North Fontana Industrial Complex (Acacia) (MCN No. 21-099, DRP No. 21-039, TPM NO. 21-022, GPA No. 21-005 & ZCA No. 21-007)

TRAFFIC STUDY

CITY OF FONTANA

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
CA MUTCD	California Manual on Uniform Traffic Control Devices
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Program
CTR	Commute Trip Reduction
DIF	Development Impact Fee
EAP	Existing Ambient Growth plus Project
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
NCHRP	National Cooperative Highway Research Program
OD	Origination-Destination
OPR	Office of Planning and Research
OYC	Opening Year Cumulative
PCE	Passenger Car Equivalents
PHF	Peak Hour Factor
Project	North Fontana Industrial Complex (Acacia)
SB 743	Senate Bill 743
SBTAM	San Bernardino Transportation Analysis Model
SHS	State Highway System
TA	Traffic Analysis
TAZ	Traffic Analysis Zone
TDM	Transportation Demand Management
TPA	Transit Priority Area
V/C	Volume to Capacity
VMT	Vehicle Miles Traveled

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1 INTRODUCTION

This report presents the results of the Traffic Analysis (TA) for the proposed North Fontana Industrial Complex (Acacia) development ("Project"), which is located east of Sierra Avenue and south of Duncan Canyon Road in the City of Fontana, as shown on Exhibit 1-1. Exhibit 1-1 depicts the location of the proposed Project in relation to the existing roadway network and the study area intersections.

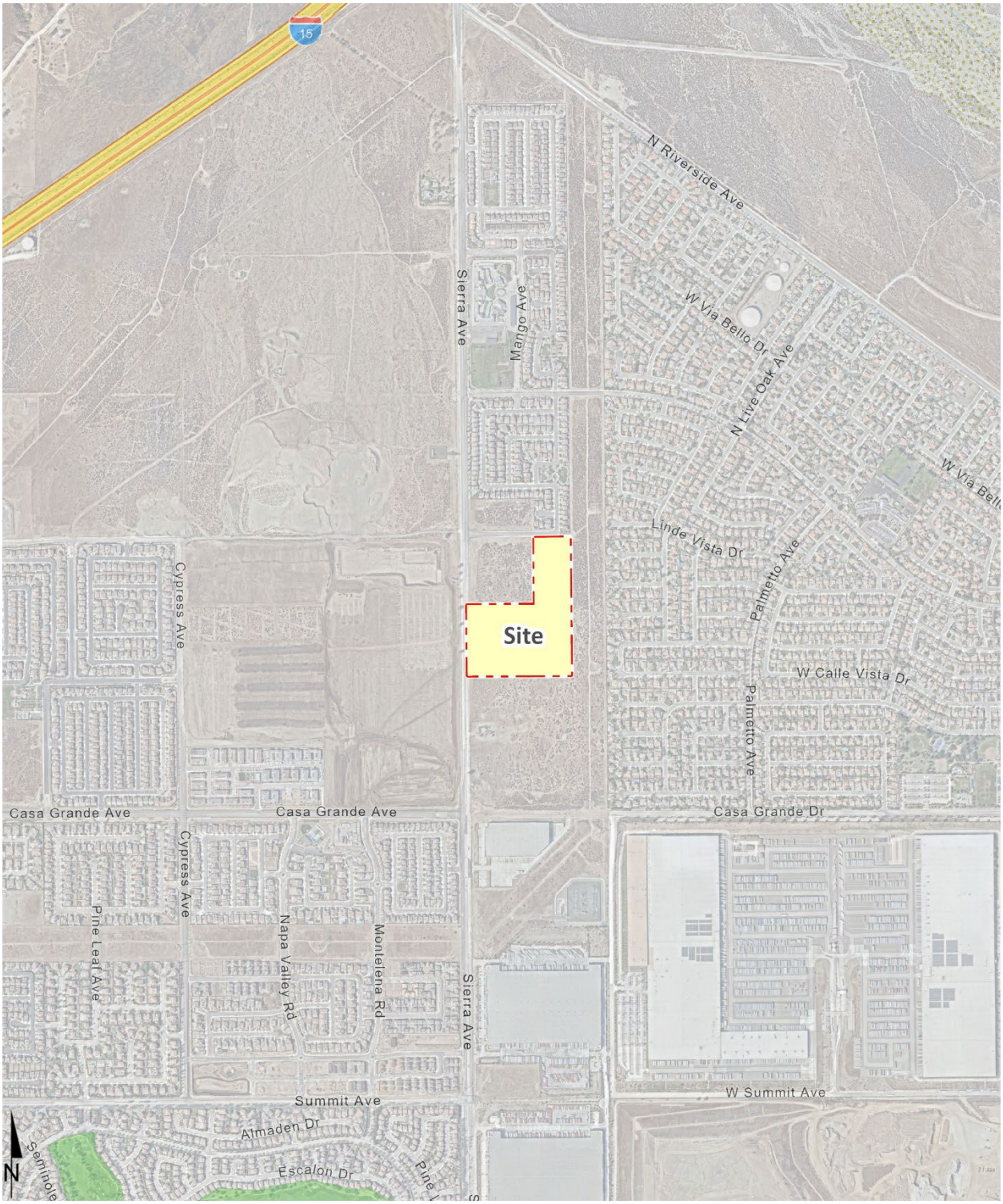
The purpose of this TA is to evaluate the potential deficiencies related to traffic, identify circulation system deficiencies that may result from the development of the proposed Project, and to recommend improvements to resolve identified deficiencies in order to achieve acceptable operational conditions at study area intersections and ensure consistency with the City's General Plan. This TA 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 TA, which has been reviewed and approved by City of Fontana staff.

1.1 SUMMARY OF FINDINGS

1.1.1 VEHICLE MILES TRAVELED

Changes to California Environmental Quality Act (CEQA) Guidelines were adopted in December 2018, which require all lead agencies to adopt Vehicle Miles Traveled (VMT) as a replacement for automobile delay-based level of service (LOS) as the new measure for identifying transportation impacts for land use projects. This statewide mandate went into effect July 1, 2020. To aid in the transition from LOS to VMT, the Governor's Office of Planning and Research (OPR) published its Technical Advisory on Evaluating Transportation Impacts in CEQA (**Technical Advisory**). (2) Based on OPR's Technical Advisory specific procedures for complying with the new CEQA requirements for VMT analysis the City of Fontana adopted Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment (**City Guidelines**), which documents the City's VMT analysis methodology and approved impact thresholds. Consistent with City Guidelines a comprehensive VMT analysis was performed and the Project was evaluated against screening criteria as outlined in the City Guidelines. The Project was not found to meet any available screening criteria, and a model based VMT analysis was performed. The Project's VMT analysis found the Project to exceed the City's VMT per employee threshold by 35.42% in baseline conditions and 13.34% in cumulative conditions. The Project is determined to have a potentially significant transportation impact. Since the future tenants are unknown at this time, implementation of the feasible TDM measures discussed above cannot be guaranteed to reduce the Project generated VMT per employee; the Project's VMT impact is considered significant and unavoidable.

EXHIBIT 1-1: LOCATION MAP



1.1.2 LEVEL OF SERVICE (LOS) ANALYSIS

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

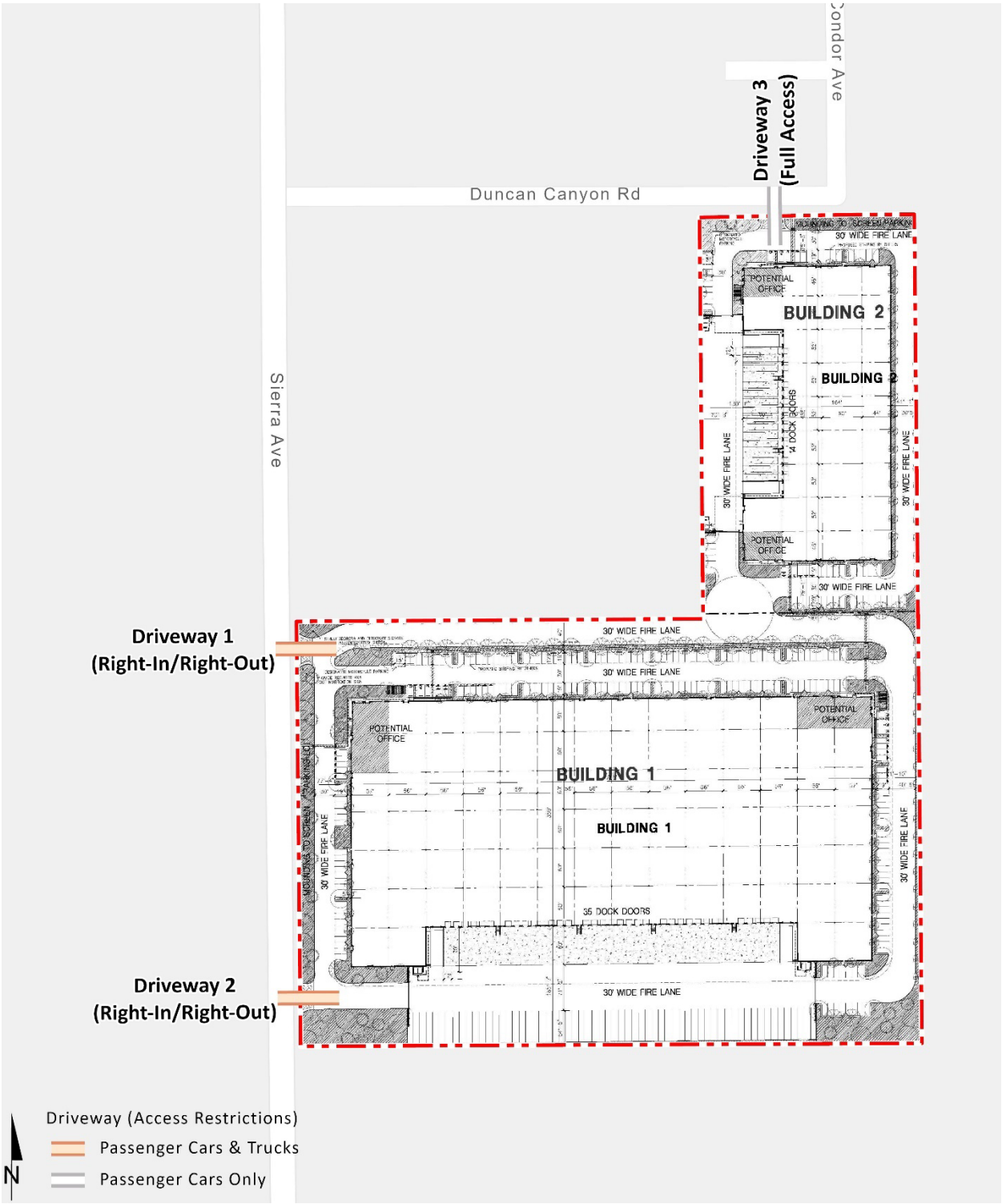
- Project to construct both driveways on Sierra Avenue with stop controls for egress traffic from the Project with free flow traffic along Sierra Avenue. These driveways will be restricted to right-in/right-out access only.
- Project to construct driveway on Duncan Canyon Road with stop controls for egress traffic from the Project with free flow traffic along Duncan Canyon Road. This driveway is proposed to have full access (no turn restrictions).
- Project to construct Sierra Avenue at its ultimate half-width (east side) as a Major Highway (132-foot right-of-way) from the southern Project boundary to the northern Project boundary consistent with the City's standards. This includes the construction of a raised median which will be used to physically prohibit left turns into and out of the Project at the two driveways proposed on Sierra Avenue.

Additional details and intersection lane geometrics are provided in Section 1.6 *Recommendations* of this report. The proposed Project is not anticipated to require the construction of any off-site improvements, however, there are improvement needs identified at off-site intersections for future cumulative traffic study scenarios. As such, the Project Applicant's responsibility for the Project's contributions towards deficient off-site intersections is fulfilled through payment of fair share and/or payment into pre-existing fee programs (if applicable) that would be assigned to the future construction of the identified recommended improvements. The Project Applicant would be required to pay requisite fees and/or fair share contributions consistent with the City's requirements (see Section 8 *Local and Regional Funding Mechanisms*).

1.2 PROJECT OVERVIEW

The proposed Project includes the development of two buildings: a 296,297 square foot warehouse building (Building 1) and a smaller 88,746 square foot warehouse building (Building 2). It is anticipated to have an Opening Year of 2024. The proposed preliminary site plan for the proposed Project is shown on Exhibit 1-2. As indicated on Exhibit 1-2, access to the Project site will be provided to two limited access driveways via Sierra Avenue and to one full access driveway via Duncan Canyon Road. Regional access to the Project site is available from the I-15 Freeway via Sierra Avenue and the I-210 Freeway via Sierra Avenue to the south.

EXHIBIT 1-2: PRELIMINARY SITE PLAN



In order to develop the traffic characteristics of the proposed project, trip-generation statistics published in the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition, 2021) for the following land uses has been utilized (3):

- Warehousing (ITE Land Use Code 150)
- High-Cube Fulfillment Center (Non-Sort) (ITE Land Use Code 155)
- High-Cube Cold Storage Warehouse (ITE Land Use Code 157)

The Project is anticipated to generate a net total of 918 passenger car equivalent (PCE) two-way trips per day with 69 PCE AM peak hour trips and 75 PCE PM peak hour trips. The assumptions and methods used to estimate the Project's trip generation characteristics are discussed in greater detail in Section 4.1 *Project Trip Generation* of this report.

1.3 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)
- Existing plus Ambient Growth plus Project (EAP) (Acacia Site Only)
- Existing plus Ambient Growth plus Project (EAP) (Acacia + Shea Sites)
- Opening Year Cumulative (2024) Without Project
- Opening Year Cumulative (2024) With Project

It should be noted, per the City of Fontana traffic study guidelines, projects that are anticipated to generate between 50 and 100 two-way peak hour trips will only require an opening year assessment. As such, no horizon year buildout traffic scenarios were included in the traffic study since the proposed Project is not anticipated to generate more than 100 peak hour trips.

1.3.1 EXISTING (2021) CONDITIONS

Information for Existing (2021) traffic conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared.

1.3.2 EAP CONDITIONS

The Existing plus Ambient Growth plus Project (EAP) traffic conditions analysis determines traffic deficiencies that would occur on the existing roadway system with the addition of Project traffic. To account for background traffic growth, an ambient growth factor from Existing conditions of 6.12% is included for EAP (2024) traffic conditions (2 percent per year compounded annually over 3 years). The ambient growth is consistent with the growth used by other projects in the area within the City of Fontana. For the purposes of the EAP analysis scenario, the analysis has been performed assuming the proposed Project only and also with the near-by Sierra Industrial Facility project proposed by Shea as Master Case No. 21-090, Design Review Project No. 21-034, Tentative Parcel Map No. 21-018, General Plan Amendment No. 21-004, and Zone Change Application No. 21.006.

1.3.3 Opening Year Cumulative (2024) Conditions

The Opening Year Cumulative (2024) traffic conditions analysis determines the potential near-term cumulative circulation system deficiencies. To account for background traffic growth, traffic associated with other known cumulative development projects in conjunction with an ambient growth from Existing (2021) traffic conditions of 6.12% is included for Opening Year Cumulative (2024) traffic conditions (2 percent per year compounded annually over 3 years). This analysis scenario includes a list of other cumulative development projects which was compiled from information provided by the City of Fontana and is consistent with other recent studies in the study area.

1.4 Study Area

To ensure that this TA 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 of Fontana is included in Appendix 1.1 of this TA.

1.4.1 Intersections

The 8 study area intersections shown on Exhibit 1-3 and listed in Table 1-1 were selected for evaluation in this TA based on consultation with 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 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.

EXHIBIT 1-3: STUDY AREA

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction	CMP?
1	Sierra Av. & I-15 SB Ramps	City of Fontana, Caltrans	No
2	Sierra Av. & I-15 NB Ramps	City of Fontana, Caltrans	No
3	Sierra Av. & Riverside Av.	City of Fontana	No
4	Sierra Av. & Terra Vista Dr.	City of Fontana	No
5	Sierra Av. & Duncan Canyon Rd.	City of Fontana	No
6	Sierra Av. & Driveway 1	City of Fontana	No
7	Sierra Av. & Driveway 2	City of Fontana	No
8	Driveway 3 & Duncan Canyon Rd.	City of Fontana	No

1.4.2 ROADWAY SEGMENTS

At the request of City staff, daily volume-to-capacity (v/c) has been evaluated for the following roadway segment listed in Table 1-2:

TABLE 1-2: ROADWAY SEGMENT ANALYSIS LOCATIONS

ID	Roadway Segments
1	Sierra Avenue, Riverside Av. to Terra Vista Dr.

1.5 DEFICIENCIES

This section provides a summary of deficiencies by analysis scenario. Section 2 *Methodologies* provides information on the methodologies used in the analysis and Section 5 *EAP (2024) Traffic Conditions* and Section 6 *Opening Year Cumulative (2024) Traffic Conditions.* A summary of LOS results for all analysis scenarios is presented on Table 1-3.

TABLE 1-3: SUMMARY OF INTERSECTION LEVEL OF SERVICE BY ANALYSIS SCENARIO

#	Intersection	Existing (2021)		EAP (Acacia Site Only)		EAP (Acacia + Shea Sites)		OYC (2024) Without Project		OYC (2024) With Project	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Sierra Av. & I-15 SB Ramps	F	A - D	F	A - D	F	A - D	F	A - D	F	E
2	Sierra Av. & I-15 NB Ramps	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D
3	Sierra Av. & Riverside Av.	F	F	F	F	F	F	F	F	F	F
4	Sierra Av. & Terra Vista Dr.	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D
5	Sierra Av. & Duncan Canyon Rd.	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D
5	Sierra Av. & Driveway 1	N/A	N/A	N/A	N/A	A - D	A - D	N/A	N/A	A - D	A - D
5	Sierra Av. & Driveway 2	N/A	N/A	N/A	N/A	A - D	A - D	N/A	N/A	A - D	A - D
6	Driveway 3 & Duncan Canyon Rd.	N/A	N/A	N/A	N/A	A - D	A - D	N/A	N/A	A - D	A - D

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

1.5.1 EXISTING (2021) CONDITIONS

Intersections

The study area intersections are currently operating at an acceptable LOS during the peak hours, with the exception of the following intersections:

- Sierra Avenue & I-15 SB Ramps (#1) – LOS F AM peak hour only
- Sierra Avenue & Riverside Avenue (#3) – LOS F AM and PM peak hours

Roadway Segments

The study area roadway segment is currently operating at an acceptable LOS based on the City's planning level daily roadway capacity thresholds.

Off-Ramp Queues

There are no movements that are currently experiencing queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows.

1.5.2 EAP CONDITIONS

Intersections

Consistent with Existing (2021) traffic conditions, the following study area intersections are anticipated to operate at an unacceptable LOS during the peak hours under EAP (Acacia site only and Acacia + Shea sites) traffic conditions:

- Sierra Avenue & I-15 SB Ramps (#1) – LOS F AM peak hour only
- Sierra Avenue & Riverside Avenue (#3) – LOS F AM and PM peak hours

Roadway Segments

Consistent with Existing (2021) traffic conditions, the study area roadway segment is anticipated to continue to operate at an acceptable LOS based on the City's planning level daily roadway capacity thresholds EAP (Acacia site only and Acacia + Shea sites) traffic conditions.

