

North–South Corridor Study Alternatives Selection Report

Pinal County, Arizona
Federal-aid No. STP-999-A(365)S
ADOT Project No. 999 PN 000 H7454

October 2014
Revision 7



Abstract: The Arizona Department of Transportation, in partnership with the Federal Highway Administration, is conducting the North–South Corridor Study, which will result in the preparation of a location/design concept report and an environmental impact statement for a proposed 45-mile-long, north–south transportation corridor in Pinal County, Arizona. As a first step in the study process, this report recommends North–South Corridor route alternatives to be studied in further detail in the next phase of the study.



Arizona Department of Transportation
Federal Highway Administration

North–South Corridor Study Alternatives Selection Report

Pinal County, Arizona
Federal-aid No. STP-999-A(365)S
ADOT Project No. 999 PN 000 H7454

October 2014
Revision 7

Prepared for

Arizona Department of Transportation
Multimodal Planning Division
206 South 17th Avenue, Mail Drop 075R
Phoenix, Arizona 85007

Prepared by

HDR Engineering, Inc.
Kimley-Horn and Associates, Inc.
AECOM
NCS Consultants, LLC
Elliott D. Pollack & Company
Statistical Research, Inc.

Contents

1	Introduction	3
1.1	Foreword.....	3
1.2	Study Team Organization.....	7
1.3	Previous and Ongoing Studies	9
1.4	Project Purpose.....	13
1.5	Project Need	14
1.6	Scoping.....	14
1.7	Agency and Public Involvement.....	17
2	Characteristics of the Corridor	20
2.1	Study Area.....	20
2.2	Traffic	26
2.3	Development	36
2.4	Open Space	41
2.5	Topographical Conditions	43
2.6	Geotechnical Conditions	43
2.7	Drainage.....	43
2.8	Land Ownership	49
2.9	Utilities.....	51
3	Design Features.....	61
3.1	Introduction	61
3.2	Roadway Cross Section	61
3.3	Passenger Rail Design References.....	61
3.4	Preliminary Design Criteria for Developing Route Alternatives.....	61
3.5	Considerations for the Location/Design Concept Report	62
4	Alternatives Development and Evaluation.....	64
4.1	Alternatives Screening Process.....	64
4.2	Stage I – Modal Alternatives Screening	64
4.3	Stage II – Route Alternatives Development and Screening	67
5	Recommendations	110
5.1	Supplemental Investigations.....	110
6	Bibliography	112

Tables

Table 1. Public scoping meetings	15
Table 2. Major agency involvement activities	18
Table 3. Major public involvement activities	18
Table 4. Existing traffic on state highways and major local roadways.....	26
Table 5. North–South Sketch Planning Tool projections	32
Table 6. North–South Sketch Planning Tool cut-line analysis.....	32
Table 7. Study area land ownership.....	49
Table 8. Study area utility providers	52
Table 9. North–South Corridor design criteria for developing route alternatives.....	61
Table 10. Traffic model output for 2050 conditions	79
Table 11. Corridor analysis matrix	80
Table 12. North–South Corridor route alternative evaluation criteria	87
Table 13. Evaluation rating matrix.....	96

Figures

Figure 1. State location map	4
Figure 2. North–South Corridor study area	5
Figure 3. Sun Corridor Location	6
Figure 4. Study process.....	7
Figure 5. Population density, 2000	21
Figure 6. Population density, 2010	22
Figure 7. Existing roadways	23
Figure 8. Pinal County Regionally Significant Routes.....	24
Figure 9. North–South Sketch Planning Tool modeling area	28
Figure 10. North–South Sketch Planning Tool process.....	29
Figure 11. North–South Corridor cut-line locations	31
Figure 12. 2050 no-build daily traffic flow.....	34
Figure 13. 2050 north–south freeway daily traffic flow	35
Figure 14. Rittenhouse Airfield and Florence Military Reserve	39
Figure 15. Conceptual rendering of Portalis	40
Figure 16. Conceptual rendering of Superstition Vistas study area and proposed transportation network	40
Figure 17. Conceptual rendering of Merrill Ranch and Anthem at Merrill Ranch	41
Figure 18. Existing and planned open space.....	42
Figure 19. Topographic features.....	44
Figure 20. Ground subsidence and earth fissures	45
Figure 21. Drainage features	46
Figure 22. Land Ownership	50
Figure 23. Major utilities.....	53
Figure 24. SunZia alternative routes, Willow 500 kilovolt Substation to Pinal Central Substation	55
Figure 25. Alternatives development and screening process.....	65
Figure 26. Modal alternatives screening	66
Figure 27. Existing land use and planned development avoidance areas	69
Figure 28. Existing and proposed open space avoidance areas	70
Figure 29. Topographic features avoidance areas.....	71
Figure 30. Fissure avoidance areas	72
Figure 31. Drainage feature avoidance areas	73
Figure 32. Initial Corridor Opportunity Area	74
Figure 33. Refined Corridor Opportunity Area	75
Figure 34. Corridor segments	78
Figure 35. Possible route alternatives	85

Figure 36. Example application of route segment ratings	91
Figure 37. Local stakeholder agency rating.....	93
Figure 38. Regional, state, and federal stakeholder agency rating.....	94
Figure 39. Public preference rating.....	95
Figure 40. Step 1 evaluation ratings results (<i>presented to stakeholders on March 6, 2012</i>).....	99
Figure 41. Route Alternatives 1A and 1B (<i>presented to stakeholders on May 15, 2012</i>)	102
Figure 42. Route Alternatives 2A and 2B (<i>presented to stakeholders on May 15, 2012</i>)	103
Figure 43. Segments U and V	104
Figure 44. Segments AK and AF	106
Figure 45. System Interchange Spacing with SR 24	108
Figure 46. Route alternatives recommended to be advanced for detailed study in the EIS	111

Appendixes

Appendix A	Alternatives Selection Process Milestones and Decisions
Appendix B	Purpose and Need Corridor Build Alternatives
Appendix C	Step 1 Route Alternatives Evaluation Results
Appendix D	Route Alternatives Stakeholder Agency Rating Form
Appendix E	Step 1 Route Alternatives Segment Rejection Matrix

Abbreviations and Acronyms

AZARNG	Arizona Army National Guard
ADMP	Area drainage master plan
ADOT	Arizona Department of Transportation
AGFD	Arizona Game and Fish Department
amsl	above mean sea level
ASLD	Arizona State Land Department
ASR	Alternatives Selection Report
AZTDM1	first-generation Arizona Statewide Travel Demand Model
AZTDM2	second-generation Arizona Statewide Travel Demand Model
BIA	U.S. Department of the Interior Bureau of Indian Affairs
BLM	U.S. Department of the Interior Bureau of Land Management
bqAZ	Building a Quality Arizona
CAG	Central Arizona Governments
CAP	Central Arizona Project
COA	Corridor Opportunity Area
EIS	environmental impact statement
FCDMC	Flood Control District of Maricopa County
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
Framework Program	Statewide Transportation Planning Framework Program
FRS	flood retarding structure
GIS	geographic information system
I-8	Interstate 8
I-10	Interstate 10
kV	kilovolt
L/DCR	location/design concept report
LOMR	Letter of Map Revision
MAG	Maricopa Association of Governments
MoveAZ	What Moves You Arizona
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act

NOI	Notice of Intent
NRCS	U.S. Department of Agriculture Natural Resources Conservation Service
NSSPT	North–South Sketch Planning Tool
ODME	origin-destination estimation
PAG	Pima Association of Governments
RAZ	regional analysis zone
RMSE	root mean square error
ROW	right-of-way
RPTA	Regional Public Transportation Authority
RSRSM	Regionally Significant Routes for Safety and Mobility (Pinal County)
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SEMNPST	Southeast Maricopa/Northern Pinal County Area Transportation Study
SR	State Route
SR 202L	State Route 202 Loop
SRP	Salt River Project
STB	State Transportation Board (Arizona)
T&E	threatened and endangered
TAZ	traffic analysis zone
TDM	travel demand management
TSM	transportation systems management
UPRR	Union Pacific Railroad
US 60	United States Route 60
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

Executive Summary

The Arizona Department of Transportation (ADOT), in partnership with the Federal Highway Administration (FHWA), is conducting the North–South Corridor Study, Federal-aid No. STP-999-A(365)X, ADOT Project No. 999 PN 000 H7454, which will result in the preparation of a location/design concept report (L/DCR) and an environmental impact statement (EIS) for a proposed 45-mile-long, north–south transportation corridor in Pinal County, Arizona. ADOT and FHWA are lead agencies for the Study, with ADOT as the project sponsor.

The Notice of Intent was published in the Federal Register on September 20, 2010. The project purpose and need are documented in the North–South Corridor Study Draft Purpose and Need, dated December 2011. Project scoping was open to agencies and the public to identify the range, or scope, of issues to be addressed during the development of engineering, planning, and environmental studies. The agency scoping meeting occurred on October 5, 2010, and the public scoping meetings occurred on October 19, 21, 26, and 28, 2010, in locations throughout the Corridor.

The outcomes of project scoping are summarized in the North–South Corridor Study Draft Agency and Public Scoping Summary, dated February 2011. Agency and public involvement in the study is consistent with that prescribed in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) Section 6002 Coordination Plan for Agency and Public Involvement (November 2011).

The 45-mile-long study area covers over 900 square miles and is bounded by United States Route 60 (US 60) on the north; Interstate 10 (I-10) on the south; roughly State Route (SR) 202 Loop, the Gila River Indian Community, and SR 87 on the west; and roughly SR 79 on the east. Local governmental entities within the study area include Central Arizona Governments; Pinal County; the Gila River Indian Community; the Cities of Apache Junction, Coolidge, Mesa, and Eloy; and the Towns of Florence and Queen Creek. Study area features include the SR 24 study area, Picacho Mountains, Picacho Reservoir, Gila River, Queen Creek Wash, Arizona Army National Guard (AZARNG) Rittenhouse Field and Florence Military Reserve, Union Pacific Railroad, Magma Arizona and Copper Basin railroad lines, Central Arizona Project’s Fannin-McFarland Aqueduct, and several flood retarding structures.

This Alternatives Selection Report (ASR) describes the alternatives development and evaluation process and the recommended alternatives for the North–South Corridor that will be carried forward into the L/DCR and EIS for further detailed analysis. The process used for developing and evaluating route alternatives is consistent with ADOT Policy and Implementation Memorandum 89-5 for preparing an ASR. The process incorporates the analyses of all reasonable alternatives, supports the iterative nature of the National Environmental Policy Act process, provides an audit trail of the investigation and selection process, and determines optimal route alternatives subject to constraints defined by the project purpose and need, agency and public input, and environmental, engineering, social, and economic data. One of the purposes of the ASR is to document the screening process for alternatives that do not warrant further analysis.

A principal design feature of the Corridor will be to accommodate both ADOT roadway design criteria for a fully access-controlled freeway facility and passenger rail should all or a segment of the Corridor be selected as an alternative for the ongoing ADOT Passenger Rail Study.

A two-stage process was used for developing and evaluating route alternatives. Stage I involved the development and evaluation of a wide range of modal alternatives to improve transportation conditions within

the study area. Stage II involved the development and evaluation of route alternatives that would accommodate a major transportation facility within the study area.

Stage I modal alternatives developed included travel demand management strategies, traffic systems management strategies, arterial street improvements, transit improvements, and the proposed North–South transportation facility connecting US 60 and I-10. The principal evaluation criterion for screening modal alternatives was the “percentage of projected 2050 travel in the study area that can be accommodated by the estimated capacity of modal alternatives.” The analysis used a travel demand model that determined that none of the modal alternatives would independently meet future travel demand. The analysis also determined that all of the modal alternatives, including a new major transportation facility (e.g., the North–South Corridor) will be required to meet 90 percent of the estimated future travel demand. Based on this analysis, developing and evaluating route alternatives for a North–South transportation facility is justified (in Stage II), and other modal strategies should also be included in long-range transportation improvements in the study area.

Stage II used a two-step process to develop and screen route alternatives to a reasonable set of continuous alternatives that could be advanced for detailed study in the L/DCR and EIS. Alternatives were developed using input from stakeholder agencies and the public. Step 1 of the screening process developed and evaluated route segments using quantifiable impacts criteria, jurisdiction and stakeholder agency criteria, and public input criteria. Step 1 identified route segments with higher levels of public and stakeholder preferences and lower levels of impacts. These routes segments were subsequently combined into continuous route alternatives. Step 2 screening criteria included regional service and accessibility criteria and cost criteria. Following the completion of Step 1, it was determined that Step 1 screening was sufficient to produce a set of continuous route alternatives for further evaluation in the L/DCR and EIS, when each continuous route alternative will be evaluated along with the no-build alternative. As such, Step 2 screening was not completed.

Four continuous independent route alternatives are recommended (**Figure 46**) for further analysis in the L/DCR and EIS phase of the North–South Corridor Study: 1A, 1B, 2A, and 2B. Route Alternatives 1A and 1B represent the route alternatives that emerged from the screening process. Route Alternatives 2A and 2B represent the route alternatives, located west of the CAP Canal, that respond to stakeholder comments. Individual route segments within any of the four independent route alternatives may be combined in any reasonable fashion during the L/DCR and EIS phase of the study to produce many combinations of continuous route alternatives.

1 Introduction

1.1 Foreword

The Arizona Department of Transportation (ADOT), in partnership with the Federal Highway Administration (FHWA), is conducting the North–South Corridor Study, Federal-aid No. STP-999-A(365)S, ADOT Project No. 999 PN 000 H7454, which will result in the preparation of a location/design concept report (L/DCR) and an environmental impact statement (EIS) for a proposed 45-mile-long, north–south transportation corridor in Pinal County, Arizona. The project location is shown in **Figure 1**.

Early in the study process, a study area was delineated to define boundaries of the analysis. The 900-square-mile study area, which was primarily delineated through observation, is shown in **Figure 2**. The 45-mile-long study area is bounded by United States Route 60 (US 60) on the north; Interstate 10 (I-10) on the south; roughly State Route (SR) 202 Loop (202L), the Gila River Indian Community, and SR 87 on the west; and roughly SR 79 on the east. Local governmental entities within the study area include Central Arizona Governments (CAG); Pinal County; the Gila River Indian Community; the Cities of Apache Junction, Coolidge, and Eloy; and the Towns of Florence and Queen Creek. Study area features include the SR 24 study area, Picacho Mountains, Picacho Reservoir, the Gila River, Queen Creek Wash, Arizona Army National Guard (AANG) Rittenhouse Field, railroad lines (Union Pacific Railroad [UPRR], Magma Arizona, and Copper Basin), Central Arizona Project’s Fannin-McFarland Aqueduct (CAP Canal), and several flood retarding structures.

The study area is located within the Sun Corridor region, an area of projected high population density. The Sun Corridor is anchored by Tucson and Phoenix, but is envisioned to eventually stretch from the Mexican border to beyond Prescott, Arizona (see **Figure 3**). The Sun Corridor is one of 20 megapolitan areas across the United States that demographers have identified as the focus of the majority of the country’s future growth (Morrison Institute for Public Policy 2008). The urbanized areas of Tucson and Phoenix are anticipated to grow into one “megaregion” with 15 million people by 2060. More than 80 percent of Arizonans now live in the Sun Corridor (Morrison Institute for Public Policy 2008). Although growth in Arizona has slowed as part of the economic downturn, the Sun Corridor is expected to expand from a current population of about 5 million to nearly 10 million people (comparable to the population of metropolitan Chicago today) by 2040 (Morrison Institute for Public Policy 2008). With southeastern Maricopa County approaching high population densities, Pinal County is becoming a critical focus area for future development and economic growth in the Sun Corridor.

A Draft Purpose and Need document, dated December 2011 has been prepared for the North-South Corridor. The purpose and need was based on an analysis of 2050 build-out conditions in the study area that was developed in the 2008 Building a Quality Arizona Statewide Transportation Planning Framework Program. The North-South Corridor Draft Purpose and Need document defines functional requirements for the North-South Corridor and other transportation features in the study area for travel demands projected for 2050.

Typically, an Alternatives Selection Report (ASR) would advance the definition of functional requirements for a transportation facility for a specified design year. This is typically accomplished through an assessment of opportunities and constraints as identified by detailed technical assessments on land use, traffic, drainage, geotechnical, and environmental features. ADOT and FHWA however recognized that conducting detailed technical assessments of the expansive study area (900 square miles) would require significant resources and time, especially in the assessment of environmental resources. In recognition of this, detailed technical assessments were not completed in advance of the ASR. High level technical assessments were completed as part of the ASR sufficient to inform development and evaluation of reasonable and feasible alternatives leading to recommendations for broadly defined continuous route alternatives within the study area.

Figure 1. State location map

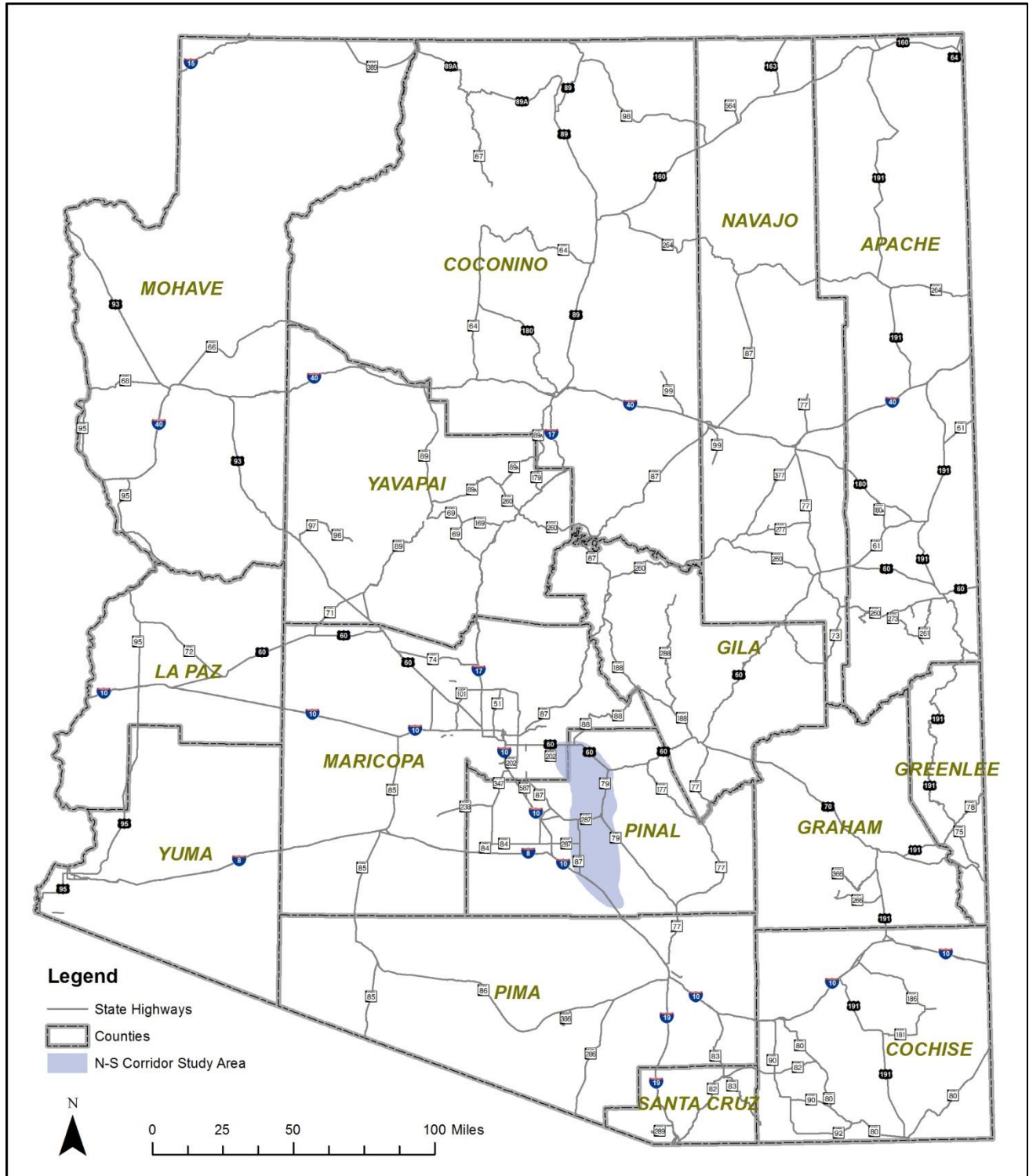
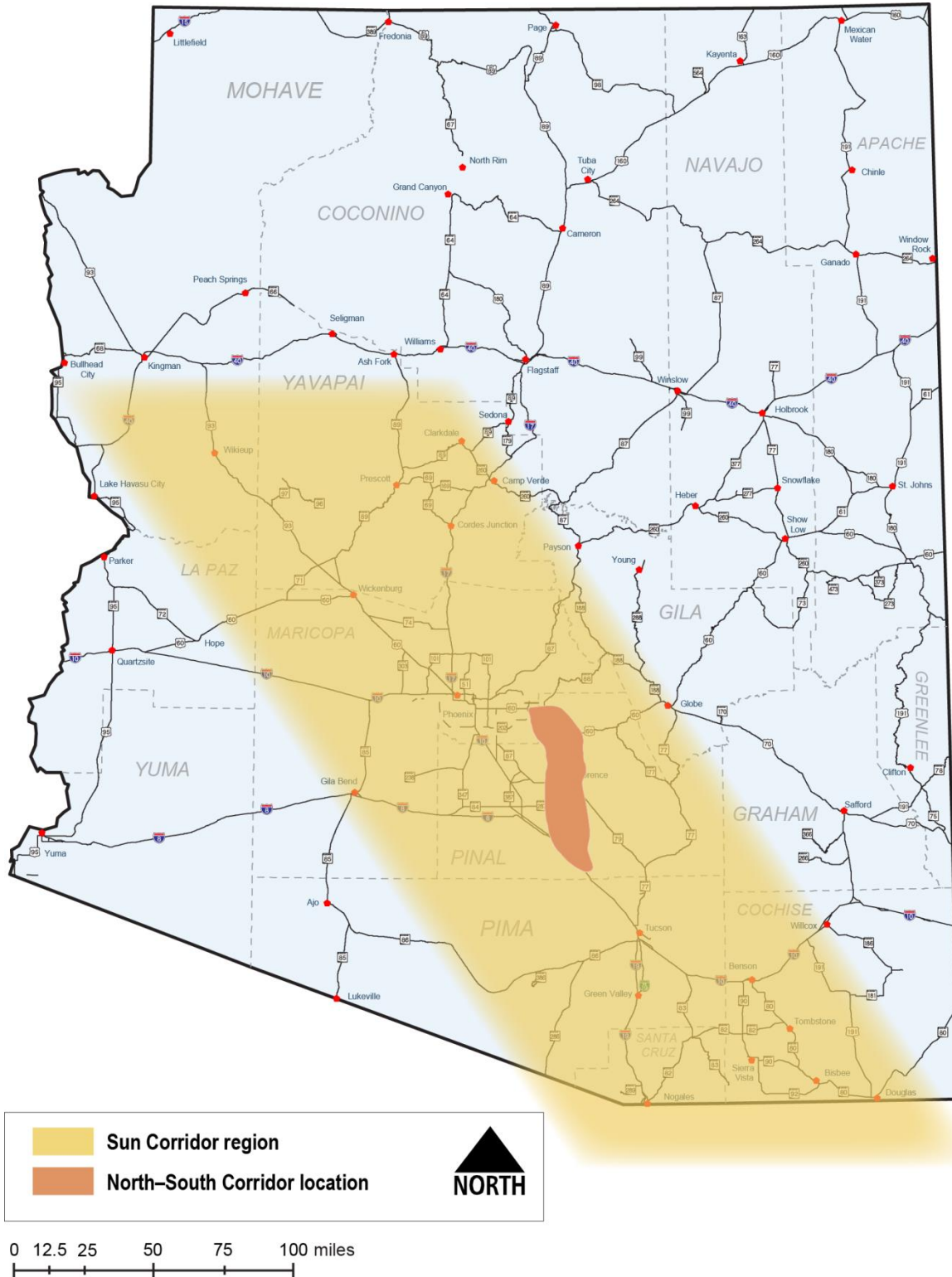


Figure 2. North–South Corridor study area



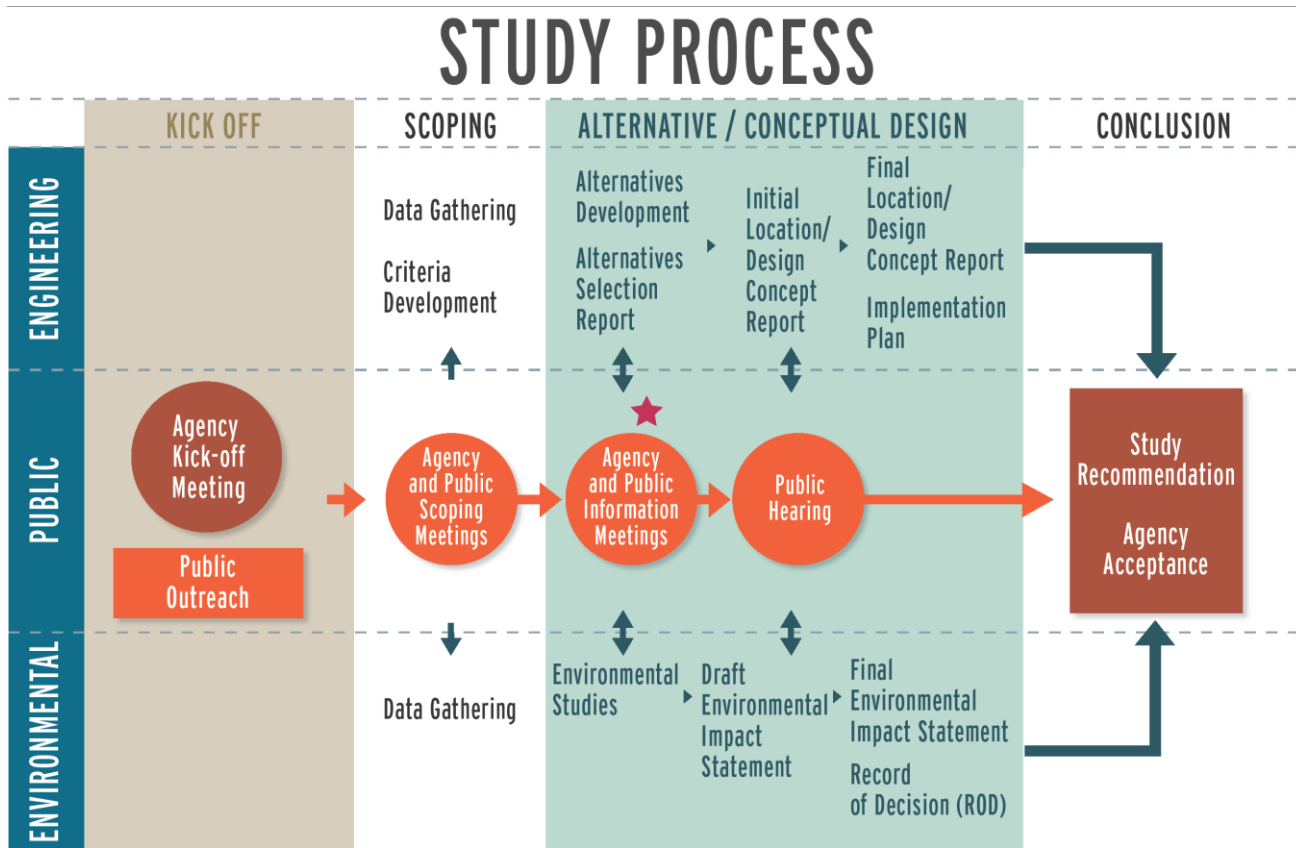
Figure 3. Sun Corridor Location



The North-South Corridor Study ASR describes the development and evaluation process for the alternatives considered and the recommended continuous route alternatives for the North-South Corridor.

The process used for developing and evaluating route alternatives (refer to **Figure 4**) included the analysis of all reasonable alternatives, supports the iterative nature of the National Environmental Policy Act (NEPA) process, provides an audit trail of the investigation and selection process, and determines optimal route alternatives subject to the constraints defined by the project purpose and need, agency and public input, and environmental, engineering, social, and economic data. For the recommended continuous route alternatives, detailed technical reports will be prepared as parts of the L/DCR and EIS phase to further define corridor features, impacts, and mitigation actions. The technical reports will define corridor development priorities and design features for a specified design year.

Figure 4. Study process



1.2 Study Team Organization

The study team organization is described below. Agency involvement in the Study is consistent with that prescribed in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) Section 6002 Coordination Plan for Agency and Public Involvement (November 2011).

1.2.1 Lead Agencies

ADOT and FHWA are lead agencies for the Study, with ADOT as the project sponsor.

1.2.2 Cooperating Agencies

NEPA regulations require that those federal agencies with jurisdiction by law (with permitting or land transfer authority) or with special expertise regarding any potential project-related environmental impact are invited to serve as cooperating agencies for an EIS. A state or local agency with similar qualifications may also become a cooperating agency. When the potential impacts would occur on land of tribal interest, a Native American tribe may also become a cooperating agency.

Agencies designated to serve as cooperating agencies are listed below:

- U.S. Army Corps of Engineers (USACE)
- U.S. Environmental Protection Agency (USEPA)
- U.S. Department of the Interior, Bureau of Reclamation
- U.S. Fish and Wildlife Service (USFWS)
- U.S. Department of Energy, Western Area Power Administration

The U.S. Department of the Interior Bureau of Land Management (BLM) was invited to serve as a cooperating agency; however, it was designated as a participating agency.

1.2.3 Participating Agencies

Section 6002 of SAFETEA-LU created a new category of agencies to participate in the EIS environmental review process. Participating agencies include federal, state, tribal, regional, and local governmental agencies with an interest in the project. Participating agencies were formally invited to participate in the environmental review process. Other agencies identified as stakeholders had the opportunity to comment regardless of whether a formal invitation to participate was accepted.

Agencies designated to serve as participating agencies are listed below:

- Arizona Army National Guard (AZARNG)
- Arizona Game and Fish Department (AGFD)
- Arizona State Parks
- City of Apache Junction
- City of Casa Grande
- City of Eloy
- City of Mesa
- Town of Florence
- Town of Queen Creek
- U.S. Department of Agriculture Natural Resources Conservation Service (NRCS)
- U.S. Department of the Interior Bureau of Land Management (BLM)
- U.S. Department of Transportation Federal Aviation Administration
- U.S. Department of Transportation Federal Railroad Administration
- U.S. Department of Transportation Federal Transit Administration

Invitations to participate in the study as a participating agency were sent to all agencies in the study area; however some agencies did not formally accept the invitation to serve as a participating agency. These agencies participated in the study but are not listed above.

1.2.4 Core Team

Study oversight and direction was provided by a Core Team consisting of representatives of the lead agencies, ADOT, and FHWA. Monthly Core Team meetings were conducted, at which the consultant team provided presentations on study progress and technical information. The Core Team reviewed and commented on technical information and approved “next steps.” It approved the presentation of technical information to the Stakeholder Agency Group. Public involvement materials and strategies were also developed in consultation with and approved by the Core Team.

1.2.5 Stakeholder Agency Group

The Stakeholder Agency Group consisted of representatives of lead, cooperating, and participating agencies. Stakeholder Agency Group meetings were conducted as needed to inform the agencies of technical information and public involvement activities relevant to the interests of the agencies.

