

Appendix A – Arkadelphia Bypass Traffic Study

Arkadelphia Bypass Traffic Study

HWY. 67 TO HWY. 51 (ARKADELPHIA BYPASS) P.E.

ARDOT Job 070442; F.A.P. Number STPC-9013(10)

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List of Appendices

Appendix A - Volume Data

Appendix B – Intersection Operational Analysis Results

Appendix C – Roadway Segment Operational Analysis Results

Due to the size of these appendices (1,145 pages in total), they have been removed from this report but are available upon request.

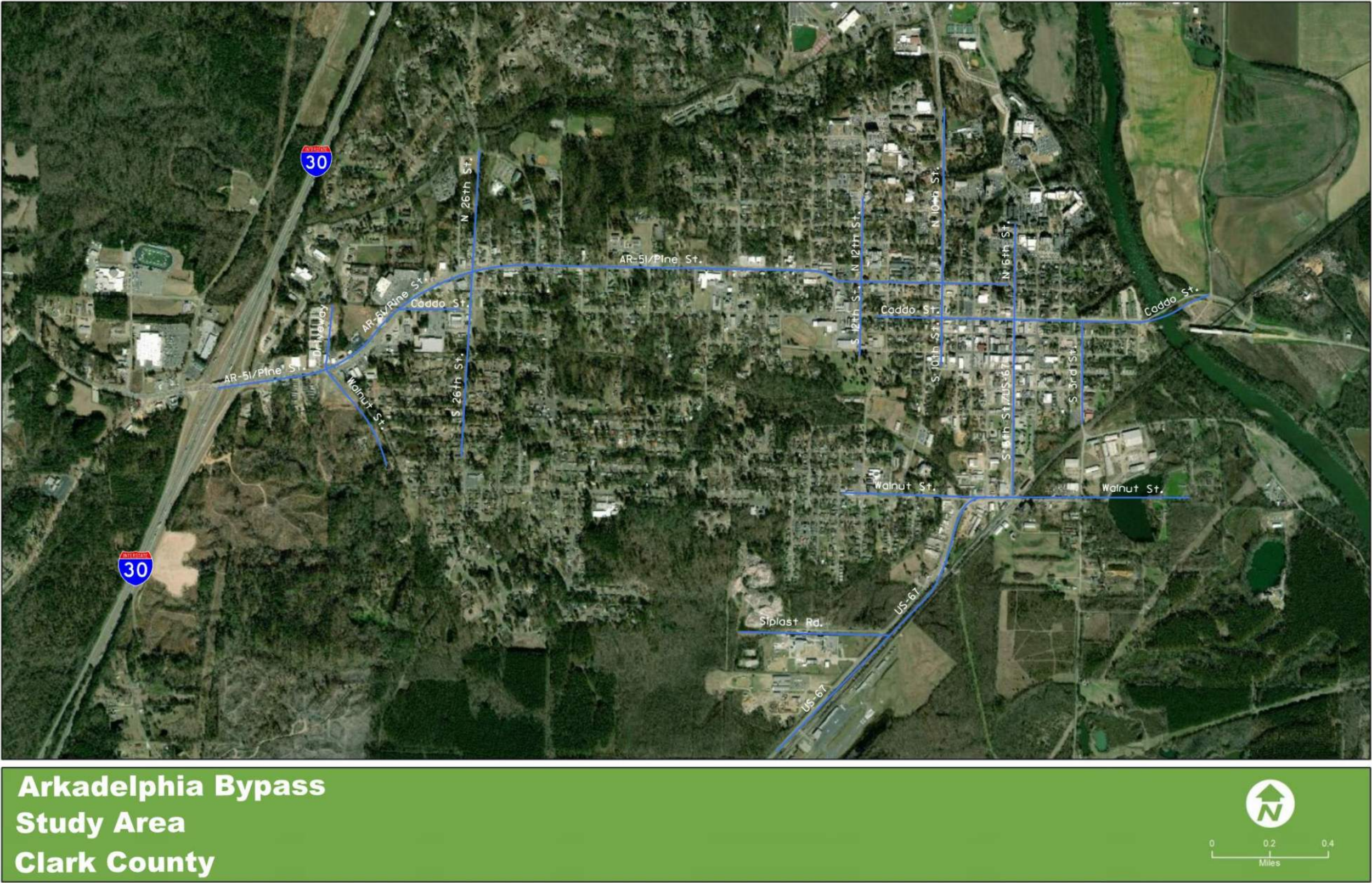
INTRODUCTION

Arkadelphia is adjacent to the only Ouachita River crossing in the region, and this route (Highway 51) continues through the heart of Arkadelphia and provides critical access to Highway 67 and Interstate 30 (I-30). A number of sawmills operate within 40 miles of Arkadelphia, and trucks going to and from the sawmills utilize this river crossing. These trucks must negotiate several difficult turns and pass through the Arkadelphia Central Business District (CBD), which imposes delays on other road users within the city.

In 2013, the Arkansas Department of Transportation (ARDOT) conducted a study to investigate alternate bridge locations and bypass options to better serve the heavy truck traffic and long distance through traffic. Since then, the existing bridge has been replaced at the same location, and no bypass has been constructed.

As part of the NEPA process, Garver reviewed the previous study and is providing an updated traffic and safety study which includes an analysis of the existing and future No Action conditions, safety analysis, and analysis of the new proposed bypass alternatives. **Figure 1** on the following page shows the study area. The following sections of this report document the findings of the traffic and safety analyses.

Figure 1: Arkadelphia Bypass Study Area



EXISTING / NO ACTION ANALYSIS

An updated analyses of existing and future No Action conditions were conducted to identify any safety or operational issues and to provide a basis of comparison for the proposed Action alternatives. The results of the existing and future No Action analyses are described in the following subsections.

2018 EXISTING VOLUMES

In April of 2018, turning movement counts were conducted at key intersections within the study area and included 24-hours of data with percentages of buses and trucks. This data was processed to identify the peak hours, peak hour factors, and percentages of heavy vehicles during the peak hours. For this study area, a single seasonal adjustment factor of 0.98 was applied according to the methodologies outlined in the *ARDOT Traffic Monitoring System Handbook* for an urban principal arterial with data collected in April. No balancing was required between intersections due to the presence of cross streets and driveways between the study intersections.

After the initial volumes were developed, the study area was expanded further west along Pine Street. Additional turning movement counts were collected at key intersections within the added area in September and October of 2018. Seasonal adjustment factors of 0.95 and 0.99 were applied to the October and September counts, respectively, in accordance with the *ARDOT Traffic Monitoring System Handbook* for an urban principal arterial with data collected in these months. As with the original study area, no balancing was required between intersections for the expanded study area due to the presence of cross streets and driveways between the study intersections. The resulting 2018 Existing design volumes are shown in **Figure 2** and in **Figure 3** on the following pages. The raw turning movement data is provided in **Appendix A - Volume Data**.

Figure 2: 2018 Existing Volumes

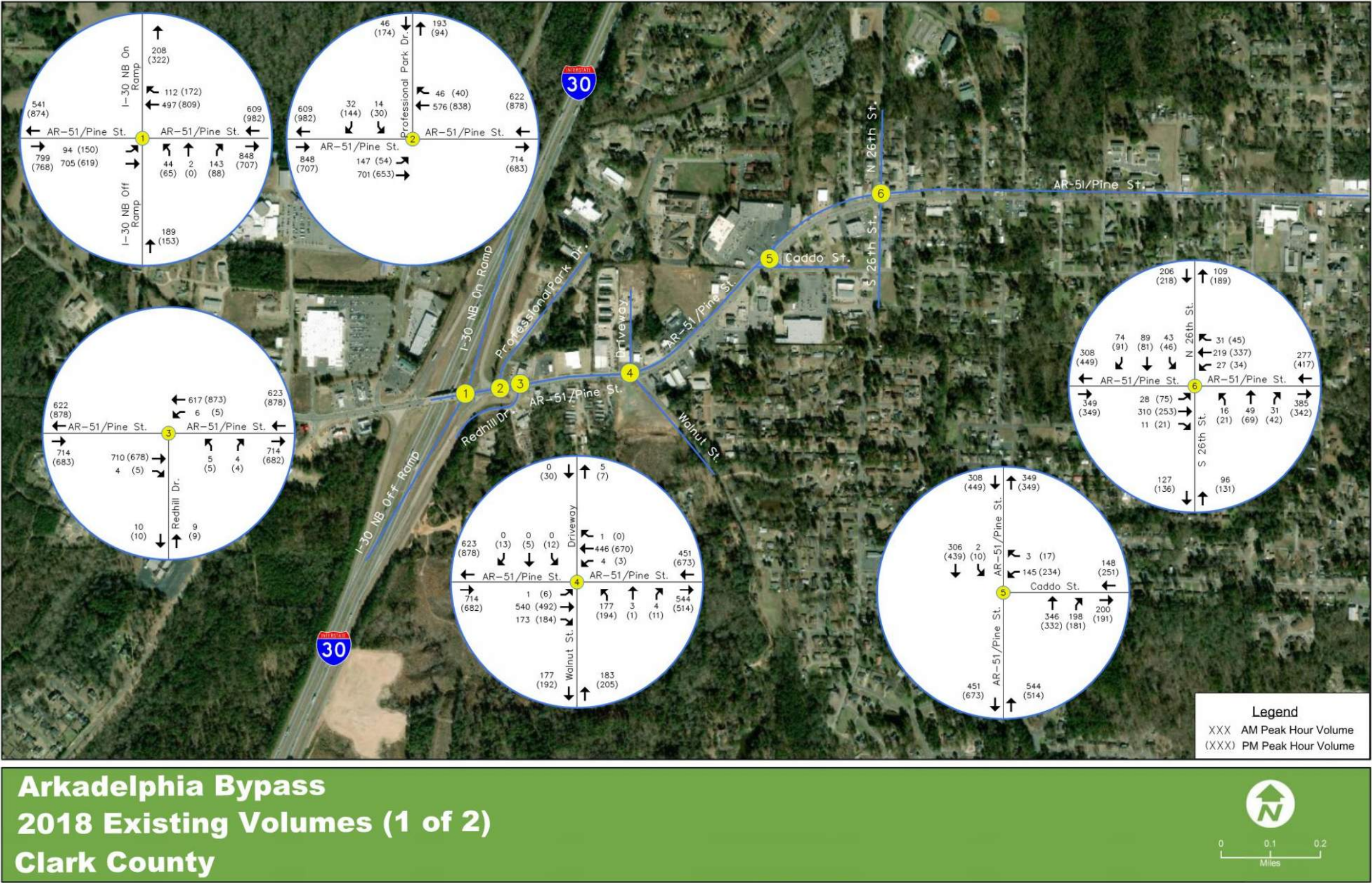
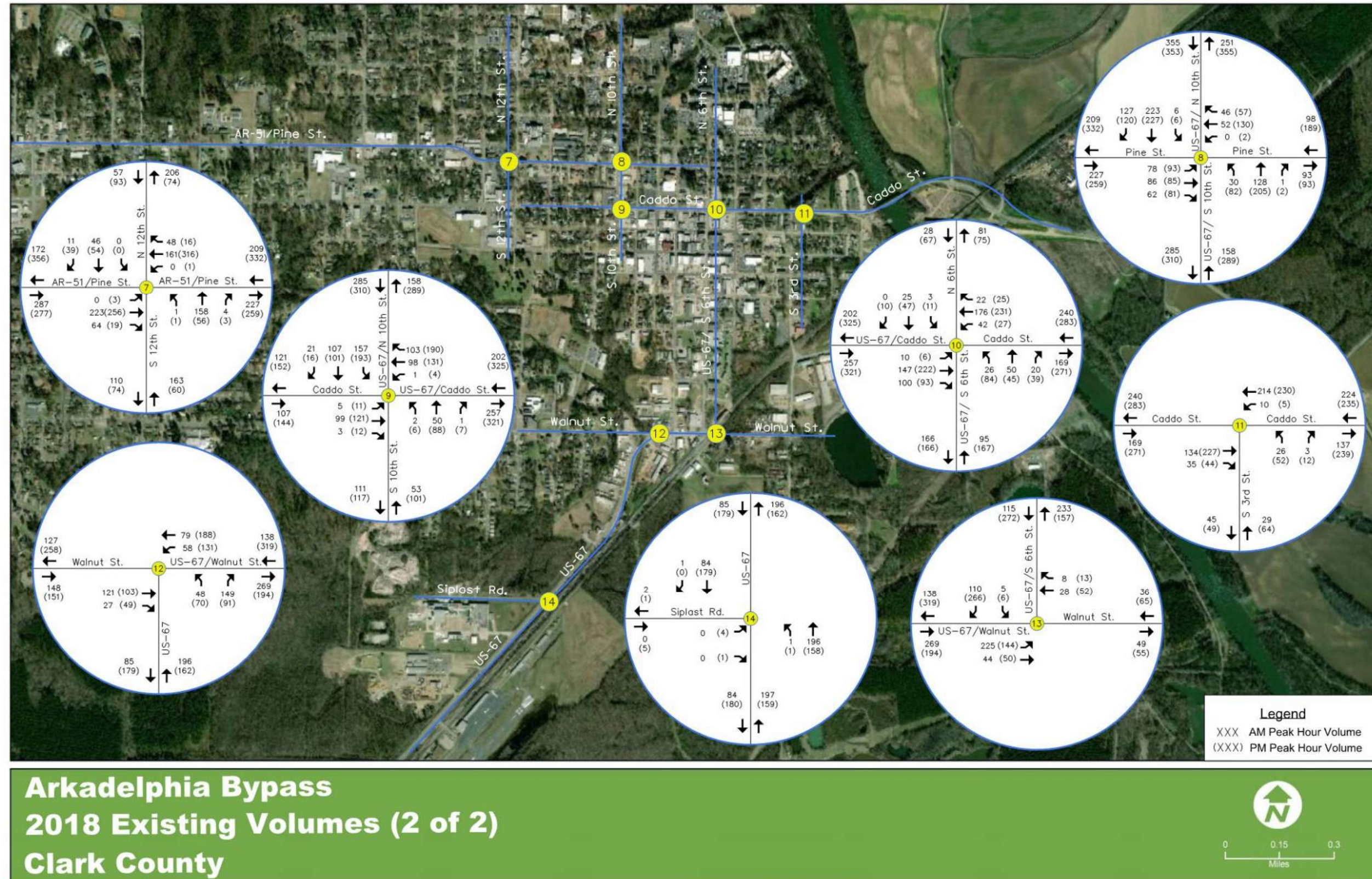


Figure 3: 2018 Existing Volumes



TRAFFIC FORECAST

From the ARDOT database, fourteen ADT counting stations were identified near or within the study area. All of these stations had over twenty years of data. The historic data was compiled into an Excel sheet and is also shown in **Table 1** on the following page.

Several methods were investigated to determine the growth rate and project future volumes. First, the trend function was used in Excel to project 2038 traffic volumes based on the historic volumes. This function is based on the equation $y=mx+b$, where y represents the traffic volume and x represents the year. For these calculations, the true “ b ” value was selected. The projected volumes and resulting growth rates based on the trend function are shown in **Table 2**. Negative growth rates were not considered in determining the appropriate growth rate to use for this traffic study, and all growth rates not utilized are shaded a darker gray.

Table 1: Historic ADT Data

Location	Hwy. 51 East of Ouachita River	Caddo St. (Hwy. 51) - b/t 3 rd St. and 4 th St.	Caddo St. (Hwy. 67) - b/t 8 th St. and 9 th St.	10th St. (Hwy. 67) - b/t Pine St. & Caddo St.	Pine St. (Hwy. 51) - b/t Robey St. & 11 th St.	Pine St. (Hwy. 51) - b/t Hunter St. & 13th St.	Pine St. (Hwy. 51) - b/t 20th St. & 19th St.	Pine St. (Hwy. 51) - b/t 27th St. & 26th St.	Pine St. (Hwy. 51) - b/t Walnut St. & 29th St.	Pine St. (Hwy. 51) - b/t Red Hill Rd. & Walnut St.	6 th St. (Hwy. 67) - b/t Crittende n St. & Carpenter St.	Walnut St. - b/t 11 th St. & Hwy. 67	Walnut St. b/t 13 th St. & 12 th St.	Hwy. 67 - South of Walnut St.
Station	100028	100208	100211	100212	100207	100206	100205	100204	100203	100202	100210	10S096	10S095	100209
1998	3,200	3,000	6,900	8,100	8,300	11,000	11,000	11,000	12,000	14,000	2,500	2,800	3,900	4,100
1999	2,800	4,200	6,300	7,000	6,300	8,400	8,200	8,500	10,000	13,500	2,500	3,050	3,300	4,200
2000	2,800	3,600	6,100	6,900	6,000	8,000	7,300	8,700	11,000	13,000	2,600	3,300	4,500	3,500
2001	3,200	4,100	6,900	7,900	7,300	9,100	9,800	10,000	13,000	15,000	2,800	3,700	4,700	4,200
2002	2,900	4,200	6,200	5,600	6,200	7,400	8,000	8,600	11,000	13,000	2,800	3,400	4,800	3,700
2003	3,000	4,600	6,600	7,400	6,600	8,100	9,000	9,900	13,000	15,000	2,800	4,000	4,800	3,900
2004	3,500	4,800	6,700	7,300	6,200	7,900	8,300	9,600	12,300	14,400	2,600	3,600	5,400	4,200
2005	3,000	4,550	6,400	7,400	7,900	9,200	10,300	10,600	13,300	16,000	2,950	3,800	5,150	3,900
2006	3,300	4,300	7,300	7,600	7,500	9,500	11,100	12,000	16,100	18,800	3,300	4,100	4,900	4,200
2007	3,100	4,000	7,300	7,900	8,100	10,400	10,800	11,400	14,100	17,200	2,900	4,000	5,000	4,200
2008	2,900	4,400	7,000	7,400	7,500	8,000	9,800	10,000	13,000	16,000	2,900	3,700	5,000	3,500
2009	2,900	4,000	7,000	7,500	7,300	8,700	10,000	13,000	14,000	18,000	2,800	3,700	5,000	3,600
2010	3,000	4,500	7,200	7,700	7,600	9,000	11,000	13,000	15,000	18,000	3,000	3,700	5,200	3,600
2011	3,000	4,700	7,700	8,300	7,700	10,000	9,000	9,800	15,000	16,000	3,200	3,600	5,200	4,100
2012	3,000	4,700	7,400	7,800	7,400	7,600	9,700	9,300	12,000	17,000	2,900	3,600	5,300	3,600
2013	2,800	5,300	10,000	11,000	7,800	11,000	9,800	12,000	16,000	17,000	2,800	3,700	5,000	3,300
2014	3,100	5,600	8,800	8,400	7,600	8,700	9,700	11,000	13,000	17,000	3,200	3,700	4,700	3,600
2015	2,300	5,200	7,700	7,800	7,300	8,500	9,400	10,000	13,000	17,000	2,800	3,300	4,800	3,600
2016	3,100	4,800	7,500	7,500	7,100	8,700	9,000	9,900	13,000	17,000	2,800	3,300	4,800	3,500
2017	2,700	4,800	7,500	9,700	6,700	8,100	8,700	10,000	13,000	18,000	2,900	3,500	4,800	3,800
2018	3,000	4,800	7,800	7,700	7,400	8,300	9,400	11,000	14,000	17,000	2,800	3,200	4,700	3,400

Table 2: AGR based on the Trend Function

Location	Hwy. 51 East of Ouachita River	Caddo St. (Hwy. 51) - b/t 3 rd St. and 4 th St.	Caddo St. (Hwy. 67) - b/t 8 th St. and 9 th St.	10th St. (Hwy. 67) - b/t Pine St. & Caddo St.	Pine St. (Hwy. 51) - b/t Robey St. & 11 th St.	Pine St. (Hwy. 51) - b/t Hunter St. & 13 th St.	Pine St. (Hwy. 51) - b/t 20 th St. & 19 th St.	Pine St. (Hwy. 51) - b/t 27 th St. & 26 th St.	Pine St. (Hwy. 51) - b/t Walnut St. & 29 th St.	Pine St. (Hwy. 51) - b/t Red Hill Rd. & Walnut St.	6 th St. (Hwy. 67) - b/t Crittende n St. & Carpenter St.	Walnut St. - b/t 11 th St. & Hwy. 67	Walnut St. b/t 13 th St. & 12 th St.	Hwy. 67 - South of Walnut St.	Average AGR (%)
AGR (%)	-0.68	1.57	1.35	1.46	0.43	0.15	0.33	0.57	0.90	1.37	0.84	0.74	1.05	-0.73	0.90
2018	3,000	4,800	7,800	7,700	7,400	8,300	9,400	11,000	14,000	17,000	2,800	3,200	4,700	3,400	
2038	2,615	6,550	10,190	10,287	8,062	8,546	10,044	12,313	16,750	22,328	3,312	3,710	5,795	2,938	

Next, future volumes were projected using the growth rate calculated based on **Equation 1**.

Equation 1:

$$V_F = V_P * GF^n$$

$$GF = (1 + AGR/100)$$

Where: V_F = future volume

V_P = present volume

GF = growth factor

AGR = annual growth rate (%)

n = number of years

The annual growth rate was calculated based on the 1998 and 2018 ADT for each station as shown in **Table 3** on the following page. Negative growth rates were not considered in determining the appropriate growth rate to use for this traffic study, and all growth rates not utilized are shaded a dark gray.

Table 3: Projected ADT Based on the Calculated Growth Rate

Location	Hwy. 51 East of Ouachita River	Caddo St. (Hwy. 51) - b/t 3 rd St. and 4 th St.	Caddo St. (Hwy. 67) - b/t 8 th St. and 9 th St.	10th St. (Hwy. 67) - b/t Pine St. & Caddo St.	Pine St. (Hwy. 51) - b/t Robey St. & 11 th St.	Pine St. (Hwy. 51) - b/t Hunter St. & 13 th St.	Pine St. (Hwy. 51) - b/t 20 th St. & 19 th St.	Pine St. (Hwy. 51) - b/t 27 th St. & 26 th St.	Pine St. (Hwy. 51) - b/t Walnut St. & 29 th St.	Pine St. (Hwy. 51) - b/t Red Hill Rd. & Walnut St.	6 th St. (Hwy. 67) - b/t Crittende n St. & Carpenter St.	Walnut St. - b/t 11 th St. & Hwy. 67	Walnut St. b/t 13 th St. & 12 th St.	Hwy. 67 - South of Walnut St.	Average AGR (%)
AGR (%)	-0.32	2.38	0.61	-0.25	-0.57	-1.40	-0.78	0.00	0.77	0.98	0.57	0.67	0.94	-0.93	0.66
2018	3,000	4,800	7,800	7,700	7,400	8,300	9,400	11,000	14,000	17,000	2,800	3,200	4,700	3,400	
2038	2,813	7,680	8,817	7,320	6,598	6,263	8,033	11,000	16,333	20,643	3,136	3,657	5,664	2,820	

Next, ARDOT calculates county growth rates across the state. Based on this information provided by ARDOT, a growth factor of 1.198 (AGR = 0.90%) for Clark County was applied to all of the stations within the study area as shown in **Table 4**.

Table 4: Projected ADT Based on County Growth Rate

Location	Hwy. 51 East of Ouachita River	Caddo St. (Hwy. 51) - b/t 3 rd St. and 4 th St.	Caddo St. (Hwy. 67) - b/t 8 th St. and 9 th St.	10th St. (Hwy. 67) - b/t Pine St. & Caddo St.	Pine St. (Hwy. 51) - b/t Robey St. & 11 th St.	Pine St. (Hwy. 51) - b/t Hunter St. & 13 th St.	Pine St. (Hwy. 51) - b/t 20 th St. & 19 th St.	Pine St. (Hwy. 51) - b/t 27 th St. & 26 th St.	Pine St. (Hwy. 51) - b/t Walnut St. & 29 th St.	Pine St. (Hwy. 51) - b/t Red Hill Rd. & Walnut St.	6 th St. (Hwy. 67) - b/t Crittende n St. & Carpenter St.	Walnut St. - b/t 11 th St. & Hwy. 67	Walnut St. b/t 13 th St. & 12 th St.	Hwy. 67 - South of Walnut St.	Average AGR (%)
AGR (%)	0.90														0.90
2018	3,000	4,800	7,800	7,700	7,400	8,300	9,400	11,000	14,000	17,000	2,800	3,200	4,700	3,400	
2038	3,589	5,742	9,331	9,211	8,852	9,929	11,245	13,159	16,748	20,336	3,350	3,828	5,622	4,067	

Volumes and growth rates developed in the previous study used similar methodology and are shown in **Table 5**. They were reviewed for comparison but were not included in the tabulation for this study. Compared to the current study, the previous study utilized a much smaller growth rate.

Table 5: Projected ADT Based on Previous Study

Location	Hwy. 51 East of Ouachita River	Caddo St. (Hwy. 51) - b/t 3 rd St. and 4 th St.	Caddo St. (Hwy. 67) - b/t 8 th St. and 9 th St.	10th St. (Hwy. 67) - b/t Pine St. & Caddo St.	Pine St. (Hwy. 51) - b/t Robey St. & 11 th St.	Pine St. (Hwy. 51) - b/t Hunter St. & 13th St.	Pine St. (Hwy. 51) - b/t 20th St. & 19th St.	Pine St. (Hwy. 51) - b/t 27th St. & 26th St.	Pine St. (Hwy. 51) - b/t Walnut St. & 29th St.	Pine St. (Hwy. 51) - b/t Red Hill Rd. & Walnut St.	6 th St. (Hwy. 67) - b/t Crittende n St. & Carpenter St.	Walnut St. - b/t 11 th St. & Hwy. 67	Walnut St. b/t 13 th St. & 12 th St.	Hwy. 67 - South of Walnut St.	Average AGR (%)
Previous Studies Methodology															
2013	3,000		7,800	9,500	7,800						3,200	-	-	4,100	
2033	3,300		8,600	10,500	8,600						3,600	-	-	4,600	
AGR (%)	0.48	-	0.33	0.33	0.33						0.39	-	-	0.38	0.37

Note: Data from Previous Study was used for comparison, not as a data point in determining the AGR for this study.

Table 6 shows a summary of the various calculated growth rates and the growth rate selected for this study. The negative growths shaded dark gray in the previous tables were not included when calculating the average growth rates for each of the methodologies. Based on these average growth rates for each methodology, a growth rate of 0.80% was selected to project future volumes throughout the study area for this traffic study.

Table 6: Summary of Growth Rates

	Trend Function $y = mx + b$	Calculated $V_F = V_P * GF$	County	Average AGR (%)	Selected AGR (%)
Avg AGR (%)	0.90	0.66	0.90	0.82	0.80

2040 NO ACTION VOLUMES

The 2040 No Action Design volumes were projected from the 2018 Existing Design volumes using the exponential growth rate of 0.80% which was determined based on the traffic forecast described in the previous subsection. No balancing was required due to the presence of cross streets and driveways between each of the study intersections. The 2040 No Action Design volumes are shown in **Figure 4** and in **Figure 5** on the following pages.

Figure 4: 2040 No Action Design Volumes

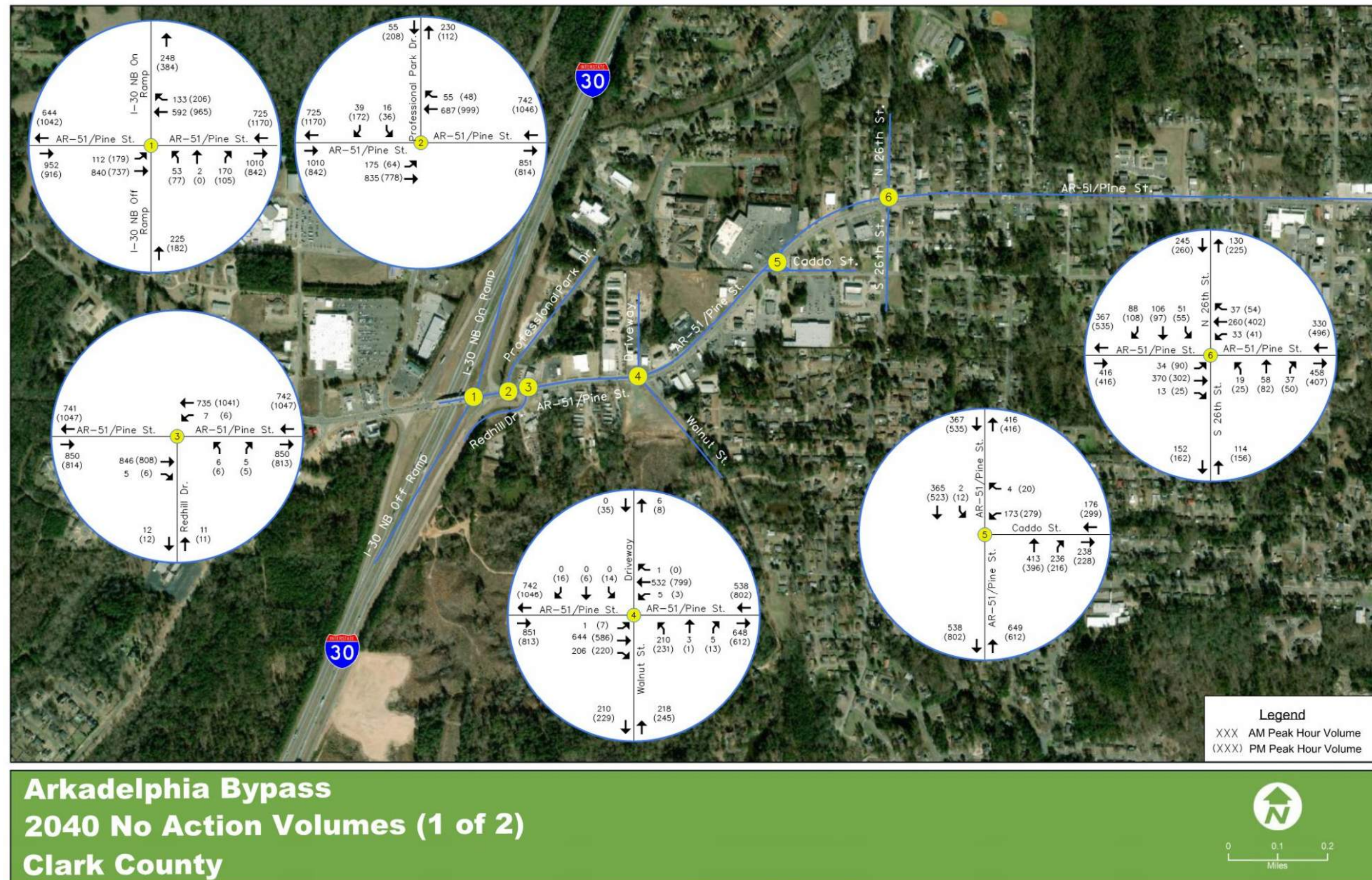
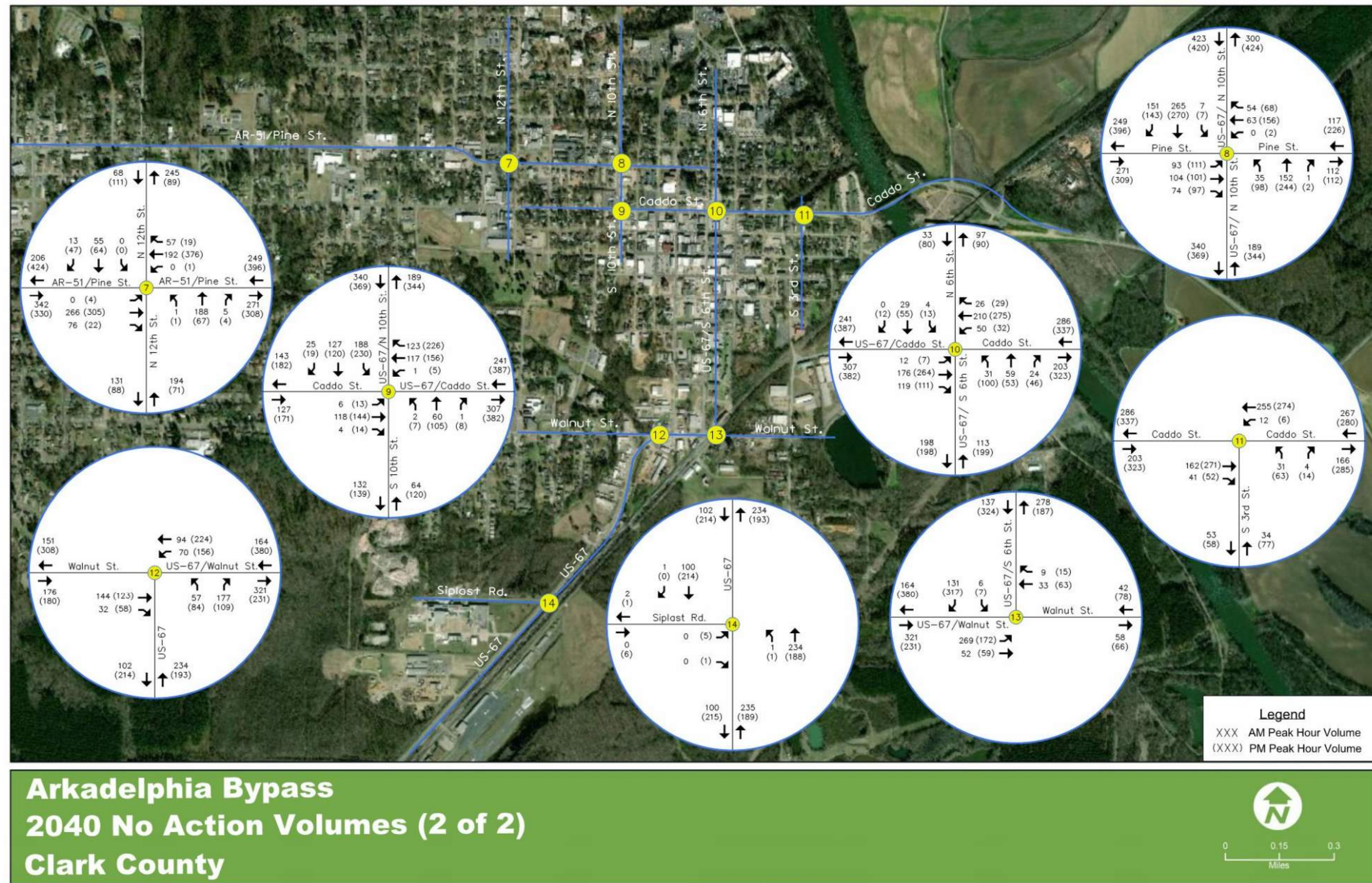


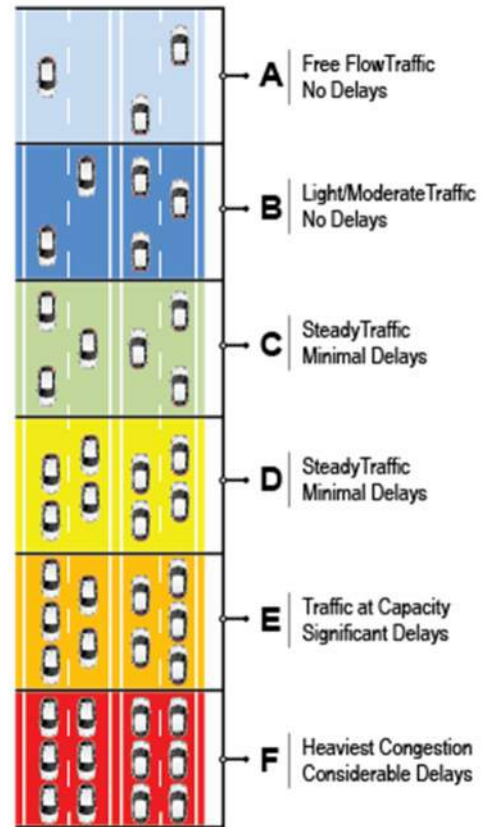
Figure 5: 2040 No Action Design Volumes



OPERATIONAL ANALYSIS METHODOLOGY

The 2018 Existing and 2040 No Action conditions were used to establish a baseline for comparison of the Action Alternatives with regards to congestion. Congestion along the project corridor was evaluated using Level of Service (LOS) as a performance measure. LOS is a qualitative measure used to depict operational conditions within a traffic stream or at an intersection. LOS is typically designated into six categories. These range from LOS A indicating free-flow, low density, or nearly negligible delay conditions to LOS F where demand exceeds capacity and large queues are experienced. A graphical representation of LOS is presented in **Figure 6**.

Figure 6: Level of Service (LOS) Categories



Intersection Analysis Methodology

Operational analyses of the intersections were conducted using *Synchro 10* and *SimTraffic* software according to the *Highway Capacity Manual 6th Edition (HCM)* methodology and *SimTraffic* microsimulation methodology. Microsimulation allows the user to analyze intersection operations both individually and in context of the entire study network. Additionally, microsimulation gives the user a powerful visualization tool to trace any sources of vehicle delay and queuing as well as the opportunity to perform multiple simulation runs with varying traffic loading within the peak hour to account for the expected variability within a system. This variation also accounts for the various types of drivers (aggressiveness, gap acceptance tolerance) and vehicles (performance on grades,

general acceleration /deceleration). Finally, micro-simulation provides the best means to demonstrate the impacts of queues on nearby intersections.

For intersections, the *HCM* uses control delay, measured in average seconds of delay per vehicle, as the basis for determining LOS. Control delay at an intersection is the average stopped time per vehicle traveling through the intersection plus the movements at slower speeds due to the vehicles moving up in the queue or slowing upstream of the approach.

Table 7 shows the LOS delay thresholds as stated in *HCM*, pages 19-16, 20-6 and 21-9.

Table 7: LOS Thresholds for Intersections (Control Delay)

Level of Service	Signal Control Control Delay Range (sec/veh)	Stop Control Control Delay Range (sec/veh)
A	0 to 10	0 to 10
B	> 10 to 20	> 10 to 15
C	> 20 to 35	> 15 to 25
D	> 35 to 55	> 25 to 35
E	> 55 to 80	> 35 to 50
F	> 80	> 50

Roadway Segment Analysis Methodology

Operational analysis along the corridors was conducted using the two-lane highway module of the *Highway Capacity Software (HCS)*, according to *HCM* methodology. The two-lane highway module within *HCS* was utilized to analyze the operating conditions of the roadway segments within the study area. For two-lane highways, the LOS is defined based on different criteria depending on the classification of the highway. Below is a brief description of each classification type:

- Class I
 - Motorists expect relatively high speeds.
 - Major intercity route, primary connector, commuter routes, etc.
 - Serves mostly long-distance trips.
- Class II
 - Motorists do not expect to sustain high speeds.
 - Access route to Class I facility, scenic/recreational route, or rugged terrain.
 - Serves shorter trips, beginning/ending portions of longer trips, or sightseeing trips.
- Class III
 - Reduced speed limits.
 - Higher number of unsignalized driveways and cross streets.
 - Serves moderately developed areas; local traffic mixes with through traffic.

For Class I highways, the LOS is defined based on average travel speed (ATS) and percent time spent following (PTSF). For Class II highways, the LOS is defined based on PTSF. For Class III highways, the LOS is defined based on percent of free flow speed (PFFS). **Table 8** shows the LOS thresholds for each classification of two-lane highway as stated in the *HCM 6th Edition*, pg 15-8. Note that for this study, only Class I and Class III classifications were used.

Table 8: LOS Thresholds for Two-lane Highways Intersections

Level of Service	Class I		Class II	Class III
	ATS (mi/h)	PTSF (%)	PTSF (%)	PFFS (%)
A	> 55	≤ 35	≤ 40	> 91.7
B	> 50 - 55	> 35 - 50	> 40 - 55	> 83.3 – 91.7
C	> 45 - 50	> 50 - 65	> 55 - 70	> 75.0 – 83.3
D	> 40 - 45	> 65 - 80	> 70 - 85	> 66.7 – 75.0
E	≤ 40	> 80	> 85	≤ 66.7
F	Demand exceeds capacity			

2018 EXISTING CONDITIONS

Using the 2018 Existing volumes, the existing signalized intersections were modeled, and the existing signal timings were optimized using actuated control settings. An AM Peak Hour Factor (PHF) of 0.80 and a PM PHF of 0.86 were utilized. The percentage of heavy vehicles was modeled as 3% for both peak periods. The results of the operational analysis of existing conditions are reported in the following subsections.

2018 Intersection Analysis, Existing Conditions

The results based on *HCM* methodology and *SimTraffic* methodology are summarized in **Tables 9 and 10**. The complete results are provided in **Appendix B – Intersection Operational Analysis Results**. These results demonstrate that all movements at the study intersections operate acceptably under 2018 Existing conditions.

