Appendix 3

Traffic Impact Analysis

Lakeland Village

Initial Study

Lakeland Village Community Plan (GPA No. 1208)

TRAFFIC IMPACT ANALYSIS

COUNTY OF RIVERSIDE

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TABLE OF CONTENTS

APPENDICES

APPENDIX 1.1: APPROVED TRAFFIC STUDY SCOPING AGREEMENT
APPENDIX 3.1: EXISTING TRAFFIC COUNTS – APRIL 2019
APPENDIX 3.2: EXISTING (2019) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS
APPENDIX 3.3: EXISTING (2019) CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS
APPENDIX 4.1: POST PROCESSING WORKSHEETS
APPENDIX 5.1: E+P CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS
APPENDIX 5.2: E+P CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS WITH IMPROVEMENTS
APPENDIX 6.1: HORIZON YEAR (2040) WITHOUT PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS
APPENDIX 6.2: HORIZON YEAR (2040) WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS
APPENDIX 6.3: HORIZON YEAR (2040) WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS WITH IMPROVEMENTS

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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
DIF	Development Impact Fee
E+P	Existing Plus Project
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
NCHRP	National Cooperative Highway Research Program
PCE	Passenger Car Equivalents
PHF	Peak Hour Factor
Project	Lakeland Village Community Plan (GPA No. 1208)
RivTAM	Riverside County Transportation Analysis Model
RTP	Regional Transportation Plan
SCAG	Southern California Association of Governments
SCS	Sustainable Communities Strategy
SHS	State Highway System
TIA	Traffic Impact Analysis
TIF	Traffic Infrastructure Fee
TUMF	Transportation Uniform Mitigation Fee
WRCOG	Western Riverside Council of Governments

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1 INTRODUCTION

This report presents the results of the traffic impact analysis (TIA) for the proposed Lakeland Village Community Plan (GPA No. 1208) development ("Project"), which is located along Grand Avenue in the County of Riverside as shown on Exhibit 1-1.

The purpose of this TIA is to evaluate the potential circulation system deficiencies that may result from the development of the proposed Project and recommend improvements to achieve acceptable circulation system operational conditions. This TIA has been prepared in accordance with the *County of Riverside Transportation Department Traffic Impact Analysis Preparation Guide* (April 2008), the California Department of Transportation (Caltrans) *Guide for the Preparation of Traffic Impact Studies* (December 2002), and consultation with County of Riverside staff during the scoping process. (1) (2) The approved Project Traffic Study Scoping agreement is provided in Appendix 1.1 of this TIA.

1.1 PROJECT OVERVIEW

The Project is proposed to consist of the land use designations and acreage included in GPA No. 960 and GPA No. 1156, with an additional 829 dwelling units, 7,659 square feet (sf) of commercial retail, 3,795 sf of light industrial use, 7,659 sf of non-residential use, and 1,139 square feet of public facilities. The Project is proposed to have access onto Grand Avenue. Regional access to the Project site will be provided by the SR-74 Highway and the I-15 Freeway.

Trips generated by the Project's proposed land uses have been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, 2017. (3) The proposed Project is estimated to generate a net total of 7,594 PCE trip-ends per day with 599 PCE AM peak hour trips and 817 PCE 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.

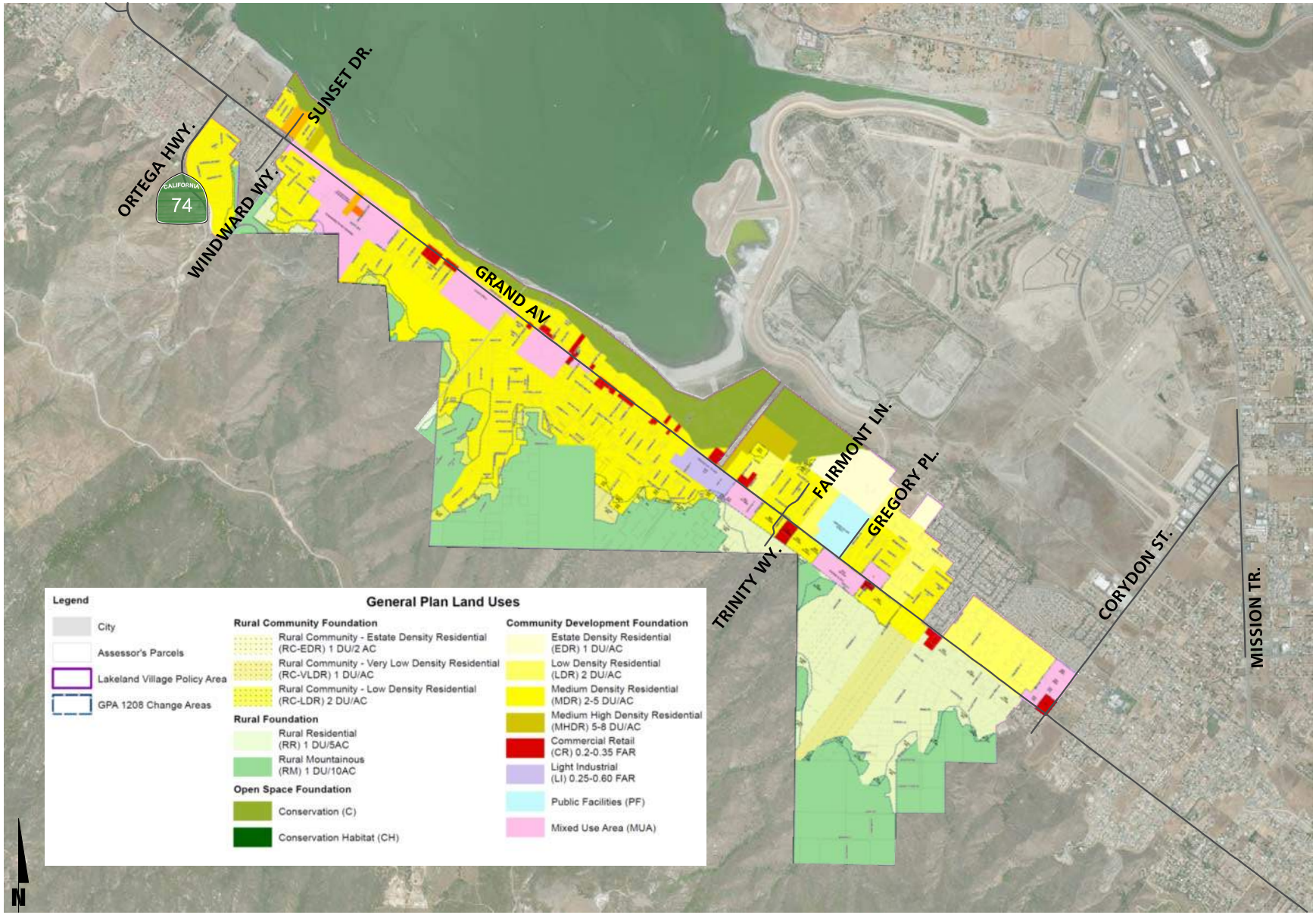
1.2 ANALYSIS SCENARIOS

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

- Existing (2019) Conditions
- Existing plus Project (E+P) Conditions
- Horizon Year (2040) Without Project
- Horizon Year (2040) With Project

All study area intersections will be evaluated using the Highway Capacity Manual (HCM) 6th Edition analysis methodology.

EXHIBIT 1-1: PRELIMINARY LAND USE PLAN



11436 - land use.dwg

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1.2.1 EXISTING CONDITIONS

Existing physical conditions have been disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared.

1.2.2 E+P CONDITIONS

The 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.

1.2.3 HORIZON YEAR (2040) CONDITIONS

Traffic projections for Horizon Year with Project conditions were derived from the Riverside County Transportation Analysis Model (RivTAM) using accepted procedures for model forecast refinement and smoothing. The Horizon Year conditions analysis will be utilized to determine if improvements funded through regional transportation mitigation fee programs, such as the Transportation Uniform Mitigation Fee (TUMF), County of Riverside Development Impact Fee (DIF) programs, or other approved funding mechanism (e.g., City of Lake Elsinore TIF, City of Wildomar DIF, etc.) can accommodate the long-range cumulative traffic at the target Level of Service (LOS) identified in the County of Riverside (lead agency) General Plan. (4) Other improvements needed beyond the "funded" improvements (such as localized improvements to non-TUMF, non-TIF, or non-DIF facilities) are identified as such. Each of these regional transportation fee programs are discussed in more detail in Section 7 *Local and Regional Funding Mechanisms*.

1.3 STUDY AREA

1.3.1 INTERSECTIONS

The Project study area was defined in coordination with the County of Riverside. The study area represents key intersections determined through consultation with the County of Riverside staff. Exhibit 1-2 and Table 1-1 presents the study area and intersection analysis locations.

In consultation with County Planning Department staff, the land use plan is envisioned to enhance mixed use area resulting in trips generated to remain local to the area.

To ensure that this TIA satisfies the needs of the County of Riverside, Urban Crossroads, Inc. prepared a Project specific traffic study scoping agreement for review by County staff prior to the preparation of this TIA. The agreement provides an outline of the study area, trip generation, trip distribution, and analysis methodology. The agreement approved by the County of Riverside is included in Appendix 1.1.

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction
1	Riverside Dr. (SR-74) & Collier Av. (SR-74)	Caltrans, City of Lake Elsinore
2	Riverside Dr. (SR-74) & Lakeshore Dr.	Caltrans, City of Lake Elsinore
3	Riverside Dr. (SR-74) & Lincoln St.	Caltrans, City of Lake Elsinore
4	Riverside Dr. (SR-74) & Grand Av.	Caltrans, City of Lake Elsinore
5	Central St. (SR-74) & I-15 NB Ramps	Caltrans, Riverside County, City of Lake Elsinore
6	Central St. (SR-74) & I-15 SB Ramps	Caltrans, City of Lake Elsinore
7	Central St. (SR-74) & Collier Av. (SR-74)	Caltrans, City of Lake Elsinore
8	Ortega Hwy. (SR-74) & Grand Av.	Caltrans, City of Lake Elsinore
9	Corydon St. & Mission Tr.	City of Lake Elsinore, City of Wildomar
10	Corydon St. & Grand Av.	Riverside County, City of Lake Elsinore, City of Wildomar
11	Central St. & Palomar St.	City of Wildomar
12	Central St. & Grand Av.	City of Wildomar

1.4 ANALYSIS FINDINGS

This section provides a summary of the analysis results for Existing (2019), E+P, and Horizon Year (2040) Without Project and Horizon Year (2040) With Project.

Existing (2019) Conditions

Intersection Operations Analysis

The summary of LOS results for Existing (2019) traffic conditions are presented in Exhibit 1-3. As shown, the following study area intersection is currently operating at an unacceptable LOS during the one or more peak hours:

- Riverside Dr. (SR-74) & Grand Av. (#4) – LOS F AM peak hour; LOS E PM peak hour

Existing Plus Project (E+P) Conditions

Intersection Operations Analysis

As shown on Exhibit 1-3 and consistent with Existing (2019) traffic conditions, there are no additional study area intersections anticipated to operate at unacceptable LOS under E+P traffic conditions.

Mitigation Measures

The following additional improvements are recommended to improve each impacted intersection's LOS back to acceptable LOS, where the Project is recommended to contribute a fair share in order to reduce the cumulative impacts to less than significant levels:

Mitigation Measure 1.1 – Riverside Dr. (SR-74) & Grand Av. (#4)

- Contribute fair share towards installing a traffic signal.

EXHIBIT 1-2: LOCATION MAP

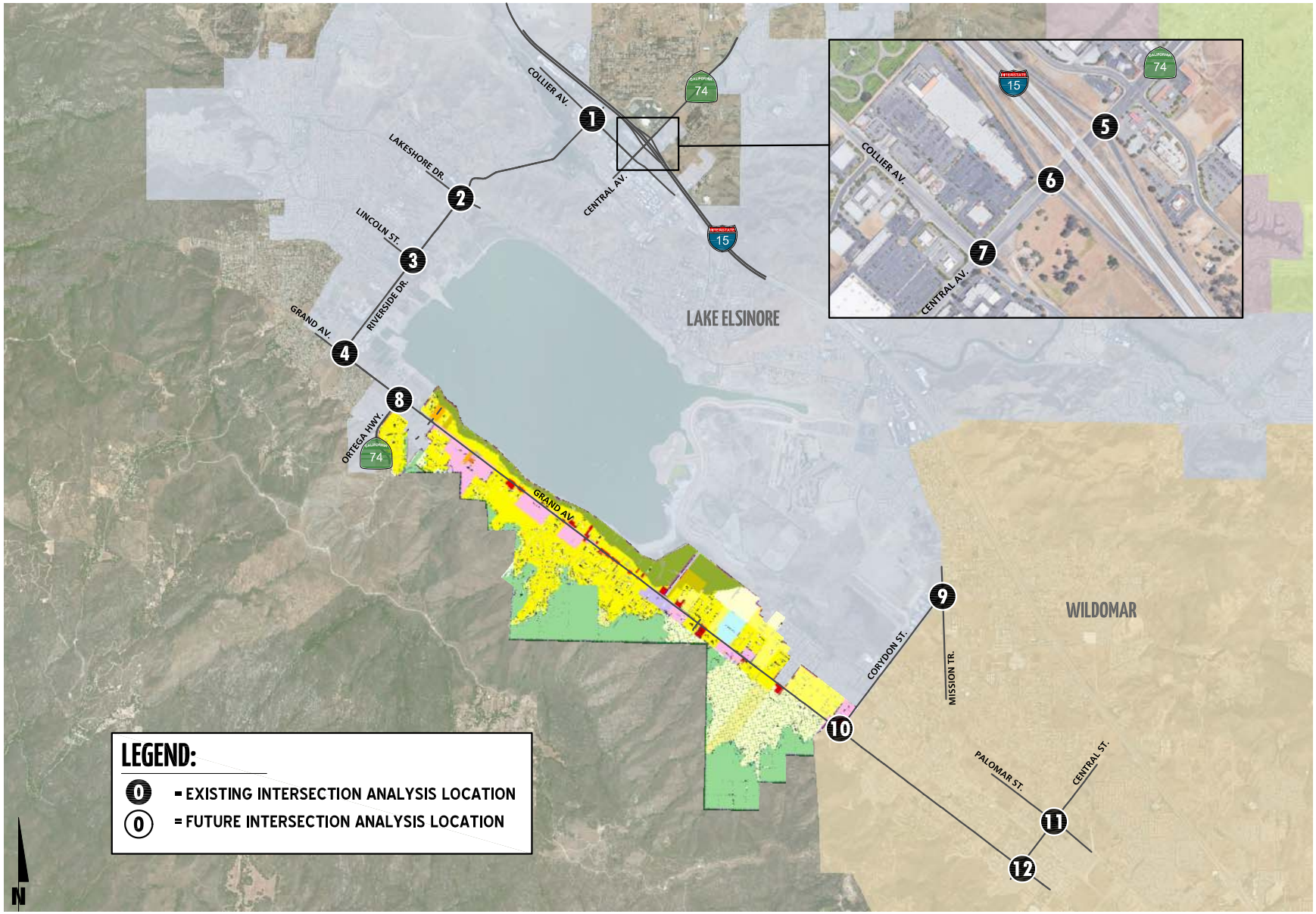

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EXHIBIT 1-3: SUMMARY OF DEFICIENT INTERSECTIONS BY ANALYSIS SCENARIO

#	Intersection	Existing (2019)	E+P	Horizon Year (2040) Without Project	Horizon Year (2040) With Project
1	Riverside Dr. (SR-74) & Collier Av. (SR-74)				
2	Riverside Dr. (SR-74) & Lakeshore Dr.				
3	Riverside Dr. (SR-74) & Lincoln St.				
4	Riverside Dr. (SR-74) & Grand Av.				
5	Central St. (SR-74) & I-15 NB Ramps				
6	Central St. (SR-74) & I-15 SB Ramps				
7	Central St. (SR-74) & Collier Av. (SR-74)				
8	Ortega Hwy. (SR-74) & Grand Av.				
9	Corydon St. & Mission Tr.				
10	Corydon St. & Grand Av.				
11	Central St. & Palomar St.				
12	Central St. & Grand Av.				

LEGEND:

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

Horizon Year (2040) Conditions

Intersection Operations Analysis

As shown on Exhibit 1-3, there are seven study area intersection that are anticipated to operate at an unacceptable LOS during one or both peak hours for Horizon Year (2040) traffic conditions.

Mitigation Measures

The following additional improvements are recommended to improve each impacted intersection's LOS back to acceptable LOS, where the Project is recommended to contribute a fair share in order to reduce the cumulative impacts to less than significant levels:

Mitigation Measure 2.1 – Riverside Dr. (SR-74) & Collier Av. (SR-74) (#1)

- Contribute fair share towards the addition of a northbound left turn lane, a 2nd northbound through lane, a 2nd southbound through lane, a 2nd westbound left turn lane, and a westbound right turn lane.

Mitigation Measure 3.1 – Riverside Dr. (SR-74) & Lakeshore Dr. (#2)

- Contribute fair share towards modifying the traffic signal to implement overlap phasing on the northbound and southbound right turn lane, and the addition of a 2nd southbound through lane and a 2nd eastbound left turn lane.

Mitigation Measure 4.1 – Riverside Dr. (SR-74) & Lincoln St. (#3)

- Contribute fair share towards the addition of a 2nd northbound through lane, a 2nd southbound through lane, and a southbound right turn lane.

Mitigation Measure 1.2 – Riverside Dr. (SR-74) & Grand Av. (#4)

- Same improvement identified previously by Mitigation Measure 1.1; and
- Contribute fair share towards the addition of a 2nd northbound through lane, a 2nd southbound through lane, and a southbound right turn lane.

Mitigation Measure 5.1 – Central St. (SR-74) & I-15 SB Ramps (#6)

- Contribute fair share towards the addition of a 3rd northbound through lane and a 3rd southbound through lane.

Mitigation Measure 6.1 – Ortega Hwy. (SR-74) & Grand Av. (#8)

- Contribute fair share towards the addition of a 2nd eastbound through lane and a 2nd westbound through lane.

