

**Draft  
ENVIRONMENTAL ASSESSMENT/  
INITIAL STUDY  
(VOLUME II)**

# **WASCO CENTER**

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**AUGUST 2008**

**Draft**  
**ENVIRONMENTAL ASSESSMENT/  
INITIAL STUDY**  
**(VOLUME II)**

# **WASCO CENTER**

**(General Plan Amendment 08-02)**  
**(Zone Change 08-06)**  
**(Precise Development Plan 08-04)**  
**(Vesting Tentative Tract Map No. 7127)**  
**(Williamson Act Cancellation 08-02)**

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- D            Cultural Resources Impact Assessment**
  
- E            Phase I Environmental Site Assessment Report**
  
- F            Noise Impact Assessment**

*NOTE: The sections above are included under separate cover in Volume I of this document.*

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- G            Traffic Impact Assessment**
  
- H            Wasco Center Preliminary Sewer Study**
  
- I            Wasco Center Preliminary Water Study**
  
- J            Water Supply Assessment for the Wasco Center**

# **APPENDIX G**

**Traffic Impact Assessment**

**TRAFFIC IMPACT STUDY  
FOR WASCO CENTER  
WASCO, CALIFORNIA**

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## 1. EXECUTIVE SUMMARY

The Wasco Center is anticipated to be a multi-use development that will be built on approximately 120 acres in the City of Wasco in Kern County, California. The project site is located along the northern side of Highway 46 between Magnolia Avenue and Palm Avenue, and is currently occupied by almond orchards and other mostly vacant areas. The project is expected to be built in two phases, as follows:

- Phase 1: This phase will include the development east of Central Avenue, and is expected to be completed in 2010.
- Phase 2: This phase will add the development west of Central Avenue, and is expected to be completed in 2015.

Table i shows the type and size of the land uses associated with each phase of the project. As shown in the table, Phase 1 will include a hotel, five small retail spaces, three fitness centers, and two of the three apartment areas (including 99 of the 123 units). Phase 2 includes the third apartment area (24 units), five restaurants, a movie theater, and three large retail spaces.

***Table i. Proposed Land Uses and Development Intensity***

ID #	Land Use	Size	Unit
<b>PHASE 1 - 2010 Projected Opening</b>			
7	Apartments	64	Dwelling Units
7.1	Apartments	35	Dwelling Units
8	Hotel	100	Rooms
9	Retail	39,000	Square Feet
10	Retail	27,000	Square Feet
11	Retail	37,000	Square Feet
12	Retail	33,000	Square Feet
13	Retail	70,000	Square Feet
14	Fitness Centers/Recreation (3)	11,900	Square Feet
<b>PHASE 2 - 2015 Projected Opening</b>			
1	Large Retail	158,000	Square Feet
2	Large Retail	115,000	Square Feet
3	Shopping Center	105,000	Square Feet
4	Movie Theater	75,000	Square Feet
5	Restaurants (5)	67,500	Square Feet
6	Apartments	24	Dwelling Units

Access to the site will be accomplished through one of several driveways located on Magnolia Avenue, Central Avenue, Palm Avenue, and Highway 46. Overall, there will be 18 access points, including three full access points on Magnolia Avenue, eight access points on Highway 46 (3 full access, 4 right-in right-out only access, and 1 modified access), five on Central Avenue (2 full access, 3 right-turn only) and two full access points on Palm Avenue. The total site frontage along Highway 46 is 1 mile.

The trip generation analysis indicates that Phase 1 will generate 12,563 daily trips, 2,498 of which will be pass-by trips. Therefore, the project will add 10,065 daily trips to external roadways by 2010. Phase 2 will add approximately 11,017 external daily trips to the roadway network, bringing the total external trip generation for the site to 21,082 trips per day.

The additional traffic on the roadway network will require the construction of improvements in order to maintain an adequate LOS. Although Caltrans has a target LOS of C on State facilities, the *State Route 46 Transportation Concept Report* recommended LOS D as the target for this segment of Highway 46 due to the right-of-way constraints and the built environment. In addition, according to the *Kern County General Plan*, LOS D is the target for all facilities within the City of Wasco. The mitigation measures discussed below (and summarized in Figure i) will ensure that all facilities operate at an acceptable LOS. The owners of the Wasco Center are responsible for contributing the project's fair share to the implementation of those measures.

#### Phase 1 Mitigation Measures (2010)

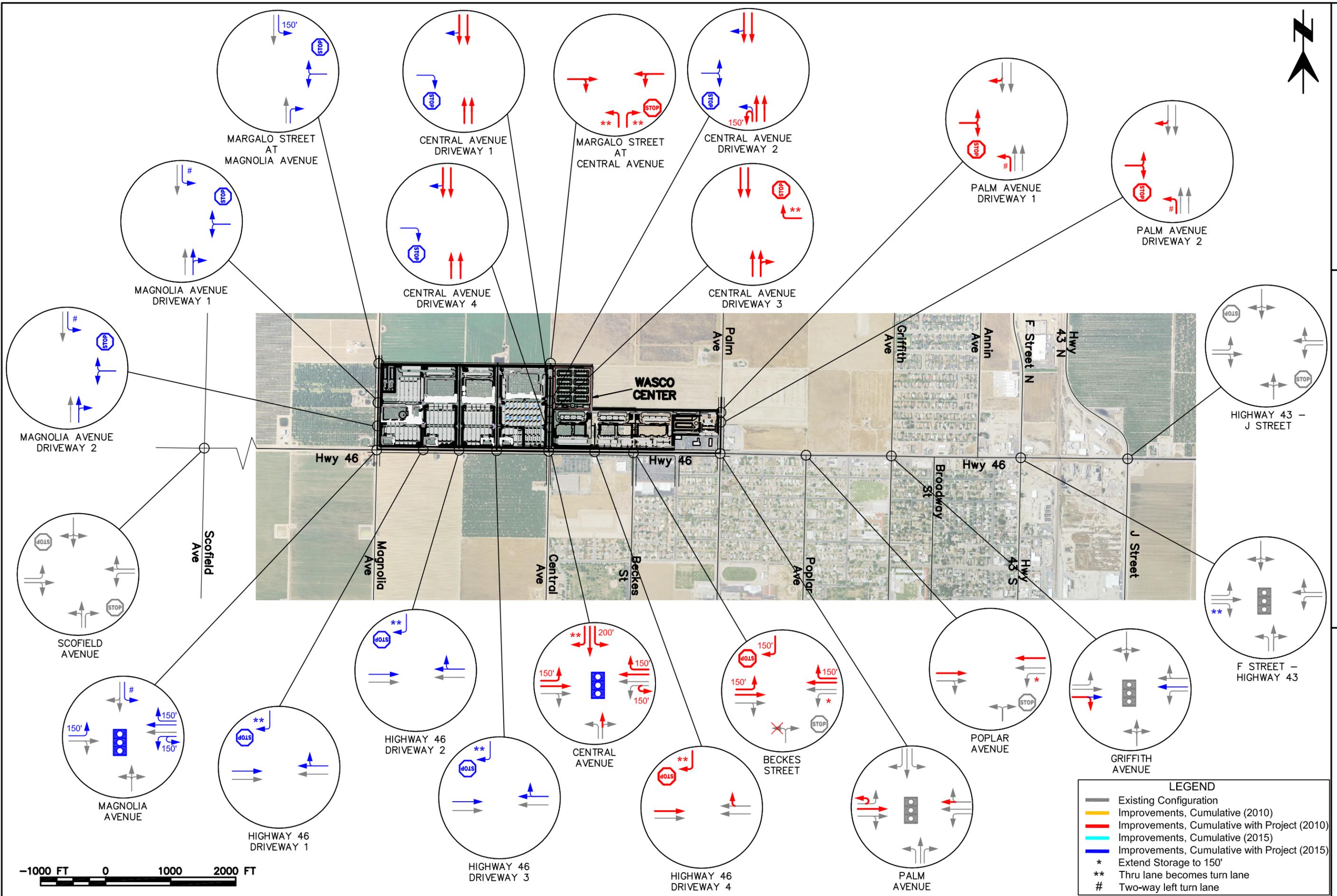
- Improve Highway 46 to a 4-lane divided section between Central Avenue and Griffith Avenue, as shown in Figure 5.
- Extend Central Avenue from Highway 46 to Margalo Street (1/4 mile) as a 4-lane roadway with a raised median (Figure 44).
- Improve a short section of Palm Avenue north of Highway 46 to a 5-lane section (4 through lanes with a two-way left turn lane) through the frontage of the project.
- Improve a short section of Margalo Street east of Central Avenue through the frontage of the project.
- Provide turn lanes as shown in Figure i.

### Phase 2 Mitigation Measures (2015)

- Improve Highway 46 to a 4-lane divided section between Magnolia Avenue and Central Avenue, and between Griffith Avenue and Highway 43 South, as shown in Figure 5. The addition of these improvements to the improvements from Phase 1 will result on a 4-lane divided facility for Highway 46 between Magnolia Avenue and Highway 43 South / F Street.
- Construct the eastern half of a 5-lane section on Magnolia Avenue between Highway 46 and Margalo Street (Figure 45). This would result in two northbound through lanes, a two-way left turn lane, and one southbound through lane.
- Construct Margalo Street as a 2-lane roadway between Magnolia Avenue and Central Avenue (Figure 45).
- Install a traffic signal at the intersection of Magnolia Avenue and Highway 46.
- Install a traffic signal at the intersection of Central Avenue and Highway 46.
- Provide turn lanes as shown in Figure i.

FIGURE I  
MITIGATION MEASURES BY PHASE

WASCO CENTER  
TRAFFIC IMPACT STUDY



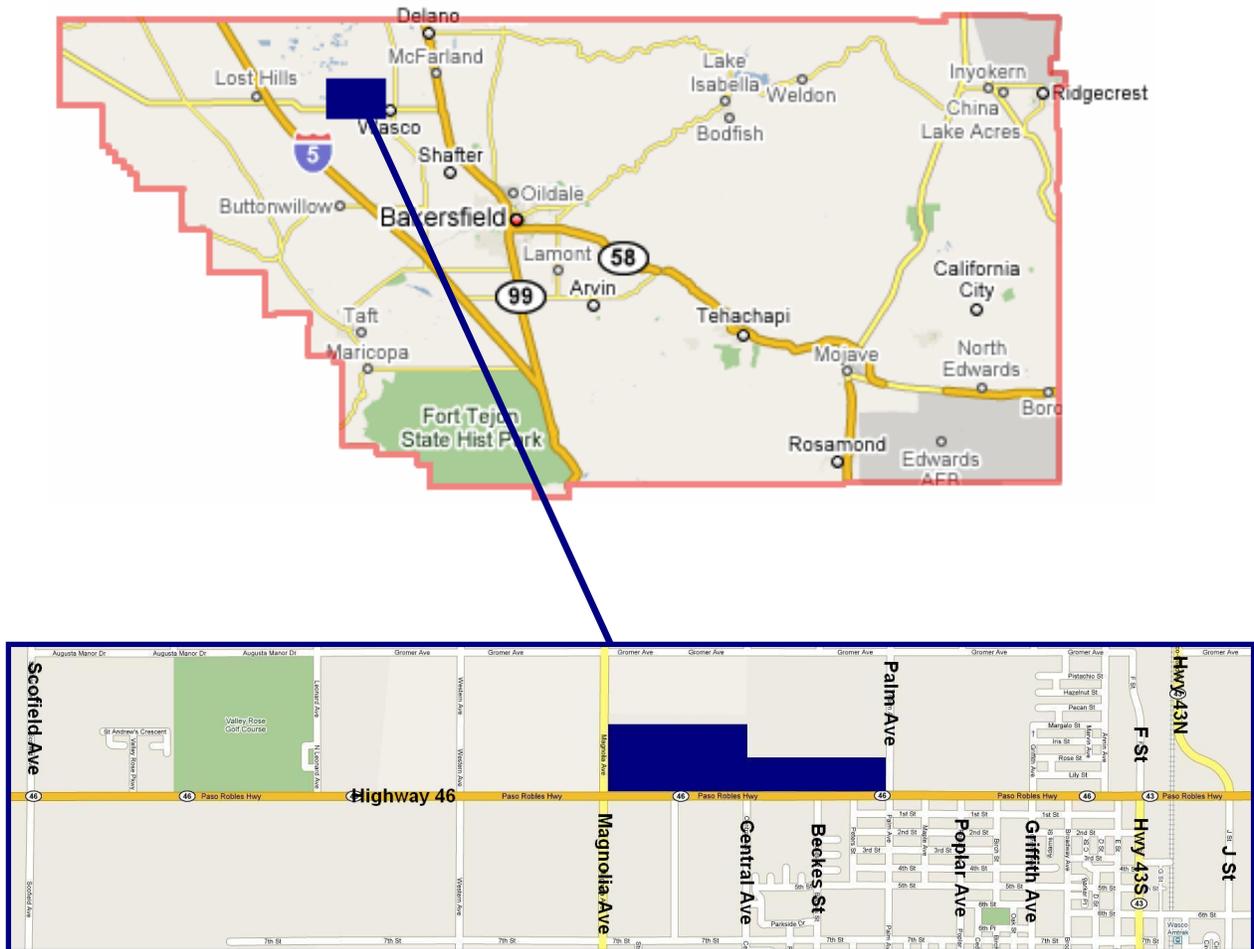
**LEGEND**

- Existing Configuration
- Improvements, Cumulative (2010)
- Improvements, Cumulative with Project (2010)
- Improvements, Cumulative (2015)
- Improvements, Cumulative with Project (2015)
- \* Extend Storage to 150'
- \*\* Thru lane becomes turn lane
- # Two-way left turn lane

## 2. INTRODUCTION

### 2.1. PROJECT LOCATION

The Wasco Center will be located in the City of Wasco in Kern County, California. The City of Wasco is 140 miles north of Los Angeles and 25 miles northwest of Bakersfield. The site for the Wasco Center occupies approximately 120 acres and is bound by Highway 46 on the south, Magnolia Avenue on the west, and Palm Avenue on the east. Along the north end of the project, from Magnolia Avenue to approximately 1/8 mile east of Central Avenue, the site is bound by Margalo Street. Further east, the site is bound by the Hidden Grove subdivision to the north. Figure 1 shows the project location.



**Figure 1. Project Location**

## 2.2. PROJECT DESCRIPTION AND PHASING

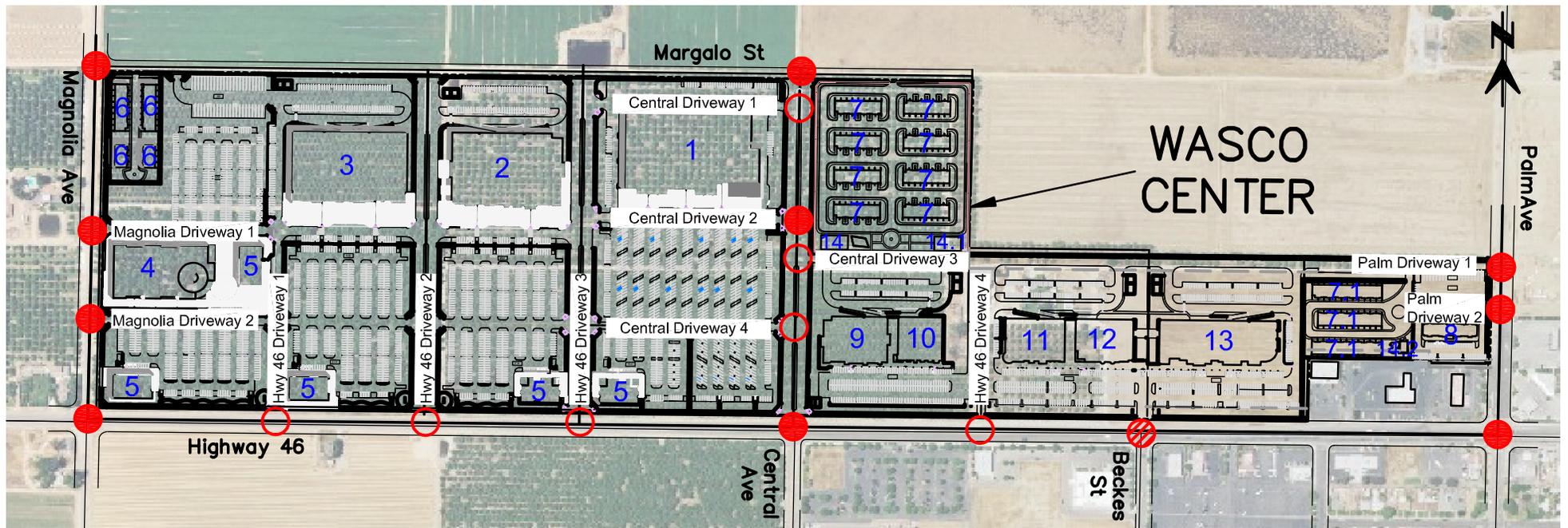
The Wasco Center is anticipated to be a multi-use development with commercial, recreational and residential uses, as shown in the site plan (Figure 2). The project is expected to be built in two phases, as follows:

- Phase 1: This phase will include the development east of Central Avenue, and is expected to be completed in 2010.
- Phase 2: This phase will add the development west of Central Avenue, and is expected to be completed in 2015.

Table 1 shows the type and size of the land uses associated with each phase of the project. As shown in the table (and in Figure 2), Phase 1 will include the hotel, five small retail spaces, three fitness centers, and two of the three apartment areas (including 99 of the 123 units). Phase 2 includes the third apartment area (24 units), five restaurants, a movie theater, and three large retail spaces.

**Table 1. Proposed Land Uses and Development Intensity**

ID #	Land Use	Size	Unit
<b>PHASE 1 - 2010 Projected Opening</b>			
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12	Retail	33,000	Square Feet
13	Retail	70,000	Square Feet
14	Fitness Centers/Recreation (3)	11,900	Square Feet
<b>PHASE 2 - 2015 Projected Opening</b>			
1	Large Retail	158,000	Square Feet
2	Large Retail	115,000	Square Feet
3	Shopping Center	105,000	Square Feet
4	Movie Theater	75,000	Square Feet
5	Restaurants (5)	67,500	Square Feet
6	Apartments	24	Dwelling Units



**PHASE 1**

- 7 Housing - 64 Units
- 7.1 Housing - 35 Units
- 8 100 Room Hotel
- 9 Retail 1-Story, 39,000 SF
- 10 Retail 1-Story, 27,000 SF
- 11 Retail 1-Story, 37,000 SF
- 12 Retail 1-Story, 33,000 SF
- 13 Retail 1-Story, 70,000 SF
- 14 Recreation 1-Story, 5,400 SF
- 14.1 Recreation 1-Story, 5,400 SF
- 14.2 Recreation 1-Story, 1,100 SF

**PHASE 2**

- 1 Large Retail, 158,000 SF
- 2 Large Retail, 115,000 SF
- 3 Shopping Center 1-Story, 105,000 SF
- 4 Movie Theater, 75,000 SF
- 5 Restaurants, 5 @ 13,500 SF EA
- 6 Housing - 24 Units

**LEGEND**

- Full Access
- ⊘ Modified Access
- Right-in Right-out Only



**WASCO CENTER  
TRAFFIC IMPACT STUDY**

**FIGURE 2  
PROJECT SITE PLAN AND  
CIRCULATION NETWORK**

**P S O M A S**

**JULY 2008**

### 2.3. PROJECT ACCESS AND CIRCULATION

The site's proposed circulation and access locations are also depicted in Figure 2. Overall, the site will have 18 access points, including three full access points on Magnolia Avenue, eight access locations on Highway 46 (3 full-access, 4 right-in right-out only access, and 1 modified access), five on Central Avenue (2 full access, 3 right-turn only) and two full access points on Palm Avenue.

The proposed access locations along Highway 46 were developed with the intent of maximizing separation between driveways and minimizing vehicular conflicts. All of the proposed full access locations line up with existing collector or arterial streets on the south side of Highway 46 and are separated at least ¼ mile. The minimum separation between right-turn only driveways is 550 feet. Table 2 summarizes the proposed access and circulation on Highway 46.

**Table 2. Proposed Access Spacing on Highway 46**

Access Point	Existing/ New	Type	Distance to next access point (ft)	Distance to next full access (ft)
Magnolia Avenue	Existing	Full Access	710	2,640
Hwy 46 Driveway 1	New	Right-turn Only	550	
Hwy 46 Driveway 2	New	Right-turn Only	580	
Hwy 46 Driveway 3	New	Right-turn Only	800	
Central Avenue	Existing	Full Access	700	2,640
Hwy 46 Driveway 4	New	Right-turn Only	620	
Beckes Street	Existing	Modified	1,320	
Palm Avenue	Existing	Full Access		

\*Modified access will allow all turns from Hwy 46, but only right turns from Beckes St

### 2.4. SCOPE OF THE TRAFFIC IMPACT STUDY

Psomas met with Caltrans District 6 in September 2007 to discuss the limits of the study area and the horizon years for the project. Additional issues such as traffic counts, trip distribution, pass-by trips and internal capture rates were also discussed with Caltrans via phone and e-mail.

From the meeting and subsequent discussions, it was determined that the study should include a stretch of 4.2 miles along Highway 46 between Scofield Avenue and Highway 43N (J Street), as well as the other arterials and collectors from which the site can be accessed (Magnolia

Avenue, Central Avenue, Palm Avenue). As far as horizon years, it was determined that the study should evaluate conditions for 2010 and 2015 to reflect operating conditions at completion of each phase of the project.

## 2.5. LAND USE

A majority of the land on which the Wasco Center will be located is currently an almond orchard. The area of the project site from Magnolia Avenue to approximately 1/8 mile east of Central Avenue is almond orchards, and the remainder of the site is mostly vacant.

The south side of Highway 46 between Central Avenue and Palm Avenue is a commercial corridor with a Kmart (at Central Avenue), several fast food restaurants, and a large strip mall east of Beckes Street. The area east of the commercial developments is mainly residential, as the central part of the City of Wasco is located to the south and east of this project.

The land to the north and west of the project is also agricultural, with the exception of the northwest corner of Palm Avenue and Highway 46, where there is a small commercial development (Figure 3). The development includes Blockbuster, Pizza Hut, and McDonald's. Further north on Palm Avenue (directly north of the Wasco Center project site), the Hidden Grove subdivision is currently under construction. The area on the east side of Palm Avenue is also a recently constructed residential subdivision.



**Figure 3. Land Use at the Intersection of Highway 46 and Palm Avenue**

## 2.6. ROADWAY NETWORK

The Wasco Center will have direct access onto Magnolia Avenue, Central Avenue, Palm Avenue, Margalo Street, and Highway 46. The other roadways in the study area include Scofield Avenue, Beckes Street, Poplar Avenue, Griffith Avenue, Highway 43 South/F Street North, and Highway 43 North/J Street.

**Highway 46** begins at the junction of Route 1 in San Luis Obispo County and continues east for 118 miles, intersecting Interstate 5 and terminating at State Route 99 east of Wasco. The highway functions as a significant interregional route for agricultural products and recreational traffic to and from the Central Coast/Central Valley. The segment included in this study extends from PM 47 (Scofield Avenue) to PM 51.2 (Highway 43 North / J Street) and was classified as an urban other principal arterial by the Federal Highway Administration (FHWA) in 2007<sup>1</sup>.

Highway 46 is a two-lane highway between Scofield Avenue and Central Avenue. Between Central Avenue and Highway 43 South (F Street) there is a continuous two-way left turn lane (TWLTL). The road then narrows again to two lanes between the south and north legs of Highway 43 as it goes under the Burlington Northern/Santa Fe Railroad. In addition, Highway 46 widens to four lanes between Central Avenue and Beckes Street (1/4 mile) providing two eastbound lanes, one westbound lane and a two-way left turn lane, as shown in Figure 4. The additional eastbound lane becomes a trap lane at Beckes Street, where the roadway returns to a 3-lane section. Between Peters Street (1/8 mile west of Palm Avenue) and Poplar Avenue (1/4 mile east of Palm Avenue) the roadway widens enough to provide two westbound lanes, but there is no striping to indicate that there are two westbound travel lanes.



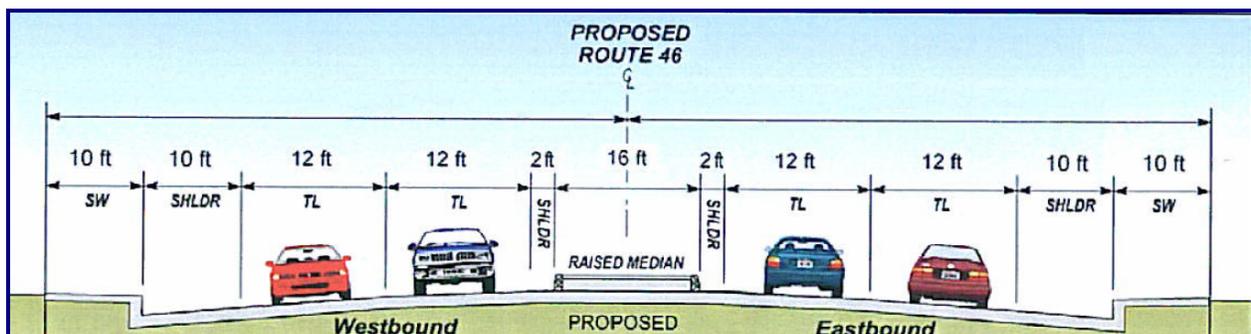
**Figure 4. Highway 46 at Central Avenue. Left – Looking West. Right – Looking East.**

The road is curbed with sidewalks on the south side east of Central Avenue. On the north side there are short segments of curb with sidewalks, particularly in the vicinity of Palm Avenue. West of Central Avenue the road is uncurbed. The curbed segments have a wide-curb lane to provide room for disabled vehicles. The uncurbed segments include a wide paved shoulder.

The posted speed limit is 40 mph east of Palm Avenue, and 45 mph from Palm Avenue to Central Avenue, where the speed limit zone ends (westbound). The route serves a very high volume of heavy trucks and buses (approximately 35%<sup>2</sup>) in part due to its importance for agriculture in the region.

In the last few years, Caltrans has completed two studies of Highway 46 to determine its future needs. The *State Route 46 Transportation Concept Report*<sup>3</sup>, prepared in 2001, covered the entire length of the Highway between the San Luis Obispo County line and Route 99. The study proposed a concept Level of Service (LOS) D and recommended a four lane conventional facility for the segment between Scofield Avenue and Route 43 North because of the restricted right-of-way through Wasco's built-out area. According to the study, the ultimate facility for this segment will be a four lane expressway bypass of Wasco.

The *Wasco 4-Lane Project Initial Study*<sup>2</sup> was prepared in 2006 to specifically address the area between PM 46 and PM 51.2 (west of Scofield Avenue to Highway 43 North). The report recommended Alternative 9b between Magnolia Avenue and Highway 43 South, which consisted of a conventional 4-lane highway with a raised median, shoulders, outside curb and wide sidewalks, as shown in Figure 5. Alternative 1 was recommended west of Magnolia Avenue, and consists of a conventional 4-lane highway with an unpaved median and inside and outside shoulders.



**Figure 5. Proposed Typical Section from Wasco 4-lane Study Segment 2 (Caltrans)**

**Scofield Avenue** is a two-lane roadway, approximately two miles west of Magnolia Avenue. The roadway was classified as a minor arterial north of Highway 46 by the FHWA in 2007. Scofield Avenue was classified as a minor arterial south of Highway 46 to the Wasco State Prison (approximately one-half mile), then as a collector south of the prison by the FHWA.

**Magnolia Avenue** is a two-lane roadway in the project area, and was classified as an urban minor arterial south of Highway 46 by the FHWA in 2007. North of Highway 46, Magnolia Avenue was classified as an urban local street by the FHWA. The roadway does not have paved shoulders or exclusive turn lanes within the project area.

**Central Avenue** is a two-lane roadway that currently dead-ends at Highway 46 from the south. The roadway provides access into the City of Wasco, and was classified as an urban minor arterial by the FHWA in 2007.

**Beckes Street** is a two-lane roadway that currently dead-ends at Highway 46 from the south. The roadway provides access into the City of Wasco and serves both commercial and residential land uses.

**Palm Avenue** is a two-lane roadway, but portions of it have been widened to four lanes north of Highway 46. The widened areas are located along the frontage of the Hidden Grove subdivision, which is currently under construction, and immediately north of the Highway 46 intersection. Palm Avenue was classified as an urban minor arterial by the FHWA in 2007 and has a speed limit of 35 mph south of Highway 46.

**Poplar Avenue** is a two-lane roadway that currently dead-ends at Highway 46 from the south. The roadway provides access into the City of Wasco, and was classified as an urban collector by the FHWA in 2007.

**Griffith Avenue** is a two-lane roadway, with parking allowed south of Highway 46. South of Highway 46, the roadway was classified as an urban collector by the FHWA in 2007, and north of Highway 46 was classified as an urban local street.

**F Street/Highway 43 South** is a two-lane highway in the project area. South of Highway 46, the roadway is State Route 43 South, classified as an urban other principal arterial by the FHWA in 2007. Continuing north of Highway 46, the roadway becomes F Street, and is classified as an urban collector.

**J Street/Highway 43 North** is a two-lane highway in the project area. South of Highway 46, the roadway is J Street, and was classified as an urban minor arterial by the FHWA in 2007. North of Highway 46, the roadway is State Route 43 North, offset approximately 1/3 mile from State Route 43 South, and classified as an urban other principal arterial.

**Margalo Street** is currently a dirt road along the northern boundary of the proposed project. To the east, between Griffith Avenue and Annin Avenue (outside of the limits of the Wasco Center project), Margalo Street is a two-lane subdivision street.

## 2.7. INTERSECTION CHARACTERISTICS

The following nine existing intersections will be analyzed in this report (listed from west to east):

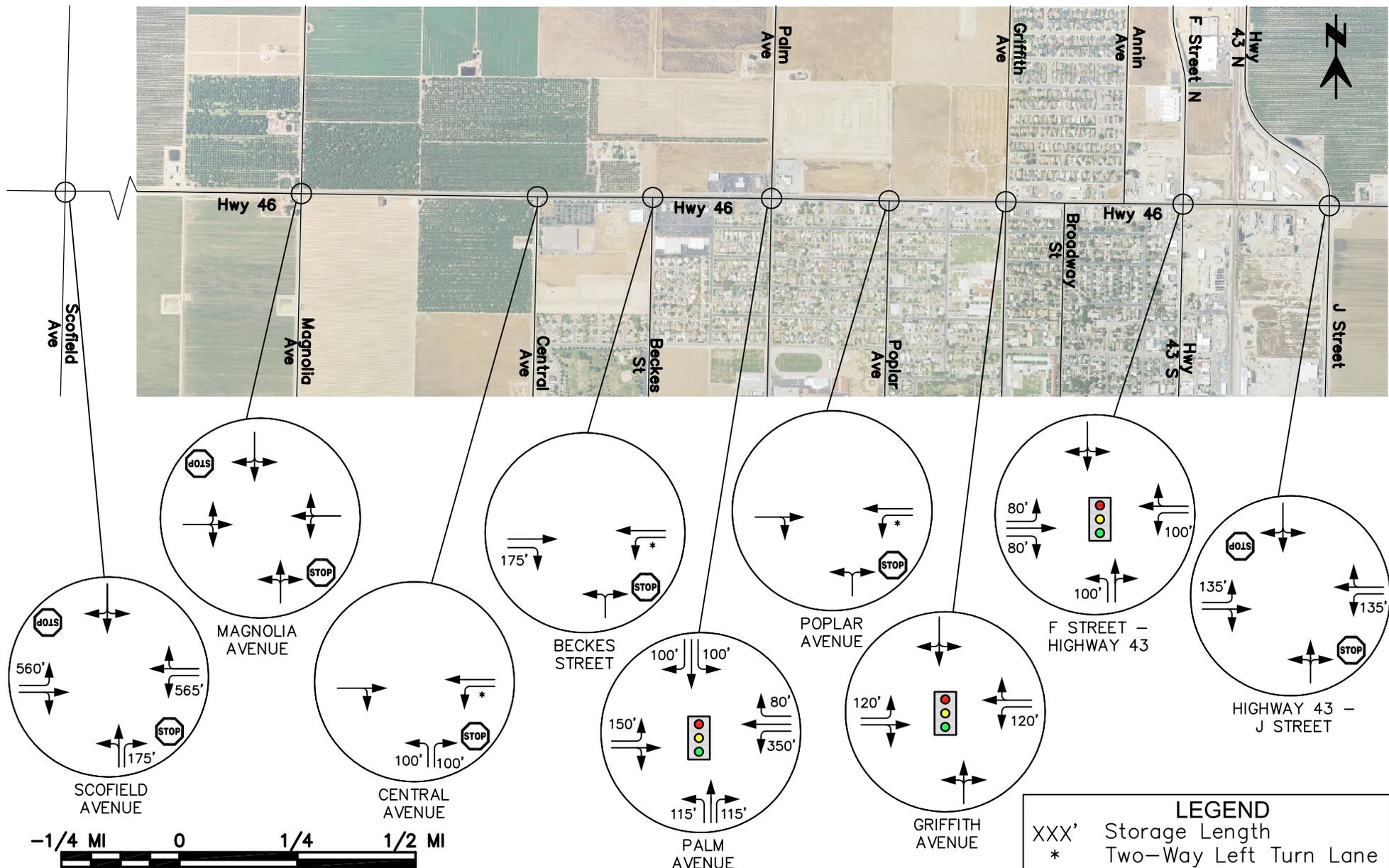
1. Highway 46 and Scofield Avenue
2. Highway 46 and Magnolia Avenue
3. Highway 46 and Central Avenue
4. Highway 46 and Beckes Street
5. Highway 46 and Palm Avenue
6. Highway 46 and Poplar Avenue
7. Highway 46 and Griffith Avenue
8. Highway 46 and Highway 43 South / F Street
9. Highway 46 and Highway 43 North / J Street

The intersections with Palm Avenue, Highway 43 South, and Griffith Avenue are signalized (Griffith Avenue was signalized recently, as presented in Figure 6). The other six intersections operate with stop control on the minor street. There are also warning flashers on Highway 46 as drivers approach the junction with Highway 43 North.



**Figure 6. Highway 46 at Griffith Avenue**

Figure 7 summarizes the lane configurations at each of the intersections that will be included in the analysis along with the type of traffic control and the storage length of any turn lanes that may be present. As shown in the figure, there are left turn lanes on Highway 46 at Scofield Avenue, Central Avenue, Beckes Street, Palm Avenue, Poplar Avenue, Griffith Avenue, F Street/Highway 43S, and J Street/Highway 43N. There are also exclusive left and right turn lanes on Central Avenue and Palm Avenue at Highway 46, and an exclusive northbound right turn lane on Scofield Avenue at Highway 46.



**WASCO CENTER  
 TRAFFIC IMPACT STUDY**

**FIGURE 7  
 EXISTING  
 INTERSECTION  
 CHARACTERISTICS**

**PSOMAS**

**JULY 2008**

## 2.8. PERFORMANCE MEASURES

In order to better understand how the existing roadway network and intersections are operating and how they will operate in the future, it is necessary to evaluate their Level of Service (LOS). Level of Service is a qualitative measure that describes operational conditions of transportation facilities. LOS ranges from A to F, with A representing the best operating conditions and F representing the worst. Although Caltrans has a target LOS of C on State facilities, the *State Route 46 Transportation Concept Report* recommended LOS D as the target for this segment of Highway 46 due to the right-of-way constraints and the built environment. In addition, according to the *Kern County General Plan*, LOS D is the target for all facilities within the City of Wasco<sup>4</sup>.

The performance measures used to evaluate LOS for roadway segments and intersections are based on the guidance from the *Highway Capacity Manual*<sup>5</sup> (*HCM*) and the Caltrans' *Guide for the Preparation of Traffic Impact Studies*<sup>6</sup>. A discussion for each type of facility is presented in the following sections.

### 2.8.1. Signalized Intersection Analysis

The analysis of the signalized intersections was performed using *Synchro*, a software tool that employs the methodology set forth in the 2000 *Highway Capacity Manual*. The *HCM* defines the Level of Service (LOS) of a signalized intersection in terms of control delay per vehicle. Table 3 presents the thresholds defined in the *HCM* for determining the LOS of signalized intersections. Based on the LOS D target set by Kern County and Caltrans, signalized intersections should operate with 55 seconds or less of delay per vehicle.

**Table 3. Signalized Intersection Level of Service**

Average Delay (seconds per vehicle)	Level of Service
≤10	A
>10 - 20	B
>20 - 35	C
>35 - 55	D
>55 - 80	E
>80	F

### 2.8.2. Unsignalized Intersection Analysis

Unsignalized intersections were analyzed using the same software (*Synchro*) as the signalized intersection analysis. However, the thresholds set in the *Highway Capacity Manual* for unsignalized intersections are slightly different than those set for signalized intersections. Table 4 shows the LOS thresholds for unsignalized intersections.

**Table 4. Unsignalized Intersection Level of Service**

Average Delay (seconds per vehicle)	Level of Service
≤10	A
>10 - 15	B
>15 - 25	C
>25 - 35	D
>35 - 50	E
>50	F

Because LOS is only defined for movements that experience stop delay, only some of the movements at an unsignalized intersection will be included in the analysis and the intersection as a whole will not have an average delay (and therefore will not have a LOS). In order to meet Kern County standards, each stop-controlled approach has to have 35 or fewer seconds of delay per vehicle to meet the LOS D target.

### 2.8.3. Signal Warrant Analysis

Signal warrant analyses were conducted for unsignalized intersections under existing conditions as well as at the completion of each phase of the project (2010 and 2015). At the completion year of each phase, the unsignalized intersections were analyzed for conditions both with and without the project. The analysis was conducted using the *California Manual on Uniform Traffic Control Devices (MUTCD)*<sup>7</sup>. Because traffic volume projections are based on peak-hour volumes instead of 4 or 8-hour volumes, the need for signals was evaluated using Warrant 3B (the peak-hour warrant). For intersections where the posted speed limit on the major roadway is 45 mph or greater, the 70% factor warrant was used. This includes the intersections of Scofield Avenue, Magnolia Avenue, Central Avenue, and Beckes Street with Highway 46. In all other cases, the original warrant was used.

#### 2.8.4. Roadway Segment Analysis

The LOS of arterial roadways and two-lane highways is defined as a function of the travel speeds. Since those are difficult to estimate for future roadways, level of service is generally approximated using the maximum daily service volumes. The maximum service volumes are based on the number of lanes, functional classification, and other geometric characteristics.

In this case, the maximum service volumes for each LOS category and road type were estimated using *Artplan*, a module of the *Highway Capacity Software (HCS)* that evaluates capacity of planned improvements. The assumptions used to determine the capacities are included in Appendix A. Table 5 shows the capacities by roadway classification.

**Table 5. Roadway Segment Level of Service**

Roadway Classification	Number of Lanes	LOS				
		A	B	C	D	E
		Roadway Capacity (Vehicles per Day)				
Collector	2	8,500	12,800	13,900	14,600	**
Collector	4	18,700	26,300	28,000	29,100	**
Arterial	2	5,000	13,700	17,000	18,100	**
Arterial	4	10,000	28,600	34,400	36,300	**
Arterial	6	15,300	43,800	51,700	54,400	54,700
Arterial	8	20,400	58,800	69,000	72,700	72,900

\*\*Level of Service is Not Defined

#### 2.9. RELATED TRAFFIC IMPACT STUDIES

To date, two other projects have been identified in the vicinity of the study area; the Rose City Industrial Park, and a commercial development north of Highway 46 and west of Poplar Street.

In August 2007, URS submitted the *Draft Environmental Impact Report (DEIR) for the Rose City Industrial Park Project<sup>4</sup>* to the City of Wasco. The traffic impact analysis report for the project was included as an appendix to the DEIR. The Rose City Industrial Park Project will be located just east of Highway 43 North between Kimberlina Road (on the south) and Highway 46. The project is expected to include ethanol plants and a steel recycling facility, generating 1,186 daily trips in the near term, growing to 11,333 daily trips by 2030. Approximately 45% of those trips would be in the study area of the Wasco Center proposed project. Because the report was

completed very recently and because of the location of the project with respect to the proposed Wasco Center, the traffic impact analysis is referenced for this report.

Even more recently (December 2007), Crenshaw Traffic Engineering submitted a *Traffic Impact Study, Commercial Developments, North Side of State Route 46 (Famosa Hwy) West of Poplar Avenue* (known hereafter as the Crenshaw Traffic Impact Study)<sup>8</sup>. The project will be located adjacent to the proposed Wasco Center, north of Highway 46 between Palm Avenue and Poplar Avenue. The project will include a Best Western, a Denny's Restaurant, a Jack in the Box Restaurant, a Red Roof Inn, and two other commercial parcels with tenants to be determined. At build out (2009), the project is expected to generate 1,819 trips per day. The report includes counts and analyses for the intersections of State Route 46 with Central Avenue, Palm Avenue, Poplar Avenue, and Griffith Avenue.

### 3. TRAFFIC ANALYSIS – EXISTING CONDITIONS

#### 3.1. TRAFFIC VOLUMES

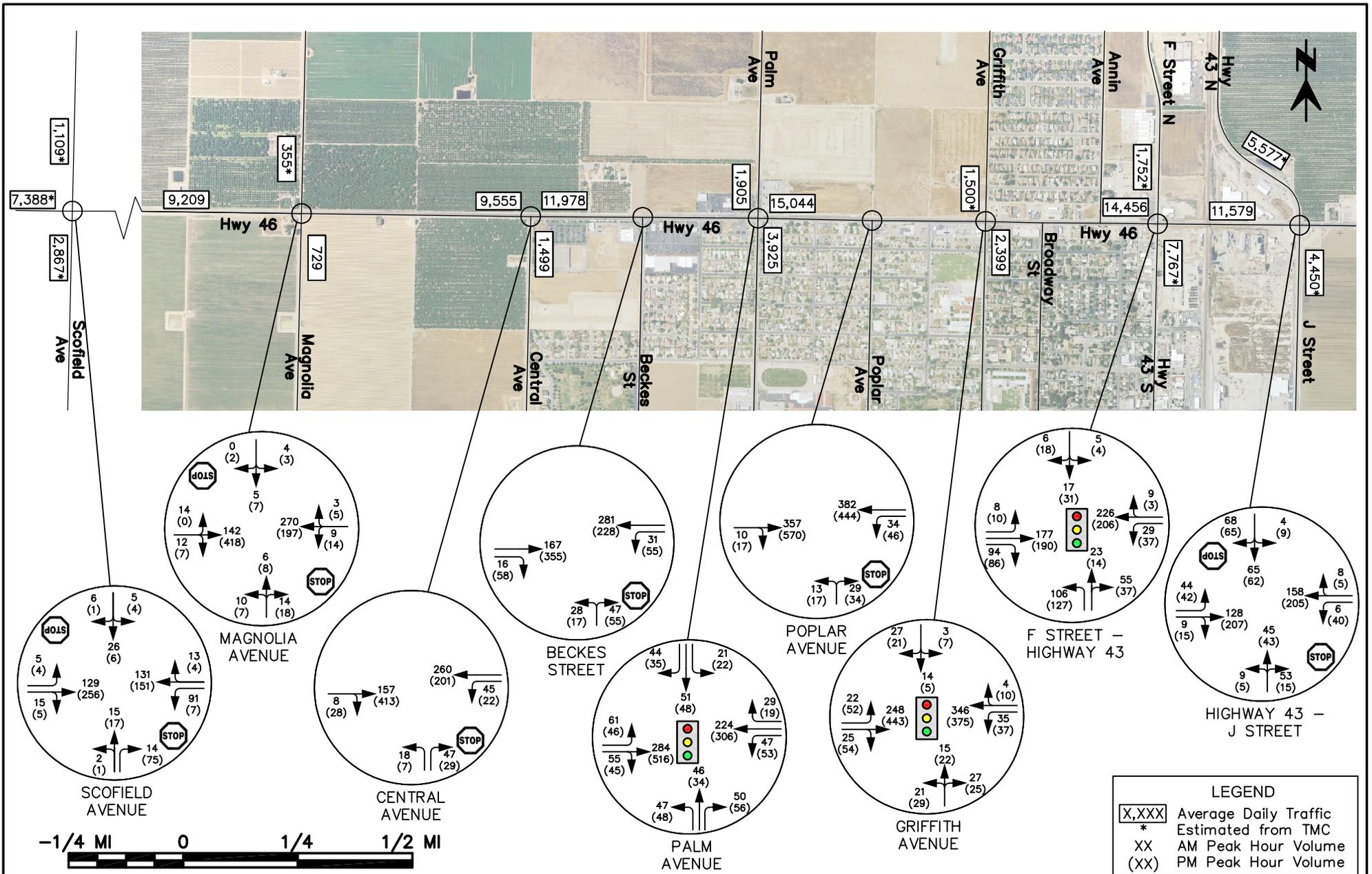
Existing Average Daily Traffic (ADT) volumes and peak hour turning movement counts for the road segments and intersections in the study area were collected by City Traffic Counters for Psomas in 2007 and 2008. Turning movement counts for Poplar Avenue at Highway 46 were taken from the Traffic Impact Study prepared by Crenshaw Traffic Engineering in December 2007. The counts are included in Appendix B, while Figure 8 shows the existing volumes in the area.

The highest ADT in the study area (15,044) was found to be just east of Palm Avenue; volumes on Highway 46 drop to under 10,000 vehicles per day west of Magnolia Avenue and east of Highway 43 North. Table 6 shows the K and D factors for the peak hour.

**Table 6. Existing K and D Factors During Peak Hour**

Roadway Segment	Direction of Travel	Peak Hour	K	D
Highway 46, Scofield Ave to Magnolia Ave	EB	PM	0.07	0.64
Highway 46, Magnolia Ave to Central Ave	EB	PM	0.07	0.63
Highway 46, Central Ave to Beckes St	EB	PM	0.07	0.57
Highway 46, Palm Ave to Griffith Ave	EB	PM	0.07	0.57
Highway 46, Griffith Ave to Hwy 43S	EB	PM	0.07	0.52
Highway 46, Hwy 43S to Hwy 43N	WB	PM	0.07	0.52

Note that the direction of travel shown in the table refers to the direction on each roadway that carries the higher volume during the 24-hour period. As seen in Table 6, the PM peak hour carries approximately 7% of the total daily traffic on each roadway segment along Highway 46. A majority of traffic is eastbound from west of Magnolia Avenue to Highway 43 South, but between Highway 43 South and Highway 43 North, a majority of traffic is traveling westbound. Also notable is that the directional split is greater for those segments that are further away from the center of the City of Wasco. The heaviest volumes along Highway 46 are typically between 3:00 PM and 6:00 PM. In the early morning hours, between 2:00 AM and 9:00 AM, a majority of traffic is traveling westbound on Highway 46, and throughout the rest of the day, more traffic travels eastbound. The ADT along Highway 43 South was 7,767 veh/day, while to the north it was 5,577 veh/day. All the other side streets had volumes under 5,000 veh/day.



**WASCO CENTER  
TRAFFIC IMPACT STUDY**

**FIGURE 8  
EXISTING  
TRAFFIC VOLUMES**

**PSOMAS**

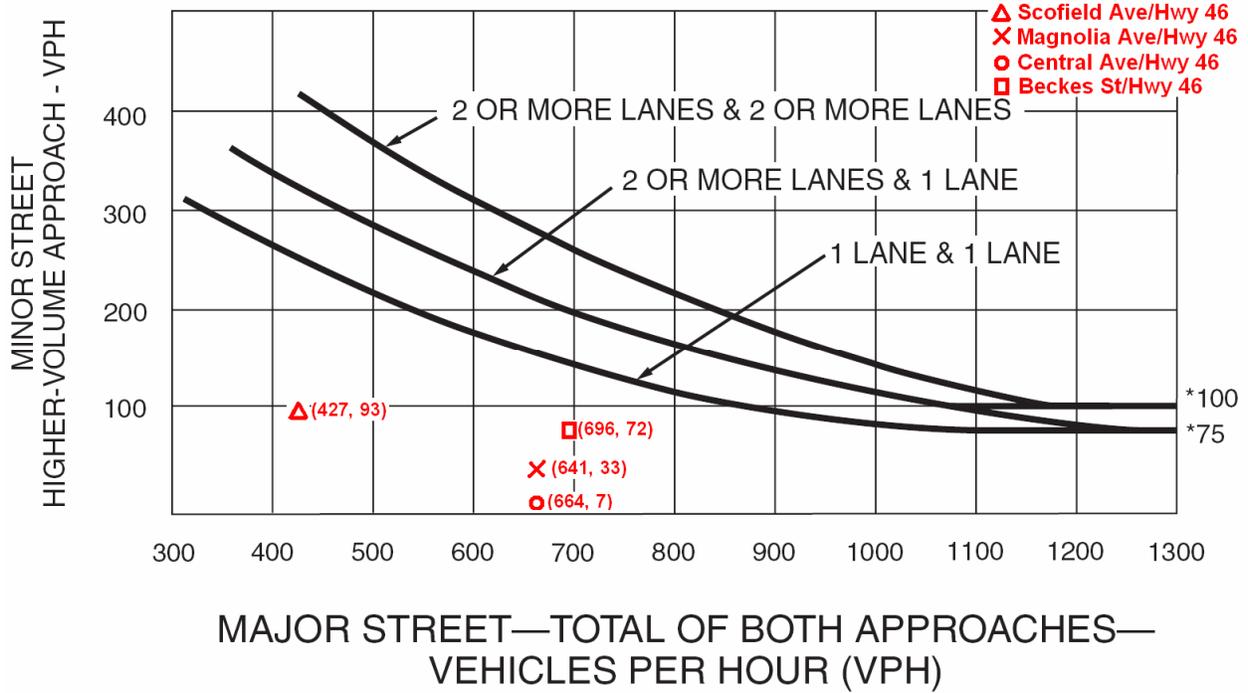
**JULY 2008**

From the turning movement counts, the morning peak hour for the study area was found to be from 7:30 AM to 8:30 AM, and the evening peak hour was found to be from 4:45 PM to 5:45 PM. The highest turning movements are the eastbound right turns and northbound left turns at the intersection of Highway 43 South / F Street and Highway 46. The eastbound right turns are slightly lower than the northbound left turns, but have similar morning (94 vehicles) and evening (86 vehicles) volumes. The northbound left turns are higher in the evening, perhaps an indication of drivers traveling home from Wasco's city center. The peak hour factors (PHF) were calculated at each of the intersections in the study area, and for the approaches along Highway 46 were found to vary between 0.62 and 0.97. All of the PHFs for Highway 46 and the cross streets can be found in Appendix C.

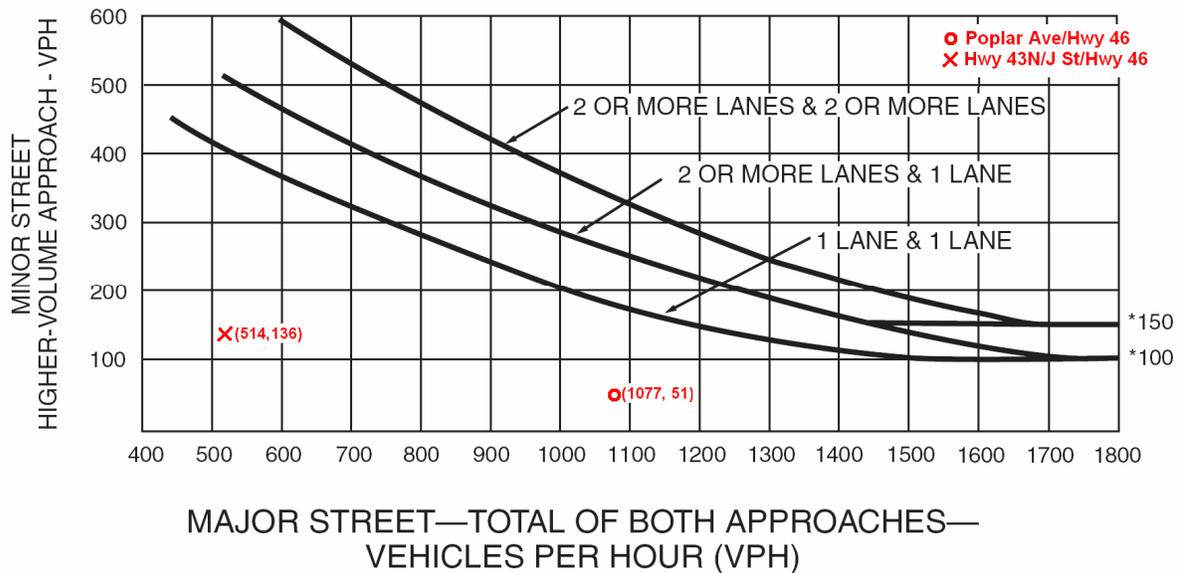
### **3.2. WARRANT ANALYSIS**

A signal warrant analysis was completed for six unsignalized intersections along Highway 46. The intersections analyzed were those at Scofield Avenue, Magnolia Avenue, Central Avenue, Beckes Street, Poplar Avenue, and J Street / Highway 43 North. In all cases, Highway 46 is assumed to be a one-lane approach because most of the traffic is on the single through lane. All the minor street approaches are one lane as well under existing conditions. At Central Avenue, the northbound right turning volume was excluded from the analysis because it has an exclusive approach lane and can easily merge into the second eastbound travel lane that begins at Central Avenue. The intersections of Highway 46 at Palm Avenue, Griffith Avenue, and F Street / Highway 43 South were not analyzed because they are already signalized intersections.

As shown in Figures 9 and 10, none of the intersections analyzed meet the signal warrant under existing conditions. All five intersections were analyzed for the evening peak hour, since the volumes during that period were found to be higher than those in the morning peak hour. The intersections of Highway 46 at Scofield Avenue, Magnolia Avenue, Central Avenue, and Beckes Street were analyzed using the 70% warrant because at those intersections Highway 46 has a posted speed of 45 mph or higher. The 100% warrant was used to analyze the intersections of Highway 46 at Poplar Avenue and J Street / Highway 43 North because the speed limit on Highway 46 at those intersections is 40 mph.



