

# APPENDIX J

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## Traffic Impact Analysis



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**LAKE ELSINORE WALMART  
TRAFFIC IMPACT ANALYSIS (REVISED)  
CITY OF LAKE ELSINORE, CALIFORNIA**

June 11, 2015 (Revised)  
November 13, 2013

JN:08651-09 Report  
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**LAKE ELSINORE WALMART  
TRAFFIC IMPACT ANALYSIS  
CITY OF LAKE ELSINORE, CALIFORNIA**

## **1.0 INTRODUCTION**

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This report presents the results of the traffic impact analysis (TIA) for the proposed Lake Elsinore Walmart (referred to as “Project”), which is located on the southwest corner of the intersection of Cambern Avenue and Central Avenue (SR-74) in the City of Lake Elsinore as shown on Exhibit 1-1.

The purpose of this traffic impact analysis is to evaluate the potential impacts to traffic and circulation associated with the development of the proposed Project, and recommend improvements to mitigate impacts considered significant in comparison to established regulatory thresholds.

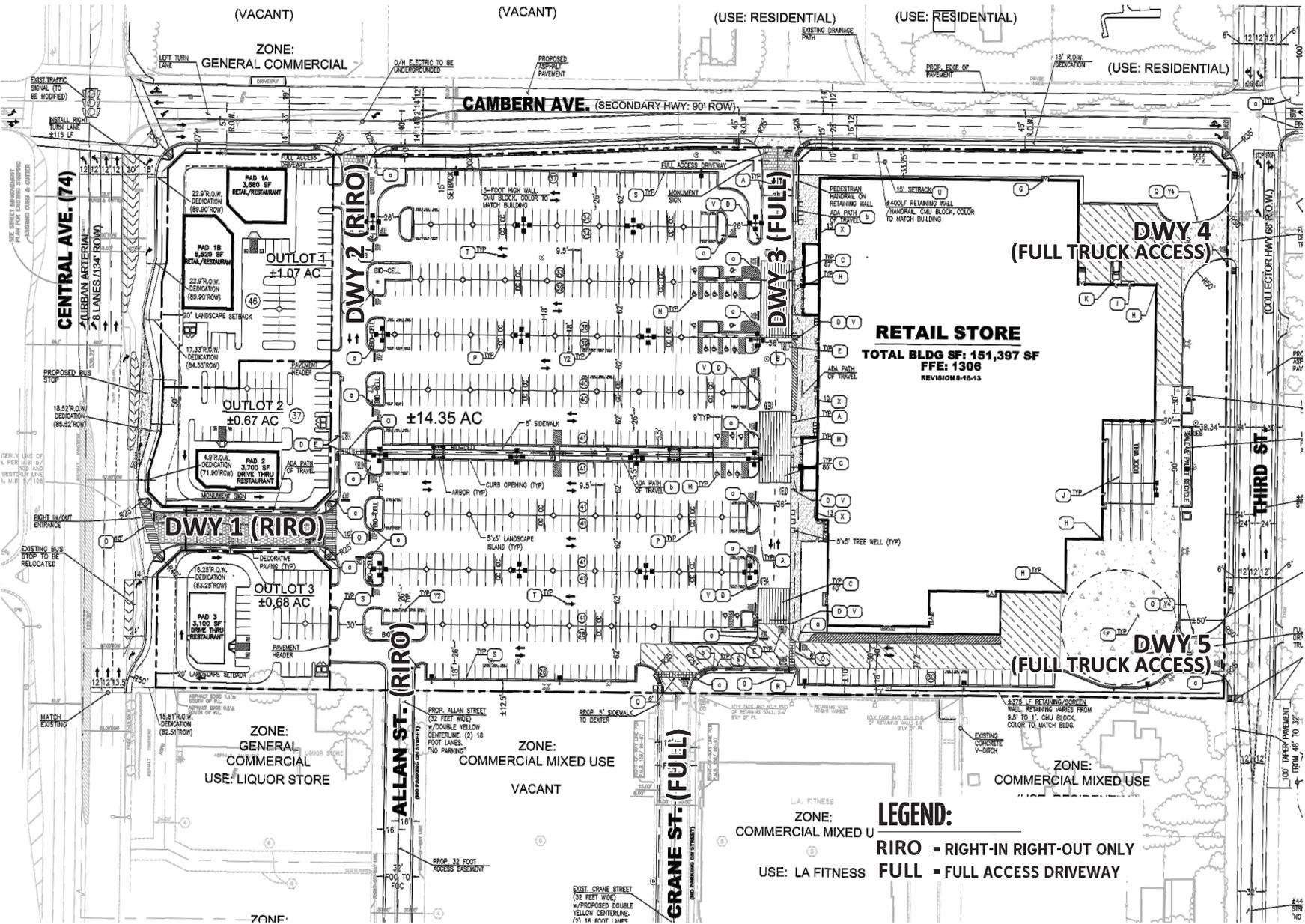
### **1.1 PROJECT OVERVIEW**

The Project includes the development of a 154,487 square foot Walmart store (which includes a 3,090 square foot Garden Center), 4,600 square feet of specialty retail shops, 4,600 square feet of fast-food without drive-through window use, and two (2) fast-food restaurants with drive-through windows totaling 6,800 square feet. For the purpose of this analysis, the Project is anticipated to be developed in a single phase with a projected Opening Year of 2016.

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) and published in their most current edition of the *Trip Generation* manual, 9<sup>th</sup> Edition, 2012. The Project is estimated to generate a net total of approximately 11,723 net trip-ends per day on a typical weekday with approximately 595 net weekday AM peak hour trips, 829 net weekday PM peak hour trips and 1,204 net Saturday mid-day peak hour trips. The assumptions and methods used to estimate the Project’s trip generation characteristics are discussed in detail in Section 4.1 *Project Trip Generation* of this report.

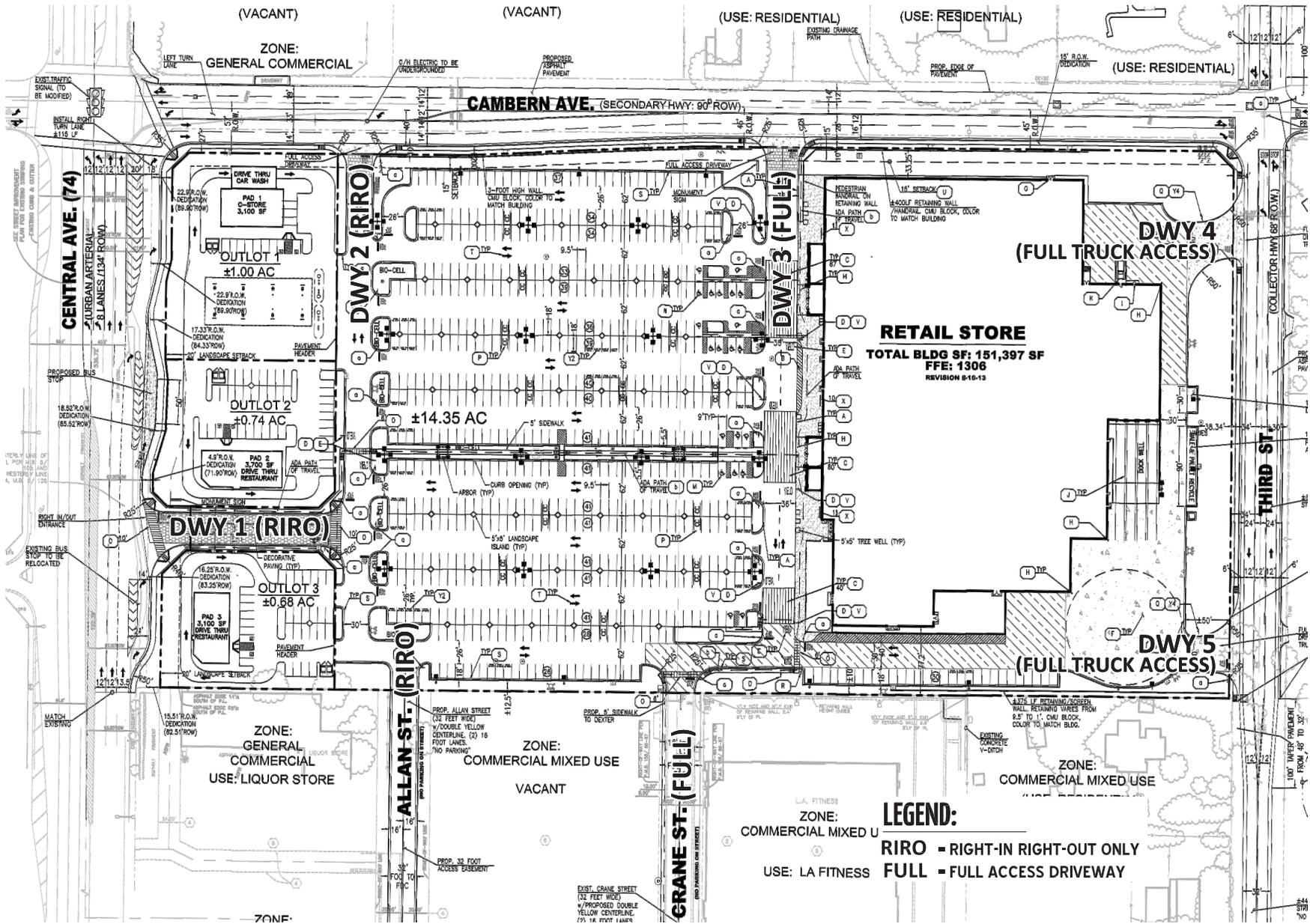
An alternative site plan that would include the development of a 154,487 square foot Walmart store (which includes a 3,090 square foot Garden Center), two (2) fast-food restaurants with drive-through windows totaling 6,800 square feet, and a gas station/convenience store/car wash with sixteen (16) pump stations is shown on Exhibit 1-2. As compared to the proposed Project, the alternative site plan with gas station is anticipated to generate 2,180 fewer net trip-ends per weekday, 123 fewer net weekday AM peak hour trips, 28 fewer net weekday PM peak hour trips, and 113 fewer net Saturday Mid-Day peak hour trips. In an effort to overstate rather than understate potential Project impacts, the traffic study has included a detailed analysis of the retail oriented site plan (without gas station).

# EXHIBIT 1-1 PRELIMINARY SITE PLAN



2

# EXHIBIT 1-2 ALTERNATIVE SITE PLAN



3

## 1.2 ANALYSIS SCENARIOS

Potential impacts to traffic and circulation were assessed for each of the following conditions:

- Existing (2013) Conditions (1 scenario)
- Existing plus Project Conditions (1 scenario)
- Opening Year (2016), Without and With Project (2 scenarios) – ambient growth and cumulative development projects (EAC and EAPC)
- General Plan Buildout (Post-2035), Without and With Project (2 scenarios) – based on a version of Riverside County Transportation Analysis Model (RivTAM) modified to represent General Plan Buildout conditions for the City of Lake Elsinore

### 1.2.1 EXISTING (2013) CONDITIONS

Information for Existing (2013) is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared.

### 1.2.2 EXISTING PLUS PROJECT CONDITIONS

The Existing (2013) plus Project (E+P) analysis determines direct project-related traffic impacts that would occur on the existing roadway system in the scenario of the Project being placed upon Existing (2013) conditions.

### 1.2.3 OPENING YEAR CUMULATIVE (2016) CONDITIONS

The Opening Year Cumulative (2016) conditions analysis will be utilized to identify cumulative impacts for the Project's anticipated opening year and determine whether improvements funded through local and regional transportation mitigation fee programs, such as the Transportation Uniform Mitigation Fee (TUMF) program, City of Lake Elsinore Traffic Impact Fee (TIF) program, or other approved funding mechanism can accommodate the near-term cumulative traffic at the target LOS identified in the City of Lake Elsinore General Plan. To account for background traffic, twenty-nine (29) other known cumulative development projects in the study area were included in addition to 6.14% of ambient growth. This comprehensive list was compiled from information provided by the City of Lake Elsinore Planning Division and adjacent jurisdictions. If the "funded" improvements can provide the target LOS, then the Project's payment into the TUMF and TIF will be considered as cumulative mitigation through the conditions of approval. Other improvements needed beyond the "funded" improvements (such as localized improvements to non-TUMF or non-TIF facilities) are identified as such. The improvements that exceed the "funded" improvements can either be constructed by the Project with fee credit or a covered through a fair share contribution, as directed by City staff.

#### 1.2.4 GENERAL PLAN BUILDOUT (POST-2035) CONDITIONS

Traffic projections for General Plan Buildout (Post-2035) Without Project conditions were derived from a version of RivTAM modified to represent General Plan Buildout conditions for the City of Lake Elsinore using accepted procedures for model forecast refinement and smoothing. The traffic forecasts reflect the area-wide growth anticipated between Existing (2013) conditions and General Plan Buildout (Post-2035) conditions. The General Plan Buildout (Post-2035) Without Project traffic forecasts were determined by subtracting the proposed Project traffic from the General Plan Buildout (Post-2035) With Project traffic forecasts from the RivTAM model. The General Plan Buildout (Post-2035) Without and With Project traffic conditions analyses will be utilized to determine if improvements funded through regional transportation mitigation fee programs, such as the Transportation Uniform Mitigation Fee (TUMF) and County Traffic Impact Fee (TIF) programs, or other approved funding mechanism can accommodate the long-range cumulative traffic at the target LOS identified in the City of Lake Elsinore General Plan. If the “funded” improvements can provide the target LOS, then the Project’s payment into TUMF and TIF will be considered as cumulative mitigation through the conditions of approval. Other improvements needed beyond the “funded” improvements (such as localized improvements to non-TUMF or non-TIF facilities) are identified as such.

In many instances, the traffic model zone structure is not designed to provide accurate turning movements along arterial roadways unless refinement and reasonableness checking is performed. As such, General Plan Buildout (Post-2035) turning volumes were compared to Opening Year (2016) With Project volumes in order to ensure a minimum growth of ten (10) percent as a part of the refinement process, where applicable. The minimum ten (10) percent growth includes any additional growth between Opening Year (2016) With Project and General Plan Buildout (Post-2035) With Project traffic conditions that is not accounted for by the traffic generated by cumulative development projects and the ambient growth between Existing (2013) and Opening Year (2016) With Project conditions. The initial estimate of the future General Plan Buildout (Post-2035) 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.

### 1.3 STUDY AREA

The traffic impact study area was defined in coordination with the City of Lake Elsinore. Based on discussions with City staff, the study area includes any intersection of "Collector" or higher classification street, with "Collector" or higher classification streets, at which the proposed project will add 50 or more peak hour trips. Exhibit 1-2 presents the study area and intersection analysis locations.

It should be pointed out that the “50 peak hour trip” criteria utilized by the City of Lake Elsinore is consistent with Riverside County traffic study guidelines, and generally represents a threshold of trips

at which a typical intersection would have the potential to be impacted. Although each intersection may have unique operating characteristics, this traffic engineering rule of thumb is a widely utilized tool for estimating a potential area of impact (i.e., study area).

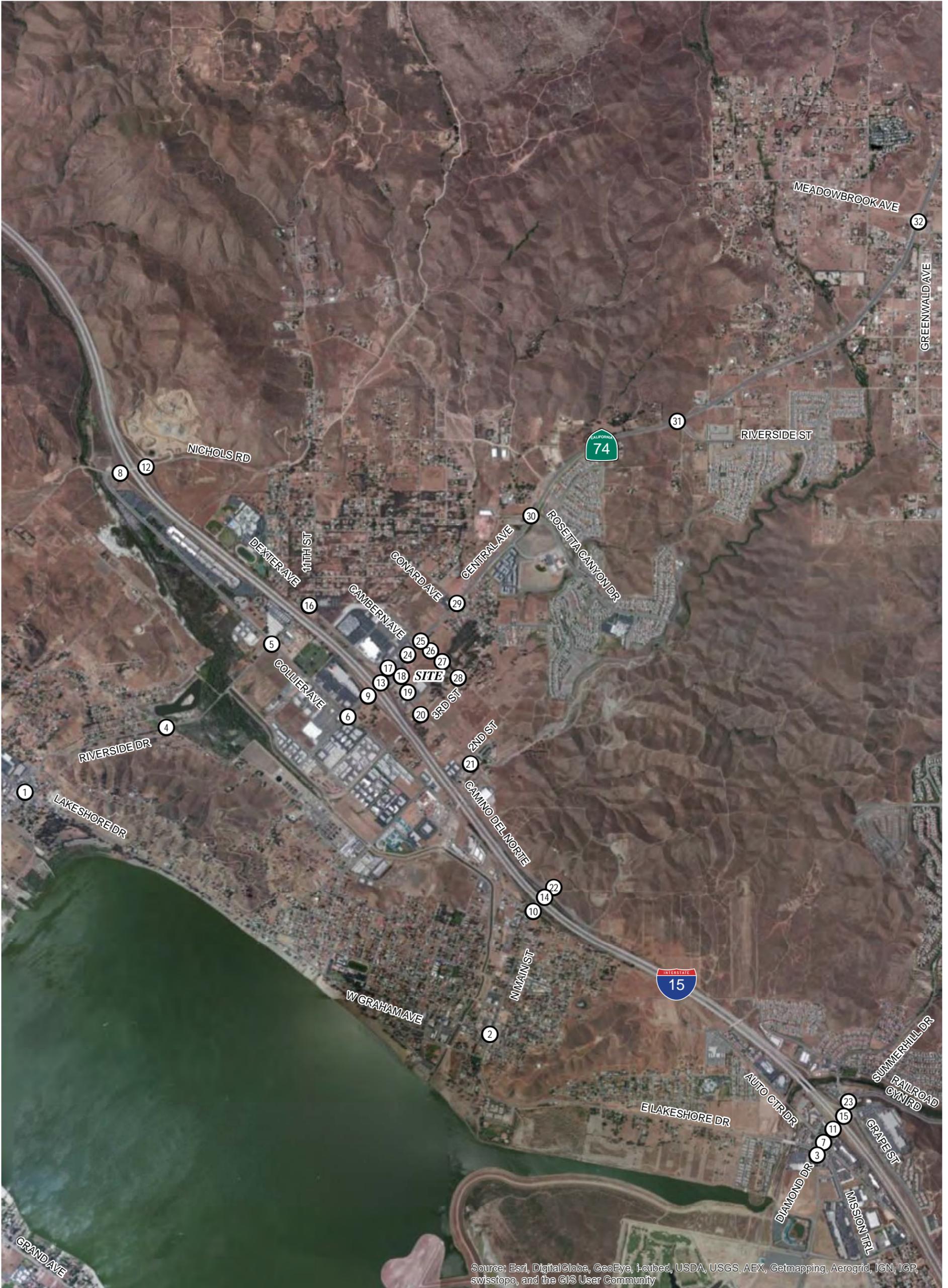
To ensure that this TIA satisfies the needs of the City of Lake Elsinore, Urban Crossroads, Inc. prepared a Project traffic study scoping agreement for review by City staff prior to the preparation of this TIA. The agreement provides an outline of the Project study area, trip generation, trip distribution,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

### 1.3.1 INTERSECTIONS

The following thirty-two (32) Project study area intersection locations shown on Exhibit 1-3 and listed on Table 1-1 were selected for this TIA based on the following: (1) City’s TIA analysis methodology that requires analysis of intersection locations with 50 or more peak-hour Project trips and (2) input from the City of Lake Elsinore Traffic Engineering Division.

**Table 1-1 Intersection Analysis Locations**

ID	Intersection Location	Jurisdiction
1	Lakeshore Drive / Riverside Drive (SR-74)	Caltrans
2	W. Graham Avenue / N. Main Street	Lake Elsinore
3	E. Lakeshore Drive / Diamond Drive	Caltrans
4	Gunnerson Street / Riverside Drive (SR-74)	Caltrans
5	Collier Avenue / Riverside Drive (SR-74)	Caltrans
6	Collier Avenue / Central Avenue (SR-74)	Caltrans
7	Auto Center Drive / Diamond Drive	Lake Elsinore
8	I-15 Southbound Ramps / Nichols Road	Caltrans
9	I-15 Southbound Ramps / Central Avenue (SR-74)	Caltrans
10	I-15 Southbound Ramps / N. Main Street	Caltrans
11	I-15 Southbound Ramps / Railroad Canyon Road	Caltrans
12	I-15 Northbound Ramps / Nichols Road	Caltrans
13	I-15 Northbound Ramps / Central Avenue (SR-74)	Caltrans
14	I-15 Northbound Ramps / N. Main Street	Caltrans
15	I-15 Northbound Ramps / Railroad Canyon Road	Caltrans
16	Dexter Avenue / 11th Street	Riverside County
17	Dexter Avenue / Central Avenue (SR-74)	Caltrans
18	Dexter Avenue / Allan Street	Lake Elsinore
19	Dexter Avenue / Crane Street	Lake Elsinore



ID	Intersection Location	Jurisdiction
20	Dexter Avenue / 3rd Street	Lake Elsinore/Riverside County
21	Dexter Avenue / 2nd Street	Lake Elsinore/ Riverside County
22	Camino del Norte / N. Main Street	Lake Elsinore
23	Summerhill Drive / Railroad Canyon Road	Lake Elsinore
24	Driveway 1 / Central Avenue (SR-74)	Caltrans
25	Cambern Avenue / Central Avenue (SR-74)	Caltrans
26	Cambern Avenue / Driveway 2	Lake Elsinore/ Riverside County
27	Cambern Avenue / Driveway 3	Lake Elsinore/ Riverside County
28	Cambern Avenue / 3rd Street	Riverside County
29	Conard Avenue / Central Avenue (SR-74)	Caltrans
30	Rosetta Canyon Drive / Central Avenue (SR-74)	Caltrans
31	Riverside Street / Central Avenue (SR-74)	Caltrans
32	Greenwald Avenue / Central Avenue (SR-74)	Caltrans

### 1.3.2 FREEWAY MAINLINE SEGMENTS

Consistent with Caltrans traffic study guidelines, the freeway mainline analysis locations include the segments on either side of the two interchanges where the proposed Project is anticipated to contribute 100 two-way peak hour trips on the segments. The study area freeway mainline analysis locations include ten (10) I-15 Freeway mainline segments for the, northbound and southbound directions of flow as shown on Table 1-2:

**Table 1-2 Freeway Mainline Segment Analysis Locations**

ID	Freeway Mainline Segments
1	I-15 Freeway – Southbound, North of Nichols Road
2	I-15 Freeway – Southbound, Nichols Road to Central Avenue (SR-74)
3	I-15 Freeway – Southbound, Central Avenue (SR-74) to N. Main Street
4	I-15 Freeway – Southbound, N. Main Street to Railroad Canyon Road
5	I-15 Freeway – Southbound, South of Railroad Canyon Road
6	I-15 Freeway – Northbound, North of Nichols Road
7	I-15 Freeway – Northbound, Nichols Road to Central Avenue (SR-74)
8	I-15 Freeway – Northbound, Central Avenue (SR-74) to N. Main Street
9	I-15 Freeway – Northbound, N. Main Street to Railroad Canyon Road
10	I-15 Freeway – Northbound, South of Railroad Canyon Road

### 1.3.3 FREEWAY MERGE/DIVERGE RAMP JUNCTIONS

The study area freeway merge/diverge ramp junction analysis locations include sixteen (16) I-15 freeway ramp junctions for the, northbound and southbound directions of flow as shown on Table 1-3:

**Table 1-3 Freeway Merge/Diverge Ramp Junction Analysis Locations**

ID	Freeway Merge/Diverge Ramp Junctions
1	I-15 Freeway – Southbound, Off-Ramp at Nichols Road (Diverge)
2	I-15 Freeway – Southbound, On-Ramp at Nichols Road (Merge)
3	I-15 Freeway – Southbound, Off-Ramp at Central Avenue (SR-74) (Diverge)
4	I-15 Freeway – Southbound, On-Ramp at Central Avenue (SR-74) (Merge)
5	I-15 Freeway – Southbound, Off-Ramp at N. Main Street (Diverge)
6	I-15 Freeway – Southbound, On-Ramp at N. Main Street (Merge)
7	I-15 Freeway – Southbound, Off-Ramp at Railroad Canyon Road (Diverge)
8	I-15 Freeway – Southbound, On-Ramp at Railroad Canyon Road (Merge)
9	I-15 Freeway – Northbound, On-Ramp at Nichols Road (Merge)
10	I-15 Freeway – Northbound, Off-Ramp at Nichols Road (Diverge)
11	I-15 Freeway – Northbound, On-Ramp at Central Avenue (SR-74) (Merge)
12	I-15 Freeway – Northbound, Off-Ramp at Central Avenue (SR-74) (Diverge)
13	I-15 Freeway – Northbound, On-Ramp at N. Main Street (Merge)
14	I-15 Freeway – Northbound, Off-Ramp at N. Main Street (Diverge)
15	I-15 Freeway – Northbound, On-Ramp at Railroad Canyon Road (Merge)
16	I-15 Freeway – Northbound, Off-Ramp at Railroad Canyon Road (Diverge)

## 1.4 SUMMARY OF PROJECT IMPACTS AND RECOMMENDED IMPROVEMENTS

This section provides a summary of project-related impacts and associated mitigation measures. Section 2.0 *Methodologies* provides information on the methodologies used in the analyses and Section 5.0 *Existing Plus Project Traffic Analysis* includes the detailed analysis. The recommended mitigation measures necessary to reduce the direct project-related impacts to “less-than-significant” are discussed below. A comparison of Existing (2013) to Existing Plus Project traffic conditions indicates that the addition of Project traffic is anticipated to result in deficient peak hour operations at the following study area intersections:

ID	Intersection Location
3	E. Lakeshore Drive / Diamond Drive
4	Gunnerson Street / Riverside Drive (SR-74)
11	I-15 Southbound Ramps / Railroad Canyon Road

ID	Intersection Location
12	I-15 Northbound Ramps / Nichols Road
14	I-15 Northbound Ramps / N. Main Street
23	Summerhill Drive / Railroad Canyon Road

**Impact 1.1 – E. Lakeshore Drive / Diamond Drive (#3)** – Although the intersection is currently operating at unacceptable LOS (i.e., LOS “F”) during the AM, PM and Saturday mid-day peak hours under Existing (2013) traffic conditions, the addition of Project traffic (as measured by 50 or more peak hour trips) is anticipated to result in an increase to the intersection’s delay by more than 1.0 second during the AM, PM and Saturday mid-day peak hours at this intersection. Consistent with the City’s significance criteria, the impact is considered significant.

**Mitigation Measure 1.1** – The following mitigation measure is necessary to reduce the Project’s impact to less-than-significant:

- Modify the traffic signal and implement overlap phasing on the northbound right turn lane. No physical lane improvements are necessary.

**Impact 2.1 – Gunnerson Street / Riverside Drive (SR-74) (#4)** – Although the intersection is currently operating at unacceptable LOS (i.e., LOS “E” or LOS “F”) during the AM, PM and Saturday mid-day peak hours under Existing (2013) traffic conditions, the addition of Project traffic (as measured by 50 or more peak hour trips) is anticipated to result in an increase to the intersection’s delay by more than 2.0 seconds during the AM peak hour and by more than 1.0 second during the PM and Saturday mid-day peak hours at this intersection. Consistent with the City’s significance criteria, the impact is considered significant.

**Mitigation Measure 2.1** – The following mitigation measure is necessary to reduce the Project’s impact to less-than-significant:

- Project should contribute its fair share towards the installation of a traffic signal at the intersection and implement permissive left-turn phasing on all approaches. No physical lane improvements are necessary.

**Impact 3.1 – I-15 Southbound Ramps / Railroad Canyon Road (#11)** – Although the intersection is currently operating at unacceptable LOS (i.e., LOS “E” or LOS “F”) during the PM and Saturday mid-day peak hours under Existing (2013) traffic conditions, the addition of Project traffic (as measured by 50 or more peak hour trips) is anticipated to result in an increase to the intersection’s delay by more than 1.0 second during the PM peak hour and by more than 2.0 seconds during the Saturday mid-day

peak hour at this intersection. Consistent with the City's significance criteria, the impact is considered significant.

**Mitigation Measure 3.1** – The following mitigation measure is necessary to reduce the Project's impact to less-than-significant:

- Restripe the existing eastbound right turn lane as a 3<sup>rd</sup> shared through-right turn lane. No physical lane improvements or roadway widening through the interchange area are necessary.

**Impact 4.1 – I-15 Northbound Ramps / Nichols Road (#12)** – Although the intersection is currently operating at unacceptable LOS (i.e., LOS "E") during the AM peak hour under Existing (2013) traffic conditions, the addition of Project traffic (as measured by 50 or more peak hour trips) is anticipated to result in an increase to the intersection's delay by more than 2.0 seconds during the AM peak hour at this intersection. Consistent with the City's significance criteria, the impact is considered significant.

**Mitigation Measure 4.1** – The following mitigation measure is necessary to reduce the Project's impact to less-than-significant:

- Project should contribute its fair share towards the installation of a traffic signal. No physical lane improvements are necessary.

**Impact 5.1 – I-15 Northbound Ramps / N. Main Street (#14)** – Although the intersection is currently operating at unacceptable LOS (i.e., LOS "F") during the AM and PM peak hours under Existing (2013) traffic conditions, the addition of Project traffic (as measured by 50 or more peak hour trips) is anticipated to result in an increase to the intersection's delay by more than 1.0 second during the AM and PM peak hours at this intersection. Consistent with the City's significance criteria, the impact is considered significant.

**Mitigation Measure 5.1** – The following mitigation measure is necessary to reduce the Project's impact to less-than-significant:

- Project should contribute its fair share towards the installation of a traffic signal. No physical lane improvements are necessary.

**Impact 6.1 – Summerhill Drive / Railroad Canyon Road (#23)** – Although the intersection is currently operating at unacceptable LOS (i.e., LOS "F") during the AM, PM and Saturday mid-day peak hours under Existing (2013) traffic conditions, the addition of Project traffic (as measured by 50 or more peak hour trips) is anticipated to result in an increase to the intersection's delay by more than 1.0 second during the AM, PM and Saturday mid-day peak hours at this intersection. Consistent with the City's significance criteria, the impact is considered significant.

**Mitigation Measure 6.1** – The following mitigation measures are necessary to reduce the Project’s impact to less-than-significant:

- Stripe a northbound right turn lane. Roadway widening does not appear necessary to accommodate the recommended turn lane.
- Modify the traffic signal and implement overlap phasing on the northbound and eastbound right turn lanes.

## 1.5 SUMMARY OF CUMULATIVE IMPACTS AND RECOMMENDED IMPROVEMENTS

A summary of the cumulatively impacted study area intersections and recommended improvements to reduce cumulative impacts to less-than-significant are described in detail within Section 6.0 *Opening Year (2016) Traffic Analysis* and Section 7.0 *General Plan Buildout (Post-2035) Traffic Analysis* of this report. Cumulative impacts are deficiencies in the transportation network’s LOS that would not be directly caused by the Project. The Project would, however, contribute traffic to these deficient facilities, resulting in a finding that the Project’s contribution to the cumulative impact is considered cumulatively considerable.

In 2003, the Transportation Uniform Mitigation Fee (TUMF) program was implemented in Western Riverside County. Under the TUMF, developers of residential, industrial and commercial property are required to pay a development fee to fund regional transportation projects, which mitigates cumulative impacts to the roadway segments and intersections included in the TUMF program. The TUMF funds both local and regional arterial projects. The 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 required Western Riverside County TUMF, in addition to City of Lake Elsinore Traffic Impact Fees (TIF) and other fair share contributions as directed by the City. These fees are collected as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with the projected vehicle trip increases.

As development increases within the region, the amount of fees collected also increases thereby accelerating the construction of transportation facilities included in each funding program. Similarly, if development within the region experiences reduced growth, the amount of fees collected also is reduced. However, a slower growth cycle would likely result in a slower growth in traffic volumes, thereby lengthening the timeline necessary to complete transportation infrastructure improvements.

Intersection and roadway improvements that were identified in the analysis found in Section 7.0 *General Plan Buildout (Post-2035) Traffic Analysis* as necessary to maintain or improve the operational level of service of the street system in the vicinity of the project site are shown in Table 1-4. The table lists the total improvements that are required by General Plan Buildout (Post-2035) With Project traffic conditions. It is anticipated that the improvements required to maintain or to improve the LOS operations of transportation facilities in the vicinity of the Project will be constructed through the City’s

Summary of Transportation Impact Fee Program Improvements for General Plan Buildout (Post-2035) Conditions

#	Intersection Location	Jurisdiction	Recommended Improvements - Opening Year (2016)	Recommended Improvements - Post-2035	Program Improvements <sup>1</sup>	Non-Program Improvements	Fair Share <sup>2</sup>
1	Lakeshore Dr / Riverside Dr (SR-74)	Caltrans	1.WBT	1.NBL, 1.NBR, 1.SBL, 1.SBT, 1.EBL, 1.EBT, 2.WBT, modify TS and implement overlap phasing on SBR, EBR and WBR	TIF (Intersection), TUMF (1.SBT)		--
2	W Graham Av / N Main St	Lake Elsinore		Install traffic signal, 1.EBL, 1.WBL	TIF (Intersection)		--
3	E Lakeshore Dr / Diamond Dr	Caltrans	1.SBL and modify TS to implement overlap phasing on NBR	1.NBL, 1.NBT, 1.NBR, 1.SBL, 1.SBT, 1.SBR, 1.EBL, 1.EBR, 1.WBT, 2.WBR, modify TS and implement overlap phasing on NBR, SBR and WBR	TIF (Intersection)		--
4	Gunnerson St / Riverside Dr (SR-74)	Caltrans	Install traffic signal, 1.EBL, 1.EBT, 1.WBL, 1.WBT	Install traffic signal, 1.EBL, 1.EBT, 1.WBL, 1.WBT	TUMF (1.EBT, 1.WBT)	Install traffic signal, 1.EBL, 1.WBL	4.3%
5	Collier Av / Riverside Dr (SR-74)	Caltrans		1.NBL, 1.NBT, 1.NBR, 1.SBL, 1.SBT, 2.EBL, 2.EBT, 1.EBFR, 2.WBL, 2.WBT, 1.WBR, modify TS and implement overlap phasing on NBR and SBR	TIF (Intersection)		--
6	Collier Av / Central Av (SR-74)	Caltrans		1.NBT, 1.NBR, 1.SBL, 1.EBT, 1.EBR, 1.WBT, 1.WBFR, modify TS and implement overlap phasing on EBR	TIF (Intersection)		--
7	Auto Center Dr / Diamond Dr	Lake Elsinore		1.NBL, 2.NBR, 1.SBL, 2.SBR, 1.EBL, 1.EBR, 1.WBT, 1.WBR, modify TS and implement overlap phasing on all approaches	TIF (Intersection & Interchange), TUMF (1.WBT & Interchange)		--
8	I-15 SB Ramps / Nichols Rd	Caltrans		Install traffic signal, 2.SBL, 1.SBR, Restripe 1.SBLTR as 1.SBR, 2.EBT, 1.WBL, 2.WBT	TIF (Interchange)		--
9	I-15 SB Ramps / Central Av (SR-74)	Caltrans		*New Interchange Design*, 1.SBL, Restripe 1.SBLTR as 1.SBR, 1.EBT, 1.EBR	TIF & TUMF (Interchange)		--
10	I-15 SB Ramps / N Main St	Caltrans		Install traffic signal, 1.SBL, 1.EBT, 1.EBR, 1.WBL, 1.WBT		Install traffic signal, 1.SBL, 1.EBT, 1.EBR, 1.WBL, 1.WBT	2.9%
11	I-15 SB Ramps / Railroad Canyon Rd	Caltrans	1.EBT	*New Interchange Design*, 1.NBR, 2.SBL, 1.SBT, 1.WBL, 2.WBR	TIF & TUMF (Interchange)		--
12	I-15 NB Ramps / Nichols Rd	Caltrans	Install traffic signal	Install traffic signal, 1.NBL, 1.NBR, Restripe 1.NBLTR as 1.NBR, 1.EBL, 2.EBT, 2.WBT, 1.WBR	TIF (Interchange)		--
13	I-15 NB Ramps / Central Av (SR-74)	Caltrans		*New Interchange Design*, 1.NBL, Restripe 1.NBLTR as 1.NBR, Restripe 1.EBR	TIF & TUMF (Interchange)		--

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Table 1-4  
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Summary of Transportation Impact Fee Program Improvements for General Plan Buildout (Post-2035) Conditions

#	Intersection Location	Jurisdiction	Recommended Improvements - Opening Year (2016)	Recommended Improvements - Post-2035	Program Improvements <sup>1</sup>	Non-Program Improvements	Fair Share <sup>2</sup>
14	I-15 NB Ramps / N Main St	Caltrans	Install traffic signal	Install traffic signal, 1.NBL, 1.NBR, 1.EBL, 1.EBT, 1.WBT, 1.WBR		Install traffic signal, 1.NBL, 1.NBR, 1.EBL, 1.EBT, 1.WBT, 1.WBR	2.5%
15	I-15 NB Ramps / Railroad Canyon Rd	Caltrans	1.NBL	*New Interchange Design*, 1.NBL, 1.SBFR, 2.EBL, 1.EBR	TIF & TUMF (Interchange)		--
16	Dexter Av / 11th St	Riverside County		Install traffic signal, 1.NBL, 1.SBL, 1.EBL, 1.EBT, 1.EBR, 1.WBL, 1.WBT, modify the TS and implement overlap phasing on the EBR		Install traffic signal, 1.NBL, 1.SBL, 1.EBL, 1.EBT, 1.EBR, 1.WBL, 1.WBT, modify the TS and implement overlap phasing on the EBR	1.8%
17	Dexter Av / Central Av (SR-74)	Caltrans		1.NBL, 1.NBR, 1.SBL, 1.EBL, modify the TS and implement overlap phasing on the NBR	TIF (Intersection)		--
19	Dexter Av / Crane St	Lake Elsinore		Install traffic signal		Install traffic signal	13.8%
20	Dexter Av / 3rd St	Lake Elsinore/Riverside County		Install traffic signal, 1.NBL, 1.SBL, 1.EBL, 1.WBL		Install traffic signal, 1.NBL, 1.SBL, 1.EBL, 1.WBL	3.8%
21	Dexter Av / 2nd St	Lake Elsinore/Riverside County		Install traffic signal, 1.NBL, 1.SBL, 1.SBR w/overlap, 1.EBL, 1.WBL	TIF (Intersection)		--
22	Camino del Norte / N Main St	Lake Elsinore		Install traffic signal, 2.NBL, 1.SBR w/overlap, overlap phasing on EBR	TIF (Intersection)		--
23	Summerhill Dr / Railroad Canyon Rd	Lake Elsinore	1.NBR, 1.SBT, 1.EBT, 1.WBL and modify the TS to implement overlap phasing on the NBR and EBR	2.NBR, 1.SBL, 1.SBR, 1.EBT, 1.WBL, 2.WBR, modify the TS and implement overlap phasing on the NBR, EBR and WBR	TIF (Intersection)		--
25	Cambern Av / Central Av (SR-74)	Caltrans		1.NBL, 1.NBR, 2.SBL, 1.SBT, 1.EBT, 1.EBR, 1.WBL, 1.WBT, modify the TS and implement overlap phasing on all approaches	TIF (Intersection)		--
28	Cambern Av / 3rd St	Riverside County		Install traffic signal, 1.NBL, 1.NBT, 1.SBL, 1.SBT, 1.SBR, 2.EBL, 1.WBL, 1.WBR		Install traffic signal, 1.NBL, 1.NBT, 1.SBL, 1.SBT, 1.EBL, 1.WBL	0.3%
29	Conard Av / Central Av (SR-74)	Caltrans		1.SBL, 1.SBR, 1.SBR, 1.EBL, 2.EBT, 1.EBR, 2.WBT, 1.WBR, modify the TS and implement overlap phasing on the SBR	TUMF (1.EBT, 1.WBT)	1.SBL, 1.SBR, 1.SBR, 1.EBL, 1.EBT, 1.EBR, 1.WBT, 1.WBR, modify the TS and implement overlap phasing on the SBR	3.1%

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**Table 1-4**  
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**Summary of Transportation Impact Fee Program Improvements for General Plan Buildout (Post-2035) Conditions**

#	Intersection Location	Jurisdiction	Recommended Improvements - Opening Year (2016)	Recommended Improvements - Post-2035	Program Improvements <sup>1</sup>	Non-Program Improvements	Fair Share <sup>2</sup>
30	Rosetta Canyon Dr / Central Av (SR-74)	Caltrans		1.NBL, 1.EBT, 1.EBR, 1.WBL, 2.WBT, modify the TS and implement overlap phasing on the NBR and EBR	TUMF (1.WBT)	1.NBL, 1.EBT, 1.EBR, 1.WBL, 1.WBT, modify the TS and implement overlap phasing on the NBR and EBR	2.6%
31	Riverside St / Central Av (SR-74)	Caltrans		2.NBT, 2.SBL, 2.SBT, 1.SBR, 2.EBL, 2.EBT, 1.EBR, 1.WBL, 2.WBT, 1.WBR, modify the TS and implement overlap phasing on the EBR and WBR	TUMF (1.EBT, 1.WBT)	2.NBT, 2.SBL, 2.SBT, 1.SBR, 2.EBL, 1.EBT, 1.EBR, 1.WBL, 1.WBT, 1.WBR, modify the TS and implement overlap phasing on the EBR and WBR	1.1%
32	Greenwald Av / Central Av (SR-74)	Caltrans		1.NBR, 1.SBR, 1.EBL, 1.EBT, 1.WBL, 1.WBT, 1.WBR, modify the TS and implement overlap phasing on the NBR and EBR	TUMF (1.EBT, 1.WBT)	1.NBR, 1.SBR, 1.EBL, 1.WBL, 1.WBR, modify the TS and implement overlap phasing on the NBR and EBR	0.9%

<sup>1</sup> Improvements included in TUMF Nexus (October 12, 2009) or City of Lake Elsinore DIF programs.

<sup>2</sup> Program improvements constructed by project may be eligible for fee credit. In lieu fee payment is at discretion of City. Fair share selected based on peak hour with worst LOS. Fair share percentages only shown for intersections with improvements that are not currently included in a pre-existing fee program.

local transportation impact fee and regional transportation improvement programs, such as the Transportation Uniform Mitigation Fee (TUMF) and the City of Lake Elsinore's Traffic Impact Fee (TIF). In addition, Table 1-4 identifies which of the total General Plan Buildout (Post-2035) improvements are not included in the TUMF or TIF programs, but may instead be covered by a fair share contribution, as directed by the City.

## 1.6 ON-SITE ROADWAY AND SITE ACCESS IMPROVEMENTS

The Project is proposed to have access on Central Avenue (SR-74), Dexter Avenue, Cambern Avenue, and truck access on Third Street. All Project access points are proposed to be full-access, with the exception of Allan Street on Dexter Avenue, Driveway 1 on Central Avenue (SR-74), and Driveway 2 on Cambern Avenue which are proposed for right-in/right-out access only. Regional access to the Project site will be provided by the I-15 Freeway (located to the west) via Central Avenue (SR-74).

As part of the development, the Project will construct improvements on the site adjacent roadways of Central Avenue (SR-74), Cambern Avenue, Third Street, Crane Street and Allan Street. Roadway improvements necessary to provide site access and on-site circulation are assumed to be constructed in conjunction with site development and are described below. These improvements should be in place prior to occupancy.

### 1.6.1 ON-SITE ROADWAY IMPROVEMENTS

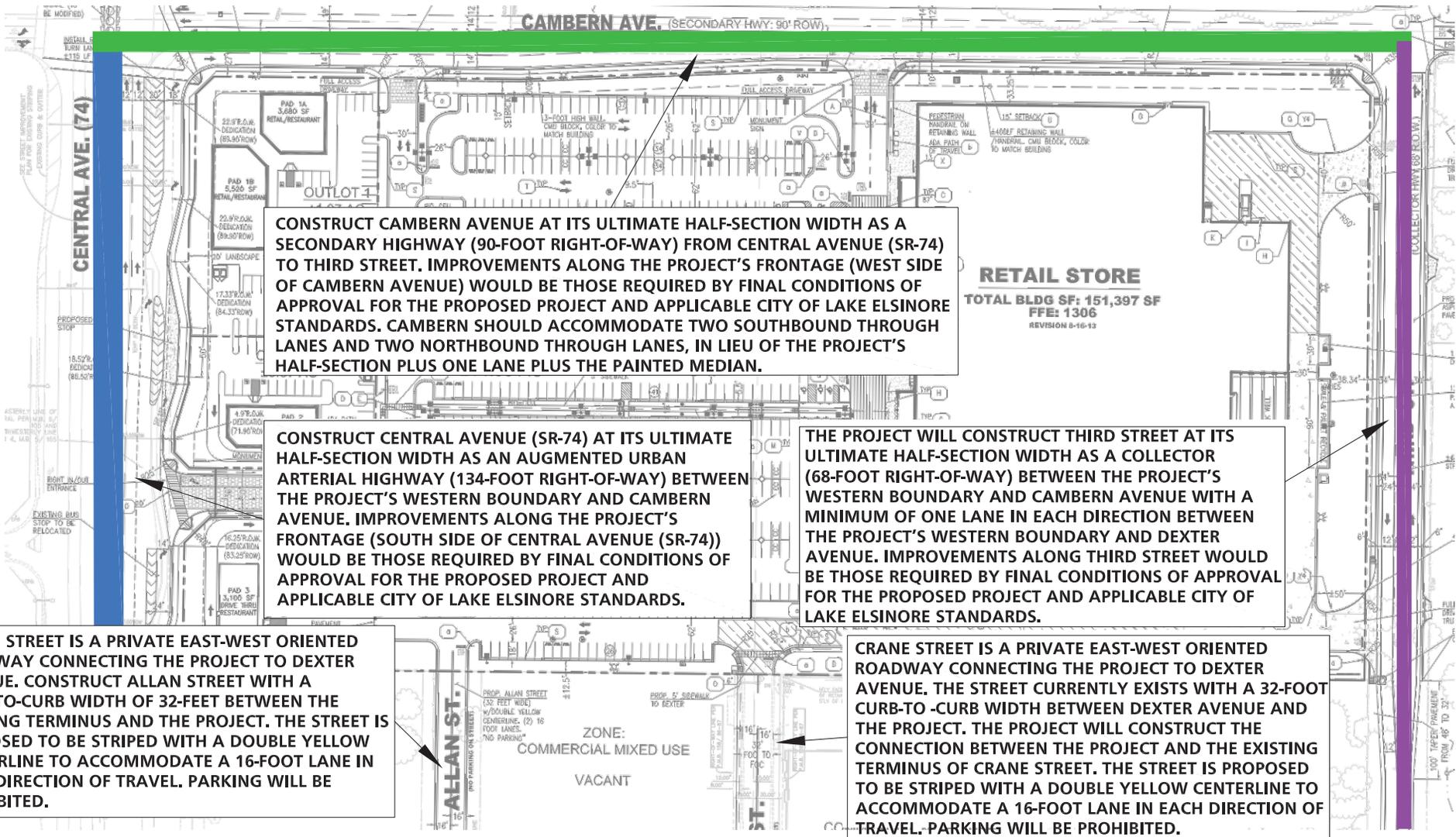
The recommended site-adjacent roadway improvements for the Project are described below. Exhibit 1-4 illustrates the site-adjacent roadway improvement recommendations.

**Central Avenue (SR-74)** – Central Avenue (SR-74) is an east-west oriented roadway located along the Project's northern boundary. Construct Central Avenue (SR-74) at its ultimate half-section width as an Augmented Urban Arterial Highway (134-foot right-of-way) between the Project's western boundary and Cambern Avenue. Improvements along the Project's frontage (south side of Central Avenue (SR-74)) would be those required by final conditions of approval for the proposed Project and applicable City of Lake Elsinore standards.

**Cambren Avenue** – Cambren Avenue is a north-south oriented roadway located along the Project's eastern boundary. Construct Cambren Avenue at its ultimate half-section width as a Secondary Highway (90-foot right-of-way) from Central Avenue (SR-74) to Third Street. Improvements along the Project's frontage (west side of Cambren Avenue) would be those required by final conditions of approval for the proposed Project and applicable City of Lake Elsinore standards. Cambren Avenue should accommodate two southbound through lanes and two northbound through lanes, in lieu of the Project's half-section plus one lane plus the painted median.

# SITE ADJACENT ROADWAY RECOMMENDATIONS

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CONSTRUCT CAMBERN AVENUE AT ITS ULTIMATE HALF-SECTION WIDTH AS A SECONDARY HIGHWAY (90-FOOT RIGHT-OF-WAY) FROM CENTRAL AVENUE (SR-74) TO THIRD STREET. IMPROVEMENTS ALONG THE PROJECT'S FRONTAGE (WEST SIDE OF CAMBERN AVENUE) WOULD BE THOSE REQUIRED BY FINAL CONDITIONS OF APPROVAL FOR THE PROPOSED PROJECT AND APPLICABLE CITY OF LAKE ELSINORE STANDARDS. CAMBERN SHOULD ACCOMMODATE TWO SOUTHBOUND THROUGH LANES AND TWO NORTHBOUND THROUGH LANES, IN LIEU OF THE PROJECT'S HALF-SECTION PLUS ONE LANE PLUS THE PAINTED MEDIAN.

CONSTRUCT CENTRAL AVENUE (SR-74) AT ITS ULTIMATE HALF-SECTION WIDTH AS AN AUGMENTED URBAN ARTERIAL HIGHWAY (134-FOOT RIGHT-OF-WAY) BETWEEN THE PROJECT'S WESTERN BOUNDARY AND CAMBERN AVENUE. IMPROVEMENTS ALONG THE PROJECT'S FRONTAGE (SOUTH SIDE OF CENTRAL AVENUE (SR-74)) WOULD BE THOSE REQUIRED BY FINAL CONDITIONS OF APPROVAL FOR THE PROPOSED PROJECT AND APPLICABLE CITY OF LAKE ELSINORE STANDARDS.

THE PROJECT WILL CONSTRUCT THIRD STREET AT ITS ULTIMATE HALF-SECTION WIDTH AS A COLLECTOR (68-FOOT RIGHT-OF-WAY) BETWEEN THE PROJECT'S WESTERN BOUNDARY AND CAMBERN AVENUE WITH A MINIMUM OF ONE LANE IN EACH DIRECTION BETWEEN THE PROJECT'S WESTERN BOUNDARY AND DEXTER AVENUE. IMPROVEMENTS ALONG THIRD STREET WOULD BE THOSE REQUIRED BY FINAL CONDITIONS OF APPROVAL FOR THE PROPOSED PROJECT AND APPLICABLE CITY OF LAKE ELSINORE STANDARDS.

ALLAN STREET IS A PRIVATE EAST-WEST ORIENTED ROADWAY CONNECTING THE PROJECT TO DEXTER AVENUE. CONSTRUCT ALLAN STREET WITH A CURB-TO-CURB WIDTH OF 32-FEET BETWEEN THE EXISTING TERMINUS AND THE PROJECT. THE STREET IS PROPOSED TO BE STRIPED WITH A DOUBLE YELLOW CENTERLINE TO ACCOMMODATE A 16-FOOT LANE IN EACH DIRECTION OF TRAVEL. PARKING WILL BE PROHIBITED.

CRANE STREET IS A PRIVATE EAST-WEST ORIENTED ROADWAY CONNECTING THE PROJECT TO DEXTER AVENUE. THE STREET CURRENTLY EXISTS WITH A 32-FOOT CURB-TO-CURB WIDTH BETWEEN DEXTER AVENUE AND THE PROJECT. THE PROJECT WILL CONSTRUCT THE CONNECTION BETWEEN THE PROJECT AND THE EXISTING TERMINUS OF CRANE STREET. THE STREET IS PROPOSED TO BE STRIPED WITH A DOUBLE YELLOW CENTERLINE TO ACCOMMODATE A 16-FOOT LANE IN EACH DIRECTION OF TRAVEL. PARKING WILL BE PROHIBITED.

### LEGEND:

-  = AUGMENTED URBAN ARTERIAL HIGHWAY (8-LANES; 134-FOOT R.O.W.)
-  = SECONDARY HIGHWAY (4-LANES; 90-FOOT R.O.W.)
-  = COLLECTOR (2-LANES; 68-FOOT R.O.W.)

**Third Street** – Third Street is an east-west oriented roadway located along the Project's southern boundary. The Project will construct Third Street at its ultimate half-section width as a Collector (68-foot right-of-way) between the Project's western boundary and Cambern Avenue with a minimum of one lane in each direction between the Project's western boundary and Dexter Avenue. Improvements along Third Street would be those required by final conditions of approval for the proposed Project and applicable City of Lake Elsinore standards.

**Allan Street** – Allan Street is a private east-west oriented roadway connecting the Project to Dexter Avenue. Construct Allan Street with a curb-to-curb width of 32-feet between the existing terminus and the Project. The street is proposed to be striped with a double yellow centerline to accommodate a 16-foot lane in each direction of travel. Parking will be prohibited along Allan Street.

**Crane Street** – Crane Street is a private east-west oriented roadway connecting the Project to Dexter Avenue. The street currently exists with a 32-foot curb-to-curb width between Dexter Avenue and the Project. The Project will construct the connection between the Project and the existing terminus of Crane Street. The street is proposed to be striped with a double yellow centerline to accommodate a 16-foot lane in each direction of travel. Parking will be prohibited along Crane Street.

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

## 1.6.2 SITE ACCESS IMPROVEMENTS

The recommended site access driveway improvements for the Project are described below. Exhibit 1-5 illustrates the on-site and site adjacent recommended roadway lane improvements. Construction of on-site and site adjacent improvements shall occur in conjunction with adjacent Project development activity or as needed for Project access purposes.

**Dexter Avenue / Allan Street** – Maintain the existing cross-street stop control and modify the lane geometrics to restrict access to right-in/right-out only, as follows:

Northbound Approach: One through lane and one defacto right turn lane.

Southbound Approach: One through lane and one defacto right turn lane.

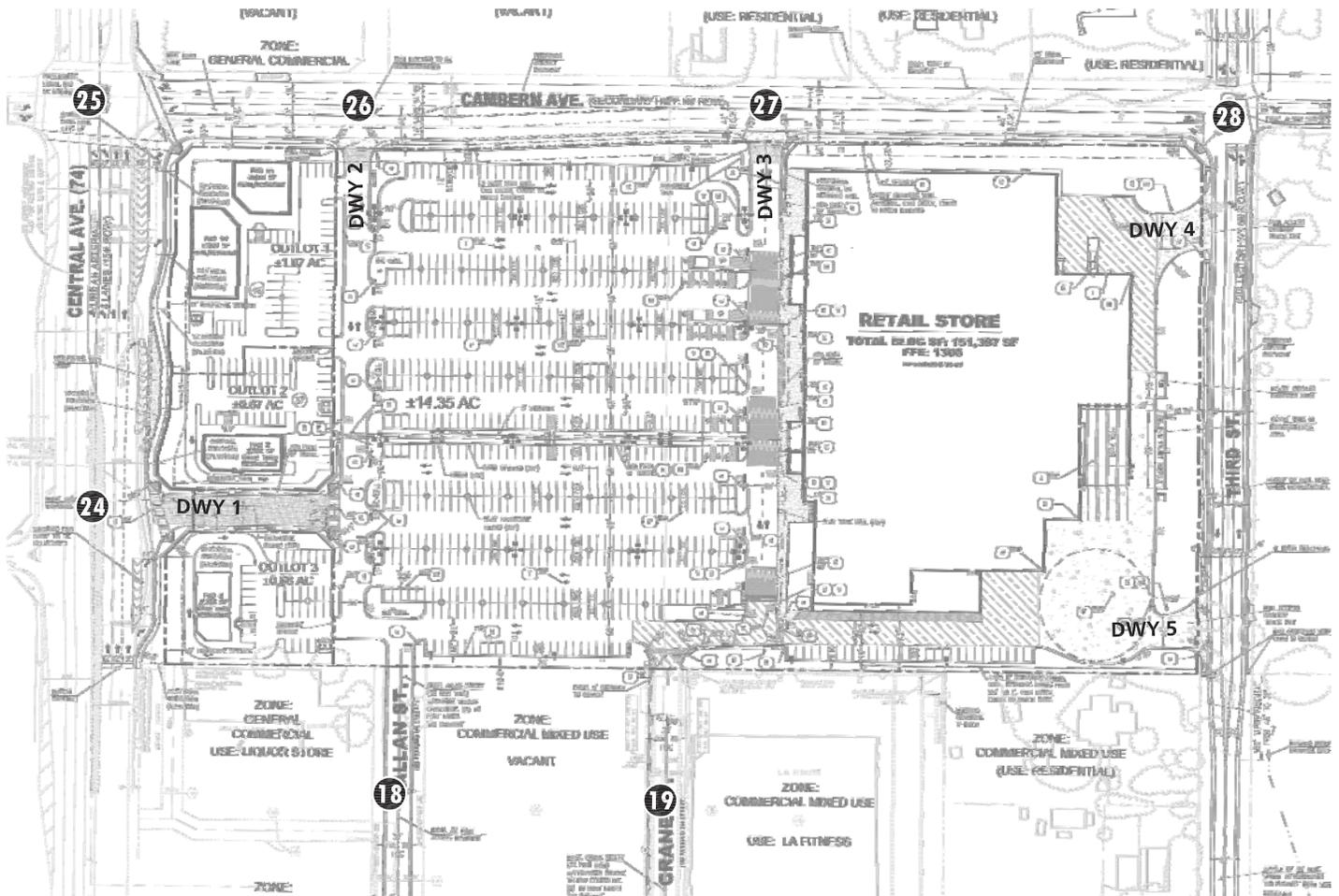
Eastbound Approach: One right turn lane.