Off-Ramp Queues

Consistent with Existing (2021) traffic conditions, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows with the addition of Project traffic (Acacia site only and Acacia + Shea sites).

1.5.3 OPENING YEAR CUMULATIVE (2024) CONDITIONS

Intersections

The following study area intersections are anticipated to operate at an unacceptable LOS during the peak hours under Opening Year Cumulative (2024) Without Project traffic conditions:

- Sierra Avenue & I-15 SB Ramps (#1) – LOS F AM peak hour only
- Sierra Avenue & Riverside Avenue (#3) – LOS F AM and PM peak hours

The following additional study area intersection is anticipated to operate at an unacceptable LOS with the addition of Project traffic, in addition to the intersections previously identified under Opening Year Cumulative (2024) Without Project traffic conditions:

- Sierra Avenue & I-15 SB Ramps (#1) – LOS E PM peak hour (same location listed above for Without Project conditions but has a new peak hour deficiency)

Roadway Segments

The following study area roadway segment is anticipated to operate at an unacceptable LOS based on the City's planning level daily roadway capacity thresholds for Opening Year Cumulative (2024) Without Project and With Project traffic conditions:

- Terra Vista Drive to Riverside Avenue (#1) – LOS F

Off-Ramp Queues

There are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows under Opening Year Cumulative (2024) Without Project and With Project traffic conditions.

1.6 RECOMMENDATIONS

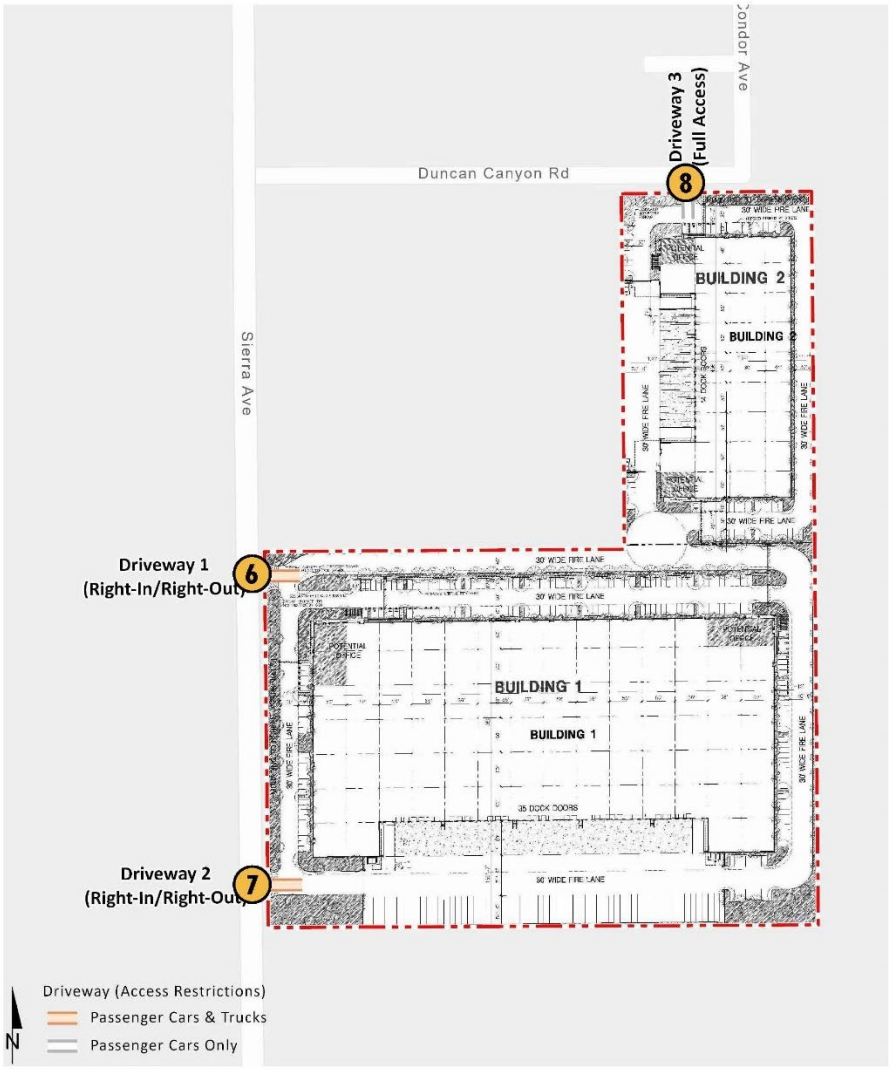
1.6.1 SITE ADJACENT AND SITE ACCESS RECOMMENDATIONS

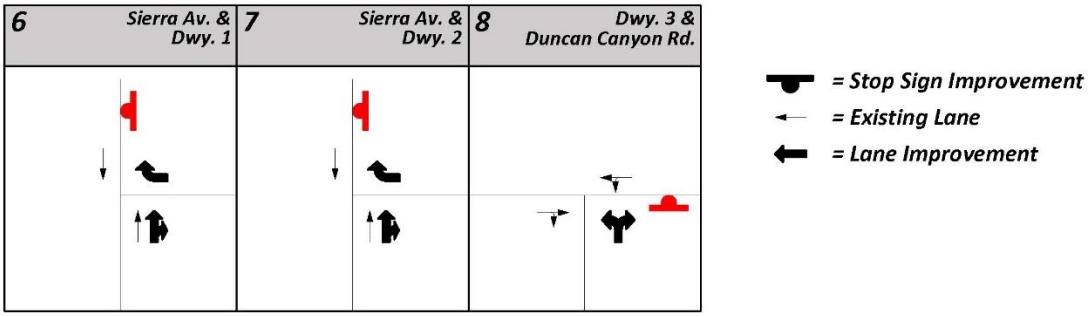
The following recommendations are based on the minimum improvements needed to accommodate site access and maintain acceptable peak hour operations. The site adjacent recommendations are shown on Exhibits 1-4.

Recommendation 1 – Sierra Avenue & Driveway 1 (#6) – The following improvements are necessary to accommodate site access:

- Project to install a stop sign on the westbound approach and accommodate a northbound right turn lane. Driveway is to be restricted to right-in/right-out access only for passenger cars and trucks.
- Construct a 2nd northbound through lane along the Project's frontage.

EXHIBIT 1-4: SITE ADJACENT ROADWAY AND SITE ACCESS RECOMMENDATIONS





Recommendation 2 – ***Sierra Avenue & Driveway 2 (#7)*** – The following improvements are necessary to accommodate site access:

- Project to install a stop sign on the westbound approach and accommodate a northbound right turn lane. Driveway is to be restricted to right-in/right-out access only for passenger cars only.
- Construct a 2nd northbound through lane along the Project's frontage.

Recommendation 3 – ***Driveway 3 & Duncan Canyon Road (#8)*** – The following improvements are necessary to accommodate site access:

- Project to install a stop sign on the northbound approach and accommodate an eastbound right turn lane. Driveway is to accommodate full access (no turn restrictions) and will serve passenger cars only (no trucks on Duncan Canyon Road).

Recommendation 4 – ***Sierra Avenue*** – Sierra Avenue is a north-south oriented roadway located on the western boundary of the Project. Project to construct Sierra Avenue at its ultimate half-width (east side) as a Major Highway (132-foot right-of-way) from the southern Project boundary to the northern Project boundary consistent with the City's standards. This includes the construction of a raised median which will be used to physically prohibit left turns into and out of the Project at the two driveways proposed on Sierra Avenue.

1.6.2 QUEUING ANALYSIS

A queuing analysis has been performed for the Project driveways and the site adjacent intersection of Citrus Avenue and Duncan Canyon Road for Opening Year Cumulative (2024) With Project traffic conditions. The traffic modeling and signal timing optimization software package SimTraffic has been utilized to assess the queues. 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. These 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 up to 5 times, during the weekday AM and weekday PM peak hours, and has been seeded for 30-minute periods with 60-minute recording intervals. Queuing analysis worksheets for the weekday AM and PM peak hours are provided in Appendix 1.2 of this report.

1.6.3 OFF-SITE RECOMMENDATIONS

The recommended improvements needed to address the cumulative deficiencies identified under Existing (2021), EAP, and Opening Year Cumulative (2024) traffic conditions are shown in Table 1-4. For those improvements listed in Table 1-4 and not constructed as part of the Project, the Project Applicant's responsibility for the Project's contributions towards deficient intersections is fulfilled through payment of fair share that would be assigned to construction of the identified recommended improvements. The Project Applicant would be required to pay fair share fees consistent with the City's requirements (see Section 7 *Local and Regional Funding Mechanisms)*.

TABLE 1-4: SUMMARY OF IMPROVEMENTS BY ANALYSIS SCENARIO

#	Intersection Location	Jurisdiction	Existing (2021)	EAP (Acacia Site Only)	EAP (Acacia + Shea Sites)	OYC 2024 NP	OYC 2024 WP	Improvements in Fee Program?[1]	Project Responsibility[2]	Total Cost[3]	Fair Share %[4]	Estimated Fair Share Cost
1	Sierra Av. & I-15 SB Ramps	Fontana, Caltrans	Add 2nd NB Left-Turn lane	Same	Same	Same	Same	No	Fair Share	$2,309,184	3.8%	$86,783
3	Sierra Av. & Riverside Av.	Fontana	Add Traffic Signal	Same	Same	Same	Same	No	Fair Share	$600,000	5.1%	$30,585
									Total Costs for OYC (2024) With Project Improvements	**$2,909,184**		**$117,368**
									Total Project Fair Share Contribution to Fontana[5]			**$30,585**
									Total Project Fair Share Contribution to Caltrans[6]			**$86,783**

[1] Improvements included in the SBCTA Necus Study Fee program or the SSBCTA Measure I Funding

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

[3] Costs have been estimated using the data provided in Appendix G of the San Bernardino County CMP (2016 Update) for preliminary construction costs. Appendix G costs escalated by a factor of 1.71 to reflect 2021/2022 conditions, except for Traffic Signals.

[4] Program improvements constructed by project may be eligible for fee credit, at discretion of City. See Table 7-1 for fair share calculations.

[5] Total project fair share contribution consists of the improvements which are not already included in the City of Fontana's DIF for those intersections wholly or partially within the City of Fontana.

[6] Total project fair share contribution consists of the improvements which are not already included in a fee program for those intersections wholly or partially within Caltrans' jurisdiction.

1.7 VEHICLE MILES TRAVELED (VMT) ANALYSIS

Consistent with City Guidelines a comprehensive VMT analysis was performed, and the Project was evaluated against screening criteria as outlined in the City Guidelines. The Project was not found to meet any available screening criteria, and a model based VMT analysis was performed. The Project's VMT analysis found the Project to exceed the City's VMT per employee threshold by 35.42% in baseline conditions and 13.34% in cumulative conditions. The Project is determined to have a potentially significant transportation impact. Since the future tenants are unknown at this time, implementation of the feasible TDM measures discussed above cannot be guaranteed to reduce the Project generated VMT per employee; the Project's VMT impact is considered significant and unavoidable. Detailed 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's 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 Highway Capacity Manual (HCM) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. (4) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

The 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 10) analysis software package.

The traffic modeling and signal timing optimization software package Synchro (Version 10) is utilized to analyze signalized intersections within the study area. 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

A saturation flow rate of 1900 has been utilized for all study area intersections located within the City of Fontana. The peak hour traffic volumes are 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)

California Department of Transportation (Caltrans)

Per the California Department of Transportation (Caltrans) traffic study guidance, the traffic modeling and signal timing optimization software package Synchro (Version 10) has also been utilized to analyze signalized intersections under Caltrans' jurisdiction, which include interchange to arterial ramps (i.e., I-15 Freeway ramps at Beech Avenue and Duncan Canyon Road). (5) Signal timing for the freeway arterial-to-ramp intersections have been obtained from Caltrans District 8 and were utilized for the purposes of this analysis.

2.2.2 UNSIGNALIZED INTERSECTIONS

The City of Fontana requires the operations of unsignalized intersections be evaluated using the methodology described the HCM. (4) The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-2).

TABLE 2-2: UNSIGNALIZED INTERSECTION 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

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).

2.3 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by the Caltrans and other public agencies to quantitatively justify or ascertain the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TA uses the signal warrant criteria presented in the latest edition of the Caltrans California Manual on Uniform Traffic Control Devices *(CA MUTCD)*. (6)

The signal warrant criteria for Existing conditions are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. The Caltrans CA MUTCD indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. (6) Specifically, this TA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for existing study area intersections for all analysis scenarios. Warrant 3 is appropriate to use for this TA because it provides specialized warrant criteria for intersections with rural characteristics (e.g., located in communities with populations of less than 10,000 persons or with adjacent major streets operating above 40 miles per hour). For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection.

Traffic signal warrant analyses were performed for the following unsignalized study area intersection shown in Table 2-3:

TABLE 2-3: TRAFFIC SIGNAL WARRANT ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction
3	Sierra Av. & Riverside Av.	Fontana
5	Sierra Av. & Duncan Canyon Rd.	Fontana
8	Driveway 3 & Duncan Canyon Rd.	Fontana

The Existing conditions traffic signal warrant analysis is presented in the subsequent section, Section 3 *Area Conditions* of this report. The traffic signal warrant analyses for future conditions are presented in Section 5 *EAP (2024) Traffic Conditions* and Section 6 *Opening Year Cumulative (2024) Traffic Conditions* of this report.

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

2.4 ROADWAY SEGMENT CAPACITY ANALYSIS

Roadway segment operations have been evaluated using the daily roadway segment capacities for each type of roadway. The roadway segment capacities utilized for this analysis are based on the Fontana Forward General Plan Update 2015-2035 (June 8, 2018). (7)

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

2.5 FREEWAY OFF-RAMP QUEUING ANALYSIS

Consistent with Caltrans requirements, 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-15 Freeway at Sierra Avenue interchange. Specifically, the queuing analysis is utilized to identify any potential queuing and "spill back" onto the I-15 Freeway mainline from the off-ramps.

The traffic progression analysis tool and HCM intersection analysis program, Synchro, has been used to assess the potential 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. The 95th percentile queue is derived from the average queue plus 1.65 standard deviations. The 95th percentile queue is not necessarily ever observed it is simply based on statistical calculations.

2.6 MINIMUM LEVEL OF SERVICE (LOS)

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

2.6.1 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)

2.6.2 CALTRANS

Senate Bill 743 (SB 743), approved in 2013, endeavors to change the way transportation impacts will be determined according to the California Environmental Quality Act (CEQA). The Office of Planning and Research (OPR) has recommended the use of vehicle miles traveled (VMT) as the replacement for automobile delay-based LOS. Caltrans acknowledges automobile delay will no longer be considered a CEQA impact for development projects and will use VMT as the metric for determining impacts on the State Highway System (SHS). However, LOS D has been utilized as the target LOS for Caltrans facilities, consistent with other recent studies in the City of Fontana.

2.7 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 2-4. The thresholds for LOS A, B, and C do not apply to projects consistent with the General Plan.

TABLE 2-4: 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	2.0 Seconds
F	1.0 Second

Source: Fontana Traffic Study Guidelines, October 2020

[1] Increase in delay

Cumulative traffic impacts are deficiencies that are not directly caused by the Project but occur as a result of regional growth combined with that or other nearby cumulative development projects. Cumulative impacts utilize the same thresholds of significant impacts as shown on Table 2-4. The Project's contribution to a particular cumulative transportation deficiency is deemed cumulatively considerable if the Project adds significant traffic to the forecasted deficiency (Per Table 2-4). A Project's contribution to a cumulatively considerable impact can be reduced to less than significant if the Project is required to implement or fund its fair share of improvements designed to alleviate the potential cumulative impact. If full funding of future cumulative improvements is not reasonably assured, a temporary unmitigated cumulative impact may occur until the needed improvement is fully funded and constructed.

2.8 PROJECT FAIR SHARE CALCULATION METHODOLOGY

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

Project Fair Share % = Project AM/PM Traffic / (OYC 2024 With Project AM/PM Total Traffic – Existing AM/PM Traffic)

The project fair share percentage has been calculated for both the AM peak hour and PM peak hour and the highest of the two has been selected. The Project fair share contribution calculations are presented in Section 7 *Local and Regional Funding Mechanisms* of this TA. The cost of implementing the improvements shown on Table 1-3 have been estimated based on the preliminary construction cost estimates found in Appendix G of the San Bernardino County CMP in conjunction with a total cost escalation factor of 1.71 to more closely approximate current (2021) costs. These cost estimates have been utilized in conjunction with the Project fair share percentages to determine the Project's fair share cost of the recommended improvements (see Table 7-1). These estimates are a rough order of magnitude only as they are intended only for discussion purposes and do not imply any legal responsibility or formula for contributions or physical improvements.

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, traffic signal warrant, roadway segment, and off-ramp queuing analyses.

3.1 EXISTING CIRCULATION NETWORK

Pursuant to the scoping agreement with City of Fontana staff (Appendix 1.1), the study area includes a total of 8 existing and future intersections as shown previously on Exhibit 1-2. Exhibit 3-1 illustrates the study area intersections located near the proposed Project and identifies the number of through traffic lanes for existing roadways and intersection traffic controls.

