Appendix L Traffic Study

Appendices

This page intentionally left blank.

Chaffey Community College District's Fontana Campus Master Plan

TRAFFIC STUDY

CITY OF FONTANA

PREPARED BY:

Aric Evatt, PTP
aevatt@urbanxroads.com

Charlene So, PE
cso@urbanxroads.com

MARCH 8, 2022

TABLE OF CONTENTS

APPENDICES

APPENDIX 1.1: APPROVED SCOPING AGREEMENT
APPENDIX 1.2: SITE ADJACENT QUEUING WORKSHEETS
APPENDIX 3.1: EXISTING TRAFFIC COUNTS
APPENDIX 3.2: EXISTING (2021) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS
APPENDIX 3.3: EXISTING (2021) CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS
APPENDIX 4.1: POST PROCESSING WORKSHEETS
APPENDIX 5.1: E+P CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS
APPENDIX 5.2: E+P CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS
APPENDIX 5.3: E+P INTERSECTION OPERATIONS ANALYSIS WORKSHEETS WITH IMPROVEMENTS
APPENDIX 6.1: HORIZON YEAR (2051) WITHOUT PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS
APPENDIX 6.2: HORIZON YEAR (2051) WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS
APPENDIX 6.3: HORIZON YEAR (2051) WITHOUT PROJECT CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS
APPENDIX 6.4: HORIZON YEAR (2051) WITH PROJECT CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS
APPENDIX 6.5: HORIZON YEAR (2051) WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS WITH IMPROVEMENTS

This Page Intentionally Left Blank

LIST OF EXHIBITS

LIST OF TABLES

This Page Intentionally Left Blank

LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
CA MUTCD	California Manual on Uniform Traffic Control Devices
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Program
DIF	Development Impact Fee
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
OPT	Office of Planning and Research
PCE	Passenger Car Equivalent
PHF	Peak Hour Factor
Project	Chaffey Community College District's Fontana Campus Master Plan
RTP	Regional Transportation Plan
SB 743	Senate Bill 743
SBCTA	San Bernardino County Transportation Authority
SCAG	Southern California Association of Governments
SCS	Sustainable Communities Strategy
SED	Socio-Economic Data
SP	Service Population
TAZ	Traffic Analysis Zone
TPA	Transit Priority Area
TS	Traffic Study
v/c	Volume to Capacity
VMT	Vehicle Miles Traveled
vphgpl	Vehicles Per Hour Green Per Lane

This Page Intentionally Left Blank

1 INTRODUCTION

This report presents the results of the traffic study (TS) for the proposed Chaffey Community College District's Fontana Campus Master Plan development (referred to as "Project") located west of Sierra Avenue at Underwood Drive in the City of Fontana, as shown on Exhibit 1-1.

The purpose of this TS is to evaluate the potential deficiencies related to traffic, identify circulation system deficiencies that may result from the development of the proposed Project, and to recommend improvements to resolve identified deficiencies in order to achieve acceptable operational conditions at study area intersections and ensure consistency with the City's General Plan. This TS has been prepared in accordance with the City of Fontana's Traffic Impact Analysis (TIA) Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (October 21, 2020) and through consultation with City of Fontana staff during the scoping process. (1) The Project traffic study scoping agreement is provided in Appendix 1.1 of this TS, which has been approved by the City of Fontana.

1.1 SUMMARY OF FINDINGS

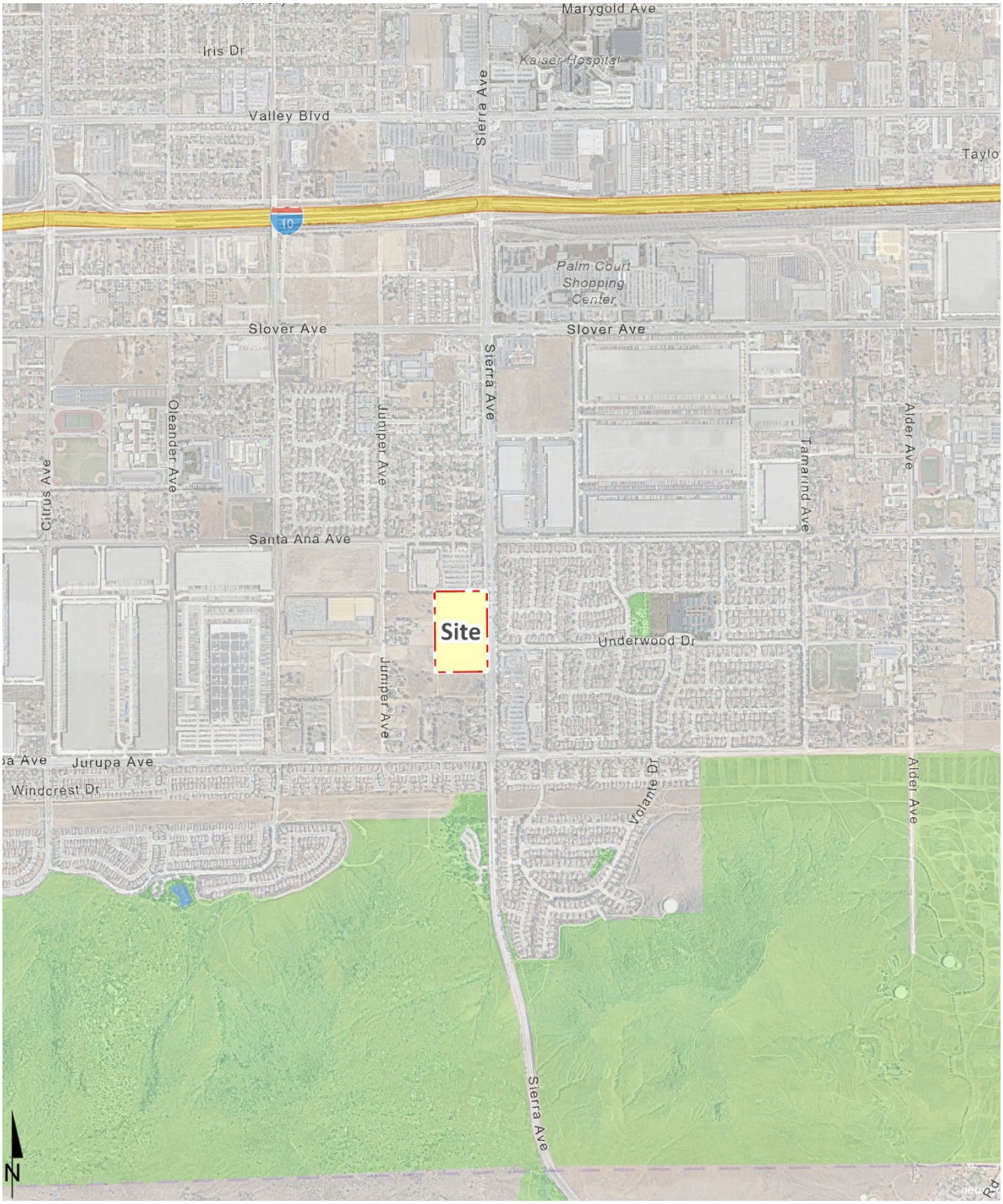
The Project is to construct the following improvements as Project design features in conjunction with development of the site:

- Project access points are adequate to accommodate the anticipated 3,641 students currently enrolled at the Fontana Campus which will be relocated to the Project in conjunction with an increase of 854 students at Project Buildout.

Additional details and intersection lane geometrics are provided in Section 1.6 *On-Site and Site Access Improvements* of this report. The Project should implement the intersection improvement at the intersection of Sierra Avenue and Jurupa Avenue in order to reduce the effect of the contribution of Project traffic at the intersection. This improvement includes the implementation of overlap phasing on the eastbound right turn lane. The City has pre-existing fee programs in place and the Project will coordinate with the City for provision of any needed improvements (Project is not subject to pre-existing fees, see also Section 7 *Local and Regional Funding Mechanisms*).

As required by City Guidelines, a project level Vehicle Miles Traveled (VMT) analysis was conducted consistent with the requirements identified for the proposed Project. The Project was found to meet the Low Project Type Screening criteria based on the Project's student population comprising of students traveling within the local area. The Project's impact to VMT is therefore presumed to be less than significant. Detail traffic analysis can be found in Section 7 *Vehicle Miles Traveled Analysis* of this TS.

EXHIBIT 1-1: LOCATION MAP



1.2 PROJECT OVERVIEW

The proposed Project includes the relocation and expansion of the existing Fontana Campus (located at the southwest corner of Sierra Avenue and Merrill Avenue) to the new proposed site and development of the new structures will occur over the next 10 years (see Exhibit 1-2). The short-term development (Opening Year of 2026) will include the Welcome Center and Library (51,000 square feet), Instructional Building I (28,000 square feet), Automotive Technology Building (50,000 square feet), and Permanent Operations and Maintenance Building (8,000 square feet). This initial phase includes a total of 137,000 square feet with a total of 4,295 unduplicated students. Note that the existing Fontana Campus has a baseline enrollment of 3,641 unduplicated students in 2019 (pre-COVID), which results in a net increase of 654 students from the baseline condition.

Project buildout (anticipated completion in 2030) includes the development of a CTE & Training Building (32,000 square feet), Instructional Building II (20,000 square feet), and Student & Community Center (20,000 square feet). Project buildout will include an additional 72,000 square feet with a total of an additional 200 unduplicated students (total of 4,495 unduplicated students or a net increase of 854 students from the baseline condition). Project access will be accommodated off of Sierra Avenue via a new right-in/right-out driveway and a new driveway aligning with the intersection of Underwood Drive. Regional access to the Project site is available from the I-10 Freeway via the Sierra Avenue interchange.

Trips generated by the Project's proposed land uses have been estimated based on trip generation rates published by the Institute of Transportation Engineers (ITE) as provided in their Trip Generation Manual, 11th Edition, 2021. (2) The Project is estimated to generate a net increase of 982 two-way vehicle trips per day on a typical weekday, with 94 AM peak hour trips and 94 PM peak hour trips. However, the full trip generation with the reallocated existing students has been evaluated for both Phase 1 and Project Buildout traffic conditions. As such, the proposed Project has been evaluated assuming a total of 5,170 two-way trips per day, with 495 AM peak hour trips and 495 PM peak hour trips at Project Buildout. 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 (2021)
- Opening Year Cumulative (2026) Without Project
- Opening Year Cumulative (2026) With Project
- Opening Year Cumulative (2030) Without Project
- Opening Year Cumulative (2030) With Project (Project Buildout)

EXHIBIT 1-2: PRELIMINARY SITE PLAN

1.3.1 EXISTING (2021) CONDITIONS

Existing (2021) conditions represent the baseline traffic conditions as they existed at the time this report was prepared. It should be noted that historic traffic count data in conjunction with current count data has been utilized to establish the baseline condition due to the currently ongoing COVID-19 pandemic. Additional details on adjustments to the Existing conditions baseline are discussed in Section 3.5 *Existing Traffic Counts* of this report.

1.3.2 OPENING YEAR CUMULATIVE (2026) CONDITIONS

The Opening Year Cumulative (2026) conditions analysis determines the potential near-term cumulative circulation system deficiencies associated with the initial phase of development. To account for background traffic growth, traffic associated with other known cumulative development projects in conjunction with an ambient growth from Existing (2021) conditions of 5.94% is included for Opening Year Cumulative (2026) traffic conditions. This analysis scenario will be utilized to determine whether the addition of Project traffic requires improvements to be implemented based on the City's deficiency criteria.

1.3.3 OPENING YEAR CUMULATIVE (2030) CONDITIONS

The Opening Year Cumulative (2030) conditions analysis determines the potential near-term cumulative circulation system deficiencies associated with Project Buildout conditions. To account for background traffic growth, traffic associated with other known cumulative development projects in conjunction with an ambient growth from Existing (2021) conditions of 10.94% is included for Opening Year Cumulative (2030) traffic conditions. The near-term conditions analysis will be utilized to determine if improvements funded through regional transportation fee programs, such as the City's Development Impact Fee (DIF) program, or other approved funding mechanisms can accommodate the long-range cumulative traffic at the target level of service (LOS) identified by the City of Fontana (lead agency). Other improvements needed beyond the "funded" improvements (such as localized improvements to non-DIF facilities) are identified as such.

1.4 STUDY AREA

To ensure that this TS satisfies the City of Fontana's traffic study requirements, Urban Crossroads, Inc. prepared a Project traffic study scoping package for review by City of Fontana 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 City is included in Appendix 1.1 of this TS.

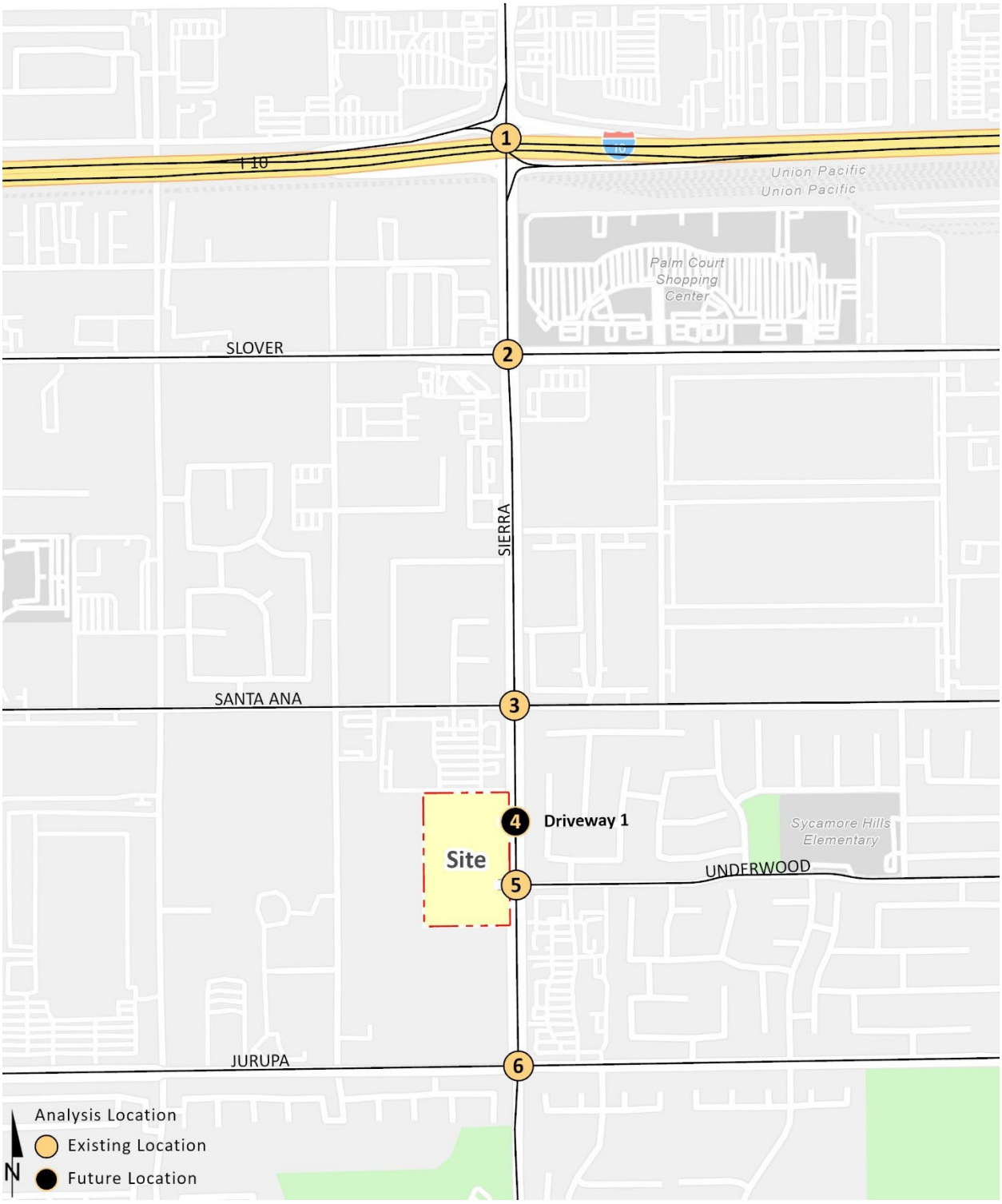
The 6 study area intersections shown on Exhibit 1-3 and listed in Table 1-1 based on consultation with City of Fontana staff. The study area includes intersections where the Project is anticipated to contribute 50 or more peak hour trips per the City of Fontana's traffic study guidelines. (1) The "50 peak hour trip" criteria represent 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 San Bernardino 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. Counties within California have developed CMPs with varying methods and strategies to meet the intent of the CMP legislation. There are no study area intersections identified as CMP facilities in the County of San Bernardino per the San Bernardino County Transportation Authority (SBCTA) CMP as indicated on Table 1-1. (3)

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction	CMP?
1	Sierra Av. & I-10 Freeway	Fontana, Caltrans	No
2	Sierra Av. & Slover Av.	Fontana	No
3	Sierra Av. & Santa Ana Av.	Fontana	No
4	Sierra Av. & Driveway 1	Fontana	No
5	Sierra Av. & Driveway 2/Underwood Dr.	Fontana	No
6	Sierra Av. & Jurupa Av.	Fontana	No

EXHIBIT 1-3: LOCATION MAP



1.5 DEFICIENCIES

This section provides a summary of Project deficiencies. Section 2 *Methodologies* provides information on the methodologies used in the analysis and Section 5 *Existing plus Project Traffic Conditions* and Section 6 *Horizon Year (2051) 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 DEFICIENT INTERSECTIONS BY ANALYSIS SCENARIO

#	Intersection	Existing		2026 Without Project		2026 With Project		2030 Without Project		2030 With Project	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Sierra Av. & I-10 Ramps										
2	Sierra Av. & Slover Av.										
3	Sierra Av. & Santa Ana Av.										
4	Sierra Av. & Driveway 1	N/A	N/A	N/A	N/A			N/A	N/A		
5	Sierra Av. & Driveway 2/Underwood Dr.										
6	Sierra Av. & Jurupa Av.										