Westbound Approach: One right turn lane.

**Dexter Avenue / Crane Street** – Maintain the existing cross-street stop control and lane geometrics. No additional improvements are recommended beyond those that currently exist.

# EXHIBIT 1-5

# ON-SITE CIRCULATION RECOMMENDATIONS



18	Dexter Av. & Allan St.	19	Dexter Av. & Crane St.	24	Central Av. (SR-74) & Driveway 1	25	Central Av. (SR-74) & Cambern Av.	26	Driveway 2 & Cambern Av.	27	Driveway 3 & Cambern Av.	28	Third Street & Cambern Av.

ON-SITE TRAFFIC SIGNING AND STRIPING SHOULD BE IMPLEMENTED IN CONJUNCTION WITH DETAILED CONSTRUCTION PLANS FOR THE PROJECT SITE.

SIGHT DISTANCE AT EACH PROJECT ACCESS POINT SHOULD BE REVIEWED WITH RESPECT TO STANDARD CALTRANS AND CITY OF LAKE ELSINORE SIGHT DISTANCE STANDARDS AT THE TIME OF PREPARATION OF FINAL GRADING, LANDSCAPE AND STREET IMPROVEMENT PLANS.

**LEGEND:**

- = TRAFFIC SIGNAL
- = ALL WAY STOP
- = STOP SIGN
- = EXISTING LANE
- = LANE IMPROVEMENT

**Driveway 1 / Central Avenue (SR-74)** – Install a stop control on the northbound approach and construct the intersection with the following geometrics:

Northbound Approach: One right turn lane.

Southbound Approach: N/A

Eastbound Approach: Two through lanes and one shared through-right turn lane.

Westbound Approach: Four through lanes.

**Cambern Avenue / Central Avenue (SR-74)** – Maintain the existing traffic signal control and lane geometrics. No additional improvements are recommended beyond those that currently exist.

**Cambern Avenue / Driveway 2** – Based on the anticipated queues for the northbound left turn lane at Cambern Avenue and Central Avenue (SR-74), it is recommended that this intersection be restricted to right-in/right-out access only. Construct the intersection to prohibit left turns in and out (e.g., construction of a pork-chop island, etc.). Install a stop control on the eastbound approach and construct the intersection with the following geometrics:

Northbound Approach: One through lane.

Southbound Approach: One shared through-right turn lane.

Eastbound Approach: One right turn lane.

Westbound Approach: N/A

**Cambern Avenue / Driveway 3** – Install a stop control on the eastbound approach and construct the intersection with the following geometrics:

Northbound Approach: One shared left-through lane.

Southbound Approach: One shared through-right turn lane.

Eastbound Approach: One shared left-right turn lane.

Westbound Approach: N/A

**Cambern Avenue / Third Street** – Install a stop control on all four approaches (for an all-way stop control) and construct the intersection with the following geometrics:

Northbound Approach: One shared left-through-right turn lane.

Southbound Approach: One shared left-through-right turn lane.

Eastbound Approach: One shared left-through-right turn lane.

Westbound Approach: One shared left-through-right turn lane.

**Driveway 4 / Third Street** – Install a stop control on the southbound approach and construct the intersection with the following geometrics:

Northbound Approach: N/A

Southbound Approach: One shared left-right turn lane.

Eastbound Approach: One shared left-through lane.

Westbound Approach: One shared through-right turn lane.

This driveway provides access to the rear of the store for deliveries (i.e., truck access).

**Driveway 5 / Third Street** – Install a stop control on the southbound approach and construct the intersection with the following geometrics:

Northbound Approach: N/A

Southbound Approach: One shared left-right turn lane.

Eastbound Approach: One shared left-through lane.

Westbound Approach: One shared through-right turn lane.

This driveway provides access to the rear of the store for deliveries (i.e., truck access).

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

Sight distance at each project access point should be reviewed with respect to standard Caltrans and City of Lake Elsinore sight distance standards at the time of preparation of final grading, landscape and street improvement plans.

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## 2.0 METHODOLOGIES

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

### 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) (Transportation Research Board 2000) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. The HCM uses different procedures depending on the type of intersection control.

#### 2.2.1 SIGNALIZED INTERSECTIONS

The City of Lake Elsinore requires signalized intersection operations analysis based on the methodology described in Chapter 16 of the HCM. 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.

Per the Caltrans *Guide for the Preparation of Traffic Impact Studies*, the traffic modeling and signal timing optimization software package Synchro (Version 8 Build 804) has been utilized to analyze signalized intersections under Caltrans' jurisdiction, which include interchange to arterial ramps (i.e. I-15 Freeway ramps at Nichols Road, I-15 Freeway ramps at Central Avenue (SR-74), I-15 Freeway ramps at N. Main Street, and I-15 Freeway ramps at Railroad Canyon Road). Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the Chapter 16 of the HCM. Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length. The level of service and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections

within a network. All other study area intersections within the City of Lake Elsinore have been analyzed using the software package Traffix (Version 8.0 R1, 2008).

**Table 2-1 Signalized Intersection LOS Thresholds**

Level of Service	Description	Average Control Delay (Seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle length.	0 to 10.00
B	Operations with low delay occurring with good progression and/or short cycle lengths.	10.01 to 20.00
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.01 to 35.00
D	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
E	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
F	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths	80.01 and up

Source: HCM 2000, Chapter 16

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.  $PHF = \frac{Hourly\ Volume}{4 \times Peak\ 15\text{-minute\ Flow\ Rate}}$ ). 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, with the exception of General Plan Buildout (Post-2035) traffic conditions. A PHF of 0.92 or higher has been used for all intersections for General Plan Buildout (Post-2035) Without and With Project traffic conditions.

### 2.2.2 UNSIGNALIZED INTERSECTIONS

The City of Lake Elsinore requires the operations of unsignalized intersections be evaluated using the methodology described in Chapter 17 of the HCM. The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-2).

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. All unsignalized study area intersections have utilized the Traffix software (Version 8.0 R1, 2008).

**Table 2-2 Unsignalized Intersection LOS Thresholds**

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

Source: HCM 2000, Chapter 17

### 2.3 FREEWAY RAMP QUEUING ANALYSIS

The study area for this TIA includes segments of the I-15 Freeway from north of Nichols Road to south of Railroad Canyon Road and also includes the freeway-to-arterial interchanges of the I-15 Freeway with Nichols Road ramps, the I-15 Freeway with Central Avenue (SR-74) ramps, the I-15 Freeway with N. Main Street, and the I-15 Freeway with Railroad Canyon Road ramps. Consistent with Caltrans requirements, the freeway ramp Queuing has been assessed to determine potential queuing impacts at the freeway ramp intersections on Nichols Road at the I-15 Freeway, Central Avenue (SR-74) at the I-15 Freeway, N. Main Street at the I-15 Freeway, and Railroad Canyon Road at the I-15 Freeway. Specifically, the queuing analysis is utilized to identify any potential queuing and “spill back” onto the I-15 Freeway mainline from the off-ramps.

The traffic progression analysis tool and HCM intersection analysis program, Synchro, has been used to assess the potential impacts/needs of the intersections with traffic added from the proposed Project. Storage (turn-pocket) length recommendations at the ramps have been based upon the 95<sup>th</sup> percentile queue resulting from the Synchro progression analysis. The 95<sup>th</sup> percentile queue is the maximum back of queue with 95<sup>th</sup> percentile traffic volumes. The queue length reported is for the lane with the highest queue in the lane group.

There are two footnotes which appear on the Synchro outputs. One footnote indicates if the 95<sup>th</sup> percentile cycle exceeds capacity. Traffic is simulated for two complete cycles of the 95<sup>th</sup> percentile traffic in Synchro in order to account for the effects of spillover between cycles. In practice, the 95<sup>th</sup> percentile queue shown will rarely be exceeded and the queues shown with the footnote are acceptable for the design of storage

bays. The other footnote indicates whether or not the volume for the 95<sup>th</sup> percentile queue is metered by an upstream signal. In many cases, the 95<sup>th</sup> percentile queue will not be experienced and may potentially be less than the 50<sup>th</sup> percentile queue due to upstream metering. If the upstream intersection is at or near capacity, the 50<sup>th</sup> percentile queue represents the maximum queue experienced.

A vehicle is considered queued whenever it is traveling at less than 10 feet/second. A vehicle will only become queued when it is either at the stop bar or behind another queued vehicle. Although only the 95<sup>th</sup> percentile queue has been reported in the tables, the 50<sup>th</sup> percentile queue can be found in the appendix alongside the 95<sup>th</sup> percentile queue for each ramp location. The 50<sup>th</sup> percentile maximum queue is the maximum back of queue on a typical cycle during the peak hour, while the 95<sup>th</sup> percentile queue is the maximum back of queue with 95<sup>th</sup> percentile traffic volumes during the peak hour. In other words, if traffic were observed for 100 cycles, the 95<sup>th</sup> percentile queue would be the queue experienced with the 95<sup>th</sup> busiest cycle (or 5% of the time). The 50<sup>th</sup> percentile or average queue represents the typical queue length for peak hour traffic conditions, while the 95<sup>th</sup> percentile queue is derived from the average queue plus 1.65 standard deviations. The 95<sup>th</sup> percentile queue is not necessarily ever observed, it is simply based on statistical calculations.

## 2.4 FREEWAY MAINLINE SEGMENT ANALYSIS

The freeway system in the study area, from north to south of Nichols Road, Central Avenue, N. Main Street, and Railroad Canyon Road, has been broken into segments defined by the freeway-to-arterial interchange locations. The freeway segments have been evaluated in this TIA based upon peak hour directional volumes. The freeway segment analysis is based on the methodology described in Chapter 23 of the HCM and performed using HCS+ software. The performance measure preferred by Caltrans to calculate LOS is density. Density is expressed in terms of passenger cars per mile per lane. Table 2-3 illustrates the freeway segment LOS thresholds for each density range utilized for this analysis.

The number of lanes for existing baseline conditions has been obtained from field observations conducted by Urban Crossroads in June 2013. The Riverside County Transportation Commission (RCTC) has long-range plans in place to construct a carpool lane (high-occupancy vehicle lane) for both northbound and southbound directions of flow on the I-15 Freeway. The HOV lanes would extend from the I-15/I-215 interchange to Central Avenue (SR-74). Additionally, two tolled express lanes and one mixed-flow lane serving northbound and southbound directions of travel are also proposed to be from Central Avenue (SR-74) to the SR-60 Freeway. The information provided on the RCTC website for the freeway improvements are in the preliminary stages, and because of such, no date of completion is provided.

The I-15 Freeway mainline volume data was obtained from the Caltrans Performance Measurement System (PeMS) website for the segments of the I-15 Freeway interchange at Nichols Road. The data obtained was for the May 2013. In an effort to conduct a conservative analysis, the maximum value

observed within the three (3) day period was utilized for the weekday morning (AM), weekday evening (PM) peak hours, and Saturday mid-day peak hours. The maximum value observed for the Saturday mid-day peak hour was utilized for the same day that the Saturday mid-day peak hour intersection counts were conducted. In addition, truck traffic, represented as a percentage of total traffic, has been utilized for the purposes of this analysis in an effort to not overstate traffic volumes and potential impacts. As such, actual vehicles (as opposed to passenger-car-equivalent volumes) have been utilized for the purposes of the basic freeway segment analysis.

**Table 2-3 Freeway Mainline LOS Thresholds**

Level of Service	Description	Density Range (pc/mi/ln) <sup>1</sup>
A	Free-flow operations in which vehicles are relatively unimpeded in their ability to maneuver within the traffic stream. Effects of incidents are easily absorbed.	0.0 – 11.0
B	Relative free-flow operations in which vehicle maneuvers within the traffic stream are slightly restricted. Effects of minor incidents are easily absorbed.	11.1 – 18.0
C	Travel is still at relative free-flow speeds, but freedom to maneuver within the traffic stream is noticeably restricted. Minor incidents may be absorbed, but local deterioration in service will be substantial. Queues begin to form behind significant blockages.	18.1 – 26.0
D	Speeds begin to decline slightly and flows and densities begin to increase more quickly. Freedom to maneuver is noticeably limited. Minor incidents can be expected to create queuing as the traffic stream has little space to absorb disruptions.	26.1 – 35.0
E	Operation at capacity. Vehicles are closely spaced with little room to maneuver. Any disruption in the traffic stream can establish a disruption wave that propagates throughout the upstream traffic flow. Any incident can be expected to produce a serious disruption in traffic flow and extensive queuing.	35.1 – 45.0
F	Breakdown in vehicle flow.	>45.0

<sup>1</sup> pc/mi/ln = passenger cars per mile per lane. Source: HCM 2000, Chapter 23

## 2.5 FREEWAY MERGE/DIVERGE RAMP JUNCTION ANALYSIS

The freeway system in the study area has been broken into segments defined by freeway-to-arterial interchange locations resulting in sixteen (16) existing on and off ramp locations. Although the HCM indicates the influence area for a merge/diverge junction is 1,500 feet, the analysis presented in this traffic study has been performed at all ramp locations with respect to the nearest on or off ramp at each interchange in an effort to be consistent with Caltrans guidance/comments on other projects Urban Crossroads has worked on along the I-15 corridor.

The merge/diverge analysis is based on the HCM Ramps and Ramp Junctions analysis method and performed using HCS+ software. The measure of effectiveness (reported in passenger car/mile/lane) are calculated based on the existing number of travel lanes, number of lanes at the on and off ramps both at the analysis junction and at upstream and downstream locations (if applicable) and acceleration/deceleration lengths at each merge/diverge point. Table 2-4 presents the merge/diverge area level of service thresholds for each density range utilized for this analysis.

**Table 2-4 Freeway Merge and Diverge LOS Thresholds**

Level of Service	Density Range (pc/mi/ln) <sup>1</sup>
A	≤10.0
B	10.0 – 20.0
C	20.0 – 28.0
D	28.0 – 35.0
E	>35.0
F	Demand Exceeds Capacity

<sup>1</sup> pc/mi/ln = passenger cars per mile per lane. Source: HCM 2000, Chapter 25

Similar to the basic freeway segment analysis, the I-15 Freeway mainline volume data were obtained from the Caltrans Performance Measurement System (PeMS) website for the segments of the I-15 Freeway Southbound and north of Northbound of Nichols Road. The ramp data (per the count data presented in Appendix “3.1”) were then utilized to flow conserve the mainline volumes and determines the I-15 Freeway mainline volumes south of Nichols Road. The data obtained was for May 2013. In an effort to conduct a conservative analysis, the maximum value observed within the three (3) day period was utilized for the weekday morning (AM) and weekday evening (PM) peak hours. The maximum value observed for the Saturday mid-day peak hour was utilized for the same day that the Saturday mid-day peak hour intersection counts were conducted. In addition, truck traffic, represented as a percentage of total traffic, has been utilized for the purposes of this analysis in an effort to not overstate traffic volumes and potential impacts. As such, actual vehicles (as opposed to passenger-car-equivalent volumes) have been utilized for the purposes of the freeway ramp junction (merge/diverge) analysis.

## 2.6 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by 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 Federal Highway Administration’s (FHWA) *Manual on Uniform Traffic Control Devices (MUTCD)*, as amended by the *2012 California MUTCD (CA MUTCD)*, for all study area intersections.

The signal warrant criteria for Existing (2013) conditions are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. Both the FHWA's *MUTCD* and the *2012 CA MUTCD* indicate that the installation of a traffic signal should be considered if one or more of the signal warrants are met. Specifically, this TIA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for Existing (2013) traffic conditions. Warrant 3 criteria are basically identical for both the FHWA's *MUTCD* and the *2012 CA MUTCD*. 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 (new) unsignalized intersections and existing intersections under future traffic conditions 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.

<b>ID</b>	<b>Intersection Location</b>	<b>Jurisdiction</b>
2	W. Graham Avenue / N. Main Street	Lake Elsinore
4	Gunnerson Street / Riverside Drive (SR-74)	Caltrans
8	I-15 SB Ramps / Nichols Road	Caltrans
10	I-15 SB Ramps / N. Main Street	Caltrans
12	I-15 NB Ramps / Nichols Road	Caltrans
14	I-15 NB Ramps / N. Main Street	Caltrans
16	Dexter Avenue / 11th Street	Riverside County
19	Dexter Avenue / Crane Street	Lake Elsinore
20	Dexter Avenue / 3rd Street	Lake Elsinore/Riverside County
21	Dexter Avenue / 2nd Street	Lake Elsinore/Riverside County
22	Camino del Norte / N. Main Street	Lake Elsinore
27	Cambern Avenue / Driveway 3 – Future Intersection	Lake Elsinore/Riverside County
28	Cambern Avenue / 3rd Street	Riverside County

The Existing (2013) conditions traffic signal warrant analysis is presented in the subsequent section, Section 3.0 *Area Conditions* of this report. The traffic signal warrant analysis for future conditions is presented in Section 5.0 *Existing plus Project Traffic Analysis*, Section 6.0 *Opening Year (2016) Traffic Analysis*, and Section 7.0 *General Plan Buildout (Post-2035) 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 threshold 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 level of service. An intersection may satisfy a signal warrant condition and operate at or above LOS “D” or operate below LOS “D” and not meet a signal warrant.

## **2.7 LOS CRITERIA**

### **2.7.1 CITY OF LAKE ELSINORE**

The definition of an intersection deficiency in the City of Lake Elsinore is based on the City of Lake Elsinore General Plan Circulation Element. The City of Lake Elsinore General Plan states that target LOS “D” be maintained along City roads (including intersections) wherever possible. As an exception, the City’s General Plan allows for LOS “E” operations in the Historic Area of the City within the Main Street overlay and the City’s Ballpark District. As such, LOS “E” has been considered the minimum LOS at the intersections of E. Lakeshore Drive and Diamond Drive and W. Graham Avenue and N. Main Street.

### **2.7.2 COUNTY OF RIVERSIDE**

Riverside County General Plan Policy C 2.1 states that the County will maintain the following County-wide target level of service (LOS): LOS “C” on all County-maintained roads and conventional State Highways. As an exception, LOS “D” may be allowed in Community Development areas at intersections of any combination of Secondary Highways, Major Highways, Arterial Highways, Urban Arterial Highways, Expressways or conventional State Highways. LOS “E” may be allowed in designated Community Centers to the extent that it would support transit-oriented development and pedestrian communities. As such, LOS “D” has been considered acceptable at any intersection within the County of Riverside because all of the study area intersections are classified as Secondary Highways or a higher classification.

### **2.7.3 CALTRANS**

Regarding Caltrans’ ramp to arterial intersections and other Caltrans maintained facilities, the published Caltrans traffic study guidelines (December 2002) states the following:

*“Caltrans endeavors to maintain a target LOS at the transition between LOS “C” and LOS “D” on State highway facilities, however, Caltrans acknowledges that this may not be always feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS.”*

Caltrans has worked with the County of Riverside and local jurisdictions such as the City of Lake Elsinore to establish a local threshold for freeway-to-arterial interchange intersections. Consistent with City's stated threshold, LOS "D" is considered to be the limit of acceptable traffic operations during the peak hour at the freeway-to-arterial interchange intersections maintained by Caltrans.

In an effort to more directly link land use, transportation and air quality and promote reasonable growth, the County of Riverside adopted a Congestion Management Plan (CMP) (March 10, 2010). The Riverside County Transportation Commission (RCTC) monitors the CMP roadway network system to minimize LOS deficiencies. Within the project study area, the I-215 Freeway and Central Avenue (SR-74) are recognized as key transportation facilities within the CMP system. Although Caltrans utilizes LOS "D" as their stated threshold, RCTC has adopted LOS "E" as the minimum standard for intersections and segments along the CMP System of Highways and Roadways. However, for the purposes of this traffic impact analysis, LOS "D" has been considered to be the limit of acceptable traffic operations for the I-15 Freeway mainline segments and ramp junctions and for intersections along Central Avenue (SR-74).

## **2.8 THRESHOLDS OF SIGNIFICANCE**

This section outlines the significance criteria used in this analysis relating to roadway system impacts. The Criteria are based on California Environmental Quality Act (CEQA).

### **2.8.1 INTERSECTIONS/ROADWAYS**

For the purposes of this analysis, the following thresholds of significance have been utilized to determine whether the addition of project traffic at a study intersection results in a significant project-related impact:

- A significant project-related impact occurs at a study intersection if the addition of project-generated trips reduces the peak hour level of service of the study intersection to change from acceptable level of service (i.e., LOS "A", "B", "C" or "D") to an unacceptable level of service (i.e., LOS "E" or "F");
- A significant project-related impact occurs at a study intersection if the project-generated trips worsen the pre-project level of service grade at a deficiently operating (i.e., LOS "E" or "F") intersection by the values shown in Table 2-5.

**Table 2-5: Thresholds of Significance**

<b>Pre-Project LOS</b>	<b>Project-Related Delay Increase</b>	<b>Mitigation Measure</b>
E	2.0 Seconds or More	Achieve Pre-project delay or better
F	1.0 Second or More	Achieve Pre-project delay or better

The proposed significance thresholds have been applied to the study area intersections for the purposes of determining project-related impacts through a comparison of peak hour operations under Existing (2013) and Existing Plus Project traffic conditions.

A significant cumulative impact is identified when a facility is projected to operate below the level of service standards due to local and regional traffic growth (i.e., cumulative development and ambient growth) along with the addition of Project traffic. A project’s contribution to a cumulatively significant traffic impact can be reduced to less-than-significant if the Project is required to implement or fund its fair share of improvements designed to alleviate the potential cumulative impact. If full funding of future cumulative improvements is not reasonably assured, a temporary unmitigated cumulative impact may occur until the needed improvement is fully funded and constructed.

### **2.8.2 FREEWAY**

For the purposes of this traffic impact analysis, if a freeway segment is projected to operate at an acceptable level of service (i.e., LOS “D” or better) without the Project and the Project is expected to cause the facility to operate at an unacceptable level of service (i.e., LOS “E” or LOS “F”), the impact is considered significant.

## **2.9 PROJECT FAIR SHARE CALCULATION METHODOLOGY**

In cases where this TIA identifies that the proposed Project would have a significant cumulative impact to a roadway facility, and the recommended mitigation measure is a fair share monetary contribution, the following methodology was applied to determine the fair share contribution. A project’s fair share contribution at an off-site study area intersection is determined based on the following equation, which is the ratio of Project traffic to new traffic, and new traffic is total future traffic subtracts existing baseline traffic:

$$\text{Project Fair Share \%} = \text{Project Traffic} / (\text{Post-2035 Total Traffic} - \text{Existing Baseline Traffic})$$

The Project fair share contribution calculations are presented in Section 9.0 *Local and Regional Funding Mechanisms* of this TIA.

## **3.0 AREA CONDITIONS**

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

### **3.1 EXISTING CIRCULATION NETWORK**

Pursuant to the Traffic Study Scoping Agreement (Appendix “1.1”) and discussion with the City of Lake Elsinore staff, the study area includes a total of thirty-two (32) existing and future intersections as shown on Exhibit 1-2. Of these of thirty-two (32) intersections, the existing study area circulation network includes of twenty-nine (29) intersections analysis locations shown on Table 1-1. The other three (3) intersections in the study area are future planned intersections (Project driveways) that do not currently exist.

Exhibit 3-1 illustrates the study area intersections located near the proposed Project and identifies the number of through traffic lanes for existing roadways and intersection traffic controls.

### **3.2 CITY OF LAKE ELSINORE GENERAL PLAN CIRCULATION ELEMENT**

As previously noted, the Project site is located within the City of Lake Elsinore. Exhibit 3-2 shows the City of Lake Elsinore General Plan Circulation Element, and Exhibit 3-3 illustrates the City of Lake Elsinore General Plan roadway cross-sections.

Exhibit 3-4 shows the Riverside County General Plan Circulation Element, and Exhibit 3-5 illustrates the Riverside County General Plan roadway cross-sections.

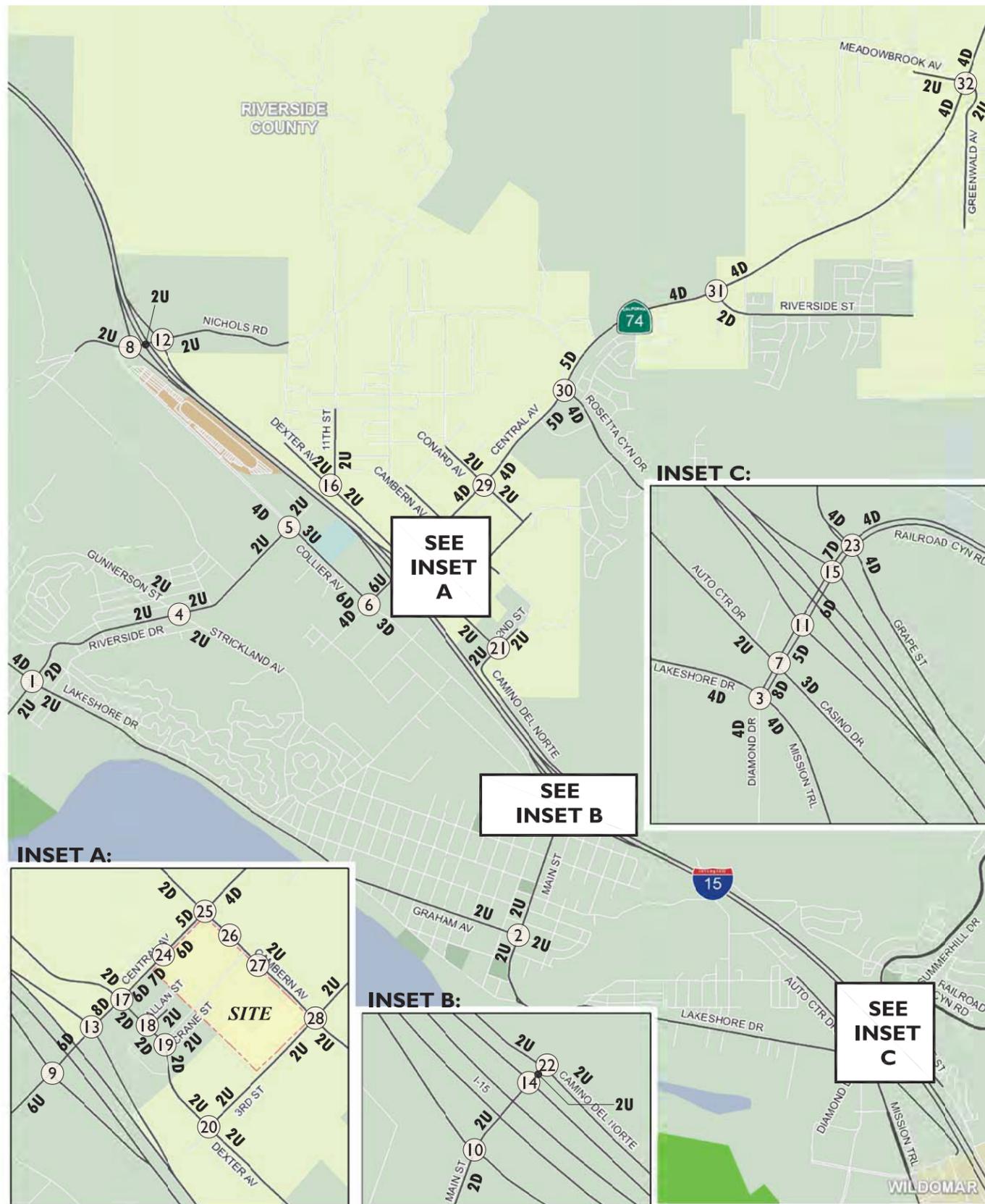
### **3.3 PEDESTRIAN AND BICYCLE FACILITIES**

Field observations conducted in June 2013 indicate nominal pedestrian and bicycle activity within the study area, which can be attributable to the limited residential and commercial development within and immediately surrounding the study area. Exhibit 3-6 illustrates the planned trails included on the City of Lake Elsinore, Elsinore Area Trails System. As shown, there is a Regional Trail south of the Project along 2<sup>nd</sup> Street/Wasson Canyon Road and the Lake Elsinore Lake, River, Levee Regional Trail that runs along Alberhill Creek. Exhibit 3-7 illustrates the proposed City of Lake Elsinore Bikeway Plan. The following bikeways currently exist within the vicinity of the study area:

- Class I bikeways are dedicated trails, separated from vehicular traffic. There are no Class I bikeway facilities within the study area.
- Class II bikeways are designated, striped bikeways generally located along the right shoulder of the roadway. No Class II bikeways were found within the study area based on field review; however,

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# EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS

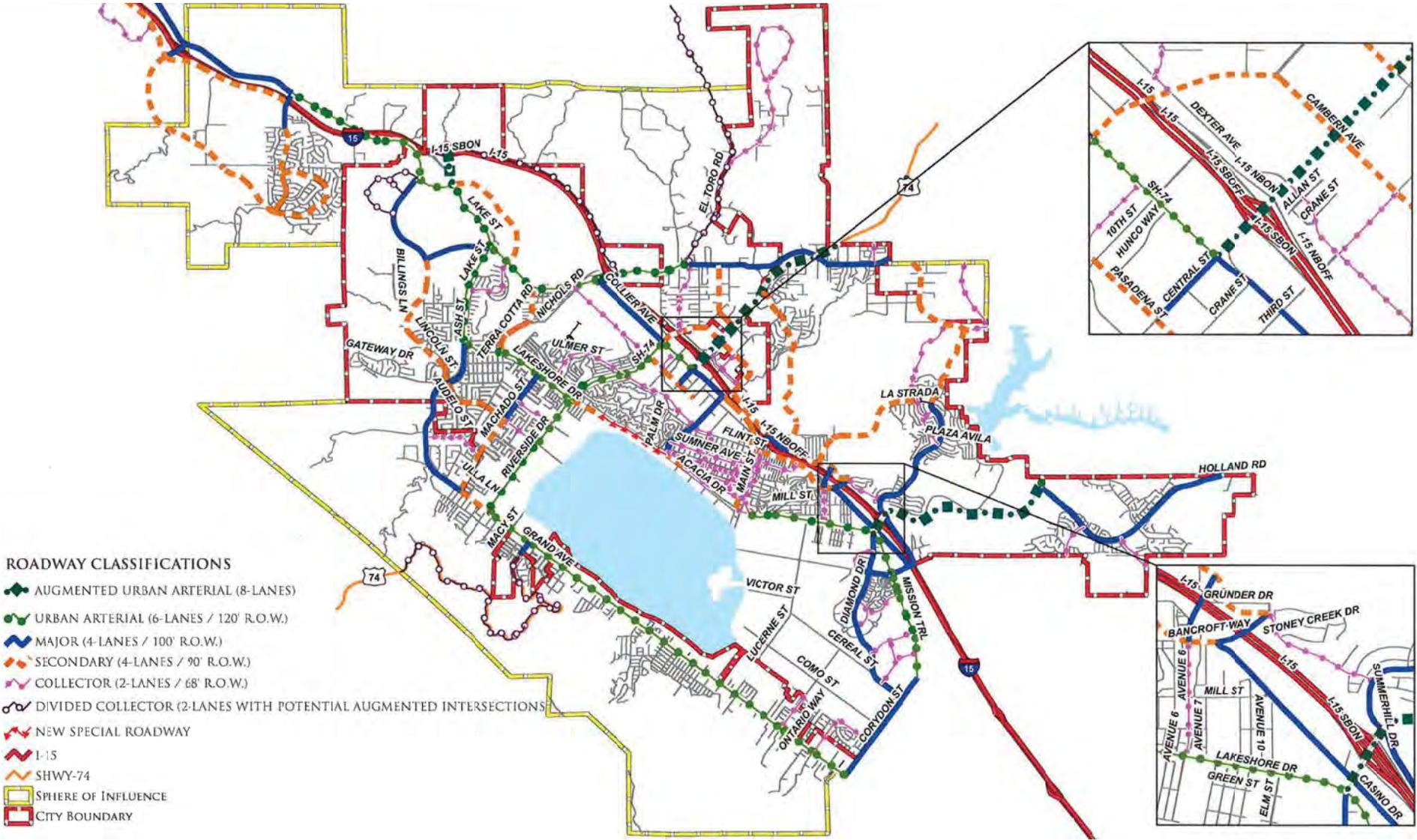


1 Lakeshore Dr. & Riverside Dr. (SR-74)	2 Graham Av. & Main St.	3 Lakeshore Dr./ Mission Bl. & Diamond Dr.	4 Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74)	5 Collier Av. & Riverside Dr. (SR-74)	6 Collier Av. & Central Av. (SR-74)	7 Auto Center Dr. & Diamond Dr.	
8 I-15 SB Ramps & Nichols Rd.	9 I-15 SB Ramps & Central Av. (SR-74)	10 I-15 SB Ramps & Main St.	11 I-15 SB Ramps & Railroad Canyon Rd.	12 I-15 NB Ramps & Nichols Rd.	13 I-15 NB Ramps & Central Av. (SR-74)	14 I-15 NB Ramps & Main St.	
15 I-15 NB Ramps & Railroad Canyon Rd.	16 Dexter Av. & 11th St.	17 Dexter Av. & Central Av. (SR-74)	18 Dexter Av. & Allan St.	19 Dexter Av. & Crane St.	20 Dexter Av. & 3rd St.	21 Dexter Av. & 2nd St.	
22 Camino Del Norte & Main St.	23 Summerhill Dr./ Grape St. & Railroad Canyon Rd.	24 Driveway 1 & Central Av. (SR-74)	25 Cambern Av. & Central Av. (SR-74)	26 Cambern Av. & Driveway 2	27 Cambern Av. & Driveway 3	28 Cambern Av. & 3rd St.	
29 Conard Av. & Central Av. (SR-74)	30 Rosetta Cyn. Dr. & Central Av. (SR-74)	31 Riverside St. & Central Av. (SR-74)	32 Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74)				

- LEGEND:**
- = TRAFFIC SIGNAL
  - = ALL WAY STOP
  - = STOP SIGN
  - 4** = NUMBER OF LANES
  - D** = DIVIDED
  - U** = UNDIVIDED
  - RTO** = RIGHT TURN OVERLAP
  - DEF** = DEFACTO RIGHT TURN

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

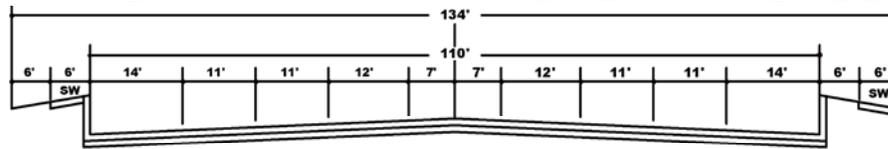


37

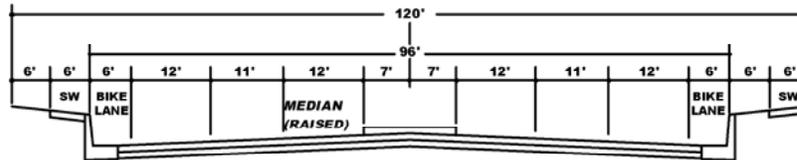
SOURCE: CITY OF LAKE ELSINORE GENERAL PLAN (ADOPTED 12-13-2011)



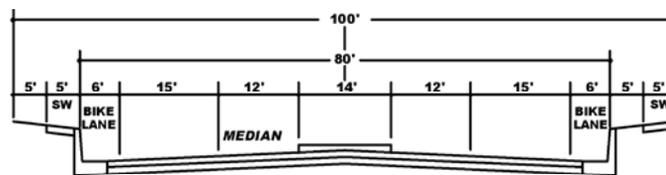
# CITY OF LAKE ELSINORE GENERAL PLAN ROADWAY CROSS-SECTIONS



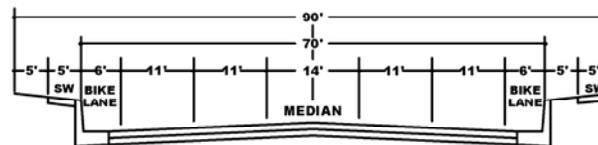
**AUGMENTED URBAN ARTERIAL - STATE HIGHWAY**  
(8-LANE)



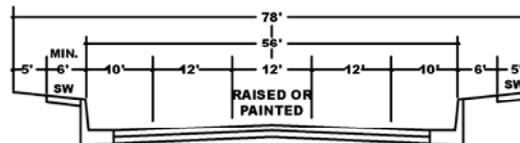
**URBAN ARTERIAL HIGHWAY**  
(6-LANE)



**MAJOR HIGHWAY**  
(4-LANE)

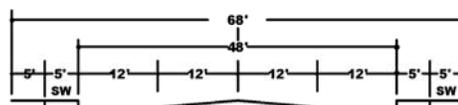


**SECONDARY HIGHWAY**  
(4-LANE)

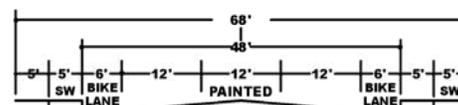


**DIVIDED COLLECTOR**  
(2-LANE)

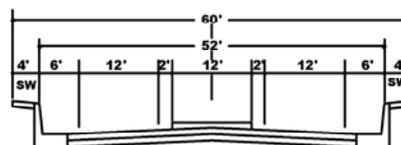
BIKES USE SHOULDER



**COLLECTOR HIGHWAY**  
(4-LANE)



**COLLECTOR HIGHWAY**  
(2-LANE)



**NEW SPECIAL ROADWAY**  
(2-LANE)

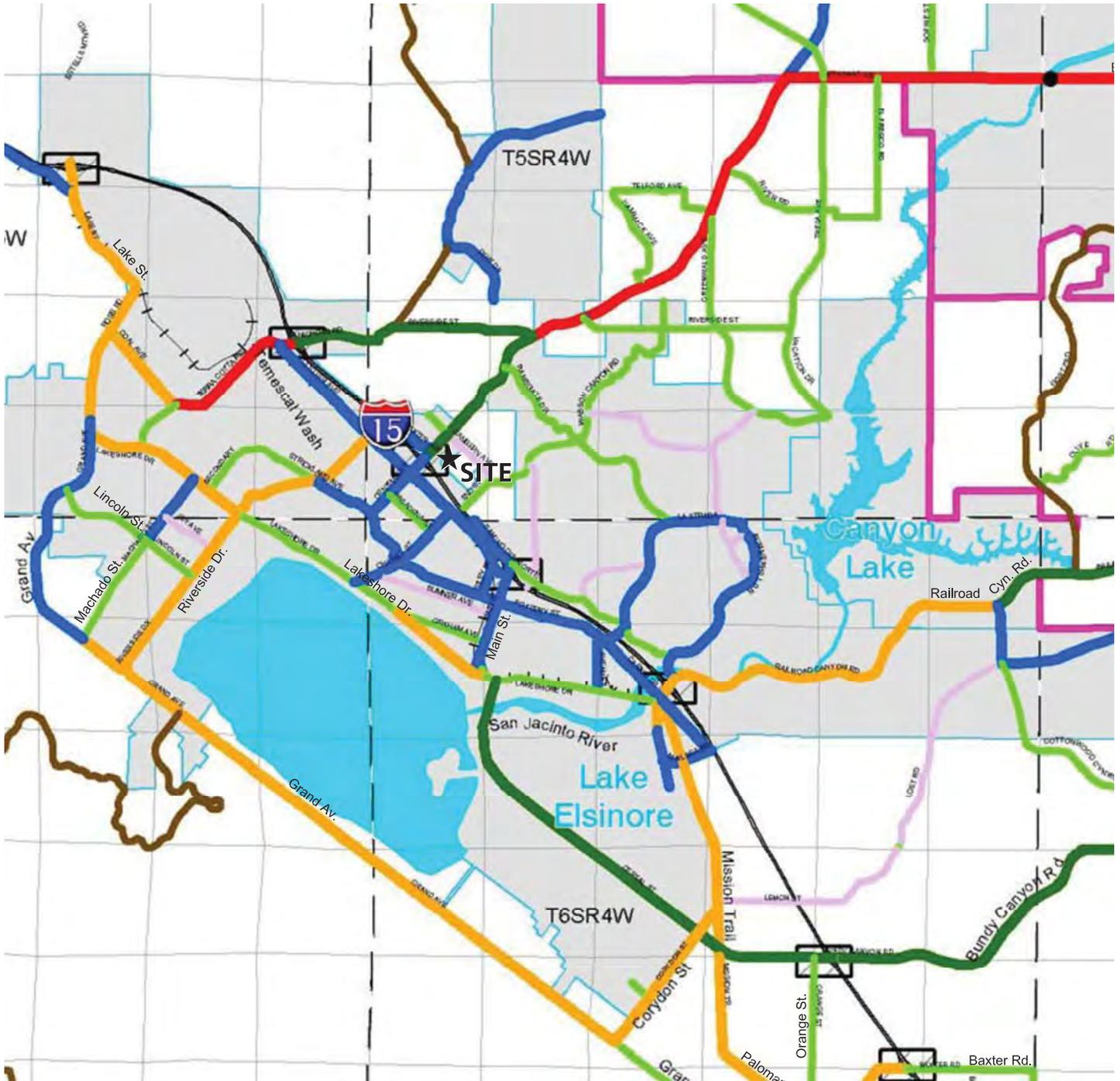
SHOULDER/BIKE LANE

(PROPOSED FOR LAKESHORE DRIVE IN THE COUNTRY CLUB HEIGHT DISTRICT)

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

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

EXHIBIT 3-4  
**RIVERSIDE COUNTY  
 GENERAL PLAN CIRCULATION ELEMENT**

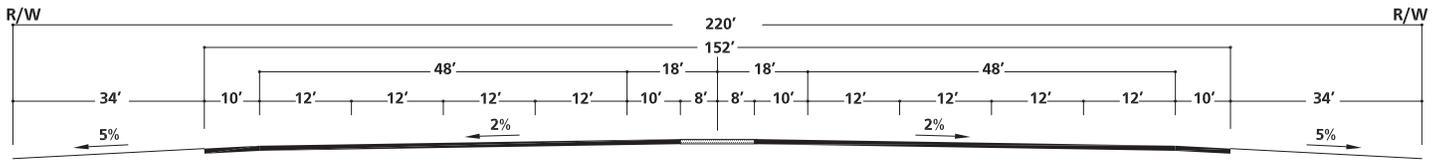


- |                              |   |                    |
|------------------------------|---|--------------------|
| Expressway (184' ROW)        | Bridges   | Area Plan Boundary |
| Urban Arterial (152' ROW)    | Moreno Valley to San Bernardino Corridor Alternatives | Township           |
| Arterial (128' ROW)          | Hemet to Corona/Lake Elsinore Corridor Alternatives   | Section            |
| Major (118' ROW)             | SR-79 Re-alignment Alternatives                       | Water              |
| Secondary (100' ROW)         | Proposed Interchange                                  | City               |
| Collector (74' ROW)          | Existing Interchange                                  |                    |
| Mountain Arterial (110' ROW) |   |                    |
| Freeway                      |   |                    |
| Railroad                     |   |                    |

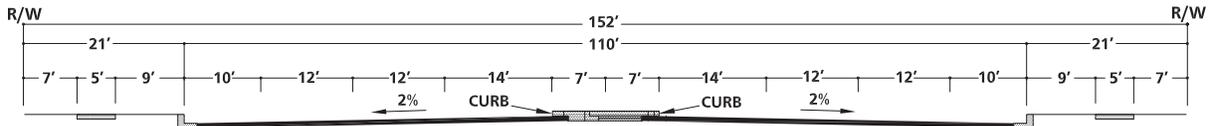
SOURCE: RIVERSIDE COUNTY INTEGRATED PROJECT (RCIP)  
 (OCTOBER 7, 2003)

EXHIBIT 3-5

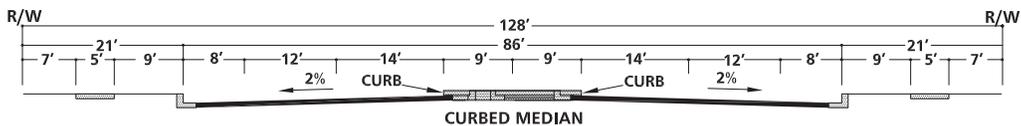
# RIVERSIDE COUNTY GENERAL PLAN ROADWAY CROSS-SECTIONS



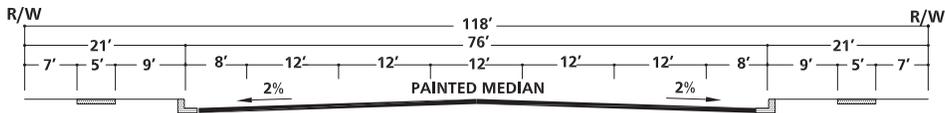
**EXPRESSWAY - 8 LANES**



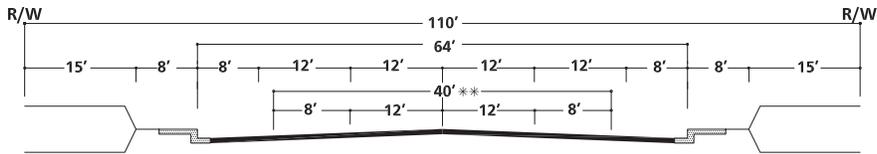
**URBAN ARTERIAL HIGHWAY \***



**ARTERIAL HIGHWAY \***

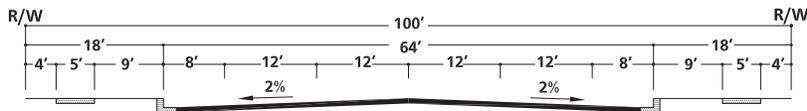


**MAJOR HIGHWAY - 4 LANES**

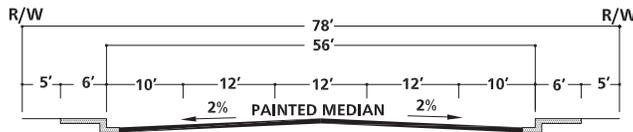


**MOUNTAIN ARTERIAL - 2 TO 4 LANES**

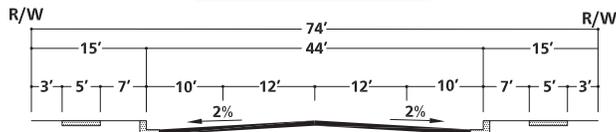
\*\* 2 LANE SECTION



**SECONDARY HIGHWAY**



**INDUSTRIAL COLLECTOR**



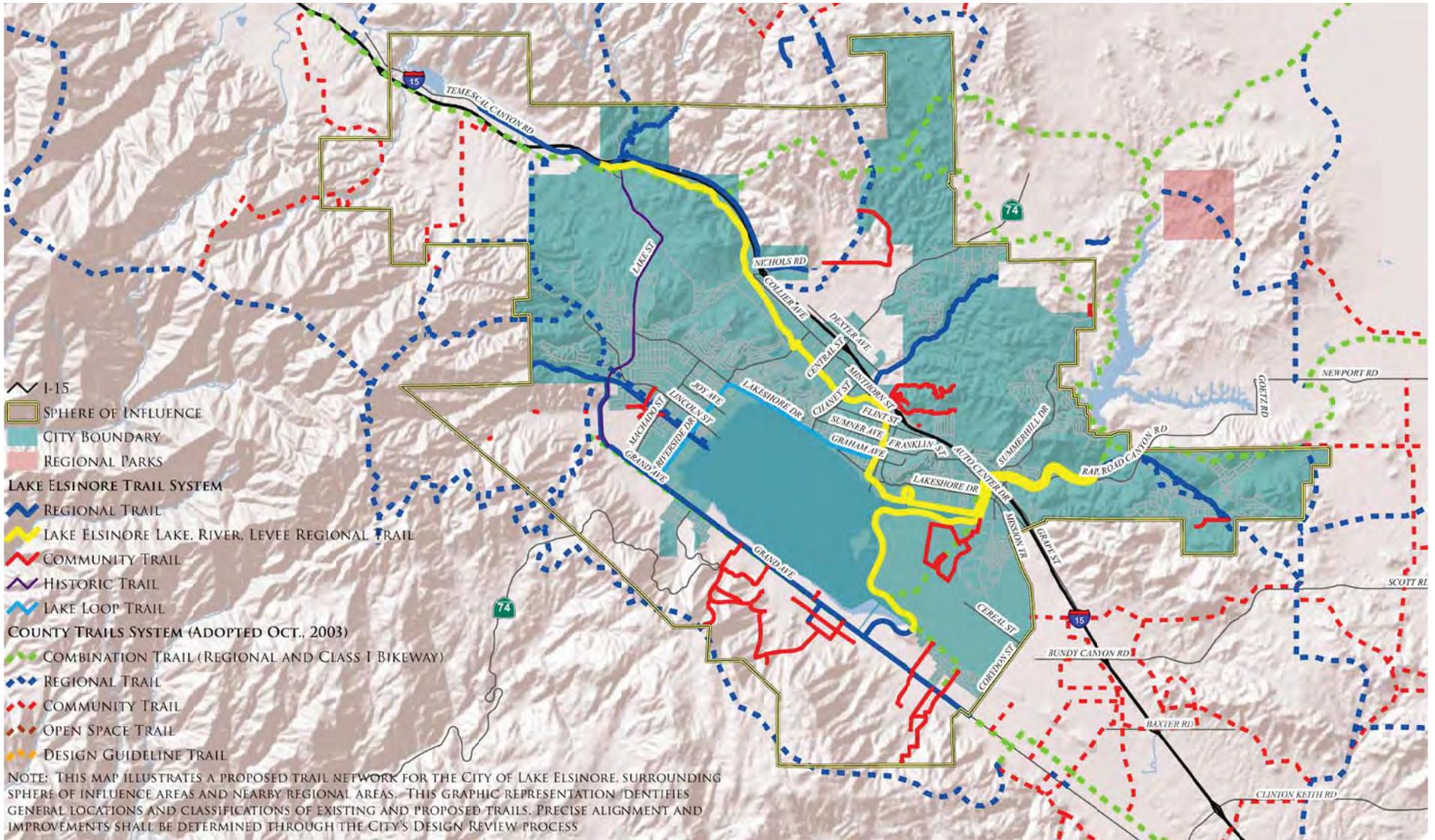
**COLLECTOR**

\* 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

# CITY OF LAKE ELSINORE ELSINORE AREA TRAILS SYSTEM

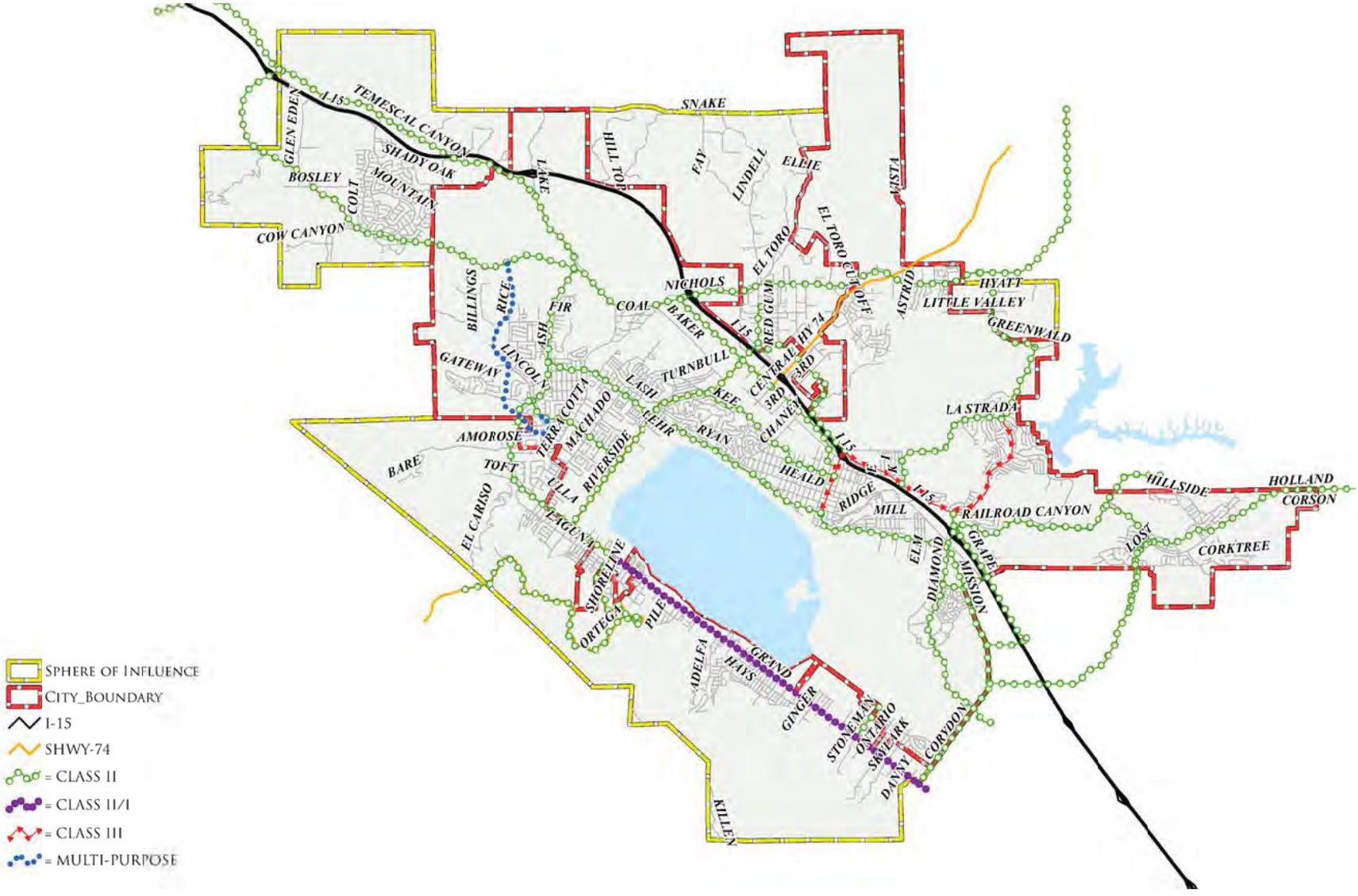


41



EXHIBIT 3-7  
**CITY OF LAKE ELSINORE  
 BIKEWAY PLAN**

42



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



there are planned Class II bikeways along Nichols Road, Collier Avenue, Riverside Drive (SR-74), Camino del Norte, 11<sup>th</sup> Street, Lakeshore Drive, La Strada, Railroad Canyon Road/Diamond Drive, Grape Street, and Greenwald Avenue.

- Class III routes are designated bikeways, although not striped, and are shared with vehicles. Future Class III bikeways are planned along N. Main Street, Camino del Norte (south of N. Main Street), and along Summerhill Drive.

Existing pedestrian facilities (e.g., crosswalks, sidewalks, bus stops, etc.) within the study area are shown on Exhibit 3-8.

### **3.4 TRANSIT SERVICE**

The study area is currently served by the Riverside Transit Agency (RTA) with bus services along the I-15 Freeway, Nichols Road, Collier Avenue, and Central Avenue (SR-74) via Commuter Route 206; along Collier Avenue and Central Avenue (SR-74) via Route 22; and along Collier Avenue, Chaney Street, Graham Avenue, Lakeshore Drive, Diamond Drive and Grape Street, via Route 7. The existing RTA Route 22 would likely serve the proposed Project. It is our understanding that the proposed Project would provide a bus turnout for a future stop along its frontage on Central Avenue (SR-74). Exhibit 3-9 illustrates the RTA bus routes for the study area.

Transit service is reviewed and updated by RTA periodically to address ridership, budget and community demand needs. Changes in land use can affect these periodic adjustments which may lead to either enhanced or reduced service where appropriate.

### **3.5 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 May 2013. 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)
- Saturday Mid-Day Peak Hour (peak hour between 12:00 PM and 3:00 PM)

Manual weekday AM, weekday PM and Saturday mid-day peak hour turning movement counts were conducted in May 2013. The weekday AM, weekday PM and Saturday mid-day peak hour count data is representative of typical weekday or weekend 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. The raw manual peak hour turning movement traffic count data sheets are included in Appendix “3.1”. The traffic counts collected in May 2013 include the vehicle classifications as shown below for the Caltrans arterial-to-freeway ramp facilities:

EXHIBIT 3-8  
**EXISTING PEDESTRIAN FACILITIES**



EXHIBIT 3-9  
**EXISTING TRANSIT SERVICES**



- 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 Passenger Car Equivalents (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.

