

APPENDIX B

**DRAFT TRAFFIC IMPACT
ANALYSIS**

**Wistaria Ranch Solar Energy Center
County of Imperial (SW Area – Mt. Signal Vicinity)
May 14, 2014**

Draft Traffic Impact Analysis

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1.0 Introduction

The purpose of this study is to determine and analyze potential traffic impacts for the proposed Wistaria Ranch Solar Energy Center Project. The project is a solar photovoltaic energy-generating facility of approximately 250 megawatts of electricity on approximately 2,793 acres. The project is located approximately 8 miles west of the City of Calexico in the Mt. Signal area of Imperial Valley. The project is located on three clusters of privately owned, agricultural land. The general locations of the three cluster of land known as the project are shown in **Figure 1**. A site plan is included in **Figure 2**.

This report describes the existing roadway network in the vicinity of the project site. It includes a review of the existing and proposed traffic activities for weekday peak AM and PM periods and daily traffic conditions. The format of this study includes the following chapters:

- 1.0 Introduction
- 2.0 Study Methodology
- 3.0 Existing Conditions
- 4.0 Project Description
- 5.0 Cumulative Projects
- 6.0 Existing Year 2013 + Project Conditions
- 7.0 Existing Year 2013 + Project Construction + Cumulative Conditions
- 8.0 Near-Term 2016 Conditions
- 9.0 Near-Term Year 2016 + Project Conditions
- 10.0 Near-Term Year 2016 + Project + Cumulative Conditions
- 11.0 Mid-Term Year 2019 Conditions
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- 16.0 Long-Term Year 2024 Cumulative Projects
- 17.0 Long-Term Year 2024 + Project + Cumulative Conditions
- 18.0 Horizon Year 2049 Conditions
- 19.0 Conclusions and Recommendations
- 20.0 References

Figure 1: Project Location

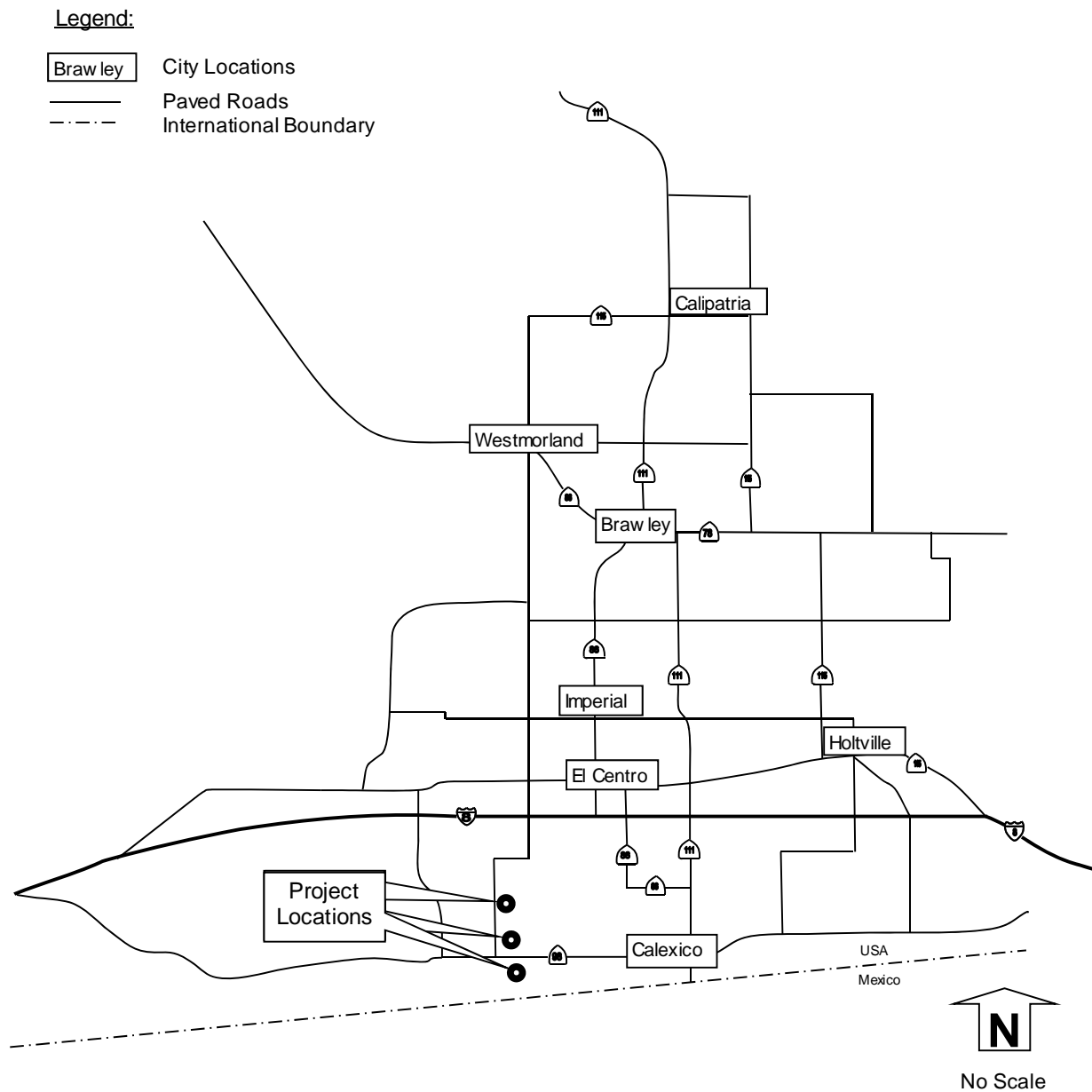
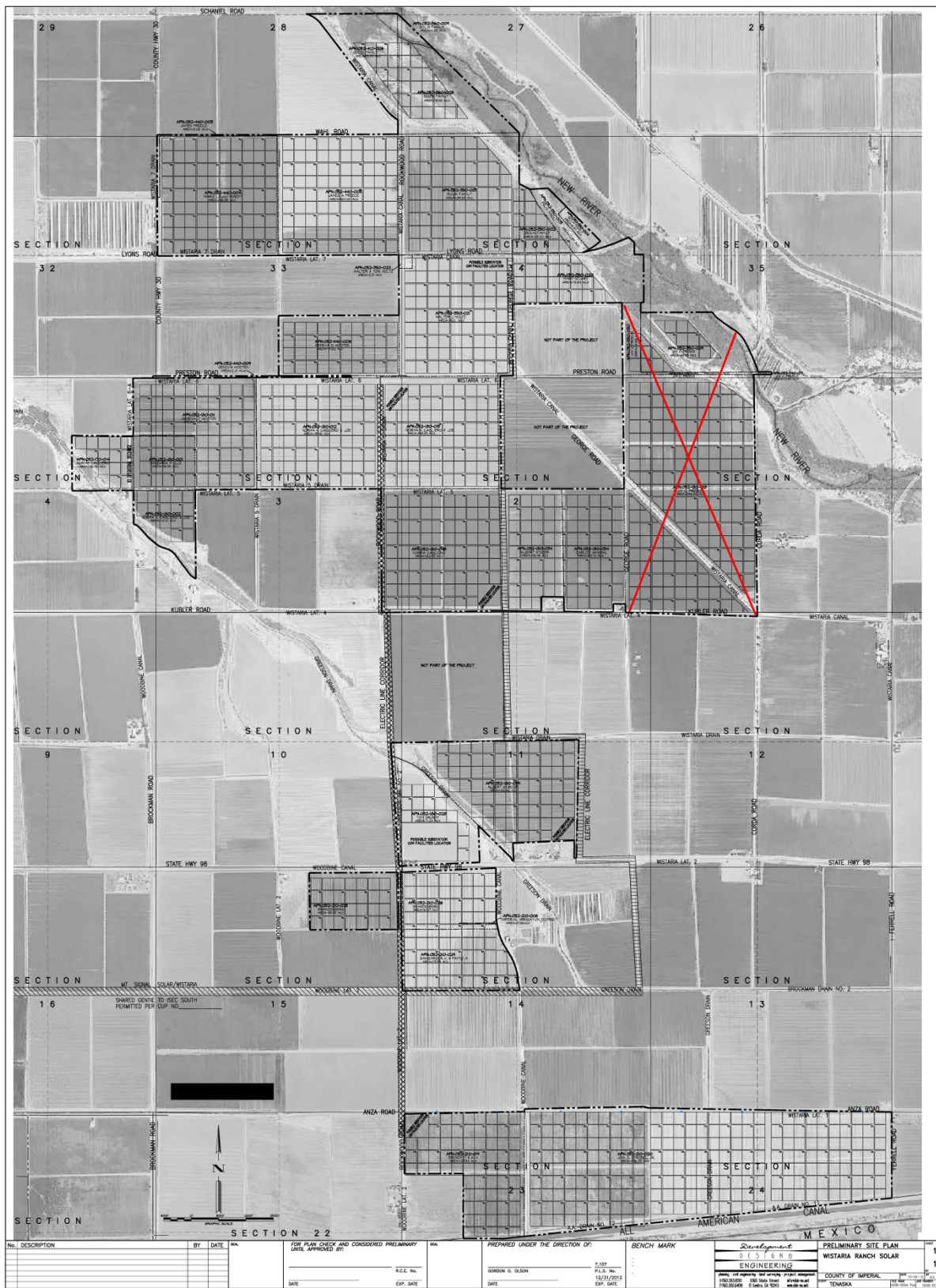


Figure 2: Site Plan



2.0 Traffic Analysis Methodology and Significance Criteria

The parameters by which this traffic study was prepared included the determination of what intersections and roadways are to be analyzed, the scenarios to be analyzed and the methods required for analysis. The criteria for each of these parameters are included herein.

2.1 Study Area Criteria

The County of Imperial Department of Public Works *Traffic Study and Report Policy* dated March 12, 2007, revised June 29, 2007 and approved by the Board of Supervisors of the County of Imperial on August 7, 2007 states on page 14 “The study area for the project will be expected to encompass an adequate surrounding area to ensure that all impacts are identified to a sufficient extent that any mitigation measures, regardless of importance are shown, e.g. stop signs, yield signs, etc.” The project study area was determined based on similar solar projects in the same general area. The following intersections were analyzed as part of this study:

- 1) Forrester Road/I-8 WB Ramp (un-signalized)
- 2) Forrester Road/I-8 EB Ramp (un-signalized)
- 3) Forrester Road/McCabe Road (un-signalized)
- 4) Brockman Road/Lyons Road (un-signalized)
- 5) Brockman Road/Kubler Road (un-signalized)
- 6) Brockman Road/SR-98 (un-signalized)
- 7) Brockman Road/Anza Road (un-signalized)
- 8) La Brucherie Road/McCabe Road (un-signalized)
- 9) La Brucherie Road/Wahl Road (un-signalized)
- 10) La Brucherie Road/Kubler Road (un-signalized)
- 11) La Brucherie Road/SR-98 (un-signalized)
- 12) La Brucherie Road/Anza Road (un-signalized)

Along with the following roadway segments:

- 1) Anza Road from Brockman Road to Ferrell Road
- 2) Brockman Road from McCabe Road to Lyons Road
- 3) Brockman Road from Lyons Road to Kubler Road
- 4) Brockman Road from Kubler Road to SR-98
- 5) Brockman Road from SR-98 to Anza Road
- 6) Forrester Road from I-8 to McCabe Road
- 7) Kubler Road from Brockman Road to Ferrell Road
- 8) La Brucherie Road from McCabe Road to Lyons Road
- 9) La Brucherie Road from Lyons Road to Kubler Road
- 10) La Brucherie Road from Kubler Road to SR-98
- 11) La Brucherie Road from SR-98 to Anza Road
- 12) Lyons Road from Brockman Road to La Brucherie Road

And, the following Interstate and Freeway and State Route segments:

- 1) I-8 between Drew Road and Forrester Road
- 2) I-8 between Forrester Road and Imperial Avenue
- 3) SR-98 between Drew Road and Brockman Road
- 4) SR-98 between Brockman Road and Ferrell Road
- 5) SR-98 between Ferrell Road and Clark Road

2.2 Scenario Criteria

The number of scenarios to be analyzed is based on the methodology outlined in the County of Imperial Department of Public Works *Traffic Study and Report Policy* dated March 12, 2007, revised June 29, 2007 and approved by the Board of Supervisors of the County of Imperial on August 7, 2007. Excerpts from the *Traffic Study and Report Policy* showing the scenario criteria are included in **Appendix A**. Based on the aforementioned methodology source and to account for the possibility that the project may be phase, the following scenarios were analyzed:

- 1) Existing 2013 Conditions
- 2) Existing 2013 + Project Conditions
- 3) Existing 2013 + Project + Cumulative Conditions
- 4) Near-Term Year 2016 Conditions
- 5) Near-Term Year 2016 + Project Conditions
- 6) Near-Term Year 2016 + Project + Cumulative Conditions
- 7) Mid-Term Year 2019 Conditions
- 8) Mid-Term Year 2019 + Project Conditions
- 9) Mid-Term Year 2019 + Project + Cumulative Conditions
- 10) Long-Term Year 2024 Conditions
- 11) Long-Term Year 2024 + Project Conditions
- 12) Long-Term Year 2024 + Project + Cumulative Conditions
- 13) Horizon Year 2049 Conditions

2.3 Traffic Analysis Criteria

In the traffic analyses prepared for this study, the *2000 Highway Capacity Manual* (HCM) operations analysis using Level of Service (LOS) evaluation criteria were employed. The operating conditions of the study intersections are measured using the HCM LOS designations ranging from A through F. LOS A represents the best operating condition and LOS F denotes the worst operating condition. The individual LOS criteria for each roadway component are described below.

2.3.1 Intersections

The study intersections were analyzed using the **operational analysis** method outlined in the 2000 HCM. This process defines LOS in terms of **average control delay** (measured in seconds) per vehicle. Intersection LOS was calculated using the Synchro 8.0 (Trafficware 2011) computer software program. The HCM LOS for the range of delay by seconds for un-signalized and signalized intersections is described in **Table 1**.

TABLE 1: UN-SIGNALIZED AND SIGNALIZED INTERSECTION LEVEL OF SERVICE (HCM 2000)

Level of Service	Un-Signalized Average Control Delay (seconds/vehicle)	Signalized Average Control Delay (seconds/vehicle)
A	0-10	0-10
B	> 10-15	> 10-20
C	> 15-25	> 20-35
D	> 25-35	> 35-55
E	> 35-50	> 55-80
F	> 50	> 80

Source: Highway Capacity Manual 2000.

As noted on page 5 of Caltrans' *Guide for the Preparation of Traffic Impact Studies*, December 2002, the accepted methodology by Caltrans for un-signalized intersections is the most current edition of the HCM (excerpt included in **Appendix B**). Therefore, all of the study interchanges with un-signalized intersections were analyzed using the most current edition of the HCM.

2.3.2 Roadway Segments

The roadway segments were analyzed based on the functional classification of the roadway using the Imperial County Standard Street Classification capacity lookup table (copy included in **Appendix C**). The roadway segment capacity and LOS standards used to analyze roadway segments are summarized in **Table 2**.

TABLE 2: ROADWAY SEGMENT DAILY CAPACITY AND LOS (IMPERIAL COUNTY)

Circulation Element Road Classification	CROSS SECTION	LOS A	LOS B	LOS C	LOS D	LOS E
Expressway	154/210	<30,000	<42,000	<60,000	<70,000	<80,000
Prime Arterial	106/136	<22,200	<37,000	<44,600	<50,000	<57,000
Minor Arterial	82/102	<14,800	<24,700	<29,600	<33,400	<37,000
Major Collector (Collector)	64/84	<13,700	<22,800	<27,400	<30,800	<34,200
Minor Collector (Local Collector)	40/70	<1,900	<4,100	<7,100	<10,900	<16,200
Local County (Residential)	40/60	*	*	<1,500	*	*
Local County (Residential Cul-de-Sac or Loop Street)	40/60	*	*	<200	*	*
Major Industrial Collector – (Industrial)	76/96	<5,000	<10,000	<14,000	<17,000	<20,000
Industrial Local	44/64	<2,500	<5,000	<7,000	<8,500	<10,000

Source: Imperial County Department of Planning & Development Services *Circulation and Scenic Highways Element* January 29, 2008. Notes: *Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

2.3.3 Freeway Segments

The freeway segments were analyzed based on a multilane highway LOS criteria using a Volume to Capacity (V/C) ratio as outlined in the 2000 HCM. The V/C ratio is the ratio of traffic over the roadway capacity that provides a measure of how much roadway capacity is being used. The accepted methodology by Caltrans for the analysis of freeway sections is to use the most current edition of the HCM as noted on page 5 of Caltrans' *Guide for the Preparation of Traffic Impact*



Studies, December 2002. The freeway LOS operations are based on Caltrans' *Guide for the Preparation of Traffic Impact Studies* V/C ratios as summarized below in **Table 3**. Excerpts from Caltrans' *Guide for the Preparation of Traffic Impact Studies* are included in **Appendix D**.

TABLE 3: FREEWAY LEVEL OF SERVICE

Measure of Effectiveness	LOS A	LOS B	LOS C	LOS D	LOS E
Max Volume/Capacity Ratio	0.30	0.50	0.71	0.89	1.00

Source: Caltrans' *Guide for the Preparation of Traffic Impact Studies*, December 2002.

2.4 Significance Criteria

The significance criteria for traffic impacts are based on the Imperial County Planning & Development Services Department level of service standard as outlined on page 55 of the *Circulation and Scenic Highways Element* dated January 29, 2008, which states "The County's goal for an acceptable traffic service standard on an Average Daily Traffic (ADT) basis and during AM and PM peak periods for all County-Maintained Roads shall be LOS C for all street segment links and intersections." An excerpt from the *Circulation and Scenic Highways Element* is included in **Appendix E**. The current practice of determining direct or cumulative impacts is defined by the significance criteria outlined in **Table 4**, which was obtained from several EIRs for projects located in Imperial County. Copies of traffic significance criteria from other EIRs are included in **Appendix F**.

TABLE 4: SIGNIFICANCE CRITERIA

Existing	Existing + Project	Existing + Project + Cumulative Projects	Impact Type
Intersections			
LOS C or better	LOS C or better	LOS C or better	None
LOS C or better	LOS D or worse	NA	Direct
LOS D	LOS D and adds 2.0 seconds or more of delay	LOS D or worse	Cumulative
LOS D	LOS E or F	NA	Direct
LOS E	LOS F	NA	Direct
LOS F	LOS F and delay increases by ≥ 10.0 seconds	LOS F	Direct
Any LOS	Project does not degrade LOS and adds < 2.0 seconds of delay	Any LOS	None
Any LOS	Project does not degrade LOS but adds 2.0 to 9.9 seconds of delay	LOS E or worse	Cumulative
Segments			
LOS C or better	LOS C or better	LOS C or better	None
LOS C or better	LOS C or better and v/c > 0.02	LOS D or worse	Cumulative
LOS C or better	LOS D or worse	NA	Direct (1)
LOS D	LOS D and v/c > 0.02	LOS D or worse	Cumulative
LOS D	LOS E or F	NA	Direct
LOS E	LOS F	NA	Direct
LOS F	LOS F and v/c increases by >0.09	LOS F	Direct
Any LOS	LOS E or worse & v/c 0.02 to 0.09	LOS E or worse	Cumulative
Any LOS	LOS E or worse and v/c < 0.02	Any LOS	None

Notes: LOS: Level of Service. (1) Exception: post-project segment operation is LOS D and intersections along segment are LOS D or better resulting in no significant impact. NA: Not Applicable.

2.5 Study Limitations

The findings and recommendations of this report were prepared in accordance with generally accepted professional traffic, transportation engineering principles and practice, and California Environmental Quality Act (CEQA) based on substantial evidence. No other warranty, express or implied is made.



3.0 Existing Conditions

This section describes the study area street system, peak hour intersection volumes, daily roadway volumes, and existing LOS.

3.1 Existing Street System

The existing roadway system and classifications are described below. The classifications are based on the Imperial County Planning & Development Services Department *Circulation and Scenic Highways Element*, January 29, 2008 and valid as of the date of the Project's Notice of Preparation of the EIR – excerpts included in **Appendix G**.

Anza Road between Brockman Road and Ferrell Road has a classification of Local in the *Imperial County Circulation Element Plan*. This roadway is currently constructed as a 2 lane un-divided roadway.

Brockman Road between McCabe Road and SR-98 has a classification of Major Collector in the *Imperial County Circulation Element Plan*. This roadway is currently constructed as a 2 lane un-divided roadway. From SR-98 to Anza Road, the classification for Brockman Road is not listed in the *Imperial County Circulation Element Plan*; however, this segment is constructed as a 2 lane un-divided roadway.

Ferrell Road between Kubler Road and SR-98 has a classification of Major Collector in the *Imperial County Circulation Element Plan*. This roadway is currently constructed as a 2 lane un-divided roadway. From SR-98 to Anza Road, the classification is listed as Minor Collector in the *Imperial County Circulation Element Plan* and this segment is constructed as a 2 lane un-divided roadway.

Forrester Road between I-8 and McCabe Road has a classification of Prime Arterial in the *Imperial County Circulation Element Plan*. This roadway is currently constructed as a 2 lane un-divided roadway.

Interstate 8 (I-8) between Drew Road and Imperial Avenue is constructed as a 4 lane divided highway with 2 lanes in each direction.

Kubler Road between Brockman Road and La Brucherie Road has a classification of Major Collector in the *Imperial County Circulation Element Plan*. This roadway is currently constructed as a 2 lane un-divided roadway.

La Brucherie Road between McCabe Road and Kubler Road has a classification of Major Collector in the *Imperial County Circulation Element Plan*. This roadway is currently constructed as a 2 lane un-divided roadway.

Lyons Road between Brockman Road and Nichols Road has a classification of Minor Collector in the *Imperial County Circulation Element Plan*. This roadway is currently constructed as a 2 lane

un-divided roadway.

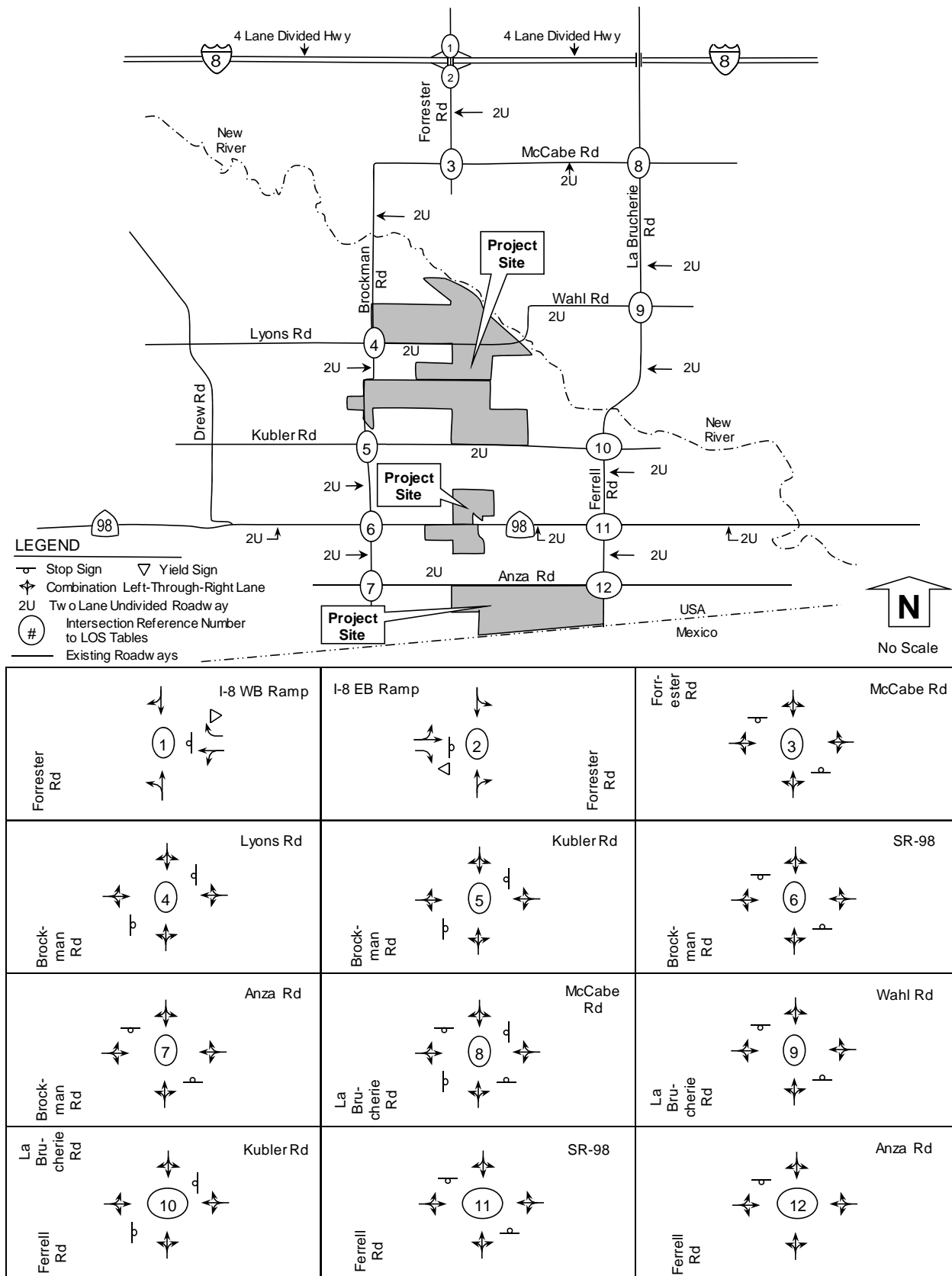
McCabe Road between Brockman Road and La Brucherie Road has a classification of Major Collector in the *Imperial County Circulation Element Plan*. This roadway is currently constructed as a 2 lane un-divided roadway.

State Route (SR-98) between Drew Road and Clark Road has a classification of State Highway in the *Imperial County Circulation Element Plan*. This roadway is currently constructed as a 2 lane un-divided roadway.

The existing roadway conditions are shown in **Figure 3**.



Figure 3: Existing Roadway Conditions



3.2 Existing Traffic Volumes and LOS Analyses

Existing AM and PM peak hour intersection volumes (with count dates) were collected for this study:

- 1) Forrester Road/I-8 WB Ramp (Wednesday 4/24/2013)
- 2) Forrester Road/I-8 EB Ramp (Wednesday 4/24/2013)
- 3) Forrester Road/McCabe Road (Wednesday 4/24/2013)
- 4) Brockman Road/Lyons Road (Wednesday 4/24/2013)
- 5) Brockman Road/Kubler Road (Wednesday 4/24/2013)
- 6) Brockman Road/SR-98 (Wednesday 4/24/2013)
- 7) Brockman Road/Anza Road (Wednesday 4/24/2013)
- 8) La Brucherie Road/McCabe Road (Wednesday 4/24/2013)
- 9) La Brucherie Road/Wahl Road (Wednesday 4/24/2013)
- 10) La Brucherie Road/Kubler Road (Wednesday 4/24/2013)
- 11) La Brucherie Road/SR-98 (Wednesday 4/24/2013)
- 12) La Brucherie Road/Anza Road (Wednesday 4/24/2013)

The following roadway segments:

- 1) Anza Road from Brockman Road to Ferrell Road (Wednesday 4/24/2013)
- 2) Brockman Road from McCabe Road to Lyons Road (Wednesday 4/24/2013)
- 3) Brockman Road from Lyons Road to Kubler Road (Wednesday 4/24/2013)
- 4) Brockman Road from Kubler Road to SR-98 (Wednesday 4/24/2013)
- 5) Brockman Road from SR-98 to Anza Road (Wednesday 4/24/2013)
- 6) Forrester Road from I-8 to McCabe Road (Wednesday 4/24/2013)
- 7) Kubler Road from Brockman Road to Ferrell Road (Wednesday 4/24/2013)
- 8) La Brucherie Road from McCabe Road to Lyons Road (Wednesday 4/24/2013)
- 9) La Brucherie Road from Lyons Road to Kubler Road (Wednesday 4/24/2013)
- 10) La Brucherie Road from Kubler Road to SR-98 (Wednesday 4/24/2013)
- 11) La Brucherie Road from SR-98 to Anza Road (Wednesday 4/24/2013)
- 12) Lyons Road from Brockman Road to La Brucherie Road (Wednesday 4/24/2013)

And, the following Interstate and State Route segments (please note that the latest available Caltrans data from 2011 was factored up to a year 2013 volume using a 2.8% annual growth factor that was obtained from the Southern California Association of Governments Community Development Division's 2004 *Regional Transportation Plan Socio-Economic Forecast Report* [details included in Section 6 of this TIA]):

- 1) I-8 between Drew Road and Forrester Road (Caltrans latest available 2011 data with a 2.8% annual growth factor applied to reach an existing year 2013 volume)
- 2) I-8 between Forrester Road and Imperial Avenue (Caltrans latest available 2011 data with a 2.8% annual growth factor applied to reach an existing year 2013 volume)
- 3) SR-98 between Drew Road and Brockman Road (Caltrans latest available 2011 data with a 2.8% annual growth factor applied to reach an existing year 2013 volume)
- 4) SR-98 between Brockman Road and Ferrell Road (Caltrans latest available 2011 data with a

- 2.8% annual growth factor applied to reach an existing year 2013 volume)
- 5) SR-98 between Ferrell Road and Clark Road (Caltrans latest available 2011 data with a 2.8% annual growth factor applied to reach an existing year 2013 volume)

Existing AM, PM, and daily volumes are shown on **Figure 4**. Count data are included in **Appendix H**. The intersection, segment, and freeway LOS are shown in **Tables 5, 6, and 7** respectively. Intersections LOS calculations are included in **Appendix I**.

