

DESIGN REASSESSMENT
FOR
SPRINGDALE NORTHERN BYPASS P.E.
HIGHWAY 412 IN BENTON AND WASHINGTON COUNTIES, ARKANSAS

Federal Highway Administration-Arkansas Division

Federal Project: FHWA-AR-EIS-01-F

FAP Number NH-9399(5)

State Project Number 001966

APPROVED


Environmental Specialist
Federal Highway Administration
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PROJECT HISTORY

The National Environmental Policy Act (NEPA) process was begun for Arkansas State Highway and Transportation Department (AHTD) Job Number 001966, FAP NH-9399(5), Springdale Northern Bypass (SNB) with work in 1998 on a Draft Environmental Impact Statement (DEIS). The DEIS was completed and signed by the Federal Highway Administration (FHWA) in January 2002. A decision was made that further study was needed, and information related to a new alignment and its comparison to the previous alignments in the DEIS was developed and presented in a Supplemental Draft Environmental Impact Statement (SDEIS). The SDEIS was approved in May 2004 and a Final Environmental Impact Statement (FEIS) was approved in October 2005, with a Record of Decision (ROD) issued in February 2006. In July 2008, Design Public Hearings (DPH) presented the changes made in the alignment during the design process. Comments received at the DPHs were addressed in the Location and Design Documentation approved by FHWA in September 2008. Figure 1 identifies the location of the 2006 ROD alignment and the alignment shown at the DPH (referred to in this document as the 2014 current alignment). These alignment changes and the passage of time have necessitated a reassessment of the proposed project.

PROPOSED PROJECT DESCRIPTION

The project is located in northern Washington and southern Benton Counties, Arkansas and will be a four-lane divided typical section with fully controlled access (interstate type) facility and have a design speed of 70 mph. It will consist of two twelve-foot wide travel lanes in each direction separated by a variable width median. Right of way widths will vary depending on the depth of cut or height of fill, but are estimated to average 300 feet.

The SNB western terminus is within the city limits of Tontitown. From there, the SNB runs northeast crossing Highway 112, then east across Interstate 49 (I-49) and Highway 265, then southeast to its eastern terminus at Highway 412, just west of Beaver Lake. Interchanges are proposed at seven locations along the route: Highway 412 west (Tontitown), at the proposed Northwest Arkansas Regional Airport (NWARA) access road, Highway 112, I-49, Highway 71 Business (71B), Highway 264 and Highway 412 east. An I-49/SNB Interchange Justification Report was prepared and approved by the FHWA in February 2014. The report found the I-49/SNB interchange to be viable, necessary and regionally significant.

The purpose of the project is to provide safe and efficient movement of local and through traffic and to alleviate congestion along existing facilities. Current funding projections have limited the AHTD in allocating resources to the construction of the SNB. The AHTD plans to utilize available funds for construction of Job Number CA0907 (Figure 2), between the limits of Robbins Road and Interstate 49. While the remainder of the SNB will be viable for the long range, the AHTD does not anticipate funding final design, right of way acquisition or construction for the remainder of the SNB in the near future.

