5.13 TRANSPORTATION

This section of the draft environmental impact report (DEIR) evaluates the potential for implementation of The Residences at Nohl Ranch Project to result in transportation and traffic impacts in the City of Anaheim and its surrounding area. The analysis in this section is based on the following traffic study prepared by LSA consistent with the requirements of the City of Anaheim (City) Criteria for Preparation of Traffic Impact Studies and applicable provisions of the California Environmental Quality Act (CEQA). The scope of the traffic study and studied traffic intersections were determined in consultation with the City's traffic engineer based on the project description and site-specific issues identified during the scoping process.

- *Traffic Impact Analysis, Nohl Ranch Condominiums, Anaheim, Orange County, California*, LSA, June 2019.

A complete copy of this study is in Appendix N to this Draft EIR.

5.13.1 Environmental Setting

5.13.1.1 REGULATORY BACKGROUND

Congestion Management Program

In June 1990, the passage of the Proposition 111 required California's urbanized areas to adopt a Congestion Management Program (CMP). The Orange County Transportation Authority (OCTA) is the Congestion Management Agency for the county and is responsible for the development, monitoring, and biennial updating of Orange County's CMP.

The goals of Orange County's CMP are to support regional mobility objectives by reducing traffic congestion, to provide a mechanism for coordinating land use and development decisions that support the regional economy, and to support gas tax funding eligibility. To meet these goals, the CMP contains a number of policies designed to monitor and address system performance issues. OCTA developed the policies that make up Orange County's CMP in coordination with local jurisdictions, the California Department of Transportation, and the South Coast Air Quality Management District. The CMP establishes that the level of service (LOS) should be LOS E or better for CMP roadways and intersections.

City of Anaheim Circulation Element

An important standard referred to throughout the City's Circulation Element relates to the ability of a roadway and/or intersection to accommodate traffic. The LOS standard may be used to describe both existing and future traffic conditions. It is a qualitative ranking that characterizes traffic congestion on a report card scale of A to F, with LOS A being free-flow conditions and LOS F representing extreme congestion.

The City's Circulation Element establishes that the LOS should be LOS D or better for major intersections in the City. For roadway segments, the target is LOS C.

Senate Bill 743

Senate Bill (SB) 743 (Steinberg, 2013) required changes to the CEQA analysis of transportation impacts. The Governor's Office of Planning and Research (OPR) made changes to the CEQA Guidelines that identify vehicle miles traveled (VMT) as the most appropriate metric to evaluate a project's transportation impacts, and the California Natural Resources Agency adopted these changes. Therefore, automobile delay, as measured by "level of service" and other similar metrics, generally will no longer constitute a significant environmental effect under CEQA. The updated Guidelines became effective on December 28, 2018, and lead agencies must switch to VMT as an impact standard for CEQA no later than July 1, 2020.

5.13.1.2 EXISTING CONDITIONS

Key roadways in the vicinity of the Proposed Project are:

- **Nohl Ranch Road:** Nohl Ranch Road, a north-south roadway located west of and adjacent to the project site, is classified as a Hillside Secondary Arterial by the City's General Plan Circulation Element. Nohl Ranch Road, which is adjacent to the Project Site, is a four-lane roadway divided by a two-way left-turn lane that acts as a median. Nohl Ranch Road provides direct access to the Project Site at an unsignalized driveway. The posted speed limit on Nohl Ranch Road is 45 miles per hour (mph). There are sidewalks provided on both sides of the street. There are no bike lanes, and on-street parking is prohibited.

- **Serrano Avenue:** Serrano Avenue is an east-west roadway located south of the project that provides access to the project site at unsignalized driveways. The route is designated as a Hillside Secondary Arterial by the City's General Plan Circulation Element. The posted speed limit on Serrano Avenue is 45 mph. In the vicinity of the project site, the roadway has four lanes and a two-way left-turn lane that acts as a median. There are sidewalks provided on both sides of the street. There are Class II bike lanes, and on-street parking is prohibited.

- **Carnegie Avenue:** Carnegie Avenue is a local road that is not included in the City's General Plan Circulation Element. Carnegie Avenue has two undivided lanes and provides direct access to residences within the neighborhood. Sidewalks are provided on both sides of the street, and on-street parking is permitted.

- **Calle Venado:** Calle Venado is a local road that is not included in the City's General Plan Circulation Element. Calle Venado has two undivided lanes and provides direct access to residences within the neighborhood. Sidewalks are provided on both sides of the street, and on-street parking is permitted.

- **Cannon Street:** Between the northern city limits and Santiago Canyon Road, the City of Orange Master Plan of Streets and Highways classifies Cannon Street as a Major Arterial. Cannon Street has a posted speed limit of 45 mph. The roadway has four lanes and a striped median becoming a left-turn lane at intersections. A continuous sidewalk is provided on the east side of the roadway, while portions of the west side of the roadway have an interrupted sidewalk. Narrow Class II bike lanes are provided on both sides of the street. The City or Orange Master Plan of Streets and Highways indicates that this roadway will be six lanes at General Plan buildout.

- **Santiago Canyon Road:** The City of Orange Master Plan of Streets and Highways classifies Santiago Canyon Road as a Major Arterial. Santiago Canyon Road has a posted speed limit of 50 mph. The roadway has four lanes and a two-way left-turn lane that acts as a median. A continuous sidewalk is provided on the south side of the roadway, while portions of the north side of the roadway have an interrupted sidewalk. Class II bike lanes are provided on both sides of the street. The City or Orange Master Plan of Streets and Highways indicates that this roadway will be six lanes at General Plan buildout.

The traffic study area includes four intersections in the City of Orange jurisdiction (i.e., ID#4, ID#10, ID#11, and ID#12). Figure 5.13-1, *Traffic Study Area Intersections*, illustrates the locations of the studied intersections and roadway segments, and Figure 5.13-2, *Existing Geometrics*, provides the existing geometrics and traffic control devices at each study area intersection.

Traffic Study Area Intersections

1. Nohl Ranch Road/Stage Coach Road (traffic signal) – City of Anaheim
2. Nohl Ranch Road/Carnegie Avenue (side-street stop) – City of Anaheim
3. Nohl Ranch Road/Project Driveway (side-street stop) – City of Anaheim
4. Kendra Drive/Serrano Avenue (traffic signal) – City of Orange
5. Nohl Ranch Road/Serrano Avenue (traffic signal) – City of Anaheim
6. Project Driveway/Serrano Avenue (side-street stop) – City of Anaheim
7. Pegasus Street/Serrano Avenue (side-street stop) – City of Anaheim
8. Calle Venado/Serrano Avenue (side-street stop) – City of Anaheim
9. Canyon Rim Road/Serrano Avenue (traffic signal) – City of Anaheim
10. Cannon Street/Serrano Avenue (traffic signal) – City of Orange
11. Cannon Street/Taft Avenue (traffic signal) – City of Orange
12. Cannon Street/Santiago Canyon Road (traffic signal) – City of Orange

Roadway Segments

1. Nohl Ranch Road (Stage Coach Road to Serrano Avenue)
2. Serrano Avenue (Kendra Drive to Nohl Ranch Road)
3. Serrano Avenue (Nohl Ranch Road to Canyon Rim Road)
4. Carnegie Avenue (Nohl Ranch Road to Calle Venado)
5. Calle Venado (Carnegie Avenue to Serrano Avenue)

Existing (2018) Intersection Level of Service Analysis

In addition to the LOS definition, a traffic volume–to–road capacity ratio (V/C ratio) is used to provide a more quantified description of traffic conditions at intersections. The V/C ratio is the ratio of existing or projected traffic volumes to an intersection's design capacity. The V/C ratio represents the percentage of the capacity utilized. For example, a V/C ratio of 0.90 for an intersection means that the traffic volumes at the intersection represent that 90 percent of its design capacity is being used.

5. Environmental Analysis
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The Intersection Capacity Utilization (ICU) method was used to analyze intersection operating conditions for signalized intersections, and the Highway Capacity Manual (6th ed.) (HCM) was used for unsignalized intersections. See Section 5.13.4.1, *Methodology*, for more information about these methods.

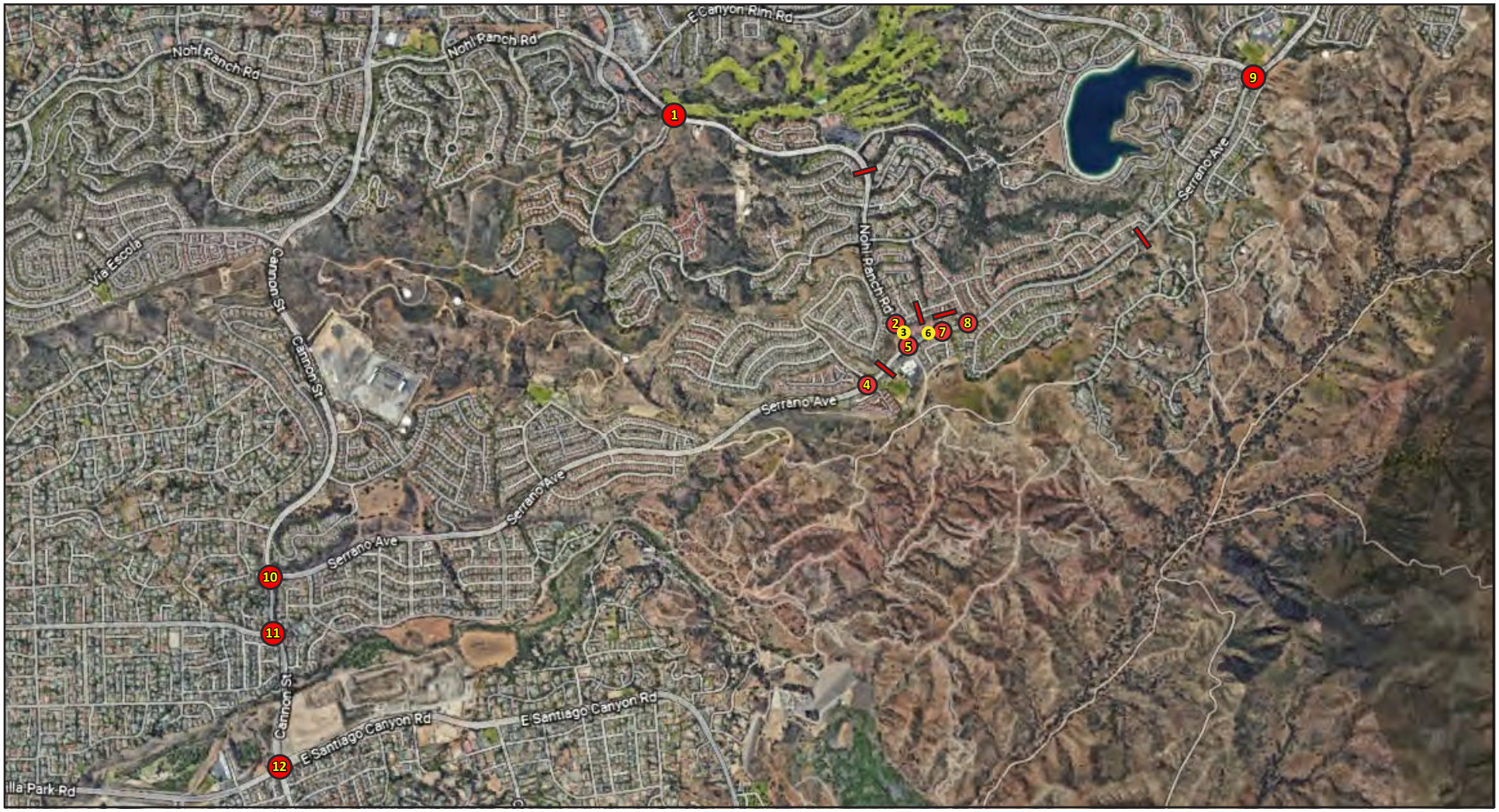
Vehicle turning volumes were collected for the study area intersections during the peak morning (7:00 AM to 9:00 AM) and evening (4:00 PM to 6:00 PM) commute periods. Peak-hour intersection turn volumes were surveyed on a typical weekday (Wednesday, May 16, 2018) when schools were in session at the study area intersections in Anaheim. After a request from the City of Orange, additional turn volumes were collected at intersections in Orange on a typical weekday (Thursday, February 7, 2019) when schools were in session. These volumes were taken in 15-minute increments and then totaled as hourly volumes, which is the standard procedure for volume data collection. Figure 5.13-3, *Existing (2018) Volumes*, presents the existing AM and PM peak-hour turn movement volumes for the traffic study area intersections. The intersection of Nohl Ranch Road/Serrano Avenue is located adjacent to Anaheim Hills Elementary School and experiences a surge in traffic immediately prior to school start time during the a.m. peak hour. At this intersection, the peak hour factor (i.e., the concentration of peak hour traffic volume during the busiest 15 minutes) identified in existing conditions was applied for all a.m. peak period analyses. School departure occurs outside of the p.m. peak hour and no peak hour factors were applied during the p.m. peak hour.. Table 5.13-1 summarizes the results of the existing AM and PM peak-hour LOS analysis for the traffic study area intersections. As Table 5.13-1 indicates, all study area intersections operate at an acceptable LOS (i.e., LOS D or better) in the AM and PM peak hours, except for the intersections of Cannon Street/Serrano Avenue (ID#10) and Cannon Street/Taft Avenue (ID#11), both in the City of Orange. All ICU analysis worksheets are provided in Appendix B, and all HCM analysis worksheets are provided in Appendix C of the Traffic Study in Appendix N of the DEIR.

