

FINAL REPORT

Compilation of Evaluation Data for Designation of the CANAMEX Corridor Through the Maricopa Region

Prepared for
Arizona Department of Transportation
Maricopa Association of Governments
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and Associates, Inc.

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1. EXECUTIVE SUMMARY

1.1 PURPOSE AND OBJECTIVES

The Arizona Department of Transportation (ADOT) and the Maricopa Association of Governments (MAG) are cooperating in the designation of a specific route for the CANAMEX Corridor in the Maricopa Region. As part of the route designation process, ADOT and MAG will perform a high-level evaluation of eight alternative routes that were selected in MAG-sponsored forums with agency representatives and stakeholders from within the MAG region. The evaluation will assess each alternative route using ten evaluation criteria. The evaluation of alternative CANAMEX Corridor routes in the Maricopa Region will result in the selection of a preferred route and a planning-level cost estimate for constructing route improvements.

Kimley-Horn and Associates, under contract to ADOT, provided technical assistance to ADOT and MAG in support of the high-level evaluation of route alternatives. Specifically, available information was compiled for each alternative route according to each evaluation criterion. A field review of route conditions was conducted to supplement and confirm compiled information.

1.2 ROUTE ALTERNATIVES

From an initial list of fifteen route alternatives, eight CANAMEX Corridor route alternatives in the Maricopa Region were identified for further consideration. For the purpose of this study, all routes were defined with common termini; the I-10/I-8 interchange near Casa Grande, Arizona on the south and the SR 93/Vulture Mine Road intersection near Wickenburg, Arizona on the north. The Wickenburg Bypass was not directly considered in the definition of CANAMEX route alternatives. However, issues associated with the use of the Wickenburg Bypass, as a segment of the CANAMEX Corridor will be considered in future continuing development of the preferred route alternative. **Exhibit ES1A** and **Exhibit ES1B** illustrate the eight route alternative, between the north and south termini.

1.3 EVALUATION CRITERIA

ADOT and MAG will evaluate and select a preferred CANAMEX route from among eight route alternatives using ten evaluation criteria. The evaluation criteria are listed below.

- Costs
- Travel Time
- Length
- Level of Service
- Access to Freight Terminals
- Constructibility
- Safety
- Environmental Impacts
- Title VI and Environmental Justice Impacts
- Major Community Impacts

Exhibit ES2 summarizes for each route alternative the data gathered for each evaluation criterion. Criterion assessment results are provided below for two of the ten criteria (Environmental Impacts and Major Community Impacts).

To facilitate the review of criteria-related data, criterion definitions (developed by ADOT and MAG) and measure(s) of effectiveness are summarized below for each evaluation criterion.

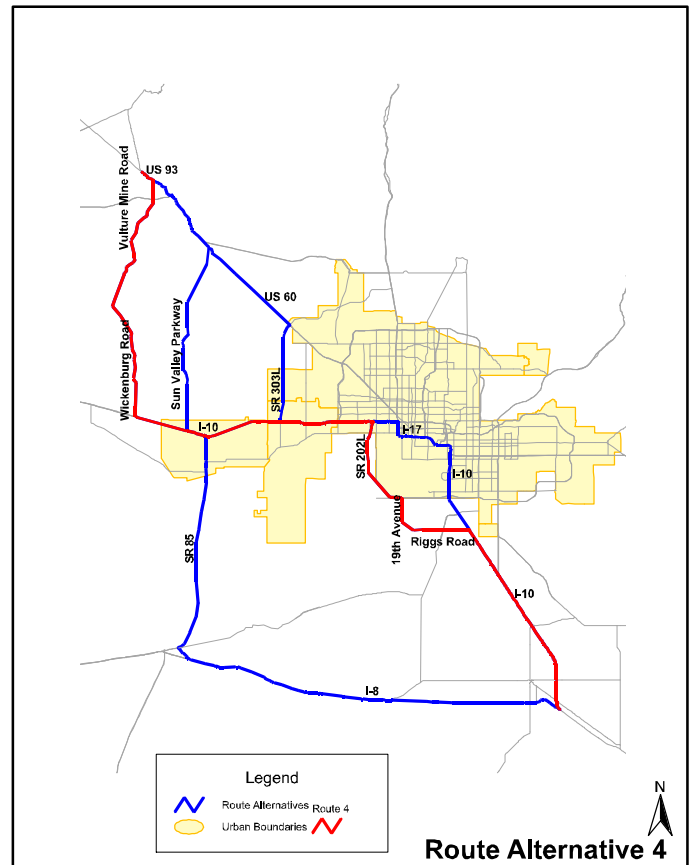
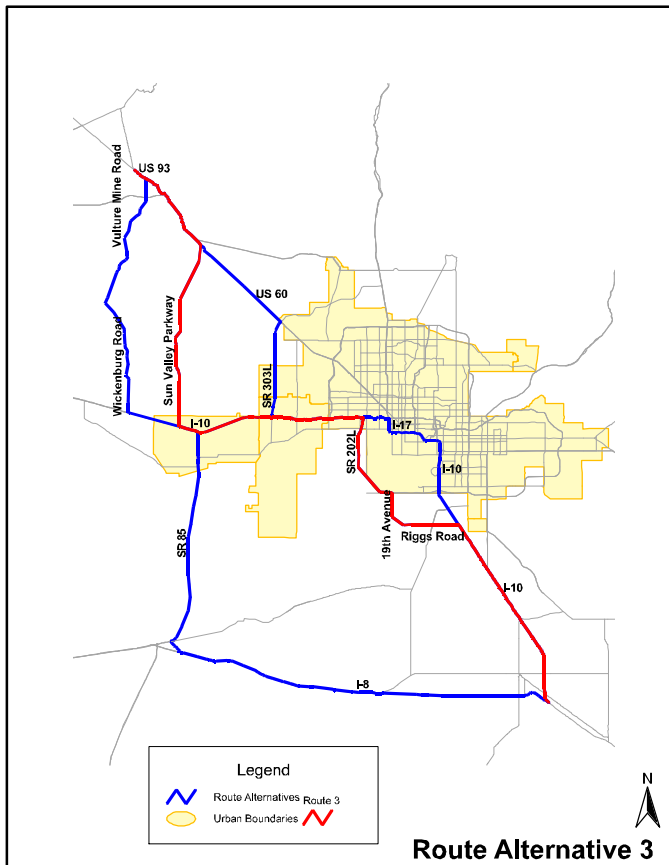
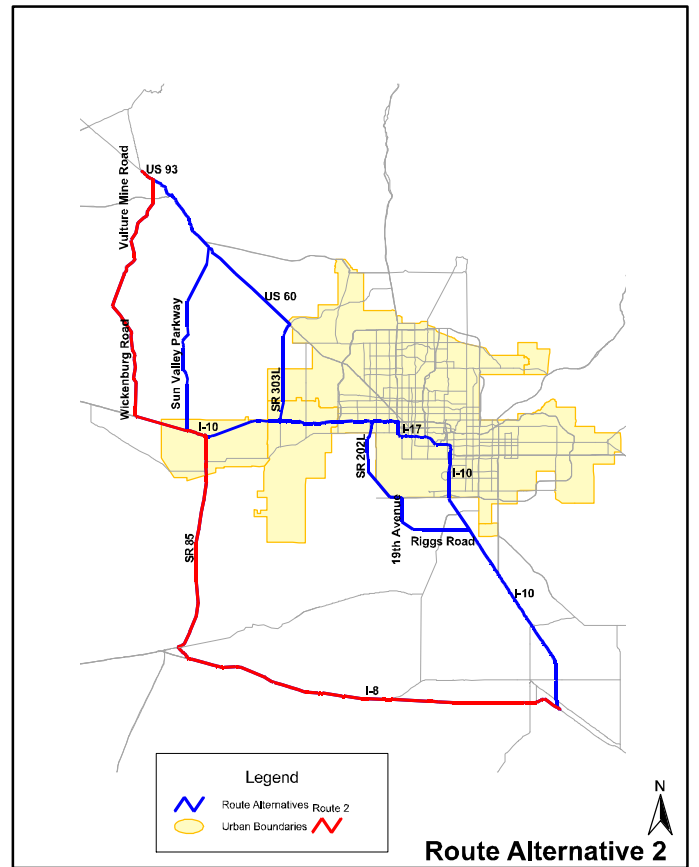
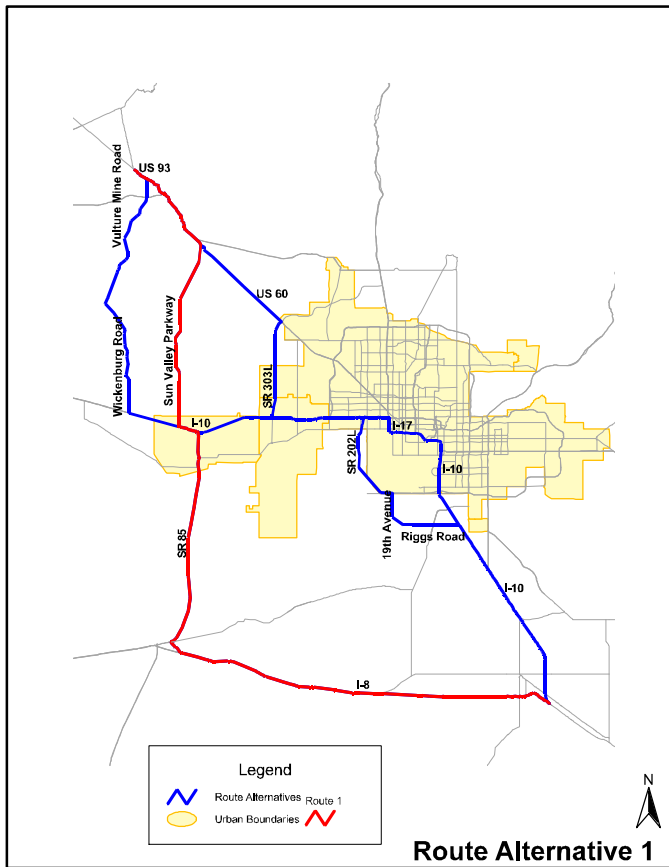


Exhibit ES1A - Route Alternatives 1 - 4

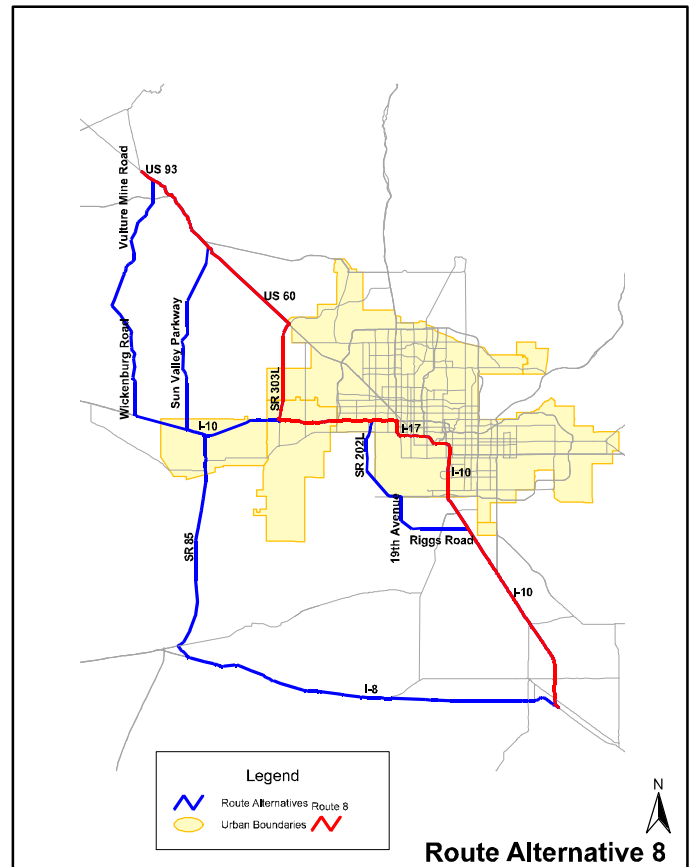
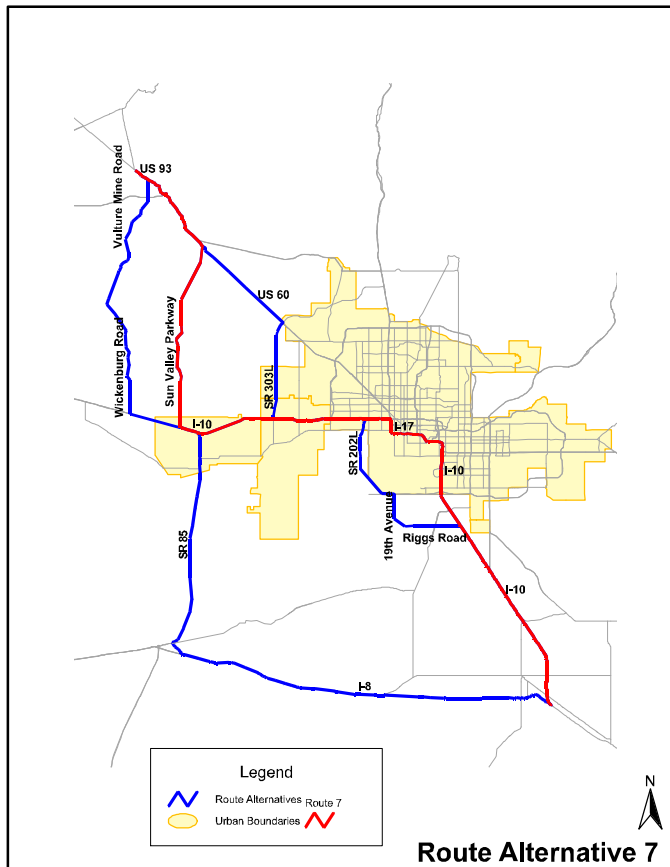
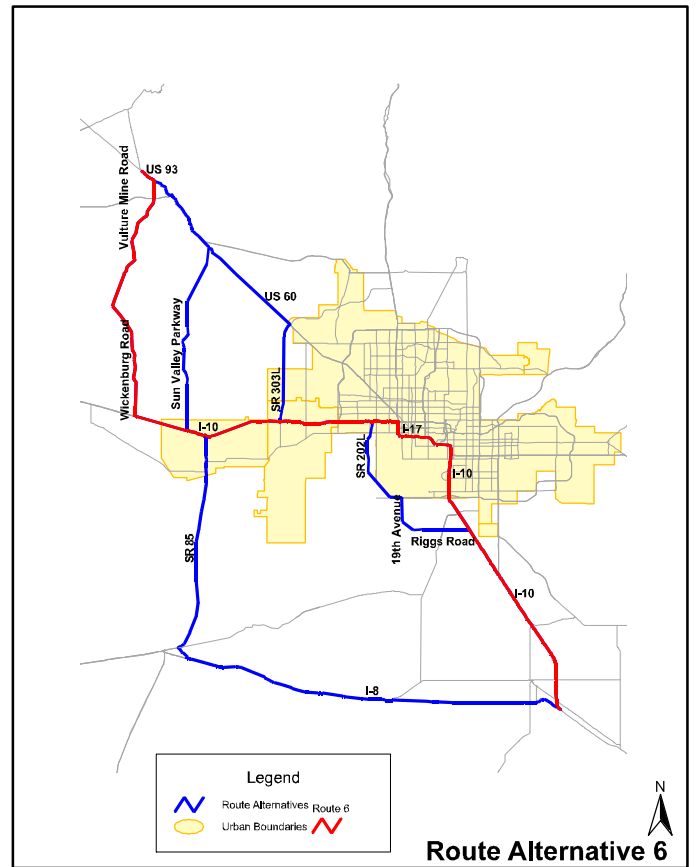
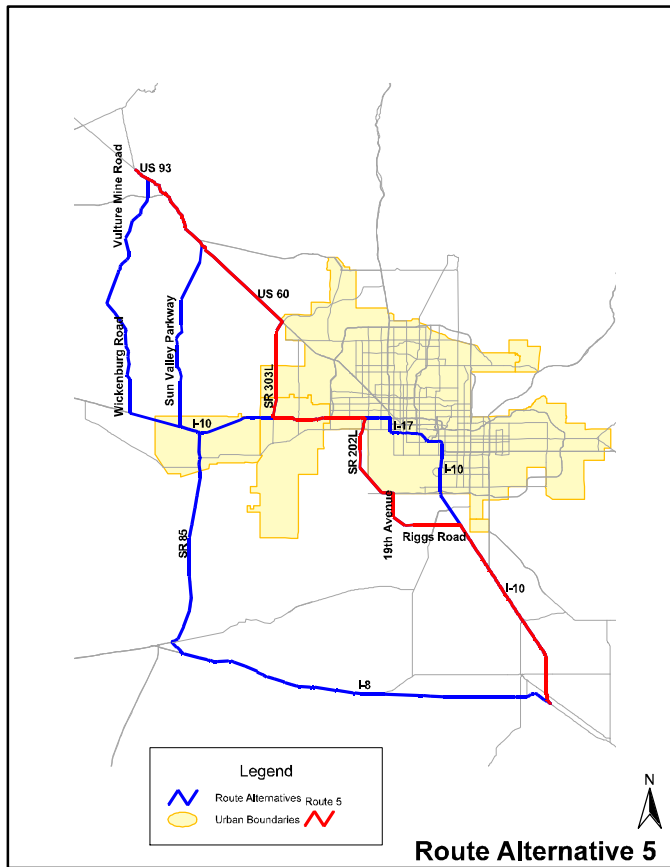


Exhibit ES1B - Route Alternatives 5 - 8

1.3.1 Costs

MAG/ADOT CRITERION DEFINITION

Capital cost of land acquisition and construction including all new infrastructure plus any rehabilitation of pavement, shoulders, medians, bridge and culvert structures, and roadway appurtenances.

MEASURES OF EFFECTIVENESS

- Order-of-magnitude (planning-level) capital construction and right-of-way acquisition costs, in 2000 dollars, to upgrade existing roadway facilities or to construct new roadway infrastructure to a minimum pavement cross-section of 40-feet on 200-feet of right-of-way.
- Planning-level design, construction, and right-of-way acquisition costs for route segments currently programmed by MAG or ADOT (i.e., SR 202L).
- Planning-level costs for constructing projects and implementing transportation improvement needs on route segments.

1.3.2 Travel Time

MAG/ADOT CRITERION DEFINITION

Measured or estimated for peak and off-peak periods, for cross-regional trips.

MEASURES OF EFFECTIVENESS

- Off-peak travel time (based on free-flow speed) expressed in minutes, between route alternative termini.
- Peak period travel time, expressed in minutes, between route alternative termini.

1.3.3 Length

MAG/ADOT CRITERION DEFINITION

Total estimated or measured distance for the route through the Maricopa Region.

MEASURES OF EFFECTIVENESS

- Length in miles between route termini for each route alternative.

ES2 - Evaluation Criteria

Criteria	Construction Cost of Land and Construction (1)		Travel Time				Route Length	Level of Service				Access to Freight Terminals (2)		Constructability		Safety	Environmental Impacts	Title VI (2)										Major Community Impacts
Route	Upgrade Capital Cost (millions)	Programmed Capital Costs (millions)	Existing Peak (minutes)	Existing Off-Peak (minutes)	Future Peak (minutes) (2)	Future Off-Peak (minutes) (2)	Length (miles)	Existing (Threshold is the Summation of LOS C or worse for Rural Roadways and LOS E or worse for Urban Roadways)		Future (Threshold is LOS D or Worse) (2)		Existing (Threshold is Route Alternatives within Areas with 0.41 Trucking and Warehouse facilities Sites Per Square Mile)		Construction Difficulty	Construction Impacts on Surrounding Area	Tractor Trailer Involved Crashes (November 1996 through October 1999)		Low Income (Route Alternative Within or Adjacent to Area with One or More Households in Poverty Per Acre)		Minority (Route Alternative Within or Adjacent to Area with Greater than Twenty-One Percent Percent Racial Minority Population)		Elderly (Route Alternative Within or Adjacent to Area with Greater than Twenty Percent Percent Population Aged 60 Years and Older)		Disabled (Route Alternative Within or Adjacent to Area with Greater than Three Percent Population with Disability or Transportation Limitations)		Gender (Route Alternative Within or Adjacent to Area with Greater than Forty-Nine Percent Female Population)		
								Length (miles)	Percentage (of total)	Length (miles)	Percentage (of total)	Length (miles)	Percentage (of total)					Length (miles)	Percentage (of total)	Length (miles)	Percentage (of total)	Length (miles)	Percentage (of total)	Length (miles)	Percentage (of total)	Length (miles)	Percentage (of total)	
1	\$25	\$0	156	156	139	131	145.4	1.0	1%	13.4	9%	0.0	0%	Moderate	Low	72	See Environmental Section within Executive Summary	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	See Major Community Impacts Section in Executive Summary
2	\$121	\$0	155	155	157	157	149.9	0.5	0%	10.9	7%	0.0	0%	Low	Moderate	74		0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	
3	\$31	\$225	154	152	150	120	138.0	9.9	7%	48.7	35%	0.7	1%	Moderate	Low	241		2.9	2%	14.0	10%	0.0	0%	6.2	4%	2.5	2%	
4	\$132	\$225	153	151	168	146	142.6	9.4	7%	46.2	32%	0.7	1%	Low	Moderate	243		2.9	2%	14.0	10%	0.0	0%	6.2	4%	2.5	2%	
5	\$18	\$225	154	152	148	120	126.2	9.9	8%	57.5	46%	0.7	1%	Low	High	261		3.7	3%	14.6	12%	0.8	1%	9.0	7%	2.8	2%	
6	\$121	\$0	151	146	188	153	141.5	13.1	9%	64.5	46%	11.4	8%	Low	Moderate	540		10.1	7%	20.8	15%	1.0	1%	9.1	6%	5.9	4%	
7	\$25	\$0	153	147	169	126	136.9	13.6	10%	67.0	49%	11.4	8%	Moderate	Low	538		10.1	7%	20.8	15%	1.0	1%	9.1	7%	5.9	4%	
8	\$7	\$0	152	147	167	126	125.1	13.6	11%	75.8	61%	11.4	9%	Low	High	558		10.9	9%	21.3	17%	1.8	1%	12.0	10%	6.2	5%	

Notes
(1) Does not include upgrading SR 303 to parkway facility or for constructing the Wickenburg Bypass.
(2) Only data within MAG Planning Region were available for this criterion.

1.3.4 Level of Service

MAG/ADOT CRITERION DEFINITION

Qualitative measure of highway operation under given traffic, physical, and operational conditions.

MEASURE OF EFFECTIVENESS

- Percentage of total miles for each route alternative exceeding ADOT level of service criteria for urban and rural roadways under current traffic, physical, and operational conditions.
- Percentage of total miles for each route alternative exceeding level of service D under 2020 traffic, physical, and operational conditions.

1.3.5 Access to Freight Terminals

MAG/ADOT CRITERION DEFINITION

Route within acceptable distance to terminal destinations.

MEASURE OF EFFECTIVENESS

- Percentage of total miles for each route alternative located within or adjacent to areas with trucking and warehouse facility densities of greater than 0.41 sites per square mile.

1.3.6 Constructibility

MAG/ADOT CRITERION DEFINITION

Minimal difficulty in constructing a project and minimal significant short-term impacts on the immediate surrounding area.

MEASURES OF EFFECTIVENESS

- Qualitative rating of relative degree of construction difficulty expressed as high, moderate, or low levels of difficulty.
- Qualitative rating of relative adverse impacts of construction on surrounding areas expressed as high, moderate, or low levels of adverse impacts.

1.3.7 Safety

MAG/ADOT CRITERION DEFINITION

Suitable geometrics and environment for truck traffic and crash history.

MEASURE OF EFFECTIVENESS

- Truck-involved crash frequency for the period, November 1996 through October 1999

1.3.8 *Environmental Impacts*

MAG/ADOT CRITERION DEFINITION

Air quality, visual impacts, species habitat impacts, sensitive noise receptors, proximity to existing/future historic properties, or high-density archaeological sites, and proximity to wilderness areas.

MEASURES OF EFFECTIVENESS

- Listing of fatal environmental flaws that preclude upgrading a particular route segment or selecting a particular route alternative.
- Rating of significance of environmental regulatory requirements (in the form of a regulatory compliance matrix).

CRITERION ASSESSMENT RESULTS

Information for this criterion was compiled based on limited field review, limited research, and environmental judgement based on experience with similar projects. It is therefore difficult to make absolute projections about regulatory issues. While this regulatory assessment and field review did not note fatal flaws that would prevent the upgrading of a particular route nor preclude the selection of any route alternative, further analysis may identify significant impediments to upgrade and/or selection of a specific route alternative. Additional study of the preferred route alternative is recommended to determine more precisely the status of the various regulatory issues, as well as to insure that other previously unidentified regulatory issues are not overlooked.

Specific design details will affect regulatory compliance. As an example, if the preferred route alternative requires minimal upgrading of the existing roadway and limited construction activity it will be less likely to have significant regulatory compliance issues. Conversely, if the preferred route is requires substantial upgrading, with extensive construction activity, the regulatory compliance issues will be more complex.

Exhibit ES3 summarizes the results of the regulatory compliance evaluation.

Exhibit ES3 - Regulatory Compliance Summary

Route	Regulatory Constraint				
	Clean Water Act	Endangered Species Act	National Historic Prevention Act	NEPA	Prime Otherwise Designated Soils
Route 303	Low	Low	Low	Low	Moderate
Sun Valley Parkway	Low	Low/Moderate	Low	Low	Low
Wickenburg Vulture Mine	Significant	Significant	Significant	Significant	Low
Riggs Road/19th Ave.	Low	Low	Moderate/Significant	Moderate	Low

It should be noted that the rating system is not a ranking system (i.e. a significant rating is not three times as difficult as a low rating), but is meant to convey the potential level of regulatory compliance complexity that the various routes may encounter. No matter what rating each route segment is assigned, it will require some level of documentation. A low rating is anticipated to require less evaluation, documentation, and potential compensatory mitigation as a high rating. While these ratings do take in to account the potential applicability of each regulation for each route, a low rating is not meant as a final indication that a regulation is not applicable.

1.3.9 Title VI and Environmental Justice Impacts

MAG/ADOT CRITERION DEFINITION

Impacts on persons who have limited transportation opportunities, including elderly, disabled, and low-income individuals.

