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COMMERCIAL DEVELOPMENT IN KRAMER JUNCTION A.P.N 0491-151-11

SAN BERNARDINO COUNTY, CALIFORNIA

Prepared by:

DAVID EVANS AND ASSOCIATES INC.

DRAFT REPORT
June 30, 2022

DAVID EVANS
AND ASSOCIATES INC.

June 30, 2022 Job No. JKIV0000-0001

Mr. Harp Verma
JKI Ventures, LLC.
15760 Ranchero Road
Hesperia, Ca 92345

RE: TRAFFIC IMPACT ANALYSIS– COMMERCIAL DEVELOPMENT IN KRAMER JUNCTION, SAN BERNARDINO COUNTY, CALIFORNIA – A.P.N 0491-151-11

Dear Mr. Verma,

David Evans and Associates, Inc. is pleased to submit this draft traffic impact analysis report for your proposed commercial development in the unincorporated community of Kramer Junction in San Bernardino County.

This report was prepared in accordance with the County of San Bernardino's Traffic Impact Analysis Guidelines for evaluating vehicle miles traveled (VMT) and assessing intersection level of service (LOS) for General Plan consistency published in July 2019.

We are pleased to have been of assistance to you in processing and obtaining approval for the project. If you have any questions or comments, please feel free to contact me at 909-912-7304.

Respectfully submitted,

DAVID EVANS AND ASSOCIATES, INC.

James M. Daisa, P.E.
Senior Project Manager / Associate

DAVID EVANS AND ASSOCIATES INC.

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DAVID EVANS AND ASSOCIATES INC.

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1 EXECUTIVE SUMMARY

This executive summary presents the findings and recommendations of this study.

1.1 Project Description

The project site is located northeast of the Highway 395 and Highway 58 freeway junction in unincorporated San Bernardino County in the community of Kramer Junction, California. The proposed project consists of construction of convenience store/gas station with 21 fueling positions and an integrated fast-food restaurant with drive-through window, a coffee/donut shop with drive-through window, and a high-turnover (sit-down) restaurant. Access to the site is from three proposed driveways on Highway 395: an unsignalized driveway at the southern property line with restricted movements, a signalized full access driveway at the northern property line, and a right turn in only driveway at the property's midpoint.

1.2 San Bernardino County General Plan Consistency Requirements

San Bernardino County's General Plan includes policies that address level of service (LOS) and identifies transportation facility LOS standards for which the County strives to maintain. In addition to analysis of Vehicle Miles Traveled (VMT) required under the California Environmental Quality Act (CEQA), the County also requires transportation impact studies for new development projects to demonstrate consistency with General Plan level of service policies and standards.

According to San Bernardino County's *Transportation Impact Study Guidelines* (July 2019), the minimum acceptable intersection level of service for the County's **desert regions** as described in the current San Bernardino County General Plan, is LOS C. The criteria for identifying operational deficiencies at unsignalized and signalized intersections are shown in **Table 1-1** and **Table 1-2** respectively.

Table 1-1: Criteria for Determining General Plan Level of Service Consistency at Unsignalized Intersections

<table>
<tr><td colspan="4">At an unsignalized intersection, an operational improvement would be required if the analysis determines that the proposed project causes or contributes to conditions described in criterion (A) <u>or</u> criterion (B) and (C).</td></tr>
<tr><td>(A)</td><td rowspan="5">OR</td><td colspan="2">(B)</td></tr>
<tr><td>The addition of project traffic causes an intersection to degrade from a LOS C or better to a LOS D or worse.</td><td colspan="2">The project adds 5.0 seconds or more of delay to an intersection that is already projected to operate without project traffic at an LOS D, E or F.</td></tr>
<tr><td rowspan="3">Note: If Criteria A is met in a near-term scenario (e.g., background + project scenario) it is considered a Project-specific impact and the project is solely responsible for its mitigation. If the criterion is met in a long-range scenario (e.g., year 2040) it is considered a cumulative impact and the project contributes its fair share to the cost of the improvement.</td><td colspan="2">AND</td></tr>
<tr><td colspan="2">(C)
One or both of the following conditions are met:</td></tr>
<tr><td>The project adds ten (10) or more peak hour trips to any minor street approach of the unsignalized intersection being analyzed.</td><td>The intersection, with the addition of project traffic, meets the peak hour traffic signal warrant as defined in the California Manual on Uniform Traffic Control Devices.</td></tr>
<tr><td colspan="4">Notes:
The criterion in this table is applicable for the County's desert region.
If the analysis of a development project meets the criteria above, the transportation impact study needs to identify measures that will achieve the following:
• Measures applied to unsignalized intersections impacted under Criteria A should improve peak hour level of service to a LOS C or better or,
• Measures applied to unsignalized intersections impacted under Criteria B and C should reduce delay (and associated LOS) to at least pre-project levels.
Source: San Bernardino County Transportation Impact Study Guidelines (July 9, 2019)</td></tr>
</table>

Table 1-2: Criteria for Determining General Plan Level of Service Consistency at Signalized Intersections

At a signalized intersection, an operational improvement would be required if the analysis determines that the proposed project causes or contributes to either of the conditions described below.
1. At a signalized intersection operating at LOS C or better without the project where the addition of project traffic causes the intersection to operate at a LOS D, E, or F, the study shall identify improvements to improve operations to a LOS C.
2. At a signalized intersection operating at a LOS D, E, or F without the project where the addition of project traffic increases delay by 5.0 seconds or more, the study shall identify improvements to offset the increase in delay.
Notes: The criterion in this table is applicable for the County's desert region. Source: San Bernardino County Transportation Impact Study Guidelines (July 9, 2019)

1.3 Caltrans Policy on Intersection Level of Service on State Highways

The Caltrans' *Guide for the Preparation of Traffic Impact Studies* (December 2002) states "Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" (see Appendix "C-3") on State highway facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency (San Bernardino County) consult with Caltrans to determine the appropriate target LOS".

For this study, the County's LOS C is more stringent and assumed to be the minimum level of service criteria for the study intersections.

1.4 Proposed Project-Specific Access, Roadway, and Intersection Improvements

The project proposes to construct several roadway and intersection improvements on Highway 395 concurrent with the construction of the project. These improvements include right-of-way dedication and widening of the Highway 395 to meet Caltrans cross-section standards and access driveways including turning lanes as needed to safely accommodate entering traffic. Because the project would not be constructed without these proposed improvements, the analysis of project conditions includes the proposed improvements.

The proposed project-specific access, roadway, and intersection frontage improvements are shown in **Figure ES-1**. The improvements include the signalization of Project Driveway "C" and Highway 395 as shown in detail in **Figure ES-1** and at a larger scale in the conceptual geometric plans provided with this report.

Access to the site is proposed via driveways along Highway 395. The proposed Highway 395 driveways are described below (also refer to **Figure ES-1)**:

1. A left in-right in and right-out access driveway is proposed at Project Driveway "A" and Highway 395 located about 305 feet (measured from centerline to centerline) north of Highway 58 westbound on and off-ramps. Proposed improvements to Highway 395 include widening the east side of the road and restriping the lanes to provide two northbound through lanes, a northbound bike lane, and a continuous northbound right turn lane into Project Driveway "A" and extends the length of the project's frontage. A striped median for the provision of turning lanes is proposed and extending the length of the project's frontage. The median includes an offset median (worm) island at Driveway "A" to prevent left turns out.
2. A right in access driveway is proposed at Project Driveway "B" and Highway 395 located about 475 feet (measured from centerline to centerline) north of Highway 58 westbound on and off-ramps. Proposed improvements to Highway 395 include widening the east side of the road and restriping the lanes to provide two northbound through lanes, a northbound bike lane, and a continuous northbound right turn lane into Project Driveway "B" and extending the length of the project's frontage.
3. A full access traffic signal-controlled driveway is proposed at Project Driveway "C" and Highway 395 located about 710 feet (measured from centerline to centerline) north of Highway 58 westbound on and off-ramps. Proposed improvements to Highway 395 include widening the east side of the road and restriping the lanes to provide two northbound through lanes, a northbound bike lane, termination of the continuous right turn lane into an exclusive northbound right turn lane, and a southbound median left turn lane into Project Driveway "C".

1.5 Summary of General Plan Consistency Impacts

Summary of General Plan Consistency Impacts at Off-Site Study Intersections

Table 1-3 summarizes the application of the level of service impact criteria to the study intersections in both the near-term and long-term planning horizons.

The analysis concludes that the proposed project does not cause, or contribute, to a LOS deficiency at any of the study intersections in either peak hour under background + project and future + project conditions.

Table 1-3: Summary of Level of Service Impact Assessment

Criterion for General Plan LOS Consistency Impacts at Signalized Intersections (Refer to Table 1-2)				
Scenario \ Study Intersection	The addition of project traffic causes, or contributes, to an intersection operating at a LOS C or better without the project to operate at a LOS D, E, or F.		The addition of project traffic causes, or contributes, to an intersection operating at a LOS D, E, or F without the project an increase delay by 5.0 seconds or more	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Background + Project Conditions (Near-Term)				
1. Highway 395 / Twenty Mule Team Rd	NO	NO	-	-
2. Highway 395 / Highway 58 EB Ramps	NO	NO	-	-
3. Highway 395 / Highway 58 WB Ramps	NO	NO	-	-
Future (2040) + Project Conditions (Long-Term)				
1. Highway 395 / Twenty Mule Team Rd	NO	NO		
2. Highway 395 / Highway 58 EB Ramps		NO	NO	
3. Highway 395 / Highway 58 WB Ramps	NO	NO		
Notes: Refer to Table 5-2 for a comparison of level of service, delay, and change in delay caused by project traffic under background and background + project conditions. Refer to Table 7-1 for a comparison of level of service, delay, and change in delay caused by project traffic under future and future + project conditions.				

Project Driveway Operations

The proposed project driveways are considered part of the project description and intended to be implemented with the project construction and configured / controlled to operate safely at a reasonable level of service. This section presents driveway level of service. For a discussion of other driveway characteristics, see Section 5.

- Highway 395 / Project Driveway "A" – This right-turn in / right turn out and left in driveway operates at LOS A in the AM and PM peak hours under background + project and future + project conditions for the right turn out movement.
- Highway 395 / Project Driveway "B" – This driveway is restricted to right turn in only. Since there are no conflicting volumes, level of service is not calculated for the right turn in movement.
- Highway 395 / Project Driveway "C" – This driveway is proposed to allow full access with traffic signal control. With the project, the signalized intersection of Highway 395 and Driveway "C" would operate at a LOS C or better during the AM and PM peak hours under both background + project and future + project conditions. Section 5.4 summarizes a signal warrant analysis and other factors considered in rationalizing the proposed traffic signal.

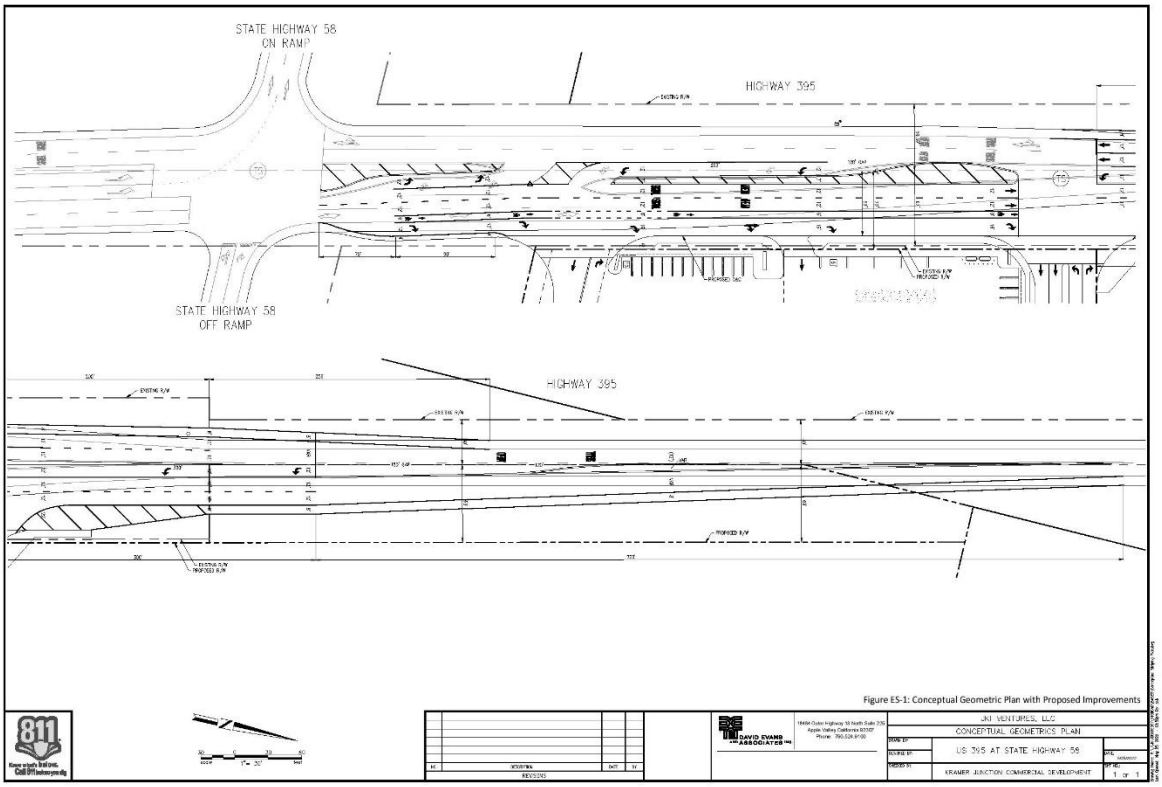

Figure ES-1: Conceptual Geometric Plan with Proposed Improvements

2 INTRODUCTION

This report identifies the traffic impacts with respect to deficiencies in the County's General Plan level of service standards and recommends mitigation of deficiencies, and site access for the proposed commercial development in the community of Kramer Junction in unincorporated San Bernardino County.

The proposed project consists of construction of convenience store/gas station with 21 fueling positions and an integrated fast-food restaurant with drive-through window, a coffee/donut shop with drive-through window, and a high-turnover (sit-down) restaurant.

Access to the site is from three proposed driveways on Highway 395: an unsignalized driveway at the southern property line with restricted movements, a signalized full access driveway at the northern property line, and a right turn in only driveway at the property's midpoint.

Figure 1 illustrates the vicinity map, and **Figure 2** illustrates the proposed project site plan.