1.2.6 Consultant Team

HDR Engineering, Inc. (HDR), is the prime consultant for the Study, under contract to ADOT. Consultant partners to HDR include Kimley-Horn and Associates, Inc. (Kimley-Horn); AECOM; NCS Consultants, LLC; Elliott D. Pollack & Company; and Statistical Research, Inc. Kimley-Horn was the principal author of this ASR with support provided by the consultant team. ADOT Communications and its consultant, Gordley Group, provided public involvement services.

1.3 Previous and Ongoing Studies

1.3.1 Southeast Maricopa/Northern Pinal County Area Transportation Study

In 2001, the Maricopa Association of Governments (MAG), CAG, and ADOT initiated the Southeast Maricopa/Northern Pinal County Area Transportation Study (SEMPTS). The final report, completed in 2003, evaluated transportation connections between Maricopa and Pinal Counties, examined the long-range transportation needs, and identified projects to address these needs. It was anticipated that the identified projects would be further assessed in the CAG and Pinal County long-range planning process and by ADOT in evaluating the need for future state facilities. The SEMPTS recommended \$12 billion to \$14 billion in improvements to meet transportation needs in the area bounded by US 60 and SR 79 on the east, SR 202L and the Gila River Indian Community on the west, US 60 on the north, and Coolidge and Florence on the south. In the study, this area was projected to be home to more than 1 million people by 2030. The recommended improvements included approximately 3,000 lane-miles of new and improved arterial streets, an enhanced transit system, improvements to existing freeway corridors, and 95 miles of new freeways. SEMPTS recommended four corridors to enhance mobility within its study area. One of the recommended corridors, the Apache Junction/Coolidge Corridor, would become the North–South Corridor. The Apache Junction/Coolidge Corridor was entirely in Pinal County, and connected US 60 on the north to I-10 on the south. If built as a freeway, SEMPTS estimated that the corridor would carry between 46,000 and 110,000 vehicles per day in 2030 and cost \$1.6 billion to construct. The Apache Junction/Coolidge Corridor was later renamed the North–South Corridor.

1.3.2 Pinal County Corridors Definition Studies (House Bill 2456)

In 2004, House Bill 2456 designated MAG, CAG, and ADOT as the responsible parties for further definition of the four corridors recommended by the SEMNPTS for the purpose of right-of-way preservation. The Bill required that studies be initiated before the end of 2004 to provide information to the State Transportation Board (STB) for adoption into the State Highway System by the end of 2008. The STB directed ADOT to conduct studies to examine the need for each of the four proposed corridors, their ability to accommodate anticipated growth, and the performance impacts of each corridor on other regional and state highways. As a result of this direction, in 2004, ADOT began three separate studies; the Williams Gateway Corridor Definition Study, the US 60 Corridor Definition Study, and Pinal County Corridor Definition Study which included both the East Valley Corridor and the Apache Junction/Coolidge Corridor. Study requirements relevant to the each corridor were to:

- confirm the need for the corridor
- identify planning-level corridor definition alternatives
- perform a technical assessment of engineering, environmental, and land use constraints and opportunities for the planning-level corridor definition alternatives
- identify, to the extent possible, feasible and preferred planning-level corridor definitions on the basis of the technical assessment
- document planning-level costs of corridor development (including studies, design, construction, and ROW costs) for the preferred Corridor alternative definitions

The Final Report for the Pinal County Corridor Definition Study (ADOT 2007) recommended future development of roadway alignments, corridor design concepts, and required environmental studies. In 2006, the STB approved adoption of the recommendations of the Pinal County Corridors Definition Study Final Report into MoveAZ, the statewide long-range transportation plan that was completed by ADOT in 2004. These recommendations included the North–South Corridor. While no funding was identified for the purchase of right-of-way or for the construction of a transportation facility, inclusion in MoveAZ allowed for the funding of studies that would identify alignments of a potential new freeway.

1.3.3 Statewide Transportation Planning Framework Program (part of Building a Quality Arizona)

In 2008, ADOT initiated four regional framework studies as part of the Statewide Transportation Planning Framework Program (Framework Program) as part of the Build a Quality Arizona initiative. The Framework Program was initiated by the Arizona Council of Governments/Metropolitan Planning Organization Directors Association. The main goal of the Framework Program was to plan a seamless transportation system that would efficiently move the state’s rapidly growing population and would ensure that Arizona’s economy remains competitive and thriving. The regional framework studies also considered sustainability and other environmental factors, safety, and security, and looked at methods for addressing rapidly shrinking infrastructure funds. As part of the Framework Program, ADOT, together with local and regional leaders, conducted extensive outreach efforts with local and regional transportation planning entities, transit organizations, tribal governments, land management agencies, conservation groups, and business and community leaders to formulate and evaluate multimodal transportation improvements. Outreach also included transportation agencies in bordering states and the Mexican states of Sonora and Chihuahua. Additionally, more than 120 community workshops and focus groups were held during the first year of the Framework Program to gather input and work through ideas with Arizona communities, agencies, and organizations. The Framework Program documented multi-modal transportation needs and desires at the state, county, tribal, and local levels through 2050. The study was documented in the 2010 Statewide Transportation Planning Framework Final

Report, a long-term vision for transportation in Arizona. This vision, which the STB accepted on January 15, 2010, served as input to the ADOT Long-Range Transportation Plan (What Moves You Arizona) and to the purpose and need for the North–South Corridor.

One of the regional framework efforts was the Central Arizona Regional Framework Study, which confirmed the need for the North–South Corridor. The study team compiled available CAG and local government information and land use plans to describe current conditions. The team also used projected travel demand, related plans and studies, and other considerations to develop recommendations for future development. ADOT subsequently refined the regional recommendations to create the final statewide framework recommendation. Identification of the need for the North–South Corridor was one of the results of the Central Arizona Regional Framework Study (ADOT 2009).

1.3.4 SR 24 Corridor Study

The SR 24 Corridor, which connects SR 202L (Santan Freeway) on the west with US 60 or SR 79 near Florence Junction, is located in both Maricopa and Pinal Counties. Construction is underway by ADOT in Maricopa County for the segment of SR 24 between SR 202L near the Phoenix-Mesa Gateway Airport and Ellsworth Road. Within Pinal County, the SR 24 Alignment Study is in progress by ADOT. This study advances the recommendations of the ADOT Williams Gateway Corridor Definition Study by investigating alignments that continue to the east, terminating at either US 60 south of El Camino Viejo Road or at the intersection of US 60 and SR 79 at Florence Junction. These alternatives are being developed to minimize impacts on existing developed residential communities located south of Germann Road and west of Schnepf Farms Road, AZARNG’s Rittenhouse training facility, and the proposed master planned improvements of the Superstition Vistas community, located predominantly east of the CAP Canal and north of Queen Creek Wash. No funding is currently identified for the portion in Pinal County.

1.3.5 US 60 Realignment Study

The US 60 Realignment Study was completed by ADOT in February 2011. The study advanced the recommendations of the ADOT US 60 Corridor Definition Study by investigating improvements to US 60 beginning at milepost 198.7 (the end of the Superstition Freeway) to milepost 211.0 just west of the intersection of US 60 and SR 79 at Florence Junction. US 60 serves as a major regional transportation route connecting the Phoenix metropolitan area with several developing communities adjacent to the highway. It provides direct access to the expanding suburban communities of Apache Junction and Gold Canyon as well as the newly developed master planned communities of Lost Dutchman Heights and Superstition Vistas, which are located immediately within and adjacent to the project limits. Major study products included an L/DCR and an environmental finding of no significant environmental impact, which was approved in June 2011. No funding is currently identified for the improvements.

1.3.6 Additional Statewide and Local Transportation Studies

- ADOT is concurrently conducting the Passenger Rail Corridor Study to identify and compare “ideas” to solve the transportation problem that exists along I-10 between Phoenix and Tucson. In addition to the no-build alternative, both rail and nonrail solutions are being considered. The study will analyze six options for passenger rail between Tucson and Phoenix. Portions of the North–South Corridor are among the alternatives being evaluated and, thus, a shared multimodal corridor is a possibility for the North–South Corridor.
- The Pinal County Comprehensive Plan (Pinal County 2009) guides actions to manage growth, preserve and/or improve the quality of life, and promote sustainable, environmentally responsible actions. This study

identified the need for light/commuter rail as part of the area's future development. This study also proposed a major transportation facility in the study area as a future significant component that should be considered in area plans. The Comprehensive Plan amendment process is ongoing and amendments to the Plan occur over time. Amendments to date have not resulted in significant changes in the Plan since adoption in 2009.

- An objective of ADOT's 2008 Southern Pinal/Northern Pima Corridors Definition Study was to determine the need for and feasibility of high-capacity corridors in southern Pinal County and northern Pima County. The study team also looked at the potential of extending a major transportation facility extending south from Florence (ADOT 2008). This study was discontinued and replaced with the Framework Program effort.
- The 2008 Pinal County Regionally Significant Routes Plan for Safety and Mobility (RSRSM), a Pinal County-funded study, provided a guide for Pinal County and other stakeholders, both public and private, to implement and fund Regionally Significant Routes and preserve ROW for these routes. Authors of this study confirmed the need for a North-South Freeway as an ADOT corridor.
- In a 2008 cooperative effort by ADOT, the City of Coolidge, and the Town of Florence, the authors of the Coolidge-Florence Regional Transportation Plan, developed a regional multimodal transportation system plan for the Coolidge-Florence planning areas. They evaluated the areas based on growth projections in place in 2008. In this study, the authors modeled traffic projections with and without a major north-south transportation facility in 2025. They recommended that the City of Coolidge and Town of Florence coordinate with ADOT on the design concept study for a major north-south transportation facility.
- The 2008 Queen Creek Small Area Transportation Study, sponsored by ADOT and the Town of Queen Creek, addressed long-term transportation planning issues for Queen Creek. The study primarily encompassed the town limits of Queen Creek. Given the regional nature of transportation issues, however, the study authors identified the need for a major north-south transportation facility and focused on the need to coordinate future road systems to promote connectivity among communities.
- The Superstition Vistas Scenario Report and Superstition Vistas Area Planning Project, produced by the East Valley Partnership and Pinal Partnership (2010 and 2009, respectively), recommend a vision for sustainable development of 275 square miles of State Trust land in the area of the Superstition Mountains. This land is the Arizona State Land Department's (ASLD's) largest contiguous parcel of land near a metropolitan area. It is equal in size to Gilbert, Mesa, Chandler, and Tempe combined (East Valley Partnership 2009). In this study, the authors developed several different growth scenarios, each of which included a major north-south transportation facility in the study area. On December 21, 2011, the Pinal County Board of Supervisors approved the Superstition Vistas Pinal County Comprehensive Plan amendment that ASLD had submitted in June. The approved amendment included revisions to the original submittal, including changes to density designations and a stipulation that ASLD work with County staff and Resolution Copper Company regarding land use designations along the Magma Railroad Corridor. A number of Superstition Vistas Steering Committee members noted that this amendment will likely be the first of a number of amendments proposed for this area as this project evolves over the next decades.
- The Portalis Project, consisting of 7,700 acres of State Trust land, is proposed in an area south of the Apache Junction city limits. This project will include a significant residential development component but is also expected to include several mixed-use commercial cores that could provide a setting for Class A office space for tenants serving outside markets, research and development space, regional offices for finance and insurance companies, emergency data centers for large companies, and other such employment-oriented spaces.

- Pinal County, in cooperation and coordination with the Cities of Casa Grande and Maricopa, is conducting an East–West Corridor Study in an area bounded by SR 347 to the west, I-10 to the east, the Gila River Indian Community to the north, and I-8 to the south. The purpose of this study is to improve the mobility and connectivity of the Pinal County regional transportation networks. The RSRSM and the I-8 and I-10 Hidden Valley Transportation Framework Study (MAG 2009) proposed new transportation facilities that could provide connectivity in, through, and around this growing area of Pinal County. The transportation goals include the need for new, high-capacity facilities that can handle the projected east–west travel demand of western Pinal County. The project proponents have since tailored a project study area to a 107-square-mile section of Pinal County that includes portions of the City of Maricopa, the Ak-Chin Indian Community, the City of Casa Grande, and unincorporated areas of Pinal County, with the eastern limits centered predominantly on the Val Vista Drive alignment. Separate regional planning studies are being developed by the communities of Coolidge, Florence, and Eloy in conjunction with Pinal County to investigate high-volume regional facilities continuing farther east of I-10. Preliminary indications are that such alignments would focus on routes centered on or about Kleck Road and SR 287.
- ADOT and the City of Coolidge are collaborating on a transportation feasibility study to evaluate the transportation needs and future growth of Coolidge. The ongoing study will develop a comprehensive transportation plan that identifies strategies to improve mobility for vehicular, bicycle, pedestrian, and transit methods of travel. The study will examine the current transportation system within the City of Coolidge Municipal Planning Area and identify potential mobility improvements for sustainable growth and to enhance the quality of life for Coolidge residents.
- Regional and state planning agencies have begun identifying future commuter rail corridors and routes that would serve demand in the study area. Relevant studies include the Valley Metro/Regional Public Transportation Authority (RPTA) Regional Transit System Study (2003); MAG’s High Capacity Transit Study (2003), Commuter Rail Strategic Plan (2008), and Commuter Rail System Study (2010); ADOT’s 2010 Statewide Rail Framework Study (2010); ASLD’s Superstition Vistas efforts; and the Pinal County Comprehensive Plan Amendment (2012).

1.4 Project Purpose

The Framework Program, in combination with previous studies and local traffic projections, was instrumental in defining the purpose and need for the North–South Corridor. The project purpose is documented in the North–South Corridor Study Draft Purpose and Need, dated December 2011, and is summarized as follows.

Adding north–south transportation capacity in the study area would facilitate the connection between US 60 and I-10. The current connection is a fragmented assortment of rural roads, with missing linkages throughout. While this fragmentation of north–south routes does not currently cause substantial congestion, growth projections show that the urbanized areas of Tucson and Phoenix could develop into a single “megaregion” with 15 million people by 2060 (Morrison Institute for Public Policy 2008). About 80 percent of Arizonans now live in this emerging area (Morrison Institute for Public Policy 2008). According to the Statewide Transportation Planning Framework Final Report (2010), the population of Maricopa, Pima, and Pinal Counties could grow to 11.7 million people as early as 2050. A large increase in population in these counties, and in the study area specifically, would indicate a substantial increase in travel demand. The addition of continuous, nonfragmented, north–south transportation capacity in the study area would facilitate regional mobility. Addressing anticipated transportation capacity deficiencies would reduce projected freeway congestion on I-10 and the planned SR 24. Additional, nonfragmented north–south capacity would also relieve anticipated congestion on existing highways such as SR 87, Hunt Highway, and Ironwood Road. It would also relieve anticipated congestion on the other Regionally Significant Routes that would be constructed before 2050.

As documented in the Statewide Transportation Planning Framework Final Report (2010), the build-out population of Pinal County is estimated at 2.2 million. Existing regional transportation facilities cannot accommodate the projected travel demand resulting from this growth. The Framework Program showed that at Pinal County build-out, I-10 will be heavily congested, creating significant delays for inter- and intrastate travelers between Phoenix and Tucson. Eliminating anticipated north–south transportation capacity deficiencies in the study area would improve connectivity among Tucson, Pinal County, Phoenix, and southeastern Maricopa County by providing:

- relief from congestion anticipated from projected growth in the study area
- traffic relief on I-10
- improved access to future activity centers
- more direct connection to the eastern portion of the Phoenix metropolitan area

The project purpose was an important consideration in the development of route alternatives and in the development of evaluation criteria for screening route alternatives.

1.5 Project Need

The project need is documented in the North–South Corridor Study Draft Purpose and Need, dated December 2011. The Framework Program, in combination with previous studies and local traffic projections, served as key inputs to the purpose and need for the North–South Corridor. The project need is summarized as follows:

- perform functions and provide services identified in local, regional, and statewide plans
- address lack of capacity
- avoid and alleviate congestion
- improve the effectiveness of existing freeway and arterial street networks
- enhance transportation system linkage

Without elimination of north–south capacity deficiencies, the integrity and efficiencies envisioned in the Framework Program and other studies would be compromised, congestion would worsen, and increased travel times would affect the lives of residents, employees, and visitors.

The project need was an important consideration in the development of route alternatives and in the development of evaluation criteria for screening route alternatives.

1.6 Scoping

1.6.1 Scoping Process

Project scoping is an early step in the NEPA process, the results of which are summarized in the North–South Corridor Study Draft Agency and Public Scoping Summary, dated February 2011. The Notice of Intent (NOI) was published in the Federal Register on September 20, 2010, which represented the official start of the EIS and initiated the scoping process. Agency and public involvement in the study is consistent with that prescribed in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) Section 6002 Coordination Plan for Agency and Public Involvement (November 2011). The scoping process was open to agencies and the public to identify the range, or scope, of issues to be addressed during the development of engineering, planning, and environmental studies. The agency scoping meeting occurred on

October 5, 2010, and the public scoping meetings occurred on October 19, 21, 26, and 28, 2010, in locations throughout the study area. The official scoping comment period ended on November 11, 2010; however, comments received after the comment period were documented.

1.6.2 Agency Scoping

An agency scoping meeting was conducted on October 5, 2010, at the Florence Town Hall, located at 775 North Main Street in Florence. The purpose of this meeting was to provide agency representatives with preliminary study information, present the Corridor Opportunity Area (COA, refer to **Figure 32**, Chapter 4), and receive input on issues to be addressed. Attendees included 56 individuals representing 27 local, regional, state, and federal agencies.

Following a presentation, each agency representative was given the opportunity to comment on the study and the information presented. Twenty-five verbal comments were documented during the agency scoping meeting. Written and verbal comments and responses are documented in the North–South Corridor Study Draft Agency and Public Scoping Summary, dated February 2011.

Several consistent comments received during the agency scoping meeting led to further refinements of the study area, as shown in **Figure 33** (Chapter 4). The refined COA reflects comments related to the extremely low development potential of the opportunity area to the east of the Picacho Mountains and the importance of avoiding adverse impacts on the planned UPRR Switch Yard at Red Rock, located southeast of the Picacho Mountains.

1.6.3 Public Scoping

Four public scoping meetings were conducted on the dates and locations listed in **Table 1**. The total attendance at public scoping meetings was 150 participants.

Table 1. Public scoping meetings

Date	Location	Attendance
Tuesday, Oct. 19, 2010	Union Center at Merrill Ranch, Florence	52 participants
Thursday, Oct. 21, 2010	Picacho Elementary School, Picacho	14 participants
Tuesday, Oct. 26, 2010	Apache Junction High School, Apache Junction	55 participants
Thursday, Oct. 28, 2010	Skyline Ranch K-8 School, Queen Creek	29 participants

The purpose of the public scoping meetings was to provide an overview of the study process, discuss the environmental and engineering processes and schedule, present the COA (refer to **Figure 33**, Chapter 4), and provide the opportunity for the public to ask questions and provide feedback. Each meeting was held from 6 to 8 p.m. and was identical in presentation content.

General comments were received via comment survey, letter, e-mail, and at the public scoping meetings. A total of 56 comments were received during the public scoping period. Responses were typically prepared using the communication method in which the comments were received (e.g., e-mailed comments were responded to by e-mail). In addition to the comment surveys that allowed commenters to rank issues of importance, comments were also submitted, either at the public scoping meetings or following the meeting. Comments received that influenced the development and evaluation of alternatives are summarized below, along with a response to each comment.

Cultural Resources

The comments submitted pertaining to cultural resources supported additional study and inventory and avoidance or preservation of potential historic areas. *Response:* The study team will conduct a comprehensive cultural resources evaluation and coordinate with the State Historic Preservation Office during refinement of the COA for inclusion in the EIS.

Design

The majority of comments submitted were design-related. *Response:* Comments related to the design of the corridor were considered during development of the ASR.

Existing and Planned Development

Several commenters also urged the study team to avoid existing development and areas where planned development will occur. Comments were also provided regarding the inclusion of the Florence Copper project and Superstition Vistas development in the study process. *Response:* Planned developments to 2020 were avoided during the development of the COA and will be considered as areas to avoid in future alternatives evaluations. Coordination with development projects occurs throughout the study process. The Superstition Vistas area is within the future planning area, and the study team is using information from the Superstition Vistas Plan and other future planned development in the area.

Fissures

Comments expressed concern related to the many fissures in the study area and the stability of these fissures after groundwater has been used by pending development. *Response:* Fissures and ground subsidence are among the factors being considered in developing and evaluating route alternatives.

General Transportation

Comments categorized as general transportation included support for a North–South Corridor to be constructed and support for access to adjacent cities, towns, and landmarks. In addition, comments were provided regarding potential traffic impacts, both local and regional, the corridor may have on residential and commercial property and development. *Response:* Responses to general transportation comments were noted and specific questions about multimodal options were relayed to the appropriate ADOT representative, study team members, or local agency. Traffic studies will be conducted as part of the L/DCR.

Recreation/Open Space

Several comments urged the study team to preserve the existing recreational and open space areas as identified by Pinal County and to consider the impact of a transportation route on opportunities for quiet recreation. *Response:* The study team will inventory existing and proposed recreational and open space areas during the ASR process and will include an evaluation of impacts on these areas in the EIS.

Multimodal Options

Comments provided were both supportive and unsupportive of multimodal options. Comments urged the study team to evaluate the potential of a multimodal system within the study area. *Response:* The concept of a dual corridor for rail and vehicular traffic was recommended for the area between Phoenix and Tucson. Multimodal options are being evaluated as part of this study. In addition, the study team is coordinating with the Phoenix-Tucson Passenger Rail study regarding the potential integration of multimodal options.

Rail Connection

Two comments were submitted regarding a potential rail connection or use of rail for freight hauling.

Response: Responses to rail-related comments were considered by the study team and/or shared with ADOT Multimodal Planning representatives for inclusion in other rail studies as appropriate.

Utilities

One comment was submitted regarding ongoing utility projects in the area, specifically Salt River Project (SRP)-related projects. This comment urged the study team to coordinate with utility services during the alternatives development phase of the study. *Response:* The study team will coordinate with utilities located within the study area.

Wildlife

One comment was submitted pertaining to wildlife and included suggestions that the study evaluate threatened and endangered species in the study area and the effect of the potential facility on wildlife crossings and the introduction of invasive species. Concern was also expressed regarding the potential fragmentation and loss of habitat. The comment recommended that the study consider ways to mitigate impacts on wildlife and habitat.

Response: The study team will complete comprehensive biological analyses that evaluate wildlife, flora and fauna, threatened and endangered species, existing habitats, and wildlife crossings as part of the EIS.

1.7 Agency and Public Involvement

1.7.1 Coordination Plan for Agency and Public Involvement

Section 6002 of SAFETEA-LU requires that a plan be prepared for coordinating public and agency involvement during the environmental review process for any federally funded project. The North–South Corridor Study SAFETEA-LU Section 6002 Coordination Plan (November 2011) defines the process by which ADOT and FHWA are to communicate information about the study to the cooperating and participating agencies and to the public. The plan also identifies how input from agencies and the public are to be solicited and considered. A draft of the plan was made available to the stakeholder agency group in November 2011 for review. The plan will be updated continually throughout the duration of the study.

1.7.2 Agency and Public Involvement Activities

Since the official NOI was published in the *Federal Register* on September 20, 2010, many meetings and presentations have been conducted with stakeholder groups including agencies and the general public:

- 1 agency scoping meeting
- 4 public scoping meetings
- presentations at 11 city council/local agency meetings
- presentations at 4 industry association meetings
- 37 individual agency and stakeholder coordination meetings
- newsletter distribution to 55,000 residents
- 4 public information workshops
- 8 stakeholder agency progress meetings
- development of study website

A listing of the major agency and public involvement activities is presented in **Tables 2 and 3**, respectively. Comments received through the agency and public involvement activities were instrumental in developing and screening route alternatives.

Table 2. Major agency involvement activities

Type	Date	Location	Number of participants	Items presented
Agency Scoping	10/5/2010	Florence Town Hall	63	Corridor Opportunity Area
Four Southern Tribes Cultural Resources Subcommittee	11/19/2010	Gila River Indian Community Governance Center	>10	Corridor Opportunity Area
Agency Progress Meeting	12/7/2010	HDR Engineering, Inc., office	42	16 Corridor Segments
Twelve Individual Agency Meetings	January 2011	Various local and state agency offices	<15 per meeting	Refined Corridor Opportunity Area
Agency Progress Meeting	6/22/2011	HDR Engineering, Inc., office	49	Corridor Segment Analysis and Purpose and Need Screening
Agency Progress Meeting	9/6/2011	HDR Engineering, Inc., office	38	Draft Evaluation Criteria for Review
Agency Progress Meeting	10/4/2011	HDR Engineering, Inc., office	36	Map of Preliminary Route Alternatives for Review
Agency Progress Meeting	11/1/2011	HDR Engineering, Inc., office	40	Stage I Screening Results, Route Alternative Agency Rating Forms, and Preview of Public Comment Form
Four Southern Tribes Cultural Resources Subcommittee	11/18/2011	Gila River Indian Community Governance Center	>10	Preliminary Route Alternatives for Review
Agency Progress Meeting	2/7/2012	HDR Engineering, Inc., office	42	Public and Agency Route Alternatives Rating Results
Agency Progress Meeting	3/6/2012	HDR Engineering, Inc., office	39	Screening Results
Agency Progress Meeting	5/15/2012	HDR Engineering, Inc., office	37	Route Alternatives to Carry Forward
Four Southern Tribes Cultural Resources Subcommittee	6/22/2012	Salt River Pima-Maricopa Indian Community Complex	<10	Adamsville Traditional Cultural Property Coordination

Table 3. Major public involvement activities

Type	Date	Location	Number of participants
Public Scoping	10/19/2010	Union Center at Merrill Ranch, Florence	52
Public Scoping	10/21/2010	Picacho Elementary School Cafeteria, Picacho	14
Public Scoping	10/26/2010	Apache Junction High School Cafeteria, Apache Junction	55
Public Scoping	10/28/2010	Skyline Ranch K-8 School Cafeteria, San Tan Valley	29
Mayor/Council Briefings	2010 and 2011	Various	Not available
Industry Association Meetings	2010, 2011, and 2012	Various	Not available
Individual Public Stakeholder Meetings	2010, 2011, and 2012	Various	<10
Newsletter Distribution	June 2011	N/A	55,000 residents

Type	Date	Location	Number of participants
Public Workshop	12/6/2011	Santa Cruz Valley Union High School Cafeteria, Eloy	19
Public Workshop	12/7/2011	Moose Lodge Large Meeting Room, Apache Junction	75
Public Workshop	12/8/2011	Coolidge-Florence Elks Lodge Banquet Room, Coolidge	106
Public Workshop	12/12/2011	Walker Butte Elementary School Cafeteria, San Tan Valley	69

2 Characteristics of the Corridor

2.1 Study Area

The study area has experienced significant population growth over the past 10 years. The 2010 population of Pinal County was 382,992, a 212 percent increase from the 2000 population of 179,727. **Figures 5 and 6** depict the study area population density in 2000 and 2010, respectively. The map shows expanding population centers in southeastern Maricopa County and northern Pinal County. Most notable is the increased development along the Hunt Highway corridor. The Florence area population has grown significantly.

2.1.1 Freeways

Pinal, Maricopa, and Pima Counties are served by I-10, which provides the main connection between Tucson and Phoenix. Traffic congestion exists on I-10 in Tucson and Phoenix during peak traffic hours, and conditions are becoming more congested between the two metropolitan areas. Planned (near-term) and completed widening of I-10 to six lanes from Interstate 8 (I-8) to Picacho and from Picacho to Marana, respectively, help to meet current and short-term travel demand. US 60, SR 202L, and the Maricopa County segment of SR 24 (under construction) provide access to the northern portion of the study area. The segment of SR 24 in Pinal County is currently under study by ADOT. Initial route alternatives developed for SR 24 in 2009 were used to define a “SR 24 study area in Pinal County,” reflected on maps prepared for the North–South Corridor study area.

2.1.2 Highways

State highways carry the majority of regional traffic in Pinal County. Within the study area, these facilities include SR 87, SR 287, and SR 79. Generally, these highways are one lane in each direction in rural areas, with some wider cross sections in more urbanized areas like Coolidge and Florence.

2.1.3 Local Arterial Streets

The study area is characterized by a limited network of continuous arterial streets. Roads that generally connect to the freeways and highways and serve more populated areas of the study area including Coolidge, Florence, and San Tan Valley are:

- Hunt Highway (two lanes)
- Ellsworth Road (two lanes)
- Ironwood Road./Gantzel Road (four lanes)
- Bella Vista Road (two lanes)
- Arizona Farms Road (two lanes)
- Attaway Road (two lanes)
- Cactus Forest Road (two lanes)

A map of existing local roadways is shown in **Figure 7**. The planned Pinal County Regionally Significant Routes network is shown in **Figure 8**. The Regionally Significant Routes serve as a guide for Pinal County and other stakeholders, both public and private, to implement and fund Regionally Significant Routes and preserve ROW for these routes.