**Figure 9. Existing Conditions Signal Warrant Analysis - 70% Condition**



**Figure 10. Existing Conditions Signal Warrant Analysis- 100% Condition**

### **3.3. LEVEL OF SERVICE ANALYSIS**

#### **3.3.1. Intersections**

Level of Service (LOS) analysis was completed for eight intersections in the project area based on the existing traffic volumes, intersection geometry, and traffic control. Existing signal phasing was obtained from field visits and information found in the *Traffic Impact Study for the Rose City Industrial Park Project*, while the splits and cycle length were optimized using *Synchro*. It was assumed that the signals are actuated but not coordinated. The nine intersections analyzed are all located along Highway 46, and include three signalized intersections (at Palm Avenue, Griffith Avenue, and Highway 43 South / F Street), and six unsignalized intersections (at Scofield Avenue, Magnolia Avenue, Central Avenue, Beckes Street, Poplar Avenue, and Highway 43 North / J Street). Table 7 shows the results of the LOS analysis. The *Synchro* reports can be found in Appendix C.

As indicated in the table, the signalized intersections are all operating at LOS B or better in both the morning and evening peak hours. At each of the unsignalized intersections, all of the movements are operating at LOS C or better in both peak hours. The results indicate that under existing conditions, there are no significant delays at any intersection in the project area, and all of the intersections are operating at an acceptable LOS.

**Table 7. Existing Intersection Level of Service**

		Highway 46						Scofield Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS	A			A			B	B	A	C	C	C	2-Way Stop	N/A
	Delay	7.6			7.9			15.0	15.0	9.4	15.4	15.4	15.4		N/A
PM	LOS	A			A			B	B	B	B	B	B		N/A
	Delay	7.6			8.0			13.7	13.7	11.3	14.8	14.8	14.8		N/A
		Highway 46						Magnolia Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS	A			A			B	B	B	B	B		2-Way Stop	N/A
	Delay	0.1			0.1			11.8	11.8	11.8	13.6	13.6			N/A
PM	LOS	A			A			B	B	B	C	C	C		N/A
	Delay				0.1			13.9	13.9	13.9	15.2	15.2	15.2		N/A
		Highway 46						Central Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS				A			B		B				2-Way Stop	N/A
	Delay				7.7			10.9		10.9					N/A
PM	LOS				A			C		B					N/A
	Delay				8.4			15.1		11.5					N/A
		Highway 46						Beckes Street						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS				A			B		B				2-Way Stop	N/A
	Delay				7.7			12.3		12.3					N/A
PM	LOS				A			B		B					N/A
	Delay				8.5			12.9		12.9					N/A
		Highway 46						Palm Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS	C	A	A	C	A	A	B	B	A	B	B	A	Signal	B
	Delay	21.3	9.9	9.9	21.7	9.7	4.3	18.7	16.8	7.2	16.8	17.1	7.3		12.0
PM	LOS	C	B	B	C	A	A	C	B	A	B	B	A		B
	Delay	24.9	15.8	15.8	26.6	8.6	4.4	21.9	18.9	7.7	19.6	20.0	8.1		14.6
		Highway 46						Poplar Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS				A			B		B				2-Way Stop	N/A
	Delay				8.3			13.9		13.9					N/A
PM	LOS				A			C		C					N/A
	Delay				9.0			17.4		17.4					N/A
		Highway 46						Griffith Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS	C	A	A	C	A	A	B	B	B	B	B	B	Signal	A
	Delay	23.0	7.8	7.8	21.9	7.3	7.3	14.7	14.7	14.7	12.1	12.1	12.1		9.5
PM	LOS	C	B	B	C	B	B	B	B	B	B	B	B		B
	Delay	26.4	10.3	10.3	28.8	10.3	10.3	16.8	16.8	16.8	12.0	12.0	12.0		12.3
		Highway 46						F Street/Highway 43 South						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS	C	B	A	C	B	B	C	B	B	C	C	C	Signal	B
	Delay	27.6	13.7	4.7	27.8	13.6	13.6	21.5	10.5	10.5	20.9	20.9	20.9		14.4
PM	LOS	C	C	A	C	B	B	C	B	B	C	C	C		B
	Delay	33.4	21.7	5.3	34.5	18.7	18.7	26.0	11.1	11.1	21.0	21.0	21.0		19.8
		Highway 46						J Street/Highway 43 North						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS	A			A			B	B	B	B	B	B	2-Way Stop	N/A
	Delay	7.7			7.5			12.5	12.5	12.5	12.8	12.8	12.8		N/A
PM	LOS	A			A			C	C	C	C	C	C		N/A
	Delay	7.8			7.8			16.4	16.4	16.4	17.1	17.1	17.1		N/A

### 3.3.2. Roadway Segments

The existing LOS for roadway segments in the area was also analyzed using the criteria discussed in Section 2.8.4. Table 8 shows the LOS for the major road segments in the project area.

**Table 8. Existing Roadway Level of Service**

Roadway	Segment	# Lanes	Roadway Classification	Existing ADT	LOS
Scofield Avenue	North of Highway 46	2	Arterial	1,109*	A
	South of Highway 46	2	Arterial	2,867*	A
Magnolia Avenue	North of Highway 46	2	Collector	355*	A
	South of Highway 46	2	Arterial	729	A
Central Avenue	South of Highway 46	2	Arterial	1,499	A
Palm Avenue	North of Highway 46	2	Arterial	1,905	A
	South of Highway 46	2	Arterial	3,925	A
Griffith Avenue	North of Highway 46	2	Collector	1,500*	A
	South of Highway 46	2	Collector	2,399	A
Highway 43 South/F Street	North of Highway 46	2	Collector	1,752*	A
	South of Highway 46	2	Arterial	7,767*	B
Highway 43 North/J Street	North of Highway 46	2	Arterial	5,577*	B
	South of Highway 46	2	Arterial	4,450*	A
Highway 46	West of Scofield Ave	2	Arterial	7,388*	B
	Scofield Ave to Magnolia Ave	2	Arterial	9,209	B
	Magnolia Ave to Central Ave	2	Arterial	9,555	B
	Central Ave to Palm Ave	2	Arterial	11,978	B
	Palm Ave to Griffith Ave	2	Arterial	15,044	C
	Griffith Ave to Hwy 43S	2	Arterial	14,456	C
	Hwy 43S to Hwy 43N	2	Arterial	11,579	B

\*Estimated from Peak Hour Volumes

As shown in the table, most roadway segments are currently operating at a LOS of B or better. Highway 46 east of Palm Avenue and West of Highway 43 South is operating at LOS C, which is acceptable by both Caltrans and Kern County standards.

## 4. TRAFFIC ANALYSIS – PHASE 1 CONDITIONS (2010)

### 4.1. TRAFFIC VOLUMES

#### 4.1.1. Proposed Project

Phase 1 of the project will consist of the development east of Central Avenue, which includes the 100-room hotel, 99 of the 123 apartments, the 5 small retail spaces (206,000 square feet total), and the 3 fitness centers (11,900 sq.ft. total).

#### Trip Generation

The trip generation for Phase 1 of the project was calculated using the rates published in the Institute of Transportation Engineers (ITE) *Trip Generation, 7<sup>th</sup> Edition*<sup>9</sup>. For each land use, the decision to utilize the average rate or the regression equation was based on the recommendations of the *Trip Generation Handbook, 2<sup>nd</sup> Edition*<sup>10</sup>. At its completion, the project will have a significant percentage of internal capture trips (i.e. trips whose origin and destination are contained within the site). However, for Phase 1, it was assumed that there will be no internal capture trips. Although there may be some internal trips between the residential areas and the commercial uses, the assumption of no internal capture allows for a conservative estimate of the traffic that will be added to the existing roadways in the project area at the completion of Phase 1.

The percentage of pass-by trips was also calculated for each land use (where necessary) using the *Trip Generation Handbook, 2<sup>nd</sup> Edition* (from ITE). Pass-by trips are those that are made as intermediate stops on the way from an origin to a destination. Examples of pass-by trips include things such as eating and grocery shopping on the way from work to home, or as part of another primary trip. Using the equation in the *Trip Generation Handbook* for land use 820, the pass-by trips for the retail developments in Phase 1 would be 32%. However, if the entire project (phases 1 and 2) is considered, the pass-by rate drops to 23%. The lower 23% rate was used for Phase 1 recognizing that the existing traffic on Highway 46 may not be enough to produce 32% of pass-by trips. None of the non-commercial land uses in Phase 1 will generate pass-by trips.

Table 9 shows the number of trips generated by the project at the completion of Phase 1. The gold and green shading indicates whether the average trip generation rate or the trip generation

equation was used to calculate the number of trips for a given land use. The choice of one or the other was made by following the procedure in Section 3.3 of the *Trip Generation Handbook, 2<sup>nd</sup> Edition*. As shown in the table, Phase 1 will generate 12,563 daily trips, including 2,498 of which will be pass-by trips. Therefore, the project will add 10,065 daily trips to external roadways at the completion of Phase 1 in 2010.

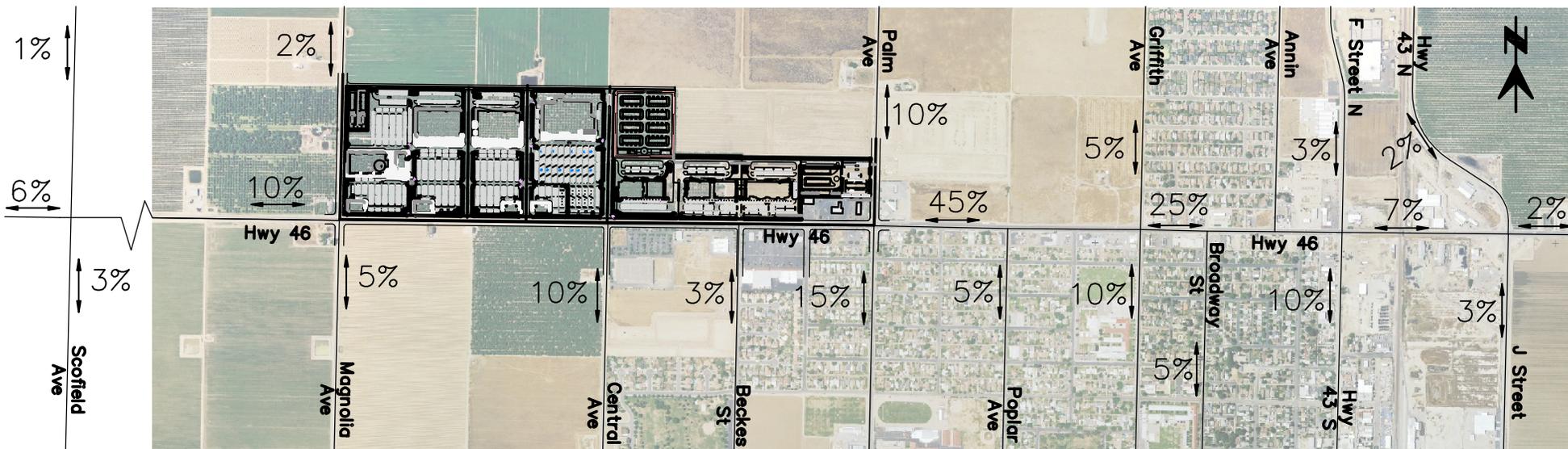
**Table 9. Trip Generation – Phase 1 (2010)**

LU Code	320			820			220			492					
Item	Motel			Retail			Apartments			Health/Fitness			Equation		
Size	100			206			99			11.9			Avg Rate		
Unit	Rooms			kSF			Dwellings			kSF					
Trips	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total		
AM	44	16	28	241	147	94	52	10	42	14	6	8	353		
PM	57	31	26	1,009	484	525	72	47	25	48	25	24	1,186		
Daily	563	282	282	10,863	5,432	5,432	745	373	373	392	196	196	12,563		
<b>Internal Capture</b>															
AM	-	-	-	-	-	-	-	-	-	-	-	-	-	0%	
PM	-	-	-	-	-	-	-	-	-	-	-	-	-	0%	
Daily	-	-	-	-	-	-	-	-	-	-	-	-	-	0%	
<b>External Traffic</b>															
AM	44	16	28	241	147	94	52	10	42	14	6	8	353	180	172
PM	57	31	26	1,009	484	525	72	47	25	48	25	24	1,186	586	600
Daily	563	282	282	10,863	5,432	5,432	745	373	373	392	196	196	12,563	6,282	6,282
<b>Pass-by trips</b>															
				23%									Total	In	Out
AM	-	-	-	56	34	22	-	-	-	-	-	-	56	34	22
PM	-	-	-	232	111	121	-	-	-	-	-	-	232	111	121
Daily	-	-	-	2,498	1,249	1,249	-	-	-	-	-	-	2,498	1,249	1,249
<b>Total External Primary Trips</b>															
AM	44	16	28	186	113	73	52	10	42	14	6	8	297	146	151
PM	57	31	26	777	373	404	72	47	25	48	25	24	954	475	479
Daily	563	282	282	8,365	4,182	4,182	745	373	373	392	196	196	10,065	5,032	5,032

Trip Distribution

Primary access into and out of the Wasco Center at the buildout of Phase 1 (2010) will be from Central Avenue on the west, Palm Avenue on the east, and Highway 46 on the south. Palm Avenue will have two full access points north of Highway 46. The access points on Central Avenue at the completion of Phase 1 include a full access at Margalo Street and one right-in right-out access point approximately 650 feet north of Highway 46. There will also be a right-in right-out only access between Central Avenue and Beckes Street on Highway 46, as well as a modified access at Beckes Street (allowing left and right turns from Highway 46, but only right turns onto Highway 46). The apartments located just east of Central Avenue will be accessed by traveling north on Central Avenue to Margalo Street, then east to the apartment entrance.

The distribution of trips to and from the site was determined based on the existing trip distribution in the area and with input from Caltrans and the City of Wasco. Figure 11 shows the resulting distribution.



**WASCO CENTER  
TRAFFIC IMPACT STUDY**

**FIGURE 11  
PROJECT TRIP DISTRIBUTION**

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As an example, it is estimated that 45% of the trips generated by the project will use Highway 46 east of Palm Avenue. Some of those trips will be to/from Griffith Avenue and Poplar Avenue. Therefore, the 45% on Highway 46 is broken down into 5% to/from the north on Griffith Avenue, 10% to/from the south on Griffith Avenue, 5% to/from the south on Poplar Avenue, and the remaining 25% to/from the east on the next segment of Highway 46 (Griffith Avenue to Highway 43 South / F Street).

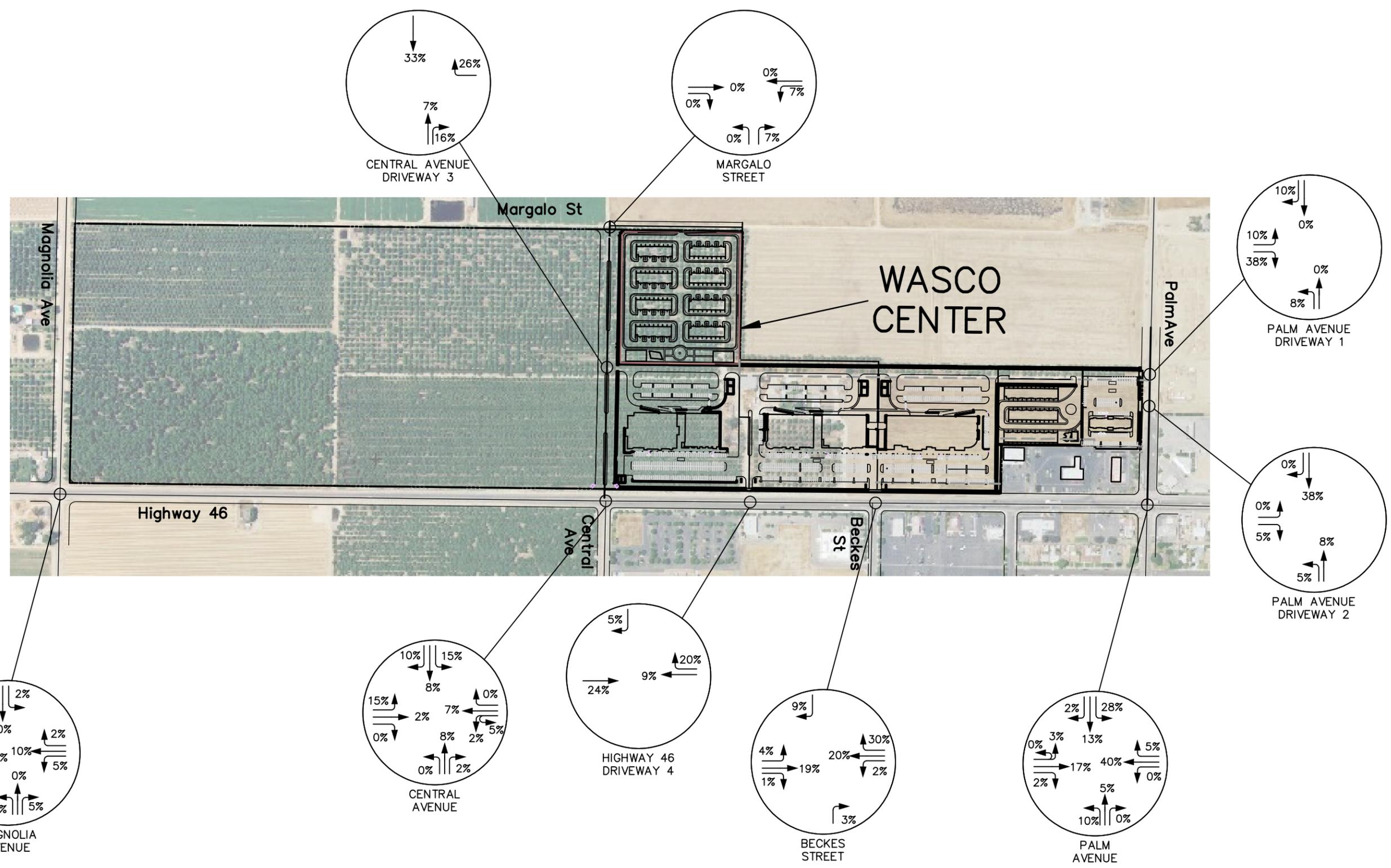
### Trip Assignment

The daily and peak hour site traffic volumes at the completion of Phase 1 (2010) were calculated by applying the trip distribution to the external trips generated by the site. Figure 12 shows the assignment of trips at the intersections within and adjacent to the site based on the trip distribution and the type of access. Note that flows into and out of the site may not be symmetrical due to the presence of a number of right-in right-out only access points.

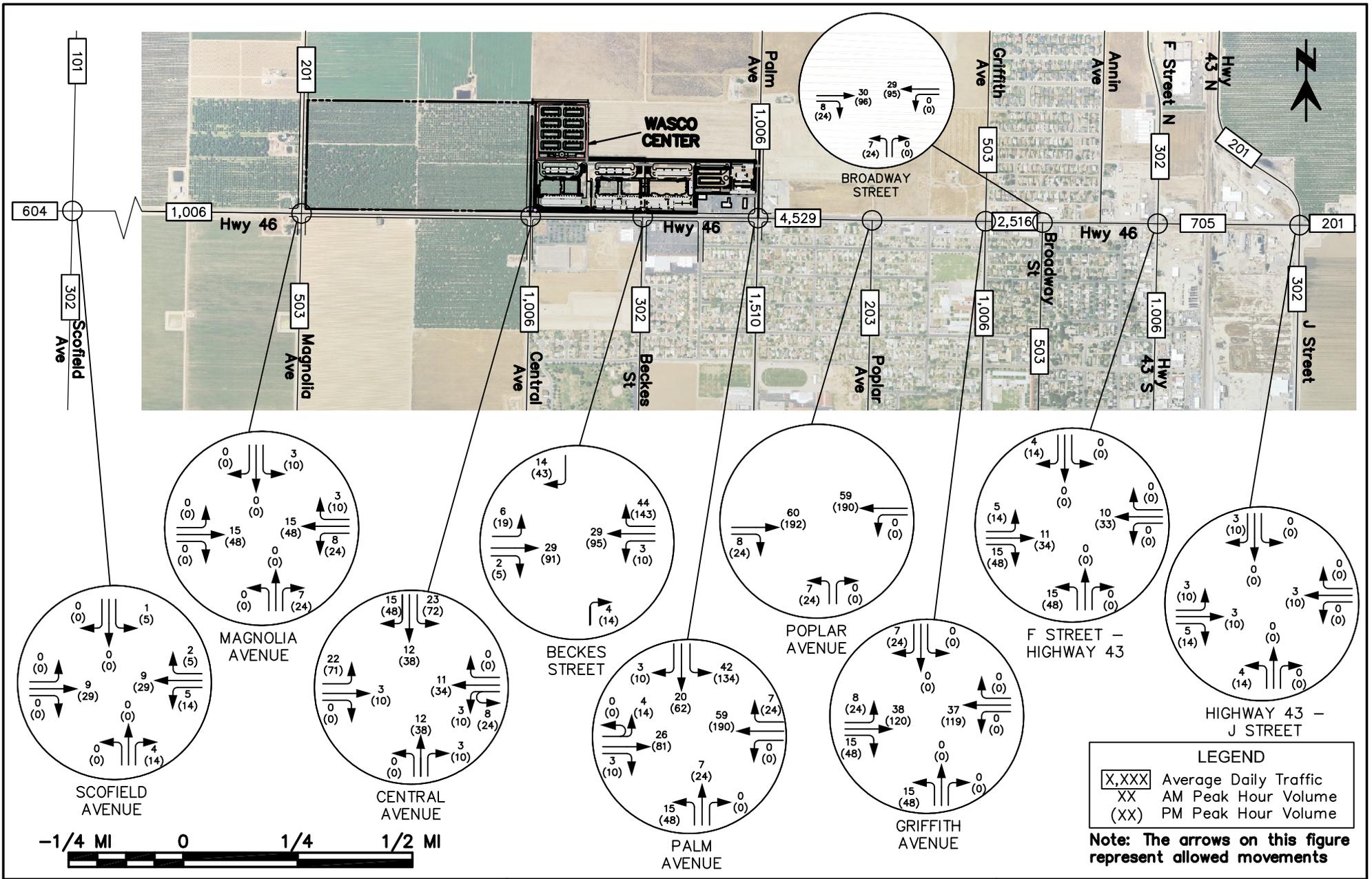
Figures 13 and 14 show the resulting primary external trips in the project vicinity and adjacent to the site, respectively. Figure 15 shows the adjustment necessary to account for pass-by traffic. The overall traffic generated by Phase 1 of the project, which is the result of adding the primary and pass-by trips, is shown in Figures 16 and 17.

FIGURE 12  
PROJECT TRIP ASSIGNMENT -  
PHASE 1

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TRAFFIC IMPACT STUDY



Note: The arrows on this figure represent allowed movements.



**WASCO CENTER  
TRAFFIC IMPACT STUDY**

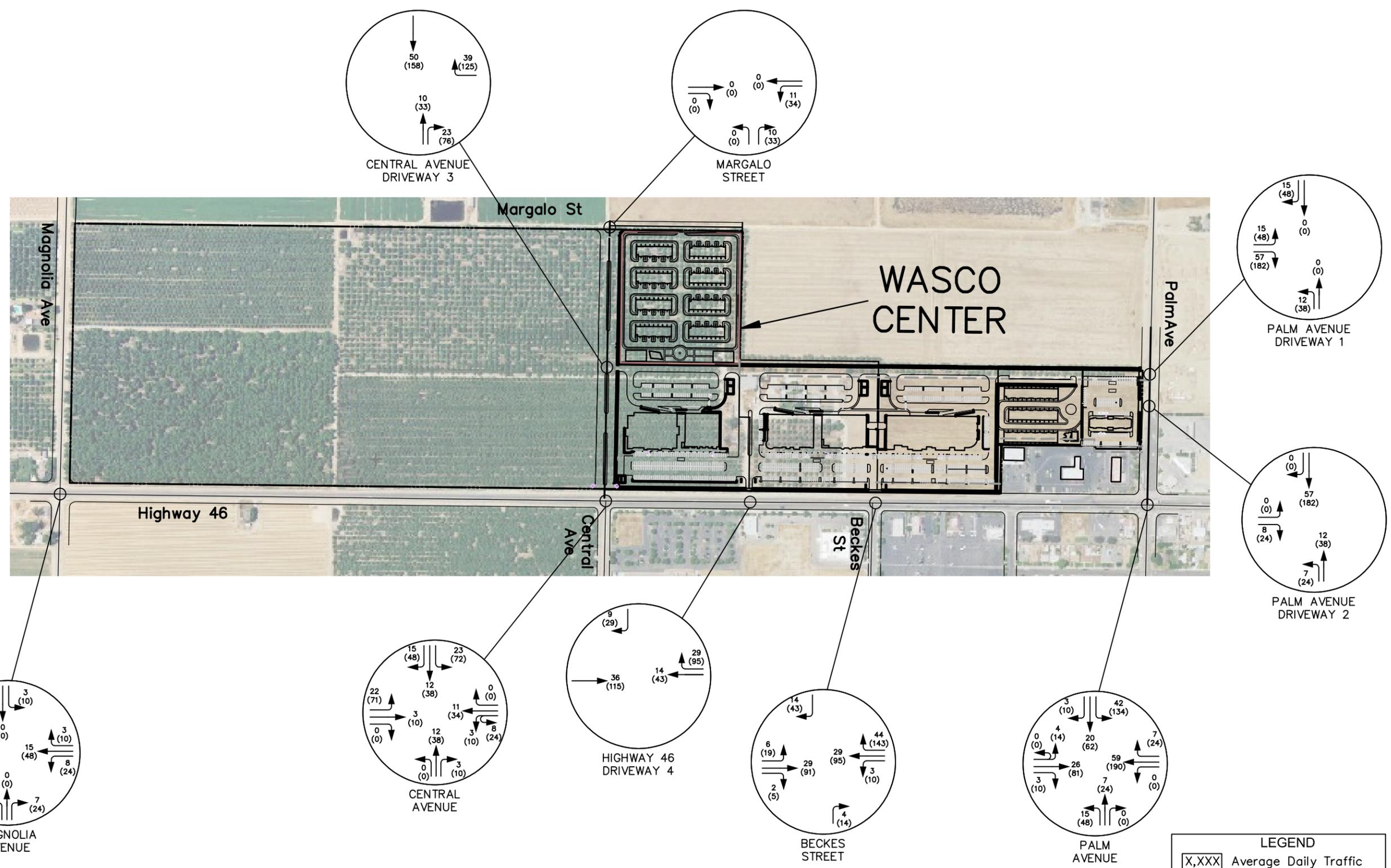
**FIGURE 13  
PROJECT PRIMARY TRIPS -  
PHASE 1 (SITE VICINITY)**

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FIGURE 14  
PROJECT PRIMARY TRIPS -  
PHASE 1 (ADJACENT TO SITE)

WASCO CENTER  
TRAFFIC IMPACT STUDY



Note: The arrows on this figure represent allowed movements.

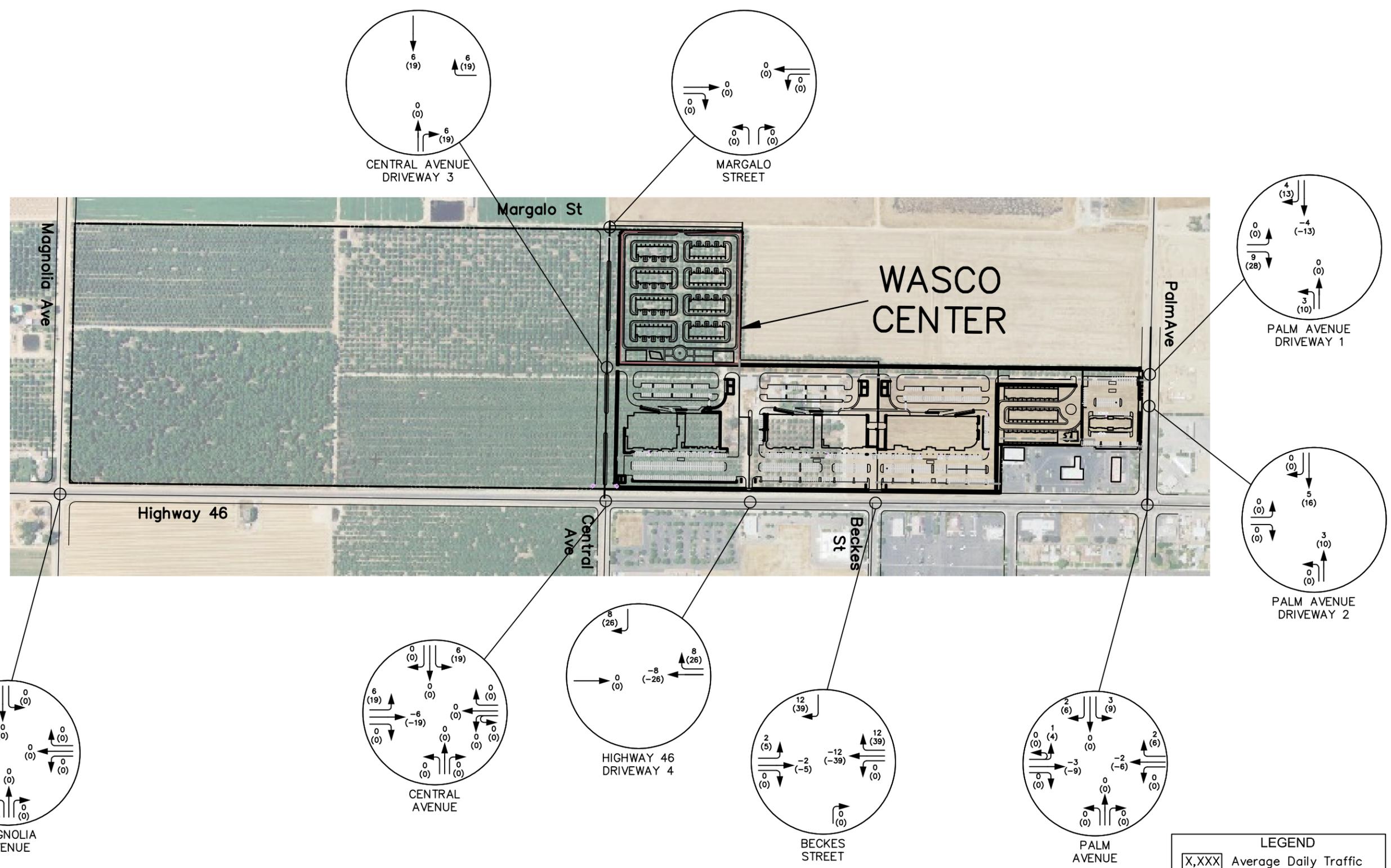
LEGEND

X,XXX	Average Daily Traffic
XX	AM Peak Hour Volume
(XX)	PM Peak Hour Volume



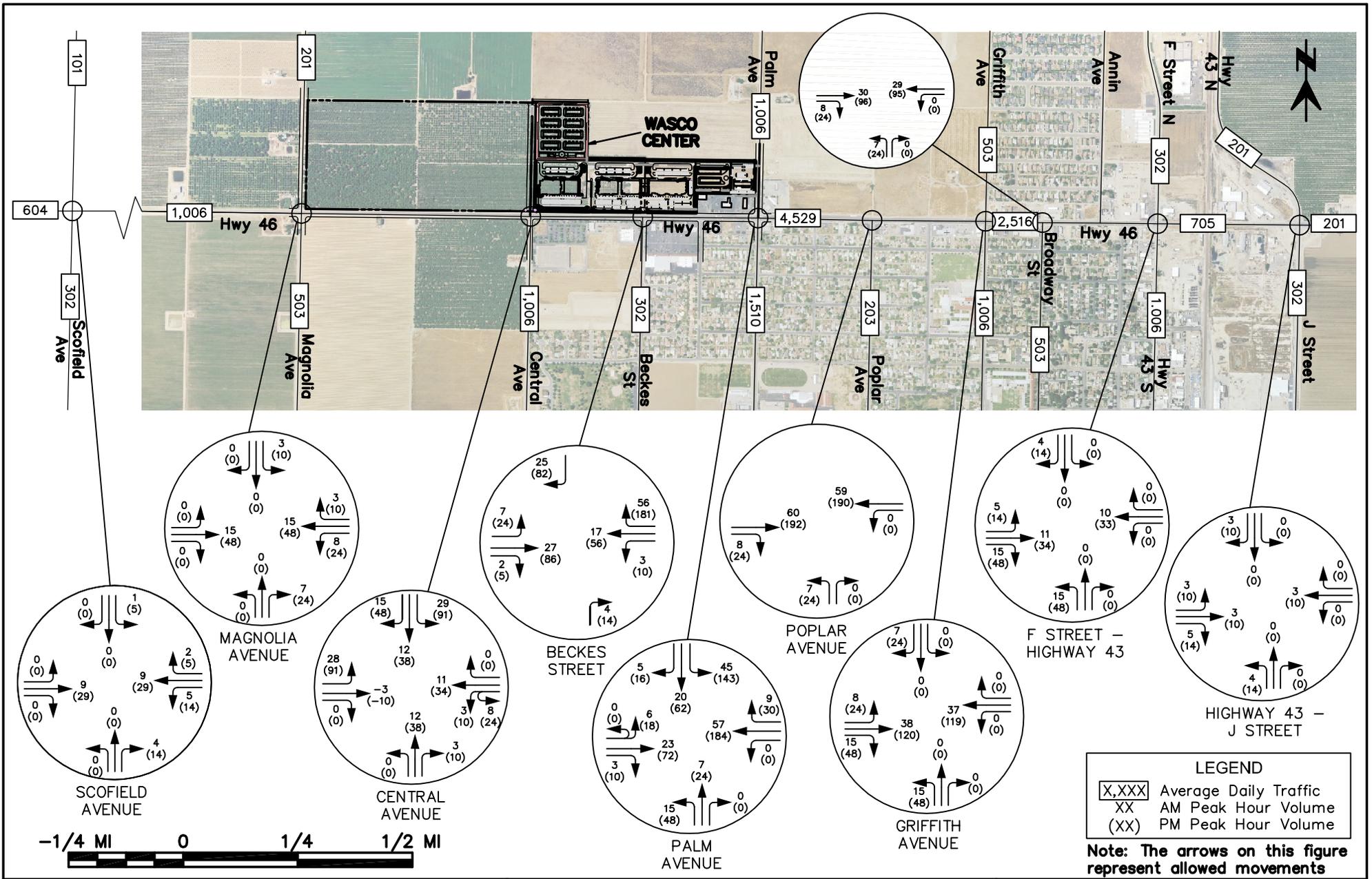
FIGURE 15  
PROJECT PASS-BY TRIPS -  
PHASE 1

WASCO CENTER  
TRAFFIC IMPACT STUDY



Note: The arrows on this figure represent allowed movements.





**WASCO CENTER  
TRAFFIC IMPACT STUDY**

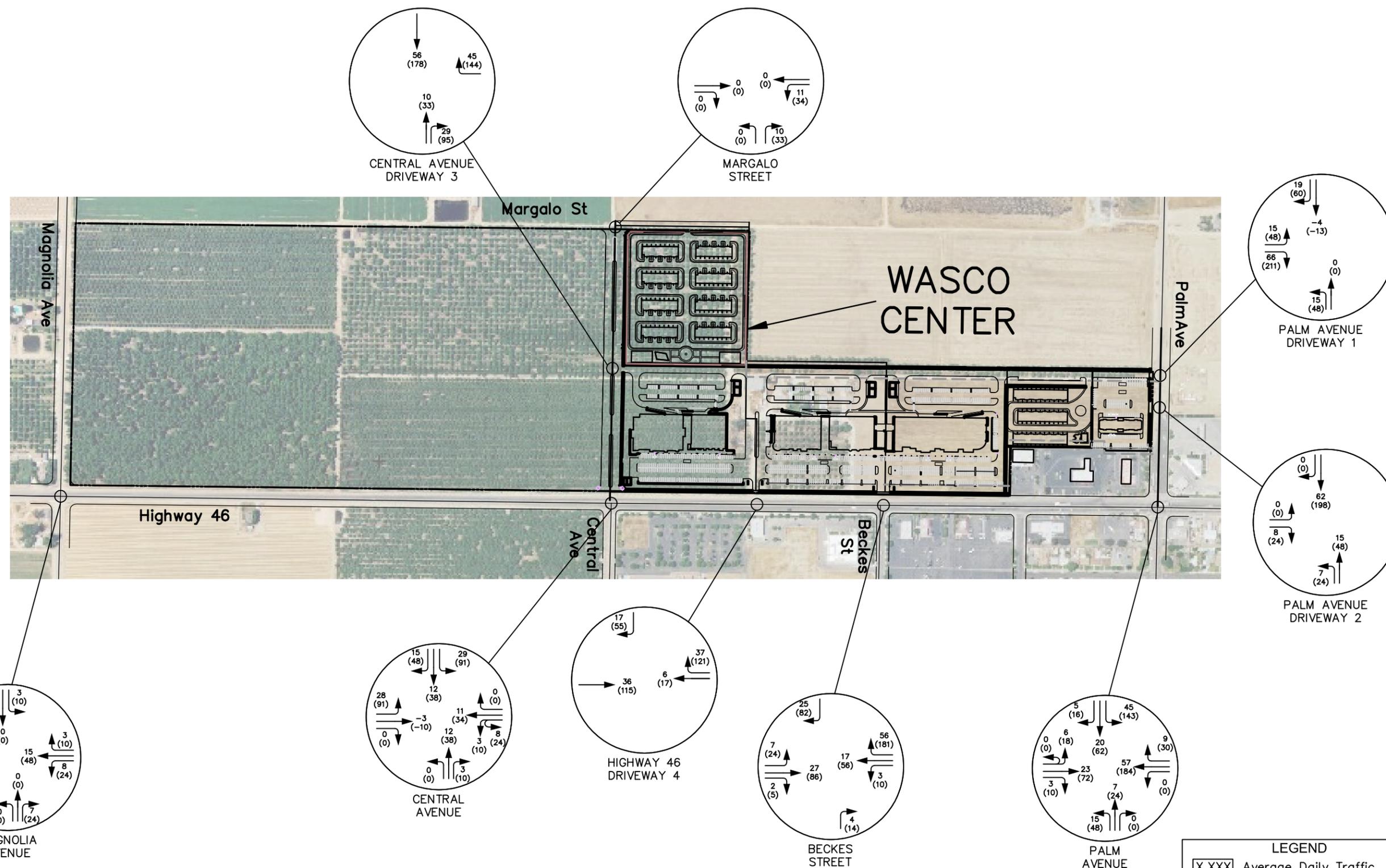
**FIGURE 16  
2010 PROJECT TRAFFIC  
VOLUMES - PHASE 1  
(SITE VICINITY)**

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**FIGURE 17**  
**2010 PROJECT TRAFFIC**  
**VOLUMES - PHASE 1**  
**(ADJACENT TO SITE)**

**WASCO CENTER**  
**TRAFFIC IMPACT STUDY**



Note: The arrows on this figure represent allowed movements.

**LEGEND**

X,XXX	Average Daily Traffic
XX	AM Peak Hour Volume
(XX)	PM Peak Hour Volume

#### 4.1.2. Cumulative Conditions

The cumulative conditions represent the traffic volumes that would be on the roadway network in the study area without the proposed development. This traffic was calculated by applying a growth factor to the existing traffic volumes.

Psomas obtained volume forecasts for the Wasco area from the Kern County Council of Governments (KERNCOG) in September 2007. The information received, which is included in Appendix D, consisted of 1998 actual volumes and 2030 projected volumes.

Volumes along several segments of Highways 46 and 43 were analyzed to determine the growth rate on each segment. Table 10 shows the result of that analysis, illustrating that Kern County is projecting an approximate 1% growth rate on the roadways in the project area. Since this is an exponential rate, it means that the existing volumes would increase 26% between 2007 and 2030 even without the Wasco Center. This would be a result of regional traffic and the development of areas such as the Rose City project and the development discussed in the Crenshaw Traffic Impact Study.

**Table 10. Kern County Council of Governments Growth Rates**

Location	Daily Volume		Growth Rate
	1998	2030	
Hwy 46, W of Scofield	4,210	6,620	1.42%
Hwy 46, W of Magnolia	6,271	8,284	0.87%
Hwy 46, W of Central	6,027	8,232	0.98%
Hwy 46, E of Central	5,753	7,870	0.98%
Hwy 46, W of Hwy 43S	7,234	10,348	1.13%
Hwy 46, W of Hwy 43N	7,149	10,714	1.27%
Hwy 43, N of Hwy 46	6,043	7,858	0.82%
Hwy 43, S of Hwy 46	3,470	4,688	0.94%
<b>Average Growth Rate for Project Area</b>			<b>1.05%</b>

Other sources of information to be considered in the projections include Caltrans and the population growth expected for Kern County and Wasco. As stated in the Crenshaw Traffic Impact Study, the Caltrans projected growth rate for Kern County is 2.5%. The *Draft 2007 Destination 2030 Regional Transportation Plan*<sup>11</sup> for Kern County shows a 1.9% yearly growth in County population and a 2.5% yearly growth in the Wasco population between 2006 and 2030.

The combination of the 1% growth rate obtained from KERNCOG and the forecasted volumes for the Wasco Center project results in a total growth rate of 2.5% per year, which is consistent with both the population trends and the Caltrans projections. Therefore, a 1% per year growth rate will be used to estimate cumulative traffic. Figure 18 shows the resulting traffic volumes.

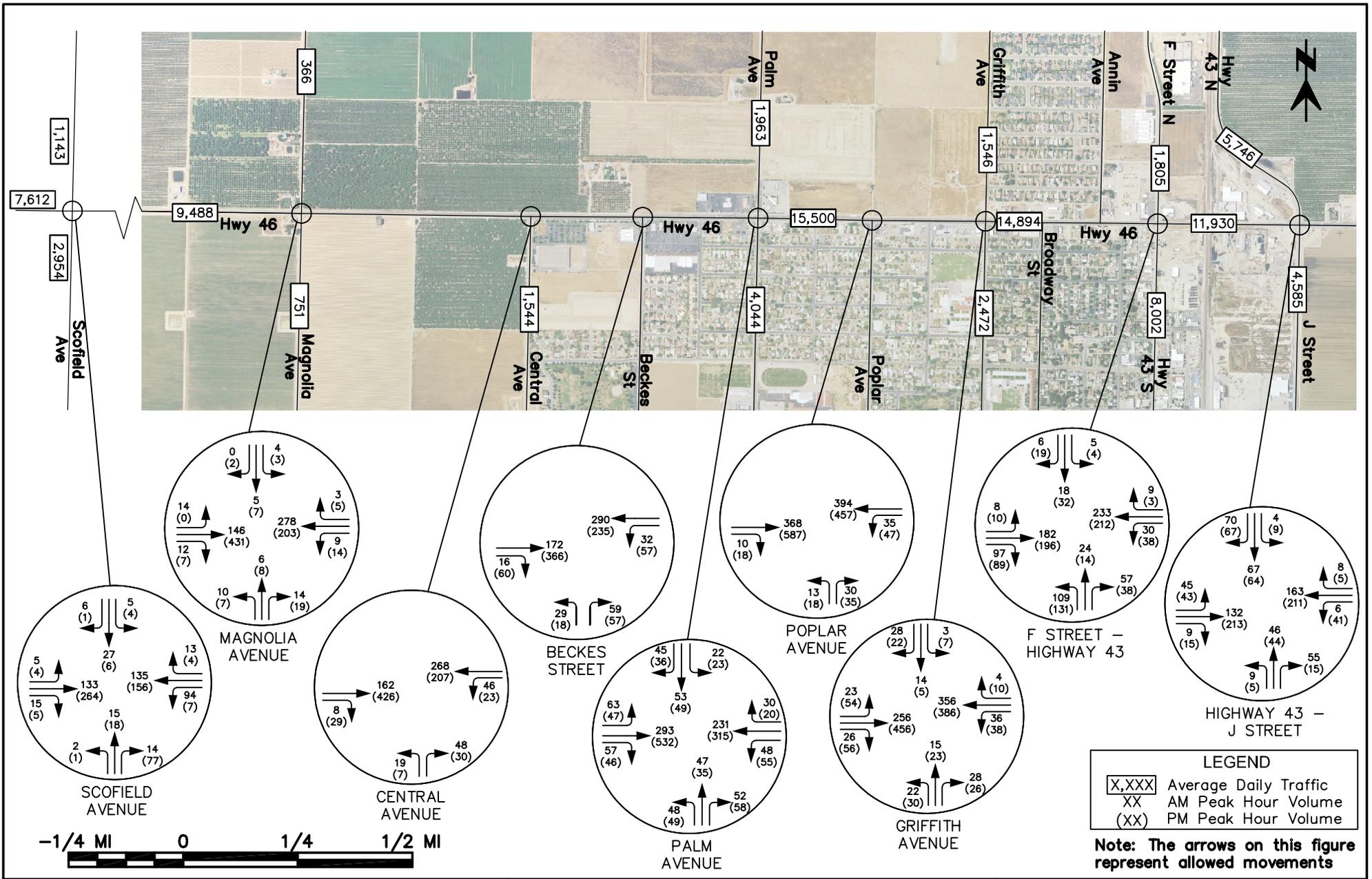
It was assumed that without this project, the peak hour factors and heavy vehicle percentage would remain unchanged. Recall that the existing heavy vehicle percentage along Highway 46 is 35%, and along the side streets is assumed to be 2%. Refer to Appendix C for the peak hour factors for each of the intersections.

#### **4.1.3. Cumulative Conditions with Proposed Project**

The cumulative conditions with the proposed project volumes represent the sum of the projected traffic without the project and the traffic expected to be generated by the Wasco Center at the completion of Phase 1. Figures 19 and 20 show these volumes. As seen in Figure 19, the ADT west of Scofield Avenue will increase to 8,216 vehicles per day, to 10,495 vehicles per day just west of the project, to approximately 20,000 vehicles per day just east of Palm, and to 12,131 east of Highway 43 South / F Street.

Because this project will add a large number of passenger vehicles to Highway 46 and only a small number of heavy vehicles, it was determined that at this phase the heavy truck percentage along the roadway would drop to 30%. The peak hour factors will also be affected with the project. Approaches that are new with the project or that are expected to be made up of mostly project traffic were assumed to have a PHF of 0.92. For approaches that will carry very little (or no) project traffic, the PHF was assumed to remain unchanged. The PHF for all other approaches was taken as the average of the existing PHF and the generally assumed PHF of 0.92.

Figure 20 shows the volumes at the project intersections, and at the major intersections adjacent to the site (Magnolia Avenue, Central Avenue, Beckes Street, and Palm Avenue). Recall that the only full access intersections in Phase 1 will be those along Palm Avenue and the intersections of Central Avenue at Margalo Street and at Highway 46. The other three intersections (one along Central Avenue, two along Highway 46) will be right-in right-out only or modified access.

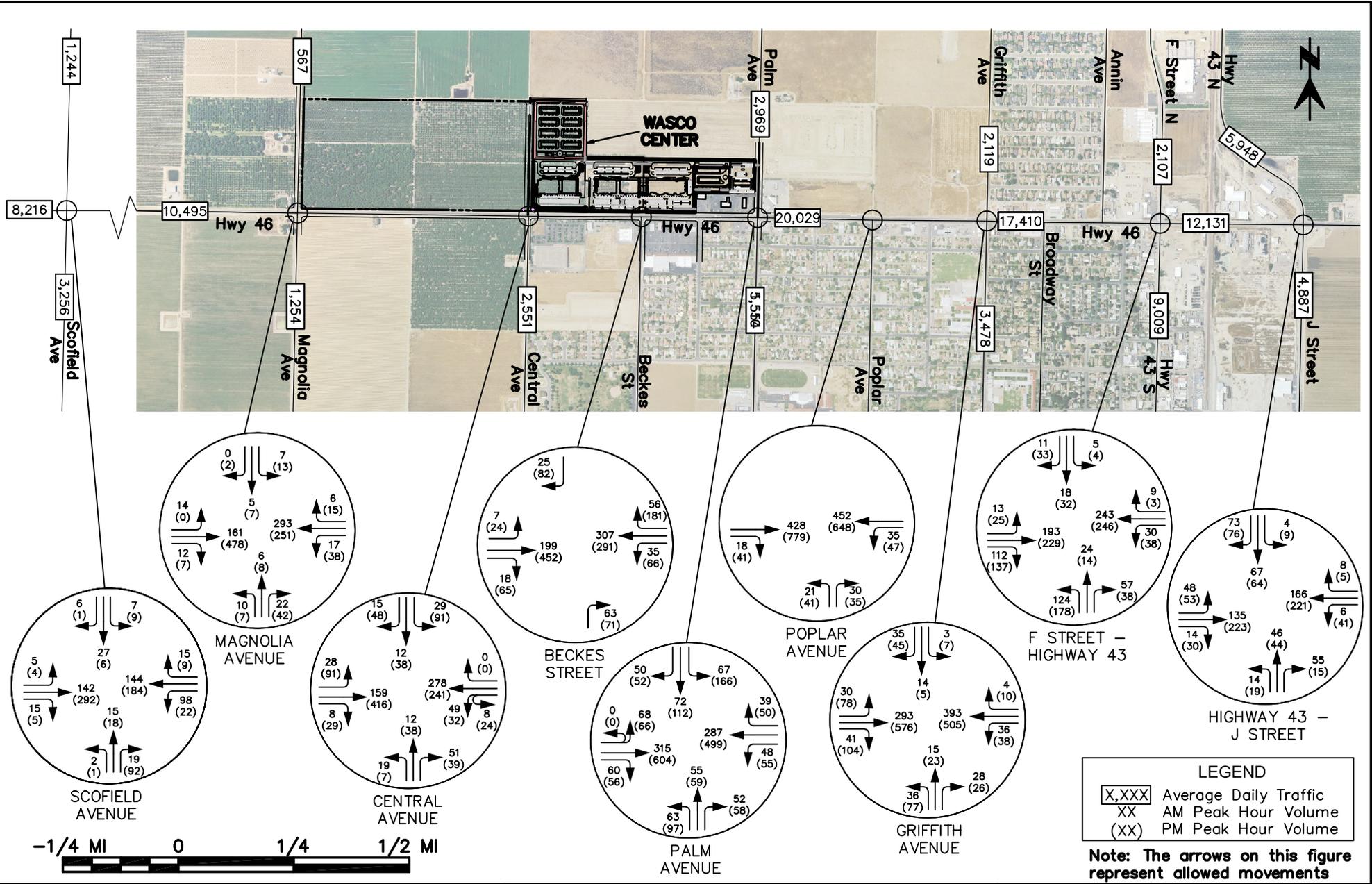


**WASCO CENTER  
 TRAFFIC IMPACT STUDY**

**FIGURE 18  
 2010 TRAFFIC VOLUMES -  
 CUMULATIVE CONDITONS**

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TRAFFIC IMPACT STUDY**

**FIGURE 19  
2010 TRAFFIC VOLUMES -  
CUMULATIVE CONDITIONS  
WITH PROJECT (SITE VICINITY)**

**PSOMAS**

**JULY 2008**



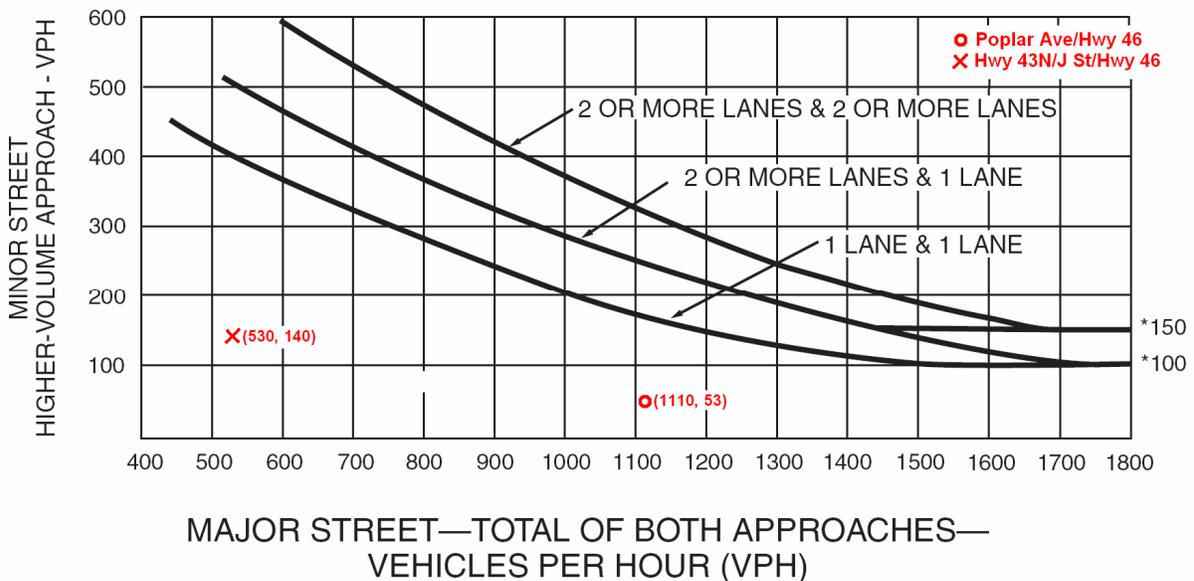
## 4.2. 2010 CUMULATIVE CONDITIONS ANALYSIS

### 4.2.1. Warrant Analysis

Traffic signal warrant 3B was evaluated for the unsignalized intersections in the project area along Highway 46 to determine if signalization will be warranted in 2010 under cumulative conditions. Figures 21 and 22 show the results of the analysis.



**Figure 21. Signal Warrant Analysis – 70% Condition, Cumulative Conditions (2010)**



**Figure 22. Signal Warrant Analysis – 100% Condition, Cumulative Conditions (2010)**

As seen in Figures 21 and 22, no new signals will be warranted under cumulative conditions in 2010.

#### **4.2.2. Level of Service Analysis**

Under cumulative conditions, the highest volume in the area would be on Highway 46 between Palm Avenue and Griffith Avenue with 15,500 vehicles per day, which corresponds to LOS C (see Table 5). The other roadway segments along Highway 46 and the other arterials and collectors in the area would also operate at LOS C or better. Therefore, no roadway segment improvements would be needed in 2010.

Table 11 shows the LOS and delays for each of the intersections in the project area under cumulative conditions as determined using *Synchro*. The *Synchro* reports can be found in Appendix C. It should be noted that the results reported for this scenario do not assume the construction of any additional turn lanes.

As seen in the table, all of the signalized intersections are expected to operate at LOS B or better in both the morning and evening peak hours. Further, all of the movements at the 5 unsignalized intersections are expected to operate at LOS C or better in both peak hours.