This report evaluates level of service deficiencies at off-site intersections caused, or contributed by, the proposed development and evaluates the proposed site access in accordance with the County of San Bernardino's *Transportation Impact Study Guidelines* (July 2019) under the following scenarios:

- Existing Conditions
- Background Conditions Without Project (Year 2024)
- Project Conditions (Background Conditions With Project - Year 2024)
- Future Year Conditions Without Project (Year 2040)
- Future Year Conditions With Project (Year 2040)

2.1 Scenario Definitions

Existing Conditions. This scenario represents existing transportation conditions at the time this report was prepared. Data includes traffic counts collected in October 2020 and current roadway and intersection geometries. This scenario is used as the baseline condition from which to compare future scenarios and is used to build traffic projections.

Background Conditions (Year 2024). This scenario represents conditions at the time the project is anticipated to be constructed and occupied (Year 2024) but without traffic generated by the project. The ambient growth used to represent this timeframe is a general rate of growth in traffic from overall regional development (assumed to be 2% annually for this study).

Project Conditions (Year 2024). This scenario adds the project's estimated traffic generation at project buildout (Year 2024) to the background conditions scenario described above. Level of service deficiency Impacts identified in this scenario are considered "cumulative" impacts—impacts that the project contributes to, but does not solely cause, and may be responsible for a fair-share of the cost to implement any mitigation measures.

Future Year Conditions (Year 2040). This scenario represents regional ambient growth in traffic up to the year 2040. Ambient growth derived from an average annual growth rate calculated from Annual Average Daily Traffic (AADT) obtained from the Caltrans Traffic Census Program count stations within the vicinity of the proposed development site.

Future Year Conditions with Project (Year 2040). This scenario adds the project's estimated traffic generation to the future year conditions scenario described above. Level of service deficiency Impacts identified in this scenario are also considered "cumulative" impacts—impacts that the project contributes to, but does not solely cause, and may be responsible for a fair-share of the cost to implement any mitigation measures.

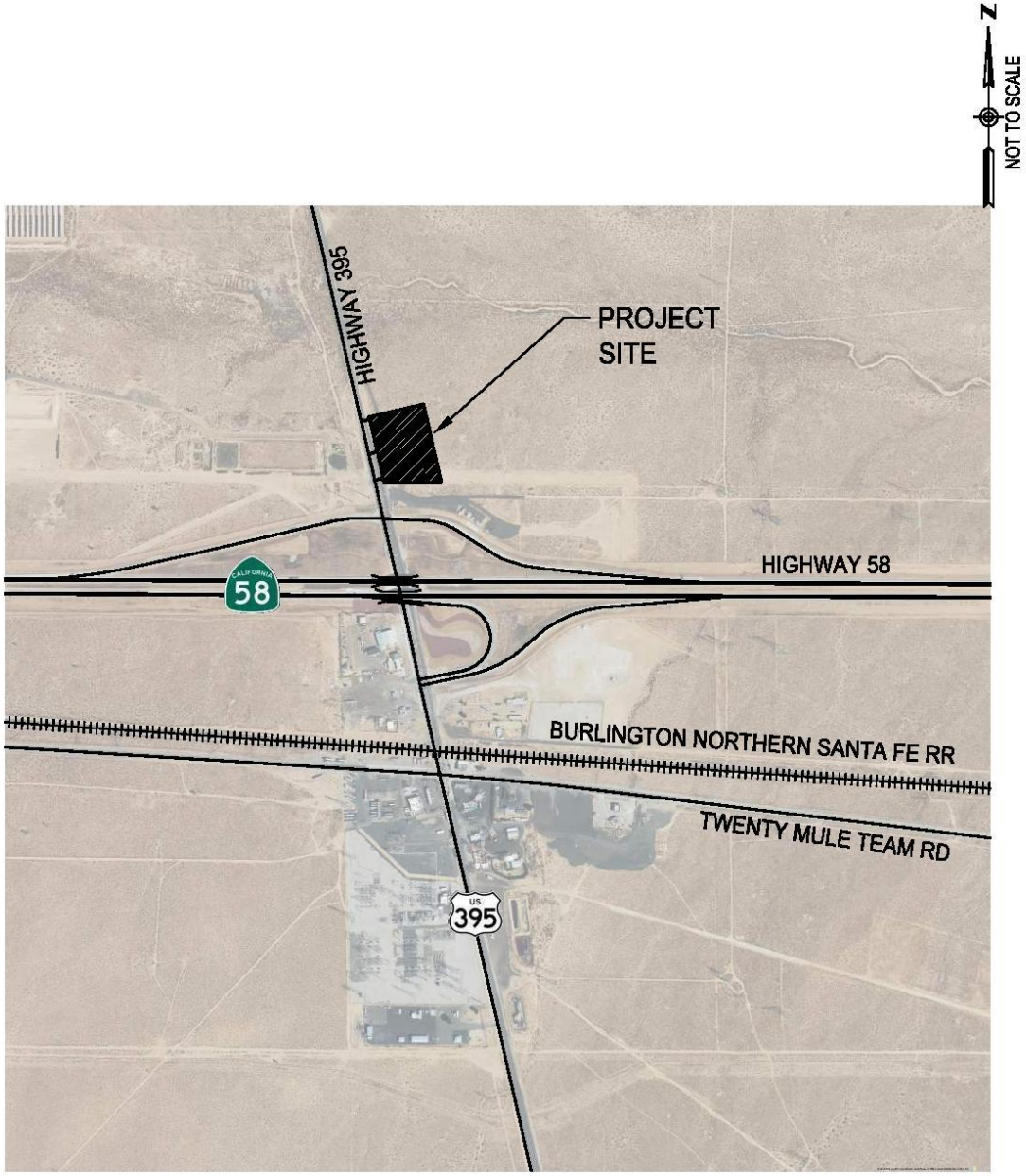

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FIGURE 1: VICINITY MAP
COMMERCIAL DEVELOPMENT
IN KRAMER JUNCTION
SAN BERNARDINO COUNTY, CALIFORNIA

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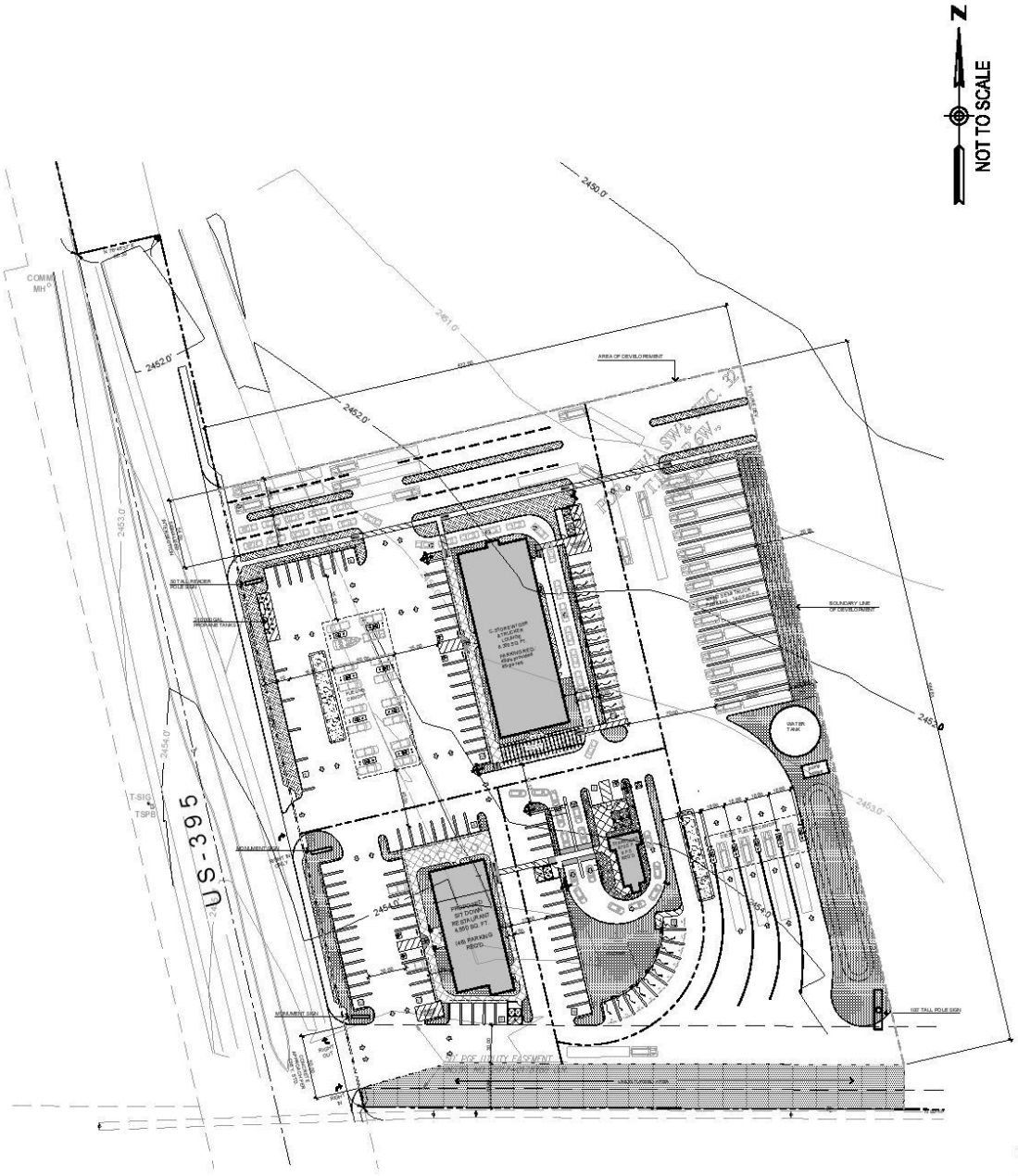

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FIGURE 2: SITE PLAN
COMMERCIAL DEVELOPMENT
IN KRAMER JUNCTION
SAN BERNARDINO COUNTY, CALIFORNIA

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3 EXISTING CONDITIONS

The proposed project is located along Highway 395 in the in the unincorporated community of Kramer Junction, County of San Bernardino. The proposed project consists of construction of convenience store/gas station with 21 fueling positions and an integrated fast-food restaurant with drive-through window, a coffee/donut shop with drive-through window, and a high-turnover (sit-down) restaurant.

3.1 San Bernardino County General Plan Consistency Requirements

San Bernardino County's General Plan includes policies that address level of service (LOS) and identifies transportation facility LOS standards for which the County strives to maintain. In addition to analysis of Vehicle Miles Traveled (VMT) required under the California Environmental Quality Act (CEQA), the County also requires transportation impact studies for new development projects to demonstrate consistency with General Plan level of service policies and standards. The minimum acceptable level of service for the County's **desert** regions as described in the current San Bernardino County General Plan, is LOS C.

According to San Bernardino County's Transportation Impact Study Guidelines the criteria for identifying operational deficiencies at an unsignalized intersection in the County's **desert** regions are shown in **Table** 3-1. **Table 3-2** identifies the criteria for identifying operational deficiencies at signalized intersections.

Table 3-1: Criteria for Determining General Plan Level of Service Consistency at Unsignalized Intersections

<table>
<tr><td colspan="4">At an unsignalized intersection, an operational improvement would be required if the analysis determines that the proposed project causes or contributes to conditions described in criterion (A) <u>or</u> criterion (B) and (C).</td></tr>
<tr><td>(A)</td><td rowspan="6">OR</td><td colspan="2">(B)</td></tr>
<tr><td>The addition of project traffic causes an intersection to degrade from a LOS C or better to a LOS D or worse.</td><td colspan="2">The project adds 5.0 seconds or more of delay to an intersection that is already projected to operate without project traffic at an LOS D, E or F.</td></tr>
<tr><td rowspan="4">Note: If Criteria A is met in a near-term scenario (e.g., background + project scenario) it is considered a Project-specific impact and the project is solely responsible for its mitigation. If the criterion is met in a long-range scenario (e.g., year 2040) it is considered a cumulative impact and the project contributes its fair share to the cost of the improvement.</td><td colspan="2">AND</td></tr>
<tr><td colspan="2">(C)
One or both of the following conditions are met:</td></tr>
<tr><td>The project adds ten (10) or more peak hour trips to any minor street approach of the unsignalized intersection being analyzed.</td><td>The intersection, with the addition of project traffic, meets the peak hour traffic signal warrant as defined in the California Manual on Uniform Traffic Control Devices.</td></tr>
<tr><td colspan="4">Notes:
The criterion in this table is applicable for the County's desert region.
If the analysis of a development project meets the criteria above, the transportation impact study needs to identify measures that will achieve the following:
• Measures applied to unsignalized intersections impacted under Criteria A should improve peak hour level of service to a LOS C or better or,
• Measures applied to unsignalized intersections impacted under Criteria B and C should reduce delay (and associated LOS) to at least pre-project levels.
Source: San Bernardino County Transportation Impact Study Guidelines (July 9, 2019)</td></tr>
</table>

3.2 Caltrans Policy on Intersection Level of Service on State Highways

The Caltrans' Guide for the Preparation of Traffic Impact Studies (December 2002) states "Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" (see Appendix "C-3") on State highway facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency (San Bernardino County) consult with Caltrans to determine the appropriate target LOS". **For this study, the County's standard is more stringent and assumed to be the minimum level of service criteria for the study intersections.**

Table 3-2: Criteria for Determining General Plan Level of Service Consistency at Signalized Intersections

At a signalized intersection, an operational improvement would be required if the analysis determines that the proposed project causes or contributes to either of the conditions described below.
1. At a signalized intersection operating at LOS C or better without the project where the addition of project traffic causes the intersection to operate at a LOS D, E, or F, the study shall identify improvements to improve operations to a LOS C.
2. At a signalized intersection operating at a LOS D, E, or F without the project where the addition of project traffic increases delay by 5.0 seconds or more, the study shall identify improvements to offset the increase in delay.
Notes: The criterion in this table is applicable for the County's desert region. Source: San Bernardino County Transportation Impact Study Guidelines (July 9, 2019)

3.3 Local and Major Roadways

Highway 395 is a north-south primarily two-lane (a single lane in each direction) US highway that connects the two nearest cities of Ridgecrest in the north and Adelanto in the south. Highway 395 is identified as a major highway on the County of San Bernardino Circulation Plan. The posted speed limit within the project area is 55 mph.

Highway 58 is a major east-west primarily four-lane (two lanes in each direction) divided State Highway that provides access from Barstow in the east and Mojave in the west. Recently completed, the construction of Highway 58 as an access-controlled freeway included a new interchange with Highway 395. The interchange's ramp terminals (Highway 58 Eastbound On and Off Ramps / Highway 395 and Highway 58 Westbound On and Off Ramps / Highway 395) are traffic signal controlled.