3.2 GENERAL PLAN CIRCULATION ELEMENTS

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 a Major Highways:

- Sierra Avenue
- Riverside 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 roadway within the City of Fontana is classified as a Primary Highways:

- Sierra Avenue, north of the I-15 northbound ramps

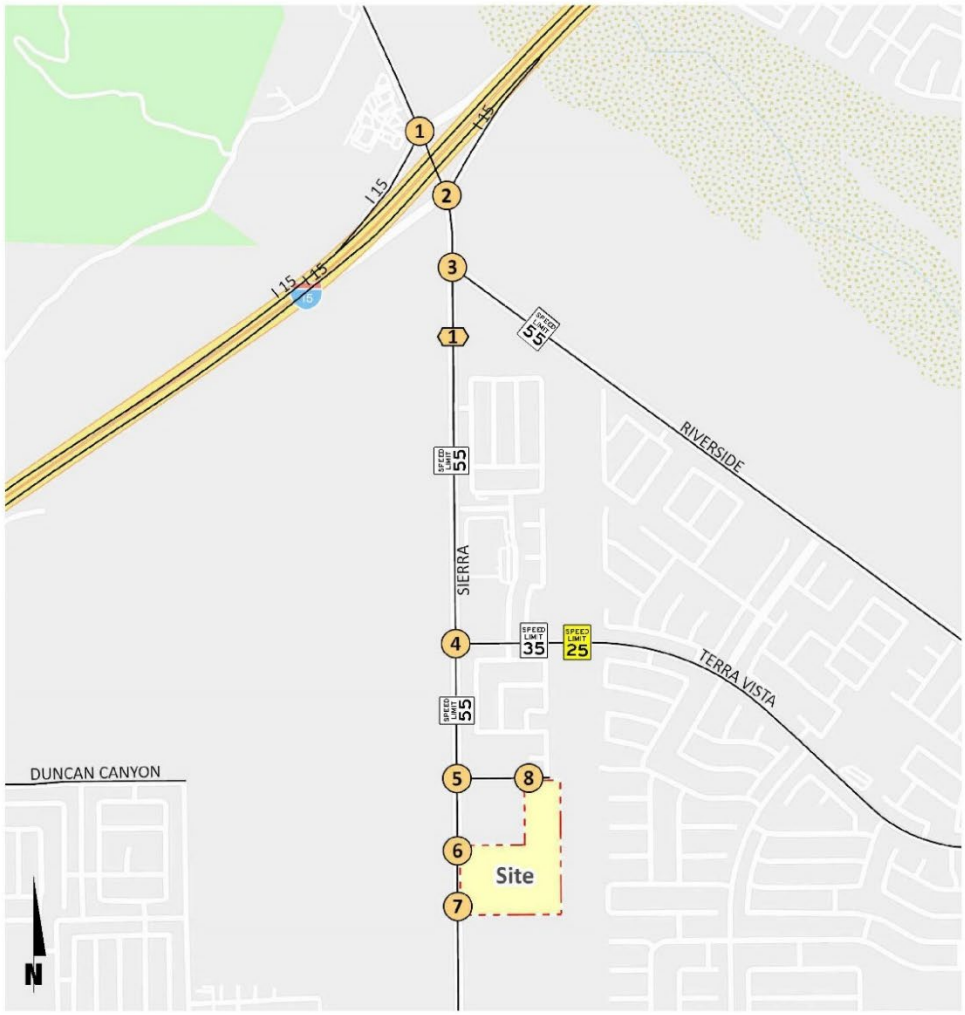
Collector Streets are two-lane streets, providing one lane in each direction. The following study area roadway within the study area is classified as a Collector Street:

- Duncan Canyon Road, east of Sierra Avenue

3.3 BICYCLE & PEDESTRIAN FACILITIES

The City of Fontana bike facilities are shown on Exhibit 3-3. Sierra Avenue is a proposed Class II bike facility (striped, on-street bike lanes). Existing pedestrian facilities are shown on Exhibit 3-4. As shown on Exhibit 3-4, there are limited pedestrian facilities along Sierra Avenue.

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



1 Sierra Av. & I-15 SB Ramps	2 Sierra Av. & I-15 NB Ramps	3 Sierra Av. & Riverside Av.	4 Sierra Av. & Terra Vista Dr.	5 Sierra Av. & Duncan Canyon Rd.
4D / 4D	4D / 4D	4D / S / 2U / 2U	3D / 2D / 3D	2U / 2U / Dirt Road / 3D
6 Sierra Av. & Dwy. 1	**7 Sierra Av. & Dwy. 2**	**8 Dwy. 3 & Duncan Canyon Rd.**		
Future Intersection	Future Intersection	Future Intersection		

= Traffic Signal
S = All Way Stop
= Stop Sign
4 = Number of Lanes
D = Divided
U = Undivided
= Speed Limit (MPH)
= School Speed Limit (MPH)

EXHIBIT 3-2: CITY OF FONTANA HIERARCHY OF STREETS

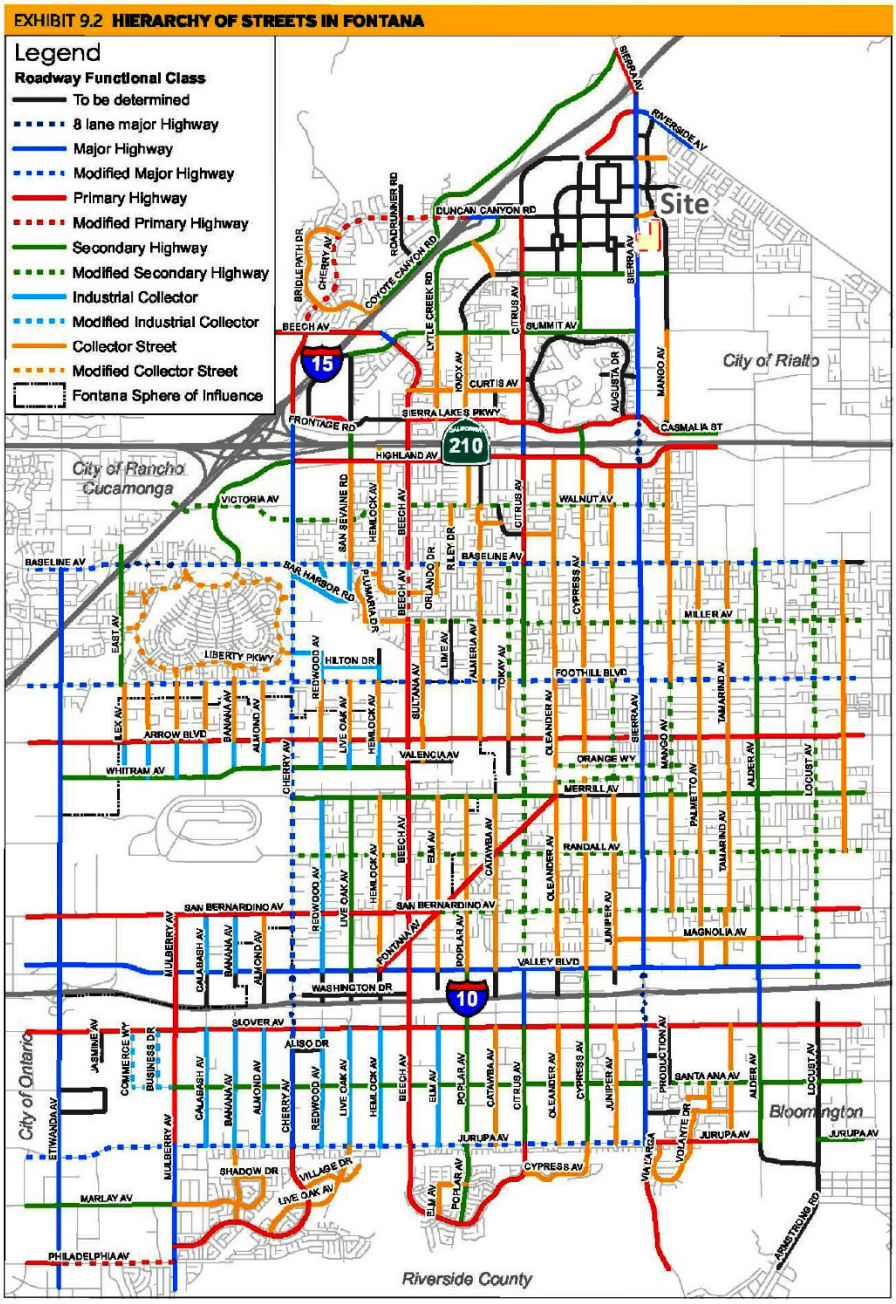
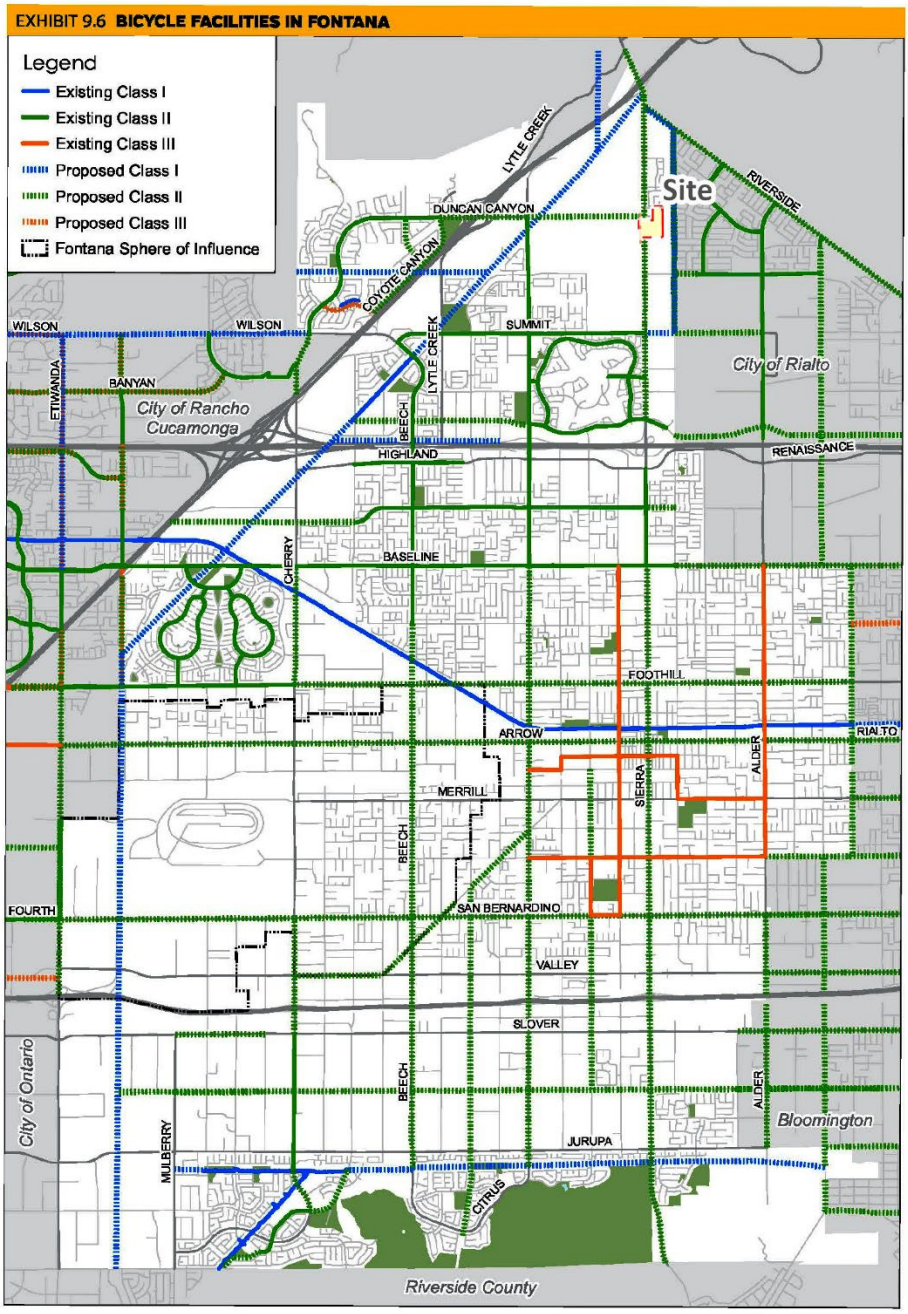


EXHIBIT 3-3: CITY OF FONTANA BICYCLE FACILITIES



Bicycle Facilities
March, 2017
Data sources: City of Fontana, 2015; SANBAG NMTP, 2014

Fontana Forward

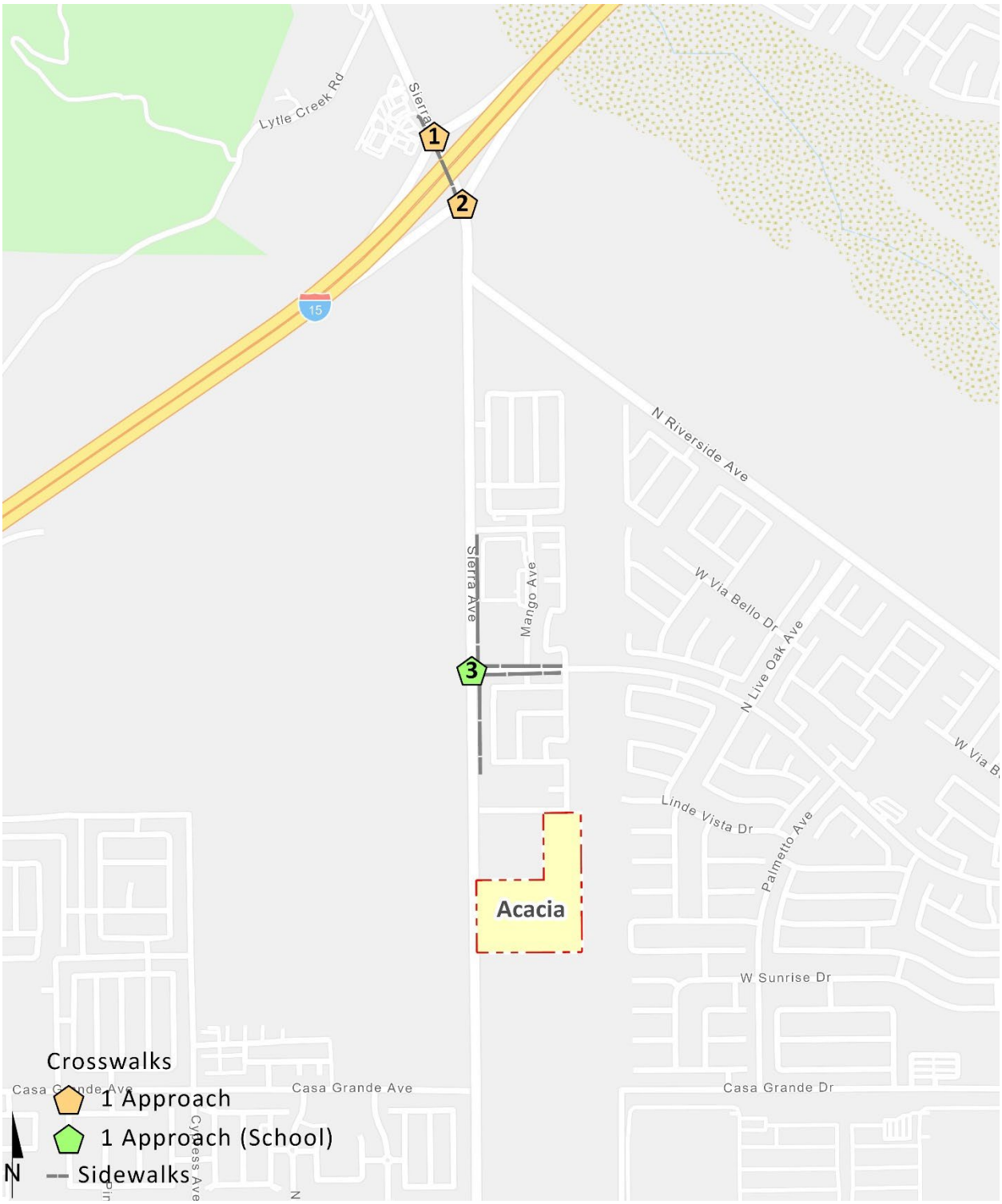
0 2,500 5,000 10,000
Scale 1:75,000 Feet

Site Boundary

9.14 Fontana General Plan
Approved and Adopted by City Council November 13, 2018

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

EXHIBIT 3-4: EXISTING PEDESTRIAN FACILITIES



3.4 TRANSIT SERVICE

The study area is currently served by Omnitrans Transit Agency with bus services along parts of Riverside Avenue and Terra Vista Drive. Route 22 is the closest route that provides service along Riverside Avenue to Live Oak Avenue, however, there are currently no transit routes that provide service along Sierra Avenue that could potentially serve the Project site in the future. The transit services are illustrated 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.

3.4 TRUCK ROUTES

The City of Fontana designated truck route map is shown on Exhibit 3-6. Sierra Avenue is identified as a designated truck route within the City. These designated truck route maps, in conjunction with direction from City staff, have been utilized to route truck traffic to and from the Project and future cumulative development projects throughout the study area.

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 2021. 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 raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1. The traffic counts include the following vehicle classifications: Passenger Cars, 2-Axle Trucks, 3-Axle Trucks, and 4 or More Axle Trucks. To represent the effects large trucks, buses and recreational vehicles have on traffic flow; all trucks were converted into PCE. 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 much longer than for passenger cars and varies depending on the type of vehicle and number of axles. For the purpose of this analysis, a PCE factor of 2.0 has been applied to 2-axle trucks, 2.5 for 3-axle trucks, and 3.0 for 4+-axle trucks to estimate each turning movement. These factors are consistent with the values recommended for use in the City's Traffic Study Guidelines.

24-hour tube counts were collected at two locations; first one was on Sierra Avenue south of Riverside Avenue; second one was on Sierra Avenue south of Duncan Canyon Road. Where actual 24-hour tube count data was not available, Existing ADT volumes were based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg (see Exhibit 3-7):