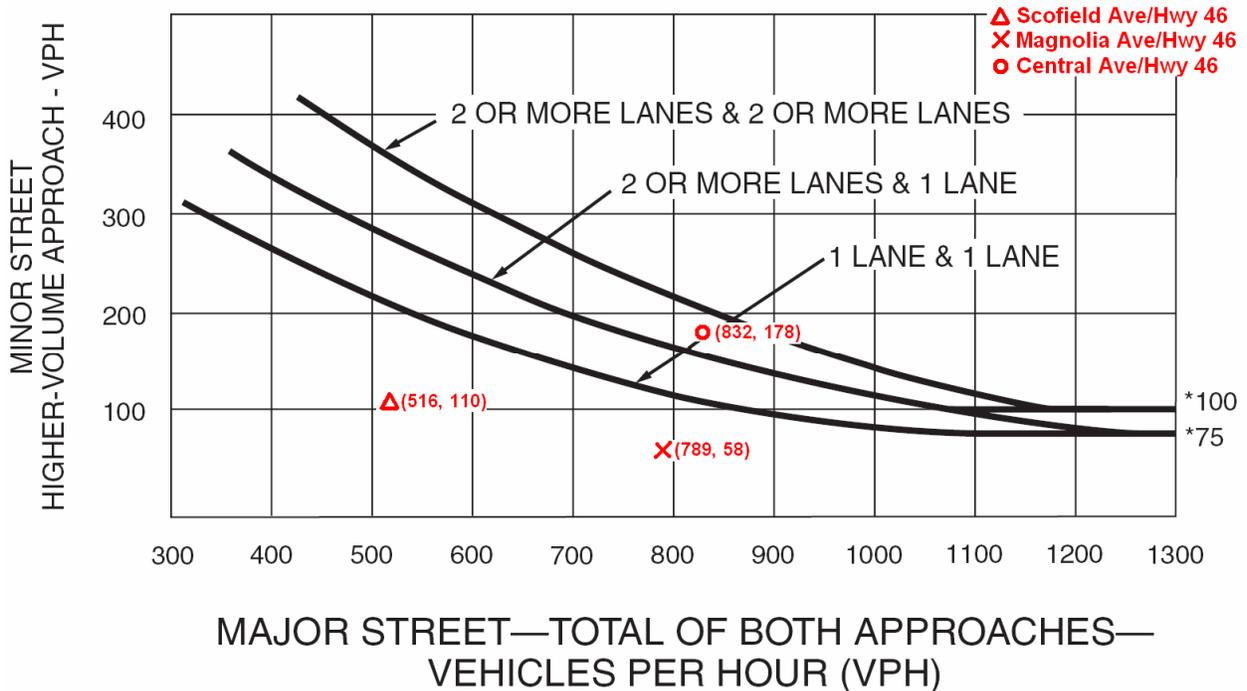
**Table 11. LOS for Cumulative Conditions (2010)**

		Highway 46						Scofield Avenue						Traffic Control	Intersection LOS	
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS	A			A			C	C	A	C	C	C	2-Way Stop	N/A	
	Delay	7.6			7.9			15.3	15.3	9.4	15.8	15.8	15.8		N/A	
PM	LOS	A			A			B	B	B	C	C	C		N/A	
	Delay	7.6			8.0			13.9	13.9	11.4	15.2	15.2	15.2		N/A	
		Highway 46						Magnolia Avenue							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS	A			A			B	B	B	B	B		2-Way Stop	N/A	
	Delay	0.1			0.1			11.9	11.9	11.9	14.1	14.1			N/A	
PM	LOS				A			B	B	B	C	C	C		N/A	
	Delay				0.1			14.1	14.1	14.1	15.5	15.5	15.5		N/A	
		Highway 46						Central Avenue							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS				A			B		B				2-Way Stop	N/A	
	Delay				7.8			11.0		11.0					N/A	
PM	LOS				A			B		B					N/A	
	Delay				8.5			12.4		12.4					N/A	
		Highway 46						Beckes Street							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS				A			B		B				2-Way Stop	N/A	
	Delay				7.7			12.5		12.5					N/A	
PM	LOS				A			B		B					N/A	
	Delay				8.5			13.2		13.2					N/A	
		Highway 46						Palm Avenue							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS	C	A	A	C	A	A	B	B	A	B	B	A	Signal	B	
	Delay	21.6	9.3	9.3	23.7	9.9	4.3	18.7	16.9	7.1	16.9	17.2	7.2		12.0	
PM	LOS	C	B	B	C	A	A	C	B	A	B	C	A		B	
	Delay	26.8	16.6	16.6	26.9	8.2	4.1	21.9	18.9	7.6	19.7	20.1	8.0		14.9	
		Highway 46						Poplar Avenue							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS				A			B		B				2-Way Stop	N/A	
	Delay				8.3			14.1		14.1					N/A	
PM	LOS				A			C		C					N/A	
	Delay				9.1			18.0		18.0					N/A	
		Highway 46						Griffith Avenue							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS	C	A	A	C	A	A	B	B	B	B	B	B	Signal	A	
	Delay	22.5	8.1	8.1	21.4	8.1	8.1	14.2	14.2	14.2	11.7	11.7	11.7		9.8	
PM	LOS	C	B	B	C	B	B	B	B	B	B	B	B		B	
	Delay	26.6	10.7	10.7	28.9	10.8	10.8	16.9	16.9	16.9	11.8	11.8	11.8		12.6	
		Highway 46						F Street/Highway 43 South							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS	C	B	A	C	B	B	C	B	B	C	C	C	Signal	B	
	Delay	27.6	13.9	4.7	28.0	14.1	14.1	21.5	10.5	10.5	21.1	21.1	21.1		14.7	
PM	LOS	C	C	A	C	B	B	C	B	B	C	C	C		B	
	Delay	32.2	21.6	5.6	34.5	19.1	19.1	26.2	11.1	11.1	20.9	20.9	20.9		19.9	
		Highway 46						J Street/Highway 43 North							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS	A			A			B	B	B	B	B	B	2-Way Stop	N/A	
	Delay	7.7			7.5			12.6	12.6	12.6	13.0	13.0	13.0		N/A	
PM	LOS	A			A			C	C	C	C	C	C		N/A	
	Delay	7.9			7.8			17.0	17.0	17.0	17.8	17.8	17.8		N/A	

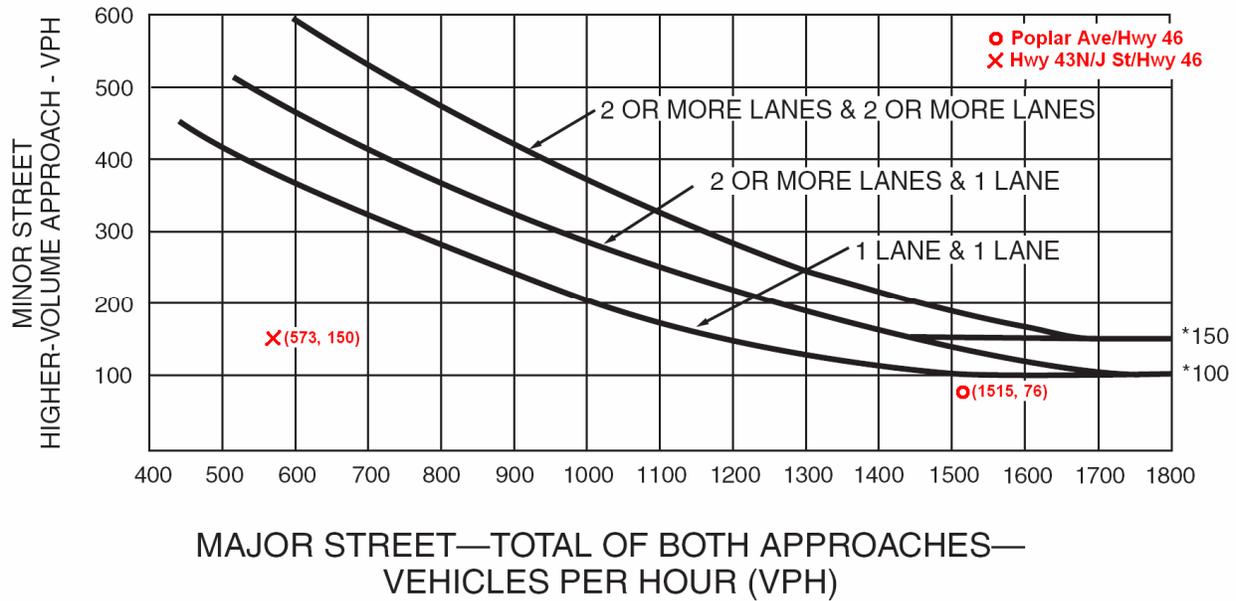
### 4.3. 2010 CUMULATIVE CONDITIONS WITH PROPOSED PROJECT ANALYSIS

#### 4.3.1. Warrant Analysis

Figures 23 and 24 compare the volumes at the major unsignalized intersections with Warrant 3B in the MUTCD. None of the unsignalized intersections in the study area are expected to meet the traffic signal warrant by completion of Phase 1 of the project, though Central Avenue is close to the warrant line. However, as discussed in the following section (4.3.2), the daily volumes will require widening Highway 46 to four lanes between Central Avenue and Griffith Avenue. (For this reason, Beckes Street is not included in the signal warrant analysis under cumulative conditions with the proposed project. The construction of Highway 46 as a 4-lane divided roadway will only allow for a directional median at Beckes Street, preventing left turns from Beckes Street.) In addition, separate southbound left and thru/right lanes will be provided at Central Avenue, making it a two-lane approach. Based on that configuration, the volumes at Central Avenue need to be compared to the top line in Figure 23 (2 lane major street, 2 lane minor street). In consequence, the volumes at Central Avenue after Phase 1 of the project will still be below the warrant line, as seen in Figure 23.



**Figure 23. Signal Warrant Analysis – 70% Condition, Cumulative Conditions with Project (2010)**



**Figure 24. Signal Warrant Analysis – 100% Condition, Cumulative Conditions with Project (2010)**

#### 4.3.2. Level of Service Analysis

With the construction of the project, the ADT on Highway 46 between Palm Avenue and Griffith Avenue will grow to approximately 20,000 vehicles per day. East of Griffith Avenue, the ADT will be 17,410 vehicles per day. Based on the LOS thresholds presented in Table 5, a 2-lane arterial can operate at LOS D with as many as 18,100 vehicles per day. Therefore, in order to maintain LOS D or better along Highway 46 (as required by Kern County and Caltrans), the roadway will need to be widened to a 4-lane divided section between Central Avenue and Griffith Avenue with the completion of Phase 1 (1 mile). All other roadway segments in the study area will operate at LOS D or better as 2-lane roadways.

Other roadway improvements to be undertaken with this phase of the project include:

- Extend Central Avenue from Highway 46 to Margalo Street (1/4 mile) as a 4-lane roadway with a raised median.
- Widen a short segment of Palm Avenue to a 5-lane section along the eastern boundary of the site.
- Improve a short segment of Margalo Street east of Central Avenue fronting the project.

The intersection LOS is shown in Tables 12 and 13. Table 12 shows the LOS for the existing intersections (those that were previously evaluated for cumulative conditions in 2010), while Table 13 shows the intersections that will be created with Phase 1 of the project.

**Table 12. LOS for Cumulative Conditions with Project (2010) - Site Vicinity**

		Highway 46						Scofield Avenue						Traffic Control	Intersection LOS	
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS	A			A			C	C	A	C	C	C	2-Way Stop	N/A	
	Delay	7.6			7.9			15.8	15.8	9.5	16.7	16.7	16.7		N/A	
PM	LOS	A			A			C	C	B	C	C	C		N/A	
	Delay	7.7			8.1			15.2	15.2	11.6	18.2	18.2	18.2		N/A	
		Highway 46						Magnolia Avenue							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS	A			A			B	B	B	B	B		2-Way Stop	N/A	
	Delay	0.1			0.1			11.8	11.8	11.8	15.0	15.0			N/A	
PM	LOS				A			C	C	C	C	C	C		N/A	
	Delay				0.4			15.1	15.1	15.1	21.8	21.8	21.8		N/A	
		Highway 46						Central Avenue							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS	A			A			B	B	B	C	B	A	2-Way Stop	N/A	
	Delay	8.0			7.7			13.3	10.2	10.2	15.1	14.0	9.3		N/A	
PM	LOS	A			A			C	C	C	C	C	A		N/A	
	Delay	8.0			8.5			18.7	15.1	15.1	23.0	19.0	9.3		N/A	
		Highway 46						Beckes Street							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS	A			A					A			A	2-Way Stop	N/A	
	Delay	8.3			7.8					9.6			9.6		N/A	
PM	LOS	A			A					B			A		N/A	
	Delay	8.6			8.8					10.8			9.8		N/A	
		Highway 46						Palm Avenue							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS	C	A	A	C	A	A	B	B	A	B	B	A	Signal	B	
	Delay	22.1	6.8	6.8	24.7	9.5	9.5	18.8	16.4	6.7	19.2	17.0	6.7		11.8	
PM	LOS	C	B	B	C	B	B	B	B	A	C	B	A		B	
	Delay	27.5	13.5	13.5	26.8	13.1	13.1	17.8	14.5	5.4	23.5	15.9	5.5		15.3	
		Highway 46						Poplar Avenue							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS				A			B		B				2-Way Stop	N/A	
	Delay				8.5			11.5		11.5					N/A	
PM	LOS				B			C		C					N/A	
	Delay				10.1			16.6		16.6					N/A	
		Highway 46						Griffith Avenue							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS	C	A	A	C	A	A	B	B	B	B	B	B	Signal	B	
	Delay	24.0	7.6	3.3	24.9	9.5	9.5	15.7	15.7	15.7	10.7	10.7	10.7		10.3	
PM	LOS	C	B	A	C	B	B	C	C	C	A	A	A		B	
	Delay	34.0	16.5	2.8	30.1	17.1	17.1	24.7	24.7	24.7	9.7	9.7	9.7		17.5	
		Highway 46						F Street/Highway 43 South							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS	C	B	A	C	B	B	C	B	B	B	B	B	Signal	B	
	Delay	28.3	14.6	4.6	28.2	14.9	14.9	21.6	10.3	10.3	19.6	19.6	19.6		15.0	
PM	LOS	C	C	A	C	C	C	C	A	A	B	B	B		B	
	Delay	32.2	21.2	5.2	32.9	20.6	20.6	27.1	9.5	9.5	18.8	18.8	18.8		19.6	
		Highway 46						J Street/Highway 43 North							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS	A			A			B	B	B	B	B	B	2-Way Stop	N/A	
	Delay	7.7			7.6			13.3	13.3	13.3	13.2	13.2	13.2		N/A	
PM	LOS	A			A			C	C	C	C	C	C		N/A	
	Delay	7.9			7.9			22.1	22.1	22.1	19.2	19.2	19.2		N/A	

**Table 13. LOS for Cumulative Conditions with Project (2010) - Site Driveways**

		Margalo Street						Central Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS				A					A				2-Way Stop	N/A
	Delay				0.0					8.4					N/A
PM	LOS				A					A					N/A
	Delay				0.0					8.4					N/A

		Central Avenue Driveway 3						Central Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS						A							2-Way Stop	N/A
	Delay						8.6								N/A
PM	LOS						A								N/A
	Delay						9.4								N/A

		Highway 46						Highway 46 Driveway 4						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS												A	2-Way Stop	N/A
	Delay												9.5		N/A
PM	LOS												A		N/A
	Delay												9.7		N/A

		Palm Avenue Driveway 1						Palm Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS	A		A				A						2-Way Stop	N/A
	Delay	9.8		9.8				7.5							N/A
PM	LOS	B		B				A							N/A
	Delay	11.5		11.5				7.7							N/A

		Palm Avenue Driveway 2						Palm Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS			A				A						2-Way Stop	N/A
	Delay			8.9				7.6							N/A
PM	LOS			A				A							N/A
	Delay			9.3				7.9							N/A

The LOS reported is based on the construction of the following lane configuration improvements:

- An additional eastbound through lane approaching Central Avenue on Highway 46. Also, eastbound left turn and westbound right turn lanes should be constructed at the intersection.
- A southbound left turn lane on Central Avenue at Highway 46. The outside southbound travel lane on Central Avenue should become a right turn lane at Highway 46.
- Eastbound left turn and westbound right turn lanes Highway 46 approaching Beckes Street. Further, Beckes Street will have modified access with the construction of the 4-lane section on Highway 46 (full access from Highway 46, right-turn only onto Highway 46).

- Stripe the Highway 46 outside eastbound travel lane approaching Griffith Avenue as a right turn only lane to facilitate the transition to a 2-lane section for Highway 46 east of Griffith Avenue.

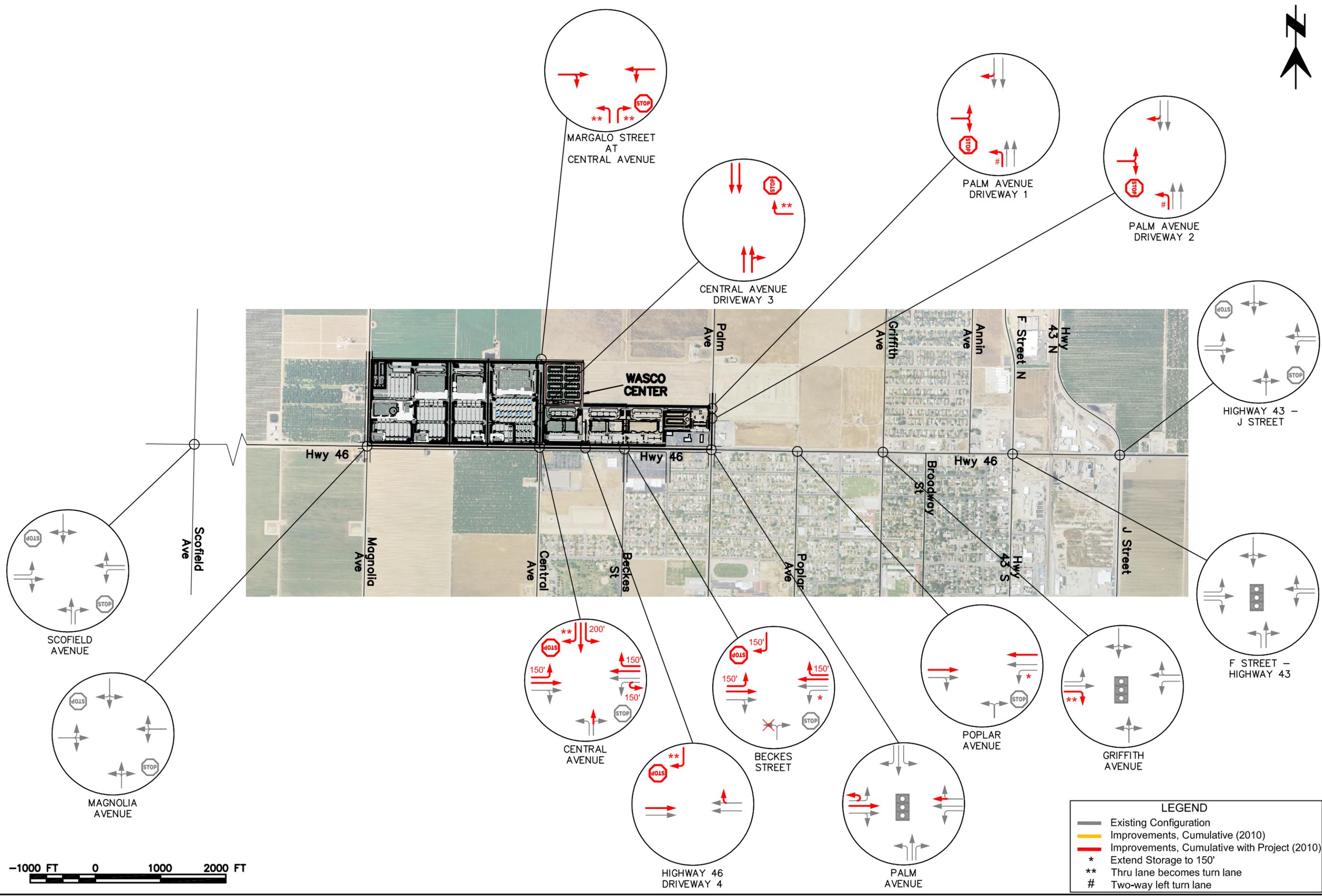
With the proposed lane configurations, all of the intersections in the study area will operate at acceptable LOS as shown in Tables 12 and 13.

#### **4.4. RECOMMENDED IMPROVEMENTS**

Figure 25 summarizes the improvements that will be required in 2010 to mitigate the traffic operation to LOS D under cumulative conditions only, and under cumulative conditions with this project. The numbers shown adjacent to the turn lanes indicate the storage required to accommodate the 95<sup>th</sup> percentile queues reported by *Synchro*. If the 95<sup>th</sup> percentile queue was less than 150 feet, a 150-foot storage length was recommended (unless short access separation limits the available storage length).

FIGURE 25  
PHASE 1 RECOMMENDED  
IMPROVEMENTS (2010)

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**LEGEND**

- Existing Configuration
- Improvements, Cumulative (2010)
- Improvements, Cumulative with Project (2010)
- \* Extend Storage to 150'
- \*\* Thru lane becomes turn lane
- # Two-way left turn lane

-1000 FT 0 1000 2000 FT

## 5. TRAFFIC ANALYSIS – PHASE 2 CONDITIONS (2015)

### 5.1. TRAFFIC VOLUMES

#### 5.1.1. Proposed Project

Phase 2 will consist of the development west of Central Avenue, bringing the completion of the Wasco Center project. The new developments that will be added include the remaining 24 apartments, 3 large retail spaces (378,000 sq. ft.), 5 restaurants (13,500 sq. ft. each), and the movie theater. In total, there will be 123 apartments, a 100-room hotel, 5 restaurants (67,500 sq. ft. total), 8 total retail spaces (584,000 sq. ft. total), 3 fitness centers (11,900 sq. ft. total), and a movie theater.

#### Trip Generation

The trip generation for Phase 2 of the project was calculated using the rates published in the Institute of Transportation Engineers (ITE) *Trip Generation, 7<sup>th</sup> Edition*. For each land use, the decision to utilize the average rate or the regression equation was based on the recommendations of the *Trip Generation Handbook, 2<sup>nd</sup> Edition*. Table 14 shows the total resulting trip generation for the project. As shown in the table, the combination of Phases 1 and 2 of the project will generate 21,082 external trips.

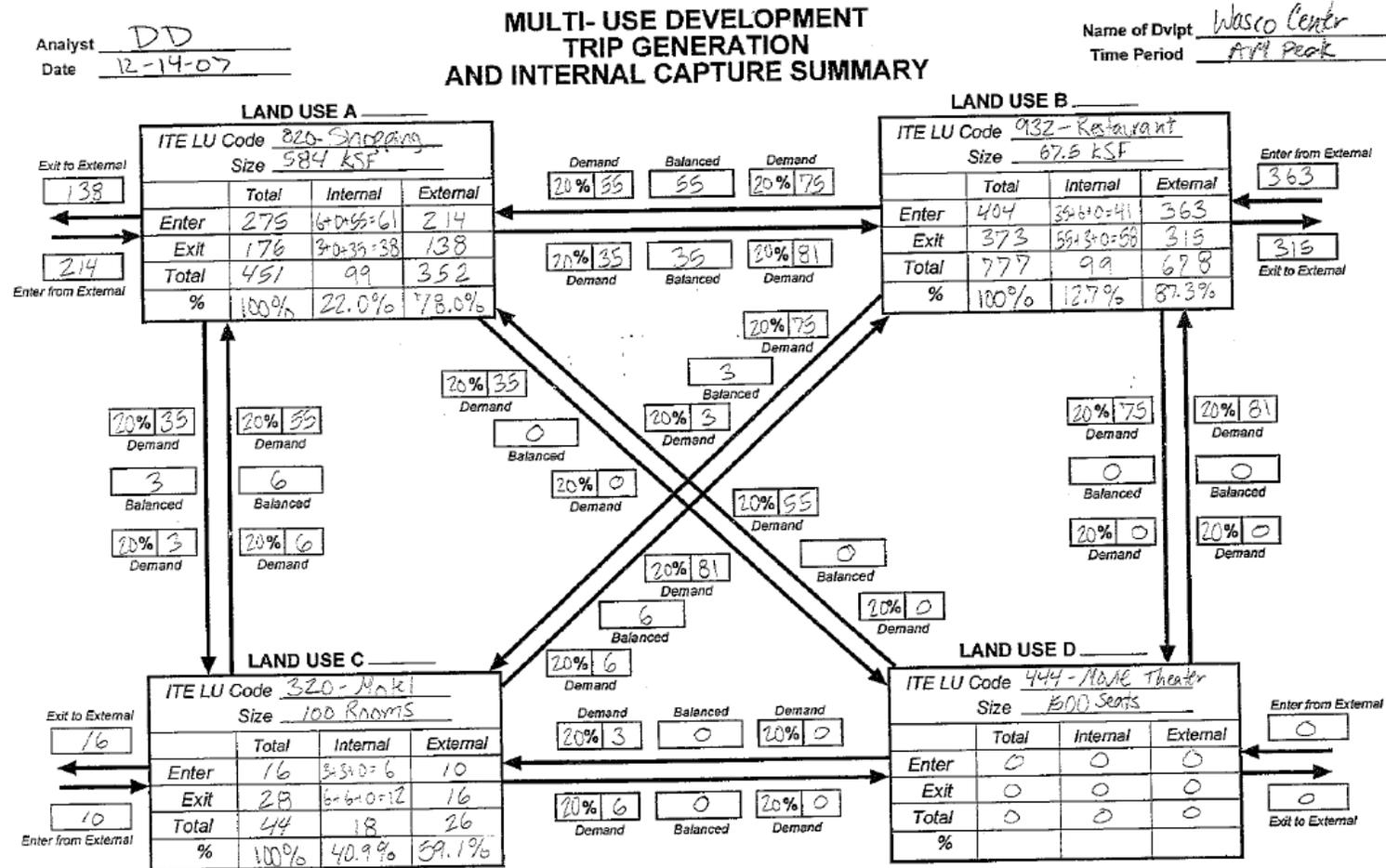
The internal trip capture was determined by following the procedure outlined in Section 7.5 of the *Trip Generation Handbook*. Figures 26, 27, and 28 show the process that was followed for the AM peak hour, PM peak hour, and daily internal trip capture calculations, which resulted in capture rates of 17%, 15% and 18%, respectively. In order to provide a conservative estimate for the site traffic on the external roadways, the internal capture rate for the PM peak hour (15%) was used for both peak hours as well as for the daily calculations.

Again using the *Trip Generation Handbook*, the percentage of pass-by trips was calculated for the retail developments and restaurants, the only two land uses within the Wasco Center that are expected to generate pass-by trips. As discussed in Section 4.1.1 of this report, the percentage of pass-by trips for the retail developments is 23%. From Table 5.22 in the *Trip Generation Handbook*, the percentage of pass-by trips for restaurants is 43%. The pass-by trips are based on the traffic volumes after the internal capture trips are subtracted from the initial trip generation.

**Table 14. Trip Generation – Phase 2 (2015)**

LU Code	320			932			820			220			492			444						
Item	Motel			Restaurant			Retail			Apartments			Health/Fitness			Movie Theater			Equation			
Size	100			67.5			584			123			11.9			1500			Avg Rate			
Unit	Rooms			kSF			kSF			Dwellings			kSF			Seats						
Trips	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total			
AM	44	16	28	778	404	373	451	275	176	64	13	51	14	6	8	0	0	0	1352			
PM	57	31	26	737	450	287	2006	963	1043	85	55	30	48	25	24	105	58	47	3039			
Daily	563	282	282	8583	4291	4291	21385	10692	10692	890	445	445	392	196	196	2340	1170	1170	34,152			
<b>Internal Capture</b>																						
AM	18	6	12	99	41	58	99	61	38	-	-	-	-	-	-	-	-	-	216			
PM	33	18	15	179	104	75	179	71	108	-	-	-	-	-	-	53	29	24	444			
Daily	336	168	168	2,296	1,148	1,148	2,296	1,148	1,148	-	-	-	-	-	-	1,048	524	524	5,976			
<b>External Traffic</b>																						
AM	26	10	16	679	363	315	352	214	138	64	13	51	14	6	8	-	-	-	1,136	607	529	
PM	24	13	11	558	346	212	1,827	892	935	85	55	30	48	25	24	52	29	23	2,595	1,359	1,236	
Daily	227	114	114	6,287	3,143	3,143	19,089	9,544	9,544	890	445	445	392	196	196	1,292	646	646	28,176	14,088	14,088	
<b>Pass-by trips</b>																						
				43%			23%													Total	In	Out
AM	-	-	-	292	156	136	81	49	32	-	-	-	-	-	-	-	-	-	373	206	167	
PM	-	-	-	240	149	91	420	205	215	-	-	-	-	-	-	-	-	-	660	354	306	
Daily	-	-	-	2,703	1,352	1,352	4,390	2,195	2,195	-	-	-	-	-	-	-	-	-	7,094	3,547	3,547	
<b>Total External Primary Trips</b>																						
AM	26	10	16	387	207	180	271	165	106	64	13	51	14	6	8	-	-	-	763	401	361	
PM	24	13	11	318	197	121	1,407	687	720	85	55	30	48	25	24	52	29	23	1,935	1,006	929	
Daily	227	114	114	3,583	1,792	1,792	14,698	7,349	7,349	890	445	445	392	196	196	1,292	646	646	21,082	10,541	10,541	

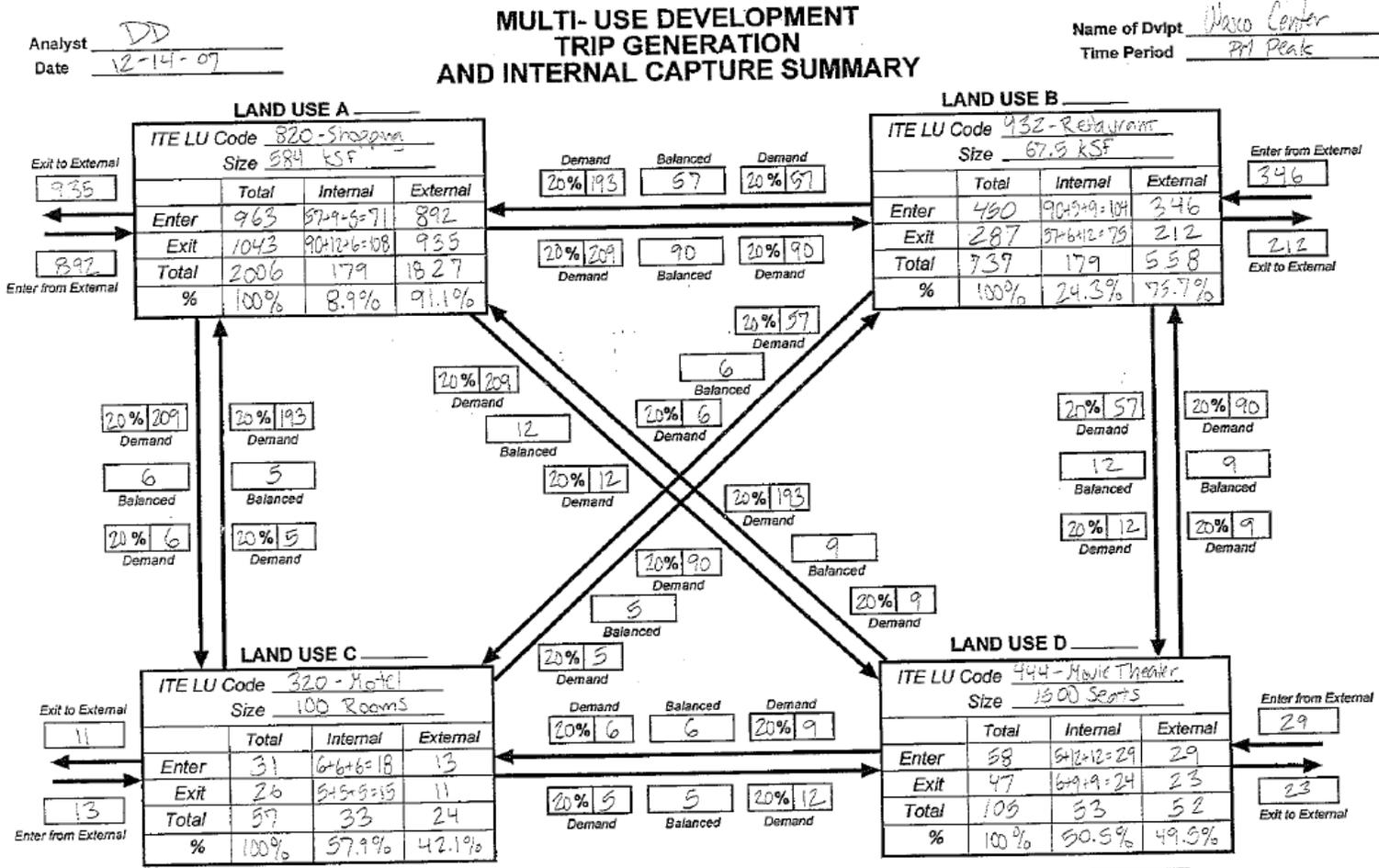
Figure 26. AM Peak Hour Internal Trip Capture Calculations



Net External Trips for Multi-Use Development					
	LAND USE A	LAND USE B	LAND USE C	LAND USE D	TOTAL
Enter	214	363	10	0	587
Exit	138	315	16	0	469
Total	352	678	26	0	1056
Single-Use Trip Gen. Est.	451	777	44	0	1272
					INTERNAL CAPTURE 17%

Source: Kaku Associates, Inc.

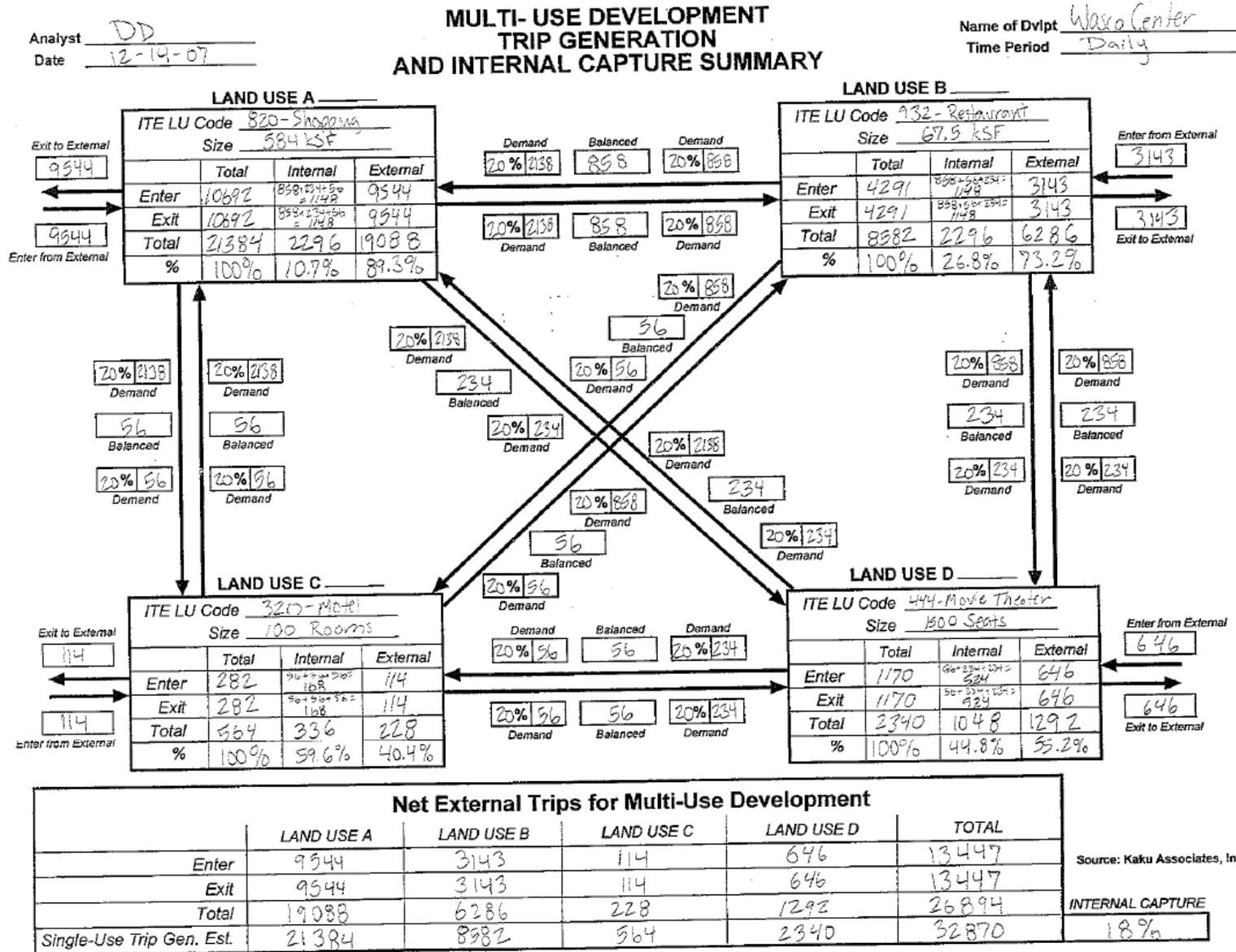
Figure 27. PM Peak Hour Internal Trip Capture Calculations



Net External Trips for Multi-Use Development					
	LAND USE A	LAND USE B	LAND USE C	LAND USE D	TOTAL
Enter	892	346	13	29	1280
Exit	935	212	11	23	1181
Total	1827	558	24	52	2461
Single-Use Trip Gen. Est.	2006	737	57	105	2905
					INTERNAL CAPTURE
					15%

Source: Kaku Associates, Inc.

Figure 28. Daily Internal Trip Capture Calculations



### Trip Distribution

At the completion of Phase 2 (2015), the access into the site will be from Magnolia Avenue, Central Avenue, Palm Avenue, Margalo Street, and Highway 46. There will be a total of 18 access points into the site, including full access and right-in right-out only access points. Figure 2 shows the locations and types of these access points. The figure also provides names for each of the site driveways to maintain order in later analyses.

The distribution of trips to and from the site is expected to be the same as the distribution that was derived in Section 4.1.1 of this report. Figure 11 shows the distribution.

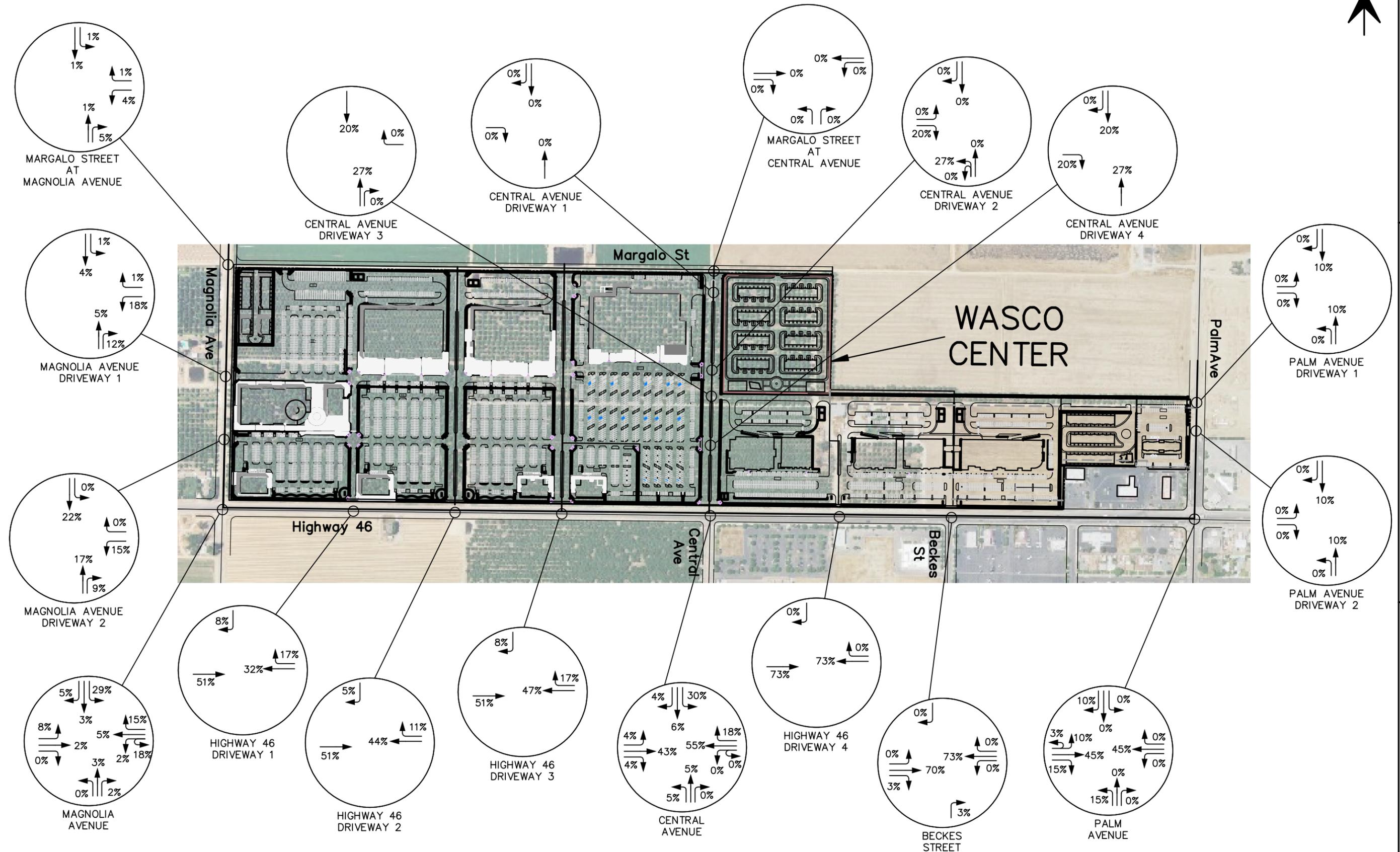
### Trip Assignment

The daily and peak hour site traffic volumes at the completion of Phase 2 (2015) were calculated by applying the trip distribution to the external trips generated by the site. Figure 29 shows the assignment of trips at the intersections within and adjacent to the site based on the trip distribution and the type of access. Note that flows into and out of the site may not be symmetrical due to the presence of a number of right-in right-out only access points.

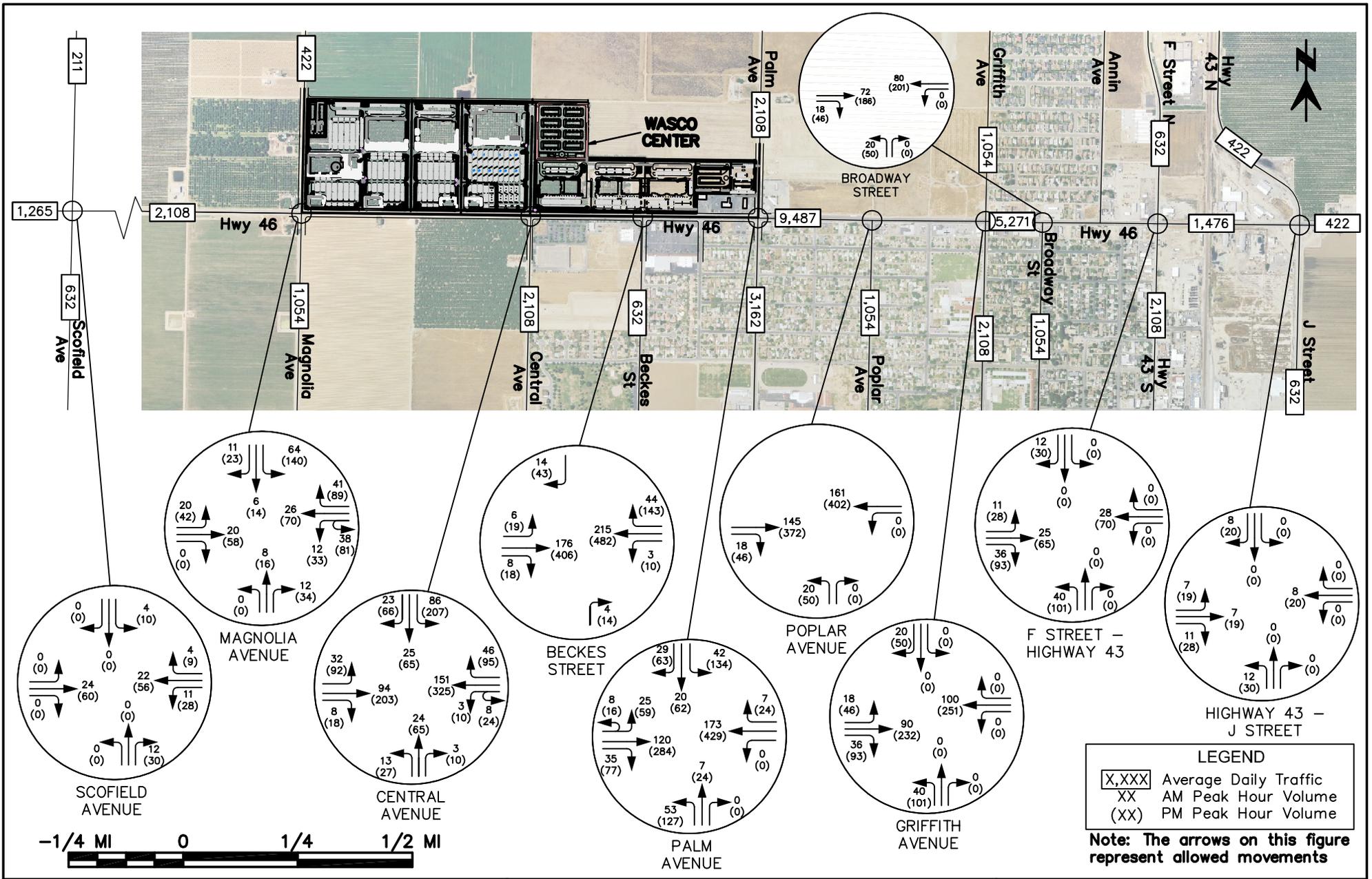
Figures 30 and 31 show the resulting primary external trips in the project vicinity and adjacent to the site, respectively. Figure 32 shows the adjustment necessary to account for pass-by traffic. The overall traffic generated by buildout of the project, which is the result of adding the primary and pass-by trips, is shown in Figures 33 and 34.

FIGURE 29  
PROJECT TRIP ASSIGNMENT -  
PHASE 2

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Note: The arrows on this figure represent allowed movements.



**WASCO CENTER  
TRAFFIC IMPACT STUDY**

**FIGURE 30  
PROJECT PRIMARY TRIPS -  
PHASE 2 (SITE VICINITY)**

**PSOMAS**

**JULY 2008**

FIGURE 31  
PROJECT PRIMARY TRIPS -  
PHASE 2 (ADJACENT TO SITE)

WASCO CENTER  
TRAFFIC IMPACT STUDY

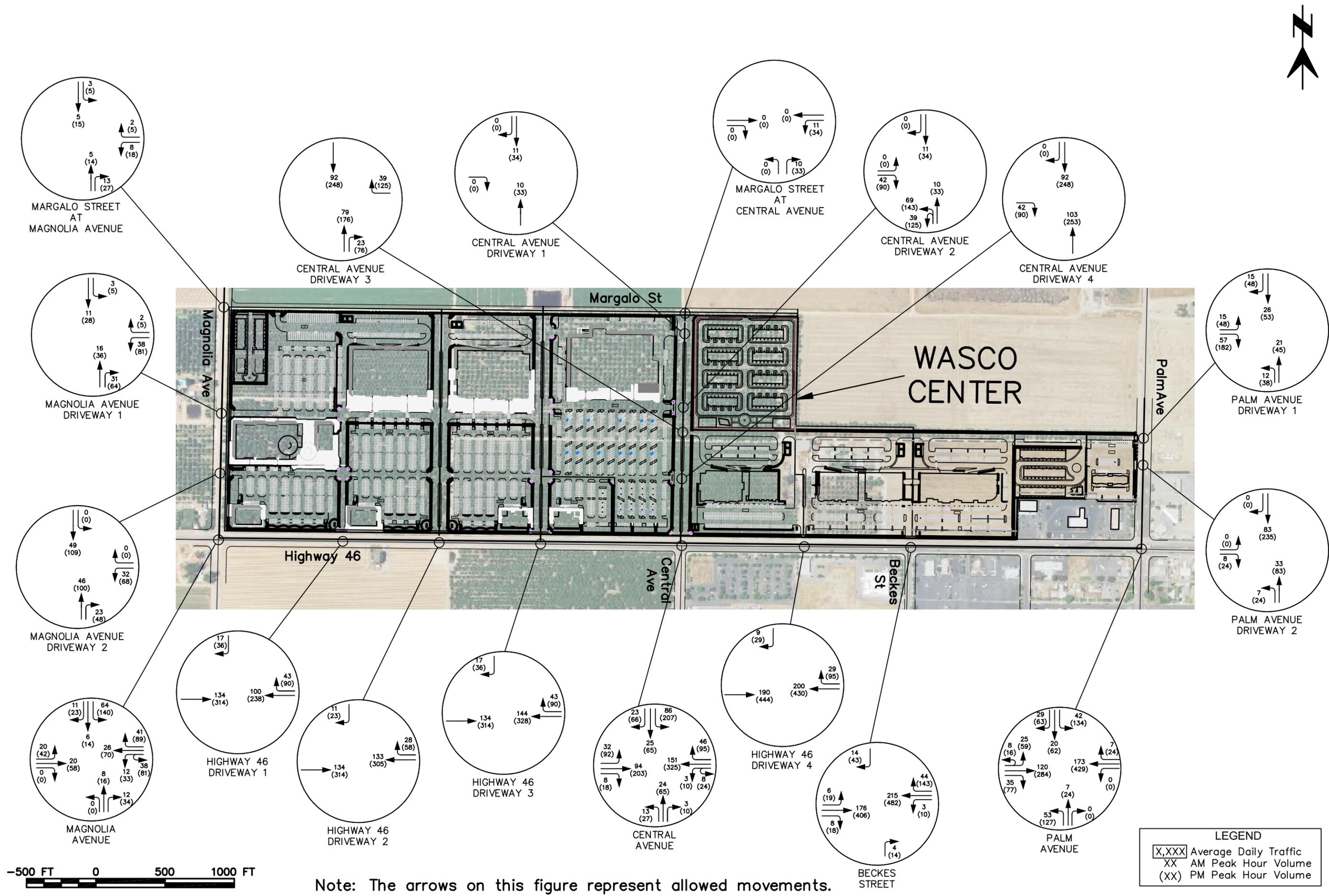
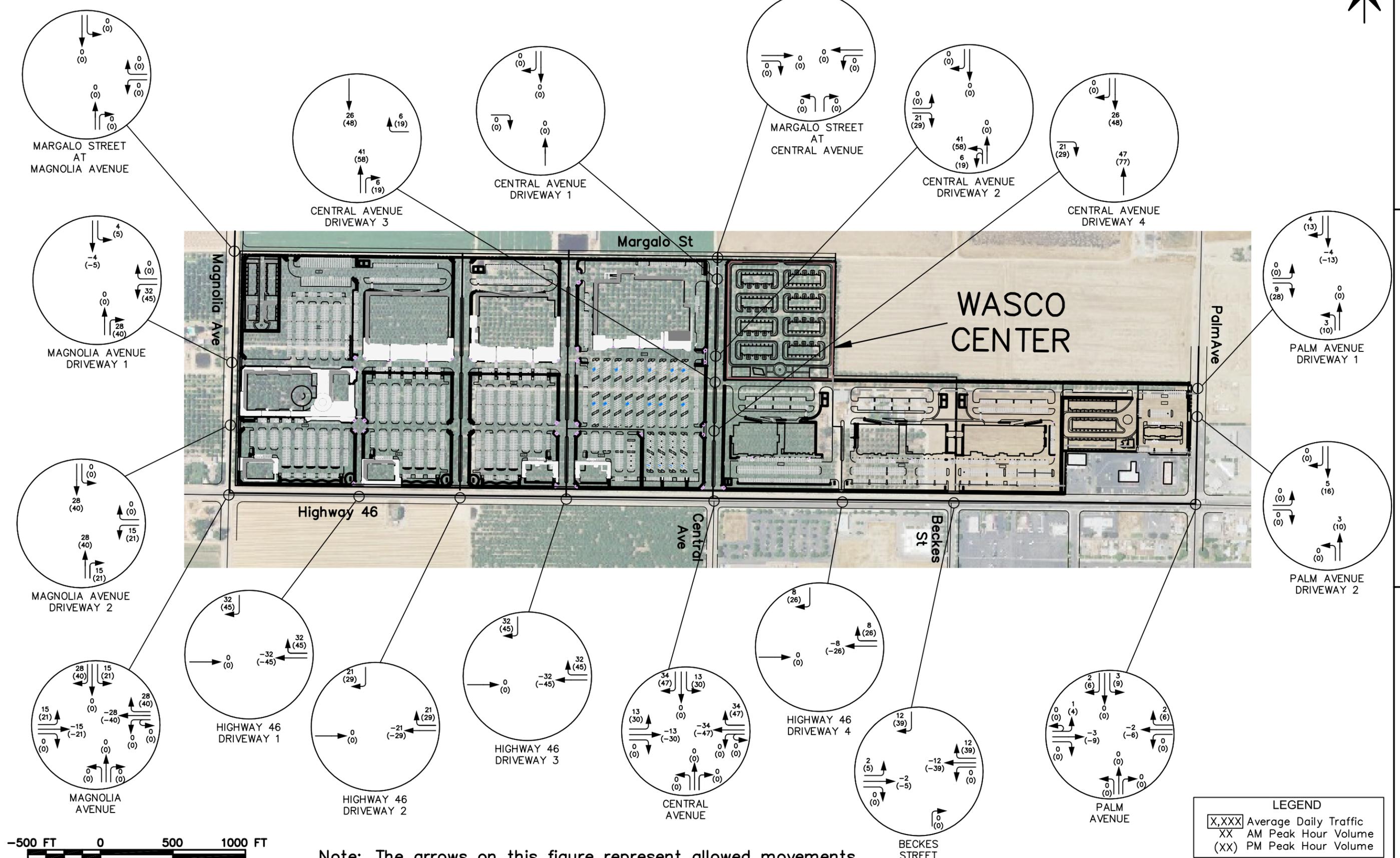
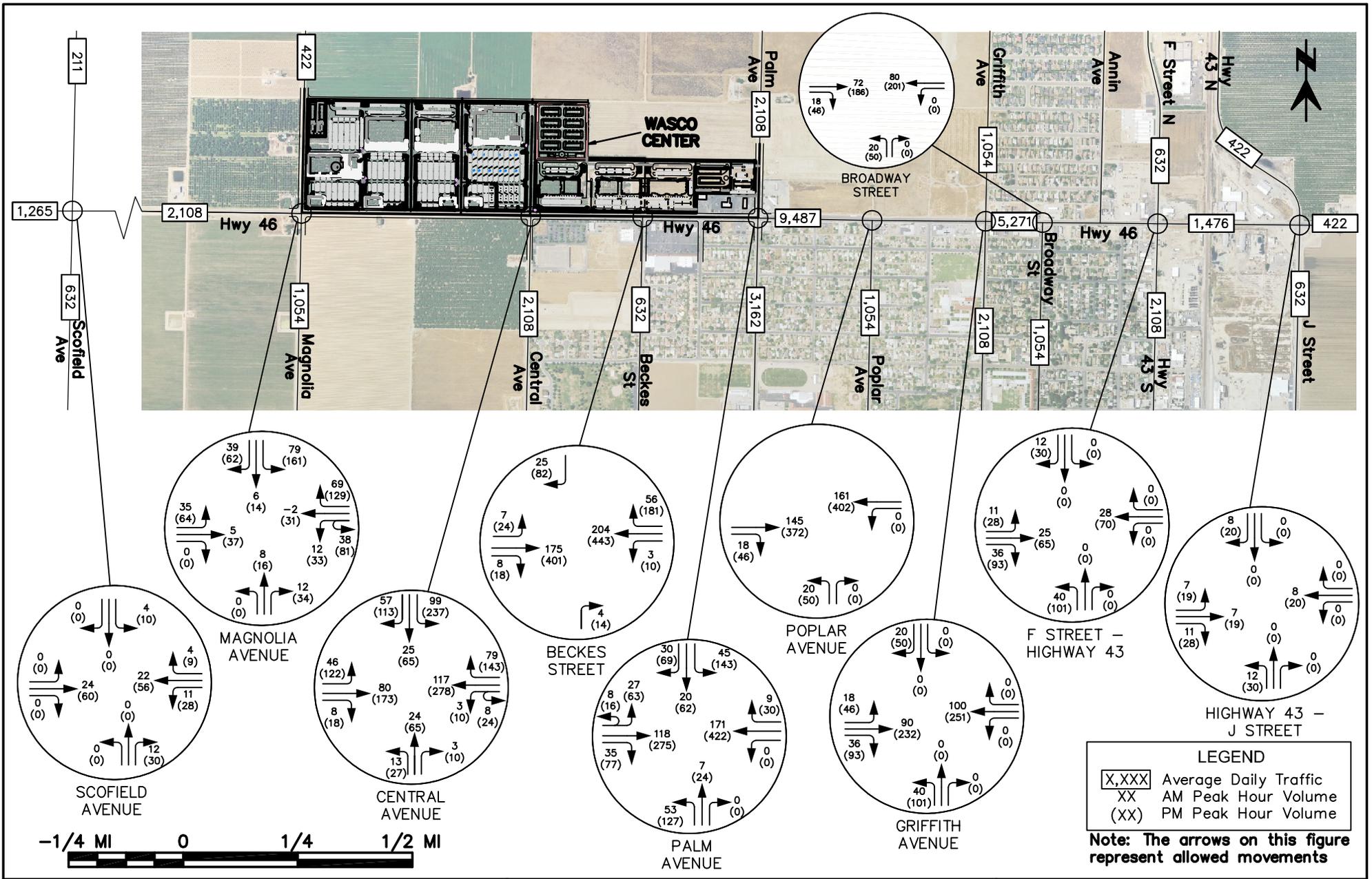


FIGURE 32  
PROJECT PASS-BY TRIPS -  
PHASE 2

WASCO CENTER  
TRAFFIC IMPACT STUDY





**WASCO CENTER  
TRAFFIC IMPACT STUDY**

**FIGURE 33  
2015 PROJECT TRAFFIC  
VOLUMES - PHASE 2  
(SITE VICINITY)**

**PSOMAS**

**JULY 2008**



### **5.1.2. Cumulative Conditions**

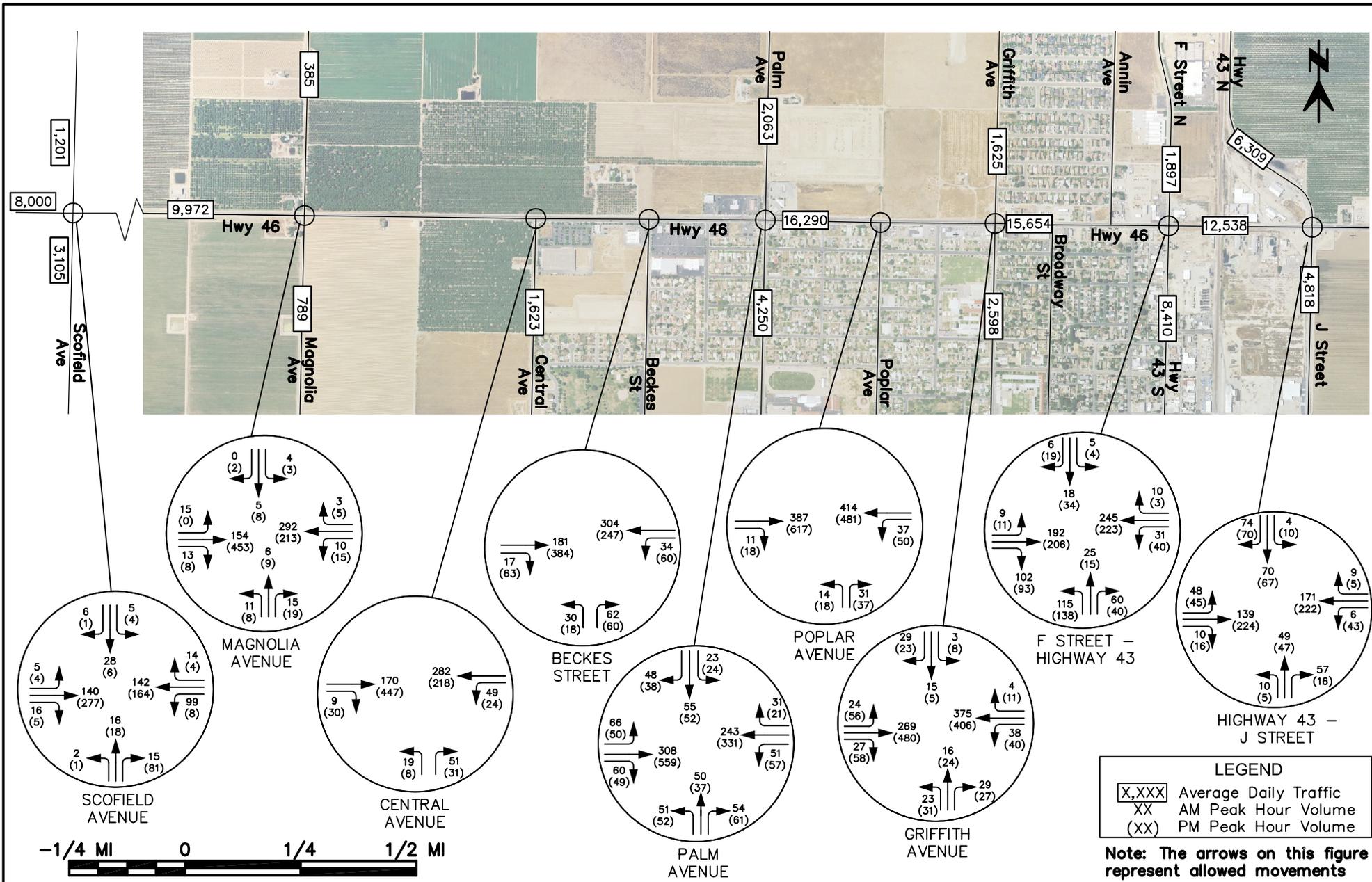
The cumulative conditions represent the traffic volumes that would be on the roadway network in the study area without the proposed project. The traffic in 2015 was calculated by continuing to use a 1% per year exponential growth factor, as discussed in Section 4.1.2. Recall that without the project, the heavy truck percentage and peak hour factors will remain unchanged. Figure 35 shows the projected cumulative conditions in 2015.

