

TRAFFIC IMPACT ANALYSIS

LOTUS RANCH

El Centro, California
April 26, 2016

LLG Ref. 3-14-2392

Prepared by:

KC Yellapu, P.E
Senior Transportation Engineer

&

Charlene Sadiarin
Transportation Engineer II

Under the Supervision of:

John Boarman, P.E
Principal

**Linscott, Law &
Greenspan, Engineers**

4542 Ruffner Street
Suite 100

San Diego, CA 92111

858.300.8800 T

858.300.8810 F

www.llgengineers.com

TABLE OF CONTENTS

SECTION	PAGE
1.0 Introduction.....	1
2.0 Project Description	4
2.1 Project Location	4
2.2 Project Description.....	4
2.2.1 Residential.....	5
2.2.2 Public Park	5
2.2.3 Infrastructure.....	5
2.2.4 Access	5
3.0 Existing Conditions.....	7
3.1 Existing Street Network.....	7
3.2 Existing Traffic Volumes.....	8
4.0 Analysis Approach and Methodology	11
4.1 Intersections	11
4.2 Street Segments.....	11
5.0 Significance Criteria	12
6.0 Analysis of Existing Conditions	13
6.1 Intersection Operations	13
6.2 Segment Operations	13
7.0 Trip Generation/Distribution/Assignment	16
7.1 Trip Generation.....	16
7.2 Trip Distribution/Assignment	16
7.3 Planned Improvements to the Roadway Network	17
8.0 Cumulative Projects.....	25
8.1 Description of Projects.....	25
9.0 Analysis of Near-Term Scenarios.....	30
9.1 Existing + Phase 1 Project	30
9.1.1 Intersection Operations	30
9.1.2 Segment Operations	30
9.2 Existing + Phase 1 and Phase 2 Project	31
9.2.1 Intersection Operations	31
9.2.2 Segment Operations	31
9.3 Existing + Total Project	31

TABLE OF CONTENTS (CONTINUED)

SECTION	PAGE
9.3.1	Intersection Operations 31
9.3.2	Segment Operations 31
9.4	Existing + Cumulative Projects + Total Project 32
9.4.1	Intersection Operations 32
9.4.2	Segment Operations 32
10.0	Horizon Year Analysis..... 36
10.1	Segment Operations 36
11.0	Future I-8 / Austin Road Interchange Analysis 38
11.1	Horizon Year without Project Intersection Operations..... 38
11.2	Horizon Year with Project Intersection Operations..... 38
12.0	School Site Alternative Scenario Analysis 39
12.1	Trip Generation/Distribution/Assignment 39
12.2	Existing + Total Alternative Project Analysis 39
12.2.1	Intersection Operations 39
12.2.2	Segment Operations 39
12.3	Existing + Total Alternative Project + Cumulative Projects Analysis 39
12.3.1	Intersection Operations 39
12.3.2	Segment Operations 40
12.4	School Site Alternative Scenario Significant Impacts and Mitigation 40
13.0	Access and Other Issues 48
14.0	Significance of Impacts and Mitigation Measures 49
14.1	Significance of Impacts..... 49
14.1.1	Direct Impacts 49
14.1.2	Cumulative Impacts 49
14.1.3	Access Related Impacts 49
14.2	Mitigation..... 49

APPENDICES

APPENDIX

- A. Intersection and Segment Manual Count Sheets
- B. Intersection Methodology and Analysis Sheets
- C. City of El Centro and County of Imperial Roadway Classification Tables
- D. Existing Peak Hour Intersection Analysis Worksheets
- E. Trip Generation Rates
- F. Existing + Phase 1 Project Peak Hour Intersection Analysis Worksheets
- G. Existing + Phase 1 and Phase 2 Project Peak Hour Intersection Analysis Worksheets
- H. Existing + Total Project Peak Hour Intersection Analysis Worksheets
- I. Existing + Total Project + Cumulative Projects Peak Hour Intersection Analysis Worksheets
- J. I-8 / Austin Road Interchange Horizon Year Peak Hour Intersection Analysis Worksheets
- K. Existing + Total Alternative Project Peak Hour Intersection Analysis Worksheets
- L. Existing + Total Alternative Project + Cumulative Projects Peak Hour Intersection Analysis Worksheets

LIST OF FIGURES

SECTION—FIGURE #	FOLLOWING PAGE
Figure 1–1 Vicinity Map	2
Figure 1–2 Project Area Map	3
Figure 2–1 Site Plan	6
Figure 3–1 Existing Conditions Diagram.....	9
Figure 3–2 Existing Traffic Volumes.....	10
Figure 7–1 Project Traffic Distribution.....	19
Figure 7–2 Project (Phase 1) Traffic Volumes.....	20
Figure 7–3 Project (Phase 1 and Phase 2) Traffic Volumes.....	21
Figure 7–4 Total Project Traffic Volumes	22
Figure 7–5 Existing + Total Project Traffic Volumes.....	23
Figure 7–6 Project Traffic Distribution (with Imperial Avenue and Wake Avenue extensions)....	24
Figure 8–1 Cumulative Projects Location Map	27
Figure 8–2 Cumulative Projects Traffic Volumes	28
Figure 8–3 Existing + Total Project + Cumulative Projects Traffic Volumes.....	29
Figure 10–1 Year 2030 Traffic Volumes.....	37
Figure 12–1 Alternative Project Site Plan	44
Figure 12–2 Alternative Project Traffic Volumes	45
Figure 12–3 Existing + Alternative Project Traffic Volumes	46
Figure 12–4 Existing + Alternative Project + Cumulative Projects Traffic Volumes.....	47
Figure 14–1 Cumulative Impacts / Fairshare Contribution	51

LIST OF TABLES

SECTION—TABLE #	PAGE
Table 3–1 Existing Traffic Volumes.....	8
Table 5-1 Significance Criteria.....	12
Table 6–1 Existing Intersection Operations.....	14
Table 6–2 Existing Street Segment Operations	15
Table 7–1 Phase I Project Trip Generation.....	17
Table 7–2 Phase I + Phase II Project Trip Generation.....	18
Table 7–3 Total Project Trip Generation	18
Table 9–1 Near-Term Intersection Operations	33
Table 9–2 Near-Term Street Segment Operations.....	34
Table 10–1 Horizon year Street Segment Operations.....	36
Table 11–1 Future Austin Road Interchange Intersection Operations.....	38
Table 12–1 Total Alternative Project Trip Generation	40
Table 12–2 Near-Term Intersection Operations (Alternative Project Scenario)	41
Table 12–3 Near-Term Street Segment Operations (Alternative Project Scenario).....	42

TRAFFIC IMPACT ANALYSIS

LOTUS RANCH

El Centro, California

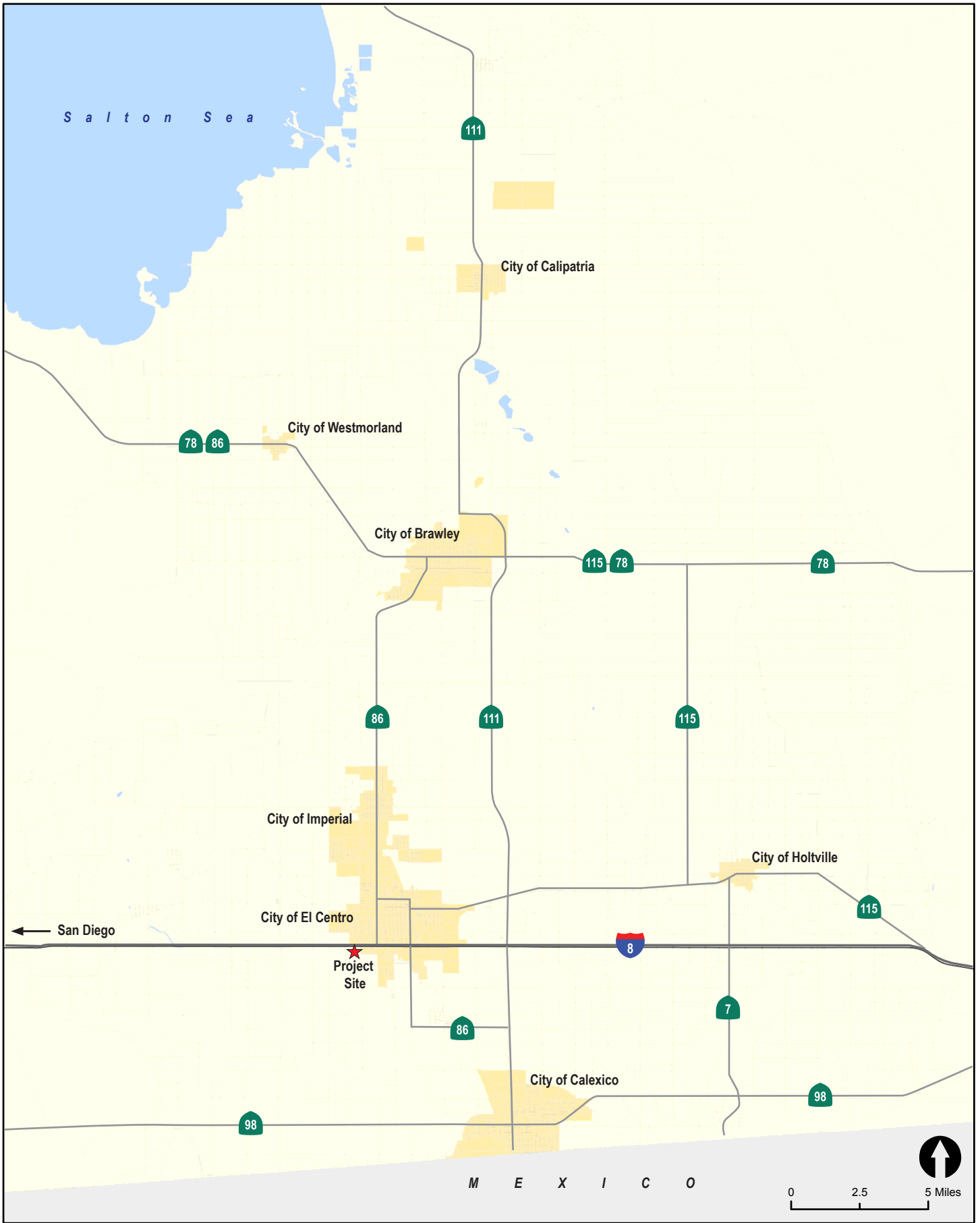
April 26, 2016

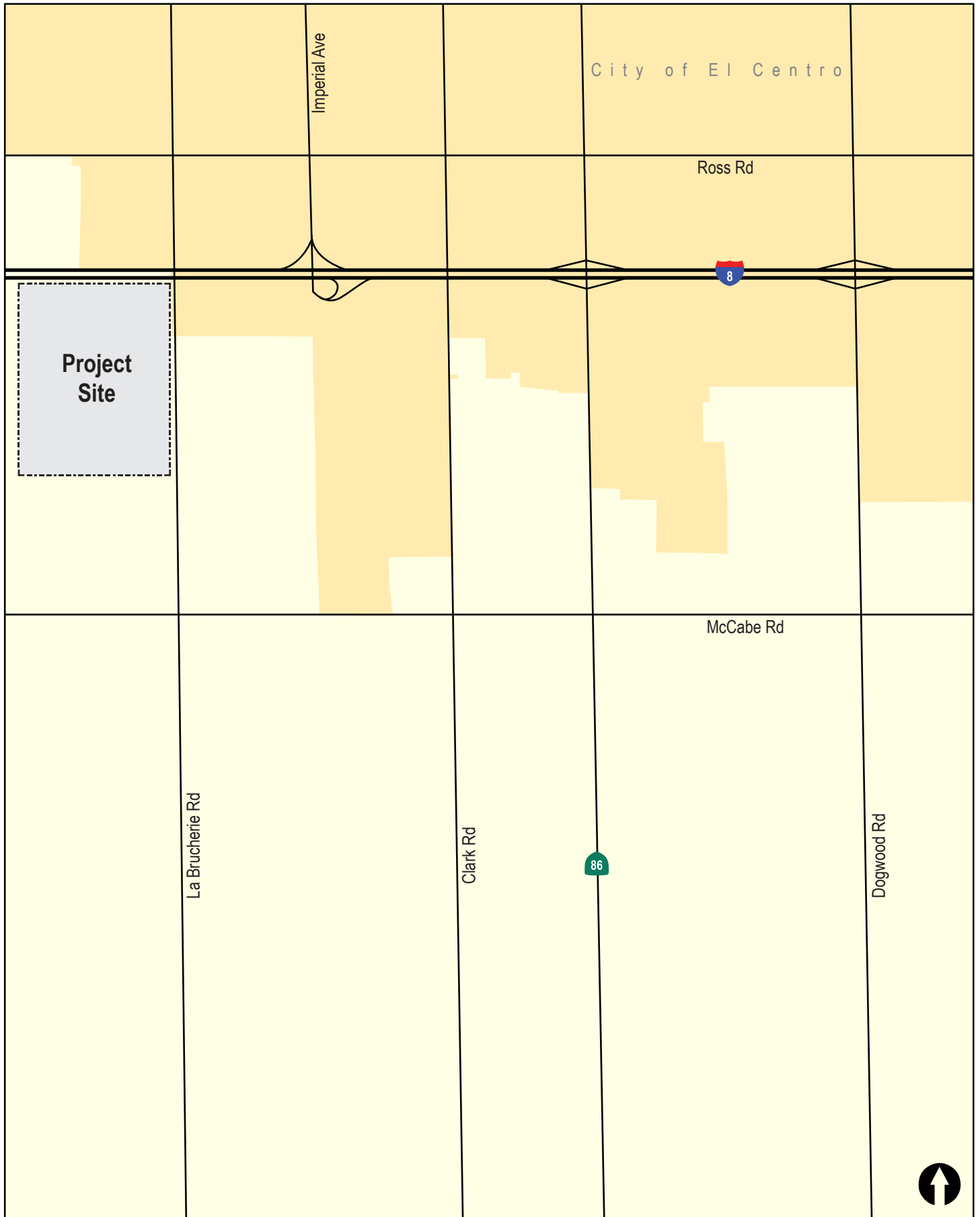
1.0 INTRODUCTION

Linscott, Law & Greenspan Engineers (LLG) has been retained to assess the potential traffic impacts to local roadway system due to the proposed Lotus Ranch project. The site is located south of Interstate 8 (I-8) along the west side of La Brucherie Avenue in the County of Imperial. The project site is proposed for annexation by the City of El Centro. *Figure 1-1* shows the vicinity map, and *Figure 1-2* shows a more detailed project area map.

The following items are included in this traffic analysis:

- Project Description
- Existing Conditions Description
- Analysis Approach and Methodology
- Significance Criteria
- Analysis of Existing Conditions
- Trip Generation/Distribution/Assignment
- Cumulative Projects Discussion
- Near-Term Analysis
- Horizon Year Analysis
- Alternative Project Scenario Analysis
- Site Access Assessment
- Significance of Impacts and Mitigation Measures





2.0 PROJECT DESCRIPTION

2.1 Project Location

The site of the proposed project is located in the southeastern portion of the State of California approximately 13 miles from the United States/Mexico international border. The site is currently within unincorporated land in the south-central portion of the County of Imperial. The site abuts the southern incorporated boundary of the City of El Centro and is within the City of El Centro's adopted Sphere of Influence boundaries.

The project site is bound by Interstate 8 (I-8) in the north, the Lotus Canal and Drain in the west, La Brucherie Avenue and the Dahlia Canal in the east, and active agricultural land in the south. La Brucherie Avenue provides access to the site. The site comprises two existing legal lots: County Assessor Parcel Numbers 052-280-12-01 and 052-380-30-01. These lots make up a portion of tracts 58 and 61, Township 16 South, Range 13 East, San Bernardino Base and Meridian.

2.2 Project Description

The project proposes annexation of an approximately 213-acre area from the County to the City, subdivision of the existing lots, and construction and occupation on those lots of a 617-unit single-family residential development and two 5.8-acre public parks. Detailed descriptions of these aspects of the project are provided below.

Project implementation requires the following agency approvals: 1) approval by LAFCO for annexation of the site from the County of Imperial to the City; 2) establishment of a prezone of R1 Residential under the City Zoning Ordinance; and 3) City approval of a tentative subdivision map to allow the creation of 617 single-family residential lots and public park on the approximately 213-acre site. Annexation and prezone to R1 residential of the two "out parcels" adjacent to La Brucherie Avenue is included as part of the project.

To prepare the site for development, all structures existent within the site's boundaries would be demolished. Structures to be demolished include a single-family residence and several accessory buildings located along the site's eastern boundary and north of an existing east-west dirt road (future alignment of Wake Avenue). There are two additional single-family residences and accessory structures located along the site's eastern boundary and south of an existing east-west dirt road (future alignment of Danenberg Drive). The residences are not within the project boundaries and would not be demolished as part of the project; however, two structures accessory to the northern of these two residences are within the project boundaries and would be demolished. All existing crops and vegetation within the site and ornamental vegetation adjacent to the residences are to be cleared as part of the project. Grading would be conducted to create building pads for the residential lots and the park; however, grading is anticipated to be minimal due to the site's flat topography.