= A - C = D/E = F

1.5.1 OPENING YEAR CUMULATIVE (2026) CONDITIONS

The following intersection is anticipated to continue to operate at an unacceptable LOS during the peak hours under Opening Year Cumulative (2026) Without and With Project traffic conditions:

- Sierra Av. & Slover Av. (#2) – LOS E or D AM peak hour; and LOS F PM peak hour
- Sierra Av. & Jurupa Av. (#6) – LOS D AM peak hour; LOS F PM peak hour

It should be noted that although there is an existing deficiency at the intersection of Sierra Avenue at Slover Avenue the Project will reduce delays at this location with the reallocation of the existing school site traffic and addition of new traffic from the proposed Project site.

1.5.2 OPENING YEAR CUMULATIVE (2030) CONDITIONS

The following study area intersection is anticipated to operate at an unacceptable LOS during the peak hours under Opening Year Cumulative (2030) Without Project conditions:

- Sierra Av. & Slover Av. (#2) – LOS E AM peak hour; and LOS F PM peak hour
- Sierra Av. & Jurupa Av. (#6) – LOS D AM peak hour; LOS F PM peak hour

With the addition of Project traffic, there are no additional study area intersections that are anticipated to operate at an unacceptable LOS during the peak hours. Although there is an existing deficiency at the intersection of Sierra Avenue at Slover Avenue the Project will reduce delays at this location with the reallocation of the existing school site traffic and addition of new traffic from the proposed Project site.

1.6 ON-SITE AND SITE ACCESS IMPROVEMENTS

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

Recommendation 1 – Sierra Av. & Driveway 1 (#4) – The following improvements are necessary to accommodate site access:

- Project to implement a stop control on the eastbound approach with a right turn lane.
- Project to stripe a 3rd southbound through lane along the Project's frontage.
- Driveway to be restricted to right-in/right-out access only.

Recommendation 2 – Sierra Av. & Driveway 2/Underwood Dr. (#5) – The following improvements are necessary to accommodate site access:

- Project to install signal equipment to accommodate a new 4th (west) leg of the intersection to facilitate site access (signal equipment on the southeast corner). The new eastbound approach should accommodate a left turn lane and shared through-right turn lane.
- The existing northbound left turn pocket should be restriped to accommodate a minimum 150-foot northbound left turn lane.
- The westbound right turn lane should be restriped as a shared through-right turn lane.
- Project to stripe a 3rd southbound through lane along the Project's frontage.
- It is recommended that the intersection maintain the existing cycle lengths as established by SBCTA as part of their San Bernardino Valley Coordinated Traffic Signal System program (Tier ¾ intersections).

Recommendation 3 – Sierra Avenue is a north-south oriented roadway located on the Project's eastbound boundary. Project to construct Sierra Avenue at its ultimate half-width as a Major Highway (134-foot right-of-way, 112-foot curb-to-curb) from its northern boundary to the southern boundary consistent with the City's standards. The half-section street improvements include three travel lanes and accommodating a Class IV (separated bikeway) along with landscaping and sidewalk improvements. A Class IV bikeway is proposed along Sierra Avenue between Slover Avenue and Jurupa Avenue per the City's Active Transportation Plan. The separated bikeway is typically 5-7 feet and provides a curb, flexible post, or other physical barrier as a separation between the bike lane and adjacent travel lane. The physical barriers would be accommodated within a 3-5-foot pavement width.

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

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

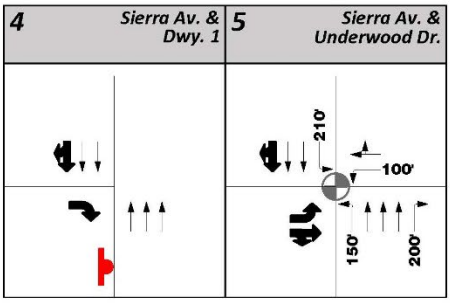
1.7 QUEUING ANALYSIS

A queuing analysis was conducted along the site adjacent roadways and driveways for Opening Year Cumulative (2030) With Project traffic conditions to determine the turn pocket lengths necessary to accommodate 95th percentile queues and to determine if additional storage is needed for the existing left turn pockets at Project Buildout. The analysis was conducted for the weekday AM and weekday PM peak hours and results have been provided in Appendix 1.2.

SimTraffic is designed to model networks of signalized and unsignalized intersections, with the primary purpose of checking and fine-tuning signal operations. SimTraffic uses the input parameters from Synchro to generate random simulations. The 50th percentile, or average, queue represents the typical queue length for peak hour traffic conditions, while the 95th percentile queue is derived from the average queue plus 1.65 standard deviations. The 95th percentile queue is not necessarily ever observed; it is simply based on statistical calculations (or Average Queue plus 1.65 standard deviations). Many agencies utilize the 95th percentile queues for design purposes.

The random simulations generated by SimTraffic have been utilized to determine the 95th percentile queue lengths observed for each applicable turn lane. A SimTraffic simulation has been recorded five times, during the weekday AM and weekday PM peak hours, and has been seeded for 15-minute periods with 60-minute recording intervals. Based on the anticipated 95th percentile queue, there are no anticipated queue issues along the Project frontages that would block the adjacent driveways or cause queues within turn lanes to spill back into the adjacent through lanes. Turn pocket storage lengths needed to accommodate site access are also based on the peak 95th percentile queues and are reflected on Exhibit 1-4.

EXHIBIT 1-4: SITE ACCESS RECOMMENDATIONS



= Stop Sign Improvement
= Existing Lane
= Lane Improvement
100' = Minimum Turn Pocket Length

1.8 OFF-SITE IMPROVEMENTS

The recommended improvements needed to address the cumulative deficiencies identified under Opening Year Cumulative (2026) and Opening Year Cumulative (2030) traffic conditions are the same. Based on the operations analysis, the Project is to implement the improvement identified in Table 1-3.

TABLE 1-3: SUMMARY OF IMPROVEMENTS BY ANALYSIS SCENARIO

#	Intersection	Jurisdiction	2026 With Project	2030 With Project	Improvements in Fee Program?[1]	Project Responsibility[2]
6	Sierra Av. & Jurupa Av.	Fontana	Implement overlap phasing on the eastbound right turn lane[3]	Same	No	Implement

[1] Improvements included in the City's DIF or regional fee programs.

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

[3] Implementation of improvement also requires restriction of U-turns from the northbound left turn lane.

1.9 VEHICLE MILES TRAVELED (VMT) ANALYSIS

The Project was evaluated against City Guideline's stated VMT screening criteria and was found to meet the Low Project Type screening threshold. As such, the Project's impact to VMT is presumed to be less than significant. Detail traffic analysis can be found in Section 8 *Vehicle Miles Traveled Analysis* of this TS.

2 METHODOLOGIES

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. The methodologies described are generally consistent with the City of Fontana traffic study guidelines. (1)

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 Transportation Research Board's Highway Capacity Manual (HCM) 6th Edition 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 City of Fontana and Caltrans require signalized intersection operations analysis based on the methodology described in the HCM 6th Edition. Intersection LOS operations are based on an intersection's average control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. For signalized intersections, LOS is directly related to the average control delay per vehicle and is correlated to a LOS designation as described in Table 2-1.

Study area intersections have been evaluated using the Synchro (Version 11) analysis software package. Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the HCM. Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length. The level of service and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network.

TABLE 2-1: SIGNALIZED INTERSECTION LOS THRESHOLDS

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

Source: HCM, 6th Edition

The peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15-minute volumes. Common practice for LOS analysis is to use a peak 15-minute rate of flow. However, flow rates are typically expressed in vehicles per hour. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume (e.g., PHF = [Hourly Volume] / [4 x Peak 15-minute Flow Rate]). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for all 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 City of Fontana requires the operations of unsignalized intersections be evaluated using the methodology described the HCM 6th Edition. (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. Per the HCM, the highest delay and associated LOS on the minor approach is reported for two-way stop-controlled intersections. For all-way stop controlled intersections, LOS is computed for the intersection as a whole and the average delay is reported (similar to signalized intersections).

TABLE 2-2: UNSIGNALIZED INTERSECTION LOS THRESHOLDS

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

Source: HCM, 6th Edition

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 ascertain the potential need for installation of a traffic signal at an otherwise unsignalized intersection. All of the existing study area intersections are signalized and the only unsignalized future driveway is not a suitable location for a traffic signal given its proposed location with respect to existing signals to the north and south. As such, traffic signal warrant analyses have not been conducted for the purposes of this TS.

2.4 FREEWAY OFF-RAMP QUEUING ANALYSIS

The 95th percentile queuing of vehicles has been assessed at the off-ramps to determine potential queuing deficiencies at the freeway ramp intersections at the I-10 Freeway at Sierra Avenue interchange. Specifically, the queuing analysis is utilized to identify any potential queuing and "spill back" onto the I-10 Freeway mainline from the off-ramps.

The traffic progression analysis tool and HCM intersection analysis program, Synchro, has been used to assess the potential deficiencies/needs of the intersections with traffic added from the proposed Project. Storage (turn-pocket) length recommendations at the ramps have been based upon the 95th percentile queue resulting from the Synchro progression analysis. The footnote from the Synchro output sheets indicates if the 95th percentile cycle exceeds capacity. Traffic is simulated for two complete cycles of the 95th percentile traffic in Synchro in order to account for the effects of spillover between cycles. In practice, the 95th percentile queue shown will rarely be exceeded and the queues shown with the footnote are acceptable for the design of storage bays.

Although only the 95th percentile queue has been reported in the tables, the 50th percentile queue can be found in the appendix alongside the 95th percentile queue for each ramp location. The queue length reported is for the lane with the highest queue in the lane group. The 50th percentile or average queue represents the typical queue length for peak hour traffic conditions, while the 95th percentile queue is derived from the average queue plus 1.65 standard deviations. The 95th percentile queue is not necessarily ever observed it is simply based on statistical calculations.

2.5 MINIMUM ACCEPTABLE LEVELS OF SERVICE (LOS)

2.5.1 CITY OF FONTANA

The City's General Plan recommends a LOS standard of LOS C. Intersections which are forecast to operate at unsatisfactory conditions (i.e., at LOS worse than LOS C for City intersections) shall be identified as cumulatively deficient intersections. Therefore, any intersection operating at LOS D, E, or F will be considered deficient for the purposes of this analysis. (1)

2.5.2 SAN BERNARDINO COUNTY CMP

The CMP definition of deficiency is based on maintaining a level of service standard of LOS E or better, where feasible, except where an existing LOS F condition is identified in the CMP document. However, for the purposes of this analysis, LOS D has been utilized for all study area intersections. (3)

2.5.3 CALTRANS

For the purposes of this TS, a minimum LOS standard of LOS D has been utilized for Caltrans facilities.

2.6 INTERSECTION DEFICIENCY CRITERIA

For the intersections that lie within the City of Fontana, determination of direct project-related deficiencies will be based on a comparison of without and with project levels of service for each analysis year. A project-related deficiency occurs if project traffic increases the average delay at an intersection by more than the thresholds identified on Table 2-3. The thresholds for LOS A, B, and C do not apply to projects consistent with the General Plan.

TABLE 2-3: THRESHOLDS OF SIGNIFICANT IMPACT

Pre-Project LOS	Significant Impact Threshold[1]
A/B	10.0 Seconds
C	8.0 Seconds
D	5.0 Seconds
E	3.0 Seconds
F	1.0 Second

Source: Fontana Traffic Study Guidelines, October 21, 2020.

[1] Increase in delay

A Project's contribution to a deficiency can be reduced/improved if the Project is required to implement or fund its fair share of improvements designed to alleviate the potential deficiency.

3 AREA CONDITIONS

This section provides a summary of the existing circulation network, the City of Fontana General Plan Circulation Network, and a review of existing peak hour intersection operations and freeway off-ramp queuing analyses.

3.1 EXISTING CIRCULATION NETWORK

The study area includes a total of 6 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 CITY OF FONTANA GENERAL PLAN CIRCULATION ELEMENT

As previously noted, the Project site is located within the City of Fontana. Exhibit 3-2 shows the City of Fontana General Plan Circulation Element. The City of Fontana General Plan does not include roadway cross-sections in its General Plan.

Major Highways are four-to-six-lane divided roadways (typically divided by a raised median or painted two-way turn-lane). 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 roadways within the City of Fontana are classified as Major Highways:

- Sierra Avenue
- Jurupa Avenue (8-lane Major Highway, west of Sierra Avenue)

Primary Highways are four-lane roadways and may include a painted median. These roadways typically direct traffic through major development areas. The following study area roadways within the City of Fontana are classified as Primary Highways:

- Slover Avenue
- Jurupa Avenue (east of Sierra Avenue)
- Sierra Avenue (south of Jurupa Avenue)

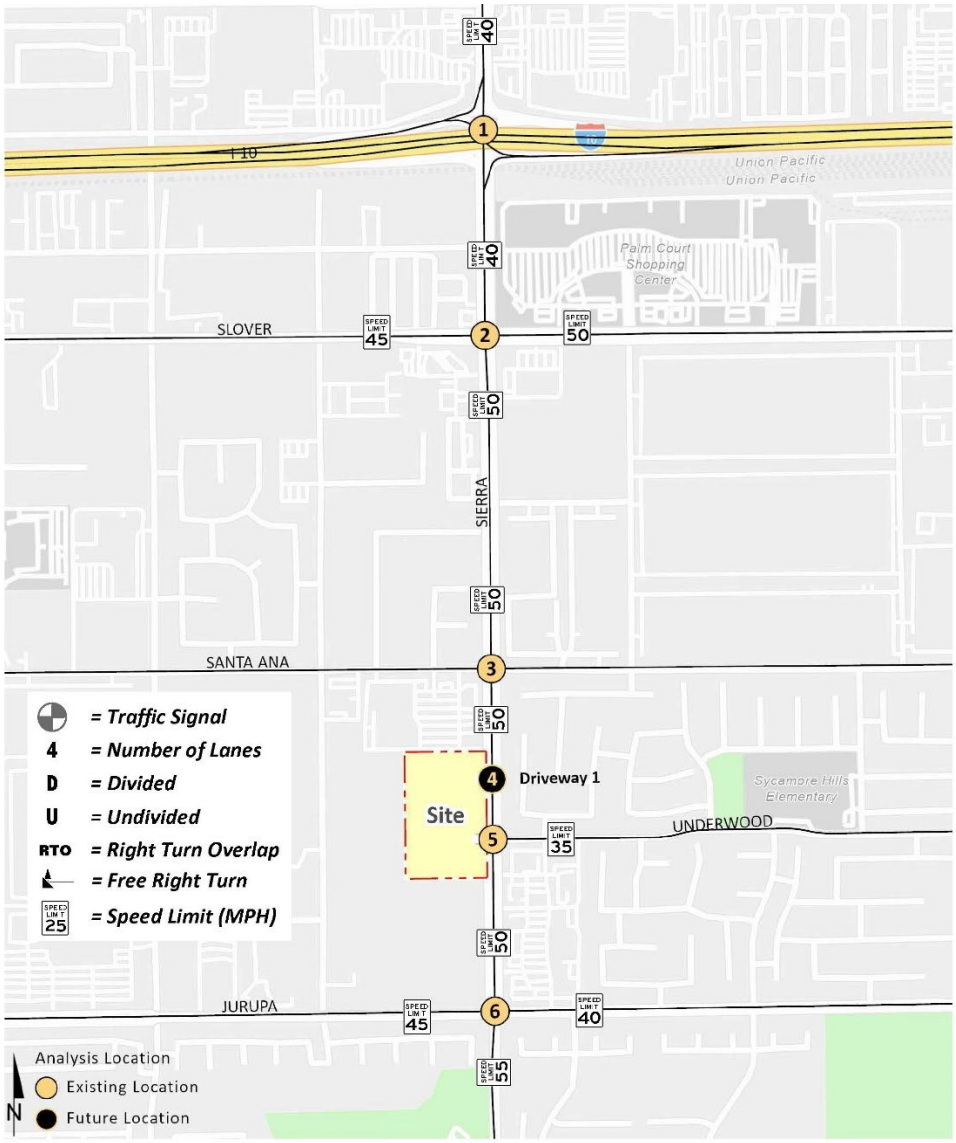
Secondary Highways are two-lane streets, providing one lane in each direction, separated by a raised median. The following study area roadway within the study area is classified as a Secondary Highway:

- Santa Ana Avenue

Collector Streets are two-lane streets, providing one lane in each direction. The following study area roadway within the study area is classified as a Collector Street:

- Underwood Drive

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



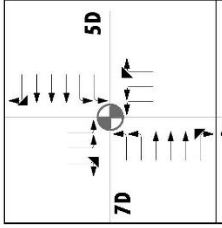
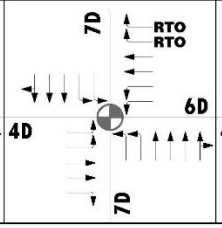
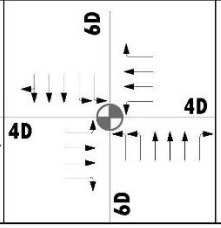
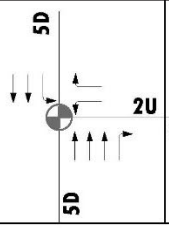
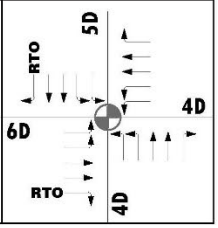
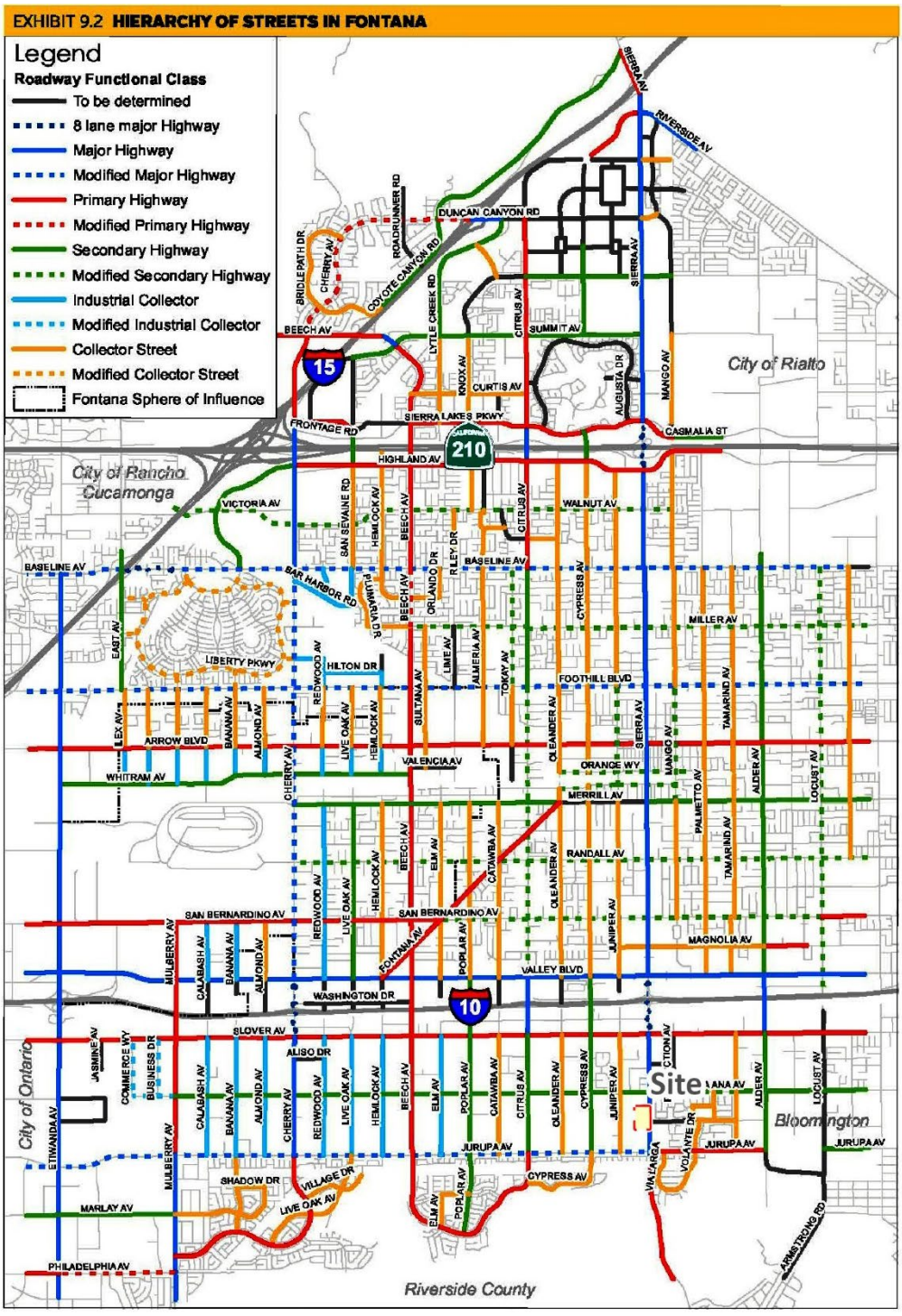
1 Sierra Av. & I-10 Ramps	2 Sierra Av. & Slover Av.	3 Sierra Av. & Santa Ana Av.	4 Sierra Av. & Dwy. 1	5 Sierra Av. & Underwood Dr.	6 Sierra Av. & Jurupa Av.
			Future Intersection		

EXHIBIT 3-2: CITY OF FONTANA HIERARCHY OF STREETS



Approved and Adopted by City Council November 13, 2018

City Council Resolution 2018-096
City Council Resolution 2018-097

3.3 BICYCLE & PEDESTRIAN FACILITIES

In an effort to promote alternative modes of transportation, the City of Fontana General Plan also includes a bicycle plan. The City of Fontana bike routes are shown on Exhibit 3-3 (per the City's Active Transportation Plan). Within the study area, there are proposed Class IV (on-street, separated bikeway) bike lanes along Sierra Avenue and on-street Class II bike lanes on Santa Ana Avenue. There are existing Class II bike lanes along Sierra Avenue (north of Santa Ana Avenue, on the east side of the street) and also on Santa Ana Avenue (west of Juniper Avenue, both sides of the street). There is also a proposed Class I (off-street) bike route along the Southern California Edison easement, located south of and parallel to Jurupa Avenue. Exhibit 3-4 illustrates the existing pedestrian facilities, including sidewalks and crosswalk locations. As shown on Exhibit 3-4, there are currently no sidewalks (or curb and gutter improvements) along the Project's frontage along Sierra Avenue. There is an existing crosswalk across the north leg and east leg of the intersection of Sierra Avenue at Underwood Drive. The Project would construct the site adjacent improvements including accommodating the necessary ultimate right-of-way along Sierra Avenue and constructing sidewalk improvements. In addition, additional crosswalks will need to be accommodated at the intersection of Sierra Avenue and Underwood Drive with the addition of the Project's access (Driveway 2).

3.4 TRANSIT SERVICE

The study area is currently served by Omnitrans, a public transit agency serving various jurisdictions within San Bernardino County, with bus service along Slover Avenue, Sierra Avenue and Jurupa Avenue via Route 82. The existing Omnitrans Route 82 would serve the Project as it runs along the Project's frontage on Sierra Avenue with existing stops at Underwood Drive. The proposed Project includes the relocation of the Omnitrans bus stop from its currently location along southbound Sierra Avenue, just north of Underwood Drive, to south of Underwood Drive (or south of Driveway 2). The existing transit routes within the area by Omnitrans is shown on Exhibit 3-5. Transit service is reviewed and updated by Omnitrans 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.

EXHIBIT 3-3: CITY OF FONTANA BICYCLE FACILITIES

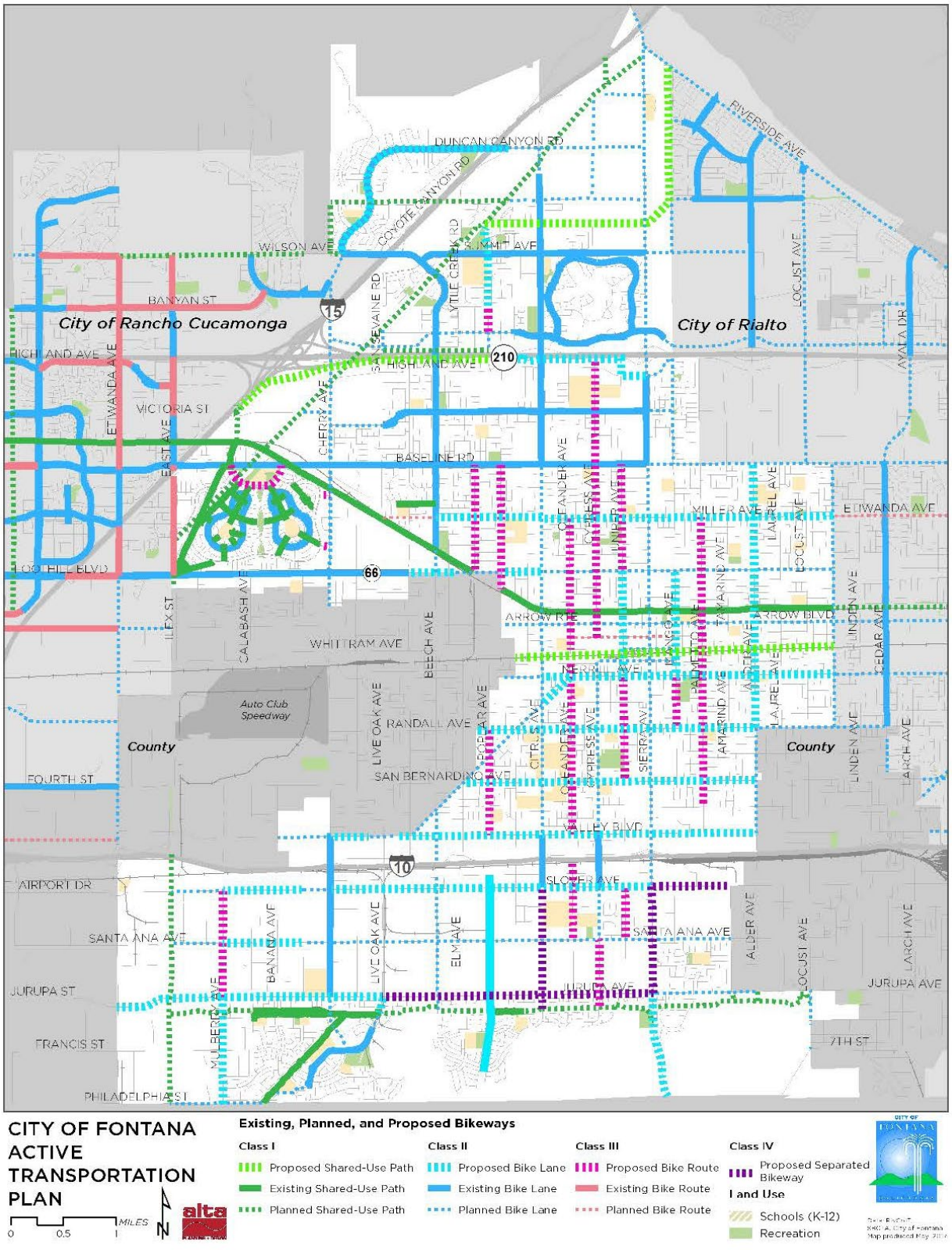


EXHIBIT 3-4: EXISTING PEDESTRIAN FACILITIES

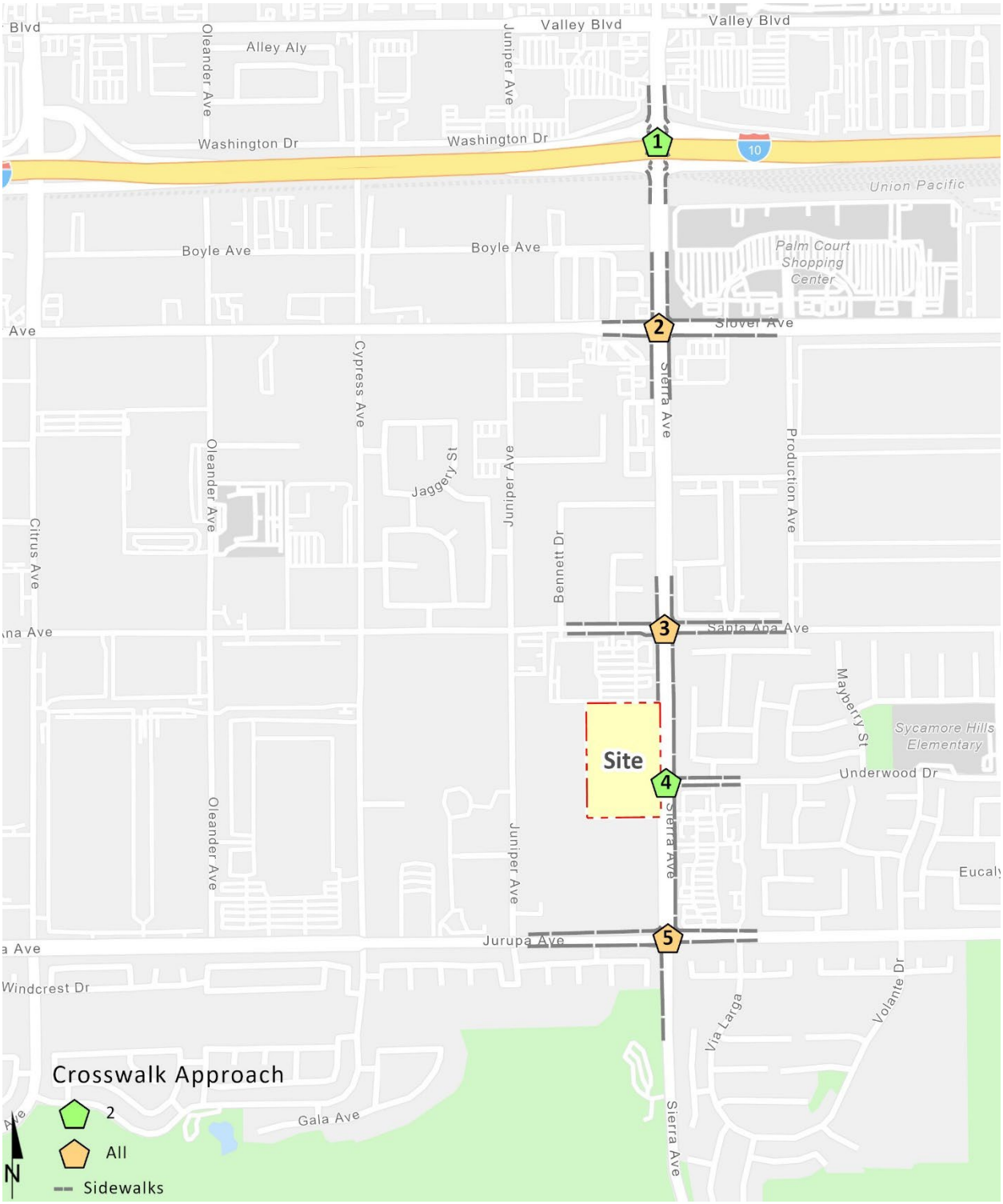
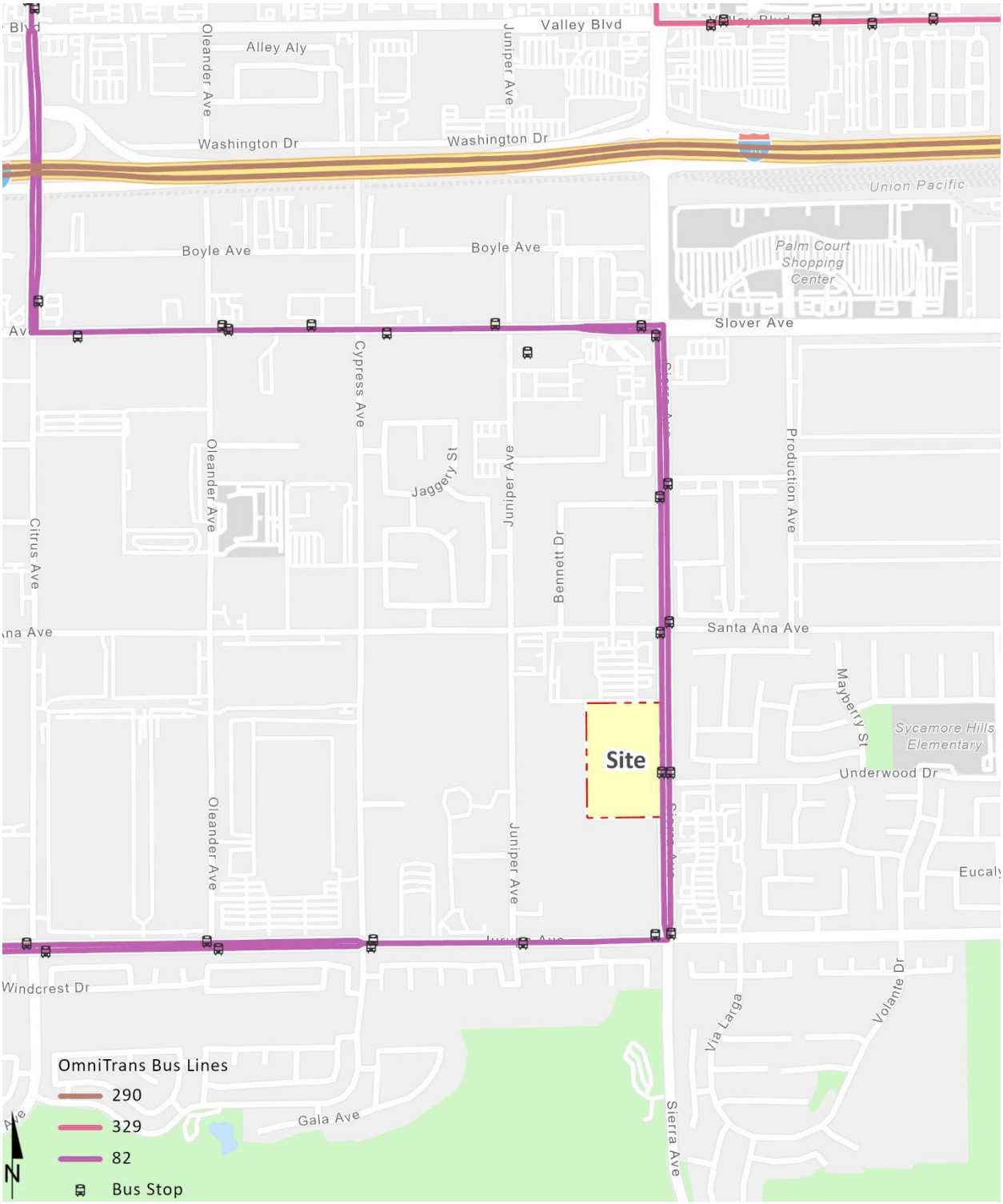