Weekday PM Peak Hour (Approach Volume + Exit Volume) x 11.36 = Leg Volume

EXHIBIT 3-5: EXISTING TRANSIT ROUTES

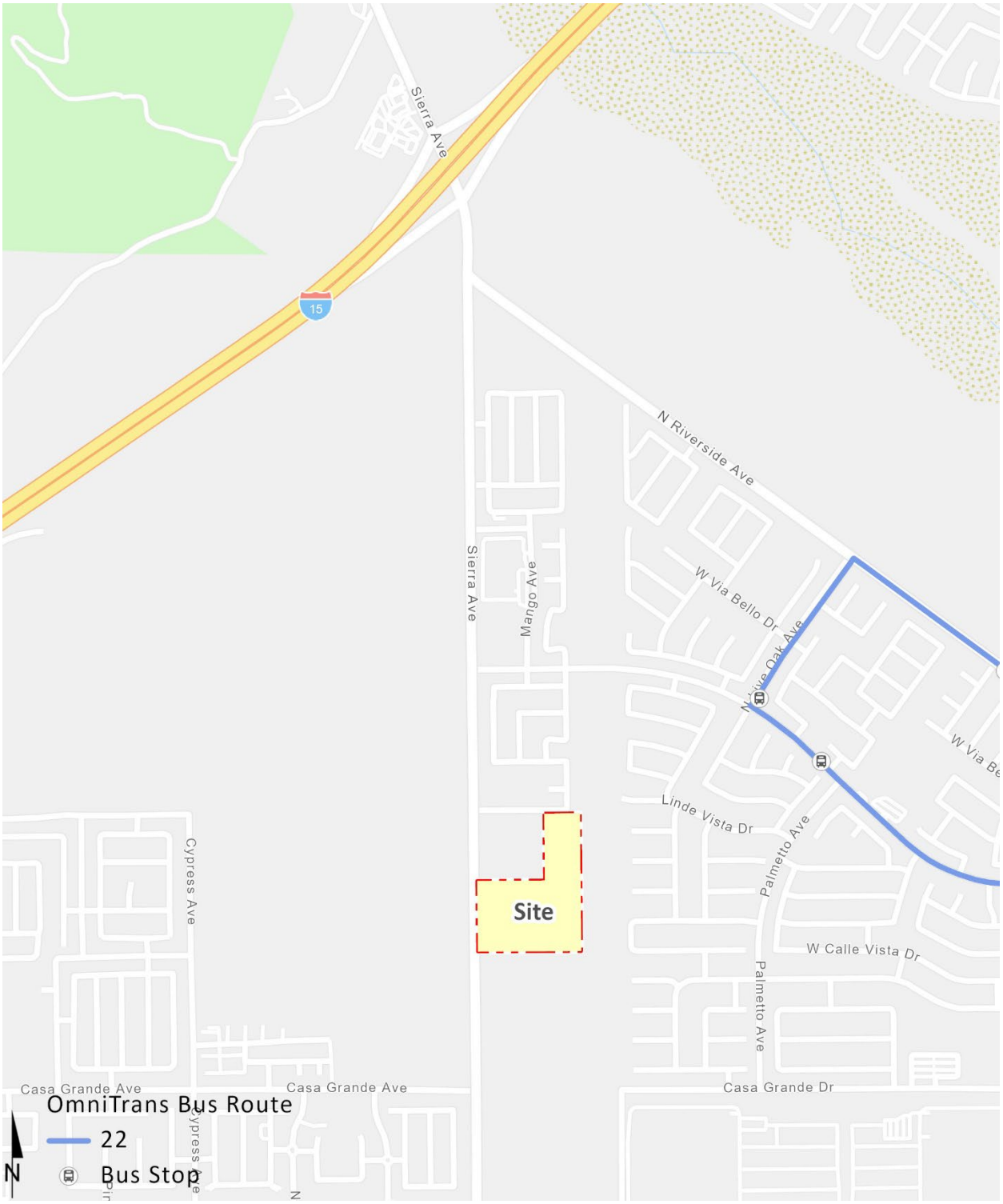


EXHIBIT 3-6: EXISTING TRUCK ROUTES

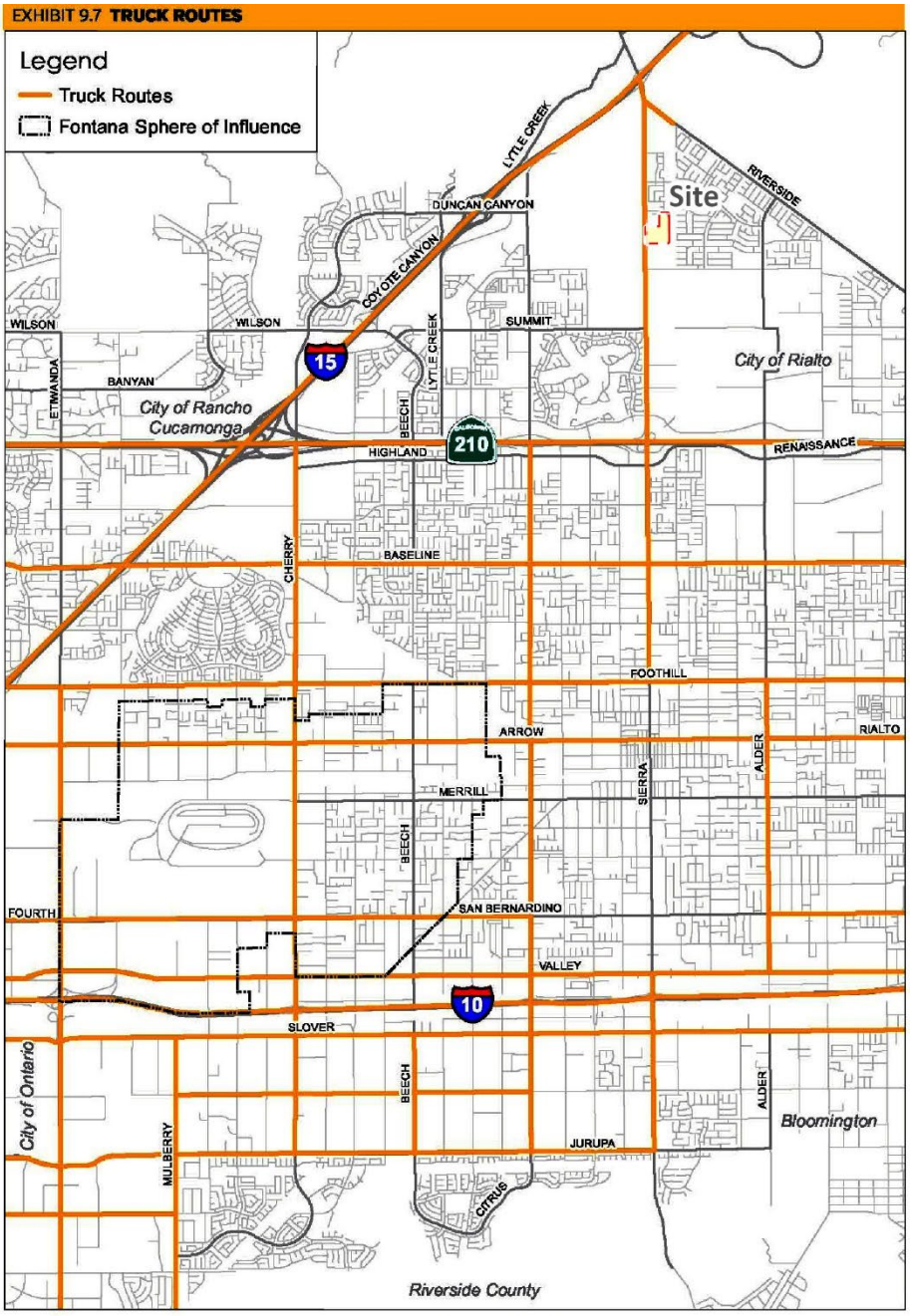
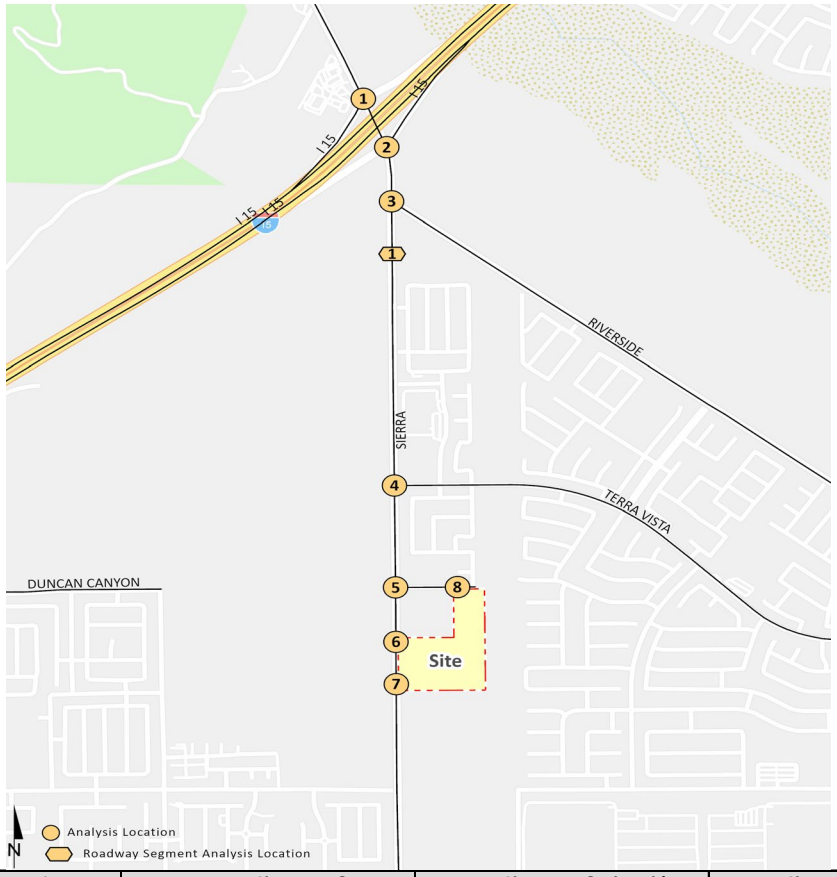


EXHIBIT 3-7: EXISTING (2021) TRAFFIC VOLUMES



1 Sierra Av. & I-15 SB Ramps	2 Sierra Av. & I-15 NB Ramps	3 Sierra Av. & Riverside Av.	4 Sierra Av. & Terra Vista Dr.
25,450	27,600	25,250	12,450
↲ 807(331)	↓ 806(679)	↓ 534(467)	↓ 530(311)
↓ 382(348)	↳ 70(95)	↳ 434(518)	↳ 35(117)
6,150	5,550	13,400	8,050
↱ 100(91)		↱ 565(573)	↱ 147(108)
← 1(2)			
↰ 494(426)		↰ 41(17)	↰ 306(197)
6,050	12,850	13,550	15,200
↰ 243(179)	215(778) ↳	→ 326(581)	→ 246(517)
→ 464(1383)	3(3) →	↱ 51(28)	↱ 145(260)
	162(306) ↲		
	→ 492(784)		
	↱ 399(370)		
27,600	25,250		15,200

5 Sierra Av. & Duncan Canyon Rd.	6 Sierra Av. & Driveway 1	7 Sierra Av. & Driveway 2	8 Driveway 3 & Duncan Canyon Rd.
15,200	15,550	15,550	450
↓ 835(506)	↓ 848(516)	↓ 848(516)	
↳ 1(2)			
450			450
↱ 3(1)			← 16(11)
↰ 13(10)			
15,750	15,550	15,550	450
→ 388(776)	→ 402(799)	→ 402(799)	15(25) →
↱ 14(23)			

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

Average Daily Trips

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 8.81 percent. As such, the above equation utilizing a factor of 11.36 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 8.81 percent (i.e., 1/0.0881 = 11.36) 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 are shown on Exhibit 3-7. Note volumes shown are in actual vehicles. The PCE volumes used for the peak hour operations analyses can be found in the applicable appendix with the intersection operations analysis worksheets.

3.6 EXISTING (2021) INTERSECTION OPERATIONS ANALYSIS

Signal timing for the Sierra Avenue & I-15 Freeway Ramps and Sierra Avenue and Terra Vista Drive intersection have been obtained from Caltrans and the City of Fontana, respectively, to reflect the existing signal timing. It should be noted that for the purposes of this TS, no optimization of signal timing has been performed for the existing and future analysis scenarios unless noted otherwise (as recommended improvements). 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 study area intersections are currently operating at an acceptable LOS during the peak hours, with the exception of the following intersections:

- Sierra Avenue & I-15 Southbound Ramps (#1) – LOS F AM peak hour only
- Sierra Avenue & Riverside Avenue (#3) – LOS F AM and PM peak hours

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-15 SB Ramps	TS	**101.8**	29.8	**F**	C
2	Sierra Av. & I-15 NB Ramps	TS	10.5	27.9	B	C
3	Sierra Av. & Riverside Av.	AWS	**114.9**	**194.8**	**F**	**F**
4	Sierra Av. & Terra Vista Dr.	TS	8.4	5.5	A	A
5	Sierra Av. & Duncan Canyon Rd.	CSS	18.3	17.4	C	C
6	Sierra Av. & Driveway 1	CSS	Future Intersection			
7	Sierra Av. & Driveway 2	CSS	Future Intersection			
8	Driveway 3 & Duncan Canyon Rd.	CSS	Future Intersection			

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; AWS = All Way Stop

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

3.7 EXISTING (2021) TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for Existing traffic conditions are based on existing peak hour intersection turning volumes. The following unsignalized study area intersection currently warrants a traffic signal for Existing (2021) traffic conditions (see Appendix 3.3):

- Sierra Avenue & Riverside Avenue (#3)

3.8 EXISTING (2021) ROADWAY SEGMENT CAPACITY ANALYSIS

The City of Fontana General Plan provides roadway volume capacity values and are approximate figures only and are used at the General Plan level to assist in determining the roadway functional classification (number of through lanes) needed to meet traffic demand. Table 3-2 provides a summary of the Existing (2021) traffic conditions roadway segment capacity analysis. As shown in Table 3-2, the study area roadway segment is currently operating at an acceptable LOS based on the City's planning level daily roadway capacity thresholds.

TABLE 3-2: ROADWAY SEGMENT CAPACITY ANALYSIS FOR EXISTING (2021) CONDITIONS

#	Roadway	Segment Limits	Roadway Section	LOS Capacity[1]	Existing 2021	V/C[2]	LOS[3]
1	Sierra Av.	Riverside Av. to Terra Vista Dr.	2U	18,000	13,550	0.75	C

[1] Maximum roadway capacities are based on the Fontana Forward General Plan Update 2015-2035. The roadway capacity for a 2-lane Major Highway has been interpolated from the 6-lane Major Highway capacity obtained from the General Plan update.

[2] V/C = Volume to Capacity Ratio

[3] LOS = Level of Service

3.9 EXISTING (2021) OFF-RAMP QUEUING ANALYSIS

A queuing analysis was performed for the off-ramps at the I-15 Freeway at the 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-15 Freeway mainline. Queuing analysis findings are presented in Table 3-3. It is important to note that off-ramp lengths are consistent with the measured distance between the intersection and the freeway mainline. As shown in Table 3-3, there are no movements that are currently experiencing queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows. Worksheets for Existing (2021) traffic conditions off-ramp queuing analysis are provided in Appendix 3.4.

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

Intersection	Movement	Available Stacking Distance (Feet)	Existing (2021) 95th Percentile Queue (Feet)		Acceptable? [1]	
			AM Peak Hour	PM Peak Hour	AM	PM
Sierra Av. & I-15 SB Ramps	WBL	190	217 [2,3]	176	Yes	Yes
	WBL/T	1,125	218 [2]	181	Yes	Yes
	WBR	190	37	28	Yes	Yes
Sierra Av. & I-15 NB Ramps	EBL	365	127	391 [2]	Yes	Yes
	EBT	1,410	125	424 [2]	Yes	Yes
	EBR	365	46	126	Yes	Yes

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

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

[3] Although 95th percentile queue is anticipated to exceed the available storage for the turn lane, the adjacent lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-15 Freeway mainline.

3.10 RECOMMENDED IMPROVEMENTS

This section provides a summary of Project deficiencies and recommended improvements. Based on the City of Fontana and County of San Bernardino deficiency criteria discussed in Section 2.7 *Deficiency Criteria*, the following intersections were found to be deficient.

3.10.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

The effectiveness of the recommended improvement strategies to address Existing (2021) traffic deficiencies are presented on Table 3-4. The Project Applicant shall contribute to these improvements through payment of regional DIF fees or fair share contribution as identified on Table 1-3. Worksheets for Existing (2024) traffic conditions, with improvements, HCM calculation worksheets are provided in Appendix 3.5.

TABLE 3-4: INTERSECTION ANALYSIS FOR EXISTING (2021) CONDITIONS WITH IMPROVEMENTS

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Sierra Av. & I-15 SB Ramps																	
	- Without Improvements	TS	**2**	2	0	0	2	1	0	0	0	1	1	1	**101.8**	29.8	**F**	C
	- With Improvements[4]	TS	**2**	2	0	0	2	1	0	0	0	1	1	1	24.5	17.1	C	B
3	Sierra Av. & Riverside Av.																	
	- Without Improvements	AWS	0	2	0	1	2	0	0	0	0	1	0	1	**114.9**	**194.8**	**F**	**F**
	- With Improvements	**TS**	0	2	0	1	2	0	0	0	0	1	0	1	21.6	38.2	C	D

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

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

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

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

[3] AWS = All Way Stop; TS = Traffic Signal; **TS** = Improvement

[4] Improvement includes modifying the traffic signal to an 80-second cycle length during the AM peak and 90-second cycle length during the PM peak.

3.10.2 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON ROADWAY SEGMENT

As shown previously on Table 3-2, study area roadway segment currently is operating at an acceptable capacity under Existing (2021) traffic conditions. As such, no improvements have been recommended.

3.10.3 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON OFF-RAMP QUEUES

As shown previously on Table 3-3, there are no movements are currently experiencing any queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows for Existing (2021) traffic conditions. As such, no improvements have been recommended.

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4 PROJECTED FUTURE TRAFFIC

The proposed Project includes the development of two buildings: a 296,297 square foot warehouse building (Building 1) and a smaller 88,746 square foot warehouse building (Building 2). It is anticipated that the Project would be developed in a single phase with an anticipated Opening Year of 2024. For the purposes of this analysis, the following driveways will be assumed to provide access to the Project site:

- Driveway 1 on Sierra Avenue – Right-in/Right-out access (passenger cars and trucks)
- Driveway 2 on Sierra Avenue – Right-in/Right-out access (passenger cars only)
- Driveway 3 on Duncan Canyon Road –Full access (passenger cars only)

Regional access to the Project site is available from the I-15 Freeway via Sierra Avenue and the I-210 Freeway via Sierra Avenue to the south.

4.1 PROJECT TRIP GENERATION

In order to develop the traffic characteristics of the proposed project, trip-generation statistics published in the ITE Trip Generation Manual (11th Edition, 2021) for the following land uses has been utilized (3):

- ITE land use code 150 (Warehousing) has been used to derive site specific trip generation estimates for up to 88,746 square feet (100% of Building 2). A warehouse is primarily devoted to the storage of materials but may also include office and maintenance areas. The vehicle mix has also been obtained from the ITE's latest Trip Generation Manual. The truck percentages were further broken down by axle type per the following SCAQMD recommended truck mix: 2-Axle = 16.7%; 3-Axle = 20.7%; 4+-Axle = 62.6%.
- ITE land use code 157 (High-Cube Cold Storage Warehouse) has been used to derive site specific trip generation estimates for up to 29,630 square feet (10% of Building 1). High-cube cold storage warehouses include warehouses characterized by the storage and/or consolidation of manufactured goods (and to a lesser extent, raw materials) prior to their distribution to retail locations or other warehouses. High-cube cold storage warehouses are facilities typified by temperature-controlled environments for frozen food or other perishable products. The High-Cube Cold Storage Warehouse vehicle mix (passenger cars versus trucks) has also been obtained from the ITE's latest Trip Generation Manual. The truck percentages were further broken down by axle type per the following SCAQMD recommended truck mix: 2-Axle = 34.7%; 3-Axle = 11.0%; 4+-Axle = 54.3%.

- High-Cube Fulfillment Center Warehouse (ITE Land Use Code 155) has been used to derive site specific trip generation estimates for up to 266,667 square feet (90% of Building 1). The ITE Trip Generation Manual has trip generation rates for high-cube fulfillment center use for both non-sort and sort facilities (ITE land use code 155). As defined by ITE, *a high-cube warehouse is a building that typically has at least 200,000 gross square feet of floor area, has a ceiling height of 24 feet or more, and is used primarily for the storage and/or consolidation of manufactured goods (and to a lesser extent, raw materials) prior to their distribution to retail locations or other warehouses. A typical high-cube warehouse has a high level of on-site automation and logistics management. The automation and logistics enable highly efficient processing of goods through the high-cube warehouse.* The ITE Trip Generation Manual has two subcategories for the High-Cube Fulfillment Center use: sort and non-sort. ITE describes a sort facility as a *fulfillment center that ships out smaller items, requiring extensive sorting, typically by manual means*. In comparison, *a non-sort facility is a fulfillment center that ships large box items that are processed primarily with automation rather than through manual means*. Some limited assembly and repackaging may occur within the facility. Given this description, a non-sort facility has been assumed for the purposes of calculating trip generation for the proposed Project. The vehicle mix (passenger cars versus trucks) has been obtained from the ITE's latest Trip Generation Manual. The truck percentages were further broken down by axle type per the following SCAQMD recommended truck mix: 2-Axle = 16.7%; 3-Axle = 20.7%; 4+-Axle = 62.6%.

The Project trip generation summary is shown in Table 4-1. As shown in Table 4-2, the Project is anticipated to generate a net total of 704 two-way trips per day with 59 AM peak hour trips and 61 PM peak hour trips. In comparison, the proposed Project is anticipated to generate a net total of 918 PCE trip-ends per day with 69 PCE AM peak hour trips and 75 PCE PM peak hour trips.

