

TRANSPORTATION IMPACT ANALYSIS
DOGWOOD AT VILLA AVENUE PROJECT
El Centro, California
September 4, 2018

LLG Ref. 3-17-2782

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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 Dogwood at Villa Avenue site project. The proposed property will require Annexation, Pre-Zone Change and a General Plan Amendment. The property is situated on approximately +/- 320 acres of agriculture land located within the County of Imperial. The property is located on the southeast corner of the intersection of N. Dogwood Road and East Villa Road intersection, adjacent to the Imperial Irrigation District's facility on N. Dogwood Road.

The following items are included in this traffic analysis:

- Project Description
- Existing Conditions Description
- Analysis Approach and Methodology
- Significance Criteria
- Analysis of Existing Conditions
- Project Traffic Generation/Distribution/Assignment
- Cumulative Projects Discussion
- Analysis of Near-Term Scenarios
- Site Access Discussion
- Transportation Demand Management
- Significance of Impacts and Mitigation Measures

2.0 PROJECT DESCRIPTION

The proposed property will be in line with the future vision and path stated in the General Plan once the Zone Change, Annexation and General Plan Amendment has taken place. The property is located on the southeast corner of the intersection of N. Dogwood Road and East Villa Road, adjacent to the Imperial Irrigation District's facility on N. Dogwood Road. Per the Imperial County Zoning Ordinance, once the proposed project is zone changed from A2U to MG upon Annexation, this zone change would allow for additional industrial zoned land in continuum with the adjacent land to the south of the proposed site which is currently zoned MBP Manufacturing Business Park.

The majority of the project site's perimeter is lined with both County of Imperial roads and City of El Centro streets. To the west of the property lies N. Dogwood Road, to the north of the property lies East Villa Road and to the east of the property lies Cooley Road. The site is currently vacant farmland.

Phase 1 of the project is proposed to be built out with approximately 1 million square feet (MSF) of industrial/manufacturing uses. This traffic study determines the impacts associated with 1 MSF, 2 MSF and 3 MSF of development and how much total development can be accommodated with:

- a) Access only from Villa Avenue east of Dogwood Road; and
- b) Access from Villa Avenue and from Cooley Road extended between Aten Road and the project site.

Figure 2-1 shows the Project's Vicinity Map and **Figure 2-2** shows a more detailed Project Area Map.

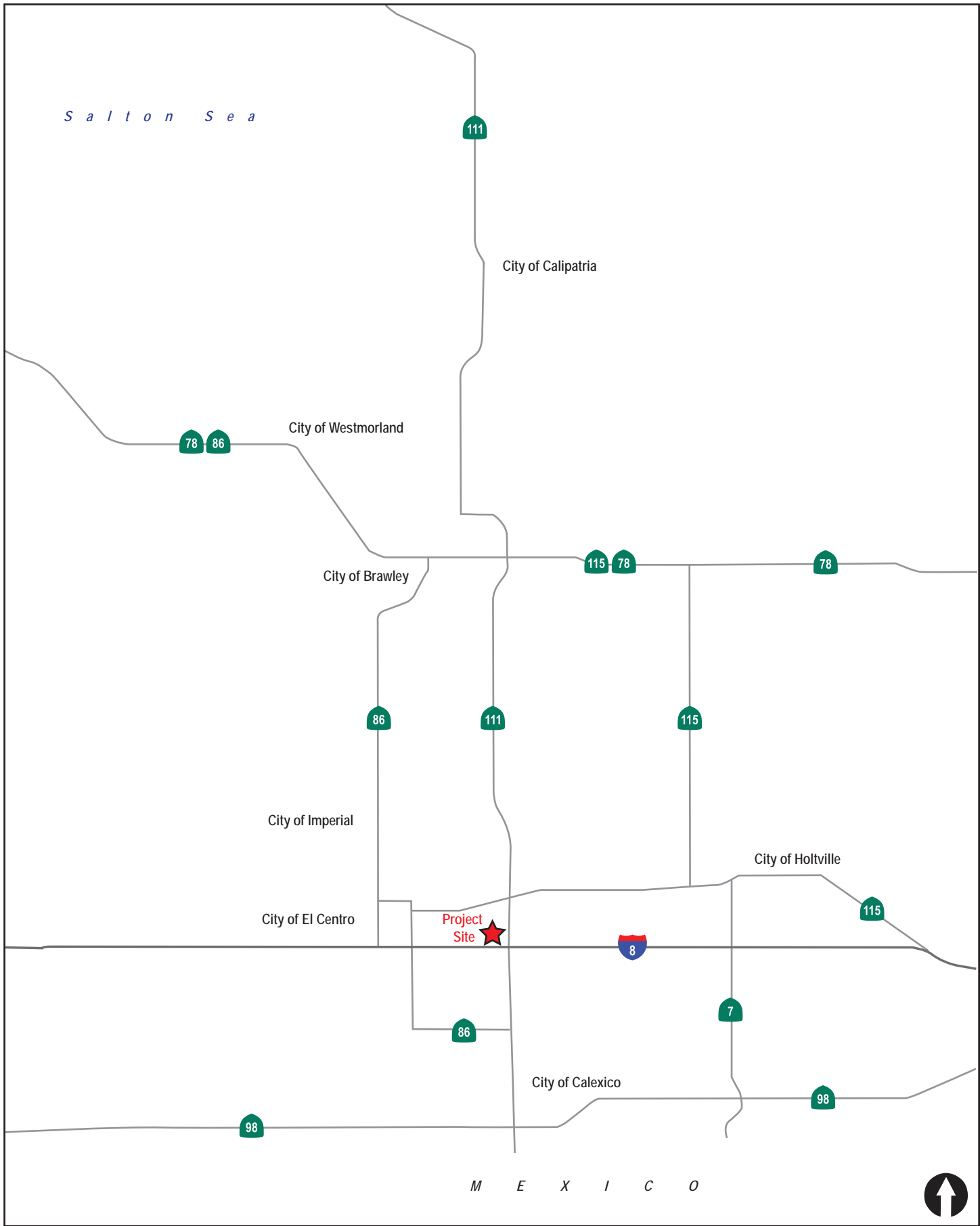


Figure 2-1

Vicinity Map

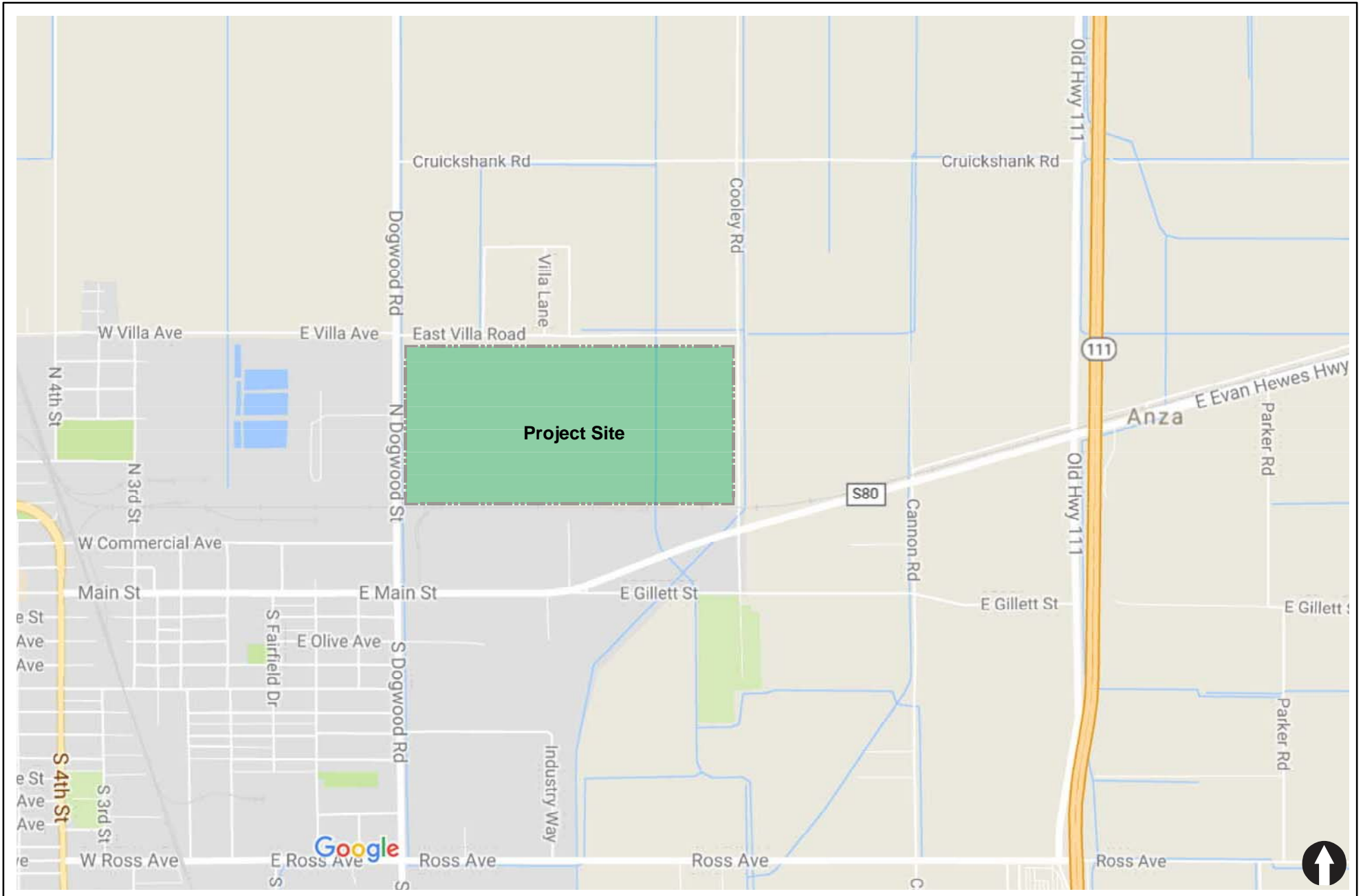


Figure 2-2

Project Area Map

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 the study intersection and street segment lane configurations.

3.1 Existing Street Network

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

State Route 111 (SR-111) is classified as a State Highway/Expressway on the Imperial County General Plan Circulation Element. SR-111 is a north-south highway that runs from I-10 in Riverside County to the international border. Within the study area, SR-111 is constructed as a four-lane divided north-south roadway, providing two lanes of travel per direction and the posted speed limit is generally 65 mph. Bike lanes are not provided, though the roadway is generally built with 8-foot shoulders. No bus stops are provided, and parking is not permitted along either side of the roadway.

Aten Road is classified as a 6-Lane Prime Arterial circulation element road on the County of Imperial Circulation Element. It is currently constructed as a four-lane undivided roadway, providing two travel lanes per direction. This facility runs east-west and curbside parking is not permitted, the posted speed limit is 55mph and no bike lanes, bus stops, or paved shoulders are provided within the study area.

E. Villa Avenue/East Villa Road is classified as a 4-Lane Arterial on the City of El Centro Circulation Element. It is currently constructed as a two-lane undivided roadway, providing one travel lane per direction. The facility runs west-east and transitions to an unpaved two-lane road halfway between N. Dogwood Road and Cooley Road. E. Villa Avenue changes name to East Villa Road east of N. Dogwood Road. No posted speed limit, bike lanes, bus stops, or paved shoulders are provided along E. Villa Avenue or East Villa Road within the study area.

