URBAN | CROSSROADS

ARROYO VISTA

TRAFFIC ANALYSIS

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
CA MUTCD	California Manual on Uniform Traffic Control Devices
Caltrans	California Department of Transportation
CMP	Congestion Management Program
DIF	Development Impact Fee
EAP	Existing plus Ambient Growth plus Project
EAPC	Existing plus Ambient Growth plus Project plus Cumulative
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
NCHRP	National Cooperative Highway Research Program
PHF	Peak Hour Factor
Project	Arroyo Vista
RCTC	Riverside County Transportation Commission
RIVCOM	Riverside County Model
RTA	Riverside Transit Agency
TA	Traffic Analysis
TUMF	Transportation Uniform Mitigation Fee
v/c	Volume to Capacity
vphgpl	Vehicles per Hour Green per Lane
WRCOG	Western Riverside Council of Governments

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1 INTRODUCTION

This report presents the results of the Traffic Analysis (TA) for Arroyo Vista ("Project"), which is located on the northwest corner of Chicago Avenue and Iris Avenue in the Woodcrest area of unincorporated County of Riverside, as shown on Exhibit 1-1. The purpose of this TA is to evaluate the potential circulation system deficiencies that may result from the development of the proposed Project, and where necessary recommend improvements to achieve acceptable operations consistent with General Plan level of service goals and policies. This traffic study has been prepared in accordance with the County of Riverside's Traffic Impact Analysis Guidelines and consultation with County staff during the traffic study scoping process. (1) The County approved Project Traffic Study Scoping agreement is provided in Appendix 1.1 of this TA.

1.1 SUMMARY OF FINDINGS

The Project is to construct the following improvement as a design feature in conjunction with development of the site:

- Project to construct Iris Avenue along the Project's frontage at its ultimate half-section width as a Local Street (60-foot right-of-way) from Chicago Avenue to the Project's western boundary consistent with the County's standards.
- Project to construct Chicago Avenue along the Project's frontage at its ultimate half-section width as a Local Street (60-foot right-of-way) from the emergency vehicle access to Gentian Avenue, consistent with the County's standards.

Additional details and intersection lane geometrics are provided in Section 1.6 *Recommendations* of this report.

1.2 PROJECT OVERVIEW

A preliminary site plan for the proposed Project is shown on Exhibit 1-2. The Project is anticipated to be developed in two phases with an opening year of 2026 for Phase 1 and Project Buildout in 2027. Phase 1 is proposed to consist of 121 single family detached residential dwelling units. Project Buildout is proposed to consist of an additional 112 dwelling units, for a total of 233 single family detached residential dwelling units. As indicated on Exhibit 1-2, vehicular access will be provided via the following driveways:

- Street O on Iris Avenue: full access
- Chicago Avenue on Iris Avenue: full access

Regional access to the Project site is available from the SR-91 and I-215 Freeways via Van Buren Boulevard. Exhibit 1-3 depicts the location of the proposed Project in relation to the existing roadway network and the study area intersections.

EXHIBIT 1-1: LOCATION MAP

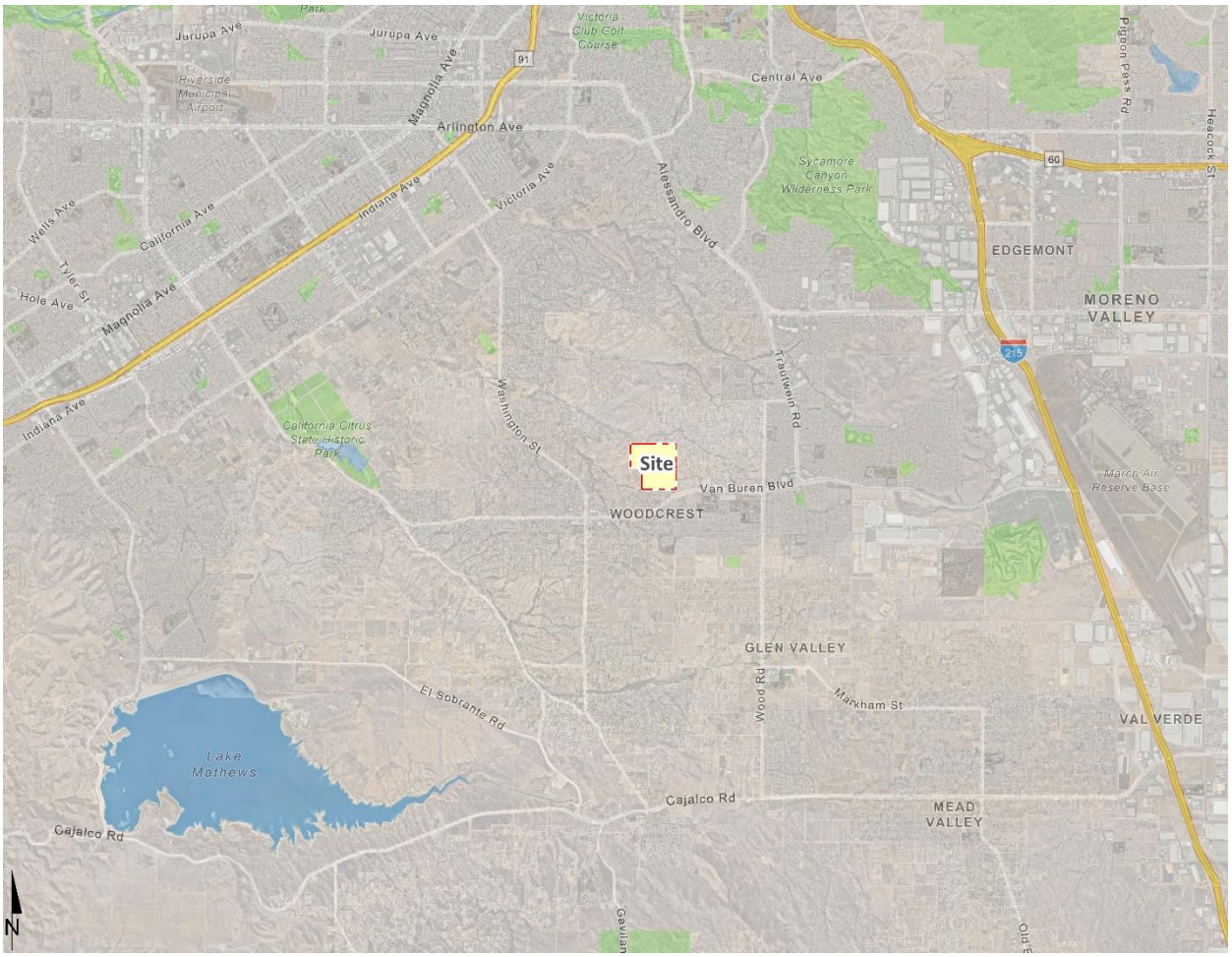


EXHIBIT 1-2: PRELIMINARY SITE PLAN

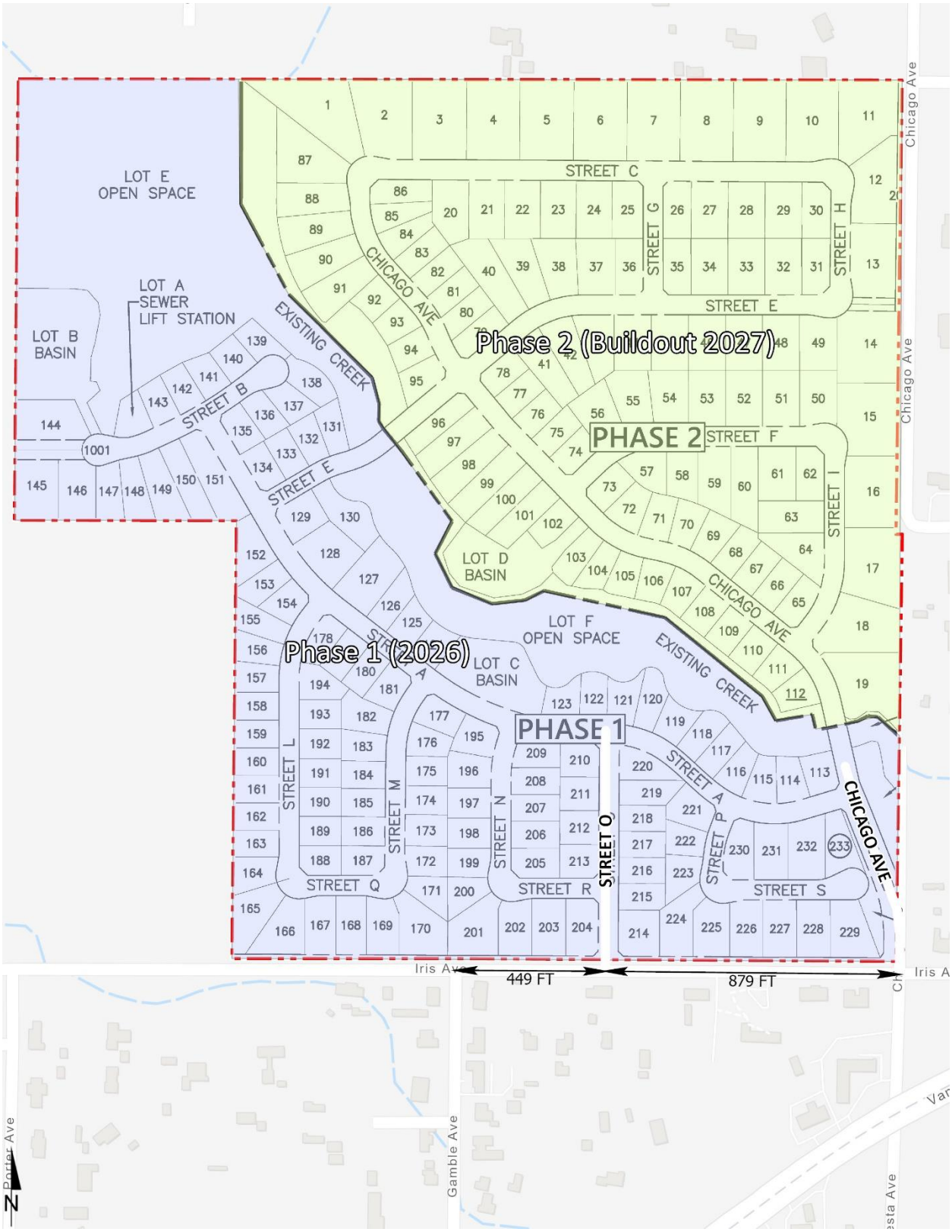
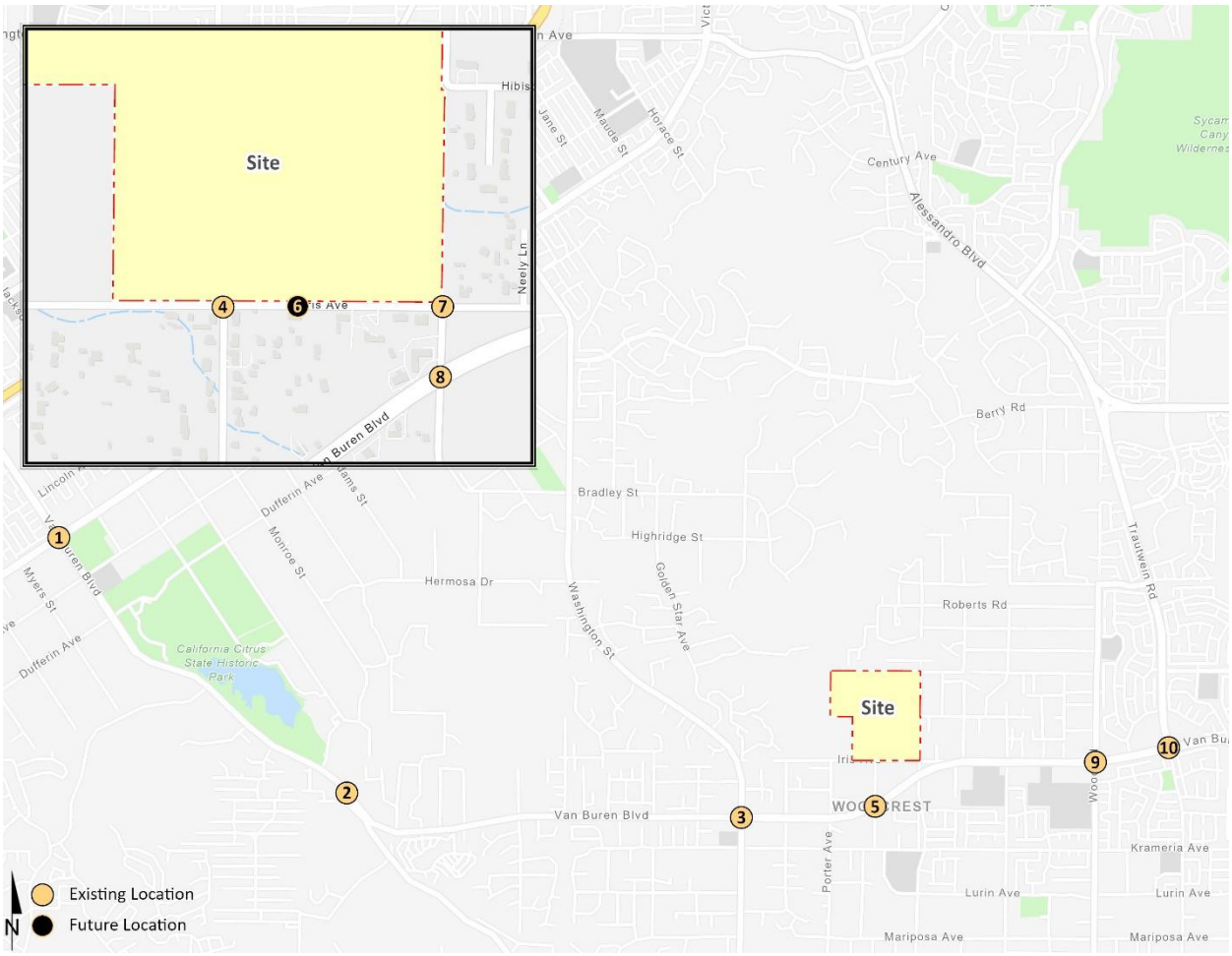


EXHIBIT 1-3: STUDY AREA



In order to develop the traffic characteristics of the proposed project, trip-generation statistics published in the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition, 2021) for the Single Family Detached Residential (ITE Land Use Code 210) has been utilized. (2) The proposed Project is anticipated to be developed in the following phases:

- Phase 1 (2026): 121 single family residential dwelling units
- Project Buildout (2027): 112 single family residential dwelling units

With the development of Phase 1, the Project is anticipated to generate a total of 1,142 vehicle trip-ends per day with 85 AM peak hour trips and 114 PM peak hour trips. Under Project Buildout, the Project is anticipated to generate a total of 2,198 vehicle trip-ends per day with 163 AM peak hour trips and 219 PM peak hour trips. The assumptions and methods used to estimate the Project's trip generation characteristics are discussed in greater detail in Section 4.1 *Project Trip Generation* of this report.

1.3 ANALYSIS SCENARIOS

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

- Existing (2022) Conditions
- Existing plus Ambient Growth plus Project (EAP) (2026) Conditions – Phase 1
- EAP (2027) – Project Buildout
- Existing plus Ambient Growth plus Project plus Cumulative (EAPC) (2027) Conditions – Project Buildout
- Horizon Year (2045) Without Project
- Horizon Year (2045) With Project (Project Buildout)

1.3.1 EXISTING (2022) CONDITIONS

Information for Existing (2022) conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared.

1.3.2 EAP (2026 & 2027) CONDITIONS

The EAP (2026) and EAP (2027) conditions analyses determines the potential circulation system deficiencies based on a comparison of the EAP traffic conditions to Existing conditions. The roadway network is similar to Existing conditions except for new connections to be constructed by the Project. To account for background traffic growth, an ambient growth factor from Existing (2022) conditions of 8.24% (2 percent per year, compounded over 4 years) is included for EAP (2026) traffic conditions and 10.41% (2 percent per year, compounded over 5 years) is included for EAP (2027) traffic conditions. The assumed ambient growth factor is based on the requirements per the County of Riverside traffic study guidelines. Consistent with Riverside County traffic study guidelines, the EAP analysis is intended to identify "Opening Year" deficiencies associated with the development of the proposed Project based on the expected background growth within the study area.

1.3.3 EAPC (2027) CONDITIONS

The EAPC (2027) traffic conditions analysis determines the potential near-term cumulative circulation system deficiencies. The roadway network is similar to Existing conditions except for new connections to be constructed by the Project. To account for background traffic growth, an ambient growth factor from Existing (2022) conditions of 10.41% (2 percent per year, compounded over 5 years) is included for EAPC (2027) traffic conditions.

Conservatively, this TA estimates the area ambient traffic growth and then adds traffic generated by other known or probable related projects. These related projects are at least in part already accounted for in the assumed ambient growth rates; and some of these related projects may not be implemented and operational within the 2027 Opening Year time frame assumed for the Project. The resulting traffic growth utilized in this traffic study (ambient growth factor plus traffic generated by related projects) would therefore tend to overstate rather than understate background cumulative traffic deficiencies under 2027 conditions.

1.3.4 HORIZON YEAR (2045) CONDITIONS

Traffic projections for Horizon Year (2045) conditions were derived from the County of Riverside refined version of the Riverside County Model (RIVCOM) using accepted procedures for model forecast refinement and smoothing. The Horizon Year conditions analysis has been utilized to determine if improvements funded through regional transportation mitigation fee programs, such as the Western Riverside Council of Governments (WRCOG) Transportation Uniform Mitigation Fee (TUMF) program, can accommodate the long-range cumulative traffic at the target Level of Service (LOS) identified in the County of Riverside (lead agency) General Plan. (3) Each of these regional transportation fee programs are discussed in more detail in Section 9 *Local and Regional Funding Mechanisms*.