PROJECT DESIGN MODIFICATIONS

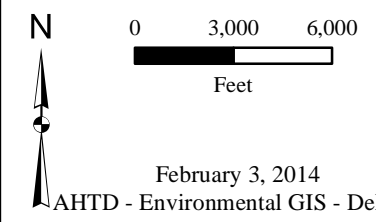
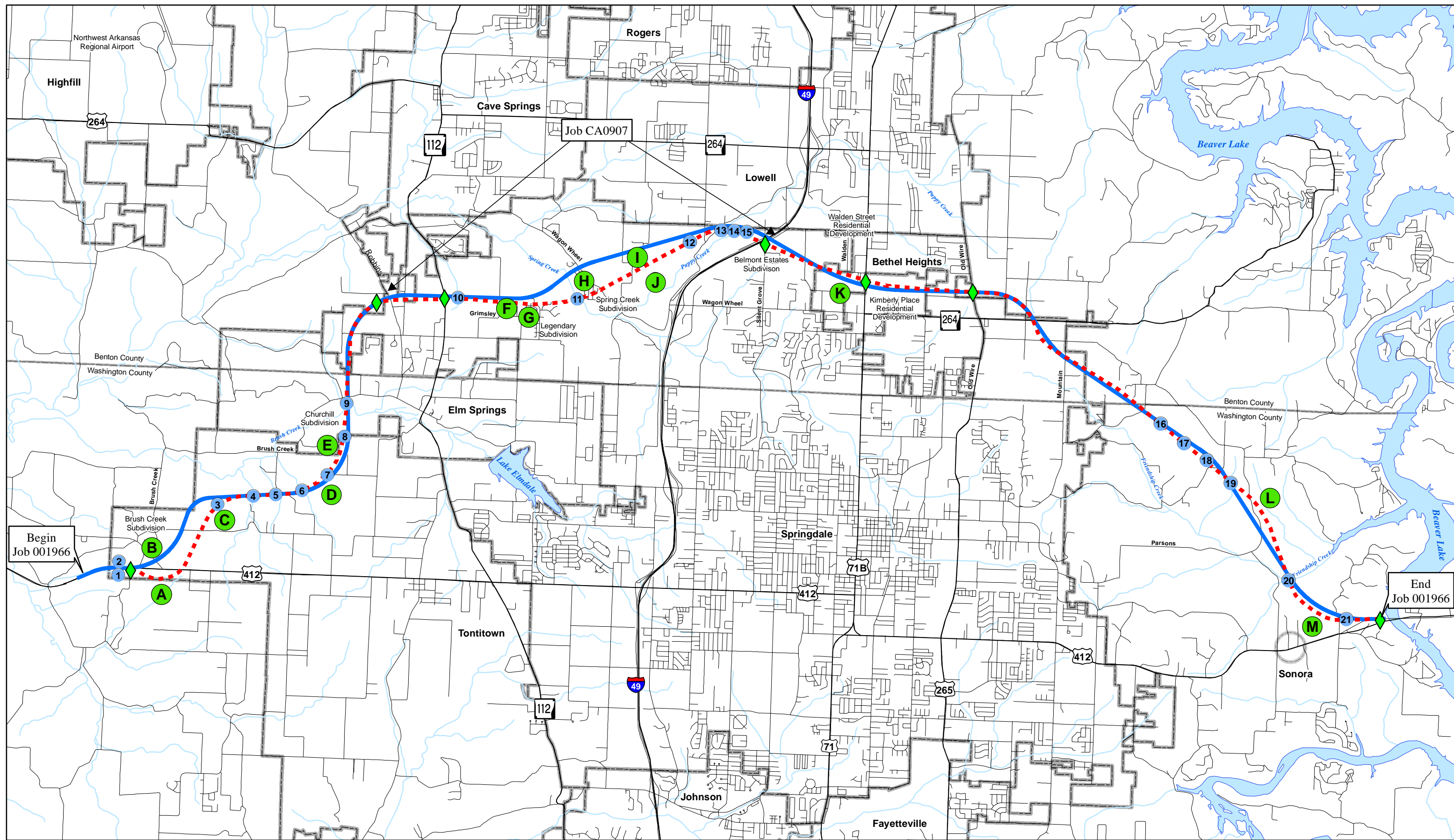
Table 1 lists the design modifications that were incorporated into the 2014 current alignment. The locations of these modifications are shown on Figure 1.

Table 1 Design Modification Summary	
Location	Design Modification
A	Interchange with Highway 412 configured to avoid large electrical transmission lines.
B	Cultural resources constraints.
C	Gas fired power plant constructed in centerline necessitated realignment to the west.
D	Slight realignment to avoid direct impacts to water well.
E	Avoided direct impacts to Churchill Subdivision.
F	Shifted northward to avoid direct impacts to Willis Shaw Elementary School (City of Springdale).
G	Alignment shifted to utilize Legendary Subdivision's reserved corridor.
H	Alignment shifted north to reduce impacts to Spring Creek Subdivision.
I	Realignment of Zion Road and avoidance of historic structure.
J	Alignment moved north to miss McClinton-Anchor Sharps Quarry expansion.
K	Slight adjustment to avoid impacting existing businesses along Highway 71B.
L	Adjustment to avoid Kiewit Southern Quarry scales.
M	Alignment adjustment resulting from change at location L.