Table 5.13-1 Existing Intersection LOS Summary

Study Area No.	Intersections	City	AM Peak		PM Peak	
			V/C or Delay (sec)	LOS	V/C or Delay (sec)	LOS
1	Nohl Ranch Road/Stage Coach Road	Anaheim	0.319	A	0.274	A
2	Nohl Ranch Road/Carnegie Avenue (u)	Anaheim	11.3	B	10.4	B
3	Nohl Ranch Road/Project Driveway (u)	Anaheim	9.2	A	9.2	A
4	Kendra Drive/Serrano Avenue	Orange	0.411	A	0.440	A
5	Nohl Ranch Road/Serrano Avenue	Anaheim	0.593	A	0.427	A
6	Project Driveway/Serrano Avenue (u)	Anaheim	11.9	B	9.9	A
7	Pegasus Street/Serrano Avenue (u)	Anaheim	12.3	B	23.0	C
8	Calle Venado/Serrano Avenue (u)	Anaheim	11.7	B	17.6	C
9	Canyon Rim Road/Serrano Avenue	Anaheim	0.488	A	0.420	A
10	Cannon Street/Serrano Avenue	Orange	0.816	D	0.991	E
11	Cannon Street/Taft Avenue	Orange	0.946	E	0.957	E
12	Cannon Street/Santiago Canyon Road	Orange	0.761	C	0.774	C

LOS = level of service; sec = seconds; V/C = volume-to-capacity
(u) = unsignalized, worst approach delay shown
☐ Unsatisfactory LOS

Figure 5.13-1 - Traffic Study Area Intersections
5. Environmental Analysis



1 Study Intersection
2 Project Driveway
Study Roadway

0 2,000
Scale (Feet)

Source: LSA, 2019

5. Environmental Analysis
TRANSPORTATION

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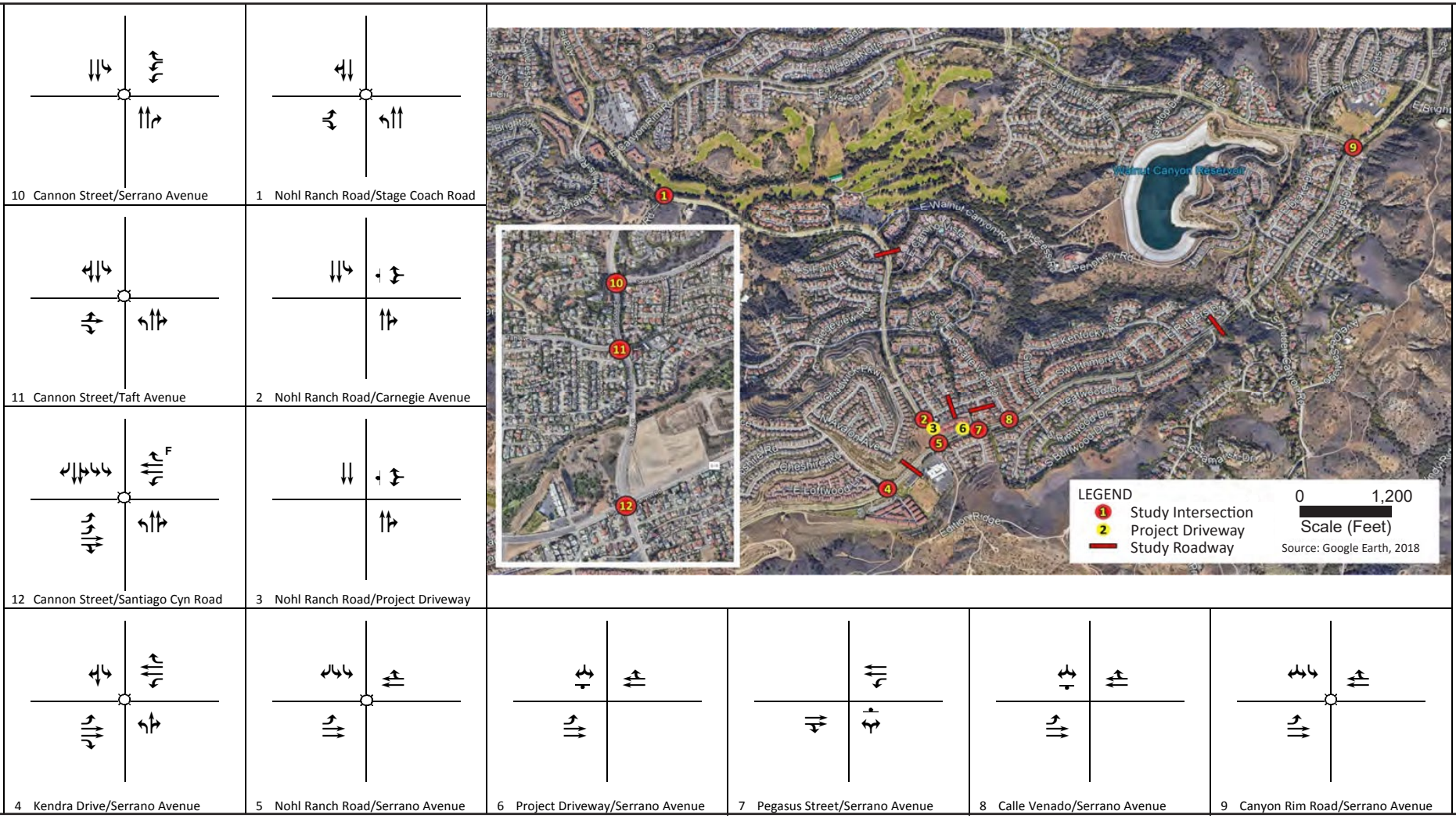
Figure 5.13-2 - Existing Geometrics

5. Environmental Analysis



Source: LSA, 2019

5. Environmental Analysis
TRANSPORTATION

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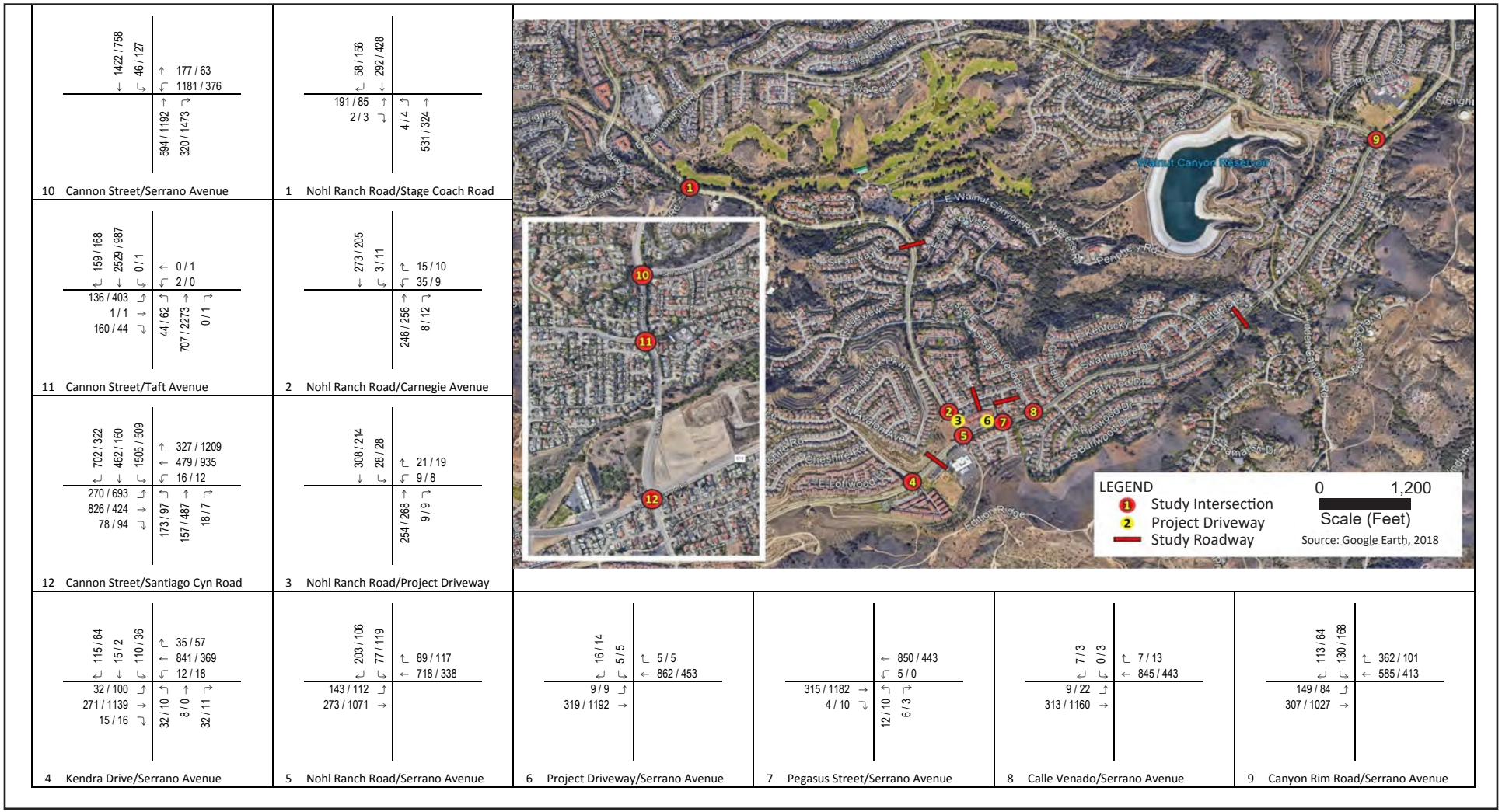
Figure 5.13-3 - Existing (2018) Volumes

5. Environmental Analysis



XXX / YYY AM / PM Volume

Source: LSA, 2019

5. Environmental Analysis
TRANSPORTATION

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Existing Roadway Segment Level of Service Analysis

Roadway LOS is calculated by comparing the daily traffic volume to the theoretical daily capacity of that roadway. Existing daily traffic volumes were collected on a typical weekday when schools were in session (Wednesday, May 16, 2018). Table 5.13-2 summarizes the daily traffic volumes and V/C ratios for the five traffic study area roadway segments in the existing condition. As Table 5.13-2 illustrates, all traffic study area roadway segments operate at an acceptable LOS (i.e., LOS C or better).

Table 5.13-2 Existing Roadway LOS Comparison

Roadway Segment	Mid-Block Lanes	Capacity	Existing	V/C	LOS
Nohl Ranch Road (Stage Coach Road to Serrano Avenue)	4D	37,500	5,599	0.15	A
Serrano Avenue (Kendra Drive to Nohl Ranch Road)	4D	37,500	14,121	0.38	A
Serrano Avenue (Nohl Ranch Road to Canyon Rim Road)	4D	37,500	14,013	0.37	A
Carnegie Avenue (Nohl Ranch Road to Calle Venado)	2U	12,500	695	0.06	A
Calle Venado (Carnegie Avenue to Serrano Avenue)	2U	12,500	424	0.03	A

Source: HCM 2000.

Serrano Center and Anaheim Hills Elementary School Parking Condition

The Project Site is diagonally across from Anaheim Hills Elementary School (AHES), and the Serrano Center parking lot is currently used by some parents to park while dropping off or picking up students at AHES. Serrano Avenue experiences brief periods of high traffic volumes and queueing around the beginning and end of the AHES school day. Site visits were conducted at the beginning and end of the school day to identify how many school trips would need to be accounted for in the traffic analysis of Project traffic conditions.

AHES has a driveway on Serrano Avenue approximately 310 feet west of the intersection of Nohl Ranch Road/Serrano Avenue, and the school provides approximately 900 feet of queuing space (i.e., space for approximately 36 vehicles) inside the property for vehicles dropping off or picking up students. When queues exceed the internal storage, vehicles begin to queue on Serrano Avenue. Eastbound Serrano Avenue has a right-turn pocket leading to the school driveway that has approximately 180 feet of storage, which is enough room for seven cars. Westbound Serrano Avenue has a two-way left-turn median with sufficient room for approximately six vehicles. When queues exceed the capacity of this median, left-turning vehicles begin to impact other movements and interfere with traffic around this median.

Eastbound traffic on Serrano Avenue has approximately 485 feet between Kendra Drive and the school driveway. This is enough space for approximately 12 vehicles, but they would block one of the two through lanes. On westbound Serrano Avenue, approximately 2 vehicles could be accommodated by crossing the double yellow lines of the two-way left-turn median (an area normally functioning as the bay taper for eastbound left turns onto Nohl Ranch Road) and approximately 4 more vehicles could queue in one of the two through lanes before reaching the intersection of Nohl Ranch Road/Serrano Avenue.

Some vehicles were observed traveling westbound on Serrano Avenue, then making a U-turn at Kendra Drive to join the eastbound right-turn queue into the school. This may be because the eastbound direction has more

space for vehicles to queue. It may also be because right-turning vehicles are not delayed by through traffic, and the eastbound right-turn queue moves with greater frequency than the westbound left-turn queue.