MEASURES OF EFFECTIVENESS

- Percent of total route length within or adjacent to areas with greater than 21 percent racial minority population, as tabulated in the 1995 special census.
- Percent of total route length within or adjacent to areas with greater than 20 percent population aged 60 years and older, as tabulated in the 1995 special census.
- Percent of total route length within or adjacent to areas with one or more household in poverty per acre, as tabulated in the 1995 special census.
- Percent of total route length within or adjacent to areas with greater than 3 percent population with disability or transportation limitations, as tabulated in the 1995 special census.
- Percent of total route length within or adjacent to areas which are comprised of 50 percent or more females, as tabulated in the 1995 special census.

1.3.10 Major Community Impacts

MAG/ADOT CRITERION DEFINITION

Major impacts, including economic development to existing and planned residential neighborhoods located near the corridor.

MEASURES OF EFFECTIVENESS

- Public perceptions on advantages and disadvantages of each route alternative.
- Public support and opposition for each route alternative.

CRITERION ASSESSMENT RESULTS

Assessment of agency, stakeholder, and public input during the route designation and development process is an ongoing responsibility of MAG and ADOT. Refer to the “Joint Recommendation for the CANAMEX Corridor Through the Maricopa Region” for a summary of public input.

2. INTRODUCTION

2.1 PURPOSE

The Arizona Department of Transportation (ADOT) and the Maricopa Association of Governments (MAG) are cooperating in the evaluation of route alternatives and the designation of a specific route for the CANAMEX Corridor in the Maricopa Region. As part of the route designation process, ADOT and MAG will perform a high-level evaluation of eight alternative routes that were selected in MAG-sponsored forums with agency representatives and stakeholders from within the MAG region. The evaluation will assess each alternative route using the following ten evaluation criteria.

- Capital cost of land acquisition and construction
- Travel time
- Route length
- Level of service
- Access to freight terminals
- Constructibility
- Safety
- Environmental impacts
- Title VI and environmental justice impacts
- Major community impacts

The ADOT/MAG evaluation of alternative CANAMEX Corridor routes in the Maricopa Region will result in the designation of a preferred route and a planning-level cost estimate for constructing route improvements.

The purpose of this study is to provide technical assistance to ADOT and MAG in support of the ADOT/MAG evaluation of route alternatives (the purpose of this study is not to evaluate or select a preferred route alternative). Specifically, available information was gathered and organized for each alternative route according to the evaluation criteria listed above. A field review of existing route conditions was conducted to supplement and confirm gathered information.

2.2 STUDY PROCESS

Scoping Meetings. Scoping meetings were held with ADOT and MAG representatives in late-December 1999 to refine the scope of study, confirm the alternative CANAMEX Corridor routes to be considered, and refine the evaluation criteria. During and following the scoping meetings, ADOT and MAG provided data and information related to route characteristics and the evaluation criteria in the form of geographic information system (G.I.S.), databases, video-logs, and printed material including study reports and planning/programming documents.

Data Collection, Review, and Organization. Agency-provided data and information were reviewed and organized by route segment for each evaluation criterion to facilitate data presentation. During the review of agency-provided information, it was observed that some of the databases contained incomplete data and/or did not reflect current conditions. In other instances, agency-provided data did not consistently cover the entire study area within which the route alternatives exist. For example, 2020 travel time data provided by MAG typically covered only the MAG Planning Region (some of the route segments lay outside of the MAG region) and data provided by ADOT included only information for the State Highway System (three route segments are not State Highways). Correcting and updating agency-provided data was beyond the scope of this study. However, multiple data sources were not used for a given criterion to ensure data consistency for each criterion.

As a supplement, interviews were conducted with public agency representatives to obtain additional detailed information for on-going projects. Interviews were conducted to gather information on the following on-going projects.

- I-10, I-8 to Maricopa Traffic Interchange Design Concept Report, by CH2MHill for ADOT
- US 60, SR 303L to SR 74, by Dibble & Associates for ADOT
- 59th Avenue Truck Bypass Study, by Lima & Associates for MCDOT

As a supplement to agency-provided travel time data, travel time and delay studies were also conducted to obtain information on peak periods travel characteristics on urban freeways in the Phoenix metropolitan area.

Engineering and Environmental Field Reviews. Field reviews were conducted in mid-January to review non-interstate route segments and to record operational and geometric conditions, and environmentally sensitive areas along the route. Field reviews were only conducted for existing roadway facilities.

Evaluation Criteria Summaries. Information and data pertaining to each evaluation criterion was summarized and presented for each route alternative (this report).

3. ROUTE DEFINITIONS

During scoping meetings, eight CANAMEX route alternatives were designated for consideration in the study. For the purpose of this study, all routes were defined with common termini; the I-10/I-8 interchange near Casa Grande, Arizona on the south and the SR 93/ Vulture Mine Road intersection near Wickenburg, Arizona on the north. To facilitate data extraction and presentation, “functional terminal points” were defined beyond the route termini and designated as the “Southern Terminus” and “Northern Terminus” for all routes. **Exhibits 1-8** define physical and operational characteristics for route segments that make up the eight alternative routes. **Exhibits 9-16** show graphical illustrations of each route.

Route segments that comprise the eight alternatives are shown in **Exhibit 17**. Route segments consist of both existing roadways and non-existing (future) roadways. The following points summarize route segments that do not currently exist and how these route segments were treated in the study.

- **Sun Valley Parkway, Bell Road to US 60.** Sun Valley Parkway currently extends approximately 15 miles in a north-south orientation between I-10 and a point on Sun Valley Parkway where the roadway transitions to an east-west orientation on the existing Bell Road alignment. For Route Alternatives 1, 3, and 7, it was assumed that a new segment of Sun Valley Parkway would be constructed north from Bell Road, to intersect with US 60 in the vicinity of the intersect of US 60 and SR 74, a distance of approximately 14 miles. For the purposes of this study it was assumed that the alignment for Sun Valley Parkway generally followed an alignment developed by the Maricopa County Department of Transportation (MCDOT) shown in **Exhibit 18**. Establishment of the future alignment for Sun Valley Parkway was not part of this study nor was an assessment of the feasibility of the MCDOT alignment shown in **Exhibit 18**. It was assumed that Sun Valley Parkway would be constructed as a capital cost requirement for Routes 1, 3, and 7.
- **State Route 303 L, I-10 to US 60.** SR 303 L, between I-10 and US 60 is currently planned as a 4-lane expressway. Because construction of SR 303 L is not currently included in the current MAG Transportation Improvement Plan (TIP), it was assumed that Route Alternatives 5 and 8 would follow the current Cotton Lane/SR 303 L alignment between I-10 and US 60. It was also assumed that Cotton Lane/SR 303 L would be upgraded as a capital cost requirement for Routes 5 and 8.

- **State Route 202 L, 19th Avenue to I-10.** This segment of SR 202 L is part of the planned South Mountain freeway facility which connects I-10, southeast of Phoenix at a future interchange on the Pecos Road alignment with I-10, west of Phoenix at a future interchange on the 62nd Avenue alignment. Because this facility is currently included in the MAG TIP, it was assumed that Route Alternatives 3, 4, and 5 would utilize the future SR 202 L alignment between 19th Avenue and I-10, west of Phoenix. It was assumed that SR 202 L would be constructed as a capital cost requirement for Routes 3, 4, and 5.
- **19th Avenue, Riggs Road to (future) State Route 202 L.** During the scoping meetings for this study, Route Alternatives 3, 4, and 5 were defined as following a future 19th Avenue alignment between Riggs Road and future SR 202 L. It was assumed that 19th Avenue would be upgraded as a capital cost requirement for Routes 3, 4, and 5.
- **Wickenburg Road, I-10 to Indian School Road.** Wickenburg Road currently does not have an interchange with I-10. Rather, Wickenburg Road ends at Indian School Road, north of the I-10 alignment and proceeds west for approximately 6.5 miles to the I-10/Tonopah interchange at milepost 94. In this study, it was assumed that Route Alternatives 2, 4, and 6 would access Wickenburg Road via a reconstructed interchange at the 355th Avenue overpass and proceed north on the existing 355th Avenue alignment to the intersection of Wickenburg Road and Indian School Road. It was assumed that the 355th Avenue interchange would be reconstructed as a capital cost requirement for Routes 2, 4, and 6.
- **Wickenburg Bypass.** ADOT is currently conducting a study to develop and evaluate alternative roadway alignments and design concepts for a bypass of Wickenburg, Arizona. Direction received during scoping for this study indicated that if the preferred bypass alignment is located southwest of Wickenburg, all CANAMEX route alternatives would utilize the bypass facility to access the Northern Terminus of the route alternatives. Due to uncertainty of the selected bypass alignment, route alternatives considered in this study were assumed to follow existing roads including US 60, SR 93, and Vulture Mine Road as each route proceeds to the Northern Terminus. Therefore, evaluation criteria for route length, travel time, capital costs of construction, and level of service does not reflect the ultimate connection of CANAMEX route alternatives to the Wickenburg Bypass. It was assumed that existing roadways would be upgraded as a capital cost requirement for Routes 2, 4, and 6.

Exhibit 1 - Physical and Operational Characteristics for Route 1

Segment Order	Road Name	Beginning Point	Ending Point	Total Distance (miles)	Urban Roadway (miles)	Rural Roadway (miles)	Functional Classification	Travel Lanes			
								Minimum	Maximum		
1	I-10	SOUTHERN TERMINUS I-10 SR 085Y SR 085 I-10 SR 085Y I-10 SUN VALLEY PARKWAY SUN VALLEY PARKWAY (FUTURE) US 060 US 093 US 093	I-08 SR 085Y SR 085 I-10 SUN VALLEY PARKWAY SUN VALLEY PARKWAY (FUTURE) US 060 US 093 VULTURE MINE ROAD NORTHERN TERMINUS	1.0	0.0	1.0	1	4	4		
2	I-08			58.5	0.0	58.5	1	4	4		
3	SR 085Y			2.4	0.0	2.4	2	2	2		
4	SR 085			34.0	6.0	28.1	2.3	2	3		
5	I-10			3.1	3.1	0.0	1	4	4		
6	SUN VALLEY PARKWAY			15.4	1.6	13.7	4.5	0	4		
7	SUN VALLEY PARKWAY (FUTURE)			14.3	0.0	14.3	0	0	0		
8	US 060			10.8	0.0	10.8	2	4	4		
9	US 093			3.6	0.0	3.6	2	2	4		
10	US 093			2.4	0.0	2.4	2	2	4		
*Functional System Code (Urban/Rural): 1=Interstate/Interstate, 2=Other Principal Arterial/Other Freeways and Expressways, 3=Minor Arterial/Other Principal Arterial, 4=Minor Collector/Collector, 5=Local/Local											
Segment Order	Road Name	Beginning Point	Ending Point	Existing Volumes		Future Volumes (2020)					
				Daily Traffic	Minimum	Maximum	Daily Trucks	Daily Traffic	Minimum	Maximum	Daily Trucks
1	I-10	SOUTHERN TERMINUS I-10 SR 085Y SR 085 I-10 SR 085Y I-10 SUN VALLEY PARKWAY SUN VALLEY PARKWAY (FUTURE) US 060 US 093 US 093	I-08 SR 085Y SR 085 I-10 SUN VALLEY PARKWAY SUN VALLEY PARKWAY (FUTURE) US 060 US 093 VII TUIPE MINE ROAD	5,550	35,259	2,054	13,046	n/a	n/a	n/a	
2	I-08			4,786	6,347	1,915	2,540	n/a	n/a	n/a	
3	SR 085Y			2,650	2,650	743	743	n/a	n/a	n/a	
4	SR 085			8,305	9,203	2,326	2,577	n/a	n/a	n/a	
5	I-10			19,861	19,861	8,740	8,740	61,000	63,000	14,802	
6	SUN VALLEY PARKWAY			483	630	23	29	13,000	21,000	626	
7	SUN VALLEY PARKWAY (FUTURE)			n/a	n/a	n/a	n/a	2,000	5,000	964	
8	US 060			8,913	17,524	2,497	4,908	2,000	34,000	797	
9	US 093			7,125	7,778	1,426	1,556	12,000	34,000	5,984	
								12,000	12,000	437	

Exhibit 1 - Physical and Operational Characteristics for Route 1



Exhibit 2 - Physical and Operational Characteristics for Route 2

Segment Order	Road Name	Beginning Point	Ending Point	Total Distance (miles)	Urban Roadway (miles)	Rural Roadway (miles)	Functional Classification	Travel Lanes
1	I-10			1.0	0.0	1.0	1	4
2	I-08	SOUTHERN TERMINUS	I-08	58.5	0.0	58.5	1	4
3	SR 085Y	I-10	SR 085Y	2.4	0.0	2.4	1	4
4	SR 085	I-08	SR 085	34.0	6.0	28.1	2,3	2
5	I-10	SR 085Y	SUN VALLEY PARKWAY	3.1	3.1	0.0	1	2
6	I-10	SUN VALLEY PARKWAY	WICKENBURG ROAD	8.3	4.2	4.0	1	4
7	WICKENBURG ROAD	I-10	VULTURE MINE ROAD	18.4	0.0	18.4	4	2
8	VULTURE MINE ROAD	WICKENBURG ROAD	US 093	21.9	0.0	21.9	4,6	0
9	US 093	VULTURE MINE ROAD	NORTHERN TERMINUS	2.4	0.0	2.4	2	4

*Functional System Code (Urban/Rural); 1=Interstate/Interstate, 2=Other Principal Arterial/Other Freeways and Expressways, 3=Minor Arterial/Other Principal Arterial, 4=Minor Collector/Collector, 5=Local/Local

Segment Order	Road Name	Beginning Point	Ending Point	Existing Volumes				Future Volumes (2020)			
				Daily Traffic		Daily Trucks		Daily Traffic		Daily Trucks	
				Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
1	I-10			5,550	35,259	2,054	13,046	n/a	n/a	n/a	n/a
2	I-08	SOUTHERN TERMINUS	I-08	4,786	6,347	1,915	2,540	n/a	n/a	n/a	n/a
3	SR 085Y	I-10	SR 085Y	2,650	2,650	743	743	n/a	n/a	n/a	n/a
4	SR 085	SR 085Y	I-10	8,305	9,203	2,326	2,577	n/a	n/a	n/a	n/a
5	I-10	SR 085	SUN VALLEY PARKWAY	19,861	19,861	8,740	8,740	61,000	63,000	14,802	15,364
6	I-10	SUN VALLEY PARKWAY	WICKENBURG ROAD	18,815	19,311	8,280	8,497	48,000	49,000	7,423	9,282
7	WICKENBURG ROAD	I-10	VULTURE MINE ROAD	386	8,500	32	680	48,000	4,000	88	521
8	VULTURE MINE ROAD	WICKENBURG ROAD	US 093	769	5,000	0	0	4,000	4,000	20	521
9	US 093	VULTURE MINE ROAD	NORTHERN TERMINUS	4,012	7,778	883	1,712	n/a	n/a	n/a	n/a

Exhibit 2 - Physical and Operational Characteristics for Route 2

Exhibit 3 - Physical and Operational Characteristics for Route 3

Segment Order	Road Name	Beginning Point	Ending Point	Total Distance (miles)	Urban Roadway (miles)	Rural Roadway (miles)	Functional Classification	Travel Lanes	
								Minimum	Maximum
1	I-10	SOUTHERN TERMINUS	RIGGS ROAD	32.4	3.1	29.3	1	4	4
2	RIGGS ROAD	I-10	19TH AVENUE	10.8	0.0	10.8	4	0	2
3	19TH AVENUE	RIGGS ROAD	LOOP 202	3.7	0.0	3.7	0	0	0
4	LOOP 202	19TH AVENUE	I-10	15.2	15.2	0.0	2	4	4
5	I-10	LOOP 202 (WEST)	LOOP 303	14.5	14.5	0.0	1	4	8
6	I-10	LOOP 303	SR 085	12.0	12.0	0.0	1	4	4
7	I-10	SR 085	SUN VALLEY PARKWAY	3.1	3.1	0.0	1	4	4
8	SUN VALLEY PARKWAY	I-10	SUN VALLEY PARKWAY (FUTURE)	15.4	1.6	13.7	4.5	0	4
9	SUN VALLEY PARKWAY (FUTURE)	SUN VALLEY PARKWAY	US 060	14.3	0.0	14.3	0	0	0
10	US 060	SUN VALLEY PARKWAY (FUTURE)	US 093	10.8	0.0	10.8	2	4	4
11	US 093	US 060	VULTURE MINE ROAD	3.6	0.0	3.6	2	2	4
12	US 093	VULTURE MINE ROAD	NORTHERN TERMINUS	2.4	0.0	2.4	2	2	4

*Functional System Code (Urban/Rural); 1=Interstate/Interstate, 2=Other Principal Arterial/Other Freeways and Expressways, 3=Minor Arterial/Other Principal Arterial, 4=Minor Collector/Collector, 5=Local/Local

Segment Order	Road Name	Beginning Point	Ending Point	Existing Volumes		Future Volumes (2020)	
				Daily Traffic	Daily Trucks	Daily Traffic	Daily Trucks
1	I-10	SOUTHERN TERMINUS	RIGGS ROAD	31,312	11,145	n/a	n/a
2	RIGGS ROAD	I-10	19TH AVENUE	2,644	424	18,000	4,234
3	19TH AVENUE	RIGGS ROAD	LOOP 202	n/a	n/a	17,000	2,652
4	LOOP 202	19TH AVENUE	I-10	48,000	4,320	46,000	27,000
5	I-10	LOOP 202 (WEST)	LOOP 303	36,000	8,383	109,000	14,290
6	I-10	LOOP 303	SR 085	21,592	6,262	175,000	25,208
7	I-10	SR 085	SUN VALLEY PARKWAY	19,861	8,740	87,000	17,677
8	SUN VALLEY PARKWAY	I-10	SUN VALLEY PARKWAY (FUTURE)	483	23	61,000	14,802
9	SUN VALLEY PARKWAY (FUTURE)	SUN VALLEY PARKWAY	US 060	n/a	n/a	13,000	626
10	US 060	SUN VALLEY PARKWAY (FUTURE)	US 093	8,913	2,497	2,000	797
11	US 093	US 060	VULTURE MINE ROAD	7,125	1,426	34,000	5,984
12	US 093	VULTURE MINE ROAD	NORTHERN TERMINUS	4,012	883	12,000	437

Exhibit 3 - Physical and Operational Characteristics for Route 3

Exhibit 4 - Physical and Operational Characteristics for Route 4

Segment Order	Road Name	Beginning Point	Ending Point	Total Distance (miles)	Urban Roadway (miles)	Rural Roadway (miles)	Functional Classification	Travel Lanes	
								Minimum	Maximum
1	I-10	SOUTHERN TERMINUS	RIGGS ROAD	32.4	3.1	29.3	1	4	4
2	RIGGS ROAD	I-10	19TH AVENUE	10.8	0.0	10.8	4	0	2
3	19TH AVENUE	RIGGS ROAD	LOOP 202	3.7	0.0	3.7	0	0	0
4	LOOP 202	19TH AVENUE	I-10	15.2	15.2	0.0	2	4	4
5	I-10	LOOP 202 (WEST)	LOOP 303	14.5	14.5	0.0	1	4	8
6	I-10	LOOP 303	SR 085	12.0	12.0	0.0	1	4	4
7	I-10	SR 085	SUN VALLEY PARKWAY	3.1	3.1	0.0	1	4	4
8	I-10	SUN VALLEY PARKWAY	WICKENBURG ROAD	8.3	4.2	4.0	1	4	4
9	WICKENBURG ROAD	I-10	VULTURE MINE ROAD	18.4	0.0	18.4	4	0	2
10	VULTURE MINE ROAD	WICKENBURG ROAD	US 093	21.9	0.0	21.9	4	0	0
11	US 093	VULTURE MINE ROAD	NORTHERN TERMINUS	2.4	0.0	2.4	2	2	4

*Functional System Code (Urban/Rural); 1=Interstate/Interstate, 2=Other Principal Arterial/Other Freeways and Expressways, 3=Minor Arterial/Other Principal Arterial, 4=Minor Collector/Collector, 5=Local/Local

Segment Order	Road Name	Beginning Point	Ending Point	Existing Volumes		Future Volumes (2020)	
				Minimum	Maximum	Minimum	Maximum
1	I-10	SOUTHERN TERMINUS	RIGGS ROAD	31,312	41,122	n/a	n/a
2	RIGGS ROAD	I-10	19TH AVENUE	2,644	6,955	18,000	4,234
3	19TH AVENUE	RIGGS ROAD	LOOP 202	n/a	n/a	17,000	2,852
4	LOOP 202	19TH AVENUE	I-10	48,000	48,000	46,000	14,290
5	I-10	LOOP 202 (WEST)	LOOP 303	36,000	122,448	147,000	109,000
6	I-10	LOOP 303	SR 085	21,592	28,000	175,000	25,208
7	I-10	SR 085	SUN VALLEY PARKWAY	19,861	8,740	87,000	17,677
8	I-10	SUN VALLEY PARKWAY	WICKENBURG ROAD	18,815	19,311	61,000	14,802
9	WICKENBURG ROAD	I-10	VULTURE MINE ROAD	386	8,500	48,000	7,423
10	VULTURE MINE ROAD	WICKENBURG ROAD	US 093	789	5,000	4,000	88
						4,000	20
							521

Exhibit 4 - Physical and Operational Characteristics for Route 4

Exhibit 5 - Physical and Operational Characteristics for Route 5

Segment Order	Road Name	Beginning Point	Ending Point	Total Distance (miles)	Urban Roadway (miles)	Rural Roadway (miles)	Functional Classification	Minimum	Maximum
1	I-10	SOUTHERN TERMINUS	RIGGS ROAD	32.4	3.1	29.3	1	4	4
2	RIGGS ROAD	I-10	19TH AVENUE	10.8	0.0	10.8	4	0	2
3	19TH AVENUE	RIGGS ROAD	LOOP 202	3.7	0.0	3.7	0	0	0
4	LOOP 202	19TH AVENUE	I-10	15.2	15.2	0.0	2	4	4
5	I-10	LOOP 202 (WEST)	LOOP 303	14.5	14.5	0.0	1	4	8
6	LOOP 303	I-10	US 060	15.4	8.3	7.1	2	2	2
7	US 060	LOOP 303	SUN VALLEY PARKWAY (FUTURE)	17.5	0.6	17.0	2.3	2	4
8	US 060	SUN VALLEY PARKWAY (FUTURE)	US 093	10.8	0.0	10.8	2	4	4
9	US 093	US 060	VULTURE MINE ROAD	3.6	0.0	3.6	2	2	4
10	US 093	VULTURE MINE ROAD	NORTHERN TERMINUS	2.4	0.0	2.4	2	2	4

*Functional System Code (Urban/Rural); 1=Interstate/Interstate, 2=Other Principal Arterial/Other Freeways and Expressways, 3=Minor Arterial/Other Principal Arterial, 4=Minor Collector/Collector, 5=Local/Local

Segment Order	Road Name	Beginning Point	Ending Point	Existing Volumes				Future Volumes (2020)			
				Daily Traffic		Daily Trucks		Daily Traffic		Daily Trucks	
				Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
1	I-10	SOUTHERN TERMINUS	RIGGS ROAD	31,312	41,122	11,145	14,635	n/a	n/a	n/a	n/a
2	RIGGS ROAD	I-10	19TH AVENUE	2,644	6,955	424	1,114	18,000	32,000	4,234	7,530
3	19TH AVENUE	RIGGS ROAD	LOOP 202	n/a	n/a	n/a	n/a	17,000	27,000	2,652	7,530
4	LOOP 202	19TH AVENUE	I-10	48,000	48,000	4,320	4,320	46,000	109,000	14,290	33,112
5	I-10	LOOP 202 (WEST)	LOOP 303	36,000	122,448	8,383	28,512	147,000	175,000	25,208	52,658
6	LOOP 303	I-10	US 060	1,800	5,147	252	720	24,000	32,000	7,952	9,341
7	US 060	LOOP 303	SUN VALLEY PARKWAY (FUTURE)	8,913	8,913	2,497	2,497	30,000	44,000	4,275	9,013
8	US 060	SUN VALLEY PARKWAY (FUTURE)	US 093	8,913	17,524	2,497	4,908	34,000	34,000	5,984	5,984
9	US 093	US 060	VULTURE MINE ROAD	7,125	7,778	1,426	1,556	12,000	12,000	437	437
10	US 093	VULTURE MINE ROAD	NORTHERN TERMINUS	4,012	7,778	883	1,712	n/a	n/a	n/a	n/a

Exhibit 5 - Physical and Operational Characteristics for Route 5

Exhibit 6 - Physical and Operational Characteristics for Route 6

Segment Order	Road Name	Beginning Point	Ending Point	Total Distance (miles)	Urban Roadway (miles)	Rural Roadway (miles)	Functional Classification	Travel Lanes	
								Minimum	Maximum
1	I-10	SOUTHERN TERMINUS	RIGGS ROAD	32.4	3.1	29	1	4	4
2	I-10	RIGGS ROAD	I-17	18.3	12.7	6	1	4	12
3	I-17	I-10 (SOUTH)	I-10 (NORTH)	6.3	6.3	0	1	6	6
4	I-10	LOOP 202 (WEST)	LOOP 202 (WEST)	4.0	4.0	0	1	8	10
5	I-10	LOOP 303	SR 085	14.5	14.5	0	1	4	8
6	I-10	LOOP 303	SUN VALLEY PARKWAY	12.0	12.0	0	1	4	4
7	I-10	SR 085	WICKENBURG ROAD	3.1	3.1	0	1	4	4
8	I-10	SUN VALLEY PARKWAY	WICKENBURG ROAD	8.3	4.2	4	1	4	4
9	WICKENBURG ROAD	I-10	VULTURE MINE ROAD	18.4	0.0	18	4	0	2
10	VULTURE MINE ROAD	WICKENBURG ROAD	US 093	21.9	0.0	22	4,6	0	0
11	US 093	VULTURE MINE ROAD	NORTHERN TERMINUS	2.4	0.0	2	2	2	4

*Functional System Code (Urban/Rural); 1=Interstate/Interstate, 2=Other Principal Arterial/Other Freeways and Expressways, 3=Minor Arterial/Other Principal Arterial, 4=Minor Collector/Collector, 5=Local/Local