E. Commercial Avenue is classified as a Two-Lane Collector on the City of El Centro Circulation Element. It is currently constructed as a two-lane undivided roadway, providing one travel lane per direction. The facility runs west-east and curbside parking is intermittently permitted. A speed limit is not posted.

Main Street / E. Evan Hewes Highway is classified as a Four-Lane Arterial element road on the City of El Centro Circulation Element. It is currently constructed as a four-lane undivided roadway with a Two-Way Left-Turn median (TWLTL) and providing two travel lanes per direction. The facility runs west-east. A posted speed limit of 40 mph was observed along with curbside parking permitted intermittently along both sides of the roadway. Main Street changes name to E. Evan Hewes Highway east of N. Earls Street.

N. Dogwood Road is classified as a Six-Lane Arterial on the City of El Centro Circulation Element. It is currently constructed as a two-lane undivided roadway, providing one travel lane per direction.

The facility runs north-south. A posted speed limit of 45 mph with no bike lanes or paved shoulders provided within the study area.

N. Earls Street is a non-circulation element road on the City of El Centro Circulation Element. It is currently constructed as a two-lane undivided roadway, providing one travel lane per direction. The facility runs north-south for approximately 1,200 feet before terminating. A speed limit is not posted.

Cooley Road is classified as a 4-Lane Arterial on the City of El Centro Circulation Element. It is currently constructed as a two-lane undivided roadway south of E. Evan Hewes Highway, providing one travel lane per direction.

3.2 Existing Traffic Volumes

Peak Hour Volumes– Existing weekday AM and PM peak hour (7:00-9:00 AM and 4:00-6:00 PM) traffic volumes were commissioned at all the study area intersections. AM and PM peak hour manual turning movement counts were taken on Thursday, June 22, 2017.

Daily Volumes– Existing weekday street segment Average Daily Traffic (ADT) volumes were taken the week of June 19th, 2017.

Table 3-1 is a summary of the existing street segment average daily traffic within the project study area.

Figure 3-2 shows the Existing Traffic Volumes. **Appendix A** contains the manual count sheets.

TABLE 3-1
EXISTING TRAFFIC VOLUMES

Street Segment	ADT ^a	Date	Source
N. Dogwood Road			
Aten Road to East Villa Road	5,430	June 2017	LLG
East Villa Road to E. Commercial Avenue	5,060	June 2017	LLG
South of Main Street	6,140	June 2017	LLG
E. Main Street / E. Evan Hewes Highway			
N. Dogwood Road to N. Earls Street	5,960	June 2017	LLG
N. Earls Street to Cooley Road	5,800	June 2017	LLG
Cooley Road to Old Highway 111	5,300	June 2017	LLG
East Villa Road			
N. Dogwood Road to Cooley Road	500E	N/A	LLG

Footnotes:

a. Average Daily Traffic Volumes.

General Notes:

E – Estimated ADT assumes the AM peak hour, comprises 10% of the ADT.

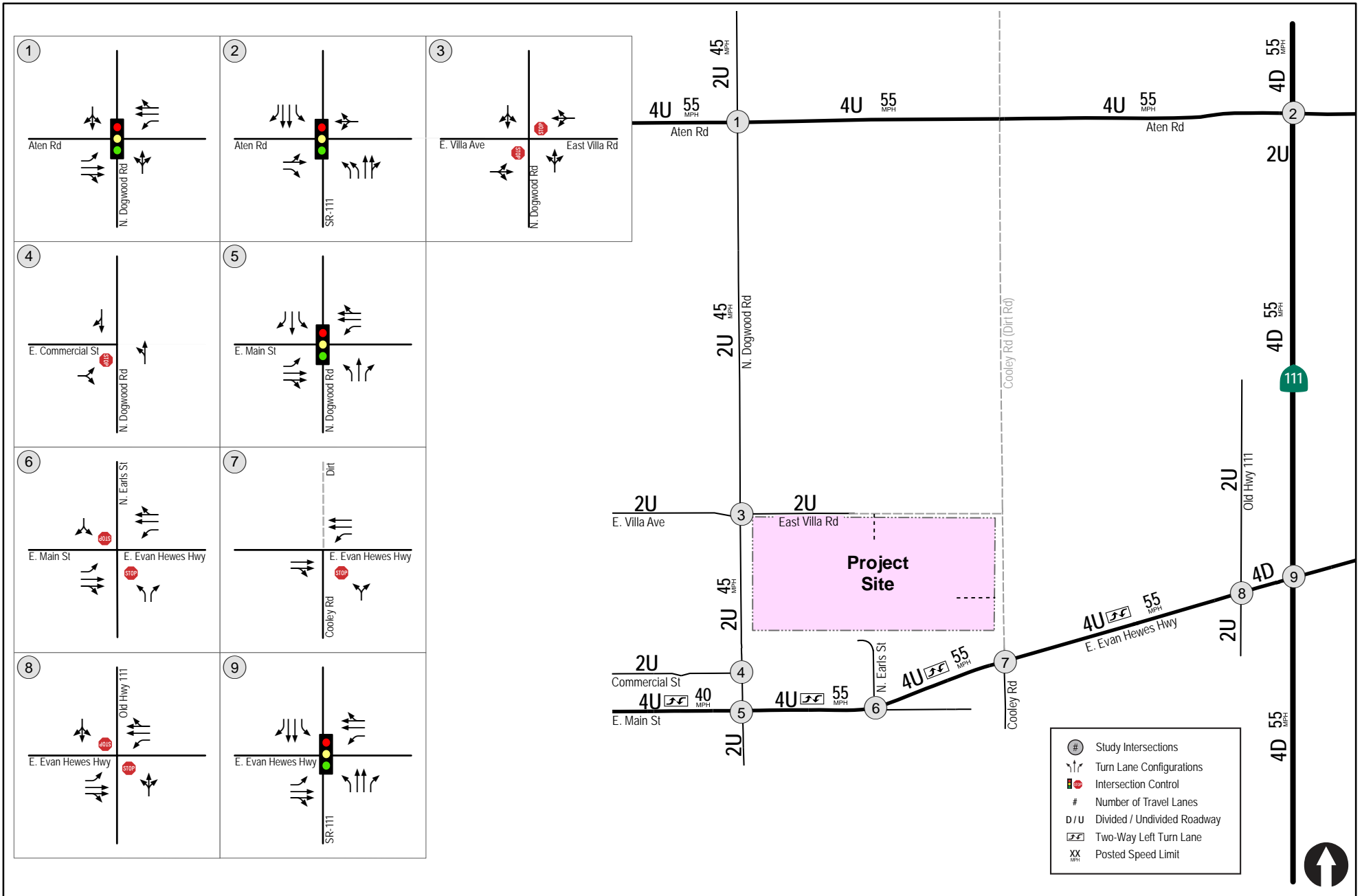


Figure 3-1

Existing Conditions Diagram

DOGWOOD AT VILLA AVENUE PROJECT

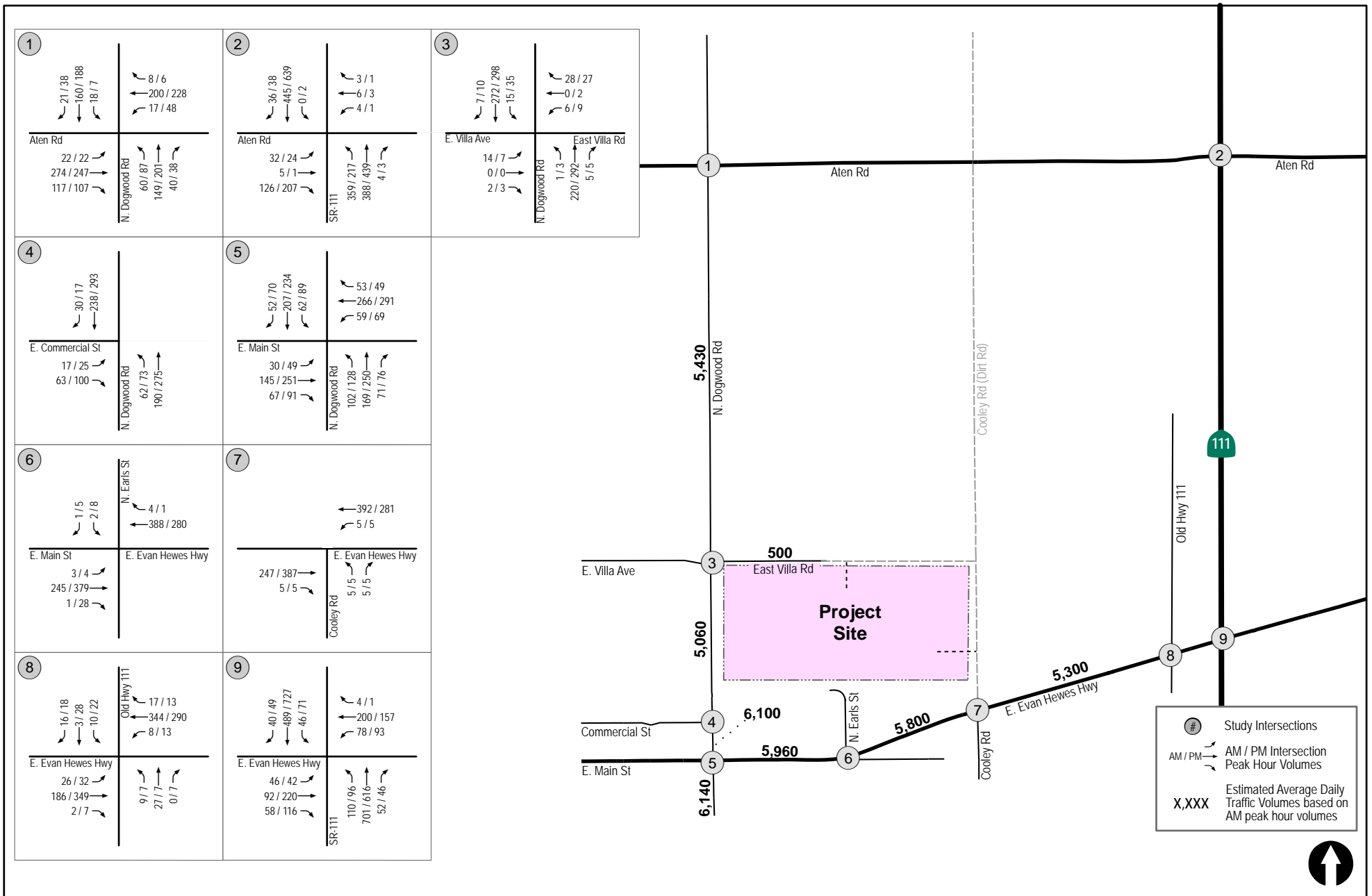


Figure 3-2

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 *Synchro* (version 9) computer software. The delay values (represented in seconds) were qualified with a corresponding intersection Level of Service (LOS).

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 of the *2010 Highway Capacity Manual (HCM)*, with the assistance of the *Synchro* (version 9) computer software. The delay values (represented in seconds) were qualified with a corresponding intersection Level of Service (LOS).