Comparisons of the design and cost data for the 2006 ROD alignment and the 2014 current alignment are listed in Table 2. All costs are estimates and shown in 2014 dollars.

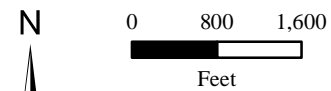
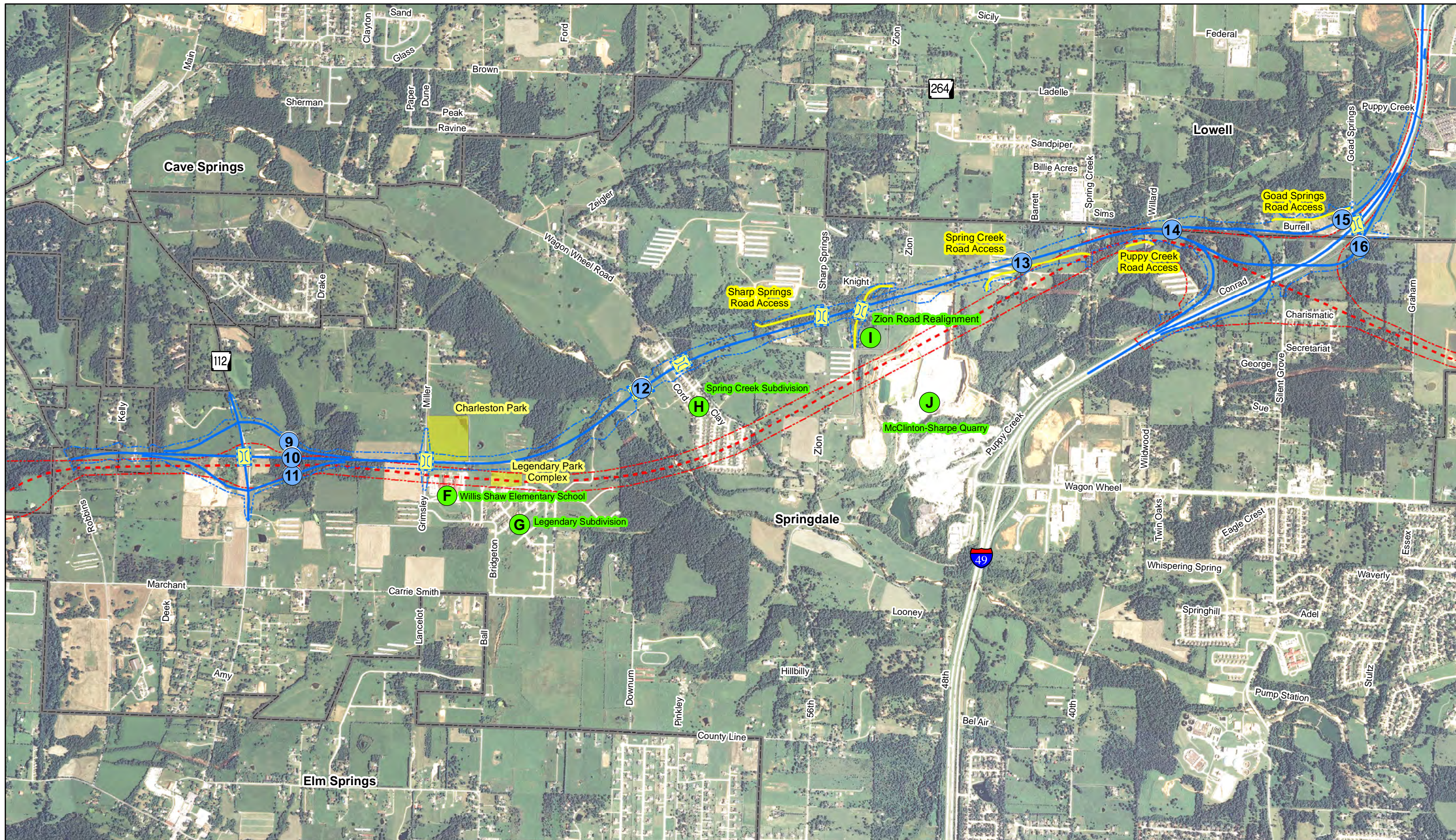
Project CA0907 will construct the proposed project between I-49 and Highway 112. Design plans are available for this project and right of way acquisition has been ongoing. The portion of CA0907 from Robbins Road to Highway 112 will be cleared and grubbed, drainage structures constructed, and the land graded to interstate standards. No other work will be done on this portion during the current construction project. Design and estimated cost information for Job CA0907 is listed in Table 3.

