Chevron ExtraMile Gas Station

TRAFFIC ANALYSIS

CITY OF LAKE ELSINORE

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9/8/2020
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AUGUST 31, 2020 (REVISED)

TABLE OF CONTENTS

APPENDICES

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LIST OF EXHIBITS

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LIST OF TABLES

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
CA MUTCD	California Manual on Uniform Traffic Control Devices
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Program
E+P	Existing Plus Project
EAP	Existing Plus Ambient Growth Plus Project
EAPC	Existing Plus Ambient Growth Plus Project Plus Cumulative
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
PHF	Peak Hour Factor
Project	Chevron ExtraMile Gas Station
RCTC	Riverside County Transportation Commission
RTA	Riverside Transport Authority
SR	State Route
TA	Traffic Impact Analysis
TIF	Transportation Impact Fee
TUMF	Transportation Uniform Mitigation Fee
v/c	Volume to Capacity
WRCOG	Western Riverside Council of Governments

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1 INTRODUCTION

This report presents the results of the traffic analysis (TA) for the proposed Chevron ExtraMile Gas Station development ("Project"), which is located at 16830 Lakeshore Drive in the City of Lake Elsinore, as shown on Exhibit 1-1.

The purpose of this TA is to evaluate the potential circulation system deficiencies that may result from the development of the proposed Project, and to recommend improvements to achieve acceptable circulation system operational conditions. The TA will be utilized to support General Plan consistency and will not be utilized in the environmental document per California Environmental Quality Act (CEQA). As of July 1st, vehicle miles traveled (VMT) is be utilized to discern traffic-related impacts and potential mitigation measures (prepared under separate cover). As directed by City of Lake Elsinore staff, this traffic study has been prepared in accordance with the County of Riverside Traffic Impact Analysis Preparation Guide, the California Department of Transportation (Caltrans) Guide for the Preparation of Traffic Impact Studies, and consultation with City staff during the scoping process. (1) (2) The approved Project Traffic Study Scoping agreement is provided in Appendix 1.1 of this TA.

1.1 SUMMARY OF FINDINGS

The Project should modify the curb, gutter, sidewalk, and landscape improvements as proposed on the site plan (see Exhibit 1-2) in order to accommodate the proposed site access. Both Lakeshore Drive and Riverside Drive (SR-74) are not currently built to their ultimate General Plan roadway cross-sections. As such, these roadways would need to be improved in the future. The Project is anticipated to contribute to the anticipated deficiency at the intersection of Lakeshore Drive and Riverside Drive (SR-74) under Existing plus Ambient Growth plus Project plus Cumulative (EAPC) (2021) traffic conditions. As such, the Project will pay its transportation impact fees and contribute its fair share towards the future improvement needs. Additional details are provided in Section 1.6 *Recommendations* of this report.

EXHIBIT 1-1: EXISTING SITE PLAN

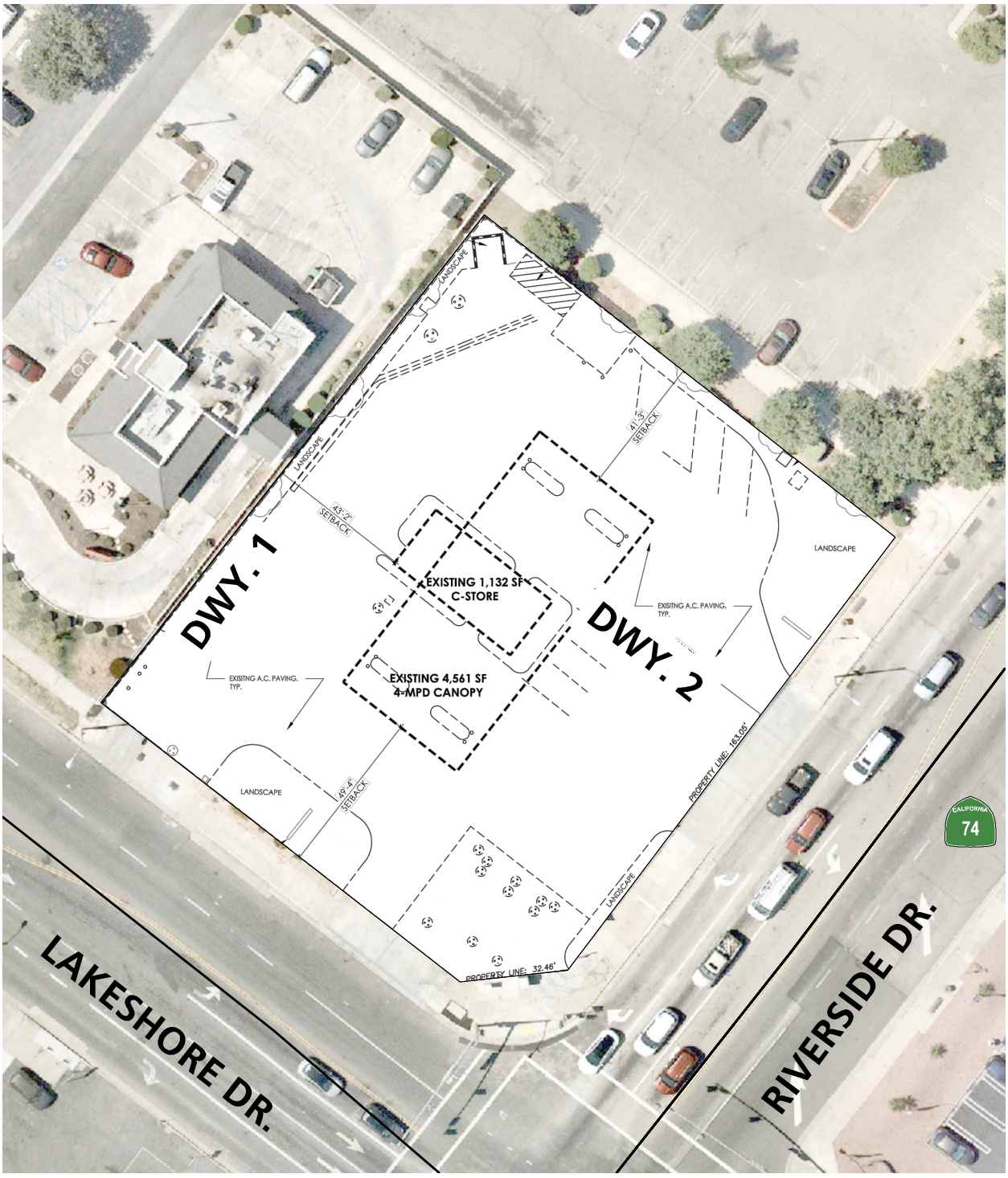
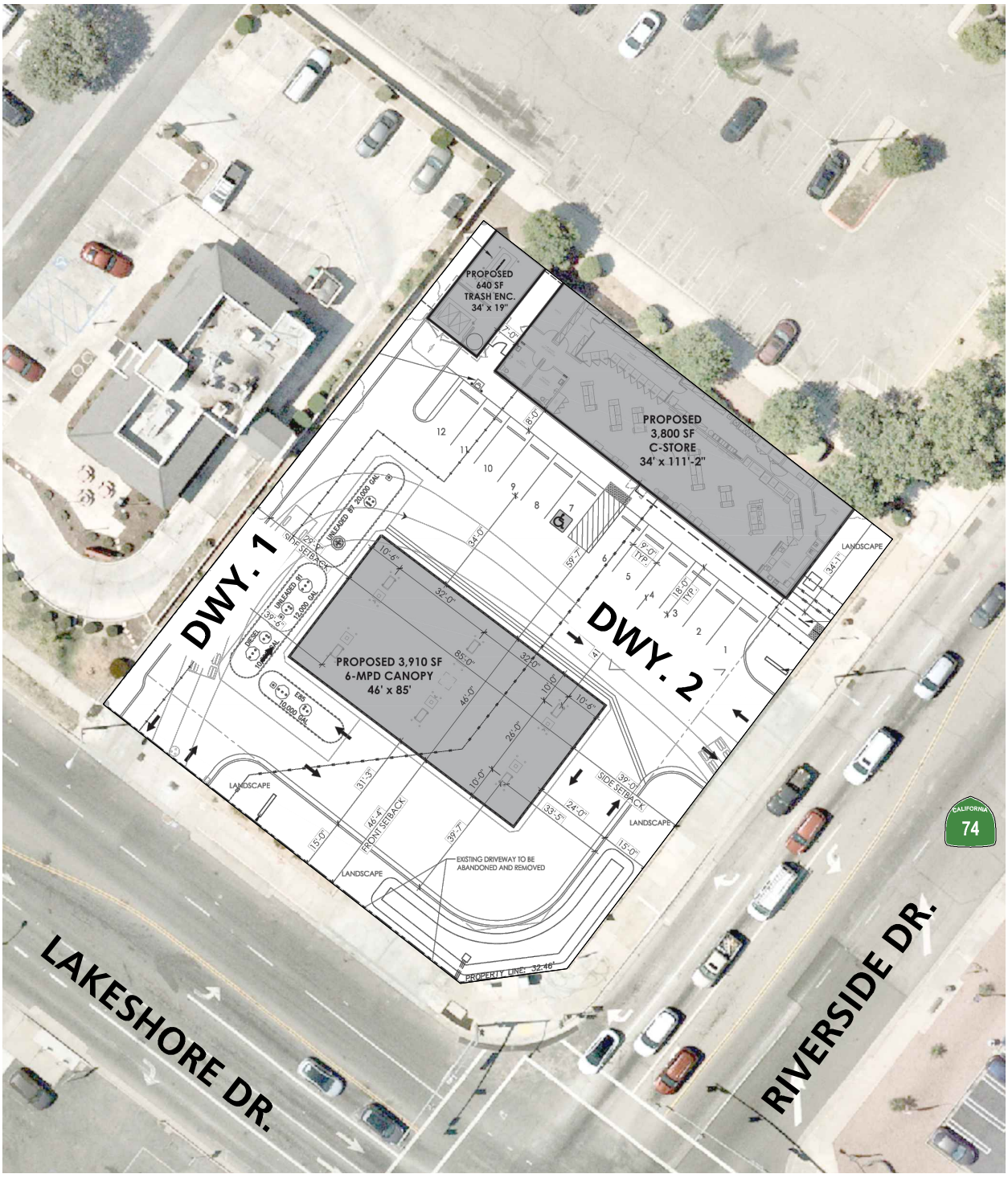


EXHIBIT 1-2: PRELIMINARY SITE PLAN



13202 - siteplan.dwg

1.2 PROJECT OVERVIEW

The existing gas station is shown on Exhibit 1-1. Exhibit 1-2 illustrates the preliminary Project site plan. The Project proposes to demolish an existing 8-vehicle fueling position gas station with a 1,132 square foot convenience market (see Exhibit 1-1) to construct a new 12-vehicle fueling position gas station with a 3,800 square foot convenience market (see Exhibit 1-2). It is anticipated that the Project would be developed in a single phase with an anticipated Opening Year of 2021. For the purpose of this analysis, the following driveways will provide access to the Project site:

- Driveway 1 via Lakeshore Drive – Full Access
- Driveway 2 via Riverside Drive (SR-74) – Full Access

Regional access to the Project site is available from Riverside Drive (SR-74)/Ortega Highway (SR-74) and the I-15 Freeway.

Trips generated by the Project's proposed land uses have been estimated based on the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition, 2017) for Super Convenience Market/Gas Station (ITE Land Use Code 960). (3) The proposed Project is anticipated to generate a total of 664 trip-ends per day with 80 AM peak hour trips and 66 PM peak hour trips. The assumptions and methods used to estimate the Project's trip generation characteristics are discussed in greater detail in Section 4.1 *Project Trip Generation* of this report.

1.3 ANALYSIS SCENARIOS

For the purposes of this traffic study, potential deficiencies to traffic and circulation have been assessed for each of the following conditions:

- Existing (2020) Conditions
- Existing Plus Project (E+P) Conditions
- Existing Plus Ambient Growth Plus Project (EAP) (2021)
- Existing Plus Ambient Growth Plus Project Plus Cumulative Projects (EAPC) (2021)

1.3.1 EXISTING (2020) CONDITIONS

Information for Existing (2020) conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared.

1.3.2 EXISTING PLUS PROJECT CONDITIONS

The Existing Plus Project (E+P) analysis determines circulation system deficiencies that would occur on the existing roadway system in the scenario of the Project being placed upon Existing conditions. The E+P analysis is intended to identify the project-specific traffic deficiencies associated solely with the development of the proposed Project based on a comparison of the E+P traffic conditions to Existing (2020) conditions.

1.3.3 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT (2021) CONDITIONS

The EAP (2021) conditions analysis determines the traffic deficiencies based on a comparison of the EAP (2021) traffic conditions to Existing (2020) traffic conditions. To account for background traffic growth, an ambient growth factor from Existing (2020) conditions of 2.0% is included for EAP (2021) traffic conditions. The EAP analysis is intended to identify "Opening Year" deficiencies associated with the development of the proposed Project based on the expected background growth within the study area.

1.3.4 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE (2021) CONDITIONS

The EAPC (2021) traffic conditions analysis determines the potential near-term cumulative circulation system deficiencies. To account for background traffic growth, traffic associated with other known cumulative development projects in conjunction with an ambient growth factor of 2.0% from Existing conditions are included for EAPC (2021) traffic conditions.

1.4 STUDY AREA

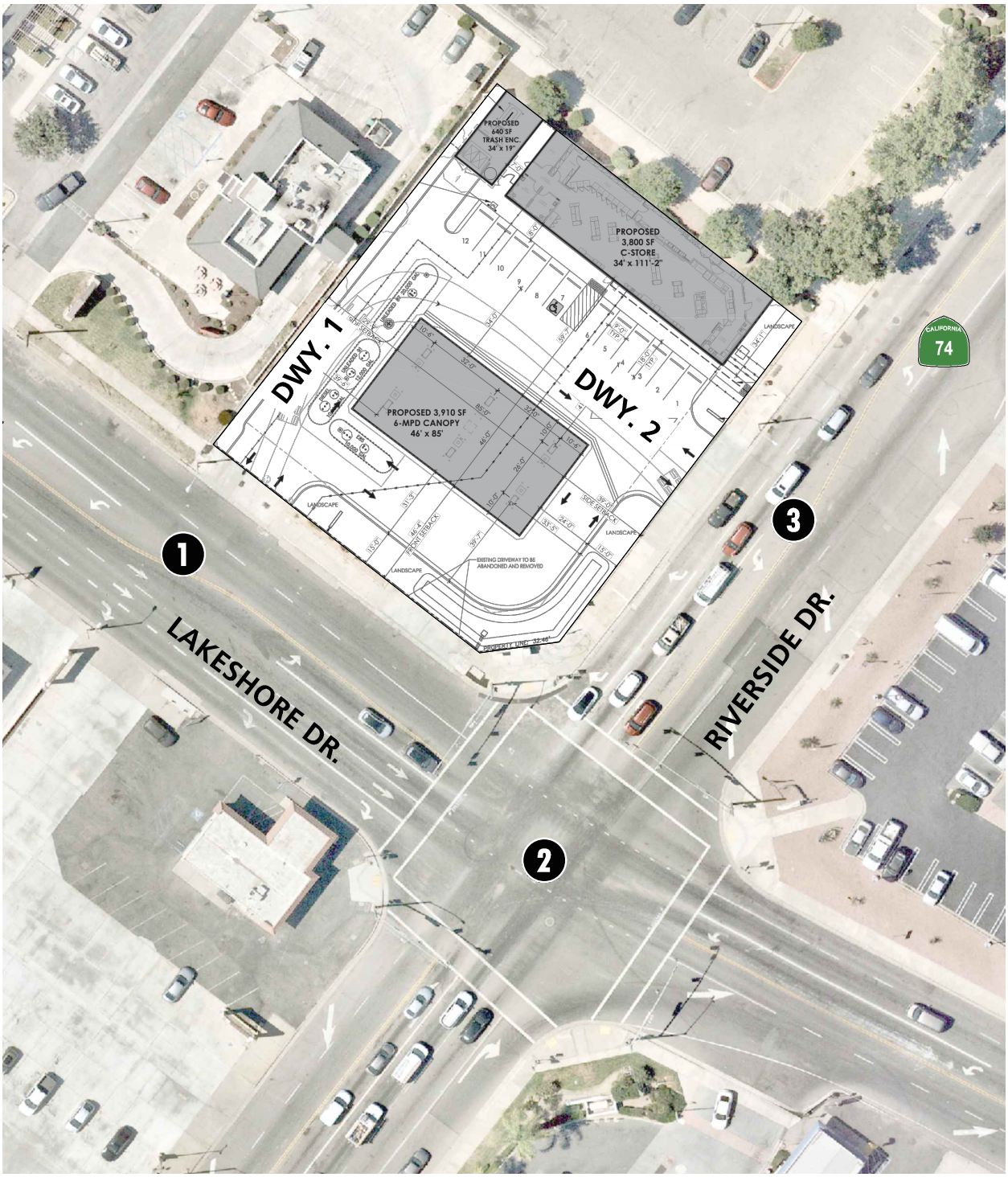
To ensure that this TA satisfies the City of Lake Elsinore's traffic study requirements, Urban Crossroads, Inc. prepared a traffic study scoping package for review by City staff prior to the preparation of this report. The Agreement provides an outline of the Project study area, trip generation, trip distribution, and analysis methodology and is included in Appendix 1.1.

The following 3 study area intersections shown on Exhibit 1-3 and listed in Table 1-1 were selected for this TA based on consultation with City of Lake Elsinore staff and have generally been selected based on the "50 peak hour trip" criterion. The "50 peak hour trip" criterion is consistent with the methodology employed by the City of Lake Elsinore and County of Riverside, and generally represents a minimum number of trips at which a typical intersection would have the potential to be affected by a given development proposal. Although each intersection may have unique operating characteristics, this traffic engineering rule of thumb is a widely utilized tool for estimating a potential study area.