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 County of Imperial's *Roadway Classification, Level of Service, and ADT Table*. This table provides segment capacities for different street classifications, based on traffic volumes and roadway characteristics. The City of El Centro's and County of Imperial's *Roadway Classification, Level of Service, and ADT Table* is attached in **Appendix B**.

4.3 Study Area

The following study area was analyzed based on discussions with City staff.

Intersections:

1. N. Dogwood Road / Aten Road
2. SR-111 / Aten Road
3. N. Dogwood Road / East Villa Road
4. N. Dogwood Road / E. Commercial Avenue
5. N. Dogwood Road / E. Main Street
6. E. Evan Hewes Highway / N. Earls Street
7. E. Evan Hewes Highway / Cooley Road
8. E. Evan Hewes Highway / Old Highway 111
9. E. Evan Hewes Highway / SR-111

Street Segments:

1. N. Dogwood Road: Aten Road to East Villa Road
2. N. Dogwood Road: East Villa Road to E. Commercial Avenue
3. N. Dogwood Road: Commercial Avenue to E. Main Street
4. N. Dogwood Road: South of E. Main Street
5. E. Main Street/E. Evan Hewes Highway: N. Dogwood Road to N. Earls Street
6. E. Main Street/E. Evan Hewes Highway: N. Earls Street to Cooley Road
7. E. Main Street/E. Evan Hewes Highway: Cooley Road to Old Highway 111
8. East Villa Road: N. Dogwood Road to Cooley Road
9. Cooley Road: Aten Road to East Villa Road (*future*)

The intersection of Aten Road and Imperial Valley College was not included in the study area since it currently operates at a very good level of service and is expected to continue to operate well with the addition of project traffic.

5.0 SIGNIFICANCE CRITERIA

5.1 City of El Centro Facilities

The significance criteria summarized in *Table 5-1* developed by Linscott, Law and Greenspan, Engineers is based upon the City of El Centro's goal to operate at LOS C or better with LOS D acceptable during peak hours.

5.2 Caltrans Facilities

SR-111 intersects Aten Road to the north and E. Evan Hewes Highway to the south within the study area within the Caltrans right-of-way (ROW). Therefore, identification of impacts at these locations were evaluated based on Caltrans significance criteria. *Caltrans' Guide for the Preparation of Traffic Impact Studies*, December 2002, outlines recommended procedures for traffic study contents but does not identify specific traffic impact thresholds. Caltrans staff has indicated that there is a desire to maintain facility operations between LOS C and D levels, however, Caltrans acknowledges that this may not always be feasible. Specific traffic impact thresholds are typically identified by local Caltrans staff. For the purposes of this study, LOS D or better is considered acceptable and the City of El Centro's significance criteria, outlined above, was used for the determination of the significance of impacts for Caltrans maintained facilities where LOS E and F operations are calculated.

6.0 ANALYSIS OF EXISTING CONDITIONS

6.1 Peak Hour Intersection Levels of Service

Table 6-1 summarizes the existing peak hour operations at the study area intersections. As seen in *Table 6-1*, all study intersections are calculated to operate at LOS C or better during both the AM and PM peak hours. *Appendix C* provides the intersection analysis worksheets for all scenarios.

6.2 Street Segment Levels of Service

As seen in *Table 6-2*, all study area segments are calculated to currently operate at LOS B or better operations on a daily basis.

**TABLE 6-1
EXISTING INTERSECTION OPERATIONS**

Intersection	Control Type	Peak Hour	Existing	
			Delay ^a	LOS ^b
1. N. Dogwood Rd / Aten Rd	Signal	AM	10.2	B
		PM	11.3	B
2. SR-111 / Aten Rd	Signal	AM	15.0	B
		PM	15.6	B
3. N. Dogwood Rd / East Villa Road	MSSC ^c	AM	13.9	B
		PM	15.1	C
4. N. Dogwood Rd / E. Commercial Ave	MSSC	AM	11.4	B
		PM	13.1	B
5. N. Dogwood Rd / E. Main St	Signal	AM	26.3	C
		PM	28.5	C
6. E. Evan Hewes Hwy / N. Earls St	MSSC	AM	12.4	B
		PM	11.8	B
7. E. Evan Hewes Hwy / Cooley Rd	MSSC	AM	11.1	B
		PM	12.0	B
8. E. Evan Hewes Hwy / Old Hwy 111	MSSC	AM	15.4	C
		PM	16.5	C
9. E. Evan Hewes Hwy / SR-111	Signal	AM	19.8	B
		PM	23.5	C

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. Minor Street Stop Controlled intersection. Minor street left turn delay is reported.

SIGNALIZED		UNSIGNALIZED	
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 45.0	D	25.1 to 35.0	D
45.1 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	Roadway Classification	Capacity at LOS E ^a	Existing		
			ADT ^b	LOS ^c	V/C ^d
N. Dogwood Road					
Aten Road to East Villa Road	2-Lane Collector	12,000	5,430	A	0.453
East Villa Road to E. Commercial Avenue	2-Lane Collector	12,000	5,060	A	0.422
South of E. Main Street	2-Lane Arterial	18,000	6,140	A	0.341
E. Main Street / E. Evan Hewes Highway					
N. Dogwood Road to N. Earls Street	4-Lane (U) Arterial	27,000	5,960	A	0.221
N. Earls Street to Cooley Road	4-Lane (U) Arterial	27,000	5,800	A	0.215
Cooley Road to Old Highway 111	4-Lane (U) Arterial	27,000	5,300	A	0.196
East Villa Road					
N. Dogwood Road to Cooley Road	2-Lane Local	2,000	500	A	0.250

Footnotes:

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

7.0 TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

The following is a discussion of the project trip generation calculations and the project traffic distribution and assignment through the local network. For the purposes of this report, three project generation forecasts were calculated: Phase 1 was assumed to develop 1 MSF, Phase II with a total of 2 MSF, and Phase 3 with a total of 3 MSF.

7.1 Trip Generation

Traffic generation is expressed in vehicle trip ends, defined as one-way vehicular movements, either entering or exiting the generating land use. Generation rates used in the traffic forecasting procedure are found in the Ninth Edition of *Trip Generation*, published by the Institute of Transportation Engineers (ITE) [Washington D.C., 2012]. The trip generation potential for the proposed Project was forecast using ITE Land Use Code 140, Manufacturing.

Table 7-1 summarizes the trip generation rates used in forecasting the vehicular trips generated by the proposed project and the project's peak hour and ADT trip generation amounts. A worse case assumption of no employees arriving via transit was assumed.

7.1.1 Project Phase 1 Trip Generation Forecast

As shown in *Table 7-1*, the Project Phase 1 (1 MSF) is expected to generate a total of 3,820 daily trips (one half arriving, one half departing), with 730 trips in the AM peak hour (569 inbound, 161 outbound) and 730 trips in the PM peak hour (263 inbound, 467 outbound).

7.1.2 Project Phase 2 Trip Generation Forecast

As shown in *Table 7-1*, the Project Phase 2 (2 MSF) is expected to generate a total of 7,640 daily trips (one half arriving, one half departing), with 1,460 trips in the AM peak hour (1,139 inbound, 321 outbound) and 1,460 trips in the PM peak hour (526 inbound, 934 outbound).

7.1.3 Project Phase 3 Trip Generation Forecast

As shown in *Table 7-1*, the Project Phase 3 (3 MSF) is expected to generate a total of 11,460 daily trips (one half arriving, one half departing), with 2,190 trips in the AM peak hour (1,708 inbound, 482 outbound) and 2,190 trips in the PM peak hour (788 inbound, 1,402 outbound).

7.2 Trip Distribution / Assignment

The project traffic was distributed and assigned to the roadway network based on existing travel patterns, the proposed improvements to East Villa Road and Cooley Road, the project's proximity to state highways and arterials, transit centers/stops, and residential neighborhoods.

Figure 7-1 shows the Project traffic distribution with access provided only to Villa Avenue. **Figure 7-2** shows the Project traffic distribution with access provided to Villa Avenue and Cooley Road extended between Aten Road and the Project site. **Figure 7-3** shows the Project Phase 1 traffic volumes with access provided only to Villa Avenue. **Figure 7-4** shows the Project Phase 2 traffic volumes with access provided to Villa Avenue and Cooley Road extended between Aten Road and

the Project site. **Figure 7-5** shows the Project Phase 3 traffic volumes with access provided to Villa Avenue and Cooley Road extended between Aten Road and the Project site.

TABLE 7-1
PROJECT TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs) ^a		AM Peak Hour					PM Peak Hour				
		Rate ^b	Volume	Rate	In:Out	Volume			Rate ^b	In:Out	Volume		
					Split%	In	Out	Total		Split%	In	Out	Total
Manufacturing	1 MSF	3.82/KSF	3,820	0.73/KSF	78:22	569	161	730	0.73/KSF	36:64	263	467	730
Manufacturing	2 MSF	3.82/KSF	7,640	0.73/KSF	78:22	1,139	321	1,460	0.73/KSF	36:64	526	934	1,460
Manufacturing	3 MSF	3.82/KSF	11,460	0.73/KSF	78:22	1,708	482	2,190	0.73/KSF	36:64	788	1,402	2,190

Footnotes:

- a. Trip-ends are one-way traffic movements, either entering or leaving.
- b. Rate is based on ITE Trip Generation Manual (9th Ed.), rate for *Manufacturing (Code 140)*.

General Notes:

1. MSF = million square feet. KSF = thousand square feet.

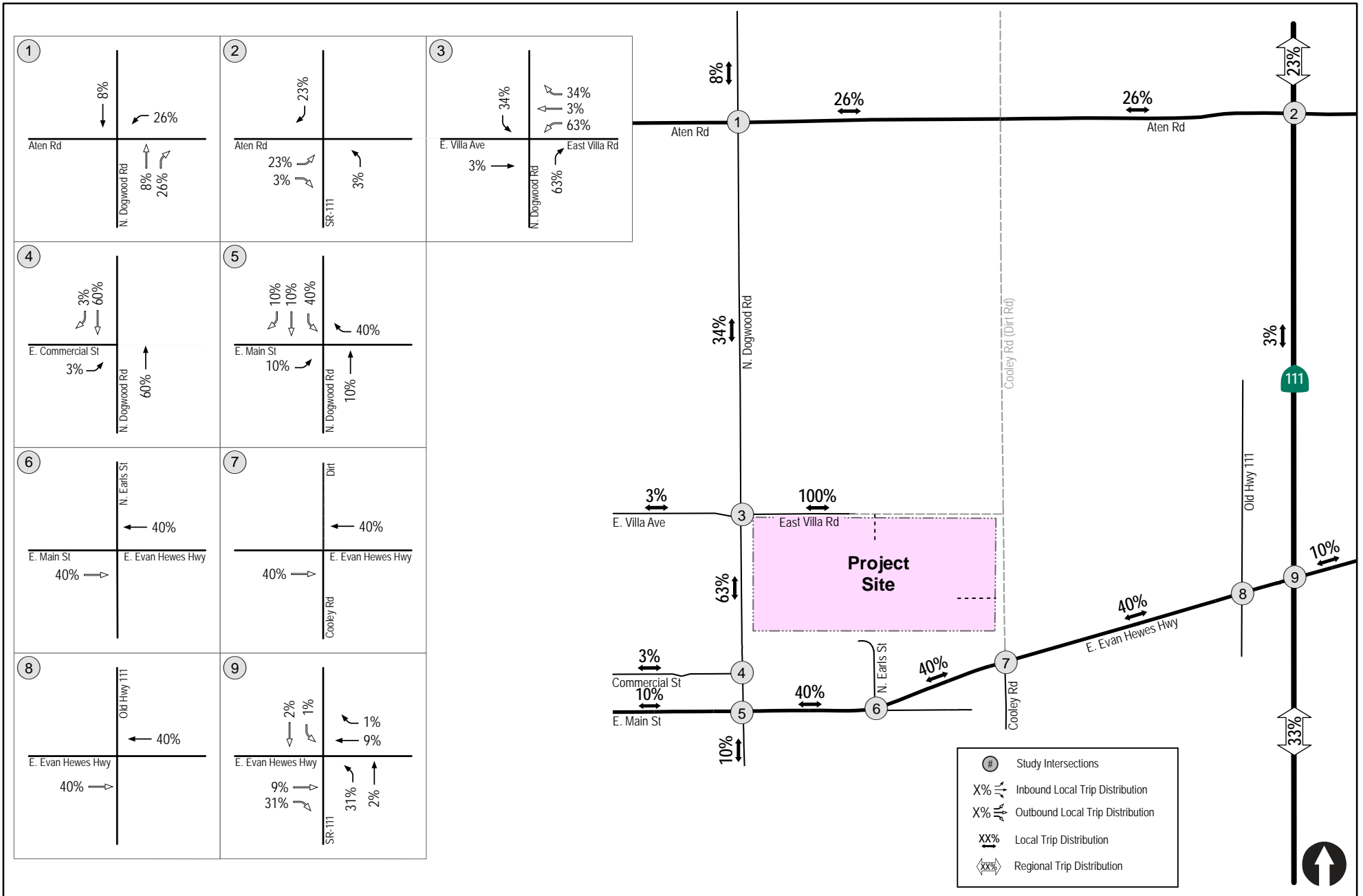


Figure 7-1
Project Traffic Distribution
(Villa Avenue Access Only - Phase 1)
DOGWOOD AT VILLA AVENUE PROJECT

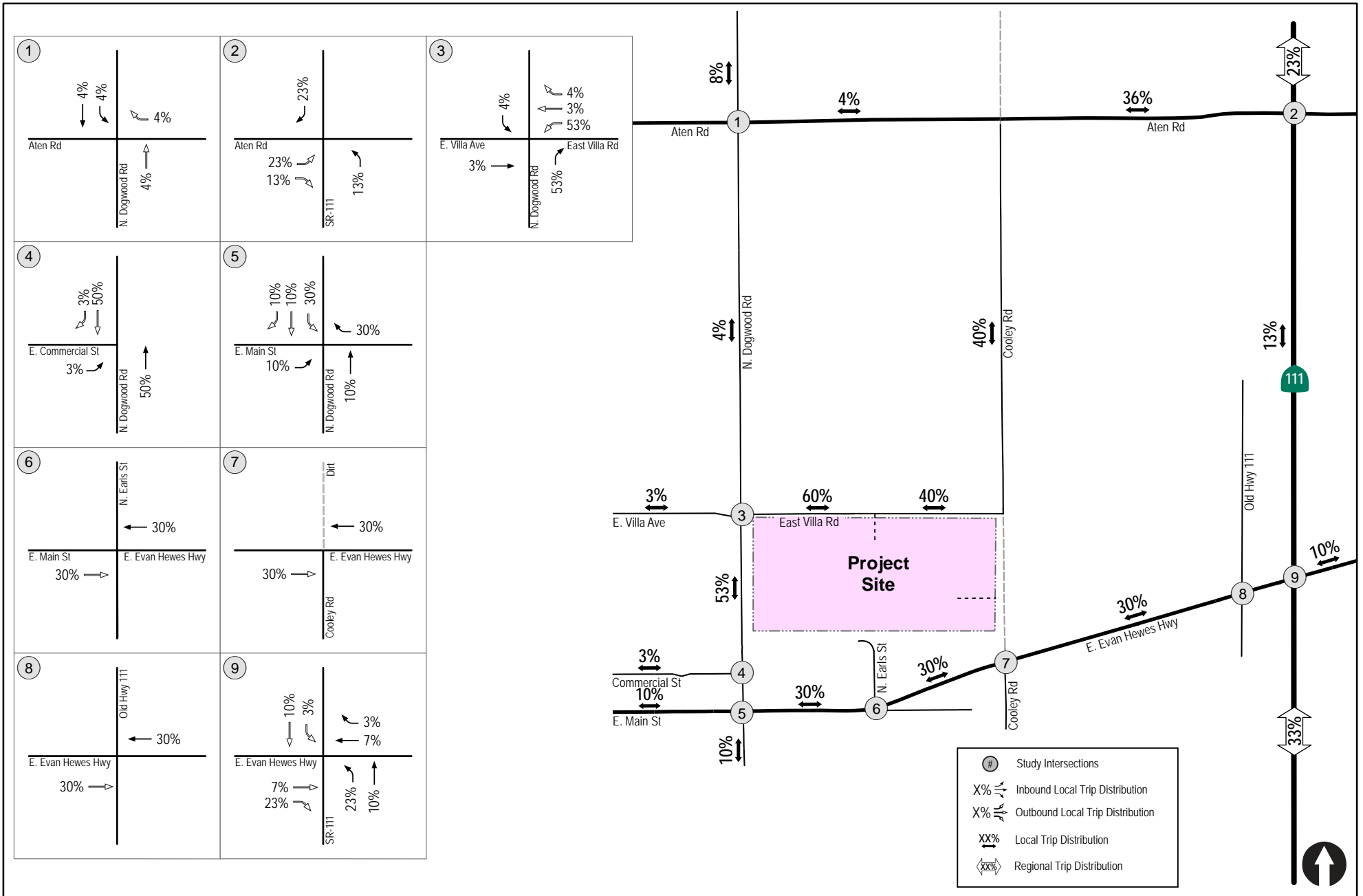


Figure 7-2
Project Traffic Distribution
(Villa Avenue & Cooley Road Access - Phases 2 & 3)