### **5.1.3. Cumulative Conditions with Proposed Project**

The cumulative conditions with the proposed project volumes represent the sum of the projected traffic without the project and the traffic expected to be generated by the Wasco Center at the completion of Phase 2. Figures 36 and 37 show these volumes. As seen in Figure 36, the ADT just west of the project will increase to 12,080 vehicles per day, and just east of the project will increase to nearly 25,777 vehicles per day.

At the completion of Phase 2, it was determined that the heavy vehicle percentage would decrease further to 25% along Highway 46. The peak hour factors were also adjusted as discussed in Section 4.1.3, and can be found in Appendix C.

Figure 37 shows the volumes at the project intersections, and also repeats the volumes shown at the major intersections adjacent to the project. In addition to the full access intersections in Phase 1, five full access intersections will be built with Phase 2. Three are those along Magnolia Avenue (as seen in Figure 2), and two are along Central Avenue. The other five intersections that will be added with Phase 2 will be right-in right-out only.

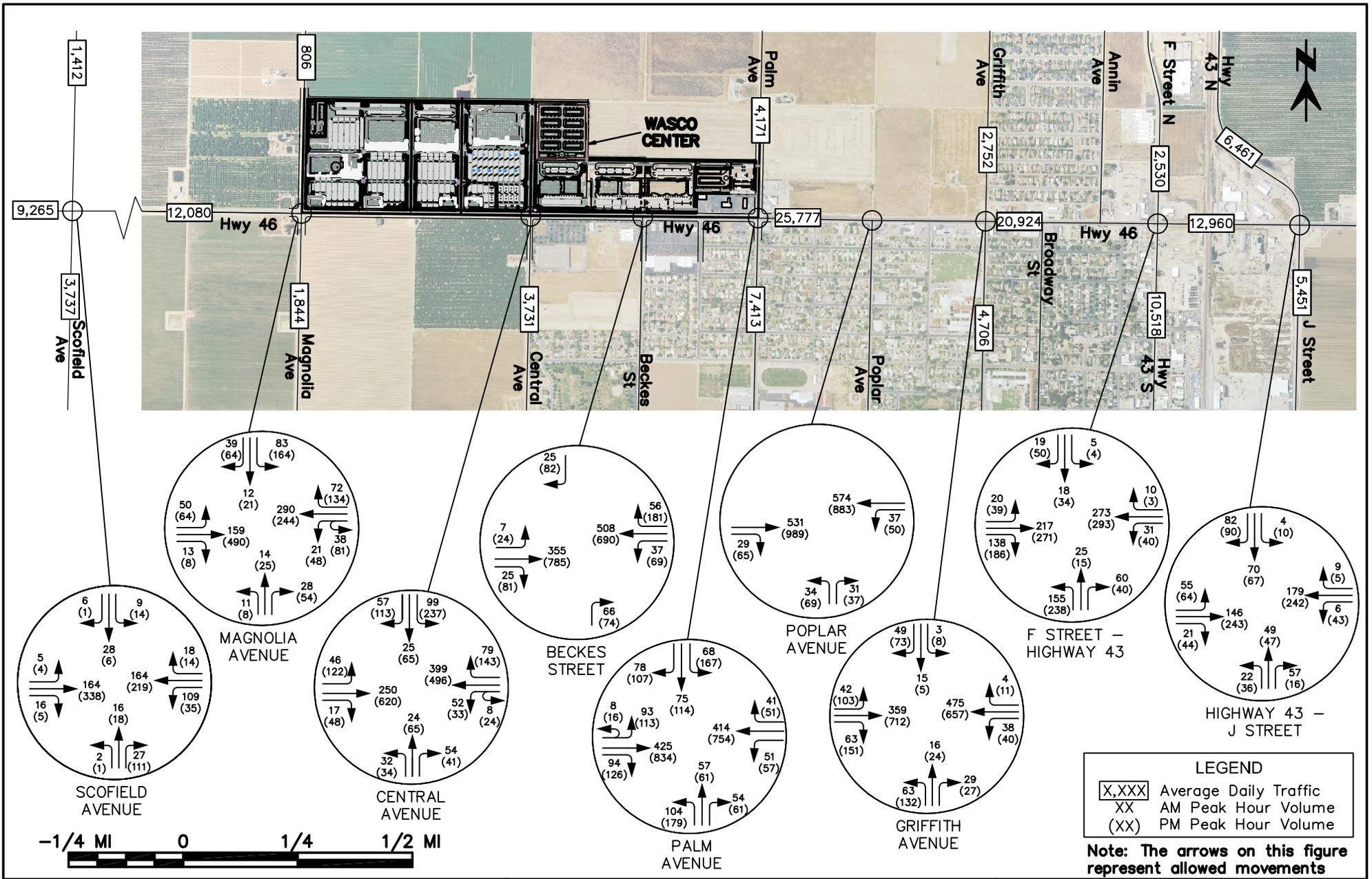


**WASCO CENTER  
TRAFFIC IMPACT STUDY**

**FIGURE 35  
2015 TRAFFIC VOLUMES -  
CUMULATIVE CONDITONS**

**PSOMAS**

**JULY 2008**



**WASCO CENTER  
TRAFFIC IMPACT STUDY**

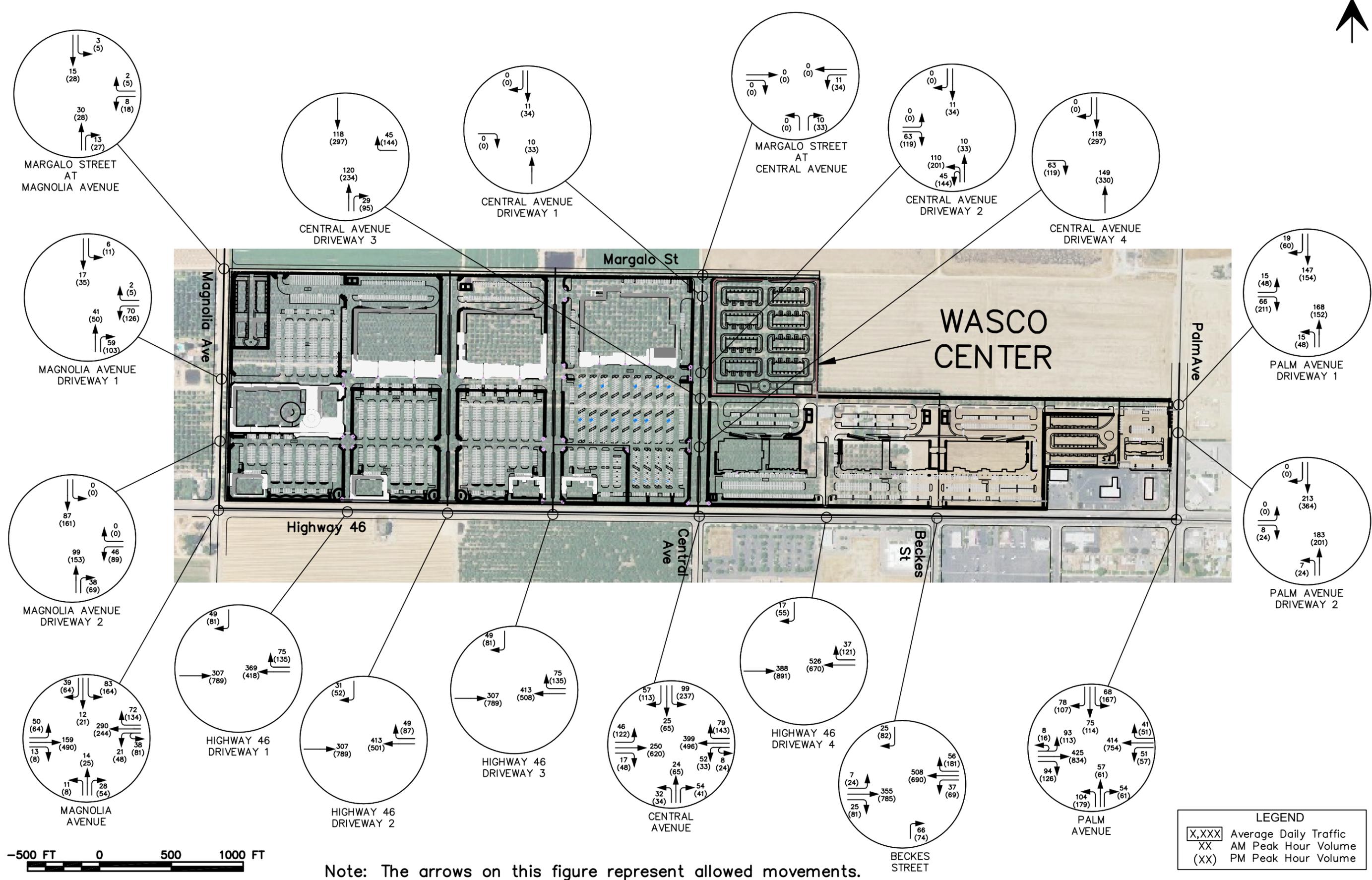
**FIGURE 36  
2015 TRAFFIC VOLUMES -  
CUMULATIVE CONDITIONS  
WITH PROJECT (SITE VICINITY)**

**PSOMAS**

**JULY 2008**

FIGURE 37  
2015 TRAFFIC VOLUMES - CUMULATIVE  
CONDITIONS WITH PROJECT  
(ADJACENT TO SITE)

WASCO CENTER  
TRAFFIC IMPACT STUDY

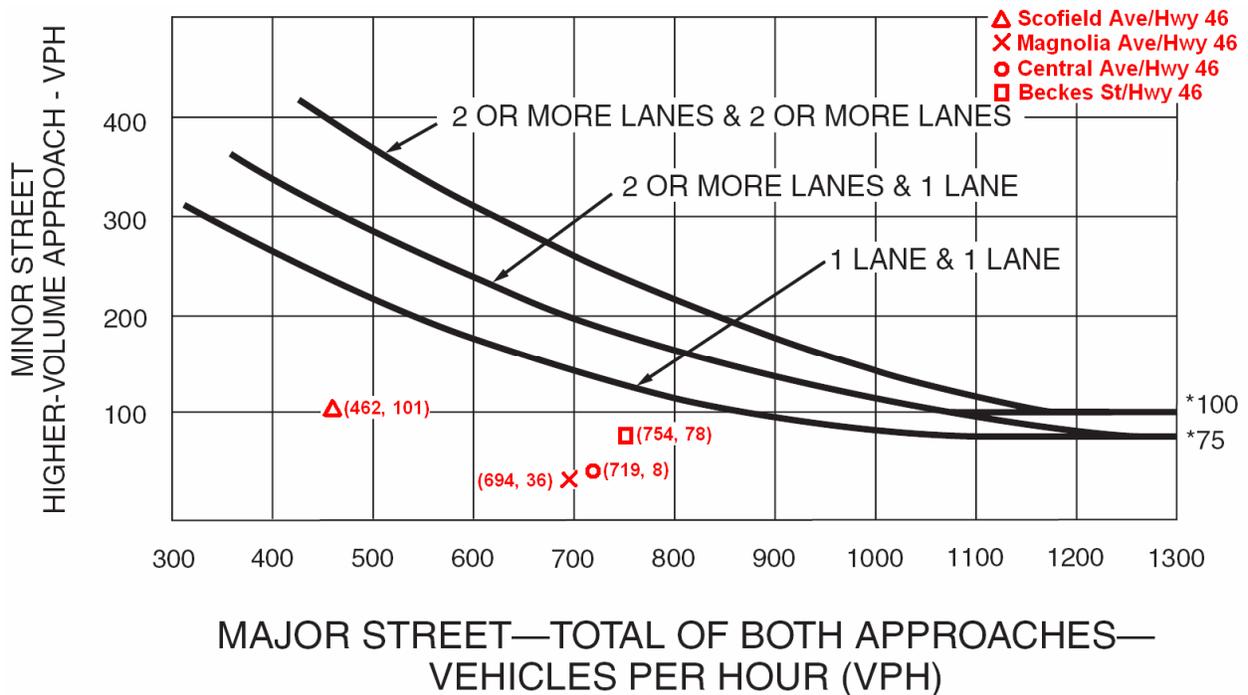


## 5.2. 2015 CUMULATIVE CONDITIONS ANALYSIS

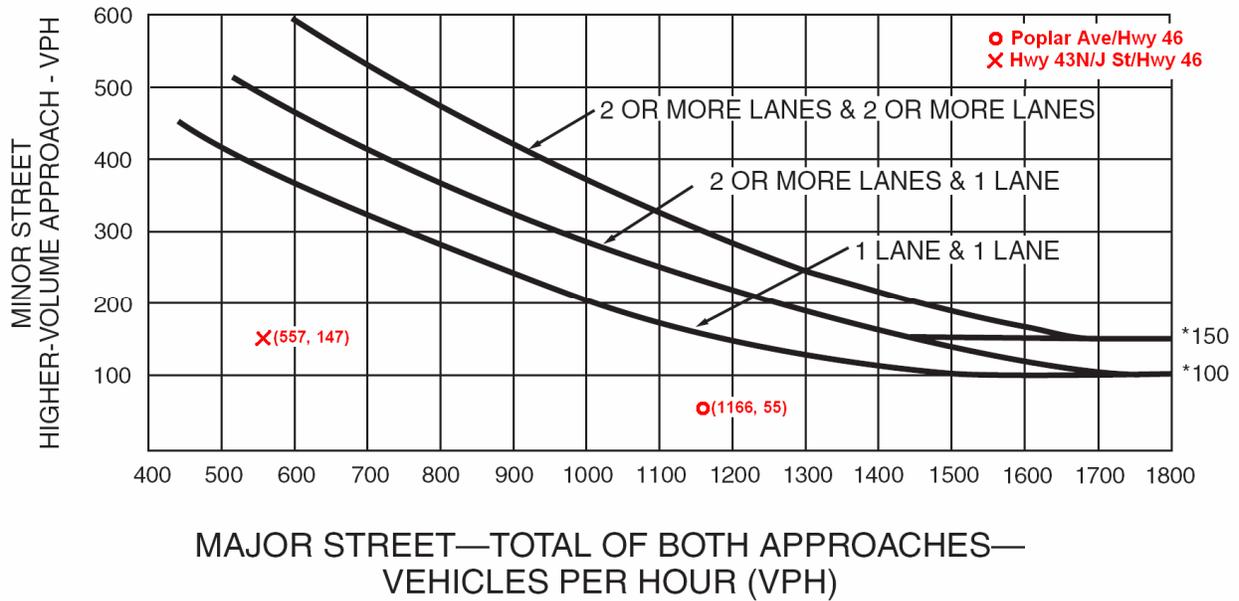
### 5.2.1. Warrant Analysis

Traffic signal warrant 3B was evaluated for the unsignalized intersections in the project area along Highway 46 to determine if signalization will be warranted in 2015 under cumulative conditions. Figures 38 and 39 show the results of the analysis.

As seen in the figures, no new signals would be warranted under cumulative conditions in 2015. The primary reason for the finding is that the volumes on the minor streets intersecting Highway 46 will be too low to require signalization.



**Figure 38. Signal Warrant Analysis – 70% Condition, Cumulative Conditions (2015)**



**Figure 39. Signal Warrant Analysis – 100% Condition, Cumulative Conditions (2015)**

### 5.2.2. Level of Service Analysis

Under cumulative conditions, the highest ADT on Highway 46 would be 16,290 vehicles per day, just east of Palm Avenue. Given the roadway capacities in Table 5, the roadway at that point would be operating at LOS C, which is acceptable under Kern County and Caltrans standards. The other roadway segments along Highway 46 and the other arterials and collectors in the area would also operate at LOS C or better. Therefore, no roadway segment improvements would be needed in 2015 under cumulative conditions.

Table 15 shows the LOS and delays for each of the intersections in the project area under cumulative conditions as determined using *Synchro*. The *Synchro* reports can be found in Appendix C. It should be noted that the results reported for this scenario do not assume the construction of any additional turn lanes.

As seen in the table, all of the signalized intersections are expected to operate at LOS B or better in the morning peak hour and at LOS C or better in the evening peak hour. Further, all of the movements at the 5 unsignalized intersections are expected to operate at LOS C or better in both peak hours.

**Table 15. Projected LOS for Cumulative Conditions (2015)**

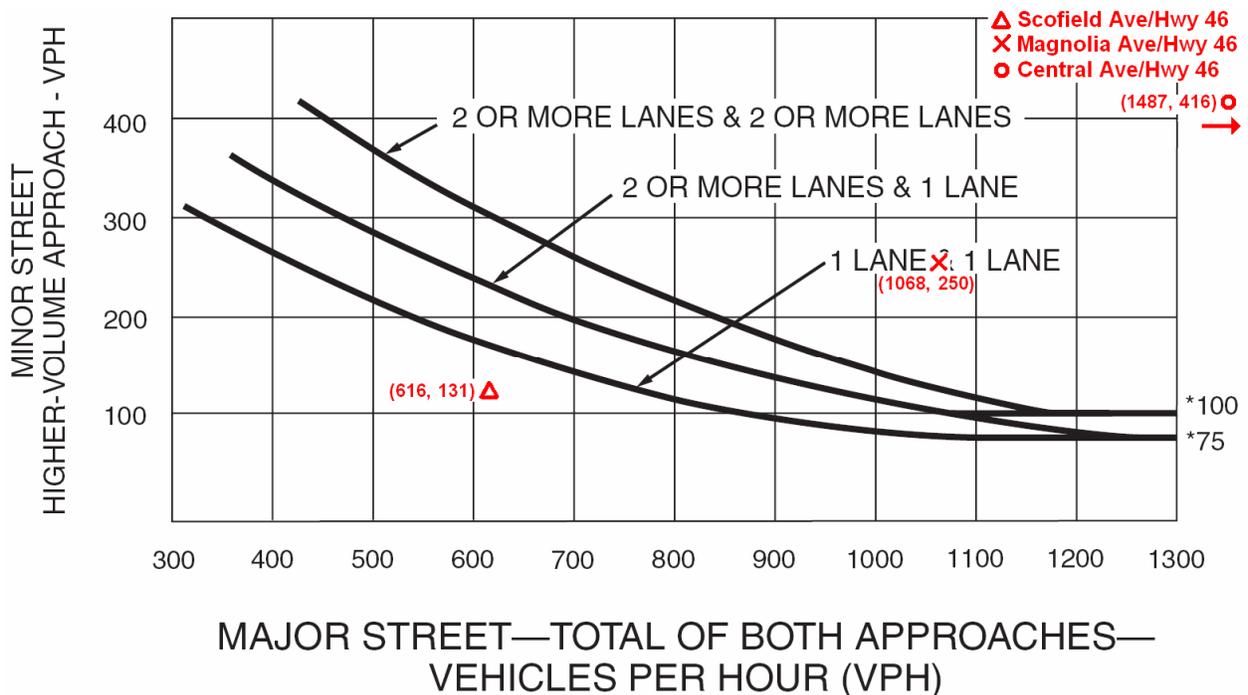
		Highway 46						Scofield Avenue						Traffic Control	Intersection LOS	
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS	A			A			C	C	A	C	C	C	2-Way Stop	N/A	
	Delay	7.6			7.9			15.9	15.9	9.5	16.5	16.5	16.5		N/A	
PM	LOS	A			A			B	B	B	C	C	C		N/A	
	Delay	7.6			8.0			14.3	14.3	11.7	15.8	15.8	15.8		N/A	
		Highway 46						Magnolia Avenue							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS	A			A			B	B	B	B	B		2-Way Stop	N/A	
	Delay	0.1			0.1			12.2	12.2	12.2	14.6	14.6			N/A	
PM	LOS				A			B	B	B	C	C	C		N/A	
	Delay				0.2			14.9	14.9	14.9	16.2	16.2	16.2		N/A	
		Highway 46						Central Avenue							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS				A			B		B				2-Way Stop	N/A	
	Delay				7.8			11.2		11.2					N/A	
PM	LOS				A			B		B					N/A	
	Delay				8.6			12.7		12.7					N/A	
		Highway 46						Beckes Street							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS				A			B		B				2-Way Stop	N/A	
	Delay				7.8			12.8		12.8					N/A	
PM	LOS				A			B		B					N/A	
	Delay				8.6			13.5		13.5					N/A	
		Highway 46						Palm Avenue							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS	C	B	B	C	B	A	B	B	A	B	B	A	Signal	B	
	Delay	21.8	11.5	11.5	22.8	10.1	4.3	18.9	16.7	7.1	16.8	17.2	7.1		12.7	
PM	LOS	C	B	B	C	A	A	C	C	A	C	C	A		B	
	Delay	31.2	16.6	16.6	32.8	9.6	3.6	27.9	23.8	8.9	24.8	25.3	9.3		16.5	
		Highway 46						Poplar Avenue							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS				A			B		B				2-Way Stop	N/A	
	Delay				8.4			14.7		14.7					N/A	
PM	LOS				A			C		C					N/A	
	Delay				9.2			19.0		19.0					N/A	
		Highway 46						Griffith Avenue							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS	C	A	A	C	A	A	B	B	B	B	B	B	Signal	A	
	Delay	23.4	7.9	7.9	22.8	8.1	8.1	14.4	14.4	14.4	11.8	11.8	11.8		9.9	
PM	LOS	C	B	B	C	B	B	B	B	B	B	B	B		B	
	Delay	27.5	13.5	13.5	27.0	12.5	12.5	16.6	16.6	16.6	11.9	11.9	11.9		14.4	
		Highway 46						F Street/Highway 43 South							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS	C	B	A	C	B	B	C	B	B	C	C	C	Signal	B	
	Delay	27.9	14.5	4.7	28.2	15.2	15.2	21.5	10.4	10.4	21.2	21.2	21.2		15.2	
PM	LOS	C	C	A	C	C	C	C	B	B	C	C	C		C	
	Delay	34.2	24.3	6.9	33.9	20.1	20.1	31.6	12.0	12.0	24.3	24.3	24.3		22.2	
		Highway 46						J Street/Highway 43 North							Traffic Control	Intersection LOS
		EB			WB			NB			SB					
		L	T	R	L	T	R	L	T	R	L	T	R			
AM	LOS	A			A			B	B	B	B	B	B	2-Way Stop	N/A	
	Delay	7.7			7.6			13.2	13.2	13.2	13.5	13.5	13.5		N/A	
PM	LOS	A			A			C	C	C	C	C	C		N/A	
	Delay	7.9			7.9			17.8	17.8	17.8	19.2	19.2	19.2		N/A	

### 5.3. 2015 CUMULATIVE CONDITIONS WITH PROPOSED PROJECT ANALYSIS

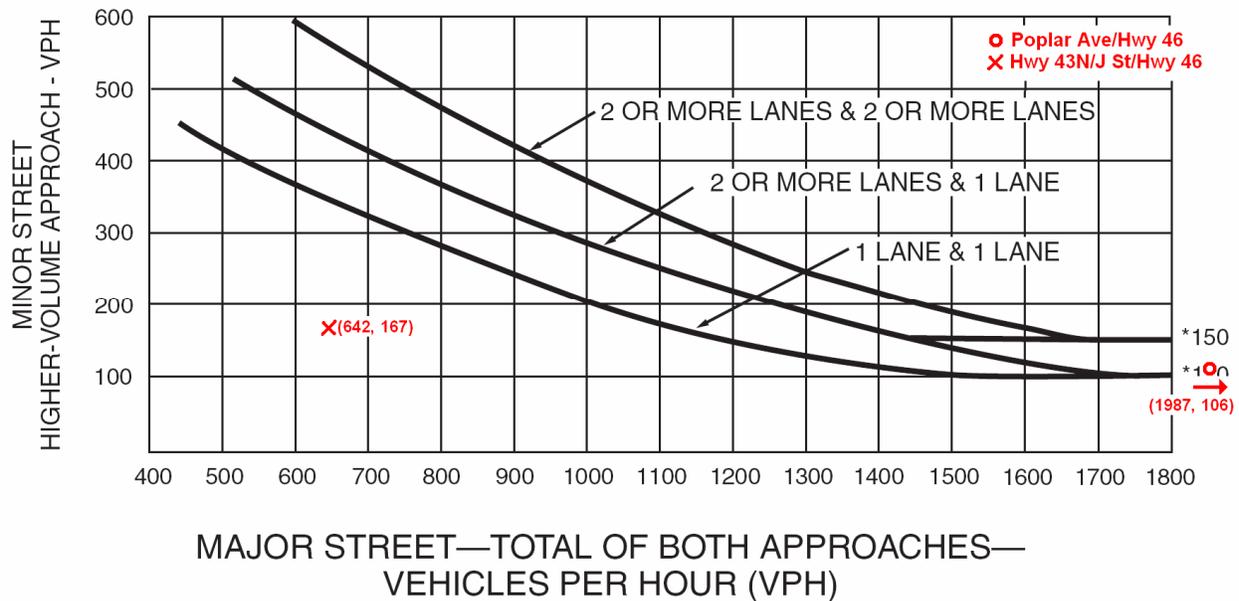
#### 5.3.1. Warrant Analysis

Figures 40 and 41 compare the volumes at the major unsignalized intersections with Warrant 3B in the MUTCD. Highway 46 will be a four-lane section at the intersections shown, except at Highway 43 North / J Street. Magnolia Avenue and Central Avenue will each have a separate southbound left turn lane with adequate storage, meaning that both should be considered two-lane approaches when evaluating the signal warrant. Scofield Avenue, Poplar Avenue, and Highway 43 N / J Street will only have a one-lane approach. Recall that Beckes Street will not be a full intersection, and will therefore not be included in the signal warrant analysis for cumulative conditions with the proposed project.

While the intersections of Highway 46 with Scofield Avenue and Highway 43 North / J Street will not meet the signal warrant, the intersections of Highway 46 with Magnolia Avenue, Central Avenue, and Poplar Avenue are all expected to meet warrants at the completion of Phase 2 of this project.



**Figure 40. Signal Warrant Analysis – 70% Condition, Cumulative Conditions with Project (2015)**



**Figure 41. Signal Warrant Analysis – 100% Condition, Cumulative Conditions with Project (2015)**

However, it should be kept in mind that while meeting a signal warrant is a necessary condition for signalization, meeting a warrant does not necessarily mean that a signal should be installed. The MUTCD reads “The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.”

In this case it is recommended that traffic signals be installed at the intersections of Highway 46 with Central Avenue and with Magnolia Avenue because they will significantly exceed the warrant volume thresholds, the LOS would be degraded beyond D without a signal, and because their separation (1/2 mile from other signals) is conducive to progression.

On the other hand, the installation of a signal at Poplar Avenue is not recommended for the following reasons:

- The intersection would operate at LOS D or better without signalization.
- Adding a signal at this location would reduce signal spacing to ¼ mile.
- The volumes on the minor street (106 veh/hr) are very close to the warrant threshold.
- Minor street volumes can be reduced by rerouting drivers from Poplar Avenue to Central Avenue, Palm Avenue or Griffith Avenue.

### **5.3.2. Level of Service Analysis**

With the construction of this project, the ADT on Highway 46 will increase to nearly 26,000 vehicles per day just east of Palm Avenue with the completion of Phase 2. East of Griffith Avenue, the ADT will still be over 20,000 vehicles per day, dropping to 12,960 veh/day east of Highway 43 South / F Street and 12,080 veh/day west of Magnolia Avenue. Based on the LOS criteria, a 2-lane arterial can operate at LOS D with as many as 18,100 vehicles per day. Therefore, in order to maintain LOS D or better (as required by Kern County and Caltrans), Highway 46 will need to be widened to 4 lanes between Magnolia Avenue and Highway 43 South / F Street) with the completion of Phase 2. Recall that Highway 46 will have been widened to 4 lanes between Central Avenue and Griffith Avenue with Phase 1 of the project, and the additional widening with Phase 2 would include ½ mile of roadway on either side of the 4-lane segment. All other roadway segments in the study area are expected to operate at LOS D or better.

Other roadway improvements to be undertaken with this phase of the project include:

- Construct the eastern half of a 5-lane section on Magnolia Avenue between Highway 46 and Margalo Street. This would result in two northbound through lanes, a two-way left turn lane, and one southbound through lane.
- Construct Margalo Street as a 2-lane roadway between Magnolia Avenue and Central Avenue.
- Construct a westbound right turn lane at Magnolia Avenue.

The intersection LOS is shown in Tables 16 and 17. Table 16 shows the LOS for the existing intersections, those that were previously evaluated for cumulative conditions in 2015 (Section 5.2.2). Table 17 shows the new intersections that will be created by the completion of Phase 2 of the project as well as those that were added with the completion of Phase 1.

**Table 16. LOS for Cumulative Conditions with Project (2015) – Site Vicinity**

		Highway 46						Scofield Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS	A			A			C	C	A	C	C	C	2-Way Stop	N/A
	Delay	7.6			7.9			16.5	16.5	9.5	18.1	18.1	18.1		N/A
PM	LOS	A			A			C	C	B	C	C	C		N/A
	Delay	7.8			8.2			16.9	16.9	12.2	23.4	23.4	23.4		N/A

		Highway 46						Magnolia Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS	A	A	A	A	A	A	A	A	A	A	A	A	Signal	A
	Delay	6.8	7.7	7.7	6.7	7.0	2.5	5.0	5.0	5.0	8.2	4.1	4.1		6.5
PM	LOS	A	B	B	B	A	A	A	A	A	B	A	A		B
	Delay	6.3	14.4	14.4	11.5	6.0	1.9	7.8	7.8	7.8	16.9	6.8	6.8		10.5

		Highway 46						Central Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS	A	A	A	A	A	A	A	A	A	B	A	A	Signal	A
	Delay	6.9	6.3	6.3	7.0	7.5	2.5	8.3	4.6	4.6	10.4	8.4	4.1		6.8
PM	LOS	B	B	B	B	A	A	A	A	A	B	A	A		A
	Delay	12.5	10.7	10.7	10.8	9.4	2.6	9.4	6.9	6.9	16.7	9.5	3.7		10.0

		Highway 46						Beckes Street						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS	A			A					B			B	2-Way Stop	N/A
	Delay	9.0			8.3					10.5			10.5		N/A
PM	LOS	B			B					B			B		N/A
	Delay	10.5			10.5					13.2			12.1		N/A

		Highway 46						Palm Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS	C	A	A	C	B	B	C	B	A	B	B	A	Signal	B
	Delay	25.8	9.0	9.0	25.8	12.3	12.3	21.5	15.9	6.1	18.4	16.6	5.7		13.4
PM	LOS	C	B	B	C	B	B	C	B	A	C	B	A		B
	Delay	31.1	16.9	16.9	27.4	19.1	19.1	32.2	17.3	6.0	29.6	19.2	5.5		19.8

		Highway 46						Poplar Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS				A			B		B				2-Way Stop	N/A
	Delay				8.9			14.6		14.6					N/A
PM	LOS				B			E		E					N/A
	Delay				11.5			36.5		36.5					N/A

		Highway 46						Griffith Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS	C	A	A	C	A	A	B	B	B	A	A	A	Signal	A
	Delay	21.0	7.1	7.1	20.8	8.0	8.0	15.1	15.1	15.1	8.2	8.2	8.2		9.2
PM	LOS	C	B	B	C	B	B	C	C	C	A	A	A		B
	Delay	28.5	12.7	12.7	27.1	15.8	15.8	26.3	26.3	26.3	7.3	7.3	7.3		16.0

		Highway 46						F Street/Highway 43 South						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS	C	B	A	C	B	B	C	A	A	B	B	B	Signal	B
	Delay	29.6	15.3	4.5	29.0	16.3	16.3	22.0	10.0	10.0	18.3	18.3	18.3		15.7
PM	LOS	C	C	A	C	C	C	C	B	B	B	B	B		C
	Delay	32.2	28.4	7.8	32.5	32.0	32.0	32.6	10.7	10.7	17.3	17.3	17.3		25.6

		Highway 46						J Street/Highway 43 North						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS	A			A			C	C	C	B	B	B	2-Way Stop	N/A
	Delay	7.8			7.6			15.2	15.2	15.2	14.0	14.0	14.0		N/A
PM	LOS	A			A			D	D	D	C	C	C		N/A
	Delay	8.0			8.0			34.5	34.5	34.5	21.8	21.8	21.8		N/A

**Table 17. LOS for Cumulative Conditions with Project (2015) – Site Driveways**

		Margalo Street						Magnolia Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS				B		B				A			2-Way Stop	N/A
	Delay				10.1		10.1				7.3				N/A
PM	LOS				B		B				A				N/A
	Delay				10.3		10.3				7.3				N/A

		Magnolia Avenue Driveway 1						Magnolia Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS				B		B				A			2-Way Stop	N/A
	Delay				11.5		11.5				7.4				N/A
PM	LOS				B		B				A				N/A
	Delay				13.0		13.0				7.6				N/A

		Magnolia Avenue Driveway 2						Magnolia Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS				B									2-Way Stop	N/A
	Delay				12.1										N/A
PM	LOS				B										N/A
	Delay				14.3										N/A

		Highway 46						Highway 46 Driveway 1						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS												B	2-Way Stop	N/A
	Delay												10.1		N/A
PM	LOS												B		N/A
	Delay												10.9		N/A

		Highway 46						Highway 46 Driveway 2						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS												A	2-Way Stop	N/A
	Delay												10.0		N/A
PM	LOS												B		N/A
	Delay												10.8		N/A

		Highway 46						Highway 46 Driveway 3						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS												B	2-Way Stop	N/A
	Delay												10.3		N/A
PM	LOS												B		N/A
	Delay												11.4		N/A

		Margalo Street						Central Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS									A				2-Way Stop	N/A
	Delay									8.4					N/A
PM	LOS									A					N/A
	Delay									8.4					N/A

		Central Avenue Driveway 1						Central Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS													2-Way Stop	N/A
	Delay														N/A
PM	LOS														N/A
	Delay														N/A

**Table 17 cont'd. LOS for Cumulative Conditions with Project (2015) – Site Driveways**

		Central Avenue Driveway 2						Central Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS			A				A						2-Way Stop	N/A
	Delay			8.6				7.4							N/A
PM	LOS			A				A							N/A
	Delay			8.9				7.7							N/A

		Central Avenue Driveway 3						Central Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS						A							2-Way Stop	N/A
	Delay						9.2								N/A
PM	LOS						B								N/A
	Delay						10.3								N/A

		Central Avenue Driveway 4						Central Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS			A										2-Way Stop	N/A
	Delay			9.2											N/A
PM	LOS			A											N/A
	Delay			10.0											N/A

		Highway 46						Highway 46 Driveway 4						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS												B	2-Way Stop	N/A
	Delay												10.3		N/A
PM	LOS												B		N/A
	Delay												11.7		N/A

		Palm Avenue Driveway 1						Palm Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS	A		A				A						2-Way Stop	N/A
	Delay	9.9		9.9				7.6							N/A
PM	LOS	B		B				A							N/A
	Delay	12.0		12.0				7.8							N/A

		Palm Avenue Driveway 2						Palm Avenue						Traffic Control	Intersection LOS
		EB			WB			NB			SB				
		L	T	R	L	T	R	L	T	R	L	T	R		
AM	LOS			A				A						2-Way Stop	N/A
	Delay			9.0				7.7							N/A
PM	LOS			A				A							N/A
	Delay			9.5				8.1							N/A

The LOS reported is based on the construction of the following lane configuration improvements:

- Exclusive left turn lanes for eastbound, westbound, and southbound traffic at the intersection of Magnolia Avenue and Highway 46. Also, an exclusive westbound right turn lane at the same intersection.

- Stripe the Highway 46 outside eastbound travel lane approaching Highway 43 South / F Street as a right turn only lane to facilitate the transition to a 2-lane section for Highway 46 east of Highway 43 South / F Street.

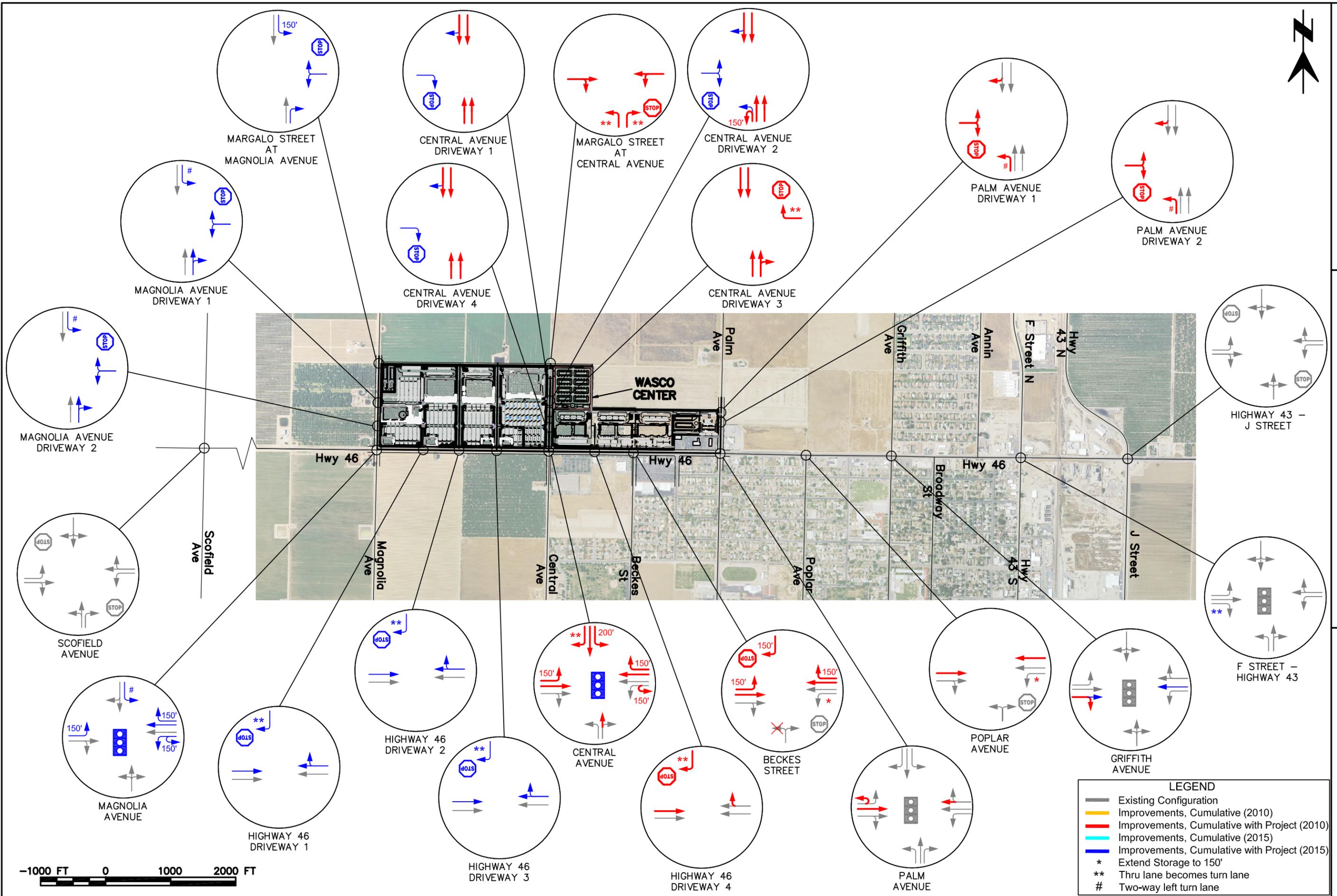
With the proposed lane configurations, all the intersections in the study area will operate at an acceptable LOS, as shown in Tables 16 and 17. The northbound left and right turns at Poplar Avenue will operate at LOS E in the evening peak hour (Table 16) with an average delay of 36.5 seconds per vehicle. The delay for this movement is only slightly higher than the target of 35 seconds per vehicle (LOS D), and the overall corridor and study area operate efficiently. Therefore, given the characteristics of the area, it was determined that the delay at Poplar Avenue in the evening peak hour was acceptable.

#### **5.4. RECOMMENDED IMPROVEMENTS**

Figure 42 summarizes the improvements that will be required in 2015 to mitigate the traffic operations to LOS D under cumulative conditions only, and under cumulative conditions with this project. Also shown in the figure are the mitigations needed for both conditions in 2010. The numbers shown adjacent to the turn lanes indicate the storage required to accommodate the 95<sup>th</sup> percentile queues reported by *Synchro*. If the 95<sup>th</sup> percentile queue was less than 150 feet, a 150-foot storage length was recommended (unless short access separation limits the available storage length).

FIGURE 42  
PHASE 2 RECOMMENDED  
IMPROVEMENTS (2015)

WASCO CENTER  
TRAFFIC IMPACT STUDY



-1000 FT 0 1000 2000 FT



## 6. CONCLUSIONS AND RECOMMENDATIONS

The Wasco Center will be located in the City of Wasco, bound by Highway 46 on the south, Magnolia Avenue on the west, and Palm Avenue on the east. Along the north end of the project, Margalo Street provides the northern boundary from Magnolia Avenue to approximately 1/8 mile east of Central Avenue. The remaining northern boundary is formed by the Hidden Grove subdivision, which is currently under construction.

The Wasco Center will be a multi-use project expected to include a hotel, apartments, restaurants, movie theaters, fitness centers and several retail pads. The project is expected to be built in two phases, and will obtain primary access from Highway 46, Palm Avenue, Central Avenue and Magnolia Avenue.

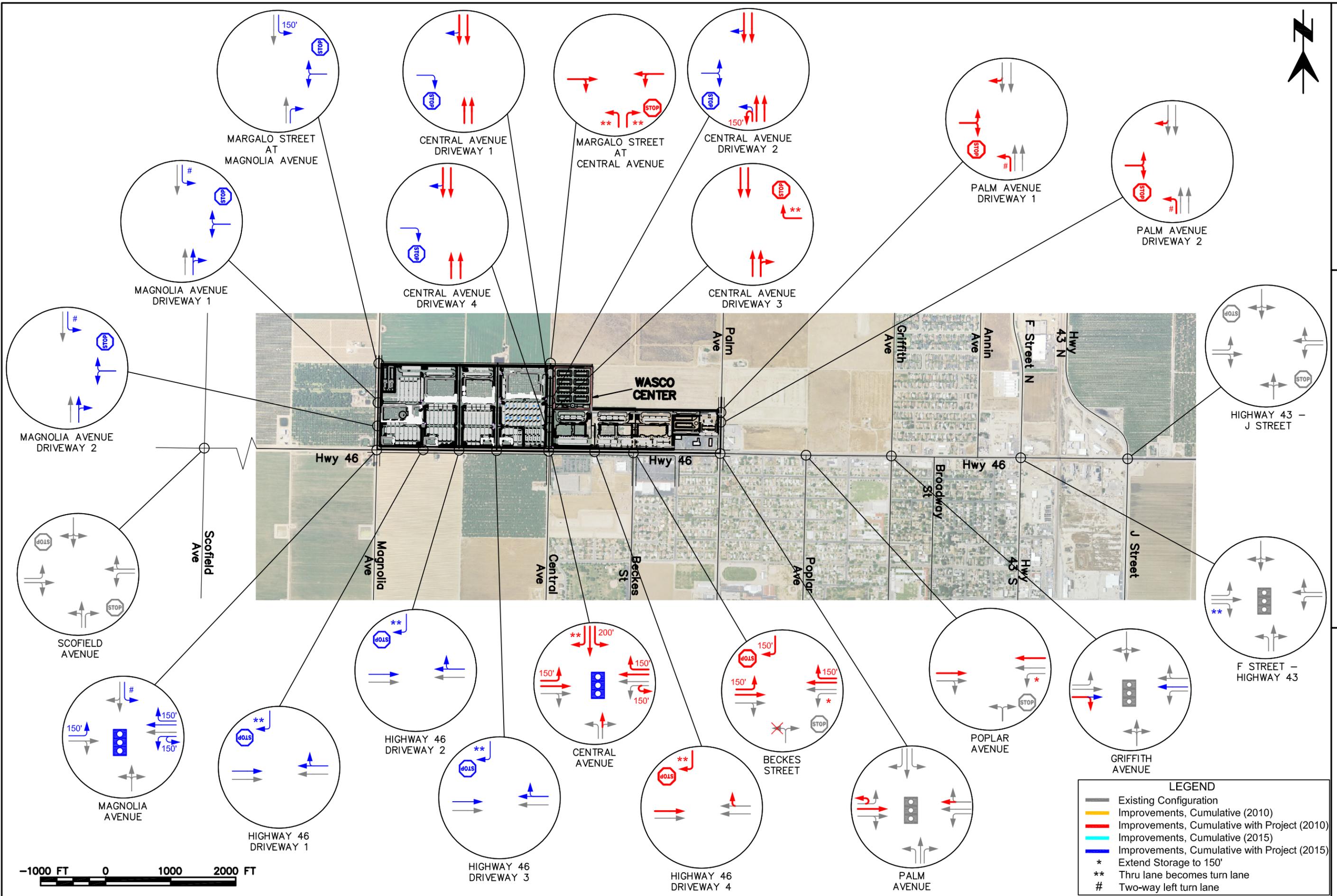
The first phase, expected to be completed in 2010, will cover the area east of Central Avenue and will include a 100-room hotel, 99 apartments, 5 small retail spaces (206,000 square feet total), and 3 fitness centers (11,900 sq.ft. total). Phase 1 will generate 12,563 daily trips, including 2,498 of which will be pass-by trips. Therefore, the project will add 10,065 daily trips to external roadways by 2010.

The second phase will then add the development west of Central Avenue, and is expected to be completed in 2015. Phase 2 includes 24 more apartments, 5 restaurants, a movie theater, and three large retail spaces (378,000 sq. ft.). This phase will add approximately 11,017 external daily trips to the roadway network, bringing the total external trip generation for the site to 21,082 trips per day

The additional traffic on the roadway network will require the construction of improvements in order to maintain an adequate LOS. Although Caltrans has a target LOS of C on State facilities, the *State Route 46 Transportation Concept Report* recommended LOS D as the target for this segment of Highway 46 due to the right-of-way constraints and the built environment. In addition, according to the *Kern County General Plan*, LOS D is the target for all facilities within the City of Wasco. The mitigation measures discussed in the following sections (and summarized in Figure 43) will ensure that all facilities operate at an acceptable LOS. The owners of the Wasco Center are responsible for contributing the project's fair share to the implementation of those measures.