A combination of Connecting Arkansas Program funds, Congressional Earmark Funding, and Safety Funds will be used to construct the 4.9 mile CA0907 project. The Section 402 Highway Safety Funds will be used to build approximately 2.41 miles of wire reinforced safety fence in the median along two sections of the project from Grimsly Road Overpass to the south side of Puppy Creek Bridge and from the north side of Puppy Creek Bridge to the start of the I-49 interchange.



- Design Modification
- ① Stream Crossing
- ◆ Proposed Interchange
- - - 2006 ROD Alignment
- 2014 Current Alignment

Figure 1
001966 Project Modifications
and Impacts



February 3, 2014
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2006 ROD Alignment	Design Modification
2006 ROD Alignment ROW	Grade Separation
2014 Current Alignment	Stream Crossing
2014 Current Alignment ROW	

Figure 2
 CA0907 Project Modifications
 and Impacts

Table 2		
001966 Design and Estimated Cost Information		
	2006 ROD Alignment	2014 Current Alignment
Length	20.6 miles	20.4 miles
Right of Way	1,165 acres	1,018 acres
Construction Cost	381.4 million	383.6 million
Right of Way Cost	74.9* million	73.6*million
Design Cost	8.7 million	9.0 million
Total Cost	465.0 million	466.2 million

*Reflects acquisition costs and relocation costs, but does not include utility adjustment costs.

Table 3	
CA0907 Design and Estimated Cost Information	
Length	4.9 miles
Right of Way	410 acres
Construction Cost	120.5 million
Right of Way Cost	27.0* million
Design Cost	3.0 million
Total Cost	150.5 million

*Reflects acquisition costs and relocation costs but does not include utility adjustment costs.

ENVIRONMENTAL IMPACTS

Environmental impacts outlined in this reassessment are those impacts that changed from the 2006 ROD alignment to the 2014 current alignment. Impacts for Job CA0907 are also outlined.

Relocations

A comparison of the relocation numbers between the 2006 ROD alignment and the 2014 current alignment show a decrease of six relocatees. This can be attributed to alignment changes to avoid homes, developments and businesses along the 2014 current alignment. Comparisons of total relocatees for the 2006 ROD alignment versus the 2014 current alignment are shown in Table 4.

	2006 ROD Alignment	2014 Current Alignment
Residential Owners	60	53
Residential Tenants	10	19
Businesses	43	31
Farms	6	5
Total	114	108
Minority Households	4	1
Elderly Households	9	12
Low Income Households	2	6

Minor alignment shifts for Job CA0907 were utilized to minimize impacts to relocations. Table 5 summarizes the relocation impacts for Job CA0907. Shifts were made to avoid an elementary school, the Legendary subdivision, and the Spring Creek Subdivision.

Table 5 CA0907 Relocations	
Residential Owners	25
Residential Tenants	9
Businesses	3
Farms	2
Total	39
Minority Households	1
Elderly Households	8
Low Income Households	4

Noise

A commitment was previously established that a noise barrier analysis will be conducted for the residential areas on the SNB, in accordance with the AHTD’s *Policy on Highway Traffic Noise Abatement*, to determine barrier feasibility for impacted receptors.

The following residential areas, shown on Figure 1, will warrant additional and detailed studies for noise barrier analysis:

- 1) Brush Creek Subdivision,
- 2) Churchill Subdivision adjacent to Brush Creek Road,
- 3) Residential development in the Legendary Subdivision,
- 4) Residential development in the Spring Creek Subdivision,
- 5) Belmont Estates Subdivision adjacent to Silent Grove Road,
- 6) Residential development on Walden Street, and
- 7) Residential development near Kimberly Place.