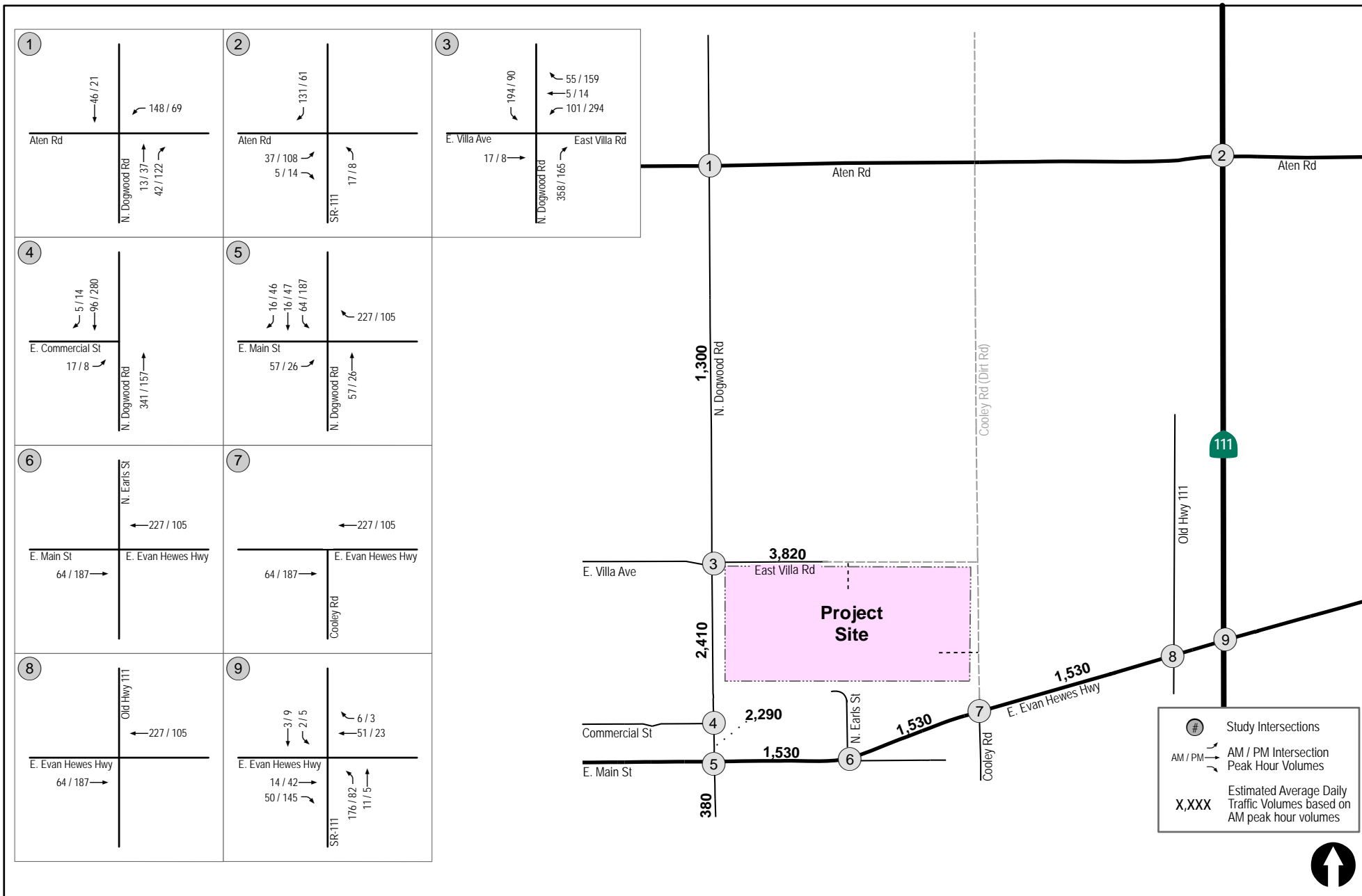


Figure 7-3

Project Phase 1 Volumes

DOGWOOD AT VILLA AVENUE PROJECT

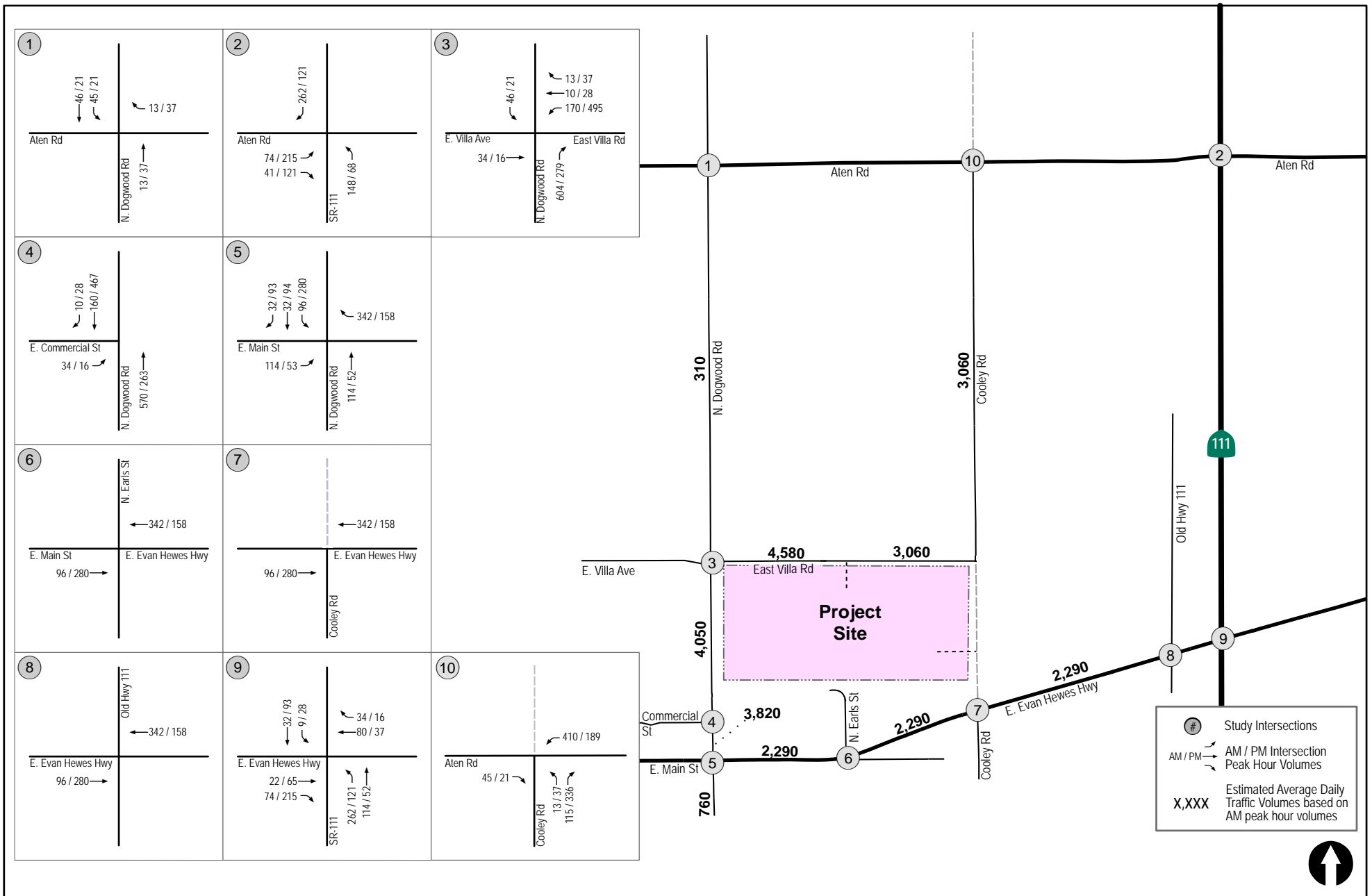


Figure 7-4

Project Phase 2 Traffic Volumes

DOGWOOD AT VILLA AVENUE PROJECT

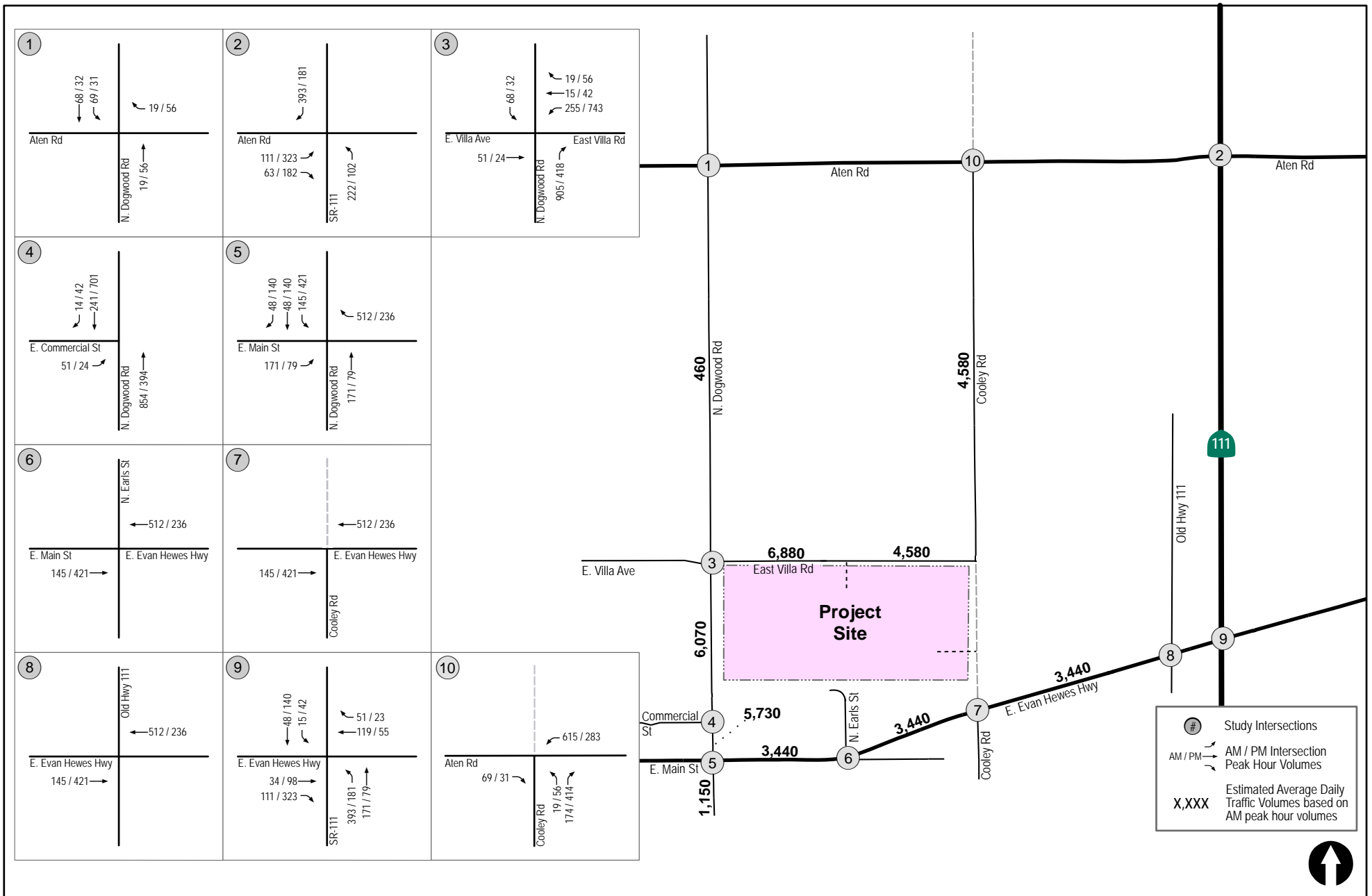


Figure 7-5

Project Phase 3 Traffic Volumes

DOGWOOD AT VILLA AVENUE PROJECT

8.0 CUMULATIVE PROJECTS

Cumulative projects are other projects in the study area that will add traffic to the nearby circulation system in the near future. LLG reviewed potential projects in the City of El Centro, City of Imperial, and County of Imperial. Cumulative projects, as defined by Section 15355 of the CEQA Guidelines, are “closely related past, present and reasonably foreseeable probable future projects”. Following are brief descriptions of each of them:

1. **Rosswood** includes 148 single family units located south of Ross Road and ½ mile east of Dogwood Road.
2. **Imperial Valley Commons** includes 575,000 sf of Retail commercial along the north side of Danenberg Avenue and 1/3 mile east of Dogwood Road.
3. **Palmilla Assisted Living Facility** includes 422 bed assisted living facility located at 1402 W. Pico Avenue.
4. **4th Street Properties** includes three buildings totaling 12,000 sf, northeast corner of 4th Street and Wake Avenue.
5. **Stonefield** includes 240 condominium units located east of Imperial Valley Mall.
6. **Town Center Village Apartments** includes 247 multifamily units located at 2100 N. 10th Street.
7. **El Centro Town Center Commercial/Manufacturing project** includes 200,000 sf of light manufacturing and 240,000 sf of general commercial located on the west side of 8th Street between Bradshaw Drive and Northern City limits.
8. **Victoria Ranch Subdivision 5A** includes 40 single family units located on the southwest corner of Aten Road and Legakes Avenue in the City of Imperial.
9. **Willowbend** includes 131 single family units located at the southwest corner of McCabe Road and SR-86.
10. **Citrus Grove** includes 120 single family units located at the southwest corner of McCabe Road and SR-86.
11. **Linda Vista** includes 232 single family units located north of McCabe Road and ¼ mile west of Clark Road.
12. **PMB Medical Building** includes 63,000 sf of medical office located at 852 E. Danenberg Drive.

13. **El Centro Aquatic Center** includes an eight-lane competition pool, a 2,025 square foot warm-up pool, a 1,605 square foot activity pool, and a 5,400 square foot lazy river. In addition a 4,350 square foot building is proposed to provide locker rooms, staff offices, a snack bar, storage, and a party room. The project is proposed to be located at the existing Adams Park, which is situated south of Adams Avenue, west of SR 86, north of Park Avenue and east of 6th Street.

9.0 ANALYSIS OF NEAR-TERM SCENARIOS

Traffic volumes from the thirteen identified cumulative projects were added to existing traffic volumes. In addition, a growth rate of 2% per year (3 years) was added to existing + cumulative projects traffic volumes to forecast the Near-Term Without Project traffic volumes. **Figure 9-1** shows the Near-Term Without Project traffic volumes and **Figure 9-2** shows the Near-Term With Phase 1 Project traffic volumes. **Figure 9-3** shows the Near-Term With Phase 2 Project traffic volumes. **Figure 9-4** shows the Near-Term With Phase 3 Project traffic volumes. *Appendix C* provides the intersection analysis worksheets for all scenarios.

9.1 Near-Term Without Project Intersection Analysis

Table 9-1 summarizes the Near-Term peak hour intersection operations. As seen in **Table 9-1**, all study intersections are calculated to operate at LOS C or better in the near-term without project scenarios.

9.2 Near-Term Without Project Street Segment Operations

Table 9-2 summarizes the Near-Term street segment operations. As seen in **Table 9-2**, all study area segments are calculated to operate at LOS B or better on a daily basis.

9.3 Near-Term With Project Phase 1 Intersection Analysis

Table 9-1 summarizes the Near-Term peak hour intersection operations with the addition of project Phase 1 traffic. As seen in **Table 9-1**, all study intersections are calculated to operate at LOS D or better, with the exception of the following:

- Intersection #3. N. Dogwood Road / East Villa Road – LOS F (AM and PM Peak Hours)
- Intersection #4. N. Dogwood Road / E. Commercial Avenue – LOS E (PM Peak Hour)

Based on the established significance criteria, significant impacts are calculated at these intersections.

9.4 Near-Term With Project Phase 1 Street Segment Operations

Table 9-2 summarizes the Near-Term street segment operations with the addition of project Phase 1 traffic. As seen in **Table 9-2**, all study area segments are calculated to operate at LOS B or better on a daily basis, with the exception of the following:

- N. Dogwood Road: E. Commercial Avenue to E. Main Street – LOS D
- East Villa Road: N. Dogwood Road to Cooley Road (Project Frontage) – LOS F

Based on the significance criteria, a significant impact is calculated along these segments.