4.2 PROJECT TRIP DISTRIBUTION

The Project trip distribution represents the directional orientation of traffic to and from the Project site. 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. Truck distribution patterns are based on truck routes, the site's proximity to the regional freeway system and likely distribution of traffic if a future tenant is known. Passenger car distribution patterns are based on existing and planned land uses in the area along with the planned circulation system. Exhibit 4-1 illustrates the truck trip distribution patterns for the Project and Exhibit 4-2 illustrates the passenger car trip distribution patterns.

TABLE 4-1: PROJECT TRIP GENERATION SUMMARY

Land Use[1]	Units[2]	ITE LU Code	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
Warehousing[3]	TSF	150	0.131	0.039	0.170	0.050	0.130	0.180	1.710
Passenger Cars			0.116	0.034	0.150	0.042	0.108	0.150	1.110
2-Axle Trucks			0.002	0.001	0.003	0.003	0.002	0.005	0.100
3-Axle Trucks			0.002	0.002	0.004	0.003	0.003	0.006	0.124
4+-Axle Trucks			0.007	0.006	0.013	0.010	0.009	0.019	0.376
High-Cube Fulfillment Center (Non-Sort)[3]	TSF	155	0.122	0.028	0.150	0.062	0.098	0.160	1.810
Passenger Cars			0.105	0.025	0.130	0.059	0.091	0.150	1.580
2-Axle Trucks			0.002	0.001	0.003	0.001	0.001	0.002	0.038
3-Axle Trucks			0.002	0.002	0.004	0.001	0.001	0.002	0.048
4+-Axle Trucks			0.006	0.007	0.013	0.003	0.003	0.006	0.144
High-Cube Cold Storage Warehouse[3]	TSF	157	0.085	0.025	0.110	0.034	0.086	0.120	2.120
Passenger Cars			0.062	0.018	0.080	0.025	0.065	0.090	1.665
2-Axle Trucks			0.003	0.007	0.010	0.005	0.005	0.010	0.260
3-Axle Trucks			0.001	0.002	0.003	0.002	0.001	0.003	0.083
4+-Axle Trucks			0.005	0.011	0.016	0.008	0.008	0.016	0.113
Passenger Car Equivalent (PCE) Trip Generation Rates[4]									
Warehousing[3]	TSF	150	0.131	0.039	0.170	0.050	0.130	0.180	1.710
Passenger Cars			0.116	0.034	0.150	0.042	0.108	0.150	1.110
2-Axle Trucks (PCE = 2.0)			0.004	0.003	0.007	0.006	0.004	0.010	0.200
3-Axle Trucks (PCE = 2.5)			0.005	0.005	0.010	0.008	0.008	0.016	0.311
4+-Axle Trucks (PCE = 3.0)			0.021	0.017	0.038	0.030	0.026	0.056	1.127
High-Cube Fulfillment Center (Non-Sort)[3]	TSF	155	0.122	0.028	0.150	0.062	0.098	0.160	1.810
Passenger Cars			0.105	0.025	0.130	0.059	0.091	0.150	1.580
2-Axle Trucks (PCE = 2.0)			0.004	0.003	0.007	0.002	0.001	0.003	0.077
3-Axle Trucks (PCE = 2.5)			0.005	0.005	0.010	0.003	0.003	0.005	0.119
4+-Axle Trucks (PCE = 3.0)			0.018	0.020	0.038	0.009	0.010	0.019	0.432
High-Cube Cold Storage Warehouse[3]	TSF	157	0.085	0.025	0.110	0.034	0.086	0.120	2.120
Passenger Cars			0.062	0.018	0.080	0.025	0.065	0.090	1.665
2-Axle Trucks (PCE = 2.0)			0.006	0.015	0.021	0.010	0.011	0.021	0.521
3-Axle Trucks (PCE = 2.5)			0.003	0.006	0.008	0.005	0.003	0.008	0.206
4+-Axle Trucks (PCE = 3.0)			0.015	0.034	0.049	0.024	0.025	0.049	0.338

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

[2] TSF = thousand square feet

[3] Truck Mix: South Coast Air Quality Management District's (SCAQMD) recommended truck mix, by axle type.
Normalized % - Without Cold Storage: 16.7% 2-Axle trucks, 20.7% 3-Axle trucks, 62.6% 4-Axle trucks.
Normalized % - With Cold Storage: 34.7% 2-Axle trucks, 11.0% 3-Axle trucks, 54.3% 4-Axle trucks.

[4] PCE factors: 2-axle = 2.0; 3-axle = 2.5; 4+-axle = 3.0.

TABLE 4-2: PROJECT TRIP GENERATION SUMMARY (ACTUAL VEHICLES AND PCE)

Land Use	Quantity Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Warehousing (Building 2)	88.746 TSF							
Passenger Cars:		10	3	13	4	10	14	100
2-axle Trucks:		0	0	0	0	0	0	10
3-axle Trucks:		0	0	0	0	0	0	12
4+-axle Trucks:		1	0	1	1	1	2	34
Total Truck Trips (Actual Vehicles):		1	0	1	1	1	2	56
Total Trips (Actual Vehicles)[2]		11	3	14	5	11	16	156
High-Cube Cold Storage (10% Building 1)	29.630 TSF							
Passenger Cars:		2	1	3	1	2	3	50
2-axle Trucks:		0	0	0	0	0	0	8
3-axle Trucks:		0	0	0	0	0	0	2
4+-axle Trucks:		0	0	0	0	0	0	4
Total Truck Trips (Actual Vehicles):		0	0	0	0	0	0	14
Total Trips (Actual Vehicles)[2]		2	1	3	1	2	3	64
High-Cube Fulfillment (Non-Sort) (90% Building 1)	266.667 TSF							
Passenger Cars:		28	7	35	16	24	40	422
2-axle Trucks:		1	0	1	0	0	0	10
3-axle Trucks:		1	1	2	0	0	0	14
4+-axle Trucks:		2	2	4	1	1	2	38
Total Truck Trips (Actual Vehicles):		4	3	7	1	1	2	62
Total Trips (Actual Vehicles)[2]		32	10	42	17	25	42	484
Passenger Cars:		**40**	**11**	**51**	**21**	**36**	**57**	**572**
Total Truck Trips (Actual Vehicles):		**5**	**3**	**8**	**2**	**2**	**4**	**132**
Total Project Trips (Actual Vehicles)[2]		**45**	**14**	**59**	**23**	**38**	**61**	**704**

[1] TSF = thousand square feet

[2] Total Trips = Passenger Cars + Truck Trips.

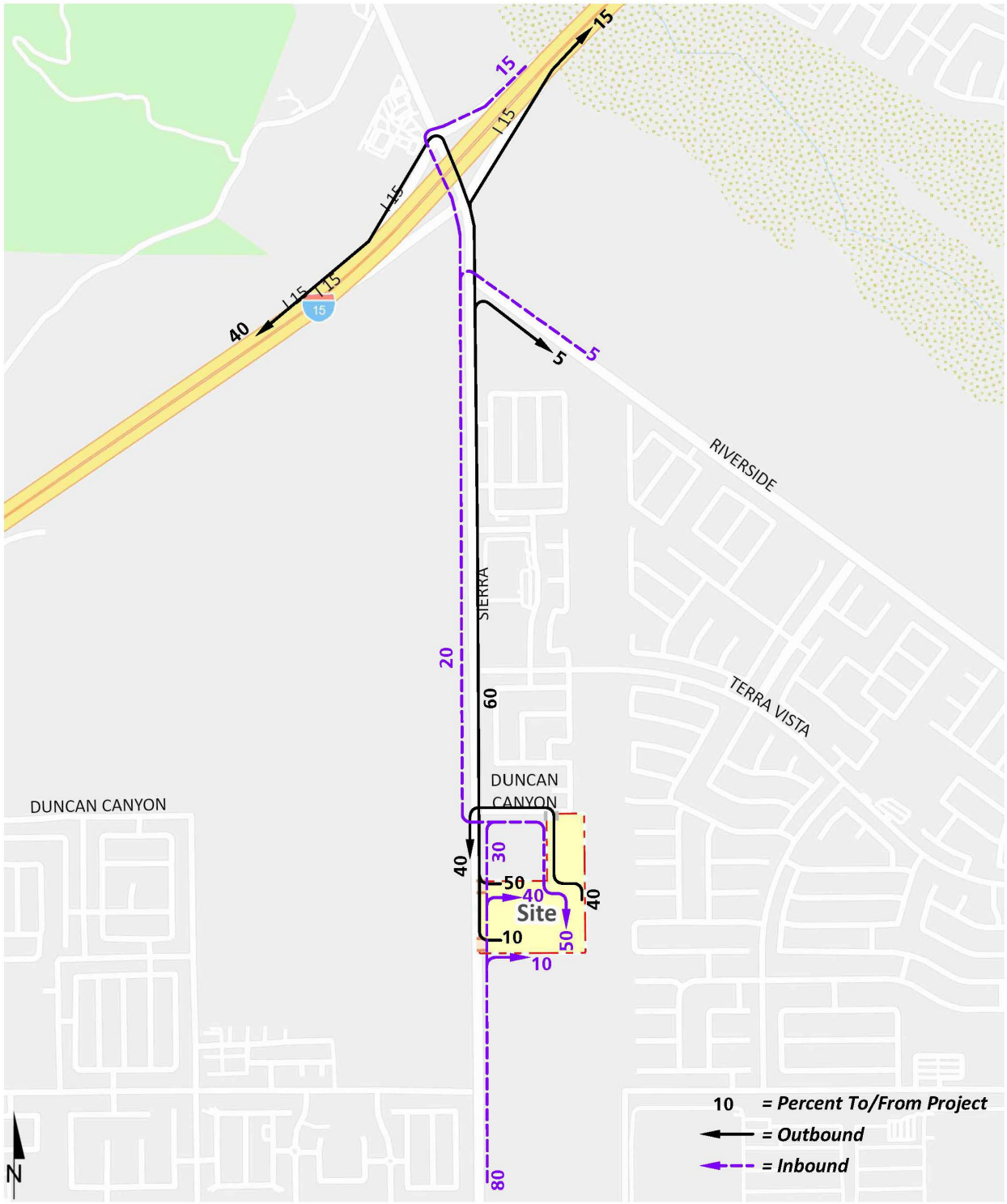
Land Use	Quantity Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Warehousing (Building 2)	88.746 TSF							
Passenger Cars:		10	3	13	4	10	14	100
2-axle Trucks:		0	0	0	1	0	1	18
3-axle Trucks:		0	0	0	1	1	2	28
4+-axle Trucks:		2	1	3	3	2	5	100
Total Truck Trips (PCE):		2	1	3	5	3	8	146
Total Trips (PCE)[2]		12	4	16	9	13	22	246
High-Cube Cold Storage (10% Building 1)	29.630 TSF							
Passenger Cars:		2	1	3	1	2	3	50
2-axle Trucks:		0	0	0	0	0	0	16
3-axle Trucks:		0	0	0	0	0	0	6
4+-axle Trucks:		0	1	1	1	1	2	10
Total Truck Trips (PCE):		0	1	1	1	1	2	32
Total Trips (PCE)[2]		2	2	4	2	3	5	82
High-Cube Fulfillment (Non-Sort) (90% Building 1)	266.667 TSF							
Passenger Cars:		28	7	35	16	24	40	422
2-axle Trucks:		1	1	2	1	0	1	20
3-axle Trucks:		1	1	2	1	1	2	32
4+-axle Trucks:		5	5	10	2	3	5	116
Total Truck Trips (PCE):		7	7	14	4	4	8	168
Total Trips (PCE)[2]		35	14	49	20	28	48	590
Passenger Cars:		**40**	**11**	**51**	**21**	**36**	**57**	**572**
Total Truck Trips (PCE):		**9**	**9**	**18**	**10**	**8**	**18**	**346**
Total Project Trips (PCE)[2]		**49**	**20**	**69**	**31**	**44**	**75**	**918**

[1] TSF = thousand square feet

[2] Total Trips = Passenger Cars + Truck Trips.

EXHIBIT 4-1: PROJECT (TRUCK) TRIP DISTRIBUTION

EXHIBIT 4-2: PROJECT (PASSENGER CAR) TRIP DISTRIBUTION



4.3 MODAL SPLIT

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

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 4-3.

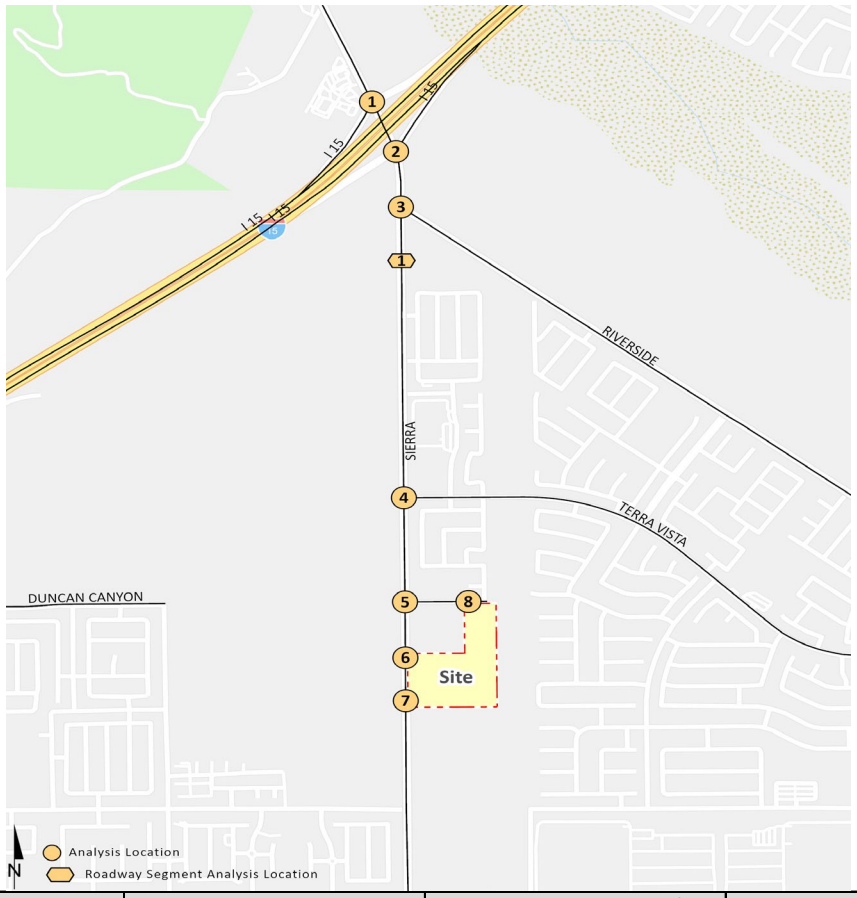
4.5 BACKGROUND TRAFFIC

Future year traffic forecasts have been based upon background (ambient) growth at 2.0% per year for 2024 traffic conditions, consistent with other recent studies performed in the area. The total ambient growth is 6.12% for 2024 traffic conditions (compounded growth of 2.0 percent per year over 3 years or $1.02^{3 \text{ years}}$). 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. EAP and Opening Year Cumulative (2024) traffic volumes are provided in Section 5 and 6 of this TA. 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 (2024) 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). Exhibit 4-4 illustrates the cumulative development location map. A summary of cumulative development projects and their proposed land uses are shown on Table 4-3. In an effort to conduct a conservative analysis, the cumulative projects are added in conjunction with the ambient growth identified in Section 4.5 *Background Traffic*. Cumulative ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-5 for near-term traffic conditions.

EXHIBIT 4-3: PROJECT ONLY TRAFFIC VOLUMES



1 Sierra Av. & I-15 SB Ramps	2 Sierra Av. & I-15 NB Ramps	3 Sierra Av. & Riverside Av.	4 Sierra Av. & Terra Vista Dr.
Nominal ↰ 6(3) 6(16) ↱ *150* *200*	*200* *Nominal* 6(3) ↓ 6(16) → 3(6) ↱ *250*	*250* *Nominal* 6(3) ↓ ↰ 2(1) 9(22) → 1(2) ↱ *300*	*300* 8(4) ↓ 10(24) → *300*
5 Sierra Av. & Duncan Canyon Rd.	**6 Sierra Av. & Driveway 1**	**7 Sierra Av. & Driveway 2**	**8 Driveway 3 & Duncan Canyon Rd.**
300 *250* 8(4) ↳ ↰ 4(14) 10(24) → 12(6) ↱ *450*	*450* *400* 4(14) ↓ ↰ 9(20) 13(10) → 21(10) ↱ *400*	*400* *Nominal* 4(14) ↓ ↰ 1(4) 33(17) → 4(2) ↱ *400*	 20(11) ↴ 4(14) ↰ *250* *250*