Existing (2013) average daily traffic (ADT) volumes on arterial highways throughout the study area are shown on Exhibit 3-10. Existing (2013) ADT volumes are based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg:

$$\text{PM Peak Hour (Approach Volume + Exit Volume)} \times 12 = \text{Leg Volume}$$

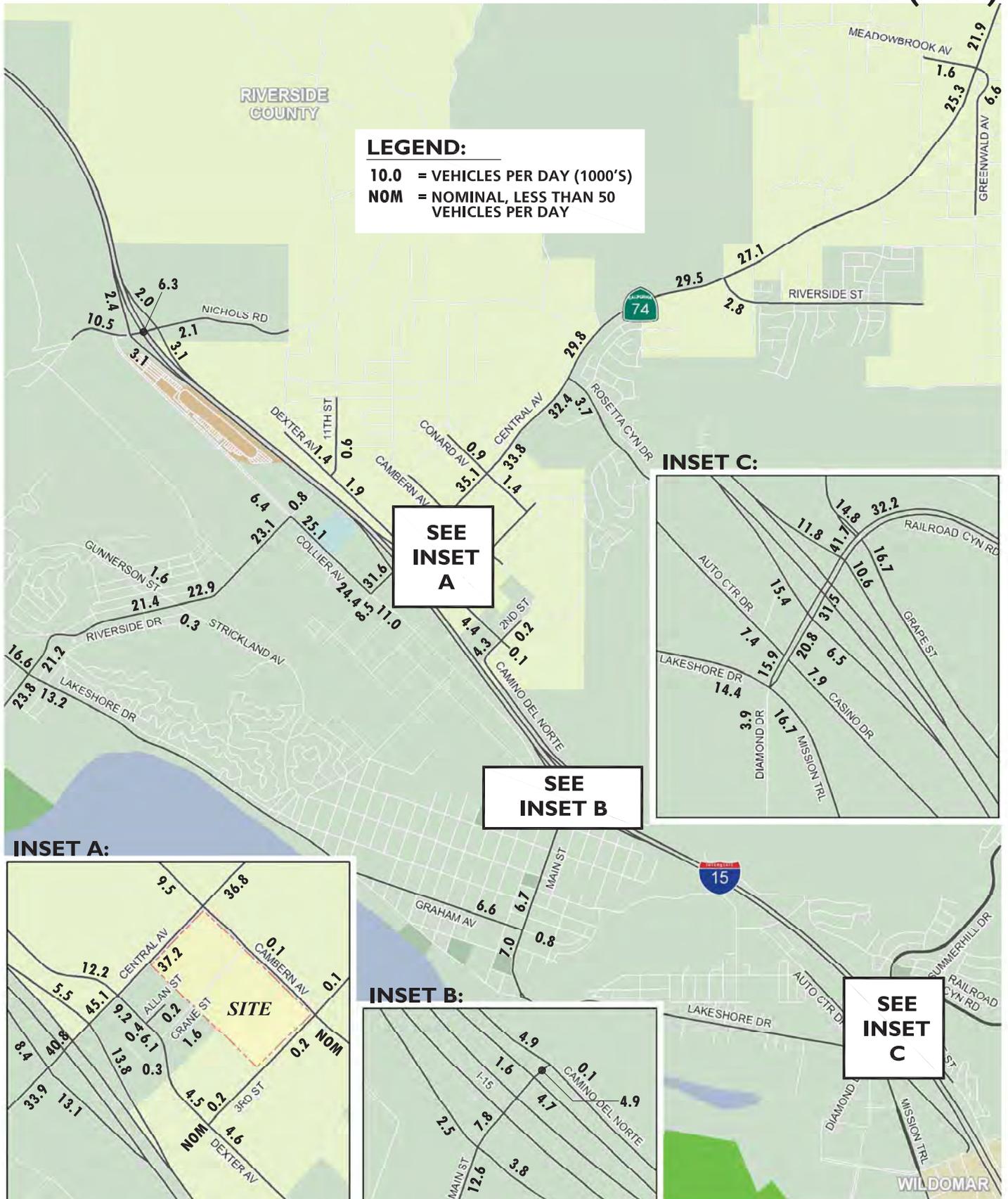
Based on a comparison of PM peak hour traffic count data to 24-hour tube count data along roadway segments in close proximity to the study area, it was determined that the PM peak hour volumes were approximately eight (8) to nine (9) percent of the total 24-hour daily volume on select segments. As such, it was determined that the above equation could be utilized to approximate the ADT volume on the study area segments based on the same relationship (i.e., 8-9 percent PM peak-to-daily relationship).

Existing (2013) weekday AM, weekday PM, and Saturday mid-day peak hour intersection volumes are shown on Exhibits 3-11, 3-12, and 3-13, respectively. It should be noted that the volumes utilized at the Caltrans arterial-to-freeway ramp intersections have been modified to reflect PCE volumes for the peak hour intersection operations analysis.

### 3.6 EXISTING CONDITIONS INTERSECTION OPERATIONS ANALYSIS

Existing (2013) 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. The Existing (2013) conditions operations analysis shows that all but six (6) study area intersections currently operate at acceptable LOS (i.e., LOS “D” or better) during the peak hours. As shown below, the following intersections are currently shown to be operating at an unacceptable LOS during one or more peak hours:

EXHIBIT 3-10  
**EXISTING (2013)  
 AVERAGE DAILY TRAFFIC (ADT)**



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**EXISTING (2013)**

**WEEKDAY AM PEAK HOUR INTERSECTION VOLUMES**



<b>1</b> Lakeshore Dr. & Riverside Dr. (SR-74) 	<b>2</b> Graham Av. & Main St. 	<b>3</b> Lakeshore Dr./ Mission Bl. & Diamond Dr. 	<b>4</b> Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 	<b>5</b> Collier Av. & Riverside Dr. (SR-74) 	<b>6</b> Collier Av. & Central Av. (SR-74) 	<b>7</b> Auto Center Dr. & Diamond Dr. 	
<b>8</b> I-15 SB Ramps & Nichols Rd. 	<b>9</b> I-15 SB Ramps & Central Av. (SR-74) 	<b>10</b> I-15 SB Ramps & Main St. 	<b>11</b> I-15 SB Ramps & Railroad Canyon Rd. 	<b>12</b> I-15 NB Ramps & Nichols Rd. 	<b>13</b> I-15 NB Ramps & Central Av. (SR-74) 	<b>14</b> I-15 NB Ramps & Main St. 	
<b>15</b> I-15 NB Ramps & Railroad Canyon Rd. 	<b>16</b> Dexter Av. & 11th St. 	<b>17</b> Dexter Av. & Central Av. (SR-74) 	<b>18</b> Dexter Av. & Allan St. 	<b>19</b> Dexter Av. & Crane St. 	<b>20</b> Dexter Av. & 3rd St. 	<b>21</b> Dexter Av. & 2nd St. 	
<b>22</b> Camino Del Norte & Main St. 	<b>23</b> Summerhill Dr./ Grape St. & Railroad Canyon Rd. 	<b>24</b> Driveway 1 & Central Av. (SR-74) Future Intersection 	<b>25</b> Cambern Av. & Central Av. (SR-74) 	<b>26</b> Cambern Av. & Driveway 2 Future Intersection 	<b>27</b> Cambern Av. & Driveway 3 Future Intersection 	<b>28</b> Cambern Av. & 3rd St. 	
<b>29</b> Conard Av. & Central Av. (SR-74) 	<b>30</b> Rosetta Cyn. Dr. & Central Av. (SR-74) 	<b>31</b> Riverside St. & Central Av. (SR-74) 	<b>32</b> Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74) 				

**EXISTING (2013)**

**WEEKDAY PM PEAK HOUR INTERSECTION VOLUMES**



<b>1</b> Lakeshore Dr. & Riverside Dr. (SR-74) 	<b>2</b> Graham Av. & Main St. 	<b>3</b> Lakeshore Dr./ Mission Bl. & Diamond Dr. 	<b>4</b> Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 	<b>5</b> Collier Av. & Riverside Dr. (SR-74) 	<b>6</b> Collier Av. & Central Av. (SR-74) 	<b>7</b> Auto Center Dr. & Diamond Dr. 	
<b>8</b> I-15 SB Ramps & Nichols Rd. 	<b>9</b> I-15 SB Ramps & Central Av. (SR-74) 	<b>10</b> I-15 SB Ramps & Main St. 	<b>11</b> I-15 SB Ramps & Railroad Canyon Rd. 	<b>12</b> I-15 NB Ramps & Nichols Rd. 	<b>13</b> I-15 NB Ramps & Central Av. (SR-74) 	<b>14</b> I-15 NB Ramps & Main St. 	
<b>15</b> I-15 NB Ramps & Railroad Canyon Rd. 	<b>16</b> Dexter Av. & 11th St. 	<b>17</b> Dexter Av. & Central Av. (SR-74) 	<b>18</b> Dexter Av. & Allan St. 	<b>19</b> Dexter Av. & Crane St. 	<b>20</b> Dexter Av. & 3rd St. 	<b>21</b> Dexter Av. & 2nd St. 	
<b>22</b> Camino Del Norte & Main St. 	<b>23</b> Summerhill Dr./ Grape St. & Railroad Canyon Rd. 	<b>24</b> Driveway 1 & Central Av. (SR-74) Future Intersection 	<b>25</b> Cambern Av. & Central Av. (SR-74) 	<b>26</b> Cambern Av. & Driveway 2 Future Intersection 	<b>27</b> Cambern Av. & Driveway 3 Future Intersection 	<b>28</b> Cambern Av. & 3rd St. 	
<b>29</b> Conard Av. & Central Av. (SR-74) 	<b>30</b> Rosetta Cyn. Dr. & Central Av. (SR-74) 	<b>31</b> Riverside St. & Central Av. (SR-74) 	<b>32</b> Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74) 				

**EXISTING (2013)**

**SATURDAY MID-DAY PEAK HOUR INTERSECTION VOLUMES**



<b>1</b> Lakeshore Dr. & Riverside Dr. (SR-74) 	<b>2</b> Graham Av. & Main St. 	<b>3</b> Lakeshore Dr./ Mission Bl. & Diamond Dr. 	<b>4</b> Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 	<b>5</b> Collier Av. & Riverside Dr. (SR-74) 	<b>6</b> Collier Av. & Central Av. (SR-74) 	<b>7</b> Auto Center Dr. & Diamond Dr. 	
<b>8</b> I-15 SB Ramps & Nichols Rd. 	<b>9</b> I-15 SB Ramps & Central Av. (SR-74) 	<b>10</b> I-15 SB Ramps & Main St. 	<b>11</b> I-15 SB Ramps & Railroad Canyon Rd. 	<b>12</b> I-15 NB Ramps & Nichols Rd. 	<b>13</b> I-15 NB Ramps & Central Av. (SR-74) 	<b>14</b> I-15 NB Ramps & Main St. 	
<b>15</b> I-15 NB Ramps & Railroad Canyon Rd. 	<b>16</b> Dexter Av. & 11th St. 	<b>17</b> Dexter Av. & Central Av. (SR-74) 	<b>18</b> Dexter Av. & Allan St. 	<b>19</b> Dexter Av. & Crane St. 	<b>20</b> Dexter Av. & 3rd St. 	<b>21</b> Dexter Av. & 2nd St. 	
<b>22</b> Camino Del Norte & Main St. 	<b>23</b> Summerhill Dr./ Grape St. & Railroad Canyon Rd. 	<b>24</b> Driveway 1 & Central Av. (SR-74) Future Intersection 	<b>25</b> Cambern Av. & Central Av. (SR-74) 	<b>26</b> Cambern Av. & Driveway 2 Future Intersection 	<b>27</b> Cambern Av. & Driveway 3 Future Intersection 	<b>28</b> Cambern Av. & 3rd St. 	
<b>29</b> Conard Av. & Central Av. (SR-74) 	<b>30</b> Rosetta Cyn. Dr. & Central Av. (SR-74) 	<b>31</b> Riverside St. & Central Av. (SR-74) 	<b>32</b> Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74) 				

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Table 3-1

Intersection Analysis for Existing (2013) Conditions

#	Intersection	Traffic Control <sup>3</sup>	Intersection Approach Lanes <sup>1</sup>												Delay <sup>2</sup> (secs.)			Level of Service		
			Northbound			Southbound			Eastbound			Westbound			AM	PM	Sat	AM	PM	Sat
			L	T	R	L	T	R	L	T	R	L	T	R						
1	Lakeshore Dr / Riverside Dr (SR-74)	TS	1	2	0	1	2	1	1	2	1	1	1	1	41.3	43.7	43.5	D	D	D
2	W Graham Av / N Main St	AWS	0	1	0	1	1	0	0	1	0	0	1	0	9.0	11.8	10.4	A	B	B
3	E Lakeshore Dr / Diamond Dr	TS	1	2	1	1	2	d	1	3	0	2	2	0	147.6	>200.0	>200.0	F	F	F
4	Gunnerson St / Riverside Dr (SR-74)	CSS	0	1	1	0	1	1	0	1	0	0	1	0	47.0	>100.0	>100.0	E	F	F
5	Collier Av / Riverside Dr (SR-74)	TS	1	1	0	1	1	1	0	1	1>	0	1	0	12.4	17.3	20.1	B	B	C
6	Collier Av / Central Av (SR-74)	TS	1	1	1>	2	2	1	2	2	0	2	1	2>	37.9	35.8	33.2	D	D	C
7	Auto Center Dr / Diamond Dr	TS	1	2	0	1	2	0	1	3	0	2	2	0	22.8	23.8	24.5	C	C	C
8	I-15 SB Ramps / Nichols Rd	AWS	0	0	0	0	1	0	0	1	1	1	1	0	10.1	9.7	9.2	B	A	A
9	I-15 SB Ramps / Central Av (SR-74)	TS	0	0	0	1	1	1	0	2	1	2	2	0	24.5	31.6	25.1	C	C	C
10	I-15 SB Ramps / N Main St	CSS	0	0	0	0	1	1	0	1	d	1	1	0	12.9	13.9	10.5	B	B	B
11	I-15 SB Ramps / Railroad Canyon Rd	TS	0	0	0	2	1	1	0	2	1	1	2	0	50.1	<b>96.1</b>	<b>63.7</b>	D	F	E
12	I-15 NB Ramps / Nichols Rd	CSS	0	1	0	0	0	0	1	1	0	0	1	0	40.1	30.2	19.0	E	D	C
13	I-15 NB Ramps / Central Av (SR-74)	TS	1	1	1	0	0	0	1	3	0	0	3	1	20.8	23.7	21.4	C	C	C
14	I-15 NB Ramps / N Main St	CSS	0	1	0	0	0	0	1	1	0	0	1	0	57.7	<b>52.9</b>	15.9	F	F	C
15	I-15 NB Ramps / Railroad Canyon Rd	TS	0	1	2	0	0	0	2	3	0	0	2	1	36.1	46.6	28.4	D	D	C
16	Dexter Av / 11th St	CSS	0	1	d	0	1	d	0	1	0	0	1	0	9.9	9.4	9.4	A	A	A
17	Dexter Av / Central Av (SR-74)	TS	1	1	d	1	1	1>	1	3	1	1	4	1	32.3	33.4	33.9	C	C	C
18	Dexter Av / Allan St	CSS	1	1	d	1	1	d	0	1	0	0	1	0	10.4	11.1	10.0	B	B	A
19	Dexter Av / Crane St	CSS	1	1	d	1	1	d	0	1	0	0	1	0	10.0	11.9	9.8	B	B	A
20	Dexter Av / 3rd St	CSS	0	1	0	0	1	0	0	1	0	0	1	0	10.1	10.2	9.4	B	B	A
21	Dexter Av / 2nd St	AWS	0	1	0	0	1	0	0	1	0	0	1	0	8.6	8.7	8.0	A	A	A
22	Camino del Norte / N Main St	CSS	0	1	0	0	1	0	1	0	1	0	0	0	10.2	10.5	9.8	B	B	A
23	Summerhill Dr / Railroad Canyon Rd	TS	2	2	0	1	1	1>	2	2	1	1	3	0	<b>92.5</b>	<b>146.1</b>	<b>94.5</b>	F	F	F
24	Driveway 1 / Central Av (SR-74)																			
25	Cambern Av / Central Av (SR-74)	TS	1	1	0	0	1	1	2	2	0	1	2	1	16.9	23.8	25.9	B	C	C
26	Cambern Av / Driveway 2																			
27	Cambern Av / Driveway 3																			
28	Cambern Av / 3rd St	AWS	0	1	0	0	1	0	0	1	0	0	1	0	6.8	6.9	6.9	A	A	A
29	Conard Av / Central Av (SR-74)	TS	0	1	0	0	1	d	1	2	d	1	2	d	18.1	22.3	18.8	B	C	B
30	Rosetta Canyon Dr / Central Av (SR-74)	TS	1	0	1	0	0	0	0	3	d	1	2	0	18.6	16.5	15.0	B	B	B
31	Riverside St / Central Av (SR-74)	TS	2	0	1	0	0	0	0	2	d	1	2	0	13.4	14.5	12.7	B	B	B
32	Greenwald Av / Central Av (SR-74)	TS	1	1	0	1	1	0	1	2	1	1	2	d	21.8	22.5	21.7	C	C	C

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

<sup>1</sup> 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; d= Defacto Right Turn Lane

<sup>2</sup> Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all-way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. The I-15 ramp locations have been analyzed using the Synchro Software (Version 8).

<sup>3</sup> CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal

ID	Intersection Location
3	E. Lakeshore Drive / Diamond Drive – LOS “F” AM, PM and Saturday peak hours
4	Gunnerson Street / Riverside Drive (SR-74) – LOS “E” AM peak hour; LOS “F” PM and Saturday peak hours
11	I-15 Southbound Ramps / Railroad Canyon Road – LOS “F” PM peak hour; LOS “E” Saturday peak hour
12	I-15 Northbound Ramps / Nichols Road LOS “E” AM peak hour
14	I-15 Northbound Ramps / N. Main Street – LOS “F” AM and PM peak hours
23	Summerhill Drive / Railroad Canyon Road – LOS “F” AM, PM, and Saturday peak hours

Exhibit 3-14 summarizes the weekday AM, weekday PM, and Saturday mid-day peak hour study area intersection LOS under Existing (2013) conditions, consistent with the summary provided in Table 3-1. The intersection operations analysis worksheets are included in Appendix “3.2” of this TIA.

### 3.7 EXISTING CONDITIONS TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for Existing traffic conditions are based on existing peak hour intersection volumes. For Existing (2013) conditions, there are no study area intersections that currently appears to warrant a traffic signal (see Appendix “3.3”).

### 3.8 EXISTING CONDITIONS RAMP QUEUING ANALYSIS

A ramp queuing analysis was also performed for southbound and northbound off-ramps at I-15/Nichols Road, I-15/Central (SR-74), I-15/Main, and I-15/Railroad Canyon Road to assess vehicle queues for the off ramps that may potentially impact peak hour operations at the ramp-to-arterial intersections and may potentially “spill back” onto the I-15 Freeway mainline. Ramp queuing analysis findings are presented in Table 3-2. It is important to note that segment lengths are consistent with the measured distance between the ramps and the adjacent signalized/full-access intersection. As shown on Table 3-2, the following movements may potentially be experiencing queuing issues during the weekday AM, weekday PM or Saturday mid-day peak 95<sup>th</sup> percentile traffic flows:

ID	Intersection Location
9	I-15 Southbound Off-Ramp / Central Avenue (SR-74) – Southbound Left (PM peak hour only)
13	I-15 Northbound Off-Ramp / Central Avenue (SR-74) – Northbound Left (AM, PM, and Saturday peak hours); Northbound Right (PM peak hour only)
15	I-15 Northbound Off-Ramp / Railroad Canyon Road – Northbound Left-Through (PM peak hour only)

# SUMMARY OF PEAK HOUR INTERSECTIONS LOS FOR EXISTING (2013) CONDITIONS

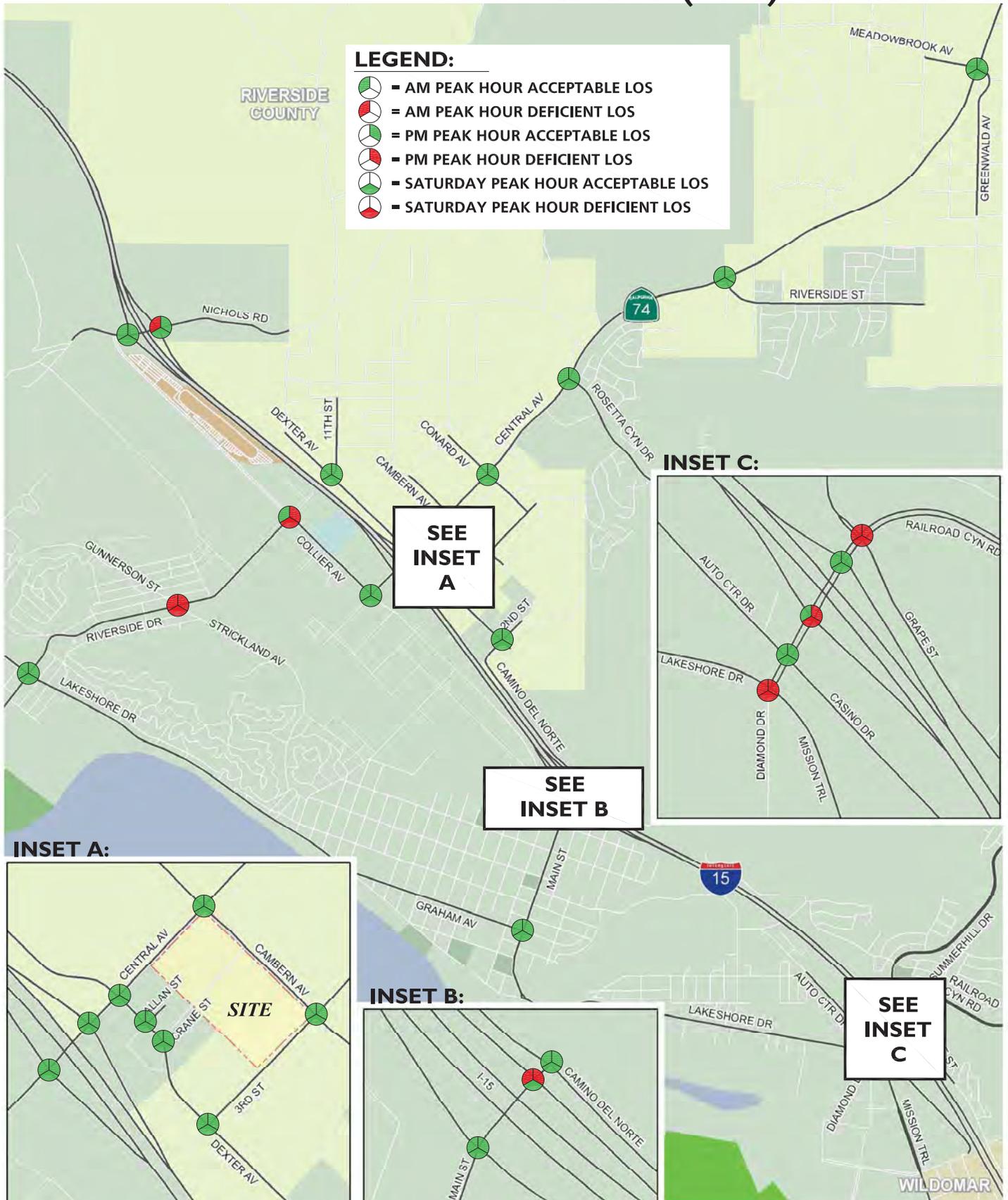


Table 3-2

Existing (2013) Conditions  
AM/PM Peak Hour Off-Ramp Stacking Length Summary along I-15 Freeway

Intersection	Movement	Stacking Distance (Feet)	95th Percentile Stacking Distance Required (Feet)			Acceptable? <sup>1</sup>		
			AM Peak Hour	PM Peak Hour	SAT Peak Hour	AM	PM	SAT
I-15 NB Off-Ramp / Nichols Rd.	NBL/T/R	1,530	156	130	64	Yes	Yes	Yes
I-15 SB Off-Ramp / Central Av. (SR-74)	SBL	250	174	<b>360</b> <sup>2</sup>	221	Yes	<b>No</b>	Yes
	SBT	1,520	174	393 <sup>2</sup>	226	Yes	Yes	Yes
	SBR	250	85	66	96	Yes	Yes	Yes
I-15 NB Off-Ramp / Central Av. (SR-74)	NBL	250	<b>313</b> <sup>2</sup>	<b>407</b> <sup>2</sup>	<b>362</b> <sup>2</sup>	<b>No</b>	<b>No</b>	<b>No</b>
	NBT	1,300	237	359 <sup>2</sup>	300 <sup>2</sup>	Yes	Yes	Yes
	NBR	250	163	<b>318</b> <sup>2</sup>	254	Yes	<b>No</b>	Yes
I-15 SB Off-Ramp / Main St.	SBR	200	9	40	12	Yes	Yes	Yes
I-15 NB Off-Ramp / Main St.	NBL/T/R	1,610	316	268	57	Yes	Yes	Yes
I-15 SB Off-Ramp / Railroad Canyon Rd.	SBL	1,270	329 <sup>2</sup>	691 <sup>2</sup>	559 <sup>2</sup>	Yes	Yes	Yes
	SBT/R	725	45	69	63	Yes	Yes	Yes
	SBR	280	44	64	61	Yes	Yes	Yes
I-15 NB Off-Ramp / Railroad Canyon Rd.	NBL/T	340	271 <sup>2</sup>	<b>396</b> <sup>2</sup>	188	Yes	<b>No</b>	Yes
	NBR	1,600	43	392 <sup>2</sup>	162	Yes	Yes	Yes

Note: The 95th percentile queues indicates potential queuing for the movements and peak hours identified above. However, while the potential queues would exceed the turn pocket lengths and could spillback into the adjacent through lanes, none are anticipated to result in spillback onto the I-15 Freeway mainline since the adjacent through lanes all have sufficient capacity.

<sup>1</sup> Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

<sup>2</sup> 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

The 95<sup>th</sup> percentile queues for Existing (2013) traffic conditions indicates potential queuing for the movements and peak hours identified above. As shown, the analysis indicates that potential queues would exceed the turn pocket lengths and could spillback into the adjacent through lanes; however, are not anticipated to result in spillback onto the I-15 Freeway mainline since the adjacent through lanes all have sufficient capacity to accommodate the queue spillback from adjacent turn lanes.

Worksheets for Existing (2013) conditions queuing analysis are provided in Appendix “3.4”.

### 3.9 EXISTING CONDITIONS BASIC FREEWAY SEGMENT ANALYSIS

Existing (2013) mainline directional volumes for the weekday AM, weekday PM and Saturday mid-day peak hours are provided on Exhibit 3-15. As shown on Table 3-3, I-15 Freeway segments analyzed for this study were found to operate at an acceptable LOS (i.e., LOS “D” or better) during the peak hours for Existing (2013) traffic conditions with the exception of the I-15 Freeway northbound segment between N. Main Street and Railroad Canyon which currently operates at LOS “E” during the PM peak hour. Existing (2013) basic freeway segment analysis worksheets are provided in Appendix “3.5”.

### 3.10 EXISTING CONDITIONS FREEWAY MERGE/DIVERGE ANALYSIS

Ramp merge and diverge operations were also evaluated for Existing (2013) conditions and the results of this analysis are presented in Table 3-4. As shown in Table 3-4, the I-15 Freeway ramp merge and diverge areas at Nichols Road and I-15 Northbound and Southbound, Central Avenue (SR-74) and I-15 Southbound, N. Main Street and I-15 Southbound, and Railroad Canyon Road and I-15 Southbound currently operate at LOS “D” or better conditions, with the exception of the following locations during the peak hours under Existing (2013) traffic conditions:

ID	Freeway Merge/Diverge Ramp Junctions
12	I-15 Freeway – Northbound, Off-Ramp at Central Avenue (SR-74) – LOS “E” PM peak hour only
14	I-15 Freeway – Northbound, Off-Ramp at N. Main Street – LOS “E” PM peak hour only
15	I-15 Freeway – Northbound, On-Ramp at Railroad Canyon Road – LOS “E” AM and PM peak hours
16	I-15 Freeway – Northbound, Off -Ramp at Railroad Canyon Road – LOS “E” PM peak hour only

Existing (2013) freeway ramp junction operations analysis worksheets are provided in Appendix “3.6”.

# EXISTING (2013) PEAK HOUR FREEWAY MAINLINE VOLUMES



**LEGEND:**

100/ 100/ 100 = AM/ PM/ SAT VOLUMES

NOTE: VOLUMES SHOWN ARE ACTUAL VEHICLES (NOT PCE).

Table 3-3

Existing (2013) Conditions Basic Freeway Segment Analysis

Freeway	Direction	Mainline Segment	Lanes <sup>1</sup>	Volume <sup>2</sup>			Density <sup>3</sup>			LOS		
				AM	PM	SAT	AM	PM	SAT	AM	PM	SAT
I-15 Freeway	Southbound	North of Nichols Road	3	2,813	3,760	3,328	15.3	20.6	18.2	B	C	C
		Nichols Road to Central Avenue (SR-74)	3	2,823	3,821	3,359	15.4	20.9	18.3	B	C	C
		Central Avenue (SR-74) to N. Main Street	3	3,429	4,211	3,841	18.5	22.9	20.8	C	C	C
		N. Main Street to Railroad Canyon Road	3	3,687	4,320	3,927	19.8	23.6	21.3	C	C	C
		South of Railroad Canyon Road	3	3,625	3,580	3,327	19.4	19.5	18.2	C	C	C
	Northbound	North of Nichols Road	3	4,429	4,666	4,332	24.6	26.2	24.0	C	D	C
		Nichols Road to Central Avenue (SR-74)	3	4,470	4,753	4,388	24.9	26.9	24.3	C	D	C
		Central Avenue (SR-74) to N. Main Street	3	4,859	5,439	4,956	27.3	32.3	28.2	D	D	D
		N. Main Street to Railroad Canyon Road	3	5,193	5,697	5,090	30.0	35.2	29.1	D	E	D
		South of Railroad Canyon Road	3	4,204	5,598	4,509	23.2	34.1	25.0	C	D	C

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

<sup>1</sup> Number of lanes are in the specified direction and is based on existing conditions.

<sup>2</sup> Directional volumes based on current PeMS data. Truck percentages are consistent with available Caltrans 2011 data.

<sup>3</sup> Density is measured by passenger cars per mile per lane (pc/mi/ln).

Table 3-4

I-15 Freeway Ramp Junction Merge/Diverge Analysis  
For Existing (2013) Conditions

Freeway	Direction	Ramp or Segment	Lanes on Freeway	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
				Density <sup>1</sup>	LOS	Density <sup>1</sup>	LOS	Density <sup>1</sup>	LOS
I-15 Freeway	Southbound	Off-Ramp at Nichols Road	3	21.4	C	26.8	C	24.4	C
		On-Ramp at Nichols Road	3	19.5	B	24.7	C	22.2	C
		Off-Ramp at Central Avenue (SR-74)	3	22.2	C	28.2	D	25.5	C
		On-Ramp at Central Avenue (SR-74)	3	24.6	C	28.9	D	26.9	C
		Off-Ramp at Main Street	3	25.1	C	29.5	D	27.5	C
		On-Ramp at Main Street	3	23.6	C	27.1	C	24.7	C
		Off-Ramp at Railroad Canyon Road	3	27.8	C	32.2	D	30.0	D
		On-Ramp at Railroad Canyon Road	3	23.6	C	23.0	C	21.8	C
	Northbound	On-Ramp at Nichols Road	3	24.7	C	26.0	C	24.2	C
		Off-Ramp at Nichols Road	3	30.3	D	31.8	D	30.0	D
		On-Ramp at Central Avenue (SR-74)	3	26.5	C	27.8	C	26.0	C
		Off-Ramp at Central Avenue (SR-74)	3	33.5	D	<b>36.5</b>	E	34.4	D
		On-Ramp at Main Street	3	29.3	D	32.5	D	30.0	D
		Off-Ramp at Main Street	3	34.2	D	<b>36.3</b>	E	33.5	D
		On-Ramp at Railroad Canyon Road	3	35.3	E	<b>36.2</b>	E	33.6	D
Off-Ramp at Railroad Canyon Road		3	29.6	D	<b>36.4</b>	E	31.0	D	

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

<sup>1</sup> Density is measured by passenger cars per mile per lane (pc/mi/ln).

## 4.0 PROJECTED FUTURE TRAFFIC

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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 proposed Project is anticipated to include the development of a 154,487 square foot Walmart store (which includes a 3,090 square foot Garden Center), 4,600 square feet of specialty retail shops, 4,600 square feet of fast-food without drive-through window use, and two (2) fast-food restaurants with drive-through windows totaling 6,800 square feet located on the southwest corner of the intersection of Cambren Avenue and Central Avenue (SR-74). For the purpose of this analysis, the project is anticipated to be developed in a single phase with a projected Opening Year of 2016.

The Project is proposed to have access on Central Avenue (SR-74) via Driveway 1, Cambren Avenue via Driveway 2 and Driveway 3, Dexter Avenue via Allan Street and Crane Street, and Third Street via Driveway 4 and Driveway 5. All Project access points are proposed to be full-access, with the exception of Allan Street on Dexter Avenue, Driveway 1 on Central Avenue (SR-74), and Driveway 2 on Cambren Avenue which are proposed to have right-in/right-out access only. Driveway 4 and Driveway 5 on Third Street are proposed for truck access. Regional access to the Project site will be provided by the I-15 Freeway (located to the west) via Central Avenue (SR-74). As part of the development, the Project will construct improvements on the site adjacent roadways of Central Avenue (SR-74), Cambren Avenue, Third Street, Allan Street and Crane Street.

### 4.1 PROJECT TRIP GENERATION

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

Trip generation rates used to estimate Project traffic are shown in Table 4-1 and a summary of the Project's trip generation is shown in Table 4-2. The trip generation rates are based upon data collected by the Institute of Transportation Engineers (ITE) for Free-standing Discount Superstore (ITE Land Use Code 813), Specialty Retail (ITE Land Use Code 820/826), Fast-food without Drive-Through (ITE Land Use Code 933) and Fast-food with Drive-Through (ITE Land Use Code 934) in their recently published *Trip Generation* manual, 9<sup>th</sup> Edition, 2012.

Pass-by trips are defined as intermediate stops on the way from an origin to a primary trip destination without a route diversion. Pass-by trips are attracted from traffic passing the site on an adjacent street or roadway that offers direct access to the generator. These types of trips are many times associated with retail uses, such as fast-food restaurants with drive-through window. As the Project is proposed to include fast-food with drive-through uses, pass-by percentages have been obtained from Tables 5.23 and 5.24 of

**Table 4-1**

**Project Trip Generation Rates<sup>1</sup>**

Land Use <sup>1</sup>	ITE LU Code	Units <sup>2</sup>	Weekday AM Peak Hour			Weekday PM Peak Hour			Weekday Daily	Saturday Mid-Day Peak Hour <sup>3</sup>		
			In	Out	Total	In	Out	Total		In	Out	Total
Free Standing Discount Superstore	813	TSF	1.04	0.81	1.85	2.13	2.22	4.35	50.75	2.82	2.82	5.64
Specialty Retail <sup>3</sup>	820/826	TSF	0.60	0.36	0.96	1.19	1.52	2.71	44.32	1.19	1.52	2.71
Fast-food without Drive-Through	933	TSF	26.32	17.55	43.87	13.34	12.81	26.15	716.00	26.73	27.82	54.55
Fast-food with Drive-Through	934	TSF	23.16	22.26	45.42	16.98	15.67	32.65	496.12	30.09	28.91	59.00
Gas/Market/Car Wash	946	VFP	6.04	5.80	11.84	7.07	6.79	13.86	152.84	9.73	9.73	19.46

<sup>1</sup> Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation, Ninth Edition (2012).

<sup>2</sup> TSF = Thousand Square Feet

<sup>3</sup> Saturday peak hour of the generator trip rates is utilized.

**Table 4-2**

**Project Trip Generation Summary**

Land Use	Quantity	Units <sup>1</sup>	Weekday AM Peak Hour			Weekday PM Peak Hour			Weekday Daily	Saturday Mid-Day Peak Hour		
			In	Out	Total	In	Out	Total		In	Out	Total
Free-Standing Discount Superstore	154.487	TSF	161	125	286	329	343	672	7,840	436	436	871
Internal Trip Reduction (10%)			-13	-13	-26	-33	-33	-66	-784	-44	-44	-88
<i>Subtotal</i>			<i>148</i>	<i>112</i>	<i>260</i>	<i>296</i>	<i>310</i>	<i>606</i>	<i>7,056</i>	<i>392</i>	<i>392</i>	<i>783</i>
Specialty Retail	4.600	TSF	3	2	4	5	7	12	204	5	7	12
Internal Trip Reduction (10%)			0	0	0	-1	-1	-2	-20	-1	-1	-2
<i>Subtotal</i>			<i>3</i>	<i>2</i>	<i>4</i>	<i>4</i>	<i>6</i>	<i>10</i>	<i>184</i>	<i>4</i>	<i>6</i>	<i>10</i>
Fast-food without Drive-Through	4.600	TSF	121	81	202	61	59	120	3,294	123	128	251
Internal Trip Reduction (10%)			-8	-8	-16	-6	-6	-12	-329	-12	-12	-24
<i>Subtotal</i>			<i>113</i>	<i>73</i>	<i>186</i>	<i>55</i>	<i>53</i>	<i>108</i>	<i>2,965</i>	<i>111</i>	<i>116</i>	<i>227</i>
Fast-food with Drive-Through	6.800	TSF	157	151	309	115	107	222	3,374	205	197	401
Internal Trip Reduction (10%)			-15	-15	-30	-11	-11	-22	-337	-20	-20	-40
Pass-by Trip Reduction (49% AM; 50% PM/Daily) <sup>2</sup>			-67	-67	-134	-48	-48	-96	-1,518	-88	-88	-177
<i>Subtotal</i>			<i>76</i>	<i>69</i>	<i>145</i>	<i>57</i>	<i>48</i>	<i>104</i>	<i>1,518</i>	<i>96</i>	<i>88</i>	<i>185</i>
<b>TOTAL NET TRIPS</b>			<b>339</b>	<b>256</b>	<b>595</b>	<b>412</b>	<b>417</b>	<b>829</b>	<b>11,723</b>	<b>602</b>	<b>602</b>	<b>1,204</b>

<sup>1</sup> TSF = Thousand Square Feet

<sup>2</sup> Pass-by reduction percentages are from the ITE Trip Generation Handbook (3rd Edition, 2014): Tables F.31 and F.32.

**Table 4-3**

**Project Trip Generation Summary - Gas Station Alternative**

Land Use	Quantity	Units	Weekday AM Peak Hour			Weekday PM Peak Hour			Weekday Daily	Saturday Mid-Day Peak Hour		
			In	Out	Total	In	Out	Total		In	Out	Total
Free-Standing Discount Superstore	154.487	TSF	161	125	286	329	343	672	7,840	436	436	871
Internal Trip Reduction (10%)			-13	-13	-26	-33	-33	-66	-784	-44	-44	-88
<i>Subtotal</i>			<i>148</i>	<i>112</i>	<i>260</i>	<i>296</i>	<i>310</i>	<i>606</i>	<i>7,056</i>	<i>392</i>	<i>392</i>	<i>783</i>
Fast-food with Drive-Through	6.800	TSF	157	151	309	115	107	222	3,374	205	197	401
Internal Trip Reduction (10%)			-15	-15	-30	-11	-11	-22	-337	-20	-20	-40
Pass-by Trip Reduction (49% AM; 50% PM/Daily) <sup>2</sup>			-67	-67	-134	-48	-48	-96	-1,518	-88	-88	-176
<i>Subtotal</i>			<i>76</i>	<i>69</i>	<i>145</i>	<i>57</i>	<i>48</i>	<i>104</i>	<i>1,518</i>	<i>97</i>	<i>89</i>	<i>185</i>
Gas Station/Market/Car Wash	16	VFP	97	93	189	113	109	222	2,445	156	156	311
Internal Trip Reduction (10%)			-9	-9	-19	-11	-11	-22	-245	-16	-16	-32
Pass-by Trip Reduction (62% AM; 56% PM/Daily) <sup>2</sup>			-52	-52	-104	-55	-55	-110	-1,233	-78	-78	-156
<i>Subtotal</i>			<i>36</i>	<i>32</i>	<i>67</i>	<i>48</i>	<i>43</i>	<i>91</i>	<i>968</i>	<i>61</i>	<i>61</i>	<i>123</i>
<b>TOTAL NET TRIPS</b>			<b>259</b>	<b>213</b>	<b>472</b>	<b>400</b>	<b>401</b>	<b>801</b>	<b>9,543</b>	<b>550</b>	<b>542</b>	<b>1,091</b>

<sup>1</sup> TSF = Thousand Square Feet; VFP = Vehicle Fueling Positions

<sup>2</sup> Pass-by reduction percentages are from the ITE Trip Generation Handbook (3rd Edition, 2014): Tables F.31, and F.32, F.37, and F38.

the ITE *Trip Generation Handbook* (2nd Edition, 2004). Although the ITE *Trip Generation Handbook* allows up to a 34% pass-by reduction on the free-standing discount superstore, no pass-by trip reductions were taken on this particular land use for the purposes of this analysis in an effort to overstate as opposed to understate potential project impacts.

Internal capture is a percentage reduction that can be applied to the trip generation estimates for individual land uses to account for trips internal to the site. In other words, trips may be made between individual retail uses on-site and can be made either by walking or using internal roadways without using external streets. It has been assumed that approximately 10% of Project trips would remain within the Project boundary. As the trip generation for the site was conservatively estimated based on individual land uses as opposed to the overall ITE Shopping Center rate, an internal capture reduction of 10% was applied to recognize the interactions that would occur between the various complimentary land uses. For example, patrons of the free-standing discount superstore may also visit the specialty retail or fast food restaurants without leaving the site and are therefore considered as vehicle trips that are internal to the site. As shown on Table 7.1 of the ITE *Trip Generation Handbook*, the internal capture percentage between retail-to-retail land uses is approximately 29% during the weekday mid-day peak hour and approximately 20% during the weekday PM peak hour. As such, a 10% internal capture reduction has been utilized in an effort to estimate a conservative trip generation for the proposed Project. The internal capture reduction percentage applied has been reviewed and approved by City staff.

Saturday mid-day peak hour and daily trip generation has also been estimated. To estimate the worse-case scenario, the highest peak rate of the generator for Saturday or Sunday has been used. The proposed development is projected to generate a total of approximately 11,723 net trip-ends per day on a typical weekday. The Project is anticipated to generate a total of approximately 595 net weekday AM peak hour trips, 829 net weekday PM peak hour trips and 1,204 net Saturday Mid-day peak hour trips. It should be noted that truck traffic is limited to deliveries which typically occur during the off-peak hours. As such, truck traffic related to ongoing operations of the Project (i.e., deliveries) during weekday and Saturday peak hour conditions is considered less-than-significant.

The proposed Project also considered an alternative site plan that would include the development of a 154,487 square foot Walmart store (which includes a 3,090 square foot Garden Center), two (2) fast-food restaurants with drive-through windows totaling 6,800 square feet, and a gas station/convenience store/car wash with sixteen (16) pump stations. As shown on Table 4-3, this alternative site plan is anticipated to generate a total of approximately 9,543 net trip-ends per day on a typical weekday, 472 net weekday AM peak hour trips, 801 net weekday PM peak hour trips, and 1,091 net Saturday Mid-day peak hour trips. As compared to the proposed Project, the alternative site plan with gas station is anticipated to generate 2,180 fewer net trip-ends per weekday, 123 fewer net weekday AM peak hour trips, 28 fewer net weekday PM peak hour trips, and 113 fewer net Saturday Mid-Day peak hour trips. In order to be conservative, the traffic study has included a detailed analysis of the retail oriented site plan (without gas station).

## 4.2 PROJECT TRIP DISTRIBUTION

Exhibit 4-1 illustrates the proposed Project trip distribution patterns under Opening Year (2016) traffic conditions. Exhibit 4-2 illustrates the proposed Project trip distribution patterns under General Plan Buildout (Post-2035) traffic conditions, and assumes the anticipated long-range roadway network. The General Plan Buildout (Post-2035) Project trip distribution patterns have been identified based on a “select zone” model run from the RivTAM (2035) focused model, and assumes congested conditions during the weekday PM peak period. As RivTAM does not include a weekend model, weekend travel patterns are assumed to be similar to those identified for weekday PM peak hour conditions. To develop the Opening Year (2016) trip distribution patterns, the General Plan Buildout (Post-2035) Project trip distribution patterns were adjusted accordingly to utilize the existing and near-term roadway network only. The General Plan Buildout (Post-2035) Project trip distribution patterns also takes into account future planned interchange improvements and roadway network, including the construction of raised median along Central Avenue (SR-74) at Dexter Avenue.

## 4.3 MODAL SPLIT

The traffic reducing potential of public transit, walking or bicycling have not been considered in this TIA. Essentially, the traffic projections are "conservative" in that these alternative travel modes might be able to reduce the forecasted traffic volumes.

## 4.4 PROJECT TRIP ASSIGNMENT

The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the location and configuration of Project site access driveways 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 (2016) average daily traffic (ADT) volumes for the weekday are shown on Exhibit 4-3. Project (2016) weekday AM, weekday PM and Saturday Mid-day peak hour volumes are shown on Exhibits 4-4, 4-5 and 4-6, respectively.

## 4.5 CONSTRUCTION TRAFFIC

Traffic operations during the proposed construction phase of the project may potentially result in traffic impacts related to construction employees, export of materials, import of construction materials, etc. It is anticipated that the following construction-related activities would generate traffic and may potentially result in construction-related traffic impacts:

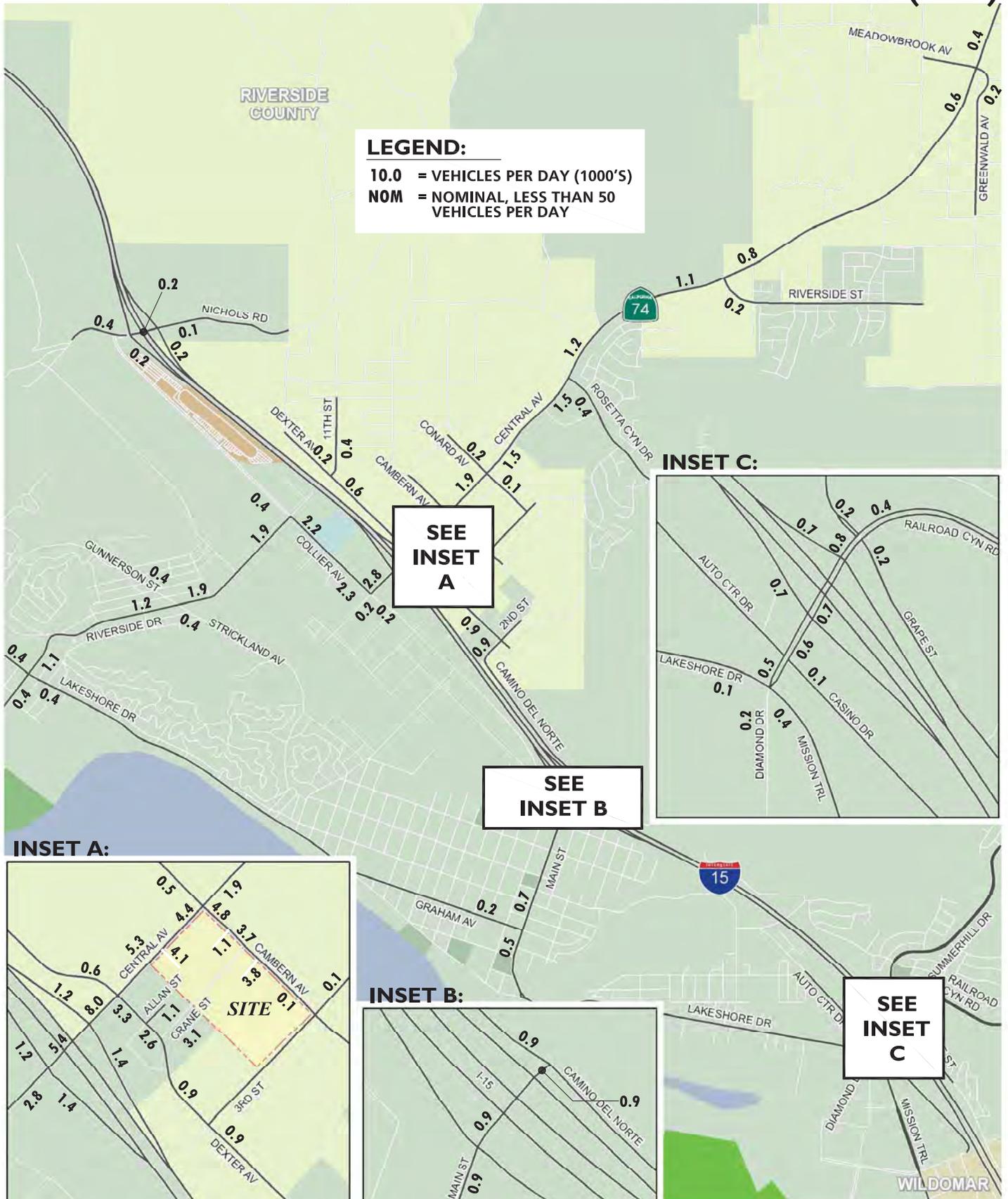
- Employee trips
- Export of materials
- Import of construction materials
- Use of heavy equipment



# PROJECT TRIP (GENERAL PLAN BUILDOUT) DISTRIBUTION



# PROJECT ONLY AVERAGE DAILY TRAFFIC (ADT)



**WEEKDAY AM PEAK HOUR INTERSECTION VOLUMES**



<p><b>1</b> Lakeshore Dr. &amp; Riverside Dr. (SR-74)</p>	<p><b>2</b> Graham Av. &amp; Main St.</p>	<p><b>3</b> Lakeshore Dr./ Mission Bl. &amp; Diamond Dr.</p>	<p><b>4</b> Gunnerson St./ Strickland Av. &amp; Riverside Dr. (SR-74)</p>	<p><b>5</b> Collier Av. &amp; Riverside Dr. (SR-74)</p>	<p><b>6</b> Collier Av. &amp; Central Av. (SR-74)</p>	<p><b>7</b> Auto Center Dr. &amp; Diamond Dr.</p>
<p><b>8</b> I-15 SB Ramps &amp; Nichols Rd.</p>	<p><b>9</b> I-15 SB Ramps &amp; Central Av. (SR-74)</p>	<p><b>10</b> I-15 SB Ramps &amp; Main St.</p>	<p><b>11</b> I-15 SB Ramps &amp; Railroad Canyon Rd.</p>	<p><b>12</b> I-15 NB Ramps &amp; Nichols Rd.</p>	<p><b>13</b> I-15 NB Ramps &amp; Central Av. (SR-74)</p>	<p><b>14</b> I-15 NB Ramps &amp; Main St.</p>
<p><b>15</b> I-15 NB Ramps &amp; Railroad Canyon Rd.</p>	<p><b>16</b> Dexter Av. &amp; 11th St.</p>	<p><b>17</b> Dexter Av. &amp; Central Av. (SR-74)</p>	<p><b>18</b> Dexter Av. &amp; Allan St.</p>	<p><b>19</b> Dexter Av. &amp; Crane St.</p>	<p><b>20</b> Dexter Av. &amp; 3rd St.</p>	<p><b>21</b> Dexter Av. &amp; 2nd St.</p>
<p><b>22</b> Camino Del Norte &amp; Main St.</p>	<p><b>23</b> Summerhill Dr./ Grape St. &amp; Railroad Canyon Rd.</p>	<p><b>24</b> Driveway 1 &amp; Central Av. (SR-74)</p>	<p><b>25</b> Cambern Av. &amp; Central Av. (SR-74)</p>	<p><b>26</b> Cambern Av. &amp; Driveway 2</p>	<p><b>27</b> Cambern Av. &amp; Driveway 3</p>	<p><b>28</b> Cambern Av. &amp; 3rd St.</p>
<p><b>29</b> Conard Av. &amp; Central Av. (SR-74)</p>	<p><b>30</b> Rosetta Cyn. Dr. &amp; Central Av. (SR-74)</p>	<p><b>31</b> Riverside St. &amp; Central Av. (SR-74)</p>	<p><b>32</b> Meadowbrook Av./ Greenwald Av. &amp; Central Av. (SR-74)</p>			



<b>1</b> Lakeshore Dr. & Riverside Dr. (SR-74) 	<b>2</b> Graham Av. & Main St. 	<b>3</b> Lakeshore Dr./ Mission Bl. & Diamond Dr. 	<b>4</b> Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 	<b>5</b> Collier Av. & Riverside Dr. (SR-74) 	<b>6</b> Collier Av. & Central Av. (SR-74) 	<b>7</b> Auto Center Dr. & Diamond Dr. 
<b>8</b> I-15 SB Ramps & Nichols Rd. 	<b>9</b> I-15 SB Ramps & Central Av. (SR-74) 	<b>10</b> I-15 SB Ramps & Main St. 	<b>11</b> I-15 SB Ramps & Railroad Canyon Rd. 	<b>12</b> I-15 NB Ramps & Nichols Rd. 	<b>13</b> I-15 NB Ramps & Central Av. (SR-74) 	<b>14</b> I-15 NB Ramps & Main St. 
<b>15</b> I-15 NB Ramps & Railroad Canyon Rd. 	<b>16</b> Dexter Av. & 11th St. 	<b>17</b> Dexter Av. & Central Av. (SR-74) 	<b>18</b> Dexter Av. & Allan St. 	<b>19</b> Dexter Av. & Crane St. 	<b>20</b> Dexter Av. & 3rd St. 	<b>21</b> Dexter Av. & 2nd St. 
<b>22</b> Camino Del Norte & Main St. 	<b>23</b> Summerhill Dr./ Grape St. & Railroad Canyon Rd. 	<b>24</b> Driveway 1 & Central Av. (SR-74) 	<b>25</b> Cambern Av. & Central Av. (SR-74) 	<b>26</b> Cambern Av. & Driveway 2 	<b>27</b> Cambern Av. & Driveway 3 	<b>28</b> Cambern Av. & 3rd St. 
<b>29</b> Conard Av. & Central Av. (SR-74) 	<b>30</b> Rosetta Cyn. Dr. & Central Av. (SR-74) 	<b>31</b> Riverside St. & Central Av. (SR-74) 	<b>32</b> Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74) 			

**PROJECT ONLY**

**SATURDAY MID-DAY PEAK HOUR INTERSECTION VOLUMES**



<b>1</b> Lakeshore Dr. & Riverside Dr. (SR-74) 	<b>2</b> Graham Av. & Main St. 	<b>3</b> Lakeshore Dr./ Mission Bl. & Diamond Dr. 	<b>4</b> Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 	<b>5</b> Collier Av. & Riverside Dr. (SR-74) 	<b>6</b> Collier Av. & Central Av. (SR-74) 	<b>7</b> Auto Center Dr. & Diamond Dr. 
<b>8</b> I-15 SB Ramps & Nichols Rd. 	<b>9</b> I-15 SB Ramps & Central Av. (SR-74) 	<b>10</b> I-15 SB Ramps & Main St. 	<b>11</b> I-15 SB Ramps & Railroad Canyon Rd. 	<b>12</b> I-15 NB Ramps & Nichols Rd. 	<b>13</b> I-15 NB Ramps & Central Av. (SR-74) 	<b>14</b> I-15 NB Ramps & Main St. 
<b>15</b> I-15 NB Ramps & Railroad Canyon Rd. 	<b>16</b> Dexter Av. & 11th St. 	<b>17</b> Dexter Av. & Central Av. (SR-74) 	<b>18</b> Dexter Av. & Allan St. 	<b>19</b> Dexter Av. & Crane St. 	<b>20</b> Dexter Av. & 3rd St. 	<b>21</b> Dexter Av. & 2nd St. 
<b>22</b> Camino Del Norte & Main St. 	<b>23</b> Summerhill Dr./ Grape St. & Railroad Canyon Rd. 	<b>24</b> Driveway 1 & Central Av. (SR-74) 	<b>25</b> Cambern Av. & Central Av. (SR-74) 	<b>26</b> Cambern Av. & Driveway 2 	<b>27</b> Cambern Av. & Driveway 3 	<b>28</b> Cambern Av. & 3rd St. 
<b>29</b> Conard Av. & Central Av. (SR-74) 	<b>30</b> Rosetta Cyn. Dr. & Central Av. (SR-74) 	<b>31</b> Riverside St. & Central Av. (SR-74) 	<b>32</b> Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74) 			

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Each of the traffic generating activities listed above is discussed thoroughly in the subsequent sections. It has been assumed that construction activity will occur during the hours of 7:00 AM and 7:00 PM.

#### **4.5.1 EMPLOYEE TRIPS**

Employee trips are estimated based on the number of employees estimated to be on-site throughout the various stages of construction. Each employee is assumed to drive and from the construction site each day. It has been assumed that employees will arrive up to 30 minutes prior to the workday and will leave up to 30 minutes after the workday ends. Parking for employees and non-employee vehicles can be accommodated through the construction of a portion of the proposed parking lot for the Project. It is anticipated that the majority of employees would arrive and depart from the site adjacent to the peak commute traffic periods (i.e., 7:00 AM – 9:00 AM and 4:00 PM – 6:00 PM) with a period of overlap. Employee trips are based on the number of employees estimated to be on site during different points throughout the project. Each employee is assumed to drive to and from the site alone each day. The impacts of construction-related parking and employee traffic are considered less-than-significant.

#### **4.5.2 EXPORT AND IMPORT OF MATERIALS**

Construction of the Project will require the export and import of construction materials to and from the site. The export/import materials will be transported via 15-cubic yard (cy) capacity dump trucks. Each truck will generate one (1) inbound and one (1) outbound trip, accounting for a total of two (2) truck trips per load of material exported or imported. Export of construction materials is anticipated to consist of the exportation of “cut” soil from the site. Import of construction materials is anticipated to consist of the importation of raw building materials, concrete, asphalt, etc.

In order to minimize the impact of construction truck traffic to the surrounding roadway network, it is recommended that trucks utilize the most direct route between the site and the I-15 Freeway via Central Avenue (SR-74). It is anticipated that the construction staging will be located off of Central Avenue (SR-74). As such, the proposed construction access on Central Avenue (SR-74) will provide the most direct access. Import and export of soil and related materials may utilize Central Avenue (SR-74) or Main Street depending on the location of the surface mining pit.

