Polopolus

TRAFFIC IMPACT ANALYSIS

CITY OF EASTVALE

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Program
DIF	Development Impact Fee
E+P	Existing Plus Project
HCM	Highway Capacity Manual
ICU	Intersection Capacity Utilization
ITE	Institute of Transportation Engineers
LOS	Level of Service
NP	No Project (or Without Project)
PHF	Peak Hour Factor
Project	Polopolus
RBBD	Road and Bridge Benefit District
RTA	Riverside Transport Authority
RTP	Regional Transportation Plan
SCAG	Southern California Association of Governments
SCS	Sustainable Communities Strategy
SF	Square Feet
SHS	State Highway System
SR	State Route
TIA	Traffic Impact Analysis
TUMF	Transportation Uniform Mitigation Fee
VFP	Vehicle Fueling Position
WP	With Project

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1 INTRODUCTION

This report presents the results of the traffic impact analysis (TIA) for the proposed Polopolus development ("Project"), which is located on the southeast corner of Hamner Avenue and Schleisman Avenue in the City of Eastvale.

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

1.1 PROJECT OVERVIEW

The Project is proposed to consist of the following land uses and is anticipated to be operational by 2019:

- Parcel 1: 8 vehicle fueling position (VFP) gas station with market
- Parcel 2: 3,500 square feet (SF) of fast-food restaurant with drive-through window
- Parcel 3: 2,000 SF coffee shop with drive-through window
- Parcel 4: 6,000 SF high turnover sit-down restaurant
- Parcel 5: 4,000 SF of commercial retail use
- Parcel 5: 4,000 SF of fast-food restaurant without drive-through window
- Parcel 6: 10,000 SF of medical office use
- Parcel 7: 130 room hotel
- Civic: 40,000 SF government office
- Civic: 25,000 SF library
- Hamner Avenue & Riverboat Drive Site: 16 VFP gas station with market and car wash.

Regional access to the Project is provided by the I-15 Freeway via Limonite Avenue or 6th Street. Access to the Project is unknown at this time as a site plan is not currently available. However, for the purposes of this analysis, access to the Project site is assumed to be provided by an eastern extension of Schleisman Avenue, east of Hamner Avenue. Additional restricted access points may also be provided along Hamner Avenue, however, only a single entry has been evaluated in order to conduct a conservative analysis and overstate as opposed to understate potential impacts at the primary entrance. The Hamner Avenue & Riverboat Drive site is assumed to take access via Riverboat Drive to the west of Hamner Avenue.

Trips generated by the Project's proposed land uses have been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition, 2012. (3) The proposed Project is anticipated to generate a net total of 6,864 trip-ends per day with 534 AM peak hour trips and 647 PM peak hour trips. The assumptions and methods used to estimate the Project's trip generation characteristics are discussed in greater detail in Section 4.1 *Project Trip Generation* of this report.

1.2 ANALYSIS SCENARIOS

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

- Existing (2017)
- Existing plus Project (E+P)
- Opening Year Cumulative (2019) Without Project
- Opening Year Cumulative (2019) With Project

1.2.1 EXISTING (2017) CONDITIONS

Information for Existing (2017) conditions 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 Plus Project (E+P) analysis determines circulation system deficiencies that would occur on the existing roadway system in the scenario of the Project being placed upon Existing conditions. The E+P analysis is intended to identify the project-specific traffic impacts associated solely with the development of the proposed Project based on a comparison of the E+P traffic conditions to Existing (2017) conditions.

1.2.3 OPENING YEAR CUMULATIVE CONDITIONS

The Opening Year Cumulative traffic conditions analyses determine the potential near-term cumulative circulation system deficiencies. To account for background traffic growth, traffic associated with other known cumulative development projects in conjunction with an ambient growth factor from Existing conditions of 3.23% (for 2019 conditions based on an annual compounded growth rate of 1.6%) are included for Opening Year Cumulative traffic conditions. This comprehensive list was compiled from information provided by the City of Eastvale and other near-by agencies.

The Opening Year Cumulative conditions analysis will be utilized to determine if improvements funded through regional transportation mitigation fee programs, such as the City's Development Impact Fee (DIF) program, County of Riverside Transportation Uniform Mitigation Fee (TUMF) program, Mira Loma Road and Bridge Benefit District (RBBD), or other approved funding mechanisms (such as fair share) can accommodate the long-range cumulative traffic at the target level of service (LOS) identified by the City of Eastvale (lead agency). If the planned and funded improvements can provide the target LOS, then the Project's payment into established fee

programs will be considered as cumulative mitigation. Other improvements needed beyond the "funded" improvements (such as localized improvements to non-DIF, non-TUMF, or non-RBBD facilities) are identified as such.

1.3 STUDY AREA

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

1.3.1 INTERSECTIONS

The following 11 study area intersections shown on Exhibit 1-1 and listed in Table 1-1 were selected for this TIA based on consultation with City of Eastvale staff. The "50 peak hour trip" criterion utilized by the City of Eastvale is consistent with the methodology employed by the County of Riverside, and generally represents a minimum number of trips at which a typical intersection would have the potential to be substantively impacted by a given development proposal. Although each intersection may have unique operating characteristics, this traffic engineering rule of thumb is a widely utilized tool for estimating a potential area of impact (i.e., study area). The Project is anticipated to contribute less than 50 PCE peak hour trips to the study area intersections. As such, the development of the study area was based on direction from City staff.

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction	CMP?
1	Scholar Way & Schleisman Road	City of Eastvale	No
2	Hamner Avenue & Limonite Avenue	City of Eastvale	No
3	Hamner Avenue & 68th Street	City of Eastvale	No
4	Hamner Avenue & Riverboat Drive	City of Eastvale	No
5	Hamner Avenue & Schleisman Road	City of Eastvale	No
6	Hamner Avenue & Citrus Avenue	City of Eastvale, City of Norco	No
7	Hamner Avenue & Norco Drive/6th Street	City of Norco	No
8	I-15 Southbound Ramps & Limonite Avenue	City of Eastvale, Caltrans	Yes
9	I-15 Southbound Ramps & 6th Street	City of Norco, Caltrans	No
10	I-15 Northbound Ramps & Limonite Avenue	City of Jurupa Valley, Caltrans	Yes
11	I-15 Northbound Ramps & 6th Street	City of Norco, Caltrans	No

EXHIBIT 1-1: LOCATION MAP

1.3.2 ROADWAY SEGMENTS

Pursuant to the direction of City staff, daily volume-to-capacity roadway analyses have been evaluated for the following roadway segments as shown on Table 1-2:

TABLE 1-2: ROADWAY SEGMENT ANALYSIS LOCATIONS

ID	Roadway Segment Location	Jurisdiction
1	Schleisman Road, Scholar Way to Hamner Avenue	City of Eastvale
2	Hamner Avenue, Limonite Avenue to 68th Street	City of Eastvale
3	Hamner Avenue, 68th Street to Riverboat Drive	City of Eastvale
4	Hamner Avenue, Riverboat Drive to Schleisman Road	City of Eastvale
5	Hamner Avenue, Schleisman Road to Citrus Street	City of Eastvale, City of Norco
6	Hamner Avenue, Citrus Street to Norco Drive/6th Street	City of Eastvale, City of Norco
7	Limonite Avenue, Hamner Avenue to I-15 Freeway	City of Eastvale
8	6th Street, Hamner Avenue to I-15 Freeway	City of Norco

1.4 IMPACTS AND MITIGATION MEASURES

This section provides a summary of recommended mitigation measures necessary to address Project impacts for E+P traffic conditions. Section 2 *Methodologies* provides information on the methodologies used in the analysis and Section 5 *E+P Traffic Analysis* includes the detailed analysis.

1.4.1 IMPACTS

Based on the City of Eastvale's significance criteria as discussed in Section 2.8 *Thresholds of Significance*, the following study area intersections were found to be significantly impacted by the Project for E+P traffic conditions:

- Hamner Avenue & Citrus Avenue (#6)
- Hamner Avenue & Norco Drive/6th Street (#7)

Both intersections are currently operating at a deficient LOS, however, the addition of Project traffic is anticipated to increase the delay during one or both peak hours by 5.0 seconds or more. As such, the Project's impact to the off-site study area intersections listed above is cumulatively considerable.

A summary of other cumulatively impacted study area intersections and recommended mitigation measures to address cumulatively significant impacts are described in detail within Section 6 *Opening Year Cumulative (2019) Traffic Conditions*. Cumulative impacts are deficiencies that would not be directly caused by the Project. The Project would, however, contribute traffic

to these deficient facilities along with other cumulative development projects, resulting in a cumulatively considerable impact.

The peak hour intersection operations for Opening Year Cumulative (2019) traffic conditions indicates that the following study area intersections are anticipated to operate at unacceptable LOS during the peak hours, and the addition of Project traffic is anticipated to meet the City's significance threshold (i.e., resulting in an increase of 5.0 seconds or more with the addition of Project traffic):

- Hamner Avenue & Limonite Avenue (#2)
- Hamner Avenue & Citrus Avenue (#6)
- Hamner Avenue & Norco Drive/6th Street (#7)

As such, the Project's impact to these off-site study area intersections is also cumulatively considerable.

The only deficient roadway segment is Hamner Avenue between Citrus Street and Norco Drive/6th Street for Existing and E+P traffic conditions. The roadway segment of Hamner Avenue is currently 3 lanes immediately south of Citrus Street and then narrows to a 2-lane roadway from just north of the Santa Ana River to Norco Drive/6th Street. The analysis indicates that widening of the existing bridge over the Santa Ana River and remaining roadway segment to Norco Drive/6th Street is necessary in order to accommodate daily volumes. There is slowing and congestion observed along this roadway segment, but this is can expected during the peak hours due to the roadway tapering down to one lane in each direction of travel. Although there is congestion, field observations indicate that the traffic is slow but still moves through this area, which is attributable to the limited access and lack of signals between Citrus Street and Norco Drive/6th Street. A portion of the segment of Hamner Avenue will be widened to 6 lanes between Citrus Street and Detroit Street through SB132.

1.4.2 MITIGATION MEASURES

Improvement strategies are recommended at intersections that this report identifies as significantly impacted by the Project in an effort to reduce each location's peak hour delay and improve the associated LOS grade to an acceptable LOS. Table 1-3 shows the improvement needs and the Project fair share percentage for each applicable study area intersection. Exhibit 1-2 graphically shows the recommended intersection improvements that are included on Table 1-3. Table 1-4 shows the improvements needs and Project fair share percentage for each applicable study area roadway segment.

Although the TIA indicates fair share fees payable to extra-jurisdictional entities, these "fair share" calculations represent the Project's proportional contributions to extra-jurisdictional impacts rather than monies that would be assessed of the Project for construction of extra-jurisdictional improvements. In this latter regard, there does not exist an extra-jurisdictional fee sharing mechanism between the City of Eastvale and extra-jurisdictional agencies, nor does the City or Project Applicant have plenary control for funding of, or construction of extra-jurisdictional improvements.

Table 1-3

Summary of Intersection Improvements

#	Intersection Location	Jurisdiction	Recommended Improvements		Improvements in DIF, TUMF, or RBBD[2]?	Fair Share %[3]
			Existing Plus Project	2019 With Project		
2	Hamner Av. & Limonite Av.	Eastvale	None	Pay fees towards 3rd NB through lane	Yes (TUMF)	N/A[6]
				Pay fees towards 3rd WB through lane	Yes (TUMF)	
				Pay fees towards modifying the traffic signal to accommodate overlap phasing for the NB, SB, EB, and WB right turn lanes	Yes (DIF)	
5	Hamner Av. & Schleisman Rd.	Eastvale	3rd NB through lane[4]	Same	Yes (TUMF)	N/A[6]
			SB left turn lane[4]	Same	No	
			EB through lane[4]	Same	No	
			1st and 2nd WB left turn lanes[4]	Same	No	
			WB through lane[4]	Same	No	
			WB right turn lane[4]	Same	No	
6	Hamner Av. & Citrus Av.	Eastvale, Norco	Contribute fair share for 2nd NB left turn lane[5]	Same	No	34.2%
				Contribute fair share for 3rd NB through lane	No	
				Contribute fair share for 3rd SB through lane	No	
				Contribute fair share for 2nd EB left turn lane	No	
				Contribute fair share for modifying the traffic signal to accommodate left turn phasing for the EB and WB approaches		

Table 1-3
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Summary of Intersection Improvements

#	Intersection Location	Jurisdiction	Recommended Improvements		Improvements in DIF, TUMF, or RBBD[2]?	Fair Share %[3]
			Existing Plus Project	2019 With Project		
7	Hamner Av. & Norco Dr./6th St.	Norco	Contribute fair share for striping a NB right turn lane	Same	No	25.1%
			Contribute fair share for modifying the traffic signal to accommodate overlap phasing for the NB and WB right turn lanes	Same	No	
				Contribute fair share for 2nd SB left turn lane	No	

[1] All recommended improvements are consistent with the general plan designations of the respective jurisdictions in which they are located.
[2] Improvements are identified as being included in the City of Eastvale DIF, Western Riverside Council of Governments (WRCOG) Transportation Uniform Mitigation Fee (TUMF) program, or the County of Riverside's Mira Loma Road and Bridge Benefit District (RBBD) Facilities List.
[3] Program improvements constructed by project may be eligible for fee credit, at discretion of City. See Table 1-5 for Fair Share Calculations.
[4] Improvements are to be constructed by the Project to facilitate site access.
[5] Recommended improvement consists of restriping to accommodate a 2nd northbound left turn lane.
[6] N/A = Not Applicable. Fair share has not been calculated for the improvements identified to be included in one of the pre-existing fee-programs as payment of fees would cover the Project's contribution to these improvements or is a Project design feature.

Table 1-4

Summary of Roadway Segment Improvements

#	Roadway Segment	Jurisdiction	Recommended Improvements		Improvements in DIF, TUMF, or RBBD[2]?	Fair Share %[3]
			Existing Plus Project	2019 With Project		
4	Hamner Avenue, between Riverboat Drive and Schleisman Road	Eastvale	None	Pay fees towards 3rd NB through lane Pay fees towards 3rd SB through lane	Yes (TUMF) Yes (TUMF)	N/A[5]
6	Hamner Avenue, between Citrus Street and Norco Drive/6th Street[6]	Eastvale, Norco	Contribute fair share for 2nd and 3rd NB through lanes Contribute fair share for 2nd and 3rd SB through lanes	Same Same	No No	26.1%

[1] All recommended improvements are consistent with the general plan designations of the respective jurisdictions in which they are located.

[2] Improvements are identified as being included in the City of Eastvale DIF, Western Riverside Council of Governments (WRCOG) Transportation Uniform Mitigation Fee (TUMF) program, or the County of Riverside's Mira Loma Road and Bridge Benefit District (RBBD) Facilities List.

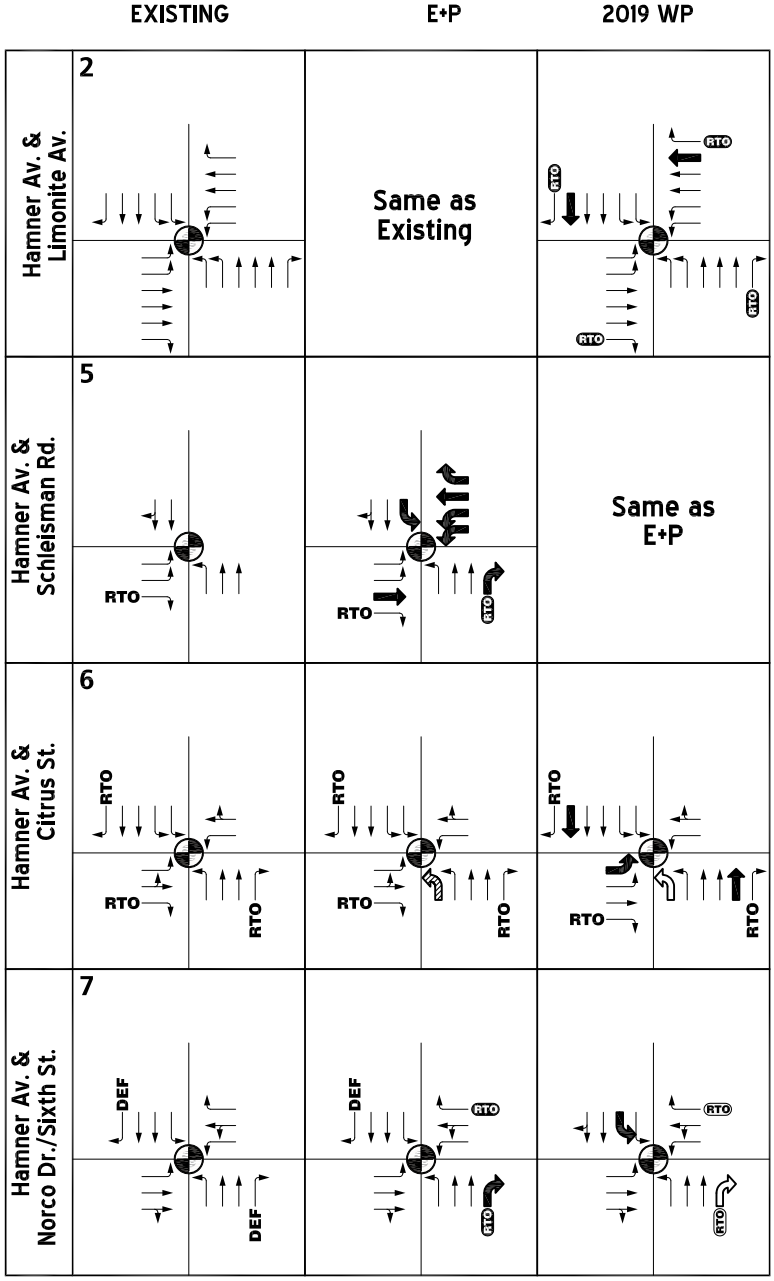
[3] Program improvements constructed by project may be eligible for fee credit, at discretion of City. See Table 1-6 for Fair Share Calculations.

[4] A portion of the improvements are to be constructed by the Project as part of site adjacent roadway improvements.

[5] N/A = Not Applicable. Fair share has not been calculated for the improvements identified to be included in one of the pre-existing fee-programs as payment of fees would cover the Project's contribution to these improvements.

[6] This roadway segment will be widened to 6 lanes between Citrus Street and Detroit Street through SB132.

EXHIBIT 1-2: SUMMARY OF RECOMMENDED IMPROVEMENTS



LEGEND:

- = TRAFFIC SIGNAL
- RTO = RIGHT TURN OVERLAP
- DEF = DEFACTO RIGHT TURN
- = EXISTING LANE
- = RESTRIPE ONLY
- = CURRENT SCENARIO IMPROVEMENT
- = PREVIOUS PHASE IMPROVEMENT
- RTO = PREVIOUS PHASE IMPROVEMENT
- RTO = CURRENT SCENARIO IMPROVEMENT

1.5 LOCAL AND REGIONAL FUNDING MECHANISMS

Transportation improvements within the City of Eastvale are funded through a combination of direct project mitigation, development impact fee programs or fair share contributions, such as the City of Eastvale DIF, County of Riverside TUMF, and Mira Loma RBBD programs. Identification and timing of needed improvements is generally determined through local jurisdictions based upon a variety of factors. Funds collected for the City's DIF, County TUMF, or RBBD fee programs are applicable to improvements located within the City of Eastvale or County of Riverside only.

1.5.1 CITY OF EASTVALE DEVELOPMENT IMPACT FEE PROGRAM

The City of Eastvale has prepared a Nexus Study to establish fees which has been adopted by the City as of July 1, 2012. It is our understanding that the DIF program includes widening of the Hellman Avenue bridge over Cucamonga Creek and the signalization of up to twenty-three intersections. The fee for commercial/retail use is $1,966 per thousand square feet of gross floor area and $654 per thousand square feet of gross floor area as of July 1, 2017. In addition, an annual inflation adjustment is considered each year. Fee credits and reimbursements will be available as part of the Fee Program and will only be given to projects that are identified as a Fee Program facility. The Project's Conditions of Approval will establish and clarify eligibility.

The timing to use the DIF 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. The City also uses this data to ensure that the improvements listed on the facilities list are constructed before the LOS falls below the LOS performance standards adopted by the City. In this way, the improvements are constructed before the LOS falls below the City's LOS performance thresholds.

The Project Applicant will be subject to the City's DIF fee program, and will pay the requisite City DIF fees at the rates then in effect pursuant to the City's ordinance.

1.5.2 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 is $10.49 per square foot of gross floor area for commercial/retail uses and $2.19 per square foot of gross floor area for Class A and Class B office uses (applicable to the proposed Project). In addition, an annual inflation adjustment is considered each year in January. In this

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

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.

1.5.3 MIRA LOMA ROAD AND BRIDGE BENEFIT DISTRICT (RBBD) PROGRAM

Similar to other regions within Riverside County, the City of Eastvale is anticipated to experience substantial growth. Extensive improvements are necessitated by new development within the region. In particular, Riverside County recognized the impact of this growth on the vicinity of the study area when it formed the Mira Loma RBBD. The proposed Project lies within Zone A of the Mira Loma RBBD. Zone A is generally bounded by Philadelphia Avenue to the north, Milliken Avenue to the west, Bain Street to the east, and the Cantu-Galleano Ranch Road to the south. As discussed above, the facilities improvements that will be ultimately constructed as a result of the collection of these fees and assessments are significant. The fee for commercial retail use is $6,914 per gross acre within Zone E. They include:

Mira Loma Road and Bridge Benefits District (Zone E):

- Limonite Avenue interchange at the I-15 Freeway and between Hamner Avenue and Wineville Avenue
- Bellegrave Avenue overcrossing improvement at the I-15 Freeway
- Hamner Avenue landscaped median between Bellegrave Avenue and the Santa Ana River
- Limonite Avenue landscaped median between Hamner Avenue and Wineville Avenue

1.5.4 FAIR SHARE CONTRIBUTION

Project mitigation may include a combination of construction of specific improvements or payment of a fair share contribution toward future improvements. Improvements constructed by development may be eligible for a fee credit or reimbursement through the program where appropriate (to be determined at the City's discretion). When off-site improvements are identified with a minor share of responsibility assigned to proposed development, the approving jurisdiction may elect to collect a fair share contribution or require the development to construct improvements. Detailed fair share calculations are shown on Table 1-5 for study area intersections and on Table 1-6 for the applicable study area roadway segments.

Table 1-5

Project Fair Share Calculations at Intersections

#	Intersection	Existing (2017)	Project	2019 With Project	Total New Traffic	Project % of New Traffic[1]
6	Hamner Av. & Citrus Av.					
	AM:	2,967	247	3,689	722	**34.2%**
	PM:	2,748	270	3,800	1,052	25.7%
7	Hamner Av. & Norco Dr./6th St.					
	AM:	3,146	144	3,720	574	**25.1%**
	PM:	3,397	171	4,224	827	20.7%

[1] Project percentage of new traffic between Existing (2017) and Opening Year Cumulative (2019) traffic conditions. Highest fair share percentage is highlighted.

Table 1-6

Project Fair Share Calculations along Roadway Segments

#	Roadway Segment	Existing (2017)	Project	2019 With Project	Total New Traffic	Project % of New Traffic[1]
6	Hamner Avenue, between Citrus Street and Norco Drive/6th Street					
	AM:	2,425	143	2,973	548	**26.1%**
	PM:	2,365	97	3,161	796	12.2%

[1] Project percentage of new traffic between Existing (2017) and Opening Year Cumulative (2019) traffic conditions. Highest fair share percentage is highlighted.

1.6 ON-SITE ROADWAY AND SITE ACCESS IMPROVEMENTS

This section summarizes Project site access and on-site circulation recommendations. 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 are required to be in place prior to occupancy.

Regional access to the Project is provided by the I-15 Freeway via Limonite Avenue or 6th Street. Access to the Project is unknown at this time as a site plan is not currently available. However, for the purposes of this analysis, access to the Project site is assumed to be provided by an eastern extension of Schleisman Avenue, east of Hamner Avenue. Additional restricted access points may also be provided along Hamner Avenue, however, only a single entry has been evaluated in order to conduct a conservative analysis and overstate as opposed to understate potential impacts at the primary entrance. The Hamner Avenue & Riverboat Drive site is assumed to take access via Riverboat Drive to the west of Hamner Avenue.

1.7.1 SITE ADJACENT ROADWAY AND SITE ACCESS IMPROVEMENTS

The recommended site-adjacent roadway improvements for the Project are described below. These improvements need to be incorporated into the Project description prior to Project approval or imposed as conditions of approval as part of the Project approval. Construction of on-site and site adjacent improvements are recommended to occur in conjunction with adjacent Project development activity or as needed for Project access purposes.

Hamner Avenue – Hamner Avenue is a north-south oriented roadway located along the western boundary of the Project. Construct Hamner Avenue from the Project's northern boundary to the Project's southern boundary at its ultimate half-section width as a 6-lane Urban Arterial Highway (ultimate 152-foot right-of-way) north of Schleisman Road and as a 4-lane Major Highway (ultimate 118-foot right-of-way) in compliance with the circulation recommendations found in the City of Eastvale's General Plan.

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

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 Eastvale sight distance standards at the time of preparation of final grading, landscape and street improvement plans.

1.7.2 QUEUING ANALYSIS AT THE PROJECT DRIVEWAYS

A queuing analysis was conducted along the site adjacent roadway of Hamner Avenue for Opening Year Cumulative (2019) traffic conditions to determine the turn pocket storage lengths necessary to accommodate near term 95th percentile queues. The analysis was conducted for both the weekday AM and weekday PM peak hours. The storage length recommendations for the turning movements at the Project are discussed below as part of the intersection improvements. The Opening Year Cumulative (2019) queuing results are provided in Appendix 1.2 of this report.

The traffic modeling and signal timing optimization software package Synchro (Version 9.1) has been utilized to assess queues at the Project access points. Synchro is a macroscopic traffic software program that is based on the signalized and unsignalized intersection capacity analyses as specified in the HCM. Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length in Synchro. The LOS and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network.

SimTraffic is designed to model networks of signalized and unsignalized intersections, with the primary purpose of checking and fine-tuning signal operations. SimTraffic uses the input parameters from Synchro to generate random simulations. The 95th percentile queue is not necessarily ever observed; it is simply based on statistical calculations (or Average Queue plus 1.65 standard deviations). However, the average queue is the average of all the two-minute maximum queues observed by SimTraffic. The maximum back of queue observed for every two-minute period is recorded by SimTraffic.

SimTraffic has been utilized to assess peak hour queuing at the site access driveways for Opening Year Cumulative (2019) With Project traffic conditions. The random simulations generated by SimTraffic have been utilized to determine the 50th and 95th percentile queue lengths observed for each turn lane. A SimTraffic simulation has been recorded 5 times, during the weekday AM and weekday PM peak hours, and has been seeded for 60-minute periods with 60-minute recording intervals.

Hamner Avenue & Riverboat Drive (#4) – Maintain the existing traffic signal and the following existing lane geometrics:

Northbound Approach: One left turn lane with 160-feet of storage, three through lanes, and one defacto right turn lane.

Southbound Approach: One left turn lane with 200-feet of storage, two through lanes, and one southbound right turn lane.

Eastbound Approach: One left turn lane with 140-feet of storage and one shared through-right turn lane.

Westbound Approach: One left turn lane with 150-feet of storage and one shared through-right turn lane.

