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# **Tentative Tract Map No. 36911**

## **TRAFFIC IMPACT ANALYSIS CITY OF MENIFEE**

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## **LIST OF ABBREVIATED TERMS**

(1)	Reference
ADT	Average Daily Traffic
Caltrans	California Department of Transportation
CMP	Congestion Management Program
DIF	Development Impact Fee
E+P	Existing Plus Project
EAP	Existing Plus Ambient Growth Plus Project
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
MUTCD	Manual on Uniform Traffic Control Devices
NEV	Neighborhood Electric Vehicle
PHF	Peak Hour Factor
Project	Tentative Tract Map No. 36911
RTA	Riverside Transit Agency
RTP	Regional Transportation Plan
SCAG	Southern California Association of Governments
TIA	Traffic Impact Analysis
TUMF	Transportation Uniform Mitigation Fee
WRCOG	Western Riverside Council of Governments

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# 1 INTRODUCTION

This report presents the results of the traffic impact analysis (TIA) for the proposed Tentative Tract Map No. 36911 development ("Project") located south of Chambers Avenue and west of Valley Boulevard in the City of Menifee.

The purpose of this TIA is to evaluate the potential circulation system deficiencies that may result from the development of the proposed Project, and recommend improvements to achieve acceptable circulation system operational conditions. This TIA has been prepared in accordance with the City of Menifee Planning Department Traffic Impact Analysis Guidelines (August 2015). (1)

## 1.1 SUMMARY OF FINDINGS

Trips generated by the Project's proposed land use has been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10<sup>th</sup> Edition, 2017. (2) The Project is estimated to generate a net total of 708 trip-ends per day on a typical weekday with approximately 56 AM peak hour trips and 74 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.

The contribution of Project traffic to either existing or existing plus ambient growth conditions was not found to result in any deficient intersection operations. In other words, there were no direct Project impacts related to traffic. The Project is anticipated to contribute towards a cumulative traffic impact at the intersection of Murrieta Road and Chambers Avenue for Opening Year Cumulative traffic conditions. The Project's contribution through a fair share payment would mitigate its cumulative impact to this intersection.

## 1.2 PROJECT OVERVIEW

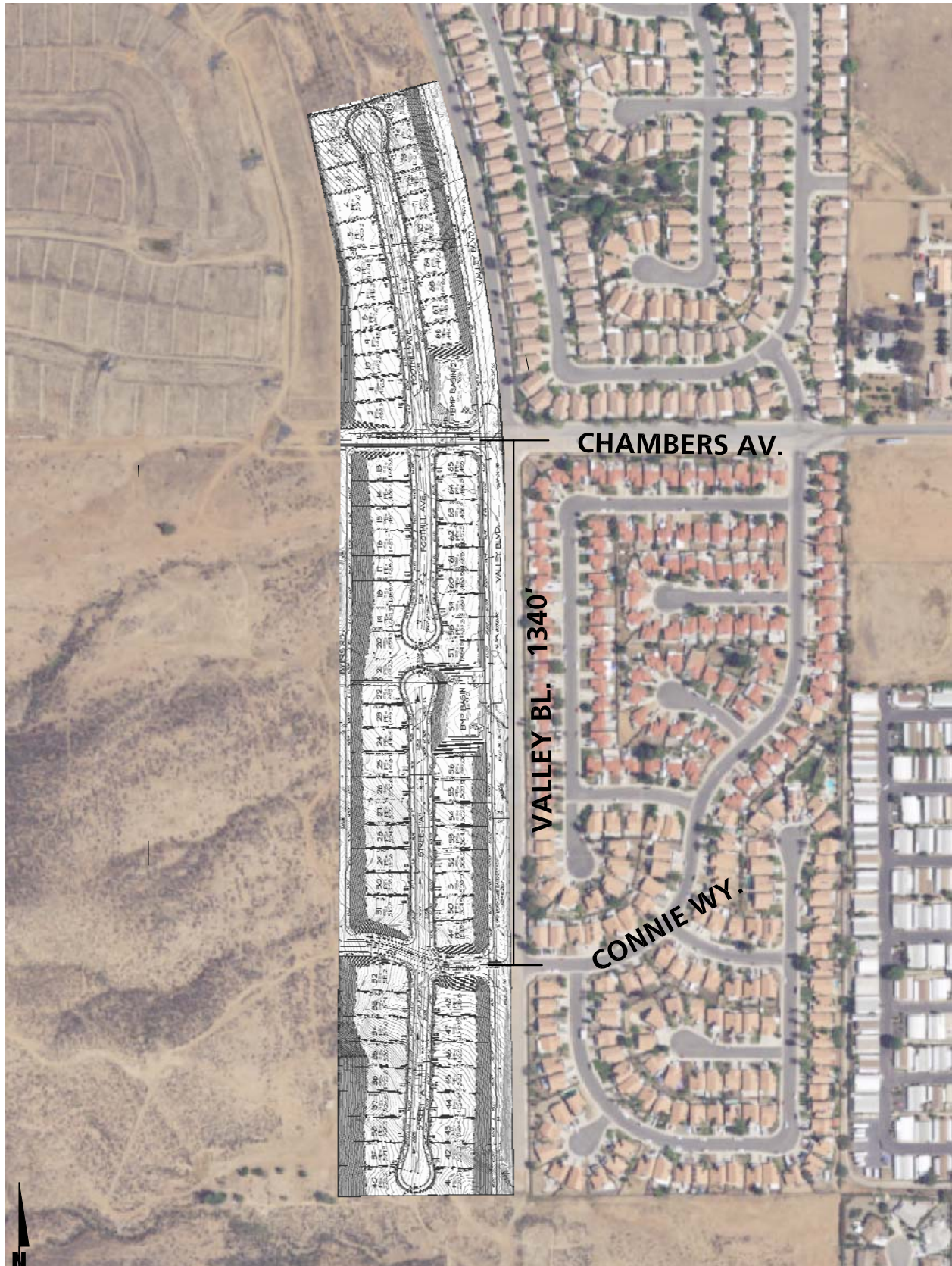
The Project is anticipated to be developed in a single phase with an opening year of 2020 and consists of 75 single family detached dwelling units (see Exhibit 1-1). Access to the Project site will be provided on Chambers Avenue and Connie Way. Regional access to the Project site will be provided by the I-215 Freeway via McCall Boulevard.

## 1.3 ANALYSIS SCENARIOS

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

- Existing (2018) Conditions
- Existing plus Project (E+P) Conditions
- Existing plus ambient growth plus Project (EAP) Conditions
- Opening Year Cumulative (2020) Without Project Conditions
- Opening Year Cumulative (2020) With Project Conditions

**EXHIBIT 1-1: PRELIMINARY SITE PLAN**



### **1.3.1 EXISTING CONDITIONS**

Existing physical conditions have been disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared.

### **1.3.2 EXISTING PLUS PROJECT (E+P) CONDITIONS**

The E+P analysis determines circulation system deficiencies that would occur on the existing roadway system in the scenario of the Project being placed upon Existing conditions.

### **1.3.3 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT (EAP) CONDITIONS**

The EAP (2020) conditions analysis determines the potential traffic impacts based on a comparison of the EAP traffic conditions to Existing conditions. To account for background traffic growth, an ambient growth factor from Existing (2018) conditions of 2.0 percent over 2 years is included for EAP (2020) traffic conditions. Consistent with City of Menifee traffic study guidelines, the EAP analysis is intended to identify “Opening Year” deficiencies associated with the development of the proposed Project based on the expected background growth within the study area.

### **1.3.4 OPENING YEAR CUMULATIVE (2020) CONDITIONS**

The Opening Year Cumulative conditions analysis will determine the potential near-term cumulative circulation system deficiencies. To account for near-term cumulative growth, traffic associated with other known or probable cumulative development projects in conjunction with an ambient growth from Existing (2018) conditions of 2.0 percent over 2 years is included for Opening Year Cumulative (2020) traffic conditions.

The comprehensive list of cumulative development projects in the study area was compiled from information provided by the City of Menifee and is consistent with recent studies in the study area. Please refer also to the discussion of study area traffic growth presented at TIA Section 4.5 *Background Traffic*. The Opening Year Cumulative conditions analysis will be utilized to determine if improvements funded through regional transportation mitigation fee programs, such as the Western Riverside Council of Governments (WRCOG) Transportation Uniform Mitigation Fee (TUMF), City of Menifee Development Impact Fee (DIF) programs, or other approved funding mechanism (Community Facilities District, etc.) can accommodate the near-term cumulative traffic at the target level of service (LOS) identified in the City of Menifee (lead agency) General Plan. Other improvements needed beyond the “funded” improvements (such as localized improvements to non-TUMF facilities or non-DIF facilities) are identified as such. Each of these regional transportation fee programs are discussed in more detail in Section 8.2 *Local and Regional Funding Mechanisms*.

## 1.4 STUDY AREA

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

### 1.4.1 INTERSECTIONS

The following 4 study area intersections listed in Table 1-1 and shown on Exhibit 1-2, were selected for this TIA based on consultation with City of Menifee staff. Based on the City's traffic study guidelines, the study area includes intersections where the Project is anticipated to contribute 50 or more peak hour trips.

**TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS**

ID	Intersection Location	Jurisdiction	CMP
1	Valley Bl. / Chambers Av.	City of Menifee	No
2	Valley Bl. / Connie Wy.	City of Menifee	No
3	Murrieta Rd. / Chambers Av.	City of Menifee	No
4	Murrieta Rd. / McCall Bl.	City of Menifee	No

There are no study area intersections within the study area that are identified as Congestion Management Program (CMP) roadways in the Riverside County CMP.

## 1.5 ANALYSIS FINDINGS

This section provides a summary of the analysis results for Existing (2018), E+P, and Opening Year Cumulative (2020) traffic conditions.

### 1.5.1 INTERSECTIONS

#### Existing (2018) Conditions

For Existing (2018) traffic conditions, there are no intersections currently operating at an unacceptable LOS (i.e., LOS E or worse) during one or both of the AM and PM peak hours.

#### E+P Conditions

The intersection analysis results indicate that the addition of Project traffic is not anticipated to result in any LOS deficiencies consistent with Existing (2018) traffic conditions.

#### EAP (2020) Conditions

The intersection analysis results indicate that the addition of ambient growth and Project traffic is not anticipated to result in any LOS deficiencies consistent with Existing (2018) traffic conditions.



## EXHIBIT 1-2: LOCATION MAP



### LEGEND:

- 0** = INTERSECTION ANALYSIS LOCATION
- 00** = ROADWAY SEGMENT ANALYSIS LOCATION

## **Opening Year Cumulative (2020) Conditions**

### *Opening Year Cumulative (2020) Without Project*

The following study area intersection is anticipated to operate at an unacceptable LOS (LOS E or worse) during one or more peak hours under Opening Year Cumulative (2020) Without Project traffic conditions:

- Murrieta Rd. / Chambers Av. (#3) – LOS E PM peak hour only

### *Opening Year Cumulative (2020) With Project*

The intersection analysis results indicate that the addition of Project traffic is not anticipated to result in any additional LOS deficiencies, in addition to those previously identified under Opening Year Cumulative (2020) Without Project traffic conditions.

## **1.5.2 ROADWAY SEGMENTS**

### **Existing (2018) Conditions**

For Existing (2018) traffic conditions, there are no study area roadway segments currently operating at an unacceptable LOS (i.e., LOS E or worse).

### **E+P Conditions**

The roadway segment analysis results indicate that the addition of Project traffic is not anticipated to result in any roadway segment deficiencies consistent with Existing (2018) traffic conditions.

### **EAP (2020) Conditions**

The roadway segment analysis results indicate that the addition of ambient growth and Project traffic is not anticipated to result in any roadway segment deficiencies consistent with Existing (2018) traffic conditions.

## **Opening Year Cumulative (2020) Conditions**

### *Opening Year Cumulative (2020) Without Project*

There are no study area roadway segments anticipated to operate at an unacceptable LOS (LOS E or worse) under Opening Year Cumulative (2020) Without Project traffic conditions.

### *Opening Year Cumulative (2020) With Project*

The roadway segment analysis results indicate that the addition of Project traffic is not anticipated to result in any roadway segment deficiencies.

## 2 METHODOLOGIES

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

### 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. (3) The HCM uses different procedures depending on the type of intersection control.

#### 2.2.1 SIGNALIZED INTERSECTIONS

##### ***City of Menifee***

The City of Menifee requires signalized intersection operations analysis based on the methodology described in the HCM (6<sup>th</sup> Edition) (3). 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.

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 LOS and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network. The Synchro software (Version 10) has been utilized to evaluate all signalized study area intersections.

**TABLE 2-1: SIGNALIZED INTERSECTION DESCRIPTION OF LOS**

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, 6<sup>th</sup> Edition

The peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15 minute volumes. Common practice for LOS analysis is to use a peak 15-minute rate of flow. However, flow rates are typically expressed in vehicles per hour. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume (e.g.  $PHF = [Hourly Volume] / [4 \times Peak\ 15\text{-minute Flow Rate}]$ ). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for all analysis scenarios. Per Chapter 4 of the HCM (6<sup>th</sup> Edition), 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. (3)

### 2.2.2 UNSIGNALIZED INTERSECTIONS

The City of Menifee requires the operations of unsignalized intersections be evaluated using the methodology described in the HCM (6<sup>th</sup> Edition). (3) 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 DESCRIPTION OF LOS**

Description	Average Control Delay Per Vehicle (Seconds)	Level of Service, $V/C \leq 1.0$	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, 6<sup>th</sup> Edition, Chapter 19 and Chapter 20

At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. For all-way stop controlled intersections, LOS is computed for the intersection as a whole. The Synchro software (Version 10) has also been utilized to evaluate all unsignalized study area intersections.

## 2.3 ROADWAY SEGMENT CAPACITY ANALYSIS

Roadway segment operations have been evaluated using the City of Menifee Roadway Segment Capacity Thresholds provided in Attachment B of the City's traffic study guidelines. (1) Where applicable, roadway segment capacities have been interpolated based on the City of Menifee General Plan roadway classification, the existing number of lanes, and the City's roadway segment capacity thresholds found in Attachment B of the City's traffic study guidelines. Per the City of Menifee's TIA guidelines, roadway segments within the study area should maintain LOS D capacities along City roadways. 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. In other words, while using ADT for planning purposes is suitable with regards to evaluating potential volume to capacity with future forecasts, it is not suitable for operational analysis because it does not account for the factors listed previously. As such, where the 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, roadway segment widening is typically only recommended if the peak hour intersection analysis indicates the need for additional through lanes.

## 2.4 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by 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 TIA uses the signal warrant criteria

presented in the latest edition of the Caltrans California Manual on Uniform Traffic Control Devices (CA MUTCD) for all study area intersections. (4)

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. (4) Specifically, this TIA 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 TIA because it provides specialized warrant criteria for intersections with rural characteristics (e.g. located in communities with populations of less than 10,000 persons or with adjacent major streets operating above 40 miles per hour). For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection.

Future unsignalized intersections have been assessed regarding the potential need for new traffic signals based on future average daily traffic (ADT) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets.

Traffic signal warrant analyses were performed for the following unsignalized study area intersections:

- Valley Bl. / Chambers Av.
- Valley Bl. / Connie Wy.
- Murrieta Rd. / Chambers Av.

The Existing conditions traffic signal warrant analysis is presented in the subsequent section, Section 3 *Existing Conditions* of this report. The traffic signal warrant analysis for future conditions is presented in Section 5 *E+P Traffic Conditions*, Section 6 *EAP (2020) Traffic Conditions*, and Section 7 *Opening Year Cumulative (2020) 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 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.

## **2.5 MINIMUM LEVEL OF SERVICE (LOS)**

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

### 2.5.1 CITY OF MENIFEE

Per Policy C-1.2 of the City of Menifee General Plan, the following LOS will be utilized for study area intersections located within the City: Require development to achieve a peak hour Level of Service (LOS) D or better at intersections, except at constrained intersections within close proximity to the I-215 Freeway, where LOS E may be permitted. (6)

## 2.6 THRESHOLDS OF SIGNIFICANCE

This section outlines the methodology used in this analysis related to identifying circulation system deficiencies. To determine whether the addition of project traffic at a study intersection results in a significant project-related impact, the following thresholds of significance will be utilized:

- If an intersection is projected to operate at an acceptable level of service (i.e., LOS D or better) under Existing traffic conditions and the addition of project traffic, as measured by 50 or more peak hour trips, is expected to cause the intersection to operate at an unacceptable level of service (i.e., LOS E or F), the impact is considered significant;
- If an intersection is projected to operate at LOS E or LOS F under Existing, and the addition of project traffic, as measured by 50 or more peak hour trips, the impact is considered significant.

The proposed significance thresholds will be applied at study area intersections for the purposes of determining project-related impacts.

## 2.7 PROJECT FAIR SHARE CALCULATION METHODOLOGY

Improvements found to be included in the City of Menifee's DIF program and WRCOG TUMF, will be identified as such. For improvements that do not appear to be in either of the pre-existing fee programs, a fair share financial contribution based on the Project's fair share impact may be imposed in order to mitigate the Project's share of impacts in lieu of construction.

The Project's fair share contribution would be determined based on the following equation, which is the ratio of Project traffic to new traffic, where new traffic is total (Opening Year Cumulative) future traffic less existing baseline traffic:

$$\text{Project Fair Share \%} = \text{Project Buildout Traffic} / (\text{Opening Year Cumulative (2020) Total Traffic} - \text{Existing Traffic})$$

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### **3 EXISTING CONDITIONS**

This section provides a summary of the existing circulation network, the City of Menifee General Plan Circulation Network, and a review of existing peak hour intersection operations, roadway segment capacity, and traffic signal warrant analyses.

#### **3.1 EXISTING CIRCULATION NETWORK**

Pursuant to the agreement with City of Menifee staff (Appendix 1.1), the study area includes a total of 4 intersections as shown 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 CITY OF MENIFEE GENERAL PLAN CIRCULATION ELEMENT**

Exhibit 3-2 shows the adopted City of Menifee General Plan Roadway Network, and Exhibit 3-3 illustrates the adopted City of Menifee General Plan roadway cross-sections.

#### **3.3 TRANSIT SERVICE**

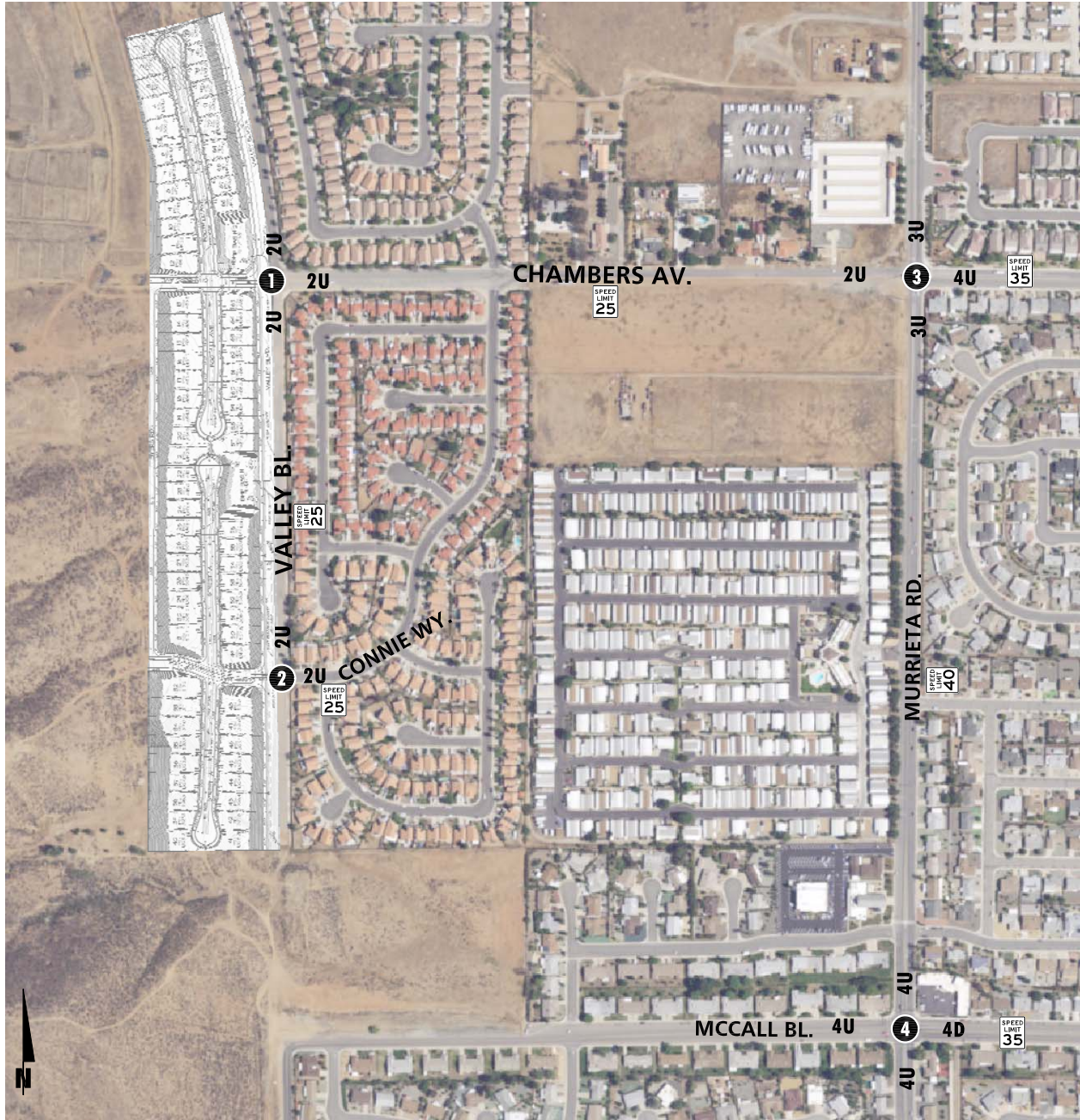
The study area is currently served by the Riverside Transit Agency (RTA) with bus services along Chambers Avenue via Route 74, McCall Boulevard via Route 61, and Murrieta Road via Route 74 and Route 61 (see Exhibit 3-4). However, there are currently no existing RTA bus routes that could serve the Project. Exhibit 3-5 shows existing and planned transit service for the City of Menifee. As shown, there are future on-road transit services anticipated along McCall Boulevard and Menifee Road near the vicinity of the Project. Transit service is reviewed and updated by RTA periodically to address ridership, budget and community demand needs. Changes in land use can affect these periodic adjustments which may lead to either enhanced or reduced service where appropriate. As such, it is recommended that the Project Applicant work in conjunction with RTA to potentially provide bus service to the site.