Twenty Mule Team Rd (Old Highway 58) is a major east-west primarily two-lane (a single lane in each direction) roadway. The intersection of Twenty Mule Team Rd (Old Highway 58) / Highway 395 is also traffic signal controlled. The posted speed limit within the project area is 55 mph.

3.4 Study Intersections

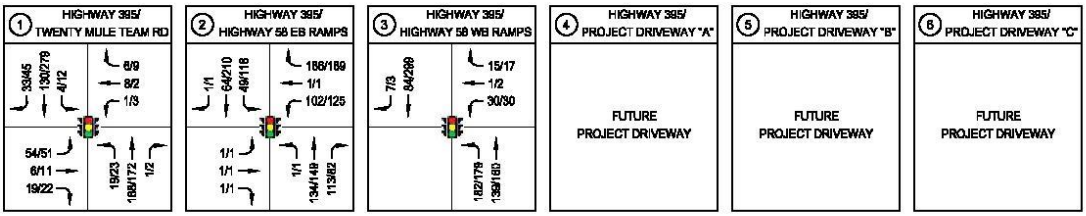
The project would potentially affect three existing intersections and the project's proposed driveways:

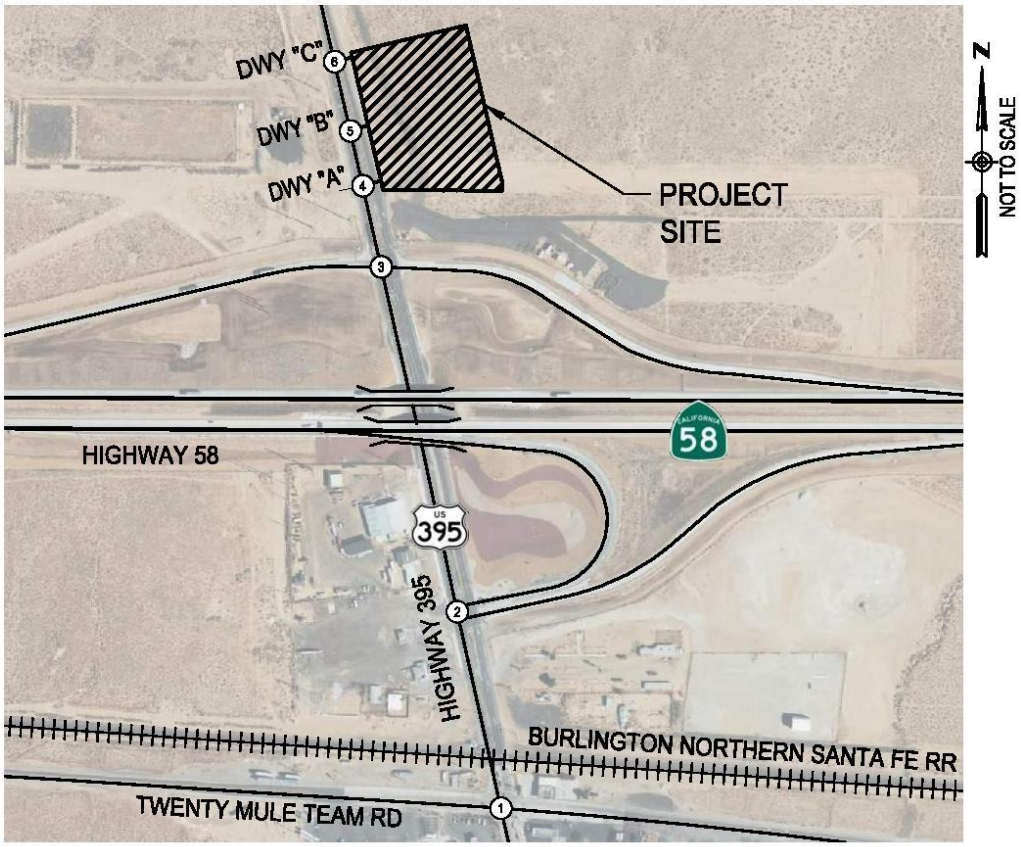
1. Highway 395 / Twenty Mule Team Rd (Old Highway 58)
2. Highway 395 / Highway 58 EB Ramps
3. Highway 395 / Highway 58 WB Ramps
4. Highway 395 / Project Driveway "A"
5. Highway 395 / Project Driveway "B
6. Highway 395 / Project Driveway "C

The intersections of Highway 395 at Twenty Mule Team Rd (Old Highway 58), Highway 395 at Highway 58 Eastbound Ramps, and Highway 395 at Highway 58 Westbound Ramps are controlled with traffic signals.

3.5 Existing Traffic Volumes

Turn movement counts were conducted in May 2022 by Newport Traffic Studies, an independent traffic data collection company. These counts were collected during the AM (7:00-9:00 AM) and PM (4:00-6:00 PM) peak periods. The existing turn movement counts are included in **Appendix A** of this study. **Figure 3** illustrates the existing peak hour traffic volumes in the study area.





LEGEND

XX/XX - AM/PM PEAK HOUR VOLUMES
(#) - STUDY INTERSECTIONS
- SIGNALIZED INTERSECTION
- STOP CONTROLLED APPROACH

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FIGURE 3: EXISTING TRAFFIC VOLUMES
COMMERCIAL DEVELOPMENT
IN KRAMER JUNCTION
SAN BERNARDINO COUNTY, CALIFORNIA

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3.6 Intersection Capacity Analysis Methodology

Intersection level of service (LOS) is determined using Synchro software[1] which implements the methodology in Chapter 19, Chapter 20, and Chapter 21 of the Highway Capacity Manual, 6th Edition (HCM 6)[2] and conforms to the procedures and assumptions in the County's Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (LOS).

The intersection analyses use existing intersection geometrics and existing traffic volumes in determining AM and PM peak hour intersection level of service. **Table 3-4** provides LOS thresholds for signalized intersections as provided in the HCM 6 Chapter 19.

Table 3-3: HCM 6 – LOS Criteria for Signalized Intersections

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio [a]	
	≤1.0	>1.0
≤ 10	A	F
> 10 - 20	B	F
> 20 - 35	C	F
> 35 - 55	D	F
> 55 - 80	E	F
> 80	F	F

[a] For approach-based and intersection-wide assessments, LOS is defined solely by control delay. Source: Highway Capacity Manual 6th Edition, Exhibit 19-8.

The level of service for a two-way stop controlled (TWSC) intersection is determined by the computed or measured control delay. The LOS for the intersection is determined by the minor-street movement (or shared movement) with the worst level of service using the criteria provided in **Table 3-4**.

Table 3-4: HCM 6 – Level of Service Criteria for Two-Way Stop Controlled (TWSC) Intersections

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio	
	v/c ≤1.0	v/c >1.0
0 - 10	A	F
> 10 -15	B	F
> 15 - 25	C	F
> 25 - 35	D	F
> 35 - 50	E	F
> 50	F	F

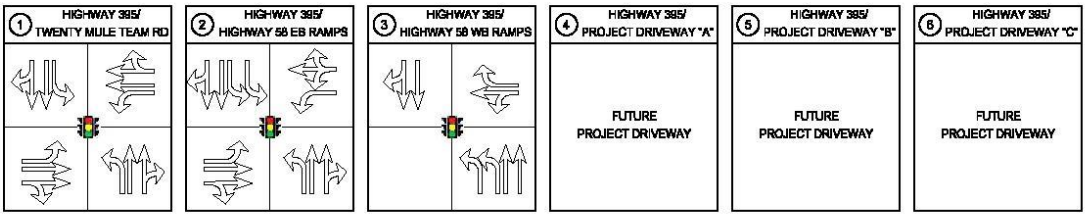
Note: The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for the uncontrolled major-Street approaches or for the intersection as a whole.
Source: Highway Capacity Manual 6th Edition, Exhibit 20-2.

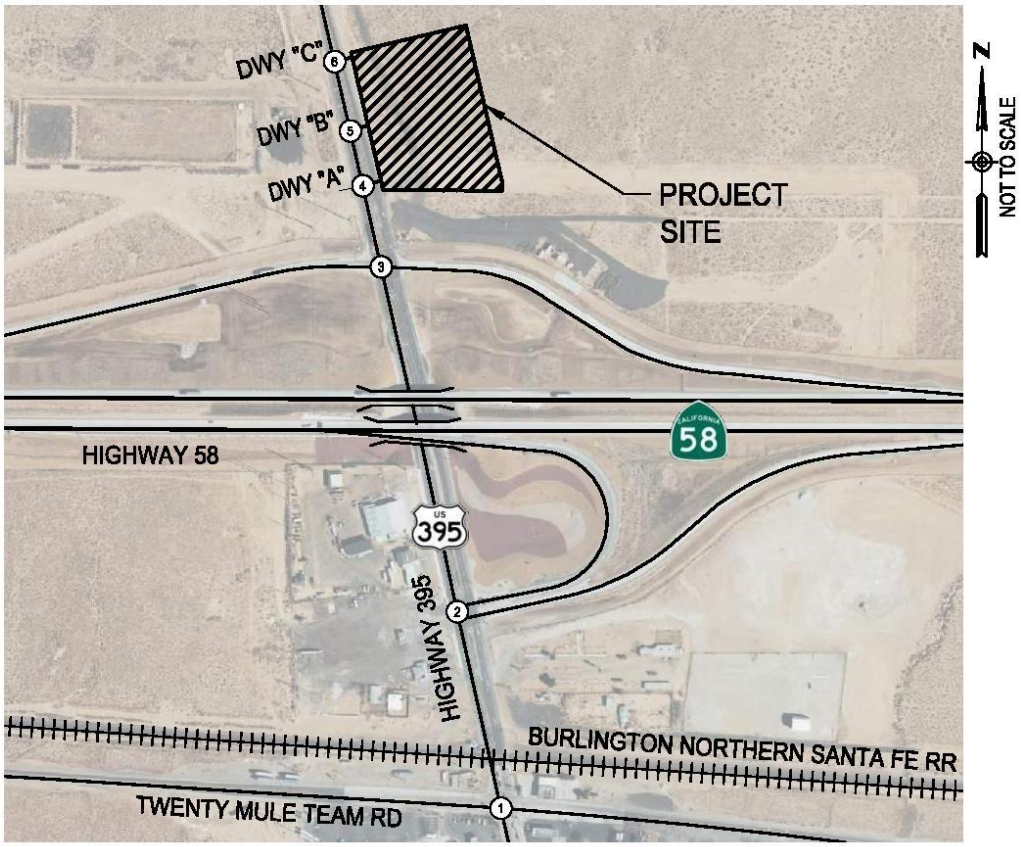
3.7 Existing Traffic Analysis

Existing intersection geometrics and existing AM and PM peak hour traffic counts are used to analyze existing intersection capacity and level of service. **Table 3-5** and **Appendix C** provide the results of the analysis. **Figure 4** illustrates the existing intersection geometrics utilized in the capacity analysis.

As presented in Table 3-5, under existing conditions, the existing study intersection of Highway 395 / Twenty Mule Team Rd (Old Highway 58) is currently operating at a deficient LOS D in the AM peak hour and a LOS C in the PM peak hour. The intersection of Highway 395 / Highway 58 Eastbound Ramps operates at LOS C in both peak hours and the intersection of Highway 395 / Highway 58 Westbound Ramps operates at LOS B in both peak hours.

1 Trafficware Ltd, version 10.
2 Transportation Research Board, Washington D.C., 2010.





LEGEND

- EXISTING GEOMETRICS
- (#) - STUDY INTERSECTIONS
- SIGNALIZED INTERSECTION
- STOP CONTROLLED APPROACH

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FIGURE 4: EXISTING INTERSECTION GEOMETRICS
COMMERCIAL DEVELOPMENT
IN KRAMER JUNCTION
SAN BERNARDINO COUNTY, CALIFORNIA

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Table 3-5: Intersection Capacity Analysis – Existing Conditions

Intersection	Intersection Control Type	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
1. Highway 395 / Twenty Mule Team Rd (Old Highway 58)	TS	35.6	D	29.2	C
2. Highway 395 / Highway 58 EB Ramps	TS	32.0	C	25.2	C
3. Highway 395 / Highway 58 WB Ramps	TS	15.5	B	15.9	B
Abbreviations / Definitions: TS – Traffic signal-controlled intersection, Delay – seconds per vehicle, LOS – Level of Service					

4 BACKGROUND CONDITIONS

The background conditions scenario evaluates impacts due to ambient growth in traffic and traffic generated by other area development within the study area up to the Year 2024 when project construction is expected to be completed. Ambient growth represents growth in traffic from local and regional development (assumed to be 2% annually for this study).

4.1 Background Conditions Traffic Analysis

The background conditions intersection capacity analysis uses existing intersection geometrics and the projected AM and PM peak hour traffic shown in **Figure 5**. **Table 4-1** and **Appendix C** provides the results of the analysis.