EXHIBIT 3-5: EXISTING TRANSIT ROUTES



3.5 EXISTING TRAFFIC COUNTS

The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions using traffic count data collected in October 2021. Consistent with standard engineering practice, these traffic counts were conducted either on Tuesday, Wednesday, or Thursday due to potential fluctuations in traffic that typically occur on Mondays, Fridays, Holidays, or weekends. 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 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 (with in-person instruction) and operating on normal schedules. Where applicable, traffic volumes have been flow conserved in order to not have any loss of vehicles. The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1. These raw turning volumes have been flow conserved between intersections with limited access, no access, and where there are currently no uses generating traffic. The traffic counts collected in October 2021 include the vehicle classifications as shown below:

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

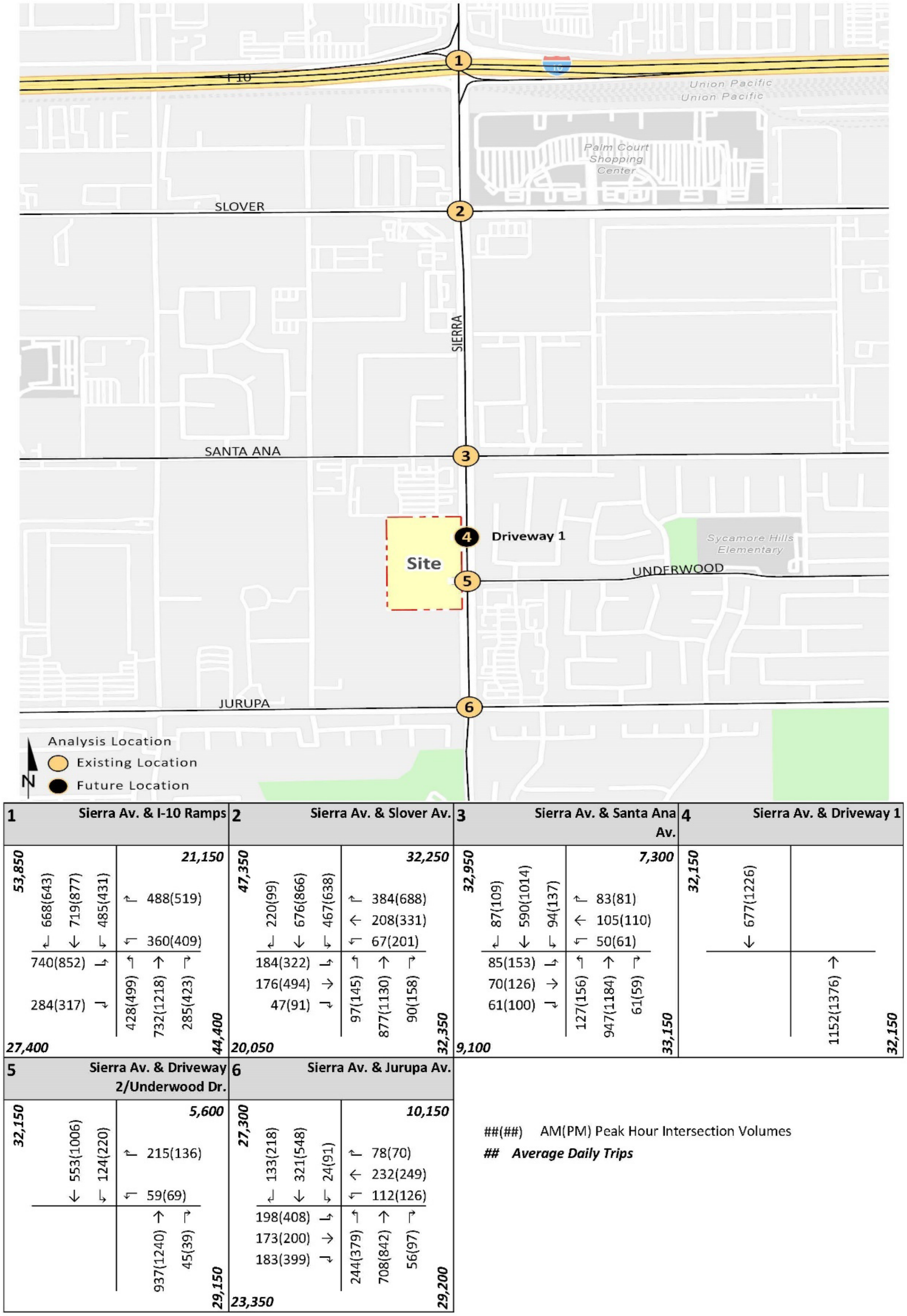
To represent the effect of large trucks, buses, and recreational vehicles have on traffic flow within the study area, all trucks were accounted for in the operations analysis as a percentage of total traffic. By their size alone, these vehicles occupy the same space as two or more passenger cars. In addition, the time it takes for them to accelerate and slow-down is also much longer than for passenger cars and varies depending on the type of vehicle and number of axles.

Existing weekday ADT volumes on arterial highways throughout the study area are shown on Exhibit 3-6. 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 11.86 = Leg Volume

A comparison of the PM peak hour and daily traffic volumes of various roadway segments within the study area indicated that the peak-to-daily relationship is approximately 8.43 percent. As such, the above equation utilizing a factor of 11.86 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 8.43 percent (i.e., 1/0.0843 = 11.86) and was assumed to sufficiently estimate average daily traffic (ADT) volumes for planning-level analyses. Existing weekday AM and weekday PM peak hour intersection volumes (in actual vehicles) are also shown on Exhibit 3-6. PCE based traffic volumes utilized for all applicable analysis scenarios are identified in Appendix 3.1.

EXHIBIT 3-6: EXISTING (2021) TRAFFIC VOLUMES (IN ACTUAL VEHICLES)



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 the following study area intersections are currently operating at an unacceptable LOS during the peak hours (i.e., LOS D or worse):

- Sierra Av. & Slover Av. (#2) – LOS D AM peak hour; LOS F PM peak hour
- Sierra Av. & Jurupa Av. (#6) – LOS D AM peak hour; LOS F PM peak hour

The intersection operations analysis worksheets are included in Appendix 3.2 of this TS.

TABLE 3-1: INTERSECTION ANALYSIS FOR EXISTING (2021) CONDITIONS

#	Intersection	Traffic Control[2]	Delay[1] (secs.)		Level of Service	
			AM	PM	AM	PM
1	Sierra Av. & I-10 Ramps	TS	40.7	41.4	D	D
2	Sierra Av. & Slover Av.	TS	**43.9**	**92.2**	**D**	**F**
3	Sierra Av. & Santa Ana Av.	TS	13.7	14.4	B	B
4	Sierra Av. & Driveway 1		Future Intersection			
5	Sierra Av. & Driveway 2/Underwood Dr.	TS	8.2	7.2	A	A
6	Sierra Av. & Jurupa Av.	TS	**37.4**	**110.3**	**D**	**F**

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

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

[2] TS = Traffic Signal

3.7 FREEWAY OFF-RAMP QUEUING ANALYSIS

A queuing analysis was performed for the off-ramps at the I-10 Freeway at Sierra Avenue interchange to assess vehicle queues for the off ramps that may potentially result in deficient peak hour operations at the ramp-to-arterial intersections and may potentially "spill back" onto the I-10 Freeway mainline. Queuing analysis findings are presented in Table 3-2. It is important to note that off-ramp lengths are consistent with the measured distance between the intersection and the freeway mainline. As shown in Table 3-2, there are no movements that are currently experiencing queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows. Worksheets for Existing (2021) traffic conditions off-ramp queuing analysis are provided in Appendix 3.3.

TABLE 3-2: PEAK HOUR FREEWAY OFF-RAMP QUEUING SUMMARY FOR EXISTING (2021) CONDITIONS

#	Intersection	Movement	Available Stacking Distance (Feet)	95th Percentile Queue (Feet)		Acceptable?[1]	
				AM Peak Hour	PM Peak Hour	AM	PM
1	Sierra Av. & I-10 Ramps	EBL	450	350	404	Yes	Yes
		EBR	1,300	0	0	Yes	Yes
		WBL	1,300	173	185	Yes	Yes
		WBR	430	0	0	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.

This Page Intentionally Left Blank

4 PROJECTED FUTURE TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project, as well as the Project's trip assignment, onto the study area roadway network. The pre-pandemic student headcount at the existing Chaffey College Fontana Campus is 3,641 students actively enrolled in Fall 2019. By 2026, the student count is anticipated to increase by approximately 654 students and by a total of 854 additional students (above baseline) at Project Buildout which is anticipated to occur in Year 2030. The proposed Project will be developed in 2 phases over the next 10 years. Specifically, the Project includes the development of the following:

Short-Term (2026):

- Welcome Center & Library: 51,000 square feet (SF)
- Instructional Building I: 28,000 SF
- Automotive Technology Building: 50,000 SF
- Permanent Operations & Maintenance Building: 8,000 SF
- **Total of 137,000 SF with a total of 4,295 unduplicated students. Note that the existing Fontana Campus has a baseline enrollment of 3,641 unduplicated students in 2019 (pre-COVID), which results in a net increase of 654 students from the baseline condition.**

Long-Term (2030):

- CTE & Training Building: 32,000 SF
- Instructional Building II: 20,000 SF
- Student & Community Center: 20,000 SF
- **Total 72,000 SF with a total of with an additional 200 unduplicated students, for a total of 4,495 unduplicated students or a net increase of 854 students from the baseline condition.**

Regional access to the Project site is available from the I-10 Freeway at the Sierra Avenue interchange.

4.1 TRIP GENERATION

Trip generation represents the amount of traffic that is attracted and produced by a development and is based upon the specific land uses planned for a given project. In order to develop the traffic characteristics of the proposed project, the trip generation rates used for this analysis are based upon information collected by the ITE as provided in their Trip Generation Manual, 11th Edition, 2021 for the Junior/Community College land use (ITE Land Use Code 540). (2) Trip generation rates for the proposed Project are shown in Table 4-1. The trip generation summary illustrating daily, and peak hour trip generation estimates for the proposed Project are also shown in Table 4-1.

TABLE 4-1: PROJECT TRIP GENERATION SUMMARY

Land Use[1]	ITE LU 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
Trip Generation Rates:									
Junior/Community College	540	STU	0.09	0.02	0.11	0.06	0.05	0.11	1.15

Land Use[1]	Quantity	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
Project Trip Generation Summary:									
Chaffey College - Fontana (Existing)	3,641	STU	324	76	400	224	176	400	4,188
Chaffey College - Fontana (Phase 1)	4,295	STU	383	90	473	265	208	473	4,940
Phase 1 - Net Increase	**654**	**STU**	**58**	**14**	**72**	**40**	**32**	**72**	**752**
Chaffey College - Fontana (Buildout)	4,495	STU	401	94	495	277	218	495	5,170
Project Buildout - Net Increase	**854**	**STU**	**76**	**18**	**94**	**53**	**41**	**94**	**982**

Note: Baseline enrollment at the Fontana Campus was 3,641 unduplicated students in 2019.

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

[2] STU = Students

As shown in Table 4-1, the proposed Project is anticipated to generate a net increase of 982 two-way trip-ends per day, with 94 AM peak hour trips and 94 PM peak hour trips. However, the full trip generation with the reallocated existing students has been evaluated for both Phase 1 and Project Buildout traffic conditions. As such, the proposed Project has been evaluated assuming a total of 5,170 two-way trips per day, with 495 AM peak hour trips and 495 PM peak hour trips at Project Buildout.

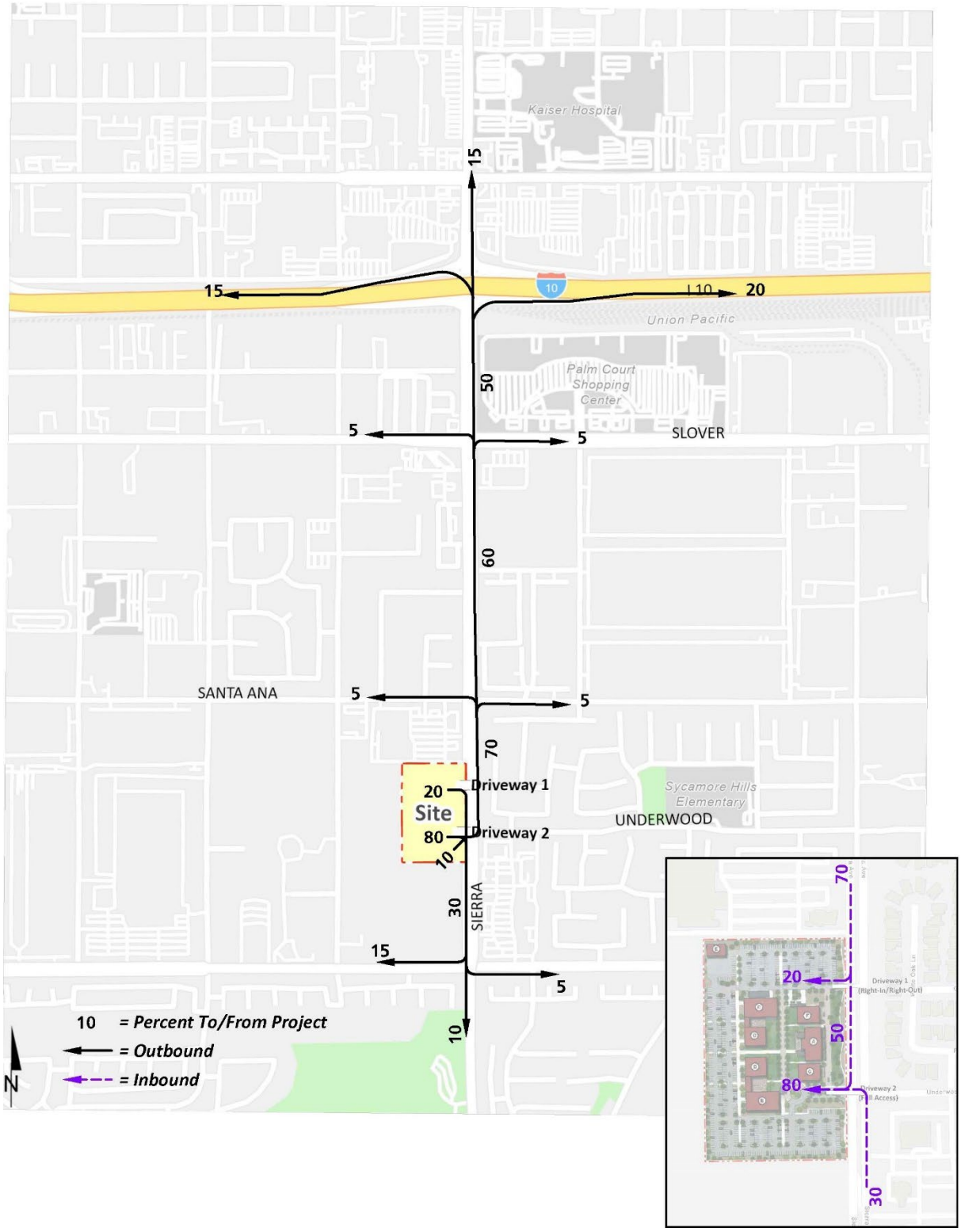
4.2 PROJECT TRIP DISTRIBUTION

Trip distribution is the process of identifying the probable destinations, directions, or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered to identify the route where the Project traffic would distribute. The Project trip distribution was developed based on anticipated travel patterns to and from the Project site. The Project trip distribution patterns are graphically depicted on Exhibit 4-1.