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

Average Daily Trips

EXHIBIT 4-4: CUMULATIVE DEVELOPMENT LOCATION MAP

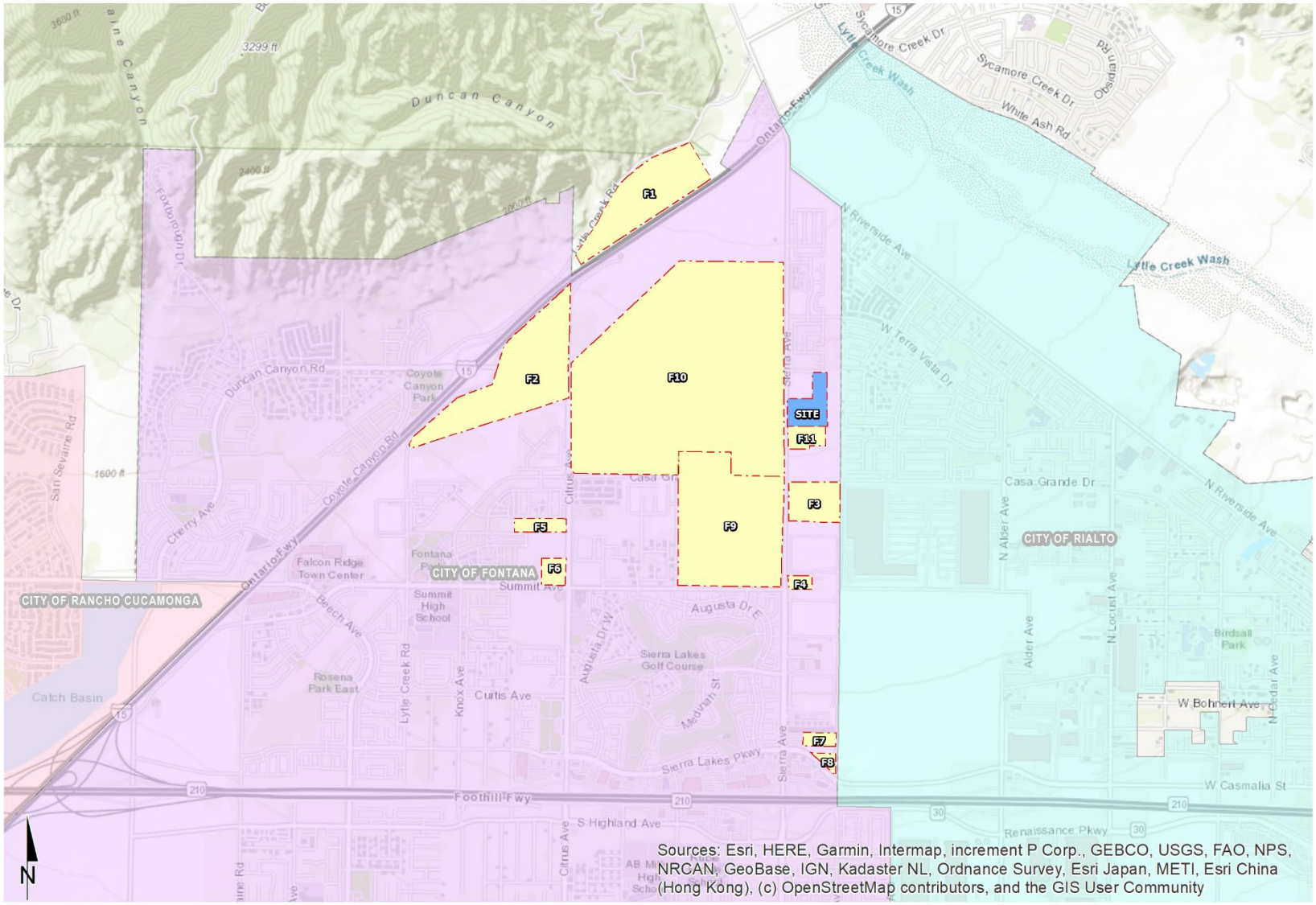
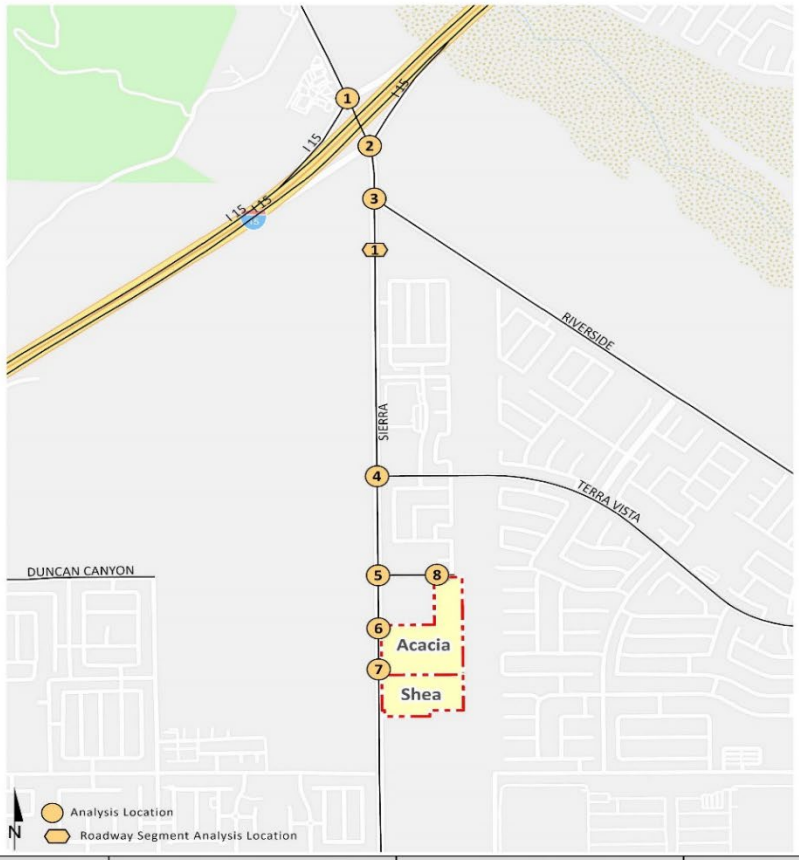
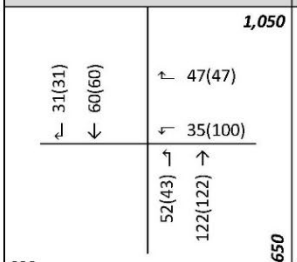


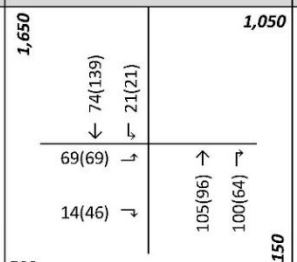
EXHIBIT 4-5: CUMULATIVE ONLY TRAFFIC VOLUMES



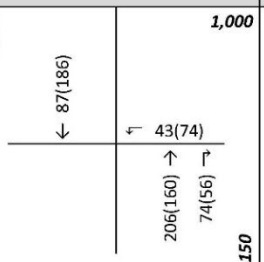
1 Sierra Av. & I-15 SB Ramps



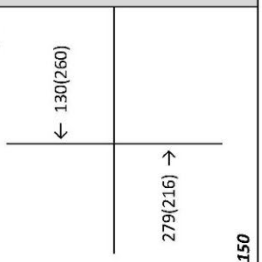
2 Sierra Av. & I-15 NB Ramps



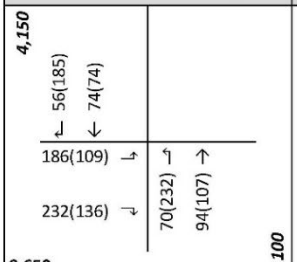
3 Sierra Av. & Riverside Av.



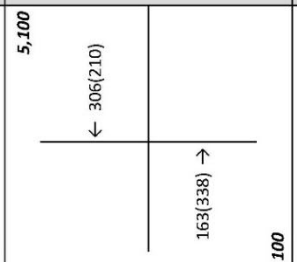
4 Sierra Av. & Terra Vista Dr.



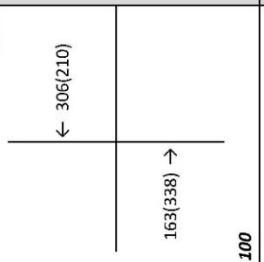
5 Sierra Av. & Duncan Canyon Rd.



6 Sierra Av. & Driveway 1



7 Sierra Av. & Driveway 2



8 Driveway 3 & Duncan Canyon Rd.

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

Average Daily Trips

TABLE 4-3: CUMULATIVE DEVELOPMENT LAND USE SUMMARY

No.	Project Name	Land Use	Quantity[1]
City of Fontana:			
F1	I-15 Logistics Center (JN:9688)	High-Cube Logistic Warehouse	1175.720 TSF
F2	Ventana (JN:13769)	Residential	257 DU
F3	Casa Grande Warehouse	Warehousing	188.338 TSF
F4	Sierra/Summit Warehouse	Warehousing	92.380 TSF
F5	Shady Trails PA 13 & 14	Condominiums	101 DU
F6	Shady Trails PA 16	Condominiums	139 DU
F7	Mango Avenue Industrial	Industrial Warehouse	115.100 TSF
F8	Sierra Lakes & Mango C-Store And Pumps	Convenience Store w/ Fuel Center	4.000 TSF
F9	Summit at Rosena Specific Plan	Residential Single-Family Detached	509 DU
		Townhouse	347 DU
		Commercial (retail, service, and convenience)	20.000 TSF
		Park	20 AC
F10	Arboretum	Multif-Family Detached	986 DU
		Multi Family	613 DU
		Multiy-Family Attached	1927 DU
		Elementary School	12.1 AC
		Jr. High/High School	24.4 AC
		Parks	31.1 AC
		Activity Center (variety of commerical retail and neighborhood services)	8.8 AC
F11	Sierra Industrial Facility (Shea) MCN No. 21-090	High-Cube Fulfillment/Cold Storage Warehouse	203.000 TSF

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

4.7 NEAR-TERM TRAFFIC CONDITIONS

The "buildup" approach combines existing traffic counts with a background ambient growth factor to forecast the near-term EAP (2024) and Opening Year Cumulative (2024) traffic conditions. An ambient growth factor of 2.0% per year, compounded annually, accounts for background (area-wide) traffic increases that occur over time up to the year 2024 from the year 2021. Traffic volumes generated by cumulative development projects are then added to assess the Opening Year Cumulative (2024) traffic conditions. Lastly, Project traffic is added to assess "With Project" traffic conditions. The 2024 roadway network are similar to the existing conditions roadway network with the exception of future roadways and intersections proposed to be developed by the Project.

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

- EAP (2024) (Acacia Site Only)
    - Existing 2021 volumes
    - Ambient growth traffic (6.12%)
    - Project (Acacia Site Only) Traffic
- EAP (2024) (Acacia + Shea Sites)
    - Existing 2021 volumes
    - Ambient growth traffic (6.12%)
    - Acacia + Shea Sites Traffic
- Opening Year Cumulative (2024) Without Project
    - Existing 2021 volumes
    - Ambient growth traffic (6.12%)
    - Cumulative Traffic (Includes Shea Site)
- Opening Year Cumulative (2024) With Project
    - Existing 2021 volumes
    - Ambient growth traffic (6.12%)
    - Cumulative Traffic (Includes Shea Site)
    - Project Traffic (Acacia Site Only)

5 EAP (2024) TRAFFIC CONDITIONS

This section discusses the methods used to develop EAP (Acacia Site Only) and EAP (Acacia + Shea Sites) traffic forecasts, and the resulting intersection operations, traffic signal warrant, roadway segment, and off-ramp queuing analyses.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Opening Year Cumulative (2024) traffic 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 EAP conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways). The improvements needed to accommodate site access to the adjacent Shea development has also been assumed for this analysis scenario.

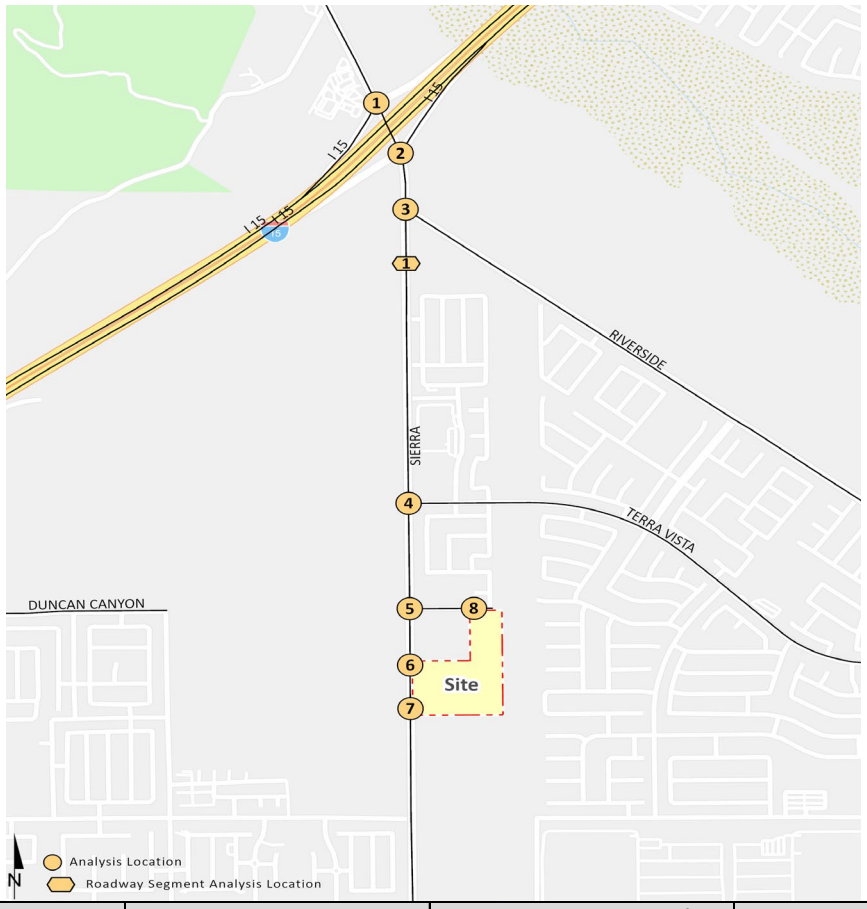
5.2 EAP (2024) (ACACIA SITE ONLY) PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus an ambient growth factor of 6.12% and the addition of Project (Acacia Site Only) traffic. The ADT and peak hour intersection turning movement volumes which can be expected for EAP (2024) conditions are shown on Exhibit 5-1.

5.3 EAP (2024) (ACACIA + SHEA SITES) PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes, an ambient growth factor of 6.12%, Project (Acacia Site) traffic, and traffic associated with the adjacent Shea development. The ADT and peak hour intersection turning movement volumes which can be expected for EAP (2024) With Project conditions are shown on Exhibit 5-2.

EXHIBIT 5-1: EAP (ACACIA SITE ONLY) TRAFFIC VOLUMES



1 Sierra Av. & I-15 SB Ramps

		6,550
27,000	856(351) ↲ 405(369) ↓	↰ 106(97) ← 1(2) ↰ 530(455)
	264(206) ↰ 492(1468) ↑	
6,600		29,500

2 Sierra Av. & I-15 NB Ramps

		5,950
29,500	861(724) ↓ 74(101) ↳	
	228(826) ↳ 3(3) → 172(325) ↲	528(848) → 426(399) ↱
13,650		27,100

3 Sierra Av. & Riverside Av.

		14,250
27,100	573(499) ↓ 461(550) ↳	↰ 600(608) ↰ 46(19)
		355(639) → 55(32) ↱
		14,650

4 Sierra Av. & Terra Vista Dr.

		8,550
13,500	570(334) ↓ 37(124) ↳	↰ 156(115) ↰ 325(209)
		271(573) → 154(276) ↱
		16,400

5 Sierra Av. & Duncan Canyon Rd.

		700
16,400	886(537) ↓ 9(6) ↳	↰ 3(1) ↰ 18(25)
		422(847) → 27(30) ↱
		17,150

6 Sierra Av. & Driveway 1

		400
16,950	904(562) ↓	↰ 9(20)
		440(858) → 21(10) ↱
		16,900

7 Sierra Av. & Driveway 2

		Nominal
16,900	904(562) ↓	↰ 1(4)
		460(865) → 4(2) ↱
		16,900

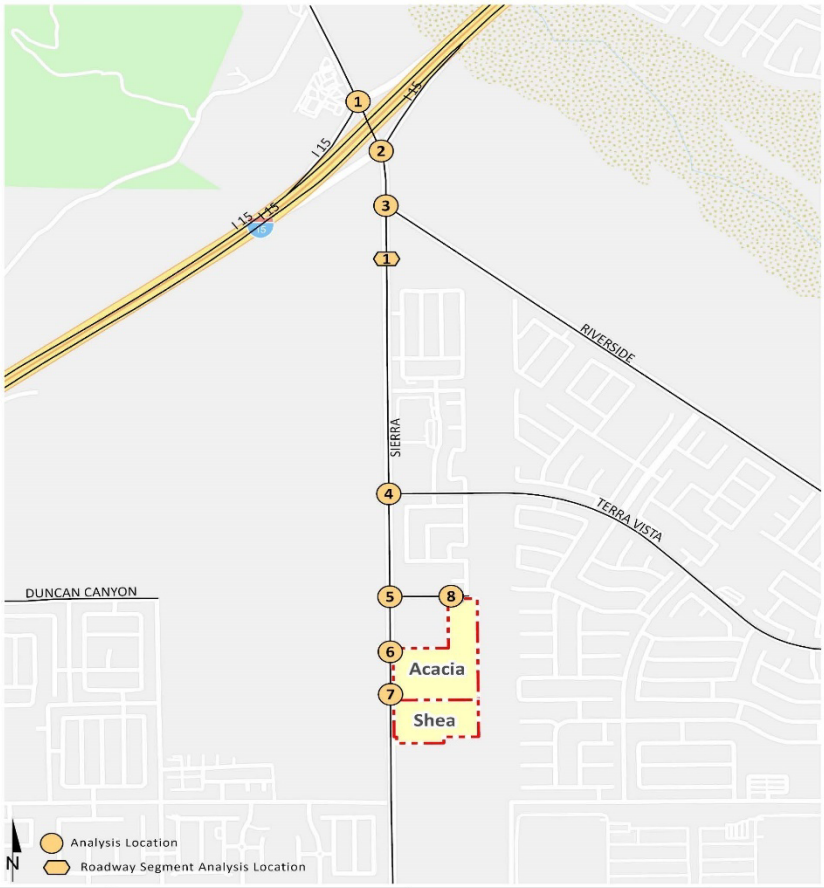
8 Driveway 3 & Duncan Canyon Rd.

		450
		← 17(12)
	16(27) → 20(11) ↲	4(14) ↰
700		250

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

Average Daily Trips

EXHIBIT 5-2: EAP (ACACIA + SHEA SITES) TRAFFIC VOLUMES



1 Sierra Av. & I-15 SB Ramps

		6,600
27,000	856(351) ↲ 405(369) ↓	↱ 106(97) ↑ 1(2) ↰ 532(459)
6,600	264(206) ↰ 492(1468) ↑	29,550

2 Sierra Av. & I-15 NB Ramps

		5,950
29,550	863(728) ↓ 74(101) ↳	
13,650	228(826) ↳ 3(3) → 172(325) ↲	528(848) → 429(401) ↱ 27,150

3 Sierra Av. & Riverside Av.

		14,250
27,150	575(503) ↓ 461(550) ↳	↱ 600(608) ↰ 46(19)
	358(641) → 55(32) ↱	14,750

4 Sierra Av. & Terra Vista Dr.

		8,550
13,550	572(338) ↓ 37(124) ↳	↱ 156(115) ↰ 325(209)
	274(575) → 154(276) ↱	16,500

5 Sierra Av. & Duncan Canyon Rd.

		700
16,500	888(541) ↓ 9(6) ↳	↱ 3(1) ↰ 18(25)
	425(849) → 27(30) ↱	17,200

6 Sierra Av. & Driveway 1

		500
17,000	906(566) ↓	↱ 9(20)
	443(860) → 21(10) ↱	17,050

7 Sierra Av. & Driveway 2

		400
17,050	906(566) ↓	↱ 1(4)
	469(880) → 4(2) ↱	17,300

8 Driveway 3 & Duncan Canyon Rd.

		450
		← 17(12)
700	16(27) → 20(11) ↲	↰ 4(14) 250

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

Average Daily Trips

5.4 INTERSECTION OPERATIONS ANALYSIS

EAP (2024) 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 EAP (2024) traffic conditions (both Acacia Site Only and Acacia + Shea Sites):

- Sierra Avenue & I-15 Southbound Ramps (#1) – LOS F AM peak hour only
- Sierra Avenue & Riverside Avenue (#3) – LOS F AM and PM peak hours

The intersection operations analysis worksheets for EAP (2024) (Acacia Site only) and EAP (2024) (Acacia + Shea Sites) traffic conditions are included in Appendix 5.1 and Appendix 5.2, respectively, of this TA.