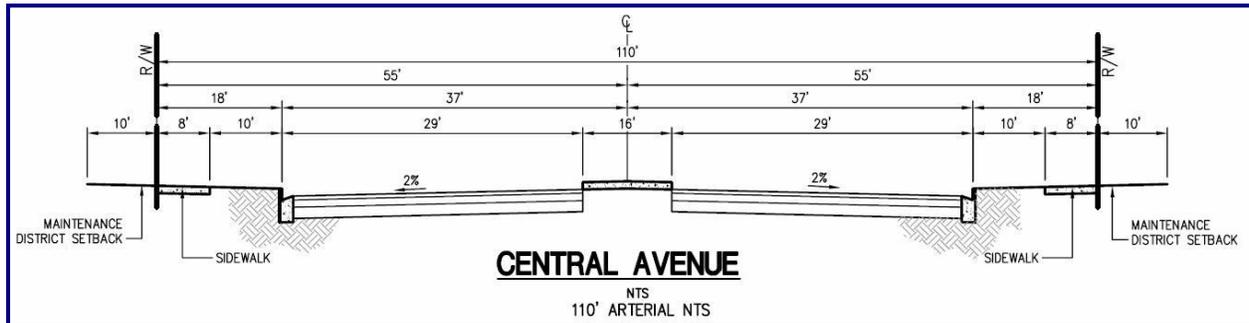
FIGURE 43  
MITIGATION MEASURES BY PHASE

WASCO CENTER  
TRAFFIC IMPACT STUDY



## 6.1. PHASE 1 (2010) MITIGATION MEASURES

- Improve Highway 46 to a 4-lane divided section between Central Avenue and Griffith Avenue, as shown in Figure 5.
- Extend Central Avenue from Highway 46 to Margalo Street (1/4 mile) as a 4-lane roadway with a raised median (Figure 44).
- Improve a short section of Palm Avenue north of Highway 46 to a 5-lane section (4 through lanes with a two-way left turn lane) through the frontage of the project.
- Improve a short section of Margalo Street east of Central Avenue through the frontage of the project.
- Provide turn lanes as shown in Figure 43.

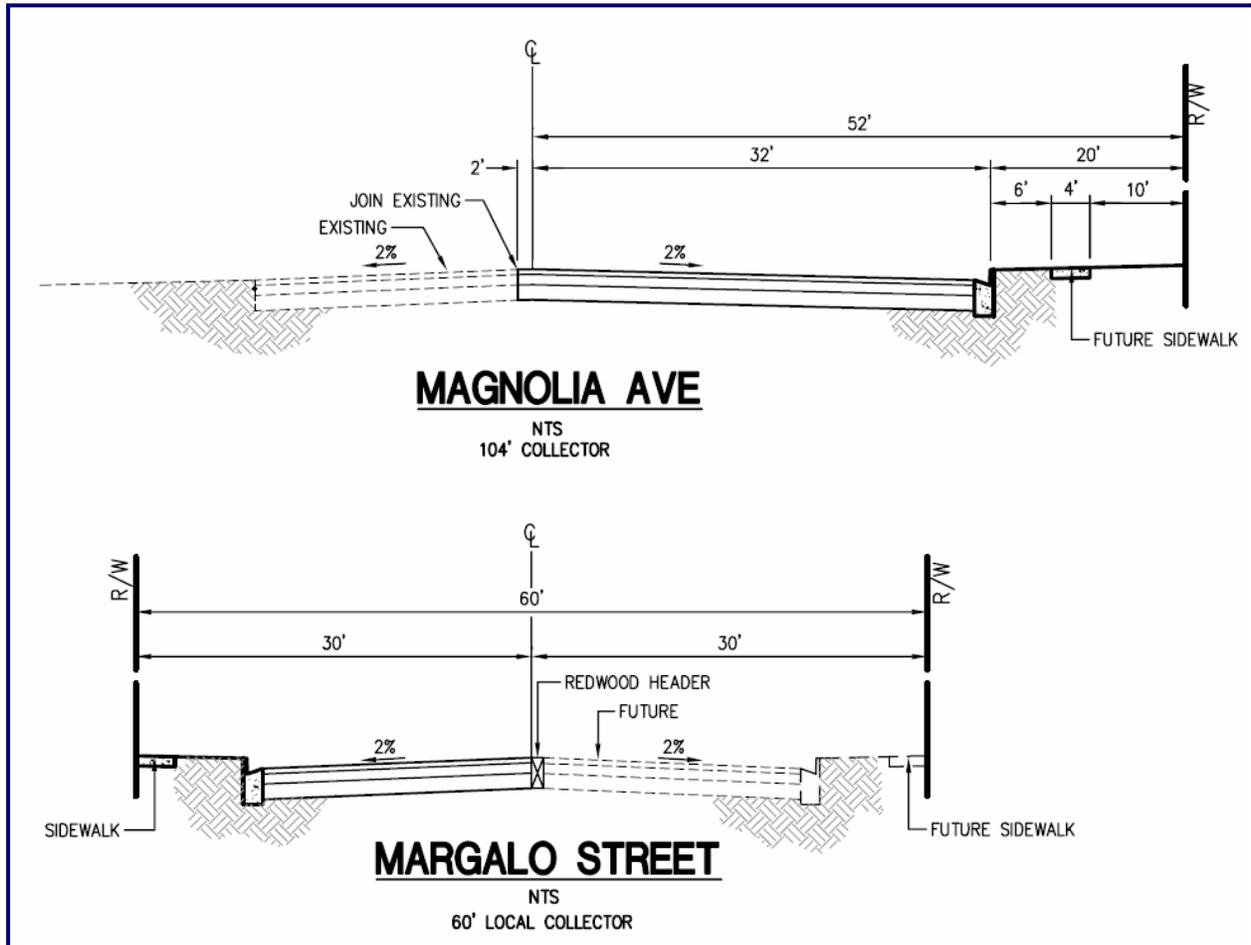


**Figure 44. Recommended Typical Section - Central Avenue**

## 6.2. PHASE 2 (2015) MITIGATION MEASURES

- Improve Highway 46 to a 4-lane divided section between Magnolia Avenue and Central Avenue, and between Griffith Avenue and Highway 43 South / F Street, as shown in Figure 5. The addition of these improvements to the improvements from Phase 1 will result on a 4-lane divided facility for Highway 46 between Magnolia Avenue and Highway 43 South / F Street.
- Construct the eastern half of a 5-lane section on Magnolia Avenue between Highway 46 and Margalo Street (Figure 45). This would result in two northbound through lanes, a two-way left turn lane, and one southbound through lane.
- Construct Margalo Street as a 2-lane roadway between Magnolia Avenue and Central Avenue (Figure 45).
- Install a traffic signal at the intersection of Magnolia Avenue and Highway 46.

- Install a traffic signal at the intersection of Central Avenue and Highway 46.
- Provide turn lanes as shown in Figure 43.



**Figure 45. Recommended Typical Section – Magnolia Avenue and Margalo Street**

### 6.3. EQUITABLE SHARE OF MITIGATION MEASURES

Based on the Caltrans *Guide for the Preparation of Traffic Impact Studies*, the owner of the project will be fully responsible for providing all on-site streets and turn lanes that provide exclusive access to the site. Table 18 lists the improvements that the owner of the Wasco Center will be 100% responsible for. As shown in the table, the project owner will provide the right-of-way for the north side of Highway 46 (14 feet per e-mail from Lisa Zito on June 16, 2008), and will construct a second westbound through lane for Highway 46 along the frontage of the Wasco Center.

**Table 18. Roadway Improvements – Full Responsibility for Wasco Center**

Roadway Improvements - Full Responsibility for Wasco Center	
Right-of-way for North side of Highway 46	
2nd Westbound Thru lane on Highway 46 (Magnolia Ave to Palm Ave)	
Westbound right turn lane at Beckes St	Westbound right turn lane at Central Ave
Eastbound left turn lane at Beckes St	Eastbound left turn lane at Central Ave

### 6.3.1. Equitable Share Calculation – Caltrans Method

In addition to the improvements that the owner is fully responsible for constructing, there are other improvements in the project area that the owner will be partially responsible for. One way to calculate the equitable share for off-site roadway improvements outlined in the *Traffic Impact Study for Wasco Center* is to use Equation C-1 from the *Caltrans Guide for the Preparation of Traffic Impact Studies*. The equation, which requires converting the volumes into passenger car equivalents using the PCE factors from the *Highway Capacity Manual*, is reproduced below.

$$P = \frac{T}{T_B - T_E}$$

Where:

P = The equitable share for the proposed project’s traffic impact.

T = The vehicle trips generated by the project during the peak hour of adjacent State highway facility in vehicles per hour, vph.

T<sub>B</sub> = The forecasted traffic volume on an impacted State highway facility at the time of general plan build-out (e.g., 20 year model of the furthest future model date feasible), vph.

T<sub>E</sub> = The traffic volume existing on the impacted State highway facility plus other approved projects that will generated traffic that has yet to be constructed/opened, vph.

Based on this methodology, the equitable share was calculated for the recommended improvements triggered by the Wasco Center project. The calculations were done separately for each phase, and the results are shown in Table 19. Note that the volumes used to represent the forecasted traffic volume at the time of general plan build-out are the 2015 volumes with this project. The 2030 projected volumes received from the Kern Council of Governments (the general plan build-out year) are lower than the existing volumes that were collected at the beginning of this project, so they were not used.

**Table 19. Equitable Share Calculations**

Phase 1		Existing veh/hr	Existing PCE (T <sub>E</sub> )*	Project veh/hr	Project PCE (T)*	2015 veh/hr	2015 PCE (T <sub>B</sub> )	Fair Share %	Fair Share Total %
Poplar EBT	AM	357	419	145	146	531	598	82%	83%
	PM	570	670	372	375	989	1,113	85%	
Poplar WBT	AM	382	449	161	162	574	646	82%	84%
	PM	444	522	402	406	883	993	86%	
Griffith EBR	AM	25	25	36	37	63	64	95%	95%
	PM	54	55	93	94	151	153	95%	

\* Vehicles are converted to Passenger Car Equivalents (PCEs) using the truck percentage and a truck equivalent of 1.5 pass cars/truck (per HCM flat terrain). Truck % is as follows: Hwy 46 - 35% in 2008, 30% in 2010, 25% in 2015. Truck % for other streets is 2%. Project traffic is assumed to have 2% trucks.

Phase 2		Existing veh/hr	Existing PCE (T <sub>E</sub> )*	Project veh/hr	Project PCE (T)*	2015 veh/hr	2015 PCE (T <sub>B</sub> )	Fair Share %	Fair Share Total %
Magnolia EBL	AM	14	14	35	36	50	51	97%	98%
	PM	0	0	64	64	64	64	100%	
Magnolia WBL	AM	9	9	12	12	21	22	94%	95%
	PM	14	14	33	33	48	49	97%	
Magnolia WBR	AM	3	3	69	70	72	73	100%	100%
	PM	5	5	129	130	134	135	100%	
Magnolia SBL	AM	4	4	79	80	83	84	100%	100%
	PM	3	3	161	163	164	166	100%	
Magnolia Signal	AM	489	494	301	304	830	838	88%	90%
	PM	686	693	661	668	1,404	1,418	92%	
Central Signal	AM	535	540	563	568	1,142	1,153	93%	94%
	PM	700	707	1,284	1,297	2,042	2,063	96%	
Griffith WBT	AM	346	407	100	101	475	534	79%	82%
	PM	375	441	251	254	657	740	85%	

This method appears to place a disproportionate amount of responsibility on the project owner. For example, the project will only add 12 vehicles in the morning peak hour and 33 vehicles in the evening peak hour to the westbound left turn from Highway 46 onto Magnolia Avenue, but when the methodology is applied, the result is that the project owner is responsible for 95% of the cost of the turn lane. Likewise, the owner of the Wasco Center would be responsible for 94% of the signal at Central Avenue, despite the fact that there are already over 700 veh/hr entering the intersection.

An updated model showing 2030 projected volumes is needed to calculate the equitable share percentages using the Caltrans method. As a result, an alternative method of cost allocation is described below.

### 6.3.2. Proposed Equitable Share Calculation – Proportion of Total Traffic

Allocating improvements based on the ratio of site traffic to forecasted total traffic (the proportion of site traffic to total traffic) would provide a fair measure of cost sharing. The equation below illustrates this concept in mathematical form. Turn lanes that provide exclusive access to the Wasco Center project would continue to be 100% attributable to the project, keeping the commitments in Table 18 unchanged. The percentage of roadway improvement cost for all other movements that the project owner is responsible for was calculated using the following equation, with the definitions taken from the Caltrans *Guide for the Preparation of Traffic Impact Studies*:

$$P = \frac{T}{T_B}$$

Where:

P = The equitable share for the proposed project's traffic impact.

T = The vehicle trips generated by the project during the peak hour of adjacent State highway facility in vehicles per hour, vph.

T<sub>B</sub> = The forecasted traffic volume on an impacted State highway facility at the time of general plan build-out (e.g., 20 year model of the furthest future model date feasible), vph.

This equation was developed with the idea that the equitable share percentage should be based on the amount of project traffic compared to the total traffic in the project buildout year. Therefore, the equitable share percentage that the project owner is responsible for is directly related to the percentage of traffic that the project will contribute to a particular movement at buildout. Before calculating the equitable share percentage, the volumes were converted into passenger car equivalents using the PCE factors from the *Highway Capacity Manual*, as required by Caltrans. The results are shown in Table 20.

**Table 20. Equitable Share Calculations**

Phase 1		Existing veh/hr	Existing PCE (T <sub>E</sub> )*	Project veh/hr	Project PCE (T)*	2015 veh/hr	2015 PCE (T <sub>B</sub> )	Fair Share %	Fair Share Total %
Poplar EBT	AM	357	419	145	146	531	598	24%	29%
	PM	570	670	372	375	989	1,113	34%	
Poplar WBT	AM	382	449	161	162	574	646	25%	33%
	PM	444	522	402	406	883	993	41%	
Griffith EBR	AM	25	25	36	37	63	64	57%	59%
	PM	54	55	93	94	151	153	61%	

\* Vehicles are converted to Passenger Car Equivalents (PCEs) using the truck percentage and a truck equivalent of 1.5 pass cars/truck (per HCM flat terrain). Truck % is as follows: Hwy 46 - 35% in 2008, 30% in 2010, 25% in 2015. Truck % for other streets is 2%. Project traffic is assumed to have 2% trucks.

Phase 2		Existing veh/hr	Existing PCE (T <sub>E</sub> )*	Project veh/hr	Project PCE (T)*	2015 veh/hr	2015 PCE (T <sub>B</sub> )	Fair Share %	Fair Share Total %
Magnolia EBL	AM	14	14	35	36	50	51	70%	85%
	PM	0	0	64	64	64	64	100%	
Magnolia WBL	AM	9	9	12	12	21	22	55%	62%
	PM	14	14	33	33	48	49	68%	
Magnolia WBR	AM	3	3	69	70	72	73	96%	96%
	PM	5	5	129	130	134	135	96%	
Magnolia SBL	AM	4	4	79	80	83	84	95%	96%
	PM	3	3	161	163	164	166	98%	
Magnolia Signal	AM	489	494	301	304	830	838	36%	42%
	PM	686	693	661	668	1,404	1,418	47%	
Central Signal	AM	535	540	563	568	1,142	1,153	49%	56%
	PM	700	707	1,284	1,297	2,042	2,063	63%	
Griffith WBT	AM	346	407	100	101	475	534	19%	27%
	PM	375	441	251	254	657	740	34%	

As seen in the table, the project owner would bear a majority of the cost at locations where site traffic is a majority of the movement, such as the westbound right turns and southbound left turns at Magnolia Avenue. It is recommended that this method be used to determine the equitable share responsibility of the owner for the improvements discussed in this report.

## 7. REFERENCES

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- <sup>1</sup> Kern County California Road System, Functional Classification Maps. Federal Highway Administration, April 2007. [http://www.dot.ca.gov/hq/tsip/hseb/crs\\_maps/](http://www.dot.ca.gov/hq/tsip/hseb/crs_maps/) (Map 11r32), Accessed January 8, 2008.
- <sup>2</sup> Wasco 4-Lane Project. Initial Study with Mitigated Negative Declaration/Environmental Assessment with Finding of No Significant Impact. U.S. Department of Transportation, Federal Highway Administration, and the State of California Department of Transportation, October 2006.
- <sup>3</sup> State Route 46 Transportation Concept Report. California Department of Transportation, District 6 Office of Planning, July 2001.
- <sup>4</sup> Traffic Impact Analysis Report, Rose City Industrial Park Project, Draft Report. URS Corporation, July 2007.
- <sup>5</sup> Highway Capacity Manual. Transportation Research Board, Washington D.C., 2000.
- <sup>6</sup> Guide for the Preparation of Traffic Impact Studies. California Department of Transportation, December 2002.
- <sup>7</sup> California Manual on Uniform Traffic Control Devices. Federal Highway Administration, 2003 and amended for use in California 2006.
- <sup>8</sup> Traffic Impact Study, Commercial Developments, North Side of State Route 46 (Famosa Hwy) West of Poplar Avenue. Crenshaw Traffic Engineering, December 2007.
- <sup>9</sup> Institute of Transportation Engineers. Trip Generation, 7<sup>th</sup> edition, Washington D.C., 2004.
- <sup>10</sup> Institute of Transportation Engineers. Trip Generation Handbook, 2<sup>nd</sup> Edition, Washington D.C., 2004.
- <sup>11</sup> DRAFT 2007 Destination 2030 Regional Transportation Plan. Kern Council of Governments, March 2007.

## 8. APPENDIX A: ROADWAY CAPACITY PARAMETERS

# ARTPLAN 2002 Conceptual Planning Analysis

## Description/File Information

<b>Filename</b>		<b>Date Prepared</b>	12/6/2007	
<b>Program</b>	ARTPLAN	<b>Version</b>	5.2.0	
<b>Analyst</b>	Psomas	<b>Agency</b>	Psomas	<b>District</b>
<b>Arterial Name</b>	Collectors	<b>Begin Intersection</b>		<b>End Intersection</b>
<b>Study Period</b>	K30	<b>Peak Direction</b>	Eastbound	
<b>User Notes</b>				

## Facility Data

Roadway Variables		Traffic Variables		Control Variables		Multimodal Variables	
<b>Area Type</b>	Urbanized	<b>AADT</b>	10000	<b>Arrival Type</b>	3	<b>Paved Shoulder/Bike Lane</b>	No
<b>Class</b>	3	<b>K</b>	0.12	<b>Signals/Mile</b>	5.00	<b>Outside Lane Width</b>	Typical
<b>Posted Speed</b>	35	<b>D</b>	0.6	<b>Cycle Length</b>	90	<b>Pavement Condition</b>	Typical
<b># Thru Lanes</b>	2	<b>PHF</b>	0.9	<b>Through g/C</b>	0.3	<b>Sidewalk</b>	Yes
<b>Median Type</b>	None	<b>% Turns Excl. Lanes</b>	10	<b>Control Type</b>	Semiactuated	<b>Sidewalk/Roadway Separation</b>	Typical
<b>Left Turn Lanes</b>	Yes	<b>% Heavy Vehicles</b>	10			<b>Sidewalk/Roadway Protective Barrier</b>	No
		<b>Base Sat Flow Rate</b>	1700			<b>Obstacle to Bus Stop</b>	No
		<b>Local Adj. Factor</b>	1			<b>Bus Freq</b>	1
		<b>Adjusted Sat Flow Rate</b>	1468			<b>Bus Span Of Service</b>	15

### Automobile Segment Data

Segment #	Cycle Length	g/C	Arr. Type	% Turns	# Dir. Lanes	Length	AADT	Hourly Vol.	FFS	Median Type
1 (to )	120	0.5	4	30	2	0.5	30000	1568	50	Restrictive
2 (to )	120	0.5	4	30	2	0.5	30000	1568	50	Restrictive
3 (to )	120	0.5	4	30	2	0.5	30000	1568	50	Restrictive
4 (to )	120	0.5	4	30	2	0.5	30000	1568	50	Restrictive

### Automobile LOS

Segment #	Thru Mvmt Flow Rate	v/c	Control Delay	Int. Approach LOS	Speed (mph)	Segment LOS
1 (to )	1220	0.83	21.27	C	28.1	B
2 (to )	1220	0.83	21.27	C	28.1	B
3 (to )	1220	0.83	21.27	C	28.1	B
4 (to )	1220	0.83	21.27	C	28.1	B

Arterial Length

2.0

Auto Speed

28.1

Auto LOS

B

### Automobile Service Volume Tables

	A	B	C	D	E
<b>Lanes</b>	<b>Hourly Volume In Peak Direction</b>				
1	610	920	1000	1050	***
2	1340	1890	2020	2100	***
3	2080	2850	3030	3150	***
4	2820	3810	4040	4190	***
*	1340	1890	2020	2100	***
<b>Lanes</b>	<b>Hourly Volume In Both Directions</b>				
2	1020	1530	1670	1750	***
4	2240	3150	3360	3500	***
6	3460	4750	5050	5240	***
8	4690	6350	6730	6990	***
*	2240	3150	3360	3500	***
<b>Lanes</b>	<b>Annual Average Daily Traffic</b>				
2	8500	12800	13900	14600	***
4	18700	26300	28000	29100	***
6	28800	39600	42100	43700	***
8	39100	52900	56100	58300	***
*	18700	26300	28000	29100	***

# ARTPLAN 2002 Conceptual Planning Analysis

## Description/File Information

<b>Filename</b>		<b>Date Prepared</b>	12/6/2007	
<b>Program</b>	ARTPLAN	<b>Version</b>	5.2.0	
<b>Analyst</b>	Psomas	<b>Agency</b>	Psomas	<b>District</b>
<b>Arterial Name</b>	Arterial	<b>Begin Intersection</b>		<b>End Intersection</b>
<b>Study Period</b>	K30	<b>Peak Direction</b>	Eastbound	
<b>User Notes</b>				

## Facility Data

Roadway Variables		Traffic Variables		Control Variables		Multimodal Variables	
<b>Area Type</b>	Urbanized	<b>AADT</b>	30000	<b>Arrival Type</b>	4	<b>Paved Shoulder/Bike Lane</b>	No
<b>Class</b>	2	<b>K</b>	0.095	<b>Signals/Mile</b>	2.00	<b>Outside Lane Width</b>	Typical
<b>Posted Speed</b>	45	<b>D</b>	0.55	<b>Cycle Length</b>	120	<b>Pavement Condition</b>	Typical
<b># Thru Lanes</b>	4	<b>PHF</b>	0.92	<b>Through g/C</b>	0.5	<b>Sidewalk</b>	Yes
<b>Median Type</b>	Restrictive	<b>% Turns Excl. Lanes</b>	30	<b>Control Type</b>	Actuated	<b>Sidewalk/Roadway Separation</b>	Typical
<b>Left Turn Lanes</b>	Yes	<b>% Heavy Vehicles</b>	35			<b>Sidewalk/Roadway Protective Barrier</b>	No
		<b>Base Sat Flow Rate</b>	1800			<b>Obstacle to Bus Stop</b>	No
		<b>Local Adj. Factor</b>	1			<b>Bus Freq</b>	1
		<b>Adjusted Sat Flow Rate</b>	1333			<b>Bus Span Of Service</b>	15

### Automobile Segment Data

Segment #	Cycle Length	g/C	Arr. Type	% Turns	# Dir. Lanes	Length	AADT	Hourly Vol.	FFS	Median Type
1 (to )	120	0.5	4	30	2	0.5	30000	1568	50	Restrictive
2 (to )	120	0.5	4	30	2	0.5	30000	1568	50	Restrictive
3 (to )	120	0.5	4	30	2	0.5	30000	1568	50	Restrictive
4 (to )	120	0.5	4	30	2	0.5	30000	1568	50	Restrictive

### Automobile LOS

Segment #	Thru Mvmt Flow Rate	v/c	Control Delay	Int. Approach LOS	Speed (mph)	Segment LOS
1 (to )	1193	0.89	23.76	C	27.1	C
2 (to )	1193	0.89	23.76	C	27.1	C
3 (to )	1193	0.89	23.76	C	27.1	C
4 (to )	1193	0.89	23.76	C	27.1	C

Arterial Length

2.0

Auto Speed

27.1

Auto LOS

C

### Automobile Service Volume Tables

Lanes	A	B	C	D	E
<b>Hourly Volume In Peak Direction</b>					
1	260	720	890	950	***
2	530	1500	1800	1900	***
3	800	2290	2700	2850	2860
4	1070	3070	3600	3800	3810
*	530	1500	1800	1900	***
<b>Hourly Volume In Both Directions</b>					
2	470	1300	1620	1720	***
4	950	2720	3260	3450	***
6	1460	4160	4910	5170	5190
8	1940	5590	6550	6900	6920
*	950	2720	3260	3450	***
<b>Annual Average Daily Traffic</b>					
2	5000	13700	17000	18100	***
4	10000	28600	34400	36300	***
6	15300	43800	51700	54400	54700
8	20400	58800	69000	72700	72900
*	10000	28600	34400	36300	***

## 9. APPENDIX B: TRAFFIC COUNTS

City Traffic Counters  
626.256.4171

Site Code : 00000000000

Start Date: 10/03/2007

File I.D. : PRWOMAG

Page : 1

Street name :Paso Robles Hwy 46 Cross street:W/O Magnolia Ave Direction 1

Begin Time	East		West		Combined		Wednesday					
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.						
12:00 10/03	32	62	8	63	40	125						
12:15	16	83	6	57	22	140						
12:30	39	79	14	46	53	125						
12:45	21	108	89	313	7	35	69	235	28	143	158	548
01:00	10		80		9		67		19		147	
01:15	16		93		1		61		17		154	
01:30	11		94		12		52		23		146	
01:45	5	42	82	349	10	32	55	235	15	74	137	584
02:00	25		68		15		47		40		115	
02:15	11		98		14		55		25		153	
02:30	8		91		11		48		19		139	
02:45	11	55	105	362	15	55	49	199	26	110	154	561
03:00	13		99		6		60		19		159	
03:15	6		98		12		60		18		158	
03:30	19		105		15		74		34		179	
03:45	9	47	120	422	28	61	43	237	37	108	163	659
04:00	10		102		22		45		32		147	
04:15	9		105		28		57		37		162	
04:30	14		104		49		37		63		141	
04:45	21	54	91	402	60	159	62	201	81	213	153	603
05:00	21		97		95		56		116		153	
05:15	20		115		92		42		112		157	
05:30	30		98		100		55		130		153	
05:45	38	109	81	391	81	368	52	205	119	477	133	596
06:00	29		78		93		55		122		133	
06:15	27		64		88		26		115		90	
06:30	52		110		79		41		131		151	
06:45	44	152	77	329	76	336	25	147	120	488	102	476
07:00	34		52		93		28		127		80	
07:15	49		48		65		26		114		74	
07:30	37		59		99		16		136		75	
07:45	51	171	54	213	81	338	25	95	132	509	79	308
08:00	49		43		53		23		102		66	
08:15	47		43		52		26		99		69	
08:30	73		46		50		33		123		79	
08:45	64	233	44	176	42	197	24	106	106	430	68	282
09:00	43		42		66		23		109		65	
09:15	65		45		49		32		114		77	
09:30	43		27		58		23		101		50	
09:45	79	230	34	148	39	212	24	102	118	442	58	250
10:00	61		53		48		19		109		72	
10:15	60		17		61		9		121		26	
10:30	64		29		49		11		113		40	
10:45	79	264	21	120	50	208	10	49	129	472	31	169
11:00	75		23		54		18		129		41	
11:15	80		21		75		8		155		29	
11:30	83		27		51		11		134		38	
11:45	89	327	18	89	66	246	8	45	155	573	26	134
Totals	1792		3314		2247		1856		4039		5170	
Day Totals		5106				4103				9209		
Split %	44.3%		64.1%		55.6%		35.9%					
Peak Hour	11:00		03:30		05:00		12:45		11:00		03:00	
Volume	327		432		368		249		573		659	
P.H.F.	.91		.9		.92		.90		.92		.92	

City Traffic Counters  
626.256.4171

Site Code : 00000000000  
Start Date: 10/03/2007  
File I.D. : PRWOCEN  
Page : 1

Street name :Paso Robles Hwy 46 Cross street:W/O Central Ave Direction 1

Begin Time	East		West		Combined		Wednesday					
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.						
12:00 10/03	24	80	8	67	32	147						
12:15	19	84	7	60	26	144						
12:30	25	85	11	58	36	143						
12:45	30	94	8	34	53	238	132					
01:00	16	86	9	64	25	150	581					
01:15	14	93	4	59	18	152						
01:30	12	90	10	54	22	144						
01:45	8	50	87	356	11	34	52	229	19	84	139	585
02:00	16	86	14	64	30	150						
02:15	15	90	16	49	31	139						
02:30	9	96	13	56	22	152						
02:45	11	51	98	370	12	55	53	222	23	106	151	592
03:00	11	109	8	59	19	168						
03:15	7	98	10	51	17	149						
03:30	16	97	11	67	27	164						
03:45	8	42	107	411	20	49	69	246	28	91	176	657
04:00	10	114	24	50	34	164						
04:15	9	108	24	42	33	150						
04:30	14	106	38	55	52	161						
04:45	20	53	102	430	52	138	58	205	72	191	160	635
05:00	20	106	86	48	106	154						
05:15	24	119	89	49	113	168						
05:30	28	104	94	64	122	168						
05:45	38	110	92	421	88	357	56	217	126	467	148	638
06:00	31	89	91	58	122	147						
06:15	29	116	90	30	119	146						
06:30	47	79	87	44	134	123						
06:45	46	153	75	359	80	348	29	161	126	501	104	520
07:00	32	59	90	26	122	85						
07:15	49	64	78	28	127	92						
07:30	40	59	91	20	131	79						
07:45	52	173	47	229	85	344	28	102	137	517	75	331
08:00	51	50	59	26	110	76						
08:15	56	55	55	25	111	80						
08:30	72	63	50	29	122	92						
08:45	68	247	50	218	49	213	28	108	117	460	78	326
09:00	64	52	63	26	127	78						
09:15	56	47	52	30	108	77						
09:30	50	39	55	27	105	66						
09:45	62	232	38	176	46	216	26	109	108	448	64	285
10:00	71	46	47	23	118	69						
10:15	72	27	55	14	127	41						
10:30	71	26	51	16	122	42						
10:45	79	293	24	123	46	199	10	63	125	492	34	186
11:00	84	28	50	14	134	42						
11:15	88	22	66	9	154	31						
11:30	89	24	52	10	141	34						
11:45	96	357	26	100	63	231	9	42	159	588	35	142
Totals	1859	3536	2218	1942	4077	5478						
Day Totals		5395		4160		9555						
Split %	45.6%	64.5%	54.4%	35.4%								
Peak Hour	11:00	03:45	05:30	03:00	11:00	03:00						
Volume	357	435	363	246	588	657						
P.H.F.	.92	.95	.96	.89	.92	.93						

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Street name :Paso Robles Hwy 46 Cross street:Bt. Central & Beckes Direction 1

Begin Time	East		West		Combined		Wednesday					
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.						
12:00 10/03	18	111	11	88	29	199						
12:15	26	85	15	84	41	169						
12:30	22	97	14	92	36	189						
12:45	38	104	104	397	25	65	69	333	63	169	173	730
01:00	20	95	19	84	39	179						
01:15	10	93	6	85	16	178						
01:30	19	84	6	114	25	198						
01:45	10	59	87	359	15	46	91	374	25	105	178	733
02:00	8	87	14	86	22	173						
02:15	23	94	23	69	46	163						
02:30	10	106	20	87	30	193						
02:45	8	49	121	408	12	69	71	313	20	118	192	721
03:00	12	125	17	77	29	202						
03:15	10	122	8	77	18	199						
03:30	9	102	13	89	22	191						
03:45	15	46	133	482	17	55	93	336	32	101	226	818
04:00	7	127	29	72	36	199						
04:15	10	120	25	71	35	191						
04:30	8	126	34	101	42	227						
04:45	15	40	142	515	47	135	75	319	62	175	217	834
05:00	19	109	67	82	86	191						
05:15	20	117	79	87	99	204						
05:30	27	136	101	90	128	226						
05:45	27	93	115	477	103	350	105	364	130	443	220	841
06:00	38	118	82	85	120	203						
06:15	34	93	108	88	142	181						
06:30	34	110	87	61	121	171						
06:45	44	150	136	457	72	349	79	313	116	499	215	770
07:00	47	77	87	48	134	125						
07:15	28	81	94	60	122	141						
07:30	48	64	81	57	129	121						
07:45	55	178	71	293	117	379	46	211	172	557	117	504
08:00	57	70	95	54	152	124						
08:15	70	66	66	52	136	118						
08:30	72	58	82	49	154	107						
08:45	77	276	60	254	70	313	58	213	147	589	118	467
09:00	79	81	58	54	137	135						
09:15	58	57	94	35	152	92						
09:30	76	52	74	51	150	103						
09:45	57	270	42	232	83	309	46	186	140	579	88	418
10:00	91	41	66	24	157	65						
10:15	79	54	62	38	141	92						
10:30	76	25	88	16	164	41						
10:45	79	325	30	150	80	296	25	103	159	621	55	253
11:00	98	30	74	14	172	44						
11:15	95	23	74	28	169	51						
11:30	98	21	98	21	196	42						
11:45	101	392	35	109	97	343	26	89	198	735	61	198
Totals	1982	4133	2709	3154	4691	7287						
Day Totals	6115	5863	11978									
Split %	42.2%	56.7%	57.7%	43.2%								
Peak Hour	11:00	04:00	05:30	01:15	11:00	05:15						
Volume	392	515	394	376	735	853						
P.H.F.	.97	.90	.91	.82	.92	.94						

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Street name :Paso Robles Hwy 46 Cross street:Bt. Maple & Poplar Direction 1

Begin Time	West		East		Combined		Wednesday					
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.						
12:00 10/03	11	129	23	142	34	271						
12:15	13	126	26	110	39	236						
12:30	8	113	26	144	34	257						
12:45	20	110	33	108	53	243	1007					
01:00	16	119	22	121	38	240						
01:15	5	109	13	112	18	221						
01:30	9	144	16	106	25	250						
01:45	10	102	11	62	21	211	922					
02:00	11	121	7	125	18	246						
02:15	17	117	29	128	46	245						
02:30	20	100	12	135	32	235						
02:45	9	85	9	57	18	219	945					
03:00	15	118	15	125	30	243						
03:15	9	104	10	161	19	265						
03:30	14	112	11	156	25	268						
03:45	19	129	19	55	38	313	1089					
04:00	22	100	7	155	29	255						
04:15	21	87	9	135	30	222						
04:30	36	121	11	130	47	251						
04:45	43	122	16	43	59	287	1015					
05:00	56	115	22	134	78	249						
05:15	88	130	26	159	114	289						
05:30	91	121	42	148	133	269						
05:45	116	351	139	505	41	131	129	570	157	482	268	1075
06:00	85	119	62	132	147	251						
06:15	107	124	45	117	152	241						
06:30	103	87	57	103	160	190						
06:45	99	394	108	438	62	226	143	495	161	620	251	933
07:00	91	77	68	124	159	201						
07:15	104	70	50	138	154	208						
07:30	108	85	67	99	175	184						
07:45	127	430	78	310	87	272	95	456	214	702	173	766
08:00	122	78	89	91	211	169						
08:15	92	68	98	78	190	146						
08:30	92	58	87	84	179	142						
08:45	86	392	66	270	112	386	82	335	198	778	148	605
09:00	83	62	101	102	184	164						
09:15	91	50	79	74	170	124						
09:30	117	49	81	61	198	110						
09:45	113	404	47	208	73	334	49	286	186	738	96	494
10:00	95	35	132	46	227	81						
10:15	86	41	125	66	211	107						
10:30	110	16	76	28	186	44						
10:45	98	389	22	114	107	440	35	175	205	829	57	289
11:00	109	27	113	25	222	52						
11:15	101	22	109	33	210	55						
11:30	125	22	108	21	233	43						
11:45	108	443	20	91	124	454	35	114	232	897	55	205
Totals	3131	4199	2568	5146	5699	9345						
Day Totals		7330		7714		15044						
Split %	54.9%	44.9%	45.0%	55.0%								
Peak Hour	07:15	05:15	11:00	03:15	11:00	03:15						
Volume	461	509	454	656	897	1101						
P.H.F.	.90	.91	.91	.89	.96	.87						

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Street name :Paso Robles Hwy 46 Cross street:Bt. E & F St Direction 1

Begin Time	East		West		Combined		Wednesday					
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.						
12:00 10/03	25	131	15	131	40	262						
12:15	24	91	16	108	40	199						
12:30	27	110	11	106	38	216						
12:45	43	119	107	439	26	68	100	445	69	187	207	884
01:00	26	135	16	104	42	239						
01:15	9	111	11	97	20	208						
01:30	19	109	10	147	29	256						
01:45	14	68	98	453	13	50	104	452	27	118	202	905
02:00	7	119	13	125	20	244						
02:15	24	136	20	85	44	221						
02:30	14	120	25	119	39	239						
02:45	6	51	124	499	10	68	119	448	16	119	243	947
03:00	19	131	19	112	38	243						
03:15	8	149	7	99	15	248						
03:30	18	137	14	117	32	254						
03:45	19	64	160	577	18	58	127	455	37	122	287	1032
04:00	12	135	27	133	39	268						
04:15	13	123	21	103	34	226						
04:30	14	112	32	135	46	247						
04:45	27	66	144	514	41	121	118	489	68	187	262	1003
05:00	24	135	45	151	69	286						
05:15	47	137	56	122	103	259						
05:30	52	141	69	111	121	252						
05:45	69	192	131	544	84	254	122	506	153	446	253	1050
06:00	91	124	58	109	149	233						
06:15	106	124	96	109	202	233						
06:30	105	100	79	69	184	169						
06:45	102	404	134	482	69	302	62	349	171	706	196	831
07:00	67	109	91	69	158	178						
07:15	58	108	107	73	165	181						
07:30	71	79	107	65	178	144						
07:45	95	291	76	372	107	412	69	276	202	703	145	648
08:00	81	80	97	57	178	137						
08:15	95	65	81	50	176	115						
08:30	95	70	88	55	183	125						
08:45	112	383	72	287	77	343	44	206	189	726	116	493
09:00	112	89	88	49	200	138						
09:15	96	55	89	37	185	92						
09:30	91	63	108	36	199	99						
09:45	67	366	44	251	96	381	54	176	163	747	98	427
10:00	101	48	70	35	171	83						
10:15	121	55	86	40	207	95						
10:30	84	31	111	26	195	57						
10:45	114	420	38	172	96	363	27	128	210	783	65	300
11:00	108	27	107	22	215	49						
11:15	106	29	105	14	211	43						
11:30	111	24	128	26	239	50						
11:45	137	462	32	112	101	441	15	77	238	903	47	189
Totals	2886	4702	2861	4007	5747	8709						
Day Totals		7588		6868		14456						
Split %	50.2%	53.9%	49.7%	46.0%								
Peak Hour	11:00	03:15	11:00	04:30	11:00	04:45						
Volume	462	581	441	526	903	1059						
P.H.F.	.84	.90	.86	.87	.94	.92						

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Street name :Paso Robles Hwy 46 Cross street:Bt. F St & RR Tracks Direction 1

Begin Time	West		East		Combined		Wednesday	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.		
12:00 10/03	27	102	17	81	44	183		
12:15	17	85	21	100	38	185		
12:30	16	84	24	81	40	165		
12:45	16	76	68	339	24	86	68	330
01:00	15	84	20	65	35	149	162	669
01:15	30	69	40	75	70	144		
01:30	18	80	22	85	40	165		
01:45	10	73	99	332	5	87	85	310
02:00	13	122	18	83	31	205	160	642
02:15	18	89	7	77	25	166		
02:30	14	115	4	85	18	200		
02:45	17	62	112	438	26	55	96	341
03:00	26	102	6	94	43	117	208	779
03:15	21	96	2	77	32	196		
03:30	25	92	12	89	23	173		
03:45	11	83	85	375	37	181	108	751
04:00	17	99	5	25	16	201		
04:15	23	105	23	107	40	206		
04:30	31	121	15	142	38	247		
04:45	22	93	10	85	41	206		
05:00	28	79	12	60	34	174	153	833
05:15	39	118	16	89	44	207		
05:30	39	93	29	103	68	196		
05:45	39	118	29	106	68	224		
05:55	57	163	111	440	42	116	107	405
06:00	46	106	48	121	99	218	279	845
06:15	68	99	59	89	94	227		
06:30	56	81	83	95	127	188		
06:45	82	252	81	367	139	176	546	759
07:00	71	59	104	294	186	168		
07:15	59	56	98	78	169	137		
07:30	73	44	92	79	151	155		
07:45	102	305	53	207	126	120	611	530
08:00	92	53	63	306	70	323	165	611
08:15	99	50	60	49	152	102		
08:30	89	39	80	46	179	96		
08:45	70	350	64	269	153	100	619	384
09:00	63	39	65	44	135	86		
09:15	67	31	90	46	153	85		
09:30	67	32	91	59	158	90		
09:45	80	277	76	128	143	94	601	337
10:00	68	38	67	324	147	68		
10:15	90	39	77	47	145	85		
10:30	63	32	47	29	137	68		
10:45	79	300	74	151	137	66	594	307
11:00	92	42	96	294	175	88		
11:15	74	19	61	25	153	44		
11:30	75	31	79	31	153	62		
11:45	67	24	81	19	156	43		
Totals	2342	3454	2218	3565	4560	7019		
Day Totals	5796		5783		11579			
Split %	51.3%	49.2%	48.6%	50.7%				
Peak Hour	07:45	05:00	06:30	03:30	07:45	05:15		
Volume	382	440	377	454	649	865		
P.H.F.	.93	.93	.90	.79	.90	.95		

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Street name :Magnolia Ave Cross street:S/O Paso Robles Hwy 46 Direction 1											
Begin Time	<-----> North				<-----> South				<-----> Combined		----->
	A.M.		P.M.	A.M.		P.M.		A.M.	P.M.		Wednesday
12:00 10/03	1		6	0		5		1	11		
12:15	0		3	0		2		0	5		
12:30	1		8	0		6		1	14		
12:45	1	3	7	24	1	1	14	2	8	4	38
01:00	0		5	0		3		0	8		
01:15	1		8	0		10		1	18		
01:30	0		9	0		11		0	20		
01:45	1	2	6	28	0	*	28	1	10	2	56
02:00	1		9	1		8		2	17		
02:15	0		5	0		4		0	9		
02:30	1		6	1		5		2	11		
02:45	0	2	5	25	0	2	23	0	11	4	48
03:00	0		6	0		5		0	11		
03:15	0		14	0		1		0	15		
03:30	1		5	1		10		2	15		
03:45	0	1	4	29	0	1	21	0	9	2	50
04:00	1		9	0		6		1	15		
04:15	0		10	0		9		0	19		
04:30	0		11	2		7		2	18		
04:45	2	3	10	40	0	2	32	2	20	5	72
05:00	6		9	2		5		8	14		
05:15	10		8	0		7		10	15		
05:30	3		5	3		3		6	8		
05:45	4	23	8	30	9	14	24	13	17	37	54
06:00	10		4	4		0		14	4		
06:15	4		9	8		8		12	17		
06:30	6		7	2		1		8	8		
06:45	11	31	6	26	5	19	13	16	10	50	39
07:00	9		1	8		12		17	13		
07:15	4		5	6		2		10	7		
07:30	6		3	7		2		13	5		
07:45	14	33	2	11	8	29	19	22	5	62	30
08:00	8		1	7		4		15	5		
08:15	8		0	3		1		11	1		
08:30	7		5	3		0		10	5		
08:45	6	29	3	9	5	18	5	11	3	47	14
09:00	6		4	2		6		8	10		
09:15	9		3	4		0		13	3		
09:30	3		3	7		0		10	3		
09:45	2	20	0	10	0	13	6	2	0	33	16
10:00	2		1	5		1		7	2		
10:15	4		1	0		2		4	3		
10:30	3		1	2		0		5	1		
10:45	3	12	1	4	5	12	3	8	1	24	7
11:00	6		1	3		0		9	1		
11:15	5		2	2		2		7	4		
11:30	5		1	4		0		9	1		
11:45	2	18	0	4	2	11	2	4	0	29	6
Totals	177		240	122		190		299	430		
Day Totals		417			312				729		
Split %	59.2%		55.8%	40.8%		44.1%					
Peak Hour	07:45		04:00	07:00		01:15		07:00		04:00	
Volume	37		40	29		33		62		72	
P.H.F.	.66		.90	.90		.75		.70		.9	

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Street name :Central Ave Cross street:S/O Paso Robles Hwy 46 Direction 1

Begin Time	North		South		Combined		Wednesday
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	
12:00 10/03	0	17	1	8	1	25	
12:15	0	7	0	15	0	22	
12:30	0	14	0	13	0	27	
12:45	1	7	45	2	3	8	44
01:00	0	15		3	8	4	15
01:15	1	11		1	7	2	18
01:30	3	14		0	12	3	26
01:45	0	4	51	0	4	9	36
02:00	0	12		1	10	1	22
02:15	0	16		2	14	2	30
02:30	0	8		0	12	0	20
02:45	0	*	18	54	1	4	8
03:00	0	9		0	10	0	19
03:15	3	12		2	15	5	27
03:30	0	12		0	16	0	28
03:45	2	5	11	44	1	3	10
04:00	1	13		0	15	1	28
04:15	2	11		1	13	3	24
04:30	3	8		4	21	7	29
04:45	17	23	8	40	2	7	16
05:00	9	13		6	16	15	30
05:15	18	13		3	15	21	28
05:30	15	8		5	15	20	23
05:45	15	57	12	46	0	14	8
06:00	15	14		7	16	22	30
06:15	10	9		10	11	20	20
06:30	18	16		10	12	28	28
06:45	13	56	18	57	5	32	13
07:00	9	10		15	6	24	16
07:15	6	6		3	17	9	23
07:30	9	12		15	8	24	20
07:45	22	46	6	34	15	48	12
08:00	21	10		14	3	37	94
08:15	15	6		9	8	24	14
08:30	11	3		13	11	24	14
08:45	14	61	8	27	1	37	4
09:00	9	6		8	10	17	16
09:15	5	12		9	5	14	17
09:30	9	2		7	4	16	6
09:45	3	26	1	21	10	34	6
10:00	2	2		6	5	8	7
10:15	12	1		5	1	17	2
10:30	5	4		8	3	13	7
10:45	10	29	3	10	9	28	1
11:00	10	2		3	2	13	4
11:15	17	0		4	2	21	2
11:30	15	0		14	0	29	0
11:45	10	52	2	4	15	36	2
Totals	360	433	250	456	610	889	
Day Totals		793		706		1499	
Split %	59.0%	48.7%	40.9%	51.2%			
Peak Hour	07:45	06:00	07:30	04:30	07:30	04:30	
Volume	69	57	53	68	120	110	
P.H.F.	.78	.79	.88	.80	.81	.94	

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Street name :Palm Ave Cross street:N/O Paso Robles Hwy 46 Direction 1

Begin Time	South		North		Combined		Wednesday					
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.						
12:00 10/03	1	30	0	18	1	48						
12:15	0	20	1	13	1	33						
12:30	1	9	0	14	1	23						
12:45	0	2	17	76	1	2	39	143				
01:00	2	19	2	13	4	32						
01:15	0	10	0	20	0	30						
01:30	0	12	0	10	0	22						
01:45	0	2	16	57	1	3	35	119				
02:00	1	17	0	12	1	29						
02:15	4	11	1	8	5	19						
02:30	0	24	0	8	0	32						
02:45	0	5	16	68	1	2	25	105				
03:00	0	20	1	11	1	31						
03:15	2	20	0	17	2	37						
03:30	0	16	1	13	1	29						
03:45	3	5	27	83	3	5	37	134				
04:00	1	19	0	14	1	33						
04:15	1	29	1	14	2	43						
04:30	3	23	0	13	3	36						
04:45	3	8	37	108	1	2	48	160				
05:00	5	23	3	8	8	31						
05:15	4	23	3	16	7	39						
05:30	8	25	18	23	26	48						
05:45	9	26	22	93	19	60	44	162				
06:00	10	16	20	7	30	23						
06:15	8	6	13	10	21	16						
06:30	11	17	28	11	39	28						
06:45	11	40	20	59	45	135	36	103				
07:00	12	12	19	5	31	17						
07:15	13	9	15	5	28	14						
07:30	11	10	19	9	30	19						
07:45	20	56	6	37	12	65	5	24	32	121	11	61
08:00	21	9	10	6	31	15						
08:15	9	6	10	8	19	14						
08:30	10	3	23	4	33	7						
08:45	12	52	3	21	14	57	8	26	26	109	11	47
09:00	13	4	13	5	26	9						
09:15	8	4	18	7	26	11						
09:30	10	1	18	5	28	6						
09:45	11	42	2	11	9	58	1	18	20	100	3	29
10:00	22	2	21	4	43	6						
10:15	8	3	10	7	18	10						
10:30	11	5	9	1	20	6						
10:45	14	55	2	12	11	51	1	13	25	106	3	25
11:00	17	1	16	2	33	3						
11:15	23	1	14	1	37	2						
11:30	17	3	17	1	34	4						
11:45	21	78	0	5	16	63	0	4	37	141	0	9
Totals	371	630	437	467	808	1097						
Day Totals	1001	904	1905									
Split %	45.9%	57.4%	54.0%	42.5%								
Peak Hour	11:00	04:15	06:30	12:30	06:30	04:45						
Volume	78	112	96	69	143	166						
P.H.F.	.84	.75	.70	.78	.79	.86						

City Traffic Counters  
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Site Code : 00000000000  
Start Date: 10/03/2007  
File I.D. : C:\DOCUMENTS  
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Street name :Palm Ave Cross street:S/O Paso Robles Hwy 46 Direction 1

Begin Time	North		South		Combined		Wednesday
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	
12:00 10/03	2	32	5	36	7	68	
12:15	1	48	2	45	3	93	
12:30	4	44	2	37	6	81	
12:45	2	37	2	46	4	83	325
01:00	0	41	2	40	2	81	
01:15	2	22	3	32	5	54	
01:30	1	29	2	30	3	59	
01:45	1	30	1	22	2	52	246
02:00	0	27	1	29	1	56	
02:15	2	25	1	26	3	51	
02:30	0	16	1	28	1	44	
02:45	4	22	1	30	5	52	203
03:00	2	18	0	44	2	62	
03:15	1	33	2	30	3	63	
03:30	4	40	0	28	4	68	
03:45	3	34	1	36	4	70	263
04:00	2	32	4	35	6	67	
04:15	3	21	2	37	5	58	
04:30	4	34	1	42	5	76	
04:45	8	36	3	46	11	82	283
05:00	16	36	5	33	21	69	
05:15	15	39	9	51	24	90	
05:30	38	39	7	49	45	88	
05:45	15	33	7	38	22	71	318
06:00	34	34	10	41	44	75	
06:15	31	28	14	37	45	65	
06:30	29	37	6	40	35	77	
06:45	22	51	13	43	35	92	309
07:00	33	38	19	43	52	81	
07:15	25	54	15	31	40	85	
07:30	38	35	28	34	66	69	
07:45	42	28	34	31	76	59	294
08:00	24	19	27	26	51	45	
08:15	30	19	18	36	48	55	
08:30	27	23	10	20	37	43	
08:45	23	28	13	19	36	47	190
09:00	21	22	18	22	39	44	
09:15	20	9	16	23	36	32	
09:30	14	16	26	16	40	32	
09:45	27	7	15	8	42	15	123
10:00	28	6	34	10	62	16	
10:15	11	12	20	17	31	29	
10:30	20	3	11	11	31	14	
10:45	17	5	24	2	41	7	66
11:00	15	5	20	14	35	19	
11:15	15	5	19	3	34	8	
11:30	25	4	19	7	44	11	
11:45	32	1	33	7	65	8	46
Totals	733	1257	526	1409	1259	2666	
Day Totals		1990		1935		3925	
Split %	58.2%	47.1%	41.7%	52.8%			
Peak Hour	07:00	06:30	07:30	04:45	07:30	12:15	
Volume	138	180	107	179	241	338	
P.H.F.	.82	.83	.78	.87	.79	.90	

City Traffic Counters  
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Site Code : 000000000000  
Start Date: 10/03/2007  
File I.D. : C:\DOCUMENTS  
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Street name :Griffith Ave Cross street:Bt. Paso Robles Hwy 46 & 1st St Direction 1

Begin Time	North		South		Combined			
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.		
12:00 10/03	4	22	0	17	4	39		
12:15	2	20	0	18	2	38		
12:30	0	24	1	8	1	32		
12:45	0	6 14	80 1	2 16	59 1	8 30	139	
01:00	1	26	1	14	2	40		
01:15	1	20	2	10	3	30		
01:30	0	17	0	7	0	24		
01:45	1	3 34	97 0	3 15	46 1	6 49	143	
02:00	0	12	1	16	1	28		
02:15	0	17	0	19	0	36		
02:30	0	15	0	20	0	35		
02:45	0	* 18	62 1	2 16	71 1	2 34	133	
03:00	2	23	0	22	2	45		
03:15	0	28	1	29	1	57		
03:30	2	17	0	28	2	45		
03:45	4	8 23	91 0	1 20	99 4	9 43	190	
04:00	1	15	1	27	2	42		
04:15	0	28	1	24	1	52		
04:30	3	30	1	23	4	53		
04:45	3	7 31	104 1	4 34	108 4	11 65	212	
05:00	2	15	1	26	3	41		
05:15	15	29	4	30	19	59		
05:30	11	31	2	23	13	54		
05:45	9	37 27	102 1	8 35	114 10	45 62	216	
06:00	8	26	2	19	10	45		
06:15	27	31	2	27	29	58		
06:30	34	41	3	13	37	54		
06:45	15	84 19	117 6	13 21	80 21	97 40	197	
07:00	13	25	8	21	21	46		
07:15	14	23	4	18	18	41		
07:30	19	25	13	19	32	44		
07:45	16	62 34	107 27	52 10	68 43	114 44	175	
08:00	23	18	28	16	51	34		
08:15	15	22	9	8	24	30		
08:30	19	22	5	8	24	30		
08:45	24	81 16	78 5	47 13	45 29	128 29	123	
09:00	13	23	13	13	26	36		
09:15	13	24	2	7	15	31		
09:30	18	15	3	10	21	25		
09:45	13	57 5	67 8	26 4	34 21	83 9	101	
10:00	15	6	16	0	31	6		
10:15	16	3	8	5	24	8		
10:30	20	6	9	1	29	7		
10:45	14	65 1	16 9	42 2	8 23	107 3	24	
11:00	16	2	13	4	29	6		
11:15	16	4	10	4	26	8		
11:30	18	0	7	1	25	1		
11:45	14	64 3	9 18	48 6	15 32	112 9	24	
Totals	474	930	248	747	722	1677		
Day Totals		1404		995		2399		
Split %	65.6%	55.4%	34.3%	44.5%				