2.2.1 Residential

The residential component of the proposed project would entail construction and occupation of 617 single-family detached residential units on approximately 174 acres of the 213-acre site. Lot sizes would range from approximately 7,200 square feet (sf) to approximately 19,411 sf, with an average lot size of 8,494 sf. Residences would variously be one- and two-levels and would be consistent in size and appearance with existing and planned residences in the vicinity of the site. Each lot would feature a garage and landscaped yards. According to the project application, the proposed residences would be constructed in 3 phases.

2.2.2 Public Park

Two approximately 5.8-acre parks would be constructed in the project site. The parks would be public-use facilities consisting of grass play areas and play equipment for children, with restrooms, drinking fountains, and security lighting provided. The project applicant will construct the parks, but the parks would be owned, operated, and maintained by the City Parks and Recreation Department.

2.2.3 Infrastructure

Infrastructure improvements, including roadways, sewer and water lines, and gas/electric connections, will be installed as part of the project. A grid of roads and cul de sacs to be constructed as part of the project and maintained by the City would serve the project. The street system would be connected to the existing and planned City street system.

The project entails widening a segment of La Brucherie Avenue, which is currently paved within the project area. The existing pavement between I-8 and Wake Avenue would be retained in its existing width. The existing pavement between Wake Avenue and the future alignment of Horne Avenue (the project's southern boundary) would be replaced to a width of 60 feet. Concrete sidewalks and storm water gutters would be constructed along the western side of the roadway, and streetlights installed at regular intervals. Guardrails would be installed along the eastern side of the roadway to protect existing power poles.

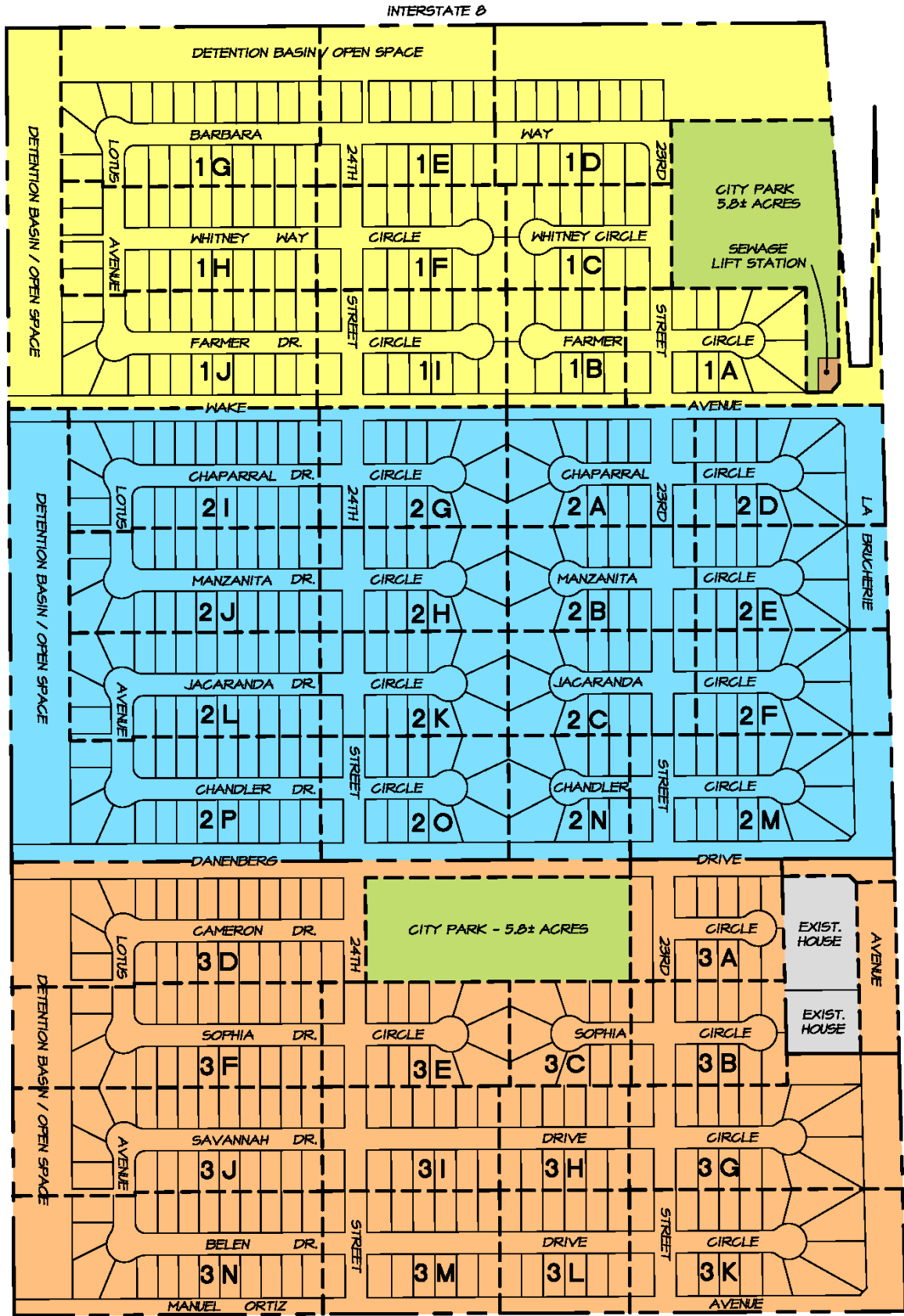
2.2.4 Access

The extensions of Wake Avenue, Danenberg Drive, and Manuel Ortiz Avenue to La Brucherie Road will provide access to the project site.

UNIT 1 / PHASING

UNIT 2 / PHASING

UNIT 3 / PHASING



3.0 EXISTING CONDITIONS

Effective evaluation of the traffic impacts associated with the proposed project requires an understanding of the existing transportation system within the project area. *Figure 3-1* shows an existing conditions diagram, including signalized intersections and lane configurations.

3.1 Existing Street Network

The following is a description of the existing street network in the study area.

La Brucherie Avenue/Road is classified as a four-lane arterial in the City of El Centro Circulation Element. It is currently constructed as a three-lane undivided roadway with a two-way left-turn lane between Ross Avenue and Ocotillo Drive and as a two-lane undivided roadway south of Ocotillo Drive. The posted speed limit is between 40-50 mph.

Ross Avenue is classified as a two-lane arterial in the City of El Centro Circulation Element. It is currently constructed as a four-lane undivided roadway. Bike lanes and bus stops are not provided. Curbside parking is provided intermittently along both sides of the roadway. The posted speed limit is 35 mph.

Ocotillo Drive is classified as a two-lane arterial in the City of El Centro Circulation Element. It is currently constructed as a four-lane undivided roadway. Bike lanes and bus stops are not provided. Curbside parking is permitted. The posted speed limit is 30 mph.

8th Street Bridge / Clark Road is classified as a six-lane arterial from Ross Avenue to Danenberg Drive and as a four-lane arterial from Danenberg Drive to McCabe Road in the City of El Centro Circulation Element. It is currently constructed as a two-lane undivided roadway from Ross Avenue to Wake Avenue and as a four-lane undivided roadway from Wake Avenue to McCabe Road. Bike lanes and bus stops are not provided. Curbside parking is not permitted. The posted speed limit is 35-50mph.

McCabe Road is classified as a six-lane prime arterial in the Imperial County Circulation Element. It is currently constructed as a two-lane undivided roadway. Bike lanes and bus stops are not provided. The posted speed limit is 50 mph.

Imperial Avenue is classified as a six-lane arterial in the City of El Centro Circulation Element. It is planned to extend south from I-8 to McCabe Road in the next few years. See Section 7.3 for more information.

Wake Avenue is classified as a two-lane collector in the City of El Centro Circulation Element. It is currently constructed as a two-lane undivided roadway but is not yet constructed between Imperial Avenue and 8th Street. See 7.3 for more information.

3.2 Existing Traffic Volumes

Peak hour intersection turning movement traffic counts and segment counts within the project area were conducted in October 2014 when schools were in session. The peak hour counts were conducted between the hours of 7:00-9:00 AM and 4:00-6:00 PM.

Table 3-1 is a summary of the average daily traffic volumes (ADTs) conducted by Traffic Data in October 2014. *Figure 3-2* shows the Existing Traffic Volumes. *Appendix A* contains the intersection and segment manual count sheets.

**TABLE 3-1
EXISTING TRAFFIC VOLUMES**

Street Segment	ADT ^a	Date	Source
La Brucherie Ave			
Ross Ave to Ocotillo Dr	6,953	10/9/2014	LLG
Ocotillo Dr to Wake Ave	5,130	10/9/2014	LLG
Wake Ave to McCabe Rd	3,512	10/9/2014	LLG
Ross Ave			
La Brucherie Ave to Imperial Ave	7,061	10/9/2014	LLG
8th Street Bridge			
Aurora Dr to Wake Ave	10,360	10/9/2014	LLG
Ocotillo Dr			
La Brucherie to Imperial Ave	6,888	10/9/2014	LLG
McCabe Rd			
La Brucherie Rd to Clark Rd	4,415	10/9/2014	LLG
Clark Rd to SR 86	3,849	10/9/2014	LLG
Clark Road			
Wake Ave to McCabe Rd	8,239	10/9/2014	LLG

Footnotes:

- a. Average Daily Traffic Volumes.

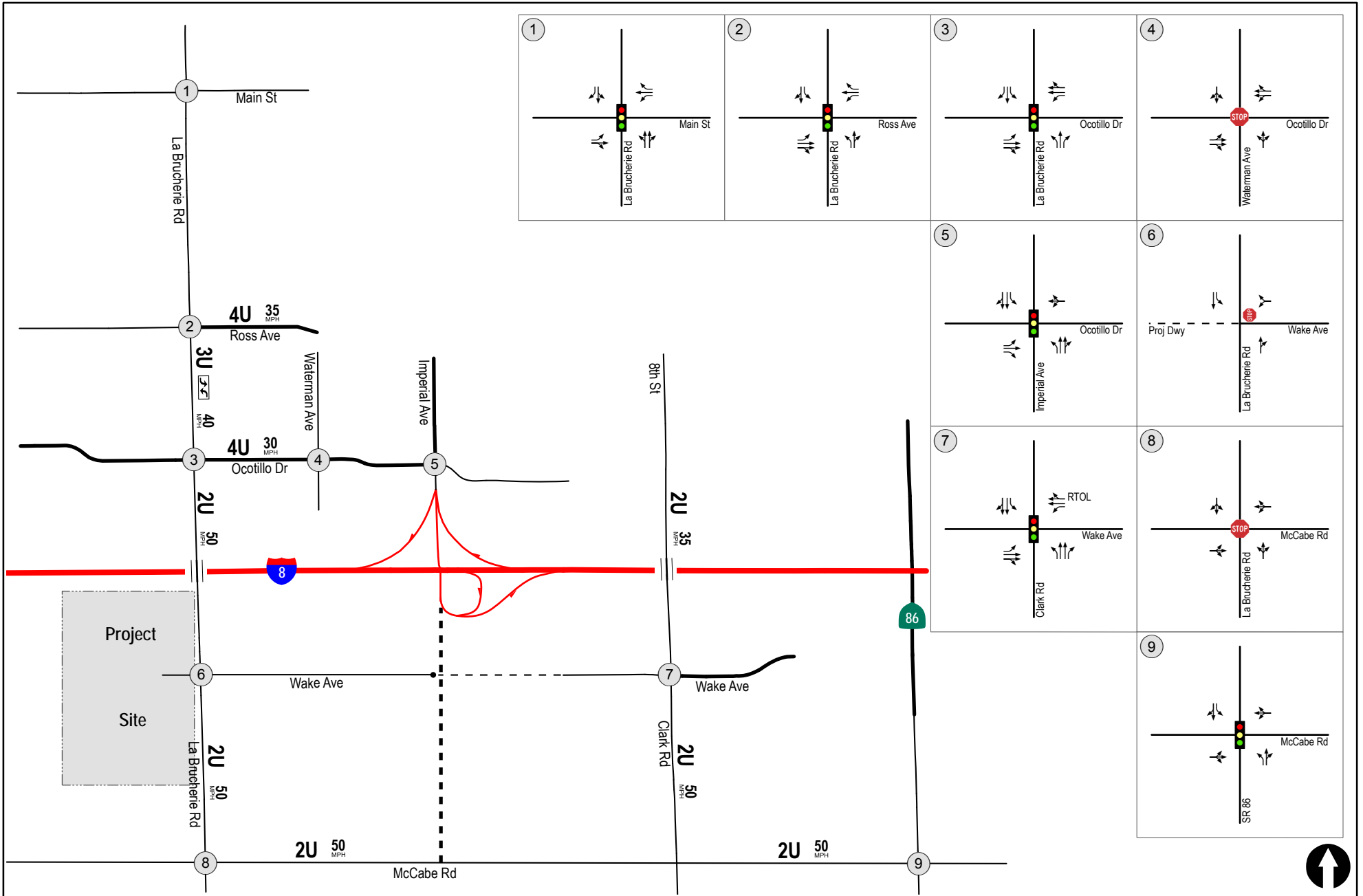


Figure 3-1
Existing Conditions Diagram

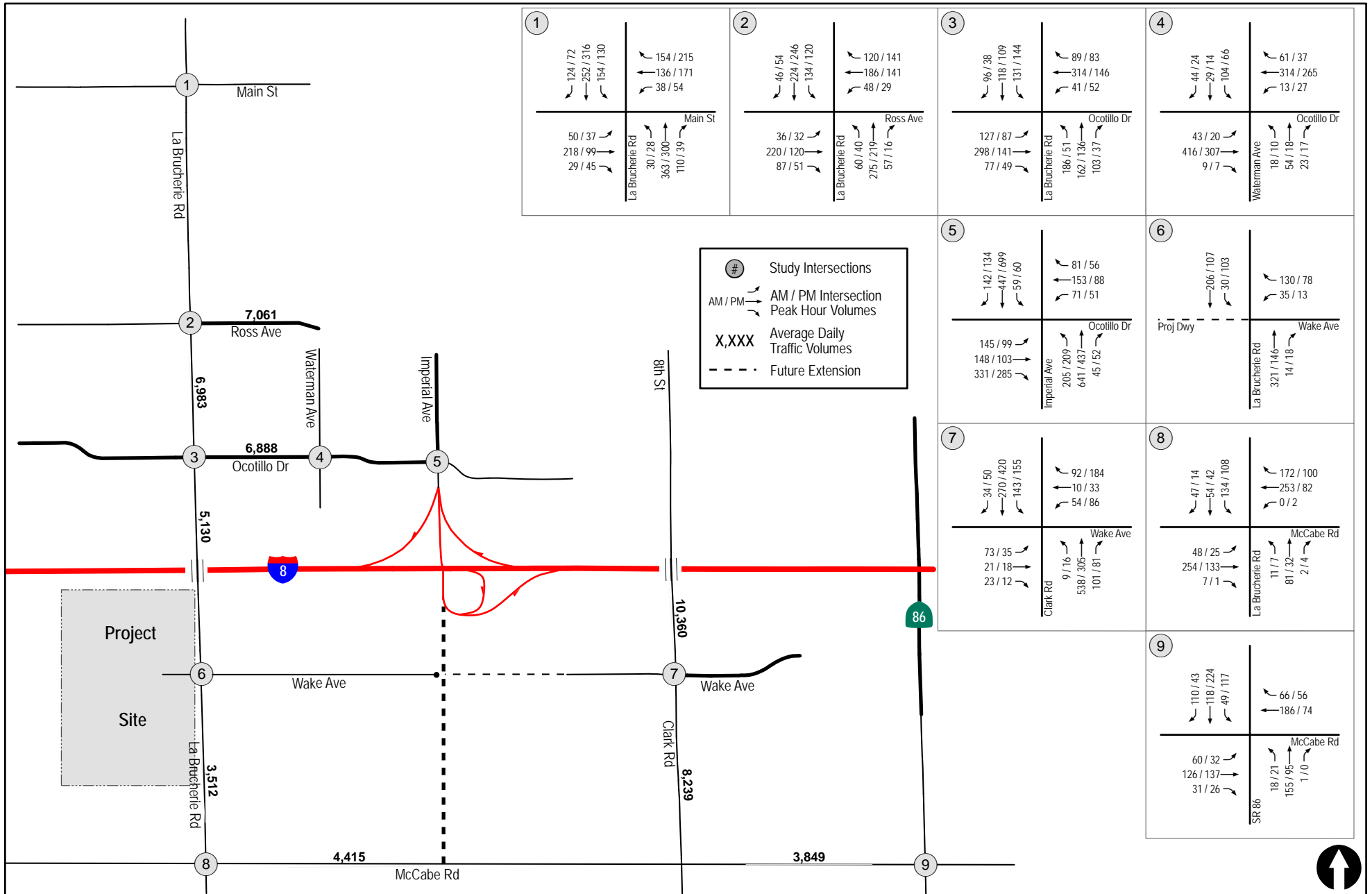


Figure 3-2
Existing Traffic Volumes

4.0 ANALYSIS APPROACH AND METHODOLOGY

Level of service (LOS) is the term used to denote the different operating conditions which occur on a given roadway segment under various traffic volume loads. It is a qualitative measure used to describe a quantitative analysis taking into account factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. Level of service provides an index to the operational qualities of a roadway segment or an intersection. Level of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. Level of service designation is reported differently for signalized and unsignalized intersections, as well as for roadway segments.