#### **3.4 PEDESTRIAN AND BICYCLE FACILITIES**

Field observations conducted in April 2017 indicate nominal pedestrian and bicycle activity within the study area. The proposed City of Menifee Bikeways and Community Pedestrian network are shown on Exhibit 3-6 and the existing pedestrian facilities within the study area are shown on Exhibit 3-7. As shown on Exhibit 3-6, on-street Class II bike lanes are proposed along Valley Boulevard, Chambers Avenue, Murrieta Road and McCall Boulevard in the vicinity of the Project.

Exhibit 3-8 shows the City of Menifee Neighborhood Electric Vehicle (NEV) network, which includes Class II NEV routes along portions of Antelope Road, Rouse Road, Chambers Avenue, and McCall Boulevard in the vicinity of the Project and shared use with NEVs along Palomar Road.

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



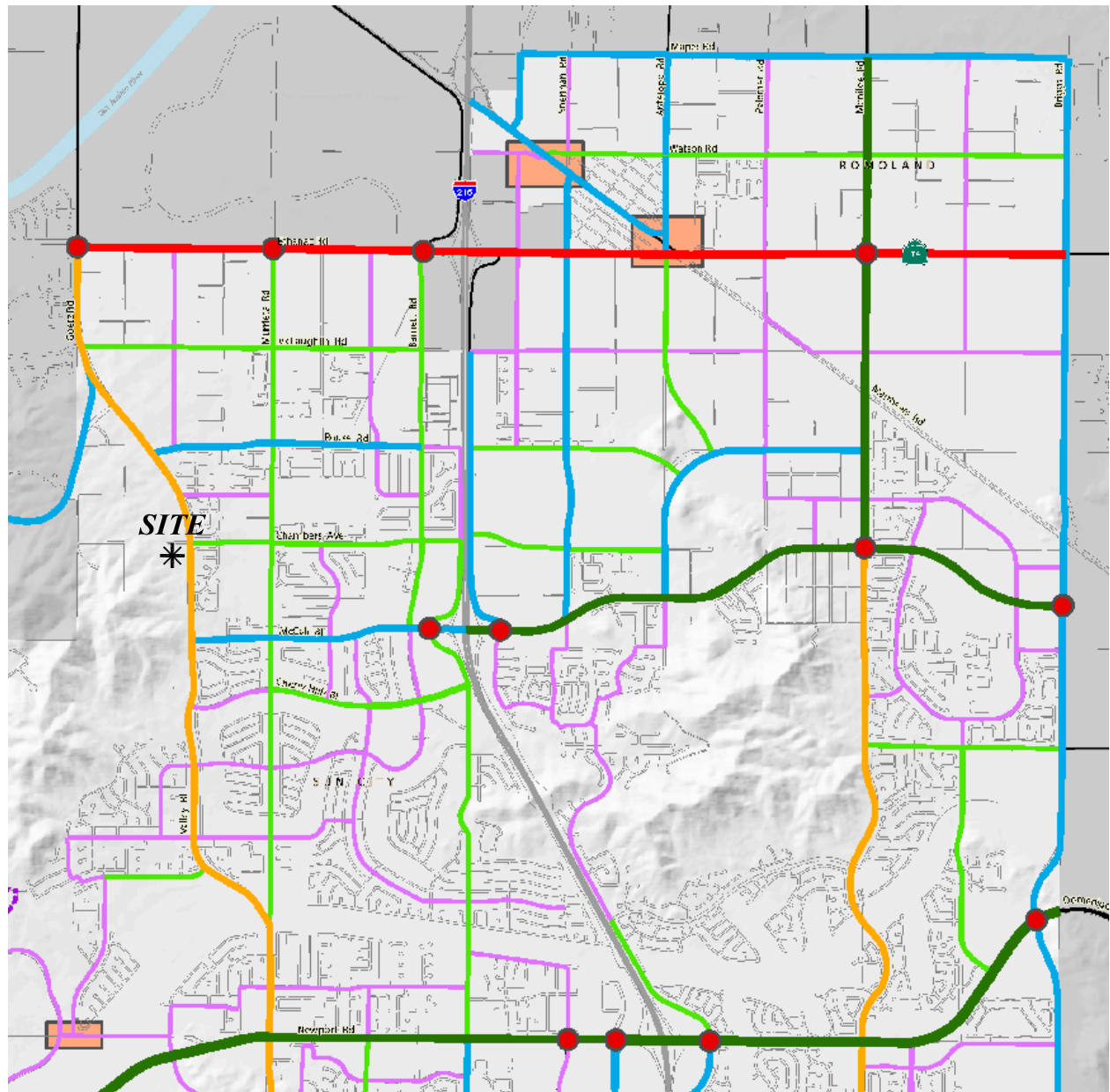
1	Valley Bl. & Chambers Av.	2	Valley Bl. & Connie Wy.	3	Murrieta Rd. & Chambers Av.	4	Murrieta Rd. & McCall Bl.

#### LEGEND:

- = TRAFFIC SIGNAL
- = ALL WAY STOP
- = STOP SIGN
- 4** = NUMBER OF LANES
- D** = DIVIDED
- U** = UNDIVIDED
- DEF** = DEFACTO RIGHT TURN
- = SPEED LIMIT (MPH)



### EXHIBIT 3-2: CITY OF MENIFEE GENERAL PLAN ROADWAY NETWORK



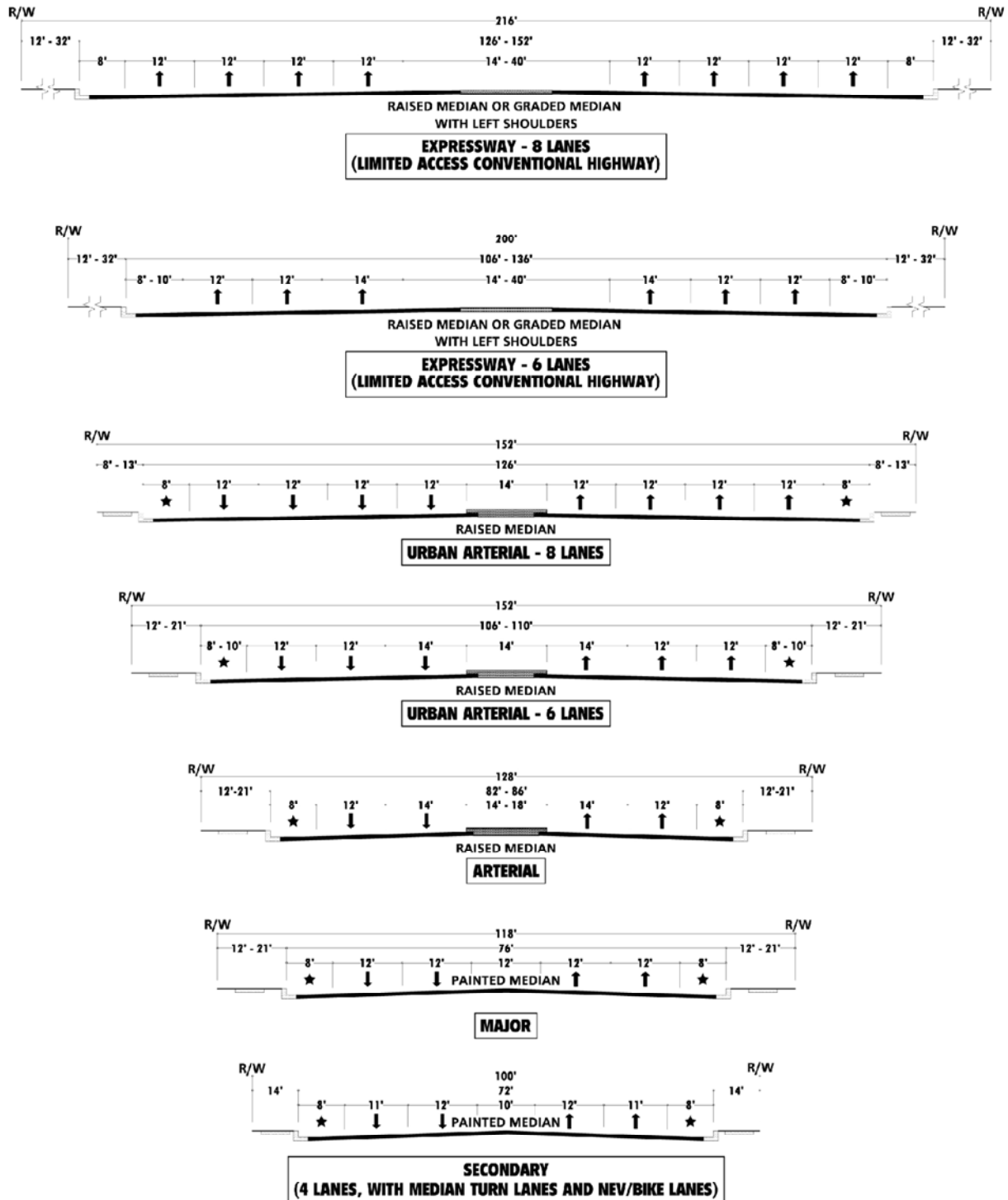
- Expressway (6 to 8 Lanes, Divided)
- Urban Arterial (6 Lanes, Divided)
- Arterial (4 Lanes, Divided)
- Major (4 Lanes, Divided)

- Mountain Arterial (4 Lanes, Undivided)
- Secondary (4 Lanes, Undivided)
- Collector / Interconnected Local (2 Lanes)
- Rural Collector / Interconnected Local (2 Lanes)

- Future Freeway Interchange
- Connectivity Analysis Zone -  
Roadway alignments, intersection geometrics and traffic control features subject to additional assessment
- Future Freeway Overcrossing
- Enhanced Intersection -  
● Additional lanes / Right-of-Way required within 600 feet of the intersection



# EXHIBIT 3-3 (PAGE 1 OF 2): CITY OF MENIFEE GENERAL PLAN ROADWAY CROSS-SECTIONS



## NOTES:

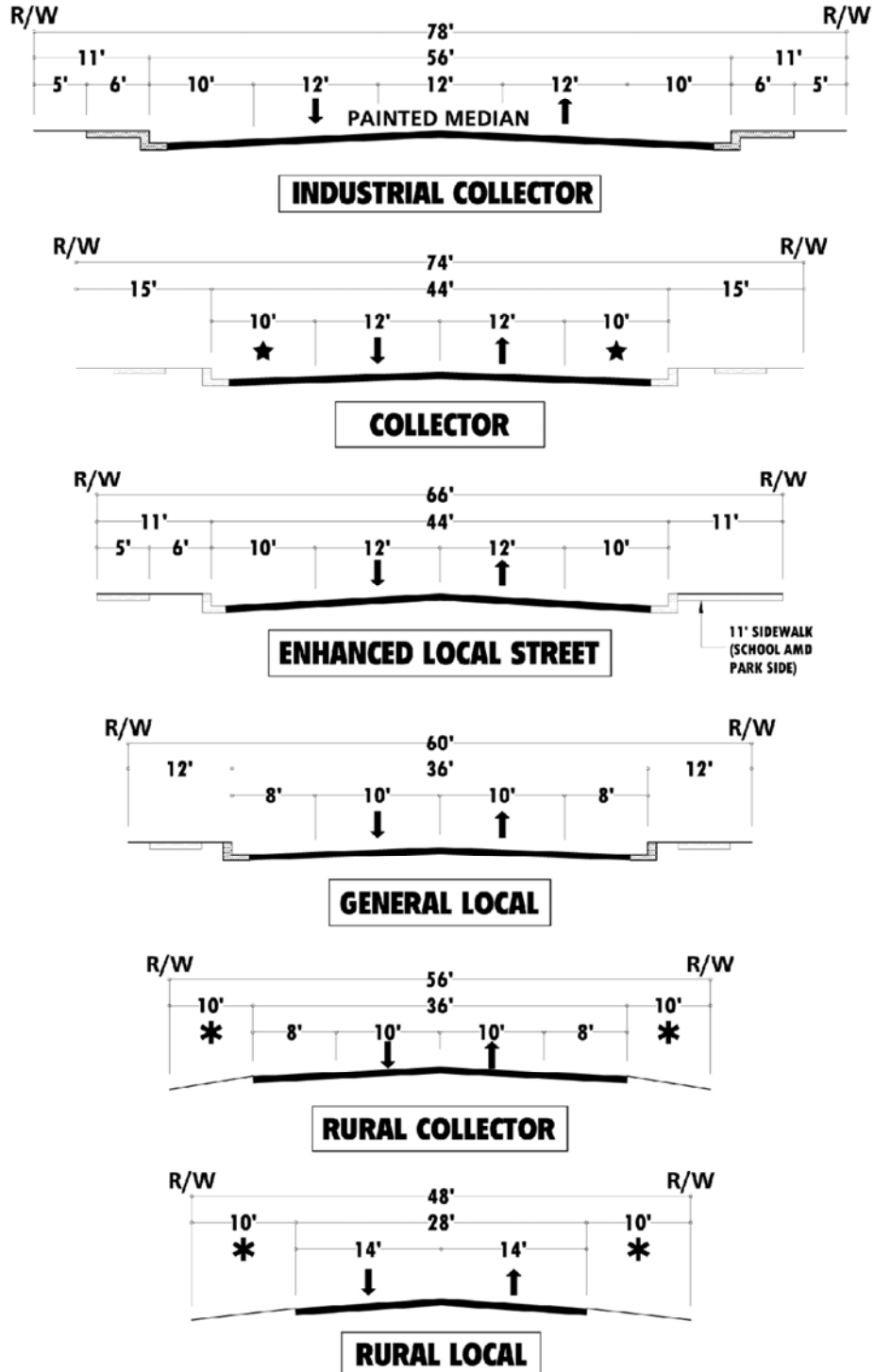
These standard sections are for typical roadway segments and may vary slightly based on intersection land requirements, physical site constraints, and/or environmental issues. Proposed roadway sections should always provide the greatest width possible. Any deviation from these sections is at the discretion of City Engineer.

Sidewalks may be curb-adjacent or separated from roadway by a landscaped parkway.

★ Shoulders may accommodate exclusive bike lanes, shared NEV/bike lanes, or on-street parking subject to approval by City Engineer.



**EXHIBIT 3-3 (PAGE 2 OF 2): CITY OF MENIFEE GENERAL PLAN ROADWAY CROSS-SECTIONS**



**NOTES:**

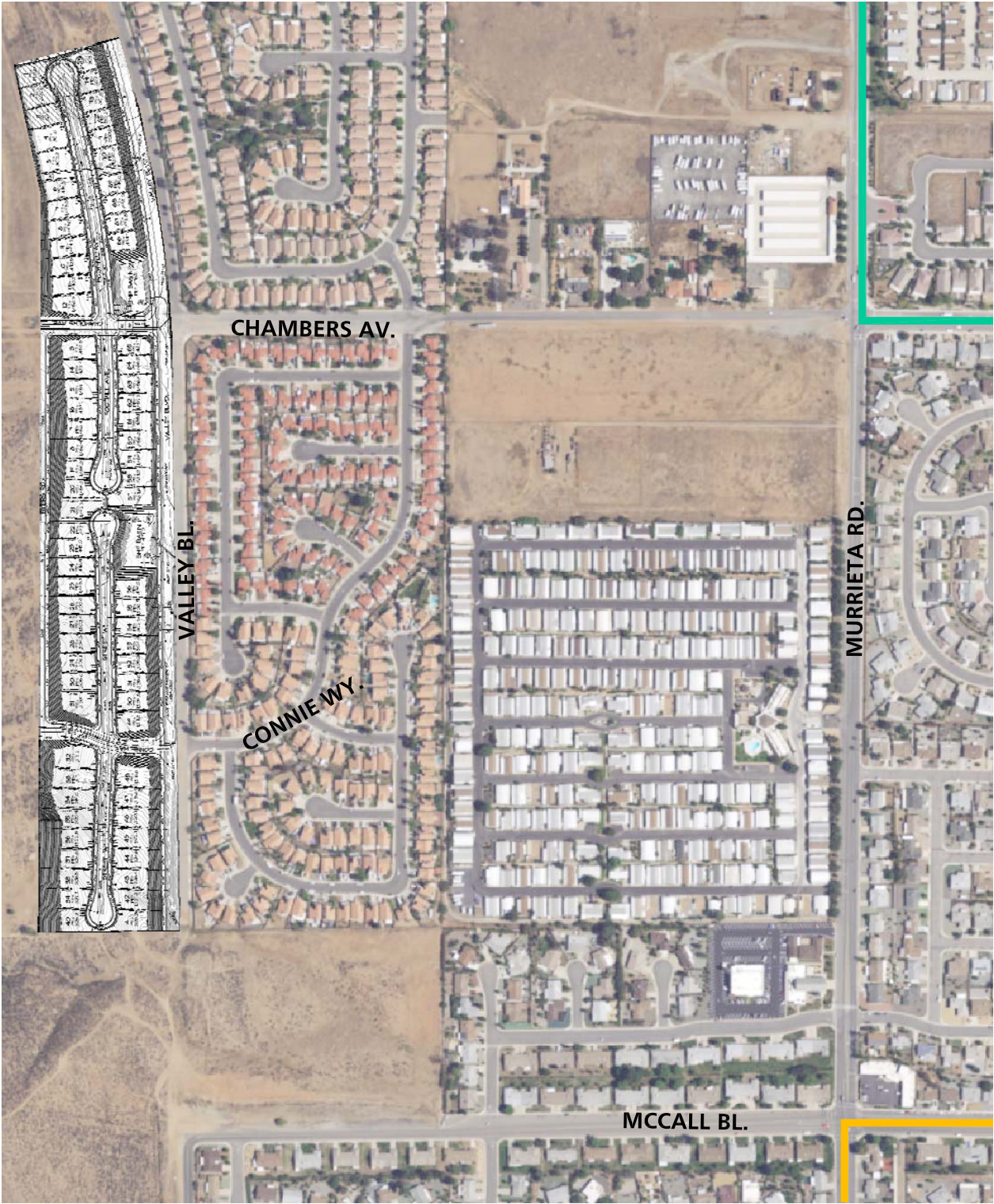
These standard sections are for typical roadway segments and may vary slightly based on intersection land requirements, physical site constraints, and/or environmental issues. Proposed roadway sections should always provide the greatest width possible. Any deviation from these sections is at the discretion of City Engineer.

Sidewalks may be curb-adjacent or separated from roadway by a landscaped parkway.

★ Shoulders may accommodate exclusive bike lanes, shared NEV/bike lanes, or on-street parking subject to approval by City Engineer.

\* Rural Parkways may accommodate pedestrian dirt paths and/or equestrian trails subject to approval by City Engineer.