9.5 Near-Term With Project Phase 2 Intersection Analysis

Table 9-1 summarizes the Near-Term peak hour intersection operations with the addition of project Phase 2 traffic. As seen in *Table 9-1*, all study intersections are calculated to operate at LOS D or better, with the exception of the following:

- Intersection #8. E. Evan Hewes Highway / Old Highway 111 – LOS E (PM Peak Hour)

Based on the established significance criteria, significant impacts are calculated at this intersection.

9.6 Near-Term With Project Phase 2 Street Segment Operations

Table 9-2 summarizes the Near-Term street segment operations with the addition of project Phase 2 traffic. As seen in *Table 9-2*, all study area segments are calculated to operate at LOS B or better on a daily basis, with the exception of the following:

- N. Dogwood Road: East Villa Avenue to E. Commercial Avenue – LOS D
- N. Dogwood Road: E. Commercial Avenue to E. Main Street – LOS E
- East Villa Road: N. Dogwood Road to Cooley Road (Project Frontage) – LOS F

Based on the significance criteria, a significant impact is calculated along these segments.

9.7 Near-Term With Project Phase 3 Intersection Analysis

Table 9-1 summarizes the Near-Term peak hour intersection operations with the addition of project Phase 3 traffic. As seen in *Table 9-1*, all study intersections are calculated to operate at LOS D or better, with the exception of the following:

- Intersection #3. N. Dogwood Road / East Villa Road – LOS F (AM and PM Peak Hours)
- Intersection #5. N. Dogwood Road / E. Main Street – LOS F (AM Peak Hour) and LOS E (PM Peak Hour)
- Intersection #9. E. Evan Hewes Highway / SR-111 – LOS E (PM Peak Hour)

Based on the established significance criteria, significant impacts are calculated at these intersections.

9.8 Near-Term With Project Phase 3 Street Segment Operations

Table 9-2 summarizes the Near-Term street segment operations with the addition of project Phase 3 traffic. As seen in *Table 9-2*, all study area segments are calculated to operate at LOS B or better on a daily basis, with the exception of the following:

- N. Dogwood Road: East Villa Avenue to E. Commercial Avenue – LOS F
- N. Dogwood Road: E. Commercial Avenue to E. Main Street – LOS F
- East Villa Road: N. Dogwood Road to Cooley Road (Project Frontage) – LOS F

Based on the significance criteria, a significant impact is calculated along these segments.

TABLE 9-1
NEAR-TERM INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing		Near-Term Without Project		Near-Term With Project Phase I				Near-Term With Project Phase II ^e				Near-Term With Project Phase III ^f			
			Delay ^a	LOS ^b	Delay ^a	LOS ^b	Delay ^a	LOS ^b	Δ ^d	Sig Impact?	Delay ^a	LOS ^b	Δ ^d	Sig Impact?	Delay ^a	LOS ^b	Δ ^d	Sig Impact?
1. N. Dogwood Rd / Aten Rd	Signal	AM	10.2	B	10.5	B	14.0	B	3.5	None	10.9	B	0.4	None	11.3	B	0.8	None
		PM	11.3	B	12.0	B	16.0	B	4.0	None	12.4	B	0.4	None	12.6	B	0.6	None
2. SR-111 / Aten Rd	Signal	AM	15.0	B	16.2	B	17.6	B	1.4	None	42.9	D	26.7	None	26.7	C	10.5	None
		PM	15.6	B	16.6	B	17.8	B	1.2	None	28.1	C	11.5	None	39.2	D	22.6	None
3. N. Dogwood Rd / East Villa Rd	MSSC ^c / Signal	AM	13.9	B	14.7	B	269.8	F	255.1	Yes	34.8	C	20.1	None	111.7	F	97	Yes
		PM	15.1	C	17.0	C	805.6	F	788.6	Yes	43.6	D	26.6	None	117.5	F	100.5	Yes
4. N. Dogwood Rd / E. Commercial Ave	MSSC / Signal	AM	11.4	B	11.8	B	19.3	C	7.5	None	8.8	A	-3.0	None	14.4	B	2.6	None
		PM	13.1	B	15.0	B	35.9	E	20.9	Yes	16.3	B	1.3	None	43.4	D	28.4	None
5. N. Dogwood Rd / E. Main St	Signal	AM	26.3	C	27.2	C	36.3	D	9.1	None	38.4	D	11.2	None	112.4	F	85.2	Yes
		PM	28.5	C	32.2	C	36.8	D	4.6	None	41.6	D	9.4	None	68.9	E	36.7	Yes
6. E. Evan Hewes Hwy / N. Earls St	MSSC	AM	12.4	B	13.0	B	17.2	C	4.2	None	20.2	C	7.2	None	26.2	D	13.2	None
		PM	11.8	B	12.4	B	15.1	C	2.7	None	17.0	C	4.6	None	20.5	C	8.1	None
7. E. Evan Hewes Hwy / Cooley Rd	MSSC	AM	11.1	B	11.4	B	13.2	B	1.8	None	14.3	B	2.9	None	16.4	C	5.0	None
		PM	12.0	B	12.6	B	15.9	C	3.3	None	18.2	C	5.6	None	22.8	C	10.2	None
8. E. Evan Hewes Hwy / Old Hwy 111	MSSC / Signal	AM	15.4	C	16.4	C	23.5	C	7.1	None	29.0	D	12.6	None	13.5	B	-2.9	None
		PM	16.5	C	18.3	C	27.5	D	9.2	None	35.6	E	17.3	Yes	13.2	B	-5.1	None
9. E. Evan Hewes Hwy / SR-111	Signal	AM	19.8	B	21.6	C	26.3	C	4.7	None	39.7	D	18.1	None	36.0	D	14.4	None
		PM	23.5	C	25.9	C	32.2	C	6.3	None	42.7	D	16.8	None	63.4	E	37.5	Yes

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. MSSC – Minor Street Stop Controlled Intersection. Minor street left turn delay is reported.
- d. Δ denotes an increase in delay due to Project.
- e. Phase 1 mitigation assumed in place.
- f. Phase 1 and 2 mitigation assumed in place.

SIGNALIZED		UNSIGNALIZED	
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	Roadway Classification	Capacity at LOS E ^a	Existing			Near-Term Without Project			Near-Term With Project Phase I					Near-Term With Project Phase II					Near-Term With Project Phase III				
			ADT ^b	LOS ^c	V/C ^d	ADT	LOS	V/C	ADT	LOS	V/C	Δ ^e	Sig Impact?	ADT	LOS	V/C	Δ ^e	Sig Impact?	ADT	LOS	V/C	Δ ^e	Sig Impact?
N. Dogwood Road																							
Aten Road to East Villa Road	2-Lane Collector	12,000	5,430	A	0.453	6,360	B	0.530	7,660	C	0.638	0.108	None	6,670	B	0.556	0.026	None	6,820	B	0.568	0.038	None
East Villa Road to E. Commercial Avenue	2-Lane Collector	12,000	5,060	A	0.422	5,960	A	0.497	8,370	C	0.698	0.201	None	10,010	D	0.834	0.338	Yes	12,030	F	1.003	0.506	Yes
Commercial Avenue to Main Street	2-Lane Collector	12,000	6,100	B	0.508	7,000	B	0.583	9,290	D	0.774	0.191	Yes	10,820	E	0.902	0.318	Yes	12,730	F	1.061	0.478	Yes
South of E. Main Street	2-Lane Arterial	18,000	6,140	A	0.341	6,520	A	0.632	6,900	A	0.383	0.021	None	7,280	A	0.404	0.042	None	7,670	A	0.426	0.064	None
E. Main Street / E. Evan Hewes Highway																							
N. Dogwood Road to N. Earls Street	4-Lane (U) Arterial	27,000	5,960	A	0.221	6,770	A	0.251	8,300	A	0.307	0.057	None	9,060	A	0.336	0.085	None	10,210	A	0.378	0.127	None
N. Earls Street to Cooley Road	4-Lane (U) Arterial	27,000	5,800	A	0.215	6,450	A	0.239	7,980	A	0.296	0.057	None	8,740	A	0.324	0.085	None	9,890	A	0.366	0.127	None
Cooley Road to Old Highway 111	4-Lane (U) Arterial	27,000	5,300	A	0.196	5,770	A	0.214	7,300	A	0.270	0.057	None	8,060	A	0.299	0.085	None	9,210	A	0.341	0.127	None
East Villa Road																							
N. Dogwood Road to Cooley Road	2-Lane Local	2,000	500	A	0.250	500	A	0.250	4,320	F	2.160	1.910	Yes	5,080	F	2.540	2.290	Yes	7,380	F	3.690	3.440	Yes
Cooley Road																							
Aten Road to East Villa Road	2-Lane Collector	10,000	—	—	—	—	—	—	—	—	—	—	—	3,060	A	.306	—	None	4,580	B	0.458	0.152	None

Footnotes:

- a. Capacities based on City of El Centro & County of Imperial Roadway Classification tables.
- b. Average Daily Traffic.
- c. Level of Service.
- d. Volume to Capacity ratio.
- e. Δ denotes an increase in V/C due to Project.
- f. Cooley Road estimated to operate with a capacity of 10,000 ADT due to little to no side street friction.