It is recommended that the export and import of construction materials occur during off-peak hours in order to have a minimal traffic impact to the surrounding roadway network. It is also recommended that a construction traffic management plan be implemented for the duration of the construction phase. If such measures are imposed, it can be assumed that truck traffic impacts associated with the export and import of construction materials could be considered less-than-significant.

### 4.5.3 HEAVY EQUIPMENT

Heavy equipment to be utilized on-site during construction include, but is not limited to: flat beds, dozers, scrapers, graders, track hoes, dump trucks, forklifts, cranes, cement trucks, pavers, rollers, water trucks, rolling container trucks and bobcats. Heavy equipment will be delivered and removed from the site throughout the construction phase. As most heavy equipment is typically not an authorized vehicle to be driven on a public roadway, most of the equipment will be delivered and removed from the site via large flatbed trucks. It is anticipated that delivery of heavy equipment would not occur on a daily basis, but rather periodically throughout the construction phase based on need.

The delivery and removal of heavy equipment is recommended to occur outside of the morning and evening peak hours in order to have nominal impacts to traffic and circulation near the vicinity of the project. If this measure is applied, it is anticipated that traffic impacts associated with the delivery and removal of heavy equipment are less-than-significant.

## 4.6 BACKGROUND TRAFFIC

Future year traffic forecasts have been based upon three (3) years of background (ambient) growth at 2% per year for 2016 traffic conditions. The ambient growth factor is intended to approximate regional traffic growth. The total ambient growth is 6.12% for 2016 traffic conditions (compounded growth of two percent per year over three years or  $1.02^3$  years). This ambient growth rate is added to existing traffic volumes to account for area-wide growth not reflected by cumulative development projects. Ambient growth has been added to daily and peak hour traffic volumes on surrounding roadways, in addition to traffic generated by the development of future projects that have been approved but not yet built and/or for which development applications have been filed and are under consideration by governing agencies.

According to information published by the Riverside County Information Technology GIS staff as input to the Southern California Association of Governments (SCAG) Regional Transportation Plan (2012), the population of Western Riverside County is projected to increase by 41% in the period between 2010 and 2035, a compounded rate of approximately 1.38% annually. During the same period, employment in Western Riverside County is expected to increase by 112% or 3.06% compounded annually.

Therefore, the use of an annual growth rate of 2.0 percent would appear to accurately approximate the anticipated regional growth in traffic volumes in the City of Lake Elsinore, especially when considered along with the addition of project-related traffic and traffic generated by other known development projects. As such, the growth in traffic volumes assumed in this traffic impact analysis would tend to overstate as opposed to understate the potential impacts to traffic and circulation.

## 4.7 CUMULATIVE DEVELOPMENT TRAFFIC

CEQA guidelines require that other reasonably foreseeable development projects which are either approved or being processed concurrently in the study area also be included as part of a cumulative analysis scenario. A cumulative project list was developed for the purposes of this analysis through consultation with planning and engineering staff from the City of Lake Elsinore. Exhibit 4-7 illustrates the cumulative development location map. A summary of cumulative development land uses are shown on Table 4-4.

## 4.8 TRAFFIC FORECASTS

To provide a comprehensive assessment of the potential project-related and cumulative traffic impacts, two types of analyses, “buildup” and “buildout”, were performed in support of this work effort. The “buildup” method was used to approximate traffic forecasts for both E+P and Opening Year (206) traffic conditions. The E+P scenario is intended to identify the significant Project impacts associated with the proposed Project while the Opening Year (2016) scenario is intended to identify near-term cumulative impacts on both the existing and planned near-term circulation system. The E+P traffic conditions include existing traffic in addition to the traffic generated by the proposed Project. The Opening Year (2016) traffic conditions include background traffic, traffic generated by other cumulative development projects within the study area and the traffic generated by the proposed Project. The “buildout” approach is used to forecast the General Plan Buildout (Post-2035) without and with Project conditions of the study area.

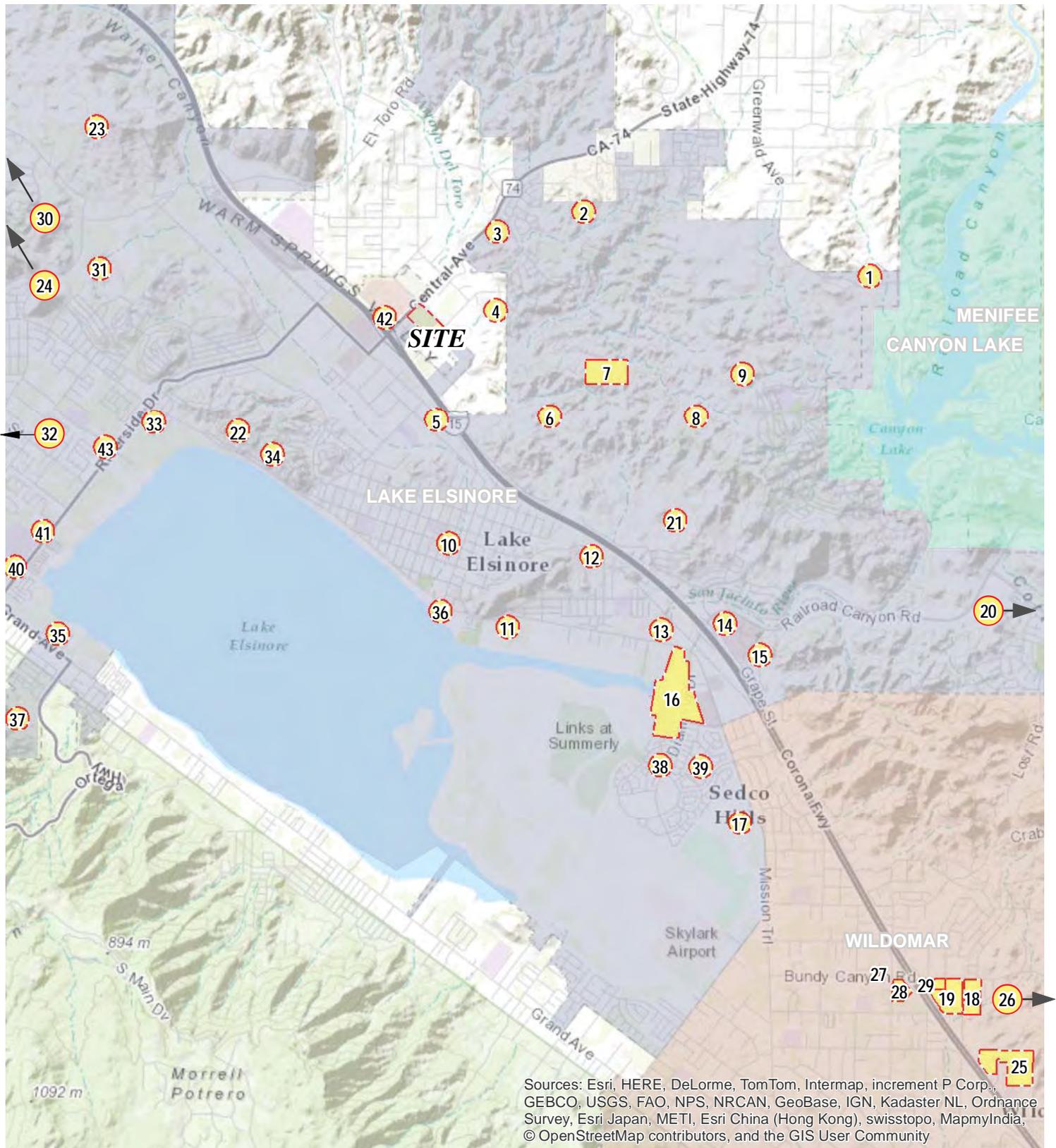
## 4.9 NEAR-TERM (2016) CONDITIONS

The buildup approach combines existing traffic counts with a background ambient growth factor to forecast the near-term 2016 traffic conditions. An ambient growth factor of 6.14% accounts for background (area-wide) traffic increases that occur over time up to the year 2016 from the year 2013 (compounded two percent per year growth over a minimum three year period). Ambient growth has been added to daily and peak hour traffic volumes on surrounding roadways, in addition to traffic generated by the development of future projects that have been approved but not yet built and/or for which development applications have been filed and are under consideration by governing agencies. Traffic volumes generated by the Project are then added to assess the 2016 With Project traffic conditions. The 2016 roadway network is similar to the Existing (2013) conditions roadway network, with the exception of future driveways proposed to be developed by the Project.

The near-term traffic analysis includes the following traffic conditions, with the various traffic components:

- Opening Year (2016) Without Project
  - Existing 2013 counts
  - Ambient growth traffic (6.14%)
  - Cumulative Development Project traffic

# CUMULATIVE DEVELOPMENT LOCATION MAP



### LEGEND:

 Cumulative Development

**Table 4-4**

(Page 1 of 2)

**Summary of Cumulative Development Projects**

No.	Project Name	Location	Land Use	Quantity <sup>1</sup>
1	Greenwald <sup>2</sup>	Lake Elsinore	Shopping Center	104.450 TSF
2	Ramsgate	Lake Elsinore	Single Family Residential	1,012 DU
			Condo/Townhomes	120 DU
3	Trieste Residential (Tract 36624)	Lake Elsinore	Single Family Residential	75 DU
4	Lennar (Tract 31792)	County of Riverside	Single Family Residential	191 DU
5	1400 Minthorn Street <sup>3</sup>	Lake Elsinore	Single Family Residential	84 DU
6	Spyglass Ranch <sup>4</sup>	Lake Elsinore	Single Family Residential	523 DU
			Condo/Townhomes	171 DU
			Shopping Center	145.00 TSF
7	South Shore I (Tract 31593) <sup>5</sup>	Lake Elsinore	Single Family Residential	521 DU
	South Shore II (Tract 36567) <sup>5</sup>	Lake Elsinore	Single Family Residential	147 DU
8	La Strada (Tract 32077)	Lake Elsinore	Single Family Residential	134 DU
9	Tuscany West (Tract 25473) <sup>5</sup>	Lake Elsinore	Single Family Residential	164 DU
10	Marina Village Condos (Tract 33820) <sup>6</sup>	Lake Elsinore	Condo/Townhomes	94 DU
11	Watersedge <sup>5</sup>	Lake Elsinore	Single Family Residential	170 DU
			Condo/Townhomes	250 DU
			Apartments	110 DU
			Office	54.600 TSF
			Hotel	150 RM
			Boat/Watercraft Dealers & Service	50.000 TSF
			Mini-Warehouse (Boat & Watercraft Storage)	76.000 TSF
			Shopping Center	86.600 TSF
	Cottages by the Lake	Lake Elsinore	Condo/Townhomes	169 DU
12	Tessera <sup>5</sup>	Lake Elsinore	Single Family Residential	90 DU
13	TAG Property <sup>6</sup>	Lake Elsinore	New Car Sales	50.000 TSF
14	City Center Condos <sup>6</sup>	Lake Elsinore	Condo/Townhomes	144 DU
15	Lake View Villas	Lake Elsinore	Condo/Townhomes	155 DU
16	Diamond Specific Plan <sup>7</sup>	Lake Elsinore	Condo/Townhomes	600 DU
			Hotel	150 RM
			General Office	425.000 TSF
			Shopping Center	472.000 TSF
17	The Colony <sup>6</sup>	Lake Elsinore	Apartments	211 DU
	Back Basin Specific Plan & East Lake Specific Plan	Lake Elsinore	Single Family Residential	2,407 DU
			Condo/Townhomes	324 DU
	John Laing Homes (Phase 2)	Lake Elsinore	Single Family Residential	506 DU
			Condo/Townhomes	1,141 DU
			Apartments	308 DU
	Shopping Center		117.000 TSF	
18	Rancon Monte Vista Residential (TTM No. 31409, APN: 367-110-007, 367-110-008)	Wildomar	SFDR	126 DU
19	Wildomar Walmart	Wildomar	Free-Standing Discount Superstore	200.000 TSF
			Specialty Retail	3.900 TSF
			Fast-food with Drive-Through	126.000 TSF

**Table 4-4**

(Page 2 of 2)

**Summary of Cumulative Development Projects**

No.	Project Name	Location	Land Use	Quantity <sup>1</sup>
20	Canyon Hills Estates (Tract 34249)	Lake Elsinore	Single Family Residential	302 DU
	Canyon Hills (Multiple Tracts)	Lake Elsinore	Single Family Residential	2,700 DU
			Apartments	1,575 DU
	Audie Murphy (Tract 36484)	Lake Elsinore	Single Family Residential	109 DU
Audie Murphy (Tract 36485)	Lake Elsinore	Single Family Residential	1,003 DU	
21	Gruneto Hills	Lake Elsinore	Single Family Residential	191 DU
22	Hotel at 17584 Lawrence Way	Lake Elsinore	Hotel	57 RM
23	Alberhill Ridge (Tract 35001)	Lake Elsinore	Single Family Residential	1,056 DU
			Apartments	345 DU
			Shopping Center	679.000 TSF
			General Office	679.000 TSF
24	Alberhill Ranch	Lake Elsinore	Single Family Residential	1,986 DU
25	Cornerstone Church Pre-School Expansion (PUP No. 778) <sup>4</sup>	Wildomar	Pre-School/Day Care	180 STU
26	Sehremelis PAR (TTM 29426, APN:367-250-007)	Lake Elsinore	SFDR	80 DU
27	Subway (Case No. 10-0222, APN:366-390-026, 366-390-027)	Wildomar	Specialty Retail	10.500 TSF
28	Orange Bundy (TPM 30522, APN: 367-100-024, 367-100-026)	Wildomar	Retail	79.497 TSF
			Fast Food w/Drive Thru	1.500 TSF
			Gas Station w/ Market	6 VFP
29	Bundy Canyon Plaza (Case No. 08-0179, TPM 32257, APN:367-100-019)	Wildomar	Retail	33.800 TSF
			Fast Food w/Drive Thru	6.200 TSF
			Gas Station w/ Market	12 VFP
30	Alberhill Villages	Lake Elsinore	Single Family Residential	9,536 DU
31	Terracina	Lake Elsinore	Single Family Residential	365 DU
32	Encore at Cambria Hills	Lake Elsinore	Single Family Residential	214 DU
33	Family Dollar Store	Lake Elsinore	Discount Store	8.320 TSF
34	Fisherman's Wharf	Lake Elsinore	Fisherman's Wharf	12.748 TSF
35	Wake Rider Beach Resort	Lake Elsinore	Beach Resort	11.350 TSF
36	Lakeshore Town Center	Lake Elsinore	Town Center	237.400 TSF
37	Ortega	Lake Elsinore	Single Family Residential	105 DU
38	Summerly	Lake Elsinore	Single Family Residential	142 DU
39	Beazer, KB Homes, McMillin Homes, Richmond American	Lake Elsinore	Single Family Residential	395 DU
40	Village at Lake Elsinore SPA #1	Lake Elsinore	Single Family Residential	163 DU
41	Lake Shore Pointe Phase I	Lake Elsinore	Single Family Residential	43 DU
			Apartments	161 DU
42	Golden Corral Restaurant	Lake Elsinore	Restaurant	7.798 TSF
43	Circle K	Lake Elsinore	Gas Station	4.500 TSF

<sup>1</sup> TSF = Thousand Square Feet; DU = Dwelling Unit; AC = Acres; STU = Students; VFP = Vehicle Fueling Positions

<sup>2</sup> Source: Greenwald Avenue Commercial Center TIA, Urban Crossroads, Inc., May 2008.

<sup>3</sup> Source: 1400 Minthorn Street Traffic Study Report, ASM Consulting, August 2007.

<sup>4</sup> Source: Spyglass Ranch TIA (Revised), Kunzman Associates, February 2007.

<sup>5</sup> Source: Porto Romano SP TIA (Revised), Urban Crossroads, Inc., May 2007.

<sup>6</sup> Source: Lake Elsinore TAG Property TIA (Revised), Urban Crossroads, Inc., August 2008.

<sup>7</sup> Source: The Diamond Specific Plan TIA, Urban Crossroads, Inc., April 2009.

- Opening Year (2016) With Project
  - Existing 2013 counts
  - Ambient growth traffic (6.14%)
  - Cumulative Development Project traffic
  - Project traffic

#### **4.10 GENERAL PLAN BUILDOUT (POST-2035) CONDITIONS**

Traffic projections for General Plan Buildout (Post-2035) Without Project conditions were derived from a version of RivTAM modified to represent General Plan Buildout conditions for the City of Lake Elsinore using accepted procedures for model forecast refinement and smoothing. The traffic forecasts reflect the area-wide growth anticipated between Existing (2013) conditions and General Plan Buildout (Post-2035) conditions. The General Plan Buildout (Post-2035) Without and With Project traffic conditions analyses will be utilized to determine if long-range cumulative improvements funded through regional transportation mitigation fee programs, such as the Transportation Uniform Mitigation Fee (TUMF) and City Traffic Impact Fee (TIF) programs, or other approved funding mechanism can accommodate the long-range cumulative traffic at the target LOS identified in the City of Lake Elsinore General Plan. If the “funded” improvements can provide the target LOS, then the Project’s payment into TUMF and TIF will be considered as cumulative mitigation through the conditions of approval. Other improvements needed beyond the “funded” improvements (such as localized improvements to non-TUMF or non-TIF facilities) are identified as such.

The traffic model zone structure is not designed to provide accurate turning movements along arterial roadways unless refinement and reasonableness checking is performed. General Plan Buildout (Post-2035) turning volumes were compared to Opening Year (2016) With Project volumes in order to ensure a minimum growth of ten (10) percent as a part of the refinement process, where applicable. The minimum ten (10) percent growth includes any additional growth between Opening Year (2016) With Project and General Plan Buildout (Post-2035) With Project traffic conditions that is not accounted for by the traffic generated by cumulative development projects and the ambient growth between Existing (2013) and Opening Year (2016) With Project conditions. The initial estimate of the future General Plan Buildout (Post-2035) 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.

As noted previously, the traffic analysis in this report considers Saturday mid-day peak hour traffic conditions in addition to the weekday AM and weekday PM peak hours. Therefore, factors were applied to the weekday PM peak hour General Plan Buildout (Post-2035) traffic forecasts with a relationship to the Saturday mid-day Existing (2013) turning volumes to estimate Saturday mid-day peak hour General Plan Buildout (Post-2035) traffic forecasts since the RivTAM 2035 traffic model considers only weekday peak

hour traffic conditions. Based on the volume comparison and evaluation of Existing (2013) PM peak hour and Saturday peak hour traffic forecasts, relationships were found to vary between study area intersections. These calculated factors (determined by turning movement) were then applied to the weekday PM General Plan Buildout (Post-2035) peak hour turning volumes to determine General Plan Buildout (Post-2035) turning volumes during the Saturday mid-day peak hour using the same relationship observed for Existing (2013) traffic conditions.

Post-processing worksheets for General Plan Buildout (Post-2035) With Project traffic conditions are provided in Appendix "4.1".

## 5.0 EXISTING PLUS PROJECT TRAFFIC ANALYSIS

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

### 5.1 ROADWAY IMPROVEMENTS

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

- At 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 turn lane improvements at the Project driveways).

### 5.2 EXISTING PLUS PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Existing (2013) 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, weekday PM, and Saturday mid-day peak hour intersection turning movement volumes are shown on Exhibits 5-2, 5-3, and 5-4, respectively.

### 5.3 INTERSECTION OPERATIONS ANALYSIS

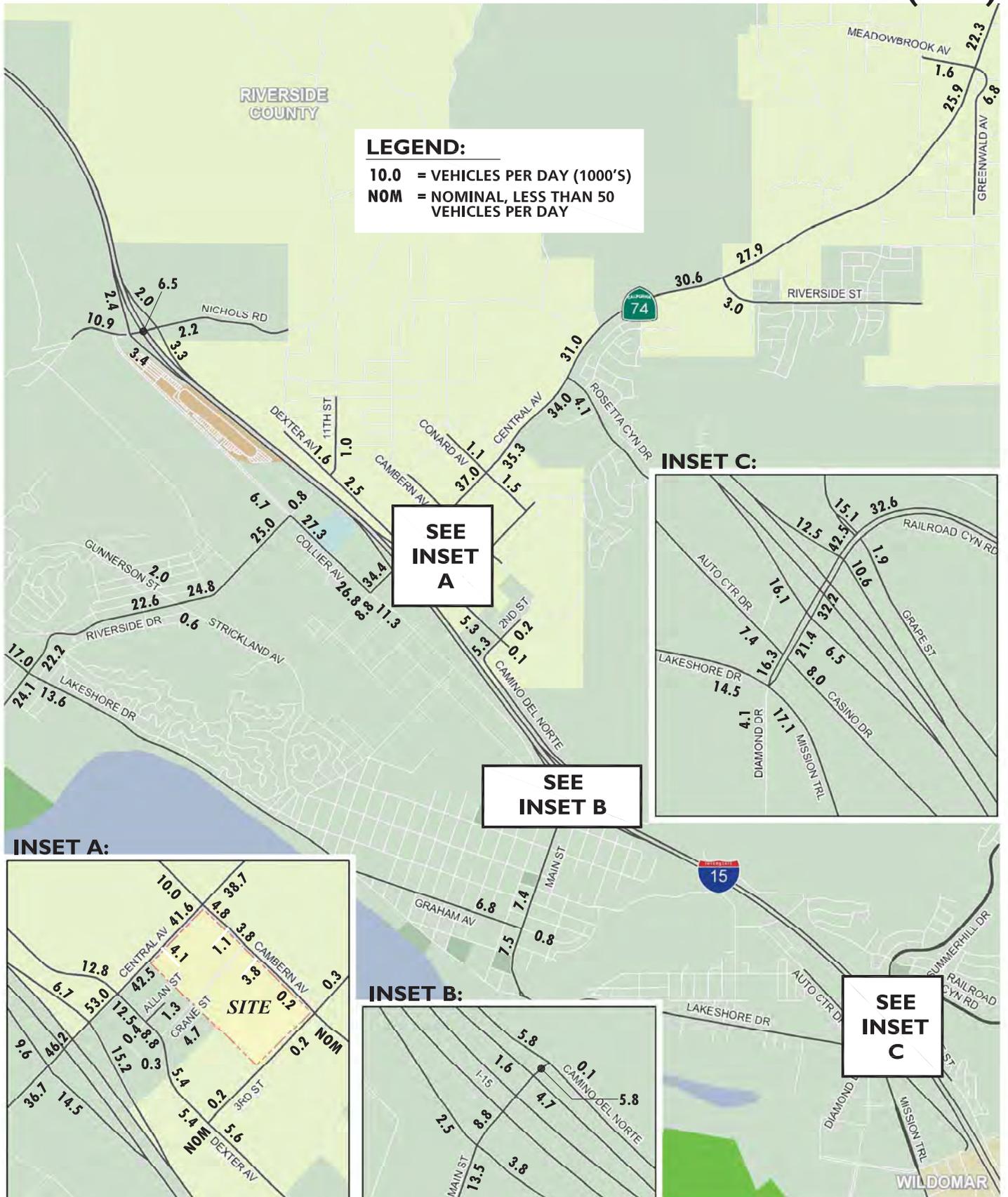
E+P peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.0 *Methodologies* of this TIA. The intersection analysis results are summarized in Table 5-1, which indicates no additional study area intersections are anticipated experience unacceptable LOS (i.e., LOS “E” or worse) during one or more peak hours in addition to those previously identified under Existing (2013) traffic conditions.

Exhibit 5-5 summarizes the weekday AM, weekday PM, and Saturday 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 impacts for E+P traffic conditions are discussed in section 5.8 *Project Impacts and Recommended Improvements*.

Based on the significance thresholds discussed in Section 2.8 *Thresholds of Significance*, the following intersections are anticipated to be significantly impacted by the Project:

**Impact 1.1 – E. Lakeshore Drive / Diamond Drive (#3)** – Although the intersection is currently operating at unacceptable LOS (i.e., LOS “F”) during the AM, PM and Saturday mid-day peak hours

# EXISTING PLUS PROJECT AVERAGE DAILY TRAFFIC (ADT)



# EXISTING PLUS PROJECT WEEKDAY AM PEAK HOUR INTERSECTION VOLUMES



<b>1</b> Lakeshore Dr. & Riverside Dr. (SR-74) 	<b>2</b> Graham Av. & Main St. 	<b>3</b> Lakeshore Dr./ Mission Bl. & Diamond Dr. 	<b>4</b> Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 	<b>5</b> Collier Av. & Riverside Dr. (SR-74) 	<b>6</b> Collier Av. & Central Av. (SR-74) 	<b>7</b> Auto Center Dr. & Diamond Dr. 
<b>8</b> I-15 SB Ramps & Nichols Rd. 	<b>9</b> I-15 SB Ramps & Central Av. (SR-74) 	<b>10</b> I-15 SB Ramps & Main St. 	<b>11</b> I-15 SB Ramps & Railroad Canyon Rd. 	<b>12</b> I-15 NB Ramps & Nichols Rd. 	<b>13</b> I-15 NB Ramps & Central Av. (SR-74) 	<b>14</b> I-15 NB Ramps & Main St. 
<b>15</b> I-15 NB Ramps & Railroad Canyon Rd. 	<b>16</b> Dexter Av. & 11th St. 	<b>17</b> Dexter Av. & Central Av. (SR-74) 	<b>18</b> Dexter Av. & Allan St. 	<b>19</b> Dexter Av. & Crane St. 	<b>20</b> Dexter Av. & 3rd St. 	<b>21</b> Dexter Av. & 2nd St. 
<b>22</b> Camino Del Norte & Main St. 	<b>23</b> Summerhill Dr./ Grape St. & Railroad Canyon Rd. 	<b>24</b> Driveway 1 & Central Av. (SR-74) 	<b>25</b> Cambern Av. & Central Av. (SR-74) 	<b>26</b> Cambern Av. & Driveway 2 	<b>27</b> Cambern Av. & Driveway 3 	<b>28</b> Cambern Av. & 3rd St. 
<b>29</b> Conard Av. & Central Av. (SR-74) 	<b>30</b> Rosetta Cyn. Dr. & Central Av. (SR-74) 	<b>31</b> Riverside St. & Central Av. (SR-74) 	<b>32</b> Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74) 			

# EXISTING PLUS PROJECT WEEKDAY PM PEAK HOUR INTERSECTION VOLUMES



<b>1</b> Lakeshore Dr. & Riverside Dr. (SR-74) 	<b>2</b> Graham Av. & Main St. 	<b>3</b> Lakeshore Dr./ Mission Bl. & Diamond Dr. 	<b>4</b> Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 	<b>5</b> Collier Av. & Riverside Dr. (SR-74) 	<b>6</b> Collier Av. & Central Av. (SR-74) 	<b>7</b> Auto Center Dr. & Diamond Dr. 	
<b>8</b> I-15 SB Ramps & Nichols Rd. 	<b>9</b> I-15 SB Ramps & Central Av. (SR-74) 	<b>10</b> I-15 SB Ramps & Main St. 	<b>11</b> I-15 SB Ramps & Railroad Canyon Rd. 	<b>12</b> I-15 NB Ramps & Nichols Rd. 	<b>13</b> I-15 NB Ramps & Central Av. (SR-74) 	<b>14</b> I-15 NB Ramps & Main St. 	
<b>15</b> I-15 NB Ramps & Railroad Canyon Rd. 	<b>16</b> Dexter Av. & 11th St. 	<b>17</b> Dexter Av. & Central Av. (SR-74) 	<b>18</b> Dexter Av. & Allan St. 	<b>19</b> Dexter Av. & Crane St. 	<b>20</b> Dexter Av. & 3rd St. 	<b>21</b> Dexter Av. & 2nd St. 	
<b>22</b> Camino Del Norte & Main St. 	<b>23</b> Summerhill Dr./ Grape St. & Railroad Canyon Rd. 	<b>24</b> Driveway 1 & Central Av. (SR-74) 	<b>25</b> Cambern Av. & Central Av. (SR-74) 	<b>26</b> Cambern Av. & Driveway 2 	<b>27</b> Cambern Av. & Driveway 3 	<b>28</b> Cambern Av. & 3rd St. 	
<b>29</b> Conard Av. & Central Av. (SR-74) 	<b>30</b> Rosetta Cyn. Dr. & Central Av. (SR-74) 	<b>31</b> Riverside St. & Central Av. (SR-74) 	<b>32</b> Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74) 				

# EXISTING PLUS PROJECT SATURDAY MID-DAY PEAK HOUR INTERSECTION VOLUMES



<b>1</b> Lakeshore Dr. & Riverside Dr. (SR-74) 	<b>2</b> Graham Av. & Main St. 	<b>3</b> Lakeshore Dr./ Mission Bl. & Diamond Dr. 	<b>4</b> Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 	<b>5</b> Collier Av. & Riverside Dr. (SR-74) 	<b>6</b> Collier Av. & Central Av. (SR-74) 	<b>7</b> Auto Center Dr. & Diamond Dr. 	
<b>8</b> I-15 SB Ramps & Nichols Rd. 	<b>9</b> I-15 SB Ramps & Central Av. (SR-74) 	<b>10</b> I-15 SB Ramps & Main St. 	<b>11</b> I-15 SB Ramps & Railroad Canyon Rd. 	<b>12</b> I-15 NB Ramps & Nichols Rd. 	<b>13</b> I-15 NB Ramps & Central Av. (SR-74) 	<b>14</b> I-15 NB Ramps & Main St. 	
<b>15</b> I-15 NB Ramps & Railroad Canyon Rd. 	<b>16</b> Dexter Av. & 11th St. 	<b>17</b> Dexter Av. & Central Av. (SR-74) 	<b>18</b> Dexter Av. & Allan St. 	<b>19</b> Dexter Av. & Crane St. 	<b>20</b> Dexter Av. & 3rd St. 	<b>21</b> Dexter Av. & 2nd St. 	
<b>22</b> Camino Del Norte & Main St. 	<b>23</b> Summerhill Dr./ Grape St. & Railroad Canyon Rd. 	<b>24</b> Driveway 1 & Central Av. (SR-74) 	<b>25</b> Cambern Av. & Central Av. (SR-74) 	<b>26</b> Cambern Av. & Driveway 2 	<b>27</b> Cambern Av. & Driveway 3 	<b>28</b> Cambern Av. & 3rd St. 	
<b>29</b> Conard Av. & Central Av. (SR-74) 	<b>30</b> Rosetta Cyn. Dr. & Central Av. (SR-74) 	<b>31</b> Riverside St. & Central Av. (SR-74) 	<b>32</b> Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74) 				

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# SUMMARY OF PEAK HOUR INTERSECTION LOS FOR EXISTING PLUS PROJECT CONDITIONS

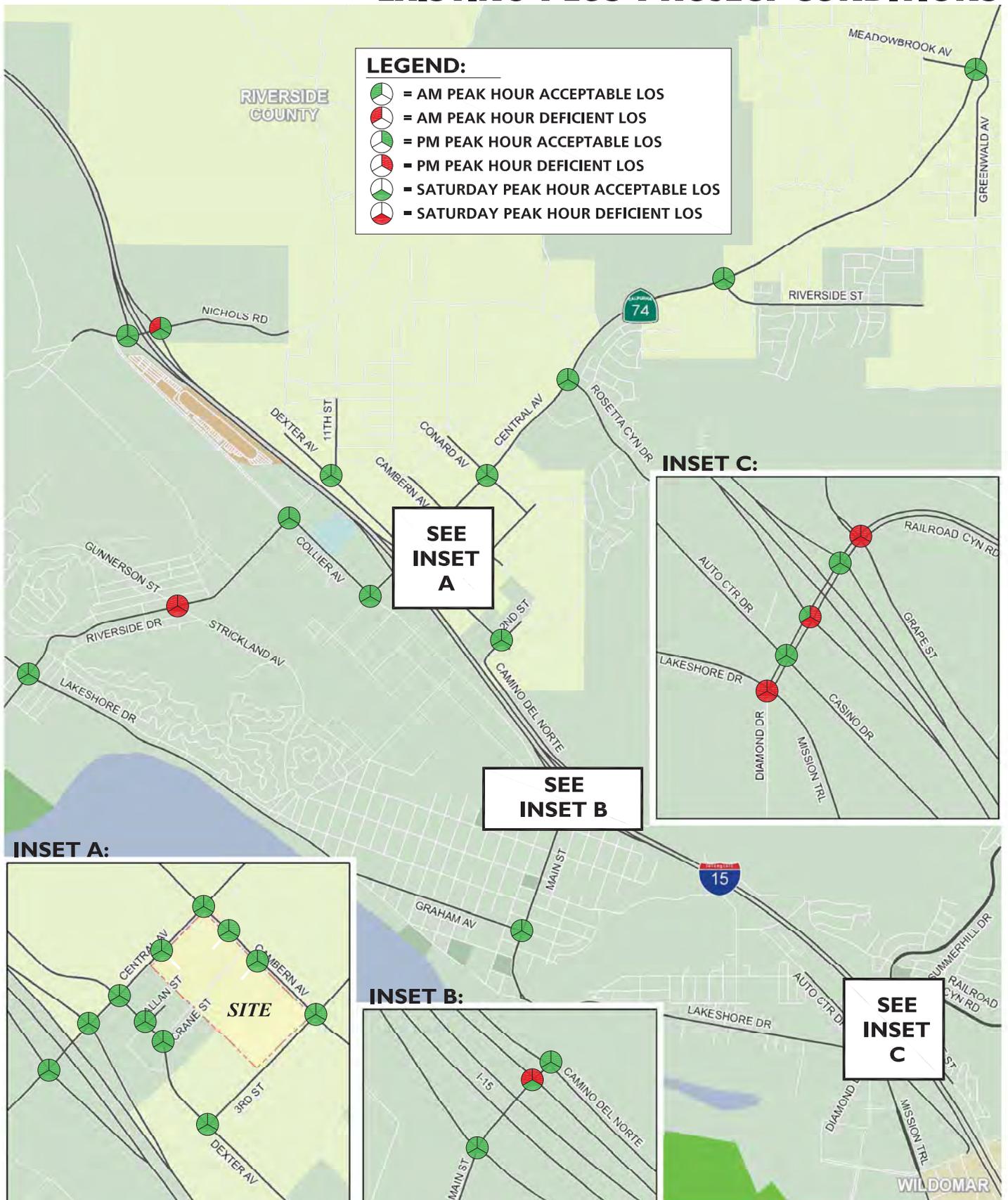


Table 5-1

Intersection Analysis for Existing Plus Project Conditions

#	Intersection	Traffic Control <sup>2</sup>	Existing (2013)						Existing Plus Project					
			Delay <sup>1</sup> (secs.)			Level of Service			Delay <sup>1</sup> (secs.)			Level of Service		
			AM	PM	Sat	AM	PM	Sat	AM	PM	Sat	AM	PM	Sat
1	Lakeshore Dr / Riverside Dr (SR-74)	TS	41.3	43.7	43.5	D	D	D	41.8	44.6	44.9	D	D	D
2	W Graham Av / N Main St	AWS	9.0	11.8	10.4	A	B	B	9.3	12.4	11.0	A	B	B
3	E Lakeshore Dr / Diamond Dr	TS	<b>147.6</b>	<b>&gt;200.0</b>	<b>&gt;200.0</b>	F	F	F	<b>149.2</b>	<b>&gt;200.0</b>	<b>&gt;200.0</b>	F	F	F
4	Gunnerson St / Riverside Dr (SR-74)	CSS	<b>47.0</b>	<b>&gt;100.0</b>	<b>&gt;100.0</b>	E	F	F	<b>68.4</b>	<b>&gt;100.0</b>	<b>&gt;100.0</b>	F	F	F
5	Collier Av / Riverside Dr (SR-74)	TS	12.4	17.3	20.1	B	B	C	13.5	19.6	24.9	B	B	C
6	Collier Av / Central Av (SR-74)	TS	37.9	35.8	33.2	D	D	C	37.8	35.7	33.5	D	D	C
7	Auto Center Dr / Diamond Dr	TS	22.8	23.8	24.5	C	C	C	22.8	23.8	24.6	C	C	C
8	I-15 SB Ramps / Nichols Rd	AWS	10.1	9.7	9.2	B	A	A	10.2	9.8	9.4	B	A	A
9	I-15 SB Ramps / Central Av (SR-74)	TS	24.5	31.6	25.1	C	C	C	26.6	38.0	30.1	C	D	C
10	I-15 SB Ramps / N Main St	CSS	12.9	13.9	10.5	B	B	B	13.3	14.6	11.0	B	B	B
11	I-15 SB Ramps / Railroad Canyon Rd	TS	50.1	<b>96.1</b>	<b>63.7</b>	D	F	E	52.0	<b>102.9</b>	<b>70.2</b>	D	F	E
12	I-15 NB Ramps / Nichols Rd	CSS	<b>40.1</b>	30.2	19.0	E	D	C	<b>46.7</b>	33.7	20.3	E	D	C
13	I-15 NB Ramps / Central Av (SR-74)	TS	20.8	23.7	21.4	C	C	C	22.3	26.1	24.4	C	C	C
14	I-15 NB Ramps / N Main St	CSS	<b>57.7</b>	<b>52.9</b>	15.9	F	F	C	<b>82.4</b>	<b>80.9</b>	19.1	F	F	C
15	I-15 NB Ramps / Railroad Canyon Rd	TS	36.1	46.6	28.4	D	D	C	36.1	47.3	29.1	D	D	C
16	Dexter Av / 11th St	CSS	9.9	9.4	9.4	A	A	A	10.1	9.6	9.7	B	A	A
17	Dexter Av / Central Av (SR-74)	TS	32.3	33.4	33.9	C	C	C	32.6	34.5	35.2	C	C	D
18	Dexter Av / Allan St	CSS	10.4	11.1	10.0	B	B	A	9.6	11.2	10.9	A	B	B
19	Dexter Av / Crane St	CSS	10.0	11.9	9.8	B	B	A	11.7	20.6	15.5	B	C	C
20	Dexter Av / 3rd St	CSS	10.1	10.2	9.4	B	B	A	10.3	10.5	9.8	B	B	A
21	Dexter Av / 2nd St	AWS	8.6	8.7	8.0	A	A	A	9.1	9.2	8.6	A	A	A
22	Camino del Norte / N Main St	CSS	10.2	10.5	9.8	B	B	A	10.6	11.0	10.5	B	B	B
23	Summerhill Dr / Railroad Canyon Rd	TS	<b>92.5</b>	<b>146.1</b>	<b>94.5</b>	F	F	F	<b>95.0</b>	<b>150.5</b>	<b>98.7</b>	F	F	F
24	Driveway 1 / Central Av (SR-74)	<b>CSS</b>	Intersection Does Not Exist						10.6	12.8	14.1	B	B	B
25	Cambern Av / Central Av (SR-74)	TS	16.9	23.8	25.9	B	C	C	20.7	32.8	46.2	C	C	D
26	Cambern Av / Driveway 2	<b>CSS</b>	Intersection Does Not Exist						0.0	0.0	0.0	A	A	A
27	Cambern Av / Driveway 3	<b>CSS</b>	Intersection Does Not Exist						9.3	9.9	10.8	A	A	B
28	Cambern Av / 3rd St	AWS	6.8	6.9	6.9	A	A	A	6.8	6.9	6.9	A	A	A
29	Conard Av / Central Av (SR-74)	TS	18.1	22.3	18.8	B	C	B	18.8	23.2	19.3	B	C	B
30	Rosetta Canyon Dr / Central Av (SR-74)	TS	18.6	16.5	15.0	B	B	B	19.6	16.8	15.4	B	B	B
31	Riverside St / Central Av (SR-74)	TS	13.4	14.5	12.7	B	B	B	13.6	14.8	13.0	B	B	B
32	Greenwald Av / Central Av (SR-74)	TS	21.8	22.5	21.7	C	C	C	21.8	22.6	21.9	C	C	C

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

**BOLD** = Significant Impact: 1) the pre-Project condition is at or above LOS "D" and Project traffic causes deterioration below LOS "D" or 2) if the pre-Project condition is already below LOS "D" (i.e., LOS "E" or "F") and the Project increases the delay by 2.0 seconds or more for LOS "E" or by 1.0 second or more for LOS "F", the impact is considered "significant". Consistent with City traffic study guidelines, the impact will be improved back to pre-project condition or better, thus reducing the Project's contribution to the impact to less-than-significant.

<sup>1</sup> Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all-way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

<sup>2</sup> CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal; **CSS** = Improvement

under Existing (2013) traffic conditions, the addition of Project traffic (as measured by 50 or more peak hour trips) is anticipated to result in an increase to the intersection's delay by more than 1.0 second during the AM, PM and Saturday mid-day peak hours at this intersection. Consistent with the City's significance criteria, the impact is considered significant.

**Impact 2.1 – Gunnerson Street / Riverside Drive (SR-74) (#4)** – Although the intersection is currently operating at unacceptable LOS (i.e., LOS “E” or LOS “F”) during the AM, PM and Saturday mid-day peak hours under Existing (2013) traffic conditions, the addition of Project traffic (as measured by 50 or more peak hour trips) is anticipated to result in an increase to the intersection's delay by more than 2.0 seconds during the AM peak hour and by more than 1.0 second during the PM and Saturday mid-day peak hours at this intersection. Consistent with the City's significance criteria, the impact is considered significant.

**Impact 3.1 – I-15 Southbound Ramps / Railroad Canyon Road (#11)** – Although the intersection is currently operating at unacceptable LOS (i.e., LOS “E” or LOS “F”) during the PM and Saturday mid-day peak hours under Existing (2013) traffic conditions, the addition of Project traffic (as measured by 50 or more peak hour trips) is anticipated to result in an increase to the intersection's delay by more than 1.0 second during the PM peak hour and by more than 2.0 seconds during the Saturday mid-day peak hour at this intersection. Consistent with the City's significance criteria, the impact is considered significant.

**Impact 4.1 – I-15 Northbound Ramps / Nichols Road (#12)** – Although the intersection is currently operating at unacceptable LOS (i.e., LOS “E”) during the AM peak hour under Existing (2013) traffic conditions, the addition of Project traffic (as measured by 50 or more peak hour trips) is anticipated to result in an increase to the intersection's delay by more than 2.0 seconds during the AM peak hour at this intersection. Consistent with the City's significance criteria, the impact is considered significant.

**Impact 5.1 – I-15 Northbound Ramps / N. Main Street (#14)** – Although the intersection is currently operating at unacceptable LOS (i.e., LOS “F”) during the AM and PM peak hours under Existing (2013) traffic conditions, the addition of Project traffic (as measured by 50 or more peak hour trips) is anticipated to result in an increase to the intersection's delay by more than 1.0 second during the AM and PM peak hours at this intersection. Consistent with the City's significance criteria, the impact is considered significant.

**Impact 6.1 – Summerhill Drive / Railroad Canyon Road (#23)** – Although the intersection is currently operating at unacceptable LOS (i.e., LOS “F”) during the AM, PM and Saturday mid-day peak hours under Existing (2013) traffic conditions, the addition of Project traffic (as measured by 50 or more peak hour trips) is anticipated to result in an increase to the intersection's delay by more than 1.0 second during the AM, PM and Saturday mid-day peak hours at this intersection. Consistent with the City's significance criteria, the impact is considered significant.

## 5.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for E+P traffic conditions are based on E+P ADT volumes. For E+P conditions, the intersection of I-15 Southbound Ramps and N. Main Street is anticipated to warrant a traffic signal (see Appendix “5.2”). However, this intersection is anticipated to operate at acceptable LOS during the peak hour without the installation of a traffic signal. The intersection should be monitored and a traffic signal should be installed at the City Traffic Engineer’s discretion.

## 5.5 PROGRESSION ANALYSIS

A ramp queuing analysis was performed for southbound and northbound off-ramps at I-15/Nichols Road, I-15/Central (SR-74), I-15/Main, and I-15/Railroad Canyon Road to assess vehicle queues for the off ramps that may potentially impact peak hour operations at the ramp-to-arterial intersections and may potentially “spill back” onto the I-15 Freeway mainline. Ramp queuing analysis findings are presented in Table 5-2. It is important to note that segment lengths are consistent with the measured distance between the ramps and the adjacent signalized/full-access intersection. As shown on Table 5-2, the following movements may potentially be experiencing queuing issues during the weekday AM, weekday PM or Saturday mid-day peak 95<sup>th</sup> percentile traffic flows:

ID	Intersection Location
9	I-15 Southbound Off-Ramp / Central Avenue (SR-74) – Southbound Left (PM and Saturday peak hours)
13	I-15 Northbound Off-Ramp / Central Avenue (SR-74) – Northbound Left (AM, PM, and Saturday peak hours); Northbound Right (PM and Saturday peak hours)
15	I-15 Northbound Off-Ramp / Railroad Canyon Road – Northbound Left-Through (PM peak hour only)

The 95<sup>th</sup> percentile queues for E+P traffic conditions indicates potential queuing for the movements and peak hours identified above. However, while the potential queues would exceed the turn pocket lengths and could spillback into the adjacent through lanes, none are anticipated to result in spillback onto the I-15 Freeway mainline since the adjacent through lanes all have sufficient capacity.

Worksheets for E+P conditions queuing analysis is provided in Appendix “5.3”.

## 5.6 BASIC FREEWAY SEGMENT ANALYSIS

E+P mainline directional volumes for the weekday AM, weekday PM and Saturday mid-day peak hours are provided on Exhibit 5-6. As shown on Table 5-3, I-15 Freeway segments analyzed for this study were found to operate at an acceptable LOS (i.e., LOS “D” or better) during the peak hours for E+P traffic conditions with the exception of the I-15 Freeway northbound segment between N. Main Street

Table 5-2

Existing Plus Project Conditions  
AM/PM Peak Hour Off-Ramp Stacking Length Summary along I-15 Freeway

Intersection	Movement	Stacking Distance (Feet)	95th Percentile Stacking Distance Required (Feet)			Acceptable? <sup>1</sup>		
			AM Peak Hour	PM Peak Hour	SAT Peak Hour	AM	PM	SAT
I-15 NB Off-Ramp / Nichols Rd.	NBL/T/R	1,530	182	151	76	Yes	Yes	Yes
I-15 SB Off-Ramp / Central Av. (SR-74)	SBL	250	205	<b>434</b> <sup>2</sup>	<b>285</b> <sup>2</sup>	Yes	<b>No</b>	<b>No</b>
	SBT	1,520	210	469 <sup>2</sup>	320 <sup>2</sup>	Yes	Yes	Yes
	SBR	250	107	81	118	Yes	Yes	Yes
I-15 NB Off-Ramp / Central Av. (SR-74)	NBL	250	<b>354</b> <sup>2</sup>	<b>460</b> <sup>2</sup>	<b>400</b> <sup>2</sup>	<b>No</b>	<b>No</b>	<b>No</b>
	NBT	1,300	262 <sup>2</sup>	404 <sup>2</sup>	384 <sup>2</sup>	Yes	Yes	Yes
	NBR	250	235	<b>369</b> <sup>2</sup>	<b>364</b> <sup>2</sup>	Yes	<b>No</b>	<b>No</b>
I-15 SB Off-Ramp / Main St.	SBR	200	9	43	13	Yes	Yes	Yes
I-15 NB Off-Ramp / Main St.	NBL/T/R	1,610	384	340	72	Yes	Yes	Yes
I-15 SB Off-Ramp / Railroad Canyon Rd.	SBL	1,270	346 <sup>2</sup>	718 <sup>2</sup>	588 <sup>2</sup>	Yes	Yes	Yes
	SBT/R	725	46	70	65	Yes	Yes	Yes
	SBR	280	44	65	64	Yes	Yes	Yes
I-15 NB Off-Ramp / Railroad Canyon Rd.	NBL/T	340	271 <sup>2</sup>	<b>396</b> <sup>2</sup>	188	Yes	<b>No</b>	Yes
	NBR	1,600	43	399 <sup>2</sup>	169	Yes	Yes	Yes

Note: The 95th percentile queues indicates potential queuing for the movements and peak hours identified above. However, while the potential queues would exceed the turn pocket lengths and could spillback into the adjacent through lanes, none are anticipated to result in spillback onto the I-15 Freeway mainline since the adjacent through lanes all have sufficient capacity.

<sup>1</sup> Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

<sup>2</sup> 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Table 5-3

## Existing Plus Project Conditions Basic Freeway Segment Analysis

Freeway	Direction	Mainline Segment	Lanes <sup>1</sup>	Existing (2013)						Existing Plus Project					
				Density <sup>3</sup>			LOS			Density <sup>3</sup>			LOS		
				AM	PM	SAT	AM	PM	SAT	AM	PM	SAT	AM	PM	SAT
I-15 Freeway	Southbound	North of Nichols Road	3	15.3	20.6	18.2	B	C	C	15.6	20.8	18.6	B	C	C
		Nichols Road to Central Avenue (SR-74)	3	15.4	20.9	18.3	B	C	C	15.7	21.3	18.9	B	C	C
		Central Avenue (SR-74) to N. Main Street	3	18.5	22.9	20.8	C	C	C	18.8	23.6	21.6	C	C	C
		N. Main Street to Railroad Canyon Road	3	19.8	23.6	21.3	C	C	C	20.2	24.3	22.1	C	C	C
		South of Railroad Canyon Road	3	19.4	19.5	18.2	C	C	C	19.6	19.8	18.6	C	C	C
	Northbound	North of Nichols Road	3	24.6	26.2	24.0	C	D	C	24.8	26.7	24.6	C	D	C
		Nichols Road to Central Avenue (SR-74)	3	24.9	26.9	24.3	C	D	C	25.1	27.3	25.0	C	D	C
		Central Avenue (SR-74) to N. Main Street	3	27.3	32.3	28.2	D	D	D	27.9	33.4	29.2	D	D	D
		N. Main Street to Railroad Canyon Road	3	30.0	<b>35.2</b>	29.1	D	<b>E</b>	D	30.8	<b>36.4</b>	30.4	D	<b>E</b>	D
		South of Railroad Canyon Road	3	23.2	34.1	25.0	C	D	C	23.4	34.6	25.5	C	D	C

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

<sup>1</sup> Number of lanes are in the specified direction and is based on existing conditions.

<sup>2</sup> Directional volumes based on current PeMS data. Truck percentages are consistent with available Caltrans 2011 data.

<sup>3</sup> Density is measured by passenger cars per mile per lane (pc/mi/ln).

# EXISTING PLUS PROJECT PEAK HOUR FREEWAY MAINLINE VOLUMES



**LEGEND:**

100/ 100/ 100 = AM/ PM/ SAT VOLUMES

NOTE: VOLUMES SHOWN ARE ACTUAL VEHICLES (NOT PCE).

and Railroad Canyon Road, which currently operates at LOS “E” during the PM peak hour under Existing (2013) traffic conditions. E+P basic freeway segment analysis worksheets are provided in Appendix “5.4”.

## 5.7 FREEWAY MERGE/DIVERGE ANALYSIS

Ramp merge and diverge operations were also evaluated for E+P conditions and the results of this analysis are presented in Table 5-4. As shown in Table 5-4, the I-15 Freeway ramp merge and diverge areas at Nichols Road and I-15 Northbound and Southbound, Central Avenue (SR-74) and I-15 Southbound, N. Main Street and I-15 Southbound, and Railroad Canyon Road and I-15 Southbound currently operate at LOS “D” or better for E+P traffic conditions, with the exception of the following locations:

ID	Freeway Merge/Diverge Ramp Junctions
12	I-15 Freeway – Northbound, Off-Ramp at Central Avenue (SR-74) – LOS “E” PM and Saturday peak hours
14	I-15 Freeway – Northbound, Off-Ramp at N. Main Street – LOS “E” PM peak hour only
15	I-15 Freeway – Northbound, On-Ramp at Railroad Canyon Road – LOS “E” AM and PM peak hours
16	I-15 Freeway – Northbound, Off -Ramp at Railroad Canyon Road – LOS “E” PM peak hour only

E+P freeway ramp junction operations analysis worksheets are provided in Appendix “5.5”.

## 5.8 PROJECT IMPACTS AND RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections that have been identified as impacted to reduce each location’s peak hour delay and improve the associated LOS grade to LOS “D”/LOS “E” or better. The effectiveness of the proposed recommended improvements is presented in Table 5-5 for E+P traffic conditions. The effectiveness of the recommended improvement strategies discussed below to address E+P traffic impacts are presented in Table 5-5. The following intersection improvements are recommended to reduce the E+P impact to less-than-significant:

**Mitigation Measure 1.1 – E. Lakeshore Drive / Diamond Drive (#3)** – The following mitigation measure is necessary to reduce the Project’s impact to less-than-significant:

- Modify the traffic signal and implement overlap phasing on the northbound right turn lane. No physical lane improvements are necessary.

**Mitigation Measure 2.1 – Gunnerson Street / Riverside Drive (SR-74) (#4)** – The following mitigation measure is necessary to reduce the Project’s impact to less-than-significant:

Table 5-4

I-15 Freeway Ramp Junction Merge/Diverge Analysis  
For Existing Plus Project Conditions

Freeway	Direction	Ramp or Segment	Lanes on Freeway	Existing (2013)						Existing Plus Project					
				AM Peak Hour		PM Peak Hour		Saturday Peak Hour		AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
				Density <sup>1</sup>	LOS	Density <sup>1</sup>	LOS	Density <sup>1</sup>	LOS	Density <sup>1</sup>	LOS	Density <sup>1</sup>	LOS	Density <sup>1</sup>	LOS
I-15 Freeway 56	Southbound	Off-Ramp at Nichols Road	3	21.4	C	26.8	C	24.4	C	21.7	C	27.0	C	24.9	C
		On-Ramp at Nichols Road	3	19.5	B	24.7	C	22.2	C	19.8	B	25.2	C	22.9	C
		Off-Ramp at Central Avenue (SR-74)	3	22.2	C	28.2	D	25.5	C	22.7	C	28.7	D	26.3	C
		On-Ramp at Central Avenue (SR-74)	3	24.6	C	28.9	D	26.9	C	25.1	C	29.7	D	28.0	D
		Off-Ramp at Main Street	3	25.1	C	29.5	D	27.5	C	25.4	C	30.1	D	28.3	D
		On-Ramp at Main Street	3	23.6	C	27.1	C	24.7	C	23.9	C	27.5	C	25.3	C
		Off-Ramp at Railroad Canyon Road	3	27.8	C	32.2	D	30.0	D	28.2	D	32.7	D	30.9	D
		On-Ramp at Railroad Canyon Road	3	23.6	C	23.0	C	21.8	C	23.7	C	23.2	C	22.2	C
	Northbound	On-Ramp at Nichols Road	3	24.7	C	26.0	C	24.2	C	24.9	C	26.3	C	24.7	C
		Off-Ramp at Nichols Road	3	30.3	D	31.8	D	30.0	D	30.5	D	32.1	D	30.5	D
		On-Ramp at Central Avenue (SR-74)	3	26.5	C	27.8	C	26.0	C	26.9	C	28.5	D	27.0	C
		Off-Ramp at Central Avenue (SR-74)	3	33.5	D	<b>36.5</b>	E	34.4	D	34.0	D	<b>37.2</b>	E	<b>35.2</b>	E
		On-Ramp at Main Street	3	29.3	D	32.5	D	30.0	D	29.8	D	33.0	D	30.6	D
		Off-Ramp at Main Street	3	34.2	D	<b>36.3</b>	E	33.5	D	34.5	D	<b>36.7</b>	E	34.1	D
On-Ramp at Railroad Canyon Road		3	<b>35.3</b>	E	<b>36.2</b>	E	33.6	D	<b>35.8</b>	E	<b>36.9</b>	E	34.6	D	
Off-Ramp at Railroad Canyon Road		3	29.6	D	<b>36.4</b>	E	31.0	D	29.8	D	<b>36.6</b>	E	31.4	D	

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

<sup>1</sup> Density is measured by passenger cars per mile per lane (pc/mi/ln).

Lake Elsinore Walmart

City of Lake Elsinore, CA (JN:08651)

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- Project should contribute its fair share towards the installation of a traffic signal at the intersection and implement permissive left-turn phasing on all approaches. No physical lane improvements are necessary.

**Mitigation Measure 3.1 – I-15 Southbound Ramps / Railroad Canyon Road (#11)** – The following mitigation measure is necessary to reduce the Project’s impact to less-than-significant:

- Restripe the existing eastbound right turn lane as a 3<sup>rd</sup> shared through-right turn lane. No physical lane improvements or roadway widening through the interchange area are necessary.

**Mitigation Measure 4.1 – I-15 Northbound Ramps / Nichols Road (#12)** – The following mitigation measure is necessary to reduce the Project’s impact to less-than-significant:

- Project should contribute its fair share towards the installation of a traffic signal. No physical lane improvements are necessary.

**Mitigation Measure 5.1 – I-15 Northbound Ramps / N. Main Street (#14)** – The following mitigation measure is necessary to reduce the Project’s impact to less-than-significant:

- Project should contribute its fair share towards the installation of a traffic signal. No physical lane improvements are necessary.

**Mitigation Measure 6.1 – Summerhill Drive / Railroad Canyon Road (#23)** – The following mitigation measures are necessary to reduce the Project’s impact to less-than-significant:

- Stripe a northbound right turn lane. Roadway widening does not appear necessary to accommodate the recommended turn lane.
- Modify the traffic signal and implement overlap phasing on the northbound and eastbound right turn lanes.

Worksheets for E+P traffic conditions, with improvements, HCM calculations are provided in Appendix “5.6”.