Mitigation Measure 7.1 – Corydon St. & Grand Av. (#10)

- Contribute fair share towards modifying the traffic signal to implement overlap phasing on the southbound right turn lane and the addition of a 2nd eastbound left turn lane.

1.5 CIRCULATION SYSTEM DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

1.5.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

A summary of the operationally deficient study area intersections and recommended improvements required to achieve acceptable circulation system performance are described in detail within Section 3 *Existing Conditions*, Section 5 *E+P Traffic Analysis*, and Section 6 *Horizon Year (2040) Traffic Analysis* of this report.

A summary of off-site improvements needed to address intersection operational deficiencies for each analysis scenario is included in Table 1-2 and Exhibit 1-4. These recommended improvements are consistent with or less than the geometrics assumed in the County of Riverside, City of Lake Elsinore, and City of Wildomar General Plan Circulation Elements. For improvements that do not appear to be in the TUMF, TIF, or DIF, a fair share financial contribution based on the Project's fair share impact may be imposed in order to mitigate the Project's share of impacts in lieu of construction. These fees (both to the County of Riverside, TUMF, and as determined, to surrounding agencies as fair-share contributions) 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. Additional information related to these various fee programs are contained in Section 7 *Local and Regional Funding Mechanisms* of this report.

Table 1-2

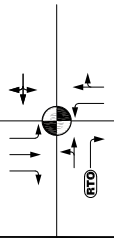
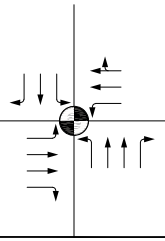
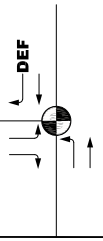
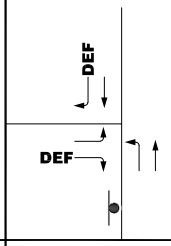
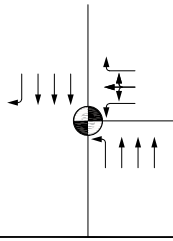
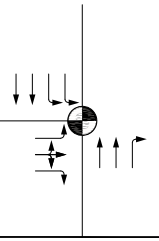
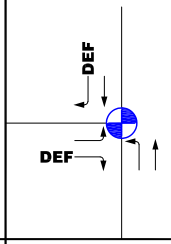
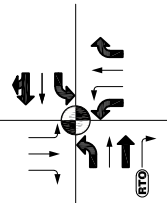
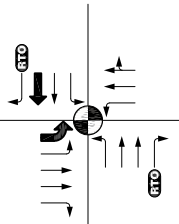
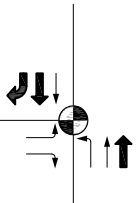
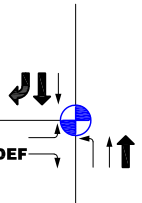
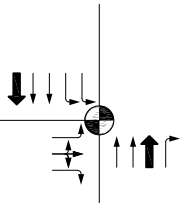
Summary of Improvements by Analysis Scenario

#	Intersection Location	Jurisdiction	E+P	2040 With Project	Improvements in TUMF/TIF/DIF?[1]	Fair Share %[2]
1	Riverside Dr. (SR-74) & Collier Av. (SR-74)	Caltrans, City of Lake Elsinore	- None	- NB left turn lane - 2nd NB through lane - SB left turn lane - 2nd SB through lane - 2nd WB left turn lane - WB right turn lane	Yes Yes Yes Yes No No	30.85%
2	Riverside Dr. (SR-74) & Lakeshore Dr.	Caltrans, City of Lake Elsinore	- None	- 2nd EB left turn lane - Right turn overlap for the north and south legs	No No	21.75%
3	Riverside Dr. (SR-74) & Lincoln St.	Caltrans, City of Lake Elsinore	- None	- 2nd NB through lane - 2nd SB through lane - SB right turn lane	Yes Yes Yes	40.09%
4	Riverside Dr. (SR-74) & Grand Av.	Caltrans, City of Lake Elsinore	- Install a traffic signal	- Same - 2nd NB through lane - 2nd SB through lane - SB right turn lane	Yes Yes Yes Yes	45.97%
6	Central St. (SR-74) & I-15 SB Ramps	Caltrans, City of Lake Elsinore	- None	- 3rd NB through lane - 3rd SB through lane	Yes Yes	18.40%
8	Ortega Hwy. (SR-74) & Grand Av.	Caltrans, City of Lake Elsinore	- None	- 2nd EB through lane - 2nd WB through lane	Yes Yes	40.66%
10	Corydon St. & Grand Av.	Riverside County, City of Lake Elsinore, City of Wildomar	- None	- 2nd EB left turn lane - Right turn overlap for the north leg	No No	23.44%

[1] Improvements included in WRCOG TUMF, County DIF, City of Lake Elsinore TIF, or City of Wildomar DIF.

[2] Program improvements constructed by the Project may be eligible for fee credit, at discretion of County. See Table 7-1 for Fair Share Calculations.

EXHIBIT 1-4 (1OF2): SUMMARY OF INTERSECTION LANE CONFIGURATION BY ANALYSIS SCENARIO

	Riverside Dr. (SR-74) & Collier Av. (SR74)	Riverside Dr. (SR-74) & Lakeshore Dr.	Riverside Dr. (SR-74) & Lincoln St.	Riverside Dr. (SR-74) & Grand Av.	Central St. (SR-74) & I-15 NB Ramps	Central St. (SR-74) & I-15 SB Ramps
	1	2	3	4	5	6
Existing						
E+P With Improvements	No Improvement Required	No Improvement Required	No Improvement Required		No Improvement Required	No Improvement Required
Horizon Year (2040) With Project With Improvements					No Improvement Required	

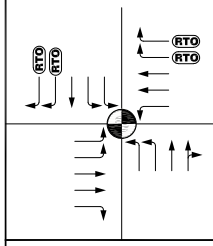
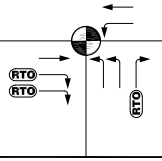
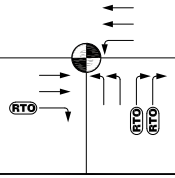
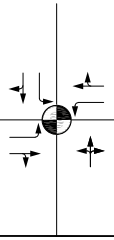
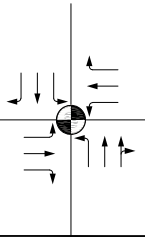
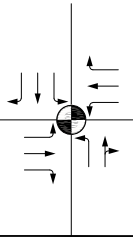
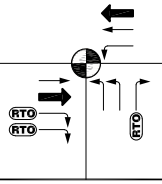
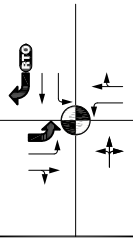
LEGEND:

- = TRAFFIC SIGNAL
- = NEW TRAFFIC SIGNAL
- = EXISTING LANE
- = LANE IMPROVEMENT
- DEF = DEFACTO RIGHT TURN
- RTO = RIGHT TURN OVERLAP EXISTING
- RTO = RIGHT TURN OVERLAP IMPROVEMENT

N

URBAN CROSSROADS

EXHIBIT 1-4 (2OF2): SUMMARY OF INTERSECTION LANE CONFIGURATION BY ANALYSIS SCENARIO

	Central St. (SR-74) & Collier Av. (SR74)	Ortega Hwy. (SR-74) & Grand Av.	Corydon St. & Mission Tr.	Corydon St. & Grand Av.	Central St. & Palomar St.	Central St. & Grand Av.
Existing	7 	8 	9 	10 	11 	12 
E+P With Improvements	No Improvement Required	No Improvement Required	No Improvement Required	No Improvement Required	No Improvement Required	No Improvement Required
Horizon Year (2040) With Project With Improvements	No Improvement Required		No Improvement Required		No Improvement Required	No Improvement Required

LEGEND:

- = TRAFFIC SIGNAL
- = EXISTING LANE
- = LANE IMPROVEMENT
- RTO = RIGHT TURN OVERLAP EXISTING
- RTO = RIGHT TURN OVERLAP IMPROVEMENT

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2 METHODOLOGIES

This section documents the methodologies and assumptions used to perform this traffic assessment.

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) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. (7) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

County of Riverside, City of Lake Elsinore, and City of Wildomar

The County of Riverside, City of Lake Elsinore, and City of Wildomar require signalized intersection operations analysis based on the methodology described in the HCM 6th Edition. (7) 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.

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 been utilized to analyze signalized intersections under Caltrans' jurisdiction, which include interchange to arterial ramps (i.e. I-15 Freeway ramps at Central Avenue). (2) 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.

TABLE 2-1: SIGNALIZED INTERSECTION DESCRIPTION OF LOS

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

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. Signal timing for the freeway arterial-to-ramp intersections have been obtained from Caltrans District 8 and were utilized for the purposes of this analysis. All signalized study area intersections with the County of Riverside, City of Lake Elsinore, and City of Wildomar have also utilized the Synchro software.

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 analysis scenarios. Per Chapter 4 of the HCM 6th Edition, 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. (7)

2.2.2 UNSIGNALIZED INTERSECTIONS

The County of Riverside, City of Lake Elsinore, and City of Wildomar require the operations of unsignalized intersections be evaluated using the methodology described in the HCM 6th Edition. (7) 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 DESCRIPTION OF LOS

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. For all-way stop controlled intersections, LOS is computed for the intersection as a whole.

2.4 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by the California Department of Transportation (Caltrans) and other public agencies to quantitatively justify or ascertain the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TIA uses the signal warrant criteria presented in the latest edition of the Caltrans California Manual on Uniform Traffic Control Devices (CA MUTCD). (8)

The signal warrant criteria for Existing study area intersections are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. The CA MUTCD indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. (8) Specifically, this TIA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for existing traffic conditions. Warrant 3 is appropriate to use for this TIA because it provides specialized warrant criteria for intersections with rural characteristics (e.g. located in communities with populations of less than 10,000 persons or with adjacent major streets operating above 40 miles per hour). For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection.

Future unsignalized intersections, that currently do not exist, have been assessed regarding the potential need for new traffic signals based on future average daily traffic (ADT) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets.

Traffic signal warrant analyses were performed for all unsignalized study area intersections as shown on Table 2-3:

TABLE 2-3: UNSIGNALIZED INTERSECTION LOCATIONS

ID	Intersection Location
4	Riverside Dr. (SR-74) & Grand Av.

The Existing conditions traffic signal warrant analysis is presented in the subsequent section, Section 3 *Existing Conditions* of this report. The traffic signal warrant analysis for future conditions is presented in Section 5 *E+P Traffic Analysis* and Section 6 *Horizon Year (2040) Traffic Analysis* of this report.

It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should also be noted that signal warrants do not necessarily correlate with LOS. An intersection may satisfy a signal warrant condition and operate at or above acceptable LOS or operate below acceptable LOS and not meet a signal warrant.

2.5 MINIMUM LEVEL OF SERVICE (LOS)

The definition of an intersection deficiency has been obtained from each of the applicable surrounding jurisdictions.

2.5.1 COUNTY OF RIVERSIDE, CITY OF LAKE ELSINORE, AND CITY OF WILDOMAR

Riverside County General Plan Policy C 2.1 states that the County will maintain the following County-wide target LOS:

The following minimum target levels of service have been designated for the review of development proposals in the unincorporated areas of Riverside County with respect to transportation impacts on roadways designated in the Riverside County Circulation Plan which are currently County maintained, or are intended to be accepted into the County maintained roadway system:

- *LOS C shall apply to all development proposals in any area of the Riverside County not located within the boundaries of an Area Plan, as well as those areas located within the following Area Plans: REMAP, Eastern Coachella Valley, Desert Center, Palo Verde Valley, and those non-Community Development areas of the Elsinore, Lake Mathews/Woodcrest, Mead Valley and Temescal Canyon Area Plans.*
- *LOS D shall apply to all development proposals located within any of the following Area Plans: Eastvale, Jurupa, Highgrove, Reche Canyon/Badlands, Lakeview/Nuevo, Sun City/Menifee Valley,*

Harvest Valley/Winchester, Southwest Area, The Pass, San Jacinto Valley, Western Coachella Valley and those Community Development Areas of the Elsinore, Lake Mathews/Woodcrest, Mead Valley and Temescal Canyon Area Plans.

- *LOS E may be allowed by the Board of Supervisors within designated areas where transit-oriented development and walkable communities are proposed.*

Notwithstanding the forgoing minimum LOS targets, the Board of Supervisors may, on occasion by virtue of their discretionary powers, approve a project that fails to meet these LOS targets in order to balance congestion management considerations in relation to benefits, environmental impacts and costs, provided an Environmental Impact Report, or equivalent, has been completed to fully evaluate the impacts of such approval. Any such approval must incorporate all feasible mitigation measures, make specific findings to support the decision, and adopt a statement of overriding considerations.

For the purposes of this analysis, LOS D has been assumed at all of the study area intersections.

2.5.2 CALTRANS

Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on SHS facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. Consistent with the County of Riverside minimum LOS of LOS D, LOS D will be used as the target LOS for both arterial-to-freeway ramps.

2.6 DEFICIENCY CRITERIA

This section outlines the methodology used in this analysis related to identifying circulation system deficiencies.

2.6.1 INTERSECTIONS

County of Riverside, City of Lake Elsinore, and City of Wildomar

To determine whether the addition of project traffic at a study intersection would result in a deficiency, the following will be utilized:

- A deficiency occurs at study area intersections if the pre-Project condition is at or better than LOS D (i.e., acceptable LOS), and the addition of project trips causes the peak hour LOS of the study area intersection to operate at unacceptable LOS (i.e., LOS E or F).
- Per the County of Riverside traffic study guidelines, for intersections currently operating at unacceptable LOS (LOS E or F), a deficiency would occur if the Project contributes 50 or more peak hour trips to pre-project traffic conditions.

2.6.2 CALTRANS FACILITIES

To determine whether the addition of project traffic to the SHS freeway segments would result in a deficiency, the following will be utilized:

- The traffic study finds that the LOS of a segment will degrade from D or better to E or F.

- The traffic study finds that the project will exacerbate an already deficient condition (i.e., contributing 50 or more peak hour trips). A segment that is operating at or near capacity is deemed to be deficient.

2.7 PROJECT FAIR SHARE CALCULATION METHODOLOGY

In cases where this TIA identifies that the Project would contribute additional traffic volumes to cumulative traffic deficiencies, Project fair share costs of improvements necessary to address deficiencies have been identified. The Project's fair share cost of improvements is determined based on the following equation, which is the ratio of Project traffic to new traffic, and new traffic is total future traffic less existing baseline traffic:

Project Fair Share % = Project Traffic / (2040 With Project Total Traffic – Existing Traffic)

The Project fair share contribution calculations are presented in Section 7 *Local and Regional Funding Mechanisms* of this TIA.

3 EXISTING CONDITIONS

This section provides a summary of the existing circulation network, the County of Riverside General Plan Circulation Network, the City of Lake Elsinore General Plan Circulation Network, City of Wildomar General Plan Circulation Network, and a review of existing peak hour intersection operations, and traffic signal warrant analyses.

3.1 EXISTING CIRCULATION NETWORK

Pursuant to the agreement with County of Riverside staff (Appendix 1.1), the study area includes a total of 12 existing intersections as shown previously on Exhibit 1-2. 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 GENERAL PLAN CIRCULATION ELEMENT

3.2.1 COUNTY OF RIVERSIDE

Exhibit 3-2 shows the adopted County of Riverside General Plan Circulation Element, and Exhibit 3-3 illustrates the adopted County of Riverside General Plan roadway cross-sections.

3.2.2 CITY OF LAKE ELSINORE

Exhibit 3-4 shows the City of Lake Elsinore General Plan Circulation Element, and Exhibit 3-5 illustrates the City of Lake Elsinore General Plan roadway cross-sections.

3.2.3 CITY OF WILDOMAR

Exhibit 3-6 shows the City of Wildomar General Plan Circulation Element, and Exhibit 3-7 illustrates the City of Wildomar General Plan roadway cross-sections.