TABLE 5: EXISTING INTERSECTION LOS

Intersection & (Control) ¹	Movement	Peak Hour	Existing	
			Delay ²	LOS ³
1) Forrester Rd at I-8 WB Ramp (U)	Minor Leg	AM PM	9.6 10.0	A B
2) Forrester Rd at I-8 EB Ramp (U)	Minor Leg	AM PM	10.5 13.8	B B
3) Forrester Rd at McCabe Rd (U)	Minor Leg	AM PM	9.4 10.5	A B
4) Brockman Rd at Lyons Rd (U)	Minor Leg	AM PM	10.2 10.0	B B
5) Brockman Rd at Kubler Rd (U)	Minor Leg	AM PM	10.0 9.1	B A
6) Brockman Rd at SR-98 (U)	Minor Leg	AM PM	16.5 12.4	C B
7) Brockman Rd at Anza Rd (U)	Minor Leg	AM PM	8.5 8.7	A A
8) La Brucherie Rd at McCabe Rd (U)	All All	AM PM	8.1 8.9	A A
9) La Brucherie Rd at Wahl Rd (U)	Minor Leg	AM PM	10.2 9.8	B A
10) Ferrell Rd at Kubler Rd (U)	Minor Leg	AM PM	9.6 9.6	A A
11) Ferrell Rd at SR-98 (U)	Minor Leg	AM PM	13.6 12.6	B B
12) Ferrell Rd at Anza Rd (U)	Minor Leg	AM PM	9.2 9.4	A A

Notes: 1) Intersection Control - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds.

3) LOS: Level of Service. Minor Leg: approach LOS of minor/lesser roadway. All: combined LOS for all approaches.

Figure 4: Existing Volumes

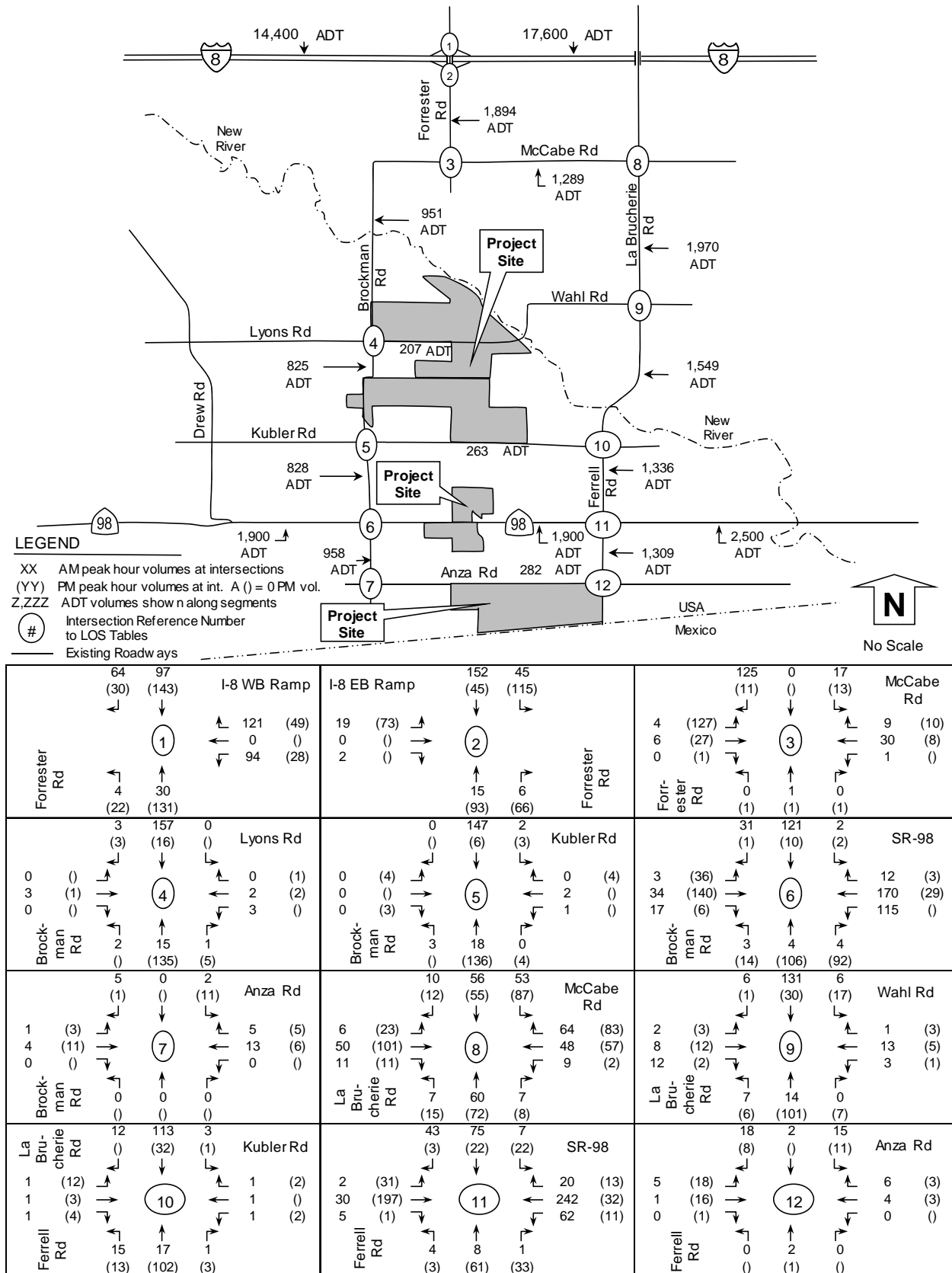


TABLE 6: EXISTING SEGMENT LOS

Segment	Classification (as built)	Existing				
		Daily Volume	# of lanes	LOS C Capacity	V/C	LOS
<u>Anza Road</u>						
Brockman Rd to Ferrell Rd	Local (2U)	282	2	7,100	0.04	A
<u>Brockman Road</u>						
McCabe Rd to Lyons Rd	Major (2U)	951	2	7,100	0.13	A
Lyons Rd to Kubler Rd	Major (2U)	825	2	7,100	0.12	A
Kubler to SR-98	Major (2U)	828	2	7,100	0.12	A
SR-98 to Anza Rd	Not Classified (2U)	958	2	7,100	0.13	A
<u>Forrester Road</u>						
I-8 to McCabe Rd	Prime (2U)	1,894	2	7,100	0.27	A
<u>Kubler Road</u>						
Brockman Rd to Ferrell Rd	Major (2U)	263	2	7,100	0.04	A
<u>La Brucherie Road/Ferrell Road</u>						
McCabe Rd to Wahl Rd	Major (2U)	1,970	2	7,100	0.28	B
Wahl Rd to Kubler Rd	Major (2U)	1,549	2	7,100	0.22	A
Kubler Rd to SR-98	Major (2U)	1,336	2	7,100	0.19	A
SR-98 to Anza Rd	Minor (2U)	1,309	2	7,100	0.18	A
<u>Lyons Road</u>						
Brockman Rd to La Brucherie Rd	Minor (2U)	207	2	7,100	0.03	A
<u>McCabe Road</u>						
Forrester Rd to La Brucherie Rd	Major (2U)	1,289	2	7,100	0.18	A
<u>SR-98</u>						
Drew Rd to Brockman Rd	State Highway (2U)	1,900	2	7,100	0.27	B
Brockman Rd Ferrell	State Highway (2U)	1,900	2	7,100	0.27	B
Ferrell Rd to Dogwood Rd	State Highway (2U)	2,500	2	7,100	0.35	B

Notes: Classification based on 1/29/08 Circulation and Scenic Highways Element. 2U = 2 lane undivided roadway. Daily volume is a 24 hour volume. LOS: Level of Service. LOS based on actual number of lanes currently constructed. V/C: Volume to Capacity ratio.

TABLE 7: EXISTING FREEWAY LOS

Freeway Segment	I-8 Drew Rd to Forrester Rd				I-8 Forrester Rd to Imperial Ave			
	A M		P M		A M		P M	
Forecasted Year 2013	14,400				17,600			
ADT								
Peak Hour								
Direction	EB	WB	EB	WB	EB	WB	EB	WB
Number of Lanes	2	2	2	2	2	2	2	2
Capacity (1)	4,700	4,700	4,700	4,700	4,700	4,700	4,700	4,700
K Factor (2)	0.1076	0.0963	0.0917	0.1517	0.1076	0.0963	0.0917	0.1517
D Factor (3)	0.2616	0.7384	0.4419	0.5581	0.2616	0.7384	0.4419	0.5581
Truck Factor (4)	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376
Peak Hour Volume	484	1,222	697	1,456	591	1,494	851	1,779
Volume to Capacity	0.103	0.260	0.148	0.310	0.126	0.318	0.181	0.379
LOS	A	A	A	B	A	B	A	B

Notes: (1) Capacity of 2,350 pcphpl from CALTRANS' Guide for the Preparation of Traffic Impact Studies, December 2002. (2) Latest K factor from Caltrans (based on 2007 report), which is the percentage of AADT in both directions. (3) Latest D factor from Caltrans (based on 2007 report), which when multiplied by K and ADT will provide peak hour volume. (4) Latest truck factor from Caltrans (based on 2007 report).

Under existing conditions, the study intersections, roadways, and freeway segments were calculated to operate at LOS C or better.

4.0 Project Description

The project is a solar photovoltaic energy-generating facility capable of producing approximately 250 megawatts of electricity on approximately 2,793 acres. The project is located approximately 8 miles west of the City of Calexico in the Mt. Signal area of Imperial Valley. The project is located on privately owned, agricultural land.

4.1 Project Trip Generation and Phases/Phasing

The project trip generation consists of a construction phase and operations phase. The construction phase will have the highest intensity followed by an operations phase with significantly fewer trips. This section describes the construction and operations trip generation. Project description details are included in **Appendix J**.

The project may be phased over time; therefore, four possible phases were analyzed. This included the entire project being constructed early in 2013 (existing conditions scenario), the entire project being constructed on a typical schedule that accounts for time needed to obtain permits and financing for the project in 2016 (near-term scenario), the entire project being construct in 2019 (2024 minus 5 years for a mid-point scenario of the CUP), and the entire project being delayed due to market forces until 2024 (long-term scenario).

4.1.1 Project Construction Trip Generation

Construction of the project includes site preparation, foundation construction, delivery of equipment and supplies, erection of major equipment and structures, installation of control systems, and start-up/testing. These construction activities are expected to require approximately 18 months. According to the Applicant, the construction workforce is expected to start in 2015 and reach the highest concentration in spring of 2016 (for the near-term scenario) with an average of 250 workers and a possible peak of up to 350 daily workers. Based on the applicant's experience in the current construction of IV Solar South, about 75% of the workers follow a 4 day at 10 hours per day (4-10) schedule, about 25% follow a 5 day at 8 hours per day (5-8) schedule, and roughly 25% of the workers carpool. The workers also have different start and end times between the 4-10 and 5-8 schedule. The 4-10 workers typically arrive at 6am and depart at 5pm while the 8-5 workers typically arrive at 7am and depart at 4pm. This analysis is based on the higher concentration (75%) of 4-10 workers that arrive a 6am and depart at 5pm. The worker and construction truck traffic is calculated at 664 ADT with 209 AM peak hour trips (203 inbound and 6 outbound) and 209 PM peak hour trips (6 inbound and 203 outbound) as shown in **Table 8**.

TABLE 8: PROJECT CONSTRUCTION TRIP GENERATION

Proposed Construction Related Traffic	ADT	6:00 AM		7:00 AM		4:00 PM		5:00 PM	
		IN	OUT	IN	OUT	IN	OUT	IN	OUT
Construction Workers on 4-10 Shift (75% of 350) ¹	394	197	0	0	0	0	0	0	197
Construction Workers on 5-8 Shift (25% of 350) ²	132	0	0	66	0	0	66	0	0
Equipment and Construction Trucks (with PCE) ³	138	6	6	6	6	6	6	6	6
Total Traffic During Peak Construction Period	664	203	6	72	6	6	72	6	203
Daily and Higher Peak Hour Used For Analysis	664	203	6					6	203

Notes: 1) Applicant estimates the 4 days at 10 hrs/day (4-10) shift to include about 75% of the total 350 peak work force with about 25% carpooling. 2) Applicant estimates the 5 days at 8 hrs/day (5-8) shift to include about 25% of the total 350 peak work forces with about 25% carpooling. 3) About 23 daily trucks with a Passenger Car Equivalent (PCE) factor of 3 applied to each truck equals 138 ADT (23 trucks x 2 x 3 PCE = 138 ADT) that are anticipated to have a frequency of about 2 per hour for a peak period volume of 6 (with PCE).

On infrequent occasions, minor construction activities that do not involve noise generating construction equipment may occur between the hours of 7pm and 10pm; however, due to the infrequent occurrence and because this is outside the peak hours of commuter traffic, the period of 7pm to 10pm with occasional minor construction activities was not analyzed because it would not contribute to an accurate understanding of the environmental tradeoffs of approving the project.

4.1.2 Project Operations and Maintenance Trip Generation

According to the applicant, the project will primarily operate during daylight hours and will require approximately 15 fulltime personnel for operations and maintenance. Based on this information, the operations and maintenance trip generation is estimated at 30 ADT with approximately 10 AM and 10 PM peak hour trips. Therefore, the higher and more conservative construction trip generation is used to determine potential project impacts.

4.2 Construction Trip Distribution and Assignment

The Applicant estimates that approximately 80% of the labor pool for the construction workforce is anticipated to come from a combination of existing residents and workers that will temporarily reside within Imperial County. The remaining approximately 20% of construction workers will come from outside Imperial County. The existing residents and workers that will temporarily reside within Imperial County are anticipated to travel from Calipatria, Westmorland, Brawley, Imperial, El Centro, Holtville, and Calexico. The distribution of the construction workforce by cities/communities was based on the concentration of populations per the Census 2010 from the U.S. Census Bureau (<http://2010.census.gov/2010census>). The percentage of local construction workforce by city/community and county is shown in **Table 9**.

TABLE 9: CONSTRUCTION WORKFORCE SOURCES BASED ON CENSUS 2010 POPULATIONS (80% LOCAL)

80% LOCAL WORKFORCE	2010 Census Population	Percentage of Total	Percentage of Construction Employees (80% from within Imperial County)
Calipatria	7,705	5%	4%
Westmorland	2,225	2%	1%
Brawley	24,953	18%	15%
Imperial	14,758	11%	9%
El Centro	42,598	31%	25%
Holtville	5,939	4%	3%
Calexico	38,572	28%	23%
Total	136,750	100%	80%

Source: Population data from U.S. Census Bureau (<http://2010.census.gov/2010census>).

The percentage of non-local construction workforce (remainder 20%) is estimated to be from San Diego County (15%) and Riverside County (5%). Based on the aforementioned Census information, the regional construction distribution is shown in **Figure 5**. The local distribution accounted for the three project areas (upper, middle, and lower) and travel between each area. The upper project area represents about 65% of the combined project area, thus about 65% of the project

distribution was assigned to the upper area. The middle has about 15% and the lower about 20%, thus the distribution reflected their respective percentage of the total project area. About 5% of the peak hour may travel between the different areas and is incorporated into the local distribution. The local area distribution is shown in **Figure 6**, which was based on the aforementioned breakdown of upper, middle, and lower project areas and travel between work areas. The peak (year 2016) construction trip assignment based on the aforementioned distribution is shown in **Figure 7**.



Figure 5: Regional Construction Distribution

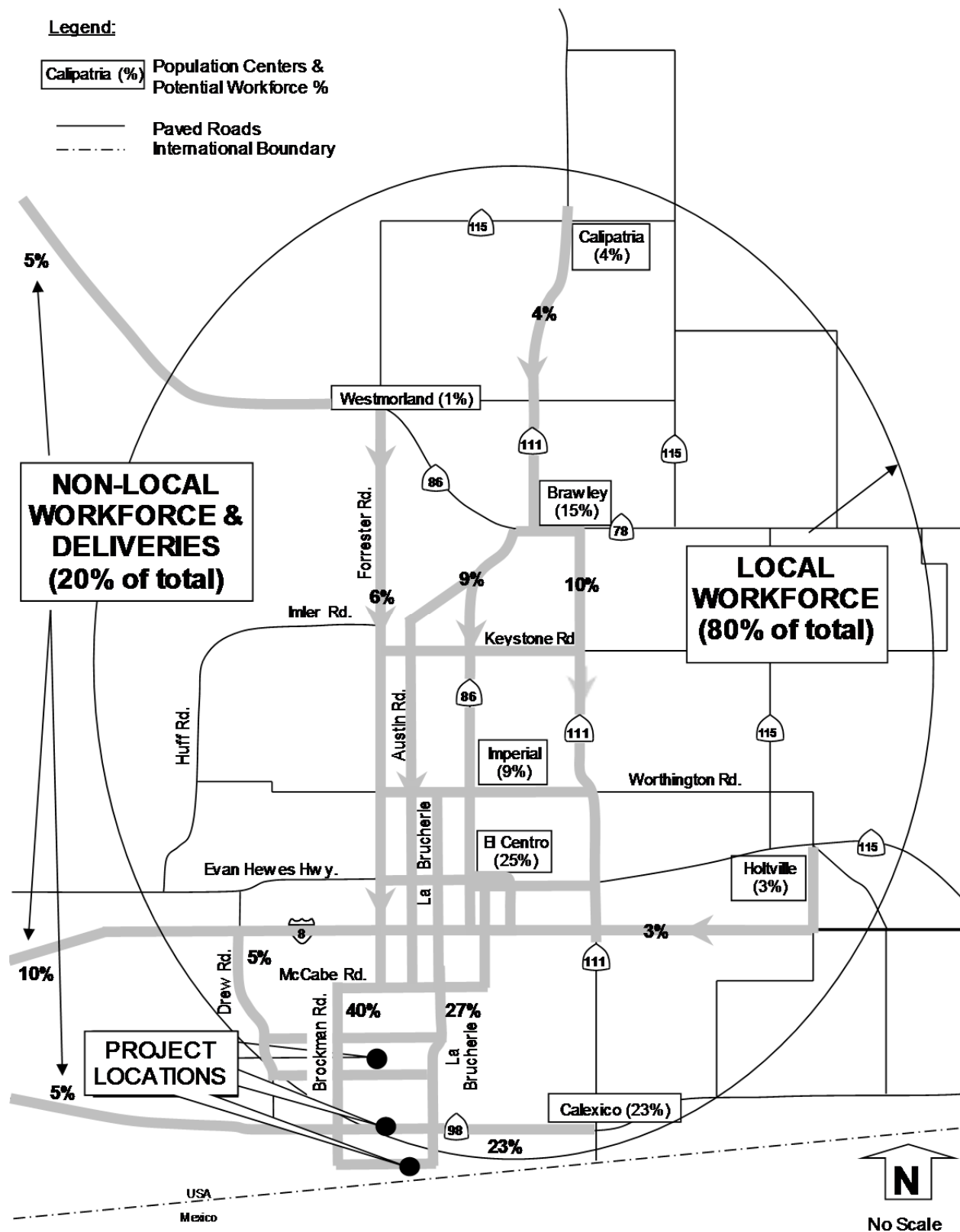
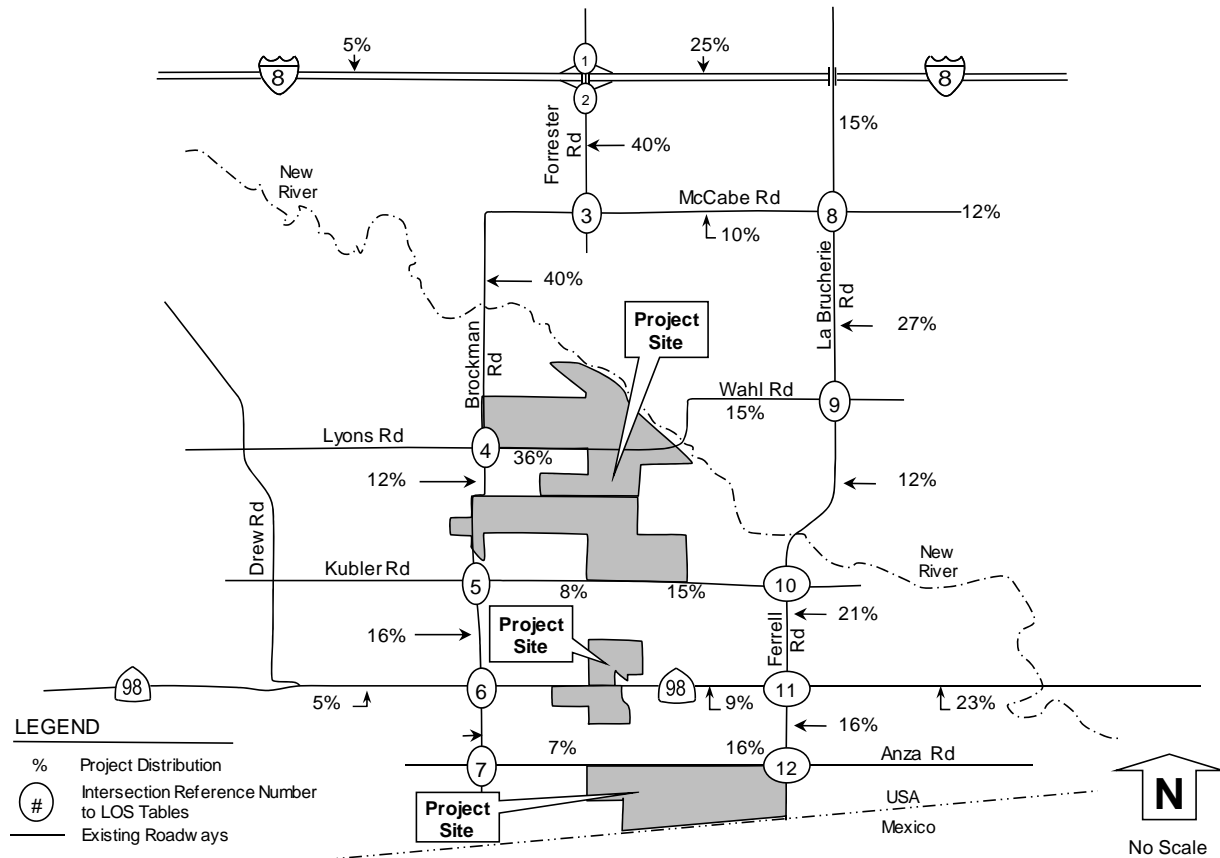
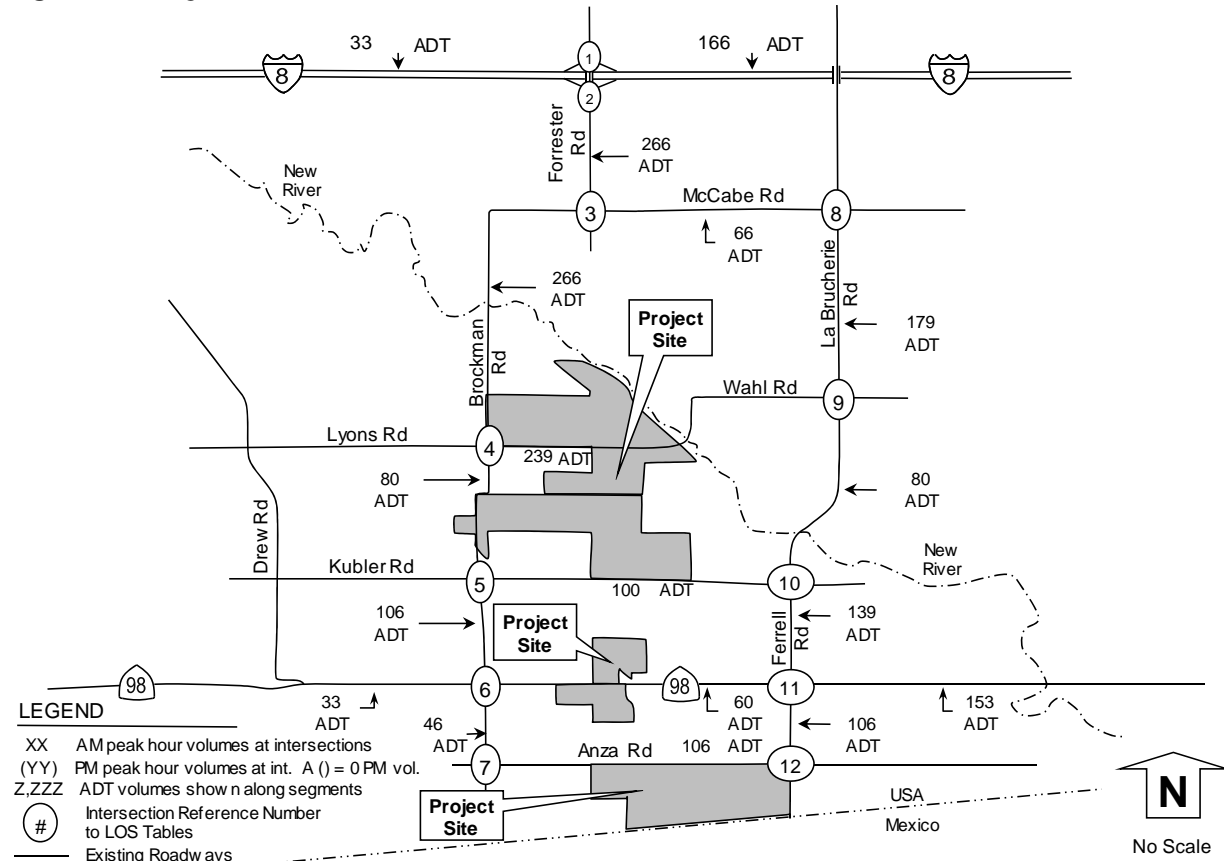


Figure 6: Local Project Construction Distribution



<p>Forrester Rd</p> <p>10% I-8 WB Ramp</p> <p>5% 1 25%</p>	<p>I-8 EB Ramp</p> <p>35% 2 15% 25%</p> <p>5% Forrester Rd</p>	<p>McCabe Rd</p> <p>35% 3 5% 5%</p> <p>Forrester Rd</p>
<p>Lyons Rd</p> <p>10% 30% 30% 4% 4% 2%</p> <p>4% 4 10% 2%</p> <p>Brockman Rd</p>	<p>Kubler Rd</p> <p>10% 2% 2% 1% 5%</p> <p>1% 5 10% 5%</p> <p>Brockman Rd</p>	<p>SR-98</p> <p>3% 6% 7% 7% 1%</p> <p>3% 1% 1% 1% 6%</p> <p>Brockman Rd</p>
<p>Anza Rd</p> <p>7% 7%</p> <p>7 7%</p> <p>Brockman Rd</p>	<p>McCabe Rd</p> <p>3% 12% 2% 10%</p> <p>3% 2% 5% 5% 12% 10%</p> <p>La Brucherie Rd</p>	<p>Wahl Rd</p> <p>15% 12% 12%</p> <p>15% 9 12%</p> <p>La Brucherie Rd</p>
<p>Kubler Rd</p> <p>3% 9% 3%</p> <p>3% 10 12% 9%</p> <p>La Brucherie Rd Ferrell Rd</p>	<p>SR-98</p> <p>11% 9% 9% 5%</p> <p>9% 11 11% 5%</p> <p>Ferrell Rd</p>	<p>Anza Rd</p> <p>16% 16%</p> <p>16% 12 16%</p> <p>Ferrell Rd</p>