The Legendary Subdivision and the Spring Creek Subdivision are the only areas within the CA0907 project that will warrant additional and detailed studies for noise barrier analysis.

Floodways and Floodplains

The largest floodplain areas occur along Spring, Brush, and Puppy Creeks. The 2006 ROD alignment and the 2014 current alignment would impact 2,650 linear feet of Special Flood Hazard Areas (SFHAs). The 2006 ROD alignment and 2014 current alignment would impact 1,050 and 1,095 linear feet of floodway, respectively.

Job CA0907 will impact 1,100 linear feet of SFHAs and 255 linear feet of floodway.

The proposed construction will not cause a significant reduction of floodwater storage or retention functions. Bridges and/or drainage structures have been sized sufficiently to minimize impacts on natural and beneficial floodplain values. Adjacent properties should not be impacted nor have a greater flood risk than existed before construction of the project. None of the encroachments will constitute a significant floodplain encroachment or a significant risk to property or life.

Wetlands and Waters of the U.S.

Wetlands

There will be no jurisdictional wetland impacts caused by the implementation of this project.

Streams

Between 2005 and 2010, the U.S. Army Corps of Engineers developed new regulations, policies and guidance concerning stream impact limits for Nationwide Permits and stream mitigation requirements in general. Stream relocation lengths were not discussed in the ROD.

The 2006 ROD alignment and 2014 current alignment would impact 21 mapped streams classified as waters of the United States streams, as shown on Figure 1. There would be stream relocations on 15 of the 21 stream crossings. The 2006 ROD alignment proposed six pipe culverts, nine concrete box culverts, and eight bridges, resulting in 1.97 acres of stream impacts. The 2014 current alignment would include construction of 12 pipe culverts, seven box culverts, and 13 bridges impacting 4,110 linear feet of streams and 1.28 acres.

The AHTD will be required to apply for a Standard Section 404 Permit because stream impacts for the project exceeded new Nationwide Permit limits of 350 linear feet per project. Stream credits are converted from length to credits using the Little Rock District Stream Method. The CA0907 project will require 5,486 stream credits to be purchased from an accredited Corp of Engineers mitigation bank. No stream credits are tabulated for the remainder of the SNB, since no additional design information is available.

A total of eight stream crossings are planned for Job CA0907 consisting of four pipe culverts, seven bridges, and one box culvert impacting 1,745 linear feet of stream relocation and 0.29 acre. Table 6 summarizes stream impacts for Job CA0907. Locations of these stream crossings are shown on Figure 2.

Table 6 CA0907 Stream Impacts			
Stream Crossing	Structures	Stream Length Impacts (linear feet)	Stream Impacts (acres)
9	1 Pipe Culvert	290	0.03
10	1 Pipe Culvert	280	0.02
11	1 Pipe Culvert	280	0.02
12	2 Bridges	0	0
13	1 Pipe Culvert	375	0.05
14	2 Bridges	0	0
15	1 Box Culvert	300	0.12
16	1 Bridge	220	0.05
Total		1,745	0.29

Surface Water Quality

Potential surface water quality impacts were compared between the 2006 ROD alignment and the 2014 current alignment. Table 7 shows a breakdown of the stream types, the proposed crossing structure and the water quality rating for each stream by alignment, as shown on Figure 1. A higher water quality rating signifies a higher potential impact to water quality.

Field visits by the AHTD and the consulting design engineers were instrumental in minimizing water quality impacts for Job CA0907. Stream crossings were designed to enhance protection of wildlife and water quality. Additional erosion control measures are still being designed for water quality protection in this area due to the steep slopes and fine textured soils. Site-specific erosion control plans will be reviewed by the Arkansas Department of Environmental Quality (ADEQ). Fifteen of the 21 stream crossings will require stream relocation to complete this project. Even with extensive controls in place, construction in and around streams could result in localized, short-term, adverse water quality impacts, including exceedances of state water quality standards. Short-term activity authorization from ADEQ will be obtained for these activities. Special provisions will be utilized during the construction phase to minimize surface water impacts.