AHES begins instruction for all K-6 students at 8:00 AM. At 7:40 AM, a maximum of three vehicles were waiting in the westbound left-turn queue on Serrano Avenue. Between 7:45 AM and 7:55 AM, the westbound left-turn queue filled all available space in the two-way left-turn median, with one vehicle extending into the through travel lane. By 8:00 AM, however, this queue had receded to a single vehicle waiting to turn left. A queue for eastbound right-turning traffic was also observed.

Some vehicles arrived and parked at the Serrano Center before school started. About half of the vehicles using the Serrano Center parking lot arrived between 7:50 AM and 7:55 AM. The remainder of the arrivals were evenly split between the 5-minute period before and the 5-minute period after this.

Instruction ends at 2:20 PM for all K-6 students. By 2:20 PM, the queues on Serrano Avenue were 4 vehicles in the westbound direction and 6 vehicles in the eastbound direction. By 2:25 PM, the queues reached their peak at 9 vehicles in the westbound direction (i.e., 1 vehicle extending into the through travel lane) and 10 vehicles in the eastbound direction (i.e., at least 3 vehicles extending into the through travel lane). Queues were contained within the turn lanes by 2:30 PM, and no vehicles were queued onto Serrano Avenue by 2:35 PM. More vehicles parked at the Serrano Center after school than before school. Some vehicles had arrived by 2:05 PM, and vehicles continued to arrive until 2:30 PM. It should be noted that some of the parents who parked at the Serrano Center may have picked up students from the school and walked them to the Serrano Center to one of the child-oriented businesses in the shopping center.

5.13.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

T-1 Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

T-2 Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b).

T-3 Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

T-4 Result in inadequate emergency access.

5.13.3 Plans, Programs, and Policies

Project Design Features

PDF T-1 As part of the Proposed Project, the Project Applicant is required to work with the City of Anaheim to channelize vehicle movements on the Nohl Ranch driveway to exclusive right-turn in and out. Per the recommended condition of approval, should the measures

constructed at the driveway on Nohl Ranch Road to prevent southbound left-turns in and westbound left-turns out of the Project Site prove to be ineffective, the Project Applicant shall be required to revise the measures and construct alternative measures, at Project Applicant cost, until an effective measure is found and to the satisfaction of the City Engineer.

Regulatory Requirements

RR T-1 The Proposed Project is required to pay transportation impact fees per the Anaheim Municipal Code based on type of construction. These fees go toward funding improvements per the City of Anaheim Circulation Element.

RR T-1 The Proposed Project is required to pay the Transportation Corridor Agencies' Eastern Transportation Corridor fees.

5.13.4 Environmental Impacts

5.13.4.1 METHODOLOGY

The City's "Criteria for Preparation of Traffic Impact Studies" requires a capacity analysis at intersections and roadway segments where the project contributes at least 51 trips. The Traffic Study in Appendix N of the DEIR demonstrates that the Proposed Project is not anticipated to contribute 51 or more trips to any intersection or roadway segment. However, the traffic study area analyzed 12 intersections and 5 roadway segments, as listed above, because of the number of traffic-related comments during the scoping period from the community, and proximity to the City of Orange boundaries.

Intersection Level of Service Methodology

In accordance with the City's Criteria for Preparation of Traffic Impact Studies and the City of Orange Traffic Impact Analysis Guidelines, the study area intersections were analyzed using ICU methodology for signalized intersections and HCM methodology for unsignalized intersections. Traffix (version 8.0) and Synchro 10 are the software applications utilized to determine the LOS for signalized and unsignalized intersections, respectively. These programs calculate LOS based on traffic volume and intersection geometry inputs.

The ICU methodology compares the amount of traffic an intersection is able to process (capacity) to the level of traffic during peak hours (volume). The resulting V/C ratio is expressed in terms of LOS. The HCM methodology calculates the delay experienced by all movements through an intersection. At a two-way, stop-controlled intersection (i.e., an unsignalized intersection where the main street is uncontrolled and traffic on the minor street has to stop before finding a gap to enter the main street), delay is reported for the most delayed approach. LOS is a qualitative assessment of the quantitative effects of such factors as traffic volume, roadway geometrics, speed, delay, and maneuverability on roadway and intersection operations. Table 5.13-3, *Intersection Level of Service*, shows the letter grades assigned to the various degrees of delay and the traffic conditions they represent.

Table 5.13-3 Intersection Level of Service Description

LOS	Interpretation	Delay (seconds) HCM Methodology	Volume to Capacity Ratio ICU Methodology
A	No approach phase is fully utilized by traffic, and no vehicle waits longer than one red indication. Typically, the approach appears quite open, turns are made easily, and nearly all drivers find freedom of operation.	≤ 10.0	< 0.60
B	This service level represents stable operation, where an occasional approach phase is fully utilized, and a substantial number are nearing full use. Many drivers begin to feel restricted within platoons of vehicles.	> 10.0 and ≤ 15.0	0.61–0.70
C	This level still represents stable operating conditions. Occasionally, drivers may have to wait through more than one red signal indication, and backups may develop behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so.	> 15.0 and ≤ 25.0	0.71–0.80
D	This level encompasses a zone of increasing restriction approaching instability at the intersection. Delays to approaching vehicles may be substantial during short peaks within the peak period; however, enough cycles with lower demand occur to permit periodic clearance of developing queues, thus preventing excessive backups.	> 25.0 and ≤ 35.0	0.81–0.90
E	Capacity occurs at the upper end of this service level. It represents the most vehicles that any particular intersection approach can accommodate. Full utilization of every signal cycle is attained no matter how great the demand.	> 35.0 and ≤ 50.0	0.91–1.00
F	This level describes forced-flow operations at low speeds, where volumes exceed capacity. These conditions usually result from queues of vehicles backing up from a restriction downstream. Speeds are reduced substantially, and stoppages may occur for short or long periods of time due to the congestion. In the extreme case, speed can drop to zero.	> 50.0	> 1.00

HCM = Highway Capacity Manual
ICU = intersection capacity utilization

Roadway Segment Level of Service Methodology

Using the same V/C methodology discussed above, daily roadway link V/C ratios were determined using roadway volume data and the theoretical daily capacities provided by the City of Anaheim. The theoretical daily capacity of a roadway is dependent on its roadway classification.

Type of Arterial	Daily Capacity
Eight Lanes Divided	75,000
Six Lanes Divided	56,300
Four Lanes Divided	37,500
Four Lanes (Undivided)	25,000
Two Lanes (Undivided)	12,500

For roadway segments, the City's General Plan establishes a target of LOS C. If a segment is found to operate at LOS D, E, or F under daily conditions, its operation is also analyzed under peak-hour conditions. If the roadway segment also operates at LOS D, E, or F under peak-hour conditions and project-related traffic increases the daily V/C ratio by 0.01 or greater, the project would have a significant impact. The relationship between LOS and the V/C ratio for roadways is shown below.

Level of Service	V/C Ratio
A	< 0.60
B	0.61–0.70
C	0.71–0.80
D	0.81–0.90
E	0.91–1.00
F	>1.00

Significance Criteria

A transportation impact on an intersection is considered significant in accordance with Table 5.13-4. The "Final V/C Ratio" includes the future V/C ratio at an intersection, considering traffic from existing conditions, ambient growth, approved/related projects, and the Proposed Project, but without any proposed mitigation. Mitigation is required for any intersection where project traffic is considered to have a significant impact.

Table 5.13-4 LOS Significance Criteria

Level of Service	Final V/C Ratio	Project-Related Increase in V/C Ratio
C	> 0.701–0.800	≥ 0.050
D	> 0.801–0.900	≥ 0.030
E, F	> 0.901	≥ 0.010

Source: City of Anaheim, Criteria for Preparation of Traffic Impact Studies.
V/C = volume-to-capacity

For intersections within the jurisdiction of the City of Orange, a V/C ratio of 0.90 (LOS D) is considered the upper limit of satisfactory operations. The City of Orange Traffic Impact Analysis Guidelines state that a transportation impact on an intersection shall be deemed significant and require mitigation if the final V/C ratio exceeds 0.90 and the project-related increase in V/C is equal to or greater than 0.01.

The Orange County CMP stipulates the requirements for maintaining LOS E at CMP intersections. However, no CMP intersections are near the Project Site.

5.13.4.1 IMPACT ANALYSIS

Trip Generation

The Proposed Project considers the demolition of the Serrano Center and construction of 60 residential dwelling units on the Project Site. The daily and peak-hour trips for the Proposed Project were generated using

trip rates contained in the Institute of Transportation Engineers (ITE) Trip Generation Manual, Tenth Edition (2017). The Project trip generation being added to the roadway network is presented in Table 5.13-5, *Existing Trips and Trip Generation*. As Table 5.13-5 shows, the 60 dwelling units are anticipated to generate 439 trips per day, of which 28 would occur in the AM peak hour and 34 would occur in the PM peak hour. Although the Proposed Project involves development of 58 units, not 60 units, the traffic impact analysis in the DEIR provides a worst-case scenario.

Table 5.13-5 Existing Trips and Trip Generation

Land Use	Unit	ADT	In	Out	Total	In	Out	Total
Trip Rates (ITE land use code)								
Multifamily Housing (220)[1]	DU	7.32	0.11	0.35	0.46	0.35	0.21	0.56
Project Trip Generation								
Nohl Ranch Condominiums	60 DU	439	7	21	28	21	13	34
Existing Trip Generation to be Replaced[2]								
Serrano Center	Surveyed	(1,003)	(51)	(51)	(102)	(51)	(46)	(97)
School Traffic Diverted to Adjacent Intersections[3]								
Drop-off/Pick-up	Observed	126	20	20	40	0	0	0
Net New Trip Generation		(438)	(24)	(10)	(34)	(30)	(33)	(63)

[1] Trip rates referenced from the ITE Trip Generation Manual, 10th Edition (2017)
[2] Total trips observed at shopping center driveways
[3] Trips observed at shopping center driveways that would remain on the roadways with closure of the shopping center
ADT = average daily trips
DU = dwelling unit
(100) = parentheses denote decrease

Table 5.13-5 also shows the existing trips generated by the Serrano Center that will be removed from the roadway network. The Serrano Center is currently leasing space to a variety of commercial uses, including a grocery store, dry cleaner, professional services, professional offices, children's swim school, children's dance school, after-school tutoring, and children's day care. Rather than using ITE trip generation rates to estimate the trip generation for these various uses, trip generation was determined by counting vehicles entering and exiting the Serrano Center driveways. Driveway surveys were conducted on a typical weekday (Wednesday, May 16, 2018) for a 24-hour period. The results of these surveys showed that the Serrano Center currently generates 1,003 trips per day, of which 102 occur in the AM peak hour and 97 occur in the PM peak hour. It should be noted that the surveys revealed that the western driveway on Serrano Avenue (which would be closed by the Proposed Project) is used infrequently during the AM and PM peak hours.

Some of the trips into and out of the Serrano Center driveways in the existing condition are the result of parents dropping off and picking up students of Anaheim Hills Elementary School. These trips will not be eliminated from the roadway network with the closure of the Serrano Center. In order to determine how many of the trips into the Serrano Center driveways will be redirected rather than eliminated, site visits were conducted, and trips were observed at the Serrano Center at times of school drop-off and pick-up. Based on these observations, it was estimated that approximately 20 vehicles were using the Serrano Center parking lot

to drop off students (during the AM peak hour), and approximately 43 vehicles were using the Serrano Center parking lot to pick up students (outside of the PM peak hour). Because each vehicle generates both an inbound and outbound trip, school trips account for 126 trips per day, of which 40 occur in the AM peak hour and none occur in the PM peak hour; 86 occur outside of the peak commute hours.

As Table 5.13-5 shows, the Project trip generation would be less than the observed trip generation of the existing Serrano Center, even when taking into account school drop-off and pick-up trips into the shopping center. As such, the daily and peak-hour trip generation for the Proposed Project is negative. However, the Proposed Project may contribute traffic in a different way than existing conditions and may add trips to some parts of the roadway network.

Trip Distribution and Assignment

Trip distribution defines the regional percentage origins/destinations for a project. To determine trip distribution for the Proposed Project, the existing traffic patterns adjacent to the Project Site was considered. The land uses surrounding the Project Site are largely residential, and residents of the Proposed Project are likely to have similar traffic patterns. Traffic from the Project Site was distributed 15 percent north, 60 percent west (and then south on Cannon Street), and 25 percent east.

Trips were assigned to travel paths based on accessibility of the Project Site. In and out movements will be prohibited at the Project driveway on Nohl Ranch Road with implementation of the Project, and left-turn movements will be permitted at the Project driveway on Serrano Avenue. (For further detail, see the *Neighborhood Traffic Impact* section under Impact 5.13-1 and Figure 5.13-10, T*ravel Paths To and From the Project Site*.) Figure 5.13-4, *Serrano Center Trip Assignment*, illustrates the Project trip assignment resulting from the subtraction of existing traffic generated by the Serrano Center and redirecting school trips currently terminating at the Serrano Center to terminate at the school instead. Figure 5.13-5, *Proposed Project Trip Assignment*, illustrates the assignment for residential Project trips accounting for future turn restriction on the Nohl Ranch driveway. Figure 5.13-6, *Net Proposed Project Trip Assignment*, illustrates the net trips resulting from the Proposed Project, which account for the Serrano Center trip redistribution and the proposed turn restrictions. Figure 5.13-6 shows that eliminating Serrano Center traffic and adding Project-related traffic would result in lower traffic volumes for most turn movements.