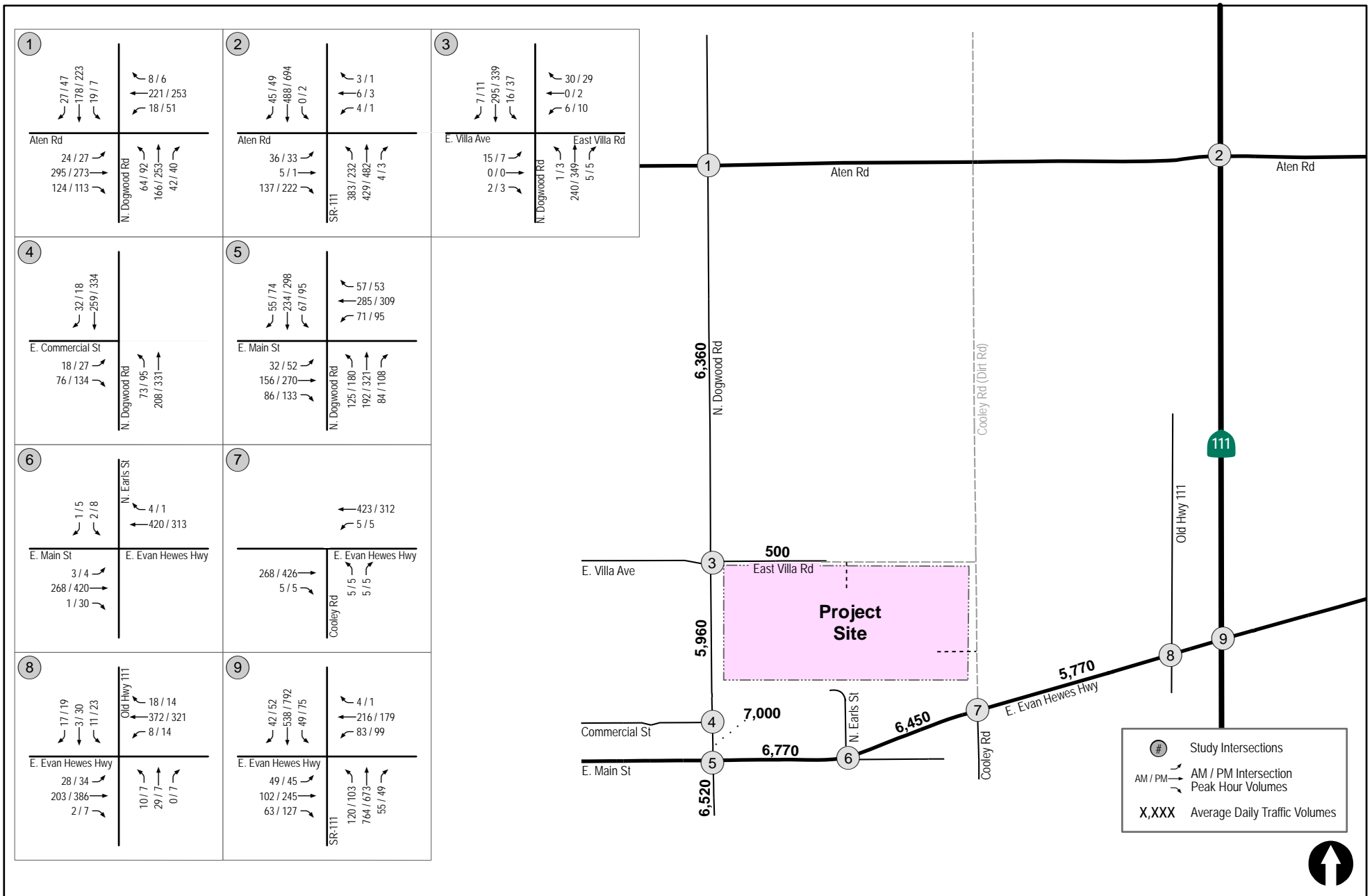


Figure 9-1
Near-Term Without Project Phase 1 Project Traffic Volumes

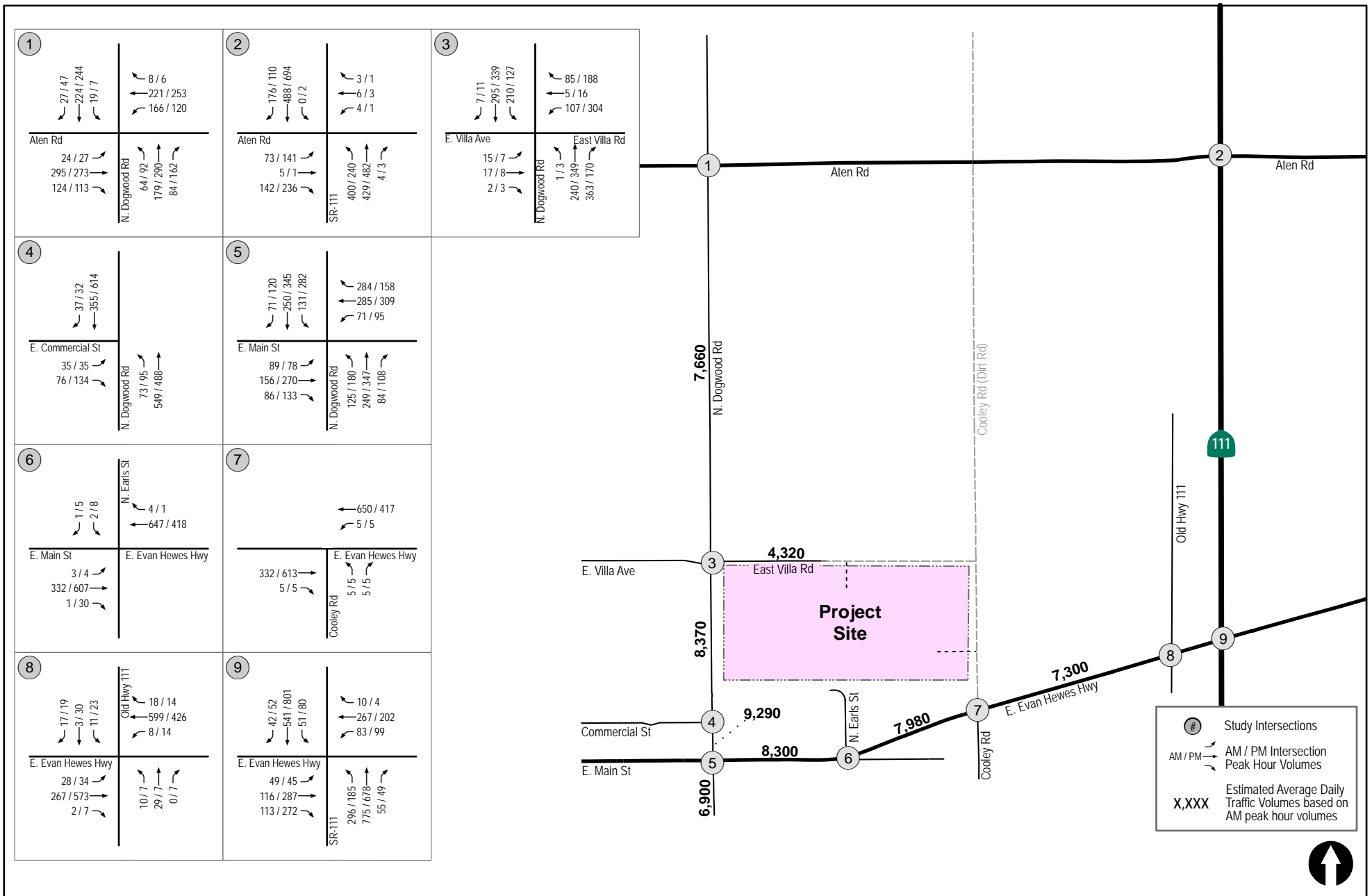


Figure 9-2
Near-Term + Project Phase 1 Traffic Volumes

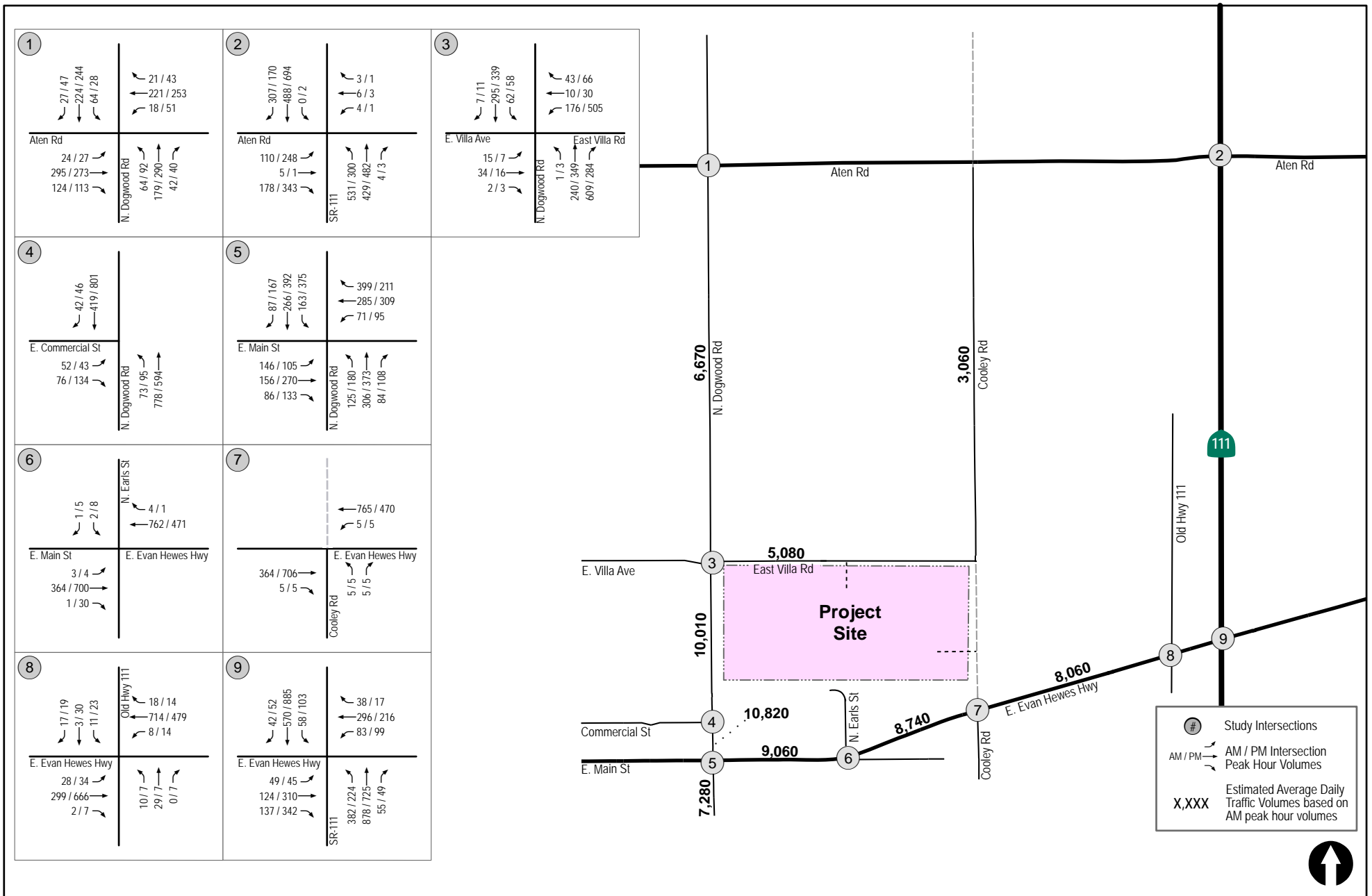


Figure 9-3
Near-Term + Project Phase 2 Traffic Volumes

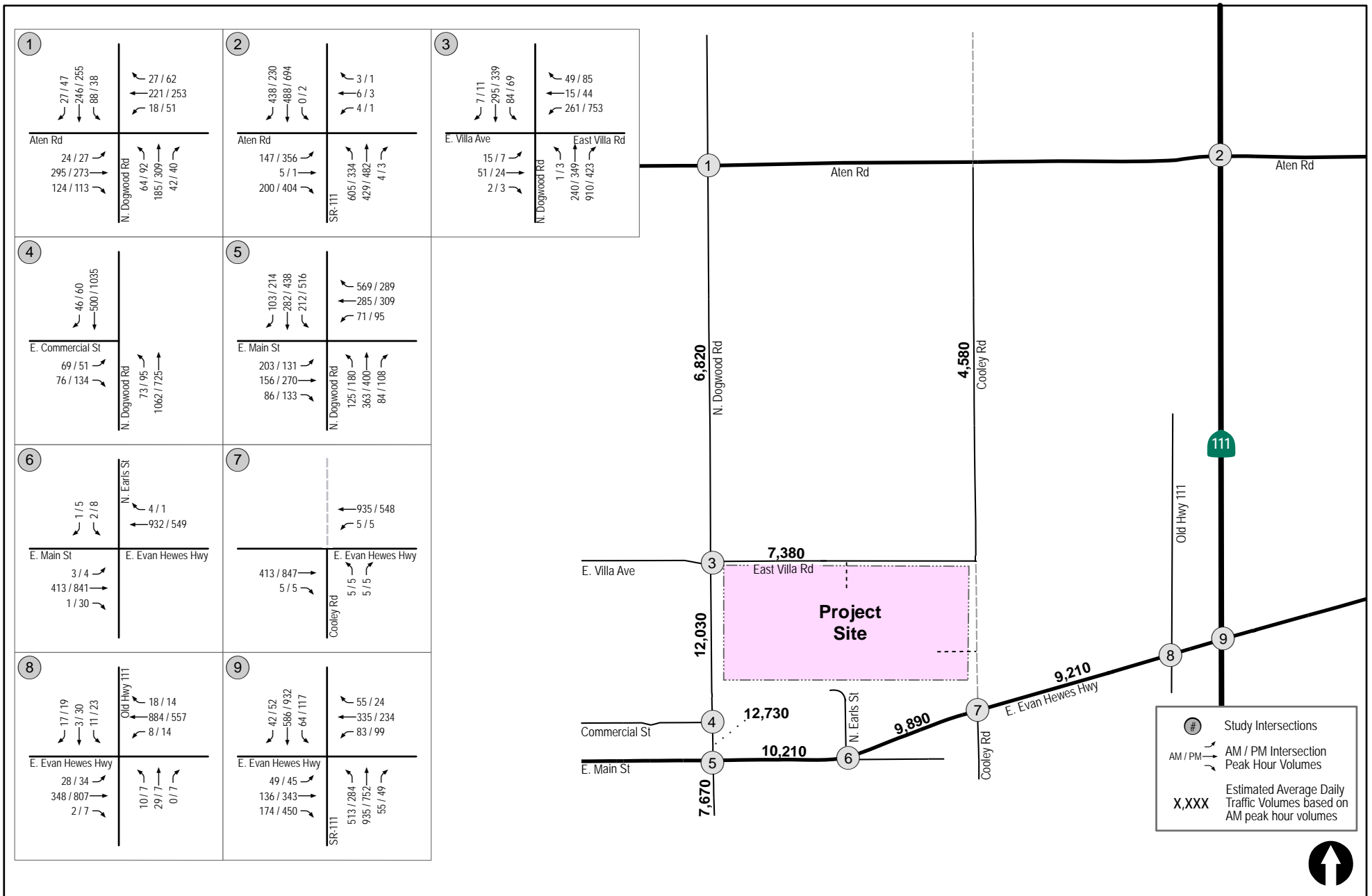


Figure 9-4
Near-Term + Project Phase 3 Traffic Volumes

10.0 SITE ACCESS

Access is proposed to initially be from East Villa Road and then subsequently via the extension of Cooley Road as a 2-lane road between Aten Road and East Villa Road. Dedicated left-turn pockets should be provided at each access point on East Villa Road. Also, access should be provided to the site via Cooley Road south of Villa Avenue along the project frontage once this roadway is extended.

A two-lane East Villa Road is sufficient to accommodate project traffic but the project should dedicate right-of-way along the project frontage to 4-Lane Arterial standards. Two lanes is also sufficient along the Cooley Road frontage (until Cooley Road is extended between the site and Evan Hewes Highway), but dedication to Four-Lane Arterial standard should occur.

11.0 PHASING ANALYSIS RESULTS

The analysis shows that the access can be provided only to East Villa Road up until about 1.5 MSF of development. At this point, Cooley Road would need to be extended between Aten Road and the project site as a 2-lane roadway.

The analysis also shows that access would need to be provided via an extension of Cooley Road between East Villa Road and E. Evan Hewes Highway (or Dogwood Road would need to be widened to 4 lanes between Villa Road and E. Main Street) once the site development reaches about 3 MSF.

12.0 TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) plans are comprised of features, practices and incentives to encourage employees and visitors to use alternate forms of transportation other than single occupancy vehicles. The goal of these plans is to reduce and/or remove vehicle trips out of the peak hours, thereby relieving congestion.

The project should provide a comprehensive TDM plan. Features of the plan should include.

1. Provide subsidized transit passes to all employees.
2. Provide a shuttle from heavier populated areas to the project site.
3. Provide preferred parking spaces for employees who carpool.
4. Allow annual monitoring of the TDM program by City staff.
5. Stagger work shift times to avoid the hours of 7-8AM and 4-6PM in terms of start and end times.

13.0 SIGNIFICANCE OF IMPACTS AND MITIGATION MEASURES

Following is a description of the calculated significant impacts based on the established significance criteria along with recommendations for mitigation measures.

13.1 Significant Impacts Prior to Mitigation

Per the established significance thresholds and the analysis methodology presented in this report, Project-related traffic is calculated to result in the following significant impacts.

The following section identifies the significance of impacts and recommended mitigation to address the identified cumulative impacts.

13.1.1 Phase 1 Significant Impacts

INTERSECTIONS:

TRA-1. Intersection #3. N. Dogwood Road / E. Villa Road

TRA-2. Intersection #4. N. Dogwood Road / E. Commercial Avenue

STREET SEGMENTS:

TRA-3. N. Dogwood Road between E. Commercial Avenue and E. Main Street

TRA-4. E. Villa Road between N. Dogwood Road to Cooley Road

13.1.2 Phase 2 Significant Impacts

INTERSECTIONS:

TRA-5. Intersection #8. E. Evan Hewes Highway / Old Highway 111

STREET SEGMENTS:

TRA-6. N. Dogwood Road between East Villa Road and E. Commercial Avenue

TRA-7. N. Dogwood Road between E. Commercial Avenue and E. Main Street

TRA-8. E. Villa Road between N. Dogwood Road to Cooley Road

13.1.3 Phase 3 Significant Impacts

INTERSECTIONS:

TRA-9. Intersection #3. N. Dogwood Road / E. Villa Road

TRA-10. Intersection #5. N. Dogwood Road / E. Main Street

TRA-11. Intersection #9. E. Evan Hewes Highway / SR-111

STREET SEGMENTS:

TRA-12. N. Dogwood Road between East Villa Road and E. Commercial Avenue

TRA-13. N. Dogwood Road between E. Commercial Avenue and E. Main Street

TRA-14. E. Villa Road between N. Dogwood Road to Cooley Road

13.2 Mitigation Measures

The project is calculated to have significant impacts at several study area intersections. The following summarizes the recommended mitigation measures. A trial and error exercise was conducted to determine the approximate square footage (sf) which could be built before the Phase I mitigation would be necessary. The results are indicated within each mitigation measure.

13.2.1 Phase 1 Mitigation Measures

INTERSECTIONS:

- TRA-1. **Intersection #3. N. Dogwood Road / E. Villa Road** – Prior to the construction of 300,000 sf of development, install a traffic signal and restripe the intersection to the following:
- *Southbound* – provide a dedicated left-turn lane and shared thru / right-turn lane.