TABLE 5-1: INTERSECTION ANALYSIS FOR EAP (2024) CONDITIONS

			Existing (2021)				EAP (Acacia Site Only)				EAP (Acacia + Shea Sites)			
			Delay[1] (secs.)		Level of Service		Delay[1] (secs.)		Level of Service		Delay[1] (secs.)		Level of Service	
	Intersection	Traffic Control[2]	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Sierra Av. & I-15 SB Ramps	TS	**101.8**	29.8	**F**	C	**118.4**	39.6	**F**	D	**118.4**	39.6	**F**	D
2	Sierra Av. & I-15 NB Ramps	TS	10.5	27.9	B	C	16.4	34.2	B	C	16.4	34.2	B	C
3	Sierra Av. & Riverside Av.	AWS	**114.9**	**194.8**	**F**	**F**	**145.1**	**>200.0**	**F**	**F**	**145.6**	**>200.0**	**F**	**F**
4	Sierra Av. & Terra Vista Dr.	TS	8.4	5.5	A	A	9.1	5.7	A	A	9.1	5.7	A	A
5	Sierra Av. & Duncan Canyon Rd.	CSS	18.3	17.4	C	C	20.5	19.6	C	C	20.6	19.7	C	C
6	Sierra Av. & Driveway 1	CSS	Future Intersection				11.5	18.2	B	C	11.6	18.2	B	C
7	Sierra Av. & Driveway 2	CSS	Future Intersection				11.6	17.4	B	C	11.7	17.7	B	C
8	Driveway 3 & Duncan Canyon Rd.	CSS	Future Intersection				8.8	8.8	A	A	8.8	8.8	A	A

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; AWS = All Way Stop

5.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants have been performed (based on CA MUTCD) for EAP (2024) traffic conditions based on peak hour intersection turning movements volumes or planning level (ADT) volumes. There is no additional unsignalized study area intersection anticipated to meet a traffic signal warrant under EAP (2024) traffic conditions for both Acacia Site Only and Acacia + Shea Sites, in addition to the intersections identified previously under Existing (2021) traffic conditions (see Appendix 5.3 and Appendix 5.4).

5.6 ROADWAY SEGMENT CAPACITY ANALYSIS

The City of Fontana General Plan provides roadway volume capacity values and are approximate figures only and are used at the General Plan level to assist in determining the roadway functional classification (number of through lanes) needed to meet traffic demand. Table 5-2 provides a summary of the EAP (2024) conditions roadway segment capacity analysis. As shown in Table 5-2, no study area roadway segments are anticipated to operate at an unacceptable LOS based on the City's planning level daily roadway capacity thresholds for EAP (Acacia + Shea Sites) traffic conditions:

TABLE 5-2: ROADWAY SEGMENT CAPACITY ANALYSIS FOR EAP (2024) CONDITIONS

#	Roadway	Segment Limits	Roadway Section	LOS Capacity[1]	Existing (2021)	V/C[2]	LOS[3]	EAP (Acacia Site Only)	V/C[2]	LOS[3]	EAP (Acacia + Shea Sites)	V/C[2]	LOS[3]
1	Sierra Av.	Riverside Av. to Terra Vista Dr.	2U	18,000	13,550	0.75	C	14,673	0.82	D	14,749	0.82	D

[1] Maximum roadway capacities are based on the Fontana Forward General Plan Update 2015-2035. The roadway capacity for a 2-lane Major Highway has been interpolated from the 6-lane Major Highway capacity obtained from the General Plan update.

[2] V/C = Volume to Capacity Ratio

[3] LOS = Level of Service

5.7 OFF-RAMP QUEUING ANALYSIS

Queuing analysis findings for EAP (2024) are presented in Table 5-3. As shown in Table 5-3, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows under EAP (2024) traffic conditions. Worksheets for EAP (2024) (Acacia Site Only) and EAP (2024) (Acacia + Shea Sites) traffic conditions off-ramp queuing analyses are provided Appendices 5.5 and 5.6, respectively.

TABLE 5-3: PEAK HOUR FREEWAY OFF-RAMP QUEUING SUMMARY FOR EAP (2024) CONDITIONS

			Existing (2021)				EAP (Acacia Site Only)				EAP (Acacia + Shea Sites)			
		Available Stacking Distance	95th Percentile Queue (Feet)		Acceptable?[1]		95th Percentile Queue (Feet)		Acceptable?[1]		95th Percentile Queue (Feet)		Acceptable?[1]	
Intersection	Movement	(Feet)	AM Peak Hour	PM Peak Hour	AM	PM	AM Peak Hour	PM Peak Hour	AM	PM	AM Peak Hour	PM Peak Hour	AM	PM
Sierra Av. & I-15 SB Ramps	WBL	190	217	176	No	Yes	242 [2,3]	194 [2,3]	Yes	Yes	243 [2,3]	198 [2,3]	Yes	Yes
	WBL/T	1,125	218	181	Yes	Yes	242 [2]	209 [2]	Yes	Yes	243 [2]	212 [2]	Yes	Yes
	WBR	190	37	28	Yes	Yes	38	32	Yes	Yes	38	32	Yes	Yes
Sierra Av. & I-15 NB Ramps	EBL	365	127	391	Yes	No	137	421 [2,3]	Yes	Yes	137	421 [2,3]	Yes	Yes
	EBT	1,410	125	424	Yes	Yes	135	454 [2]	Yes	Yes	135	454 [2]	Yes	Yes
	EBR	365	46	126	Yes	Yes	50	150	Yes	Yes	50	151	Yes	Yes

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

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

[3] Although 95th percentile queue is anticipated to exceed the available storage for the turn lane, the adjacent lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-15 Freeway mainline.

5.8 DEFICIENCIES AND IMPROVEMENTS

This section provides a summary of deficiencies, based on the City of Fontana's deficiency criteria discussed in Section 2.7 *Deficiency Criteria*, and improvements needed to improve operations back to acceptable levels.

5.8.1 IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

The effectiveness of the recommended improvement strategies to address EAP (2024) traffic deficiencies are presented in Table 5-4. Worksheets for EAP (2024) (Acacia Site Only) and EAP (2024) (Acacia + Shea Sites) traffic conditions, with improvements, HCM calculation worksheets are provided in Appendices 5.7 and 5.8, respectively.

TABLE 5-4: INTERSECTION ANALYSIS FOR OPENING YEAR CUMULATIVE (2024) CONDITIONS WITH IMPROVEMENTS

			Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
		Traffic	Northbound			Southbound			Eastbound			Westbound						
#	Intersection	Control[3]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Sierra Av. & I-15 SB Ramps																	
	- Acacia Site Only	TS	**2**	2	0	0	2	1	0	0	0	1	1	1	44.5	16.8	D	B
	- Acacia + Shea Sites	TS	**2**	2	0	0	2	1	0	0	0	1	1	1	44.6	16.8	D	B
3	Sierra Av. & Riverside Av.																	
	- Acacia Site Only	AWS	0	2	0	1	2	0	0	0	0	1	0	1	25.1	47.4	C	D
	- Acacia + Shea Sites	**TS**	0	2	0	1	2	0	0	0	0	1	0	1	25.1	47.5	C	D

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

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

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

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

[3] AWS = All Way Stop; TS = Traffic Signal; **TS** = Improvement

5.8.2 IMPROVEMENTS TO ADDRESS DEFICIENCIES ON ROADWAY SEGMENTS

As shown previously on Table 5-2, study area roadway segment is anticipated to operate at an acceptable capacity under EAP (2024) traffic conditions. As such, no improvements have been recommended.

5.8.3 IMPROVEMENTS TO ADDRESS DEFICIENCIES ON OFF-RAMP QUEUES

As shown previously in Table 5-3, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows for Opening Year Cumulative (2024) traffic conditions. As such, no improvements have been identified.

6 OPENING YEAR CUMULATIVE (2024) TRAFFIC CONDITIONS

This section discusses the methods used to develop Opening Year Cumulative (2024) Without and With Project traffic forecasts, and the resulting intersection operations, traffic signal warrant, roadway segment, and off-ramp queuing analyses.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Opening Year Cumulative (2024) traffic 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, including Lytle Creek Road).
- 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).

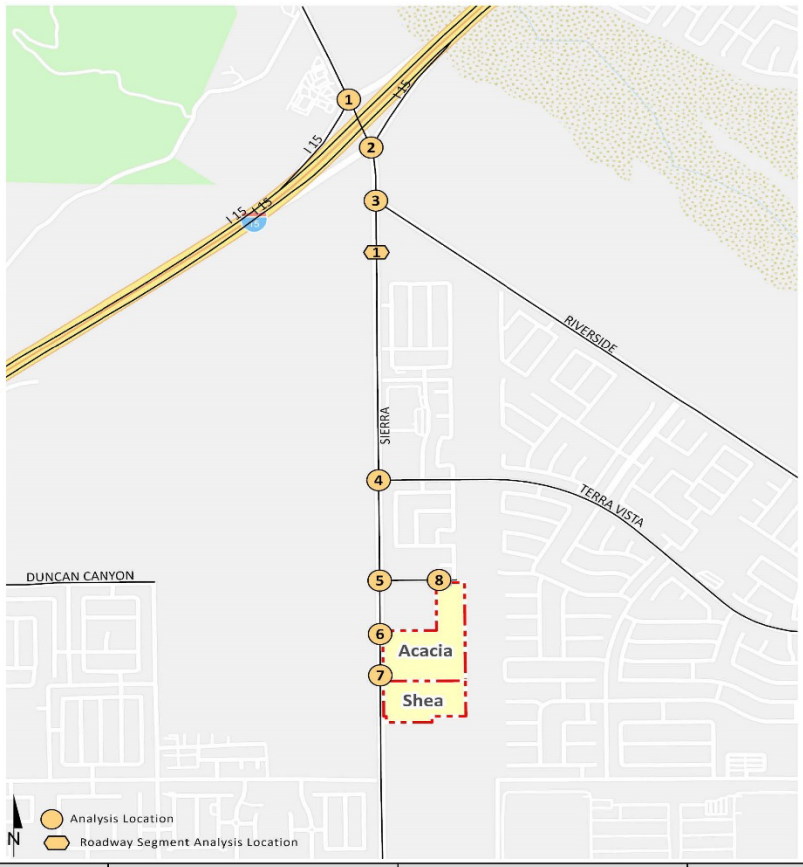
6.2 OPENING YEAR CUMULATIVE (2024) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus an ambient growth factor of 6.12% plus traffic from pending and approved but not yet constructed known development projects in the area. The Opening Year Cumulative Without Project traffic forecasts include the Sierra Industrial Facility (Shea) site. The ADT and peak hour intersection turning movement volumes which can be expected for Opening Year Cumulative (2024) Without Project conditions are shown on Exhibit 6-1.

6.3 OPENING YEAR CUMULATIVE (2024) WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes, an ambient growth factor of 6.12%, traffic from pending and approved but not yet constructed known development projects in the area and the addition of Project traffic. The ADT and peak hour intersection turning movement volumes which can be expected for Opening Year Cumulative (2024) With Project traffic conditions are shown on Exhibit 6-2.

EXHIBIT 6-1: OPENING YEAR CUMULATIVE (2024) WITHOUT PROJECT TRAFFIC VOLUMES



1 Sierra Av. & I-15 SB Ramps

		7,600
27,000	887(382) ↲ 465(429) ↓	↱ 153(144) ← 1(2) ↰ 561(556)
7,000	↰ 310(233) → 614(1590) ↱	30,950

2 Sierra Av. & I-15 NB Ramps

		6,950
30,950	996(864) ↓ 95(122) ↳	
14,100	297(895) → 3(3) → 218(371) ↴ ↱ 618(928) → 490(459)	30,050

3 Sierra Av. & Riverside Av.

		15,200
30,050	755(686) ↓ 461(550) ↳	↱ 600(608) ↰ 118(92)
18,600	↑ 509(779) ↱ 110(86)	

4 Sierra Av. & Terra Vista Dr.

		8,550
17,450	824(594) ↓ 37(124) ↳	↱ 156(115) ↰ 325(209)
20,350	↑ 480(767) ↱ 154(276)	

5 Sierra Av. & Duncan Canyon Rd.

		450
20,350	185(185) ↲ 962(615) ↓ 1(2) ↳	↱ 3(1) ↰ 14(11)
8,650	109(109) → 136(136) ↴ ↰ 232(232) → 522(932) ↱ 15(24)	21,900

6 Sierra Av. & Driveway 1

		150
21,700	1112(762) ↓	
21,750	↑ 768(1188)	

7 Sierra Av. & Driveway 2

		350
21,750	1112(762) ↓	
22,000	↑ 774(1201)	

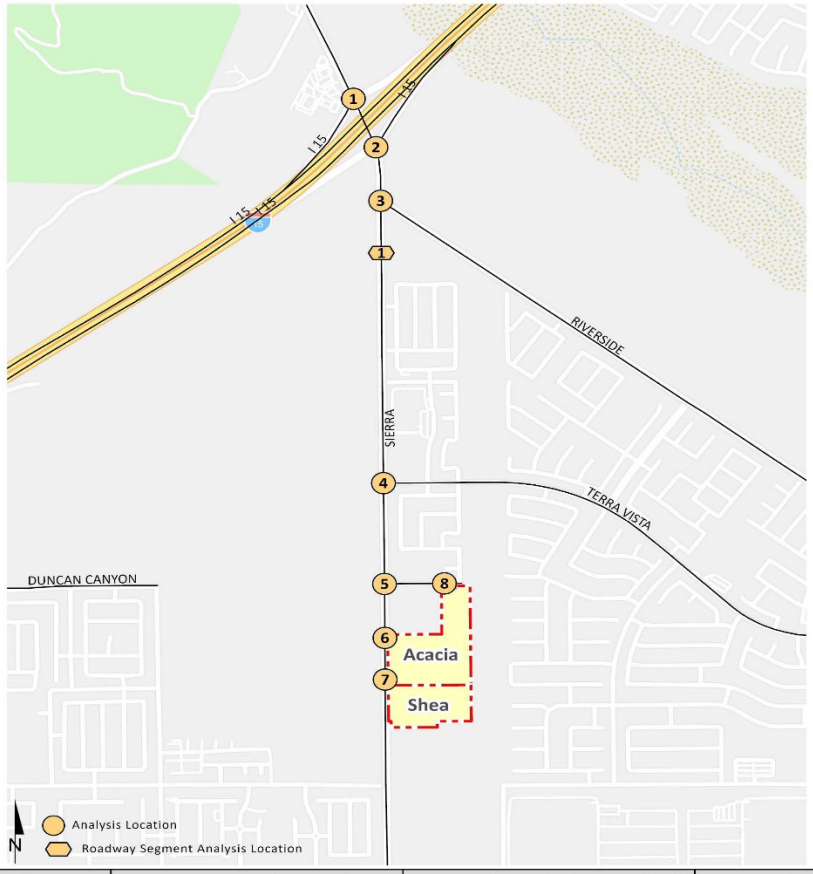
8 Driveway 3 & Duncan Canyon Rd.

		450
		← 17(12)
450	16(27) →	

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

Average Daily Trips

EXHIBIT 6-2: OPENING YEAR CUMULATIVE (2024) WITH PROJECT TRAFFIC VOLUMES



1 Sierra Av. & I-15 SB Ramps	2 Sierra Av. & I-15 NB Ramps	3 Sierra Av. & Riverside Av.	4 Sierra Av. & Terra Vista Dr.
27,000	31,150	30,350	17,750
↲ 887(382) ↓ 465(429)	↓ 1002(867) ↳ 95(122)	← 761(689) ↳ 461(550)	← 832(598) ↳ 37(124)
↱ 153(144) ← 1(2) ↰ 567(559)	297(895) → 3(3) → 218(371) ↴	↱ 600(608) ↰ 120(93)	↱ 156(115) ↰ 325(209)
↰ 316(249) ↑ 614(1590)	↑ 624(944) ↱ 493(465)	↑ 518(801) ↱ 111(88)	↑ 490(791) ↱ 154(276)
7,600	7,050	15,250	8,550
7,200	14,100	18,900	20,650
31,150	30,350		

5 Sierra Av. & Duncan Canyon Rd.	6 Sierra Av. & Driveway 1	7 Sierra Av. & Driveway 2	8 Driveway 3 & Duncan Canyon Rd.
20,650	22,100	22,200	
↲ 185(185) ↓ 962(615) ↳ 9(6)	↓ 1116(776)	← 1116(776)	
↱ 3(1) ↰ 18(25)	↱ 9(20)	↱ 1(4)	← 17(12)
109(109) → 136(136) ↴			↰ 16(27) → 20(11) ↴
↰ 232(232) ↑ 532(956) ↱ 27(30)	↑ 781(1198) ↱ 21(10)	↑ 807(1218) ↱ 4(2)	↰ 4(14)
700	500	400	450
8,650	22,200	22,400	250
22,300			700

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

Average Daily Trips

6.4 INTERSECTION OPERATIONS ANALYSIS

6.4.1 OPENING YEAR CUMULATIVE (2024) WITHOUT PROJECT TRAFFIC CONDITIONS

Opening Year Cumulative (2024) 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 (2024) Without Project:

- Sierra Avenue & I-15 SB Ramps (#1) – LOS F AM peak hour only
- Sierra Avenue & Riverside Avenue (#3) – LOS F AM and PM peak hours

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

6.4.2 OPENING YEAR CUMULATIVE (2024) WITH PROJECT TRAFFIC CONDITIONS

As shown in Table 6-1, the following additional study area intersection is anticipated to operate at an unacceptable LOS with the addition of Project traffic, in addition to the intersections previously identified under Opening Year Cumulative (2024) Without Project traffic conditions:

- Sierra Avenue & I-15 SB Ramps (#1) – LOS F AM peak hour; LOS E PM peak hour

The intersection operations analysis worksheets for Opening Year Cumulative (2024) With Project traffic conditions are included in Appendix 6.2 of this TA.

TABLE 6-1: INTERSECTION ANALYSIS FOR OPENING YEAR CUMULATIVE (2024) CONDITIONS

#	Intersection	Traffic Control[2]	OYC (2024) NP Delay[1] (Secs.) AM	OYC (2024) NP Delay[1] (Secs.) PM	OYC (2024) NP LOS[3] AM	OYC (2024) NP LOS[3] PM	OYC (2024) WP Delay[1] (Secs.) AM	OYC (2024) WP Delay[1] (Secs.) PM	OYC (2024) WP LOS[3] AM	OYC (2024) WP LOS[3] PM
1	Sierra Av. & I-15 SB Ramps	TS	**141.6**	49.7	**F**	D	**149.4**	**57.8**	**F**	**E**
2	Sierra Av. & I-15 NB Ramps	TS	12.0	53.2	B	D	12.0	54.9	B	D
3	Sierra Av. & Riverside Av.	AWS	**>200.0**	**>200.0**	**F**	**F**	**>200.0**	**>200.0**	**F**	**F**
4	Sierra Av. & Terra Vista Dr.	TS	14.5	6.1	B	A	14.8	6.1	B	A
5	Sierra Av. & Duncan Canyon Rd.	CSS	23.7	20.7	C	C	24.9	22.4	C	C
6	Sierra Av. & Driveway 1	CSS	Future Intersection				16.0	28.5	C	D
7	Sierra Av. & Driveway 2	CSS	Future Intersection				15.9	26.2	C	C
8	Driveway 3 & Duncan Canyon Rd.	CSS	Future Intersection				8.8	8.8	A	A

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

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

[3] LOS = Level of Service

6.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants have been performed (based on CA MUTCD) for Opening Year Cumulative (2024) traffic conditions based on peak hour intersection turning movements volumes or planning level (ADT) volumes. The following unsignalized study area intersections is anticipated to meet a traffic signal warrant under Opening Year Cumulative (2024) Without Project traffic conditions, in addition to the intersection identified previously under Existing (2021) (see Appendix 6.3):

- Sierra Avenue & Duncan Canyon Road (#5)

No additional study area intersections are anticipated to meet a warrant under Opening Year Cumulative (2024) With Project traffic conditions (see Appendix 6.4).