The following impact analysis addresses thresholds of significance for which the Initial Study disclosed potentially significant impacts. The applicable thresholds are identified in brackets after the impact statement.

Impact 5.13-1: The Proposed Project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. [Threshold T-1]

Existing (2018) Plus Project Intersection Level of Service Analysis

Table 5.13-6 summarizes the results of the Existing Plus Project AM and PM peak-hour LOS analysis for all traffic study area intersections. Figure 5.13-7, *Existing (2018) Plus Project Volumes*, illustrates the resulting Existing (2018) Plus Project AM and PM peak-hour traffic volumes. As Table 5.13-6 indicates, all study area intersections

are anticipated to operate at an acceptable LOS (i.e., LOS D or better) in the AM and PM peak hours, except for two intersections—Cannon Street/Serrano Avenue (ID#10) and Cannon Street/Taft Avenue (ID#11)—under the existing conditions with and without the Project. These two intersections are under the jurisdiction of the City of Orange, and although they operate at unacceptable LOS E and V/C ratio exceeds 0.90, the Proposed Project does not increase V/C equal or greater than 0.01, but actually decreases V/C. Based on empirical data collected at the driveways of the existing retail center, the Proposed Project is forecast to generate less traffic. As a result of generating less traffic, the Proposed Project is forecast to reduce V/C ratios and delay at the intersections included in the traffic study area; therefore, impacts would be less than significant.

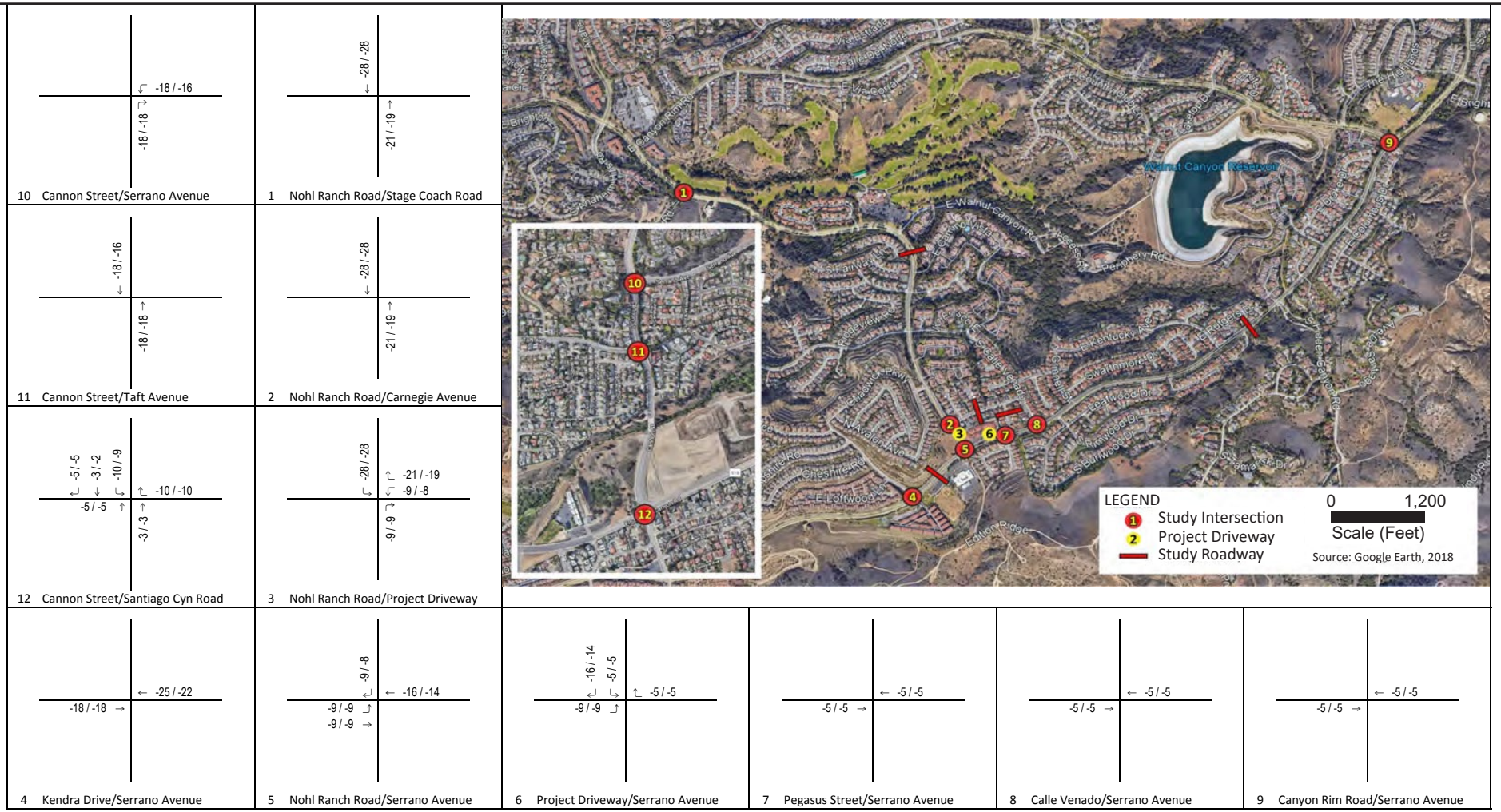
Table 5.13-6 Existing Plus Project Intersection LOS Summary

		Existing				Plus Project				Change	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		V/C or Delay (sec)	
ID	Intersections	V/C (sec)	LOS	V/C (sec)	LOS	V/C (sec)	LOS	V/C (sec)	LOS	AM	PM
1	Nohl Ranch Rd./Stage Coach Rd.	0.319	A	0.274	A	0.313	A	0.267	A	(0.006)	(0.007)
2	Nohl Ranch Rd./Carnegie Ave. (u)	11.3	B	10.4	B	11.0	B	10.2	B	(0.3)	(0.2)
3	Nohl Ranch Rd./Project Dwy. (u)	9.2	A	9.2	A	9.1	A	9.1	A	(0.1)	0.1
4	Kendra Dr./Serrano Ave.*	0.411	A	0.440	A	0.408	A	0.439	A	(0.003)	(0.001)
5	Nohl Ranch Rd./Serrano Ave.	0.593	A	0.427	A	0.581	A	0.422	A	(0.012)	(0.005)
6	Project Dwy./Serrano Ave. (u)	11.9	B	9.9	A	11.9	B	9.9	A	0.0	0.0
7	Pegasus St./Serrano Ave. (u)	12.3	B	23.0	C	12.3	B	22.9	C	0.0	(0.1)
8	Calle Venado/Serrano Ave. (u)	11.7	B	17.6	C	11.7	C	17.5	C	0.0	(0.1)
9	Canyon Rim Rd./Serrano Ave.	0.488	A	0.420	A	0.487	A	0.420	A	(0.001)	0.000
10	Cannon St./Serrano Ave.*	0.816	D	0.991	E	0.814	D	0.988	E	(0.002)	(0.003)
11	Cannon St./Taft Ave.*	0.946	E	0.957	E	0.945	E	0.956	E	(0.001)	(0.001)
12	Cannon St./Santiago Cyn Rd.*	0.761	C	0.774	C	0.761	C	0.772	C	0.000	(0.002)

LOS = level of service
sec = seconds
* City of Orange Intersections
(u) = unsignalized, worst approach delay shown
V/C = volume-to-capacity
(0.1) = parentheses denote decrease

Figure 5.13-4 - Serrano Center Trip Assignment

5. Environmental Analysis



XXX / YYY AM / PM Volume

Source: LSA, 2019

5. Environmental Analysis
TRANSPORTATION

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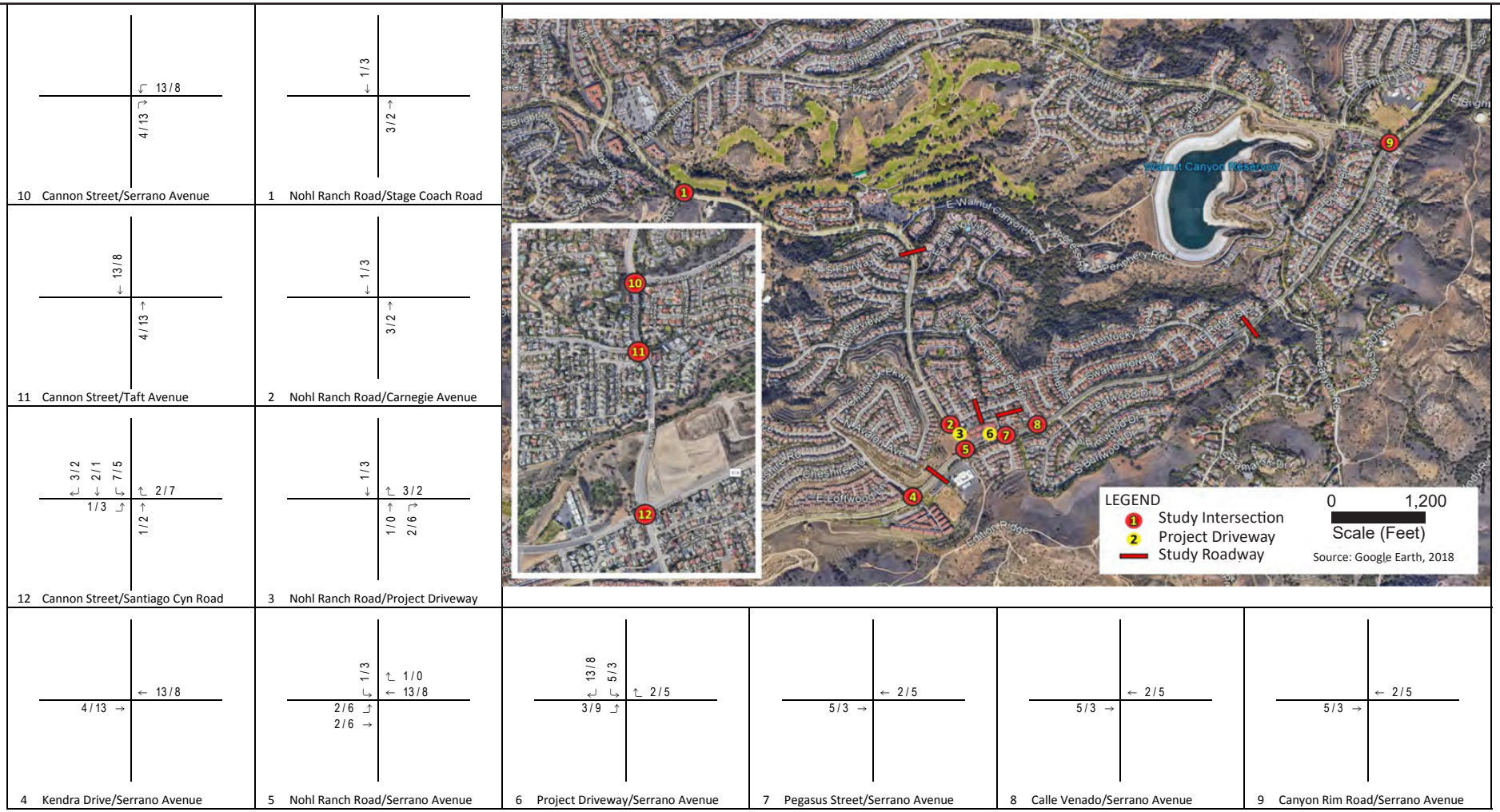
Figure 5.13-5 - Proposed Project Trip Assignment