1.4 STUDY AREA

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

The 10 study area intersections shown on Exhibit 1-3 and listed in Table 1-1 were selected for evaluation in this TA based on consultation with County of Riverside staff. At a minimum, the study area includes intersections where the Project is anticipated to contribute 50 or more peak hour trips per the County's traffic study guidelines. (1) The "50 peak hour trip" criteria represents a minimum number of trips at which a typical intersection would have the potential to be substantively affected by a given development proposal. The 50 peak hour trip criterion is a traffic engineering rule of thumb that is accepted and widely used within Riverside County for estimating a potential area of influence (i.e., study area).

The intent of a Congestion Management Program (CMP) is to more directly link land use, transportation, and air quality, thereby prompting reasonable growth management programs that will effectively utilize new transportation funds, alleviate traffic congestion and related deficiencies, and improve air quality. The County of Riverside CMP became effective with the passage of Proposition 111 in 1990 and updated most recently updated in 2011. The Riverside County Transportation Commission (RCTC) adopted the 2011 CMP for the County of Riverside in December 2011. (5) CMP intersections are identified in Table 1-1. There are no study area intersections identified as a Riverside County CMP facility.

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

#	Intersections	Jursidiction	CMP?
1	Van Buren Bl. & Victoria Av.	Riverside	No
2	Van Buren Bl. & Mockingbird Canyon Rd.	County of Riverside	No
3	Washington St. & Van Buren Bl.	County of Riverside	No
4	Gamble Av. & Iris Av.	County of Riverside	No
5	Gamble Av. & Van Buren Bl.	County of Riverside, Riverside	No
6	Street O & Iris Av.	County of Riverside	No
7	Chicago Av. & Iris Av.	County of Riverside	No
8	Chicago Av./Alta Cresta Av. & Van Buren Bl.	County of Riverside, Riverside	No
9	Wood Rd. & Van Buren Bl.	Riverside	No
10	Trautwein Rd./Cole Av. & Van Buren Bl.	Riverside	No

1.5 DEFICIENCIES

This section provides a summary of deficiencies by analysis scenario. Section 2 *Methodologies* provides information on the methodologies used in the analysis and Section 3 *Area Conditions*, Section 5 *EAP (2026 & 2027) Traffic Conditions*, Section 6 *EAPC (2027) Conditions*, and Section 7 *Horizon Year (2045) Traffic Conditions* includes the detailed analysis. A summary of LOS results for all analysis scenarios is presented in Table 1-2.

TABLE 1-2: SUMMARY OF LOS

		Existing		EAP (2026)		EAP (2027)		2027 Without Project		2045 Without Project		2045 With Project	
#	Intersection	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Van Buren Bl. & Victoria Av.	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	F	A - D	F
2	Van Buren Bl. & Mockingbird Canyon Rd.	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D
3	Washington St. & Van Buren Bl.	A - D	A - D	A - D	A - D	A - D	A - D	E	E	F	F	F	F
4	Gamble Av. & Iris Av.	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D
5	Gamble Av. & Van Buren Bl.	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D
6	Street O & Iris Av.	N/A	N/A	A - D	A - D	A - D	A - D	A - D	A - D	N/A	N/A	A - D	A - D
7	Chicago Av. & Iris Av.	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D
8	Chicago Av./Alta Cresta Av. & Van Buren Bl.	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D
9	Wood Rd. & Van Buren Bl.	A - D	A - D	A - D	A - D	A - D	A - D	F	F	F	F	F	F
10	Trautwein Rd./Cole Av. & Van Buren Bl.	A - D	A - D	A - D	A - D	A - D	A - D	F	E	F	F	F	F

A - D = A - D E = E F = F

1.5.1 EXISTING (2022) CONDITIONS

The study area intersections are currently operating at an acceptable LOS during the peak hours.

1.5.2 EAP (2026 & 2027) CONDITIONS

The study area intersections are anticipated to continue to operate at an acceptable LOS during the peak hours with the addition of Project (Phase 1) and Project (Project Buildout) traffic under both EAP (2026) and EAP (2027) traffic conditions.

1.5.3 EAPC (2027) CONDITIONS

The following study area intersections are anticipated to operate at an unacceptable LOS under EAP (2027) traffic conditions:

- Washington Street & Van Buren Boulevard (#3) – LOS E AM and PM peak hours
- Wood Road & Van Buren Boulevard (#9) – LOS F AM and PM peak hours
- Trautwein Road/Cole Avenue. & Van Buren Boulevard (#9) – LOS F AM peak hour; LOS E PM peak hour

1.5.4 HORIZON YEAR (2045) CONDITIONS

The following study area intersections are anticipated to operate at an unacceptable LOS under Horizon Year (2045) Without Project and With Project traffic conditions:

- Van Buren Boulevard & Victoria Avenue (#1) – LOS F PM peak hour only
- Washington Street & Van Buren Boulevard (#3) – LOS F AM and PM peak hours
- Wood Road & Van Buren Boulevard (#9) – LOS F AM and PM peak hours
- Trautwein Road/Cole Avenue & Van Buren Boulevard (#10) – LOS F AM and PM peak hours

1.6 RECOMMENDATIONS

1.6.1 SITE ADJACENT AND SITE ACCESS RECOMMENDATIONS

The following recommendations are based on the minimum improvements needed to accommodate site access and maintain acceptable peak hour operations for the proposed Project. The site adjacent recommendations are shown on Exhibit 1-4.

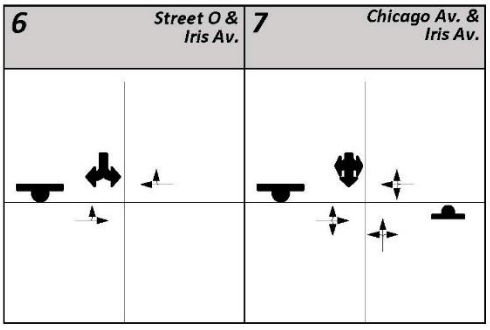
Recommendation 1 – Street O & Iris Avenue (#6) – The following improvements are necessary to accommodate site access:

- Project to install a stop sign on the southbound approach (Project driveway).
- Project to construct a southbound shared left-right turn lane.

EXHIBIT 1-4: SITE ACCESS RECOMMENDATIONS

LINE AND CURVE TABLE		
LENGTH	BEARING/DELTA	RADIUS
207.51'	039°37'53"	300.00'
223.26'	042°37'40"	300.00'
23.63'	004°31'02"	300.00'
231.18'	044°08'50"	300.00'
183.04'	034°56'05"	300.00'
261.58'	038°29'38"	300.00'
202.86'	038°43'57"	300.00'
78.69'	009°01'00"	500.00'
187.69'	035°52'11"	300.00'
112.91'	021°33'51"	300.00'
304.83'	058°13'54"	300.00'
209.35'	039°58'56"	300.00'
504.83'	036°09'30"	800.00'
91.27'	017°25'51"	300.00'
183.28'	034°25'52"	300.00'
201.26'	038°24'00"	300.00'
268.96'	022°00'32"	700.00'
302.37'	018°49'28"	1200.00'
82.99'	015°50'53"	300.00'
86.01'	016°25'17"	300.00'
59.66'	011°23'00"	300.00'
142.77'	027°16'00"	300.00'
131.53'	025°11'46"	300.00'
132.61'	031°31'24"	300.00'
1441.00	S59°36'01"E	
386.03	S27°49'24"W	
399.82	N70°03'00"E	
784.54	N69°00'00"W	
90.30	N72°37'59"E	
215.33	N39°37'53"W	
350.01	N41°08'55"W	

PARCEL LINE AND CURVE TABLE			
LINE #/CURVE #	LENGTH	BEARING/DELTA	RADIUS
L35	302.67	N07°00'00"W	
L36	373.56	N70°09'06"E	
L37	117.09	S45°51'56"W	
L39	79.91	N38°43'57"E	
L40	265.07	N12°46'04"W	
L41	214.06	N21°47'04"W	
L42	89.50	N07°30'07"E	
L43	417.63	N69°00'00"E	
L44	73.89	S07°00'00"E	
L45	84.83	S21°33'51"W	
L46	153.85	N73°27'44"E	
L47	132.57	S48°28'22"E	
L48	80.46	S68°27'31"E	
L49	346.27	S82°17'51"E	
L50	333.25	S07°00'00"E	
L51	321.82	N69°00'00"E	
L52	694.66	S07°21'40"W	
L53	386.92	S07°40'35"W	
L54	314.68	N07°00'00"W	
L55	670.76	N07°00'00"E	
L56	78.09	N38°24'30"E	
L58	38.82	N69°00'30"E	
L59	202.91	S59°43'02"W	
L61	143.10	N42°16'40"W	
L62	40.82	N23°11'40"W	
L63	40.56	N78°30'38"W	
L64	78.74	S17°23'31"W	
L65	70.87	S35°11'17"W	
L66	537.71	S50°23'07"W	
L67	427.46	S36°16'58"E	
L68	66.22	N68°05'36"E	



6 = Intersection Analysis Location

= Existing Stop Sign

= Stop Sign Improvement

= Existing Lane

= Lane Improvement

Recommendation 2 – Chicago Avenue & Iris Avenue (#7) – The following improvements are necessary to accommodate site access:

- Project to install a stop sign on the southbound approach (Project driveway).
- Project to construct a southbound shared left-through-right turn lane.

Recommendation 3 – Iris Avenue is an east-west oriented roadway located on the Project's southern boundary. Project to construct Iris Avenue along the Project's frontage at its ultimate half-section width as a Local Street (60-foot right-of-way) from Chicago Avenue to the Project's western boundary consistent with the County's standards.

Recommendation 4 – Chicago Avenue is a north-south oriented roadway located on the Project's eastern boundary. Project to construct Chicago Avenue along the Project's frontage at its ultimate half-section width as a Local Street (60-foot right-of-way) from the emergency vehicle access to Gentian Avenue, consistent with the County's standards.

On-site traffic signing and striping should be implemented agreeable with the provisions of the California Manual on Uniform Traffic Control Devices (CA MUTCD) and in conjunction with detailed construction plans for the Project site.

Sight distance at each project access point should be reviewed with respect to standard California Department of Transportation (Caltrans) and County of Riverside sight distance standards at the time of preparation of final grading, landscape, and street improvement plans.

1.6.2 OFF-SITE RECOMMENDATIONS

A summary of the off-site intersection improvements is provided in Table 1-3. As shown in Table 1-3, the Project will construct the improvements identified, as discussed in Section 1.6.1 *Site Adjacent and Site Access* Recommendations. Improvements that appear under EAP traffic conditions would be the Project's responsibility to construct to maintain acceptable LOS, if not also required to address Existing deficiencies.

For those improvements listed in Table 1-3 and not constructed as part of the Project, the Project Applicant's responsibility for the Project's contributions towards deficient intersections is fulfilled through payment of fair share or fees (applicable pre-existing fee programs) that would be assigned to construction of the identified recommended improvements. The Project Applicant would be required to pay fair share and fees consistent with the County's requirements (see Section 9 *Local and Regional Funding Mechanisms*).

1.7 QUEUING ANALYSIS

A queuing analysis was conducted for Gamble Avenue & Iris Avenue (#4) and the Project driveways for Horizon Year (2045) With Project traffic conditions to determine the lengths necessary to accommodate near-term 95th percentile queues. The site adjacent intersections are anticipated to operate without queueing issues, as shown in Table 1-4. The site adjacent queuing analysis worksheets are provided in Appendix 1.2.

TABLE 1-3: SUMMARY OF IMPROVEMENTS BY ANALYSIS SCENARIO

#	Intersection Location	Jurisdiction	EAP (2026)	EAP (2027)	EAPC (2027)	2045 Without Project	2045 With Project	Improvements in County TUMF/DIF? [1,2]	Project Responsibility	Project Fair Share %
3	Washington St. & Van Buren Bl.	County of Riverside	None	None	Add EB 3rd through lane	Same	Same	Yes (TUMF)	Fees	4.7%
					Add WB 3rd through lane	Same	Same	Yes (TUMF)	Fees	
						Add 2nd EB left turn lane	Same	No	Fair Share	
						Add EB right turn lane	Same	No	Fair Share	
						Add 2nd WB left turn lane	Same	No	Fair Share	
						Modify the traffic signal to implement overlap phasing for the WB right turn lane	Same	No	Fair Share	
9	Wood Rd. & Van Buren Bl.	Riverside	None	None	Add EB 3rd through lane	Same	Same	Yes (TUMF)	Fees	--
					Add WB 3rd through lane	Same	Same	Yes (TUMF)	Fees	
10	Trautwein Rd./Cole Av. & Van Buren Bl.	Riverside	None	None	Add EB 3rd through lane	Same	Same	No	Fair Share	4.3%

[1] Improvements included in regional/County fee programs have been identified as such.

[2] Program improvements constructed by project may be eligible for fee credit, at discretion of City. See Table 8-1 for fair share calculations.

TABLE 1-4: QUEUING ANALYSIS FOR HORIZON YEAR (2045) CONDITIONS

#	Intersection	Movement	Available Stacking Distance (Feet)	95th Percentile Queue (Feet)		Acceptable? [1]	
				AM Peak Hour	PM Peak Hour	AM	PM
4	Gamble Av. & Iris Av.	WBL	449	0	0	Yes	Yes
6	Street O & Iris Av.	EBL	449	7	10	Yes	Yes
7	Chicago Av. & Iris Av.	NBL/T/R	335	46	57	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 in this table, where applicable.

2 METHODOLOGIES

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. The methodologies described are consistent with County of Riverside's Traffic Study Guidelines.

2.1 LEVEL OF SERVICE

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

2.2 INTERSECTION CAPACITY ANALYSIS

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. The 6th Edition Highway Capacity Manual (HCM) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. (4) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

The County of Riverside requires 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 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[1]
Operations with very low delay occurring with favorable progression and/or short cycle length.	0 to 10.00	A
Operations with low delay occurring with good progression and/or short cycle lengths.	10.01 to 20.00	B
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
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
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
Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	80.01 and up	F

Source: HCM, 6th Edition

[1] If V/C is greater than 1.0 then LOS is F per HCM.

Consistent with the Riverside County CMP, a saturation flow rate of 1900 vehicles per hour green per lane (vphgpl) has been utilized for all intersections for all scenarios.

The traffic modeling and signal timing optimization software package Synchro (Version 11) has been utilized to analyze signalized intersections. 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. Customary 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)

2.2.2 UNSIGNALIZED INTERSECTIONS

The County of Riverside requires 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 2-2). At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. Delay for the intersection is reported for the worst individual movement at a two-way stop-controlled intersection. For all-way stop controlled intersections, LOS is computed for the intersection as a whole (average delay).

TABLE 2-2: UNSIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0[1]
Little or no delays.	0 to 10.00	A
Short traffic delays.	10.01 to 15.00	B
Average traffic delays.	15.01 to 25.00	C
Long traffic delays.	25.01 to 35.00	D
Very long traffic delays.	35.01 to 50.00	E
Extreme traffic delays with intersection capacity exceeded.	> 50.00	F

Source: HCM, 6th Edition

[1] If V/C is greater than 1.0 then LOS is F per HCM.

2.3 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 determine the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TA uses the signal warrant criteria presented in the latest edition of the Caltrans California Manual on Uniform Traffic Control Devices (CA MUTCD). (5)

The signal warrant criteria for Existing study area intersections are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. The CA MUTCD indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. (5) Specifically, this TA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for existing traffic conditions and for all future analysis scenarios for existing unsignalized intersections. Warrant 3 is appropriate to use for this TA because it provides specialized warrant criteria for intersections with rural characteristics. For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection. Urban warrants have been used as posted speed limits on the major roadways with unsignalized intersections are 40 miles per hour or below and rural warrants have been used where speeds exceed 40 miles per hour.

Future intersections that do not currently exist have been assessed regarding the potential need for new traffic signals based on future average daily traffic (ADT) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets. Similarly, the speed limit has been used as the basis for determining the use of Urban and Rural warrants. Traffic signal warrant analyses were performed for the following study area intersection shown in Table 2-3:

TABLE 2-3: TRAFFIC SIGNAL WARRANT ANALYSIS LOCATIONS

#	Intersections	Jursidiction
4	Gamble Av. & Iris Av.	County of Riverside
6	Street O & Iris Av.	County of Riverside
7	Chicago Av. & Iris Av.	County of Riverside

The Existing conditions traffic signal warrant analysis is presented in the subsequent section, Section 3 *Area Conditions* of this report. The traffic signal warrant analyses for future conditions are presented in Section 5 *EAP (2026 & 2027) Traffic Conditions*, Section 6 *EAPC (2027) Traffic Conditions*, and Section 7 *Horizon Year (2045) Traffic Conditions* of this report. It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should also be noted that signal warrants do not necessarily correlate with LOS. An intersection may satisfy a signal warrant condition and operate at or above acceptable LOS or operate below acceptable LOS and not meet a signal warrant.