4.3 MODAL SPLIT

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

EXHIBIT 4-1: PROJECT TRIP DISTRIBUTION



4.4 PROJECT TRIP ASSIGNMENT

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

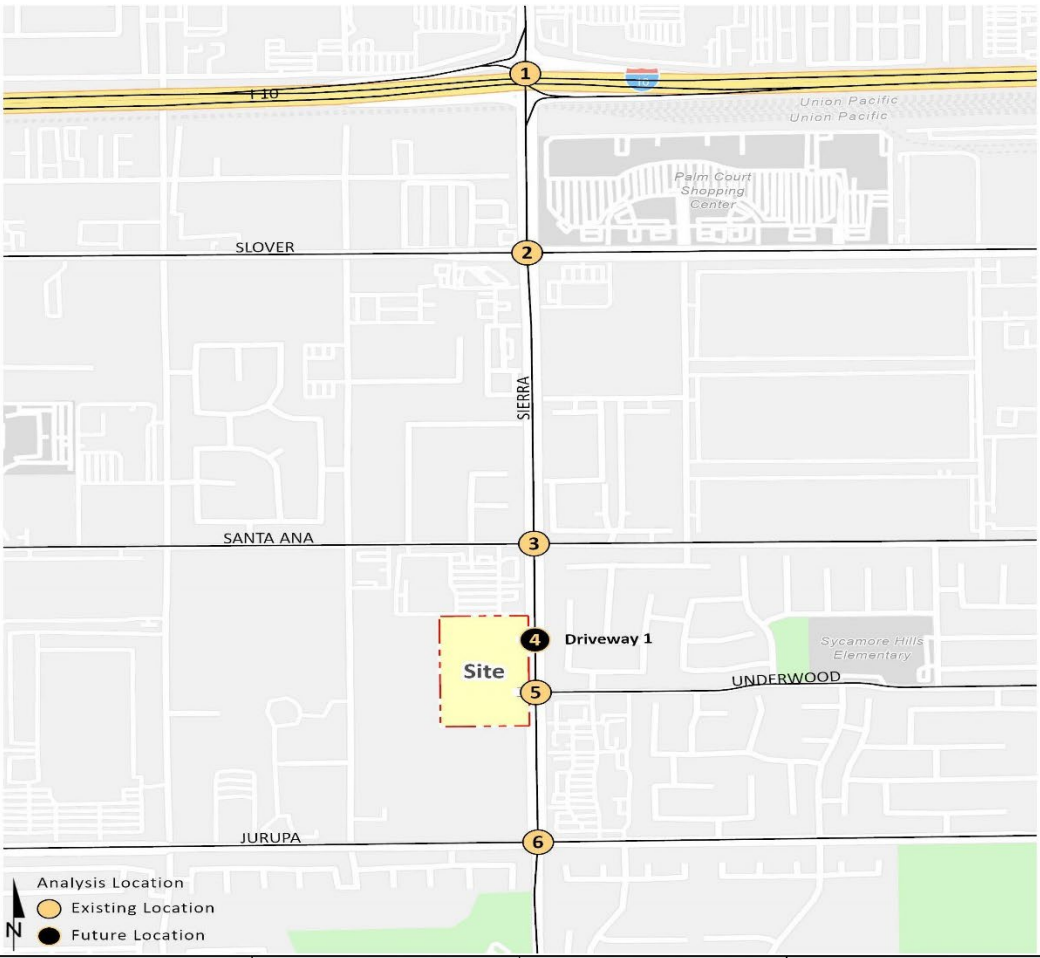
4.5 BACKGROUND TRAFFIC

Future year traffic forecasts have been based upon background (ambient) growth at 1.16% per year for 2026 and 2030 traffic conditions, consistent with other recent studies performed in the area. The total ambient growth is 5.94% for 2026 traffic conditions and 10.94% for 2030 traffic conditions (compounded growth of 1.16 percent per year over 5 or 9 years or $1.0116^{5 \text{ or } 9 \text{ years}}$). 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 addition to traffic generated by the development of future projects that have been approved but not yet built and/or for which development applications have been filed and are under consideration by governing agencies. Opening Year Cumulative (2026) traffic volumes are provided in Section 5 of this TS and in Section 6 for Opening Year Cumulative (2030) conditions. The traffic generated by the proposed Project was then manually added to the base volume to determine Opening Year Cumulative "With Project" forecasts.

4.6 CUMULATIVE DEVELOPMENT TRAFFIC

A cumulative project list was developed for the purposes of this analysis through consultation with planning and engineering staff from the City of Fontana. The cumulative project list includes known and foreseeable projects that are anticipated to contribute traffic to the study area intersections. Where applicable, cumulative projects anticipated to contribute measurable traffic (i.e., 50 or more peak hour trips) to study area intersections have been manually added to the study area network to generate Opening Year Cumulative (2026 and 2030) forecasts. In other words, this list of cumulative development projects has been reviewed to determine which projects would likely contribute measurable traffic through the study area intersections (e.g., those cumulative projects in close proximity to the proposed Project). For the purposes of this analysis, the cumulative projects that were determined to affect one or more of the study area intersections are shown on Exhibit 4-4, listed in Table 4-2, and have been considered for inclusion.

EXHIBIT 4-2: PROJECT (PHASE 1) TRAFFIC VOLUMES (IN ACTUAL VEHICLES)



1 Sierra Av. & I-10 Ramps

750 | 1,000
← 57(40) | ↰ 77(53)
↲ 57(40) | ↰ 14(31) ↑ 14(31) ↱ 18(42)
750 | 2,450

2 Sierra Av. & Slover Av.

2,450 | 250
← 192(133) | ↰ 19(13)
↲ 19(13) | ↰ 5(10) ↑ 45(104) ↱ 5(10)
250 | 2,950

3 Sierra Av. & Santa Ana Av.

2,950 | 250
← 230(159) | ↰ 19(13)
↲ 19(13) | ↰ 5(10) ↑ 54(125) ↱ 5(10)
250 | 3,450

4 Sierra Av. & Driveway 1

3,450
← 77(53) ← 192(133)
↲ 18(42) | ↑ 63(146)
1,000 | 3,450

5 Sierra Av. & Driveway 2/Underwood Dr.

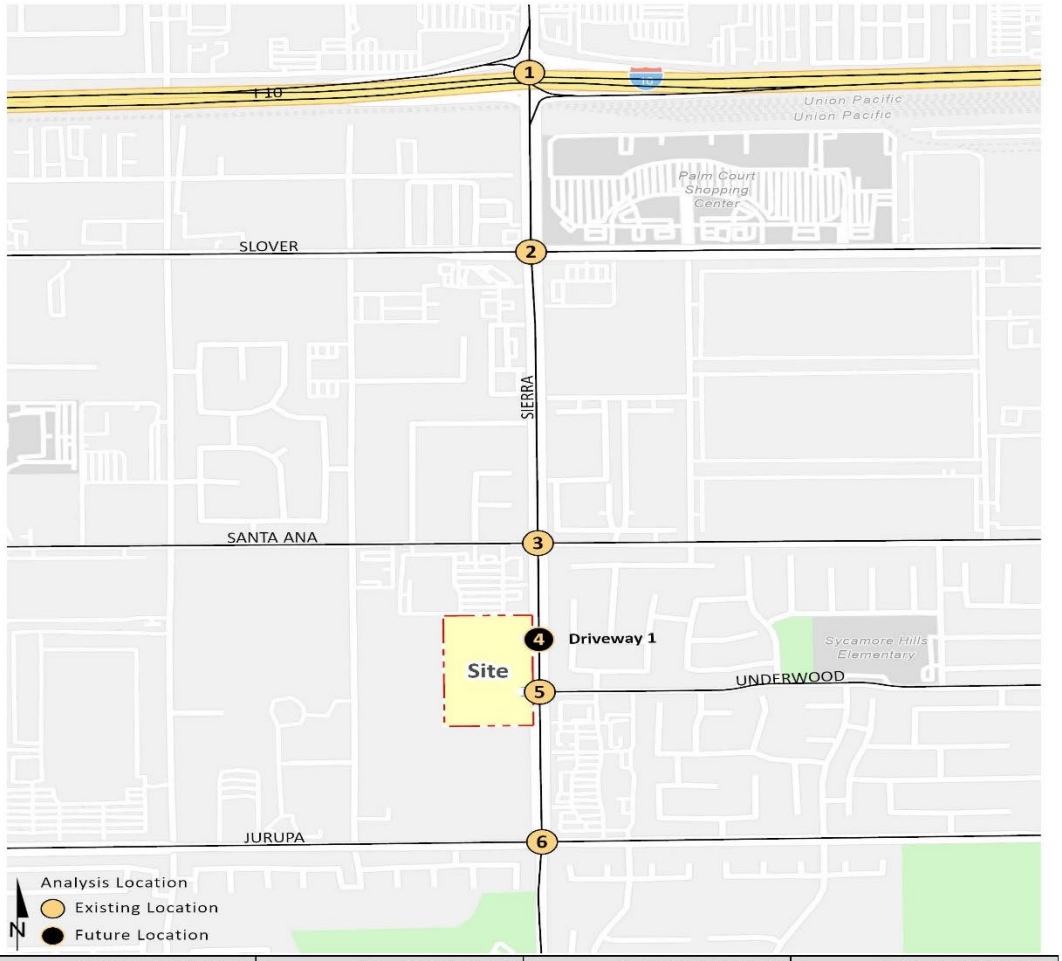
3,450
← 192(133) ← 18(42)
↳ 63(146) | ↰
↲ 9(21) | ↰ 115(80)
3,950 | 1,500

6 Sierra Av. & Jurupa Av.

1,500 | 250
← 14(31) ← 9(21) ↳ 5(10) | ↱ 19(13)
↳ 57(40) | ↑ 38(27)
750 | 500

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

EXHIBIT 4-3: PROJECT (BUILDOUT) TRAFFIC VOLUMES (IN ACTUAL VEHICLES)