Table 9: Intersection Analysis – 2018 Existing Conditions – HCM

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall	
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Hwy 67 at Siplast Rd.	AM	One-Way Stop	LOS	n/a ¹						A	n/a ²			n/a ²	n/a ²	A	
			v/c	n/a ¹						0.0	n/a ²			n/a ²	n/a ²		
			Delay	n/a ¹						7.4	n/a ²			n/a ²	n/a ²	0.0	
	PM		LOS	B						A	n/a ²			n/a ²	n/a ²	A	
			v/c	0.0						0.0	n/a ²			n/a ²	n/a ²		
			Delay	10.9						7.7	n/a ²			n/a ²	n/a ²	0.2	
Hwy 67 at W Walnut St.	AM	One-Way Stop	LOS	B						A	n/a ²			n/a ²	n/a ²	A	
			v/c	0.3						0.0	n/a ²			n/a ²	n/a ²		
			Delay	13.7						7.5	n/a ²			n/a ²	n/a ²	4.9	
	PM		LOS	C						A	n/a ²			n/a ²	n/a ²	A	
			v/c	0.4						0.1	n/a ²			n/a ²	n/a ²		
			Delay	16.0						7.7	n/a ²			n/a ²	n/a ²	4.7	
Hwy 67/ Walnut St. at Hwy 67 / 6th St.	AM	One-Way Stop	LOS	n/a ²	n/a ²			B					A		n/a ²	B	
			v/c	n/a ²	n/a ²			0.1					0.0		n/a ²		
			Delay	n/a ²	n/a ²			11.7					8.0		n/a ²	11.7	
	PM		LOS	n/a ²	n/a ²			B					A		n/a ²	A	
			v/c	n/a ²	n/a ²			0.2					0.0		n/a ²		
			Delay	n/a ²	n/a ²			13.1					7.7		n/a ²	1.8	
Hwy 67 / 6th St. at Hwy 67 / Caddo St.	AM	Two-Way Stop	LOS	A	n/a ²	n/a ²	A	n/a ²	n/a ²	C			C			A	
			v/c	0.0	n/a ²	n/a ²	0.0	n/a ²	n/a ²	0.3			0.1				
			Delay	7.8	n/a ²	n/a ²	8.0	n/a ²	n/a ²	17.3			16.6			4.1	
	PM		LOS	A	n/a ²	n/a ²	A	n/a ²	n/a ²	D			C			A	
			v/c	0.0	n/a ²	n/a ²	0.0	n/a ²	n/a ²	0.6			0.3				
			Delay	7.9	n/a ²	n/a ²	8.2	n/a ²	n/a ²	33.8			20.1			8.7	
Caddo St. at S 3rd St.	AM	One-Way Stop	LOS		n/a ²	n/a ²	A	n/a ²		B						A	
			v/c		n/a ²	n/a ²	0.0	n/a ²		0.1							
			Delay		n/a ²	n/a ²	7.7	n/a ²		11.9						1.0	
	PM		LOS		n/a ²	n/a ²	A	n/a ²		B						A	
			v/c		n/a ²	n/a ²	0.0	n/a ²		0.2							
			Delay		n/a ²	n/a ²	8.0	n/a ²		13.9						1.6	
Hwy 67/ Caddo St. at 10th St.	AM	Signal	LOS	B	A	A	C	A	A	A	A	A	A	A	A	B	
			v/c	0.3	0.0	0.0	0.6	0.0	0.0	0.1	0.0	0.0	0.4	0.0	0.0		
			Delay	17.4	0.0	0.0	20.3	0.0	0.0	4.0	0.0	0.0	5.8	0.0	0.0	12.1	
	PM		LOS	B	A	A	C	A	A	A	A	A	A	A	A	A	B
			v/c	0.3	0.0	0.0	0.7	0.0	0.0	0.1	0.0	0.0	0.5	0.0	0.0		
			Delay	13.7	0.0	0.0	20.2	0.0	0.0	6.7	0.0	0.0	9.6	0.0	0.0	13.8	
10th St. at Pine St.	AM	Signal	LOS	C	A	B	n/a ¹	A	B	A	A	A	A	A	A	B	
			v/c	0.3	0.0	0.6	n/a ¹	0.0	0.4	0.1	0.0	0.2	0.4	0.0	0.0		
			Delay	20.9	0.0	19.3	n/a ¹	0.0	18.2	0.1	0.0	0.3	6.2	0.0	0.0	10.2	
	PM		LOS	B	A	C	C	A	A	A	A	A	A	A	A	A	B
			v/c	0.4	0.0	0.7	0.6	0.0	0.0	0.1	0.0	0.2	0.4	0.0	0.0		
			Delay	19.1	0.0	20.7	20.5	0.0	0.0	0.4	0.0	0.5	6.0	0.0	0.0	10.4	

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 9 (continued): Intersection Analysis – 2018 Existing Conditions – HCM

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
12th St. at Pine St.	AM	Signal	LOS	n/a ¹	A	B	n/a ¹	A	B	A	A	A	n/a ¹	A	A	B
			v/c	n/a ¹	0.0	0.8	n/a ¹	0.0	0.6	0.2	0.0	0.0	n/a ¹	0.0	0.1	
			Delay	n/a ¹	0.0	16.0	n/a ¹	0.0	13.5	6.5	0.0	0.0	n/a ¹	0.0	5.7	12.3
	PM		LOS	B	A	A	B	A	A	A	A	A	n/a ¹	A	A	B
			v/c	0.6	0.0	0.0	0.7	0.0	0.0	0.1	0.0	0.0	n/a ¹	0.0	0.2	
			Delay	12.3	0.0	0.0	13.3	0.0	0.0	6.5	0.0	0.0	n/a ¹	0.0	7.0	11.6
26th St. at Pine St.	AM	Signal	LOS	A	B	A	A	A	B	B	A	B	B	A	B	B
			v/c	0.1	0.5	0.0	0.1	0.0	0.4	0.2	0.0	0.1	0.3	0.0	0.2	
			Delay	9.0	14.6	9.6	9.4	0.0	13.5	16.0	0.0	15.5	17.6	0.0	16.8	14.7
	PM		LOS	B	B	A	A	A	C	B	A	B	B	A	B	B
			v/c	0.3	0.4	0.0	0.1	0.0	0.7	0.2	0.0	0.1	0.3	0.0	0.3	
			Delay	11.0	13.6	10.0	9.8	0.0	20.6	16.5	0.0	15.7	17.5	0.0	17.3	16.7
Caddo St. at Pine St.	AM	Signal	LOS				C		C		A		A	A		B
			v/c				0.8		0.0		0.2		0.0	0.2		
			Delay				30.9		22.2		9.3		4.8	3.0		10.8
	PM		LOS				C		B		B		A	A		B
			v/c				0.8		0.1		0.3		0.0	0.3		
			Delay				27.4		18.8		11.4		6.8	5.1		12.4
Walnut St. at Pine St.	AM	Signal	LOS	B	B	B	B	B	B	B	A	A	n/a ¹	n/a ¹	n/a ¹	B
			v/c	0.0	0.6	0.6	0.0	0.4	0.4	0.3	0.0	0.0	n/a ¹	n/a ¹	n/a ¹	
			Delay	12.7	15.9	16.0	17.2	12.0	11.9	14.6	0.0	0.0	n/a ¹	n/a ¹	n/a ¹	14.4
	PM		LOS	B	B	B	B	B	n/a ¹	B	A	A	B	A	A	B
			v/c	0.0	0.6	0.6	0.0	0.6	n/a ¹	0.4	0.0	0.0	0.1	0.0	0.0	
			Delay	17.6	16.7	16.9	17.8	14.5	n/a ¹	14.2	0.0	0.0	10.8	0.0	0.0	15.4
Redhill Rd. at Pine St.	AM	One-Way Stop	LOS		n/a ²	n/a ²	A	n/a ¹		C		B				A
			v/c		n/a ²	n/a ²	0.0	n/a ¹		0.0		0.0				
			Delay		n/a ²	n/a ²	9.9	n/a ¹		18.7		11.5				0.1
	PM		LOS		n/a ²	n/a ²	A	n/a ¹		C		B				A
			v/c		n/a ²	n/a ²	0.0	n/a ¹		0.0		0.0				
			Delay		n/a ²	n/a ²	9.7	n/a ¹		19.5		11.3				0.1
Professional Dr. at Pine St.	AM	One-Way Stop	LOS	B	n/a ²			n/a ²	n/a ²				D		B	A
			v/c	0.2	n/a ²			n/a ²	n/a ²				0.1		0.1	
			Delay	10.6	n/a ²			n/a ²	n/a ²				31.7		11.3	1.5
	PM		LOS	B	n/a ²			n/a ²	n/a ²				D		C	A
			v/c	0.1	n/a ²			n/a ²	n/a ²				0.2		0.4	
			Delay	11.3	n/a ²			n/a ²	n/a ²				29.3		17.0	2.3
I-30 NB Off Ramp at Pine St.	AM	One-Way Stop	LOS	A	n/a ²			n/a ²	n/a ²	F		B				A
			v/c	0.1	n/a ²			n/a ²	n/a ²	0.5		0.3				
			Delay	9.3	n/a ²			n/a ²	n/a ²	69.0		14.4				3.8
	PM		LOS	B	n/a ²			n/a ²	n/a ²	F		B				B
			v/c	0.3	n/a ²			n/a ²	n/a ²	1.3		0.2				
			Delay	12.4	n/a ²			n/a ²	n/a ²	320.7		12.2				12.5

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 10: Intersection Analysis – 2018 Existing Conditions – SimTraffic

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Hwy 67 at Siplast Rd.	AM	One-Way Stop	LOS	n/a ¹		n/a ¹				A					A	A
			Delay	n/a ¹		n/a ¹				1.0					2.0	1.3
	PM	One-Way Stop	LOS	A		A				A					A	A
			Delay	4.3		1.0				0.9					2.2	1.6
Hwy 67 at W Walnut St.	AM	One-Way Stop	LOS	A		A				A	A				A	A
			Delay	7.2		2.6				3.7	2.3				2.0	3.6
	PM	One-Way Stop	LOS	A		A				A	A				A	A
			Delay	7.4		2.4				3.6	2.0				2.3	3.2
Hwy 67/ Walnut St. at Hwy 67 / 6th St.	AM	One-Way Stop	LOS	A	A			A	A				A		A	A
			Delay	1.1	1.4			7.2	2.5				1.9		1.8	1.8
	PM	One-Way Stop	LOS	A	A			A	A				A		A	A
			Delay	1.0	0.8			7.4	3.6				2.7		1.7	2.0
Hwy 67 / 6th St. at Hwy 67 / Caddo St.	AM	Two-Way Stop	LOS	A	A	A	A	A	A	A	A	A	A	A	n/a ¹	A
			Delay	4.9	2.4	1.9	4.2	1.4	0.8	7.5	3.5	5.0	6.0	8.6	n/a ¹	3.0
	PM	Two-Way Stop	LOS	A	A	A	A	A	A	B	B	A	A	B	B	A
			Delay	3.3	2.6	1.8	4.4	2.3	1.3	11.0	12.9	8.1	9.5	11.0	14.7	4.6
Caddo St. at S 3rd St.	AM	One-Way Stop	LOS		A	A	A	A		A		A				A
			Delay		1.2	0.8	4.4	1.7		5.6		3.8				1.7
	PM	One-Way Stop	LOS		A	A	A	A		A		A				A
			Delay		1.2	0.7	2.0	2.5		6.3		4.0				2.3
Hwy 67/ Caddo St. at 10th St.	AM	Signal	LOS	C	C	A	n/a ²	C	A	n/a ²	A	A	A	A	A	B
			Delay	23.5	21.9	7.6	n/a ²	21.7	9.3	n/a ²	3.5	3.3	6.6	6.3	2.3	10.8
	PM	Signal	LOS	C	B	B	C	C	B	B	A	A	A	A	A	B
			Delay	27.8	20.0	13.5	34.3	21.4	11.1	10.1	4.6	3.5	7.1	9.0	6.7	12.4
10th St. at Pine St.	AM	Signal	LOS	C	C	B	n/a ¹	B	A	B	A	A	A	A	A	B
			Delay	29.3	27.9	14.4	n/a ¹	17.5	6.5	11.2	3.1	5.2	7.9	6.7	4.1	11.4
	PM	Signal	LOS	C	B	B	B	A	B	A	A	n/a ²	A	A	A	B
			Delay	32.4	19.7	11.4	14.1	18.4	8.8	12.6	4.0	n/a ²	6.2	8.5	5.5	11.8
12th St. at Pine St.	AM	Signal	LOS	n/a ¹	B	A	n/a ¹	B	A	B	A	A	n/a ¹	A	A	B
			Delay	n/a ¹	11.8	9.8	n/a ¹	12.8	8.5	13.4	6.6	3.1	n/a ¹	5.3	3.6	10.2
	PM	Signal	LOS	B	A	A	B	B	A	A	A	A	n/a ¹	A	A	A
			Delay	12.2	9.4	5.4	18.5	11.4	6.6	1.6	6.4	0.0	n/a ¹	7.5	3.4	9.5
26th St. at Pine St.	AM	Signal	LOS	A	A	A	B	B	A	B	B	A	B	B	A	A
			Delay	5.7	4.7	0.6	12.5	11.4	4.4	15.0	14.8	4.2	16.7	18.0	4.2	8.9
	PM	Signal	LOS	B	A	A	B	B	B	B	B	A	B	B	A	B
			Delay	11.0	5.1	0.9	17.1	17.5	13.7	17.3	15.2	4.3	18.1	16.6	4.0	11.8
Caddo St. at Pine St.	AM	Signal	LOS				C		A		A		A	A		A
			Delay				26.4		3.6		0.8		5.0	5.9		6.9
	PM	Signal	LOS				C		A		A		B	A		A
			Delay				23.4		3.5		1.5		13.4	8.0		9.6

¹No Volume modeled making this movement²Low volume modeled making this movement

Table 10 (Continued): Intersection Analysis – 2018 Existing – *SimTraffic*

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Walnut St. at Pine St.	AM	Signal	LOS	n/a ²	B	A	C	B	B	B	n/a ²	A	n/a ¹	n/a ¹	n/a ¹	B
			Delay	n/a ²	11.2	8.0	21.9	11.4	10.1	12.7	n/a ²	4.6	n/a ¹	n/a ¹	n/a ¹	11.0
	PM		LOS	C	B	A	C	B	n/a ¹	A	A	A	A	A	A	B
			Delay	22.3	13.3	9.3	21.1	13.4	n/a ¹	13.8	0.9	9.9	6.1	0.8	7.1	12.8
Redhill Rd. at Pine St.	AM	One-Way Stop	LOS		A	A	A	A		C		A				A
			Delay		0.2	0.0	8.4	3.7		17.5		0.0				1.9
	PM		LOS		A	A	A	A		C		A				A
			Delay		0.2	0.0	4.6	4.7		24.2		0.0				2.7
Professional Dr. at Pine St.	AM	One-Way Stop	LOS	A	A			A	A				C		A	A
			Delay	6.6	1.0			0.8	0.2				17.6		6.6	1.7
	PM		LOS	A	A			A	A				E		B	A
			Delay	9.5	0.8			1.0	0.3				41.7		12.0	2.9
I-30 NB Off Ramp at Pine St.	AM	One-Way Stop	LOS	A	A			A	A	C	n/a ²	A				A
			Delay	4.7	0.8			1.4	1.6	19.9	n/a ²	1.5				1.9
	PM		LOS	A	A			A	A	F	n/a ¹	A				A
			Delay	9.6	0.7			2.0	1.7	68.0	n/a ¹	1.6				4.2

2018 Roadway Segment Analysis, Existing Conditions

Where applicable, the roadway segments within the study area were analyzed using the *HCS* two-lane highway module. To the north of Walnut Street, Highway 67 crosses through Arkadelphia's Central Business District (CBD) and does not function as a highway. The number of access points per mile exceeds the range for a two-lane highway, and the base free flow speed (BFFS) is below the range for a two-lane highway according to the *HCM* methodology. Due to the close spacing of intersections and nature of operations along the roadway segments to the north of Walnut Street, these segments were not analyzed separately from the intersection analysis.

To the south of Walnut Street, two segments along Highway 67 were identified as functioning like a two-lane highway and were delineated according to typical section and speed limit as follows:

- Segment 1-Highway 67, from south of Siplast Road to north of Siplast Road (where the speed limit drops from 50 mph to 45 mph). This segment was identified as a Class I Two-Lane Highway and has an access point density of 8 points per mile.
- Segment 2- Highway 67, from north of Siplast Road to south of Walnut Street (where the speed limit drops from 45 mph to 40 mph). This segment was identified as a Class III Two-Lane Highway and has an access point density of 40 points per mile.

Based on the volume data, a peak hour factor of 0.82 was utilized for the AM peak and a peak hour factor of 0.86 was utilized for the PM peak. The percentage of heavy vehicles was 5% for the AM peak and 4% for the PM peak. Level terrain was assumed for both segments. The base free flow speed was estimated to be 50 mph based on the posted speed limit plus 10 mph according to *HCM* methodology.

The results of this analysis are shown in **Table 11** below. The complete results from this analysis are provided in **Appendix C - Roadway Segment Operational Analysis Results**. These results demonstrate that the corridor currently operates at acceptable LOS throughout the study area. However, the portion of Highway 67 from south of Siplast Road to north of Siplast Road operates at only marginally acceptable LOS D in both directions during one or both of the peak periods.

Table 11: Roadway Segment Analysis – 2018 Existing Conditions – HCM

Segment	Direction	Two-Lane Hwy Class	AM					PM				
			LOS	ATS (mph)	PTS F (%)	PFF S (%)	v/c	LOS	ATS (mph)	PTS F (%)	PFF S (%)	v/c
Hwy 67 - South of Siplast Rd. to North of Siplast Rd.	NB	Class I	C	45.1	48.0	93.9	0.14	D	43.9	36.3	91.4	0.1
Hwy 67 - North of Siplast Rd. to South of Walnut St.		Class III	B	29.8	59.2	85.1	0.14	C	28.0	50.0	79.9	0.11
Hwy 67 - South of Walnut St. to North of Siplast Rd.	SB	Class III	B	30.2	25.9	86.2	0.06	B	29.7	51.3	84.8	0.12
Hwy 67 - North of Siplast Rd. to South of Siplast Rd.		Class I	D	43.9	21.0	91.6	0.05	D	44.0	44.7	91.7	0.12

2040 FUTURE NO ACTION CONDITIONS

For the 2040 No Action Conditions, no improvements were assumed. The intersections and the highway segments were analyzed using the same methodologies and assumptions as were used for the 2018 Existing conditions. Only the volumes changed between the 2018 Existing and the 2040 No Action conditions. The results are described in the following subsections.

2040 Intersection Analysis, No Action Conditions

The results from the 2040 No Action intersection analysis are shown in **Tables 12 and 13**. The complete results are provided in **Appendix B - Intersection Operational Analysis Results**. This analysis showed that most movements at the study intersections operate acceptable under 2040 No Action conditions.

Table 12: Intersection Analysis – 2040 No Action Conditions – HCM

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Hwy 67 at Siplast Rd.	AM	One-Way Stop	LOS	n/a ¹						A	n/a ²			n/a ²	n/a ²	A
			v/c	n/a ¹						0.0	n/a ²			n/a ²	n/a ²	
			Delay	n/a ¹						7.5	n/a ²			n/a ²	0.0	
	PM		LOS	B						A	n/a ²	n/a ²		n/a ²	A	
			v/c	0.0						0.0	n/a ²	n/a ²		n/a ²		
			Delay	11.6						7.8	n/a ²	n/a ²		n/a ²	0.2	
Hwy 67 at W Walnut St.	AM	One-Way Stop	LOS	C						A	n/a ²			n/a ²	n/a ²	A
			v/c	0.4						0.0	n/a ²			n/a ²	n/a ²	
			Delay	16.2						7.5	n/a ²			n/a ²	n/a ²	5.7
	PM		LOS	C						A	n/a ²	n/a ²		n/a ²	A	
			v/c	0.5						0.1	n/a ²	n/a ²		n/a ²		
			Delay	21.1						7.8	n/a ²	n/a ²		n/a ²	5.9	
Hwy 67/ Walnut St. at Hwy 67 / 6th St.	AM	One-Way Stop	LOS	n/a ²	n/a ²		B				A		n/a ²	B		
			v/c	n/a ²	n/a ²								0.1	n/a ²		
			Delay	n/a ²	n/a ²								12.7	n/a ²		
	PM		LOS	n/a ²	n/a ²		B				A		n/a ²	A		
			v/c	n/a ²	n/a ²								0.2	n/a ²		
			Delay	n/a ²	n/a ²								14.9	n/a ²		
Hwy 67 / 6th St. at Hwy 67 / Caddo St.	AM	Two-Way Stop	LOS	A	n/a ²	n/a ²	A	n/a ²	n/a ²	C			C			A
			v/c	0.0	n/a ²	n/a ²	0.1	n/a ²	n/a ²		0.4		0.1			
			Delay	7.9	n/a ²	n/a ²	8.2	n/a ²	n/a ²	22.8			20.0			5.1
	PM		LOS	A	n/a ²	n/a ²	A	n/a ²	n/a ²	F			D			C
			v/c	0.0	n/a ²	n/a ²	0.0	n/a ²	n/a ²		1.0		0.4			
			Delay	8.1	n/a ²	n/a ²	8.4	n/a ²	n/a ²	96.1			27.4			21.7
Caddo St. at S 3rd St.	AM	One-Way Stop	LOS		n/a ²	n/a ²	A	n/a ²		B						A
			v/c		n/a ²	n/a ²	0.0	n/a ²		0.1						
			Delay		n/a ²	n/a ²	7.8	n/a ²		13.0						1.1
	PM		LOS		n/a ²	n/a ²	A	n/a ²		C						A
			v/c		n/a ²	n/a ²	0.0	n/a ²		0.2						
			Delay		n/a ²	n/a ²	8.2	n/a ²		16.2						1.9
Hwy 67/ Caddo St. at 10th St.	AM	Signal	LOS	B	A	A	B	A	A	A	A	A	A	A	A	A
			v/c	0.3	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	
			Delay	16.0	0.0	0.0	19.6	0.0	0.0	4.8	0.0	0.0	1.5	0.0	0.0	9.7
	PM		LOS	B	A	A	C	A	A	A	A	A	A	A	A	B
			v/c	0.3	0.0	0.0	0.8	0.0	0.0	0.2	0.0	0.0	0.6	0.0	0.0	
10th St. at Pine St.	AM	Signal	Delay	12.5	0.0	0.0	22.1	0.0	0.0	8.0	0.0	0.0	5.9	0.0	0.0	13.2
			PM	LOS	B	A	B	B	A	A	A	A	A	A	A	B
				v/c	0.4	0.0	0.7	0.6	0.0	0.0	0.2	0.0	0.3	0.5	0.0	0.0
	PM		Delay	18.5	0.0	19.0	19.3	0.0	0.0	0.7	0.0	0.8	8.2	0.0	0.0	10.7

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 12 (Continued): Intersection Analysis – 2040 No Action Conditions – HCM

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
12th St. at Pine St.	AM	Signal	LOS	n/a ¹	A	B	n/a ¹	A	B	A	A	A	n/a ¹	A	A	B
			v/c	n/a ¹	0.0	0.8	n/a ¹	0.0	0.6	0.3	0.0	0.0	n/a ¹	0.0	0.1	
			Delay	n/a ¹	0.0	15.8	n/a ¹	0.0	12.8	8.0	0.0	0.0	n/a ¹	0.0	6.8	12.4
	PM		LOS	B	A	A	B	A	A	A	A	A	n/a ¹	A	A	B
			v/c	0.6	0.0	0.0	0.7	0.0	0.0	0.1	0.0	0.0	n/a ¹	0.0	0.2	
			Delay	12.5	0.0	0.0	13.9	0.0	0.0	7.7	0.0	0.0	n/a ¹	0.0	8.4	12.2
26th St. at Pine St.	AM	Signal	LOS	A	B	A	A	B	C	A	B	F	A	B	C	
			v/c	0.1	0.6	0.0	0.1	0.0	0.5	0.4	0.0	0.1	1.0	0.0	0.3	
			Delay	9.4	16.7	9.8	10.0	0.0	15.0	22.2	0.0	15.7	88.3	0.0	17.3	26.3
	PM		LOS	B	B	B	A	C	A	C	A	B	F	A	B	C
			v/c	0.4	0.5	0.1	0.1	0.8		0.5		0.1	1.1		0.3	
			Delay	12.8	15.0	10.2	10.0	28.3		25.6		16.0	103.7		18.1	30.4
Caddo St. at Pine St.	AM	Signal	LOS				C		C		B		A	A		B
			v/c				0.8		0.0		0.4		0.0	0.2		
			Delay				29.7		21.0		10.6		6.0	3.6		11.4
	PM		LOS				C		B		B		A	A		B
			v/c				0.9		0.1		0.3		0.0	0.3		
			Delay				26.5		17.1		13.1		8.7	6.4		13.3
Walnut St. at Pine St.	AM	Signal	LOS	B	B	B	B	B	B	B	A	A	n/a ¹	n/a ¹	n/a ¹	B
			v/c	0.0	0.7	0.7	0.0	0.4	0.4	0.4	0.0	0.0	n/a ¹	n/a ¹	n/a ¹	
			Delay	12.1	16.2	16.4	17.8	11.2	11.1	17.5	0.0	0.0	n/a ¹	n/a ¹	n/a ¹	14.8
	PM		LOS	B	B	B	B	B	n/a ¹	B	A	A	B	A	A	B
			v/c	0.0	0.7	0.7	0.0	0.7	n/a ¹	0.5	0.0	0.0	0.7	0.0	0.0	
			Delay	19.0	18.1	18.3	19.1	15.1	n/a ¹	16.5	0.0	0.0	11.6	0.0	0.0	16.6
Redhill Rd. at Pine St.	AM	One-Way Stop	LOS		n/a ²	n/a ²	B	n/a ²		C		B				A
			v/c		n/a ²	n/a ²	0.0	n/a ²		0.0		0.0				
			Delay		n/a ²	n/a ²	10.7	n/a ²		22.3		12.5				0.2
	PM		LOS		n/a ²	n/a ²	B	n/a ²		C		B				A
			v/c		n/a ²	n/a ²	0.0	n/a ²		0.0		0.0				
			Delay		n/a ²	n/a ²	10.4	n/a ²		23.3		12.2				0.2
Professional Dr. at Pine St.	AM	One-Way Stop	LOS	B	n/a ²			n/a ²	n/a ²				F		B	A
			v/c	0.3	n/a ²			n/a ²	n/a ²				0.2		0.1	
			Delay	12.1	n/a ²			n/a ²	n/a ²				58.3		12.3	2.0
	PM		LOS	B	n/a ²			n/a ²	n/a ²				E		C	A
			v/c	0.2	n/a ²			n/a ²	n/a ²				0.3		0.5	
			Delay	13.2	n/a ²			n/a ²	n/a ²				44.0		23.4	3.1
I-30 NB Off Ramp at Pine St.	AM	One-Way Stop	LOS	B	n/a ²			n/a ²	n/a ²	F		C				A
			v/c	0.2	n/a ²			n/a ²	n/a ²	1.0		0.4				
			Delay	10.0	n/a ²			n/a ²	n/a ²	209.3		17.6				8.2
	PM		LOS	C	n/a ²			n/a ²	n/a ²	F		B				E
			v/c	0.4	n/a ²			n/a ²	n/a ²	2.9		0.2				
			Delay	15.4	n/a ²			n/a ²	n/a ²	1119.1		13.7				39.8

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 13: Intersection Analysis – 2040 No Action Conditions – *SimTraffic*

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Hwy 67 at Sipplast Rd.	AM	One-Way Stop	LOS	n/a ¹		n/a ¹				A				A		A
			Delay	n/a ¹		n/a ¹				2.9				3.4		1.9
	PM	One-Way Stop	LOS	A		A				A				A		A
			Delay	7.7		1.0				1.1				3.0		2.1
Hwy 67 at W Walnut St.	AM	One-Way Stop	LOS	A		A				A	A			A	A	A
			Delay	9.1		4.5				3.7	3.1			1.9	1.9	4.6
	PM	One-Way Stop	LOS	A		A				A	A			A	A	A
			Delay	7.3		2.3				4.9	3.3			2.8	2.6	3.8
Hwy 67/ Walnut St. at Hwy 67 / 6th St.	AM	One-Way Stop	LOS	A	A			A	A				A		A	A
			Delay	1.2	1.8			7.4	2.4				0.9		1.2	1.6
	PM	One-Way Stop	LOS	A	A			A	A				A		A	A
			Delay	1.0	1.1			9.0	5.1				1.9		2.0	2.5
Hwy 67 / 6th St. at Hwy 67 / Caddo St.	AM	Two-Way Stop	LOS	A	A	A	A	A	A	B	A	A	A	A	n/a ¹	A
			Delay	4.2	2.3	1.7	4.2	2.3	2.7	10.3	3.1	7.6	6.6	8.4	n/a ¹	3.1
	PM	Two-Way Stop	LOS	A	A	A	A	A	A	B	C	A	A	B	A	A
			Delay	4.5	2.9	2.0	5.2	2.2	1.7	14.1	17.2	8.7	8.1	12.6	7.0	5.6
Caddo St. at S 3rd St.	AM	One-Way Stop	LOS		A	A	A	A		A		A				A
			Delay		1.0	0.3	5.0	2.9		5.3		2.8				2.3
	PM	One-Way Stop	LOS		A	A	A	A		A		A				A
			Delay		1.5	1.3	2.9	2.4		7.4		4.6				2.4
Hwy 67/ Caddo St. at 10th St.	AM	Signal	LOS	B	B	A	n/a ²	C	B	A	A	A	A	A	A	B
			Delay	12.3	17.2	3.9	n/a ²	22.7	12.0	2.5	2.9	2.0	7.2	7.2	4.0	11.1
	PM	Signal	LOS	D	C	C	A	C	B	A	A	A	B	B	A	B
			Delay	47.0	33.4	32.8	9.9	21.8	15.6	5.3	5.7	3.7	10.5	10.7	7.7	16.6
10th St. at Pine St.	AM	Signal	LOS	C	B	B	n/a ¹	B	A	B	A	A	B	A	A	B
			Delay	21.8	19.8	12.4	n/a ¹	15.9	5.1	11.5	4.8	4.3	17.4	8.0	5.8	10.5
	PM	Signal	LOS	C	C	B	A	B	A	C	A	A	A	A	A	B
			Delay	25.8	22.6	12.2	7.5	15.1	7.9	20.2	5.3	2.7	10.0	9.9	7.0	12.8
12th St. at Pine St.	AM	Signal	LOS	n/a ¹	B	A	n/a ¹	B	A	n/a ²	A	A	n/a ¹	A	A	A
			Delay	n/a ¹	11.2	9.3	n/a ¹	10.2	6.7	n/a ²	7.4	5.0	n/a ¹	6.7	3.5	9.5
	PM	Signal	LOS	B	B	B	n/a ²	B	B	A	A	A	n/a ¹	A	A	B
			Delay	19.1	12.0	10.4	n/a ²	11.5	11.4	5.8	5.8	4.3	n/a ¹	8.9	3.3	10.6
26th St. at Pine St.	AM	Signal	LOS	B	A	A	B	B	A	B	B	A	C	B	A	B
			Delay	13.2	8.2	2.3	18.2	13.0	8.8	11.8	11.5	5.0	20.1	18.6	3.7	10.9
	PM	Signal	LOS	B	A	A	C	C	B	B	B	A	C	B	A	B
			Delay	13.7	8.7	1.9	24.5	20.9	16.8	18.9	15.5	4.4	21.6	19.4	4.7	14.8
Caddo St. at Pine St.	AM	Signal	LOS				C		A		A		B	A		A
			Delay				26.8		6.6		0.8		13.5	6.5		7.8
	PM	Signal	LOS				C		A		A		B	A		A
			Delay				20.6		4.2		1.2		12.8	8.1		8.6

¹No Volume modeled making this movement²Low volume modeled making this movement

Table 13 (Continued): Intersection Analysis – 2040 No Action – SimTraffic

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Walnut St. at Pine St.	AM	Signal	LOS	n/a ²	B	A	C	A	A	B	A	B	n/a ¹	n/a ¹	n/a ¹	B
			Delay	n/a ²	11.6	9.3	26.4	7.8	2.8	15.3	9.0	10.8	n/a ¹	n/a ¹	n/a ¹	10.6
	PM		LOS	D	B	B	C	B	n/a ¹	B	B	A	B	A	A	B
			Delay	40.2	11.7	10.7	29.9	10.7	n/a ¹	14.7	14.9	9.7	15.6	2.1	5.0	11.6
Redhill Rd. at Pine St.	AM	One-Way Stop	LOS		A	A	A	A		C		A				A
			Delay		0.2	0.0	7.4	3.0		22.4		0.0				1.5
	PM		LOS		A	A	A	A		B		A				A
			Delay		0.1	0.0	5.8	4.2		12.0		0.3				2.4
Professional Dr. at Pine St.	AM	One-Way Stop	LOS	A	A			A	A				F		A	A
			Delay	9.4	1.6			0.8	0.2				56.7		7.5	2.6
	PM		LOS	B	A			A	A				F		C	A
			Delay	13.9	1.3			1.1	0.3				68.2		22.6	4.5
I-30 NB Off Ramp at Pine St.	AM	One-Way Stop	LOS	A	A			A	A	F	F	A				A
			Delay	9.8	0.9			1.5	1.7	59.2	109.0	3.0				3.8
	PM		LOS	C	A			A	A	F	n/a ¹	F				C
			Delay	21.3	0.9			2.4	1.6	390	n/a ¹	134.0				23.5

¹No Volume modeled making this movement²Low volume modeled making this movement

2040 Roadway Segment Analysis, No Action Conditions

The results from the *HCS* analysis of the Highway 67 roadway segments which operate as a two-lane highway are shown in **Table 14**. For this analysis, all assumptions and inputs remained the same as the 2018 Existing conditions except the volumes were updated to reflect the anticipated growth for 2040. Complete results of this analysis are provided in **Appendix C - Roadway Segment Operational Analysis Results**. Based on this analysis, the performance along these portions of Highway 67 will continue to perform adequately during both peak periods in 2040. However, the southernmost segment of Highway 67 from south of Siplast Road to north of Siplast Road will operate at marginally acceptable LOS D conditions for both directions of travel during both peak periods.

Table 14: Roadway Segment Analysis – 2040 No Action Conditions – HCM

Segment	Direction	Two-Lane Hwy Class	AM					PM				
			LOS	ATS (mph)	PTS F (%)	PFF S (%)	v/c	LOS	ATS (mph)	PTS F (%)	PFF S (%)	v/c
Hwy 67- South of Siplast Rd. to North of Siplast Rd.	NB	Class I	D	44.4	52.1	92.5	0.17	D	43.4	40.3	90.3	0.11
Hwy 67 - North of Siplast Rd. to South of Walnut St.		Class III	C	29.1	63.7	83.3	0.17	C	27.6	53.9	79.0	0.13
Hwy 67 - South of Walnut St. to North of Siplast Rd.	SB	Class III	B	30.0	26.6	85.7	0.07	C	29.1	54.7	83.1	0.14
Hwy 67 - North of Siplast Rd. to South of Siplast Rd.		Class I	D	43.5	24.1	90.7	0.07	D	43.1	48.8	89.9	0.14

SAFETY ANALYSIS

In order to evaluate safety performance, the historical crashes occurring within the study area were collected for the three most recent complete years of available data (2015-2017). Generally, crash patterns on this corridor are typical of State highways in Arkansas: in urban areas, where traffic volumes are high, the frequency of rear-end and angle accidents tends to increase due to proliferation of access points. In rural areas, there is a higher incidence of single-vehicle (run-off-road) crashes.

Crash rates for total crashes and KA crashes were calculated for contiguous segments with similar geometric, developmental, and other characteristics along 4 separate segments of Hwy. 51 and Hwy. 67 and

KA Crashes are defined as either fatal or serious injury crashes.

compared to the statewide averages for similar facilities. Crash rates were calculated as follows:

$$\text{Crash Rate (R)} = (C * 10^6) / (V * 365 * N * L)$$

- R = Roadway crash rate expressed as crashes per Million Vehicle-Miles (MVM) of travel
 - KA crash rate is expressed as crashes per 100 MVM of travel, thus $(C * 10^8)$
- C = Total number of roadway crashes in the study period
- V = Traffic volumes using Average Annual Daily Traffic volumes
- N = Number of years of data
- L = Length of the roadway segment in miles

Table 15 shows the three-year average crash rates compared to statewide averages. The average crash rates on Highway 51 are above the statewide average for similar facilities. However, The KA crash rate was lower than the statewide average along the entire project corridor. The average crash rate on Highway 67 is also higher than the statewide average for similar facilities.

Table 15: Annual Average Crash Rates (2015 – 2017)

Route	Log Miles	Weighted ADT ¹	Segment Length	All Crashes			KA Crashes		
				Number of Crashes	Crash Rate (per 100 MVM) ⁴	Statewide Average (per 100 MVM) ⁴	Number of Crashes	Crash Rate (per 100 MVM) ⁵	Statewide Average (per 100 MVM) ⁵
Highway 51 (Walnut Street to 26th Street)	29.06 to 29.99	13,000	0.93	60	4.53	3.98 ³	2	0.15	7.88
Highway 51 (26th Street to Robey)	30.00 to 31.27	9,000	1.27	47	3.76	2.48 ²	0	0	9.55
Highway 67 (Siplast Road to Pine Street)	14.415 to 15.795	6,700	1.38	27	2.67	2.48 ²	0	0	9.55
Highway 51 (1st Street to 5th Street)	0.00 to 0.51	3,400	0.51	8	4.21	2.48 ²	0	0	9.55
¹ - Average daily traffic ² - Statewide average crash rate for two-lane undivided highways, no control of access ³ - Statewide average crash rate for four-lane undivided highways, no control of access ⁴ - Crash rates reported in crashes per million vehicle miles (MVM) ⁵ - KA crash rates reported in crashes per 100 million vehicle miles (MVM)									

Figure 7 illustrates locations with a high crash frequency. Crashes occurred more frequently along Highway 51 from Walnut Street to Robey Street, which are the most congested intersections on the corridor with frequent stop-and-go conditions. When considering fatal (K) and serious injury (A) crashes, as shown in **Figure 8**, the highest concentration is located between Walnut Street and 26th Street – as only 2 KA crashes occur within these project limits over the 3 year time period. A closer examination revealed these 2 KA crashes occurred due to a northbound vehicle attempting to turn left at Mercy Way in the inside through lane (because a turn bay wasn't present) and getting rear-ended by another vehicle.

The safety analysis also revealed a relatively high number of crashes at the unsignalized intersections of Highway 51 between the I-30 northbound ramp and Professional Park

The safety analysis also revealed a relatively high number of crashes at the unsignalized intersections of Highway 51 between the I-30 northbound ramp and Professional Park Drive. Eastbound cars turning left are not protected resulting in angle crashes. Several rear-end crashes occur here potentially due to a westbound following driver incorrectly assuming that the drivers will be accelerating onto the interstate ramp.

At the signalized intersection at Pine Street and Walnut Street, a pattern of angle crashes occur, which could be due to the roadway curve through the intersection.

The roadway configuration at Pine Street and Caddo Street, coupled with the lack on signage, could play a role in the number of crashes occurring near this intersection. Vehicles eastbound on Street have the opportunity to turn right onto Caddo Street, approximately 150 feet upstream of the signal. There is no physical barrier preventing westbound vehicles using from turn left at this location. The confusion of this configuration may add to the number of angle crashes occurring here.

Figure 7: Highway 51 and Highway 67 Safety Review (All Crashes)

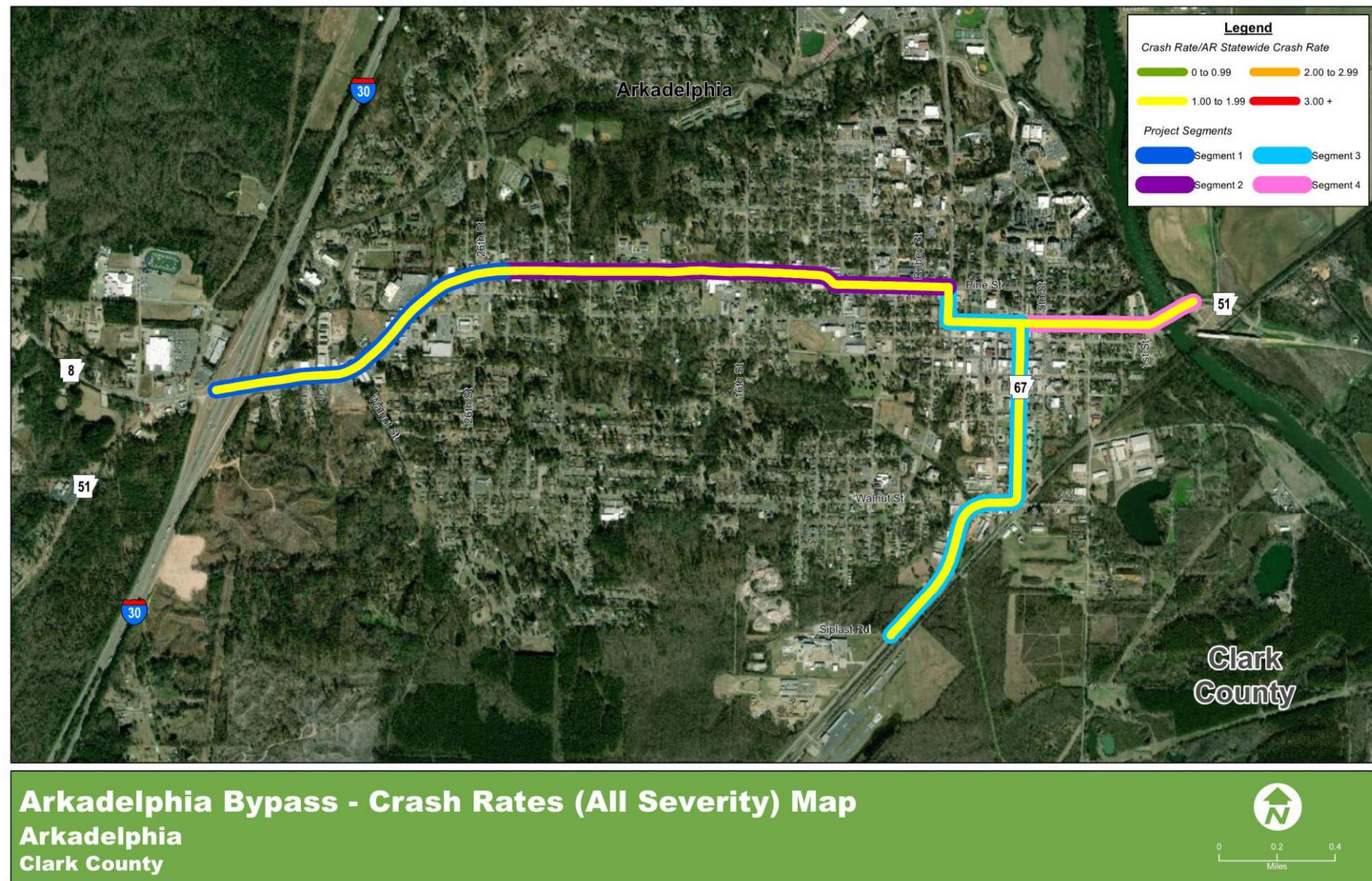
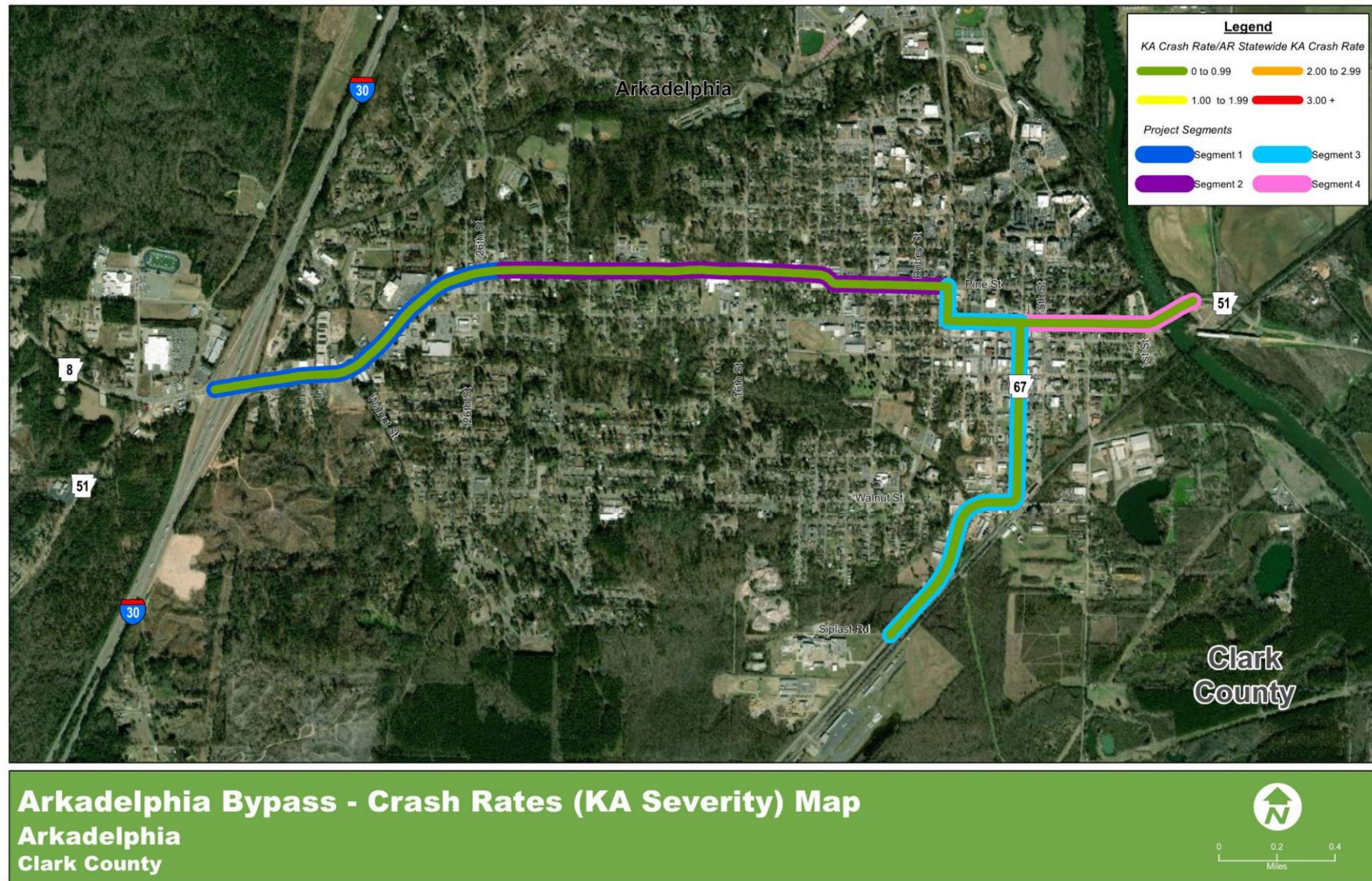


Figure 8: Highway 51 and Highway 67 Safety Review (KA Crashes)



ALTERNATIVES

Based on an evaluation of the existing conditions as well as future transportation needs, various bypass corridors have been identified. The proposed bypass alignment generally intersects Highway 51 near the I-30 interchange, passes south of Arkadelphia, intersects Highway 67 and continues east, intersecting with Highway 51 on the east side of Arkadelphia. A modified bypass option that intersects I-30 at a new interchange south of the I-30 interchange at Highway 51 was also considered as part of the report. This alternative removes all bypass traffic from the intersections on Highway 51 / Pine Street. To evaluate the impacts of a future bypass, the study area was separated into western improvement alternatives and eastern improvement alternatives. For each alternative analysis, it was assumed the full bypass would be constructed by 2040.

2040 ALTERNATIVES VOLUMES

To develop 2040 Alternative Volumes, the 2018 Existing Volumes were redistributed based on the Projected Bypass Volumes for Alternative 3 and Alternative 7 from the previous study. On Walnut Street near the Pine Street intersection, the previous study showed the bypass would carry an average daily traffic (ADT) volume of 5,200 in 2013. Along the bypass south of Arkadelphia, the report showed an ADT of 1,300 in 2013. These ADTs were projected to 2018 and AM and PM peak hour volumes were developed, assuming approximately 9.5% and 10.5% of the ADT respectively. The traffic volume expected to use the proposed bypass were removed from the traffic volumes currently using Highway 51 through the city.

Like the 2040 No Action volumes, 2040 Alternative volumes were projected from the 2018 redistributed volumes using the exponential growth rate of 0.80%. Future traffic volumes for western improvement alternative are shown in **Figures 9 through Figure 13.**

Additional development will likely occur within this portion of study area but should not significantly increase the traffic volumes on the existing and proposed roadway network. Future volumes for the eastern improvement alternatives are shown in **Figure 14** and **Figure 15**. Due to very similar alignments, future volumes at key intersections for Bypass Alignment E and Bypass Alignment F are shown on Figure 14.