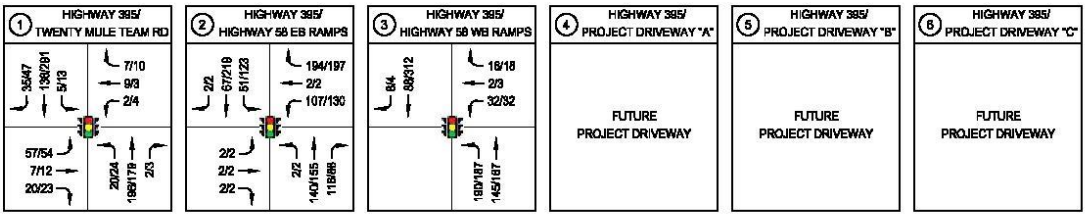
Table 4-1: Intersection Capacity Analysis – Background Conditions

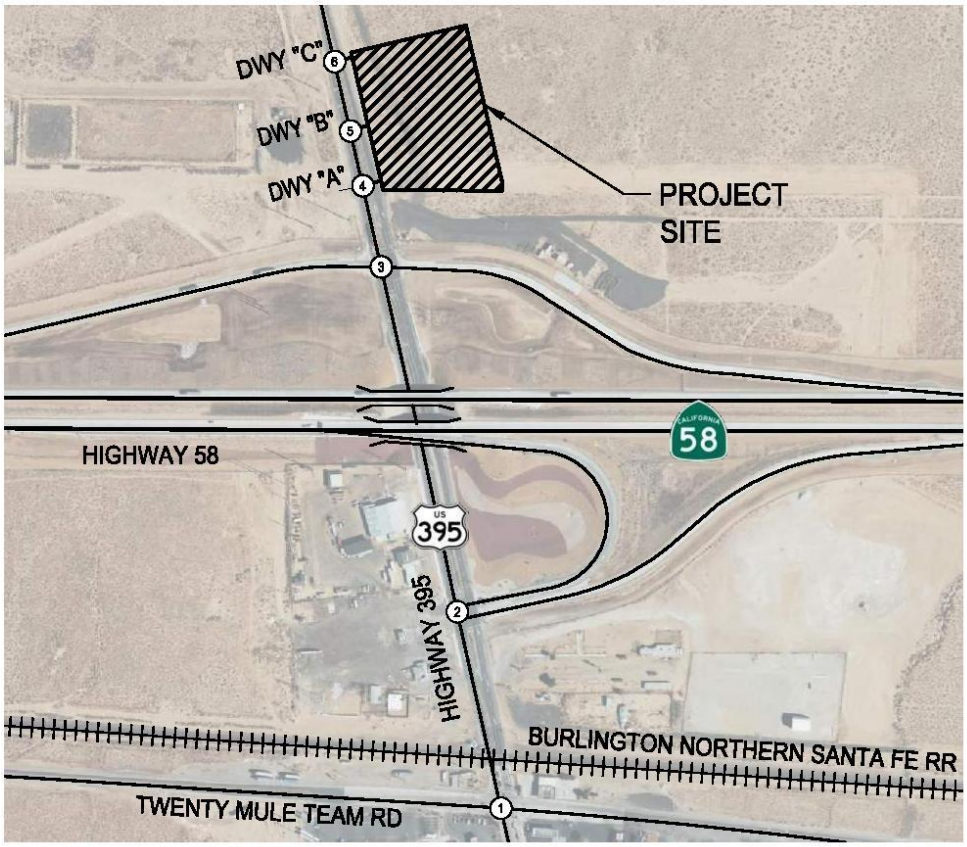
Intersection	Intersection Control Type	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
1. Highway 395 / Twenty Mule Team Rd (Old Highway 58)	TS	31.3	C	26.0	C
2. Highway 395 / Highway 58 EB Ramps	TS	31.8	C	25.0	C
3. Highway 395 / Highway 58 WB Ramps	TS	15.2	B	16.0	B
Notes: The capacity analysis of scenarios reflecting future conditions (i.e., background, background + project, future year 2040, future year 2040 + project) uses different parameters than the capacity analysis of the existing conditions scenario. Per the County guidelines future scenarios uses a fixed peak hour factor (PHF) of 0.95 and saturation flow rates equaling 100 vehicles per hour green per lane (vphgpl) more than the saturation flow rates specified in the guidelines for existing conditions. As a result, some future conditions level of service may show a slight improvement over existing conditions. Abbreviations / Definitions: TS – Traffic signal-controlled intersection, Delay – seconds per vehicle, LOS – Level of Service					

As presented in **Table 4-1**, the study intersections under background conditions operate similar to existing conditions with the exception of Highway 395 / Twenty Mule Team Rd (Old Highway 58) which, based on analysis parameters representing future scenarios, operates at a LOS C in both the AM and PM peak hours. The intersection of Highway 395 / Highway 58 Eastbound Ramps operates at LOS C in both peak hours and the intersection of Highway 395 / Highway 58 Westbound Ramps operates at LOS B in both peak hours.

5 PROJECT CONDITIONS

The project conditions scenario evaluates the potential effects on intersection level of service within the study area due to growth in background traffic up to the project opening day of 2024 and the addition of project traffic. This scenario adds the project's estimated traffic generation at opening day to the background conditions scenario. Impacts identified in this near-term scenario are considered "cumulative" impacts—impacts that the project contributes to, but does not solely cause, and may be responsible for a fair-share of the cost to implement any mitigation measures.





N
NOT TO SCALE

LEGEND

XX/XX - AM/PM PEAK HOUR VOLUMES
(#) - STUDY INTERSECTIONS
- SIGNALIZED INTERSECTION
- STOP CONTROLLED APPROACH

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FIGURE 5: BACKGROUND TRAFFIC VOLUMES
COMMERCIAL DEVELOPMENT
IN KRAMER JUNCTION
SAN BERNARDINO COUNTY, CALIFORNIA

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5.1 Project Description and Trip Generation

The project's trip generation was estimated using the 11th Edition of the Institute of Transportation Engineers (ITE) Trip Generation with trip rates for the AM and PM Peak Hours of the Adjacent Street Traffic. The ITE land use categories best representing the project land uses include Convenience Store/Gas Station (Land Use Category ITE 945) subcategory (VFP 16-24), Fast-Food Restaurant with Drive-Through Window (Land Use Category ITE 934), Coffee/Donut Shop with Drive-Through Window (Land Use Category ITE 937), and High-Turnover (Sit-Down) Restaurant (Land Use Category ITE 932).

Most of the vehicle trips generated by highway-oriented development are trips that access the site as a convenient interim stop while traveling between an origin and destination that is their primary trip. These types of trips are either "diverted link trips" or "pass-by trips". The Institute of Transportation Engineers (ITE) Trip Generation Handbook defines a diverted trip as:

"A diverted trip is attracted from the traffic volume on roadways within the vicinity of the generator but without direct access to the site. A diverted trip requires a diversion from a roadway not adjacent to the site to another roadway to gain direct access to the site. ***A diverted trip adds traffic to streets adjacent to a site and could remove a trip on streets from which it diverted.*** *A diverted trips may be part of multiple-stop chain of trips."*

Diverted link trips for the proposed project are diverted from Highway 58 at the interchange with Highway 395 and then return to the freeway using the same interchange.

ITE defines a pass-by trip as:

"A pass-by trip is made as an intermediate stop on the way from an origin to a primary trip destination without a route diversion. ***Pass-by trips are attracted from traffic passing the site on an adjacent street or roadway that offers direct access to the generator.*** *Pass-by trips are not diverted from another roadway not adjacent to the site."*

Pass-by trips will come from Highway 395 which fronts the project site and provides direct access via three driveways.

Since the project is in a remote area with few nearby residents and businesses, most of the traffic traveling on Highway 58 and Highway 395 are long-distance automobile and truck trips for various purposes including freight hauling, intra and inter-regional travel, and tourism. These trip types are consistent with ITE data on the split between primary, pass-by, and diverted trips for convenience and highway-oriented land uses[3]. Primary trips are defined as trips in which the project is the primary destination and are considered new trips on the adjacent streets. For gas stations, convenience markets, and fast-food restaurants, the ITE data divides trips into **20% primary trips**, **65% diverted link trips**, **and 15% pass-by project trips.**

Table 5-1 summarizes the estimated trip generation for the proposed project site, for an average weekday, and the AM (7-9 AM) and PM (4-6 PM) peak hours based on ITE rates representing the Peak Hour of the Adjacent Street Traffic. A 10% trip reduction representing internalization of trips between the site's land uses has been applied to the project trip generation. As shown in **Table 5-1**, the proposed project is estimated to generate 9,974, 785, and 640 trips at the driveways on a weekday, AM peak hour, and PM peak hour respectively with 1,795 daily trips, 141 AM and 115 PM peak hour trips being primary trips to the site.

5.2 Project Trip Distribution and Assignment

The distribution of the project's primary trips to the surrounding street network is based on assumed origins of the project's employees and customers. The directional distribution patterns (east, west, north, and south) are

[3] Trip Generation Handbook (3rd Edition). Appendix E. Database on Pass-By, Diverted, and Primary Trips. Institute of Transportation Engineers. Washington DC. 2017.

consistent with area traffic patterns, and then assigned to the street system based on the type of trip (primary, diverted link or pass-by) on the most direct route on major streets.

Table 5-1: Estimated Project Trip Generation

	Use	Size/ Quantity	Daily	AM			PM		
				In	Out	Total	In	Out	Total
1	**Convenience Store/Gas Station (VFP 16-24) - Land Use Category (ITE 945)**								
	Per 1,000 Sq. Ft. GLA	6,300	1283.38	45.68	45.68	91.35	39.48	39.48	78.95
	Trips		8,086	288	288	576	249	249	498
2	**Fast-Food Restaurant with Drive-Through Window - Land Use Category (ITE 934)**								
	Per 1,000 Sq. Ft. GLA	2,000	467.48	22.75	21.86	44.61	17.18	15.85	33.03
	Trips		935	46	44	90	34	32	66
3	**Coffee/Donut Shop with Drive-Through Window - Land Use Category (ITE 937)**								
	Per 1,000 Sq. Ft. GLA	870	533.57	43.80	42.08	85.88	19.50	19.50	38.99
	Trips		465	38	37	75	17	17	34
4	**High-Turnover (Sit-Down) Restaurant - Land Use Category (ITE 932)**								
	Per 1,000 Sq. Ft. GLA	4,550	107.2	5.26	4.31	9.57	5.52	3.53	9.05
	Trips		488	24	20	44	25	17	42
	Sub-Total Trips		9,974	396	389	785	325	315	640
	Internal Trips (10%)		997	40	39	79	33	32	64
	Adjusted Sub-Total Trips		8,977	356	350	707	293	284	576
	Diverted Link Trips (65%)		5,835	232	228	459	190	184	374
	Pass-by Trips (15%)		1,346	53	53	106	44	43	86
	Primary Trips (20%)		**1,795**	71	70	**141**	59	57	**115**

Source: "Trip Generation, Institute of Transportation Engineers", 11th Edition.

Figure 6 presents the primary project trips distribution percentages at each study intersection. **Figure 7** presents the distribution of diverted-link trips at each study intersection. **Figure 8** presents the primary project trips assigned to each study intersection, and **Figure 9** presents the diverted-link project trips assigned to each study intersection. **Figure 10** shows the pass-by trips as assigned to each project driveway and study intersection. Finally, **Figure 11** presents the total project trips assigned to each study intersection.