Peak Hour	06:15	05:45	07:30	05:00	07:30	05:15
Volume	89	125	77	114	150	220
P.H.F.	.65	.76	.68	.81	.73	.88

City Traffic Counters  
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File Name : Hwy46Scofield  
Site Code : 00000000  
Start Date : 7/8/2008  
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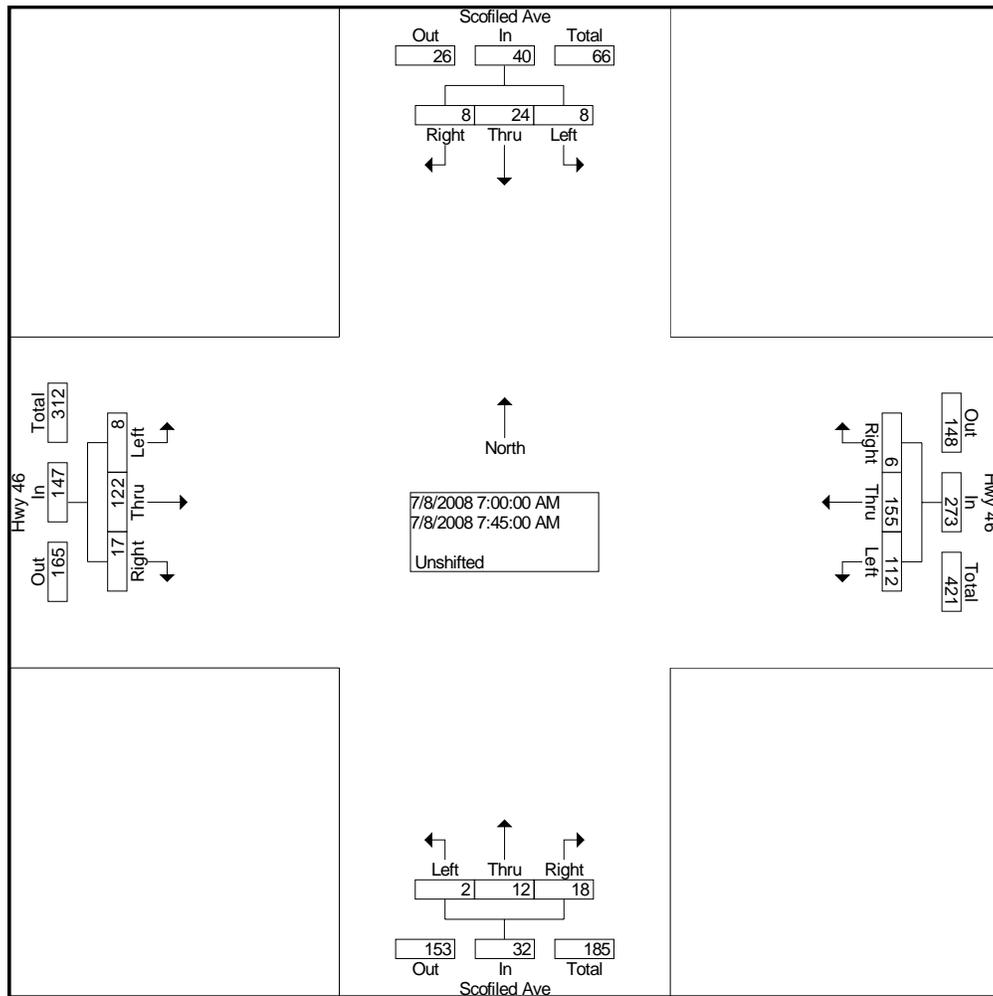
Groups Printed- Unshifted

Start Time	Scofield Ave Southbound			Hwy 46 Westbound			Scofield Ave Northbound			Hwy 46 Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00 AM	3	5	1	31	41	1	0	2	4	1	26	3	118
07:15 AM	1	3	4	15	51	1	1	3	5	4	19	1	108
07:30 AM	0	3	1	29	35	3	1	3	3	2	42	11	133
07:45 AM	4	13	2	37	28	1	0	4	6	1	35	2	133
Total	8	24	8	112	155	6	2	12	18	8	122	17	492
08:00 AM	1	7	1	15	30	5	1	6	2	0	19	0	87
08:15 AM	0	3	2	10	38	4	0	2	3	2	33	2	99
08:30 AM	0	4	1	24	41	1	0	4	2	2	36	0	115
08:45 AM	0	5	2	14	35	2	0	3	3	2	33	1	100
Total	1	19	6	63	144	12	1	15	10	6	121	3	401
04:00 PM	4	1	1	3	41	1	3	3	24	0	70	1	152
04:15 PM	3	1	2	2	32	0	2	13	22	2	74	1	154
04:30 PM	4	2	1	1	39	0	0	4	12	2	79	1	145
04:45 PM	1	1	1	0	45	1	0	6	37	4	80	1	177
Total	12	5	5	6	157	2	5	26	95	8	303	4	628
05:00 PM	1	2	0	5	34	0	0	7	15	0	53	2	119
05:15 PM	2	1	0	2	38	1	1	4	12	0	64	1	126
05:30 PM	0	2	0	0	34	2	0	0	11	0	59	1	109
05:45 PM	1	5	1	4	45	2	3	4	8	0	64	1	138
Total	4	10	1	11	151	5	4	15	46	0	240	5	492
Grand Total	25	58	20	192	607	25	12	68	169	22	786	29	2013
Apprch %	24.3	56.3	19.4	23.3	73.7	3.0	4.8	27.3	67.9	2.6	93.9	3.5	
Total %	1.2	2.9	1.0	9.5	30.2	1.2	0.6	3.4	8.4	1.1	39.0	1.4	

City Traffic Counters  
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File Name : Hwy46Scofield  
Site Code : 00000000  
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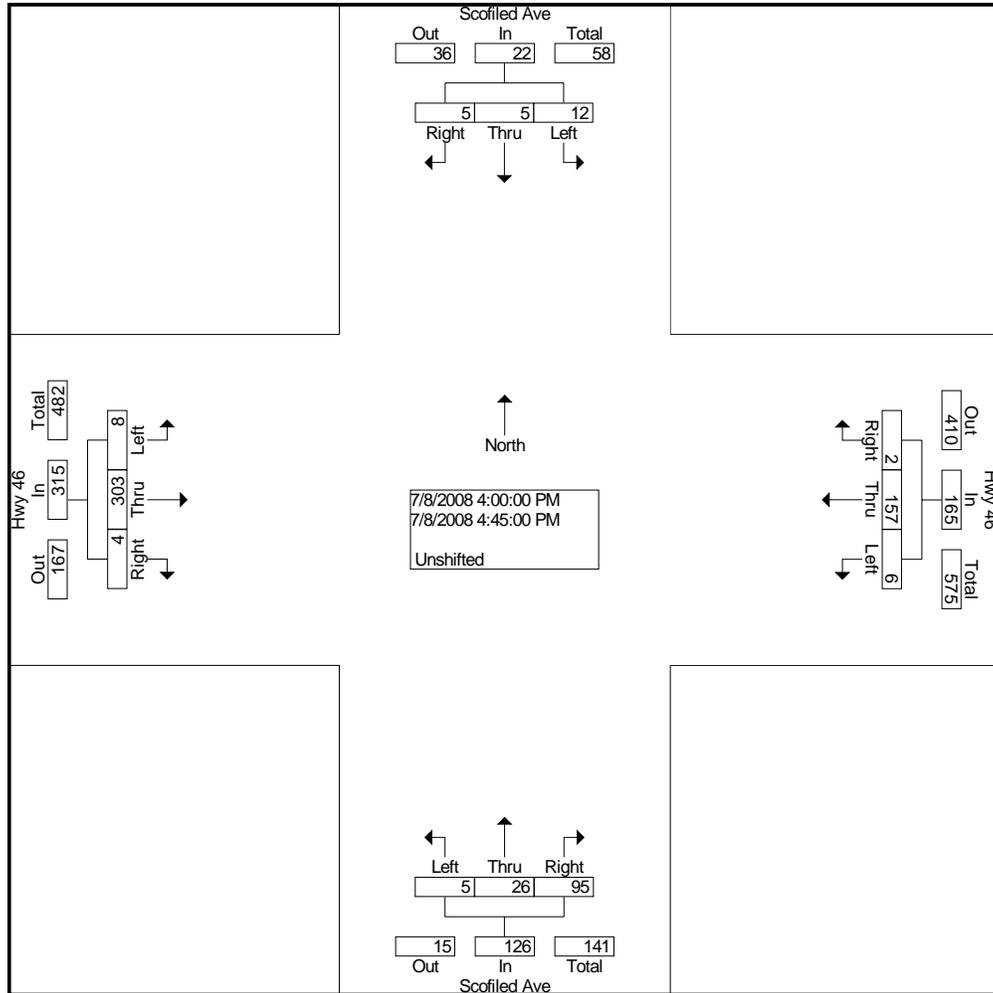
Start Time	Scofield Ave Southbound				Hwy 46 Westbound				Scofield Ave Northbound				Hwy 46 Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Intersection	07:00 AM																
Volume	8	24	8	40	112	155	6	273	2	12	18	32	8	122	17	147	492
Percent	20.0	60.0	20.0		41.0	56.8	2.2		6.3	37.5	56.3		5.4	83.0	11.6		
07:45	07:00 AM																
Volume	4	13	2	19	37	28	1	66	0	4	6	10	1	35	2	38	133
Peak Factor	07:45 AM																
High Int.	0.526				0.935				0.800				0.668				0.925
Volume	4	13	2	19	31	41	1	73	0	4	6	10	2	42	11	55	
Peak Factor	0.526				0.935				0.800				0.668				



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File Name : Hwy46Scofield  
Site Code : 00000000  
Start Date : 7/8/2008  
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Start Time	Scofield Ave Southbound				Hwy 46 Westbound				Scofield Ave Northbound				Hwy 46 Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Intersection	04:00 PM																
Volume	12	5	5	22	6	157	2	165	5	26	95	126	8	303	4	315	628
Percent	54.5	22.7	22.7		3.6	95.2	1.2		4.0	20.6	75.4		2.5	96.2	1.3		
04:45																	
Volume	1	1	1	3	0	45	1	46	0	6	37	43	4	80	1	85	177
Peak Factor	0.887																
High Int.	04:30 PM																
Volume	4	2	1	7	0	45	1	46	0	6	37	43	4	80	1	85	
Peak Factor	0.786				0.897				0.733				0.926				



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File Name : Paso\_Mag  
Site Code : 00000000  
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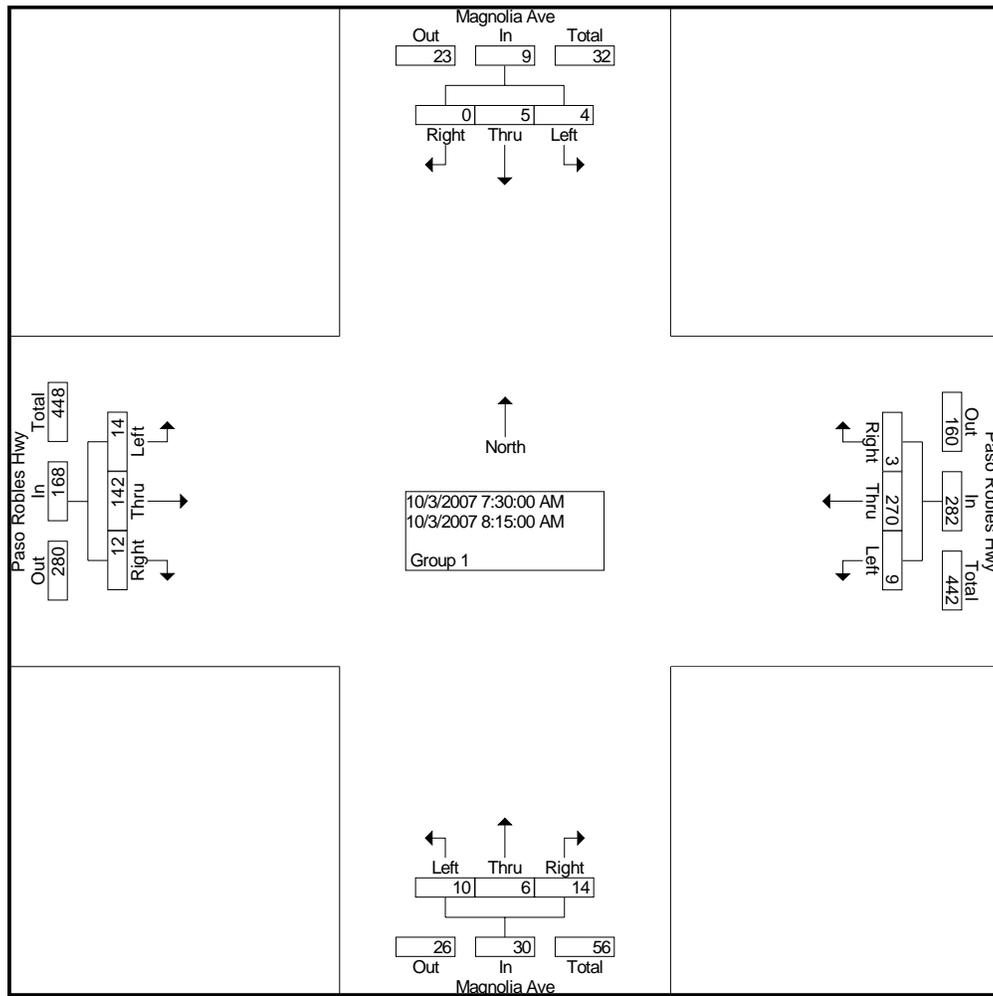
Groups Printed- Group 1

Start Time	Magnolia Ave Southbound			Paso Robles Hwy Westbound			Magnolia Ave Northbound			Paso Robles Hwy Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00 AM	1	1	0	3	76	1	0	2	5	0	28	3	120
07:15 AM	3	2	0	2	54	0	1	0	3	0	34	3	102
07:30 AM	1	1	0	1	81	2	1	0	4	3	31	5	130
07:45 AM	0	0	0	5	78	0	4	3	1	4	30	4	129
Total	5	4	0	11	289	3	6	5	13	7	123	15	481
08:00 AM	2	4	0	1	61	1	3	2	5	3	41	2	125
08:15 AM	1	0	0	2	50	0	2	1	4	4	40	1	105
08:30 AM	0	0	0	2	45	2	1	2	4	0	41	1	98
08:45 AM	2	2	0	3	33	0	2	1	4	0	38	0	85
Total	5	6	0	8	189	3	8	6	17	7	160	4	413
04:00 PM	1	2	0	3	50	2	2	2	5	2	95	2	166
04:15 PM	0	1	1	4	49	0	3	4	4	2	96	4	168
04:30 PM	1	2	1	3	54	0	4	3	5	4	91	2	170
04:45 PM	0	4	0	6	47	1	2	4	4	0	101	1	170
Total	2	9	2	16	200	3	11	13	18	8	383	9	674
05:00 PM	2	1	0	2	48	0	2	2	5	0	104	2	168
05:15 PM	0	2	2	4	45	1	1	1	6	0	98	3	163
05:30 PM	1	0	0	2	57	3	2	1	3	0	115	1	185
05:45 PM	0	2	0	2	48	4	2	4	2	1	83	4	152
Total	3	5	2	10	198	8	7	8	16	1	400	10	668
Grand Total	15	24	4	45	876	17	32	32	64	23	1066	38	2236
Apprch %	34.9	55.8	9.3	4.8	93.4	1.8	25.0	25.0	50.0	2.0	94.6	3.4	
Total %	0.7	1.1	0.2	2.0	39.2	0.8	1.4	1.4	2.9	1.0	47.7	1.7	

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File Name : Paso\_Mag  
Site Code : 00000000  
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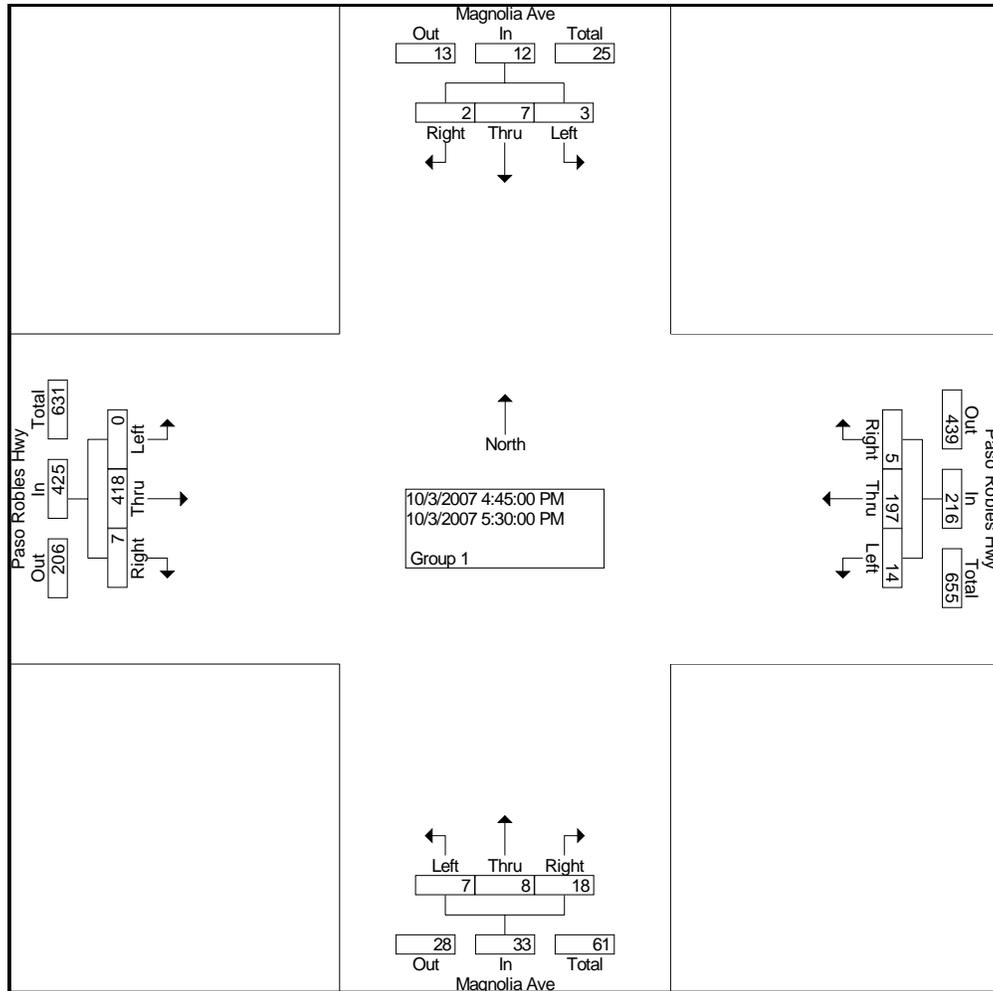
Start Time	Magnolia Ave Southbound				Paso Robles Hwy Westbound				Magnolia Ave Northbound				Paso Robles Hwy Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Intersection	07:30 AM																
Volume	4	5	0	9	9	270	3	282	10	6	14	30	14	142	12	168	489
Percent	44.4	55.6	0.0		3.2	95.7	1.1		33.3	20.0	46.7		8.3	84.5	7.1		
07:30 Volume	1	1	0	2	1	81	2	84	1	0	4	5	3	31	5	39	130
Peak Factor	0.940																
High Int.	08:00 AM																
Volume	2	4	0	6	1	81	2	84	3	2	5	10	3	41	2	46	
Peak Factor	0.375				0.839				0.750				0.913				



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Start Time	Magnolia Ave Southbound				Paso Robles Hwy Westbound				Magnolia Ave Northbound				Paso Robles Hwy Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Intersection	04:45 PM																
Volume	3	7	2	12	14	197	5	216	7	8	18	33	0	418	7	425	686
Percent	25.0	58.3	16.7		6.5	91.2	2.3		21.2	24.2	54.5		0.0	98.4	1.6		
05:30																	
Volume	1	0	0	1	2	57	3	62	2	1	3	6	0	115	1	116	185
Peak Factor	0.927																
High Int.	04:45 PM																
Volume	0	4	0	4	05:30 PM				04:45 PM				05:30 PM				
Peak Factor	0.750				0.871				0.825				0.916				



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File Name : Paso\_Central  
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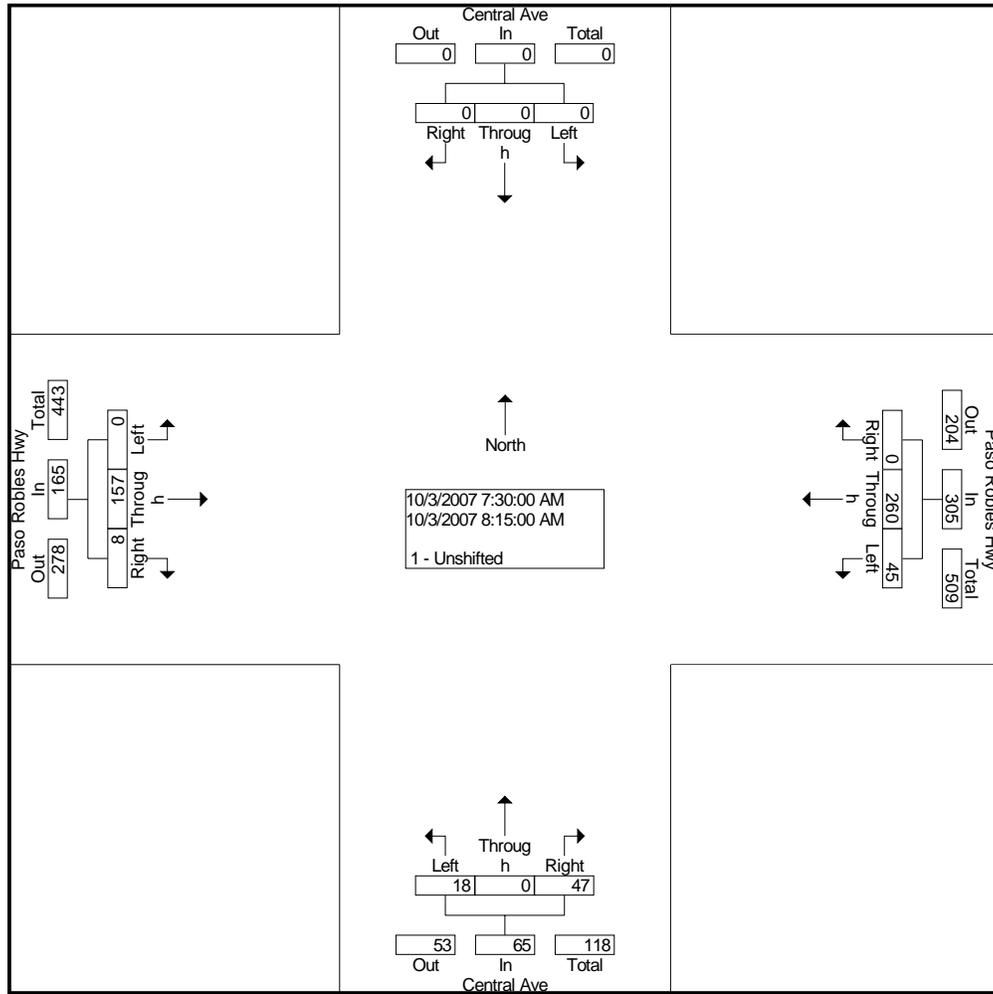
Groups Printed- 1 - Unshifted

Start Time	Central Ave Southbound			Paso Robles Hwy Westbound			Central Ave Northbound			Paso Robles Hwy Eastbound			Int. Total
	Left	Throug h	Right	Left	Throug h	Right	Left	Throug h	Right	Left	Throug h	Right	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00 AM	0	0	0	3	78	0	3	0	2	2	27	1	116
07:15 AM	0	0	0	3	53	0	1	0	3	3	34	6	103
07:30 AM	0	0	0	14	79	0	5	0	8	0	34	3	143
07:45 AM	0	0	0	13	72	0	7	0	20	0	28	1	141
Total	0	0	0	33	282	0	16	0	33	5	123	11	503
08:00 AM	0	0	0	5	59	0	3	0	9	0	48	3	127
08:15 AM	0	0	0	13	50	0	3	0	10	0	47	1	124
08:30 AM	0	0	0	2	43	0	5	0	4	0	44	2	100
08:45 AM	0	0	0	4	33	0	1	0	10	0	45	1	94
Total	0	0	0	24	185	0	12	0	33	0	184	7	445
04:00 PM	0	0	0	5	55	0	2	0	6	0	91	6	165
04:15 PM	0	0	0	5	53	0	0	0	5	0	95	5	163
04:30 PM	0	0	0	2	54	0	3	0	11	0	87	8	165
04:45 PM	0	0	0	5	50	0	2	0	7	0	98	8	170
Total	0	0	0	17	212	0	7	0	29	0	371	27	663
05:00 PM	0	0	0	9	46	0	0	0	10	0	108	2	175
05:15 PM	0	0	0	3	45	0	2	0	4	0	93	10	157
05:30 PM	0	0	0	5	60	0	3	0	8	0	114	8	198
05:45 PM	0	0	0	10	53	0	2	0	10	0	75	8	158
Total	0	0	0	27	204	0	7	0	32	0	390	28	688
Grand Total	0	0	0	101	883	0	42	0	127	5	1068	73	2299
Apprch %	0.0	0.0	0.0	10.3	89.7	0.0	24.9	0.0	75.1	0.4	93.2	6.4	
Total %	0.0	0.0	0.0	4.4	38.4	0.0	1.8	0.0	5.5	0.2	46.5	3.2	

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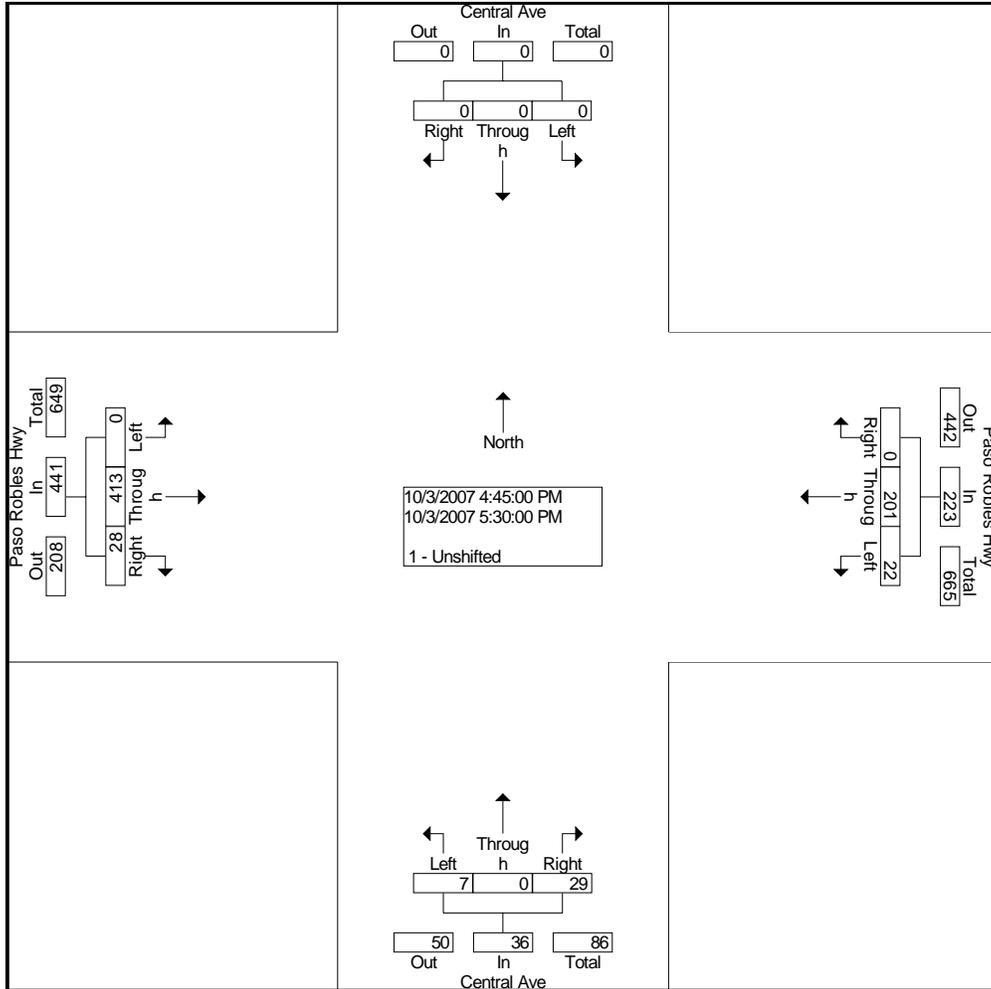
Start Time	Central Ave Southbound				Paso Robles Hwy Westbound				Central Ave Northbound				Paso Robles Hwy Eastbound				Int. Total
	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	
Peak Hour From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Intersection	07:30 AM																
Volume	0	0	0	0	45	260	0	305	18	0	47	65	0	157	8	165	535
Percent	0.0	0.0	0.0	0.0	14.8	85.2	0.0		27.7	0.0	72.3		0.0	95.2	4.8		
07:30 Volume	0	0	0	0	14	79	0	93	5	0	8	13	0	34	3	37	143
Peak Factor	0.935																
High Int.	6:45:00 AM																
Volume	0	0	0	0	14	79	0	93	7	0	20	27	0	48	3	51	
Peak Factor					0.820				0.602				0.809				



City Traffic Counters  
(626) 256-4171

File Name : Paso\_Central  
Site Code : 00000000  
Start Date : 10/3/2007  
Page No : 3

Start Time	Central Ave Southbound				Paso Robles Hwy Westbound				Central Ave Northbound				Paso Robles Hwy Eastbound				Int. Total
	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	
Peak Hour From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Intersection	04:45 PM																
Volume	0	0	0	0	22	201	0	223	7	0	29	36	0	413	28	441	700
Percent	0.0	0.0	0.0		9.9	90.1	0.0		19.4	0.0	80.6		0.0	93.7	6.3		
05:30	05:30 PM																
Volume	0	0	0	0	5	60	0	65	3	0	8	11	0	114	8	122	198
Peak Factor																	0.884
High Int.																	
Volume	0	0	0	0	5	60	0	65	3	0	8	11	0	114	8	122	
Peak Factor																	0.858
																	0.818
																	0.904



Start Date 12/18/2007

Street Name	Beckes St--Southbound			Paso Robles Hwy--Westbound			Beckes St--Northbound			Paso Robles Hwy--Eastbound			Int. Total
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
7:00 AM	0	0	0	10	85	0	2	0	17	0	41	3	158
7:15 AM	0	0	0	2	45	0	3	0	12	0	26	0	88
7:30 AM	0	0	0	5	69	0	1	0	10	0	31	2	118
7:45 AM	0	0	0	7	61	0	10	0	16	0	44	5	143
Total	0	0	0	24	260	0	16	0	55	0	142	10	507
8:00 AM	0	0	0	12	87	0	11	0	20	0	45	6	181
8:15 AM	0	0	0	7	64	0	6	0	11	0	47	3	138
8:30 AM	0	0	0	6	56	0	0	0	8	0	43	4	117
8:45 AM	0	0	0	7	68	0	1	0	9	0	28	5	118
Total	0	0	0	32	275	0	18	0	48	0	163	18	554
4:00 PM	0	0	0	14	75	0	3	0	9	0	114	5	220
4:15 PM	0	0	0	20	79	0	5	0	10	0	71	9	194
4:30 PM	0	0	0	16	58	0	6	0	14	0	98	9	201
4:45 PM	0	0	0	17	67	0	5	0	10	0	97	16	212
Total	0	0	0	67	279	0	19	0	43	0	380	39	827
5:00 PM	0	0	0	17	46	0	5	0	16	0	82	14	180
5:15 PM	0	0	0	12	63	0	3	0	15	0	81	18	192
5:30 PM	0	0	0	9	52	0	4	0	14	0	95	10	184
5:45 PM	0	0	0	16	59	0	5	0	12	0	92	13	197
Total	0	0	0	54	220	0	17	0	57	0	350	55	753
Grand Total	0	0	0	177	1034	0	70	0	203	0	1035	122	2641
Apprch %	0.0%	0.0%	0.0%	14.6%	85.4%	0.0%	25.6%	0.0%	74.4%	0.0%	89.5%	10.5%	
Total %	0.0%	0.0%	0.0%	6.7%	39.2%	0.0%	2.7%	0.0%	7.7%	0.0%	39.2%	4.6%	

City Traffic Counters  
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File Name : Paso\_Palm  
Site Code : 00000000  
Start Date : 10/3/2007  
Page No : 1

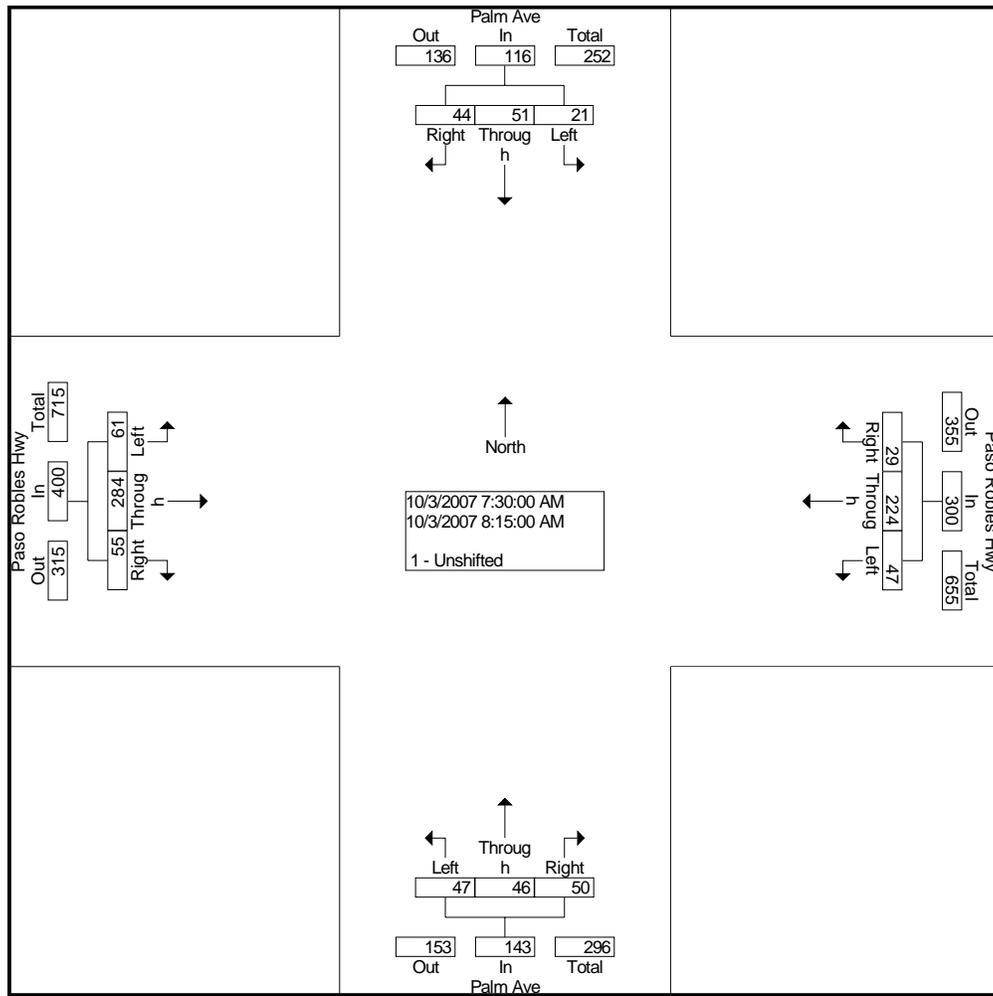
Groups Printed- 1 - Unshifted

Start Time	Palm Ave Southbound			Paso Robles Hwy Westbound			Palm Ave Northbound			Paso Robles Hwy Eastbound			Int. Total
	Left	Throug h	Right	Left	Throug h	Right	Left	Throug h	Right	Left	Throug h	Right	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00 AM	13	15	5	8	46	3	10	10	8	8	63	6	195
07:15 AM	5	13	4	4	43	2	5	3	10	7	69	6	171
07:30 AM	8	14	10	13	49	8	13	12	15	22	64	11	239
07:45 AM	6	12	17	12	48	6	12	15	13	17	82	14	254
Total	32	54	36	37	186	19	40	40	46	54	278	37	859
08:00 AM	4	10	6	18	63	7	13	10	15	16	83	15	260
08:15 AM	3	15	11	4	64	8	9	9	7	6	55	15	206
08:30 AM	7	5	11	10	61	4	10	8	10	4	60	9	199
08:45 AM	7	10	6	5	79	5	13	5	10	5	60	10	215
Total	21	40	34	37	267	24	45	32	42	31	258	49	880
04:00 PM	14	14	12	13	74	4	5	8	6	5	83	8	246
04:15 PM	8	7	8	9	78	8	8	8	11	3	86	6	240
04:30 PM	7	3	3	17	68	11	10	2	13	6	69	8	217
04:45 PM	14	12	12	23	77	7	17	7	11	5	110	14	309
Total	43	36	35	62	297	30	40	25	41	19	348	36	1012
05:00 PM	2	11	4	7	64	8	12	10	19	17	133	9	296
05:15 PM	5	13	10	12	71	4	12	9	10	11	139	11	307
05:30 PM	1	12	9	11	94	0	7	8	16	13	134	11	316
05:45 PM	7	14	21	11	87	6	8	8	16	4	127	9	318
Total	15	50	44	41	316	18	39	35	61	45	533	40	1237
Grand Total	111	180	149	177	1066	91	164	132	190	149	1417	162	3988
Apprch %	25.2	40.9	33.9	13.3	79.9	6.8	33.7	27.2	39.1	8.6	82.0	9.4	
Total %	2.8	4.5	3.7	4.4	26.7	2.3	4.1	3.3	4.8	3.7	35.5	4.1	

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File Name : Paso\_Palm  
Site Code : 00000000  
Start Date : 10/3/2007  
Page No : 2

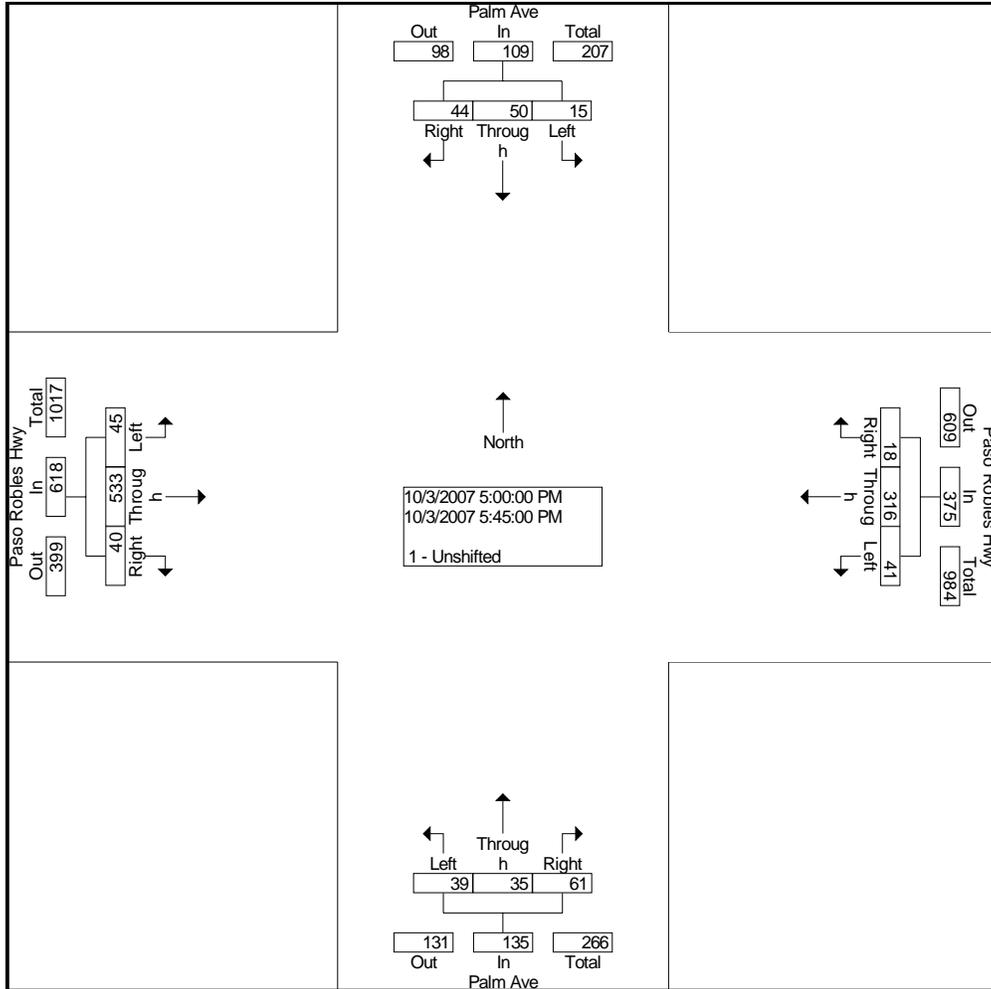
Start Time	Palm Ave Southbound				Paso Robles Hwy Westbound				Palm Ave Northbound				Paso Robles Hwy Eastbound				Int. Total
	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	
Peak Hour From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Intersection	07:30 AM																
Volume	21	51	44	116	47	224	29	300	47	46	50	143	61	284	55	400	959
Percent	18.1	44.0	37.9		15.7	74.7	9.7		32.9	32.2	35.0		15.3	71.0	13.8		
08:00																	
Volume	4	10	6	20	18	63	7	88	13	10	15	38	16	83	15	114	260
Peak Factor																	
High Int.	07:45 AM				08:00 AM				07:30 AM				08:00 AM				0.922
Volume	6	12	17	35	18	63	7	88	13	12	15	40	16	83	15	114	
Peak Factor	0.829				0.852				0.894				0.877				



City Traffic Counters  
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File Name : Paso\_Palm  
Site Code : 00000000  
Start Date : 10/3/2007  
Page No : 3

Start Time	Palm Ave Southbound				Paso Robles Hwy Westbound				Palm Ave Northbound				Paso Robles Hwy Eastbound				Int. Total
	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	
Peak Hour From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Intersection	05:00 PM																
Volume	15	50	44	109	41	316	18	375	39	35	61	135	45	533	40	618	1237
Percent	13.8	45.9	40.4		10.9	84.3	4.8		28.9	25.9	45.2		7.3	86.2	6.5		
05:45	05:30 PM																
Volume	7	14	21	42	11	87	6	104	8	8	16	32	4	127	9	140	318
Peak Factor	05:00 PM																
High Int.	05:45 PM				05:30 PM				05:00 PM				05:15 PM				0.972
Volume	7	14	21	42	11	94	0	105	12	10	19	41	11	139	11	161	
Peak Factor	0.649				0.893				0.823				0.960				



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File Name : Paso\_Griffith  
Site Code : 00000000  
Start Date : 10/3/2007  
Page No : 1

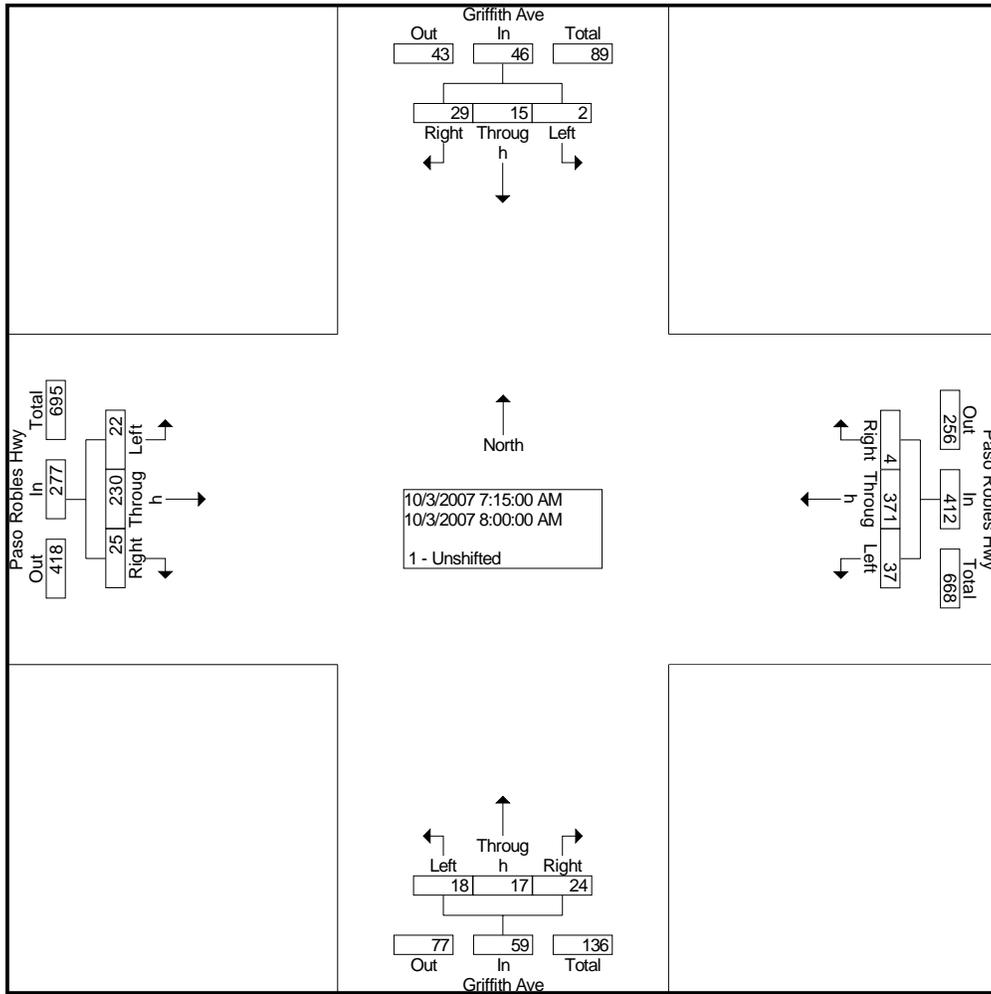
Groups Printed- 1 - Unshifted

Start Time	Griffith Ave Southbound			Paso Robles Hwy Westbound			Griffith Ave Northbound			Paso Robles Hwy Eastbound			Int. Total
	Left	Throug h	Right	Left	Throug h	Right	Left	Throug h	Right	Left	Throug h	Right	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00 AM	0	0	6	5	60	1	2	0	6	4	63	3	150
07:15 AM	0	1	3	4	80	0	3	4	5	1	48	1	150
07:30 AM	1	4	9	9	103	0	3	4	10	4	57	6	210
07:45 AM	0	9	14	11	94	2	6	3	4	9	66	6	224
Total	1	14	32	29	337	3	14	11	25	18	234	16	734
08:00 AM	1	1	3	13	94	2	6	6	5	8	59	12	210
08:15 AM	1	0	1	2	55	0	6	2	8	1	66	1	143
08:30 AM	2	0	1	3	64	0	1	2	4	3	77	3	160
08:45 AM	2	2	4	3	67	1	2	4	7	3	91	4	190
Total	6	3	9	21	280	3	15	14	24	15	293	20	703
04:00 PM	2	1	2	3	77	1	7	4	6	5	157	2	267
04:15 PM	2	8	3	3	73	2	1	1	1	4	87	3	188
04:30 PM	0	1	1	7	86	0	4	5	5	2	86	7	204
04:45 PM	4	6	5	10	113	6	7	5	6	3	161	2	328
Total	8	16	11	23	349	9	19	15	18	14	491	14	987
05:00 PM	3	9	3	13	120	1	8	10	8	5	208	4	392
05:15 PM	1	1	1	2	110	0	4	2	6	4	169	2	302
05:30 PM	0	3	2	8	152	3	5	2	4	3	219	3	404
05:45 PM	0	0	0	1	132	0	1	0	0	1	194	0	329
Total	4	13	6	24	514	4	18	14	18	13	790	9	1427
Grand Total	19	46	58	97	1480	19	66	54	85	60	1808	59	3851
Apprch %	15.4	37.4	47.2	6.1	92.7	1.2	32.2	26.3	41.5	3.1	93.8	3.1	
Total %	0.5	1.2	1.5	2.5	38.4	0.5	1.7	1.4	2.2	1.6	46.9	1.5	

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File Name : Paso\_Griffith  
Site Code : 00000000  
Start Date : 10/3/2007  
Page No : 2

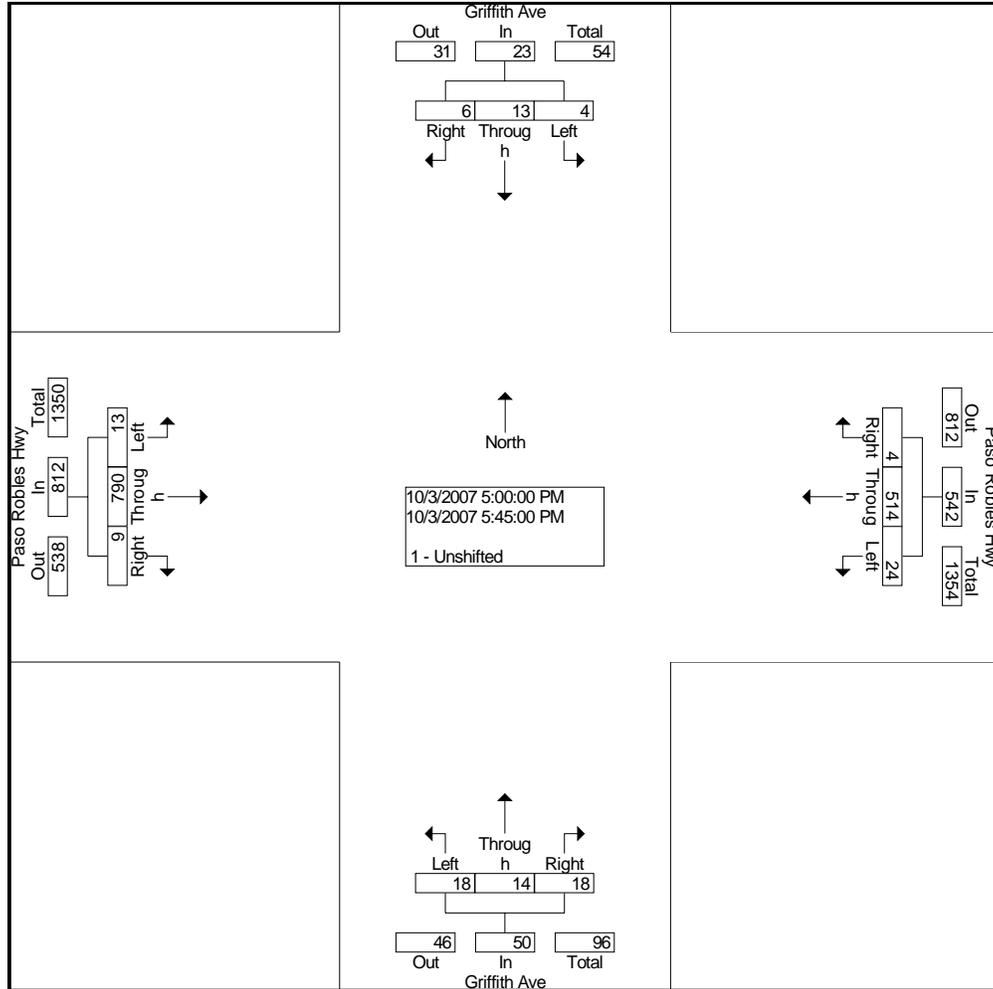
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	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	
Peak Hour From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Intersection	07:15 AM																
Volume	2	15	29	46	37	371	4	412	18	17	24	59	22	230	25	277	794
Percent	4.3	32.6	63.0		9.0	90.0	1.0		30.5	28.8	40.7		7.9	83.0	9.0		
07:45																	
Volume	0	9	14	23	11	94	2	107	6	3	4	13	9	66	6	81	224
Peak Factor																	
High Int.	07:45 AM																
Volume	0	9	14	23	07:30 AM				07:30 AM				07:45 AM				0.886
Peak Factor	0.500								0.920				0.868				0.855



City Traffic Counters  
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File Name : Paso\_Griffith  
Site Code : 00000000  
Start Date : 10/3/2007  
Page No : 3

Start Time	Griffith Ave Southbound				Paso Robles Hwy Westbound				Griffith Ave Northbound				Paso Robles Hwy Eastbound				Int. Total
	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	
Peak Hour From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Intersection	05:00 PM																
Volume	4	13	6	23	24	514	4	542	18	14	18	50	13	790	9	812	1427
Percent	17.4	56.5	26.1		4.4	94.8	0.7		36.0	28.0	36.0		1.6	97.3	1.1		
05:30	05:30 PM																
Volume	0	3	2	5	8	152	3	163	5	2	4	11	3	219	3	225	404
Peak Factor	0.883																
High Int.	05:00 PM																
Volume	3	9	3	15	8	152	3	163	8	10	8	26	3	219	3	225	
Peak Factor	0.383				0.831				0.481				0.902				



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File Name : Paso\_FSt  
Site Code : 00000000  
Start Date : 10/3/2007  
Page No : 1