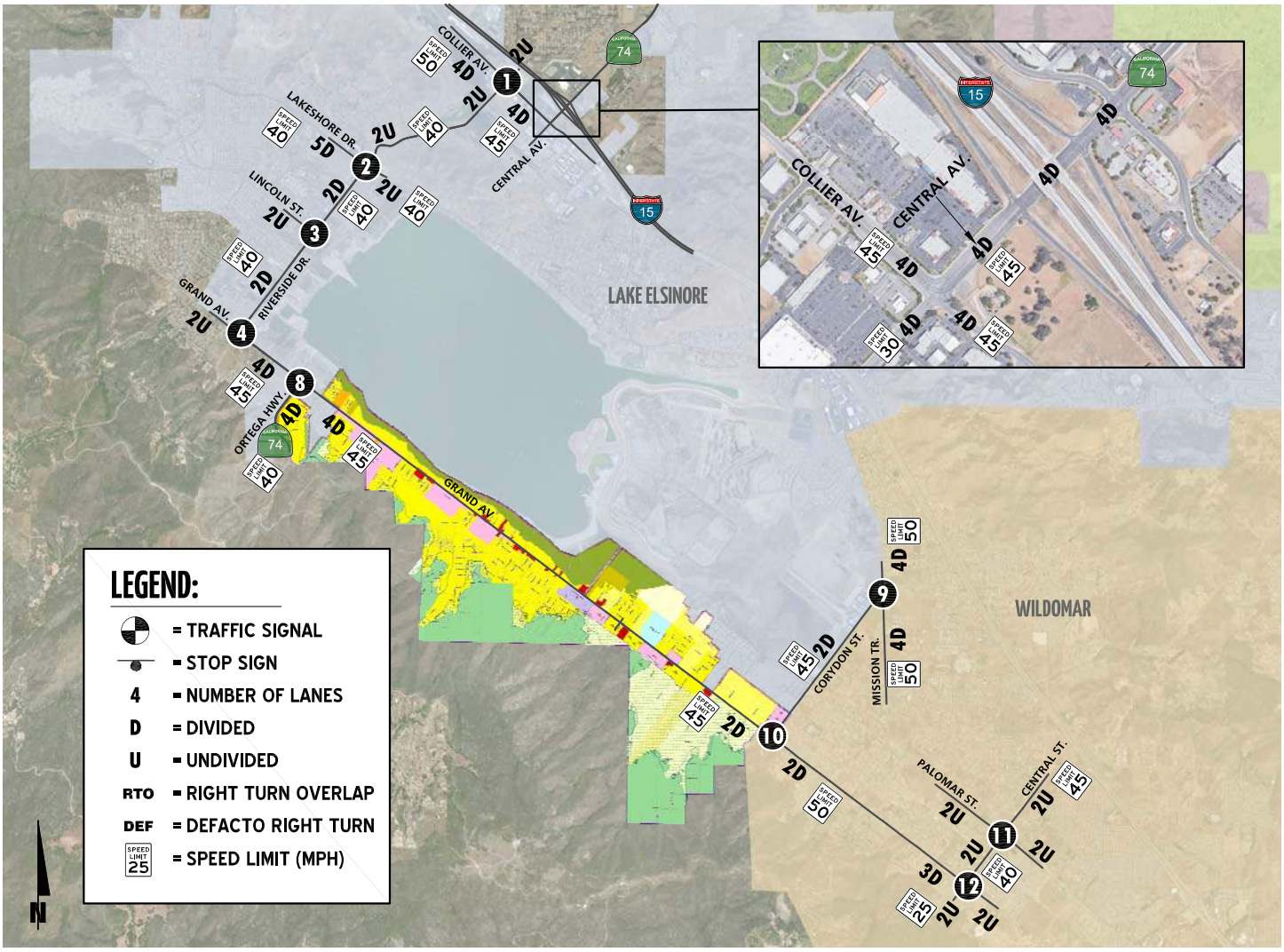
3.3 EXISTING TRAFFIC COUNTS

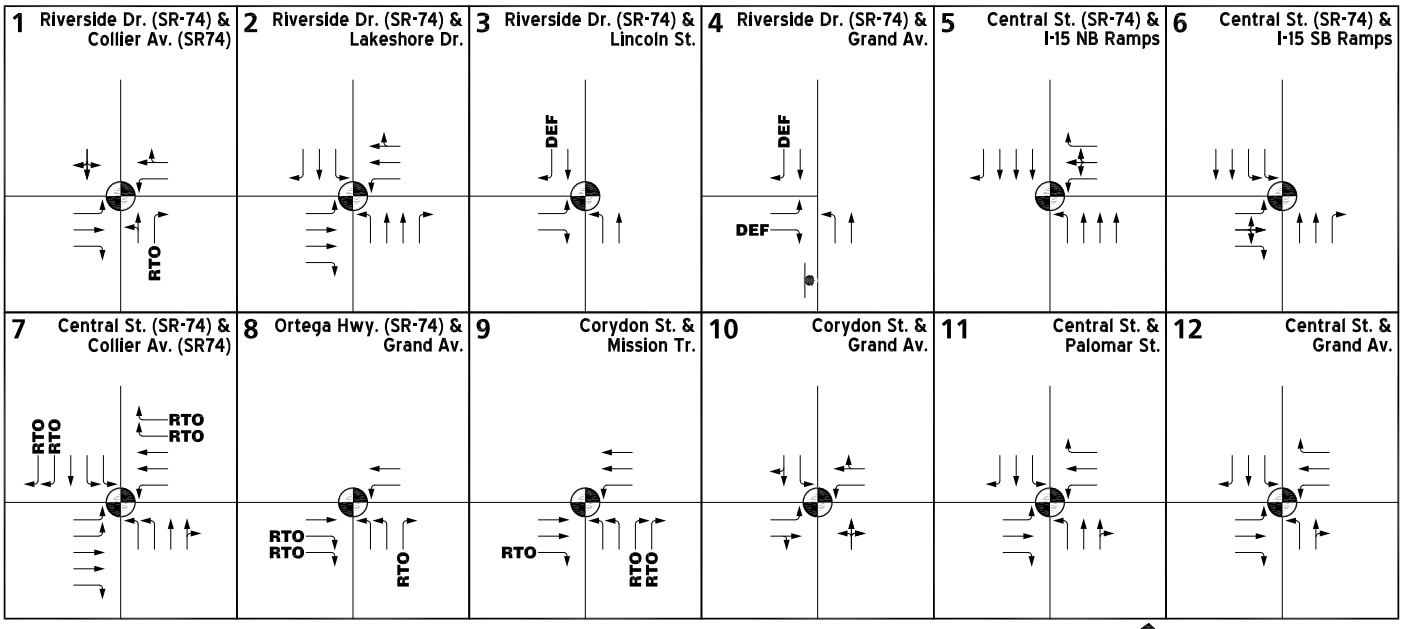
The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions using traffic count data collected in April 2019. The following peak hours were selected for analysis:

- 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 is 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.

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



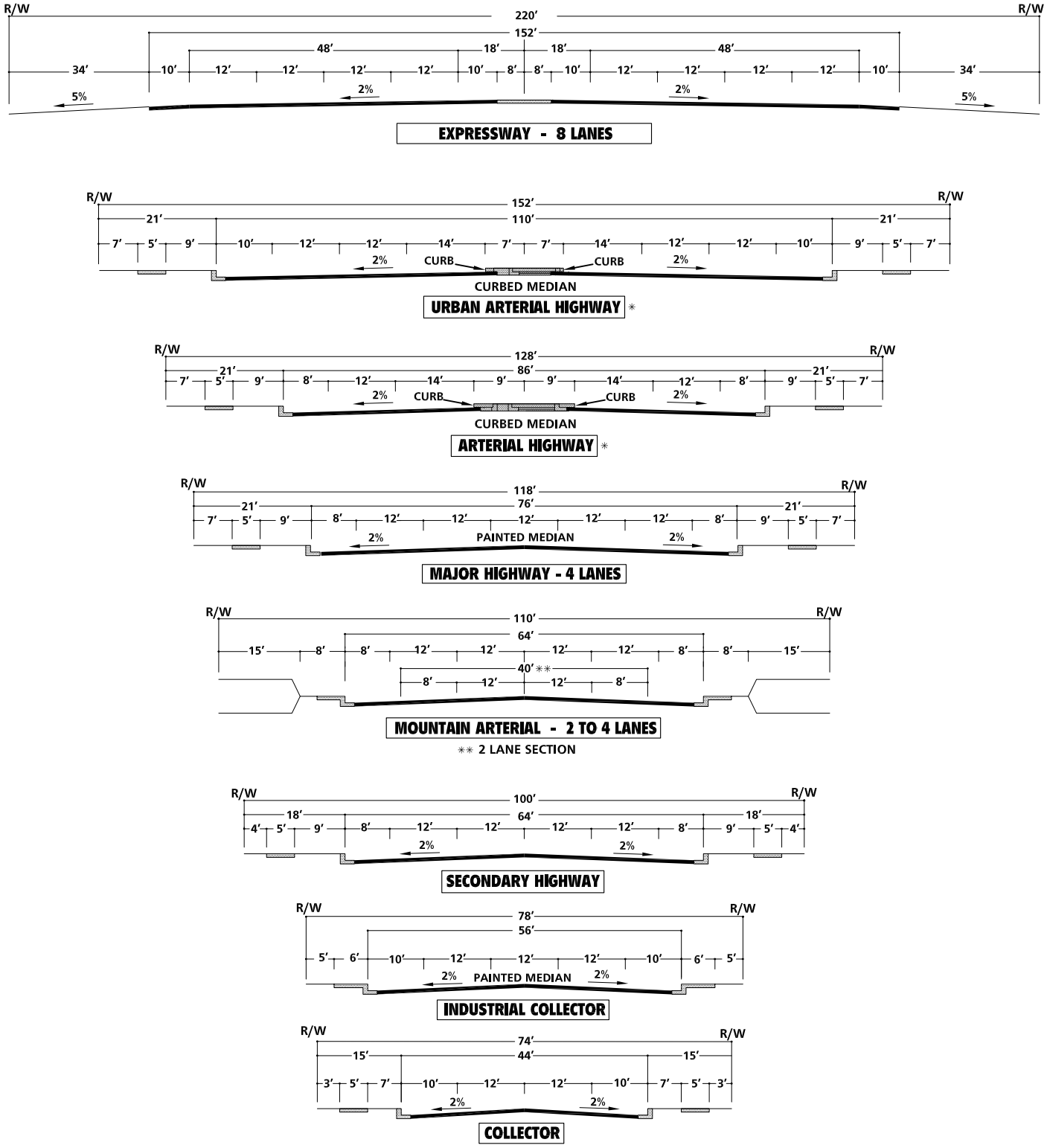


11436 - icon.dwg

URBAN CROSSROADS

EXHIBIT 3-2: COUNTY OF RIVERSIDE GENERAL PLAN CIRCULATION ELEMENT

EXHIBIT 3-3: COUNTY OF RIVERSIDE GENERAL PLAN ROADWAY CROSS-SECTIONS

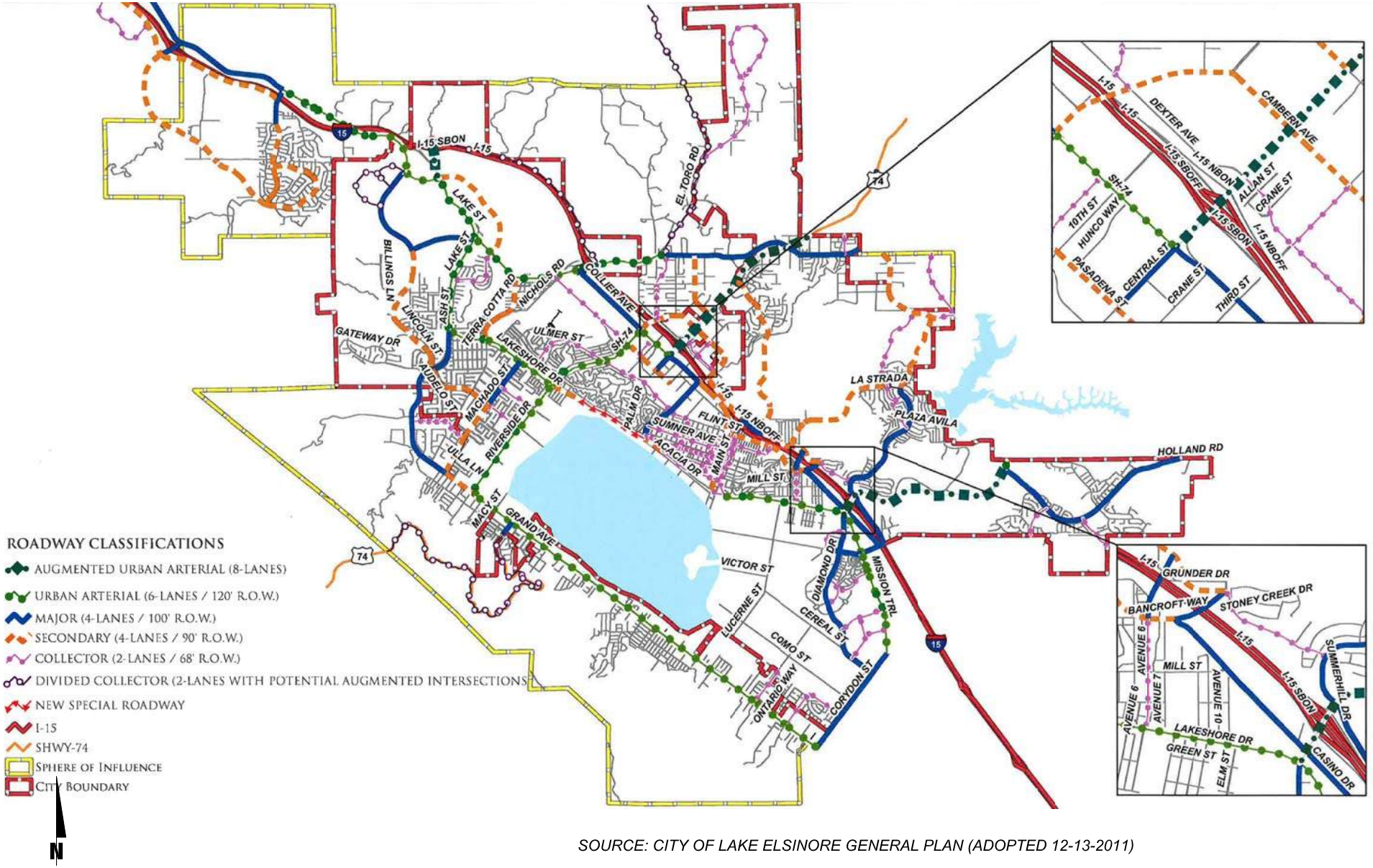


✳ *IMPROVEMENTS MAY BE RECONFIGURED TO ACCOMMODATE EXCLUSIVE TRANSIT LANES OR ALTERNATIVE LANE ARRANGEMENTS ADDITIONAL RIGHT OF WAY MAY BE REQUIRED AT INTERSECTIONS TO ACCOMMODATE ULTIMATE IMPROVEMENTS FOR STATE HIGHWAYS SHALL CONFORM TO CALTRANS DESIGN STANDARDS.*

NOT TO SCALE

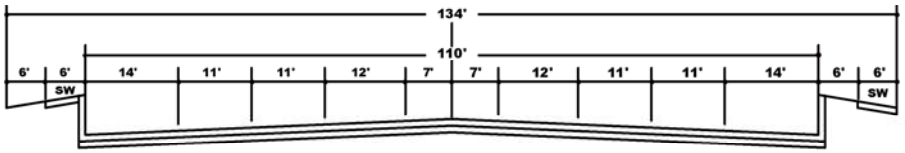
SOURCE: COUNTY OF RIVERSIDE

EXHIBIT 3-4: CITY OF LAKE ELSINORE GENERAL PLAN CIRCULATION ELEMENT

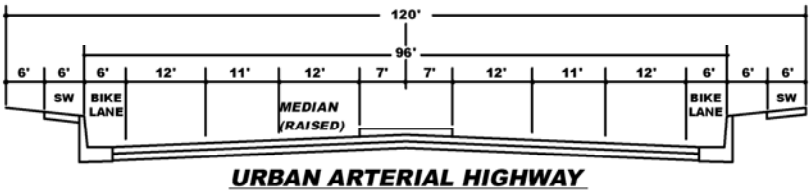


SOURCE: CITY OF LAKE ELSINORE GENERAL PLAN (ADOPTED 12-13-2011)

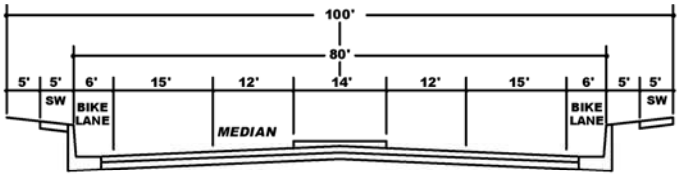
EXHIBIT 3-5: CITY OF LAKE ELSINORE GENERAL PLAN ROADWAY CROSS-SECTIONS



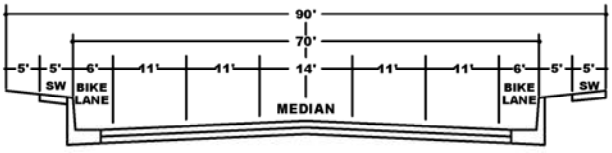
AUGMENTED URBAN ARTERIAL - STATE HIGHWAY
(8-LANE)



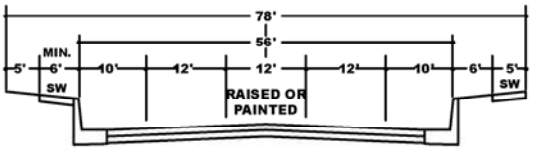
URBAN ARTERIAL HIGHWAY
(6-LANE)



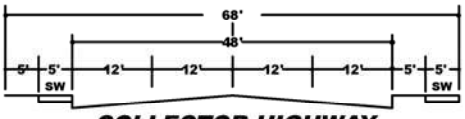
MAJOR HIGHWAY
(4-LANE)



SECONDARY HIGHWAY
(4-LANE)

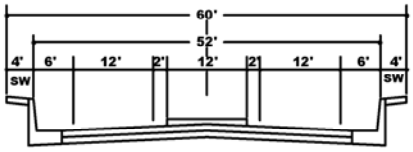


DIVIDED COLLECTOR
BIKES USE SHOULDER
(2-LANE)



COLLECTOR HIGHWAY
(4-LANE)

COLLECTOR HIGHWAY
(2-LANE)