Figure 9: 2040 Western Portion - Alternative 1 Volumes

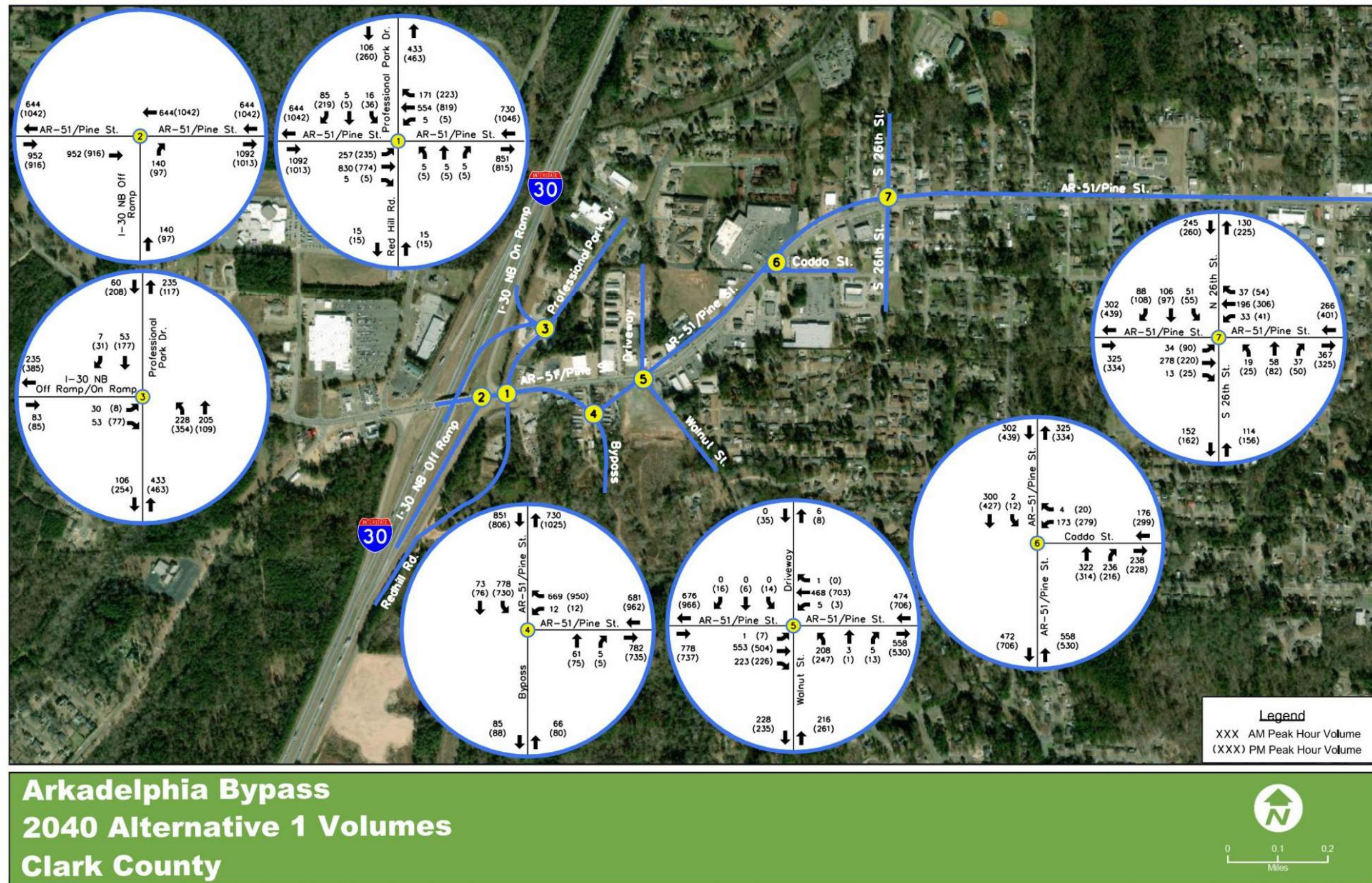


Figure 10: 2040 Western Portion - Alternative 2 Volumes

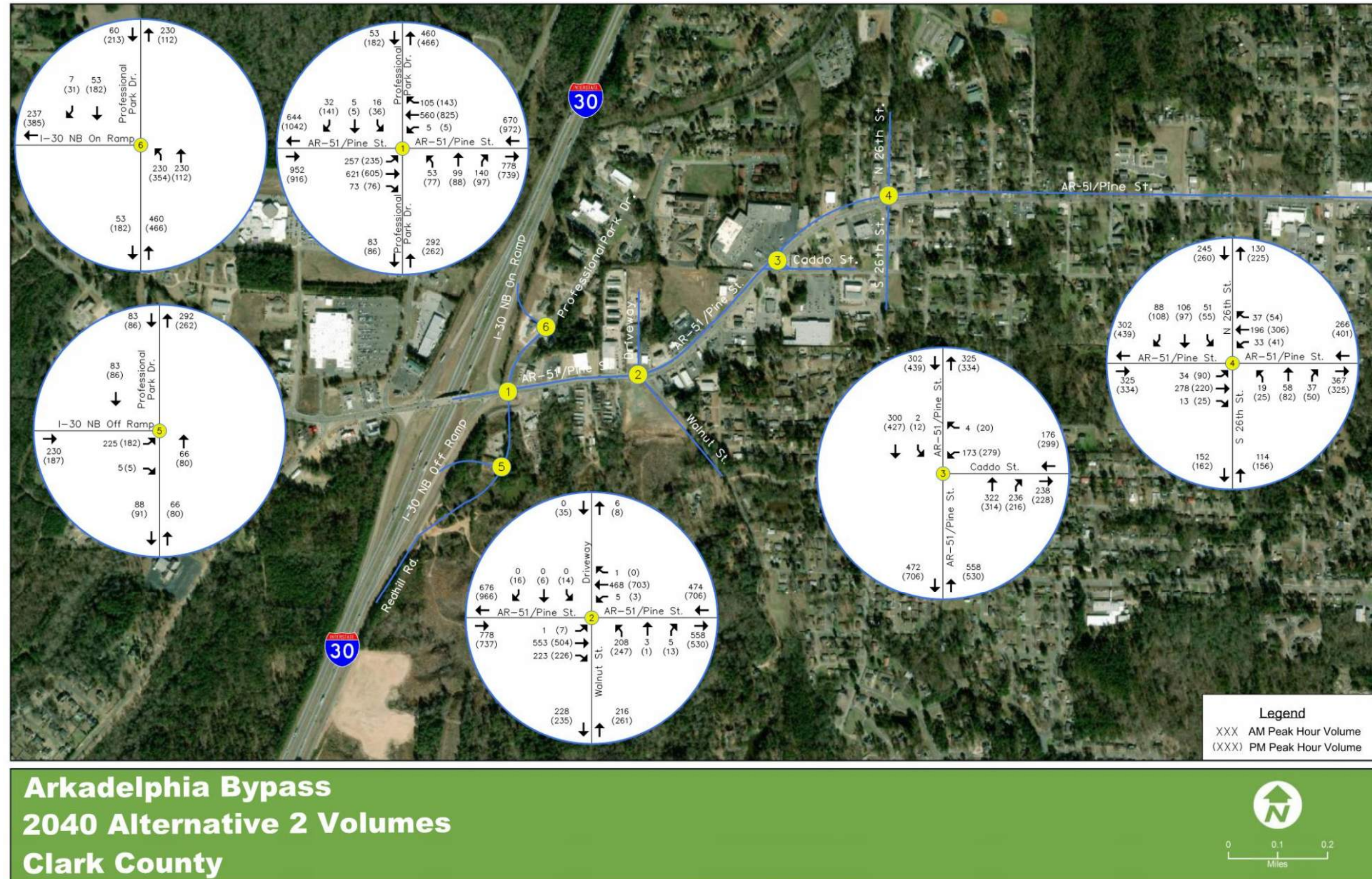


Figure 11: 2040 Western Portion - Alternative 3 Volumes

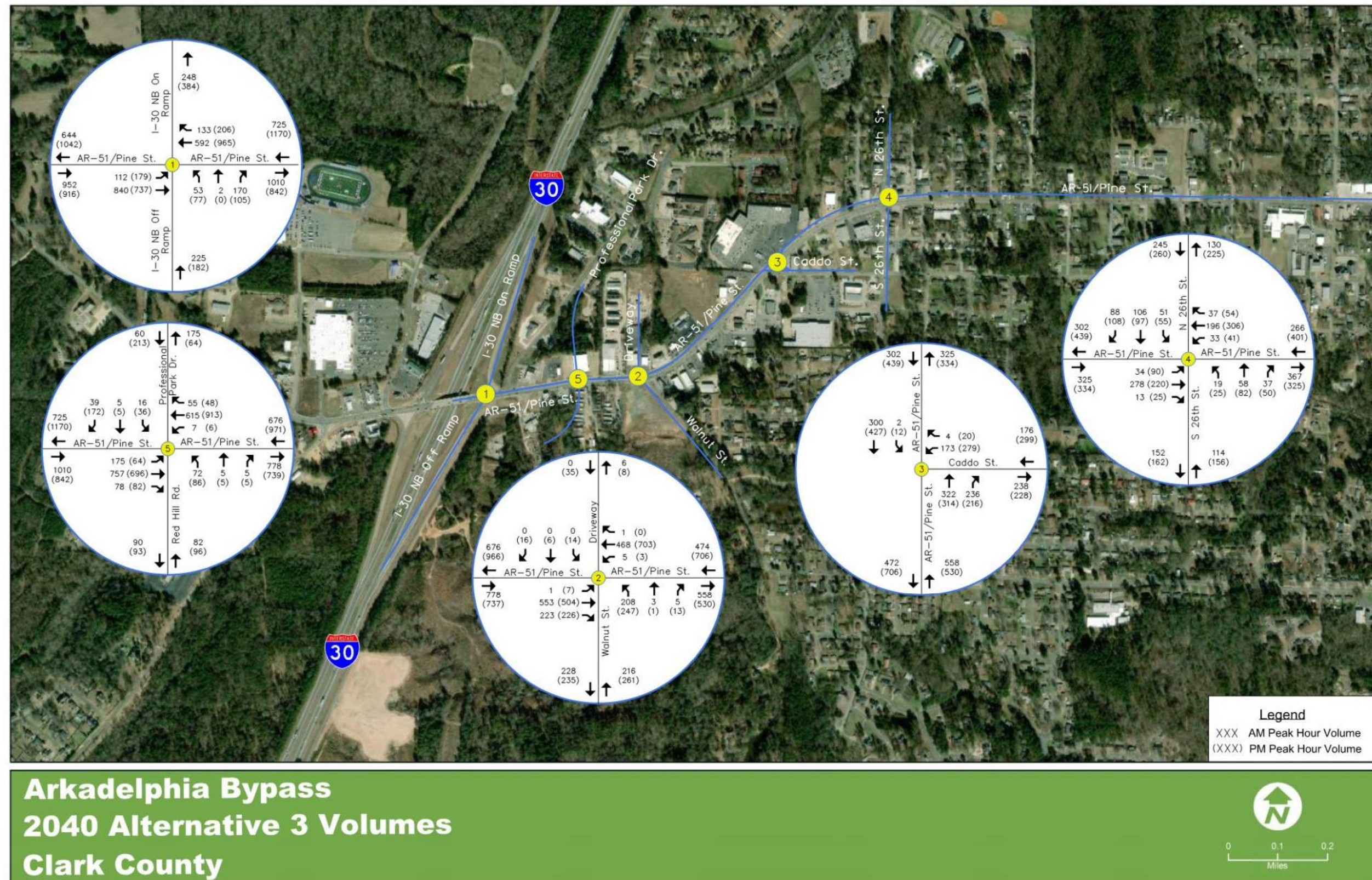


Figure 12: 2040 Western Portion - Alternative 4 Volumes

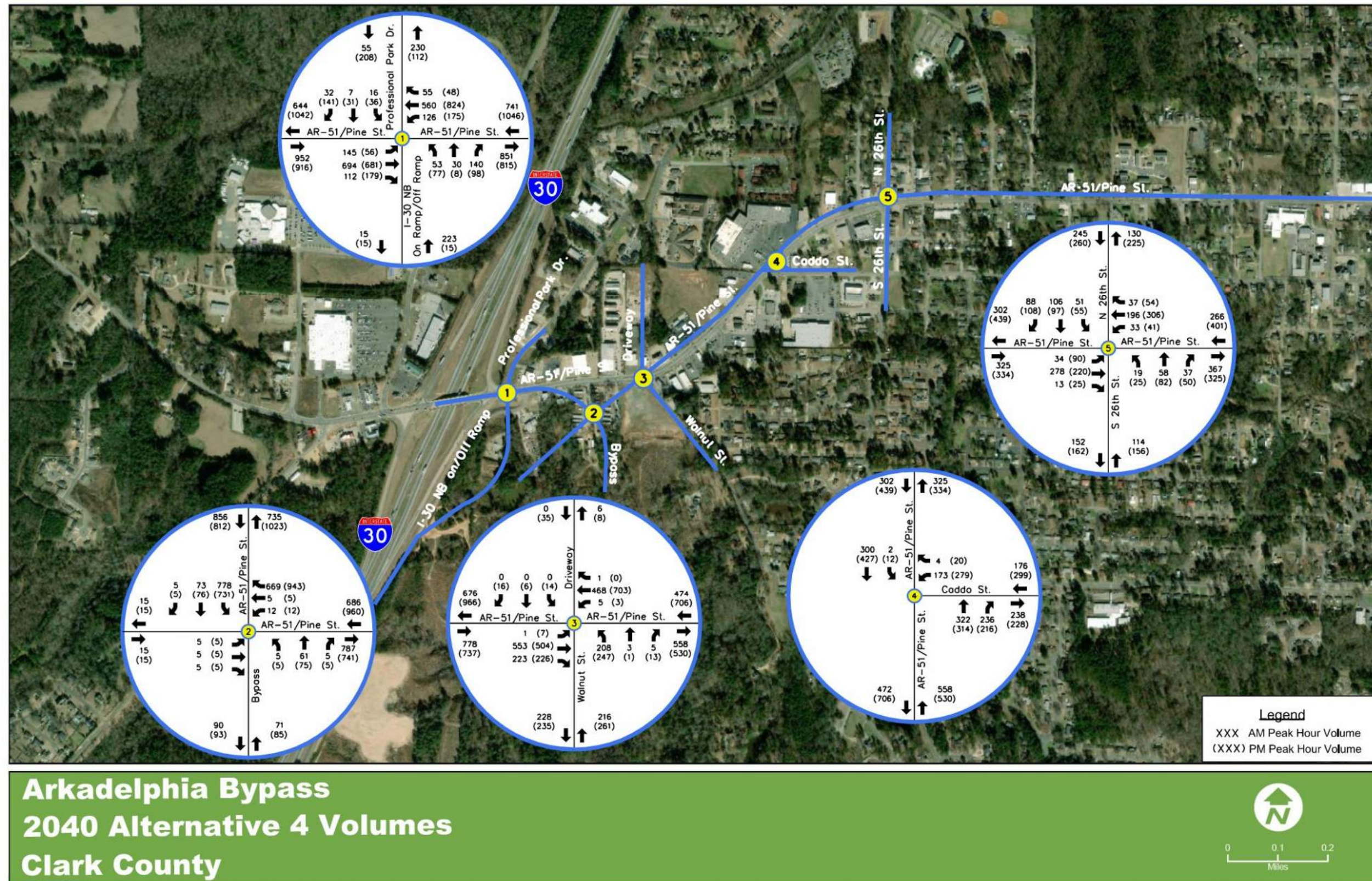


Figure 13: 2040 Western Portion – New Interchange

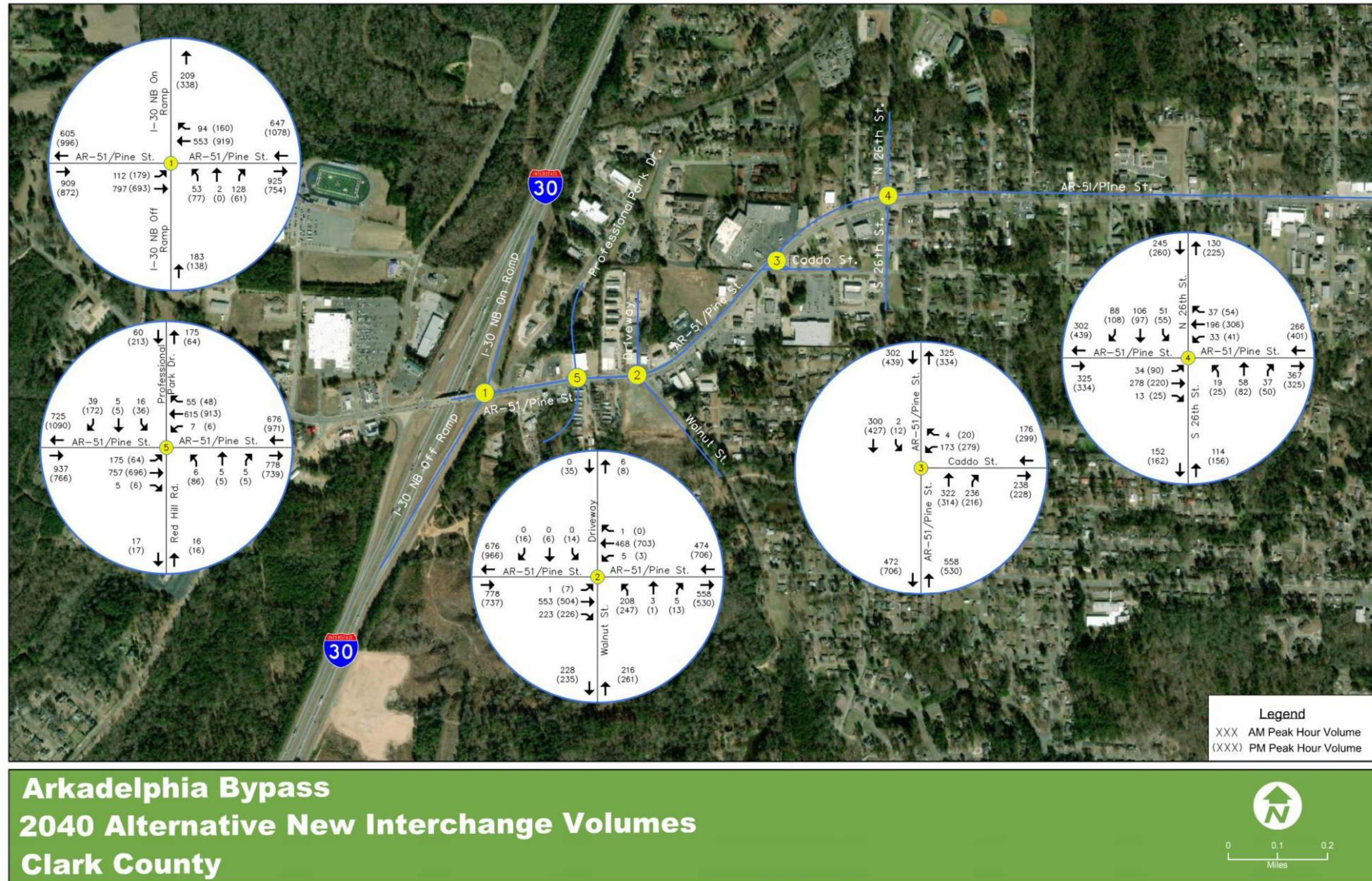


Figure 14: 2040 Eastern Portion - Alternative E and F Volumes

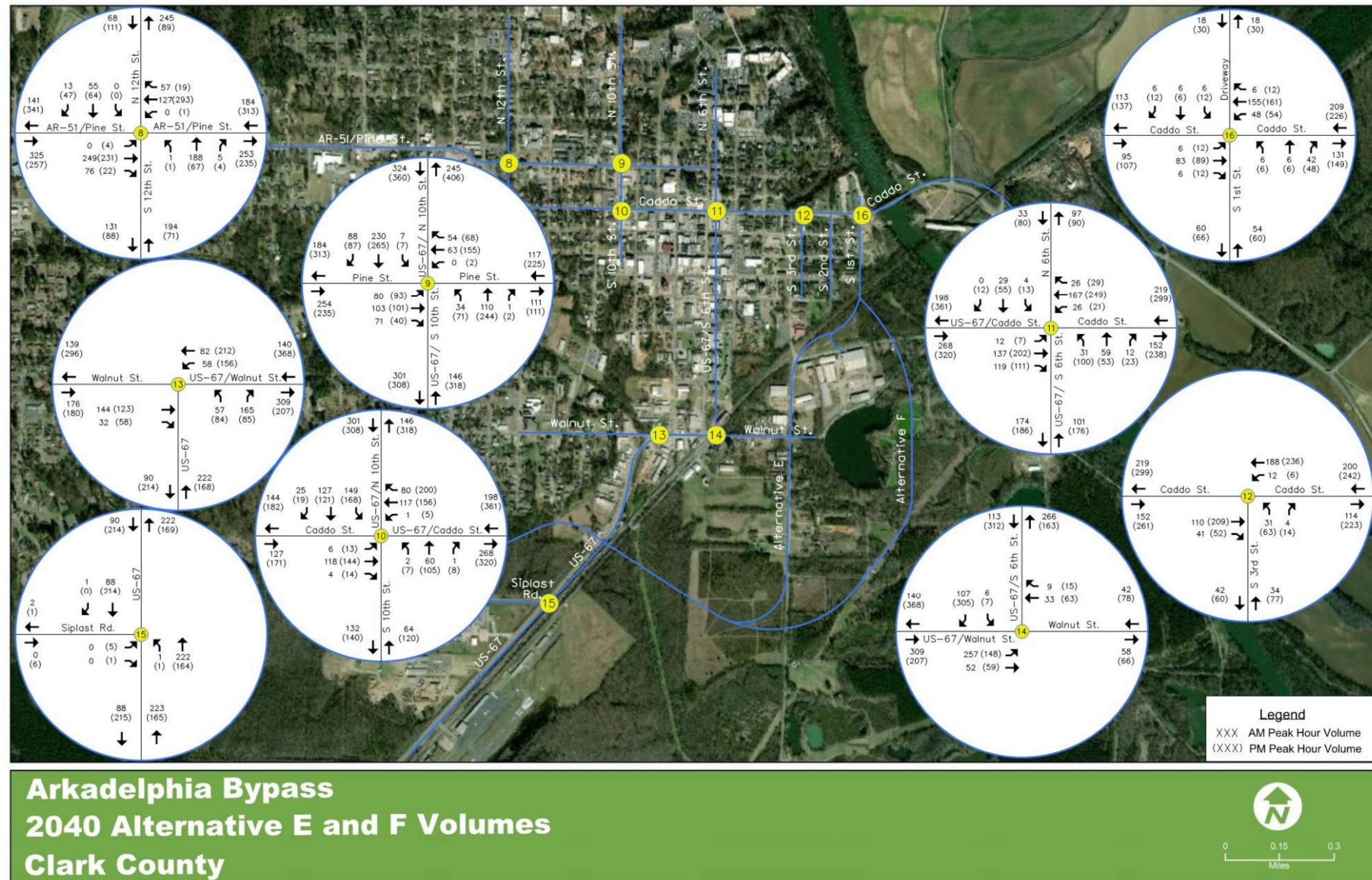
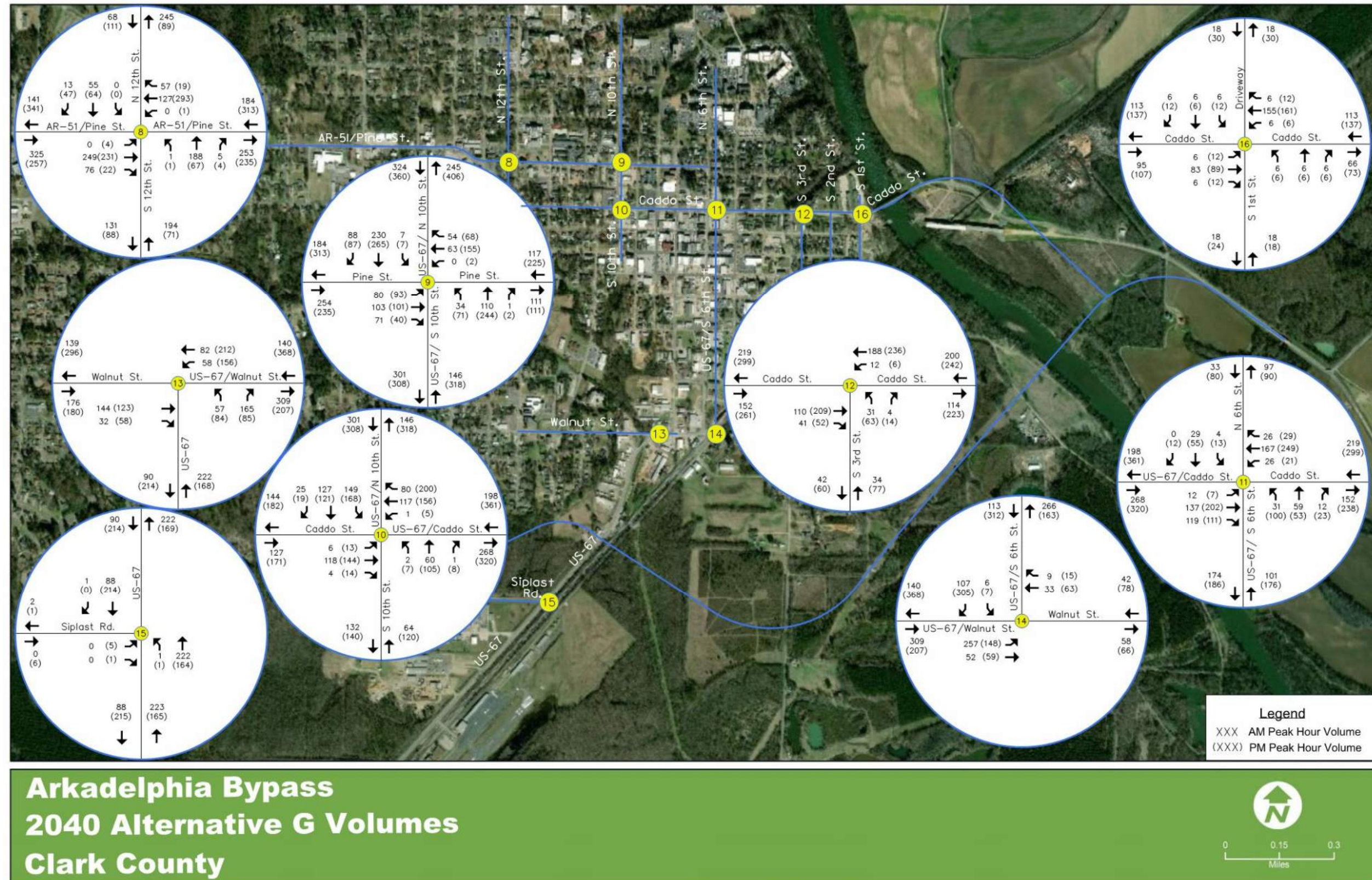


Figure 15: 2040 Eastern Portion - Alternative G Volumes



2040 ALTERNATIVES ANALYSIS

Traffic operations were evaluated for all bypass alternatives. The intersections were analyzed using the same methodologies as the Existing and the 2040 No Action conditions. All Action Alternative conditions assumed completion of the full bypass for 2040 and were evaluated as western improvement alternatives and eastern improvement alternatives. For the western bypass alternatives that extended to the existing interchange, the improved intersections near the interchange were analyzed as signals and as roundabouts. For the new interchange alternative, the study intersections were analyzed only as signals. The results of the intersection analyses and the roadway segment analyses are described in the following subsections.

2040 Intersection Analysis, Western Alternative Conditions

The results from the western intersection analyses for both signalized intersections and roundabout intersections are shown in **Table 16** through **Table 31**. The results from the analyses that included the new interchange are shown in **Table 32** and **Table 33**. The complete results are provided in **Appendix B - Intersection Operational Analysis Results**.

The results of the operational analysis of the Western Action Alternatives indicate similar delays for each scenario. Generally, the overall intersection LOS for the signalized intersections on the western end of study area operate acceptably during AM and PM peak hours, with an unacceptable LOS for certain movements for Alternatives 1, 2 and 3. The western end of the study area operates well with roundabout intersections during both AM and PM peak hours for all proposed Action Alternatives. As would be expected with the new interchange alternative, removing bypass traffic from Highway 51/Pine Street between the interchange and Walnut decreases overall delay at each intersection during AM and PM peak hours.

Table 16: Intersection Analysis – 2040 Alternative 1 (Signals) – HCM

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall	
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
26th St. at Pine St.	AM	Signal	LOS	A	B	A	A	A	B	C	A	B	F	A	B	C	
			v/c	0.1	0.5	0.0	0.1	0.0	0.4	0.4	0.0	0.1	1.0	0.0	0.3		
			Delay	9.0	14.1	9.8	9.2	0.0	13.4	22.2	0.0	15.7	88.3	0.0	17.3	26.8	
	PM		LOS	B	B	B	A	A	B	C	A	B	F	A	B	C	
			v/c	0.3	0.4	0.1	0.1	0.0	0.7	0.5	0.0	0.1	1.1	0.0	0.3		
			Delay	10.9	13.2	10.3	9.7	0.0	19.9	25.5	0.0	16.0	103.6	0.0	18.0	28.6	
Pine St. at Caddo St.	AM	Signal	LOS				C			C			A			A	
			v/c				0.8			0.0			0.2			0.0	0.2
			Delay				29.6			21.0			3.6			3.9	3.5
	PM		LOS				C			B			A			A	A
			v/c				0.9			0.1			0.2			0.0	0.3
			Delay				26.2			17.1			5.8			6.5	6.1
Walnut St. at Pine St.	AM	Signal	LOS	B	C	C	C	B	B	B	A	A	n/a ¹	n/a ¹	n/a ¹	B	
			v/c	0.0	0.8	0.8	0.0	0.5	0.5	0.3	0.3	0.4	n/a ¹	n/a ¹	n/a ¹		
			Delay	17.2	21.6	21.8	24.4	14.7	14.7	11.5	0.0	0.0	n/a ¹	n/a ¹	n/a ¹	17.9	
	PM		LOS	C	C	C	C	B	n/a ¹	B	A	A	A	A	A	B	
			v/c	0.0	0.8	0.8	0.0	0.8	n/a ¹	0.4	0.2	0.0	0.1	0.0	0.0		
			Delay	24.0	23.5	23.8	25.1	19.6	n/a ¹	11.4	0.0	0.0	7.8	0.0	0.0	19.8	
Red Hill Rd. / Professional Park Dr. at Pine St.	AM	Signal	LOS	D	B	B	E	B	B	C	C	C	C	C	C	B	
			v/c	0.8	0.5	0.5	0.5	0.4	0.3	0.0	0.0	0.0	0.1	0.0	0.2		
			Delay	41.4	11.0	10.9	68.2	14.8	13.9	28.0	27.8	27.3	28.5	27.8	21.7	17.2	
	PM		LOS	D	B	B	D	C	B	B	B	B	B	B	B	C	
			v/c	0.8	0.6	0.6	0.5	0.9	0.5	0.0	0.0	0.0	0.8	0.0	0.5		
			Delay	41.8	15.9	15.8	49.7	25.2	18.2	14.9	14.8	14.5	15.6	14.8	15.1	21.9	
Professional Park Dr. at I-30 NB Ramps	AM	Signal	LOS	D			D				D	A			B	B	C
			v/c	0.4			0.7				0.8	0.1			0.1	0.0	
			Delay	42.4			50.8				37.8	0.1			12.7	12.2	23.2
	PM		LOS	D			D				D	A			B	B	C
			v/c	0.1			0.8				0.8	0.1			0.3	0.1	
			Delay	38.3			51.7				38.1	5.1			16.6	14.2	28.2
Bypass at Pine St.	AM	Signal	LOS				C			B			C	B	C	A	
			v/c				0.0			0.6			0.1	0.0	0.9	0.0	
			Delay				28.7			14.7			22.2	10.7	25.4	0.0	
	PM		LOS				C			B			C	B	C	A	
			v/c				0.0			18.1			0.1	0.0	0.9	0.0	
			Delay				26.3			18.3			24.0	10.3	33.9	5.4	

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 17: Intersection Analysis – 2040 Alternative 1 (Signals) – SimTraffic

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
26th St. at Pine St.	AM	Signal	LOS	B	B	A	B	A	A	B	B	A	B	B	A	B
			Delay	13.5	17.0	2.6	11.3	9.7	6.8	17.2	15.7	3.9	19.2	16.2	3.7	12.5
	PM		LOS	B	B	A	B	C	B	B	B	A	B	B	A	B
			Delay	16.4	16.1	3.9	18.4	22.0	17.6	18.0	13.0	3.9	17.2	18.7	3.8	16.3
Pine St. at Caddo St.	AM	Signal	LOS				C		A		A		C	A		A
			Delay				24.4		2.0		1.2		23.9	4.6		7.4
	PM		LOS				B		A		A		B	A		A
			Delay				19.7		1.9		2.1		15.7	9.5		9.8
Walnut St. at Pine St.	AM	Signal	LOS	n/a ²	C	C	F	B	n/a ²	A	B	A	n/a ¹	n/a ¹	n/a ¹	C
			Delay	n/a ²	29.2	28.5	91.4	17.9	n/a ²	9.8	17.5	6.6	n/a ¹	n/a ¹	n/a ¹	22.5
	PM		LOS	n/a ¹	B	B	D	B	n/a ¹	B	n/a ¹	A	A	B	A	B
			Delay	n/a ¹	16.4	12.5	35.1	19.3	n/a ¹	10.5	n/a ¹	7.0	5.0	10.2	4.3	15.9
Red Hill Rd. / Professional Park Dr. at Pine St.	AM	Signal	LOS	C	A	A	D	C	A	C	C	C	D	C	A	B
			Delay	33.9	8.5	4.3	44.3	22.6	8.3	34.1	28.4	21.3	44.8	31.2	3.7	16.2
	PM		LOS	C	B	A	C	C	A	A	C	A	B	C	A	B
			Delay	29.3	14.0	1.1	23.9	27.1	9.9	7.8	20.1	0.0	15.5	23.1	8.0	19.3
Professional Park Dr. at I-30 NB Ramps	AM	Signal	LOS	D		A				A	A			C	A	A
			Delay	43.7		4.3				6.3	3.7			28.4	3.2	9.0
	PM		LOS	E		A				B	A			C	A	B
			Delay	56.7		5.3				10.8	1.7			28.0	5.8	12.7
Bypass at Pine St.	AM	One-Way Stop	LOS				E		A		D	A	D	A		C
			Delay				43.6		8.6		31.4	6.4	28.8	4.4		19.2
	PM		LOS				E		B		D	A	C	A		C
			Delay				39.7		10.3		30.2	6.7	22.1	5.4		15.5

¹No Volume modeled making this movement²Low volume modeled making this movement

Table 18: Intersection Analysis – 2040 Alternative 1 (Roundabouts) – HCM

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
26th St. at Pine St.	AM	Signal	LOS	A	B	A	A	A	B	C	A	B	F	A	B	C
			v/c	0.1	0.5	0.0	0.1	0.0	0.4	0.4	0.0	0.1	1.0	0.0	0.3	
			Delay	9.0	14.1	9.8	9.2	0.0	13.4	22.2	0.0	15.7	88.3	0.0	17.3	26.8
	PM		LOS	B	B	B	A	A	B	C	A	B	F	A	B	C
			v/c	0.3	0.4	0.1	0.1	0.0	0.7	0.5	0.0	0.1	1.1	0.0	0.3	
			Delay	10.9	13.2	10.3	9.7	0.0	19.9	25.5	0.0	16.0	103.6	0.0	18.0	28.6
Pine St. at Caddo St.	AM	Signal	LOS				C	C			A	A			A	
			v/c				0.8	0.0			0.2	0.0			0.2	
			Delay				29.6	21.0			3.6	3.9			3.5	
	PM		LOS				C	B			A	A			A	
			v/c				0.9	0.1			0.2	0.0			0.3	
			Delay				26.2	17.4			5.8	6.5			6.1	
Walnut St. at Pine St.	AM	Signal	LOS	B	C	C	C	B	B	B	A	A	n/a ¹	n/a ¹	n/a ¹	B
			v/c	0.0	0.8	0.8	0.0	0.5	0.5	0.3	0.0	0.0	n/a ¹	n/a ¹	n/a ¹	
			Delay	17.2	22.5	22.8	24.4	14.7	14.7	11.5	0.0	0.0	n/a ¹	n/a ¹	n/a ¹	18.5
	PM		LOS	C	C	C	C	B	n/a ¹	B	A	A	A	A	A	C
			v/c	0.1	0.8	0.8	0.0	0.8	n/a ¹	0.4	0.2	0.4	0.1	0.0	0.0	
			Delay	24.1	24.7	25.1	25.1	19.6	n/a ¹	11.4	0.0	0.0	7.8	0.0	0.0	20.4
Professional Park Dr. at I-30 NB Ramps	AM	Roundabout	LOS	A						A			A			
			v/c	0.1						0.4			0.1			
			Delay	3.6						6.9			4.3			
	PM		LOS	A						A			A			
			v/c	0.1						0.4			0.3			
			Delay	4.3						7.0			7.7			
Red Hill Rd. / Professional Park Dr. at Pine St.	AM	Roundabout	LOS	A			A			A			A			
			v/c	0.5			0.5			0.0			0.2			
			Delay	8.4			9.0			9.2			6.8			
	PM		LOS	A			B			A			C			
			v/c	0.5			0.6			0.0			0.6			
			Delay	8.0			12.9			8.6			18.0			
Bypass at Pine St.	AM	Roundabout	LOS				A			A			B			
			v/c				0.3			0.1			0.8			
			Delay				6.0			7.7			14.5			
	PM		LOS				A			A			B			
			v/c				0.5			0.1			0.7			
			Delay				8.1			7.1			12.7			

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 19: Intersection Analysis – 2040 Alternative 1 (Roundabouts) – SIDRA

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
26th St. at Pine St.	AM	Signal	LOS	B	B	A	B	B	B	B	B	A	B	B	A	B
			Delay	16.2	17.0	3.8	11.2	14.1	11.6	16.5	15.7	4.5	18.2	17.0	4.1	14.0
	PM		LOS	B	B	A	B	C	B	C	B	A	C	C	A	B
			Delay	14.7	14.3	3.7	18.5	22.3	16.0	21.2	16.9	4.0	25.5	23.6	4.5	16.3
Pine St. at Caddo St.	AM	Signal	LOS				C		A		A		A	A		A
			Delay				22.4		3.8		0.8		3.3	7.5		8.2
	PM		LOS				B		A		A		A	A		B
			Delay				19.3		3.2		6.6		9.1	6.6		10.2
Walnut St. at Pine St.	AM	Signal	LOS	A			A			A			A			A
			Delay	5.3			5.3			7.6			5.0			5.6
	PM		LOS	A			A			A			A			A
			Delay	5.3			7.1			8.2			7.3			6.5
Professional Park Dr. at I-30 NB Ramps	AM	Roundabout	LOS	A						A			A			A
			Delay	3.4						6.2			4.0			5.6
	PM		LOS	A						A			A			A
			Delay	4.0						6.3			6.6			6.1
Red Hill Rd. / Professional Park Dr. at Pine St.	AM	Roundabout	LOS	A			A			A			A			A
			Delay	7.0			7.4			7.9			5.9			7.1
	PM		LOS	A			A			A			B			A
			Delay	6.8			9.7			7.5			12.6			8.8
Bypass at Pine St.	AM	Roundabout	LOS				A			A			A			A
			Delay				5.6			2.9			5.5			5.4
	PM		LOS				A			A			A			A
			Delay				7.0			6.2			5.7			6.4

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 20: Intersection Analysis – 2040 Alternative 2 (Signals) – HCM

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
26th St. at Pine St.	AM	Signal	LOS	A	B	A	A	A	B	C	A	B	F	A	B	C
			v/c	0.1	0.5	0.0	0.1	0.0	0.4	0.4	0.0	0.1	1.0	0.0	0.3	
			Delay	9.0	14.1	9.8	9.2	0.0	13.4	22.2	0.0	15.7	88.3	0.0	17.3	26.8
	PM		LOS	B	B	B	A	A	B	C	A	B	F	A	B	C
			v/c	0.3	0.4	0.1	0.1	0.0	0.7	0.5	0.0	0.1	1.1	0.0	0.3	
			Delay	10.9	13.2	10.3	9.7	0.0	19.9	25.5	0.0	16.0	103.6	0.0	18.0	28.6
Pine St. at Caddo St.	AM	Signal	LOS				C		C		A		A	A		A
			v/c				0.8		0.0		0.2		0.0	0.2		
			Delay				29.6		21.0		3.6		3.9	3.5		9.3
	PM		LOS				C		B		A		A	A		B
			v/c				0.9		0.1		0.2		0.0	0.3		
			Delay				26.2		17.4		5.8		6.5	6.1		11.7
Walnut St. at Pine St.	AM	Signal	LOS	A	A	A	B	B	B	C	A	A	n/a ¹	n/a ¹	n/a ¹	B
			v/c	0.0	0.6	0.6	0.0	0.4	0.4	0.4	0.0	0.0	n/a ¹	n/a ¹	n/a ¹	
			Delay	1.4	3.6	3.8	12.1	15.2	15.1	21.5	0.0	0.0	n/a ¹	n/a ¹	n/a ¹	11.9
	PM		LOS	A	A	A	B	C	A	B	A	A	B	A	A	B
			v/c	0.0	0.6	0.6	0.0	0.6	0.0	0.5	0.0	0.0	0.1	0.0	0.0	
			Delay	8.5	6.9	7.1	17.4	20.5	0.0	19.9	0.0	0.0	14.2	0.0	0.0	14.6
Professional Park Dr. at Pine St.	AM	Signal	LOS	D	A	A	E	A	A	C	C	D	C	C	C	B
			v/c	0.9	0.4	0.1	0.5	0.5	0.2	0.2	0.4	0.6	0.1	0.0	0.1	
			Delay	46.3	8.1	6.4	68.1	5.2	4.5	31.7	34.0	41.8	34.9	29.0	30.6	17.1
	PM		LOS	D	A	A	E	A	A	C	C	D	D	C	D	B
			v/c	0.9	0.4	0.1	0.5	0.7	0.3	0.3	0.3	0.4	0.2	0.0	0.6	
			Delay	53.6	8.0	6.4	63.8	5.3	3.5	34.0	33.3	35.8	35.9	29.0	41.9	16.9
I-30 NB Off-Ramp at Professional Park Dr.	AM	Two-Way Stop	LOS	B		A					n/a ²			n/a ²		A
			v/c	0.4		0.0					n/a ²			n/a ²		
			Delay	11.9		8.8					n/a ²			n/a ²		7.2
	PM		LOS	B		A					n/a ²			n/a ²		A
			v/c	0.3		0.0					n/a ²			n/a ²		
			Delay	11.5		8.8					n/a ²			n/a ²		6.0
I-30 NB On-Ramp at Professional Park Dr.	AM	Two-Way Stop	LOS							A	A			A	A	A
			v/c							0.0	0.0			0.0	0.0	
			Delay							5.0	5.0			5.0	5.0	5.0
	PM		LOS							A	A			A	A	A
			v/c							0.0	0.0			0.0	0.0	
			Delay							5.0	5.0			5.0	5.0	5.0

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 21: Intersection Analysis – 2040 Alternative 2 (Signals) – SimTraffic

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
26th St. at Pine St.	AM	Signal	LOS	B	A	A	A	A	A	B	B	A	B	B	A	A
			Delay	11.8	9.8	1.8	9.7	9.8	5.4	13.3	14.0	5.3	13.1	15.7	3.9	10.0
	PM	Signal	LOS	B	A	A	B	B	B	B	B	A	C	B	A	B
			Delay	11.4	8.3	3.2	17.4	17.1	12.9	14.3	14.6	3.7	25.2	18.1	3.8	12.7
Caddo St. at Pine St.	AM	Signal	LOS				C		A		A		A	A		A
			Delay				24.2		2.7		5.1		3.5	3.4		8.6
	PM	Signal	LOS				C		A		A		A	A		A
			Delay				22.6		4.1		5.5		10.0	4.9		9.8
Walnut St. at Pine St.	AM	Signal	LOS	n/a ²	B	B	E	B	A	B	B	A	n/a ¹	n/a ¹	n/a ¹	B
			Delay	n/a ²	14.2	13.0	69.7	11.9	5.9	19.2	17.7	3.4	n/a ¹	n/a ¹	n/a ¹	14.1
	PM	Signal	LOS	D	B	B	E	B	n/a ¹	B	A	A	A	B	A	B
			Delay	39.8	14.5	11.0	60.4	15.8	n/a ¹	18.2	0.0	9.5	8.4	19.8	5.8	15.0
Professional Park Dr. at Pine St.	AM	Signal	LOS	D	A	A	C	C	B	C	C	A	D	C	A	B
			Delay	35.1	7.4	2.4	28.5	20.6	16.5	29.1	29.9	9.1	42.3	34.3	6.6	17.4
	PM	Signal	LOS	C	A	A	D	C	B	C	C	A	D	D	A	B
			Delay	33.6	6.3	2.4	45.7	20.8	14.1	32.2	29.2	5.7	50.1	41.6	10.0	17.5
I-30 NB Off-Ramp at Professional Park Dr.	AM	Two-Way Stop	LOS	A		A					A			A		A
			Delay	6.2		3.1					0.3			0.5		4.0
	PM	Two-Way Stop	LOS	A		A					A			A		A
			Delay	6.3		2.0					0.2			0.5		3.4
I-30 NB On-Ramp at Professional Park Dr.	AM	Two-Way Stop	LOS							A	A			A	A	A
			Delay							8.6	8.6			6.1	2.9	8.3
	PM	Two-Way Stop	LOS							A	A			A	A	A
			Delay							7.7	9.0			6.5	2.4	8.1