1 Sierra Av. & I-10 Ramps

800		1,050
↓ 60(42)		↰ 80(55)
60(42) ↲	↰ 14(33) ↑ 14(33) ↱ 19(44)	
800		2,600

2 Sierra Av. & Slover Av.

2,600		250
↓ 201(139)		↰ 20(14)
20(14) ↲	↰ 5(11) ↑ 47(109) ↱ 5(11)	
250		3,100

3 Sierra Av. & Santa Ana Av.

3,100		250
↓ 241(166)		↰ 20(14)
20(14) ↲	↰ 5(11) ↑ 56(131) ↱ 5(11)	
250		3,600

4 Sierra Av. & Driveway 1

3,600		
↰ 80(55) ↓ 201(138)		
19(44) ↲	↑ 66(153)	
1,050		3,600

5 Sierra Av. & Driveway 2/Underwood Dr.

3,600		
↰ 201(138) ↓ 19(44)		
66(153) ↳	↰	
9(22) ↲	120(83)	
4,150		1,550

6 Sierra Av. & Jurupa Av.

1,550		250
↰ 14(33) ↓ 9(22) ↶ 5(11)		↰ 20(14)
60(42) ↳	↑	
	40(28)	
800		500

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

Average Daily Trips

EXHIBIT 4-4: CUMULATIVE DEVELOPMENT LOCATION MAP

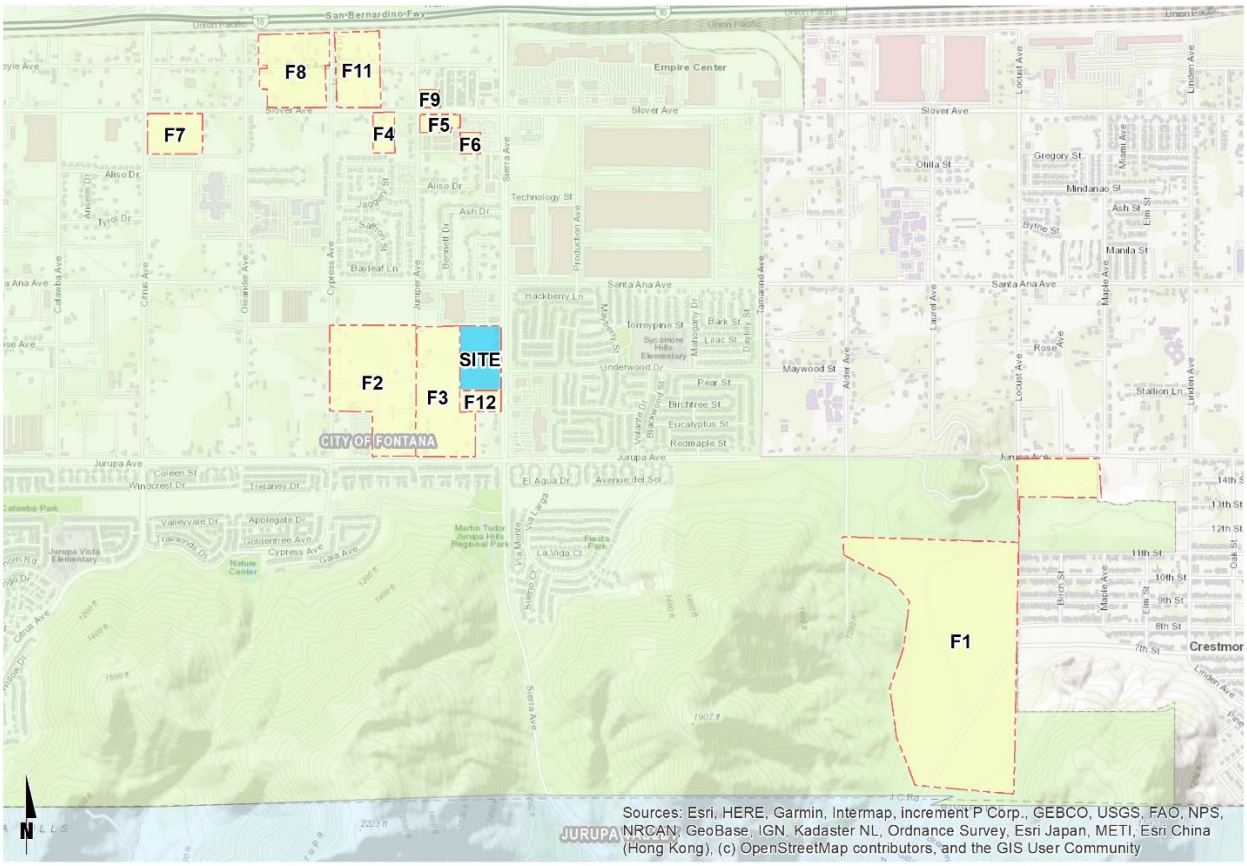


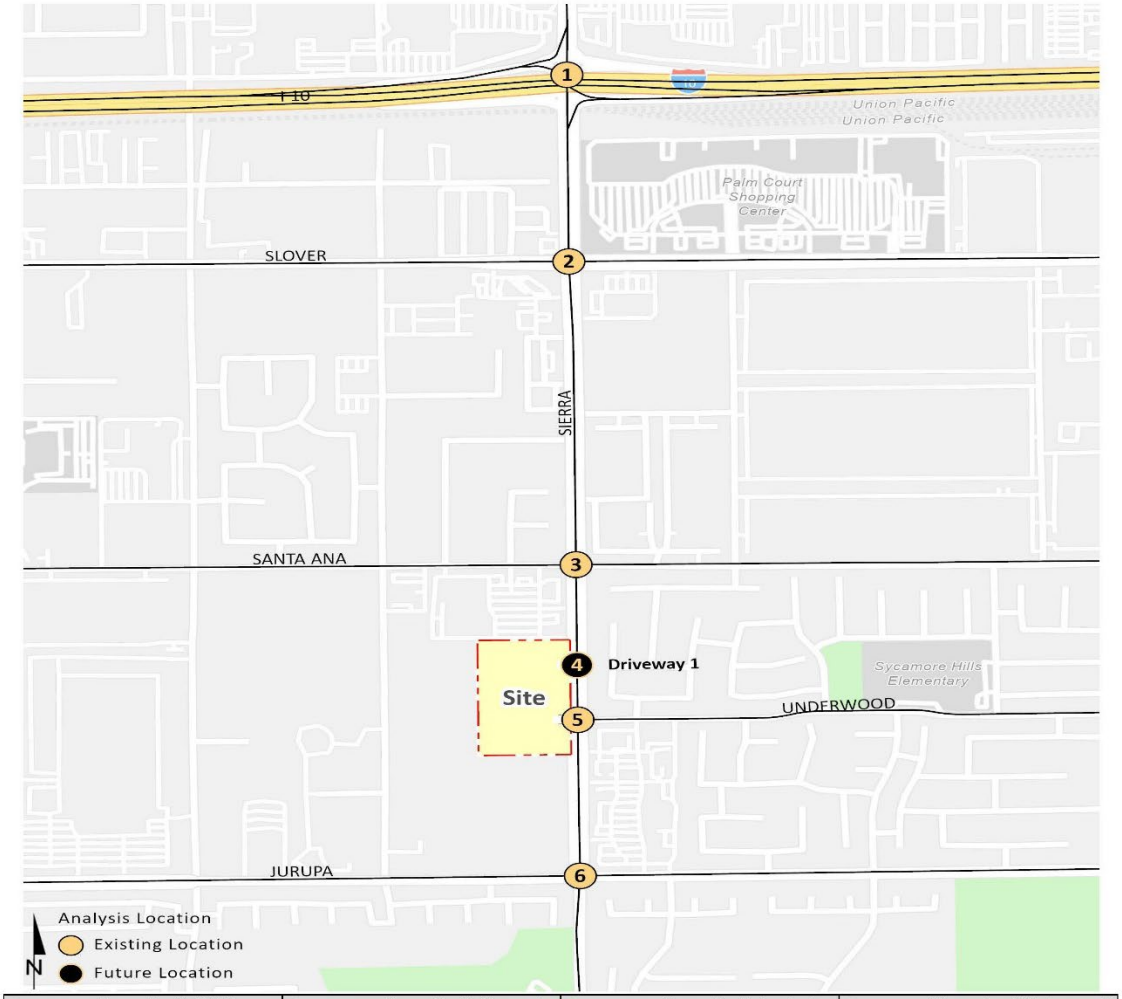
TABLE 4-2: CUMULATIVE DEVELOPMENT LAND USE SUMMARY

TAZ	Project	Land Use	Quantity[1]
F1	West Valley Logistics Center	High-Cube Fulfillment Center	3,473.690 TSF
F2	GLC Fontana III	Warehousing	362.416 TSF
		High-Cube Cold Storage Warehouse	90.604 TSF
F3	Fontana Foothills	High-Cube Warehouse / Distribution Center	754.408 TSF
F4	Slover Industrial Center	High-Cube Warehouse (Cold Storage)	20.421 TSF
		Warehousing	115.719 TSF
F5	La Quinta Inn	Hotel	104 Room
F6	Townplace Suites	Hotel	116 Room
F7	Citrus / Slover Warehouse (SEC of Citrus Av. & Slover Av.)	Warehousing	194.212 TSF
F8	Cypress and Slover Warehouse	High-Cube Warehouse (Cold Storage)	156.365 TSF
		High-Cube Fulfillment Center	469.095 TSF
F9	Slover Avenue Office/Warehouse	Warehouse	41.000 TSF
F10	Transwestern Buildings - Boyle	Warehouse	483.500 TSF
F11	Sierra Business Center	High-Cube Warehouse Fulfillment Center (Sort)	707.735 TSF
F12	Affordable Housing Project	Affordable Homes	130 DU

[1] TSF = Thousand Square Feet; DU = Dwelling Units

Although it is unlikely that all of these cumulative projects would be fully built and occupied by Year 2030, 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. Any additional traffic generated by other projects not on the cumulative projects list is likely accounted for through background ambient growth factors that have been applied to the peak hour volumes at study area intersections as discussed in Section 4.5 *Background Traffic*. Cumulative Only ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-5. A 100% absorption has been assumed of all cumulative projects for Opening Year Cumulative (2030) traffic conditions, while only 50% has been assumed for Opening Year Cumulative (2026) traffic conditions.

EXHIBIT 4-5: CUMULATIVE ONLY TRAFFIC VOLUMES (ACTUAL VEHICLES)



1 Sierra Av. & I-10 Ramps

	← 152(104)	2,650
		↰ 165(115)
34(33) ↲	22(36) ↰ 47(168) → 59(184) ↱	

2,000 850 5,500

2 Sierra Av. & Slover Av.

	↲ 274(202) ← 39(30) ↳ 38(20)	1,300
		↱ 9(31) ← 34(41) ↰ 1(2)
94(311) ↳ 34(46) → 21(49) ↲	↰ 42(36) → 25(44) ↱ 2(1)	

5,500 5,550 1,600

3 Sierra Av. & Santa Ana Av.

	↲ 18(8) ← 33(67) ↳ 8(4)	700
		↱ 2(6) ← 21(17) ↰ 6(5)
5(22) ↳ 17(28) → 1(1) ↲	↰ 2(0) → 58(55) ↱ 7(5)	

1,600 750 1,350

4 Sierra Av. & Driveway 1

← 41(72)	
	→ 66(60)

1,350 1,350

5 Sierra Av. & Driveway 2/Underwood Dr.

← 41(72)	
↰ 6(16) → 66(60)	

1,350 150 1,500

6 Sierra Av. & Jurupa Av.

	↲ 30(19) ← 15(41) ↳ 20(15)	350
		↱ 1(2) ← 8(4)
15(30) ↳ 2(9) → 3(7) ↲	↰ 9(3) → 34(29)	

1,400 950 700

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

Average Daily Trips

4.7 NEAR-TERM TRAFFIC CONDITIONS

The "buildup" approach combines existing traffic counts with a background ambient growth factor to forecast the near-term 2026 and 2030 traffic conditions. An ambient growth factor of 1.16% per year, compounded annually, accounts for background (area-wide) traffic increases that occur over time up to the years 2026 and 2030 from the year 2021. Traffic volumes generated by cumulative development projects are then added to assess the Opening Year Cumulative traffic conditions. Lastly, Project traffic is added to assess "With Project" traffic conditions. The 2023 and 2030 roadway network are similar to the existing conditions roadway network with the exception of intersections proposed to be developed by the Project. The near-term traffic analysis includes the following traffic conditions, with the various traffic components:

- Opening Year Cumulative (2026) Without Project
    - Existing 2021 counts
    - Ambient growth traffic (5.94%)
    - 50% Cumulative Development Project traffic
- Opening Year Cumulative (2026) With Project
    - Existing 2021 counts
    - Ambient growth traffic (5.94%)
    - 50% Cumulative Development Project traffic
    - Phase 1 Project traffic
- Opening Year Cumulative (2030) Without Project
    - Existing 2021 counts
    - Ambient growth traffic (10.94%)
    - 100% Cumulative Development Project traffic
- Opening Year Cumulative (2026) With Project
    - Existing 2021 counts
    - Ambient growth traffic (10.94%)
    - 100% Cumulative Development Project traffic
    - Project Buildout traffic

5 OPENING YEAR CUMULATIVE (2026) TRAFFIC ANALYSIS

This section discusses the methods used to develop Opening Year Cumulative (2026) Without and With Project traffic forecasts, and the resulting intersection operations and freeway off-ramp queuing analyses.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Opening Year Cumulative (2026) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

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

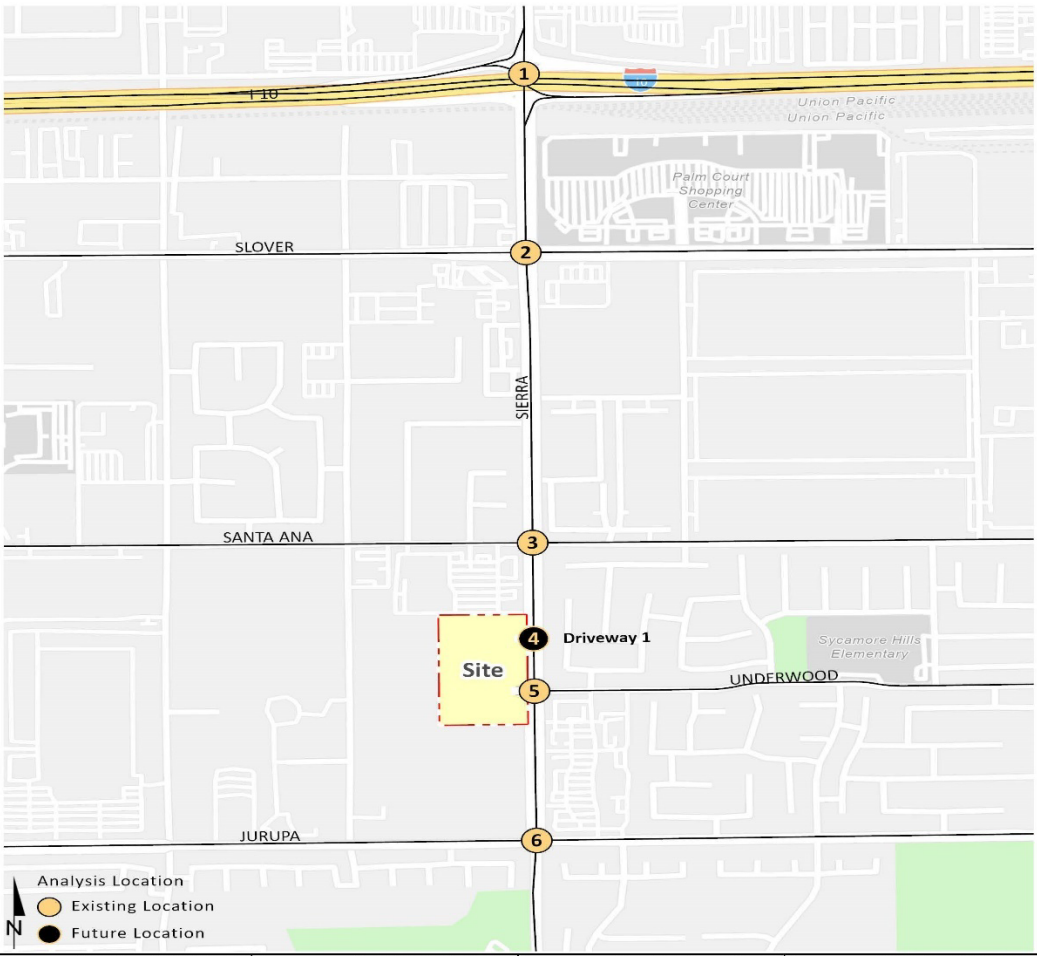
5.2 OPENING YEAR CUMULATIVE (2026) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus an ambient growth factor of 5.94% plus traffic from pending and approved but not yet constructed known development projects in the area (50% absorption). The ADT and peak hour intersection turning movement volumes which can be expected for Opening Year Cumulative (2026) Without Project conditions are shown on Exhibit 5-1.

5.3 OPENING YEAR CUMULATIVE (2026) WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes, an ambient growth factor of 5.94%, traffic from pending and approved but not yet constructed known development projects in the area (50% absorption) and the addition of Phase 1 Project traffic. The ADT and peak hour intersection turning movement volumes which can be expected for Opening Year Cumulative (2026) With Project conditions are shown on Exhibit 5-2.

EXHIBIT 5-1: OPENING YEAR CUMULATIVE (2026) WITHOUT PROJECT TRAFFIC VOLUMES



1 Sierra Av. & I-10 Ramps

											23,700
58,050										↱	517(550)
	←	708(681)	←	838(981)	↳	514(457)					
										↰	464(491)
		784(903)	↳				↰	↑	↱		
							464(547)	799(1374)	331(540)		
		318(352)	↲								
29,450											***49,750***

2 Sierra Av. & Slover Av.

											34,800
52,900										↱	411(744)
	←	370(206)	←	736(932)	↳	514(686)				←	237(371)
										↰	71(214)
		242(497)	↳				↰	↑	↱		
		203(546)	→				124(172)	942(1219)	96(168)		
		60(121)	↲								
24,000											***35,050***

3 Sierra Av. & Santa Ana Av.

											8,100
35,700										↱	89(89)
	←	101(119)	←	642(1108)	↳	104(147)				←	122(125)
										↰	56(67)
		93(173)	↳				↰	↑	↱		
		83(147)	→				136(165)	1032(1282)	68(65)		
		65(106)	↲								
10,050											***35,750***

4 Sierra Av. & Driveway 1

34,750											
	←	738(1335)									
										↑	1253(1488)
											34,750

5 Sierra Av. & Driveway 2/Underwood Dr.

											5,900
34,750										↱	228(144)
	←	606(1102)	↳	131(233)							
										↰	63(73)
							3(8)	1026(1344)	48(41)		
Nominal											***31,650***

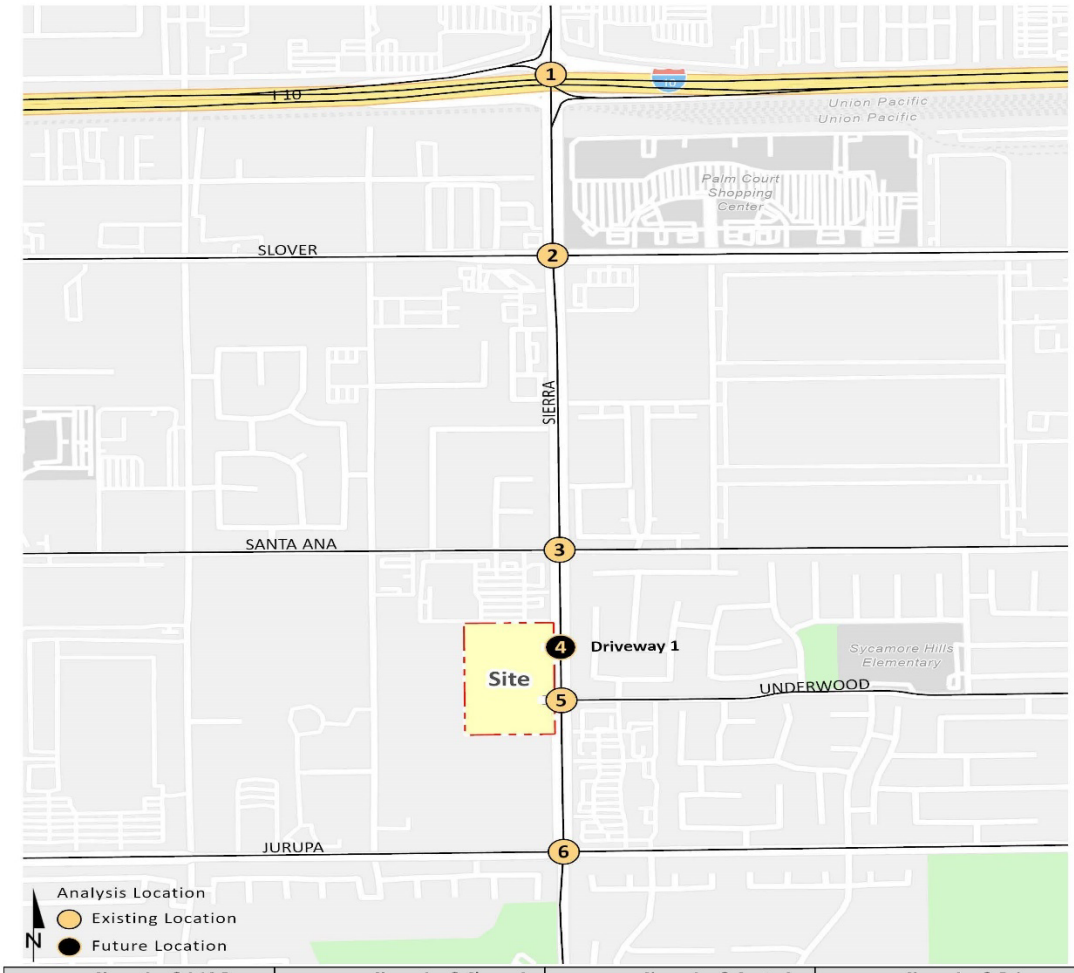
6 Sierra Av. & Jurupa Av.