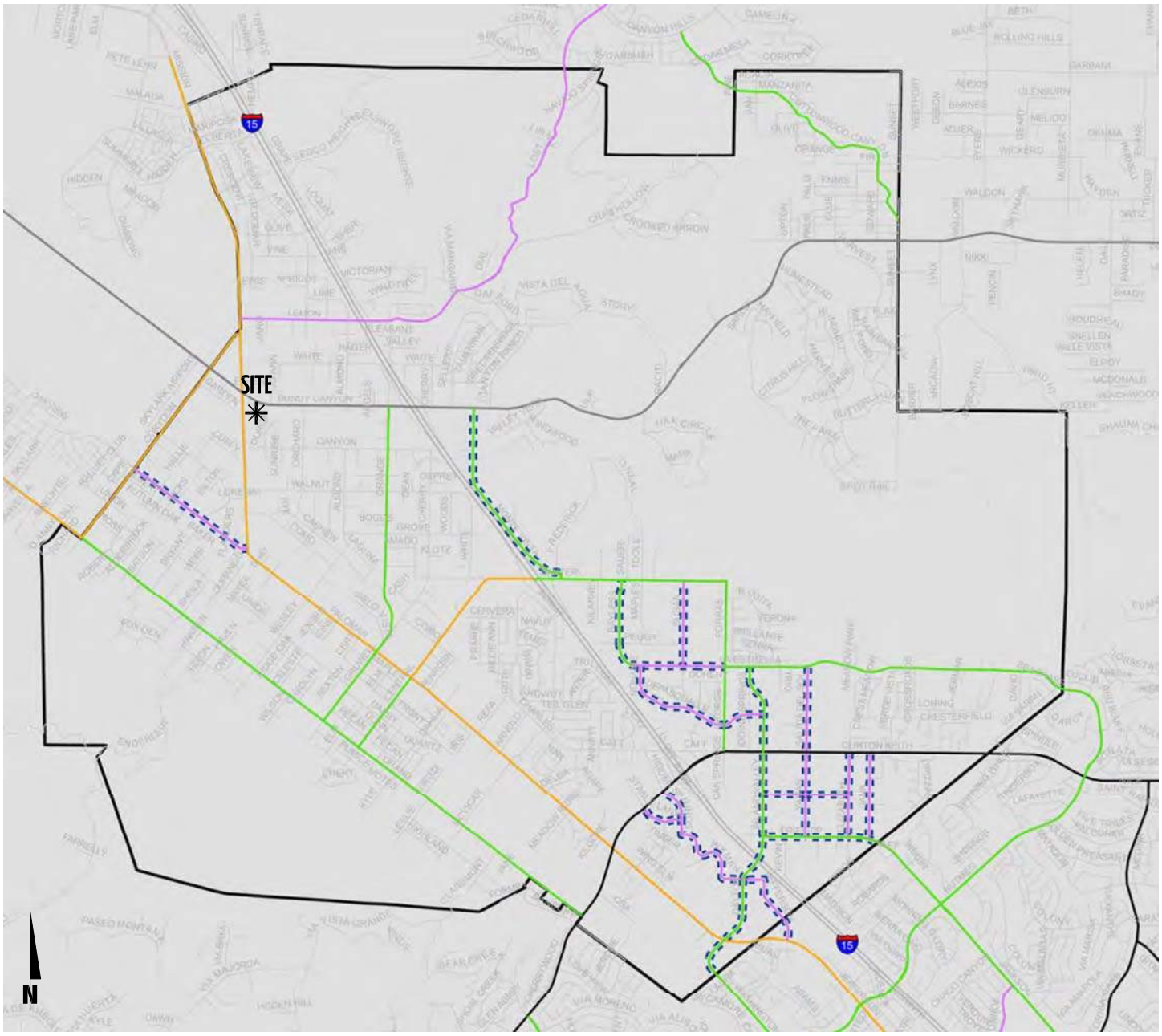


NEW SPECIAL ROADWAY
SHOULDER/BIKE LANE
(2-LANE)
(PROPOSED FOR LAKESHORE DRIVE IN THE COUNTRY CLUB HEIGHT DISTRICT)

* 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 3-6: CITY OF WILDOMAR GENERAL PLAN CIRCULATION AND INFRASTRUCTURE ELEMENT

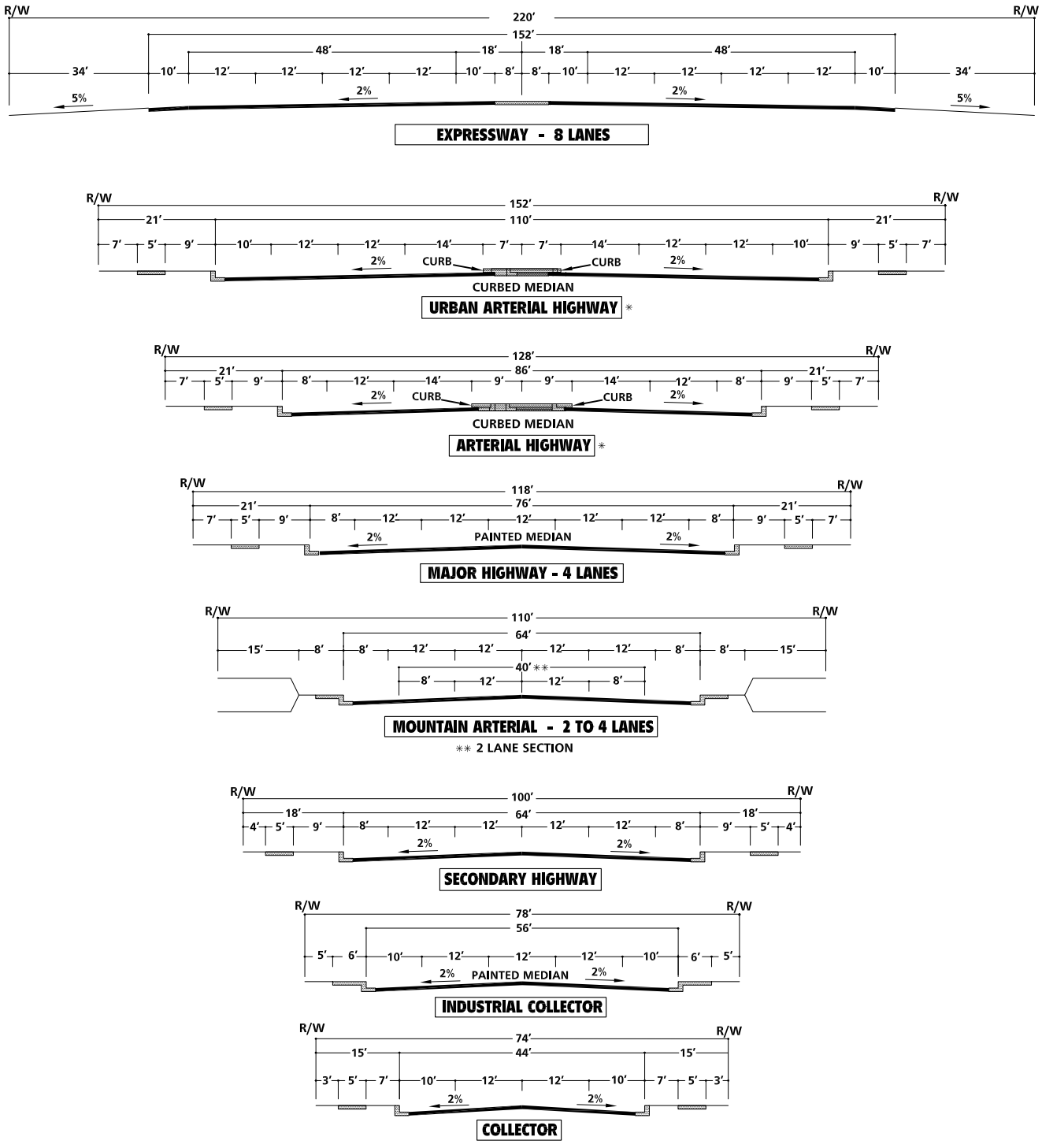


LEGEND:

- URBAN ARTERIAL
- ARTERIAL
- MAJOR
- SECONDARY
- COLLECTOR
- WILDOMAR CITY BOUNDARIES

NOTE: CITY OF WILDOMAR DRAFT GENERAL PLAN UPDATE JANUARY 2015

EXHIBIT 3-7: CITY OF WILDOMAR GENERAL PLAN ROADWAY CROSS-SECTIONS



* *IMPROVEMENTS MAY BE RECONFIGURED TO ACCOMMODATE EXCLUSIVE TRANSIT LANES OR ALTERNATIVE LANE ARRANGEMENTS ADDITIONAL RIGHT OF WAY MAY BE REQUIRED AT INTERSECTIONS TO ACCOMMODATE ULTIMATE IMPROVEMENTS FOR STATE HIGHWAYS SHALL CONFORM TO CALTRANS DESIGN STANDARDS.*

NOTE: THE CITY OF WILDOMAR HAS ADOPTED THE COUNTY OF RIVERSIDE'S GENERAL PLAN AND STANDARDS

These raw turning volumes have been flow conserved between intersections with limited access, no access and where there are currently no uses generating traffic (e.g., between ramp-to-arterial intersections, etc.). The traffic counts collected in April 2019 include the vehicle classifications as shown below:

- Passenger Cars
- 2-Axle Trucks
- 3-Axle Trucks
- 4 or More Axle Trucks

To represent the impact large trucks, buses and recreational vehicles have on traffic flow; all trucks were converted into PCEs. By their size alone, these vehicles occupy the same space as two or more passenger cars. In addition, the time it takes for them to accelerate and slow-down is also much longer than for passenger cars, and varies depending on the type of vehicle and number of axles. For the purpose of this analysis, a PCE factor of 1.5 has been applied to 2-axle trucks, 2.0 for 3-axle trucks and 3.0 for 4+-axle trucks to estimate each turning movement. These factors are consistent with the values recommended for use in the San Bernardino County CMP and are in excess of the factor recommended for use in the County of Riverside traffic study guidelines. (9) Although the County of Riverside has a recommended PCE factor of 2.0, the San Bernardino County CMP PCE factors have been utilized in an effort to conduct a more conservative analysis.

Existing weekday ADT volumes on arterial highways throughout the study area are shown on Exhibit 3-8. Existing ADT volumes are 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 11.1524 = 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 8.97 percent. As such, the above equation utilizing a factor of 11.1524 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 8.97 percent (i.e., 1/0.0897 = 11.1524) and was assumed to sufficiently estimate average daily traffic (ADT) volumes for planning-level analyses. Existing weekday AM and weekday PM peak hour intersection volumes (in PCE) are also shown on Exhibit 3-8.

3.4 EXISTING CONDITIONS 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 the following study area intersection is currently operating at an unacceptable LOS during the one or more peak hours:

- Riverside Dr. (SR-74) & Grand Av. (#4) – LOS F AM peak hour; LOS E PM peak hour

Table 3-1

Intersection Analysis for Existing (2019) Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay (secs.)[1]		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Riverside Dr. (SR-74) & Collier Av. (SR-74)	TS	0	1	1>	0	1	0	1	1	1	1	1	0	17.9	23.7	B	C
2	Riverside Dr. (SR-74) & Lakeshore Dr.	TS	1	2	1	1	1	1	1	2	1	1	2	0	31.3	34.1	C	C
3	Riverside Dr. (SR-74) & Lincoln St.	TS	1	1	0	0	1	d	1	0	1	0	0	0	32.1	12.9	C	B
4	Riverside Dr. (SR-74) & Grand Av.	CSS	1	1	0	0	1	d	1	0	d	0	0	0	**62.2**	**47.4**	**F**	**E**
5	Central St. (SR-74) & I-15 NB Ramps	TS	1	3	0	0	3	1	0	0	0	1	1	1	14.6	13.5	B	B
6	Central St. (SR-74) & I-15 SB Ramps	TS	0	2	1	2	2	0	1	1	1	0	0	0	15.4	20.9	B	C
7	Central St. (SR-74) & Collier Av. (SR-74)	TS	2	2	0	2	1	2>	2	2	1	1	2	2>	25.6	26.3	C	C
8	Ortega Hwy. (SR-74) & Grand Av.	TS	2	0	1>	0	0	0	0	1	2>	1	1	0	14.5	19.6	B	B
9	Corydon St. & Mission Tr.	TS	2	0	2>	0	0	0	0	2	1>	1	2	0	12.5	12.0	B	B
10	Corydon St. & Grand Av.	TS	0	1	0	1	1	0	1	1	0	1	1	0	16.2	18.4	B	B
11	Central St. & Palomar St.	TS	1	2	0	1	1	1	1	1	1	1	1	1	23.3	18.4	C	B
12	Central St. & Grand Av.	TS	1	1	0	1	1	1	1	1	1	1	1	1	20.4	13.5	C	B

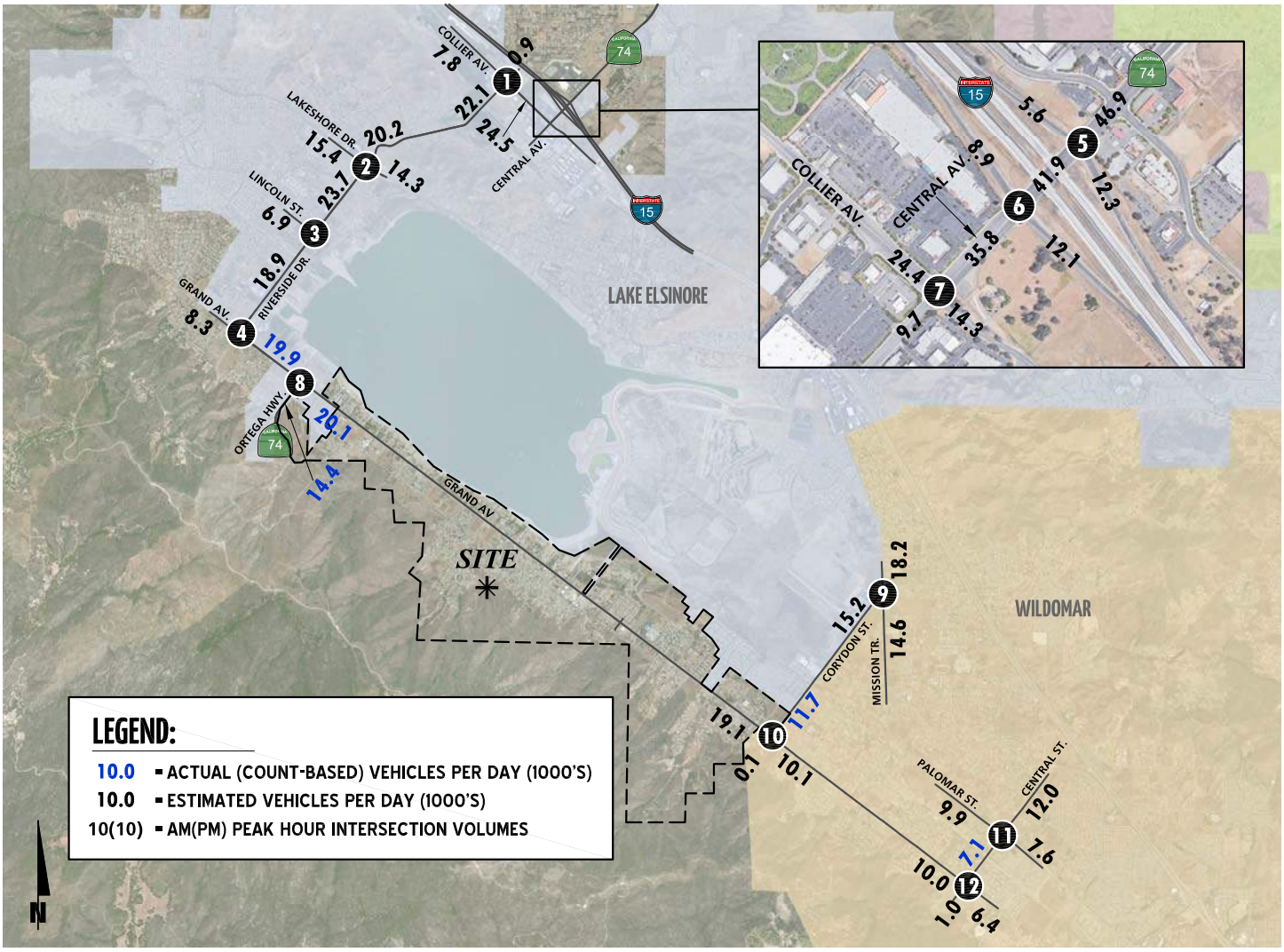
[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

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

[2] Per the Highway Capacity Manual (HCM) 6th Edition, overall average intersection delay and level of service are shown for intersections with a traffic signal. 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. LOS calculated using Synchro (Version 10).

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

EXHIBIT 3-8: EXISTING (2019) TRAFFIC VOLUMES (IN PCE)



1 Riverside Dr. (SR-74) & Collier Av. (SR74) 6(10) 1(22) 8(16) ← 16(25) 60(251) 614(859) 6(9) 72(190) 57(140) → 97(99) 9(4) 872(856)	**2** Riverside Dr. (SR-74) & Lakeshore Dr. 139(280) 488(561) 26(36) ← 20(33) 171(321) 208(287) 290(218) 299(289) 141(149) → 129(125) 566(682) 328(319)	**3** Riverside Dr. (SR-74) & Lincoln St. 64(212) 648(688) 408(257) 297(90) → 158(59) 686(855)	**4** Riverside Dr. (SR-74) & Grand Av. 162(126) 632(583) 72(63) 360(195) → 202(358) 609(841)	**5** Central St. (SR-74) & I-15 NB Ramps 548(391) 1597(1425) ← 475(636) 3(1) 486(465) 82(114) 982(1757)	**6** Central St. (SR-74) & I-15 SB Ramps 1411(1314) 673(576) 355(636) 1(4) 195(156) → 709(1236) 545(508)
7 Central St. (SR-74) & Collier Av. (SR74) 642(736) 290(184) 513(306) ← 342(496) 53(146) 28(75) 845(903) 73(196) 18(52) → 31(155) 125(336) 37(68)	**8** Ortega Hwy. (SR-74) & Grand Av. ← 621(465) 305(65) 590(598) 471(105) → 109(751) 63(549)	**9** Corydon St. & Mission Tr. ← 371(417) 250(243) 320(367) 364(398) → 458(452) 263(271)	**10** Corydon St. & Grand Av. 368(388) 0(1) 67(44) ← 55(28) 335(331) 1(2) 350(496) 506(496) 0(0) → 0(1) 2(0) 3(1)	**11** Central St. & Palomar St. 149(213) 259(307) 63(73) ← 83(61) 278(266) 66(64) 204(126) 274(182) 167(66) → 113(41) 357(300) 56(32)	**12** Central St. & Grand Av. 140(193) 21(38) 217(56) ← 200(47) 303(185) 14(16) 243(251) 328(259) 10(3) → 9(4) 50(24) 22(8)