Figure 5. Population density, 2000

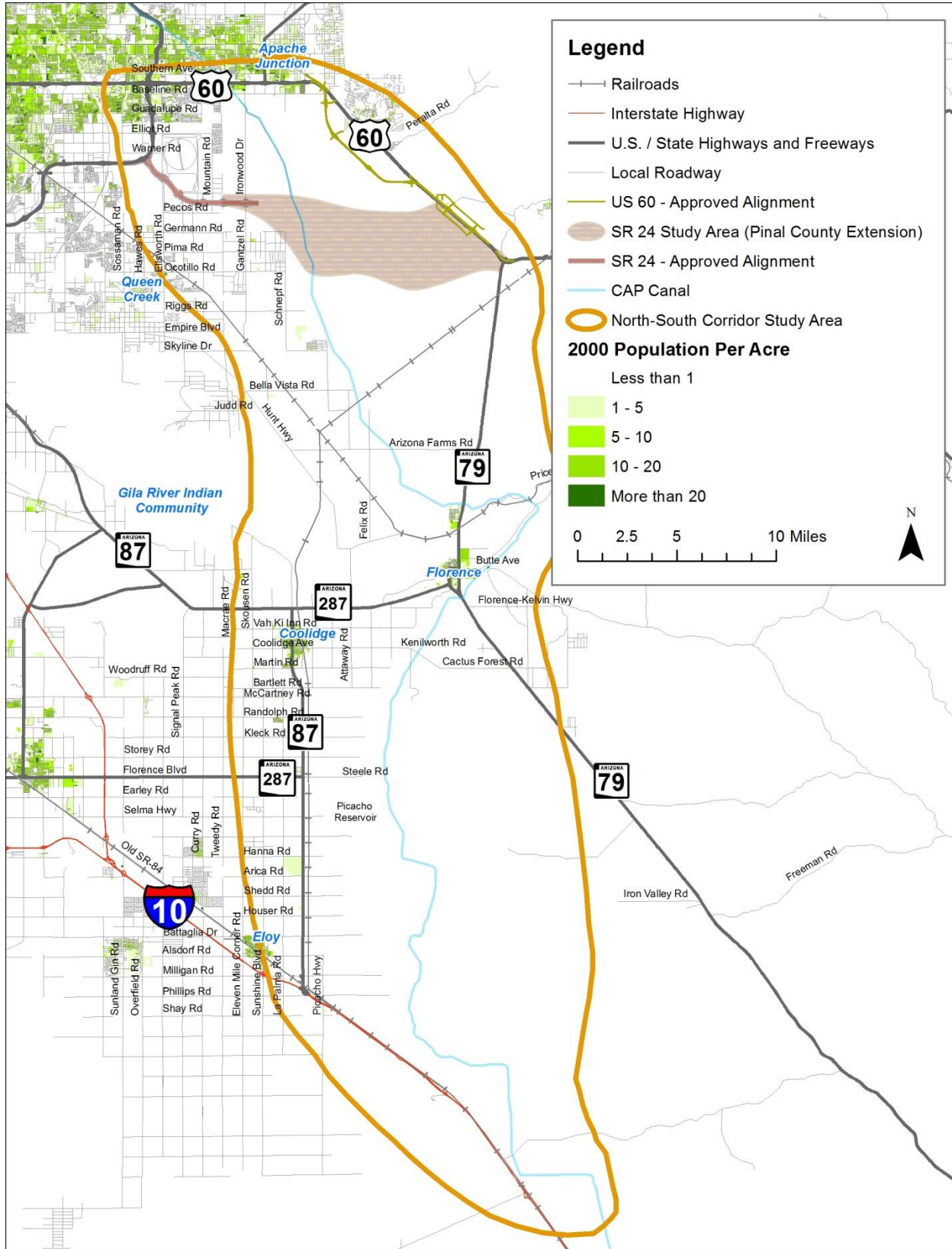


Figure 6. Population density, 2010

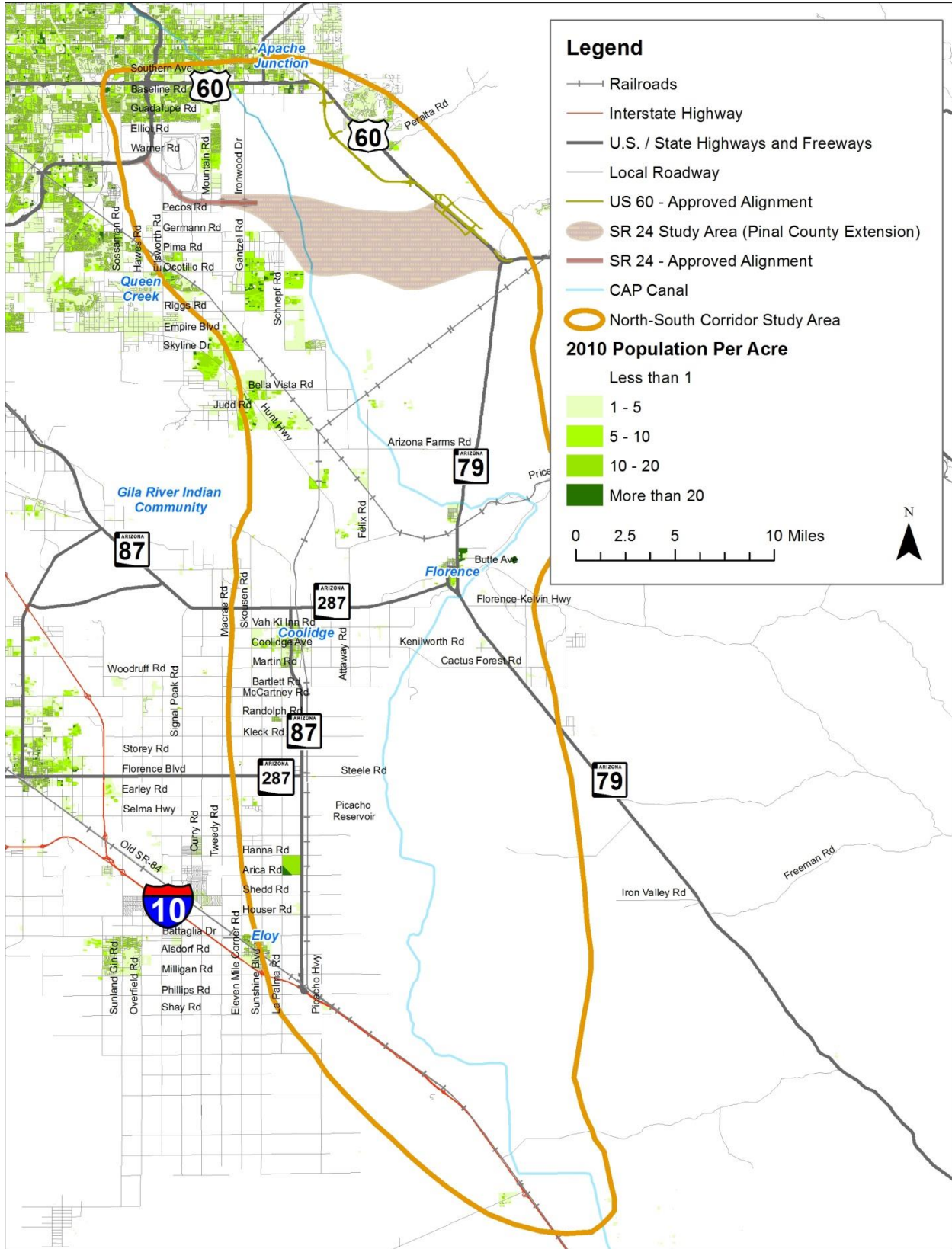


Figure 7. Existing roadways

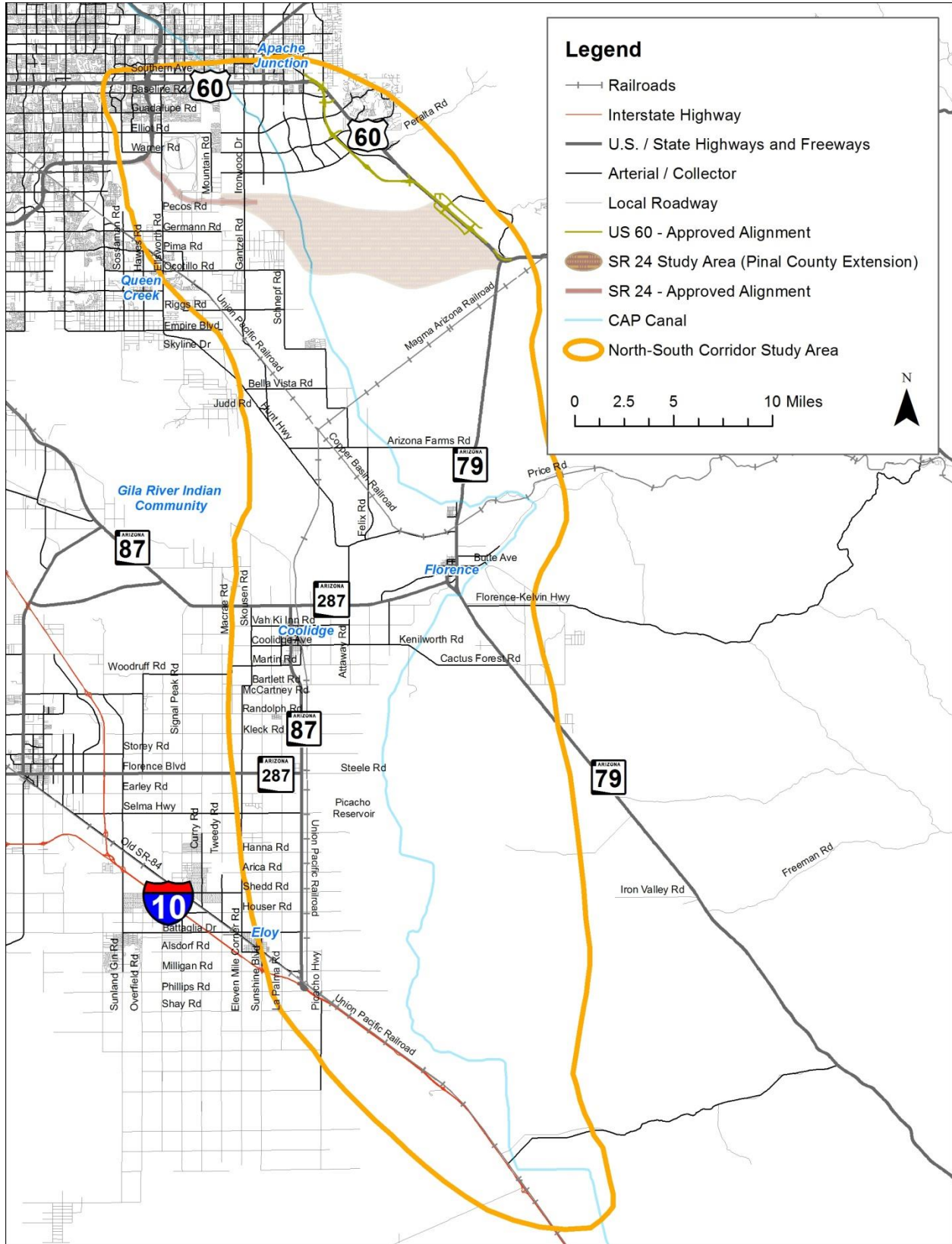
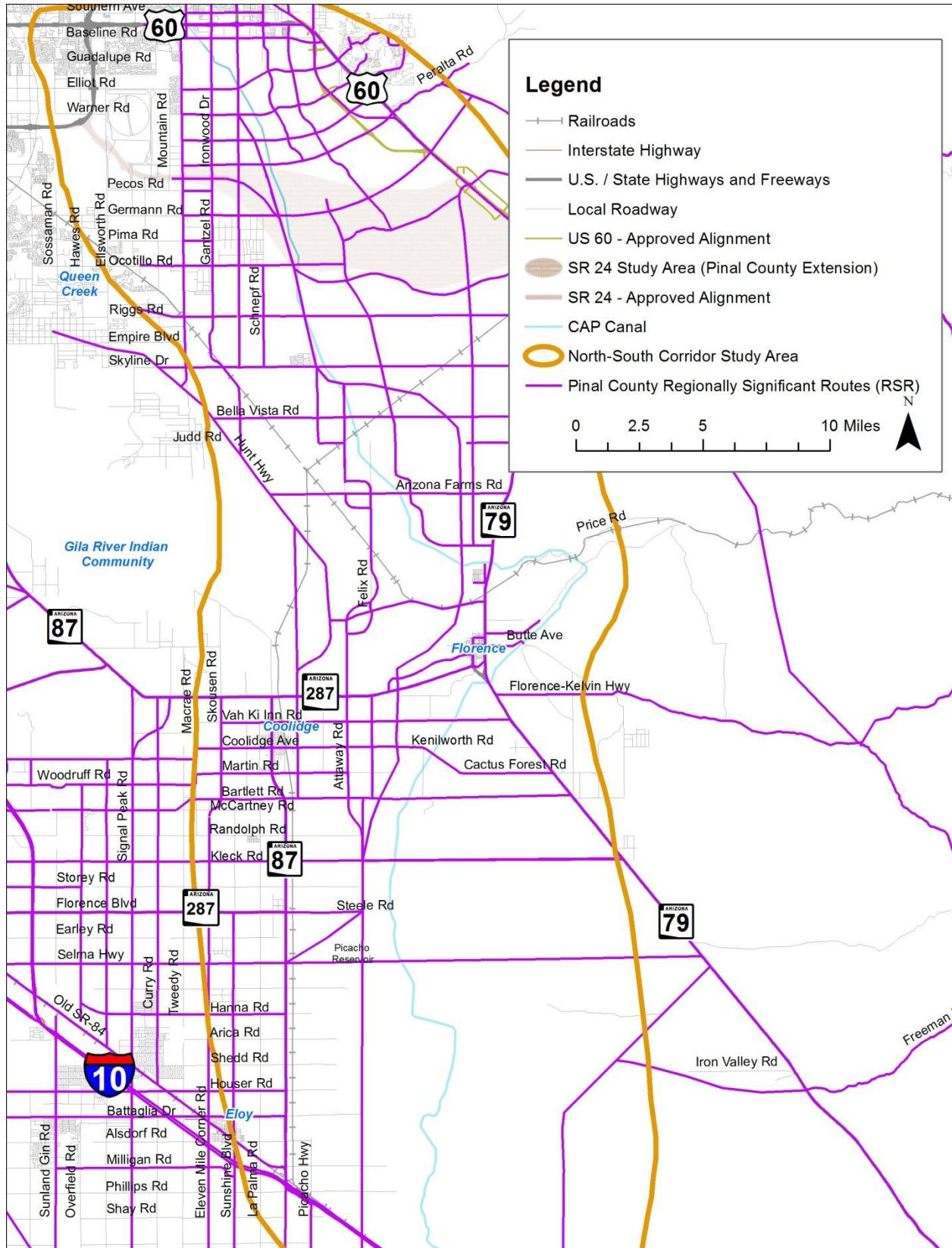


Figure 8. Pinal County Regionally Significant Routes



2.1.4 Transit

Public transit service in Pinal County is limited. No countywide services exist, and most available services are for senior and disabled residents. Transit service in the Corridor is limited to the Cotton Express Service in the Coolidge area.

2.1.5 Railroads

Information on rail services in the study area is derived from the State of Arizona Railroad Inventory and Assessment 2007 and Building a Quality Arizona.

Union Pacific Railroad

UPRR has rail lines carrying freight in the study area. The UPRR east–west Sunset Route crosses the entire state of Arizona, passing through Cochise, Benson, Tucson, Picacho, Eloy, Casa Grande, Maricopa, Gila Bend, Wellton, and Yuma. Traffic on the Sunset Route varies from 44 to 49 trains per day, on average. This is the UPRR main line, connecting southern California with Texas and the south-central United States. Within the study area, the Sunset Route runs parallel to I-10.

UPRR is currently double-tracking the transcontinental Sunset Route. Additionally, UPRR has developed plans for constructing a new rail yard in the Red Rock area at the southern end of the study area.

UPRR has a second line in the study area, the Phoenix Subdivision, which runs north from the Sunset Route along SR 87 into Coolidge, where it turns to the northwest and serves the Phoenix metropolitan area. The UPRR Phoenix Subdivision connects the Sunset Route with Phoenix and points west and east of Phoenix. The Phoenix Subdivision averages about six through trains per day. UPRR currently interchanges with three railroads on its Phoenix Subdivision: Copper Basin Railway at Magma Junction, the dormant Magma Arizona Railroad at Magma Junction, and BNSF Railway at Phoenix.

Amtrak provides passenger service on the Sunset Route. The Sunset Limited service route begins in Orlando, Florida, and ends in Los Angeles, California, but it does not currently have any stops within the study area (the closest stops are in Tucson and Maricopa). ADOT is concurrently conducting the Passenger Rail Corridor Study to solve the existing transportation problems along I-10 between Phoenix and Tucson. In addition to a no-build alternative, both rail and nonrail solutions are being considered. The study will analyze six options for passenger rail between Tucson and Phoenix. Portions of the North–South Corridor are among the alternatives being evaluated.

Stakeholder interviews with rail representatives identified that design for North–South Corridor should ultimately allow for up to four main line tracks on the UPRR Sunset Line. Any new additional tracks will be located adjacent to the existing tracks on UPRR right-of-way. It is UPRR policy that clear span structures are required over UPRR right-of-way and that the number of tracks to be accommodated in the roadway design will be determined by UPRR on a case-by-case review.

Copper Basin Railroad

The Copper Basin Railway extends 54.6 miles from its interchange with UPRR at Magma to Winkelman. The line is owned by ASARCO, LLC, a copper mining, smelting, and refining company. Major commodities carried include copper ore, concentrates, anodes, cathodes, coal, coke, smelting biproduct corrosive, lumber products (building material), military vehicles, petroleum naphtha, plastic resins, and sulfuric acid.

Magma Arizona Railroad

This 28-mile line is currently out of service. It is owned by BHP-Billiton and connects UPRR and Copper Basin Railway at Magma with the BHP Superior Mine. This copper mine closed in 1995. The Magma Railroad is expected to be reactivated when the Superior Mine reopens.

2.2 Traffic

A separate detailed traffic report will be prepared in the next phase of the study. This section documents existing traffic volumes and the methodology used to project future traffic volumes in the study area to facilitate the development and evaluation of route alternatives.

2.2.1 Traffic Data

Table 4 lists existing traffic on state highways and major local roadways in the study area.

Table 4. Existing traffic on state highways and major local roadways

Route	Average daily traffic range (vehicles per day)	Percentage trucks
Interstate 10	41,500–46,000	19–21
U.S. Route 60	10,500–82,500	4–9
State Route 79	2,800–9,500	7–9
State Route 87	2,600–15,500	8–9
State Route 202 Loop	25,500–34,500	4
State Route 287	4,100–11,000	12
Arizona Farms Road	2,000–2,200	Not available
Hunt Highway	4,000–37,500	Not available
Ironwood Road/Gantzel	13,500–29,000	Not available

Source: State of Arizona Highway Performance Monitoring System (2010), CAAG Regional Counts Traffic Database (2010)

2.2.2 Traffic Forecasting Methodology

In the ADOT Statewide Transportation Framework Study, ADOT prepared its first-generation statewide travel demand model (AZTDM1) to estimate 2050 travel demand. This model used 2050 population and employment projections from the state’s metropolitan planning organizations, councils of governments, and local agencies. This model was used in the development of the project purpose and need for the North–South Corridor Study. While the traffic forecasts from AZTDM1 helped to justify the project purpose and need, it was determined through coordination with ADOT representatives and the Core Team that AZTDM1 was not refined enough for the more detailed analysis required to evaluate the alternatives.

The following options were considered for use in alternatives evaluation.

- **Pinal County RSRSM Travel Demand Model.** This model includes Pinal County in its entirety; however, it does not include the Tucson or Phoenix metropolitan areas. Interaction between these urban areas and Pinal County was estimated (and reflected in external stations) from regional travel demand models maintained by MAG and the Pima Association of Governments (PAG) rather than forecast by computer algorithms of travel supply and demand. This option was not selected for use in the North-South

Corridor Study because the model did not include dynamically estimated traffic interactions between the MAG, PAG, and CAG planning areas.

- **Second-generation Arizona Statewide Travel Demand Model (AZTDM2).** It was determined that the time necessary for AZTDM2 development did not meet the needs of the North–South Corridor Study schedule.
- **Expanded MAG Regional Travel Demand Model.** This model was developed through a partnership between MAG and CAG to expand the MAG regional model to include all of Pinal County. While completion of this expanded model was anticipated in early 2010, development of this model took longer than expected. In February 2011, MAG provided the consultant team with initial 2010 traffic assignments from the expanded model and noted that calibration and validation had not been conducted for the model.

Since the expanded MAG model was not ready, the consultant team, in consultation with MAG, ADOT, and the Core Team, began development of a 2050 sketch planning model using the trip table and network from the expanded MAG model in March 2011. The sketch planning model forecasts traffic based on growth trends rather than population and employment projections. The model referenced socioeconomic forecasts developed by CAG, and the network included the regionally significant roadways recommended in the RSRSM Study.

The consultant team recommendation to develop the North–South Sketch Planning Tool (NSSPT) for use in evaluating alternatives developed in the study area was endorsed by the Core Team and Agency Stakeholder Group.

2.2.3 Sketch Planning Tool Development

The NSSPT provides 2050 traffic forecasts for a modeling area in Maricopa and Pinal County bounded by I-10, SR 202L, SR 79, and US 60. The NSSPT was developed using the TransCAD travel demand modeling software package. An origin destination estimation (ODME) algorithm was used to estimate traffic volumes and generate a trip table matrix. Data from both the 2010 MAG-CAG model and 2031 MAG-CAG model were used, including the road network and the volume-delay functions for traffic assignment. Other than adding external gateway traffic analysis zones, no changes were made to the MAG-CAG model network. Traffic Analysis Zone (TAZ) centroid location and zone connectors were not changed; facility type and speed information were also unchanged. The NSSPT model includes 684 TAZs (154 in Maricopa County and 470 in Pinal County) and 60 external gateways.

More than 400 traffic counts were obtained from a variety of sources including ADOT, CAAG, MAG, City of Chandler, Town of Gilbert, City of Mesa, and the Town of Queen Creek. CAAG’s “most likely regional growth projections” at the Regional Analysis Zone (RAZ) level were also used to develop and verify the traffic forecasts.

For I-10 and SR 79 at the Pinal-Pima County boundary, traffic forecasts were coordinated with estimates from the PAG travel demand model. The 2050 NSSPT forecasts on these two external gateways were estimated from 2040 PAG forecasts.

The base-year network shown in **Figure 9** was developed from the 2010 MAG-CAG model. **Figure 9** also shows the traffic count locations used in model estimation. **Figure 10** shows the steps used to develop the NSSPT. At each step, model estimation results were evaluated for reasonableness. This reasonableness check included looking at overall model traffic growth and road segment traffic growth, as well as comparing model volume estimates with trip generation estimates based on CAG’s most likely regional growth population projections.

Figure 9. North–South Sketch Planning Tool modeling area

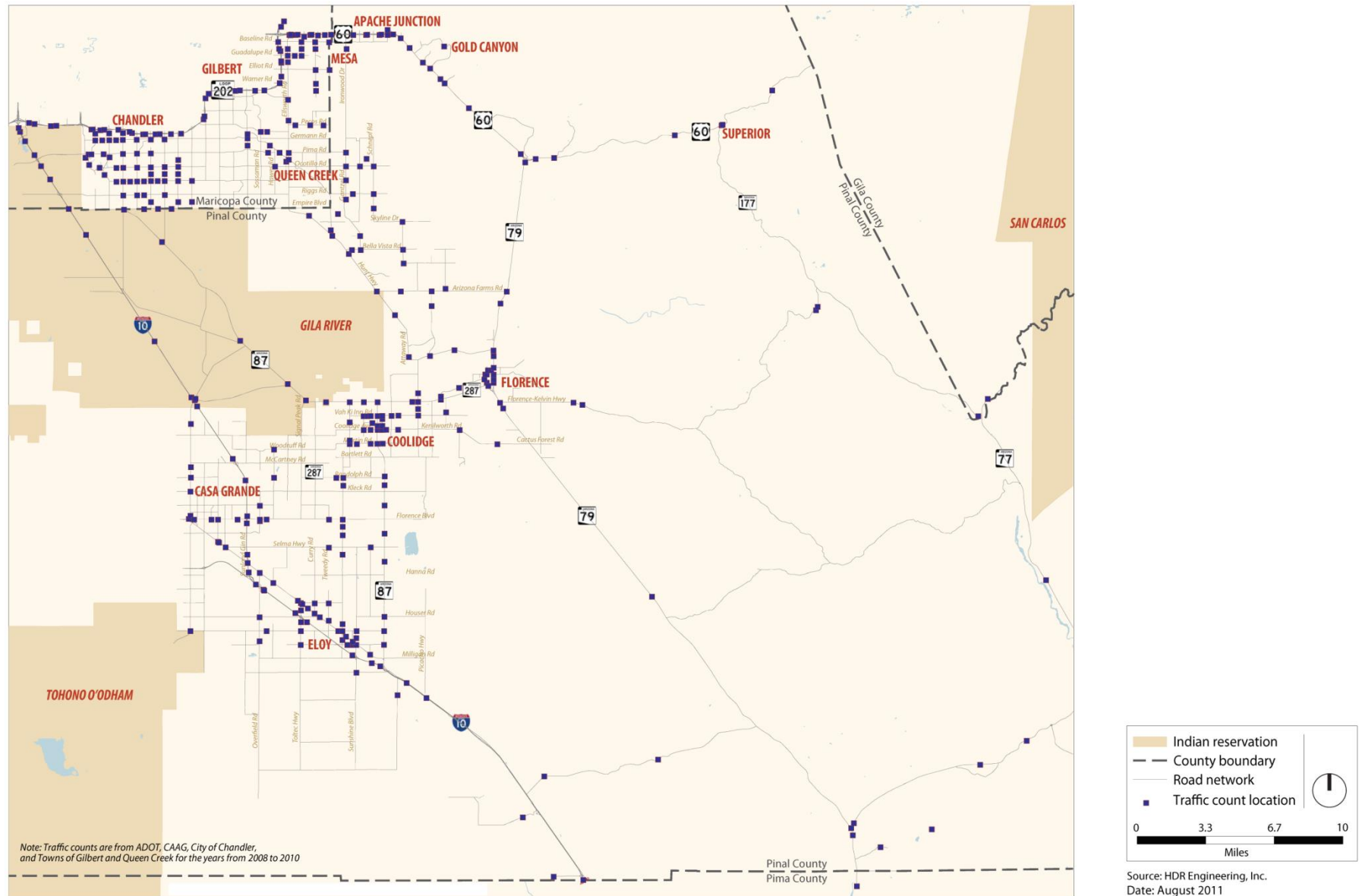
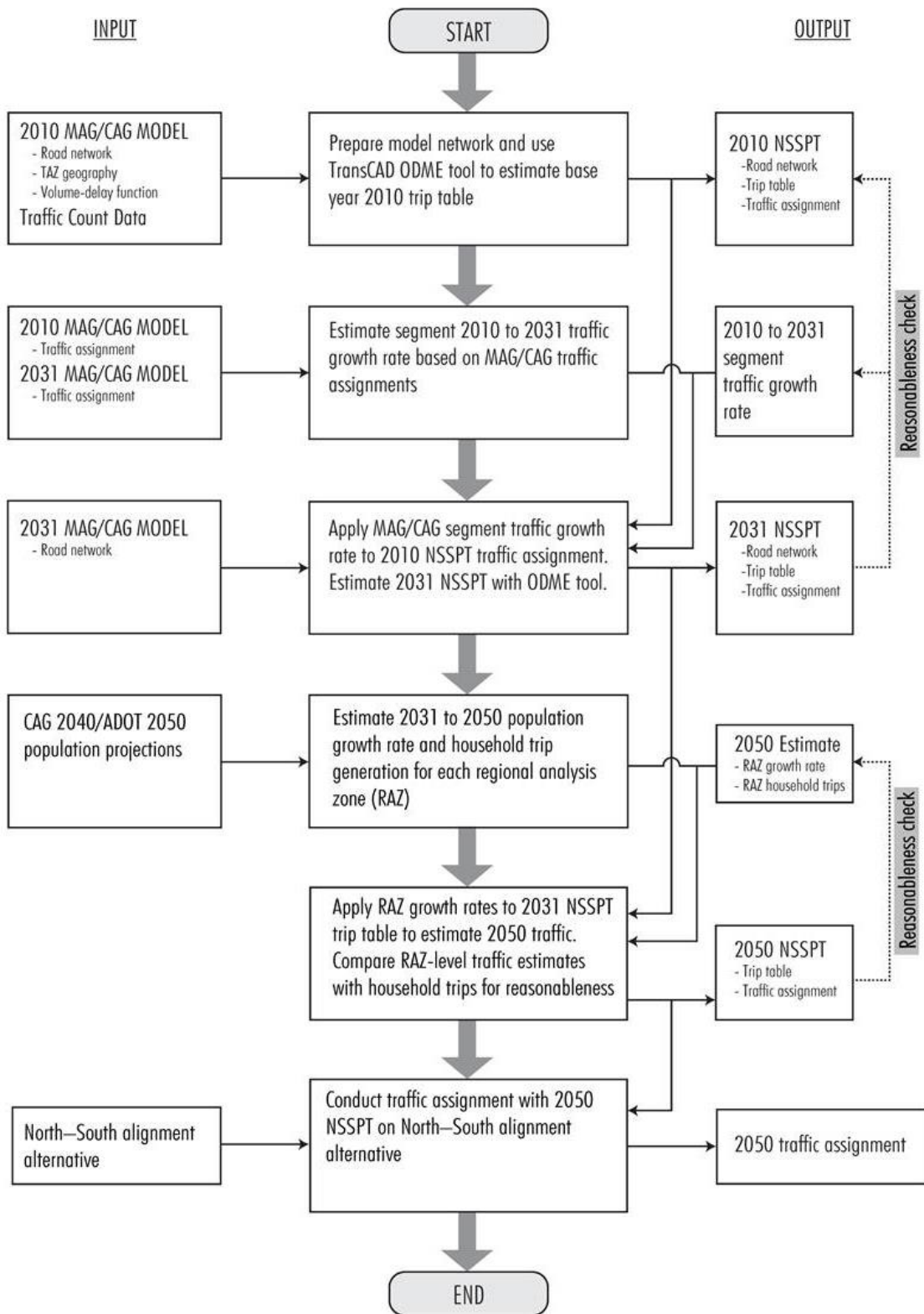


Figure 10. North–South Sketch Planning Tool process



2.2.4 Sketch Planning Tool Reliability

There are two key risks associated with the reliability of travel demand forecasts developed for the North-South Corridor Study. These risks stem from the study area population and employment projections and the sketch planning approach to travel demand forecasts.

The primary risk of the sketch planning tool approach is that the model does not respond well to changes in land use and access. While the NSSPT development included numerous cross-checks to produce reasonable forecasts, the ODME methodology has limitations. A typical urban transportation planning model, such as the MAG Regional Travel Demand Model, has four steps: trip generation; trip distribution; mode choice; and network assignment. In a four-step model trip generation, trip distribution, and mode choice are estimated dynamically each time the model runs to reflect changes in socioeconomic data and the transportation network. This makes the traffic assignment sensitive to changes in land use as well as changes to the road and transit system. For example, trip length and mode choice are very sensitive to the intensity and mix of land uses. A new corridor can change the attractiveness of activity centers affecting regional trip making patterns.

Unlike a four-step model, the NSSPT trip distribution is established by the travel patterns reflected by the base year traffic count data. While the number of trips produced and attracted at each traffic analysis zone can be manually reviewed and updated, the overall trip distribution patterns are fixed. Trip length and trip distribution do not respond to changes in land use. Similarly, changes in mode choice can be manually reflected in the traffic assignment, but analyst assessments are not based on the same kind of dynamic interplay of socioeconomic and network characteristics found in the MAG Regional Travel Demand Model. In summary, changes in land use and access within the study area may not generate the expected NSSPT response.

The second key risk behind the reliability of the travel demand forecasts is the population and employment projections. The overall timing and magnitude of study area growth combined with projected versus actual land use can all affect the travel demand forecasts.