											10,900
29,600										↱	83(75)
	↲	156(240)	←	348(601)	↳	35(104)				←	250(266)
										↰	119(133)
		217(447)	↳				↰	↑	↱		
		184(216)	→				263(403)	767(906)	59(103)		
		195(426)	↲								
25,200											***31,250***

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

***Average Daily Trips***

EXHIBIT 5-2: OPENING YEAR CUMULATIVE (2026) WITH PROJECT TRAFFIC VOLUMES



1 Sierra Av. & I-10 Ramps

											23,800
55,650		696(654)	866(955)	498(420)						↱	448(502)
	↳				↰	↑	↱			↰	541(544)
	732(867)	↳	↰	↑	↱						
						478(578)	693(1323)	349(582)			
	375(392)	↴									
29,550											**50,700**

2 Sierra Av. & Slover Av.

											34,850
53,800		366(196)	908(1019)	509(676)						↱	394(733)
	↳				↰	↑	↱			←	237(371)
	225(485)	↳	↰	↑	↱					↰	90(227)
	203(546)	→				129(182)	901(1264)	101(178)			
	79(134)	↴									
24,050											**36,900**

3 Sierra Av. & Santa Ana Av.

											8,100
37,550		97(110)	860(1239)	99(138)						↱	72(77)
	↳				↰	↑	↱			←	122(125)
	76(161)	↳	↰	↑	↱					↰	75(80)
	83(147)	→				141(175)	1034(1371)	73(75)			
	84(119)	↴									
10,050											**38,550**

4 Sierra Av. & Driveway 1

37,550		77(53)	918(1440)								
	↳				↰	↑	↱				
	18(42)	↴									
							1264(1598)	→			
1,000											**37,550**

5 Sierra Av. & Driveway 2/Underwood Dr.

											5,900
37,550		192(133)	613(1116)	131(233)						↱	228(144)
	↳				↰	↑	↱			↰	63(73)
	63(146)	↳	↰	↑	↱						
						118(88)	974(1308)	48(41)			
	9(21)	↴									
4,000											**32,450**

6 Sierra Av. & Jurupa Av.

											10,900
30,400		166(262)	352(612)	36(104)						↱	85(77)
	↳				↰	↑	↱			←	250(266)
	257(476)	↳	↰	↑	↱					↰	119(133)
	184(216)	→				263(403)	788(922)	59(103)			
	195(426)	↴									
25,700											**31,550**

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

Average Daily Trips

5.4 INTERSECTION OPERATIONS ANALYSIS

5.4.1 OPENING YEAR CUMULATIVE (2026) WITHOUT PROJECT TRAFFIC CONDITIONS

Opening Year Cumulative (2026) 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 analysis results are summarized in Table 5-1, which indicate that the following study area intersections are anticipated to operate at an unacceptable LOS during the peak hours under Opening Year Cumulative (2026) Without Project:

- Sierra Av. & Slover Av. (#2) – LOS E AM peak hour; LOS F PM peak hour
- Sierra Av. & Jurupa Av. (#6) – LOS D AM peak hour; LOS F PM peak hour

The intersection operations analysis worksheets for Opening Year Cumulative Without Project traffic conditions are included in Appendix 5.1 of this TS.

TABLE 5-1: INTERSECTION ANALYSIS FOR OPENING YEAR CUMULATIVE (2026) CONDITIONS

#	Intersection	Traffic Control[2]	2026 Without Project Delay[1] (secs.) AM	PM	Level of Service AM	PM	2026 With Project Delay[1] (secs.) AM	PM	Level of Service AM	PM	Change in Delay AM	PM	Deficiency Criteria Met?
1	Sierra Av. & I-10 Ramps	TS	41.6	42.2	D	D	41.5	41.4	D	D	--	--	
2	Sierra Av. & Slover Av.	TS	**55.1**	**149.7**	**E**	**F**	**53.0**	**144.5**	**D**	**F**	-2.1	-5.2	No
3	Sierra Av. & Santa Ana Av.	TS	13.9	19.9	B	B	15.4	24.0	B	C	1.5	4.1	No
4	Sierra Av. & Driveway 1	**CSS**	Future Intersection				10.3	11.7	B	B	--	--	
5	Sierra Av. & Driveway 2/Underwood Dr.	TS	9.7	9.3	A	A	16.1	8.4	B	A	6.4	-0.9	No
6	Sierra Av. & Jurupa Av.	TS	**42.1**	**128.0**	**D**	**F**	**48.3**	**135.4**	**D**	**F**	**6.2**	**7.4**	**Yes**

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

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

[2] TS = Traffic Signal; CSS = Cross-Street Stop; **CSS** = Improvement

5.4.2 OPENING YEAR CUMULATIVE (2026) WITH PROJECT TRAFFIC CONDITIONS

As shown in Table 5-1, there are no additional study area intersections anticipated to operate at an unacceptable LOS with the addition of Project traffic, in addition to the intersections previously identified under Opening Year Cumulative (2026) Without Project traffic conditions. The peak hour intersection operations at Sierra Avenue at Slover Avenue is anticipated to improve under With Project traffic conditions based on the reallocation of existing school traffic in conjunction with the additional students from the new site. The intersection operations analysis worksheets for Opening Year Cumulative (2026) With Project traffic conditions are included in Appendix 5.2 of this TS.

5.5 FREEWAY OFF-RAMP QUEUING ANALYSIS

A queuing analysis was performed for the off-ramps at the I-10 Freeway at Sierra Avenue interchange to assess vehicle queues for the off ramps that may potentially result in deficient peak hour operations at the ramp-to-arterial intersections and may potentially "spill back" onto the I-10 Freeway mainline. Queuing analysis findings are presented in Table 5-2. It is important to note that off-ramp lengths are consistent with the measured distance between the intersection and the freeway mainline. As shown in Table 5-2, there are no turning movements anticipated to experience any queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows under Opening Year Cumulative (2026) traffic conditions. Worksheets for Opening Year Cumulative (2026) Without and With Project traffic conditions off-ramp queuing analysis are provided in Appendix 5.3 and Appendix 5.4, respectively.

TABLE 5-2: PEAK HOUR FREEWAY OFF-RAMP QUEUING SUMMARY FOR OPENING YEAR CUMULATIVE (2026) CONDITIONS

				2026 Without Project				2026 With Project			
				95th Percentile Queue (Feet)		Acceptable?[1]		95th Percentile Queue (Feet)		Acceptable?[1]	
#	Intersection	Movement	Available Stacking Distance (Feet)	AM Peak Hour	PM Peak Hour	AM	PM	AM Peak Hour	PM Peak Hour	AM	PM
1	Sierra Av. & I-10 Ramps	EBL	450	370	435	Yes	Yes	347	414	Yes	Yes
		EBR	1,300	0	0	Yes	Yes	0	0	Yes	Yes
		WBL	1,300	227	226	Yes	Yes	269	251	Yes	Yes
		WBR	430	0	0	Yes	Yes	0	0	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.

5.6 DEFICIENCIES AND IMPROVEMENTS

This section provides a summary of deficiencies, based on the City of Fontana's deficiency criteria discussed in Section 2.6 *Intersection Deficiency Criteria*, and improvements needed to improve peak hour operations back to pre-project traffic conditions or better. The intersection with the change in delay with the addition of Project traffic is anticipated to exceed the City's thresholds, as such, the Project is anticipated to have a significant effect on the pre-project deficiency at Sierra Avenue and Jurupa Avenue (see Table 5-3). As shown in Table 5-3, the recommended improvement would reduce the Project's contribution to the intersection delay to levels within the City's deficiency criteria (see Table 2-3). The following improvement has been recommended for those intersections exceeding the City's thresholds as listed in Table 2-3:

- ***Sierra Av. & Jurupa Av. (#6):*** Project to implement overlap phasing on the eastbound right turn lane. This improvement also requires a U-turn restriction from the northbound left turn lane.

The intersection operations analysis worksheets for Opening Year Cumulative (2026) With Project with improvements are included in Appendix 5.5 of this TS.

TABLE 5-3: INTERSECTION DEFICIENCIES AND IMPROVEMENTS FOR OPENING YEAR CUMULATIVE (2026) CONDITIONS

#	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[2] (secs.) AM	PM	Level of Service AM	PM
6	Sierra Av. & Jurupa Av.																	
	- Pre-Project Conditions	TS	2	2	1	2	2	1>	2	2	1	2	2	1	**42.1**	**128.0**	**D**	**F**
	-Without Improvements	TS	2	2	1	2	2	1>	2	2	1	2	2	1	**48.3**	**135.4**	**D**	**F**
	-With Improvements[4]	TS	2	2	1	2	2	1>	2	2	**1>**	2	2	1	**44.9**	**117.2**	**D**	**F**

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

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

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

[3] TS = Traffic Signal

[4] Improvement requires U-turn restriction from the northbound left turn lanes. Cycle length would remain at 110 seconds.

6 OPENING YEAR CUMULATIVE (2030) TRAFFIC ANALYSIS

This section discusses the methods used to develop Opening Year Cumulative (2030) Without and With Project traffic forecasts, and the resulting intersection operations and freeway off-ramp queuing analyses.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Opening Year Cumulative (2030) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

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

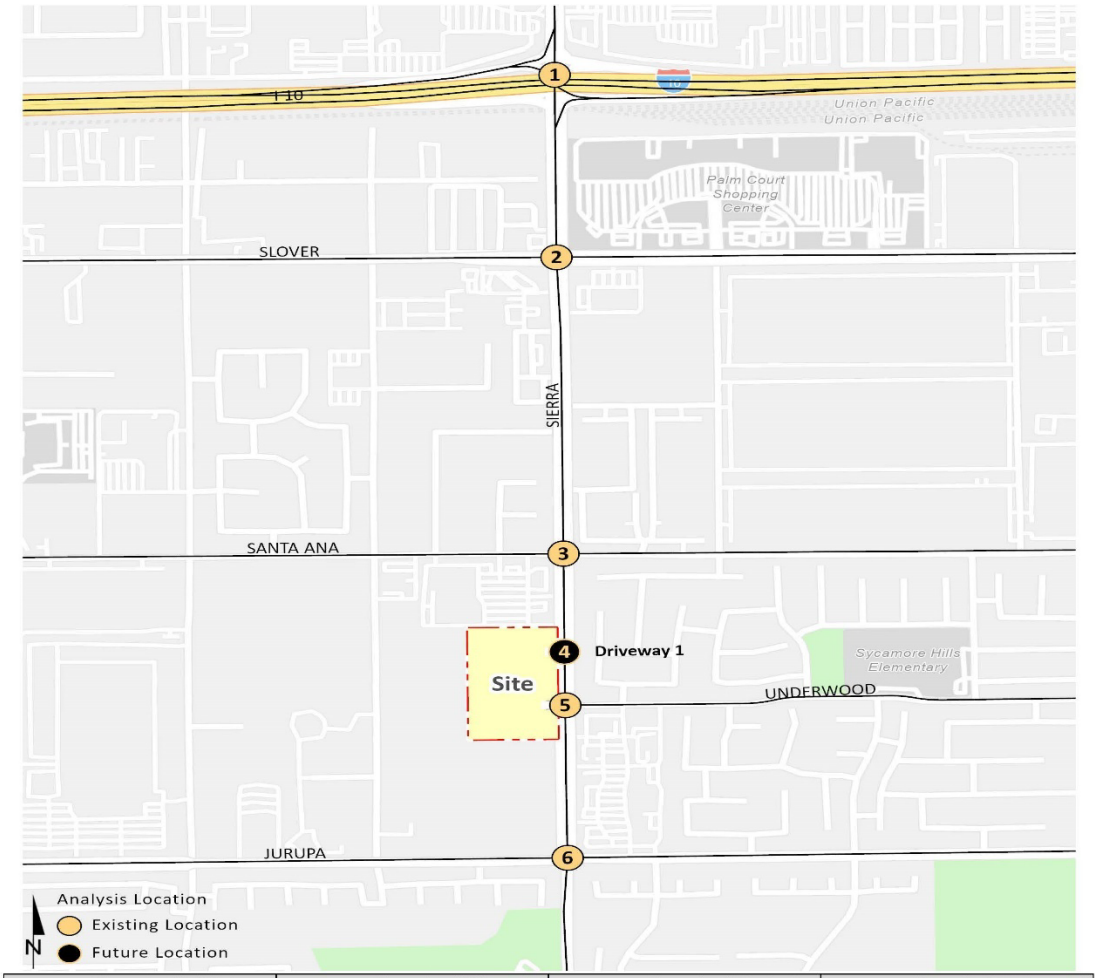
6.2 OPENING YEAR CUMULATIVE (2030) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus an ambient growth factor of 10.94% plus traffic from pending and approved but not yet constructed known development projects in the area (100% absorption). The ADT and peak hour intersection turning movement volumes which can be expected for Opening Year Cumulative (2030) Without Project conditions are shown on Exhibit 6-1.

6.3 OPENING YEAR CUMULATIVE (2030) WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes, an ambient growth factor of 10.94%, traffic from pending and approved but not yet constructed known development projects in the area (100% absorption) and the addition of Project Buildout traffic. The ADT and peak hour intersection turning movement volumes which can be expected for Opening Year Cumulative (2030) With Project conditions are shown on Exhibit 6-2.

EXHIBIT 6-1: OPENING YEAR CUMULATIVE (2030) WITHOUT PROJECT TRAFFIC VOLUMES



1 Sierra Av. & I-10 Ramps

											26,100
61,700		741(713)	950(1077)	538(478)						↱	541(576)
		↲	↓	↳						↰	564(569)
		821(945)	→	↳	↰	→	↱				
		349(385)	↴		497(590)	859(1519)	375(653)				**54,750**
31,250											

2 Sierra Av. & Slover Av.

											37,050
58,000		518(312)	789(991)	556(728)						↱	435(794)
		↲	↓	↳						↰	265(408)
		298(668)	→	↳	↰	→	↱			↰	75(225)
		229(594)	→								
		73(150)	↴		150(197)	998(1298)	102(176)				**37,500**
27,800											

3 Sierra Av. & Santa Ana Av.

											8,800
38,150		115(129)	688(1192)	112(156)						↱	94(96)
		↲	↓	↳						↰	137(139)
		99(192)	→	↳	↰	→	↱			↰	61(73)
		95(168)	→								
		69(112)	↴		143(173)	1109(1369)	75(70)				**38,100**
10,850											

4 Sierra Av. & Driveway 1

37,050											
										↰	792(1432)
											37,050
											1344(1587) →

5 Sierra Av. & Driveway 2/Underwood Dr.

											6,200
37,050			654(1188)	138(244)						↱	239(151)
			↓	↳						↰	65(77)
					↰	→	↱				
					6(16)	1105(1436)	50(43)				**33,850**
150											

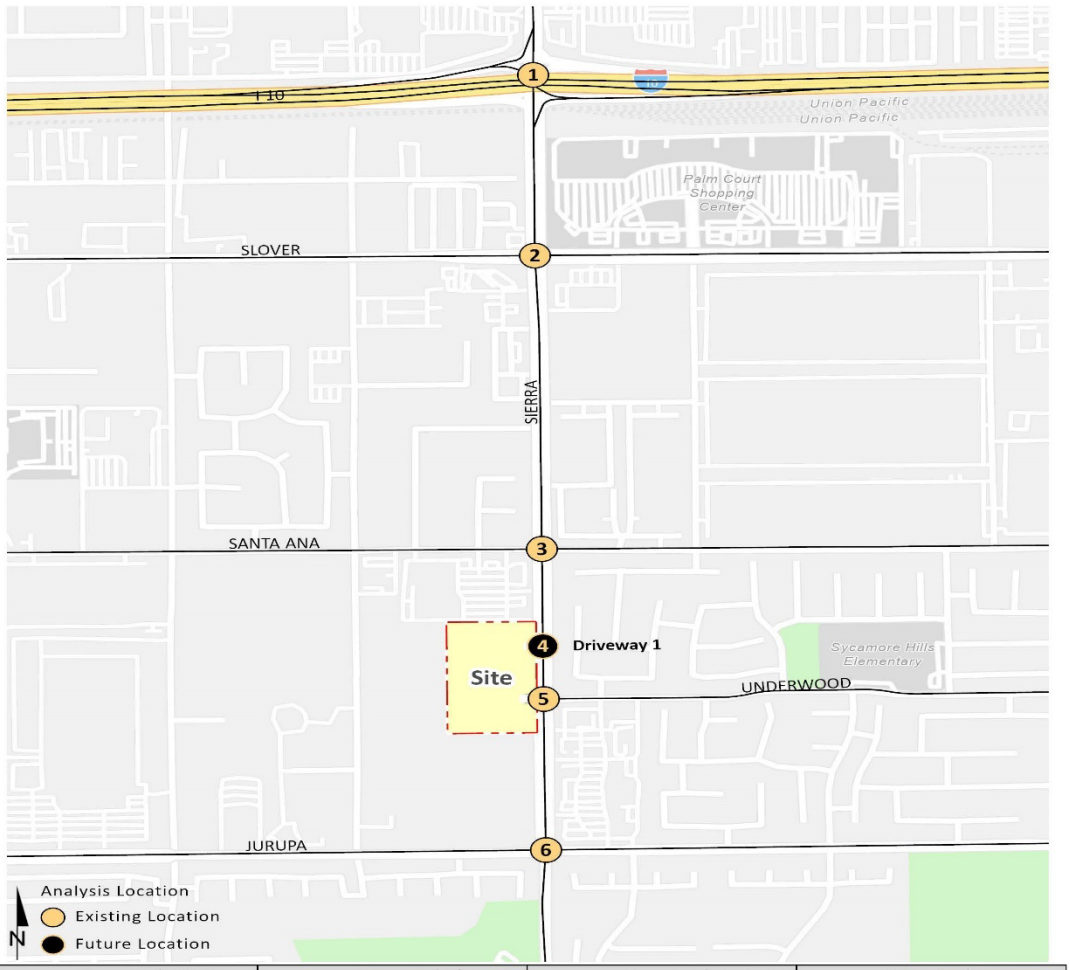
6 Sierra Av. & Jurupa Av.