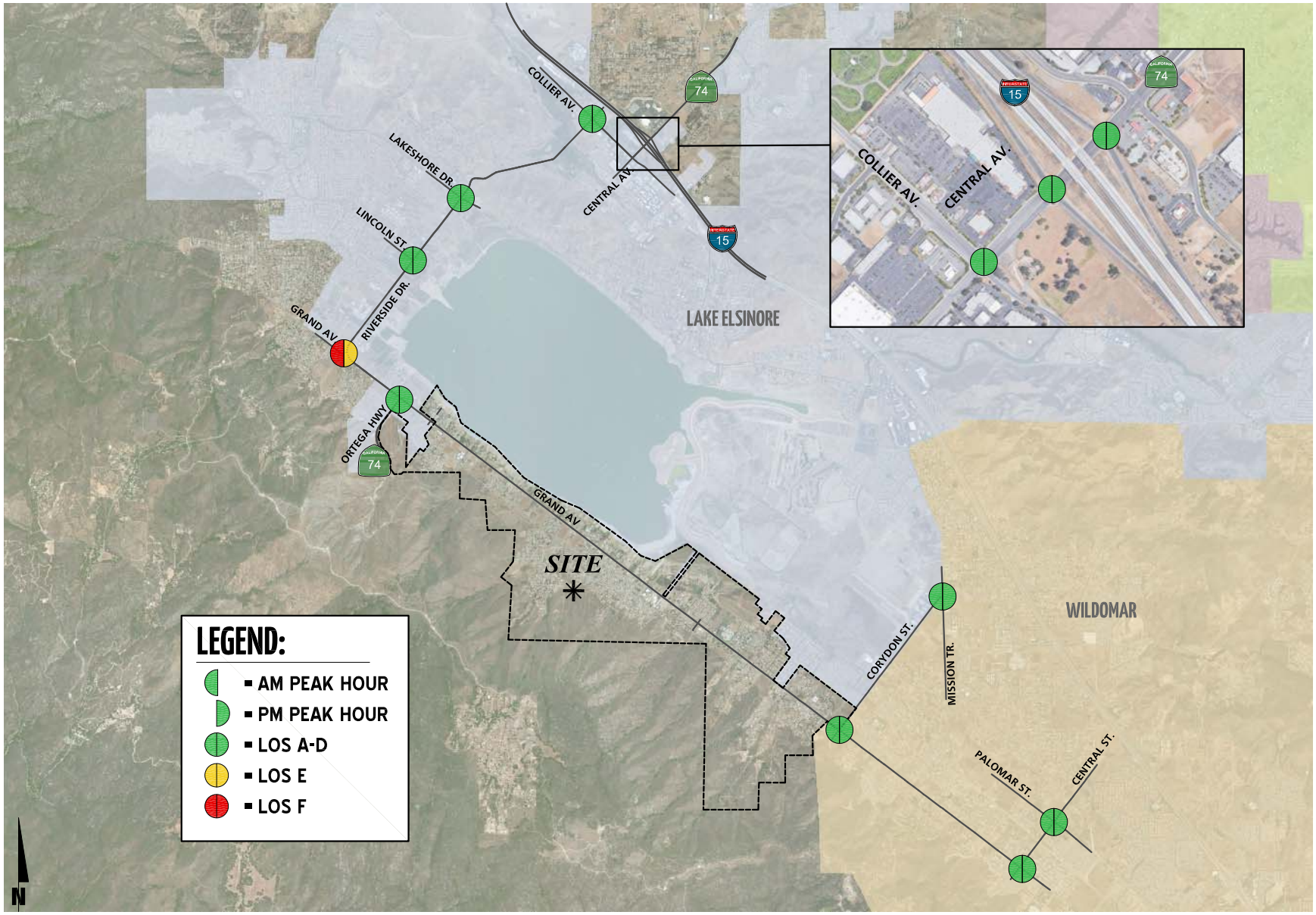
Consistent with Table 3-1, a summary of the peak hour intersection LOS for Existing conditions are shown on Exhibit 3-9. The intersection operations analysis worksheets are included in Appendix 3.2 of this TIA.

It is important to recognize that the intersection operations analysis reflects the existing constrained traffic count conditions. These constraints in the form of vehicle queues at closely spaced intersections significantly limit the number of vehicles that can physically be accommodated during peak hour conditions. While the traffic counts identify all the vehicles using an intersection during peak hours, they may not fully account for the unconstrained demand at a particular location. Field observations indicate that the intersection of Riverside Drive & Collier Avenue experiences vehicle delays that are not reflected in the intersection LOS analysis. Field observations also show that this intersection experiences peak hour queues that periodically affect intersection operations. As such, based on the constrained traffic count data the intersections appear to operate at acceptable LOS or at LOS better than field observations would suggest.

3.5 EXISTING CONDITIONS TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for Existing traffic conditions are based on existing peak hour intersection turning volumes. For Existing traffic conditions, the intersection of Riverside Drive (SR-74) & Grand Avenue appear to currently be warranted for a traffic signal (see Appendix 3.3).

EXHIBIT 3-9: EXISTING (2019) SUMMARY OF LOS



URBAN CROSSROADS

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4 PROJECTED FUTURE TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project, as well as the Project's trip assignment onto the study area roadway network. The Project is proposed to consist of the land use designations and acreage included in GPA No. 960 and GPA No. 1156, with an additional 829 dwelling units, 7,659 square feet (sf) of commercial retail, 3,795 sf of light industrial use, 7,659 sf of non-residential use, and 1,139 square feet of public facilities. The Project is proposed to have access onto Grand Avenue. Regional access to the Project site will be provided by the SR-74 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 (in PCE) used to estimate Project traffic and a summary of the Project's trip generation (in PCE) are shown in Table 4-1. Trip generation rates (in actual vehicles) used to estimate Project traffic and a summary of the Project's trip generation (in actual vehicles) are shown in Table 4-2. The trip generation rates are based upon data collected by the Institute of Transportation Engineers (ITE) in their published Trip Generation Manual, 10th Edition, 2017. (3) The following land uses were utilized for the purposes of this analysis:

- General Light Industrial (ITE LU Code 110)
- Single Family Detached Residential (ITE LU Code 210)
- Shopping Center (ITE LU Code 820)

The proposed Project is estimated to generate a net total of 7,594 PCE trip-ends per day with 599 PCE AM peak hour trips and 817 PCE PM peak hour trips. In comparison, the proposed Project is estimated to generate a net total of 7,584 actual vehicle trip-ends per day with 599 actual vehicle AM peak hour trips and 815 actual vehicle PM peak hour trips.

4.2 PROJECT TRIP DISTRIBUTION

Trip distribution is the process of identifying the probable destinations, directions or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered, to identify the route where the Project traffic would distribute.

The Project trip distribution was developed based on anticipated travel patterns to and from the Project site. The Project trip distribution pattern was developed based on an understanding of existing travel patterns in the area, the geographical location of the site, and the site's proximity to the regional arterial and state highway system. The Project passenger car trip distribution patterns are graphically depicted on Exhibit 4-1.

Table 4-1

Project Trip Generation Summary (PCE)

Project Trip Generation Rates									
Land Use[1]	ITE LU Code	Units[2]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
General Light Industrial[3,4]	110	TSF	0.616	0.084	0.700	0.082	0.548	0.630	4.960
Passenger Cars (61.2%)			0.377	0.051	0.428	0.050	0.336	0.386	3.038
2-Axle Trucks (6.1%) (PCE = 1.5)			0.057	0.008	0.065	0.008	0.051	0.059	0.458
3-Axle Trucks (12.7%) (PCE = 2.0)			0.156	0.022	0.178	0.020	0.140	0.160	1.262
4-Axle+ Trucks (19.9%) (PCE = 3.0)			0.369	0.051	0.420	0.048	0.327	0.375	2.961
Single Family Detached Residential	210	DU	0.185	0.555	0.740	0.624	0.366	0.990	9.440
Shopping Center	820	TSF	0.583	0.357	0.940	1.829	1.981	3.810	37.750

Project Trip Generation									
Project	Quantity	Units[2]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
General Light Industrial	3.795	TSF							
Passenger Cars:			1	0	1	0	1	1	12
Truck Trips:									
2-axle:			0	0	0	0	0	0	2
3-axle:			1	0	1	0	1	1	6
4+-axle:			1	0	1	0	1	1	12
- Net Truck Trips			*2*	*0*	*2*	*0*	*2*	*2*	*20*
Single Family Detached Residential	829	DU	154	461	615	518	304	822	7,826
Commercial Retail/Non-Residential	15.318	TSF	9	6	15	29	31	60	580
Subtotal			*166*	*467*	*633*	*547*	*338*	*885*	*8,438*
Internal Capture (10%)			*-17*	*-17*	*-34*	*-34*	*-34*	*-68*	*-844*
TOTAL NET TRIPS			***149***	***450***	***599***	***513***	***304***	***817***	***7,594***

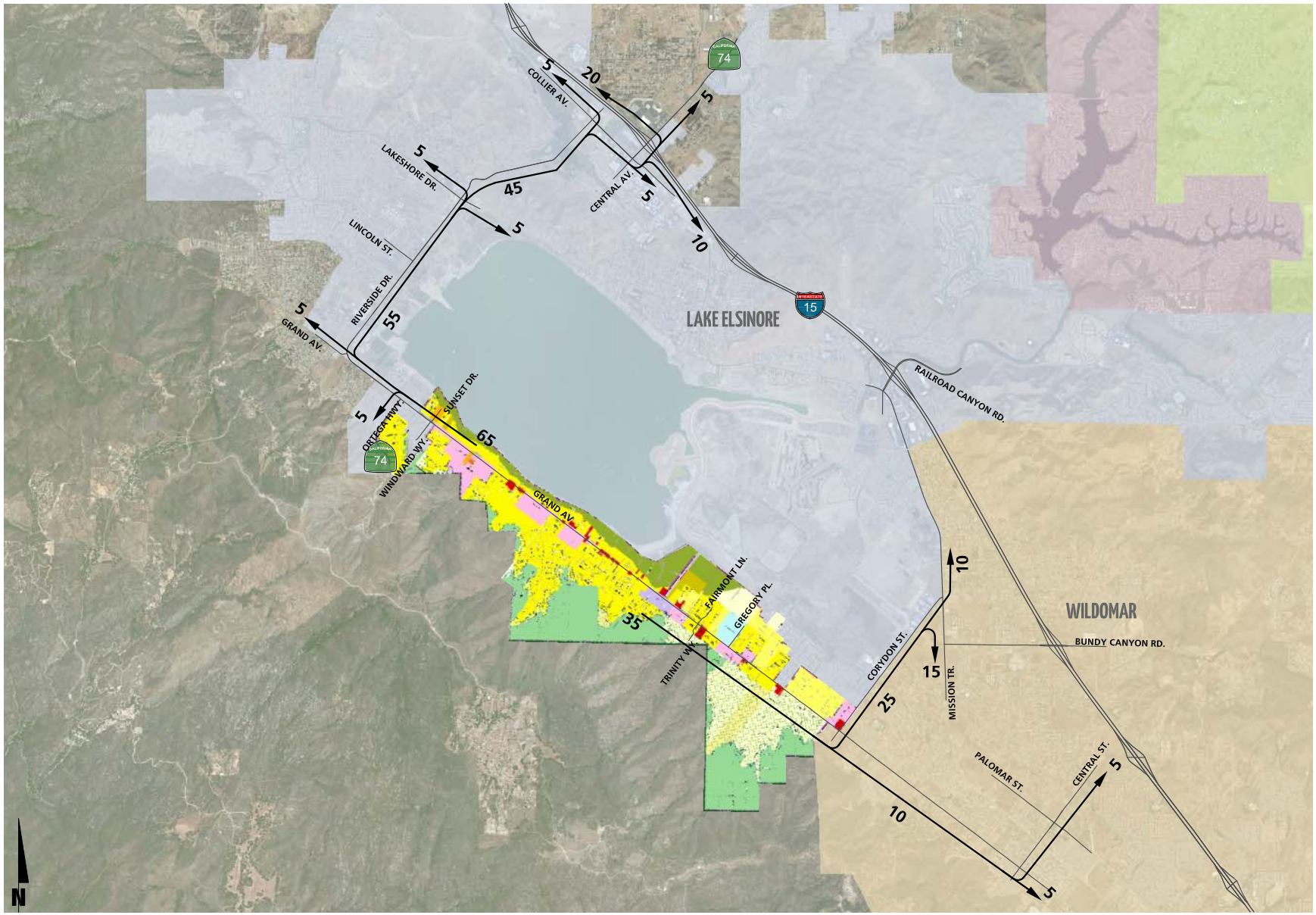
[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[2] TSF = thousand square feet; DU = Dwelling Units

[3] Vehicle Mix Source: Institute of Transportation Engineers (ITE), Trip Generation Handbook, Third Edition (September 2017).

[4] Truck mix per City of Fontana Truck Trip Generation Study for LU 110, August 2003. PCE rates are per SBCTA.

EXHIBIT 4-1: PROJECT TRIP DISTRIBUTION



URBAN CROSSROADS

4.3 MODAL SPLIT

Although the use of public transit, walking, and/or bicycling have the potential to reduce Project-related traffic, such reductions have not been taken into consideration in this traffic study in order to provide a conservative analysis of the Project's potential to contribute to circulation system deficiencies.

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. Based on the identified Project traffic generation and trip distribution patterns, Project ADT and peak hour intersection turning movement volumes are shown on Exhibits 4-2.

4.5 BACKGROUND TRAFFIC

The adopted Southern California Association of Governments (SCAG) 2016 Regional Transportation Plan (RTP) /Sustainable Communities Strategy (SCS) (April 2016) growth forecasts for Riverside County identifies projected growth in population of 359,000 in 2012 to 499,200 in 2040, or a 39.05% increase over the 28-year period. The change in population equates to roughly a 1.18 percent growth rate, compounded annually. Similarly, growth over the same 28-year period in households is projected to increase by 45.06 percent, or 1.34 percent growth rate, compounded annually. Finally, growth in employment over the same 28-year period is projected to increase by 122.13 percent, or a 2.89 percent growth rate, compounded annually. (10) Therefore, the annual growth rate of 2.0% in conjunction with cumulative project traffic would appear to be conservative and tend to overstate as opposed to understate future traffic growth.

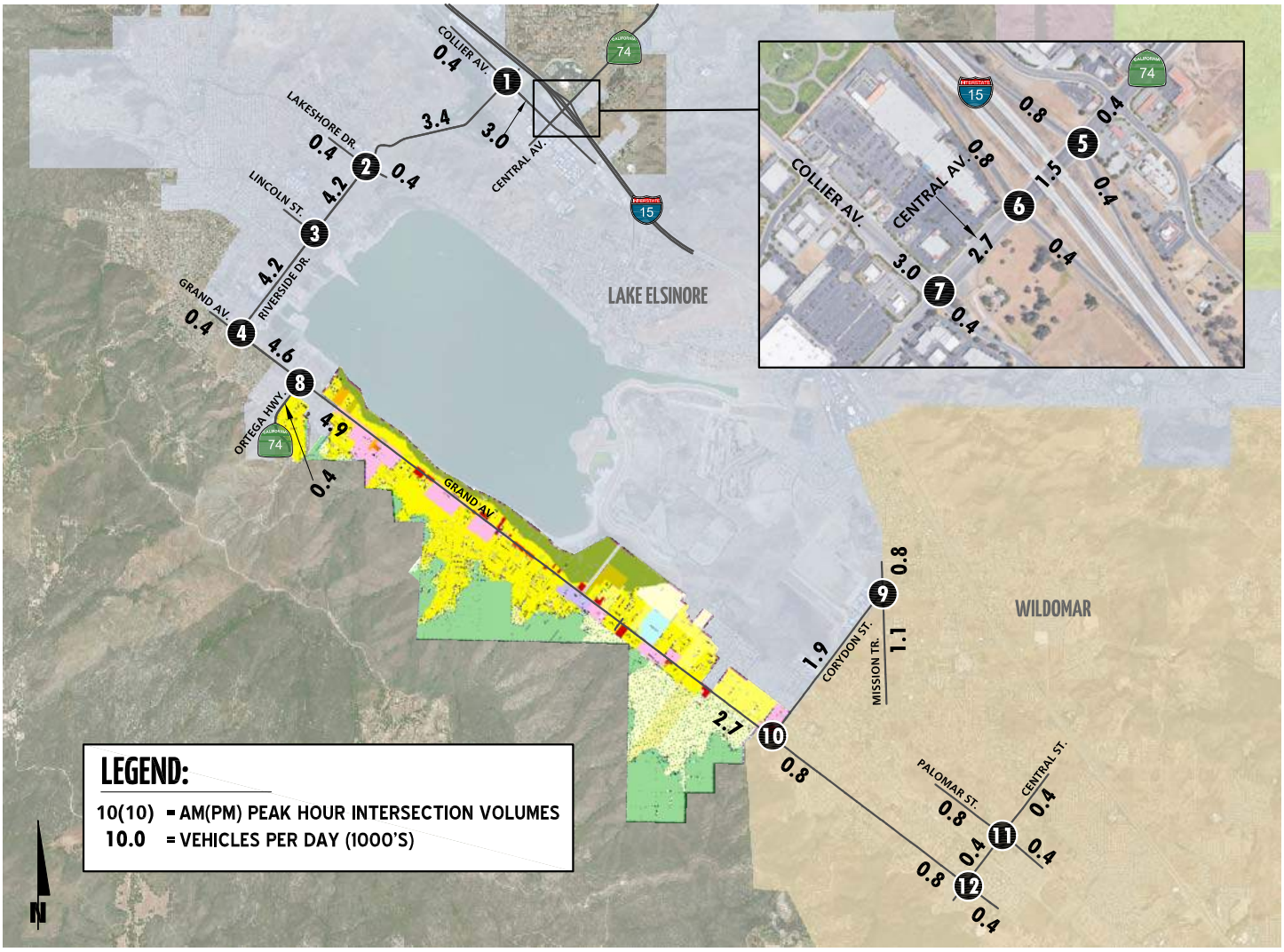
4.6 TRAFFIC FORECASTS

To provide a comprehensive assessment of the deficiencies, a "buildout" analysis was performed in support of this work effort. The "buildout" approach is used to forecast the Horizon Year Without and With Project conditions of the study area based on planned land uses within the Project vicinity.

4.7 HORIZON YEAR (2040) CONDITIONS

"Buildout" traffic projections for Horizon Year With Project conditions are based on traffic model forecasts and were derived from the Riverside County Transportation Analysis Model (RivTAM) using accepted procedures for model forecast refinement and smoothing. The Horizon Year traffic conditions analyses will be utilized to determine if improvements funded through regional transportation mitigation fee programs, such as the TUMF, County of Riverside DIF programs, or other approved funding mechanism can accommodate the long-range cumulative traffic at the target LOS identified in the County of Riverside General Plan. Other improvements needed beyond the "funded" improvements (such as localized improvements to non-TUMF, non-TIF, or non-DIF facilities) are identified as such.