4.1 Intersections

Signalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay was determined utilizing the methodology found in Chapter 18 of the *2010 Highway Capacity Manual (HCM)*, with the assistance of the *PTV Vistro* (version 3.0) computer software. The delay values (represented in seconds) were qualified with a corresponding intersection Level of Service (LOS). A more detailed explanation of the methodology is attached in *Appendix B*.

Unsignalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay and Levels of Service (LOS) was determined based upon the procedures found in Chapter 19 and Chapter 20 of the *2010 Highway Capacity Manual (HCM)*, with the assistance of the *PTV Vistro* (version 3.0) computer software. A more detailed explanation of the methodology are attached in *Appendix B*.

4.2 Street Segments

Street segment analysis is based upon the comparison of daily traffic volumes (ADTs) to the City of El Centro's and the County of Imperial's *Roadway Classification, Level of Service, and ADT Tables*. These tables provides segment capacities for different street classifications, based on traffic volumes and roadway characteristics. The City of El Centro's and the County of Imperial's *Roadway Classification, Level of Service, and ADT Tables* are attached in *Appendix C*.

5.0 SIGNIFICANCE CRITERIA

The significance criteria summarized in *Table 5-1* developed by Linscott, Law and Greenspan, Engineers is based upon the City of El Centro and the County of Imperial’s goal for intersections and roadway segments to operate at LOS C or better.

In general, a LOS C or better that degrades to a LOS D or worse is considered a significant direct impact. A cumulative impact can occur if the intersection or segment level of service is already operating below City / County standards and the project increases the delay by more than 2 seconds or the v/c ratio by more than 0.02.

**TABLE 5-1
SIGNIFICANCE CRITERIA**

INTERSECTIONS			
Existing	Existing + Project	Existing + Project + Cumulative Projects	Impact Type
LOS ^a C or better	LOS C or better	LOS C or better	None
LOS C or better	LOS D or worse	—	Direct
LOS D	LOS D and adds 2.0 seconds or more of delay	—	Cumulative
LOS D	LOS E or F	—	Direct
LOS E	LOS F	—	Direct
LOS F	LOS F and delay increases by ≥ 10.0 seconds	—	Direct
Any LOS	Project does not degrade LOS and adds 2.0 to 9.9 seconds of delay	LOS E or worse	Cumulative
Any LOS	Project does not degrade LOS and adds < 2.0 seconds of delay	Any LOS	None
SEGMENTS			
Existing	Existing + Project	Existing + Project + Cumulative Projects	Impact Type
LOS C or better	LOS C or better	LOS C or better	None
LOS C or better	LOS C or better and $v/c^c > 0.02$	LOS D or worse	Cumulative
LOS C or better	LOS D or worse	—	Direct ^b
LOS D	LOS D and $v/c > 0.02$	—	Cumulative
LOS D	LOS E or F	—	Direct
LOS E	LOS F	—	Direct
LOS F	LOS F and v/c increases by > 0.09	—	Direct
Any LOS	LOS E or worse and 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

Source: Linscott, Law & Greenspan, Engineers

Footnotes:

a. Level of Service

b. Exception: post-project segment operation is LOS D and intersections along segment are LOS D or better results in no significant impact.

c. Volume to Capacity Ratio

6.0 ANALYSIS OF EXISTING CONDITIONS

6.1 Intersection Operations

Table 6-1 shows the peak hour intersection analyses for the existing scenario. This table shows that the following study intersections are calculated to currently operate at LOS D:

- La Brucherie Avenue/W. Main Street (LOS D during the both the AM peak PM peak hours);
- La Brucherie Avenue/Ocotillo Drive (LOS D during the AM peak hour);
- Ocotillo Drive/Imperial Avenue (LOS D during the AM peak hour); and
- La Brucherie Avenue/ McCabe Road (LOS D during the AM peak hour).

Appendix D contains the existing peak hour intersection analyses worksheets.

6.2 Segment Operations

Table 6-2 shows the volume/capacity street segment analyses for the existing scenario. This table shows that all street segments in the study area are calculated to operate at LOS C or better.

**TABLE 6-1
EXISTING INTERSECTION OPERATIONS**

Intersection	Control Type	Peak Hour	Existing	
			Delay ^a	LOS ^b
1. La Brucherie Avenue / W. Main Street	Signal	AM	35.3	D
		PM	36.6	D
2. La Brucherie Avenue / Ross Avenue	Signal	AM	27.5	C
		PM	28.7	C
3. La Brucherie Avenue / Ocotillo Drive	Signal	AM	35.8	D
		PM	29.2	C
4. Waterman Avenue / Ocotillo Drive	AWSC ^c	AM	17.2	C
		PM	10.2	B
5. Imperial Avenue / Ocotillo Drive	Signal	AM	42.2	D
		PM	25.8	C
6. La Brucherie Avenue / Wake Avenue	OWSC ^d	AM	21.5	C
		PM	12.9	B
7. 8 th Street / Wake Avenue	Signal	AM	20.7	C
		PM	22.0	C
8. La Brucherie Road / McCabe Road	AWSC ^c	AM	26.7	D
		PM	12.5	B
9. SR 86 / McCabe Road	Signal	AM	18.0	B
		PM	20.7	C

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. AWSC – All-Way Stop Controlled intersection.
- d. OWSC – One-Way Stop Controlled intersection. Minor street left turn delay is reported.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

**TABLE 6-2
EXISTING STREET SEGMENT OPERATIONS**

Street Segment	Capacity (LOS E) ^a	ADT ^b	LOS ^c	V/C ^d
La Brucherie Avenue				
Ross Avenue to Ocotillo Drive	18,000	6,983	0.388	A
Ocotillo Drive to Wake Avenue	18,000	5,130	0.285	A
Wake Avenue to McCabe Road	18,000	3,512	0.195	A
Ross Avenue				
La Brucherie Avenue to Imperial Avenue	27,000	7,061	0.262	A
Ocotillo Drive				
La Brucherie Avenue to Imperial Avenue	27,000	6,888	0.255	A
8th Street Bridge / Clark Road				
Aurora Drive to Wake Avenue	27,000	10,360	0.576	A
Wake Avenue to McCabe Road	18,000	8,239	0.305	A
McCabe Road				
La Brucherie Road to Clark Road	16,200 ^b	4,415	0.273	C
Clark Road to SR 86	16,200 ^b	3,849	0.238	B

Footnotes:

- a. Capacities based on City of El Centro Roadway Classification Table.
- b. Capacities based on County of Imperial Roadway Classification Table.
- c. Average Daily Traffic Volumes.
- d. Level of Service.
- e. Volume to Capacity.

7.0 TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

7.1 Trip Generation

The trip generation rates for the project are based on the rates outlined in the City of San Diego's *Trip Generation Manual* and the *ITE Trip Generation Manual* (9th Edition). The proposed project is planned to develop 617 single-family dwelling units and 11.6 acres of public park space. **Appendix E** includes the Trip Generation Rate Summary table from the City of San Diego's *Trip Generation Manual* and the *ITE Trip Generation Manual* (9th Edition).

The project is proposed to be constructed in three phases. The proposed land use summary of each phase is listed below:

Phase 1: 158 single-family dwelling units and a 5.8-acre city park

Phase 2: 240 single-family dwelling units

Phase 3: 219 single-family dwelling units and a 5.8-acre city park.

Table 7-1 tabulates the Phase 1 project traffic generation. Phase 1 of the project is calculated to generate approximately 1,591 ADT with 40 inbound / 91 outbound trips during the AM peak hour and 113 inbound / 49 outbound trips during the PM peak hour.

Table 7-1 tabulates the Phase 1 + Phase 2 project traffic generation. Phase 1 + Phase 2 of the project is calculated to generate approximately 3,991 ADT with 98 inbound / 225 outbound trips during the AM peak hour and 281 inbound / 121 outbound trips during the PM peak hour.

Table 7-3 tabulates the total project traffic generation. The total project is calculated to generate approximately 6,192 ADT with 152 inbound / 350 outbound trips during the AM peak hour and 436 inbound / 189 outbound trips during the PM peak hour.

7.2 Trip Distribution/Assignment

The project traffic was distributed and assigned based on the project's proximity to state highways and arterials, locations of retail, places of employment, schools, and other shopping opportunities. **Figure 7-1** depicts the trip distribution percentages for the project. **Figure 7-2** illustrates the Phase 1 project volumes assignment. **Figure 7-3** illustrates the Phase 1 + Phase 2 project volumes assignment. **Figure 7-4** illustrates the total project volumes assignment. **Figure 7-5** illustrates the existing + total project volumes assignment.

7.3 Planned Improvements to the Roadway Network

Two major roadway network improvements within the study area are proposed to be constructed in the next several years. These are described below. For the purpose of this study and based on discussions with City staff, they were assumed to be constructed and open between project phase 2 and 3. **Figure 7-6** illustrates the project trip distribution assuming that these two roadway improvements are constructed.

- **Imperial Avenue Interchange Bridge and Extension:** The I-8/Imperial Avenue interchange is proposed to be reconstructed to realign the westbound exist and entrance ramps to I-8 and reconstruct the eastbound exit and entrance ramps. The Imperial Avenue bridge is proposed to be upgraded to four lanes. Imperial Avenue will be extended from I-8 initially to Wake Avenue and eventually to McCabe Road. Construction of the bridge and extension is expected to be completed by 2018.
- **Wake Avenue Extension:** Wake Avenue is proposed to be connected between La Brucherie Road and 8th Street. Construction is expected to follow the Imperial Avenue schedule.

**TABLE 7-1
PHASE I PROJECT TRIP GENERATION**

Land Use	Size	Daily Trip Ends (ADTs) ^a		AM Peak Hour					PM Peak Hour				
		Rate	Volume	% of ADT	In:Out Split	Volume			% of ADT	In:Out Split	Volume		
						In	Out	Total			In	Out	Total
Residential: Single Family Detached	158 DU	10 /DU ^b	1,580	8%	30:70	38	89	127	10%	70:30	111	47	158
Park	5.8 acres	1.89 /acre ^c	11		50:50	2	2	4		50:50	2	2	4
Total		—	1,591	—	—	40	91	131	—	—	113	49	162

Footnotes:

- Trip-ends are one-way traffic movements, either entering or leaving.
- Rate is based on City of San Diego's Trip Generation Rate Summary table.
- Rate is based on the ITE Trip Generation Manual (9th Edition).

**TABLE 7-2
PHASE I + PHASE II PROJECT TRIP GENERATION**

Land Use	Size	Daily Trip Ends (ADTs) ^a		AM Peak Hour					PM Peak Hour				
		Rate	Volume	% of ADT	In:Out Split	Volume			% of ADT	In:Out Split	Volume		
						In	Out	Total			In	Out	Total
Residential: Single Family Detached	398 DU	10 /DU ^b	3,980	8%	30:70	96	223	319	10%	70:30	279	119	398
Park	5.8 acres	1.89 /acre ^c	11		50:50	2	2	4		50:50	2	2	4
Total		—	3,991	—	—	98	225	323	—	—	281	121	402

Footnotes:

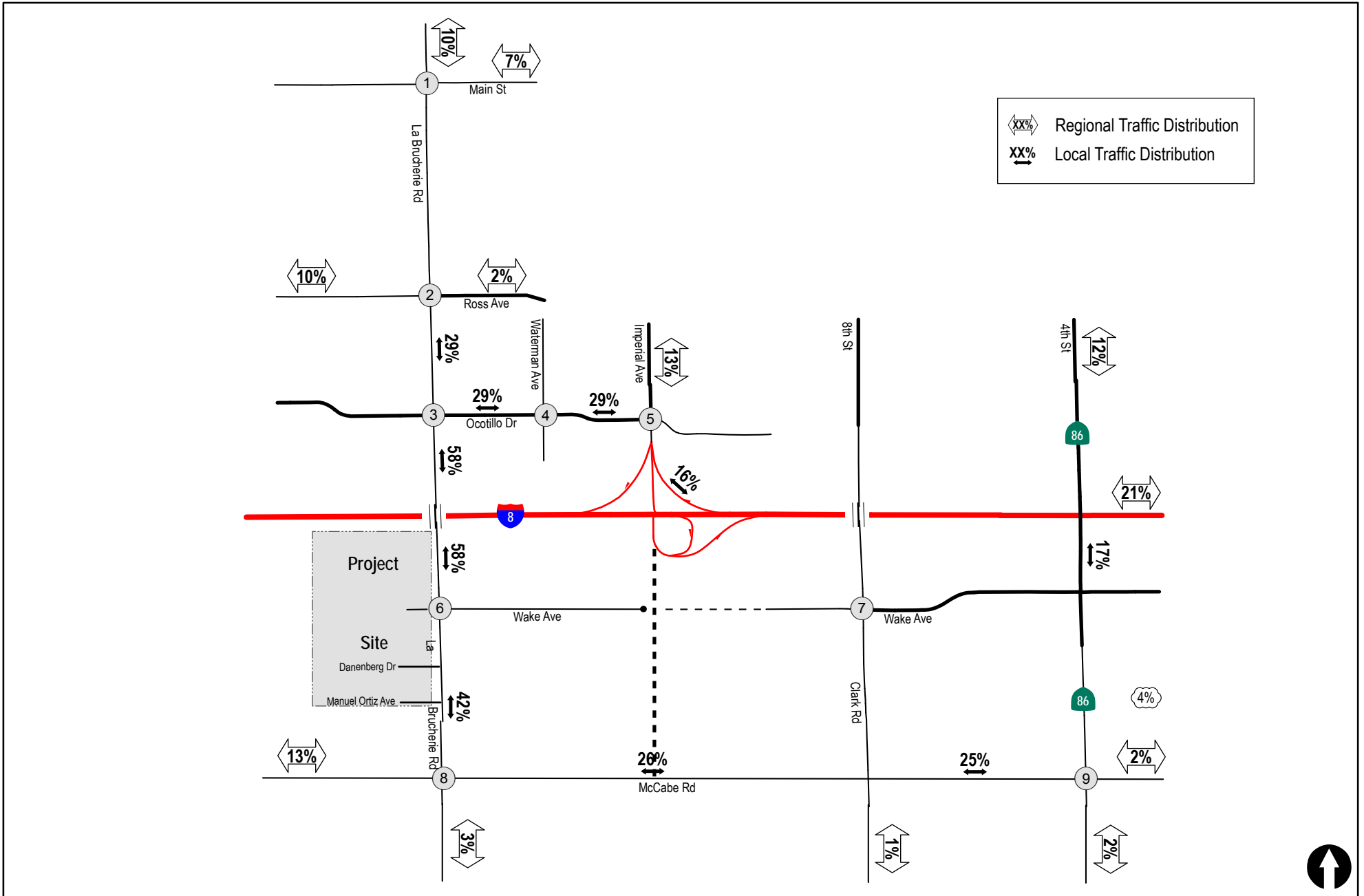
- a. Trip-ends are one-way traffic movements, either entering or leaving.
- b. Rate is based on City of San Diego's Trip Generation Rate Summary table.
- c. Rate is based on the ITE Trip Generation Manual (9th Edition).

**TABLE 7-3
TOTAL PROJECT TRIP GENERATION**

Land Use	Size	Daily Trip Ends (ADTs) ^a		AM Peak Hour					PM Peak Hour				
		Rate	Volume	% of ADT	In:Out Split	Volume			% of ADT	In:Out Split	Volume		
						In	Out	Total			In	Out	Total
Residential: Single Family Detached	617 DU	10 /DU ^b	6,170	8%	30:70	148	346	494	10%	70:30	432	185	617
Park	11.6 acres	1.89 /acre ^c	22		50:50	4	4	8		50:50	4	4	8
Total		—	6,192	—	—	152	350	502	—	—	436	189	625

Footnotes:

- a. Trip-ends are one-way traffic movements, either entering or leaving.
- b. Rate is based on City of San Diego's Trip Generation Rate Summary table.
- c. Rate is based on the ITE Trip Generation Manual (9th Edition).