Segment Order	Road Name	Beginning Point	Ending Point	Existing Volumes		Future Volumes (2020)	
				Minimum	Maximum	Minimum	Maximum
1	I-10	SOUTHERN TERMINUS	RIGGS ROAD	31,312	41,122	11,145	n/a
2	I-10	RIGGS ROAD	I-17	43,907	234,359	9,262	193,000
3	I-17	I-10 (SOUTH)	I-10 (NORTH)	89,990	144,467	8,099	131,000
4	I-10	LOOP 202 (WEST)	LOOP 202 (WEST)	132,426	164,607	11,918	131,000
5	I-10	LOOP 303	SR 085	36,000	122,448	8,383	165,000
6	I-10	LOOP 303	SUN VALLEY PARKWAY	21,592	28,000	6,262	175,000
7	I-10	SR 085	WICKENBURG ROAD	19,861	19,861	8,740	87,000
8	I-10	SUN VALLEY PARKWAY	WICKENBURG ROAD	18,815	19,311	8,280	63,000
9	WICKENBURG ROAD	I-10	VULTURE MINE ROAD	386	8,500	32	49,000
10	VULTURE MINE ROAD	WICKENBURG ROAD	US 093	769	5,000	0	4,000
11	US 093	VULTURE MINE ROAD	NORTHERN TERMINUS	4,012	7,778	883	n/a

Exhibit 6 - Physical and Operational Characteristics for Route 6

Exhibit 7 - Physical and Operational Characteristics for Route 7

Segment Order	Road Name	Beginning Point	Ending Point	Total Distance (miles)	Urban Roadway (miles)	Rural Roadway (miles)	Functional Classification	Travel Lanes
1	I-10	SOUTHERN TERMINUS	RIGGS ROAD	32.4	3.1	29.3	1	4
2	I-10	RIGGS ROAD	I-17	18.3	12.7	5.6	1	4
3	I-17	I-10 (SOUTH)	I-10 (NORTH)	6.3	6.3	0.0	1	12
4	I-10	I-17	LOOP 202 (WEST)	4.0	4.0	0.0	1	6
5	I-10	LOOP 202 (WEST)	LOOP 303	14.5	14.5	0.0	1	8
6	I-10	LOOP 303	SR 085	12.0	12.0	0.0	1	4
7	I-10	SR 085	SUN VALLEY PARKWAY	3.1	3.1	0.0	1	4
8	SUN VALLEY PARKWAY	I-10	SUN VALLEY PARKWAY (FUTURE)	15.4	1.6	13.7	4,5	4
9	SUN VALLEY PARKWAY (FUTURE)	SUN VALLEY PARKWAY	US 060	14.3	0.0	14.3	0	0
10	US 060	SUN VALLEY PARKWAY (FUTURE)	US 093	10.8	0.0	10.8	2	4
11	US 093	US 060	VULTURE MINE ROAD	3.6	0.0	3.6	2	4
12	US 093	VULTURE MINE ROAD	NORTHERN TERMINUS	2.4	0.0	2.4	2	4

*Functional System Code (Urban/Rural); 1=Interstate/Interstate, 2=Other Principal Arterial/Other Freeways and Expressways, 3=Minor Arterial/Other Principal Arterial, 4=Minor Collector/Collector, 5=Local/Local

Segment	Road Name	Beginning Point	Ending Point	Existing Volumes				Future Volumes (2020)			
				Daily Traffic		Daily Trucks		Daily Traffic		Daily Trucks	
				Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
1	I-10	SOUTHERN TERMINUS	RIGGS ROAD	31,312	41,122	11,145	14,635	n/a	n/a	n/a	n/a
2	I-10	RIGGS ROAD	I-17	43,907	234,359	9,262	49,433	193,000	202,000	11,367	76,759
3	I-17	I-10 (SOUTH)	I-10 (NORTH)	89,990	144,467	8,099	13,002	131,000	139,000	47,189	76,759
4	I-10	I-17	LOOP 202 (WEST)	132,426	164,607	11,918	14,814	165,000	212,000	55,693	66,271
5	I-10	LOOP 202 (WEST)	LOOP 303	36,000	122,448	8,383	28,512	147,000	175,000	25,208	52,658
6	I-10	LOOP 303	SR 085	21,592	28,000	6,262	8,120	76,000	87,000	17,677	23,685
7	I-10	SR 085	SUN VALLEY PARKWAY	19,861	19,861	8,740	8,740	61,000	63,000	14,802	15,364
8	SUN VALLEY PARKWAY	I-10	SUN VALLEY PARKWAY (FUTURE)	483	630	23	29	13,000	21,000	626	797
9	SUN VALLEY PARKWAY (FUTURE)	SUN VALLEY PARKWAY	US 060	n/a	n/a	n/a	n/a	2,000	5,000	797	964
10	US 060	SUN VALLEY PARKWAY (FUTURE)	US 093	8,913	17,524	2,497	4,908	34,000	34,000	5,984	5,984
11	US 093	US 060	VULTURE MINE ROAD	7,125	7,778	1,426	1,556	12,000	12,000	437	437
12	US 093	VULTURE MINE ROAD	NORTHERN TERMINUS	4,012	7,778	883	1,712	n/a	n/a	n/a	n/a

Exhibit 7 - Physical and Operational Characteristics for Route 7

Exhibit 8 - Physical and Operational Characteristics for Route 8

Segment Order	Road Name	Beginning Point	Ending Point	Total Distance (miles)	Urban Roadway (miles)	Rural Roadway (miles)	Functional Classification	Travel Lanes	
								Minimum	Maximum
1	I-10	SOUTHERN TERMINUS	RIGGS ROAD	32.4	3.1	29.3	1	4	4
2	I-10	RIGGS ROAD	I-17	18.3	12.7	5.6	1	4	12
3	I-17	I-10 (SOUTH)	I-10 (NORTH)	6.3	6.3	0.0	1	6	6
4	I-10	I-17	LOOP 202 (WEST)	4.0	4.0	0.0	1	8	10
5	I-10	LOOP 202 (WEST)	LOOP 303	14.5	14.5	0.0	1	4	8
6	LOOP 303	I-10	US 060	15.4	8.3	7.1	2	2	2
7	US 060	LOOP 303	SUN VALLEY PARKWAY (FUTURE)	17.5	0.6	17.0	2.3	2	4
8	US 060	SUN VALLEY PARKWAY (FUTURE)	US 093	10.8	0.0	10.8	2	2	4
9	US 093	US 060	VULTURE MINE ROAD	3.6	0.0	3.6	2	2	4
10	US 093	VULTURE MINE ROAD	NORTHERN TERMINUS	2.4	0.0	2.4	2	2	4

*Functional System Code (Urban/Rural); 1=Interstate/Interstate, 2=Other Principal Arterial/Other Freeways and Expressways, 3=Minor Arterial/Other Principal Arterial, 4=Minor Collector/Collector, 5=Local/Local

Segment Order	Road Name	Beginning Point	Ending Point	Existing Volumes		Future Volumes (2020)	
				Minimum	Maximum	Minimum	Maximum
1	I-10	SOUTHERN TERMINUS	RIGGS ROAD	31,312	41,122	11,145	14,635
2	I-10	RIGGS ROAD	I-17	43,907	234,359	9,262	49,433
3	I-17	I-10 (SOUTH)	I-10 (NORTH)	89,990	144,467	8,099	13,002
4	I-10	I-17	LOOP 202 (WEST)	132,426	164,607	11,918	14,814
5	I-10	LOOP 202 (WEST)	LOOP 303	36,000	122,448	8,383	28,512
6	LOOP 303	I-10	US 060	1,800	5,147	252	720
7	US 060	LOOP 303	SUN VALLEY PARKWAY (FUTURE)	8,913	8,913	2,497	2,497
8	US 060	SUN VALLEY PARKWAY (FUTURE)	US 093	8,913	17,524	2,497	4,908
9	US 093	US 060	VULTURE MINE ROAD	7,125	7,778	1,426	1,556
10	US 093	VULTURE MINE ROAD	NORTHERN TERMINUS	4,012	7,778	883	1,712

Exhibit 8 - Physical and Operational Characteristics for Route 8

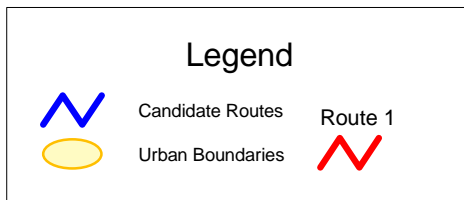
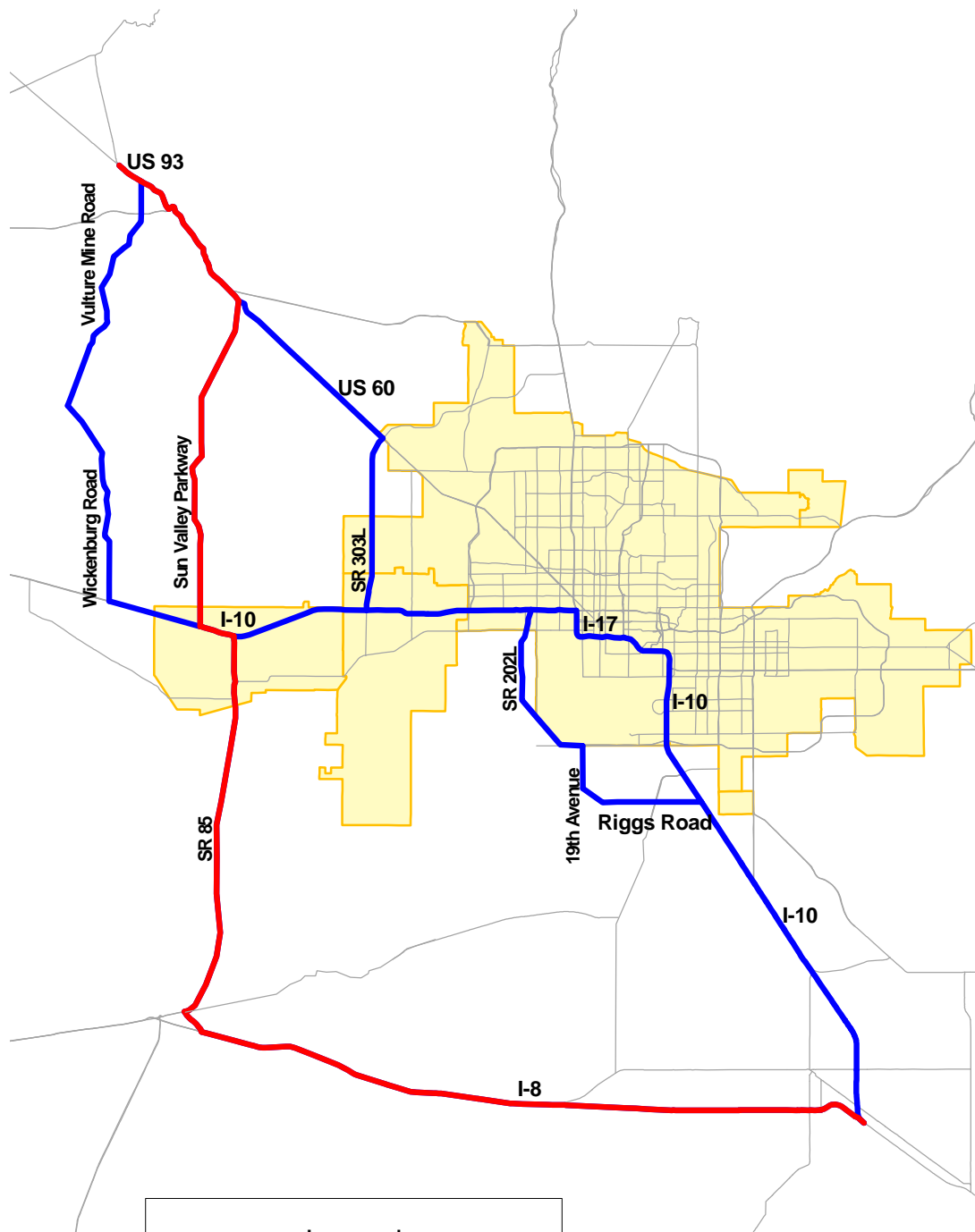


Exhibit 9 - Route Alternative 1

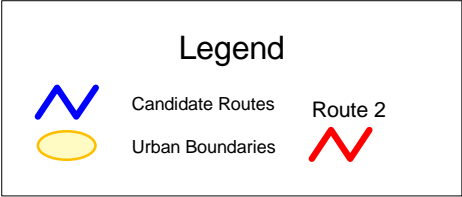
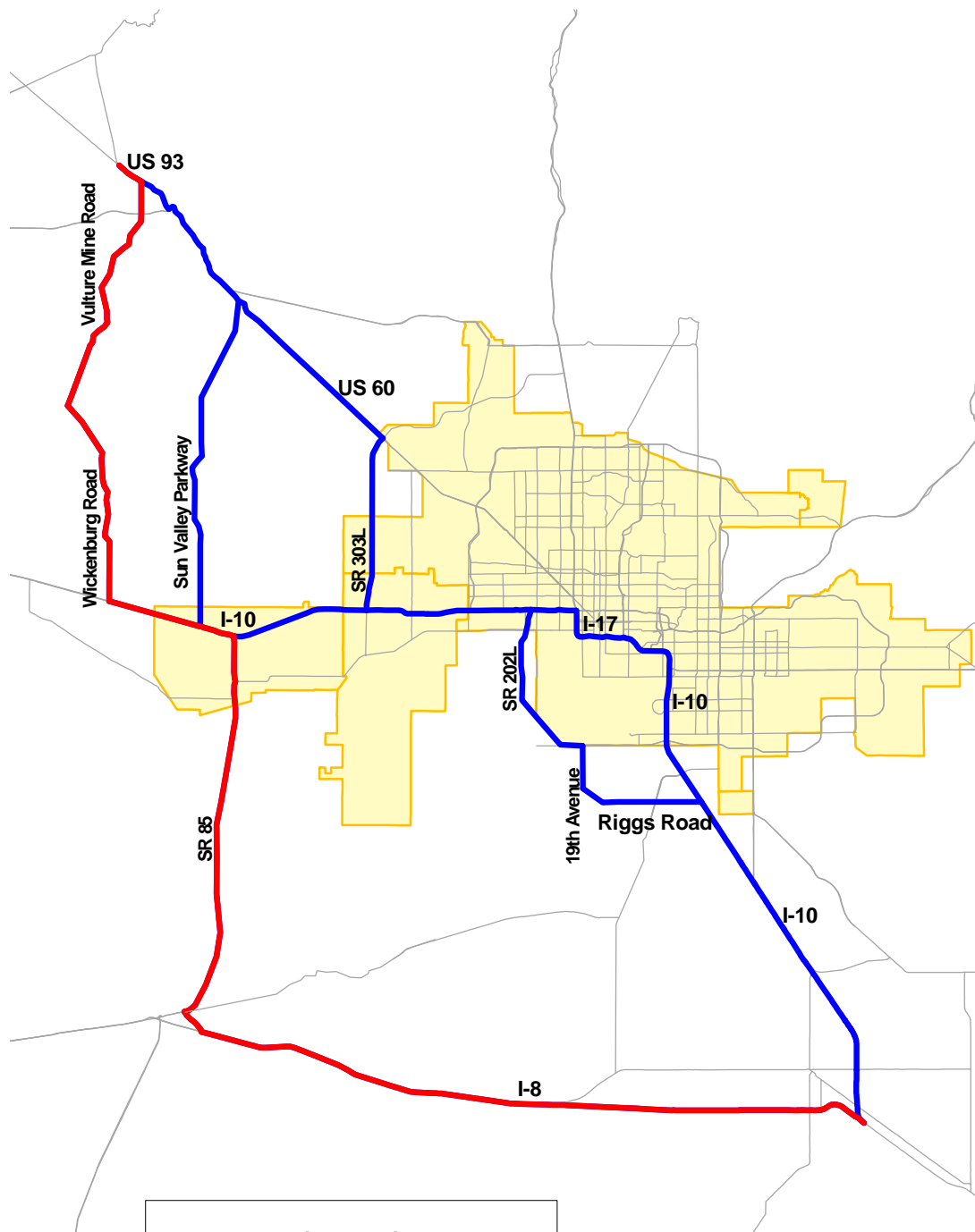


Exhibit 10 - Route Alternative 2

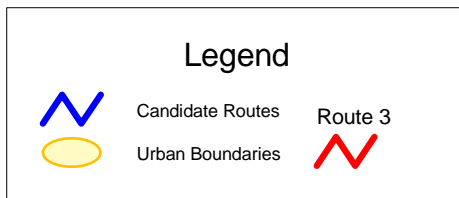
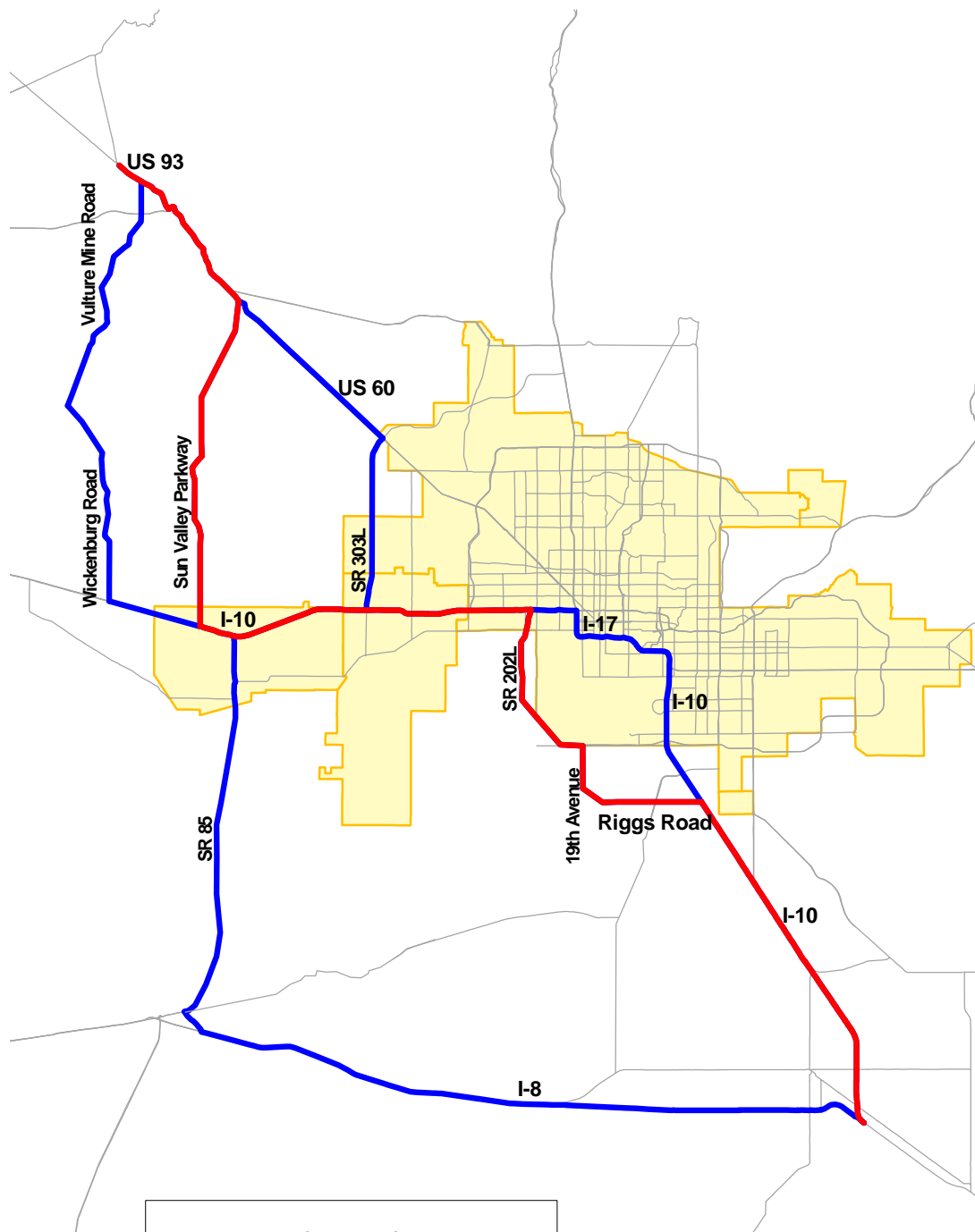


Exhibit 11 - Route Alternative 3

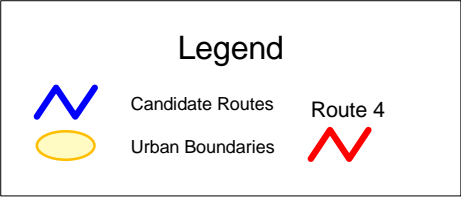
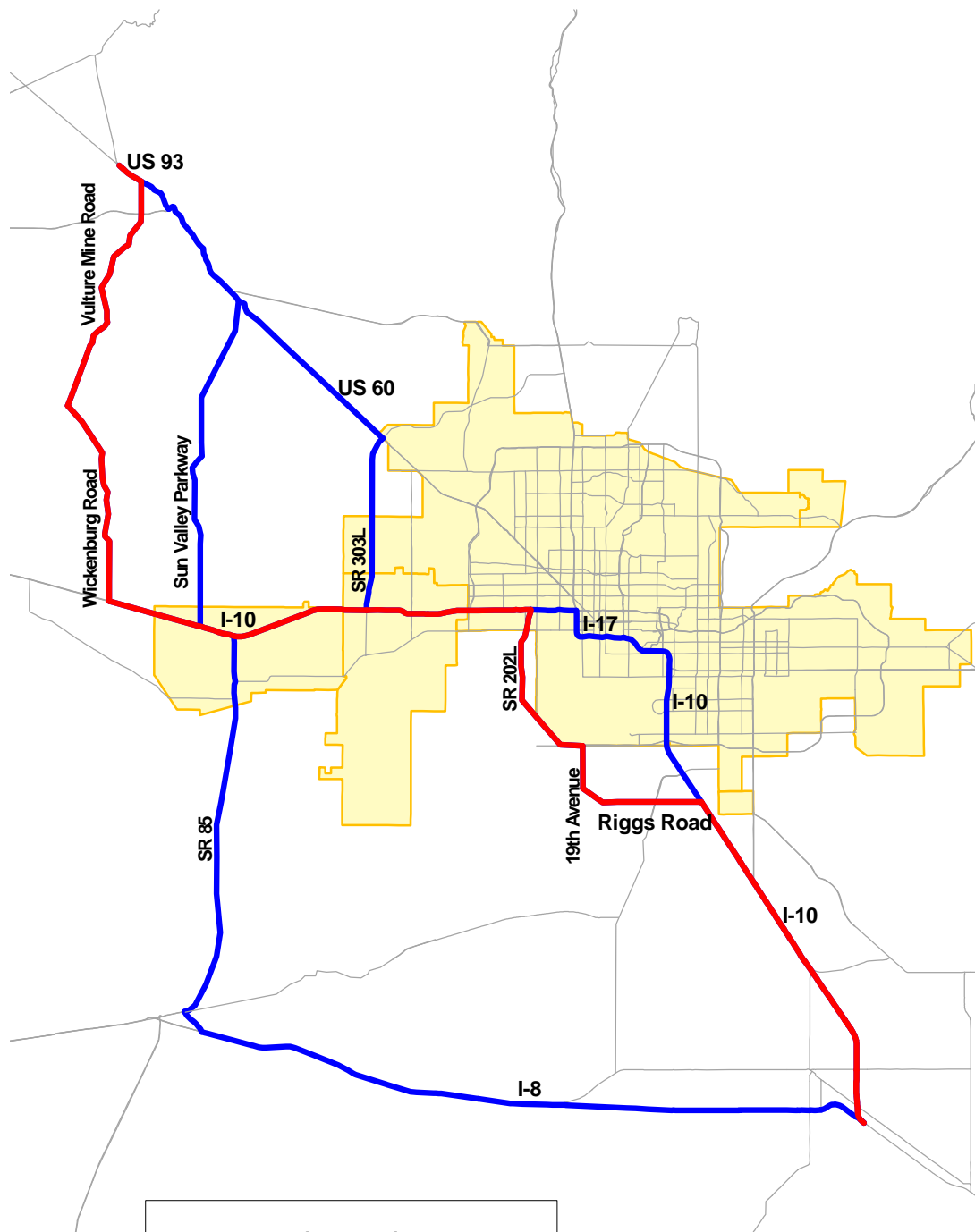


Exhibit 12 - Route Alternative 4

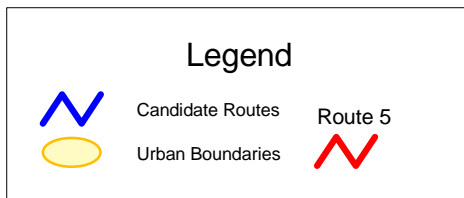
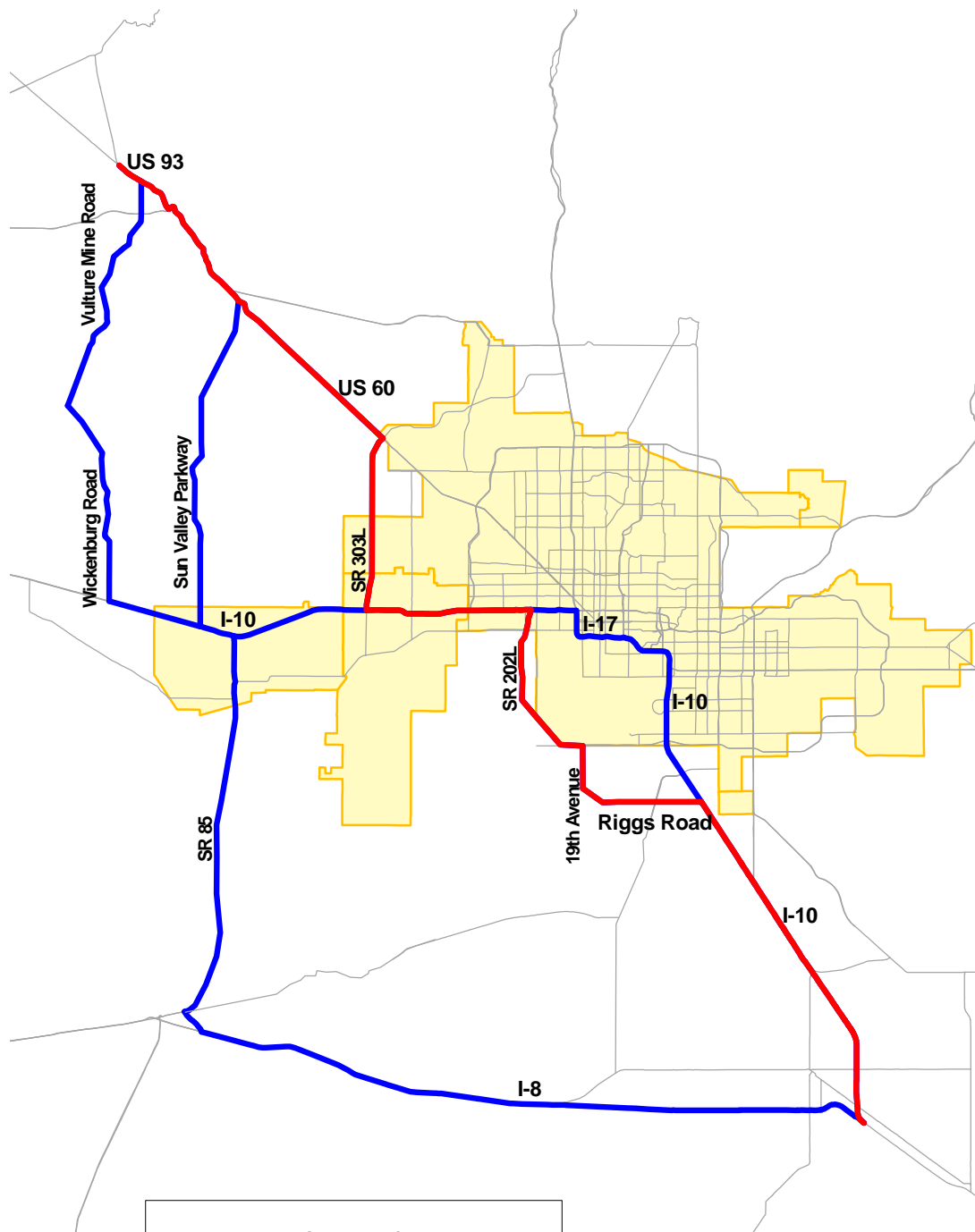