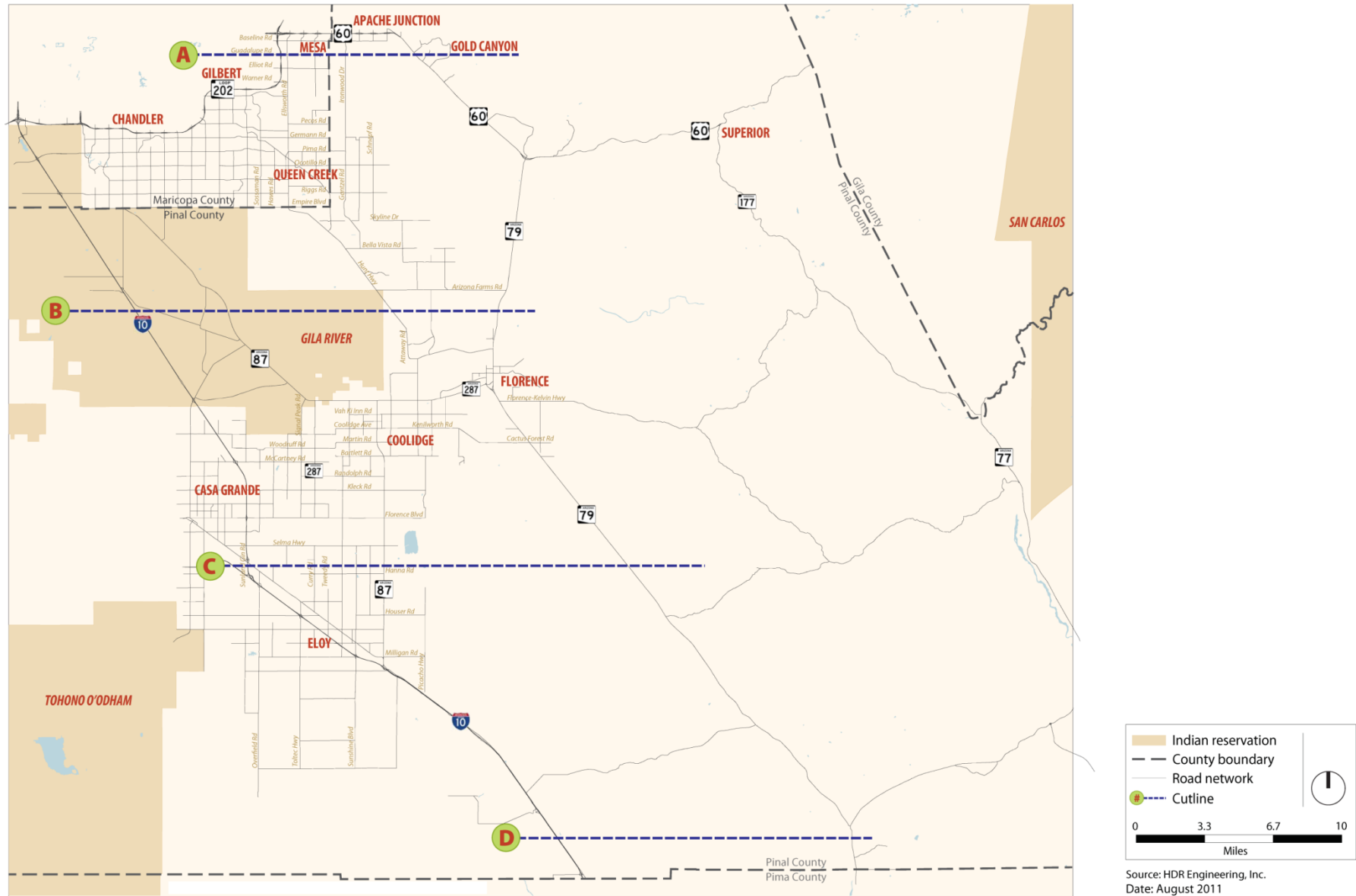
The consultant team developed the NSSPT in collaboration with the Core Team and Agency Stakeholder Group using the best available data and modeling techniques to minimize these risks. However, the expanded MAG Regional Travel Demand Model should be used to assess the reliability of the NSSPT forecasts.

The consultant team used the 2040 traffic forecasts as the basis for estimating 2050 traffic forecasts. The consultant team compared the 2040 traffic forecasts at a cut-line level with the Arizona Statewide Transportation Framework Study 2050 forecasts. The consultant team then grew the 2040 trip tables until the NSSPT traffic forecasts were consistent with the 2050 forecasts. As a reasonableness check, the consultant team compared NSSPT trip generation at the RAZ level with a planning-level estimate of trip generation based on the 2.2 million Pinal County population shown in the Arizona Statewide Transportation Framework Study 2050 projections. This population projection is based on a build out scenario of the Pinal County Comprehensive Plan.

Table 5 shows the CAG population and employment projections for 2010, 2031, 2040, and 2050 together with the system performance measures from the NSSPT. This table shows that the overall growth shown in the NSSPT is consistent with growth in the CAG population and employment projections.

Cut-line analysis is a high-level planning tool used for regional corridor analyses. Cut lines were used to compare the model volume growth estimates among various scenarios. Cut-line locations were selected to represent key travel corridors. For this cut-line analysis, an imaginary line was drawn across all of the model road facilities in each corridor. **Figure 11** shows the cut-line locations.

Figure 11. North–South Corridor cut-line locations



Four cut-line locations were used to verify the reasonableness of the NSSPT model outcome. The cut lines were used for system performance analysis and for a broader assessment of the relationship between model volume estimates and observed traffic counts. A traffic report will be prepared during the next phase of the study to determine roadway function and capacity. A total cut-line model volume estimate was obtained by adding up volumes on the individual roads that cross the cut line. The traffic growth across the cut lines shown in **Table 6** is consistent with population and employment growth shown in the CAG population projections. The 2050 cut-line growth at the Pima County line was estimated from PAG 2040 forecasts.

Table 5. North–South Sketch Planning Tool projections

Attribute	2010	2031	2040	2050	Growth Factor		
					2010–2031	2010–2040	2010–2050
Vehicle trips	1,861,981	5,330,508	7,054,600	8,595,430	1.05	1.05	1.04
Total traffic flow	25,312,689	72,138,088	98,232,787	157,636,588	1.05	1.05	1.05
Total vehicle miles traveled	13,488,626	34,582,920	46,775,024	89,041,026	1.05	1.04	1.05
Total vehicle hours traveled	295,488	948,703	1,372,992	4,932,461	1.06	1.05	1.07
Weighted average congested speed (miles per hour)	42	41.1	39.4	36.6	—	—	—
Total delay (hours)	11,457	209,290	430,582	3,146,270	1.15	1.13	1.15
Central Arizona Governments' population and employment projections (model area only)							
Occupied households	174,030	439,721	587,253	1,225,169	1.05	1.04	1.05
Employment	110,660	411,411	666,755	1,138,218	1.06	1.06	1.06

Table 6. North–South Sketch Planning Tool cut-line analysis

Cut line	2010	2031	2040	2050	Growth Factor		
					2010–2031	2010–2040	2010–2050
A: State Route 202 Loop, Ellsworth Road, U.S. Route 60	121,159	342,000	455,900	612,412	1.05	1.05	1.04
B: Interstate 10, State Route 87, Hunt Highway, State Route 79	88,729	285,000	359,400	657,362	1.06	1.05	1.05
C: Interstate 10, State Route 287, State Route 79	49,347	137,000	183,800	539,936	1.05	1.04	1.06
D: Interstate 10, State Route 79	57,600	96,700	102,800	567,412	1.02	1.02	1.06

The NSSPT was prepared to evaluate route alternatives for the North–South Corridor Study. The traffic forecasts are based on existing travel patterns reflected in traffic count data and informed by forecasts from the MAG-CAG regional travel demand model. CAG’s most likely population and employment projections and the bqAZ Statewide Transportation Framework Study population and employment projections were used to estimate traffic growth at the RAZ level. The bqAZ Statewide Transportation Framework Study based its 2050

Pinal County projections on a buildout scenario of the Pinal County Comprehensive Plan. Overall, this sketch planning tool reflects the growth assumptions of the bqAZ 2050 growth projections. **Figure 12** shows the 2050 no-build traffic forecasts. **Figure 13** shows the 2050 traffic forecasts for one route alternative.

Figure 12. 2050 no-build daily traffic flow

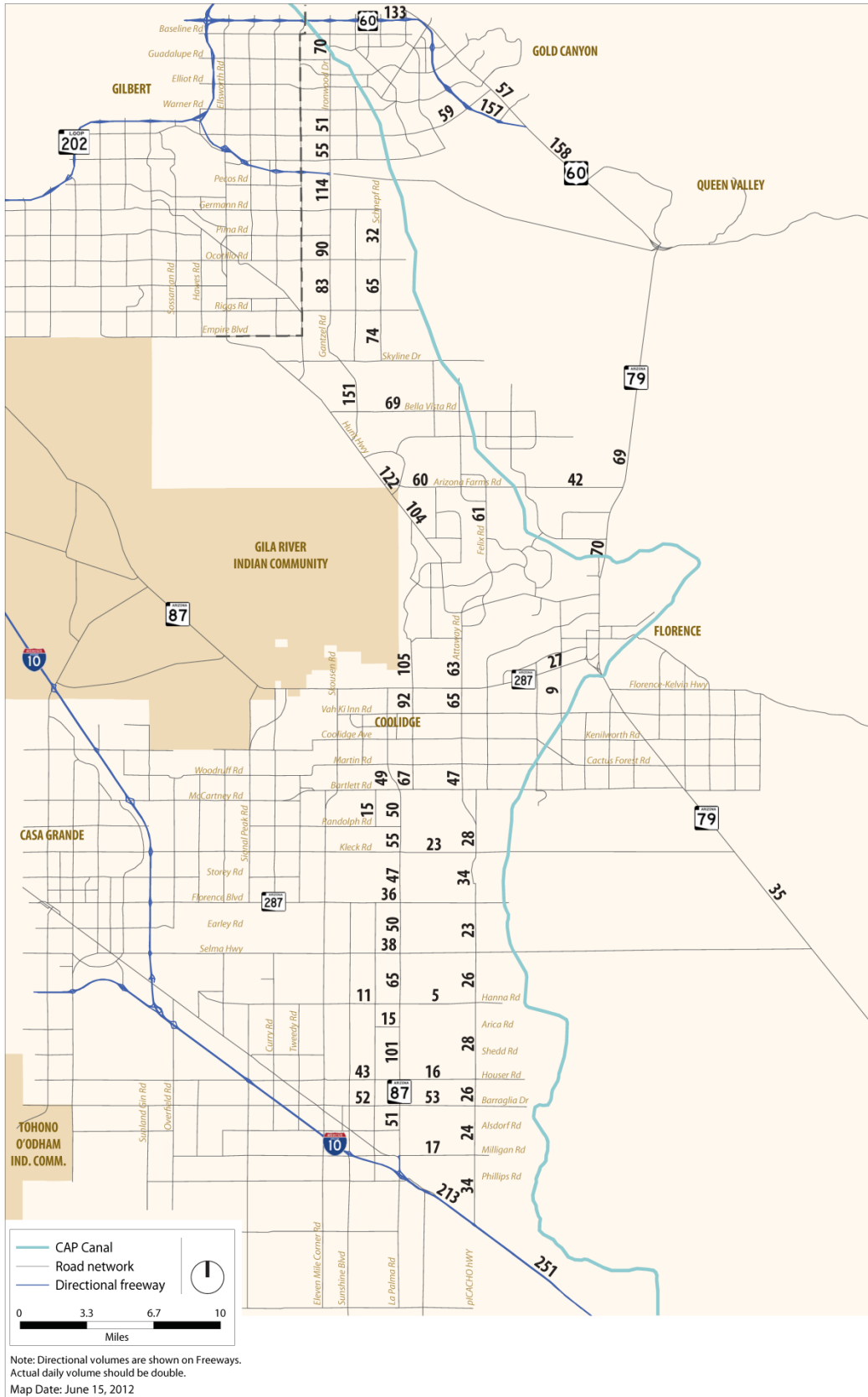


Figure 13. 2050 north-south freeway daily traffic flow



While the NSSPT provides 2050 traffic estimates, these forecasts should be used with caution. Trips in the NSSPT are not generated based on population and employment; rather, they are established by traffic counts and growth factors. While the model may appear reasonable at a higher level, some activity centers may not be accurately reflected. Also, the trip distribution patterns in the model are fixed. While traffic may reroute during the highway assignment process based on congestion, trip distribution will not change. If a potential corridor improves the attractiveness of an activity center, the NSSPT cannot adjust to reflect the new access. Despite the shortcomings of the sketch planning tool approach, the NSSPT provides insight into overall system performance and was endorsed by the Core Team and Agency Stakeholder Group as a tool for evaluating route alternatives in the North–South Corridor Study.

2.3 Development

The study area has experienced significant recent development growth, as demonstrated by the population increase in the area. Development in the area is projected to continue for many decades to come.

CAG maintains a planned development database that contains planned development as of July 2009. The database includes an approximation of “start year” for the planned development. **Figure 14** depicts existing land use and planned development in the study area. Existing development is most prominent in the northwestern portion of the study area, along the Hunt Highway corridor and in the Florence area. Existing development is also prevalent in the Coolidge and Eloy areas. The study area contains large areas that are void of existing development. These are located in the northeastern and southeastern portions of the study area. The approximate “start year” in the planned development database was used to categorize future development as occurring prior to or after 2020 to reflect the probability that development would occur as planned. For example, development planned to be in place before 2020 was judged to be more probable and therefore avoided if possible. Development planned for beyond 2020 was judged to be less probable and therefore more flexible in accommodating impacts from the introduction of a transportation facility.

Prominent existing and planned developments within the study area are described below.

2.3.1 Portalis

Based on information and exhibits received from the City of Apache Junction in January 2011, Portalis is a proposed 7,700-acre development on State Trust land. The development is located west of the CAP Canal extending from Meridian Road to Mountain View Road, and south of US 60 from Baseline Road to Elliot Road. The proposed project includes significant residential development, but also includes several mixed use commercial cores. The commercial cores could include office space and attract tenants such as finance and insurance companies, data centers, research and development, or light industrial. Major arterial streets in Portalis are planned to match up with the major grid system, with exception of Idaho and Mountain View Roads. A concept rendering of the development is shown in **Figure 15**.

2.3.2 Superstition Vistas

Based on information and exhibits taken from the website, <superstitionvistas.org>, in July 2012, Superstition Vistas is a 275-square mile tract of undeveloped land located south of Apache Junction and owned by ASLD. The area extends from Apache Junction toward Florence. The area is equivalent to the size of Mesa, Chandler, Tempe, and Gilbert combined. A vision planning process was completed for the area to guide “sustainable development.” The area could ultimately accommodate up to 1 million people. The Superstition Vistas plan envisions a mix of urban centers and open spaces. It is anticipated that development will take decades to materialize. The proposed transportation network is depicted in **Figure 16**.

2.3.3 Merrill Ranch and Anthem at Merrill Ranch

Merrill Ranch and Anthem at Merrill Ranch are planned developments located north of Florence. A land use map of Anthem at Merrill Ranch provided by Southwest Value Partners is shown in **Figure 17**. Anthem at Merrill Ranch is located east of Hunt Highway and is home to several thousand people.

Merrill Ranch is located east of Anthem at Merrill Ranch and is in the planning stages. According to the CAG planned development database, development was not anticipated until after 2020. However, recent input from CAG, in an e-mail dated August 3, 2012, stated that in recent months, Merrill Ranch project representatives have been working with the Town of Florence to reevaluate development scenarios on various properties in the Florence area that could be affected by the North–South Corridor. It was indicated that the consultations are leading CAG to change the estimated development timelines for certain properties. Specifically, the e-mail stated the following:

“working with the Town of Florence to change the timeline for the portions of the Merrill Ranch project owned by Southwest Value Partners to a 10 year timeframe. According to Florence, the Town is rebounding from the recession and seeing the potential for substantially increased growth in the Anthem at Merrill Ranch area. This growth will inherently spill over to the adjacent Merrill Ranch property because of infrastructure availability, transportation networks, property ownership and the substantial engineering that has gone into the Merrill Ranch property. Although we are currently updating our databases and maps to reflect the changes discussed, we believe it is appropriate to share this update with ADOT because of how this change might impact the current planning study for the North–South Freeway Corridor.”

2.3.4 North End Framework Vision Plan

The Town of Florence sponsored the North End Framework Vision Plan to address a broad range of planning issues for expanding Florence’s Main Street as the heart of a vibrant, charming, and authentic Arizona community. The goal of the visioning exercise was to integrate commerce, government, culture, recreation, and entertainment with high performance development practices that are financially sound, and environmentally sensitive. The issues that were considered included:

- Floodplain mitigation and engineering
- Cost ramifications
- Finance mechanisms and development strategies
- Market and economic opportunities
- Planning and design options
- Community participation process

This planning process provides a platform for considering a more comprehensive vision for the community and it’s downtown now and into the future. Instead of reacting to future development scenarios brought forth by others, this pro-active process has resulted in an exciting vision that sets the stage and expectation for what the community would like to see.

Rittenhouse Airfield and Florence Military Reserve

Rittenhouse Airfield is located west of the CAP Canal, between Ocotillo and Pecos Roads. The facility is operated and maintained by AZARNG. The land is leased from BLM and ASLD and Pinal County owns property on the approach to this facility. The facility is located in **Figure 14** as the “airport” located just west of

the CAP Canal. The facility is used for refueling, night vision, and firefighting training exercises with small- to medium-sized helicopters. The facility is an important asset to AZARNG because it is close to other facilities in the Phoenix metropolitan area. AZARNG also controls 565 acres adjacent to the airfield to provide a buffer from development.

In stakeholder discussions with AZARNG representatives on January 28, 2011, and summarized in a meeting summary, they stated that loss of the Rittenhouse facility would result in nearly \$500,000 in increased training costs. Furthermore, it may be very difficult to identify suitable training sites.

Florence Military Reservation (FMR) is the primary location within the state of Arizona that is utilized for weapons qualifications, live fire exercises, and small unit training. This site specializes in live fire of small arms, mortar, artillery, explosives, unmanned aerial vehicle operations, Improvised Explosive Device (IED), and movement techniques both mounted and dismounted. FMR is a strategic training area for the AZARNG as well as civilian law enforcement and Department of Defense agencies. The facility is located in **Figure 14** on SR 79, north of Florence. There is also an ammunition storage bunker and blast radius (see **Figure 14**).

According to input received from AZARNG representatives, the capability of the FMR becomes jeopardized with the introduction of a high capacity route of travel through or close to FMR borders. This would limit the capabilities of the site now and into the future. The strategic development plan for this site also projects future border expansion to the north and northwest of the current boundaries. FMR has restricted airspace that many federal and civilian agencies use. Encroachment on the FMR would seriously affect 10 years of intensive site development conducted to meet state and national training objectives.

Figure 14. Rittenhouse Airfield and Florence Military Reserve

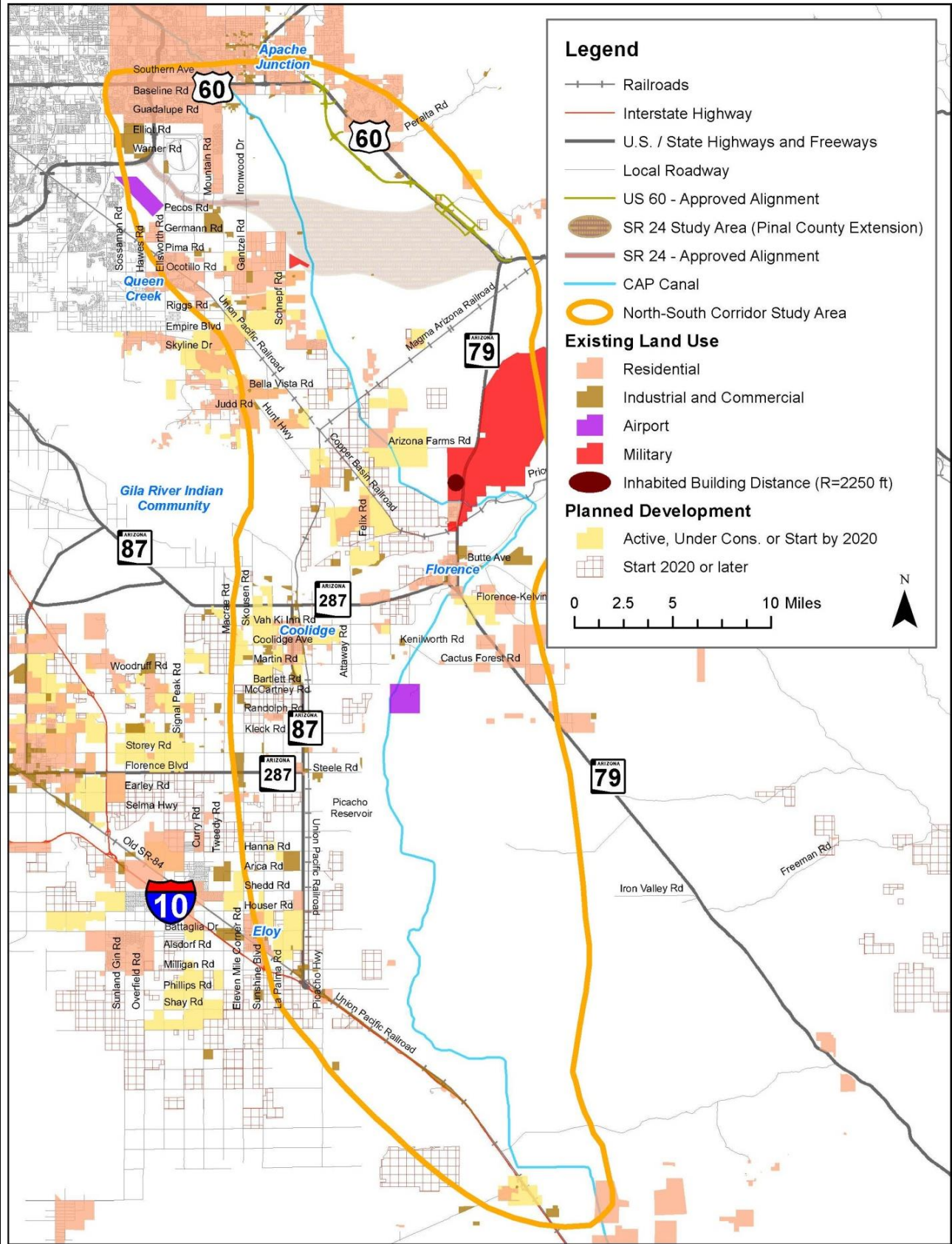
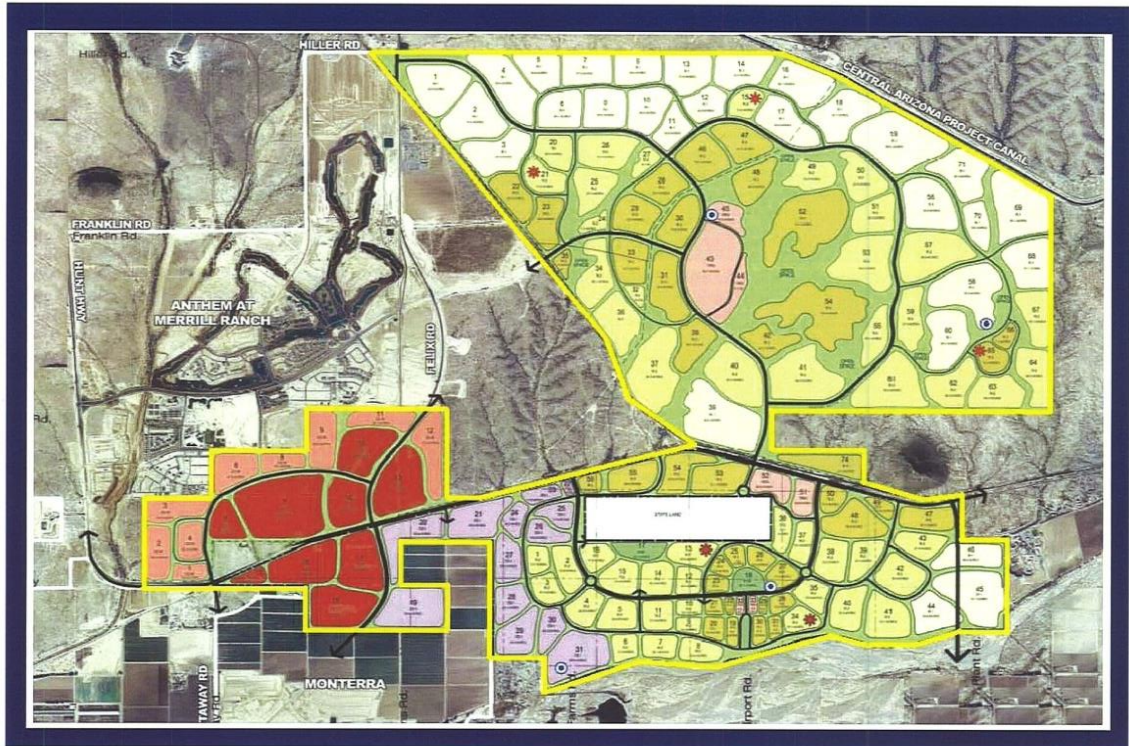


Figure 17. Conceptual rendering of Merrill Ranch and Anthem at Merrill Ranch

Merrill Ranch PUD Map

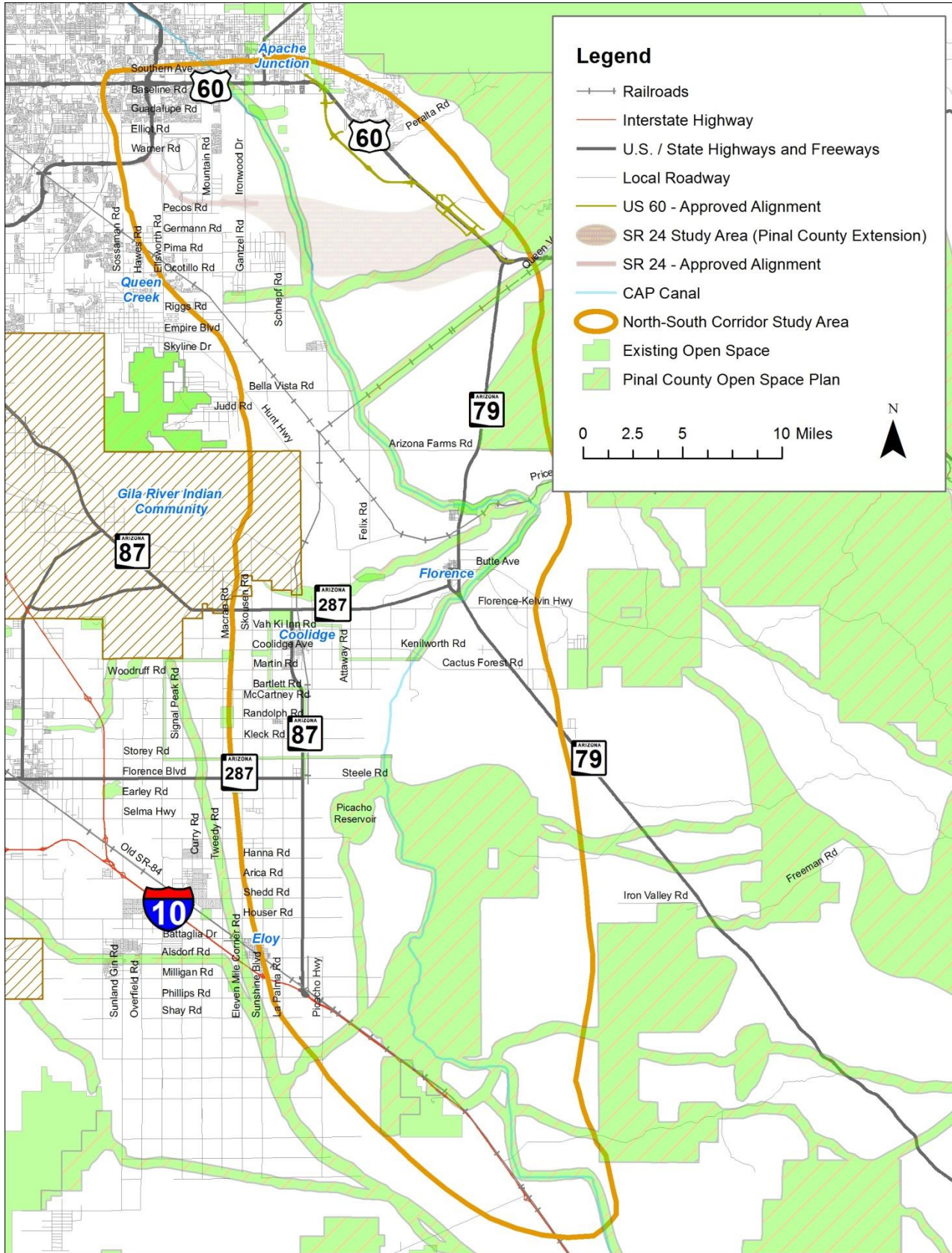


Source: Southwest Value Partners

2.4 Open Space

Existing and planned open space within the study area is documented in the Pinal County Open Space and Trails Plan (October 2007). The Plan includes several linear open space areas that cross the entire width of the study area. **Figure 18** depicts existing and proposed open space. Within the study area, existing designated open space includes Picacho Peak State Park in the southwestern portion of the study area, and linear open space along the CAP Canal and the Gila River. Planned open space consists of large tracts of land to support wildlife habitat. Examples include a proposed regional park north of Picacho Peak State Park, in the southern portion of the study area. Planned open space is also identified along the Gila River and the CAP Canal.

Figure 18. Existing and planned open space



2.5 Topographical Conditions

The majority of the study area is relatively flat, with isolated areas of bedrock outcroppings. Poston Butte, a historical feature that rises approximately 400 feet above the surrounding desert, is located west of SR 79 and north of Hunt Highway. The Superstition Mountains are located north of the study area, north of SR 79 and US 60. The Picacho Mountains are located in the southern portion of the study area as reflected in **Figure 19**.

2.6 Geotechnical Conditions

A separate detailed geotechnical report will be prepared in the next phase of the study. This section documents available geologic and geotechnical data in the study area to facilitate the development and evaluation of route alternatives.

The study area is characterized by a significant amount of ground subsidence and earth fissuring (**Figure 20**). Ground subsidence occurs when large amounts of groundwater have been withdrawn from an aquifer. The clay layers within the aquifer compact and settle, resulting in lowering the ground surface. Earth fissures can be expected to occur closer to the Picacho Mountains than in areas to the west where the depth to bedrock is generally constant and relatively shallow. The area immediately to the west of the Picacho Mountains is where the greatest concentration of earth fissures occurs within the study area. Concentrations of fissures also exist in the northern part of the study area where the CAP Canal intersects US 60 and where SR 202L intersects US 60.

2.7 Drainage

A separate, more detailed drainage report will be prepared in the next phase of the study. This section documents drainage conditions and infrastructure in the study area to facilitate the development and evaluation of route alternatives.

Stormwater generally drains from east to west in the study area. The watersheds located within the study area ultimately empty into the Gila River, downstream of the study area. The northern half of the study area drains toward the southwest while the southern half drains toward the northwest. The major drainage features that influence the development and evaluation of route alternatives are summarized below. **Figure 21** depicts the major drainage features, including floodplains.

2.7.1 Dams, Flood Retarding Structures, and Levees

Dams, flood retarding structures (FRS), and levees are important drainage features for flood control and public safety. The following drainage features are located within the study area:

- Magma FRS (Magma Dam) – 5.5-mile-long earthen structure providing flood protection to unincorporated areas of northern Pinal County. The dam has known inadequacies in the emergency spillway capacity and transverse cracks in the embankment and is currently being rehabilitated.
- Powerline FRS, Vineyard Road FRS, and Rittenhouse FRS – Three structures that work as a system to capture stormwater from a 159-square-mile area. The structures run parallel and adjacent to the CAP Canal. They are located within Pinal County, but are operated and maintained by the Flood Control District of Maricopa County (FCDMC) and provide flood protection for downstream portions of Maricopa County. Currently, FCDMC is in the planning phase of rehabilitating these three structures.

Florence FRS – 5-mile-long, 20-foot-high earthen structure providing flood protection to Florence, Arizona State Prisons facilities, the CAP Canal, the Florence-Casa Grande Canal, and prime farmland.