5. Environmental Analysis



XXX / YYY AM / PM Volume

Source: LSA, 2019

5. Environmental Analysis
TRANSPORTATION

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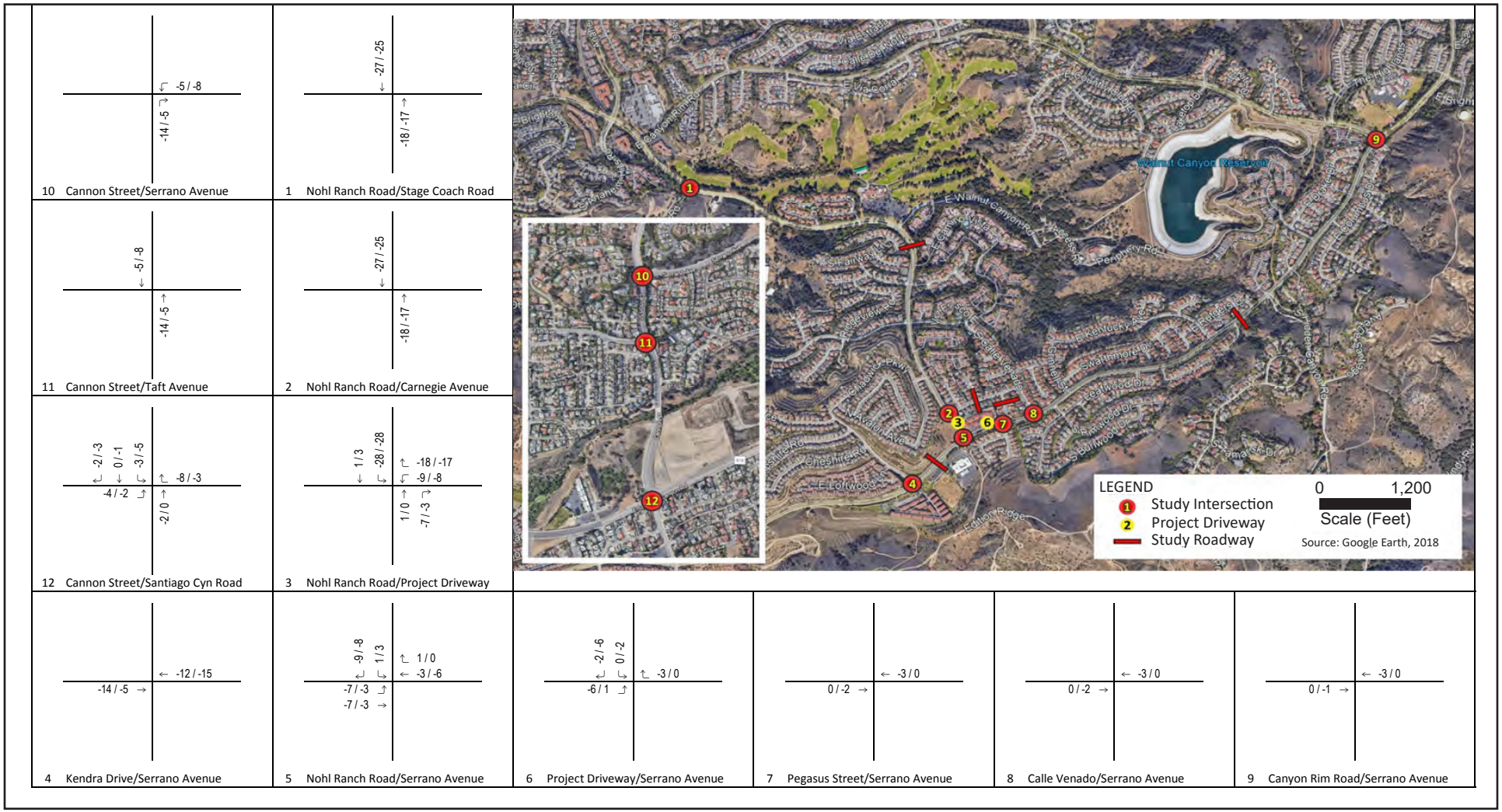
Figure 5.13-6 - Net Proposed Project Trip Assignment

5. Environmental Analysis



XXX / YYY AM / PM Volume

Source: LSA, 2019

5. Environmental Analysis
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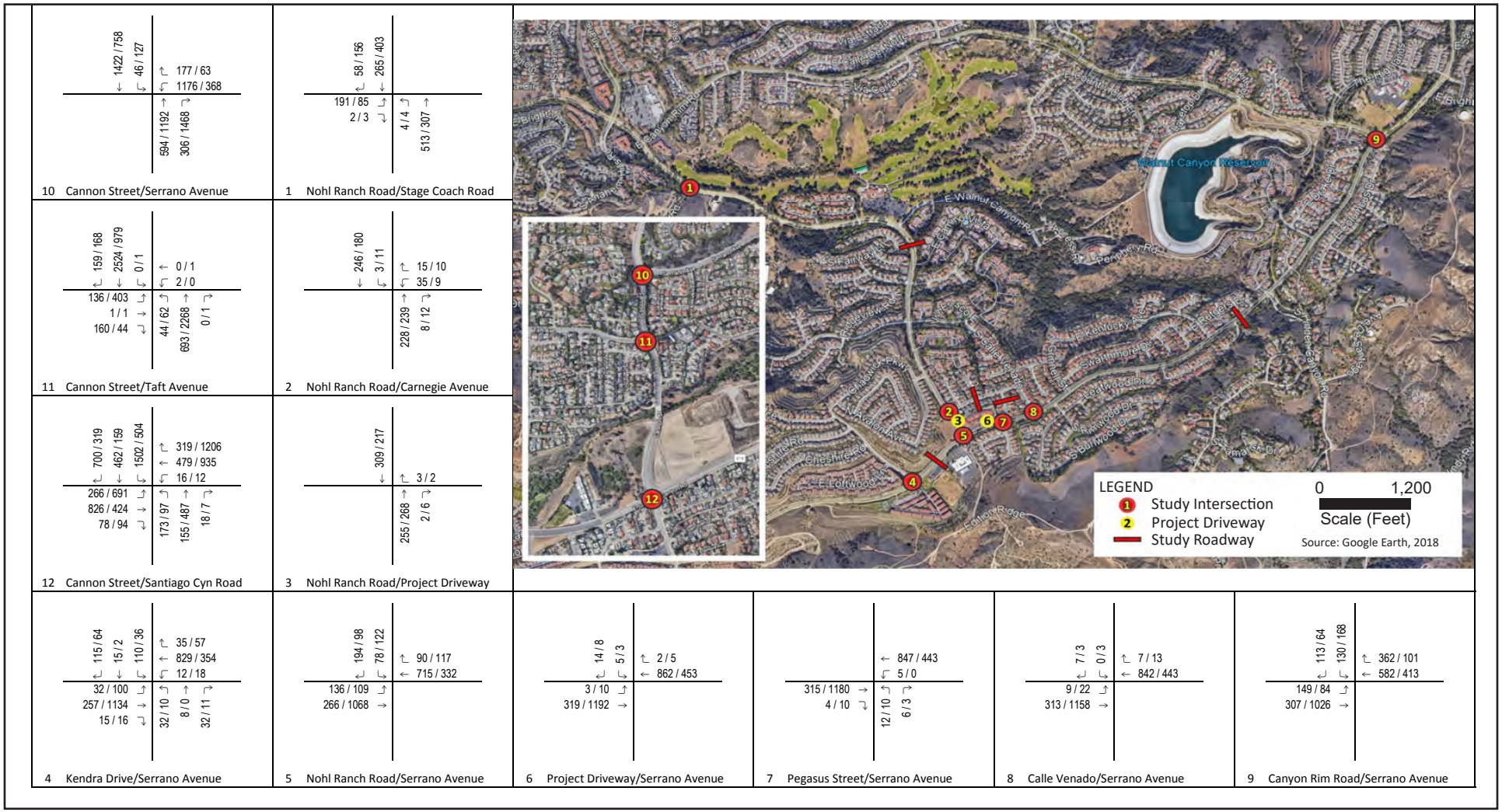
Figure 5.13-7 - Existing (2018) Plus Project Volumes

5. Environmental Analysis



XXX / YYY AM / PM Volume

Source: LSA, 2019

5. Environmental Analysis
TRANSPORTATION

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Existing Plus Project Roadway Segment Level of Service Analysis

Table 5.13-7 summarizes the daily traffic volumes and V/C ratios for the five traffic study area roadway segments with the addition of Project traffic. As Table 5.13-7 illustrates, all study area roadway segments operate at an acceptable LOS (i.e., LOS C or better) during the critical peak hours. Therefore, impacts would be considered less than significant.

Table 5.13-7 Existing Plus Project Roadway LOS Comparison

Roadway Segment	Mid-Block Lanes	Capacity	Existing			Plus Project			Change
			Volume	V/C	LOS	Volume	V/C	LOS	
Nohl Ranch Road (Stage Coach Rd to Serrano Ave)	4D	37,500	5,599	0.15	A	5,182	0.14	A	(0.01)
Serrano Avenue (Kendra Dr to Nohl Ranch Rd)	4D	37,500	14,121	0.38	A	14,196	0.38	A	0.00
Serrano Avenue (Nohl Ranch Rd to Canyon Rim Rd)	4D	37,500	14,013	0.37	A	14,023	0.37	A	0.00
Carnegie Avenue (Nohl Ranch Rd to Calle Venado)	2U	12,500	695	0.06	A	695	0.06	A	0.00
Calle Venado (Carnegie Ave to Serrano Ave)	2U	12,500	424	0.03	A	424	0.03	A	0.00

LOS = level of service
V/C = volume-to-capacity ratio
(0.1) = parentheses denote decrease

Project Opening Year (2022) Plus Project Condition

The Proposed Project is anticipated to be completed by 2022. There are no nearby approved or pending projects within two-mile radius that could be completed and thereby contribute traffic to the traffic study area by 2022. The traffic study added traffic volumes at the traffic study area intersections consistent with the Project volumes identified in the Santiago Hills II Traffic Study in the City of Orange as part of the 2022 traffic condition (Stantec 2016). In addition, the Proposed Project escalated existing roadway and intersection volumes by 1 percent per year, for a total of 4 percent over the next 4 years, in order to account for ambient traffic growth from existing traffic volumes collected in 2018 and early 2019.

Intersection geometrics at the traffic study area intersections (shown in Figure 5.13-2) are not anticipated to change by the Project opening year. The future AM and PM peak-hour traffic volumes for opening year 2022 without the Proposed Project are shown on Figure 6 of the Traffic Study included as Appendix N of the DEIR.

Project Opening Year (2022) Baseline Intersection Level of Service Analysis

As indicated in Table 5.13-8, all traffic study area intersections operate at an acceptable LOS in the AM and PM peak hours in the Project Opening Year (2022) Baseline condition except for the intersections of Cannon Street/Serrano Avenue (ID#10) and Cannon Street/Taft Avenue (ID#11). Note that these intersections are under the jurisdiction of the City of Orange and that they also operate at unacceptable LOS in existing conditions.

Project Opening Year (2022) Plus Project Intersection Level of Service Summary Analysis

Traffic generated by the Proposed Project was added to the Project Opening Year (2022) traffic volumes at each study area intersection and roadway segment. Figure 5.13-8, *Project Opening Year (2022) Plus Project Volumes*, illustrates the resulting Project Opening Year (2022) plus Project AM and PM peak-hour traffic volumes.

Table 5.13-8 summarizes the results of the Project Opening Year (2022) plus Project AM and PM peak-hour LOS analysis for all traffic study area intersections. As Table 5.13-8 indicates, all study area intersections are anticipated to operate at an acceptable LOS (i.e., LOS D or better) in the AM and PM peak hours, except for the intersections of Cannon Street/Serrano Avenue (ID#10) and Cannon Street/Taft Avenue (ID#11). These intersections are under the jurisdiction of the City of Orange and are the same intersections that operate at unacceptable LOS in existing conditions and baseline conditions without the Proposed Project. Based on empirical data collected at the driveways of the existing retail center, the Proposed Project is forecast to generate less traffic. As a result of generating less traffic, the Proposed Project is forecast to reduce V/C ratios and delay at the intersections included in the study area. Based on the City's criteria for determining significant traffic impacts (i.e., City of Anaheim criteria for intersections in Anaheim and City of Orange criteria for intersections in Orange), the Proposed Project is not expected to result in a significant impact at any of the traffic study area intersections. Impacts would be less than significant.

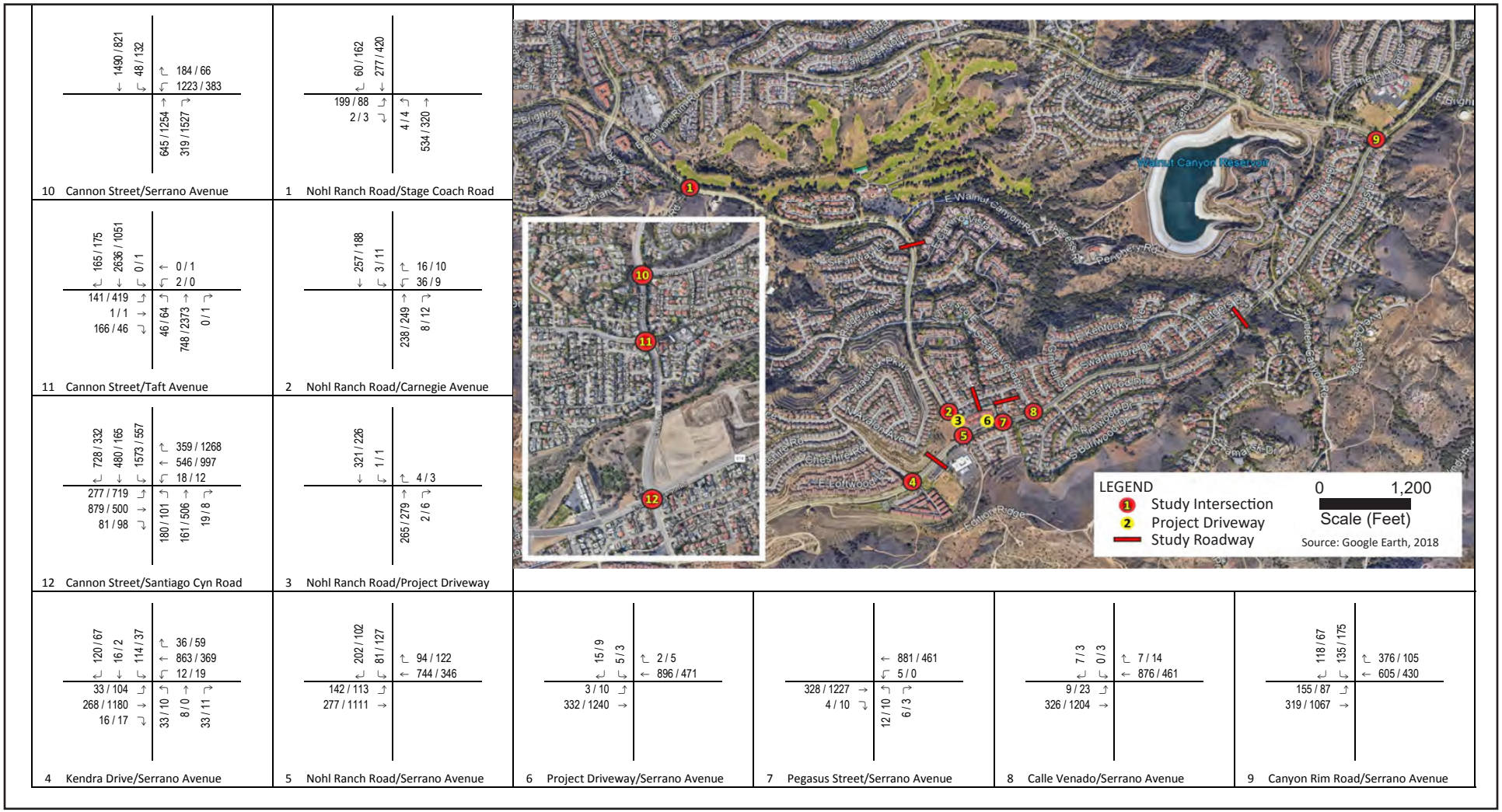
Table 5.13-8 Opening Year (2022) Plus Project Intersection LOS Summary