Exhibit 13 - Route Alternative 5

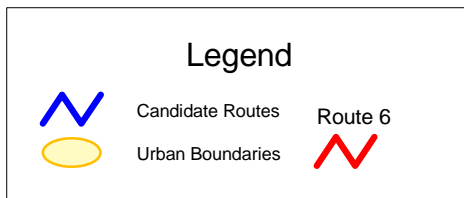
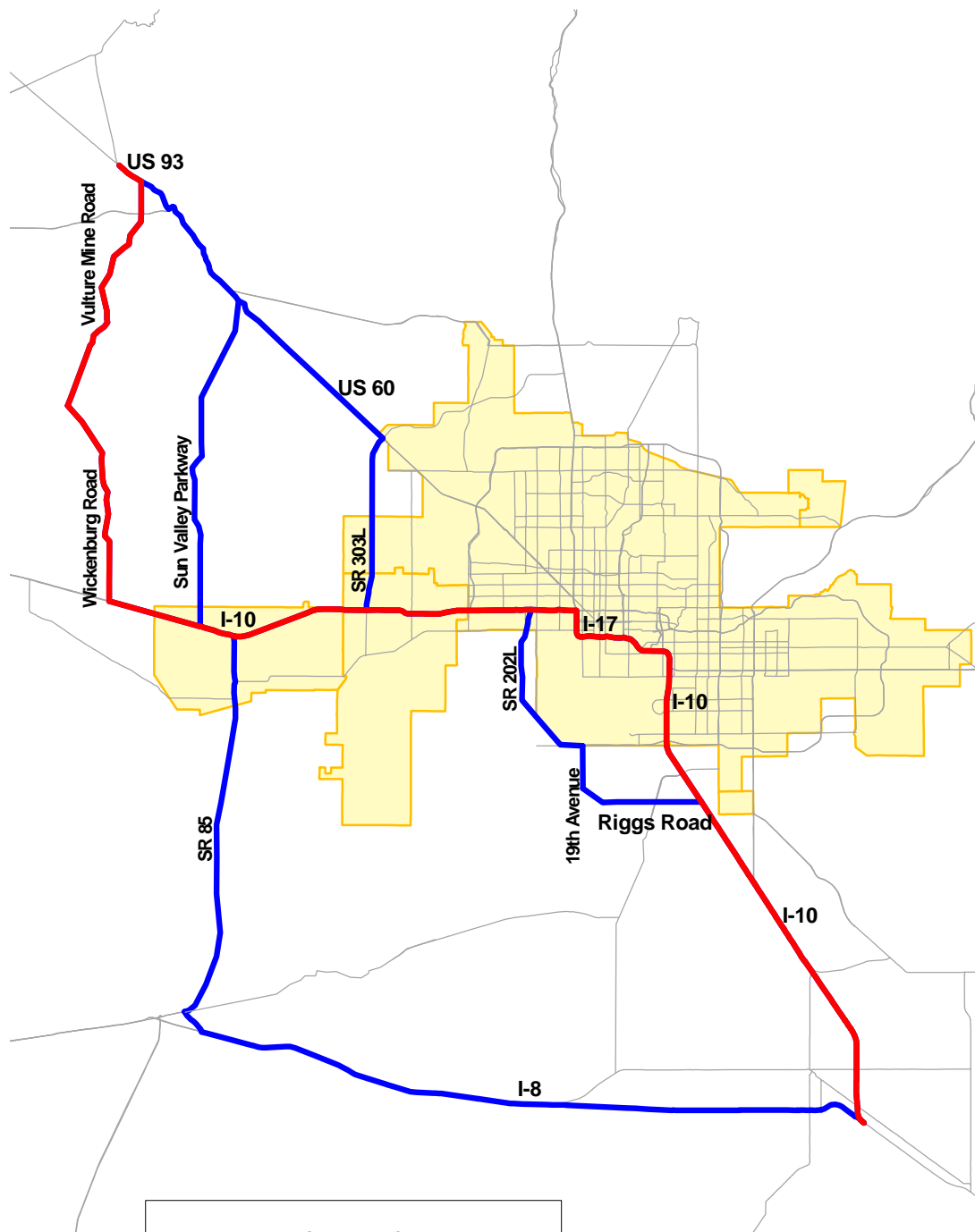


Exhibit 14 - Route Alternative 6

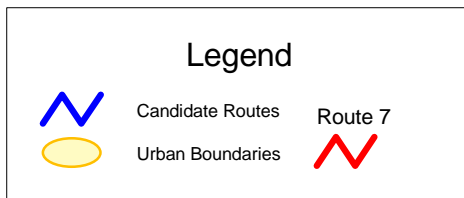
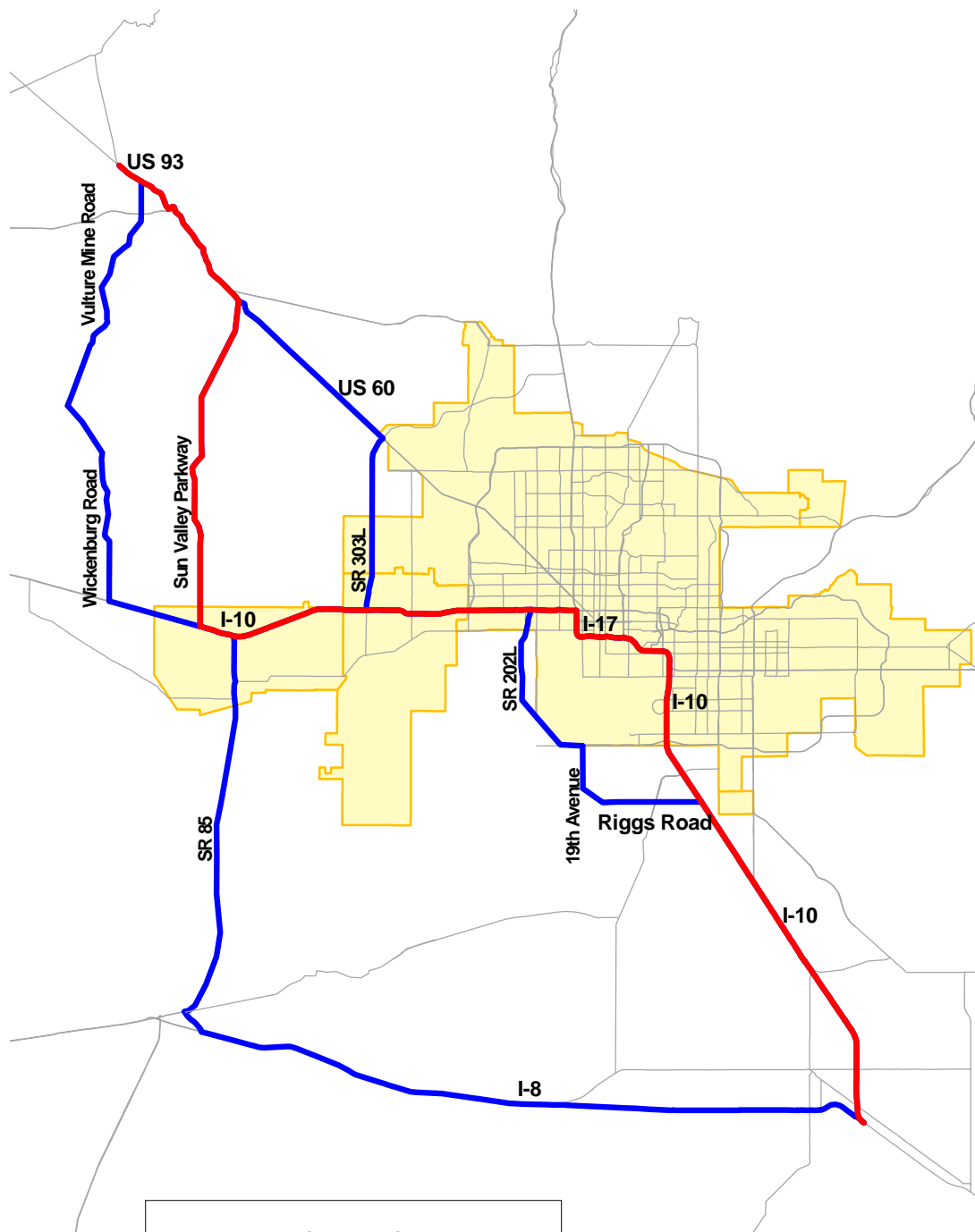


Exhibit 15 - Route Alternative 7

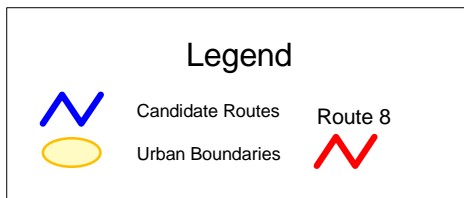
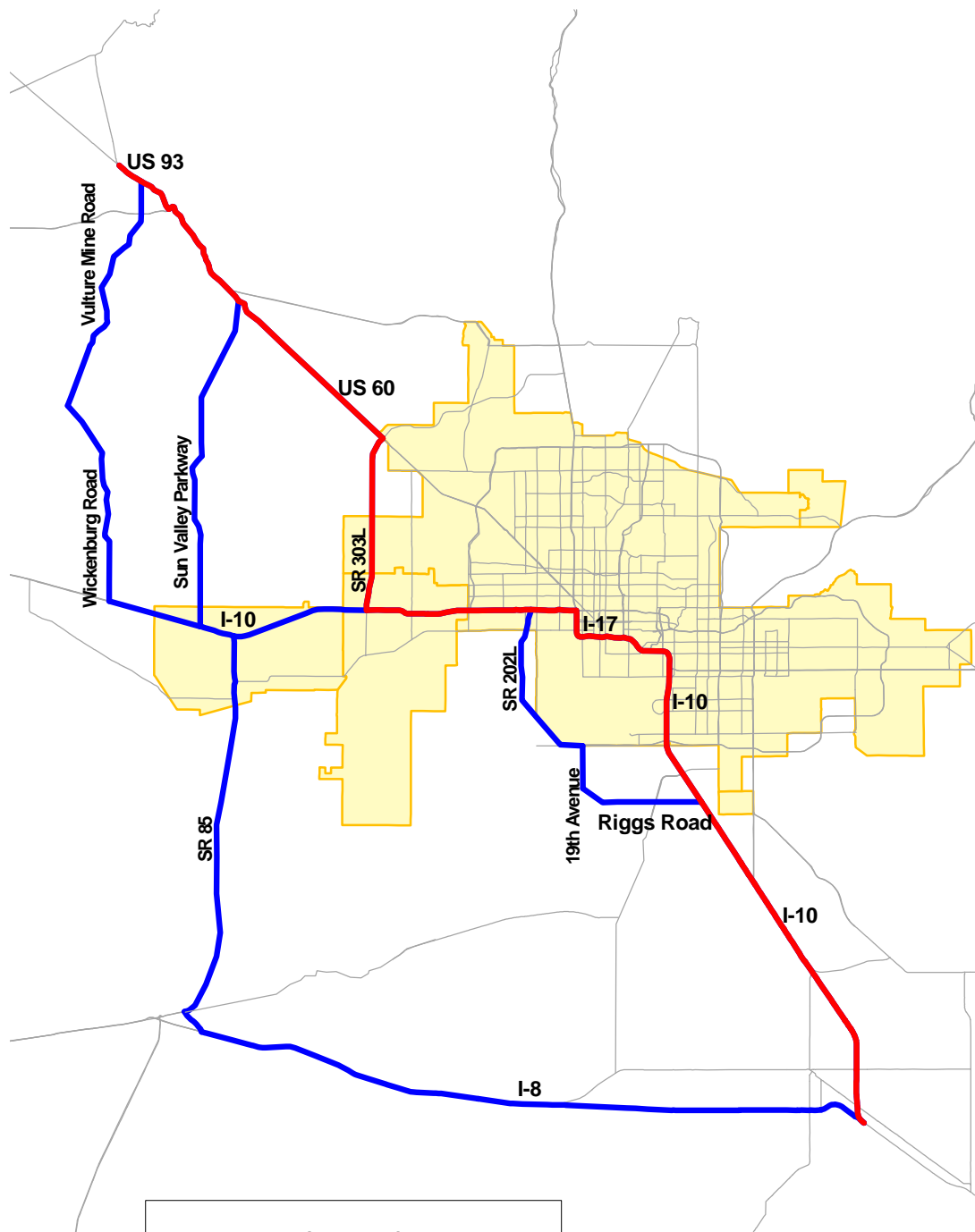


Exhibit 16 - Route Alternative 8

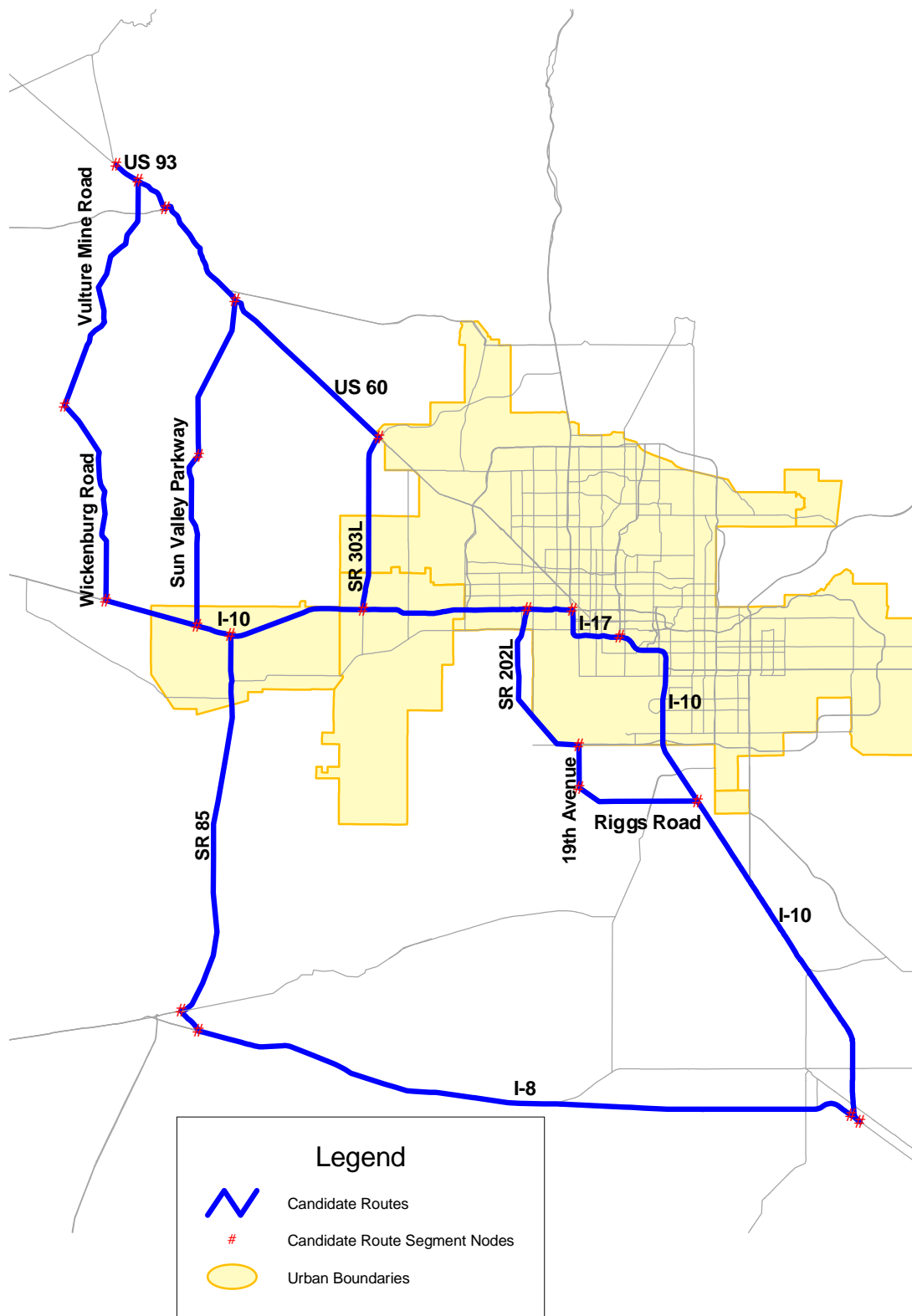


Exhibit 17 - Route Segments

4. ROUTE COMPARISONS

4.1 OVERVIEW OF EVALUATION CRITERIA

ADOT and MAG will evaluate and designate a preferred CANAMEX route from among eight route alternatives using ten evaluation criteria. The evaluation criteria are listed below.

- Costs
- Travel Time
- Length
- Level of Service
- Access to Freight Terminals
- Constructibility
- Safety
- Environmental Impacts
- Title VI and Environmental Justice Impacts
- Major Community Impacts

Definitions for each criterion were developed by ADOT and MAG and provided during scoping meetings for this study. To facilitate the presentation of data in this study, measure(s) of effectiveness were defined for each criterion. The following sections summarize for each criterion:

- ADOT/MAG criterion definition;
- Measure(s) of effectiveness for each criterion;
- The assessment methodology used in the study to quantify the measures of effectiveness;
- Primary source(s) of information and data used to quantify each measure of effectiveness; and
- A presentation of criterion assessment results.

4.1.1 *Costs*

ADOT/MAG CRITERION DEFINITION

Capital cost of land acquisition and construction including all new infrastructure plus any rehabilitation of pavement, shoulders, medians, bridge and culvert structures, and roadway appurtenances.

MEASURE(S) OF EFFECTIVENESS

- Order-of-magnitude capital construction and right-of-way acquisition costs, in 2000 dollars, to upgrade existing roadway facilities or to construct new roadway infrastructure to a minimum roadway cross-section of 40-feet on 200-feet of right-of-way.
- Planning-level design, construction, and right-of-way acquisition costs for route segments currently programmed (i.e., SR 202L).
- Planning-level costs for constructing projects and implementing transportation improvement needs on route segments.

PRIMARY DATA SOURCE(S)

- ADOT Five-Year Construction Program
- MAG Transportation Improvement Program
- MAG Long-range Plan
- ADOT Corridor Profile Studies
- Engineering Field Review
- Maricopa County Department of Transportation (right-of-way acquisition costs)
- ADOT Roadway Design Guidelines

CRITERION ASSESSMENT METHODOLOGY

Order-of-magnitude construction cost estimates were developed for route segments that do not currently exist and that are not programmed for design, right-of-way, and/or construction. The development of costs for new route segments was based on constructing the roadway cross section shown in **Exhibit 19** and did not establish or consider a specific route alignment. These route segments include the following.

- Sun Valley Parkway, Bell Road to US 60
- 19th Avenue, Riggs Road to (future) State Route 202

Note that SR 202 L has not been included in this type of route segment because it has been programmed for design and construction in the MAG TIP and the MAG Long-Range Transportation Plan.

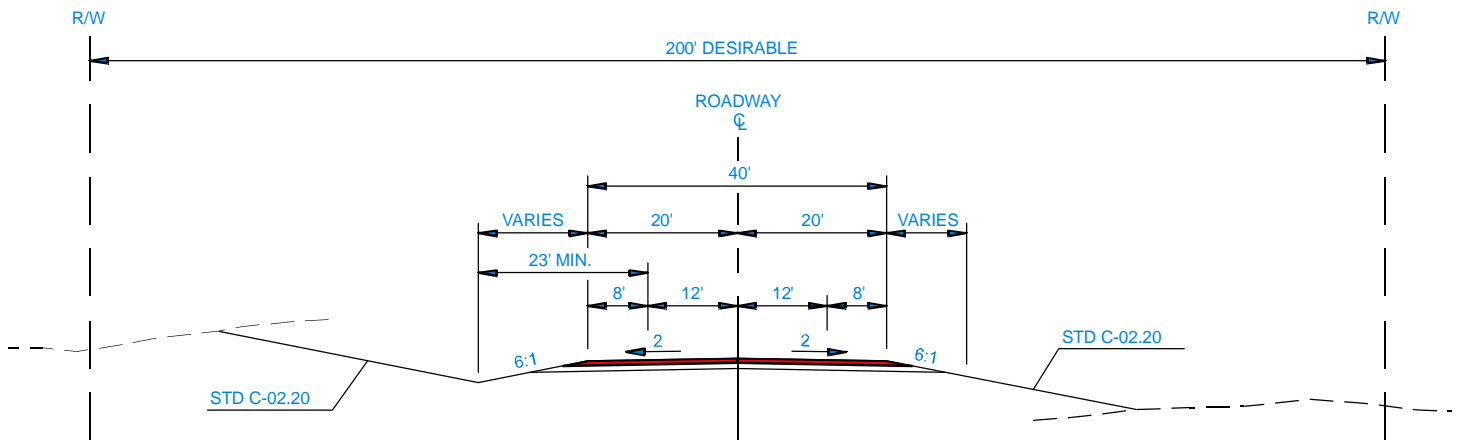
Order-of-magnitude construction cost estimates were also developed for route segments that were assessed, on the basis of a field review, to have less than minimum cross-section (refer to **Exhibit 19**) and roadway alignment characteristics for accommodating increased truck traffic volumes. The route segments for which construction cost estimates were developed include the following.

- SR 303 L/Cotton Lane, I-10 to US 60
- Wickenburg Road, Indian School Road to Vulture Mine Road
- Vulture Mine Road, Wickenburg Road to SR 93
- Riggs Road, I-10 to 19th Avenue

Note that SR 303 L/Cotton Lane has been included in this type of route segment because its development as a 4-lane parkway facility has not yet been programmed.

The minimum roadway cross-section standard used in the development of order-of-magnitude construction cost estimates for the two types of route segments listed above is shown in **Exhibit 19**.

The cost estimate includes alignment improvements to provide a 60-mile per hour design speed for horizontal and vertical curves. Construction cost estimates also included allocations for drainage, bridge, and interchange improvements. Order-of-magnitude right-of-way acquisition costs were developed using the following input from the Maricopa County Department of Transportation.



TYPICAL SECTION
NOT TO SCALE

SOURCE: ARIZONA DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN GUIDELINES

- \$32,000 to \$35,000 per acre for populated areas
- \$12,000 to \$15,000 per acre for unpopulated areas

Order-of-magnitude construction and right-of-way acquisition costs are summarized on worksheets in **Appendix A**. All costs are expressed in 2000 dollars.

In addition to estimating the cost of capital improvements on each route alternative, available agency documents and databases containing route-specific improvement plans were obtained and reviewed. Principal sources of information on transportation improvement plans and needs included the MAG Transportation Improvement Program (TIP), the MAG Long-Range Transportation Plan (LRTP), and ADOT Multi-Modal Corridor Profile Analysis Study reports. For CANAMEX route alternatives that will be developed or improved as part of an approved program such as the MAG TIP, the programmed cost of design, right-of-way acquisition, and construction was used directly in the development of capital costs of route improvements. Other route improvements contained in the MAG LRTP and ADOT Multi-Modal Corridor Profile Analysis Studies are summarized in **Appendix B**.

CRITERION ASSESSMENT RESULTS

Exhibit 20 lists the total capital construction and right-of-way acquisition costs along with the costs of programmed improvements necessary for achieving the minimum cross-section shown in **Exhibit 19**. Because programmed improvements do not include the upgrade of SR 303 L to a parkway facility and the construction of the Wickenburg Bypass, these costs are not included in **Exhibit 20**.

Exhibit 20 - Total Capital Construction and Right-Of-Way Acquisition Costs by Route

Route	Upgrade Capital Cost (millions)	Programmed Capital Costs (millions)
1	\$25	\$0
2	\$121	\$0
3	\$31	\$225
4	\$132	\$225
5	\$18	\$225
6	\$121	\$0
7	\$25	\$0
8	\$7	\$0

4.1.2 Travel Time

ADOT/MAG CRITERION DEFINITION

Measured or estimated for peak and off-peak periods, for cross-regional trips.

MEASURE(S) OF EFFECTIVENESS

- Off-peak travel time (based on free-flow speed) for existing and 2002 conditions, expressed in minutes, between route alternative termini.
- Peak period travel time for existing and 2002 conditions, expressed in minutes.

4.1.3 Primary Data Source(s)

- Highway Performance Monitoring System (HPMS) database (1998 version, released in November of 1999) containing posted speed limits and route segment distances
- Peak period travel time and delay studies
- Travel demand model estimates of 2020 travel times for route segments with the MAG Planning Region.

CRITERION ASSESSMENT METHODOLOGY

Off-peak travel time was estimated for each route alternative using HPMS posted speed and segment length data. For the purpose of this study, the free flow speed was assumed to be equal to the posted speed. Resulting travel time therefore represents the time required to traverse each route segment at the assumed free flow speed. For route segments that do not exist, posted speed limits were established based on the speed limits of similar types of roadway facilities and segment lengths defined in GIS data.