**Table 7
Water Quality Ratings for Stream Crossings**

Stream Crossing	2006 ROD Stream Type	2006 ROD Structure	Water Quality Rating	2014 Current Stream Type	2014 Current Structure	Water Quality Rating
1	Intermittent	1 Box Culvert	1	Intermittent	Double Pipe Culvert	2
2	Ephemeral	1 Pipe Culvert	0	Intermittent	1 Pipe Culvert	2
3	Ephemeral	1 Pipe Culvert	0	Intermittent	Double Pipe Culvert	2
4	Intermittent	1 Box Culvert	1	Intermittent	Double Box Culvert	1
5	Intermittent	1 Box Culvert	1	Intermittent	2 Bridges	0
6	Intermittent	1 Box Culvert	1	Intermittent	Double Box Culvert	1
7	Intermittent	1 Box Culvert	1	Intermittent	Double Pipe Culvert	1
8	Intermittent	1 Box Culvert	1	Perennial	2 Bridges	0
9	Intermittent	1 Pipe Culvert	2	Ephemeral	1 Pipe Culvert	0
10	Perennial	1 Bridge	0	Ephemeral	1 Pipe Culvert	0
11	Intermittent	1 Pipe Culvert	2	Ephemeral	1 Pipe Culvert	0
12	Perennial	3 Bridges	0	Perennial	2 Bridges	0
13	Intermittent	1 Box Culvert	2	Intermittent	1 Pipe Culvert	2
14	Intermittent	Triple Box Culvert	3	Perennial	2 Bridges	0
15	Intermittent	Double Box Culvert	3	Intermittent	1 Box Culvert	3
16	Intermittent	1 Box Culvert	2	Intermittent	1 Bridge	2
17	Intermittent	1 Pipe Culvert	1	Intermittent	Box Culvert	2
18	Ephemeral	1 Pipe Culvert	0	Intermittent	Pipe Culvert	2
19	Intermittent	1 Pipe Culvert	1	Intermittent	Box Culvert	2
20	Perennial	2 Bridges	2	Ephemeral	2 Bridges	0
21	Intermittent	1 Pipe Culvert	1	Intermittent	Road encroachment	2

Cultural Resources

Initially, only one known archeological site (3BE716) and one historic house were identified as being impacted by the 2006 ROD alignment. A Phase I cultural resources survey has been conducted since the ROD was issued. Twelve archeological sites will require compliance with *Section 106 of the National Historic Preservation Act* and will need Phase II testing to determine

their eligibility to the National Register of Historic Places. These sites are listed in Table 8. The amount and nature of Phase II testing will be based on an individual assessment of each site. No impacts to historic structures are expected for the 2014 current alignment.

Table 8 Sites Recommended for Phase II Testing			
Site	Type	Period	Testing Recommendations
3WA1441	Prehistoric camp	Unknown	test units and discing transects
3WA1442	Prehistoric camp	Unknown	test units
3WA1444	Prehistoric camp/village	Late Archaic	test units
3WA1449	Prehistoric camp	Unknown	test units
3WA1454	Prehistoric base camp	Middle to Late Archaic	test units, scraping, trenching, and bank profiles
3BE714*	Prehistoric village	Archaic to possible Woodland	test units, scraping, and trenching
3BE906*	Prehistoric camp	Mid-Late Archaic	test units, scraping, trenching, and bank profiles
3BE907*	Prehistoric camp	Late Archaic	test units, scraping and trenching
3BE908*	Prehistoric lithic quarry	Unknown	systematic examination of surface material and test units
3BE911	Prehistoric lithic quarry	Unknown	systematic examination of surface material and test units
3BE927	Prehistoric lithic quarry	Unknown	systematic examination of surface material and test units
3WA1441	Prehistoric camp	Unknown	test units and discing transects

* Phase II survey underway on these sites.

Four archeological sites (3BE714, 3BE906, 3BE907 and 3BE908) will be impacted by Job CA0907. Significance testing of each of these sites is underway. Six other areas were not included in the first Phase I survey due to a lack of landowner permission. These parcels are in high probability areas and are also currently being surveyed. No historic structures will be affected by Job CA0907.

Public Land

There are no Section 4(f) or *Land and Water Conservation Act* Section 6(f) impacts associated with this project. Charleston Park, impacted by Job CA0907, is a private park.