 - *Northbound* – provide a dedicated left-turn lane, thru, and right-turn lane.
 - *Westbound* – provide a dedicated left-turn lane, thru, and right-turn lane (with overlap phase).
 - *Eastbound* – provide a dedicated left-turn lane and shared thru / right-turn lane.
- TRA-2. **Intersection #4. N. Dogwood Road / E. Commercial Street** – Prior to the construction of 900,000 sf of development, provide a traffic signal.

STREET SEGMENTS:

- TRA-3. **N. Dogwood Road between East Villa Road and E. Commercial Avenue** – The intersection improvements at Dogwood Road / East Villa Road and Dogwood / E. Commercial Street would mitigate the segment impact
- TRA-4. **E. Villa Road between N. Dogwood Road and Cooley Road Segment** – Widen E. Villa Road to 2-lane Arterial standards between N. Dogwood Road and the furthest east project driveway. The extension to Cooley Road would not be needed until Cooley Road is built.

13.2.2 Phase 2 Mitigation Measures

INTERSECTIONS:

- TRA-5. **Intersection #8. E. Evan Hewes Highway / Old Highway SR-111** – Two options are available. The first is to signalize and the second is to install a raised median to limit the northbound and southbound approaches to right-turn out (northbound and southbound) movements.

STREET SEGMENTS:

- TRA-6. **N. Dogwood Road between East Villa Road and E. Commercial Avenue** – Extend Cooley Road between Aten Road and the project site as a 2-lane roadway. Signalize the Cooley Road / Aten Road intersection and provide a dedicated westbound left-turn lane and two northbound lanes, one left-turn and one right-turn lane. Northbound Right-Turn Overlap (RTOL) Phasing should be provided.
- TRA-7. **E. Villa Road between N. Dogwood Road and Cooley Road Segment** – Phase 1 mitigation will mitigate this impact.
- TRA-8. **N. Dogwood Road between E. Commercial Avenue and E. Main Street** – Extend Cooley Road between Aten Road and the project site as a 2-lane roadway.

13.2.3 *Phase 3 Mitigation Measures*

INTERSECTIONS:

- TRA-9. **Intersection #3. N. Dogwood Road / E. Villa Road** – Provide the following:
- *Southbound* – provide a dedicated left-turn lane and shared thru / right-turn lane.
 - *Northbound* – provide a dedicated left-turn lane, thru lane, and dual right-turn lanes.
 - *Westbound* – provide a dedicated left-turn lane, a shared thru / left-turn lane, and a dedicated right-turn lane (with overlap phase).
 - *Eastbound* – provide a dedicated left-turn lane and shared thru / right-turn lane.

A second southbound lane on Dogwood Road between East Villa Avenue and E. Commercial Street and a second eastbound lane on East Villa Avenue would be necessary. If Cooley Road was built between the site and E. Evan Hewes Highway, the second westbound left-turn lane at the Dogwood East Villa Road intersection and the second southbound lane on Dogwood Road would not be necessary.

- TRA-10. **Intersection #5. N. Dogwood Road / E. Main Street** – Modify the signal timing to change the north/south approach to “protected left-turn” phasing. The north/south phasing at this intersection is currently split phase. Split phasing is less efficient than protected left-turn phasing and is typically used where one reciprocal approach has a heavy left-turn movement and the opposing approach does not, thus providing additional green time to that greater movement and increasing the delay at the minor approach. The left-turns at the north/south approaches are fairly balanced. Thus, changing this phase to protected left-turn phasing would improve operations at this location.

TRA-11. **Intersection #9. SR-111 / E. Evan Hewes Highway** – Provide a second northbound left-turn lane, a southbound right-turn overlap phase and a dedicated eastbound right-turn lane with an overlap phase.

STREET SEGMENTS:

TRA-12. **N. Dogwood Road between East Villa Road and E. Commercial Avenue** – Phase 2 mitigation will mitigate this impact.

TRA-13. **E. Villa Road between N. Dogwood Road and Cooley Road Segment** – Phase 1 mitigation will mitigate this impact.

TRA-14. **N. Dogwood Road between E. Commercial Avenue and E. Main Street** – Phase 2 mitigation will mitigate this impact.

OTHER MEASURES:

The following measures are also recommended to be implemented either as a project feature or as mitigation measures.

1. Dedicate right-of-way along the project's N. Dogwood Road frontage to City Circulation Element standards of a 6-lane Prime Arterial.
2. Provide a bus stop on East Villa Road east of N. Dogwood Road.
3. Pave East Villa Road between N. Dogwood Road and Cooley Road.
4. Develop a comprehensive Transportation Demand Management (TDM) plan for the project and include items such as outlined in *Section 13.0*.
5. Widen N. Dogwood Road to 4-lanes between East Villa Road and E. Main Street if access is provided directly to N. Dogwood Road.
6. Conduct a follow-up traffic assessment after each phase is completed using actual site traffic data.
7. Provide dedicated left-turn lanes at each project driveway.