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction	CMP?
1	Lakeshore Dr. & Driveway 1	Lake Elsinore	No
2	Lakeshore Dr. & Riverside Dr. (SR-74)	Lake Elsinore, Caltrans	No
3	Driveway 2 & Riverside Dr. (SR-74)	Lake Elsinore, Caltrans	No

EXHIBIT 1-3: LOCATION MAP



LEGEND:

O = EXISTING INTERSECTION ANALYSIS LOCATION

N

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The intent of a Congestion Management Program (CMP) is to more directly link land use, transportation, and air quality, thereby prompting reasonable growth management programs that will effectively utilize new transportation funds, alleviate traffic congestion and related deficiencies, and improve air quality. The County of Riverside CMP became effective with the passage of Proposition 111 in 1990 and updated most recently updated in 2011. The Riverside County Transportation Commission (RCTC) adopted the 2011 CMP for the County of Riverside in December 2011. (4) None of the study area intersections are identified as CMP facilities in the Riverside County CMP.

1.5 ANALYSIS FINDINGS

This section provides a summary of analysis results for E+P, EAP (2021), and EAPC (2021) traffic conditions. A summary of level of service (LOS) results for all analysis scenarios is presented on Exhibit 1-4.

1.5.1 EXISTING (2020) CONDITIONS

All study area intersections are currently operating at an acceptable LOS during the peak hours under Existing (2020) traffic conditions.

1.5.2 E+P CONDITIONS

All study area intersections are anticipated to continue to operate at an acceptable LOS during the peak hours with the addition of Project traffic for E+P traffic conditions.

1.5.3 EAP (2021) CONDITIONS

All study area intersections are anticipated to continue to operate at an acceptable LOS during the peak hours under EAP (2021) traffic conditions.

1.5.4 EAPC (2021) CONDITIONS

All study area intersections are anticipated to continue to operate at an acceptable LOS during the peak hours under EAPC (2021) traffic conditions, with the exception of the following:

- Lakeshore Dr. & Riverside Dr. (#2) – LOS E PM peak hour only

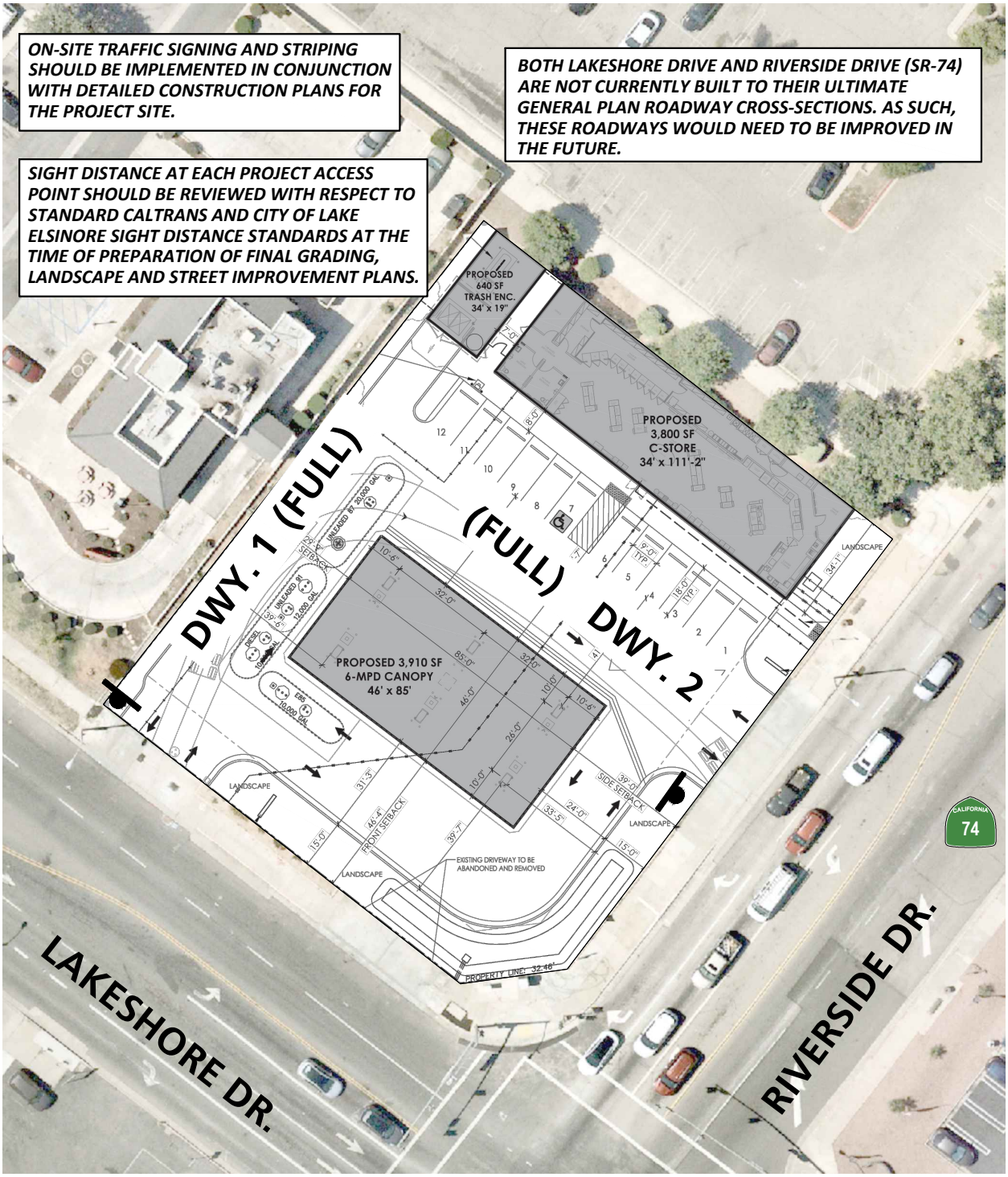
EXHIBIT 1-4: SUMMARY OF DEFICIENT INTERSECTIONS BY ANALYSIS SCENARIO

#	Intersection	Existing (2020)	E+P	EAP (2021)	EAPC (2021)
1	Lakeshore Dr. & Dwy. 1				
2	Lakeshore Dr. & Riverside Dr. (SR-74)				
3	Dwy. 2 & Riverside Dr. (SR-74)				

LEGEND:

- AM PEAK HOUR
- PM PEAK HOUR
- LOS A-D
- LOS E
- LOS F

EXHIBIT 1-5: SITE ADJACENT ROADWAY AND SITE ACCESS RECOMMENDATIONS



LEGEND:

FULL = FULL ACCESS

= STOP SIGN

N

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1.6 RECOMMENDATIONS

The following recommendations are based on the improvements needed to accommodate site access and peak hour queues. Exhibit 1-4 shows the site adjacent recommendations.

- Both Lakeshore Drive and Riverside Drive (SR-74) are not currently built to their ultimate General Plan roadway cross-sections. As such, these roadways would need to be improved in the future.
- Project to install a stop control on the westbound approach at Driveway 1 on Lakeshore Drive and on the southbound approach at Driveway 2 on Riverside Drive (SR-74).
- The Project should modify the curb, gutter, sidewalk, and landscape improvements as proposed on the site plan (see Exhibit 1-2) in order to accommodate the proposed site access.

Wherever necessary, roadways adjacent to the Project, site access points and site-adjacent intersections will be constructed to be consistent with the identified roadway classifications and respective cross-sections in the City of Lake Elsinore General Plan Circulation Element.

On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the Project site.

Table 1-2 lists the recommended improvements necessary to reduce the identified LOS deficiencies at the intersection of Lakeshore Drive and Riverside Drive (SR-74) under EAPC (2021) traffic conditions. For improvements that are not included in the County's Transportation Uniform Mitigation Fee (TUMF) or City's Transportation Impact Fee (TIF), fair share contribution based on the Project's percent contribution has been provided in Table 1-3. These fees are collected as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with the projected vehicle trip increases.

Table 1-2

Summary of Improvements by Analysis Scenario

#	Intersection Location	Jurisdiction	E+P	EAP (2021)	EAPC (2021)	Improvements in City TIF/County TUMF?[1]	Project Responsibility[2]	Fair Share %[3]
2	Lakeshore Dr. & Riverside Dr. (SR-74)	Lake Elsinore, Caltrans	None	None	2nd WB through lane Modify the traffic signal to implement overlap phasing on the WB right turn lane	Yes (TUMF) No	Fees Fair Share	3.365%

[1] Improvements included in City of Lake Elsinore TIF program for local improvements or the County's TUMF regional fee program.

[2] Identifies the Project's responsibility to construct an improvement or contribute fair share towards the implementation of the improvement shown.

[3] Program improvements constructed by the Project may be eligible for fee credit, at discretion of City. See Table 1-3 for Fair Share Calculations.

[5] Improvements are consistent with the Phase 1 improvements planned as part of the I-15/Railroad Canyon Road Interchange Project.

Table 1-3

Project Fair Share Calculations for Intersections

#	Intersection	Existing	Project	EAPC (2021) Total Volume	Total New Traffic	Project % of New Traffic
2	Lakeshore Dr. & Riverside Dr. (SR-74)					
	AM:	2,743	32	3,694	951	**3.365%**
	PM:	3,296	16	4,529	1,233	1.298%

BOLD = Denotes highest peak hour

2 METHODOLOGIES

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. The methodologies described are consistent with City of Lake Elsinore traffic study guidelines.

2.1 LEVEL OF SERVICE

Traffic operations of roadway facilities are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic flow based on several factors such as speed, travel time, delay, and freedom to maneuver. Six levels are typically defined ranging from LOS A, representing completely free-flow conditions, to LOS F, representing breakdown in flow resulting in stop-and-go conditions. LOS E represents operations at or near capacity, an unstable level where vehicles are operating with the minimum spacing for maintaining uniform flow.

2.2 INTERSECTION CAPACITY ANALYSIS

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. The Highway Capacity Manual (HCM), 6th Edition, methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. (5) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

The City of Lake Elsinore requires signalized intersection operations analysis based on the methodology described in the HCM. (5) Intersection LOS operations are based on an intersection's average control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. For signalized intersections LOS is directly related to the average control delay per vehicle and is correlated to a LOS designation as described in Table 2-1. Study area intersections have been evaluated using the Synchro (Version 10) analysis software package.

Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the HCM. Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length. The level of service and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network.

TABLE 2-1: SIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Operations with very low delay occurring with favorable progression and/or short cycle length.	0 to 10.00	A	F
Operations with low delay occurring with good progression and/or short cycle lengths.	10.01 to 20.00	B	F
Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.01 to 35.00	C	F
Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.01 to 55.00	D	F
Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.01 to 80.00	E	F
Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	80.01 and up	F	F

Source: HCM (6th Edition)

The peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15-minute volumes. Common practice for LOS analysis is to use a peak 15-minute rate of flow. However, flow rates are typically expressed in vehicles per hour. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume (e.g. PHF = [Hourly Volume] / [4 x Peak 15-minute Flow Rate]). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for all near-term analysis scenarios. Per the HCM, PHF values over 0.95 often are indicative of high traffic volumes with capacity constraints on peak hour flows while lower PHF values are indicative of greater variability of flow during the peak hour. (5)

California Department of Transportation (Caltrans)

Per the Caltrans Guide for the Preparation of Traffic Impact Studies, the traffic modeling and signal timing optimization software package Synchro (Version 10) has also been utilized to analyze signalized intersections under Caltrans' jurisdiction, which include intersections along Riverside Drive (SR-74). (2)

2.2.2 UNSIGNALIZED INTERSECTIONS

The City of Lake Elsinore requires the operations of unsignalized intersections be evaluated using the methodology described in the HCM. (5) The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-2).

TABLE 2-2: UNSIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay Per Vehicle (Seconds)	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Little or no delays.	0 to 10.00	A	F
Short traffic delays.	10.01 to 15.00	B	F
Average traffic delays.	15.01 to 25.00	C	F
Long traffic delays.	25.01 to 35.00	D	F
Very long traffic delays.	35.01 to 50.00	E	F
Extreme traffic delays with intersection capacity exceeded.	> 50.00	F	F

Source: HCM (6th Edition)

At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. Per the HCM, the highest delay for any individual movement on the minor street is reported for side-street stop-controlled intersections. For all-way stop controlled intersections, LOS is computed for the intersection as a whole and the average intersection delay is reported (similar to signalized intersections).

2.3 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

Although the study area includes two unsignalized study area intersections (Driveway 1 on Lakeshore Drive and Driveway 2 on Riverside Drive (SR-74)), these intersections are not suitable locations for the installation of a traffic signal due to their proximity to the existing signalized intersection of Lakeshore Drive and Riverside Drive (SR-74). As such, traffic signal warrant analyses have not been performed for the unsignalized study area intersections for the purposes of this TA.

2.4 MINIMUM ACCEPTABLE LOS

The City, pursuant to its 2011 General Plan, requires that peak hour intersection operations be at LOS D or better to be considered acceptable. Therefore, City intersections operating at LOS E or F would be considered deficient.

2.5 DEFICIENCY CRITERIA

The following types of traffic deficiencies are considered for the purposes of this TA:

- When existing traffic conditions exceed the General Plan target LOS (e.g., LOS D or better).
- When project traffic, when added to existing traffic, will deteriorate the LOS to below the target LOS, and deficiencies cannot be mitigated through project conditions of approval.
- When cumulative traffic exceeds the target LOS, and deficiencies cannot be mitigated through the Transportation Uniform Mitigation Fee (TUMF) network (or other funding mechanism), project conditions of approval, or other implementation mechanism.

3 AREA CONDITIONS

This section provides a summary of the existing circulation network, the City of Lake Elsinore General Plan Circulation Network, and a review of existing peak hour intersection operations analysis.

3.1 EXISTING CIRCULATION NETWORK

Pursuant to the agreement with City of Lake Elsinore staff (Appendix 1.1), the study area includes a total of 3 intersections as shown previously on Exhibit 1-3. Exhibit 3-1 illustrates the study area intersections located near the proposed Project and identifies the number of through traffic lanes for existing roadways and intersection traffic controls.

3.2 CITY OF LAKE ELSINORE GENERAL PLAN CIRCULATION ELEMENT

As noted previously, the Project site is located within the City of Lake Elsinore. The roadway classifications and planned (ultimate) roadway cross-sections of the major roadways within the study area, as identified in the City of Lake Elsinore General Plan Circulation Element, are described subsequently. Exhibit 3-2 shows the City of Lake Elsinore General Plan Circulation Element, and Exhibit 3-3 illustrates the City of Lake Elsinore General Plan roadway cross-sections.

Study area roadways that are classified as an Urban Arterial are identified as having six lanes of travel. The following study area roadways within the City of Lake Elsinore are classified as an Urban Arterial:

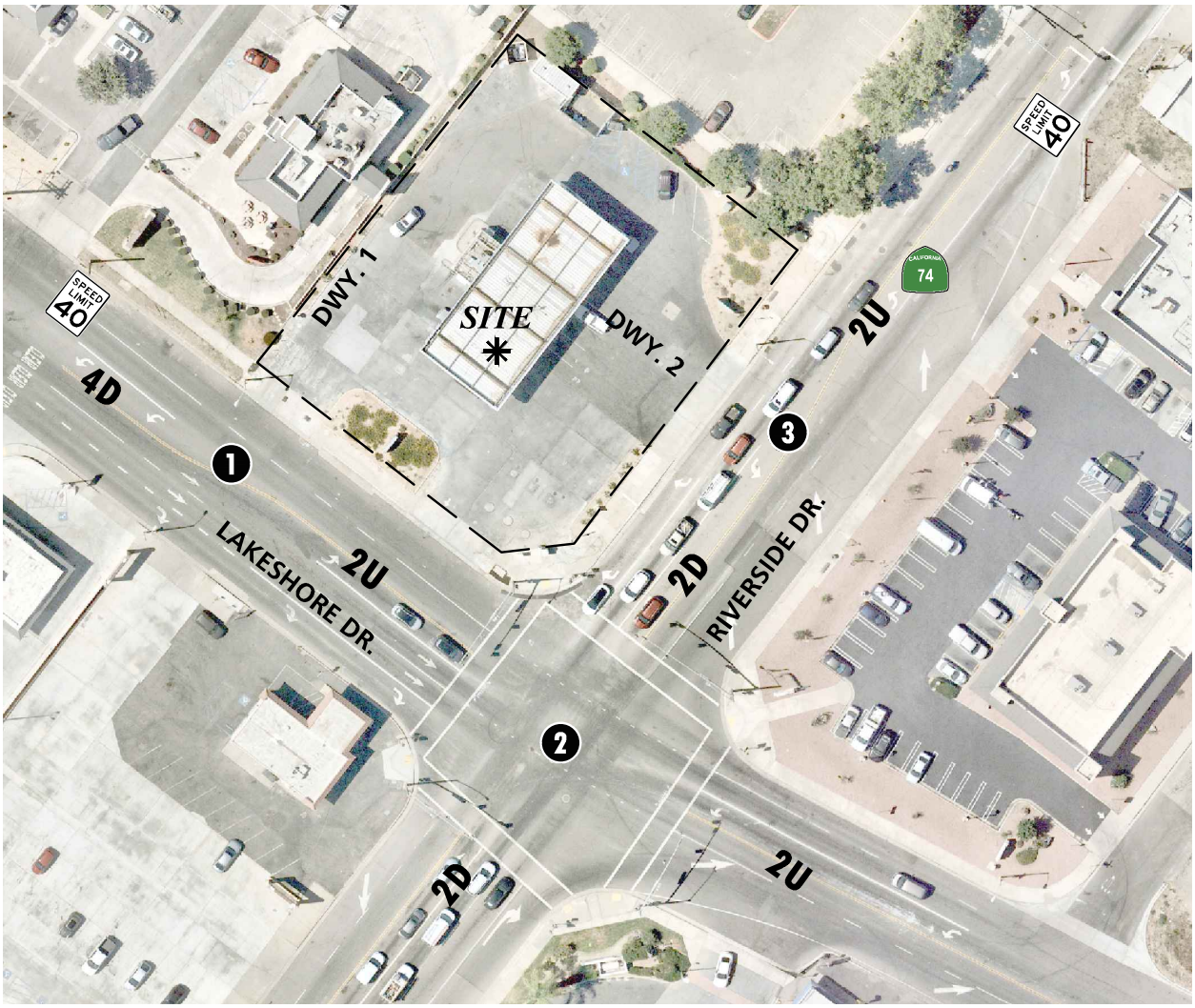
- Lakeshore Drive
- Riverside Drive (SR-74)

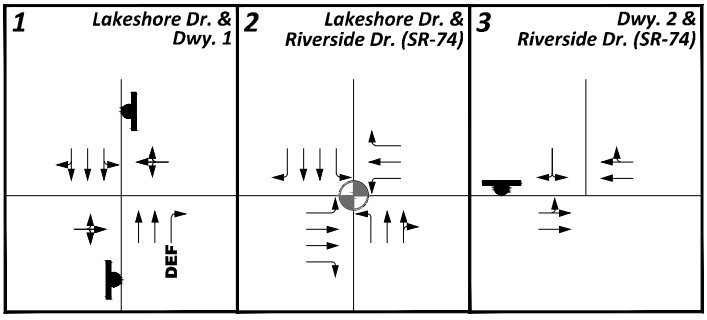
Both Lakeshore Drive and Riverside Drive (SR-74) are not currently built to their ultimate General Plan roadway cross-sections. As such, these roadways would need to be improved in the future.