Figure 19. Topographic features

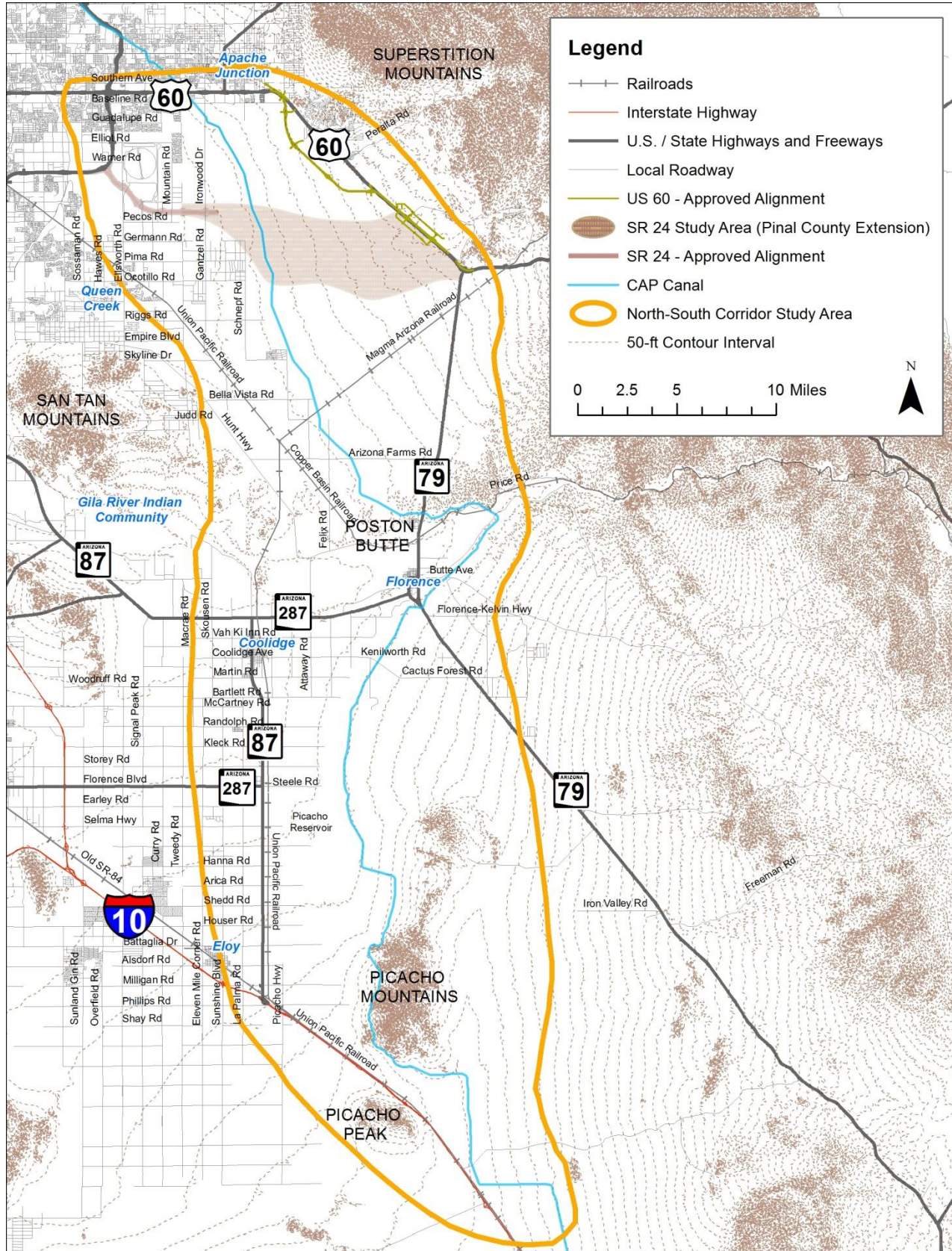


Figure 20. Ground subsidence and earth fissures

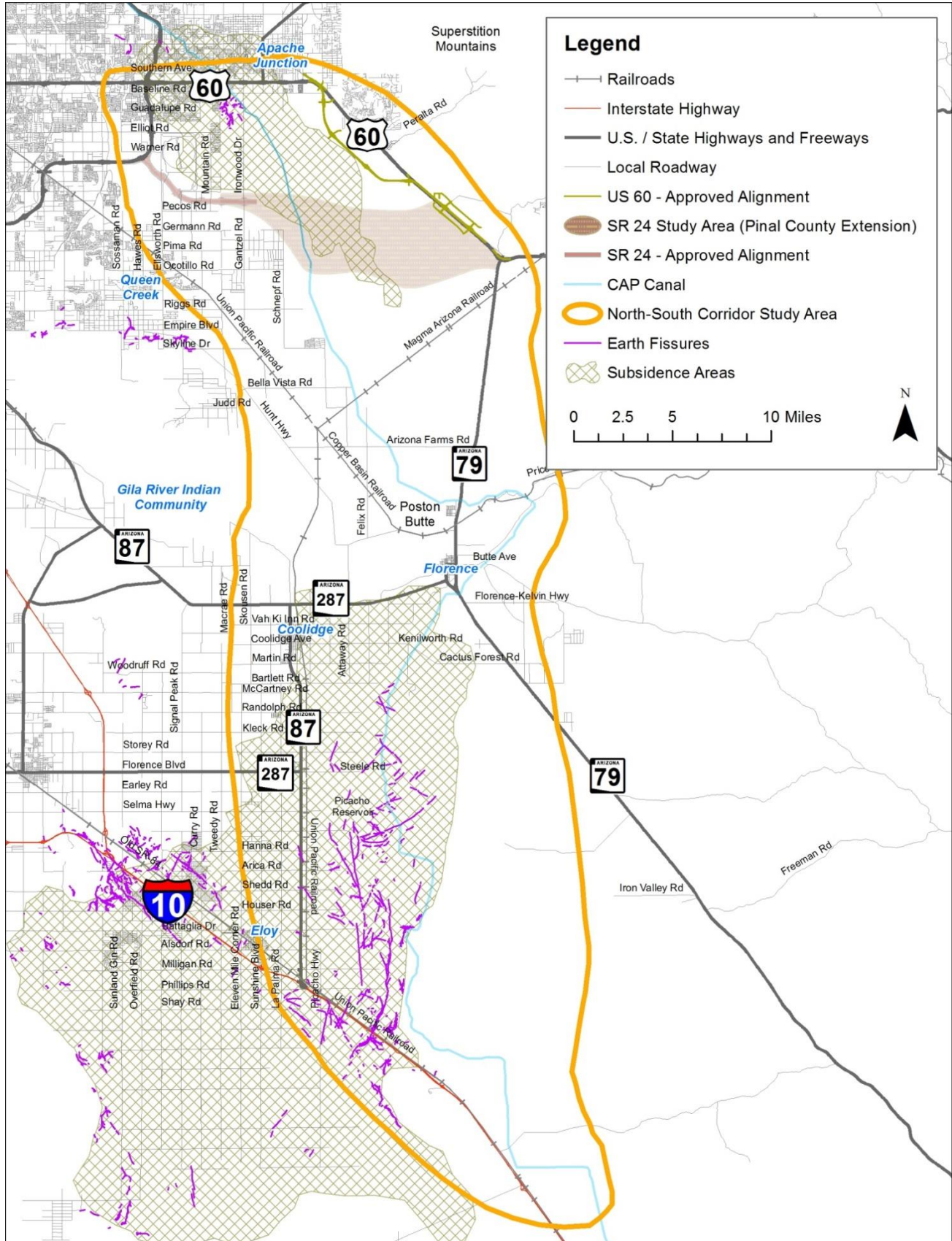
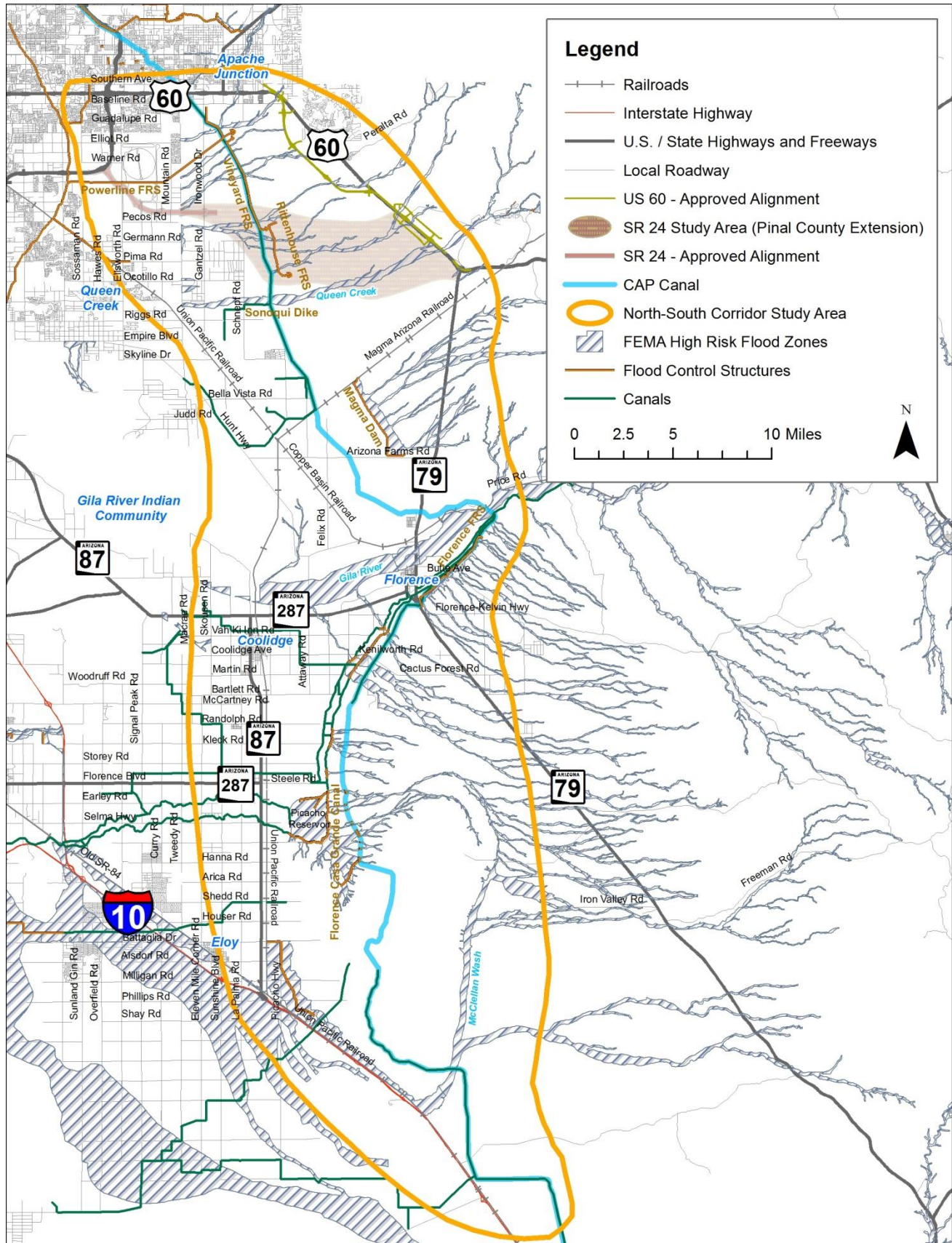


Figure 21. Drainage features



- Sonoqui Dike – The Sonoqui Dike is a flood control structure constructed by the Bureau of Reclamation that protects a portion of the CAP’s Fannin-McFarland Aqueduct during large storms. Floodwater is regulated through the Sonoqui Dike by a manually operated slide gate, passes through pipes over the CAP Canal, and then empties into Queen Creek.

There are no Federal Emergency Management Agency (FEMA)-accredited levees in the study area.

2.7.2 Reservoirs

Reservoirs are artificial lakes where water is collected and kept in quantity for use. The Picacho Reservoir is the only reservoir located within the study area. According to information contained in the Pinal County Area Drainage Master Plan (ADMP) Phase D – Picacho Reservoir Watershed (Entellus, 2010), it was originally constructed in 1889, then expanded and reconstructed to its present size in the 1920s as part of the Florence-Casa Grande Canal construction. The Picacho Reservoir Dam is an earthen dam 15 feet high and 5 miles long with an original estimated capacity of 13,720 acre-feet. It is currently operated by the San Carlos Irrigation Project under the control of the Bureau of Indian Affairs (BIA). In 1955, the dam failed because of fissures in the embankment, and the embankment, outlet works, core drain, and spillway were reconstructed. The Picacho Reservoir Watershed ADMP states that the integrity of Picacho Reservoir is severely compromised by fissures in the dam and sedimentation in the reservoir.

2.7.3 Groundwater Recharge Facilities

Groundwater recharge facilities are specified locations where excess surface water is directed into the ground to replenish the aquifer. A future groundwater recharge facility will be located along Queen Creek, just upstream of the CAP Canal. This project is administered by Central Arizona Water Conservation District, and the construction date is unknown.

2.7.4 Canals

A canal is defined as an artificial channel filled with water designed for draining or irrigating land. Canals located within the study area include the CAP Canal and the Florence Casa Grande Canal. Approximately 16 miles of the CAP Canal system is located within the study area; specifically the Salt-Gila Aqueduct Reaches 1–3. The CAP Canal design documents indicate that the canal is designed to impede the 100-year, 6-hour storm with pipe overchutes in several locations along the canal. These design documents indicate ponding areas on the upstream side of the CAP Canal, which were considered in the development of the route alternatives. The CAP Canal construction methods, stability, and maintenance are unknown. It is assumed for the purposes of this report that the CAP Canal was properly designed, constructed, and maintained, such that the structure acts as sufficient barrier for 100-year off-site flows. The stability or maintenance practices for this structure have not been evaluated at this time. It is assumed that the 100-year storm flows from upstream of the CAP Canal will not affect route alternatives downstream of the canal.

The southwest parts of the study area include over 25 miles of main conveyance and delivery features of the San Carlos Irrigation Project including the Pima Lateral, Casa Grande Canal, Florence Canal, and Florence-Casa Grande Canal Extension. These canals may be in conflict with segments of continuous route alternatives recommended for further study.

2.7.5 Floodplains

Floodplains are areas adjacent to rivers and streams subject to recurring flooding. The majority of the study area is located within Flood Zone X, with large portions within Flood Zone D. Several major rivers and washes

located in the study area are mapped as Flood Zones A and AE. Each project in a regulatory floodway must undergo an encroachment review to determine its effect on flood flows and to ensure the project does not cause flooding problems. Impacts on floodplains may require FEMA map revisions (i.e., Letter of Map Revision [LOMR]) and permits from federal, state, and local agencies.

Descriptions of the flood zones within the study area follow:

- **Zone X** is defined as: “Areas of 0.2% annual chance of flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.” Zone X areas are good opportunities for route alternative because drainage impacts are minimal.
- **Zone D** is defined as: “Areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted.” Because Zone D areas do not have sufficient flood hazard information, a detailed floodplain study may be required before construction permits are issued.
- **Zone A** is defined as: “Areas with a 1% chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones.” Because Zone A areas are approximated, many states and local ordinances require a base flood elevation before a permit will be issued for development. The methodology for determining base flood elevations is determined by the state and local ordinances and ranges from a detailed study to more simplified methods that can be used in isolated areas where more costly studies cannot be justified. It is likely that additional studies would be required.
- **Zone AE** is defined as: “The base floodplain where base flood elevations are provided.” Development in Zone AE areas is subject to federal, state, and local regulations before permits are issued.
- **Zone AH** is defined as: “Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.” There are only a few small locations mapped as Zone AH in the study area. Zone AH has base flood elevations and must meet the same requirements as Zone AE.

A few significant floodplains in the study area are listed below, and depicted in **Figure 21**:

- Queen Creek (Zone A)
- Gila River (Zones A and AE)
- McClellan Wash (Zones A and AE)
- Siphon Draw (Zone A)

2.7.6 Rivers and Washes

Major rivers and washes in the study area are:

- Queen Creek – Queen Creek is located in the northern half of the study area and crosses through from east to west with a 100-year flow rate in the range of 20,000 cubic feet per second.
- Gila River – The Gila River is the largest river in the study area, carrying a 100-year flow rate of approximately 66,300 cubic feet per second near Florence. The Gila River undergoes continuing sand and gravel mining operations within the river corridor. The locations and extents of potential future mining operations are unknown at this time.
- McClellan Wash – McClellan Wash is located in the southern portion of the study area and consists of flow that naturally spreads as it meanders through the flat lands of the Eloy area. It has a flow rate of

approximately 17,500 cubic feet per second. Human-made diversions have caused flows to be diverted around agricultural fields, but it generally flows from southeast to northwest.

2.7.7 Easement Areas

FCDMC has large easement areas upstream of the Powerline FRS, Vineyard FRS, and Rittenhouse FRS. These easement areas were considered in the route alternatives because construction within these areas would require permits from FCDMC.

2.8 Land Ownership

Landowners in the study area include ASLD, BLM, AANG and GRIC. **Table 7** lists major landowners and the number of acres within their jurisdiction within the study area. Land ownership is depicted in **Figure 22**.

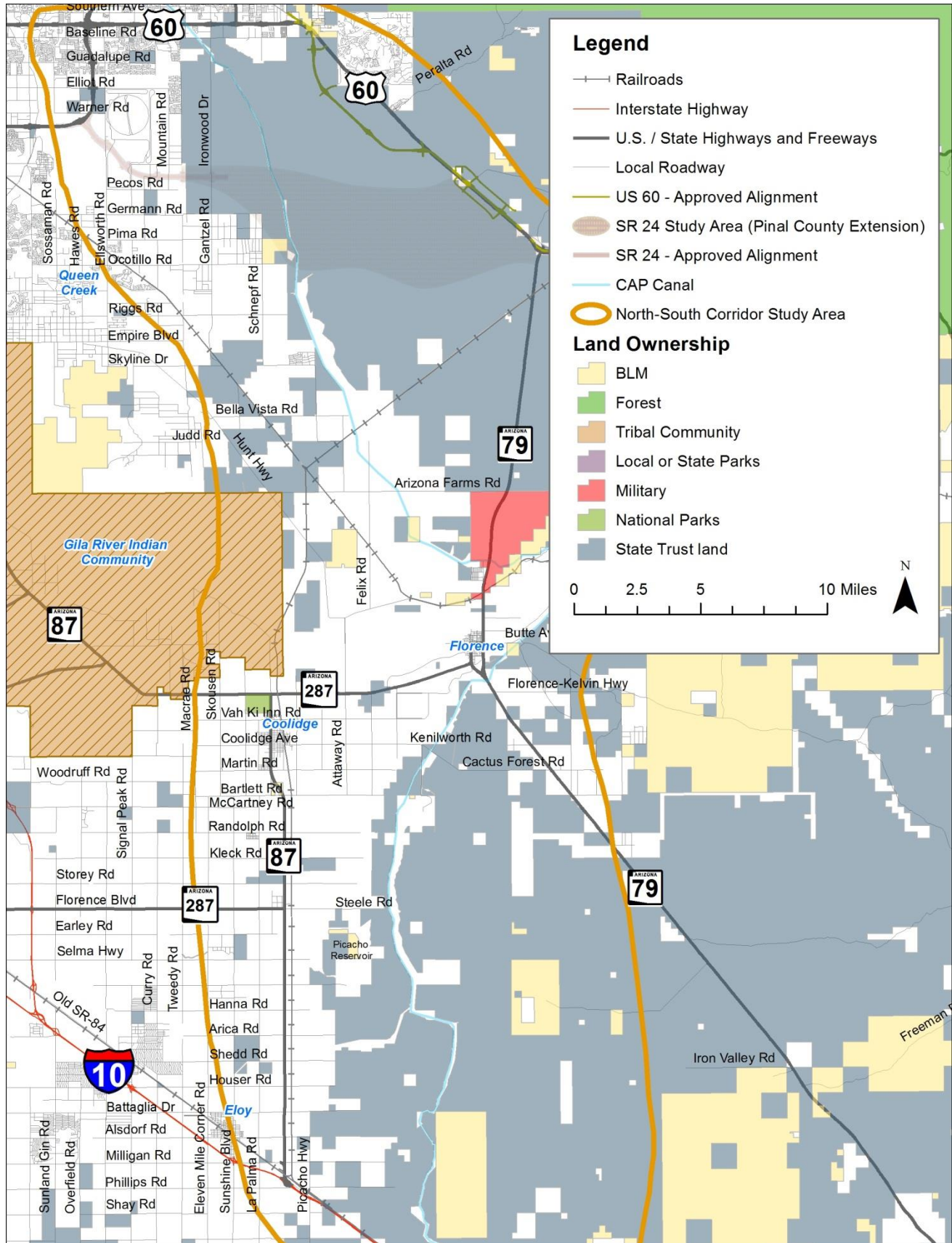
ASLD owns more than 52 percent of land within the study area. ASLD land is concentrated toward the eastern portion of the study area. Nearly 40 percent of the land is under private ownership.

Table 7. Study area land ownership

Land owner	Acreage	Square miles	Percentage of study area
Arizona State Land Department	300,750	469.92	52.11
Bureau of Land Management	16,551	25.86	2.87
Gila River Indian Community	12,614	19.71	2.19
Local or State Parks	3,398	5.31	0.59
Military (Arizona Army National Guard)	5,996	9.37	1.04
National parks/National monuments	469	0.73	0.08
Other	10,866	16.98	1.88
Private	226,536	353.96	39.25
Total	577,181	901.84	100.00

Source: Arizona State Land Department

Figure 22. Land Ownership



2.9 Utilities

A separate detailed utilities report will be prepared in the next phase of the study. This section documents available utilities information and features in the study area to facilitate the development and evaluation of route alternatives. Utility information was obtained from Platts, a provider of geospatial energy information, and from ASLD. Railroad information was obtained from ADOT. A listing of utility providers was obtained from Arizona Blue Stake, which provides the ability for authorized persons/companies to create a design request (through use of E-Stake) to obtain a list of member underground facility owners/operators potentially affected by a future project. The list provides the location of underground facilities for planning and design purposes.

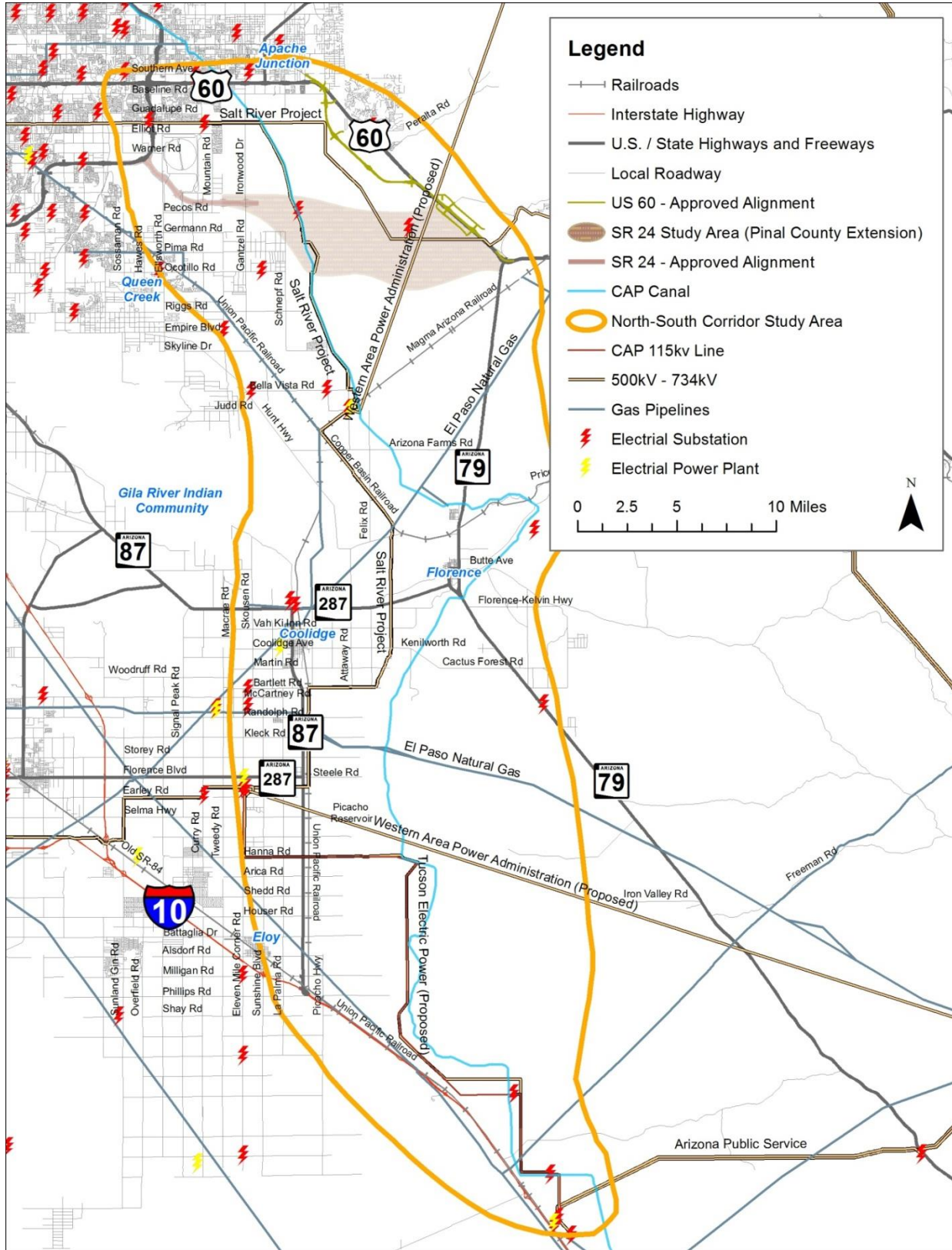
Table 8 is a list of utility providers with facilities within the study area. **Figure 23** depicts the major utilities.

Table 8. Study area utility providers

Utility company	Facility type
AT&T Long Distance	Long distance telephone
Salt River Project – Pinal County	Communication, electric, fiber
Salt River Project – Maricopa County	Communication, electric, fiber, irrigation
AT&T	Coaxial, fiber
Apache Junction Water Co.	Water
Arizona Public Service – Main State Office	Electric
Arizona Water Company	Water
City of Mesa Utilities	Gas
Central Arizona Project	Coaxial, electric, fiber, water
COX Communications – Pinal County	Cable television, fiber
Diversified Water Utilities Inc.	Water
El Paso Natural Gas	Gas
Electrical District No. 2	Electric, street lights
Electrical District No. 4	Electric
Gold Canyon Sewer Company	Sewer
Gila River Telecommunications	Coaxial, fiber
H2O, Inc.	Water
Hohokam Irrigation and Drainage District	Electric
Kinder Morgan Energy	Petroleum
Level 3 Communications, LLC	Fiber
MCI	Fiber
Media Com – Apache Junction	Cable television
Quest Communications Network	Fiber
Quest Local Network	Coaxial, fiber
Salt River Project	Communication, electric, fiber
San Carlos Irrigation Project	Electric
Southwest Gas Valley District	High-pressure gas
Southwest Gas Central Division	High-pressure gas
Sprint Communications Company	Fiber
Superstition Mountain Community Facilities District	Sewer
Superstition Mountain, LLC	Water
Tucson Electric Power	Proposed 500 kilovolt transmission line
Western Area Power Administration	Transmission

Source: Arizona Blue Stake, Platts

Figure 23. Major utilities



Source: Platts

2.9.1 Salt River Project 500 kilovolt Line

Salt River Project is in the process of completing a new 500 kilovolt (kV) power transmission line for Pinal West to Southeast/Browning. The transmission line provides additional capacity to deliver power from the Palo Verde energy hub near the Palo Verde Nuclear Generating Station to new substations throughout Pinal County and terminating at the Browning Substation in the East Valley, for a total distance of more than 150 miles. The alignment was approved in 2005. The project is broken into four segments. The first segment, Randolph to Browning, which is the segment within the study area, was completed in 2010. The other remaining segments are scheduled for completion in 2014.

During stakeholder meetings with SRP representatives, SRP indicated that it is generally agreeable to locate a corridor directly adjacent to its 130-foot right-of-way. Generally, SRP lines are centered within the 130-foot right-of-way to accommodate blow-out and maintenance of the lines. SRP would require maintenance access gates.

2.9.2 Salt River Project Substations

SRP operates several substations within the study area. Three of these substations are located at:

- Germann Road and CAP: 500 kV and 230 kV lines run east–west from substation
- Abel Substation (Judd, Attaway, and CAP): 500 kV, 230 kV, 69 kV and 12 kV substation that will serve future Superstition Vistas area
- Quail Run and Bella Vista Substation: 69 kV substation west of Quail Run

Discussions with SRP indicate that the Abel substation could cost \$100 million or more to relocate. Substations should be avoided if at all possible. Generally, if ADOT affects a substation, ADOT is responsible for replacement costs.

2.9.3 Tucson Electric Power 500 kilovolt Line (Proposed)

Tucson Electric Power has proposed to construct a new 500 kV transmission line in Pinal County in the Coolidge area, extending approximately 40 miles from the future Pinal Central Substation east of Casa Grande to Tucson Electric Power's Tortolita Substation east of Red Rock. Construction is anticipated to be complete in May 2014. The preferred alignment is "Alternative A." This alternative extends from the substation located at 11-Mile Corner and Early Roads (south of Florence Boulevard and SR 287), going eastward crossing SR 87, running parallel to SR 87 south to Hanna Road, then extending east along Hanna Road to approximately the CAP Canal, then going south to I-10.

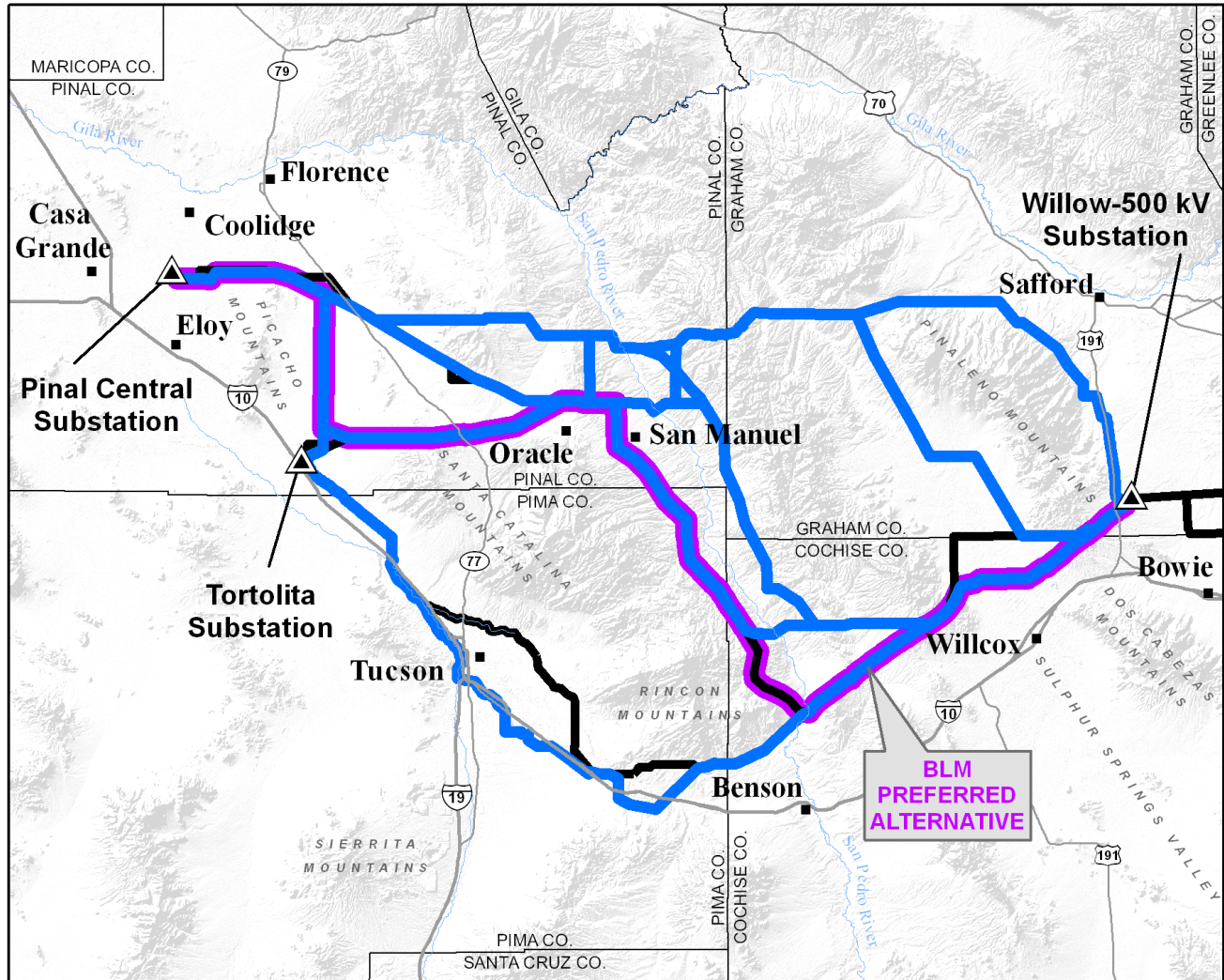
2.9.4 SunZia 500 kilovolt Line (Proposed)

The SunZia Southwest Transmission Project is planned to be approximately 500 miles of two single-circuit 500 kV transmission lines and associated substations that interconnect SunZia with numerous 345 kV lines in both Arizona and New Mexico. The "Preferred Alternative" identified by BLM in the Draft EIS is approximately 530 miles long and would pass through 191 miles of federal land, 226 miles of state land, and 113 miles of private or other land in Arizona and New Mexico. BLM's final determination on SunZia's alignment has not been made and alternative routes are still under consideration. A map of the alignments under consideration is presented in **Figure 24**.