Table 5-5

Recommended Improvements for Existing Plus Project Conditions

#	Intersection	Traffic Control <sup>3</sup>	Intersection Approach Lanes <sup>1</sup>												Delay <sup>2</sup> (secs.)			Level of Service		
			Northbound			Southbound			Eastbound			Westbound			AM	PM	Sat	AM	PM	Sat
			L	T	R	L	T	R	L	T	R	L	T	R	L	T	R			
3	E Lakeshore Dr / Diamond Dr - Existing (2013) - With Mitigation Measure 1.1	TS	1	2	1	1	2	d	1	3	0	2	2	0	147.6	204.9	259.2	F	F	F
		TS	1	2	1>	1	2	d	1	3	0	2	2	0	38.1	55.0	97.5	D	D	F
4	Gunnerson St / Riverside Dr (SR-74) - Existing (2013) - With Mitigation Measure 2.1 <sup>4</sup>	CSS	0	1	1	0	1	1	0	1	0	0	1	0	47.0	162.2	183.4	E	F	F
		TS	0	1	1	0	1	1	0	1	0	0	1	0	6.4	7.8	8.5	A	A	A
11	I-15 SB Ramps / Railroad Canyon Rd - Existing (2013) - With Mitigation Measure 3.1 <sup>5</sup>	TS	0	0	0	2	1	1	0	2	1	1	2	0	50.1	96.1	63.7	D	F	E
		TS	0	0	0	2	1	1	0	3	0	1	2	0	37.5	36.4	38.4	D	D	D
12	I-15 NB Ramps / Nichols Rd - Existing (2013) - With Mitigation Measure 4.1 <sup>4,6</sup>	CSS	0	1	0	0	0	0	1	1	0	0	1	0	40.1	30.2	19.0	E	D	C
		TS	0	1	0	0	0	0	1	1	0	0	1	0	23.1	26.0	26.3	C	C	C
14	I-15 NB Ramps / N Main St - Existing (2013) - With Mitigation Measure 5.1 <sup>4,6</sup>	CSS	0	1	0	0	0	0	1	1	0	0	1	0	57.7	52.9	15.9	F	F	C
		TS	0	1	0	0	0	0	1	1	0	0	1	0	24.3	29.8	28.5	C	C	C
23	Summerhill Dr / Railroad Canyon Rd - Existing (2013) - With Mitigation Measure 6.1 <sup>7</sup>	TS	2	2	0	1	1	1>	2	2	1	1	3	0	92.5	146.1	94.5	F	F	F
		TS	2	2	1>	1	1	1>	2	2	1>	1	3	0	79.7	108.0	71.5	E	F	E

<sup>1</sup> 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; d= Defacto Right Turn Lane; 1 = Improvement

<sup>2</sup> Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all-way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

<sup>3</sup> CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal

<sup>4</sup> Although the intersection is not anticipated to warrant a traffic signal under E+P traffic conditions, the addition of lane geometric improvements alone is not anticipated to improve the peak hour delays. As such, the intersection should be monitored and a traffic signal should be installed at the lead jurisdiction's discretion.

<sup>5</sup> Recommendation includes restriping the existing eastbound right turn lane as a shared through-right turn lane. No other physical improvements are necessary.

<sup>6</sup> Although signalization of the adjacent ramp is not necessary to achieve acceptable peak hour operations, the installation of a traffic signal at the adjacent ramp should be considered in an effort to preserve traffic flow through the interchange area.

<sup>7</sup> Recommendation includes modifying the traffic signal to implement protected left turn phasing on the northbound and eastbound approaches.

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## **6.0 OPENING YEAR (2016) TRAFFIC ANALYSIS**

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This section discusses the methods used to develop Opening Year (2016) traffic forecasts for Without and With Project conditions, and the resulting intersection, roadway segment and freeway mainline operations.

### **6.1 ROADWAY IMPROVEMENTS**

The lane configurations and traffic controls assumed to be in place for Opening Year (2016) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- At Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for Opening Year (2016) With Project conditions only (e.g., intersection turn lane improvements at the Project driveways).

### **6.2 OPENING YEAR (2016) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS**

This scenario includes Existing (2013) traffic volumes plus an ambient growth factor of 6.12% plus traffic from pending and approved but not yet constructed known development projects in the area. The weekday ADT volumes which can be expected for Opening Year (2016) Without Project traffic conditions are shown on Exhibit 6-1. Exhibits 6-2, 6-3, and 6-4 show the weekday AM, weekday PM, and Saturday mid-day peak hour intersection turning movement volumes for Opening Year (2016) Without Project traffic conditions.

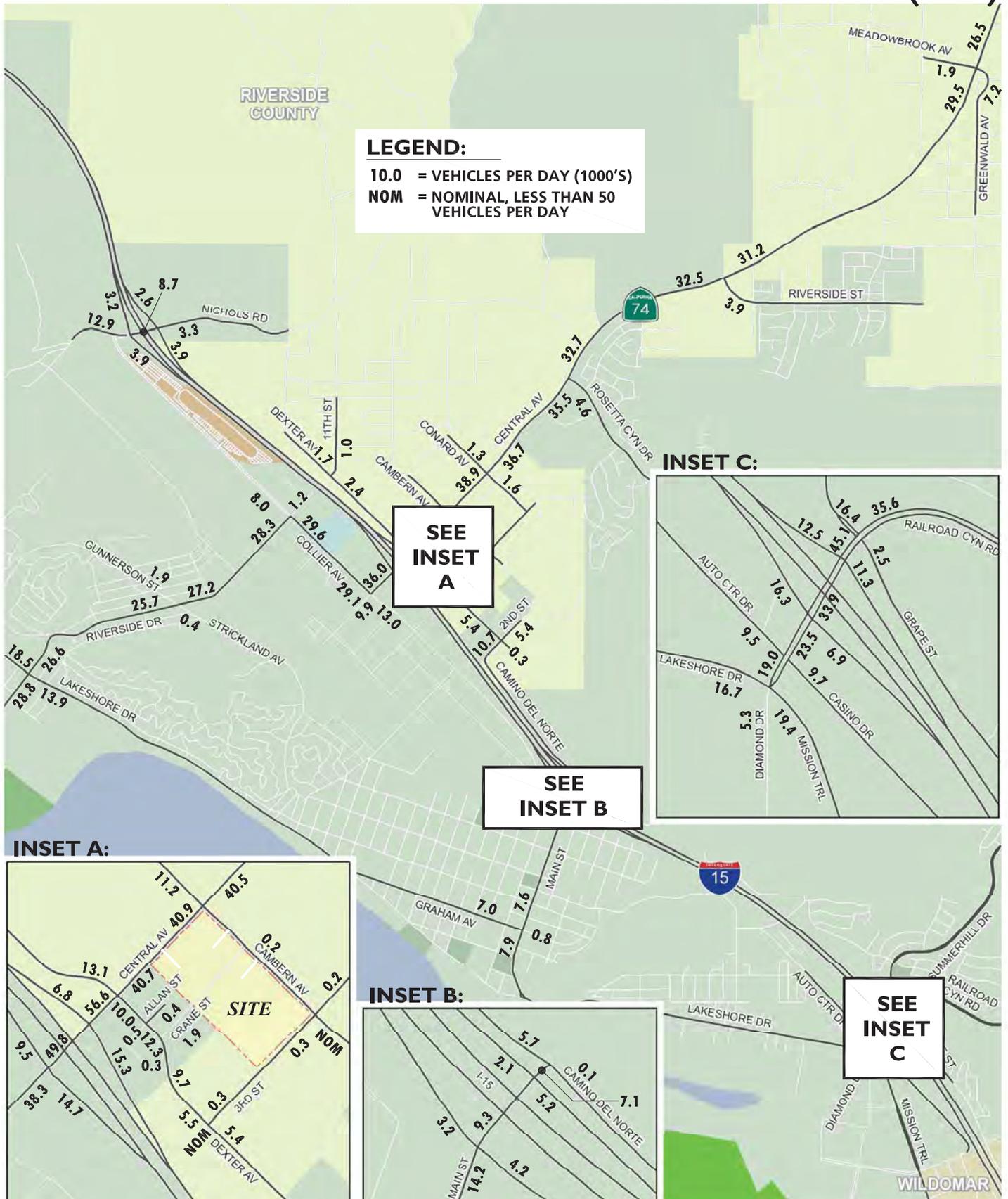
### **6.3 OPENING YEAR (2016) WITH PROJECT TRAFFIC VOLUME FORECASTS**

This scenario includes Existing (2013) traffic volumes, an ambient growth factor of 6.12%, traffic from pending and approved but not yet constructed known development projects in the area and the addition of Project traffic. The weekday ADT volumes which can be expected for Opening Year (2016) With Project traffic conditions are shown on Exhibit 6-5. Exhibits 6-6, 6-7, and 6-8 show the weekday AM, weekday PM, and Saturday mid-day peak hour intersection turning movement volumes for Opening Year (2016) With Project traffic conditions.

### **6.4 INTERSECTION OPERATIONS ANALYSIS**

Level of service calculations were conducted for the study intersections to evaluate their operations under Opening Year (2016) conditions with existing roadway and intersection geometrics consistent with Exhibit 3-1. The intersection analysis results are summarized in Table 6-1, which indicates that the following intersections are anticipated to experience unacceptable LOS (i.e., LOS "E" or worse) during one or more peak hours for Opening Year (2016) Without Project traffic conditions in addition to those previously identified under Existing (2013) traffic conditions:

# OPENING YEAR (2016) WITHOUT PROJECT AVERAGE DAILY TRAFFIC (ADT)



# OPENING YEAR (2016) WITHOUT PROJECT WEEKDAY AM PEAK HOUR INTERSECTION VOLUMES



<b>1</b> Lakeshore Dr. & Riverside Dr. (SR-74) 	<b>2</b> Graham Av. & Main St. 	<b>3</b> Lakeshore Dr./ Mission Bl. & Diamond Dr. 	<b>4</b> Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 	<b>5</b> Collier Av. & Riverside Dr. (SR-74) 	<b>6</b> Collier Av. & Central Av. (SR-74) 	<b>7</b> Auto Center Dr. & Diamond Dr. 	
<b>8</b> I-15 SB Ramps & Nichols Rd. 	<b>9</b> I-15 SB Ramps & Central Av. (SR-74) 	<b>10</b> I-15 SB Ramps & Main St. 	<b>11</b> I-15 SB Ramps & Railroad Canyon Rd. 	<b>12</b> I-15 NB Ramps & Nichols Rd. 	<b>13</b> I-15 NB Ramps & Central Av. (SR-74) 	<b>14</b> I-15 NB Ramps & Main St. 	
<b>15</b> I-15 NB Ramps & Railroad Canyon Rd. 	<b>16</b> Dexter Av. & 11th St. 	<b>17</b> Dexter Av. & Central Av. (SR-74) 	<b>18</b> Dexter Av. & Allan St. 	<b>19</b> Dexter Av. & Crane St. 	<b>20</b> Dexter Av. & 3rd St. 	<b>21</b> Dexter Av. & 2nd St. 	
<b>22</b> Camino Del Norte & Main St. 	<b>23</b> Summerhill Dr./ Grape St. & Railroad Canyon Rd. 	<b>24</b> Driveway 1 & Central Av. (SR-74) Future Intersection 	<b>25</b> Cambern Av. & Central Av. (SR-74) 	<b>26</b> Cambern Av. & Driveway 2 Future Intersection 	<b>27</b> Cambern Av. & Driveway 3 Future Intersection 	<b>28</b> Cambern Av. & 3rd St. 	
<b>29</b> Conard Av. & Central Av. (SR-74) 	<b>30</b> Rosetta Cyn. Dr. & Central Av. (SR-74) 	<b>31</b> Riverside St. & Central Av. (SR-74) 	<b>32</b> Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74) 				

# OPENING YEAR (2016) WITHOUT PROJECT WEEKDAY PM PEAK HOUR INTERSECTION VOLUMES



<b>1</b> Lakeshore Dr. & Riverside Dr. (SR-74) 	<b>2</b> Graham Av. & Main St. 	<b>3</b> Lakeshore Dr./ Mission Bl. & Diamond Dr. 	<b>4</b> Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 	<b>5</b> Collier Av. & Riverside Dr. (SR-74) 	<b>6</b> Collier Av. & Central Av. (SR-74) 	<b>7</b> Auto Center Dr. & Diamond Dr. 	
<b>8</b> I-15 SB Ramps & Nichols Rd. 	<b>9</b> I-15 SB Ramps & Central Av. (SR-74) 	<b>10</b> I-15 SB Ramps & Main St. 	<b>11</b> I-15 SB Ramps & Railroad Canyon Rd. 	<b>12</b> I-15 NB Ramps & Nichols Rd. 	<b>13</b> I-15 NB Ramps & Central Av. (SR-74) 	<b>14</b> I-15 NB Ramps & Main St. 	
<b>15</b> I-15 NB Ramps & Railroad Canyon Rd. 	<b>16</b> Dexter Av. & 11th St. 	<b>17</b> Dexter Av. & Central Av. (SR-74) 	<b>18</b> Dexter Av. & Allan St. 	<b>19</b> Dexter Av. & Crane St. 	<b>20</b> Dexter Av. & 3rd St. 	<b>21</b> Dexter Av. & 2nd St. 	
<b>22</b> Camino Del Norte & Main St. 	<b>23</b> Summerhill Dr./ Grape St. & Railroad Canyon Rd. 	<b>24</b> Driveway 1 & Central Av. (SR-74) Future Intersection	<b>25</b> Cambern Av. & Central Av. (SR-74) 	<b>26</b> Cambern Av. & Driveway 2 Future Intersection	<b>27</b> Cambern Av. & Driveway 3 Future Intersection	<b>28</b> Cambern Av. & 3rd St. 	
<b>29</b> Conard Av. & Central Av. (SR-74) 	<b>30</b> Rosetta Cyn. Dr. & Central Av. (SR-74) 	<b>31</b> Riverside St. & Central Av. (SR-74) 	<b>32</b> Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74) 				

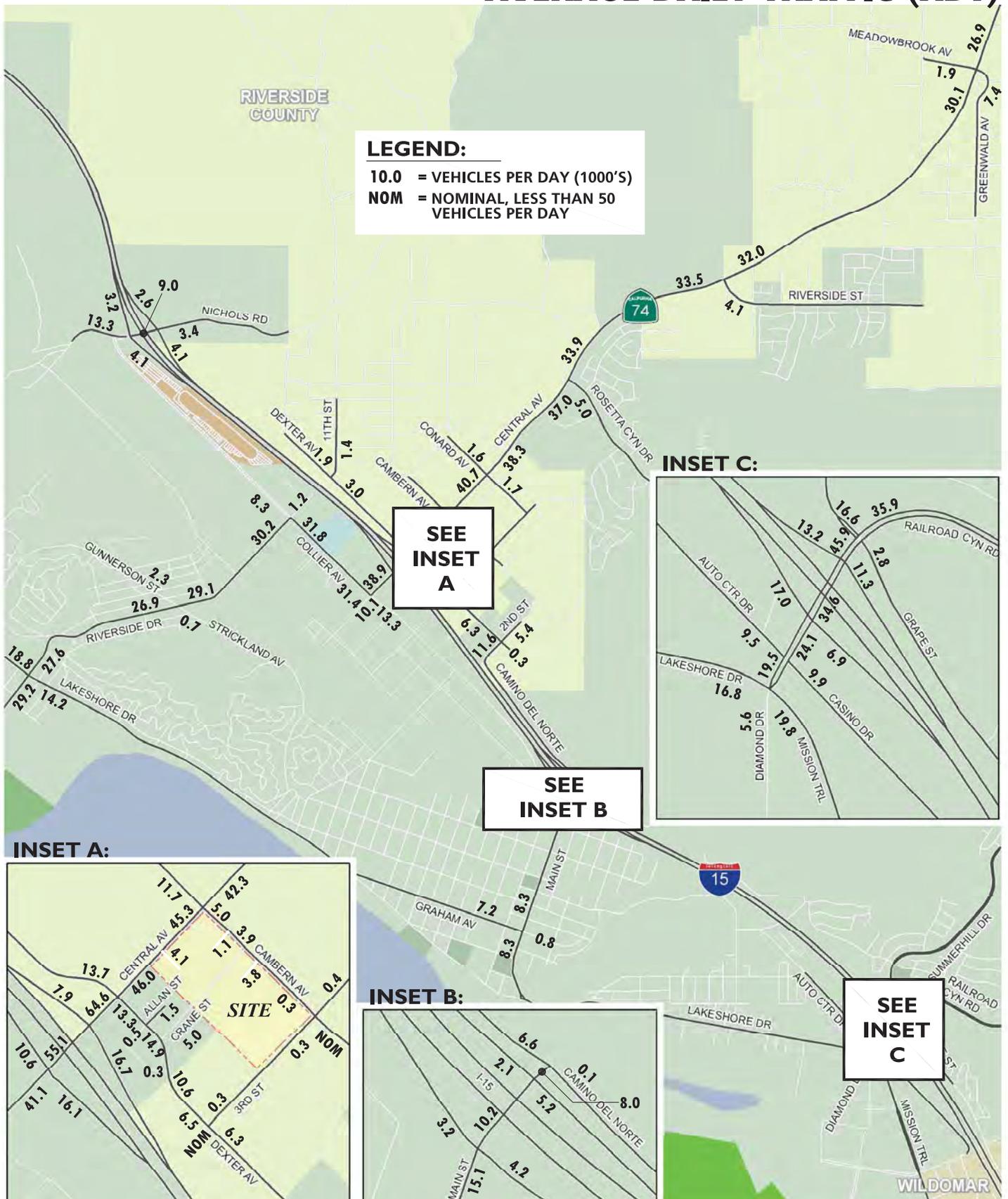
# OPENING YEAR (2016) WITHOUT PROJECT SATURDAY MID-DAY PEAK HOUR INTERSECTION VOLUMES



<b>1</b> Lakeshore Dr. & Riverside Dr. (SR-74) 	<b>2</b> Graham Av. & Main St. 	<b>3</b> Lakeshore Dr./Mission Bl. & Diamond Dr. 	<b>4</b> Gunnerson St./Strickland Av. & Riverside Dr. (SR-74) 	<b>5</b> Collier Av. & Riverside Dr. (SR-74) 	<b>6</b> Collier Av. & Central Av. (SR-74) 	<b>7</b> Auto Center Dr. & Diamond Dr. 	
<b>8</b> I-15 SB Ramps & Nichols Rd. 	<b>9</b> I-15 SB Ramps & Central Av. (SR-74) 	<b>10</b> I-15 SB Ramps & Main St. 	<b>11</b> I-15 SB Ramps & Railroad Canyon Rd. 	<b>12</b> I-15 NB Ramps & Nichols Rd. 	<b>13</b> I-15 NB Ramps & Central Av. (SR-74) 	<b>14</b> I-15 NB Ramps & Main St. 	
<b>15</b> I-15 NB Ramps & Railroad Canyon Rd. 	<b>16</b> Dexter Av. & 11th St. 	<b>17</b> Dexter Av. & Central Av. (SR-74) 	<b>18</b> Dexter Av. & Allan St. 	<b>19</b> Dexter Av. & Crane St. 	<b>20</b> Dexter Av. & 3rd St. 	<b>21</b> Dexter Av. & 2nd St. 	
<b>22</b> Camino Del Norte & Main St. 	<b>23</b> Summerhill Dr./Grape St. & Railroad Canyon Rd. 	<b>24</b> Driveway 1 & Central Av. (SR-74) Future Intersection 	<b>25</b> Cambern Av. & Central Av. (SR-74) 	<b>26</b> Cambern Av. & Driveway 2 Future Intersection 	<b>27</b> Cambern Av. & Driveway 3 Future Intersection 	<b>28</b> Cambern Av. & 3rd St. 	
<b>29</b> Conard Av. & Central Av. (SR-74) 	<b>30</b> Rosetta Cyn. Dr. & Central Av. (SR-74) 	<b>31</b> Riverside St. & Central Av. (SR-74) 	<b>32</b> Meadowbrook Av./Greenwald Av. & Central Av. (SR-74) 				

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# OPENING YEAR (2016) WITH PROJECT AVERAGE DAILY TRAFFIC (ADT)



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# OPENING YEAR (2016) WITH PROJECT WEEKDAY AM PEAK HOUR INTERSECTION VOLUMES



<b>1</b> Lakeshore Dr. & Riverside Dr. (SR-74) 	<b>2</b> Graham Av. & Main St. 	<b>3</b> Lakeshore Dr./ Mission Bl. & Diamond Dr. 	<b>4</b> Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 	<b>5</b> Collier Av. & Riverside Dr. (SR-74) 	<b>6</b> Collier Av. & Central Av. (SR-74) 	<b>7</b> Auto Center Dr. & Diamond Dr. 
<b>8</b> I-15 SB Ramps & Nichols Rd. 	<b>9</b> I-15 SB Ramps & Central Av. (SR-74) 	<b>10</b> I-15 SB Ramps & Main St. 	<b>11</b> I-15 SB Ramps & Railroad Canyon Rd. 	<b>12</b> I-15 NB Ramps & Nichols Rd. 	<b>13</b> I-15 NB Ramps & Central Av. (SR-74) 	<b>14</b> I-15 NB Ramps & Main St. 
<b>15</b> I-15 NB Ramps & Railroad Canyon Rd. 	<b>16</b> Dexter Av. & 11th St. 	<b>17</b> Dexter Av. & Central Av. (SR-74) 	<b>18</b> Dexter Av. & Allan St. 	<b>19</b> Dexter Av. & Crane St. 	<b>20</b> Dexter Av. & 3rd St. 	<b>21</b> Dexter Av. & 2nd St. 
<b>22</b> Camino Del Norte & Main St. 	<b>23</b> Summerhill Dr./ Grape St. & Railroad Canyon Rd. 	<b>24</b> Driveway 1 & Central Av. (SR-74) 	<b>25</b> Cambern Av. & Central Av. (SR-74) 	<b>26</b> Cambern Av. & Driveway 2 	<b>27</b> Cambern Av. & Driveway 3 	<b>28</b> Cambern Av. & 3rd St. 
<b>29</b> Conard Av. & Central Av. (SR-74) 	<b>30</b> Rosetta Cyn. Dr. & Central Av. (SR-74) 	<b>31</b> Riverside St. & Central Av. (SR-74) 	<b>32</b> Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74) 			

# OPENING YEAR (2016) WITH PROJECT WEEKDAY PM PEAK HOUR INTERSECTION VOLUMES



<b>1</b> Lakeshore Dr. & Riverside Dr. (SR-74) 211 271 238 350 722 70	<b>2</b> Graham Av. & Main St. 123 167 116 108 608	<b>3</b> Lakeshore Dr./ Mission Bl. & Diamond Dr. 51 389 236 257 183 451	<b>4</b> Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 7 2 45 117 134 20	<b>5</b> Collier Av. & Riverside Dr. (SR-74) 28 181 4 13 24 38	<b>6</b> Collier Av. & Central Av. (SR-74) 26 146 1094 920 220 246	<b>7</b> Auto Center Dr. & Diamond Dr. 96 179 153 149 738 258
<b>8</b> I-15 SB Ramps & Nichols Rd. 171 876 267 31 339 37 354 37	<b>9</b> I-15 SB Ramps & Central Av. (SR-74) 178 180 7 11 11 15 1400 743	<b>10</b> I-15 SB Ramps & Main St. 74 144 15 26 404 339 439 72	<b>11</b> I-15 SB Ramps & Railroad Canyon Rd. 400 6 1036 745 428	<b>12</b> I-15 NB Ramps & Nichols Rd. 111 17 1039 1064 250 9	<b>13</b> I-15 NB Ramps & Central Av. (SR-74) 195 340 52 61 163 439 479 1517	<b>14</b> I-15 NB Ramps & Main St. 72 596 48 50 158 116 32 220
<b>15</b> I-15 NB Ramps & Railroad Canyon Rd. 814 892	<b>16</b> Dexter Av. & 11th St. 0 0 0 0 39 42	<b>17</b> Dexter Av. & Central Av. (SR-74) 375 74 59 100 138 153 33	<b>18</b> Dexter Av. & Allan St. 7 538 70	<b>19</b> Dexter Av. & Crane St. 5 312 224 101 39	<b>20</b> Dexter Av. & 3rd St. 55 247 55 8 52	<b>21</b> Dexter Av. & 2nd St. 224 33 2 25
<b>22</b> Camino Del Norte & Main St. 234 4 294 31 17 0	<b>23</b> Summerhill Dr./ Grape St. & Railroad Canyon Rd. 386 182 223 73 936 169 408 1287 438 383 160 287	<b>24</b> Driveway 1 & Central Av. (SR-74) 1636	<b>25</b> Cambern Av. & Central Av. (SR-74) 165 12 265 184 1302 68 320 1651 66 169 126 26	<b>26</b> Cambern Av. & Driveway 2 74 72 209	<b>27</b> Cambern Av. & Driveway 3 62 10 4 9	<b>28</b> Cambern Av. & 3rd St. 6 0 8 0 6 4 2 0 12 10
<b>29</b> Conard Av. & Central Av. (SR-74) 38 15 30 1299 41 1871 73 52 2 4	<b>30</b> Rosetta Cyn. Dr. & Central Av. (SR-74) 1124 36 1634 199 150 32	<b>31</b> Riverside St. & Central Av. (SR-74) 1033 13 1490 167 110 10	<b>32</b> Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74) 26 17 37 41 866 14 1087 310 141 22 52			

# OPENING YEAR (2016) WITH PROJECT SATURDAY MID-DAY PEAK HOUR INTERSECTION VOLUMES



<b>1</b> Lakeshore Dr. & Riverside Dr. (SR-74) 	<b>2</b> Graham Av. & Main St. 	<b>3</b> Lakeshore Dr./ Mission Bl. & Diamond Dr. 	<b>4</b> Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 	<b>5</b> Collier Av. & Riverside Dr. (SR-74) 	<b>6</b> Collier Av. & Central Av. (SR-74) 	<b>7</b> Auto Center Dr. & Diamond Dr. 
<b>8</b> I-15 SB Ramps & Nichols Rd. 	<b>9</b> I-15 SB Ramps & Central Av. (SR-74) 	<b>10</b> I-15 SB Ramps & Main St. 	<b>11</b> I-15 SB Ramps & Railroad Canyon Rd. 	<b>12</b> I-15 NB Ramps & Nichols Rd. 	<b>13</b> I-15 NB Ramps & Central Av. (SR-74) 	<b>14</b> I-15 NB Ramps & Main St. 
<b>15</b> I-15 NB Ramps & Railroad Canyon Rd. 	<b>16</b> Dexter Av. & 11th St. 	<b>17</b> Dexter Av. & Central Av. (SR-74) 	<b>18</b> Dexter Av. & Allan St. 	<b>19</b> Dexter Av. & Crane St. 	<b>20</b> Dexter Av. & 3rd St. 	<b>21</b> Dexter Av. & 2nd St. 
<b>22</b> Camino Del Norte & Main St. 	<b>23</b> Summerhill Dr./ Grape St. & Railroad Canyon Rd. 	<b>24</b> Driveway 1 & Central Av. (SR-74) 	<b>25</b> Cambern Av. & Central Av. (SR-74) 	<b>26</b> Cambern Av. & Driveway 2 	<b>27</b> Cambern Av. & Driveway 3 	<b>28</b> Cambern Av. & 3rd St. 
<b>29</b> Conard Av. & Central Av. (SR-74) 	<b>30</b> Rosetta Cyn. Dr. & Central Av. (SR-74) 	<b>31</b> Riverside St. & Central Av. (SR-74) 	<b>32</b> Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74) 			

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Table 6-1

Intersection Analysis for Opening Year (2016) Conditions

#	Intersection	Traffic Control <sup>2</sup>	Opening Year (2016) Without Project						Opening Year (2016) With Project					
			Delay <sup>1</sup> (secs.)			Level of Service			Delay <sup>1</sup> (secs.)			Level of Service		
			AM	PM	Sat	AM	PM	Sat	AM	PM	Sat	AM	PM	Sat
1	Lakeshore Dr / Riverside Dr (SR-74)	TS	46.9	63.5	61.5	D	E	E	47.9	66.1	65.4	D	E	E
2	W Graham Av / N Main St	AWS	9.5	13.2	11.3	A	B	B	9.8	14.1	12.2	A	B	B
3	E Lakeshore Dr / Diamond Dr	TS	<b>175.1</b>	<b>&gt;200.0</b>	<b>&gt;200.0</b>	F	F	F	<b>176.2</b>	<b>&gt;200.0</b>	<b>&gt;200.0</b>	F	F	F
4	Gunnerson St / Riverside Dr (SR-74)	CSS	<b>&gt;100.0</b>	<b>&gt;100.0</b>	<b>&gt;100.0</b>	F	F	F	<b>&gt;100.0</b>	<b>&gt;100.0</b>	<b>&gt;100.0</b>	F	F	F
5	Collier Av / Riverside Dr (SR-74)	TS	16.0	27.9	35.4	B	C	D	17.1	33.8	48.0	B	C	D
6	Collier Av / Central Av (SR-74)	TS	36.7	37.7	33.8	D	D	C	37.6	38.8	36.0	D	D	D
7	Auto Center Dr / Diamond Dr	TS	24.8	27.1	30.1	C	C	C	24.9	27.2	30.7	C	C	C
8	I-15 SB Ramps / Nichols Rd	AWS	12.9	12.3	11.2	B	B	B	13.0	12.6	11.5	B	B	B
9	I-15 SB Ramps / Central Av (SR-74)	TS	25.9	32.6	26.0	C	C	C	27.9	41.6	31.4	C	D	C
10	I-15 SB Ramps / N Main St	CSS	14.2	15.5	11.4	B	C	B	14.7	16.4	12.1	B	C	B
11	I-15 SB Ramps / Railroad Canyon Rd	TS	<b>58.1</b>	<b>105.1</b>	<b>76.8</b>	E	F	E	<b>60.2</b>	<b>111.9</b>	<b>85.6</b>	E	F	F
12	I-15 NB Ramps / Nichols Rd	CSS	<b>&gt;100.0</b>	<b>&gt;100.0</b>	<b>38.5</b>	F	F	E	<b>&gt;100.0</b>	<b>&gt;100.0</b>	<b>45.7</b>	F	F	E
13	I-15 NB Ramps / Central Av (SR-74)	TS	24.9	29.7	25.2	C	C	C	27.7	35.5	31.5	C	D	C
14	I-15 NB Ramps / N Main St	CSS	<b>&gt;100.0</b>	<b>&gt;100.0</b>	21.8	F	F	C	<b>&gt;100.0</b>	<b>&gt;100.0</b>	28.7	F	F	D
15	I-15 NB Ramps / Railroad Canyon Rd	TS	36.1	<b>56.4</b>	31.8	D	E	C	36.7	<b>57.1</b>	32.3	D	E	C
16	Dexter Av / 11th St	CSS	10.2	10.0	9.7	B	A	A	10.5	10.3	10.1	B	B	B
17	Dexter Av / Central Av (SR-74)	TS	34.0	34.9	36.1	C	C	D	36.2	36.2	37.4	D	D	D
18	Dexter Av / Allan St	CSS	11.6	13.3	10.2	B	B	B	12.5	12.5	11.1	B	B	B
19	Dexter Av / Crane St	CSS	11.4	14.2	10.5	B	B	B	33.5	33.5	18.2	D	D	C
20	Dexter Av / 3rd St	CSS	12.9	13.4	10.9	B	B	B	14.0	14.0	11.5	B	B	B
21	Dexter Av / 2nd St	AWS	9.4	9.4	8.3	A	A	A	10.1	10.0	9.0	B	B	A
22	Camino del Norte / N Main St	CSS	11.7	11.5	10.7	B	B	B	12.4	12.2	11.6	B	B	B
23	Summerhill Dr / Railroad Canyon Rd	TS	<b>123.5</b>	<b>172.1</b>	<b>109.7</b>	F	F	F	<b>126.0</b>	<b>176.5</b>	<b>114.7</b>	F	F	F
24	Driveway 1 / Central Av (SR-74)	<b>CSS</b>	Intersection Does Not Exist						10.9	12.1	14.5	B	B	B
25	Cambern Av / Central Av (SR-74)	TS	19.8	27.3	28.1	B	C	C	23.5	40.1	43.8	C	D	D
26	Cambern Av / Driveway 2	<b>CSS</b>	Intersection Does Not Exist						0.0	0.0	0.0	A	A	A
27	Cambern Av / Driveway 3	<b>CSS</b>	Intersection Does Not Exist						9.4	9.9	11.5	A	A	B
28	Cambern Av / 3rd St	AWS	6.8	7.0	6.9	A	A	A	6.8	7.0	6.9	A	A	A
29	Conard Av / Central Av (SR-74)	TS	23.6	25.1	19.8	C	C	B	24.5	26.6	20.5	C	C	C
30	Rosetta Canyon Dr / Central Av (SR-74)	TS	21.4	17.4	15.7	C	B	B	21.9	17.6	16.1	C	B	B
31	Riverside St / Central Av (SR-74)	TS	14.0	15.6	13.4	B	B	B	14.1	15.8	13.6	B	B	B
32	Greenwald Av / Central Av (SR-74)	TS	22.6	23.4	22.5	C	C	C	22.6	23.4	22.6	C	C	C

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

<sup>1</sup> Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all-way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

<sup>2</sup> CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal; **CSS** = Improvement

ID	Intersection Location
1	Lakeshore Drive / Riverside Drive (SR-74) – LOS “E” PM and Saturday peak hours
15	I-15 Northbound Ramps / Railroad Canyon Road – LOS “E” PM peak hour only

Exhibit 6-9 summarizes the weekday AM, weekday PM, and Saturday mid-day peak hour study area intersection LOS under Opening Year (2016) Without Project traffic conditions, consistent with the summary provided in Table 6-1. The intersection operations analysis worksheets for Opening Year (2016) Without Project conditions are included in Appendix “6.1” of this TIA.

As shown on Table 6-1, the addition of Project traffic is not anticipated to result in any additional deficient intersections in addition to those identified for Opening Year (2016) Without Project traffic conditions. Exhibit 6-10 summarizes the weekday AM, weekday PM, and Saturday mid-day peak hour study area intersection LOS under Opening Year (2016) With Project traffic conditions, consistent with the summary provided in Table 6-1. The intersection operations analysis worksheets for Opening Year (2016) With Project conditions are included in Appendix “6.2” of this TIA.

Measures to address near-term cumulative impacts for Opening Year (2016) traffic conditions are discussed in Section 6.9 *Near-Term Cumulative Impacts and Recommended Improvements*.

## 6.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

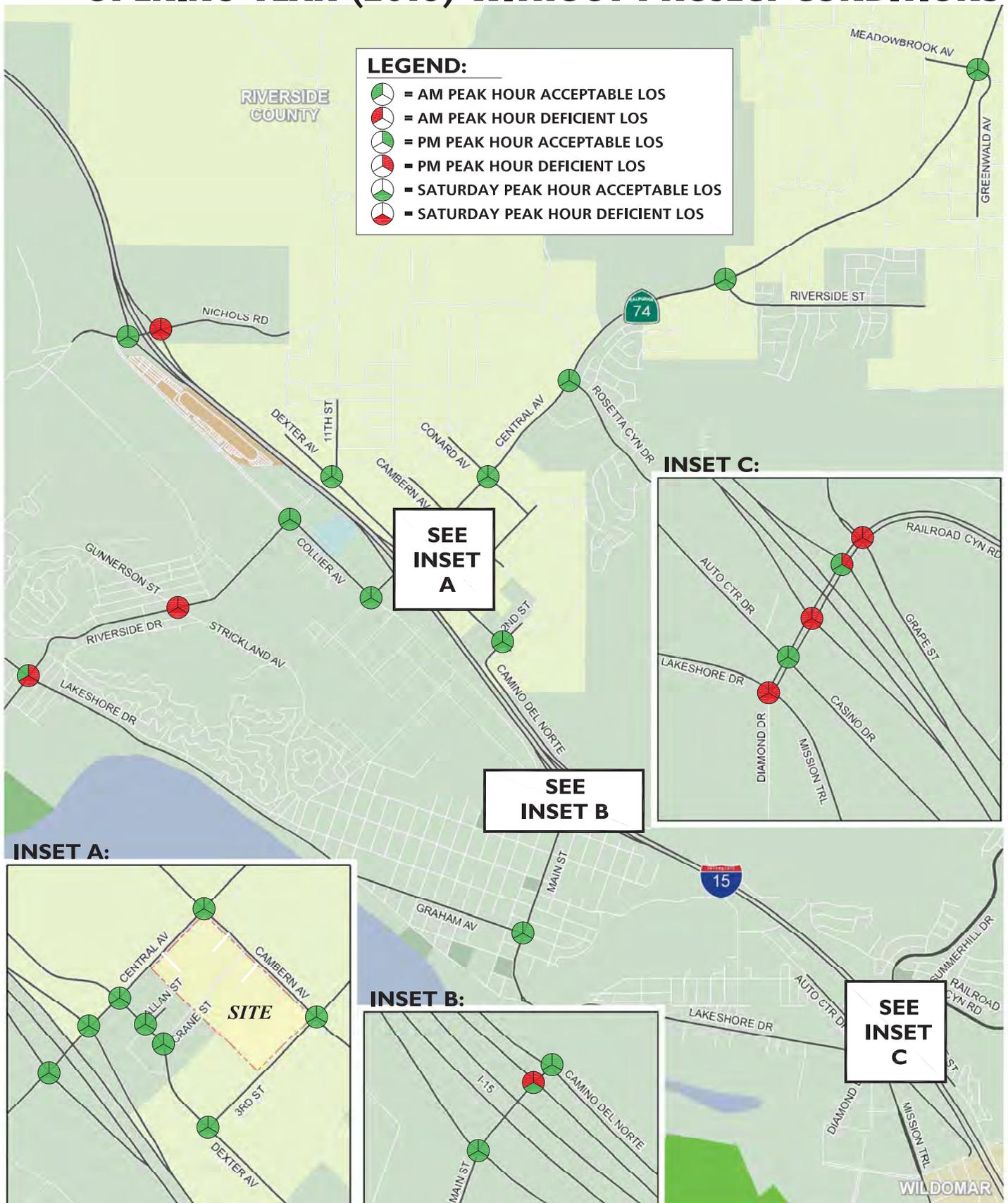
For Opening Year (2016) Without Project conditions, the following intersections appear to warrant traffic signals based on the future ADT traffic volumes in addition to those previously warranted under E+P traffic conditions (see Appendix “6.3”):

ID	Intersection Location	Jurisdiction
8	I-15 SB Ramps / Nichols Road	Caltrans
14	I-15 NB Ramps / N. Main Street	Caltrans
21	Dexter Avenue / 2nd Street	Lake Elsinore/Riverside County

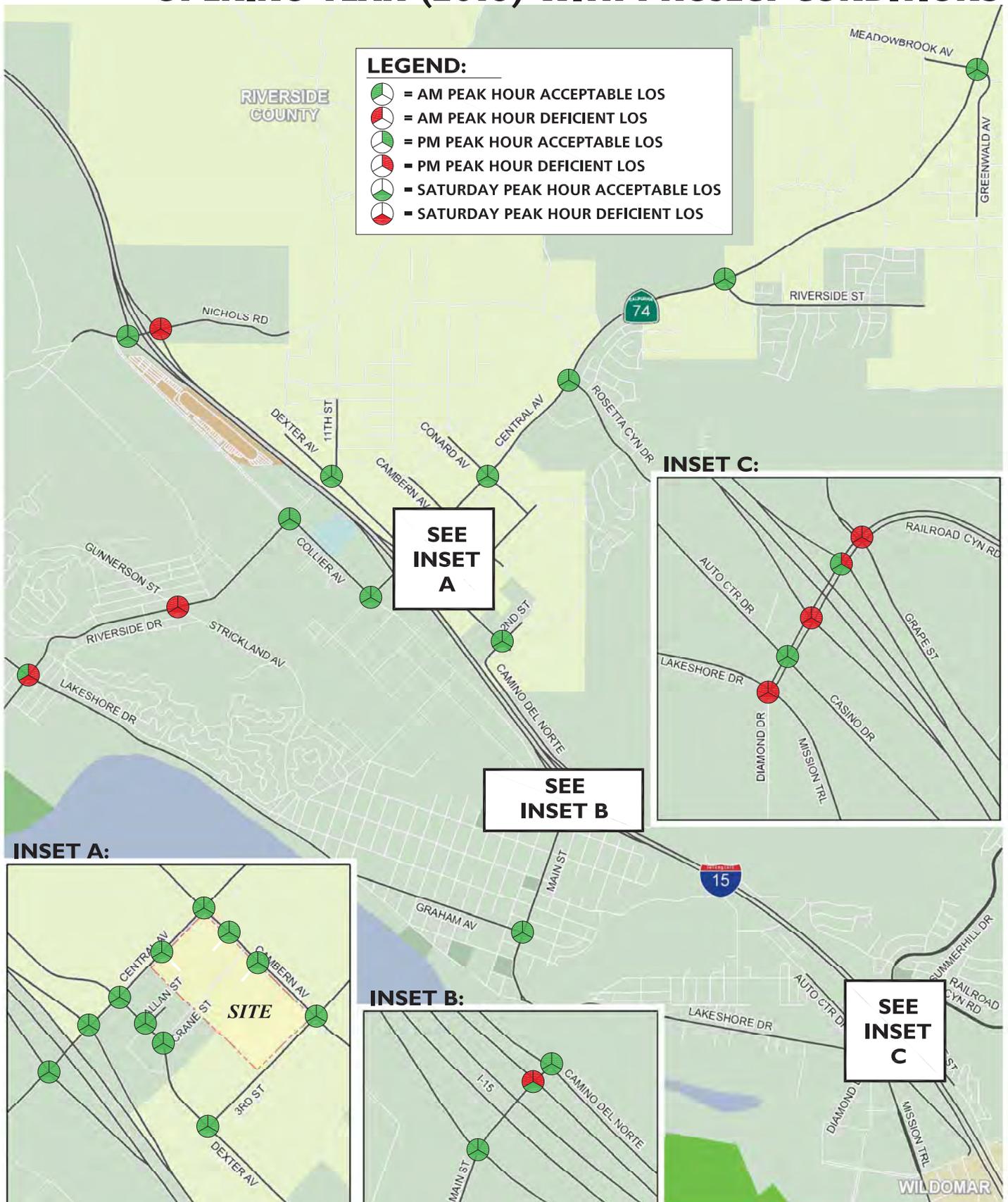
For Opening Year (2016) With Project conditions, the following intersections appear to warrant traffic signals based on the future ADT traffic volumes in addition to those previously warranted under Opening Year (2016) Without Project traffic conditions (see Appendix “6.4”):

ID	Intersection Location	Jurisdiction
2	W. Graham Avenue / N. Main Street	Lake Elsinore
19	Dexter Avenue / Crane Street	Lake Elsinore

# SUMMARY OF PEAK HOUR INTERSECTION LOS FOR OPENING YEAR (2016) WITHOUT PROJECT CONDITIONS



# SUMMARY OF PEAK HOUR INTERSECTION LOS FOR OPENING YEAR (2016) WITH PROJECT CONDITIONS



As noted previously, a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold 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 level of service.

Although the following intersections meet planning level ADT warrants, these intersections are anticipated to operate at acceptable LOS during the peak hour without the installation of a traffic signal:

ID	Intersection Location	Jurisdiction
2	W. Graham Avenue / N. Main Street	Lake Elsinore
19	Dexter Avenue / Crane Street	Lake Elsinore
21	Dexter Avenue / 2nd Street	Lake Elsinore/Riverside County

These locations should be monitored and a traffic signal should be installed at the City Traffic Engineer’s discretion.

## 6.6 RAMP QUEUING ANALYSIS

A ramp queuing analysis was performed for southbound and northbound off-ramps at I-15/Nichols Road, I-15/Central (SR-74), I-15/Main, and I-15/Railroad Canyon Road to assess vehicle queues for the off ramps that may potentially impact peak hour operations at the ramp-to-arterial intersections and may potentially “spill back” onto the I-15 Freeway mainline. Ramp queuing analysis findings are presented in Table 6-2. It is important to note that segment lengths are consistent with the measured distance between the ramps and the adjacent signalized/full-access intersection. As shown on Table 6-2, the following movements may potentially be experiencing queuing issues during the weekday AM, weekday PM or Saturday mid-day peak 95<sup>th</sup> percentile traffic flows:

ID	Intersection Location
9	I-15 Southbound Off-Ramp / Central Avenue (SR-74) – Southbound Left (PM peak hour only)
13	I-15 Northbound Off-Ramp / Central Avenue (SR-74) – Northbound Left (AM, PM, and Saturday peak hours); Northbound Right (PM and Saturday peak hours)
15	I-15 Northbound Off-Ramp / Railroad Canyon Road – Northbound Left-Through (PM peak hour only)

The 95<sup>th</sup> percentile queues for Opening Year (2016) Without Project traffic conditions indicates potential queuing for the movements and peak hours identified above. However, while the potential queues would exceed the turn pocket lengths and could spillback into the adjacent through lanes, none are anticipated to result in spillback onto the I-15 Freeway mainline since the adjacent through lanes all have sufficient

**Table 6-2**  
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**Opening Year (2016) Conditions**  
**AM/PM Peak Hour Off-Ramp Stacking Length Summary along I-15 Freeway**

Intersection	Movement	Stacking Distance (Feet)	95th Percentile Stacking Distance Required (Feet)			Acceptable? <sup>1</sup>		
			AM Peak Hour	PM Peak Hour	SAT Peak Hour	AM	PM	SAT
<b>Opening Year (2016) Without Project</b>								
I-15 NB Off-Ramp / Nichols Rd.	NBL/T/R	1,530	450	341	140	Yes	Yes	Yes
I-15 SB Off-Ramp / Central Av. (SR-74)	SBL	250	210	<b>408<sup>2</sup></b>	251	Yes	<b>No</b>	Yes
	SBT	1,520	162	341 <sup>2</sup>	206	Yes	Yes	Yes
	SBR	250	136	147	166	Yes	Yes	Yes
I-15 NB Off-Ramp / Central Av. (SR-74)	NBL	250	<b>381<sup>2</sup></b>	<b>494<sup>2</sup></b>	<b>438<sup>2</sup></b>	<b>No</b>	<b>No</b>	<b>No</b>
	NBT	1,300	321 <sup>2</sup>	432 <sup>2</sup>	373 <sup>2</sup>	Yes	Yes	Yes
	NBR	250	242 <sup>2</sup>	<b>389<sup>2</sup></b>	<b>341<sup>2</sup></b>	Yes	<b>No</b>	<b>No</b>
I-15 SB Off-Ramp / Main St.	SBR	200	14	51	15	Yes	Yes	Yes
I-15 NB Off-Ramp / Main St.	NBL/T/R	1,610	591	503	88	Yes	Yes	Yes
I-15 SB Off-Ramp / Railroad Canyon Rd.	SBL	1,270	362 <sup>2</sup>	745 <sup>2</sup>	624 <sup>2</sup>	Yes	Yes	Yes
	SBT/R	725	48	73	67	Yes	Yes	Yes
	SBR	280	46	68	65	Yes	Yes	Yes
I-15 NB Off-Ramp / Railroad Canyon Rd.	NBL/T	340	295 <sup>2</sup>	<b>428<sup>2</sup></b>	203	Yes	<b>No</b>	Yes
	NBR	1,600	73	450 <sup>2</sup>	210 <sup>2</sup>	Yes	Yes	Yes
<b>Opening Year (2016) With Project</b>								
I-15 NB Off-Ramp / Nichols Rd.	NBL/T/R	1,530	502	389	171	Yes	Yes	Yes
I-15 SB Off-Ramp / Central Av. (SR-74)	SBL	250	237	<b>485<sup>2</sup></b>	<b>340<sup>2</sup></b>	Yes	<b>No</b>	<b>No</b>
	SBT	1,520	192	418 <sup>2</sup>	272	Yes	Yes	Yes
	SBR	250	162	148	186	Yes	Yes	Yes
I-15 NB Off-Ramp / Central Av. (SR-74)	NBL	250	<b>427<sup>2</sup></b>	<b>540<sup>2</sup></b>	<b>512<sup>2</sup></b>	<b>No</b>	<b>No</b>	<b>No</b>
	NBT	1,300	369 <sup>2</sup>	484 <sup>2</sup>	442 <sup>2</sup>	Yes	Yes	Yes
	NBR	250	<b>335<sup>2</sup></b>	<b>445<sup>2</sup></b>	<b>413<sup>2</sup></b>	<b>No</b>	<b>No</b>	<b>No</b>

**Table 6-2**  
Page 2 of 2

**Opening Year (2016) Conditions  
AM/PM Peak Hour Off-Ramp Stacking Length Summary along I-15 Freeway**

Intersection	Movement	Stacking Distance (Feet)	95th Percentile Stacking Distance Required (Feet)			Acceptable? <sup>1</sup>		
			AM Peak Hour	PM Peak Hour	SAT Peak Hour	AM	PM	SAT
I-15 SB Off-Ramp / Main St.	SBR	200	15	55	16	Yes	Yes	Yes
I-15 NB Off-Ramp / Main St.	NBL/T/R	1,610	675	596	116	Yes	Yes	Yes
I-15 SB Off-Ramp / Railroad Canyon Rd.	SBL	1,270	380 <sup>2</sup>	771 <sup>2</sup>	660 <sup>2</sup>	Yes	Yes	Yes
	SBT/R	725	48	76	69	Yes	Yes	Yes
	SBR	280	46	69	68	Yes	Yes	Yes
I-15 NB Off-Ramp / Railroad Canyon Rd.	NBL/T	340	295 <sup>2</sup>	<b>428<sup>2</sup></b>	203	Yes	<b>No</b>	Yes
	NBR	1,600	79	456 <sup>2</sup>	224 <sup>2</sup>	Yes	Yes	Yes

Note: The 95th percentile queues indicates potential queuing for the movements and peak hours identified above. However, while the potential queues would exceed the turn pocket lengths and could spillback into the adjacent through lanes, none are anticipated to result in spillback onto the I-15 Freeway mainline since the adjacent through lanes all have sufficient capacity.

<sup>1</sup> Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

<sup>2</sup> 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

capacity. There are no additional movements with potential queuing issues anticipated with the addition of Project traffic.

Worksheets for Opening Year (2016) Without and With Project conditions queuing analyses are provided in Appendix “6.5” and Appendix “6.6”, respectively.

## 6.7 BASIC FREEWAY SEGMENT ANALYSIS

Opening Year (2016) Without and With Project peak hour mainline directional volumes are provided on Exhibits 6-11 and 6-12, respectively. As shown on Table 6-3, I-15 Freeway segments analyzed for this study were found to operate at an acceptable LOS (i.e., LOS “D” or better) during the peak hours for Opening Year (2016) Without Project traffic conditions with the exception of the I-15 Freeway northbound segment between N. Main Street and Railroad Canyon Road, which currently operates at LOS “E” during the PM peak hour under Existing (2013) traffic conditions, and the I-15 Northbound segment south of Railroad Canyon Road which is anticipated to operate at LOS “E” during the PM peak hour only. The I-15 Freeway northbound segment between Central Avenue (SR-74) and Main Street is anticipated to operate at LOS “E” during the PM peak hour only with the addition of Project traffic.

Opening Year (2016) Without and With Project conditions basic freeway segment analysis worksheets are provided in Appendix “6.7” and Appendix “6.8”, respectively.

## 6.8 FREEWAY MERGE/DIVERGE ANALYSIS

Ramp merge and diverge operations were also evaluated for Opening Year (2016) Without and With Project conditions and the results of this analysis are presented in Table 6-4. As shown in Table 6-4, the I-15 Freeway ramp merge and diverge areas at Nichols Road and I-15 Northbound and Southbound, Central Avenue (SR-74) and I-15 Southbound, N. Main Street and I-15 Southbound, and Railroad Canyon Road and I-15 Southbound currently operate at LOS “D” or better for Opening Year (2016) Without Project traffic conditions, with the exception of the following locations:

ID	Freeway Merge/Diverge Ramp Junctions
12	I-15 Freeway – Northbound, Off-Ramp at Central Avenue (SR-74) – LOS “E” AM, PM, and Saturday peak hours
14	I-15 Freeway – Northbound, Off-Ramp at N. Main Street – LOS “E” AM and PM peak hours
15	I-15 Freeway – Northbound, On-Ramp at Railroad Canyon Road – LOS “E” AM and PM peak hours
16	I-15 Freeway – Northbound, Off -Ramp at Railroad Canyon Road – LOS “E” PM peak hour only

There are no additional freeway ramp junctions anticipated to operate at unacceptable LOS with the addition of Project traffic, in addition to those previously identified for Opening Year (2016) Without Project traffic conditions.

# OPENING YEAR (2016) WITHOUT PROJECT PEAK HOUR FREEWAY MAINLINE VOLUMES



**LEGEND:**

100/ 100/ 100 = AM/ PM/ SAT VOLUMES

NOTE: VOLUMES SHOWN ARE ACTUAL VEHICLES (NOT PCE).

# OPENING YEAR (2016) WITH PROJECT PEAK HOUR FREEWAY MAINLINE VOLUMES



**LEGEND:**

100/ 100/ 100 = AM/ PM/ SAT VOLUMES

NOTE: VOLUMES SHOWN ARE ACTUAL VEHICLES (NOT PCE).

Table 6-3

Opening Year (2016) Conditions Basic Freeway Segment Analysis

Freeway	Direction	Mainline Segment	Lanes <sup>1</sup>	Opening Year (2016) Without Project						Opening Year (2016) With Project					
				Density <sup>3</sup>			LOS			Density <sup>3</sup>			LOS		
				AM	PM	SAT	AM	PM	SAT	AM	PM	SAT	AM	PM	SAT
I-15 Freeway	Southbound	North of Nichols Road	3	16.3	22.4	19.7	B	C	C	16.6	22.7	20.1	B	C	C
		Nichols Road to Central Avenue (SR-74)	3	16.3	22.6	19.7	B	C	C	16.6	23.1	20.4	B	C	C
		Central Avenue (SR-74) to N. Main Street	3	19.4	25.0	22.3	C	C	C	19.6	25.6	23.2	C	C	C
		N. Main Street to Railroad Canyon Road	3	20.7	25.6	22.7	C	C	C	21.1	26.3	23.6	C	D	C
		South of Railroad Canyon Road	3	20.2	21.1	19.2	C	C	C	20.4	21.3	19.6	C	C	C
	Northbound	North of Nichols Road	3	26.3	27.3	24.8	D	D	C	26.6	27.8	25.3	D	D	C
		Nichols Road to Central Avenue (SR-74)	3	26.5	27.7	24.9	D	D	C	26.9	28.3	25.7	D	D	C
		Central Avenue (SR-74) to N. Main Street	3	29.8	34.0	29.7	D	D	D	30.5	35.2	30.8	D	E	D
		N. Main Street to Railroad Canyon Road	3	33.1	<b>37.2</b>	30.6	D	E	D	33.9	<b>38.5</b>	32.0	D	E	D
		South of Railroad Canyon Road	3	24.8	<b>35.2</b>	25.7	C	E	C	25.0	<b>35.8</b>	26.2	C	E	D

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

<sup>1</sup> Number of lanes are in the specified direction and is based on existing conditions.

<sup>2</sup> Directional volumes based on current PeMS data. Truck percentages are consistent with available Caltrans 2011 data.

<sup>3</sup> Density is measured by passenger cars per mile per lane (pc/mi/ln).

Table 6-4

I-15 Freeway Ramp Junction Merge/Diverge Analysis  
For Opening Year (2016) Conditions

Freeway	Direction	Ramp or Segment	Lanes on Freeway	Opening Year (2016) Without Project						Opening Year (2016) With Project					
				AM Peak Hour		PM Peak Hour		Saturday Peak Hour		AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
				Density <sup>1</sup>	LOS	Density <sup>1</sup>	LOS	Density <sup>1</sup>	LOS	Density <sup>1</sup>	LOS	Density <sup>1</sup>	LOS	Density <sup>1</sup>	LOS
I-15 Freeway	Southbound	Off-Ramp at Nichols Road	3	22.6	C	28.5	D	26.0	C	22.9	C	28.8	D	26.4	C
		On-Ramp at Nichols Road	3	20.4	C	26.5	C	23.8	C	20.8	C	27.0	C	24.5	C
		Off-Ramp at Central Avenue (SR-74)	3	23.2	C	29.9	D	27.0	C	23.8	C	30.5	D	27.9	C
		On-Ramp at Central Avenue (SR-74)	3	25.6	C	30.7	D	28.4	D	26.1	C	31.5	D	29.6	D
		Off-Ramp at Main Street	3	26.1	C	31.1	D	28.8	D	26.3	C	31.6	D	29.6	D
		On-Ramp at Main Street	3	24.5	C	28.7	D	26.0	C	24.8	C	29.1	D	26.7	C
		Off-Ramp at Railroad Canyon Road	3	28.9	D	33.8	D	31.5	D	29.2	D	34.4	D	32.4	D
		On-Ramp at Railroad Canyon Road	3	24.6	C	24.6	C	23.0	C	24.8	C	24.9	C	23.4	C
	Northbound	On-Ramp at Nichols Road	3	26.1	C	26.9	C	25.0	C	26.4	C	27.2	C	25.6	C
		Off-Ramp at Nichols Road	3	31.6	D	32.4	D	30.5	D	31.8	D	32.8	D	31.1	D
		On-Ramp at Central Avenue (SR-74)	3	28.0	C	28.8	D	26.6	C	28.4	D	29.4	D	27.6	C
		Off-Ramp at Central Avenue (SR-74)	3	<b>35.1</b>	E	<b>37.4</b>	E	<b>35.4</b>	E	<b>35.6</b>	E	<b>38.0</b>	E	<b>36.2</b>	E
		On-Ramp at Main Street	3	31.0	D	33.4	D	31.0	D	31.4	D	33.9	D	31.6	D
		Off-Ramp at Main Street	3	<b>35.6</b>	E	<b>37.0</b>	E	34.2	D	<b>35.9</b>	E	<b>37.5</b>	E	34.9	D
On-Ramp at Railroad Canyon Road		3	<b>37.2</b>	E	<b>37.3</b>	E	34.9	D	<b>37.7</b>	E	<b>38.0</b>	E	<b>35.8</b>	E	
Off-Ramp at Railroad Canyon Road		3	30.9	D	<b>36.9</b>	E	31.6	D	31.1	D	<b>37.1</b>	E	32.0	D	

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

<sup>1</sup> Density is measured by passenger cars per mile per lane (pc/mi/ln).