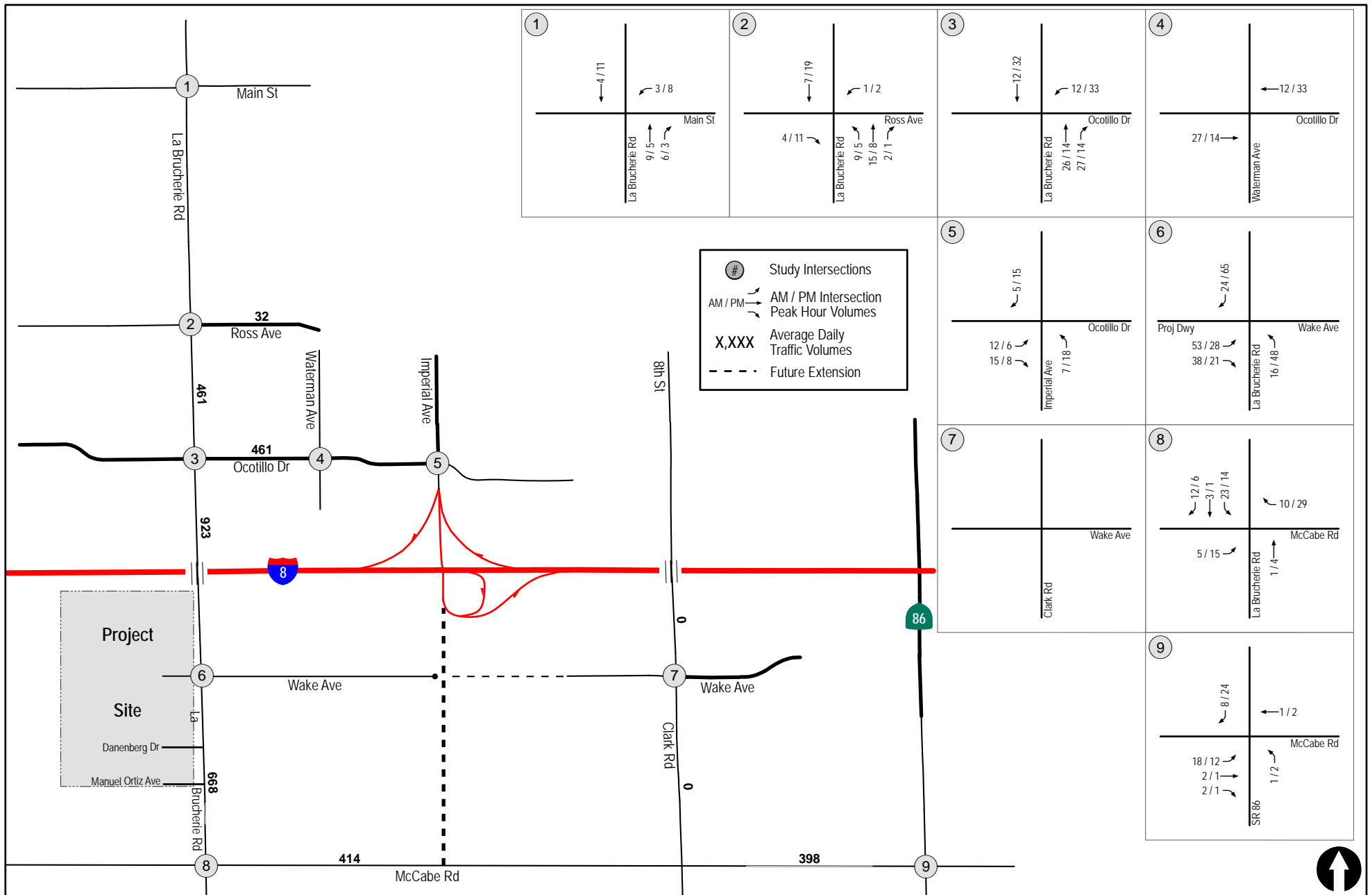


Figure 7-2
Project (Phase 1) Traffic Volumes

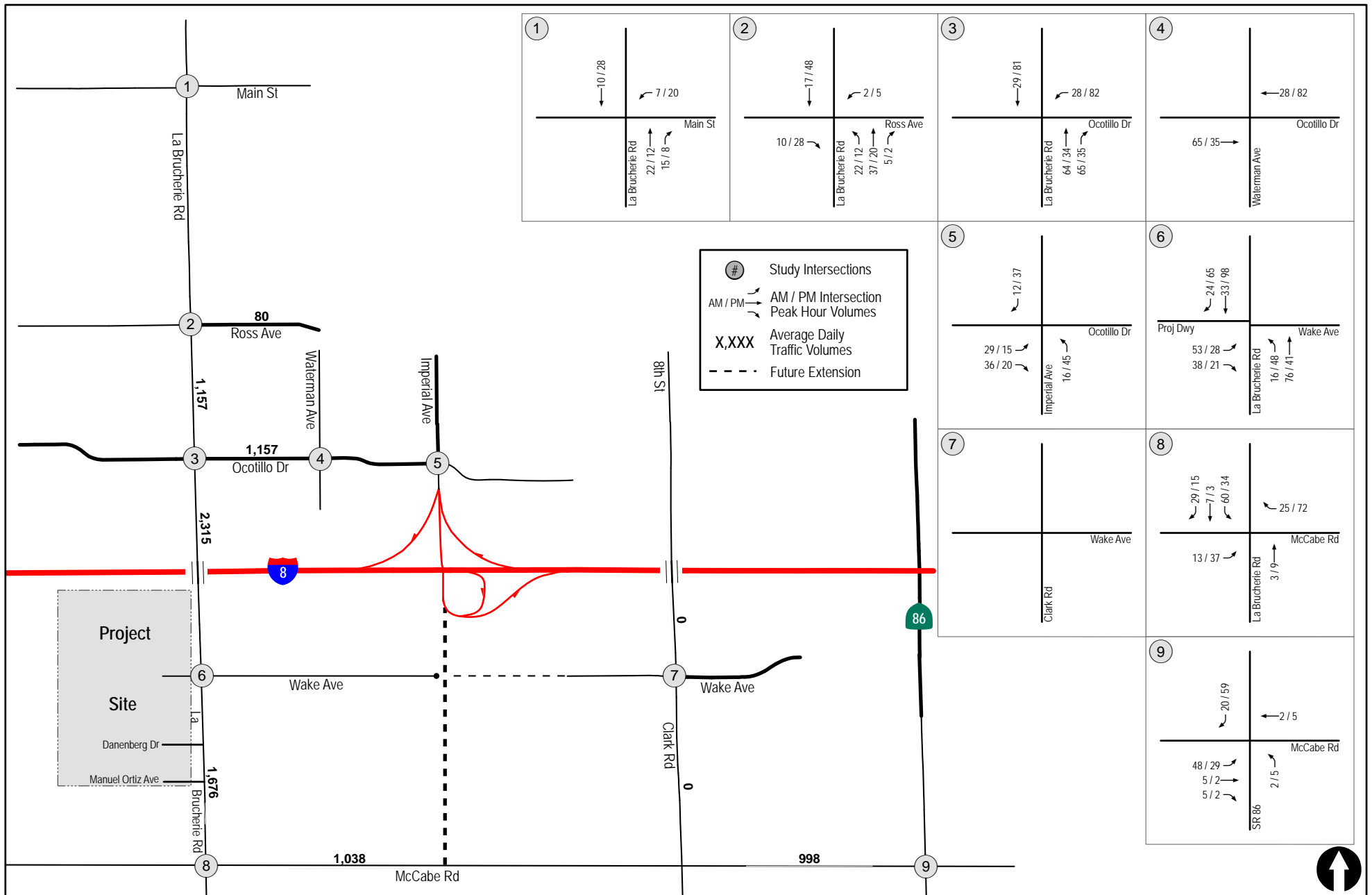
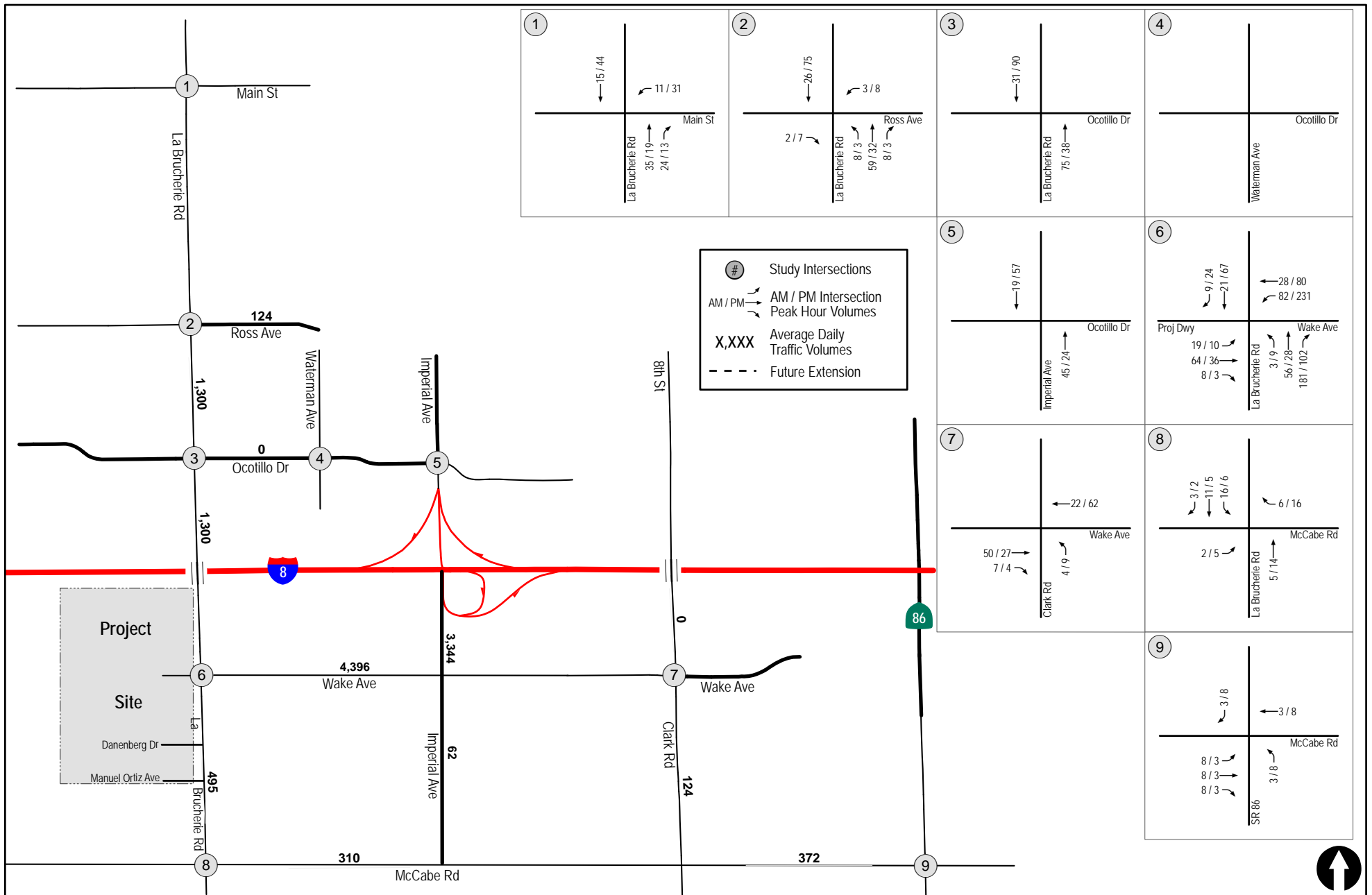