											11,550
31,650		178(261)	371(649)	47(116)						↱	88(80)
		↲	↓	↳						↰	265(280)
		235(483)	→	↳	↰	→	↱			↰	124(140)
		194(231)	→								
		206(450)	↴		280(423)	819(963)	62(108)				**33,100**
26,800											

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

Average Daily Trips

EXHIBIT 6-2: OPENING YEAR CUMULATIVE (2030) WITH PROJECT TRAFFIC VOLUMES



1 Sierra Av. & I-10 Ramps

											26,200
										↱	469(526)
									↰	←	644(624)
									767(907)	↳	
								↰	↑	↱	
								511(623)	748(1466)	394(697)	
							409(427)	↲			
59,250											**55,700**
			729(684)	↲	980(1050)	↓	521(439)	↳			
31,300											

2 Sierra Av. & Slover Av.

											37,100
										↱	417(782)
									↰	←	265(408)
									280(656)	↳	95(239)
								↰	↑	↱	
								155(208)	955(1344)	107(187)	
							229(594)	→			
							93(164)	↲			
59,000											**39,450**
			514(302)	↲	969(1081)	↓	552(718)	↳			
27,850											

3 Sierra Av. & Santa Ana Av.

											8,850
										↱	76(84)
									↰	←	137(139)
									82(180)	↳	81(87)
								↰	↑	↱	
								148(184)	1110(1462)	80(81)	
							95(168)	→			
							89(126)	↲			
40,100											**41,000**
			110(119)	↲	916(1329)	↓	108(146)	↳			
10,900											

4 Sierra Av. & Driveway 1

											1356(1702)
							19(44)	↲			
39,950											**39,950**
			80(55)	↲	981(1541)	↓					
1,050											

5 Sierra Av. & Driveway 2/Underwood Dr.

											6,200
										↱	239(151)
									↰	←	65(77)
									66(153)	↳	
								↰	↑	↱	
								126(99)	1051(1398)	50(43)	
							9(22)	↲			
39,950											**34,700**
			201(138)	↲	661(1203)	↓	138(244)	↳			
4,300											

6 Sierra Av. & Jurupa Av.

											11,600
										↱	90(81)
									↰	←	265(280)
									277(512)	↳	124(140)
								↰	↑	↱	
								280(423)	842(979)	62(108)	
							194(231)	→			
							206(450)	↲			
32,500											**33,350**
			187(284)	↲	376(661)	↓	47(117)	↳			
27,350											

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

Average Daily Trips

6.4 INTERSECTION OPERATIONS ANALYSIS

6.4.1 OPENING YEAR CUMULATIVE (2030) WITHOUT PROJECT TRAFFIC CONDITIONS

Opening Year Cumulative (2030) 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 analysis results are summarized in Table 6-1, which indicate that the following study area intersections are anticipated to operate at an unacceptable LOS during the peak hours under Opening Year Cumulative (2030) Without Project:

- Sierra Av. & Slover Av. (#2) – LOS E AM peak hour; LOS F PM peak hour
- Sierra Av. & Jurupa Av. (#6) – LOS D AM peak hour; LOS F PM peak hour

The intersection operations analysis worksheets for Opening Year Cumulative Without Project traffic conditions are included in Appendix 6.1 of this TS.

TABLE 6-1: INTERSECTION ANALYSIS FOR OPENING YEAR CUMULATIVE (2030) CONDITIONS

#	Intersection	Traffic Control[2]	2030 Without Project Delay[1] (secs.)		2030 Without Project Level of Service		2030 With Project Delay[1] (secs.)		2030 With Project Level of Service		Change in Delay		Deficiency Criteria Met?
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
1	Sierra Av. & I-10 Ramps	TS	42.6	43.9	D	D	42.8	42.8	D	D	--	--	
2	Sierra Av. & Slover Av.	TS	**75.1**	**220.6**	**E**	**F**	**72.1**	**213.3**	**E**	**F**	-3.0	-7.3	No
3	Sierra Av. & Santa Ana Av.	TS	14.2	24.1	B	C	24.5	28.7	C	C	10.3	4.6	No
4	Sierra Av. & Driveway 1	**CSS**	Future Intersection				10.5	12.0	B	B	--	--	
5	Sierra Av. & Driveway 2/Underwood Dr.	TS	9.8	9.6	A	A	19.0	18.5	B	B	9.2	8.9	No
6	Sierra Av. & Jurupa Av.	TS	**47.5**	**145.1**	**D**	**F**	**53.7**	**153.0**	**D**	**F**	**6.2**	**7.9**	**Yes**

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

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

[2] TS = Traffic Signal; CSS = Cross-Street Stop; **CSS** = Improvement

6.4.2 OPENING YEAR CUMULATIVE (2030) WITH PROJECT TRAFFIC CONDITIONS

As shown in Table 6-1, there are no additional study area intersections anticipated to operate at an unacceptable LOS with the addition of Project traffic, in addition to the intersections previously identified under Opening Year Cumulative (2030) Without Project traffic conditions. The peak hour intersection operations at Sierra Avenue at Slover Avenue is anticipated to improve under With Project traffic conditions based on the reallocation of existing school traffic in conjunction with the additional students from the new site. The intersection operations analysis worksheets for Opening Year Cumulative (2030) With Project traffic conditions are included in Appendix 6.2 of this TS.

6.5 FREEWAY OFF-RAMP QUEUING ANALYSIS

A queuing analysis was performed for the off-ramps at the I-10 Freeway at Sierra Avenue interchange to assess vehicle queues for the off ramps that may potentially result in deficient peak hour operations at the ramp-to-arterial intersections and may potentially "spill back" onto the I-10 Freeway mainline. Queuing analysis findings are presented in Table 6-2. It is important to note that off-ramp lengths are consistent with the measured distance between the intersection and the freeway mainline. As shown in Table 6-2, there are no turning movements anticipated to experience any queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows under Opening Year Cumulative (2030) traffic conditions. Worksheets for Opening Year Cumulative (2030) Without and With Project traffic conditions off-ramp queuing analysis are provided in Appendix 6.3 and Appendix 6.4, respectively.

TABLE 6-2: PEAK HOUR FREEWAY OFF-RAMP QUEUING SUMMARY FOR OPENING YEAR CUMULATIVE (2030) CONDITIONS

				2030 Without Project				2030 With Project			
				95th Percentile Queue (Feet)		Acceptable?[1]		95th Percentile Queue (Feet)		Acceptable?[1]	
#	Intersection	Movement	Available Stacking Distance (Feet)	AM Peak Hour	PM Peak Hour	AM	PM	AM Peak Hour	PM Peak Hour	AM	PM
1	Sierra Av. & I-10 Ramps	EBL	450	391	462	Yes	Yes	362	438	Yes	Yes
		EBR	1,300	0	0	Yes	Yes	0	0	Yes	Yes
		WBL	1,300	287	267	Yes	Yes	329	294	Yes	Yes
		WBR	430	0	0	Yes	Yes	0	0	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.

6.6 DEFICIENCIES AND IMPROVEMENTS

This section provides a summary of deficiencies, based on the City of Fontana's deficiency criteria discussed in Section 2.6 *Intersection Deficiency Criteria*, and improvements needed to improve operations back to pre-project traffic conditions. The intersection with the change in delay with the addition of Project traffic is anticipated to exceed the City's thresholds, as such, the Project is anticipated to have a significant effect on the pre-project deficiency at Sierra Avenue and Jurupa Avenue (see Table 6-3). The same improvement identified under Opening Year Cumulative (2026) is anticipated to reduce the peak hour delays below the City's thresholds between pre-project and With Project traffic conditions as listed in Table 2-3. The intersection operations analysis worksheets for Opening Year Cumulative (2030) With Project with improvements are included in Appendix 6.5 of this TS.

TABLE 6-3: INTERSECTION DEFICIENCIES AND IMPROVEMENTS FOR OPENING YEAR CUMULATIVE (2030) CONDITIONS

#	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[2] (secs.) AM	PM	Level of Service AM	PM
6	Sierra Av. & Jurupa Av.																	
	- Pre-Project Conditions	TS	2	2	1	2	2	1>	2	2	1	2	2	1	**47.5**	**145.1**	**D**	**F**
	-Without Improvements	TS	2	2	1	2	2	1>	2	2	1	2	2	1	**53.7**	**153.0**	**D**	**F**
	-With Improvements[4]	TS	2	2	1	2	2	1>	2	2	**1>**	2	2	1	**49.7**	**129.2**	**D**	**F**

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

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

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

[3] TS = Traffic Signal

[4] Improvement requires U-turn restriction from the northbound left turn lanes. Cycle length would remain at 110 seconds.

7 LOCAL AND REGIONAL FUNDING MECHANISMS

Transportation improvements within the City of Fontana are funded through a combination of direct project mitigation, development impact fee programs or fair share contributions, such as the City of Fontana DIF program. Identification and timing of needed improvements is generally determined through local jurisdictions based upon a variety of factors.

7.1 MEASURE "I" FUNDS

In 2004, the voters of San Bernardino County approved the 30-year extension of Measure "I", a one-half of one percent sales tax on retail transactions, through the year 2040, for transportation projects including, but not limited to, infrastructure improvements, commuter rail, public transit, and other identified improvements. The Measure "I" extension requires that a regional traffic impact fee be created to ensure development is paying its fair share. A regional Nexus study was prepared by SBCTA and concluded that each jurisdiction should include a regional fee component in their local programs in order to meet the Measure "I" requirement. The regional component assigns specific facilities and cost sharing formulas to each jurisdiction and was most recently updated in May 2018. Revenues collected through these programs are used in tandem with Measure "I" funds to deliver projects identified in the Nexus Study.

While Measure "I" is a self-executing sales tax administered by SBCTA, it bears discussion here because the funds raised through Measure "I" have funded in the past and will continue to fund new transportation facilities in San Bernardino County, including within the City of Fontana.

7.2 CITY OF FONTANA DEVELOPMENT IMPACT FEE (DIF)

The City of Fontana adopted the latest update to their DIF program in February 2016. Fees from new residential, commercial and industrial development are collected to fund Measure "I" compliant regional facilities as well as local facilities. These DIF fees are not appliable to schools/colleges (educational institutions).

This Page Intentionally Left Blank

8 VEHICLE MILES TRAVELED

Changes to California Environmental Quality Act (CEQA) Guidelines were adopted in December 2018, which require all lead agencies to adopt VMT as a replacement for automobile delay-based LOS as the measure for identifying transportation impacts for land use projects. This statewide mandate went into effect July 1, 2020. To aid in this transition, the Governor's Office of Planning and Research (OPR) released a Technical Advisory on Evaluating Transportation Impacts in CEQA (December of 2018) (Technical Advisory). (5) Based on OPR's Technical Advisory, the City of Fontana adopted its Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment (October of 2020) (1) (City Guidelines), which documents the City's VMT analysis methodology and approved impact thresholds.

8.1 PROJECT SCREENING

The City Guidelines provides information on appropriate screening thresholds that can be used to identify when a proposed land use project is anticipated to result in a less than significant impact without conducting a more detailed project-level assessment. Screening thresholds are broken into the following four steps:

- Step 1: Transit Priority Area (TPA) Screening
- Step 2: Low VMT Area Screening
- Step 3: Low Project Type Screening
- Step 4: Project net daily trips less than 500 ADT

The City Guidelines identify that the SBCTA VMT Screening Tool (Screening Tool) is utilized to assess project VMT screening criteria. The Screening Tool uses the project's assessor's parcel number (APN) to determine if its location meets one or more of the VMT screening thresholds for land use projects. A land use project need only meet one of the above screening criteria to result in a less than significant impact.

8.1.1 STEP 1: TPA SCREENING

Consistent with guidance identified in the City Guidelines, projects located within a Transit Priority Area (TPA) (i.e., within ½ mile of an existing "major transit stop"[1] or an existing stop along a "high-quality transit corridor"[2]) may be presumed to have a less than significant impact absent substantial evidence to the contrary. However, the presumption may not be appropriate if a project:

- Has a Floor Area Ratio (FAR) of less than 0.75;

[1] Pub. Resources Code, § 21064.3 ("'Major transit stop' means a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.").

[2] Pub. Resources Code, § 21155 ("For purposes of this section, a high-quality transit corridor means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.").

- Includes more parking for use by residents, customers, or employees of the project than required by the jurisdiction (if the jurisdiction requires the project to supply parking);
- Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Metropolitan Planning Organization); or
- Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

The Project is not located near a major transit stop or high-quality transit corridor (see Appendix 8.1).

TPA screening criteria is not met.

8.1.2 STEP 2: LOW VMT AREA SCREENING

City Guidelines state that "residential and office projects located within a low VMT-generating area may be presumed to have a less than significant impact absent substantial evidence to the contrary."[3] Furthermore, OPR's Technical Advisory notes that "projects that locate in areas with low VMT and that incorporate similar features (i.e., density, mix of uses, transit accessibility), will tend to exhibit similarly low VMT."[4]

The City uses the SBCTA screening tool to determine low areas of VMT. The screening tool uses the sub-regional San Bernardino Transportation Analysis Model (SBTAM) to measure VMT performance within individual traffic analysis zones (TAZ's) within the region. The parcel containing the proposed Project was selected and the screening tool was run for the Origin/Destination (OD) VMT per service population measure of VMT. Based on the Screening Tool results, the Project resides within TAZ 53724202 and the Project's TAZ was shown to not be within a low VMT generating zone (see Appendix 8.1).

Low VMT Area screening criteria is not met.

8.1.3 STEP 3: LOW PROJECT TYPE SCREENING

Additionally, the City Guidelines identify that local serving essential services (e.g., Student housing projects on or adjacent to college campuses, community institutions, local serving community colleges that are consistent with the assumptions noted in the RTP/SCS, etc.) are presumed to have a less than significant impact absent substantial evidence to the contrary. The City's existing General Plan land use identifies the project site as designated WMXU-1 and in the Transitional District of the Form Based Code zoning district, therefore the project is consistent with the City's General Plan land use assumptions. The Project intends to develop a new campus located 3 miles south of Chaffey's existing Fontan campus. Student enrollment data[5] provided to Urban Crossroads identify that the student population is comprised of local population traveling a median distance of 4.88 miles to the campus (see Appendix 8.2). Chaffey College has several local campuses within the San Bernardino County to locally serve students. Comparatively,

[3] City Guidelines; Page 19
[4] Technical Advisory; Page 12
[5] Chaffey College Students Home Residence and Distance from Chaffey College Campuses (June 2021); Page 4, Table 2

California State University San Bernardino serves students at a regional level, based on its location and proximity to other State Colleges (i.e., California State University Fullerton). Therefore, the Project is local serving and is presumed to have a less than significant impact to VMT.

Low Project Type screening threshold is met.

8.1.4 STEP 4: PROJECT NET DAILY TRIPS LESS THAN 500 ADT SCREENING

Projects that generate fewer than 500 average daily trips (ADT) (stated in actual vehicles) are deemed to not cause a substantial increase in the total citywide or regional VMT and are therefore presumed to have a less than significant impact on VMT. Substantial evidence in support this daily trip threshold is documented in the City Guidelines.[6] Trip generation rates and a summary of daily vehicle trips for the Project are presented in Table 4-1 of this TS. The trip generation rates used for this analysis are based on the trip generation statistics published in the Institute of Transportation Engineer (ITE) Trip Generation Manual (11th Edition, 2021). (2) The Project anticipated to generate vehicle trip-ends per day which would exceed the City's screening threshold of 500 ADT.

Project net daily trips less than 500 ADT screening criteria is not met.

8.2 CONCLUSION

In summary, the Project meets the Project Type screening criteria based on the Project's student population comprising of students traveling within the local area. Therefore, the project presumed to result in a less than significant VMT impact; no further VMT analysis required.

[6] City Guidelines; Appendix B.

This Page Intentionally Left Blank

9 REFERENCES

1. **City of Fontana Public Works Department.** *Traffic Impact Analysis (TIA) Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment.* Fontana : s.n., October 21, 2020.
2. **Institute of Transportation Engineers.** *Trip Generation Manual.* 11th Edition. 2021.
3. **San Bernardino Associated Governments.** *Congestion Management Program for County of San Bernardino.* County of San Bernardino : s.n., Updated June 2016.
4. **Transportation Research Board.** *Highway Capacity Manual (HCM).* 6th Edition. s.l. : National Academy of Sciences, 2016.
5. **Office of Planning and Research.** *Technical Advisory on Evaluating Transportation Impacts in CEQA.* State of California : s.n., December 2018.

This Page Intentionally Left Blank