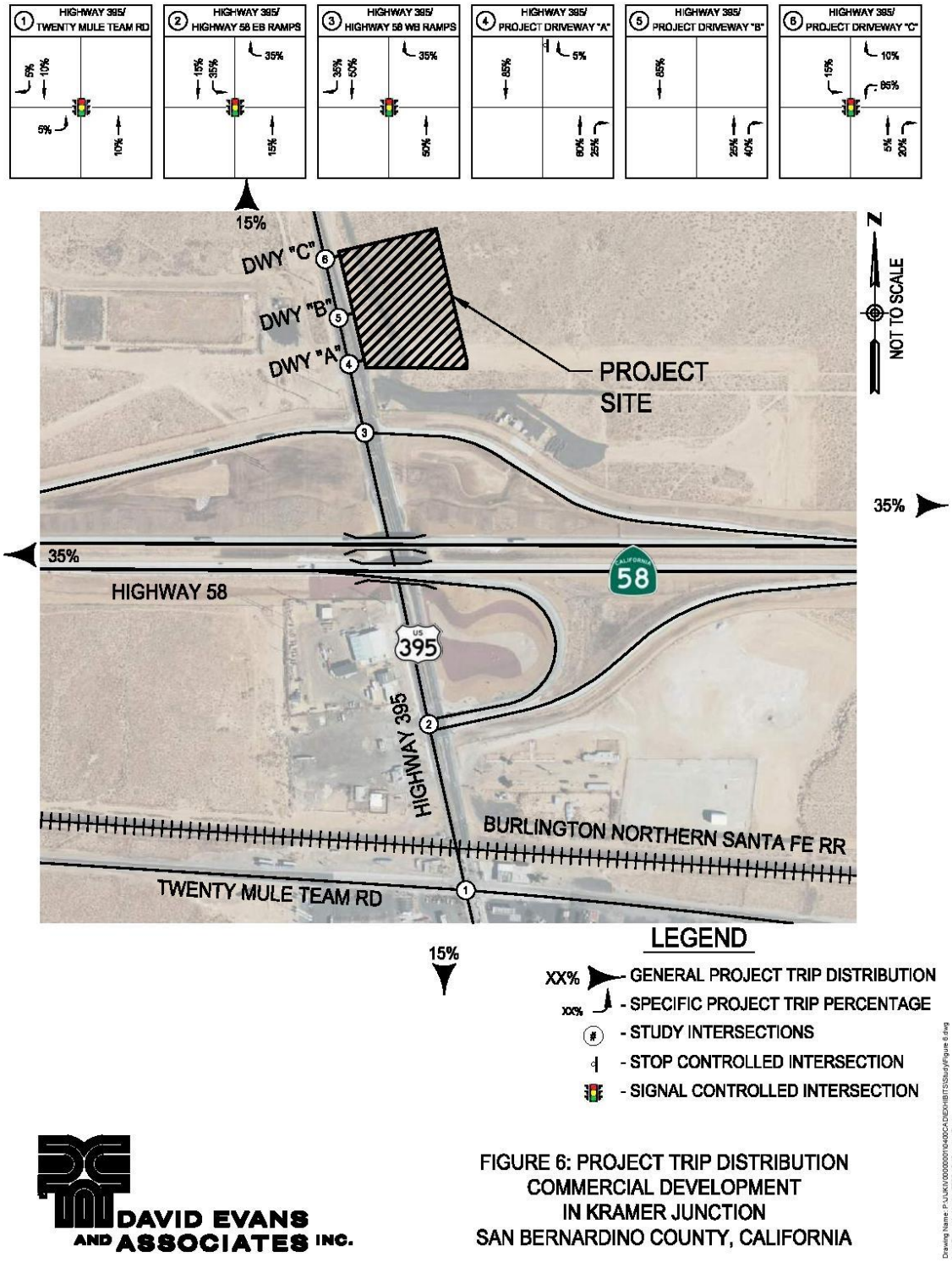

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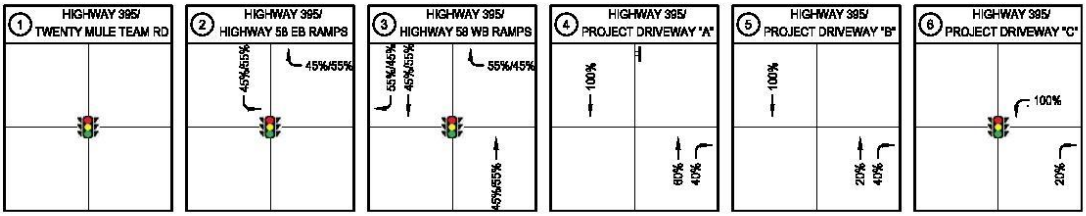
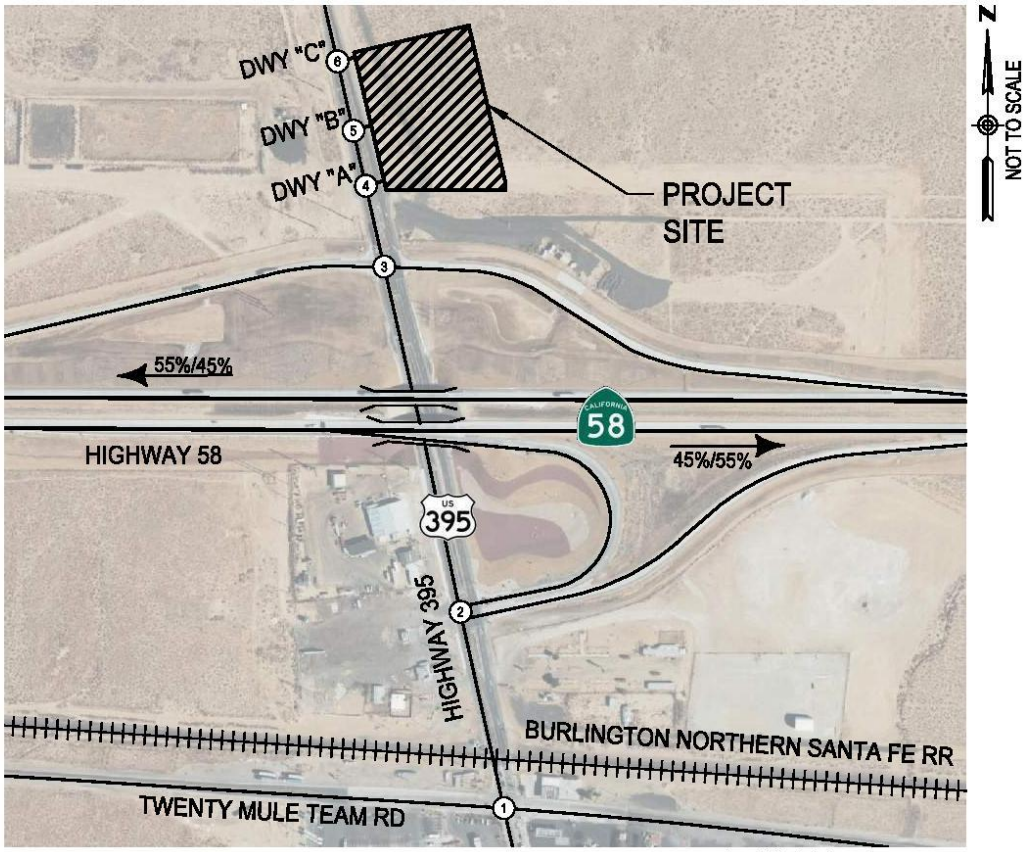
FIGURE 6: PROJECT TRIP DISTRIBUTION
COMMERCIAL DEVELOPMENT
IN KRAMER JUNCTION
SAN BERNARDINO COUNTY, CALIFORNIA





LEGEND

XX% / XX% - GENERAL DIVERTED LINK PROJECT FRI PEAK/SUN PEAK TRIP DISTRIBUTION

XX% / XX% (#) - SPECIFIC DIVERTED LINK PROJECT FRI PEAK/SUN PEAK TRIP PERCENTAGE

- STUDY INTERSECTIONS

- STOP CONTROLLED INTERSECTION

- SIGNAL CONTROLLED INTERSECTION

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FIGURE 7: DIVERTED-LINK PROJECT TRIP DISTRIBUTION
COMMERCIAL DEVELOPMENT
IN KRAMER JUNCTION
SAN BERNARDINO COUNTY, CALIFORNIA

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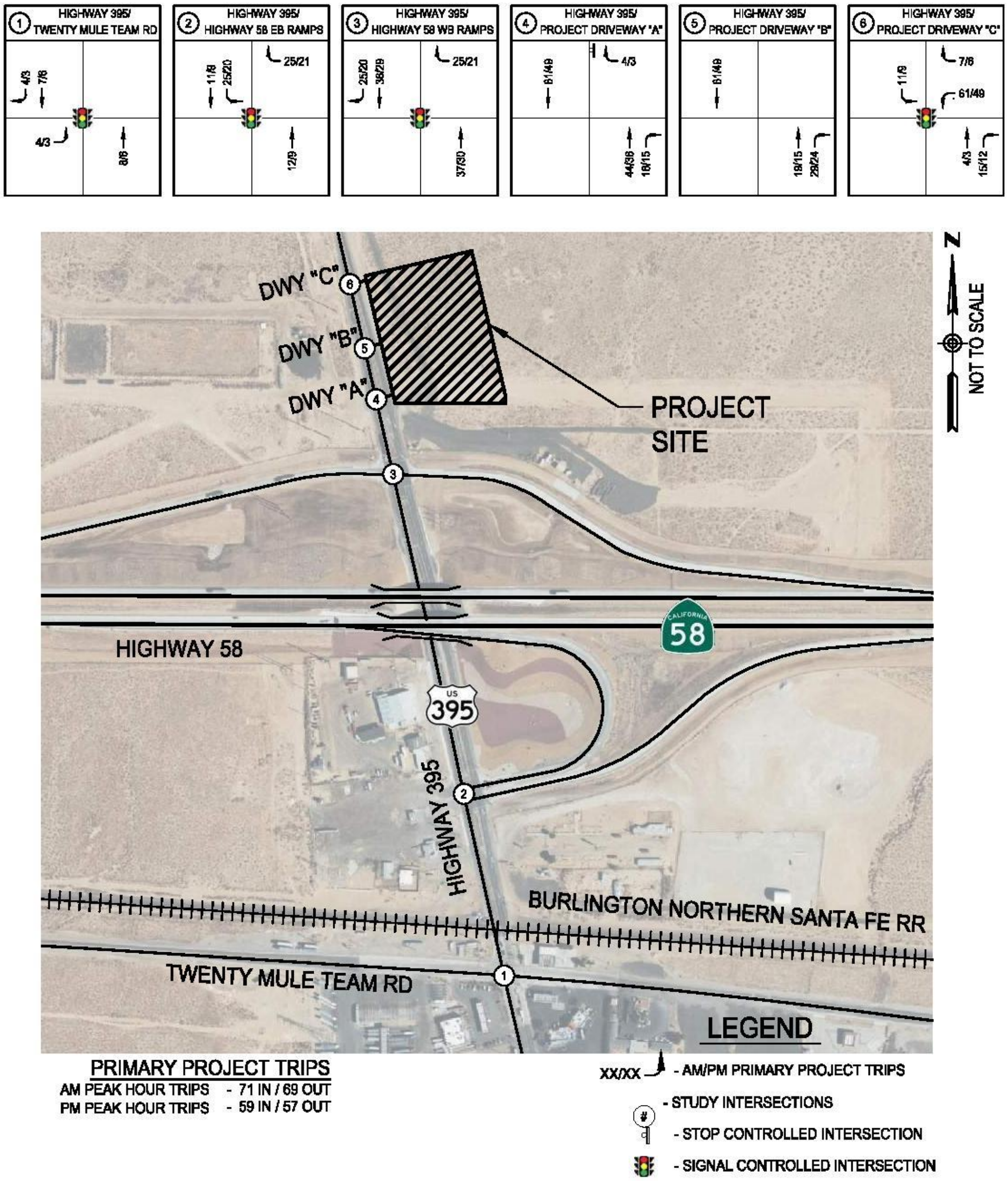
1 HIGHWAY 395/ TWENTY MULE TEAM RD
4/3
7/6
4/3
8/6
2 HIGHWAY 395/ HIGHWAY 58 EB RAMPS
11/8
25/20
25/21
12/9
3 HIGHWAY 395/ HIGHWAY 58 WB RAMPS
25/20
38/29
25/21
37/30
4 HIGHWAY 395/ PROJECT DRIVEWAY "A"
61/49
4/3
44/36
16/15
5 HIGHWAY 395/ PROJECT DRIVEWAY "B"
61/49
19/15
29/24
6 HIGHWAY 395/ PROJECT DRIVEWAY "C"
11/8
7/6
61/49
4/3
15/12
DWY "C"
DWY "B"
DWY "A"
PROJECT SITE
N
NOT TO SCALE
HIGHWAY 58
58
395
HIGHWAY 395
BURLINGTON NORTHERN SANTA FE RR
TWENTY MULE TEAM RD
LEGEND
PRIMARY PROJECT TRIPS
AM PEAK HOUR TRIPS - 71 IN / 69 OUT
PM PEAK HOUR TRIPS - 59 IN / 57 OUT
XX/XX - AM/PM PRIMARY PROJECT TRIPS
- STUDY INTERSECTIONS
- STOP CONTROLLED INTERSECTION
- SIGNAL CONTROLLED INTERSECTION

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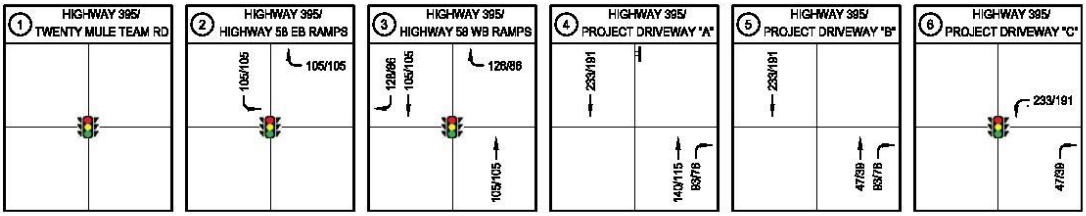
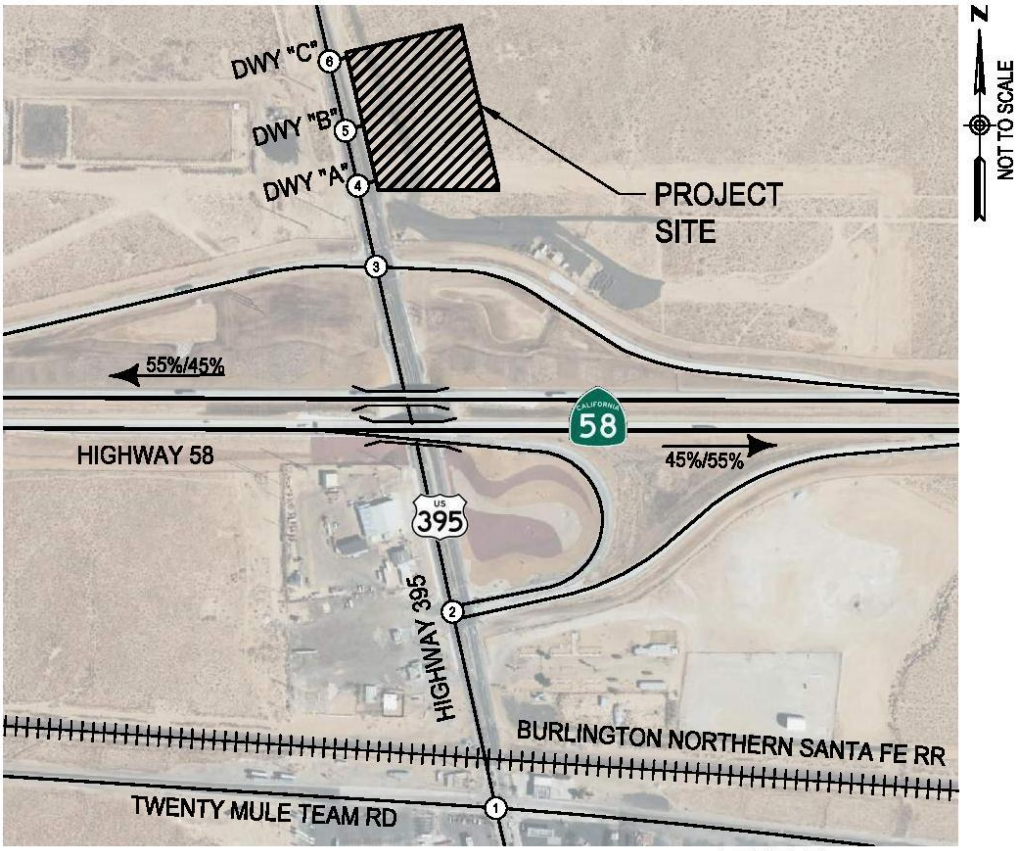
FIGURE 8: PRIMARY PROJECT TRIPS
COMMERCIAL DEVELOPMENT
IN KRAMER JUNCTION
SAN BERNARDINO COUNTY, CALIFORNIA





DIVERTED-LINK PROJECT TRIPS
AM PEAK HOUR TRIPS - 232 IN / 228 OUT
PM PEAK HOUR TRIPS - 190 IN / 184 OUT

LEGEND
XX/XX - AM/PM DIVERTED-LINK PROJECT TRIPS
- STUDY INTERSECTIONS
- STOP CONTROLLED INTERSECTION
- SIGNAL CONTROLLED INTERSECTION

DAVID EVANS AND ASSOCIATES INC.