2.9.5 Central Arizona Project Canal

Based on information received from interviews with CAP in April 2011, the CAP Canal is a defining feature in the study area. The CAP Canal is a 336-mile-long system of aqueducts, tunnels, pumping plants, and pipelines constructed by the Bureau of Reclamation. As part of the planning effort for the CAP Canal, the bureau has committed to maintaining a 20-foot recreation corridor on the downstream side of the canal (generally the southern or western side). The intent of the CAP is to include a 10-foot-wide paved, nonmotorized path.

Figure 24. SunZia alternative routes, Willow 500 kilovolt Substation to Pinal Central Substation



Source: <sunzia.net>, accessed on October 8, 2012

The CAP Canal extends north–south through the entire study area, from US 60 to I-10. Stakeholder interviews with CAP Canal representatives indicated that crossings of the CAP Canal should be avoided if at all possible. If crossings are unavoidable, the number of crossings should be kept to a minimum and spaced no closer than 2 miles. The Bureau of Reclamation must approve all crossings. Recently constructed crossings have cost more than \$10 million. CAP representatives did not express concern about a corridor that parallels the CAP Canal as long as adequate maintenance access is maintained.

2.9.6 Environmental Features

As growth and development occurs in the Sun Corridor and the metropolitan areas of Tucson and Phoenix merge to form a “megaregion,” a substantial expanse of open, remote desert land will undergo conversion to various urban and suburban uses. High rates of growth in population, housing, and employment are anticipated. Between now and 2050, travel demand will substantially increase and congestion will worsen on I-10 and other north–south arterial roads in the Corridor. Adding north–south transportation capacity along the proposed 45-mile-long corridor will facilitate travel between US 60 and I-10, currently accommodated through use of a fragmented and discontinuous system of rural roads. While adding continuous, nonfragmented, north–south transportation capacity would facilitate regional mobility, it will also accelerate conversion of desert land. The following sections briefly outline the implications to established ecosystems and to socioeconomic and cultural systems of such anticipated rapid and substantial land conversion within the COA introduced in Chapter 4 and illustrated in **Figure 33**. Route alternatives outside the limits of the study area will be carried forward and studied in more detail during the L/DCR and EIS phase.

2.9.7 Topography

The study area is located with the Basin and Range Physiographic Province of southeastern Arizona. Terrain in the study area is generally flat with a gentle westward descending slope, cut by east–west-trending washes. Elevations range between approximately 1,500 and 2,100 feet above mean sea level (amsl) from west to east.

2.9.8 Biological Community

Vegetation/Biotic Communities

The study area lies within two large biotic communities: the Lower Colorado River Sonoran Desertscrub and the Arizona Upland subdivisions of the Sonoran Desert. The Sonoran Desertscrub subdivision ranges in elevation, within the study area, from 1,400 to 3,200 feet amsl. It is characterized by blue palo verde, honey mesquite, and ironwood along drainages and ocotillo, creosote bush, and brittlebush in flat, open areas. Various cacti including saguaro, cholla, and prickly pear are sparse to moderately abundant. The Arizona Upland subdivision of the Sonoran Desert biotic community ranges in elevation, within the study area, between 1,700 and 4,200 feet amsl and is characterized by palo verde, mesquite, ironwood, and creosote bush. Abundant cacti include saguaro, prickly pear, and cholla (Turner and Brown 1994).

Numerous plant associations are present within the two larger biotic communities. While many species are found throughout the study area, three distinct associations account for 72 percent of the total land area. The creosote bush-white bursage association covers approximately 200,000 acres. It is found at the lower elevations (average of 1,738 feet amsl) and flats of the study area, generally occurring in the central portion from the northern to southern edges. Higher elevations (average of 2,131 feet amsl) and hillsides are populated by the palo verde-mixed cacti association. This is prevalent in the Picacho Mountains and the eastern edge of the study area, and also totals approximately 200,000 acres. While not consisting of native species, agriculture accounts for 112,000 acres of the study area, generally concentrated along the western edge. The remaining 28 percent of the study area consists of developed or barren land and smaller desertscrub associations.

Riparian Areas

Preliminary data suggest a very small amount, 0.5 percent, of riparian land exists primarily in the southeastern portion of the study area along the CAP Canal. Dominant species here are anticipated to be mesquite and tamarisk (*Tamarix* spp.). While small in size, riparian areas provide important habitat for numerous animal species. This area will be investigated further as the study develops.

Rivers and Washes

Queen Creek and the Gila River are ephemeral in the northern and central portions of the study area, respectively, and run east–west. Numerous ephemeral washes, also trending in an east–west direction, eventually drain into the Gila River. Creosote bush and tree species increase in abundance along the banks of the study area’s waterways. Washes are more prevalent in the undisturbed eastern portion than in the western portion of the study area. All waterways are part of the Gila River Watershed.

Wetlands

Picacho Reservoir, located in the southern portion of the study area, is a shallow marsh with extensive stands of cattails (*Typha* spp.) and rushes. Mesquite habitat lines the canal entering Picacho Reservoir. The reservoir was designed with a surface area of over 2 square miles; however, siltation and vegetation have greatly reduced this area. Water level is highly variable and in some years the reservoir is completely dry.

Protected Native Plants

Native plants protected under the Arizona Native Plant Act include all native cacti, yucca, agave, and many wild-growing (i.e., not planted for landscaping) leguminous tree species. No formal inventory of protected native plants has been conducted in the study area; however, native plants do occur. These native plants include trees such as mesquite, palo verde, and catclaw acacia among others, and cacti, including saguaro, cholla, prickly pear, and hedgehog. Compliance with the Arizona Native Plant Act would require notification to the Arizona Department of Agriculture with the filing of a Notice of Intent to Clear Land at least 60 days prior to onset of land clearing.

Wildlife

The study area and surrounding land support a wide variety of wildlife species common to the Sonoran Desert. These species range from small to large mammals and a variety of reptiles, amphibians, and birds.

Threatened and Endangered Species

The Endangered Species Act of 1973 provides for the conservation of threatened and endangered plants and animals and the habitats in which they live. These species are vulnerable to habitat loss or population decline because of their rarity.

Wildlife of Special Concern

Wildlife of Special Concern is a state designation for species whose occurrence in Arizona is or may be at jeopardy, as designated by AGFD. The Heritage Data Management System manages and stores the locations of all agency special-status species recorded during surveys.

Migratory Bird Treaty Act

Migratory birds, most notably raptors, could nest or forage in the study area. These migratory birds are all protected under the Migratory Bird Treaty Act of 1918. Compliance with the Act would be achieved as long as no harm occurs to the species and/or nests and their contents.

Wildlife Corridors

Linear transportation features such as roads and highways can fragment wildlife habitat and act as physical barriers to wildlife movement. Wildlife movement corridors can be narrow strips or blocks of habitat that may be used by wildlife to move from one area of habitat to another. Other corridors include areas where the

landscape offers good physical relief and/or vegetative cover. Wildlife movement within these corridors is crucial to maintain healthy wildlife populations by supporting a larger gene pool for a species. Fragmentation can prevent wildlife from gaining access to needed resources and to other individuals of its species, reducing genetic diversity and weakening a population's long-term viability. In Arizona, wildlife movement corridors are often ephemeral washes with associated riparian habitat. The consultant team worked closely with AGFD to ensure wildlife corridors were considered during the ASR phase. Wildlife corridors information was received from AGFD and will be reflected as part of the EIS.

2.9.9 Cultural Resources

A Class I records review was performed for the study area. Approximately 24 percent of the area (29,300 acres) was covered by previous surveys. Of the 313 sites that have been documented, 1 site (Adamsville Ruin) is listed in the National Register of Historic Places (National Register), 1 site (Poston's Butte) is listed in the Arizona Register of Historic Places, 153 sites are recommended or determined eligible for listing in the National Register, 61 sites are recommended or determined ineligible for National Register listing, and 97 sites have an unknown National Register status. Additional alternatives outside of the COA were identified and additional cultural literature was gathered and used as part of the criteria for evaluating alternatives. An addendum to the original Class I literature report will be prepared during the EIS to formally document the new historic information.

Compliance with Section 106 of the National Historic Preservation Act requires the identification of cultural resources (a prehistoric or historic district, site, building, structure, object, or traditional cultural property) and evaluation of its National Register eligibility. A project-specific Programmatic Agreement outlining Section 106 responsibility also will need to be developed. Cultural resources determined eligible for listing in the National Register (also referred to as historic properties) should be avoided in project design. If avoidance of historic properties is not feasible, a mitigation plan will need to be developed and implemented.

2.9.10 Noise

Potential noise receivers were identified during the ASR phase and used as one of the criteria for identifying the proposed alternatives that will be carried forward in the L/DCR and EIS phase. Noise impacts will be evaluated during the L/DCR phase, and the results will be incorporated into the EIS.

2.9.11 Hazardous Materials

Preliminary research was limited to a review of the USEPA website for Superfund sites. The results were "no superfund sites are found within Pinal County."

2.9.12 Socioeconomic Considerations

Socioeconomic information gathered consists of geographic information system (GIS) shape files depicting demographic areas within the study area. In particular, the area near Coolidge was identified as low-income and minority in population. Impacts on low-income and minority populations will be avoided or minimized.

2.9.13 Considerations for the Draft Environmental Impact Statement

Comments were received from Agency Stakeholders who reviewed the Draft ASR on issues that should be considered or investigated during the preparation of the Draft Environmental Impact Statement. The comments are listed below.

- Hazardous waste and air quality were not used as criteria in the ASR evaluation of alternatives. These should be considered as criteria in the DEIS (ADOT Environmental Planning Group).
- The DEIS should consider the Arizona’s Statewide Wildlife Action Plan; 2012-2022 (SWAP) within the environmental assessment and analysis. Additional information related to the stressors that are affecting wildlife, conservation actions, and Species of Greatest Conservation Need (SGCN) vulnerability ratings can be found in the plan (Arizona Game and Fish Department).
- Air quality should be explored during the DEIS phase of the study (ADOT Environmental Planning Group).
- ADOT should designate funding to support investigations to refine the identification of wildlife corridors, potential crossing areas within the study area/drafted alternatives, design recommendations and specifications to ensure minimization of impacts and facilitation of safe movement. The Wildlife Contracts Branch of the Department would be a valuable resource in conducting such investigations given their previous experience and expertise (Arizona Game and Fish Department).
- The DEIS should consider wildlife movement areas, further analysis to include special status species, species of greatest conservation need, and species of recreational importance (Arizona Game and Fish Department).
- The DEIS should provide quantitative information on any avoidable impacts to wildlife movement corridors and should document coordination with the Fish and Wildlife Service and Arizona Department of Game and Fish, regarding appropriate avoidance, wildlife crossings, and mitigation measures to address these impacts. Furthermore, the DEIS should include specific design commitments that: 1) remove wildlife movement barriers; 2) enhance use of modeled wildlife corridors; and 3) provide crossings with suitable habitat and topography for multiple species (EPA).
- A Clean Water Act jurisdictional determination should be completed and submitted to the Army Corps of Engineers for verification prior to release of the DEIS. This data should then be incorporated into the DEIS so that an assessment of existing conditions and environmental consequences of each route alternative can be made. Additionally, the DEIS should identify specific avoidance and minimization measures for impacts to waters (e.g., complete spanning of washes, use of bottomless arch culverts, etc.) (EPA).
- Prime and Unique Farmland was not used as criteria in the ASR evaluation of alternatives. Prime and Unique Farmland should be considered as criteria in the DEIS (ADOT).
- During preparation of the DEIS, contact ADOT and AGFD so that the DEIS can specifically refer to, and include information from, the County-specific reports that they have completed with regard to wildlife habitat linkages. A specific study for Pinal County has not been completed, but reports have been completed for Maricopa and Pima Counties, and these would provide valuable information and guidance for the North-South Corridor Study. This information would help to identify and evaluate specific wildlife linkages in the study area (US Fish and Wildlife Service).
- Under the Migratory Bird Treaty Act, the DEIS should include the important group of neotropical migratory songbirds that depend on these areas of their range during the crucial breeding season. Also, it is suggested that the DEIS specifically mention burrowing owls in this section, as they are likely to be an important species of migratory bird for consideration during this study and evaluation (US Fish and Wildlife Service).
- Under Protected Native Plants, the DEIS should include and emphasize ironwood trees. These are the equivalent of Sonoran desert old growth forests and have tremendous ecological value to the ecosystems upon which threatened and endangered species, as well as many other wildlife species, depend (US Fish and Wildlife Service).

- The draft ARS indicates that riparian communities only make up about 0.5% of the study area. The definition of “riparian” needs to be addressed in the DEIS. The DEIS should consider ephemeral drainages and xeroriparian as riparian habitats, and with the extent of those types of communities in the study area, I would think that they make up more than 0.5% of the study area. It is important to note that other important riparian tree species occur in these types of riparian communities and should be acknowledged. These include, but are not limited to, ironwood, paloverde (particularly blue paloverde), acacias, and desert willow (US Fish and Wildlife Service).
- The acknowledgement that the development of a North-South Corridor will accelerate the development of currently undeveloped, natural desert communities will be an important consideration in the DEIS as it considers impacts to threatened and endangered species, as well as wildlife in general (US Fish and Wildlife Service).
- Noise receptors should be further studied and evaluated in the DEIS phase of the study (Pinal County).

3 Design Features

3.1 Introduction

Detailed cross-sections and design criteria will be developed in the L/DCR and applied in the development of preliminary roadway plans. For the purpose of this ASR, design criteria were developed to the level of detail needed to establish a right-of-way envelope necessary for the development of route alternatives. A generalized cross-section provides a right-of-way envelope with sufficient flexibility to facilitate geometric refinements during preliminary design. Generalized design criteria are limited to horizontal and vertical geometry that will accommodate desired modes of transportation and desired cross-sectional roadway features.

A principal design feature of the Corridor will be to accommodate both ADOT roadway design criteria for a fully access-controlled freeway facility and passenger rail should all or a segment of the Corridor be selected as an alternative for passenger rail.

3.2 Roadway Cross Section

The Corridor may be constructed over many years in response to funding availability and incremental land use development in urbanized, fringe, and rural areas. To accommodate a variety of functional, capacity, and construction phasing requirements for corridor development, several cross-sections in the ADOT Roadway Design Guidelines were reviewed to determine a roadway cross section and right-of-way envelope that offered flexibility for corridor development scenarios. The following ADOT roadway cross-sections are considered.

- ADOT Typical Section RA, Rural 4-Lane Freeway (Roadway Design Guidelines Figure 306.2)
- ADOT Typical Section IS3, Fringe-Urban, 4-Lane Divided with Uncurbed, Unpaved Median, Short Term conversion to Urban Section
- ADOT Typical Section UD, Ultimate 6-Lane Facility (Roadway Design Guidelines Figure 306.4B)

3.3 Passenger Rail Design References

North–South route alternatives will be developed to accommodate intercity passenger rail. The ADOT Passenger Rail Study has not yet reached a point where technology and design criteria have been developed. General rail design criteria that have been used for intercity rail in other parts of the country include the following projects. These design criteria served as input to the development of rail criteria as listed in **Table 9**.

- Corridor Design Issues for Florida High Speed Rail, American Railway Engineering and Maintenance-of-Way Association Conference, 2004
- Desert Xpress Rail Project, Highway Interface Manual, February 8, 2011
- High Speed Rail and Existing Rail Corridors, Northwest Transportation Conference, February 11, 2010

3.4 Preliminary Design Criteria for Developing Route Alternatives

Based on the above information, the design criteria shown in **Table 9** are proposed for use in route alternatives development and screening. These criteria will be refined during the development of the Traffic Report and L/DCR.

Table 9. North–South Corridor design criteria for developing route alternatives

Design criterion	Description
------------------	-------------

Right-of-way envelope	400 feet, typical: provides sufficient right-of-way to accommodate Typical Section RA (308 feet), and 60 feet for rail accommodation (preliminary design phase will consider interchange design requirements, drainage infrastructure, and other design features to determine actual right-of-way needs)					
Design speed	75 mph (minimum) (roadway)					
Superelevation	0.06 feet/foot (maximum)					
Horizontal geometry	Desired degree of curvature: 30 minutes desirable, 1 degree maximum to accommodate passenger rail at 125 mph)					
Degree of curvature (Design speed = 75 mph)	Radii (feet)	Superelevation	Superelevation runoff (feet) for values of D (feet)			Minimum length of curvature (feet)
			12	24	36	
30 minute	11,459	Normal crown	64	95	127	950
1 degree	5,730	0.037	117	176	234	900

3.5 Considerations for the Location/Design Concept Report

Comments were received from Agency Stakeholders who reviewed the Draft ASR on issues that should be considered or investigated during the preparation of the Location/Design Concept Report. The comments are listed below.

- Wildlife crossings and linkages considered in the planning and design of the preferred alternative. The design and location of wildlife crossings and linkages should be based on the studies conducted for ADOT and Arizona Game and Fish Department (AGFD) (comment received from US Fish and Wildlife Service)
- Crossing of the preferred alternative and existing railroads will require grade separated crossings. In addition, crossing infrastructure of the preferred alternative and the Phoenix-Tucson Passenger Rail will need to be negotiated with the host railroad (comment received from ADOT)
- A transit reservation similar to what was created in the 1980s on I-10 west of downtown Phoenix should be considered. This reservation would provide for the future placement of high capacity transit investments within the corridor as the surrounding area builds out. Options that could be supported by this reservation include commuter rail, light rail, bus rapid transit, or express/limited stop bus service. The latter two options could be collocated on future high occupancy vehicle lanes which should be included in the design of the roadway infrastructure (comment received from Valley Metro)
- Regional park & ride facilities should be located at points with good regional road access. They should also be located with an eye towards how they will interface with future local bus and circulator services. Park & ride facilities can function as a transit center, providing local bus routes with a layover and/or turn around location. The latter is a significant characteristic since the future road network in this area may restrict bus layover and turn around opportunities (comment received from Valley Metro)
- Under the Settlement Agreement with the Arizona State Land Department (ASLD), the Flood Control District of Maricopa County reviews for approval (under a permitting process) any plans by others for construction or activities by others within an area known as the “modified easement area”, an approximately 6400 acre area of state land for which the District has the right to manage three existing flood control dam and associated features and has the right to construct and manage future flood control facilities. Any construction cannot impact the functionality or safety of the flood retarding structures (FRS) and must fully accommodate District plans for future flood control facilities within the modified easement area. The District is currently involved in the planning phase of a rehabilitation or replacement project for the Powerline, Vineyard, and Rittenhouse structures. Vineyard Road FRS will be raised at least 12 additional feet and a freeway over the structure would need to span it and obtain permits from not only the

District but Natural Resources Conservation Service, Arizona Department of Water Resources and ASLD. The District has performed extensive land subsidence and earth fissure analysis of the area surrounding the Powerline and Vineyard Road FRS. The District will provide such information and reports to ADOT at ADOT's request (comment received from Flood Control District of Maricopa County)

- The Salt River Project (SRP) has numerous 69kV transmission lines in the study area. SRP will be reviewing the 12kV system for potential conflicts. Because this involves multiple lines, SRP will provide ADOT with details of potential conflicts once the preferred alternative has been selected (comment received from Salt River Project)
- There is the potential for the preferred alternative to impact two SRP major transmission lines. The first circuit lies between Browning and Silver King receiving stations and the second line, a 230kV/500kV line lies between Browning and Randolph receiving stations (comment received from Salt River Project)
- San Carlos Irrigation Project (SCIP) manages electric and water utilities in the study area consisting mainly of canals. Crossing of these canals or altering of these canals requires an encroachment permit from SCIP (comment received from San Carlos Irrigation Project)
- In a Technical Report by Montgomery and Associates (available on the Florence Copper Project website), the number of wells that may ultimately be installed at this site is extensive. Segment Q is bordering on the proposed mining property on the west and segment X is close to the eastern boundary. It is recommended that the impacts of wells on the Florence Copper Project site be further evaluated in the Location/Design Concept Report (comment received from ADOT)
- Curis Resources has actively been seeking approvals and permits on State and privately owned property for a large copper mining facility known as the Florence Copper Project. This should be a consideration in the L/DCR and EIS phase (City of Florence).
- During preparation of the ASR, Magma Railroad and Copper Basin Railroad should be contacted during design to discuss grade separation requirements (ADOT). If the North-South corridor is full access controlled, grade separation from existing railroad lines would be required.

4 Alternatives Development and Evaluation

4.1 Alternatives Screening Process

ADOT requirements (ADOT Policy and Implementation Memorandum 89-5) for the alternatives selection process include methods and technologies to generate many alternatives to ensure comprehensive corridor investigation. The requirements state that the process should analyze all reasonable alternatives, support the iterative nature of the NEPA process, provide an audit trail of the investigation and selection process, and determine optimal corridors subject to the constraints defined by environmental, engineering, social, and economic constraints. The process for developing and evaluating North–South Corridor alternatives was consistent with these requirements.

The two-stage process for developing and evaluating North–South alternatives is illustrated in **Figure 25**. Stage I involved the development and evaluation of a wide range of modal alternatives to improve transportation conditions within the study area. Stage II involved the development and evaluation of route alternatives that would accommodate a major transportation facility within the study area. A table of key milestones and decisions that were made during the alternatives development and evaluation process is included in Appendix A.

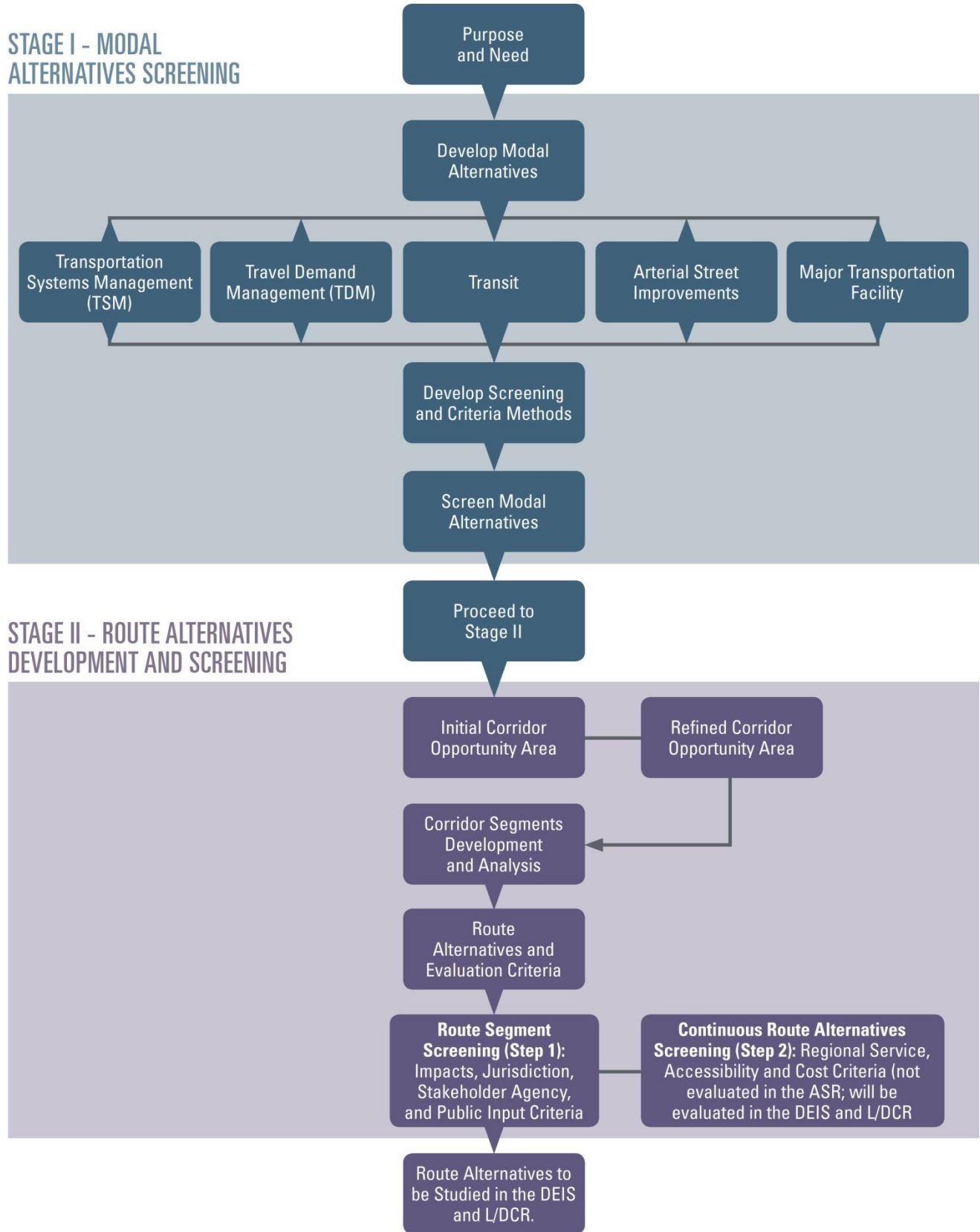
4.2 Stage I – Modal Alternatives Screening

4.2.1 Modal Alternatives and Evaluation Criteria

The need for considering modal alternatives was reiterated by USEPA in a letter to FHWA dated November 2, 2010. In the response letter dated May 12, 2011, FHWA committed to considering “a full spectrum of alternatives including the No-Build alternative, improvements to existing facilities, and alternatives that incorporate transit options.” The process for evaluating modal alternatives was included as Stage I of the alternatives development and screening process. The modal alternatives were developed by the consultant team in consultation with the Core Team and presented to the Stakeholder Agency Group. The screening process and the following modal alternatives were endorsed by both the Core Team and the Stakeholder Agency Group.

- **Travel Demand Management (TDM) Strategies:** These strategies reduce overall demand on the transportation system through incentives to divert single-occupancy travel to higher occupancy travel. TDM strategies include high-occupancy vehicle lanes, park-and-ride lots, express bus service, and pricing.
- **Traffic Systems Management (TSM) Strategies:** These strategies provide more efficient use of system capacity through the use of traffic operations technologies that enhance the efficiency of available roadway capacity. Typical TSM strategies include freeway management systems, traffic signal systems, ramp metering, and motorist information systems.
- **Arterial Street Improvements:** Arterial street improvements include the full implementation of planned transportation network improvements including the ADOT capacity improvements on the State Highway System, Pinal County roads of regional significance, and planned capacity improvements by local jurisdictions.
- **Transit Improvements:** Transit improvements provide incentives for using higher occupancy vehicles rather than lower occupancy automobiles. They include development of regional bus transit systems and the introduction of passenger rail service between Phoenix and Tucson, through the study area.
- **Proposed North–South transportation facility connecting US 60 and I-10.**

Figure 25. Alternatives development and screening process

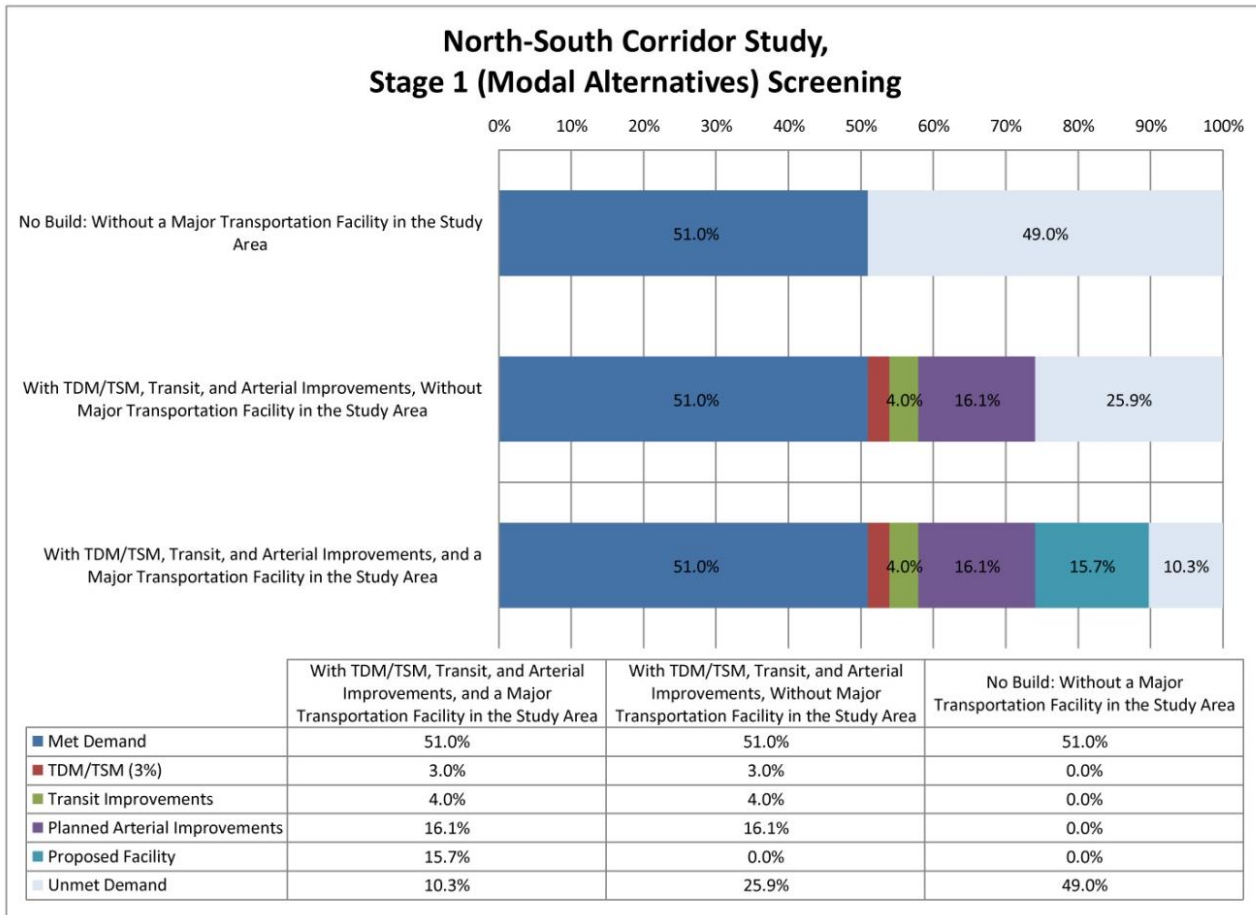


The NSSPT presented in Chapter 2 of this report was developed as the principal tool to evaluate North–South alternatives. The model was reviewed and received the endorsement of the Core Team for use in modal alternatives analysis. Since the model does not explicitly allow for the screening of modal alternatives, the criterion for modal alternatives was the “percentage of projected 2050 travel in the study area that can be accommodated by the estimated capacity of modal alternatives.” The baseline alternative for the analysis was the No-Build alternative. Modal screening was accomplished using off-model consideration of capacity and demand altering strategies necessary to meet 2050 travel demands. The modal distribution of travel demand is consistent with estimates from ADOT, MAG, and research literature.