EXHIBIT 3-4: EXISTING TRANSIT ROUTES

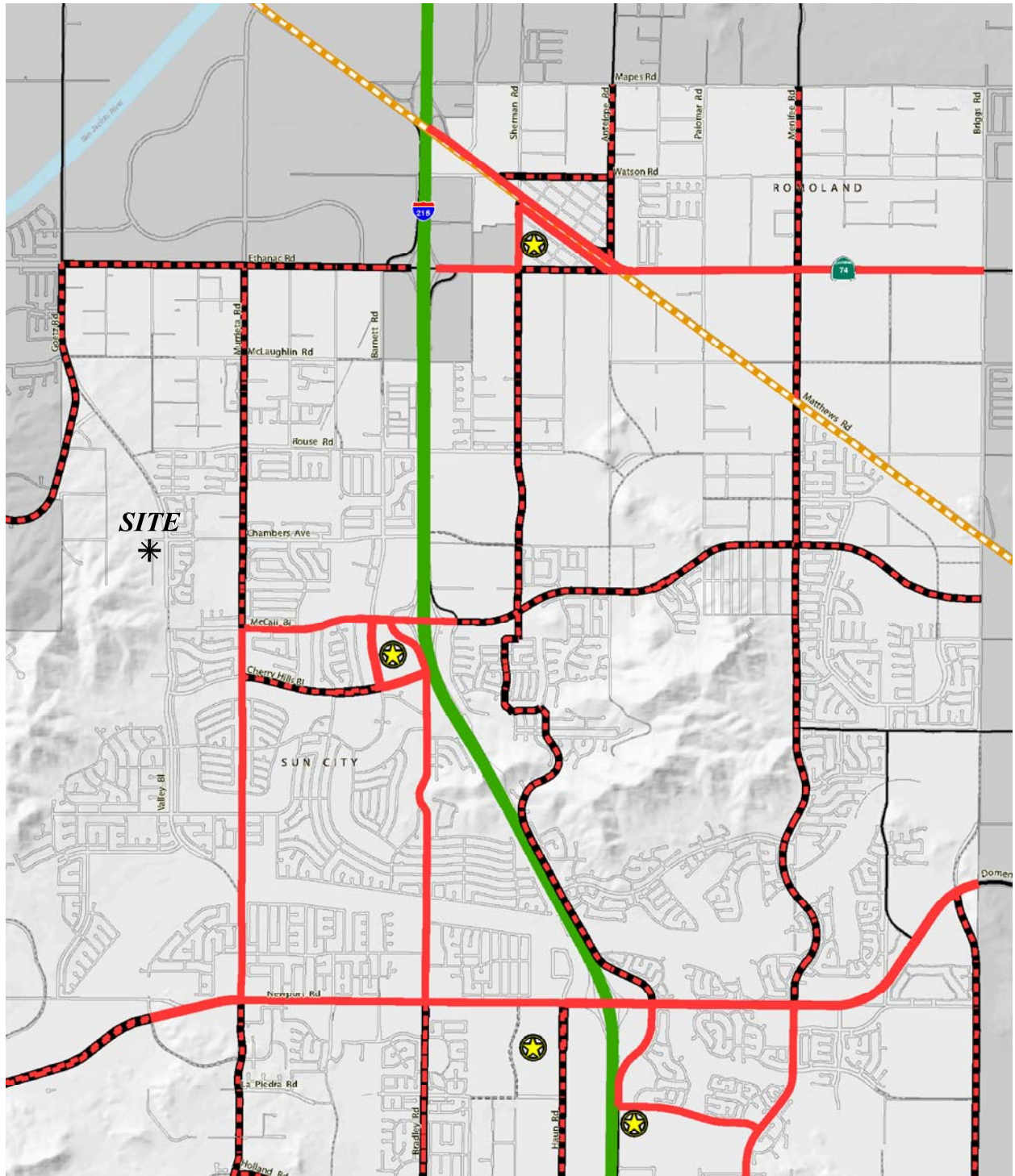


**LEGEND:**  
— = RTA ROUTE 74  
— = RTA ROUTE 61





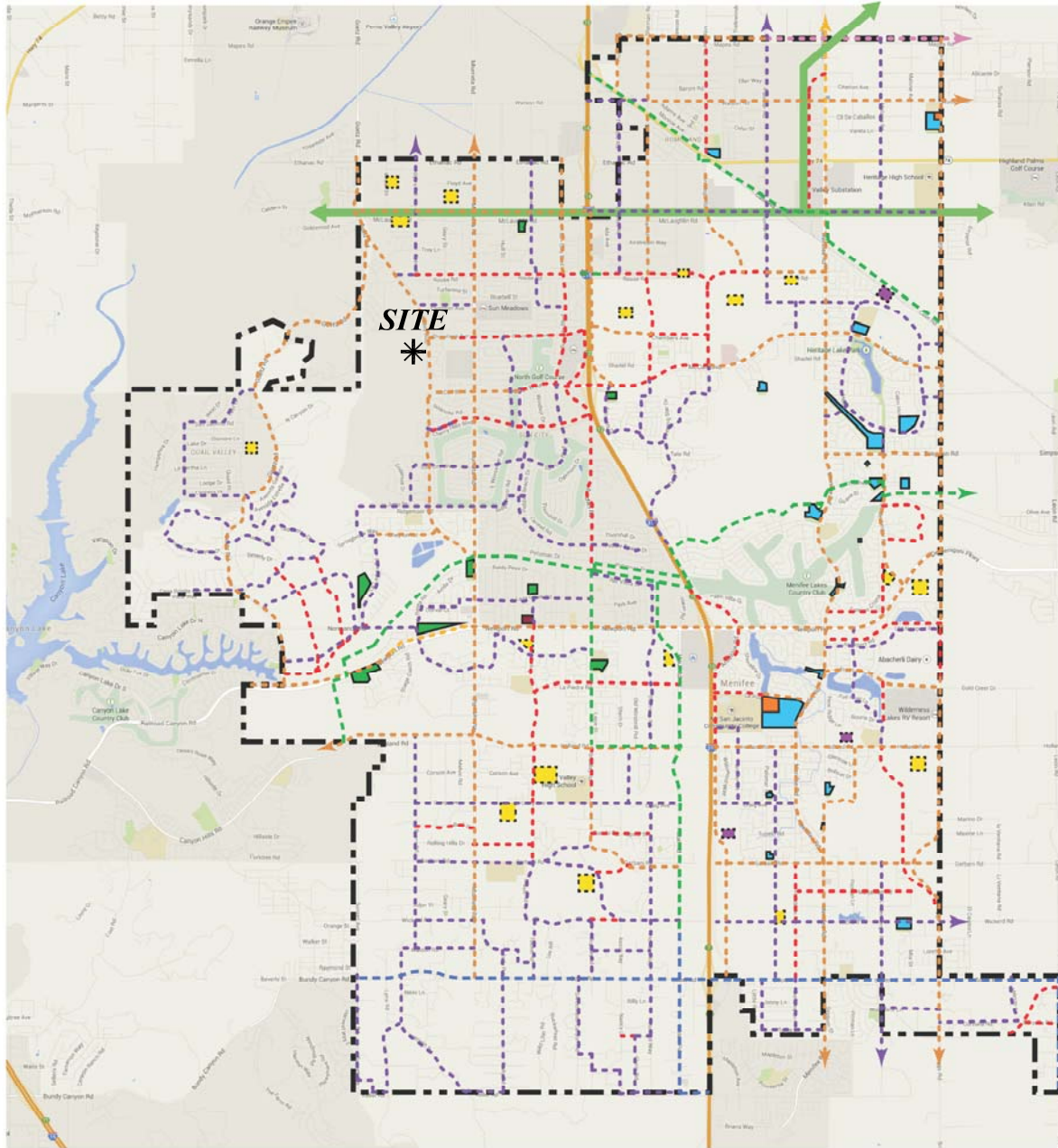
### EXHIBIT 3-5: CITY OF MENIFEE PROPOSED TRANSIT SERVICES



- Existing On-Road Transit Service (RTA)
- - - Potential Future Rail Service
- ★ Transit Node
- - - Potential Future On-Road Transit Service
- Express Bus Service



### EXHIBIT 3-6: CITY OF MENIFEE BIKEWAY AND COMMUNITY PEDESTRIAN NETWORK



#### LEGEND

##### TRAILS

- Regional Trail - Class I  
(Includes C4 Subregional Route - Off-Road Bike Trail Class I, C4 Community Off-Road Bike Trail, and Landscape Standards Regional Trail)
- Regional Bike Lane - Class II  
(Includes C4 Subregional - On-Street Bike Lane Class II)
- Community Bike Lane - Class II  
(Includes C4 Community On-Street NEV/Bike Lanes Class II, and Community On-Street Bike Lane, Class II)
- Community Bike Lane - Class III  
(Includes C4 Class III Bike Routes)
- Community Trail - Hiking, Biking & Equestrian  
(Includes C4 Community Hiking/Biking Trail Opportunity)

##### TRAIL OPPORTUNITIES

- Public Utility Corridor

##### PARKS & FACILITIES

- City Parks
- City Facilities
- City Parks in Progress
- VWRPD Parks
- VWRPD Facilities
- VWRPD Parks in Progress





### EXHIBIT 3-7: EXISTING PEDESTRIAN FACILITIES



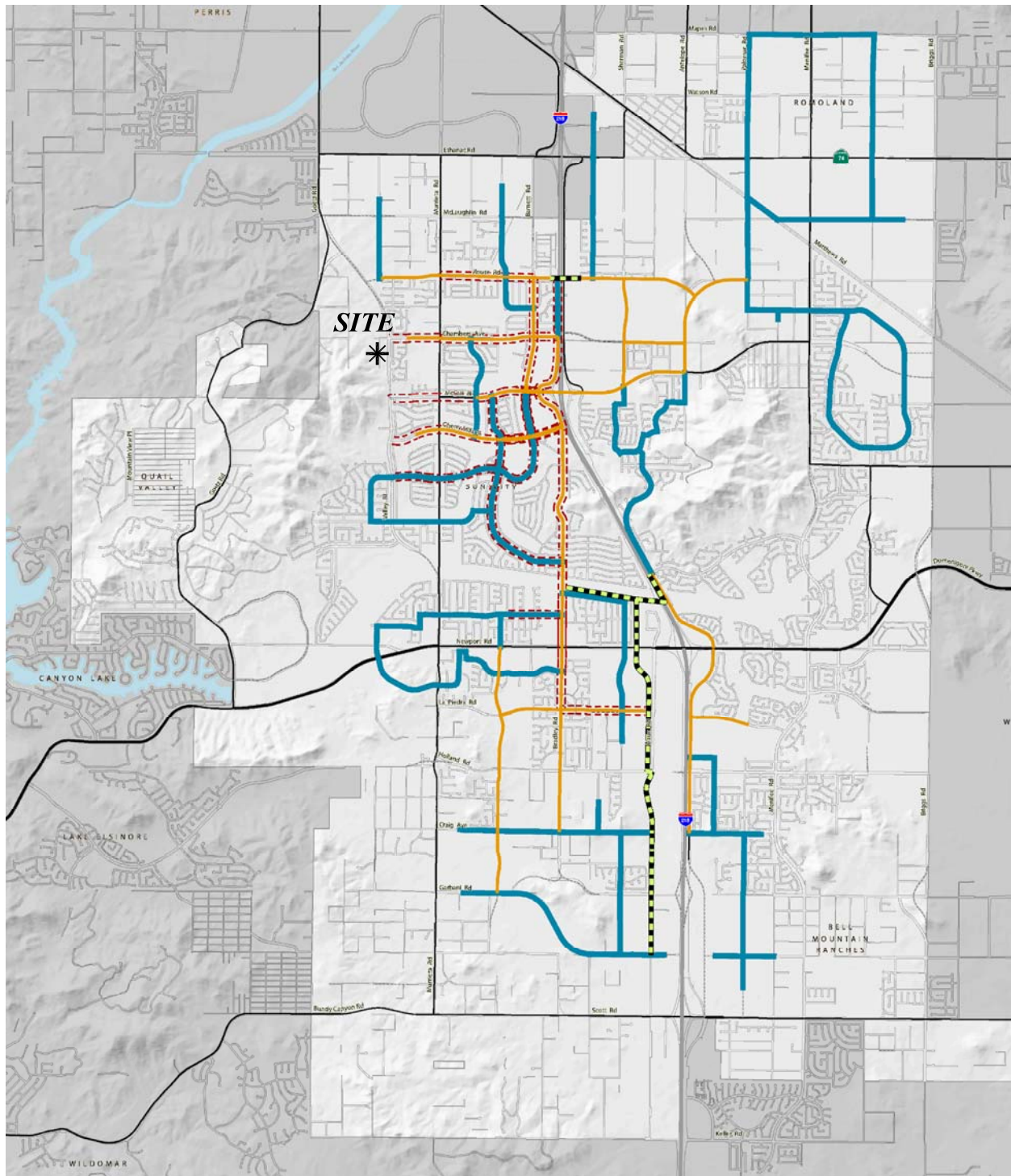
#### LEGEND:

- = SIDEWALK
- = BIKE LANE
- B = BUS STOP
- 0 = NO CROSSWALK
- 0 = CROSSWALK ON ALL APPROACHES





### EXHIBIT 3-8: CITY OF MENIFEE NEIGHBORHOOD ELECTRIC VEHICLE NETWORK



- Off-Road NEV/Bike Trail (Class I)
- NEV/Bike Lanes (Class II Routes)
- Shared Use Roadway (Potentially Signed, Class III Routes, on Two-Lane Roadways with Speed Limits of 35 MPH or Less; NEV/Bike Lanes on Roadways with Speed Limits Greater than 35 MPH)
- Adopted Sun City Golf Cart Plan



### 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 December 2017. The following peak hours were selected for analysis:

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

The weekday AM and PM peak hour count data is representative of typical peak hour traffic conditions in the study area. The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1. These raw turning volumes have been flow conserved between intersections with limited access, no access and where there are currently no uses generating traffic.

Per the direction of City of Menifee staff, a 2% ambient growth factor was applied to the 2017 traffic count data to reflect 2018 conditions. The year 2018 represents the baseline traffic conditions for this TIA.

Existing weekday average daily traffic (ADT) volumes on arterial highways and weekday AM and PM peak hour intersection volumes throughout the study area are shown on Exhibit 3-9. Existing ADT volumes are based upon collected 24-hour tube count data (see Appendix 3.1).

### 3.6 EXISTING CONDITIONS INTERSECTION OPERATIONS ANALYSIS

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

Consistent with Table 3-1, a summary of the peak hour intersection LOS for Existing conditions are shown on Exhibit 3-10. The intersection operations analysis worksheets are included in Appendix 3.2 of this TIA.



### EXHIBIT 3-9: EXISTING (2018) TRAFFIC VOLUMES



1	Valley Bl. & Chambers Av.	2	Valley Bl. & Connie Wy.	3	Murrieta Rd. & Chambers Av.	4	Murrieta Rd. & McCall Bl
	<div><div><div>↖0(3)</div><div>↖0(1)</div><div>↖1(4)</div><div>↖6(12)</div></div><div><div>↖0(5)</div><div>↖7(4)</div></div></div>		<div><div><div>↖6(15)</div><div>↖7(9)</div></div></div>	<div><div><div>↖9(30)</div><div>↖267(325)</div><div>↖44(47)</div></div><div><div>↖18(62)</div><div>↖10(20)</div><div>↖12(14)</div></div></div>	<div><div><div>↖77(39)</div><div>↖206(261)</div><div>↖70(137)</div></div><div><div>↖81(114)</div><div>↖83(112)</div><div>↖153(268)</div></div></div>		
				<div><div><div>↖19(23)</div><div>↖37(18)</div><div>↖68(53)</div></div><div><div>↖40(62)</div><div>↖315(294)</div><div>↖14(12)</div></div></div>	<div><div><div>↖107(30)</div><div>↖126(66)</div><div>↖3(3)</div></div><div><div>↖2(1)</div><div>↖237(264)</div><div>↖190(191)</div></div></div>		

#### LEGEND:

- 10.0** ■ ACTUAL (COUNT-BASED) VEHICLES PER DAY (1000'S)
- 10.0** ■ ESTIMATED VEHICLES PER DAY (1000'S)
- 10(10) ■ AM(PM) PEAK HOUR INTERSECTION VOLUMES



### EXHIBIT 3-10: EXISTING (2018) SUMMARY OF LOS



#### LEGEND:





-  = AM PEAK HOUR ACCEPTABLE LOS
-  = AM PEAK HOUR DEFICIENT LOS
-  = PM PEAK HOUR ACCEPTABLE LOS
-  = PM PEAK HOUR DEFICIENT LOS



Table 3-1

Intersection Analysis for Existing (2018) Conditions

#	Intersection	Traffic Control <sup>3</sup>	Intersection Approach Lanes <sup>1</sup>												Delay <sup>2</sup> (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound			AM	PM	AM	PM
			L	T	R	L	T	R	L	T	R	L	T	R				
1	Valley Bl. & Chambers Av.	AWS	0	1	1	0	1	0	0	0	0	1	0	1	7.1	7.5	A	A
2	Valley Bl. & Connie Wy.	CSS	0	0	0	1	0	0	0	0	0	0	0	1	0.0	0.0	A	A
3	Murrieta Rd. & Chambers Av.	AWS	1	2	0	1	2	0	0	1	0	1	1	1	13.5	14.8	B	B
4	Murrieta Rd. & McCall Bl.	TS	1	2	0	1	2	0	1	2	d	1	2	d	19.8	22.4	B	C

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

L = Left; T = Through; R = Right; d= Defacto Right Turn Lane

<sup>2</sup> 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.

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

### **3.7 EXISTING CONDITIONS ROADWAY SEGMENT CAPACITY ANALYSIS**

The City of Menifee TIA guidelines provides roadway volume capacity values. These roadway segment capacities 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. Where applicable, roadway segment capacities have been interpolated based on the City of Menifee General Plan roadway classification, the existing number of lanes, and the City's roadway segment capacity thresholds found in Attachment B of the City's traffic study guidelines. Table 3-2 provides a summary of the Existing (2018) conditions roadway segment capacity analysis based on the City of Menifee Roadway Segment Capacity Thresholds. As shown on Table 3-2, all study area roadway segments currently operate at an acceptable LOS based on the City's planning level daily roadway capacity thresholds.

### **3.8 EXISTING CONDITIONS TRAFFIC SIGNAL WARRANTS ANALYSIS**

Traffic signal warrants for Existing traffic conditions are based on existing peak hour intersection turning volumes. For Existing traffic conditions, there are no study area intersections anticipated to warrant a traffic signal (see Appendix 3.3).

Table 3-2

## Roadway Segment Capacity Analysis for Existing (2018) Conditions

#	Roadway	Segment Limits	Roadway Section	LOS E Capacity <sup>1</sup>	Existing (2018)	V/C <sup>2</sup>	LOS <sup>3</sup>	Acceptable LOS
1	Valley Bl.	Chambers Av. to Connie Wy.	2U	13,000	235	0.02	A	D
2	Chambers Av.	Valley Bl. to Connie Wy.	2U	13,000	266	0.02	A	D
3	Chambers Av.	Connie Wy. To Murrieta Rd.	2U	13,000	2,495	0.19	A	D
4	Murrieta Rd.	Chambers Av. to McCall Bl.	4U	25,900	10,489	0.40	A	D

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

<sup>1</sup> These maximum roadway capacities have been extracted from the following source: City of Menifee Traffic Impact Analysis Guidelines and Requirements (Attachment B). These roadway capacities are "rule of thumb" estimates for planning purposes. The LOS E service volumes are estimated maximum daily capacity for respective classifications. By using the LOS E capacity for each roadway facility type, volume-to-capacity (v/c) values between 0.00-0.60 will represent LOS A, 0.61-0.70 will represent LOS B, 0.71-0.80 will represent LOS C, 0.81-0.90 will represent LOS D, 0.91-1.00 will represent LOS E, and v/c values greater than 1.00 will represent LOS F operations. Capacity is affected by such factors as intersections (spacing, configuration and control features), degree of access control, roadway grades, design geometrics (horizontal and vertical alignment standards), sight distance, vehicle mix (truck and bus traffic) and pedestrian and bicycle traffic.

<sup>2</sup> v/c = Volume to Capacity ratio

<sup>3</sup> LOS = Level of Service

## 4 PROJECTED FUTURE TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project, as well as the Project's trip assignment onto the study area roadway network.

The Project is proposed to consist of the development of 75 single family detached residential dwelling units in a single phase with an opening year of 2020.

Access to the Project site will be provided on Chambers Avenue and Connie Way. Regional access to the Project site will be provided by the I-215 Freeway via McCall Boulevard.

### 4.1 PROJECT TRIP GENERATION

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

Trip generation rates used to estimate Project traffic and a summary of the Project's trip generation are shown in Table 4-1. The trip generation rates are based upon data collected by the Institute of Transportation Engineers (ITE) for the Single-Family Detached Residential (ITE Land Use Code 210) in their published Trip Generation Manual, 10th Edition, 2017. (2)

The Project is estimated to generate a net total of 708 trip-ends per day on a typical weekday with approximately 56 AM peak hour trips and 74 PM peak hour trips.

### 4.2 PROJECT TRIP DISTRIBUTION

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

### 4.3 MODAL SPLIT

Although the use of public transit, walking, and/or bicycling have the potential to reduce Project-related traffic, such reductions have not been taken into consideration in this traffic study in order to provide a conservative analysis of the Project's potential to contribute to circulation system deficiencies.

Table 4-1

## Project Trip Generation Summary

Land Use	Units <sup>2</sup>	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Project Trip Generation Rates <sup>1</sup>									
Single Family Detached Residential	DU	210	0.19	0.56	0.74	0.62	0.37	0.99	9.44

Land Use	Quantity	Units <sup>2</sup>	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Tentative Tract No. 36911	75	DU	14	42	56	47	27	74	708

<sup>1</sup> Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

<sup>2</sup> DU = dwelling units

#### **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 (shown on Exhibit 4-1), Project ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-2.