3.3 BICYCLE AND PEDESTRIAN FACILITIES

The City of Lake Elsinore Area Trails System is shown on Exhibit 3-4 while the City of Lake Elsinore Bikeway Plan is shown on Exhibit 3-5. There is currently a Lake Loop Trail on Riverside Drive (SR-74) west of Lakeshore Drive and Lakeshore Drive south of Riverside Drive (SR-74). Lakeshore Drive and Riverside Drive (SR-74) are designated as Class II bike facilities per the City of Lake Elsinore General Plan. Existing pedestrian facilities within the study area are shown on Exhibit 3-6. Field observations conducted in February 2020 indicate nominal pedestrian and bicycle activity within the study area.

EXHIBIT 3-1: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS





LEGEND:

- = TRAFFIC SIGNAL
- = STOP SIGN
- 4 = NUMBER OF LANES
- D = DIVIDED
- U = UNDIVIDED
- DEF = DEFACTO RIGHT TURN
- SPEED LIMIT 25 = SPEED LIMIT (MPH)

N

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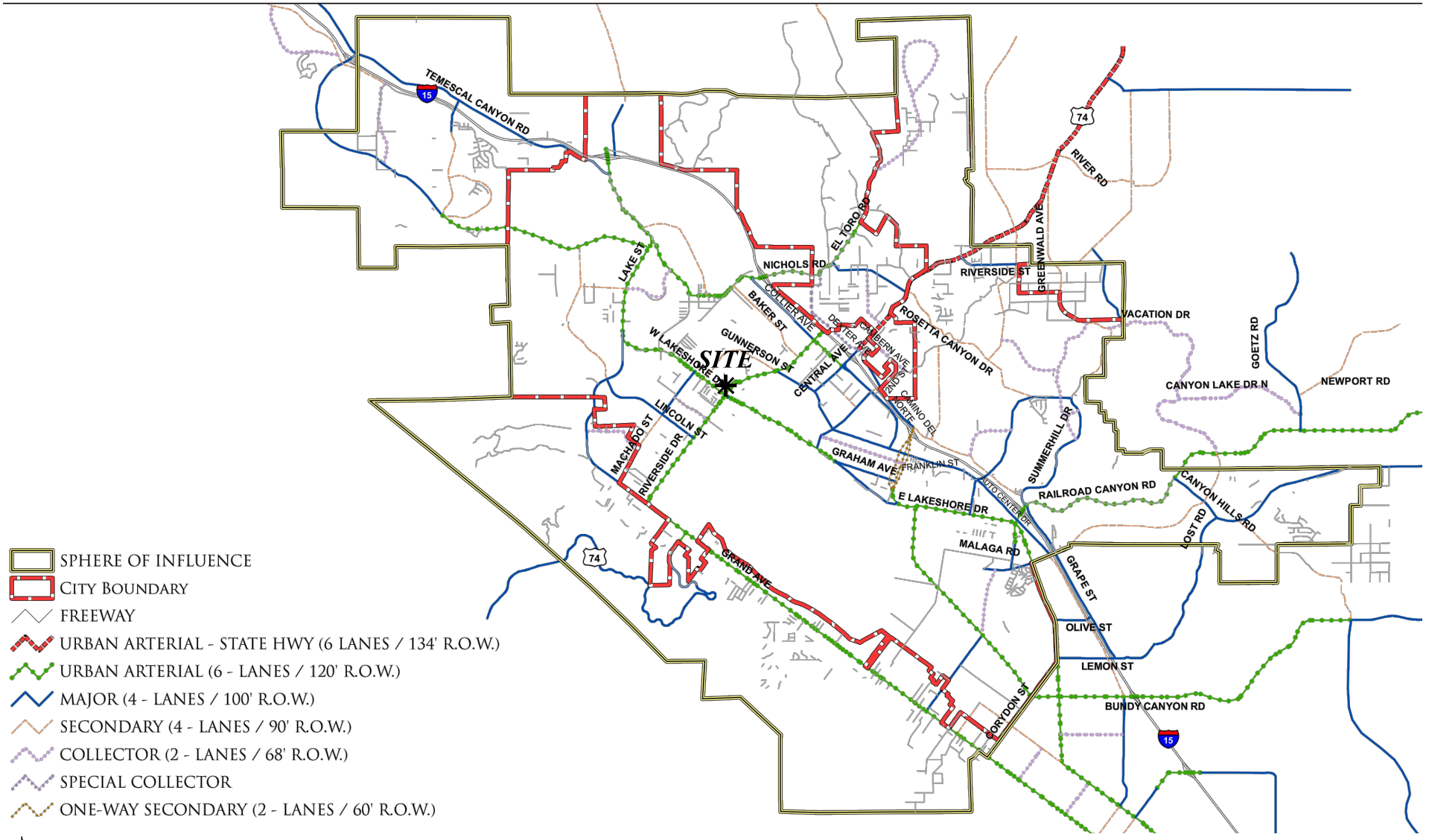
EXHIBIT 3-2: CITY OF LAKE ELSINORE GENERAL PLAN CIRCULATION ELEMENT



SOURCE: CITY OF LAKE ELSINORE GENERAL PLAN (ADOPTED 12-13-2011)

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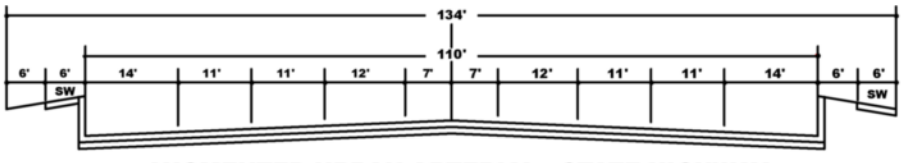
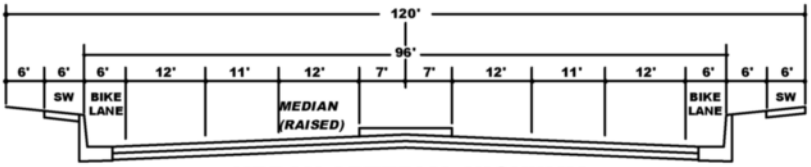
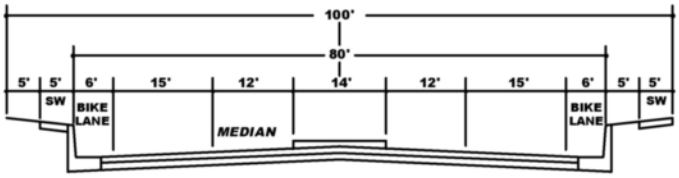
EXHIBIT 3-3: CITY OF LAKE ELSINORE GENERAL PLAN ROADWAY CROSS-SECTIONS



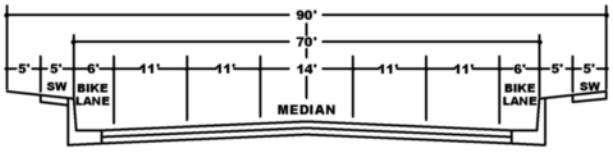
AUGMENTED URBAN ARTERIAL - STATE HIGHWAY
(8-LANE)



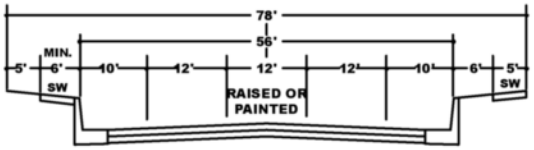
URBAN ARTERIAL HIGHWAY
(6-LANE)



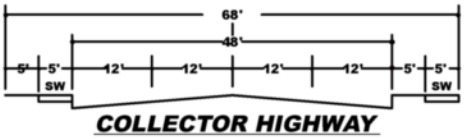
MAJOR HIGHWAY
(4-LANE)



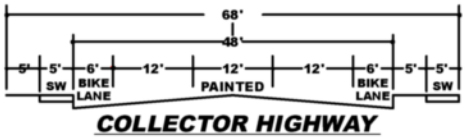
SECONDARY HIGHWAY
(4-LANE)



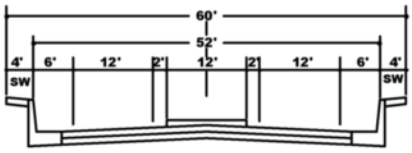
DIVIDED COLLECTOR
(2-LANE)
BIKES USE SHOULDER



COLLECTOR HIGHWAY
(4-LANE)



COLLECTOR HIGHWAY
(2-LANE)

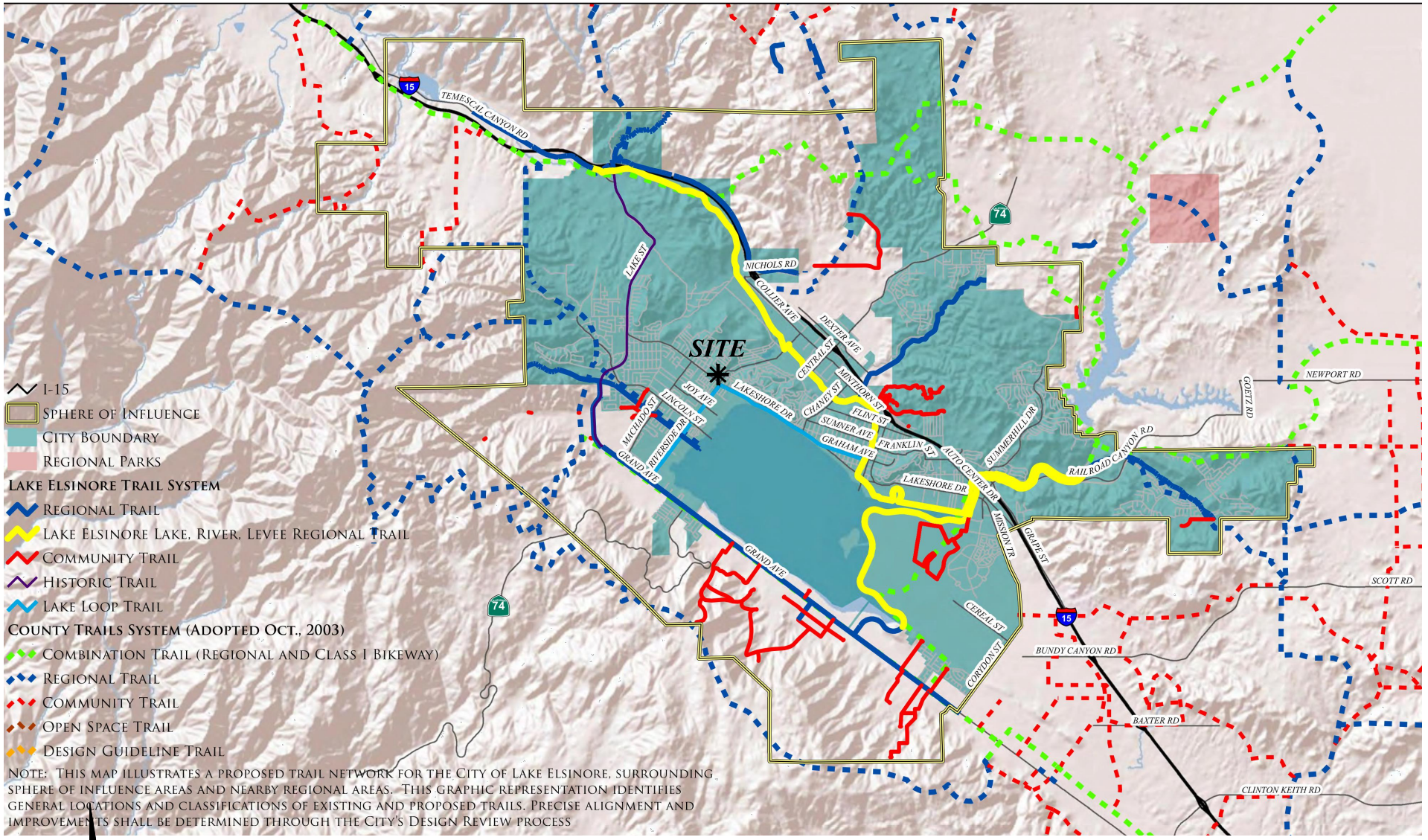


NEW SPECIAL ROADWAY
(2-LANE)
SHOULDER/BIKE LANE
(PROPOSED FOR LAKESHORE DRIVE IN THE COUNTRY CLUB HEIGHT DISTRICT)

* BIKE LANES ARE NOT MANDATORY UNLESS SHOWN ON THE BIKEWAY CIRCULATION ELEMENT PLAN
PRECISE SIDEWALK LOCATION SUBJECT TO CITY ENGINEER APPROVAL
NOTE: CHECK THE DISTRICT PLAN OF YOUR AREA FOR ANY REQUIRED SPECIAL ROADWAY CROSS-SECTION, ESPECIALLY THE LAKE EDGE AND COUNTRY CLUB HEIGHTS DISTRICT PLANS.
STRIPPING OF COLLECTOR HIGHWAY AS DIRECTED BY CITY ENGINEER.

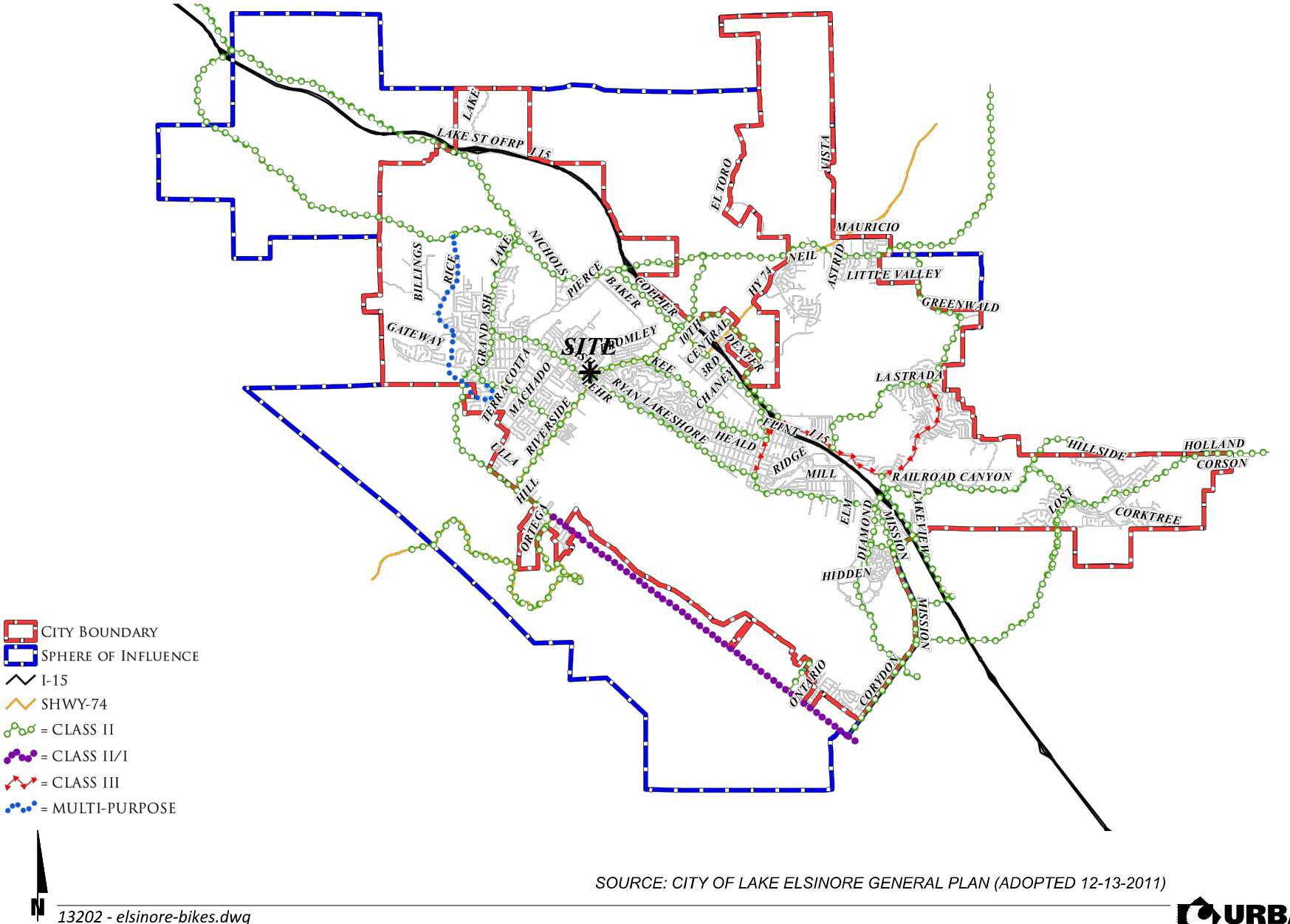
SOURCE: CITY OF LAKE ELSINORE GENERAL PLAN (ADOPTED 12-13-2011)