Lake Elsinore Walmart

City of Lake Elsinore, CA (JN:08651)

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Opening Year (2016) Without and With Project conditions freeway ramp junction operations analysis worksheets are provided in Appendix “6.9” and Appendix “6.10”.

## 6.9 NEAR-TERM CUMULATIVE IMPACTS AND RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections that have been identified as cumulatively impacted in an effort to reduce each location’s peak hour delay and improve the associated LOS grade to LOS “D” or better. The effectiveness of the recommended improvement strategies discussed below to address Opening Year (2016) cumulative traffic impacts are presented in Table 6-5. As shown in Table 6-5, the same improvements are needed for both Opening Year (2016) Without and With Project traffic conditions. The improvements that were previously required to address LOS deficiencies for E+P traffic conditions are shown in *italics*. New improvements for Opening Year (2016) With Project traffic conditions are shown in **bold**.

The following recommended improvements are recommended to reduce Opening Year (2016) cumulative impacts to “less-than-significant”:

***Recommended Improvement – E. Lakeshore Drive / Riverside Drive (SR-74) (#1)*** – This intersection is anticipated to operate at an unacceptable LOS (LOS “E”) during the weekday PM and Saturday peak hours under Opening Year (2016) Without Project conditions and is anticipated to continue to operate at LOS “E” during the weekday PM and Saturday peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvement is necessary to reduce the cumulative impact to less-than-significant:

- **Construct a 2<sup>nd</sup> westbound through lane.**

***Recommended Improvement – E. Lakeshore Drive / Diamond Drive (#3)*** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under Opening Year (2016) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- *Modify the traffic signal and implement overlap phasing on the northbound right turn lane.*
- **Construct a 2<sup>nd</sup> southbound left turn lane.**

***Recommended Improvement – Gunnerson Street / Riverside Drive (SR-74) (#4)*** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under Opening Year (2016) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak

Table 6-5

Recommended Improvements for Opening Year (2016) Conditions

#	Intersection	Traffic Control <sup>3</sup>	Intersection Approach Lanes <sup>1</sup>												Delay <sup>2</sup> (secs.)			Level of Service		
			Northbound			Southbound			Eastbound			Westbound			AM	PM	Sat	AM	PM	Sat
			L	T	R	L	T	R	L	T	R	L	T	R						
1	Lakeshore Dr / Riverside Dr (SR-74)																			
	- Without Project, With Improvements	TS	1	2	0	1	2	1	1	2	1	1	<u>2</u>	1	41.1	45.0	42.5	D	D	D
	- With Project, With Improvements	TS	1	2	0	1	2	1	1	2	1	1	<u>2</u>	1	41.5	45.7	43.7	D	D	D
3	E Lakeshore Dr / Diamond Dr																			
	- Without Project, With Improvements	TS	1	2	<u>1</u> >	<u>2</u>	2	d	1	3	0	2	2	0	47.6	39.6	49.7	D	D	D
	- With Project, With Improvements	TS	1	2	<u>1</u> >	<u>2</u>	2	d	1	3	0	2	2	0	47.6	39.8	52.2	D	D	D
4	Gunnerson St / Riverside Dr (SR-74)																			
	- Without Project, With Improvements <sup>4</sup>	<u>TS</u>	0	1	1	0	1	1	<u>1</u>	<u>2</u>	0	<u>1</u>	<u>2</u>	0	11.9	12.1	12.5	B	B	B
	- With Project, With Improvements <sup>4</sup>	<u>TS</u>	0	1	1	0	1	1	<u>1</u>	<u>2</u>	0	<u>1</u>	<u>2</u>	0	12.6	12.7	13.3	B	B	B
11	I-15 SB Ramps / Railroad Canyon Rd																			
	- Without Project, With Improvements <sup>5</sup>	TS	0	0	0	2	1	1	0	<u>3</u>	<u>0</u>	1	2	0	42.0	39.6	40.5	D	D	D
	- With Project, With Improvements <sup>5</sup>	TS	0	0	0	2	1	1	0	<u>3</u>	<u>0</u>	1	2	0	47.8	46.1	41.7	D	D	D
12	I-15 NB Ramps / Nichols Rd																			
	- Without Project, With Improvements <sup>4,6</sup>	<u>TS</u>	0	1	0	0	0	0	1	1	0	0	1	0	25.2	25.6	25.7	C	C	C
	- With Project, With Improvements <sup>4,6</sup>	<u>TS</u>	0	1	0	0	0	0	1	1	0	0	1	0	25.5	25.8	25.9	C	C	C
14	I-15 NB Ramps / N Main St																			
	- Without Project, With Improvements	<u>TS</u>	0	1	0	0	0	0	1	1	0	0	1	0	25.9	31.6	30.3	C	C	C
	- With Project, With Improvements	<u>TS</u>	0	1	0	0	0	0	1	1	0	0	1	0	26.1	31.1	28.6	C	C	C
15	I-15 NB Ramps / Railroad Canyon Rd																			
	- Without Project, With Improvements	TS	<u>1</u>	1	2	0	0	0	2	3	0	0	2	1	40.3	52.2	28.1	D	D	C
	- With Project, With Improvements	TS	<u>1</u>	1	2	0	0	0	2	3	0	0	2	1	33.0	53.9	46.3	C	D	D
23	Summerhill Dr / Railroad Canyon Rd																			
	- Without Project, With Improvements <sup>7</sup>	TS	2	2	<u>1</u> >	1	<u>2</u>	1>	2	<u>3</u>	<u>1</u> >	<u>2</u>	3	0	50.6	53.3	39.6	D	D	D
	- With Project, With Improvements <sup>7</sup>	TS	2	2	<u>1</u> >	1	<u>2</u>	1>	2	<u>3</u>	<u>1</u> >	<u>2</u>	3	0	52.0	53.4	40.1	D	D	D

<sup>1</sup> 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; d= Defacto Right Turn Lane; 1 = Improvement

<sup>2</sup> Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all-way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

<sup>3</sup> CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal

<sup>4</sup> Although the intersection is not anticipated to warrant a traffic signal under Opening Year (2016) traffic conditions, the addition of lane geometric improvements alone is not anticipated to improve the peak hour delays. As such, the intersection should be monitored and a traffic signal should be installed at the lead jurisdiction's discretion.

<sup>5</sup> Recommendation includes restriping the existing eastbound right turn lane as a shared through-right turn lane. No other physical improvements are necessary.

<sup>6</sup> Although signalization of the adjacent ramp is not necessary to achieve acceptable peak hour operations, the installation of a traffic signal at the adjacent ramp should be considered in an effort to preserve traffic flow through the interchange area.

<sup>7</sup> Recommendation includes modifying the traffic signal to implement protected left turn phasing on the northbound and southbound approaches.

Additional roadway widening necessary to accommodate these capacity enhancements may prove to be infeasible due to right-of-way constraints. At this time, the City of Lake Elsinore is currently exploring options for a capacity enhancement design at Railroad Canyon Road near the I-15 Freeway interchange that would include the intersection of Summerhill Drive and Railroad Canyon Road.

hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- *Install a traffic signal.*
- **Construct an eastbound left turn lane and a 2<sup>nd</sup> eastbound through lane.**
- **Construct a westbound left turn lane and a 2<sup>nd</sup> westbound through lane.**
- **Implement protected left turn phasing for the eastbound and westbound approaches.**

**Recommended Improvement – I-15 Southbound Ramps / Railroad Canyon Road (#11)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “E” or worse) during the peak hours under Opening Year (2016) Without Project conditions and is anticipated to continue to operate at LOS “E” or worse during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvement is necessary to reduce the cumulative impact to less-than-significant:

- *Restripe the existing eastbound right turn lane as a 3<sup>rd</sup> shared through-right turn lane. No physical lane improvements or roadway widening through the interchange area are necessary.*

**Recommended Improvement – I-15 Northbound Ramps / Nichols Road (#12)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “E” or worse) during the peak hours under Opening Year (2016) Without Project conditions and is anticipated to continue to operate at LOS “E” or worse during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvement is necessary to reduce the cumulative impact to less-than-significant:

- *Install a traffic signal. No physical lane improvements are necessary.*

**Recommended Improvement – I-15 Northbound Ramps / N. Main Street (#14)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the weekday AM and PM peak hours under Opening Year (2016) Without Project conditions and is anticipated to continue to operate at LOS “F” during the weekday AM and PM peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvement is necessary to reduce the cumulative impact to less-than-significant:

- *Install a traffic signal. No physical lane improvements are necessary.*

**Recommended Improvement – I-15 Northbound Ramps / Railroad Canyon Road (#15)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “E”) during the weekday PM peak hour only under Opening Year (2016) Without Project conditions and is anticipated to continue to operate at LOS “E” during the weekday PM peak hour only with the addition of Project traffic. As such,

this impact is considered potentially significant. The following improvement is necessary to reduce the cumulative impact to less-than-significant:

- **Construct a northbound left turn lane.**

**Recommended Improvement – Summerhill Drive / Railroad Canyon Road (#23)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under Opening Year (2016) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- *Stripe a northbound right turn lane and modify the traffic signal to implement overlap phasing on the northbound right turn lane.*
- *Modify the traffic signal to implement overlap phasing on the eastbound right turn lane.*
- **Construct a 2<sup>nd</sup> southbound through lane.**
- **Construct a 3<sup>rd</sup> eastbound through lane.**
- **Construct a 2<sup>nd</sup> westbound left turn lane.**

Additional roadway widening necessary to accommodate these capacity enhancements may prove to be infeasible due to right-of-way constraints. At this time, the City of Lake Elsinore is currently exploring options for a capacity enhancement design at Railroad Canyon Road near the I-15 Freeway interchange that would include the intersection of Summerhill Drive and Railroad Canyon Road. The Project’s payment towards the City’s TIF would address the Project’s near-term contribution to the intersection of Summerhill Drive and Railroad Canyon Road.

The 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 Transportation Uniform Mitigation Fees (TUMF), City of Lake Elsinore Traffic Impact Fees (TIF) or a fair share contribution as directed by the City. 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 funding program, City TIF funding program or fair share contribution in Section 9.0 *Local and Regional Funding Mechanisms* of this TIA.

Worksheets for Opening Year (2016) Without Project conditions, with improvements, HCM calculations are provided in Appendix “6.11”. Worksheets for Opening Year (2016) With Project conditions, with improvements, HCM calculations are provided in Appendix “6.12”.

## **7.0 GENERAL PLAN BUILDOUT (POST-2035) TRAFFIC ANALYSIS**

This section discusses the methods used to develop General Plan Buildout (Post-2035) traffic forecasts for Without and With Project conditions and the resulting intersection, roadway segment and freeway mainline operations.

### **7.1 ROADWAY IMPROVEMENTS**

Similar to Opening Year (2016) conditions, the lane configurations and traffic controls assumed to be in place for General Plan Buildout (Post-2035) conditions is consistent with those shown previously on Exhibit 3-1, with the exception of the following:

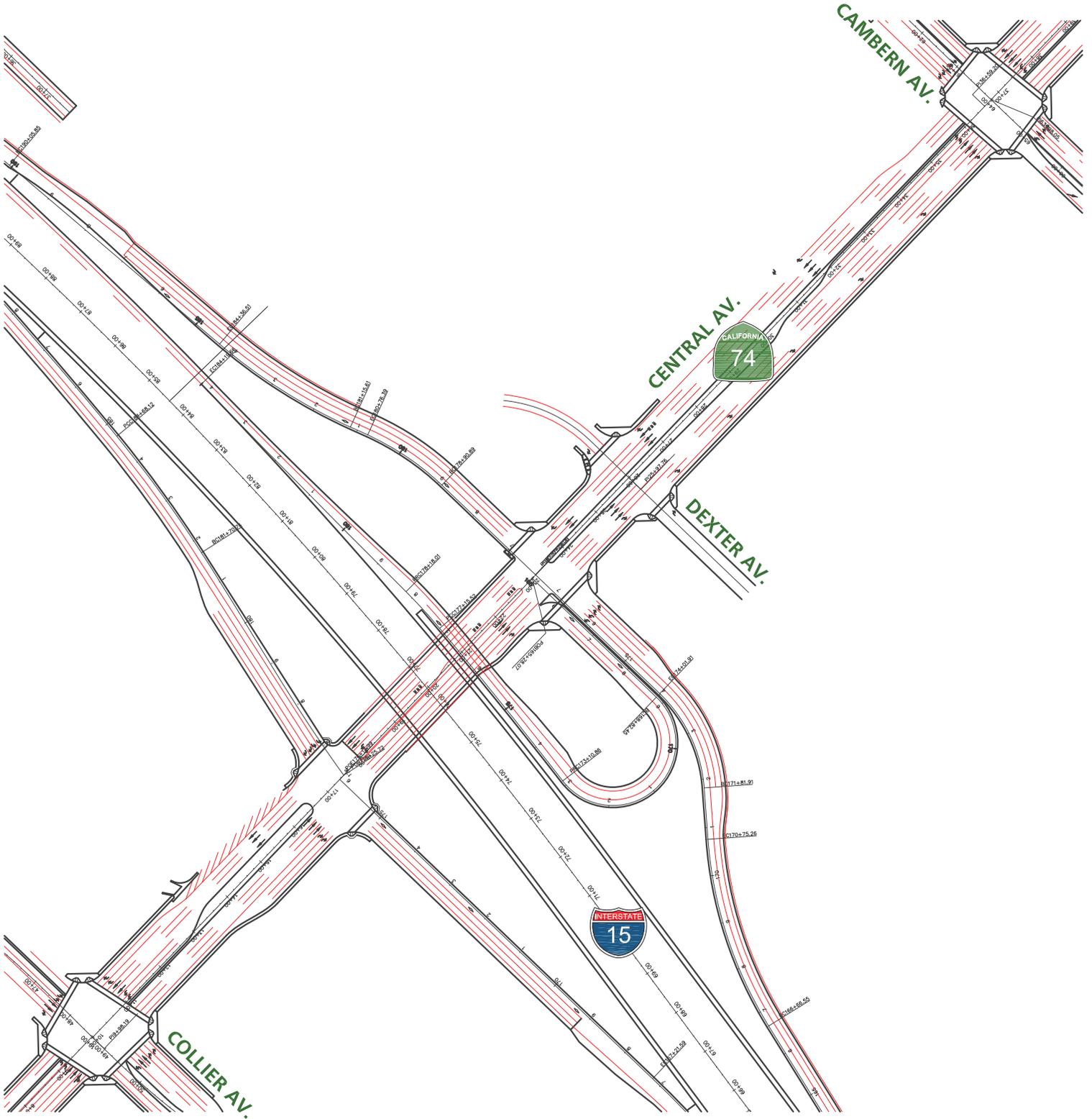
- General Plan Buildout (Post-2035) With Project traffic conditions assumes the re-configured interchanges at the I-15 Freeway and Central Avenue (SR-74) and Railroad Canyon Road. Exhibits 7-1 and 7-2 illustrate the I-15 Freeway at Central Avenue (SR-74) and I-15 Freeway at Railroad Canyon Road, respectively. The proposed interchange designs utilized are consistent with the draft geometric approval drawings for the respective interchanges. It should also be noted that volumes for General Plan Buildout (Post-2035) With Project conditions assumes a circulation network consistent with the City of Lake Elsinore General Plan Circulation Element. As such, volumes along Railroad Canyon Road, Mission Trail and Lakeshore Drive may have decreased from Opening Year (2016) traffic conditions since additional parallel routes are utilized.
- As shown on Exhibit 7-1, future improvements to the I-15 Freeway and Central Avenue (SR-74) interchange include restricting the access at Dexter Avenue to right-in/right-out only via the construction of a raised median along Central Avenue (SR-74) through the intersection at Dexter Avenue.
- At project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for General Plan Buildout (Post-2035) With Project conditions only (e.g., intersection turn lane improvements at the Project driveways).

### **7.2 GENERAL PLAN BUILDOUT (POST-2035) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS**

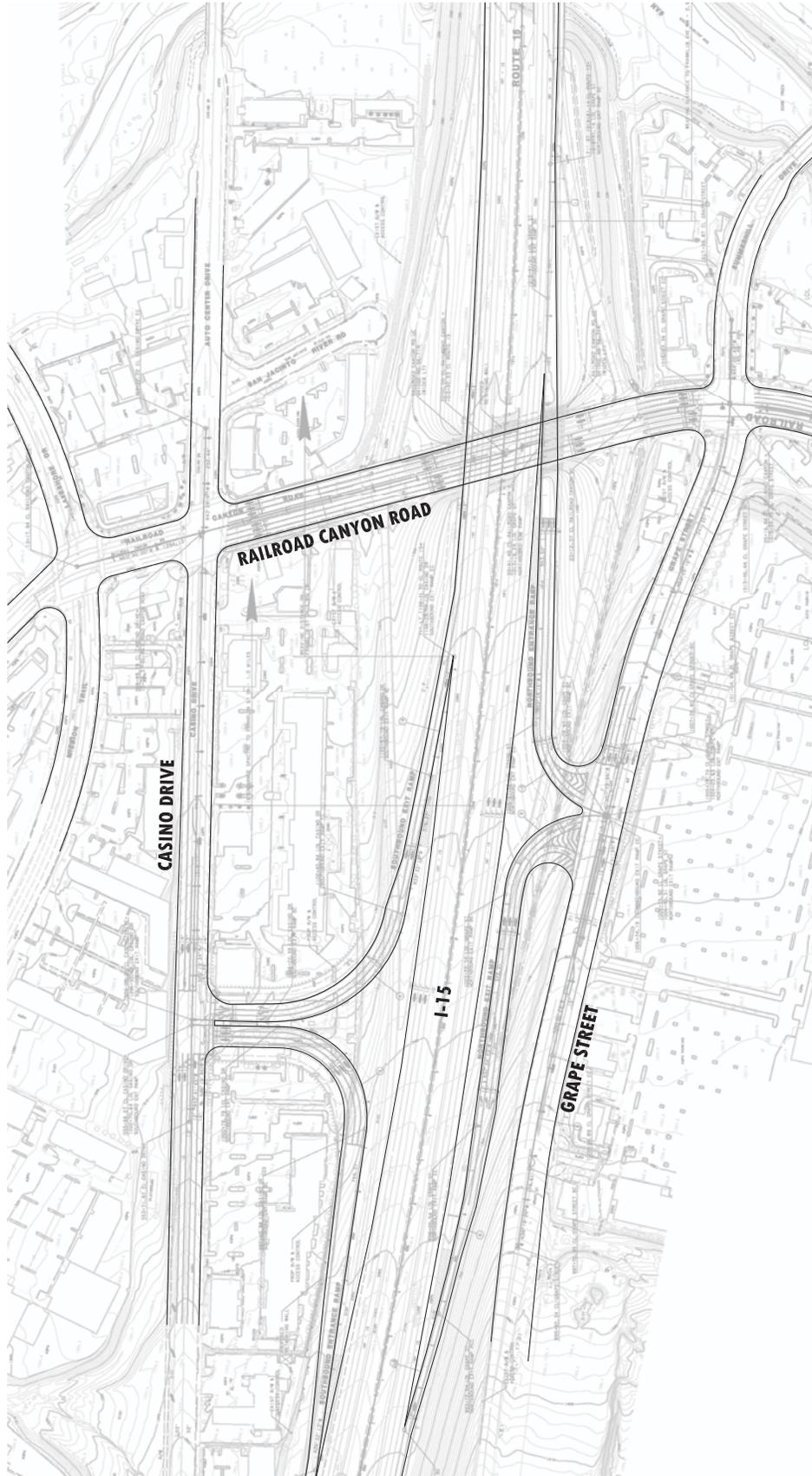
This scenario includes the refined post-processed volumes obtained from a version of RivTAM modified to represent General Plan Buildout conditions for the City of Lake Elsinore. The weekday ADT volumes which can be expected for General Plan Buildout (Post-2035) Without Project traffic conditions are shown on Exhibit 7-3. Exhibits 7-4, 7-5, and 7-6 show the weekday AM, weekday PM, and Saturday mid-day peak hour intersection turning movement volumes for General Plan Buildout (Post-2035) Without Project traffic conditions.

# I-15/SR-74 INTERCHANGE PROPOSED CONCEPTUAL DESIGN

EXHIBIT 7-1



# I-15/RAILROAD CANYON ROAD INTERCHANGE PROPOSED CONCEPTUAL DESIGN





# GENERAL PLAN BUILDOUT (POST-2035) WITHOUT PROJECT WEEKDAY AM PEAK HOUR INTERSECTION VOLUMES



<b>1</b> Lakeshore Dr. & Riverside Dr. (SR-74) 	<b>2</b> Graham Av. & Main St. 	<b>3</b> Lakeshore Dr./ Mission Bl. & Diamond Dr. 	<b>4</b> Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 	<b>5</b> Collier Av. & Riverside Dr. (SR-74) 	<b>6</b> Collier Av. & Central Av. (SR-74) 	<b>7</b> Auto Center Dr. & Diamond Dr. 	
<b>8</b> I-15 SB Ramps & Nichols Rd. 	<b>9</b> I-15 SB Ramps & Central Av. (SR-74) 	<b>10</b> I-15 SB Ramps & Main St. 	<b>11</b> Casino Dr. & I-15 SB Ramps 	<b>12</b> I-15 NB Ramps & Nichols Rd. 	<b>13</b> I-15 NB Ramps & Central Av. (SR-74) 	<b>14</b> I-15 NB Ramps & Main St. 	
<b>15</b> Grape St. & I-15 NB Ramps 	<b>16</b> Dexter Av. & 11th St. 	<b>17</b> Dexter Av. & Central Av. (SR-74) 	<b>18</b> Dexter Av. & Allan St. 	<b>19</b> Dexter Av. & Crane St. 	<b>20</b> Dexter Av. & 3rd St. 	<b>21</b> Dexter Av. & 2nd St. 	
<b>22</b> Camino Del Norte & Main St. 	<b>23</b> Summerhill Dr./ Grape St. & Railroad Canyon Rd. 	<b>24</b> Driveway 1 & Central Av. (SR-74) Future Intersection	<b>25</b> Cambern Av. & Central Av. (SR-74) 	<b>26</b> Cambern Av. & Driveway 2 Future Intersection	<b>27</b> Cambern Av. & Driveway 3 Future Intersection	<b>28</b> Cambern Av. & 3rd St. 	
<b>29</b> Conard Av. & Central Av. (SR-74) 	<b>30</b> Rosetta Cyn. Dr. & Central Av. (SR-74) 	<b>31</b> Riverside St. & Central Av. (SR-74) 	<b>32</b> Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74) 				

# GENERAL PLAN BUILDOUT (POST-2035) WITHOUT PROJECT WEEKDAY PM PEAK HOUR INTERSECTION VOLUMES



<b>1</b> Lakeshore Dr. & Riverside Dr. (SR-74) 517 520 567 587 1888 75 472 1578 343 364 623 48	<b>2</b> Graham Av. & Main St. 174 21 217 208 135 29 552 551 22 15 24 21	<b>3</b> Lakeshore Dr./ Mission Bl. & Diamond Dr. 591 592 704 471 1319 973 56 570 177 2159 32 104 1997 109 55 83	<b>4</b> Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 438 431 211 274 755 522 97 691 1150 1043 907 602 809 1086 709 690 731 301 543 622	<b>5</b> Collier Av. & Riverside Dr. (SR-74) 375 851 1003 111 842 324 1128 212 190 680 931	<b>6</b> Collier Av. & Central Av. (SR-74) 96 590 485 266 1765 622	<b>7</b> Auto Center Dr. & Diamond Dr. 696 750 485 266 1765 622
<b>8</b> I-15 SB Ramps & Nichols Rd. 710 0 839 1583 763 1896 596	<b>9</b> I-15 SB Ramps & Central Av. (SR-74) 842 0 799 2050 668 1971 1037	<b>10</b> I-15 SB Ramps & Main St. 441 0 628 714 290 994 286	<b>11</b> Casino Dr. & I-15 SB Ramps 1094 550 865 127 745 64	<b>12</b> I-15 NB Ramps & Nichols Rd. 551 1943 770 1965 403 741	<b>13</b> I-15 NB Ramps & Central Av. (SR-74) 749 605 2100 670 113 909	<b>14</b> I-15 NB Ramps & Main St. 415 604 546 1076 400 337
<b>15</b> Grape St. & I-15 NB Ramps 851 903 652 100 95 622	<b>16</b> Dexter Av. & 11th St. 80 61 12 433 43 96 643 406 292 154 32	<b>17</b> Dexter Av. & Central Av. (SR-74) 385 256 1969 2399 610 215	<b>18</b> Dexter Av. & Allan St. 10 586 14 45 42 43 55 30 208 28	<b>19</b> Dexter Av. & Crane St. 10 552 109 514 69 10 25 238 28	<b>20</b> Dexter Av. & 3rd St. 113 322 211 530 543 139 65 184 30 37 197 206	<b>21</b> Dexter Av. & 2nd St. 993 93 101 378 333 484 5 525
<b>22</b> Camino Del Norte & Main St. 492 340 530 883 527 139	<b>23</b> Summerhill Dr./ Grape St. & Railroad Canyon Rd. 587 541 624 723 1624 780 442 320 739	<b>24</b> Driveway 1 & Central Av. (SR-74) Future Intersection	<b>25</b> Cambern Av. & Central Av. (SR-74) 550 496 425 486 1213 342 488 1580 246 193 490 504	<b>26</b> Cambern Av. & Driveway 2 Future Intersection	<b>27</b> Cambern Av. & Driveway 3 Future Intersection	<b>28</b> Cambern Av. & 3rd St. 560 368 256 204 107 29 475 830 45 642 49
<b>29</b> Conard Av. & Central Av. (SR-74) 484 33 188 158 2391 18 516 3046 70 63 39 26	<b>30</b> Rosetta Cyn. Dr. & Central Av. (SR-74) 1908 438 2741 640 454 570	<b>31</b> Riverside St. & Central Av. (SR-74) 273 994 475 544 1888 356 358 2493 429 301 745 272	<b>32</b> Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74) 199 25 51 190 2148 392 199 25 51 2713 337 251 375			

# GENERAL PLAN BUILDOUT (POST-2035) WITHOUT PROJECT SATURDAY MID-DAY PEAK HOUR INTERSECTION VOLUMES



<b>1</b> Lakeshore Dr. & Riverside Dr. (SR-74) 	<b>2</b> Graham Av. & Main St. 	<b>3</b> Lakeshore Dr./ Mission Bl. & Diamond Dr. 	<b>4</b> Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 	<b>5</b> Collier Av. & Riverside Dr. (SR-74) 	<b>6</b> Collier Av. & Central Av. (SR-74) 	<b>7</b> Auto Center Dr. & Diamond Dr. 	
<b>8</b> I-15 SB Ramps & Nichols Rd. 	<b>9</b> I-15 SB Ramps & Central Av. (SR-74) 	<b>10</b> I-15 SB Ramps & Main St. 	<b>11</b> Casino Dr. & I-15 SB Ramps 	<b>12</b> I-15 NB Ramps & Nichols Rd. 	<b>13</b> I-15 NB Ramps & Central Av. (SR-74) 	<b>14</b> I-15 NB Ramps & Main St. 	
<b>15</b> Grape St. & I-15 NB Ramps 	<b>16</b> Dexter Av. & 11th St. 	<b>17</b> Dexter Av. & Central Av. (SR-74) 	<b>18</b> Dexter Av. & Allan St. 	<b>19</b> Dexter Av. & Crane St. 	<b>20</b> Dexter Av. & 3rd St. 	<b>21</b> Dexter Av. & 2nd St. 	
<b>22</b> Camino Del Norte & Main St. 	<b>23</b> Summerhill Dr./ Grape St. & Railroad Canyon Rd. 	<b>24</b> Driveway 1 & Central Av. (SR-74) Future Intersection	<b>25</b> Cambern Av. & Central Av. (SR-74) 	<b>26</b> Cambern Av. & Driveway 2 Future Intersection	<b>27</b> Cambern Av. & Driveway 3 Future Intersection	<b>28</b> Cambern Av. & 3rd St. 	
<b>29</b> Conard Av. & Central Av. (SR-74) 	<b>30</b> Rosetta Cyn. Dr. & Central Av. (SR-74) 	<b>31</b> Riverside St. & Central Av. (SR-74) 	<b>32</b> Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74) 				

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### 7.3 GENERAL PLAN BUILDOUT (POST-2035) WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes obtained from a version of RivTAM modified to represent General Plan Buildout conditions for the City of Lake Elsinore with the addition of Project traffic. The weekday ADT volumes which can be expected for General Plan Buildout (Post-2035) With Project traffic conditions are shown on Exhibit 7-7. Exhibits 7-8, 7-9, and 7-10 show the weekday AM, weekday PM, and Saturday mid-day peak hour intersection turning movement volumes for General Plan Buildout (Post-2035) With Project traffic conditions.

### 7.4 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under General Plan Buildout (Post-2035) Without and With Project conditions with Existing (2013) roadway and intersection geometrics consistent with Exhibit 3-1. The intersection analysis results are summarized in Table 7-1 which indicates that all study area intersection locations will experience unacceptable LOS (i.e., LOS “E” or LOS “F”) during one or both of the peak hours, with the exception of the following intersections:

ID	Intersection Location	Jurisdiction
18	Dexter Avenue / Allan Street	Lake Elsinore
19	Dexter Avenue / Crane Street	Lake Elsinore

Exhibit 7-11 summarizes the weekday AM, weekday PM, and Saturday mid-day peak hour study area intersection LOS under General Plan Buildout (Post-2035) Without Project traffic conditions, consistent with the summary provided in Table 7-1. Exhibit 7-12 summarizes the weekday AM, weekday PM, and Saturday mid-day peak hour study area intersection LOS under General Plan Buildout (Post-2035) With Project traffic conditions, consistent with the summary provided in Table 7-1. 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 General Plan Buildout (Post-2035) Without Project traffic conditions, with the exception of the following location:

ID	Intersection Location
19	Dexter Avenue / Crane Street – LOS “F” PM and Saturday peak hours

The intersection operations analysis worksheets for General Plan Buildout (Post-2035) Without Project conditions are included in Appendix “7.1” of this TIA. The intersection operations analysis worksheets for General Plan Buildout (Post-2035) With Project conditions are included in Appendix “7.2” of this TIA. Measures to address cumulative impacts for General Plan Buildout (Post-2035) traffic conditions are



# GENERAL PLAN BUILDOUT (POST-2035) WITH PROJECT WEEKDAY AM PEAK HOUR INTERSECTION VOLUMES



<b>1</b> Lakeshore Dr. & Riverside Dr. (SR-74) 	<b>2</b> Graham Av. & Main St. 	<b>3</b> Lakeshore Dr./ Mission Bl. & Diamond Dr. 	<b>4</b> Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 	<b>5</b> Collier Av. & Riverside Dr. (SR-74) 	<b>6</b> Collier Av. & Central Av. (SR-74) 	<b>7</b> Auto Center Dr. & Diamond Dr. 	
<b>8</b> I-15 SB Ramps & Nichols Rd. 	<b>9</b> I-15 SB Ramps & Central Av. (SR-74) 	<b>10</b> I-15 SB Ramps & Main St. 	<b>11</b> Casino Dr. & I-15 SB Ramps 	<b>12</b> I-15 NB Ramps & Nichols Rd. 	<b>13</b> I-15 NB Ramps & Central Av. (SR-74) 	<b>14</b> I-15 NB Ramps & Main St. 	
<b>15</b> Grape St. & I-15 NB Ramps 	<b>16</b> Dexter Av. & 11th St. 	<b>17</b> Dexter Av. & Central Av. (SR-74) 	<b>18</b> Dexter Av. & Allan St. 	<b>19</b> Dexter Av. & Crane St. 	<b>20</b> Dexter Av. & 3rd St. 	<b>21</b> Dexter Av. & 2nd St. 	
<b>22</b> Camino Del Norte & Main St. 	<b>23</b> Summerhill Dr./ Grape St. & Railroad Canyon Rd. 	<b>24</b> Driveway 1 & Central Av. (SR-74) 	<b>25</b> Cambern Av. & Central Av. (SR-74) 	<b>26</b> Cambern Av. & Driveway 2 	<b>27</b> Cambern Av. & Driveway 3 	<b>28</b> Cambern Av. & 3rd St. 	
<b>29</b> Conard Av. & Central Av. (SR-74) 	<b>30</b> Rosetta Cyn. Dr. & Central Av. (SR-74) 	<b>31</b> Riverside St. & Central Av. (SR-74) 	<b>32</b> Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74) 				

# GENERAL PLAN BUILDOUT (POST-2035) WITH PROJECT WEEKDAY PM PEAK HOUR INTERSECTION VOLUMES



<b>1</b> Lakeshore Dr. & Riverside Dr. (SR-74) 517 520 599 600 1901 88 472 1590 343 364 623 60	<b>2</b> Graham Av. & Main St. 174 21 225 143 283 29 252 568 22 15 24 21	<b>3</b> Lakeshore Dr./ Mission Bl. & Diamond Dr. 591 596 704 471 1327 981 625 1230 102 232 1109 687	<b>4</b> Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 56 582 190 2201 45 438 643 211 375 851 1069 1178 855 324	<b>5</b> Collier Av. & Riverside Dr. (SR-74) 438 643 211 274 355 522 379 1136 212 190 680 739	<b>6</b> Collier Av. & Central Av. (SR-74) 97 691 1232 1126 810 86 690 485 809 1102 709 118 915 108	<b>7</b> Auto Center Dr. & Diamond Dr. 96 690 485 266 1765 622 266 1765 622
<b>8</b> I-15 SB Ramps & Nichols Rd. 710 0 839 1596 767	<b>9</b> I-15 SB Ramps & Central Av. (SR-74) 842 0 881 2150 768	<b>10</b> I-15 SB Ramps & Main St. 441 0 628 747 290	<b>11</b> Casino Dr. & I-15 SB Ramps 1094 550 901 131	<b>12</b> I-15 NB Ramps & Nichols Rd. 551 1947	<b>13</b> I-15 NB Ramps & Central Av. (SR-74) 832 1805	<b>14</b> I-15 NB Ramps & Main St. 415 637
<b>15</b> Grape St. & I-15 NB Ramps 891 911 652 100 103 622	<b>16</b> Dexter Av. & 11th St. 80 89 12 503 568 96 643 406 292 162 45	<b>17</b> Dexter Av. & Central Av. (SR-74) 385 277 2253 2660 630 236	<b>18</b> Dexter Av. & Allan St. 10 620 17 43 219 44	<b>19</b> Dexter Av. & Crane St. 10 510 143 5 3 144 15 25 44 55 224 44	<b>20</b> Dexter Av. & 3rd St. 113 311 1008 113 1008 113 311 1008	<b>21</b> Dexter Av. & 2nd St. 426 93 378 5 366 484 5 366 484 5
<b>22</b> Camino Del Norte & Main St. 525 340 563 863 527 139	<b>23</b> Summerhill Dr./ Grape St. & Railroad Canyon Rd. 595 541 624 723 1636 780 475 1455 713 450 320 739	<b>24</b> Driveway 1 & Central Av. (SR-74) 2529 2724 171 110	<b>25</b> Cambern Av. & Central Av. (SR-74) 550 525 725 886 1513 508 383 678 44 508	<b>26</b> Cambern Av. & Driveway 2 115 1301 0 1629	<b>27</b> Cambern Av. & Driveway 3 117 1184 297 4 4 1332	<b>28</b> Cambern Av. & 3rd St. 560 368 260 208 107 29 475 480 49 45 642 49
<b>29</b> Conard Av. & Central Av. (SR-74) 492 33 188 158 2445 18 524 3100 74 67 39 26	<b>30</b> Rosetta Cyn. Dr. & Central Av. (SR-74) 1949 438 2783 653 466 570	<b>31</b> Riverside St. & Central Av. (SR-74) 273 394 475 544 1917 356 358 2522 437 309 745 272	<b>32</b> Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74) 199 251 190 2160 392 199 251 190 2160 392 2726 345 259 375			

# GENERAL PLAN BUILDOUT (POST-2035) WITH PROJECT SATURDAY MID-DAY PEAK HOUR INTERSECTION VOLUMES



<b>1</b> Lakeshore Dr. & Riverside Dr. (SR-74) 	<b>2</b> Graham Av. & Main St. 	<b>3</b> Lakeshore Dr./ Mission Bl. & Diamond Dr. 	<b>4</b> Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 	<b>5</b> Collier Av. & Riverside Dr. (SR-74) 	<b>6</b> Collier Av. & Central Av. (SR-74) 	<b>7</b> Auto Center Dr. & Diamond Dr. 
<b>8</b> I-15 SB Ramps & Nichols Rd. 	<b>9</b> I-15 SB Ramps & Central Av. (SR-74) 	<b>10</b> I-15 SB Ramps & Main St. 	<b>11</b> Casino Dr. & I-15 SB Ramps 	<b>12</b> I-15 NB Ramps & Nichols Rd. 	<b>13</b> I-15 NB Ramps & Central Av. (SR-74) 	<b>14</b> I-15 NB Ramps & Main St. 
<b>15</b> Grape St. & I-15 NB Ramps 	<b>16</b> Dexter Av. & 11th St. 	<b>17</b> Dexter Av. & Central Av. (SR-74) 	<b>18</b> Dexter Av. & Allan St. 	<b>19</b> Dexter Av. & Crane St. 	<b>20</b> Dexter Av. & 3rd St. 	<b>21</b> Dexter Av. & 2nd St. 
<b>22</b> Camino Del Norte & Main St. 	<b>23</b> Summerhill Dr./ Grape St. & Railroad Canyon Rd. 	<b>24</b> Driveway 1 & Central Av. (SR-74) 	<b>25</b> Cambern Av. & Central Av. (SR-74) 	<b>26</b> Cambern Av. & Driveway 2 	<b>27</b> Cambern Av. & Driveway 3 	<b>28</b> Cambern Av. & 3rd St. 
<b>29</b> Conard Av. & Central Av. (SR-74) 	<b>30</b> Rosetta Cyn. Dr. & Central Av. (SR-74) 	<b>31</b> Riverside St. & Central Av. (SR-74) 	<b>32</b> Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74) 			
<b>9</b> Main St. 	<b>10</b> Main St. 	<b>14</b> Camino Del Norte 	<b>10</b> Main St. 	<b>16</b> Camino Del Norte 	<b>31</b> Riverside St. & Central Av. (SR-74) 	<b>32</b> Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74) 

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Table 7-1

Intersection Analysis for General Plan Buildout (Post-2035) Conditions

#	Intersection	Traffic Control <sup>2</sup>	General Plan Buildout (Post-2035) Without Project						General Plan Buildout (Post-2035) With Project					
			Delay <sup>1</sup> (secs.)			Level of Service			Delay <sup>1</sup> (secs.)			Level of Service		
			AM	PM	Sat	AM	PM	Sat	AM	PM	Sat	AM	PM	Sat
1	Lakeshore Dr / Riverside Dr (SR-74)	TS	>200.0	>200.0	>200.0	F	F	F	>200.0	>200.0	>200.0	F	F	F
2	W Graham Av / N Main St	AWS	49.7	>100.0	>100.0	F <sup>3</sup>	F	F	57.0	>100.0	>100.0	F	F	F
3	E Lakeshore Dr / Diamond Dr	TS	>200.0	>200.0	>200.0	F	F	F	>200.0	>200.0	>200.0	F	F	F
4	Gunnerson St / Riverside Dr (SR-74)	CSS	>100.0	>100.0	>100.0	F	F	F	>100.0	>100.0	>100.0	F	F	F
5	Collier Av / Riverside Dr (SR-74)	TS	>200.0	>200.0	>200.0	F	F	F	>200.0	>200.0	>200.0	F	F	F
6	Collier Av / Central Av (SR-74)	TS	71.2	>200.0	>200.0	F <sup>3</sup>	F	F	77.2	>200.0	>200.0	F <sup>3</sup>	F	F
7	Auto Center Dr / Diamond Dr	TS	>200.0	>200.0	>200.0	F	F	F	>200.0	>200.0	>200.0	F	F	F
8	I-15 SB Ramps / Nichols Rd	AWS	>100.0	>100.0	>100.0	F	F	F	>100.0	>100.0	>100.0	F	F	F
9	I-15 SB Ramps / Central Av (SR-74)	TS	103.0	154.9	60.4	F	F	F <sup>3</sup>	119.6	178.7	87.7	F	F	F
10	I-15 SB Ramps / N Main St	CSS	>100.0	>100.0	>100.0	F	F	F	>100.0	>100.0	>100.0	F	F	F
11	I-15 SB Ramps / Railroad Canyon Rd	TS	Not Applicable <sup>4</sup>						Not Applicable <sup>4</sup>					
12	I-15 NB Ramps / Nichols Rd	CSS	>100.0	>100.0	>100.0	F	F	F	>100.0	>100.0	>100.0	F	F	F
13	I-15 NB Ramps / Central Av (SR-74)	TS	116.2	131.4	80.9	F	F	F	135.0	148.9	117.1	F	F	F
14	I-15 NB Ramps / N Main St	CSS	>100.0	>100.0	>100.0	F	F	F	>100.0	>100.0	>100.0	F	F	F
15	I-15 NB Ramps / Railroad Canyon Rd	TS	Not Applicable <sup>4</sup>						Not Applicable <sup>4</sup>					
16	Dexter Av / 11th St	CSS	>100.0	>100.0	>100.0	F	F	F	>100.0	>100.0	>100.0	F	F	F
17	Dexter Av / Central Av (SR-74)	TS	Not Applicable <sup>5</sup>						Not Applicable <sup>5</sup>					
18	Dexter Av / Allan St	CSS	13.2	18.8	16.5	B	C	C	12.0	14.5	12.0	B	B	B
19	Dexter Av / Crane St	CSS	17.1	29.1	18.6	C	D	C	22.9	>100.0	70.8	C	F	F
20	Dexter Av / 3rd St	CSS	>100.0	>100.0	>100.0	F	F	F	>100.0	>100.0	>100.0	F	F	F
21	Dexter Av / 2nd St	AWS	22.3	>100.0	>100.0	C	F	F	25.4	>100.0	>100.0	D	F	F
22	Camino del Norte / N Main St	CSS	>100.0	>100.0	>100.0	F	F	F	>100.0	>100.0	>100.0	F	F	F
23	Summerhill Dr / Railroad Canyon Rd	TS	>200.0	>200.0	>200.0	F	F	F	>200.0	>200.0	>200.0	F	F	F
24	Driveway 1 / Central Av (SR-74)	<u>CSS</u>	Intersection Does Not Exist						11.2	12.2	11.9	B	B	B
25	Cambern Av / Central Av (SR-74)	TS	>200.0	>200.0	>200.0	F	F	F	>200.0	>200.0	>200.0	F	F	F
26	Cambern Av / Driveway 2	<u>CSS</u>	Intersection Does Not Exist						0.0	0.0	0.0	A	A	A
27	Cambern Av / Driveway 3	<u>TS</u>	Intersection Does Not Exist						9.4	13.5	18.7	A	B	B
28	Cambern Av / 3rd St	AWS	>100.0	>100.0	>100.0	F	F	F	>100.0	>100.0	>100.0	F	F	F
29	Conard Av / Central Av (SR-74)	TS	104.5	>200.0	128.2	F	F	F	111.0	>200.0	142.6	F	F	F
30	Rosetta Canyon Dr / Central Av (SR-74)	TS	58.2	109.4	38.4	E	F	D	62.7	112.1	41.7	E	F	D
31	Riverside St / Central Av (SR-74)	TS	>200.0	>200.0	>200.0	F	F	F	>200.0	>200.0	>200.0	F	F	F
32	Greenwald Av / Central Av (SR-74)	TS	>200.0	>200.0	128.5	F	F	F	>200.0	>200.0	135.4	F	F	F

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

<sup>1</sup> Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all-way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

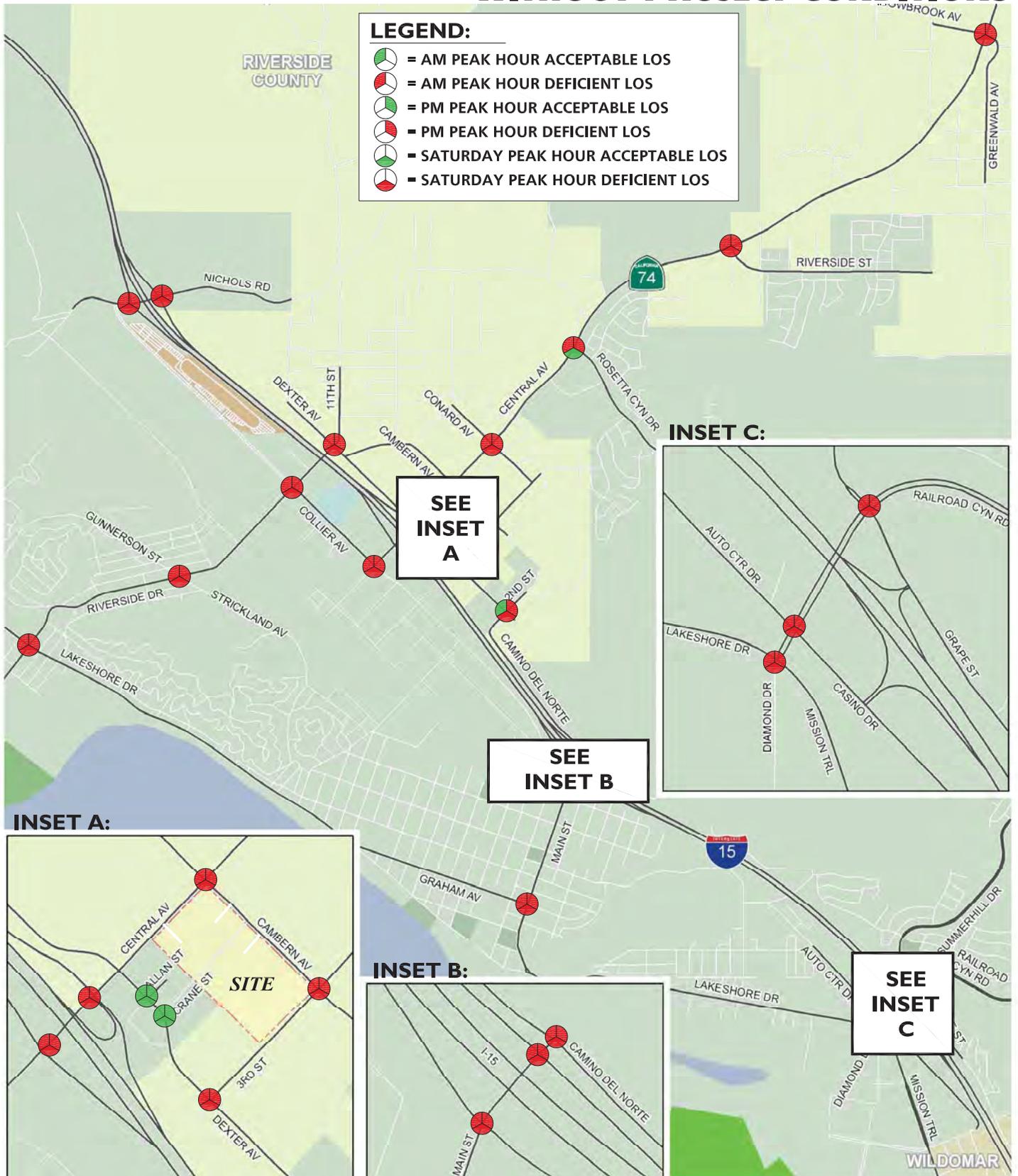
<sup>2</sup> CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal; **CSS** = Improvement

<sup>3</sup> Volume-to-capacity ratio is greater than 1.00; Intersection unstable; Level of Service "F".

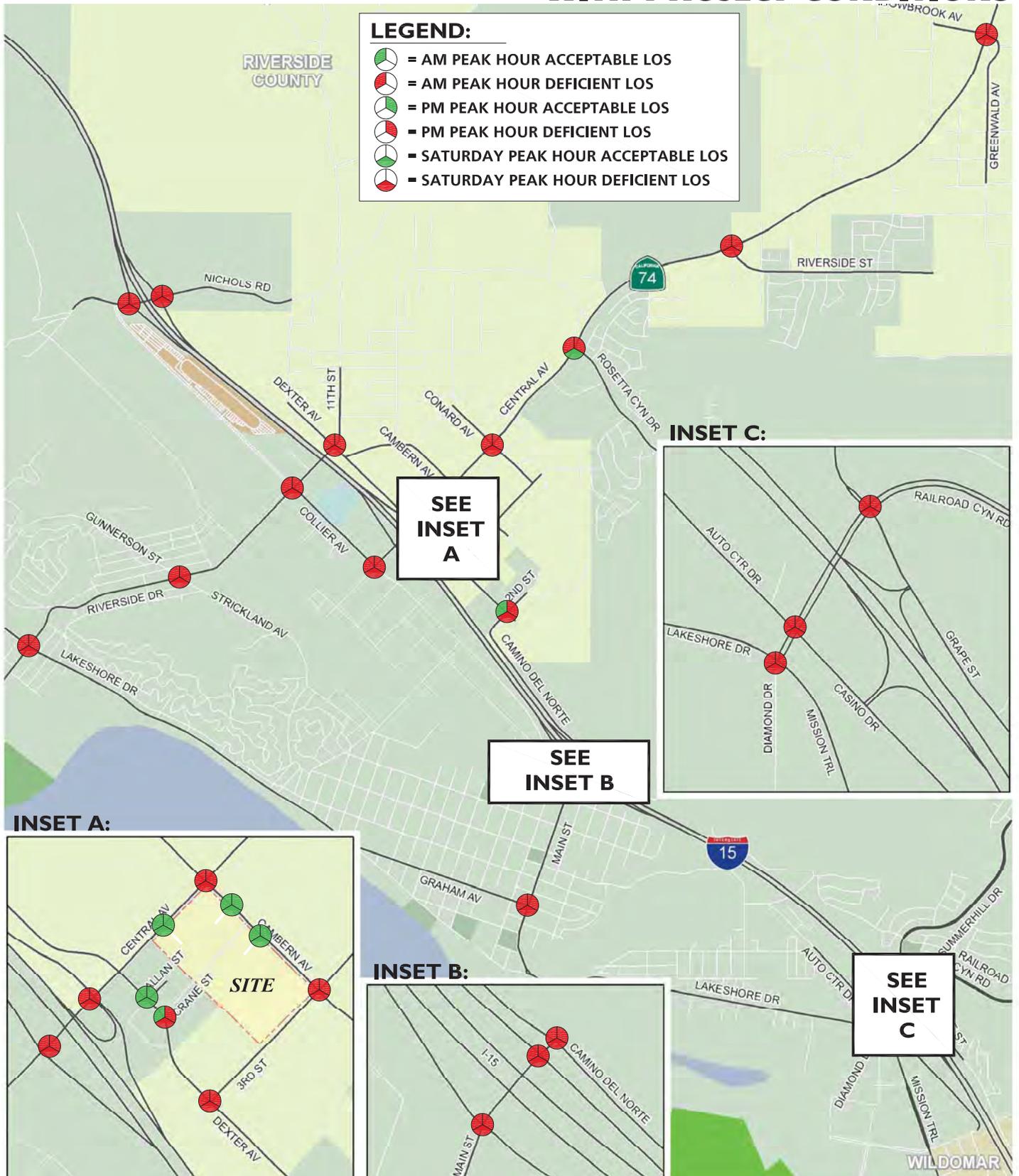
<sup>4</sup> It is anticipated that long-range interchange improvements at the I-15 Freeway and Railroad Canyon Road interchange include relocating the existing on and off ramps onto Casino Drive and Grape Street. As such, these ramps have been assessed for "with improvements" conditions only.

<sup>5</sup> The intersection of Dexter Avenue at Central Avenue (SR-74) is proposed to be restricted to right-in/right-out access only under long-range traffic conditions. As such, the peak hour LOS has been assessed for "with improvements" conditions only.

# SUMMARY OF PEAK HOUR INTERSECTION LOS FOR GENERAL PLAN BUILDOUT (POST-2035) WITHOUT PROJECT CONDITIONS



# SUMMARY OF PEAK HOUR INTERSECTION LOS FOR GENERAL PLAN BUILDOUT (POST-2035) WITH PROJECT CONDITIONS



discussed in Section 7.19 *General Plan Buildout (Post-2035) Cumulative Impacts and Recommended Improvements*.

## 7.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

For General Plan Buildout (Post-2035) Without Project conditions, the following intersections appear to warrant traffic signals based on the future ADT traffic volumes in addition to those previously warranted under Opening Year (2016) With Project traffic conditions (see Appendix “7.3”):

ID	Intersection Location	Jurisdiction
4	Gunnerson Street / Riverside Drive (SR-74)	Caltrans
12	I-15 Northbound Ramps / Nichols Road	Caltrans
16	Dexter Avenue / 11th Street	Riverside County
20	Dexter Avenue / 3rd Street	Lake Elsinore/Riverside County
22	Camino del Norte / N. Main Street	Lake Elsinore
28	Cambern Avenue / 3rd Street	Riverside County

For General Plan Buildout (Post-2035) With Project conditions, that the following intersection appears to warrant a traffic signal in addition to those warranted under General Plan Buildout (Post-2035) Without Project traffic conditions (see Appendix “7.4”):

ID	Intersection Location	Jurisdiction
27	Cambern Avenue / Driveway 3	Lake Elsinore

## 7.6 RAMP QUEUING ANALYSIS

A ramp Queuing analysis was performed for southbound and northbound off-ramps at I-15/Nichols Road, I-15/Central (SR-74), I-15/Main, and I-15/Railroad Canyon Road to assess vehicle queues for the off ramps that may potentially impact peak hour operations at the ramp-to-arterial intersections and may potentially “spill back” onto the I-15 Freeway mainline. Ramp queuing analysis findings are presented in Table 7-2. It is important to note that segment lengths are consistent with the measured distance between the ramps and the adjacent signalized/full-access intersection. As shown on Table 7-2, the following movements may potentially be experiencing queuing issues during the weekday AM, weekday PM or Saturday mid-day peak 95<sup>th</sup> percentile traffic flows:

ID	Intersection Location
9	I-15 Southbound Off-Ramp / Central Avenue (SR-74) – Southbound Left and Southbound Right (AM, PM and Saturday peak hours)
13	I-15 Northbound Off-Ramp / Central Avenue (SR-74) – Northbound Left and Northbound Right (AM, PM and Saturday peak hours)

Table 7-2

**General Plan Buildout (Post-2035) Conditions  
AM/PM Peak Hour Off-Ramp Stacking Length Summary along I-15 Freeway**

Intersection	Movement	Stacking Distance (Feet)	95th Percentile Stacking Distance Required (Feet)			Acceptable? <sup>1</sup>		
			AM Peak Hour	PM Peak Hour	SAT Peak Hour	AM	PM	SAT
<b>General Plan Buildout (Post-2035) Without Project</b>								
I-15 SB Off-Ramp / Central Av. (SR-74)	SBL	250	<b>812</b> <sup>2</sup>	<b>861</b> <sup>2</sup>	<b>615</b> <sup>2</sup>	No	No	No
	SBT	1,520	757 <sup>2</sup>	821 <sup>2</sup>	567 <sup>2</sup>	Yes	Yes	Yes
	SBR	250	<b>665</b> <sup>2</sup>	<b>731</b> <sup>2</sup>	<b>508</b> <sup>2</sup>	No	No	No
I-15 NB Off-Ramp / Central Av. (SR-74)	NBL	250	<b>793</b> <sup>2</sup>	<b>843</b> <sup>2</sup>	<b>717</b> <sup>2</sup>	No	No	No
	NBT	1,300	747 <sup>2</sup>	805 <sup>2</sup>	663 <sup>2</sup>	Yes	Yes	Yes
	NBR	250	<b>671</b> <sup>2</sup>	<b>712</b> <sup>2</sup>	<b>591</b> <sup>2</sup>	No	No	No
<b>General Plan Buildout (Post-2035) With Project</b>								
I-15 SB Off-Ramp / Central Av. (SR-74)	SBL	250	<b>857</b> <sup>2</sup>	<b>914</b> <sup>2</sup>	<b>691</b> <sup>2</sup>	No	No	No
	SBT	1,520	795 <sup>2</sup>	865 <sup>2</sup>	635 <sup>2</sup>	Yes	Yes	Yes
	SBR	250	<b>706</b> <sup>2</sup>	<b>778</b> <sup>2</sup>	<b>572</b> <sup>2</sup>	No	No	No
I-15 NB Off-Ramp / Central Av. (SR-74)	NBL	250	<b>835</b> <sup>2</sup>	<b>888</b> <sup>2</sup>	<b>790</b> <sup>2</sup>	No	No	No
	NBT	1,300	790 <sup>2</sup>	849 <sup>2</sup>	730 <sup>2</sup>	Yes	Yes	Yes
	NBR	250	<b>711</b> <sup>2</sup>	<b>768</b> <sup>2</sup>	<b>662</b> <sup>2</sup>	No	No	No

Note: The 95th percentile queues indicates potential queuing for the movements and peak hours identified above. However, while the potential queues would exceed the turn pocket lengths and could spillback into the adjacent through lanes, none are anticipated to result in spillback onto the I-15 Freeway mainline since the adjacent through lanes all have sufficient capacity.