#### **4.5 BACKGROUND TRAFFIC**

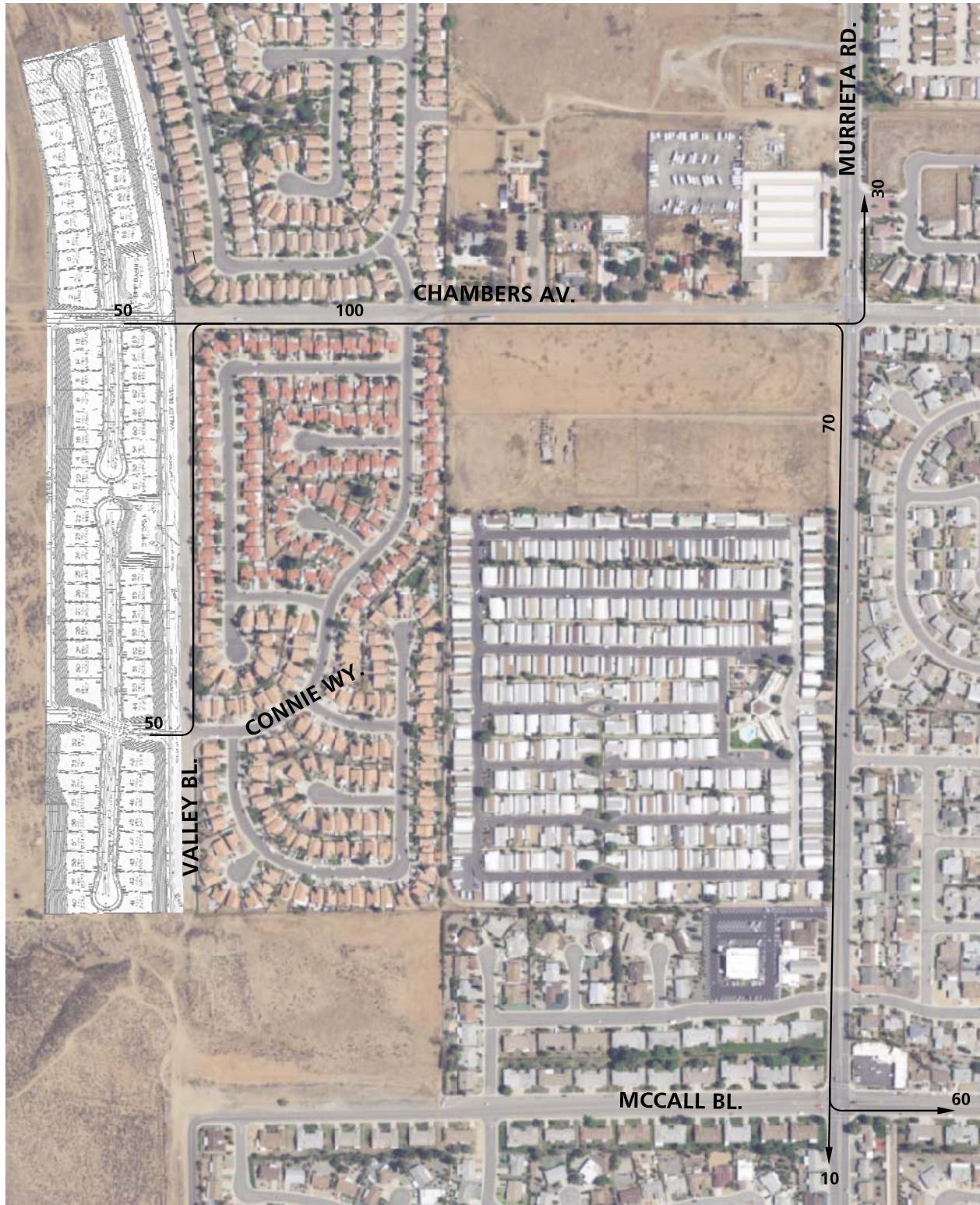
Future year traffic forecasts have been based upon a background (ambient) growth factor of 2% per year. The ambient growth factor is intended to approximate traffic growth. The total ambient growth is 4.04% for 2020 traffic conditions. This ambient growth rate is added to existing traffic volumes to account for area-wide growth not reflected by cumulative development projects. Ambient growth has been added to daily and peak hour traffic volumes on surrounding roadways, in addition to traffic generated by the development of future projects that have been approved but not yet built and/or for which development applications have been filed and are under consideration by governing agencies.

According to information in the Southern California Association of Governments (SCAG) Regional Transportation Plan (RTP) (2016), the population of the City of Menifee is projected to increase by 1.42% per year (compounded annually) for the period between 2012 and 2040 (total of 48.41 percent over the 28-year period). During the same period 28-year period, employment in the City of Menifee is expected to increase by 2.99%, compounded annually. Between 2012 and 2040, the number of households in the City of Menifee is expected to increase by 1.90%, compounded annually.

Based on a comparison of Existing traffic volumes to the Opening Year Cumulative (2020) With Project forecasts, the average growth rate is estimated at approximately 65.81 percent per year, compounded annually, between Existing and Opening Year Cumulative (2020) With Project traffic conditions. The annual growth rate at each individual intersection is not lower than 16.68 percent per year, compounded annually, to as high as 174.60 percent per year, compounded annually, over the same 2-year time period. Therefore, the annual growth rate utilized for the purposes of this analysis (2.0 percent per year) would appear to conservatively approximate the anticipated regional growth in traffic volumes in the City of Menifee for Opening Year Cumulative traffic conditions, especially when considered along with the addition of project-related traffic and traffic associated with other cumulative development projects within the study area. As such, the growth in traffic volumes assumed in this traffic impact analysis would tend to overstate as opposed to understate the potential impacts to traffic and circulation.



# EXHIBIT 4-1: PROJECT TRIP DISTRIBUTION

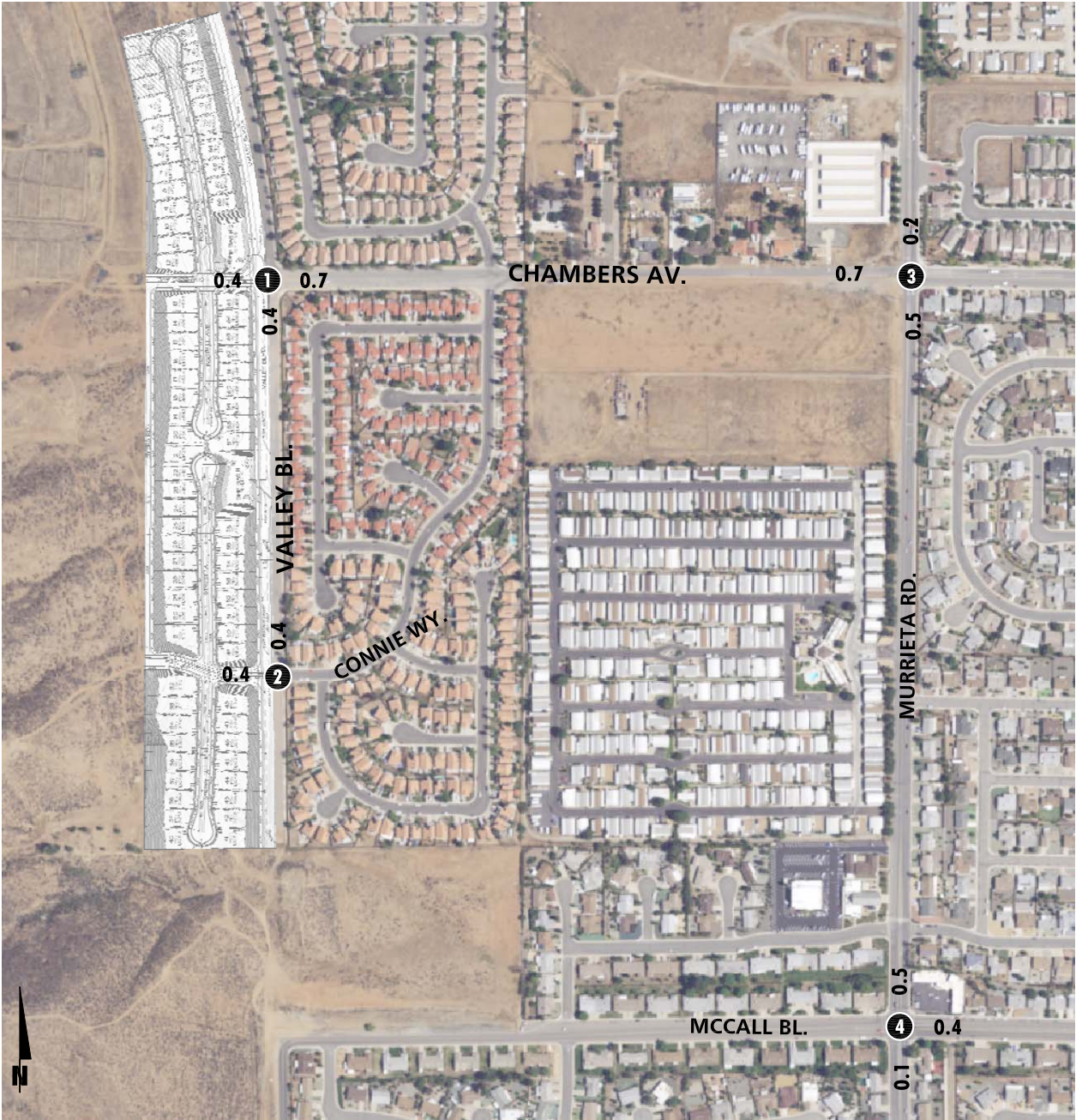


## LEGEND:

10 = PERCENT TO/FROM PROJECT



EXHIBIT 4-2: PROJECT ONLY TRAFFIC VOLUMES



1	Valley Bl. & Chambers Av.	2	Valley Bl. & Connie Wy.	3	Murrieta Rd. & Chambers Av.	4	Murrieta Rd. & McCall Bl.
<div><div><div>0(0)</div><div>0(0)</div><div>0(0)</div></div><div><div>0(0)</div><div>21(14)</div><div>0(0)</div></div></div>	<div><div><div>0(0)</div><div>0(0)</div><div>0(0)</div></div><div><div>0(0)</div><div>0(0)</div><div>0(0)</div></div></div>	<div><div><div>7(23)</div><div>0(0)</div><div>0(0)</div></div><div><div>21(13)</div><div>0(0)</div><div>0(0)</div></div></div>	<div><div><div>4(14)</div><div>0(0)</div><div>0(0)</div></div><div><div>13(8)</div><div>0(0)</div><div>29(19)</div></div></div>	<div><div><div>0(0)</div><div>0(0)</div><div>0(0)</div></div><div><div>10(33)</div><div>0(0)</div><div>0(0)</div></div></div>	<div><div><div>0(0)</div><div>0(0)</div><div>0(0)</div></div><div><div>0(0)</div><div>1(5)</div><div>0(0)</div></div></div>	<div><div><div>0(0)</div><div>0(0)</div><div>0(0)</div></div><div><div>0(0)</div><div>0(0)</div><div>0(0)</div></div></div>	

**LEGEND:**  
10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES  
10.0 = VEHICLES PER DAY (1000'S)

## 4.6 CUMULATIVE DEVELOPMENT TRAFFIC

A cumulative project list was developed for the purposes of this analysis through consultation with the City of Menifee (see Appendix 4.1). The list consists of cumulative projects that are anticipated to contribute traffic to any study area facility. Exhibit 4-3 illustrates the cumulative development location map. A summary of cumulative development projects and their proposed land uses are shown on Table 4-2. Where applicable, the traffic generated by individual cumulative projects has been manually added to the Opening Year Cumulative (2020) forecasts to ensure that traffic generated by the listed cumulative development projects in Table 4-2 are reflected as part of the background traffic. Cumulative Development ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-4.

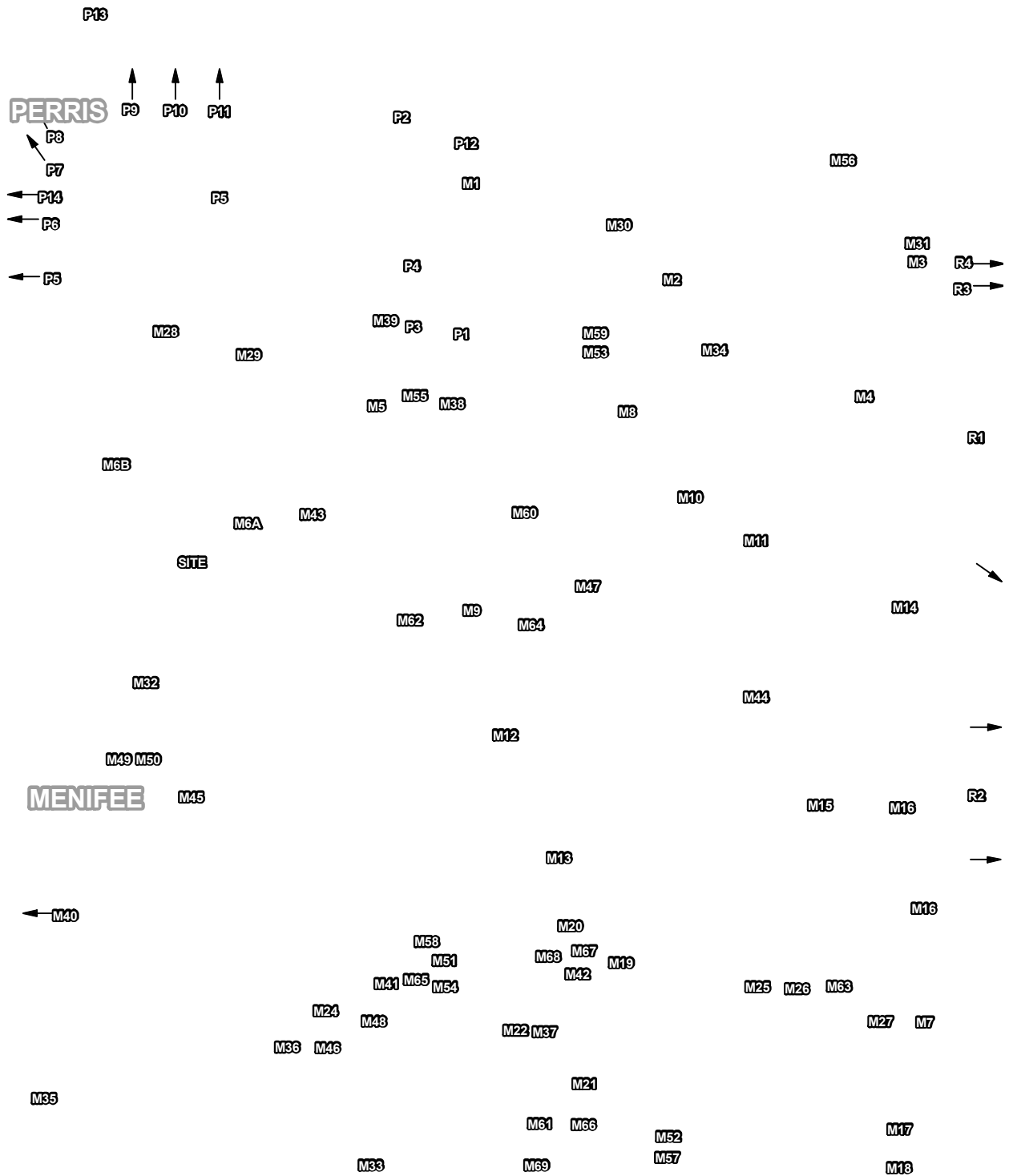
## 4.7 TRAFFIC FORECASTS

To provide a comprehensive assessment of the deficiencies, “buildup” analysis was performed in support of this work effort. The “buildup” method was used to approximate E+P, EAP (2020), and Opening Year Cumulative (2020) traffic conditions, and is intended to identify the near-term deficiencies on both the existing and planned near-term circulation system. The Opening Year Cumulative (2020) With Project traffic conditions includes background traffic, traffic generated by other cumulative development projects within the study area, and traffic generated by the proposed Project.

## 4.8 NEAR-TERM CONDITIONS

The “buildup” approach combines existing traffic counts with a background ambient growth factor to forecast the EAP (2020) and Opening Year Cumulative (2020) traffic conditions. An ambient growth factor of 4.04 percent accounts for background (area-wide) traffic increases that occur over time up to the year 2020 from the year 2018 (compounded 2 percent per year growth over a 2-year period). Traffic volumes generated by cumulative development projects are then added to assess the EAP (2020) and Opening Year Cumulative (2020) traffic conditions. The 2020 roadway network is similar to the existing conditions roadway network with the exception of future roadways and intersections proposed to be developed by the Project.

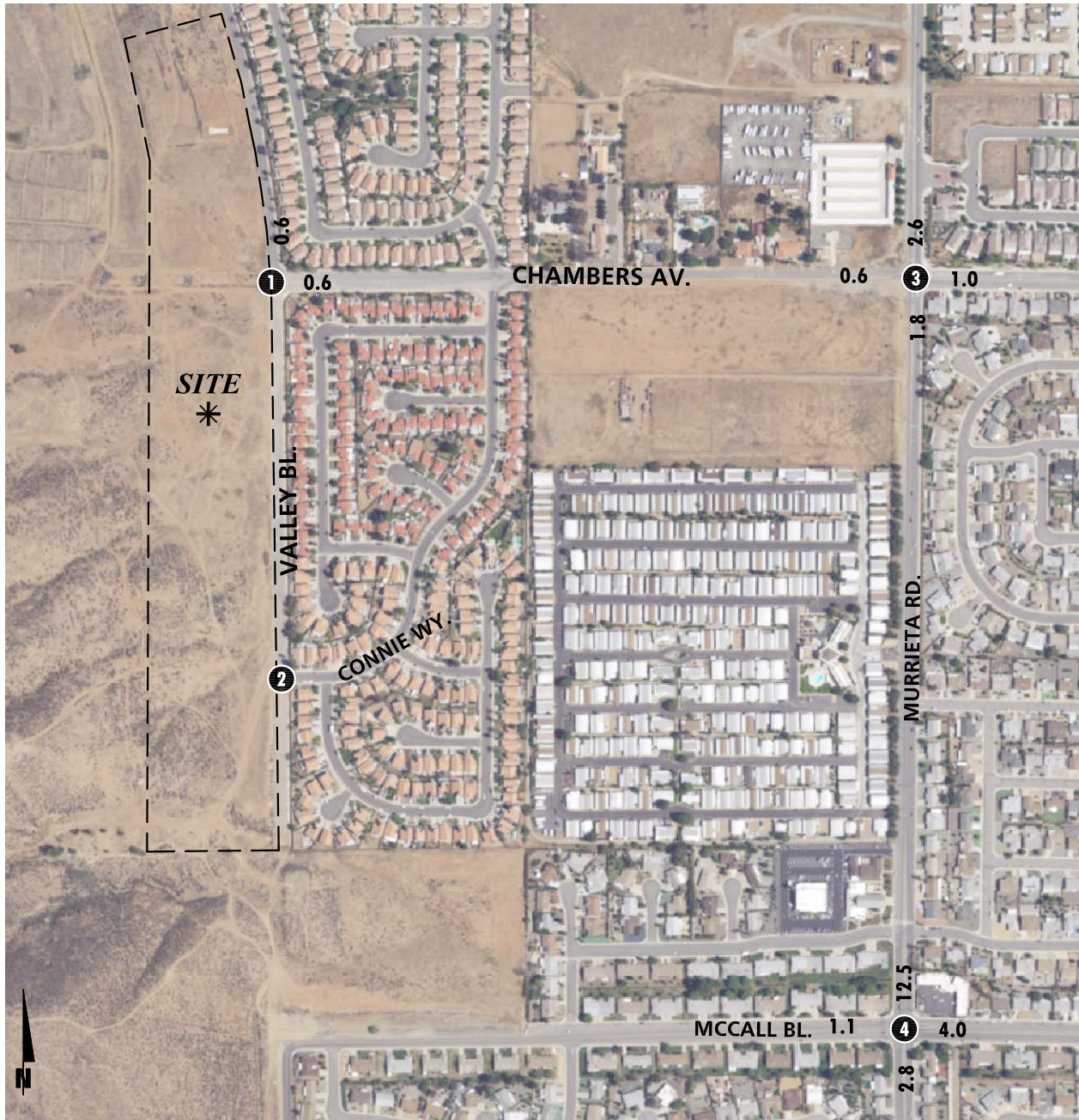
# EXHIBIT 4-3: CUMULATIVE DEVELOPMENT LOCATION MAP



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community



EXHIBIT 4-4: CUMULATIVE DEVELOPMENT TRAFFIC VOLUMES



1	Valley Bl. & Chambers Av.	2	Valley Bl. & Connie Wy.	3	Murrieta Rd. & Chambers Av.	4	Murrieta Rd. & McCall Bl	
<div><div><div>0(0)</div><div>22(27)</div><div>13(31)</div><div>0(0)</div></div><div><div>0(0)</div><div>0(0)</div></div></div>		<div><div><div>0(0)</div><div>0(0)</div></div></div>	<div><div><div>0(0)</div><div>0(0)</div></div></div>	<div><div><div>11(27)</div><div>70(79)</div><div>6(10)</div></div><div><div>22(17)</div><div>15(22)</div><div>15(20)</div><div>8(18)</div><div>48(99)</div><div>4(8)</div></div></div>	<div><div><div>14(17)</div><div>13(24)</div><div>8(7)</div></div><div><div>8(18)</div><div>48(99)</div><div>4(8)</div></div></div>	<div><div><div>5(6)</div><div>47(44)</div><div>53(68)</div></div><div><div>4(8)</div><div>58(58)</div><div>0(0)</div></div></div>	<div><div><div>43(75)</div><div>31(75)</div><div>58(82)</div></div><div><div>0(0)</div><div>24(63)</div><div>59(83)</div></div></div>	

LEGEND:

- 10(10) - AM(PM) PEAK HOUR INTERSECTION VOLUMES
- 10.0 - VEHICLES PER DAY (1000'S)