EXHIBIT 3-4: CITY OF LAKE ELSINORE AREA TRAILS SYSTEM



SOURCE: CITY OF LAKE ELSINORE GENERAL PLAN (ADOPTED 12-13-2011)

EXHIBIT 3-5: CITY OF LAKE ELSINORE BIKEWAY PLAN



SOURCE: CITY OF LAKE ELSINORE GENERAL PLAN (ADOPTED 12-13-2011)

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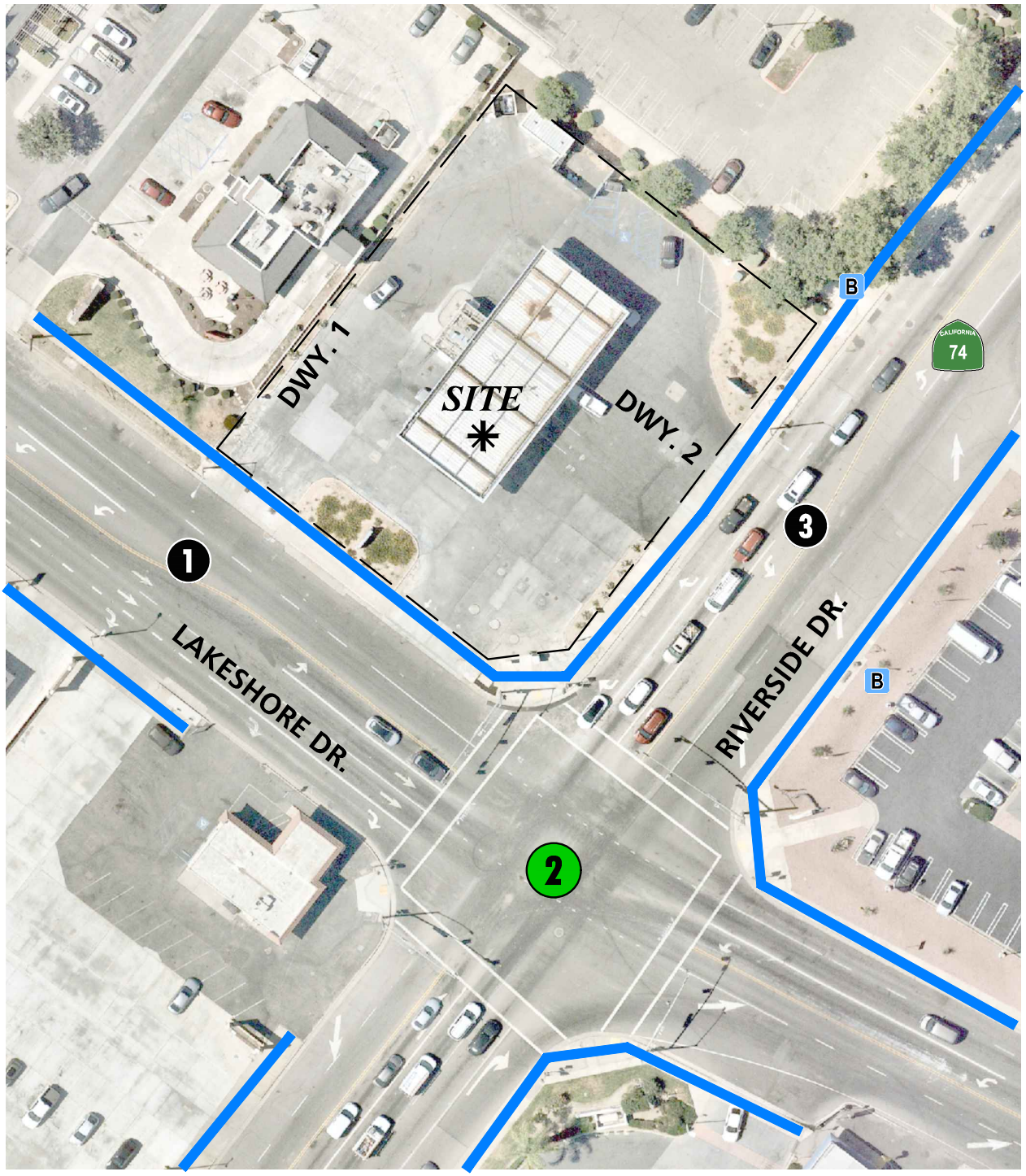
EXHIBIT 3-6: EXISTING PEDESTRIAN FACILITIES



LEGEND:

- = SIDEWALK
- B = BUS STOP
- 0 = NO CROSSWALK
- 0 = CROSSWALK ON FOUR APPROACHES

N

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URBAN CROSSROADS

3.4 TRANSIT SERVICE

The Riverside Transit Authority (RTA) currently serves the City of Lake Elsinore. Transit service is reviewed and updated by RTA periodically to address ridership, budget, and community demand needs. RTA Route 8 runs along Lakeshore Drive and Riverside Drive (SR-74). RTA Route 8 could likely serve the Project in the future. Existing transit routes in the vicinity of the study area are illustrated on Exhibit 3-7. Changes in land use can affect these periodic adjustments which may lead to either enhanced or reduced service where appropriate. As such, it is recommended that the applicant work in conjunction with RTA to potentially provide additional bus service to the site.

3.5 EXISTING (2020) TRAFFIC COUNTS

The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions using traffic count data collected on Thursday, February 27, 2020. The following peak hours were selected for analysis:

- Weekday AM Peak Hour (peak hour between 7:00 AM and 9:00 AM)
- Weekday PM Peak Hour (peak hour between 4:00 PM and 6:00 PM)

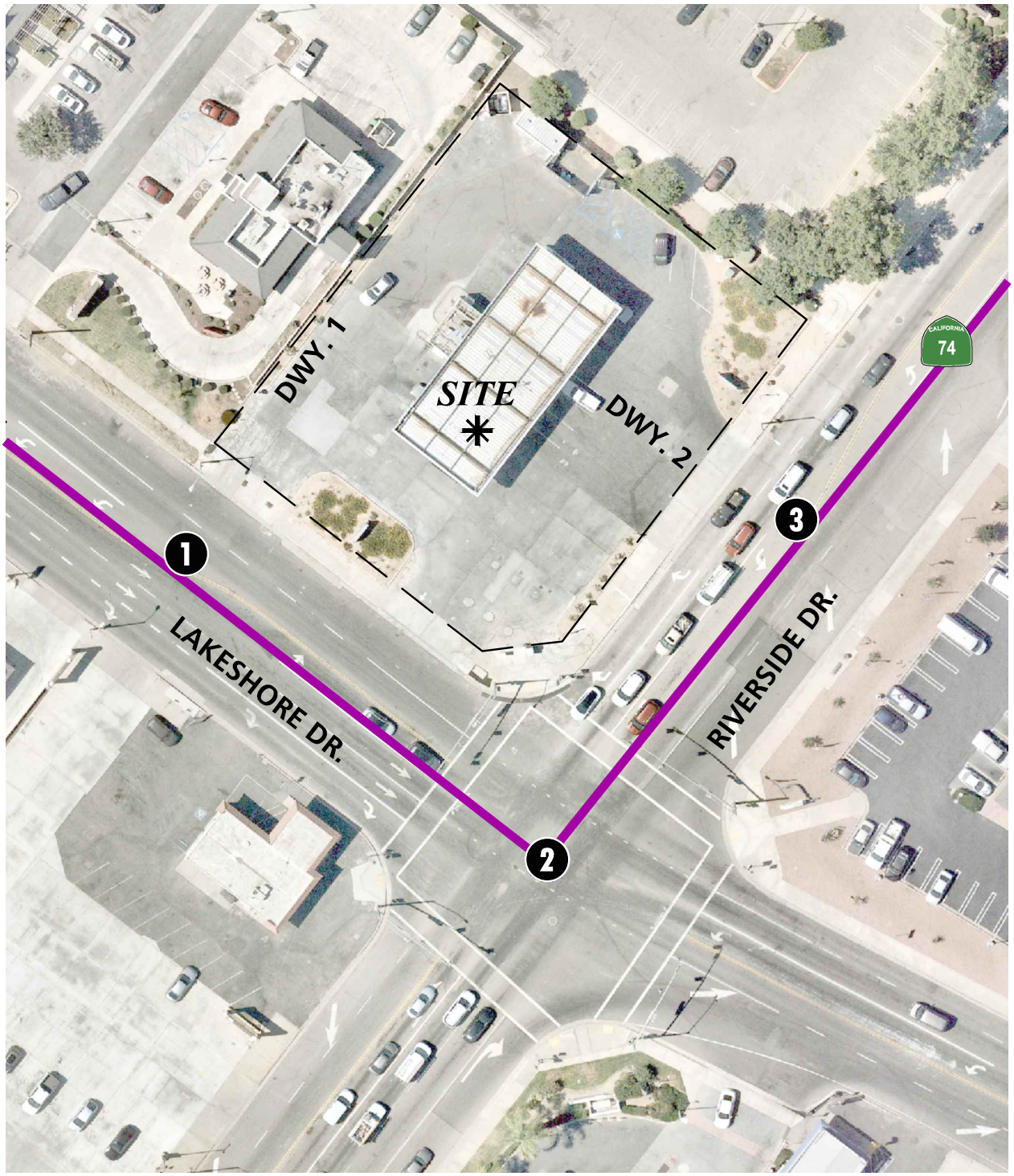
The weekday AM and weekday PM peak hour count data are representative of typical weekday peak hour traffic conditions in the study area. There were no observations made in the field that would indicate atypical traffic conditions on the count dates, such as construction activity or detour routes and near-by schools were in session and operating on normal schedules. The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1.

Existing weekday Average Daily Traffic (ADT) volumes are shown on Exhibit 3-8. Where actual 24-hour tube count data was not available, Existing ADT volumes were based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg:

Weekday PM Peak Hour (Approach Volume + Exit Volume) x 13.72 = Leg Volume

A comparison of the PM peak hour and daily traffic volumes of various roadway segments within the study area indicated that the peak-to-daily relationship is approximately 7.29 percent. As such, the above equation utilizing a factor of 13.72 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 7.29 percent (i.e., 1/0.0729 = 13.72) and was assumed to sufficiently estimate ADT volumes for planning-level analyses. Existing weekday AM and weekday PM peak hour intersection volumes are also shown on Exhibit 3-8.

EXHIBIT 3-7: EXISTING TRANSIT ROUTES



LEGEND:

= RTA ROUTE 8

N

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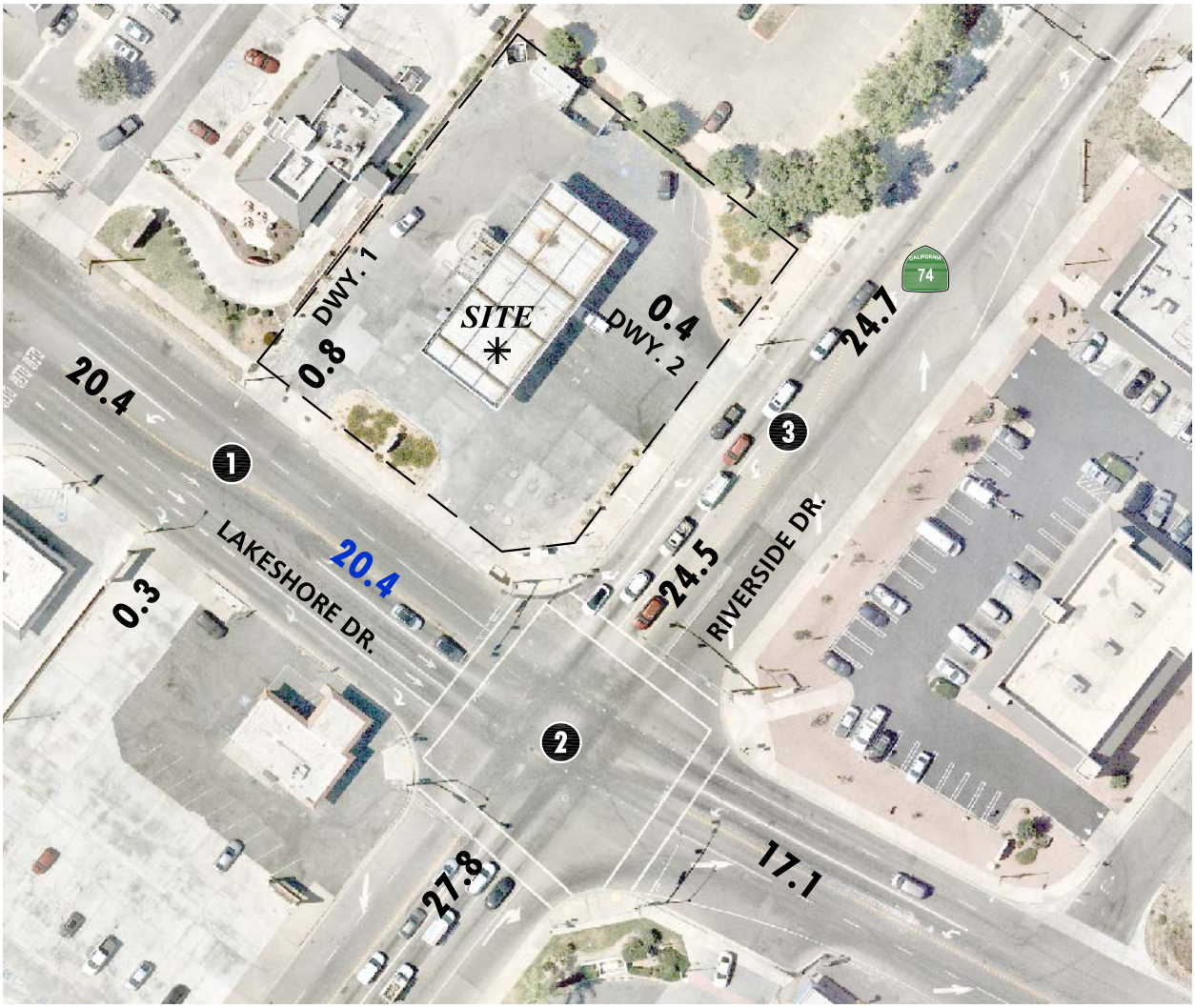
EXHIBIT 3-8: EXISTING (2020) TRAFFIC VOLUMES (IN PCE)



1 Lakeshore Dr. & Dwy. 1	2 Lakeshore Dr. & Riverside Dr. (SR74)	3 Dwy. 2 & Riverside Dr. (SR74)
3(14) 709(712) 14(11) → 25(39) ← 0(0) ← 3(5)	111(179) 322(287) 282(258) → 148(322) ← 474(526) ← 19(34)	10(6) 0(0) → 11(25) ← 630(875)
2(0) → 0(0) → 2(7) → 465(804) ← 1(2)	149(142) → 549(621) → 303(292) → 209(271) 170(343) ← 12(23)	0(0) → 842(902) →

LEGEND:

10.0 *= ACTUAL (COUNT-BASED) VEHICLES PER DAY (1000'S)*
10.0 *= ESTIMATED VEHICLES PER DAY (1000'S)*
10(10) *= AM(PM) PEAK HOUR INTERSECTION VOLUMES*

N

3.6 INTERSECTION OPERATIONS ANALYSIS

Existing peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.2 *Intersection Capacity Analysis* of this report. The intersection operations analysis results are summarized in Table 3-1, which indicates that all the study area intersections are currently operating at an acceptable LOS during the peak hours under Existing (2020) traffic conditions. Consistent with Table 3-1, a summary of the peak hour intersection LOS for Existing (2020) traffic conditions is shown on Exhibit 3-9. The intersection operations analysis worksheets are included in Appendix 3.2 of this TA.

3.7 RECOMMENDED IMPROVEMENTS

As shown in Table 3-1, the study area intersections are currently operating at an acceptable LOS during the peak hours under Existing (2020) traffic conditions. As such, no improvements have been recommended.

Table 3-1

Intersection Analysis for Existing (2020) Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Lakeshore Dr. & Driveway 1	CSS	0	2	d	0	3	0	0	1	0	0	1	0	16.8	12.6	C	B
2	Lakeshore Dr. & Riverside Dr. (SR-74)	TS	1	2	0	1	2	1	1	2	1	1	1	1	31.1	32.1	C	C
3	Driveway 2 & Riverside Dr. (SR-74)	CSS	0	0	0	0	1	0	0	2	0	0	2	0	10.5	11.6	B	B

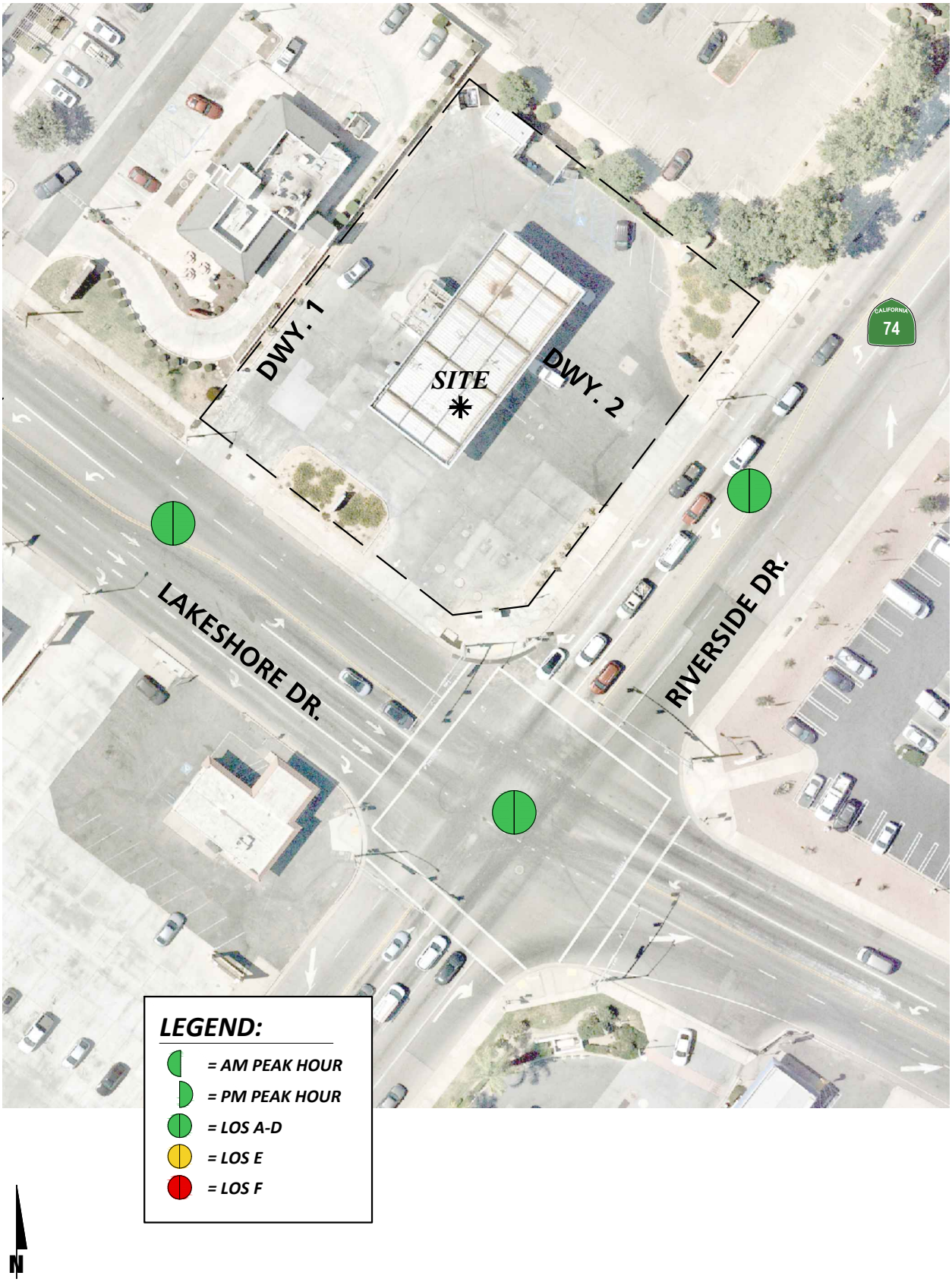
[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; d= Defacto Right Turn Lane

[2] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. HCM delay reported in seconds.