		Baseline				Plus Project				Change	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		V/C or Delay (sec)	
ID	Intersections	V/C (sec)	LOS	V/C (sec)	LOS	V/C (sec)	LOS	V/C (sec)	LOS	AM	PM
1	Nohl Ranch Rd./Stage Coach Rd.	0.329	A	0.276	A	0.324	A	0.276	A	(0.005)	0.000
2	Nohl Ranch Rd./Carnegie Ave. (u)	11.4	B	13.8	B	11.2	B	10.3	B	(0.2)	(3.5)
3	Nohl Ranch Rd./Project Dwy. (u)	9.2	A	9.3	A	9.1	A	9.2	A	(0.1)	(0.1)
4	Kendra Dr./Serrano Ave.*	0.426	A	0.454	A	0.422	A	0.454	A	(0.004)	0.000
5	Nohl Ranch Rd./Serrano Ave.	0.615	B	0.437	A	0.602	B	0.437	A	(0.013)	0.000
6	Project Dwy./Serrano Ave. (u)	12.1	B	10.0	B	12.1	B	9.9	A	0.0	(0.1)
7	Pegasus St./Serrano Ave. (u)	12.5	B	24.2	C	12.5	B	24.1	C	0.0	(0.1)
8	Calle Venado/Serrano Ave. (u)	11.9	B	18.3	C	11.9	B	18.3	C	0.0	0.0
9	Canyon Rim Rd./Serrano Ave.	0.505	A	0.435	A	0.504	A	0.435	A	(0.001)	0.000
10	Cannon St./Serrano Ave.*	0.849	D	1.026	F	0.848	D	1.026	F	(0.001)	0.000
11	Cannon St./Taft Ave.*	0.986	E	0.996	E	0.984	E	0.996	E	(0.002)	0.000
12	Cannon St./Santiago Cyn Rd.*	0.795	C	0.815	D	0.795	C	0.815	D	0.000	0.000

☐ Unsatisfactory LOS
LOS = level of service
sec = seconds
(u) = unsignalized, worst approach delay shown
V/C = volume-to-capacity
(0.1) = parentheses denote decrease
* City of Orange intersections

Figure 5.13-8 - Project Opening Year (2022) Plus Project Volumes

5. Environmental Analysis



XXX / YYY AM / PM Volume

Source: LSA, 2019

5. Environmental Analysis
TRANSPORTATION

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Project Opening Year (2022) Plus Project Roadway Segment Level of Service Analysis

Similar to the intersection analysis, an ambient traffic growth rate of 4 percent (1 percent per year) was applied to daily roadway traffic volumes. As shown in Table 5.13-9, all study area roadway segments operate at an acceptable LOS (i.e., LOS C or better) under existing conditions during the critical peak hours and would continue to operate at an acceptable LOS with implementation of the Proposed Project.

Table 5.13-9 Project Opening Year (2022) Plus Project Roadway LOS Comparison

Roadway Segment	Mid-Block Lanes	Capacity	Existing			Plus Project			Change
			Volume	V/C	LOS	Volume	V/C	LOS	
Nohl Ranch Road (Stage Coach Rd to Serrano Ave)	4D	37,500	5,823	0.16	A	5,406	0.14	A	(0.02)
Serrano Avenue (Kendra Dr to Nohl Ranch Rd)	4D	37,500	14,686	0.39	A	14,761	0.39	A	0.00
Serrano Avenue (Nohl Ranch Rd to Canyon Rim Rd)	4D	37,500	14,574	0.39	A	14,584	0.39	A	0.00
Carnegie Avenue (Nohl Ranch Rd to Calle Venado)	2U	12,500	723	0.06	A	723	0.06	A	0.00
Calle Venado (Carnegie Ave to Serrano Ave)	2U	12,500	441	0.04	A	441	0.04	A	0.00

LOS = level of service
V/C = volume-to-capacity ratio
(0.1) = parentheses denote decrease

General Plan Buildout (2035) Plus Project Condition

The City performed a citywide analysis of intersections and roadway segments for the certified Housing Opportunities Rezoning Project Supplemental Environmental Impact Report (SEIR) No. 346 (SEIR No. 346) using the Anaheim Traffic Analysis Model (ATAM). The traffic analysis for SEIR 346 included three of the intersections in the Project's traffic study area but none of the roadway segments.

General Plan Buildout (2035) Intersection Level of Service Analysis

The City applied the ATAM traffic growth rates to the existing turn volume data collected for the Traffic Study and provided General Plan horizon traffic volumes for the three study intersections in the traffic model (Nohl Ranch Road/Stage Coach Road, Nohl Ranch Road/Serrano Avenue, and Canyon Rim Road/Serrano Avenue). The Santiago Hills II Traffic Study (Stantec 2016) included one additional study intersection and provided General Plan horizon traffic volumes for that intersection (Canon Street/Santiago Canyon Road). The Traffic Study compared the General Plan horizon traffic volumes at these intersections to the existing traffic volumes and identified the growth in traffic volume passing through the intersections. The same growth in traffic was applied to study intersections adjacent to the intersections for which General Plan horizon traffic volumes were provided.

As noted previously, the City or Orange Master Plan of Streets and Highways indicates that the roadways of Cannon Street and Santiago Canyon Road will be six lanes at General Plan buildout. Through traffic lanes at the intersections of Cannon Street/Serrano Avenue (Orange), Cannon Street/Taft Avenue (Orange), and Cannon Street/Santiago Canyon Road (Orange) were adjusted in the General Plan Buildout (2035) analysis to

account for the wider roadways. The City of Orange also reported that a project to add a second northbound right turn lane at Cannon Street/Serrano Avenue (Orange) is in process, but may not be completed by the 2022 opening year for the Proposed Project. This improvement was also included in the General Plan (2035) analysis.

Figure 7 of the Traffic Study in Appendix N of the DEIR displays the resulting General Plan Buildout (2035) traffic volumes at all traffic study intersections. Table 5.13-10 summarizes the results of the AM and PM peak-hour LOS analysis for the traffic study area intersections. All traffic study area intersections operate at an acceptable LOS in the AM and PM peak hours in the General Plan Buildout (2035) with planned improvements.

General Plan Buildout (2035) Plus Project Intersection Level of Service Analysis

The Traffic Study found that the Serrano Center experiences additional AM peak-hour trips due to its proximity to Anaheim Hills Elementary School and that the Serrano Center generates approximately 75 percent of the PM peak-hour trip (i.e., compared to the trips estimated by ITE trip rates) generation of a fully occupied center in the existing condition. However, in ATAM and General Plan Buildout, the Serrano Center would have the potential to generate traffic as a fully occupied shopping center. Table 5.13-10 presents the trip generation comparison under these conditions. Net Project trips were added to the traffic study area, resulting in the General Plan (2035) Plus Project traffic volumes illustrated on Figure 5.13-9, *General Plan (2035) Plus Project Traffic Volume*.

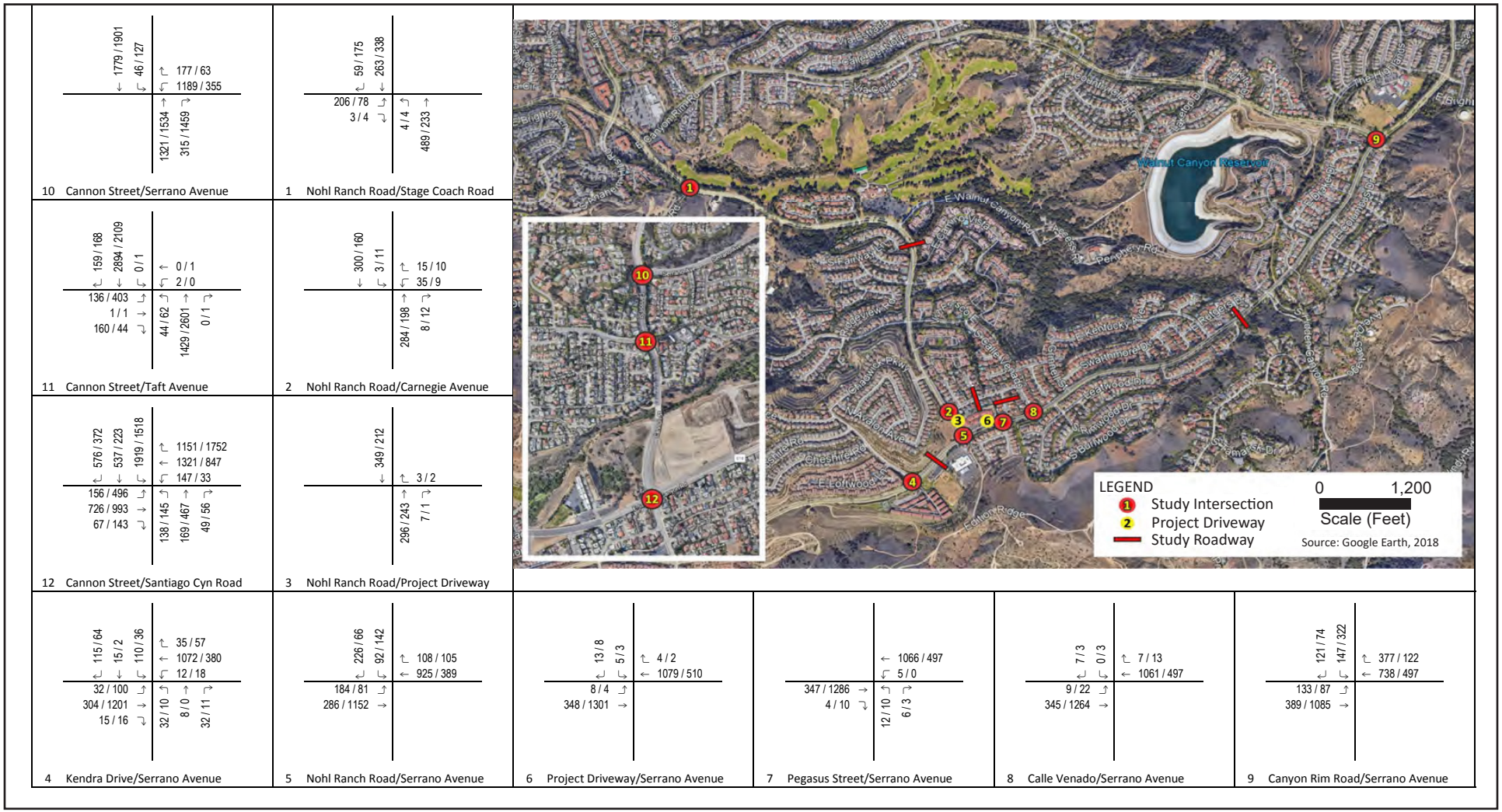
Table 5.13-10 Buildout Trip Comparison

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates (Land Use Code)									
Multifamily Housing (220)[1]		DU	7.32	0.11	0.35	0.46	0.35	0.21	0.56
Shopping Center (820)[1]		TSF	37.75	0.58	0.36	0.94	1.83	1.98	3.81
Project Trip Generation									
Nohl Ranch Condominiums (220)	60	DU	439	7	21	28	21	13	34
Existing Trip Generation to Be Replaced									
Serrano Center (820)	42.526	TSF	1,605	25	15	40	78	84	162
Net New Trip Generation			**(1,166)**	**(18)**	**6**	**(12)**	**(57)**	**(71)**	**(128)**

[1] Trip rates referenced from the ITE *Trip Generation Manual* (10th edition).
ADT = average daily trips DU = dwelling unit
ITE = Institute of Transportation Engineers TSF = thousand square feet
(100) = parentheses denote decrease

Figure 5.13-9 - General Plan (2035) Plus Project Volumes

5. Environmental Analysis



XXX / YYY AM / PM Volume

Source: LSA, 2019

5. Environmental Analysis
TRANSPORTATION

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Table 5.13-11 summarizes the results of the General Plan Buildout (2035) plus Project AM and PM peak-hour LOS analysis for all study area intersections. As Table 5.13-11 shows, all traffic study area intersections are anticipated to operate at an acceptable LOS (i.e., LOS D or better) in the AM and PM peak hours. Based on empirical data collected at the driveways of the existing retail center, the Proposed Project is forecast to generate less traffic, therefore, would reduce V/C ratios and delay at the intersections included in the traffic study area. Traffic impacts would be considered less than significant. However, as described in RR T-1 and RR T-2, the Anaheim Municipal Code requires the Proposed Project to pay transportation impact and improvement fees based on type of construction.