**Table 4-2**  
(Page 1 of 6)

**Summary of Cumulative Development Projects**

No.	Project Name	Land Use	Quantity <sup>1</sup>	
CITY OF MENIFEE				
M1	CUP 2016-289	Fast-food w/ Drive-Thru	3.039	TSF
		Retail	14.95	TSF
M2	TR 34118	Single Family Residential	169	DU
M3	TR34600	Single Family Residential	153	DU
M4	TR 31811	Single Family Residential	559	DU
	TR 31812	Senior Adult Detached Housing	742	DU
M5	TR 30182	Single Family Residential	84	DU
	TR 33419	Single Family Residential	140	DU
	TR 33648	Single Family Residential	56	DU
	TR 35143	Single Family Residential	15	DU
M6A	TR 32314	Single Family Residential	33	DU
M6B	Cimarron Ridge	Single Family Residential	756	DU
M7	TR 2016-285, SP 2016-286, GPA 2016-287, CZ 2016-288	Single Family Residential	305	DU
M8	TR 29777	Single Family Residential	177	DU
M9	Menifee North Shopping Center	Free-Standing Discount Superstore	200.000	TSF
		Bank with Drive-through Window	5.500	TSF
		Fast-food w/ Drive-Thru	6.700	TSF
		Shopping Center	10.000	TSF
		Gas Station & Market / Car Wash	16	VFP
M10	TR 29835	Single Family Residential	543	DU
	TR 31098	Single Family Residential	264	DU
M11	CUP 03549	Self-Storage Facility	152.893	TSF
		Grocery Store	45.000	TSF
		Pharmacy	14.600	TSF
		Shopping Center	11.500	TSF
		Restaurants	6.100	TSF
		Fast-food w/ Drive-Thru	3.500	TSF
		Gas Station & Market / Car Wash	16	VFP
M12	PP 19469R1	Senior Apartments	221	DU
M13	CUP 2017-042	Assisted Living	118	Rooms
M14	TR 34180	Single Family Residential (80% Built)	97	DU
	TR 34406	Single Family Residential (25% Built)	693	DU
M15	TR 31582	Single Family Residential (50% Built)	140	DU

**Table 4-2**  
(Page 2 of 6)

**Summary of Cumulative Development Projects**

No.	Project Name	Land Use	Quantity <sup>1</sup>	
M16	TR 32100	Single Family Residential	170	DU
	TR 32101	Single Family Residential	197	DU
	TR 32102	Single Family Residential	272	DU
M17	Nautical Cove Residential	Single Family Residential	235	DU
M18	Menifee Heights - TR32277	Single Family Residential	359	DU
		Active Parks	10.2	AC
M19	Menifee Lakes Shopping Center (PP 2009-052)	Shopping Center	120.848	TSF
		Gas Station & Market / Car Wash	12	VFP
		Hotel	71	ROOM
M20	SP 248 Newport Hub	Shopping Center (50% occupied)	229.70	TSF
		General Office	97.6	TSF
		General Light Industrial (50% occupied)	241.8	TSF
		Motel	100	ROOM
M21	Pechanga Commercial Site (PP 2010-123)	Shopping Center	208.160	TSF
M22	Menifee Town Center Specific Plan	Shopping Center	409.370	TSF
		Hotel	99	ROOM
		Single Family Residential	277	DU
		Condo/Townhomes / Apartments	548	DU
M23	Junction at Menifee	Shopping Center	526.800	TSF
	Menifee Shopping Center	Shopping Center	238.180	TSF
M24	TR 28788 & TR 29794	Single Family Residential (50% Built)	334	DU
M25	TPM 2009-168	Archibald's; Rite-Aid; Senior Apartments	N/A	
M26	Newport & Menifee Retail	Shopping Center	138.091	TSF
M27	The Lakes (TR 30422 / SP 247 Amendment 1)	Single Family Residential (75% Built)82	327	DU
M28	TTM 34037	Single Family Residential	132	DU
M29	TTM 31856	Single Family Residential	79	DU
M30	TTM 35876	Single Family Residential	17	DU
M31	TTM 33738	Single Family Residential	52	DU
M32	TTM 31456	Single Family Residential	177	DU
M33	PA 2014-218	Single Family Residential	80	DU
M34	CUP 2016-263	Manufacturing	12.323	TSF
M35	TR 32025	Single Family Residential	198	DU
M36	TR 30812	Single Family Residential	29	DU
M37	PP 2016-239	Recreation Community Center	N/A	
M38	CUP 2016-233	Automobile Parts Sales	17.600	TSF

**Table 4-2**  
(Page 3 of 6)

**Summary of Cumulative Development Projects**

No.	Project Name	Land Use	Quantity <sup>1</sup>
M39	PAR 2015-228	Gas Station & Market / Car Wash	8 VFP
		Fast-food w/ Drive-Thru	4.365 TSF
M40	PAR 2016-215	Gas Station & Market / Car Wash	4 VFP
		Fast-food w/ Drive-Thru	3.200 TSF
		Retail	2.000 TSF
M41	CUP 2015-157	Car Wash	4.392 TSF
		Tire Shop	6.166 TSF
M42	PAR 2016-154/PP 2017-021	Wholesale Market	29.536 TSF
		Retail	12.993 TSF
		High Turnover (Sit-Down) Restaurant	8.646 TSF
M43	PP 2016-213 (TR 30507)	Single Family Residential	111 TSF
M44	2013-040	Senior Adult Attached Housing	228 DU
M45	TR 2016-038	Single Family Residential	18 DU
M46	TM 28787	Single Family Residential	67 DU
M47	CUP 2016-183	Assisted Living	45.246 TSF
		Mixed Office/Retail	10.368 TSF
M48	TM 28790	Single Family Residential	156 DU
M49	TR 28859	Single Family Residential (65% Built)	86 DU
M50	TR 28859-1	Automobile Parts Sales	6.214 TSF
M51	CUP 2013-157	Tire Store	7.171 TSF
M52	PP 2015-164	Senior Adult Attached Housing	100 DU
		Apartments	238 DU
M53	EOT 2015-012	General Light Industrial	97.564 TSF
M54	PP 2015-099	Retail	9.750 TSF
M55	PAR 2015-133	Condo/Townhomes	126 DU
M56	TR 31536	Single Family Residential	44 DU
M57	TTM 2015-165	Single Family Residential	68 DU
M58	PAR 2015-195	Condo/Townhomes	207 DU
M59	2011-003	Office	21.623 TSF
		Warehouse	40.000 TSF
M60	Fleming Ranch Specific Plan	Single Family Residential	1080 DU
		Shopping Center	225.000 TSF
		Sports Park	13.4 AC
M61	PAR 2016-039/TR33511	Single Family Residential	71 DU
M62	CUP 2016-110	Fast-food w/ Drive-Thru	2.400 DU

**Table 4-2**  
(Page 4 of 6)

**Summary of Cumulative Development Projects**

No.	Project Name	Land Use	Quantity <sup>1</sup>	
M63	GPA 2016-061; SPA -062; TR -063	Single Family Residential	54	DU
M64	PP 2016-124	Fast-food w/ Drive-Thru	6.200	TSF
		Retail	1.000	TSF
		Gas Station & Market / Car Wash	12	VFP
M65	PP 2016-164	Fast-food w/ Drive-Thru	2.730	TSF
M66	PP 22628; EOT 2016-102	Mixed Commercial/Industrial	N/A	
M67	PP 2016-135	Medical Office	25.698	TSF
M68	PAR 2016-154	Retail	38.582	TSF
M69	TR 2017-174; CUP 2017-173; PP 2017-175	Assisted Living	142	Rooms
		Memory Care	36	Rooms
		Office	21.722	TSF
CITY OF PERRIS				
P1	Towne Center (DPR 06-0337)	Shopping Center	286.000	TSF
		Free-Standing Discount Store	221.000	TSF
P2	Metrolink Station	Light Rail Transit	680	SP
P3	PDO 07-12-0006	Condo/Townhomes	400	DU
		Shopping Center	60.000	TSF
P4	Remaining DPR 04-0621 (Perris Crossing)	Fast-food w/ Drive-Thru	16.300	TSF
		General Office	24.200	TSF
		Specialty Retail	26.825	TSF
		Shopping Center	209.500	TSF
P5	Green Valley Specific Plan	Single Family Residential	976	DU
		Condo/Townhomes	1,472	DU
		Apartments	926	DU
		Community Center	131.769	TSF
		Shopping Center	303.831	TSF
	Riverwoods Specific Plan	Single Family Residential	663	DU
		Elementary School	600	STU
		City Park	12	AC
		Community Center	2.500	TSF



**Table 4-2**  
(Page 5 of 6)

**Summary of Cumulative Development Projects**

No.	Project Name	Land Use	Quantity <sup>1</sup>	
P6	TR 31304	Single Family Residential	123	DU
	TR 31407	Single Family Residential	243	DU
	TR 31650	Single Family Residential	61	DU
	TR 30973	Single Family Residential	35	DU
	TR 31225	Single Family Residential	57	DU
	TR 31226	Single Family Residential	82	DU
	TR 33050	Single Family Residential	35	DU
	TR 33199	Single Family Residential	26	DU
	TR 33200	Single Family Residential	130	DU
	TR 33247	Single Family Residential	28	DU
	TR 33193	Condo/Townhomes	94	DU
	TR 32032	Single Family Residential	108	DU
	TR 31926	Single Family Residential	337	DU
	TR 33900	Single Family Residential	198	DU
	TR 33973	Single Family Residential	384	DU
	TR 31925	Single Family Residential	10	DU
	TR 36343	Single Family Residential	184	DU
	TR 32666	Single Family Residential	663	DU
P7	DPR 07-0130 (First Industrial)	High-Cube Warehouse	760.000	TSF
	DPR 08-01-0007 (First Industrial)	High-Cube Warehouse	3,200.000	TSF
	DPR 08-04-0006 (First Industrial)	High-Cube Warehouse	3,400.000	TSF
P8	TR 32525	Single Family Residential	162	DU
P9	Downtown Specific Plan	Single Family Residential	391	DU
		Apartments	2,598	DU
		Condo/Townhomes	377	DU
		General Office	1,588.271	TSF
		Shopping Center	536.576	TSF
		General Light Industrial (Existing Uses)	-344	TSF
	DPR 12-07-0011	Specialty Retail	12.48	TSF

**Table 4-2**  
(Page 6 of 6)

**Summary of Cumulative Development Projects**

No.	Project Name	Land Use	Quantity <sup>1</sup>	
P10	Parkwest Specific Plan	Single Family Residential	2,027	DU
	TR 34078	Single Family Residential	72	DU
	TR 31678	Single Family Residential	67	DU
	DPR 06-0378	Senior Apartments	429	DU
	DPR 10-03-0001	Senior Apartments	190	DU
	TR 31651	Single Family Residential	57	DU
	TR 31240-1	Single Family Residential	114	DU
	DPR 12-05-0013	Apartments	75	DU
P11	DPR 08-04-0016 (Redlands Retail)	Shopping Center	643.000	TSF
	DPR 10-01-0008	Shopping Center	43.000	TSF
	DPR 07-07-0032	Shopping Center	83.464	TSF
P12	DPR 11-12-0009	Hotel	100	ROOM
P13	DPR 14-03-0018; MA 14-03-0019	Manufacturing	47	TSF
P14	ADPR 14-03-0008	City Park	6.0	AC
<b>COUNTY OF RIVERSIDE</b>				
R1	TR 31500	Single Family Residential	182	DU
	TR 32514	Condo/Townhomes	86	DU
	TR 30972	Single Family Residential	91	DU
		City Park	1.50	AC
R2	TR 30266	Single Family Residential	245	DU
		Condo/Townhomes	265	DU
		Elementary School	600	STU
		City Park	5	AC
		Shopping Center	183.600	TSF
	TR 33498	Condo/Townhomes	233	DU
	TR 34677	Single Family Residential	420	DU
		City Park	4.1	AC
	TR 31100	Single Family Residential	286	DU
	TTM 34842	Single Family Residential	32	DU
	TT 31537	Single Family Residential	588	DU
		Elementary School	600	DU
	TR 30808	Single Family Residential	393	DU
R3	PP 25248	Shopping Center	8.239	TSF
R4	TR 29322	Single Family Residential	202	DU

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

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

- Existing Plus Ambient Growth Plus Project
  - Existing (2018) counts
  - Ambient growth traffic (4.04%)
  - Project traffic
- Opening Year Cumulative (2020) Without Project
  - Existing 2018 counts
  - Ambient growth traffic (4.04%)
  - Cumulative Development Project traffic
- Opening Year Cumulative (2020) With Project
  - Existing 2018 counts
  - Ambient growth traffic (4.04%)
  - Cumulative Development Project traffic
  - Project traffic

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## **5 E+P TRAFFIC CONDITIONS**

This section discusses the traffic forecasts for Existing plus Project (E+P) conditions and the resulting intersection operations, roadway segment capacity, and traffic signal warrant analyses.

### **5.1 ROADWAY IMPROVEMENTS**

Exhibit 5-1 shows the intersection geometries with the addition of the Project. These geometries are assumed to be in place for E+P traffic conditions.

### **5.2 E+P TRAFFIC VOLUME FORECASTS**

This scenario includes Existing traffic volumes plus Project traffic. Exhibit 5-2 shows the ADT volumes, weekday AM and weekday PM peak hour intersection turning movement volumes.

### **5.3 INTERSECTION OPERATIONS ANALYSIS**

E+P peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TIA. The intersection analysis results are summarized in Table 5-1, which indicates that there are no study area intersections anticipated to operate at an unacceptable LOS during the peak hours with the addition of Project traffic consistent with Existing (2018) traffic conditions. Exhibit 5-3 summarizes the weekday AM and PM peak hour study area intersection LOS under E+P traffic conditions, consistent with the summary provided in Table 5-1. The intersection operations analysis worksheets are included in Appendix 5.1 of this TIA for E+P traffic conditions.

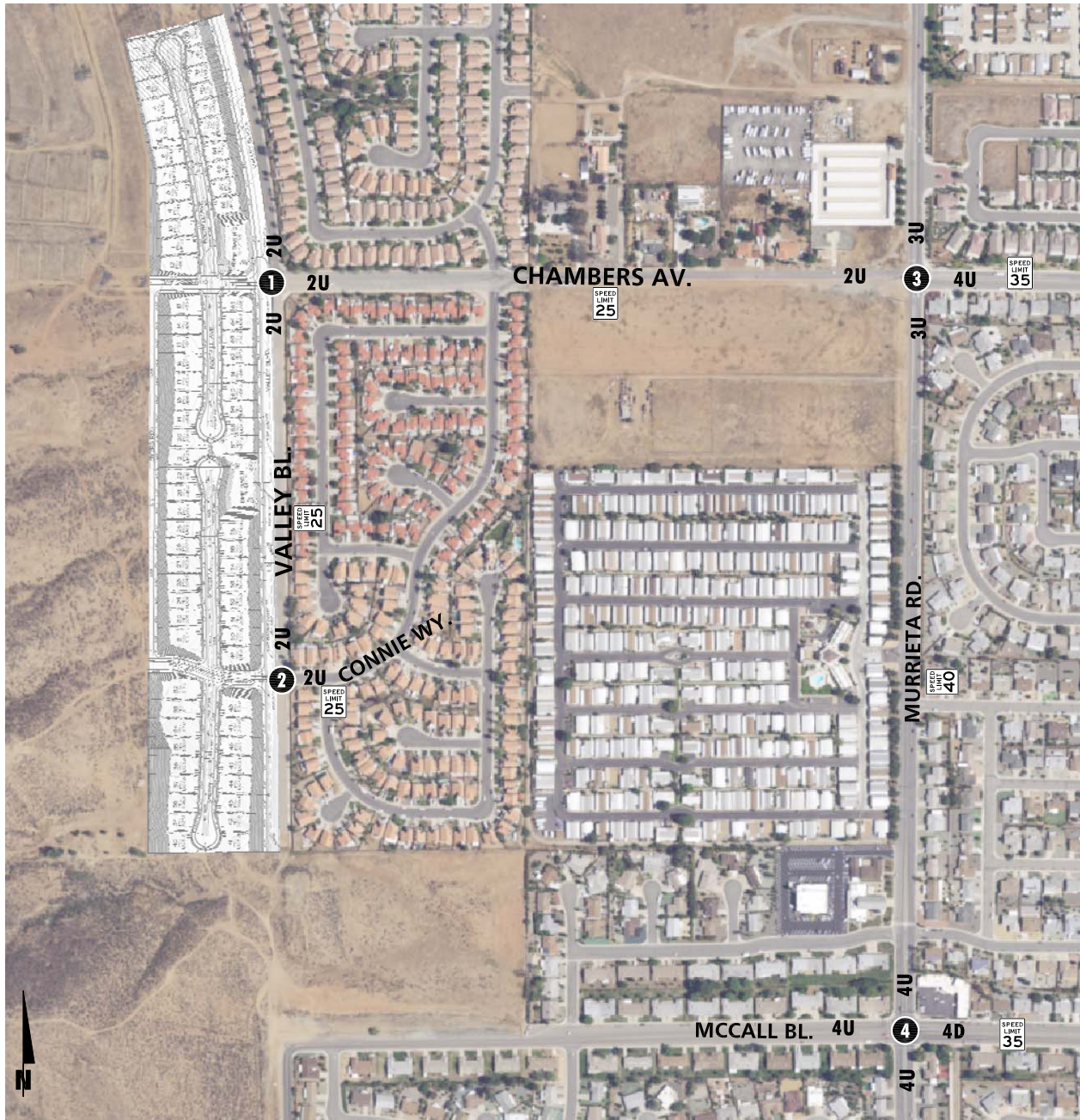
### **5.4 ROADWAY SEGMENT CAPACITY ANALYSIS**

The City of Menifee TIA guidelines provides roadway volume capacity values. These roadway segment capacities 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. Where applicable, roadway segment capacities have been interpolated based on the City of Menifee General Plan roadway classification, the existing number of lanes, and the City's roadway segment capacity thresholds found in Attachment B of the City's traffic study guidelines. Table 5-2 provides a summary of the E+P conditions roadway segment capacity analysis based on the City of Menifee Roadway Segment Capacity Thresholds. As shown on Table 5-2, there are no study area roadway segments anticipated to operate at an unacceptable LOS with the addition of Project traffic consistent with Existing (2018) traffic conditions.

### **5.5 TRAFFIC SIGNAL WARRANTS ANALYSIS**

There are no study area intersections anticipated to meet traffic signal warrants for E+P traffic conditions (see Appendix 5.2).

**EXHIBIT 5-1: EXISTING PLUS PROJECT NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS**



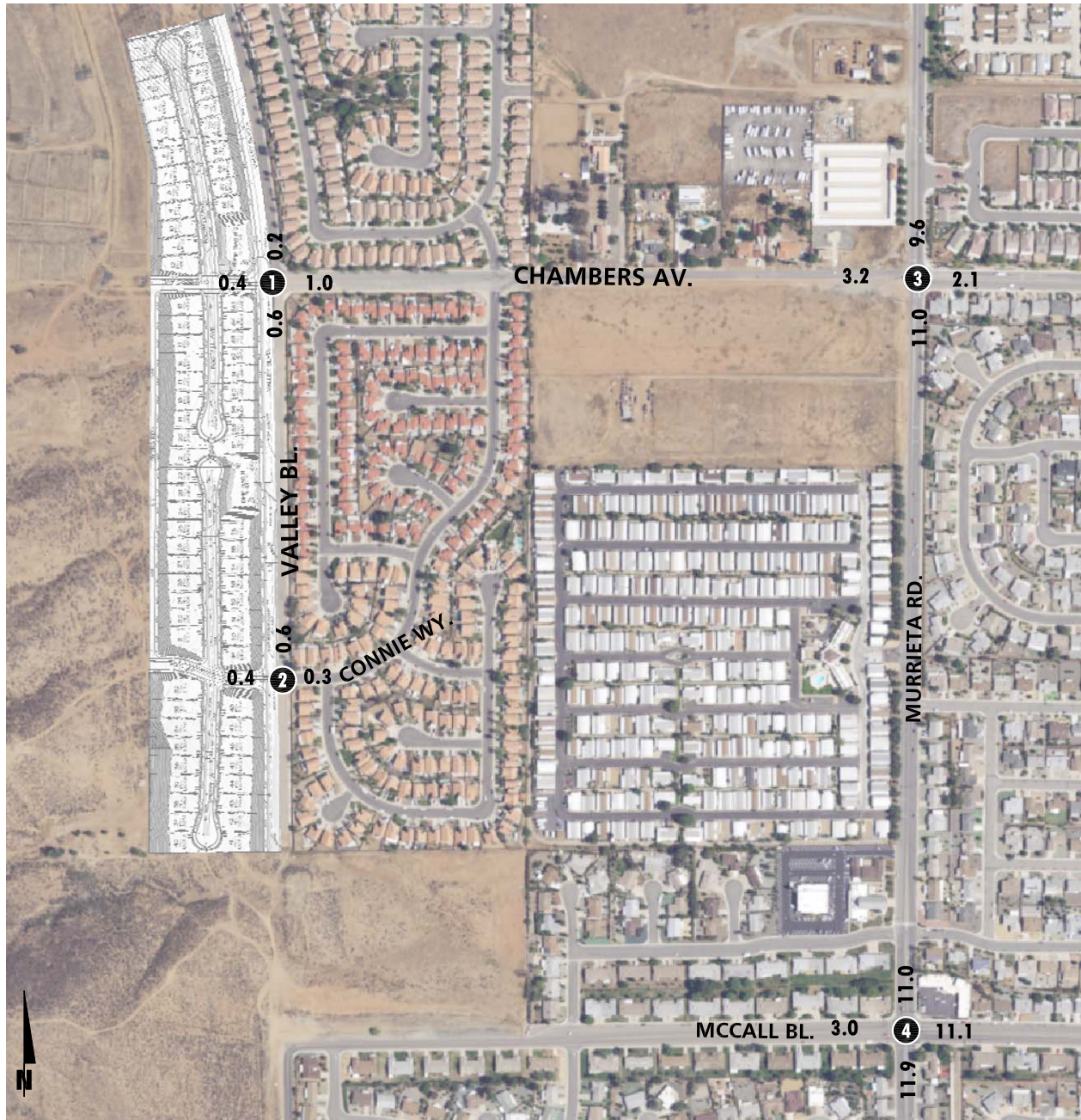
1	Valley Bl. & Chambers Av.	2	Valley Bl. & Connie Wy.	3	Murrieta Rd. & Chambers Av.	4	Murrieta Rd. & McCall Bl.