Figure 7: Project Construction Traffic



<div>Forrester Rd</div> <div> <div>0</div> <div>1</div> <div>20</div> <div>(1)</div> <div>1</div> <div>(20)</div> </div>		<div>I-8 WB Ramp</div> <div> <div>0</div> <div>0</div> <div>51</div> <div>(2)</div> </div>		<div>I-8 EB Ramp</div> <div> <div>0</div> <div>0</div> <div>10</div> <div>(3)</div> <div>1</div> <div>(30)</div> </div>		<div>Forrester Rd</div> <div> <div>71</div> <div>0</div> <div>2</div> <div>(51)</div> <div>0</div> <div>(2)</div> </div>		<div>McCabe Rd</div> <div> <div>71</div> <div>0</div> <div>10</div> <div>(10)</div> <div>0</div> <div>(10)</div> </div>	
<div>Brockman Rd</div> <div> <div>0</div> <div>0</div> <div>0</div> <div>(20)</div> <div>1</div> <div>(20)</div> </div>		<div>Lyons Rd</div> <div> <div>61</div> <div>(1)</div> <div>1</div> <div>(61)</div> <div>0</div> <div>(8)</div> </div>		<div>Kubler Rd</div> <div> <div>0</div> <div>0</div> <div>0</div> <div>(10)</div> <div>4</div> <div>(2)</div> </div>		<div>SR-98</div> <div> <div>6</div> <div>2</div> <div>2</div> <div>(14)</div> <div>0</div> <div>(2)</div> </div>		<div>Brockman Rd</div> <div> <div>0</div> <div>0</div> <div>0</div> <div>(2)</div> <div>0</div> <div>(12)</div> </div>	
<div>Brockman Rd</div> <div> <div>0</div> <div>0</div> <div>0</div> <div>(20)</div> <div>0</div> <div>(20)</div> </div>		<div>Anza Rd</div> <div> <div>14</div> <div>(14)</div> <div>0</div> <div>(0)</div> </div>		<div>McCabe Rd</div> <div> <div>0</div> <div>(6)</div> <div>4</div> <div>(1)</div> <div>0</div> <div>(1)</div> </div>		<div>Wahl Rd</div> <div> <div>30</div> <div>(2)</div> <div>0</div> <div>(1)</div> <div>0</div> <div>(24)</div> </div>		<div>La Brucherie Rd</div> <div> <div>0</div> <div>(30)</div> <div>0</div> <div>(24)</div> <div>0</div> <div>(24)</div> </div>	
<div>La Brucherie Rd</div> <div> <div>0</div> <div>(6)</div> <div>0</div> <div>(24)</div> <div>1</div> <div>(18)</div> </div>		<div>Kubler Rd</div> <div> <div>0</div> <div>0</div> <div>0</div> <div>(0)</div> <div>0</div> <div>(0)</div> </div>		<div>SR-98</div> <div> <div>0</div> <div>(18)</div> <div>0</div> <div>(10)</div> <div>18</div> <div>(1)</div> </div>		<div>Anza Rd</div> <div> <div>0</div> <div>(32)</div> <div>0</div> <div>(0)</div> <div>0</div> <div>(0)</div> </div>		<div>Ferrell Rd</div> <div> <div>0</div> <div>(1)</div> <div>0</div> <div>(18)</div> <div>0</div> <div>(0)</div> </div>	



5.0 Cumulative Projects (Past, Existing & Reasonably Foreseeable New Development)

Information on cumulative projects was obtained from the County of Imperial and confirmed with County of Imperial EIR team to be current as of April 2014. A County of Imperial map showing planned solar farm projects is included in **Appendix K**. The cumulative list below describes the cumulative projects in the immediate area around the project site (i.e. projects that are generally located south of I-8 and west of Clark Road). Most of the cumulative projects have completed technical studies including traffic generation information; however, several do not. For the projects that do not have detailed traffic generation information, an estimate was calculated based on traffic generation information for similar projects. Traffic generation calculations and copies of the cumulative project descriptions, locations, traffic generation, and assignments are also included in **Appendix L**. Information for each cumulative project is included below with text identifying if a cumulative project was observed to be under construction:

- 1) *Calexico I-A* - a photovoltaic solar facility capable of producing approximately 100 megawatts of electricity generally located 6 miles west of the City of Calexico. This project was under construction at the time the traffic counts were collected; therefore, the cumulative traffic is accounted for within the existing baseline data.
- 2) *Calexico I-B* - a photovoltaic solar facility capable of producing approximately 100 megawatts of electricity generally located 6 miles west of the City of Calexico. The construction phase is calculated to generate 283 daily trips with 110 AM peak hour trips and 112 PM peak hour trips.
- 3) *Calexico II-A* - a photovoltaic solar facility capable of producing approximately 100 megawatts of electricity generally located 6 miles west of the City of Calexico. The construction phase is calculated to generate 283 daily trips with 110 AM peak hour trips and 112 PM peak hour trips.
- 4) *Calexico II-B* - a photovoltaic solar facility capable of producing approximately 100 megawatts of electricity generally located 6 miles west of the City of Calexico. The construction phase is calculated to generate 283 daily trips with 110 AM peak hour trips and 112 PM peak hour trips.
- 5) *Campo Verde* – a photovoltaic solar facility generally located west of Drew Road and south of I-8. This project was under construction at the time the traffic counts were collected; therefore, the cumulative traffic is accounted for within the existing baseline data.
- 6) *Centinela* - a photovoltaic solar facility capable of producing approximately 275 megawatts of electricity generally located in the vicinity of SR-98 and Drew Road. This project was under construction at the time the traffic counts were collected; therefore, the cumulative traffic is accounted for within the existing baseline data.
- 7) *County Center II Expansion* – a mixed use project of a commercial center, expansion of the Imperial County Office of Education, a Joint-Use Teacher Training and Conference Center, Judicial Center, County Park, Jail expansion, County Administrative Complex, Public Works Administration, and a County Administrative Complex located on the southwest corner of McCabe Road and Clark Road. The total project is calculated to generate 24,069 ADT with

2,581 AM peak hour trips and 2,242 PM peak hour trips.

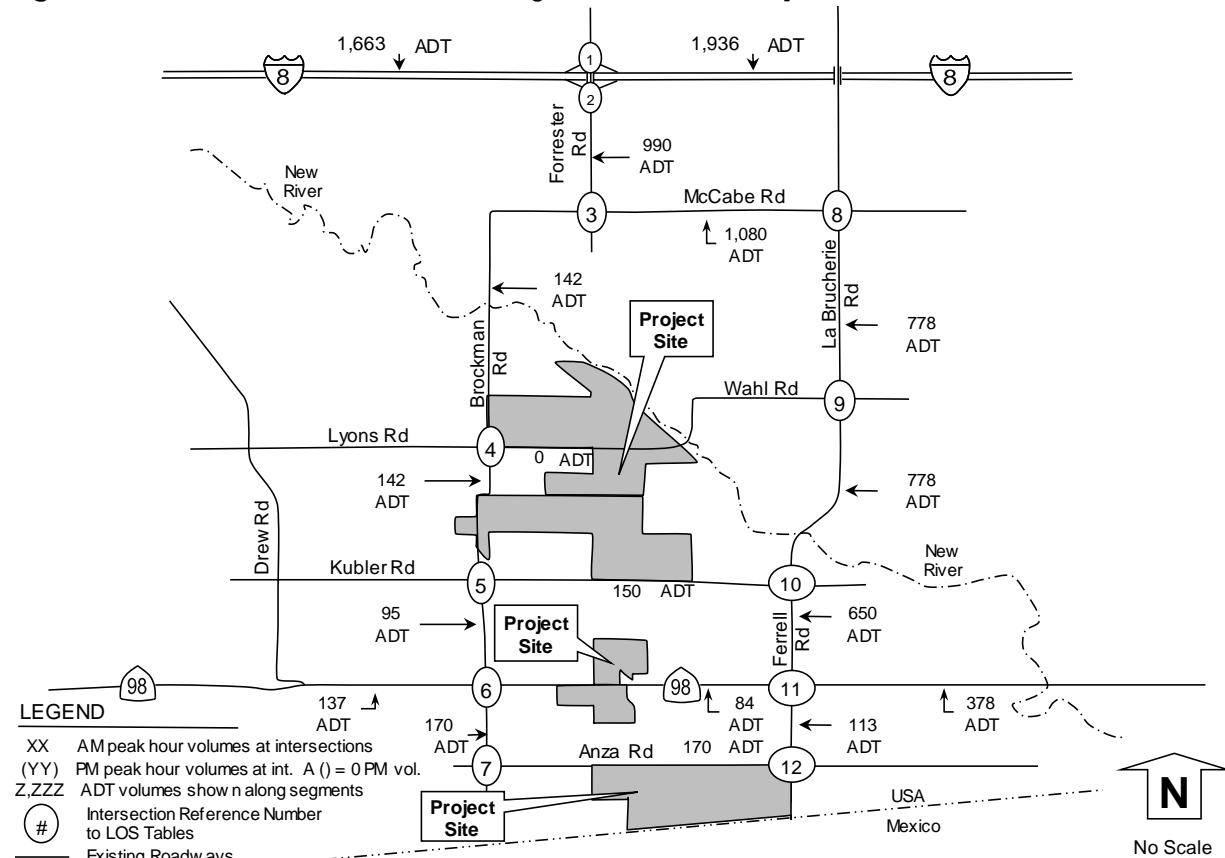
- 8) *IV Substation and SDG&E Ocotillo Solar* – a project connecting the Imperial Irrigation District’s “S” line from the Imperial Irrigation District substation to the Imperial Valley substation and a photovoltaic solar facility capable of producing approximately 14 megawatts of electricity generally located adjacent to the SDG&E Imperial Valley Substation. The combined projects are estimated at 240 ADT with 45 AM peak hour trips and 45 PM peak hour trips.
- 9) *Imperial Solar 1 LLC (Heber Solar Energy Facility)* – a solar facility generally located in the vicinity of Dogwood Road south of E Heber Road. This project is northeast of the study area and is not anticipated to add traffic to the study area roadways.
- 10) *Imperial Solar Energy Center South* – a photovoltaic solar facility capable of producing approximately 200 megawatts of electricity generally located south of SR-98 and east of Drew Road. This project was under construction at the time the traffic counts were collected; therefore, the cumulative traffic is accounted for within the existing baseline data.
- 11) *Imperial Solar Energy Center West* – a photovoltaic solar facility capable of producing approximately 250 megawatts of electricity generally located east of Dunaway Road and located both north and south of I-8. The construction phase of the project is calculated to generate 750 ADT with 306 AM peak hour trips and 315 PM peak hour trips.
- 12) *IRIS Solar Farm Cluster (Ferrell, Rockwood, Iris, and Lyons)* – photovoltaic solar facilities capable of producing approximately 200 megawatts of electricity generally located north of SR-98 between Brockman Road and Weed Road. The traffic generation for this cumulative project is calculated at 556 ADT with 221 AM and 225 PM peak hour trips.
- 13) *Linda Vista* – A mixed use project of 182 single family homes and a 6 acre commercial lot generally located on the west side of Clark Road between I-8 and McCabe Road. The traffic generation for this cumulative project is calculated at 7,175 ADT with 252 AM and 676 PM peak hour trips.
- 14) *Mount Signal Solar Farm I* – a photovoltaic solar facility capable of producing approximately 200 megawatts of electricity generally located south of SR-98 between Pulliam Road and Ferrell Road. This project was under construction at the time the traffic counts were collected; therefore, the cumulative traffic is accounted for within the existing baseline data.
- 15) *CANergy Rockwood* – a chemical manufacturing project generally located northeast of Brawley. This project is outside of the project’s traffic study area (about 20 miles away as a crow flies); however, this cumulative project is included because it may add up to 20 peak hour trips to I-8 in the vicinity of the project.
- 16) *California Ethanol & Power* – an electricity and bio-methane facility generally located approximately 4.5 miles south-southeast of the City of Brawley. This project is outside of the project’s traffic study area (about 15 miles away as a crow flies); however, this cumulative project is included because it may add up to 20 peak hour trips to I-8 in the vicinity of the project.
- 17) *Cumulative on I-8* – some of the remaining cumulative projects within Imperial County may add traffic to I-8. Many of the cumulative projects do not have traffic assignments for I-8 (because they are too far away) and some cumulative projects are too small to require a traffic study; therefore, they do not have reported cumulative traffic volumes for I-8. To account for

the possibility of cumulative traffic being added to I-8, five percent of the existing I-8 peak hour volume was used as cumulative background peak hour traffic on I-8.

It was assumed that the cumulative projects listed above will be generating construction traffic during the construction phase of the Wistaria project. Presently, however, some of the cumulative projects are still in the environmental review process and, thus, may add construction traffic after the completion of the Wistaria project. Alternatively, some of the cumulative projects may add traffic before the construction phase of Wistaria. Furthermore, most if not all of the cumulative solar projects will have a peak construction period that may or may not coincide with the Wistaria peak construction period. Also, there is a chance that some of the cumulative projects will not proceed; however, this study is made with the conservative assumption that all of the peak cumulative construction volumes were used in the cumulative analysis. Realistically, however, there is high likelihood that all construction peaks will not coincide. The cumulative project (new development) volumes are shown in **Figure 8**.



Figure 8: Near-Term Cumulative Project (New Development) Volumes



<p>Forrester Rd</p> <p>45 (2) 74 (23) 137 (5)</p> <p>1</p> <p>13 (126)</p>	<p>I-8 WB Ramp</p> <p>0 (0) 0 (0) 137 (5)</p>	<p>I-8 EB Ramp</p> <p>0 (45) 0 (0) 2 (31)</p> <p>211 (28) 0 (0) 32 (104) 2 (137)</p> <p>2</p>	<p>Forrester Rd</p> <p>55 (1) 0 (0) 169 (27)</p> <p>3</p> <p>0 (55) 0 (0) 0 (0)</p> <p>McCabe Rd</p> <p>16 (192) 0 (0) 0 (0)</p>
<p>Brockman Rd</p> <p>0 (0) 0 (0) 0 (0)</p> <p>4</p> <p>0 (55) 0 (0)</p>	<p>Lyons Rd</p> <p>0 (0) 0 (0) 0 (0)</p>	<p>Brockman Rd</p> <p>0 (0) 0 (0) 0 (0)</p> <p>5</p> <p>0 (23) 0 (0)</p>	<p>Kubler Rd</p> <p>0 (32) 0 (1) 0 (5)</p> <p>6</p> <p>5 (4) 6 (1) 33 (33)</p> <p>SR-98</p> <p>0 (0) 4 (6) 0 (0)</p>
<p>Brockman Rd</p> <p>0 (0) 0 (0) 0 (0)</p> <p>7</p> <p>0 (0) 0 (0)</p>	<p>Anza Rd</p> <p>66 (2) 0 (66) 0 (0)</p>	<p>Brockman Rd</p> <p>0 (0) 0 (0) 0 (0)</p> <p>8</p> <p>0 (31) 42 (164) 148 (164)</p>	<p>McCabe Rd</p> <p>24 (34) 24 (39) 65 (2)</p> <p>9</p> <p>0 (0) 0 (0) 0 (0)</p> <p>Wahl Rd</p> <p>0 (0) 0 (0) 0 (0)</p>
<p>La Brucherie Rd</p> <p>40 (2) 235 (8) 20 (1)</p> <p>10</p> <p>0 (40) 0 (10) 10 (166)</p>	<p>Kubler Rd</p> <p>0 (20) 0 (0) 0 (10)</p>	<p>La Brucherie Rd</p> <p>0 (0) 0 (9) 0 (0)</p> <p>11</p> <p>0 (10) 10 (33)</p>	<p>SR-98</p> <p>30 (0) 9 (0) 33 (1)</p> <p>12</p> <p>43 (43) 0 (0) 0 (0)</p> <p>Anza Rd</p> <p>0 (0) 0 (0) 0 (0)</p>

6.0 Existing Year 2013 + Project Construction Conditions

This section documents the addition of construction traffic onto year 2013 conditions to document the scenario if the project was constructed immediately. Year 2013 plus project construction traffic volumes are shown in **Figure 9**. Intersection, segment, and freeway LOS are shown in **Tables 10, 11 and 12**. Intersection LOS calculations are included in **Appendix M**.

TABLE 10: EXISTING YEAR 2013 WITHOUT AND WITH PROJECT CONSTRUCTION INTERSECTION LOS

Intersection & (Control) ¹	Movement	Year (2013)		Year (2013) + Project			
		Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	Impact ⁵
1) Forrester Rd at I-8 WB Ramp (U)	Minor	9.6	A	10.1	B	0.5	None
	Leg	10.0	B	10.4	B	0.4	None
2) Forrester Rd at I-8 EB Ramp (U)	Minor	10.5	B	10.7	B	0.2	None
	Leg	13.8	B	14.9	B	1.1	None
3) Forrester Rd at McCabe Rd (U)	Minor	9.4	A	9.7	A	0.3	None
	Leg	10.5	B	12.0	B	1.5	None
4) Brockman Rd at Lyons Rd (U)	Minor	10.2	B	11.7	B	1.5	None
	Leg	10.0	B	10.2	B	0.2	None
5) Brockman Rd at Kubler Rd (U)	Minor	10.0	B	10.4	B	0.4	None
	Leg	9.1	A	9.7	A	0.6	None
6) Brockman Rd at SR-98 (U)	Minor	16.5	C	18.6	C	2.1	None
	Leg	12.4	B	12.9	B	0.5	None
7) Brockman Rd at Anza Rd (U)	Minor	8.5	A	8.7	A	0.2	None
	Leg	8.7	A	8.7	A	0.0	None
8) La Brucherie Rd at McCabe Rd (U)	All	8.1	A	8.5	A	0.4	None
	All	8.9	A	9.2	A	0.3	None
9) La Brucherie Rd at Wahl Rd (U)	Minor	10.2	B	10.5	B	0.3	None
	Leg	9.8	A	10.6	B	0.8	None
10) Ferrell Rd at Kubler Rd (U)	Minor	9.6	A	9.9	A	0.3	None
	Leg	9.6	A	9.6	A	0.0	None
11) Ferrell Rd at SR-98 (U)	Minor	13.6	B	15.4	C	1.8	None
	Leg	12.6	B	14.2	B	1.6	None
12) Ferrell Rd at Anza Rd (U)	Minor	9.2	A	9.2	A	0.0	None
	Leg	9.4	A	9.9	A	0.5	None

Notes: 1) Intersection Control - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds.

3) LOS: Level of Service. Minor Leg: approach LOS of minor/lesser roadway. All: combined LOS for all approaches.

4) Delta is the increase in delay from project. 5) Type of impact: none, direct, or cumulative.

Figure 9: Existing Year 2013 + Project Construction Volumes

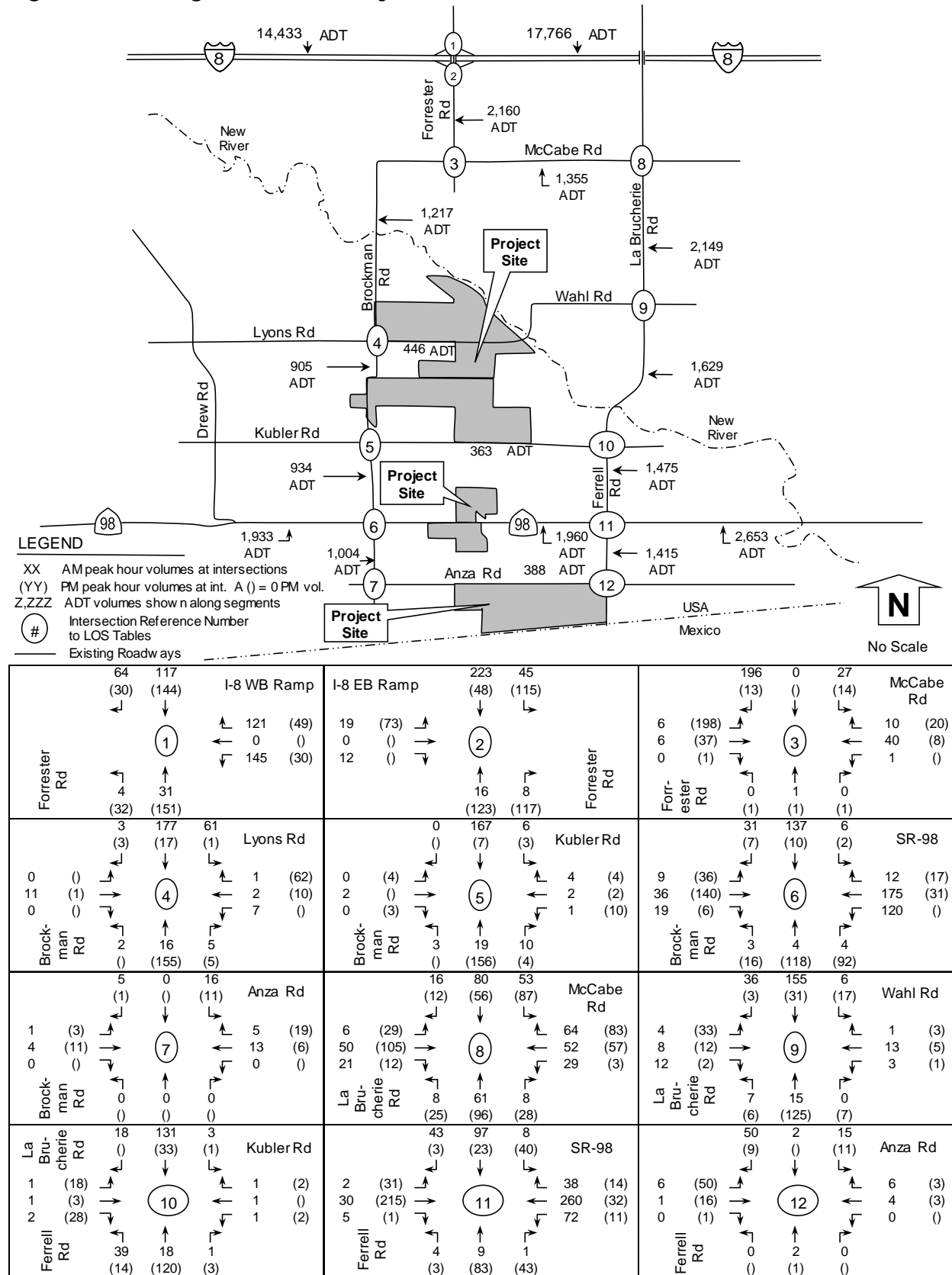


TABLE 11: EXISTING YEAR 2013 WITHOUT AND WITH PROJECT CONSTRUCTION SEGMENT LOS

Segment	Classification (as built)	Year 2013				Project Daily Volume	Year 2013 + Project						
		Daily Volume	LOS C Capacity	V/C	LOS		Daily Volume	LOS C Capacity	V/C	LOS	Change in V/C	Impact?	
Anza Road													
Brockman Rd to Ferrell Rd	Local (2U)	282	7,100	0.04	A	106	388	7,100	0.05	A	0.01	None	
Brockman Road													
McCabe Rd to Lyons Rd	Major (2U)	951	7,100	0.13	A	266	1,217	7,100	0.17	A	0.04	None	
Lyons Rd to Kubler Rd	Major (2U)	825	7,100	0.12	A	80	905	7,100	0.13	A	0.01	None	
Kubler to SR-98	Major (2U)	828	7,100	0.12	A	106	934	7,100	0.13	A	0.01	None	
SR-98 to Anza Rd	Not Classified (2U)	958	7,100	0.13	A	46	1,004	7,100	0.14	A	0.01	None	
Forrester Road													
I-8 to McCabe Rd	Prime (2U)	1,894	7,100	0.27	A	266	2,160	7,100	0.30	B	0.04	None	
Kubler Road													
Brockman Rd to Ferrell Rd	Major (2U)	263	7,100	0.04	A	100	363	7,100	0.05	A	0.01	None	
La Brucherie Road/Ferrell Road													
McCabe Rd to Wahl Rd	Major (2U)	1,970	7,100	0.28	B	179	2,149	7,100	0.30	B	0.03	None	
Wahl Rd to Kubler Rd	Major (2U)	1,549	7,100	0.22	A	80	1,629	7,100	0.23	A	0.01	None	
Kubler Rd to SR-98	Major (2U)	1,336	7,100	0.19	A	139	1,475	7,100	0.21	A	0.02	None	
SR-98 to Anza Rd	Minor (2U)	1,309	7,100	0.18	A	106	1,415	7,100	0.20	A	0.01	None	
Lyons Road													
Brockman Rd to La Brucherie Rd	Minor (2U)	207	7,100	0.03	A	239	446	7,100	0.06	A	0.03	None	
McCabe Road													
Forrester Rd to La Brucherie Rd	Major (2U)	1,289	7,100	0.18	A	66	1,355	7,100	0.19	A	0.01	None	
SR-98													
Drew Rd to Brockman Rd	State Highway (2U)	1,900	7,100	0.27	B	33	1,933	7,100	0.27	B	0.00	None	
Brockman Rd Ferrell	State Highway (2U)	1,900	7,100	0.27	B	60	1,960	7,100	0.28	B	0.01	None	
Ferrell Rd to Dogwood Rd	State Highway (2U)	2,500	7,100	0.35	B	153	2,653	7,100	0.37	B	0.02	None	

Notes: Classification based on 1/29/08 Circulation and Scenic Highways Element. 2U = 2 lane undivided roadway. Daily volume is a 24 hour volume. LOS: Level of Service. LOS based on actual number of lanes currently constructed. V/C: Volume to Capacity ratio. Impact? = type of impact (none, cumulative, or direct).

TABLE 12: EXISTING YEAR 2013 WITHOUT AND WITH PROJECT CONSTRUCTION FREEWAY LOS

Freeway Segment	I-8 Drew Rd to Forrester Rd				I-8 Forrester Rd to Imperial Ave			
	Forecasted Year 2013				Forecasted Year 2013			
ADT	14,400				17,600			
Peak Hour								
Direction	EB	WB	EB	WB	EB	WB	EB	WB
Number of Lanes	2	2	2	2	2	2	2	2
Capacity (1)	4,700	4,700	4,700	4,700	4,700	4,700	4,700	4,700
K Factor (2)	0.1076	0.0963	0.0917	0.1517	0.1076	0.0963	0.0917	0.1517
D Factor (3)	0.2616	0.7384	0.4419	0.5581	0.2616	0.7384	0.4419	0.5581
Truck Factor (4)	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376
Peak Hour Volume	484	1,222	697	1,456	593	1,494	851	1,779
Volume to Capacity	0.103	0.260	0.148	0.310	0.126	0.318	0.181	0.379
LOS	A	A	A	B	A	B	A	B
Project Pk Hr Vol	10	0	0	10	2	51	51	2
2013 + Project								
Peak Hour Volume	494	1,222	697	1,466	593	1,545	902	1,781
Volume to Capacity	0.105	0.260	0.148	0.312	0.126	0.329	0.192	0.379
LOS	A	A	A	B	A	B	A	B
Increase in V/C	0.002	0.000	0.000	0.002	0.000	0.011	0.011	0.000
Impact?	None	None	None	None	None	None	None	None

Notes: (1) Capacity of 2,350 pcphpl from CALTRANS' Guide for the Preparation of Traffic Impact Studies, December 2002. (2) Latest K factor from Caltrans (based on 2007 report), which is the percentage of AADT in both directions. (3) Latest D factor from Caltrans (based on 2007 report), which when multiplied by K and ADT will provide peak hour volume. (4) Latest truck factor from Caltrans (based on 2007 report). Impact? = Direct, Cumulative, or None.

Under existing year 2013 + project construction conditions, the study intersections, roadways, and freeway segments were calculated to operate at LOS C or better with no significant direct project impacts.

7.0 Existing Year 2013 + Project Construction + Cumulative Conditions

This section documents the addition of project construction traffic onto year 2013 with cumulative conditions. Year 2013 plus project construction + cumulative traffic volumes are shown in **Figure 10**. Intersection, segment, and freeway LOS are shown in **Tables 13, 14 and 15**. Intersection LOS calculations are included in **Appendix N**.