EXHIBIT 4-2: PROJECT ONLY TRAFFIC VOLUMES (IN PCE)



1 Riverside Dr. (SR-74) & Collier Av. (SR74) 0(0) 0(0) 0(0) ← 0(0) ← 0(0) ← 61(205) 0(0) → 0(0) → 8(26) ← 22(15) 0(0) 178(122)	2 Riverside Dr. (SR-74) & Lakeshore Dr. 0(0) 69(231) 0(0) ← 0(0) ← 0(0) ← 8(26) 0(0) → 0(0) → 8(26) ← 22(15) 200(137) 22(15)	3 Riverside Dr. (SR-74) & Lincoln St. 0(0) ← 84(282) 0(0) → 0(0) ← 245(167)	4 Riverside Dr. (SR-74) & Grand Av. 0(0) ← 84(282) 0(0) → 8(26) ← 22(15) 245(167)	5 Central St. (SR-74) & I-15 NB Ramps 0(0) 8(26) ← 0(0) ← 0(0) ← 15(51) 89(61) 22(15)	6 Central St. (SR-74) & I-15 SB Ramps 23(77) 0(0) 0(0) → 0(0) → 31(103) ← 111(76) 45(30)
7 Central St. (SR-74) & Collier Av. (SR74) 54(180) 0(0) 0(0) ← 0(0) ← 8(26) ← 0(0) 156(106) → 22(15) → 0(0) ← 0(0) 0(0) 0(0)	8 Ortega Hwy. (SR-74) & Grand Av. ← 267(182) ← 22(15) 92(308) → 0(0) ← 0(0) 8(26)	9 Corydon St. & Mission Tr. ← 0(0) ← 23(77) 0(0) → 15(51) ← 45(30) 67(46)	10 Corydon St. & Grand Av. 38(128) 0(0) 0(0) ← 0(0) ← 15(51) ← 0(0) 111(76) → 45(30) → 0(0) ← 0(0) 0(0) 0(0)	11 Central St. & Palomar St. 0(0) 8(26) 0(0) ← 0(0) ← 0(0) ← 0(0) 0(0) → 0(0) → 0(0) ← 0(0) 22(15) 0(0)	12 Central St. & Grand Av. 8(26) 0(0) 0(0) ← 0(0) ← 8(26) ← 0(0) 22(15) → 22(15) → 0(0) ← 0(0) 0(0) 0(0)

In most instances the traffic model zone structure is not designed to provide accurate turning movements along arterial roadways unless refinement and reasonableness checking is performed. Therefore, the Horizon Year peak hour forecasts were refined using the model derived long-range forecasts, base (validation) year model forecasts, along with existing peak hour traffic count data collected at each analysis location.

The refined future peak hour approach and departure volumes obtained from these calculations are then entered into a spreadsheet program consistent with the National Cooperative Highway Research Program (NCHRP Report 255), along with initial estimates of turning movement proportions. A linear programming algorithm is used to calculate individual turning movements which match the known directional roadway segment forecast volumes computed in the previous step. This program computes a likely set of intersection turning movements from intersection approach counts and the initial turning proportions from each approach leg.

In some instances, the traffic model zone structure is not designed to provide accurate turning movements along arterial roadways unless refinement and reasonableness checking is performed. Horizon Year turning volumes were compared to existing volumes in order to ensure a minimum growth as a part of the refinement process, where applicable. The minimum growth includes any additional growth between existing and Horizon Year With Project traffic conditions that is not accounted for by the traffic generated by cumulative development projects and the ambient growth between Existing and Horizon Year traffic conditions. The initial estimate of the future Horizon Year with Project peak hour turning movements was then reviewed by Urban Crossroads for reasonableness at intersections where model results showed unreasonable turning movements. The initial raw model estimates were adjusted to achieve flow conservation (where applicable), reasonable growth, and reasonable diversion between parallel routes.

Post-processing worksheets for Horizon Year with Project traffic conditions are provided in Appendix 4.1.

5 E+P TRAFFIC CONDITIONS

In an effort to satisfy the CEQA Guideline Section 15125(a), an analysis of existing traffic volumes plus traffic generated by the proposed Project (E+P) has been included in this report. This section discusses the traffic forecasts for Existing plus Project (E+P) conditions and the resulting intersection operations, and traffic signal warrant analyses.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for E+P conditions consist 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). These include the Project site adjacent roadway.

5.2 E+P TRAFFIC VOLUME FORECASTS

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

5.3 INTERSECTION OPERATIONS ANALYSIS

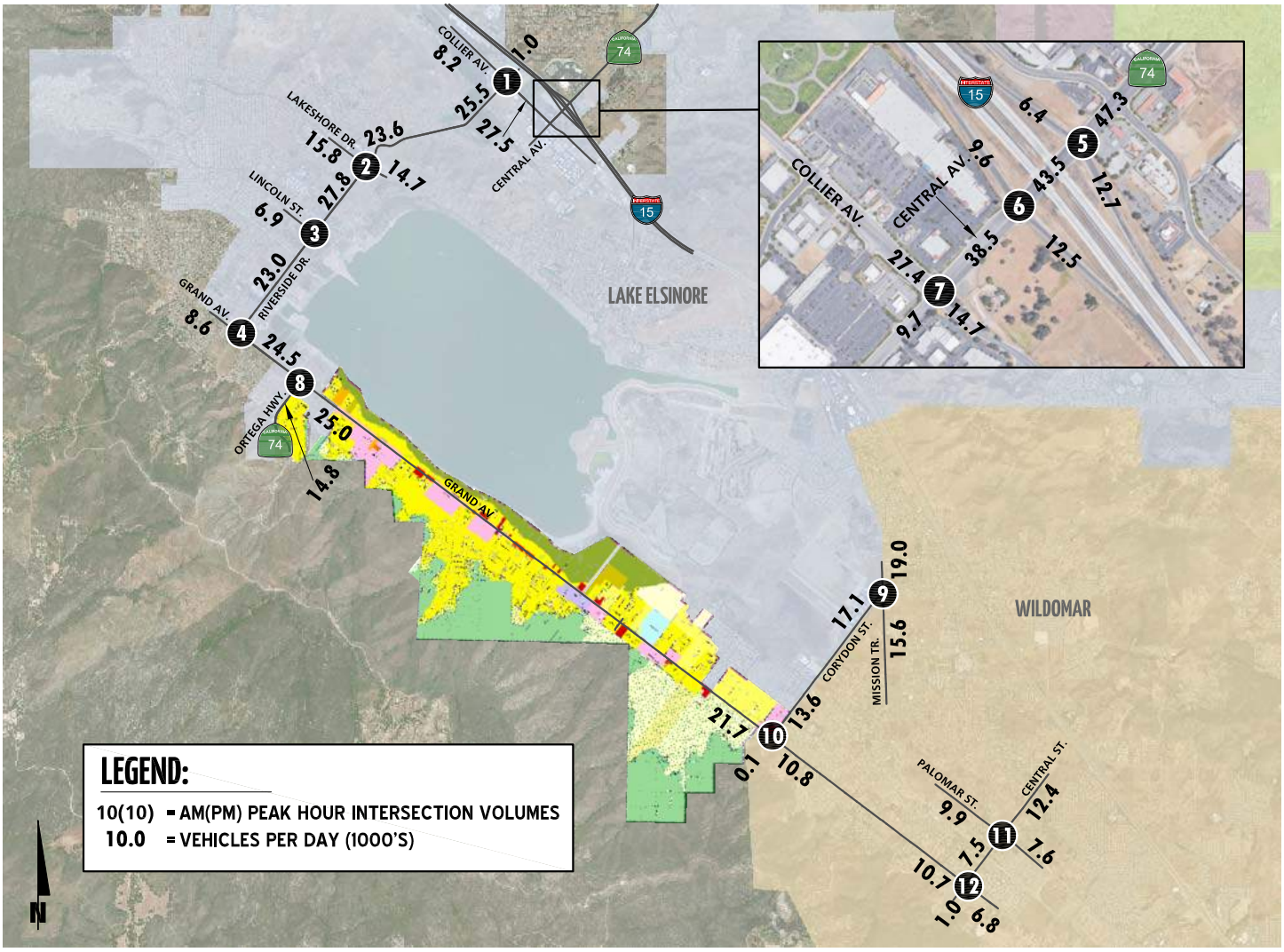
E+P peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TIA. The intersection analysis results are summarized in Table 5-1, which indicates that there are no additional study area intersections anticipated to operate at unacceptable LOS under E+P traffic conditions, consistent with Existing traffic conditions.

Exhibit 5-2 summarizes the weekday AM and PM peak hour study area intersection LOS under E+P traffic conditions, consistent with the summary provided in Table 5-1. The intersection operations analysis worksheets are included in Appendix 5.1 of this TIA. Measures to address deficiencies for Horizon Year traffic conditions are discussed in Section 5.5 *E+P Deficiencies and Recommended Improvements*.

5.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

For E+P conditions, all intersections are signalized or were anticipated to warrant a traffic signal in previous traffic conditions based on either peak hour or planning-level volume-based warrants.

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



1 Riverside Dr. (SR-74) & Collier Av. (SR74)	2 Riverside Dr. (SR-74) & Lakeshore Dr.	3 Riverside Dr. (SR-74) & Lincoln St.	4 Riverside Dr. (SR-74) & Grand Av.	5 Central St. (SR-74) & I-15 NB Ramps	6 Central St. (SR-74) & I-15 SB Ramps
6(10) → 1(22) ↓ 8(16) ←	139(280) → 557(792) ↓ 26(36) ←	64(212) → 732(970) ↓	162(126) → 716(865) ↓	548(391) → 1605(1451) ↓	1434(1391) → 673(576) ↓
↓ 16(25) ← 60(251) ← 675(1064)	↓ 20(33) ← 171(321) ← 216(313)			↓ 475(636) ← 3(1) ← 501(516)	
6(9) → 72(190) → 65(166) ↓	290(218) → 299(289) → 149(175) ↓	408(257) → 297(90) ↓	72(63) → 368(221) ↓		355(636) → 1(4) → 226(259) ↓
↑ 119(114) ↑ 9(4) ↑ 1050(978)	↑ 151(140) ↑ 766(819) ↑ 350(334)	↑ 158(59) ↑ 931(1022)	↑ 224(373) ↑ 854(1008)	↑ 171(175) ↑ 1004(1772)	↑ 820(1312) ↑ 590(538)

7 Central St. (SR-74) & Collier Av. (SR74)	8 Ortega Hwy. (SR-74) & Grand Av.	9 Corydon St. & Mission Tr.	10 Corydon St. & Grand Av.	11 Central St. & Palomar St.	12 Central St. & Grand Av.
696(916) → 290(184) ↓ 513(306) ←	← 888(647) ↓ 327(80)	← 371(417) ↓ 273(320)	406(516) → 0(1) ↓ 67(44) ←	149(213) → 267(333) ↓ 63(73) ←	148(219) → 21(38) ↓ 217(56) ←
↓ 342(496) ← 61(172) ← 28(75)			↓ 55(28) ← 350(382) ← 1(2)	↓ 83(61) ← 278(266) ← 66(64)	↓ 200(47) ← 311(211) ← 14(16)
1001(1009) → 95(211) → 18(52) ↓	682(906) → 471(105) ↓	320(367) → 379(449) ↓	461(572) → 551(526) → 0(0) ↓	204(126) → 274(182) → 167(66) ↓	265(266) → 350(274) → 10(3) ↓
↑ 31(155) ↑ 125(336) ↑ 37(68)	↑ 109(751) ↑ 71(575)	↑ 503(482) ↑ 330(317)	↑ 0(1) ↑ 2(0) ↑ 3(1)	↑ 113(41) ↑ 379(315) ↑ 56(32)	↑ 9(4) ↑ 50(24) ↑ 22(8)

EXHIBIT 5-2: E+P SUMMARY OF LOS

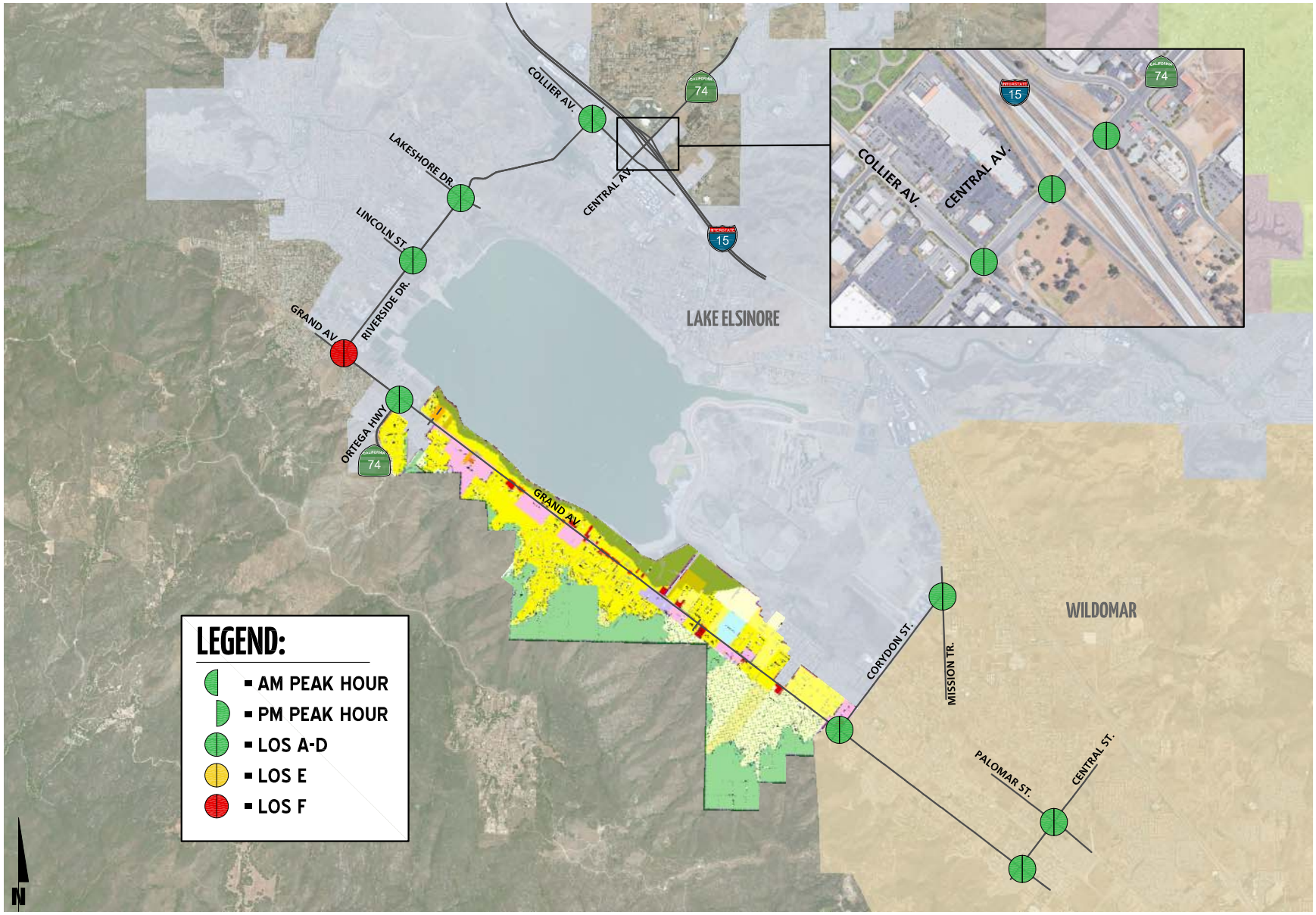


Table 5-1

Intersection Analysis for E+P Conditions

#	Intersection	Traffic Control[2]	Existing (2019)				E+P			
			Delay (secs.)[1]		Level of Service		Delay (secs.)[1]		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM
1	Riverside Dr. (SR-74) & Collier Av. (SR-74)	TS	17.9	23.7	B	C	18.3	51.9	B	D
2	Riverside Dr. (SR-74) & Lakeshore Dr.	TS	31.3	34.1	C	C	35.9	54.7	D	D
3	Riverside Dr. (SR-74) & Lincoln St.	TS	32.1	12.9	C	B	43.2	17.7	D	B
4	Riverside Dr. (SR-74) & Grand Av.	CSS	**62.2**	**47.4**	**F**	**E**	**>100.0**	**90.8**	**F**	**F**
5	Central St. (SR-74) & I-15 NB Ramps	TS	14.6	13.5	B	B	17.4	15.0	B	B
6	Central St. (SR-74) & I-15 SB Ramps	TS	15.4	20.9	B	C	15.6	22.9	B	C
7	Central St. (SR-74) & Collier Av. (SR-74)	TS	25.6	26.3	C	C	28.1	28.0	C	C
8	Ortega Hwy. (SR-74) & Grand Av.	TS	14.5	19.6	B	B	16.1	43.7	B	D
9	Corydon St. & Mission Tr.	TS	12.5	12.0	B	B	13.2	13.8	B	B
10	Corydon St. & Grand Av.	TS	16.2	18.4	B	B	22.1	42.0	C	D
11	Central St. & Palomar St.	TS	23.3	18.4	C	B	23.5	18.7	C	B
12	Central St. & Grand Av.	TS	20.4	13.5	C	B	21.5	13.9	C	B

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

[1] Per the Highway Capacity Manual (HCM) 6th Edition, overall average intersection delay and level of service are shown for intersections with a traffic signal. 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. LOS calculated using Synchro (Version 10).

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

5.5 E+P DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

5.5.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

Improvement strategies have been recommended to address intersection LOS deficiencies identified in this analysis. The effectiveness of the recommended improvement strategies is presented on Table 5-2. Worksheets for E+P conditions, with improvements, HCM calculation worksheets are provided in Appendix 5.2.