FIGURE 9: DIVERTED-LINK PROJECT TRIPS
COMMERCIAL DEVELOPMENT
IN KRAMER JUNCTION
SAN BERNARDINO COUNTY, CALIFORNIA

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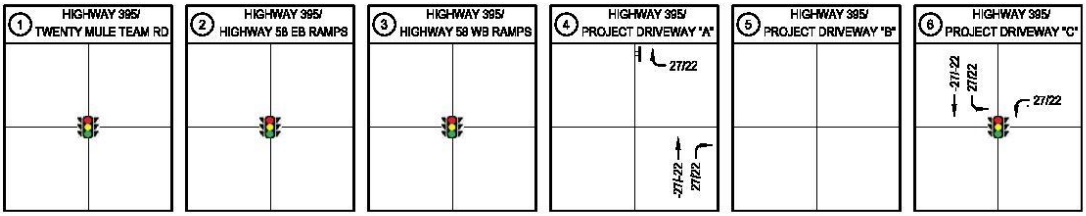

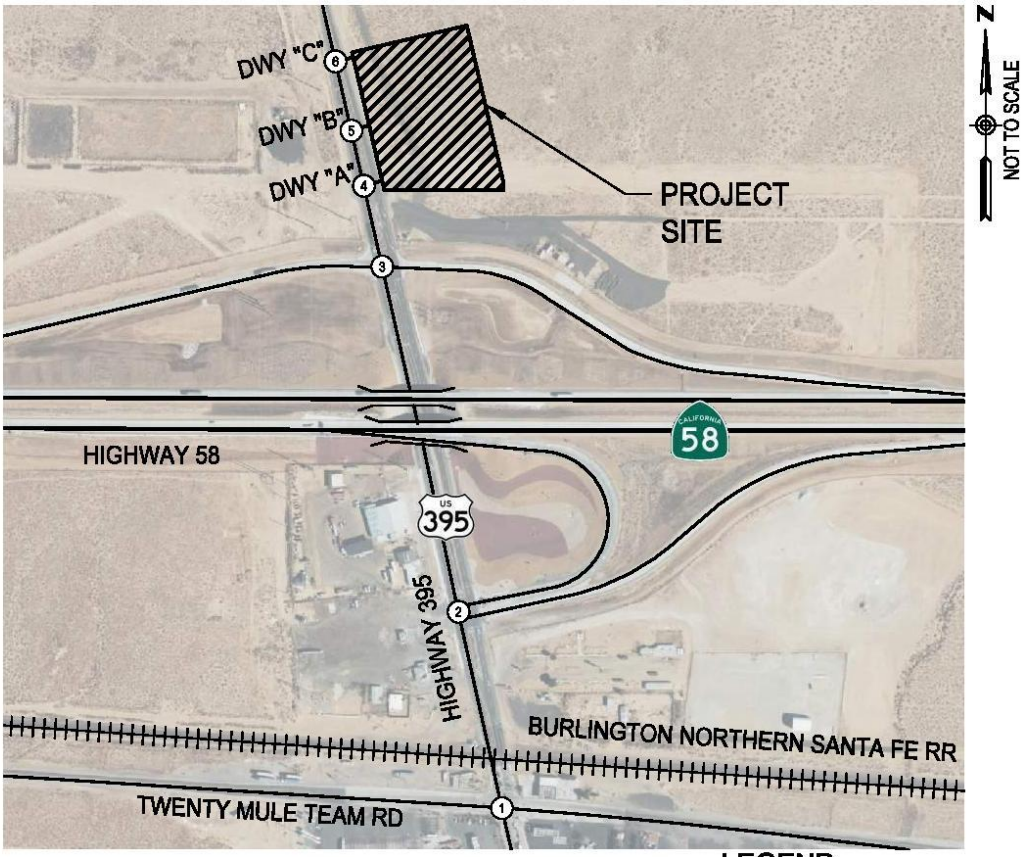

PASS-BY PROJECT TRIPS
AM PEAK HOUR TRIPS - 53 IN / 53 OUT
PM PEAK HOUR TRIPS - 44 IN / 43 OUT

LEGEND
XX/XX - AM/PM PASS-BY PROJECT TRIPS
- STUDY INTERSECTIONS
- STOP CONTROLLED INTERSECTION
- SIGNAL CONTROLLED INTERSECTION

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FIGURE 10: PASS-BY PROJECT TRIPS
COMMERCIAL DEVELOPMENT
IN KRAMER JUNCTION
SAN BERNARDINO COUNTY, CALIFORNIA

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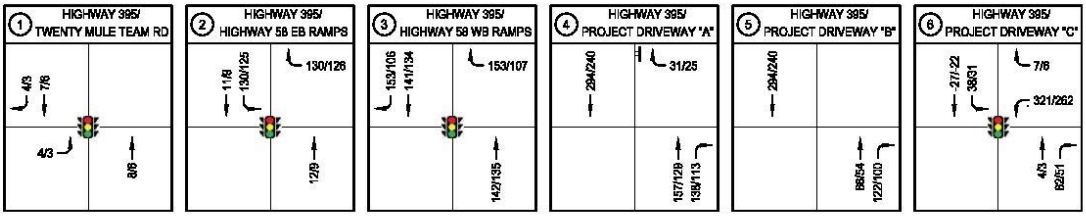

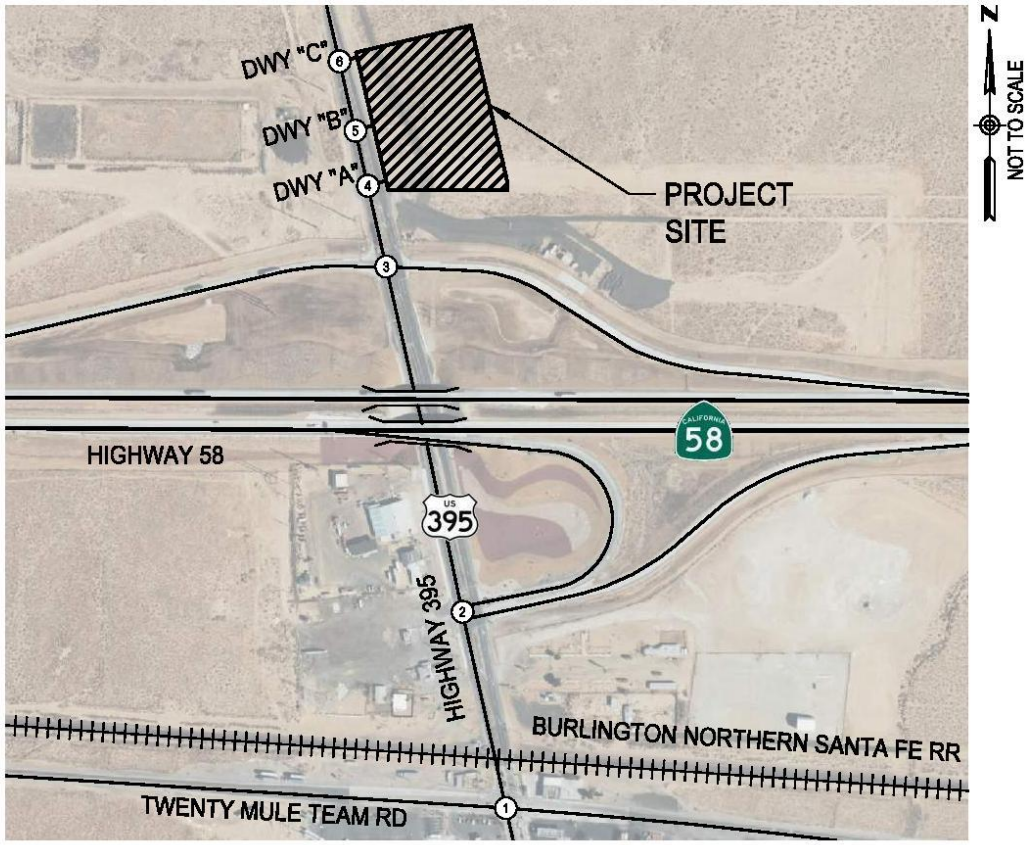

TOTAL PROJECT TRIPS
AM PEAK HOUR TRIPS - 356 IN / 350 OUT
PM PEAK HOUR TRIPS - 293 IN / 284 OUT

LEGEND
XX/XX - AM/PM TOTAL PROJECT TRIPS
- STUDY INTERSECTIONS
- STOP CONTROLLED INTERSECTION
- SIGNAL CONTROLLED INTERSECTION

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FIGURE 11: TOTAL PROJECT TRIPS
COMMERCIAL DEVELOPMENT
IN KRAMER JUNCTION
SAN BERNARDINO COUNTY, CALIFORNIA

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5.3 Project Traffic Analysis

The intersection capacity analysis of project conditions uses the AM and PM peak hour traffic volumes shown in **Figure 12** and the existing intersection geometrics shown in **Figure 13. Table 5-4** and **Appendix C** provide the results of the analysis.

Table 5-2: Intersection Capacity Analysis –Project Conditions

Intersection	Intsx Control Type	Background Conditions				Project Condition				Increase in Delay (Seconds)		Exceed Criteria?	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour					
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	AM	PM	AM	PM
1. Highway 395 / Twenty Mule Team Rd (Old Highway 58)	TS	31.3	C	26.0	C	31.4	C	27.6	C	0.1	1.6	NO	NO
2. Highway 395 / Highway 58 EB Ramps	TS	31.8	C	25.0	C	33.8	C	28.3	C	2.8	3.3	NO	NO
3. Highway 395 / Highway 58 WB Ramps	TS	15.2	B	16.0	B	17.6	B	24.3	C	2.4	18.0	NO	NO
4. Highway 395 / Project Driveway "A"	SSSC	Not Applicable				9.4	A	9.4	A	Not Applicable			
5. Highway 395 / Project Driveway "B"	RIO [1]					-	-	-	-				
6. Highway 395 / Project Driveway "C"	TS [2]					32.1	C	17.3	B				

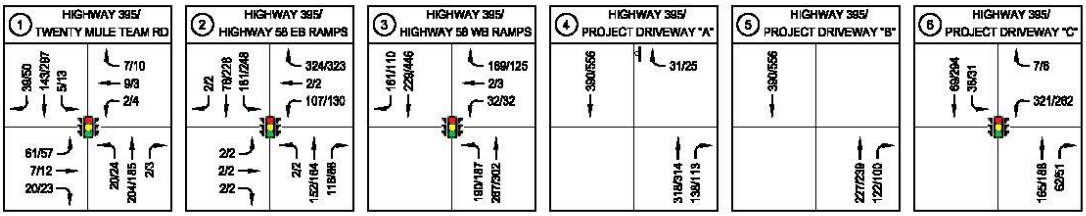
Notes:
[1] Project Driveway "B" is a right turn in only intersection. No level of service is reported for this type of intersection.
[2] Project Driveway "C" is assumed as a traffic signal-controlled intersection implemented by the project.
Abbreviations / Definitions:
TS – Traffic signal-controlled intersection, SSSC – Side-street stop-controlled intersection, Delay – seconds per vehicle, LOS – Level of Service

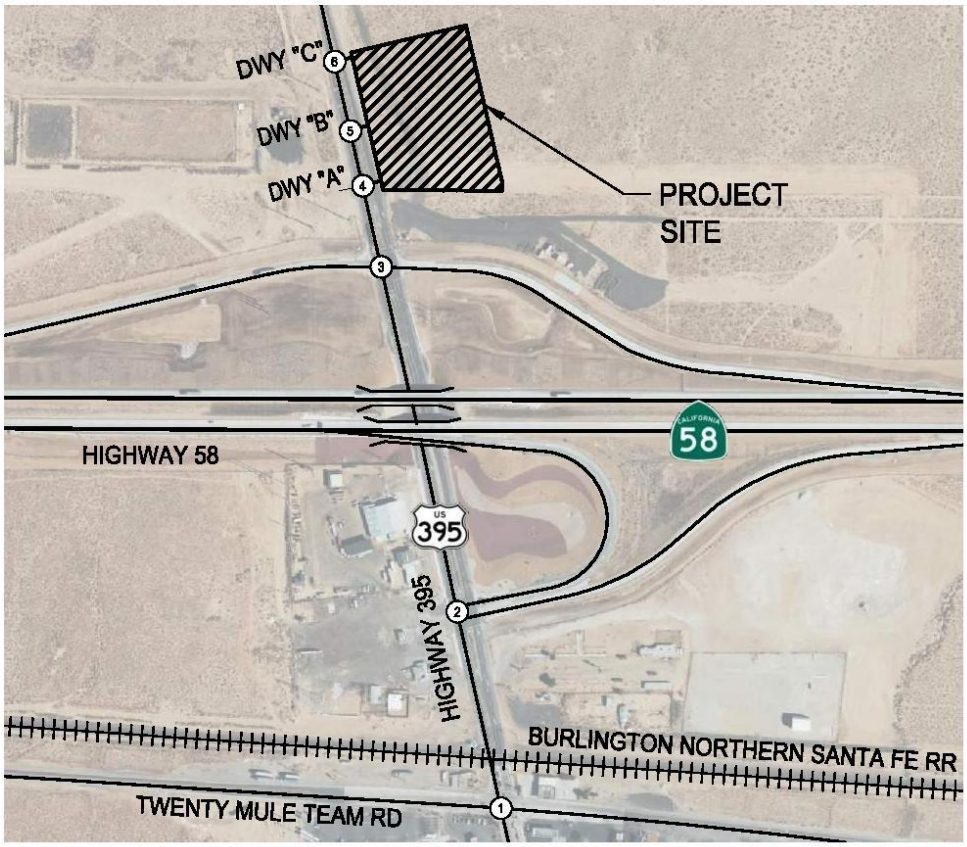
As presented in **Table 5-4**, under project conditions, the addition of project traffic does not cause, or contribute, to a deficient level of service at any study intersection based on the County's criteria.

5.4 Site Access Evaluation

As shown in the site plan (**Figure 2**) in Section 2, access to the site is proposed via three driveways along the east side of Highway 395. The proposed driveways are described below (also refer to **Figure ES-1)**:

- A left in-right in and right-out access driveway is proposed at Project Driveway "A" and Highway 395 located about 305 feet (measured from centerline to centerline) north of Highway 58 westbound on and off-ramps. Proposed improvements to Highway 395 at this driveway include widening the east side of the road and restriping the lanes to provide two northbound through lanes, a northbound bike lane, and a continuous northbound right turn lane into Project Driveway "A" and which extends the length of the project's frontage. A striped median for the provision of turning lanes is proposed which also extends the length of the project's frontage. The median includes an offset median (worm) island at Driveway "A" to prevent left turns out.
- A right in access driveway is proposed at Project Driveway "B" and Highway 395 located about 475 feet (measured from centerline to centerline) north of Highway 58 westbound on and off-ramps. Proposed improvements to Highway 395 include widening the east side of the road and restriping the lanes to provide two northbound through lanes, a northbound bike lane, and a continuous northbound right turn lane into Project Driveway "B" and extending the length of the project's frontage.
- A full access traffic signal-controlled driveway is proposed at Project Driveway "C" and Highway 395 located about 710 feet (measured from centerline to centerline) north of Highway 58 westbound on and off-ramps. Proposed improvements to Highway 395 include widening the east side of the road and restriping the lanes to provide two northbound through lanes, a northbound bike lane, termination of the continuous right turn lane into an exclusive northbound right turn lane, and a southbound median left turn lane into Project Driveway "C".