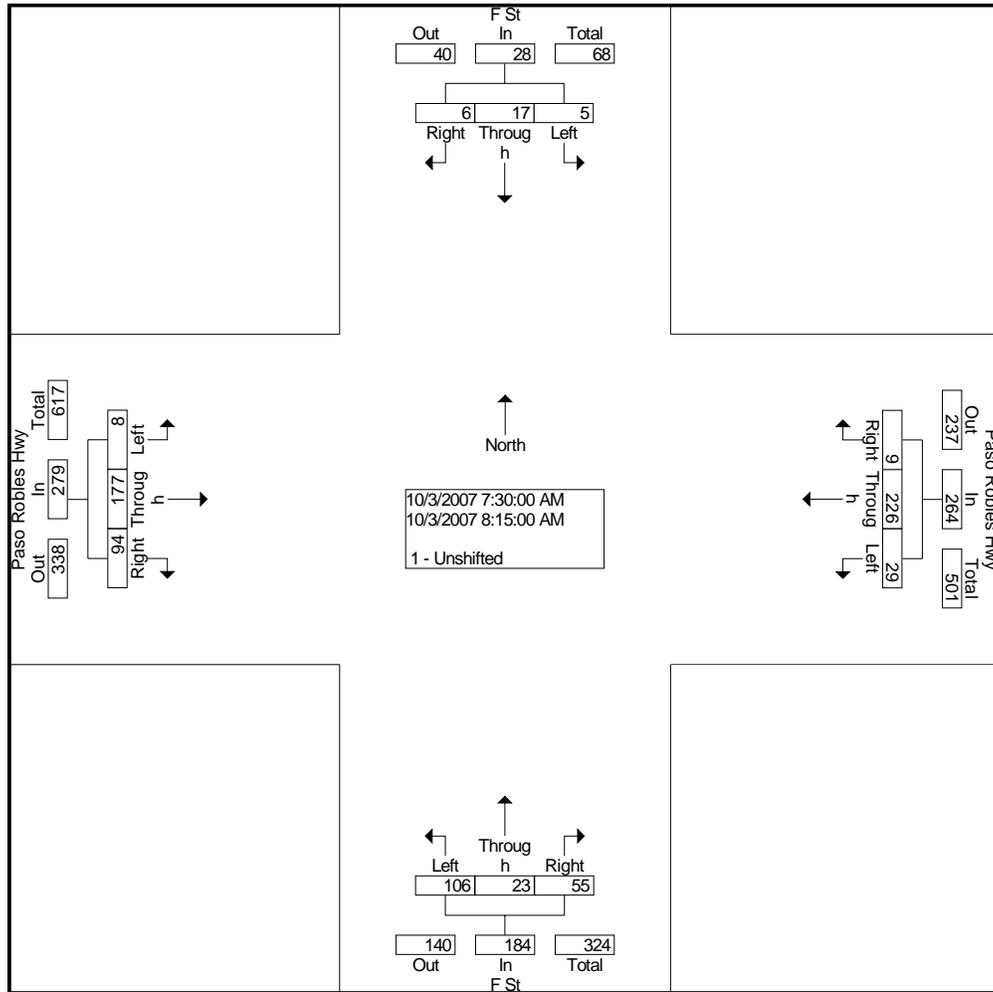
Groups Printed- 1 - Unshifted

Start Time	F St Southbound			Paso Robles Hwy Westbound			F St Northbound			Paso Robles Hwy Eastbound			Int. Total
	Left	Throug h	Right	Left	Throug h	Right	Left	Throug h	Right	Left	Throug h	Right	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00 AM	1	0	1	2	57	1	15	6	8	6	47	7	151
07:15 AM	1	6	2	12	52	3	19	6	8	1	41	21	172
07:30 AM	3	2	2	8	73	1	28	5	12	1	51	19	205
07:45 AM	1	7	2	7	59	4	21	6	14	2	37	26	186
Total	6	15	7	29	241	9	83	23	42	10	176	73	714
08:00 AM	1	4	0	7	54	4	24	6	14	3	48	24	189
08:15 AM	0	4	2	7	40	0	33	6	15	2	41	25	175
08:30 AM	4	2	2	3	38	3	26	3	9	2	53	21	166
08:45 AM	0	2	1	7	37	1	28	6	6	1	67	34	190
Total	5	12	5	24	169	8	111	21	44	8	209	104	720
04:00 PM	3	3	3	8	57	3	18	8	14	3	81	34	235
04:15 PM	4	7	3	14	62	3	29	9	12	4	57	33	237
04:30 PM	4	18	9	13	54	3	32	6	14	3	63	29	248
04:45 PM	1	13	9	13	66	1	43	4	12	2	66	30	260
Total	12	41	24	48	239	10	122	27	52	12	267	126	980
05:00 PM	1	4	2	8	37	1	19	5	10	8	34	13	142
05:15 PM	1	4	1	3	17	0	17	0	4	0	17	11	75
05:30 PM	1	10	6	13	86	1	48	5	11	0	73	32	286
05:45 PM	1	8	7	13	66	2	49	5	9	1	74	34	269
Total	4	26	16	37	206	4	133	15	34	9	198	90	772
Grand Total	27	94	52	138	855	31	449	86	172	39	850	393	3186
Apprch %	15.6	54.3	30.1	13.5	83.5	3.0	63.5	12.2	24.3	3.0	66.3	30.7	
Total %	0.8	3.0	1.6	4.3	26.8	1.0	14.1	2.7	5.4	1.2	26.7	12.3	

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File Name : Paso\_FSt  
Site Code : 00000000  
Start Date : 10/3/2007  
Page No : 2

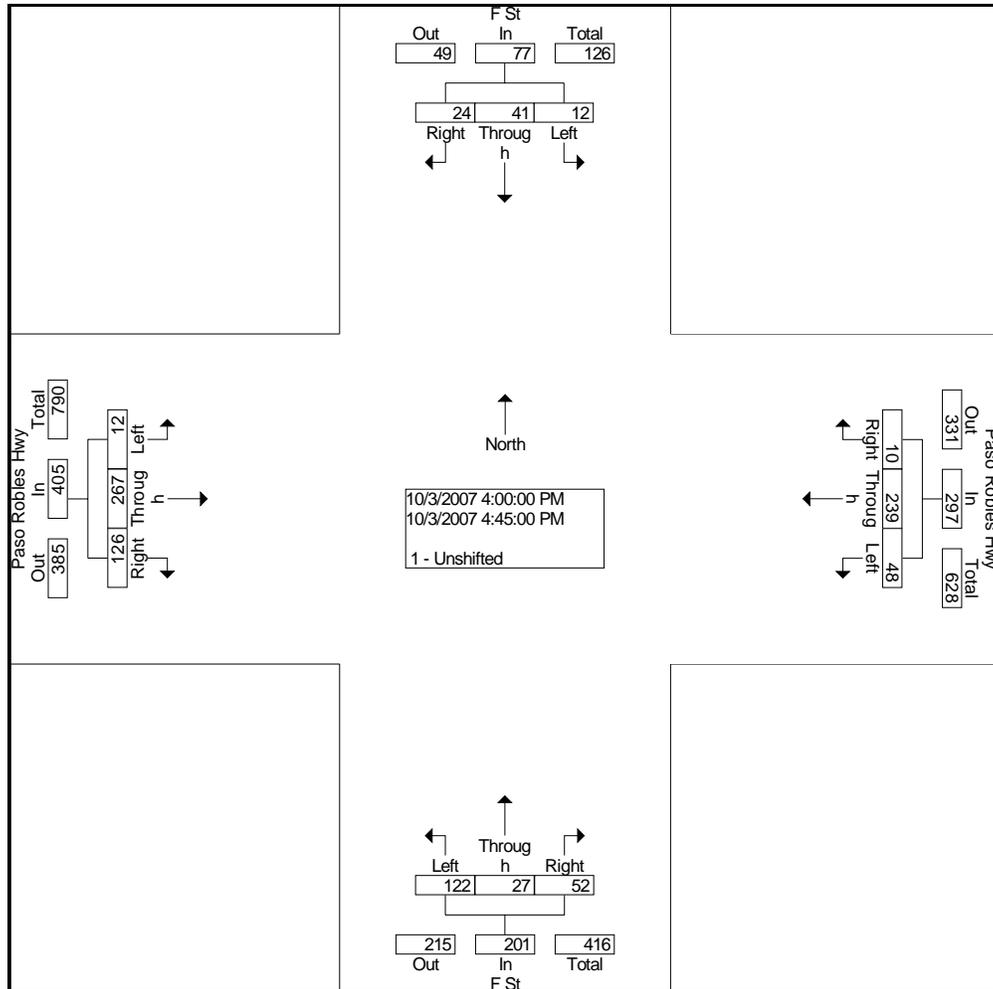
Start Time	F St Southbound				Paso Robles Hwy Westbound				F St Northbound				Paso Robles Hwy Eastbound				Int. Total
	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	
Peak Hour From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Intersection	07:30 AM																
Volume	5	17	6	28	29	226	9	264	106	23	55	184	8	177	94	279	755
Percent	17.9	60.7	21.4		11.0	85.6	3.4		57.6	12.5	29.9		2.9	63.4	33.7		
07:30 Volume	3	2	2	7	8	73	1	82	28	5	12	45	1	51	19	71	205
Peak Factor																	0.921
High Int.	07:45 AM																
Volume	1	7	2	10	8	73	1	82	33	6	15	54	3	48	24	75	
Peak Factor	0.700				0.805				0.852				0.930				



City Traffic Counters  
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File Name : Paso\_FSt  
Site Code : 00000000  
Start Date : 10/3/2007  
Page No : 3

Start Time	F St Southbound				Paso Robles Hwy Westbound				F St Northbound				Paso Robles Hwy Eastbound				Int. Total
	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	Left	Throug h	Right	App. Total	
Peak Hour From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Intersection	04:00 PM																
Volume	12	41	24	77	48	239	10	297	122	27	52	201	12	267	126	405	980
Percent	15.6	53.2	31.2		16.2	80.5	3.4		60.7	13.4	25.9		3.0	65.9	31.1		
04:45	04:45 PM																
Volume	1	13	9	23	13	66	1	80	43	4	12	59	2	66	30	98	260
Peak Factor																	
High Int.	04:30 PM																
Volume	4	18	9	31	13	66	1	80	43	4	12	59	3	81	34	118	0.942
Peak Factor	0.621				0.928				0.852				0.858				



## 10. APPENDIX C: SYNCHRO REPORTS

**11. APPENDIX D: KERN COUNTY DAILY TRAFFIC FORECASTS**

## Alejandro Angel

---

**From:** Ed Flickinger [EFlickinger@kerncog.org]  
**Sent:** Wednesday, September 26, 2007 2:44 PM  
**To:** Alejandro Angel  
**Subject:** RE: Hwy 46 Forecasts near Wasco

Hi Alejandro,

You can look at traffic counts and look at the Base year model and future year model volumes and adjust the counts appropriately based on the model growth.

Ed

Ed Flickinger  
Transportation Planner  
Kern Council of Governments  
661-861-2191

>>> "Alejandro Angel" <AAngel@psomas.com> 9/19/2007 2:02:06 PM >>>  
Hi Ed,

Thanks for sending over the information. Just to make sure I am not misinterpreting things, the projected ADT for Hwy 46 is ~11,700 near Hwy 43 and around 8,200 near Magnolia? I am asking because the Caltrans 2006 counts show volumes already higher than those.

Any thoughts?

Thanks

Alejandro

-----Original Message-----

From: Ed Flickinger [mailto:EFlickinger@kerncog.org]  
Sent: Wednesday, September 19, 2007 11:27 AM  
To: Alejandro Angel  
Subject: Re: Hwy 46 Forecasts near Wasco

Hi Alejandro,

Attached are maps of the ADTs you requested.

Ed

Ed Flickinger  
Transportation Planner  
Kern Council of Governments  
661-861-2191

>>> "Alejandro Angel" <AAngel@psomas.com> 9/18/2007 4:23 PM >>>  
Hi Ed,

We spoke on the phone a few minutes ago. We are conducting a traffic study for a project in Wasco (the Wasco Center) along Hwy 46, and Caltrans requested that we obtain the latest forecasts for Highway 46 in the vicinity of the project.

Would you be able to provide current and future (2030) volumes for Highway 46 between Scofield Avenue and J street (Hwy 43N) in Wasco? This is approximately 4 miles (PM 47 to PM 21.22).

Thanks in advance for your help. If you have any questions please let me know

Alejandro

Alejandro Angel, P.E., PTOE | PSOMAS

Traffic Engineering Manager

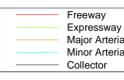
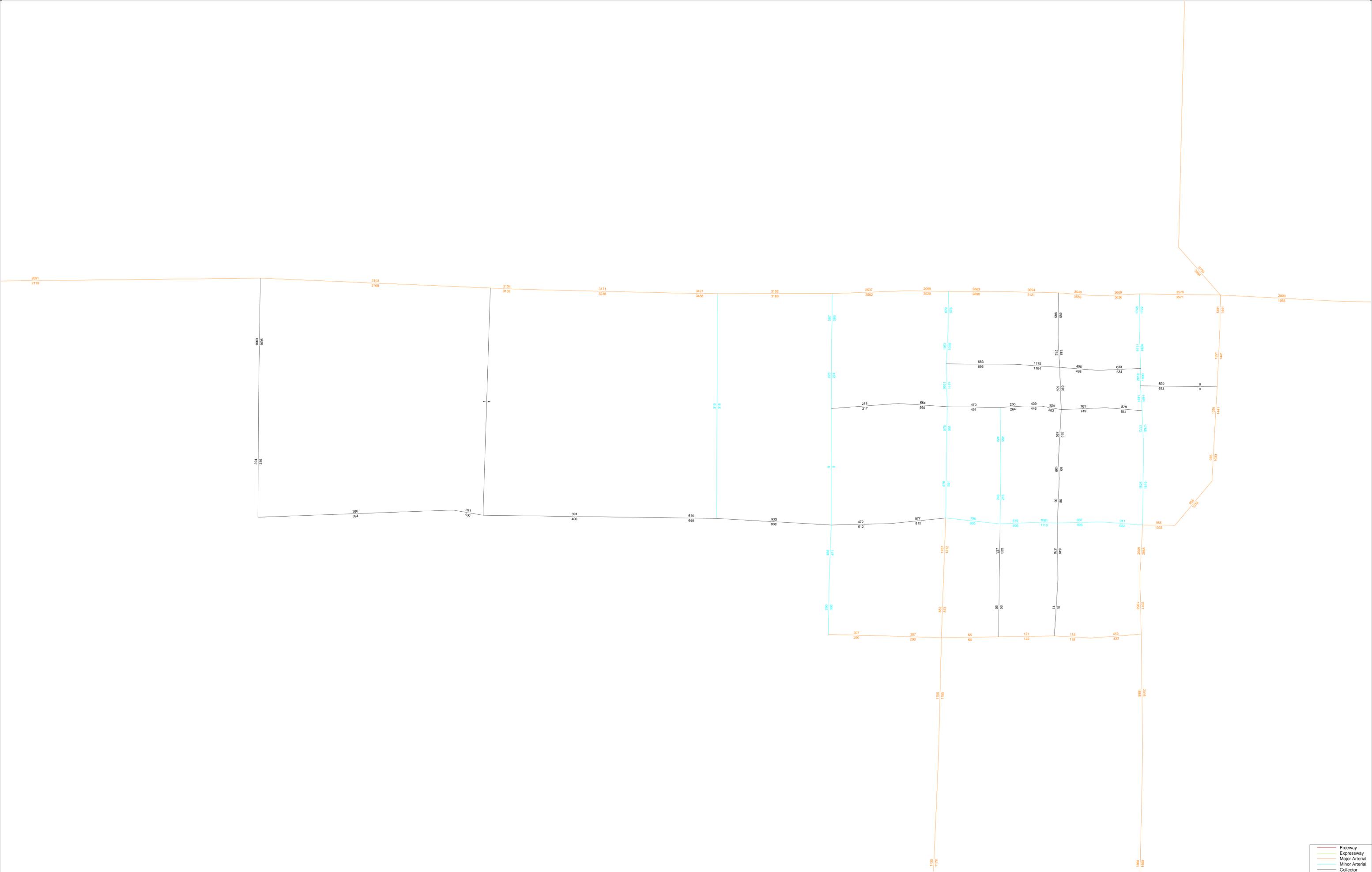
800 E. Wetmore Road, Suite 110

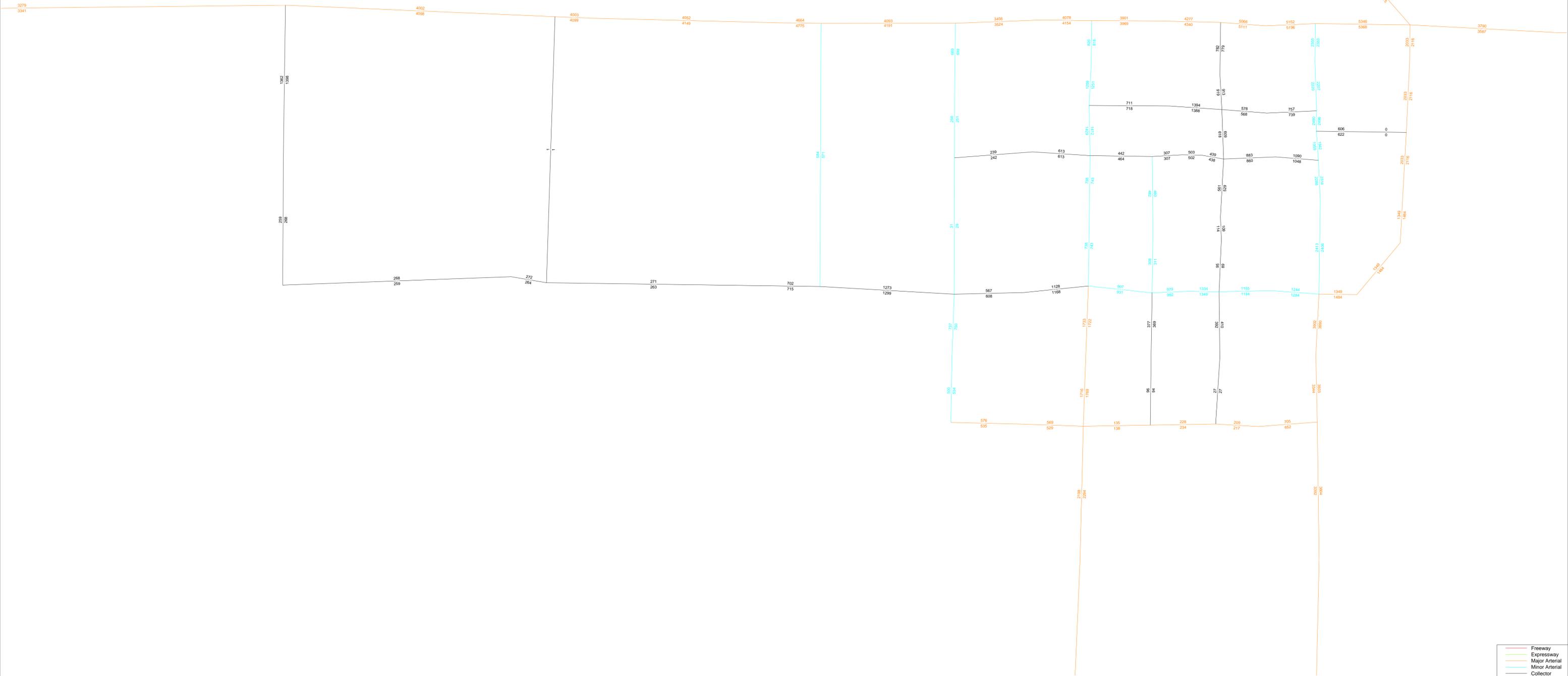
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# **APPENDIX H**

**Wasco Center-Preliminary Sewer Study**

**Wasco Center  
Preliminary Sewer Study  
VTTM 7127  
City of Wasco**

January 16, 2008

Prepared for:  
**Wasco Investment, LLC**  
800 Silverado Street  
Suite 301  
La Jolla, CA 92037

Prepared by:  
**PSOMAS**  
4540 California Avenue  
Suite 110  
Bakersfield CA 93306  
Project No. 1MER100200

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## LIST OF ABBRIVIATIONS

AC	Acres
AF	Acre Feet
AFY	Acre Feet per Year
GPD	Gallons per Day
KSF	Thousand Square Feet

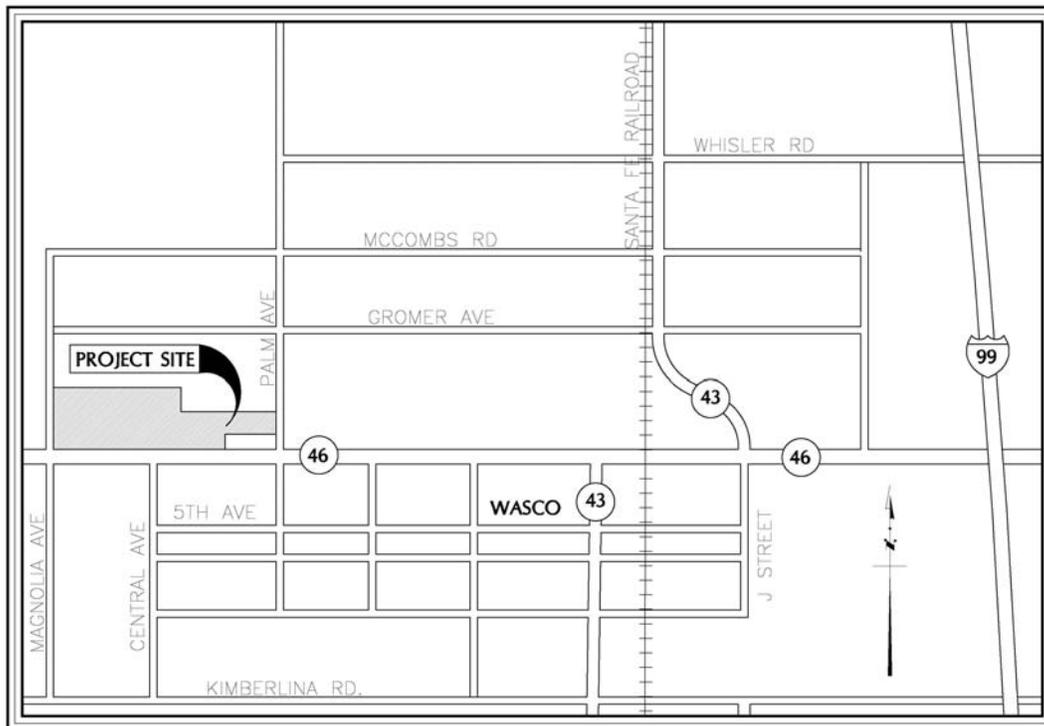
## REFERENCES

- ECO:LOGIC Engineering, 2007  
*City of Wasco Water Master Plan, April 2007*
- Irvine Ranch Water District, 2003.  
*Water Resources Master Plan.*
- Helt Engineering, Inc., 2007.  
*City of Wasco Draft – 2005 Urban Water Management Plan, August 2007*
- Psomas, 2007.  
*Water Supply Assessment for the Wasco Center, January 10 2008*
- Quad Knopf, 2008.  
*Sewer Improvement Plans and Sewer Study, February 27, 2006*

## 1.0 INTRODUCTION

Wasco Investment, LLC has submitted an application to the city of Wasco for a Land Division and Precise Development Plan over approximately 113 acres of commercially zoned land in the City of Wasco. The project site is located on the north side of Paso Robles Hwy (State Route 46) between Magnolia Avenue and Palm Avenue. The north side of the project will be bound by Margalo Street and residential development. This proposed development known as Wasco Center is composed of 98.6 acres of Commercial use including retail stores, restaurants, shopping centers, and a movie theater. It also includes 14 acres of apartment development consisting of 123 dueling units.

The Sewer service is provided by the City of Wasco primarily through a 24" Sanitary Sewer line located in Central Avenue and in west of Central along Hwy 46. This 24" Sewer runs south along Central to 7<sup>th</sup> Street where it turns west to the City's treatment plant at 7<sup>th</sup> Street and Leonard Avenue. Per conversations with City staff the treatment plant has a current capacity of 3 million gallons per day (MGD) the current average use is 1.7 MGD. The projects projected peak discharge is 0.40 MGD. This preliminary Sewer Study is consistent with the Water Supply Assessment Study prepared by Psomas for this Project.



**Figure 1 - Vicinity Map**



Figure 2 - Site Aerial



Figure 3 – Site Plan

## 2.0 OBJECTIVE

The objective of this report is to show that the current treatment plant has sufficient capacity to accept the sewage generated by the proposed project and to indicate how the project will connect to the City's system.

This report will:

- Determine the volume of sewage created by the project.
- Calculate the peak sewage flow at each point of connection to the existing City sewer pipe lines.
- Show that the existing City systems can support the sewage generated by this Project.
- Calculate the peak sewer flow for design of the onsite sewer system.
- Remain consistent with the Water Supply Assessment prepared by Psomas for the Project.

## 3.0 PROJECT DESCRIPTION

The total area of the project is 112.86 acres. The developer proposes a pedestrian oriented community comprised of 98.6 acres of commercial development including retail stores restaurants, shopping center, a movie theater and a 100 key 4 story hotel. The project also includes 123 apartment units on 14 acres.

The project will require the following permits:

- General Plan Amendment
- Zone Change
- Precise Development Plan
- Tentative Tract Map

The General Plan designation and zoning for existing and proposed use would be as shown on Table 1 below:

<b>Table 1 - Land Use &amp; Zone Map</b>		
	Existing Area Acres	Proposed Area Acres
<b>Land Use:</b>		
Commercial Retail	112.86	98.82
Multiple Family Dwellings	0	14.04
<b>Zoning:</b>		
Commercial Retail <b>CR</b>	112.86	98.82
Multiple Family Dwellings <b>R-3</b>	0	14.04

## 4.0 EXISTING CONDITIONS

Presently the project site is made up of Almond / Walnut orchards (95.0 ac) and a small farm (9.2 ac) with a house and orchard.

The Almond / Walnut orchards currently do not generate any sewage. The sewage generated by the existing house on the 9.2 ac farm does not discharge to the public sewer system; it is on a septic system. The existing sewer lines adjacent to the project are a 24" line on Palm Avenue, this 24" line flows to the south at Hwy 46 it turns west on Hwy 46 and then continues south on Central Avenue. At the intersection of Hwy 46 and Central a 12" connects to this system. This 12" in sewer line contains sewage discharge from the residential communities north of the Wasco Center Project. This 12" sewer is currently running at 59.3% full. The existing 24" lines have minimal sewage in them. Although the City is unable to provide any capacity calculations for the 24" lines, the Public works department and Helt Engineering did indicate that this is the upstream reach of this system and that our project site was taken into consideration when the line was designed.

## 5.0 DESIGN

The sewage volume and peak flows were determined utilizing the projects proposed development, City of Wasco and other agency standards as indicated below. For residential areas the number of 3.79 persons per unit and 115 gallons per capita per day (gpcd) were taken from the City of Wasco Water Master Plan (WMP). Data for the hotel does not exist on a per room basis in the City's standards. The demand factor of 150 gpd/room is based on experience of a per capita usage of 75 gpd with 2 people per room. For the commercial areas the WMP gave a number of 2500 gpd/Acre. This is highly conservative since the project has large parking and open space areas. Therefore the actual building areas were used with a factor of 220 gpd per one thousand square feet of floor area. This factor was obtained from the Irvine Ranch Water District (IRWD) Water Resources Master Plan. The demand factor was generated from years of metered data and is based on actual building areas. The information was used to determine average daily flows in gallons per day and volumes in acre feet per year (AFY). Peak flow for pipe design was calculated using information from the Kern County Development Standards Manual Section 302-1.02 and 1.04. This manual computes the peak flow factor to be 1.8. The peak flow would be 1.8 times the average flow. The total volume, average flow and peak flow is given in Table 2 below. The points of connection to the existing City sewer system are shown on the Sewer Exhibit provided in the back of this report. Most of the system is connected to the 24" sewer line at Hwy 46. Two portions of the site will discharge to the 12" on Central north of Hwy 46. At full build out the residential developments discharging to this line via a lift station will discharge 1.050 cfs bringing the line to 59.3% full (per capacity calculations provided by Quad Knopf). Our site will discharge a total of 0.094 cfs at peak flow to this line bringing the flow to 62.7%. This is below the City of Wasco design standards of 70% full.

<b>Table 2 - Flow &amp; Volume Calculations</b>							
Land Use	Dwelling Units	Building Area (SF)	Flow Factor	Average Flow gpd	Peak Factor	Peak Flow (mgd)	Volume (AFY)
Residential	123		436 gpd/du	53,628	1.8	0.0965	60
Hotel	100		150 gpd/room	15,000	1.8	0.0270	17
Commercial		726,500	209 gpd/ksf	151,839	1.8	0.2733	170
TOTAL				220,467		0.3968	247

## 6.0 CONCLUSION

This information is submitted to assist the City Staff in determining the affect the project will have on the City's Sewer System. Based on conversations with City staff the City's Sewer Treatment Facility has a capacity of 3 MGD. The current average flow for said plant is 1.7 MGD. Wasco Center is anticipated to generate a peak volume of 0.40 MGD.

The total volume of Sewage is shown in Table 2. The peak onsite pipe flows and flows at points of connection to the City's Sewer System are shown on the Sewer Exhibit included in the back of this report.

# **APPENDIX I**

**Wasco Center-Preliminary Water Study**

**Wasco Center  
Preliminary Water Study  
VTTM 7127  
City of Wasco**

January 22, 2008

Prepared for:  
**Wasco Investment, LLC**  
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Project No. 1MER100200

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## LIST OF ABBRIVIATIONS

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KSF	Thousand Square Feet

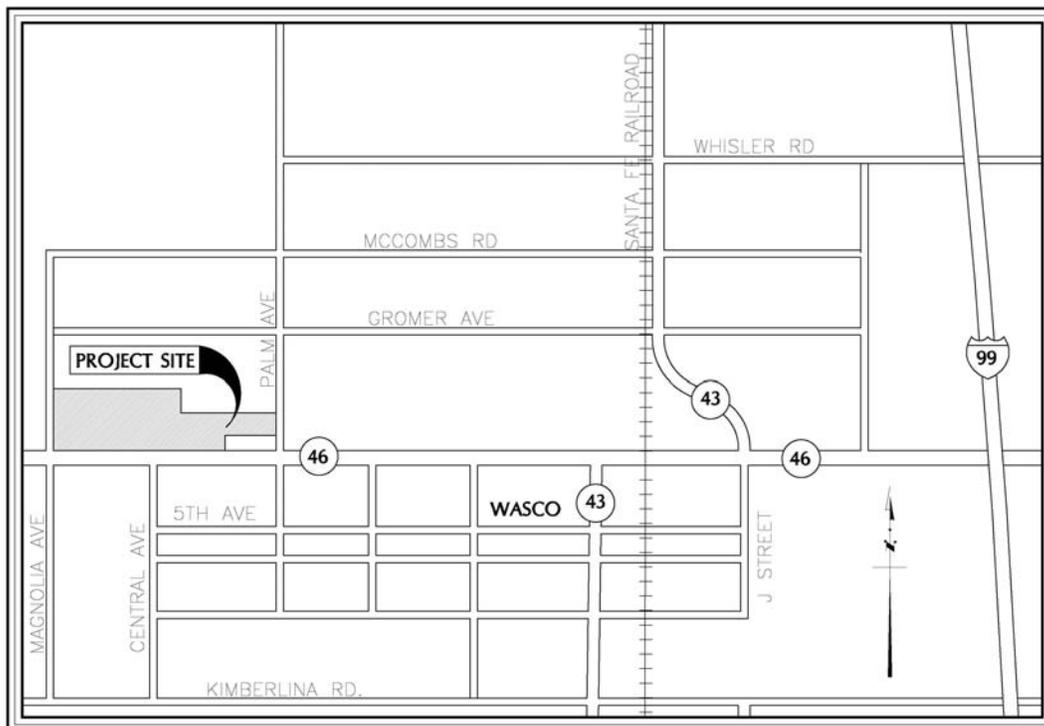
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*City of Wasco Draft – 2005 Urban Water Management Plan, August 2007*
- Psomas, 2007.  
*Water Supply Assessment for the Wasco Center, January 10 2008*
- Helt Engineering, Inc, 2008.  
*Conversation with and Fax from Jeremy Bowman, January 2008*

## 1.0 INTRODUCTION

Wasco Investment, LLC has submitted an application to the city of Wasco for a Land Division and Precise Development Plan over approximately 113 acres of commercially zoned land in the City of Wasco. The project site is located on the north side of Paso Robles Hwy (State Route 46) between Magnolia Avenue and Palm Avenue. The north side of the project will be bound by Margalo Street and residential development. This proposed development known as Wasco Center is composed of 98.6 acres of Commercial use including retail stores, restaurants, shopping centers, and a movie theater. It also includes 14 acres of apartment development consisting of 123 dwelling units.

The Water service is provided by the City of Wasco and is 100 percent groundwater, drawn from seven active production wells. The project will connect to existing water lines on Palm, Hwy 46, and Margalo east of Central Avenue. The City's current seven active production wells provide water service to approximately 20,500 people. This preliminary Water Study is consistent with the Water Supply Assessment Study prepared by Psomas for this project.



**Figure 1 - Vicinity Map**



Figure 2 - Site Aerial

PSOMAS

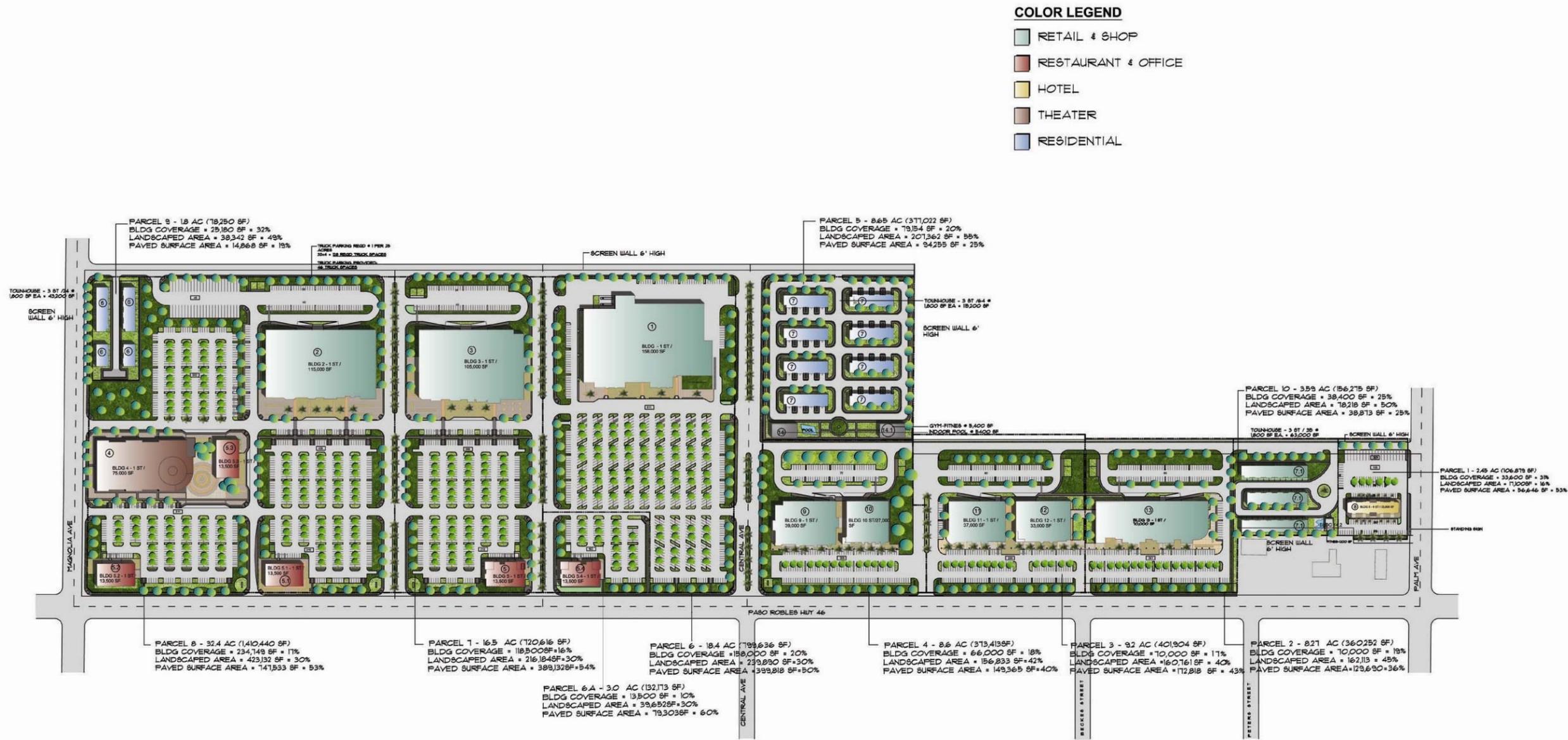


Figure 3 – Site Plan

## 2.0 OBJECTIVE

The objective of this report is to provide the City with an overview of the projected water usage from the proposed project.

This report will:

- Provide a breakdown of the existing water usage of the project site.
- Provide a breakdown of the projected demand from the proposed development.
- Provide a description of the impact the project will have on the groundwater subbasins.
- Remain consistent with the Water Supply Assessment prepared by Psomas for the Project.

## 3.0 PROJECT DESCRIPTION

The total area of the project is 112.86 acres. The developer proposes a pedestrian oriented community comprised of 98.6 acres of commercial development including retail stores, restaurants, shopping center, a movie theater and a 100 key 4 story hotel. The project also includes 123 apartment units on 14 acres.

The project will require the following permits:

- General Plan Amendment
- Zone Change
- Precise Development Plan
- Tentative Tract Map

The General Plan designation and zoning for existing and proposed use would be as shown on Table 1 below:

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Commercial Retail <b>CR</b>	112.86	98.82
Multiple Family Dwellings <b>R-3</b>	0	14.04

## 4.0 EXISTING WATER DEMAND

Presently the project site is made up of Almond / Walnut orchards (95.0 ac) and a small farm (9.2 ac) with a house and orchard.

The Almond/Walnut orchards obtain their water from the Shafter-Wasco Irrigation district and use a yearly average of 296 acre feet (AF) of water for irrigation purposes. The farm has a private well and there are no records of their current usage. It is herein assumed that the farm uses the same amount of water per acre as the Almond / Walnut Orchards. It is estimated that the farm and its orchards use approximately 22 AFY of groundwater. Based on Conversations with the City's Public Works Department, the City tries to maintain a water pressure of 50 psi in the their system at all times. Information provided by Helt Engineering (City Engineers) pressure at a fire hydrant across the street from the project in March, 2005 at 8:00 pm shows Static Pressure at 58 psi, Residual Pressure at 40 psi with a flow of 2110 gpm. Test on the same hydrant in July, 2005 shows a Static Pressure of 39 PSI, Residual Pressure of 26 psi with a flow of 1730 gpm.

Table 2 below shows the project site's existing water use.

<b>Table 2 – Existing Water Use Areas</b>			
Activity	Area (ac)	Average Daily Use (gpd)	Annual use (AF)
Almond / Walnut Orchard	95.0		296
Farm	9.2		22
Total	104.2		318

Both the Orchards and the Farm will be demolished for the demolished by the project.

## 5.0 PROJECT PROPOSED WATER DEMAND

The project proposes to build a mixed use of Residential, Hotel, Commercial Retail, and Restaurants including landscape areas within these areas. See Table 3 below for proposed water demands of the Project.

Table 3 – Proposed Water Demand						
Land Use	Area Ac	Units	Building Area	Demand Factor	Demand	
					gpd	AFY
Medium Density Residential (Landscaping included)	14.04	123	221,400	6007 gpd/ac	83,930	94
Hotel (Landscaping not included)	2.45	100	33,600	150 gpd/unit	15,179	17
Commercial (Landscaping not included)	96.37		726,500	220 gpd/ksf	159,825	179
Landscape irrigation for Commercial and Hotel 22% of 98.82 ac				5280 gpd/ac	114,288	128
<b>Total</b>	<b>112.86</b>				<b>373,222</b>	<b>418</b>

The demand factors for the residential land use were obtained from the City’s “Water Master Plan”. The commercial demand factor in the Master Plan is 2500 gpd/acre which is very conservative since the project has so much parking and open space. Therefore a factor of 220 gallons per day per thousand square feet (gpd/ksf) of building area was obtained from the Irvine Ranch Water District based on a demand factor generated from several years of metered data and actual building areas. The demand factor of 150 gpd/room for the hotel was based on a per capita usage of 75 gpd with 2 people per room. Based on information from the Projects Landscape Architect, the demand factor for the commercial landscape areas will be 5280 gpd/ac and the total landscaped area is 22 percent of the gross commercial area (including hotel).

## 6.0 IMPACT TO THE GROUNDWATER SUBBASIN

The total water demand by the project is 419 acre feet per year (AFY) (see Table 3). The existing orchards and farm have a water demand of 318 AFY. It is estimated that 35% of this demand (111 AF) will return to the subbasin leaving a net removal of 207 AFY. Based on the preliminary sewer study prepared for this project it is determined that the Wasco Center Project will create 248 AFY of wastewater. The wastewater will be conveyed to the City's wastewater treatment facility where it will be treated and recycled. The recycled water will be used for irrigation which will in turn replenish the groundwater basin (assume 35% [87 AFY] returned to the Subbasin). This is consistent with the Water Supply Assessment Study prepared by Psomas for the Project. Landscaped areas in the project require 128 AFY for Commercial area (see Table 3) and 33 AFY from residential landscaping (being the difference between the residential water demand of 94 AFY and the wastewater flow from the preliminary sewer study calculated at 61 AFY).

The net total impact on the groundwater subbasin is shown in Table 4 below.

<b>Table 4 – Impact to Groundwater Subbasin</b>	
Wasco Center – Total Demand	419 AF
Existing Orchards to be removed	
Total Demand = 318	
Recharge 35% = 111	
Net Removal = 207	-207 AF
Net Removal by Wasco Center	212 AF
From the projects preliminary Sewer Study	
Total amount of wastewater = 247	
Assume 35% irrigation recharge to Subbasin	-86 AF
Project Landscaped Area Demand = 161	
Assume 35% irrigation recharge to Subbasin	-57 AF
Total Net impact to Subbasin by Wasco Center	69 AF

## 7.0 CONCLUSION

The City of Wasco water source is 100 percent groundwater, drawn from seven active production wells. The existing conditions on the site have a Net removal of 207 AFY. The build-out of the Wasco Center will add approximately 419 AFY to the City's projected water demands. Considering the decreased agricultural demand from the Project (minus 35% return flow) plus the increased return flow from recycled wastewater generated by the Project and the 35% return flow from the Project's irrigation demand, the net impact of the Project on the water supply is 69 AFY.

# APPENDIX J



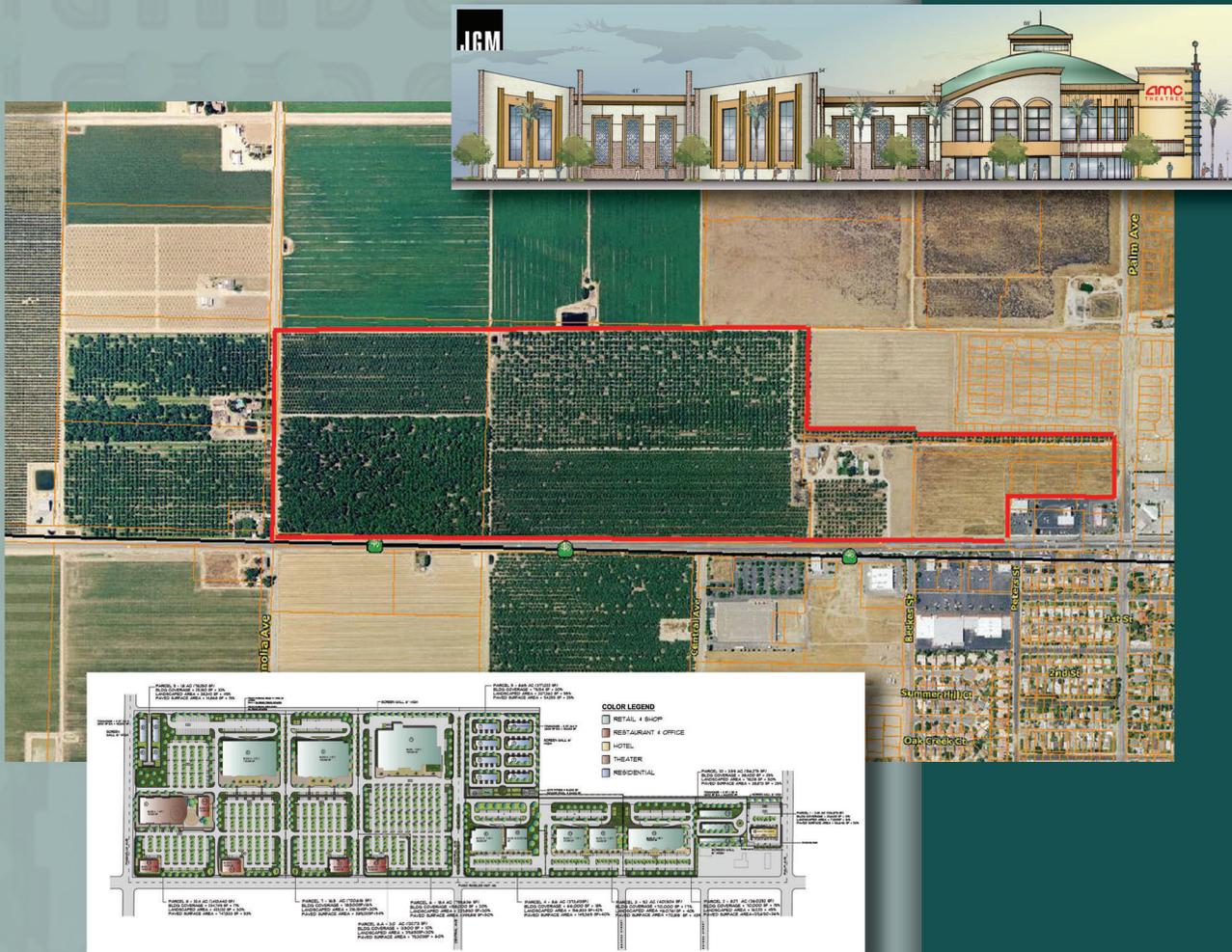
Water Supply Assessment for the Wasco Center

# Water Supply Assessment for the Wasco Center

Proposed by:  
Wasco Investment, LLC



Prepared for:  
City of Wasco



Prepared by:

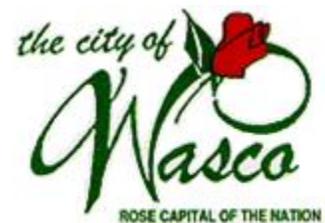
**PSOMAS**

January 10, 2008

**WATER SUPPLY ASSESSMENT AND VERIFICATION  
WASCO CENTER – WASCO, CA**

*for*  
**Wasco Center**  
proposed by  
**Wasco Investment, LLC**

*prepared for*



**City of Wasco  
PO Box 190  
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*prepared by:*  
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4540 California Avenue  
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Project No. 1MER100200

**January 10, 2008**

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## LIST OF ABBREVIATIONS

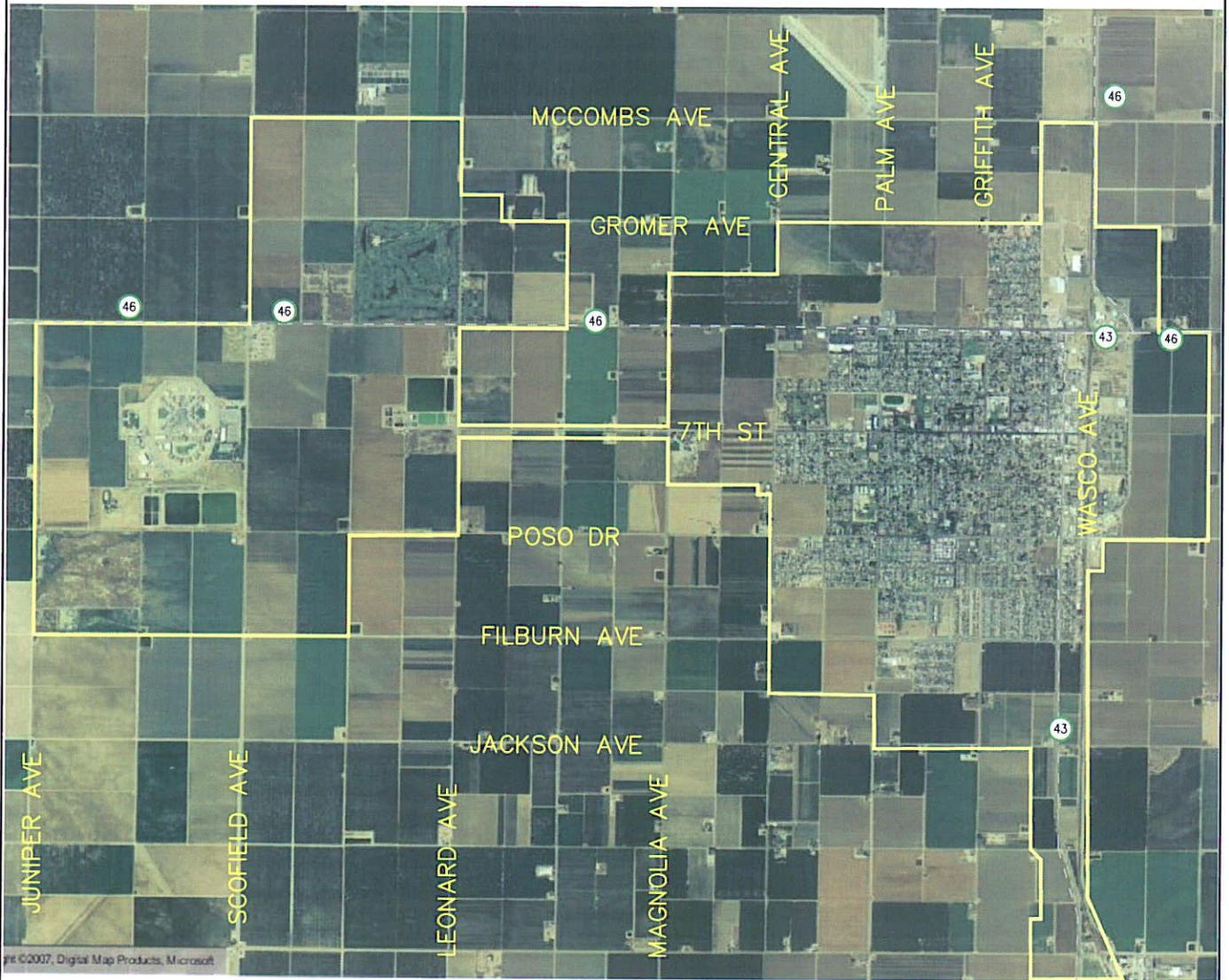
AF	Acre Feet
AFY	Acre Feet per Year
DPH	Department of Public Health
DBCP	Dibromochloropropane
DWR	Department of Water Resources
EDB	Ethylenedibromide
GPCD	Gallons Per Capita Per Day
GPD	Gallons Per Day
GPM	Gallons Per Minute
HR	Hydrologic Region
IRWD	Irvine Ranch Water District
KCWA	Kern County Water Agency
KSF	Thousand Square Feet
MAF	Million Acre Feet
MCL	Maximum Contaminant Level
MG	Million Gallons
MGD	Million Gallons per Day
MWD	Metropolitan Water District of Southern California
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SWP	State Water Project
TDS	Total Dissolved Solids
UWMP	Urban Water Management Plan
WDR	Waste Discharge Requirements
WWTF	Wastewater Treatment Facility

## **1.0 INTRODUCTION**

### **1.1 City of Wasco**

The City of Wasco, incorporated in 1945, is located in Kern County approximately 23 miles northwest of Bakersfield and 83 miles south of Fresno. The current City boundary, shown in Figure 1-1, encompasses approximately 8.5 square miles, about 900 acres of which are undeveloped. The City provides water, sewer collection, wastewater treatment, storm drainage, road and refuse service to the community. The original water system was developed in the 1920's under the authority of the Wasco Public Utilities District. The system consisted of groundwater wells and a tower reservoir. The reservoir is no longer used; however, the water system has been improved and expanded since the original construction to meet current needs. The City's water source is 100 percent groundwater, drawn from seven active production wells, providing water service to approximately 20,500 people.

Water service is primarily domestic, serving residential areas with various commercial and industrial customers. Larger agricultural water users typically have installed their own source wells and are not connected to the City's water distribution system. The Semitropic Water Storage District and the Shafter-Wasco Irrigation District provide water for irrigation and crops in the city and surrounding area. Therefore, the City of Wasco is responsible for providing water for its residents and businesses, but not for irrigating agriculture.



**LEGEND**

- (X) --- HIGHWAY
- SERVICE AREA LIMIT

**P S O M A S**

**CITY OF WASCO  
SERVICE AREA**

FIGURE  
**1-1**

## **1.2 Legislation SB610/221 Requirement**

This Water Supply Assessment and Verification Report (Report) has been prepared for the proposed Wasco Center in consultation with the City of Wasco, which is the water purveyor responsible for the Project's water supply (Refer to Section 2 for the Project Description). This Report has been prepared pursuant to Public Resources Code Section 21151.9 and California Water Code Sections 10631, 10657, 10910, 10911, 10912, and 10915 referred to as SB 610 and Business and Professions Code Section 11010 and Government Code Sections 65867.5, 66455.3, and 66473.7 referred to as SB 221.

SB 610 and SB 221 amended state law, effective January 1, 2002, to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 requires that the water purveyor of the public water system prepare a water supply assessment to be included in the environmental documentation of certain proposed projects. SB 221 requires affirmative written verification from the water purveyor of the public water system that sufficient water supplies are available for certain residential subdivisions of property prior to approval of a tentative map.

This Report identifies existing water supply for the proposed Project and a description of the quantities of water received in prior years by the City. Furthermore, this Report evaluates water supplies that are or will be available during normal, single-dry year, and multiple dry water years during a 20-year projection to meet existing demands, expected demands of the Project, and reasonably foreseeable planned future water demands served by the City.

## **1.3 Urban Water Management Plan**

In accordance with the California Urban Water Management Planning Act (Water Code Sections 10610-10656), the City of Wasco (City) prepared a draft Urban Water Management Plan (UWMP) dated August 2007. As required by law, the City's UWMP includes projected water supplies required to meet future demands through 2030. In accordance with Water Code Section 10910 (c)(2) and Government Code Section 66473.7 (c)(3), information from the City's draft 2005 UWMP has been utilized to prepare this Water Supply Assessment and Verification Report per the requirements set forth in SB 610/221. The proposed Wasco Center's water demands are included in the District's 2005 UWMP projections. A copy of the UWMP is available upon request through the City of Wasco.