TABLE 13: EXISTING YEAR 2013 WITH PROJECT CONSTRUCTION WITH CUMULATIVE INTERSECTION LOS

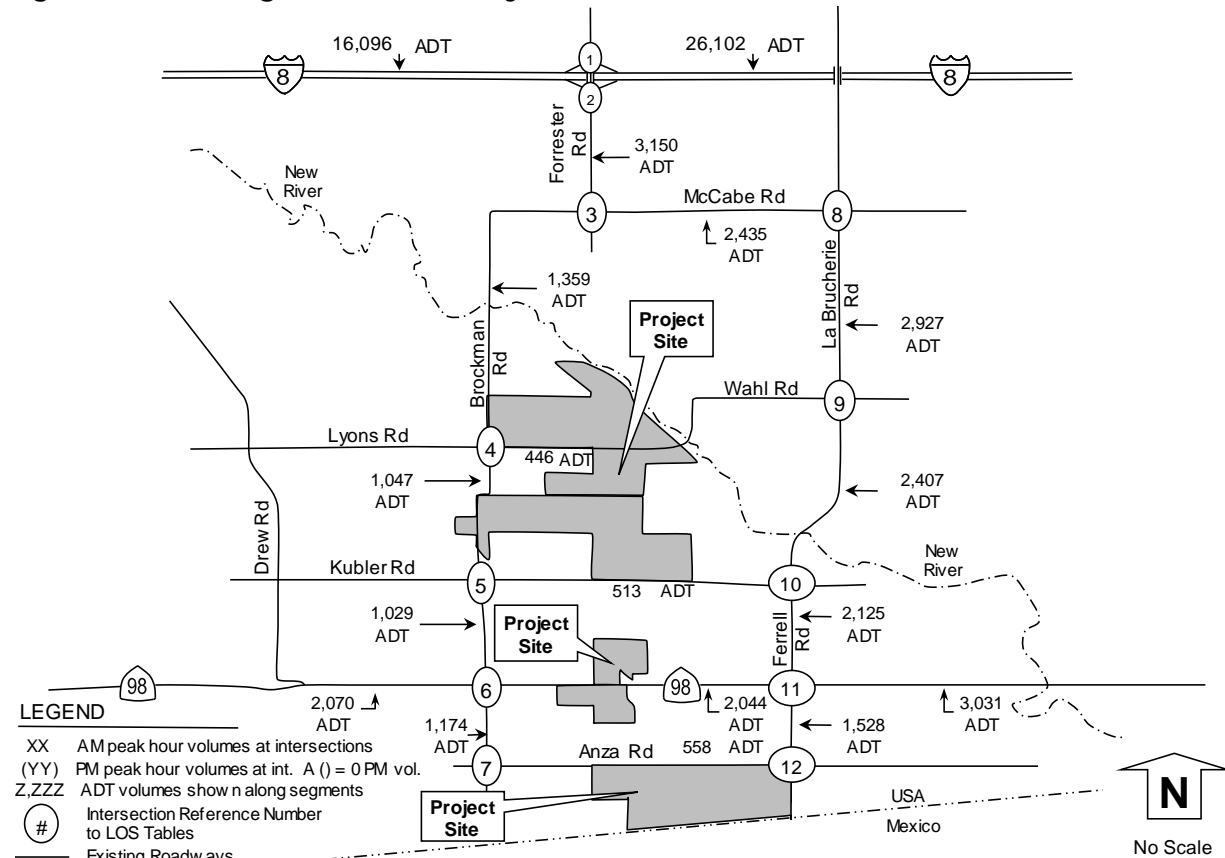
Intersection & (Control) ¹	Movement	Peak Hour	Year (2013) + Cumulative		Year (2013) + Cumulative + Project			
			Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	Impact ⁵
1) Forrester Rd at I-8 WB Ramp (U)	Minor Leg	AM PM	13.6 12.0	B B	16.5 12.5	C B	2.9 0.5	None None
2) Forrester Rd at I-8 EB Ramp (U)	Minor Leg	AM PM	13.1 18.7	B C	13.3 21.1	B C	0.2 2.4	None None
3) Forrester Rd at McCabe Rd (U)	Minor Leg	AM PM	11.2 14.0	B B	12.5 17.4	B C	1.3 3.4	None None
4) Brockman Rd at Lyons Rd (U)	Minor Leg	AM PM	10.6 10.4	B B	12.3 10.6	B B	1.7 0.2	None None
5) Brockman Rd at Kubler Rd (U)	Minor Leg	AM PM	11.0 9.5	B A	11.3 9.8	B A	0.3 0.3	None None
6) Brockman Rd at SR-98 (U)	Minor Leg	AM PM	20.4 14.0	C B	22.7 14.7	C B	2.3 0.7	None None
7) Brockman Rd at Anza Rd (U)	Minor Leg	AM PM	8.9 8.9	A A	9.0 9.0	A A	0.1 0.1	None None
8) La Brucherie Rd at McCabe Rd (U)	All	AM PM	11.5 15.5	B C	12.6 19.4	B C	1.1 3.9	None None
9) La Brucherie Rd at Wahl Rd (U)	Minor Leg	AM PM	14.6 13.9	B B	16.1 17.1	C C	1.5 3.2	None None
10) Ferrell Rd at Kubler Rd (U)	Minor Leg	AM PM	12.4 11.7	B B	12.7 11.7	B B	0.3 0.0	None None
11) Ferrell Rd at SR-98 (U)	Minor Leg	AM PM	16.3 14.5	C C	19.2 16.8	C C	2.9 2.3	None None
12) Ferrell Rd at Anza Rd (U)	Minor Leg	AM PM	9.8 10.1	A B	9.8 10.7	A B	0.0 0.6	None None

Notes: 1) Intersection Control - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds.

3) LOS: Level of Service. Minor Leg: approach LOS of minor/lesser roadway. All: combined LOS for all approaches.

4) Delta is the increase in delay from project. 5) Type of impact: none, direct, or cumulative.

Figure 10: Existing Year 2013 + Project Construction + Cumulative Volumes



<p>Forrester Rd</p> <p>109 (32) ↓</p> <p>191 (167) ↓</p> <p>121 (49) ↑</p> <p>0 (0) ↑</p> <p>282 (35) ↓</p> <p>34 (62) ↓</p> <p>44 (277) ↓</p>		<p>I-8 WB Ramp</p> <p>121 (49) ↑</p> <p>0 (0) ↑</p> <p>282 (35) ↓</p>		<p>I-8 EB Ramp</p> <p>19 (118) ↓</p> <p>0 (0) ↓</p> <p>14 (31) ↓</p>		<p>434 (76) ↓</p> <p>45 (115) ↓</p> <p>48 (227) ↓</p> <p>10 (254) ↓</p>		<p>Forrester Rd</p> <p>251 (14) ↓</p> <p>0 (0) ↓</p> <p>196 (41) ↓</p> <p>26 (212) ↓</p> <p>40 (8) ↓</p> <p>1 (0) ↓</p>	
<p>Brockman Rd</p> <p>0 (0) ↓</p> <p>11 (1) ↓</p> <p>0 (0) ↓</p> <p>2 (0) ↓</p> <p>3 (3) ↓</p> <p>232 (18) ↓</p> <p>61 (1) ↓</p> <p>1 (62) ↓</p> <p>2 (10) ↓</p> <p>7 (0) ↓</p>		<p>Lyons Rd</p> <p>1 (62) ↓</p> <p>2 (10) ↓</p> <p>7 (0) ↓</p>		<p>Brockman Rd</p> <p>0 (0) ↓</p> <p>3 (3) ↓</p> <p>0 (0) ↓</p> <p>2 (0) ↓</p> <p>3 (3) ↓</p> <p>190 (8) ↓</p> <p>38 (3) ↓</p> <p>4 (36) ↓</p> <p>2 (3) ↓</p> <p>1 (15) ↓</p>		<p>Kubler Rd</p> <p>4 (36) ↓</p> <p>2 (3) ↓</p> <p>1 (15) ↓</p>		<p>Forrester Rd</p> <p>14 (36) ↓</p> <p>42 (144) ↓</p> <p>52 (7) ↓</p> <p>3 (49) ↓</p> <p>31 (12) ↓</p> <p>160 (11) ↓</p> <p>6 (2) ↓</p> <p>12 (17) ↓</p> <p>179 (37) ↓</p> <p>120 (0) ↓</p>	
<p>Brockman Rd</p> <p>5 (1) ↓</p> <p>0 (0) ↓</p> <p>82 (13) ↓</p> <p>5 (85) ↓</p> <p>13 (6) ↓</p> <p>0 (0) ↓</p> <p>0 (0) ↓</p> <p>0 (0) ↓</p> <p>58 (2) ↓</p> <p>366 (41) ↓</p> <p>23 (2) ↓</p> <p>1 (22) ↓</p> <p>1 (0) ↓</p> <p>1 (12) ↓</p>		<p>Anza Rd</p> <p>5 (85) ↓</p> <p>13 (6) ↓</p> <p>0 (0) ↓</p>		<p>Brockman Rd</p> <p>16 (12) ↓</p> <p>162 (59) ↓</p> <p>105 (106) ↓</p> <p>6 (29) ↓</p> <p>92 (136) ↓</p> <p>169 (18) ↓</p> <p>12 (189) ↓</p> <p>62 (178) ↓</p> <p>11 (93) ↓</p> <p>88 (117) ↓</p> <p>76 (96) ↓</p> <p>94 (5) ↓</p>		<p>McCabe Rd</p> <p>36 (3) ↓</p> <p>450 (42) ↓</p> <p>6 (17) ↓</p> <p>1 (3) ↓</p> <p>13 (5) ↓</p> <p>3 (1) ↓</p>		<p>Wahl Rd</p> <p>4 (33) ↓</p> <p>8 (12) ↓</p> <p>12 (2) ↓</p> <p>7 (6) ↓</p> <p>31 (12) ↓</p> <p>160 (11) ↓</p> <p>6 (2) ↓</p> <p>12 (17) ↓</p> <p>179 (37) ↓</p> <p>120 (0) ↓</p>	
<p>La Brucherie Rd</p> <p>1 (58) ↓</p> <p>1 (3) ↓</p> <p>2 (38) ↓</p> <p>49 (14) ↓</p> <p>20 (286) ↓</p> <p>11 (3) ↓</p>		<p>Kubler Rd</p> <p>1 (22) ↓</p> <p>1 (0) ↓</p> <p>1 (12) ↓</p>		<p>La Brucherie Rd</p> <p>43 (3) ↓</p> <p>107 (23) ↓</p> <p>18 (60) ↓</p> <p>2 (31) ↓</p> <p>30 (224) ↓</p> <p>5 (1) ↓</p> <p>4 (3) ↓</p> <p>9 (93) ↓</p> <p>2 (76) ↓</p> <p>68 (14) ↓</p> <p>269 (32) ↓</p> <p>105 (12) ↓</p>		<p>SR-98</p> <p>68 (14) ↓</p> <p>269 (32) ↓</p> <p>105 (12) ↓</p>		<p>Ferrell Rd</p> <p>49 (93) ↓</p> <p>1 (16) ↓</p> <p>0 (1) ↓</p> <p>0 (0) ↓</p> <p>2 (1) ↓</p> <p>0 (0) ↓</p> <p>15 (11) ↓</p> <p>6 (3) ↓</p> <p>4 (3) ↓</p> <p>0 (0) ↓</p>	

TABLE 14: EXISTING YEAR 2013 WITH PROJECT CONSTRUCTION WITH CUMULATIVE SEGMENT LOS

Segment	Classification (as built)	Year 2013 + Cumulative				Project Daily Volumes	Year 2013 + Cumulative + Project				
		Daily Volume	LOS C Capacity	V/C	LOS		Daily Volume	LOS C Capacity	V/C	LOS	Impact?
Anza Road											
Brockman Rd to Ferrell Rd	Local (2U)	452	7,100	0.06	A	106	558	7,100	0.08	A	None
Brockman Road											
McCabe Rd to Lyons Rd	Major (2U)	1,093	7,100	0.15	A	266	1,359	7,100	0.19	A	None
Lyons Rd to Kubler Rd	Major (2U)	967	7,100	0.14	A	80	1,047	7,100	0.15	A	None
Kubler to SR-98	Major (2U)	923	7,100	0.13	A	106	1,029	7,100	0.14	A	None
SR-98 to Anza Rd	Not Classified (2U)	1,128	7,100	0.16	A	46	1,174	7,100	0.17	A	None
Forrester Road											
I-8 to McCabe Rd	Prime (2U)	2,884	7,100	0.41	B	266	3,150	7,100	0.44	B	None
Kubler Road											
Brockman Rd to Ferrell Rd	Major (2U)	413	7,100	0.06	A	100	513	7,100	0.07	A	None
La Brucherie Road/Ferrell Road											
McCabe Rd to Wahl Rd	Major (2U)	2,748	7,100	0.39	B	179	2,927	7,100	0.41	B	None
Wahl Rd to Kubler Rd	Major (2U)	2,327	7,100	0.33	B	80	2,407	7,100	0.34	B	None
Kubler Rd to SR-98	Major (2U)	1,986	7,100	0.28	B	139	2,125	7,100	0.30	B	None
SR-98 to Anza Rd	Minor (2U)	1,422	7,100	0.20	A	106	1,528	7,100	0.22	A	None
Lyons Road											
Brockman Rd to La Brucherie Rd	Minor (2U)	207	7,100	0.03	A	239	446	7,100	0.06	A	None
McCabe Road											
Forrester Rd to La Brucherie Rd	Major (2U)	2,369	7,100	0.33	B	66	2,435	7,100	0.34	B	None
SR-98											
Drew Rd to Brockman Rd	State Highway (2U)	2,037	7,100	0.29	B	33	2,070	7,100	0.29	B	None
Brockman Rd Ferrell	State Highway (2U)	1,984	7,100	0.28	B	60	2,044	7,100	0.29	B	None
Ferrell Rd to Dogwood Rd	State Highway (2U)	2,878	7,100	0.41	B	153	3,031	7,100	0.43	B	None

Notes: Classification based on 1/29/08 Circulation and Scenic Highways Element. 2U = 2 lane undivided roadway. Daily volume is a 24 hour volume. LOS: Level of Service. LOS based on actual number of lanes currently constructed. V/C: Volume to Capacity ratio. Impact? = type of impact (none, cumulative, or direct).

TABLE 15: EXISTING YEAR 2013 WITH PROJECT CONSTRUCTION WITH CUMULATIVE FREEWAY LOS

Freeway Segment	I-8 Drew Rd to Forrester Rd				I-8 Forrester Rd to Imperial Ave			
	Forecasted Year 2013				Forecasted Year 2013			
ADT	14,400				17,600			
Peak Hour	A M		P M		A M		P M	
Direction	EB	WB	EB	WB	EB	WB	EB	WB
Number of Lanes	2	2	2	2	2	2	2	2
Capacity (1)	4700	4700	4700	4700	4700	4700	4700	4700
K Factor (2)	0.1076	0.0963	0.0917	0.1517	0.1076	0.0963	0.0917	0.1517
D Factor (3)	0.2616	0.7384	0.4419	0.5581	0.2616	0.7384	0.4419	0.5581
Truck Factor (4)	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376
Peak Hour Volume	484	1222	697	1456	591	1494	851	1779
Volume to Capacity	0.103	0.260	0.148	0.310	0.126	0.318	0.181	0.379
LOS	A	A	A	B	A	B	A	B
Cumulative + Project	115	292	267	172	84	419	387	153
2013 + Cumulative + Project								
Peak Hour Volume	599	1514	964	1628	675	1913	1238	1932
Volume to Capacity	0.127	0.322	0.205	0.346	0.144	0.407	0.264	0.411
LOS	A	B	A	B	A	B	A	B
Increase in V/C	0.024	0.062	0.057	0.037	0.018	0.089	0.082	0.033
Impact?	None	None	None	None	None	None	None	None

Notes: (1) Capacity of 2,350 pcphpl from CALTRANS' Guide for the Preparation of Traffic Impact Studies, December 2002. (2) Latest K factor from Caltrans (based on 2007 report), which is the percentage of AADT in both directions. (3) Latest D factor from Caltrans (based on 2007 report), which when multiplied by K and ADT will provide peak hour volume. (4) Latest truck factor from Caltrans (based on 2007 report). Impact? = Direct, Cumulative, or None.

Under existing year 2013 + project construction + cumulative conditions, the study intersections, roadways, and freeway segments were calculated to operate at LOS C or better with no cumulatively considerable impacts.

8.0 Near-Term Year 2016 Conditions

This section documents near-term year 2016 conditions when the project is anticipated to be at the peak of construction activities. The year 2016 background volumes are based on increasing the existing year 2013 volumes by an annual growth rate. Determination of the annual growth rate was based on guidelines defined in the County of Imperial Department of Public Works *Traffic Study and Report Policy* dated March 12, 2007, revised June 29, 2007 and approved by the Board of Supervisors of the County of Imperial on August 7, 2007. The County document indicates that traffic projections should be based on demonstrated growth as detailed in the general plan. Four growth rate options were reviewed:

- 1) The Land Use Element of the general plan indicates that the Population Research Unit of the California Department of Finance (DOF) estimates the annual change in population. Using the DOF revised July 1, 2006 population estimate of 168,979 and the projected population of Imperial County in 2030 of 283,693, an annual growth rate of 2.2 percent is calculated.
- 2) The Housing Element section of the general plan has a 1980 population of 92,500. The 2000 Southern California Association of Governments [SCAG] population estimate of 148,980 for the year 2000. Based on this information, an annual growth rate of 2.4 percent is calculated.
- 3) The Southern California Association of Governments Community Development Division's 2004 *Regional Transportation Plan Socio-Economic Forecast Report*, dated June 2004, states that the population of Imperial County is projected to grow at an annual rate of 2.8 percent.
- 4) The U.S. Census Bureau population data from year 2000 to year 2010 for the local cities/residential communities within Imperial County as outlined previously in Table 11. The U.S. Census Bureau reported a population growth of 27,162 people over a 10 year period (population of 109,588 per the 2000 census and population of 136,750 per the 2010 census). Over this 10 year period, the annual growth rate was about 2.0 percent.

For the purpose of this traffic study, the more conservative growth rate of **2.8 percent** was selected for the annual population growth rate. The recent *Imperial County 2013 Transportation Plan*, dated November 2013 noted that "The California Department of Finance estimated the rate of growth in Imperial County to be 0.5% in 2012", therefore, the average annual 2.8 percent growth rate used in the analysis may be conservative. The growth factor support data and excerpt from the *Imperial County 2013 Transportation Plan* are included in **Appendix O**. Year 2016 traffic data was factored up from existing data through the application of a 2.8% annual growth rate.

Year 2016 volumes (for the construction peak period) were calculated by increasing existing volumes by 2.8% annually as shown in **Figure 11**. Intersection, segment, and freeway LOS are shown in **Tables 16, 17 and 18**. Intersection LOS calculations are included in **Appendix P**.

Figure 11: Near-Term Year 2016 Volumes

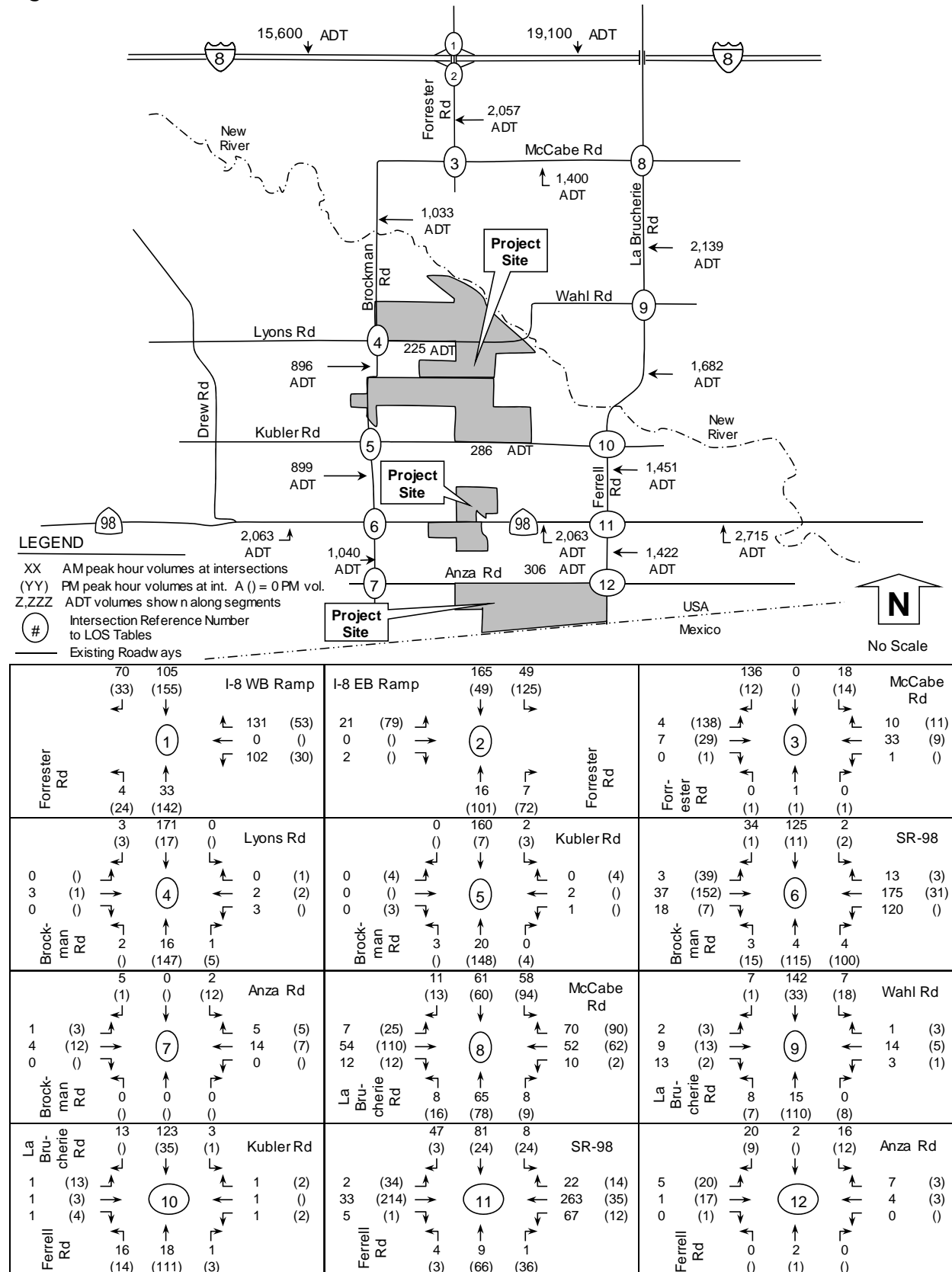


TABLE 16: NEAR-TERM YEAR 2016 INTERSECTION LOS

Intersection & (Control) ¹	Movement	Peak Hour	Year (2016)	
			Delay ²	LOS ³
1) Forrester Rd at I-8 WB Ramp (U)	Minor	AM	9.7	A
	Leg	PM	10.2	B
2) Forrester Rd at I-8 EB Ramp (U)	Minor	AM	10.8	B
	Leg	PM	14.6	B
3) Forrester Rd at McCabe Rd (U)	Minor	AM	9.4	A
	Leg	PM	10.7	B
4) Brockman Rd at Lyons Rd (U)	Minor	AM	10.3	B
	Leg	PM	10.1	B
5) Brockman Rd at Kubler Rd (U)	Minor	AM	10.1	B
	Leg	PM	9.1	A
6) Brockman Rd at SR-98 (U)	Minor	AM	17.2	C
	Leg	PM	13.0	B
7) Brockman Rd at Anza Rd (U)	Minor	AM	8.5	A
	Leg	PM	8.7	A
8) La Brucherie Rd at McCabe Rd (U)	All	AM	8.3	A
	All	PM	9.2	A
9) La Brucherie Rd at Wahl Rd (U)	Minor	AM	10.3	B
	Leg	PM	9.9	A
10) Ferrell Rd at Kubler Rd (U)	Minor	AM	9.7	A
	Leg	PM	9.7	A
11) Ferrell Rd at SR-98 (U)	Minor	AM	14.5	B
	Leg	PM	13.3	B
12) Ferrell Rd at Anza Rd (U)	Minor	AM	9.2	A
	Leg	PM	9.4	A

Notes: 1) Intersection Control - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service. Minor Leg: approach LOS of minor/lesser roadway. All: combined LOS for all approaches.

TABLE 17: NEAR-TERM YEAR 2016 SEGMENT LOS

Segment	Classification (as built)	Year 2016				
		Daily Volume	# of lanes	LOS C Capacity	V/C	LOS
<u>Anza Road</u>						
Brockman Rd to Ferrell Rd	Local (2U)	306	2	7,100	0.04	A
<u>Brockman Road</u>						
McCabe Rd to Lyons Rd	Major (2U)	1,033	2	7,100	0.15	A
Lyons Rd to Kubler Rd	Major (2U)	896	2	7,100	0.13	A
Kubler to SR-98	Major (2U)	899	2	7,100	0.13	A
SR-98 to Anza Rd	Not Classified (2U)	1,040	2	7,100	0.15	A
<u>Forrester Road</u>						
I-8 to McCabe Rd	Prime (2U)	2,057	2	7,100	0.29	B
<u>Kubler Road</u>						
Brockman Rd to Ferrell Rd	Major (2U)	286	2	7,100	0.04	A
<u>La Brucherie Road/Ferrell Road</u>						
McCabe Rd to Wahl Rd	Major (2U)	2,139	2	7,100	0.30	B
Wahl Rd to Kubler Rd	Major (2U)	1,682	2	7,100	0.24	A
Kubler Rd to SR-98	Major (2U)	1,451	2	7,100	0.20	A
SR-98 to Anza Rd	Minor (2U)	1,422	2	7,100	0.20	A
<u>Lyons Road</u>						
Brockman Rd to La Brucherie Rd	Minor (2U)	225	2	7,100	0.03	A
<u>McCabe Road</u>						
Forrester Rd to La Brucherie Rd	Major (2U)	1,400	2	7,100	0.20	A
<u>SR-98</u>						
Drew Rd to Brockman Rd	State Highway (2U)	2,063	2	7,100	0.29	B
Brockman Rd Ferrell	State Highway (2U)	2,063	2	7,100	0.29	B
Ferrell Rd to Dogwood Rd	State Highway (2U)	2,715	2	7,100	0.38	B

Notes: Classification based on 1/29/08 Circulation and Scenic Highways Element. 2U = 2 lane undivided roadway. Daily volume is a 24 hour volume. LOS: Level of Service. LOS based on actual number of lanes currently constructed. V/C: Volume to Capacity ratio.

TABLE 18: NEAR-TERM YEAR 2016 FREEWAY LOS

Freeway Segment	I-8 Drew Rd to Forrester Rd				I-8 Forrester Rd to Imperial Ave			
	15,600				19,100			
Forecasted Year 2016								
ADT								
Peak Hour	A M		P M		A M		P M	
Direction	EB	WB	EB	WB	EB	WB	EB	WB
Number of Lanes	2	2	2	2	2	2	2	2
Capacity (1)	4,700	4,700	4,700	4,700	4,700	4,700	4,700	4,700
K Factor (2)	0.1076	0.0963	0.0917	0.1517	0.1076	0.0963	0.0917	0.1517
D Factor (3)	0.2616	0.7384	0.4419	0.5581	0.2616	0.7384	0.4419	0.5581
Truck Factor (4)	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376
Peak Hour Volume	524	1,324	755	1,577	642	1,621	924	1,931
Volume to Capacity	0.112	0.282	0.161	0.335	0.137	0.345	0.197	0.411
LOS	A	A	A	B	A	B	A	B

Notes: (1) Capacity of 2,350 pcphpl from CALTRANS' Guide for the Preparation of Traffic Impact Studies, December 2002. (2) Latest K factor from Caltrans (based on 2007 report), which is the percentage of AADT in both directions. (3) Latest D factor from Caltrans (based on 2007 report), which when multiplied by K and ADT will provide peak hour volume. (4) Latest truck factor from Caltrans (based on 2007 report).

Under near-term year 2016 conditions, the study intersections, roadways, and freeway segments were calculated to operate at LOS C or better.



9.0 Near-Term Year 2016 + Project Construction Conditions

This section documents the addition of construction traffic onto near-term year 2016 conditions for the anticipated construction peak. Year 2016 plus project construction traffic volumes are shown in **Figure 12**. Intersection, segment, and freeway LOS are shown in **Tables 19, 20 and 21**. Intersection LOS calculations are included in **Appendix Q**.

TABLE 19: NEAR-TERM YEAR 2016 WITHOUT AND WITH PROJECT CONSTRUCTION INTERSECTION LOS

Intersection & (Control) ¹	Movement	Year (2016)		Year (2016) + Project			
		Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	Impact ⁵
1) Forrester Rd at I-8 WB Ramp (U)	Minor	9.7	A	10.3	B	0.6	None
	Leg	10.2	B	10.6	B	0.4	None
2) Forrester Rd at I-8 EB Ramp (U)	Minor	10.8	B	11.0	B	0.2	None
	Leg	14.6	B	16.0	C	1.4	None
3) Forrester Rd at McCabe Rd (U)	Minor	9.4	A	9.8	A	0.4	None
	Leg	10.7	B	12.3	B	1.6	None
4) Brockman Rd at Lyons Rd (U)	Minor	10.3	B	11.9	B	1.6	None
	Leg	10.1	B	10.3	B	0.2	None
5) Brockman Rd at Kubler Rd (U)	Minor	10.1	B	10.6	B	0.5	None
	Leg	9.1	A	9.8	A	0.7	None
6) Brockman Rd at SR-98 (U)	Minor	17.2	C	18.7	C	1.5	None
	Leg	13.0	B	13.6	B	0.6	None
7) Brockman Rd at Anza Rd (U)	Minor	8.5	A	8.7	A	0.2	None
	Leg	8.7	A	8.8	A	0.1	None
8) La Brucherie Rd at McCabe Rd (U)	All	8.3	A	8.7	A	0.4	None
	All	9.2	A	9.6	A	0.4	None
9) La Brucherie Rd at Wahl Rd (U)	Minor	10.3	B	10.6	B	0.3	None
	Leg	9.9	A	10.8	B	0.9	None
10) Ferrell Rd at Kubler Rd (U)	Minor	9.7	A	10.0	B	0.3	None
	Leg	9.7	A	9.7	A	0.0	None
11) Ferrell Rd at SR-98 (U)	Minor	14.5	B	16.6	C	2.1	None
	Leg	13.3	B	15.1	C	1.8	None
12) Ferrell Rd at Anza Rd (U)	Minor	9.2	A	9.2	A	0.0	None
	Leg	9.4	A	10.0	B	0.6	None

Notes: 1) Intersection Control - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds.

3) LOS: Level of Service. Minor Leg: approach LOS of minor/lesser roadway. All: combined LOS for all approaches.

4) Delta is the increase in delay from project. 5) Type of impact: none, direct, or cumulative.