[3] CSS = Cross-street Stop; TS = Traffic Signal

EXHIBIT 3-9: EXISTING (2020) SUMMARY OF LOS



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4 PROJECTED FUTURE TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project's trip assignment onto the study area roadway network. The Project proposes to demolish an existing 8-vehicle fueling position gas station with a 1,132 square foot convenience market and construct a new 12-vehicle fueling position gas station with a 3,800 square foot convenience market. It is anticipated that the Project would be developed in a single phase with an anticipated Opening Year of 2021. For the purpose of this analysis, the following driveways will provide access to the Project site:

- Driveway 1 via Lakeshore Drive – Full Access
- Driveway 2 via Riverside Drive (SR-74) – Full Access

Regional access to the Project site is available from Riverside Drive (SR-74)/Ortega Highway and the I-15 Freeway.

4.1 PROJECT TRIP GENERATION

Trip generation represents the amount of traffic which is both attracted to and produced by a development. Determining traffic generation for a specific project is therefore based upon forecasting the amount of traffic that is expected to be both attracted to and produced by the specific land uses being proposed for a given development.

Trip generation rates used to estimate Project traffic are shown in Table 4-1. The trip generation rates used for this analysis are based upon information collected by the Institute of Transportation Engineers (ITE) as provided in their Trip Generation Manual, 10th Edition, 2017. (3) The trip generation rates for the existing gas station is based on the traffic counts collected at the driveways (see Appendix 3.1). The trip generation rate for the proposed gas station are based upon data collected by ITE for Super Convenience Market/Gas Station (ITE Land Use Code 960), which has been utilized as the proposed gas station has a convenience store in excess of 3,000 square feet and is proposing more than 10 vehicle fueling positions. (3)

As the project is proposed to include the development of a gas station, pass-by percentages have been obtained from the ITE Trip Generation Handbook (3rd Edition, 2017). (6) Pass-by trips are defined as intermediate stops on the way from an origin to a primary trip destination without a route diversion. Pass-by trips are attracted from traffic passing the site on an adjacent street or roadway that offers direct access to the generator. These types of trips are many times associated with retail uses.

The existing site is currently generating 442 trip-ends per day, with 29 AM peak hour trips and 42 PM peak hour trips. The proposed Project is estimated to generate 664 trip-ends per day, with 80 AM peak hour trips and 66 PM peak hour trips. As shown in Table 4-1, the proposed Project is anticipated to generate 222 net new trip-ends per day, 51 net new AM peak hour trips and 24 net new PM peak hour trips. The net new trips have been evaluated for the purposes of this TA.

Table 4-1

Project Trip Generation Summary

Land Use	Units[1]	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Trip Generation Rates[2]									
Super Convenience Mkt./Gas Station	VFP	960	14.04	14.04	28.08	11.48	11.48	22.96	230.52

[1] VFP = Vehicle Fueling Positions

[2] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

Land Uses	Quantity	Units[1]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Project Trip Generation Summary									
Existing Use									
Existing Gas Station (Based on Counts)	8	VFP	24	34	58	35	47	82	1,006
Pass-by Reduction (AM: 62%; PM/Daily: 56%)[2]:			-15	-15	-30	-20	-20	-40	-564
Total Existing Trips:			***9***	***19***	***29***	***15***	***27***	***42***	***442***
Proposed Use									
Super Convenience Mkt./Gas Station	12	VFP	168	168	336	138	138	276	2,766
Pass-by Reduction (AM/PM/Daily: 76%)[2]:			-128	-128	-256	-105	-105	-210	-2,102
Total Proposed Project:			***40***	***40***	***80***	***33***	***33***	***66***	***664***
Net New Trips:			***31***	***21***	***51***	***18***	***6***	***24***	***222***

[1] VFP = Vehicle Fueling Positions

[2] Source: ITE Trip Generation Handbook, 3rd Edition, 2017.

4.2 PROJECT TRIP DISTRIBUTION

The Project trip distribution and assignment process represents the directional orientation of traffic to and from the Project site. The trip distribution pattern is heavily influenced by the geographical location of the site, the location of surrounding uses, and the proximity to the regional freeway system. The Project trip distribution pattern is graphically depicted on Exhibit 4-1. The Project trip distribution pattern was reviewed by the City of Lake Elsinore as part of the traffic study scoping process (see Appendix 1.1).

4.3 MODAL SPLIT

The potential for Project trips to be reduced by the use of public transit, walking or bicycling have not been included as part of the Project's estimated trip generation. Essentially, the Project's traffic projections are "conservative" in that these alternative travel modes would reduce the forecasted traffic volumes.

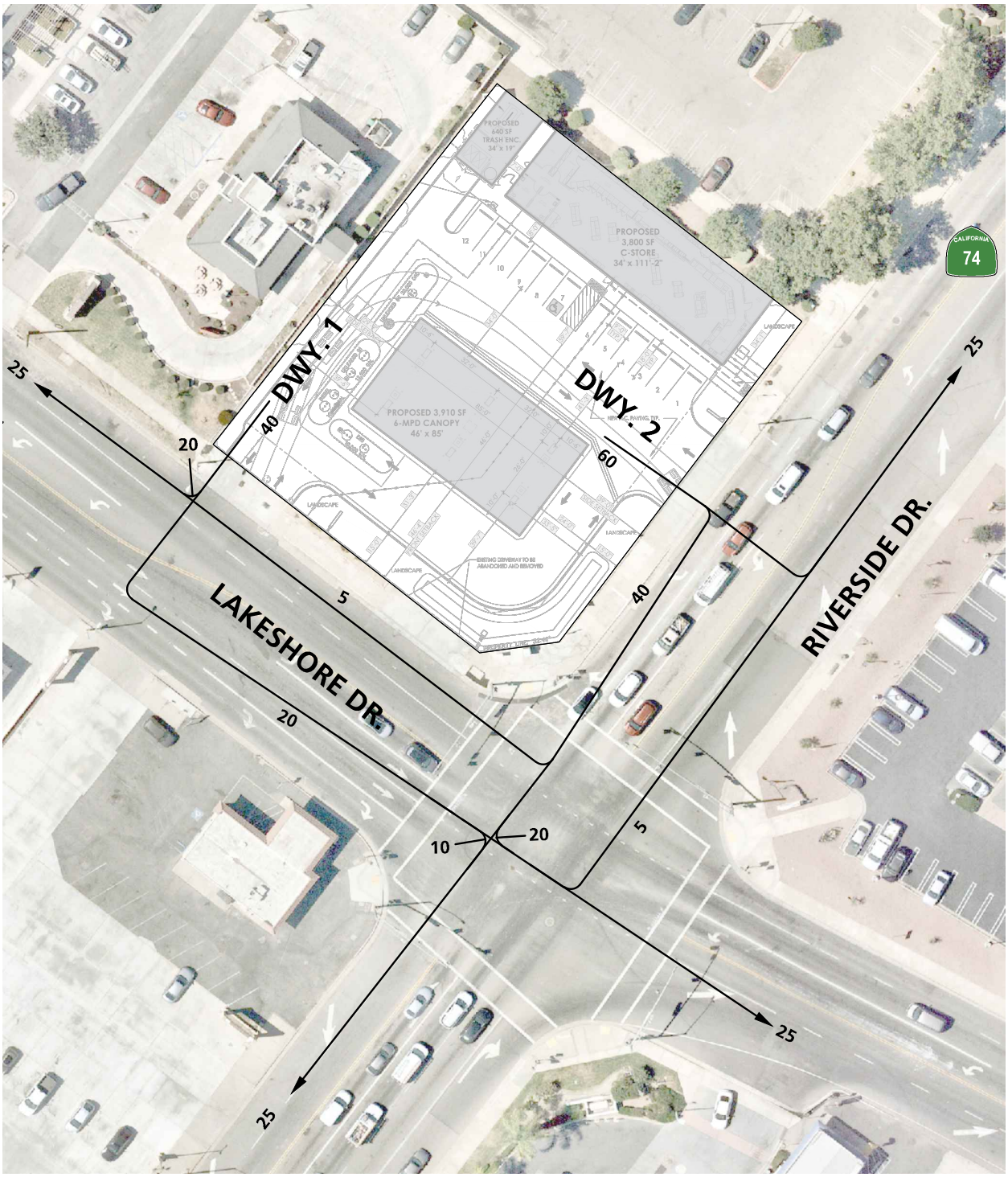
4.4 PROJECT TRIP ASSIGNMENT

The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Pass-by trip reductions at the Project driveways are shown on Exhibit 4-2. Based on the identified Project traffic generation and trip distribution patterns, Project only ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-3 (inclusive of the pass-by trips shown on Exhibit 4-2).

4.5 BACKGROUND TRAFFIC

Future year traffic forecasts have been based upon background (ambient) growth of 2.0% for 2021 traffic conditions. This ambient growth rate is added to existing traffic volumes to account for area-wide growth not reflected by cumulative development projects. Ambient growth has been added to daily and peak hour traffic volumes on surrounding roadways, in addition to traffic generated by the development of future projects that have been approved but not yet built and/or for which development applications have been filed and are under consideration by governing agencies. EAP (2021) and EAPC (2021) traffic volumes are provided in Section 6 and Section 7 of this report, respectively.

EXHIBIT 4-1: PROJECT TRIP DISTRIBUTION



LEGEND:

10 = PERCENT TO/FROM PROJECT

N

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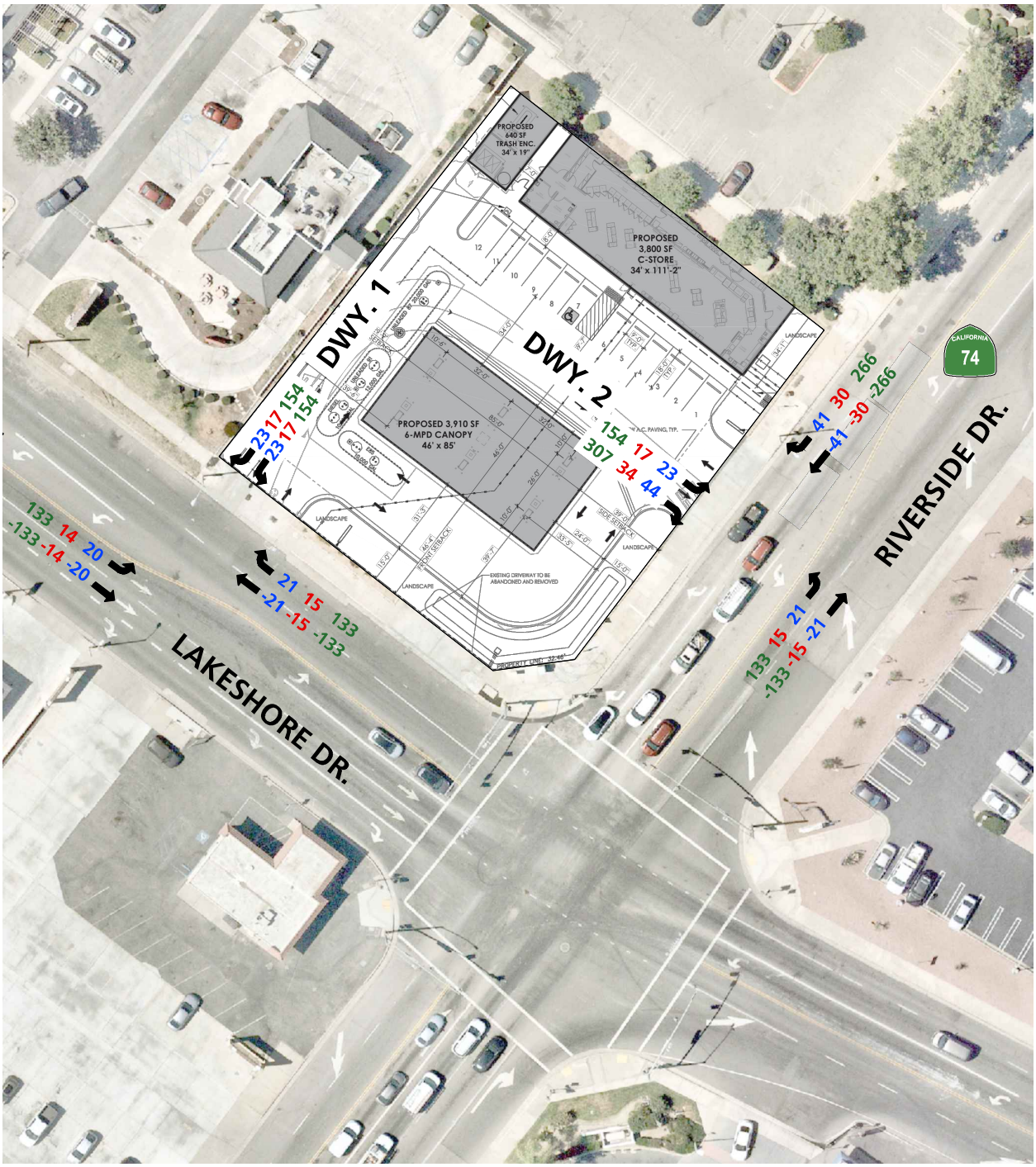
EXHIBIT 4-2: PASS-BY REDUCTIONS



LEGEND:

10 = AM TRIPS
10 = PM TRIPS
10 = DAILY TRIPS

N

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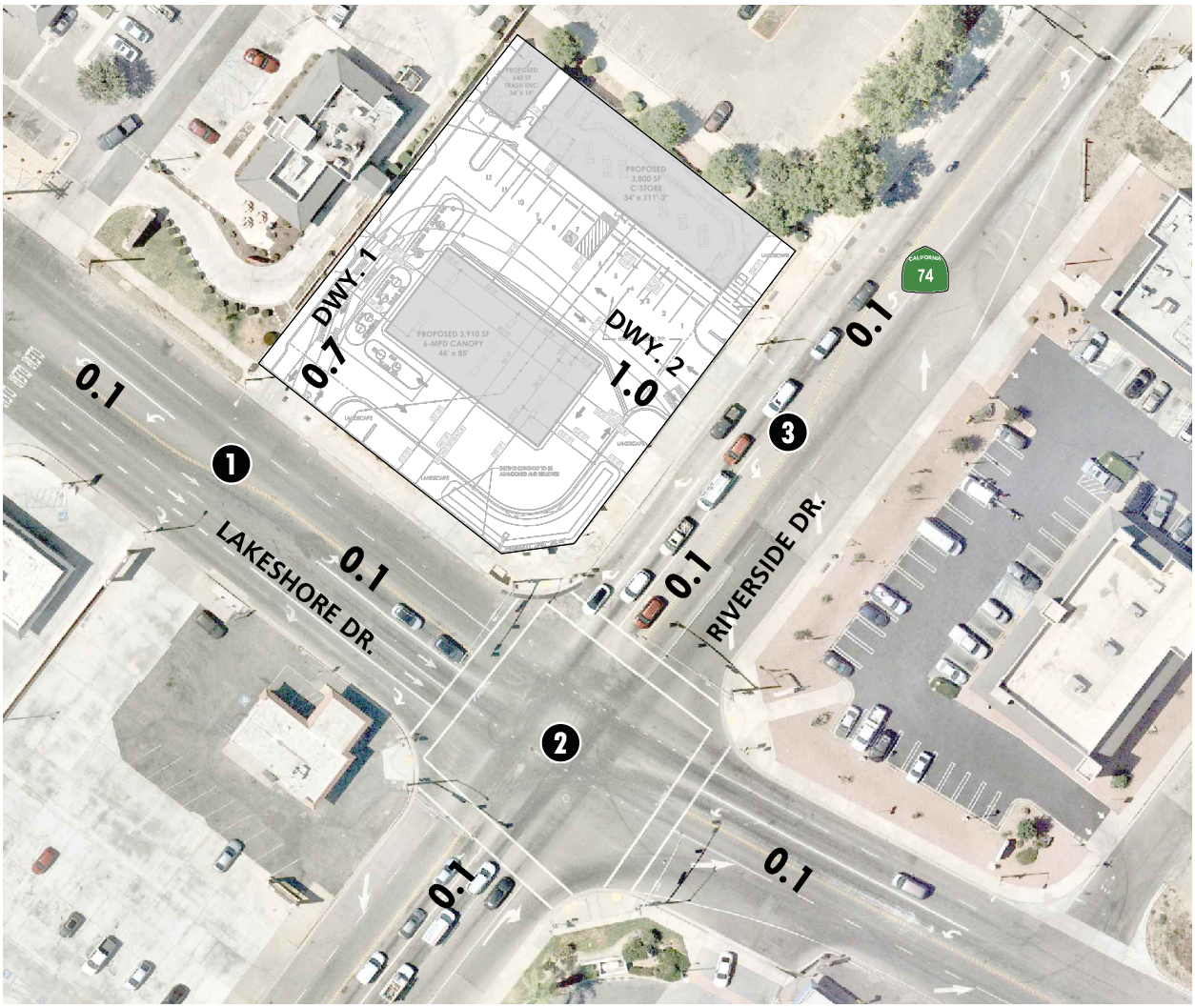
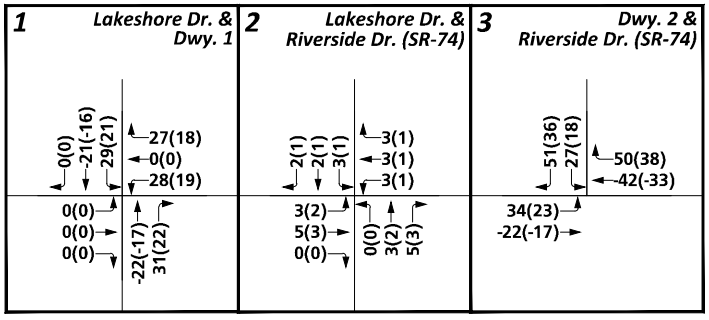
URBAN CROSSROADS

EXHIBIT 4-3: PROJECT ONLY TRAFFIC VOLUMES (IN PCE)





LEGEND:

10(10) *= AM(PM) PEAK HOUR INTERSECTION VOLUMES*
10.0 *= VEHICLES PER DAY (1000'S)*

Note: Pass-by trips shown on Exhibit 4-2 have been added to the driveway locations.