4.2.2 Modal Alternatives Analysis and Conclusions

Figure 26 shows the capacity and TDM contributions of each modal alternative in relation to the projected 2050 travel demand estimated for the study area. The analysis shows that the No-Build alternative provides capacity for 51 percent of 2050 travel demand in the study area. The analysis also shows that none of the modal alternatives independently meet 2050 travel demand and that all of the modal alternatives, including a new major transportation facility (e.g., the North–South Corridor), will be required to meet 90 percent of the estimated 2050 travel demand. Based on this analysis, developing and evaluating route alternatives for a North–South transportation facility is justified (in Stage II) and other alternative modal strategies should also be included in long-range transportation improvements in the study area. This conclusion was presented to and endorsed by the Core Team and Stakeholder Agency Group.

Figure 26. Modal alternatives screening



4.3 Stage II – Route Alternatives Development and Screening

4.3.1 Evaluation Factors

The first step in route alternatives screening was to identify geographic constraints and opportunities within the study area. Information from available environmental and engineering databases that contained information as presented in Chapter 2 was plotted on maps to illustrate major constraints to be considered when identifying potential route alternatives. Databases that were analyzed included existing and planned development, existing and planned open space, topography, environmental resources, geological and geotechnical features, and drainage features. The mapped constraints (termed corridor avoidance areas) were used to identify geographic areas within the study area where the development of a transportation corridor was considered most feasible, resulting in a COA. The following describes the constraint analysis that led to development of the initial COA (**Figure 33**).

4.3.2 Existing and Planned Development

The CAG development database was reviewed. Planned developments that have a start year prior to 2020 were categorized as high-probability growth areas. Planned developments with a start year beyond 2020 were categorized as having a lesser probability of development, or of sufficient development lead-time that land use and development planning could, upon identification of a preferred alternative, reflect a north–south corridor. All planned development information is subject to change. A 1/8-mile buffer was applied to existing and planned development (**Figure 27**) to identify existing and planned land use corridor avoidance areas. Impacts into avoidance areas are feasible but will require additional costs to mitigate impacts.

4.3.3 Existing and Planned Open Space

The existing and proposed open space within the study area was mapped using information contained in the Pinal County Open Space and Trails Plan. While other definitions for open space exist, the Pinal County Open Space and Trails Plan provided clearly defined and delineated areas of open space. Areas of existing and planned open space were mapped with a 1/8-mile buffer applied to existing and planned open space in **Figure 28** to identify existing and planned open space corridor avoidance areas. Impacts into avoidance areas are feasible but will require additional costs to mitigate impacts.

Since designated open space would be affected by any north–south alternative, mitigation would be required to offset impacts from the North–South Corridor.

4.3.4 Topographical Conditions

A 1/8-mile buffer was applied to the areas with 15 percent or greater slope (**Figure 29**) to identify topographical avoidance areas. Impacts into avoidance areas are feasible but will require additional costs to mitigate impacts.

4.3.5 Geology and Geotechnical Conditions

The fissures mapped in **Figure 30** include a 1/8-mile buffer to identify fissure avoidance areas. The impact of fissures on the North–South Corridor can be mitigated with engineering design solutions; however, such engineered solutions are often impractical due to their costs. Similarly, ground subsidence can be mitigated; however, this can become costly in areas where the magnitude of subsidence and the rate of change of ground elevation are the largest. Part of this assessment must consider future land use that may make current, relatively benign conditions significantly worse.

4.3.6 Drainage

Figure 31 identifies the avoidance areas, and areas that should be avoided if possible. The following features were identified as areas that should be avoided if possible.

- Floodplains: Floodplains are areas adjacent to rivers and streams subject to recurring flooding. The majority of the study area is located within Zone X, with large portions within Zone D. Several major rivers and washes located in the study area are mapped as Zones A and AE. Each project in a regulatory floodway must undergo an encroachment review to determine its effect on flood flows and to ensure the project does not cause flooding problems. Impacts on floodplains may require FEMA map revisions (i.e., LOMR) and permits from federal, state, and local agencies. The major floodplains in the study area are:
 - Queen Creek (Zone A)
 - Gila River (Zones A and AE). The Gila River undergoes continuing sand and gravel mining operations within the river corridor. The locations and extents of potential future mining operations are unknown at this time. These locations should be avoided with the proposed facility, as the depths are typically unpredictable.
 - McClellan Wash (Zones A and AE)
 - Siphon Draw (Zone A)
- Easement Areas: FCDMC has large easement areas upstream of Powerline FRS, Vineyard FRS, and Rittenhouse FRS. These easement areas should be avoided because permits from FCDMC will most likely be required.

4.3.7 Corridor Opportunity Area

The resulting COA was mapped for presentation to the Core Team, the Stakeholder Agency Group, and at agency and public scoping meetings. **Figure 32** illustrates the initial COA and **Figure 33** illustrates the refined COA, which incorporated comments received at the agency and public scoping meetings. This analysis produced a COA area of less than 300 square miles. The refined COA reflects comments related to the extremely low development potential of the opportunity area to the east of the Picacho Mountains and the need to serve the existing population base with a new transportation facility. In addition, the refined COA avoids impacts to a potential UPRR Switch Yard at Red Rock, generally located southeast of the Picacho Mountains and north of I-10. The refined COA also included the addition of an area between Hanna Road and I-10 at the request of stakeholders.

Figure 27. Existing land use and planned development avoidance areas

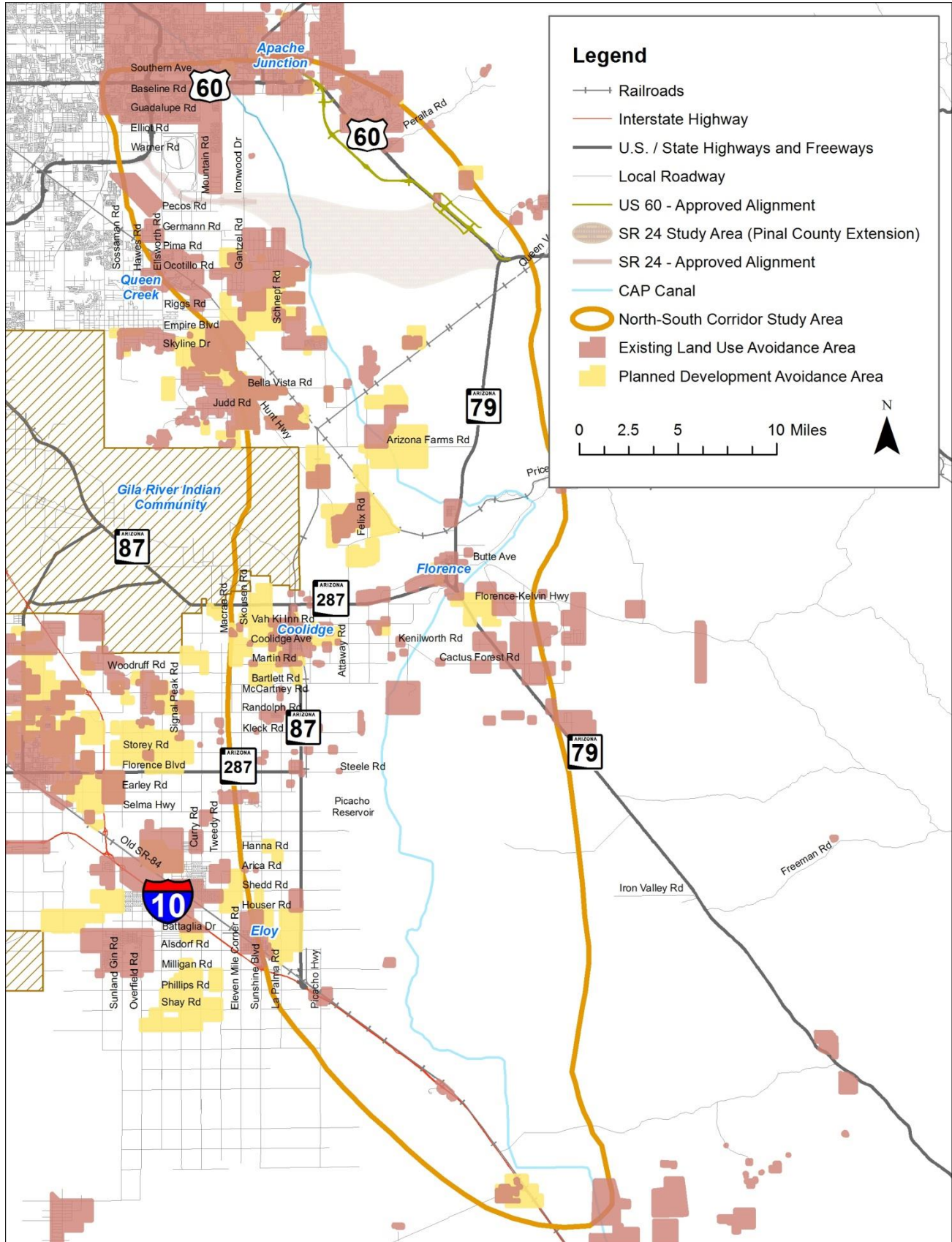


Figure 28. Existing and proposed open space avoidance areas

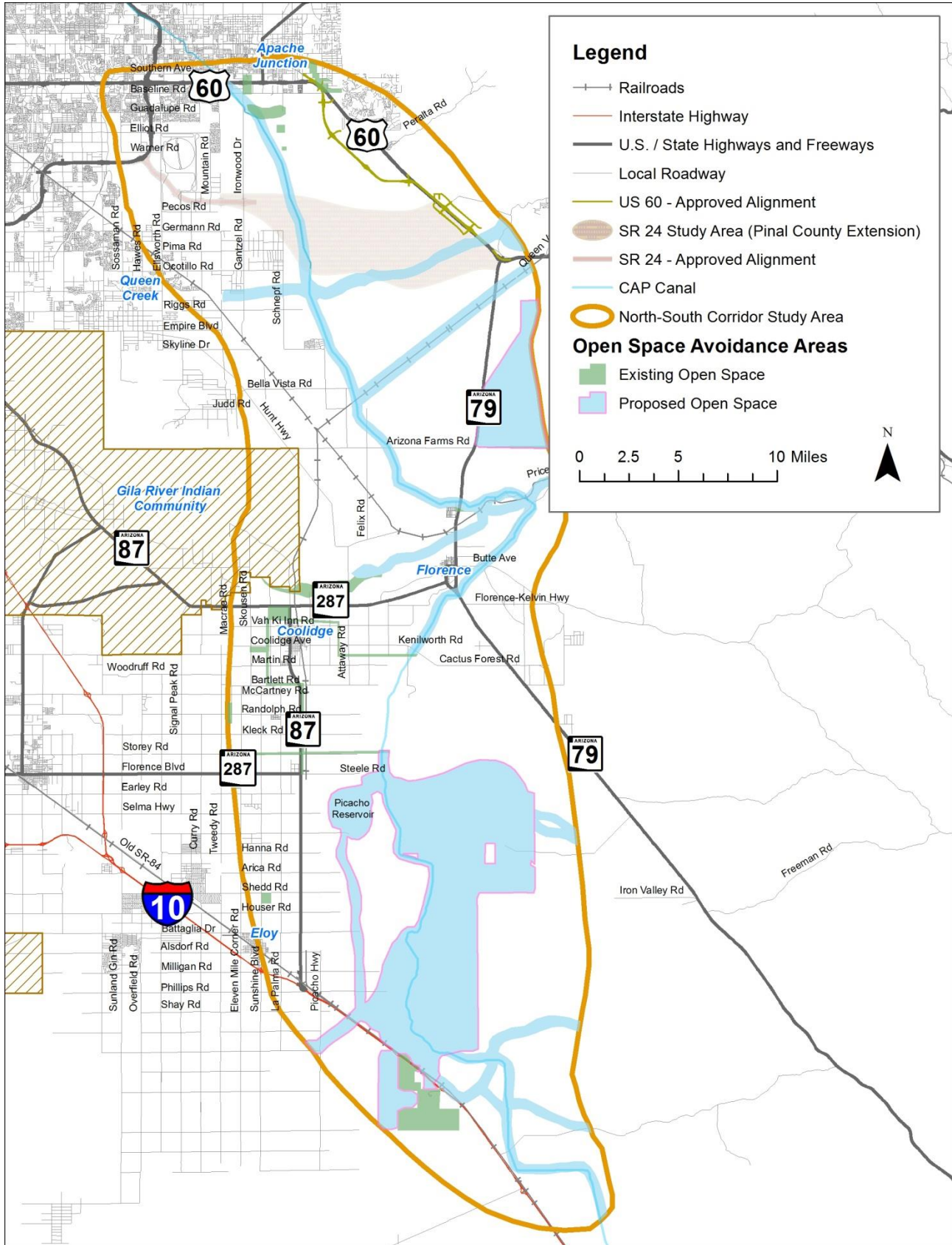


Figure 29. Topographic features avoidance areas

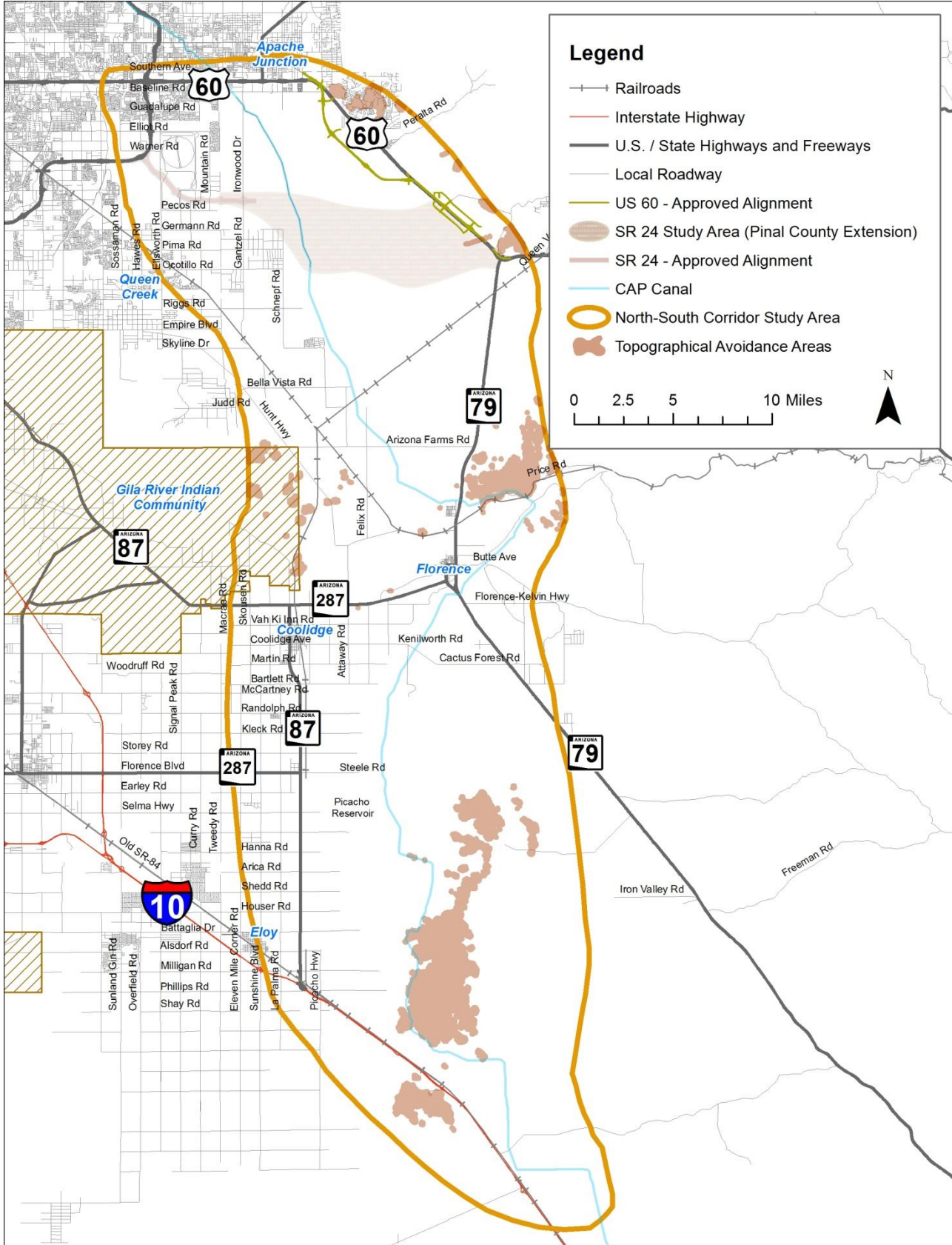


Figure 30. Fissure avoidance areas

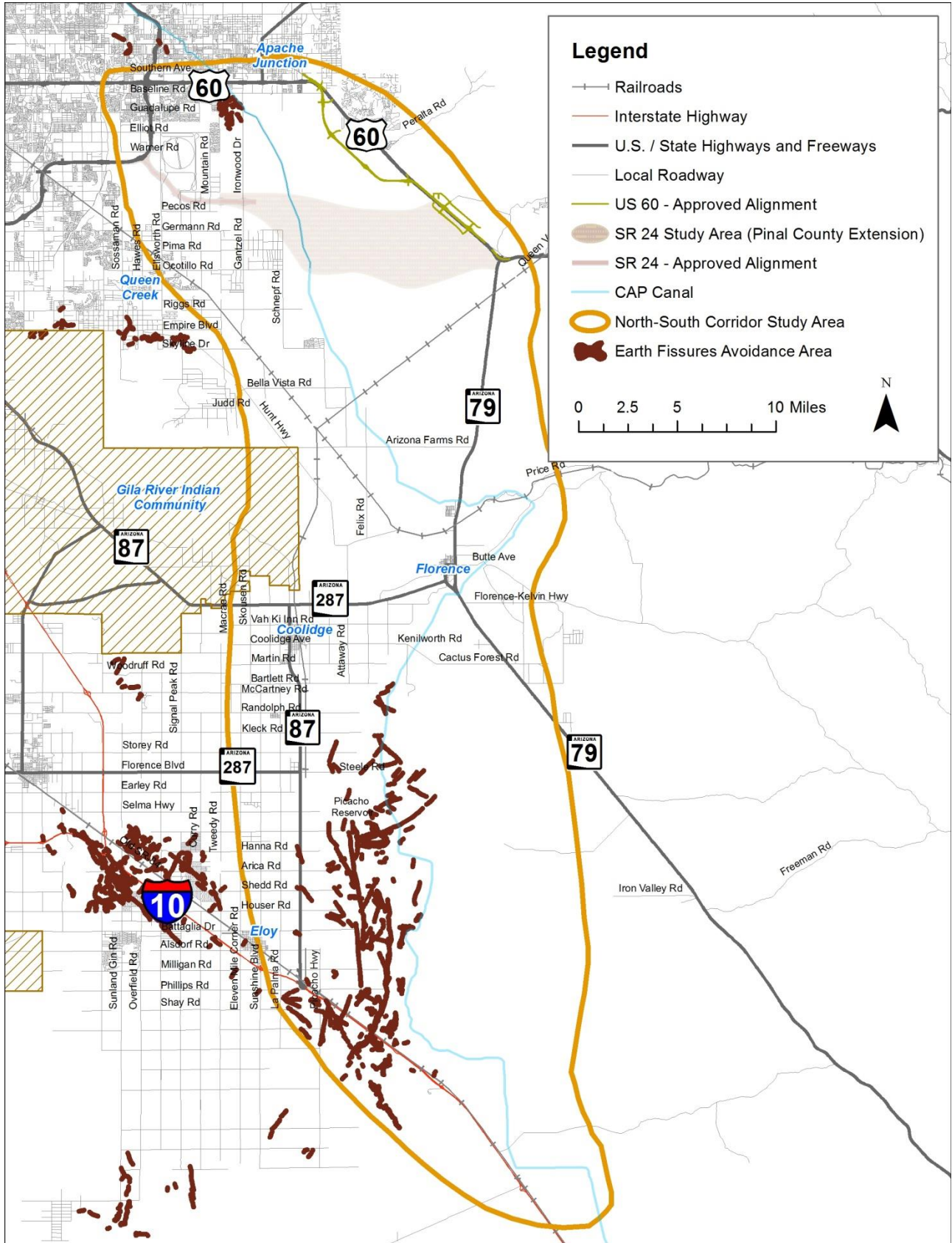


Figure 31. Drainage feature avoidance areas

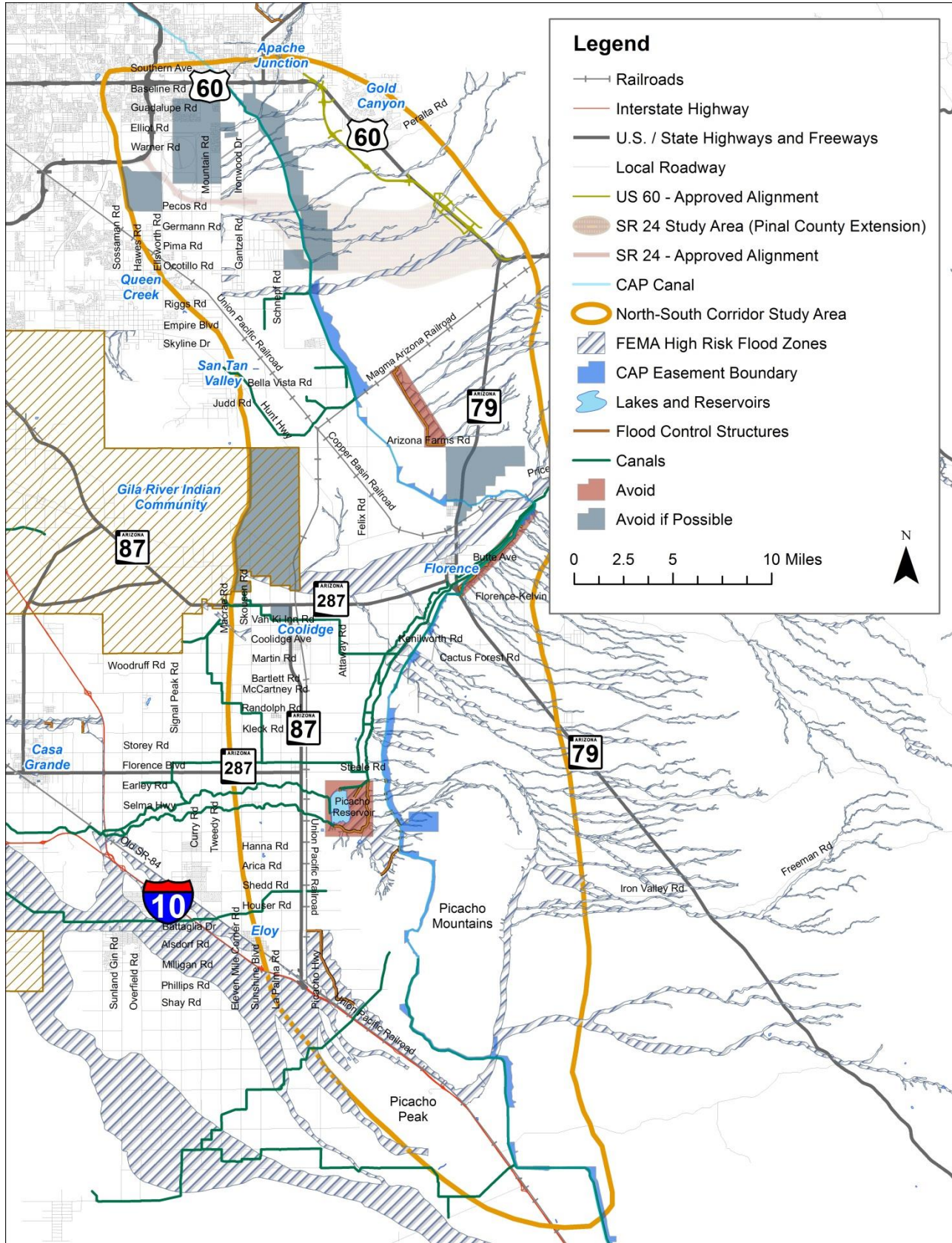


Figure 32. Initial Corridor Opportunity Area

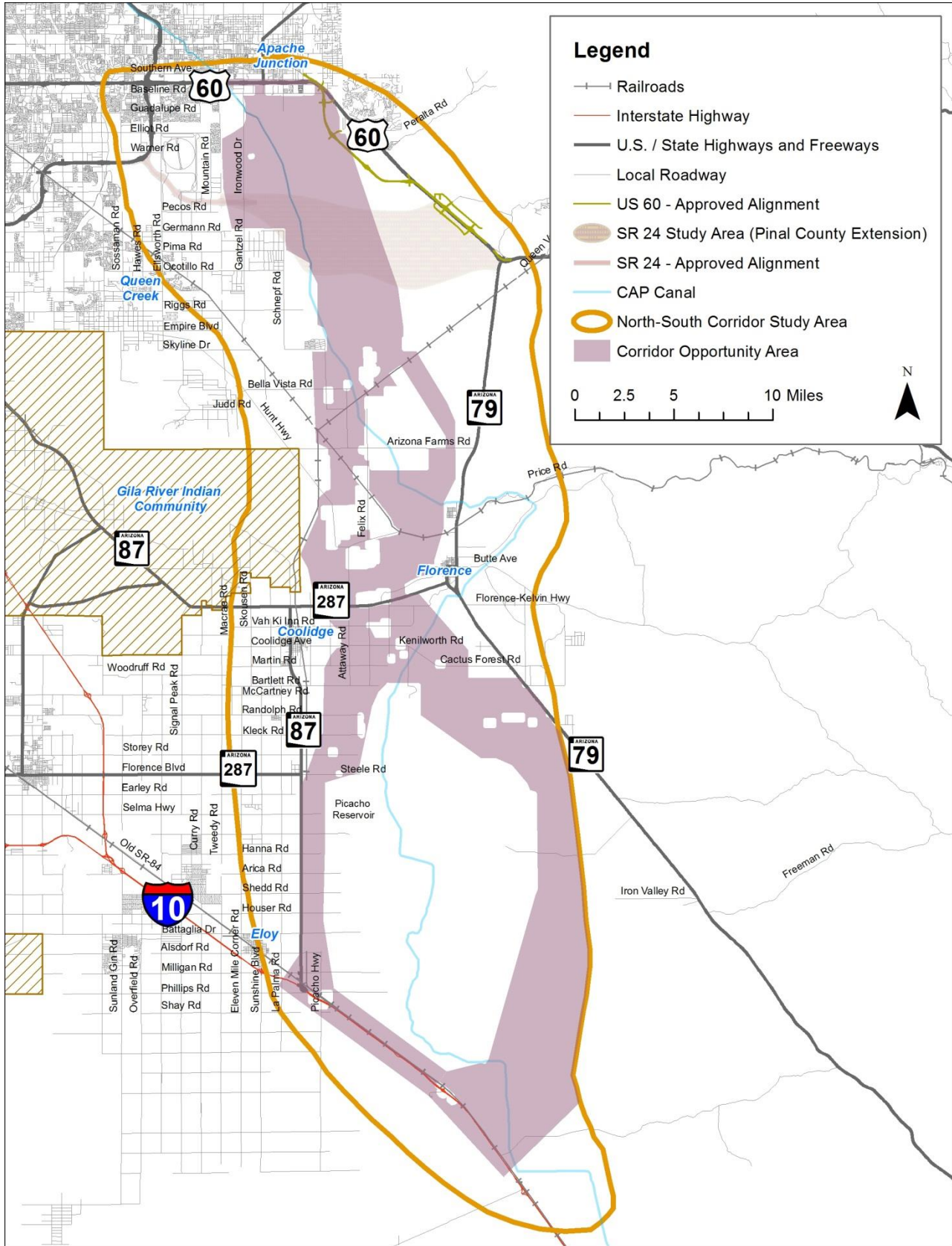
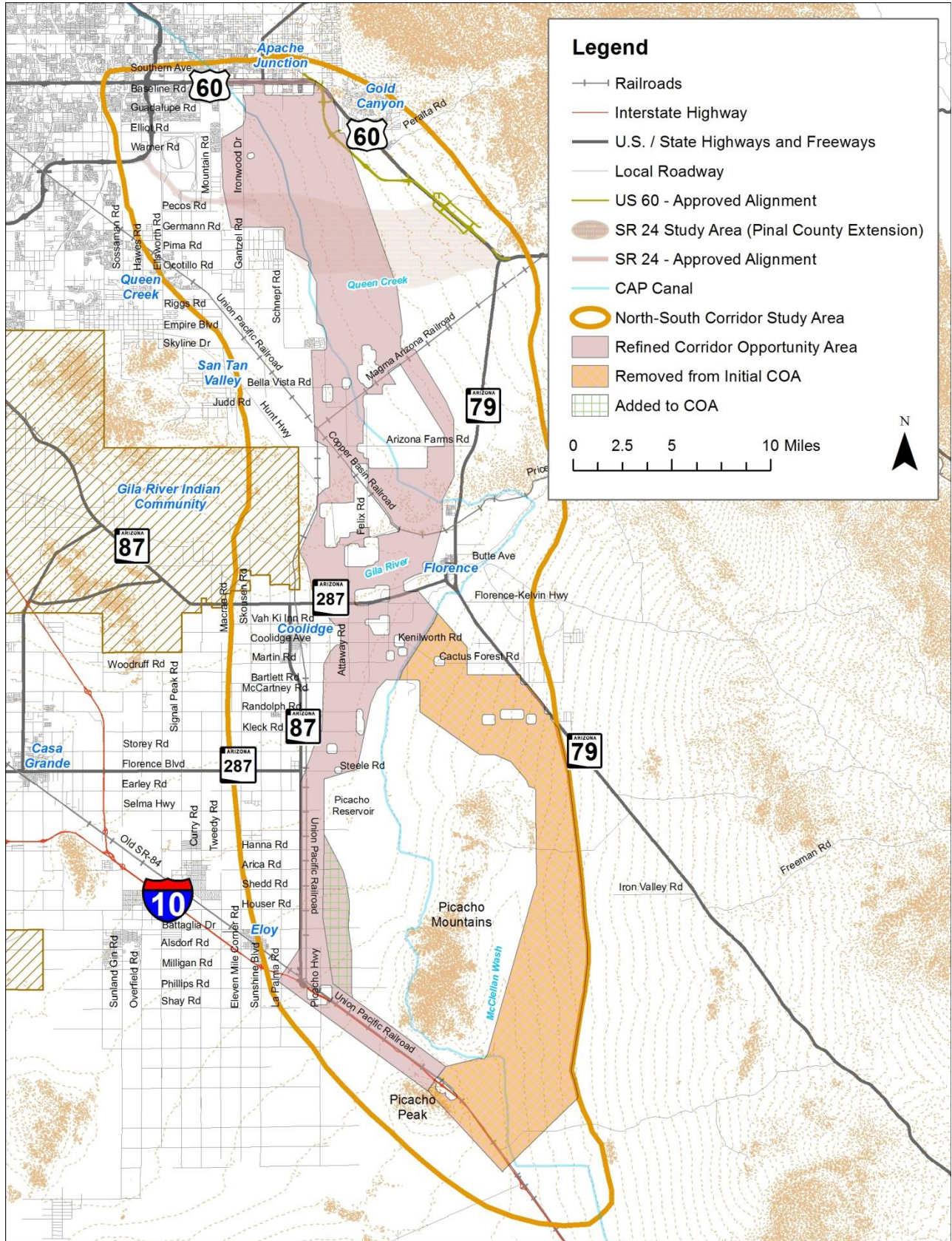


Figure 33. Refined Corridor Opportunity Area



4.3.8 Corridor Segments Development and Analysis

Corridor Segments Development

Corridor segments were developed within the refined COA to facilitate a more detailed analysis of corridor segment opportunities and constraints. Corridor segment boundaries varied and included physical features such as roadways, railroads, and the CAP canal. Sixteen corridor segments were identified within the refined COA as illustrated in **Figure 34**.