Figure 12: Near-Term Year 2016 + Project Construction Volumes

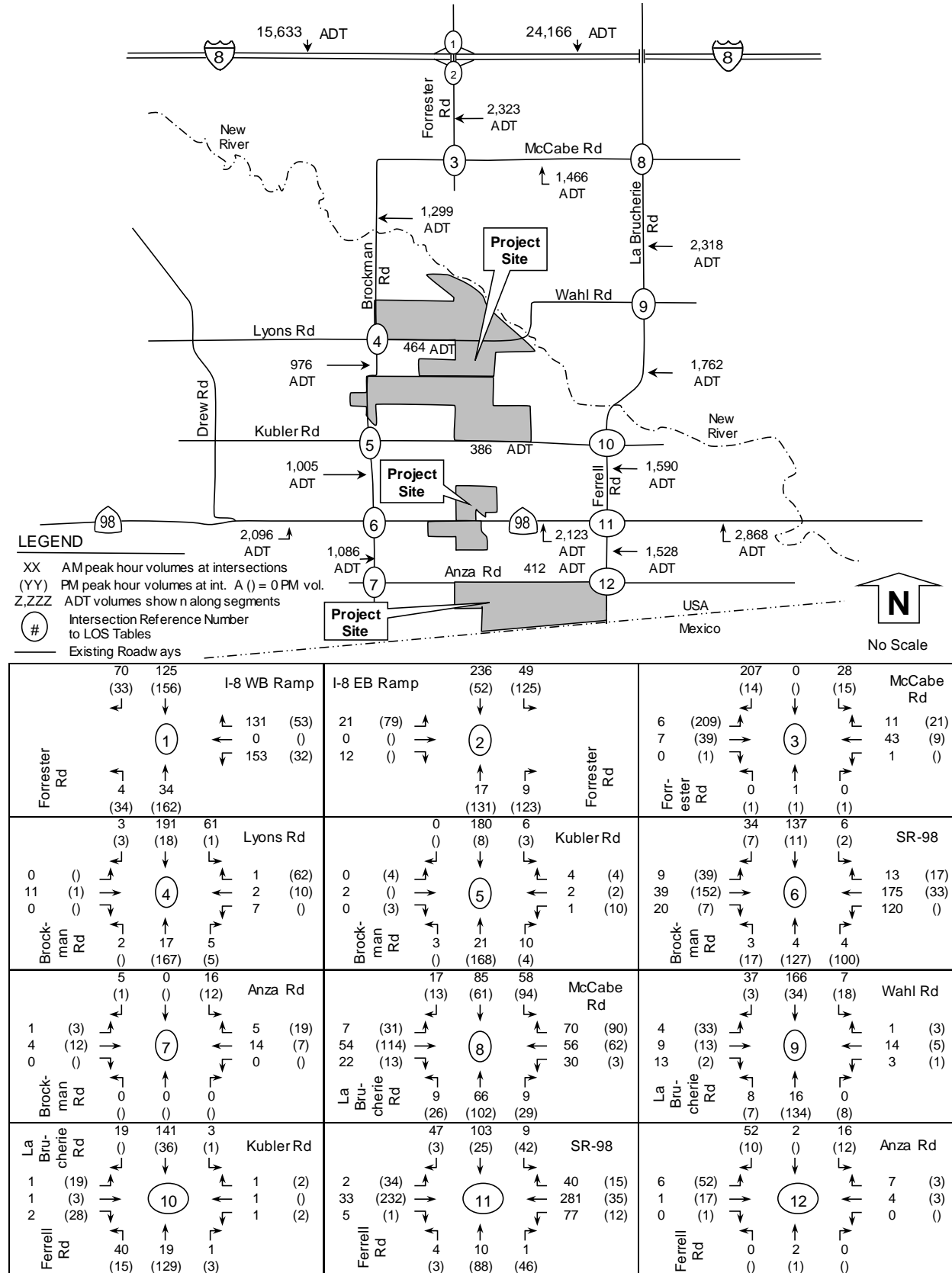


TABLE 20: NEAR-TERM YEAR 2016 WITHOUT AND WITH PROJECT CONSTRUCTION SEGMENT LOS

Segment	Classification (as built)	Year 2016				Project Daily Volume	Year 2016 + Project						
		Daily Volume	LOS C Capacity	V/C	LOS		Daily Volume	LOS C Capacity	V/C	LOS	Change in V/C	Impact?	
Anza Road													
Brockman Rd to Ferrell Rd	Local (2U)	306	7,100	0.04	A	106	412	7,100	0.06	A	0.01	None	
Brockman Road													
McCabe Rd to Lyons Rd	Major (2U)	1,033	7,100	0.15	A	266	1,299	7,100	0.18	A	0.04	None	
Lyons Rd to Kubler Rd	Major (2U)	896	7,100	0.13	A	80	976	7,100	0.14	A	0.01	None	
Kubler to SR-98	Major (2U)	899	7,100	0.13	A	106	1,005	7,100	0.14	A	0.01	None	
SR-98 to Anza Rd	Not Classified (2U)	1,040	7,100	0.15	A	46	1,086	7,100	0.15	A	0.01	None	
Forrester Road													
I-8 to McCabe Rd	Prime (2U)	2,057	7,100	0.29	B	266	2,323	7,100	0.33	B	0.04	None	
Kubler Road													
Brockman Rd to Ferrell Rd	Major (2U)	286	7,100	0.04	A	100	386	7,100	0.05	A	0.01	None	
La Brucherie Road/Ferrell Road													
McCabe Rd to Wahl Rd	Major (2U)	2,139	7,100	0.30	B	179	2,318	7,100	0.33	B	0.03	None	
Wahl Rd to Kubler Rd	Major (2U)	1,682	7,100	0.24	A	80	1,762	7,100	0.25	A	0.01	None	
Kubler Rd to SR-98	Major (2U)	1,451	7,100	0.20	A	139	1,590	7,100	0.22	A	0.02	None	
SR-98 to Anza Rd	Minor (2U)	1,422	7,100	0.20	A	106	1,528	7,100	0.22	A	0.01	None	
Lyons Road													
Brockman Rd to La Brucherie Rd	Minor (2U)	225	7,100	0.03	A	239	464	7,100	0.07	A	0.03	None	
McCabe Road													
Forrester Rd to La Brucherie Rd	Major (2U)	1,400	7,100	0.20	A	66	1,466	7,100	0.21	A	0.01	None	
SR-98													
Drew Rd to Brockman Rd State Highway (2U)		2,063	7,100	0.29	B	33	2,096	7,100	0.30	B	0.00	None	
Brockman Rd Ferrell State Highway (2U)		2,063	7,100	0.29	B	60	2,123	7,100	0.30	B	0.01	None	
Ferrell Rd to Dogwood Rd State Highway (2U)		2,715	7,100	0.38	B	153	2,868	7,100	0.40	B	0.02	None	

Notes: Classification based on 1/29/08 Circulation and Scenic Highways Element. 2U = 2 lane undivided roadway. Daily volume is a 24 hour volume. LOS: Level of Service. LOS based on actual number of lanes currently constructed. V/C: Volume to Capacity ratio. Impact? = type of impact (none, cumulative, or direct).

TABLE 21: NEAR-TERM YEAR 2016 WITHOUT AND WITH PROJECT CONSTRUCTION FREEWAY LOS

Freeway Segment	I-8 Drew Rd to Forrester Rd				I-8 Forrester Rd to Imperial Ave			
	Forecasted Year 2016				Forecasted Year 2016			
ADT	15,600				19,100			
Peak Hour								
Direction	EB	WB	EB	WB	EB	WB	EB	WB
Number of Lanes	2	2	2	2	2	2	2	2
Capacity (1)	4,700	4,700	4,700	4,700	4,700	4,700	4,700	4,700
K Factor (2)	0.1076	0.0963	0.0917	0.1517	0.1076	0.0963	0.0917	0.1517
D Factor (3)	0.2616	0.7384	0.4419	0.5581	0.2616	0.7384	0.4419	0.5581
Truck Factor (4)	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376
Peak Hour Volume	524	1,324	755	1,577	642	1,621	924	1,931
Volume to Capacity	0.112	0.282	0.161	0.335	0.137	0.345	0.197	0.411
LOS	A	A	A	B	A	B	A	B
Project Pk Hr Vol	10	0	0	10	2	51	51	2
2016 + Project								
Peak Hour Volume	534	1,324	755	1,587	644	1,672	975	1,933
Volume to Capacity	0.114	0.282	0.161	0.338	0.137	0.356	0.207	0.411
LOS	A	A	A	B	A	B	A	B
Increase in V/C	0.002	0.000	0.000	0.002	0.000	0.011	0.011	0.000
Impact?	None	None	None	None	None	None	None	None

Notes: (1) Capacity of 2,350 pcphpl from CALTRANS' Guide for the Preparation of Traffic Impact Studies, December 2002. (2) Latest K factor from Caltrans (based on 2007 report), which is the percentage of AADT in both directions. (3) Latest D factor from Caltrans (based on 2007 report), which when multiplied by K and ADT will provide peak hour volume. (4) Latest truck factor from Caltrans (based on 2007 report). Impact? = Direct, Cumulative, or None.

Under near-term year 2016 + project construction conditions, the study intersections, roadways, and freeway segments were calculated to operate at LOS C or better with no significant direct project impacts.

10.0 Near-Term Year 2016 + Project Construction + Cumulative Conditions

This section documents the addition of cumulative traffic onto near-term year 2016 with project construction conditions. Year 2016 plus project construction + cumulative traffic volumes are shown in **Figure 13**. Intersection, segment, and freeway LOS are shown in **Tables 22, 23 and 24**. Intersection LOS calculations are included in **Appendix R**.

TABLE 22: NEAR-TERM YEAR 2016 WITH PROJECT CONSTRUCTION WITH CUMULATIVE INTERSECTION LOS

Intersection & (Control) ¹	Movement	Peak Hour	Year (2016) + Cumulative		Year (2016) + Cumulative + Project			
			Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	Impact ⁵
1) Forrester Rd at I-8 WB Ramp (U)	Minor	AM	14.0	B	17.5	C	3.5	None
	Leg	PM	12.3	B	12.5	B	0.2	None
2) Forrester Rd at I-8 EB Ramp (U)	Minor	AM	13.5	B	13.7	B	0.2	None
	Leg	PM	20.7	C	21.1	C	0.4	None
3) Forrester Rd at McCabe Rd (U)	Minor	AM	11.4	B	12.8	B	1.4	None
	Leg	PM	14.4	B	17.4	C	3.0	None
4) Brockman Rd at Lyons Rd (U)	Minor	AM	10.7	B	12.4	B	1.7	None
	Leg	PM	10.5	B	10.6	B	0.1	None
5) Brockman Rd at Kubler Rd (U)	Minor	AM	11.1	B	11.5	B	0.4	None
	Leg	PM	9.6	A	9.8	A	0.2	None
6) Brockman Rd at SR-98 (U)	Minor	AM	20.6	C	22.9	C	2.3	None
	Leg	PM	14.7	B	14.7	B	0.0	None
7) Brockman Rd at Anza Rd (U)	Minor	AM	8.9	A	9.0	A	0.1	None
	Leg	PM	8.9	A	9.0	A	0.1	None
8) La Brucherie Rd at McCabe Rd (U)	All	AM	12.0	B	13.2	B	1.2	None
	All	PM	17.0	C	19.4	C	2.4	None
9) La Brucherie Rd at Wahl Rd (U)	Minor	AM	15.1	C	16.7	C	1.6	None
	Leg	PM	14.2	B	17.1	C	2.9	None
10) Ferrell Rd at Kubler Rd (U)	Minor	AM	12.6	B	12.8	B	0.2	None
	Leg	PM	12.0	B	12.0	B	0.0	None
11) Ferrell Rd at SR-98 (U)	Minor	AM	17.6	C	21.2	C	3.6	None
	Leg	PM	15.4	C	16.8	C	1.4	None
12) Ferrell Rd at Anza Rd (U)	Minor	AM	9.8	A	9.8	A	0.0	None
	Leg	PM	10.2	B	10.7	B	0.5	None

Notes: 1) Intersection Control - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds.

3) LOS: Level of Service. Minor Leg: approach LOS of minor/lesser roadway. All: combined LOS for all approaches.

4) Delta is the increase in delay from project. 5) Type of impact: none, direct, or cumulative.

Figure 13: Near-Term Year 2016 + Project Construction + Cumulative Volumes

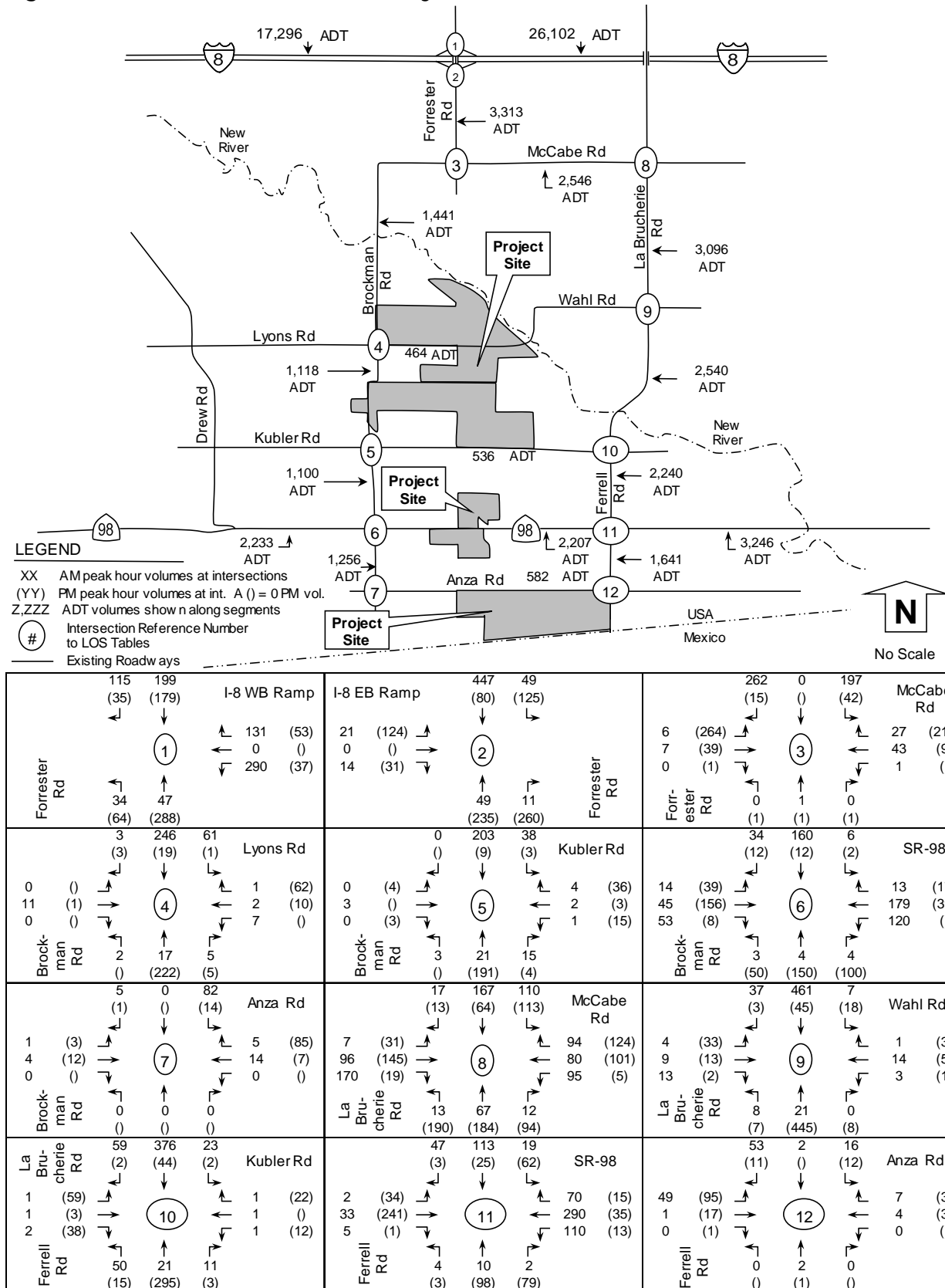


TABLE 23: NEAR-TERM YEAR 2016 WITH PROJECT CONSTRUCTION WITH CUMULATIVE SEGMENT LOS

Segment	Classification (as built)	Year 2016 + Cumulative				Project Daily Volumes	Year 2016 + Cumulative + Project				
		Daily Volume	LOS C Capacity	V/C	LOS		Daily Volume	LOS C Capacity	V/C	LOS	Impact?
Anza Road											
Brockman Rd to Ferrell Rd	Local (2U)	476	7,100	0.07	A	106	582	7,100	0.08	A	None
Brockman Road											
McCabe Rd to Lyons Rd	Major (2U)	1,175	7,100	0.17	A	266	1,441	7,100	0.20	A	None
Lyons Rd to Kubler Rd	Major (2U)	1,038	7,100	0.15	A	80	1,118	7,100	0.16	A	None
Kubler to SR-98	Major (2U)	994	7,100	0.14	A	106	1,100	7,100	0.15	A	None
SR-98 to Anza Rd	Not Classified (2U)	1,210	7,100	0.17	A	46	1,256	7,100	0.18	A	None
Forrester Road											
I-8 to McCabe Rd	Prime (2U)	3,047	7,100	0.43	B	266	3,313	7,100	0.47	B	None
Kubler Road											
Brockman Rd to Ferrell Rd	Major (2U)	436	7,100	0.06	A	100	536	7,100	0.08	A	None
La Brucherie Road/Ferrell Road											
McCabe Rd to Wahl Rd	Major (2U)	2,917	7,100	0.41	B	179	3,096	7,100	0.44	B	None
Wahl Rd to Kubler Rd	Major (2U)	2,460	7,100	0.35	B	80	2,540	7,100	0.36	B	None
Kubler Rd to SR-98	Major (2U)	2,101	7,100	0.30	B	139	2,240	7,100	0.32	B	None
SR-98 to Anza Rd	Minor (2U)	1,535	7,100	0.22	A	106	1,641	7,100	0.23	A	None
Lyons Road											
Brockman Rd to La Brucherie Rd	Minor (2U)	225	7,100	0.03	A	239	464	7,100	0.07	A	None
McCabe Road											
Forrester Rd to La Brucherie Rd	Major (2U)	2,480	7,100	0.35	B	66	2,546	7,100	0.36	B	None
SR-98											
Drew Rd to Brockman Rd	State Highway (2U)	2,200	7,100	0.31	B	33	2,233	7,100	0.31	B	None
Brockman Rd Ferrell	State Highway (2U)	2,147	7,100	0.30	B	60	2,207	7,100	0.31	B	None
Ferrell Rd to Dogwood Rd	State Highway (2U)	3,093	7,100	0.44	B	153	3,246	7,100	0.46	B	None

Notes: Classification based on 1/29/08 Circulation and Scenic Highways Element. 2U = 2 lane undivided roadway. Daily volume is a 24 hour volume. LOS: Level of Service. LOS based on actual number of lanes currently constructed. V/C: Volume to Capacity ratio. Impact? = type of impact (none, cumulative, or direct).

TABLE 24: NEAR-TERM YEAR 2016 WITH PROJECT CONSTRUCTION WITH CUMULATIVE FREEWAY LOS

Freeway Segment	I-8 Drew Rd to Forrester Rd				I-8 Forrester Rd to Imperial Ave			
	A M		P M		A M		P M	
Forecasted Year 2016	15,600				19,200			
ADT								
Peak Hour								
Direction	EB	WB	EB	WB	EB	WB	EB	WB
Number of Lanes	2	2	2	2	2	2	2	2
Capacity (1)	4700	4700	4700	4700	4700	4700	4700	4700
K Factor (2)	0.1076	0.0963	0.0917	0.1517	0.1076	0.0963	0.0917	0.1517
D Factor (3)	0.2616	0.7384	0.4419	0.5581	0.2616	0.7384	0.4419	0.5581
Truck Factor (4)	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376
Peak Hour Volume	524	1324	755	1577	645	1630	929	1941
Volume to Capacity	0.112	0.282	0.161	0.335	0.137	0.347	0.198	0.413
LOS	A	A	A	B	A	B	A	B
Cumulative + Project	115	292	267	172	84	419	387	153
2016 + Cumulative + Project								
Peak Hour Volume	639	1616	1022	1749	729	2049	1316	2094
Volume to Capacity	0.136	0.344	0.217	0.372	0.155	0.436	0.280	0.445
LOS	A	B	A	B	A	B	A	B
Increase in V/C	0.024	0.062	0.057	0.037	0.018	0.089	0.082	0.033
Impact?	None	None	None	None	None	None	None	None

Notes: (1) Capacity of 2,350 pcphpl from CALTRANS' Guide for the Preparation of Traffic Impact Studies, December 2002. (2) Latest K factor from Caltrans (based on 2007 report), which is the percentage of AADT in both directions. (3) Latest D factor from Caltrans (based on 2007 report), which when multiplied by K and ADT will provide peak hour volume. (4) Latest truck factor from Caltrans (based on 2007 report). Impact? = Direct, Cumulative, or None.

Under near-term year 2016 + project construction + cumulative conditions, the study intersections, roadways, and freeway segments were calculated to operate at LOS C or better with no cumulatively considerable impacts.

11.0 Mid-Term Year 2019 Conditions

This section documents a mid-term year 2019 condition in the event the project is constructed in about 5 years or the mid-point of the Conditional Use Permit (CUP). The year 2019 background volumes are based on increasing the existing year 2013 volumes by an annual growth rate of 2.8% as described in the Near-Term Year 2016 Conditions' Section. Year 2019 traffic volumes are shown in **Figure 14**. Intersection, segment, and freeway LOS are shown in **Tables 25, 26 & 27**. Intersection LOS calculations are included in **Appendix S**.

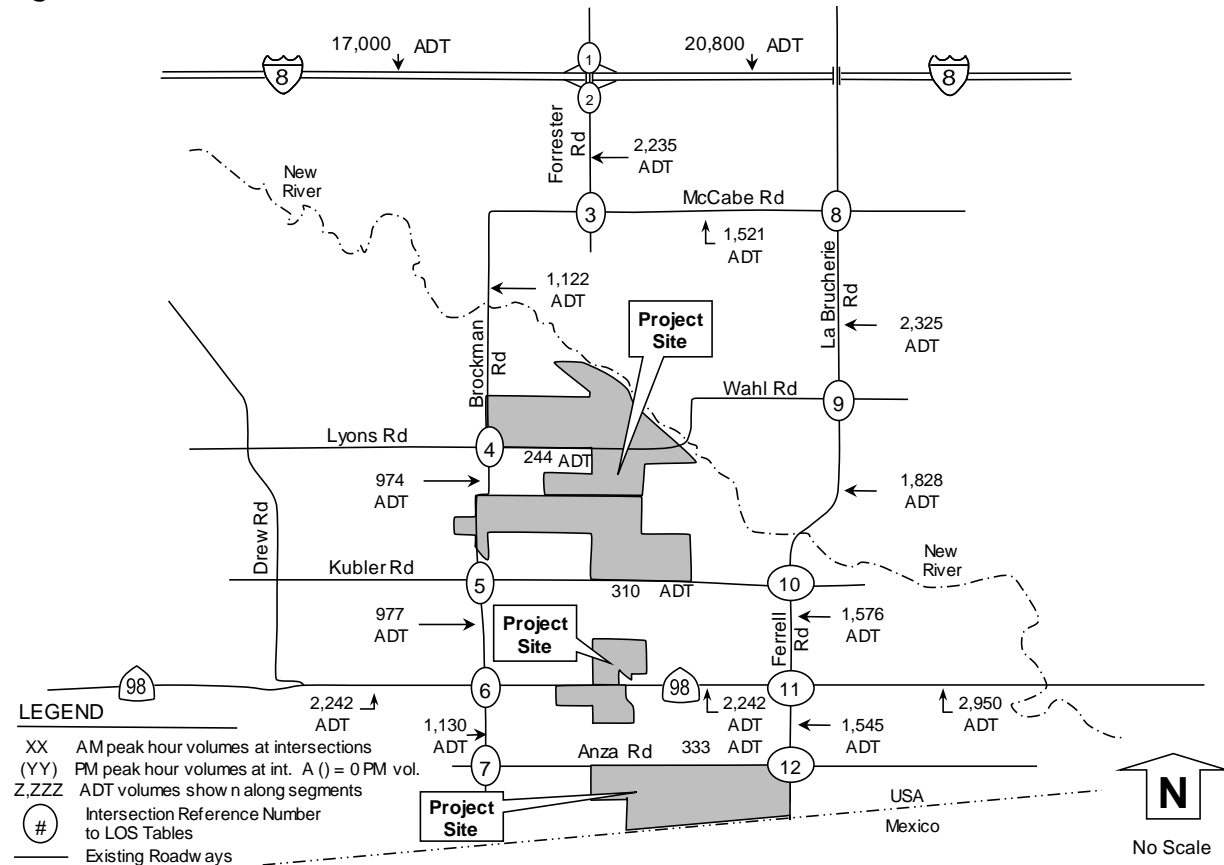
TABLE 25: MID-TERM YEAR 2019 INTERSECTION LOS

Intersection & (Control) ¹	Movement	Peak Hour	Year (2019)	
			Delay ²	LOS ³
1) Forrester Rd at I-8 WB Ramp (U)	Minor Leg	AM PM	9.8 10.5	A B
2) Forrester Rd at I-8 EB Ramp (U)	Minor Leg	AM PM	11.1 15.7	B C
3) Forrester Rd at McCabe Rd (U)	Minor Leg	AM PM	9.4 10.9	A B
4) Brockman Rd at Lyons Rd (U)	Minor Leg	AM PM	10.4 10.2	B B
5) Brockman Rd at Kubler Rd (U)	Minor Leg	AM PM	10.2 9.2	B A
6) Brockman Rd at SR-98 (U)	Minor Leg	AM PM	17.4 13.8	C B
7) Brockman Rd at Anza Rd (U)	Minor Leg	AM PM	8.5 8.7	A A
8) La Brucherie Rd at McCabe Rd (U)	All All	AM PM	8.5 9.5	A A
9) La Brucherie Rd at Wahl Rd (U)	Minor Leg	AM PM	10.4 10.0	B B
10) Ferrell Rd at Kubler Rd (U)	Minor Leg	AM PM	9.8 9.8	A A
11) Ferrell Rd at SR-98 (U)	Minor Leg	AM PM	15.6 13.9	C B
12) Ferrell Rd at Anza Rd (U)	Minor Leg	AM PM	9.2 9.5	A A

Notes: 1) Intersection Control - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds.

3) LOS: Level of Service. Minor Leg: approach LOS of minor/lesser roadway. All: combined LOS for all approaches.

Figure 14: Mid-Term Year 2019 Volumes



<p>Forrester Rd</p> <p>76 (35) 114 (169)</p> <p>1</p> <p>5 (26) 35 (155)</p>			<p>I-8 WB Ramp</p> <p>143 (58) 0 () 111 (33)</p>			<p>I-8 EB Ramp</p> <p>22 (86) 0 () 2 ()</p> <p>179 (53) 53 (136)</p> <p>18 (110) 7 (78)</p>			<p>Forrester Rd</p> <p>5 (150) 7 (32) 0 (1)</p> <p>148 (13) 0 () 20 (15)</p> <p>3</p> <p>11 (12) 35 (9) 1 ()</p>		
<p>Brockman Rd</p> <p>0 (1) 4 (1) 0 ()</p> <p>4</p> <p>2 (159) 18 (6)</p>			<p>Lyons Rd</p> <p>0 (1) 2 (2) 4 ()</p>			<p>Kubler Rd</p> <p>0 (5) 0 (4) 0 ()</p> <p>5</p> <p>21 (160) 0 (5)</p>			<p>SR-98</p> <p>4 (42) 40 (165) 20 (7)</p> <p>6</p> <p>14 (4) 175 (34) 120 ()</p>		
<p>Brockman Rd</p> <p>1 (4) 5 (13) 0 ()</p> <p>7</p> <p>0 (1) 0 (1) 0 (1)</p>			<p>Anza Rd</p> <p>6 (6) 15 (7) 0 ()</p>			<p>McCabe Rd</p> <p>76 (98) 57 (67) 11 (2)</p> <p>8</p> <p>71 (85) 8 (9)</p>			<p>Wahl Rd</p> <p>2 (4) 9 (14) 14 (2)</p> <p>9</p> <p>1 (4) 15 (6) 4 (1)</p>		
<p>La Brucherie Rd</p> <p>1 (14) 1 (4) 1 (5)</p> <p>10</p> <p>18 (15) 20 (120) 1 (4)</p>			<p>Kubler Rd</p> <p>1 (2) 1 () 1 (2)</p>			<p>SR-98</p> <p>2 (37) 35 (232) 6 (1)</p> <p>11</p> <p>9 (72) 1 (39)</p>			<p>Anza Rd</p> <p>6 (21) 1 (19) 0 (1)</p> <p>12</p> <p>7 (4) 5 (4) 0 ()</p>		

TABLE 26: MID-TERM YEAR 2019 SEGMENT LOS

Segment	Classification (as built)	Year 2019				
		Daily Volume	# of lanes	LOS C Capacity	V/C	LOS
<u>Anza Road</u>						
Brockman Rd to Ferrell Rd	Local (2U)	333	2	7,100	0.05	A
<u>Brockman Road</u>						
McCabe Rd to Lyons Rd	Major (2U)	1,122	2	7,100	0.16	A
Lyons Rd to Kubler Rd	Major (2U)	974	2	7,100	0.14	A
Kubler to SR-98	Major (2U)	977	2	7,100	0.14	A
SR-98 to Anza Rd	Not Classified (2U)	1,130	2	7,100	0.16	A
<u>Forrester Road</u>						
I-8 to McCabe Rd	Prime (2U)	2,235	2	7,100	0.31	B
<u>Kubler Road</u>						
Brockman Rd to Ferrell Rd	Major (2U)	310	2	7,100	0.04	A
<u>La Brucherie Road/Ferrell Road</u>						
McCabe Rd to Wahl Rd	Major (2U)	2,325	2	7,100	0.33	B
Wahl Rd to Kubler Rd	Major (2U)	1,828	2	7,100	0.26	A
Kubler Rd to SR-98	Major (2U)	1,576	2	7,100	0.22	A
SR-98 to Anza Rd	Minor (2U)	1,545	2	7,100	0.22	A
<u>Lyons Road</u>						
Brockman Rd to La Brucherie Rd	Minor (2U)	244	2	7,100	0.03	A
<u>McCabe Road</u>						
Forrester Rd to La Brucherie Rd	Major (2U)	1,521	2	7,100	0.21	A
<u>SR-98</u>						
Drew Rd to Brockman Rd	State Highway (2U)	2,242	2	7,100	0.32	B
Brockman Rd Ferrell	State Highway (2U)	2,242	2	7,100	0.32	B
Ferrell Rd to Dogwood Rd	State Highway (2U)	2,950	2	7,100	0.42	B

Notes: Classification based on 1/29/08 Circulation and Scenic Highways Element. 2U = 2 lane undivided roadway. Daily volume is a 24 hour volume. LOS: Level of Service. LOS based on actual number of lanes currently constructed. V/C: Volume to Capacity ratio.