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4.6 CUMULATIVE DEVELOPMENT TRAFFIC

A cumulative project list was developed for the purposes of this analysis through consultation with planning and engineering staff from the City of Lake Elsinore. Exhibit 4-4 illustrates the cumulative development location map. A summary of cumulative development projects and their proposed land uses are shown in Table 4-2. If applicable, the traffic generated by individual cumulative projects was manually added to the EAP (2021) forecasts to ensure that traffic generated by the listed cumulative development projects in Table 4-3 are reflected as part of the background traffic to calculate EAPC (2021) traffic forecasts.

For the purposes of this TA, an absorption percentage has been applied to the cumulative development traffic. It is unlikely that each cumulative development project shown on Exhibit 4-2 will be fully constructed and occupied by the year 2021. As such, 15% of the cumulative development traffic (larger projects/specific plans) has been added to the EAP (2021) traffic volumes. However, smaller cumulative projects in closer proximity to the study area have included 100% of future traffic for those projects. Cumulative ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-5. Cumulative Project Trip Generation is available in Appendix 4.1 of this TA.

EXHIBIT 4-4: CUMULATIVE DEVELOPMENT PROJECTS LOCATION MAP

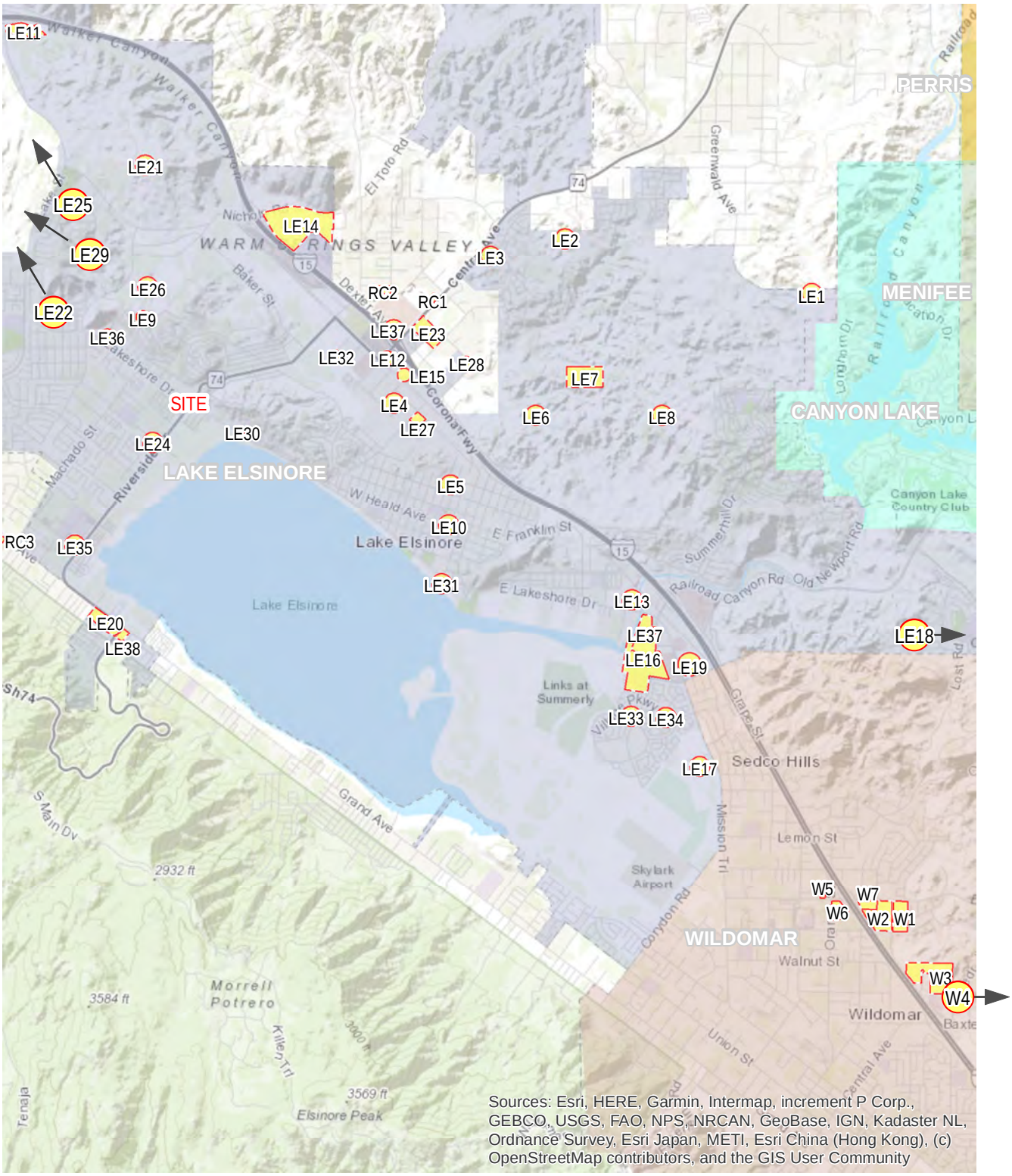

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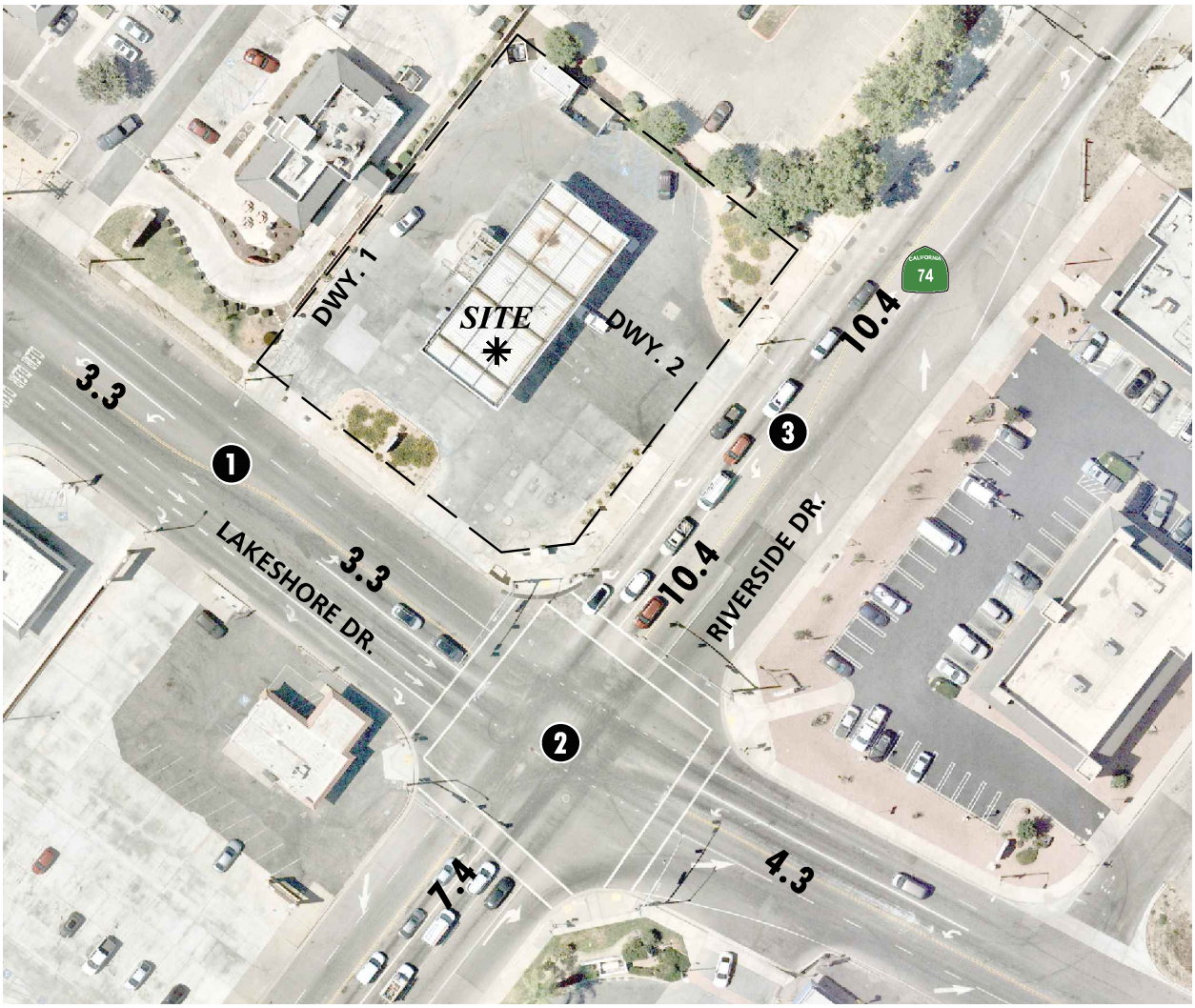
EXHIBIT 4-5: CUMULATIVE ONLY TRAFFIC VOLUMES (IN PCE)



1 Lakeshore Dr. & Dwy. 1	2 Lakeshore Dr. & Riverside Dr. (SR-74)	3 Dwy. 2 & Riverside Dr. (SR-74)
0(0) 114(153) 0(0) → 0(0) 0(0) ← 0(0)	31(30) 9(22) 74(101) → 72(99) 186(247) ← 79(119)	0(0) 0(0) → 0(0) 337(465) ←
0(0) → 0(0) → 0(0) → 109(151) 0(0) ←	32(28) ← 196(242) ← 54(57) → 49(62) 5(24) 77(121) ←	0(0) ← 347(464) →

LEGEND:

10(10) *= AM(PM) PEAK HOUR INTERSECTION VOLUMES*
10.0 *= VEHICLES PER DAY (1000'S)*

N

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URBAN CROSSROADS

Table 4-2

Summary of Cumulative Development Projects

No.	Project Name	Location	Land Use	Quantity[1]	
City of Lake Elsinore					
LE1	Greenwald[2]	Lake Elsinore	Shopping Center	104.450	TSF
LE2	Ramsgate	Lake Elsinore	Single Family Residential	1,306	DU
			Condo/Townhomes	120	DU
LE3	Trieste Residential (Tract 36624)	Lake Elsinore	Single Family Residential	75	DU
LE4	Fairway Business Park	Lake Elsinore	Warehouse	216.600	TSF
LE5	Ness Industrial Garage	Lake Elsinore	Warehouse	12.000	TSF
LE6	Spyglass Ranch[3]	Lake Elsinore	Single Family Residential	523	DU
			Condo/Townhomes	171	DU
			Shopping Center	145.00	TSF
LE7	South Shore I (Tract 31593)	Lake Elsinore	Single Family Residential	521	DU
	South Shore II (Tract 36567)	Lake Elsinore	Single Family Residential	400	DU
LE8	La Strada (Tract 32077)	Lake Elsinore	Single Family Residential	134	DU
LE9	Kassab Travel Center	Lake Elsinore	Fast Food w/ Drive Thru	2.540	TSF
			Super Gas Station	18	VFP
LE10	Marina Village Condos (Tract 33820)[6]	Lake Elsinore	Condo/Townhomes	94	DU
LE11	Lake Street Storage	Lake Elsinore	Indoor RV & Boat Storage	90.000	TSF
			Gas Station, Mini-Mart	3.000	TSF
LE12	Honda	Lake Elsinore	Automobile Sales	53.400	TSF
LE13	TAG Property[4]	Lake Elsinore	New Car Sales	50.000	TSF
LE14	Nichols South	Lake Elsinore	Single Family Residential	141	DU
			Park	8.3	AC
			Hotel	130	RM
			Shopping Center	29.500	TSF
LE15	Central & Collier	Lake Elsinore	Shopping Center	75.000	TSF
LE16	Diamond Specific Plan[5]	Lake Elsinore	Condo/Townhomes	600	DU
			Hotel	150	RM
			General Office	425.000	TSF
			Shopping Center	472.000	TSF
LE17	The Colony[4]	Lake Elsinore	Apartments	211	DU
	Back Basin Specific Plan & East Lake Specific Plan	Lake Elsinore	Single Family Residential	2,407	DU
			Condo/Townhomes	324	DU
	John Laing Homes (Phase 2)	Lake Elsinore	Single Family Residential	506	DU
			Condo/Townhomes	1,141	DU
			Apartments	308	DU
			Shopping Center	117.000	TSF
LE18	Canyon Hills Estates (Tract 34249)	Lake Elsinore	Single Family Residential	302	DU
	Canyon Hills (Multiple Tracts)	Lake Elsinore	Single Family Residential	3,703	DU
			Apartments	1,575	DU
LE19	Artisan Alley	Lake Elsinore	Shopping Center	95.100	TSF
LE20	Bamiyan Marketplace	Lake Elsinore	Multifamily Residential	80	DU
			C-Store, Restaurant	6.300	TSF
			Fast Food w/ Drive Thru	7.200	TSF
			Gas Station, Car Wash	6.000	TSF
			Shopping Center	19.500	TSF

Table 4-2

Summary of Cumulative Development Projects

No.	Project Name	Location	Land Use	Quantity[1]	
LE21	Alberhill Ridge (Tract 35001)	Lake Elsinore	Single Family Residential	1,056	DU
			Apartments	345	DU
			Shopping Center	679.000	TSF
			General Office	679.000	TSF
LE22	Alberhill Ranch	Lake Elsinore	Single Family Residential	1,986	DU
LE23	Lake Elsinore Walmart	Lake Elsinore	Free-Standing Discount Superstore	151.397	TSF
			Specialty Retail	5.300	TSF
			Fast Food w/o Drive Thru	12.100	TSF
LE24	Circle K	Lake Elsinore	Gas Station	4.500	TSF
LE25	Alberhill Villages	Lake Elsinore	Single Family Residential	8,244	DU
			Non-Residential	4,007.000	TSF
			University	6,000	STU
LE26	Terracina	Lake Elsinore	Single Family Residential	365	DU
LE27	Pennington Industrial Park	Lake Elsinore	Warehouse	91.140	TSF
LE28	North Peak Plaza	Lake Elsinore	Hotel	97	RM
			Shopping Center	37.500	TSF
LE29	Running Deer (TR 31957)	Lake Elsinore	Single Family Residential	101	DU
LE30	Lakeview Plaza	Lake Elsinore	Shopping Center	43.000	TSF
LE31	Lakeshore Town Center	Lake Elsinore	Town Center	237.400	TSF
LE32	Tige Watersports	Lake Elsinore	Shopping Center	34.500	TSF
LE33	Summerly	Lake Elsinore	Single Family Residential	142	DU
LE34	Beazer, KB Homes, McMillin Homes, Richmond American	Lake Elsinore	Single Family Residential	395	DU
LE35	Village at Lakeshore (TR 33267)	Lake Elsinore	Condo/Townhomes	163	DU
LE36	Lakeview Manor	Lake Elsinore	Condo/Townhomes	104	DU
LE37	Lake Elsinore Sports Complex	Lake Elsinore	Sports Center	525.000	TSF
LE38	Ortega Plaza	Lake Elsinore	Fast Food w/ Drive Thru	1.400	TSF
			Super Gas Station	16	VFP
County of Riverside					
RC1	CUP190006	County of Riverside	Discount Tire	8.192	TSF
RC2	TPM37545	County of Riverside	Single Family Residential	4	DU
RC3	TR32539	County of Riverside	Single Family Residential	29	DU

[1] TSF = Thousand Square Feet; DU = Dwelling Unit; AC = Acres; VFP = Vehicle Fueling Positions; RM = Rooms

[2] Source: Greenwald Avenue Commercial Center TIA, Urban Crossroads, Inc., May 2008.

[3] Source: Spyglass Ranch TIA (Revised), Kunzman Associates, February 2007.

[4] Source: Lake Elsinore TAG Property TIA (Revised), Urban Crossroads, Inc., August 2008.

[5] Source: The Diamond Specific Plan TIA, Urban Crossroads, Inc., April 2009.