Figure 7-3
Project (Phases 1 & 2) Traffic Volumes



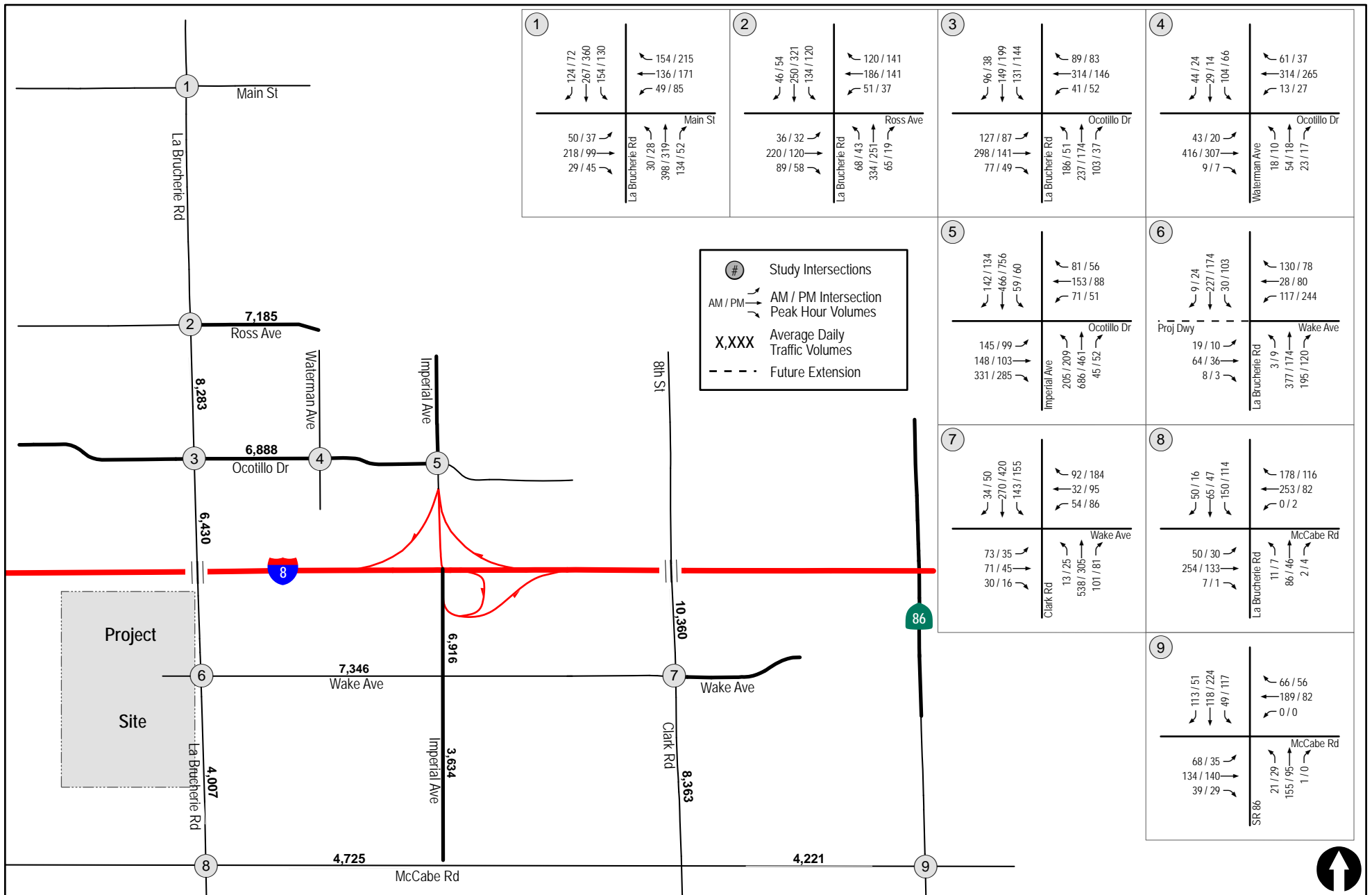


Figure 7-5
Existing + Total Project Traffic Volumes

8.0 CUMULATIVE PROJECTS

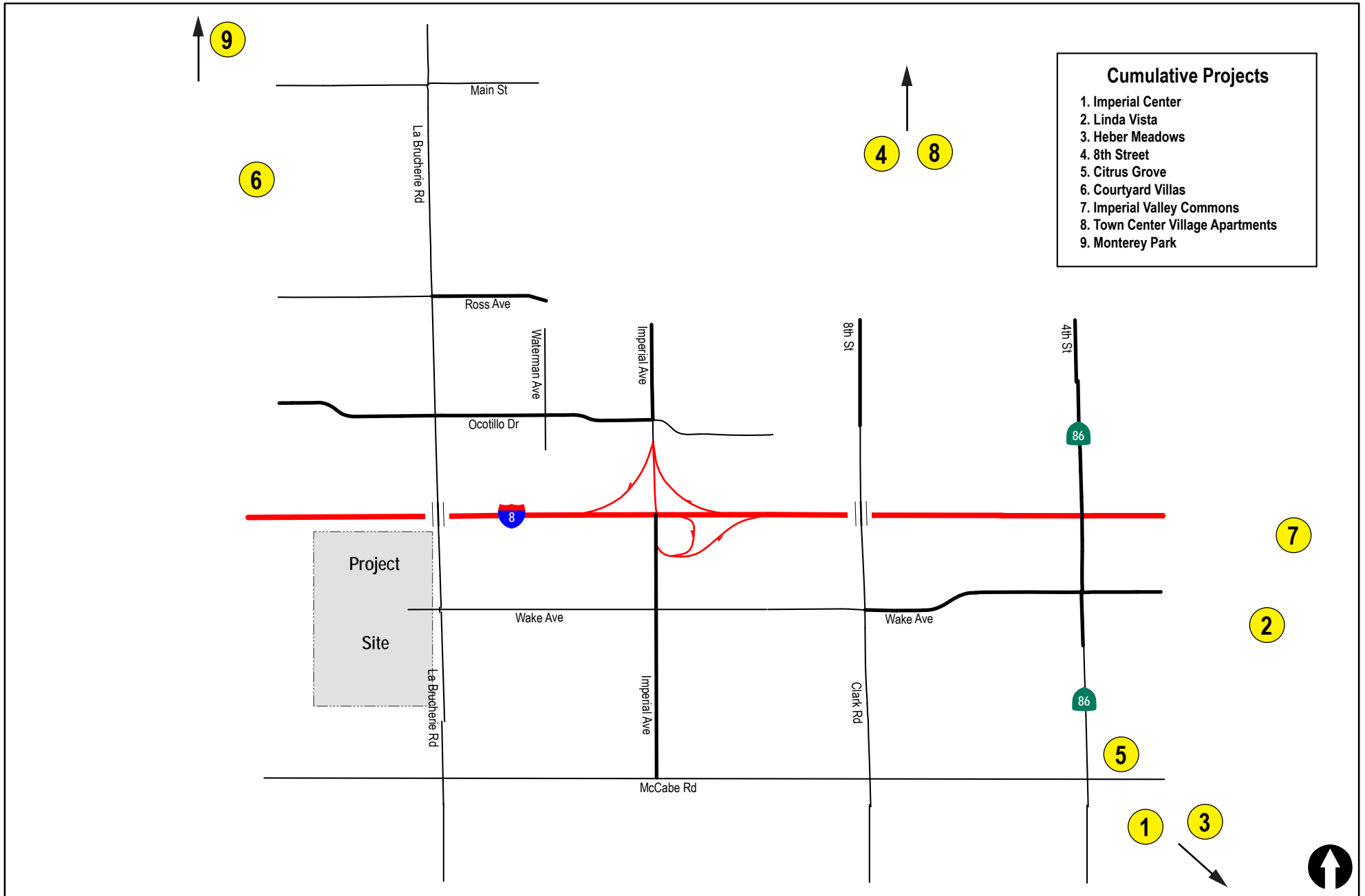
There are other planned projects within the vicinity, which could potentially add traffic to the roadways and intersections in the study area. Based on a review of other potential projects within the area, and discussions with the City of El Centro and County of Imperial staff, it was determined that the following nine future cumulative development projects should be included in the traffic analysis. Detailed below is a brief description of these cumulative projects. The existing traffic volumes were increased by 10% to account for general growth in traffic in the near future.

8.1 Description of Projects

1. **Imperial Center** is a proposed project to be built in three phases, consisting of 722,000 square feet of commercial space including a gas station and convenience store, a hotel and a shopping center. It is located to the east of SR 111 just north of Heber Road. The project is calculated to generate 25,397 ADT, with 421 inbound and 302 outbound trips during the AM peak hour, and 1,131 inbound and 1,203 outbound trips during the PM peak hour.
2. **Linda Vista** is a proposed 173-unit residential subdivision located south of I-8 and west of SR 86. The project also includes 4.6 acres of commercial land use and a school site. The project is calculated to generate 7,970 ADT, with 270 inbound trips and 246 outbound trips during the AM peak hour and 411 inbound trips and 419 outbound trips during the PM peak hour.
3. **Heber Meadows** is a project that proposes to construct a combination of single-family and multi-family residential units. The development would consist of 222 single-family residential units and a 476-unit apartment complex directly north of the single-family residential subdivision. The site is located on the southwest corner of the future Correll Road/Pitzer Road intersection. It is calculated that the proposed project would generate 5,270 ADT, with 87 inbound and 304 outbound trips during the AM peak hour, and 325 inbound and 175 outbound trips during the PM peak hour.
4. **8th Street** consists of a proposed General Plan Amendment from low-density residential to medium-density residential and general industrial. The project site is located east of SR 86 along the east side of 8th Street on the southwest corner of 8th Street and Bradshaw Road extension. The project proposes 6.9 acres of multi-family units, which would include a maximum 172 dwelling units and 14.82 acres of General Manufacturing. The project is expected to generate approximately 2,000 ADT with 240 PM peak hour trips.
5. **Citrus Grove** is a proposed project involving the residential development of approximately 50 acres of land east of SR 86 and north of McCabe Road. The project is calculated to generate 1,242 ADT, with 24 inbound and 71 outbound trips during the AM peak hour, and 78 inbound and 46 outbound trips during the PM peak hour.

6. **Courtyard Villas** is a proposed project involving 54 single-family units and a park on 21.5 acres, east of Austin Road and South of Orange Avenue. The project is calculated to generate 596 ADT, with 12 inbound and 36 outbound trips during the AM peak hour, and 38 inbound and 22 outbound trips during the PM peak hour.
7. **Imperial Valley Commons** proposes to construct and operate a commercial/retail center. The project is located in the southeastern portion of the City south of I-8, north of Danenberg Drive, and east of Dogwood Avenue. The project site consists of approximately 780,000 square feet of commercial / retail space divided into individual retail stores varying in size. The project is calculated to generate 25,811 ADT, with 339 inbound and 207 outbound trips during the AM peak hour, and 1139 inbound and 1234 outbound trips during the PM peak hour.
8. **Town Center Village Apartments** consists of the construction of a 256-unit apartment complex on 12.75 acres of land. The proposed project is located 1,000 feet east of North Imperial Avenue situated between Cruickshank Drive and Bradshaw Drive. The project is calculated to generate 1,675 ADT, with 26 inbound and 103 outbound trips during the AM peak hour, and 103 inbound and 55 outbound trips during the PM peak hour.
9. **Monterey Park** is a proposed 152-acre residential subdivision including 589 units. The proposed project is located on the southeast corner of Austin Road and Brewer Road in the City of Imperial. The project is calculated to generate 5,388 ADT, with 106 inbound and 317 outbound trips during the AM peak hour, and 326 inbound and 192 outbound trips during the PM peak hour.

Figure 8-1 depicts the locations of the cumulative projects. *Figure 8-2* depicts the Cumulative Projects traffic volumes. *Figure 8-3* depicts the Existing + Total Project + Cumulative Projects traffic volumes.



- Cumulative Projects**
1. Imperial Center
 2. Linda Vista
 3. Heber Meadows
 4. 8th Street
 5. Citrus Grove
 6. Courtyard Villas
 7. Imperial Valley Commons
 8. Town Center Village Apartments
 9. Monterey Park

Figure 8-1
Cumulative Projects Location Map

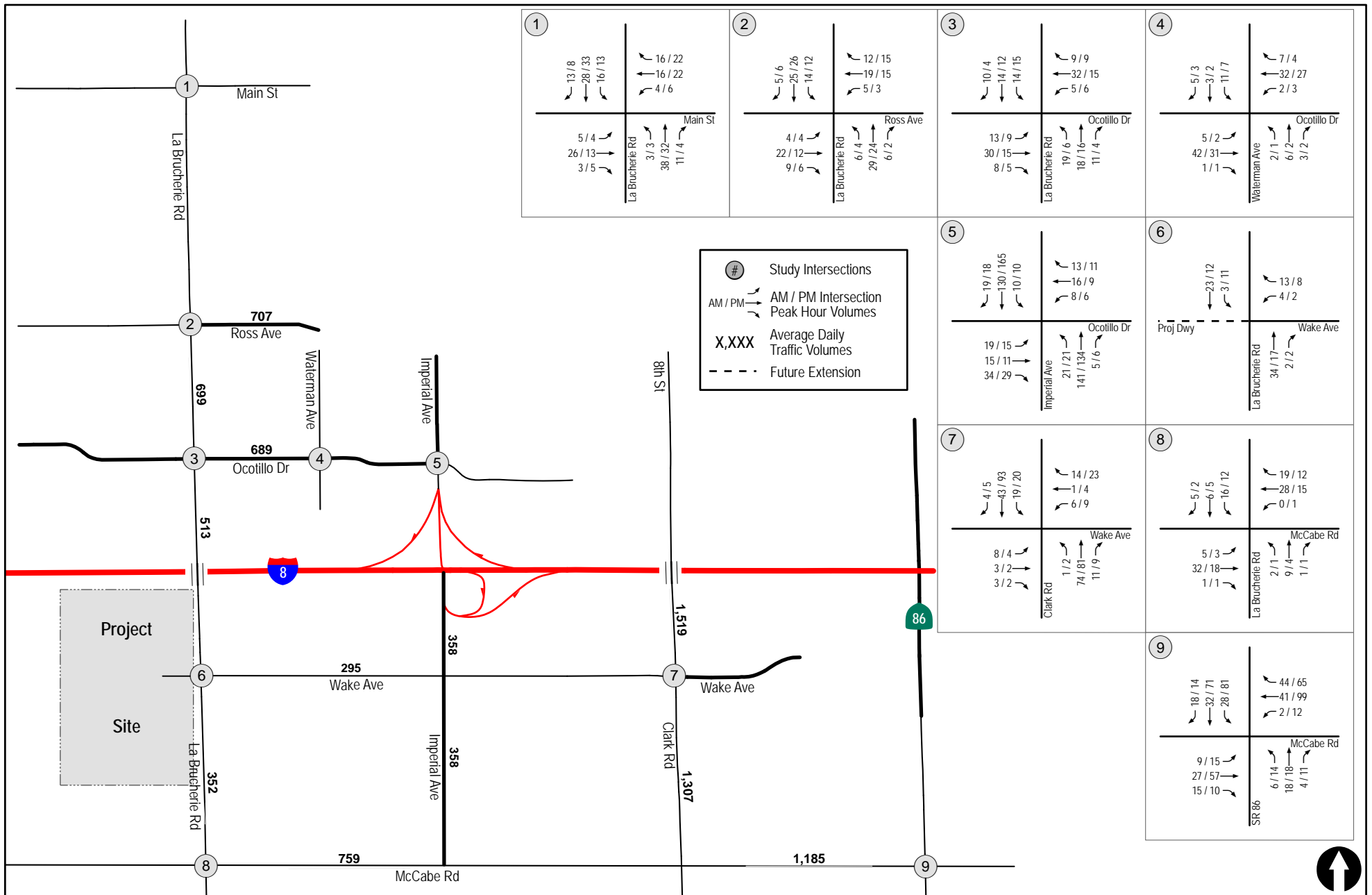
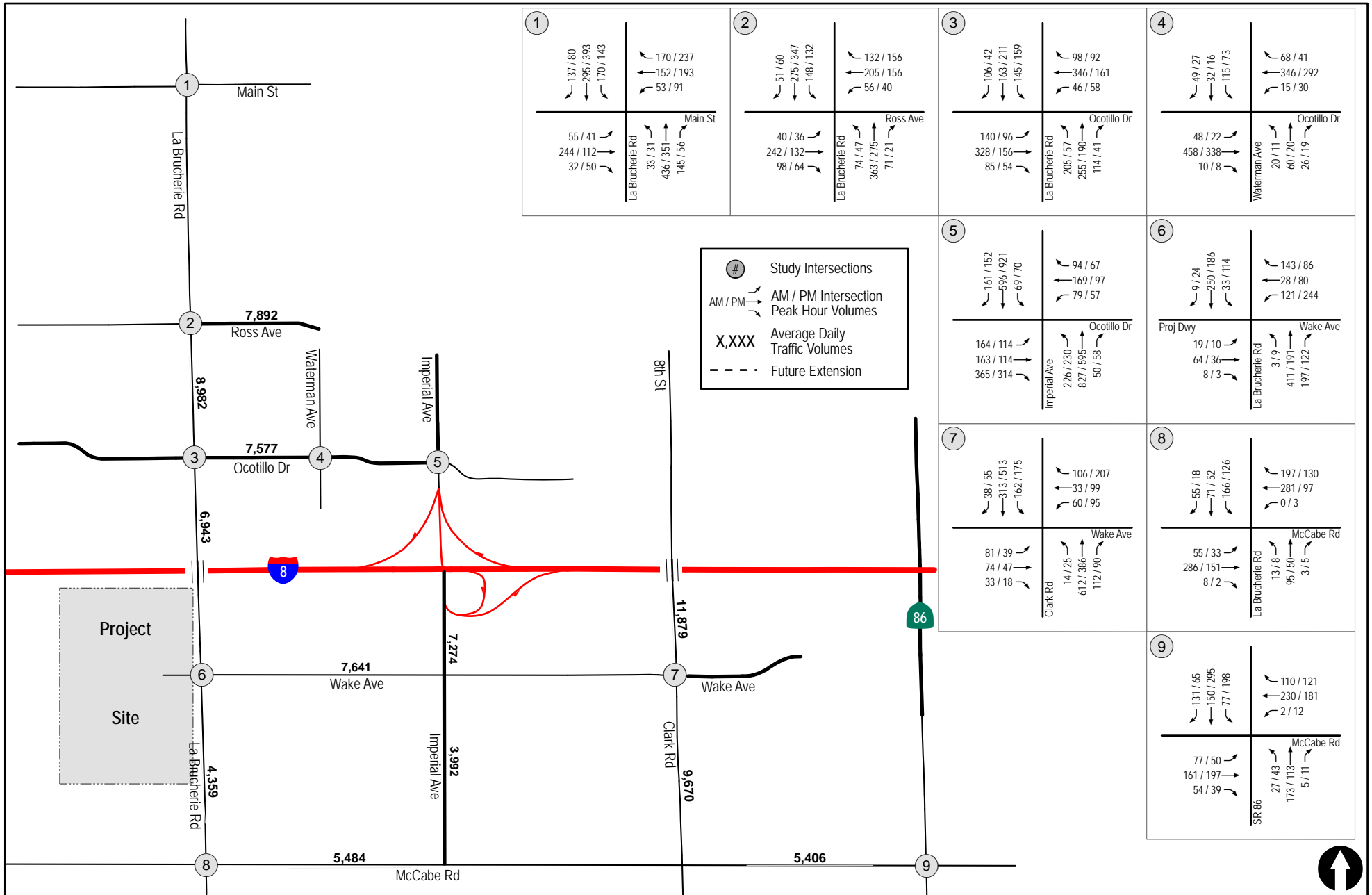


Figure 8-2
Cumulative Projects Traffic Volumes



Existing + Cumulative Projects + Total Project Traffic Volumes

9.0 ANALYSIS OF NEAR-TERM SCENARIOS

The City of El Centro has a fully funded project that includes improving the La Brucherie Avenue / W. Main Street intersection by providing the following lane geometry:

Northbound

- One dedicated left-turn lane
- Two dedicated through lanes
- One dedicated right-turn lane

Southbound

- One dedicated left-turn lane
- Two dedicated through lanes
- One dedicated right-turn lane

Westbound

- One dedicated left-turn lane
- One dedicated through lane
- One shared through/right-turn lane

Eastbound

- One dedicated left-turn lane
- One dedicated through lane
- One dedicated right-turn lane

The construction of these improvements is expected to be completed by 2017, prior to the completion of the construction of Phase 1 of the project. These improvements are included in the near-term scenarios analysis.

9.1 Existing + Phase 1 Project

9.1.1 Intersection Operations

Table 9-1 shows the peak hour intersection analyses for the Existing + Phase 1 Project scenario. This table shows that, with the addition of Phase 1 project traffic, the following study intersections are calculated to operate at LOS D or worse:

- La Brucherie Avenue/W. Main Street (LOS D during both the AM peak PM peak hours);
- La Brucherie Avenue/Ocotillo Drive (LOS D during the AM peak hour);
- Imperial Avenue/Ocotillo Drive (LOS D during the AM peak hour);
- La Brucherie Avenue/ Wake Avenue (LOS F during the AM peak hour); and
- La Brucherie Avenue/ McCabe Road (LOS D during the AM peak hour).

Appendix F contains the Existing + Phase 1 Project peak hour intersection analyses worksheets.

9.1.2 Segment Operations

Table 9-2 shows the volume/capacity street segment analyses for the Existing + Phase 1 Project scenario. This table shows that, with the addition of Phase 1 project traffic, all street segments in the study area are calculated to operate at LOS C or better.