Peak period travel time was estimated separately for route segments located in urban and rural areas. Urban travel times were estimated using the results of a peak period travel time studies conducted on the following urban freeway segments.

- I-10, Riggs Road to Junction I-17
- I-17, Junction I-10 to Junction I-10
- I-10, Junction I-17 to SR 101 L

The results of the peak period travel time and delay studies are provided in **Appendix C**.

Urban area travel time data were combined with route segment travel times estimated using posted speed limits.

Future (2020) travel time estimates were developed by MAG using its travel demand model. The travel time data from the MAG model, however, were limited to those route segments that are included in the model (i.e., 2020 travel times were provided for only route segments in the MAG planning region).

CRITERION ASSESSMENT RESULTS

Exhibit 21 lists peak and off-peak travel time estimates for each CANAMEX route alternative for current and 2020 conditions.

Exhibit 21 - Peak and Off-Peak Travel Time

Route	Existing Peak (minutes)	Existing Off-Peak (minutes)	Future Peak (minutes)	Future Off-Peak (minutes)
1	156	156	139	131
2	155	155	157	157
3	154	152	150	120
4	153	151	168	146
5	154	152	148	120
6	151	146	188	153
7	153	147	169	126
8	152	147	167	126

4.1.4 Length

ADOT/MAG CRITERION DEFINITION

Total estimated or measured distance for the route through Maricopa County.

MEASURE(S) OF EFFECTIVENESS

Length in miles between route termini for each route alternative.

PRIMARY DATA SOURCE(S)

- Highway Performance Monitoring System (HPMS) database (1998 version, released in November of 1999) containing route segment distances in miles.

CRITERION ASSESSMENT METHODOLOGY

Route lengths were estimated using route segment lengths contained in HPMS database. For route segments that do not exist, segment lengths were established using route alignment information contained in published documents.

CRITERION ASSESSMENT RESULTS

Exhibit 22 lists route lengths for each CANAMEX route alternative.

Exhibit 22 - Route Lengths

Route	Length (miles)
1	145.4
2	149.9
3	138.0
4	142.6
5	126.2
6	141.5
7	136.9
8	125.1

4.1.5 Level of Service

ADOT/MAG CRITERION DEFINITION

Qualitative measure of highway operation under given traffic, physical, and operational conditions.

MEASURE(S) OF EFFECTIVENESS

- Percentage of total miles for each route alternative exceeding ADOT level of service criteria for urban and rural roadways under current traffic, physical, and operational conditions.
- Percentage of total miles for each route alternative exceeding level of service D under 2020 traffic, physical, and operational conditions.

PRIMARY DATA SOURCE(S)

- Highway Performance Monitoring System (HPMS) database (1998 version, released in November of 1999) containing daily route segment volumes and capacities.
- MAG travel demand model outputs from the EMME 2 model containing 2020 level of service projections.

ASSESSMENT METHODOLOGY

ADOT has established criteria to categorize the acceptability of level of service on the State Highway System. According to existing ADOT criteria, the quality of traffic performance on roadway segments in urban areas is considered less than desirable for levels of service (LOS) E or worse. For rural roadway segments LOS C or worse is considered to be less than desirable. This definition is consistent with definitions used in recent multi-modal corridor profile analysis studies prepared for ADOT.

Daily volumes and daily capacities contained in the ADOT HPMS database were used to calculate daily volume-to-capacity ratios for each of the route segments that make up the CANAMEX route alternatives. Daily volume-to-capacity ratios were weighted by the length of each route segment. Volume-to-capacity ratio threshold for various levels of service were obtained from the Highway Capacity Manual (1994 Edition) and used to translate volume-to-capacity ratios to corresponding levels of service.

The EMME 2 travel demand model maintained by MAG was used to estimate future level of service conditions in 2020. Travel demand model network and modeling parameters such as number of lanes, and facility type were defined by MAG and are consistent with operational MAG models developed for 2020 conditions. Level of service projections from the MAG model was not amenable to assessment of ADOT level of service criteria. Therefore, level of service D or worse were used in the assessment of future level of service.

CRITERION ASSESSMENT RESULTS

Exhibit 23 lists the percentage of total route alternative miles that exceed ADOT level of service criteria for urban and rural roadways for current conditions.

Exhibit 23 -Level of Service Criteria for Urban and Rural Roadways for Current Conditions

Route	Length (miles)	Percentage (of total)
1	1.0	1%
2	0.5	0%
3	9.9	7%
4	9.4	7%
5	9.9	8%
6	13.1	9%
7	13.6	10%
8	13.6	11%

Exhibit 24 lists the percentage of total route alternative miles that are level of service D or worse for future conditions (Year 2020).

Exhibit 24 - Level of Service Criteria for Future Conditions

Route	Length (miles)	Percentage (of total)
1	13.4	9%
2	10.9	7%
3	48.7	35%
4	46.2	32%
5	57.5	46%
6	64.5	46%
7	67.0	49%
8	75.8	61%

4.1.6 Access to Freight Terminals

ADOT/MAG CRITERION DEFINITION

Route within acceptable distance to terminal destinations.

MEASURE(S) OF EFFECTIVENESS

- Percentage of total miles for each route alternative located within or adjacent to areas with trucking and warehouse facility densities of greater than 0.41 sites per square mile.

PRIMARY DATA SOURCE(S)

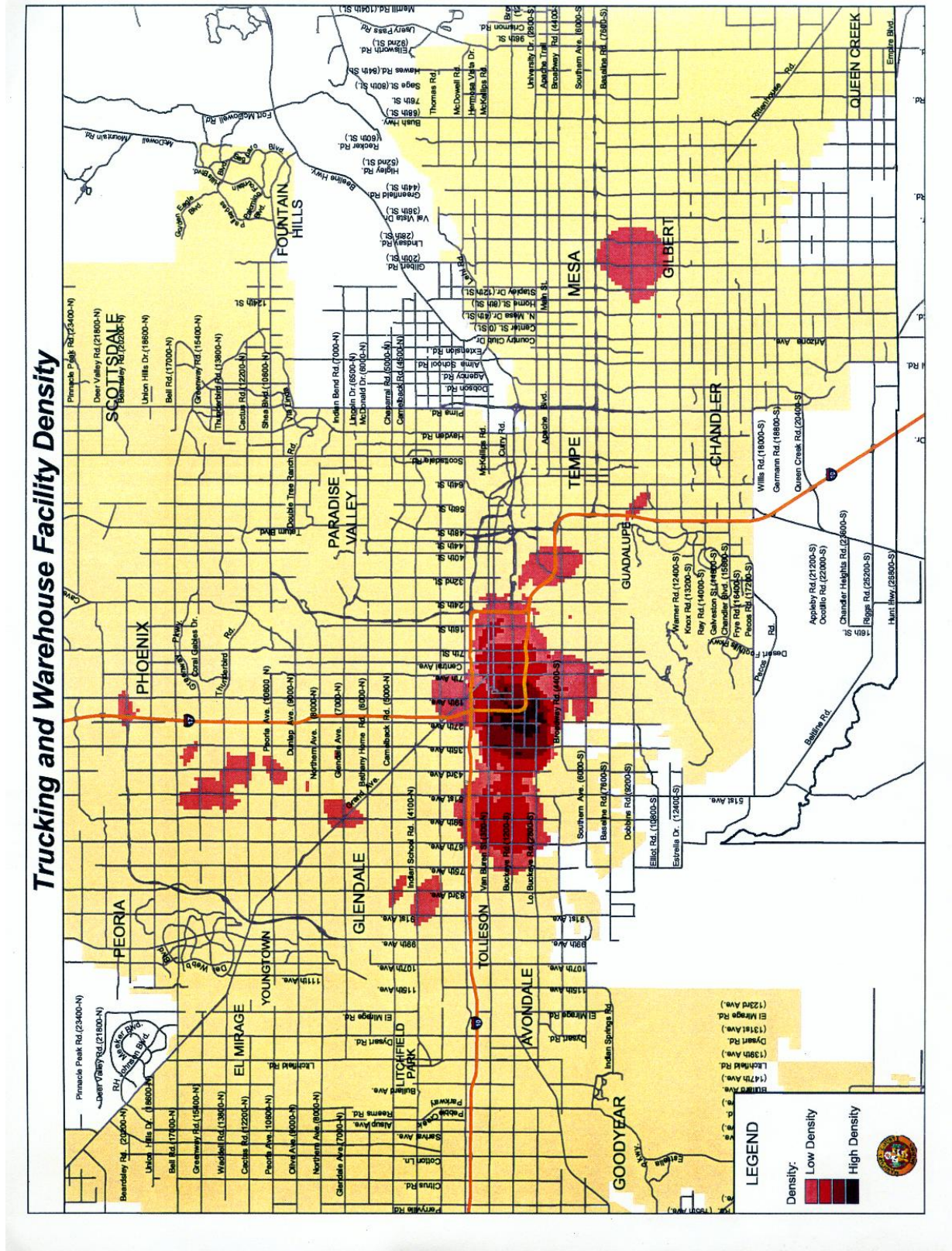
- Trucking and Warehouse Facility Density Map prepared by MCDOT

ASSESSMENT METHODOLOGY

Exhibit 25 illustrated densities of trucking and warehouse facilities in Maricopa County. Low densities correspond to densities of 0.41-0.82 sites per square mile. High densities correspond to densities of 1.65-2.06 sites per square mile. Using a banding technique, the number of miles of each route alternative within or adjacent to areas with trucking and warehouse densities of at least 0.41 sites per square mile.



Exhibit 25 - Trucking and Warehouse Facility Densities



CRITERION ASSESSMENT RESULTS

Exhibit 26 lists the miles and percentage of total route alternative within or adjacent to areas of at least 0.41 trucking and warehouse facility sites per square mile.

Exhibit 26 - Route Alternative Length within Areas of at Least 0.41 Trucking and Warehouse Facility Sites Per Square Mile

Route	Length (miles)	Percentage (of total)
1	0.0	0%
2	0.0	0%
3	0.7	1%
4	0.7	1%
5	0.7	1%
6	11.4	8%
7	11.4	8%
8	11.4	9%

4.1.7 Constructibility

ADOT/MAG CRITERION DEFINITION

Minimal difficulty in constructing a project and minimal significant short-term impacts on the immediate surrounding area.

MEASURE(S) OF EFFECTIVENESS

- Qualitative rating of relative degree of construction difficulty, expressed as a high level of difficulty, a moderate level of difficulty, or a low level of difficulty.
- Qualitative rating of relative adverse impacts of construction on surrounding areas expressed as a high level of adverse impacts, a moderate level of adverse impacts, or a low level of adverse impacts.

PRIMARY DATA SOURCE(S)

- Assessment of this criterion was based on engineering judgement resulting principally from the field review of selected route alternatives.

ASSESSMENT METHODOLOGY

The rating of the relative degree of construction difficulty is based on area conditions and the complexity of construction techniques that may be required to upgrade a particular route segment. Constructibility was not assessed for the construction of new routes because of uncertainties associated with route alignment. Route alternatives were categorized as having one of three levels of construction difficulty. A "high" level of construction difficulty denotes complex construction techniques in urbanized or developed areas and therefore requires special strategies for maintenance of commuter traffic volumes during construction; a "moderate" level of construction difficulty denotes normal

construction complexity in less developed areas where traffic maintenance during construction requires less complex strategies; and a "low" level of construction difficulty denotes construction in low traffic volume undeveloped areas.

The rating of relative adverse impacts of construction on existing surrounding areas is based on the intensity of residential and commercial development subject to adverse impacts from construction activities. Adverse construction impacts were not assessed for the construction of new routes because of uncertainties associated with route alignment. Route alternatives were categorized as having one of three levels of adverse impacts of construction on surrounding areas. A "high" level of adverse impacts denotes highly developed and urbanized areas; a "moderate" level of adverse impacts denotes moderate development densities; and a "low" level of adverse impacts denotes undeveloped areas. For example, route alternatives 5 and 8 were rated as "high" because of the highly developed residential areas along SR 303 L. Route alternatives 2, 4, and 6 were rated as "moderate" because of impacts to less intense urbanized areas along Vulture Mine Road, north of US 60.

CRITERION ASSESSMENT RESULTS

Exhibit 27 lists for each route alternative the qualitative rating of the level of relative degree of construction difficulty and the qualitative rating of the level of relative adverse impacts of construction on surrounding areas.

Exhibit 27 - Qualitative Assessment of Construction Difficulty and Relative Adverse Impacts of Construction

Route	Construction Difficulty	Construction Impacts on Surrounding Area
1	Moderate	Low
2	Low	Moderate
3	Moderate	Low
4	Low	Moderate
5	Low	High
6	Low	Moderate
7	Moderate	Low
8	Low	High

4.1.8 Safety

ADOT/MAG CRITERION DEFINITION

Suitable geometrics and environment for truck traffic and accident history.

MEASURE(S) OF EFFECTIVENESS

- Truck-involved crash frequency for the period, November 1996 through October 1999

PRIMARY DATA SOURCE(S)

- ALIS accident database maintained by ADOT

ASSESSMENT METHODOLOGY

A three-year accident database was requested from ADOT and queried by route segment, for the frequency of truck-involved crashes for the period, November 1996 through October 1999.

CRITERION ASSESSMENT RESULTS

Exhibit 28 lists the total number of truck-involved crashes recorded by the State of Arizona for each route alternative for the period, November 1996 through October 1999.

Exhibit 28 - Truck-Involved Crashes by Route Alternative

Route	Tractor Trailer Involved Accidents
1	72
2	74
3	241
4	243
5	261
6	540
7	538
8	558

4.1.9 Environmental Impacts

ADOT/MAG CRITERION DEFINITION

Air quality, visual impacts, species habitat impacts, sensitive noise receptors, proximity to existing/future historic properties, or high-density archaeological sites, and proximity to wilderness areas.

MEASURE(S) OF EFFECTIVENESS

- Listing of fatal environmental flaws that preclude upgrading a particular route segment or selecting a particular route alternative.
- Rating of significance of environmental regulatory requirements (in the form of a regulatory compliance matrix).

PRIMARY DATA SOURCE(S)

- Statewide GIS database provided by ADOT
- Environmental Field Review

ASSESSMENT METHODOLOGY

Environmental data contained in the GIS database provided by ADOT was used to develop the following maps for the study area in which the route alternatives are located (maps are provided in **Appendix D**).

- Archaeological Survey Sites
- American Indian Reservation Boundaries;
- Air Quality Designations for Carbon Monoxide, Ozone, and PM 10
- Vegetation Designations for Riparian and Biotic Areas
- Land Use Designations for Local, State, Federal, Wilderness, and Private Lands
- Fault Lines

As a supplement to the information contained on the maps, environmental field reviews were conducted to identify potential environmental impacts that may result from improvements to upgrade route alternatives (refer to Section 3.2). Present-day freeway facilities including I-10, I-17, and I-8 and new route segments (such as Sun Valley Parkway between Bell Road and US 60) were not subjected to environmental field reviews. Similarly, route segments currently under design and/or construction (US 60, Beardsley Road to the Morristown Overpass and SR 85, I-10 to I-8) and route segments that are currently funded (SR 202 L) have or will be subjected to environmental mitigation requirements as part of the route development process. The segments that were subjected to environmental field review are listed below.

- Sun Valley Parkway, I-10 to Bell Road
- State Route 303 L, I-10 to US 60
- Wickenburg Road, I-10 to Vulture Mine Road
- Vulture Mine Road, Wickenburg Road to SR 93
- Riggs Road, I-10 to (future) 19th Avenue
- US 60/SR 93, SR 74 to Vulture Mine Road

As a result of the environmental field review, selected regulatory compliance issues were reviewed in the context of route improvements that may be required to upgrade routes as recommended in Section 3.2. The following describes the regulations that were considered in this compliance assessment.

- **Section 404/401 of the Clean Water Act.** The Clean Water Act (CWA) regulates water quality issues and activities within “Waters of the US”. Those areas considered jurisdictional (Waters of the US) under the CWA and subsequent guidance include wetlands, bodies of water, perennial and intermittent water channels, and ephemeral washes. Section 404 of the CWA is administered by the US Army Corps of Engineers (Corps) and regulates fill activities within Waters of the U.S. Section 401 of the act, administered by the Arizona Department of Environmental Quality (ADEQ), regulates water quality certification and is required with a Section 404 authorization. The Section 404/401-approval process is dependent on the amount of impact, the quality of the jurisdictional area, and the general location of the project. Projects that have a minimal impact on the aquatic environment and are related to a specific activity (such as road building) may qualify for a Nationwide Permit program. Projects that do not meet the activity specific restrictions or other limits of the Nationwide program are required to apply for an Individual Permit. Nationwide

authorizations are normally processed in 60 to 90 days and an Individual Permit application process can take from 6 to 12 months. The applications involve a biological assessment, protected species evaluations and cultural resource evaluations. Most Army Corps of Engineers authorizations require compensatory mitigation.

- **Endangered Species Act.** The United State Fish and Wildlife Service (USFWS) administers the Endangered Species Act (ESA). The act requires the protection of species listed on the federal Threatened and Endangered Species list and in many cases also protects listed species' habitat. Species are listed after evaluation by the USFWS. The USFWS and the Arizona National Heritage Program maintain lists of the protected species by County. The act requires that areas be evaluated for the potential for listed species and/or the existence of suitable habitat. It defines protocol-specific surveys to determine if species inhabit areas deemed to have suitable habitat. If inhabitation is documented for USFWS listed species, the project will require coordination with the USFWS and other agencies to determine the potential impacts of the project to the identified species. The USFWS has the authority to deny authorization for the proposed impact, but in most instances grants a permit with very specific mitigation requirements. State and Federal land management agencies, such as the Bureau of Land Management (BLM) also have specific species identified for protection. This normally require adherence to specific agency mandated management guidelines.
- **National Historic Preservation Act.** The National Historic Preservation Act (NHPA) establishes protection for historic and archeological sites. Historic sites over 50 years in age and archaeological sites deemed eligible or potentially eligible for the National Register of Historic Places (NRHP) are protected under NHPA. The State Historic Preservation Office (SHPO), a division of Arizona State Parks, administers the act and is responsible for determining site eligibility. The SHPO also administers/maintains records of all identified sites. This information can be used to identify so-called "hot-spots" of activity. These hot-spot areas are used to evaluate the potential for archeological activity in a given area. Areas of long-term disturbance such as agricultural areas are normally considered to be less likely to contain eligible sites. Undisturbed areas or areas near potential congregation spots are given higher potentials for the occurrence of archaeological sites. Undisturbed areas that have not been previously evaluated for historic or cultural resources will likely require a site evaluation prior to activity. If sites are discovered they must be evaluated against a series of criterion that determine their NRHP status. If the sites are deemed eligible, mitigation, normally in the form of data recovery must be conducted prior to project activity at the site. If the site is deemed exceptionally valuable under one of the criterion data recovery may not be possible and the site will require avoidance.
- **Prime, Statewide, or Other Protected Farm Land Soils.** The U.S. Department of Agriculture defines prime farmland soils as those that are best suited to economically produce agricultural crops. The soil characteristics that are used for this determination vary but include an adequate supply of moisture (precipitation or irrigation). The Natural Resource Conservation Service (NRCS) normally lists the prime soils for a given area. Some areas also provide listings for statewide or regional important soils that are identified based on specific attributes unique to that area. Projects that involve the conversion of these soils into areas of non-production require an evaluation by the NRCS or other designated local agricultural agency.
- **National Environmental Policy Act.** The National Environmental Policy Act (NEPA) requires that projects involving a federal action be evaluated under the guidelines established by the Council of Environmental Quality (CEQ). Many federal and state agencies have also developed guidelines for compliance with NEPA. NEPA requires that the project be evaluated for potential impacts to the natural and social environment. The level of detail for such documentation varies with the complexity of the project. A project that is considered a categorical exclusion or that results in a Finding of No Significant Impact (FONSI) requires relatively minimal documentation while projects with significant impacts require extensive analysis and documentation.

CRITERION ASSESSMENT RESULTS

- **Segment-Specific Assessments--Section 404/401 of the Clean Water Act.** Sun Valley Parkway is an existing divided highway constructed through primarily undeveloped valley floor desert range. Route alternatives containing State Route 303 L, Sun Valley Parkway, and Riggs Road cross drainageways that will require evaluation to determine their Section 404 jurisdictional status. Given that upgrades to these segments will be confined to existing right-of-way, impacts to jurisdictional areas will likely be avoided. If however, construction requires activities outside of the existing right-of-way, in areas designated within identified Waters of the US, a Section 404 authorization will be required. If these activities are determined to be minimal, the project may be eligible for authorization under the Nationwide Permit program. The Wickenburg Road and Vulture Mine Road segments traverses several alluvial fans and through large tracts of open range. These route segments also traverse numerous ephemeral drainageways of varying size. These drainageways may be considered jurisdictional and may require a jurisdictional determination evaluation. Many of the existing crossings of washes are at-grade. Upgrading the roadway will require significant activity within jurisdictional areas and will likely require an individual Section 404 permit application.
- **Segment-Specific Assessments--Endangered Species Act.** All route segments are within Maricopa County, which is documented by the USFWS to contain twelve listed floral and faunal species. The preferred route alternative will require evaluation for potential habitat for these twelve species along with BLM-listed species on BLM lands. State Route 303 L is located adjacent to agricultural areas and portions of Vulture Mine Road are adjacent to residential areas. As a result, these segments are not likely to contain potential protected species habitat. However, potential habitat may exist for several listed species along all other route segments reviewed. Depending on the preferred route alternative, more intensive biological assessments may be required to determine the status of the potential habitat and may require species-specific surveys to document the status of species such as the cactus ferruginous pygmy owl (*Glaucidium brasilianum cactorum*), the peregrine falcon (*Falco peregrinus*), and others. Additionally, those portions of Wickenburg Road and Vulture Mine Road within BLM jurisdiction will be subject to protected species and general wildlife management guidelines of the BLM.
- **Segment-Specific Assessments--National Historic Preservation Act.** State Route 303 L and portions of Vulture Mine Road are located in areas of agricultural activity and/or residential development. Based on the disturbed nature of the surrounding areas, there is a low potential for intact archaeological sites. However, development activity may result in structures that are potentially eligible as historic sites. The Sun Valley Parkway, Riggs Road, and Wickenburg Road route segments are located in a generally undisturbed open range and will have a higher potential for archaeological sites. If the present-day right-of-way was surveyed during the original construction of the road, further surveys may not be required. Construction activity outside of the right-of-way may require additional surveys to identify eligible sites. Wickenburg Road, Vulture Mine Road, and Riggs Road route segments have a higher potential for archaeological and historical sites based on its past mining history, proximity to the Gila River Indian Community lands, and proximity to large washes and mountain peaks (generally considered congregation areas for indigenous people). It is likely that surveys for these areas will identify numerous archaeological or historical sites.
- **Segment-Specific Assessments--Prime, Statewide, or Other Protected Farmland Soils.** State Route 303 L passes through areas of agricultural activity that may be designated as prime or important farmland soils. These areas are also irrigated. Agency-coordination will be required along with proper documentation.
- **Segment-Specific Assessments--National Environmental Policy Act.** The triggering mechanism for NEPA is a federal action, which includes funding, management activity, permitting, or other indirect actions. Lands included within federal agency jurisdiction are considered to be subject to

federal management. Therefore, the portion of the Wickenburg Road and Vulture Mine Road traversing BLM land will be subject to NEPA compliance. The other routes, such as Riggs Road, may require NEPA compliance based on funding, policy actions or other federal actions. In addition, route alternatives that are adjacent to sensitive noise receptors and/or residential areas may experience adverse noise and air quality impacts that warrant mitigation. These assessments should be conducted for the preferred route alternative.

The assessment of this criterion is based on a limited field review, limited research, and environmental judgement based on experience with similar projects. It is therefore difficult to make absolute projections about regulatory issues. While this regulatory assessment and field review did not note fatal flaws that would prevent the upgrading of a particular route nor preclude the selection of any route alternative, further analysis may identify issues that are a significant impediment to upgrade and/or selection of a specific route alternative. Additional study of the preferred route alternative is recommended to determine more precisely the status of the various regulatory issues, as well as to insure that other previously unidentified regulatory issues are not overlooked.

Specific design details will affect regulatory compliance. As an example, if a preferred route alternative requires minimal upgrading of the existing roadway and limited construction activity it will be less likely to have significant regulatory compliance issues. Conversely, if the preferred route requires substantial upgrading, with extensive construction activity the regulatory compliance issues will be more complex.

Exhibit 29 summarizes the results of the regulatory compliance evaluation.

Exhibit 29 - Regulatory Compliance Evaluation Summary

Route	Regulatory Constraint				
	Clean Water Act	Endangered Species Act	National Historic Prevention Act	NEPA	Prime Otherwise Designated Soils
Route 303	Low	Low	Low	Low	Moderate
Sun Valley Parkway	Low	Low/Moderate	Low	Low	Low
Wickenburg Vulture Mine	Significant	Significant	Significant	Significant	Low
Riggs Road/19th Ave.	Low	Low	Moderate/Significant	Moderate	Low

It should be noted that the rating system is not a ranking system (i.e. a significant rating is not three times as difficult as a low rating), but is meant to convey the potential level of regulatory compliance complexity that the various routes may encounter. No matter what rating each route segment is assigned, it will require some level of documentation. A low rating is anticipated to require less evaluation, documentation, and potential compensatory mitigation as a high rating. While these ratings do take in to account the potential applicability of each regulation for each route, a low rating is not meant as a final indication that a regulation is not applicable.

4.1.10 Title VI and Environmental Justice Impacts

ADOT/MAG CRITERION DEFINITION

Impacts on persons who have limited transportation opportunities, including elderly, disabled, and low-income individuals.

MEASURE(S) OF EFFECTIVENESS

- Percent of total route length within or adjacent to areas with greater than 21 percent racial minority population, as tabulated in the 1995 special census. For reference, the MAG 1995 Special Census reported a Maricopa County average minority population of 28.1 percent.
- Percent of total route length within or adjacent to areas with greater than 20 percent population aged 60 years and older, as tabulated in the 1995 special census. For reference, the MAG 1995 Special Census reported a Maricopa County average elderly population (60 years and older) of 16.1 percent.
- Percent of total route length within or adjacent to areas with one or more household in poverty per acre, as tabulated in the 1995 special census. For reference, the MAG 1995 Special Census reported Maricopa County average households in poverty of 10.4 percent.
- Percent of total route length within or adjacent to areas with greater than 3 percent population with disability or transportation limitations, as tabulated in the 1990 Census. For reference, the 1990 Census reported a Maricopa County average population with mobility or self-care limitation of 5.6 percent.
- Percent of total route length within or adjacent to areas which are comprised of 50 percent or more females, as tabulated in the 1995 Special Census. For reference, the MAG 1995 Special Census reported an average female population of 49.8 percent.