¹No Volume modeled making this movement²Low volume modeled making this movement

Table 22: Intersection Analysis – 2040 Alternative 2 (Roundabouts) – HCM

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
26th St. at Pine St.	AM	Signal	LOS	A	B	A	A	A	B	C	A	B	F	A	B	C
			v/c	0.1	0.5	0.0	0.1	0.0	0.4	0.4	0.0	0.1	1.0	0.0	0.3	
			Delay	9.0	14.1	9.8	9.2	0.0	13.4	22.2	0.0	15.7	88.3	0.0	17.3	26.8
	PM		LOS	B	B	B	A	A	B	C	A	B	F	A	B	C
			v/c	0.3	0.4	0.1	0.1	0.0	0.7	0.5	0.0	0.1	1.1	0.0	0.3	
			Delay	10.9	13.2	10.3	9.7	0.0	19.9	25.5	0.0	16.0	103.6	0.0	18.0	28.6
Pine St. at Caddo St.	AM	Signal	LOS				C		C		A			A	A	A
			v/c				0.8		0.0		0.2			0.0	0.2	
			Delay				29.6		21.0		3.6			3.9	3.5	9.3
	PM		LOS				C		B		A			A	A	B
			v/c				0.9		0.1		0.2			0.0	0.3	
			Delay				26.2		17.4		5.8			6.5	6.1	11.7
Walnut St. at Pine St.	AM	Roundabout	LOS	A		A	A		A	A			A			A
			v/c	0.4		0.4	0.3		0.3	0.4			0.0			
			Delay	6.0		6.1	6.2		6.0	9.2			5.3			6.5
	PM		LOS	A		A	A		A	A			A			A
			v/c	0.3		0.4	0.4		0.4	0.4			0.1			
			Delay	6.0		6.0	8.6		8.5	10.0			8.8			7.7
Professional Park Dr. at Pine St.	AM	Roundabout	LOS	A		A	B		B	D			A			B
			v/c	0.4		0.5	0.5		0.5	0.7			0.1			
			Delay	7.2		7.4	11.1		10.7	25.3			6.2			11.2
	PM		LOS	A		A	C		C	C			B			B
			v/c	0.4		0.5	0.7		0.7	0.6			0.4			
			Delay	7.3		7.4	17.5		17.5	20.4			14.7			13.6
I-30 NB Off-Ramp at Professional Park Dr.	AM	Roundabout	LOS	A							A			A	A	
			v/c	0.2							0.1			0.1		
			Delay	5.1							4.3			3.3	4.6	
	PM		LOS	A							A			A	A	
			v/c	0.2							0.1			0.1		
			Delay	4.7							4.2			3.3	4.3	
I-30 NB On-Ramp at Professional Park Dr.	AM	Roundabout	LOS							A			A	A		
			v/c							0.4			0.1			
			Delay							6.9			4.3	6.6		
	PM		LOS							A			A	A		
			v/c							0.4			0.3			
			Delay							6.9			7.8	7.2		

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 23: Intersection Analysis – 2040 Alternative 2 (Roundabouts) – SIDRA

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
26th St. at Pine St.	AM	Signal	LOS	A	A	A	B	B	A	B	B	A	B	B	A	B
			Delay	9.8	7.7	2.5	10.2	12.2	4.6	14.5	14.5	4.1	18.7	16.1	6.9	10.4
	PM		LOS	B	B	A	B	B	B	B	B	A	B	B	A	B
			Delay	14.5	11.0	2.8	19.6	17.2	13.7	20.0	14.5	4.0	17.4	15.9	4.3	13.6
Caddo St. at Pine St.	AM	Signal	LOS				C		A		A		C	A		A
			Delay				24.0		2.2		3.1		20.1	6.1		8.9
	PM		LOS				B		A		A		B	A		B
			Delay				20.0		4.0		5.9		15.4	9.0		11.2
Walnut St. at Pine St.	AM	Roundabout	LOS	A			A			A			A			A
			Delay	5.3			5.3			7.6			5.0			5.6
	PM		LOS	A			A			A			A			A
			Delay	5.3			7.1			8.2			7.3			6.5
Professional Park Dr. at Pine St.	AM	Roundabout	LOS	A			A			B			A			A
			Delay	6.3			8.6			15.7			5.5			8.4
	PM		LOS	A			B			B			B			A
			Delay	6.3			12.0			13.7			11.0			9.9
I-30 NB Off-Ramp at Professional Park Dr.	AM	Roundabout	LOS	A						A			A			A
			Delay	4.7						4.1			3.2			4.3
	PM		LOS	A						A			A			A
			Delay	4.4						4.0			3.2			4.0
I-30 NB On-Ramp at Professional Park Dr.	AM	Roundabout	LOS							A			A			A
			Delay							6.1			4.0			5.9
	PM		LOS							A			A			A
			Delay							6.2			6.7			6.4

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 24: Intersection Analysis – 2040 Alternative 3 (Signals) – HCM

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall			
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
26th St. at Pine St.	AM	Signal	LOS	A	B	A	A	A	B	C	A	B	F	A	B	C			
			v/c	0.1	0.5	0.0	0.1	0.0	0.4	0.4	0.0	0.1	1.0	0.0	0.3				
			Delay	9.0	14.1	9.8	9.2	0.0	13.4	22.2	0.0	15.7	88.3	0.0	17.3	26.8			
	PM		LOS	B	B	B	A	A	B	C	A	B	F	A	B	C			
			v/c	0.3	0.4	0.1	0.1	0.0	0.7	0.5	0.0	0.1	1.1	0.0	0.3				
			Delay	10.9	13.2	10.3	9.7	0.0	19.9	25.5	0.0	16.0	103.6	0.0	18.0	28.6			
Pine St. at Caddo St.	AM	Signal	LOS				C			C			A			A	A		A
			v/c				0.8			0.0			0.2			0.0	0.2		
			Delay				29.6			21.0			3.6			3.9	3.5		9.3
	PM		LOS				C			B			A			A	A		B
			v/c				0.9			0.1			0.2			0.0	0.3		
			Delay				26.2			17.4			5.8			6.5	6.1		11.7
Walnut St. at Pine St.	AM	Signal	LOS	A	A	A	B	B	B	C	A	A	n/a ¹	n/a ¹	n/a ¹	A			
			v/c	0.0	0.6	0.6	0.0	0.4	0.4	0.4	0.0	0.0	n/a ¹	n/a ¹	n/a ¹				
			Delay	1.4	3.5	3.7	12.1	15.2	15.1	21.6	0.0	0.0	n/a ¹	n/a ¹	n/a ¹	10.0			
	PM		LOS	A	A	A	B	C	n/a ¹	B	A	A	B	A	A	B			
			v/c	0.0	0.6	0.6	0.0	0.6	n/a ¹	0.5	0.0	0.0	0.1	0.0	0.0				
			Delay	8.5	6.7	7.0	17.4	20.5	n/a ¹	19.9	0.0	0.0	14.2	0.0	0.0	14.5			
Red Hill Rd. / Professional Park Dr. at Pine St.	AM	Signal	LOS	D	A	A	E	A	A	C	C	C	C	C	C	A			
			v/c	0.9	0.5	0.1	0.5	0.5	0.1	0.3	0.0	0.0	0.1	0.0	0.2				
			Delay	40.6	0.6	0.2	61.9	1.4	0.7	32.4	28.6	28.6	29.3	28.6	30.6	7.3			
	PM		LOS	B	B	B	A	A	A	C	C	C	C	C	C	C	B		
			v/c	0.2	0.4	0.1	0.0	0.6	0.1	0.3	0.0	0.0	0.1	0.0	0.6				
			Delay	13.4	14.7	10.6	2.6	0.8	0.1	29.2	24.7	24.7	26.0	24.7	34.9	10.6			
I-30 NB Ramps at Pine St.	AM	Signal	LOS	D	A					A	A	C	A	D				B	
			v/c	0.8	0.5					0.5	0.2	0.2	0.0	0.6					
			Delay	48.4	8.4					0.8	0.6	28.1	0.0	38.6				11.1	
	PM		LOS	D	A					C	C	C	A	D				C	
			v/c	0.9	0.4					0.8	0.4	0.3	0.0	0.5					
			Delay	55.0	6.0					34.9	26.0	33.5	0.0	37.5				26.4	

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 25: Intersection Analysis – 2040 Alternative 3 (Signals) – SimTraffic

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
26th St. at Pine St.	AM	Signal	LOS	A	A	A	B	B	A	B	B	A	B	B	A	A
			Delay	8.6	7.9	2.4	11.3	10.5	8.6	14.6	12.6	4.2	15.4	16.2	3.7	9.7
	PM		LOS	B	A	A	B	B	B	C	B	A	B	B	A	B
			Delay	10.3	7.6	1.6	16.5	16.3	11.4	20.5	18.3	4.6	16.5	17.1	4.9	11.9
Caddo St. at Pine St.	AM	Signal	LOS				C		A		A		n/a ²	A		A
			Delay				22.6		4.8		3.9		n/a ²	3.5		7.8
	PM		LOS				B		A		A		B	A		A
			Delay				17.0		2.9		5.3		19.4	5.9		8.6
Walnut St. at Pine St.	AM	Signal	LOS	n/a ¹	B	A	C	B	A	C	B	A	n/a ¹	n/a ¹	n/a ¹	B
			Delay	n/a ¹	10.9	9.1	29.6	11.7	1.8	22.7	15.1	6.1	n/a ¹	n/a ¹	n/a ¹	12.8
	PM		LOS	B	C	B	D	B	n/a ¹	B	n/a ²	B	B	A	A	B
			Delay	16.0	20.1	15.6	39.4	17.0	n/a ¹	19.0	n/a ²	15.4	12.2	1.7	7.0	17.8
Red Hill Rd. / Professional Park Dr. at Pine St.	AM	Signal	LOS	D	A	A	D	B	A	C	C	A	C	C	A	B
			Delay	35.9	9.8	4.6	50.1	12.9	4.3	31.0	30.9	4.0	34.0	26.4	6.4	13.9
	PM		LOS	D	A	A	C	A	A	C	C	A	C	A	B	B
			Delay	36.5	9.3	3.8	24.7	7.7	4.4	25.3	32.9	2.3	22.3	9.1	13.3	10.3
I-30 NB Ramps at Pine St.	AM	Signal	LOS	D	A			C	A	C	E	B				B
			Delay	42.0	6.8			23.3	9.3	29.3	64.7	11.6				15.4
	PM		LOS	D	A			B	A	C	n/a ¹	A				B
			Delay	38.1	5.7			18.2	9.0	30.6	n/a ¹	7.8				15.0

¹No Volume modeled making this movement²Low volume modeled making this movement

Table 26: Intersection Analysis – 2040 Alternative 3 (Roundabouts) – HCM

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
26th St. at Pine St.	AM	Signal	LOS	A	B	A	A	A	B	C	A	B	F	A	B	C
			v/c	0.1	0.5	0.0	0.1	0.0	0.4	0.4	0.0	0.1	1.0	0.0	0.3	
	Delay		9.0	14.1	9.8	9.2	0.0	13.4	22.2	0.0	15.7	88.3	0.0	17.3	26.8	
	PM		LOS	B	B	B	A	A	B	C	A	B	F	A	B	C
			v/c	0.3	0.4	0.1	0.1	0.0	0.7	0.5	0.0	0.1	1.1	0.0	0.3	
Pine St. at Caddo St.	AM	Signal	Delay	10.9	13.2	10.3	9.7	0.0	19.9	25.5	0.0	16.0	103.6	0.0	18.0	28.6
			LOS				C				A				A	
			v/c				0.8				0.2					
			Delay				29.6				3.6				9.3	
	PM		LOS				C				A				B	
			v/c				0.9				0.2					
			Delay				26.2				17.4				11.7	
			Walnut St. at Pine St.	AM	Roundabout	LOS	A			A			A			A
v/c	0.7					0.3			0.3			0.0				
Delay	6.0					6.1			9.2			0.0				
PM	LOS	A				A			A			A				
	v/c	0.3				0.4			0.3			0.3				
	Delay	6.0				8.5			10.0			8.8				
Red Hill Rd. / Professional Park Dr. at Pine St.	AM	Roundabout	LOS	A			A			B			A			
			v/c	0.3			0.4			0.3			0.3			
			Delay	7.8			8.2			10.4			6.9			
	PM		LOS	A			A			A			C			
			v/c	0.4			0.5			0.2			0.6			
			Delay	6.9			9.5			8.9			20.9			
I-30 NB Ramps at Pine St.	AM	Roundabout	LOS	A			A			C						
			v/c	0.4			0.5			0.2						
			Delay	7.0			7.5			20.0						
	PM		LOS	A			C			C						
			v/c	0.4			0.7			0.4						
			Delay	6.8			16.2			15.1						

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 27: Intersection Analysis – 2040 Alternative 3 (Roundabouts) – SIDRA

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
26th St. at Pine St.	AM	Signal	LOS	B	A	A	B	A	A	B	B	A	C	B	A	A
			Delay	10.4	6.8	1.3	14.2	8.4	6.4	18.5	13.4	3.8	20.4	16.5	3.9	9.4
	PM		LOS	B	A	A	B	B	B	B	B	A	B	B	A	B
			Delay	12.1	6.2	2.0	19.3	17.5	11.9	18.3	15.4	3.6	17.0	15.6	4.8	12.2
Caddo St. at Pine St.	AM	Signal	LOS				C		A		A		B	A		A
			Delay				23.4		3.4		3.0		16.0	3.5		7.6
	PM		LOS				C		A		A		B	A		A
			Delay				21.8		3.0		4.5		18.2	4.2		8.7
Walnut St. at Pine St.	AM	Roundabout	LOS	A			A			A			A			A
			Delay	5.3			5.4			7.7			5.0			5.7
	PM		LOS	A			A			A			A			A
			Delay	5.3			7.1			8.1			7.3			6.5
Red Hill Rd. / Professional Park Dr. at Pine St.	AM	Roundabout	LOS	A			A			A			A			A
			Delay	6.6			6.9			8.4			6.0			6.8
	PM		LOS	A			A			A			B			A
			Delay	5.9			7.8			7.4			14.2			7.7
I-30 NB Ramps at Pine St.	AM	Roundabout	LOS	A			A			B						A
			Delay	6.0			6.4			13.6						7.1
	PM		LOS	A			B			B						A
			Delay	5.9			11.3			11.2						9.1

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 28: Intersection Analysis – 2040 Alternative 4 (Signals) – HCM

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
26th St. at Pine St.	AM	Signal	LOS	A	B	A	A	A	B	C	A	B	F	A	B	C
			v/c	0.1	0.5	0.0	0.1	0.0	0.4	0.4	0.0	0.1	1.0	0.0	0.3	
			Delay	9.0	14.1	9.8	9.2	0.0	13.4	22.2	0.0	15.7	88.3	0.0	17.3	26.8
	PM		LOS	B	B	B	A	A	B	C	A	B	F	A	B	C
			v/c	0.3	0.4	0.1	0.1	0.0	0.7	0.5	0.0	0.1	1.1	0.0	0.3	
			Delay	10.9	13.2	10.3	9.7	0.0	19.9	25.5	0.0	16.0	103.6	0.0	18.0	28.6
Pine St. at Caddo St.	AM	Signal	LOS				C		C		A		A	A		A
			v/c				0.8		0.0		0.2		0.0	0.2		
			Delay				29.6		21.0		3.6		3.9	3.5		9.3
	PM		LOS				C		B		A		A	A		B
			v/c				0.9		0.1		0.2		0.0	0.3		
			Delay				26.2		17.4		5.8		6.5	6.1		11.7
Bypass at Pine St.	AM	One-Way Stop	LOS	B	B	B	B	B	B	C	C	C	B	B	B	B
			v/c	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.1	0.0	0.6	0.1	0.0	
			Delay	19.1	18.7	18.8	19.1	18.7	10.1	27.2	28.6	27.8	15.7	12.2	11.9	13.8
	PM		LOS	C	C	C	C	C	B	C	C	C	C	B	B	C
			v/c	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.1	0.0	0.9	0.1	0.0	
			Delay	21.7	21.2	21.2	21.5	21.2	12.3	28.0	29.7	28.6	32.4	10.4	10.1	21.0
I-30 NB Ramps / Professional Park Dr. at Pine St.	AM	Signal	LOS	C	C	C	C	C	C	B	B	B	B	B	B	C
			v/c	0.6	0.8	0.3	0.6	0.7	0.1	0.1	0.1	0.3	0.0	0.0	0.1	
			Delay	21.7	33.4	23.5	23.8	28.5	21.3	17.3	18.3	15.9	18.0	19.2	14.4	27.2
	PM		LOS	C	C	C	C	C	B	B	B	B	B	C	C	C
			v/c	0.4	0.9	0.5	0.7	0.9	0.1	0.2	0.0	0.2	0.1	0.1	0.3	
			Delay	23.3	34.7	26.3	25.4	29.4	16.3	18.6	19.6	15.3	18.9	21.3	22.0	28.3
Walnut St. at Pine St.	AM	Signal	LOS	B	C	C	C	B	B	B	A	A	n/a ¹	n/a ¹	n/a ¹	B
			v/c	0.0	0.8	0.8	0.0	0.5	0.5	0.3	0.0	0.0	n/a ¹	n/a ¹	n/a ¹	
			Delay	17.2	21.5	21.7	24.6	14.7	14.7	11.5	0.0	0.0	n/a ¹	n/a ¹	n/a ¹	17.9
	PM		LOS	C	C	C	C	B	n/a ¹	B	A	A	A	A	A	B
			v/c	0.0	0.8	0.8	0.0	0.8	n/a ¹	0.4	0.0	0.0	0.1	0.0	0.0	
			Delay	24.0	22.0	22.0	25.1	19.6	n/a ¹	11.4	0.0	0.0	7.8	0.0	0.0	19.8

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 29: Intersection Analysis – 2040 Alternative 4 (Signals) – SimTraffic

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
26th St. at Pine St.	AM	Signal	LOS	B	B	A	B	B	A	B	B	A	B	B	A	B
			Delay	15.1	17.9	2.8	12.4	14.1	6.7	15.8	16.9	5.0	18.7	17.5	4.0	14.6
	PM		LOS	B	B	A	B	B	B	B	B	A	B	B	A	B
			Delay	14.7	14.7	3.0	16.4	19.4	14.9	18.2	15.5	3.6	18.9	18.1	5.1	14.9
Caddo St. at Pine St.	AM	Signal	LOS				C		A		A		n/a ¹	A		A
			Delay				17.7		2.9		0.9		n/a ¹	7.9		7.1
	PM		LOS				C		A		A		B	B		A
			Delay				16.7		2.4		2.1		10.5	11.1		9.7
Bypass at Pine St.	AM	One-Way Stop	LOS	C	C	A	C	C	A	A	C	A	B	A	A	B
			Delay	25.9	22.1	3.1	30.3	29.6	7.6	7.4	20.4	5.1	18.0	3.1	2.9	13.2
	PM		LOS	C	C	A	D	B	A	A	C	A	D	A	A	C
			Delay	32.9	27.9	3.1	45.8	11.5	9.4	9.0	23.4	2.0	37.6	3.6	3.5	20.6
I-30 NB Ramps / Professional Park Dr. at Pine St.	AM	Signal	LOS	F	F	B	C	B	A	C	C	B	C	D	A	D
			Delay	90.2	95.2	10.4	24.3	17.4	4.4	31.3	25.3	14.6	32.0	38.8	6.6	49.8
	PM		LOS	E	E	B	C	B	A	C	D	A	C	B	A	C
			Delay	65.5	72.9	11.4	27.2	16.6	3.9	24.0	35.7	10.0	23.8	19.8	7.5	33.8
Walnut St. at Pine St.	AM	Signal	LOS	E	B	B	E	B	n/a ²	B	A	A	n/a ¹	n/a ¹	n/a ¹	B
			Delay	59.6	17.5	15.8	58.5	18.2	n/a ²	11.3	9.7	7.5	n/a ¹	n/a ¹	n/a ¹	16.7
	PM		LOS	E	B	C	E	C	n/a ¹	B	D	A	A	B	A	C
			Delay	57.5	19.2	21.0	57.5	24.7	n/a ¹	11.9	36.2	7.1	8.5	12.0	9.1	20.3

¹No Volume modeled making this movement²Low volume modeled making this movement

Table 30: Intersection Analysis – 2040 Alternative 4 (Roundabouts) – HCM

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
26th St. at Pine St.	AM	Signal	LOS	A	B	A	A	A	B	C	A	B	F	A	B	C
			v/c	0.1	0.5	0.0	0.1	0.0	0.4	0.4	0.0	0.1	1.0	0.0	0.3	
			Delay	9.0	14.1	9.8	9.2	0.0	13.4	22.2	0.0	15.7	88.3	0.0	17.3	26.8
	PM		LOS	B	B	B	B	A	C	C	A	B	F	A	B	C
			v/c	0.3	0.4	0.1	0.1	0.0	0.7	0.5	0.0	0.1	1.1	0.0	0.3	
			Delay	12.3	13.3	10.3	10.1	0.0	21.5	25.5	0.0	16.0	103.6	0.0	18.0	29.2
Pine St. at Caddo St.	AM	Signal	LOS				C		C		A		A	A		A
			v/c				0.8		0.0		0.2		0.0	0.2		
			Delay				29.6		21.0		3.6		3.9	3.5		9.3
	PM		LOS				C		B		A		A	A		B
			v/c				0.9		0.1		0.2		0.0	0.3		
			Delay				26.2		17.1		5.8		6.5	6.1		11.5
Bypass at Pine St.	AM	Roundabout	LOS	A			A			A			A			A
			v/c	0.7			0.3			0.3			0.0			
			Delay	7.0			6.1			7.5			6.7			6.5
	PM		LOS	A			A			A			A			A
			v/c	0.0			0.5			0.1			0.4			
			Delay	6.6			8.2			7.3			6.5			7.4
I-30 NB Ramps / Professional Park Dr. at Pine St.	AM	Roundabout	LOS	A			A			C			A			A
			v/c	0.5			0.5			0.5			0.1			
			Delay	9.2			8.5			16.1			7.2			9.7
	PM		LOS	B			B			B			C			B
			v/c	0.6			0.6			0.4			0.6			
			Delay	10.7			10.1			11.8			23.9			11.7
Walnut St. at Pine St.	AM	Signal	LOS	B	C	C	C	B	B	B	A	A	n/a ¹	n/a ¹	n/a ¹	B
			v/c	0.0	0.8	0.8	0.0	0.5	0.5	0.3	0.0	0.0	n/a ¹	n/a ¹	n/a ¹	
			Delay	17.2	22.5	22.8	24.6	14.7	14.7	11.5	0.0	0.0	n/a ¹	n/a ¹	n/a ¹	18.5
	PM		LOS	C	C	C	C	B	n/a ¹	B	A	A	A	A	A	C
			v/c	0.1	0.8	0.8	0.0	0.8	n/a ¹	0.4	0.2	0.5	0.1	0.0	0.0	
			Delay	24.1	24.7	25.1	25.1	19.6	n/a ¹	11.4	0.0	0.0	7.8	0.0	0.0	20.4

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 31: Intersection Analysis – 2040 Alternative 4 (Roundabouts) – SIDRA

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall				
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right					
26th St. at Pine St.	AM	Signal	LOS	B	B	A	B	B	A	B	B	A	B	B	A	B				
			Delay	18.1	18.5	2.9	16.2	16.7	8.0	17.1	11.9	4.6	16.3	17.4	4.2	15.0				
	PM		LOS	B	B	A	B	C	B	B	B	A	B	B	A	B				
			Delay	14.9	16.7	5.0	17.8	23.4	19.1	18.0	18.8	3.6	19.5	17.6	4.0	17.0				
Caddo St. at Pine St.	AM	Signal	LOS				C			A			A	A			A			
			Delay				23.5			3.1			0.8			7.6	6.3			7.9
	PM		LOS				B			A			A			B	B			B
			Delay				17.0			2.5			1.9			15.2	13.3			10.6
Walnut St. at Pine St.	AM	Signal	LOS	C	B	B	E	B	B	B	B	A	n/a ¹	n/a ¹	n/a ¹	B				
			Delay	21.3	14.4	11.4	59.3	15.5	18.6	10.1	18.7	6.7	n/a ¹	n/a ¹	n/a ¹	13.9				
	PM		LOS	E	B	B	D	B	n/a ¹	B	n/a ²	A	A	A	A	B				
			Delay	55.1	15.6	14.6	50.4	19.1	n/a ¹	12.1	n/a ²	7.3	6.6	4.8	3.7	16.2				
Bypass at Pine St.	AM	Roundabout	LOS	A			A			A			A			A				
			Delay	5.3			5.3			7.6			5.0			5.6				
	PM		LOS	A			A			A			A			A				
			Delay	6.0			7.1			5.6			7.3			6.5				
I-30 NB Ramps / Professional Park Dr. at Pine St.	AM	Roundabout	LOS	A			A			B			A			A				
			Delay	7.6			7.0			11.7			6.2			7.8				
	PM		LOS	A			A			A			B			A				
			Delay	8.5			8.1			9.3			15.5			9.0				

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 32: Intersection Analysis – 2040 New Interchange – HCM

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
26th St. at Pine St.	AM	Signal	v/c	0.1	0.5	0.0	0.1	0.0	0.4	0.4	0.0	0.1	1.0	0.0	0.3	
			Delay	9.0	14.2	9.8	9.2	0.0	13.4	22.2	0.0	15.7	88.3	0.0	17.3	26.8
	PM		LOS	B	B	B	A	A	B	C	A	B	F	A	B	C
			v/c	0.3	0.4	0.1	0.1	0.0	0.7	0.5	0.0	0.1	1.1	0.0	0.3	
			Delay	10.9	13.2	10.2	9.6	0.0	19.8	25.6	0.0	16.0	103.7	0.0	18.1	28.6
Pine St. at Caddo St.	AM	Signal	LOS				C		C		A		A	A		A
			v/c				0.8		0.0		0.2		0.0	0.2		
			Delay				29.6		21.0		3.6		3.9	3.5		9.3
	PM		LOS				C		B		A		A	A		B
			v/c				0.9		0.1		0.2		0.0	0.3		
			Delay				28.2		17.2		5.7		6.4	6.1		12.0
Walnut St. at Pine St. / Driveway	AM	Signal	LOS	A	A	A	A	A	A	B	A	A	n/a ¹	n/a ¹	n/a ¹	A
			v/c	0.0	0.5	0.5	0.0	0.3	0.3	0.6	0.0	0.0	n/a ¹	n/a ¹	n/a ¹	
			Delay	6.3	8.1	8.2	9.1	6.0	6.0	19.2	0.0	0.0	n/a ¹	n/a ¹	n/a ¹	9.1
	PM		LOS	B	A	A	B	A	n/a ¹	B	A	A	B	A	A	B
			v/c	0.0	0.5	0.5	0.0	0.5	0.0	0.6	0.0	0.0	0.1	0.0	0.0	
			Delay	10.1	9.5	9.7	10.5	8.2	n/a ¹	18.1	0.0	0.0	13.5	0.0	0.0	10.4
Red Hill Rd. / Professional Park Dr. at Pine St.	AM	Signal	LOS	A	A	A	A	A	A	C	C	C	C	C	C	A
			v/c	0.4	0.4	0.0	0.0	0.4	0.1	0.0	0.1	0.1	0.1	0.1	0.5	
			Delay	3.7	2.4	1.4	4.3	6.0	4.5	26.6	26.4	26.5	26.9	26.4	31.2	5.1
	PM		LOS	A	A	A	A	B	A	C	C	C	C	C	C	B
			v/c	0.2	0.4	0.0	0.0	0.7	0.1	0.0	0.0	0.0	0.1	0.0	0.8	
			Delay	7.7	5.1	3.4	6.7	11.8	7.0	20.3	20.1	20.1	21.0	20.1	29.4	10.9
I-30 NB Ramps at Pine St.	AM	Signal	LOS	A	A			A	A	C	A	C				A
			v/c	0.3	0.5			0.4	0.2	0.3	0.0	0.7				
			Delay	5.2	4.6			8.7	7.3	21.2	0.0	26.9				8.2
	PM		LOS	A	A			A	A	D	A	C				A
			v/c	0.6	0.3			0.6	0.2	0.7	0.0	0.6				
			Delay	7.7	2.6			7.6	5.5	35.8	0.0	34.8				7.6

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 33: Intersection Analysis – 2040 New Interchange – SimTraffic

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
26th St. at Pine St.	AM	Signal	LOS	B	A	A	B	B	A	B	B	A	B	B	A	A
			Delay	10.1	7.0	2.8	12.5	10.4	9.7	17.4	17.3	4.1	19.2	14.0	3.4	9.7
	PM		LOS	B	A	A	B	B	B	B	B	A	B	B	A	B
			Delay	12.0	5.9	2.5	16.1	14.3	10.3	15.3	12.7	3.8	18.1	15.8	4.8	11.2
Caddo St. at Pine St.	AM	Signal	LOS				C		A		A		n/a ²	A		A
			Delay				21.5		2.8		5.1		n/a ²	3.2		8.1
	PM		LOS				B		A		A		A	A		A
			Delay				16.5		3.2		6.1		5.7	4.7		8.6
Walnut St. at Pine St. / Driveway	AM	Signal	LOS	n/a ¹	A	A	B	A	n/a ²	B	n/a ²	A	n/a ¹	n/a ¹	n/a ¹	A
			Delay	n/a ¹	5.5	4.2	19.7	4.4	n/a ²	17.5	n/a ²	10.0	n/a ¹	n/a ¹	n/a ¹	7.0
	PM		LOS	B	A	A	n/a ²	A	n/a ¹	B	n/a ²	A	B	B	A	A
			Delay	12.6	6.2	5.6	n/a ²	5.2	n/a ¹	16.2	n/a ²	9.4	14.4	16.0	5.2	7.4
Red Hill Rd. / Professional Park Dr. at Pine St.	AM	Signal	LOS	A	A	A	A	A	A	B	C	A	C	n/a ²	A	A
			Delay	8.4	1.6	2.2	8.5	2.7	2.2	19.6	24.7	2.1	27.6	n/a ²	4.0	3.3
	PM		LOS	B	A	n/a ²	B	A	A	B	C	A	C	C	A	B
			Delay	10.2	3.2	2.4	10.7	5.0	2.4	19.1	23.6	0.7	25.3	22.2	8.5	12.0
I-30 NB Ramps at Pine St.	AM	Signal	LOS	A	A			A	A	B	C	A				A
			Delay	6.7	2.0			3.5	1.8	19.9	26.9	7.0				3.8
	PM		LOS	B	A			A	A	C	n/a ¹	A				A
			Delay	11.5	3.1			7.1	4.8	32.2	n/a ¹	4.7				7.2

¹No Volume modeled making this movement²Low volume modeled making this movement**2040 Intersection Analysis, Eastern Alternative Conditions**

The results from the eastern intersection analyses are shown in **Table 34** through **Table 37**. The complete results are provided in **Appendix B - Intersection Operational Analysis Results**.

The results of the operational analysis of the Eastern Action Alternatives indicate similar delays for each scenario. Generally, the overall intersection LOS for the intersections on the eastern end of study area operate acceptably during AM and PM peak hours.

Table 34: Intersection Analysis – 2040 Alternative E and F – HCM

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Hwy 67 at Siplast Rd.	AM	One-Way Stop	LOS	n/a ¹						A	n/a ²			n/a ²	n/a ²	A
			v/c	n/a ¹						0.0	n/a ²			n/a ²	n/a ²	
			Delay	n/a ¹						7.4	n/a ²			n/a ²	0.0	
	PM		LOS	B			A	n/a ²		n/a ²	n/a ²	A				
			v/c	0.0			0.0	n/a ²		n/a ²	n/a ²					
			Delay	11.4			7.8	n/a ²		n/a ²	n/a ²	0.2				
Hwy 67 at W Walnut St.	AM	One-Way Stop	LOS	C						A	n/a ²		n/a ³	n/a ³	A	
			v/c	0.4						0.0	n/a ²		n/a ³	n/a ³		
			Delay	15.6						7.5	n/a ²		n/a ³	n/a ³	5.7	
	PM		LOS	C			A	n/a ²		n/a ³	n/a ³	A				
			v/c	0.5			0.1	n/a ²		n/a ³	n/a ³					
			Delay	19.8			7.8	n/a ²		n/a ³	n/a ³	5.9				
Hwy 67/ Walnut St. at Hwy 67 / 6th St.	AM	One-Way Stop	LOS	n/a ²	n/a ²		B						A		n/a ²	A
			v/c	n/a ²	n/a ²		0.1	0.0	n/a ²							
			Delay	n/a ²	n/a ²		12.2	8.1	n/a ²				1.2			
	PM		LOS	n/a ²	n/a ²	B			A		n/a ²	A				
			v/c	n/a ²	n/a ²	0.2	0.0	n/a ²								
			Delay	n/a ²	n/a ²	14.2	7.8	n/a ²	n/a ²		2.0					
Hwy 67 / 6th St. at Hwy 67 / Caddo St.	AM	Two-Way Stop	LOS	A	n/a ²	n/a ²	A	n/a ²	n/a ²	C			C			A
			v/c	0.0	n/a ²	n/a ²	0.0	n/a ²	n/a ²	0.3	0.1					
			Delay	7.8	n/a ²	n/a ²	8.0	n/a ²	n/a ²	17.3	16.0	4.1				
	PM		LOS	A	n/a ²	n/a ²	A	n/a ²	n/a ²	E			C			B
			v/c	0.0	n/a ²	n/a ²	0.0	n/a ²	n/a ²	0.7	0.3					
			Delay	8.0	n/a ²	n/a ²	8.2	n/a ²	n/a ²	43.9	20.9	11.0				
Caddo St. at S 3rd St.	AM	One-Way Stop	LOS		n/a ²	n/a ²	A	n/a ²		B						A
			v/c		n/a ²	n/a ²	0.0	n/a ²		0.1						
			Delay		n/a ²	n/a ²	7.6	n/a ²		11.5	1.3					
	PM		LOS		n/a ²	n/a ²	A	n/a ²	B			A				
			v/c		n/a ²	n/a ²	0.0	n/a ²	0.1							
			Delay		n/a ²	n/a ²	8.0	n/a ²	14.2	2.0						
Caddo St. at S 1st St.	AM	Signal	LOS	A	n/a ²	n/a ²	A	n/a ²	n/a ²	B			B			A
			v/c	0.0	n/a ²	n/a ²	0.1	n/a ²	n/a ²	0.1	0.0					
			Delay	7.7	n/a ²	n/a ²	7.6	n/a ²	n/a ²	10.1	11.9	3.1				
	PM		LOS	A	n/a ²	n/a ²	A	n/a ²	n/a ²	B			B			A
			v/c	0.0	n/a ²	n/a ²	0.0	n/a ²	n/a ²	0.1	0.1					
			Delay	7.7	n/a ²	n/a ²	7.6	n/a ²	n/a ²	10.2	12.4	6.5				
Hwy 67/ Caddo St. at 10th St.	AM	Signal	LOS	B	A	A	C	A	A	A	A	A	A	A	A	A
			v/c	0.4	0.0	0.0	0.6	0.0	0.0	0.1	0.0	0.0	0.4	0.0	0.0	
			Delay	18.1	0.0	0.0	20.4	0.0	0.0	4.0	0.0	0.0	0.9	0.0	0.0	10.0
	PM		LOS	B	A	A	C	A	A	A	A	A	A	A	A	B
			v/c	0.3	0.0	0.0	0.8	0.0	0.0	0.2	0.0	0.0	0.5	0.0	0.0	
			Delay	13.2	0.0	0.0	21.4	0.0	0.0	7.5	0.0	0.0	4.3	0.0	0.0	12.7

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 34 (Continued): Intersection Analysis – 2040 Alternative E and F – HCM

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10th St. at Pine St.	AM	Signal	LOS	C	A	B	n/a ¹	A	B	A	A	A	A	A	A	B
			v/c	0.3	0.0	0.6	n/a ¹	0.0	0.4	0.1	0.0	0.1	0.4	0.0	0.0	
			Delay	20.7	0.0	18.9	n/a ¹	0.0	17.8	0.2	0.0	0.3	6.3	0.0	0.0	10.8
	PM		LOS	B	A	B	B	A	A	A	A	A	A	A	A	A
			v/c	0.4	0.0	0.5	0.7	0.0	0.0	0.1	0.0	0.3	0.4	0.0	0.0	
			Delay	18.3	0.0	17.7	19.9	0.0	0.0	0.4	0.0	0.8	6.9	0.0	0.0	10.0
12th St. at Pine St.	AM	Signal	LOS	n/a ¹	A	B	n/a ¹	A	B	A	A	A	n/a ¹	A	A	B
			v/c	n/a ¹	0.0	0.8	n/a ¹	0.0	0.5	0.3	0.0	0.0	n/a ¹	0.0	0.1	
			Delay	n/a ¹	0.0	15.4	n/a ¹	0.0	11.8	7.7	0.0	0.0	n/a ¹	0.0	6.5	11.8
	PM		LOS	B	A	A	B	A	A	A	A	A	n/a ¹	A	A	B
			v/c	0.5	0.0	0.0	0.7	0.0	0.0	0.1	0.0	0.0	n/a ¹	0.0	0.2	
			Delay	12.8	0.0	0.0	13.9	0.0	0.0	6.1	0.0	0.0	n/a ¹	0.0	6.7	11.7

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 35: Intersection Analysis – 2040 Alternative E and F – SimTraffic

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Hwy 67 at Siplast Rd.	AM	One-Way Stop	LOS	n/a ¹		n/a ¹				A	A			A	A	A
			Delay	n/a ¹		n/a ¹				2.5	1.1			2.0	2.8	1.4
	PM	One-Way Stop	LOS	A		A				A	A			A	n/a ²	A
			Delay	5.7		2.4				4.0	1.0			3.0	n/a ²	2.1
Hwy 67 at W Walnut St.	AM	One-Way Stop	LOS	A		A				A	A			A	A	A
			Delay	7.5		2.5				3.5	2.4			1.6	1.9	3.8
	PM	One-Way Stop	LOS	B		A				A	A			A	A	A
			Delay	10.3		3.5				3.6	2.4			2.9	2.4	4.0
Hwy 67/ Walnut St. at Hwy 67 / 6th St.	AM	One-Way Stop	LOS	A	A			A	A				A		A	A
			Delay	1.2	1.4			7.7	3.1				1.6		1.8	1.6
	PM	One-Way Stop	LOS	A	A			A	A				A		A	A
			Delay	1.0	1.2			7.9	3.5				2.2		1.3	2.0
Hwy 67 / 6th St. at Hwy 67 / Caddo St.	AM	Two-Way Stop	LOS	A	A	A	A	A	A	A	A	A	A	A	n/a ¹	A
			Delay	4.4	2.6	2.1	3.9	0.8	0.4	7.1	8.8	5.7	9.8	8.2	n/a ¹	3.2
	PM	Two-Way Stop	LOS	A	A	A	A	A	A	B	B	A	A	B	A	A
			Delay	4.8	2.8	2.0	3.2	0.7	0.4	11.3	12.1	8.0	9.7	10.2	6.2	4.4
Caddo St. at S 3rd St.	AM	One-Way Stop	LOS		A	A	A	A		A		A				A
			Delay		0.6	0.3	2.7	0.5		5.1		3.3				0.9
	PM	One-Way Stop	LOS		A	A	A	A		A		A				A
			Delay		0.7	0.4	3.1	0.6		7.7		5.2				1.5
Caddo St. at S 1st St.	AM	Signal	LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
			Delay	2.6	0.3	0.1	3.0	1.7	1.8	6.9	8.3	2.9	6.6	7.1	2.4	2.0
	PM	Signal	LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
			Delay	2.4	0.3	0.3	3.4	2.5	0.9	5.8	6.8	3.0	5.0	6.8	2.3	2.6
Hwy 67/ Caddo St. at 10th St.	AM	Signal	LOS	C	B	B	A	B	A	A	A	A	A	A	A	B
			Delay	22.1	18.5	12.2	9.5	18.9	9.6	4.9	4.4	1.5	6.4	5.8	3.5	10.8
	PM	Signal	LOS	C	B	A	B	B	B	A	A	A	A	A	A	B
			Delay	22.0	18.0	8.8	19.1	19.9	11.9	6.5	5.9	2.1	8.5	8.1	5.6	12.2
10th St. at Pine St.	AM	Signal	LOS	C	C	B	n/a ¹	B	A	B	A	A	A	A	A	B
			Delay	25.4	22.0	12.5	n/a ¹	17.2	6.5	10.1	3.0	0.4	7.2	6.8	4.5	10.9
	PM	Signal	LOS	C	B	B	B	B	B	B	A	A	A	A	A	B
			Delay	27.4	18.8	12.3	19.7	16.9	10.2	13.6	5.4	2.6	9.2	8.9	6.4	11.9
12th St. at Pine St.	AM	Signal	LOS	n/a ¹	B	A	n/a ¹	B	A	n/a ²	A	A	n/a ¹	A	A	A
			Delay	n/a ¹	13.6	8.1	n/a ¹	10.6	5.8	n/a ²	6.9	4.2	n/a ¹	5.6	3.2	9.5
	PM	Signal	LOS	B	B	A	B	B	A	n/a ²	A	A	n/a ¹	A	A	B
			Delay	15.2	11.9	7.8	10.8	12.9	7.6	n/a ²	6.9	3.9	n/a ¹	7.1	3.8	10.7

¹No Volume modeled making this movement²Low volume modeled making this movement

Table 36: Intersection Analysis – 2040 Alternative G – HCM

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Hwy 67 at Siplast Rd.	AM	One-Way Stop	LOS	n/a ¹						A	n/a ²			n/a ²	n/a ²	A
			v/c	n/a ¹						0.0	n/a ²			n/a ²	n/a ²	
			Delay	n/a ¹						7.4	n/a ²			n/a ²	0.0	
	PM		LOS	B			A	n/a ²		n/a ²	n/a ²	A				
			v/c	0.0			0.0	n/a ²		n/a ²	n/a ²					
			Delay	11.4			7.8	n/a ²		n/a ²	0.2					
Hwy 67 at W Walnut St.	AM	One-Way Stop	LOS	C						A	n/a ²		n/a ³	n/a ³	A	
			v/c	0.4						0.0	n/a ²		n/a ³	n/a ³		
			Delay	15.6						7.5	n/a ²		n/a ³	n/a ³	5.7	
	PM		LOS	C			A	n/a ²		n/a ³	n/a ³	A				
			v/c	0.5			0.1	n/a ²		n/a ³	n/a ³					
			Delay	19.8			7.8	n/a ²		n/a ³	n/a ³	5.9				
Hwy 67/ Walnut St. at Hwy 67 / 6th St.	AM	One-Way Stop	LOS	n/a ²	n/a ²		B						A		n/a ²	A
			v/c	n/a ²	n/a ²		0.1	0.0	n/a ²							
			Delay	n/a ²	n/a ²		12.2	8.1	n/a ²				1.2			
	PM		LOS	n/a ²	n/a ²	B			A		n/a ²	A				
			v/c	n/a ²	n/a ²	0.2	0.0	n/a ²								
			Delay	n/a ²	n/a ²	14.2	7.8	n/a ²	n/a ²		2.0					
Hwy 67 / 6th St. at Hwy 67 / Caddo St.	AM	Two-Way Stop	LOS	A	n/a ²	n/a ²	A	n/a ²	n/a ²	C			C			A
			v/c	0.0	n/a ²	n/a ²	0.0	n/a ²	n/a ²	0.3	0.1					
			Delay	7.8	n/a ²	n/a ²	8.0	n/a ²	n/a ²	17.3	16.0	4.1				
	PM		LOS	A	n/a ²	n/a ²	A	n/a ²	n/a ²	E			C			B
			v/c	0.0	n/a ²	n/a ²	0.0	n/a ²	n/a ²	0.7	0.3					
			Delay	8.0	n/a ²	n/a ²	8.2	n/a ²	n/a ²	43.9	20.9	11.0				
Caddo St. at S 3rd St.	AM	One-Way Stop	LOS		n/a ²	n/a ²	A	n/a ²		B						A
			v/c		n/a ²	n/a ²	0.0	n/a ²		0.1						
			Delay		n/a ²	n/a ²	7.6	n/a ²		11.5	1.3					
	PM		LOS		n/a ²	n/a ²	A	n/a ²	B			A				
			v/c		n/a ²	n/a ²	0.0	n/a ²	0.1							
			Delay		n/a ²	n/a ²	8.0	n/a ²	14.2	2.0						
Caddo St. at S 1st St.	AM	Signal	LOS	A	n/a ²	n/a ²	A	n/a ²	n/a ²	B			B			A
			v/c	0.1	n/a ²	n/a ²	0.0	n/a ²	n/a ²	0.0	0.0					
			Delay	7.7	n/a ²	n/a ²	7.5	n/a ²	n/a ²	10.6	10.8	1.6				
	PM		LOS	A	n/a ²	n/a ²	A	n/a ²	n/a ²	B			B			A
			v/c	0.0	n/a ²	n/a ²	0.0	n/a ²	n/a ²	0.0	0.1					
			Delay	7.7	n/a ²	n/a ²	7.5	n/a ²	n/a ²	10.9	11.0	2.0				
Hwy 67/ Caddo St. at 10th St.	AM	Signal	LOS	B	A	A	C	A	A	A	A	A	A	A	A	A
			v/c	0.4	0.0	0.0	0.6	0.0	0.0	0.1	0.0	0.0	0.4	0.0	0.0	
			Delay	18.1	0.0	0.0	20.4	0.0	0.0	4.0	0.0	0.0	0.9	0.0	0.0	10.0
	PM		LOS	B	A	A	C	A	A	A	A	A	A	A	A	B
			v/c	0.3	0.0	0.0	0.8	0.0	0.0	0.2	0.0	0.0	0.5	0.0	0.0	
			Delay	13.2	0.0	0.0	21.4	0.0	0.0	7.5	0.0	0.0	4.3	0.0	0.0	12.7