2.4 MINIMUM ACCEPTABLE LEVELS OF SERVICE (LOS)

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

2.4.1 COUNTY OF RIVERSIDE

The definition of an intersection deficiency has been obtained from the County of Riverside General Plan. Riverside County General Plan Policy C 2.1 states that the County will maintain the following County-wide target LOS:

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

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

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

The applicable minimum LOS utilized for the purposes of this analysis is LOS D per the County-wide target LOS for projects located within the Woodcrest area plan. (1)

2.4.2 CITY OF RIVERSIDE

The City of Riverside General Plan states the City will strive to maintain LOS D or better on arterial streets wherever possible. At some key locations, such as City arterial roadways, which are used as freeway bypass by regional through traffic and at heavily traveled freeway intersections, LOS E may be acceptable as determined on a case-by-case basis. Locations that may warrant the LOS E standard include portions of Arlington Avenue/Alessandro Boulevard, Van Buren Boulevard throughout the City, portions of La Sierra Avenue, and selected freeway interchanges. A higher standard, such as LOS C or better, may be adopted for Local and Collector streets in residential areas. The City recognizes that along key freeway feeder segments during peak commute hours, LOS F may be expected due to regional travel patterns.

At the City's request, the analysis for all study area intersections and roadway segments that lie within the City of Riverside will be evaluated based on the guidelines outlined in the City's Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment (July 2020). As such, the minimum LOS utilized for the purposes of this analysis is LOS D for intersections located partially or wholly within the City of Riverside.

2.5 DEFICIENCY CRITERIA

2.5.1 COUNTY OF RIVERSIDE

This section outlines the methodology used in this analysis related to identifying circulation system deficiencies. The following deficiency criteria has been utilized for the County of Riverside. To determine whether the addition of project-related traffic at a study intersection would result in a deficiency, the following will be utilized:

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

2.5.2 CITY OF RIVERSIDE

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

- When the pre-Project condition is at or better than LOS D (i.e., acceptable LOS), and project-generated traffic, as measured by 50 or more peak hour trips, causes deterioration below LOS D (i.e., unacceptable LOS) or increases to the peak hour delay as defined in Table 2-4, a deficiency is deemed to occur.

TABLE 2-4: CITY OF RIVERISDE INTERSECTION DEFICIENCY CRITERIA

Pre-Project LOS	Project-Related Delay Increase	Recommended Improvements
A/B	10.0 Seconds or More	Achieve Pre-project delay or better
C	8.0 Seconds or More	Achieve Pre-project delay or better
D	5.0 Seconds or More	Achieve Pre-project delay or better
E	2.0 Seconds or More	Achieve Pre-project delay or better
F	1.0 Second or More	Achieve Pre-project delay or better

2.6 PROJECT FAIR SHARE CALCULATION METHODOLOGY

Improvements found to be included in the WRCOG TUMF and/or Development Impact Fee (DIF) programs will be identified as such. For improvements that do not appear to be in either of the pre-existing fee programs, a fair share contribution based on the Project's proportional share may be imposed in order to address the Project's share of deficiencies in lieu of construction. It should be noted that fair share calculations are for informational purposes only and the County Traffic Engineer will determine the appropriate improvements to be implemented by a project (to be identified in the conditions of approval). The Project's fair share cost of improvements would be determined based on the following equation, which is the ratio of Project traffic to new traffic, where new traffic is total future traffic less existing baseline traffic:

Project Fair Share % = Project (Buildout) Traffic / (Horizon Year (2045) Total Traffic – Existing (2022) Traffic)

3 AREA CONDITIONS

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

3.1 EXISTING CIRCULATION NETWORK

Pursuant to the agreement with County of Riverside staff (Appendix 1.1), the study area includes a total of 10 existing and future intersections as shown previously on Exhibit 1-3. Exhibit 3-1 illustrates the study area intersections located near the proposed Project and identifies the number of through traffic lanes for existing roadways and intersection traffic controls.

3.2 COUNTY OF RIVERSIDE GENERAL PLAN CIRCULATION ELEMENT

Exhibit 3-2 shows the County of Riverside Lake Mathews/Woodcrest Area Plan Circulation Element and Exhibit 3-3 illustrates the County of Riverside General Plan roadway cross-sections.

Urban Arterials are six-lane divided roadways (typically divided by a raised median or painted two-way turn-lane) with a 152-foot right-of-way and a 110-foot curb-to-curb measurement. These roadways serve both regional through-traffic and inter-city traffic and typically direct traffic onto and off-of the freeways. The following study area roadway within the County of Riverside is classified as an Urban Arterial:

- Van Buren Boulevard

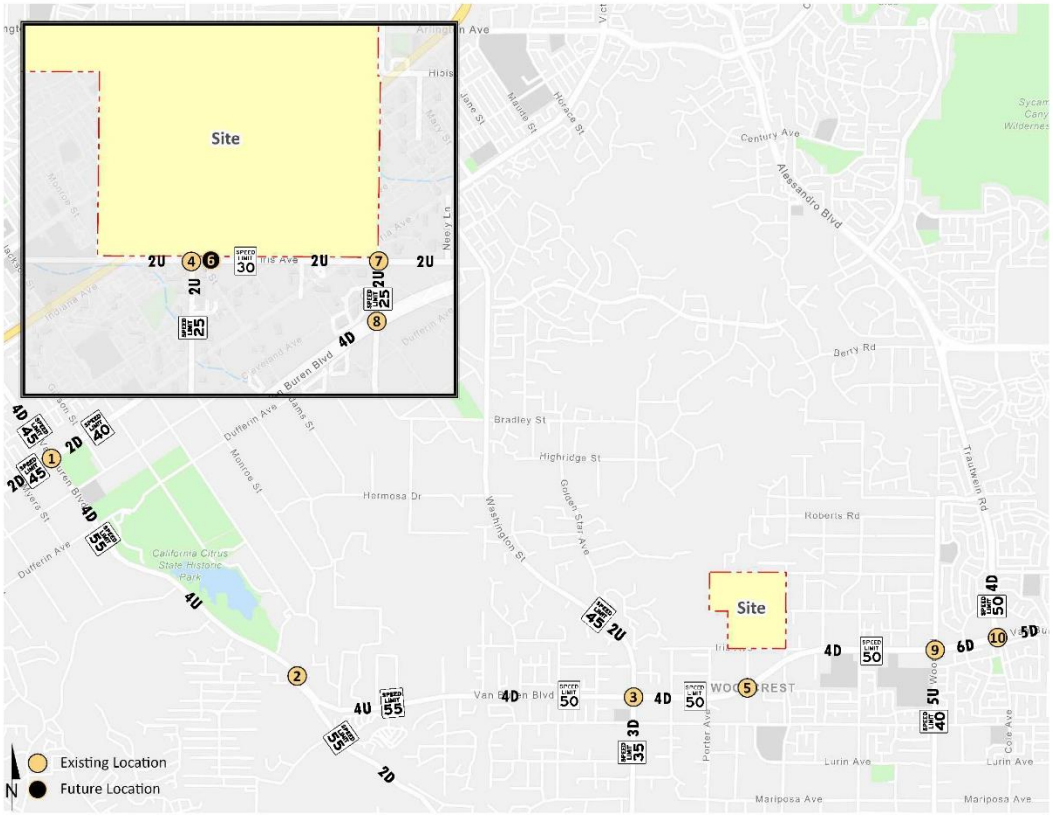
Arterials are four-lane roadways and may include a painted median. These roadways typically have a 128-foot right-of-way and an 82-to-86-foot curb-to-curb measurement. These roadways typically direct traffic through major development areas and a lesser capacity than Urban Arterials. The following study area roadway within the County of Riverside is classified as an Arterial:

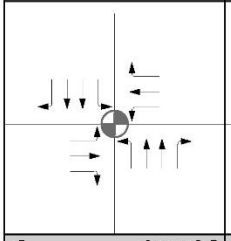
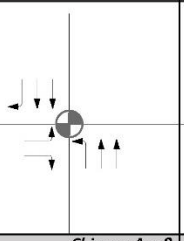
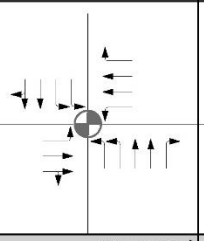
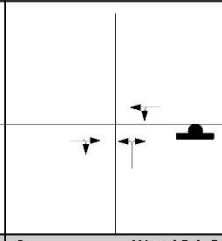
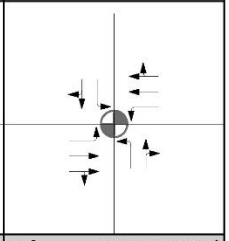
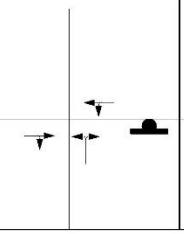
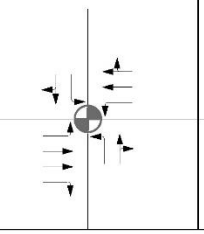
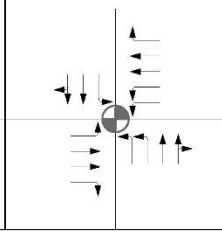
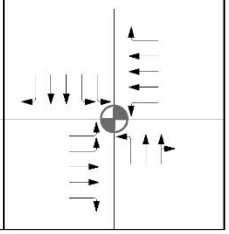
- Washington Street, north of Van Buren Boulevard

Major Roadways are four-lane roadways and may include a painted median. These roadways typically have a 118-foot right-of-way and a 76-foot curb-to-curb measurement. These roadways typically direct traffic through major development areas. The following study area roadways within the County of Riverside are classified as a Major Roadway:

- Washington Street, south of Van Buren Boulevard

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



1 Van Buren Bl. & Victoria Av.	2 Van Buren Bl. & Mockingbird Canyon Rd.	3 Washington St. & Van Buren Bl.	4 Gamble Av. & Iris Av.	5 Ganble Av. & Van Buren Bl.
				
6 Street O & Iris Av.	**7 Chicago Av. & Iris Av.**	**8 Chicago Av./ Alta Cresta Av. & Van Buren Bl.**	**9 Wood Rd. & Van Buren Bl.**	**10 Trautwein Rd./ Cole Av. & Van Buren Bl.**
Future Intersection				

4 = Number of Lanes
D = Divided
U = Undivided
45 = Speed Limit (MPH)
= Traffic Signal
= Stop Sign
= Existing Lane

EXHIBIT 3-2: LAKE MATHEWS/WOODCREST AREA PLAN CIRCULATION ELEMENT

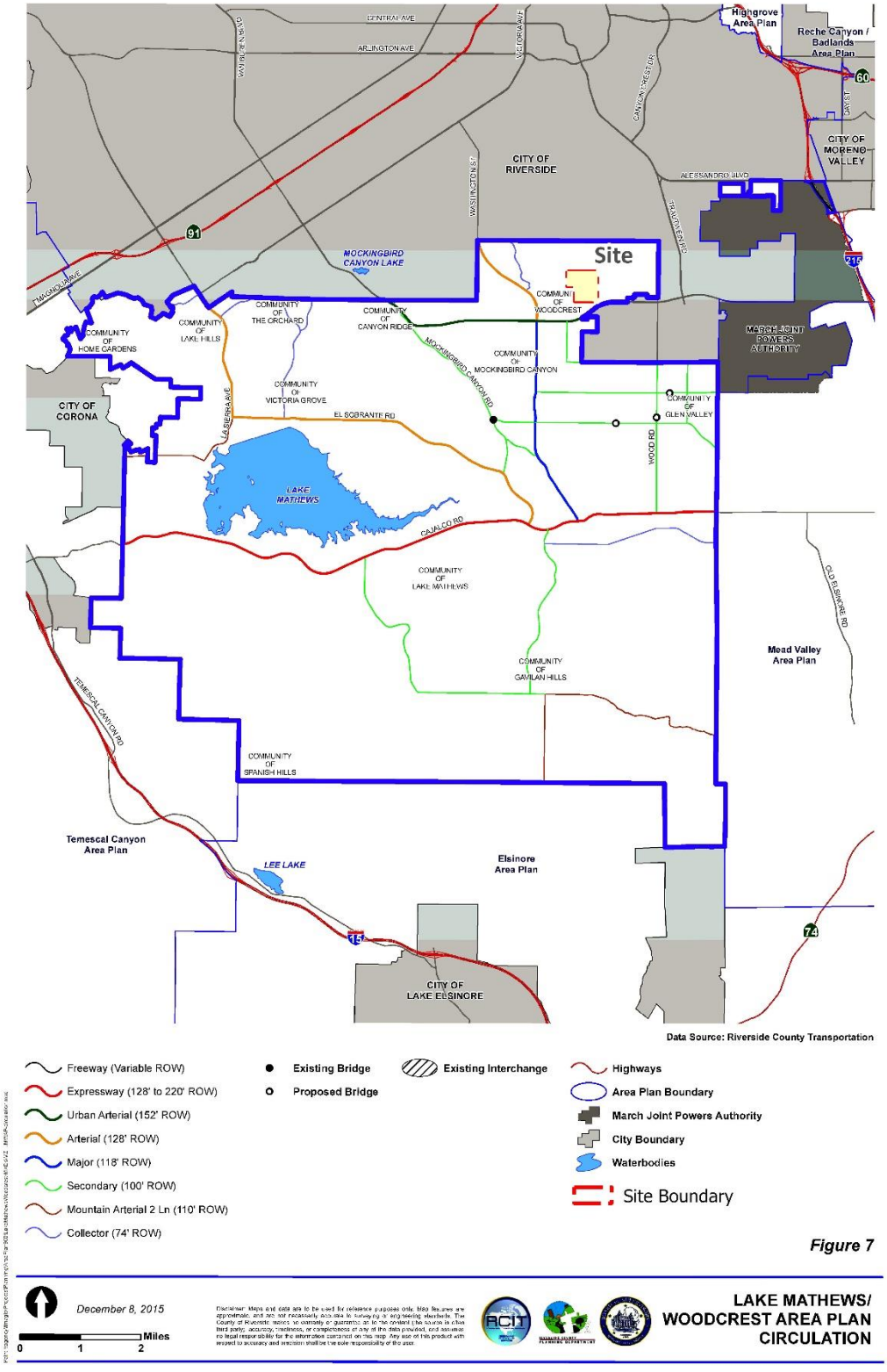
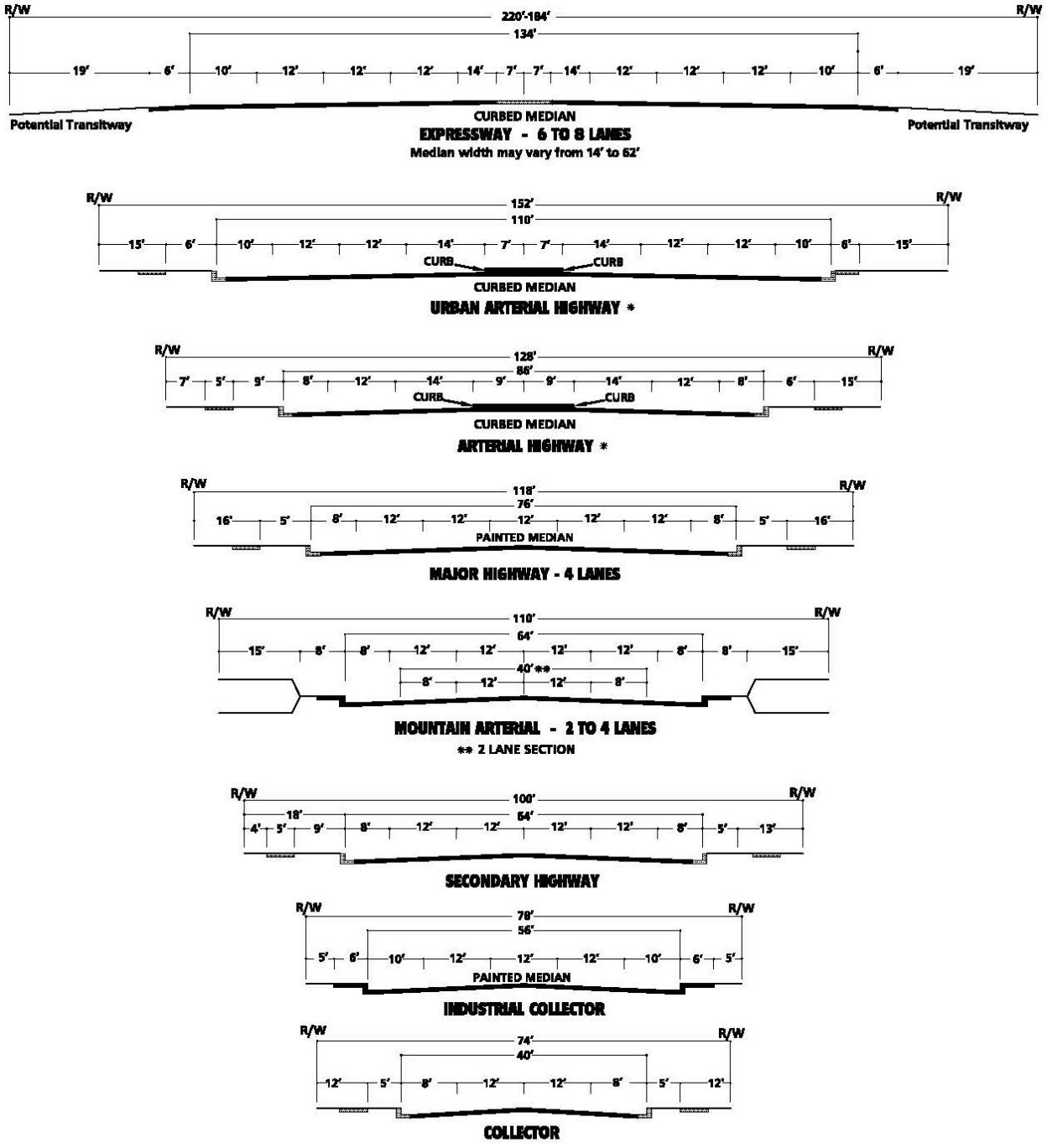


EXHIBIT 3-3: COUNTY OF RIVERSIDE GENERAL PLAN ROADWAY CROSS-SECTIONS



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

NOT TO SCALE

SOURCE: COUNTY OF RIVERSIDE
July 7, 2020

3.3 BICYCLE & PEDESTRIAN FACILITIES

Exhibit 3-4 illustrates the Lake Mathews/Woodcrest Area Plan bicycle facilities. Existing pedestrian facilities within the study area are shown on Exhibit 3-5. As shown on Exhibit 3-5, there are limited pedestrian facilities in the vicinity of the Project site. Field observations and traffic counts conducted in May 2022 indicate light pedestrian and bicycle activity within the study area.