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5 E+P TRAFFIC CONDITIONS

This section discusses the traffic forecasts for Existing plus Project (E+P) conditions and the resulting intersection operations analysis.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for E+P conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for E+P conditions only (e.g., intersection and roadway improvements at the Project's frontage and driveways).

5.2 EXISTING PLUS PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus Project traffic. The ADT volumes and weekday AM and PM peak hour intersection turning movement volumes which can be expected for E+P traffic conditions are shown on Exhibit 5-1.

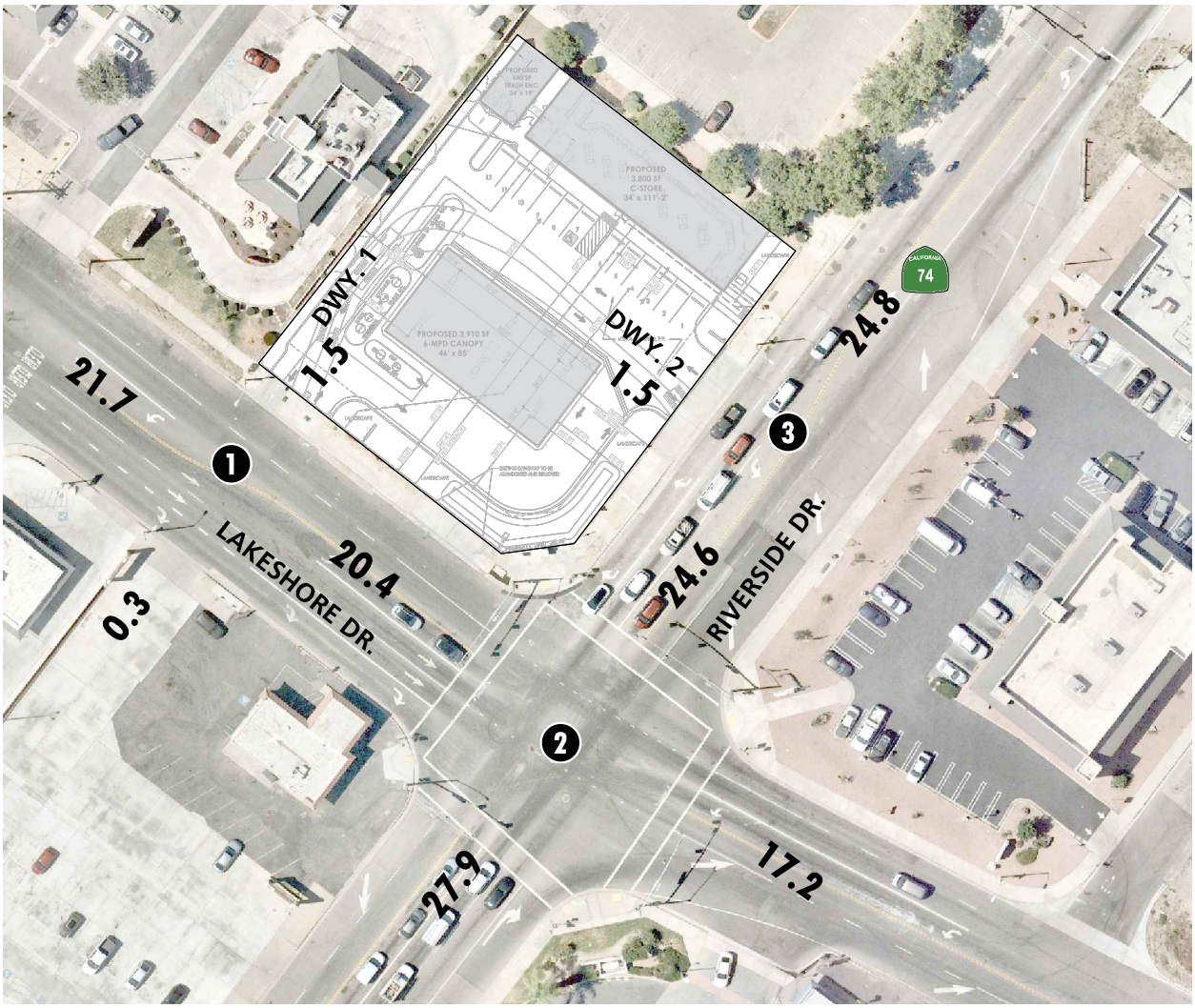
5.3 INTERSECTION OPERATIONS ANALYSIS

E+P peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TA. The intersection analysis results are summarized in Table 5-1, which indicates that consistent with Existing traffic conditions, there are no study area intersections anticipated to operate at an unacceptable LOS with the addition of Project traffic. Consistent with Table 5-1, a summary of the peak hour intersection LOS for E+P traffic conditions is shown on Exhibit 5-2. The intersection operations analysis worksheets for E+P traffic conditions are included in Appendix 5.1 of this TA.

5.4 RECOMMENDED IMPROVEMENTS

As shown in Table 5-1, the study area intersections are anticipated to operate at an acceptable LOS during the peak hours under E+P traffic conditions. As such, no improvements have been recommended.

EXHIBIT 5-1: E+P TRAFFIC VOLUMES (IN PCE)



1 Lakeshore Dr. & Dwy. 1	2 Lakeshore Dr. & Riverside Dr. (SR-74)	3 Dwy. 2 & Riverside Dr. (SR-74)
3(14) 688(696) 43(32) → 52(57) 0(0) 31(24) ←	113(180) 324(288) 285(259) → 151(323) 477(527) 22(35) ←	61(42) 27(18) → 61(63) 588(842) ←
2(0) 0(0) 2(7) →	152(144) 554(624) 303(292) →	34(23) 820(885) →
← 443(787) 32(24)	← 209(271) 173(345) 17(26)	

LEGEND:

10(10) *= AM(PM) PEAK HOUR INTERSECTION VOLUMES*
10.0 *= VEHICLES PER DAY (1000'S)*

N

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EXHIBIT 5-2: E+P SUMMARY OF LOS

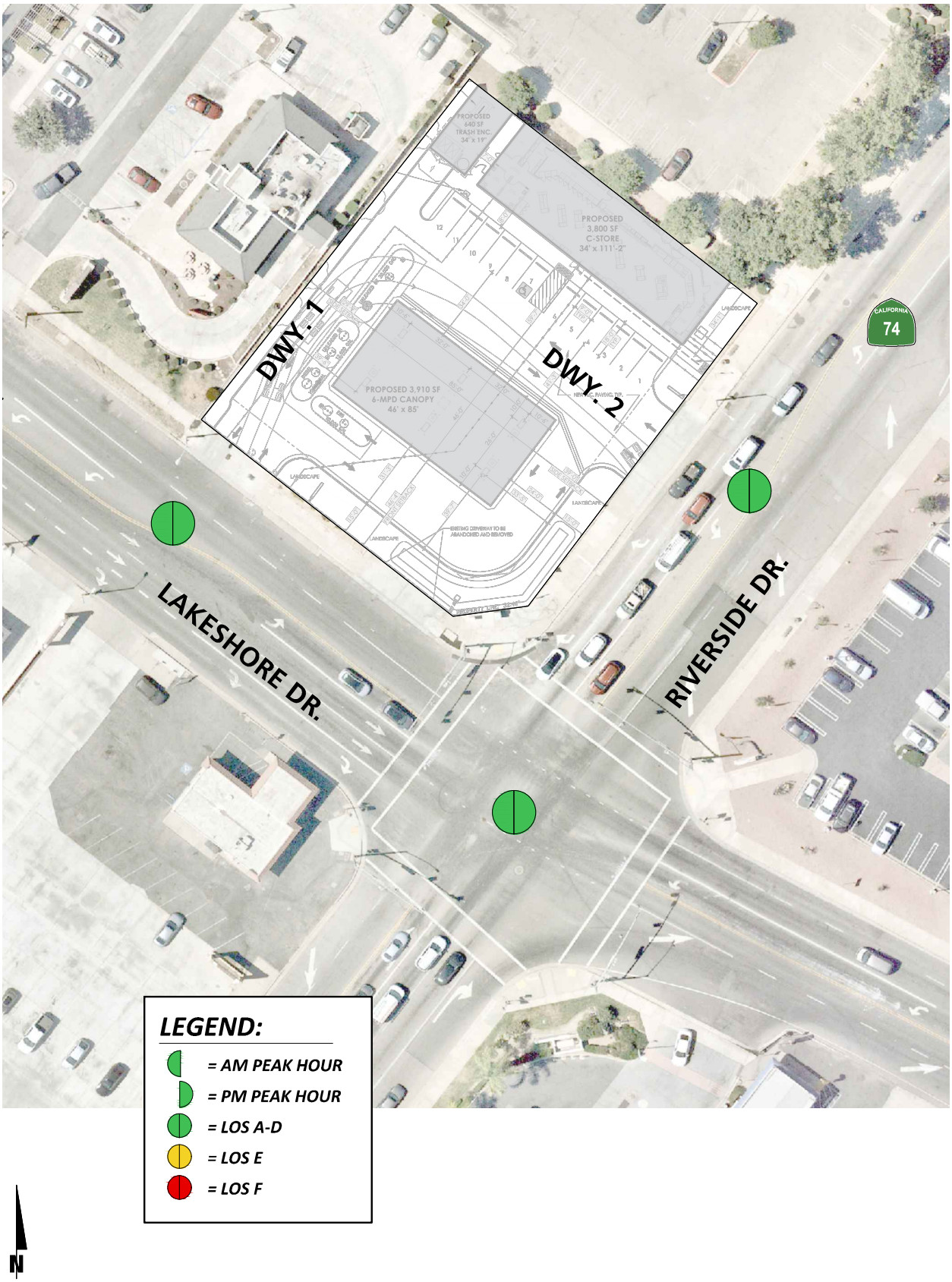

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Table 5-1

Intersection Analysis for E+P Conditions

#	Intersection	Traffic Control[2]	Existing (2020)				E+P			
			Delay[1] (secs.)		Level of Service		Delay[1] (secs.)		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM
1	Lakeshore Dr. & Driveway 1	CSS	16.8	12.6	C	B	17.4	15.3	C	C
2	Lakeshore Dr. & Riverside Dr. (SR-74)	TS	31.1	32.1	C	C	31.7	32.6	C	C
3	Driveway 2 & Riverside Dr. (SR-74)	CSS	10.5	11.6	B	B	14.2	15.6	B	C

[1] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. HCM delay reported in seconds.

[2] CSS = Cross-street Stop; TS = Traffic Signal

6 EAP (2021) TRAFFIC CONDITIONS

This section discusses the methods used to develop EAP (2021) traffic forecasts, and the resulting intersection operations analysis.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for EAP (2021) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for EAP (2021) conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways).

6.2 EAP (2021) TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus an ambient growth factor of 2.0% plus the addition of Project traffic. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for EAP (2021) traffic conditions are shown on Exhibit 6-1.

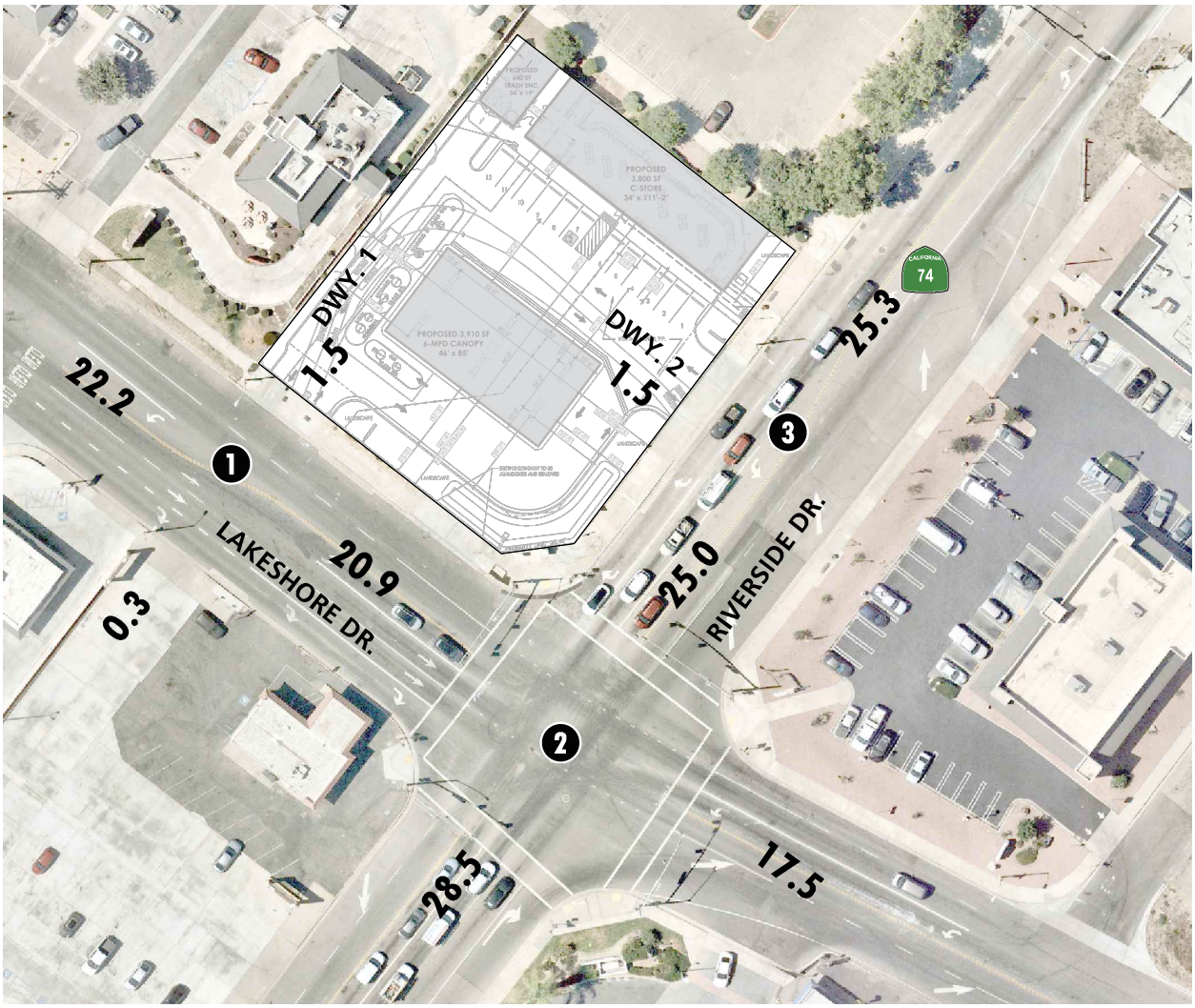
6.3 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under EAP (2021) traffic conditions with the roadway and intersection geometrics consistent with Section 6.1 *Roadway Improvements*. As shown in Table 6-1, there are no study area intersections anticipated to operate at an unacceptable LOS during the peak hours under EAP (2021) traffic conditions, consistent with Existing (2020) traffic conditions. A summary of the peak hour intersection LOS for EAP (2021) traffic conditions is shown on Exhibit 6-2. The intersection operations analysis worksheets for EAP (2021) traffic conditions are included in Appendix 6.1.

6.4 RECOMMENDED IMPROVEMENTS

As shown in Table 6-1, the study area intersections are anticipated to operate at an acceptable LOS during the peak hours under EAP (2021) traffic conditions. As such, no improvements have been recommended.

EXHIBIT 6-1: EAP (2021) TRAFFIC VOLUMES (IN PCE)



1 Lakeshore Dr. & Dwy. 1	2 Lakeshore Dr. & Riverside Dr. (SR-74)	3 Dwy. 2 & Riverside Dr. (SR-74)
3(14) 702(710) 43(32) → 52(57) 0(0) 31(24) ←	115(184) 330(294) 290(264) → 153(329) 486(538) 22(35) ←	61(42) 27(18) → 61(63) 601(860) ←
2(0) → 0(0) 2(7) ←	155(146) → 565(636) 309(298) ←	34(23) → 837(903)
452(803) 32(24) ↑	213(276) 176(352) 17(26) ↑	

LEGEND:

10(10) *= AM(PM) PEAK HOUR INTERSECTION VOLUMES*
10.0 *= VEHICLES PER DAY (1000'S)*

N

13202 - vols.dwg

EXHIBIT 6-2: EAP (2021) SUMMARY OF LOS

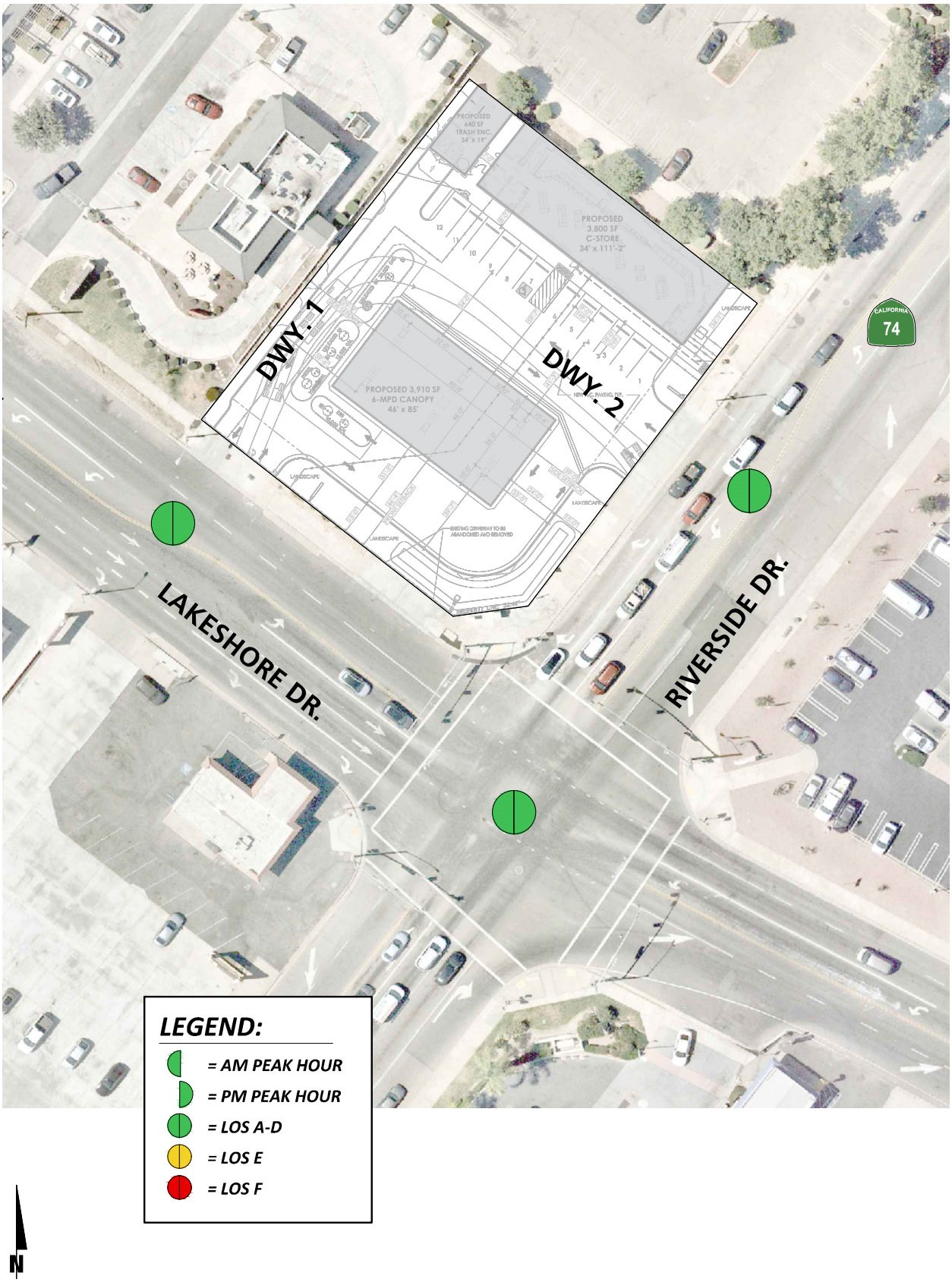


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Table 6-1

Intersection Analysis for EAP (2021) Conditions

#	Intersection	Traffic Control[2]	Existing (2020)				EAP (2021)			
			Delay[1] (secs.)		Level of Service		Delay[1] (secs.)		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM
1	Lakeshore Dr. & Driveway 1	CSS	16.8	12.6	C	B	17.7	15.6	C	C
2	Lakeshore Dr. & Riverside Dr. (SR-74)	TS	31.1	32.1	C	C	32.8	34.2	C	C
3	Driveway 2 & Riverside Dr. (SR-74)	CSS	10.5	11.6	B	B	14.3	15.9	B	C

[1] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. HCM delay reported in seconds.