9.2 Existing + Phase 1 and Phase 2 Project

9.2.1 Intersection Operations

Table 9–1 shows the peak hour intersection analyses for the Existing + Phase 1 and Phase 2 Project scenario. This table shows that, with the addition of Phase 1 and Phase 2 project traffic, the following study intersections are calculated to operate at LOS D or worse:

- La Brucherie Avenue/W. Main Street (LOS D during both the AM peak PM peak hours);
- La Brucherie Avenue/Ocotillo Drive (LOS D during the AM peak hour);
- Imperial Avenue/Ocotillo Drive (LOS D during the AM peak hour);
- La Brucherie Avenue/ Wake Avenue (LOS F during the AM peak hour); and
- La Brucherie Avenue/ McCabe Road (LOS F during the AM peak hour).

Appendix G contains the Existing + Phase 1 and Phase 2 Project peak hour intersection analyses worksheets.

9.2.2 Segment Operations

Table 9–2 shows the volume/capacity street segment analyses for the Existing + Phase 1 and Phase 2 Project scenario. This table shows that, with the addition of Phase 1 and Phase 2 project traffic, all street segments in the study area are calculated to operate at LOS C or better.

9.3 Existing + Total Project

9.3.1 Intersection Operations

Table 9–1 shows the peak hour intersection analyses for the Existing + Total Project scenario. This table shows that, with the addition of total project traffic, the following study intersections are calculated to operate at LOS D or worse:

- La Brucherie Avenue/W. Main Street (LOS D during both the AM peak PM peak hours);
- La Brucherie Avenue/Ocotillo Drive (LOS D during the AM peak hour);
- Imperial Avenue/Ocotillo Drive (LOS D during the AM peak hour);
- La Brucherie Avenue/ Wake Avenue (LOS F during both the AM peak PM peak hours); and
- La Brucherie Avenue/ McCabe Road (LOS D during the AM peak hour).

Appendix H contains the Existing + Total Project peak hour intersection analyses worksheets.

9.3.2 Segment Operations

Table 9–2 shows the volume/capacity street segment analyses for the Existing + Total Project scenario. This table shows that, with the addition of total project traffic, all street segments in the study area are calculated to operate at LOS C or better with the exception of the following segment:

- Wake Avenue between La Brucherie Avenue and Imperial Avenue (LOS D).

9.4 Existing + Cumulative Projects + Total Project

9.4.1 Intersection Operations

Table 9-1 shows the peak hour intersection analyses for the Existing + Cumulative Projects + Total Project scenario. This table shows that, with the addition of cumulative projects and total project traffic, the following study intersections are calculated to operate at LOS D or worse:

- La Brucherie Avenue/W. Main Street (LOS D during both the AM peak PM peak hours);
- La Brucherie Avenue/Ocotillo Drive (LOS D during the AM peak hour);
- Imperial Avenue/Ocotillo Drive (LOS E during the AM peak hour and LOS D during the PM peak hour);
- La Brucherie Avenue/ Wake Avenue (LOS F during both the AM and PM peak hours); and
- La Brucherie Avenue/ McCabe Road (LOS F during the AM peak hour).

Appendix I contains the Existing + Total Project + Cumulative Projects peak hour intersection analyses worksheets.

9.4.2 Segment Operations

Table 9-2 shows the volume/capacity street segment analyses for the Existing + Cumulative Projects + Total Project scenario. This table shows that, with the addition of cumulative projects and total project traffic, all street segments in the study area are calculated to operate at LOS C or better with the exception of the following segment:

- Wake Avenue between La Brucherie Avenue and Imperial Avenue (LOS D).

**TABLE 9-1
NEAR-TERM INTERSECTION OPERATIONS**

Intersection	Control Type	Peak Hour	Existing		Existing + Phase I Project		Existing + Phase I + Phase II Project		Existing + Total Project		Existing + Total Project + Cumulative	
			Delay ^a	LOS ^b	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. La Brucherie Ave / W. Main St	Signal	AM	35.3	D	24.9	C	25.0	C	25.0	C	26.7	C
		PM	36.6	D	22.4	C	22.5	C	22.5	C	23.4	C
2. La Brucherie Ave / Ross Ave	Signal	AM	27.5	C	28.0	C	30.1	C	30.3	C	30.4	C
		PM	28.7	C	30.7	C	32.8	C	32.8	C	32.8	C
3. La Brucherie Ave / Ocotillo Dr	Signal	AM	35.8	D	36.0	D	36.4	D	36.2	D	40.0	D
		PM	29.2	C	30.1	C	30.3	C	27.8	C	28.6	C
4. Ocotillo Dr/ Waterman Ave	AWSC ^c	AM	17.2	C	18.4	C	20.3	C	17.2	C	21.5	C
		PM	10.2	B	10.5	B	11.0	B	10.2	B	10.8	B
5. Ocotillo Dr / Imperial Ave	Signal	AM	42.2	D	44.2	D	48.0	D	44.1	D	61.8	E
		PM	25.8	C	27.2	C	29.3	C	27.3	C	32.5	C
6. La Brucherie Ave / Wake Ave	OWSC ^d /TWSC ^e	AM	21.5	C	38.5	E	58.6	F	>100	F	>100	F
		PM	12.9	B	17.9	C	21.8	C	>100	F	>100	F
7. 8th Street / Wake Ave	Signal	AM	20.7	C	20.7	C	20.7	C	21.3	C	22.9	C
		PM	22.0	C	22.0	C	22.0	C	22.6	C	22.7	C
8. La Brucherie Ave / McCabe Rd	AWSC ^c	AM	26.7	D	34.6	D	51.7	F	32.7	D	60.1	F
		PM	12.5	B	14.8	B	21.2	C	13.8	B	17.4	C
9. SR 86 / McCabe Rd	Signal	AM	18.0	B	18.5	B	18.9	B	20.1	C	20.9	C
		PM	20.7	C	20.7	C	20.8	C	20.8	C	21.2	C

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. AWSC- All-Way Stop Controlled intersection.
- d. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.
- e. OWSC- One-Way Stop Controlled intersection. Minor street left turn delay is reported.

General Notes:

- 1. Bold and shaded represents a potential significant impact

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

**TABLE 9-2
NEAR-TERM STREET SEGMENT OPERATIONS**

Street Segment	Existing Capacity (LOS E) ^a	Existing			Existing + Phase 1 Project			Existing + Phase 1 and Phase 2 Project			Existing + Total Project			Existing + Cumulative Projects + Project		
		ADT ^b	V/C ^c	LOS ^d	ADT	V/C	LOS	ADT	V/C	LOS	ADT	V/C	LOS	ADT	V/C	LOS
La Brucherie Avenue																
Ross Avenue to Ocotillo Drive	18,000	6,983	0.388	A	7,444	0.414	A	8,140	0.452	A	8,283	0.460	A	8,982	0.499	A
Ocotillo Drive to Wake Avenue	18,000	5,130	0.285	A	6,053	0.336	A	7,445	0.414	A	6,430	0.357	A	6,943	0.386	A
Wake Avenue to McCabe Road	18,000	3,512	0.195	A	4,180	0.232	A	5,188	0.288	A	4,007	0.223	A	4,359	0.242	A
Ross Avenue																
La Brucherie Avenue to Imperial Avenue	27,000	7,061	0.262	A	7,093	0.263	A	7,141	0.264	A	7,185	0.266	A	7,892	0.292	A
Ocotillo Drive																
La Brucherie Avenue to Imperial Avenue	27,000	6,888	0.255	A	7,349	0.272	A	8,045	0.298	A	6,888	0.255	A	7,577	0.281	A
8th Street Bridge / Clark Road																
Aurora Drive to Wake Avenue	18,000	10,360	0.576	A	10,360	0.576	A	10,360	0.576	A	10,360	0.576	A	11,879	0.660	B
Wake Avenue to McCabe Road	27,000	8,239	0.305	A	8,239	0.305	A	8,239	0.305	A	8,363	0.310	A	9,670	0.358	A
McCabe Road																
La Brucherie Road to Clark Road	16,200 ^b	4,415	0.273	C	4,829	0.298	C	5,453	0.337	C	4,725	0.292	C	5,484	0.339	C
Clark Road to SR 86	16,200 ^b	3,849	0.238	B	4,247	0.262	C	4,847	0.299	C	4,221	0.261	C	5,406	0.334	C
Imperial Avenue																
I-8 to Wake Avenue	27,000	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	6,916	0.256	A	7,274	0.269	A
Wake Avenue to McCabe Road	27,000	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	3,634	0.135	A	3,992	0.148	A

TABLE 9-2 (CONTINUED)
NEAR-TERM STREET SEGMENT OPERATIONS

Street Segment	Existing Capacity (LOS E) ^a	Existing			Existing + Phase 1 Project			Existing + Phase 1 and Phase 2 Project			Existing + Total Project			Existing + Cumulative Projects + Project		
		ADT ^b	V/C ^c	LOS ^d	ADT	V/C	LOS	ADT	V/C	LOS	ADT	V/C	LOS	ADT	V/C	LOS
Wake Avenue La Brucherie Avenue to Imperial Avenue	9,600 ^f	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	7,346	0.765	D	7,641	0.796	D

Footnotes:

- a) Capacities based on City of El Centro Roadway Classification Table (See *Appendix C*).
- b) Capacities based on County of Imperial Roadway Classification Table (See *Appendix C*).
- c) Average Daily Traffic
- d) Volume to Capacity ratio
- e) Level of Service
- f) 80% of the capacity for a 2-lane collector street based on the City of El Centro Roadway Classification Table was used since Wake Avenue is not currently built to two-lane collector standards.

General Notes:

- 1. DNE = Does not exist
- 2. Bold and shaded represents a potential significant impact

10.0 HORIZON YEAR ANALYSIS

10.1 Segment Operations

The horizon year street segment volumes were obtained from the City of El Centro Traffic Circulation Element (January 2006) and the Imperial County Circulation Element Update (August 2006), depending on the roadway location. *Table 10-1* shows the volume/capacity street segment analyses for the Horizon Year scenario. *Figure 10-1* illustrates the horizon year segment ADT volumes.

**TABLE 10-1
HORIZON YEAR STREET SEGMENT OPERATIONS**

Street Segment	Capacity (LOS E) ^a	Horizon Year		
		ADT ^b	LOS ^c	V/C ^d
La Brucherie Avenue				
Ross Ave to Ocotillo Dr	37,000	28,350	0.766	C
Ocotillo Dr to Wake Ave	37,000	16,670	0.451	B
Wake Ave to McCabe Rd	34,200	22,110	0.646	B
Ross Avenue				
La Brucherie Ave to Imperial Ave	34,200	12,290	0.359	A
Ocotillo Drive				
La Brucherie Ave to Imperial Ave	27,000	10,100	0.374	A
8th Street Bridge/ Clark Road				
Aurora Dr to Wake Ave	54,000	31,830	0.589	A
Wake Ave to McCabe Rd	34,200	24,400	0.713	C
McCabe Road				
La Brucherie Ave to Clark Rd	57,000	28,500	0.500	B
Clark Rd to SR 86	57,000	28,500	0.500	B
Imperial Avenue				
I-8 to Wake Ave	27,000	14,570	0.540	A
Wake Ave to McCabe Rd	27,000	14,570	0.540	A

Footnotes:

- a. Capacity based on City of El Centro & County of Imperial Roadway Classification & LOS tables (See *Appendix C*).
- b. Average Daily Traffic.
- c. Level of Service.
- d. Volume to Capacity.

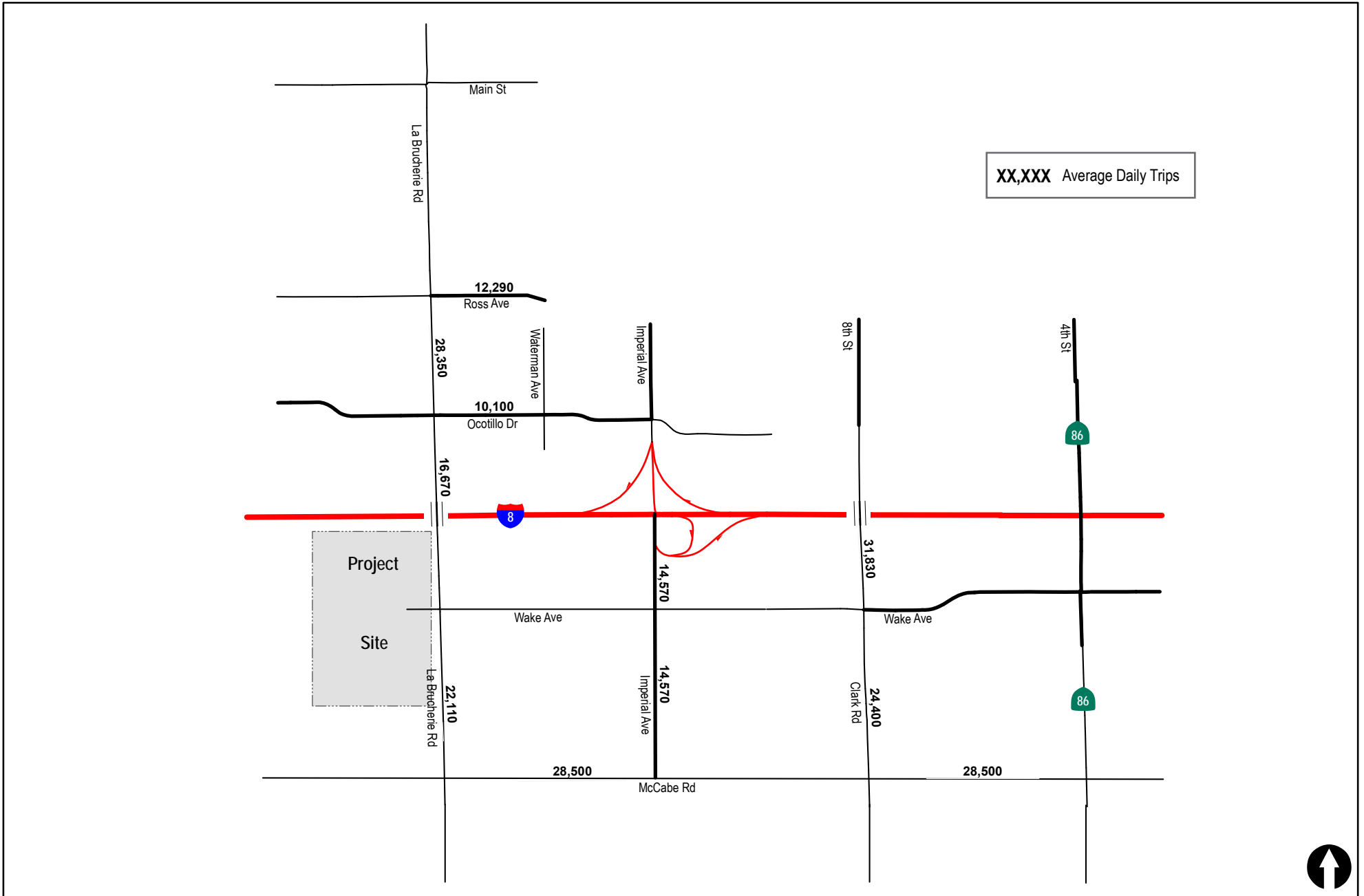


Figure 10-1
Year 2030 Traffic Volumes

11.0 FUTURE I-8 / AUSTIN ROAD INTERCHANGE ANALYSIS

A new interchange is planned for I-8 via Austin Road. There is no programmed construction year or identified funding. As explained in Section 7.3, construction of the Imperial Avenue bridge and roadway extension to McCabe Road is expected to be completed in the next several years. Due to the proximity of the Imperial Avenue interchange to the project site and the layout of the surrounding street network, it is not likely that project-related traffic would utilize the future Austin Road interchange to access the project. However, an analysis of the Austin Road interchange in the Horizon Year scenario was included in this study per Caltrans' request. Horizon year peak hour intersection volumes were forecasted based on the horizon year ADT volumes found in the County of Imperial Circulation Element Update. Several other traffic engineering principles and factors, such as the peak hour factor and direction factor, were considered. For this analysis, 10% of the project traffic was distributed to the Austin Road interchange.

11.1 Horizon Year without Project Intersection Operations

Table 11-1 shows the peak hour intersection analyses for the future I-8/Austin Road interchange for the Horizon Year without Project scenario. This table shows that both intersections are calculated to operate at LOS C or better, assuming signalization.

11.2 Horizon Year with Project Intersection Operations

Table 11-1 shows the peak hour intersection analyses for the future I-8/Austin Road interchange for the Horizon Year with Project scenario. This table shows that, with the addition of project traffic, both intersections are calculated to continue to operate at LOS C or better.

Appendix J contains the I-8/Austin Road interchange peak hour intersection analyses worksheets.