The following additional improvements are recommended to improve each impacted intersection's LOS back to acceptable LOS:

Mitigation Measure 1.1 – Riverside Dr. (SR-74) & Grand Av. (#4)

- Contribute fair share towards installing a traffic signal.

Table 5-2

Intersection Analysis for E+P 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	AM	PM	AM	PM
4	Riverside Dr. (SR-74) & Grand Av.																	
	- Without Improvements	CSS	1	1	0	0	1	d	1	0	d	0	0	0	**>100.0**	**90.8**	**F**	**F**
	- With Improvements	**TS**	1	1	0	0	1	d	1	0	d	0	0	0	45.0	39.3	D	D

* **BOLD** = Level of Service (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; **1** = Improvement

[2] Per the Highway Capacity Manual (HCM) 6th Edition, overall average intersection delay and level of service are shown for intersections with a traffic signal. 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. LOS calculated using Synchro (Version 10).

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

6 HORIZON YEAR (2040) TRAFFIC CONDITIONS

This section discusses the methods used to develop Horizon Year (2040) Without and With Project traffic forecasts, and the resulting intersection operations, and traffic signal warrant analyses.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Horizon Year conditions are consistent with the following improvement discussed below:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for Horizon Year conditions (e.g., intersection and roadway improvements at the Project's frontage and driveways). These include the Project site adjacent roadway of McAllister Parkway.
- Driveways and those facilities assumed to be constructed by cumulative developments to provide site access are also assumed to be in place for Horizon Year conditions only (e.g., intersection and roadway improvements along the cumulative development's frontages and driveways).

6.2 HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes obtained from the RivTAM. The weekday ADT, weekday AM and PM peak hour volumes which can be expected for Horizon Year Without Project traffic conditions are shown on Exhibit 6-1.

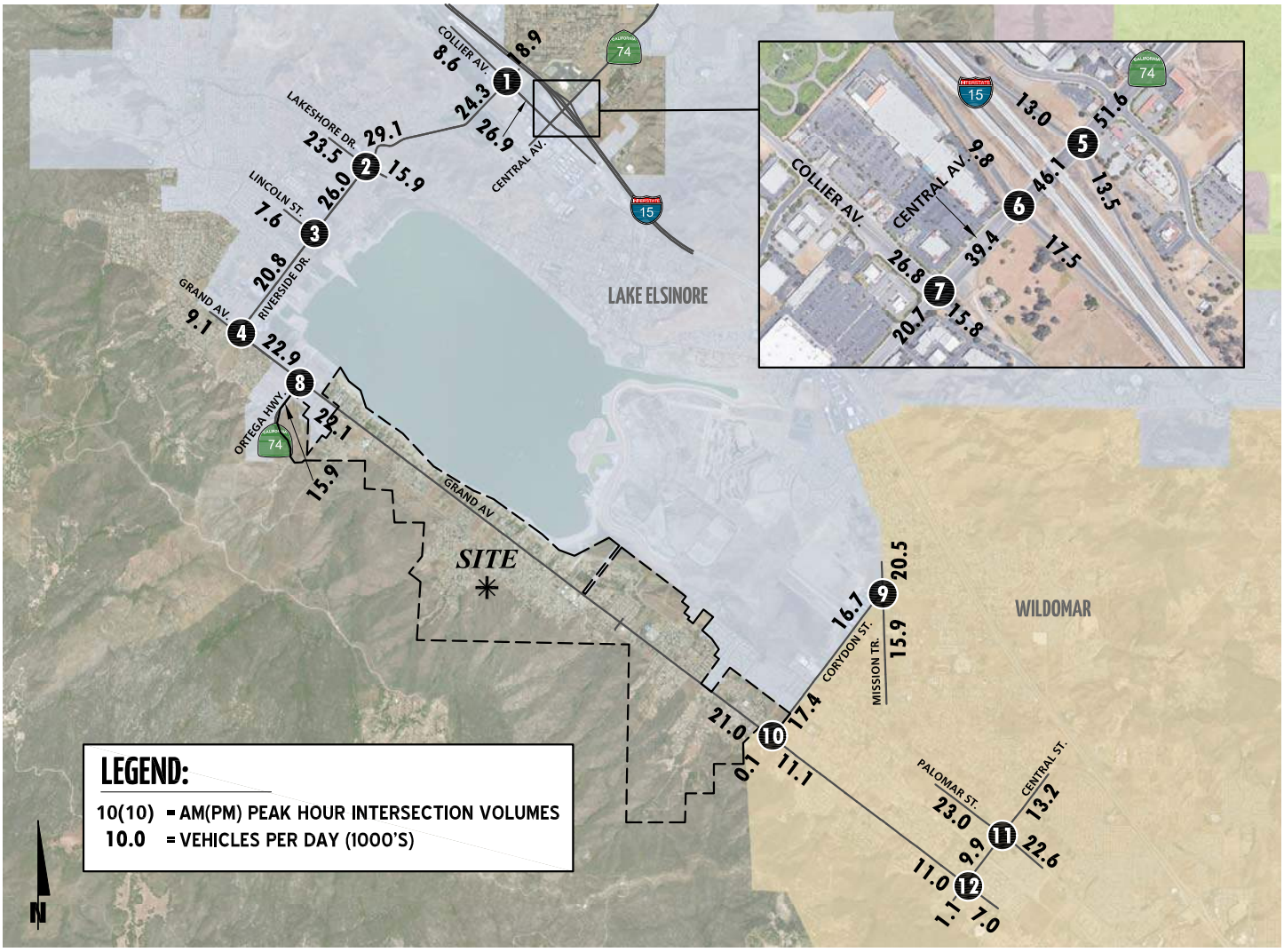
6.3 HORIZON YEAR (2040) WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes obtained from the RivTAM plus the addition of Project volumes. The weekday ADT, weekday AM and PM peak hour volumes which can be expected for Horizon Year With Project traffic conditions are shown on Exhibit 6-2.

6.4 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under Horizon Year without and with Project conditions with Existing roadway and intersection geometrics consistent with Section 6.1 *Roadway Improvements*.

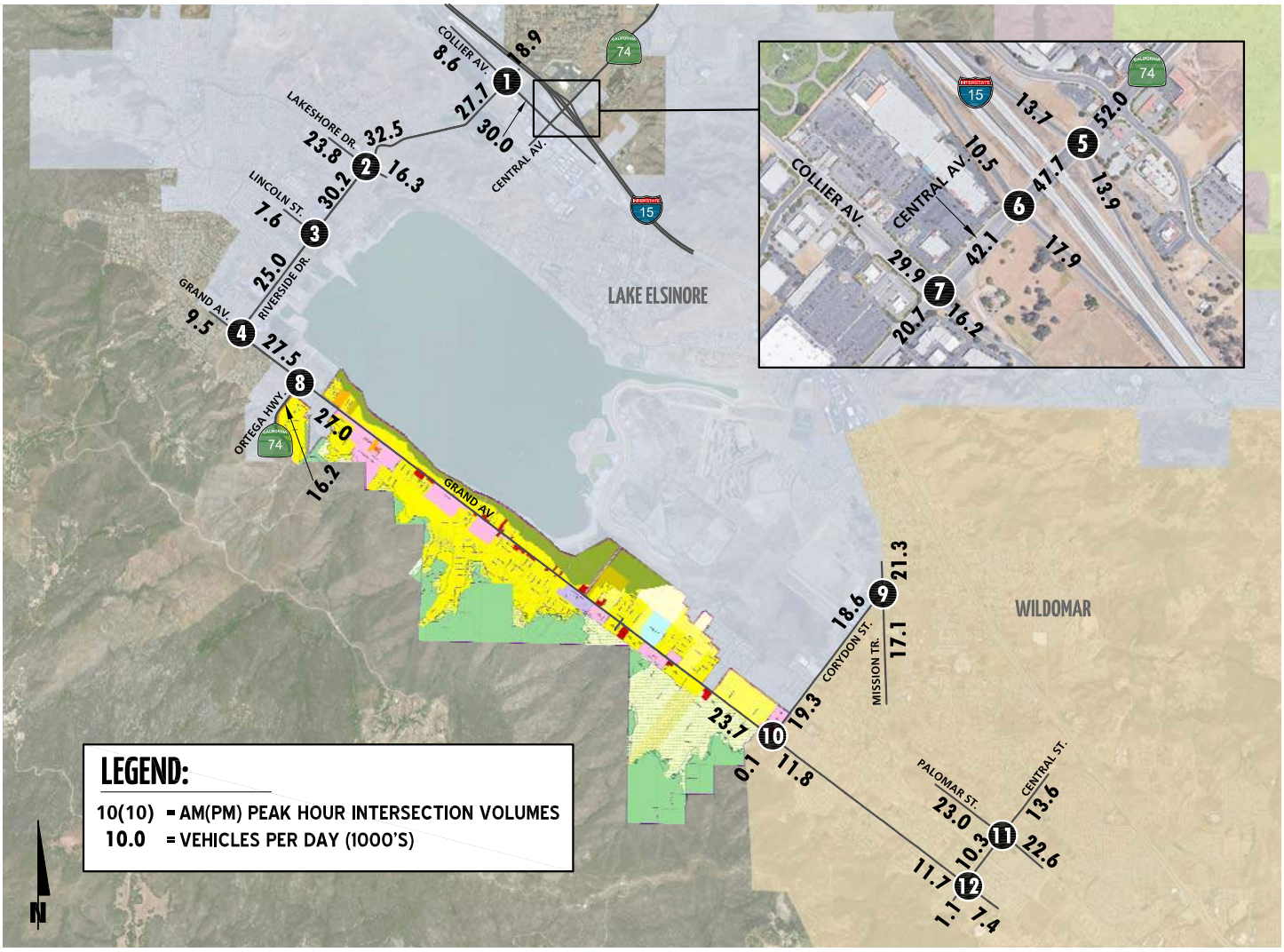
EXHIBIT 6-1: HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC VOLUMES (IN PCE)



1 Riverside Dr. (SR-74) & Collier Av. (SR74)	2 Riverside Dr. (SR-74) & Lakeshore Dr.	3 Riverside Dr. (SR-74) & Lincoln St.	4 Riverside Dr. (SR-74) & Grand Av.	5 Central St. (SR-74) & I-15 NB Ramps	6 Central St. (SR-74) & I-15 SB Ramps
84(97) 302(627) 67(52)	309(608) 626(855) 43(64)	88(304) 759(970)	177(138) 668(835)	808(413) 1711(1547)	1794(1655) 714(623)
35(222) 59(272) 411(622)	32(55) 260(506) 226(318)			514(712) 8(1) 797(730)	
34(111) 76(205) 106(149)	600(449) 455(467) 162(206)	496(345) 322(134)	79(70) 389(335)		337(1220) 1(10) 205(615)
93(226) 614(335) 538(656)	191(154) 868(885) 371(349)	213(78) 990(999)	345(412) 904(950)	256(178) 1075(2372)	994(1330) 773(622)

7 Central St. (SR-74) & Collier Av. (SR74)	8 Ortega Hwy. (SR-74) & Grand Av.	9 Corydon St. & Mission Tr.	10 Corydon St. & Grand Av.	11 Central St. & Palomar St.	12 Central St. & Grand Av.
422(628) 555(664) 576(736)			617(798) 0(1) 109(44)	193(307) 284(337) 125(157)	152(212) 23(42) 234(62)
539(609) 55(156) 42(172)	926(689) 332(70)	395(586) 266(263)	59(29) 363(360) 1(2)	143(173) 653(667) 84(70)	218(73) 328(204) 14(24)
646(610) 77(210) 17(66)	774(1016) 497(116)	466(535) 391(431)	779(943) 550(539) 0(0)	222(207) 610(393) 183(72)	265(276) 354(285) 11(3)
51(171) 634(556) 103(141)	224(817) 69(600)	495(494) 278(293)	0(1) 1(0) 3(1)	123(44) 389(330) 73(35)	10(4) 55(35) 29(9)

EXHIBIT 6-2: HORIZON YEAR (2040) WITH PROJECT TRAFFIC VOLUMES (IN PCE)



1 Riverside Dr. (SR-74) & Collier Av. (SR74) 84(97) 302(627) 67(52) — 35(222) 59(272) 472(827) 34(111) 76(205) 114(175) — 115(241) 614(335) 716(778)	**2** Riverside Dr. (SR-74) & Lakeshore Dr. 309(608) 695(1086) 43(64) — 32(55) 260(506) 234(344) 600(449) 455(467) 170(232) — 213(169) 1068(1022) 393(364)	**3** Riverside Dr. (SR-74) & Lincoln St. 88(304) 843(1252) — 496(345) 322(134) — 213(78) 1235(1166)	**4** Riverside Dr. (SR-74) & Grand Av. 177(138) 752(1117) — 79(70) 397(361) — 367(427) 1149(1117)	**5** Central St. (SR-74) & I-15 NB Ramps 808(413) 1719(1573) — 514(712) 8(1) 812(781) — 345(239) 1097(2387)	**6** Central St. (SR-74) & I-15 SB Ramps 1817(1732) 714(623) — 337(1220) 1(10) 236(718) — 1105(1406) 818(652)
7 Central St. (SR-74) & Collier Av. (SR74) 476(808) 555(664) 576(736) — 539(609) 63(182) 42(172) 802(716) 99(225) 17(66) — 51(171) 634(556) 103(141)	**8** Ortega Hwy. (SR-74) & Grand Av. — 1193(871) 354(85) 866(1324) 497(116) — 224(817) 77(626)	**9** Corydon St. & Mission Tr. — 395(586) 289(340) 466(535) 406(482) — 540(524) 345(339)	**10** Corydon St. & Grand Av. 655(926) 0(1) 109(44) — 59(29) 378(411) 1(2) 890(1019) 595(569) 0(0) — 0(1) 1(0) 3(1)	**11** Central St. & Palomar St. 193(307) 292(363) 125(157) — 143(173) 653(667) 84(70) 222(207) 610(393) 183(72) — 123(44) 411(345) 73(35)	**12** Central St. & Grand Av. 160(238) 23(42) 234(62) — 218(73) 336(230) 14(24) 287(291) 376(300) 11(3) — 10(4) 55(35) 29(9)

6.4.1 HORIZON YEAR (2040) WITHOUT PROJECT CONDITIONS

The intersection analysis results are summarized in Table 6-1 and illustrated on Exhibit 6-3 which indicates that the following study area intersections are anticipated to experience unacceptable LOS during one or more peak hours for Horizon Year Without Project traffic conditions:

- Riverside Dr. (SR-74) & Collier Av. (SR-74) – LOS F AM and PM peak hours
- Riverside Dr. (SR-74) & Lakeshore Dr. – LOS F AM and PM peak hours
- Riverside Dr. (SR-74) & Lincoln St. – LOS E AM peak hour only
- Riverside Dr. (SR-74) & Grand Av. – LOS F AM and PM peak hours
- Central St. (SR-74) & I-15 SB Ramps – LOS E PM peak hour only
- Ortega Hwy. (SR-74) & Grand Av. – LOS E PM peak hour only
- Corydon St. & Grand Av. – LOS F AM and PM peak hours

The intersection operations analysis worksheets for Horizon Year Without Project conditions are included in Appendix 6.1 of this TIA.

6.4.2 HORIZON YEAR (2040) WITH PROJECT CONDITIONS

As shown on Table 6-1 and illustrated on Exhibit 6-4, the addition of Project traffic is not anticipated to cause any additional study area intersection to operate at unacceptable LOS (i.e., LOS E or worse) in addition to those previously identified under Horizon Year Without Project conditions.

The intersection operations analysis worksheets for Horizon Year With Project conditions are included in Appendix 6.2 of this TIA. Measures to address deficiencies for Horizon Year traffic conditions are discussed in Section 6.6 *Horizon Year Deficiencies and Recommended Improvements*.

6.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

For Horizon Year (2040) conditions, all intersections are signalized or were anticipated to warrant a traffic signal in previous traffic conditions based on either peak hour or planning-level volume-based warrants.