Hamner Avenue & Schleisman Road (#5) – Maintain the existing traffic signal and construct the intersection with the following lane geometrics:

Northbound Approach: One left turn lane with 300-feet of storage, 2 through lanes, and a right turn lane with 200-feet of storage. The northbound right turn lane should accommodate overlap phasing.

Southbound Approach: One left turn lane with 300-feet of storage, one through lane and one shared through-right turn lane.

Eastbound Approach: Two left turn lanes with 300-feet of storage, one through lane, and one right turn lane. The eastbound right turn lane currently accommodates overlap phasing.

Westbound Approach: Two left turn lanes with 300-feet of storage, one through lane and one right turn lane.

1.8 PEDESTRIAN AND BICYCLE ACCOMMODATIONS

1.8.1 PEDESTRIAN ACCOMMODATIONS

The Project will construct its ultimate half-section of Hamner Avenue, including curb and gutter and sidewalk improvements, along its frontage.

1.8.2 BICYCLE ACCOMMODATIONS

Based on the City's currently Bicycle Master Plan (adopted April 2016), there is an existing Class I bike facility along Hamner Avenue south and southwest of Citrus Avenue and a Class II bike facility on Hamner Avenue north of Schleisman Avenue.

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2 METHODOLOGIES

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

2.1 LEVEL OF SERVICE

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

2.2 INTERSECTION CAPACITY ANALYSIS

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. LOS analysis was conducted to determine existing traffic conditions using the Intersection Capacity Utilization (ICU) methodology for signalized study intersections, with the exception of the Caltrans ramp-to-arterial intersections. The 2010 Highway Capacity Manual (HCM) methodology was also used to determine peak hour delay and associated LOS for all study area intersections. (4) In addition, in accordance with Caltrans' guidelines, 2010 HCM methodology was used for all State study intersections. The HCM 2010 methodology expresses the LOS at an intersection in terms of average control delay time for the various intersection approaches. The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

City of Eastvale, City of Norco, and City of Jurupa Valley

The City of Eastvale, City of Norco, and City of Jurupa Valley require signalized intersection operations analysis based on the methodology described in the HCM. (4) 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.

TABLE 2-1: SIGNALIZED INTERSECTION LOS THRESHOLDS

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

Source: HCM 2010

The traffic modeling and signal timing optimization software package Synchro (Version 9.1) has been utilized to analyze signalized intersections within the City of Eastvale and City of Ontario. Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the HCM. Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length. The level of service and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network.

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

The City of Eastvale also requires signalized intersections to be evaluated through ICU analysis which compares the peak hour traffic volumes to intersection capacity. Lane capacities of 1,600 vehicles per hour of green time have been assumed for the ICU calculations. 0.05 of V/C assumed representing 5 seconds of delay for the yellow and all-red signal indication and inherent vehicle

delay between cycles with an assumed signal cycle of 100 seconds. The ICU LOS definitions based on V/C ratio are presented in Table 2-2.

TABLE 2-2 INTERSECTION CAPACITY UTILIZATION (ICU) LOS DEFINITIONS

Level of Service	Critical Volume to Capacity Ratio
A	0.00 - 0.60
B	0.61 - 0.70
C	0.71 - 0.80
D	0.81 - 0.90
E	0.91 - 1.00
F	>1.00

California Department of Transportation (Caltrans)

Per the Caltrans *Guide for the Preparation of Traffic Impact Studies*, the traffic modeling and signal timing optimization software package Synchro (Version 9.1) has also been utilized to analyze signalized intersections under Caltrans' jurisdiction, which include interchange to arterial ramps (i.e. I-15 Freeway at Limonite Avenue and 6th Street). (2) Signal timing for the freeway arterial-to-ramp intersections have been obtained from Caltrans District 8 and were utilized for the purposes of this analysis.

2.2.2 UNSIGNALIZED INTERSECTIONS

The City of Eastvale, City of Norco, and City of Jurupa Valley require the operations of unsignalized intersections be evaluated using the methodology described in the HCM. (4) The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-3).

TABLE 2-3: UNSIGNALIZED INTERSECTION LOS THRESHOLDS

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

Source: HCM 2010

At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. For all-way stop controlled intersections, LOS is computed for the intersection as a whole.

2.3 ROADWAY SEGMENT CAPACITY ANALYSIS

Roadway segment operations have been evaluated using the daily roadway segment capacities for each type of roadway as summarized in Table 2-4.

TABLE 2-4: ROADWAY SEGMENT CAPACITIES

Roadway Lanes	City of Eastvale/City of Jurupa Valley/ City of Norco[1]
4-Lane Urban Arterial/Major Highway	35,900
6-Lane Urban Arterial	53,900
8-Lane Urban Arterial	71,800

[1] Based on LOS E maximum two-way traffic volume (ADT) thresholds from the City of Eastvale General Plan (Table C-1). The same capacities have been utilized for the City of Jurupa Valley and City of Norco.

These roadway capacities are "rule of thumb" estimates for planning purposes and are affected by such factors as intersections (spacing, configuration and control features), degree of access control, roadway grades, design geometrics (horizontal and vertical alignment standards), sight distance, vehicle mix (truck and bus traffic) and pedestrian bicycle traffic. As such, where the average daily volume (ADT) based roadway segment analysis indicates a deficiency (unacceptable LOS), a review of the more detailed peak hour intersection analysis and progression analysis are undertaken. The more detailed peak hour intersection analysis explicitly accounts for factors that affect roadway capacity. Therefore, for the purposes of this analysis, roadway segment widening is typically only recommended if the peak hour intersection analysis indicates the need for additional through lanes.

2.4 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. Traffic signal warrant analyses were not prepared for the purposes of this TIA as all of the existing study area intersections are currently signalized.

2.5 FREEWAY OFF-RAMP QUEUING ANALYSIS

The study area for this TIA includes the freeway-to-arterial interchanges of the I-15 Freeway at Limonite Avenue and 6th Street off-ramps. Consistent with Caltrans requirements, the 95th percentile queuing of vehicles has been assessed at the off-ramps to determine potential queuing impacts at the freeway ramp intersections on Limonite Avenue and 6th Street. 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 95th percentile queue resulting from the Synchro progression analysis. There are two footnotes which appear on the Synchro outputs. One footnote indicates if the 95th percentile cycle exceeds capacity. Traffic is simulated for two complete cycles of the 95th percentile traffic

in Synchro in order to account for the effects of spillover between cycles. In practice, the 95th 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 95th percentile queue is metered by an upstream signal. In many cases, the 95th percentile queue will not be experienced and may potentially be less than the 50th percentile queue due to upstream metering. If the upstream intersection is at or near capacity, the 50th 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 95th percentile queue has been reported in the tables, the 50th percentile queue can be found in the appendix alongside the 95th percentile queue for each ramp location. The 50th percentile maximum queue is the maximum back of queue on a typical cycle during the peak hour, while the 95th percentile queue is the maximum back of queue with 95th percentile traffic volumes during the peak hour. In other words, if traffic were observed for 100 cycles, the 95th percentile queue would be the queue experienced with the 95th busiest cycle (or 5% of the time). The queue length reported is for the lane with the highest queue in the lane group. The 50th percentile or average queue represents the typical queue length for peak hour traffic conditions, while the 95th percentile queue is derived from the average queue plus 1.65 standard deviations. The 95th percentile queue is not necessarily ever observed, it is simply based on statistical calculations.

2.6 MINIMUM ACCEPTABLE LEVELS OF SERVICE (LOS) AND INTERSECTION DEFICIENCY CRITERIA

Minimum Acceptable Levels of Service (LOS) and associated definitions of intersection deficiencies has been obtained from each of the applicable surrounding jurisdictions.

2.6.1 CITY OF EASTVALE

The City of Eastvale General Plan Policy C-10 sets a standard of LOS C with LOS D as acceptable in commercial and employment areas and at intersections of any combination of major highways, urban arterials, secondary highways, or freeway ramps. Based on this criterion, where feasible, LOS D is the minimum acceptable LOS at each of the study intersections within the City of Eastvale.

Where the ADT based roadway segment analysis indicates a deficiency (unacceptable LOS), a review of the more detailed peak hour intersection analysis is undertaken. The more detailed peak hour intersection analysis explicitly accounts for factors that affect roadway capacity. While this traffic study recognizes LOS C is the City's target LOS for roadway segments, a review of the more detailed peak hour intersection analysis is necessary to determine whether roadway widening along the segment is necessary. For the purposes of this analysis, if the peak hour intersection operations on either side of the roadway segment are anticipated to operate at LOS D or better, then additional roadway segment widening is not recommended. Therefore, for the purposes of this analysis, roadway segment widening is typically only recommended if the peak hour intersection analysis indicates the need for additional through lanes. Furthermore, it is likely that a roadway segment can have a volume-to-capacity ratio of up to 1.10 if the adjacent

intersections are anticipated to operate at acceptable LOS, without the need for additional widening. As the LOS threshold for the study area intersections is LOS D, LOS D has also been utilized as the minimum LOS criteria for roadway segments for the purposes of this analysis.

2.6.2 CITY OF JURUPA VALLEY AND CITY OF NORCO

For the study intersections located in the City of Jurupa Valley and City of Norco, LOS D is also the minimum acceptable condition that should be maintained during the peak commute hours.

2.6.3 CALTRANS

Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State highway system (SHS) facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. If an existing State highway facility is operating at less than this target LOS, the existing LOS should be maintained. In general, the region-wide goal for an acceptable LOS on all freeways, roadway segments, and intersections is LOS D. Consistent with the City of Eastvale LOS threshold of LOS D, LOS D will be used as the target LOS for freeway ramp-to-arterial intersections.

2.7 THRESHOLDS OF SIGNIFICANCE

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

2.7.1 INTERSECTIONS

Project related significant impacts will be identified by comparing the "Without Project" condition to the "With Project" condition based on the following criteria:

- If the LOS deteriorates from acceptable LOS (LOS D or better) to unacceptable LOS (LOS E or F); or
- If the intersection is already operating at an unacceptable LOS (LOS E or F) in "Without Project" conditions and the addition of Project traffic increases the delay by more than 5.0 seconds.

Cumulative traffic impacts are created as a result of a combination of the proposed Project together with other future developments contributing to the overall traffic impacts requiring additional improvements to maintain acceptable level of service operations with or without the Project. A Project's contribution to a significant cumulative 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 its cumulatively considerable contribution to the impact.

In the event that an intersection is operating at or is forecast to operate at a deficient LOS, the Congestion Management Program (CMP) guidelines have defined a series of steps to be completed to determine the Project's contribution to the deficiency of intersections, which has been applied to both CMP and non-CMP study area intersections. The steps are as follows:

- Determine the mitigation measures necessary to achieve an acceptable service level,
- Calculate the Project's share in the future traffic volume projections for the peak hours,

- Estimate the cost to implement recommended mitigation measures, and
- Calculate the Project's fair-share contribution to mitigate the Project's traffic impacts

2.7.2 ROADWAY SEGMENTS

Project related significant impacts will be identified by comparing the "Without Project" condition to the "With Project" condition based on the following criteria:

- If the LOS deteriorates from acceptable LOS (LOS D or better) to unacceptable LOS (LOS E or F); or
- If the roadway segment is already operating at an unacceptable LOS (LOS E or F) in "Without Project" conditions and the addition of Project traffic increases the volume-to-capacity ratio by 0.01 or greater.

2.7.3 CALTRANS FACILITIES

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

- The traffic study finds that the LOS of an intersection will degrade from D or better to E or F.
- The traffic study finds that the project will exacerbate an already deficient condition by contributing 50 or more peak hour trips.

2.8 PROJECT FAIR SHARE CALCULATION METHODOLOGY

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

Project Fair Share % = Project Traffic / (2019 With Project Total Traffic – Existing Traffic)

The Project fair share contribution calculations are presented in Section 1.5 *Local and Regional Funding Mechanisms* of this TIA.

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3 AREA CONDITIONS

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

3.1 EXISTING CIRCULATION NETWORK

Pursuant to the agreement with City of Eastvale staff (Appendix 1.1), the study area includes a total of 11 existing and future intersections as shown previously on Exhibit 1-1. 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 EASTVALE GENERAL PLAN CIRCULATION ELEMENT

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

The study area roadway that is classified as a 6-lane Urban Arterial is identified as having three lanes of travel in each direction and a 14-foot curbed or painted median. The following study area roadways within the City of Eastvale are classified as a 6-lane Urban Arterial:

- Schleisman Road
- Hamner Avenue
- Limonite Avenue

The study area roadway that is classified as a 4-lane Major Collector is identified as having two lanes of travel in each direction and a 12-foot painted median. The following study area roadways within the City of Eastvale are classified as a 4-lane Major Collector:

- Hamner Avenue, south of Schleisman Road
- 68th Street, east of Hamner Avenue

The study area roadway that is classified as a 2-lane Secondary Collector is identified as having one lanes of travel in each direction and a painted median. The following study area roadway within the City of Eastvale is classified as a 2-lane Secondary Collector:

- Scholar Way
- Citrus Street, west of Hamner Avenue

3.3 CITY OF NORCO GENERAL PLAN CIRCULATION ELEMENT

Exhibits 3-4 and 3-5 show the City of Norco General Plan Circulation Element and roadway cross-sections, respectively.

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

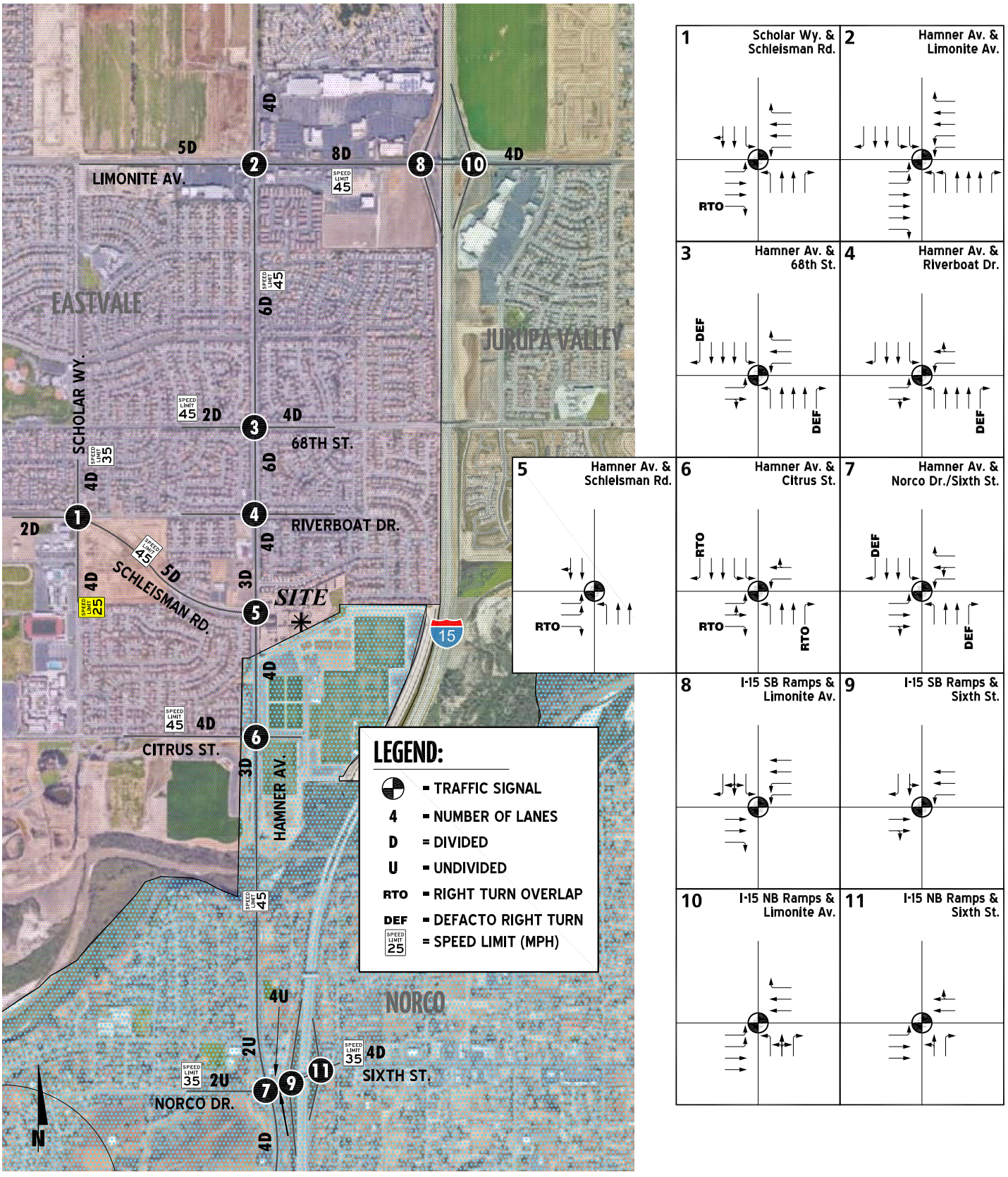
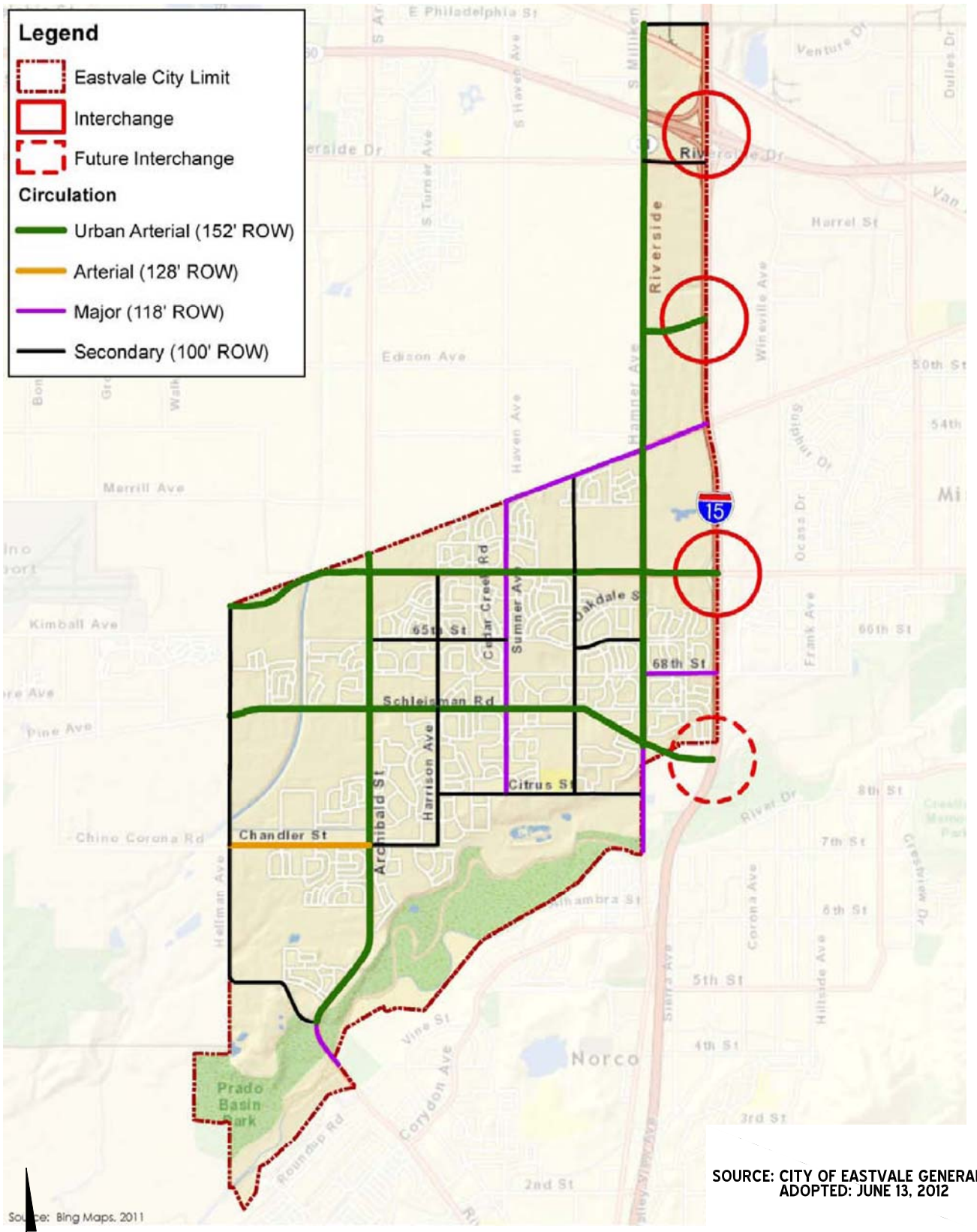
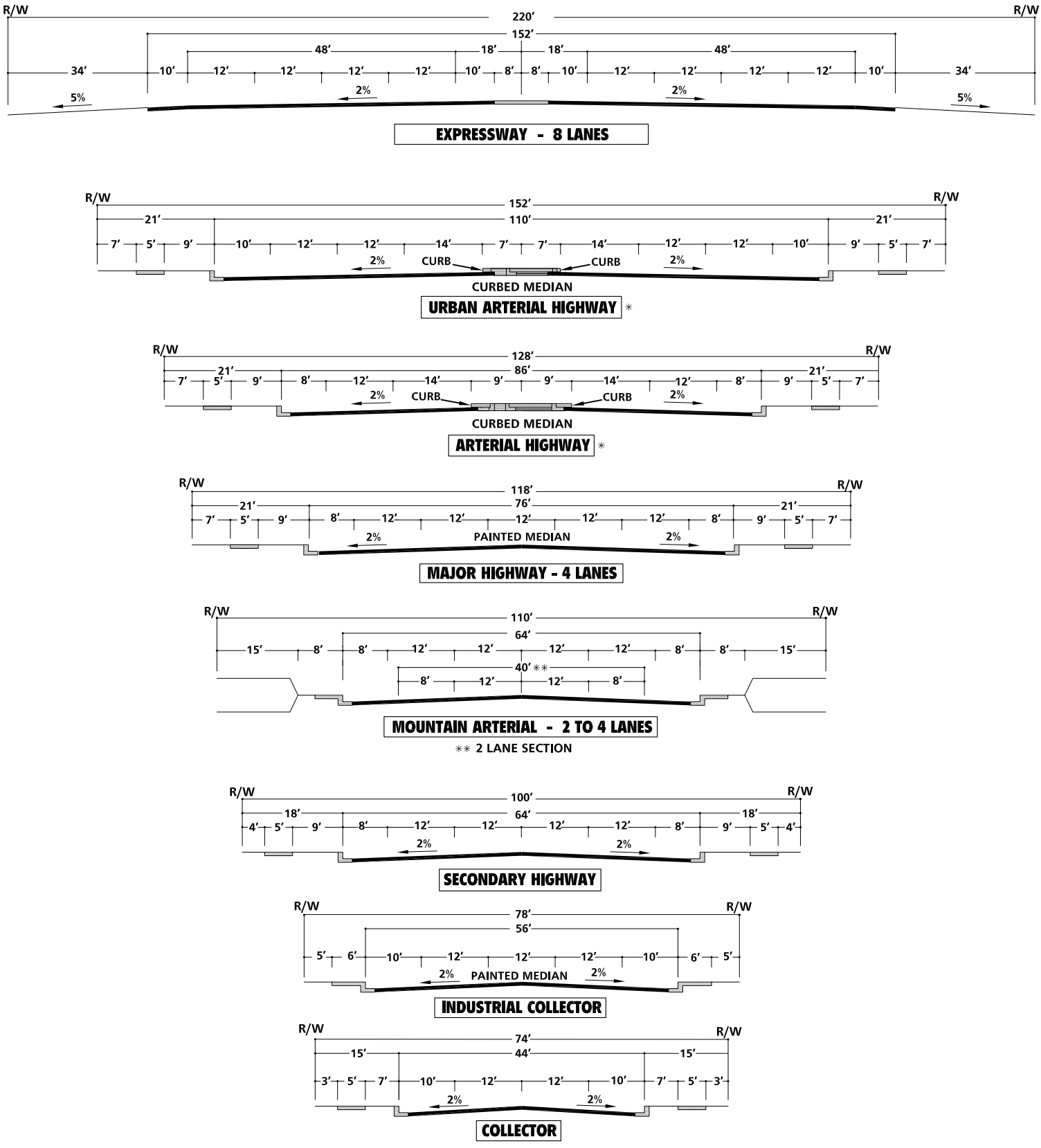


EXHIBIT 3-2: CITY OF EASTVALE GENERAL PLAN CIRCULATION ELEMENT



SOURCE: CITY OF EASTVALE GENERAL PLAN
ADOPTED: JUNE 13, 2012

EXHIBIT 3-3: CITY OF EASTVALE GENERAL PLAN ROADWAY CROSS-SECTIONS



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

NOT TO SCALE

11055 - gprcs.dwg

URBAN CROSSROADS

EXHIBIT 3-4: CITY OF NORCO GENERAL PLAN CIRCULATION ELEMENT

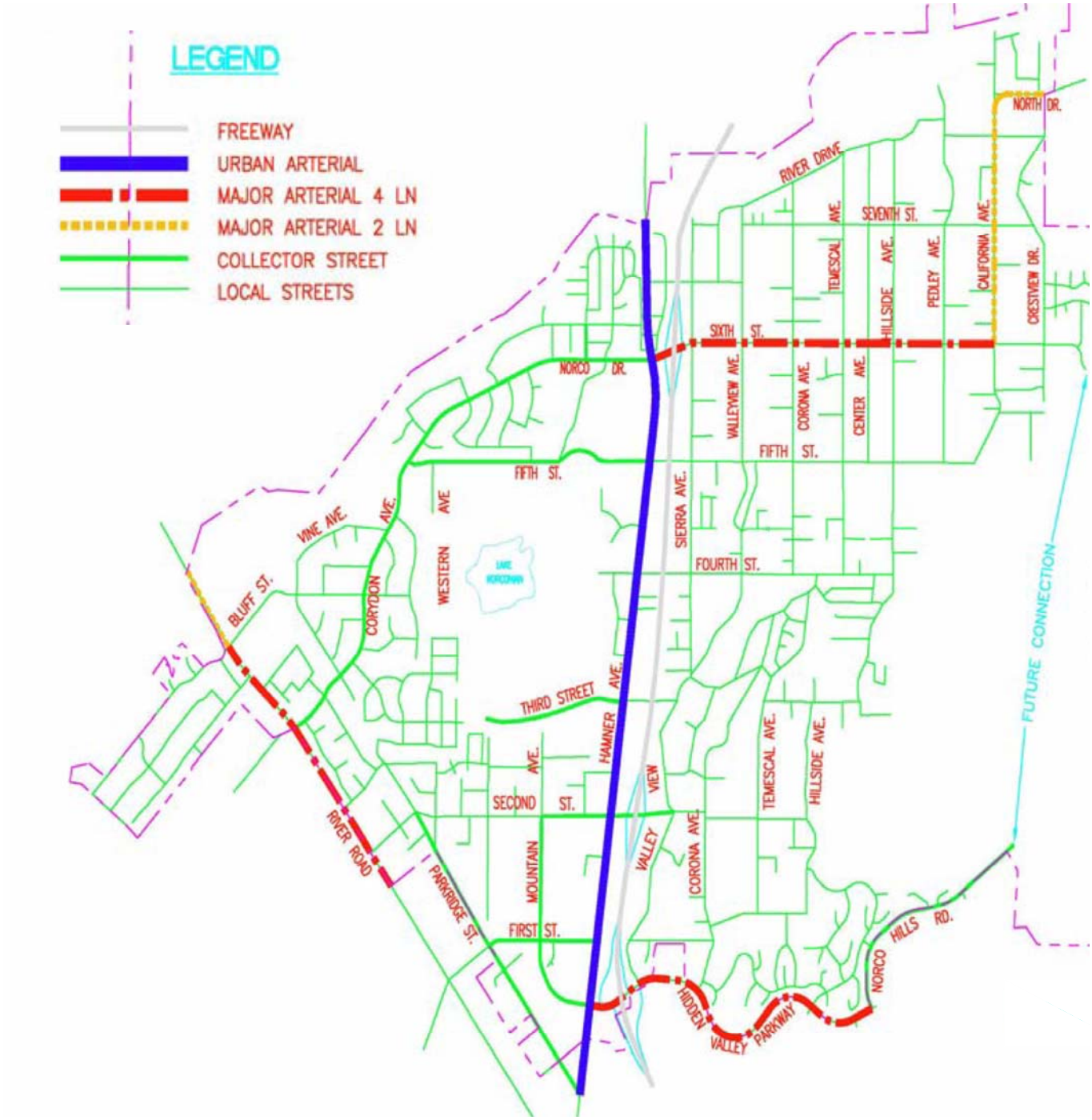
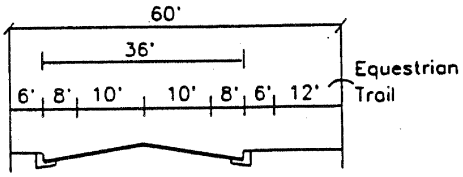
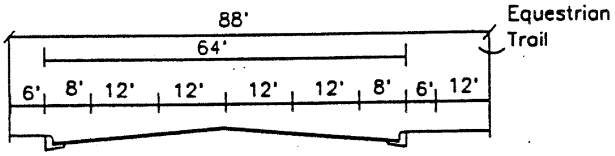