TABLE 27: MID-TERM YEAR 2019 FREEWAY LOS

Freeway Segment	I-8 Drew Rd to Forrester Rd				I-8 Forrester Rd to Imperial Ave			
	17,000				20,800			
Forecasted Year 2019								
ADT								
Peak Hour								
Direction	A M		P M		A M		P M	
Direction	EB	WB	EB	WB	EB	WB	EB	WB
Number of Lanes	2	2	2	2	2	2	2	2
Capacity (1)	4,700	4,700	4,700	4,700	4,700	4,700	4,700	4,700
K Factor (2)	0.1076	0.0963	0.0917	0.1517	0.1076	0.0963	0.0917	0.1517
D Factor (3)	0.2616	0.7384	0.4419	0.5581	0.2616	0.7384	0.4419	0.5581
Truck Factor (4)	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376
Peak Hour Volume	571	1,443	822	1,718	699	1,766	1,006	2,102
Volume to Capacity	0.122	0.307	0.175	0.366	0.149	0.376	0.214	0.447
LOS	A	B	A	B	A	B	A	B

Notes: (1) Capacity of 2,350 pcphpl from CALTRANS' Guide for the Preparation of Traffic Impact Studies, December 2002. (2) Latest K factor from Caltrans (based on 2007 report), which is the percentage of AADT in both directions. (3) Latest D factor from Caltrans (based on 2007 report), which when multiplied by K and ADT will provide peak hour volume. (4) Latest truck factor from Caltrans (based on 2007 report).

Under mid-term year 2019 conditions, the study intersections, roadways, and freeway segments were calculated to operate at LOS C or better.

12.0 Mid-Term Year 2019 + Project Construction Conditions

This section documents the addition of project construction traffic onto mid-term year 2019 conditions. Year 2019 plus project construction traffic volumes are shown in **Figure 15**. Intersection, segment, and freeway LOS are shown in **Tables 28, 29 and 30**. Intersection LOS calculations are included in **Appendix T**.

TABLE 28: MID-TERM YEAR 2019 WITH PROJECT CONSTRUCTION INTERSECTION LOS

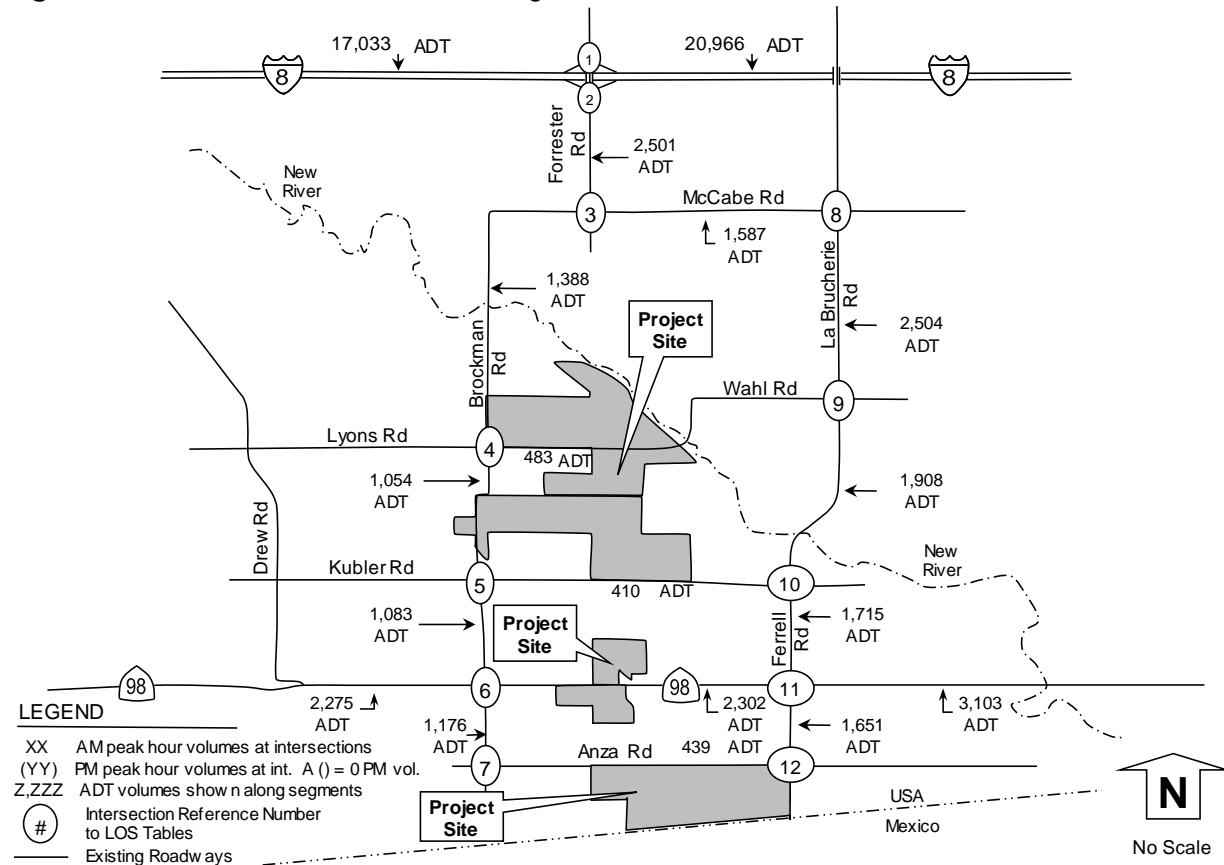
Intersection & (Control) ¹	Movement	Year (2019)		Year (2019) + Project			
		Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	Impact ⁵
1) Forrester Rd at I-8 WB Ramp (U)	Minor	9.8	A	10.5	B	0.7	None
	Leg	10.5	B	10.8	B	0.3	None
2) Forrester Rd at I-8 EB Ramp (U)	Minor	11.1	B	11.2	B	0.1	None
	Leg	15.7	C	17.3	C	1.6	None
3) Forrester Rd at McCabe Rd (U)	Minor	9.4	A	10.0	B	0.6	None
	Leg	10.9	B	12.6	B	1.7	None
4) Brockman Rd at Lyons Rd (U)	Minor	10.4	B	12.1	B	1.7	None
	Leg	10.2	B	10.4	B	0.2	None
5) Brockman Rd at Kubler Rd (U)	Minor	10.2	B	10.7	B	0.5	None
	Leg	9.2	A	9.9	A	0.7	None
6) Brockman Rd at SR-98 (U)	Minor	17.4	C	19.0	C	1.6	None
	Leg	13.8	B	14.5	B	0.7	None
7) Brockman Rd at Anza Rd (U)	Minor	8.5	A	8.7	A	0.2	None
	Leg	8.7	A	8.8	A	0.1	None
8) La Brucherie Rd at McCabe Rd (U)	All	8.5	A	8.9	A	0.4	None
	All	9.5	A	9.9	A	0.4	None
9) La Brucherie Rd at Wahl Rd (U)	Minor	10.4	B	10.8	B	0.4	None
	Leg	10.0	B	10.9	B	0.9	None
10) Ferrell Rd at Kubler Rd (U)	Minor	9.8	A	10.1	B	0.3	None
	Leg	9.8	A	9.8	A	0.0	None
11) Ferrell Rd at SR-98 (U)	Minor	15.6	C	18.2	C	2.6	None
	Leg	13.9	B	16.1	C	2.2	None
12) Ferrell Rd at Anza Rd (U)	Minor	9.2	A	9.2	A	0.0	None
	Leg	9.5	A	10.0	B	0.5	None

Notes: 1) Intersection Control - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds.

3) LOS: Level of Service. Minor Leg: approach LOS of minor/lesser roadway. All: combined LOS for all approaches.

4) Delta is the increase in delay from project. 5) Type of impact: none, direct, or cumulative.

Figure 15: Mid-Term Year 2019 + Project Construction Volumes



<p>Forrester Rd</p> <p>76 (35) 134 (170)</p> <p>1</p> <p>143 (58)</p> <p>0 (0)</p> <p>162 (35)</p>				<p>I-8 WB Ramp</p> <p>22 (86)</p> <p>0 (0)</p> <p>12 (0)</p>				<p>I-8 EB Ramp</p> <p>250 (56) 53 (136)</p> <p>19 (140) 9 (129)</p>				<p>Forrester Rd</p> <p>219 (15) 0 (0) 30 (16)</p> <p>7 (221) 7 (42) 0 (1)</p> <p>3</p> <p>12 (22) 45 (9) 1 (0)</p>				<p>McCabe Rd</p>			
<p>Brockman Rd</p> <p>4 (4) 205 (20) 61 (1)</p> <p>1 (62) 2 (10) 8 (0)</p> <p>19 (179)</p> <p>4</p> <p>4</p> <p>0</p>				<p>Lyons Rd</p> <p>0 (5) 0 (0) 0 (0)</p> <p>2 (4) 4 (0) 4 (0)</p> <p>5</p> <p>22 (180) 10 (5)</p> <p>4</p> <p>2</p> <p>1</p>				<p>Kubler Rd</p> <p>37 (7) 137 (12) 6 (2)</p> <p>10 (42) 42 (165) 22 (7)</p> <p>6</p> <p>5</p> <p>5</p>				<p>SR-98</p> <p>14 (18) 175 (36) 120 (0)</p>				<p>Brockman Rd</p>			
<p>Brockman Rd</p> <p>6 (1) 0 (0) 16 (13)</p> <p>6 (20) 15 (7) 0 (0)</p> <p>0</p> <p>0</p> <p>0</p>				<p>Anza Rd</p> <p>7 (33) 59 (123) 23 (14)</p> <p>18 (14) 90 (66) 63 (103)</p> <p>72 (28) 109 (109) 29 (29)</p> <p>9</p> <p>9</p> <p>9</p>				<p>McCabe Rd</p> <p>76 (98) 61 (67) 31 (3)</p> <p>37 (3) 179 (36) 7 (20)</p> <p>4 (34) 9 (14) 14 (2)</p> <p>18 (143) 8 (8)</p> <p>0</p>				<p>Wahl Rd</p> <p>1 (4) 15 (6) 4 (1)</p>				<p>La Brucherie Rd</p>			
<p>La Brucherie Rd</p> <p>20 (20) 151 (39) 4 (1)</p> <p>1 (2) 1 (0) 1 (2)</p> <p>42 (16) 21 (138) 1 (4)</p>				<p>Kubler Rd</p> <p>2 (37) 35 (250) 6 (1)</p> <p>51 (4) 111 (27) 9 (44)</p> <p>42 (16) 304 (38) 83 (13)</p> <p>10 (94) 1 (49)</p>				<p>SR-98</p> <p>7 (53) 1 (19) 0 (1)</p> <p>53 (10) 2 (0) 18 (13)</p> <p>7 (4) 5 (4) 0 (0)</p>				<p>Anza Rd</p>				<p>Ferrell Rd</p>			

TABLE 29: MID-TERM YEAR 2019 WITH PROJECT CONSTRUCTION SEGMENT LOS

Segment	Classification (as built)	Year 2019				Project Daily Volume	Year 2019 + Project						
		Daily Volume	LOS C Capacity	V/C	LOS		Daily Volume	LOS C Capacity	V/C	LOS	Change in V/C	Impact?	
Anza Road													
Brockman Rd to Ferrell Rd	Local (2U)	333	7,100	0.05	A	106	439	7,100	0.06	A	0.01	None	
Brockman Road													
McCabe Rd to Lyons Rd	Major (2U)	1,122	7,100	0.16	A	266	1,388	7,100	0.20	A	0.04	None	
Lyons Rd to Kubler Rd	Major (2U)	974	7,100	0.14	A	80	1,054	7,100	0.15	A	0.01	None	
Kubler to SR-98	Major (2U)	977	7,100	0.14	A	106	1,083	7,100	0.15	A	0.01	None	
SR-98 to Anza Rd	Not Classified (2U)	1,130	7,100	0.16	A	46	1,176	7,100	0.17	A	0.01	None	
Forrester Road													
I-8 to McCabe Rd	Prime (2U)	2,235	7,100	0.31	B	266	2,501	7,100	0.35	B	0.04	None	
Kubler Road													
Brockman Rd to Ferrell Rd	Major (2U)	310	7,100	0.04	A	100	410	7,100	0.06	A	0.01	None	
La Brucherie Road/Ferrell Road													
McCabe Rd to Wahl Rd	Major (2U)	2,325	7,100	0.33	B	179	2,504	7,100	0.35	B	0.03	None	
Wahl Rd to Kubler Rd	Major (2U)	1,828	7,100	0.26	A	80	1,908	7,100	0.27	B	0.01	None	
Kubler Rd to SR-98	Major (2U)	1,576	7,100	0.22	A	139	1,715	7,100	0.24	A	0.02	None	
SR-98 to Anza Rd	Minor (2U)	1,545	7,100	0.22	A	106	1,651	7,100	0.23	A	0.01	None	
Lyons Road													
Brockman Rd to La Brucherie Rd	Minor (2U)	244	7,100	0.03	A	239	483	7,100	0.07	A	0.03	None	
McCabe Road													
Forrester Rd to La Brucherie Rd	Major (2U)	1,521	7,100	0.21	A	66	1,587	7,100	0.22	A	0.01	None	
SR-98													
Drew Rd to Brockman Rd	State Highway (2U)	2,242	7,100	0.32	B	33	2,275	7,100	0.32	B	0.00	None	
Brockman Rd Ferrell	State Highway (2U)	2,242	7,100	0.32	B	60	2,302	7,100	0.32	B	0.01	None	
Ferrell Rd to Dogwood Rd	State Highway (2U)	2,950	7,100	0.42	B	153	3,103	7,100	0.44	B	0.02	None	

Notes: Classification based on 1/29/08 Circulation and Scenic Highways Element. 2U = 2 lane undivided roadway. Daily volume is a 24 hour volume. LOS: Level of Service. LOS based on actual number of lanes currently constructed. V/C: Volume to Capacity ratio. Impact? = type of impact (none, cumulative, or direct).

TABLE 30: MID-TERM YEAR 2019 WITH PROJECT CONSTRUCTION FREEWAY LOS

Freeway Segment	I-8 Drew Rd to Forrester Rd				I-8 Forrester Rd to Imperial Ave			
	Forecasted Year 2019				Forecasted Year 2019			
ADT	17,000				20,800			
Peak Hour	A M				A M			
Direction	EB	WB	EB	WB	EB	WB	EB	WB
Number of Lanes	2	2	2	2	2	2	2	2
Capacity (1)	4,700	4,700	4,700	4,700	4,700	4,700	4,700	4,700
K Factor (2)	0.1076	0.0963	0.0917	0.1517	0.1076	0.0963	0.0917	0.1517
D Factor (3)	0.2616	0.7384	0.4419	0.5581	0.2616	0.7384	0.4419	0.5581
Truck Factor (4)	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376
Peak Hour Volume	571	1,443	822	1,718	699	1,766	1,006	2,102
Volume to Capacity	0.122	0.307	0.175	0.366	0.149	0.376	0.214	0.447
LOS	A	B	A	B	A	B	A	B
Project Pk Hr Vol	10	0	0	10	2	51	51	2
2019 + Project								
Peak Hour Volume	581	1,443	822	1,728	701	1,817	1,057	2,104
Volume to Capacity	0.124	0.307	0.175	0.368	0.149	0.387	0.225	0.448
LOS	A	B	A	B	A	B	A	B
Increase in V/C	0.002	0.000	0.000	0.002	0.000	0.011	0.011	0.000
Impact?	None	None	None	None	None	None	None	None

Notes: (1) Capacity of 2,350 pcphpl from CALTRANS' Guide for the Preparation of Traffic Impact Studies, December 2002. (2) Latest K factor from Caltrans (based on 2007 report), which is the percentage of AADT in both directions. (3) Latest D factor from Caltrans (based on 2007 report), which when multiplied by K and ADT will provide peak hour volume. (4) Latest truck factor from Caltrans (based on 2007 report). Impact? = Direct, Cumulative, or None.

Under mid-term year 2019 + project construction conditions, the study intersections, roadways, and freeway segments were calculated to operate at LOS C or better with no significant direct project impacts.

13.0 Mid-Term Year 2019 + Project Construction + Cumulative Conditions

This section documents the addition of project construction traffic onto year 2019 with cumulative conditions. The mid-term cumulative project traffic was used for this scenario. Year 2019 plus project construction + cumulative traffic volumes are shown in **Figure 16**. Intersection, segment, and freeway LOS are shown in **Tables 31, 32 and 33**. Intersection LOS calculations are included in **Appendix U**.

TABLE 31: MID-TERM YEAR 2019 WITH PROJECT CONSTRUCTION WITH CUMULATIVE INTERSECTION LOS

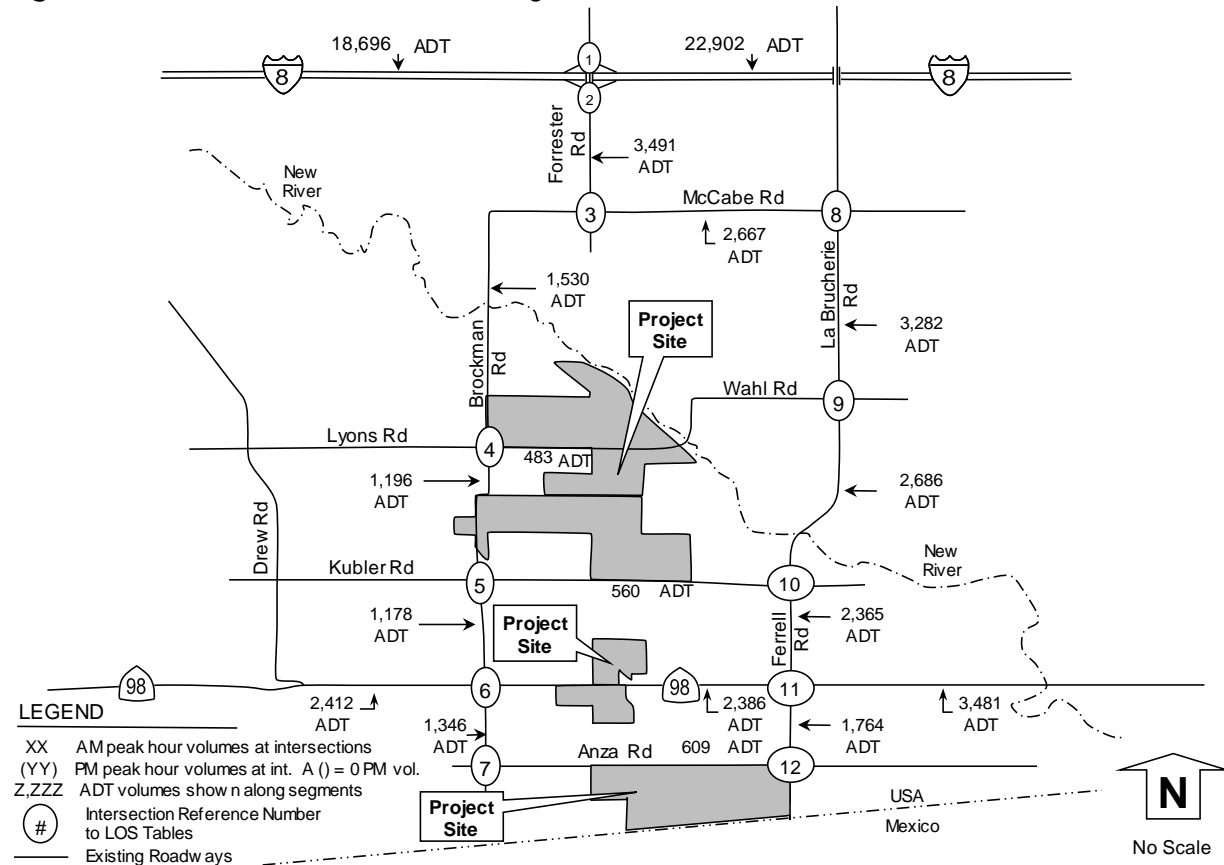
Intersection & (Control) ¹	Movement	Peak Hour	Year (2019) + Cumulative		Year (2019) + Cumulative + Project			
			Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	Impact ⁵
1) Forrester Rd at I-8 WB Ramp (U)	Minor	AM	14.6	B	18.9	C	4.3	None
	Leg	PM	12.6	B	13.2	B	0.6	None
2) Forrester Rd at I-8 EB Ramp (U)	Minor	AM	13.9	B	14.2	B	0.3	None
	Leg	PM	21.2	C	24.1	C	2.9	None
3) Forrester Rd at McCabe Rd (U)	Minor	AM	11.7	B	13.2	B	1.5	None
	Leg	PM	15.0	B	18.9	C	3.9	None
4) Brockman Rd at Lyons Rd (U)	Minor	AM	10.8	B	12.6	B	1.8	None
	Leg	PM	10.6	B	10.8	B	0.2	None
5) Brockman Rd at Kubler Rd (U)	Minor	AM	11.2	B	11.6	B	0.4	None
	Leg	PM	9.7	A	10.1	B	0.4	None
6) Brockman Rd at SR-98 (U)	Minor	AM	20.9	C	23.3	C	2.4	None
	Leg	PM	16.2	C	17.3	C	1.1	None
7) Brockman Rd at Anza Rd (U)	Minor	AM	9.0	A	9.0	A	0.0	None
	Leg	PM	9.0	A	9.0	A	0.0	None
8) La Brucherie Rd at McCabe Rd (U)	All	AM	12.5	B	14.0	B	1.5	None
	All	PM	17.4	C	22.2	C	4.8	None
9) La Brucherie Rd at Wahl Rd (U)	Minor	AM	15.6	C	17.5	C	1.9	None
	Leg	PM	14.6	B	18.2	C	3.6	None
10) Ferrell Rd at Kubler Rd (U)	Minor	AM	12.8	B	13.0	B	0.2	None
	Leg	PM	12.1	B	12.1	B	0.0	None
11) Ferrell Rd at SR-98 (U)	Minor	AM	19.5	C	24.1	C	4.6	None
	Leg	PM	16.4	C	19.8	C	3.4	None
12) Ferrell Rd at Anza Rd (U)	Minor	AM	9.9	A	9.9	A	0.0	None
	Leg	PM	10.2	B	10.8	B	0.6	None

Notes: 1) Intersection Control - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds.

3) LOS: Level of Service. Minor Leg: approach LOS of minor/lesser roadway. All: combined LOS for all approaches.

4) Delta is the increase in delay from project. 5) Type of impact: none, direct, or cumulative.

Figure 16: Mid-Term Year 2019 + Project Construction + Cumulative Volumes



<div> <div>121 (37)</div> <div>208 (193)</div> <div>143 (58)</div> <div>0 (0)</div> <div>299 (40)</div> </div>		<div> <div>461 (84)</div> <div>53 (136)</div> <div>22 (131)</div> <div>0 (0)</div> <div>14 (31)</div> </div>		<div> <div>274 (16)</div> <div>0 (0)</div> <div>199 (43)</div> <div>28 (214)</div> <div>45 (9)</div> <div>1 (0)</div> </div>	
<div> <div>4 (4)</div> <div>260 (21)</div> <div>61 (1)</div> <div>1 (62)</div> <div>2 (10)</div> <div>8 (0)</div> </div>		<div> <div>0 (5)</div> <div>216 (9)</div> <div>38 (4)</div> <div>4 (37)</div> <div>2 (3)</div> <div>1 (15)</div> </div>		<div> <div>37 (12)</div> <div>160 (13)</div> <div>6 (2)</div> <div>14 (18)</div> <div>179 (42)</div> <div>120 (0)</div> </div>	
<div> <div>6 (1)</div> <div>0 (0)</div> <div>82 (15)</div> <div>6 (86)</div> <div>15 (7)</div> <div>0 (0)</div> </div>		<div> <div>18 (14)</div> <div>172 (69)</div> <div>115 (122)</div> <div>7 (33)</div> <div>101 (154)</div> <div>171 (20)</div> </div>		<div> <div>37 (3)</div> <div>474 (47)</div> <div>7 (20)</div> <div>1 (4)</div> <div>15 (6)</div> <div>4 (1)</div> </div>	
<div> <div>60 (2)</div> <div>386 (47)</div> <div>24 (2)</div> <div>1 (22)</div> <div>1 (0)</div> <div>1 (12)</div> </div>		<div> <div>51 (4)</div> <div>121 (27)</div> <div>19 (64)</div> <div>72 (16)</div> <div>313 (38)</div> <div>116 (14)</div> </div>		<div> <div>54 (11)</div> <div>2 (0)</div> <div>18 (13)</div> <div>7 (4)</div> <div>5 (4)</div> <div>0 (0)</div> </div>	

TABLE 32: MID-TERM YEAR 2019 WITH PROJECT CONSTRUCTION WITH CUMULATIVE SEGMENT LOS

Segment	Classification (as built)	Year 2019 + Cumulative				Project Daily Volumes	Year 2019 + Cumulative + Project				
		Daily Volume	LOS C Capacity	V/C	LOS		Daily Volume	LOS C Capacity	V/C	LOS	Impact?
Anza Road											
Brockman Rd to Ferrell Rd	Local (2U)	503	7,100	0.07	A	106	609	7,100	0.09	A	None
Brockman Road											
McCabe Rd to Lyons Rd	Major (2U)	1,264	7,100	0.18	A	266	1,530	7,100	0.22	A	None
Lyons Rd to Kubler Rd	Major (2U)	1,116	7,100	0.16	A	80	1,196	7,100	0.17	A	None
Kubler to SR-98	Major (2U)	1,072	7,100	0.15	A	106	1,178	7,100	0.17	A	None
SR-98 to Anza Rd	Not Classified (2U)	1,300	7,100	0.18	A	46	1,346	7,100	0.19	A	None
Forrester Road											
I-8 to McCabe Rd	Prime (2U)	3,225	7,100	0.45	B	266	3,491	7,100	0.49	B	None
Kubler Road											
Brockman Rd to Ferrell Rd	Major (2U)	460	7,100	0.06	A	100	560	7,100	0.08	A	None
La Brucherie Road/Ferrell Road											
McCabe Rd to Wahl Rd	Major (2U)	3,103	7,100	0.44	B	179	3,282	7,100	0.46	B	None
Wahl Rd to Kubler Rd	Major (2U)	2,606	7,100	0.37	B	80	2,686	7,100	0.38	B	None
Kubler Rd to SR-98	Major (2U)	2,226	7,100	0.31	B	139	2,365	7,100	0.33	B	None
SR-98 to Anza Rd	Minor (2U)	1,658	7,100	0.23	A	106	1,764	7,100	0.25	A	None
Lyons Road											
Brockman Rd to La Brucherie Rd	Minor (2U)	244	7,100	0.03	A	239	483	7,100	0.07	A	None
McCabe Road											
Forrester Rd to La Brucherie Rd	Major (2U)	2,601	7,100	0.37	B	66	2,667	7,100	0.38	B	None
SR-98											
Drew Rd to Brockman Rd	State Highway (2U)	2,379	7,100	0.34	B	33	2,412	7,100	0.34	B	None
Brockman Rd Ferrell	State Highway (2U)	2,326	7,100	0.33	B	60	2,386	7,100	0.34	B	None
Ferrell Rd to Dogwood Rd	State Highway (2U)	3,328	7,100	0.47	B	153	3,481	7,100	0.49	B	None

Notes: Classification based on 1/29/08 Circulation and Scenic Highways Element. 2U = 2 lane undivided roadway. Daily volume is a 24 hour volume. LOS: Level of Service. LOS based on actual number of lanes currently constructed. V/C: Volume to Capacity ratio. Impact? = type of impact (none, cumulative, or direct).