**LEGEND:**

- = TRAFFIC SIGNAL
- = ALL WAY STOP
- = STOP SIGN
- 4** = NUMBER OF LANES
- D** = DIVIDED
- U** = UNDIVIDED
- DEF** = DEFACTO RIGHT TURN
- = SPEED LIMIT (MPH)



## EXHIBIT 5-2: E+P TRAFFIC VOLUMES



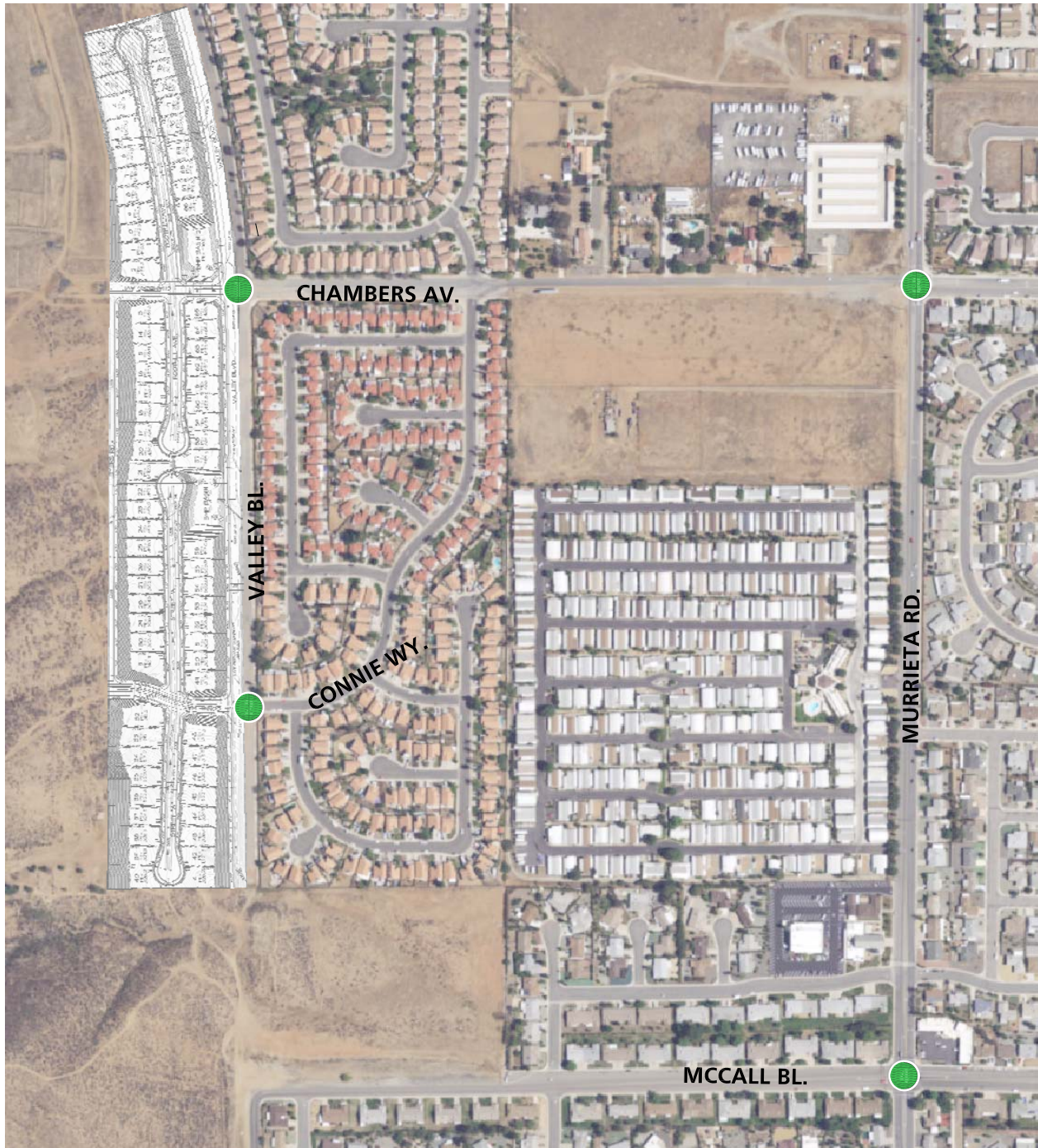
1	Valley Bl. & Chambers Av.	2	Valley Bl. & Connie Wy.	3	Murrieta Rd. & Chambers Av.	4	Murrieta Rd. & McCall Bl
	<div><div><div>0(0)</div><div>0(3)</div><div>0(1)</div></div><div><div>1(4)</div><div>7(24)</div><div>13(35)</div></div><div><div>0(0)</div><div>21(14)</div><div>0(0)</div></div><div><div>0(0)</div><div>0(5)</div><div>28(17)</div></div></div>	<div><div><div>7(23)</div><div>0(0)</div><div>6(15)</div></div><div><div>7(9)</div><div>0(0)</div><div>0(0)</div></div><div><div>21(13)</div><div>0(0)</div><div>0(0)</div></div><div><div>0(0)</div><div>0(0)</div><div>0(0)</div></div></div>	<div><div><div>13(44)</div><div>267(325)</div><div>44(47)</div></div><div><div>18(62)</div><div>10(20)</div><div>12(14)</div></div><div><div>32(31)</div><div>37(18)</div><div>97(72)</div></div><div><div>50(95)</div><div>315(294)</div><div>14(12)</div></div></div>	<div><div><div>77(39)</div><div>210(264)</div><div>95(153)</div></div><div><div>89(142)</div><div>83(112)</div><div>153(268)</div></div><div><div>107(30)</div><div>126(66)</div><div>3(3)</div></div><div><div>2(1)</div><div>238(269)</div><div>190(191)</div></div></div>			

### LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES  
10.0 = VEHICLES PER DAY (1000'S)



### EXHIBIT 5-3: E+P SUMMARY OF LOS



#### LEGEND:





-  = AM PEAK HOUR ACCEPTABLE LOS
-  = AM PEAK HOUR DEFICIENT LOS
-  = PM PEAK HOUR ACCEPTABLE LOS
-  = PM PEAK HOUR DEFICIENT LOS





Table 5-1

## Intersection Analysis for E+P Conditions

#	Intersection	Traffic Control <sup>2</sup>	Existing (2018)				E+P				Project Trips		Significant Impact? <sup>3</sup>
			Delay <sup>1</sup> (secs.)		Level of Service		Delay <sup>1</sup> (secs.)		Level of Service				
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
1	Valley Bl. & Chambers Av.	AWS	7.1	7.5	A	A	7.4	8.1	A	A	56	74	No
2	Valley Bl. & Connie Wy.	CSS	0.0	0.0	A	A	7.3	7.3	A	A	28	36	No
3	Murrieta Rd. & Chambers Av.	AWS	13.5	14.8	B	B	14.5	16.3	B	C	56	74	No
4	Murrieta Rd. & McCall Bl.	TS	19.8	22.4	B	C	20.4	23.5	C	C	38	52	No

<sup>1</sup> 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.

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

<sup>3</sup> Impact is significant if the pre-project condition is at or better than LOS D (or acceptable LOS) and the project-generated traffic causes deterioration below acceptable levels, a deficiency is deemed to occur. However, if the pre-project condition is already below LOS D (or acceptable LOS), the Project will be responsible for mitigating its impact to a LOS equal to or better than it was without the Project.

Table 5-2

## Roadway Segment Capacity Analysis for E+P Conditions

#	Roadway	Segment Limits	Roadway Section	LOS E Capacity <sup>1</sup>	Existing (2018)	V/C <sup>2</sup>	LOS <sup>3</sup>	E+P	V/C <sup>2</sup>	LOS <sup>3</sup>	Acceptable LOS	Significant Impact? <sup>4</sup>
1	Valley Bl.	Chambers Av. to Connie Wy.	2U	13,000	235	0.02	A	589	0.05	A	D	No
2	Chambers Av.	Valley Bl. to Connie Wy.	2U	13,000	266	0.02	A	974	0.07	A	D	No
3	Chambers Av.	Connie Wy. To Murrleta Rd.	2U	13,000	2,495	0.19	A	3,203	0.25	A	D	No
4	Murrleta Rd.	Chambers Av. to McCall Bl.	4U	25,900	10,489	0.40	A	10,985	0.42	A	D	No

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

<sup>1</sup> These maximum roadway capacities have been extracted from the following source: City of Menifee Traffic Impact Analysis Guidelines and Requirements (Attachment B). These roadway capacities are "rule of thumb" estimates for planning purposes. The LOS E service volumes are estimated maximum daily capacity for respective classifications. By using the LOS E capacity for each roadway facility type, volume-to-capacity (v/c) values between 0.00-0.60 will represent LOS A, 0.61-0.70 will represent LOS B, 0.71-0.80 will represent LOS C, 0.81-0.90 will represent LOS D, 0.91-1.00 will represent LOS E, and v/c values greater than 1.00 will represent LOS F operations. Capacity is affected by such factors as intersections (spacing, configuration and control features), degree of access control, roadway grades, design geometrics (horizontal and vertical alignment standards), sight distance, vehicle mix (truck and bus traffic) and pedestrian and bicycle traffic.

<sup>2</sup> v/c = Volume to Capacity ratio

<sup>3</sup> LOS = Level of Service

<sup>4</sup> Impact is significant if the pre-project condition is at or better than LOS D (or acceptable LOS) and the project-generated traffic causes deterioration below acceptable levels, a deficiency is deemed to occur. However, if the pre-project condition is already below LOS D (or acceptable LOS), the Project will be responsible for mitigating its impact to a LOS equal to or better than it was without the Project.

## **6 EAP (2020) TRAFFIC CONDITIONS**

This section discusses the methods used to develop EAP (2020) traffic forecasts, and the resulting intersection operations, roadway segment capacity, and traffic signal warrant analyses.

### **6.1 ROADWAY IMPROVEMENTS**

The lane configurations and traffic controls assumed to be in place for EAP (2020) traffic conditions are consistent with those shown previously on Exhibit 5-1.

### **6.2 EAP (2020) TRAFFIC VOLUME FORECASTS**

This scenario includes Existing (2018) traffic volumes plus an ambient growth factor of 4.04% and the addition of Project traffic. Exhibit 6-1 shows the weekday ADT volumes and peak hour volumes which can be expected for EAP (2020) traffic conditions.

### **6.3 INTERSECTION OPERATIONS ANALYSIS**

LOS calculations were conducted for the study intersections to evaluate their operations under EAP conditions with roadway and intersection geometrics consistent with Section 6.1 *Roadway Improvements*. As shown in Table 6-1, and consistent with Existing conditions, the study area intersections are anticipated to continue to operate at acceptable LOS during the peak hours for EAP (2020) traffic conditions. A summary of the peak hour intersection LOS for EAP traffic conditions is shown on Exhibit 6-2. The intersection operations analysis worksheets for EAP traffic conditions are included in Appendix 6.1 of this TIA.

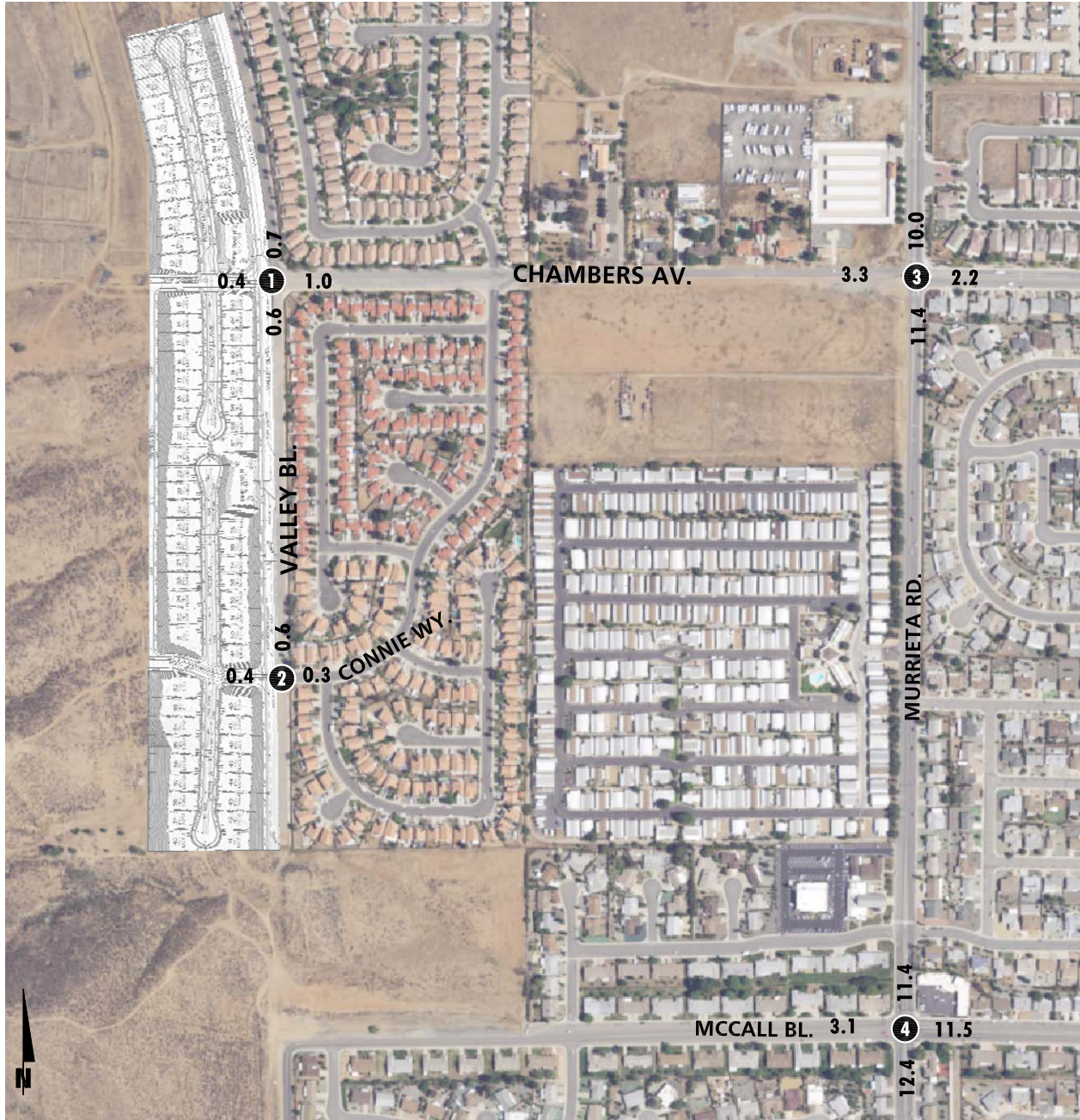
### **6.4 ROADWAY SEGMENT CAPACITY ANALYSIS**

The City of Menifee TIA guidelines provides roadway volume capacity values. These roadway segment capacities 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. Where applicable, roadway segment capacities have been interpolated based on the City of Menifee General Plan roadway classification, the existing number of lanes, and the City's roadway segment capacity thresholds found in Attachment B of the City's traffic study guidelines. Table 6-2 provides a summary of the EAP (2020) conditions roadway segment capacity analysis based on the City of Menifee Roadway Segment Capacity Thresholds. As shown on Table 6-2, there are no study area roadway segments anticipated to operate at an unacceptable LOS consistent with Existing (2018) traffic conditions.

### **6.5 TRAFFIC SIGNAL WARRANTS ANALYSIS**

There are no study area intersections anticipated to meet traffic signal warrants for EAP (2020) traffic conditions (see Appendix 6.2).

# EXHIBIT 6-1: EAP (2020) TRAFFIC VOLUMES



1	Valley Bl. & Chambers Av.	2	Valley Bl. & Connie Wy.	3	Murrieta Rd. & Chambers Av.	4	Murrieta Rd. & McCall Bl.
<div><div><div>0(0)</div><div>0(3)</div><div>0(1)</div></div><div><div>1(4)</div><div>7(24)</div><div>13(36)</div></div></div> <div><div>0(0)</div><div>21(14)</div><div>0(0)</div></div> <div><div>0(0)</div><div>0(5)</div><div>28(17)</div></div>	<div><div>7(23)</div><div>0(0)</div><div>6(16)</div></div> <div><div>7(10)</div><div>0(0)</div><div>0(0)</div></div>	<div><div>14(45)</div><div>278(339)</div><div>46(49)</div></div> <div><div>19(65)</div><div>11(21)</div><div>13(15)</div></div>	<div><div>80(40)</div><div>218(275)</div><div>98(158)</div></div> <div><div>92(147)</div><div>86(117)</div><div>159(279)</div></div>				

21(13)

0(0)

0(0)

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0(0)

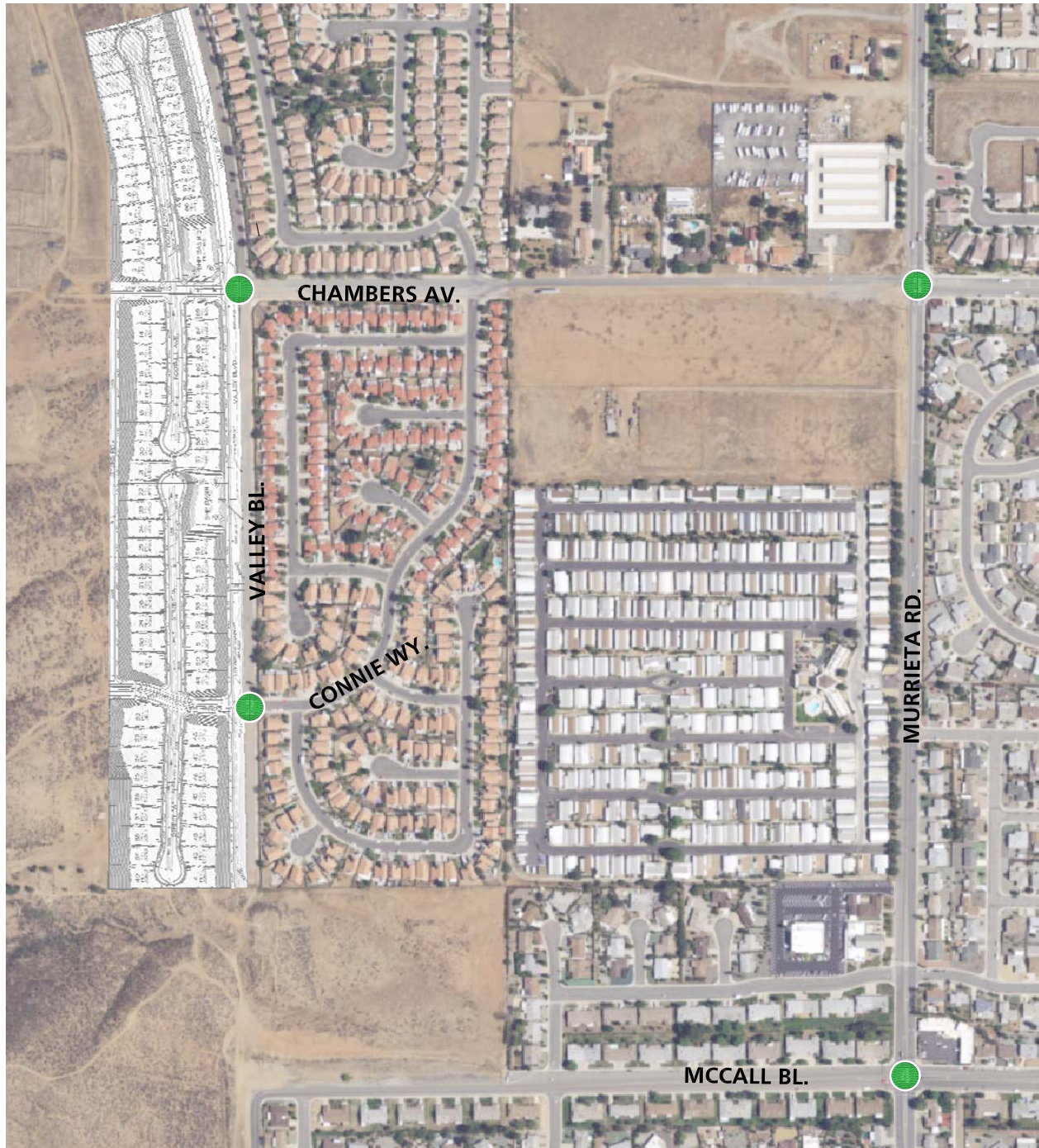
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## LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES  
 10.0 = VEHICLES PER DAY (1000'S)



## EXHIBIT 6-2: EAP (2020) SUMMARY OF LOS



### LEGEND:





-  = AM PEAK HOUR ACCEPTABLE LOS
-  = AM PEAK HOUR DEFICIENT LOS
-  = PM PEAK HOUR ACCEPTABLE LOS
-  = PM PEAK HOUR DEFICIENT LOS





Table 6-1

## Intersection Analysis for EAP (2020) Conditions

#	Intersection	Traffic Control <sup>2</sup>	Existing (2018)				EAP (2020)				Project Trips		Significant Impact? <sup>3</sup>
			Delay <sup>1</sup> (secs.)		Level of Service		Delay <sup>1</sup> (secs.)		Level of Service				
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
1	Valley Bl. & Chambers Av.	AWS	7.1	7.5	A	A	7.4	8.1	A	A	56	74	No
2	Valley Bl. & Connie Wy.	CSS	0.0	0.0	A	A	7.3	7.3	A	A	28	36	No
3	Murrieta Rd. & Chambers Av.	AWS	13.5	14.8	B	B	15.3	18.1	C	C	56	74	No
4	Murrieta Rd. & McCall Bl.	TS	19.8	22.4	B	C	20.9	24.3	C	C	38	52	No

<sup>1</sup> 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.