**TABLE 11-1
FUTURE AUSTIN ROAD INTERCHANGE INTERSECTION OPERATIONS**

Intersection	Control Type	Peak Hour	Horizon Year without Project		Horizon Year with Project	
			Delay ^a	LOS ^b	Delay ^a	LOS ^b
1. I-8 Westbound Ramps / Austin Road	Signal	AM	15.1	B	15.2	B
		PM	25.4	C	25.4	C
2. I-8 Eastbound Ramps / Austin Road	Signal	AM	13.9	B	13.9	B
		PM	14.3	B	14.3	B

Footnotes:

- e. Average delay expressed in seconds per vehicle.
- f. Level of Service.
- g. AWSC – All-Way Stop Controlled intersection.
- h. OWSC – One-Way Stop Controlled intersection. Minor street left turn delay is reported.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

12.0 SCHOOL SITE ALTERNATIVE SCENARIO ANALYSIS

An analysis of an alternative project scenario with an elementary school site located within the project was included in this study. A 12-acre elementary school would be constructed south of Danenberg Drive within the subdivision. The proposed school would replace 35 single-family detached residential dwelling units, reducing the total to 582 dwelling units. The proposed school would have an enrollment of up to 720 students in Kindergarten through 6th grade. *Figure 12-1* shows the alternative project site plan with the proposed school site.

12.1 Trip Generation/Distribution/Assignment

An 8% internal capture reduction was applied to account for the project's residential trips that will go to the school. As shown in *Table 12-1*, the alternative project is calculated to generate approximately 6,229 ADT with 296 inbound / 438 outbound trips during the AM peak hour and 426 inbound / 216 outbound trips during the PM peak hour. The alternative project traffic was distributed and assigned based on the trip distribution percentages shown in *Figure 7-6*. *Figure 12-2* illustrates the alternative project volumes assignment. *Figure 12-3* illustrates the existing + alternative project traffic volumes. *Figure 12-4* illustrates the existing + alternative project + cumulative projects traffic volumes.

12.2 Existing + Total Alternative Project Analysis

12.2.1 Intersection Operations

Table 12-2 shows the peak hour intersection analyses for the Existing + Total Alternative Project scenario. This table shows that the study intersections are calculated to operate at the same LOS under this alternative scenario as compared to the proposed project, with the exception of the following intersection:

- La Brucherie Avenue/ McCabe Road (LOS E during the AM peak hour).

Appendix K contains the Existing + Total Alternative Project peak hour intersection analyses worksheets.

12.2.2 Segment Operations

Table 12-3 shows the volume/capacity street segment analyses for the Existing + Total Alternative Project scenario. This table shows that the study segments are calculated to operate at the same LOS under this alternative scenario as compared to the proposed project.

12.3 Existing + Total Alternative Project + Cumulative Projects Analysis

12.3.1 Intersection Operations

Table 12-2 shows the peak hour intersection analyses for the Existing + Total Alternative Project scenario. This table shows that the study intersections are calculated to operate at the same LOS under this alternative scenario as compared to the proposed project.

Appendix L contains the Existing + Total Alternative Project + Cumulative Projects peak hour intersection analyses worksheets.

12.3.2 Segment Operations

Table 12–3 shows the volume/capacity street segment analyses for the Existing + Total Alternative Project scenario. This table shows that the study segments are calculated to operate at the same LOS under this alternative scenario as compared to the proposed project.

12.4 School Site Alternative Scenario Significant Impacts and Mitigation

The calculated significant impacts for the alternative project scenario are the same as those identified for the proposed project with the exception of the impact at the La Brucherie Avenue / McCabe Road. Under the alternative project scenario, a direct impact would occur at the La Brucherie Avenue / McCabe Road intersection, as opposed to the cumulative impact that occurs under the proposed project scenario.

To mitigate this impact, install a traffic signal at the intersection of La Brucherie Avenue / McCabe Road and provide a dedicated left-turn lane at each approach.

**TABLE 12–1
TOTAL ALTERNATIVE PROJECT TRIP GENERATION**

Land Use	Size	Daily Trip Ends (ADTs) ^a		AM Peak Hour					PM Peak Hour				
		Rate	Volume	% of ADT	In:Out			% of ADT	In:Out				
					Split	In	Out		Total	Split	In	Out	Total
Residential: Single Family Detached	582 DU	10 /DU ^b	5,820	8%	30:70	140	326	466	10%	70:30	407	175	582
Park	11.6 acres	1.89 /acre ^c	22		50:50	4	4	8		50:50	4	4	8
Elementary School	720 students	1.29 /student	929		55:45	178	146	324		49:51	53	55	108
Subtotal			6,771			322	476	798			464	234	698
Internal Capture ^d			542			26	38	64			38	18	56
Total External Project-Generated Trips			6,229			296	438	734			426	216	642

Footnotes:

- a. Trip-ends are one-way traffic movements, either entering or leaving.
- b. Rate is based on City of San Diego’s Trip Generation Rate Summary table.
- c. Rate is based on the ITE Trip Generation Manual (9th Edition).
- d. 8% internal capture reduction was applied

**TABLE 12-2
NEAR-TERM INTERSECTION OPERATIONS (ALTERNATIVE PROJECT SCENARIO)**

Intersection	Control Type	Peak Hour	Existing		Existing + Total Alternative Project		Existing + Total Alternative Project + Cumulative	
			Delay ^a	LOS ^b	Delay	LOS	Delay	LOS
1. La Brucherie Ave / W. Main St	Signal	AM	35.3	D	25.3	C	27.0	C
		PM	36.6	D	22.5	C	23.4	C
2. La Brucherie Ave / Ross Ave	Signal	AM	27.5	C	30.6	C	30.7	C
		PM	28.7	C	32.7	C	32.7	C
3. La Brucherie Ave / Ocotillo Dr	Signal	AM	35.8	D	36.4	D	41.1	D
		PM	29.2	C	27.7	C	29.4	C
4. Ocotillo Dr/ Waterman Ave	AWSC ^c	AM	17.2	C	17.2	C	21.5	C
		PM	10.2	B	10.2	B	10.8	B
5. Ocotillo Dr / Imperial Ave	Signal	AM	42.2	D	45.5	D	77.0	E
		PM	25.8	C	27.3	C	32.8	C
6. La Brucherie Ave / Wake Ave	OWSC ^d /TWSC ^e	AM	21.5	C	>100	F	>100	F
		PM	12.9	B	>100	F	>100	F
7. 8th Street / Wake Ave	Signal	AM	20.7	C	21.6	C	23.0	C
		PM	22.0	C	22.6	C	24.3	C
8. La Brucherie Ave / McCabe Rd	AWSC ^c	AM	26.7	D	35.8	E	65.5	F
		PM	12.5	B	14.0	B	17.6	C
9. La Brucherie Ave / McCabe Rd	AWSC ^c	AM	18.0	B	20.1	C	21.0	C
		PM	20.7	C	20.7	C	21.2	C

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. AWSC- All-Way Stop Controlled intersection.
- d. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.
- e. OWSC- One-Way Stop Controlled intersection. Minor street left turn delay is reported.

General Notes:

- 1. Bold and shaded represents a potential significant impact

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

**TABLE 12-3
NEAR-TERM STREET SEGMENT OPERATIONS (ALTERNATIVE PROJECT SCENARIO)**

Street Segment	Existing Capacity (LOS E) ^a	Existing			Existing + Total Alternative Project			Existing + Cumulative Projects + Alternative Project		
		ADT ^b	V/C ^c	LOS ^d	ADT	V/C	LOS	ADT	V/C	LOS
La Brucherie Avenue										
Ross Avenue to Ocotillo Drive	18,000	6,983	0.388	A	8,291	0.461	A	8,990	0.499	A
Ocotillo Drive to Wake Avenue	18,000	5,130	0.285	A	6,438	0.358	A	6,951	0.386	A
Wake Avenue to McCabe Road	18,000	3,512	0.195	A	4,010	0.223	A	4,362	0.242	A
Ross Avenue										
La Brucherie Avenue to Imperial Avenue	27,000	7,061	0.262	A	7,186	0.266	A	7,893	0.292	A
Ocotillo Drive										
La Brucherie Avenue to Imperial Avenue	27,000	6,888	0.255	A	6,888	0.255	A	7,577	0.281	A
8th Street Bridge / Clark Road										
Aurora Drive to Wake Avenue	18,000	10,360	0.576	A	10,360	0.576	A	11,879	0.660	B
Wake Avenue to McCabe Road	27,000	8,239	0.305	A	8,364	0.310	A	9,671	0.358	A
McCabe Road										
La Brucherie Road to Clark Road	16,200 ^b	4,415	0.273	C	4,726	0.292	C	5,485	0.339	C
Clark Road to SR 86	16,200 ^b	3,849	0.238	B	4,223	0.261	C	5,408	0.334	C
Imperial Avenue										
I-8 to Wake Avenue	27,000	DNE	DNE	DNE	6,936	0.257	A	7,274	0.270	A
Wake Avenue to McCabe Road	27,000	DNE	DNE	DNE	3,634	0.135	A	3,992	0.148	A

TABLE 12-3 (CONTINUED)
NEAR-TERM STREET SEGMENT OPERATIONS (ALTERNATIVE PROJECT SCENARIO)

Street Segment	Existing Capacity (LOS E) ^a	Existing			Existing + Total Project			Existing + Cumulative Projects + Project		
		ADT ^b	V/C ^c	LOS ^d	ADT	V/C	LOS	ADT	V/C	LOS
Wake Avenue										
La Brucherie Avenue to Imperial Avenue	9,600 ^f	DNE	DNE	DNE	7,373	0.768	D	7,668	0.799	D

Footnotes:

- a) Capacities based on City of El Centro Roadway Classification Table (See *Appendix C*).
- b) Capacities based on County of Imperial Roadway Classification Table (See *Appendix C*).
- c) Average Daily Traffic
- d) Volume to Capacity ratio
- e) Level of Service
- f) 80% of the capacity for a 2-lane collector street based on the City of El Centro Roadway Classification Table was used since Wake Avenue is not currently built to two-lane collector standards.

General Notes:

- 1. DNE = Does not exist
- 2. Bold and shaded represents a potential significant impact