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 36 (Continued): Intersection Analysis – 2040 Alternative G – HCM

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10th St. at Pine St.	AM	Signal	LOS	C	A	B	n/a ¹	A	B	A	A	A	A	A	A	B
			v/c	0.3	0.0	0.6	n/a ¹	0.0	0.4	0.1	0.0	0.1	0.4	0.0	0.0	
			Delay	20.7	0.0	18.9	n/a ¹	0.0	17.8	0.2	0.0	0.3	6.3	0.0	0.0	10.8
	PM		LOS	B	A	B	B	A	A	A	A	A	A	A	A	A
			v/c	0.4	0.0	0.5	0.7	0.0	0.0	0.1	0.0	0.3	0.4	0.0	0.0	
			Delay	18.3	0.0	17.7	19.9	0.0	0.0	0.4	0.0	0.8	6.9	0.0	0.0	10.0
12th St. at Pine St.	AM	Signal	LOS	n/a ¹	A	B	n/a ¹	A	B	A	A	A	n/a ¹	A	A	B
			v/c	n/a ¹	0.0	0.8	n/a ¹	0.0	0.5	0.3	0.0	0.0	n/a ¹	0.0	0.1	
			Delay	n/a ¹	0.0	15.4	n/a ¹	0.0	11.8	7.7	0.0	0.0	n/a ¹	0.0	6.5	11.8
	PM		LOS	B	A	A	B	A	A	A	A	A	n/a ¹	A	A	B
			v/c	0.5	0.0	0.0	0.7	0.0	0.0	0.1	0.0	0.0	n/a ¹	0.0	0.2	
			Delay	12.8	0.0	0.0	13.9	0.0	0.0	6.1	0.0	0.0	n/a ¹	0.0	6.7	11.7

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 37: Intersection Analysis – 2040 Alternative G – SimTraffic

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Hwy 67 at Siplast Rd.	AM	One-Way Stop	LOS	n/a ¹		n/a ¹				n/a ²	A			A	n/a ²	A
			Delay	n/a ¹		n/a ¹				n/a ²	1.1			2.2	n/a ²	1.5
	PM	One-Way Stop	LOS	n/a ²		n/a ²				n/a ²	A			A	n/a ²	A
			Delay	n/a ²		n/a ²				n/a ²	0.9			2.4	n/a ²	1.8
Hwy 67 at W Walnut St.	AM	One-Way Stop	LOS	A		A				A	A			A	A	A
			Delay	7.5		2.4				3.5	2.6			1.7	2.1	3.9
	PM	One-Way Stop	LOS	A		A				A	A			A	A	A
			Delay	9.1		2.6				3.7	2.6			2.4	2.3	3.9
Hwy 67/ Walnut St. at Hwy 67 / 6th St.	AM	One-Way Stop	LOS	A	A			A	A				n/a ²		A	A
			Delay	0.4	0.2			5.6	2.6				n/a ²		0.1	0.8
	PM	One-Way Stop	LOS	A	A			A	A				A		A	A
			Delay	1.1	1.2			7.5	3.4				1.1		1.2	2.0
Hwy 67 / 6th St. at Hwy 67 / Caddo St.	AM	Two-Way Stop	LOS	A	A	A	A	A	A	A	A	A	n/a ²	A	n/a ¹	A
			Delay	4.0	2.6	2.4	4.0	0.6	0.5	7.5	8.3	6.1	n/a ²	8.4	n/a ¹	3.1
	PM	Two-Way Stop	LOS	A	A	A	A	A	A	B	B	A	A	A	A	A
			Delay	4.9	2.6	2.1	4.5	0.5	0.2	11.4	14.2	8.5	7.3	9.1	3.5	4.4
Caddo St. at S 3rd St.	AM	One-Way Stop	LOS		A	A	A	A		A		A				A
			Delay		0.3	0.5	2.4	0.4		5.3		3.1				0.9
	PM	One-Way Stop	LOS		A	A	A	A		A		A				A
			Delay		0.5	0.4	2.5	0.5		5.3		5.2				1.2
Caddo St. at S 1st St.	AM	Signal	LOS	A	A	A	n/a ¹	A	A	A	A	n/a ¹	A	A	A	A
			Delay	0.0	0.2	0.2	n/a ¹	0.5	0.8	5.3	5.3	n/a ¹	5.0	4.9	3.2	1.3
	PM	Signal	LOS	A	A	A	n/a ¹	A	A	n/a ²	A	n/a ¹	A	A	A	A
			Delay	2.3	0.4	0.5	n/a ¹	1.0	0.5	n/a ²	10.0	n/a ¹	5.5	7.2	2.6	1.5
Hwy 67/ Caddo St. at 10th St.	AM	Signal	LOS	B	B	A	n/a ²	B	A	n/a ²	A	n/a ²	A	A	A	B
			Delay	12.0	19.0	9.4	n/a ²	18.8	9.2	n/a ²	5.1	n/a ²	6.2	6.4	4.2	10.8
	PM	Signal	LOS	C	C	A	n/a ²	C	B	A	A	A	A	A	A	B
			Delay	31.8	20.1	9.3	n/a ²	21.3	12.4	6.0	6.4	0.7	9.5	8.9	4.2	13.1
10th St. at Pine St.	AM	Signal	LOS	B	B	B	n/a ¹	B	A	B	A	n/a ²	A	A	A	B
			Delay	18.4	18.0	13.5	n/a ¹	19.0	8.7	10.8	4.3	n/a ²	10.0	6.3	4.4	10.4
	PM	Signal	LOS	C	B	B	n/a ²	B	B	B	A	A	B	A	A	B
			Delay	25.1	17.0	11.5	n/a ²	15.1	11.2	14.0	5.0	2.2	11.5	9.5	6.6	11.5
12th St. at Pine St.	AM	Signal	LOS	n/a ¹	B	A	n/a ¹	A	A	n/a ²	A	B	n/a ¹	A	A	A
			Delay	n/a ¹	14.7	7.4	n/a ¹	10.0	4.3	n/a ²	6.0	11.0	n/a ¹	5.1	3.3	9.4
	PM	Signal	LOS	n/a ²	B	A	n/a ²	B	A	n/a ²	A	A	n/a ¹	A	A	A
			Delay	n/a ²	11.5	6.4	n/a ²	10.7	7.4	n/a ²	6.6	1.1	n/a ¹	6.6	3.7	9.6

¹No Volume modeled making this movement²Low volume modeled making this movement

2040 Intersection Analysis, Highway 67 Improvement Alternative Condition

In addition to analyzing bypass alternatives, a Highway 67 improvement alternative (Alternative D) was also evaluated. The improved alignment extends north from west of the intersection of Highway 67 and Walnut Street toward the intersection of Caddo Street with 10th Street. Future traffic volumes for the Highway 67 Improvement Alternative are shown in **Figure 16**. The intersection analyses are shown in **Table 38** through **Table 39**. The overall intersection LOS for the study area intersections on the eastern end of study area operate acceptably during AM and PM peak hours with Alternative D improvements. The complete results are provided in **Appendix B - Intersection Operational Analysis Results**.

Figure 16: 2040 Highway 67 Improvement – Alternative D Volumes

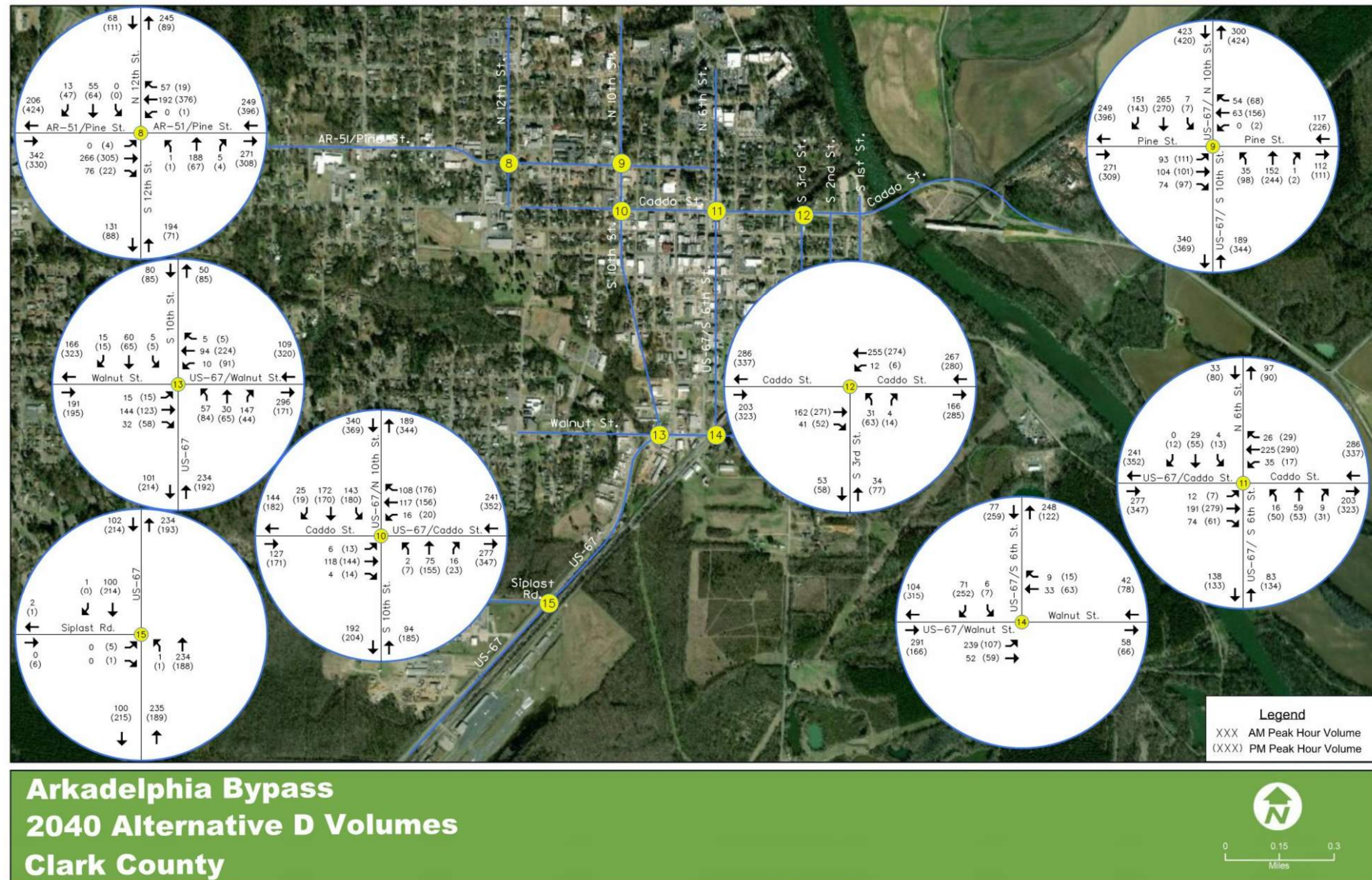


Table 38: Intersection Analysis – 2040 Alternative D – HCM

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Hwy 67 at Siplast Rd.	AM	One-Way Stop	LOS	n/a ¹						A	n/a ²			n/a ²	n/a ²	A
			v/c	n/a ¹						0.0	n/a ²			n/a ²	n/a ²	
			Delay	n/a ¹						7.5	n/a ²			n/a ²	0.0	
	PM		LOS	B						A	n/a ²	n/a ²		n/a ²	A	
	v/c		0.0			0.0				n/a ²	n/a ²	n/a ²				
	Delay		11.6			7.8				n/a ²	n/a ²	n/a ²		0.2		
Hwy 67 at W Walnut St.	AM	Signal	LOS	C			B			A			A			B
			v/c	0.6			0.4			0.3			0.1			
			Delay	21.1			19.6			4.4			3.3			11.6
	PM		LOS	B			B			A			A			B
	v/c		0.4			0.7			0.3			0.1				
	Delay		14.8			17.9			7.7			6.5			13.5	
Hwy 67/ Walnut St. at Hwy 67 / 6th St.	AM	One-Way Stop	LOS	n/a ²	n/a ²		B						A		n/a ²	A
			v/c	n/a ²	n/a ²		0.1	0.0	n/a ²							
			Delay	n/a ²	n/a ²		11.6	8.0	n/a ²				1.3			
	PM		LOS	n/a ²	n/a ²		B						A	n/a ²	A	
	v/c		n/a ²	n/a ²	0.2		0.0	n/a ²								
	Delay		n/a ²	n/a ²	12.7		7.7	n/a ²	2.1							
Hwy 67 / 6th St. at Hwy 67 / Caddo St.	AM	Two-Way Stop	LOS	A	n/a ²	n/a ²	A	n/a ²	n/a ²	C			C			A
			v/c	0.0	n/a ²	n/a ²	0.0	n/a ²	n/a ²	0.3			0.1			
			Delay	7.9	n/a ²	n/a ²	8.1	n/a ²	n/a ²	19.9			18.3			3.9
	PM		LOS	A	n/a ²	n/a ²	A	n/a ²	n/a ²	D			C			A
	v/c		0.0	n/a ²	n/a ²	0.0	n/a ²	n/a ²		0.6			0.3			
	Delay		8.1	n/a ²	n/a ²	8.2	n/a ²	n/a ²	34.2			24.1			7.5	
Caddo St. at S 3rd St.	AM	One-Way Stop	LOS		n/a ²	n/a ²	A	n/a ²		B						A
			v/c		n/a ²	n/a ²	0.0	n/a ²		0.1						
			Delay		n/a ²	n/a ²	7.8	n/a ²		13.0	1.1					
	PM		LOS		n/a ²	n/a ²	A	n/a ²		C						A
	v/c		n/a ²		n/a ²	0.0	n/a ²	0.2								
	Delay		n/a ²		n/a ²	8.2	n/a ²	16.2		1.9						
Hwy 67/ Caddo St. at 10th St.	AM	Signal	LOS	B	A	A	B	A	A	A	A	A	A	A	A	A
			v/c	0.3	0.0	0.0	0.7	0.0	0.0	0.1	0.0	0.0	0.4	0.0	0.0	
			Delay	16.3	0.0	0.0	19.5	0.0	0.0	5.0	0.0	0.0	1.2	0.0	0.0	9.5
	PM		LOS	B	A	A	C	A	A	A	A	A	A	A	B	
	v/c		0.4	0.0	0.0	0.8	0.0	0.0	0.3	0.0	0.0	0.6	0.0	0.0		
	Delay		13.4	0.0	0.0	20.7	0.0	0.0	8.1	0.0	0.0	4.7	0.0	0.0	11.9	

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 38 (Continued): Intersection Analysis – 2040 Alternative D – HCM

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10th St. at Pine St.	AM	Signal	LOS	C	A	C	n/a ¹	A	B	A	A	A	A	A	A	B
			v/c	0.4	0.0	0.6	n/a ¹	0.0	0.4	0.1	0.0	0.2	0.5	0.0	0.0	
			Delay	20.4	0.0	18.3	n/a ¹	0.0	17.2	0.2	0.0	0.4	8.1	0.0	0.0	10.7
	PM		LOS	B	A	B	B	A	A	A	A	A	A	A	A	B
			v/c	0.4	0.0	0.7	0.6	0.0	0.0	0.2	0.0	0.3	0.5	0.0	0.0	
			Delay	18.5	0.0	19.0	19.3	0.0	0.0	0.7	0.0	0.8	8.2	0.0	0.0	10.7
12th St. at Pine St.	AM	Signal	LOS	n/a ¹	A	B	n/a ¹	A	B	A	A	A	n/a ¹	A	A	B
			v/c	n/a ¹	0.0	0.8	n/a ¹	0.0	0.6	0.3	0.0	0.0	n/a ¹	0.0	0.1	
			Delay	n/a ¹	0.0	15.8	n/a ¹	0.0	12.8	8.0	0.0	0.0	n/a ¹	0.0	6.8	12.4
	PM		LOS	B	A	A	B	A	A	A	A	A	n/a ¹	A	A	B
			v/c	0.6	0.0	0.0	0.7	0.0	0.0	0.1	0.0	0.0	n/a ¹	0.0	0.2	
			Delay	12.5	0.0	0.0	13.9	0.0	0.0	7.7	0.0	0.0	n/a ¹	0.0	8.4	12.2

¹No volume modeled making this movement²Free movement³HCM methodology does not calculate LOS due to unconventional configuration

Table 39: Intersection Analysis – 2040 Alternative D – *SimTraffic*

Intersection	Time Period	Control	MOE	EB Movement			WB Movement			NB Movement			SB Movement			Overall
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Hwy 67 at Siplast Rd.	AM	One-Way Stop	LOS	n/a ¹		n/a ¹				A				A		A
			Delay	n/a ¹		n/a ¹				0.9				2.2		1.3
	PM	One-Way Stop	LOS	A		A				A				A		A
			Delay	2.6		1.0				0.6				1.7		1.2
Hwy 67 at W Walnut St.	AM	Signal	LOS	B	C	B	B	B	A	A	A	A	A	A	A	B
			Delay	19.5	20.9	11.2	11.3	17.3	5.9	6.5	5.3	4.6	7.3	5.8	3.2	11.0
	PM	Signal	LOS	B	B	A	B	B	B	B	A	A	B	A	A	B
			Delay	19.0	13.6	7.1	17.4	17.4	15.4	10.2	9.2	4.1	10.9	9.0	5.0	13.0
Hwy 67/ Walnut St. at Hwy 67 / 6th St.	AM	One-Way Stop	LOS	A	A			A	A				A		A	A
			Delay	0.5	0.9			6.6	2.9				4.6		2.2	1.4
	PM	One-Way Stop	LOS	A	A			A	A				A		A	A
			Delay	0.4	0.6			8.2	3.7				2.8		1.7	2.4
Hwy 67 / 6th St. at Hwy 67 / Caddo St.	AM	Two-Way Stop	LOS	A	A	A	A	A	A	B	B	A	A	A	n/a ¹	A
			Delay	3.4	2.2	1.7	3.1	1.8	0.8	11.0	10.5	5.1	5.5	8.1	n/a ¹	3.4
	PM	Two-Way Stop	LOS	A	A	A	A	A	A	C	B	A	B	B	B	A
			Delay	8.9	2.4	2.2	3.0	1.7	1.1	15.7	13.3	6.6	10.2	14.3	12.8	4.4
Caddo St. at S 3rd St.	AM	One-Way Stop	LOS		A	A	A	A		A		A				A
			Delay		0.9	0.6	4.6	2.2		5.3		2.8				1.9
	PM	One-Way Stop	LOS		A	A	A	A		A		A				A
			Delay		1.4	1.1	4.8	2.3		7.2		5.3				2.4
Hwy 67/ Caddo St. at 10th St.	AM	Signal	LOS	B	B	A	C	C	B	n/a ²	A	A	A	A	A	B
			Delay	11.5	14.6	3.3	22.0	21.7	13.2	n/a ²	3.3	1.7	7.0	5.4	3.3	10.5
	PM	Signal	LOS	C	B	A	B	C	B	A	A	A	B	B	B	B
			Delay	30.7	17.3	9.1	19.9	22.0	15.6	6.1	5.8	3.8	12.8	10.8	11.0	14.2
10th St. at Pine St.	AM	Signal	LOS	C	C	B	n/a ¹	B	A	B	A	n/a ²	B	A	A	B
			Delay	26.3	22.5	11.6	n/a ¹	17.2	6.7	15.6	3.3	n/a ²	10.7	8.8	5.8	11.4
	PM	Signal	LOS	C	B	B	n/a ²	B	A	B	A	A	B	B	A	B
			Delay	25.6	18.3	13.5	n/a ²	15.1	7.9	18.8	6.5	4.2	13.2	12.2	8.5	13.2
12th St. at Pine St.	AM	Signal	LOS	n/a ¹	B	A	n/a ¹	A	A	n/a ²	A	A	n/a ¹	A	A	A
			Delay	n/a ¹	11.5	8.6	n/a ¹	9.5	5.6	n/a ²	9.0	3.6	n/a ¹	7.4	3.2	9.3
	PM	Signal	LOS	B	B	A	n/a ²	B	A	A	A	A	n/a ¹	B	A	B
			Delay	17.1	12.6	7.5	n/a ²	12.8	7.8	1.8	8.3	1.1	n/a ¹	10.7	6.9	11.6

¹No Volume modeled making this movement²Low volume modeled making this movement

2040 Roadway Segment Analysis, Alternative Conditions

The roadway segment of the proposed bypass was also analyzed using the *HCS* two-lane highway module. Based on the volume data, a peak hour factor of 0.82 was utilized for the AM peak and a peak hour factor of 0.86 was utilized for the PM peak. From the previous study, the Alternative 3 and Alternative 7 bypass was projected to carry 4% heavy vehicles. This same percentage was used for in this study.

For the existing interchange bypass alternative analysis, the bypass was broken into four segments. Segment 1, between Pine Street and Walnut Street, was estimate to be approximately 0.4 miles in length with a base free flow speed for 45 mph based on the posted speed limit plus 10 mph according to *HCM* methodology. Between Walnut Street and near 13th Street, Bypass Segment 2 was estimated to be approximately 1.5 miles long with a base free flow speed of 55 mph. The third segment, between 13th Street and Clay Street, was estimated to be approximately 2.0 miles long with a base free flow speed of 55 mph. Segment 4, between Clay Street and Caddo Street/Highway 51 was estimated to be 0.2 miles long with a base free flow speed of 45 mph.

For the new interchange bypass alternative analysis, the bypass was broken into three segments. Segment 1, between the new interchange and 13th Street, was estimate to be approximately 2.3 miles long with a base free flow speed of 55 mph based on the posted speed limit plus 10 mph according to *HCM* methodology. The second segment, between 13th Street and Clay Street, was estimated to be approximately 2.0 miles long with a base free flow speed of 55 mph. Segment 3, between Clay Street and Caddo Street/Highway 51 was estimated to be 0.2 miles long with a base free flow speed of 45 mph.

The results of this analysis are shown in **Table 40** below. The complete results from this analysis are provided in **Appendix C - Roadway Segment Operational Analysis Results**.

These results demonstrate that the corridor currently operates at acceptable LOS throughout the study area.

Table 40: Roadway Segment Analysis – 2040 Alternative Action Conditions – HCM

Existing Interchange Bypass Alternative												
Segment	Direction	Two-Lane Hwy Class	AM					PM				
			LOS	ATS (mph)	PTSF (%)	PFFS (%)	v/c	LOS	ATS (mph)	PTSF (%)	PFFS (%)	v/c
Bypass - Pine Street to Walnut Street	EB	Class III	C	33.9	65.6	79.7	0.22	C	33.9	62.7	79.7	0.21
Bypass - Walnut Street to 13th Street		Class I	B	50.9	12.1	96.0	0.06	B	50.7	28.2	95.6	0.06
Bypass - 13th Street to Clay Street		Class I	B	51.4	21.8	96.9	0.03	B	51.0	22.0	96.2	0.03
Bypass - Clay Street to Hwy 51		Class III	A	39.0	31.2	91.8	0.03	B	38.9	31.9	91.6	0.03
Bypass - Hwy 51 to Clay Street	WB	Class III	A	39.0	35.3	91.8	0.03	B	38.9	35.8	91.6	0.04
Bypass - Clay Street to 13th Street		Class I	B	51.4	24.7	96.9	0.30	B	51.3	25.2	96.8	0.04
Bypass - 13th Street to Walnut Street		Class I	B	50.8	11.2	95.8	0.06	B	50.7	29.4	95.7	0.06
Bypass - Walnut Street to Pine Street		Class III	C	34.0	62.9	80.0	0.20	C	33.6	67.5	79.1	0.23
New Interchange Bypass Alternative												
Segment	Direction	Two-Lane Hwy Class	AM					PM				
			LOS	ATS (mph)	PTSF (%)	PFFS (%)	v/c	LOS	ATS (mph)	PTSF (%)	PFFS (%)	v/c
Bypass - New interchange to 13th Street	EB	Class I	B	50.9	12.1	96.0	0.06	B	50.7	28.2	95.6	0.06
Bypass - 13th Street to Clay Street		Class I	B	51.4	21.8	96.9	0.03	B	51.0	22.0	96.2	0.03
Bypass - Clay Street to Hwy 51		Class III	A	39.0	31.2	91.8	0.03	B	38.9	31.9	91.6	0.03
Bypass - Hwy 51 to Clay Street	WB	Class III	A	39.0	35.3	91.8	0.03	B	38.9	35.8	91.6	0.04
Bypass - Clay Street to 13th Street		Class I	B	51.4	24.7	96.9	0.30	B	51.3	25.2	96.8	0.04
Bypass - 13th Street to New Interchange		Class I	B	50.8	11.2	95.8	0.06	B	50.7	29.4	95.7	0.06

Appendix B – Public Involvement Synopsis

Public Involvement Synopsis

Public Meeting

Public Involvement Synopsis

ARDOT Job Number 070442
Hwy. 67 – Hwy. 51 (Arkadelphia Bypass)
Clark County
Tuesday, February 5, 2019

An open-forum Public Involvement Meeting for the proposed project was held at Henderson State University (Garrison Center Grand Ball Room), 1045 McKnight Drive in Arkadelphia from 4:00 – 7:00 p.m. on Tuesday, February 5, 2019. Special efforts to involve minorities and the public in the meeting included the following:

- Display advertisement placed in *The Arkansas Democrat Gazette* on Sunday, January 20 and Sunday, February 3, 2019
- Public Service Announcement (PSA) ran on Power 92.3FM from Saturday, February 2 through Tuesday, February 5, 2019
- Outreach letters mailed and/or emailed to public officials, stakeholders, and local churches
- Flyers distributed in the project area
- Information posted on multiple websites and social media platforms
- News release published

The following information was available for inspection and comment:

- An Environmental Constraints Map exhibit on aerial photograph at a scale of 1 inch equals 0.25 miles
- An Environmental and Safety Constraints table with potential impacts for each alignment or alternative
- Two Corridor Map roll plots on aerial photography showing seven proposed bypass alignments at a scale of 1 inch equals 200 feet
- Two sets of four Interchange Alternative roll plots on aerial photography showing interchanges on Highway 51 near I-30 at a scale of 1 inch equals 200 feet
- A 5-minute rotating PowerPoint with voiceover that provided an overview of the project and the public meeting format

Handouts for the public included a comment form, a summary sheet, and small-scale maps illustrating the corridor alignments and interchange alternatives, which were identical to the aerial photograph displays. Copies of the handouts, exhibits, and PowerPoint slides are attached.

Public Involvement Synopsis

Public Meeting

Table 1 describes the results of the participation at the public officials meeting and public meeting.

Table 1	
Public Participation	Totals
Attendance at public officials meeting (including ARDOT and Garver staff)	19
Attendance at public meeting	145
Total attendance	164
Comment forms received	52
Letters received (no comment form)	5

An analysis of the responses received as a result of the public form survey is shown in Table 2.

Table 2	
Survey Form Results (52 forms)	Totals
Feel there is a need for a proposed bypass	46
Do not feel there is a need for a proposed bypass	5
Prefer improvements to Highway 67/51 instead	15
Do not prefer improvements to Highway 67/51 instead	35
Knowledge of historical, archeological or cemetery sites	0
Knowledge of area environmental constraints	8
Beneficial impacts due to the proposed project	22
Adverse impacts due to the proposed project	9

- In general, a majority of those who commented expressed a need for a bypass and did not prefer improvements to Highway 67/51 instead.
- Most commenters felt the bypass would have beneficial impacts.

Public Involvement Synopsis

Public Meeting

An analysis of the responses received as a result of the public survey for the bypass alignments and interchange alternatives is shown in Table 3.

Table 3		
Survey Results	Support	Oppose
West: Alignment A	27	10
West: Alignment B	24	9
West: Alignment C	10	17
East: Alignment D	29	12
East: Alignment E	10	16
East: Alignment F	13	16
East: Alignment G	20	13
Interchange Alternative 1	12	17
Interchange Alternative 2	15	11
Interchange Alternative 3	11	17
Interchange Alternative 4	13	14

- Western Alignments A and B received a majority of support, while Alignment C received the greatest opposition.
- To the east, Alignments D and G received the most support, while Alignments E and F received more opposition than support.
- Interchange Alternative 2 was the only alternative that received more support than opposition.

Garver staff reviewed all comments received and evaluated their contents. The summary of comments listed below reflects the personal perception or opinion of the person or organization make the statement. The sequencing of the comments is random and is not intended to reflect importance or numerical values. Some of the comments were combined and/or paraphrased to simplify the synopsis process.

The following is a listing of comments concerning issues associated with this project:

Public Involvement Synopsis

Public Meeting

General Bypass Comments

- Nearly all comments expressed support for a bypass south of Arkadelphia and said there is a need. Commenters said truck traffic is currently an issue in the Central Business District and the number of trucks is expected to increase if the Sun Paper mill is constructed.
- Commenters discussed issues that trucks have maneuvering through the Central Business District, as well as intersections that need to be looked at. Areas mentioned included turning movements from Highway 51 to Highway 67, at I-30 exit 123, and at 10th Street and Pine Street, 10th Street and Caddo Street, and 6th Street and Caddo Street. One commenter said trucks drive up on sidewalks to make turns.
- Commenters said the bypass will open up opportunities for new business, economic development, and growth, as well as improve access and decrease congestion within the CBD, as well as safety. One comment said to make the bypass four lanes with a turning lane.
- Several commenters requested the bypass be farther outside of town.
- One commenter wished information was available regarding the number of trucks coming from each corridor.

Specific Alignment Comments

- Alignment A – Commenters said it will provide opportunity for economic development and make it easier for trucks to maneuver and not come through the city.
- Alignment B – Commenters liked the use of Red Hill Road, with some suggesting the bypass continue farther south down Red Hill Road. Commenters felt using Red Hill Road would lessen impact on business and residential areas. Others mentioned future hotel construction along the route.
- Alignment C – Several commenters said the alignment is too close to residential areas.
- Alignment D – Commenters in support said this route is cost effective, should be completed regardless of the bypass location, will make it easy for trucks to maneuver north and south and alleviates truck traffic from the CBD. Commenters with concerns said the alignment comes too far into town and trucks will still be in the CBD. Others said to make sure not to cut off pedestrian access due to this route and don't want quality of life hindered in the surrounding neighborhoods. A few suggested extending 10th Street as well as softening the turn at 10th Street and Caddo Street.
- Alignments E and F – There were only a couple comments about these alignments. One person thought the routes were too messy. Another said it would be nice to avoid the business area.
- Alignment G – Commenters said the river bridge on this alignment should have been constructed instead of the new bridge on Caddo Street, and others felt it would now be a waste of money to build a second bridge. Others, whether in support or opposed, were concerned about the cost of a new bridge. Commenters also felt that using Alignment G with Alignment A/B would be the easiest route for trucks and eliminate 90-degree turns.

Public Involvement Synopsis

Public Meeting

General Interchange Alternative Comments

- At least four commenters said they do not want the project to include roundabouts. Some commenters seemed to think there would be multiple roundabouts in this location.
- Several commenters said they wanted to see the mobile home park moved.
- One person felt the alternatives are too complex and need to be simplified.

Specific Interchange Alternative Comments

- Only a few commenters specifically mentioned an interchange in their comments. One commenter said Interchanges 1 and 4 allow space for traffic.
- Regarding Interchange 2, commenters said it has the least impact on business/residential areas and they liked the alignment with Professional Park Drive.

Suggested Routes and other Suggestions

Commenters provided numerous suggestions on new alignments or improving upon the proposed alignments. These suggestions included the following:

- Use Red Hill Road to connect to Highway 67. Won't cross rock quarry hill.
- Move I-30 interchange to Gum Springs exit or Snyder Road overpass (MM 71).
- Improve the existing CBD – repave and add turn signals at 10th and Caddo; 10th and Pine.
- Lift log-truck restrictions on interstate from Exits 69 to 78 and allow to carry full tonnage.
- Move I-30 eastbound exit farther south on Red Hill Road before Marriott. This will decrease congestion at Professional Park on-ramp and eliminate need for a roundabout at that location.
- Connect Hwy. 67 from Caddo Valley to Hwy. 51, cross Hwy. 7, continue to Gum Springs and I-30.
- Make 6th and 7th streets one-way.
- One resident is glad an option that impacted his home on Walnut (from 2013 report) is no longer under consideration, but wants to be notified if reinstated. That route followed west end of Walnut Street from Pine Street south until Walnut turns east. Then continued south and east to meet Highway 67 north of Siplast plant.
- Take route east on Pine until it intersects with 10th Street, and then turn south to Hwy. 67.
- Route should be Hwy. 67 to Country Club Road/Pizza Hut and proceed west across I-30 to Mt. Zion Road and then to Reynolds.
- I-30 at Country Club Road should have ingress and egress to highway.
- Reroute Alignment G south of the rail road bridge and continue where Alignment E is planned.
- Follow along Pine and Route 51 on Caddo. Schools are moving out of the High School.

Public Involvement Synopsis

Public Meeting

- Take Red Hill Road farther south and take former road south of Alignment B to connect to Alignment A. This will avoid hills and reduce erosion issues.
- Connect 51 to Gum Springs bridge over I-30 by going south on the west side of I-30
- Take a route south of the airport.
- Create a road on the west side of the interstate coming in on Hwy 51/26 from the west. Make the road turn between the old highway department building and Chicken Express that goes south to the overpass at Gum Springs exit.
- One person wondered why it took so long to notify landowners who might be impacted of various options under consideration after first phase of study in 2013.

Environmental or Historical

- Two commenters mentioned a landfill / old dump in area of Alignment G behind ballpark.
- Four commenters mentioned wetlands in area of Alignments A / B / C.
- Three commenters mentioned tectum dump site north of Alignment A and C, south of Walnut Street, west of Hwy. 67.
- Two commenters believe an EIS should be prepared.

Adverse Property Impacts

- The Red River Baptist Association is next to proposed bridge.
- Owner Cox Mobile Manor said some interchange alternatives will impact / ruin her property.
- Owner on 9th Street said Alignment D impacts property, shop, house, etc. but is willing to sell
- Resident on Walnut Street said bypass comes close to western edge of his property (17 acres). Believes it misses his property and doesn't object to this option. Wants to make sure recreational cabin is not impacted.
- Alignment D routes highway adjacent to owner's property, increasing traffic noise.
- Three commenters referenced the same family property, which is located along Alignments A and C, with two submitting the same form and one submitting a three-page letter.
 - The identical forms stated they thought the 2013 report showed a bypass was not warranted. At the public meeting, information was not provided on environmental and financial effects. Social information was shown but not as a take-home document. Should have been available under FOI as public record. Asked if the new bridge is a waste of tax monies and poor planning if a new bridge is built. There should be a route utilizing all existing roadways. Any of the plans will forcibly take land in their family for generations.
 - The three-page letter said a bypass should be based on relevant, repeatable and factual data, not speculation of a future pulp mill being constructed. The commenter referenced the 2013 bypass study and 2010 Highway Capacity Manual and said LOS within Arkadelphia does not warrant a new bypass. The commenter said the destination survey from that study indicates vehicles crossing the bridge are

Public Involvement Synopsis

Public Meeting

destined to the area of Arkadelphia, not to I-30 and west of Arkadelphia. A new bypass serves less of a purpose with Pine Street being widened will help east-west travel time and better handle future volumes. The commenter said alternative alignments were presented without supportive information as to why the project is needed (Purpose and Need) and associated costs. The commenter said Alignments A, B, or C from an environmental consideration will cause destruction, loss, and or degradation to wetlands and streams. The commenter opposes Alignments A, B, and C and the associated interchange alternatives. The commenter agreed that reducing truck volumes in the CBD could be beneficial, and if this is the primary objective, Alignments E or F should be considered before Alignment D, with a preference for Alignment F because it impacts fewer residents, businesses and road crossings. The commenter said either Alignment A or C will impact family land passed down for generations, and that the land is enrolled in the US Department of Agriculture's Conservation Stewardship Program.

Attachments:

- Public handouts, including blank comment form
- Small-scale display copy

ARKANSAS DEPARTMENT OF TRANSPORTATION (ARDOT) CITIZEN COMMENT FORM

ARDOT JOB NUMBER 070442
HWY. 67 – HWY. 51 (ARKADELPHIA BYPASS)
CLARK COUNTY

LOCATION:
Henderson State University (Garrison Center Grand Ball Room)
1045 McKnight Drive, Arkadelphia, AR
4:00 – 7:00 p.m., Tuesday, February 5, 2019

Make your comments on this form and leave it with ARDOT or Garver personnel at the meeting or mail it by 4:30 p.m. on **Wednesday, February 20, 2019** to: Jon Hetzel, Garver, 4701 Northshore Drive, North Little Rock, AR 72118. Alternatively, send the form via email to PublicInvolvement@GarverUSA.com.

Yes **No** Do you feel there is a need for a proposed bypass on the southern side of Arkadelphia to connect U.S. Highway 67 and State Highway 51? _____

☐
☐

Please indicate whether you support ☒ or oppose ☒ the corridor alignments and Hwy. 51 interchange alternatives near I-30 by circling your choices below. You may support or oppose single alignments or any combinations of alignments. Please provide comments in the space provided.

Corridor Alignments

Align A Align B Align C Align D

☒
☒
☒
☒
☒
☒
☒
☒

Align E Align F Align G

☒
☒
☒
☒
☒
☒

Interchange Alternatives

Alt 1 Alt 2 Alt 3 Alt 4

☒
☒
☒
☒
☒
☒
☒
☒

(Continued on Back)

Yes ☐ **No** ☐ Would you prefer improvements to Highway 67/51 through the Arkadelphia Central Business District instead of a bypass alignment? _____

Yes ☐ **No** ☐ Do you know of any historical sites, family cemeteries, or archaeological sites in the project area? Please note and discuss with staff. _____

Yes ☐ **No** ☐ Do you know of any environmental constraints, such as endangered species, hazardous waste sites, or existing or former landfills, in the vicinity of the project? Please note and discuss with staff. _____

Yes ☐ **No** ☐ Do you have a suggestion that would make this proposed project better serve the needs of the community? _____

Do you feel that the proposed project will have any impacts (☐ Beneficial or ☐ Adverse) on your property and/or community (economic, environmental, social, etc.)? Please explain. _____

It is often necessary for the ARDOT to contact property owners along potential routes. If you are a property owner along or adjacent to the route under consideration, please provide information below. Thank you.

Name (*Please Print*): _____

Address: _____ Phone: (____) ____--____

E-mail: _____

For additional information, please visit our website at www.ardot.gov.

Arkadelphia Bypass Hwy. 67 – Hwy. 51 Connection Improvement Study

Job 070442



What is the Arkadelphia Bypass Project?

The Arkansas Department of Transportation (ARDOT) is continuing to build on past planning studies and evaluating alternatives to improve traffic flow through Arkadelphia, particularly through the Central Business District (CBD). A primary concern is the truck traffic carrying raw lumber materials that must negotiate several difficult turns and pass through the CBD.

What are the Alternatives Being Considered?

Bypass Alignments

Seven alignments provide a proposed bypass south of Arkadelphia.

- Alignments A-C connect Hwy. 51 (near I-30) to Hwy. 67 near the airport.
- Alignments D-G connect Hwy. 67 to Hwy. 51 near the Ouachita River. Routes use either the recently completed river bridge or construct one farther south.

Interchange Alternatives

Four interchange alternatives connect the bypass at Hwy. 51 near I-30.

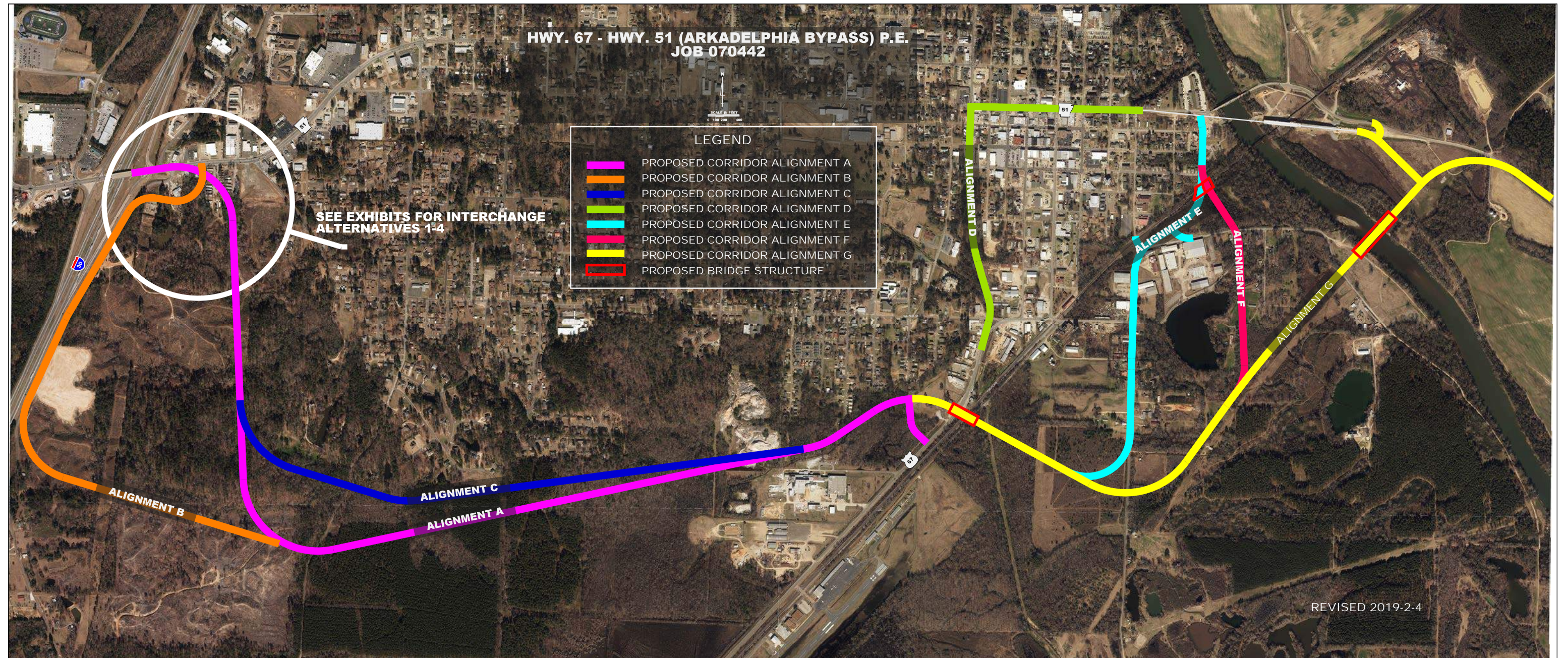
Why are we Meeting today?