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

<sup>3</sup> Impact is significant if the pre-project condition is at or better than LOS D (or acceptable LOS) and the project-generated traffic causes deterioration below acceptable levels, a deficiency is deemed to occur. However, if the pre-project condition is already below LOS D (or acceptable LOS), the Project will be responsible for mitigating its impact to a LOS equal to or better than it was without the Project.

Table 6-2

## Roadway Segment Capacity Analysis for EAP (2020) Conditions

#	Roadway	Segment Limits	Roadway Section	LOS E Capacity <sup>1</sup>	Existing (2018)	V/C <sup>2</sup>	LOS <sup>3</sup>	EAP (2020)	V/C <sup>2</sup>	LOS <sup>3</sup>	Acceptable LOS	Significant Impact? <sup>4</sup>
1	Valley Bl.	Chambers Av. to Connie Wy.	2U	13,000	235	0.02	A	598	0.05	A	D	No
2	Chambers Av.	Valley Bl. to Connie Wy.	2U	13,000	266	0.02	A	985	0.08	A	D	No
3	Chambers Av.	Connie Wy. To Murrleta Rd.	2U	13,000	2,495	0.19	A	3,304	0.25	A	D	No
4	Murrleta Rd.	Chambers Av. to McCall Bl.	4U	25,900	10,489	0.40	A	11,408	0.44	A	D	No

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

<sup>1</sup> These maximum roadway capacities have been extracted from the following source: City of Menifee Traffic Impact Analysis Guidelines and Requirements (Attachment B). These roadway capacities are "rule of thumb" estimates for planning purposes. The LOS E service volumes are estimated maximum daily capacity for respective classifications. By using the LOS E capacity for each roadway facility type, volume-to-capacity (v/c) values between 0.00-0.60 will represent LOS A, 0.61-0.70 will represent LOS B, 0.71-0.80 will represent LOS C, 0.81-0.90 will represent LOS D, 0.91-1.00 will represent LOS E, and v/c values greater than 1.00 will represent LOS F operations. Capacity is affected by such factors as intersections (spacing, configuration and control features), degree of access control, roadway grades, design geometrics (horizontal and vertical alignment standards), sight distance, vehicle mix (truck and bus traffic) and pedestrian and bicycle traffic.

<sup>2</sup> v/c = Volume to Capacity ratio

<sup>3</sup> LOS = Level of Service

<sup>4</sup> Impact is significant if the pre-project condition is at or better than LOS D (or acceptable LOS) and the project-generated traffic causes deterioration below acceptable levels, a deficiency is deemed to occur. However, if the pre-project condition is already below LOS D (or acceptable LOS), the Project will be responsible for mitigating its impact to a LOS equal to or better than it was without the Project.

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## **7 OPENING YEAR CUMULATIVE (2020) TRAFFIC CONDITIONS**

This section discusses the methods used to develop Opening Year Cumulative (2020) traffic forecasts, and the resulting intersection operations, roadway segment capacity, and traffic signal warrant analyses.

### **7.1 ROADWAY IMPROVEMENTS**

The lane configurations and traffic controls assumed to be in place for Opening Year Cumulative (2020) Without Project conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Cumulative project driveways and those facilities assumed to be constructed by the cumulative development projects to provide site access are also assumed to be in place for Opening Year Cumulative (2020) conditions only (e.g., intersection and roadway improvements along cumulative development's frontage and driveways).

The lane configurations and traffic controls assumed to be in place for Opening Year Cumulative (2020) With Project are consistent with those shown previously on Exhibit 5-1.

### **7.2 OPENING YEAR CUMULATIVE (2020) TRAFFIC VOLUME FORECASTS**

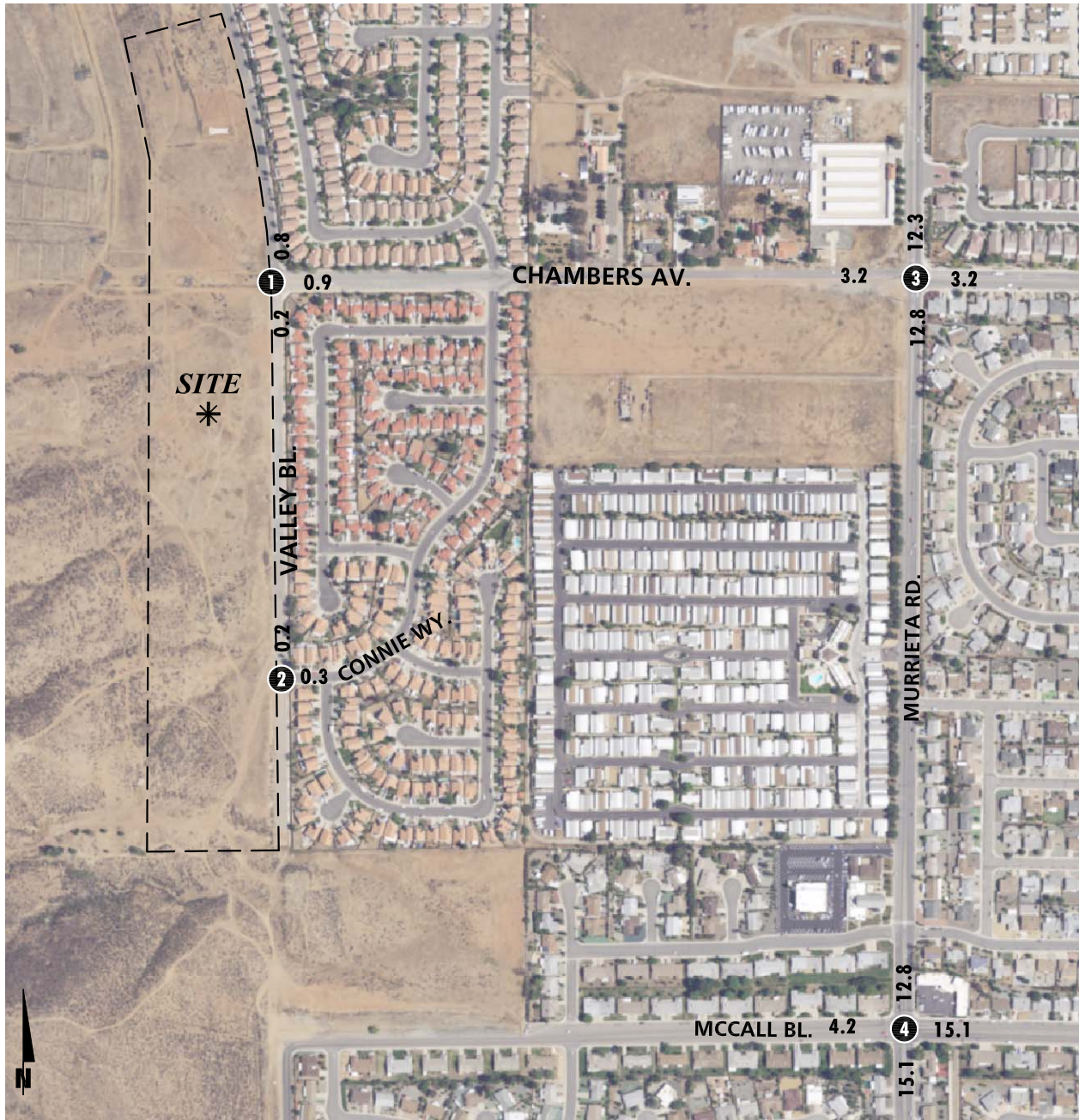
#### **7.2.1 OPENING YEAR CUMULATIVE (2020) WITHOUT PROJECT TRAFFIC CONDITIONS**

This scenario includes Existing traffic volumes, an ambient growth factor of 4.04% plus traffic from pending and approved but not yet constructed known development projects in the area. The weekday ADT, weekday AM, and PM peak hour volumes which can be expected for Opening Year Cumulative (2020) Without Project traffic conditions are shown on Exhibit 7-1.

#### **7.2.2 OPENING YEAR CUMULATIVE (2020) WITH PROJECT TRAFFIC CONDITIONS**

This scenario includes Existing traffic volumes, an ambient growth factor of 4.04%, traffic from pending and approved but not yet constructed known development projects in the area, and the addition of Project traffic. The weekday ADT, weekday AM, and PM peak hour volumes which can be expected for Opening Year Cumulative (2020) With Project traffic conditions are shown on Exhibit 7-2.

**EXHIBIT 7-1: OPENING YEAR CUMULATIVE (2020) WITHOUT PROJECT TRAFFIC VOLUMES**



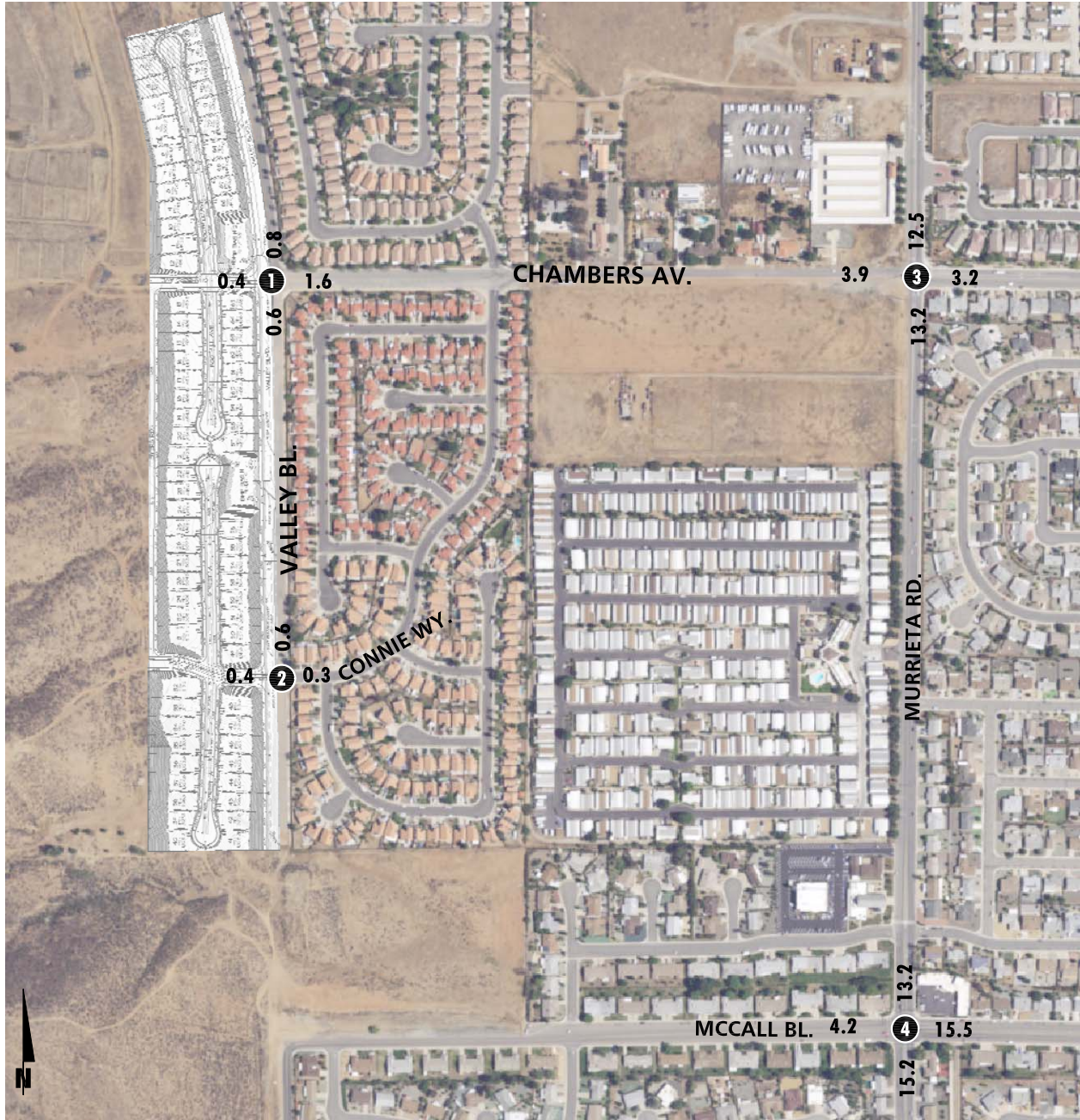
1	Valley Bl. & Chambers Av.	2	Valley Bl. & Connie Wy.	3	Murrieta Rd. & Chambers Av.	4	Murrieta Rd. & McCall Bl.
<div> <div>0(3)</div> <div>22(28)</div> <div>14(35)</div> <div>6(13)</div> <div>0(5)</div> <div>7(4)</div> </div>		<div> <div>6(16)</div> <div>7(10)</div> </div>		<div> <div>21(58)</div> <div>348(418)</div> <div>52(59)</div> <div>33(82)</div> <div>24(45)</div> <div>21(22)</div> <div>42(41)</div> <div>53(41)</div> <div>86(75)</div> <div>49(63)</div> <div>376(405)</div> <div>19(21)</div> </div>		<div> <div>85(46)</div> <div>261(316)</div> <div>126(210)</div> <div>127(194)</div> <div>117(192)</div> <div>217(361)</div> <div>115(39)</div> <div>190(127)</div> <div>3(3)</div> <div>2(1)</div> <div>270(338)</div> <div>256(281)</div> </div>	

**LEGEND:**

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES  
 10.0 = VEHICLES PER DAY (1000'S)



## EXHIBIT 7-2: OPENING YEAR CUMULATIVE (2020) WITH PROJECT TRAFFIC VOLUMES



1	Valley Bl. & Chambers Av.	2	Valley Bl. & Connie Wy.	3	Murrieta Rd. & Chambers Av.	4	Murrieta Rd. & McCall Bl.
0(0)	14(35)	7(23)	7(10)	25(72)	33(82)	85(46)	135(222)
0(3)	7(24)	0(0)	0(0)	348(418)	24(45)	265(319)	117(192)
22(28)	13(36)	6(16)	0(0)	52(59)	21(22)	151(226)	217(361)
0(0)	0(0)	21(13)	0(0)	55(49)	115(39)	2(1)	271(343)
21(14)	0(5)	0(0)	0(0)	53(41)	190(127)	271(343)	256(281)
0(0)	28(17)	0(0)	0(0)	115(94)	3(3)	256(281)	

### LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES  
10.0 = VEHICLES PER DAY (1000'S)

## 7.3 INTERSECTION OPERATIONS ANALYSIS

### 7.3.1 OPENING YEAR CUMULATIVE (2020) WITHOUT PROJECT TRAFFIC CONDITIONS

LOS calculations were conducted for the study intersections to evaluate their operations under Opening Year Cumulative Without Project conditions with roadway and intersection geometrics consistent with Section 7.1 *Roadway Improvements*. As shown in Table 7-1, the following study area intersection is anticipated to operate at unacceptable LOS:

- Murrieta Rd. / Chambers Av. (#3) – LOS E PM peak hour only

A summary of the peak hour intersection LOS for Opening Year Cumulative Without Project conditions is shown on Exhibit 7-3. The intersection operations analysis worksheets for Opening Year Cumulative (2020) Without Project traffic conditions are included in Appendix 7.1 of this TIA.

### 7.3.2 OPENING YEAR CUMULATIVE (2020) WITH PROJECT TRAFFIC CONDITIONS

As shown on Table 7-1 and illustrated on Exhibit 7-4, there are no additional study area intersections anticipated to experience unacceptable LOS (LOS E or worse) with the addition of Project traffic during one or more peak hours, in addition to the intersection previously identified under Opening Year Cumulative (2020) Without Project conditions. The intersection operations analysis worksheets for Opening Year Cumulative (2020) With Project traffic conditions are included in Appendix 7.2 of this TIA. Measures to address near-term deficiencies for Opening Year Cumulative (2020) traffic conditions are discussed in Section 7.6 *Cumulative Deficiencies and Recommended Improvements*.

## 7.4 ROADWAY SEGMENT CAPACITY ANALYSIS

The City of Menifee TIA guidelines provides roadway volume capacity values. These roadway segment capacities 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. Where applicable, roadway segment capacities have been interpolated based on the City of Menifee General Plan roadway classification, the existing number of lanes, and the City's roadway segment capacity thresholds found in Attachment B of the City's traffic study guidelines. Table 7-2 provides a summary of the Opening Year Cumulative (2020) conditions roadway segment capacity analysis based on the City of Menifee Roadway Segment Capacity Thresholds.

### 7.4.1 OPENING YEAR CUMULATIVE (2020) WITHOUT PROJECT





As shown on Table 7-2, there are no study area roadway segments anticipated to operate at an unacceptable LOS Opening Year Cumulative (2020) Without Project traffic conditions.



### EXHIBIT 7-3: OPENING YEAR CUMULATIVE (2020) WITHOUT PROJECT SUMMARY OF LOS



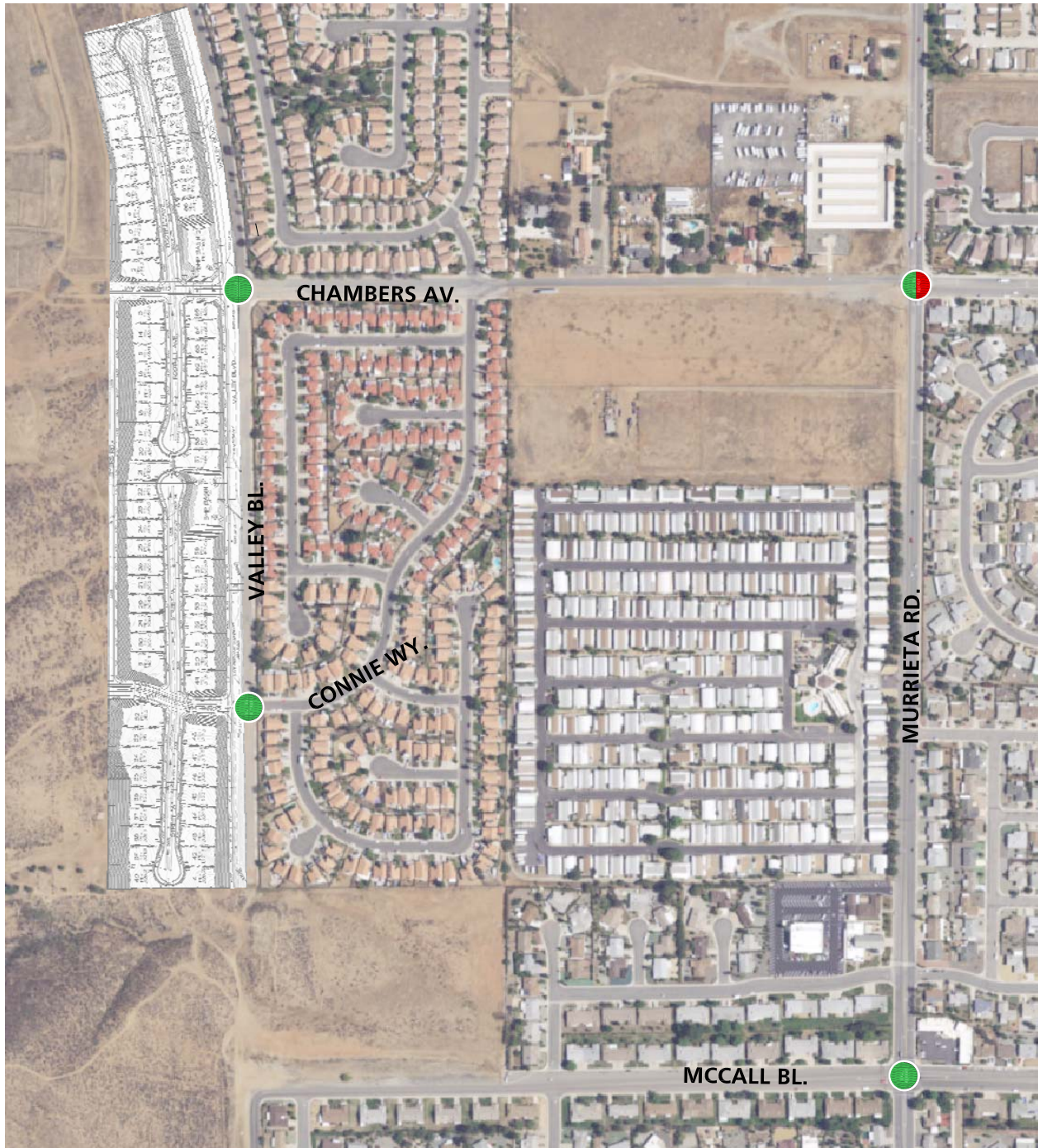
#### LEGEND:

-  = AM PEAK HOUR ACCEPTABLE LOS
-  = AM PEAK HOUR DEFICIENT LOS
-  = PM PEAK HOUR ACCEPTABLE LOS
-  = PM PEAK HOUR DEFICIENT LOS





## EXHIBIT 7-4: OPENING YEAR CUMULATIVE (2020) WITH PROJECT SUMMARY OF LOS



### LEGEND:

- = AM PEAK HOUR ACCEPTABLE LOS
- = AM PEAK HOUR DEFICIENT LOS
- = PM PEAK HOUR ACCEPTABLE LOS
- = PM PEAK HOUR DEFICIENT LOS



Table 7-1

## Intersection Analysis for Opening Year Cumulative (2020) Conditions

#	Intersection	Traffic Control <sup>2</sup>	Without Project				With Project				Project Trips		Significant Cumulative Impact? <sup>3</sup>
			Delay <sup>1</sup> (secs.)		Level of Service		Delay <sup>1</sup> (secs.)		Level of Service				
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
1	Valley Bl. & Chambers Av.	AWS	7.4	7.7	A	A	7.6	8.2	A	A	56	74	No
2	Valley Bl. & Connie Wy.	CSS	0.0	0.0	A	A	7.3	7.3	A	A	28	36	No
3	Murrieta Rd. & Chambers Av.	AWS	24.9	<b>42.9</b>	C	E	29.1	<b>51.1</b>	D	F	56	74	Yes
4	Murrieta Rd. & McCall Bl.	TS	26.1	43.1	C	D	28.5	48.2	C	D	38	52	No

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

<sup>1</sup> 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.