N
NOT TO SCALE

LEGEND

XX/XX - AM/PM PEAK HOUR VOLUMES
(#) - STUDY INTERSECTIONS
- SIGNALIZED INTERSECTION
- STOP CONTROLLED APPROACH

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FIGURE 12: PROJECT TRAFFIC VOLUMES
COMMERCIAL DEVELOPMENT
IN KRAMER JUNCTION
SAN BERNARDINO COUNTY, CALIFORNIA

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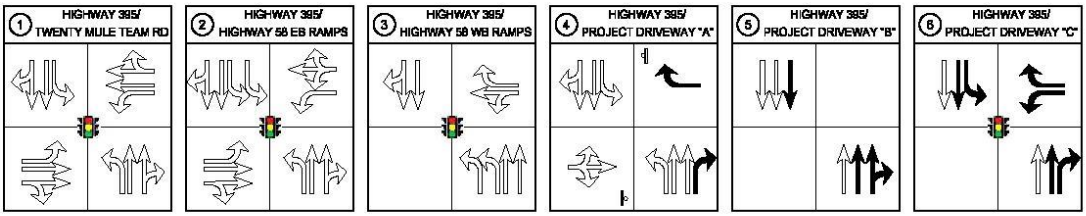

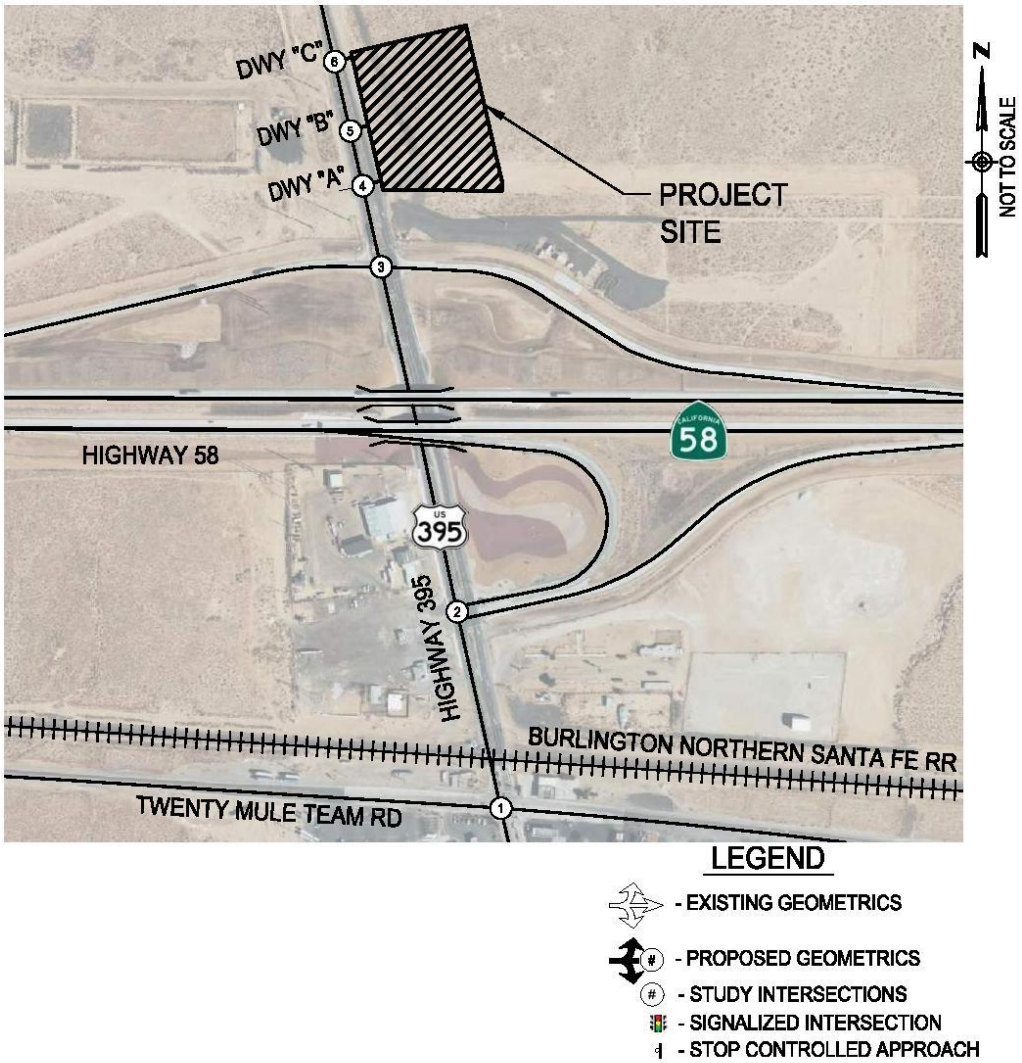

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FIGURE 13: PROJECT INTERSECTION GEOMETRICS
COMMERCIAL DEVELOPMENT
IN KRAMER JUNCTION
SAN BERNARDINO COUNTY, CALIFORNIA

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5.5 Sight Distance

Stopping Sight Distance

The minimum stopping sight distance is the distance required by the driver of a vehicle, traveling at a given speed, to bring the vehicle to a stop after an object ½-foot high on the road becomes visible. The Highway Design Manual (HDM) shows the minimum standards for stopping sight distance related to design speed for motorists. For purposes of determining stopping sight distance, the design speed is assumed to be 10 mph above the posted speed limit. The posted speed limit on Highway 395 in the vicinity of the project is 55 mph so the design speed is assumed to be 65 mph. Based on Table 201.1 in Chapter 200 of the HDM the sight distance standard for stopping at 65 mph is 660 feet.

A clear sight distance triangle with a hypotenuse of 660 feet must be maintained between a vehicle waiting at a stop-controlled project driveway and a vehicle traveling on Highway 395 in either direction

Corner Sight Distance

At unsignalized rural driveways a clear line of sight should be maintained between the driver of a vehicle stopped on the driveway and the driver of an approaching vehicle on Highway 395 that has no stop. Line of sight for all users should be included in right of way, to preserve sight lines. Adequate time should be provided for the stopped vehicle on the driveway to complete its movement onto Highway 395 without requiring through traffic to radically alter their speed.

Corner sight distance applies to private road intersections and rural driveways and should also be applied at signalized intersections to address unanticipated conflicts that can occur. However, the HDM allows the minimum corner sight distance at signalized driveways to equal the stopping sight distance.

The project driveways for which corner sight distance is applied includes stop-controlled Project Driveway "A" for the right turn movement out of the driveway and signalized Project Driveway "C" for the left and right turn movements out of the driveway. **Table 5-3** shows the derived corner sight distances for the movements at project driveways "A" and "C".

Table 5-3: Corner Sight Distance Requirements for Proposed Project Driveways

Design Vehicle / Time Gap	Driveway "A" (Right Turn Out)	Driveway "C" (Left Turn Out)	Driveway "C" (Right Turn Out)
Passenger Car - 7.5 sec time gap for left turn + 2.5 sec for additional lanes crossed. - 6.5 sec time gap for right turn.	620 ft	955 ft	620 ft
Combination Truck - 11.5 sec time gap for left turn + 3.5 sec for additional lanes crossed. -10.5 sec time gap for right turn.	1,003 ft	1,433 ft	1,003 ft
Minimum corner sight distance for signalized driveway is equal to stopping sight distance per HDM Section 405.1 (2) (b)	n/a	660 ft	660 ft
Notes: Corner sight distance = $1.47V_mT_g$ where V_m = the design speed, and Tg = the time gap of the design vehicle from Table 405.1A in the Highway Design Manual. For each additional lane crossed during the movement 0.5 seconds is added to the passenger car time gap and 0.7 seconds is added to the combination truck time gap. This extra time would only be added to the left turn movement out from Driveway "C"—a movement which crosses the equivalent of five lanes.			

Highway 395 is straight and flat in the vicinity of the proposed project and does not present any horizontal obstructions to sight distance such as curves in the road or tall structures close to the edge of pavement. In addition, there are few vertical obstructions to sight distance such as sag or crest curves, dense landscaping, or vertical infrastructure. It appears feasible to achieve the sight distances presented in **Table 5-3** by maintaining a clear sight triangle on the project property within the triangle. This means the property within the triangle must

maintain low landscaping / groundcover, narrow caliper trees with lowest branches kept pruned above 7 feet, and all vertical elements of the project (i.e., structures, signs, utilities, and other appurtenances) set back outside of the triangle.

5.6 Truck Turning Templates

Truck turning templates illustrating the swept path of an STAA design vehicle entering and exiting the project's driveways are included in **Appendix E.** As permitted in the HDM driveway widths may exceed Caltrans' standard commercial driveway widths if the swept path of the common and frequent design vehicle requires wider driveways to maneuver turns without encroaching into opposing traffic.

5.7 Traffic Signal Warrant Analysis for Project Driveway "C"

Section 4C.01 (Studies and Factors for Justifying Traffic Control Signals) of the MUTCD provides warrants related to the existing operation and safety at a study intersection and the potential to improve conditions. Warrants applicable to the intersection of Highway 395 at Project Driveway "C" include: Warrant 3 (Peak hour volume) and Warrant 7 (Crash experience). The results of the warrant analyses are summarized in **Table 5-4** and the signal warrant worksheets are in **Appendix D**.

Table 5-4: Traffic Signal Warrant Analysis of Highway 395 at Project Driveway "C"

Warrant No.	Warrant	Warrant Satisfied?
3	Peak hour volume [1]	YES
7	Crash experience [3]	NO

[1] Warrant 3 (Peak Hour Volume) utilizes Highway 395 approach volumes recorded at a location approximately 750 feet north of the intersection of Highway 395 and Highway 58 Westbound Ramps and the proposed project traffic.
[2] Warrant 7 (Crash Experience) references currently available crash data obtained from Transportation Injury Mapping System (TIMS), *Safe Transportation Research and Education Center*, *University of California, Berkeley*. 2021.

Under project conditions, the intersection of Highway 395 at Project Driveway "C" meets the Warrant 3 (peak hour volume).

Warrant 3 is satisfied based on approach volume and not the total delay experienced by traffic on the minor stop-controlled approaches. To satisfy the delay element of the warrant, the total delay experienced by the stop-controlled approach must exceed five vehicle hours for a two-lane approach. This part of the warrant is not satisfied.

Warrant 7 (crash experience) is not satisfied. Two injury collisions were reported in the 36-month period beginning in 2019 and ending in 2021. While not meeting the frequency requirement within a 12-month period, neither collision was of the type susceptible to correction with the installation of a signal.

However, meeting signal warrants is only one of many factors to consider for traffic signal installation. Safety is a consideration since the project is a highway-oriented commercial center geared towards travelers as well as serving the needs of long-distance trucking. The project generates close about 600 and 700 trips at the driveways in the AM and PM peak hour respectively (over 300 and 250 of these AM and PM peak hour trips are projected to exit the site from Driveway "C"). Many of the site's trips are large trucks all of which will use Driveway "C" to enter and exit the site. A traffic signal is recommended to reduce the potential conflict being the high level of slower moving vehicles entering and exiting the project site and the higher speed through traffic on Highway 395 (55 mph posted speed limit).

6 FUTURE CONDITIONS

The future conditions scenario represents regional ambient growth in traffic up to the year 2040. Growth in traffic is derived from an average annual growth rate calculated from Annual Average Daily Traffic (AADT) counts obtained from the Caltrans Traffic Census Program count stations within the vicinity of the proposed development site.

The Caltrans Traffic Census Program count stations identified in the vicinity of the proposed development site include:

- District 08 - Route 58 - PM 5.400 – Junction Route 395
- District 08 - Route 395 - PM 45.948 – Junction Route 58

The calculation and Caltrans Traffic Census Program count stations data is provided in **Appendix B**. An average annual rate of 3.24% is assumed for the regional ambient growth in traffic up to the year 2040 for this study.

6.1 Future Conditions Traffic Analysis

As presented in **Table 6-1** and in **Appendix C**, under future conditions, the study intersection is anticipated to operate at an LOS D or better during the AM and the PM peak hours.

Table 6-1: Intersection Capacity Analysis – Future Conditions

Intersection	Intersection Control Type	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
1. Highway 395 / Twenty Mule Team Rd (Old Highway 58)	TS	26.4	C	21.4	C
2. Highway 395 / Highway 58 EB Ramps	TS	37.1	D	28.8	C
3. Highway 395 / Highway 58 WB Ramps	TS	16.1	B	17.8	B
Abbreviations: TS – Traffic signal-controlled intersection Delay – seconds per vehicle LOS – Level of Service					

7 FUTURE PLUS PROJECT CONDITIONS

The Future Plus Project Conditions scenario evaluates the potential cumulative impacts to the area network due to ambient growth and other area project trips up to the forecast year of 2040 with the addition of project traffic. This scenario adds the project's estimated traffic generation to the Future Conditions scenario. Impacts identified in this future-term scenario are considered "cumulative" impacts—impacts that the project contributes to, but does not solely cause, and may be responsible for a fair-share of the cost to implement any mitigation measures.

7.1 Future Plus Project Traffic Analysis

Table 7-1 and provide the results of the analysis.

As presented in **Table 7-1** on the following page and in **Appendix C**, under future plus project conditions, the study intersections and project driveways, are projected to operate at a LOS B or LOS C during both peak hours except for the intersection of Highway 395 / Highway 58 Westbound Ramps which operates at a deficient LOS D during the AM peak hour.

Although the intersection of Highway 395 / Highway 58 Westbound Ramps operates at LOS D in the AM peak hour, the project does not contribute to a level of service deficiency because it does not increase the intersection's delay by 5 seconds or more.

The future conditions intersection capacity analysis uses existing intersection geometrics and the projected AM, and the PM peak hour traffic shown in **Figure 14**. The intersection capacity analysis of future plus project conditions uses existing intersection geometrics and the projected AM and PM peak hour traffic volumes shown in **Figure 15**.

Table 7-1: Intersection Capacity Analysis – Future Plus Project Conditions

Intersection	Intsx Control Type	Future Condition				Future + Project Condition				Increase in Delay (Seconds)		Exceed the Criteria	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour					
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	AM	PM	AM	PM
1. Highway 395 / Twenty Mule Team Rd (Old Highway 58)	TS	26.4	C	21.4	C	26.5	C	21.7	C	0.1	0.3	NO	NO
2. Highway 395 / Highway 58 EB Ramps	TS	37.1	D	28.8	C	41.6	D	32.2	C	4.5	3.4	NO	NO
3. Highway 395 / Highway 58 WB Ramps	TS	16.1	B	17.8	B	18.6	A	26.3	C	2.5	8.5	NO	NO
4. Highway 395 / Project Driveway "A"	SSSC	Not Applicable				9.8	A	9.8	A	Not Applicable			
5. Highway 395 / Project Driveway "B"	RIO [1]					-	-	-	-				
6. Highway 395 / Project Driveway "C"	TS [2]					30.5	C	14.1	B				

Notes:
[1] Project Driveway "B" is a right turn in only intersection. No level of service is reported for this type of intersection.
[2] Project Driveway "C" is assumed as a traffic signal-controlled intersection implemented by the project.
Abbreviations / Definitions:
TS – Traffic signal-controlled intersection, SSSC – Side-street stop-controlled intersection, Delay – seconds per vehicle, LOS – Level of Service

7.2 Traffic Signal Warrant Analysis for Project Driveway "C"

Table 7-2 summarizes the traffic signal warrant analysis for Driveway "C" under future year 2040 conditions. In this scenario, only Warrant 3 (peak hour volume) is evaluated. Like the warrant analysis under background plus project conditions, only Part B of the warrant is satisfied. The signal warrant worksheets are in **Appendix D**.

As discussed in Section 5 of this report, meeting signal warrants is only one of the factors to consider for traffic signal installation. Safety of the project's driveway traffic entering and exiting the high-speed environment of Highway 395 was a primary consideration in recommending signalization of Driveway "C".