[2] CSS = Cross-street Stop; TS = Traffic Signal

7 EAPC (2021) TRAFFIC CONDITIONS

This section discusses the methods used to develop EAPC (2021) traffic forecasts, and the resulting intersection operations analysis.

7.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for EAPC (2021) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for EAPC (2021) conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways).
- Driveways and those facilities assumed to be constructed by cumulative developments to provide site access are also assumed to be in place for EAPC (2021) conditions only (e.g., intersection and roadway improvements along the cumulative development's frontages and driveways).

7.2 EAPC (2021) TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus an ambient growth factor of 2.0% plus traffic from pending and approved but not yet constructed known development projects in the area, in conjunction with Project traffic. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for EAPC (2021) traffic conditions are shown on Exhibit 7-1.

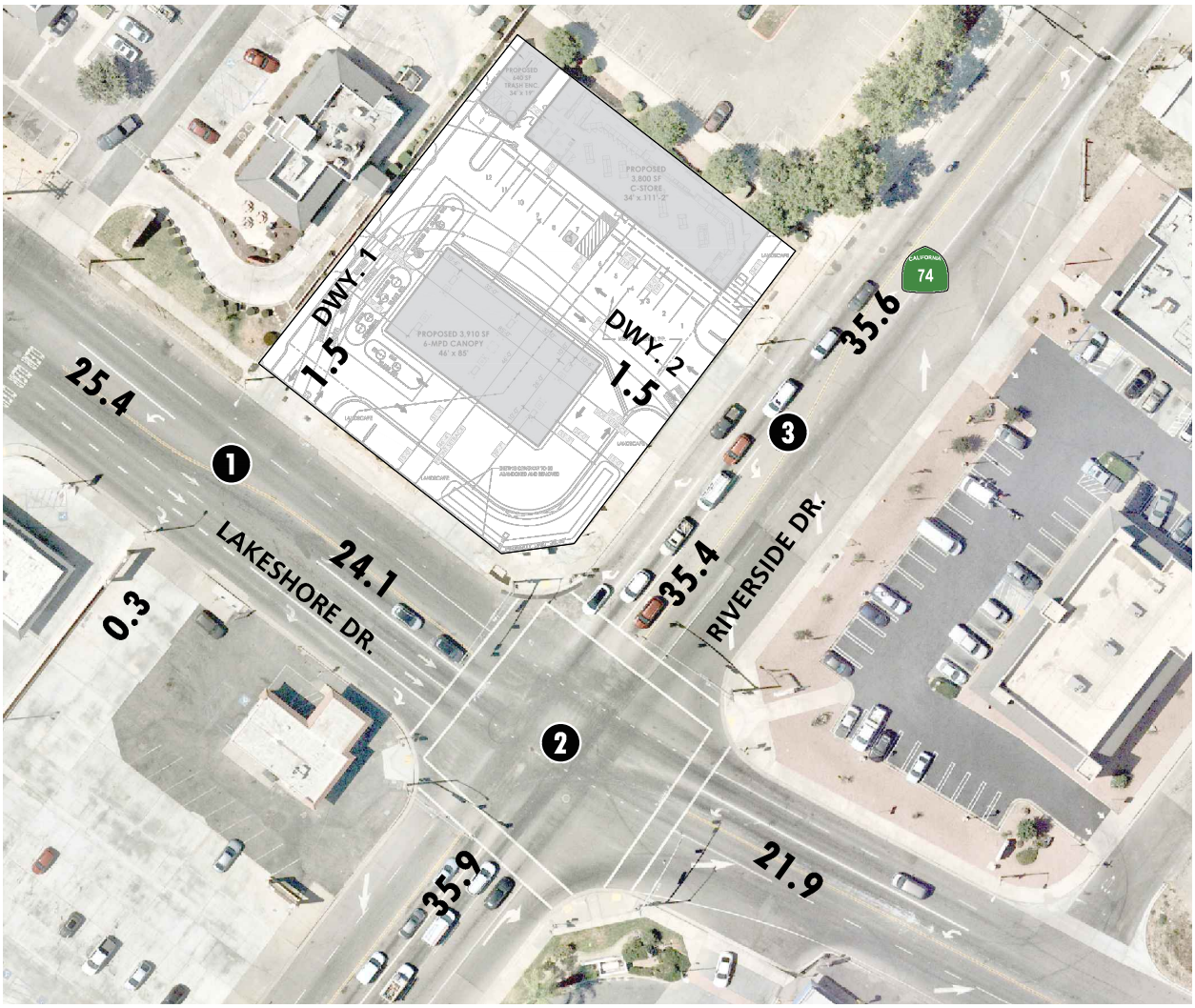
7.3 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under EAPC (2021) traffic conditions with the roadway and intersection geometrics consistent with Section 7.1 *Roadway Improvements*. As shown in Table 7-1, the following study area intersection is anticipated to operate at an unacceptable LOS during the peak hours under EAPC (2021) traffic conditions:

- Lakeshore Dr. & Riverside Dr. (SR-74) (#2) – LOS E PM peak hour only

A summary of the peak hour intersection LOS for EAPC (2021) traffic conditions is shown on Exhibit 7-2. The intersection operations analysis worksheets for EAPC (2021) traffic conditions is included in Appendix 7.1.

EXHIBIT 7-1: EAPC (2021) TRAFFIC VOLUMES (IN PCE)



1 Lakeshore Dr. & Dwy. 1	2 Lakeshore Dr. & Riverside Dr. (SR-74)	3 Dwy. 2 & Riverside Dr. (SR-74)
3(14) 816(863) 43(32) → 52(57) 0(0) 31(24)	146(214) 339(316) 364(365) → 225(428) 672(785) 101(154)	61(42) 27(18) → 61(63) 938(1325)
2(0) 0(0) 2(7) → 561(954) 32(24)	187(174) 761(878) 363(355) → 262(338) 181(376) 94(147)	34(23) 1184(1367) →

LEGEND:

10(10) *= AM(PM) PEAK HOUR INTERSECTION VOLUMES*
10.0 *= VEHICLES PER DAY (1000'S)*

N

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URBAN CROSSROADS

EXHIBIT 7-2: EAPC (2021) SUMMARY OF LOS

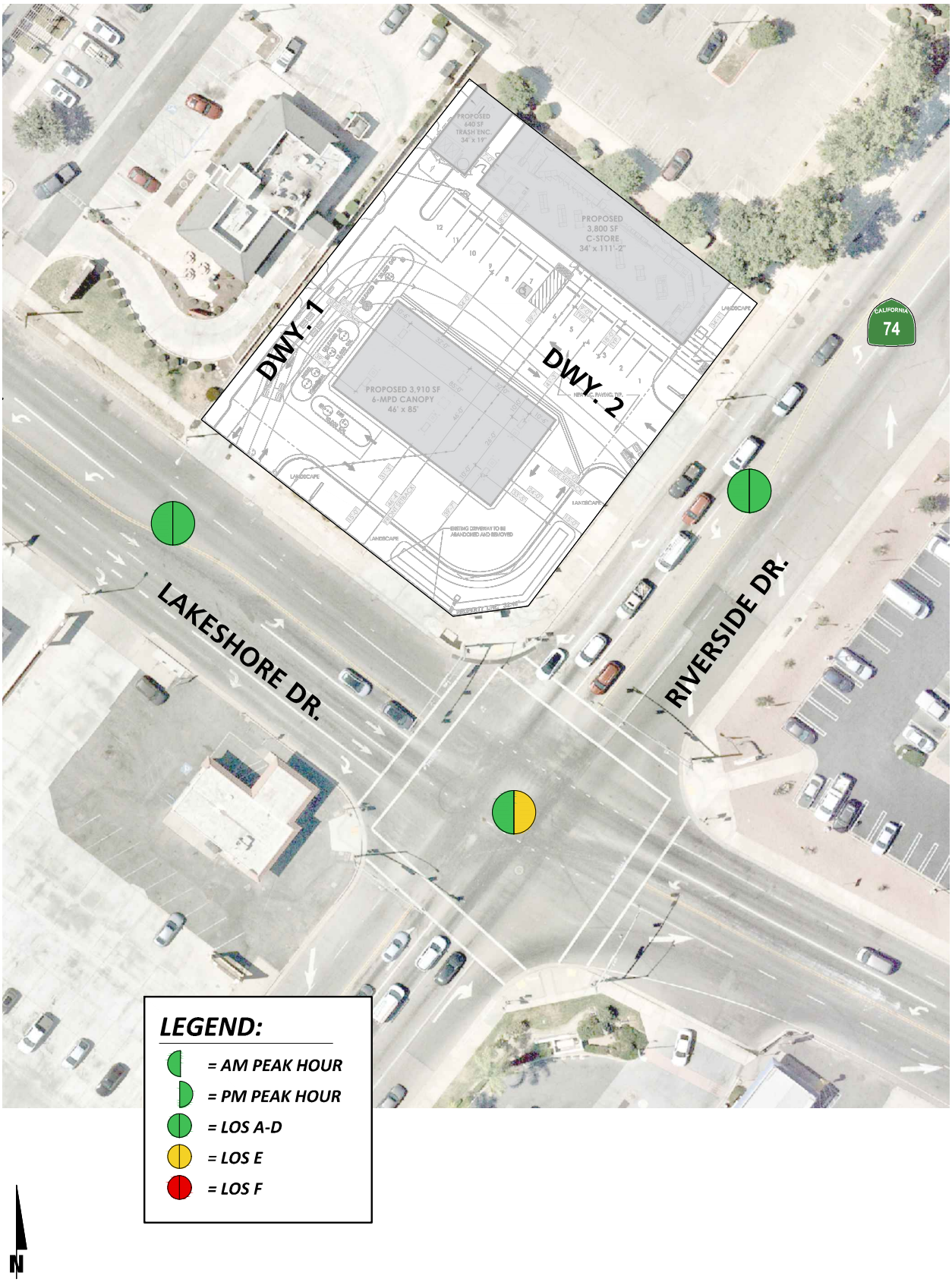

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Table 7-1

Intersection Analysis for EAPC (2021) Conditions

#	Intersection	Traffic Control[2]	EAPC (2021)			
			Delay[1] (secs.)		Level of Service	
			AM	PM	AM	PM
1	Lakeshore Dr. & Driveway 1	CSS	20.4	18.2	C	C
2	Lakeshore Dr. & Riverside Dr. (SR-74)	TS	50.8	**75.6**	D	**E**
3	Driveway 2 & Riverside Dr. (SR-74)	CSS	20.9	27.4	C	D

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LO

[1] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. HCM delay reported in seconds.

[2] CSS = Cross-street Stop; TS = Traffic Signal

7.4 RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections that have been identified as deficient to reduce each location's peak hour delay and improve the associated LOS grade to an acceptable LOS (i.e., LOS D or better). The effectiveness of the improvements is presented in Table 7-2 for EAPC (2021) traffic conditions. Improvements needed to address deficiencies for EAPC (2021) traffic conditions are described below:

Lakeshore Dr. & Riverside Dr. (#2):

- Add a 2nd westbound through lane.
- Modify the traffic signal and implement overlap phasing on the westbound right turn lane.

The EAPC (2021) intersection operations analysis worksheets, with improvements, are included in Appendix 7.2 of this TIA.

Table 7-2

Intersection Analysis for EAPC (2021) Conditions With Improvements

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	PM	SAT	PM	SAT
2	Lakeshore Dr. & Riverside Dr. (SR-74)																	
	- Without Improvements	TS	1	2	0	1	2	1	1	2	1	1	1	1	50.8	**75.6**	D	**E**
	- With Improvements	TS	1	2	0	1	2	1	1	2	1	1	**2**	**1>**	29.7	42.3	C	D

* **BOLD** = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; > = Right-Turn Overlap Phasing; **1** = Improvement

[2] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street-stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] TS = Traffic Signal

8 LOCAL AND REGIONAL FUNDING MECHANISMS

Transportation improvements within the City of Lake Elsinore are funded through a combination of improvements constructed by the Project, development impact fee programs or fair share contributions. Identification and timing of needed improvements is generally determined through local jurisdictions based upon a variety of factors.

8.1 CITY OF LAKE ELSINORE TRANSPORTATION IMPACT FEE (TIF) PROGRAM

Transportation improvements throughout the City of Lake Elsinore are funded through a combination of project improvements, fair share contributions or development impact fee programs, such as the Western Riverside Council of Governments (WRCOG) Transportation Uniform Mitigation Fee (TUMF) program or the City's Transportation Impact Fee (TIF) program. Identification and timing of needed improvements is generally determined through local jurisdictions based upon a variety of factors. These fees are collected as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with the projected vehicle trip increases.

Fees from new residential, commercial and industrial development are collected to fund local facilities. Under the City's TIF program, the City may grant to developers a credit against specific components of fees when those developers construct certain facilities and landscaped medians identified in the list of improvements funded by the TIF program.

The timing to use the TIF fees is established through periodic capital improvement programs which are overseen by the City's Engineering Department. Periodic traffic counts, review of traffic accidents, and a review of traffic trends throughout the City are also periodically performed by City staff and consultants. The City uses this data to determine the timing of the improvements listed in its facilities list. The City also uses this data to ensure that the improvements listed on the facilities list are constructed before the LOS falls below the LOS performance standards adopted by the City. In this way, the improvements are constructed before the LOS falls below the City's LOS performance thresholds. The City's TIF program establishes a timeline to fund, design, and build the improvements.

8.2 TRANSPORTATION UNIFORM MITIGATION FEE (TUMF) PROGRAM

The TUMF program is administered by the WRCOG based upon a regional Nexus Study most recently updated in 2016 to address major changes in right of way acquisition and improvement cost factors. (7) This regional program was put into place to ensure that development pays its fair share and that funding is in place for construction of facilities needed to maintain the requisite level of service and critical to mobility in the region. TUMF is a truly regional mitigation fee program and is imposed and implemented in every jurisdiction in Western Riverside County.

TUMF guidelines empower a local zone committee to prioritize and arbitrate certain projects. The Project is located in the Southwest Zone. The zone has developed a 5-year capital improvement program to prioritize public construction of certain roads. TUMF is focused on improvements necessitated by regional growth.

8.3 FAIR SHARE CONTRIBUTION

Project improvement may include a combination of fee payments to established programs, construction of specific improvements, payment of a fair share contribution toward future improvements or a combination of these approaches. Improvements constructed by development may be eligible for a fee credit or reimbursement through the program where appropriate (to be determined at the City's discretion).

When off-site improvements are identified with a minor share of responsibility assigned to proposed development, the approving jurisdiction may elect to collect a fair share contribution or require the development to construct improvements. These fees are collected with the proceeds solely used as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with the projected population increases.

9 REFERENCES

1. **Riverside County Transportation Department.** *Traffic Impact Analysis Preparation Guide.* Riverside County : s.n., April 2008.

2. **California Department of Transportation.** *Guide for the Preparation of Traffic Impact Studies.* December 2002.

3. **Institute of Transportation Engineers.** *Trip Generation Manual.* 10th Edition. 2017.

4. **Riverside County Transportation Commission.** *2011 Riverside County Congestion Management Program.* County of Riverside : RCTC, December 14, 2011.

5. **Transportation Research Board.** *Highway Capacity Manual (HCM).* 6th Edition. s.l. : National Academy of Sciences, 2016.

6. **Insttitue of Transportation Engineers.** *Trip Generation Handbook.* 3rd Edition. 2017.

7. **Western Riverside Council of Governments.** *TUMF Nexus Study, 2016 Program Update.* July 2017.

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