EXHIBIT 3-5: CITY OF NORCO GENERAL PLAN ROADWAY CROSS-SECTIONS

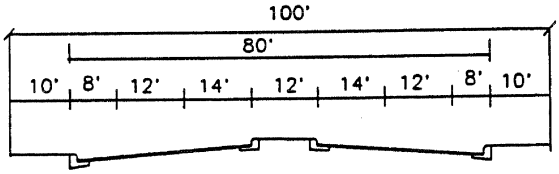
Local



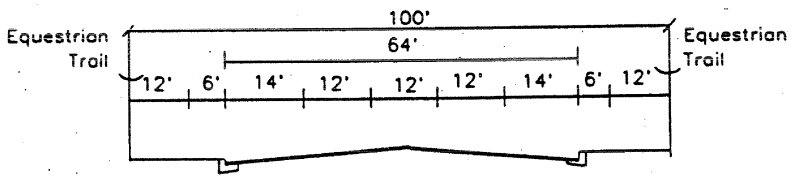
Collector



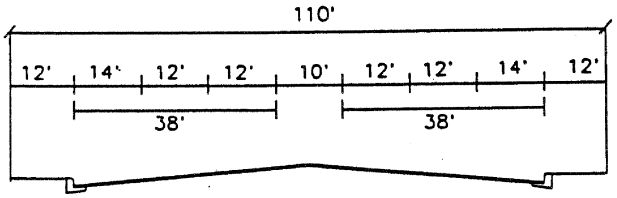
Major – 4
River Road



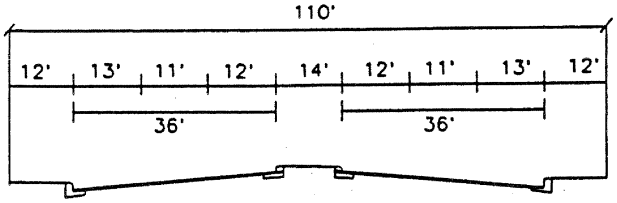
Major – 4E
Sixth Street
Hidden Valley Parkway (½)



Urban Arterial
Hamner Avenue Without Median



Urban Arterial
Hamner Avenue
With Raised Median



3.4 CITY OF JURUPA VALLEY GENERAL PLAN CIRCULATION ELEMENT

Exhibits 3-6 and 3-7 show the City of Jurupa Valley General Plan Circulation Element and roadway cross-sections, respectively.

3.5 TRANSIT SERVICE

The study area within the City of Eastvale is currently served by the Riverside Transit Authority (RTA), a public transit agency serving various jurisdictions within Riverside County. RTA Routes 3 and 29 currently serve the study area. RTA Route 3 runs along portions of Hamner Avenue, Limonite Avenue, Pats Ranch Road, 68th Street, Scholar Way, and Citrus Street. RTA Route 29 runs along portions of Limonite Avenue, Hamner Avenue, 68th Street, and Pats Ranch Road.

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. As such, it is recommended that the applicant work in conjunction with RTA to potentially provide additional bus service to the site. Existing transit routes in the vicinity of the study area are illustrated on Exhibit 3-8.

3.6 BICYCLE, EQUESTRIAN, & PEDESTRIAN FACILITIES

Field observations conducted in June 2017 indicate nominal pedestrian and bicycle activity within the study area. Exhibit 3-9 illustrates the City of Eastvale bikeway systems. Class II bike lanes exist along Hamner Avenue between Limonite Avenue and Schleisman Road and along 65th Street, west of Hamner Avenue. There is also a multi-use path (Class I) located south on Hamner Avenue and westward, just south of Citrus Street along the Santa Ana River. Exhibit 3-10 illustrates the City of Jurupa Valley trails and bikeway system, which shows a Class II bike lane along Limonite Avenue. Existing pedestrian facilities within the study area are shown on Exhibit 3-11.

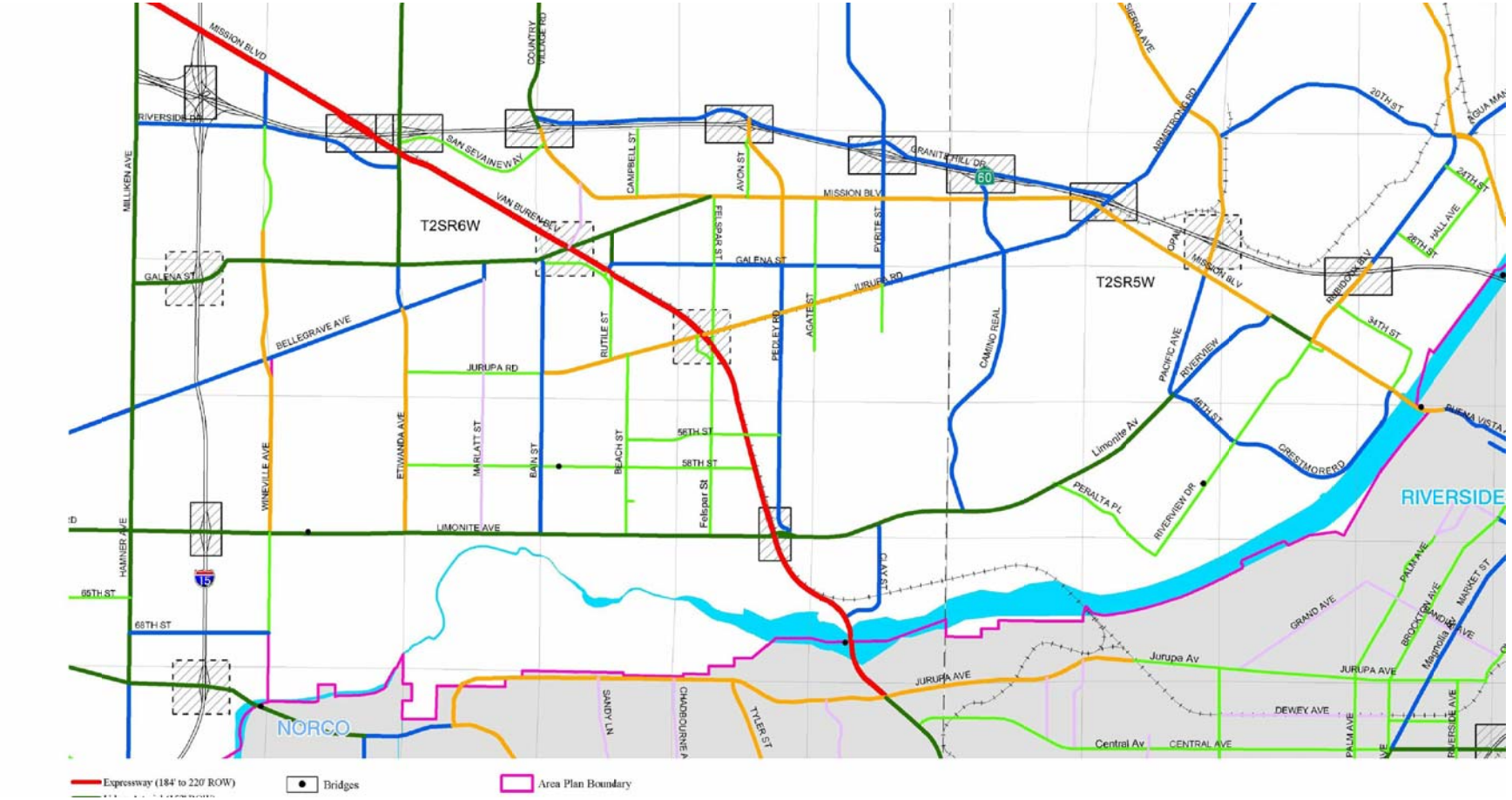
3.7 EXISTING (2017) TRAFFIC COUNTS

The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions using traffic count data collected in May of 2017 while local schools were still in session. The following peak hours were selected for analysis:

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

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

EXHIBIT 3-6: CITY OF JURUPA VALLEY GENERAL PLAN CIRCULATION ELEMENT



Expressway (184' ROW)
Urban Arterial (152' ROW)
Arterial (128' ROW)
Major (118' ROW)
Secondary (100' ROW)
Collector (74' ROW)
Mountain Arterial (110' ROW)
Freeway
Railroad

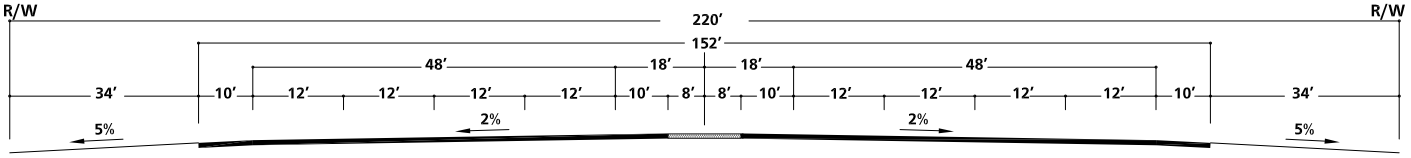
Bridges
Moreno Valley to San Bernardino Corridor Alternatives
Hemet to Corona/Lake Elsinore Corridor Alternatives
SR-79 Re-alignment Alternatives
Proposed Interchange
Existing Interchange

Area Plan Boundary
Township
Section
Water
City

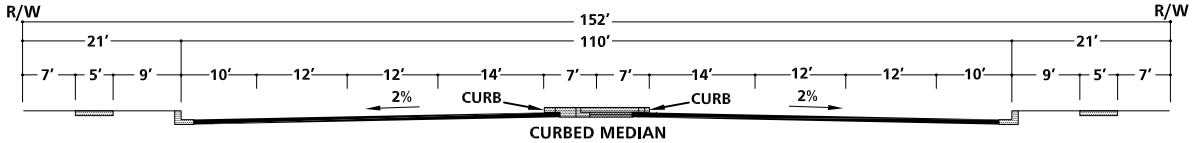
N

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

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

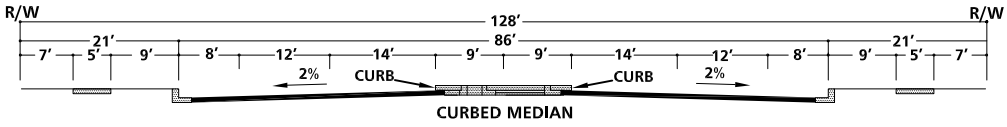


EXPRESSWAY - 8 LANES



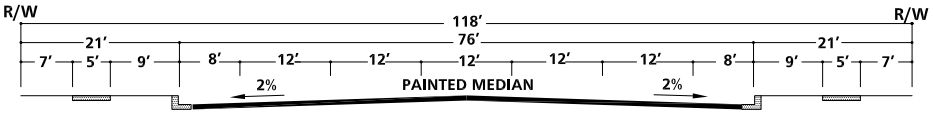
CURBED MEDIAN

URBAN ARTERIAL HIGHWAY ✳

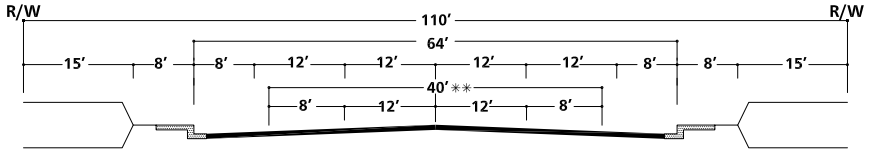


CURBED MEDIAN

ARTERIAL HIGHWAY ✳

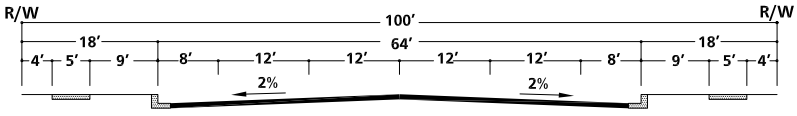


MAJOR HIGHWAY - 4 LANES

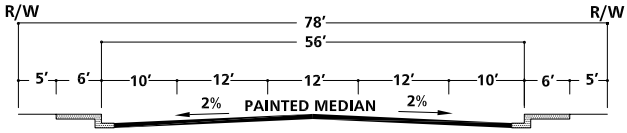


MOUNTAIN ARTERIAL - 2 TO 4 LANES

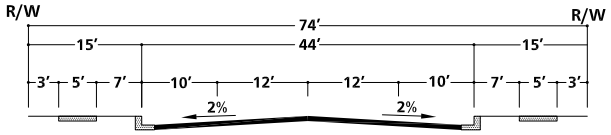
✳✳ 2 LANE SECTION



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

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URBAN CROSSROADS

EXHIBIT 3-8: EXISTING TRANSIT ROUTES

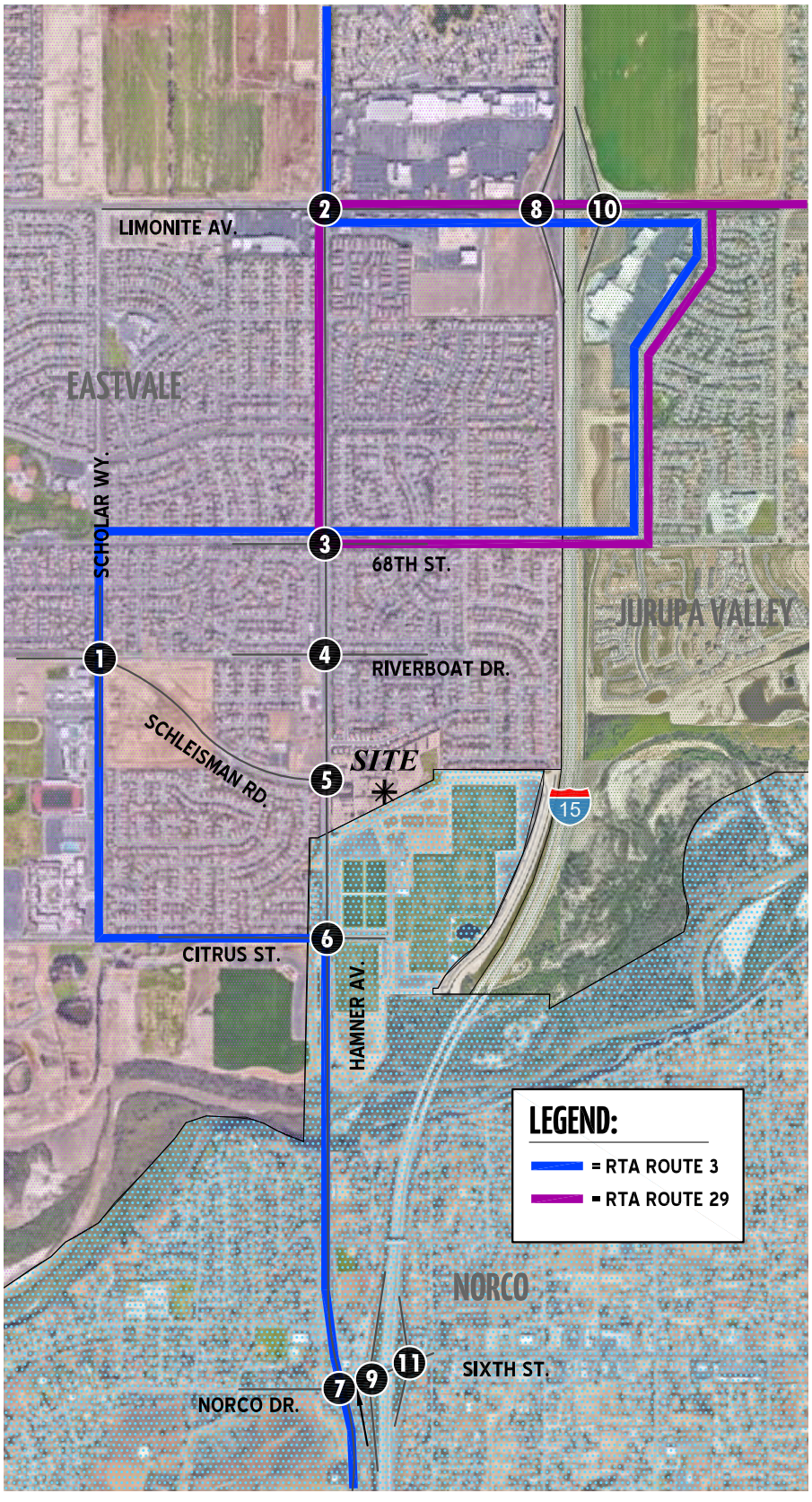
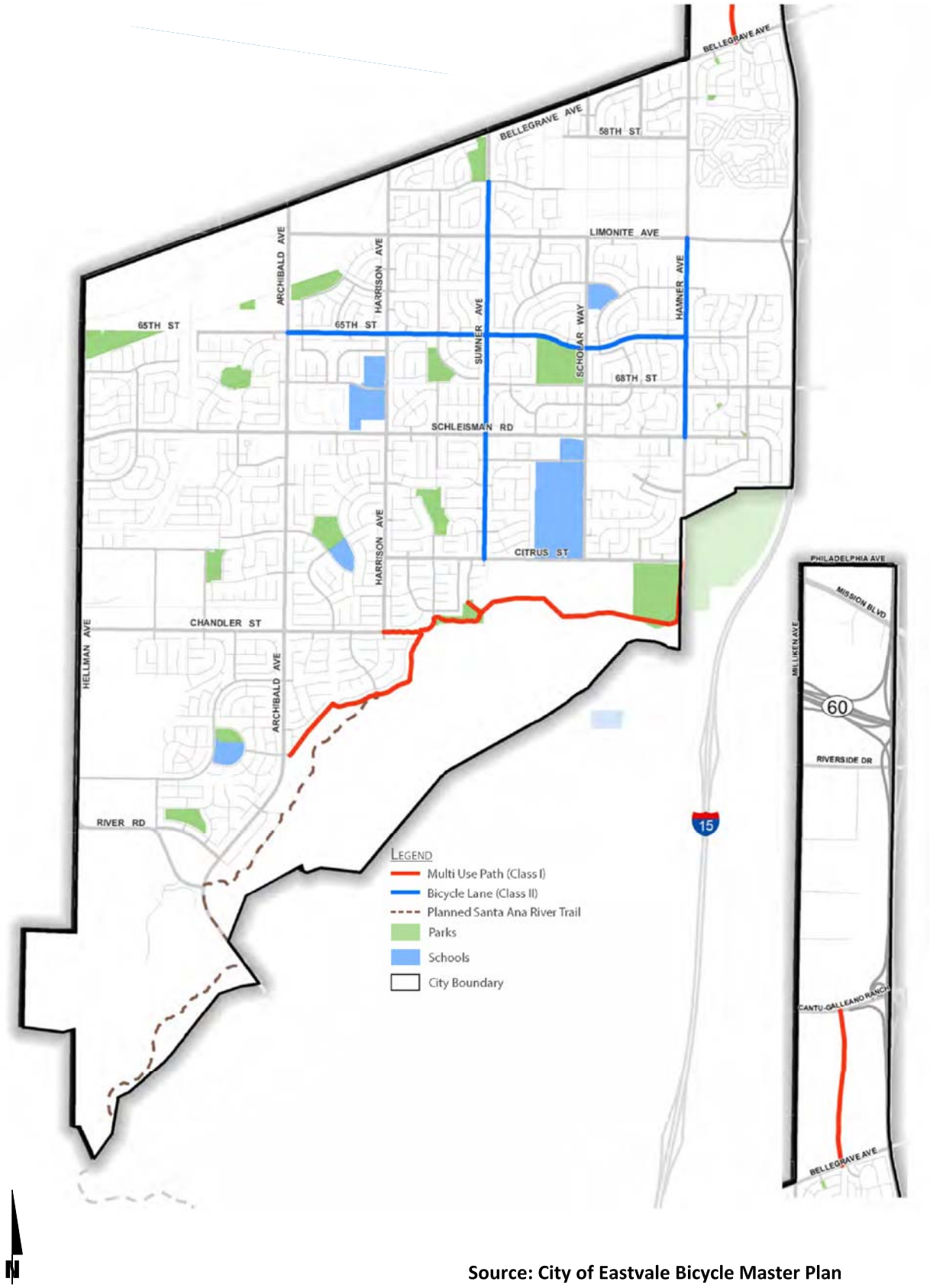


EXHIBIT 3-9: EASTVALE BICYCLE FACILITIES MAP



Source: City of Eastvale Bicycle Master Plan

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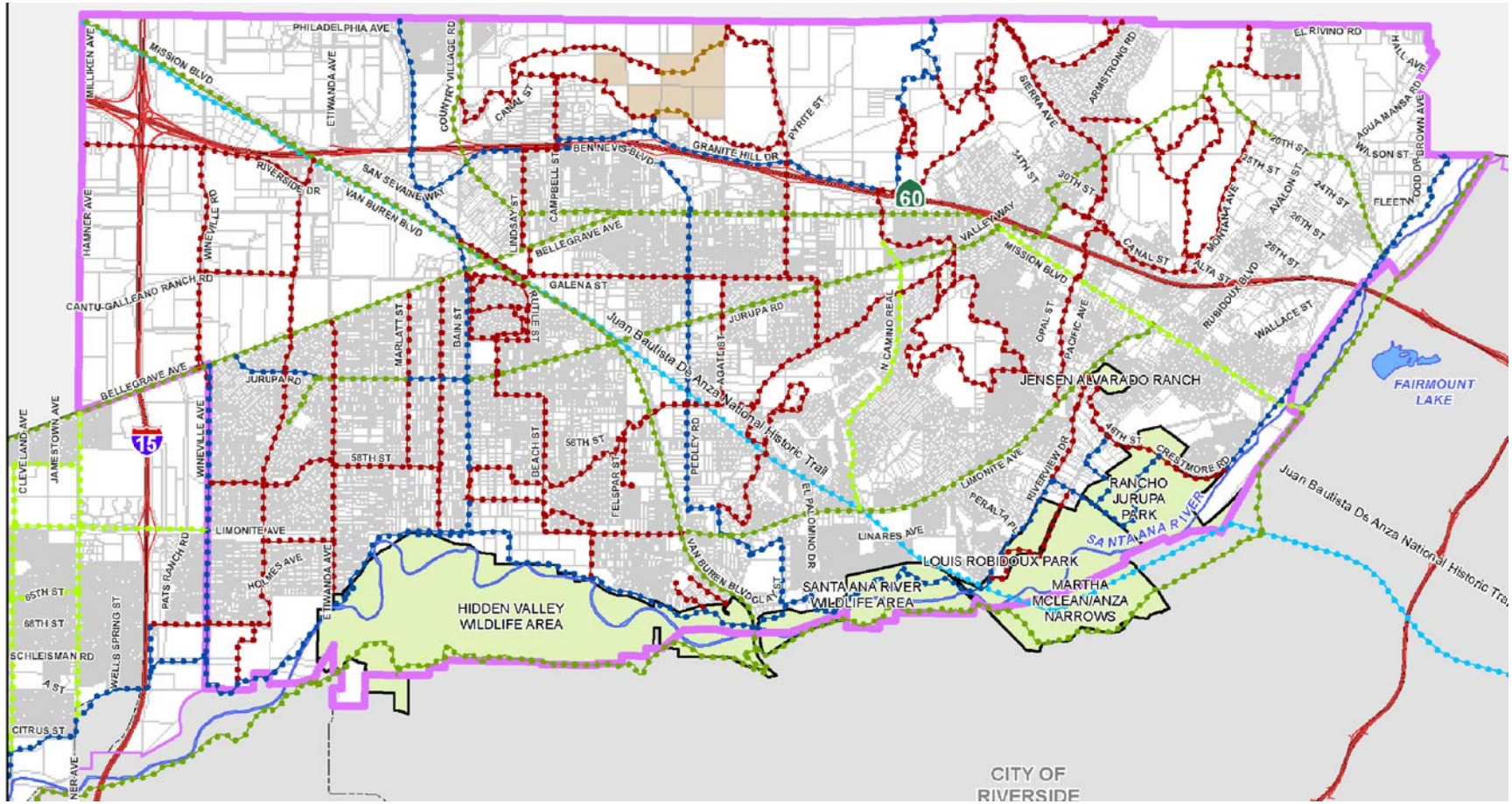
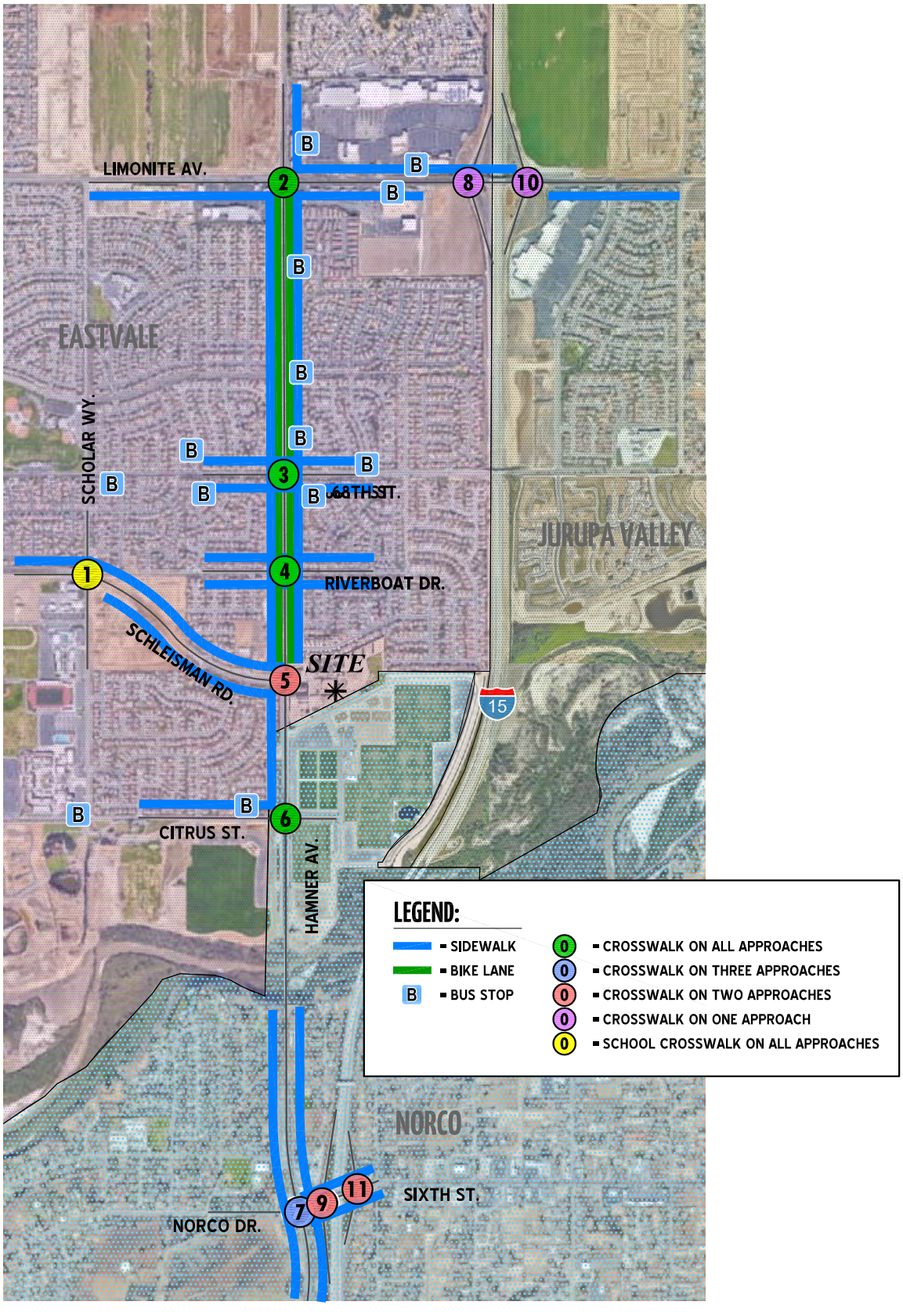
EXHIBIT 3-10: CITY OF JURUPA VALLEY TRAILS AND BIKEWAY SYSTEM



URBAN CROSSROADS

EXHIBIT 3-11: EXISTING PEDESTRIAN FACILITIES



Existing weekday ADT volumes are shown on Exhibit 3-12. Where actual 24-hour tube count data was not available, Existing ADT volumes were based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg:

Weekday PM Peak Hour (Approach Volume + Exit Volume) x 14.7782 = Leg Volume

A comparison of the PM peak hour and daily traffic volumes of various roadway segments within the study area indicated that the peak-to-daily relationship is approximately 6.77 percent. As such, the above equation utilizing a factor of 14.7782 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 6.77 percent (i.e., 1/0.0677 = 14.7782) and was assumed to sufficiently estimate average daily traffic (ADT) volumes for planning-level analyses. Existing weekday AM and weekday PM peak hour intersection volumes (in PCE) are also shown on Exhibit 3-12.