3.4 TRANSIT SERVICE

The study area within the County of Riverside is currently served by Riverside Transit Agency (RTA), a public transit agency serving various jurisdictions within Riverside County. Existing transit routes in the vicinity of the study area are illustrated on Exhibit 3-6. As shown, the existing RTA Route 27 runs along Van Buren Boulevard to the south of the Project. There is an existing bus stop on Van Buren Boulevard near Gamble Avenue. 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 Project Applicant work in conjunction with RTA to potentially extend the existing routes to accommodate bus service to the site.

3.5 EXISTING (2022) 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 2022. 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 2022 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. As such, no additional adjustments were made to the traffic counts to establish the baseline condition. The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1.

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

Weekday PM Peak Hour (Approach Volume + Exit Volume) x 11.81 = Leg Volume

EXHIBIT 3-4: LAKE MATHEWS/WOODCREST AREA PLAN BICYCLE FACILITIES

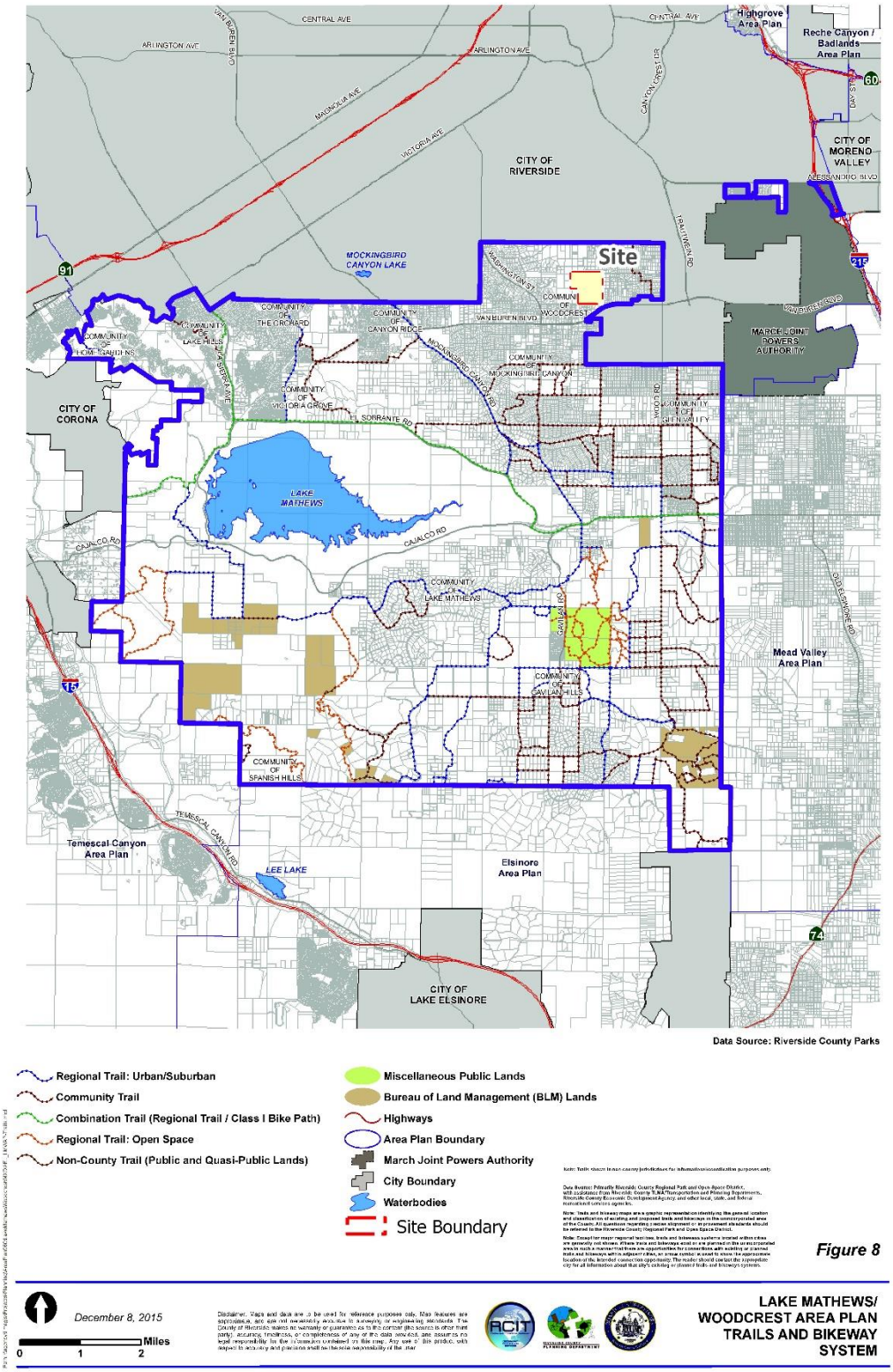


EXHIBIT 3-5: EXISTING PEDESTRIAN FACILITIES

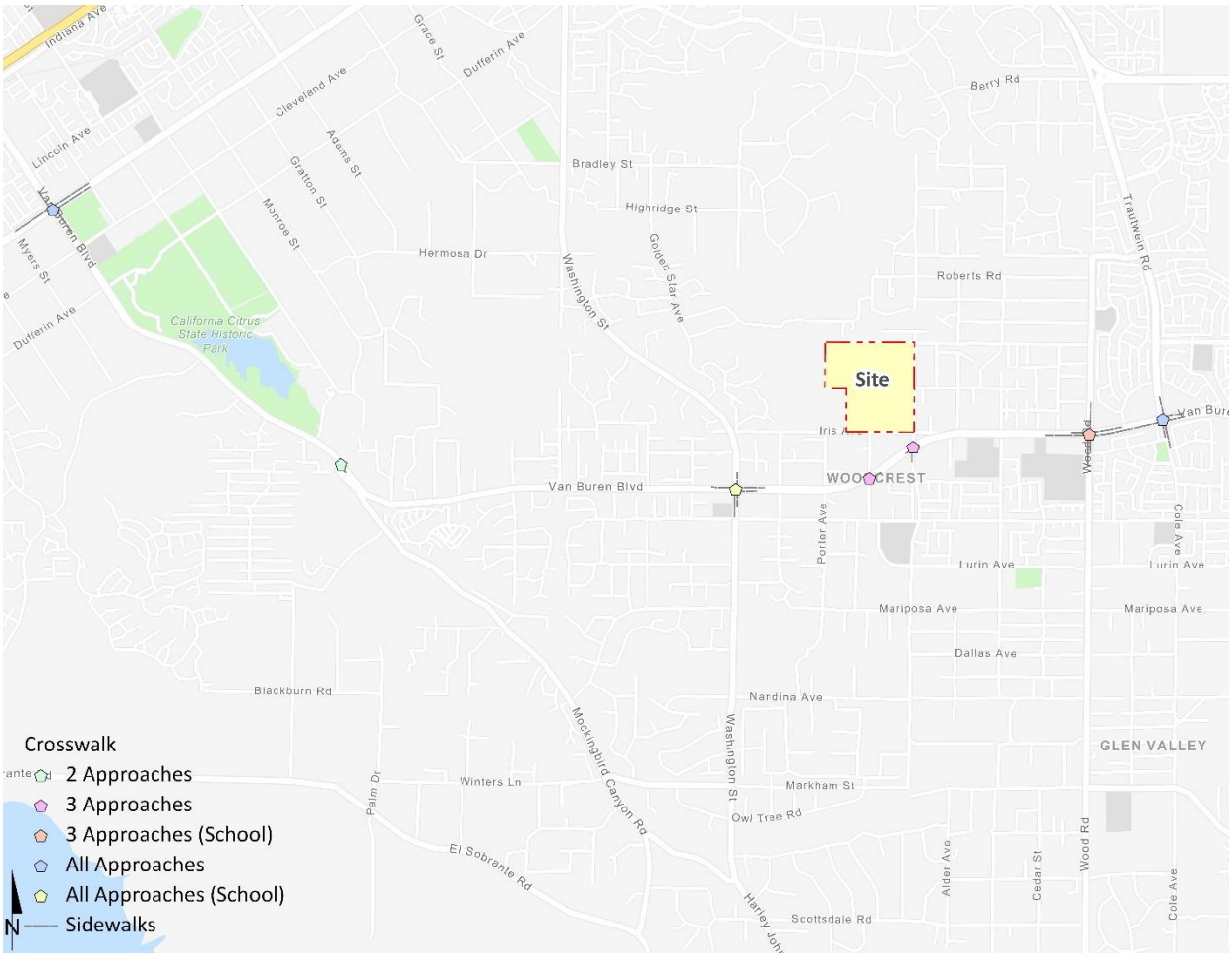
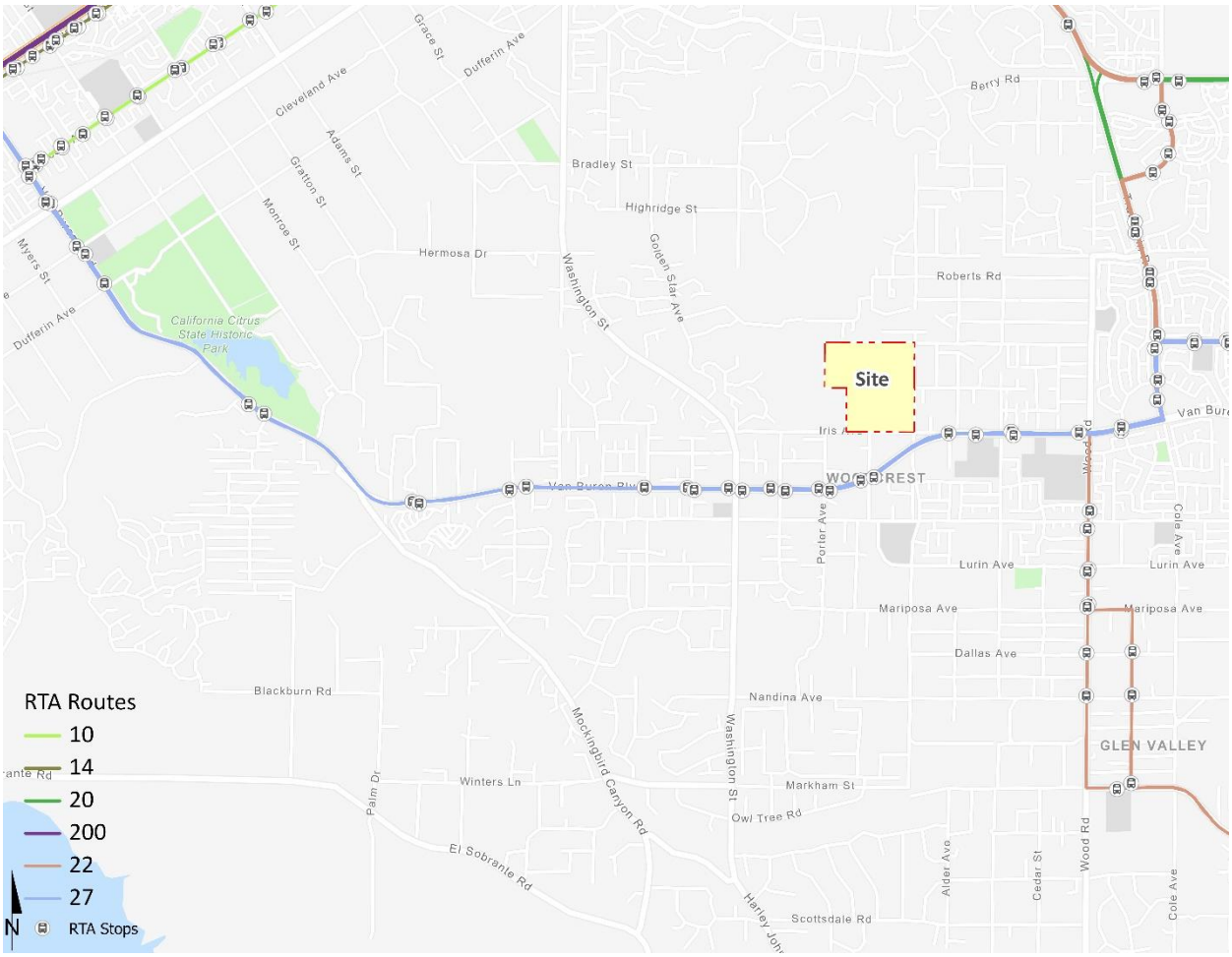


EXHIBIT 3-6: EXISTING TRANSIT ROUTES



A comparison of the PM peak hour and daily traffic volumes of various roadway segments within the study area indicated that the peak-to-daily relationship is approximately 8.46 percent. As such, the above equation utilizing a factor of 11.81 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 8.46 percent (i.e., 1/0.0846 = 11.81) and was assumed to sufficiently estimate average daily traffic (ADT) volumes for planning-level analyses. Existing weekday peak hour intersection volumes are also shown on Exhibit 3-8.

3.6 INTERSECTION OPERATIONS ANALYSIS

Existing peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.2 *Intersection Capacity Analysis* of this report. The intersection operations analysis results are summarized in Table 3-1, which indicates that all of the study area intersections are currently operating at an unacceptable LOS during the peak hours. The intersection operations analysis worksheets are included in Appendix 3.2 of this TA.

TABLE 3-1: INTERSECTION ANALYSIS FOR EXISTING (2022) CONDITIONS

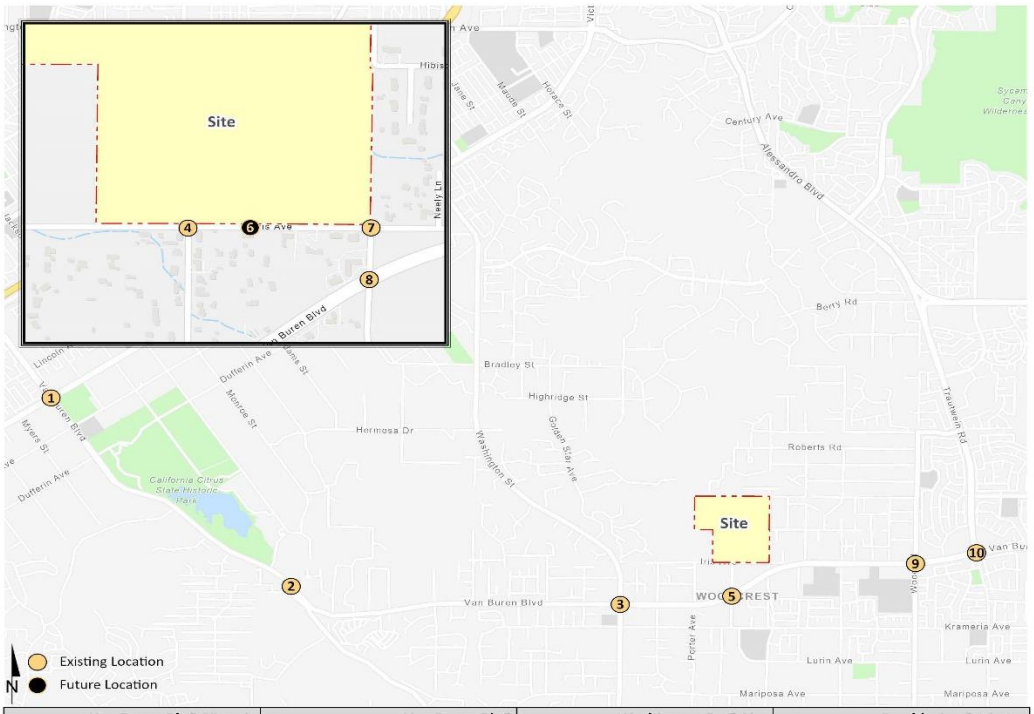
#	Intersection	Traffic Control [1]	Delay[2] (secs.)		Level of Service	
			AM	PM	AM	PM
1	Van Buren Bl. & Victoria Av.	TS	18.3	29.7	B	C
2	Van Buren Bl. & Mockingbird Canyon Rd.	TS	7.2	5.6	A	A
3	Washington St. & Van Buren Bl.	TS	29.4	35.5	C	D
4	Gamble Av. & Iris Av.	CSS	8.4	8.4	A	A
5	Gamble Av. & Van Buren Bl.	TS	5.1	4.8	A	A
6	Street O & Iris Av.		Future Intersection			
7	Chicago Av. & Iris Av.	CSS	8.5	8.5	A	A
8	Chicago Av./Alta Cresta Av. & Van Buren Bl.	TS	13.2	11.4	B	B
9	Wood Rd. & Van Buren Bl.	TS	37.7	26.3	D	C
10	Trautwein Rd./Cole Av. & Van Buren Bl.	TS	27.0	23.1	C	C

[1] TS = Traffic Signal; CSS = Cross-Street Stop

3.7 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for Existing traffic conditions are based on existing peak hour intersection turning volumes. There are no study area intersections that currently meet a traffic signal warrant under Existing (2022) traffic conditions. Existing conditions traffic signal warrant analysis worksheets are provided in Appendix 3.3.