PRIMARY DATA SOURCE(S)

- MAG Transportation Management Systems, July 1999

ASSESSMENT METHODOLOGY

Appendix E contains copies of five maps from the MAG Transportation Management Systems dated July 1999. The limit of these maps does not include all segments of every route alternative. These maps depict racial minority populations, person's aged 60 years and older, households in poverty, populations with disability or transportation limitations, and gender within the MAG planning region. The measures of effectiveness were developed on the basis of information provided on the maps in **Appendix E**. Using a banding technique, the number and percentage of miles for each route alternative were measured for each of the metrics stated as measures of effectiveness.

CRITERION ASSESSMENT RESULTS

Exhibit 30 lists the miles and percentage of total route alternative miles within or adjacent to area designations stated as measures of effectiveness.

Exhibit 30 -Title VI and Environmental Justice Impacts

Route	Low Income		Minority		Elderly		Disabled		Gender	
	Length (miles)	Percentage (of total)	Length (miles)	Percentage (of total)	Length (miles)	Percentage (of total)	Length (miles)	Percentage (of total)	Length (miles)	Percentage (of total)
1	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%
2	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%
3	2.9	2%	14.0	10%	0.0	0%	6.2	4%	2.5	2%
4	2.9	2%	14.0	10%	0.0	0%	6.2	4%	2.5	2%
5	3.7	3%	14.6	12%	0.8	1%	9.0	7%	2.8	2%
6	10.1	7%	20.8	15%	1.0	1%	9.1	6%	5.9	4%
7	10.1	7%	20.8	15%	1.0	1%	9.1	7%	5.9	4%
8	10.9	9%	21.3	17%	1.8	1%	12.0	10%	6.2	5%

4.1.11 Major Community Impacts

ADOT/MAG CRITERION DEFINITION

Major impacts, including economic development to existing and planned residential neighborhoods located near the corridor.

MEASURE(S) OF EFFECTIVENESS

- Public perceptions on advantages and disadvantages of each route alternative.
- Public support and opposition for each route alternative.

ASSESSMENT METHODOLOGY

MAG and ADOT obtained agency, stakeholder, and the general public perspectives during the route designation process using surveys, public forums, open houses, and informational meetings. In addition, members of the MAG Regional Council were asked to submit written assessments of the potential advantages and disadvantages of each route alternative. Input was requested by January 26, 2000.

PRIMARY DATA SOURCE(S)

- Stakeholder inputs recorded at Stakeholder Forums.
- Advantages/disadvantages and support/opposition received from MAG Regional Council members.

CRITERION ASSESSMENT RESULTS

Assessment of this criterion was the responsibility of MAG and ADOT.

5. REFERENCES

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5. Census Boundaries, Census Data, MAG, 1995.
6. Census Summary, Tape File 3-A, CD, MAG, 1990.
7. Congestion Management System, MAG, April 4, 1995.
8. Current Status of Environmental Justice Activities, Memo by C. Burbank and C. Adams, U.S. Department of Transportation, October 1, 1999.
9. Grand Avenue, Major Investment Study, Environmental Overview, ADOT, September 1999.
10. Grand Avenue, Major Investment Study, Final Report, ADOT, September 1999.
11. Guidance on Title VI and Environmental Justice, ADOT Environmental Planning Section, July 30, 1997.
12. HOV Study, State Route 51 - Jct. I-10 to Shea Blvd., Alternatives Selection Report, Stanley Consultants, Inc., January 1998.
13. I-8 / B-8 / SR 280 Multimodal Corridor Profile, Final Report, Parsons Brinckerhoff, December 1998.
14. I-10 Design Concept Report, Transmittal by Michael Kies, CH2MHILL, December 10, 1999.
15. Implementing Title VI Requirements in Metropolitan and Statewide Planning, Memo by G. Linton and K. Wykle, U.S. Department of Transportation, October 7, 1999.
16. Interim Region 9 Guidance, Addressing Environmental Justice in the Environmental Impact Statement (EIS), Federal Highway Administration, Federal Transit Administration, Region 9, May 9, 1997.
17. Intermodal Management System, MAG, April 1995.
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23. Section XI, Title VI Considerations, MAG Management Systems Report - FY 2000 Update.
24. September 1, 1994 through August 31, 1999 Summaries of Motor Vehicle Crashes in Maricopa County by Vehicle Body Style, Facsimile Transmittal by N. Crandall, ADOT, December 9, 1999.
25. Southwest Valley Transportation Study, Final Report, Maricopa County Department of Transportation, June, 1997.
26. Special Census for Maricopa County, Summary Tables, CD, MAG, September 1995.
27. SR 85 Multimodal Corridor Profile, Final Report, Parsons Brinckerhoff, December 1998.
28. Stakeholder Forum Short List of Alternative Routes for the Canamex Corridor Through Maricopa County, Memo by C. Voigt, MAG, November 30, 1999.
29. Stakeholder Forum for the Joint MAG-ADOT Canamex Corridor Study, Memo by J. Bourey & M. Peters, MAG, October 22, 1999.
30. Strategic Plan for Statewide Deployment of Intelligent Transportation Systems in Arizona, Final Report, ADOT, December 1998.
31. Transportation Improvement Program, MAG, June 1999.
32. Transportation Management Systems, MAG, July 1999.
33. US 60 Show Low to New Mexico Multimodal Corridor Profile Study, Final Report, Leigh, Scott & Cleary, Inc., July 13, 1999.
34. White Tank Grand Avenue Area Plan, Draft 2.0, Maricopa County Planning and Development Department

APPENDIX



A. CAPITAL COST WORKSHEETS

ITEMIZED COST ESTIMATE

Project Location: Maricopa County, Canamex Corridor Truck Operations Study

Route: Various

TRACS No.: 999 MA 000 P 5499 09 P

LOOP 303 Shoulder Widening

Federal Reference No.: NA

ITEM DESCRIPTION		UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	L.SUM	1	\$500.00	\$500
2020201	SAW CUTTING	L.FT.	10,560	\$3.00	\$31,680
2020036	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	1,173	\$4.00	\$4,700
2030301	ROADWAY EXCAVATION	CU.YD.	1,695	\$10.00	\$16,950
2030901	BORROW	CU.YD.	1,956	\$11.00	\$21,520
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	1,173	\$35.00	\$41,070
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	1,320	\$60.00	\$79,200
6080105	SIGNING	L.SUM	1	\$300.00	\$300
7040003	PAVEMENT MARKING	L.FT.	10,560	\$1.00	\$10,560
8050003	SEEDING (CLASS II)	ACRE	4.85	\$2,000.00	\$9,700
Construction Subtotal					\$216,180
10 Drainage Items (10%)					\$ 21,700
2 Quality Control (2%)					\$ 4,400
2 Water Supply/Dust Palliative (2%)					\$ 4,400
35 Maintenance/Protection of Traffic (35%)					\$ 75,700
1 Erosion Control (1%)					\$ 2,200
2 Construction Survey (2%)					\$ 4,400
19 Mobilization (19%)					\$ 41,100
40 Construction Engineering and Contingencies (40%)					\$ 86,500
PROJECT COST PER MILE					\$ 457,000
Miles			15.4		
TOTAL PROJECT COST					\$ 7,038,000

ITEMIZED COST ESTIMATE

Project Location: Maricopa County, Canamex Corridor Truck Operations Study

Route: Various

TRACS No.: 999 MA 000 P 5499 09 P

Riggs Road Shoulder Widening

Federal Reference No.: NA

ITEM DESCRIPTION		UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	L.SUM	1	\$500.00	\$500
2020201	SAW CUTTING	L.FT.	10,560	\$3.00	\$31,680
2020036	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	1,173	\$4.00	\$4,700
2030301	ROADWAY EXCAVATION	CU.YD.	1,695	\$10.00	\$16,950
2030901	BORROW	CU.YD.	1,956	\$11.00	\$21,520
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	1,173	\$35.00	\$41,070
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	1,320	\$60.00	\$79,200
6080105	SIGNING	L.SUM	1	\$300.00	\$300
7040003	PAVEMENT MARKING	L.FT.	10,560	\$1.00	\$10,560
8050003	SEEDING (CLASS II)	ACRE	4.85	\$2,000.00	\$9,700
Construction Subtotal					\$216,180
10 Drainage Items (10%)					\$ 21,700
2 Quality Control (2%)					\$ 4,400
2 Water Supply/Dust Palliative (2%)					\$ 4,400
35 Maintenance/Protection of Traffic (35%)					\$ 75,700
1 Erosion Control (1%)					\$ 2,200
2 Construction Survey (2%)					\$ 4,400
19 Mobilization (19%)					\$ 41,100
40 Construction Engineering and Contingencies (40%)					\$ 86,500
PROJECT COST PER MILE					\$ 457,000
			Miles	10.8	
TOTAL PROJECT COST					\$ 4,936,000

ITEMIZED COST ESTIMATE

Project Location: Maricopa County, Canamex Corridor Truck Operations Study

Route: Various

TRACS No.: 999 MA 000 P 5499 09 P

19th Avenue

Federal Reference No.: NA

ITEM DESCRIPTION		UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	L.SUM	1.00	\$5,000.00	\$5,000
2030301	ROADWAY EXCAVATION	CU.YD.	8,474	\$10.00	\$84,740
2030901	BORROW	CU.YD.	3,911	\$11.00	\$43,030
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	5,345	\$35.00	\$187,090
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	6,930	\$60.00	\$415,800
6080105	SIGNING	L.SUM	1	\$300.00	\$300
7040003	PAVEMENT MARKING	L.FT.	10,560	\$1.00	\$10,560
8050003	SEEDING (CLASS II)	ACRE	4.85	\$2,000.00	\$9,700
9030011	BARBED WIRE FENCE, TYPE 1	L.FT.	10,560	\$5.00	\$52,800
Construction Subtotal					\$809,020
10 Drainage Items (10%)					\$ 81,000
2 Quality Control (2%)					\$ 16,200
2 Water Supply/Dust Palliative (2%)					\$ 16,200
10 Maintenance/Protection of Traffic (10%)					\$ 81,000
1 Erosion Control (1%)					\$ 8,100
2 Construction Survey (2%)					\$ 16,200
19 Mobilization (19%)					\$ 153,800
40 Construction Engineering and Contingencies (40%)					\$ 323,700
Right-Of-Way		ACRE	12.12	\$18,000.00	\$ 218,160
TOTAL PROJECT COST PER MILE					\$ 1,724,000
			Miles	3.4	
TOTAL PROJECT COST					\$ 5,862,000

ITEMIZED COST ESTIMATE

Project Location: Maricopa County, Canamex Corridor Truck Operations Study

Route: Various

TRACS No.: 999 MA 000 P 5499 09 P

Federal Reference No.: NA

Wickenburgh Road (I-10 to Vulture Mine Road)

	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2020036	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	11,733.00	\$4.00	\$46,940
2030301	ROADWAY EXCAVATION	CU.YD.	8,474	\$10.00	\$84,740
2030401	DRAINAGE EXCAVATION	CU.YD.	612	\$20.00	\$12,240
2030501	STRUCTURAL EXCAVATION	CU.YD.	4,107	\$10.00	\$41,070
2030506	STRUCTURE BACKFILL	CU.YD.	2,222	\$50.00	\$111,120
2030901	BORROW	CU.YD.	14,748	\$20.00	\$294,960
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	5,345	\$35.00	\$187,090
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	6,930	\$60.00	\$415,800
6010002	STRUCTURAL CONCRETE (CLASS S) (F'C = 3,000)	CU.YD.	637	\$300.00	\$191,030
6050002	REINFORCING STEEL	LB.	86,880	\$0.60	\$52,130
6050101	PLACE DOWELS	EACH	21	\$250.00	\$5,150
6080105	SIGNING	L.SUM	1	\$300.00	\$300
7040003	PAVEMENT MARKING	L.FT.	10,560	\$1.00	\$10,560
8050003	SEEDING (CLASS II)	ACRE	4.85	\$2,000.00	\$9,700

Construction Subtotal **\$1,462,830**

2	Quality Control (2%)	\$	29,300
2	Water Supply/Dust Palliative (2%)	\$	29,300
30	Maintenance/Protection of Traffic (30%)	\$	438,900
1	Erosion Control (1%)	\$	14,700
2	Construction Survey (2%)	\$	29,300
19	Mobilization (19%)	\$	278,000
40	Construction Engineering and Contingencies (40%)	\$	585,200

PROJECT COST PER MILE **\$ 2,868,000**

Miles **18.4**

SUBTOTAL PROJECT COST **\$ 52,772,000**

Interchange	L. SUM	1.00	\$5,000,000	\$	5,000,000
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TOTAL PROJECT COST **\$ 57,772,000**

ITEMIZED COST ESTIMATE

Project Location: Maricopa County, Canamex Corridor Truck Operations Study
Route: Various
TRACS No.: 999 MA 000 P 5499 09 P
Federal Reference No.: NA

Vulture Mine Road (Wickenburgh Road to 93)

	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2020036	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	11,733.00	\$4.00	\$46,940
2030301	ROADWAY EXCAVATION	CU.YD.	8,474	\$10.00	\$84,740
2030401	DRAINAGE EXCAVATION	CU.YD.	612	\$20.00	\$12,240
2030501	STRUCTURAL EXCAVATION	CU.YD.	4,107	\$10.00	\$41,070
2030506	STRUCTURE BACKFILL	CU.YD.	2,222	\$50.00	\$111,120
2030901	BORROW	CU.YD.	14,748	\$20.00	\$294,960
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	5,345	\$35.00	\$187,090
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	6,930	\$60.00	\$415,800
6010002	STRUCTURAL CONCRETE (CLASS S) (F'C = 3,000)	CU.YD.	637	\$300.00	\$191,030
6050002	REINFORCING STEEL	LB.	86,880	\$0.60	\$52,130
6050101	PLACE DOWELS	EACH	21	\$250.00	\$5,150
6080105	SIGNING	L.SUM	1	\$300.00	\$300
7040003	PAVEMENT MARKING	L.FT.	10,560	\$1.00	\$10,560
8050003	SEEDING (CLASS II)	ACRE	4.85	\$2,000.00	\$9,700
Construction Subtotal					\$1,462,830
2	Quality Control (2%)			\$	29,300
2	Water Supply/Dust Palliative (2%)			\$	29,300
30	Maintenance/Protection of Traffic (30%)			\$	438,900
1	Erosion Control (1%)			\$	14,700
2	Construction Survey (2%)			\$	29,300
19	Mobilization (19%)			\$	278,000
40	Construction Engineering and Contingencies (40%)			\$	585,200
PROJECT COST PER MILE					\$ 2,868,000
			Miles	21.9	
TOTAL PROJECT COST					\$ 62,810,000



B. ROUTE-SPECIFIC PROJECTS AND NEEDS

Route Ids	Rte	BMP	Location	Length	Type of Work	Cost (Thousands)	F.Y.	Source	Time Frame
1,2	8	123.40	GILA BEND REST AREA	0.10	Construct (Rest Area Closure).	150	2000	ADOT 5 Year TIP	Near Term
1,2	8	145.00	VEKOL WASH REST AREA	0.10	Construct rest area.	6,000	2002	ADOT 5 Year TIP	Near Term
1,2	8	145.00	VEKOL WASH REST AREA	0.10	Design (Rest Area).	340	2000	ADOT 5 Year TIP	Near Term
3,4,5,6,7,8	10	127.70	BULLARD AVE TI	0.20	Construct ramps, crossroad, & traffic signals.	6,000	2002	ADOT 5 Year TIP	Near Term
3,4,5,6,7,8	10	128.00	LITCHFIELD RD TI	0.10	Intermediate TI improvement.	406	2003	ADOT 5 Year TIP	Near Term
3,4,5,6,7,8	10	129.70	DYSART-27TH AVE	0.00	Design (Sign Rehab).	300	2000	ADOT 5 Year TIP	Near Term
3,4,5,6,7,8	10	129.70	DYSART-27TH AVE	13.00	Overlay the high reflectivity signs with new reflective sheeting.	2,760	2001	ADOT 5 Year TIP	Near Term
6,7,8	10	139.70	I-10 STRUCTURES #1931, 1933, 1934, 2003 & 2349	1.00	Deck joint repairs.	641	2001	ADOT 5 Year TIP	Near Term
6,7,8	10	143.20	EB & WB, MAINLINE BRIDGE	0.20	Bridge girder repair.	2,750	2000	ADOT 5 Year TIP	Near Term
6,7,8	10	143.80	19TH AVE-JCT 202L	0.00	Design (Sign Rehab).	200	2004	ADOT 5 Year TIP	Near Term
6,7,8	10	149.86	I-17 TI	0.00	Restrip I-10 WB mainline	20		I-10 Corridor Study	Near Term
6,7,8	10	150.00	24TH STREET TI	0.00	Construct minor and intermediate TI improvement projects (Improve outside radius for EB on-ramp by adding pavement).	1		I-10 Corridor Study	Near Term
6,7,8	10	151.50	UNIVERSITY TI	0.00	Construct minor and intermediate TI improvement projects (Add right turn lane at WB University onto I-10 WB on-ramp.	21		I-10 Corridor Study	Near Term
6,7,8	10	152.00	40TH STREET TI	0.00	Construct minor and intermediate TI improvement projects (Increase sign head clearance at each ramp by attaching higher mast arm).	1		I-10 Corridor Study	Near Term
6,7,8	10	153.00	48TH STREET TI	0.00	Construct minor and intermediate TI improvement projects (Modify signalization).	27		I-10 Corridor Study	Near Term
6,7,8	10	153.00	I-10/SR 143	0.00	Construct two off ramp lanes.	400		I-10 Corridor Study	Near Term
6,7,8	10	153.00	SR 143/I-10 SYSTEM TI	0.00	Reconstruct.	20,000		I-10 Corridor Study	Near Term
6,7,8	10	153.00	SOUTHERN AVE - PECOS	8.00	Construct Freeway Management System.	8,600	2002	I-10 Corridor Study	Near ITS
6,7,8	10	154.60	SOUTHERN AVE-PECOS ROAD	0.00	Construct (FMS).	7,600	2002	ADOT 5 Year TIP	Near Term
6,7,8	10	154.90	I-10/US 60	0.00	Construct HOV direct connections.	33,000		I-10 Corridor Study	Near Term
6,7,8	10	155.60	BASILENE RD-ELLIOTT RD	2.10	Landscape & Irrigation.	1,300	2000	ADOT 5 Year TIP	Near Term
6,7,8	10	156.40	GUADALUPE ROAD UP	0.40	Remove & replace existing structure.	2,800	2000	ADOT 5 Year TIP	Near Term
6,7,8	10	156.40	GUADALUPE ROAD	0.00	R/W Acquisition (Reprogram).	1	2000	ADOT 5 Year TIP	Near Term
6,7,8	10	157.70	ELLIOT ROAD-CHANDLER BLVD	0.00	Design (Landscape).	200	2000	ADOT 5 Year TIP	Near Term
6,7,8	10	157.70	ELLIOT ROAD-CHANDLER BLVD	3.10	Landscape & Irrigation.	2,000	2001	ADOT 5 Year TIP	Near Term
6,7,8	10	157.74	ELLIOT ROAD TI	0.00	Construct minor and intermediate TI improvement projects (Relocate barrier on WB on-ramp and improve inside radius for left turning movement).	3		I-10 Corridor Study	Near Term
6,7,8	10	157.74	ELLIOT ROAD TI	0.00	Construct minor and intermediate TI improvement projects (Relocate barrier on WB on-ramp and improve inside radius for left turning movement).	3		I-10 Corridor Study	Near Term
6,7,8	10	158.70	WARNER ROAD	1.00	Noise mitigation.	1,364	2000	ADOT 5 Year TIP	Near Term
6,7,8	10	158.70	WARNER ROAD	1.00	Noise mitigation.	136	2000	ADOT 5 Year TIP	Near Term
6,7,8	10	159.00	WARNER ROAD TI	0.00	Conduct traffic operation study	20		I-10 Corridor Study	Near Term
6,7,8	10	159.70	RAY ROAD TI	0.00	Construct minor and intermediate TI improvement projects (Relocate barrier on WB on-ramp and improve inside radius for left turning movement).	1		I-10 Corridor Study	Near Term
6,7,8	10	160.00	RAY ROAD TI	0.00	Construct minor and intermediate TI improvement projects (Change striping on EB crossroad to lane drop striping).	1		I-10 Corridor Study	Near Term
6,7,8	10	160.00	RAY ROAD	0.00	Construct left turn lanes on Ray Road	250		I-10 Corridor Study	Near Term
6,7,8	10	161.00	CHANDLER BLVD - TANGERINE	80.00	Traffic Sign Rehabilitation.	1,700		I-10 Corridor Study	Long Term



Route Ids	Rte	BMP	Location	Length	Type of Work	Cost (Thousands)	F.Y.	Source	Time Frame
6,7,8	10	162.38	MARICOPA ROAD TI	0.00	Construct minor and intermediate TI improvement projects (1)Build up shoulder on EB crossroad and improve outside turning radius at EB on-ramp. (2)Improve crossroad by widening and lane striping. (3)Improve WB on and off ramp. (4)Remove cattleguards. (5)Change sign at SB off-ramp to "Maricopa Road South Only". Construct minor and intermediate TI improvement projects (1)Build up shoulder on EB crossroad and improve outside turning radius at EB on-ramp. (2)Improve crossroad by widening and lane striping. (3)Improve outside turning radius. (4)Improve WB on and off ramp. (4)Remove cattleguards. (6)Change sign at SB off-ramp to "Maricopa Road South Only. Design (Roadway). Widen between Maricopa Road and Ina by adding one mainline lane in each direction to the median. Pavement Preservation - mill and replace AC between year 2010 and 2020. Construct (3). Construct minor and intermediate TI improvement projects (1)Improve turning radii at all ramps and widen ramps at throats by adding pavement. (2)Retrofit bridge rails (both sides). (3)Create WB and EB left turn lanes. Construct minor and intermediate TI improvement projects (1)Improve turning radii at all ramps and widen ramps at throats by adding pavement. (2)Retrofit bridge rails (both sides). (3)Create WB and EB left turn lanes. Intermediate TI improvement. Reconstruct (3) I structure functionally obsolete and eligible for rehabilitation (2). Construct Gila River Bridges. Install closed circuit television. Construct minor and intermediate TI improvement projects (Provide a right turn lane at NB Casa Blanca Rd). Construct minor and intermediate TI improvement projects (Provide a right turn lane at NB Casa Blanca Rd). Construct (3). Install closed circuit television. Construct minor and intermediate TI improvement projects (1)Add a left turn lane to WB I-10 at WB on-ramp. (2)Widen WB on and off-ramps, and EB on-ramp at throats by adding pavement. Install VMS on WB I-10 Construct (3). Construct minor and intermediate TI improvement projects (Improve turning radii at SB on-ramp). Construct minor and intermediate TI improvement projects (Improve turning radii at SB on-ramp).	53		I-10 Corridor Study	Near Term
6,7,8	10	162.38	MARICOPA ROAD TI	0.00		53			
6,7,8	10	162.40	MARICOPA RD TI-RIGGS RD TI	0.00		1,200	2003	I-10 Corridor Study	Near Term
6,7,8	10	163.00	I-10	85.00		223,000		I-10 Corridor Study	Near Term
6,7,8	10	163.00	I-10	85.00		42,500		I-10 Corridor Study	Long Term
6,7,8	10	164.50	CHANDLER HEIGHTS ROAD TI	0.00		8,000		I-10 Corridor Study	Long Term
6,7,8	10	167.47	RIGGS ROAD TI	0.00		126		I-10 Corridor Study	Near Term
6,7,8	10	167.47	RIGGS ROAD TI	0.00		126		I-10 Corridor Study	Near Term
6,7,8	10	167.50	RIGGS ROAD TI	0.20		818	2003	ADOT 5 Year TIP	Near Term
6,7,8	10	168.00	RIGGS ROAD TI	0.00		4,500		I-10 Corridor Study	Long Term
3,4,5,6,7,8	10	173.00	I-10	0.00		16,000		I-10 Corridor Study	Near Term
3,4,5,6,7,8	10	173.00	I-10	0.00		46		I-10 Corridor Study	Long ITS
3,4,5,6,7,8	10	175.81	SR 587 TI	0.00		2		I-10 Corridor Study	Near Term
3,4,5,6,7,8	10	175.81	SR 587 TI	0.00		2		I-10 Corridor Study	Near Term
3,4,5,6,7,8	10	177.00	SACATON MOUNTAIN TI	0.00		8,000		I-10 Corridor Study	Long Term
3,4,5,6,7,8	10	182.00	SACATON REST AREA	0.00		46		I-10 Corridor Study	Mid ITS
3,4,5,6,7,8	10	185.26	SR 387 TI	0.00		7		I-10 Corridor Study	Near Term
3,4,5,6,7,8	10	185.26	SR 84/SR 87 TI	0.00		260		I-10 Corridor Study	Long ITS
3,4,5,6,7,8	10	187.00	VAL VISTA BOULEVARD TI	0.00		8,000		I-10 Corridor Study	Long Term
3,4,5,6,7,8	10	190.65	MCCARTNEY ROAD TI	0.00		1		I-10 Corridor Study	Near Term
3,4,5,6,7,8	10	190.65	MCCARTNEY ROAD TI	0.00		1		I-10 Corridor Study	Near Term