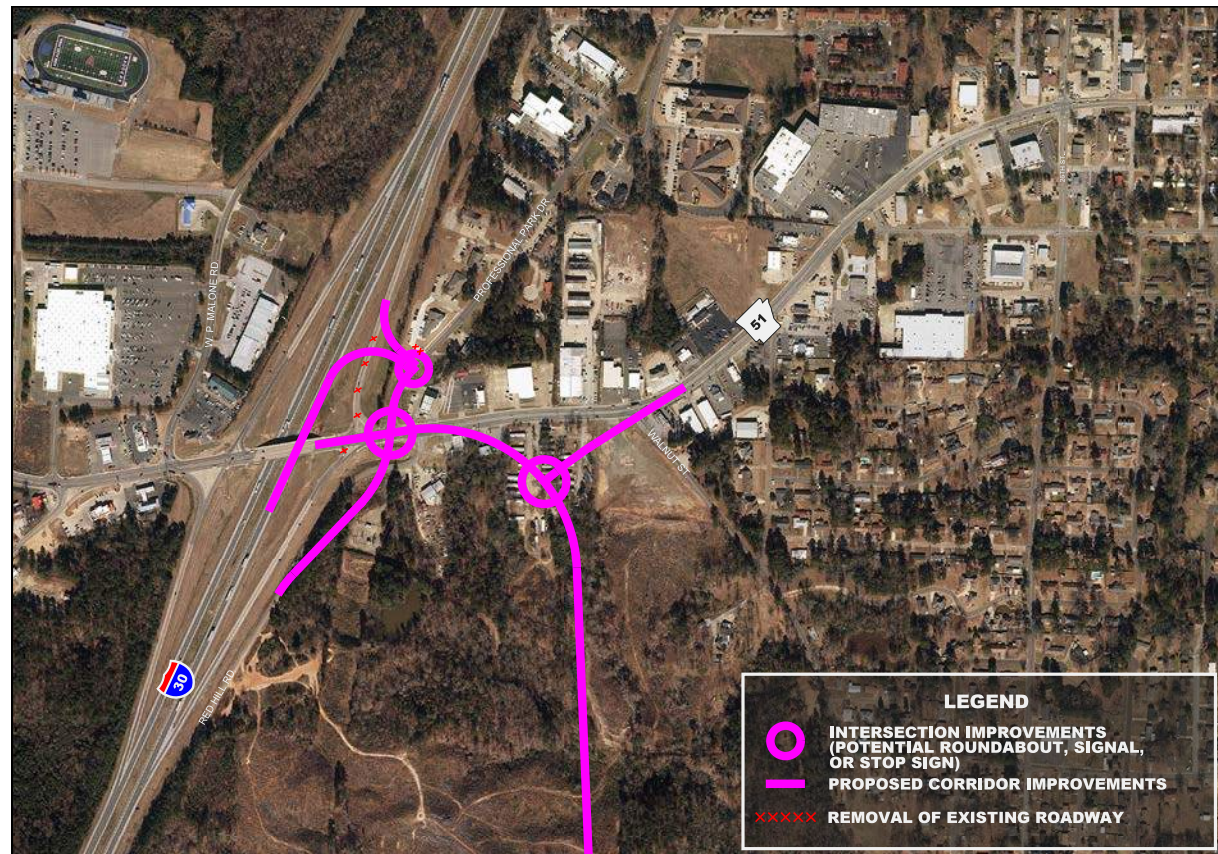
The format for the meeting is an Open House, which means there is no formal presentation. You are encouraged to view the preliminary alternatives, ask questions, and provide comments to our staff. Your comments are very important and could help shape the location and nature of future improvements. Comments may be submitted through Wednesday, February 20, 2019.

What Comes Next?

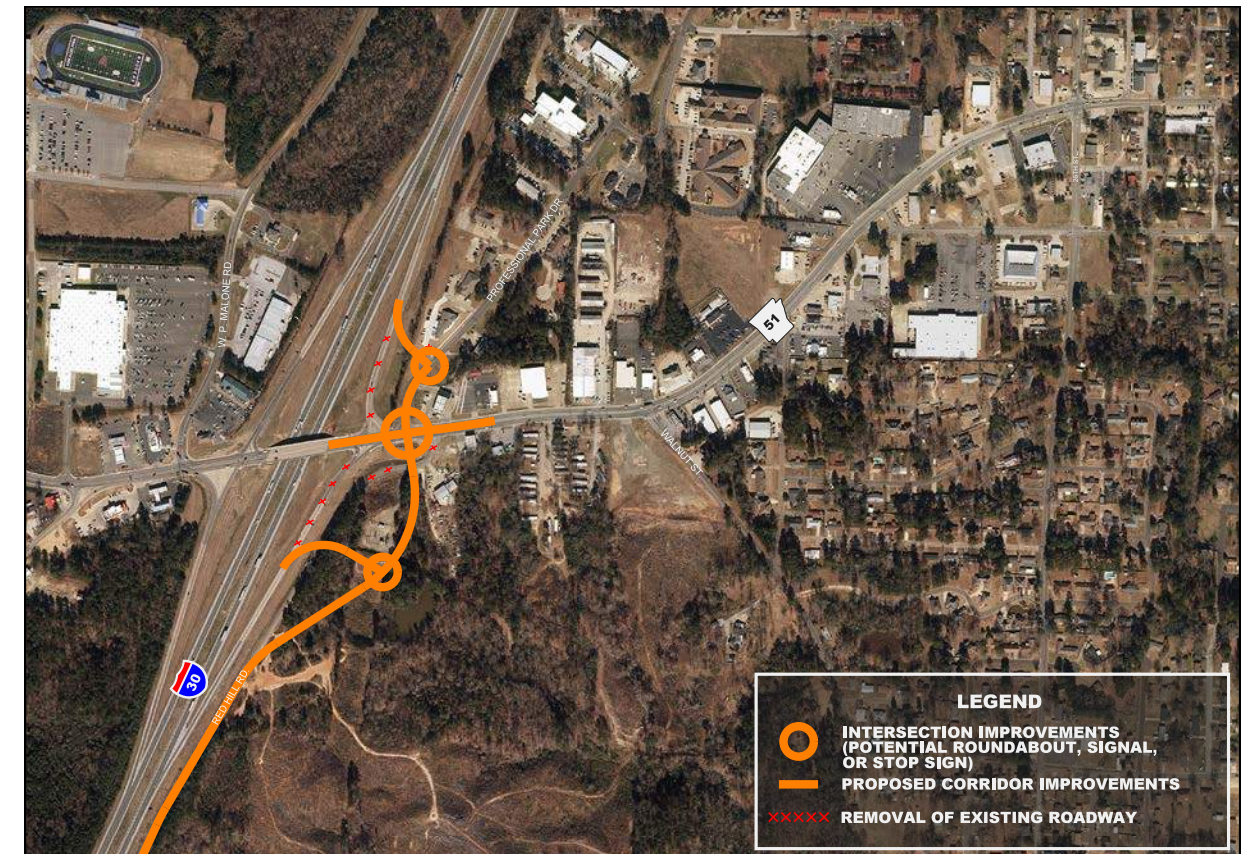
Comments received today and over the next two weeks will be considered. Based on the comments, along with environmental and design considerations, revisions will be made and a preferred alternative selected. Another meeting will be held to request feedback on the preferred alternative. There is not a funding source for construction at this time.

Meeting information is available at: http://ardot.gov/public_meetings/2019_PM/070442/070442.aspx

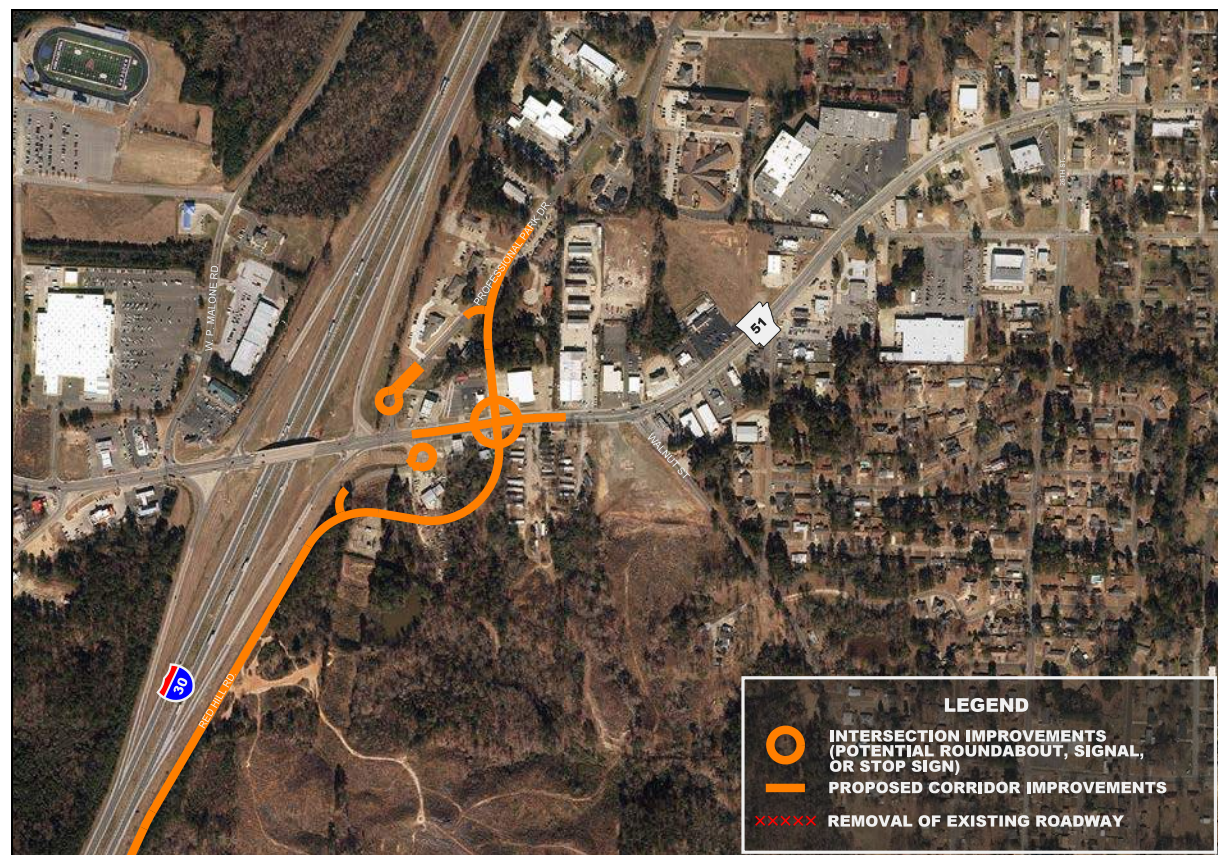




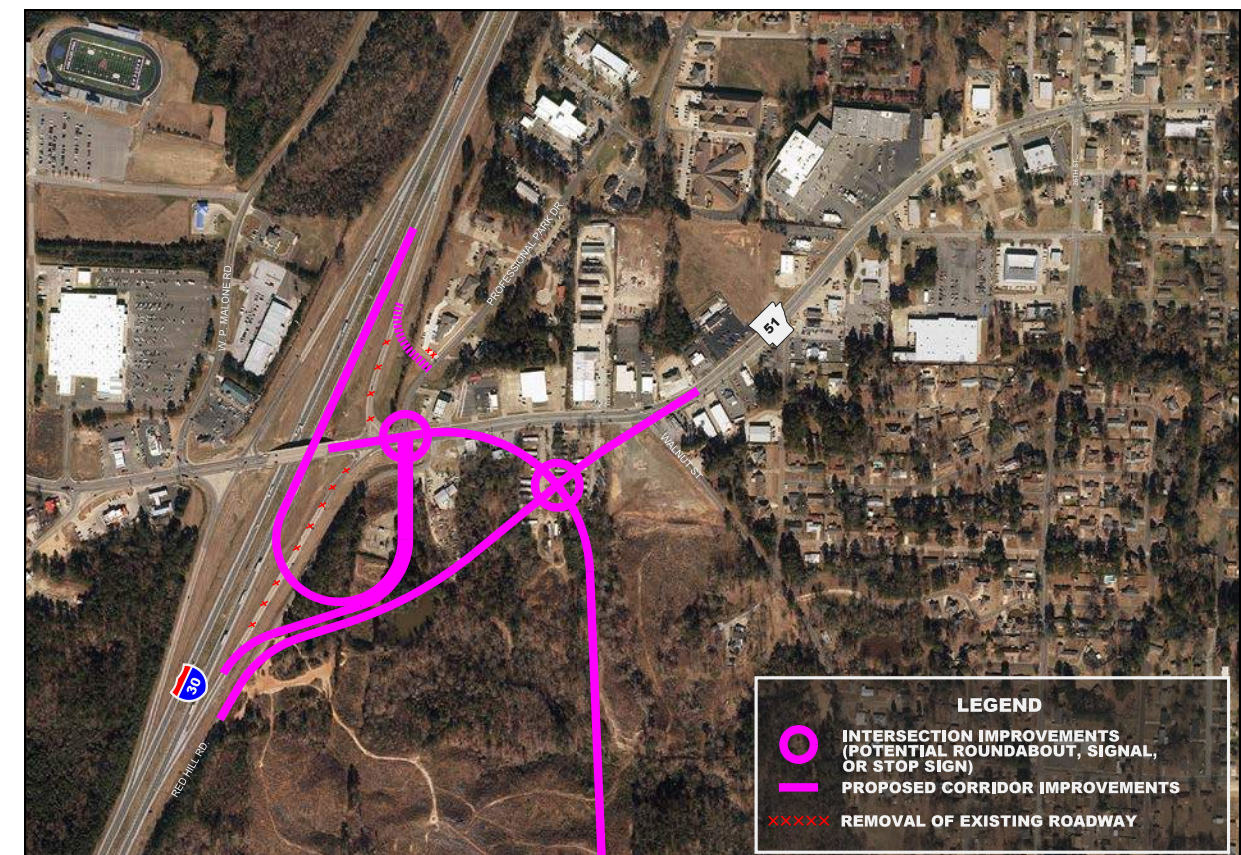
I-30/Hwy. 51 Interchange
ALTERNATIVE 1



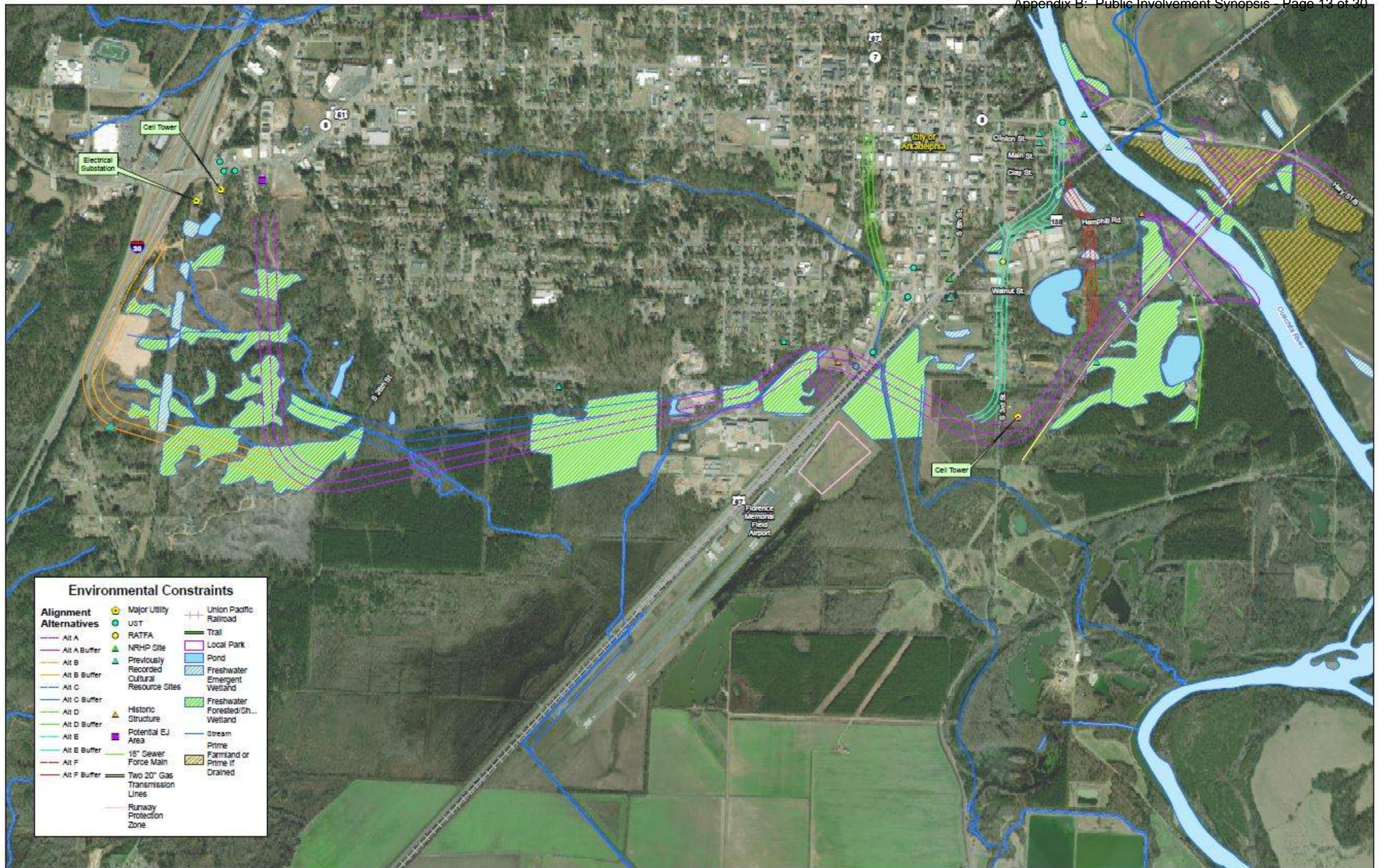
I-30/Hwy. 51 Interchange
ALTERNATIVE 2



I-30/Hwy. 51 Interchange
ALTERNATIVE 3



I-30/Hwy. 51 Interchange
ALTERNATIVE 4



Arkadelphia Bypass

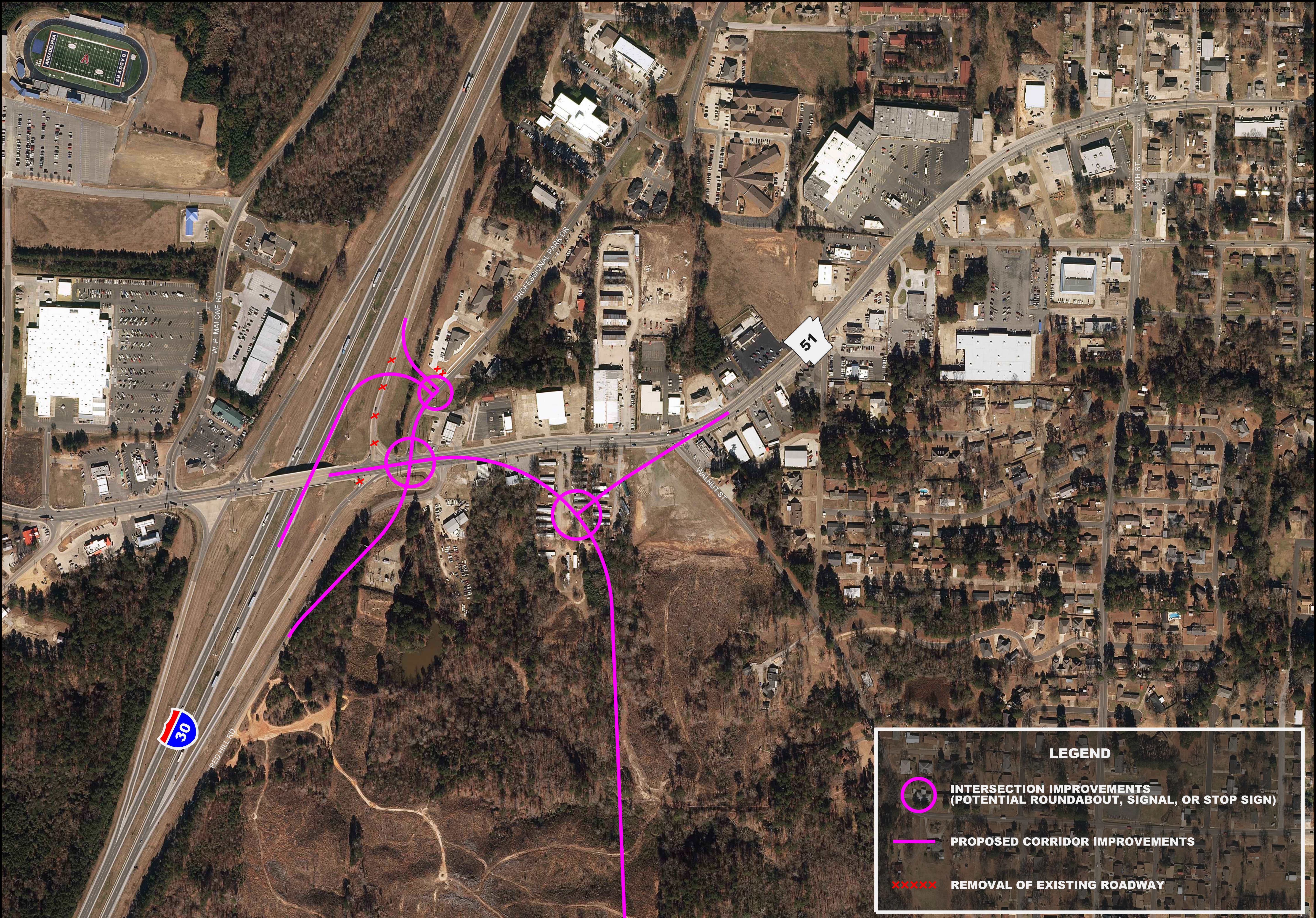
ARDOT No. 070442, Hwy. 67 - Hwy. 51 (Arkadelphia Bypass) P.E.

Environmental and Safety Constraints - All Options

			Potential Impacts										
Item #	Resource Category	Description	Mgnta/Yllw Alt A&G	Orange Alt B	Blue Alt C	Green Alt D	Cyan Alt E	Red Alt F		Interchange Alt 1	Interchange Alt 2	Interchange Alt 3	Interchange Alt 4
1	Alternative Length	Miles	5.1	1.4	1.0	0.5	1.1	0.4		--	--	--	--
2	Residential Impacts	Relocations	5	0	0	5	11	3		27	0	27	27
3	Other Structures or Major Utilities	Relocations	4	1	0	4	6	4		0	0	3	3
4	Business Impacts	Relocations	2	0	0	10	7	0		3	0	5	5
5	Roads	Crossings	8	1	0	4	8	2		3	2	3	3
6	Railroads	Crossings	1	0	0	0	1	1		0	0	0	0
7	Section 4(f) & 6(f)	Number	1	0	0	0	1	0		0	0	0	0
8	Federal Endangered and Threatened Species	Known Occurrences	1	0	0	0	0	0		0	0	0	0
9	Floodplains/Floodway	Acres	84	0	9.0	3.8	16.3	16.5		0	0	0	0
10	Hazardous Materials	Known Sites	4	0	0	0	1	0		2	2	3	3
11	Historic Resources	Known Sites	2	0	0	0	0	0		0	0	0	0
12	Streams	Crossings	8	1	1	1	1	1		0	0	0	0
13	Wetlands	Acres	50.6	12.1	13.4	0	0.5	1.8		0	0.5	0	1

HWY. 67 - HWY. 51 (ARKADELPHIA BYPASS) P.E. JOB 070442

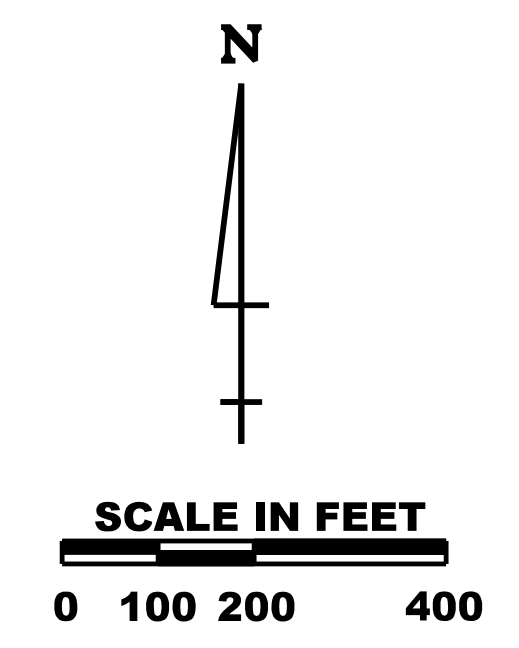


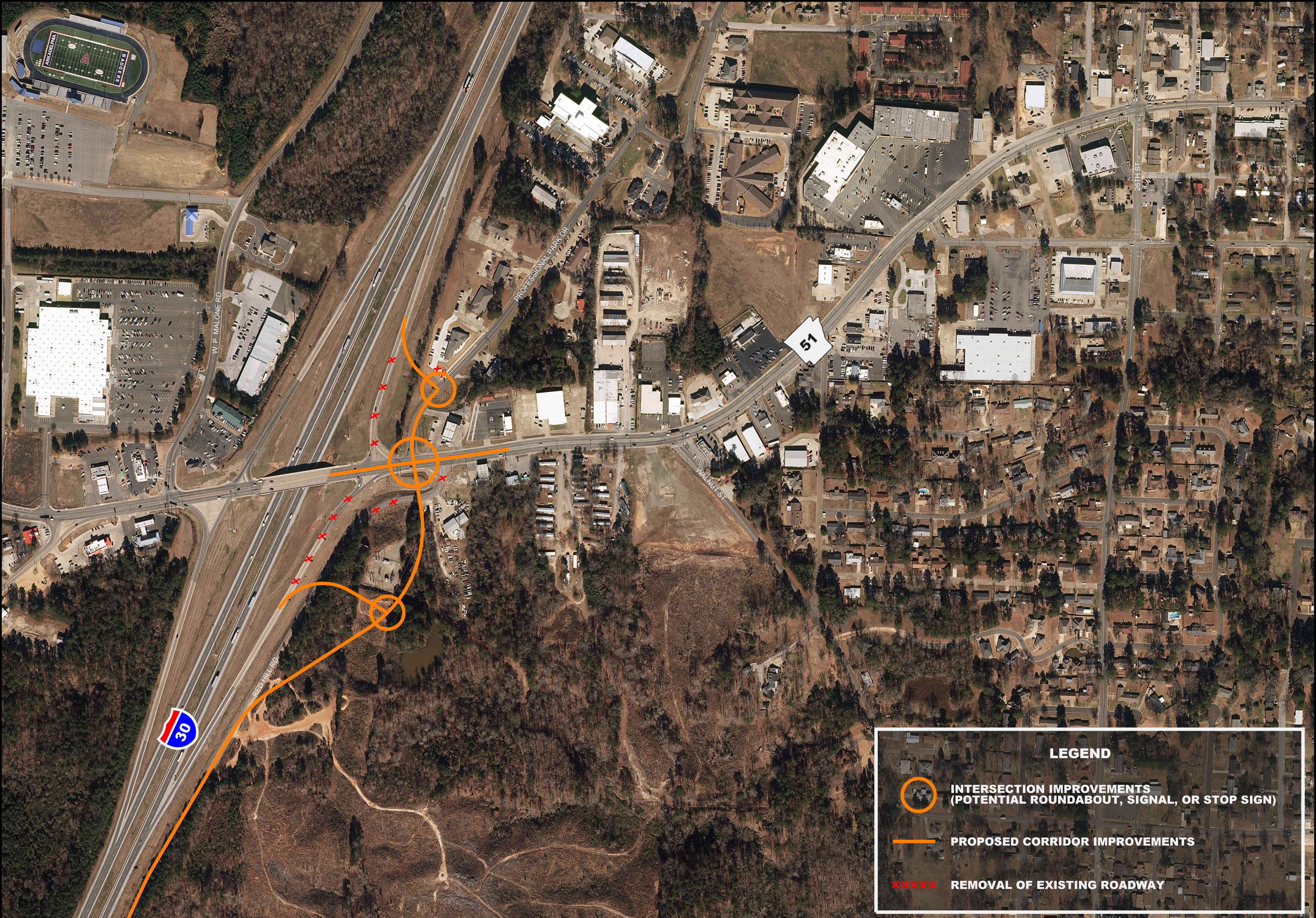


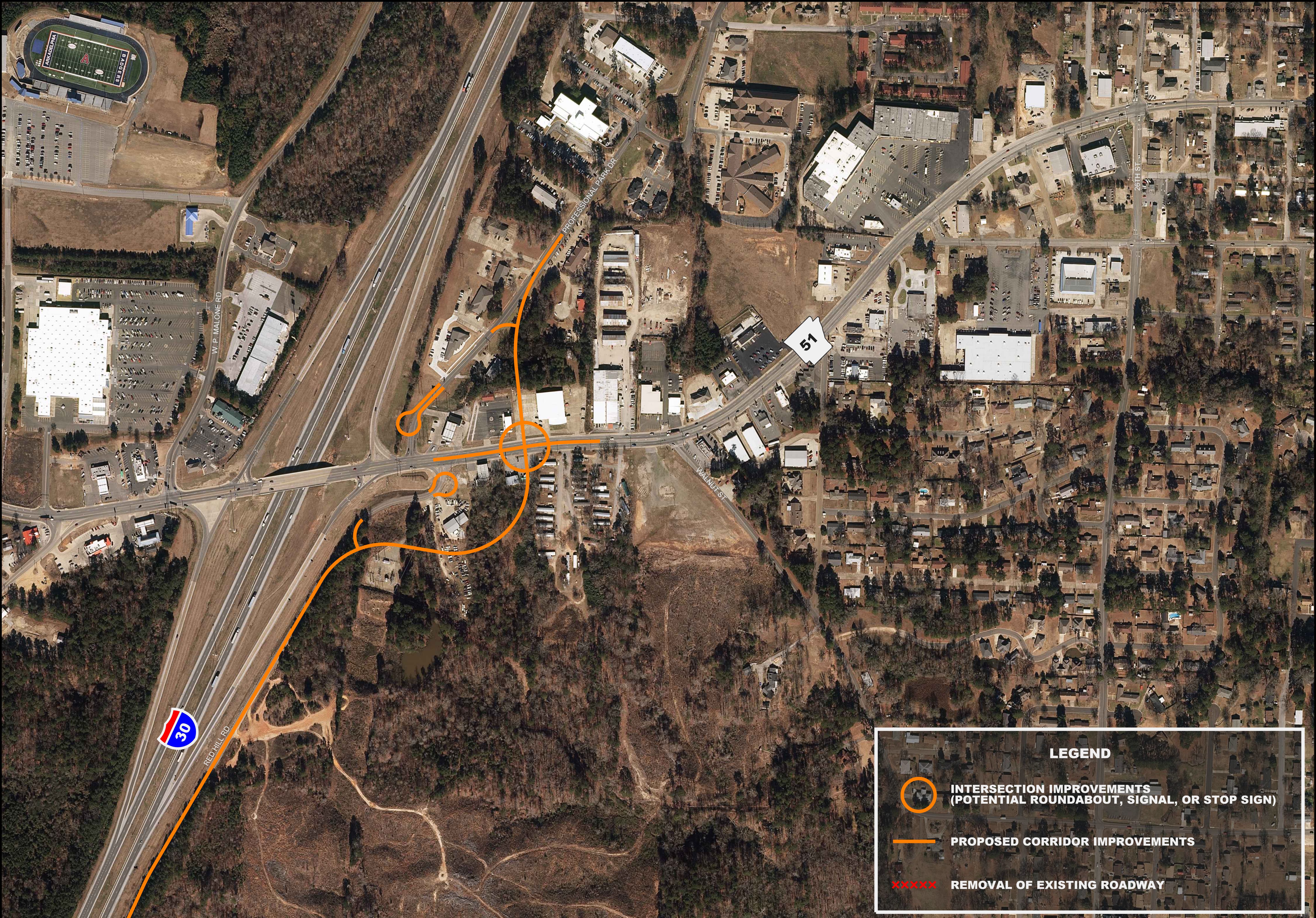
LEGEND

-  INTERSECTION IMPROVEMENTS (POTENTIAL ROUNDABOUT, SIGNAL, OR STOP SIGN)
-  PROPOSED CORRIDOR IMPROVEMENTS
-  REMOVAL OF EXISTING ROADWAY

I-30/HWY. 51 INTERCHANGE ALTERNATIVE 1



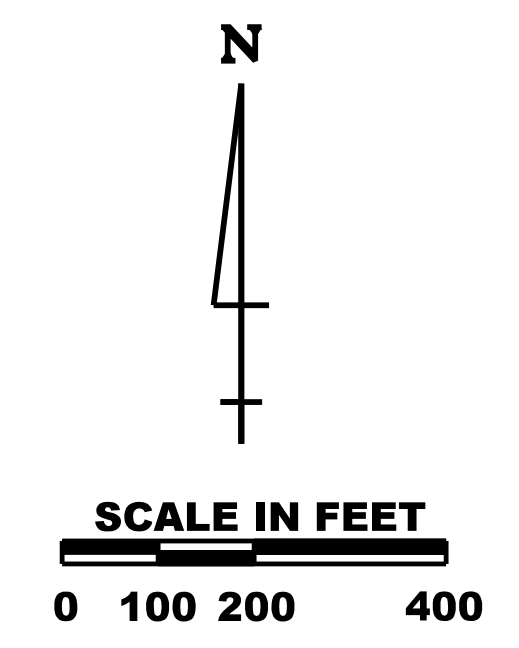


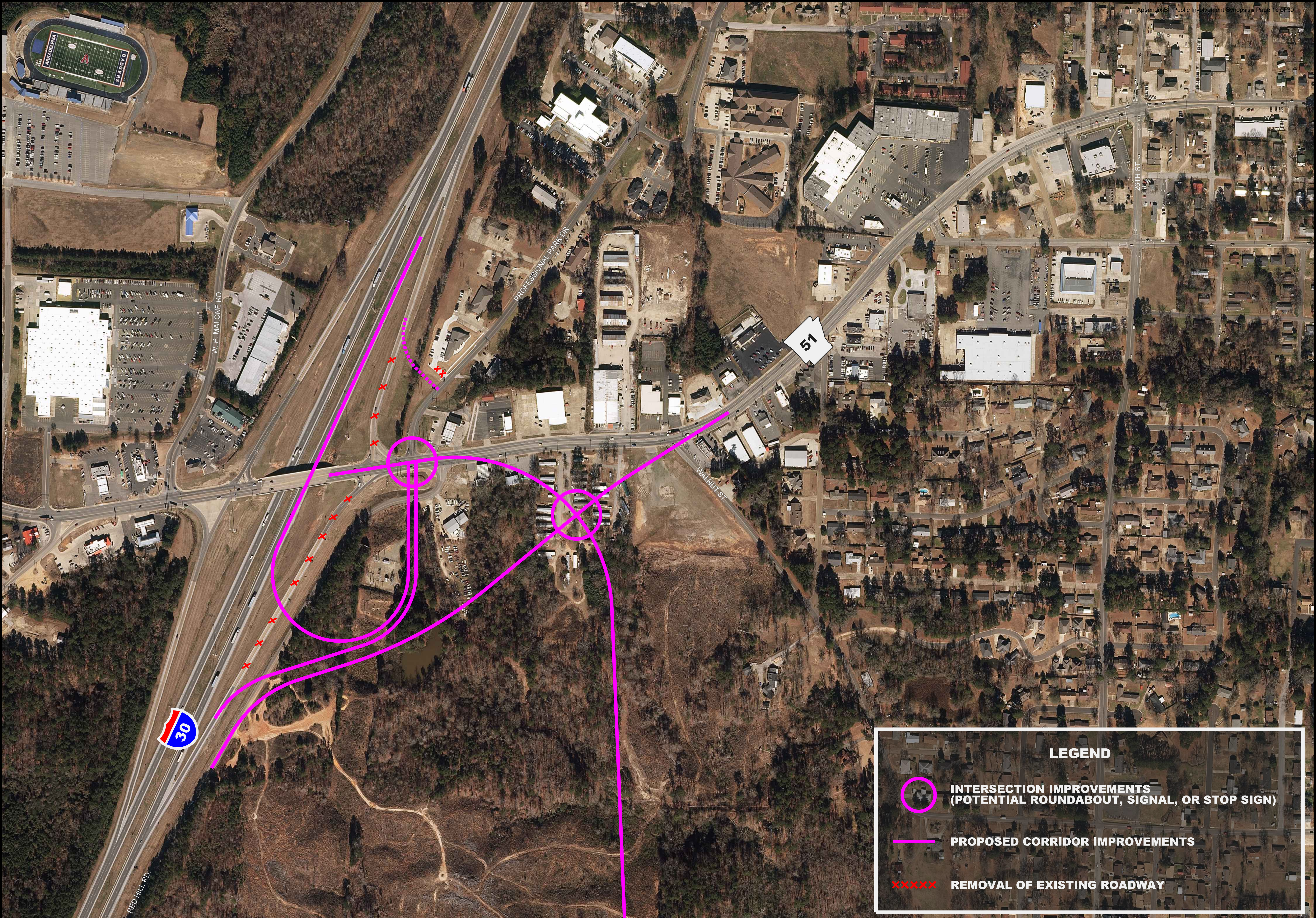


LEGEND

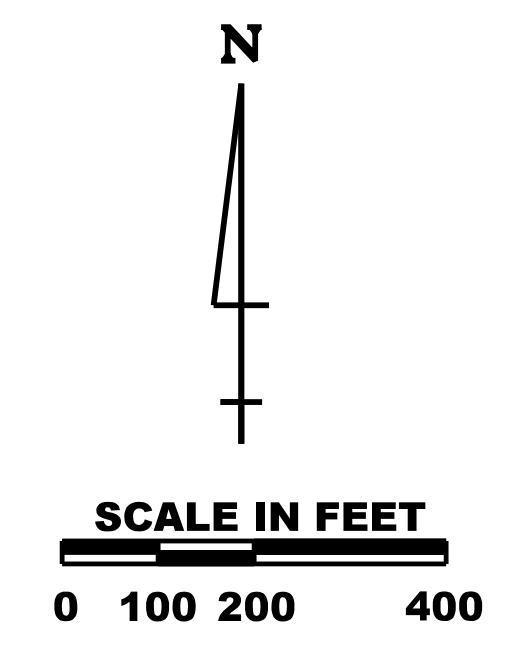
-  INTERSECTION IMPROVEMENTS (POTENTIAL ROUNDABOUT, SIGNAL, OR STOP SIGN)
-  PROPOSED CORRIDOR IMPROVEMENTS
-  REMOVAL OF EXISTING ROADWAY

I-30/HWY. 51 INTERCHANGE ALTERNATIVE 3





I-30/HWY. 51 INTERCHANGE ALTERNATIVE 4





WELCOME

Public Meeting for the Arkadelphia Bypass Clark County

February 5, 2019

OPEN HOUSE FORMAT

- The following 5 minute presentation gives a brief project summary and how you can participate in this meeting.
- This is an “open house,” so please review the maps and other materials at your own pace. You may stay and ask questions and review the materials as long as you need between 4 and 7 p.m.
- Our staff are wearing name tags. Please Ask Questions.
- Please give us feedback by filling out a comment form.

WHAT IS THE NEED FOR THIS PROJECT?

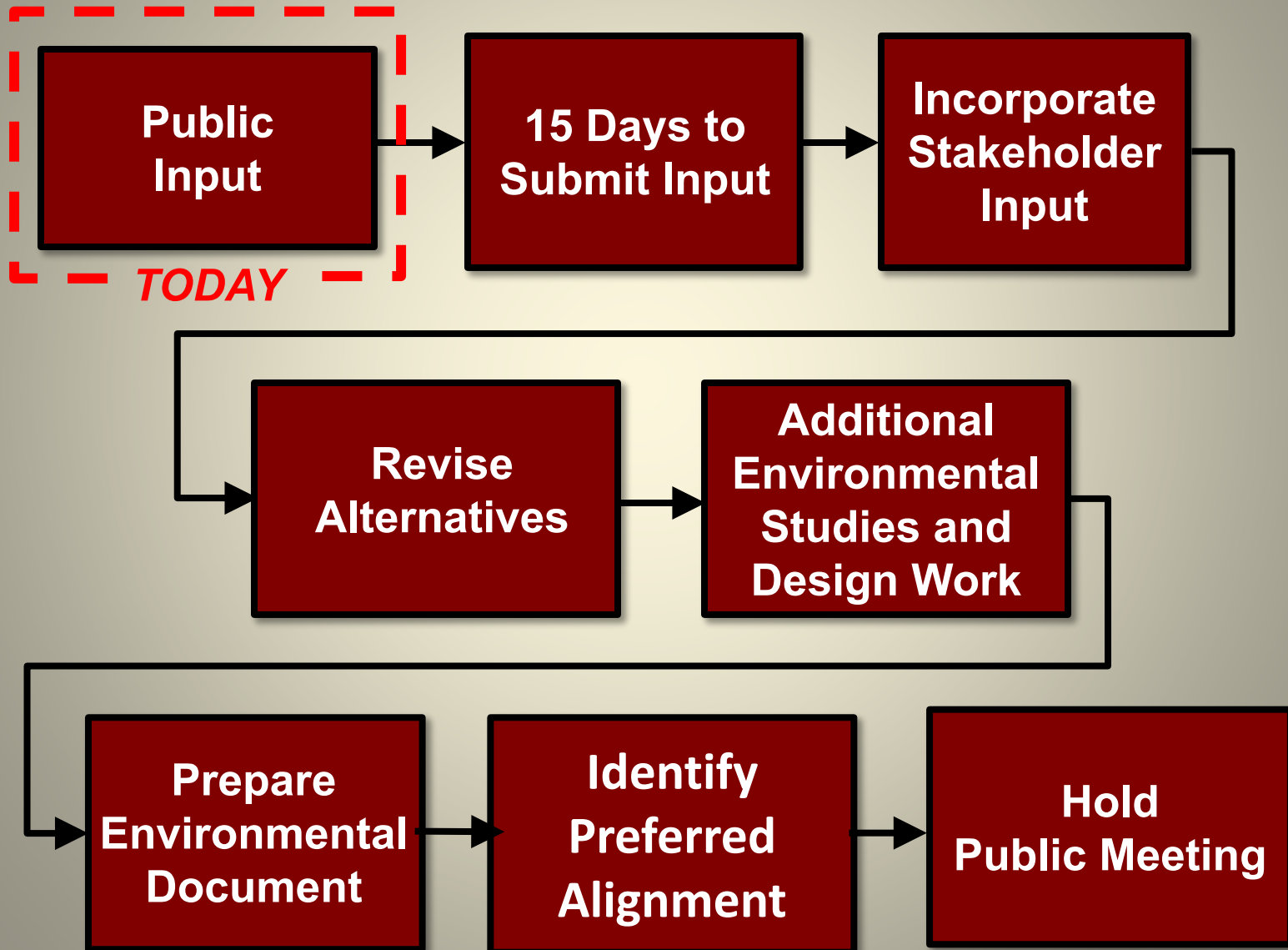
Traffic through Arkadelphia includes of a large number of trucks carrying raw lumber materials. These trucks must negotiate tight turns, especially in the Central Business District (CBD), creating mobility and safety issues.

The **PURPOSE** of this study is to improve traffic flow through Arkadelphia, particularly through the Central Business District, by providing improvements that enhance traffic operations and result in a safer road for vehicles and pedestrians.

WHY ARE WE HERE TONIGHT?

- This project has federal funding, which requires a review process called an Environmental Assessment (EA).
- The purpose of the EA is to identify a Preferred Alignment that minimizes the negative impacts to the natural and social environment while addressing the needs of the project to the greatest extent possible.
- We are holding this meeting tonight because Participation by the public and local officials is key to the success of this EA.
- The EA study process began in **April 2018** and is estimated to be complete in **November 2019**.

WHAT HAPPENS NEXT?



WHAT IS CONSIDERED IN THE EA PROCESS?

Some of the considerations in the project development are:

- Road Crossings
- Bridges and Culverts
- Railroad Crossings
- Residential Impacts
- Business Impacts
- Economic Impacts
- Indirect Impacts
- Environmental Justice
- Historic and Archeological
- Wetlands
- Floodplains
- Endangered Species
- Safety
- Community Connections
- Topography (impacts design and costs)
- Hazardous Materials Sites
- Right of Way and Construction Costs

WHAT ARE WE REVIEWING?