TABLE 33: MID-TERM YEAR 2019 WITH PROJECT CONSTRUCTION WITH CUMULATIVE FREEWAY LOS

Freeway Segment	I-8				I-8			
	Drew Rd to Forrester Rd				Forrester Rd to Imperial Ave			
Forecasted Year 2019								
ADT	17,000				20,800			
Peak Hour	A M		P M		A M		P M	
Direction	EB	WB	EB	WB	EB	WB	EB	WB
Number of Lanes	2	2	2	2	2	2	2	2
Capacity (1)	4700	4700	4700	4700	4700	4700	4700	4700
K Factor (2)	0.1076	0.0963	0.0917	0.1517	0.1076	0.0963	0.0917	0.1517
D Factor (3)	0.2616	0.7384	0.4419	0.5581	0.2616	0.7384	0.4419	0.5581
Truck Factor (4)	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376
Peak Hour Volume	571	1443	822	1718	699	1766	1006	2102
Volume to Capacity	0.122	0.307	0.175	0.366	0.149	0.376	0.214	0.447
LOS	A	B	A	B	A	B	A	B
Cumulative + Project	115	292	267	172	84	419	387	153
2019 + Cumulative + Project								
Peak Hour Volume	686	1735	1089	1890	783	2185	1393	2255
Volume to Capacity	0.146	0.369	0.232	0.402	0.167	0.465	0.296	0.480
LOS	A	B	A	B	A	B	A	B
Increase in V/C	0.024	0.062	0.057	0.037	0.018	0.089	0.082	0.033
Impact?	None	None	None	None	None	None	None	None

Notes: (1) Capacity of 2,350 pcphpl from CALTRANS' Guide for the Preparation of Traffic Impact Studies, December 2002. (2) Latest K factor from Caltrans (based on 2007 report), which is the percentage of AADT in both directions. (3) Latest D factor from Caltrans (based on 2007 report), which when multiplied by K and ADT will provide peak hour volume. (4) Latest truck factor from Caltrans (based on 2007 report). Impact? = Direct, Cumulative, or None.

Under mid-term year 2019 + project construction + cumulative conditions, the study intersections, roadways, and freeway segments were calculated to operate at LOS C or better with no cumulatively considerable impacts.

14.0 Long-Term Year 2024 Conditions

This section documents long-term year 2024 conditions in case the entire project is constructed at the end of the period when construction must commence per the Conditional Use Permit (CUP). The year 2024 background volumes are based on increasing the existing year 2013 volumes by an annual growth rate of 2.8% as described in the Near-Term Year 2016 Conditions' Section. Year 2024 traffic volumes are shown in **Figure 17**. Intersection, segment, and freeway LOS are shown in **Tables 34, 35 & 36**. Intersection LOS calculations are included in **Appendix V**.

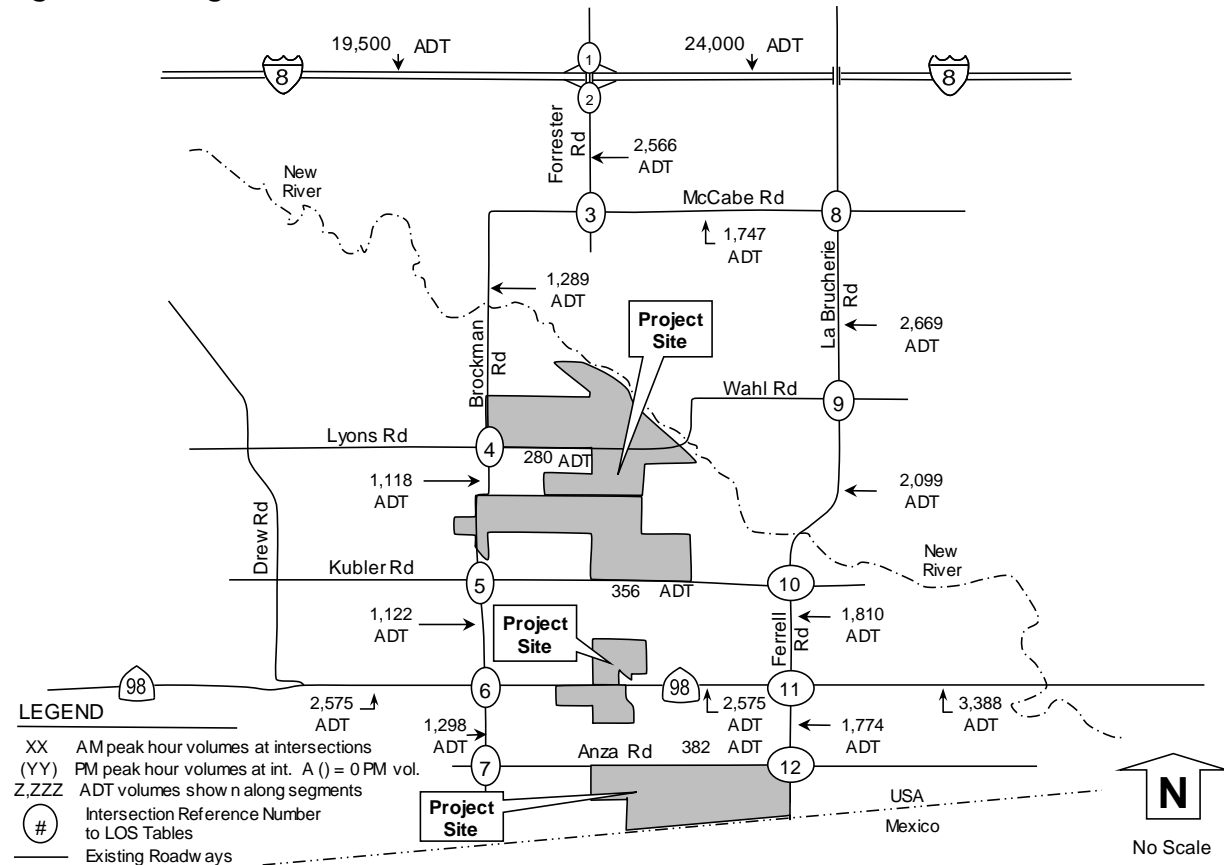
TABLE 34: YEAR 2024 INTERSECTION LOS

Intersection & (Control) ¹	Movement	Peak Hour	Year (2024)	
			Delay ²	LOS ³
1) Forrester Rd at I-8 WB Ramp (U)	Minor Leg	AM PM	10.2 11.0	B B
2) Forrester Rd at I-8 EB Ramp (U)	Minor Leg	AM PM	11.6 18.4	B C
3) Forrester Rd at McCabe Rd (U)	Minor Leg	AM PM	9.5 11.5	A B
4) Brockman Rd at Lyons Rd (U)	Minor Leg	AM PM	10.7 10.4	B B
5) Brockman Rd at Kubler Rd (U)	Minor Leg	AM PM	10.5 9.3	B A
6) Brockman Rd at SR-98 (U)	Minor Leg	AM PM	17.7 15.9	C C
7) Brockman Rd at Anza Rd (U)	Minor Leg	AM PM	8.5 8.8	A A
8) La Brucherie Rd at McCabe Rd (U)	All	AM PM	8.8 10.3	A B
9) La Brucherie Rd at Wahl Rd (U)	Minor Leg	AM PM	10.8 10.2	B B
10) Ferrell Rd at Kubler Rd (U)	Minor Leg	AM PM	10.0 10.1	B B
11) Ferrell Rd at SR-98 (U)	Minor Leg	AM PM	18.5 15.7	C C
12) Ferrell Rd at Anza Rd (U)	Minor Leg	AM PM	9.2 8.9	A A

Notes: 1) Intersection Control - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds.

3) LOS: Level of Service. Minor Leg: approach LOS of minor/lesser roadway. All: combined LOS for all approaches.

Figure 17: Long-Term Year 2024 Volumes



<p>Forrester Rd</p> <p>87 (41) 131 (194)</p> <p>1</p> <p>164 (66) 0 (0) 127 (38)</p> <p>5 (30) 41 (178)</p>				<p>I-8 WB Ramp</p> <p>26 (99) 0 (0) 3 (0)</p> <p>2</p> <p>206 (61) 61 (156)</p> <p>20 (126) 8 (89)</p>				<p>Forrester Rd</p> <p>5 (172) 8 (37) 0 (1)</p> <p>3</p> <p>169 (15) 0 (0) 23 (18)</p> <p>12 (14) 41 (11) 1 (0)</p>				<p>McCabe Rd</p>			
<p>Brockman Rd</p> <p>0 (0) 4 (1) 0 (0)</p> <p>4</p> <p>213 (22) 0 (0)</p> <p>20 (183) 1 (7)</p>				<p>Lyons Rd</p> <p>0 (1) 3 (3) 4 (0)</p> <p>5</p> <p>199 (8) 3 (4)</p> <p>24 (184) 0 (5)</p>				<p>Kubler Rd</p> <p>0 (5) 3 (0) 1 (0)</p> <p>6</p> <p>42 (1) 125 (14) 3 (3)</p> <p>4 (49) 46 (190) 23 (8)</p> <p>16 (4) 175 (39) 120 (0)</p>				<p>SR-98</p>			
<p>Brockman Rd</p> <p>1 (4) 5 (15) 0 (0)</p> <p>7</p> <p>0 (0) 0 (0) 0 (0)</p> <p>153 (43) 4 (1)</p> <p>1 (3) 1 (0) 1 (3)</p>				<p>Anza Rd</p> <p>7 (7) 18 (8) 0 (0)</p> <p>8</p> <p>14 (16) 76 (75) 72 (118)</p> <p>81 (11) 9 (9)</p>				<p>McCabe Rd</p> <p>87 (112) 65 (77) 12 (3)</p> <p>9</p> <p>8 (1) 178 (41) 8 (23)</p> <p>3 (4) 11 (16) 16 (3)</p> <p>1 (4) 18 (7) 4 (1)</p>				<p>Wahl Rd</p>			
<p>La Brucherie Rd</p> <p>1 (16) 1 (4) 1 (5)</p> <p>10</p> <p>16 (18) 23 (138) 1 (4)</p> <p>58 (4) 102 (30) 9 (30)</p> <p>27 (18) 328 (43) 84 (15)</p>				<p>Kubler Rd</p> <p>1 (3) 1 (0) 1 (3)</p> <p>11</p> <p>11 (83) 1 (45)</p> <p>24 (11) 3 (1) 20 (15)</p> <p>8 (4) 5 (4) 0 (0)</p>				<p>SR-98</p>				<p>Anza Rd</p>			
<p>Ferrell Rd</p> <p>20 (18) 23 (138) 1 (4)</p> <p>12</p> <p>0 (0) 3 (1) 0 (0)</p>				<p>Ferrell Rd</p> <p>7 (24) 1 (22) 0 (1)</p> <p>12</p> <p>0 (0) 3 (1) 0 (0)</p>				<p>Ferrell Rd</p> <p>7 (24) 1 (22) 0 (1)</p> <p>12</p> <p>0 (0) 3 (1) 0 (0)</p>				<p>Ferrell Rd</p> <p>7 (24) 1 (22) 0 (1)</p> <p>12</p> <p>0 (0) 3 (1) 0 (0)</p>			

TABLE 35: LONG-TERM YEAR 2024 SEGMENT LOS

Segment	Classification (as built)	Year 2024				
		Daily Volume	# of lanes	LOS C Capacity	V/C	LOS
Anza Road						
Brockman Rd to Ferrell Rd	Local (2U)	382	2	7,100	0.05	A
Brockman Road						
McCabe Rd to Lyons Rd	Major (2U)	1,289	2	7,100	0.18	A
Lyons Rd to Kubler Rd	Major (2U)	1,118	2	7,100	0.16	A
Kubler to SR-98	Major (2U)	1,122	2	7,100	0.16	A
SR-98 to Anza Rd	Not Classified (2U)	1,298	2	7,100	0.18	A
Forrester Road						
I-8 to McCabe Rd	Prime (2U)	2,566	2	7,100	0.36	B
Kubler Road						
Brockman Rd to Ferrell Rd	Major (2U)	356	2	7,100	0.05	A
La Brucherie Road/Ferrell Road						
McCabe Rd to Wahl Rd	Major (2U)	2,669	2	7,100	0.38	B
Wahl Rd to Kubler Rd	Major (2U)	2,099	2	7,100	0.30	B
Kubler Rd to SR-98	Major (2U)	1,810	2	7,100	0.25	A
SR-98 to Anza Rd	Minor (2U)	1,774	2	7,100	0.25	A
Lyons Road						
Brockman Rd to La Brucherie Rd	Minor (2U)	280	2	7,100	0.04	A
McCabe Road						
Forrester Rd to La Brucherie Rd	Major (2U)	1,747	2	7,100	0.25	A
SR-98						
Drew Rd to Brockman Rd	State Highway (2U)	2,575	2	7,100	0.36	B
Brockman Rd Ferrell	State Highway (2U)	2,575	2	7,100	0.36	B
Ferrell Rd to Dogwood Rd	State Highway (2U)	3,388	2	7,100	0.48	B

Notes: Classification based on 1/29/08 Circulation and Scenic Highways Element. 2U = 2 lane undivided roadway. Daily volume is a 24 hour volume. LOS: Level of Service. LOS based on actual number of lanes currently constructed. V/C: Volume to Capacity ratio.

TABLE 36: LONG-TERM YEAR 2024 FREEWAY LOS

Freeway Segment	I-8 Drew Rd to Forrester Rd				I-8 Forrester Rd to Imperial Ave			
	Forecasted Year 2024				Forecasted Year 2024			
ADT	19,500				24,000			
Peak Hour	A M				A M			
Direction	EB	WB	EB	WB	EB	WB	EB	WB
Number of Lanes	2	2	2	2	2	2	2	2
Capacity (1)	4,700	4,700	4,700	4,700	4,700	4,700	4,700	4,700
K Factor (2)	0.1076	0.0963	0.0917	0.1517	0.1076	0.0963	0.0917	0.1517
D Factor (3)	0.2616	0.7384	0.4419	0.5581	0.2616	0.7384	0.4419	0.5581
Truck Factor (4)	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376
Peak Hour Volume	655	1,655	943	1,971	807	2,037	1,161	2,426
Volume to Capacity	0.139	0.352	0.201	0.419	0.172	0.434	0.247	0.516
LOS	A	B	A	B	A	B	A	C

Notes: (1) Capacity of 2,350 pcphpl from CALTRANS' Guide for the Preparation of Traffic Impact Studies, December 2002. (2) Latest K factor from Caltrans (based on 2007 report), which is the percentage of AADT in both directions. (3) Latest D factor from Caltrans (based on 2007 report), which when multiplied by K and ADT will provide peak hour volume. (4) Latest truck factor from Caltrans (based on 2007 report).

Under long-term year 2024 conditions, the study intersections, roadways, and freeway segments were calculated to operate at LOS C or better.

15.0 Long-Term Year 2024 + Project Construction Conditions

This section documents the addition of construction traffic onto long-term year 2024 conditions. Year 2024 plus project construction traffic volumes are shown in **Figure 18**. Intersection, segment, and freeway LOS are shown in **Tables 37, 38 and 39**. Intersection LOS calculations are included in **Appendix W**.

TABLE 37: LONG-TERM YEAR 2024 WITH PROJECT CONSTRUCTION INTERSECTION LOS

Intersection & (Control) ¹	Movement	Year (2024)		Year (2024) + Project			
		Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	Impact ⁵
1) Forrester Rd at I-8 WB Ramp (U)	Minor	10.2	B	10.9	B	0.7	None
	Leg	11.0	B	11.4	B	0.4	None
2) Forrester Rd at I-8 EB Ramp (U)	Minor	11.6	B	11.8	B	0.2	None
	Leg	18.4	C	20.6	C	2.2	None
3) Forrester Rd at McCabe Rd (U)	Minor	9.5	A	10.2	B	0.7	None
	Leg	11.5	B	13.3	B	1.8	None
4) Brockman Rd at Lyons Rd (U)	Minor	10.7	B	12.4	B	1.7	None
	Leg	10.4	B	10.6	B	0.2	None
5) Brockman Rd at Kubler Rd (U)	Minor	10.5	B	10.9	B	0.4	None
	Leg	9.3	A	10.1	B	0.8	None
6) Brockman Rd at SR-98 (U)	Minor	17.7	C	19.4	C	1.7	None
	Leg	15.9	C	16.9	C	1.0	None
7) Brockman Rd at Anza Rd (U)	Minor	8.5	A	8.7	A	0.2	None
	Leg	8.8	A	8.8	A	0.0	None
8) La Brucherie Rd at McCabe Rd (U)	All	8.8	A	9.3	A	0.5	None
	All	10.3	B	10.9	B	0.6	None
9) La Brucherie Rd at Wahl Rd (U)	Minor	10.8	B	11.2	B	0.4	None
	Leg	10.2	B	10.6	B	0.4	None
10) Ferrell Rd at Kubler Rd (U)	Minor	10.0	B	10.3	B	0.3	None
	Leg	10.1	B	10.1	B	0.0	None
11) Ferrell Rd at SR-98 (U)	Minor	18.5	C	22.5	C	4.0	None
	Leg	15.7	C	18.7	C	3.0	None
12) Ferrell Rd at Anza Rd (U)	Minor	9.2	A	9.2	A	0.0	None
	Leg	8.9	A	10.1	B	1.2	None

Notes: 1) Intersection Control - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds.

3) LOS: Level of Service. Minor Leg: approach LOS of minor/lesser roadway. All: combined LOS for all approaches.

4) Delta is the increase in delay from project. 5) Type of impact: none, direct, or cumulative.

LEGEND

- XX AM peak hour volumes at intersections
- (YY) PM peak hour volumes at int. A () = 0 PM vol.
- Z,ZZZ ADT volumes shown along segments
- # Intersection Reference Number to LOS Tables
- Existing Roadways

Map Data:

- Highway 8 (Top):** 19,533 ADT (left), 24,166 ADT (right)
- Forrester Rd (Vertical):** 2,832 ADT (left)
- McCabe Rd (Horizontal):** 1,813 ADT (up)
- La Brucherie Rd (Vertical):** 2,848 ADT (left)
- Wahl Rd (Horizontal):** 2,179 ADT (left)
- Ferrell Rd (Vertical):** 1,949 ADT (left), 1,880 ADT (right)
- Anza Rd (Horizontal):** 488 ADT (left), 2,635 ADT (right)
- Lyons Rd (Horizontal):** 1,198 ADT (right)
- Kubler Rd (Horizontal):** 1,228 ADT (right)
- Drew Rd (Vertical):** 2,608 ADT (up)
- New River:** Dashed line
- Project Site:** Shaded area with callout boxes
- Intersection Reference Numbers:** 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
- Other Labels:** New River, USA, Mexico, No Scale, N

<p>Forrester Rd</p> <p>87 (41) ↓</p> <p>151 (195) ↓</p> <p>164 (66) ↑</p> <p>0 (0) ↑</p> <p>178 (40) ↑</p> <p>5 (40) ↓</p>	<p>I-8 WB Ramp</p> <p>26 (99) ↓</p> <p>0 (0) ↓</p> <p>13 (0) ↓</p>	<p>I-8 EB Ramp</p> <p>277 (64) ↓</p> <p>61 (156) ↓</p>	<p>Forrester Rd</p> <p>240 (17) ↓</p> <p>0 (0) ↓</p> <p>33 (19) ↓</p> <p>13 (24) ↓</p> <p>51 (11) ↓</p> <p>1 (0) ↓</p>	<p>McCabe Rd</p> <p>7 (243) ↓</p> <p>8 (47) ↓</p> <p>0 (1) ↓</p>	<p>Forrester Rd</p> <p>42 (7) ↓</p> <p>137 (14) ↓</p> <p>7 (3) ↓</p> <p>16 (18) ↓</p> <p>175 (41) ↓</p> <p>120 (0) ↓</p>	<p>SR-98</p> <p>10 (49) ↓</p> <p>48 (190) ↓</p> <p>25 (8) ↓</p>	<p>Brockman Rd</p> <p>0 (1) ↓</p> <p>12 (0) ↓</p> <p>0 (0) ↓</p> <p>3 (203) ↓</p> <p>7 (0) ↓</p>	<p>Lyons Rd</p> <p>61 (1) ↓</p> <p>1 (62) ↓</p> <p>3 (11) ↓</p> <p>8 (0) ↓</p> <p>5 (7) ↓</p> <p>21 (203) ↓</p>	<p>4</p>	<p>Brockman Rd</p> <p>0 (1) ↓</p> <p>15 (15) ↓</p> <p>7 (21) ↓</p> <p>18 (8) ↓</p> <p>0 (0) ↓</p> <p>0 (0) ↓</p>	<p>Anza Rd</p> <p>20 (16) ↓</p> <p>100 (76) ↓</p> <p>72 (118) ↓</p> <p>8 (37) ↓</p> <p>68 (141) ↓</p> <p>25 (16) ↓</p> <p>10 (30) ↓</p> <p>82 (122) ↓</p> <p>10 (31) ↓</p>	<p>McCabe Rd</p> <p>87 (112) ↓</p> <p>69 (77) ↓</p> <p>32 (4) ↓</p> <p>La Brucherie Rd</p> <p>58 (4) ↓</p> <p>124 (31) ↓</p> <p>10 (48) ↓</p>	<p>SR-98</p> <p>45 (19) ↓</p> <p>346 (43) ↓</p> <p>94 (15) ↓</p>	<p>Forrester Rd</p> <p>240 (17) ↓</p> <p>0 (0) ↓</p> <p>33 (19) ↓</p> <p>13 (24) ↓</p> <p>51 (11) ↓</p> <p>1 (0) ↓</p>	<p>McCabe Rd</p> <p>7 (243) ↓</p> <p>8 (47) ↓</p> <p>0 (1) ↓</p>	<p>Forrester Rd</p> <p>42 (7) ↓</p> <p>137 (14) ↓</p> <p>7 (3) ↓</p> <p>16 (18) ↓</p> <p>175 (41) ↓</p> <p>120 (0) ↓</p>	<p>SR-98</p> <p>10 (49) ↓</p> <p>48 (190) ↓</p> <p>25 (8) ↓</p>	<p>Brockman Rd</p> <p>0 (1) ↓</p> <p>15 (15) ↓</p> <p>7 (21) ↓</p> <p>18 (8) ↓</p> <p>0 (0) ↓</p> <p>0 (0) ↓</p>	<p>Anza Rd</p> <p>20 (16) ↓</p> <p>100 (76) ↓</p> <p>72 (118) ↓</p> <p>8 (37) ↓</p> <p>68 (141) ↓</p> <p>25 (16) ↓</p> <p>10 (30) ↓</p> <p>82 (122) ↓</p> <p>10 (31) ↓</p>	<p>McCabe Rd</p> <p>87 (112) ↓</p> <p>69 (77) ↓</p> <p>32 (4) ↓</p> <p>La Brucherie Rd</p> <p>58 (4) ↓</p> <p>124 (31) ↓</p> <p>10 (48) ↓</p>	<p>SR-98</p> <p>45 (19) ↓</p> <p>346 (43) ↓</p> <p>94 (15) ↓</p>	<p>Forrester Rd</p> <p>240 (17) ↓</p> <p>0 (0) ↓</p> <p>33 (19) ↓</p> <p>13 (24) ↓</p> <p>51 (11) ↓</p> <p>1 (0) ↓</p>	<p>McCabe Rd</p> <p>7 (243) ↓</p> <p>8 (47) ↓</p> <p>0 (1) ↓</p>	<p>Forrester Rd</p> <p>42 (7) ↓</p> <p>137 (14) ↓</p> <p>7 (3) ↓</p> <p>16 (18) ↓</p> <p>175 (41) ↓</p> <p>120 (0) ↓</p>	<p>SR-98</p> <p>10 (49) ↓</p> <p>48 (190) ↓</p> <p>25 (8) ↓</p>	<p>Brockman Rd</p> <p>0 (1) ↓</p> <p>15 (15) ↓</p> <p>7 (21) ↓</p> <p>18 (8) ↓</p> <p>0 (0) ↓</p> <p>0 (0) ↓</p>	<p>Anza Rd</p> <p>20 (16) ↓</p> <p>100 (76) ↓</p> <p>72 (118) ↓</p> <p>8 (37) ↓</p> <p>68 (141) ↓</p> <p>25 (16) ↓</p> <p>10 (30) ↓</p> <p>82 (122) ↓</p> <p>10 (31) ↓</p>	<p>McCabe Rd</p> <p>87 (112) ↓</p> <p>69 (77) ↓</p> <p>32 (4) ↓</p> <p>La Brucherie Rd</p> <p>58 (4) ↓</p> <p>124 (31) ↓</p> <p>10 (48) ↓</p>	<p>SR-98</p> <p>45 (19) ↓</p> <p>346 (43) ↓</p> <p>94 (15) ↓</p>	<p>Forrester Rd</p> <p>240 (17) ↓</p> <p>0 (0) ↓</p> <p>33 (19) ↓</p> <p>13 (24) ↓</p> <p>51 (11) ↓</p> <p>1 (0) ↓</p>	<p>McCabe Rd</p> <p>7 (243) ↓</p> <p>8 (47) ↓</p> <p>0 (1) ↓</p>	<p>Forrester Rd</p> <p>42 (7) ↓</p> <p>137 (14) ↓</p> <p>7 (3) ↓</p> <p>16 (18) ↓</p> <p>175 (41) ↓</p> <p>120 (0) ↓</p>	<p>SR-98</p> <p>10 (49) ↓</p> <p>48 (190) ↓</p> <p>25 (8) ↓</p>	<p>Brockman Rd</p> <p>0 (1) ↓</p> <p>15 (15) ↓</p> <p>7 (21) ↓</p> <p>18 (8) ↓</p> <p>0 (0) ↓</p> <p>0 (0) ↓</p>	<p>Anza Rd</p> <p>20 (16) ↓</p> <p>100 (76) ↓</p> <p>72 (118) ↓</p> <p>8 (37) ↓</p> <p>68 (141) ↓</p> <p>25 (16) ↓</p> <p>10 (30) ↓</p> <p>82 (122) ↓</p> <p>10 (31) ↓</p>	<p>McCabe Rd</p> <p>87 (112) ↓</p> <p>69 (77) ↓</p> <p>32 (4) ↓</p> <p>La Brucherie Rd</p> <p>58 (4) ↓</p> <p>124 (31) ↓</p> <p>10 (48) ↓</p>	<p>SR-98</p> <p>45 (19) ↓</p> <p>346 (43) ↓</p> <p>94 (15) ↓</p>	<p>Forrester Rd</p> <p>240 (17) ↓</p> <p>0 (0) ↓</p> <p>33 (19) ↓</p> <p>13 (24) ↓</p> <p>51 (11) ↓</p> <p>1 (0) ↓</p>	<p>McCabe Rd</p> <p>7 (243) ↓</p> <p>8 (47) ↓</p> <p>0 (1) ↓</p>	<p>Forrester Rd</p> <p>42 (7) ↓</p> <p>137 (14) ↓</p> <p>7 (3) ↓</p> <p>16 (18) ↓</p> <p>175 (41) ↓</p> <p>120 (0) ↓</p>	<p>SR-98</p> <p>10 (49) ↓</p> <p>48 (190) ↓</p> <p>25 (8) ↓</p>	<p>Brockman Rd</p> <p>0 (1) ↓</p> <p>15 (15) ↓</p> <p>7 (21) ↓</p> <p>18 (8) ↓</p> <p>0 (0) ↓</p> <p>0 (0) ↓</p>	<p>Anza Rd</p> <p>20 (16) ↓</p> <p>100 (76) ↓</p> <p>72 (118) ↓</p> <p>8 (37) ↓</p> <p>68 (141) ↓</p> <p>25 (16) ↓</p> <p>10 (30) ↓</p> <p>82 (122) ↓</p> <p>10 (31) ↓</p>	<p>McCabe Rd</p> <p>87 (112) ↓</p> <p>69 (77) ↓</p> <p>32 (4) ↓</p> <p>La Brucherie Rd</p> <p>58 (4) ↓</p> <p>124 (31) ↓</p>
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TABLE 38: LONG-TERM YEAR 2024 WITH PROJECT CONSTRUCTION SEGMENT LOS

Segment	Classification (as built)	Year 2024				Project Daily Volume	Year 2024 + Project					
		Daily Volume	LOS C Capacity	V/C	LOS		Daily Volume	LOS C Capacity	V/C	LOS	Change in V/C	Impact?
Anza Road												
Brockman Rd to Ferrell Rd	Local (2U)	382	7,100	0.05	A	106	488	7,100	0.07	A	0.01	None
Brockman Road												
McCabe Rd to Lyons Rd	Major (2U)	1,289	7,100	0.18	A	266	1,555	7,100	0.22	A	0.04	None
Lyons Rd to Kubler Rd	Major (2U)	1,118	7,100	0.16	A	80	1,198	7,100	0.17	A	0.01	None
Kubler to SR-98	Major (2U)	1,122	7,100	0.16	A	106	1,228	7,100	0.17	A	0.01	None
SR-98 to Anza Rd	Not Classified (2U)	1,298	7,100	0.18	A	46	1,344	7,100	0.19	A	0.01	None
Forrester Road												
I-8 to McCabe Rd	Prime (2U)	2,566	7,100	0.36	B	266	2,832	7,100	0.40	B	0.04	None
Kubler Road												
Brockman Rd to Ferrell Rd	Major (2U)	356	7,100	0.05	A	100	456	7,100	0.06	A	0.01	None
La Brucherie Road/Ferrell Road												
McCabe Rd to Wahl Rd	Major (2U)	2,669	7,100	0.38	B	179	2,848	7,100	0.40	B	0.03	None
Wahl Rd to Kubler Rd	Major (2U)	2,099	7,100	0.30	B	80	2,179	7,100	0.31	B	0.01	None
Kubler Rd to SR-98	Major (2U)	1,810	7,100	0.25	A	139	1,949	7,100	0.27	B	0.02	None
SR-98 to Anza Rd	Minor (2U)	1,774	7,100	0.25	A	106	1,880	7,100	0.26	A	0.01	None
Lyons Road												
Brockman Rd to La Brucherie Rd	Minor (2U)	280	7,100	0.04	A	239	519	7,100	0.07	A	0.03	None
McCabe Road												
Forrester Rd to La Brucherie Rd	Major (2U)	1,747	7,100	0.25	A	66	1,813	7,100	0.26	A	0.01	None
SR-98												
Drew Rd to Brockman Rd State Highway (2U)		2,575	7,100	0.36	B	33	2,608	7,100	0.37	B	0.00	None
Brockman Rd Ferrell State Highway (2U)		2,575	7,100	0.36	B	60	2,635	7,100	0.37	B	0.01	None
Ferrell Rd to Dogwood Rd State Highway (2U)		3,388	7,100	0.48	B	153	3,541	7,100	0.50	B	0.02	None

Notes: Classification based on 1/29/08 Circulation and Scenic Highways Element. 2U = 2 lane undivided roadway. Daily volume is a 24 hour volume. LOS: Level of Service. LOS based on actual number of lanes currently constructed. V/C: Volume to Capacity ratio. Impact? = type of impact (none, cumulative, or direct).