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

<sup>3</sup> Impact is significant if the pre-project condition is at or better than LOS D (or acceptable LOS) and the project-generated traffic causes deterioration below acceptable levels, a deficiency is deemed to occur. However, if the pre-project condition is already below LOS D (or acceptable LOS), the Project will be responsible for mitigating its impact to a LOS equal to or better than it was without the Project.



Table 7-2

## Roadway Segment Capacity Analysis for Opening Year Cumulative (2020) Conditions

#	Roadway	Segment Limits	Roadway Section	LOS E Capacity <sup>1</sup>	2020 NP	V/C <sup>2</sup>	LOS <sup>3</sup>	2020 WP	V/C <sup>2</sup>	LOS <sup>3</sup>	Acceptable LOS	Significant Cumulative Impact? <sup>4</sup>
1	Valley Bl.	Chambers Av. to Connie Wy.	2U	13,000	244	0.02	A	598	0.05	A	D	No
2	Chambers Av.	Valley Bl. to Connie Wy.	2U	13,000	861	0.07	A	1,569	0.12	A	D	No
3	Chambers Av.	Connie Wy. To Murrieta Rd.	2U	13,000	3,180	0.24	A	3,888	0.30	A	D	No
4	Murrieta Rd.	Chambers Av. to McCall Bl.	4U	25,900	12,748	0.49	A	13,244	0.51	A	D	No

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

<sup>1</sup> These maximum roadway capacities have been extracted from the following source: City of Menifee Traffic Impact Analysis Guidelines and Requirements (Attachment B). These roadway capacities are "rule of thumb" estimates for planning purposes. The LOS E service volumes are estimated maximum daily capacity for respective classifications. By using the LOS E capacity for each roadway facility type, volume-to-capacity (v/c) values between 0.00-0.60 will represent LOS A, 0.61-0.70 will represent LOS B, 0.71-0.80 will represent LOS C, 0.81-0.90 will represent LOS D, 0.91-1.00 will represent LOS E, and v/c values greater than 1.00 will represent LOS F operations. Capacity is affected by such factors as intersections (spacing, configuration and control features), degree of access control, roadway grades, design geometrics (horizontal and vertical alignment standards), sight distance, vehicle mix (truck and bus traffic) and pedestrian and bicycle traffic.

<sup>2</sup> v/c = Volume to Capacity ratio

<sup>3</sup> LOS = Level of Service

<sup>4</sup> Impact is significant if the pre-project condition is at or better than LOS D (or acceptable LOS) and the project-generated traffic causes deterioration below acceptable levels, a deficiency is deemed to occur. However, if the pre-project condition is already below LOS D (or acceptable LOS), the Project will be responsible for mitigating its impact to a LOS equal to or better than it was without the Project.

#### **7.4.2 OPENING YEAR CUMULATIVE (2020) WITH PROJECT**

Consistent with Existing (2018) and Opening Year Cumulative (2020) Without Project traffic conditions, there are no study area roadway segments that are anticipated to operate at an unacceptable LOS with the addition of Project traffic (see Table 7-2).

### **7.5 TRAFFIC SIGNAL WARRANTS ANALYSIS**

#### **7.5.1 OPENING YEAR CUMULATIVE (2020) WITHOUT PROJECT TRAFFIC CONDITIONS**

For Opening Year Cumulative (2020) Without Project conditions, there are no unsignalized study area intersections anticipated to meet the traffic signal warrants (see Appendix 7.3).

#### **7.5.2 OPENING YEAR CUMULATIVE (2020) WITH PROJECT TRAFFIC CONDITIONS**

For Opening Year Cumulative (2020) With Project conditions, there are no unsignalized study area intersections anticipated to meet the traffic signal warrants (see Appendix 7.4).

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

The intersection of Murrieta Road and Chambers Avenue is not anticipated to warrant a traffic signal under either Opening Year Cumulative (2020) Without and With Project traffic conditions. However, there are no additional geometric improvements that would accommodate acceptable peak hour operations at this location. As such, a traffic signal has been recommended for the intersection of Murrieta Road and Chambers Avenue. The intersection should be monitored and a traffic signal shall be installed at the City Traffic Engineer's discretion.

## 7.6 CUMULATIVE DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at the intersection that has been identified as deficient in an effort to reduce each location's peak hour delay and improve the associated LOS grade to an acceptable LOS (LOS D or better).

### ***Murrieta Road / Chambers Avenue (#3):***

- Install a traffic signal
- Add an eastbound left turn lane

The effectiveness of the recommended improvement strategy to address the Opening Year Cumulative (2020) traffic deficiency is presented in Table 7-3. Worksheets for Opening Year Cumulative (2020) Without and With Project conditions, with improvements, HCM calculations are provided in Appendix 7.5 and Appendix 7.6, respectively.

Table 7-3

## Intersection Analysis for Opening Year Cumulative (2020) Conditions With Improvements

#	Intersection	Traffic Control <sup>3</sup>	Intersection Approach Lanes <sup>1</sup>												Delay <sup>2</sup> (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
3	Murrieta Rd. & Chambers Av. <b>Without Project</b> - Without Improvements - With Improvements <b>With Project</b> - Without Improvements - With Improvements	 AWS <b>TS</b>  AWS <b>TS</b>	 1 1  1 1	 2 2  2 2	 0 0  0 0	 1 1  1 1	 2 2  2 2	 0 0  0 0	 1 1  1 1	 0 0  0 0	 1 1  1 1	 1 1  1 1	 24.9 19.3  29.1 20.2	 <b>42.9</b>  <b>51.1</b> 23.7	 C B  D C	 E C  F C		

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

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

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

<sup>2</sup> 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.

<sup>3</sup> AWS = All-Way Stop; TS = Traffic Signal; TS = Improvement

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## 8 FINDINGS AND RECOMMENDATIONS

### 8.1 CUMULATIVE IMPACTS AND RECOMMENDED IMPROVEMENTS

A summary of the operationally deficient study area intersections and recommended improvements required to address cumulatively significant impacts and achieve acceptable circulation system performance were described in detail within Section 7 *Opening Year Cumulative (2020) Traffic Conditions*.

A summary of off-site improvements needed to address the significantly impacted intersections under each With Project analysis scenario are included in Table 8-1. These recommended improvements are consistent with or less than the geometrics assumed in the City of Menifee General Plan Circulation Element. Improvements found to be included in the City of Menifee's (lead agency) DIF program or WRCOG TUMF, have been identified as such.

For improvements that do not appear to be in the City's DIF program or WRCOG's TUMF program, a fair share financial contribution based on the Project's fair share impact may be imposed in order to mitigate the Project's share of impacts in lieu of construction. These fees (both to the City of Menifee, TUMF, and as determined, to surrounding agencies as fair-share contributions) are collected as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with the projected vehicle trip increases. Additional information related to these various fee programs are contained in Section 8.2 *Local and Regional Funding Mechanisms* of this report.

Although the use of public transit, walking, and/or bicycling have the potential to reduce Project-related traffic, such reductions have not been taken into consideration in this traffic study in order to provide a conservative analysis of the Project's potential to contribute to circulation system deficiencies.

### 8.2 LOCAL AND REGIONAL FUNDING MECHANISMS

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

Table 8-1

Summary of Opening Year Cumulative (2020) Intersection Improvements

#	Intersection Location	Jurisdiction	Recommended Improvements <sup>1</sup>					Improvements in TUMF or DIF <sup>2</sup> ?	Fair Share % <sup>3</sup>
			Existing (2018)	E+P	EAP (2020)	2020 Without Project	2020 With Project		
3	Murrieta Rd. & Chambers Av.	Menifee	None	None	None	Traffic signal EB left turn lane	Same Same	No No	17.3%

<sup>1</sup> All recommended improvements are consistent with the general plan designations of the respective jurisdictions in which they are located.

<sup>2</sup> Improvements are identified as being included in the Western Riverside Council of Governments (WRCOG) Transportation Uniform Mitigation Fee (TUMF) program or as a City of Menifee DIF facility.

<sup>3</sup> Fair share percentage based on Opening Year (2020) traffic conditions. See Table 8-2 for Fair Share Calculations.

Table 8-1 lists the incremental improvements that are required by Opening Year Cumulative traffic conditions to alleviate near-term circulation system deficiencies. The regional and local transportation impact fee programs have each been reviewed and compared to the recommended improvements for each impacted facility. Recommended improvements already identified and included in one of the pre-existing fee programs (i.e., TUMF, Meniffee Valley Road RBBD, City of Meniffee DIF, etc.) are clearly denoted. If an impacted facility was found to require improvements beyond those already identified within one of the pre-existing regional or local fee programs, the project may be required to contribute the associated intersection or roadway fair-share percentage toward the costs of the recommended improvements.

The improvements listed in Table 8-1 are comprised of lane additions/modifications, installation of signals and signal modifications. As noted, the identified improvements are covered either by the TUMF Program, City of Meniffee DIF Program, or as a fair-share contribution if not covered by a fee program. Depending on the width of the existing pavement and right-of-way, these improvements may involve only striping modifications or they may involve construction of additional pavement width. Additional discussion of the relevant pre-existing transportation impact fee programs is provided below.

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

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

TUMF fees are imposed on new residential, industrial, and commercial development through application of the TUMF fee ordinance and fees are collected at the building or occupancy permit stage. In addition, an annual inflation adjustment is considered each year in February. In this way, TUMF fees are adjusted upwards on a regular basis to ensure that the development impact fees collected keep pace with construction and labor costs, etc. TUMF guidelines empower a local zone committee to prioritize and arbitrate certain projects. The Project is located in the Central Zone. The zone has developed a 5-year capital improvement program to prioritize public construction of certain roads. TUMF is focused on improvements necessitated by regional growth.

A number of the facilities forecast to be impacted by the Project are programmed for improvements through the TUMF program. The Project Applicant will be subject to the TUMF fee program and will pay the requisite TUMF fees at the rates then in effect pursuant to the TUMF Ordinance. The facilities planned through the TUMF program are constructed prior to the time at which the identified facility is expected to deteriorate to an inadequate level of service. WRCOG has a successful track record funding and overseeing the construction of improvements funded through the TUMF program. In total, the TUMF program is anticipated to generate nearly \$4 billion in transportation projects for Western Riverside County.

### **8.2.2 CITY OF MENIFEE DEVELOPMENT IMPACT FEE (DIF) PROGRAM**

Upon incorporation, the City of Menifee has adopted the County of Riverside's Sun City/Menifee Valley Development Impact Fee (DIF) program to impose and collect fees from new residential, commercial and industrial development for the purpose of funding roadways and intersections necessary to accommodate City growth as identified in the City's currently adopted General Plan Circulation Element. The City's DIF program includes facilities that are not part of or which may exceed improvements identified and covered by the TUMF program. As a result, the pairing of the regional and local fee programs provides a more comprehensive funding and implementation plan to ensure an adequate and interconnected transportation system. Under the City's 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.

The timing to use the DIF fees is established through periodic capital improvement programs which are overseen by the City's Public Works Department. Periodic traffic counts, review of traffic accidents, and a review of traffic trends throughout the City are also periodically performed by City staff and consultants. The City uses this data to determine the timing of implementing the improvements listed in its facilities list. The City also uses this data to ensure that the improvements listed on the facilities list are constructed before the LOS falls below the LOS performance standards adopted by the City. In this way, the improvements are constructed before the LOS falls below the City's LOS performance thresholds.

### **8.2.3 FAIR SHARE CONTRIBUTION**

Project mitigation may include a combination of fee payments to established programs (e.g., TUMF, and/or DIF), 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 of Menifee'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, has been provided on Table 8-2 for the deficient intersection shown previously on Table 8-1. Improvements included in a defined program and constructed by development may be eligible for a fee credit or reimbursement through the program where appropriate.

Table 8-2

Project Fair Share Calculations

#	Intersection	Existing	Project	2020 With Project	Total New Traffic	Project % of New
3	Murrieta Rd. & Chambers Av.					
	AM:	855	56	1,179	324	<b>17.3%</b>
	PM:	962	74	1,423	461	16.1%

\* Highest fair share percentage identified in **BOLD**.



### **8.3 ON-SITE ROADWAY AND SITE ACCESS IMPROVEMENTS**

Access to the Project site will be provided via Chambers Avenue and Connie Way. Regional access to the Project site will be provided by the I-215 Freeway via McCall Boulevard.

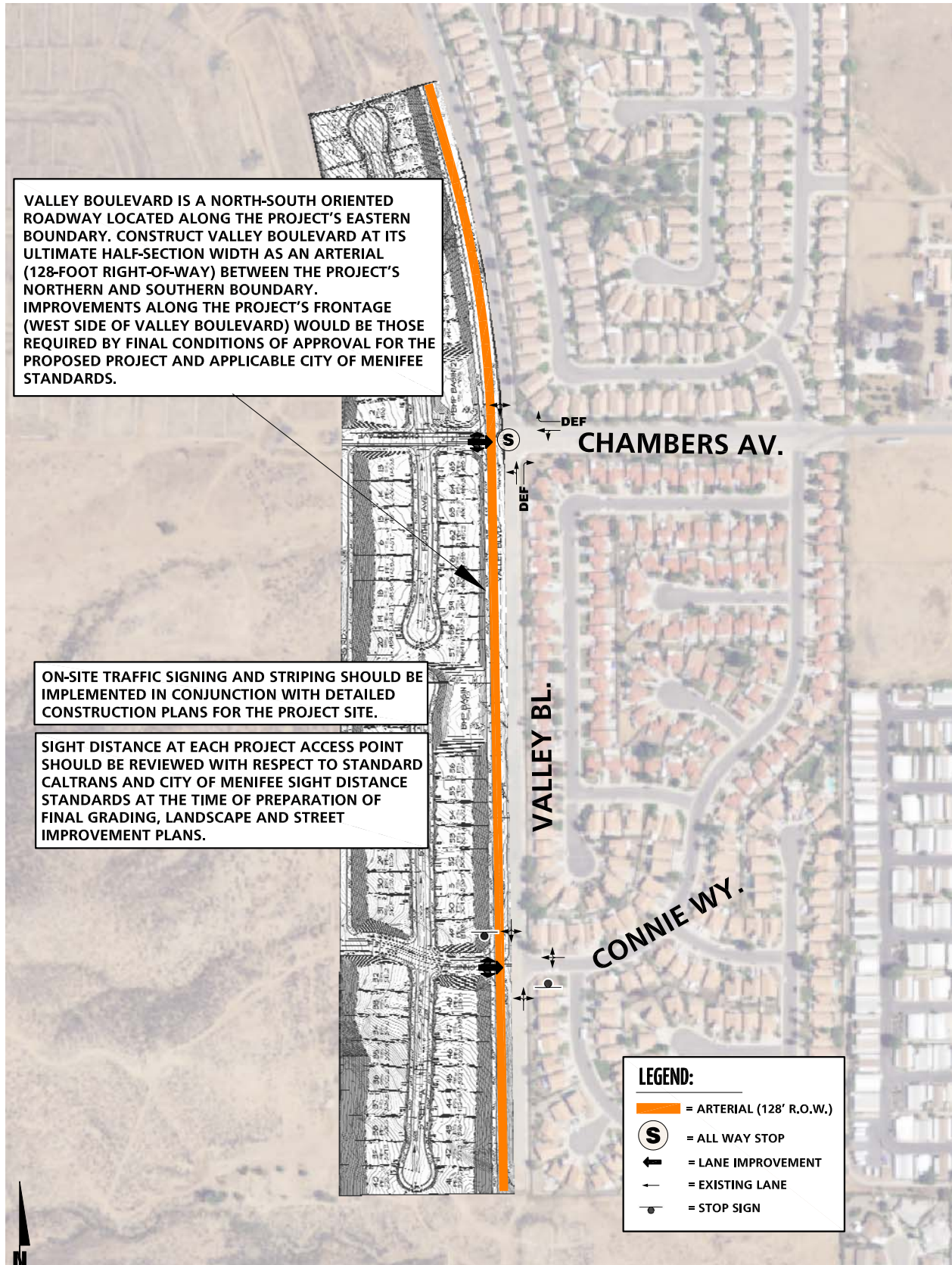
As part of the development, the Project will construct improvements on the site adjacent roadway of Valley Boulevard. Roadway improvements necessary to provide site access and on-site circulation are assumed to be constructed in conjunction with site development and are described below. These improvements should be in place prior to occupancy.

#### **8.3.1 SITE ADJACENT ROADWAY IMPROVEMENTS**

The recommended site-adjacent roadway improvements for the Project are described below. These improvements need to be incorporated into the project description prior to Project approval or imposed as conditions of approval as part of the Project approval. Exhibit 8-1 illustrates the site-adjacent roadway improvement recommendations.

**Valley Boulevard** – Valley Boulevard is a north-south oriented roadway located along the Project's eastern boundary. Construct Valley Boulevard at its ultimate half-section width as an arterial (128-foot right-of-way) between the Project's northern and southern boundary. Improvements along the Project's frontage (west side of Valley Boulevard) would be those required by final conditions of approval for the proposed Project and applicable City of Menifee standards.

## EXHIBIT 8-1: SITE ADJACENT ROADWAY AND SITE ACCESS RECOMMENDATIONS



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

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

### **8.3.2 SITE ACCESS IMPROVEMENTS**

The recommended site access driveway improvements for the Project are described below. Exhibit 8-1 also illustrates the on-site and site adjacent recommended intersection improvements. Construction of on-site and site adjacent improvements are recommended to occur in conjunction with adjacent Project development activity or as needed for Project access purposes.

**Valley Boulevard / Driveway 1/Chambers Avenue (#1)** – Install a stop control on the eastbound approach and construct the intersection with the following minimum geometrics:

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

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

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

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

**Valley Boulevard / Driveway 2/Connie Way (#2)** – Install a stop control on the northbound approach and construct the intersection with the following minimum geometrics:

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

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

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

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

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

### **8.3.3 QUEUING ANALYSIS AT THE PROJECT DRIVEWAYS**

A queuing analysis was conducted for the Project driveways to determine the turn pocket lengths necessary to accommodate near-term 95<sup>th</sup> percentile queues. The analysis was conducted for the weekday AM and weekday PM peak hours for Opening Year Cumulative (2020) traffic conditions. The 95<sup>th</sup> percentile queues for the site adjacent intersections can be found in Appendix 8.1.

The traffic modeling and signal timing optimization software package Synchro/SimTraffic has been utilized to assess queues at the Project driveways and site adjacent intersections. Synchro is a macroscopic traffic software program that is based on the signalized and unsignalized intersection capacity analyses as specified in the HCM. (3) Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections.

The 95<sup>th</sup> percentile queue has been utilized for purposes of determining the necessary turn pocket storage lengths and represents the maximum back of queue with 95<sup>th</sup> percentile traffic volumes during the peak hour. In other words, if traffic were observed for 100 cycles, the 95<sup>th</sup> percentile queue would be the queue experienced with the 95<sup>th</sup> busiest cycle (or 5% of the time). The 95<sup>th</sup> percentile queue is not necessarily ever observed; it is simply based on statistical calculations. However, many jurisdictions utilize the 95<sup>th</sup> percentile queues for design purposes.

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## 9 REFERENCES

1. **City of Menifee Planning Department.** *Traffic Impact Analysis Guidelines*. City of Menifee : s.n., August 2015.
2. **Institute of Transportation Engineers.** *Trip Generation*. 10th Edition. 2017.
3. **Transportation Research Board.** *Highway Capacity Manual (HCM)*. s.l. : National Academy of Sciences, 2010.
4. **California Department of Transportation.** California Manual on Uniform Traffic Control Devices (MUTCD). [book auth.] California Department of Transportation. *California Manual on Uniform Traffic Control Devices (CAMUTCD)*. 2017.
5. **Federal Highway Administration.** Manual on Uniform Traffic Control Devices (MUTCD). [book auth.] California Department of Transportation. *California Manual on Uniform Traffic Control Devices (CAMUTCD)*. 2014.
6. **Circulation Element C-1: Roadway System.** *The City of Menifee, California*. [Online] [Cited: December 12, 2017.] <http://cityofmenifee.us/index.aspx?NID=215>.

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