Table 5.13-11 General Plan Buildout Year (2035) Plus Project Intersection LOS Summary

		Baseline				Plus Project				Change	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		V/C or Delay (sec)	
ID	Intersections	V/C (sec)	LOS	V/C (sec)	LOS	V/C (sec)	LOS	V/C (sec)	LOS	AM	PM
1	Nohl Ranch Rd./Stage Coach Rd.	0.316	A	0.261	A	0.315	A	0.249	A	(0.001)	(0.012)
2	Nohl Ranch Rd./Carnegie Ave. (u)	11.9	B	10.2	B	11.8	B	9.9	A	(0.1)	(1.6)
3	Nohl Ranch Rd./Project Dwy. (u)	9.4	A	9.2	A	9.3	A	9.0	A	(0.1)	(0.2)
4	Kendra Dr./Serrano Ave.*	0.478	A	0.463	A	0.479	A	0.459	A	0.001	(0.004)
5	Nohl Ranch Rd./Serrano Ave.	0.714	C	0.439	A	0.714	C	0.431	A	0.0	(0.008)
6	Project Dwy./Serrano Ave. (u)	13.3	B	10.1	B	13.2	B	10.1	B	(0.1)	0.0
7	Pegasus St./Serrano Ave. (u)	13.2	B	25.8	D	13.2	B	25.7	D	0.0	(0.1)
8	Calle Venado/Serrano Ave. (u)	13.0	B	19.7	C	11.1	B	19.7	C	(1.9)	0.0
9	Canyon Rim Rd./Serrano Ave.	0.535	A	0.487	A	0.535	A	0.486	A	0.0	(0.001)
10	Cannon St./Serrano Ave.*	0.746	C	0.558	A	0.749	C	0.554	A	0.003	(0.004)
11	Cannon St./Taft Ave.*	0.753	C	0.801	D	0.755	C	0.798	C	0.002	(0.003)
12	Cannon St./Santiago Cyn Rd.*	0.795	C	0.818	D	0.795	C	0.813	D	0.0	(0.005)

☐ Unsatisfactory LOS
LOS = level of service
sec = seconds
(u) = unsignalized, worst approach delay shown
V/C = volume-to-capacity
(0.1) = parentheses denote decrease
* City of Orange intersections

General Plan (2035) Plus Project Roadway Segment Level of Service Analysis

To calculate daily roadway volumes for segments not included in the previous General Plan forecasting, LSA determined the ratio between daily and peak-hour roadway volumes in the existing condition and applied that ratio to peak-hour roadway volumes evident from intersection turn volumes. Table 5.13-12 summarizes the daily traffic volumes and V/C ratios for the five traffic study area roadway segments in the General Plan Buildout (2035) condition. As Table 5.13-12 illustrates, all traffic study area roadway segments operate at an acceptable LOS (i.e., LOS C or better). Therefore, impacts would be less than significant.

Table 5.13-12 General Plan (2035) Plus Project Roadway LOS Comparison

Roadway Segment	Midblock Lanes	Capacity	Baseline			Plus Project			Change
			Volume	V/C	LOS	Volume	V/C	LOS	
Nohl Ranch Road (Stage Coach Rd to Serrano Ave)	4D	37,500	4,954	0.13	A	4,202	0.11	A	(0.02)
Serrano Avenue (Kendra Dr to Nohl Ranch Rd)	4D	37,500	17,891	0.48	A	17,386	0.46	A	(0.02)
Serrano Avenue (Nohl Ranch Rd to Canyon Rim Rd)	4D	37,500	17,407	0.46	A	17,325	0.46	A	0.00
Carnegie Avenue (Nohl Ranch Rd to Calle Venado)	2U	12,500	693	0.06	A	693	0.06	A	0.00
Calle Venado (Carnegie Ave to Serrano Ave)	2U	12,500	422	0.03	A	422	0.03	A	0.0

LOS = level of service V/C = volume-to-capacity ratio
(0.1) = parentheses denote decrease

Neighborhood Traffic Impact

Access to the driveway on Nohl Ranch Road would be limited to right-in/right-out as part of the Proposed Project, as described in PDF T-1. Left turns out of the project driveway on Serrano Avenue would continue as they do in the existing condition. Figure 5.13-10, *Travel Paths To and From the Project Site*, illustrates the paths of travel possible to and from the Project Site. As Figure 5.13-10 shows, travel to and from the Project Site would not require traveling through residential neighborhoods except in one scenario. In a worst-case where residents choose not to turn left out of the Serrano Avenue driveway onto Serrano Avenue, they would need to travel along Carnegie Avenue and Calle Venado to travel eastbound on Serrano Avenue, because no westbound left-turn lane is provided at the intersection of Nohl Ranch Road/Serrano Avenue, and U-turns are explicitly prohibited at this location. All other movements to or from the Project Site would occur along arterial roadways. Table 5.13-13, *Project Opening Year (2022) with Worst-Case Neighborhood Traffic Intersection LOS Summary*, compares intersection performance in the Project opening year under a theoretical condition where traffic exiting the Project Site and traveling east uses Carnegie Avenue and Calle Venado. Table 5.13-14, *Opening Year (2022) with Worst-Case Neighborhood Traffic Roadway LOS Comparison*, presents roadway volume to capacity ratios under the same theoretical condition.

Table 5.13-13 Opening Year (2022) with Worst-Case Neighborhood Traffic Intersection LOS Summary

		Baseline				Plus Project				Change	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		V/C or Delay (sec)	
ID	Intersections	V/C (sec)	LOS	V/C (sec)	LOS	V/C (sec)	LOS	V/C (sec)	LOS	AM	PM
2	Nohl Ranch Rd./Carnegie Ave. (u)	11.4	B	13.8	B	11.2	B	10.3	B	(0.2)	(3.5)
8	Calle Venado/Serrano Ave. (u)	11.9	B	18.3	C	17.5	C	21.3	C	5.6	3.0

☐ Unsatisfactory LOS
LOS = level of service
sec = seconds
(u) = unsignalized, worst approach delay shown
V/C = volume-to-capacity
(0.1) = parentheses denote decrease

Table 5.13-14 Opening Year (2022) with Worst-Case Neighborhood Traffic Roadway LOS Comparison

	Midblock		Baseline			Plus Project			Change	
Roadway Segment	Lanes	Capacity	Volume	V/C	LOS	Volume	V/C	LOS	Volume	V/C
Carnegie Avenue (Nohl Ranch Rd to Calle Venado)	2U	12,500	723	0.06	A	778	0.06	A	55	0.0
Calle Venado (Carnegie Ave to Serrano Ave)	2U	12,500	441	0.04	A	496	0.04	A	55	0.0

LOS = level of service V/C = volume-to-capacity ratio
(0.1) = parentheses denote decrease

As shown in Table 5.13-13, the intersection analysis demonstrated that with the addition of Project trips using Carnegie Avenue and Calle Venado to travel eastbound on Serrano Avenue, the intersections of Nohl Ranch Road/Carnegie Avenue and Calle Venado/Serrano Avenue would operate at an acceptable LOS. The analysis also showed that daily traffic volumes on Carnegie Avenue and Calle Venado would be well below the capacity of a two-lane undivided roadway. However, these would still represent trips through a neighborhood that neither begin nor end in that neighborhood.

The City's "Criteria for Preparation of Traffic Impact Studies" does not provide thresholds for determining when traffic added to neighborhood streets represents an impact. In the worst-case scenario where all outbound trips traveling eastbound on Serrano Avenue use Carnegie Avenue and Calle Venado, Table 5.13-14 shows that the Project would result in potentially up to 55 additional daily trips. This represents less than 0.5 percent of the capacity of the roadway (i.e., 0.44 percent). During the peak hour, the Proposed Project would result in five additional trips, again representing less than 0.5 percent of the capacity of a travel lane (i.e., 0.48 percent). Given the low use by the Project, it is anticipated that the potential to impact the roadways is low, and impacts would be considered less than significant.

Serrano Center and School Parking Impact

The Project Site is currently used by some parents to park while dropping off or picking up students at AHES, but there is no formal arrangement with AHES to use the Project Site for this school use. Signs are posted at the parking lot entrances indicating that parking is for the Serrano Center only, but some parents continue to use this lot for drop-off/pick-up. Demolition of the Serrano Center and the associated parking lot would result in displacement of these drop-off/pick-up activities from the Project Site.

It should be noted that it is difficult to quantify the effects on queuing because drop-off and pick-up activity can redistribute itself temporally. Drivers typically arriving at a particular time may choose to arrive earlier or later in response to queueing and time spent waiting, and queues may rebalance to existing levels. To the extent practicable, the traffic impact analysis for the Proposed Project took into account the redirection of the school-related traffic volume from the Serrano Center to the school as described in Section 5.13.4.1, *Impact Analysis*, subheading *Trip Generation and Trip Distribution and Assignment*. And the traffic impact analysis concluded that the traffic study intersections would function at acceptable levels with Project-related traffic and the redirection of school traffic. Therefore, although it is difficult to predict the exact behavioral changes to be made by parents who are using the Serrano Center for student drop-off once the Serrano Center is demolished, these additional vehicle trips were accounted for in the future traffic conditions, and impacts were determined to be less than significant.

Level of Significance Before Mitigation: Less than significant.

Impact 5.13-2: Implementation of the Proposed Project would be consistent with CEQA Guidelines § 15064.3, subdivision (b). [Threshold T-2]

CEQA Guidelines § 15064.3 (b) has the following criteria for analyzing transportation impacts.

(1) **Land Use Projects.** Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact.

(2) **Transportation Projects.** Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in Section 15152.

(3) **Qualitative Analysis.** If existing models or methods are not available to estimate the vehicle miles traveled for the particular project being considered, a lead agency may analyze the project's vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate.

Figure 5.13-10 - Travel Paths To and From the Project Site

5. Environmental Analysis

Source: LSA, 2019

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(4) **Methodology.** A lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles traveled, and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

As described in Section 5.13.1.1 *Regulatory Background*, on December 28, 2018, the California Natural Resources Agency adopted revised CEQA Guidelines. Among the changes to the guidelines was the removal of vehicle delay and LOS from consideration under CEQA. With the adopted guidelines, transportation impacts are to be evaluated based on a project's effect on vehicle miles traveled. Lead agencies are allowed to opt into the revised transportation guidelines, but the new guidelines must be used starting July 1, 2020. The City has not adopted revised traffic impact analysis guidelines, and analysis of vehicle LOS remains the appropriate method for determining a project's transportation impact. However, a disclosure of the Proposed Project's effect on VMT is provided here for informational purposes.

The California Emissions Estimator Model (CalEEMod) is a sketch model used statewide to estimate pollutant and greenhouse gas emissions for various aspects of construction and operation of a proposed project. The Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR 2018) identifies sketch models (and CalEEMod specifically) as potential tools for analyzing a project's VMT. The air quality analysis used the trip generation from Table 5.13-5, *Existing Trips and Trip Generation*, to analyze the emissions produced by vehicles traveling to/from the Serrano Center and the emissions produced by vehicles traveling to/from the Project Site. These calculations include estimates of VMT in existing conditions and with the Proposed Project. Table 5.13-15 provides a comparison of VMT. As shown, the Proposed Project is anticipated to produce fewer VMT than the existing land use, reducing it by approximately 1.8 million annual VMT. The CEQA Guidelines § 15064.3 (b)(1) states that projects that a decrease in VMT compared to existing conditions would be presumed to have a less than significant transportation impact. While significance criteria for impacts related to VMT are not yet adopted by the City, when significance criteria are adopted, and if those significance criteria are consistent with state law, the Proposed Project would likely be determined to have a less than significant impact.

Table 5.13-15 Project Effect on Vehicle Miles Traveled

Land Use	Annual VMT
Existing Serrano Center	3,130,943
Proposed Nohl Ranch Condominiums	1,325,859
Net Change	**(1,805,084)**

VMT = vehicle miles traveled
(0.1) = parentheses denote decrease

CEQA Guidelines § 15064.3 (b)(3), indicates that where existing model or methods are not available to estimate the VMT, a lead agency may provide qualitative analysis by evaluating factors such as proximity to other destinations. Although the Proposed Project would remove the existing neighborhood commercial uses, there are two commercial areas within two-mile radius of the Project Site to the north, and four additional commercial areas within three-mile radius of the Project Site as shown in Figure 5.13-11, *Commercial Centers within 3-Mile Radius*. Therefore, other commercial areas are available nearby where displaced neighborhood commercial uses can relocate, and residents would still be able to access various commercial uses without having to increase the VMT substantially. Since there are other available commercial areas within two- to three-mile radius, and the Proposed Project would produce lower VMT than the existing Serrano Center based on the CalEEMod default values, the Proposed Project would not be considered inconsistent with the CEQA Guidelines § 15064.3 (b). Impacts would be less than significant.