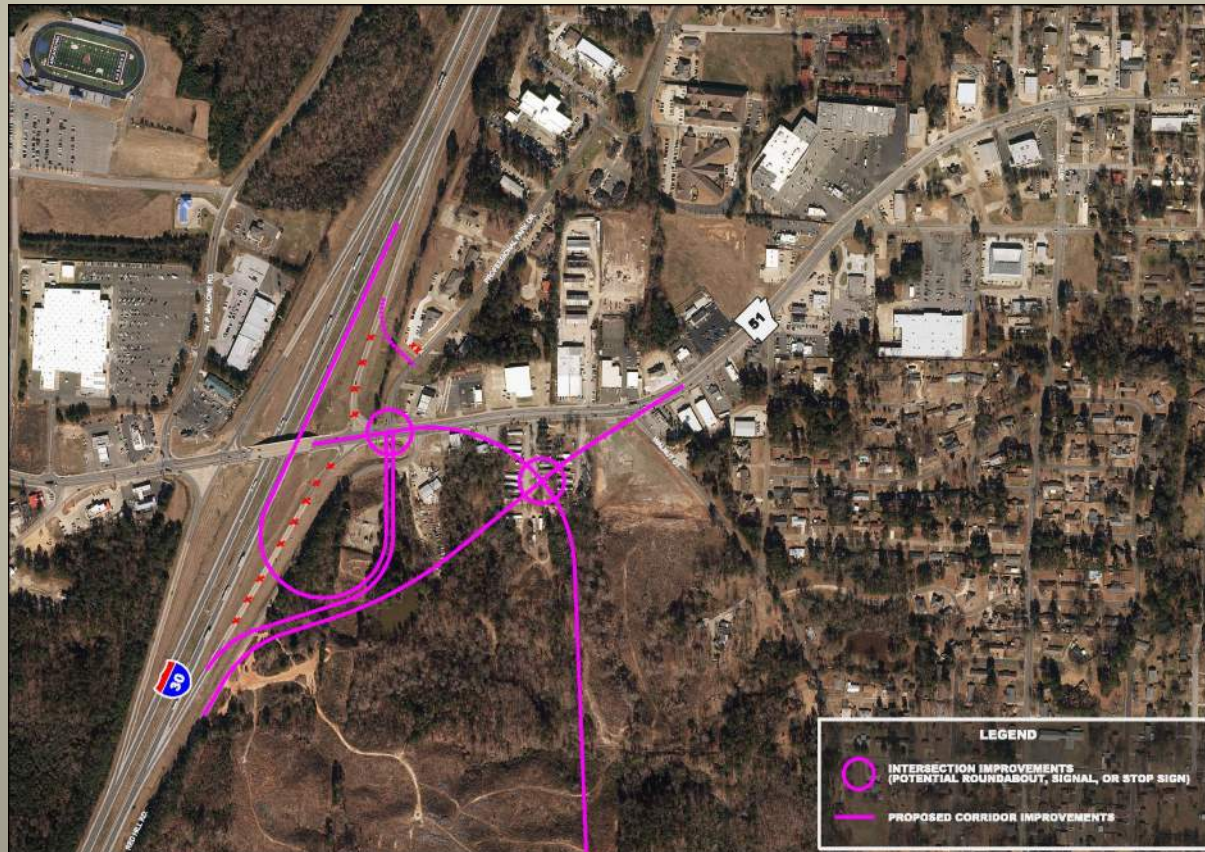
Preliminary alignments have been developed with consideration for various environmental and design concerns. There are exhibits on the tables for you to review the various bypass options.

Detailed design has not been completed – the alignments presented are close approximations so that environmental and social impacts may be evaluated and discussed.



WHAT ARE WE REVIEWING?

In addition to seven options for the main bypass segments, there are four interchange options where the western end of the bypass connects to Hwy. 51 near I-30.



WHAT DO WE EXPECT FROM THIS MEETING?

Our ultimate goal for this EA process is to identify roadway improvements that minimize the negative impacts to the natural and social environment while improving mobility, safety and the quality of life for Arkadelphia's residents and those traveling in your city.

To reach this goal, we need the involvement of your citizens and local officials, ensuring we understand the important local and regional issues and develop a plan that best fits within your community.

WHAT DO I DO NOW?

Please view the maps showing the proposed bypass alignments.

The first two tables have identical maps showing the main bypass alignments. The second set of tables have identical maps showing the interchange options near I-30.

We encourage you to fill out your comment form at the round tables in the back of the room and leave your comments with us tonight. If you are unable to provide a comment form tonight, the following slide gives additional options to provide input.

Again, our staff is here to help you understand the project and listen to your concerns. We look forward to visiting with you.

THANK YOU!

Please Submit Your Comments by: Wednesday, February 20, 2019

Leave Your Comment Form Here Tonight or Send the Comment Form Back to:

Garver, Attn: Jon Hetzel, 4701 Northshore Drive, North Little Rock, AR 72118

Email Your Comments to: PublicInvolvement@GarverUSA.com

Information is available at:

http://ardot.gov/public_meetings/2019_PM/070442/070442.aspx

Appendix C – Agency and Tribal Coordination

Agency Consultation

Agency consultation letters and exhibits were sent to the following agencies for project coordination. Agency response dates are noted.

Arkansas Department of Environmental Quality

- Response received September 25, 2018

Arkansas Department of Health

- Response received June 6, 2018

Arkansas Department of Parks and Tourism

- Response received July 20, 2018

Arkansas Game and Fish Commission

- Response received July 20, 2018

Arkansas Historic Preservation Program

- Responses received May 14, 2018

Arkansas Natural Heritage Commission

- Responses with species occurrence data received June 12 and July 24, 2018

Arkansas Natural Resources Commission

- No response received to date

Arkadelphia Water Utilities

- No response received to date

U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS)

- Response received May 30, 2018, August 3, 2018, and February 5, 2020

U.S. Fish and Wildlife Service (USFWS)

- Responses received May 23 and July 25, 2018
- IPaC list received January 21, 2020

U.S. Geological Survey (USGS)

- No response received to date



Mr. Bill McAbee, Environmental Manager
Garver, LLC
4701 Northshore Drive
North Little Rock, Arkansas 72118

Re: National Environmental Policy Act (NEPA): Comments Requested Regarding
Arkadelphia Bypass from Hwy. 67 to Hwy 51

Dear Mr. McAbee:

This is in reference to your July 6, 2018 submittal regarding the Arkadelphia Bypass from Hwy. 67 to Hwy 51 in Arkadelphia, Arkansas. Based upon the information submitted, and assuming the Arkansas Department of Transportation (ARDOT) is among the agencies contacted regarding this project, the Department does not have any specific objections at this time.

It is reminded, if the construction site will disturb in excess of one (1) acre, the permittee must comply with the terms of the Stormwater Construction General Permit ARR150000 prior to the start of construction. The ARR150000 does not authorize any activity to be conducted in Waters of the State or Waters of the United States. Any work being conducted in Waters of the State will require a Short Term Activity Authorization (STAA) from ADEQ in accordance with Regulation 2.305. A STAA is necessary for any in-stream activity that may cause an exceedance of applicable water quality standards, including, but not limited to: gravel removal, bridge or crossing repair/maintenance, bank stabilization, debris removal, culvert replacement, flood control projects, and stream relocation. Any work being conducted in Waters of the United States may require a Section 404 permit from the U.S. Army Corps of Engineers. All applicable State and Federal laws must be met before, during and after completion of the project.

This letter is issued in reliance upon the statements and representations made in the submittal and the Department has no responsibility for adequacy or proper functioning of the proposed project. If there are further questions, please contact the Permits Branch at 501-682-0623.

Sincerely,

A handwritten signature in black ink, appearing to read "Bryan Leamons", is written over a horizontal line.

Bryan Leamons, P.E.
Senior Operations Manager, Office of Water Quality

BL:tl

cc: Audree Miller, Pollution Prevention Coordinator, Office of Law and Policy



Arkansas Department of Health

4815 West Markham Street • Little Rock, Arkansas 72205-3867 • Telephone (501) 661-2000

Governor Asa Hutchinson

Nathaniel Smith, MD, MPH, Director and State Health Officer

June 6, 2018

Bill McAbee
Garver, LLC
4701 Northshore Drive
North Little Rock, AR 72118

RE: Arkadelphia Bypass from Hwy. 67 to Hwy. 51/8
Arkadelphia, Clark County, Arkansas
ARDOT Job No. 070442, Hwy. 67-Hwy. 51 (Arkadelphia Bypass) P.E.

Dear Mr. McAbee,

A staff review has been made of the information received on the following project:

ARDOT Project	ADH Number	Permit Name	County
070442	32-7846	ARKADELPHIA BYPASS HWY 67 TO HWY 51/8	CLARK

The Engineering Section has no comments on the submittal.

If you have any questions or comments, please coordinate them through Tyler Couch at (501) 280-4428.

Sincerely,

Lyle Godfrey, P.E.
Chief, Technical Support
Engineering Section

LG:DR:BG:tc

CC: Arkadelphia Waterworks, 700 Clay Street, Arkadelphia, AR 71923

Schmidt, Cassie P.

Subject: RE: Arkadelphia Bypass - possible 6(f)3 conflicts

From: Matt McNair <matt.mcnaair@arkansas.gov>

Date: July 20, 2018 at 3:57:01 PM MDT

To: "McAbee, William C." <WCMcAbee@GarverUSA.com>

Subject: Arkadelphia Bypass - possible 6(f)3 conflicts

Howdy, Bill. Please find attached a very rough (re: kind of crummy) illustration highlighting possible 6(f)3 conflicts with regard to the upcoming Arkadelphia Bypass project.

My notations didn't show up all that well, but it appears to me the two main concerns will be, depending upon the ultimate project area, Feaster Park and River Park. Feaster Park is just west-southwest of Henderson State, and River Park is sited where Hwy 67 hooks north and into town from the southwest. It's down there by the railroad depot.

Both of these parks have LWCF funding in them, and are encumbered under Section 6(f)3 of the LWCF Act. As you can see, there are a two other parks that might be affected (Arkadelphia Central Park and Ouachita River Baseball Park), but to the best of my knowledge, they are not under 6(f)3 encumbrance.

Please accept my apology for the poor quality of this map and the thumbnail-sketch nature of this response; fieldwork has kept me out of the office of late, and promises to keep me out more often than not for a couple more weeks. I just wanted to touch base and give you a general idea of what conflicts might arise. I'll be back in the office more or less regularly starting the week of August 13th; if you need anything in the meantime, shoot me an email and I'll get back to you just as soon as I can.

Cheers,

Matt McNair
Project Officer / Environmental Review Coordinator
Arkansas Dept. of Parks & Tourism, Outdoor Recreation Grants Program
1 Capitol Mall, Little Rock, AR 72201
501.682.1227
matt.mcnaair@arkansas.gov





Pat Fitts
Director

Caroline Cone
Chief of Staff and
Deputy Director

Chris Colclasure
Deputy Director

Chris Racey
Deputy Director

Arkansas Game and Fish Commission

July 20, 2018

Bill McAbee
Garver, LLC
4701 Northshore Drive
North Little Rock, Arkansas 72118

Re: Arkadelphia Bypass from Hwy. 67 to Hwy. 51/8-West Alignment
Arkadelphia, Clark County Arkansas
ARDOT Job No. 070442, Hwy. 67-Hwy. 51 (Arkadelphia Bypass) P.E.
Request for Information-Additional Study Area

Mr. McAbee,

Biologists with the Arkansas Fish and Game Commission (AGFC) have reviewed the west alignment additional study area for the Arkadelphia bypass for potential impacts to fish and wildlife resources of the state. This route should have minimal impacts to known populations of Species of Greatest Conservation Need, however, this project does fall within the consultation zone for Northern Long Eared Bat. Any tree clearing that occurs should happen only after consultation with the United States Fish and Wildlife Service. Any impacts to jurisdictional waters of the United States should be mitigated appropriately, at an approved mitigation bank adhering to the 2008 compensatory mitigation rule.

The AGFC appreciates the opportunity to review this proposed project. Should there be additional questions of the agency, please don't hesitate to contact me. Thanks.

Sincerely,

A handwritten signature in cursive script that reads "Justin Stroman".

Justin Stroman
Environmental Coordination Biologist



THE DEPARTMENT OF ARKANSAS
HERITAGE

Asa Hutchinson
Governor

Stacy Hurst
Director

Arkansas Arts Council

*
Arkansas Natural
Heritage Commission

*
Arkansas State Archives

*
Delta Cultural Center

*
Historic Arkansas Museum

*
Mosaic Templars
Cultural Center

*
Old State House Museum



ARKANSAS HISTORIC
PRESERVATION PROGRAM



1100 North Street
Little Rock, AR 72201

(501) 324-9880
fax: (501) 324-9184
tdd: 711

e-mail:

info@arkansaspreservation.org

website:

www.arkansaspreservation.com

An Equal Opportunity Employer

May 14, 2018

Mr. Bill McAbee
Garver USA
4701 Northshore Drive
North Little Rock, AR 72118

RE: Clark – Arkadelphia
Section 106 Review – FHWA
Arkadelphia Bypass from Hwy. 67 to Hwy 51/8
ARDOT Job No. 070442
Hwy. 67 – Hwy. 51 (Arkadelphia Bypass) P.E.
AHPP Tracking Number: 101106

Dear Mr. McAbee:

This letter is in response to your inquiry regarding properties of archeological, historical, or architectural significance in the area of the proposed referenced project. The staff of the Arkansas Historic Preservation Program (AHPP) has reviewed records pertaining to the area in question.

A records check found several previously recorded archeological sites in the general area of this undertaking. The Arkansas 7/51 Bridge-CL0950 and Missouri Pacific Railroad Depot-CL0193 are listed in the National Register of Historic Places (NRHP) while the Ouachita River Railroad Bridge-CL0121 is eligible for listing. In addition, there are numerous historic structures in the proposed study area that have not been evaluated for eligibility for listing in the NRHP. Because so little work has been undertaken in the proposed study area previously, we recommend that a cultural resources survey be conducted in the area of potential effect (APE).

Tribes that have expressed an interest in the area include the Caddo Nation (Ms. Tamara Francis), the Chickasaw Nation (Ms. Karen Brunso), the Choctaw Nation of Oklahoma (Dr. Ian Thompson), the Osage Nation (Dr. Andrea Hunter), the Quapaw Tribe of Oklahoma (Mr. Everett Bandy), and the Shawnee Tribe of Oklahoma (Ms. Kim Jumper). We recommend that they be consulted in accordance with 36 CFR § 800.2 (c) (2).

Thank you for the opportunity to review this undertaking. Once the undertaking is further along in the planning stages, we look forward to reviewing the updated information. If you should have any questions or comments, please do not hesitate to contact Theresa Russell of my staff at (501)-324-9357.

Sincerely,

Scott Kaufman
Director, AHPP

cc: Dr. Andrea Hunter, Osage Nation
Dr. Ann Early, Arkansas Archeological Survey



Asa Hutchinson
Governor

Stacy Hurst
Director

Date: June 12, 2018
Subject: Arkadelphia Bypass from Hwy. 67 to Hwy. 51/8
Arkadelphia, Clark County, Arkansas
ANHC No.: P-CF..-18-053

Mr. Bill McAbee
Garver, LLC
4701 Northshore Drive
North Little Rock, AR 72118

Dear Mr. McAbee:

Staff members of the Arkansas Natural Heritage Commission have reviewed our files for records indicating the occurrence of rare plants and animals, outstanding natural communities, natural or scenic rivers, or other elements of special concern within or near the study area for the Arkadelphia Bypass project from Highway 67 to Highway 51/8. The results of this review are provided as a Geographic Information System (GIS) layer file. Documentation is provided to help you interpret the information in this file.

Our records indicate the potential occurrence of the following species within or near (a one-mile radius of) the project area:

Anguilla rostrata, American eel - State Concern
Arcidens wheeleri, Ouachita Rock Pocketbook - Federal Concern (endangered)
Crystallaria asprella, crystal darter - State Concern
Cyprogenia sp. cf aberti, Ouachita Fanshell - State Concern
Hiodon tergisus, mooneye - State Concern
Lampsilis abrupta, Pink Mucket - Federal Concern (endangered)
Liodytes rigida, Glossy Swampsnake - State Concern
Mugil cephalus, striped mullet - State Concern
Nicrophorus americanus, American burying beetle - Federal Concern (endangered)
Percina vigil, saddleback darter - State Concern
Pleurobema sintoxia, Round Pigtoe - State Concern
Ptychobranhus occidentalis, Ouachita Kidneyshell - State Concern
Theliderma cylindrica, Rabbitsfoot - Federal Concern (threatened)
Toxolasma texasiense, Texas Lilliput - State Concern
Villosa lienosa, little spectaclecase - State Concern

Most of these species were reported from the Ouachita River. Many of these records are older observations. We do not know the current status of these species in this reach of the river. It is of note, that four of the above

Arkansas Arts Council

*

Arkansas Historic
Preservation Program

*

Arkansas State Archives

*

Delta Cultural Center

*

Historic Arkansas Museum

*

Mosaic Templars
Cultural Center

*

Old State House Museum



1100 North Street
Little Rock, AR 72201

(501) 324-9619
fax: (501) 324-9618
tdd: 711

e-mail:

info@naturalheritage.com

website:

www.naturalheritage.com

species are of federal concern. Coordination with the U.S. Fish and Wildlife Service would be appropriate.

A Clark County Element list is enclosed for your reference. Represented on this list are elements for which we have records in our database. The list has been annotated to indicate those elements known to occur within a one and a five-mile radius of the project site. A legend is enclosed to help you interpret the codes used on this list.

Please keep in mind that the project area may contain important natural features of which we are unaware. Staff members of the Arkansas Natural Heritage Commission have not conducted a field survey of the study site. Our review is based on data available to the program at the time of the request. It should not be regarded as a final statement on the elements or areas under consideration. Because our files are updated constantly, you may want to check with us again at a later time.

Thank you for consulting us. It has been a pleasure to work with you on this study.

Sincerely,

A handwritten signature in black ink that reads "Cindy Osborne". The signature is written in a cursive, flowing style.

Cindy Osborne
Data Manager/Environmental Review Coordinator

Enclosures: GIS Layer file (ANHCDATA)
Clark County Element List (annotated)
Legend
Invoice



THE DEPARTMENT OF ARKANSAS
HERITAGE

Asa Hutchinson
Governor

Stacy Hurst
Director

Arkansas Arts Council

Arkansas Historic
Preservation Program

Arkansas State Archives

Delta Cultural Center

Historic Arkansas Museum

Mosaic Templars
Cultural Center

Old State House Museum



1100 North Street
Little Rock, AR 72201

(501) 324-9619
fax: (501) 324-9618
tdd: 711

e-mail:
info@naturalheritage.com
website:
www.naturalheritage.com

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Date: July 24, 2018
Subject: Elements of Special Concern
Arkadelphia Bypass-West Alignment
ARDOT Job No.: 070442
Clark County, Arkansas
ANHC No.: P-CF..-18-065

Mr. Bill McAbee
Garver
4701 Northshore Drive
North Little Rock, AR 72118

Dear Mr. McAbee:

Staff members of the Arkansas Natural Heritage Commission have reviewed our files for records indicating the occurrence of rare plants and animals, outstanding natural communities, natural or scenic rivers, or other elements of special concern within or near the following site:

<u>Project Name</u>	<u>County</u>	<u>Quad. Name</u>	<u>Location</u>
Arkadelphia Bypass West	Clark	Arkadelphia 7.5'	T17S/R19W/S19,20 T17S/R20W/S24

We find no records at present time.

A Clark County Element List is enclosed. Represented on this list are elements for which we have records in our database. The list has been annotated to indicate those elements known to occur within a one and a five mile radius of the project site. A legend is enclosed to help you interpret the codes used on this list.

Please keep in mind that the project area may contain important natural features of which we are unaware. Staff members of the Arkansas Natural Heritage Commission have not conducted a field survey of the study site. Our review is based on data available to the program at the time of the request. It should not be regarded as a final statement on the elements or areas under consideration. Because our files are updated constantly, you may want to check with us again at a later time.

Thank you for consulting us. It has been a pleasure to work with you on this study.

Sincerely,

Cindy Osborne
Data Manager/Environmental Review Coordinator

Enclosures: Legend
Clark County Element List (annotated)
Invoice

6/12/2018

Arkansas Natural Heritage Commission
Department of Arkansas Heritage
Elements of Special Concern
Clark County

Scientific Name	Common Name	Federal Status	State Status	Global Rank	State Rank
Animals-Invertebrates					
✓ <i>Alasmodonta marginata</i>	Elktoe	-	INV	G4	S3
<i>Amblyscirtes belli</i>	Bell's Roadside-Skipper	-	INV	G3G4	S3S4
✓ <i>Arcidens wheeleri</i>	Ouachita Rock Pocketbook	LE	SE	G1	S1
<i>Atrytonopsis hianna</i>	Dusted Skipper	-	INV	G4G5	S2S3
<i>Beameria venosa</i>	A concealed-tymbal Cicada	-	INV	GNR	S1S2
<i>Chlosyne gorgone</i>	Gorgone Checkerspot	-	INV	G5	S3
✓ <i>Cumberlandia monodonta</i>	Spectaclecase	LE	SE	G3	S2
✓ <i>Cyprogenia sp. cf aberti</i>	Ouachita Fanshell	-	INV	GNR	S3
<i>Euphyes dukesi</i>	Dukes' Skipper	-	INV	G3	S1S2
<i>Fallicambarus jeanae</i>	Daisie burrowing crayfish	-	INV	G2	S2
<i>Faxonius menae</i>	Mena crayfish	-	INV	G3	S3
✓ <i>Lampsilis abrupta</i>	Pink Mucket	LE	SE	G2	S2
✓ <i>Lampsilis ornata</i>	Southern Pocketbook	-	INV	G5	S2
✓ <i>Lampsilis powellii</i>	Arkansas Fatmucket	LT	SE	G2	S2
<i>Lethe creola</i>	Creole Pearly-Eye	-	INV	G3G4	S3
<i>Microstylum morosum</i>	giant prairie robber fly	-	INV	G3G4	S1
✓ <i>Nicrophorus americanus</i>	American burying beetle	LE	SE	G2G3	S1
✓ <i>Obovaria olivaria</i>	Hickorynut	-	INV	G4	S3
✓ <i>Pleurobema rubrum</i>	Pyramid Pigtoe	-	INV	G2G3	S2
✓ <i>Pleurobema sintoxia</i>	Round Pigtoe	-	INV	G4G5	S3
<i>Poanes yehl</i>	Yehl Skipper	-	INV	G4	S1S3
<i>Problema byssus</i>	Byssus Skipper	-	INV	G3G4	S3
✓ <i>Procambarus parasimulans</i>	Bismark burrowing crayfish	-	INV	G4	S3
✓ <i>Ptychobranchus occidentalis</i>	Ouachita Kidneyshell	-	INV	G3G4	S3
<i>Quadrula fragosa</i>	Winged Mapleleaf	LE	SE	G1	S1
<i>Quadrula nobilis</i>	Gulf Mapleleaf	-	INV	G4	S3
✓ <i>Somatogyrus amnicoloides</i>	Ouachita pebblesnail	-	INV	GX	SX
✓ <i>Somatogyrus wheeleri</i>	channelled pebblesnail	-	INV	GX	SX
<i>Speyeria diana</i>	Diana Fritillary	-	INV	G3G4	S2S3
<i>Tetraloniella albata</i>	white long-horned bee	-	INV	GNR	S1
✓ <i>Theliderma cylindrica</i>	Rabbitsfoot	LT	SE	G3G4	S3
<i>Toxolasma lividum</i>	Purple Lilliput	-	INV	G3Q	S3
<i>Toxolasma parvum</i>	Lilliput	-	INV	G5	S3
✓ <i>Toxolasma texasiense</i>	Texas Lilliput	-	INV	G4	S3
✓ <i>Villosa lienosa</i>	little spectaclecase	-	INV	G5	S3
Animals-Vertebrates					
✓ <i>Alosa alabamiae</i>	Alabama shad	-	INV	G2G3	S1
✓ <i>Ambystoma talpoideum</i>	Mole Salamander	-	INV	G5	S3
✓ <i>Anguilla rostrata</i>	American eel	-	INV	G4	S3
✓ <i>Carphophis amoenus</i>	Common Wormsnake	-	INV	G5	S2
* <i>Corynorhinus rafinesquii</i>	Rafinesque's big-eared bat	-	INV	G3G4	S3
✓ <i>Crystallaria asprella</i>	crystal darter	-	INV	G3	S2
<i>Erimyzon sucetta</i>	lake chubsucker	-	INV	G5	S3
<i>Etheostoma clinton</i>	beaded darter	-	INV	GNR	S2
✓ <i>Etheostoma parvipinne</i>	goldstripe darter	-	INV	G4G5	S3

Clark Co. (cont.)

Scientific Name	Common Name	Federal Status	State Status	Global Rank	State Rank
<i>Eurycea paludicola</i>	Western Dwarf Salamander	-	INV	GNR	S3
<i>Haliaeetus leucocephalus</i>	Bald Eagle	-	INV	G5	S3B,S4N
<i>Hemidactylium scutatum</i>	Four-toed Salamander	-	INV	G5	S2
✓ <i>Hiodon alosoides</i>	goldeye	-	INV	G5	S2
✓ <i>Hiodon tergisus</i>	mooneye	-	INV	G5	S2
✓ <i>Hyla avivoca</i>	Bird-voiced Treefrog	-	INV	G5	S3
<i>Lethenteron appendix</i>	American brook lamprey	-	INV	G4	S3
✓ <i>Liodytes rigida</i>	Glossy Swampsnake	-	INV	G5	S3
✓ <i>Mugil cephalus</i>	striped mullet	-	INV	G5	S2
<i>Myotis austroriparius</i>	southeastern bat	-	INV	G4	S3
<i>Myotis septentrionalis</i>	northern long-eared bat	LT	SE	G1G2	S1S2
<i>Notropis ortenburgeri</i>	Kiamichi shiner	-	INV	G3	S3
✓ <i>Notropis perpalidus</i>	peppered shiner	-	INV	G3	S3
✓ <i>Noturus taylori</i>	Caddo madtom	-	INV	G1	S1
<i>Ophisaurus attenuatus</i>	Slender Glass Lizard	-	INV	G5	S3
✓ <i>Percina brucehompsoni</i>	Ouachita darter	-	INV	G2?	S2
✓ <i>Percina uranidea</i>	stargazing darter	-	INV	G3	S2
✓ <i>Percina vigil</i>	saddleback darter	-	INV	G5	S3
<i>Picoides borealis</i>	Red-cockaded Woodpecker	LE	SE	G3	S1
✓ <i>Polyodon spathula</i>	paddlefish	-	INV	G4	S3
✓ <i>Porphyrio martinicus</i>	Purple Gallinule	-	INV	G5	S1B
✓ <i>Pteronotopis hubbsi</i>	bluehead shiner	-	INV	G3	S3
Plants-Vascular					
<i>Agalinis auriculata</i>	ear-leaf false foxglove	-	INV	G3	S1
✓ <i>Amsonia hubrichtii</i>	Ouachita bluestar	-	INV	G3	S3
✓ <i>Astragalus crassicaupus</i> var. <i>crassicaupus</i>	purple ground-plum	-	INV	G5T5	S2
<i>Carex decomposita</i>	cypress-knee sedge	-	INV	G3G4	S2
<i>Cirsium engelmannii</i>	Engelmann's thistle	-	INV	G4	S1
<i>Cypripedium kentuckiense</i>	Kentucky lady's-slipper	-	INV	G3	S3
<i>Diaperia prolifera</i> var. <i>prolifera</i>	big-head rabbit-tobacco	-	INV	G5TNR	S1S3
✓ <i>Fuirena simplex</i> var. <i>aristulata</i>	western umbrella sedge	-	INV	G5T4	S1
✓ <i>Glandularia bipinnatifida</i> var. <i>bipinnatifida</i>	Dakota vervain	-	INV	G5T5	S2
<i>Liatris squarrosa</i> var. <i>squarrosa</i>	hairy scaly blazing-star	-	INV	G5T5	S1
<i>Lithospermum incisum</i>	fringed puccoon	-	INV	G5	S2S3
<i>Lithospermum tuberosum</i>	tuberous puccoon	-	INV	G4	S2
✓ <i>Lycopodiella prostrata</i>	prostrate bog club-moss	-	INV	G5	S1
<i>Minuartia drummondii</i>	Drummond's sandwort	-	INV	G5	S2S3
<i>Nemastylis geminiflora</i>	celestial-lily	-	INV	G4	S3
✓ <i>Physaria gracilis</i> ssp. <i>gracilis</i>	slender bladderpod	-	INV	G5T4	S1
✓ <i>Plantago rhodosperma</i>	red-seed plantain	-	INV	GNR	S1S2
✓ <i>Pseudolycopodiella caroliniana</i>	slender bog club-moss	-	INV	G4	S1
<i>Psilotum nudum</i>	whisk fern	-	INV	G5	S1?
✓ <i>Pyrrhopappus pauciflorus</i>	few-flower false dandelion	-	INV	G5	S1S2
<i>Ranunculus flabellaris</i>	yellow water crowfoot	-	INV	G5	S3
<i>Scleria verticillata</i>	whorled nut-rush	-	ST	G5	S1
<i>Solidago tortifolia</i>	twist-leaf goldenrod	-	INV	G4G5	S2
✓ <i>Spiranthes magnicamporum</i>	Great Plains ladies'-tresses	-	INV	G3G4	S1S2
<i>Spiranthes odorata</i>	fragrant ladies'-tresses	-	INV	G5	S1
<i>Spiranthes ovalis</i> var. <i>erostellata</i>	northern oval ladies'-tresses	-	INV	G5?T4?	S1

Clark Co. (cont.)

Scientific Name	Common Name	Federal Status	State Status	Global Rank	State Rank
<i>Spiranthes praecox</i>	giant ladies'-tresses	-	INV	G5	S1S2
<i>Stenosiphon linifolius</i>	false gaura	-	ST	G5	S1
<i>Trichomanes petersii</i>	dwarf bristle fern	-	ST	G4G5	S2
<i>Utricularia inflata</i>	swollen bladderwort	-	INV	G5	S1
<i>Vernonia lettermannii</i>	Letterman's ironweed	-	INV	G3	S3
<i>Viola walteri</i>	Walter's violet	-	INV	G4G5	S1S2
<i>Xyris difformis</i> var. <i>difformis</i>	bog yellow-eyed-grass	-	INV	G5T5	S2

Special Elements-Natural Communities

Juniper-Hardwood Woodland	-	INV	GNR	S4
Lowland Pine-Oak Forest	-	INV	GNR	S1
South Central Saline Glade	-	INV	GNR	SNR
✓ West Gulf Coastal Plain Northern Calcareous Prairie	-	INV	GNR	SNR

Special Elements-Other

Colonial nesting site, water birds	-	INV	GNR	SNR
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*-This element of special concern has been recorded within one mile of the Arkadelphia Bypass-West Alignment.

✓-These elements of special concern have been recorded within five miles of the Arkadelphia Bypass-West Alignment.

LEGEND

STATUS CODES

FEDERAL STATUS CODES

C	=	Candidate species. The U.S. Fish and Wildlife Service has enough scientific information to warrant proposing this species for listing as endangered or threatened under the Endangered Species Act.
LE	=	Listed Endangered; the U.S. Fish and Wildlife Service has listed this species as endangered under the Endangered Species Act.
LT	=	Listed Threatened; the U.S. Fish and Wildlife Service has listed this species as threatened under the Endangered Species Act.
-PD	=	Proposed for Delisting; the U.S. Fish and Wildlife Service has proposed that this species be removed from the list of Endangered or Threatened Species.
PE	=	Proposed Endangered; the U.S. Fish and Wildlife Service has proposed this species for listing as endangered.
PT	=	Proposed Threatened; the U.S. Fish and Wildlife Service has proposed this species for listing as threatened.
T/SA E/SA	=	Threatened (or Endangered) because of similarity of appearance.

STATE STATUS CODES

INV	=	Inventory Element; The Arkansas Natural Heritage Commission is currently conducting active inventory work on these elements. Available data suggests these elements are of conservation concern. These elements may include outstanding examples of Natural Communities, colonial bird nesting sites, outstanding scenic and geologic features as well as plants and animals, which, according to current information, may be rare, peripheral, or of an undetermined status in the state. The ANHC is gathering detailed location information on these elements.
WAT	=	Watch List Species; The Arkansas Natural Heritage Commission is not conducting active inventory work on these species, however, available information suggests they may be of conservation concern. The ANHC is gathering general information on status and trends of these elements. An “*” indicates the status of the species will be changed to “INV” if the species is verified as occurring in the state (this typically means the agency has received a verified breeding record for the species).
MON	=	Monitored Species; The Arkansas Natural Heritage Commission is currently monitoring information on these species. These species do not have conservation concerns at present. They may be new species to the state, or species on which additional information is needed. The ANHC is gathering detailed location information on these elements
SE	=	State Endangered; this term is applied differently for plants and animals. Animals – These species are afforded protection under Arkansas Game and Fish Commission (AGFC) Regulation. The AGFC states that it is unlawful to import, transport, sell, purchase, hunt, harass or possess any threatened or endangered species of wildlife or parts. The AGFC lists as endangered any wildlife species or subspecies endangered or threatened with extinction, listed or proposed as a candidate for listing by the U.S. Fish and Wildlife Service or any native species or subspecies listed as endangered by the Commission. Plants – These species have been recognized by the Arkansas Natural Heritage Commission as being in danger of being extirpated from the state. This is an administrative designation with no regulatory authority.
ST	=	State Threatened; These species have been recognized by the Arkansas Natural Heritage Commission as being likely to become endangered in Arkansas in the foreseeable future, based on current inventory information. This is an administrative designation with no regulatory authority.

DEFINITION OF RANKS

Global Ranks

G1	=	Critically imperiled globally. At a very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
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G2	=	Imperiled globally. At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
G3	=	Vulnerable globally. At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.
G4	=	Apparently secure globally. Uncommon but not rare; some cause for long-term concern due to declines or other factors.
G5	=	Secure globally. Common, widespread and abundant.
GH	=	Of historical occurrence, possibly extinct globally. Missing; known from only historical occurrences, but still some hope of rediscovery.
GU	=	Unrankable. Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
GX	=	Presumed extinct globally. Not located despite intensive searches and virtually no likelihood of rediscovery.
GNR	=	Unranked. The global rank not yet assessed.
GNA	=	Not Applicable. A conservation status rank is not applicable.
T-RANKS=		T subranks are given to global ranks when a subspecies, variety, or race is considered at the state level. The subrank is made up of a "T" plus a number or letter (1, 2, 3, 4, 5, H, U, X) with the same ranking rules as a full species.

State Ranks

S1	=	Critically imperiled in the state due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors making it vulnerable to extirpation.
S2	=	Imperiled in the state due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it vulnerable to extirpation.
S3	=	Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4	=	Apparently secure in the state. Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5	=	Secure in the state. Common, widespread and abundant.
SH	=	Of historical occurrence, with some possibility of rediscovery. Its presence may not have been verified in the past 20-40 years. A species may be assigned this rank without the 20-40 year delay if the only known occurrences were destroyed or if it had been extensively and unsuccessfully sought.
SU	=	Unrankable. Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SX	=	Presumed extirpated from the state. Not located despite intensive searches and virtually no likelihood of rediscovery.
SNR	=	Unranked. The state rank not yet assessed.
SNA	=	Not Applicable. A conservation status rank is not applicable.

General Ranking Notes

Q	=	A "Q" in the global rank indicates the element's taxonomic classification as a species is a matter of conjecture among scientists.
RANGES=		Ranges are used to indicate a range of uncertainty about the status of the element.
?	=	A question mark is used to denote an inexact numeric rank.
B	=	Refers to the breeding population of a species in the state.
N	=	Refers to the non-breeding population of a species in the state.



May 30, 2018

Garver, LLC
4701 Northshore Drive
North Little Rock, AR 72118

Subject: Farmland Conversion Impact Rating
Garver, LLC
ARDOT Job No. 070442 Hwy 67-Hwy 51

Dear Bill McAbee

This letter is in response to your request for information related to Prime Farmland and Farmland of Statewide Importance for the proposed Arkadelphia Bypass from Hwy 67 to Hwy 51/8 in Clark County, Arkansas. Some areas in the proposed area are considered Prime Farmland or Farmland of Statewide Importance, as showed on the attached maps.

Should you have any questions or need additional information, please call me at (870) 345-3347 or email at marie.ross@ar.usda.gov.

Sincerely,

Marie Ross
Resource Soil Scientist
USDA-Natural Resources Conservation Service
640 South 6th Street
Arkadelphia AR 71923
870-345-3347

Enclosures:
Form AD-1006
Farmland Classification Map

cc.
Edgar Mersiovsky, NRCS, State Soil Scientist, Little Rock, AR



FARMLAND CONVERSION IMPACT RATING

PART I (To be completed by Federal Agency)		Date Of Land Evaluation Request May 25, 2018				
Name of Project Arkadelphia Bypass ARDOT 070442		Federal Agency Involved				
Proposed Land Use construct bypass road		County and State Clark County, AR				
PART II (To be completed by NRCS)		Date Request Received By NRCS May 10, 2018		Person Completing Form: Marie Ross		
Does the site contain Prime, Unique, Statewide or Local Important Farmland? (If no, the FPPA does not apply - do not complete additional parts of this form)		YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	Acres Irrigated 278,293	Average Farm Size 777	
Major Crop(s) soybeans	Farmable Land In Govt. Jurisdiction Acres: 118739 % 21		Amount of Farmland As Defined in FPPA Acres: 118739 % 21			
Name of Land Evaluation System Used SCS LESA	Name of State or Local Site Assessment System Arkansas		Date Land Evaluation Returned by NRCS			
PART III (To be completed by Federal Agency)		Alternative Site Rating				
		Site A	Site B	Site C	Site D	
A. Total Acres To Be Converted Directly		635.6				
B. Total Acres To Be Converted Indirectly		0				
C. Total Acres In Site		635.6				
PART IV (To be completed by NRCS) Land Evaluation Information						
A. Total Acres Prime And Unique Farmland		376				
B. Total Acres Statewide Important or Local Important Farmland		0				
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted		0.3				
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value		100				
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)		25.9				
PART VI (To be completed by Federal Agency) Site Assessment Criteria (Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)		Maximum Points	Site A	Site B	Site C	Site D
1. Area In Non-urban Use		(15)				
2. Perimeter In Non-urban Use		(10)				
3. Percent Of Site Being Farmed		(20)				
4. Protection Provided By State and Local Government		(20)				
5. Distance From Urban Built-up Area		(15)				
6. Distance To Urban Support Services		(15)				
7. Size Of Present Farm Unit Compared To Average		(10)				
8. Creation Of Non-farmable Farmland		(10)				
9. Availability Of Farm Support Services		(5)				
10. On-Farm Investments		(20)				
11. Effects Of Conversion On Farm Support Services		(10)				
12. Compatibility With Existing Agricultural Use		(10)				
TOTAL SITE ASSESSMENT POINTS		160	0	0	0	0
PART VII (To be completed by Federal Agency)						
Relative Value Of Farmland (From Part V)		100	25.9	0	0	0
Total Site Assessment (From Part VI above or local site assessment)		160	0	0	0	0
TOTAL POINTS (Total of above 2 lines)		260	25.9	0	0	0
Site Selected:		Date Of Selection		Was A Local Site Assessment Used? YES <input type="checkbox"/> NO <input type="checkbox"/>		
Reason For Selection:						
Name of Federal agency representative completing this form: Natural Resources Conservaton Service Date: 5/25/2018						

(See Instructions on reverse side)

Form AD-1006 (03-02)

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

Appendix C: Agency and Tribal Coordination Page 18 of 34

- Step 1 - Federal agencies (or Federally funded projects) involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form. For Corridor type projects, the Federal agency shall use form NRCS-CPA-106 in place of form AD-1006. The Land Evaluation and Site Assessment (LESA) process may also be accessed by visiting the FPPA website, <http://fppa.nrcs.usda.gov/lesa/>.
- Step 2 - Originator (Federal Agency) will send one original copy of the form together with appropriate scaled maps indicating location(s) of project site(s), to the Natural Resources Conservation Service (NRCS) local Field Office or USDA Service Center and retain a copy for their files. (NRCS has offices in most counties in the U.S. The USDA Office Information Locator may be found at http://offices.usda.gov/scripts/ndISAPI.dll/oip_public/USA_map, or the offices can usually be found in the Phone Book under U.S. Government, Department of Agriculture. A list of field offices is available from the NRCS State Conservationist and State Office in each State.)
- Step 3 - NRCS will, within 10 working days after receipt of the completed form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland. (When a site visit or land evaluation system design is needed, NRCS will respond within 30 working days.
- Step 4 - For sites where farmland covered by the FPPA will be converted by the proposed project, NRCS will complete Parts II, IV and V of the form.
- Step 5 - NRCS will return the original copy of the form to the Federal agency involved in the project, and retain a file copy for NRCS records.
- Step 6 - The Federal agency involved in the proposed project will complete Parts VI and VII of the form and return the form with the final selected site to the servicing NRCS office.
- Step 7 - The Federal agency providing financial or technical assistance to the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA.

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

(For Federal Agency)

Part I: When completing the "County and State" questions, list all the local governments that are responsible for local land use controls where site(s) are to be evaluated.

Part III: When completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them or other major change in the ability to use the land for agriculture.
2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities planned build out capacity) that will cause a direct conversion.

Part VI: Do not complete Part VI using the standard format if a State or Local site assessment is used. With local and NRCS assistance, use the local Land Evaluation and Site Assessment (LESA).

1. Assign the maximum points for each site assessment criterion as shown in § 658.5(b) of CFR. In cases of corridor-type project such as transportation, power line and flood control, criteria #5 and #6 will not apply and will, be weighted zero, however, criterion #8 will be weighed a maximum of 25 points and criterion #11 a maximum of 25 points.
2. Federal agencies may assign relative weights among the 12 site assessment criteria other than those shown on the FPPA rule after submitting individual agency FPPA policy for review and comment to NRCS. In all cases where other weights are assigned, relative adjustments must be made to maintain the maximum total points at 160. For project sites where the total points equal or exceed 160, consider alternative actions, as appropriate, that could reduce adverse impacts (e.g. Alternative Sites, Modifications or Mitigation).

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, convert the site assessment points to a base of 160.

Example: if the Site Assessment maximum is 200 points, and the alternative Site "A" is rated 180 points:

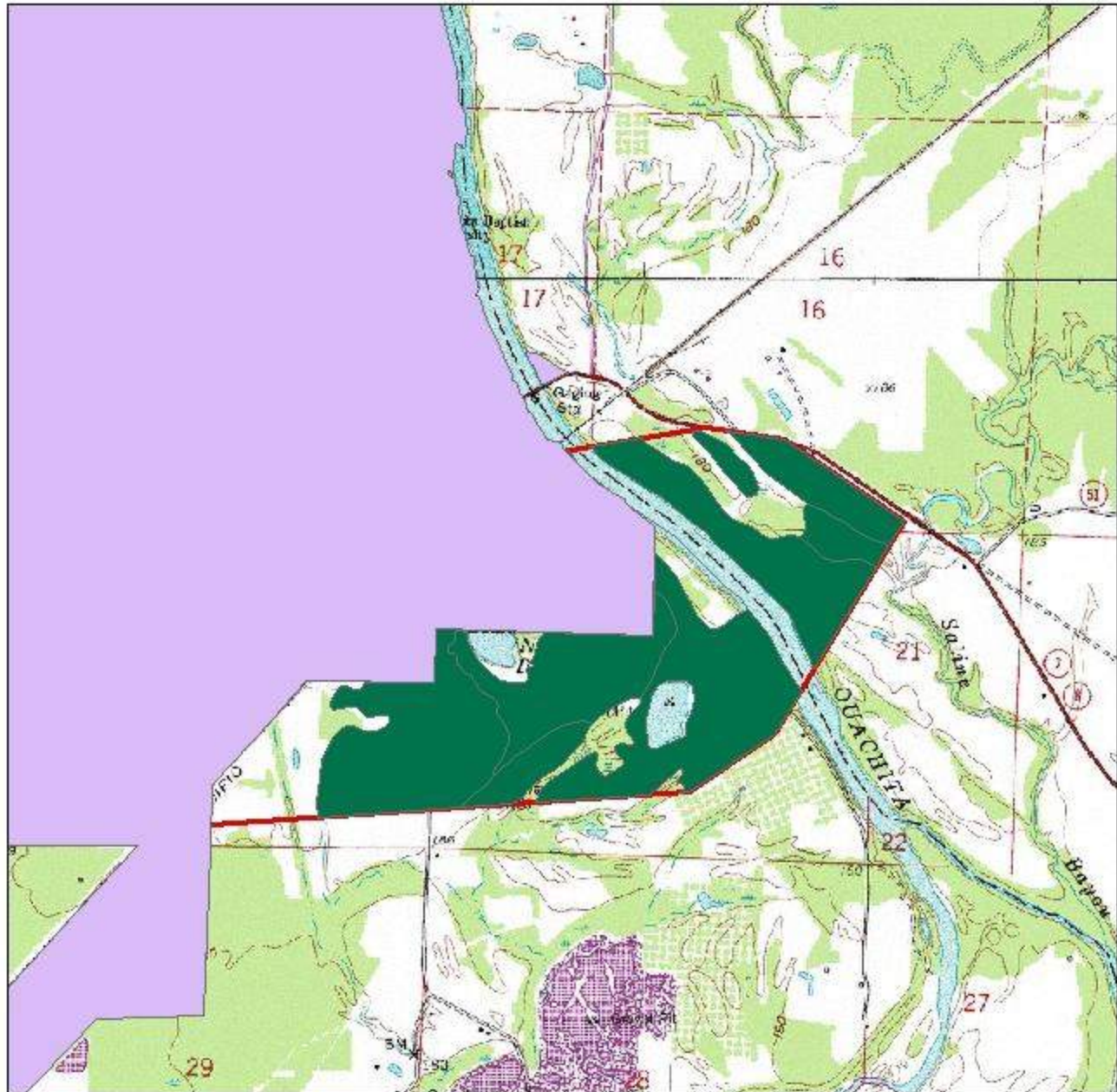
$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \times 160 = 144 \text{ points for Site A}$

For assistance in completing this form or FPPA process, contact the local NRCS Field Office or USDA Service Center.

NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.