Table 6-1

Intersection Analysis for Horizon Year (2040) Conditions

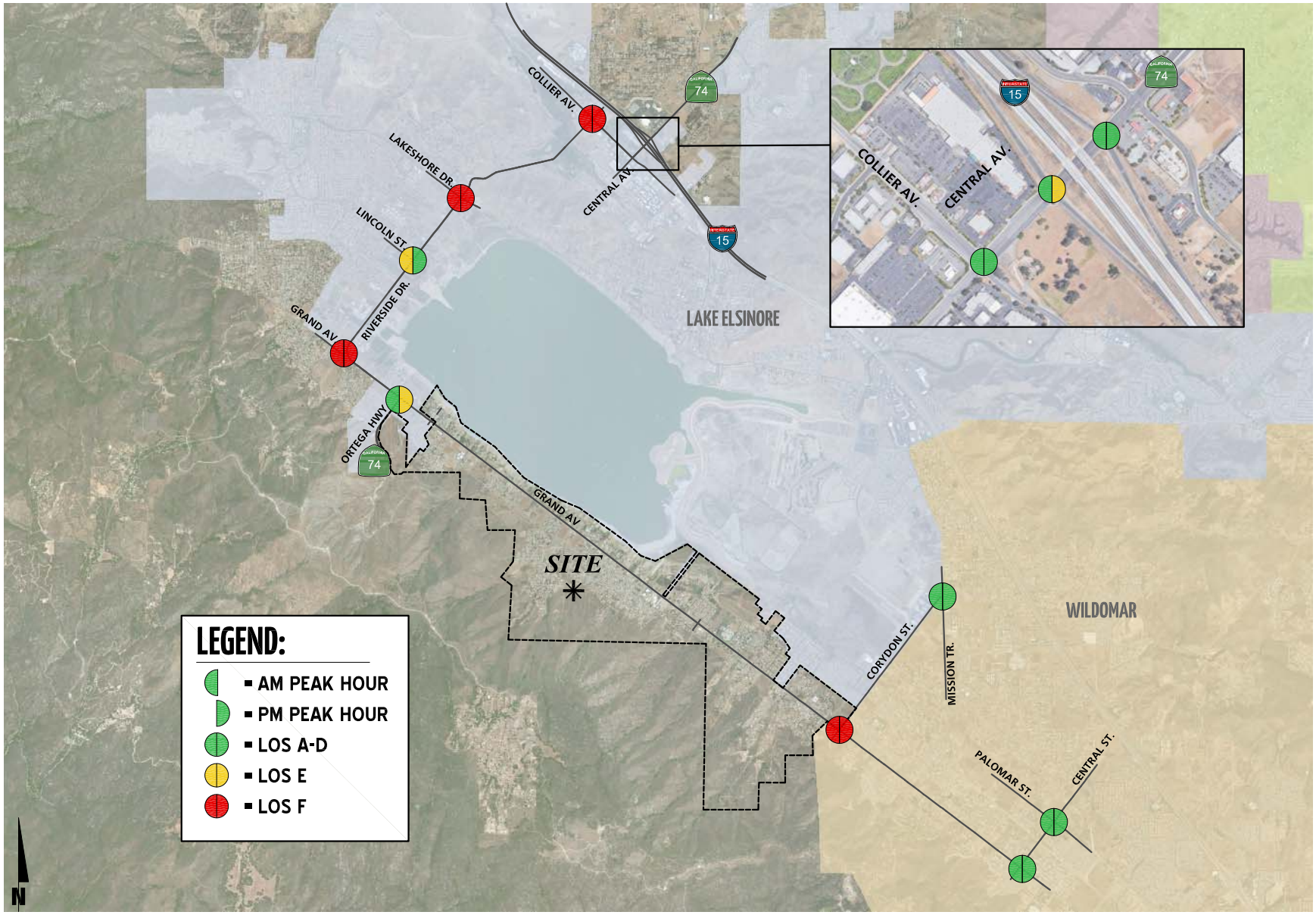
#	Intersection	Traffic Control[2]	2040 Without Project				2040 With Project			
			Delay (secs.)[1]		Level of Service		Delay (secs.)[1]		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM
1	Riverside Dr. (SR-74) & Collier Av. (SR-74)	TS	**129.9**	**>200.0**	**F**	**F**	**>200.0**	**>200.0**	**F**	**F**
2	Riverside Dr. (SR-74) & Lakeshore Dr.	TS	**94.9**	**100.3**	**F**	**F**	**99.2**	**135.4**	**F**	**F**
3	Riverside Dr. (SR-74) & Lincoln St.	TS	**68.9**	26.1	**E**	C	**114.0**	**58.7**	**F**	**E**
4	Riverside Dr. (SR-74) & Grand Av.	CSS	**>100.0**	**>100.0**	**F**	**F**	**>100.0**	**>100.0**	**F**	**F**
5	Central St. (SR-74) & I-15 NB Ramps	TS	50.0	16.7	D	B	52.9	19.1	D	B
6	Central St. (SR-74) & I-15 SB Ramps	TS	16.5	**74.8**	B	**E**	17.4	**84.6**	B	**F**
7	Central St. (SR-74) & Collier Av. (SR-74)	TS	48.0	41.5	D	D	52.6	45.8	D	D
8	Ortega Hwy. (SR-74) & Grand Av.	TS	20.7	**63.1**	C	**E**	27.9	**135.1**	C	**F**
9	Corydon St. & Mission Tr.	TS	13.8	12.9	B	B	14.7	15.0	B	B
10	Corydon St. & Grand Av.	TS	**131.2**	**199.8**	**F**	**F**	**180.6**	**>200.0**	**F**	**F**
11	Central St. & Palomar St.	TS	49.2	36.8	D	D	50.1	38.8	D	D
12	Central St. & Grand Av.	TS	24.0	14.2	C	B	26.3	14.5	C	B

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

[1] Per the Highway Capacity Manual (HCM) 6th Edition, overall average intersection delay and level of service are shown for intersections with a traffic signal. 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. LOS calculated using Synchro (Version 10).

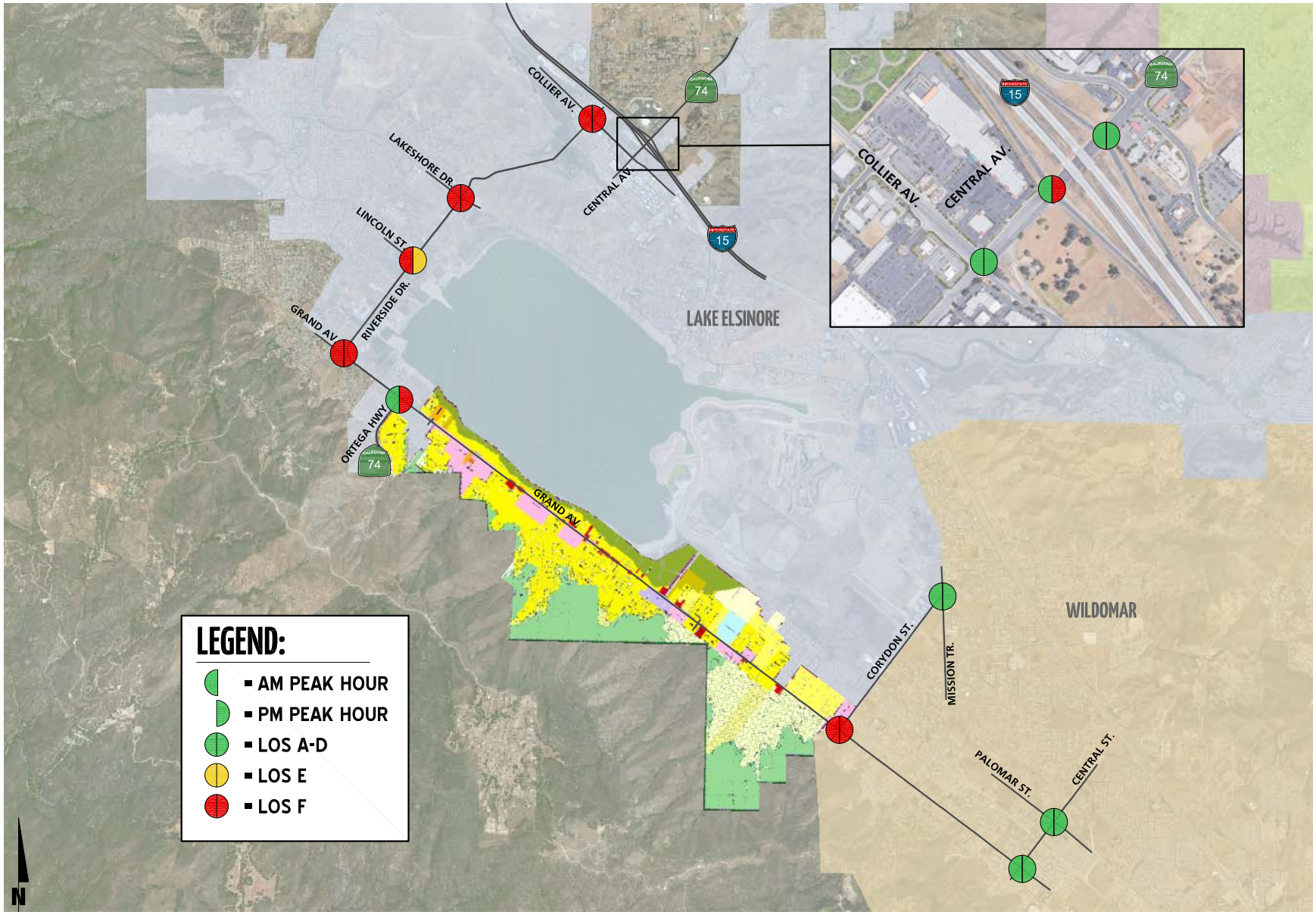
[2] CSS = Cross-street Stop; TS = Traffic Signal

EXHIBIT 6-3: HORIZON YEAR (2040) WITHOUT PROJECT SUMMARY OF LOS



URBAN CROSSROADS

EXHIBIT 6-4: HORIZON YEAR (2040) WITH PROJECT SUMMARY OF LOS



URBAN CROSSROADS

6.6 HORIZON YEAR DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

6.6.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

Improvement strategies have been recommended at intersections that have been identified as deficient in an effort to reduce each location's peak hour delay and improve the associated LOS grade to an acceptable LOS (LOS D or better). The effectiveness of the recommended improvement strategies necessary to address Horizon Year traffic deficiencies are presented in Table 6-2.

The following additional improvements are recommended to improve each impacted intersection's LOS back to acceptable LOS, where the Project is recommended to contribute a fair share in order to reduce the cumulative impacts to less than significant levels:

Mitigation Measure 2.1 – Riverside Dr. (SR-74) & Collier Av. (SR-74) (#1)

- Contribute fair share towards the addition of a northbound left turn lane, a 2nd northbound through lane, a 2nd southbound through lane, a 2nd westbound left turn lane, and a westbound right turn lane.

Mitigation Measure 3.1 – Riverside Dr. (SR-74) & Lakeshore Dr. (#2)

- Contribute fair share towards modifying the traffic signal to implement overlap phasing on the northbound and southbound right turn lane, and the addition of a 2nd southbound through lane and a 2nd eastbound left turn lane.

Mitigation Measure 4.1 – Riverside Dr. (SR-74) & Lincoln St. (#3)

- Contribute fair share towards the addition of a 2nd northbound through lane, a 2nd southbound through lane, and a southbound right turn lane.

Mitigation Measure 1.2 – Riverside Dr. (SR-74) & Grand Av. (#4)

- Same improvement identified previously by Mitigation Measure 1.1; and
- Contribute fair share towards the addition of a 2nd northbound through lane, a 2nd southbound through lane, and a southbound right turn lane.

Mitigation Measure 5.1 – Central St. (SR-74) & I-15 SB Ramps (#6)

- Contribute fair share towards the addition of a 3rd northbound through lane and a 3rd southbound through lane.

Mitigation Measure 6.1 – Ortega Hwy. (SR-74) & Grand Av. (#8)

- Contribute fair share towards the addition of a 2nd eastbound through lane and a 2nd westbound through lane.

Mitigation Measure 7.1 – Corydon St. & Grand Av. (#10)

- Contribute fair share towards modifying the traffic signal to implement overlap phasing on the southbound right turn lane and the addition of a 2nd eastbound left turn lane.

Table 6-2

Intersection Analysis for Horizon Year (2040) 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	AM	PM	AM	PM
1	Riverside Dr. (SR-74) & Collier Av. (SR-74)																	
	- Without Improvements	TS	0	1	1>	0	1	0	1	1	1	1	1	0	**>200.0**	**>200.0**	**F**	**F**
	- With Improvements	TS	**1**	**2**	1>	**1**	**2**	0	1	1	1	**2**	1	**1**	24.4	46.3	C	D
2	Riverside Dr. (SR-74) & Lakeshore Dr.																	
	- Without Improvements	TS	1	2	1	1	1	1	1	2	1	1	2	0	**99.2**	**135.4**	**F**	**F**
	- With Improvements	TS	1	2	**1>**	1	**2**	**1>**	**2**	2	1	1	2	0	34.0	43.7	C	D
3	Riverside Dr. (SR-74) & Lincoln St.																	
	- Without Improvements	TS	1	1	0	0	1	d	1	0	1	0	0	0	**114.0**	**58.7**	**F**	**E**
	- With Improvements	TS	1	**2**	0	0	**2**	**1**	1	0	1	0	0	0	29.7	14.6	C	B
4	Riverside Dr. (SR-74) & Grand Av.																	
	- Without Improvements	CSS	1	1	0	0	1	d	1	0	d	0	0	0	**>100.0**	**>100.0**	**F**	**F**
	- With Improvements	**TS**	1	**2**	0	0	**2**	**1**	1	0	d	0	0	0	29.4	37.8	C	D
6	Central St. (SR-74) & I-15 SB Ramps																	
	- Without Improvements	TS	0	2	1	2	2	0	1	1	1	0	0	0	17.4	**84.6**	B	**F**
	- With Improvements	TS	0	**3**	1	2	**3**	0	1	1	1	0	0	0	23.5	50.7	C	D
8	Ortega Hwy. (SR-74) & Grand Av.																	
	- Without Improvements	TS	2	0	1>	0	0	0	0	1	2>	1	1	0	27.9	**135.1**	C	**F**
	- With Improvements	TS	2	0	1>	0	0	0	0	**2**	2>	1	**2**	0	13.6	28.7	B	C
10	Corydon St. & Grand Av.																	
	- Without Improvements	TS	0	1	0	1	1	0	1	1	0	1	1	0	**180.6**	**>200.0**	**F**	**F**
	- With Improvements	TS	0	1	0	1	1	**1>**	**2**	1	0	1	1	0	18.1	38.2	B	D

* **BOLD** = Level of Service (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 (HCM) 6th Edition, overall average intersection delay and level of service are shown for intersections with a traffic signal. 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. LOS calculated using Synchro (Version 10).

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

The Project Applicant shall participate in the funding of off-site improvements, including traffic signals that are needed to serve cumulative traffic conditions through the payment of Western Riverside County TUMF or a fair share contribution as directed by the County. These fees are collected as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with the projected population increases. Each of the improvements discussed above have been identified as being included as part of TUMF fee program, TIF fee program, DIF fee program, or fair share contribution in Section 7.1 *Local and Regional Funding Mechanisms* of this TIA.

Worksheets for Horizon Year With Project conditions, with improvements, HCM calculations are provided in Appendix 6.2.

7 LOCAL AND REGIONAL FUNDING MECHANISMS

7.1 TRANSPORTATION UNIFORM MITIGATION FEE (TUMF) PROGRAM

Transportation improvements within the County of Riverside are funded through a combination of direct project mitigation and fee programs, such as the TUMF. Identification and timing of needed improvements is generally determined through local jurisdictions based upon a variety of factors.

The TUMF program is administered by the Western Riverside Council of Governments (WRCOG) based upon a regional Nexus Study, most recently updated in 2017, to address major changes in right of way acquisition and improvement cost factors. 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 fees are imposed on new residential, industrial, and commercial development through application of the TUMF fee ordinance and fees are collected at the building or occupancy permit stage. In addition, an annual inflation adjustment is considered each year in February. In this way, TUMF fees are adjusted upwards on a regular basis to ensure that the development impact fees collected keep pace with construction and labor costs, etc.

7.2 COUNTY OF RIVERSIDE DEVELOPMENT IMPACT FEE (DIF) PROGRAM

The Project is located within the County's Elsinore Area Plan and therefore will be subject to County of Riverside DIF in an effort by the County to address development throughout its unincorporated area. The DIF program consists of two separate transportation components: Roads, Bridges and Major Improvements component and the Traffic Signals component. Eligible facilities for funding by the County DIF program are identified on the County's Public Needs List, which currently extends through the year 2010. (6) A comprehensive review of the DIF program is now planned in order to update the nexus study. This will result in development of a revised "needs list" extending the program time horizon from 2010 to 2030.

The cost of signalizing DIF network intersections is identified under the Traffic Signals component of the DIF program. County staff generally defines DIF eligible intersections as those consisting of two intersecting general plan roadways. If the intersection meets this requirement, it is potentially eligible for up to $250,000 of credit, which is subject to negotiations with the County.

7.3 FAIR SHARE CONTRIBUTION

Project mitigation may include a combination of fee payments to established programs (e.g., TUMF and/or DIF), 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 County of Riverside'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. Detailed fair share calculations, for each peak hour, has been provided on Table 7-1 for the applicable deficient intersections.

Table 7-1

Project Fair Share Calculations

#	Intersection		Existing	Project	2040 With Project Volume	Total New Traffic	Project % of New Traffic
1	Riverside Dr. (SR-74) & Collier Av. (SR-74)						
		AM:	1,816	269	2,688	872	**30.85%**
		PM:	2,479	368	3,941	1,462	25.17%
2	Riverside Dr. (SR-74) & Lakeshore Dr.						
		AM:	2,802	329	4,472	1,670	19.70%
		PM:	3,297	450	5,366	2,069	**21.75%**
3	Riverside Dr. (SR-74) & Lincoln St.						
		AM:	2,260	329	3,197	937	35.11%
		PM:	2,159	449	3,279	1,120	**40.09%**
4	Riverside Dr. (SR-74) & Grand Av.						
		AM:	2,035	359	2,921	886	40.52%
		PM:	2,164	490	3,230	1,066	**45.97%**
6	Central St. (SR-74) & I-15 SB Ramps						
		AM:	3,887	210	5,028	1,141	**18.40%**
		PM:	4,428	286	6,361	1,933	14.80%
8	Ortega Hwy. (SR-74) & Grand Av.						
		AM:	2,158	389	3,212	1,054	36.91%
		PM:	2,533	531	3,839	1,306	**40.66%**
10	Corydon St. & Grand Av.						
		AM:	1,685	209	2,692	1,007	20.75%
		PM:	1,787	285	3,003	1,216	**23.44%**

BOLD = Denotes highest fair share percentage.

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8 REFERENCES

1. **Riverside County Transportation Department.** *Traffic Impact Analysis Preparation Guide.* County of Riverside : s.n., Updated April 2008.
2. **California Department of Transportation.** *Guide for the Preparation of Traffic Impact Studies.* December 2002.
3. **Institute of Transportation Engineers.** *Trip Generation.* 10th Edition. 2017.
4. **Western Riverside Council of Governments.** *TUMF Nexus Study, 2016 Program Update.* July 2017.
5. **Transportation Research Board.** *Highway Capacity Manual (HCM).* 6th Edition. s.l. : National Academy of Sciences, 2016.
6. **California Department of Transportation.** California Manual on Uniform Traffic Control Devices (CA MUTCD). [book auth.] California Department of Transportation. *California Manual on Uniform Traffic Control Devices (CA MUTCD).* 2014.
7. **San Bernardino Associated Governments.** *Congestion Management Program for County of San Bernardino.* County of San Bernardino : s.n., Updated December 2007.
8. **Southern California Association of Governments.** *2016 Regional Transportation Plan / Sustainable Communities Strategy.* April 2016.
9. **David Taussig & Associates, Inc.** *County of Riverside DIF Update - Updated Public Facilities Needs List through the year 2010.* County of Riverside : s.n., 2006.

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