<sup>1</sup> Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

<sup>2</sup> 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

The 95<sup>th</sup> percentile queues for General Plan Buildout (Post-2035) Without Project traffic conditions indicates potential queuing for the movements and peak hours identified above. The potential queues would exceed the turn pocket lengths and could spillback into the adjacent through lanes resulting in potential periodic spillback onto the I-15 Freeway mainline during these peak hours. There are no additional movements with potential queuing issues anticipated with the addition of Project traffic.

Worksheets for General Plan Buildout (Post-2035) Without and With Project conditions queuing analyses are provided in Appendix “7.5” and Appendix “7.6”, respectively.

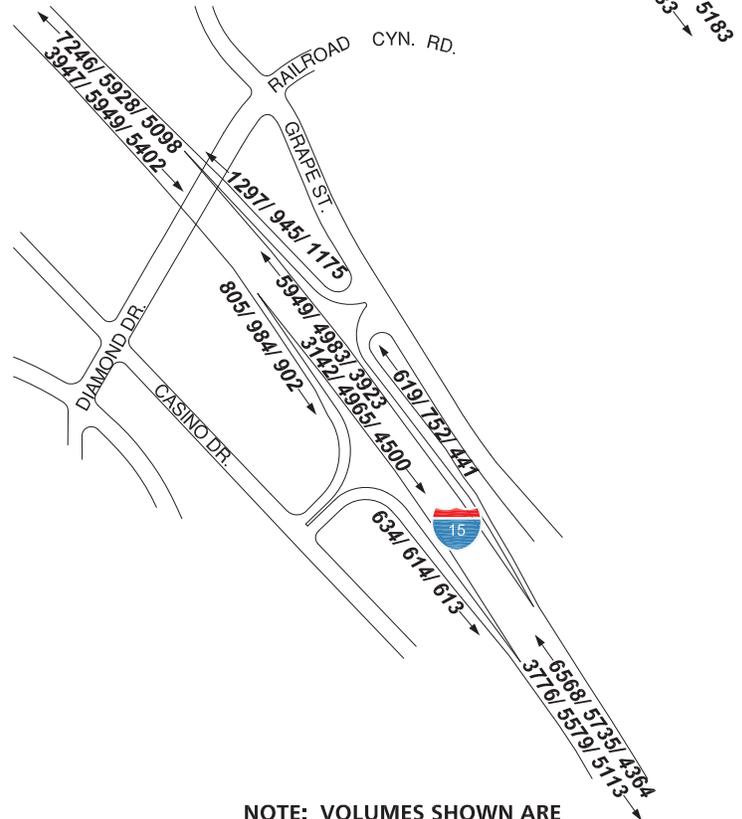
## 7.7 BASIC FREEWAY SEGMENT ANALYSIS

General Plan Buildout (Post-2035) Without and With Project peak hour mainline directional volumes are provided on Exhibits 7-13 and 7-14, respectively. As shown on Table 7-3, I-15 Freeway segments analyzed for this study were found to operate at an acceptable LOS (i.e., LOS “D” or better) during the peak hours for General Plan Buildout (Post-2035) Without Project traffic conditions with the exception of the following:

ID	Freeway Mainline Segments
1	I-15 Freeway – Southbound, North of Nichols Road – LOS “F” PM peak hour; LOS “E” Saturday peak hour
2	I-15 Freeway – Southbound, Nichols Road to Central Avenue (SR-74) – LOS “F” PM peak hour only
3	I-15 Freeway – Southbound, Central Avenue (SR-74) to N. Main Street – LOS “F” PM peak hour; LOS “E” Saturday peak hour
4	I-15 Freeway – Southbound, N. Main Street to Railroad Canyon Road – LOS “E” PM peak hour only
6	I-15 Freeway – Northbound, North of Nichols Road – LOS “E” AM and PM peak hours
7	I-15 Freeway – Northbound, Nichols Road to Central Avenue (SR-74) – LOS “F” AM peak hour only
8	I-15 Freeway – Northbound, Central Avenue (SR-74) to N. Main Street – LOS “F” AM peak hour; LOS “E” PM peak hour
9	I-15 Freeway – Northbound, N. Main Street to Railroad Canyon Road – LOS “F” AM peak hour; LOS “E” PM peak hour
10	I-15 Freeway – Northbound, South of Railroad Canyon Road – LOS “F” AM peak hour; LOS “E” PM peak hour

A schedule for the widening of I-15 Freeway between the SR-60 Freeway and the I-15/I-215 Freeway interchange has not been set, due to the state’s ongoing budget challenges. The widening project includes the addition of a carpool lane in each direction of travel between the I-15/I-215 Freeway interchange and Central Avenue (SR-74) and the construction of two tolled express lanes and one

# GENERAL PLAN BUILDOUT (POST-2035) WITHOUT PROJECT PEAK HOUR FREEWAY MAINLINE VOLUMES

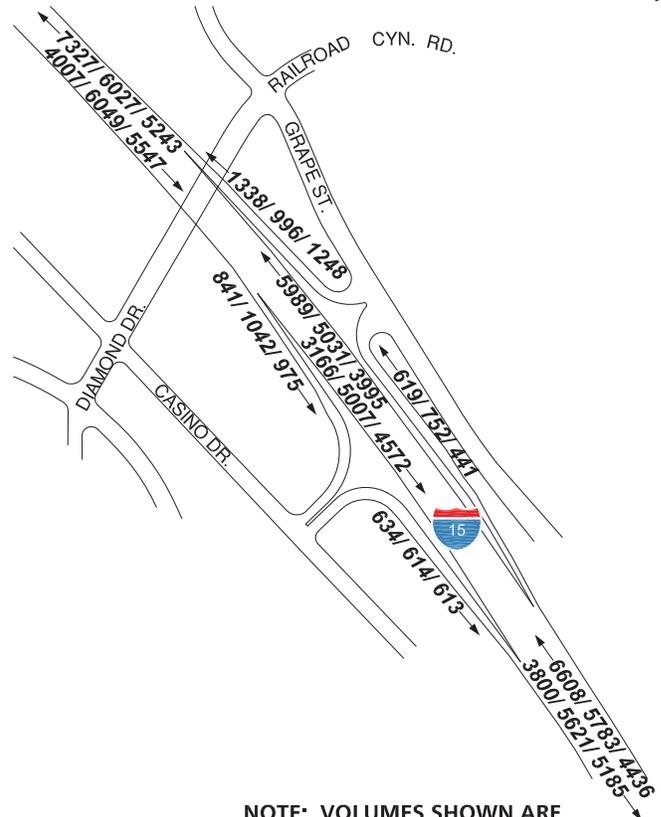
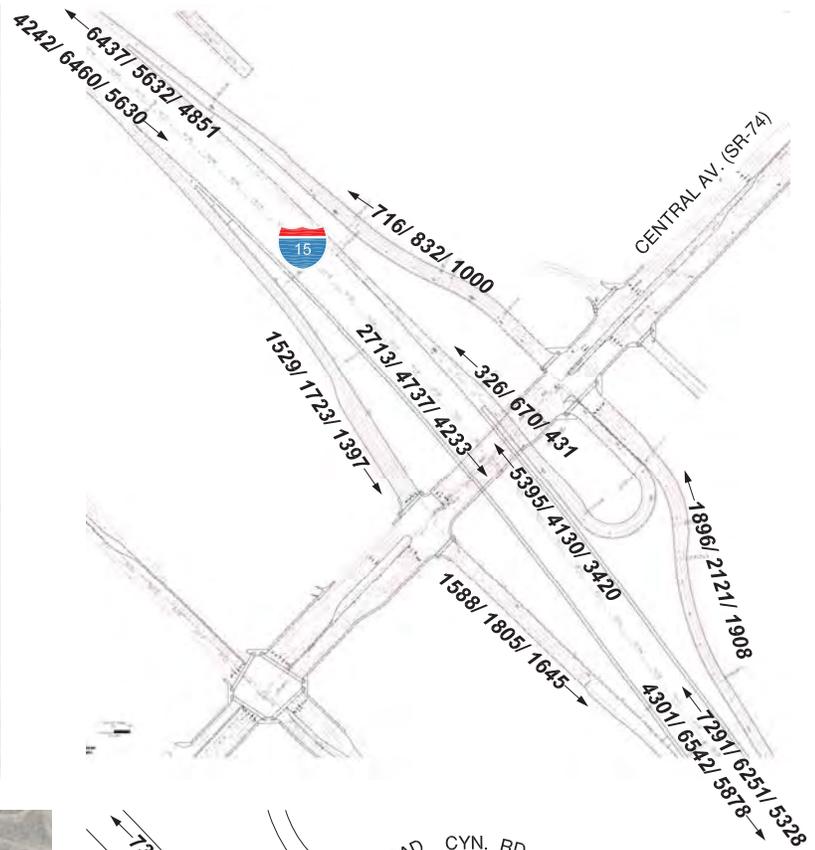


**LEGEND:**

100/ 100/ 100 = AM/ PM/ SAT VOLUMES

NOTE: VOLUMES SHOWN ARE ACTUAL VEHICLES (NOT PCE).

# GENERAL PLAN BUILDOUT (POST-2035) WITH PROJECT PEAK HOUR FREEWAY MAINLINE VOLUMES



**LEGEND:**

100/ 100/ 100 = AM/ PM/ SAT VOLUMES

NOTE: VOLUMES SHOWN ARE ACTUAL VEHICLES (NOT PCE).

Table 7-3

## General Plan Buildout (Post-2035) Conditions Basic Freeway Segment Analysis

Freeway	Direction	Mainline Segment	Lanes <sup>1</sup>	General Plan Buildout (Post-2035) Without Project						General Plan Buildout (Post-2035) With Project					
				Density <sup>3</sup>			LOS			Density <sup>3</sup>			LOS		
				AM	PM	SAT	AM	PM	SAT	AM	PM	SAT	AM	PM	SAT
I-15 Freeway	Southbound	North of Nichols Road	3	23.6	--	35.8	C	F	E	23.8	--	37.0	C	F	E
		Nichols Road to Central Avenue (SR-74)	3	22.7	--	32.8	C	F	D	23.1	--	34.1	C	F	D
		Central Avenue (SR-74) to N. Main Street	3	23.1	--	35.3	C	F	E	23.5	--	37.1	C	F	E
		N. Main Street to Railroad Canyon Road	3	21.5	<b>38.5</b>	32.0	C	<b>E</b>	D	21.7	<b>39.5</b>	33.5	C	<b>E</b>	D
		South of Railroad Canyon Road	3	20.4	33.7	29.3	C	D	D	20.6	34.3	30.0	C	D	D
	Northbound	North of Nichols Road	3	<b>44.5</b>	<b>36.2</b>	31.3	<b>E</b>	<b>E</b>	D	--	<b>37.1</b>	32.2	<b>F</b>	<b>E</b>	D
		Nichols Road to Central Avenue (SR-74)	3	--	34.1	26.9	<b>F</b>	D	D	--	<b>35.1</b>	27.8	<b>F</b>	<b>E</b>	D
		Central Avenue (SR-74) to N. Main Street	3	--	<b>42.1</b>	30.4	<b>F</b>	<b>E</b>	D	--	<b>43.9</b>	31.8	<b>F</b>	<b>E</b>	D
		N. Main Street to Railroad Canyon Road	3	--	<b>38.6</b>	29.8	<b>F</b>	<b>E</b>	D	--	<b>40.1</b>	30.9	<b>F</b>	<b>E</b>	D
		South of Railroad Canyon Road	3	--	<b>36.3</b>	24.4	<b>F</b>	<b>E</b>	C	--	<b>37.0</b>	24.9	<b>F</b>	<b>E</b>	C

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

<sup>1</sup> Number of lanes are in the specified direction and is based on existing conditions.

<sup>2</sup> Directional volumes based on current PeMS data. Truck percentages are consistent with available Caltrans 2011 data.

<sup>3</sup> Density is measured by passenger cars per mile per lane (pc/mi/ln).

mixed-flow lane in each direction of travel between Central Avenue (SR-74) and the SR-60 Freeway. As such, the I-15 Freeway widening project has been analyzed as future improvements in Section 7.9.3 *Recommended Improvements to Address Cumulative Impacts on Freeway Facilities* of this TIA only.

There are no additional freeway mainline segments anticipated to operate at unacceptable LOS with the addition of Project traffic, in addition to those previously identified for General Plan Buildout (Post-2035) Without Project traffic conditions. General Plan Buildout (Post-2035) Without and With Project conditions basic freeway segment analysis worksheets are provided in Appendix “7.7” and Appendix “7.8”, respectively.

## 7.8 FREEWAY MERGE/DIVERGE ANALYSIS

Ramp merge and diverge operations were also evaluated for General Plan Buildout (Post-2035) Without and With Project conditions and the results of this analysis are presented in Table 7-4. As shown in Table 7-4, the I-15 Freeway ramp merge and diverge areas at Nichols Road and I-15 Northbound and Southbound, Central Avenue (SR-74) and I-15 Southbound, N. Main Street and I-15 Southbound, and Railroad Canyon Road and I-15 Southbound currently operate at LOS “D” or better for General Plan Buildout (Post-2035) Without Project traffic conditions, with the exception of the following locations:

ID	Freeway Merge/Diverge Ramp Junctions
1	I-15 Freeway – Southbound, Off-Ramp at Nichols Road – LOS “F” PM peak hour; LOS “E” Saturday peak hour
2	I-15 Freeway – Southbound, On-Ramp at Nichols Road – LOS “F” PM peak hour; LOS “E” Saturday peak hour
3	I-15 Freeway – Southbound, Off-Ramp at Central Avenue (SR-74) – LOS “F” PM peak hour, LOS “E” Saturday peak hour
4	I-15 Freeway – Southbound, On-Ramp at Central Avenue (SR-74) – LOS “F” PM peak hour; LOS “E” Saturday peak hour
5	I-15 Freeway – Southbound, Off-Ramp at N. Main Street – LOS “F” PM peak hour; LOS “E” Saturday peak hour
6	I-15 Freeway – Southbound, On-Ramp at N. Main Street – LOS “E” PM peak hour only
7	I-15 Freeway – Southbound, Off-Ramp at Railroad Canyon Road – LOS “E” PM and Saturday peak hours
9	I-15 Freeway – Northbound, On-Ramp at Nichols Road – LOS “E” AM and PM peak hours
10	I-15 Freeway – Northbound, Off-Ramp at Nichols Road – LOS “F” AM peak hour; LOS “E” PM peak hour
11	I-15 Freeway – Northbound, On-Ramp at Central Avenue (SR-74) – LOS “F” AM peak hour only

Table 7-4

I-15 Freeway Ramp Junction Merge/Diverge Analysis  
For General Plan Buildout (Post-2035) Conditions

Freeway	Direction	Ramp or Segment	Lanes on Freeway	General Plan Buildout (Post-2035) Without Project						General Plan Buildout (Post-2035) With Project					
				AM Peak Hour		PM Peak Hour		Saturday Peak Hour		AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
				Density <sup>1</sup>	LOS	Density <sup>1</sup>	LOS	Density <sup>1</sup>	LOS	Density <sup>1</sup>	LOS	Density <sup>1</sup>	LOS	Density <sup>1</sup>	LOS
I-15 Freeway	Southbound	Off-Ramp at Nichols Road	3	31.4	D	42.9	F	38.3	E	31.5	D	43.5	F	38.6	E
		On-Ramp at Nichols Road	3	29.0	D	41.0	F	36.2	E	29.3	D	41.5	F	36.8	E
		Off-Ramp at Central Avenue (SR-74)	3	31.6	D	41.3	F	37.0	E	32.2	D	42.1	F	37.7	E
		On-Ramp at Central Avenue (SR-74)	3	30.4	D	42.2	F	37.9	E	30.9	D	43.0	F	39.0	E
		Off-Ramp at Main Street	3	31.0	D	42.3	F	37.2	E	31.3	D	43.3	F	37.8	E
		On-Ramp at Main Street	3	26.1	C	36.1	E	32.8	D	26.4	C	36.6	E	33.6	D
		Off-Ramp at Railroad Canyon Road	3	29.4	D	38.6	E	36.2	E	29.6	D	38.9	E	36.9	E
		On-Ramp at Railroad Canyon Road	3	24.2	C	33.5	D	31.1	D	24.3	C	33.8	D	31.5	D
	Northbound	On-Ramp at Nichols Road	3	37.4	E	35.0	E	32.4	D	37.6	F	35.4	E	32.9	D
		Off-Ramp at Nichols Road	3	41.4	F	36.9	E	32.5	D	41.9	F	37.2	E	33.1	D
		On-Ramp at Central Avenue (SR-74)	3	37.4	F	34.9	D	30.4	D	37.8	F	35.6	E	31.3	D
		Off-Ramp at Central Avenue (SR-74)	3	49.4	F	41.5	F	37.2	E	50.2	F	42.1	F	38.2	E
		On-Ramp at Main Street	3	46.0	F	38.9	E	32.8	D	46.7	F	39.3	E	33.4	D
		Off-Ramp at Main Street	3	49.8	F	37.9	E	34.1	D	50.6	F	38.5	E	34.7	D
On-Ramp at Railroad Canyon Road		3	45.8	F	37.6	E	34.1	D	46.5	F	38.3	E	35.0	E	
Off-Ramp at Railroad Canyon Road		3	43.2	F	36.9	E	30.4	D	43.6	F	37.1	E	30.8	D	

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

<sup>1</sup> Density is measured by passenger cars per mile per lane (pc/mi/ln).

ID	Freeway Merge/Diverge Ramp Junctions
12	I-15 Freeway – Northbound, Off-Ramp at Central Avenue (SR-74) – LOS “F” AM and PM Peak hours; LOS “E” Saturday peak hour
13	I-15 Freeway – Northbound, On-Ramp at N. Main Street – LOS “F” AM peak hour; LOS “E” PM peak hour
14	I-15 Freeway – Northbound, Off-Ramp at N. Main Street – LOS “F” AM peak hour; LOS “E” PM peak hour
15	I-15 Freeway – Northbound, On-Ramp at Railroad Canyon Road – LOS “F” AM peak hour; LOS “E” PM peak hour
16	I-15 Freeway – Northbound, Off-Ramp at Railroad Canyon Road – LOS “F” AM peak hour; LOS “E” PM peak hour

There are no additional freeway ramp junctions anticipated to operate at unacceptable LOS with the addition of Project traffic, in addition to those previously identified for General Plan Buildout (Post-2035) Without Project traffic conditions. General Plan Buildout (Post-2035) Without and With Project conditions freeway ramp junction operations analysis worksheets are provided in Appendix “7.9” and Appendix “7.10”.

## 7.9 GENERAL PLAN BUILDOUT (POST-2035) CUMULATIVE IMPACTS AND RECOMMENDED IMPROVEMENTS

### 7.9.1 RECOMMENDED IMPROVEMENTS TO ADDRESS GENERAL PLAN BUILDOUT (POST-2035) CUMULATIVE IMPACTS AT INTERSECTIONS

Improvements have been recommended at intersections that have been identified as cumulatively impacted to reduce each location’s peak hour delay and improve the associated LOS grade to LOS “D” or better. The effectiveness of the recommended improvements discussed below to address General Plan Buildout (Post-2035) cumulative traffic impacts are presented in Table 7-5. As shown in Table 7-5, the same improvements are needed for both General Plan Buildout (Post-2035) Without and With Project traffic conditions. The improvements that were previously required to address LOS deficiencies for E+P and Opening Year (2016) With Project traffic conditions are shown in *italics*. New improvements for General Plan Buildout (Post-2035) With Project traffic conditions are shown in **bold**.

The following improvements are recommended to reduce cumulative impacts identified at transportation facilities under General Plan Buildout (Post-2035) to less-than-significant:

**Recommended Improvement – Lakeshore Drive / Riverside Drive (SR-74) (#1)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “F”

**Table 7-5**  
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**Recommended Improvements for General Plan Buildout (Post-2035) Conditions**

#	Intersection	Traffic Control <sup>5</sup>	Intersection Approach Lanes <sup>1</sup>												Delay <sup>2</sup> (secs.)			Level of Service					
			Northbound			Southbound			Eastbound			Westbound			AM	PM	Sat	AM	PM	Sat			
			L	T	R	L	T	R	L	T	R	L	T	R									
1	Lakeshore Dr / Riverside Dr (SR-74)																						
	- Without Improvements	TS	1	2	0	1	2	1	1	2	1	1	1	1	>200.0	>200.0	>200.0	F	F	F			
	- Without Project, With Improvements	TS	<u>2</u>	2	<u>1</u>	<u>2</u>	<u>3</u>	<u>1</u> >	<u>2</u>	<u>3</u>	<u>1</u> >	1	<u>4</u>	<u>1</u> >	45.4	45.5	36.8	D	D	D			
- With Project, With Improvements	TS	<u>2</u>	2	<u>1</u>	<u>2</u>	<u>3</u>	<u>1</u> >	<u>2</u>	<u>3</u>	<u>1</u> >	1	<u>4</u>	<u>1</u> >	50.0	48.6	37.8	D	D	D				
2	W Graham Av / N Main St																						
	- Without Improvements	AWS	0	1	0	1	1	0	0	1	0	0	1	0	57.0	>100.0	>100.0	F	F	F			
	- Without Project, With Improvements	<u>TS</u>	0	1	0	1	1	0	<u>1</u>	1	0	<u>1</u>	1	0	25.1	35.1	29.7	C	D	D			
- With Project, With Improvements	<u>TS</u>	0	1	0	1	1	0	<u>1</u>	1	0	<u>1</u>	1	0	25.3	36.4	30.6	C	D	C				
3	E Lakeshore Dr / Diamond Dr																						
	- Without Improvements	TS	1	2	1	1	2	d	1	3	0	2	2	0	>200.0	>200.0	>200.0	F	F	F			
	- Without Project, With Improvements	TS	<u>2</u>	<u>3</u>	<u>2</u> >	<u>2</u>	<u>3</u>	<u>1</u> >	<u>2</u>	3	1	2	<u>3</u>	<u>2</u> >	42.7	51.9	51.4	D	D	D			
- With Project, With Improvements	TS	<u>2</u>	<u>3</u>	<u>2</u> >	<u>2</u>	<u>3</u>	<u>1</u> >	<u>2</u>	3	1	2	<u>3</u>	<u>2</u> >	43.6	53.8	53.6	D	D	D				
4	Gunnerson St / Riverside Dr (SR-74)																						
	- Without Improvements	CSS	0	1	1	0	1	1	0	1	0	0	1	0	>100.0	>100.0	>100.0	F	F	F			
	- Without Project, With Improvements	<u>TS</u>	0	1	1	0	1	1	<u>1</u>	<u>2</u>	0	<u>1</u>	<u>2</u>	0	21.1	28.7	21.2	C	C	C			
- With Project, With Improvements	<u>TS</u>	0	1	1	0	1	1	<u>1</u>	<u>2</u>	0	<u>1</u>	<u>2</u>	0	22.3	32.4	22.6	C	C	C				
5	Collier Av / Riverside Dr (SR-74)																						
	- Without Improvements	TS	1	1	0	1	1	1	0	1	1>	0	1	0	>200.0	>200.0	>200.0	F	F	F			
	- Without Project, With Improvements	TS	<u>2</u>	<u>2</u>	<u>1</u> >	<u>2</u>	<u>2</u>	<u>1</u> >	<u>2</u>	<u>3</u>	<u>1</u> >>	<u>2</u>	<u>3</u>	1	33.3	50.9	49.8	C	D	D			
- With Project, With Improvements	TS	<u>2</u>	<u>2</u>	<u>1</u> >	<u>2</u>	<u>2</u>	<u>1</u> >	<u>2</u>	<u>3</u>	<u>1</u> >>	<u>2</u>	<u>3</u>	1	34.1	53.8	54.0	C	D	D				
6	Collier Av / Central Av (SR-74)																						
	- Without Improvements	TS	1	1	1>	2	2	1	2	2	0	2	1	2>	77.2	>200.0	>200.0	F <sup>3</sup>	F	F			
	- Without Project, With Improvements	TS	1	<u>2</u>	<u>2</u> >	<u>3</u>	2	1	2	<u>3</u>	<u>1</u> >	2	<u>2</u>	<u>1</u> >>	32.4	49.4	45.4	C	D	D			
- With Project, With Improvements	TS	1	<u>2</u>	<u>2</u> >	<u>3</u>	2	1	2	<u>3</u>	<u>1</u> >	2	<u>2</u>	<u>1</u> >>	32.6	51.2	47.8	C	D	D				
7	Auto Center Dr / Diamond Dr																						
	- Without Improvements	TS	1	2	0	1	2	0	1	3	0	2	2	0	>200.0	>200.0	>200.0	F	F	F			
	- Without Project, With Improvements	TS	<u>2</u>	2	<u>2</u> >	<u>2</u>	2	<u>2</u> >	<u>2</u>	3	<u>1</u> >	2	<u>3</u>	<u>1</u> >	42.7	49.6	47.9	D	D	D			
- With Project, With Improvements	TS	<u>2</u>	2	<u>2</u> >	<u>2</u>	2	<u>2</u> >	<u>2</u>	3	<u>1</u> >	2	<u>3</u>	<u>1</u> >	50.8	53.8	49.8	D	D	D				
8	I-15 SB Ramps / Nichols Rd																						
	- Without Improvements	AWS	0	0	0	0	1	0	0	1	1	1	1	0	>100.0	>100.0	>100.0	F	F	F			
	- Without Project, With Improvements	<u>TS</u>	0	0	0	<u>2</u>	<u>0</u>	<u>2</u>	0	<u>3</u>	1	<u>2</u>	<u>3</u>	0	30.5	40.3	32.1	C	D	C			
- With Project, With Improvements	<u>TS</u>	0	0	0	<u>2</u>	<u>0</u>	<u>2</u>	0	<u>3</u>	1	<u>2</u>	<u>3</u>	0	30.5	40.4	32.2	C	D	C				
9	I-15 SB Ramps / Central Av (SR-74)																						
	- Without Improvements	TS	0	0	0	1	1	1	0	2	1	2	2	0	119.6	178.7	87.7	F	F	F			
	- Without Project, With Improvements <sup>4</sup>	TS	0	0	0	<u>2</u>	<u>0</u>	<u>2</u>	0	<u>3</u>	<u>2</u>	2	2	0	44.6	41.8	35.7	D	D	D			
- With Project, With Improvements <sup>4</sup>	TS	0	0	0	<u>2</u>	<u>0</u>	<u>2</u>	0	<u>3</u>	<u>2</u>	2	2	0	47.4	47.6	37.4	D	D	D				
10	I-15 SB Ramps / N Main St																						
	- Without Improvements	CSS	0	0	0	0	1	1	0	1	d	1	1	0	>100.0	>100.0	>100.0	F	F	F			
	- Without Project, With Improvements	<u>TS</u>	0	0	0	<u>1</u>	1	1	0	<u>2</u>	<u>1</u>	<u>2</u>	<u>2</u>	0	26.8	40.8	30.8	C	D	C			
- With Project, With Improvements	<u>TS</u>	0	0	0	<u>1</u>	1	1	0	<u>2</u>	<u>1</u>	<u>2</u>	<u>2</u>	0	27.0	41.1	31.5	C	D	C				
11	I-15 SB Ramps / Railroad Canyon Rd																						
	- Without Improvements	TS	0	0	0	2	1	1	0	2	1	1	2	0	Not Applicable								
	- Without Project, With Improvements <sup>4</sup>	<u>TS</u>	0	1	1	<u>2</u>	<u>2</u>	<u>0</u>	0	<u>0</u>	<u>0</u>	1	<u>0</u>	<u>2</u>	36.6	49.4	34.7	D	D	C			
- With Project, With Improvements <sup>4</sup>	<u>TS</u>	0	1	1	<u>2</u>	<u>2</u>	<u>0</u>	0	<u>0</u>	<u>0</u>	1	<u>0</u>	<u>2</u>	37.4	49.7	36.5	D	D	D				

**Table 7-5**  
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**Recommended Improvements for General Plan Buildout (Post-2035) Conditions**

#	Intersection	Traffic Control <sup>3</sup>	Intersection Approach Lanes <sup>1</sup>												Delay <sup>2</sup> (secs.)			Level of Service		
			Northbound			Southbound			Eastbound			Westbound			AM	PM	Sat	AM	PM	Sat
			L	T	R	L	T	R	L	T	R	L	T	R						
12	I-15 NB Ramps / Nichols Rd																			
	- Without Improvements	CSS	0	1	0	0	0	0	1	1	0	0	1	0	>100.0	>100.0	>100.0	F	F	F
	- Without Project, With Improvements	TS	1	0	2	0	0	0	2	3	0	0	3	1	31.6	34.8	27.3	C	C	C
	- With Project, With Improvements	TS	1	0	2	0	0	0	2	3	0	0	3	1	31.8	35.5	27.6	C	D	C
13	I-15 NB Ramps / Central Av (SR-74)																			
	- Without Improvements	TS	1	1	1	0	0	0	1	3	0	0	3	1	135.0	148.9	117.1	F	F	F
	- Without Project, With Improvements <sup>4</sup>	TS	2	0	2	0	0	0	0	3	1	0	3	1	25.0	29.5	19.2	C	C	B
	- With Project, With Improvements <sup>4</sup>	TS	2	0	2	0	0	0	0	3	1	0	3	1	27.8	31.9	22.3	C	C	C
14	I-15 NB Ramps / N Main St																			
	- Without Improvements	CSS	0	1	0	0	0	0	1	1	0	0	1	0	>100.0	>100.0	>100.0	F	F	F
	- Without Project, With Improvements	TS	1	1	1	0	0	0	2	2	0	0	2	1	53.2	33.7	29.7	D	C	C
	- With Project, With Improvements	TS	1	1	1	0	0	0	2	2	0	0	2	1	53.9	34.9	30.0	D	C	C
15	I-15 NB Ramps / Railroad Canyon Rd																			
	- Without Improvements	TS	0	1	2	0	0	0	2	3	0	0	2	1	Not Applicable					
	- Without Project, With Improvements <sup>4</sup>	TS	1	2	0	0	2	1>>	2	0	1	0	0	0	18.8	19.5	13.6	B	B	B
	- With Project, With Improvements <sup>4</sup>	TS	1	2	0	0	2	1>>	2	0	1	0	0	0	18.9	19.5	13.7	B	B	B
16	Dexter Av / 11th St																			
	- Without Improvements	CSS	0	1	d	0	1	d	0	1	0	0	1	0	>100.0	>100.0	>100.0	F	F	F
	- Without Project, With Improvements	TS	1	1	0	1	1	0	1	2	1>	1	2	0	18.9	22.1	21.0	B	C	C
	- With Project, With Improvements	TS	1	1	0	1	1	0	1	2	1>	1	2	0	19.0	22.3	21.4	B	C	C
17	Dexter Av / Central Av (SR-74)																			
	- Without Improvements	TS	1	1	d	1	1	1>	1	3	1	1	4	1	Not Applicable					
	- Without Project, With Improvements	TS	0	0	1	0	0	1	0	3	1	0	4	1	20.6	19.2	18.7	C	B	B
	- With Project, With Improvements	TS	0	0	1	0	0	1	0	3	1	0	4	1	20.9	20.8	18.8	C	C	B
19	Dexter Av / Crane St																			
	- Without Improvements	CSS	1	1	d	1	1	d	0	1	0	0	1	0	22.9	>100.0	70.8	C	F	F
	- With Project, With Improvements	TS	1	1	d	1	1	d	0	1	0	0	1	0	16.8	22.5	24.8	B	C	C
20	Dexter Av / 3rd St																			
	- Without Improvements	CSS	0	1	0	0	1	0	0	1	0	0	1	0	>100.0	>100.0	>100.0	F	F	F
	- Without Project, With Improvements	TS	1	1	0	1	1	0	1	1	0	1	1	0	23.8	38.8	37.0	C	D	D
	- With Project, With Improvements	TS	1	1	0	1	1	0	1	1	0	1	1	0	23.9	39.9	37.6	C	D	D
21	Dexter Av / 2nd St																			
	- Without Improvements	AWS	0	1	0	0	1	0	0	1	0	0	1	0	25.4	>100.0	>100.0	D	F	F
	- Without Project, With Improvements	TS	1	1	0	1	1	1>	1	1	0	1	1	0	22.4	27.7	39.9	C	C	D
	- With Project, With Improvements	TS	1	1	0	1	1	1>	1	1	0	1	1	0	23.2	28.6	44.1	C	C	D
22	Camino del Norte / N Main St																			
	- Without Improvements	CSS	0	1	0	0	1	0	1	0	1	0	0	0	>100.0	>100.0	>100.0	F	F	F
	- Without Project, With Improvements	TS	2	1	0	0	1	1>	1	0	1>	0	0	0	24.6	25.3	29.6	C	C	C
	- With Project, With Improvements	TS	2	1	0	0	1	1>	1	0	1>	0	0	0	24.6	25.3	30.0	C	C	C

**Table 7-5**  
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**Recommended Improvements for General Plan Buildout (Post-2035) Conditions**

#	Intersection	Traffic Control <sup>4</sup>	Intersection Approach Lanes <sup>1</sup>												Delay <sup>2</sup> (secs.)			Level of Service		
			Northbound			Southbound			Eastbound			Westbound			AM	PM	Sat	AM	PM	Sat
			L	T	R	L	T	R	L	T	R	L	T	R						
23	Summerhill Dr / Railroad Canyon Rd																			
	- Without Improvements	TS	2	2	0	1	1	1>	2	2	1	1	3	0	>200.0	>200.0	>200.0	F	F	F
	- Without Project, With Improvements <sup>5</sup>	TS	2	2	<u>2&gt;</u>	<u>2</u>	1	<u>2&gt;</u>	2	<u>3</u>	<u>1&gt;</u>	<u>2</u>	3	<u>2&gt;</u>	35.0	45.6	46.0	D	D	D
- With Project, With Improvements <sup>5</sup>	TS	2	2	<u>2&gt;</u>	<u>2</u>	1	<u>2&gt;</u>	2	<u>3</u>	<u>1&gt;</u>	<u>2</u>	3	<u>2&gt;</u>	35.2	46.5	48.4	C	D	D	
25	Cambern Av / Central Av (SR-74)																			
	- Without Improvements	TS	1	1	0	0	1	1	2	2	0	1	2	1	>200.0	>200.0	>200.0	F	F	F
	- Without Project, With Improvements	TS	<u>2</u>	1	<u>1&gt;</u>	<u>2</u>	<u>2</u>	<u>1&gt;</u>	2	<u>3</u>	<u>1&gt;</u>	<u>2</u>	<u>3</u>	<u>1&gt;</u>	53.6	39.1	52.4	D	D	D
- With Project, With Improvements	TS	<u>2</u>	1	<u>1&gt;</u>	<u>2</u>	<u>2</u>	<u>1&gt;</u>	2	<u>3</u>	<u>1&gt;</u>	<u>2</u>	<u>3</u>	<u>1&gt;</u>	54.4	48.8	54.6	D	D	D	
28	Cambern Av / 3rd St																			
	- Without Improvements	AWS	0	1	0	0	1	0	0	1	0	0	1	0	>100.0	>100.0	>100.0	F	F	F
	- Without Project, With Improvements	TS	<u>1</u>	<u>2</u>	0	<u>1</u>	<u>2</u>	<u>1</u>	<u>2</u>	1	0	<u>1</u>	1	<u>1</u>	31.0	35.2	37.6	C	D	D
- With Project, With Improvements	TS	<u>1</u>	<u>2</u>	0	<u>1</u>	<u>2</u>	<u>1</u>	<u>2</u>	1	0	<u>1</u>	1	<u>1</u>	31.1	35.3	38.7	C	D	D	
29	Conard Av / Central Av (SR-74)																			
	- Without Improvements	TS	0	1	0	0	1	d	1	2	d	1	2	d	111.0	>200.0	142.6	F	F	F
	- Without Project, With Improvements	TS	0	1	0	<u>1</u>	1	<u>1&gt;</u>	<u>2</u>	<u>4</u>	<u>1</u>	<u>1</u>	<u>4</u>	<u>1</u>	16.9	20.5	23.6	B	C	C
- With Project, With Improvements	TS	0	1	0	<u>1</u>	1	<u>1&gt;</u>	<u>2</u>	<u>4</u>	<u>1</u>	<u>1</u>	<u>4</u>	<u>1</u>	17.1	20.9	24.4	B	C	C	
30	Rosetta Canyon Dr / Central Av (SR-74)																			
	- Without Improvements	TS	1	0	1	0	0	0	0	3	d	1	2	0	62.7	112.1	41.7	E	F	D
	- Without Project, With Improvements	TS	<u>2</u>	0	<u>1&gt;</u>	0	0	0	0	<u>4</u>	<u>1&gt;</u>	<u>2</u>	<u>4</u>	0	21.9	35.0	20.3	C	D	C
- With Project, With Improvements	TS	<u>2</u>	0	<u>1&gt;</u>	0	0	0	0	<u>4</u>	<u>1&gt;</u>	<u>2</u>	<u>4</u>	0	22.1	36.8	20.5	C	D	C	
31	Riverside St / Central Av (SR-74)																			
	- Without Improvements	TS	2	0	1	0	0	0	0	2	d	1	2	0	>200.0	>200.0	>200.0	F	F	F
	- Without Project, With Improvements	TS	2	<u>2</u>	1	<u>2</u>	<u>2</u>	<u>1</u>	<u>2</u>	<u>4</u>	<u>1&gt;</u>	<u>2</u>	<u>4</u>	<u>1&gt;</u>	42.9	51.7	36.5	D	D	D
- With Project, With Improvements	TS	2	<u>2</u>	1	<u>2</u>	<u>2</u>	<u>1</u>	<u>2</u>	<u>4</u>	<u>1&gt;</u>	<u>2</u>	<u>4</u>	<u>1&gt;</u>	43.1	52.6	36.8	D	D	D	
32	Greenwald Av / Central Av (SR-74)																			
	- Without Improvements	TS	1	1	0	1	1	0	1	2	1	1	2	d	>200.0	>200.0	135.4	F	F	F
	- Without Project, With Improvements	TS	1	1	<u>1&gt;</u>	1	1	<u>1</u>	<u>2</u>	<u>3</u>	<u>1&gt;</u>	<u>2</u>	<u>3</u>	<u>1</u>	34.0	43.9	28.4	C	D	C
- With Project, With Improvements	TS	1	1	<u>1&gt;</u>	1	1	<u>1</u>	<u>2</u>	<u>3</u>	<u>1&gt;</u>	<u>2</u>	<u>3</u>	<u>1</u>	34.7	49.1	29.0	C	D	C	

<sup>1</sup> 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; d= Defacto Right Turn Lane; 1 = Improvement

<sup>2</sup> Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all-way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

<sup>3</sup> CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal

<sup>4</sup> New Interchange design.

<sup>5</sup> Recommendation includes modifying the traffic signal to implement protected left turn phasing on the northbound and southbound approaches.

Additional roadway widening necessary to accommodate these capacity enhancements may prove to be infeasible due to right-of-way constraints. At this time, the City of Lake Elsinore is currently exploring options for a capacity enhancement design at Railroad Canyon Road near the I-15 Freeway interchange that would include the intersection of Summerhill Drive and Railroad Canyon Road.

during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- *Construct a 2<sup>nd</sup> westbound through lane.*
- **Construct a 2<sup>nd</sup> northbound left turn lane and a right turn lane.**
- **Construct a 2<sup>nd</sup> southbound left turn lane and a 3<sup>rd</sup> through lane. Modify the traffic signal to implement overlap phasing on the right turn lane.**
- **Construct a 2<sup>nd</sup> eastbound left turn lane and a 3<sup>rd</sup> through lane. Modify the traffic signal to implement overlap phasing on the right turn lane.**
- **Construct the 3<sup>rd</sup> and 4<sup>th</sup> westbound through lanes. Modify the traffic signal to implement overlap phasing on the right turn lane.**

***Recommended Improvement – W. Graham Avenue / N. Main Street (SR-74) (#2)*** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- **Install a traffic signal.**
- **Construct an eastbound left turn lane.**
- **Construct a westbound left turn lane.**

***Recommended Improvement – E. Lakeshore Drive / Diamond Drive (#3)*** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- *Modify the traffic signal and implement overlap phasing on the northbound right turn lane.*
- *Construct a 2<sup>nd</sup> southbound left turn lane.*
- **Construct a 2<sup>nd</sup> northbound left turn lane, 3<sup>rd</sup> through lane and 2<sup>nd</sup> right turn lanes. Modify the traffic signal to implement overlap phasing on the right turn lanes.**
- **Construct a 3<sup>rd</sup> southbound through lane and a right turn lane. Modify the traffic signal to implement overlap phasing on the right turn lane.**
- **Construct a 2<sup>nd</sup> eastbound left turn lane and a right turn lane.**
- **Construct a 3<sup>rd</sup> westbound through lane and 2 right turn lanes. Modify the traffic signal to implement overlap phasing on the right turn lanes.**

**Recommended Improvement – Gunnerson Street / Riverside Drive (SR-74) (#4)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- *Install a traffic signal.*
- *Construct an eastbound left turn lane and a 2<sup>nd</sup> eastbound through lane.*
- *Construct a westbound left turn lane and a 2<sup>nd</sup> westbound through lane.*
- *Implement protected left turn phasing for the eastbound and westbound approaches.*

**Recommended Improvement – Collier Avenue / Riverside Drive (SR-74) (#5)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- **Construct a 2<sup>nd</sup> northbound left turn lane, 2<sup>nd</sup> through lane and a right turn lane. Modify the traffic signal to implement overlap phasing on the right turn lane.**
- **Construct a 2<sup>nd</sup> southbound left turn lane and a 2<sup>nd</sup> through lane. Modify the traffic signal to implement overlap phasing on the right turn lane.**
- **Construct 2 eastbound left turn lanes, the 2<sup>nd</sup> and 3<sup>rd</sup> through lanes and a free-right turn lane.**
- **Construct 2 westbound left turn lanes, the 2<sup>nd</sup> and 3<sup>rd</sup> through lanes and a right turn lane.**

**Recommended Improvement – Collier Avenue / Central Avenue (SR-74) (#6)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- **Construct a 2<sup>nd</sup> northbound through lane and a 2<sup>nd</sup> right turn lane with overlap phasing.**
- **Construct a 3<sup>rd</sup> southbound left turn lane.**
- **Construct a 3<sup>rd</sup> eastbound through lane and a right turn lane. Modify the traffic signal to implement overlap phasing on the right turn lane.**
- **Construct a 2<sup>nd</sup> westbound through lane and a free-right turn lane.**

**Recommended Improvement – Auto Center Drive / Diamond Drive (#6)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- **Construct a 2<sup>nd</sup> northbound left turn lane and 2 northbound right turn lanes. Modify the traffic signal to implement overlap phasing on the right turn lanes.**
- **Construct a 2<sup>nd</sup> southbound left turn lane and 2 right turn lanes. Modify the traffic signal to implement overlap phasing on the right turn lanes.**
- **Construct a 2<sup>nd</sup> eastbound left turn lane and a right turn lane. Modify the traffic signal to implement overlap phasing on the right turn lane.**
- **Construct a 3<sup>rd</sup> westbound through lane and a right turn lane. Modify the traffic signal to implement overlap phasing on the right turn lane.**

**Recommended Improvement – I-15 Southbound Ramps / Nichols Road (#8)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- **Install a traffic signal.**
- **Construct 2 southbound left turn lanes and a right turn lane and restripe the southbound left-through-right turn lane as a 2<sup>nd</sup> right turn lane.**
- **Construct the 2<sup>nd</sup> and 3<sup>rd</sup> eastbound through lanes.**
- **Construct a 2<sup>nd</sup> westbound left turn lane and the 2<sup>nd</sup> and 3<sup>rd</sup> through lanes.**

**Recommended Improvement – I-15 Southbound Ramps / Central Avenue (SR-74) (#9)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- **New Interchange Design (loop on-ramp at I-15 Northbound Ramps).**
- **Construct a 2<sup>nd</sup> northbound left turn lane, 2<sup>nd</sup> through lane and a right turn lane. Modify the traffic signal to implement overlap phasing on the right turn lane.**

- **Construct a 3<sup>rd</sup> eastbound through lane and 2<sup>nd</sup> right turn lane.**

**Recommended Improvement – I-15 Southbound Ramps / N. Main Street (#10)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- **Install a traffic signal.**
- **Construct a southbound left turn lane.**
- **Construct a 2<sup>nd</sup> eastbound through lane and a right turn lane.**
- **Construct a 2<sup>nd</sup> westbound left turn lane and a 2<sup>nd</sup> through lane.**

**Recommended Improvement – I-15 Southbound Ramps / Railroad Canyon Road (Casino Drive / I-15 Southbound Ramps) (#11)** – This intersection was not analyzed for both General Plan Buildout (Post-2035) Without and With Project traffic conditions due to the proposed new interchange design. However, if the existing diamond interchange remains, it is anticipated it would operate at unacceptable LOS during the peak hours. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- **New Interchange Design (ramps on frontage roads).**
- **Install a traffic signal.**
- **Construct a northbound right turn lane.**
- **Construct 2 southbound left turn lanes and a 2<sup>nd</sup> through lane.**
- **Construct a westbound left turn lane and 2 right turn lanes.**

**Recommended Improvement – I-15 Northbound Ramps / Nichols Road (#12)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- *Install a traffic signal.*
- **Construct a northbound left turn lane and a right turn lane and restripe the shared left-through-right turn lane as a 2<sup>nd</sup> right turn lane.**
- **Construct a 2<sup>nd</sup> eastbound left turn lane and the 2<sup>nd</sup> and 3<sup>rd</sup> through lanes.**
- **Construct the 2<sup>nd</sup> and 3<sup>rd</sup> westbound through lanes and a right turn lane.**

**Recommended Improvement – I-15 Northbound Ramps / Central Avenue (SR-74) (#13)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- **New Interchange Design (loop on-ramp at I-15 Northbound Ramps).**
- **Construct a northbound left turn lane and restripe the left-through-right turn lane as a 2<sup>nd</sup> right turn lane.**
- **Construct an eastbound right turn lane.**

**Recommended Improvement – I-15 Northbound Ramps / N. Main Street (#14)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- *Install a traffic signal.*
- **Construct a northbound left turn lane and a right turn lane.**
- **Construct a 2<sup>nd</sup> eastbound left turn lane and a 2<sup>nd</sup> through lane.**
- **Construct a 2<sup>nd</sup> westbound through lane and a right turn lane.**

**Recommended Improvement – I-15 Northbound Ramps / Railroad Canyon Road (Grape Street / I-15 Northbound Ramps) (#15)** – This intersection was not analyzed for both General Plan Buildout (Post-2035) Without and With Project traffic conditions due to the proposed new interchange design. However, if the existing diamond interchange remains, it is anticipated it would operate at unacceptable LOS during the peak hours. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- **Construct a northbound left turn lane.**
- **Construct a southbound free-right turn lane.**
- **Construct 2 eastbound left turn lanes and a right turn lane.**

**Recommended Improvement – Dexter Avenue / 11<sup>th</sup> Street (#16)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- **Install a traffic signal.**
- **Construct a northbound left turn lane.**
- **Construct a southbound left turn lane.**
- **Construct an eastbound left turn lane, 2<sup>nd</sup> through lane and a right turn lane with overlap phasing.**
- **Construct a westbound left turn lane and a 2<sup>nd</sup> through lane.**

**Recommended Improvement – Dexter Avenue / Central Avenue (SR-74) (#17)** – This intersection was not analyzed for both General Plan Buildout (Post-2035) Without and With Project traffic conditions due to the proposed access restriction to right-in/right-out only. However, if the existing full access intersection configuration were to remain, it is anticipated it would operate at unacceptable LOS during the peak hours. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- **Re-designed intersection to include a raised median to prohibit left-turns. Intersection would operate with right-in/right-out access only.**

**Dexter Avenue / Allan Street (#18)** – This intersection is anticipated to operate at an acceptable LOS (LOS “D” or better) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to operate at LOS “F” during the weekday PM and Saturday mid-day peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. However, improvement recommendations have not been made at this intersection since signalization would be the only mitigation measure. Signalization of this intersection is not recommended due to its proximity to the proposed signal at Dexter Avenue and Crane Street. It is important to note that high delays only occur on the side-streets (eastbound and westbound directions) and the LOS for the northbound and southbound through traffic is anticipated to be LOS “A”. To avoid high delays at this unsignalized intersection, side-street traffic could potentially utilize the proposed signalized access at Crane Street.

**Recommended Improvement – Dexter Avenue / Crane Street (#19)** – This intersection is anticipated to operate at an acceptable LOS (LOS “D” or better) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to operate at LOS “F” during the weekday PM and Saturday mid-day peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvement is necessary to reduce the cumulative impact to less-than-significant:

- **Install a traffic signal. No physical lane improvements are necessary.**

**Recommended Improvement – Dexter Avenue / 3<sup>rd</sup> Street (#20)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- **Install a traffic signal.**
- **Construct a northbound left turn lane.**
- **Construct a southbound left turn lane.**
- **Construct an eastbound left turn lane.**
- **Construct a westbound left turn lane.**

**Recommended Improvement – Dexter Avenue / 2<sup>nd</sup> Street (#21)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the PM and Saturday mid-day peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “F” during the PM and Saturday mid-day peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- **Install a traffic signal.**
- **Construct a northbound left turn lane.**
- **Construct a southbound left turn lane and a right turn lane with overlap phasing.**
- **Construct an eastbound left turn lane.**
- **Construct a westbound left turn lane.**

**Recommended Improvement – Camino del Norte / N. Main Street (#22)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- **Install a traffic signal.**
- **Construct 2 northbound left turn lanes.**
- **Construct a southbound right turn lane with overlap phasing.**
- **Implement overlap phasing on the eastbound right turn lane.**

**Recommended Improvement – Summerhill Drive / Railroad Canyon Road (#23)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “F”

during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. Any physical construction of improvements beyond those that exist today are anticipated to be infeasible due to the right-of-way constraints. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- *Stripe a northbound right turn lane and modify the traffic signal to implement overlap phasing on the northbound right turn lane.*
- *Construct a 3<sup>rd</sup> eastbound through lane and modify the traffic signal to implement overlap phasing on the eastbound right turn lane.*
- *Construct a 2<sup>nd</sup> westbound left turn lane.*
- **Construct a 2<sup>nd</sup> northbound right turn lane with overlap phasing.**
- **Construct a 2<sup>nd</sup> southbound left turn lane and a 2<sup>nd</sup> right turn lane with overlap phasing.**
- **Construct 2 westbound right turn lanes and modify the traffic signal to implement overlap phasing on the right turn lanes.**

Additional roadway widening necessary to accommodate these capacity enhancements may prove to be infeasible due to right-of-way constraints. At this time, the City of Lake Elsinore is currently exploring options for a capacity enhancement design at Railroad Canyon Road near the I-15 Freeway interchange that would include the intersection of Summerhill Drive and Railroad Canyon Road. The Project's payment towards the City's TIF would address the Project's long-range contribution to the intersection of Summerhill Drive and Railroad Canyon Road.

***Recommended Improvement – Cambern Avenue / Central Avenue (SR-74) (#25)*** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- **Construct a 2<sup>nd</sup> northbound left turn lane and right turn lane. Modify the traffic signal to implement overlap phasing on the right turn lane.**
- **Construct 2 southbound left turn lane and a 2<sup>nd</sup> through lane. Modify the traffic signal to implement overlap phasing on the right turn lane.**
- **Construct a 3<sup>rd</sup> eastbound through lane and a right turn lane. Modify the traffic signal to implement overlap phasing on the right turn lane.**
- **Construct a 2<sup>nd</sup> westbound left turn lane and 3<sup>rd</sup> through lane. Modify the traffic signal to implement overlap phasing on the right turn lane.**

***Recommended Improvement – Cambern Avenue / 3<sup>rd</sup> Street (#28)*** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under General Plan Buildout (Post-

2035) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- **Install a traffic signal.**
- **Construct a northbound left turn lane and a 2<sup>nd</sup> through lane.**
- **Construct a southbound left turn lane, a 2<sup>nd</sup> through lane, and a right turn lane.**
- **Construct a 2<sup>nd</sup> eastbound left turn lane.**
- **Construct a westbound left turn lane and right turn lane.**

**Recommended Improvement – Conard Avenue / Central Avenue (SR-74) (#29)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- **Construct a southbound left turn lane and a right turn lane. Modify the traffic signal to implement overlap phasing on the right turn lane.**
- **Construct a 2<sup>nd</sup> eastbound left turn lane, the 3<sup>rd</sup> and 4<sup>th</sup> through lanes and a right turn lane.**
- **Construct the 3<sup>rd</sup> and 4<sup>th</sup> through lanes and a right turn lane.**

**Recommended Improvement – Rosetta Canyon Drive / Central Avenue (SR-74) (#30)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “E” and LOS “F”) during the AM and PM peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “E” or LOS “F” during the AM and PM peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- **Construct a 2<sup>nd</sup> northbound left turn lane. Modify the traffic signal to implement overlap phasing on the right turn lane.**
- **Construct a 4<sup>th</sup> eastbound through lane and a right turn lane. Modify the traffic signal to implement overlap phasing on the right turn lane.**
- **Construct a 2<sup>nd</sup> westbound left turn lane and the 3<sup>rd</sup> and 4<sup>th</sup> through lanes.**

**Recommended Improvement – Riverside Street / Central Avenue (SR-74) (#31)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak hours with the addition of Project traffic. As such, this impact is considered potentially

significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- **Construct 2 northbound through lanes.**
- **Construct 2 southbound left turn lanes, 2 through lanes and a right turn lane.**
- **Construct 2 eastbound left turn lanes, 3<sup>rd</sup> and 4<sup>th</sup> through lanes and a right turn lane. Modify the traffic signal to implement overlap phasing on the right turn lane.**
- **Construct a 2<sup>nd</sup> westbound left turn lane, the 3<sup>rd</sup> and 4<sup>th</sup> through lanes and a right turn lane. Modify the traffic signal to implement overlap phasing on the right turn lane.**

**Recommended Improvement – Greenwald Avenue / Central Avenue (SR-74) (#32)** – This intersection is anticipated to operate at an unacceptable LOS (LOS “F”) during the peak hours under General Plan Buildout (Post-2035) Without Project conditions and is anticipated to continue to operate at LOS “F” during the peak hours with the addition of Project traffic. As such, this impact is considered potentially significant. The following improvements are necessary to reduce the cumulative impact to less-than-significant:

- **Construct a northbound right turn lane. Modify the traffic signal to implement overlap phasing on the right turn lane.**
- **Construct a southbound right turn lane.**
- **Construct a 2<sup>nd</sup> eastbound left turn lane and a 3<sup>rd</sup> through lane. Modify the traffic signal to implement overlap phasing on the right turn lane.**
- **Construct a 2<sup>nd</sup> westbound left turn lane, a 3<sup>rd</sup> through lane and a right turn lane.**

The 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 Transportation Uniform Mitigation Fees (TUMF), City of Lake Elsinore Traffic Impact Fees (TIF) or a fair share contribution as directed by the City. 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 funding program, City TIF funding program or fair share contribution in Section 9.0 *Local and Regional Funding Mechanisms* of this TIA.

Worksheets for General Plan Buildout (Post-2035) Without Project conditions, with improvements, HCM calculations are provided in Appendix “7.11”. Worksheets for General Plan Buildout (Post-2035) With Project conditions, with improvements, HCM calculations are provided in Appendix “7.12”.

It is important to note that with the implementation of the recommended intersection improvements discussed above, which are necessary to reduce cumulative impacts to less-than-significant, there are no potential queuing issues anticipated for General Plan Buildout (Post-2035) With Project conditions (see

Table 7-6), with the exception of the southbound right turn lane at the I-15 Southbound Ramps on Central Avenue (SR-74) during the weekday PM peak hour only and the southbound left turn lane at the I-15 Southbound Ramps on N. Main Street during the weekday PM peak hour. However, while the potential queues would exceed the turn pocket lengths and could spillback into the adjacent through lanes, none are anticipated to result in spillback onto the I-15 Freeway mainline since the adjacent through lanes all have sufficient capacity. Worksheets for General Plan Buildout (Post-2035) With Project conditions, with improvements, queuing analysis is provided in Appendix “7.13”.

**7.9.2 RECOMMENDED IMPROVEMENTS TO ADDRESS GENERAL PLAN BUILDOUT (POST-2035) CUMULATIVE IMPACTS ON FREEWAY FACILITIES**

The I-15 Corridor Improvement Project includes the construction of an high-occupancy vehicle lane in each direction of the I-15 Freeway between the I-15/I-215 Freeway interchange near the City of Murrieta and the Central Avenue (SR-74) in the City of Lake Elsinore and the construction of two tolled express lanes and one mixed-flow lane in each direction from Central Avenue (SR-74) to the SR-60 Freeway near the City of Ontario. The 44-mile corridor improvements also include a new interchange at the I-15 Freeway and French Valley Parkway in the City of Temecula.