Prime Farmland

The 2006 ROD alignment impacted 120 acres of prime farmland and 66 acres of Farmland of Statewide Importance. The 2014 current alignment impacts 43 acres of prime farmland and approximately 18 acres of Farmland of Statewide Importance. The reduction in farmland impacts is due to the expansion of city limits within the project area.

There will be no prime farmland impacts for CA0907 as it is within the city limits of Springdale and Lowell.

Land Use

Table 9 contains the land use data for the 2006 ROD alignment and the 2014 current alignment. The higher residential land use impact for the 2014 current alignment (96 acres versus 38 acres) can be attributed to urbanization that has occurred in the project area between 2006 and 2014.

SUMMARY

Table 9 compares the overall impacts for the 2006 ROD alignment with the 2014 current alignment. Table 10 outlines the impacts of Job CA0907.

This reevaluation of the environmental impacts resulting from design modifications was conducted through document review, site visits, and evaluation of the Design Public Hearing comments. The additional and/or revised impacts detailed in this design reassessment are not deemed significant.

APPROVAL OF REASSESSMENT

Approving Official: _____ Date: _____

Federal Highway Administration

Table 9
001966 IMPACT SUMMARY

Alignment	Length (miles)	Acreage	Total Cost* (million \$)	Existing Land Use Converted to Highway Right of Way						Prime Farmland		Cultural Resources			
				Commercial (acres)	Residential (acres)	Industrial (acres)	Woodland (acres)	Agricultural (acres)	Other (acres)	Prime Farmland (acres)	Farmland of S.I. (acres)	Recorded Archeological Sites	Historic Structures	GLO Resources	Cemeteries
2006 ROD	20.6	1,165	465	16	48	38	344	653	66	120	66	1	1	0	0
2014 Current	20.4	1,018	466	12	96	32	204	581	93	43	18	12	0	0	0

Alignment	Relocations										Hazardous Materials Impacts
	Residential Owners	Residential Tenants	Businesses	Farms	Non-Profit Organizations	Total	Minority Households	Elderly Households	Low Income Households		
2006 ROD	60	10	43	6	0	114	4	9	2	0	
2014 Current	53	19	31	5	0	108	1	12	6	0	

Alignment	Floodplain Impacts			USACE Section 404 Impacts						Surface Water Quality Impact Ratings		
	SFHA** (Linear Ft.)	Floodway (Linear Ft.)	Long. Encroachments (Linear Ft.)	Springs	Stream Crossings					Low	Medium	High
					Ephemeral	Intermittent	Perennial	Length / acres	Total			
2006 ROD	2,650	1,050	0	1	3	15	3	0 [¥] / 1.97	21	8	4	1
2014 Current	2,650	1,095	0	0	4	14	3	4,110 / 1.28	21	11	0	1

*Includes construction, ROW and design costs in 2014 dollars.

**Special Flood Hazard Area

¥ No stream impact lengths were evaluated prior to 2010.

Table 10
CA0907 IMPACT SUMMARY

Length (miles)	Acreage	Total Cost* (million \$)	Existing Land Use Converted to Highway Right of Way						Prime Farmland		Cultural Resources			
			Commercial (acres)	Residential (acres)	Industrial (acres)	Woodland (acres)	Agricultural (acres)	Other (acres)	Prime Farmland (acres)	Farmland of S. I. (acres)	Recorded Archeological Sites	Historic Structures	GLO Resources	Cemeteries
4.9	410	150.5	9	49	12	92	182	66	0	0	4	0	0	0

Relocations										Hazardous Materials Impacts
Residential Owners	Residential Tenants	Businesses	Farms	Non-Profit Organizations	Total	Minority Households	Elderly Households	Low Income Households		
25	9	3	2	0	39	1	8	4	0	

Floodplain Impacts			USACE Section 404 Impacts						Surface Water Quality Impact Ratings		
SFHA** (Linear Ft.)	Floodway (Linear Ft.)	Long. Encroachments (Linear Ft.)	Springs	Stream Crossings					Low	Medium	High
				Ephemeral	Intermittent	Perennial	Length / acre	Total			
1,100	255	0	0	3	3	2	1,745 / 0.29	8	7	1	0

*Includes construction, ROW and design costs, in 2014 dollars.

**Special Flood Hazard Area