Level of Significance Before Mitigation: Less than significant.

Impact 5.13-3: Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). [Threshold T-3]

Implementation of the Proposed Project would require that left-turn movements be prohibited at the project driveway on Nohl Ranch Road. The Proposed Project would retain full access at the project driveway on Serrano Avenue, and right-in/right-out movement access at the project driveway on Nohl Ranch Road.

Nohl Ranch Road Driveway

In the existing condition, the driveway on Nohl Ranch Road is approximately 200 feet north of the intersection of Nohl Ranch Road/Serrano Avenue, and there are no turn movement restrictions into or out of the driveway. However, because the left-turn pocket for southbound Nohl Ranch Road onto eastbound Serrano Avenue extends 225 feet from the intersection of Nohl Ranch Road/Serrano Avenue, left-turn movements out of the Nohl Ranch driveway must cross through the left-turn lanes of Nohl Ranch Road. Therefore, if not turning left at the intersection of Nohl Ranch Road/Serrano Avenue, vehicles exiting the driveway have approximately 200 feet to merge over three lanes. The length of the left-turn pocket also requires left-turn movements into the driveway to pause at the beginning of the left-turn pocket while waiting for any conflicting vehicles. Two existing left-turn lanes on Nohl Ranch Road still allow vehicles to enter the left-turn lane even when a vehicle is waiting to turn into the Nohl Ranch driveway.

Figure 15.13-11 - Commercial Centers within 3-Mile Radius

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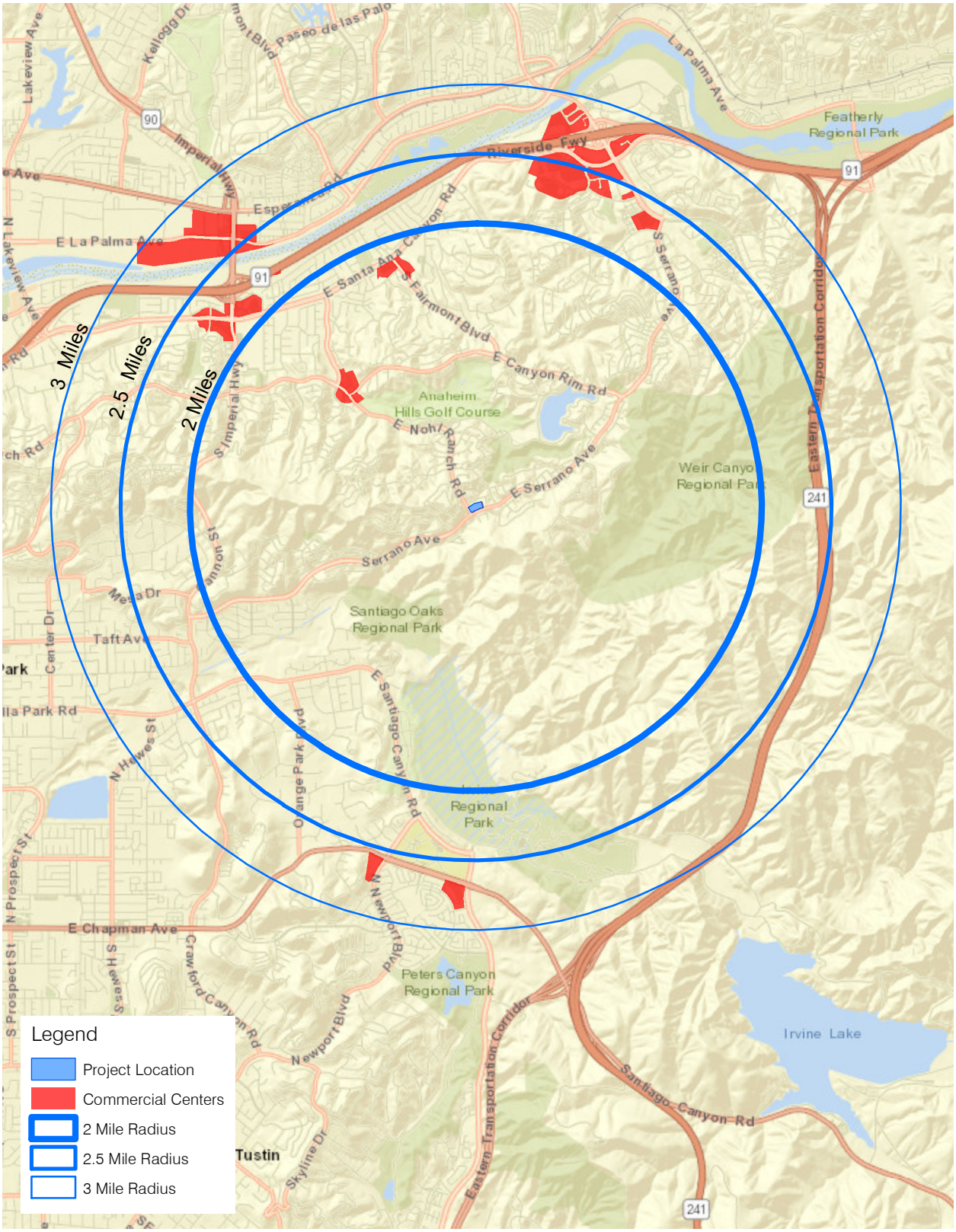

Source: ESRI, 2015; PlaceWorks, 2019

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However, implementation of the Proposed Project would move the driveway on Nohl Ranch Road approximately 75 feet closer to the Nohl Ranch Road/Serrano Avenue intersection. This would leave exiting vehicles approximately 125 feet to transition across three lanes if not turning left at the intersection of Nohl Ranch Road/Serrano Avenue. Because this reduction in transition length can cause potential hazards due to vehicles waiting near the middle of the turn pocket to turn left, while other vehicles are trying to turn left at the intersection, only right-in/right-out movement would be allowed from the Nohl Ranch driveway, prohibiting left-turn movement into or out from the driveway on Nohl Ranch Road. As stated in PDF T-1, as part of the Proposed Project, the Project Applicant is required to work with the City of Anaheim to channelize vehicle movements on the Nohl Ranch driveway to exclusive right-turn in and out. This restrictions in turn movement would be accomplished initially through signage and striping. And per the recommended condition of approval, should the initial installation signage and striping at the driveway on Nohl Ranch Road to restrict turning movement prove to be ineffective, the Project Applicant is required to revise the measures and construct alternative measures, at Project Applicant cost, until an effective measure is found and to the satisfaction of the City Engineer. This design feature is part of the Proposed Project, and the trip assignment analyzed in this DEIR section reflects this turn restriction. Therefore, no significant design safety hazards are anticipated by the Proposed Project on the Nohl Ranch driveway.

Serrano Avenue Driveway

There are currently two driveways on Serrano Avenue, and the Proposed Project would close the western driveway on Serrano Avenue and would not alter the location of the eastern driveway. Serrano Avenue has four lanes and a two-way left-turn lane that acts as a median. Left-turn movements into and out of the driveways on Serrano Avenue are supported by the two-way left-turn median. The two-way left-turn median provides a space for vehicles turning into a driveway to wait out of the flow of traffic before turning into the driveway. Similarly, vehicles turning left out of a driveway can complete their turn in two parts: (1) entering the two-way left-turn median during an appropriate gap in westbound traffic, and (2) exiting the two-way left-turn median into travel lanes during an appropriate gap in eastbound traffic.

At the eastern driveway, however, the two-way left-turn median is also used by vehicles turning left out of Pegasus Street. The distance between the eastern driveway and Pegasus Street is approximately 75 feet. This is sufficient distance to accommodate two vehicles, but it is also close enough to warrant considering the likelihood that two vehicles would enter at the same time from opposite directions. Adequate sight distance is provided at this location, and vehicles exiting Pegasus Street and the Project driveway can see each other.

Pegasus Street serves a neighborhood of 33 homes south of the Project Site. The traffic volume generated by 33 homes is relatively low—the Existing traffic volume data showed a maximum of 12 left turns from this neighborhood in the busiest hour (i.e., the AM peak hour). This equates to one vehicle every 5 minutes entering the two-way left-turn median during the highest one-hour period of the day. During the AM peak hour, the Proposed Project is anticipated to generate five outbound trips headed eastbound on Serrano Avenue, equating to one vehicle every 12 minutes entering the two-way left-turn median. The infrequency of use by vehicles in either direction makes it less likely that two vehicles would use the lane simultaneously.

The use of the two-way left-turn median by vehicles coming from Pegasus Street would not change as a result of the Project implementation. The estimated volume of vehicles that would enter the two-way left-turn median from the Serrano Avenue driveway for the Proposed Project is similar to the existing volume.

The traffic study reviewed collision statistics to determine whether the spacing between the two points accessing the two-way left-turn median presents an issue. The Statewide Integrated Traffic Records System data within the Transportation Injury Mapping System for 2011 to 2017 was examined, and the data identified no reported collisions at Pegasus Street or the Serrano Center driveway during this period. Given the low frequency of use of the two-way left-turn median and the historical lack of collisions from similar traffic volumes, no potentially significant hazards are anticipated at the Serrano Avenue driveway even with full left- and right-turn access as it is in the existing condition. Impacts would be less than significant.

Therefore, implementation of the Proposed Project would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). Impacts would be less than significant.

Level of Significance Before Mitigation: Less than significant.

Impact 5.13-4: The Proposed Project would not result in inadequate emergency access. [Threshold T-4]

The Project Site has two street frontages that could provide access during emergencies. A fire access plan has been prepared that will be reviewed and approved by Anaheim Fire and Rescue. The driveway widths and turning radius would meet the minimum requirements for fire access roads. The Proposed Project would not result in inadequate emergency access. Additionally, as discussed in the *Neighborhood Traffic Impact* section under Impact 5.13-1, even if all outbound Project-related traffic exiting from the Nohl Ranch driveway use Carnegie Avenue and Calle Venado to travel onto eastbound Serrano Avenue, this traffic would represent only 0.5 percent of the capacity of the roadway, and therefore would not adversely affect traffic in the neighborhood, including emergency access. Moreover, the overall traffic volume from the Project Site would decrease with implementation of the Proposed Project. Therefore, no operational emergency access impacts are anticipated.

As discussed in Impact 5.8-2 in Section 5.8, *Hazards and Hazardous Materials*, of this DEIR, construction-related activities could adversely impact emergency access in adjacent roadways. Construction-related trips involve construction worker trips, large trucks hauling soil and debris from the site, trucks delivering construction equipment to/from the site, and large trucks delivering concrete and other construction materials. These trips could potentially interfere with area traffic during emergency situations.

Therefore, mitigation is necessary to ensure that construction staging and traffic control plans are prepared and implemented. These plans will indicate on- or off-site construction staging area, any potential for full or partial lane closures, hours during which lane closures (if any) would not be allowed, local traffic detours (if any), and protective devices and traffic controls (such as barricades, cones, flag persons, lights, warning beacons, temporary traffic signals, warning signs). Provided that site-specific construction worksite staging and traffic control plans are approved and implemented, the Proposed Project would not adversely impact or physically interfere with an adopted emergency responder or evacuation plan. Additionally, construction would be

temporary, approximately two years, and only between the hours of 7:00 AM and 7:00 PM, from Monday through Saturday. No construction is allowed at any time on Sundays or federally recognized holidays.

Level of Significance Before Mitigation: Potentially significant.

5.13.5 Cumulative Impacts

Discussion in the *General Plan Buildout (2035) Plus Project Condition* section in Impact 5.13-1 evaluated cumulative traffic impacts. As shown in Tables 5.13-11 and 5.13-12, the Proposed Project would not result in significant impacts to any of the study area intersections and roadway segments individually or cumulatively. The Proposed Project would decrease the traffic volumes in the area. No additional traffic improvements or mitigation measures are necessary to reduce impacts of the Proposed Project. Cumulative traffic impacts would be less than significant.

Level of Significance Before Mitigation: Less than significant.

5.13.6 Level of Significance Before Mitigation

Upon implementation of regulatory requirements and standard conditions of approval, the following impacts would be less than significant: 5.13-1, 5.13-2, and 5.13-3.

Without mitigation, the following impact would be **potentially significant**:

- **Impact 5.13-4** The Proposed Project could adversely affect emergency access during construction.

5.13.7 Mitigation Measures

Impact 5.13-4

HAZ-1 A site-specific construction worksite staging and traffic control plan shall be prepared and submitted to the City of Anaheim for review and approval prior to the start of any construction work. This plan shall include such elements as the location of any potential partial lane closures, hours during which lane closures (if any) would not be allowed, local traffic detours (if any), protective devices and traffic controls (such as barricades, cones, flag persons, lights, warning beacons, temporary traffic signals, warning signs). The Proposed Project will be required to comply with the City-approved plan measures.

5.13.8 Level of Significance After Mitigation

The mitigation measures identified above would reduce potential impacts associated with transportation to a level that is less than significant. Therefore, no significant unavoidable adverse impacts relating to transportation remain.

5.13.9 References

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