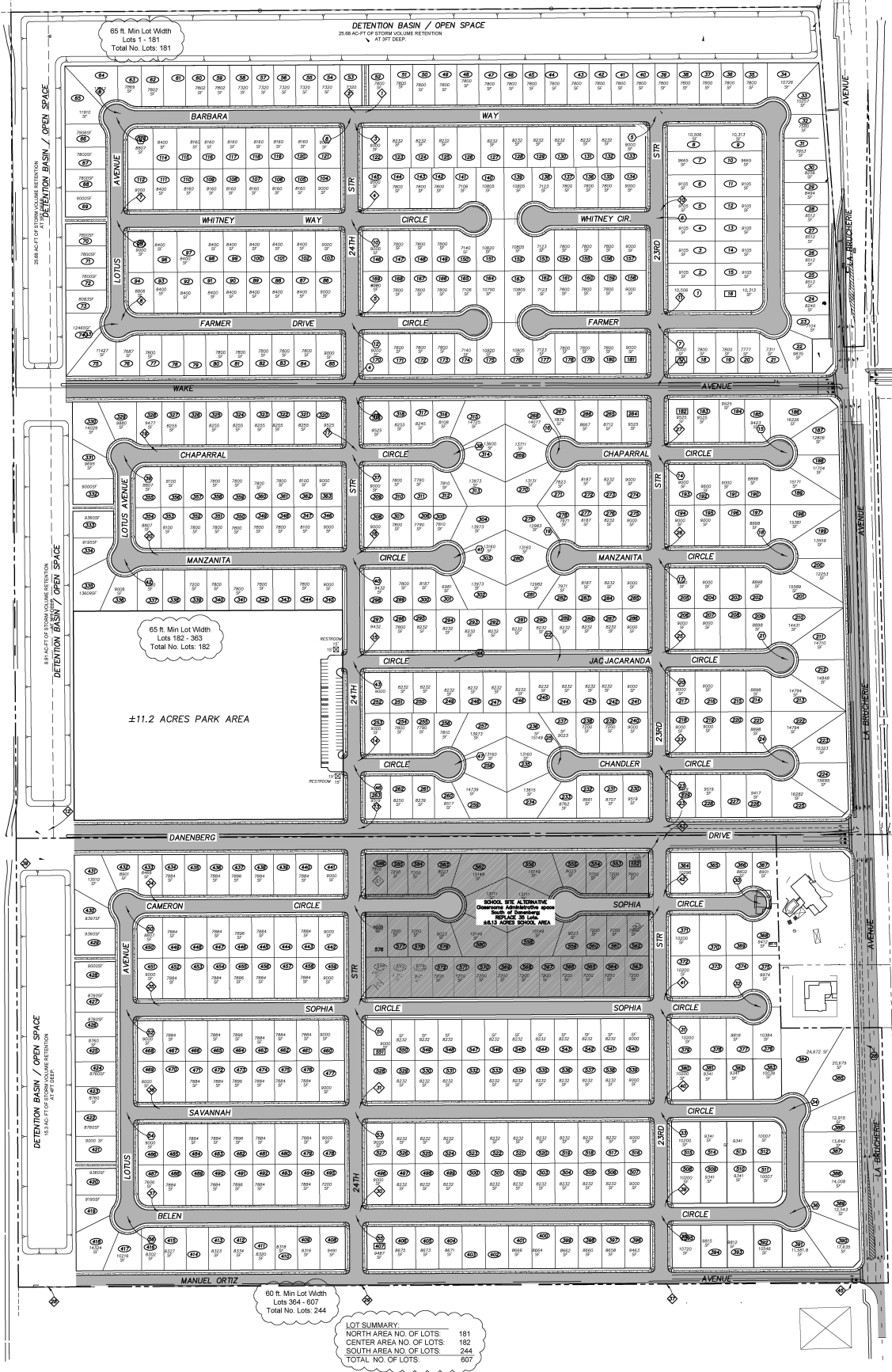
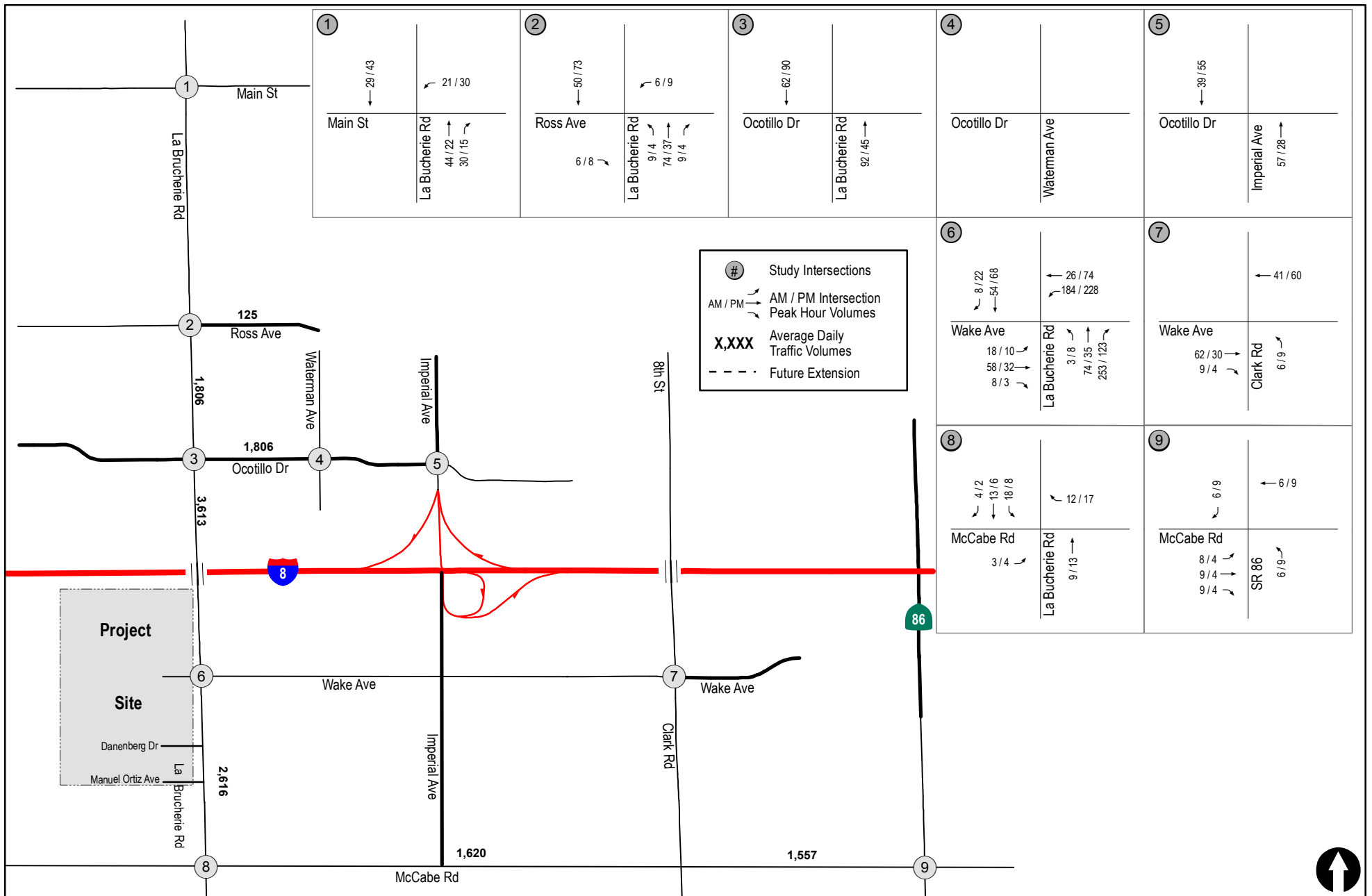
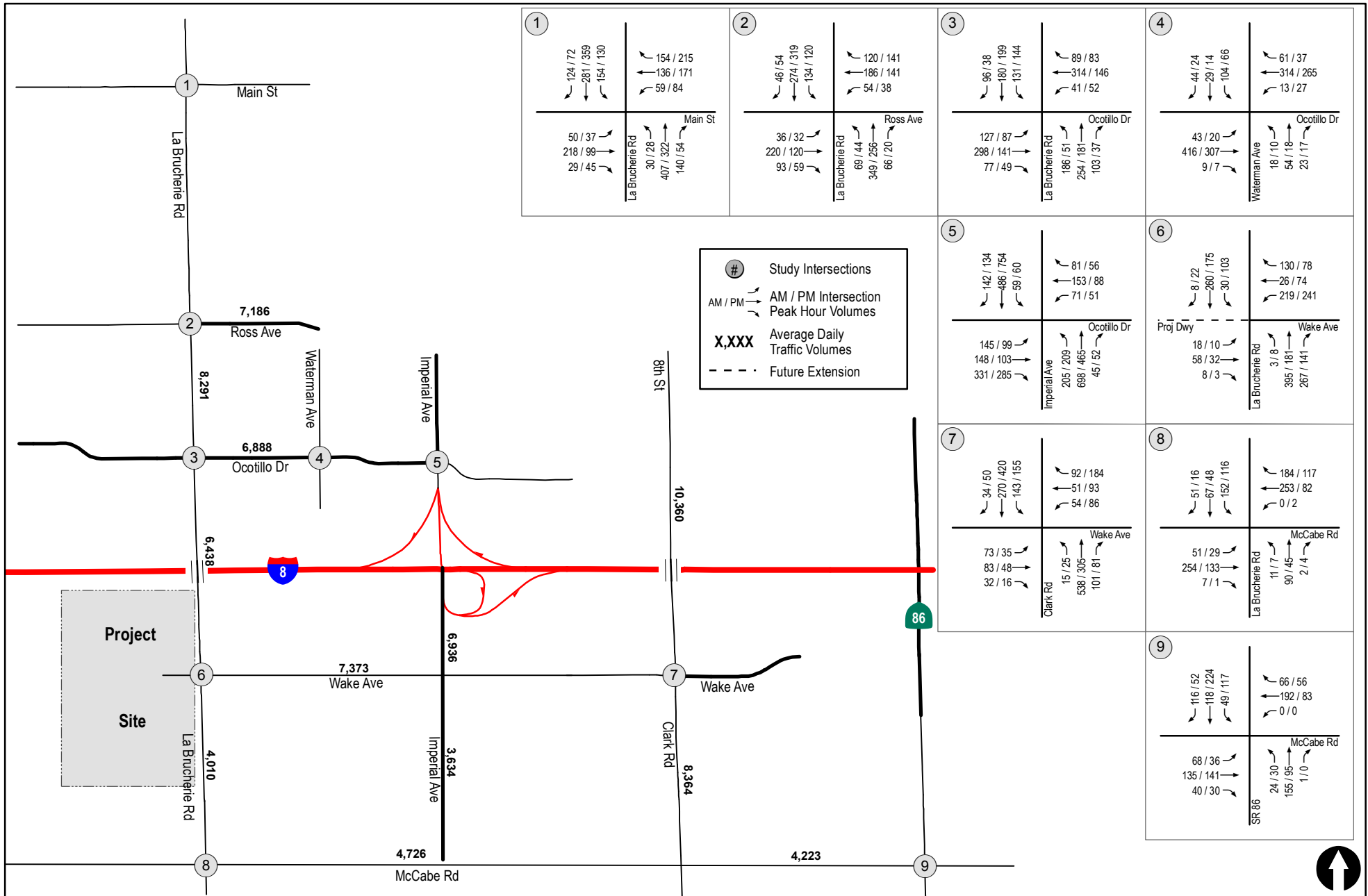
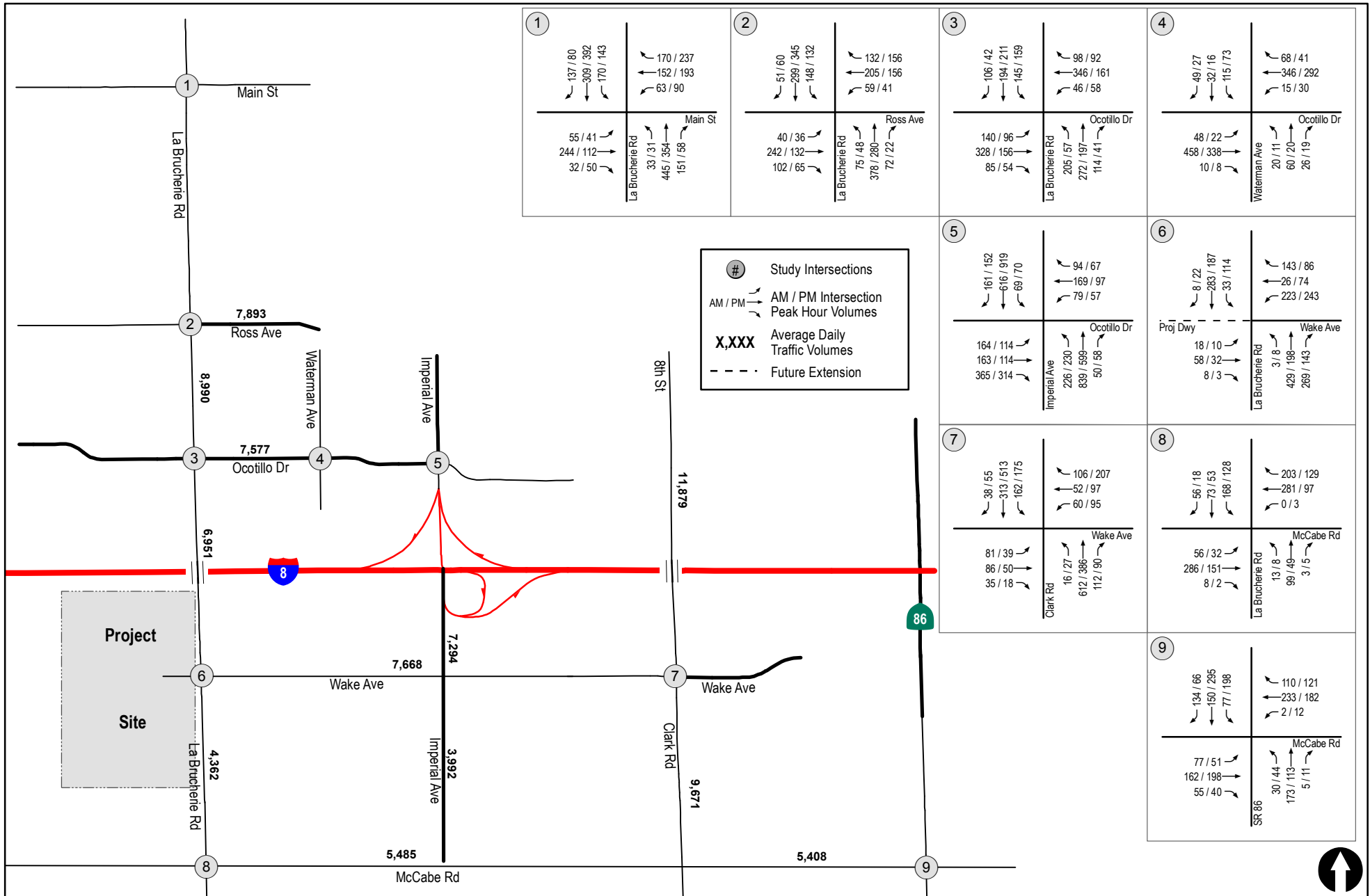


Figure 12-1







Existing + Alternative Project + Cumulative Projects Traffic Volumes

Figure 12-4

13.0 ACCESS AND OTHER ISSUES

The following access related improvements should be implemented:

- Provide dedicated northbound left-turn lanes and dedicated southbound right-turn lanes at the three proposed access points along La Brucherie Avenue.
- Widen the west side of La Brucherie Avenue along the project's frontage to City four-lane standards.
- Provide a dedicated eastbound left-turn lane, a dedicated eastbound through lane, and a dedicated eastbound right-turn lane on Wake Avenue at La Brucherie Avenue.
- Construct Danenberg Drive within the project site to City 4-lane arterial standards.
- Provide a dedicated eastbound left-turn lane and a dedicated eastbound right-turn lane on Danenberg Drive at La Brucherie Avenue.
- Provide additional right-of-way for the proposed Class II bicycle facility.
- Provide sight distance and curb radius in conformance with City's standards at all project access points.
- Provide sufficient ADA-compliant pedestrian access to all the project facilities.

14.0 SIGNIFICANCE OF IMPACTS AND MITIGATION MEASURES

The following is a description of the calculated significant impacts for the proposed project based on the established significant criteria along with recommendations for mitigation measures at the impacted locations.

14.1 Significance of Impacts

14.1.1 Direct Impacts

- a. La Brucherie Avenue / Wake Avenue intersection

14.1.2 Cumulative Impacts

- b. Imperial Avenue / Ocotillo Drive intersection
- c. La Brucherie Avenue / McCabe Road intersection
- d. Wake Avenue from La Brucherie Avenue to Imperial Avenue segment

14.1.3 Access Related Impacts

- e. Significant operational impacts could occur if proper site access is not provided.

14.2 Mitigation

- a. When the west leg is build, provide an all-way stop control and a dedicated north bound left-turn lane at the intersection. Prior to the construction of 222 dwelling units, signalize the intersection of La Brucherie Avenue / Wake Avenue and provide the following lane configurations:

Northbound: one (1) dedicated left-turn lane
one (1) dedicated thru lane
one (1) dedicated right turn lane

Southbound: one (1) dedicated left-turn lane
two (2) dedicated thru lane
one (1) dedicated right turn lane

Westbound: one (1) dedicated left-turn lane
one (1) shared thru/right-turn lane

Eastbound: one (1) dedicated left-turn lane
one (1) dedicated thru lane
one (1) dedicated right turn lane

- b. Contribute a fairshare (2.3%) towards the provision of an eastbound right-turn overlap phase (RTOL) at the intersection of Imperial Avenue / Ocotillo Drive (prior to the construction of 210 dwelling units). If this improvement is completed prior to the trigger, the City can collect the fair share and apply towards reimbursement to the funding source of the improvements or other traffic projects identified in the circulation element at the City's discretion.

- c. Contribute a fairshare (4.3%) towards signaling the intersection of La Brucherie Avenue / McCabe Road and providing a dedicated left-turn lane at each approach (prior to the construction of 155 dwelling units). If these improvements are completed prior to the trigger, the City can collect the fair share and apply towards reimbursement to the funding source of the improvements or other traffic projects identified in the circulation element at the City's discretion.
- d. Prior to the construction of 425 dwelling units, the project should provide the following improvements:
 - Contribute a fairshare (36.6%) towards improving the currently constructed portion of Wake Avenue between La Brucherie Avenue and the future extension of Imperial Avenue to City two-lane arterial standards.
 - Contribute a fairshare (12.4%) towards the construction of Imperial Avenue between I-8 and Wake Avenue. A fairshare contribution towards the construction of Imperial Avenue between I-8 and Wake Avenue is warranted since the Wake Avenue extension would not improve traffic circulation without the Imperial Avenue extension.

If these improvements are completed prior to the trigger, the City can collect the fair share and apply towards reimbursement to the funding source of the improvements or other traffic projects identified in the circulation element at the City's discretion.

- e. The project should implement the following access-related improvements:
 - Provide dedicated northbound left-turn lanes at the three proposed access points along La Brucherie Avenue and a dedicated southbound right-turn lane at the Wake Avenue and Danenberg Drive access points.
 - Provide a dedicated eastbound left-turn lane, a dedicated eastbound through lane, and a dedicated eastbound right-turn lane on Wake Avenue at La Brucherie Avenue.
 - Construct Danenberg Drive within the project site to City 4-lane arterial standards.
 - Provide a dedicated eastbound left-turn lane and a dedicated eastbound right-turn lane on Danenberg Drive at La Brucherie Avenue.

Figure 14-1 illustrates the locations of the cumulatively impacted locations and the associated fairshare percentages.

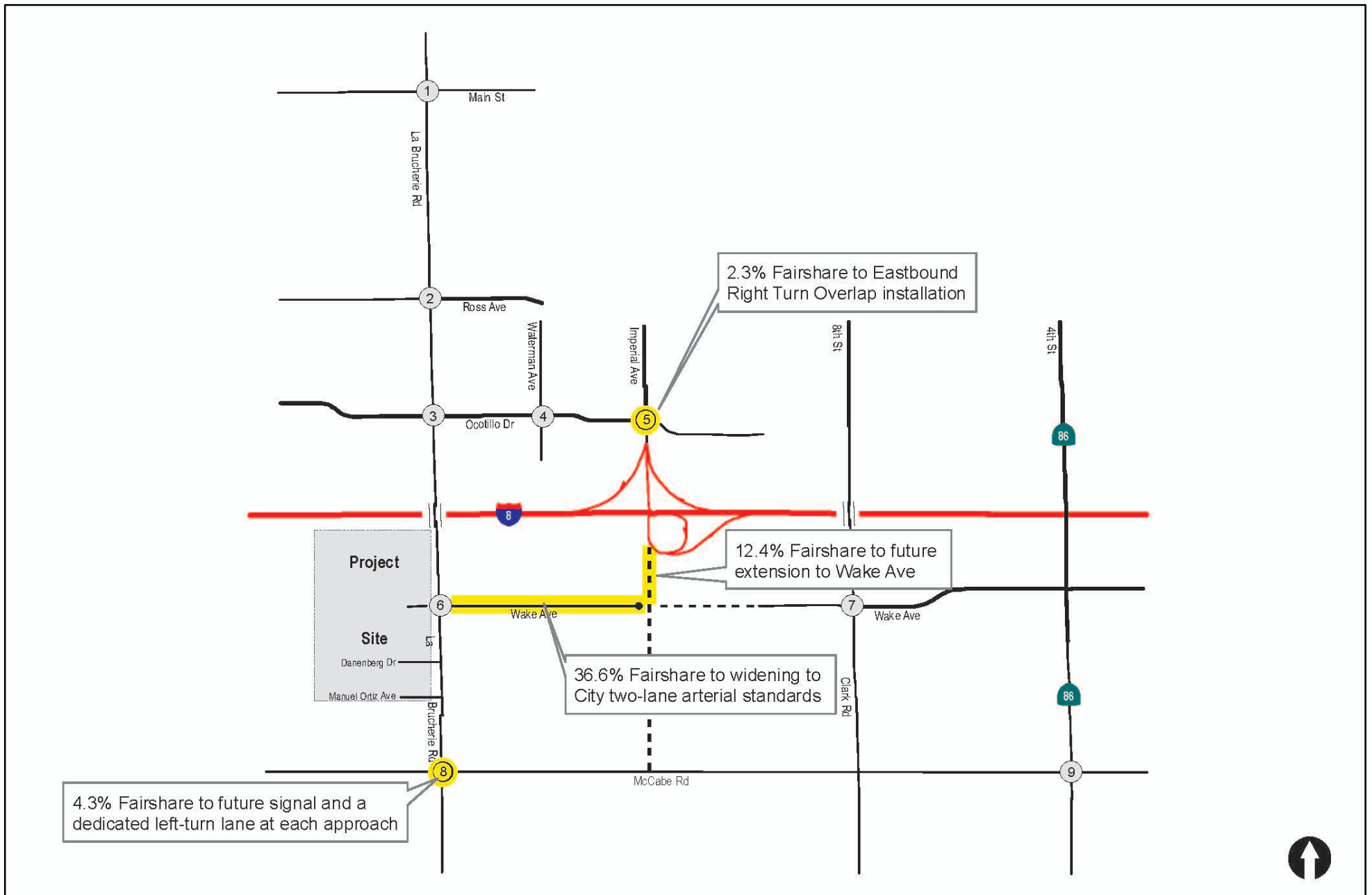


Figure 14-1

Cumulative Impact / Fairshare Contribution Graphics