6.6 ROADWAY SEGMENT CAPACITY ANALYSIS

The City of Fontana General Plan provides roadway volume capacity values and are approximate figures only and are used at the General Plan level to assist in determining the roadway functional classification (number of through lanes) needed to meet traffic demand. Table 6-2 provides a summary of the Opening Year Cumulative (2024) traffic conditions roadway segment capacity analysis.

TABLE 6-2: ROADWAY SEGMENT CAPACITY ANALYSIS FOR OPENING YEAR CUMULATIVE (2024) CONDITIONS

#	Roadway	Segment Limits	Roadway Section	LOS Capacity[1]	OYC (2024) Without Project	V/C[2]	LOS[3]	OYC (2024) With Project	V/C[2]	LOS[3]
1	Sierra Av.	Riverside Av. to Terra Vista Dr.	2U	18,000	18,605	**1.03**	**F**	18,899	**1.05**	**F**

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

[1] Maximum roadway capacities are based on the Fontana Forward General Plan Update 2015-2035. The roadway capacity for a 2-lane Major Highway has been interpolated from the 6-lane Major Highway capacity obtained from the General Plan update.

[2] V/C = Volume to Capacity Ratio

[3] LOS = Level of Service

As shown in Table 6-2, the following study area roadway segments is anticipated to operate at an unacceptable LOS based on the City's planning level daily roadway capacity thresholds for Opening Year Cumulative (2024) Without Project and With Project traffic conditions:

- Sierra Avenue, Terra Vista Drive to Riverside Avenue (#1) – LOS F

It should be noted, the roadway segments identified above are anticipated to improve operations to acceptable LOS with the implementation of the Project design features discussed in Section 1.6 *Recommendations.*

6.7 OFF-RAMP QUEUING ANALYSIS

Queuing analysis findings for Opening Year Cumulative (2024) are presented in Table 6-3. As shown in Table 6-3, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows under Opening Year Cumulative (2024) Without Project and With Project traffic conditions. Worksheets for Opening Year Cumulative (2024) Without Project and With Project traffic conditions off-ramp queuing analyses are provided Appendices 6.5 and 6.6, respectively.

TABLE 6-3: PEAK HOUR FREEWAY OFF-RAMP QUEUING SUMMARY FOR OPENING YEAR CUMULATIVE (2024) CONDITIONS

			OYC (2024) Without Project				OYC (2024) With Project			
			95th Percentile Queue (Feet)		Acceptable? [1]		95th Percentile Queue (Feet)		Acceptable? [1]	
Intersection	Movement	Available Stacking Distance (Feet)	AM Peak	PM Peak	AM	PM	AM Peak	PM Peak	AM	PM
Sierra Av. & I-15 SB Ramps	WBL	190	258 [2,3]	264 [2,3]	Yes	Yes	264 [2,3]	269 [2,3]	Yes	Yes
	WBL/T	1,125	261 [2]	268 [2]	Yes	Yes	265 [2]	272 [2]	Yes	Yes
	WBR	190	44	58	Yes	Yes	44	58	Yes	Yes
Sierra Av. & I-15 NB Ramps	EBL	365	177 [2]	474 [2,3]	Yes	Yes	177 [2]	486 [2,3]	Yes	Yes
	EBT	1,410	180 [2]	515 [2]	Yes	Yes	180 [2]	527 [2]	Yes	Yes
	EBR	365	89	250 [2]	Yes	Yes	89	258 [2]	Yes	Yes

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

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

[2] Maximum queue length for the approach reported.

[3] Although 95th percentile queue is anticipated to exceed the available storage for the turn lane, the adjacent through lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-15 Freeway mainline.

6.8 DEFICIENCIES AND IMPROVEMENTS

This section provides a summary of deficiencies, based on the City of Fontana's deficiency criteria discussed in Section 2.7 *Deficiency Criteria*, and improvements needed to improve operations back to acceptable levels.

6.8.1 IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

The effectiveness of the recommended improvement strategies to address Opening Year Cumulative (2024) traffic deficiencies are presented in Table 6-4. Worksheets for Opening Year Cumulative (2024) Without and With Project conditions, with improvements, HCM calculation worksheets are provided in Appendices 6.7 and 6.8, respectively.

TABLE 6-4: INTERSECTION ANALYSIS FOR OPENING YEAR CUMULATIVE (2024) CONDITIONS WITH IMPROVEMENTS

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Sierra Av. & I-15 SB Ramps[4]																	
	- Without Project	TS	**2**	2	0	0	2	1	0	0	0	1	1	1	27.2	19.9	C	B
	- With Project	TS	**2**	2	0	0	2	1	0	0	0	1	1	1	27.8	20.1	C	C
3	Sierra Av. & Riverside Av.																	
	- Without Project	**TS**	0	2	0	1	2	0	0	0	0	1	0	1	41.0	47.9	D	D
	- With Project	**TS**	0	2	0	1	2	0	0	0	0	1	0	1	44.6	49.8	D	D

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

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

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

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

[3] AWS = All Way Stop; TS = Traffic Signal; **TS** = Improvement

[4] Improvement includes widening of the I-215 SB ramp to provide pavement for an additional receiving lane.

6.8.2 IMPROVEMENTS TO ADDRESS DEFICIENCIES ON ROADWAY SEGMENTS

Where the ADT based roadway segment analysis indicates a deficiency (unacceptable LOS), the more detailed peak hour intersection analysis has also been reviewed. The more detailed peak hour intersection analysis explicitly accounts for factors that affect roadway capacity. For the purposes of this analysis, if the peak hour intersection operations on either side of the roadway segment are anticipated to operate at an acceptable LOS, then additional roadway segment widening has not been recommended. Therefore, based on the analysis shown in Table 6-4, roadway segment widening has not been recommended since the peak hour intersection analysis does not indicate the need for additional through lanes. However, if the segment of Sierra Avenue were to be widened to with an additional northbound through lane south of Riverside Avenue to the southerly tract (for a total of 2 through lanes northbound and one lane southbound), the roadway segment would operate at an acceptable capacity (see Table 6-5).

TABLE 6-5: ROADWAY SEGMENT CAPACITY ANALYSIS FOR OPENING YEAR CUMULATIVE (2024) CONDITIONS WITH IMPROVEMENTS

#	Roadway	Segment Limits	Roadway Section	LOS Capacity[1]	OYC (2024) Without Project	V/C[2]	LOS[3]	OYC (2024) With Project	V/C[2]	LOS[3]
1	Sierra Av.	Riverside Av. to Terra Vista Dr.	**3D**	27,000	18,605	0.69	B	18,899	0.70	B

3U = Improvement

[1] Maximum roadway capacities are based on the Fontana Forward General Plan Update 2015-2035. The roadway capacity for a 3-lane Major Highway has been interpolated from the 6-lane Major Highway capacity obtained from the General Plan update.

[2] V/C = Volume to Capacity Ratio

[3] LOS = Level of Service

6.8.3 IMPROVEMENTS TO ADDRESS DEFICIENCIES ON OFF-RAMP QUEUES

As shown previously in Table 6-3, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows for Opening Year Cumulative (2024) traffic conditions. As such, no improvements have been identified.

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 September 2019. Fees from new residential, commercial, and industrial development are collected to fund Measure "I" compliant regional facilities as well as local facilities. Under the City's DIF program, the City may grant to developers a credit against specific components of fees when those developers construct certain facilities and landscaped medians identified in the list of improvements funded by the DIF program.

After the City's DIF fees are collected, they are placed in a separate restricted use account pursuant to the requirements of Government Code sections 66000 *et seq*. The timing to use the DIF fees is established through periodic capital improvement programs which are overseen by the City's Engineering Department. Periodic traffic counts, review of traffic accidents, and a review of traffic trends throughout the City are also periodically performed by City staff and consultants. The City uses this data to determine the timing of the improvements listed in its facilities list. The City also uses this data to ensure that the improvements listed on the facilities list are constructed before the LOS falls below the LOS performance standards adopted by the City. In this way, the improvements are constructed before the LOS falls below the City's LOS performance thresholds. The City's DIF program establishes a timeline to fund, design, and build the improvements.

7.3 FAIR SHARE CONTRIBUTION

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

TABLE 7-1: PROJECT FAIR SHARE CALCULATIONS

#	Intersection		Existing (2021)	Project	OYC (2024) With Project	Net New Traffic	Project % of New Traffic
1	Sierra Av. & I-15 SB Ramps						
		AM:	2,711	16	3,245	534	3.0%
		PM:	2,913	23	3,525	612	**3.8%**
2	Sierra Av. & I-15 NB Ramps						
		AM:	2,368	21	2,733	365	**5.8%**
		PM:	3,221	31	3,897	676	4.6%
3	Sierra Av. & Riverside Av.						
		AM:	2,088	24	2,728	640	3.8%
		PM:	2,350	34	3,017	667	**5.1%**

BOLD = Denotes highest fair share percentage.

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 level of service (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**). (2) Based on OPR's Technical Advisory specific procedures for complying with the new CEQA requirements for VMT analysis the City of Fontana adopted Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment (**City Guidelines**), which documents the City's VMT analysis methodology and approved impact thresholds. (1) The VMT screening evaluation presented in this report has been developed based on the adopted City Guidelines.

8.1 PROJECT SCREENING

The City Guidelines describe specific "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 VMT analysis. For the purposes of this analysis, the initial VMT screening process has been conducted with the SBCTA VMT Screening Tool (**Screening Tool**), which uses screening criteria consistent with the screening thresholds recommended in the City Guidelines. Screening thresholds are described in 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

Consistent with City Guidelines a land use project needs only to satisfy one of the above screening thresholds 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:

[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.").

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

Based on the Screening Tool results presented in Appendix 8.1, the Project site is not located within ½ mile of an existing major transit stop, or along a high-quality transit corridor.

TPA screening criteria is not met.

8.1.2 STEP 2: LOW VMT AREA SCREENING

As noted in the City Guidelines, "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. In addition, other employment-related and mixed-use land use projects may qualify for the use of screening if the project can reasonably be expected to generate VMT per resident, per worker, or per service population that is similar to the existing land uses in the low VMT area." [3] The Screening Tool uses the sub-regional San Bernardino County Transportation Analysis Model (SBTAM) to measure VMT performance within San Bernardino County for individual traffic analysis zones (TAZ's) within each city. The Project's physical location based on APN is input into the Screening Tool to determine the VMT generated within the respective TAZ as compared to the jurisdictional average inclusive of a particular threshold (i.e., 15% below baseline County of San Bernardino VMT per employee). Based on the Screening Tool results, the Project is not located within a low VMT generating zone as compared to the City's adopted threshold of 15% below baseline County of San Bernardino VMT per employee. (See Appendix 8.1).

Low VMT Area screening criteria is not met.

8.1.3 STEP 3: LOW PROJECT TYPE SCREENING

The City Guidelines identify that local serving retail with buildings less than 50,000 square feet or other local serving essential services (e.g., day care centers, public schools, medical/dental office buildings, etc.) are presumed to have a less than significant impact absent substantial evidence to the contrary. The proposed Project is not considered a local serving use based on the examples provided in the City Guidelines.[4]

Low Project Type screening criteria is not met.

[3] City Guidelines; Page 12.
[4] City Guidelines; Page 13.

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

Projects that generate fewer than 500 net 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 of this daily trip threshold is documented in the City Guidelines.[5] 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). (3) The proposed Project is estimated to generate 704 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.

As none of the aforementioned VMT screening criteria are met a project-level VMT analysis has been prepared.

8.2 VMT METHODOLOGY

The Project was not found to be located within a TPA, low VMT area, or meet either of the project type screening thresholds and would therefore require a full VMT analysis. The City has identified following recommended threshold(s):

- The baseline project generated VMT per service population exceeds 15% below the baseline County of San Bernardino VMT per service population, or
- The cumulative project generated VMT per service population exceeds 15% below the baseline County of San Bernardino VMT per service population.

8.3 VMT ANALYSIS

The calculation of VMT for land use projects is based on the total number of trips generated and the average trip length of each vehicle. The San Bernardino Transportation Analysis Model (SBTAM) is a useful tool to estimate VMT as it considers interaction between different land uses based on socio-economic data such as population, households, and employment. The City Guidelines identifies SBTAM as the appropriate tool for conducting VMT analysis for land use projects in the City of Fontana. Therefore, the vehicle trips and average daily trip length for project-related vehicle trips are model derived from SBTAM.

Project VMT has been calculated using the most current version of SBTAM. Adjustments in socio-economic data (SED) (i.e., employment) have been made to the appropriate traffic analysis zone (TAZ) within the SBTAM model to reflect the Project's proposed land uses (i.e., warehouse). Table 1 summarizes the employment estimates for the Project. It should be noted that the employment estimates are consistent with the employment density factors identified in the Southern California Association of Governments (SCAG) Employment Density Study (October 2001). (8)

[5] City Guidelines; Appendix B.

TABLE 8-1: EMPLOYMENT ESTIMATES

Land Use	Quantity (SF)	Employment Density Factor[6]	Estimated Employees
Warehouse	296,297	1 employee per 1,195 SF	248

Adjustments to employment were added to the Project's TAZ 53740301 for both the SBTAM base year (2016) and cumulative year (2040) traffic models. Project generated VMT was calculated from the model's Production-Attraction (PA) matrices. As noted in the City Guidelines and through consultation with City Staff, it was deemed appropriate for an employment generating single land use project to use the PA matrices to derive the home-based-work (HBW) VMT per employee. The base year and cumulative year results were then interpolated for the baseline (2021) conditions. The total VMT is then normalized by dividing by the Project's employees. As shown in Table 2, the Project Baseline VMT per employee is 19.69 and Project Cumulative VMT per employee is 16.48.

TABLE 8-2: PROJECT VMT PER EMPLOYEE

	Base Year (2016)	Cumulative Year (2040)	Baseline (2021)
Employment	248	248	248
VMT	5,091	4,087	4,882
VMT / Employee	20.53	16.48	19.69

8.3.1 IMPACT ASSESSMENT

SBCTA provides VMT calculations for each of its member agencies and for the baseline County of San Bernardino region. Urban Crossroads has obtained this published data from SBCTA, which for the County of San Bernardino is 17.1 VMT per employee. As outlined in the City Guidelines, a threshold of 15 percent below the regional baseline is 14.54 VMT per employee.

Table 3 illustrates the comparison between Project generated VMT per employee to the Baseline regional (San Bernardino County) VMT per employee. As shown, the Project would exceed the threshold of 15 percent below the baseline County of San Bernardino VMT per employee for both in the baseline or cumulative Project conditions. The Project VMT impact is therefore considered potentially significant.

TABLE 8-3: PROJECT VMT PER EMPLOYEE COMPARISON

	Baseline	Cumulative
Impact Threshold	14.54	14.54
Project	19.69	16.48
Percent Change	+35.42%	+13.34%
Potentially Significant?	Yes	Yes

[6] Table II-B of the SCAG Employment Density Study.

8.3.2 CUMULATIVE ASSESSMENT

The Technical Advisory notes that "… metrics such as VMT per capita or VMT per employee, i.e., metrics framed in terms of efficiency (as recommended below for use on residential and office projects), cannot be summed because they employ a denominator. A project that falls below an efficiency-based threshold that is aligned with long-term goals and relevant plans has no cumulative impact distinct from the project impact. Accordingly, a finding of a less-than-significant project impact would imply a less than significant cumulative impact, and vice versa. This is similar to the analysis typically conducted for greenhouse gas emissions, air quality impacts, and impact that utilize plan compliance as a threshold of significance." Since the Project was found to have a potentially significant impact at the project level, it is considered to have a potentially significant cumulative impact as well.

8.3.3 VMT REDUCTION STRATEGIES

Transportation Demand Management (TDM) strategies in the form of commute trip reduction program measures have been reviewed for the purpose of reducing Project related VMT impacts (i.e., commute trips) determined to be potentially significant. The level of effectiveness of each trip reduction measure has been determined based on the Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (CAPCOA, 2021) (**2021 Handbook**). As the future building tenants are not known for the Project, the effectiveness of each commute trip reduction measures may be limited. In addition to specific tenancy considerations, locational context is also a major factor relevant to the potential application and effectiveness of TDM measures. The three locational contexts identified by the 2021 Handbook are suburban, urban, and rural.[7] The locational context of the Project is characteristically suburban.

Under the most favorable circumstances and ideal conditions a project can realize a maximum reduction of 45% in commute VMT through implementation of the trip reduction program measures listed below.[8] The proposed Project would require a minimum reduction of 35.42% to achieve a less than significant impact. The 2021 Handbook lists the following trip reduction measures. These measures can be implemented individually or grouped together to create either a voluntary or mandatory commute trip reduction (CTR) program.

- T-6 – Implement Commute Trip Reduction Marketing (*up to 4.0% reduction)*
- T-7 – Provide Ridesharing Program *(up to 8% reduction)*
- T-8 – Implement Subsidized or Discounted Transit Program *(up to 5.5% reduction)*
- T-9 – Provide End-of-Trip Facilities *(up to 4.4% reduction)*
- T-10 – Provide Employer-Sponsored Vanpool *(up to 20.4% reduction)*
- T-11 – Price Workplace Parking *(up to 20.0% reduction)*
- T-12 – Implement Employee Parking Cash-Out *(up to 12.0% reduction)*

[7] 2021 Handbook; Page 43
[8] 2021 Handbook; Page 61

Other regional transportation measures that may reduce VMT include but are not limited to improving/increasing access to transit, increasing access to common goods and service, or orientating land uses towards alternative transportation. These regional transportation measures may be infeasible at the project level but will generally be implemented as the surrounding communities develop. There is no means, however, to quantify any VMT reductions that could result. Additionally, the effectiveness of the CTR program measures listed above have potential to reduce the Project VMT are dependent on as yet unknown building tenant(s); and as noted above, VMT reductions from various CTR measures cannot be guaranteed.

Based on the results of this analysis the following findings are made:

- The Project was evaluated against screening criteria as outlined in the City Guidelines. The Project was not found to meet any available screening criteria, and a model based VMT analysis was performed.
- The Project's VMT analysis found the Project to exceed the City's VMT per employee threshold by 35.42% in baseline conditions and 13.34% in cumulative conditions. The Project is determined to have a potentially significant transportation impact.
- Since the future tenants are unknown at this time, implementation of the feasible TDM measures discussed above cannot be guaranteed to reduce the Project generated VMT per employee; the Project's VMT impact is considered significant and unavoidable.

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. **Office of Planning and Research.** *Technical Advisory on Evaluating Transportation Impacts in CEQA.* State of California : s.n., December 2018.
3. **Institute of Transportation Engineers.** *Trip Generation Manual.* 11th Edition. 2021.
4. **Transportation Research Board.** *Highway Capacity Manual (HCM).* 6th Edition. s.l. : National Academy of Sciences, 2016.
5. **California Department of Transportation.** *Guide for the Preparation of Traffic Impact Studies.* December 2002.
6. —. California Manual on Uniform Traffic Control Devices (MUTCD). [book auth.] California Department of Transportation. *California Manual on Uniform Traffic Control Devices (CAMUTCD).* 2017.
7. **City of Fontana.** *Fontana Forward General Plan Update 2015-2035.* Fontana : City of Fontana, 2018.
8. **Southern California Association of Governments.** *Employment Density Study.* October 2001.

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