Route Ids	Rte	BMP	Location	Length	Type of Work	Cost (Thousands)	F.Y.	Source	Time Frame
3,4,5,6,7,8	10	194.90	SR 287 TI	0.00	Construct minor and intermediate TI improvement projects (1)Widen EB and WB on-ramps at throat. (2)Widen EB and WB off-ramps at throat to provide 3 lanes each. (3)Widen two existing steel girder bridges over I-10, and over drainage structure from 4 to 6 inches.	765		I-10 Corridor Study	Near Term
3,4,5,6,7,8	10	194.90	SR 287 TI	0.00	Construct minor and intermediate TI improvement projects (1)Widen EB and WB on-ramps at throat. (2)Widen EB and WB off-ramps at throat to provide 3 lanes each. (3)Widen two existing steel girder bridges over I-10, and over drainage structure from 4 to 6 inches.	765		I-10 Corridor Study	Near Term
3,4,5,6,7,8	10	198.05	SR 84 TI	0.00	Construct minor and intermediate TI improvement projects (1)Relocate WB off-ramp further to the north, increase radius of loop ramp, and provide a deceleration lane. (2)Relocate WB on-ramp to provide room for WB off-ramp.	125		I-10 Corridor Study	Near Term
3,4,5,6,7,8	10	199.00	I-10/I-8	0.00	Analyze traffic signage at interchange and construct improvements.	10		I-10 Corridor Study	Near Term
3,4,5,6,7,8	10	199.00	I-10	0.00	Install closed circuit television.	46		I-10 Corridor Study	Long ITS
6,7,8	10	description	EB I-10 & WB I-10	0.00	Rehabilitate pavement between EB MP 155-156, 227-228, 256-257 and WB MP 221-223.	2,400		I-10 Corridor Study	Near Term
3,4,5,6,7,8	10	description	I-10	0.00	Install weigh-in motion system N of Casa Grande using mobile sprint port deployments.	250		I-10 Corridor Study	Mid ITS
3,4,5,6,7,8	10	description	I-10	0.00	Install a weigh-in motion system south of I-8 possibly using mobile sprint port deployments.	250		I-10 Corridor Study	Long ITS
3,4,5,6,7,8	10	description	I-10	0.00	Install Blowing Dust Warning System north of Picacho Peak	N/A		I-10 Corridor Study	Long ITS
3,4,5,6,7,8	10	description	I-10	0.00	Install Blowing Dust Warning System north of Casa Grande	N/A		I-10 Corridor Study	Long ITS
3,4,5,6,7,8	10	description	I-10	0.00	Install kiosks at truck stops especially in Casa Grande and Eloy.	1.95 each		I-10 Corridor Study	Long ITS
3,4,5,6,7,8	10	description	I-10	0.00	Install a Traveler Information System between Phoenix and Tucson.	N/A		I-10 Corridor Study	Long ITS
3,4,5,6,7,8	10	description	I-10	0.00	Instrument remaining AzTech "smart" corridors with ITS technologies.	15,000		I-10 Corridor Study	Long ITS
6,7,8	17	193.90	MARICOPA RD TL/RIGGS RD TI	7.00	Overlay the high reflexivity signs with new reflective sheeting.	1,840	2000	ADOT 5 Year TIP	Near Term
6,7,8	17	194.00	16TH STREET-BUCKEYE	3.90	Remove & replace AR-FC in Driving Lanes.	1,351	2000	ADOT 5 Year TIP	Near Term
6,7,8	17	195.00	16TH STREET-PINNACLE PEAK	22.00	Rehabilitate Frontage Roads.	2,261	2001	ADOT 5 Year TIP	Near Term
6,7,8	17	197.90	19TH AVE II	0.10	Intermediate TI improvement.	1,680	2000	ADOT 5 Year TIP	Near Term
5,8	60	123.00	MORRISTOWN RR OP-203RD AVE	4.00	Construct Roadway, Phase III & IV	20,760	2001	ADOT 5 Year TIP	Near Term
5,8	60	123.00	MORRISTOWN RR OP-203RD AVE (WEST), PHASE II	0.00	Design (Roadway).	1,044	2000	ADOT 5 Year TIP	Near Term
5,8	60	123.00	MORRISTOWN RR OP-203RD AVE	0.00	R/W Acquisition (Reprogram).	985	2000	ADOT 5 Year TIP	Near Term
5,8	60	123.40	MORRISTOWN RR OP-203RD AVE (WEST)-DEER	0.00	R/W Plans, Appraisals, Acquisition, Relocation & Demolition.	1,469	2000	ADOT 5 Year TIP	Near Term
5,8	60	131.40	VALLEY ROAD	5.50	Ultimate Improvement #2: Construct Roadway.	10,370	2000	ADOT 5 Year TIP	Near Term
5,8	60	131.40	203RD AVE-DEER VALLEY ROAD	0.00	R/W Acquisition (Reprogram).	950	2000	ADOT 5 Year TIP	Near Term
5,8	60	136.90	BEARDSLEY ROAD	1.90	Ultimate Improvement #1: Construct Roadway.	3,600	2000	ADOT 5 Year TIP	Near Term
5,8	60	138.10	COTTON LANE OP	0.00	US 60 Overpass, Maricopa County Project - ADOT Payback	340	2000	ADOT 5 Year TIP	Near Term
5,8	60	138.20	COTTON LANE OP	0.00	US 60 Overpass, Maricopa County Project - ADOT Payback	340	2001	ADOT 5 Year TIP	Near Term
5,8	60	138.30	COTTON LANE OP	0.00	US 60 Overpass, Maricopa County Project - ADOT Payback	340	2002	ADOT 5 Year TIP	Near Term
5,8	60	138.40	COTTON LANE OP	0.00	US 60 Overpass, Maricopa County Project - ADOT Payback	340	2003	ADOT 5 Year TIP	Near Term



Route Ids	Rte	BMP	Location	Length	Type of Work	Cost (Thousands)	F.Y.	Source	Time Frame
1.2	85	120.00	SR 85 ACCESS CONTROL	0.00	R/W Acquisition.	2,000	2000	ADOT 5 Year TIP	Near Term
1.2	85	122.00	GILA BEND-JCT I 10, PHASE I	1.00	Construct Roadway.	11,000	2000	ADOT 5 Year TIP	Near Term
1.2	85	122.00	GILA BEND-JCT I 10, PHASE I	0.00	Design (Interim).	2,000	2000	ADOT 5 Year TIP	Near Term
1.2	85	137.80	GILA BEND-JCT I 10, PHASE II	0.00	Design (Roadway).	2,500	2002	ADOT 5 Year TIP	Near Term
1.2	85	137.80	GILA BEND-JCT I 10, PHASE II	2.00	Construct Roadway.	25,000	2004	ADOT 5 Year TIP	Near Term
1.2	85	137.80	GILA BEND-JCT I 10, PHASE II	0.00	R/W Acquisition.	3,000	2003	ADOT 5 Year TIP	Near Term
1.2	85	193.00	17TH AVE/CAPITOL MALL AREA	0.80	Construct 17th Ave pedestrian improvements	1,200	2000	ADOT 5 Year TIP	Near Term
3.5,7,8	93	199.00	SOLS WASH BRIDGE	0.00	R/W Acquisition	1	2000	ADOT 5 Year TIP	Near Term
3.4,5	202	55.00	MAG "SET-A-SIDE"	0.00	Environmental Assessment	300	2000	ADOT 5 Year TIP	Near Term
3.4,5	202	55.00	MAG "SET-A-SIDE"	0.00	Design (Roadway).	6,748	2002	ADOT 5 Year TIP	Near Term
3.4,5	202	55.00	MAG "SET-A-SIDE"	0.00	R/W Acquisition.	3,180	2002	ADOT 5 Year TIP	Near Term
3.4,5	202	55.00	SOUTH MOUNTAIN	0.00	R/W Property Management.	22	2000	ADOT 5 Year TIP	Near Term
3.4,5	202	55.00	MAG "SET-A-SIDE"	0.00	Construct Roadway.	61,592	2004	ADOT 5 Year TIP	Near Term
3.4,5	202	55.00	MAG "SET-A-SIDE"	0.00	R/W (Initial purchase, BFO).	13,180	2000	ADOT 5 Year TIP	Near Term
1.2	B-8	115.62	SR 85 TI	0.00	Interchange Improvements	50		I-8 Corridor Study	Long Term
1.2	B-8	119.75	Sand Tank Wash RCB	0.00	Bridge Rehabilitation	250		I-8 Corridor Study	Mid Term
1.2	B-8	120.3	Town of Gila Bend	2.22	Improve Vertical Curves	1,110		I-8 Corridor Study	Long Term
1.2	B-8	120.34	Greene Wash	2.49	Improve Shoulder	250		I-8 Corridor Study	Long Term
1.2	B-8	120.41	Sand Tank Wash Br	0.00	Bridge Reconstruction	240		I-8 Corridor Study	Long Term
1.2	B-8	102.27	Painted Rock TI OP EB & WB	0.00	Bridge Reconstruction	580		I-8 Corridor Study	Long Term
1.2	B-8	106	Maricopa County	9.00	Improve Vertical and Horizontal Curves	4,500		I-8 Corridor Study	Long Term
1.2	B-8	106.54	Paloma Rd TI OP EB & WB	0.00	Bridge Reconstruction	620		I-8 Corridor Study	Long Term
1.2	B-8	111.42	Citrus Valley	0.00	Interchange Improvements	10		I-8 Corridor Study	Mid Term
1.2	B-8	112.01	RCB EB & WB & SFR	0.00	Bridge Rehabilitation	250		I-8 Corridor Study	Mid Term
1.2	B-8	113.27	Sauceda Wash Br SFR	0.00	Bridge Rehabilitation	250		I-8 Corridor Study	Mid Term
1.2	B-8	116.76	County Rd TI Op EB & WB	0.00	Bridge Reconstruction	640		I-8 Corridor Study	Long Term
1.2	B-8	119.42	E. Gila Bend/B-8 TI	0.00	Interchange Improvements	10		I-8 Corridor Study	Short Term
1.2	B-8	119.42	Butterfield	0.00	Interchange Improvements	10		I-8 Corridor Study	Long Term
1.2	B-8	119.64	Maricopa County	2.28	Pavement Preservation	340		I-8 Corridor Study	Long Term
1.2	B-8	122.03	RCB EB & WB	0.00	Bridge Rehabilitation	250		I-8 Corridor Study	Mid Term
1.2	B-8	123.92	Maricopa County	4.70	Pavement Preservation	640		I-8 Corridor Study	Long Term
1.2	B-8	134.73	RCB EB & WB	0.00	Bridge Rehabilitation	250		I-8 Corridor Study	Mid Term
1.2	B-8	135	Maricopa County	6.30	Improve Vertical Curves	3,150		I-8 Corridor Study	Long Term
1.2	B-8	136	RCB EB & WB	0.00	Bridge Rehabilitation	250		I-8 Corridor Study	Mid Term
1.2	B-8	137.1	RCB EB & WB	0.00	Bridge Rehabilitation	250		I-8 Corridor Study	Mid Term
1.2	B-8	137.5	RCB EB & WB	0.00	Bridge Rehabilitation	250		I-8 Corridor Study	Mid Term
1.2	B-8	137.84	RCB EB & WB	0.00	Bridge Rehabilitation	250		I-8 Corridor Study	Mid Term
1.2	B-8	138.2	RCB EB & WB	0.00	Bridge Rehabilitation	250		I-8 Corridor Study	Mid Term
1.2	B-8	139.26	RCB EB & WB	0.00	Bridge Rehabilitation	250		I-8 Corridor Study	Mid Term
1.2	B-8	140.8	Freeman TI OP EB & WB	0.00	Bridge Reconstruction	180		I-8 Corridor Study	Long Term
1.2	B-8	141.7	Pinal County	12.89	Improve Vertical Curves	5,000		I-8 Corridor Study	Long Term
1.2	B-8	144.57	Vekol Rd	0.00	Interchange Improvements	10		I-8 Corridor Study	Long Term
1.2	B-8	145.91	RCB EB & WB	0.00	Bridge Rehabilitation	250		I-8 Corridor Study	Mid Term
1.2	B-8	151.68	Maricopa Rd	0.00	Interchange Improvements	20		I-8 Corridor Study	Long Term
1.2	B-8	151.7	State Rte 84 TI OP	0.00	Bridge Reconstruction	780		I-8 Corridor Study	Long Term
1.2	B-8	151.9	Mendell Wash Br EB	0.00	Bridge Reconstruction	520		I-8 Corridor Study	Short Term
1.2	B-8	151.9	Mendell Wash Br WB	0.00	Bridge Reconstruction	460		I-8 Corridor Study	Short Term
1.2	B-8	154.59	Pinal County	16.10	Improve Vertical and Horizontal Curves	8,050		I-8 Corridor Study	Long Term
1.2	B-8	157.55	Smith Rd OP EB & WB	0.00	Bridge Reconstruction	580		I-8 Corridor Study	Long Term
1.2	B-8	162.5	Murphy Rd Up	0.00	Bridge Reconstruction	640		I-8 Corridor Study	Short Term

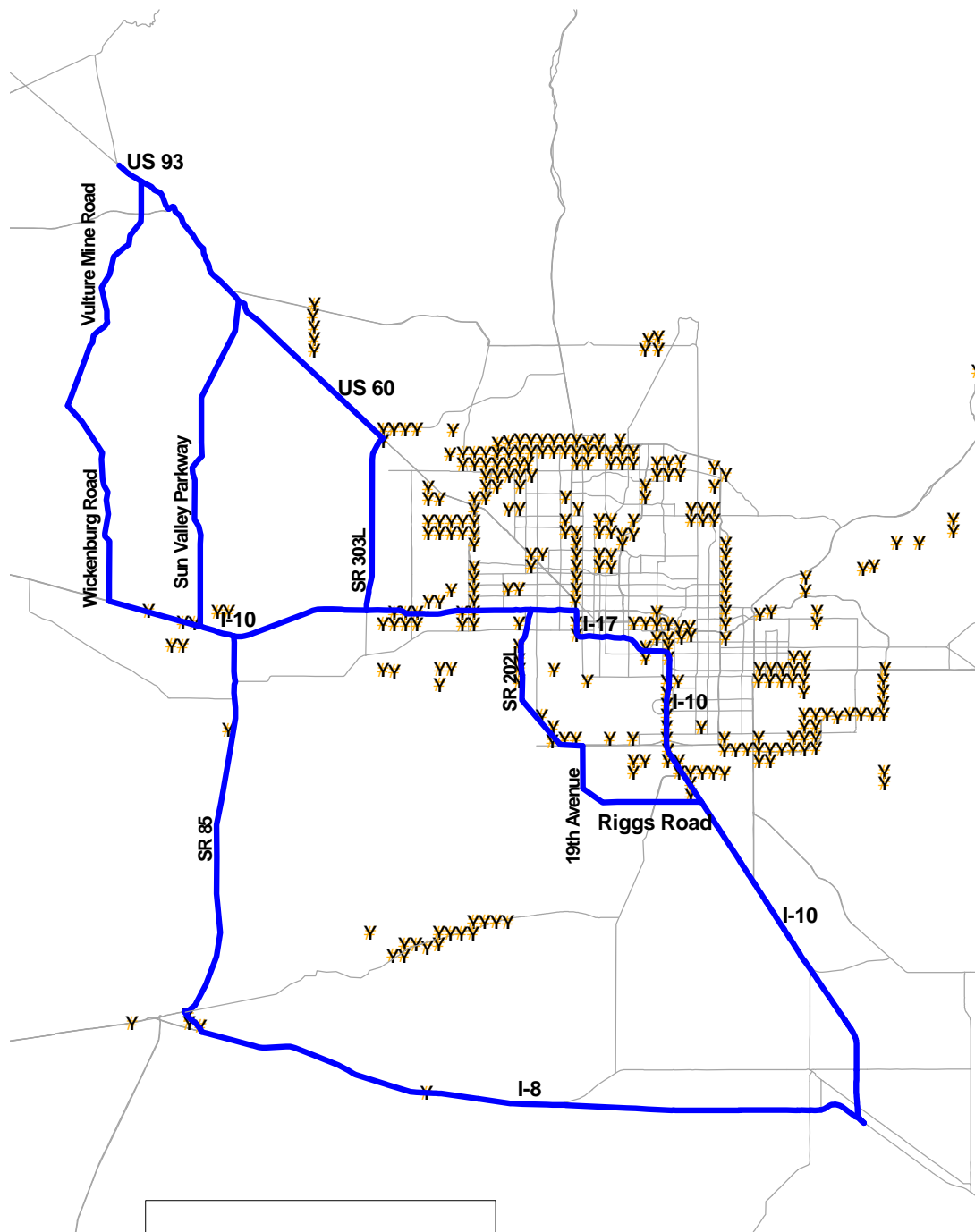
Route Ids	Rte	BMP	Location	Length	Type of Work	Cost (Thousands)	F.Y.	Source	Time Frame
1.2	I-8	163	Santa Rosa BR EB	0.00	Bridge Reconstruction	1,640		I-8 Corridor Study	Short Term
1.2	I-8	163	Santa Rosa BR EB	0.00	Bridge Reconstruction	1,640		I-8 Corridor Study	Short Term
1.2	I-8	163.06	Santa Rosa Wash	0.00	Improve Shoulder	100		I-8 Corridor Study	Long Term
1.2	I-8	164.5	Russell Rd UP	0.00	Bridge Reconstruction	710		I-8 Corridor Study	Long Term
1.2	I-8	166.91	Greene Wash	0.00	Improve Shoulder	100		I-8 Corridor Study	Long Term
1.2	I-8	169.54	Pinal County	0.50	Pavement Preservation	80		I-8 Corridor Study	Long Term
1.2	I-8	170.69	Pinal County	2.61	Improve Horizontal Curves	1,310		I-8 Corridor Study	Long Term
1.2	I-8	172.53	Thornton Rd	0.00	Interchange Improvements	10		I-8 Corridor Study	Long Term
1.2	I-8	175.65	Casa Grande Pk OP EB & WB	0.00	Bridge Reconstruction	600		I-8 Corridor Study	Long Term
1.2	I-8	178.33	I-10/I-8 TI Up WB	0.00	Bridge Rehabilitation	250		I-8 Corridor Study	Mid Term
1.2	I-8	178.33	I-8 TI OP EB Ramp	0.00	Bridge Reconstruction	630		I-8 Corridor Study	Long Term



C. TRAVEL TIME AND DELAY DATA

Route	TI Names	AM			PM				
		West Bound Accum. Time	Travel Time Between TIs	East Bound Accum. Time	Travel Time Between TIs	West Bound Accum. Time	Travel Time Between TIs	East Bound Accum. Time	Travel Time Between TIs
I-10	Riggs Road	0.00		48.37	2.37	0.00		48.85	2.52
I-10	Queen Creek Road	2.45	2.45	46.00	1.93	2.38	2.38	46.33	1.98
I-10	Maricopa Road	4.28	1.83	44.07	1.53	4.17	1.78	44.35	1.50
I-10	Chandler Blvd.	5.78	1.50	42.53	0.97	5.58	1.42	42.85	0.92
I-10	Ray Road	6.78	1.00	41.57	0.93	6.50	0.92	41.93	1.12
I-10	Warner Road	10.17	3.38	40.63	0.93	7.42	0.92	40.82	1.18
I-10	Elliot Road	13.20	3.03	39.70	0.97	8.38	0.97	39.63	1.52
I-10	Guadalupe Road	17.38	4.18	38.73	0.72	9.30	0.92	38.12	1.12
I-10	Baseline Road	20.22	2.83	38.02	0.87	10.27	0.97	37.00	0.95
I-10	US 60	22.93	2.72	37.15	1.83	10.83	0.57	36.05	3.25
I-10	Broadway/52nd Street	25.40	2.47			12.28	1.45		
I-10	48th Street	25.78	0.38	35.32	0.95	12.80	0.52	32.80	1.68
I-10	40th Street	27.20	1.42	34.37	0.90	13.52	0.72	31.12	2.30
I-10	University Drive	28.45	1.25	33.47	1.73	14.27	0.75	28.82	3.72
I-10	I-17/I-10	30.27	1.82	31.73	0.97	15.78	1.52	25.10	1.55
I-17	16th Street			30.77	1.40			23.55	1.10
I-17	7th Street/Central	32.22	32.22	29.37	0.62	17.82	17.82	22.45	1.02
I-17	7th Avenue	33.15	0.93	28.75	0.98	18.67	0.85	21.43	1.00
I-17	19 Avenue	34.08	0.93	27.77	0.87	19.65	0.98	20.43	0.82
I-17	Buckeye Road	34.83	0.75	26.90	0.28	20.50	0.85	19.62	0.27
I-17	Grant Street	35.13	0.30	26.62	0.48	20.95	0.45	19.35	0.48
I-17	Adams Street/Van Buren	35.60	0.47	26.13	0.67	21.85	0.90	18.87	0.52
I-17	Adams Street/Van Buren	35.73	0.13	25.47	0.32	22.02	0.17	18.35	0.35
I-17	I-10/I-17	35.98	0.25	25.15	0.33	22.53	0.52	18.00	0.33
I-10	27th Avenue			24.82	1.82			17.87	1.00
I-10	35th Avenue	37.97	1.98	23.00	1.07	28.48	5.95	16.67	0.53
I-10	39th Avenue	38.45	0.48	21.93	0.90	28.98	0.50	16.13	0.48
I-10	43rd Avenue	38.92	0.47	21.03	2.43	30.15	1.17	15.65	0.90
I-10	51st Avenue	39.93	1.02	18.60	2.63	31.68	1.53	14.75	0.93
I-10	59th Avenue	40.67	0.73	15.97	1.83	32.73	1.05	13.82	0.88
I-10	67th Avenue	40.93	0.27	14.13	0.97	33.78	1.05	12.93	0.92
I-10	75th Avenue	42.77	1.83	13.17	0.97	34.75	0.97	12.02	0.85
I-10	83rd Avenue	43.73	0.97	12.20	3.13	35.72	0.97	11.17	2.80
I-10	91st Avenue (construction)	44.63	0.90	Closed		36.63	0.92	Closed	
I-10	99th Avenue (construction)	Closed		Closed		Closed		Closed	
I-10	107th Avenue (construction)	Closed		Closed		Closed		Closed	
I-10	115th Avenue	47.32	2.68	7.97	1.10	39.57	2.93	8.37	0.83
I-10	Dysart	49.08	4.45	6.18	1.00	41.28	4.65	5.93	0.82
I-10	Litchfield Road	49.92	0.83	5.18	1.47	42.17	0.88	5.12	1.50
I-10	Pebble Creek	51.67	1.75	3.72	1.88	44.02	1.85	3.62	2.68
I-10	Cotton Lane	52.98	1.32	1.83	1.83	45.73	1.72	0.93	0.93
I-10	Loop 303	55.25	2.27	0.00		47.87	2.13	0.00	