EXHIBIT 3-8: EXISTING (2022) TRAFFIC VOLUMES



1 Van Buren Bl. & Victoria Av.

30,300 | 24(85) ↲ | 770(1456) ↓ | 27(82) ↳ | 5,750
12(22) ↰
108(132) ←
77(121) ↖
29(31) ⇀
157(160) →
125(323) ↱
218(123) ↑ | 1335(887) ↑ | 168(76) ↗
10,100 | 39,750

2 Van Buren Bl. & Mockingbird Canyon Rd.

32,650 | 126(358) ↲ | 832(1414) ↓ | 26,500
370(180) ⇀
6(3) ↱
4(12) ↑ | 1241(813) ↑
6,500

3 Washington St. & Van Buren Bl.

15,750 | 64(76) ↲ | 148(288) ↓ | 268(435) ↳ | 35,550
451(231) ↰
1159(924) ←
78(149) ↖
113(132) ⇀
821(1198) →
99(33) ↱
112(66) ↑ | 405(169) ↑ | 112(73) ↗
28,700 | 9,200

4 Gamble Av. & Iris Av.

150
1(1) ←
3(6) ↖
4(1) ↱
0(1) ↑ | 3(7) ↑
Nominal | 200

5 Gamble Av. & Van Buren Bl.

5(0) ↲ | 1(0) ↳ | 40,250
3(0) ↰
1634(1263) ←
2(7) ↖
1210(1757) →
2(1) ↱
0(1) ↑ | 1(7) ↑
35,700 | 200

6 Street O & Iris Av.

150
4(7) ←
3(7) →
150

7 Chicago Av. & Iris Av.

150
0(1) ←
5(3) ↖
0(1) →
0(7) ↱
3(6) ↑ | 2(8) ↑
200 | 300

8 Chicago Av./Alta Cresta Av. & Van Buren Bl.

1,100 | 4(12) ↲ | 0(5) ↓ | 5(14) ↳ | 33,800
10(27) ↰
1541(1181) ←
41(34) ↖
27(36) ⇀
1130(1593) →
43(141) ↱
87(46) ↑ | 1(1) ↑ | 43(13) ↗
35,550 | 2,850

9 Wood Rd. & Van Buren Bl.

9,250 | 140(184) ↲ | 405(183) ↓ | 65(61) ↳ | 32,000
97(56) ↰
1036(1070) ←
356(189) ↖
141(147) ⇀
721(1197) →
283(194) ↱
295(196) ↑ | 348(151) ↑ | 197(134) ↗
35,300 | 12,350

10 Trautwein Rd./Cole Av. & Van Buren Bl.

19,600 | 235(208) ↲ | 305(467) ↓ | 151(277) ↳ | 29,500
278(183) ↰
1153(982) ←
132(97) ↖
220(270) ⇀
688(930) →
70(99) ↱
135(75) ↑ | 135(75) ↑ | 81(29) ↗
30,300 | 12,050

##(##) AM(PM) Peak Hour Intersection Volumes
Average Daily Trips

3.8 PROJECT DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

As shown in Table 3-1, all study area intersections are currently operating at an acceptable LOS during the peak hours for Existing (2022) traffic conditions. As such, no improvements have been identified.

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4 PROJECTED FUTURE TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project, as well as the Project's trip assignment onto the study area roadway network. A preliminary site plan for the proposed Project is shown previously on Exhibit 1-2. The Project is anticipated to be developed in two phases with an opening year of 2026 and 2027. As indicated on Exhibit 1-2, vehicular access will be provided via the following driveways:

- Street O on Iris Avenue: full access
- Chicago Avenue on Iris Avenue: full access

Regional access to the Project site is available from the I-215 Freeway via Scott Road interchange (to the west). The proposed Project is anticipated to be developed in the following phases:

- Phase 1 (2026): 121 single family residential dwelling units
- Project Buildout (2027): 233 single family residential dwelling units

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.

With the development of Phase 1, the Project is anticipated to generate a total of 1,142 vehicle trip-ends per day with 85 AM peak hour trips and 114 PM peak hour trips (see Table 4-1). Under Project Buildout, the Project is anticipated to generate a total of 2,198 vehicle trip-ends per day with 163 AM peak hour trips and 219 PM peak hour trips (see Table 4-1).

TABLE 4-1: TRIP GENERATION SUMMARY

Land Use[1]	ITE Code	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Single Family Detached Residential	210	DU	0.18	0.52	0.70	0.59	0.35	0.94	9.43

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Eleventh Edition (2021).

[2] DU = dwelling units

Land Use	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Phase 1 (2026)	121	DU	22	63	85	72	42	114	1,142
Phase 2 (2027)	112	DU	20	58	78	66	39	105	1,056
Total	233	DU	**42**	**121**	**163**	**138**	**81**	**219**	**2,198**

[1] DU = dwelling units

4.2 PROJECT TRIP DISTRIBUTION

The Project trip distribution and assignment process represents the directional orientation of traffic to and from the Project site. The trip distribution pattern is heavily influenced by the geographical location of the site, the location of surrounding uses, and the proximity to the regional freeway system. Exhibit 4-1 illustrates the proposed Project distribution patterns for the proposed Project.

4.3 MODAL SPLIT

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

4.4 PROJECT TRIP ASSIGNMENT

The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified Project traffic generation and trip distribution patterns, Project (Phase 1) weekday ADT and weekday peak hour intersection turning movement volumes are shown on Exhibit 4-2. Project (Project Buildout) weekday ADT and weekday peak hour intersection turning movement volumes are shown on Exhibit 4-3.

4.5 BACKGROUND TRAFFIC

Future year traffic forecasts have been based upon background (ambient) growth at 2% per year, compounded annually, for 2026 and 2027 traffic conditions. The total ambient growth is 8.24% for 2026 traffic conditions and 10.41% for 2027 traffic conditions. The ambient growth factor is intended to approximate regional traffic growth. 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 conjunction with 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. 2026 and 2027 traffic volumes are provided in Section 5 and Section 6 of this report. The traffic generated by the proposed Project was then manually added to the base volume to determine With Project forecasts.

EXHIBIT 4-1: PROJECT TRIP DISTRIBUTION

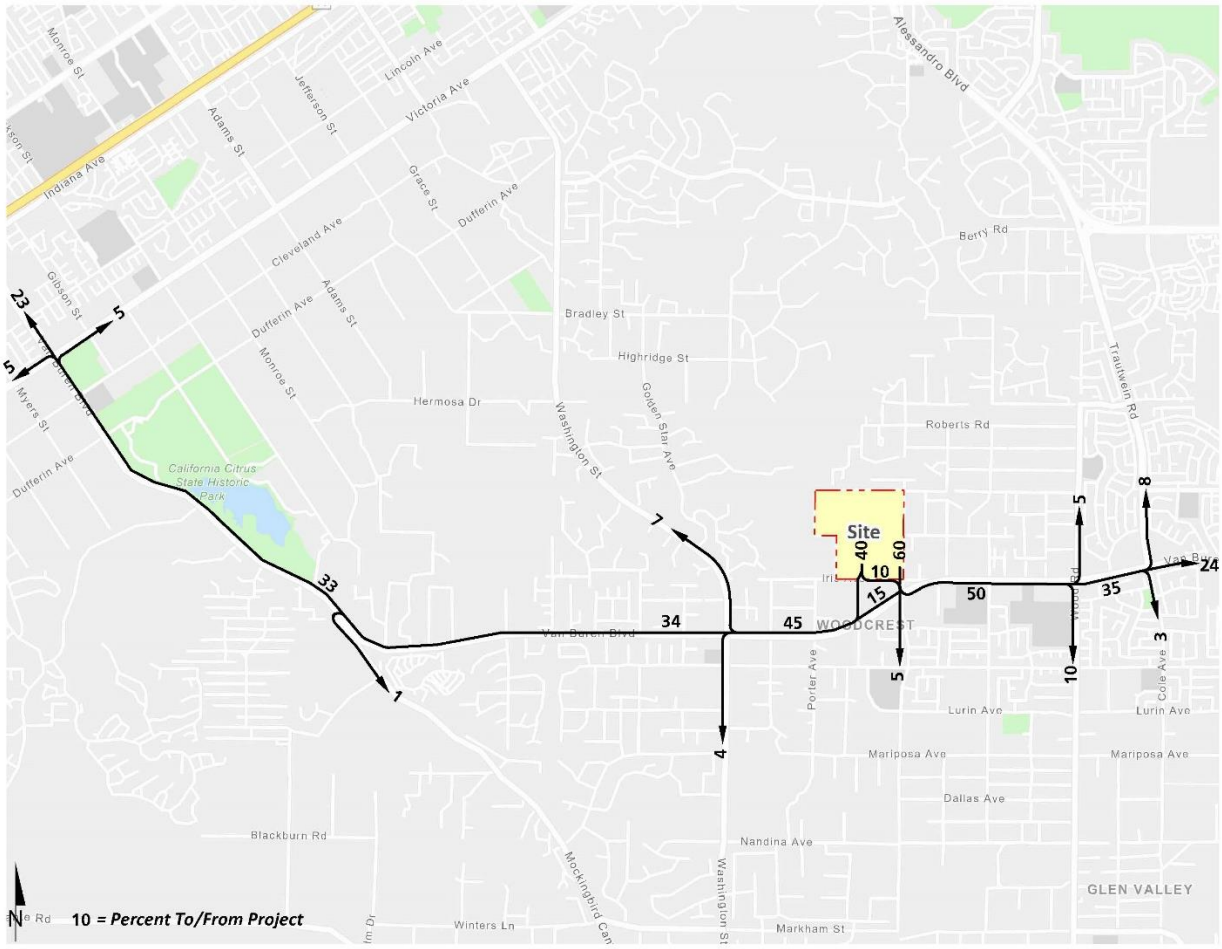
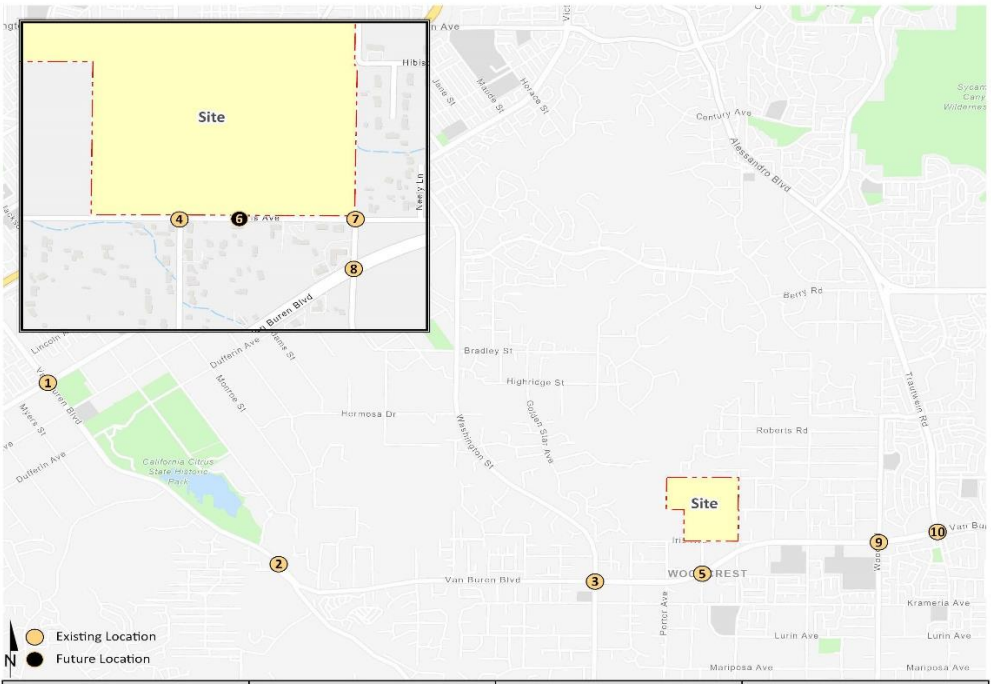


EXHIBIT 4-2: PROJECT ONLY (PHASE 1) TRAFFIC VOLUMES



1 Van Buren Bl. & Victoria Av. — *Nominal*

	5(17) ←	
		1(4) ↰
1(4) ↴	3(2) ↰ 14(10) ↑ 3(2) ↱	

Nominal / *400*

2 Van Buren Bl. & Mockingbird Canyon Rd. — *400*

	7(24) ←	
0(1) ↲	1(0) ↰ 21(14) ↑	

400

3 Washington St. & Van Buren Bl. — *500*

	2(5) ↳	↱ 4(3) ← 21(14) ↰ 3(2)
7(24) →		1(3) ↱

400 / *Nominal*

4 Gamble Av. & Iris Av. — *350*

	↰ 19(13)
	7(22) ↱

350

5 Gamble Av. & Van Buren Bl. — *150*

19(13) ↲	← 9(6)
7(22) ↴ 3(11) →	

350 / *500*

6 Street O & Iris Av. — *100*

19(13) ↲ 6(4) ↳	↱ 2(7)
7(22) ↳	

450 / *350*

7 Chicago Av. & Iris Av. — *800*

38(25) ↓	
6(4) ↲	↰ 2(7) 13(43) ↑

700 / *100*

8 Chicago Av./Alta Cresta Av. & Van Buren Bl. — *Nominal*

9(6) ↲ 3(2) ↓ 32(21) ↳	↱ 11(36)
3(11) ↳	↑ 1(4)

800 / *150*

9 Wood Rd. & Van Buren Bl. — *100*

1(4) ↲	← 8(25)
3(2) ↴ 22(15) → 6(4) ↴	↰ 2(7)

Nominal / *550*

10 Trautwein Rd./Cole Av. & Van Buren Bl. — *Nominal*

2(6) ↲	← 5(17)
5(3) ↳ 15(10) → 2(1) ↴	↰ 1(2) ↑ 1(2)

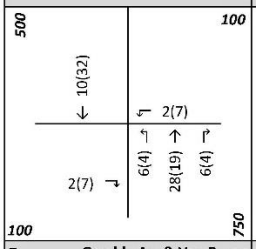
100 / *400*

##(##) AM(PM) Peak Hour Intersection Volumes

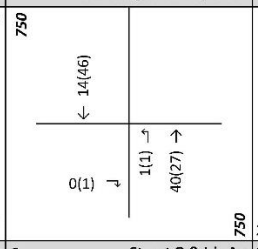
***Average Daily Trips***

EXHIBIT 4-3: PROJECT ONLY (PROJECT BUILDOUT) TRAFFIC VOLUMES

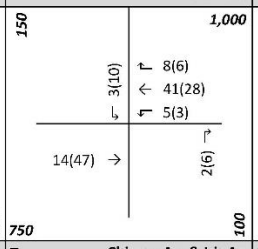
1 Van Buren Bl. & Victoria Av.



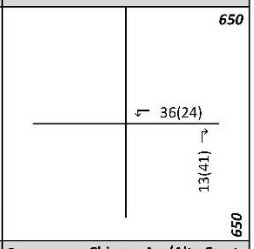
2 Van Buren Bl. & Mockingbird Canyon Rd.



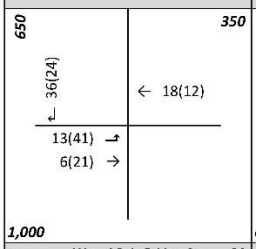
3 Washington St. & Van Buren Bl.



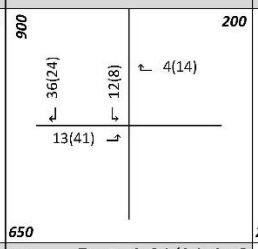
4 Gamble Av. & Iris Av.



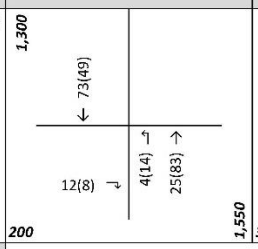
5 Gamble Av. & Van Buren Bl.



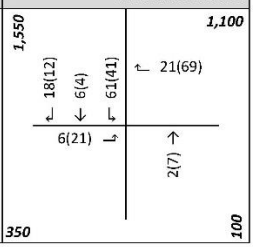
6 Street O & Iris Av.



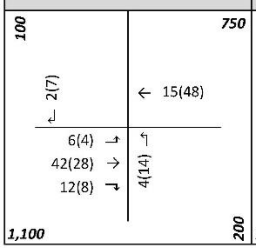
7 Chicago Av. & Iris Av.



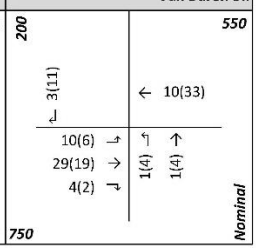
8 Chicago Av./Alta Cresta Av. & Van Buren Bl.



9 Wood Rd. & Van Buren Bl.



10 Trautwein Rd./Cole Av. & Van Buren Bl.



##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

4.6 CUMULATIVE DEVELOPMENT TRAFFIC

A cumulative project list was developed for the purposes of this analysis through consultation with planning and engineering staff from the County of Riverside. The cumulative projects listed are those that would generate traffic and would contribute traffic to study area intersections. Exhibit 4-4 illustrates the cumulative development location map. A summary of cumulative development projects and their proposed land uses are shown in Table 4-2. If applicable, the traffic generated by individual cumulative projects was manually added to the Without Project forecasts to ensure that traffic generated by the listed cumulative development projects in Table 4-2 are reflected as part of the background traffic. In an effort to conduct a conservative analysis, the cumulative projects are added in conjunction with the ambient growth identified in Section 4.5 *Background Traffic*. Although it is unlikely that all of these cumulative projects would be fully built and occupied by Year 2028, they have been included in an effort to conduct a conservative analysis and overstate as opposed to understate potential traffic deficiencies. Any other cumulative projects located beyond the cumulative study area that are not expected to contribute measurable traffic to study area intersections have not been included since the traffic would dissipate due to the distance from the Project site and study area intersections. Cumulative Only ADT and weekday peak hour intersection turning movement volumes are shown on Exhibit 4-5.