## **2.0 WASCO CENTER**

### **2.1 Project Description**

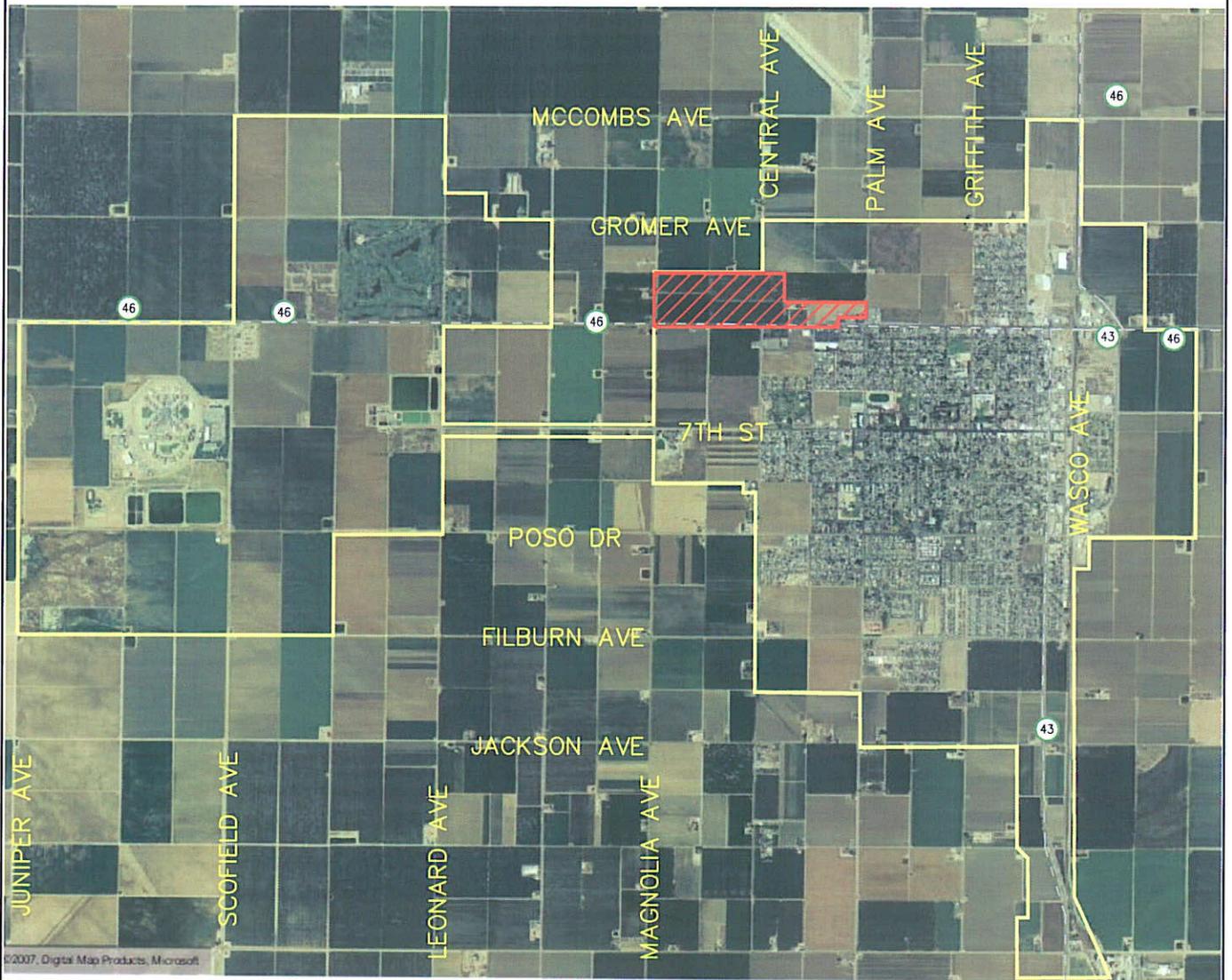
Wasco Investment, LLC and Cal Valley, LLC are developing 121 acres of land within the northern portion of the City of Wasco. It is bounded by the State Highway 46 on the south, Magnolia Avenue on the west, Margalo Street on the north and Palm Avenue on the east. The development project known as Wasco Center consists of Tentative Tract Map No. 7127 currently being processed by the City of Wasco for approval.

The Wasco Center development is comprised of 98.82 acres of Commercial which includes 2 large retail buildings, 5 restaurants, 5 retail buildings, shopping center, movie theater and a hotel with 100 rooms. It will also include 123 residential dwelling units comprising 14.04 acres.

Figure 2-1 shows the Project Location and Figure 2-2 shows the Land Use Plan. Project construction is scheduled to begin in 2008 and will be completed in 2015. The Project will be divided into two phases with Phase 1 containing the portion to the east of Central Avenue and Phase 2 to the west of Central Avenue. Each phase will be constructed within a four year period. It is anticipated that Project demands will result in approximately 419 AFY at build-out, with occupancy beginning two years after the start of construction. The City's projected demands, as included in the 2005 Draft UWMP, did account for the Wasco Center Project demands. The Project demands broken down by land use category are shown in Table 2-1.

Currently, the location of the Wasco Center has an agricultural land use and consists of approximately 95 acres of almond and walnut orchards. These crops are irrigated with water obtained from the Shafter-Wasco Irrigation District and use a yearly average of approximately 296 AFY of water. There is also a 9.2 acre private farm which includes a house plus approximately 7 acres of orchards. This farm obtains its water from a private well. Water use records for this well were not available but it is assumed that the orchards use the same amount of water per acre as the other orchards. Therefore, the private farm is estimated to use approximately 22 AFY of groundwater.

Once the Wasco Center begins Phase 1 construction in 2008, the orchards on the east side of Central Avenue will be demolished and approximately 101 AFY of existing irrigation water use will be curtailed. In 2010, the remaining orchards will be removed to prepare for Phase 2 construction, removing another 217 AFY of agricultural demand.



**LEGEND**

- (X) --- HIGHWAY
- SERVICE AREA LIMIT
- ▨ PROJECT SITE

**PSOMAS**

**WASCO CENTER  
LOCATION**

**FIGURE  
2-1**

PHASE 1  
(2008-2011)

PHASE 2  
(2012-2015)



**LEGEND**

- COMMERCIAL AREA
- RESIDENTIAL AREA
- LANDSCAPE

LAND USE BREAK DOWN TABLE	
COMMERCIAL AREA	
DESCRIPTION	BUILDING SIZE (SF)
1 - LARGE RETAIL	273,000
2 - SHOPPING CENTER	105,000
3 - MOVIE THEATER	75,000
4 - RESTAURANTS	67,500
5 - RETAIL	206,000
6 - 100 ROOM HOTEL	33,600
TOTAL	760,100

LAND USE BREAK DOWN TABLE	
RESIDENTIAL AREA	
DESCRIPTION	DENSITY (DU/ACRE)
7 - HOUSING-24 UNITS	13.33
8 - HOUSING-64 UNITS	7.40
9 - HOUSING-35 UNITS	9.75



NOT TO SCALE

**WASCO CENTER  
LAND USE PLAN**

**P S O M A S**

FIGURE  
**2-2**

**Table 2-1  
Wasco Center  
Water Demand Summary**

Land Use	Area (acres)	DU's/ Rooms	Building Area (sf)	Demand Factor	Demand Factor Unit	Demand (gpd)	Demand (AFY)
<u>Phase 1</u>							
Medium Density Residential	12.24	99	178,200	6007	gpd/acre	73,526	82
Hotel	2.45	100	33,600	150	gpd/room	15,000	17
Commercial	26.07	-	206,000	220	gpd/ksf	45,320	51
Landscape Irrigation (22% of Area)	28.52	-	-	5280	gpd/acre	33,129	37
<b>Phase 1 Total</b>	<b>40.76</b>					<b>166,975</b>	<b>187</b>
<u>Phase 2</u>							
Medium Density Residential	1.8	24	43,200	6007	gpd/acre	10,813	12
Commercial	70.3	-	520,500	220	gpd/ksf	114,510	128
Landscape Irrigation (22% of Area)	70.3	-	-	5280	gpd/acre	81,660	91
<b>Phase 2 Total</b>	<b>72.1</b>					<b>206,983</b>	<b>232</b>
<b>Project Total</b>	<b>112.86</b>					<b>373,958</b>	<b>419</b>

The demand factors for the residential land uses were obtained from the City's Water Master Plan and are based on the density of the three residential areas. The commercial demand factor in the Master Plan is 2,500 gpd/acre and based on experience, is a highly conservative factor. The factor of 220 gallons per day per thousand square feet (gpd/ksf) of building area was obtained from the Irvine Ranch Water District (IRWD) Water Resources Master Plan. This demand factor was generated from years of metered data and is based on the actual building size rather than the lot area. Since the size of the restaurants, movie theater, shopping and retail centers are known, this demand factor will more accurately account for the water demand of these commercial users. Data for the hotel does not exist on a per room basis in the City's Water Master Plan. The demand factor of 150 gpd/room is based on experience of a per capita usage of 75 gpd with 2 people per room. The landscaped areas located in the parking lots and surrounding the retail centers and hotel will require irrigation. According to the Project's landscape architect, Copley Design, the irrigation demand in the commercial areas is 5,280 gpd/acre of irrigated area and assumes that 22 percent of the total area will be irrigated. The assumption is that the residential demand factor obtained from the City's Water Master Plan includes all water demands including irrigation. Therefore, the irrigation demand is not projected separately. Based on the total water demand of the residential areas and the amount of wastewater flow generated by them, as seen in Table 2-2, approximately 34 AFY of water will be used to irrigate the landscape in the residential areas.

The Project is estimated to generate a wastewater flow of approximately 220,000 gallons per day or 247 AFY at build-out, as seen in Table 2-2. This wastewater will be conveyed to the City's WWTF where it will generate a source of recycled water once it is treated to

secondary levels. This recycled water will be used to irrigate the City-owned land that surrounds the WWTF and will aid in replenishing the groundwater basin.

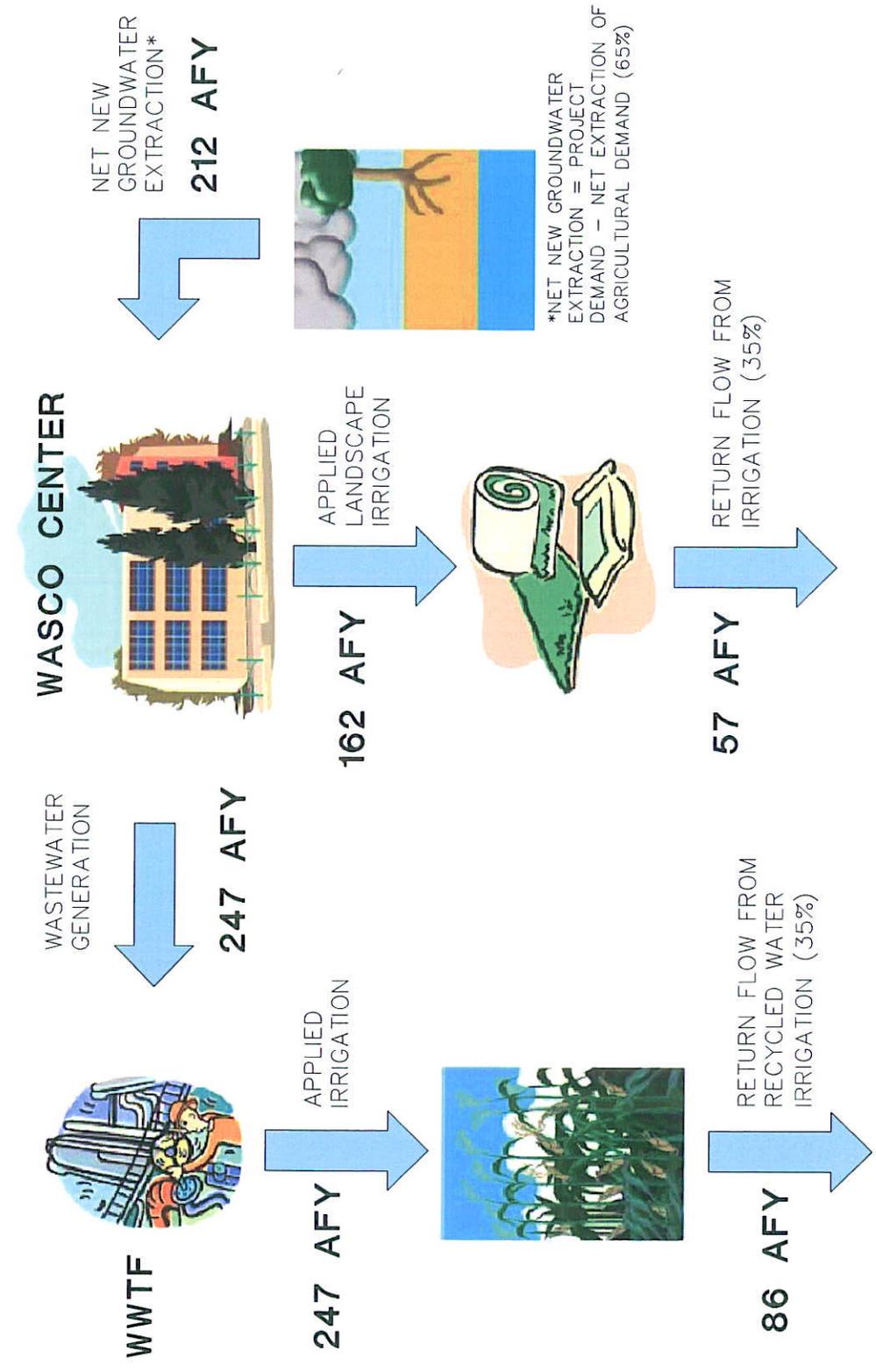
**Table 2-2  
Wasco Center  
Wastewater Flow Summary  
(AFY)**

Land Use	DU's/ Rooms	Building Area (sf)	Demand Factor	Demand Factor Unit	Demand (gpd)	Demand (AFY)
<u>Phase 1</u>						
Medium Density Residential	99	178,200	436	gpd/du	43,164	48
Hotel	100	33,600	150	gpd/room	15,000	17
Commercial	-	206,000	209	gpd/ksf	43,054	48
<b>Phase 1 Total</b>					<b>101,218</b>	<b>113</b>
<u>Phase 2</u>						
Medium Density Residential	24	43,200	436	gpd/du	10,464	12
Commercial	-	520,500	209	gpd/ksf	108,785	122
<b>Phase 2 Total</b>					<b>119,249</b>	<b>134</b>
<b>Project Total</b>					<b>220,467</b>	<b>247</b>

The unit flow factor for the residential areas was obtained from the City's Draft 2005 UWMP. For medium density residential units, the UWMP estimates there are 3.79 people per dwelling unit with a 115 gallon per capita per day (gpcd) contribution of wastewater flow. The commercial unit flow factor is the local interior water demand obtained from the IRWD Water Resources Master Plan.

Figure 2-3 is a water balance for the Wasco Center at build-out. The purpose of the water balance is to determine the net impact on the groundwater subbasin by accounting for existing extractions and all return flows from irrigation. The net new groundwater extraction from the subbasin is 212 AFY, which is the total water demand of the Project minus the net amount of groundwater used due to the existing agricultural land use (35% of the groundwater used by the existing agricultural users is assumed to be return flow). The amount of applied irrigation to be used on the landscape for the Wasco Center is 162 AFY. The return flow to the groundwater subbasin from irrigation is 35% of the total or 57 AFY. As seen in Table 2-2, the Project will generate a wastewater flow of 247 AFY. This water will be conveyed to the WWTF for treatment and will be used to irrigate crops on City-owned land and recharge the groundwater subbasin. The return flow from the recycled water irrigation is also estimated at 35% of the wastewater flow or 86 AFY. Therefore, the net impact of the Wasco Center on the groundwater subbasin is calculated at 69 AFY of additional, new groundwater extraction.

**NET IMPACT ON GROUNDWATER SUBBASIN = 212 AFY - 57 AFY - 86 AFY = 69 AFY**



**NET NEW GROUNDWATER EXTRACTION = PROJECT DEMAND - NET EXTRACTION OF AGRICULTURAL DEMAND (65%)**

**PSOMAS** **WASCO CENTER WATER BALANCE** **FIGURE 2-3**

Table 2-3 shows the projected water demand phasing by year. The water demands presented in the table represent the net impact on the groundwater subbasin for each year of the Project’s construction period. Beginning in year 2008, the existing orchards in Phase 1 will be demolished and construction will begin. Occupancy is estimated to begin in 2010 and construction for Phase 1 will be completed in 2011. The water demand is split evenly across the final two years of construction in both phases. Phase 2 construction will begin in 2012 and the existing orchards will be demolished in 2010. Occupancy in Phase 2 is estimated to begin in 2014. In 2015, construction will be complete and the Project will have a 69 AFY net impact on the subbasin. The analysis of the Project is over a 25-year period meeting the required minimum 20-year planning period, and maintaining consistency with the City’s Draft 2005 UWMP demand projections. Phasing is consistent with the developer’s phases and assumed construction periods. These phased demands are used later in Section 4 to compare with overall City demands.

**Table 2-3  
Wasco Center  
Water Demand Phasing  
(AFY)**

<b>Water Demand</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Existing Agricultural (65%)	-66	-66	-66	-66	-66	-66	-66	-66
Wasco Center Demand	0	0	93	187	187	187	187	187
Irrigation Return Flow (35%)	0	0	-12	-24	-24	-24	-24	-24
Recycled Water Return Flow (35%)	0	0	-20	-40	-40	-40	-40	-40
<b>Phase 1</b>	<b>-66</b>	<b>-66</b>	<b>-5</b>	<b>57</b>	<b>57</b>	<b>57</b>	<b>57</b>	<b>57</b>
Existing Agricultural (65%)	141	141	-141	-141	-141	-141	-141	-141
Wasco Center Demand	0	0	0	0	0	0	116	232
Irrigation Return Flow (35%)	0	0	0	0	0	0	-16	-32
Recycled Water Return Flow (35%)	0	0	0	0	0	0	-23	-47
<b>Phase 2</b>	<b>141</b>	<b>141</b>	<b>-141</b>	<b>-141</b>	<b>-141</b>	<b>-141</b>	<b>-64</b>	<b>12</b>
<b>Total</b>	<b>75</b>	<b>75</b>	<b>-146</b>	<b>-84</b>	<b>-84</b>	<b>-84</b>	<b>-7</b>	<b>69</b>

### 3.0 CITY OF WASCO WATER DEMAND AND SUPPLY

The City of Wasco’s water source is 100 percent groundwater, drawn from the Kern County Subbasin aquifer by seven deep-well turbine pumps. The Project will utilize the groundwater as its primary source of water.

#### **Population**

The City of Wasco currently serves approximately 20,500 residents. It is experiencing a somewhat steady population growth and the City’s 2005 UWMP indicates that it expects growth of 1,137 people per year (based on 300 single family dwelling units and 3.79 people per dwelling unit). Also, over the next 20 years, the City is expecting to increase its overall boundary service area from approximately 5,400 acres to 10,600 acres. The estimated population based on the expected growth rates is summarized in Table 3-1.

**Table 3-1  
City of Wasco Population Projections**

Year	2005	2010	2015	2020	2025	2030
<b>Service Area Population</b>	17,611	23,996	29,681	35,366	41,051	46,736

Source: City of Wasco Draft – 2005 Urban Water Management Plan, Section 2

### 3.1 Water Demands

#### 3.1.1 Water Use by Sector

Residential is the largest customer class (sector) in the City’s service area and is the primary water user. The residential group consists of single-family and multi-family residences. The commercial/institutional/government sector represents the range of commercial and other public facility uses as well as the local government facilities, state prison, and schools. The industrial class includes the range of light and heavy industrial uses including warehousing, storage, manufacturing and food processing. The landscape sector represents the four parks and golf course that lie within the City limits. The landscape irrigation water for these uses is supplied by the Shafter-Wasco Irrigation District and the City supplies the potable water to the public restrooms for the parks and golf course and the golf course clubhouse. Agricultural water for local farmers is also supplied by the Shafter-Wasco Irrigation District. Table 3-2 quantifies the water use per classification (sector) for the City and also shows unaccounted-for water, or losses.

The projected water use by sector presented in the row entitled “Subtotal” reflects the total water demand projections, which do not include unaccounted-for water. The total water use presented in Table 3-2 takes unaccounted-for losses into consideration.

The proposed Project is included in the City’s Water Master Plan projected water demands. The 20-Year Planning Boundary indicates the Project is in the Wasco Core - Unentitled Planning Area.

**Table 3-2  
City of Wasco  
Past, Current and Projected Water Use by Sector  
(AF)**

<b>Water Use Sectors</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
Single Family Residential	28.3	26.46	1,670	4,057	5,278	6,641	8,147
Multi Family Residential	277.29	370.32	1,043	1,420	1,847	2,324	2,852
Commercial/Institutional/Gov	325.48	239.17	745	1,014	1,319	1,660	2,037
Industrial	134.44	204.45	1415	1927	2507	3154	3870
Landscape	N/A	188.15	372	507	660	830	1018
Agricultural	-	-	-	-	-	-	-
Other	-	26	149	203	264	332	407
<b>Subtotal</b>	<b>766</b>	<b>1,054</b>	<b>5,394</b>	<b>9,128</b>	<b>11,875</b>	<b>14,941</b>	<b>18,331</b>
Unaccounted-for System Losses	3600	3,390	2,053	1,014	1,319	1,661	2,037
<b>Total Water Use</b>	<b>4,366</b>	<b>4,444</b>	<b>7,447</b>	<b>10,142</b>	<b>13,194</b>	<b>16,602</b>	<b>20,368</b>

Source: City of Wasco Draft – 2005 Urban Water Management Plan, Section 5

Unaccounted-for system losses are considered water that is produced and distributed but not sold or metered. Currently, less than 5 percent of residential and approximately 30 percent of the commercial/institutional services within the system are metered. All industrial connections are metered. Due to the high number of unmetered services within the City, it is difficult to establish how much of the water produced is unaccounted. In order to comply with Assembly Bill No. 2572, the City plans to implement an aggressive plan to retrofit existing unmetered connections with meters. Beginning in fiscal year 2008-2009 the City plans to retrofit 500 connections, more or less, per year with meters. As reflected in the table above, meter installation will be completed in 2015. Metered accounts may result in a 15% reduction in demand compared to non-metered accounts (City of Wasco Draft – 2005 UWMP, Section 6).

The differential between water supply and metered water use included system flushing, firefighting, unmetered construction usage, unmetered swimming pool filling, system leaks, repair flushing, hydrant leaks, street sweeping and known leaks that are subsequently repaired. The City is committed to minimizing its unaccounted-for water and staying within the industry average of a maximum 10% loss once meter installation is completed in 2015, as shown in Table 3-2.

Table 3-3 shows the past and projected number of water service customers by customer class through 2030. The number of service connections is anticipated to increase by about 300 percent through 2030. The City’s overall projections shown below include the Project’s proposed water service connections.

**Table 3-3  
City of Wasco  
Number of Water Service Connections by Sector  
(AF)**

	2000	2005	2010	2015	2020	2025	2030
Single Family Residential	3,210	3,372	4,831	6,331	7,831	9,331	10,831
Multi Family Residential	249	240	282	311	344	379	419
Commercial/Institutional/Gov	311	267	305	337	372	411	453
Industrial	11	19	22	26	30	34	40
Landscape	7	43	46	51	56	62	69
Agricultural	-	-	-	-	-	-	-
Other	-	14	15	17	18	20	23
<b>Total Connections</b>	<b>3,788</b>	<b>3,955</b>	<b>5,501</b>	<b>7,073</b>	<b>8,651</b>	<b>10,237</b>	<b>11,835</b>

Source: City of Wasco Draft – 2005 Urban Water Management Plan, Section 5

### 3.1.2 Historical

Table 3-4 summarizes the amount of groundwater pumped by the City for the last five years.

**Table 3-4  
Historic Groundwater Production  
(AFY)**

Basin Name	2000	2001	2002	2003	2004
Kern County Subbasin	4,366	4,351	4,459	4,542	4,613

Source: City of Wasco Draft – 2005 Urban Water Management Plan, Section 3

Table 3-5 projects the amount of water that is projected to be pumped in the future. The amounts shown are based on the amounts needed to meet demand.

**Table 3-5  
Current and Projected Groundwater Production  
(AFY)**

Basin Name	2005	2010	2015	2020	2025	2030
Kern County Subbasin	4,444	7,447	10,142	13,194	16,602	20,368

Source: City of Wasco Draft – 2005 Urban Water Management Plan, Section 3

The Project will rely on the current supply of groundwater, as included in the projected groundwater production for the City’s service area.

### **3.2 Description of Water Sources**

The City of Wasco is located in the northern section of the County of Kern at the southern end of the San Joaquin Valley, about twenty-five miles northwest of Bakersfield. The groundwater body from which the City extracts water has been labeled the Kern County Subbasin (5-22.14) by the California Department of Water Resources Bulletin 118-Update 2003 and is a subbasin of the Tulare Lake Hydrologic Region, as presented in Figure 3-1. Figure 3-2 shows the relative location of the water wells used to draw the groundwater from the subbasin.

The Tulare Lake Hydrologic Region (HR) covers approximately 10.9 million acres (17,000 square miles) and includes all of Kings and Tulare counties and most of Fresno and Kern counties. The region has 12 distinct groundwater basins and 7 subbasins of the San Joaquin Valley Groundwater Basin. These basins underlie approximately 5.33 million acres (8,330 square miles) or 49 percent of the entire HR area.

The San Joaquin Valley Groundwater Basin, which is surrounded on the west by the Coast Ranges, on the south by the San Emigdio and Tehachapi Mountains, on the east by the Sierra Nevada and on the north by the Sacramento-San Joaquin Valley and Sacramento Valley. The northern portion of the San Joaquin Valley drains towards the Delta via the San Joaquin River and its tributaries, the Fresno, Merced, Tuolumne, and Stanislaus Rivers. The southern portion of the valley is internally drained by the Kings, Kaweh, Tule, and Kern Rivers that flow into the Tulare drainage basin including the beds of the former Tulare, Buena Vista, and Kern Lakes (Tulare Lake Hydrologic Region, Kern County Subbasin: California's Groundwater Bulletin 118, Update 2003).



- KERN COUNTY GROUNDWATER SUBBASIN
- OTHER GROUNDWATER SUBBASINS
- SAN JOAQUIN VALLEY GROUNDWATER BASIN
- TULARE LAKE HYDROLOGIC REGION

**P S O M A S**

**CITY OF WASCO  
GROUNDWATER  
SUBBASINS**

FIGURE  
**3-1**



**LEGEND**

-  SERVICE AREA LIMIT
-  WELL LOCATION
-  HIGHWAY
-  PROJECT SITE

**PSOMAS**

**CITY OF WASCO  
WELL LOCATIONS**

FIGURE  
**3-2**

### 3.2.1 Groundwater

The City of Wasco draws 100 percent of its water supply from groundwater and the existing water system consists of eight wells (only seven currently operate) and a distribution system. The system has two pressure zones with the dividing line along Magnolia Avenue. One well, Well #6, is currently inactive due to high concentrations of nitrate and DBCP concentrations that exceed drinking water standards. A second well, Well #2, is currently only operated to supply irrigation water to the Valley Rose Golf Course due to its location. It is located on the lower most elevation zone, west of Magnolia Avenue, and it would over pressurize the system if maintained under constant operation. Water supply for domestic service and fire flow is currently supplied from the remaining six active wells. Table 3-7 lists the active wells including age, depth and capacity.

**Table 3-6  
Active Wells**

Well Number	Age (years)	Depth (feet)	Capacity (gpm)
Well #5	54	822	673
Well #7A	32	900	637
Well #8A	34	925	1,036
Well #9	51	709	578
Well #10	30	927	917
Well #11	28	928	948

Source: City of Wasco Draft – 2005 Urban Water Management Plan, Section 3 and City of Wasco Water Master Plan Table 4-1

### Kern County Groundwater Subbasin

The Kern County subbasin represents the southern portion of the San Joaquin Valley Groundwater Basin and has a surface area of 1,945,000 acres (3,040 square miles). It is bounded on the north by the Kern County line and the Tule, Tulare Lake and Pleasant Valley subbasins, on the east and southeast by granitic bedrock of the Sierra Nevada foothills and Tehachapi Mountains, and the southwest and west by the marine sediments of the San Emigdio Mountains and Coast Ranges. Principal rivers and streams include Kern River and Poso Creek. The active faults that affect groundwater movement include the Edison, Pond-Poso, and White Wolf faults (Tulare Lake Hydrologic Region, Kern County Subbasin: California’s Groundwater Bulletin 118, Update 2003).

**Groundwater Levels and Storage:** The average subbasin water level is essentially unchanged from 1970 to 2000, after experiencing cumulative changes of approximately a 15-foot decrease through 1978, a 15-foot increase through 1988, and an 8-foot increase

through 1997. However, net water level changes in different portions of the subbasin were quite variable through the period 1970-2000. These changes ranged from increases of over 30 feet at the southeast valley margin and in the Lost Hills/Buttonwillow areas to decreases of over 25 and 50 feet in the Bakersfield area and McFarland/Shafter areas, respectively (Tulare Lake Hydrologic Region, Kern County Subbasin: California's Groundwater Bulletin 118, Update 2003).

Kern County Water Agency estimates the total water in storage to be 40,000,000 AF and dewatered aquifer storage to be 10,000,000 AF. It appears that these calculations consider areas of the subbasin which are known to overlay useable groundwater, which they report to be about 1,000,000 acres (Tulare Lake Hydrologic Region, Kern County Subbasin: California's Groundwater Bulletin 118, Update 2003).

**Groundwater Quality:** Groundwater quality throughout the region is suitable for most urban and agricultural uses with only local impairments. The primary constituents of concern are high TDS, nitrate, arsenic, and organic compounds. The eastern Kern County Subbasin contains primarily calcium bicarbonate waters in the shallow zones, increasing in sodium with depth. Bicarbonate is replaced by sulfate and lesser chloride in an east to west trend across the subbasin. West side waters are primarily sodium sulfate to calcium-sodium sulfate type. The average TDS of groundwater is 400-500 mg/L with a range of 150 – 5,000 mg/L. Shallow groundwater presents problems for agriculture in the western portion of the basin. High TDS, sodium chloride, and sulfate are associated with the axial trough of the subbasin. Nitrate, DBCP, and EDB concentrations exist in some areas associated with lakebed deposits (City of Wasco – Draft 2005 UWMP, Section 3).

In the City of Wasco, all active wells are sampled and tested for general mineral, general physical, bacteriological, inorganic, and organic chemical analyses in compliance with Title 22 requirements. The overall water quality for the active wells meets the water quality criteria, however the Department of Public Health (DPH) has delineated three contaminants of concern for the City's wells including nitrate, Dibromochloropropane (DBCP) and Ethylenedibromide (EDB). There are also some bacteriological issues associated with some of the wells.

### **3.2.2 Recycled Water**

Recycled water is defined by the California Water Code as “water, which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefore considered a valuable resource.” The availability of recycled water is limited to water generated as part of the wastewater treatment associated with sewage collected from sewer residential, commercial, and industrial properties.

Water recycling has been identified as an important demand management tool in the City of Wasco. The City owns and operates a wastewater treatment facility (WWTF) west of the community and is permitted to discharge its effluent to 605 acres of City-owned land

## *Wasco Center WSA*

that surrounds the WWTF to the south and west (160 acres percolation and storage plus 445 acres irrigation). The irrigation practice helps to replenish the groundwater table through deep percolation and reduces groundwater overdraft. Effluent generally flows by gravity with the use of booster pumps during high flows through several miles of pipeline and open ditches. It is expected that this practice will continue in the future and aid the groundwater basin recharge.

The WWTF produces approximately 1.7 million gallons per day (MGD) (5.2 acre-feet/day) of undisinfected, secondary treated effluent. The City land is permitted for 1.95 MGD. The effluent is strictly used for agricultural practices within the reuse area.

As seen in Table 2-2, the Project is estimated to generate a wastewater flow of approximately 220,000 gallons per day (247 AFY) at build-out. This wastewater will be conveyed to the City's WWTF where it will generate a source of recycled water once it is treated to secondary levels. This recycled water will be used to irrigate the City-owned land that surrounds the WWTF and will aid in replenishing the groundwater basin.

## 4.0 RELIABILITY OF WATER SUPPLIES

The City of Wasco has never experienced a severe shortage of water supply, and it anticipates this condition will remain in the following years. The City's local groundwater, which is the sole source of its supply, has reliably allowed the City to meet its historical water demands. The local aquifer yields are good and can be readily recharged by percolation in the Kern River channel and other sites. The most likely reasons the City would have a deficit are: wells could not be used because of contamination, repairs or an emergency occurs which could limit the water system's ability to deliver water, and falling water levels in the groundwater basin if not enough recharge is carried out. Falling water levels in the subbasin could cause wells to dry up and in certain areas construction of deeper wells may not be possible.

Water supply and demand projections presented are based on information provided by the City's 2005 Draft UWMP. The groundwater budget presented below is based on data collected as part of DWR's Bulletin 160 preparation. The basis for the calculations includes a 1990 normalized year and land and water use data. Inflows to the subbasin include natural recharge of 150,000 AFY, artificial recharge of 308,000 AFY, applied water recharge of 843,000 AFY, and a 1958-1966 average estimated subsurface inflow of 233,000 AFY, for a total subbasin inflow of 1,543,000 AFY. Subbasin outflows are urban extraction of 154,000 AFY, agricultural extraction of 1,160,000 AFY, other extractions (oil industry related) of 86,333 AFY, and subsurface outflow was considered minimal, for a total subbasin outflow of 1,400,300 AFY. In addition to the above budget, KCWA has prepared a detailed long-term water balance which shows an average change in storage of minus 325,000 AFY. This analysis, however, does not include subsurface inflow (Tulare Lake Hydrologic Region, Kern County Subbasin: California's Groundwater Bulletin 118, Update 2003). The estimate of total water in storage within the Kern County Subbasin is approximately 40,000,000 acre-feet and dewatered aquifer storage to be 10,000,000 acre-feet.

### 4.1 Dry Year Supply and Demand

Tables 4-2 through 4-8 present the normal year, single dry year and multiple dry year supply and demand projections for the City of Wasco through 2030. The proposed project was included in the District’s 2005 UWMP projected water demands and those demands are included in the tables. The water years used was based on hydrologic data from 1970 to 1997. Based on the data compiled, the water year used for a normal (or average) water year is 1985, 1994 was used for a single-dry water year, and 1987 through 1992 was used for multiple-dry water years.

The local region experienced a prolonged drought from 1987 through 1992. Reliance on groundwater increased during droughts due to the reduced availability of surface water. During the six years of the 1987-1992 drought, groundwater storage was reduced by about 919,000 AFY in Kern County. The City of Wasco does not anticipate any water shortages in any average rainfall year through 2025.

The City’s groundwater wells can supply 10,269 AFY which is beyond the current projected demand of 6,020 AFY in 2007. The City plans to upgrade its existing water supply wells to provide its future groundwater supplies and plans to construct new wells as the need arises.

**Table 4–1  
City of Wasco  
Including Wasco Center  
Projected Water Supply and Demand  
Normal Water Year**

Water Sources	2010	2015	2020	2025	2030
	<b>Normal Water Years</b>				
<b>Supply</b>					
Groundwater	7,447	10,142	13,194	16,602	20,368
<b>Total Supply</b>	<b>7,447</b>	<b>10,142</b>	<b>13,194</b>	<b>16,602</b>	<b>20,368</b>
<b>Demand</b>					
Wasco Center	-146	69	69	69	69
Existing Service Area	7,593	10,073	13,125	16,533	20,299
<b>Total Demand</b>	<b>7,447</b>	<b>10,142</b>	<b>13,194</b>	<b>16,602</b>	<b>20,368</b>
% of Year 2005 Demand (4,444 AF)	167.6%	228.2%	296.9%	373.6%	458.3%
<b>Supply/Demand Difference</b>	0	0	0	0	0
<b>Difference as % of Supply</b>	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Difference as % of Demand</b>	0.0%	0.0%	0.0%	0.0%	0.0%

Source: City of Wasco Draft – 2005 Urban Water Management Plan, Section 11

Since the City’s entire potable water demand is met with groundwater supplies, it is not directly affected by the reduction of the surface water deliveries in drought years and is buffered from the effects of potential water shortages. The City does not anticipate any water shortages in the dry-year and multiple dry-year scenarios analyzed.

**Table 4–2  
City of Wasco  
Including Wasco Center  
Projected Water Supply and Demand  
Single Dry Water Year**

<b>Water Sources</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
	<b>Single Dry Years</b>				
<b>Supply</b>					
Groundwater	7,447	10,142	13,194	16,602	20,368
<b>Total Supply</b>	<b>7,447</b>	<b>10,142</b>	<b>13,194</b>	<b>16,602</b>	<b>20,368</b>
<b>Demand</b>					
Wasco Center	-146	69	69	69	69
Existing Service Area	7,593	10,073	13,125	16,533	20,299
<b>Total Demand</b>	<b>7,447</b>	<b>10,142</b>	<b>13,194</b>	<b>16,602</b>	<b>20,368</b>
% of Year 2005 Demand (4,444 AF)	167.6%	228.2%	296.9%	373.6%	458.3%
<b>Supply/Demand Difference</b>	0	0	0	0	0
<b>Difference as % of Supply</b>	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Difference as % of Demand</b>	0.0%	0.0%	0.0%	0.0%	0.0%

Source: City of Wasco Draft – 2005 Urban Water Management Plan, Section 11

**Table 4-3  
City of Wasco  
Including Wasco Center  
Projected Water Supply and Demand  
Multiple Dry Water Years 2006-2010**

Water Sources	2006	2007	2008	2009	2010
	<b>Multiple Dry Years</b>				
<b>Supply</b>					
Groundwater	4,584	6,019	6,473	6,966	7,447
<b>Total Supply</b>	<b>4,584</b>	<b>6,019</b>	<b>6,473</b>	<b>6,966</b>	<b>7,447</b>
<b>Demand</b>					
Wasco Center	0	0	75	75	-146
Existing Service Area	4,584	6,019	6,398	6,891	7,593
<b>Total Demand</b>	<b>4,584</b>	<b>6,019</b>	<b>6,473</b>	<b>6,966</b>	<b>7,447</b>
% of Year 2005 Demand (4,444 AF)	103.2%	135.4%	145.7%	156.8%	167.6%
<b>Supply/Demand Difference</b>	0	0	0	0	0
<b>Difference as % of Supply</b>	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Difference as % of Demand</b>	0.0%	0.0%	0.0%	0.0%	0.0%

Source: City of Wasco Draft – 2005 Urban Water Management Plan, Section 11

**Table 4-4  
City of Wasco  
Including Wasco Center  
Projected Water Supply Demand  
Multiple Dry Water Years 2011-2015**

<b>Water Sources</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
	<b>Multiple Dry Years</b>				
<b>Supply</b>					
Groundwater	7,968	8,505	9,027	9,594	10,142
<b>Total Supply</b>	<b>7,968</b>	<b>8,505</b>	<b>9,027</b>	<b>9,594</b>	<b>10,142</b>
<b>Demand</b>					
Wasco Center	-84	-84	-84	-7	69
Existing Service Area	8,052	8,589	9,111	9,601	10,073
<b>Total Demand</b>	<b>7,968</b>	<b>8,505</b>	<b>9,027</b>	<b>9,594</b>	<b>10,142</b>
% of Year 2005 Demand (4,444 AF)	179.3%	191.4%	203.1%	215.9%	228.2%
<b>Supply/Demand Difference</b>	0	0	0	0	0
<b>Difference as % of Supply</b>	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Difference as % of Demand</b>	0.0%	0.0%	0.0%	0.0%	0.0%

Source: City of Wasco Draft – 2005 Urban Water Management Plan, Section 11

**Table 4-5  
City of Wasco  
Including Wasco Center  
Projected Water Supply and Demand  
Multiple Dry Water Years 2016-2020**

<b>Water Sources</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
	<b>Multiple Dry Years</b>				
<b>Supply</b>					
Groundwater	10,738	11,349	11,938	12,578	13,194
<b>Total Supply</b>	<b>10,738</b>	<b>11,349</b>	<b>11,938</b>	<b>12,578</b>	<b>13,194</b>
<b>Demand</b>					
Wasco Center	69	69	69	69	69
Existing Service Area	10,669	11,280	11,869	12,509	13,125
<b>Total Demand</b>	<b>10,738</b>	<b>11,349</b>	<b>11,938</b>	<b>12,578</b>	<b>13,194</b>
% of Year 2005 Demand (4,444 AF)	241.6%	255.4%	268.6%	283.0%	296.9%
<b>Supply/Demand Difference</b>	0	0	0	0	0
<b>Difference as % of Supply</b>	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Difference as % of Demand</b>	0.0%	0.0%	0.0%	0.0%	0.0%

Source: City of Wasco Draft – 2005 Urban Water Management Plan, Section 11

**Table 4-6  
City of Wasco  
Including Wasco Center  
Projected Water Supply and Demand  
Multiple Dry Water Years 2021-2025**

<b>Water Sources</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
	<b>Multiple Dry Years</b>				
<b>Supply</b>					
Groundwater	13,863	14,548	15,205	15,919	16,602
<b>Total Supply</b>	<b>13,863</b>	<b>14,548</b>	<b>15,205</b>	<b>15,919</b>	<b>16,602</b>
<b>Demand</b>					
Wasco Center	69	69	69	69	69
Existing Service Area	13,794	14,479	15,136	15,850	16,533
<b>Total Demand</b>	<b>13,863</b>	<b>14,548</b>	<b>15,205</b>	<b>15,919</b>	<b>16,602</b>
% of Year 2005 Demand (4,444 AF)	311.9%	327.4%	342.1%	358.2%	373.6%
<b>Supply/Demand Difference</b>	0	0	0	0	0
<b>Difference as % of Supply</b>	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Difference as % of Demand</b>	0.0%	0.0%	0.0%	0.0%	0.0%

Source: City of Wasco Draft – 2005 Urban Water Management Plan, Section 11

**Table 4-7  
City of Wasco  
Including Wasco Center  
Projected Water Supply and Demand  
Multiple Dry Water Years 2026-2030**

<b>Water Sources</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>
	<b>Multiple Dry Years</b>				
<b>Supply</b>					
Groundwater	17,346	18,105	18,829	19,617	20,368
<b>Total Supply</b>	<b>17,346</b>	<b>18,105</b>	<b>18,829</b>	<b>19,617</b>	<b>20,368</b>
<b>Demand</b>					
Wasco Center	69	69	69	69	69
Existing Service Area	17,277	18,036	18,760	19,548	20,299
<b>Total Demand</b>	<b>17,346</b>	<b>18,105</b>	<b>18,829</b>	<b>19,617</b>	<b>20,368</b>
% of Year 2005 Demand (4,444 AF)	390.3%	407.4%	423.7%	441.4%	458.3%
<b>Supply/Demand Difference</b>	0	0	0	0	0
<b>Difference as % of Supply</b>	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Difference as % of Demand</b>	0.0%	0.0%	0.0%	0.0%	0.0%

Source: City of Wasco Draft – 2005 Urban Water Management Plan, Section 11

## **4.2 Groundwater Reliability**

The City of Wasco has never experienced a severe shortage of water supply and the groundwater supply has reliably allowed the City to meet its historical water demands. Since the City relies on groundwater alone, it is not directly affected by the reduction of the surface water deliveries in drought years and is safeguarded from the effects of potential short-term water shortages. However, shortages could result from system maintenance. The likeliest interruption would be as a result of loss of power for an extended time or facility failure at treatment and pumping facilities. In the event of a power outage, Wells #8, #9, and #10 are equipped with emergency generators on-site.

A review of historical water quality data indicates that the City's water generally exceeds State Department of Health Services water quality criteria. The City tests the drinking water quality for many constituents as required by State and Federal Regulation. DBCP has been detected in samples collected in Wells #5, #8A, and #11. The concentrations measured have generally been less than one half of the 0.0002 mg/L MCL. In addition to DBCP, Well #11 has also shown detectable concentrations of EDB which do not exceed the current MCL. Both EDB and DBCP are pesticides that are present in the soils due to runoff and leaching from former use on various crops typically grown in the San Joaquin Valley. Nitrate, present in soils from fertilizer use and leaching from septic tanks and sewerage, have been detected in periodic spikes in certain wells. Well #6 had to be removed from the system due to high nitrate concentrations and elevated concentrations have also been observed in Well #11. The City has remedied the nitrate problem in Well #11 by lowering the bowl depth hence changing the aquifer zone from which the water is pumped. In general as testing methods become more discerning and regulations become more stringent, it can be expected that sources will need additional treatment to stay in compliance.

## **4.3 Recycled Water Reliability**

The City owns and operates a wastewater treatment facility located west of the community. The current plant facilities consist of headworks with a Parshall flume, one mechanical bar screen and flow meter, aerated grit chamber, two primary clarifiers, two plastic media trickling filters, two secondary clarifiers, two smaller bentonite-lined aerated ponds and one large (25 acre) unlined storage pond, three anaerobic sludge digesters, four unlined sludge drying beds, and three 15-acre effluent disposal ponds. The WWTF also has a septage receiving station and laboratory, which is only used for process sampling. The design capacity of the existing plant is 3.0 MGD (City of Wasco Draft – 2005 UWMP, Section 9).

The City is currently permitted by the RWQCB to discharge effluent to City-owned property. Discharge to City land is governed by Waste Discharge Requirements (WDR) Order No. R5-2002-0198. The City is permitted to discharge its effluent to 605 acres of City-owned land that surrounds the WWTF to the south and west (160 acres percolation

and storage plus 445 acres irrigation). The irrigation practice helps to replenish the area groundwater table through deep percolation and reduces groundwater overdraft. It is expected that this practice will continue in the future and aid the groundwater basin recharge.

Currently, the WWTF produces approximately 1.7 MGD (5.2 acre-feet/day) of undisinfected, secondary treated effluent. The City land is permitted for 1.95 MGD. The effluent is used strictly for agricultural practices within the reuse area. The crops, which have consisted of corn, cotton, sugar beets, black eye beans, and alfalfa, are irrigated by the flood and furrow method. The sugar beets undergo a commercial pathogens destroying process.

In 2005, the City of Wasco retained the services of Carollo Engineers to prepare the Wastewater Treatment Plant Expansion Project Report. As part of the wastewater treatment plant expansion, the City plans to construct the facilities necessary to reliably transfer final effluent to the City-owned farmland and the existing and new percolation/evaporation ponds. The effluent reclamation facilities include the addition of a new effluent pump station, 2.8 miles of new 24-inch diameter effluent pipeline leading to the existing and new ponds, and 1,200 linear feet of 12-inch diameter effluent pipe leading to 55 acres owned by the City that currently can only be irrigated with irrigation water. Currently, the City is delivering 1,900 AFY of recycled water for feed and fodder type crop irrigation on City-owned land. By 2030, the City is expected to deliver 5,835 AFY for agricultural irrigation. The irrigation practice helps to offset potable water use, and helps to replenish the area groundwater table through deep percolation.

At this time, the City of Wasco does not plan to optimize the use of recycled water beyond the irrigation practice performed on the City-owned farmland. A market study and a comprehensive field survey are needed to identify the use characteristics of potential recycled water customers and the City of Wasco does not have the funds to conduct such studies. Potential users of recycled water are typically landscape or agricultural irrigation systems or possibly industrial water users.

#### **4.4 Sources and Storage**

The City does not currently have any storage capacity throughout the system. A 100,000-gallon water tower has been abandoned since 1987 due to its susceptibility to contamination from outside elements. The City is currently exploring the possibility of adding a new 3 MG storage tank to provide additional redundancy and to alleviate some of the current capacity deficiencies. A 900 GPM booster pump station and 900 GPM well are also planned at the site of the storage tank. The proposed 3 MG reservoir and well would help to meet future peaking demands during summer months. The new reservoir and well would also provide improvements in terms of operational flexibility, and would enable the City to operate some of its production wells during off-peak electricity consumption hours. The City is applying for a grant in 2007 to construct the reservoir and expects construction of the reservoir and new well by 2008. The new storage tank would be constructed in the northeast part of town on Annin Avenue. This location is ideal given its higher topographical elevation with respect to the rest of the distribution system.

The water system needed to serve the build-out of the 20-year growth areas would include up to 18 additional wells, an expanded distribution system, the proposed 3 MG storage tank and two additional 1 MG storage tanks.

Water will be supplied to the Wasco Center via an existing 12" water line located along Highway 46. Connections for the commercial and residential areas will be made to the existing 12" water line. Additional studies may be required to determine if the 12" line will be adequate for the Project's demand and fire flow. If additional capacity is needed, connection and impact fees will be assessed. There are no plans for additional wells or water pipelines due to the Project. The City of Wasco has recently upgraded two existing wells with VFD's and SCADA as well as expanding the motor capacity. These upgrades have added an equivalent capacity of two additional wells.

## **5.0 CONCLUSION**

### ***5.1 Availability of Supplies***

The City of Wasco has never experienced a severe shortage of water supply and the City's local groundwater, its sole source of supply, has reliably allowed the City to meet its historical water demands. The City currently has an active water conservation program and voluntary rationing on the part of the community through the use of a "No-Waste" Ordinance. Through the use of these programs, the City is insured a reliable water supply that meets federal, state, and local governments. This water supply assessment identifies water supply and reliability to the City, now and into the future, including a sufficient water supply for the Wasco Center area.

The City of Wasco supplied approximately 4,444 AFY to its customers in calendar year 2005. The build-out of the Wasco Center will add approximately 419 AFY to the City's projected water demands. Considering the decreased agricultural demand from the Project (minus 35% return flow) plus the increased return flow from recycled wastewater generated by the Project and the 35% return flow from the Project's irrigation demand, the net impact of the Project on water supply is 69 AFY. Build-out of the Wasco Center is estimated to occur in year 2015 when the City's total water demand is projected to be approximately 10,142 AFY. Analyses of water demand and supply projections for the City, including the Project, demonstrate that projected supplies meet or exceed demand through the water year 2030. These projections consider land use, water development programs and projects, and water conservation measures.

Overall, the City's water supply strategy to meet its demands through 2030 provides adequate water supply for the Wasco Center. The reliability of the groundwater supply ensures availability of supplies for the Project and the rest of the City's service area.

## 6.0 REFERENCES

The following documents were used in conjunction with discussion with City of Wasco staff in preparing this water supply assessment:

Copley Design, 2007. *Phone conversation with Mike Holmes.*

ECO:LOGIC Engineering, 2007. *City of Wasco Water Master Plan*, April 2007.

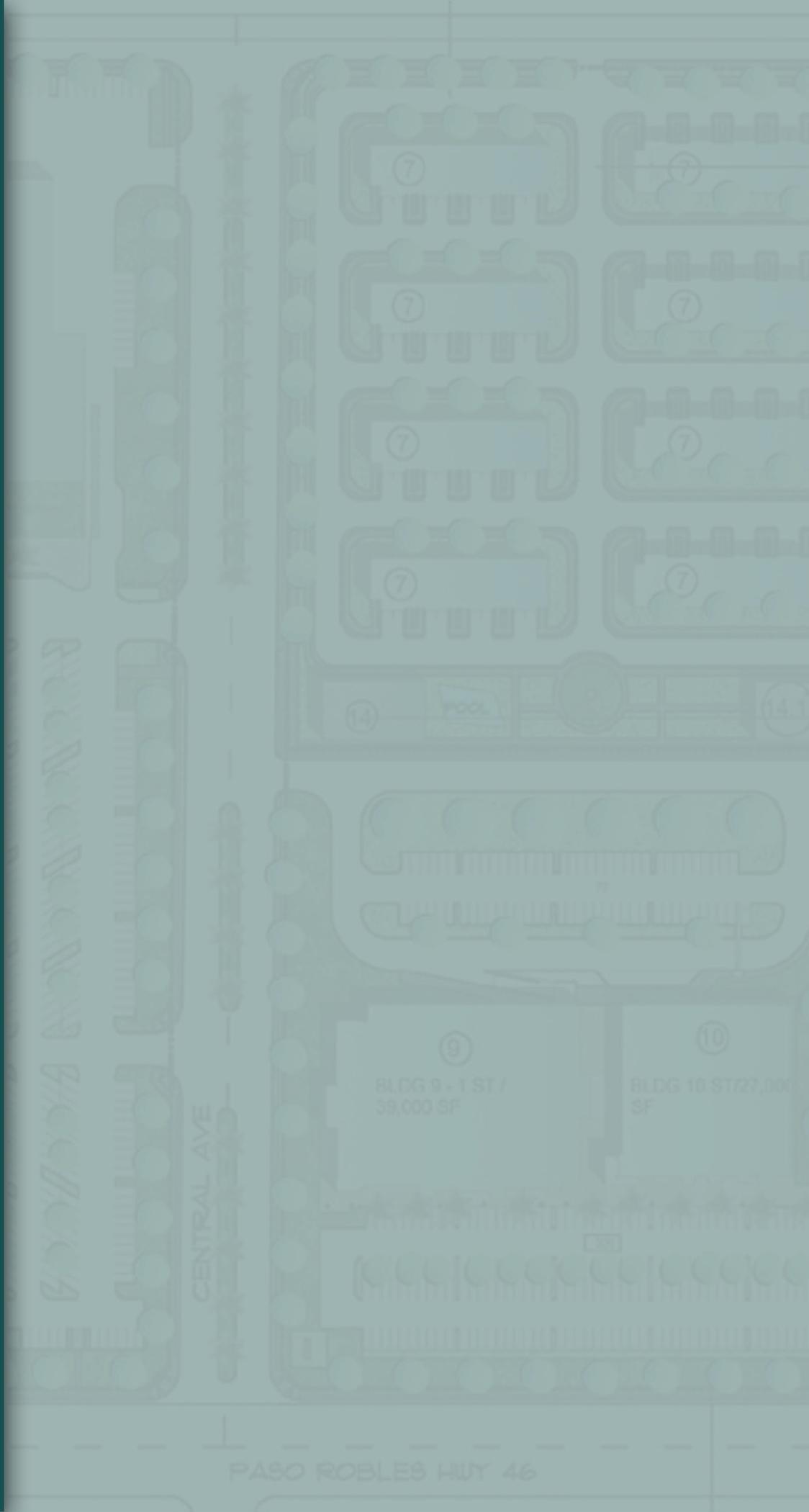
Irvine Ranch Water District, 2003. *Water Resources Master Plan.*

California Irrigation Management Information System, 2007. *Monthly Average ETo Report.*

Helt Engineering, Inc., 2007. *City of Wasco Draft – 2005 Urban Water Management Plan*, August 2007.

DWR, 2003. *California's Groundwater – Bulletin 118, Update 2003.*

DWR, 2006. *San Joaquin Valley Groundwater Basin, Kern County Subbasin: California's Groundwater Bulletin 118*, January 2006.



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