D. ENVIRONMENTAL MAPS

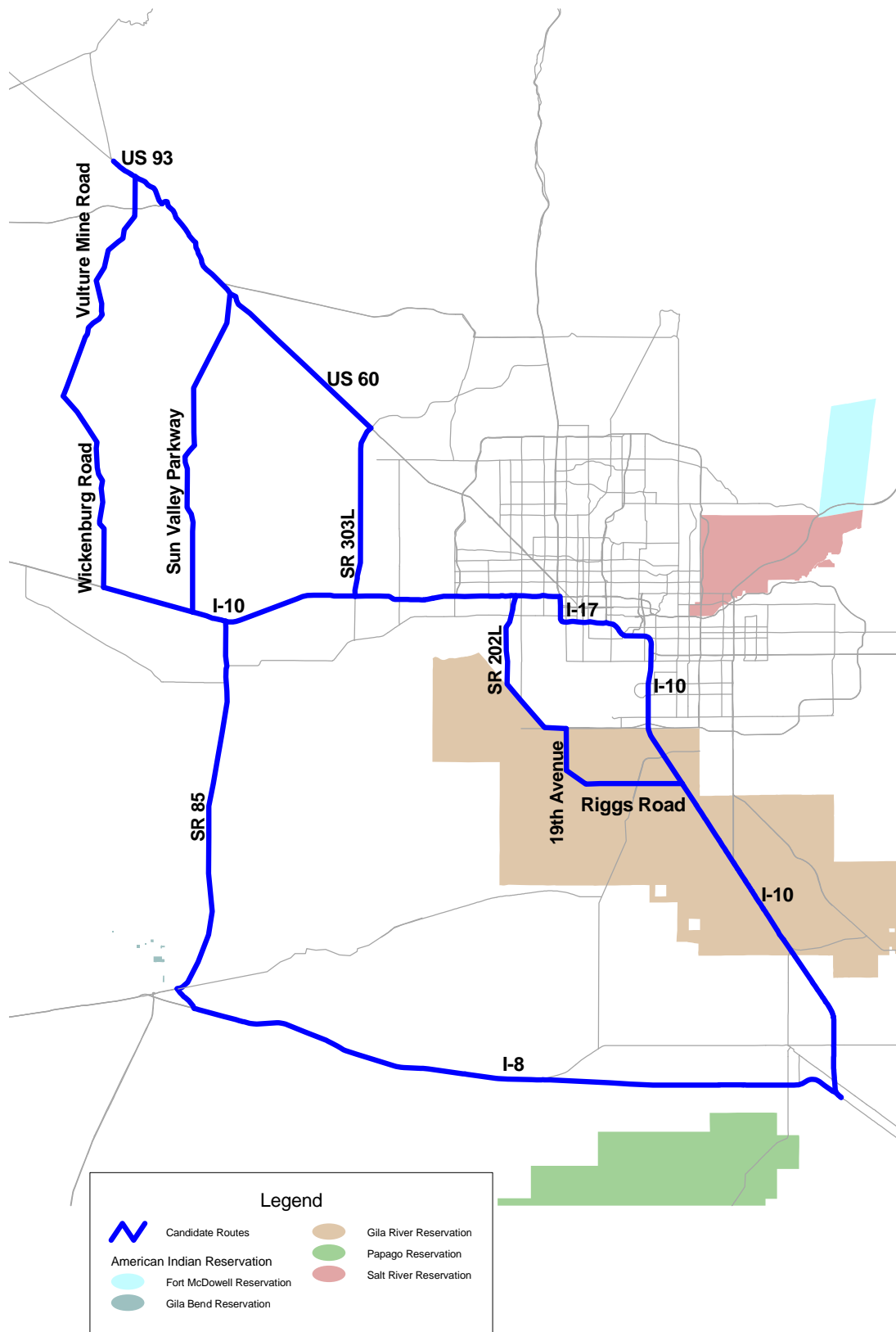


Legend

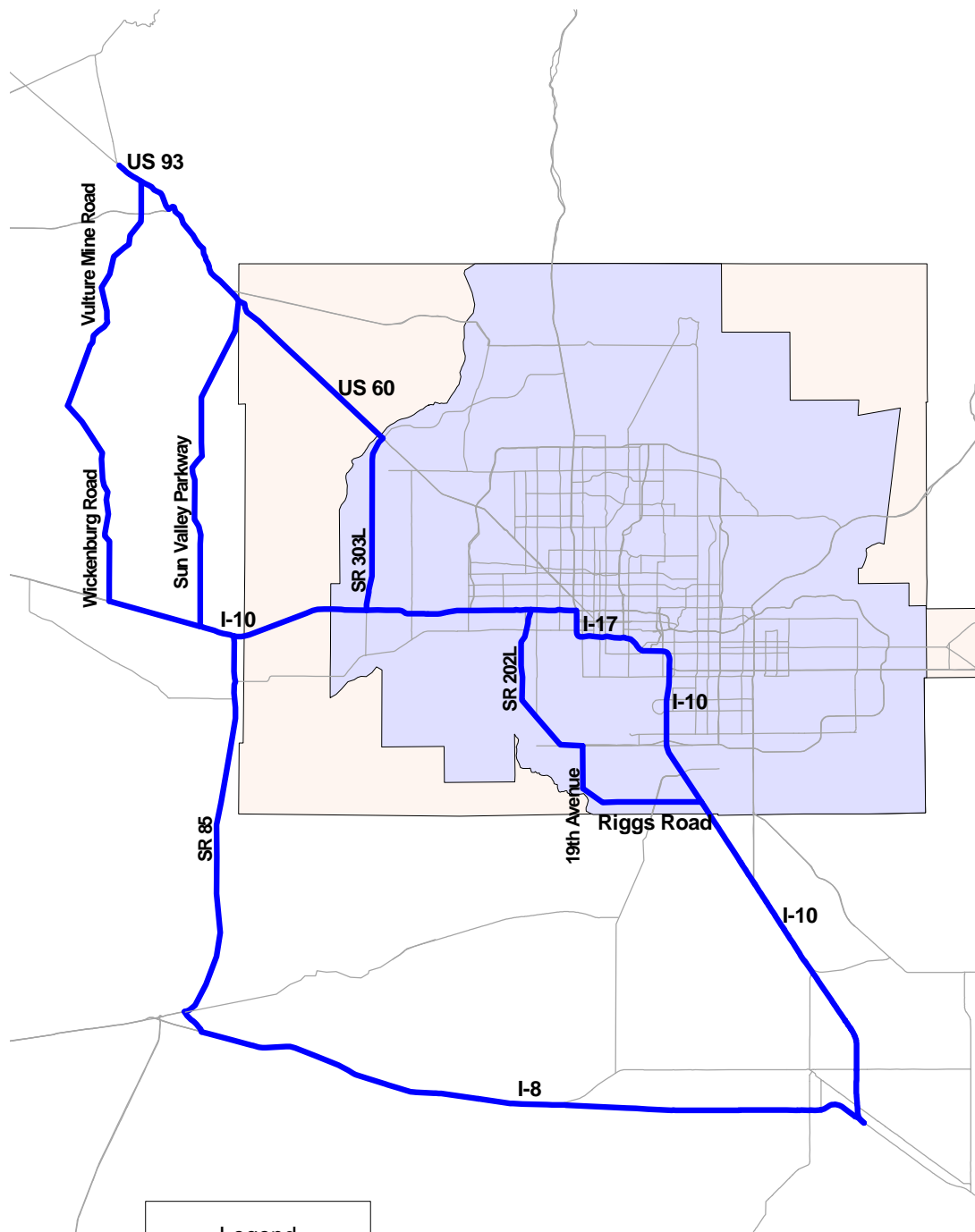
 Candidate Routes

 Archeological Survey Sites








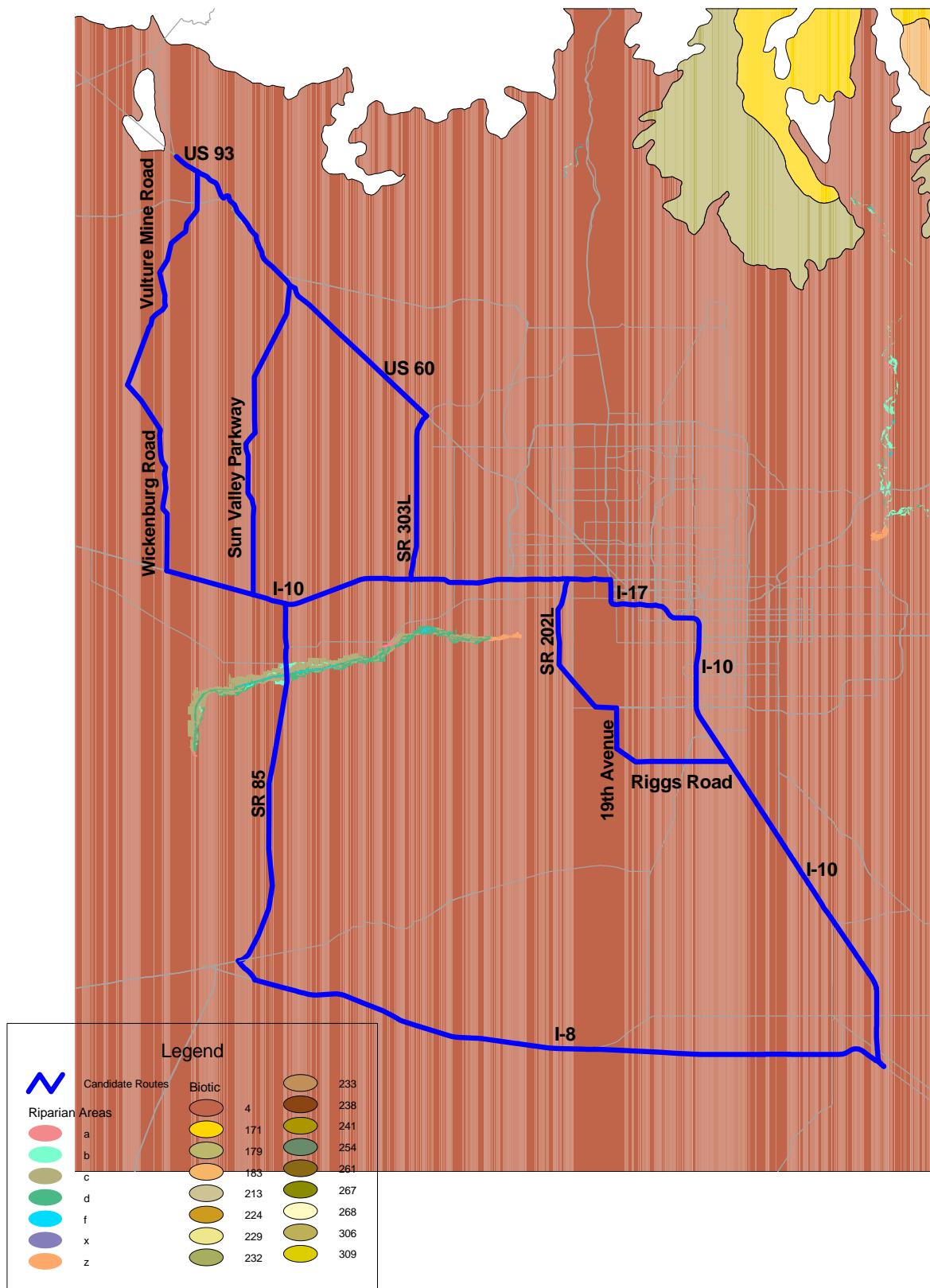
American Indian Reservation Boundaries



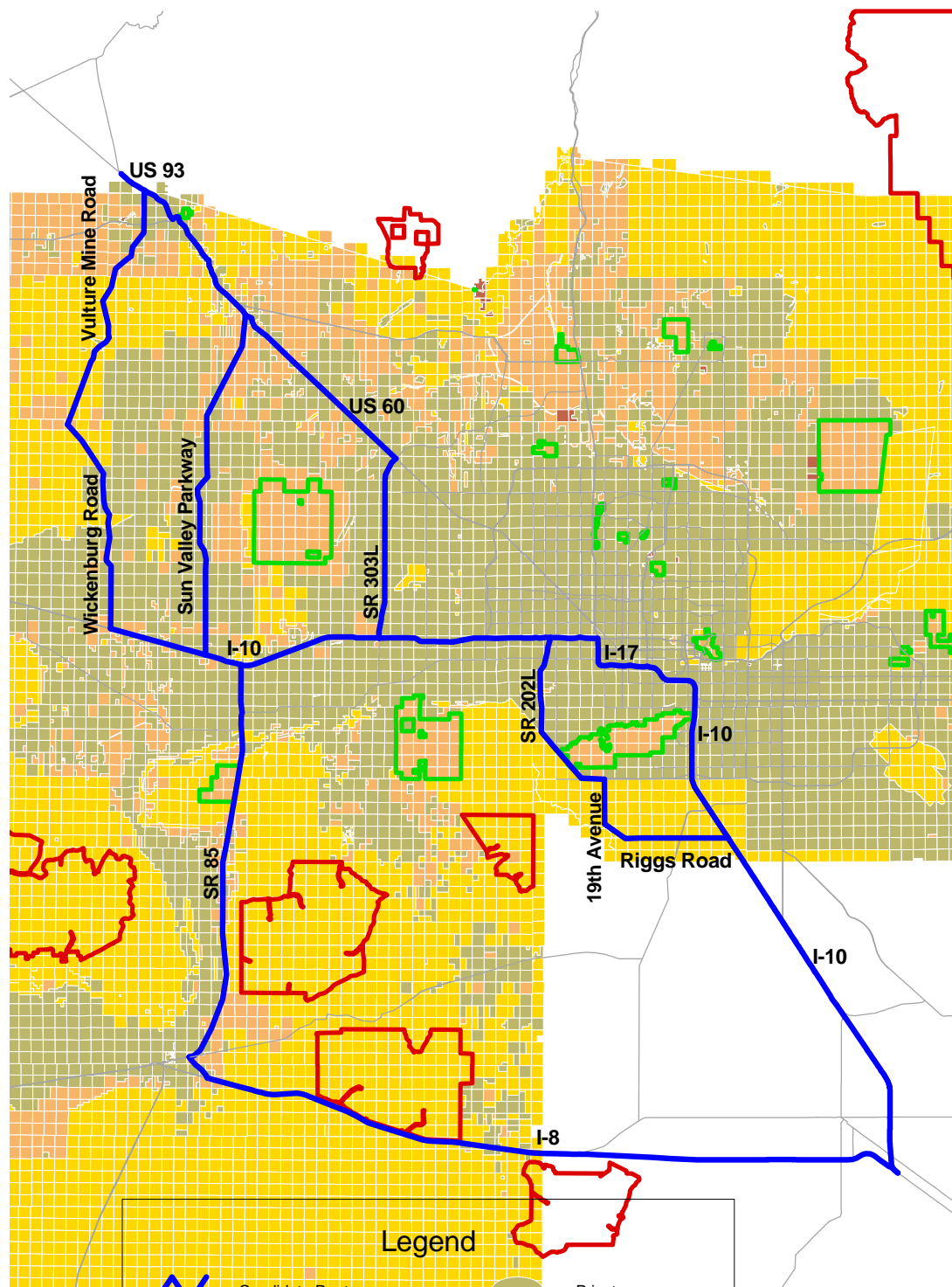
Legend

-  Candidate Routes
-  CO and Ozone
-  PM10





Biotic and Riparian Habitats



Candidate Routes

Maricopa County General Land Use

County

Federal

Legend

Private

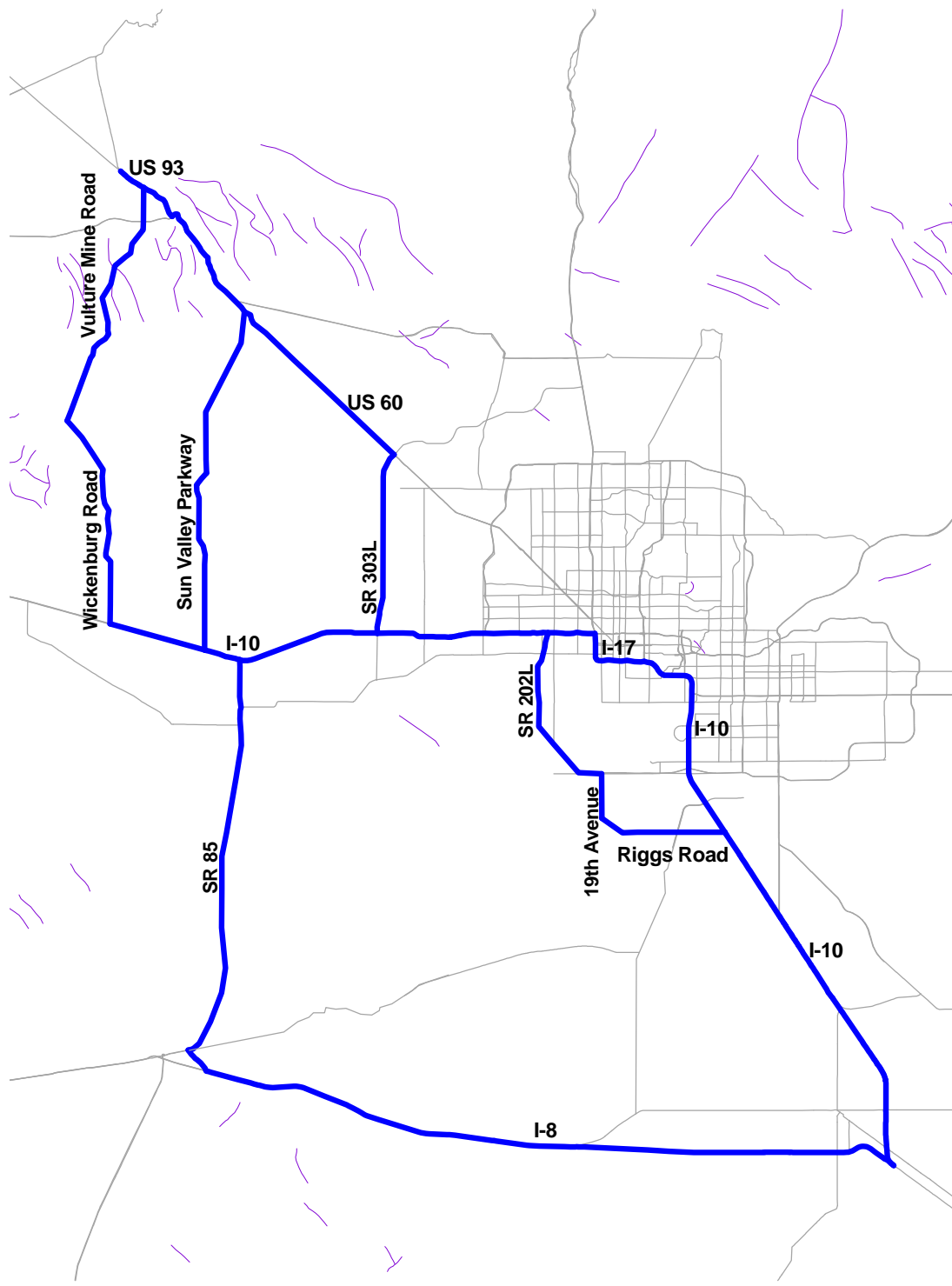
State

Wilderness Areas

State Park Land



Land Uses



Legend

	Candidate Routes		Fault Lines
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Fault Lines





E. TITLE VI AND ENVIRONMENTAL JUSTICE MAPS



FIGURE XI-1: DISTRIBUTION OF POPULATION OF RACIAL MINORITY STATUS

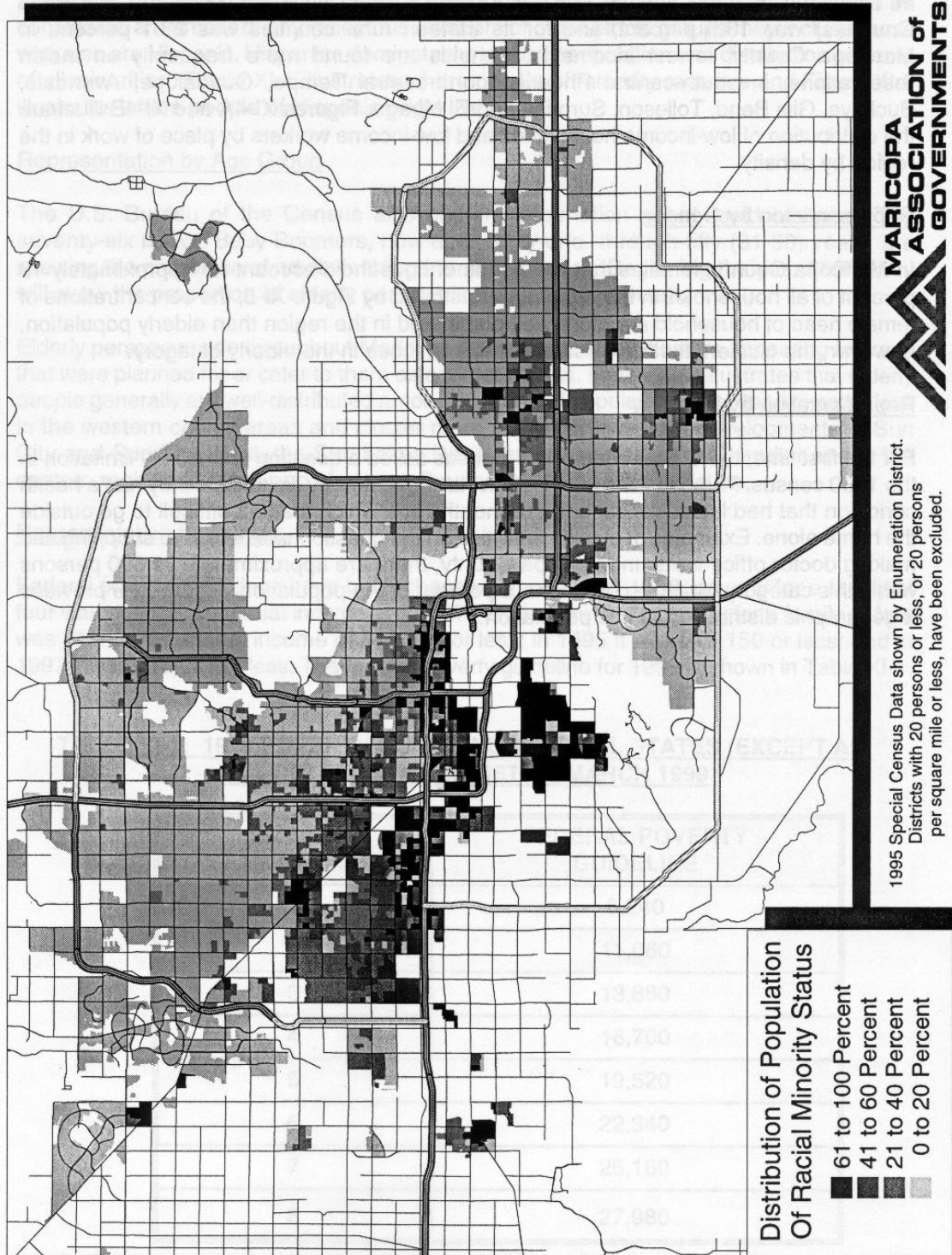


FIGURE XI-3: DISTRIBUTION OF POPULATION AGED 60 YEARS OR OLDER

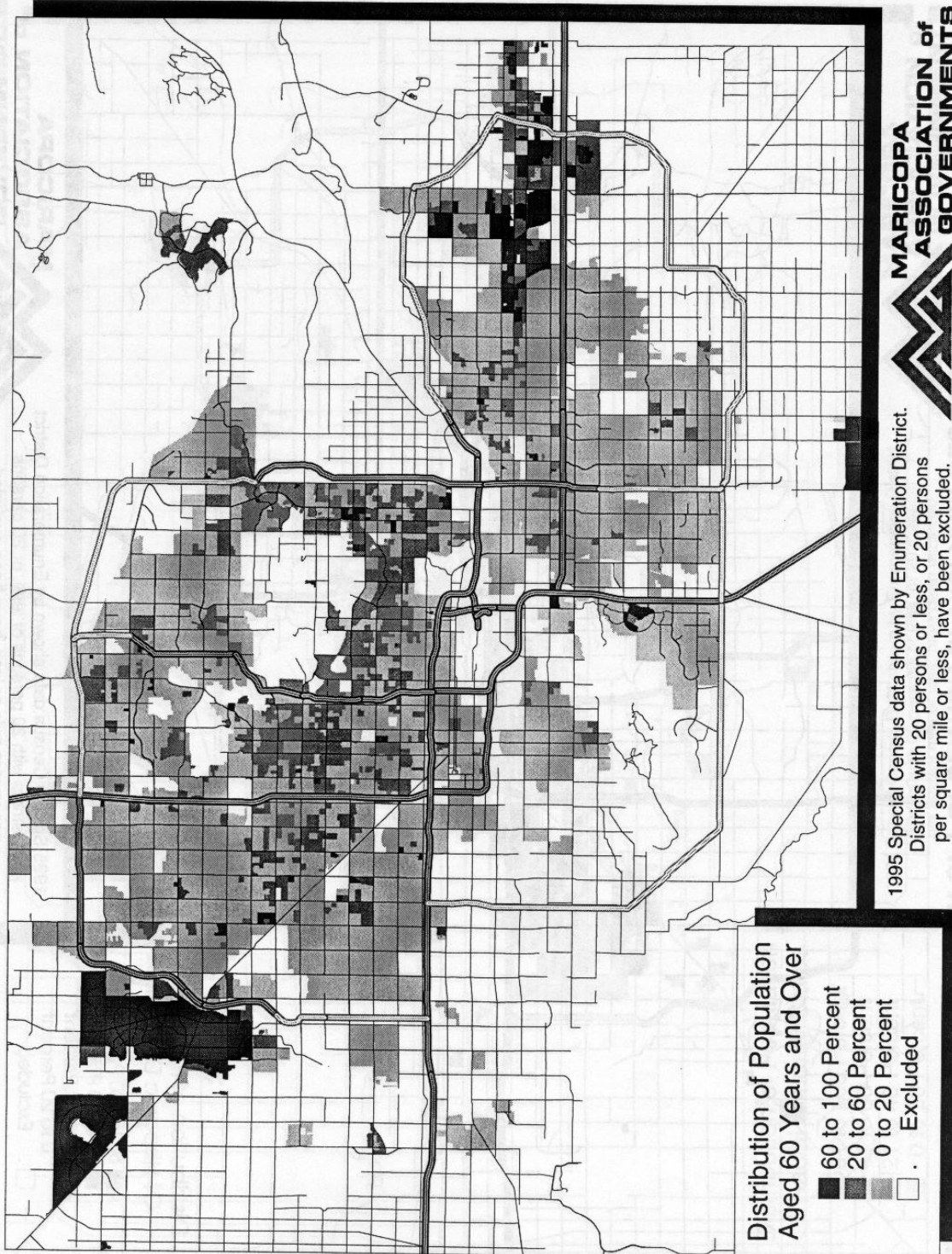




FIGURE XI-4A: DISTRIBUTION OF LOW INCOME HOUSEHOLDS

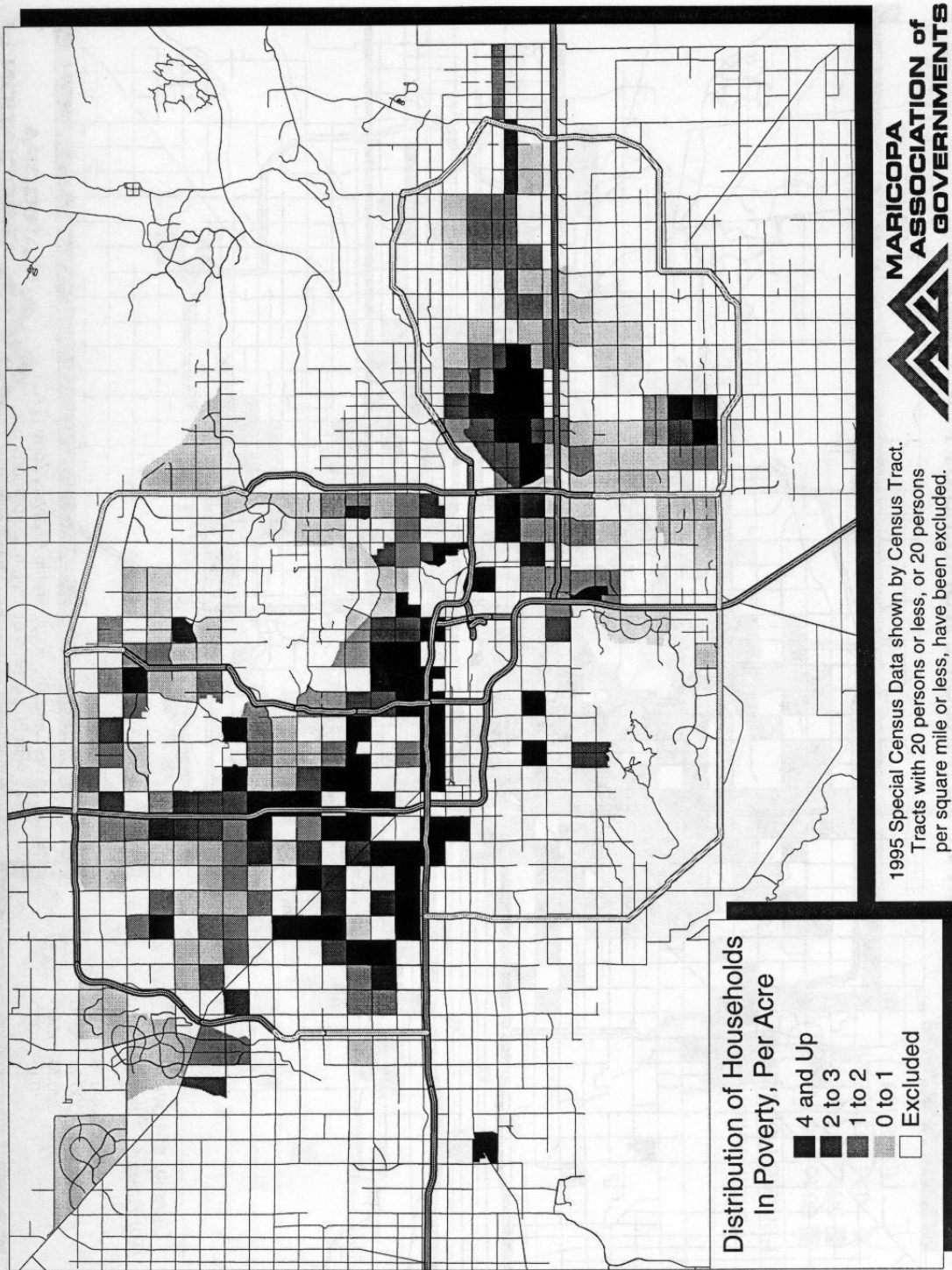




FIGURE XI-6: DISTRIBUTION OF POPULATION WITH DISABILITY/MOBILITY LIMITATIONS