4.7 NEAR-TERM TRAFFIC CONDITIONS

The "buildup" approach combines existing traffic counts with a background ambient growth factor to forecast EAP (2026), EAP (2027), and EAPC (2027) traffic conditions. An ambient growth factor accounts for background (area-wide) traffic increases that occur over time up to the year 2026 and 2027 from the year 2022. Traffic volumes generated by the Project are then added to assess the near-term traffic conditions. The 2026 and 2027 roadway networks are similar to the Existing conditions roadway network, with the exception of future driveways proposed to be developed by the Project.

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

- Existing Plus Ambient Growth Plus Project (2026)
  - Existing 2022 counts
  - Ambient growth traffic (8.24%)
  - Project (Phase 1) traffic

- Existing Plus Ambient Growth Plus Project (2027)
  - Existing 2022 counts
  - Ambient growth traffic (10.41%)
  - Project (Project Buildout) traffic

- Existing Plus Ambient Growth Plus Project Plus Cumulative (2027)
  - Existing 2022 counts
  - Ambient growth traffic (10.41%)
  - Cumulative Development traffic
  - Project (Project Buildout) traffic

EXHIBIT 4-4: CUMULATIVE DEVELOPMENT LOCATION MAP

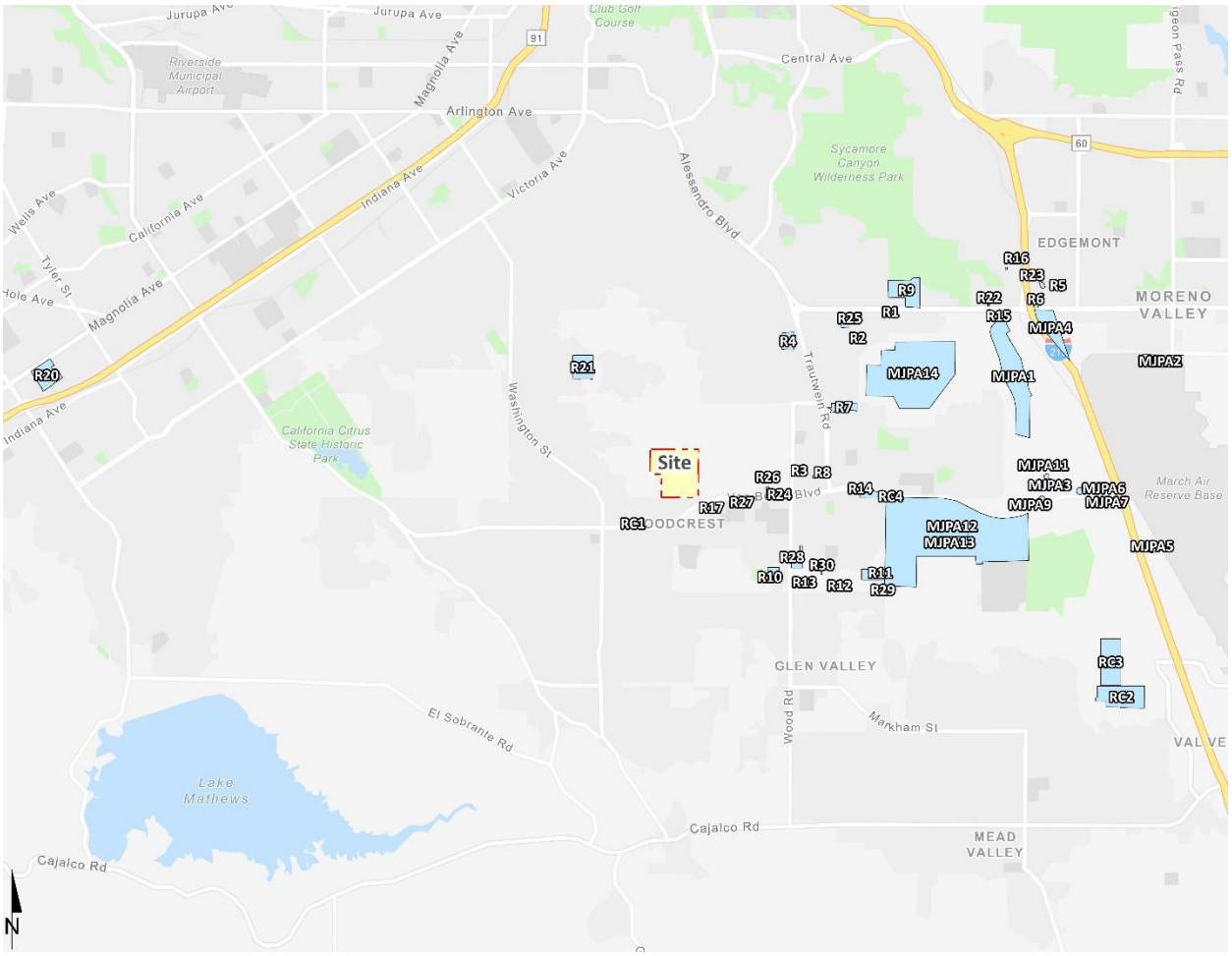
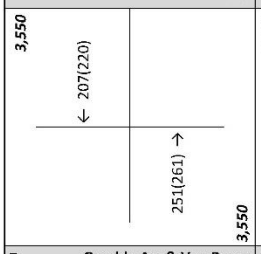
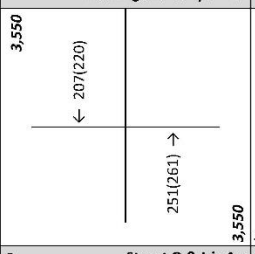


EXHIBIT 4-5: CUMULATIVE ONLY TRAFFIC VOLUMES

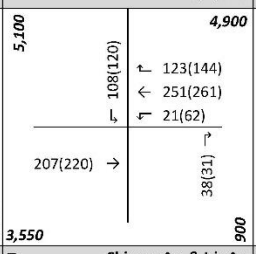
1 Van Buren Bl. & Victoria Av.



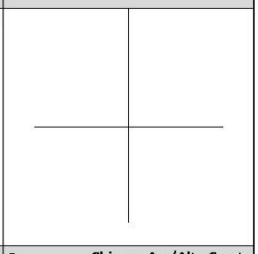
2 Van Buren Bl. & Mockingbird Canyon Rd.



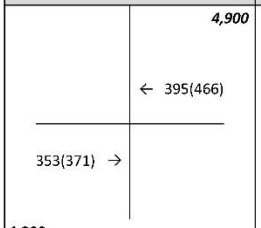
3 Washington St. & Van Buren Bl.



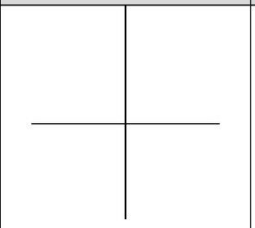
4 Gamble Av. & Iris Av.



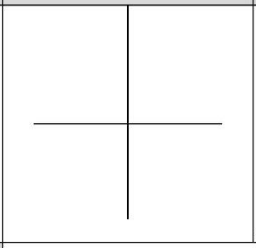
5 Gamble Av. & Van Buren Bl.



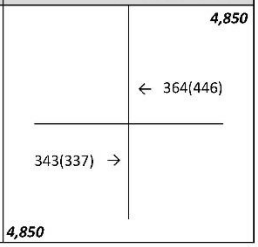
6 Street O & Iris Av.



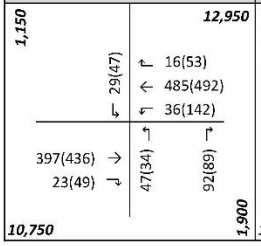
7 Chicago Av. & Iris Av.



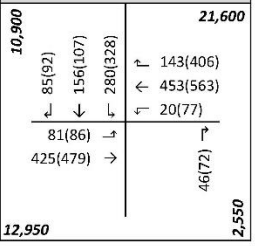
8 Chicago Av./Alta Cresta Av. & Van Buren Bl.



9 Wood Rd. & Van Buren Bl.



10 Trautwein Rd./Cole Av. & Van Buren Bl.



##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

TABLE 4-2: CUMULATIVE DEVELOPMENT LAND USE SUMMARY (1 OF 2)

#	Project/Location	Land Use	Quantity	Units[1]
City of Riverside:				
R1	P17-0419/20/21	Fast Food w/ Drive Thru	2	TSF
R2	P16-0578	Warehouse	82.2	TSF
R3	P19-0151/P19-0152/P19-0153	Health and Fitness Club	22	TSF
R4	P13-0665	SFDR	8	DU
R5	P15-1035/P16-0556/P16-0567	Warehouse	176	TSF
R6	P14-0841 to P14-0848/P16-0472/P16-0474	Warehouse	73.2	TSF
		Commercial Retail	15	TSF
R7	P14-0472/P14-0473/P15-0321/P15-0322	SFDR	85	DU
R8	P19-0022/P19-0024/P19-0026/P19-0027/P19-0028	Fast Food w/ Drive Thru	4.319	TSF
R9	Sycamore Hills Distribution Center	Warehouse	603	TSF
R10	PR-2021-00073	Single Family Detatched Housing	41	DU
R11	P06-1355	Single Family Detatched Housing	20	DU
R12	P06-1396	Single Family Detatched Housing	20	DU
R13	P03-1404	Single Family Detatched Housing	20	DU
R14	P10-0113, P10-0118, P10-0449	Free-Standing Discount Superstore	139	TSF
		Home Improvement Superstore	155.433	TSF
		Shopping Plaza	126	TSF
R15	P12-0360	Vocational School	12	TSF
R16	P12-0507 through P12-0510	Warehouse/Industrial	235.741	TSF
R17	P13-0263, P13-0264, P13-0769	Retail	11	TSF
		Day Care	10	TSF
		Drive-Thru Restaurant	3	TSF
		Office	10.000	TSF
		Medical Office	8.000	TSF
R18	P20-0013, P20-0014, P20-0015, P20-0016	Residential	81	DU
R19	P20-0018, P20-0019, P20-0020, P20-0021	Residential	138	DU
R20	PR-2021-000713	Medical Center	180.474	TSF
R21	P16-0774	Single Family Detatched Housing	46	DU
R22	P14-0600, P14-0601, P14-0602, P15-044	Industrial	121.390	TSF
R23	P14-1070	Warehousing	240.080	TSF
R24	P15-0075, P15-0076, P15-0819	Auto Repair	11.738	TSF
		Fast Food w/ Drive Thru	2.2	TSF
R25	P15-0983, P15-0984	Child Care	15	TSF
R26	P17-0688, P17-0689	Car Wash	5.440	TSF
R27	P19-0042	Restaurant	4.300	TSF
		Office	9.920	TSF
R28	PR-2021-001053	Single Family Detatched Housing	96	DU
County of Riverside:				
RC1	CUP03766	Automated Car Wash	1	TUN
RC2	Knox Business Park	Warehouse	1259.05	TSF
RC3	Oleander Business Park	Warehouse	711	TSF
RC4	PP25382	Commercial Office Building	10.275	TSF

TABLE 4-2: CUMULATIVE DEVELOPMENT LAND USE SUMMARY (2 OF 2)

March Joint Powers Authority:				
MJPA1	Meridian Business Park (West Campus)	Industrial Park	2,278.852	TSF
MJPA2	K4 Parcel	Warehouse	718	TSF
MJPA3	Economic Business Center	Warehouse	124.523	TSF
MJPA4	Freeway Business Center	Warehouse	709.083	TSF
MJPA5	Veteran's Industrial Plaza/VIP 215	Warehouse	2000	TSF
MJPA6	Veteran's Plaza	Commercial Retail	198.000	TSF
MJPA7	MS Van Buren I	Warehouse	176.396	TSF
MJPA8	MS Van Buren II	Warehouse	162	TSF
MJPA9	MS Prime Six	General Office	74.922	TSF
MJPA10	Meridian Distribution Center IV	Warehouse	90.000	TSF
MJPA11	Meridian Distribution Center III	Warehouse	262	TSF
MJPA12	Eagle Business Park	Business Park	390.480	TSF
MJPA13	South Campus	Office	388	TSF
		Commercial Retail	283	TSF
		Business Park	1764.180	TSF
		Industrial Park	1774.437	TSF
MJPA14	West Campus Upper Plateau	High-Cube Fulfillment Warehouse	1,837.000	TSF
		Cold Storage Warehouse	725.561	TSF
		Buisness Park	2,997.386	TSF
		Retail	160.921	TSF
		Park	60.280	AC

[1] AC = Acres; TSF = Thousand Square Feet; DU = Dwelling Unit

4.8 HORIZON YEAR TRAFFIC FORECASTS

Traffic projections for Horizon Year conditions were derived from the RIVCOM regional model using accepted procedures for model forecast refinement and smoothing. The traffic forecasts reflect the area-wide growth anticipated between Existing and Horizon Year traffic conditions. The base model year for the RIVCOM regional model is Year 2018 and the future year model is Year 2045.

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

The refined future peak hour approach and departure volumes obtained from these calculations are then entered into a spreadsheet program consistent with the National Cooperative Highway Research Program (NCHRP Report 765), along with initial estimates of turning movement proportions. A linear programming algorithm is used to calculate individual turning movements which match the known directional roadway segment forecast volumes computed in the previous step. This program computes a likely set of intersection turning movements from intersection approach counts and the initial turning proportions from each approach leg.

Typically, the model growth is prorated and is subsequently added to the existing (base validation) traffic volumes to represent Horizon Year traffic conditions. However, review of the resulting model growth indicates negative growth for some of the study area intersections. In an effort to conduct a conservative analysis, reductions to traffic forecasts from either Existing or EAPC traffic conditions were not assumed as part of this analysis. As such, in conjunction with the addition of cumulative projects that are not consistent with the General Plan, additional growth has also been applied on a movement-by-movement basis, where applicable, to estimate reasonable Horizon Year forecasts. Horizon Year turning volumes were compared to EAPC volumes in order to ensure a minimum growth as a part of the refinement process. The minimum growth includes any additional growth between EAPC and Horizon Year traffic conditions that is not accounted for by the traffic generated by cumulative development projects and ambient growth rates assumed between Existing (2022) and Horizon Year traffic conditions. Future estimated peak hour traffic data was used for new intersections and intersections with an anticipated change in travel patterns to further refine the Horizon Year peak hour forecasts. The only instance when the EAPC forecasts would not be used to manually adjust the Horizon Year forecasts is if there are new proposed roadway connections/facilities that would explain the change in travel patterns within the study area.

The future Horizon Year Without Project peak hour turning movements were then reviewed by Urban Crossroads for reasonableness, and in some cases, were adjusted to achieve flow conservation, reasonable growth, and reasonable diversion between parallel routes. Flow conservation checks ensure that traffic flow between two closely spaced intersections, such as two freeway ramp locations, is verified in order to make certain that vehicles leaving one intersection are entering the adjacent intersection and that there is no unexplained loss of vehicles. The result of this traffic forecasting procedure is a series of traffic volumes which are suitable for traffic operations analysis.

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5 EAP (2026 & 2027) TRAFFIC CONDITIONS

This section discusses the traffic forecasts for EAP (2026) and EAP (2027) conditions and the resulting intersection operations and traffic signal warrant analyses.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for EAP (2026) and EAP (2027) 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 (Phase 1) to provide site access are also assumed to be in place for EAP (2026) conditions (e.g., intersection and roadway improvements at the Project's frontage and driveways).
- Project driveways and those facilities assumed to be constructed by the Project (Project Buildout) to provide site access are also assumed to be in place for EAP (2027) conditions (e.g., intersection and roadway improvements at the Project's frontage and driveways).

5.2 EAP (2026) GROWTH TRAFFIC VOLUME FORECASTS

This scenario includes Existing (2022) traffic volumes plus an ambient growth factor of 8.24% and the addition of Project (Phase 1) traffic. The weekday ADT volumes and peak hour volumes which can be expected for EAP (2026) traffic conditions are shown on Exhibits 5-1.

5.3 EAP (2027) TRAFFIC VOLUME FORECASTS

This scenario includes Existing (2022) traffic volumes plus an ambient growth factor of 10.41% and the addition of Project (Buildout) traffic. The weekday ADT volumes and peak hour volumes which can be expected for EAP (2027) traffic conditions are shown on Exhibits 5-2.

5.4 INTERSECTION OPERATIONS ANALYSIS

EAP (2026 & 2027) peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TA. The intersection analysis results are summarized in Table 5-1 for EAP (2026 & 2027) traffic conditions, which indicates that there are no study area intersections anticipated to operate at an unacceptable LOS during the peak hours under both EAP (2026) and EAP (2027) traffic conditions, consistent with Existing (2022) traffic conditions.

The intersection operations analysis worksheets for EAP (2026) and EAP (2027) traffic conditions are included in Appendices 5.1 and 5.2 of this TA, respectively.