3.8 INTERSECTION OPERATIONS ANALYSIS

Existing peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.2 *Intersection Capacity Analysis* of this report. The intersection operations analysis results are summarized in Table 3-1, which indicates that all existing study area intersections are currently operating at acceptable LOS during the peak hours, with the exception of the following intersections:

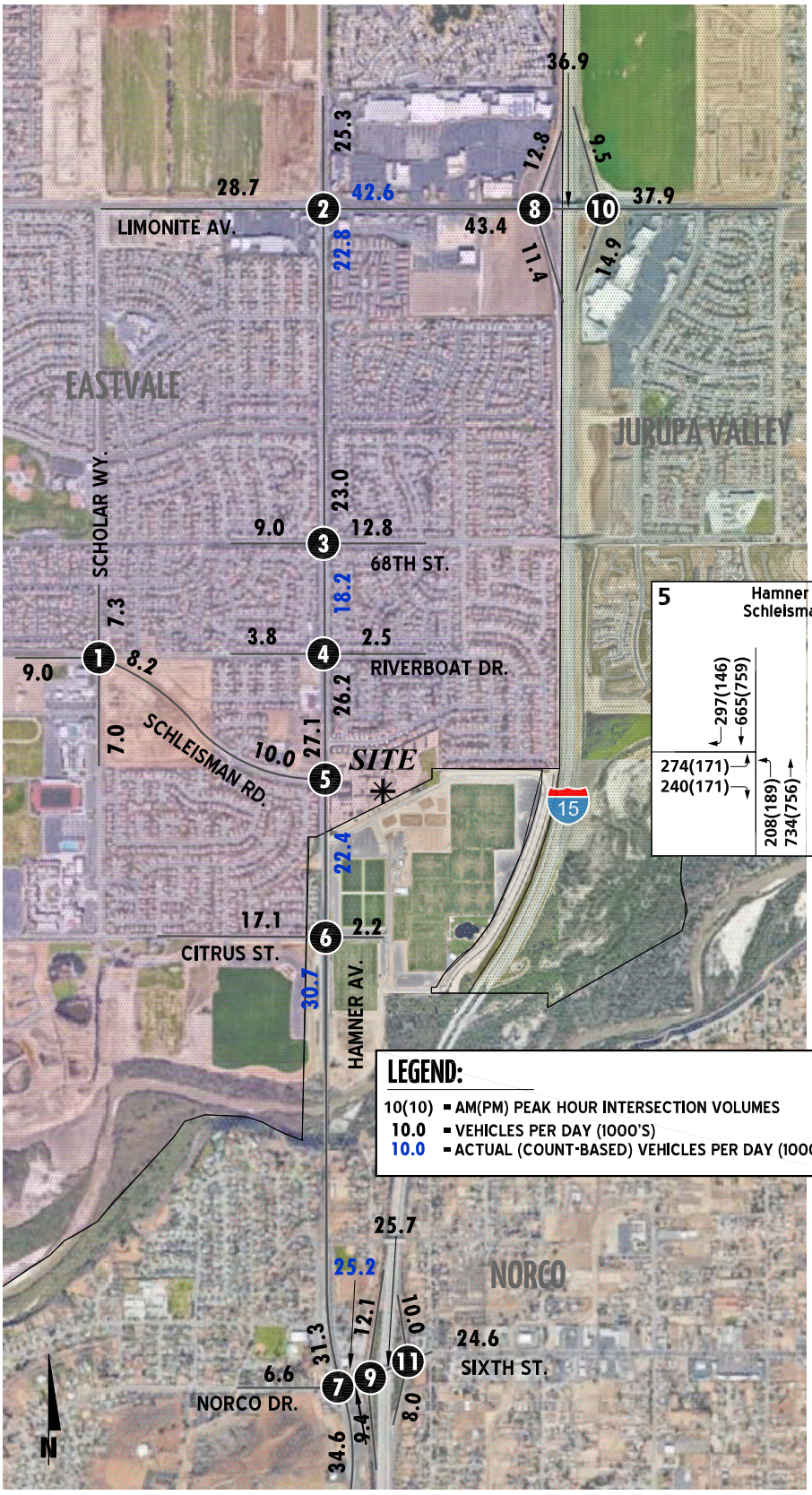
- Hamner Avenue & Citrus Avenue (#6) – LOS F AM and PM peak hours
- Hamner Avenue & Norco Drive/6th Street (#7) – LOS E PM peak hour only

Consistent with Table 3-1, a summary of the peak hour intersection LOS for Existing conditions are shown on Exhibit 3-13. The intersection operations analysis worksheets are included in Appendix 3.2 of this TIA.

3.9 TRAFFIC SIGNAL WARRANTS ANALYSIS

All existing study area intersections are currently signalized. As such, a traffic signal warrant analysis has not been prepared for Existing (2017) traffic conditions.

EXHIBIT 3-12: EXISTING (2017) TRAFFIC VOLUMES



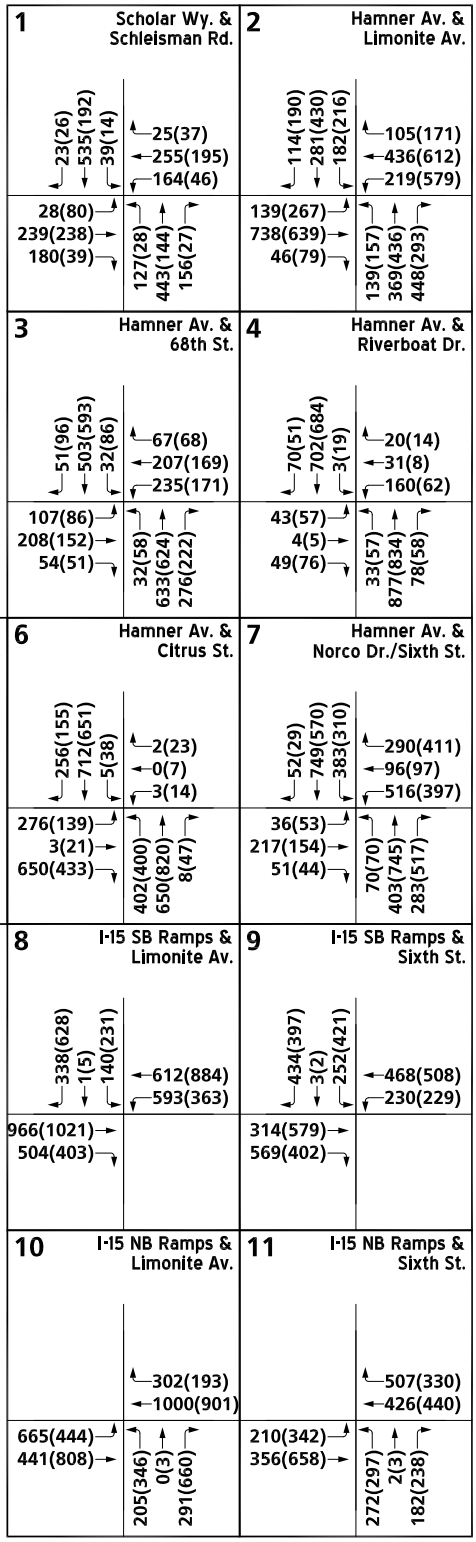


EXHIBIT 3-13: EXISTING (2017) SUMMARY OF LOS

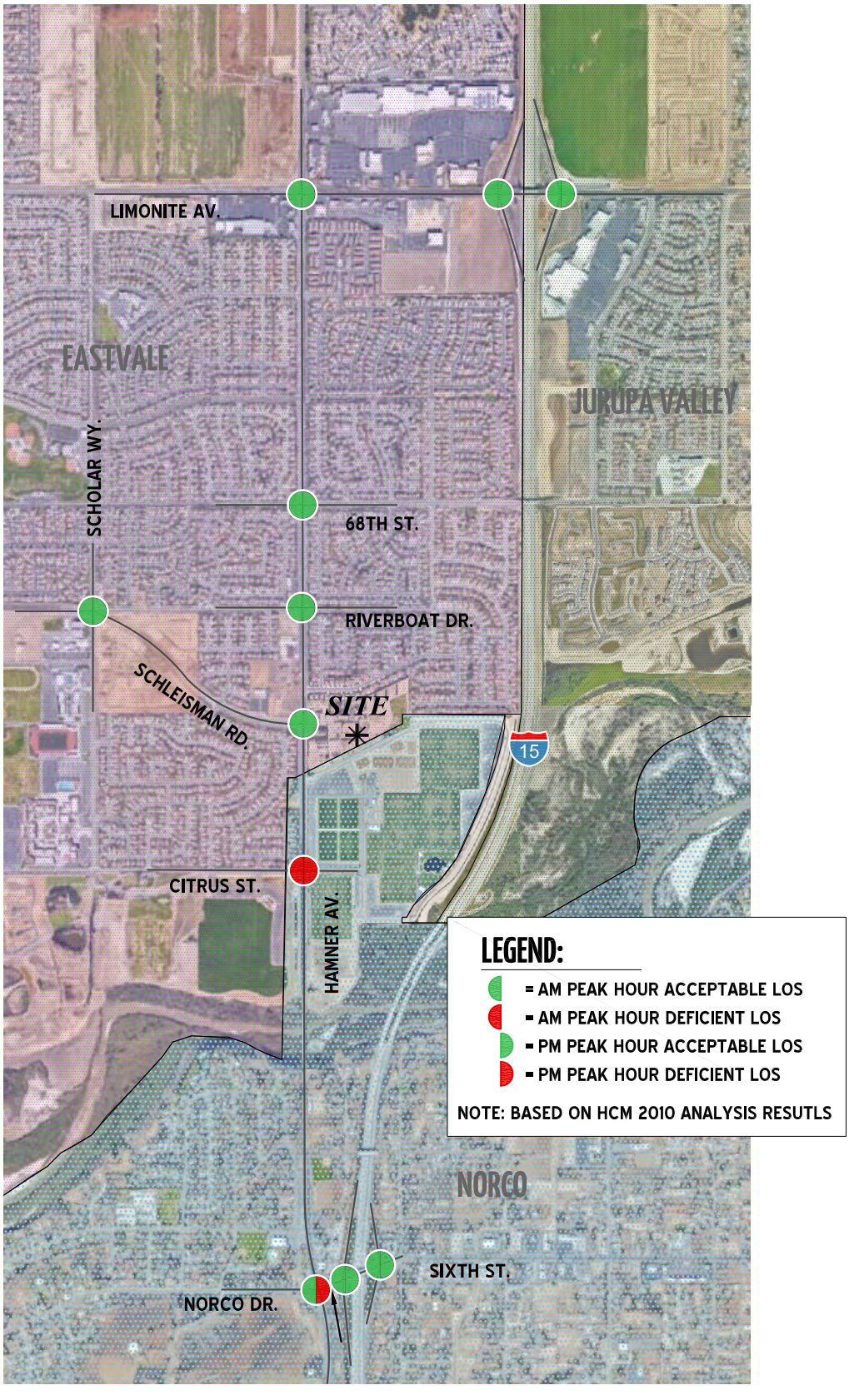


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Table 3-1

Intersection Analysis for Existing (2017) Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												ICU[2] (v/c)		Level of Service		Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound										
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM	AM	PM
1	Scholar Wy. & Schleisman Rd.	TS	1	2	1	1	2	0	1	2	1>	1	2	1	0.61	0.27	B	A	30.3	15.7	C	B
2	Hamner Av. & Limonite Av.	TS	2	3	1	2	2	1	2	3	1	2	2	1	0.63	0.65	B	B	35.4	41.3	D	D
3	Hamner Av. & 68th St.	TS	1	3	d	1	3	d	1	1	0	1	1	1	0.65	0.49	B	A	27.2	20.8	C	C
4	Hamner Av. & Riverboat Dr.	TS	1	3	d	1	2	1	1	1	0	1	1	0	0.53	0.39	A	A	20.1	15.9	C	B
5	Hamner Av. & Schleisman Rd.	TS	1	2	0	0	2	0	2	0	1	0	0	0	0.75	0.58	C	A	22.8	13.1	C	B
6	Hamner Av. & Citrus Av.	TS	1	2	1>	2	2	1>	1	1	1>	1	1	0	0.78	0.59	C	A	**127.3**	**99.8**	**F**	**F**
7	Hamner Av. & Norco Dr./6th St.	TS	1	2	d	1	2	d	1	2	0	1	1	1	0.79	0.90	C	D	43.8	**62.9**	D	**E**
8	I-15 SB Ramps & Limonite Av.	TS	0	0	0	1	1	1	0	2	1	2	2	0	Not Applicable[4]				26.2	30.6	C	C
9	I-15 SB Ramps & 6th St.	TS	0	0	0	0	1	1	0	2	0	1	2	0	Not Applicable[4]				34.4	28.9	C	C
10	I-15 NB Ramps & Limonite Av.	TS	1	1	1	0	0	0	2	2	0	0	2	1	Not Applicable[4]				28.1	27.7	C	C
11	I-15 NB Ramps & 6th St.	TS	0	1	1	0	0	0	1	2	0	0	2	0	Not Applicable[4]				22.2	23.3	C	C

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

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

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

[2] ICU reported in volume-to-capacity (v/c) using the Traffix software and HCM delay reported in seconds using the Synchro software.
Per the 2010 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.

[3] TS = Traffic Signal

[4] Only delay reported as Caltrans does not utilize the ICU methodology.

3.10 ROADWAY SEGMENT ANALYSIS

The roadway segment capacities utilized for the purposes of this analysis are approximate figures only, and are used at the General Plan level to assist in determining the roadway functional classification (number of through lanes) needed to meet traffic demand. Table 3-2 provides a summary of the Existing (2017) conditions roadway segment capacity analysis based on the applicable roadway segment capacities. As shown on Table 3-2, the study area roadway segments are currently operating at an acceptable LOS based on the applicable planning level daily roadway capacity thresholds, with the exception of the segment of Hamner Avenue between Citrus Street and Norco Drive/6th Street.

The roadway segment of Hamner Avenue is currently 3 lanes immediately south of Citrus Street and then narrows to a 2-lane roadway from just north of the Santa Ana River to Norco Drive/6th Street. The analysis indicates that widening of the existing bridge over the Santa Ana River and remaining roadway segment to Norco Drive/6th Street is necessary in order to accommodate daily volumes. There is slowing and congestion observed along this roadway segment, but this is can expected during the peak hours due to the roadway tapering down to one lane in each direction of travel. Although there is congestion, field observations indicate that the traffic is slow but still moves through this area, which is attributable to the limited access and lack of signals between Citrus Street and Norco Drive/6th Street.

3.11 OFF-RAMP QUEUING ANALYSIS

A queuing analysis was performed for the off-ramps at the I-15 Freeway and Limonite Avenue and 6th Street interchanges to assess vehicle queues for the off ramps that may potentially result in deficient peak hour operations at the ramp-to-arterial intersections and may potentially "spill back" onto the I-15 Freeway mainline. Queuing analysis findings are presented in Table 3-3. It is important to note that off-ramp lengths are consistent with the measured distance between the intersection and the freeway mainline. As shown on Table 3-3, there are no movements that are currently experiencing queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows. Worksheets for Existing traffic conditions off-ramp queuing analysis are provided in Appendix 3.3.

Table 3-2

Roadway Segment Analysis for Existing (2017) Conditions

#	Roadway	Segment Limits	Roadway Section	LOS Capacity[1]	Existing (2017)	V/C[2]	LOS[3]	Acceptable LOS[4]
1	Schleisman Road	Scholar Way to Hamner Avenue	5D	44,900	9,997	0.22	A	D
2	Hamner Avenue	Limonite Avenue to 68th Street	6D	53,900	22,751	0.42	A	D
3		68th Street to Riverboat Drive	6D	53,900	18,207	0.34	A	D
4		Riverboat Drive to Schleisman Road	4D	35,900	27,069	0.75	C	D
5		Schleisman Road to Citrus Street	4D	35,900	22,383	0.62	B	D
6		Citrus Street to Norco Drive/6th Street[5]	2U	17,950	**30,703**	**1.71**	**F**	D
7	Limonite Avenue	Hamner Avenue to I-15 Freeway	8D	71,800	42,612	0.59	A	D
8	6th Street	Hamner Avenue to I-15 Freeway	4D	35,900	25,154	0.70	C	D

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

[1] These maximum roadway capacities have been extracted from the following source: City of Eastvale General Plan (Table C-1) for each applicable roadway type. These roadway capacities are "rule of thumb" estimates for planning purposes. The LOS E service volumes are estimated maximum daily capacity for respective classifications. Capacity is affected by such factors as intersections (spacing, configuration and control features), degree of access control, roadway grades, design geometrics (horizontal and vertical alignment standards), sight distance, vehicle mix (truck and bus traffic) and pedestrian and bicycle traffic.

[2] v/c = Volume-to-capacity

[3] LOS = Level of Service

[2] Where the average daily volume (ADT) based roadway segment analysis indicates a deficiency (unacceptable LOS), a review of the more detailed peak hour intersection analysis is undertaken. The more detailed peak hour intersection analysis explicitly accounts for factors that affect roadway capacity. While this traffic study recognizes LOS C is the City's target LOS for roadway segments, a review of the more detailed peak hour intersection analysis is necessary to determine whether roadway widening along the segment is necessary. For the purposes of this analysis, if the peak hour intersection operations on either side of the roadway segment are anticipated to operate at LOS D or better, then additional roadway segment widening is not recommended. Therefore, for the purposes of this analysis, roadway segment widening is typically only recommended if the peak hour intersection analysis indicates the need for additional through lanes. Furthermore, it is likely that a roadway segment can have a volume-tc capacity ratio of up to 1.10 if the adjacent intersections are anticipated to operate at acceptable LOS, without the need for additional widening. As the LOS threshold for the study area intersections is LOS D, LOS D has also been utilized as the minimum LOS criteria for roadway segments for the purposes of this analysis.

[5] This roadway segment is 3 lanes just south of Citrus Avenue and narrows to 2 lanes (one lane in each direction) from just north of the Santa Ana River to Norco Drive/6th Street.

Table 3-3

Peak Hour Off-Ramp Queuing Analysis for Existing (2017) Conditions

Intersection	Movement	Stacking (Feet)	95th Percentile Stacking Distance Required (Feet)		Acceptable? [1]	
			AM Peak Hour	PM Peak Hour	AM	PM
I-15 SB Off-Ramp / Limonite Av.						
	SBL	400	153	204	Yes	Yes
	SBL/T/R	1,175	81	223	Yes	Yes
	SBR	400	64	208	Yes	Yes
I-15 SB Off-Ramp / 6th St.						
	SBL/T	1,385	186	359 [2]	Yes	Yes
	SBR	265	96	108	Yes	Yes
I-15 NB Off-Ramp / /Limonite Av.						
	NBL	450	194	305	Yes	Yes
	NBL/T/R	1,290	89	220	Yes	Yes
	NBR	450	60	211	Yes	Yes
I-15 NB Off-Ramp / 6th St.						
	NBL/T	1,280	217	276 [2]	Yes	Yes
	NBR	200	48	56	Yes	Yes

[1] 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.

[2] 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

4 PROJECTED FUTURE TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project's trip assignment onto the study area roadway network. The Project is proposed to consist of the following land uses and is anticipated to be operational by 2019:

- Parcel 1: 8 vehicle fueling position (VFP) gas station with market
- Parcel 2: 3,500 square feet (SF) of fast-food restaurant with drive-through window
- Parcel 3: 2,000 SF coffee shop with drive-through window
- Parcel 4: 6,000 SF high turnover sit-down restaurant
- Parcel 5: 4,000 SF of commercial retail use
- Parcel 5: 4,000 SF of fast-food restaurant without drive-through window
- Parcel 6: 10,000 SF of medical office use
- Parcel 7: 130 room hotel
- Civic: 40,000 SF government office
- Civic: 25,000 SF library
- Hamner Avenue & Riverboat Drive Site: 16 VFP gas station with market and car wash.

The land use mix described above was provided by City staff. Regional access to the Project is provided by the I-15 Freeway via Limonite Avenue or 6th Street. Access to the Project is unknown at this time as a site plan is not currently available. However, for the purposes of this analysis, access to the Project site is assumed to be provided by an eastern extension of Schleisman Avenue, east of Hamner Avenue. Additional restricted access points may also be provided along Hamner Avenue, however, only a single entry has been evaluated in order to conduct a conservative analysis and overstate as opposed to understate potential impacts at the primary entrance. The Hamner Avenue & Riverboat Drive site is assumed to take access via Riverboat Drive to the west of Hamner Avenue.

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 Hotel (ITE Land Use Code 310), Library (ITE Land Use Code 590), Medical Office (ITE Land Use Code 720), Shopping Center (ITE Land Use Code 820), High Turnover Sit-Down Restaurant (ITE Land Use Code 932), Fast-Food without Drive-Through Window Restaurant (ITE Land Use Code 933), Fast-Food with Drive-Through Window Restaurant (ITE Land Use Code 934), Coffee Shop with Drive-Through Window (ITE Land Use Code 937), Gas Station with Convenience Market (ITE Land Use Code 945), and

Gasoline/Service Station with Convenience Market and Car Wash (ITE Land Use Code 946) land uses in their published Trip Generation Manual, 9th Edition, 2012. (3) The ITE Trip Generation Manual has limited data for the Government Office land use. As such, the (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, April 2002, were utilized for the Government Office land use for the purposes of this traffic analysis. (5)

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. The internal capture rate for the retail, hotel, and office uses on-site are based on the ITE methodology from their Handbook. However, the ITE methodology does not include the library land use, but given its proximity to other food and retail uses, it has been assumed that approximately 10% of library trips would remain within the Project boundary. For example, employees or patrons of the government office or medical office may also visit the retail, gas station, or restaurants without leaving the site and are therefore considered as vehicle trips that are internal to the site.

A mode shift reduction of 5% has been taken on the fast-food restaurants, coffee-shop, high turnover sit-down restaurant, and shopping center uses. The 5% mode shift reduction accounts for people who would chose to walk either from near-by residential areas or from the existing Silverlakes facility to the south.

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, coffee/donut shops with drive-through windows, and gas stations and convenience stores. As the Project is proposed to include these types of land uses, pass-by percentages have been obtained from Tables F.9, F.30, F.31, F.32, F.33, F.34, F.37, and F.38 of the ITE Trip Generation Handbook (3rd Edition, 2004) for the applicable land uses. (6)

The internal capture, mode shift, and pass-by reductions applied have been reviewed and approved by City staff. A summary of the Project's trip generation is shown in Table 4-2. As shown on Table 4-2, the proposed Project is anticipated to generate a net total of 6,864 trip-ends per day, 534 AM peak hour trips and 647 PM peak hour trips.

Table 4-1

Project Trip Generation Rates[1]

Land Use	ITE Code	Units[2]	Weekday AM Peak Hour			Weekday PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Hotel	310	Room	0.31	0.22	0.53	0.31	0.29	0.60	8.17
Library	590	TSF	0.74	0.30	1.04	3.50	3.80	7.30	56.24
Medical Office	720	TSF	1.89	0.50	2.39	1.00	2.57	3.57	36.13
Government Office	--[3]	TSF	2.43	0.27	2.70	1.08	2.52	3.60	30.00
Shopping Center[4]	820	TSF	3.39	2.08	5.47	8.32	9.01	17.33	209.52
High-Turnover Restaurant	932	TSF	5.95	4.86	10.81	5.91	3.94	9.85	127.15
Fast-Food w/o Drive-Thru	933	TSF	26.32	17.55	43.87	13.34	12.81	26.15	716.00
Fast-Food w/ Drive-Thru	934	TSF	23.16	22.26	45.42	16.98	15.67	32.65	496.12
Coffee Shop w/ Drive-Thru	937	TSF	51.30	49.28	100.58	21.40	21.40	42.80	818.58
Gas Station w/ Market	945	VFP	5.08	5.08	10.16	6.76	6.75	13.51	162.78
Gas Station w/ Market & Car Wash	946	VFP	6.04	5.80	11.84	7.07	6.79	13.86	152.84

[1] Source: ITE (Institute of Transportation Engineers) Trip Generation Manual, 9th Edition, 2012.