Caltrans typically assumes a reduction of fourteen (14) percent to the I-15 Freeway mainline through volumes in this region to account for vehicles utilizing carpool (high-occupancy vehicle) lanes. Although the reduction to I-15 Freeway mainline volumes has been applied to account for the proposed carpool lanes, the analysis is performed assuming the same number of mixed-flow lanes and on and off-ramp configurations as existing baseline conditions, with the exception of the freeway segments north of Central Avenue (SR-74) which include an additional mixed-flow lane in each direction of travel. As shown on Table 7-7, all of the freeway mainline segments are anticipated to operate at an acceptable LOS with the construction of the proposed improvements (i.e., LOS “D” or better), with the exception of the I-15 Freeway northbound mainline segments from Central Avenue (SR-74) to south of Railroad Canyon Road during the PM peak hour only. Similarly, Table 7-8 shows that the freeway ramp junctions are anticipated to operate at an acceptable LOS with the construction of a carpool lane in both directions of travel (i.e., LOS “D” or better), with the exception of the following:

ID	Freeway Merge/Diverge Ramp Junctions
3	I-15 Freeway – Southbound, Off-Ramp at Central Avenue (SR-74) – LOS “E” PM peak hour only
4	I-15 Freeway – Southbound, On-Ramp at Central Avenue (SR-74) – LOS “E” PM and Saturday peak hours
5	I-15 Freeway – Southbound, Off-Ramp at N. Main Street – LOS “E” PM peak hour only
7	I-15 Freeway – Southbound, Off-Ramp at Railroad Canyon Road – LOS “E” PM peak hour only

Table 7-6

**General Plan Buildout (Post-2035) With Project Conditions, With Improvements  
AM/PM Peak Hour Off-Ramp Stacking Length Summary along I-15 Freeway**

Intersection	Movement	Stacking Distance (Feet)	95th Percentile Stacking Distance Required (Feet)			Acceptable? <sup>1</sup>		
			AM Peak Hour	PM Peak Hour	SAT Peak Hour	AM	PM	SAT
I-15 SB Off-Ramp / Nichols Rd.	SBL	<u>500</u>	228	493 <sup>2</sup>	389 <sup>2</sup>	Yes	Yes	Yes
	SBR	1,540	309	331	313	Yes	Yes	Yes
I-15 NB Off-Ramp / Nichols Rd.	NBL	1,530	306	563 <sup>2</sup>	442 <sup>2</sup>	Yes	Yes	Yes
	NBR	<u>500</u>	472 <sup>2</sup>	351	116	Yes	Yes	Yes
I-15 SB Off-Ramp / Central Av. (SR-74)	SBL	1,520	436 <sup>2</sup>	499 <sup>2</sup>	313	Yes	Yes	Yes
	SBR	<u>355</u>	343	<b>426<sup>2</sup></b>	321	Yes	<b>No</b>	Yes
I-15 NB Off-Ramp / Central Av. (SR-74)	NBL	1,300	432 <sup>2</sup>	497 <sup>2</sup>	295	Yes	Yes	Yes
	NBR	<u>465</u>	412 <sup>2</sup>	421 <sup>2</sup>	378 <sup>2</sup>	Yes	Yes	Yes
I-15 SB Off-Ramp / Main St.	SBL	<u>500</u>	363	<b>741<sup>2</sup></b>	449	Yes	<b>No</b>	Yes
	SBT	1,300	203	120	0	Yes	Yes	Yes
	SBR	<u>500</u>	202	121	0	Yes	Yes	Yes
I-15 NB Off-Ramp / Main St.	NBL	<u>500</u>	376	332	152	Yes	Yes	Yes
	NBT	1,610	34	96	52	Yes	Yes	Yes
	NBR	<u>500</u>	34	96	52	Yes	Yes	Yes
I-15 SB Off-Ramp / Railroad Canyon Rd.	WBL	<u>580</u>	108	136	131	Yes	Yes	Yes
	WBR	1,270	348	453 <sup>2</sup>	375	Yes	Yes	Yes
I-15 NB Off-Ramp / Railroad Canyon Rd.	EBL	1,600	271	303	193	Yes	Yes	Yes
	EBR	<u>690</u>	37	42	89	Yes	Yes	Yes

Note: The 95th percentile queues indicates potential queuing for the movements and peak hours identified above. However, while the potential queues would exceed the turn pocket lengths and could spillback into the adjacent through lanes, none are anticipated to result in spillback onto the I-15 Freeway mainline since the adjacent through lanes all have sufficient capacity.

<sup>1</sup> Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

<sup>2</sup> 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Table 7-7

## General Plan Buildout (Post-2035) With Project Conditions Basic Freeway Segment Analysis, With Improvements

Freeway	Direction	Mainline Segment	Lanes <sup>1</sup>	General Plan Buildout (Post-2035) With Project						General Plan Buildout (Post-2035) With Project, With Improvements					
				Density <sup>3</sup>			LOS			Density <sup>3</sup>			LOS		
				AM	PM	SAT	AM	PM	SAT	AM	PM	SAT	AM	PM	SAT
I-15 Freeway	Southbound	North of Nichols Road	<u>4</u>	23.8	--	<b>37.0</b>	C	F	E	15.3	23.4	20.5	B	C	C
		Nichols Road to Central Avenue (SR-74)	<u>4</u>	23.1	--	34.1	C	F	D	14.8	22.6	19.6	B	C	C
		Central Avenue (SR-74) to N. Main Street	3	23.5	--	<b>37.1</b>	C	F	E	20.1	34.2	28.9	C	D	D
		N. Main Street to Railroad Canyon Road	3	21.7	<b>39.5</b>	33.5	C	E	D	18.5	29.6	26.5	C	D	D
		South of Railroad Canyon Road	3	20.6	34.3	30.0	C	D	D	17.4	26.4	24.2	B	D	C
	Northbound	North of Nichols Road	<u>4</u>	--	<b>37.1</b>	32.2	F	E	D	22.5	20.5	19.1	C	C	C
		Nichols Road to Central Avenue (SR-74)	<u>4</u>	--	<b>35.1</b>	27.8	F	E	D	22.9	19.9	17.0	C	C	B
		Central Avenue (SR-74) to N. Main Street	3	--	<b>43.9</b>	31.8	F	E	D	--	32.9	25.9	F	D	C
		N. Main Street to Railroad Canyon Road	3	--	<b>40.1</b>	30.9	F	E	D	--	30.9	25.3	F	D	C
		South of Railroad Canyon Road	3	--	<b>37.0</b>	24.9	F	E	C	<b>35.8</b>	28.8	20.6	E	D	C

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

<sup>1</sup> Number of lanes are in the specified direction and is based on existing conditions. 4 = Improved number of new mixed-flow lanes.

<sup>2</sup> Directional volumes based on current PeMS data. Truck percentages are consistent with available Caltrans 2011 data.

<sup>3</sup> Density is measured by passenger cars per mile per lane (pc/mi/ln).

Table 7-8

I-15 Freeway Ramp Junction Merge/Diverge Analysis  
 For General Plan Buildout (Post-2035) With Project Conditions, With Improvements

Freeway	Direction	Ramp or Segment	Lanes on Freeway	General Plan Buildout (Post-2035) With Project						General Plan Buildout (Post-2035) With Project, With Improvements					
				AM Peak Hour		PM Peak Hour		Saturday Peak Hour		AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
				Density <sup>1</sup>	LOS	Density <sup>1</sup>	LOS	Density <sup>1</sup>	LOS	Density <sup>1</sup>	LOS	Density <sup>1</sup>	LOS	Density <sup>1</sup>	LOS
I-15 Freeway	Southbound	Off-Ramp at Nichols Road	<u>4</u>	31.5	D	43.6	F	38.6	E	24.8	C	34.8	D	31.6	D
		On-Ramp at Nichols Road	<u>4</u>	29.3	D	41.5	F	36.8	E	22.0	C	30.0	D	26.8	C
		Off-Ramp at Central Avenue (SR-74)	<u>4</u>	32.2	D	42.1	F	37.7	E	26.3	C	35.2	E	30.5	D
		On-Ramp at Central Avenue (SR-74)	3	30.9	D	43.0	F	39.0	E	27.8	C	38.3	E	35.0	E
		Off-Ramp at Main Street	3	31.3	D	43.3	F	37.8	E	28.3	D	37.4	E	34.4	D
		On-Ramp at Main Street	3	26.4	C	36.6	E	33.6	D	23.3	C	32.0	D	29.5	D
		Off-Ramp at Railroad Canyon Road	3	29.6	D	38.9	E	36.9	E	26.6	C	35.3	E	33.4	D
		On-Ramp at Railroad Canyon Road	3	24.3	C	33.8	D	31.5	D	21.2	C	29.1	D	27.3	C
	Northbound	On-Ramp at Nichols Road	<u>4</u>	37.6	F	35.4	E	32.9	D	25.4	C	24.5	C	22.8	C
		Off-Ramp at Nichols Road	<u>4</u>	41.9	F	37.3	E	33.1	D	32.6	D	29.3	D	23.8	C
		On-Ramp at Central Avenue (SR-74)	<u>4</u>	37.8	F	35.6	E	31.3	D	25.9	C	25.5	C	22.6	C
		Off-Ramp at Central Avenue (SR-74)	3	50.2	F	42.2	F	38.2	E	41.9	F	39.2	F	35.2	E
		On-Ramp at Main Street	3	46.7	F	39.3	E	33.4	D	39.7	F	35.4	E	29.8	D
		Off-Ramp at Main Street	3	50.6	F	38.5	E	34.7	D	42.2	F	35.1	E	31.4	D
On-Ramp at Railroad Canyon Road		3	46.5	F	38.3	E	35.0	E	41.1	F	34.2	D	31.3	D	
Off-Ramp at Railroad Canyon Road		3	43.6	F	37.1	E	30.8	D	36.5	E	33.7	D	27.2	C	

**BOLD** = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS). 4 = Improved number of mixed-flow lanes.

<sup>1</sup>Density is measured by passenger cars per mile per lane (pc/mi/ln).



ID	Freeway Merge/Diverge Ramp Junctions
12	I-15 Freeway – Northbound, Off-Ramp at Central Avenue (SR-74) – LOS “F” AM and PM Peak hours; LOS “E” Saturday peak hour
13	I-15 Freeway – Northbound, On-Ramp at N. Main Street – LOS “F” AM peak hour; LOS “E” PM peak hour
14	I-15 Freeway – Northbound, Off-Ramp at N. Main Street – LOS “F” AM peak hour; LOS “E” PM peak hour
15	I-15 Freeway – Northbound, On-Ramp at Railroad Canyon Road – LOS “F” AM peak hour only
16	I-15 Freeway – Northbound, Off-Ramp at Railroad Canyon Road – LOS “E” AM peak hour only

Worksheets for General Plan Buildout (Post-2035) With Project conditions freeway mainline level of service analysis, with improvements, is provided in Appendix “7.14”. General Plan Buildout (Post-2035) With Project freeway ramp junction level of service analysis worksheets, with improvements are provided in Appendix “7.15”.

## 8.0 LOCAL CIRCULATION AND SITE ACCESS

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This section summarizes Project site access and on-site circulation recommendations.

The Project is proposed to have access on Central Avenue (SR-74) via Driveway 1, Cambern Avenue via Driveway 2, 3, and 4, Dexter Avenue via Allan and Crane Street, and Third Street via Driveway 5. All Project access points are proposed to be full-access, with the exception of Driveway 1 on Central Avenue (SR-74) and Driveway 2 on Cambern Avenue which are proposed to have right-in/right-out access only. Driveway 4 on Cambern Avenue and Driveway 5 on Third Street are proposed for truck access. Regional access to the Project site will be provided by the I-15 Freeway (located to the west) via Central Avenue (SR-74). As part of the development, the Project will construct improvements on the site adjacent roadways of Central Avenue (SR-74), Cambern Avenue, and 3<sup>rd</sup> Street.

### 8.1 ON-SITE ROADWAY IMPROVEMENTS

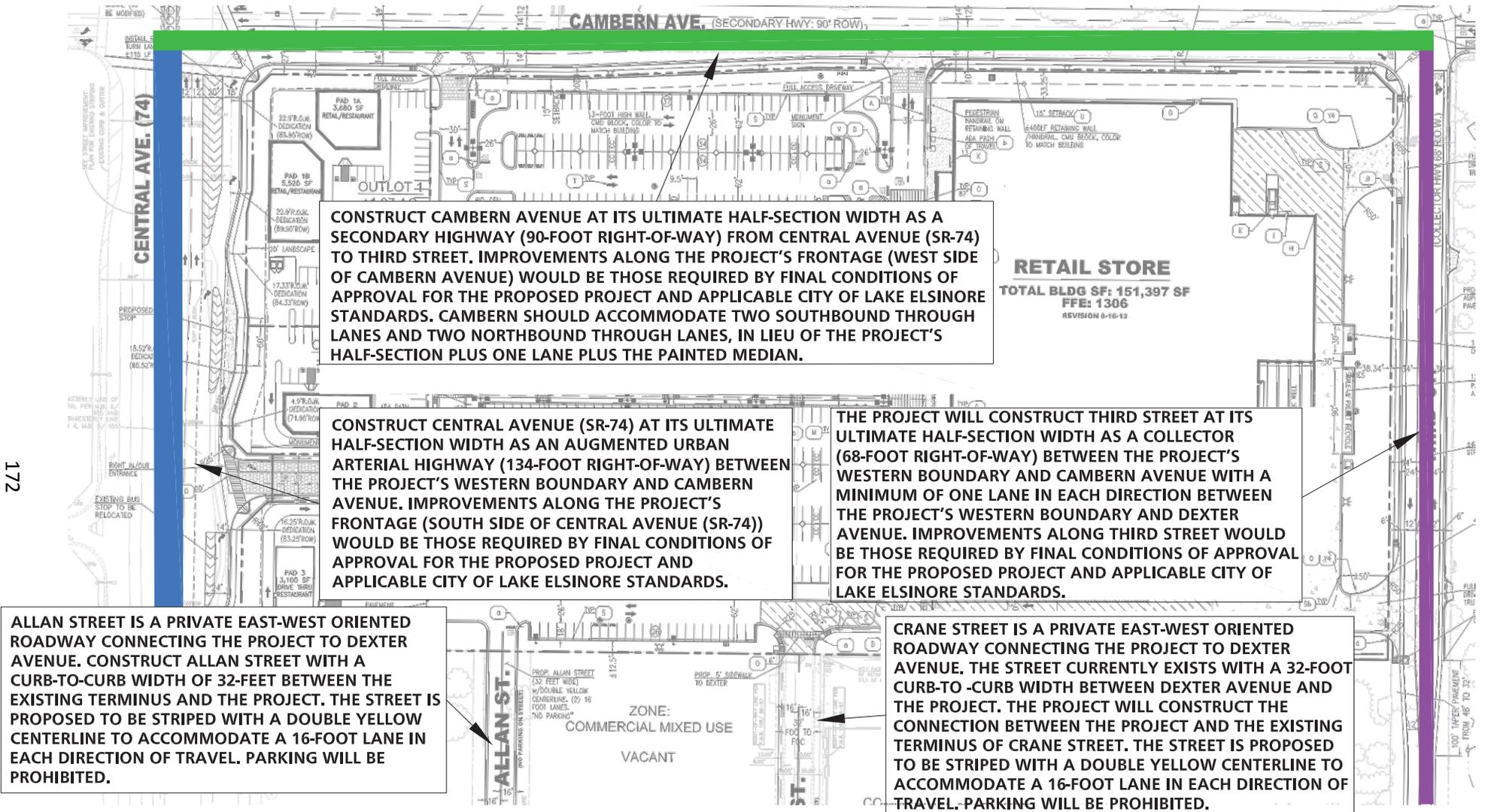
The recommended site-adjacent roadway improvements for the Project are described below. Exhibit 8-1 illustrates the site-adjacent roadway improvement recommendations.

**Central Avenue (SR-74)** – Central Avenue (SR-74) is an east-west oriented roadway located along the Project's northern boundary. Construct Central Avenue (SR-74) at its ultimate half-section width as an Augmented Urban Arterial Highway (134-foot right-of-way) between the Project's western boundary and Cambern Avenue. Improvements along the Project's frontage (south side of Central Avenue (SR-74)) would be those required by final conditions of approval for the proposed Project and applicable City of Lake Elsinore standards.

**Cambren Avenue** – Cambern Avenue is a north-south oriented roadway located along the Project's eastern boundary. Construct Cambern Avenue at its ultimate half-section width as a Secondary Highway (90-foot right-of-way) from Central Avenue (SR-74) to Third Street. Improvements along the Project's frontage (west side of Cambern Avenue) would be those required by final conditions of approval for the proposed Project and applicable City of Lake Elsinore standards. Cambern Avenue should accommodate two southbound through lanes and two northbound through lanes, in lieu of the Project's half-section plus one lane plus the painted median.

**Third Street** – Third Street is an east-west oriented roadway located along the Project's southern boundary. The Project will construct Third Street at its ultimate half-section width as a Collector (68-foot right-of-way) between the Project's western boundary and Cambern Avenue with a minimum of one lane in each direction between the Project's western boundary and Dexter Avenue. Improvements along Third Street would be those required by final conditions of approval for the proposed Project and applicable City of Lake Elsinore standards.

# SITE ADJACENT ROADWAY RECOMMENDATIONS



CONSTRUCT CAMBERN AVENUE AT ITS ULTIMATE HALF-SECTION WIDTH AS A SECONDARY HIGHWAY (90-FOOT RIGHT-OF-WAY) FROM CENTRAL AVENUE (SR-74) TO THIRD STREET. IMPROVEMENTS ALONG THE PROJECT'S FRONTAGE (WEST SIDE OF CAMBERN AVENUE) WOULD BE THOSE REQUIRED BY FINAL CONDITIONS OF APPROVAL FOR THE PROPOSED PROJECT AND APPLICABLE CITY OF LAKE ELSINORE STANDARDS. CAMBERN SHOULD ACCOMMODATE TWO SOUTHBOUND THROUGH LANES AND TWO NORTHBOUND THROUGH LANES, IN LIEU OF THE PROJECT'S HALF-SECTION PLUS ONE LANE PLUS THE PAINTED MEDIAN.

CONSTRUCT CENTRAL AVENUE (SR-74) AT ITS ULTIMATE HALF-SECTION WIDTH AS AN AUGMENTED URBAN ARTERIAL HIGHWAY (134-FOOT RIGHT-OF-WAY) BETWEEN THE PROJECT'S WESTERN BOUNDARY AND CAMBERN AVENUE. IMPROVEMENTS ALONG THE PROJECT'S FRONTAGE (SOUTH SIDE OF CENTRAL AVENUE (SR-74)) WOULD BE THOSE REQUIRED BY FINAL CONDITIONS OF APPROVAL FOR THE PROPOSED PROJECT AND APPLICABLE CITY OF LAKE ELSINORE STANDARDS.

THE PROJECT WILL CONSTRUCT THIRD STREET AT ITS ULTIMATE HALF-SECTION WIDTH AS A COLLECTOR (68-FOOT RIGHT-OF-WAY) BETWEEN THE PROJECT'S WESTERN BOUNDARY AND CAMBERN AVENUE WITH A MINIMUM OF ONE LANE IN EACH DIRECTION BETWEEN THE PROJECT'S WESTERN BOUNDARY AND DEXTER AVENUE. IMPROVEMENTS ALONG THIRD STREET WOULD BE THOSE REQUIRED BY FINAL CONDITIONS OF APPROVAL FOR THE PROPOSED PROJECT AND APPLICABLE CITY OF LAKE ELSINORE STANDARDS.

ALLAN STREET IS A PRIVATE EAST-WEST ORIENTED ROADWAY CONNECTING THE PROJECT TO DEXTER AVENUE. CONSTRUCT ALLAN STREET WITH A CURB-TO-CURB WIDTH OF 32-FEET BETWEEN THE EXISTING TERMINUS AND THE PROJECT. THE STREET IS PROPOSED TO BE STRIPED WITH A DOUBLE YELLOW CENTERLINE TO ACCOMMODATE A 16-FOOT LANE IN EACH DIRECTION OF TRAVEL. PARKING WILL BE PROHIBITED.

CRANE STREET IS A PRIVATE EAST-WEST ORIENTED ROADWAY CONNECTING THE PROJECT TO DEXTER AVENUE. THE STREET CURRENTLY EXISTS WITH A 32-FOOT CURB-TO-CURB WIDTH BETWEEN DEXTER AVENUE AND THE PROJECT. THE PROJECT WILL CONSTRUCT THE CONNECTION BETWEEN THE PROJECT AND THE EXISTING TERMINUS OF CRANE STREET. THE STREET IS PROPOSED TO BE STRIPED WITH A DOUBLE YELLOW CENTERLINE TO ACCOMMODATE A 16-FOOT LANE IN EACH DIRECTION OF TRAVEL. PARKING WILL BE PROHIBITED.

**LEGEND:**

- = AUGMENTED URBAN ARTERIAL HIGHWAY (8-LANES; 134-FOOT R.O.W.)
- = SECONDARY HIGHWAY (4-LANES; 90-FOOT R.O.W.)
- = COLLECTOR (2-LANES; 68-FOOT R.O.W.)

**Allan Street** – Allan Street is a private east-west oriented roadway connecting the Project to Dexter Avenue. Construct Allan Street with a curb-to-curb width of 32-feet between the existing terminus and the Project. The street is proposed to be striped with a double yellow centerline to accommodate a 16-foot lane in each direction of travel. Parking will be prohibited along Allan Street.

**Crane Street** – Crane Street is a private east-west oriented roadway connecting the Project to Dexter Avenue. The street currently exists with a 32-foot curb-to-curb width between Dexter Avenue and the Project. The Project will construct the connection between the Project and the existing terminus of Crane Street. The street is proposed to be striped with a double yellow centerline to accommodate a 16-foot lane in each direction of travel. Parking will be prohibited along Crane Street.

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

## 8.2 SITE ACCESS IMPROVEMENTS

The recommended site access driveway improvements for the Project are described below. Exhibit 8-2 illustrates the on-site and site adjacent recommended roadway lane improvements. Construction of on-site and site adjacent improvements shall occur in conjunction with adjacent Project development activity or as needed for Project access purposes.

**Dexter Avenue / Allan Street** – Maintain the existing cross-street stop control and modify the lane geometrics to restrict access to right-in/right-out only, as follows:

Northbound Approach: One through lane and one defacto right turn lane.

Southbound Approach: One through lane and one defacto right turn lane.

Eastbound Approach: One right turn lane.

Westbound Approach: One right turn lane.

**Dexter Avenue / Crane Street** – Maintain the existing cross-street stop control and lane geometrics. No additional improvements are recommended beyond those that currently exist.

**Driveway 1 / Central Avenue (SR-74)** – Install a stop control on the northbound approach and construct the intersection with the following geometrics:

Northbound Approach: One right turn lane.

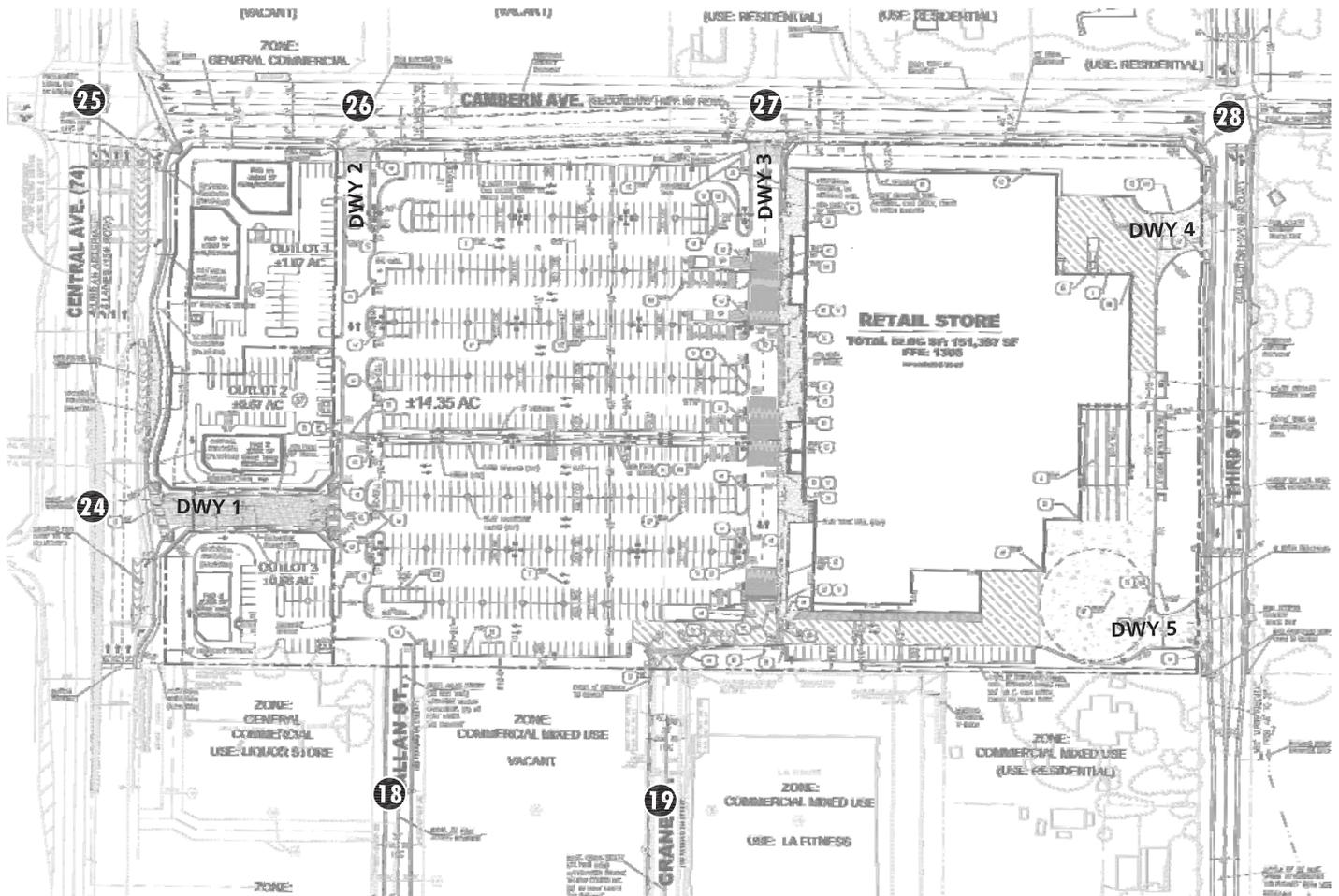
Southbound Approach: N/A

Eastbound Approach: Two through lanes and one shared through-right turn lane.

Westbound Approach: Four through lanes.

# EXHIBIT 8-2

# ON-SITE CIRCULATION RECOMMENDATIONS



18	Dexter Av. & Allan St.	19	Dexter Av. & Crane St.	24	Central Av. (SR-74) & Driveway 1	25	Central Av. (SR-74) & Cambern Av.	26	Driveway 2 & Cambern Av.	27	Driveway 3 & Cambern Av.	28	Third Street & Cambern Av.

ON-SITE TRAFFIC SIGNING AND STRIPING SHOULD BE IMPLEMENTED IN CONJUNCTION WITH DETAILED CONSTRUCTION PLANS FOR THE PROJECT SITE.

SIGHT DISTANCE AT EACH PROJECT ACCESS POINT SHOULD BE REVIEWED WITH RESPECT TO STANDARD CALTRANS AND CITY OF LAKE ELSINORE SIGHT DISTANCE STANDARDS AT THE TIME OF PREPARATION OF FINAL GRADING, LANDSCAPE AND STREET IMPROVEMENT PLANS.

**LEGEND:**

- = TRAFFIC SIGNAL
- = ALL WAY STOP
- = STOP SIGN
- = EXISTING LANE
- = LANE IMPROVEMENT

**Cambern Avenue / Central Avenue (SR-74)** – Maintain the existing traffic signal control and lane geometrics. No additional improvements are recommended beyond those that currently exist.

**Cambern Avenue / Driveway 2** – Based on the anticipated queues for the northbound left turn lane at Cambern Avenue and Central Avenue (SR-74), it is recommended that this intersection be restricted to right-in/right-out access only. Construct the intersection to prohibit left turns in and out (e.g., construction of a pork-chop island, etc.). Install a stop control on the eastbound approach and construct the intersection with the following geometrics:

Northbound Approach: One through lane.

Southbound Approach: One shared through-right turn lane.

Eastbound Approach: One right turn lane.

Westbound Approach: N/A

**Cambern Avenue / Driveway 3** – Install a stop control on the eastbound approach and construct the intersection with the following geometrics:

Northbound Approach: One shared left-through lane.

Southbound Approach: One shared through-right turn lane.

Eastbound Approach: One shared left-right turn lane.

Westbound Approach: N/A

**Cambern Avenue / Third Street** – Install a stop control on all four approaches (for an all-way stop control) and construct the intersection with the following geometrics:

Northbound Approach: One shared left-through-right turn lane.

Southbound Approach: One shared left-through-right turn lane.

Eastbound Approach: One shared left-through-right turn lane.

Westbound Approach: One shared left-through-right turn lane.

**Driveway 4 / Third Street** – Install a stop control on the southbound approach and construct the intersection with the following geometrics:

Northbound Approach: N/A

Southbound Approach: One shared left-right turn lane.

Eastbound Approach: One shared left-through lane.

Westbound Approach: One shared through-right turn lane.

This driveway provides access to the rear of the store for deliveries (i.e., truck access).

**Driveway 5 / Third Street** – Install a stop control on the southbound approach and construct the intersection with the following geometrics:

Northbound Approach: N/A

Southbound Approach: One shared left-right turn lane.

Eastbound Approach: One shared left-through lane.

Westbound Approach: One shared through-right turn lane.

This driveway provides access to the rear of the store for deliveries (i.e., truck access).

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

Sight distance at each project access point should be reviewed with respect to standard Caltrans and City of Lake Elsinore sight distance standards at the time of preparation of final grading, landscape and street improvement plans.

### **8.3 TRUCK ACCESS AND CIRCULATION**

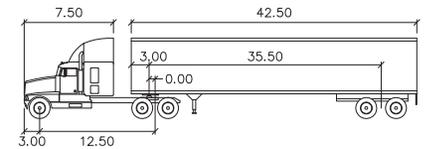
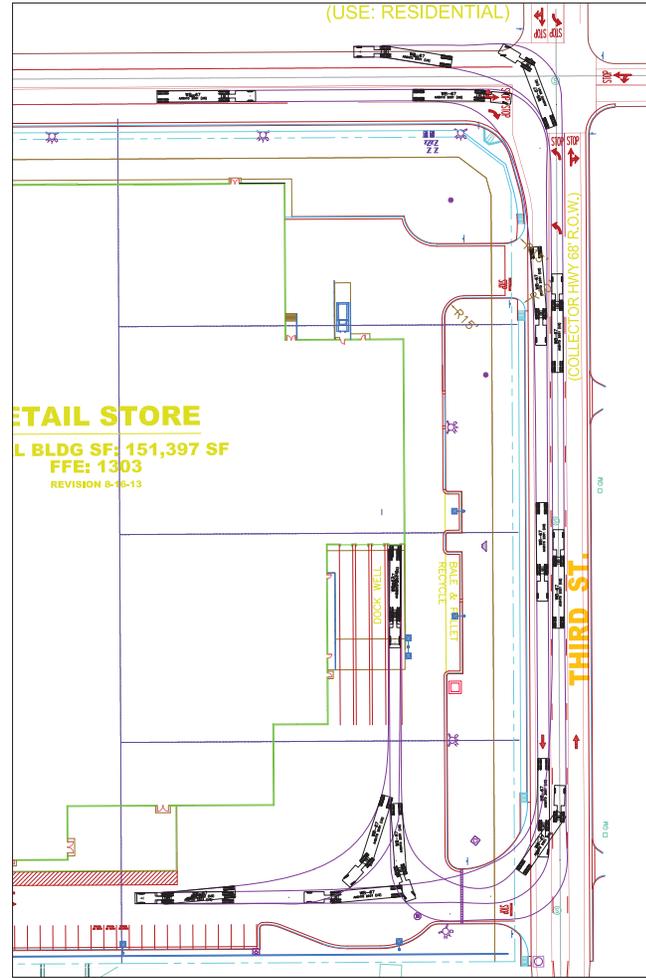
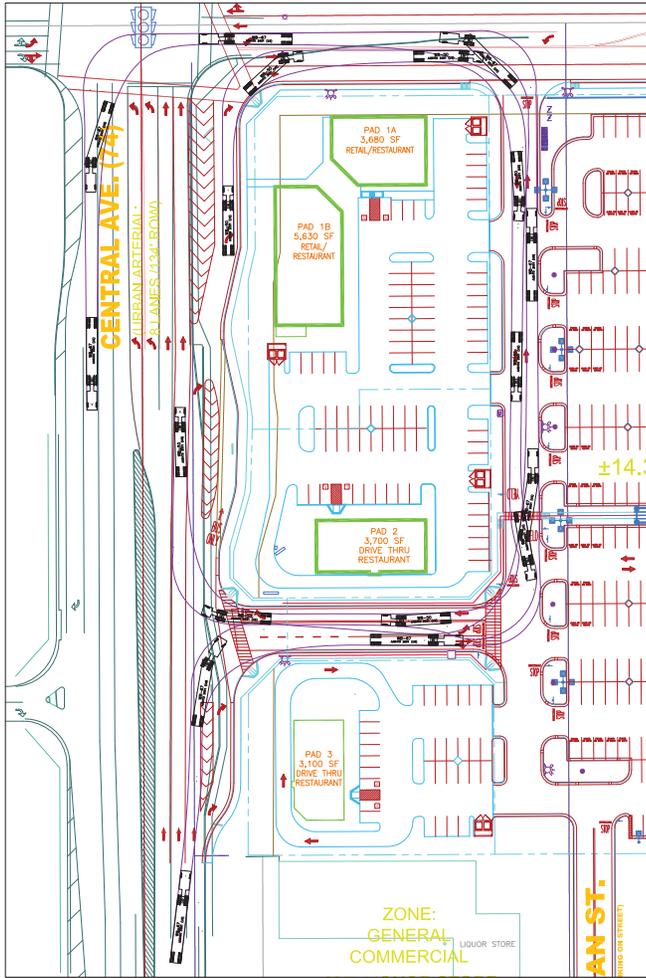
Exhibit 8-3 illustrates delivery truck access for the site and circulation for each of the applicable Project driveways. Due to the typical wide turning radius of these large delivery trucks, a truck turning template has been overlaid on the site plan at each Project driveway anticipated to have heavy trucks in order to determine appropriate curb radii and to verify that delivery trucks will have sufficient space to execute turning maneuvers to pull into and out of loading docks. Typically, Walmart stores receive their deliveries from Walmart distribution centers which utilize large delivery trucks, such as the WB-67 class. The deliveries for outparcels typically originate from local distribution centers and are traditionally served by WB-50 class or smaller box trucks. Each applicable Project access point discussed below identifies the necessary curb radii to accommodate a WB-50 or WB-67 delivery truck.

***Cambern Avenue and Central Avenue (SR-74)*** – Exhibit 8-3 illustrates the truck access circulation at Cambern Avenue and Central Avenue (SR-74). It is anticipated that this intersection would be utilized by both WB-50 and WB-67 trucks. The WB-67 truck template has been utilized at this particular intersection since the WB-67 truck is greater in size as compared to the WB-50 and would yield more conservative results. The proposed curb radius of 35-feet on the southwest corner appears to be sufficient to accommodate the eastbound right turn movement of a WB-67 truck. It appears that both Cambern Avenue and Central Avenue (SR-74) provide sufficient roadway width to accommodate the anticipated wide turns.

***Driveway 1 and Central Avenue (SR-74)*** – Exhibit 8-3 illustrates the truck access circulation at the intersection of Driveway 1 and Central Avenue (SR-74). It is anticipated that this driveway would be utilized by inbound WB-50 trucks making deliveries to the outparcels as it would minimize large trucks from having to navigate through the site. Due to the typical wide turning radius of these large delivery trucks, a turning template for a WB-50 truck has been overlaid on the site plan at Driveway 1 and Central Avenue (SR-74) in order to determine appropriate curb radii and to verify that WB-50 class trucks will have sufficient space to execute turning maneuvers. The proposed 40-foot curb radius on the southwest corner is anticipated to sufficiently accommodate the eastbound right turn movement of a WB-50 inbound truck. It appears that both Driveway 1 and Central Avenue (SR-74) provide sufficient roadway width to accommodate the anticipated wide turns.

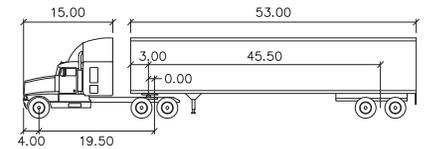
# TRUCK ACCESS AND ON-SITE CIRCULATION

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WB-50 feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.00
Trailer Width	: 8.50	Steering Angle	: 17.70
Tractor Track	: 8.00	Articulating Angle	: 70.00
Trailer Track	: 8.50		



WB-67 feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.00
Trailer Width	: 8.50	Steering Angle	: 28.40
Tractor Track	: 8.00	Articulating Angle	: 75.00
Trailer Track	: 8.50		



**Cambern Avenue and Driveway 2** – Exhibit 8-3 illustrates the truck access circulation at the intersection of Cambern Avenue and Driveway 2. It is anticipated that this driveway would be utilized by both outbound and inbound WB-50 trucks making deliveries to the outparcels as it would minimize large trucks from having to navigate through the site. Due to the typical wide turning radius of these large delivery trucks, a turning template for a WB-50 truck has been overlaid on the site plan at Cambern Avenue and Driveway 2 in order to determine appropriate curb radii and to verify that WB-50 class trucks will have sufficient space to execute turning maneuvers. The proposed 25-foot curb radius on the northwest corner is anticipated to sufficiently accommodate the southbound right turn movement of a WB-50 inbound truck. It appears that both Cambern Avenue and Driveway 2 provide sufficient roadway width to accommodate the anticipated wide turns.

**Cambern Avenue and Third Street** – Exhibit 8-3 illustrates the truck access circulation at Cambern Avenue and Third Street. It is anticipated that this intersection would be utilized by WB-67 trucks heading towards the back of the proposed Walmart store and leaving the site after making deliveries to the proposed Walmart store as it provides direct access to the proposed Walmart store and would minimize large trucks from having to navigate through the site. The WB-67 truck template has been utilized at this particular intersection. It appears that both Cambern Avenue and Third Street provide sufficient roadway width to accommodate the anticipated wide turns.

**Driveway 5 and Third Street** – Exhibit 8-3 illustrates the truck access circulation at the intersection of Driveway 5 and Third Street. It is anticipated that this driveway would be utilized by WB-67 trucks exiting the site after making deliveries to the proposed Walmart as it provides direct access to the proposed Walmart store and would minimize large trucks from having to navigate through the site. It appears that both Driveway 5 and Third Street provide sufficient roadway width to accommodate the anticipated wide turns.

## **9.0 LOCAL AND REGIONAL FUNDING MECHANISMS**

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Transportation improvements throughout Riverside County are funded through a combination of direct project mitigation, fair share contributions or development impact fee programs. Identification and timing of needed improvements is generally determined through local jurisdictions based upon a variety of factors.

Table 9-1 lists the incremental improvements that are required by General Plan Buildout (Post-2035) traffic conditions to mitigate the long-range cumulative traffic impacts. The regional and local transportation impact fee programs have each been reviewed and compared to the recommended improvements for each impacted facility. Recommended improvements already identified and included in one of the pre-existing fee programs (i.e., TUMF and City of Lake Elsinore TIF) are clearly denoted. If an impacted facility was found to require improvements beyond those already identified within one of the pre-existing regional or local fee programs, the project may be required to contribute the associated intersection or roadway fair-share percentage toward the costs of the recommended improvements. The fair-share calculations, also presented in Table 9-1, indicate that the project contributes approximately 0.3% to 37.7% of new vehicle trips to the study area intersections.

The improvements listed in Table 9-1 are comprised of lane additions, installation of signals and signal modifications. As noted, the identified improvements are covered either by the TUMF Program, the City of Lake Elsinore TIF Program or as a fair-share contribution if not covered by a fee program. Lane additions are shown as the number of lanes required and the direction of travel, for example, "1.EBT" indicates one additional eastbound through lane. Depending on the width of the existing pavement and right-of-way, these improvements may involve only striping modifications or they may involve construction of additional pavement width. Additional discussion of the relevant pre-existing transportation impact fee programs is provided below.

### **9.1 TRANSPORTATION UNIFORM MITIGATION FEE (TUMF) PROGRAM**

The TUMF program is administered by Western Riverside Council of Governments (WRCOG) based upon a regional Nexus Study completed in early 2003 and updated in 2009 to address major changes in right of way acquisition and improvement cost factors. TUMF identifies a network of backbone and local roadways that are needed to accommodate growth through 2035. 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 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. The fee for retail use is \$10.49 per square foot (applicable to the proposed project). In addition, an annual inflation adjustment is considered each year in January. In this way, TUMF fees are

Summary of Transportation Impact Fee Program Improvements for General Plan Buildout (Post-2035) Conditions

#	Intersection Location	Jurisdiction	Recommended Improvements - Opening Year (2016)	Recommended Improvements - Post-2035	Program Improvements <sup>1</sup>	Non-Program Improvements	Fair Share <sup>2</sup>
1	Lakeshore Dr / Riverside Dr (SR-74)	Caltrans	1. WBT	1.NBL, 1.NBR, 1.SBL, 1.SBT, 1.EBL, 1.EBT, 2.WBT, modify TS and implement overlap phasing on SBR, EBR and WBR	TIF (Intersection), TUMF (1.SBT)		--
2	W Graham Av / N Main St	Lake Elsinore		Install traffic signal, 1.EBL, 1.WBL	TIF (Intersection)		--
3	E Lakeshore Dr / Diamond Dr	Caltrans	1.SBL and modify TS to implement overlap phasing on NBR	1.NBL, 1.NBT, 1.NBR, 1.SBL, 1.SBT, 1.SBR, 1.EBL, 1.EBR, 1.WBT, 2.WBR, modify TS and implement overlap phasing on NBR, SBR and WBR	TIF (Intersection)		--
4	Gunnerson St / Riverside Dr (SR-74)	Caltrans	Install traffic signal, 1.EBL, 1.EBT, 1.WBL, 1.WBT	Install traffic signal, 1.EBL, 1.EBT, 1.WBL, 1.WBT	TUMF (1.EBT, 1.WBT)	Install traffic signal, 1.EBL, 1.WBL	4.3%
5	Collier Av / Riverside Dr (SR-74)	Caltrans		1.NBL, 1.NBT, 1.NBR, 1.SBL, 1.SBT, 2.EBL, 2.EBT, 1.EBFR, 2.WBL, 2.WBT, 1.WBR, modify TS and implement overlap phasing on NBR and SBR	TIF (Intersection)		--
6	Collier Av / Central Av (SR-74)	Caltrans		1.NBT, 1.NBR, 1.SBL, 1.EBT, 1.EBR, 1.WBT, 1.WBFR, modify TS and implement overlap phasing on EBR	TIF (Intersection)		--
7	Auto Center Dr / Diamond Dr	Lake Elsinore		1.NBL, 2.NBR, 1.SBL, 2.SBR, 1.EBL, 1.EBR, 1.WBT, 1.WBR, modify TS and implement overlap phasing on all approaches	TIF (Intersection & Interchange), TUMF (1.WBT & Interchange)		--
8	I-15 SB Ramps / Nichols Rd	Caltrans		Install traffic signal, 2.SBL, 1.SBR, Restripe 1.SBLTR as 1.SBR, 2.EBT, 1.WBL, 2.WBT	TIF (Interchange)		--
9	I-15 SB Ramps / Central Av (SR-74)	Caltrans		*New Interchange Design*, 1.SBL, Restripe 1.SBLTR as 1.SBR, 1.EBT, 1.EBR	TIF & TUMF (Interchange)		--
10	I-15 SB Ramps / N Main St	Caltrans		Install traffic signal, 1.SBL, 1.EBT, 1.EBR, 1.WBL, 1.WBT		Install traffic signal, 1.SBL, 1.EBT, 1.EBR, 1.WBL, 1.WBT	2.9%
11	I-15 SB Ramps / Railroad Canyon Rd	Caltrans	1.EBT	*New Interchange Design*, 1.NBR, 2.SBL, 1.SBT, 1.WBL, 2.WBR	TIF & TUMF (Interchange)		--
12	I-15 NB Ramps / Nichols Rd	Caltrans	Install traffic signal	Install traffic signal, 1.NBL, 1.NBR, Restripe 1.NBLTR as 1.NBR, 1.EBL, 2.EBT, 2.WBT, 1.WBR	TIF (Interchange)		--
13	I-15 NB Ramps / Central Av (SR-74)	Caltrans		*New Interchange Design*, 1.NBL, Restripe 1.NBLTR as 1.NBR, Restripe 1.EBR	TIF & TUMF (Interchange)		--

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Summary of Transportation Impact Fee Program Improvements for General Plan Buildout (Post-2035) Conditions

#	Intersection Location	Jurisdiction	Recommended Improvements - Opening Year (2016)	Recommended Improvements - Post-2035	Program Improvements <sup>1</sup>	Non-Program Improvements	Fair Share <sup>2</sup>
14	I-15 NB Ramps / N Main St	Caltrans	Install traffic signal	Install traffic signal, 1.NBL, 1.NBR, 1.EBL, 1.EBT, 1.WBT, 1.WBR		Install traffic signal, 1.NBL, 1.NBR, 1.EBL, 1.EBT, 1.WBT, 1.WBR	2.5%
15	I-15 NB Ramps / Railroad Canyon Rd	Caltrans	1.NBL	"New Interchange Design", 1.NBL, 1.SBFR, 2.EBL, 1.EBR	TIF & TUMF (Interchange)		--
16	Dexter Av / 11th St	Riverside County		Install traffic signal, 1.NBL, 1.SBL, 1.EBL, 1.EBT, 1.EBR, 1.WBL, 1.WBT, modify the TS and implement overlap phasing on the EBR		Install traffic signal, 1.NBL, 1.SBL, 1.EBL, 1.EBT, 1.EBR, 1.WBL, 1.WBT, modify the TS and implement overlap phasing on the EBR	1.8%
17	Dexter Av / Central Av (SR-74)	Caltrans		1.NBL, 1.NBR, 1.SBL, 1.EBL, modify the TS and implement overlap phasing on the NBR	TIF (Intersection)		--
19	Dexter Av / Crane St	Lake Elsinore		Install traffic signal		Install traffic signal	13.8%
20	Dexter Av / 3rd St	Lake Elsinore/Riverside County		Install traffic signal, 1.NBL, 1.SBL, 1.EBL, 1.WBL		Install traffic signal, 1.NBL, 1.SBL, 1.EBL, 1.WBL	3.8%
21	Dexter Av / 2nd St	Lake Elsinore/Riverside County		Install traffic signal, 1.NBL, 1.SBL, 1.SBR w/overlap, 1.EBL, 1.WBL	TIF (Intersection)		--
22	Camino del Norte / N Main St	Lake Elsinore		Install traffic signal, 2.NBL, 1.SBR w/overlap, overlap phasing on EBR	TIF (Intersection)		--
23	Summerhill Dr / Railroad Canyon Rd	Lake Elsinore	1.NBR, 1.SBT, 1.EBT, 1.WBL and modify the TS to implement overlap phasing on the NBR and EBR	2.NBR, 1.SBL, 1.SBR, 1.EBT, 1.WBL, 2.WBR, modify the TS and implement overlap phasing on the NBR, EBR and WBR	TIF (Intersection)		--
25	Cambern Av / Central Av (SR-74)	Caltrans		1.NBL, 1.NBR, 2.SBL, 1.SBT, 1.EBT, 1.EBR, 1.WBL, 1.WBT, modify the TS and implement overlap phasing on all approaches	TIF (Intersection)		--
28	Cambern Av / 3rd St	Riverside County		Install traffic signal, 1.NBL, 1.NBT, 1.SBL, 1.SBT, 1.SBR, 2.EBL, 1.WBL, 1.WBR		Install traffic signal, 1.NBL, 1.NBT, 1.SBL, 1.SBT, 1.EBL, 1.WBL	0.3%
29	Conard Av / Central Av (SR-74)	Caltrans		1.SBL, 1.SBR, 1.SBR, 1.EBL, 2.EBT, 1.EBR, 2.WBT, 1.WBR, modify the TS and implement overlap phasing on the SBR	TUMF (1.EBT, 1.WBT)	1.SBL, 1.SBR, 1.SBR, 1.EBL, 1.EBT, 1.EBR, 1.WBT, 1.WBR, modify the TS and implement overlap phasing on the SBR	3.1%

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**Table 9-1**  
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**Summary of Transportation Impact Fee Program Improvements for General Plan Buildout (Post-2035) Conditions**

#	Intersection Location	Jurisdiction	Recommended Improvements - Opening Year (2016)	Recommended Improvements - Post-2035	Program Improvements <sup>1</sup>	Non-Program Improvements	Fair Share <sup>2</sup>
30	Rosetta Canyon Dr / Central Av (SR-74)	Caltrans		1.NBL, 1.EBT, 1.EBR, 1.WBL, 2.WBT, modify the TS and implement overlap phasing on the NBR and EBR	TUMF (1.WBT)	1.NBL, 1.EBT, 1.EBR, 1.WBL, 1.WBT, modify the TS and implement overlap phasing on the NBR and EBR	2.6%
31	Riverside St / Central Av (SR-74)	Caltrans		2.NBT, 2.SBL, 2.SBT, 1.SBR, 2.EBL, 2.EBT, 1.EBR, 1.WBL, 2.WBT, 1.WBR, modify the TS and implement overlap phasing on the EBR and WBR	TUMF (1.EBT, 1.WBT)	2.NBT, 2.SBL, 2.SBT, 1.SBR, 2.EBL, 1.EBT, 1.EBR, 1.WBL, 1.WBT, 1.WBR, modify the TS and implement overlap phasing on the EBR and WBR	1.1%
32	Greenwald Av / Central Av (SR-74)	Caltrans		1.NBR, 1.SBR, 1.EBL, 1.EBT, 1.WBL, 1.WBT, 1.WBR, modify the TS and implement overlap phasing on the NBR and EBR	TUMF (1.EBT, 1.WBT)	1.NBR, 1.SBR, 1.EBL, 1.WBL, 1.WBR, modify the TS and implement overlap phasing on the NBR and EBR	0.9%

<sup>1</sup> Improvements included in TUMF Nexus (October 12, 2009) or City of Lake Elsinore TIF (2002 Update) programs.

<sup>2</sup> Program improvements constructed by project may be eligible for fee credit. In lieu fee payment is at discretion of City. Fair share selected based on peak hour with worst LOS. Fair share percentages only shown for intersections with improvements that are not currently included in a pre-existing fee program.

adjusted upwards on a regular basis to ensure that the development impact fees collected keep pace with construction and labor costs, etc.

As shown in Table 9-1, a number of the facilities forecast to be impacted by the proposed project are programmed for improvements through the TUMF program. The project applicant will be subject to the TUMF fee program and will pay the requisite TUMF fees at the rates then in effect pursuant to the TUMF Ordinance.

WRCOG has a successful track record funding and overseeing the construction of improvements funded through the TUMF program. In total, the TUMF program is anticipated to generate nearly \$5 billion in transportation projects for Western Riverside County. The project's payment of TUMF fees appear to be sufficient to mitigate its fair share of cumulative impacted TUMF-funded facilities.

## **9.2 CITY OF LAKE ELSINORE TRAFFIC IMPACT FEE (TIF) PROGRAM**

The City of Lake Elsinore has created its own local Traffic Impact Fee (TIF) program to impose and collect fees from new residential, commercial and industrial development for the purpose of funding roadways and intersections necessary to accommodate City growth as identified in the City's General Plan Circulation Element. The City's TIF program includes facilities that are not part of, or which may exceed improvements identified and covered by the TUMF program. As a result, the pairing of the regional and local fee programs provides a more comprehensive funding and implementation plan to ensure an adequate and interconnected transportation system. Under the City's TIF program, the City may grant to developers a credit against specific components of fees when those developers construct certain facilities and landscaped medians identified in the list of improvements funded by the TIF program.

The timing to use the TIF fees is established through periodic capital improvement programs which are overseen by the City's Public Works Department. Periodic traffic counts, review of traffic accidents, and a review of traffic trends throughout the City are also periodically performed by City staff and consultants. The City uses this data to determine the timing of implementing the improvements listed in its facilities list.

As shown in Table 9-1, a few of the facilities forecasted to be impacted by the Project are planned for improvements through the City's TIF Program. The Project will be subject to the City's TIF fee program, and will pay the requisite City TIF fees at the rates then in effect pursuant to the City's ordinance. The payment of the requisite TIF fees will mitigate its impacts to TIF-funded facilities. The TIF network improvement needs were last updated in 2002 with an expected completion date by 2025. Improvements are identified in the Nexus Study by location rather than with specific geometrics. Table E of that study identifies TIF improvement locations and eligible program costs but does not provide discrete improvements. As a result, Table 9-1 identifies TIF intersections with an expectation that City,

as program administrator, can distinguish if the program fees are sufficient to cover the fair share impacts for proportionality. Given the relatively low fair share assignment of the Project to many of these locations, payment of fees appears reasonable to adequately mitigate the Project's cumulative impacts.

### **9.3 FAIR SHARE CONTRIBUTION**

Project mitigation may include a combination of fee payments to established programs, construction of specific improvements, payment of a fair share contribution toward future improvements or a combination of these approaches. Table 9-1 presents improvements not included in an impact fee programs in the column labeled "Non-Program Improvements".

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 have been provided on Table 9-2.

Improvements included in a defined program and constructed by development may be eligible for a fee credit or reimbursement through the program where appropriate. A rough order of magnitude cost should be prepared to determine the appropriate contribution value based upon the project's fair share of traffic as part of the project approval process. The cost basis should be determined by the City based upon physical and community constraints, current bidding experiences and engineering preferences.

**Table 9-2**  
Page 1 of 2

**Project Fair Share Calculations**

#	Intersection	Existing	Project	Post-2035 WP	Total New Traffic	Project % of New Traffic <sup>1</sup>	
3	E Lakeshore Dr / Diamond Dr	AM:	1,397	30	8,008	6,611	0.5%
		PM:	2,119	40	8,925	6,806	0.6%
		Saturday:	2,083	60	8,241	6,158	1.0%
10	I-15 SB Ramps / N Main St	AM:	945	48	3,342	2,397	2.0%
		PM:	1,116	66	3,419	2,303	2.9%
		Saturday:	724	96	2,497	1,773	5.4%
14	I-15 NB Ramps / N Main St	AM:	721	48	3,033	2,312	2.1%
		PM:	791	66	3,444	2,653	2.5%
		Saturday:	544	96	2,348	1,804	5.3%
15	I-15 NB Ramps / Railroad Canyon Rd	AM:	862	59	2,761	1,899	3.1%
		PM:	1,390	79	3,302	1,912	4.1%
		Saturday:	1,559	114	3,846	2,287	5.0%
17	Dexter Av / Central Av (SR-74)	AM:	3,512	430	5,848	2,336	18.4%
		PM:	4,317	607	6,441	2,124	28.6%
		Saturday:	3,820	879	6,152	2,332	37.7%
18	Dexter Av / Allan St	AM:	429	42	809	380	11.1%
		PM:	522	57	953	431	13.2%
		Saturday:	420	83	699	279	29.7%
19	Dexter Av / Crane St	AM:	383	69	902	519	13.3%
		PM:	520	94	1,203	683	13.8%
		Saturday:	380	138	1,107	727	19.0%
20	Dexter Av / 3rd St	AM:	316	47	1,480	1,164	4.0%
		PM:	386	66	2,142	1,756	3.8%
		Saturday:	279	96	2,034	1,755	5.5%
28	Cambern Av / 3rd St	AM:	16	6	2,146	2,130	0.3%
		PM:	17	8	2,871	2,854	0.3%
		Saturday:	18	12	2,898	2,880	0.4%
29	Conard Av / Central Av (SR-74)	AM:	2,611	95	5,406	2,795	3.4%
		PM:	2,965	132	7,164	4,199	3.1%
		Saturday:	2,279	192	5,901	3,622	5.3%
30	Rosetta Canyon Dr / Central Av (SR-74)	AM:	2,462	78	5,115	2,653	2.9%
		PM:	2,747	108	6,859	4,112	2.6%
		Saturday:	2,048	156	5,246	3,198	4.9%

Lake Elsinore Walmart

City of Lake Elsinore, CA (JN:08651)

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**Project Fair Share Calculations**

#	Intersection	Existing	Project	Post-2035 WP	Total New Traffic	Project % of New Traffic <sup>1</sup>
31	Riverside St / Central Av (SR-74)					
	AM:	2,102	54	7,241	5,139	1.1%
	PM:	2,474	74	9,202	6,728	1.1%
	Saturday:	1,836	108	7,505	5,669	1.9%
32	Greenwald Av / Central Av (SR-74)					
	AM:	1,926	30	6,258	4,332	0.7%
	PM:	2,309	41	6,786	4,477	0.9%
	Saturday:	1,652	60	5,596	3,944	1.5%

<sup>1</sup> Project percentage of new traffic between Existing (2013) and General Plan Buildout (Post-2035) traffic conditions.