EXHIBIT 5-1: EAP (2026) TRAFFIC VOLUMES

1 Van Buren Bl. & Victoria Av.

33,050 | 26(92) ↲ 838(1593) ↓ 29(89) ↳ | 6,300 | ↱ 13(24) ← 117(143) ↰ 84(135)
31(34) ↳ | ↰ ↑ ↱
170(173) → | 239(135) 1459(970) 185(84)
136(354) ↲ |
11,000 | 43,400

2 Van Buren Bl. & Mockingbird Canyon Rd.

35,750 | 136(388) ↲ 908(1555) ↓ | | 29,050
400(195) ↳ | ↰ ↑
6(4) ↲ | 5(13) 1364(894)
7,050

3 Washington St. & Van Buren Bl.

17,100 | 69(82) ↲ 160(312) ↓ 292(476) ↳ | 39,000 | ↱ 492(253) ← 1276(1014) ↰ 87(163)
122(143) ↳ | ↰ ↑ ↱
896(1321) → | 121(71) 438(183) 122(82)
107(36) ↲ | 10,000
31,450

4 Gamble Av. & Iris Av.

500 | ← 1(1) ↰ 22(19)
4(1) ↲ | ↰ ↱
0(1) 10(30)
Nominal | 550

5 Gamble Av. & Van Buren Bl.

350 | 24(13) ↲ 1(0) ↳ | 43,750 | ↱ 3(0) ← 1778(1373) ↰ 2(8)
7(22) ↳ | ↰ ↱
1313(1913) → | 0(1) 1(8)
2(1) ↲ | 200
39,150

6 Street O & Iris Av.

450 | 19(13) ↲ 6(4) ↳ | 300 | ↱ 2(7) ← 4(8)
7(22) ↳
3(8) →
500

7 Chicago Av. & Iris Av.

700 | 38(25) ↲ | 150 | ← 0(1) ↰ 5(3)
↰ ↑ ↱
0(1) → | 5(13) 13(43) 2(9)
6(12) ↲ | 1,100
300

8 Chicago Av./Alta Cresta Av. & Van Buren Bl.

2,000 | 13(19) ↲ 3(7) ← 37(36) ↳ | 37,150 | ↱ 22(65) ← 1668(1278) ↰ 44(37)
32(50) ↳ | ↰ ↑ ↱
1223(1724) → | 94(50) 2(5) 47(14)
47(153) ↲ | 3,150
38,650

9 Wood Rd. & Van Buren Bl.

10,050 | 153(203) ↲ 438(198) ↓ 70(66) ↳ | 35,000 | ↱ 105(61) ← 1129(1183) ↰ 385(205)
156(161) ↳ | ↰ ↑ ↱
802(1311) → | 321(219) 377(163) 213(145)
312(214) ↲ | 13,500
38,800

10 Trautwein Rd./Cole Av. & Van Buren Bl.

21,300 | 256(231) ↲ 330(505) ↓ 163(300) ↳ | 32,200 | ↱ 301(198) ← 1253(1080) ↰ 143(105)
243(295) ↳ | ↰ ↑ ↱
760(1017) → | 147(83) 147(83) 88(31)
78(108) ↲ | 13,100
33,200

##(##) AM(PM) Peak Hour Intersection Volumes
Average Daily Trips

EXHIBIT 5-2: EAP (2027) TRAFFIC VOLUMES

1 Van Buren Bl. & Victoria Av.

33,950 | 6,450
26(94) ↲ 860(1640) ↓ 30(91) ↳
13(24) ↱
119(146) ←
87(141) ↰
32(34) ↳ | ↰ ↑ ↱
173(177) → | 247(140) | 1502(998) | 191(88)
140(364) ↲
11,250 | 44,600

2 Van Buren Bl. & Mockingbird Canyon Rd.

36,800
139(395) ↲ 933(1607) ↓
409(199) ↳ | ↰ ↑
7(4) ↲ | 5(14) | 1410(925)
7,200 | 30,000

3 Washington St. & Van Buren Bl.

17,500 | 40,250
71(84) ↲ 163(318) ↓ 299(490) ↳
506(261) ↱
1321(1048) ←
91(168) ↰
125(146) ↳ | ↰ ↑ ↱
920(1370) → | 124(73) | 447(187) | 126(87)
109(36) ↲
32,450 | 10,250

4 Gamble Av. & Iris Av.

850
1(1) ←
39(31) ↰
4(1) ↲ | ↰ | ↱
0(1) | 16(49)
Nominal | 850

5 Gamble Av. & Van Buren Bl.

650 | 44,800
42(24) ↲ 1(0) ↳
3(0) ↱
1822(1406) ←
2(8) ↰
13(41) ↳ | ↰ ↱
1342(1961) → | 0(1) | 1(8)
2(1) ↲
40,400 | 200

6 Street O & Iris Av.

900 | 400
36(24) ↲ 12(8) ↳
4(14) ↱
4(8) ←
13(41) ↳
3(8) →
850

7 Chicago Av. & Iris Av.

1,300 | 150
73(49) ↓
0(1) ←
6(3) ↰
↰ ↑ ↱
0(1) → | 7(21) | 25(83) | 2(9)
12(16) ↲
400 | 1,850

8 Chicago Av./Alta Cresta Av. & Van Buren Bl.

2,800 | 38,450
22(25) ↲ 6(10) ← 67(56) ↳
32(99) ↱
1701(1304) ←
45(38) ↰
36(61) ↳ | ↰ ↑ ↱
1248(1759) → | 96(51) | 3(8) | 47(14)
47(156) ↲
39,600 | 3,250

9 Wood Rd. & Van Buren Bl.

10,300 | 36,100
157(210) ↲ 447(202) ↓ 72(67) ↳
107(62) ↱
1159(1229) ←
393(209) ↰
162(166) ↳ | ↰ ↑ ↱
838(1350) → | 330(230) | 384(167) | 218(148)
324(222) ↲
40,100 | 13,900

10 Trautwein Rd./Cole Av. & Van Buren Bl.

21,800 | 33,100
262(241) ↲ 337(516) ↓ 167(306) ↳
307(202) ↱
1283(1117) ←
146(107) ↰
253(304) ↳ | ↰ ↑ ↱
789(1046) → | 150(87) | 150(87) | 89(32)
81(111) ↲
34,200 | 13,350

##(##) AM(PM) Peak Hour Intersection Volumes
Average Daily Trips

TABLE 5-1: INTERSECTION ANALYSIS FOR EAP (2026 & 2027) CONDITIONS

#	Intersection	Traffic Control[1]	Existing (2022) Delay (secs.) AM	Existing (2022) Delay (secs.) PM	Existing (2022) Level of Service AM	Existing (2022) Level of Service PM	EAP (2026) Delay (secs.) AM	EAP (2026) Delay (secs.) PM	EAP (2026) Level of Service AM	EAP (2026) Level of Service PM	EAP (2027) Delay (secs.) AM	EAP (2027) Delay (secs.) PM	EAP (2027) Level of Service AM	EAP (2027) Level of Service PM
1	Van Buren Bl. & Victoria Av.	TS	18.3	29.7	B	C	20.8	38.9	C	D	21.9	43.7	C	D
2	Van Buren Bl. & Mockingbird Canyon Rd.	TS	7.2	5.6	A	A	7.8	6.0	A	A	8.0	6.2	A	A
3	Washington St. & Van Buren Bl.	TS	29.4	35.5	C	D	34.4	42.6	C	D	36.7	46.2	D	D
4	Gamble Av. & Iris Av.	CSS	8.4	8.4	A	A	8.4	8.5	A	A	8.5	8.5	A	A
5	Gamble Av. & Van Buren Bl.	TS	5.1	4.8	A	A	6.0	6.7	A	A	6.2	7.3	A	A
6	Street O & Iris Av.	CSS	Future Intersection				8.5	8.6	A	A	8.6	8.7	A	A
7	Chicago Av. & Iris Av.	CSS	8.5	8.5	A	A	9.4	9.3	A	A	9.7	9.7	A	A
8	Chicago Av./Alta Cresta Av. & Van Buren Bl.	TS	13.2	11.4	B	B	16.5	13.0	B	B	18.9	14.7	B	B
9	Wood Rd. & Van Buren Bl.	TS	37.7	26.3	D	C	45.9	30.9	D	C	49.2	32.9	D	C
10	Trautwein Rd./Cole Av. & Van Buren Bl.	TS	27.0	23.1	C	C	30.2	25.5	C	C	31.3	26.6	C	C

[1] TS = Traffic Signal; CSS = Cross-Street Stop

5.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

The traffic signal warrant analysis for EAP (2026 & 2027) traffic conditions are based on the peak hour volumes or planning level ADT volume-based traffic signal warrants. There are no study area intersections anticipated to meet a traffic signal warrant under EAP (2026) and EAP (2027) traffic conditions (see Appendices 5.3 and 5.4, respectively).

5.6 PROJECT DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

As shown in Table 5-1, all study area intersections are anticipated to continue to operate at an acceptable LOS during the peak hours for both EAP (2026) and EAP (2027) traffic conditions. As such, no improvements have been identified.

6 EAPC (2027) TRAFFIC CONDITIONS

This section discusses the traffic forecasts for EAPC (2027) traffic conditions and the resulting intersection operations and traffic signal warrant analyses.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Background Plus Project Plus Cumulative Projects 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 (Project Buildout) to provide site access are also assumed to be in place for EAPC (2027) conditions (e.g., intersection and roadway improvements at the Project's frontage and driveways).
- Driveways and those facilities assumed to be constructed by cumulative developments to provide site access are also assumed to be in place for EAPC (2027) conditions only (e.g., intersection and roadway improvements along the cumulative development's frontages).

6.2 BACKGROUND PLUS PROJECT PLUS CUMULATIVE PROJECTS TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus an ambient growth factor of 10.41%, the addition of traffic generated by cumulative development projects, and the addition of Project (Buildout) traffic. The weekday ADT and weekday peak hour intersection turning movement volumes which can be expected for EAPC (2027) traffic conditions are shown on Exhibit 6-1.

6.3 INTERSECTION OPERATIONS ANALYSIS

EAPC (2027) peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TA. The intersection analysis results are summarized in Table 6-1 for EAPC (2027) traffic conditions, which indicates that the following study area intersection is anticipated to continue to operate at an unacceptable LOS during the peak hours:

- Washington Street & Van Buren Boulevard (#3) – LOS E AM and PM peak hours
- Wood Road & Van Buren Boulevard (#9) – LOS F AM and PM peak hours
- Trautwein Road/Cole Avenue & Van Buren Boulevard (#10) – LOS F AM peak hour; LOS E PM peak hour

The intersection operations analysis worksheets for EAPC (2027) traffic conditions are included in Appendix 6.1.

EXHIBIT 6-1: EAPC (2027) TRAFFIC VOLUMES

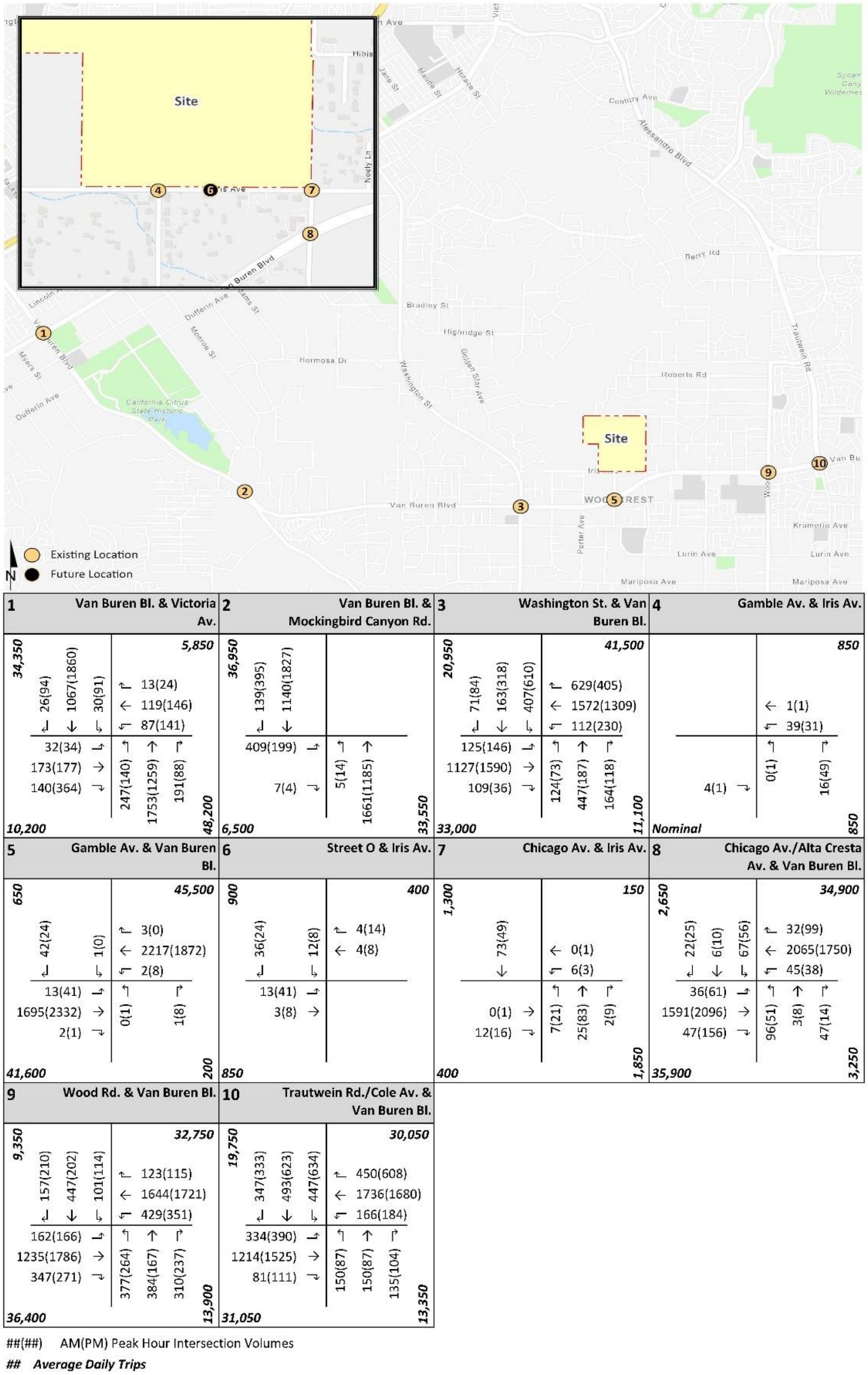


TABLE 6-1: INTERSECTION ANALYSIS FOR EAPC (2027) CONDITIONS

#	Intersection	Traffic Control[1]	EAPC (2027) Delay (secs.) AM	EAPC (2027) Delay (secs.) PM	EAPC (2027) Level of Service AM	EAPC (2027) Level of Service PM
1	Van Buren Bl. & Victoria Av.	TS	25.8	52.9	C	D
2	Van Buren Bl. & Mockingbird Canyon Rd.	TS	8.8	6.6	A	A
3	Washington St. & Van Buren Bl.	TS	**59.7**	**79.6**	**E**	**E**
4	Gamble Av. & Iris Av.	CSS	8.6	8.8	A	A
5	Gamble Av. & Van Buren Bl.	TS	8.2	11.1	A	B
6	Street O & Iris Av.	CSS	8.6	8.7	A	A
7	Chicago Av. & Iris Av.	CSS	9.7	9.7	A	A
8	Chicago Av./Alta Cresta Av. & Van Buren Bl.	TS	30.7	23.7	C	C
9	Wood Rd. & Van Buren Bl.	TS	**114.9**	**87.6**	**F**	**F**
10	Trautwein Rd./Cole Av. & Van Buren Bl.	TS	**92.0**	**77.0**	**F**	**E**

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

[1] TS = Traffic Signal; CSS = Cross-Street Stop; AWS = All-Way Stop; CSS = Improvemer

6.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

The traffic signal warrant analysis for EAPC (2027) traffic conditions are based on the peak hour volumes or planning level ADT volume-based traffic signal warrants. There are no study area intersections anticipated to meet a traffic signal warrant under EAPC (2027) traffic conditions (see Appendix 6.2).

6.5 PROJECT DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections that have been identified as deficient under EAPC (2027) traffic conditions in an effort to achieve an acceptable LOS (i.e., LOS D or better). The effectiveness of the recommended improvement strategies to address EAPC (2027) traffic deficiencies are presented in Table 6-2. Worksheets for EAPC (2027), with improvements, HCM calculation worksheets are provided in Appendix 6.3.

TABLE 6-2: EAPC (2027) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WITH IMPROVEMENTS

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1] Northbound L	T	R	Southbound L	T	R	Eastbound L	T	R	Westbound L	T	R	Delay (secs.) AM	PM	Level of Service AM	PM
3	Washington St. & Van Buren Bl.																	
	- Without Improvements	TS	2	2	1	2	2	0	1	2	0	1	2	1	**59.7**	**79.6**	**E**	**E**
	- With Improvements	TS	2	2	1	2	2	0	1	**3**	0	1	**3**	1	35.9	52.8	D	D
9	Wood Rd. & Van Buren Bl.																	
	- Without Improvements	TS	2	2	0	1	2	0	1	2	1	2	2	1	**114.9**	**87.6**	**F**	**F**
	- With Improvements	TS	2	2	0	1	2	0	1	**3**	1	2	**3**	1	50.5	39.6	D	D
10	Trautwein Rd./Cole Av. & Van Buren Bl.																	
	- Without Improvements	TS	1	2	0	2	2	1	2	2	1	1	3	1	**92.0**	**77.0**	**F**	**E**
	- With Improvements	TS	1	2	0	2	2	1	2	**3**	1	1	3	1	53.9	51.4	D	D

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

L = Left; T = Through; R = Right; 1 = Improvement

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

[3] TS = Traffic Signal

7 HORIZON YEAR (2045) TRAFFIC CONDITIONS

This section discusses the traffic forecasts for Horizon Year (2045) conditions and the resulting intersection operations and traffic signal warrant analyses.