TABLE 39: LONG-TERM YEAR 2024 WITH PROJECT CONSTRUCTION FREEWAY LOS

Freeway Segment	I-8 Drew Rd to Forrester Rd				I-8 Forrester Rd to Imperial Ave			
	Forecasted Year 2024				Forecasted Year 2024			
ADT	19,500				24,000			
Peak Hour	A M				P M			
Direction	EB	WB	EB	WB	EB	WB	EB	WB
Number of Lanes	2	2	2	2	2	2	2	2
Capacity (1)	4,700	4,700	4,700	4,700	4,700	4,700	4,700	4,700
K Factor (2)	0.1076	0.0963	0.0917	0.1517	0.1076	0.0963	0.0917	0.1517
D Factor (3)	0.2616	0.7384	0.4419	0.5581	0.2616	0.7384	0.4419	0.5581
Truck Factor (4)	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376
Peak Hour Volume	655	1,655	943	1,971	807	2,037	1,161	2,426
Volume to Capacity	0.139	0.352	0.201	0.419	0.172	0.434	0.247	0.516
LOS	A	B	A	B	A	B	A	C
Project Pk Hr Vol	10	0	0	10	2	51	51	2
2024 + Project								
Peak Hour Volume	665	1,655	943	1,981	809	2,088	1,212	2,428
Volume to Capacity	0.142	0.352	0.201	0.421	0.172	0.444	0.258	0.517
LOS	A	B	A	B	A	B	A	C
Increase in V/C	0.002	0.000	0.000	0.002	0.000	0.011	0.011	0.000
Impact?	None	None	None	None	None	None	None	None

Notes: (1) Capacity of 2,350 pcphpl from CALTRANS' Guide for the Preparation of Traffic Impact Studies, December 2002. (2) Latest K factor from Caltrans (based on 2007 report), which is the percentage of AADT in both directions. (3) Latest D factor from Caltrans (based on 2007 report), which when multiplied by K and ADT will provide peak hour volume. (4) Latest truck factor from Caltrans (based on 2007 report). Impact? = Direct, Cumulative, or None.

Under long-term year 2024 + project construction conditions, the study intersections, roadways, and freeway segments were calculated to operate at LOS C or better with no significant direct project impacts.

16.0 Long-Term Year 2024 Cumulative Projects (Past, Present, & Reasonably Foreseeable New Development)

The long-term cumulative project list was based on the near-term cumulative project list; however, most of the projects on this list are solar or other renewable energy projects. For these solar/renewable energy projects, the traffic generation was updated to reflect the post construction operations phase, which has a significantly lower amount of traffic because the typical operations staff is about 10 people compared to about 200 to 250 construction workers required to construct a solar project. The timely conversion of construction to operations is supported by the fact that County Code section 90203.13 voids such project's conditional use permits unless the permittee commences the project within one year from the approval date of the conditional use permit or obtains an extension for up to two one-year periods. Therefore, if applications on file at the County in 2013 take two years to get approved, have a one year CUP life with two years of possible CUP extensions, and an 18 month construction period, then it is reasonable to assume all renewable energy projects on the cumulative list will be completed after year 2019 and would be generating operations traffic (not construction traffic) as noted below.

The long-term cumulative list below describes the cumulative projects in the immediate area around the project site (i.e. projects that are generally located south of I-8 and west of Clark Road). Most of the cumulative projects have completed technical studies including traffic generation information; however, several do not. For the projects that do not have detailed operations phase traffic generation information, an estimate was calculated based on operations traffic generation information for similar projects. Operations traffic generation calculations are included in **Appendix X**. Information for each cumulative project is included below with text identifying if a cumulative project was observed to be under construction:

- 1) *Calexico I-A* - a photovoltaic solar facility capable of producing approximately 100 megawatts of electricity generally located 6 miles west of the City of Calexico. This project was under construction at the time the year 2013 traffic counts were collected; thereby this project's cumulative traffic is accounted for within the existing baseline data that was also increased by the 2.8% growth factor for ambient growth for year 2024 conditions. Therefore, this cumulative project construction traffic as embedded in the ambient growth would be higher than the operations phase traffic for this project.
- 2) *Calexico I-B* - a photovoltaic solar facility capable of producing approximately 100 megawatts of electricity generally located 6 miles west of the City of Calexico. The operations phase is calculated to generate 8 daily trips with 3 AM peak hour trips and 3 PM peak hour trips.
- 3) *Calexico II-A* - a photovoltaic solar facility capable of producing approximately 100 megawatts of electricity generally located 6 miles west of the City of Calexico. The operations phase is calculated to generate 8 daily trips with 3 AM peak hour trips and 3 PM peak hour trips.
- 4) *Calexico II-B* - a photovoltaic solar facility capable of producing approximately 100 megawatts of electricity generally located 6 miles west of the City of Calexico. The operations phase is calculated to generate 8 daily trips with 3 AM peak hour trips and 3 PM peak hour trips.

peak hour trips.

- 5) *Campo Verde* – a photovoltaic solar facility generally located west of Drew Road and south of I-8. This project was under construction at the time the year 2013 traffic counts were collected; thereby this project’s cumulative traffic is accounted for within the existing baseline data that was also increased by the 2.8% growth factor for ambient growth for year 2024 conditions. Therefore, this cumulative project construction traffic as embedded in the ambient growth would be higher than the operations phase traffic for this project.
- 6) *Centinela* - a photovoltaic solar facility capable of producing approximately 275 megawatts of electricity generally located in the vicinity of SR-98 and Drew Road. This project was under construction at the time the year 2013 traffic counts were collected; thereby this project’s cumulative traffic is accounted for within the existing baseline data that was also increased by the 2.8% growth factor for ambient growth for year 2024 conditions. Therefore, this cumulative project construction traffic as embedded in the ambient growth would be higher than the operations phase traffic for this project.
- 7) *County Center II Expansion* – a mixed use project of a commercial center, expansion of the Imperial County Office of Education, a Joint-Use Teacher Training and Conference Center, Judicial Center, County Park, Jail expansion, County Administrative Complex, Public Works Administration, and a County Administrative Complex located on the southwest corner of McCabe Road and Clark Road. The total project is calculated to generate 24,069 ADT with 2,581 AM peak hour trips and 2,242 PM peak hour trips.
- 8) *IV Substation and SDG&E Ocotillo Solar* – a project connecting the Imperial Irrigation District’s “S” line from the Imperial Irrigation District substation to the Imperial Valley substation and a photovoltaic solar facility capable of producing approximately 14 megawatts of electricity generally located adjacent to the SDG&E Imperial Valley Substation. The operations phase is calculated to generate 8 daily trips with 3 AM peak hour trips and 3 PM peak hour trips.
- 9) *Imperial Solar 1 LLC (Heber Solar Energy Facility)* – a solar facility generally located in the vicinity of Dogwood Road south of E Heber Road. This project is northeast of the study area and is not anticipated to add traffic to the study area roadways.
- 10) *Imperial Solar Energy Center South* – a photovoltaic solar facility capable of producing approximately 200 megawatts of electricity generally located south of SR-98 and east of Drew Road. This project was under construction at the time the year 2013 traffic counts were collected; thereby this project’s cumulative traffic is accounted for within the existing baseline data that was also increased by the 2.8% growth factor for ambient growth for year 2024 conditions. Therefore, this cumulative project construction traffic as embedded in the ambient growth would be higher than the operations phase traffic for this project.
- 11) *Imperial Solar Energy Center West* – a photovoltaic solar facility capable of producing approximately 250 megawatts of electricity generally located east of Dunaway Road and located both north and south of I-8. The operations phase is calculated to generate 15 daily trips with 4 AM peak hour trips and 4 PM peak hour trips.
- 12) *IRIS Solar Farm Cluster (Ferrell, Rockwood, Iris, and Lyons)* – photovoltaic solar facilities capable of producing approximately 200 megawatts of electricity generally located north of SR-98 between Brockman Road and Weed Road. The traffic generation for this cumulative

project is calculated at 556 ADT with 221 AM and 225 PM peak hour trips.

- 13) *Linda Vista* – A mixed use project of 182 single family homes and a 6 acre commercial lot generally located on the west side of Clark Road between I-8 and McCabe Road. The traffic generation for this cumulative project is calculated at 7,175 ADT with 252 AM and 676 PM peak hour trips.
- 14) *Mount Signal Solar Farm I* – a photovoltaic solar facility capable of producing approximately 200 megawatts of electricity generally located south of SR-98 between Pulliam Road and Ferrell Road. This project was under construction at the time the year 2013 traffic counts were collected; thereby this project's cumulative traffic is accounted for within the existing baseline data that was also increased by the 2.8% growth factor for ambient growth for year 2024 conditions. Therefore, this cumulative project construction traffic as embedded in the ambient growth would be higher than the operations phase traffic for this project.
- 15) *CANergy Rockwood* – a chemical manufacturing project generally located northeast of Brawley. This project is outside of the project's traffic study area (about 20 miles away as a crow flies); however, this cumulative project is included because it may add up to 20 peak hour trips to I-8 in the vicinity of the project.
- 16) *California Ethanol & Power* – an electricity and bio-methane facility generally located approximately 4.5 miles south-southeast of the City of Brawley. This project is outside of the project's traffic study area (about 15 miles away as a crow flies); however, this cumulative project is included because it may add up to 20 peak hour trips to I-8 in the vicinity of the project.
- 17) *Cumulative on I-8* – some of the remaining cumulative projects within Imperial County may add traffic to I-8. Many of the cumulative projects do not have traffic assignments for I-8 (because they are too far away) and some cumulative projects are too small to require a traffic study; therefore, they do not have reported cumulative traffic volumes for I-8. To account for the possibility of cumulative traffic being added to I-8, five percent of the existing I-8 peak hour volume was used as cumulative background peak hour traffic on I-8.

Traffic from the long-term cumulative list above was applied to the long-term year 2024 conditions. The long-term cumulative project (new development) volumes are shown in **Figure 19**.

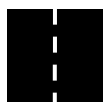
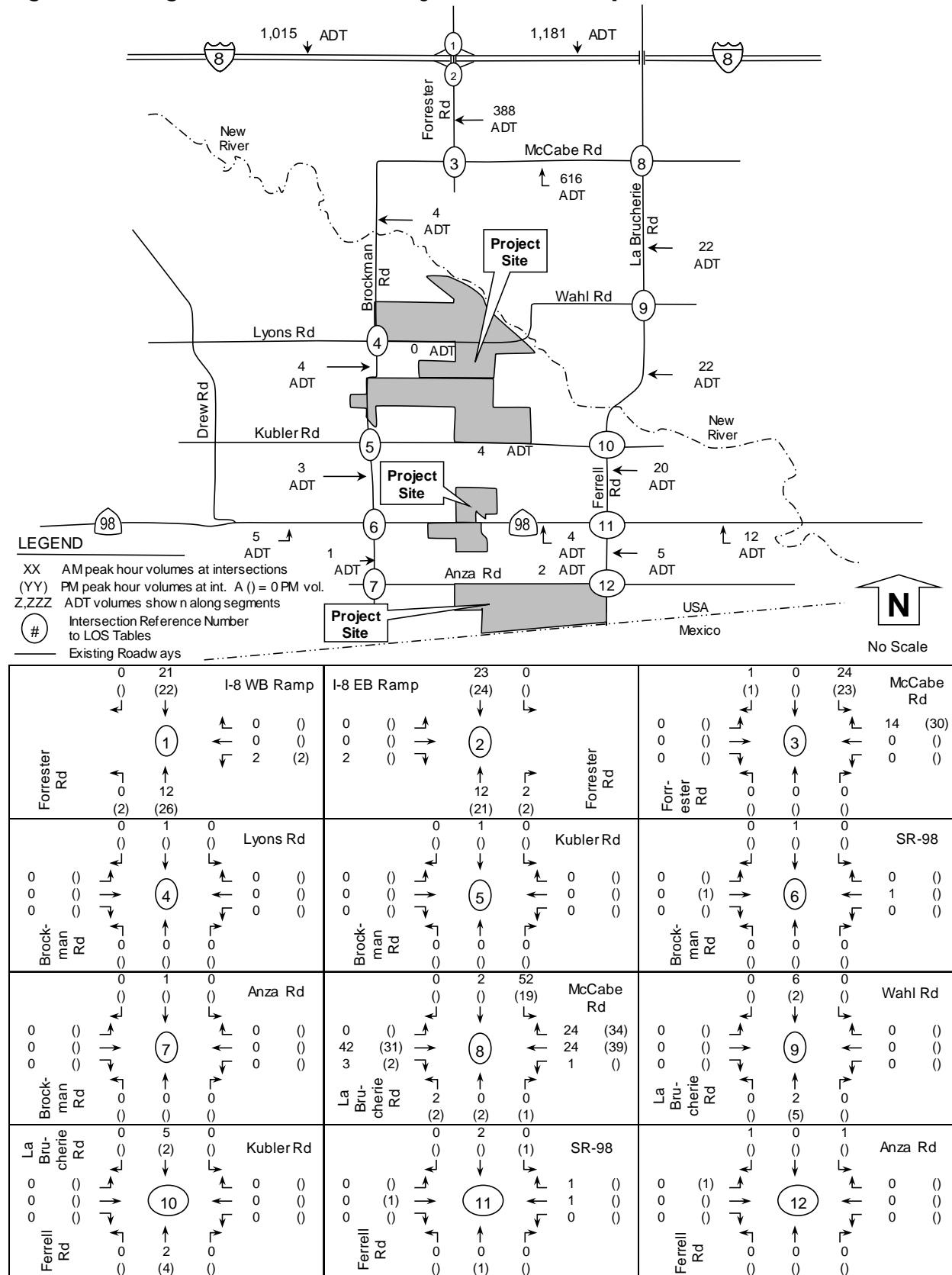


Figure 19: Long-Term Cumulative Project (New Development) Volumes



17.0 Long-Term Year 2024 + Project Construction + Cumulative Conditions

This section documents the addition of project construction traffic onto year 2024 with cumulative conditions. The long-term cumulative project traffic was used for this scenario. Year 2024 plus project construction + cumulative traffic volumes are shown in **Figure 20**. Intersection, segment, and freeway LOS are shown in **Tables 40, 41 and 42**. Intersection LOS calculations are included in **Appendix Y**.

TABLE 40: LONG-TERM YEAR 2024 WITH PROJECT CONSTRUCTION WITH CUMULATIVE INTERSECTION LOS

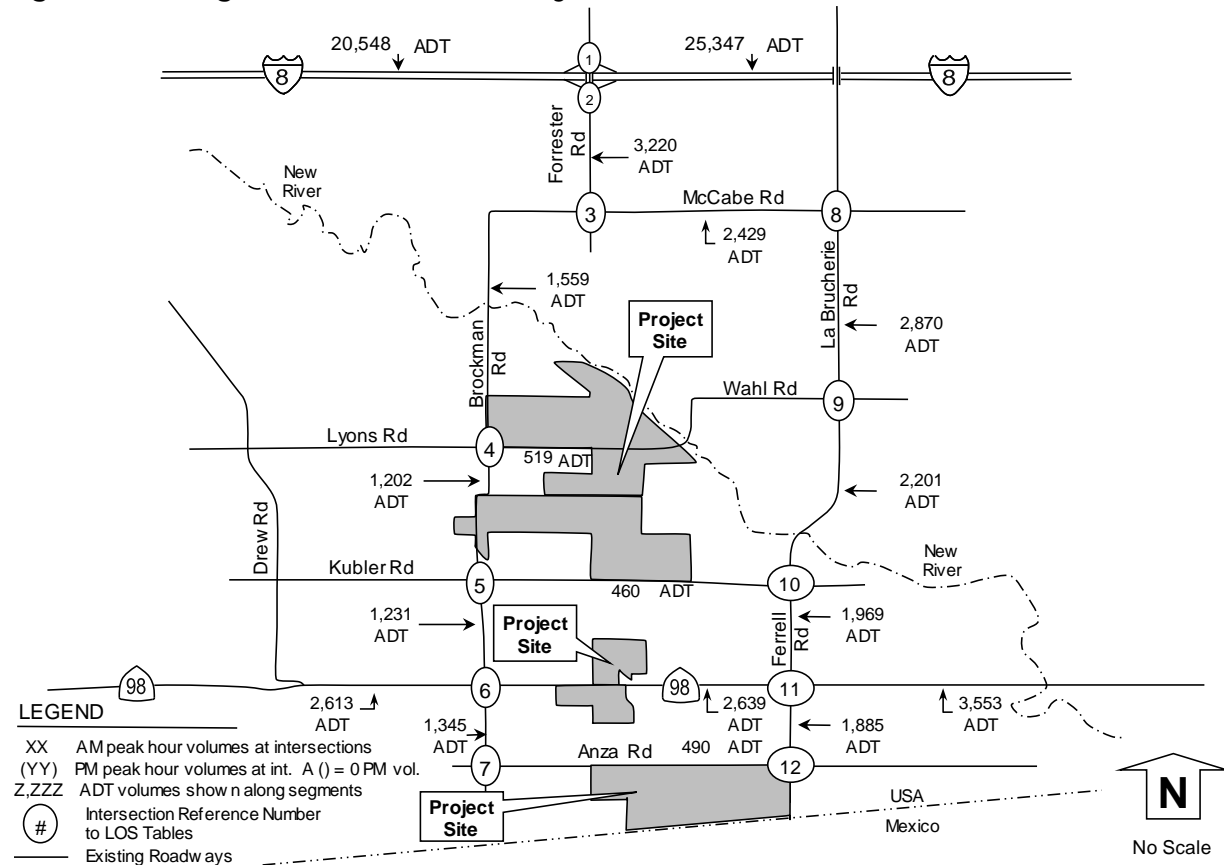
Intersection & (Control) ¹	Movement	Peak Hour	Year (2024) + Cumulative		Year (2024) + Cumulative + Project			
			Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	Impact ⁵
1) Forrester Rd at I-8 WB Ramp (U)	Minor Leg	AM PM	10.4 11.5	B B	11.2 11.9	B B	0.8 0.4	None None
2) Forrester Rd at I-8 EB Ramp (U)	Minor Leg	AM PM	11.8 20.0	B C	12.1 22.5	B C	0.3 2.5	None None
3) Forrester Rd at McCabe Rd (U)	Minor Leg	AM PM	9.8 11.7	A B	10.6 14.9	B B	0.8 3.2	None None
4) Brockman Rd at Lyons Rd (U)	Minor Leg	AM PM	10.7 10.4	B B	12.4 10.6	B B	1.7 0.2	None None
5) Brockman Rd at Kubler Rd (U)	Minor Leg	AM PM	10.5 9.3	B A	11.0 10.1	B B	0.5 0.8	None None
6) Brockman Rd at SR-98 (U)	Minor Leg	AM PM	17.8 15.9	C C	19.5 17.0	C C	1.7 1.1	None None
7) Brockman Rd at Anza Rd (U)	Minor Leg	AM PM	8.6 8.8	A A	8.7 8.8	A A	0.1 0.0	None None
8) La Brucherie Rd at McCabe Rd (U)	All All	AM PM	9.9 11.7	A B	10.7 12.6	B B	0.8 0.9	None None
9) La Brucherie Rd at Wahl Rd (U)	Minor Leg	AM PM	10.8 10.2	B B	11.3 11.2	B B	0.5 1.0	None None
10) Ferrell Rd at Kubler Rd (U)	Minor Leg	AM PM	10.1 10.0	B B	10.4 10.0	B B	0.3 0.0	None None
11) Ferrell Rd at SR-98 (U)	Minor Leg	AM PM	18.7 15.8	C C	22.8 18.9	C C	4.1 3.1	None None
12) Ferrell Rd at Anza Rd (U)	Minor Leg	AM PM	9.2 9.6	A A	9.2 10.1	A B	0.0 0.5	None None

Notes: 1) Intersection Control - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds.

3) LOS: Level of Service. Minor Leg: approach LOS of minor/lesser roadway. All: combined LOS for all approaches.

4) Delta is the increase in delay from project. 5) Type of impact: none, direct, or cumulative.

Figure 20: Long-Term Year 2024 + Project Construction + Cumulative Volumes



<p>Forrester Rd</p> <p>87 (41) 172 (217)</p> <p>164 (66) 0 (0) 180 (42)</p> <p>5 (42) 54 (224)</p> <p>I-8 WB Ramp</p>				<p>I-8 EB Ramp</p> <p>26 (99) 0 (0) 15 (0)</p> <p>300 (88) 61 (156)</p> <p>33 (177) 12 (142)</p> <p>Forrester Rd</p>				<p>McCabe Rd</p> <p>241 (18) 0 (0) 57 (42)</p> <p>7 (243) 8 (47) 0 (1)</p> <p>27 (54) 51 (11) 1 (0)</p>			
<p>Brockman Rd</p> <p>0 12 0</p> <p>4 (4) 234 (23) 61 (1)</p> <p>1 (62) 3 (11) 8 (0)</p> <p>21 (203) 5 (7)</p> <p>Lyons Rd</p>				<p>Kubler Rd</p> <p>0 2 0</p> <p>0 (5) 0 (4) 4 (0)</p> <p>220 (9) 7 (4)</p> <p>4 (5) 3 (2) 1 (10)</p> <p>Brockman Rd</p>				<p>SR-98</p> <p>10 48 25</p> <p>42 (49) 138 (191) 7 (8)</p> <p>16 (18) 176 (41) 120 (0)</p> <p>4 (21) 5 (156) 5 (125)</p> <p>Brockman Rd</p>			
<p>Brockman Rd</p> <p>1 5 0</p> <p>7 (1) 1 (0) 17 (15)</p> <p>7 (21) 18 (8) 0 (0)</p> <p>0 (0) 0 (0) 0 (0)</p> <p>Anza Rd</p>				<p>La Brucherie Rd</p> <p>8 110 28</p> <p>37 (172) 18 (18)</p> <p>20 (16) 102 (76) 124 (137)</p> <p>111 (146) 93 (116) 33 (4)</p> <p>12 (32) 82 (124) 10 (32)</p> <p>La Brucherie Rd</p>				<p>Wahl Rd</p> <p>5 11 16</p> <p>34 (16) 3 (3)</p> <p>38 (3) 208 (44) 8 (23)</p> <p>1 (4) 18 (7) 4 (1)</p> <p>9 (9) 22 (166) 0 (9)</p> <p>La Brucherie Rd</p>			
<p>La Brucherie Rd</p> <p>1 1 2</p> <p>22 (22) 176 (46) 4 (1)</p> <p>1 (3) 1 (0) 1 (3)</p> <p>44 (19) 26 (160) 1 (4)</p> <p>Kubler Rd</p>				<p>Ferrell Rd</p> <p>3 41 7</p> <p>42 (286) 1 (1)</p> <p>58 (4) 126 (31) 10 (49)</p> <p>46 (19) 347 (43) 94 (15)</p> <p>12 (106) 1 (55)</p> <p>SR-98</p>				<p>Anza Rd</p> <p>8 1 0</p> <p>57 (22) 3 (1)</p> <p>57 (12) 3 (0) 21 (15)</p> <p>8 (4) 5 (4) 0 (0)</p> <p>0 (0) 3 (1) 0 (0)</p> <p>Ferrell Rd</p>			

TABLE 41: LONG-TERM YEAR 2024 WITH PROJECT CONSTRUCTION WITH CUMULATIVE SEGMENT LOS

Segment	Classification (as built)	Year 2024 + Cumulative				Project Daily Volumes	Year 2024 + Cumulative + Project				
		Daily Volume	LOS C Capacity	V/C	LOS		Daily Volume	LOS C Capacity	V/C	LOS	Impact?
Anza Road											
Brockman Rd to Ferrell Rd	Local (2U)	384	7,100	0.05	A	106	490	7,100	0.07	A	None
Brockman Road											
McCabe Rd to Lyons Rd	Major (2U)	1,293	7,100	0.18	A	266	1,559	7,100	0.22	A	None
Lyons Rd to Kubler Rd	Major (2U)	1,122	7,100	0.16	A	80	1,202	7,100	0.17	A	None
Kubler to SR-98	Major (2U)	1,125	7,100	0.16	A	106	1,231	7,100	0.17	A	None
SR-98 to Anza Rd	Not Classified (2U)	1,299	7,100	0.18	A	46	1,345	7,100	0.19	A	None
Forrester Road											
I-8 to McCabe Rd	Prime (2U)	2,954	7,100	0.42	B	266	3,220	7,100	0.45	B	None
Kubler Road											
Brockman Rd to Ferrell Rd	Major (2U)	360	7,100	0.05	A	100	460	7,100	0.06	A	None
La Brucherie Road/Ferrell Road											
McCabe Rd to Wahl Rd	Major (2U)	2,691	7,100	0.38	B	179	2,870	7,100	0.40	B	None
Wahl Rd to Kubler Rd	Major (2U)	2,121	7,100	0.30	B	80	2,201	7,100	0.31	B	None
Kubler Rd to SR-98	Major (2U)	1,830	7,100	0.26	A	139	1,969	7,100	0.28	B	None
SR-98 to Anza Rd	Minor (2U)	1,779	7,100	0.25	A	106	1,885	7,100	0.27	A	None
Lyons Road											
Brockman Rd to La Brucherie Rd	Minor (2U)	280	7,100	0.04	A	239	519	7,100	0.07	A	None
McCabe Road											
Forrester Rd to La Brucherie Rd	Major (2U)	2,363	7,100	0.33	B	66	2,429	7,100	0.34	B	None
SR-98											
Drew Rd to Brockman Rd	State Highway (2U)	2,580	7,100	0.36	B	33	2,613	7,100	0.37	B	None
Brockman Rd Ferrell	State Highway (2U)	2,579	7,100	0.36	B	60	2,639	7,100	0.37	B	None
Ferrell Rd to Dogwood Rd	State Highway (2U)	3,400	7,100	0.48	B	153	3,553	7,100	0.50	B	None

Notes: Classification based on 1/29/08 Circulation and Scenic Highways Element. 2U = 2 lane undivided roadway. Daily volume is a 24 hour volume. LOS: Level of Service. LOS based on actual number of lanes currently constructed. V/C: Volume to Capacity ratio. Impact? = type of impact (none, cumulative, or direct).

TABLE 42: LONG-TERM YEAR 2024 WITH PROJECT CONSTRUCTION WITH CUMULATIVE FREEWAY LOS

Freeway Segment	I-8 Drew Rd to Forrester Rd				I-8 Forrester Rd to Imperial Ave			
	A M		P M		A M		P M	
Forecasted Year 2024	19,500				24,000			
ADT								
Peak Hour	A M		P M		A M		P M	
Direction	EB	WB	EB	WB	EB	WB	EB	WB
Number of Lanes	2	2	2	2	2	2	2	2
Capacity (1)	4700	4700	4700	4700	4700	4700	4700	4700
K Factor (2)	0.1076	0.0963	0.0917	0.1517	0.1076	0.0963	0.0917	0.1517
D Factor (3)	0.2616	0.7384	0.4419	0.5581	0.2616	0.7384	0.4419	0.5581
Truck Factor (4)	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376	0.8376
Peak Hour Volume	655	1655	943	1971	807	2037	1161	2426
Volume to Capacity	0.139	0.352	0.201	0.419	0.172	0.434	0.247	0.516
LOS	A	B	A	B	A	B	A	C
Cumulative + Project	76	103	77	125	72	169	137	131
2024 + Cumulative + Project								
Peak Hour Volume	731	1758	1020	2096	879	2206	1298	2557
Volume to Capacity	0.156	0.374	0.217	0.446	0.187	0.469	0.276	0.544
LOS	A	B	A	B	A	B	A	C
Increase in V/C	0.016	0.022	0.016	0.027	0.015	0.036	0.029	0.028
Impact?	None	None	None	None	None	None	None	None

Notes: (1) Capacity of 2,350 pcphpl from CALTRANS' Guide for the Preparation of Traffic Impact Studies, December 2002. (2) Latest K factor from Caltrans (based on 2007 report), which is the percentage of AADT in both directions. (3) Latest D factor from Caltrans (based on 2007 report), which when multiplied by K and ADT will provide peak hour volume. (4) Latest truck factor from Caltrans (based on 2007 report). Impact? = Direct, Cumulative, or None.

Under long-term year 2024 + project construction + cumulative conditions, the study intersections, roadways, and freeway segments were calculated to operate at LOS C or better with no cumulatively considerable impacts.