Farmland Classification **Arkadelphia Bypass from Hwy67 to Hwy 51/8** **ARDOT Job No. 070442** **Clark County, AR**


Assisted by: Marie Ross, RSS
 Natural Resources Conservation Service
 Arkadelphia Field Office




Legend

1:24,000

May 2018

 City Limit

Farmland Classification

 All areas are prime farmland





August 3, 2018

Garver, LLC
4701 Northshore Drive
North Little Rock, AR 72118
Attn: Bill McAbee

Subject: FormsAD106
Farmland Conversion Impact Rating
ARDot Job 070442 Hwy 67-Hwy 51 P.E
Arkadelphia West Bypass
Clark County, AR

Dear Mr. Bill McAbee

This letter is in response to your request for information related to Prime Farmland and Farmland of Statewide Importance for the proposed Arkadelphia West Bypass located in Clark County, Arkansas. Some areas in the proposed area are considered Prime Farmland or Farmland of Statewide Importance, as showed on the attached maps.

Should you have any questions or need additional information, please call me at (870) 345-3347 or email at marie.ross@ar.usda.gov

Sincerely,

Marie Ross
Resource Soil Scientist
USDA-Natural Resources Conservation Service
640 South 6th Street
Arkadelphia AR 71923
870-345-3347

cc

Edgar Mersiovsky, Arkansas State Soil Scientist, Little Rock, AR



U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I (To be completed by Federal Agency)		3. Date of Land Evaluation Request 7/9/18		4. Sheet 1 of 1	
1. Name of Project Arkadelphia West Bypass ARDOT 070422		5. Federal Agency Involved			
2. Type of Project		6. County and State Clark County, AR			
PART II (To be completed by NRCS)		1. Date Request Received by NRCS 7/9/18		2. Person Completing Form Marie Ross	
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form).		YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		4. Acres Irrigated Average Farm Size 79 128	
5. Major Crop(s) soybeans	6. Farmable Land in Government Jurisdiction Acres: 252,989 % 42.6		7. Amount of Farmland As Defined in FPPA Acres: 252,989 % 42.6		
8. Name Of Land Evaluation System Used SCS/LESA	9. Name of Local Site Assessment System Arkansas		10. Date Land Evaluation Returned by NRCS 7/31/18		
PART III (To be completed by Federal Agency)		Alternative Corridor For Segment			
		Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly		36.87			
B. Total Acres To Be Converted Indirectly, Or To Receive Services		0			
C. Total Acres In Corridor		36.87			
PART IV (To be completed by NRCS) Land Evaluation Information					
A. Total Acres Prime And Unique Farmland		20.6			
B. Total Acres Statewide And Local Important Farmland		0			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted		0.0042			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value		100			
PART V (To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)		49.2			
PART VI (To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))		Maximum Points			
1. Area in Nonurban Use		15			
2. Perimeter in Nonurban Use		10			
3. Percent Of Corridor Being Farmed		20			
4. Protection Provided By State And Local Government		20			
5. Size of Present Farm Unit Compared To Average		10			
6. Creation Of Nonfarmable Farmland		25			
7. Availability Of Farm Support Services		5			
8. On-Farm Investments		20			
9. Effects Of Conversion On Farm Support Services		25			
10. Compatibility With Existing Agricultural Use		10			
TOTAL CORRIDOR ASSESSMENT POINTS		160	0	0	0
PART VII (To be completed by Federal Agency)					
Relative Value Of Farmland (From Part V)		100	49.2	0	0
Total Corridor Assessment (From Part VI above or a local site assessment)		160	0	0	0
TOTAL POINTS (Total of above 2 lines)		260	49.2	0	0
1. Corridor Selected:		2. Total Acres of Farmlands to be Converted by Project:		3. Date Of Selection:	
				4. Was A Local Site Assessment Used? YES <input type="checkbox"/> NO <input type="checkbox"/>	
5. Reason For Selection:					

Signature of Person Completing this Part:

DATE

NOTE: Complete a form for each segment with more than one Alternate Corridor

Clear Form

CORRIDOR - TYPE SITE ASSESSMENT CRITERIA

The following criteria are to be used for projects that have a linear or corridor - type site configuration connecting two distant points, and crossing several different tracts of land. These include utility lines, highways, railroads, stream improvements, and flood control systems. Federal agencies are to assess the suitability of each corridor - type site or design alternative for protection as farmland along with the land evaluation information.

- (1) How much land is in nonurban use within a radius of 1.0 mile from where the project is intended?

More than 90 percent - 15 points
 90 to 20 percent - 14 to 1 point(s)
 Less than 20 percent - 0 points

- (2) How much of the perimeter of the site borders on land in nonurban use?

More than 90 percent - 10 points
 90 to 20 percent - 9 to 1 point(s)
 Less than 20 percent - 0 points

- (3) How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than five of the last 10 years?

More than 90 percent - 20 points
 90 to 20 percent - 19 to 1 point(s)
 Less than 20 percent - 0 points

- (4) Is the site subject to state or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?

Site is protected - 20 points
 Site is not protected - 0 points

- (5) Is the farm unit(s) containing the site (before the project) as large as the average - size farming unit in the County ?

(Average farm sizes in each county are available from the NRCS field offices in each state. Data are from the latest available Census of Agriculture, Acreage or Farm Units in Operation with \$1,000 or more in sales.)

As large or larger - 10 points
 Below average - deduct 1 point for each 5 percent below the average, down to 0 points if 50 percent or more below average - 9 to 0 points

- (6) If the site is chosen for the project, how much of the remaining land on the farm will become non-farmable because of interference with land patterns?

Acreage equal to more than 25 percent of acres directly converted by the project - 25 points
 Acreage equal to between 25 and 5 percent of the acres directly converted by the project - 1 to 24 point(s)
 Acreage equal to less than 5 percent of the acres directly converted by the project - 0 points

- (7) Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?

All required services are available - 5 points
 Some required services are available - 4 to 1 point(s)
 No required services are available - 0 points

- (8) Does the site have substantial and well-maintained on-farm investments such as barns, other storage building, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures?

High amount of on-farm investment - 20 points
 Moderate amount of on-farm investment - 19 to 1 point(s)
 No on-farm investment - 0 points

- (9) Would the project at this site, by converting farmland to nonagricultural use, reduce the demand for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area?

Substantial reduction in demand for support services if the site is converted - 25 points
 Some reduction in demand for support services if the site is converted - 1 to 24 point(s)
 No significant reduction in demand for support services if the site is converted - 0 points

- (10) Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of surrounding farmland to nonagricultural use?

Proposed project is incompatible to existing agricultural use of surrounding farmland - 10 points
 Proposed project is tolerable to existing agricultural use of surrounding farmland - 9 to 1 point(s)
 Proposed project is fully compatible with existing agricultural use of surrounding farmland - 0 points

Farmland Classification
Arkadelphia Bypass Hwy 67 to Hwy 51/8
West Alignment
Clark County, AR
ArDOT Job No. 070422

Appendix C: Agency and Tribal Coordination - Page 23 of 34

Assisted by: Marie Ross, RSS
Arkadelphia Service Center
Date: July 31, 2018



1:24,000

July 2018



February 5, 2020

Garver, LLC
4701 Northshore Drive
North Little Rock, AR 72118
Attn: Cassie Schmidt

Subject: Forms AD106
Farmland Conversion Impact Rating
ARDot Job 070422
Clark County, AR

Dear Ms. Schmidt,

This letter is in response to your request for information related to Prime Farmland and Farmland of Statewide Importance for the proposed Arkadelphia Bypass from Hwy 67 to Hwy 51/8 in Clark County, Arkansas. Some areas in the proposed area are considered Prime Farmland or Farmland of Statewide Importance, as showed on the attached maps.

Should you have any questions or need additional information, please call me at (870) 345-3347 or email at marie.ross@usda.gov

Sincerely,

Marie Ross
Resource Soil Scientist
USDA-Natural Resources Conservation Service
640 South 6th Street
Arkadelphia AR 71923
870-345-3347



U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I (To be completed by Federal Agency)		3. Date of Land Evaluation Request 1/13/20	4. Sheet 1 of 1
1. Name of Project Arkadelphia West Bypass ARDOT 070422		5. Federal Agency Involved FHWA	
2. Type of Project New Bypass Facility		6. County and State Clark County, AR	
PART II (To be completed by NRCS)		1. Date Request Received by NRCS 1/16/20	2. Person Completing Form Marie Ross
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		4. Acres Irrigated 79	Average Farm Size 128
5. Major Crop(s) soybeans	6. Farmable Land in Government Jurisdiction Acres: 309,138 % 54.7	7. Amount of Farmland As Defined in FPPA Acres: 252,989 % 42.6	
8. Name Of Land Evaluation System Used SCS/LESA	9. Name of Local Site Assessment System Arkansas	10. Date Land Evaluation Returned by NRCS 1/28/20	

PART III (To be completed by Federal Agency)		Alternative Corridor For Segment <u>Preferred Alternative</u>			
		Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly		100.5			
B. Total Acres To Be Converted Indirectly, Or To Receive Services		0			
C. Total Acres In Corridor		100.5			
PART IV (To be completed by NRCS) Land Evaluation Information					
A. Total Acres Prime And Unique Farmland		21.8			
B. Total Acres Statewide And Local Important Farmland		5.6			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted		0.03			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value		100			
PART V (To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)		21.9			
PART VI (To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))		Maximum Points			
1. Area in Nonurban Use		15			
2. Perimeter in Nonurban Use		10			
3. Percent Of Corridor Being Farmed		20			
4. Protection Provided By State And Local Government		20			
5. Size of Present Farm Unit Compared To Average		10			
6. Creation Of Nonfarmable Farmland		25			
7. Availability Of Farm Support Services		5			
8. On-Farm Investments		20			
9. Effects Of Conversion On Farm Support Services		25			
10. Compatibility With Existing Agricultural Use		10			
TOTAL CORRIDOR ASSESSMENT POINTS		160	0	0	0
PART VII (To be completed by Federal Agency)					
Relative Value Of Farmland (From Part V)		100	21.9	0	0
Total Corridor Assessment (From Part VI above or a local site assessment)		160	0	0	0
TOTAL POINTS (Total of above 2 lines)		260	21.9	0	0
1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used? YES <input type="checkbox"/> NO <input type="checkbox"/>		

5. Reason For Selection:

Signature of Person Completing this Part:

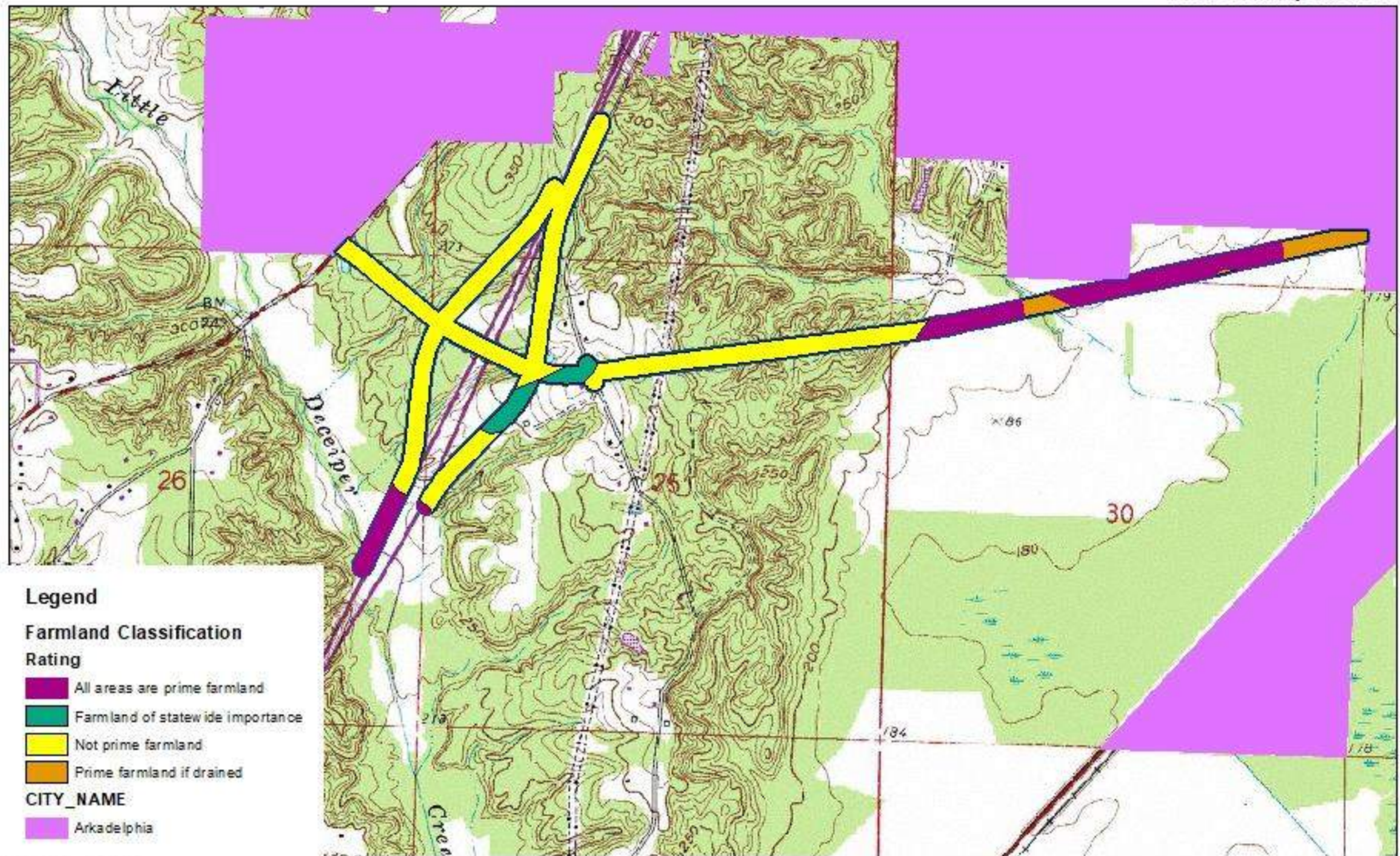
DATE

NOTE: Complete a form for each segment with more than one Alternate Corridor

Farmland Classification
Arkadelphia Bypass Hwy 67 to Hwy 51/8
West Alignment
Clark County, AR
ArDOT Job No. 070422

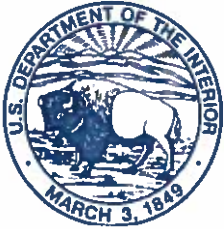
Appendix C: Agency and Tribal Coordination - Page 26 of 34

Assisted by: Marie Ross, RSS
NRCS Arkadelphia Service Center
Date: January 28, 2020



1:20,000

USGS Topo



IN REPLY REFER TO:

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Arkansas Ecological Service Field Office
110 South Amity Road, Suite 300
Conway, Arkansas 72032



May 23, 2018

Mr. Bill McAbee
Environmental Manager
Garver, LLC
4701 Northshore Drive
North Little Rock, Arkansas 72118

Dear Mr. McAbee:

The Service has reviewed your letter and request for information in preparation of National Environmental Policy Act (NEPA) documents for the Arkansas Department of Transportation (ArDOT) related to the Arkadelphia Bypass from U.S. Highway 67 to Arkansas Highway 51/8 near Arkadelphia, Clark County, Arkansas. The request for information is related to development of alternatives for ArDOT Job No. 070442 and was received on May 17, 2018.

Your letter specifically requested review of the proposed study area and to notify you of any constraints or concerns regarding the proposed project, such as unique environmental features or environmentally sensitive areas, socio-economic issues, proposed urban developments, and permit or approvals that should be obtained prior to construction of the project. The Service has reviewed the project location, along with our records and offers the following comments.

As indicated within your letter, the Information for Planning and Consultation System (IPaC), identified a total of 9 threatened, endangered, or candidate species within the vicinity of this action, along with other species of conservation concern. The list includes:

Federally Listed Species

Northern Long-eared Bat <i>Myotis septentrionalis</i>	Threatened
Piping Plover <i>Charadrius melodus</i>	Threatened
Arkansas Fatmucket <i>Lampsilis powellii</i>	Threatened
Ouachita Rock Pocketbook <i>Arcidens wheeleri</i>	Endangered
Pink Mucket (pearlymussel) <i>Lampsilis abrupta</i>	Endangered
Rabbitsfoot <i>Theliderma cylindrica</i>	Threatened
Spectaclecase (mussel) <i>Margaritifera monodonta</i>	Endangered
Winged Mapleleaf <i>Quadrula fragosa</i>	Endangered
American Burying Beetle <i>Nicrophorus americanus</i>	Endangered

Critical Habitats

There are no critical habitats at this location.

Mr. Bill McAbee

2

Migratory Birds and Eagles

Certain birds are protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Due to the proximity to the Ouachita River and the habitat within this area, it is likely that Bald Eagle, *Haliaeetus leucocephalus*, inhabits this area.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations:

1. The Migratory Bird Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Although each species identified will require further assessment and a determination by the action agency, the primary species that could be affected by this action, depending on the alternative, route, and design of the action are the freshwater mussel species identified that exist and have habitats within the Ouachita River. These species and their habitats lie within the project boundaries identified and the potentially affected areas upstream and downstream of the proposed action. Depending on the nature of the action, this project may require consultation in accordance with Section 7 of the Endangered Species Act.

Sediment and/or nutrient transport from the proposed project location may have direct, indirect, and/or cumulative effects to mussels, fish hosts, and/or their habitat(s). The effects of sedimentation and nutrients (e.g., ammonia, etc.) on mussels, fish, and their habitats are well documented in the scientific literature. Adverse effects associated with sedimentation and eutrophication from all phases of construction activities may be minimized and/or alleviated through proper implementation and maintenance of erosion control best management practices and maintaining vegetative buffers. Buffer width is dependent upon slope, vegetation type, and soil types. The Service can provide additional technical assistance on appropriate vegetative buffer widths upon request.

The comments herein are for the sole purpose of providing technical assistance to the action agency or for individual pre-project planning assistance. These comments and opinions should not be misconstrued as an "effect determination" or considered as concurrence with any proceeding determination(s) by the action agency in accordance with Section 7 of the ESA. These comments do not authorize the "take" of a threatened or endangered species as defined under the ESA. There are mechanisms available for project proponents to receive authorization from the Service for "incidental take" (e.g., an ESA Section 10 Incidental Take Permit or a Biological Opinion with "incidental take" provisions).

The Service recommends preliminary planning, use of best management practices, and selection of alternatives that would minimize and/or avoid affects to these species. More detailed recommendations and guidance cannot be provided at this time due to the limited project

Mr. Bill McAbee

3

information available. We look forward to assisting your further as more details of the action become available and alternatives are selected.

For further assistance or if you have any questions, please contact Lindsey Lewis at (501) 513-4489 or lindsey_lewis@fws.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "Melvin L. Tobin".

Melvin L. Tobin
Field Supervisor



United States Department of the Interior

Appendix C: Agency and Tribal Coordination - Page 30 of 34



FISH AND WILDLIFE SERVICE

Arkansas Ecological Service Field Office
110 South Amity Road, Suite 300
Conway, Arkansas 72032

July 25, 2018

Mr. Bill McAbee
Environmental Manager
Garver, LLC
4701 Northshore Drive
North Little Rock, Arkansas 72118

Dear Mr. McAbee:

The Service has reviewed your letter and request for information in preparation of National Environmental Policy Act (NEPA) documents for the Arkansas Department of Transportation (ArDOT) related to the Arkadelphia Bypass from U.S. Highway 67 to Arkansas Highway 51/8 - West Alignment near Arkadelphia, Clark County, Arkansas. The request for information is related to development of alternatives for ArDOT Job No. 070442 and was received on July 9, 2018.

Your letter specifically requested review of the proposed study area and to notify you of any constraints or concerns regarding the proposed project, such as unique environmental features or environmentally sensitive areas, socio-economic issues, proposed urban developments, and permit or approvals that should be obtained prior to construction of the project. The Service has reviewed the project location along with our records and offers the following comments.

As indicated within your letter, the Information for Planning and Consultation System (IPaC), identified a total of 8 threatened, endangered, or candidate species within the vicinity of this action along with other species of conservation concern. The list includes:

Federally Listed Species

Northern Long-eared Bat <i>Myotis septentrionalis</i>	Threatened
Piping Plover <i>Charadrius melodus</i>	Threatened
Ouachita Rock Pocketbook <i>Arcidens wheeleri</i>	Endangered
Pink Mucket (pearlymussel) <i>Lampsilis abrupta</i>	Endangered
Rabbitsfoot <i>Theliderma cylindrica</i>	Threatened
Spectaclecase (mussel) <i>Margaritifera monodonta</i>	Endangered
Winged Mapleleaf <i>Quadrula fragosa</i>	Endangered
American Burying Beetle <i>Nicrophorus americanus</i>	Endangered

Critical Habitats

There are no critical habitats at this location.

Mr. Bill McAbee

2

Migratory Birds and Eagles

Certain birds are protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Due to the proximity to the Ouachita River and the habitat within this area, it is likely that the Bald Eagle, *Haliaeetus leucocephalus*, inhabits this area.

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Sediment and/or nutrient transport from the proposed project location may have direct, indirect, and/or cumulative effects to mussels, fish hosts, and/or their habitat(s). The effects of sedimentation and nutrients (e.g., ammonia, etc.) on mussels, fish, and their habitats are well documented in the scientific literature. Adverse effects associated with sedimentation and eutrophication from all phases of construction activities may be minimized and/or alleviated through proper implementation and maintenance of erosion control best management practices and maintaining vegetative buffers. Buffer width is dependent upon slope, vegetation type, and soil types. The Service can provide additional technical assistance on appropriate vegetative buffer widths upon request.

The comments herein are for the sole purpose of providing technical assistance to the action agency or for individual pre-project planning assistance. These comments and opinions should not be misconstrued as an "effect determination" or considered as concurrence with any proceeding determination(s) by the action agency in accordance with Section 7 of the ESA. These comments do not authorize the "take" of a threatened or endangered species, as defined under the ESA. There are mechanisms available for project proponents to receive authorization from the Service for "incidental take" (e.g., an ESA Section 10 Incidental Take Permit or a Biological Opinion with "incidental take" provisions).

The Service recommends preliminary planning, use of best management practices, and selection of alternatives that would minimize and/or avoid affects to these species. More detailed recommendations and guidance cannot be provided at this time due to limited project

Mr. Bill McAbee

3

information available. We look forward to assisting you further as more details of the action become available and alternatives are selected.

For further assistance or if you have any questions, please contact Lindsey Lewis at (501) 513-4489 or lindsey_lewis@fws.gov.

Sincerely,



Melvin L. Tobin
Field Supervisor

cc: Project File
Read File

Filename: C:\Users\lilewis\Documents\PROJECTS\FY2018\ARDOT\Job No. 070442 - Arkadelphia Bypass\AFO Letter- West Alignment - ArDOT Job 070442 - Arkadelphia Bypass - Comments.docx

Tribal Consultation

Tribal consultation letters and exhibits were sent to the following tribes for the project. Tribal response dates are noted.

Caddo Nation

- Response received May 24, 2018

Chickasaw Nation

- No response received to date

Choctaw Nation of Oklahoma

- No response received to date

Jena Band of the Choctaw Indians

- No response received to date

Osage Nation

- No response received to date

Quapaw Tribe of Oklahoma

- Response received June 1, 2018

Shawnee Tribe of Oklahoma

- No response received to date

Tunica-Biloxi Tribe of Louisiana, Inc.

- No response received to date

QUAPAW TRIBE OF OKLAHOMA

P.O. Box 765
Quapaw, OK 74363-0765

(918) 542-1853
FAX (918) 542-4694

June 1, 2018

Arkansas State Highway and
Transportation Department
P.O. Box 2261
Little Rock, Arkansas 72203-2261

RECEIVED
ARDC
JUN 04 2018
ENVIRONMENTAL
DIVISION

Re: ArDOT Job No 070442 Hwy 67, 51 (Arkadelphia Bypass) P.E. Clark County, Arkansas

To whom it may concern,

The Quapaw Tribe Historic Preservation Office has received and reviewed the information provided for the proposed ArDOT Job No 070442 Hwy 67, 51 (Arkadelphia Bypass) P.E. Clark County, Arkansas and concurs with your recommendations for this to conduct a cultural resources survey.

In accordance with the National Historic Preservation Act, (NHPA) [16 U.S.C. 470 §§ 470-470w-6] 1966, undertakings subject to the review process are referred to in S101 (d) (6) (A), which clarifies that historic properties may have religious and cultural significance to Indian tribes. Additionally, Section 106 of NHPA requires Federal agencies to consider the effects of their actions on historic properties (36 CFR Part 800) as does the National Environmental Policy Act (43 U.S.C. 4321 and 4331-35 and 40 CFR 1501.7(a) of 1969).

The Quapaw Tribe has vital interests in protecting its historic and ancestral cultural resources. We do not anticipate that this project will adversely impact any cultural resources or human remains protected under the NHPA, NEPA, or the Native American Graves Protection and Repatriation Act. If however, artifacts or human remains are discovered during project construction, we ask that work cease immediately and that you contact the Quapaw Tribe Historic Preservation Office.

Should you have any questions or need any additional information, please feel free to contact me at the number listed below. Thank you for consulting with the Quapaw Tribe on this matter.

Sincerely,



Tribal Historic Preservation Office
Quapaw Tribe of Oklahoma
P.O. Box 765
Quapaw, OK 74363
(w) 918-238-3100

Appendix D – Conceptual Stage Relocation Study

CONCEPTUAL STAGE RELOCATION STUDY

Job 070442

**Hwy. 67 - Hwy. 51 (Arkadelphia Bypass) P.E.
Clark County**

September 9, 2020

GENERAL STATEMENT OF RELOCATION PROCEDURE

Persons displaced as a direct result of acquisition for the proposed project will be eligible for relocation assistance in accordance with Public Law 91-646, the Uniform Relocation Assistance and Real Property Acquisitions Policy Act of 1970, as amended (The Uniform Act). The Relocation Program provides advisory assistance and payments to minimize the adverse impact and hardship of displacement upon such persons. No lawful occupant shall be required to move without receiving a minimum of 90 days advance written notice. All displaced persons; residential, business, farm, nonprofit organization, and personal property relocatees are eligible for reimbursement for actual reasonable moving costs.

It is the Department's Policy that adequate replacement housing will be made available, built if necessary, before any person is required to move from their dwelling. All replacement housing must be fair housing and offered to all affected persons regardless of race, color, religion, sex or national origin. Construction of the project will not begin until decent, safe and sanitary replacement housing is in place and offered to all affected persons.

There are two basic types of residential relocation payments: (1) Replacement Housing payments and (2) Moving Expense payments. Replacement Housing payments are made to qualified owners and tenants. An owner may receive a payment of up to \$31,000.00 for the increased cost of a comparable replacement dwelling. The amount of this payment is determined by a study of the housing market. Owners may also be eligible for payments to compensate them for the increased interest cost for a new mortgage and the incidental expenses incurred in connection with the purchase of a replacement dwelling. A tenant may receive a rental subsidy payment of up to \$7,200.00. Tenants may elect to receive a down payment rather than a rental subsidy to enable them to purchase a replacement dwelling. Replacement Housing payments are made in addition to Moving Expense payments.

Businesses, farms, and nonprofit organizations are eligible for reestablishment payments, not to exceed \$25,000.00. Reestablishment expense payments are made in addition to moving expense payments. A business, farm, or nonprofit organization may be eligible for a fixed payment in lieu of the moving costs and reestablishment costs if relocation cannot be accomplished without a substantial loss of existing patronage. The fixed payment will be computed in accordance with the Uniform Relocation Act and cannot exceed \$40,000.00.

If the displacee is not satisfied with the amounts offered as relocation payments, they will be provided a form to assist in filing a formal appeal. A hearing will be arranged at a time and place convenient for the displacee, and the facts of the case will be promptly and carefully reviewed.

Relocation services will be provided until all persons are relocated or their relocation eligibility expires. The Relocation Office will have listings of available replacement housing and commercial

properties. Information is also maintained concerning other Federal and State Programs offering assistance to displaced persons.

PROJECT SPECIFIC DISPLACEMENTS

Based on preliminary right-of-way plans and aerial photographs, it is estimated that the alternatives under consideration for the subject project could cause the following displacements and costs:

WEST BYPASS ALTERNATIVES

Alternative A:

No Relocation

Alternative B:

No Relocation

Alternative H:

2	Residential Owners	\$	80,000.00
4	Residential Tenants	\$	56,000.00
2	Landlord Businesses	\$	50,000.00
5	Businesses	\$	212,000.00
1	Nonprofit Organization	\$	40,000.00
	Total	\$	438,000.00

EAST BYPASS ALTERNATIVES

Alternative D:

1	Residential Owner	\$	40,000.00
2	Residential Tenants	\$	24,000.00
4	Landlord Businesses	\$	100,000.00
9	Businesses	\$	360,000.00
1	Nonprofit Organization	\$	40,000.00
	Total	\$	564,000.00

Alternative F:

1	Residential Owner	\$	40,000.00
2	Residential Tenants	\$	24,000.00
2	Landlord Businesses	\$	50,000.00
2	Businesses	\$	83,000.00
	Total	\$	197,000.00

Alternative G:

1	Residential Owner	\$	40,000.00
2	Businesses	\$	83,000.00
	Total	\$	123,000.00

INTERCHANGE ALTERNATIVESAlternative 1:

18	Residential Tenants	\$ 252,000.00
1	Landlord Business	\$ 25,000.00
4	Businesses	\$ 166,000.00
	Total	\$ 443,000.00

Alternative 1A:

1	Business	\$ 40,000.00
	Total	\$ 40,000.00

Alternative 2:

1	Business	\$ 40,000.00
	Total	\$ 40,000.00

Alternative 3:

3	Residential Tenants	\$ 42,000.00
1	Landlord Business	\$ 25,000.00
5	Businesses	\$ 212,000.00
	Total	\$ 279,000.00

The general characteristics of the displacees to be relocated are listed on the Conceptual Stage Relocation Inventory forms in the back of this report.

An available housing inventory has been compiled and it indicates there are at least 51 comparable replacement dwellings available for sale, 19 residential lots available for sale, and 10 comparable replacement dwellings available for rent within a reasonable proximity of the project area. At least nine developed commercial properties and three vacant land commercial properties are currently for sale in the project area. There are no known commercial properties for lease at the time of this report. A breakdown of the available properties is as follows:

Residential (For Sale)	Number of Units
\$ 0.00 - 50,000	5
50,001 - 100,000	11
100,001 - 150,000	14
150,001 and up	21
Total	51

Residential Lots (For Sale)	
\$ 0.00 - 25,000	10
25,001 - 50,000	3
50,001 and up	6
Total	19

Residential	
(Monthly Rent)	
\$ 0.00 - 500.00	4
501.00 and up	6
Total	10
Commercial Properties	
(For Sale)	
\$ 0 - 100,000	1
100,001 - 200,000	2
200,001 - 300,000	3
300,001 - 400,000	0
401,000 and up	3
Total	9
Commercial Land	
(For Sale)	
\$ 0 - 100,000	0
100,001 - 200,000	1
200,001 and up	2
Total	3
Commercial Properties	
(For Lease)	
\$ 0 - 1,000	0
1,001 - 2,000	0
2,001 and up	0
Total	0

This is a new location bypass project in Arkadelphia, AR. The dwellings and number of dwellings are comparable and adequate to provide replacement housing for the families displaced on the project. The housing market should not be detrimentally affected and there should be no problems with insufficient housing at this time. In the event housing cannot be found or can be found but not within the displacees' economic means at the time of displacement, Section 206 of Public Law 91-646 (Housing of Last Resort) will be utilized to its fullest and practical extent.

The replacement property inventory was compiled from data obtained from real estate companies and web sites for the subject area. The dwellings contained in the inventory have been determined to be comparable and decent, safe, and sanitary. The locations of the comparable dwellings are not less desirable in regard to public utilities and public and commercial facilities, are reasonably accessible to the displacees' places of employment, adequate to accommodate the displacees, and in neighborhoods which are not subject to unreasonable adverse environmental factors. It has also been determined that the available housing is within the financial means of the displacees and is fair housing open to all persons regardless of race, color, sex, religion or national origin consistent with the requirements of 49 CFR, Subpart A, Section 24.2 and Title VIII of the Civil Rights Act of 1968.

A commercial property inventory indicates there are at least nine developed properties and three vacant lots available in the subject area at this time. The businesses displaced on the project may not be able to relocate in the immediate area of their displacement resulting in termination of the operation. However, in order to assist the displaced businesses and nonprofit organizations in

relocating, the State will explore all possible sources of funding or other resources that may be available to businesses and nonprofit organizations. Sources that will be considered include: State and Local entities, the Department of Housing and Urban Development, the Economic Development Administration, the Small Business Administration, and other Federal Agencies. Emphasis will be given in providing relocation advisory services to the businesses and nonprofit organizations. Appropriate measures will be taken to ensure that each entity displaced is fully aware of their benefits, entitlements, courses of action that are open to it, and any special provisions designed to encourage businesses and nonprofit organizations to relocate within the same community.

All displacees will be offered relocation assistance under provisions in the applicable FHWA regulations. At the time of displacement another inventory of available housing in the subject area will be obtained and an analysis of the market made to ensure that there are dwellings adequate to meet the needs of all displacees. Also, special relocation advisory services and assistance will be administered commensurate with displacees' needs, when necessary. Examples of these include, but are not limited to, Housing of Last Resort as previously mentioned and consultation with local officials, social and federal agencies, and community groups.

There are no other identified unusual conditions involved with this project.

CONCEPTUAL STAGE RELOCATION INVENTORYJob No.: 070442Job Name: Hwy. 67 - Hwy. 51 (Arkadelphia Bypass) P.E.Date of Inventory: September 9, 2020

Relo. #	Relo. Type¹	Description	Address	Eligible Costs²	Property Value Estimate³	# Employees	Occ. Length (Yrs)
West Bypass Alternative H							
1	LLBus + ResTen	Mobile Home	369 Red Hill Rd	\$39,000	\$15,000		
2	ResOwn	Home	379 Red Hill Rd	\$40,000	\$34,000		
3	ResOwn	Home	429 Red Hill Rd	\$40,000	\$188,550		
4-6	LLBus + ResTen	Portion of Cox Mobile Manor with 3 residential tenant relocations	3027 Pine St	\$67,000	\$28,500*	1	60
7	NPOrg	Grace Fellowship Church	469 Red Hill Rd	\$40,000	\$2,800,000	1	40
8	Bus	Arkadelphia Physical Therapy	3030 Pine St	\$40,000	\$785,000	8	19
9	Bus	Lucky Liquor	3035 Pine St	\$46,000	\$275,000	5	8
10	Bus	Private Mechanic Garage	24 Red Hill Rd	\$46,000	\$240,000	3 - 4	5
11	Bus	AT&T Store	3032 Pine St	\$40,000	\$315,000	Unk	Unk
12	Bus	Dimensions Sound & Vision	280 Professional Park Dr	\$40,000	\$320,000	2	18
East Bypass Alternative D							
1	LLBus + ResTen	Home	924 Main St	\$37,000	\$45,000		
2	LLBus	Home (Vacant)	925 Clay St	\$25,000	\$42,900		
3	LLBus + ResTen	Home	922 Crittenden St	\$37,000	\$35,000		
4	ResOwn	Home	529 S 9th St	\$40,000	\$182,450		
5	Bus	KFC	921 Clinton St	\$40,000	\$250,000	18	1
6	LLBus + NPOrg	Grace Bible Church	922 Main St	\$65,000	\$65,000	Unk	Unk
7	Bus	Mary & Martha's Florist & Gifts	921 Main St	\$40,000	\$220,000	3-4	13

Relo. #	Relo. Type ¹	Description	Address	Eligible Costs ²	Property Value Estimate ³	# Employees	Occ. Length (Yrs)
8	Bus	Ark. Dept. Community Corrections	911 Main St	\$40,000	\$135,000	Unk	Unk
9	Bus	Kidsource Therapy (Vacant)	Unknown	\$40,000	\$70,650	0	Unk
10	Bus	U-Lok-It Storage (Vacant & Listed for Sale for \$289k)	921 Clay St	\$40,000	\$70,500	0	
11	Bus	Lane Refrigeration	903 Carpenter St	\$40,000	\$159,400	Unk	Unk
12	Bus	Security Warehouse (3 western-most buildings relocated)	725 S 7th St	\$40,000	\$288,200	2	20
13	Bus	NAPA Autoparts	922 Clinton St	\$40,000	\$239,050	3-4	15
14	Bus	Stewarts Auto Sales, Inc.	102 N 10th St.	\$40,000	\$66,700	1	24
East Bypass Alternative F							
1	LLBus + ResTen	Home	117 Hemphill Rd	\$37,000	\$6,800		
2	LLBus + ResTen	Home (eastern-most only)	108 Clay St	\$37,000	\$130,000		
3	ResOwn	Home	111 S 1st St	\$40,000	\$46,000		
4	Bus	Wade's Cabinet Shop	921 Highway 67 S	\$43,000	\$350,000	2	43
5	Bus	Unnamed commercial complex (Vacant)	Unk	\$40,000	\$43,100	0	Unk
East Bypass Alternative G							
1	ResOwn	Home	727 C St	\$40,000	\$37,000		
2	Bus	Wade's Cabinet Shop	921 Highway 67 S	\$43,000	\$350,000	2	43
3	Bus	Unnamed commercial complex (Vacant)	Unknown	\$40,000	\$43,100	0	Unk
Interchange Alternative 1							
1	Bus	Lucky Liquor	3035 Pine St	\$46,000	\$275,000	5	8
2	Bus	Exxon / Blackmon Oil Co.	3036 Pine St	\$40,000	\$406,000	11	8
3	Bus	Andy's Restaurant	2927 Pine St	\$40,000	\$365,000	Unk	Unk

Relo. #	Relo. Type ¹	Description	Address	Eligible Costs ²	Property Value Estimate ³	# Employees	Occ. Length (Yrs)
4	Bus	Citgo	3039 Pine St	\$40,000	\$350,000	3	1
5-22	LLBus + ResTen	Portion of Cox Mobile Manor with 18 residential tenant relocations	3027 Pine St	\$277,000	\$1,500,000	1	60
Interchange Alternative 1A							
1	Bus	Exxon / Blackmon Oil Co.	3036 Pine St	\$40,000	\$406,000	11	8
Interchange Alternative 2							
1	Bus	Exxon / Blackmon Oil Co.	3036 Pine St	\$40,000	\$406,000	11	8
Interchange Alternative 3							
1-3	LLBus + ResTen	Portion of Cox Mobile Manor with 3 residential tenant relocations	3027 Pine St	\$67,000	\$28,500	1	60
4	Bus	Arkadelphia Physical Therapy	3030 Pine St	\$40,000	\$785,000	8	19
5	Bus	Lucky Liquor	3035 Pine St	\$46,000	\$275,000	5	8
6	Bus	Private Mechanic Garage	24 Red Hill Rd	\$46,000	\$240,000	3 - 4	5
7	Bus	Dimensions Sound & Vision	280 Professional Park Dr	\$40,000	\$320,000	2	18
8	Bus	AT&T Store	3032 Pine St	\$40,000	\$315,000	Unk	Unk

¹ Relo. Type:

ResOwn	Residential Owner
ResTen	Residential Tenant
LLBus	Landlord Business
Bus	Business
NPOrg	Nonprofit Organization

² Replacement Housing Payment, Rental Assistance Payment, Reestablishment Payment, Search Expense Payment, &/or Moving Costs. NOTE: For those displacements involving a mobile home, car lift (mechanic garage), or shipping container (Lucky Liquor), an additional estimated cost of \$3,000 per house/lift/container was applied to the moving cost.

³ Based on ROW cost estimates, county parcel data, and/or estimated cost per acre for last reported sales price.

CONCEPTUAL STAGE RELOCATION INVENTORYJob No.: 070442Job Name: Hwy. 67 - Hwy. 51 (Arkadelphia Bypass) P.E.Date of Inventory: September 8, 2020

West Bypass Alternative A

Relocation Type	Number	Property Values or Residential Rental Rates¹	Employees Affected (Range)
Residential Owners	0		
Residential Tenants	0		
Landlord Businesses	0		
Businesses	0		
Nonprofit Organizations	0		
Totals	0	N/A	0

¹ Based on interviews, ROW cost estimates, county parcel data, sales price, and/or estimated cost per acre for last reported sales price.

West Bypass Alternative B

Relocation Type	Number	Property Values or Residential Rental Rates¹	Employees Affected (Range)
Residential Owners	0		
Residential Tenants	0		
Landlord Businesses	0		
Businesses	0		
Nonprofit Organizations	0		
Totals	0	N/A	0

¹ Based on interviews, ROW cost estimates, county parcel data, sales price, and/or estimated cost per acre for last reported sales price.

West Bypass Alternative H

Relocation Type	Number	Property Values or Residential Rental Rates¹	Employees Affected (Range)
Residential Owners	2	\$30,000.00 - \$261,000.00	N/A
Residential Tenants	4	\$125.00 - \$725.00	N/A
Landlord Businesses	2	\$7,200.00 - \$1,500,000.00	1 - 2
Businesses	5	\$93,000.00 - \$785,000.00	1 - 8
Nonprofit Organizations	1	\$2,800,000.00	1
Totals	12	N/A	3 - 11

¹ Based on interviews, ROW cost estimates, county parcel data, sales price, and/or estimated cost per acre for last reported sales price.

East Bypass Alternative D

Relocation Type	Number	Property Values or Residential Rental Rates¹	Employees Affected (Range)
Residential Owners	1	\$181,000.00 - \$243,000.00	N/A
Residential Tenants	2	\$850.00 - \$950.00	N/A
Landlord Businesses	4	\$35,000.00 - \$90,000.00	Unknown
Businesses	9	\$65,000.00 - \$480,000.00	0 - 4
Nonprofit Organizations	1	\$53,000.00 - \$65,000.00	Unknown
Totals	14	N/A	0 - 4

¹ Based on interviews, ROW cost estimates, county parcel data, sales price, and/or estimated cost per acre for last reported sales price.

East Bypass Alternative F

Relocation Type	Number	Property Values or Residential Rental Rates¹	Employees Affected (Range)
Residential Owners	1	\$46,000.00 - \$97,000.00	N/A
Residential Tenants	2	\$750.00 - \$1,000.00	N/A
Landlord Businesses	2	\$5,000.00 - \$130,000.00	Unknown
Businesses	2	\$27,000.00 - \$350,000.00	0 - 2
Nonprofit Organizations	0		
Totals	5	N/A	0 - 2

¹ Based on interviews, ROW cost estimates, county parcel data, sales price, and/or estimated cost per acre for last reported sales price.

East Bypass Alternative G

Relocation Type	Number	Property Values or Residential Rental Rates¹	Employees Affected (Range)
Residential Owners	1	\$5,000.00 - \$49,000.00	N/A
Residential Tenants	0		N/A
Landlord Businesses	0		
Businesses	2	\$27,000.00 - \$350,000.00	0 - 2
Nonprofit Organizations	0		
Totals	3	N/A	0 - 2

¹ Based on interviews, ROW cost estimates, county parcel data, sales price, and/or estimated cost per acre for last reported sales price.

Interchange Alternative 1

Relocation Type	Number	Property Values or Residential Rental Rates¹	Employees Affected (Range)
Residential Owners	0		N/A
Residential Tenants	18	\$125.00 - \$135.00	N/A
Landlord Businesses	1	1,500,000.00	1
Businesses	4	\$272,000.00 - \$406,000.00	3 - 11
Nonprofit Organizations	0		
Totals	22	N/A	1 - 11

¹ Based on interviews, ROW cost estimates, county parcel data, sales price, and/or estimated cost per acre for last reported sales price.

Interchange Alternative 1A

Relocation Type	Number	Property Values or Residential Rental Rates¹	Employees Affected (Range)
Residential Owners	0		N/A
Residential Tenants	0		N/A
Landlord Businesses	0		
Businesses	1	\$406,000.00	11
Nonprofit Organizations	0		
Totals	1	N/A	11

¹ Based on interviews, ROW cost estimates, county parcel data, sales price, and/or estimated cost per acre for last reported sales price.

Interchange Alternative 2

Relocation Type	Number	Property Values or Residential Rental Rates¹	Employees Affected (Range)
Residential Owners	0		N/A
Residential Tenants	0		N/A
Landlord Businesses	0		
Businesses	1	\$406,000.00	11
Nonprofit Organizations	0		
Totals	1	N/A	11

¹ Based on interviews, ROW cost estimates, county parcel data, sales price, and/or estimated cost per acre for last reported sales price.

Interchange Alternative 3

Relocation Type	Number	Property Values or Residential Rental Rates¹	Employees Affected (Range)
Residential Owners	0		N/A
Residential Tenants	3	\$125.00 - \$135.00	N/A
Landlord Businesses	1	\$29,000.00 - \$1,500,000.00	1
Businesses	5	\$93,000.00 - \$785,000.00	1 - 8
Nonprofit Organizations	0		
Totals	8	N/A	1 - 8

¹ Based on interviews, ROW cost estimates, county parcel data, sales price, and/or estimated cost per acre for last reported sales price.