7.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Horizon Year (2045) 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 (Project Buildout) to provide site access are also assumed to be in place for Horizon Year (2045) conditions (e.g., intersection and roadway improvements at the Project's frontage and driveways).
- Other parallel facilities, that although not evaluated for the purposes of this analysis, are anticipated to be in place for Horizon Year traffic conditions and would affect the travel patterns within the study area.

7.2 HORIZON YEAR (2045) TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-process volumes obtained from the RIVCOM, plus the traffic generated by the proposed Project for With Project conditions only. The weekday ADT and weekday AM and PM peak hour volumes, in actual vehicles, which can be expected for Horizon Year (2045) Without and With Project traffic conditions are shown on Exhibits 7-1 and 7-2, respectively.

7.3 INTERSECTION OPERATIONS ANALYSIS

Horizon Year (2045) conditions peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TA. The intersection analysis results are summarized in Table 7-1 for Horizon Year (2045) conditions which indicates the following study area intersections are anticipated to operate at an unacceptable LOS under Horizon Year (2045) Without Project traffic conditions:

- Van Buren Boulevard & Victoria Avenue (#1) – LOS F PM peak hour only
- Washington Street & Van Buren Boulevard (#3) – LOS F AM and PM peak hours
- Wood Road & Van Buren Boulevard (#9) – LOS F AM and PM peak hours
- Trautwein Road/Cole Avenue & Van Buren Boulevard (#10) – LOS F AM and PM peak hours

There are no additional study area intersections anticipated to operate at an unacceptable LOS during the peak hours with the addition of Project traffic, under Horizon Year (2045) With Project traffic conditions. The intersection operations analysis worksheets for Horizon Year (2045) Without and With Project traffic conditions are included in Appendices 7.1 and 7.2, respectively.

EXHIBIT 7-1: HORIZON YEAR (2045) WITHOUT PROJECT TRAFFIC VOLUMES

1 Van Buren Bl. & Victoria Av.

41,150 | 7,000
30(228) 1142(1989) 36(114)
16(27) ← 131(160) 94(147)
39(54) → 265(162)
191(194) → 1873(1338)
152(392) → 204(92)
12,250 | 51,850

2 Van Buren Bl. & Mockingbird Canyon Rd.

43,250
187(456) 1217(1938)
449(230) → 6(15) → 1758(1248)
7(4) →
12,100 | 35,750

3 Washington St. & Van Buren Bl.

24,200 | 48,100
92(92) 209(553) 433(648)
670(425) ← 1659(1383) 116(264)
172(178) → 325(117)
1204(1675) → 1144(254)
152(84) → 233(120)
38,400 | 12,050

4 Gamble Av. & Iris Av.

200
1(1) ← 4(7)
5(1) → 0(1) 4(9)
Nominal | 200

5 Gamble Av. & Van Buren Bl.

53,800
6(0) 1(0)
4(0) ← 2379(2000) 2(9)
1823(2505) → 0(1)
2(1) → 1(9)
48,300 | 250

6 Street O & Iris Av.

200
5(9) ←
4(9) →
200

7 Chicago Av. & Iris Av.

200
0(1) ← 6(4)
0(1) → 4(7) 2(10)
0(9) →
200 | 350

8 Chicago Av./Alta Cresta Av. & Van Buren Bl.

1,350 | 41,050
5(15) 0(6) 6(17)
12(33) ← 2236(1880) 50(41)
33(44) → 106(56)
1715(2272) → 1(1)
52(171) → 52(16)
43,150 | 3,450

9 Wood Rd. & Van Buren Bl.

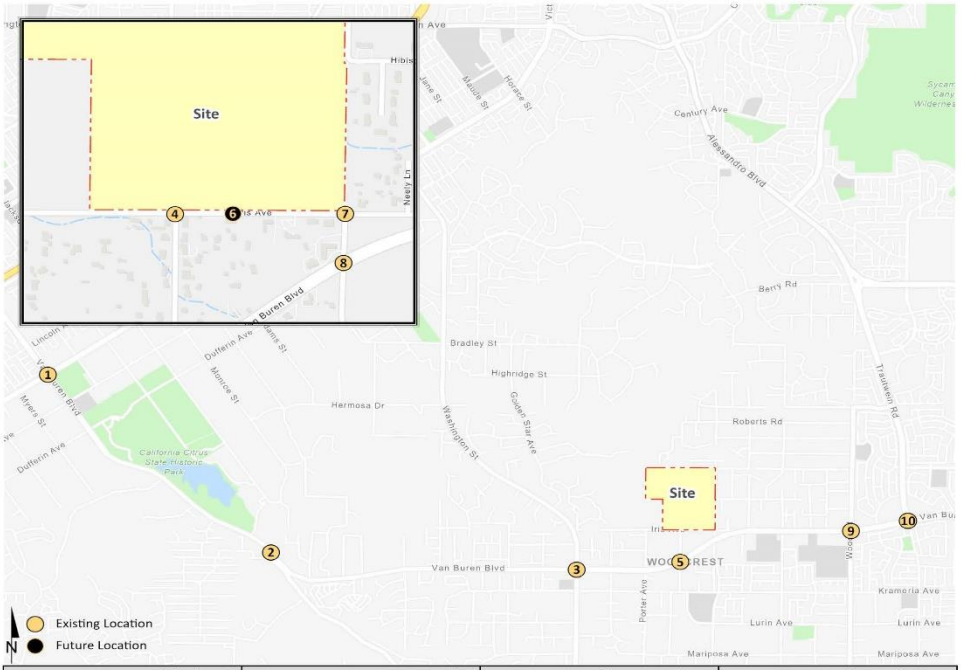
12,600 | 40,250
240(223) 552(305) 108(166)
134(201) ← 1743(1792) 468(372)
181(211) → 405(272)
1273(1890) → 423(237)
367(285) → 331(252)
45,300 | 17,850

10 Trautwein Rd./Cole Av. & Van Buren Bl.

28,150 | 35,850
370(345) 526(674) 463(664)
481(628) ← 1853(1756) 207(195)
348(414) → 164(94)
1261(1608) → 164(94)
104(120) → 144(107)
40,250 | 17,450

##(##) AM(PM) Peak Hour Intersection Volumes
Average Daily Trips

EXHIBIT 7-2: HORIZON YEAR (2045) WITH PROJECT TRAFFIC VOLUMES



1 Van Buren Bl. & Victoria Av.

	41,650	7,100
30(228) ↲	1152(2021) ←	36(114) ↳
39(54) ↳		↰ 16(27)
191(194) →		← 131(160)
154(399) ↲		↰ 96(154)
	↰ 271(166)	↑ 1901(1357) ↱ 210(96)
12,350		52,550

2 Van Buren Bl. & Mockingbird Canyon Rd.

	43,950	
187(456) ↲	1231(1984) ←	
449(230) ↳		
7(5) ↲		
	↰ 7(16)	↑ 1798(1275)
12,100		36,500

3 Washington St. & Van Buren Bl.

	24,350	49,100
92(92) ↲	209(553) ←	436(658) ↳
172(178) ↳		↰ 678(431)
1218(1722) →		← 1700(1411)
152(84) ↲		↰ 121(267)
	↰ 325(117)	↑ 1144(254) ↱ 235(126)
39,150		12,150

4 Gamble Av. & Iris Av.

		850
		← 1(1)
		↰ 40(31)
5(1) ↲		
	↰ 0(1)	↱ 17(50)
Nominal		900

5 Gamble Av. & Van Buren Bl.

650		54,150
42(24) ↲	1(0) ↳	↰ 4(0)
13(41) ↳		← 2397(2012)
1829(2526) →		↰ 2(9)
2(1) ↲		
	↰ 0(1)	↱ 1(9)
49,300		250

6 Street O & Iris Av.

900		400
36(24) ↲	12(8) ↳	↰ 4(14)
13(41) ↳		← 5(9)
4(9) →		
850		

7 Chicago Av. & Iris Av.

1,300		200
	73(49) ←	← 0(1)
		↰ 6(4)
0(1) →		
12(17) ↲		
	↰ 8(21)	↑ 25(83) ↱ 2(10)
450		1,900

8 Chicago Av./Alta Cresta Av. & Van Buren Bl.

2,900		42,150
23(27) ↲	6(10) ↳	67(58) ↰ 33(102)
39(65) ↳		← 2236(1880)
1715(2272) →		↰ 50(41)
52(171) ↲		
	↰ 106(56)	↑ 3(8) ↱ 52(16)
43,500		3,550

9 Wood Rd. & Van Buren Bl.

12,750		41,050
242(230) ↲	552(305) ←	108(166) ↳
187(215) ↳		↰ 134(201)
1315(1918) →		← 1758(1840)
379(293) ↲		↰ 468(372)
	↰ 409(286)	↑ 423(237) ↱ 331(252)
46,400		18,050

10 Trautwein Rd./Cole Av. & Van Buren Bl.

28,350		36,350
373(356) ↲	526(674) ←	463(664) ↳
358(420) ↳		↰ 481(628)
1290(1627) →		← 1863(1789)
108(122) ↲		↰ 207(195)
	↰ 165(98)	↑ 165(98) ↱ 144(107)
41,050		17,500

##(##) AM(PM) Peak Hour Intersection Volumes
Average Daily Trips

TABLE 7-1: INTERSECTION ANALYSIS FOR HORIZON YEAR (2045) CONDITIONS

#	Intersection	Traffic Control[1]	2045 Without Project Delay (secs.) AM	2045 Without Project Delay (secs.) PM	2045 Without Project Level of Service AM	2045 Without Project Level of Service PM	2045 With Project Delay (secs.) AM	2045 With Project Delay (secs.) PM	2045 With Project Level of Service AM	2045 With Project Level of Service PM	Difference in Delay AM	Difference in Delay PM	Project-Related Traffic Deficiency?[2]
1	Van Buren Bl. & Victoria Av.	TS	32.7	**85.6**	C	**F**	34.6	**86.5**	C	**F**	1.9	0.9	No
2	Van Buren Bl. & Mockingbird Canyon Rd.	TS	9.9	7.6	A	A	10.1	7.9	B	A	--	--	No
3	Washington St. & Van Buren Bl.	TS	**138.4**	**116.1**	**F**	**F**	**143.6**	**123.6**	**F**	**F**	**--**	**--**	**Yes**
4	Gamble Av. & Iris Av.	CSS	8.4	8.4	A	A	8.5	8.5	A	A	--	--	No
5	Gamble Av. & Van Buren Bl.	TS	6.7	13.0	A	B	10.6	16.2	B	B	--	--	No
6	Street O & Iris Av.	CSS	Future Intersection				8.6	8.7	A	A	--	--	No
7	Chicago Av. & Iris Av.	CSS	8.6	8.5	A	A	7.3	9.7	A	A	--	--	No
8	Chicago Av./Alta Cresta Av. & Van Buren Bl.	TS	31.0	32.4	C	C	44.7	37.9	A	D	--	--	No
9	Wood Rd. & Van Buren Bl.	TS	**135.6**	**137.0**	**F**	**F**	**140.1**	**148.3**	**F**	**F**	**4.5**	**11.3**	**Yes**
10	Trautwein Rd./Cole Av. & Van Buren Bl.	TS	**118.3**	**101.0**	**F**	**F**	**122.8**	**106.5**	**F**	**F**	**4.5**	**5.5**	**Yes**

[1] TS = Traffic Signal; CSS = Cross-Street Stop

[2] Project-related traffic deficiency occurs if the deficiency thresholds for each applicable agency are met.

7.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

The traffic signal warrant analysis for Horizon Year (2045) traffic conditions are based on the peak hour volumes or planning level ADT volume-based traffic signal warrants. There are no unsignalized study area intersections anticipated to meet a traffic signal warrant under Horizon Year (2045) Without and With Project conditions (see Appendices 7.3 and 7.4).

7.5 PROJECT DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections that have been identified as deficient under Horizon Year (2045) traffic conditions in an effort to achieve an acceptable LOS (i.e., LOS D or better). The effectiveness of the recommended improvement strategies to address Horizon Year (2045) traffic deficiencies are presented in Table 7-2. Worksheets for Horizon Year (2045) Without Project and With Project, with improvements, HCM calculation worksheets are provided in Appendices 7.5 and 7.6, respectively.

TABLE 7-2: HORIZON YEAR (2045) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WITH IMPROVEMENTS

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
3	Washington St. & Van Buren Bl.																	
	- Without Project	TS	2	2	1	2	2	0	**2**	**3**	**1**	**2**	**3**	**1>**	52.3	38.9	D	D
	- With Project	TS	2	2	1	2	2	0	**2**	**3**	**1**	**2**	**3**	**1>**	52.7	39.4	D	D
9	Wood Rd. & Van Buren Bl.																	
	- Without Project	TS	2	2	0	1	2	0	1	**3**	1	2	**3**	1	53.2	48.9	D	D
	- With Project	TS	2	2	0	1	2	0	1	**3**	1	2	**3**	1	54.8	51.5	D	D
10	Trautwein Rd./Cole Av. & Van Buren Bl.																	
	- Without Project	TS	1	2	0	2	2	1	2	**3**	1	1	3	1	**63.8**	53.9	**E**	D
	- With Project	TS	1	2	0	2	2	1	2	**3**	1	1	3	1	**65.2**	54.5	**E**	D

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

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

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

[3] TS = Traffic Signal

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8 LOCAL AND REGIONAL FUNDING MECHANISMS

Transportation improvements within the County of Riverside are funded through a combination of improvements constructed by the Project, development impact fee programs or fair share contributions. Fee programs applicable to the Project are described below.

8.1 COUNTY OF RIVERSIDE DEVELOPMENT IMPACT FEE (DIF) PROGRAM

The Project is located within the County's Woodcrest Area Plan and therefore will be subject to County of Riverside DIF in an effort by the County to address development throughout its unincorporated area. The DIF program consists of two separate transportation components: the Roads, Bridges and Major Improvements component and the Traffic Signals component. Eligible facilities for funding by the County DIF program are identified on the County's Public Needs List, which currently extends through the year 2020. (6) A comprehensive review of the DIF program is now planned in order to update the nexus study. This will result in development of a revised "needs list" extending the program time horizon from 2010 to 2030.

The cost of signalizing DIF network intersections is identified under the Traffic Signals component of the DIF program. County staff generally defines DIF eligible intersections as those consisting of two intersecting general plan roadways. If the intersection meets this requirement, it is potentially eligible for up to $235,000 of credit, which is subject to negotiations with the County.

8.2 RIVERSIDE COUNTY TRANSPORTATION UNIFORM MITIGATION FEE (TUMF)

The TUMF program is administered by the WRCOG based upon a regional Nexus Study most recently updated in 2016 to address major changes in right of way acquisition and improvement cost factors. (3) This regional program was put into place to ensure that development pays its fair share, and that funding is in place for construction of facilities needed to maintain the requisite level of service and critical to mobility in the region. TUMF is a truly regional mitigation fee program and is imposed and implemented in every jurisdiction in Western Riverside County.

8.3 MEASURE A

Measure A, Riverside County's half-cent sales tax for transportation, was adopted by voters in 1988 and extended in 2002. It will continue to fund transportation improvements through 2039. Measure A funds a wide variety of transportation projects and services throughout the County. RCTC is responsible for administering the program. Measure A dollars are spent in accordance with a voter-approved expenditure plan that was adopted as part of the 1988 election.

8.4 FAIR SHARE CONTRIBUTION

Project improvements may include a combination of fee payments to established programs, construction of specific improvements, payment of a fair share contribution toward future improvements or a combination of these approaches. Improvements constructed by development may be eligible for a fee credit or reimbursement through the program where appropriate (to be determined at the County's discretion). When off-site improvements are identified with a minor share of responsibility assigned to proposed development, the approving jurisdiction may elect to collect a fair share contribution or require the development to construct improvements. Detailed fair share calculations, for each peak hour, have been provided in Table 7-1 for the applicable deficient study area intersection and for each applicable phase. These fees are collected with the proceeds solely used as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with the projected population increases.

TABLE 8-1: PROJECT FAIR SHARE CALCULATIONS

#	Intersection		Existing	Project Buildout	2045 With Project	Total New Traffic	Project % of New Traffic[1]
3	Washington St. & Van Buren Bl.						
		AM:	3,830	73	6,483	2,653	2.8%
		PM:	3,774	100	5,893	2,119	**4.7%**
9	Wood Rd. & Van Buren Bl.						
		AM:	4,084	81	6,306	2,222	3.6%
		PM:	3,762	109	6,314	2,552	**4.3%**

[1] **BOLD =** Highest fair share percentage is highlighted.

9 REFERENCES

1. **County of Riverside.** *Transportation Analysis Guidelines.* County of Riverside : s.n., December 2020.
2. **Institute of Transportation Engineers.** *Trip Generation Manual.* 11th Edition. 2021.
3. **Western Riverside Council of Governments.** *TUMF Nexus Study, 2016 Program Update.* July 2017.
4. **Transportation Research Board.** *Highway Capacity Manual (HCM).* 6th Edition. s.l. : National Academy of Sciences, 2016.
5. **California Department of Transportation.** California Manual on Uniform Traffic Control Devices (CA MUTCD). [book auth.] California Department of Transportation. *California Manual on Uniform Traffic Control Devices (CA MUTCD).* 2014, Updated March 30, 2021 (Revision 6).
6. **Willdan Financial Services.** *County of Riverside Development Impact Fee Study Update.* County of Riverside : s.n., 2013.

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