[2] TSF = Thousand Square Feet; VFP = Vehicle Fueling Positions

[3] Source: (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, April 2002.

[4] Trip generation rates based on the ITE regression equation for ITE Land Use 820.

Table 4-2

Project Trip Generation Summary

Land Use	Quantity	Units[2]	Weekday AM Peak Hour In	Out	Total	Weekday PM Peak Hour In	Out	Total	Daily
Site Location: Hamner Avenue and Schleisman Avenue									
Parcel 1: Gas Station w/ Market	8	VFP	41	41	82	54	54	108	1,302
Internal Capture[3]:			-6	-7	-13	-32	-20	-52	-633
Pass-by Reduction (AM-68%; PM-56%)[4]:			*-21*	*-21*	*-42*	*-12*	*-12*	*-24*	*-375*
Net External Trips:			14	13	27	10	22	32	294
Parcel 2: Fast-Food w/ Drive-Thru	3.500	TSF	81	78	159	59	55	114	1,736
Mode Shift[5]:			-4	-4	-8	-3	-3	-6	-87
Internal Capture[3]:			-6	-7	-13	-13	-19	-32	-483
Pass-by Reduction (AM-49%; PM-50%)[4]:			*-33*	*-33*	*-66*	*-17*	*-17*	*-34*	*-583*
Net External Trips:			38	34	72	26	16	43	583
Parcel 3: Coffee Shop w/ Drive-Thru	2.000	TSF	103	99	202	43	43	86	1,637
Mode Shift[5]:			-5	-5	-10	-2	-2	-4	-82
Internal Capture[3]:			-5	-5	-10	-9	-14	-23	-447
Pass-by Reduction (AM/PM-89%)[4]:			*-79*	*-79*	*-158*	*-24*	*-24*	*-48*	*-986*
Net External Trips:			14	10	24	7	3	10	122
Parcel 4: High-Turnover Restaurant	6.000	TSF	36	29	65	35	24	59	763
Mode Shift[5]:			-2	-1	-3	-2	-1	-3	-38
Internal Capture[3]:			-3	-4	-7	-7	-10	-16	-212
Pass-by Reduction (PM-43%)[4]:			*0*	*0*	*0*	*-6*	*-6*	*-11*	*-220*
Net External Trips:			31	24	55	21	7	29	292
Parcel 5: Shopping Center	4.000	TSF	14	8	22	33	36	69	838
Mode Shift[5]:			-1	0	-1	-2	-2	-4	-42
Internal Capture[3]:			-4	-4	-8	-21	-13	-34	-407
Pass-by Reduction (PM-34%)[4]:			*0*	*0*	*0*	*-4*	*-4*	*-8*	*-132*
Net External Trips:			9	3	12	6	17	23	257
Parcel 5: Fast-Food w/o Drive-Thru	4.000	TSF	105	70	175	53	51	104	2,864
Mode Shift[5]:			-5	-4	-9	-3	-3	-6	-143
Internal Capture[3]:			-5	-7	-12	-11	-18	-29	-809
Pass-by Reduction (AM-49%; PM-50%)[4]:			*-29*	*-29*	*-58*	*-15*	*-15*	*-30*	*-956*
Net External Trips:			65	31	96	24	16	40	956
Parcel 6: Medical Office	10.000	TSF	19	5	24	10	26	36	361
Internal Capture[3]:			-4	-3	-7	-1	-2	-3	-33
Net External Trips:			15	2	17	9	24	33	328
Parcel 7: Hotel	130	Room	40	29	69	40	38	78	1,062
Mode Shift[5]:			-2	-1	-3	-2	-2	-4	-53
Internal Capture[3]:			-2	-8	-10	-17	-12	-29	-395
Net External Trips:			36	20	56	21	24	45	614
Civic: Government Office	40.000	TSF	97	11	108	43	101	144	1,200
Internal Capture[3]:			-20	-11	-31	-6	-9	-15	-123
Net External Trips:			77	0	77	37	92	129	1,077
Civic: Library	25.000	TSF	19	8	27	88	95	183	1,406
Internal Capture (10% reduction):			-2	-1	-3	-9	-10	-18	-141
Net External Trips:			17	7	24	79	86	165	1,265
Subtotal Net External Trips			***316***	***144***	***460***	***240***	***307***	***547***	***5,788***
Site Location: Hamner Avenue and Riverboat Drive									
Gas Station w/ Market & Car Wash[6]	16	VFP	97	93	189	113	109	222	2,445
Pass-by Reduction (AM-68%; PM-56%)[4]:			*-58*	*-58*	*-116*	*-61*	*-61*	*-122*	*-1,369*
Subtotal Net External Trips			***39***	***35***	***73***	***52***	***48***	***100***	***1,076***
TOTAL NET EXTERNAL TRIPS			**355**	**179**	***534***	**292**	**355**	***647***	**6,864**

[1] Source: ITE (Institute of Transportation Engineers) Trip Generation Manual, 9th Edition, 2012.

[2] TSF = Thousand Square Feet; VFP = Vehicle Fueling Positions

[3] Internal capture calculated from NCHRP 684 Internal Trip Capture Estimation Tool.

[4] Pass-by reduction percentages from Tables F.9, F.30, F.31, F.32, F.33, F.34, F.37, and F.38 of the ITE Trip Generation Handbook, 3rd Edition.

[5] Mode shift accounts for people who will walk or bike between the Project and other near-by uses.

[6] Site is located on the southwest corner of Hamner Avenue and Riverboat Drive.

4.2 PROJECT TRIP DISTRIBUTION

The Project trip distribution and assignment process represents the directional orientation of traffic to and from the Project site. The trip distribution pattern is influenced by the geographical location of the site, the location of surrounding uses, and the proximity to the regional freeway system. The following exhibits illustrate the proposed Project trip distribution patterns, by land use:

- Exhibit 4-1: Project (Hotel) Trip Distribution
- Exhibit 4-2: Project (Commercial Retail, Restaurants, and Gas Station) Trip Distribution
- Exhibit 4-3: Project (Government Office, Library, and Medical Office) Trip Distribution
- Exhibit 4-4: Project (Potential Gas Station) Trip Distribution

4.3 MODAL SPLIT

A mode shift reduction of 5% has been taken on the fast-food restaurants, coffee-shop, high turnover sit-down restaurant, and shopping center uses only. The mode shift reduction accounts for people who would chose to travel to the site via public transit or walking/bicycling from either from near-by residential areas or from the existing Silverlakes facility to the south.

4.4 PROJECT TRIP ASSIGNMENT

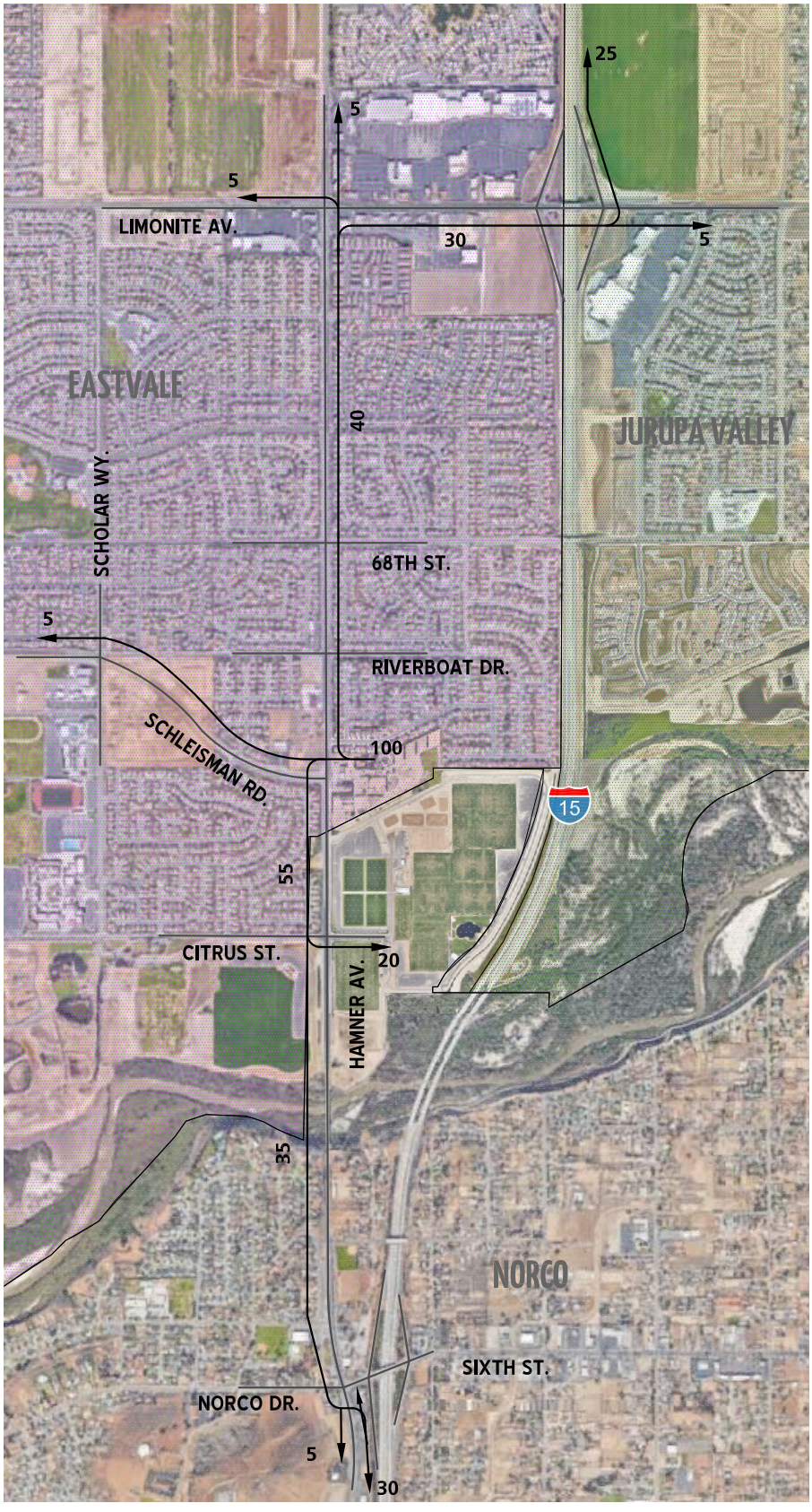
The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified Project traffic generation and trip distribution patterns, Project ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-5.

4.5 BACKGROUND TRAFFIC

Future year traffic forecasts have been based upon background (ambient) growth at 1.6% per year, compounded over 2 years for 2019 traffic conditions. The ambient growth factor is intended to approximate regional traffic growth. The total ambient growth is 3.23% for 2019 traffic conditions (growth of 1.6 percent per year over 2 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.

Opening Year Cumulative (2019) traffic volumes are provided in Section 6 *Opening Year Cumulative (2019) Traffic Conditions* of this report. The traffic generated by the proposed Project was then manually added to the base volume to determine Opening Year Cumulative "With Project" forecasts for 2019.

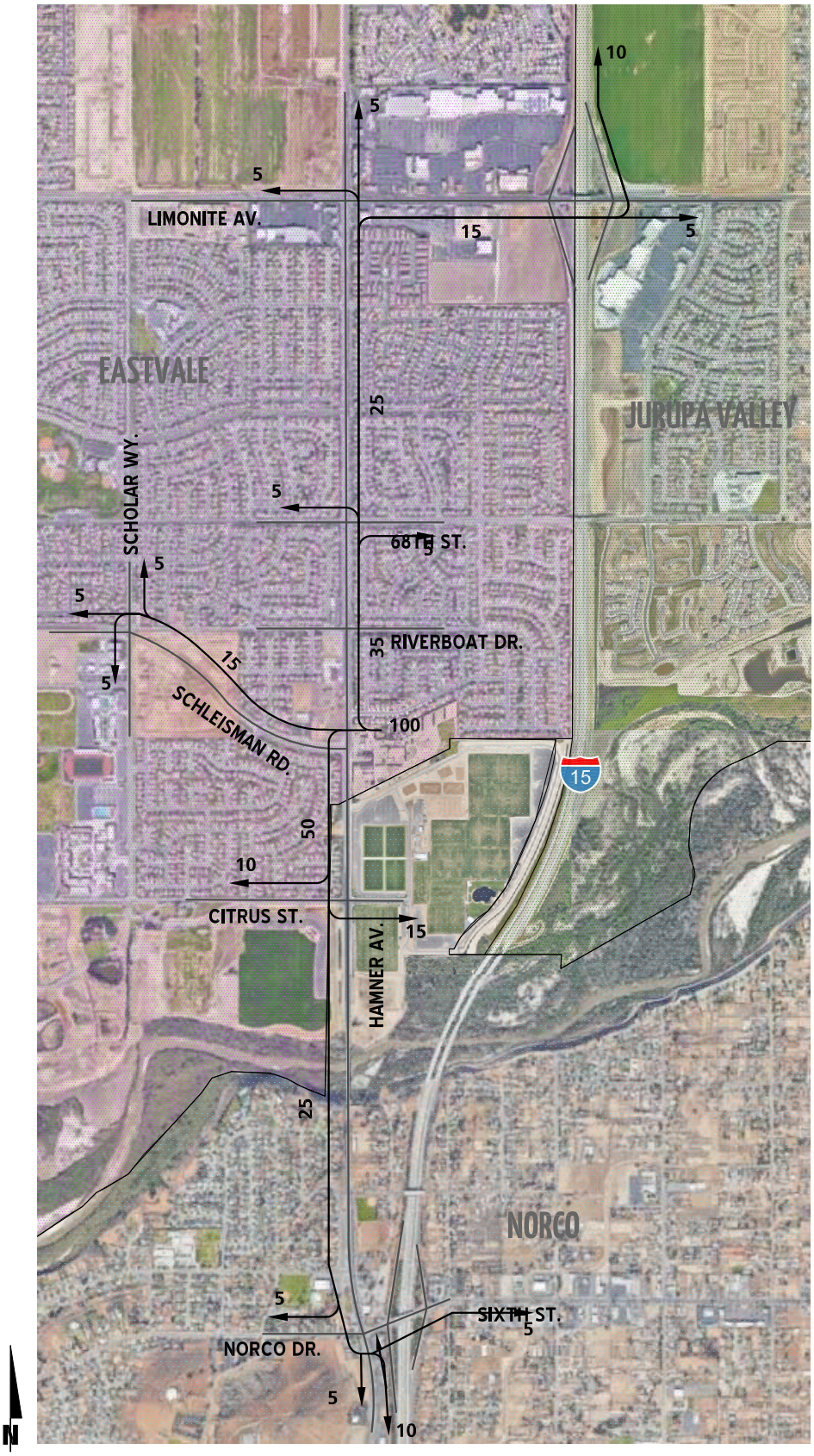
EXHIBIT 4-1: PROJECT (HOTEL) TRIP DISTRIBUTION



LEGEND:

10 = PERCENT TO/FROM PROJECT

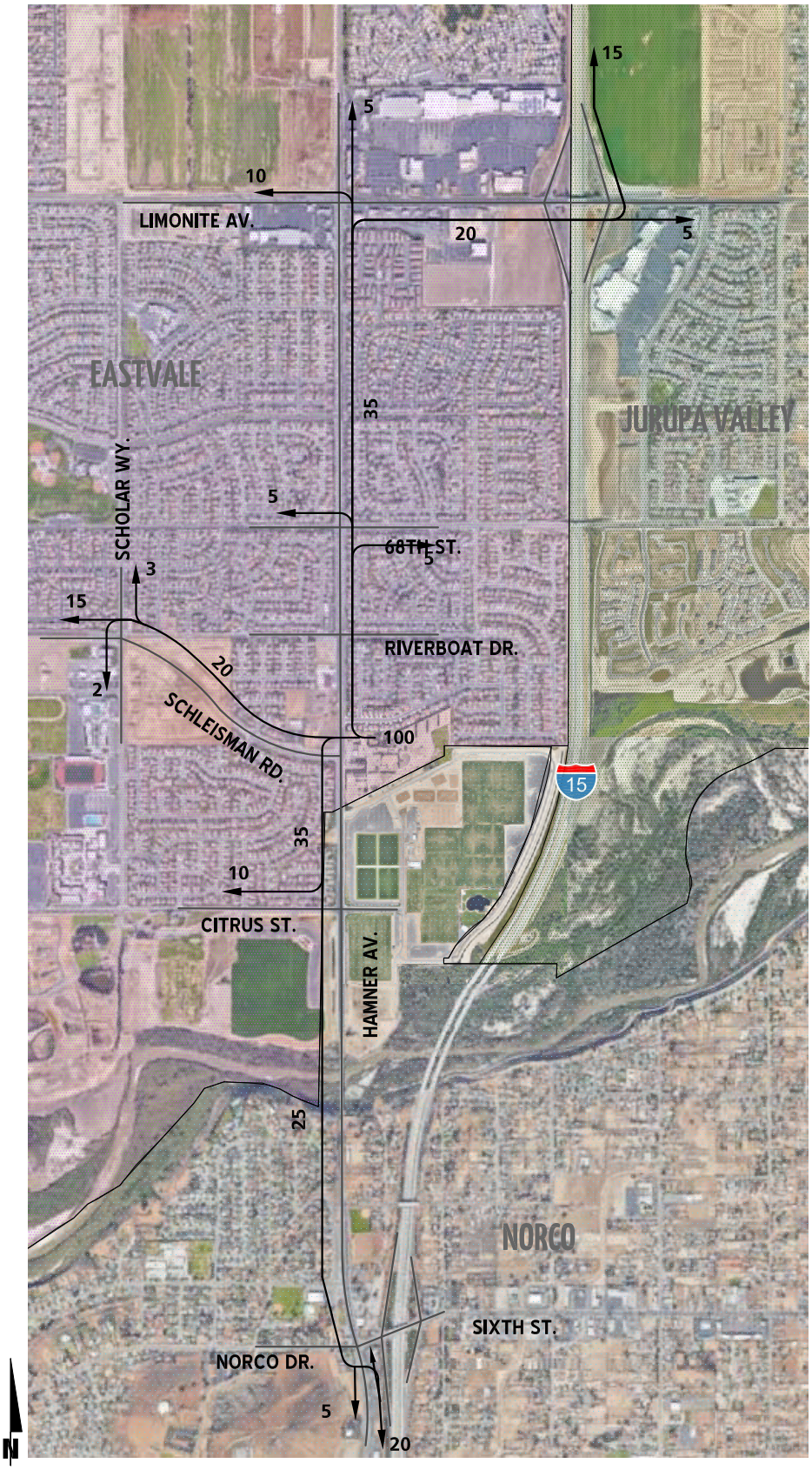
EXHIBIT 4-2: PROJECT (COMMERCIAL RETAIL, RESTAURANTS, AND GAS STATION) TRIP DISTRIBUTION



LEGEND:

10 = PERCENT TO/FROM PROJECT

EXHIBIT 4-3: PROJECT (GOVERNMENT OFFICE, LIBRARY, AND MEDICAL OFFICE) TRIP DISTRIBUTION



LEGEND:

10 = PERCENT TO/FROM PROJECT

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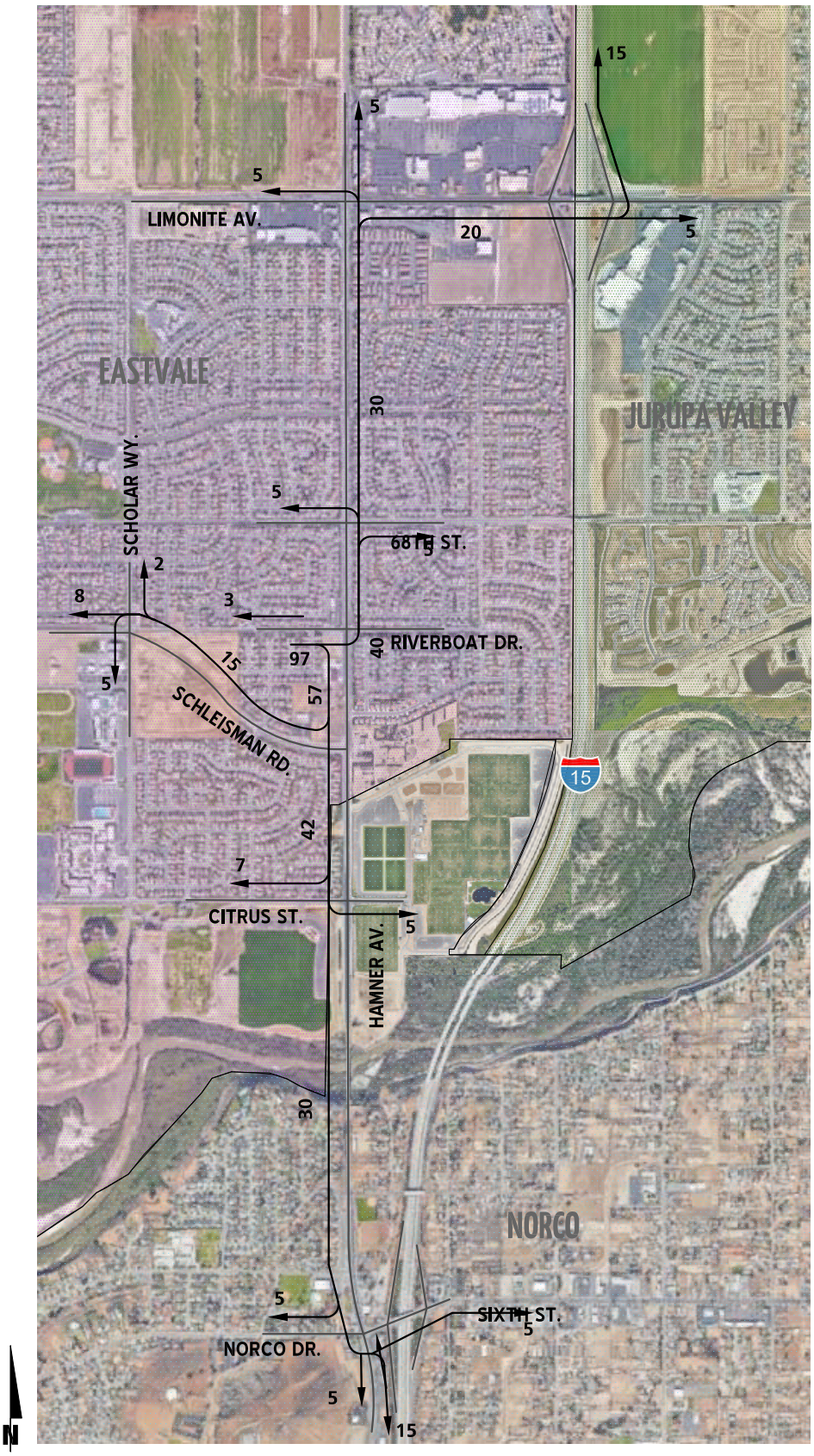
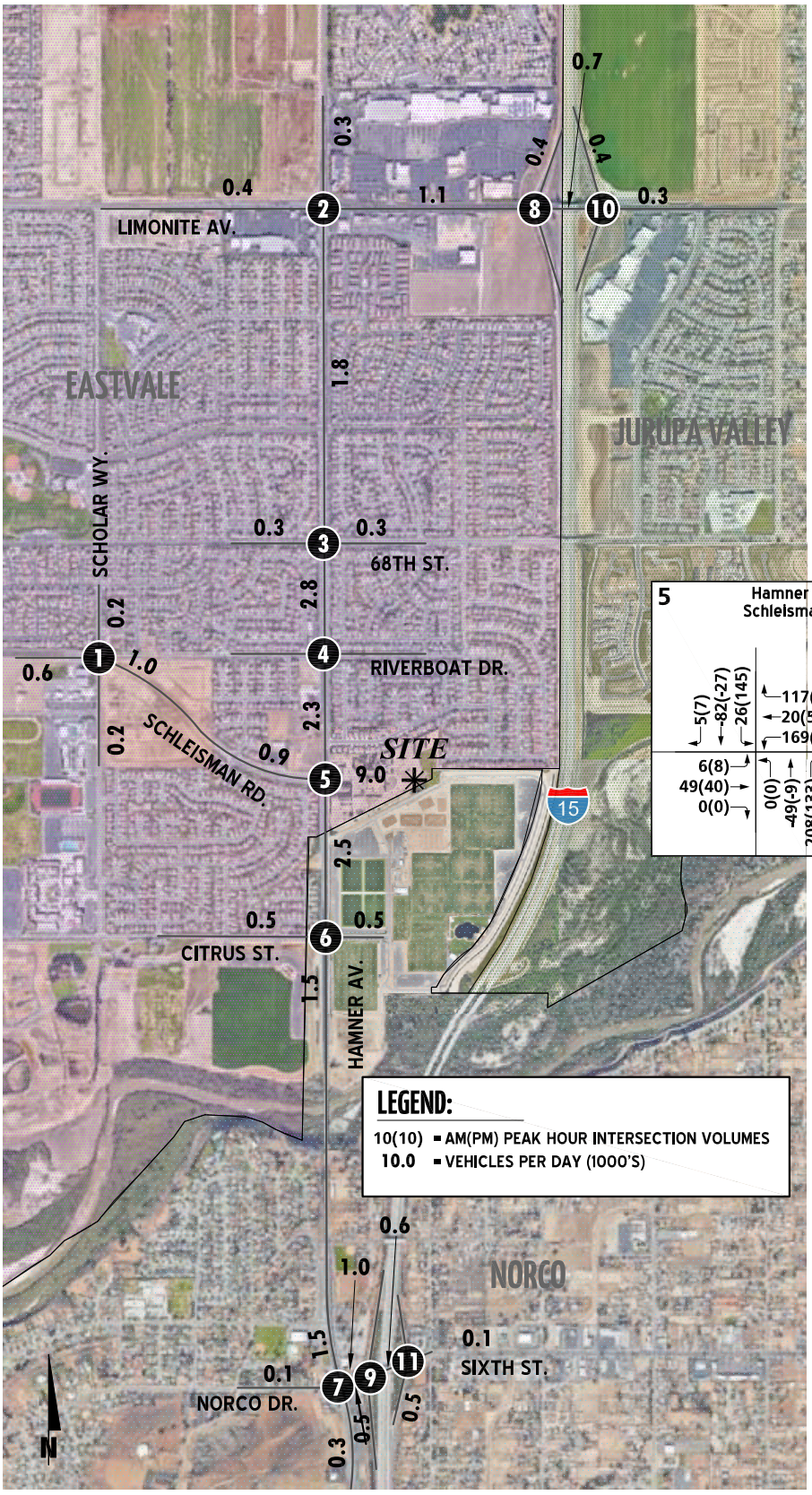
EXHIBIT 4-4: PROJECT (POTENTIAL GAS STATION) TRIP DISTRIBUTION

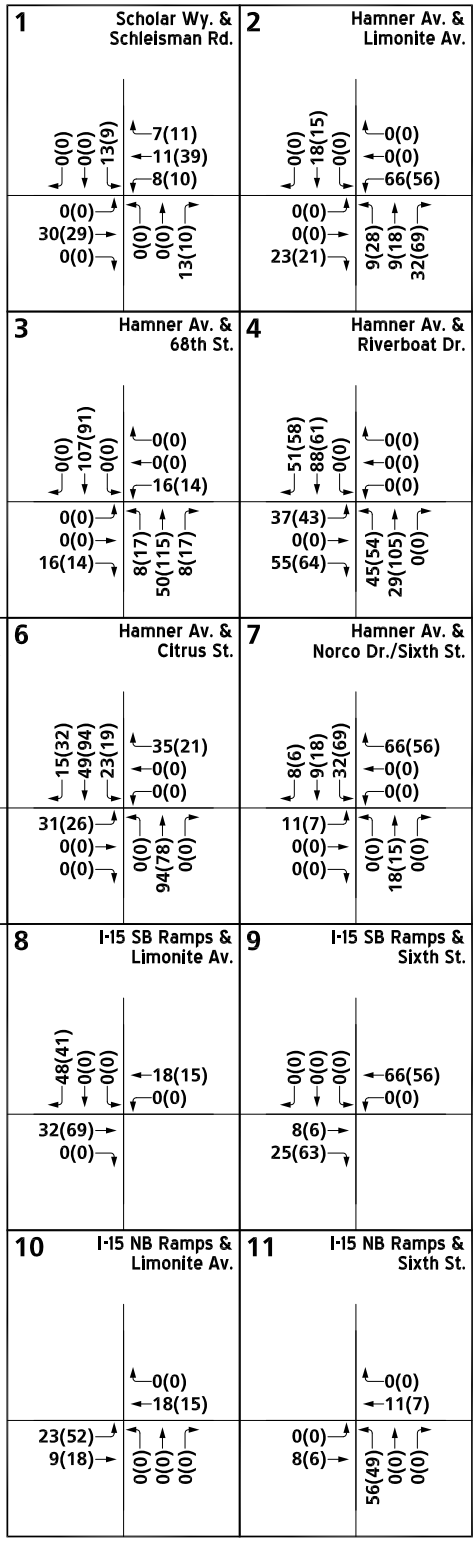


LEGEND:

10 = PERCENT TO/FROM PROJECT

EXHIBIT 4-5: PROJECT ONLY TRAFFIC VOLUMES





The adopted *Southern California Association of Governments (SCAG) 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS)* (April 2016) growth forecasts for the City of Eastvale identifies projected growth in population of 56,500 in 2012 to 65,400 in 2040, or a 15.75% increase over the 28-year period. (7) The change in population equates to roughly a 0.52% growth rate, compounded annually. Similarly, growth over the same 28-year period in households is projected to increase by 17.02%, or a 0.56% annual growth rate. Finally, growth in employment over the same 28-year period is projected to increase by 127.91%, or a 2.99% annual growth rate.