Table 7-2: Traffic Signal Warrant Analysis of Highway 395 at Project Driveway "C" Under Future Conditions

Warrant No.	Warrant	Warrant Satisfied?
3	Peak hour volume [1]	YES

[1] Warrant 3 (Peak Hour Volume) utilizes Highway 395 approach volumes recorded at a location approximately 750 feet north of the intersection of Highway 395 and Highway 58 Westbound Ramps and the proposed project traffic.

8 VEHICLE MILES OF TRAVEL (VMT)

This section was taken from the March 1, 2022, document titled *Traffic Impact Study Scoping Memorandum Commercial Development in Kramer Junction, San Bernardino County, California – A.P.N 0491-151-11.* The scoping memorandum, submitted to the County and Caltrans in early March of 2022, included a screening assessment to determine if the proposed project is required to prepare a detailed Vehicle Miles Travelled (VMT) analysis under CEQA.

8.1 VMT Screening Assessment

County of San Bernardino guidelines refer to the use of the San Bernardino County Transportation Authority (SBCTA) guidelines for screening and/or analyzing a development project's VMT in conformance with SB 743.

According to the SBCTA guidelines a VMT analysis would apply to projects that have the potential to increase the average VMT per service population (e.g., population plus employment) compared to the County of San Bernardino VMT average of 32.7%.

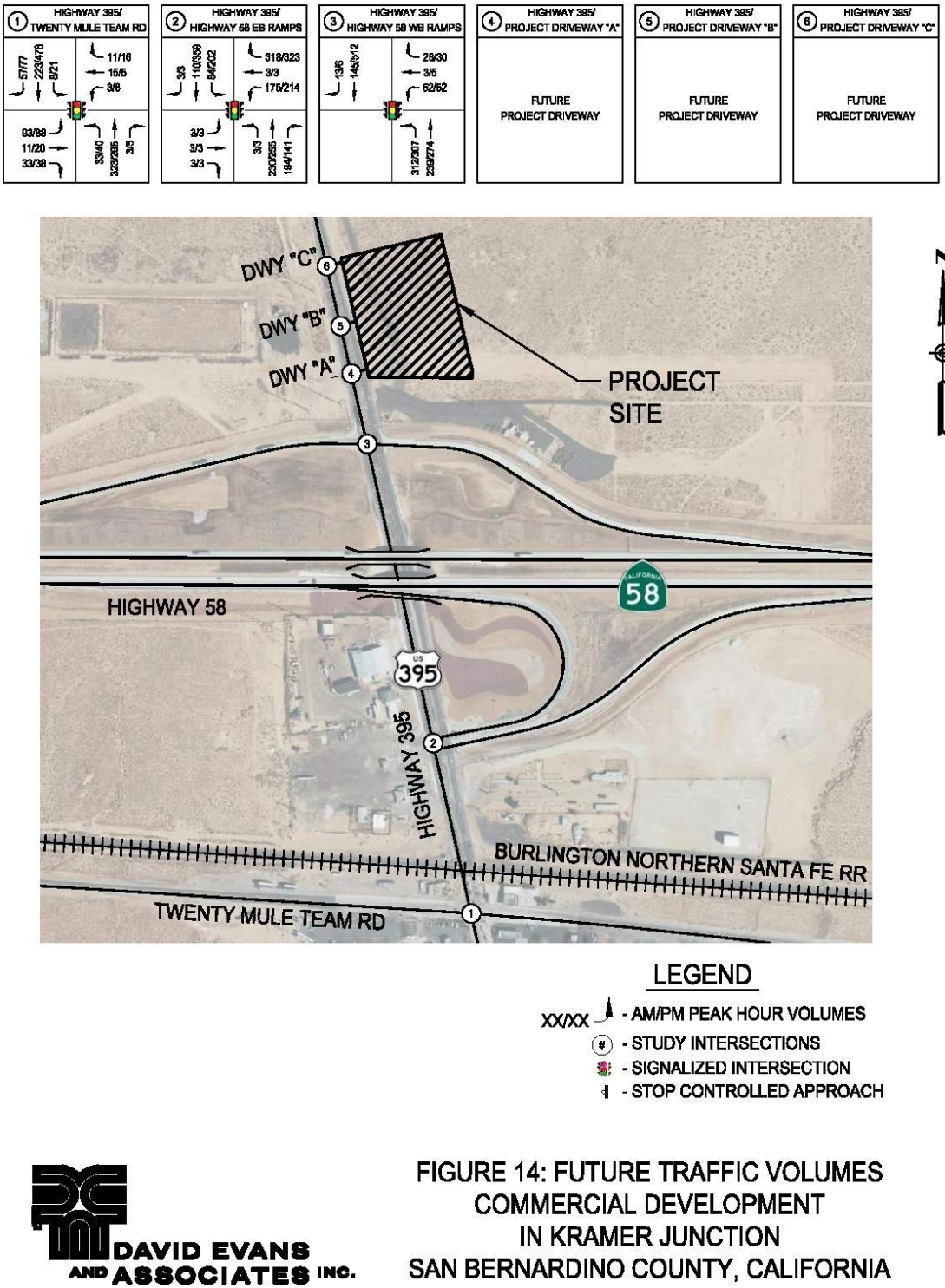

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FIGURE 14: FUTURE TRAFFIC VOLUMES
COMMERCIAL DEVELOPMENT
IN KRAMER JUNCTION
SAN BERNARDINO COUNTY, CALIFORNIA

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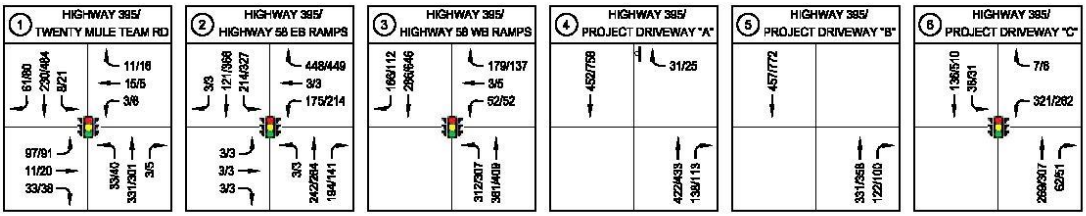

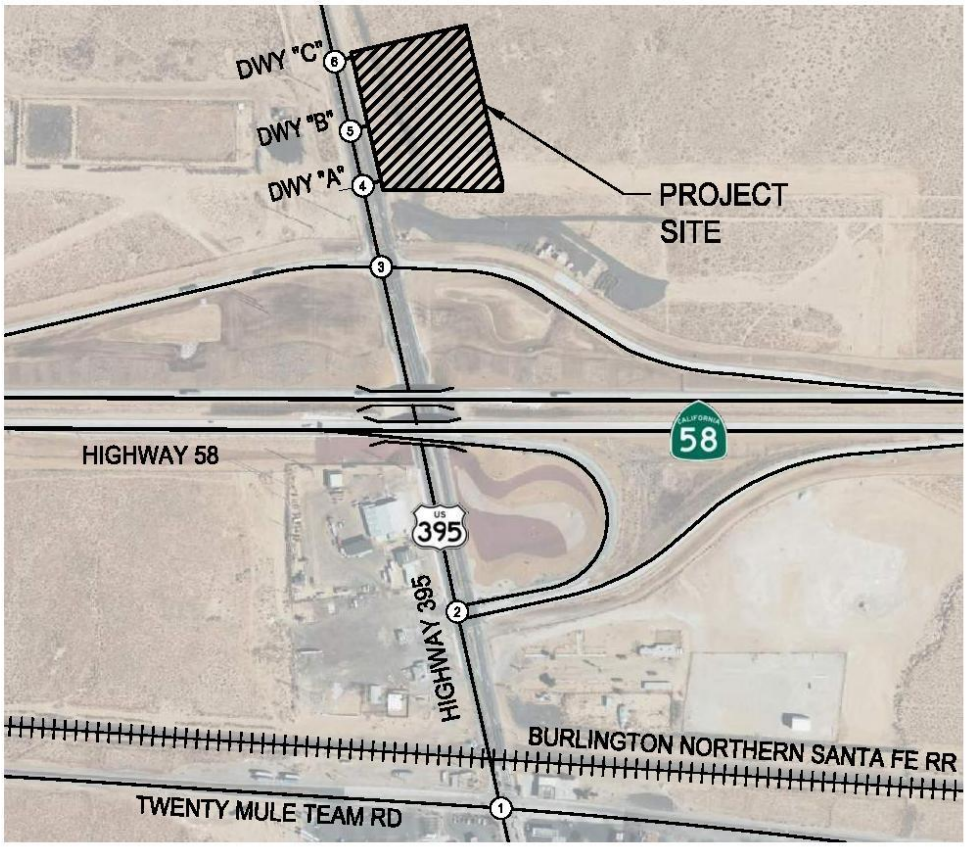

N
NOT TO SCALE

LEGEND

XX/XX - AM/PM PEAK HOUR VOLUMES
(#) - STUDY INTERSECTIONS
- SIGNALIZED INTERSECTION
- STOP CONTROLLED APPROACH

FIGURE 15: FUTURE + PROJECT TRAFFIC VOLUMES COMMERCIAL DEVELOPMENT IN KRAMER JUNCTION SAN BERNARDINO COUNTY, CALIFORNIA

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Project Screening from Conducting VMT Analyses

There are three methods of screening land development projects from requiring a project-level VMT analysis according to San Bernardino County's *Transportation Impact Study Guidelines (July 2019) Section 4. CEQA Assessment – VMT Analysis*. Only two of the County's screening methods are applicable to the project and are described below:

Low VMT Generating Area Screening

Employment-related and mixed-use development projects located in low-VMT generating areas may qualify for this screening criteria if the project can reasonably be expected to generate VMT per resident, per worker, or per service population that is similar to the existing land uses in the low VMT area.

For low VMT screening in San Bernardino County, the SBTAM travel forecasting model was used to develop a tool that measures VMT performance for individual jurisdictions and for individual traffic analysis zones (TAZs). TAZs are geographic polygons like Census block groups used to represent areas of homogenous travel behavior. Total daily VMT per service population (population plus employment) was estimated for each TAZ. This presumption may not be appropriate if the project's proposed land use would alter the existing built environment in such a way as to increase the rate or length of vehicle trips.

To identify if the project is in a low VMT-generating area, the SBCTA screening tool[4] is used to compare the appropriate baseline (without project) TAZ VMT to current County of San Bernardino VMT threshold of 32.7% VMT/Service Population. Additionally, as noted above, the analyst must identify if the project is consistent with the existing land use within that TAZ and use professional judgement that there is nothing unique about the project that would otherwise be mis-represented utilizing the data from the travel demand model.

Exhibit 1 shows the SBCTA screening tool output for the project's opening year (2023) and shows that the project parcel identified in blue. Based on this analysis, the project is not located in a low-VMT generating area.

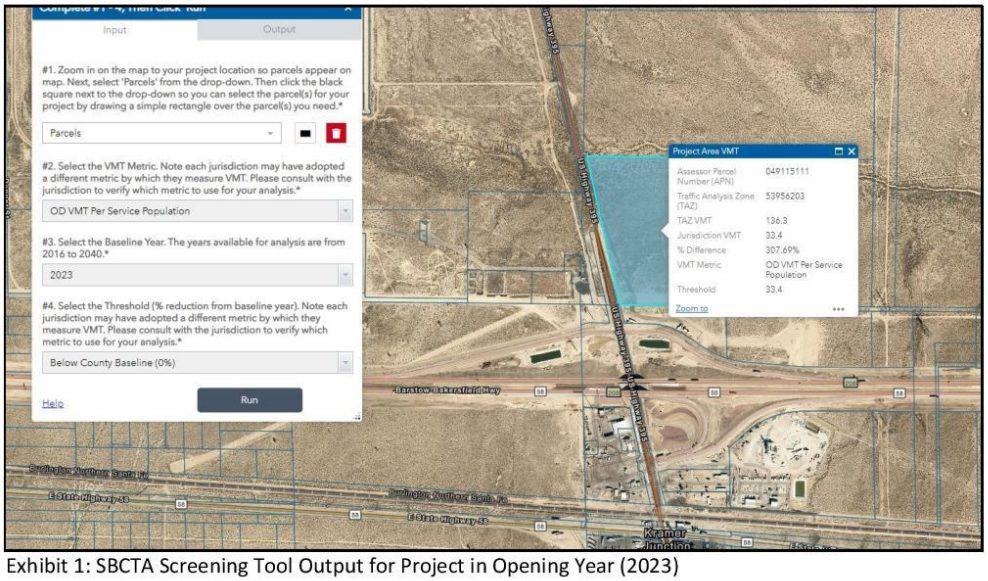

Exhibit 1: SBCTA Screening Tool Output for Project in Opening Year (2023)

[4] https://sbcta.maps.arcgis.com/apps/webappviewer/index.html?id=779a71bc659041ad995cd48d9ef4052b

Project Type Screening

Local serving retail projects less than 50,000 square feet may be presumed to have a less than significant impact absent substantial evidence to the contrary. Local serving retail generally improves the convenience of shopping close to home and has the effect of reducing vehicle travel.

The benefit of local serving retail may also be applied to convenience retail near freeways that attract most of their customers from the freeway, especially when placed close to an interchange. These "diverted" customer trips from the freeway are trips that are traveling on a nearby freeway and stop at the project site as an intermediate stop between their origin and destination to fulfill their need for refueling, dining, and rest from driving. The location of the project between ¼-mile and ½-mile from the Highway 58 ramp intersections minimizes the length of the diverted travel. In addition to these "diverted" trips, travelers on Highway 395 passing-by the project site are attracted to the project with direct access to/from Highway 395.

In addition to local serving retail, the following uses can also be presumed to have a less than significant impact absent substantial evidence to the contrary as their uses are local serving in nature:

- Local-serving K-12 schools
- Local parks
- Day care centers
- **Local-serving gas stations**
- Local-serving banks
- Local-serving hotels (e.g. non-destination hotels)
- Local-serving medical
- Student housing projects on or adjacent to college campuses
- Local-serving assembly uses (places of worship, community organizations)
- Community institutions (Public libraries, fire stations, local government)
- Local serving community colleges that are consistent with the assumptions noted in the RTP/SCS
- Affordable or supportive housing
- Assisted living facilities
- Senior housing (as defined by HUD)

8.2 VMT Screening Conclusion

Based on the above screening, the proposed project is screened from requiring a project-level VMT analysis. Specifically:

- The proposed project is a local and subregional-serving automobile-oriented commercial center designed to capture travelers on Highway 395 and Highway 58 needing fuel, food, and convenience items. The convenience market/gas station and food services are located along a rural highway with limited services available to travelers between San Bernardino County and Kern County. As such, the proposed project meets the definition of a locally and subregional-serving gas station / retail and is presumed to have a less than significant impact.

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