Based on a comparison of Existing (2017) traffic volumes to the Opening Year Cumulative (2019) forecasts, the average growth rate is estimated at approximately 2.41%, compounded annually between Existing (2017) and 2019 traffic conditions. The annual growth rate at each individual intersection is not lower than 0.70% compounded annually to as high as 4.79% compounded annually over the same time period.

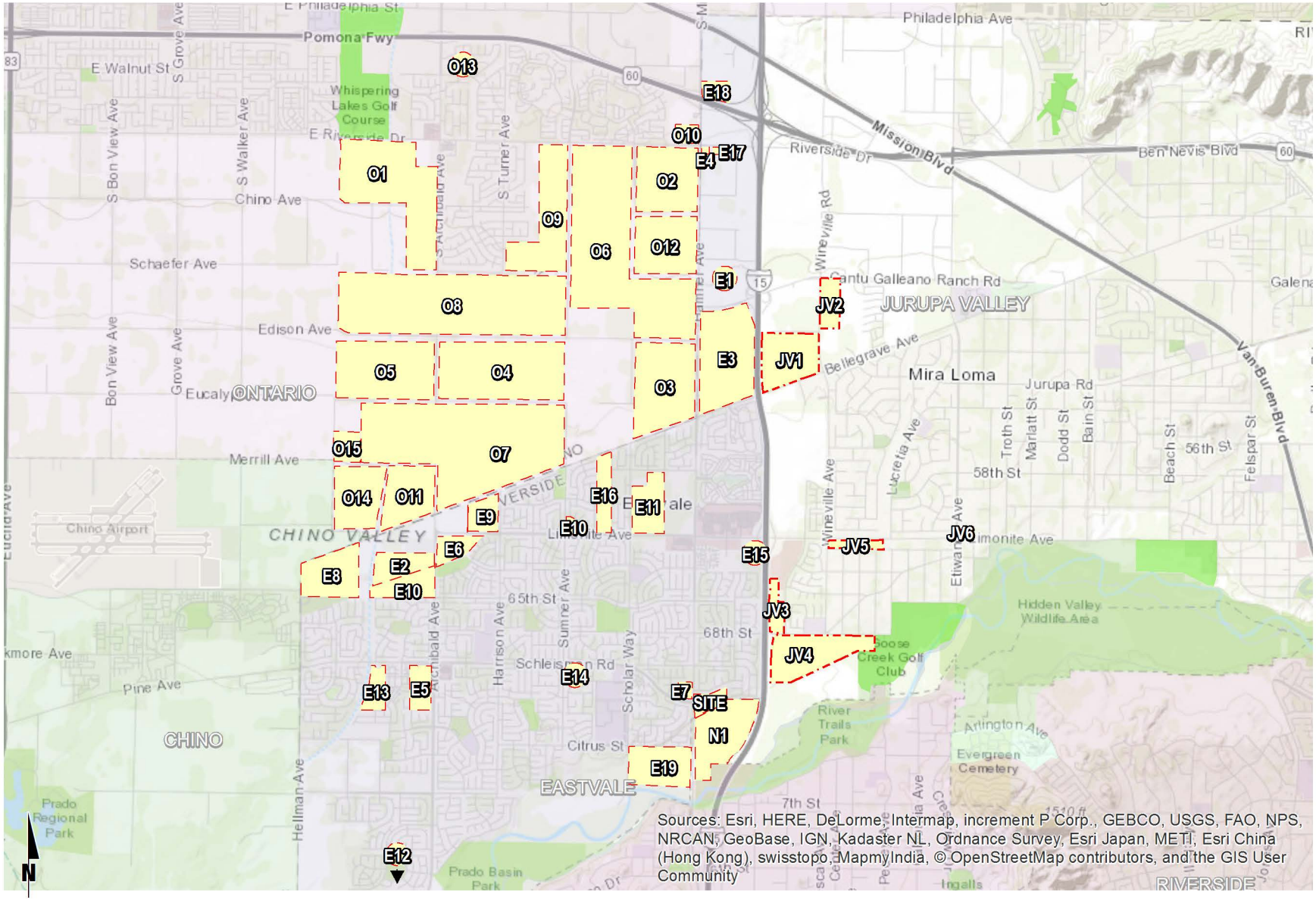
Therefore, the annual growth rate utilized for the purposes of this analysis would appear to conservatively approximate the anticipated regional growth in traffic volumes in the City of Eastvale for Opening Year Cumulative (2019) traffic conditions, especially when considered along with the addition of project-related traffic. 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.

4.6 CUMULATIVE DEVELOPMENT TRAFFIC

California Environmental Quality Act (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 Eastvale. The neighboring jurisdictions of Ontario, Jurupa Valley, and Norco have also been contacted to include key projects in their respective cities.

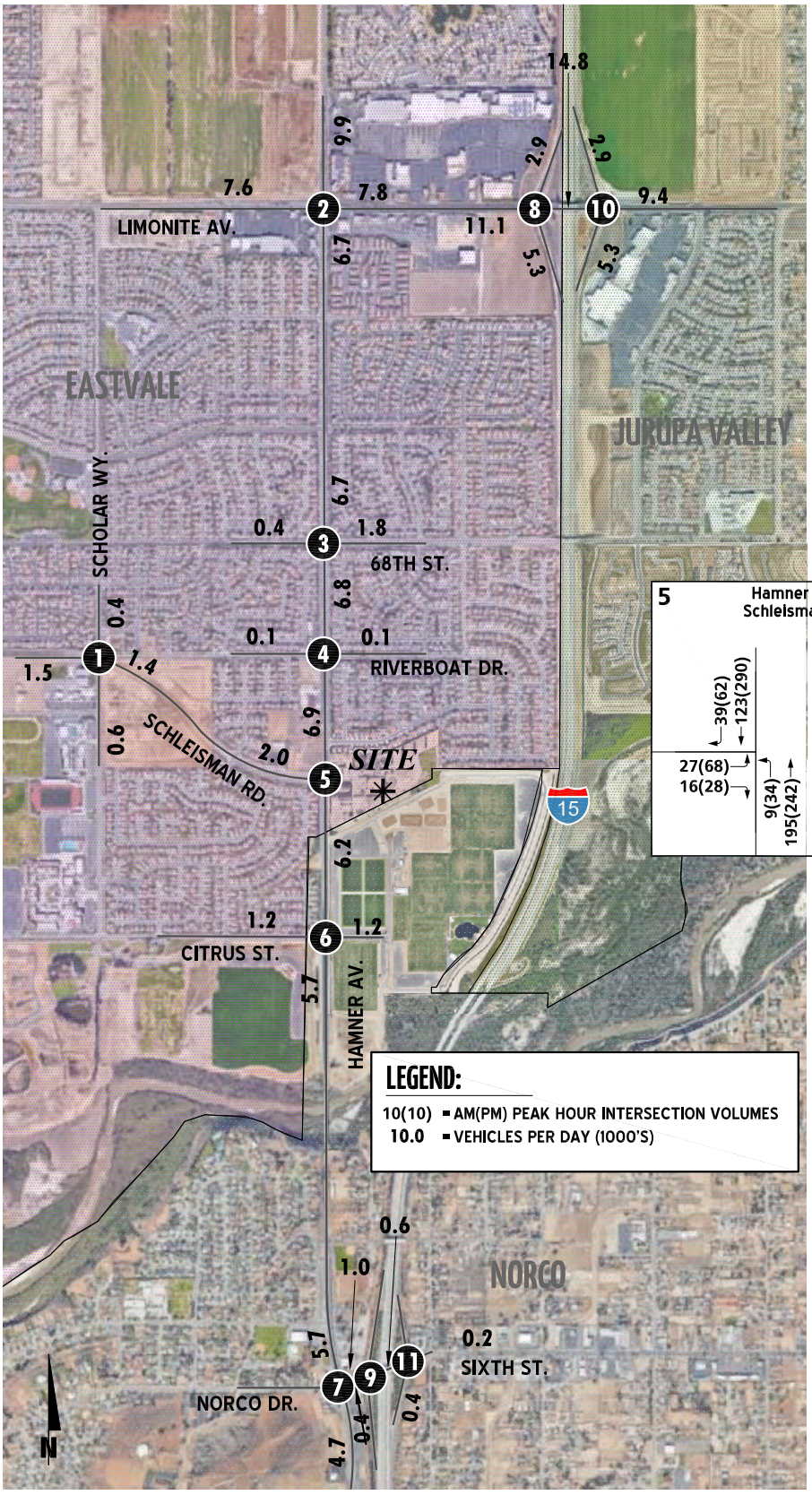
Exhibit 4-6 illustrates the cumulative development location map. A summary of cumulative development projects and their proposed land uses are shown on Table 4-3. If applicable, the traffic generated by individual cumulative projects was manually added to the Opening Year Cumulative forecasts to ensure that traffic generated by the listed cumulative development projects in Table 4-3 are reflected as part of the background traffic. Cumulative ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-7.

EXHIBIT 4-6: CUMULATIVE DEVELOPMENT LOCATION MAP

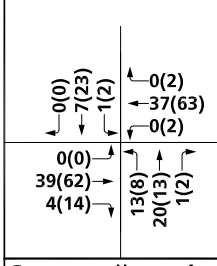


URBAN CROSSROADS

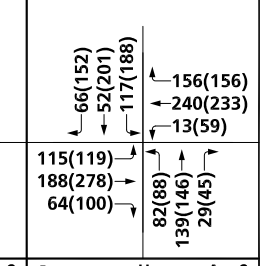
EXHIBIT 4-7: CUMULATIVE TRAFFIC VOLUMES



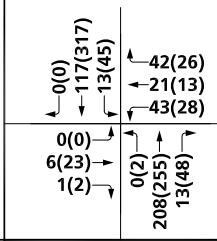
1 Scholar Wy. & Schleisman Rd.



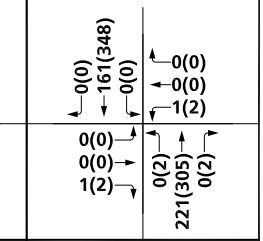
2 Hamner Av. & Limonite Av.



3 Hamner Av. & 68th St.

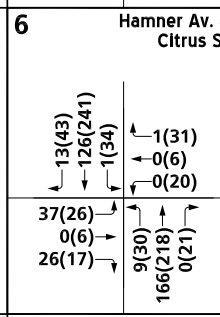


4 Hamner Av. & Riverboat Dr.

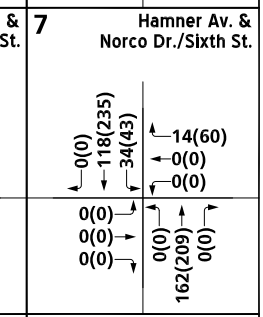


5 Hamner Av. & Schleisman Rd.

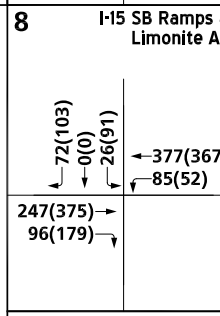
6 Hamner Av. & Citrus St.



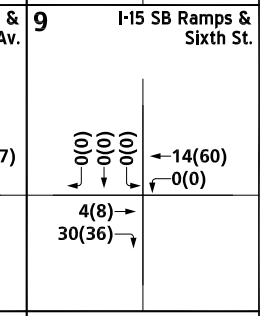
7 Hamner Av. & Norco Dr./Sixth St.



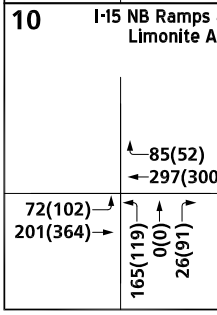
8 I-15 SB Ramps & Limonite Av.



9 I-15 SB Ramps & Sixth St.



10 I-15 NB Ramps & Limonite Av.



11 I-15 NB Ramps & Sixth St.

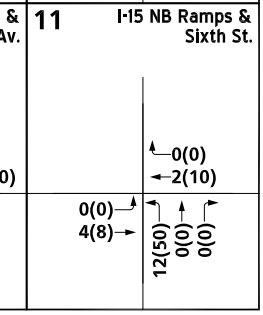


Table 4-3
Page 1 of 2

Cumulative Development Land Use Summary

#	Project/Location	Land Use[1]	Quantity	Units[2]
City of Eastvale				
E1	14-1077 - Grainger Site (APN:156-050-025, 156-050-026, 156-020-027)	Industrial	546.000	TSF
E2	The Campus	Business Park	776.000	TSF
E3	11-0271 - Eastvale Commerce Center (Goodman Commerce Center)	Shopping Center	399.782	TSF
		High-Cube Warehouse	2,040.897	TSF
		Costco	158.000	TSF
		Business Park	191.356	TSF
E4	11-0354 - Chevron Gas Station	Gas Station w/ convenience store and car wash	18.000	VFP
E5	17-0038 - The Marketplace at Enclave (Dialysis Center)	Medical Office Building	40.000	TSF
E6	12-0051 - Eastvale Shopping Center	Free-Standing Discount Superstore	177.719	TSF
		Specialty Retail	9.200	TSF
		Fast-Food Without Drive-Thru	7.200	TSF
		Coffee/Donut Shop w/ Drive Thru	2.000	TSF
		Fast-Food with Drive-Thru	3.500	TSF
		Gas Station w/ convenience store and car wash	16	VFP
E7	13-1601 - 99 Cents Only	Discount Store	19.104	TSF
E8	15-0783 - The Ranch	Warehousing	985.000	TSF
E9	14-1398 - Sendero Planned Residential Development	SFDR	323	TSF
E10	15-0958 - Eastvale Marketplace	Shopping Center	72.779	TSF
E11	Leal Master Plan	Lifestyle Center (Commercial)	1,300.000	TSF
		General Commercial	225.000	TSF
		Office	920.000	TSF
		Hotel	450	Room
		Civic Center		TSF
		Medium Density Residential		DU
		High Density Residential	500-660	DU
E12	15-1174 - Vantage Point Church	Church	85.000	TSF
E13	PM35751	Condo/Townhouse	243	DU
E14	13-0632 - Sumner Residential (Stratham Homes)	SFDR	129	DU
E15	14-0046 - Kasbergen/William Lyons Homes	Condo/Townhouse	220	DU
E16	10-0124 - The Lodge	Condo/Townhouse	12	DU
E17	15-1508 - Industrial Warehouse	Warehousing	155.000	TSF
E18	S. Milliken Warehouse	High-Cube Warehouse	280.000	TSF
E19	Van Leeuwen General Plan Amendment	SFDR	224	DU

Cumulative Development Land Use Summary

#	Project/Location	Land Use[1]	Quantity	Units[2]
City of Ontario				
O1	Countryside	SFDR	819	DU
	Armstrong Ranch	SFDR	994	DU
O2	Edenglen	SFDR	310	DU
		Multi-Family Attached (Condo)	274	DU
		Shopping Center	217.520	TSF
		Business Park	550.000	TSF
O3	Esperanza	SFDR	914	DU
		Multi-Family Attached (Apartments)	496	DU
O4	Grand Park	SFDR	484	DU
		Multi-Family Attached (Apartments)	843	DU
O5	Parkside	SFDR	437	DU
		Multi-Family Attached (Apartments)	1,510	DU
		Shopping Center	115.000	TSF
O6	Rich Haven	SFDR	2,732	DU
		Multi-Family Attached (Condo)	1,524	DU
		Shopping Center	317.400	TSF
O7	Subarea 29 & Amendment	SFDR	2,149	DU
		Shopping Center	87.000	TSF
O8	The Avenue	SFDR	2,020	DU
		Multi-Family Attached (Apartments)	586	DU
		Shopping Center	250.000	TSF
O9	West Haven	SFDR	753	DU
		Shopping Center	87.000	TSF
O10	Tuscana Village	SFDR	176	DU
		Shopping Center	26.000	TSF
O11	Colony Commerce East	High-Cube Warehouse	998.680	TSF
		Warehousing	505.440	TSF
		Manufacturing	168.480	TSF
O12	PDEV10-008 - Dry Food Storage	Mini-Warehouse	17.000	TSF
O13	PDEV08-008	Shopping Center	3.920	TSF
O14	Colony Commerce West	High-Cube Warehouse	2213.360	TSF
		Manufacturing	737.786	TSF
O15	West Ontario Commerce Center SP	High-Cube Warehouse	1976.535	TSF
		Manufacturing	658.845	TSF
		Business Park	548.856	TSF
City of Jurupa Valley				
JV1	Thoroughbred Farms	General Light Industrial	42.6	AC
		Business Park	35.5	AC
		Commercial	19.1	AC
JV2	Harmony Trails	SFDR	176	DU
JV3	Vernola Marketplace Apartments	Apartments	397	DU
JV4	Riverbend	Residential	466	DU
JV5	Wineville Marketplace	Commercial	37.657	TSF
JV6	Express Car Wash	Car Wash		
City of Norco				
N1	Silverlakes Equestrian[6]	The Field House Restaurant	250	Seats
		Stadium	5,000	Seats

[1] SFDR = Single Family Detached Residential

[2] TSF = Ten Thousand Square Feet; DU = Dwelling Unit; VFP = Vehicle Fueling Position ; AC = Acres

[3] Source: Eastvale South Trip Generation Analysis, Albert A. Webb Associates, May 27, 2011

[4] Source: Trip Generation Comparison for Cloverdale Marketplace, Phase II, Eastvale CA, Albert A. Webb Associates, August 15, 2011.

[5] Source: Altfillisch Residential Project TIA Memorandum, LSA Associates, Inc., July 25, 2011.

[6] Source: From Silverlakes TIA (Revised), Kunzman Associates, September 25, 2008.

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5 E+P TRAFFIC CONDITIONS

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

5.1 ROADWAY IMPROVEMENTS

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

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

5.2 EXISTING PLUS PROJECT TRAFFIC VOLUME FORECASTS

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

5.3 INTERSECTION OPERATIONS ANALYSIS

E+P peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TIA. The intersection analysis results are summarized in Table 5-1, which indicates there are no additional intersections anticipated to operate at an unacceptable LOS, in addition to the intersections previously identified for Existing (2017) traffic conditions.

Consistent with Table 5-1, a summary of the peak hour intersection LOS for E+P conditions is shown on Exhibit 5-2. The intersection operations analysis worksheets for E+P traffic conditions are included in Appendix 5.1 of this TIA.

5.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

All existing study area intersections are currently signalized. As such, a traffic signal warrant analysis has not been prepared for E+P traffic conditions.

5.5 ROADWAY SEGMENT ANALYSIS

The roadway segment capacities utilized for the purposes of this analysis are approximate figures only, and are used at the General Plan level to assist in determining the roadway functional classification (number of through lanes) needed to meet traffic demand. Table 5-2 provides a summary of the E+P conditions roadway segment capacity analysis based on the applicable roadway segment capacity. As shown on Table 5-2, there are no additional segments anticipated to operate at an unacceptable LOS in addition to the location previously identified for Existing (2017) traffic conditions.

EXHIBIT 5-1: E+P TRAFFIC VOLUMES

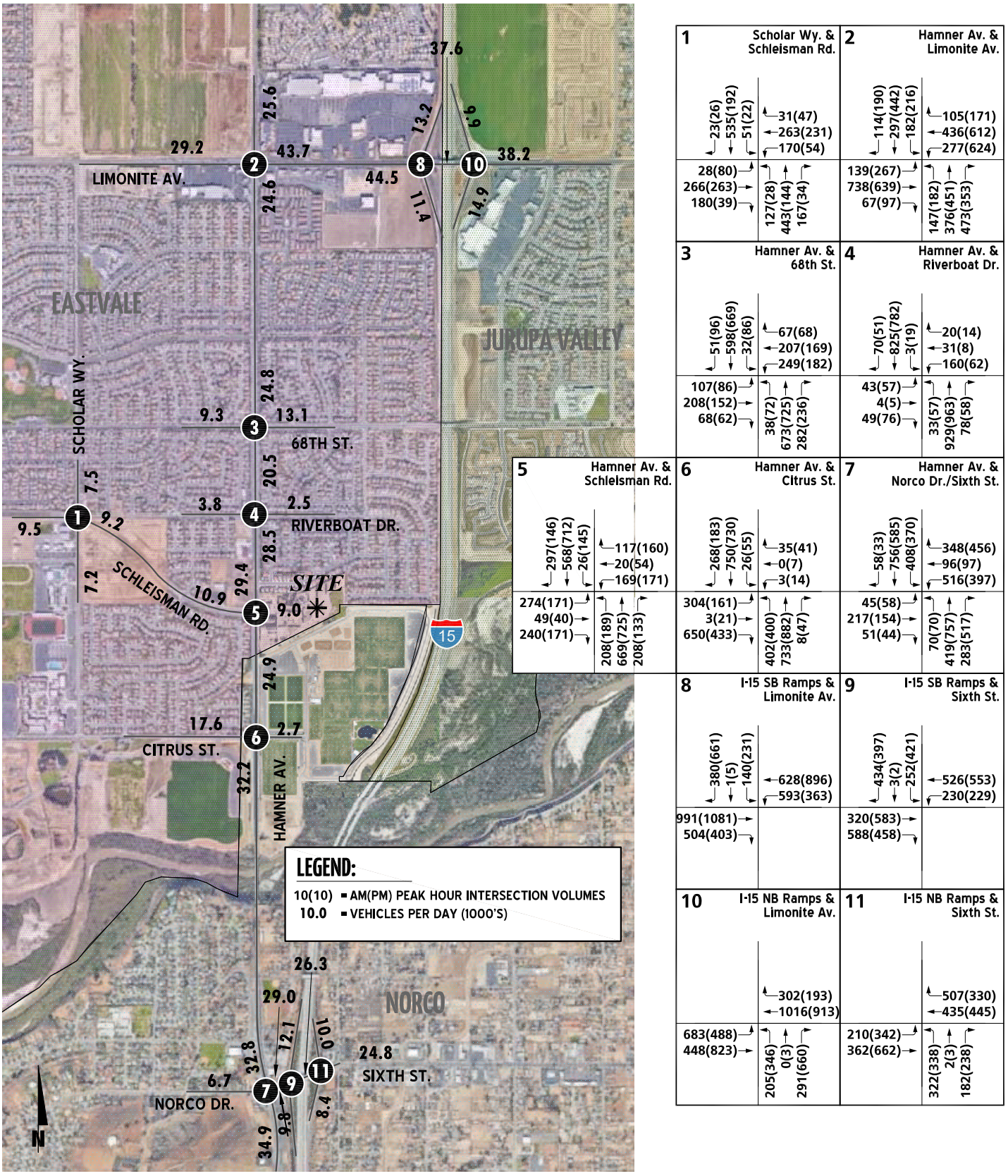

EXHIBIT 5-2: E+P SUMMARY OF LOS

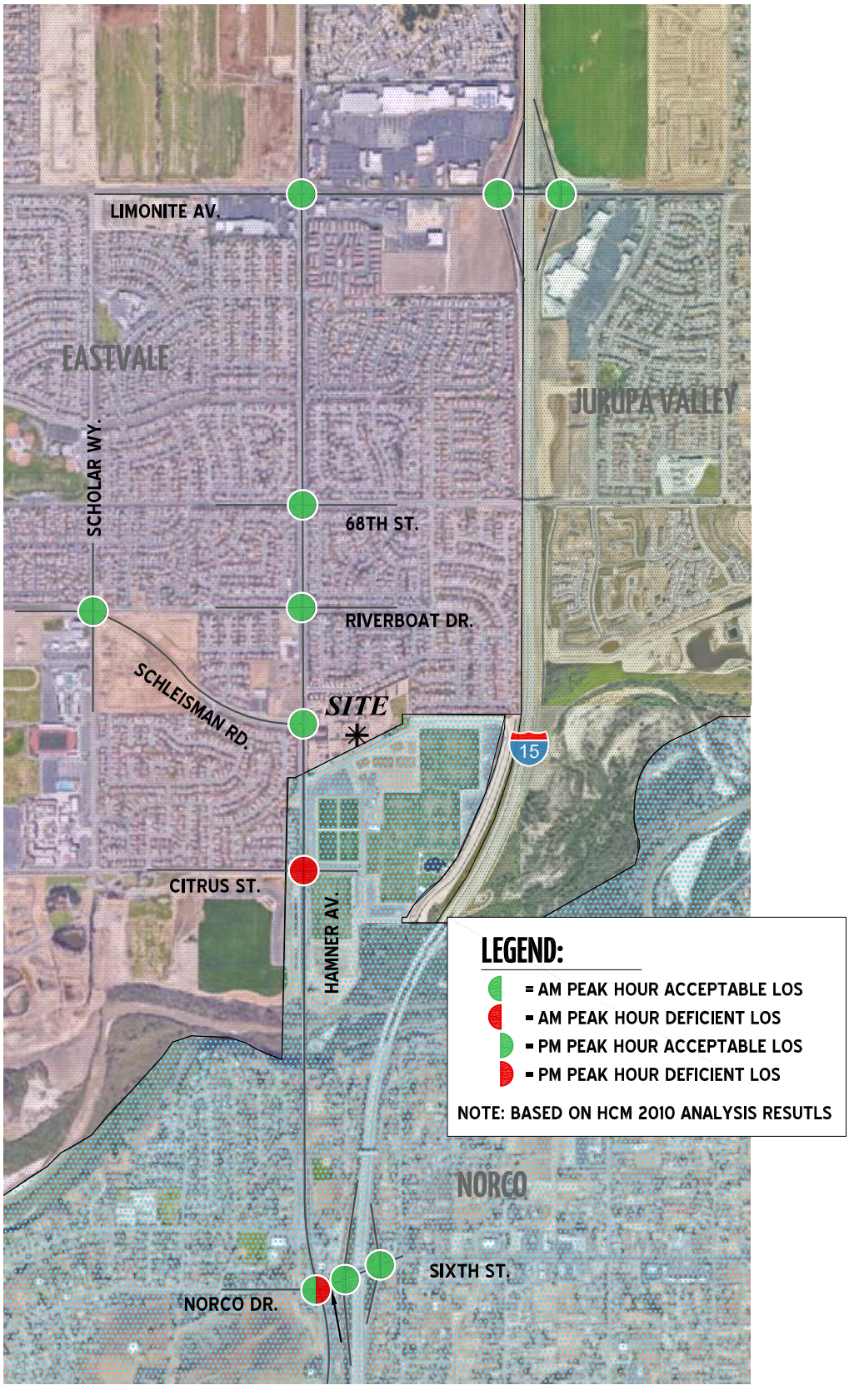

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Table 5-1

Intersection Analysis for E+P Conditions

#	Intersection	Traffic Control[3]	Existing (2017)								E+P							
			ICU[2] (v/c)		Level of Service		Delay[2] (secs.)		Level of Service		ICU[2] (v/c)		Level of Service		Delay[2] (secs.)		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Scholar Wy. & Schleisman Rd.	TS	0.61	0.27	B	A	30.3	15.7	C	B	0.62	0.28	B	A	32.4	16.0	C	B
2	Hamner Av. & Limonite Av.	TS	0.63	0.65	B	B	35.4	41.3	D	D	0.67	0.72	B	C	39.0	45.7	D	D
3	Hamner Av. & 68th St.	TS	0.65	0.49	B	A	27.2	20.8	C	C	0.68	0.53	B	A	29.3	22.1	C	C
4	Hamner Av. & Riverboat Dr.	TS	0.53	0.39	A	A	20.1	15.9	C	B	0.64	0.48	B	A	24.3	19.6	C	B
5	Hamner Av. & Schleisman Rd.	TS	0.75	0.58	C	A	22.8	13.1	C	B	0.78	0.63	C	B	34.0	23.6	C	C
6	Hamner Av. & Citrus Av.	TS	0.78	0.59	C	A	**127.3**	**99.8**	**F**	**F**	0.82	0.64	D	B	**162.8**	**103.8**	**F**	**F**
7	Hamner Av. & Norco Dr./6th St.	TS	0.79	0.90	C	D	43.8	**62.9**	D	**E**	0.84	**0.98**	D	**E**	51.4	**78.3**	D	**E**
8	I-15 SB Ramps & Limonite Av.	TS	Not Applicable[4]				26.2	30.6	C	C	Not Applicable[4]				27.4	32.9	C	C
9	I-15 SB Ramps & 6th St.	TS	Not Applicable[4]				34.4	28.9	C	C	Not Applicable[4]				34.7	29.0	C	C
10	I-15 NB Ramps & Limonite Av.	TS	Not Applicable[4]				28.1	27.7	C	C	Not Applicable[4]				28.4	28.5	C	C
11	I-15 NB Ramps & 6th St.	TS	Not Applicable[4]				22.2	23.3	C	C	Not Applicable[4]				24.8	25.0	C	C

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

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

; T = Through; R = Right; > = Right-Turn Overlap Phasing; >> = Free-Right Turn Lane; d= Defacto Rig

[2] ICU reported in volume-to-capacity (v/c) using the Traffix software and HCM delay reported in seconds using the Synchro software. Per the 2010 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.

[3] TS = Traffic Signal

[4] Only delay reported as Caltrans does not utilize the ICU methodology.

Table 5-2

Roadway Segment Analysis for E+P Conditions

#	Roadway	Segment Limits	Roadway Section	LOS Capacity[1]	Existing (2017)	V/C[2]	LOS[3]	E+P	V/C[2]	LOS[3]	Acceptable LOS[4]
1	Schleisman Road	Scholar Way to Hamner Avenue	5D	44,900	9,997	0.22	A	11,097	0.25	A	D
2	Hamner Avenue	Limonite Avenue to 68th Street	6D	53,900	22,751	0.42	A	24,881	0.46	A	D
3		68th Street to Riverboat Drive	6D	53,900	18,207	0.34	A	20,959	0.39	A	D
4		Riverboat Drive to Schleisman Road	4D	35,900	27,069	0.75	C	30,007	0.84	D	D
5		Schleisman Road to Citrus Street	4D	35,900	22,383	0.62	B	25,359	0.71	C	D
6		Citrus Street to Norco Drive/6th Street[5]	2U	17,950	**30,703**	**1.71**	**F**	**32,535**	**1.81**	**F**	D
7	Limonite Avenue	Hamner Avenue to I-15 Freeway	8D	71,800	42,612	0.59	C	43,922	0.61	B	D
8	6th Street	Hamner Avenue to I-15 Freeway	4D	35,900	25,154	0.70	C	26,464	0.74	C	D

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

[1] These maximum roadway capacities have been extracted from the following source: City of Eastvale General Plan (Table C-1) for each applicable roadway type. These roadway capacities are "rule of thumb" estimates for planning purposes. The LOS E service volumes are estimated maximum daily capacity for respective classifications. Capacity is affected by such factors as intersections (spacing, configuration and control features), degree of access control, roadway grades, design geometrics (horizontal and vertical alignment standards), sight distance, vehicle mix (truck and bus traffic) and pedestrian and bicycle traffic.

[2] v/c = Volume-to-capacity

[3] LOS = Level of Service

[4] Where the average daily volume (ADT) based roadway segment analysis indicates a deficiency (unacceptable LOS), a review of the more detailed peak hour intersection analysis is undertaken. The more detailed peak hour intersection analysis explicitly accounts for factors that affect roadway capacity. A review of the more detailed peak hour intersection analysis is necessary to determine whether roadway widening along the segment is necessary. For the purposes of this analysis, if the peak hour intersection operations on either side of the roadway segment are anticipated to operate at LOS D or better, then additional roadway segment widening is not recommended. Therefore, for the purposes of this analysis, roadway segment widening is typically only recommended if the peak hour intersection analysis indicates the need for additional through lanes. Furthermore, it is likely that a roadway segment can have a volume-to-capacity ratio of up to 1.10 if the adjacent intersections are anticipated to operate at acceptable LOS, without the need for additional widening. As the LOS threshold for the study area intersections is LOS D, LOS D has also been utilized as the minimum LOS criteria for roadway segments for the purposes of this analysis.

[5] This roadway segment is 3 lanes just south of Citrus Avenue and narrows to 2 lanes (one lane in each direction) from just north of the Santa Ana River to Norco Drive/6th Street.

5.6 OFF-RAMP QUEUING ANALYSIS

Queuing analysis findings for E+P are presented in Table 5-3. As shown on Table 5-3, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows with the addition of either Project or Project (Alternative Access) traffic. Worksheets for E+P traffic conditions off-ramp queuing analysis are provided in Appendix 5.2.

5.7 PROJECT IMPACTS AND RECOMMENDED IMPROVEMENTS

This section provides a summary of Project impacts and recommended improvements. Based on the City of Eastvale significance criteria discussed in Section 2.7 *Thresholds of Significance*, the following intersections were found to be impacted by Project.

5.7.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

Based on the City of Eastvale's significance criteria as discussed in Section 2.8 *Thresholds of Significance*, the following study area intersections were found to be significantly impacted by the Project for E+P traffic conditions:

- Hamner Avenue & Citrus Avenue (#6)
- Hamner Avenue & Norco Drive/6th Street (#7)

As shown on Table 5-4, both intersections are currently operating at a deficient LOS, however, the addition of Project traffic is anticipated to increase the delay during one or both peak hours by 5.0 seconds or more. As such, the Project's impact to the off-site study area intersections listed above is cumulatively considerable.

As shown on Table 5-5, improvement strategies are recommended at intersections that this report identifies as significantly impacted by the Project in an effort to reduce each location's peak hour delay and improve the associated LOS grade to an acceptable LOS. The Project would contribute fair share towards the recommended improvements shown on Table 5-5 to reduce the impacts to less than significant.

Table 5-3

Peak Hour Off-Ramp Queuing Analysis for E+P Conditions

Intersection	Movement	Stacking (Feet)	Existing (2017)				E+P			
			95th Percentile Stacking Distance Required (Feet)		Acceptable? [1]		95th Percentile Stacking Distance Required (Feet)		Acceptable? [1]	
			Hour	PM Peak Hour	AM	PM	Hour	PM Peak Hour	AM	PM
I-15 SB Off-Ramp / Limonite Av.										
	SBL	400	153	204	Yes	Yes	153	204	Yes	Yes
	SBL/T/R	1,175	81	223	Yes	Yes	85	251	Yes	Yes
	SBR	400	64	208	Yes	Yes	68	237	Yes	Yes
I-15 SB Off-Ramp / 6th St.										
	SBL/T	1,385	186	359 [2]	Yes	Yes	186	359 [2]	Yes	Yes
	SBR	265	96	108	Yes	Yes	131	135	Yes	Yes
I-15 NB Off-Ramp / /Limonite Av.										
	NBL	450	194	305	Yes	Yes	194	305	Yes	Yes
	NBL/T/R	1,290	89	220	Yes	Yes	89	226	Yes	Yes
	NBR	450	60	211	Yes	Yes	60	217	Yes	Yes
I-15 NB Off-Ramp / 6th St.										
	NBL/T	1,280	217	276 [2]	Yes	Yes	298 [2]	338 [2]	Yes	Yes
	NBR	200	48	56	Yes	Yes	48	56	Yes	Yes

[1] 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.

[2] 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Table 5-4

Determination of Significant Impacts for E+P Conditions

#	Intersection	Traffic Control[2]	Existing (2017)				E+P						
			Delay [1] (secs.)		Level of Service		Delay [1] (secs.)		Level of Service		Change in Delay		Significant Impact?
			AM	PM	AM	PM	AM	PM	AM	PM			
1	Scholar Wy. & Schleisman Rd.	TS	30.3	15.7	C	B	32.4	16.0	C	B	--	--	No
2	Hamner Av. & Limonite Av.	TS	35.4	41.3	D	D	39.0	45.7	D	D	--	--	No
3	Hamner Av. & 68th St.	TS	27.2	20.8	C	C	29.3	22.1	C	C	--	--	No
4	Hamner Av. & Riverboat Dr.	TS	20.1	15.9	C	B	24.3	19.6	C	B	--	--	No
5	Hamner Av. & Schleisman Rd.	TS	22.8	13.1	C	B	34.0	23.6	C	C	--	--	No
6	Hamner Av. & Citrus Av.	TS	**127.3**	**99.8**	**F**	**F**	**162.8**	**103.8**	**F**	**F**	**35.5**	**4.0**	**Yes**
7	Hamner Av. & Norco Dr./6th St.	TS	43.8	**62.9**	D	**E**	51.4	**78.3**	D	**E**	--	**15.4**	**Yes**
8	I-15 SB Ramps & Limonite Av.	TS	26.2	30.6	C	C	27.4	32.9	C	C	--	--	No
9	I-15 SB Ramps & 6th St.	TS	34.4	28.9	C	C	34.7	29.0	C	C	--	--	No
10	I-15 NB Ramps & Limonite Av.	TS	28.1	27.7	C	C	28.4	28.5	C	C	--	--	No
11	I-15 NB Ramps & 6th St.	TS	22.2	23.3	C	C	24.8	25.0	C	C	--	--	No

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

[1] HCM delay reported in seconds using the Synchro software. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of servic 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 fc the worst individual movement (or movements sharing a single lane) are shown

[2] TS = Traffic Signal

Table 5-5

Intersection Analysis for E+P Conditions With Improvements

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												ICU[2] (v/c)		Level of Service		Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound										
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM	AM	PM
6	Hamner Av. & Citrus Av.																					
	- Without Improvements	TS	1	2	1>	2	2	1>	1	1	1>	1	1	0	0.82	0.64	D	B	**162.8**	**103.8**	**F**	**F**
	- With Improvements[4]	TS	**2**	2	1>	2	2	1>	1	1	1>	1	1	0	0.82	0.60	D	B	44.8	30.1	D	C
7	Hamner Av. & Norco Dr./6th St.																					
	- Without Improvements	TS	1	2	d	1	2	d	1	2	0	1	1	1	0.84	**0.98**	D	**E**	51.4	**78.3**	D	**E**
	- With Improvements	TS	1	2	**1>**	1	2	d	1	2	0	1	1	**1>**	0.76	0.75	C	C	36.5	39.3	D	D

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

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

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

[2] ICU reported in volume-to-capacity (v/c) using the Traffix software and HCM delay reported in seconds using the Synchro software
Per the 2010 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

[3] TS = Traffic Signal

[4] Recommended improvement shown consists of restriping the northbound approach to provide 2 left turn lanes. No widening is necessary.

5.7.2 RECOMMENDED IMPROVEMENTS TO ADDRESS ROADWAY SEGMENTS

As shown previously on Table 5-2, the only deficient roadway segment is Hamner Avenue between Citrus Street and Norco Drive/6th Street. As noted previously, this segment is currently 3 lanes south of Citrus Street and narrows to a 2-lane roadway from north of the Santa Ana River south to Norco Drive/6th Street. The peak hour intersection operations indicate that the intersections on either end can accommodate peak hour traffic with the intersection improvements shown on Table 5-5.

The addition of Project is anticipated to the increase the existing deficiency by more than 0.01. As such, the impact is considered cumulatively considerable and the Project should contribute its fair share towards the improvements. The City of Norco's General Plan shows as 6-lane facility along this portion of Hamner Avenue. Table 5-6 shows the LOS for the segment as a 6-lane facility. The Project should contribute their fair share towards the future widening of Hamner Avenue between Citrus Street and Norco Drive/6th Street.

5.7.3 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON OFF-RAMP QUEUES

As shown previously on Table 5-3, there are no peak hour queuing issues at I-15 Freeway and Limonite Avenue and 6th Street interchanges. As such, no improvements have been recommended.

Table 5-6

Roadway Segment Analysis for E+P Conditions With Improvements

#	Roadway	Segment Limits	Roadway Section	LOS Capacity[1]	Existing (2017)	V/C[2]	LOS[3]	E+P	V/C[2]	LOS[3]	Acceptable LOS[4]
6	Hamner Avenue	Citrus Street to Norco Drive/6th Street[5]	**6D**	53,900	30,703	0.57	A	32,535	0.60	B	D

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

[1] These maximum roadway capacities have been extracted from the following source: City of Eastvale General Plan (Table C-1) for each applicable roadway type. These roadway capacities are "rule of thumb" estimates for planning purposes. The LOS E service volumes are estimated maximum daily capacity for respective classifications. Capacity is affected by such factors as intersections (spacing, configuration and control features), degree of access control, roadway grades, design geometrics (horizontal and vertical alignment standards), sight distance, vehicle mix (truck and bus traffic) and pedestrian and bicycle traffic.

[2] v/c = Volume-to-capacity

[3] LOS = Level of Service

[4] Where the average daily volume (ADT) based roadway segment analysis indicates a deficiency (unacceptable LOS), a review of the more detailed peak hour intersection analysis is undertaken. The more detailed peak hour intersection analysis explicitly accounts for factors that affect roadway capacity. A review of the more detailed peak hour intersection analysis is necessary to determine whether roadway widening along the segment is necessary. For the purposes of this analysis, if the peak hour intersection operations on either side of the roadway segment are anticipated to operate at LOS D or better, then additional roadway segment widening is not recommended. Therefore, for the purposes of this analysis, roadway segment widening is typically only recommended if the peak hour intersection analysis indicates the need for additional through lanes. Furthermore, it is likely that a roadway segment can have a volume-to-capacity ratio of up to 1.10 if the adjacent intersections are anticipated to operate at acceptable LOS, without the need for additional widening. As the LOS threshold for the study area intersections is LOS D, LOS D has also been utilized as the minimum LOS criteria for roadway segments for the purposes of this analysis.

[5] This roadway segment will be widened to 6 lanes between Citrus Street and Detroit Street through SB132.

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6 OPENING YEAR CUMULATIVE (2019) TRAFFIC CONDITIONS

This section discusses the methods used to develop Opening Year Cumulative (2019) Without and With Project traffic forecasts, and the resulting intersection operations analysis and roadway segment capacities.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Opening Year Cumulative (2019) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

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

6.2 OPENING YEAR CUMULATIVE (2019) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus an ambient growth factor of 3.23% plus traffic from pending and approved but not yet constructed known development projects in the area. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Opening Year Cumulative (2019) Without Project traffic conditions are shown on Exhibit 6-1.

6.3 OPENING YEAR CUMULATIVE (2019) WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Opening Year Cumulative (2019) Without Project traffic with the addition of Project traffic. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Opening Year Cumulative (2019) With Project traffic conditions are shown on Exhibit 6-2.

EXHIBIT 6-1: OPENING YEAR CUMULATIVE (2019) WITHOUT PROJECT TRAFFIC VOLUMES

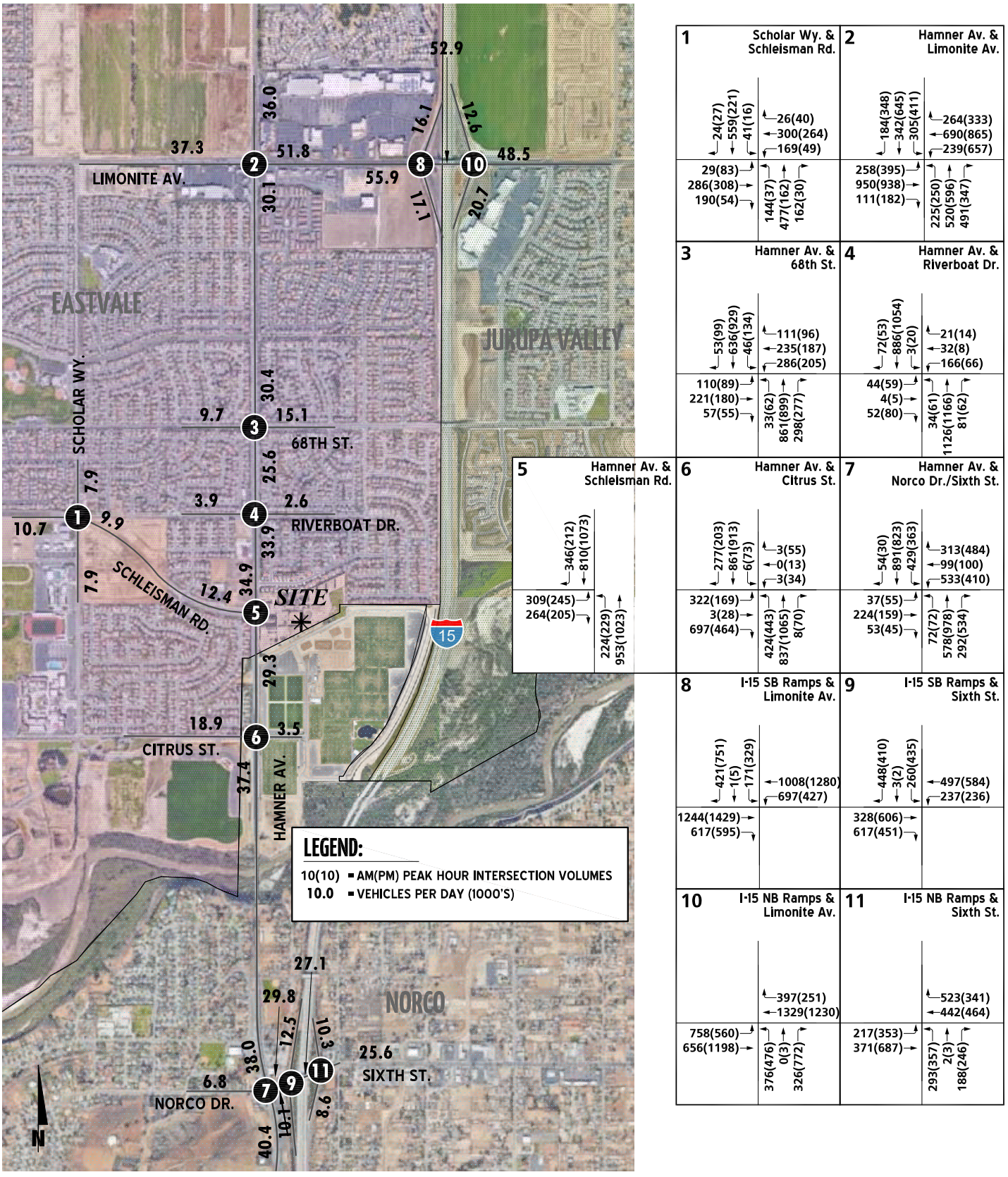
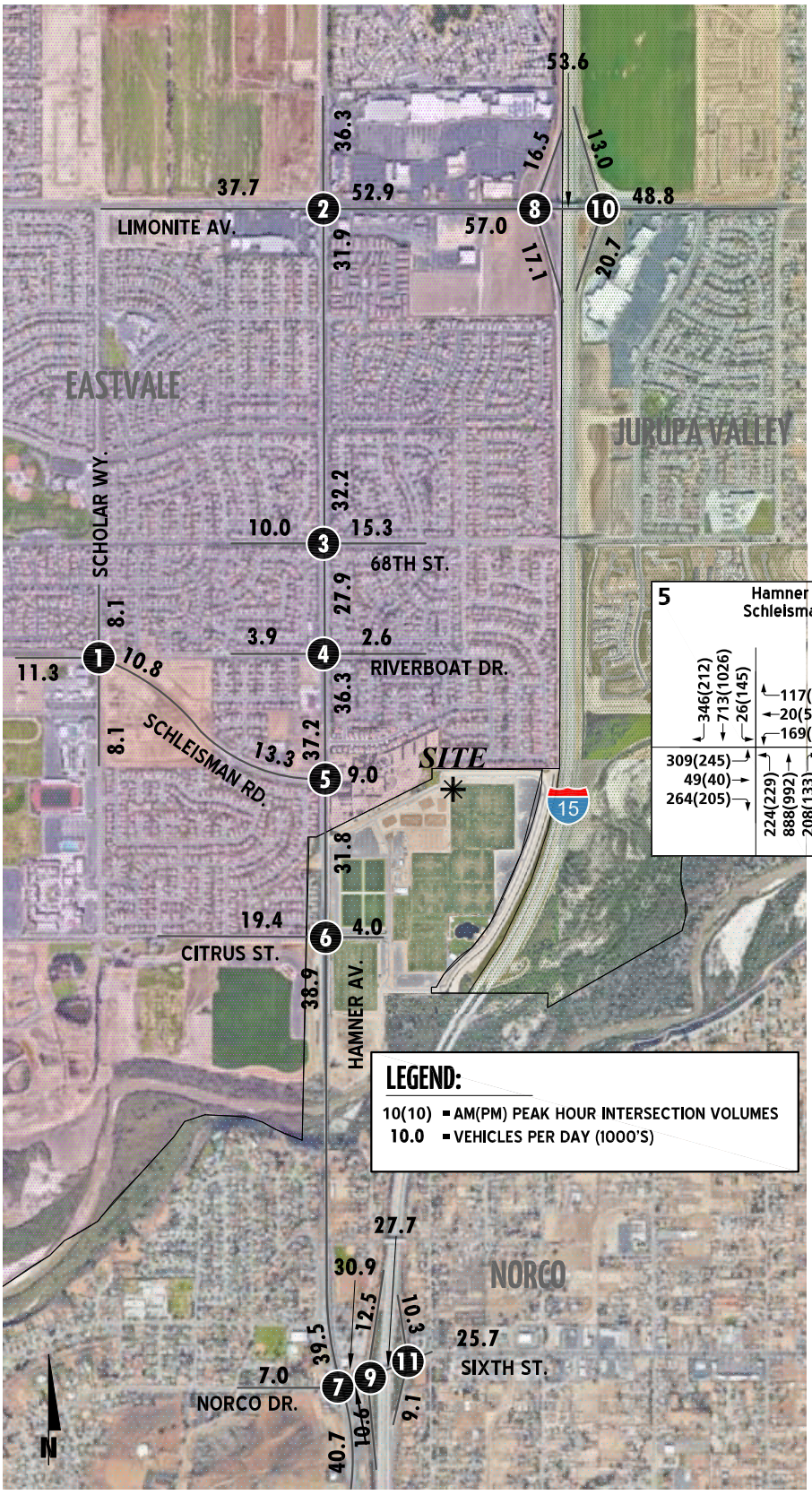
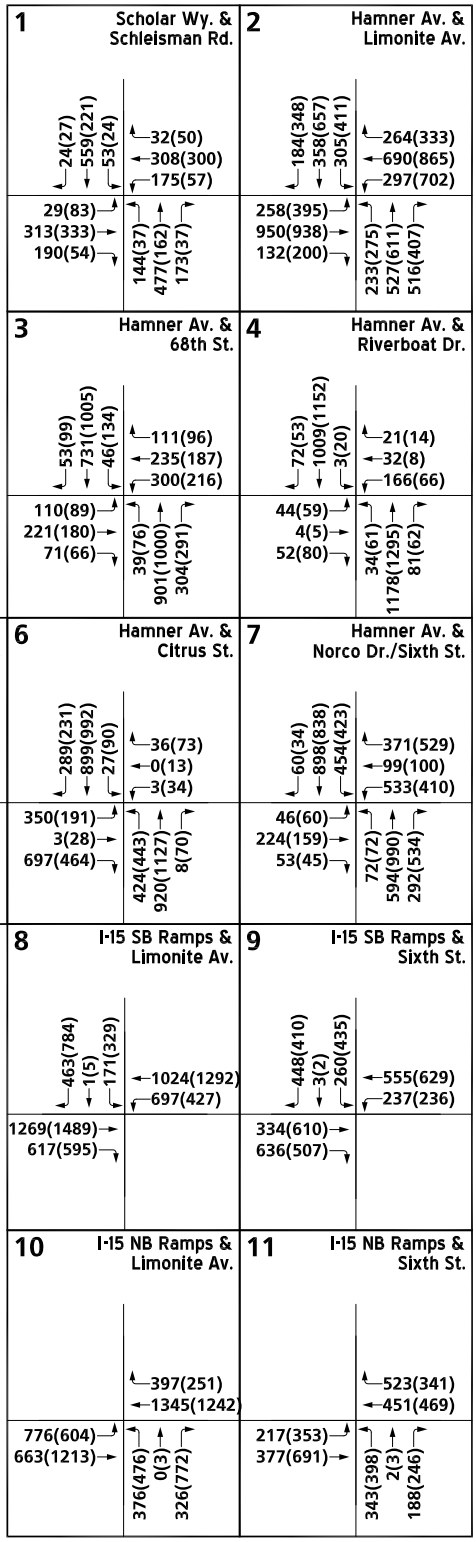


EXHIBIT 6-2: OPENING YEAR CUMULATIVE (2019) WITH PROJECT TRAFFIC VOLUMES





6.4 INTERSECTION OPERATIONS ANALYSIS

6.4.1 OPENING YEAR CUMULATIVE (2019) WITHOUT PROJECT TRAFFIC CONDITIONS

LOS calculations were conducted for the study intersections to evaluate their operations under Opening Year Cumulative (2019) Without Project conditions with roadway and intersection geometrics consistent with Section 6.1 *Roadway Improvements*. As shown in Table 6-1, the following study area intersections are anticipated to operate at an unacceptable LOS under Opening Year Cumulative (2019) Without Project traffic conditions:

- Hamner Avenue & Limonite Avenue (#2) – LOS E AM and PM peak hours
- Hamner Avenue & Citrus Avenue (#6) – LOS F AM and PM peak hours
- Hamner Avenue & Norco Drive/6th Street (#7) – LOS E AM peak hour; LOS F PM peak hour

A summary of the peak hour intersection LOS for Opening Year Cumulative (2019) Without Project conditions is shown on Exhibit 6-3. The intersection operations analysis worksheets for Opening Year Cumulative (2019) Without Project traffic conditions are included in Appendix 6.1 of this TIA.

6.4.2 OPENING YEAR CUMULATIVE (2019) WITH PROJECT TRAFFIC CONDITIONS

As shown on Table 6-1 and illustrated on Exhibit 6-4, there are no additional study area intersections anticipated to operate at an unacceptable LOS with the addition of Project traffic, in addition to those previously identified for Opening Year Cumulative (2019) Without Project traffic conditions. The intersection operations analysis worksheets for Opening Year Cumulative (2019) With Project traffic conditions are included in Appendix 6.2 of this TIA.

6.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

All existing study area intersections are currently signalized. As such, a traffic signal warrant analysis has not been prepared for Opening Year Cumulative traffic conditions.

Table 6-1

Intersection Analysis for Opening Year Cumulative (2019) Conditions

#	Intersection	Traffic Control[3]	2019 Without Project								2019 With Project							
			ICU[2] (v/c)		Level of Service		Delay[2] (secs.)		Level of Service		ICU[2] (v/c)		Level of Service		Delay[2] (secs.)		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Scholar Wy. & Schleisman Rd.	TS	0.52	0.29	A	A	34.3	16.1	C	B	0.53	0.29	A	A	36.7	16.4	D	B
2	Hamner Av. & Limonite Av.	TS	0.75	0.80	C	C	51.3	**70.9**	D	**E**	0.77	0.86	C	D	**55.4**	**77.9**	**E**	**E**
3	Hamner Av. & 68th St.	TS	0.62	0.60	B	A	31.4	25.4	C	C	0.64	0.64	B	B	33.7	27.6	C	C
4	Hamner Av. & Riverboat Dr.	TS	0.49	0.51	A	A	20.1	21.6	C	C	0.58	0.61	A	B	24.3	26.4	C	C
5	Hamner Av. & Schleisman Rd.[4]	TS	0.72	0.72	C	C	31.2	20.5	C	C	0.75	0.77	C	C	45.5	35.9	D	D
6	Hamner Av. & Citrus Av.	TS	0.76	0.72	C	C	**140.3**	**131.5**	**F**	**F**	0.79	0.77	C	C	**177.9**	**134.0**	**F**	**F**
7	Hamner Av. & Norco Dr./6th St.	TS	0.78	**0.98**	C	**E**	50.2	**86.0**	D	**F**	0.85	**1.06**	D	**F**	**59.1**	**101.6**	**E**	**F**
8	I-15 SB Ramps & Limonite Av.	TS	Not Applicable[5]				34.3	35.5	C	D	Not Applicable[5]				36.3	41.8	D	D
9	I-15 SB Ramps & 6th St.	TS	Not Applicable[5]				35.0	30.2	C	C	Not Applicable[5]				36.0	30.9	D	C
10	I-15 NB Ramps & Limonite Av.	TS	Not Applicable[5]				32.6	36.5	C	D	Not Applicable[5]				33.4	38.7	C	D
11	I-15 NB Ramps & 6th St.	TS	Not Applicable[5]				26.8	26.5	C	C	Not Applicable[5]				34.7	28.2	C	C

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

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.
; T = Through; R = Right; > = Right-Turn Overlap Phasing; >> = Free-Right Turn Lane; d= Defacto Righ

[2] ICU reported in volume-to-capacity (v/c) using the Traffix software and HCM delay reported in seconds using the Synchro software.
Per the 2010 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.

[3] TS = Traffic Signal

[4] Intersection improvements needed to facilitate site access are included for E+P conditions.

[5] Only delay reported as Caltrans does not utilize the ICU methodology.

EXHIBIT 6-3: OPENING YEAR CUMULATIVE (2019) WITHOUT PROJECT SUMMARY OF LOS

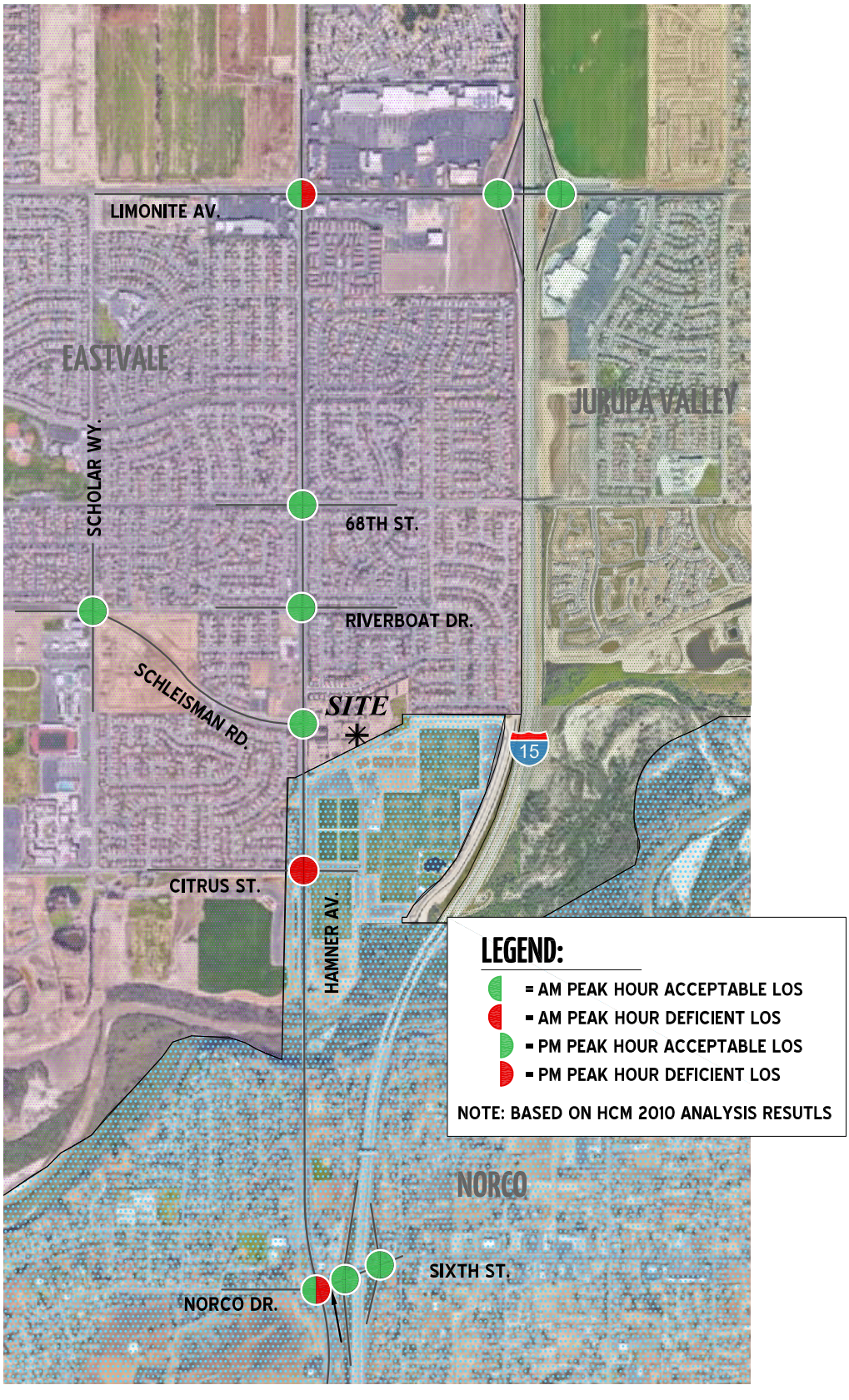


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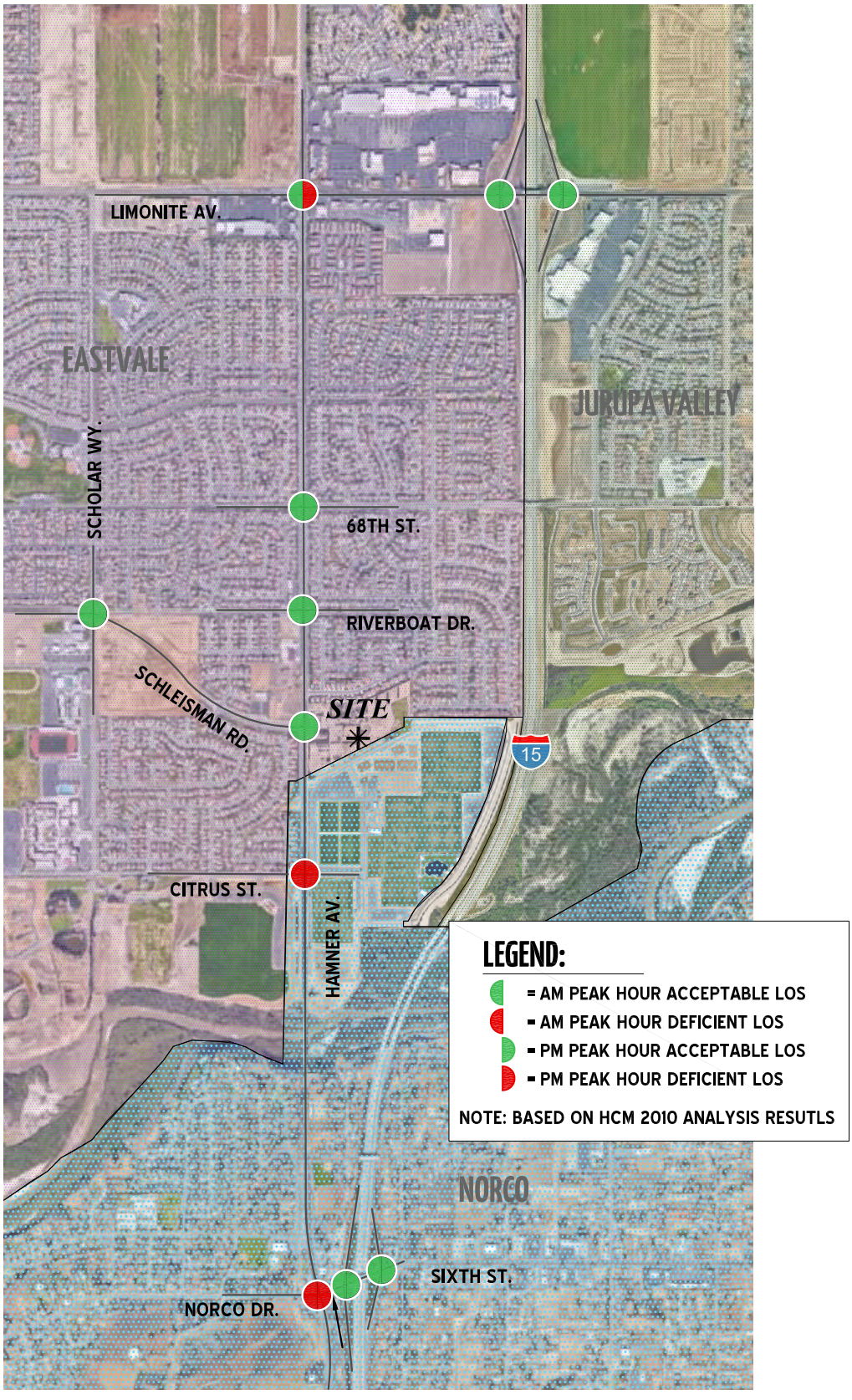
EXHIBIT 6-4: OPENING YEAR CUMULATIVE (2019) WITH PROJECT SUMMARY OF LOS



6.6 ROADWAY SEGMENT ANALYSIS

The roadway segment capacities utilized for the purposes of this analysis are approximate figures only, and are used at the General Plan level to assist in determining the roadway functional classification (number of through lanes) needed to meet traffic demand. Table 6-2 provides a summary of the Opening Year Cumulative (2019) Without Project conditions roadway segment capacity analysis based on the applicable roadway segment capacity. As shown on Table 6-2, the following roadway segments are anticipated to operate at an unacceptable LOS:

- Hamner Avenue, between Riverboat Drive to Schleisman Road (#4) – LOS F
- Hamner Avenue, between Citrus Street to Norco Drive/6th Street (#6) – LOS F

There are no additional roadway segments anticipated to operate at a deficient LOS with the addition of Project traffic for Opening Year Cumulative (2019) With Project traffic conditions.

6.7 OFF-RAMP QUEUING ANALYSIS

Queuing analysis findings for Opening Year Cumulative (2019) Without and With Project traffic conditions are shown in Table 6-3. As shown on Table 6-3, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows with the addition of Project traffic. Worksheets for Opening Year Cumulative (2019) Without and With Project traffic conditions off-ramp queuing analysis are provided in Appendices 6.3 and 6.4, respectively.

6.8 RECOMMENDED IMPROVEMENTS

6.8.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

Based on the City of Eastvale's significance criteria as discussed in Section 2.8 *Thresholds of Significance*, the following study area intersections were found to be significantly impacted by the Project for Opening Year Cumulative (2019) traffic conditions:

- Hamner Avenue & Limonite Avenue (#2) – LOS E AM peak hour; LOS F PM peak hour
- Hamner Avenue & Citrus Avenue (#6) – LOS F AM and PM peak hours
- Hamner Avenue & Norco Drive/6th Street (#7) – LOS F AM and PM peak hours

Table 6-2

Roadway Segment Analysis for Opening Year Cumulative (2019) Conditions

#	Roadway	Segment Limits	Roadway Section	LOS Capacity[1]	2019 NP	V/C[2]	LOS[3]	2019 WP	V/C[2]	LOS[3]	Acceptable LOS[4]
1	Schleisman Road	Scholar Way to Hamner Avenue	5D	44,900	11,700	0.26	A	12,800	0.29	A	D
2	Hamner Avenue	Limonite Avenue to 68th Street	6D	53,900	30,138	0.56	A	32,268	0.60	A	D
3		68th Street to Riverboat Drive	6D	53,900	25,610	0.48	A	28,362	0.53	A	D
4		Riverboat Drive to Schleisman Road	4D	35,900	**34,867**	**0.97**	**E**	**37,805**	**1.05**	**F**	D
5		Schleisman Road to Citrus Street	4D	35,900	29,266	0.82	D	32,242	0.90	D	D
6		Citrus Street to Norco Drive/6th Street[5]	2U	17,950	**37,393**	**2.08**	**F**	**39,225**	**2.19**	**F**	D
7	Limonite Avenue	Hamner Avenue to I-15 Freeway	8D	71,800	50,375	0.70	C	51,685	0.72	C	D
8	6th Street	Hamner Avenue to I-15 Freeway	4D	35,900	26,992	0.75	C	28,302	0.79	C	D

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

[1] These maximum roadway capacities have been extracted from the following source: City of Eastvale General Plan (Table C-1) for each applicable roadway type. These roadway capacities are "rule of thumb" estimates for planning purposes. The LOS E service volumes are estimated maximum daily capacity for respective classifications. Capacity is affected by such factors as intersections (spacing, configuration and control features), degree of access control, roadway grades, design geometrics (horizontal and vertical alignment standards), sight distance, vehicle mix (truck and bus traffic) and pedestrian and bicycle traffic.

[2] v/c = Volume-to-capacity

[3] LOS = Level of Service

[4] Where the average daily volume (ADT) based roadway segment analysis indicates a deficiency (unacceptable LOS), a review of the more detailed peak hour intersection analysis is undertaken. The more detailed peak hour intersection analysis explicitly accounts for factors that affect roadway capacity. A review of the more detailed peak hour intersection analysis is necessary to determine whether roadway widening along the segment is necessary. For the purposes of this analysis, if the peak hour intersection operations on either side of the roadway segment are anticipated to operate at LOS D or better, then additional roadway segment widening is not recommended. Therefore, for the purposes of this analysis, roadway segment widening is typically only recommended if the peak hour intersection analysis indicates the need for additional through lanes. Furthermore, it is likely that a roadway segment can have a volume-to-capacity ratio of up to 1.10 if the adjacent intersections are anticipated to operate at acceptable LOS, without the need for additional widening. As the LOS threshold for the study area intersections is LOS D, LOS D has also been utilized as the minimum LOS criteria for roadway segments for the purposes of this analysis.

[5] This roadway segment is 3 lanes just south of Citrus Avenue and narrows to 2 lanes (one lane in each direction) from just north of the Santa Ana River to Norco Drive/6th Street.

Table 6-3

Peak Hour Off-Ramp Queuing Analysis for Opening Year Cumulative (2019) Conditions

Intersection	Movement	Stacking (Feet)	2019 Without Project				2019 With Project			
			95th Percentile Stacking Distance Required (Feet)		Acceptable?[1]		95th Percentile Stacking Distance Required (Feet)		Acceptable?[1]	
			Hour	PM Peak Hour	AM	PM	Hour	PM Peak Hour	AM	PM
I-15 SB Off-Ramp / Limonite Av.										
	SBL	400	181	295	Yes	Yes	181	295	Yes	Yes
	SBL/T/R	1,175	145	451 [2]	Yes	Yes	176	491 [2]	Yes	Yes
	SBR	400	135	408 [2]	Yes	Yes	168	444 [2]	Yes	Yes[3]
I-15 SB Off-Ramp / 6th St.										
	SBL/T	1,385	227	375 [2]	Yes	Yes	222	375 [2]	Yes	Yes
	SBR	265	147	153	Yes	Yes	183	176	Yes	Yes
I-15 NB Off-Ramp / /Limonite Av.										
	NBL	450	309 [2]	492 [2]	Yes	Yes[3]	309 [2]	492 [2]	Yes	Yes[3]
	NBL/T/R	1,290	224 [2]	452 [2]	Yes	Yes	224 [2]	456 [2]	Yes	Yes
	NBR	450	69	415 [2]	Yes	Yes	69	418 [2]	Yes	Yes
I-15 NB Off-Ramp / 6th St.										
	NBL/T	1,280	286	354 [2]	Yes	Yes	365 [2]	392 [2]	Yes	Yes
	NBR	200	54	57	Yes	Yes	53	63	Yes	Yes

[1] 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.

[2] 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

[3] 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.

As shown on Table 6-4, intersections are currently operating at a deficient LOS, however, the addition of Project traffic is anticipated to increase the delay during one or both peak hours by 5.0 seconds or more. As such, the Project's impact to the listed off-site study area intersections listed above is cumulatively considerable. Based on the City's significance threshold criteria, there is no significant impact at Scholar Way & Schleisman Road and Hamner Avenue & Schleisman Road (once the Project's site adjacent and intersection improvements are implemented).

Improvement strategies are recommended at intersections that this report identifies as significantly impacted by the Project in an effort to reduce each location's peak hour delay and improve the associated LOS grade to an acceptable LOS. The effectiveness of the recommended improvement strategies discussed below to address Opening Year Cumulative traffic deficiencies is presented in Table 6-5. Worksheets for Opening Year Cumulative With Project conditions, with improvements, HCM calculation worksheets are provided in Appendix 6.5.

6.8.2 Recommended Improvements to Address Roadway Segments

The addition of Project is anticipated to the increase the existing deficiency by more than 0.01 for each of the deficient roadway segments previously shown on Table 6-2. As such, the impact is considered cumulatively considerable and the Project should contribute its fair share towards the improvements. Table 6-6 shows the resulting roadway segment LOS with the roadway improvements shown.

6.8.3 Recommended Improvements To Address Deficiencies On Off-Ramp Queues

Although Table 6-3 indicates there are no peak hour queuing issues at I-15 Freeway and Limonite Avenue and 6th Street interchanges, the queuing results at the study area intersections are provided with the recommended intersection improvements for Opening Year Cumulative (2019) traffic conditions. Table 6-7 summarizes the queuing results with the intersection improvements previously listed on Table 6-5. Worksheets for Opening Year Cumulative (2019) With Project traffic conditions, with improvements, off-ramp queuing analysis are provided in Appendix 6.6.

Table 6-4

Determination of Significant Impacts for Opening Year Cumulative (2019) Conditions

#	Intersection	Traffic Control[2]	2019 Without Project				2019 With Project				Change in Delay		Significant Impact?
			Delay [1] (secs.)		Level of Service		Delay [1] (secs.)		Level of Service				
			AM	PM	AM	PM	AM	PM	AM	PM			
1	Scholar Wy. & Schleisman Rd.	TS	34.3	16.1	C	B	36.7	16.4	D	B	--	--	No
2	Hamner Av. & Limonite Av.	TS	**51.3**	**70.9**	**D**	**E**	**55.4**	**77.9**	**E**	**E**	4.1	**7.0**	**Yes**
3	Hamner Av. & 68th St.	TS	31.4	25.4	C	C	33.7	27.6	C	C	--	--	No
4	Hamner Av. & Riverboat Dr.	TS	20.1	21.6	C	C	24.3	26.4	C	C	--	--	No
5	Hamner Av. & Schleisman Rd.	TS	31.2	20.5	C	C	45.5	35.9	D	D	--	--	No
6	Hamner Av. & Citrus Av.	TS	**140.3**	**131.5**	**F**	**F**	**177.9**	**134.0**	**F**	**F**	**37.6**	2.5	**Yes**
7	Hamner Av. & Norco Dr./6th St.	TS	**50.2**	**86.0**	**D**	**F**	**59.1**	**101.6**	**E**	**F**	**8.9**	**15.6**	**Yes**
8	I-15 SB Ramps & Limonite Av.	TS	34.3	35.5	C	D	36.3	41.8	D	D	--	--	No
9	I-15 SB Ramps & 6th St.	TS	35.0	30.2	C	C	36.0	30.9	D	C	--	--	No
10	I-15 NB Ramps & Limonite Av.	TS	32.6	36.5	C	D	33.4	38.7	C	D	--	--	No
11	I-15 NB Ramps & 6th St.	TS	26.8	26.5	C	C	34.7	28.2	C	C	--	--	No

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

[1] HCM delay reported in seconds using the Synchro software. Per the 2010 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.

[2] TS = Traffic Signal

Table 6-5

Intersection Analysis for Opening Year Cumulative (2019) Without Project Conditions With Improvements

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												ICU[2] (v/c)		Level of Service		Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound										
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM	AM	PM
2	Hamner Av. & Limonite Av.																					
	- Without Improvements	TS	2	3	1	2	2	1	2	3	1	2	2	1	0.77	0.86	C	D	**55.4**	**77.9**	**E**	**E**
	- With Improvements	TS	2	3	**1>**	2	**3**	**1>**	2	3	**1>**	2	**3**	**1>**	0.67	0.73	B	C	37.1	39.4	D	D
6	Hamner Av. & Citrus Av.																					
	- Without Improvements	TS	1	2	1>	2	2	1>	1	1	1>	1	1	0	0.79	0.77	C	C	**177.9**	**134.0**	**F**	**F**
	- With Improvements[4]	TS	**2**	**3**	1>	2	**3**	1>	**2**	1	1>	1	1	0	0.59	0.57	A	A	27.7	23.0	C	C
7	Hamner Av. & Norco Dr./6th St.																					
	- Without Improvements	TS	1	2	d	1	2	d	1	2	0	1	1	1	0.85	**1.06**	D	**F**	**59.1**	**101.6**	**E**	**F**
	- With Improvements	TS	1	2	**1>**	**2**	2	**0**	1	2	0	1	1	**1>**	0.66	0.79	B	C	34.3	36.2	C	D

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

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for righ 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

[2] ICU reported in volume-to-capacity (v/c) using the Traffix software and HCM delay reported in seconds using the Synchro software
Per the 2010 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 show

[3] TS = Traffic Signal

[4] Recommended improvement includes modifying the signal to accommodate protected left turn phasing for the eastbound and westbound approaches.

Table 6-6

Roadway Segment Analysis for Opening Year Cumulative (2019) Conditions With Improvements

#	Roadway	Segment Limits	Roadway Section	LOS Capacity[1]	2019 NP	V/C[2]	LOS[3]	2019 WP	V/C[2]	LOS[3]	Acceptable LOS[4]
4	Hamner Avenue	Riverboat Drive to Schleisman Road	**6D**	53,900	34,867	0.65	B	37,805	0.70	C	D
6		Citrus Street to Norco Drive/6th Street[5]	**6D**	53,900	37,393	0.69	B	39,225	0.73	C	D

6D = Improvement (consistent with intersection improvements shown on Table 6-5).

[1] These maximum roadway capacities have been extracted from the following source: City of Eastvale General Plan (Table C-1) for each applicable roadway type. These roadway capacities are "rule of thumb" estimates for planning purposes. The LOS E service volumes are estimated maximum daily capacity for respective classifications. Capacity is affected by such factors as intersections (spacing, configuration and control features), degree of access control, roadway grades, design geometrics (horizontal and vertical alignment standards), sight distance, vehicle mix (truck and bus traffic) and pedestrian and bicycle traffic.

[2] v/c = Volume-to-capacity

[3] LOS = Level of Service

[4] Where the average daily volume (ADT) based roadway segment analysis indicates a deficiency (unacceptable LOS), a review of the more detailed peak hour intersection analysis is undertaken. The more detailed peak hour intersection analysis explicitly accounts for factors that affect roadway capacity. A review of the more detailed peak hour intersection analysis is necessary to determine whether roadway widening along the segment is necessary. For the purposes of this analysis, if the peak hour intersection operations on either side of the roadway segment are anticipated to operate at LOS D or better, then additional roadway segment widening is not recommended. Therefore, for the purposes of this analysis, roadway segment widening is typically only recommended if the peak hour intersection analysis indicates the need for additional through lanes. Furthermore, it is likely that a roadway segment can have a volume-to-capacity ratio of up to 1.10 if the adjacent intersections are anticipated to operate at acceptable LOS, without the need for additional widening. As the LOS threshold for the study area intersections is LOS D, LOS D has also been utilized as the minimum LOS criteria for roadway segments for the purposes of this analysis.

[5] This roadway segment will be widened to 6 lanes between Citrus Street and Detroit Street through SB132.

7 REFERENCES

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

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

3. **Institute of Transportation Engineers.** *Trip Generation.* 9th Edition. 2012.

4. **Transportation Research Board.** *Highway Capacity Manual (HCM).* s.l. : National Academy of Sciences, 2010.

5. **San Diego Associated Governments (SANDAG).** *(Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region.* [PDF] County of San Diego : s.n., April 2002.

6. **Institute of Transportation Engineers.** *Trip Generation Handbook.* August 2014.

7. **Southern California Association of Governments.** *2016 Regional Transportation Plan/Sustainable Communities Strategy.* April 2016.

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