Corridor Segment Analysis

Corridor segment analysis was performed to evaluate the degree to which each corridor segment provided opportunities or constraints for a North–South Corridor. Corridors were analyzed considering the degree to which the segments met the purpose and need, technical assessments, and stakeholder agency input.

Purpose and Need Analysis

The NSSPT presented in Chapter 2 was developed as the principal tool to evaluate the extent to which the North–South Corridor is projected to meet the project purpose and need. The model was reviewed and received the endorsement of the Core Team for use in corridor segment analysis. A matrix of model-generated performance screening criteria was developed to quantify the extent to which each of the seven “build” scenarios met the purpose and need criteria. The seven “build” scenarios were developed to represent various combinations of corridor segments that could form continuous route alternatives. The No-Build scenario and the seven “build” scenarios are described below and graphically depicted in **Appendix B**:

- 2050 Base Network (No-Build Scenario) – Represents the base future condition, socioeconomic data, and future transportation network with no north–south transportation facility.
- Scenario 1: West – Scenario West is an access-controlled freeway connecting Apache Junction (1W) to I-10 northwest of Picacho (9W) via all western (W) corridors. Includes a system interchange with SR 24. This scenario encompasses the following corridors: 1W, 2W, 3, 4W, 5W, 6W, 7, 8W, 9W.
- Scenario 2: East – Scenario East is an access-controlled freeway connecting Apache Junction (1E) to I-10 southeast of Picacho (9E) via all eastern (E) corridors. Includes a system interchange with SR 24. This scenario encompasses the following corridors: 1E, 2E, 3, 4E, 5E, 6E, 7, 8E, 9E. Note that this corridor connects Corridor 6E to Corridor 7 through a portion of Corridor 6W.
- Scenario 3: East with 4W – Scenario East with Corridor 4W is an access-controlled freeway connecting Apache Junction (1E) to I-10 northwest of Picacho (9W). Includes a system interchange with SR 24. This scenario encompasses the following corridors: 1E, 2E, 3, 4W, 5E, 6E, 7, 8E, 9E. Note that corridor 4W connects to Corridor 5E through the northern portion of Corridor 5W. The Town of Florence indicated that this connection may be feasible.
- Scenario 4: West to East, Transition at 4W – This scenario is an access-controlled freeway connecting Apache Junction (1W) to I-10 southeast of Picacho (9E). Includes a system interchange with SR 24. This scenario encompasses the following corridors: 1W, 2W, 3, 4E, 5E, 6E, 7, 8E, 9E. Note that this corridor connects Corridor 6E to Corridor 7 through a portion of Corridor 6W.
- Scenario 5: West to East, Transition at 5W – This scenario is an access-controlled freeway connecting Apache Junction (1W) to I-10 southeast of Picacho (9E). Includes a system interchange with SR 24. This scenario comprises the following corridors: 1W, 2W, 3, 4W, 5E, 6E, 7, 8E, 9E. Note that Corridor 4W connects to Corridor 5E through the northern portion of Corridor 5W. The Town of Florence indicated that this connection may be feasible.

- Scenario 6: East to West, Transition at 4W – Scenario East to West is an access-controlled freeway connecting Apache Junction (1E) to I-10 northwest of Picacho (9W). Includes a system interchange with SR 24. This scenario encompasses the following corridors: 1E, 2E, 3, 4W, 5W, 6W, 7, 8W, 9W.
- Scenario 7: East to West, Transition at 6W – This scenario is an access-controlled freeway connecting Apache Junction (1E) to I-10 northwest of Picacho (9W). Includes a system interchange with SR 24. This scenario comprises the following corridors: 1E, 2E, 3, 4E, 5E, 6W, 7, 8W, 9W.

Table 10 contains performance measure output from the NSSPT for each of the seven “build” scenarios. In general, these performance measures indicated that corridor scenarios in the western corridors have higher volumes on the North–South Corridor and provide significant relief on the arterial streets because of the close proximity to developed areas and activities. Eastern “build” scenarios, however, had lower (but favorable) volumes on the North–South Corridor and provided less (but favorable) relief on the arterial streets because of a location farther from developed areas and activities. Transitional corridor scenarios provide intermediate (but favorable) north–south volumes and relief to arterial streets. Key performance criteria related to “build” scenarios, as compared to the No-Build scenario, are summarized below.

- increases average congested speed by over 25 percent
- reduces travel on arterial streets by over 30 percent
- reduces delay on arterial streets by over 55 percent

The degree to which each corridor satisfies the purpose and need for the corridor is summarized in **Table 11**.

Stakeholder Agency Analysis

The study team met with stakeholder agencies on a one-on-one basis in January and February 2011. A detailed summary of agency input received in January and February 2011 was documented in a memorandum (dated March 7, 2011) and is summarized in **Table 11**.

Technical Assessments

Technical assessments of drainage, geotechnical, and economic development features in each corridor segment, completed in June 2011, are summarized in **Table 11**.

Corridor Segment Analysis Conclusions

The corridor segment analysis identified opportunities and constraints for route alternatives in each segment. Some corridor segments offered significantly more opportunities than others, and some corridor segments were characterized by significant constraints and challenges. Rather than selecting corridor segments for further consideration and eliminating others from further consideration, it was determined by the Core Team and Agency Stakeholder Group that the corridor segment analysis should be used to inform the development and evaluation of route alternatives in Stage II of the process illustrated in **Figure 25**.

Figure 34. Corridor segments

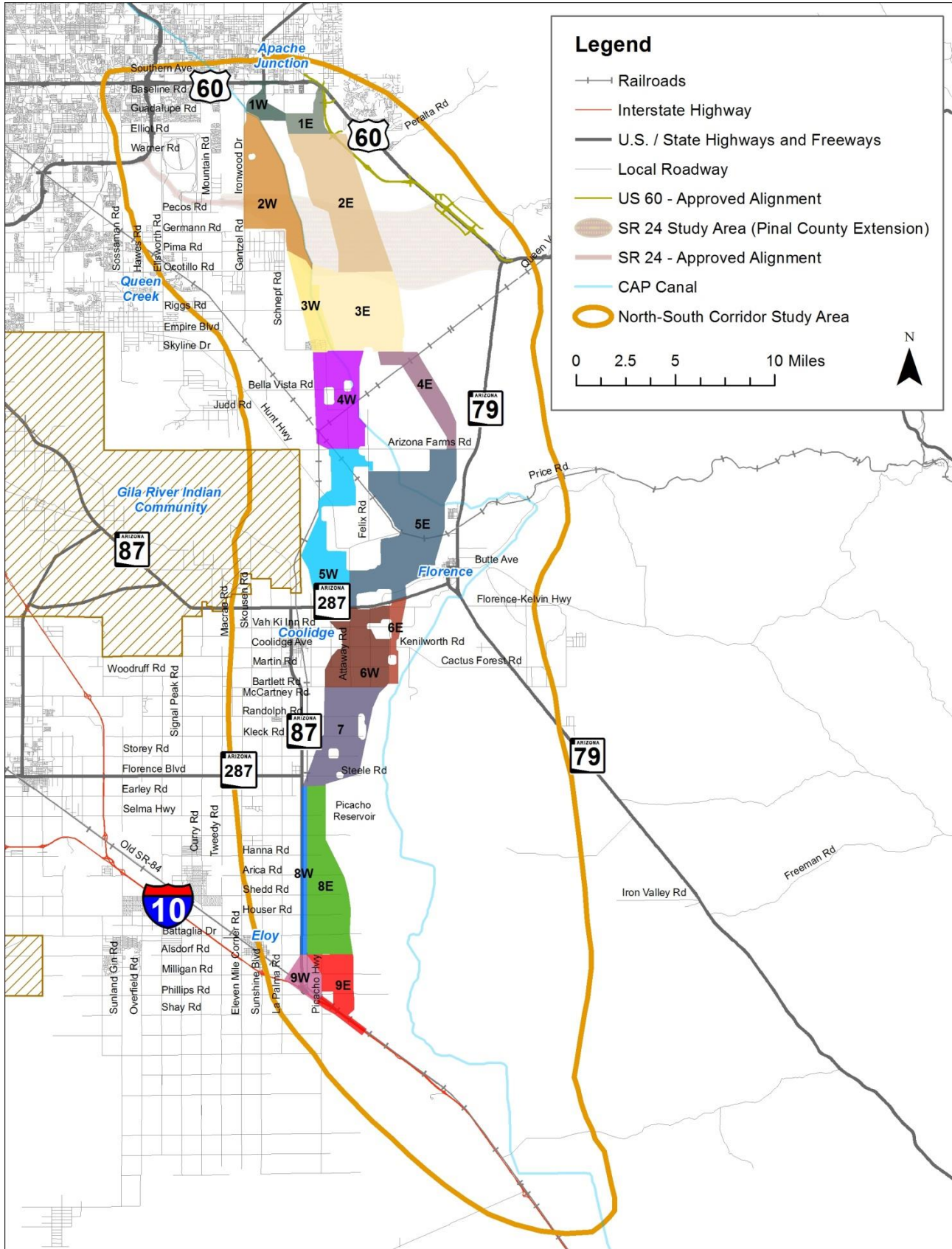


Table 10. Traffic model output for 2050 conditions

	Scenario 1: West	Scenario 2: East	Scenario 3: East with 4W	Scenario 4: West to East, Transition at 4W	Scenario 5: West to East, Transition at 5W	Scenario 6: East to West, Transition at 4W	Scenario 7: East to West, Transition at 6W
Study area system performance measures¹	Percentage change²						
Total vehicle miles traveled	6.1%	5.6%	4.6%	6.0%	3.1%	6.1%	5.1%
Total vehicle hours traveled	-15.7%	-12.8%	-15.9%	-15.0%	-16.5%	-14.6%	-14.4%
Weighted average congested speed (mph)	25.8%	21.1%	24.4%	24.7%	23.5%	24.3%	22.8%
Total delay (hours)	-35.2%	-28.0%	-34.9%	-34.2%	-35.0%	-32.9%	-30.7%
Vehicle miles traveled, by facility type							
Arterial streets	-26.4%	-21.3%	-24.1%	-24.9%	-27.2%	-24.6%	-23.7%
System vehicle miles traveled total	6.1%	5.6%	4.6%	6.0%	3.1%	6.1%	5.1%
Vehicle hours traveled, by facility type							
Arterials	-36.8%	-28.6%	-33.8%	-33.9%	-36.4%	-33.4%	-31.2%
System vehicle hours traveled total	-15.7%	-12.8%	-15.9%	-15.0%	-16.5%	-14.6%	-14.4%
Total delay (hours), by facility type							
Arterial streets	-61.7%	-43.6%	-55.8%	-55.9%	-60.5%	-54.7%	-47.5%
Total system delay (hours)	-35.2%	-28.0%	-34.9%	-34.2%	-35.0%	-32.9%	-30.7%
Congested speed, by facility type							
Arterial streets	16.0%	9.8%	14.3%	13.4%	14.0%	12.7%	10.4%

Source: HDR Engineering, Inc.

Note: Green shading represents the best performing scenario for the respective criterion; yellow represents moderate improvement; and red represents the least improvement.

¹ as estimated from the North-South Sketch Planning Tool (NSSPT)


























² percentage change as compared with 2050 no-build scenario

Table 11. Corridor analysis matrix

LEGEND

- = Undesirable feature
- ◐ = Neutral feature; issues can be resolved
- = Desired feature

Corridor segment	Stakeholder agency input	Drainage assessment	Geotechnical assessment	Economic development assessment	Purpose and need
1W	○ Conflicts with AJ PARA and Portalis	○ Within FCDMC FRS easement/ponding area, requires bridging of Powerline FRS, Zone A floodplains, and CAP	○ Earth fissures and subsidence	● Benefits existing and future growth areas, promotes industrial and office development near residential areas	● Improves access to existing and future activity, employment, and population centers
1E	◐ Consistent with AJ PARA and Portalis; possible connection to US 60 via Mountain View would affect US 60 Reroute	● No easements/no CAP crossing; within FCDMC, fewer floodplains issues	◐ No earth fissures, stay east to avoid subsidence	◐ May not provide significant economic development benefits within 20-year timeframe; uncertainty regarding timing of ASLD land	◐ Improves access to future activity, employment, and population centers; less proximity to existing population and employment centers
2W	◐ Alternatives in northern 2W conflict with AJ PARA and Portalis; encroaches on Rittenhouse Airfield; desired by Queen Creek, Pinal County, and USEPA to serve existing and future population centers	◐ Crosses several Zone A and D floodplains, Powerline Channel, and encroaches on FCDMC FRS easement area	◐ No earth fissures; some subsidence	● Benefits existing development and promotes industrial and office development near residential areas	● Improves access to existing and future activity, employment, and population centers
2E	◐ Supported by Apache Junction; possible termini at US 60 Reroute at Peralta traffic interchange	◐ Crosses several Zone A floodplains	◐ No fissures; subsidence in western areas; areas in east have no reported subsidence; localized zones of large volume change soils will be encountered	◐ May not provide significant economic development benefits within 20-year timeframe; uncertainty regarding timing of ASLD land	◐ Improves access to future activity, employment, and population centers; less proximity to existing population and employment centers

Corridor segment	Stakeholder agency input	Drainage assessment	Geotechnical assessment	Economic development assessment	Purpose and need
3W	 <p>Alternatives west of the CAP are desired by Queen Creek, Pinal County, and USEPA to serve existing and future population centers; encroaches on Rittenhouse Airfield; affects existing residential community</p>	 <p>Requires crossing of Queen Creek (Zone A floodplain); downstream of CAP Canal and Sonoqui Dike; these structures impede water requiring less drainage infrastructure; avoids future CAP recharge basins and ponding areas upstream of the CAP Canal</p>	 <p>No fissures; little to no subsidence issues identified</p>	 <p>Alternatives in western area would provide greatest benefit to existing development</p>	 <p>Improves access to existing and future activity, employment, and population centers</p>
3E	 <p>Alternatives west of the CAP are desired by Pinal County to serve existing and future population centers</p>	 <p>Requires crossing of Queen Creek (Zone A floodplain) at narrowest location to reduce bridge length</p>	 <p>Little to no subsidence issues identified</p>	 <p>Alternatives in western area would provide greatest benefit to existing development</p>	 <p>Improves access to future activity, employment, and population centers; in less proximity to existing population and employment centers</p>
4W	 <p>Supported by Florence General Plan</p>	 <p>No major drainage issues; CAP crossing required</p>	 <p>Soils with large volume change; difficulties in pavement subgrade design</p>	 <p>Benefits existing development and promotes industrial and office development near residential areas</p>	 <p>Improves access to existing and future activity, employment, and population centers</p>
4E	 <p>No agency support; inconsistent with Town of Florence plans</p>	 <p>Crosses several floodplains; adjacent to ponding area; would force alternatives into Zone D floodplain in 5E</p>	 <p>No geotechnical issues identified</p>	 <p>Existing or planned economic development not imminent</p>	 <p>Improves access to future activity, employment, and population centers; less proximity to existing population and employment centers; access limited by FRS</p>
5W	 <p>No agency support; inconsistent with Town of Florence plans</p>	 <p>Crosses several Zone A floodplains; requires Gila River crossing</p>	 <p>No geotechnical issues</p>	 <p>Would not benefit future economic development in Florence</p>	 <p>Location west of Florence provides less access and mobility benefits to existing and future activity, employment, and population centers</p>

Corridor segment	Stakeholder agency input	Drainage assessment	Geotechnical assessment	Economic development assessment	Purpose and need
5E	<p>●</p> <p>Supported by Florence General Plan and Northern Framework; eastern crossing of Gila River preferred by Florence</p>	<p>◐</p> <p>Crosses fewer Zone A floodplains; requires CAP crossing; potential shorter bridge crossing the Gila River</p>	<p>◐</p> <p>Potential future fissures; stay east of the local bedrock outcrops; gypsum deposits can be addressed</p>	<p>●</p> <p>Promotes economic development in Florence, but should avoid existing and planned residential areas</p>	<p>●</p> <p>Improves access to existing and future activity, employment, and population centers; close to Town of Florence activity centers</p>
6W	<p>●</p> <p>Eastern area of 6W preferred by Coolidge; City of Coolidge resolution supports alternatives west of Valley Farms along Clemans-Felix Road</p>	<p>◐</p> <p>Fewer impacts on floodplains; likely able to avoid floodplains; crosses the Pima Lateral, a canal nearly equal in size to the CAP canal ; crossing requirements of the Pima Lateral will be provided by the Gila River Indian Irrigation and Drainage District (GRIIDD) and the Pima-Maricopa Irrigation Project (PMIP)</p>	<p>◐</p> <p>Potential subsidence and future fissures in eastern portions; stay west to avoid potential future fissures</p>	<p>●</p> <p>Promotes economic development in Coolidge, but should avoid existing and planned residential areas</p>	<p>●</p> <p>Improves access to existing and future activity, employment, and population centers; in close proximity to City of Coolidge activity centers</p>
6E	<p>●</p> <p>Supported by Coolidge General Plan</p>	<p>◐</p> <p>Requires crossings of Zone A floodplains and potential uncertified FEMA levee structures on south end; crosses the Pima Lateral, a canal nearly equal in size to the CAP canal ; crossing requirements of the Pima Lateral will be provided by the Gila River Indian Irrigation and Drainage District (GRIIDD) and the Pima-Maricopa Irrigation Project (PMIP)</p>	<p>◐</p> <p>Subsidence and potential future fissures</p>	<p>●</p> <p>Promotes economic development in Coolidge, but should avoid existing and planned residential areas</p>	<p>●</p> <p>Improves access to existing and future activity, employment, and population centers; centrally located between Florence and Coolidge</p>
7	<p>●</p> <p>Supported by Coolidge General Plan</p>	<p>◐</p> <p>Crosses the rehabilitated SCIP canals; crossing requirements of will be provided by the Gila River Indian Irrigation and Drainage District (GRIIDD) and the Pima-Maricopa Irrigation Project (PMIP)</p>	<p>◐</p> <p>Stay close to the western boundary to avoid potential future fissures</p>	<p>●</p> <p>Alternatives in eastern area would promote future economic development</p>	<p>●</p> <p>Improves access to existing and future activity, employment, and population centers</p>

Corridor segment	Stakeholder agency input	Drainage assessment	Geotechnical assessment	Economic development assessment	Purpose and need
8W	<p>● Not supported by local agencies; supported by ADOT Tucson District pending resolution of turn-back issue</p>	<p>● Crosses Casa Grande Canal and the Florence Casa-Grande Canal Extension; crossing requirements of will be provided by the Gila River Indian Irrigation and Drainage District (GRIIDD) and the Pima-Maricopa Irrigation Project (PMIP)</p>	<p>○ Existing fissures; avoids Picacho Reservoir; stay close to UPRR and SR 87 to avoid most fissures</p>	<p>○ May disrupt potential economic growth along rail corridor</p>	<p>● Improves access to existing and future activity, employment, and population centers</p>
8E	<p>● Supported by Eloy and Mesa</p>	<p>● Encroaches on Zone AE floodplain; requires CLOMR; requires buffer from Picacho Reservoir; crosses Casa Grande Canal and the Florence Casa-Grande Canal Extension; crossing requirements of will be provided by the Gila River Indian Irrigation and Drainage District (GRIIDD) and the Pima-Maricopa Irrigation Project (PMIP)</p>	<p>○ Stay west to avoid existing and potential future fissures; soils with high potential of concrete corrosion</p>	<p>● Consistent with Eloy growth and commercial economic development; planned residential development is not imminent</p>	<p>● Improves access to future activity, employment, and population centers; located east of existing population centers</p>
9W	<p>● Not supported by local agencies; supported by ADOT Tucson District pending resolution of turn-back issue; inconsistent with ADOT I-10 DCR, Tangerine Road to I-8; interchange with I-10 may warrant reconstruction of planned service interchange; not supported by Eloy</p>	<p>● Portion located within Zone AE floodplain; requires CLOMR</p>	<p>○ Existing and potential fissures based on nearby major fissures; stay close to UPRR and SR 87 to avoid most fissures</p>	<p>○ May disrupt potential economic growth along rail corridor; system interchange would disrupt local development plans</p>	<p>● Improves access to existing and future activity, employment, and population centers</p>
9E	<p>● Supported by Eloy and Mesa</p>	<p>● Almost entirely within Zone AE floodplain; requires CLOMR</p>	<p>○ Existing and potential future fissures; stay west to avoid subsidence and major existing fissures; potential future fissures based on major nearby fissures; soil with large volume change; difficulties in pavement subgrade design</p>	<p>● Consistent with Eloy growth and economic development</p>	<p>● Improves access to future activity, employment, and population centers; located east of existing population centers</p>

Notes: AJ = Apache Junction, ASLD = Arizona State Land Department, CAP = Central Arizona Project, CLOMR = Conditional Letter of Map Revision, DCR = design concept report, FCDMC = Flood Control District of Maricopa County, FRS = flood retarding structure, I-8 = Interstate 8, I-10 = Interstate 10, PARA = Planning Assistance for Rural Areas, SR = State Route; US 60 = United States Route 60, USEPA = U.S. Environmental Protection Agency; UPRR = Union Pacific Railroad

4.3.9 Route Alternatives and Evaluation Criteria

The route alternatives evaluation process included two steps. The purpose of the two-step process was to screen the route alternatives to a reasonable set of continuous alternatives that could be advanced for detailed study in the L/DCR and EIS.

Step 1 of the screening process evaluated the route segments using quantifiable impacts criteria, jurisdiction and stakeholder agency criteria, and public input criteria. Step 1 identified route segments with higher levels of public and stakeholder preferences and lower levels of impacts. These routes segments were subsequently combined into continuous route alternatives.

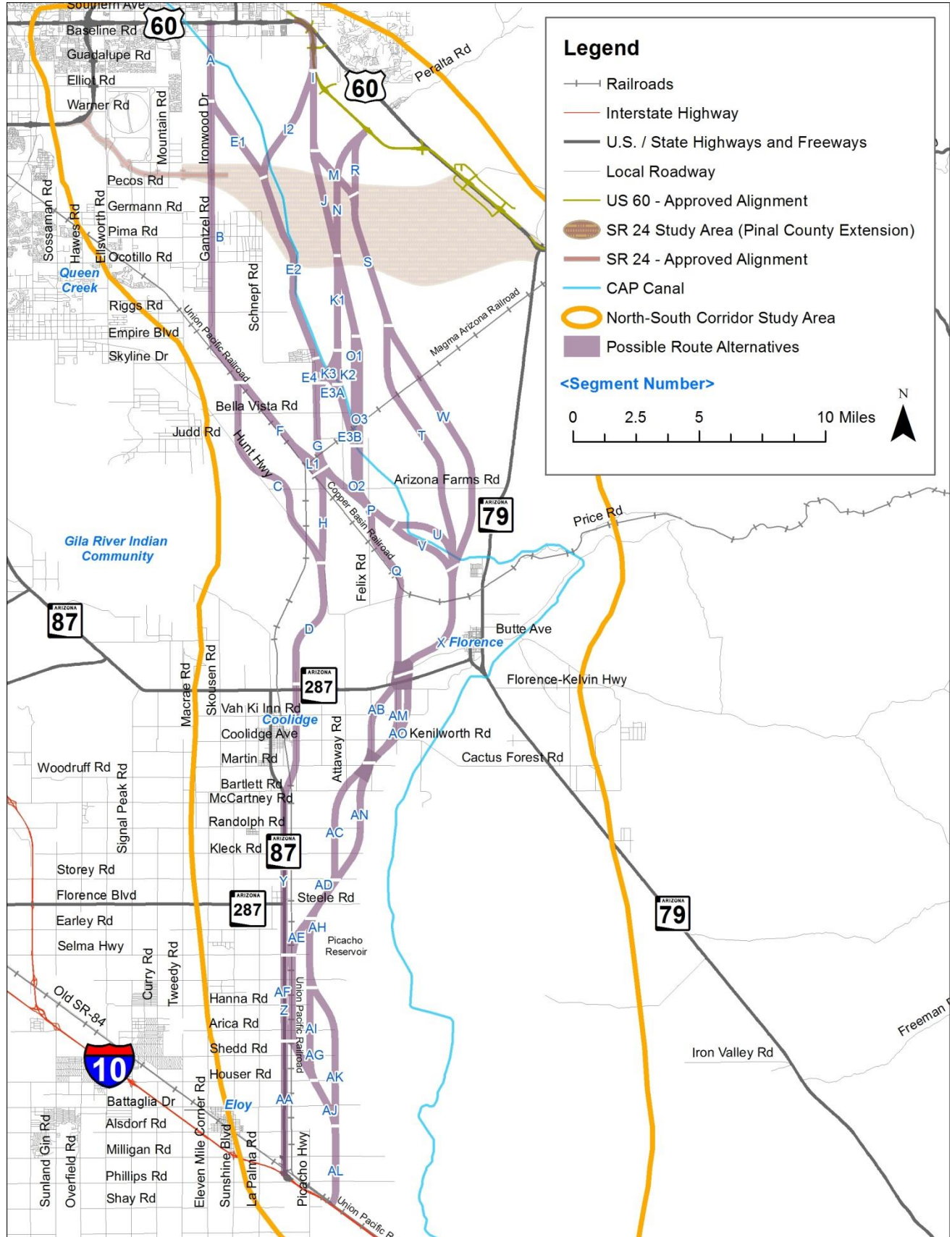
Step 2 screening criteria included regional service and accessibility criteria and cost criteria. Note that following Step 1, the Core Team and the Agency Stakeholder Group agreed that Step 1 screening was sufficient to produce a set of continuous route alternatives for further evaluation in the L/DCR and EIS, during which each continuous route alternative will be evaluated along with the No-Build alternative. As such, Step 2 screening was not completed.

Route Alternatives Development

Initial route alternatives that connect US 60 and I-10 were developed using information from other studies, jurisdictional planning documents, existing and planned future conditions, and the corridor analysis presented above. Initial alternatives were presented at meetings and input was received from the Core Team, the Stakeholder Agency Group, and the general public. As each group reviewed the initial alternatives, the consultant team revised the initial alternatives and communicated changes to the Core Team. The Stakeholder Agency Group was allowed a 2-month period to review initial alternatives and offer input on revisions to initial alternatives or to offer new alternatives. The general public was offered the opportunity to comment on alternatives during four public workshops in December 2011.

In January 2012, the Core Team approved the revised alternatives for presentation to the Stakeholder Agency Group, which endorsed the revised alternatives for screening. As illustrated in **Figure 35**, the alternatives development process produced hundreds of continuous route alternatives. Each continuous route alternative reflected the geometric design features outlined in Chapter 3 of this report and provided a route width of 1,500 feet to provide flexibility in route location. To facilitate the route alternatives evaluation, the 1,500-foot-wide route alternatives were defined by 56 route segments, also shown in **Figure 35**. Route segments were defined between each junction of route segments so that continuous route alternatives could be described by the combination of route segments.

Figure 35. Possible route alternatives



Evaluation Criteria

Evaluation criteria (**Table 12**) were initially developed based on those used to evaluate SR 24 route alternatives that traverse the North–South Corridor and connect SR 202L and US 60 in the vicinity of Florence Junction. The evaluation criteria were presented at a Stakeholder Agency Group meeting. Stakeholders provided comments on the evaluation criteria. The evaluation criteria were subsequently expanded and modified to reflect Core Team and Stakeholder Agency Group input.

Evaluation criteria were presented at and endorsed by the Core Team and the Stakeholder Agency Group. Evaluation criteria were categorized as Step 1 criteria and Step 2 criteria as listed below.

Segment Screening (Step 1) Criteria

- Impacts Criteria
- Local Agency Input Criteria
- Regional, State, and Federal Agency Input Criteria
- Public Input Criteria

Continuous Route Alternatives (Step 2) Criteria

- Regional Service and Accessibility Criteria
- Cost Criteria

Table 12 lists the evaluation criteria and the application of each criterion for use in Step 1 and Step 2 screening. As previously mentioned, during the evaluation process, it was determined that Step 2 criteria would be better applied during the EIS process. As such, Step 2 criteria were not evaluated within the ASR.

The following section presents a discussion and evaluation results for the Step 1 (segment) screening.

Route Segment Screening Results (Step 1)

Step 1 evaluation criteria (refer to **Table 12**) were applied to each of the 56 route segments. Step 1 criteria are separated into four categories.

- Impacts Rating
- Local Stakeholder Agency Rating
- Regional, State, and Federal Stakeholder Agency Rating
- Public Rating

Impacts Rating

Impacts criteria included environmental/natural resource, land use and development, geotechnical, utilities, and ROW. Impacts were calculated for each segment using geographic databases of study area features. The calculations produced quantitative measures for each screening criteria in terms of area (e.g., acreage of existing development affected by the segment), linear segment length (e.g., segment-miles of existing ROW), and frequencies (e.g., number of crossings of the CAP Canal). Each quantitative measure was converted to a rating scale of “1” (least favorable) to “5” (most favorable).

Table 12. North–South Corridor route alternative evaluation criteria

Criteria	Description	Performance Measures	
Step 1: Evaluation Criteria for Segment Screening			
<i>Impacts Criteria</i>			
1A	Water resources	Impacts on natural drainage features	Number of crossings (measured as crossings per mile) or direct impacts on natural washes (drainage features identified on USGS maps), FEMA floodplain features
1B		Impacts on human-made (i.e., FRSs and the CAP Canal) drainage features	Number of crossings (measured as crossings per mile) or direct impacts on human-made drainage features
2	Utility conflicts	Impacts on existing and planned facilities	Number of conflicts with major existing and planned utility facilities
3A	Existing and planned development	Impacts on existing development (existing land uses)	Number of acres directly affected
3B		Impacts on planned development 2020 or before	Number of acres directly affected
4A	Use of existing right-of-way	Degree of use of existing roadways with existing right-of-way	Percentage of segment length on existing roadway alignment
5A	Threatened and endangered species	Potential impact on proposed, candidate, and listed species and their habitats	Number of acres within habitat areas of threatened and endangered species (based on available database search)
6A	Cultural sites/resources	Potential impacts on known historic sites and structures, prehistoric sites, and traditional cultural properties	Number of potential cultural resource sites within corridor segment (based on available databases)
7A	Potential impact of geotechnical features	Potential impact of NRCS (near surface) features	Degree of impact of known surface characteristics: fines (% passing #200 sieve); plasticity index; linear extensibility; corrosion to concrete; gypsum; pH
7B		Potential impact of known subsurface/subsidence sites	Degree of impact of fissure/subsurface sites
8A	Existing open space	Potential impacts on existing designated open space	Acres of existing open space affected by the proposed alternative
8B	Proposed open space	Potential impacts on proposed open space	Acres of proposed open space affected by the proposed alternative (open space is as proposed in the Pinal County Open Space and Trails Master Plan)
9A	Public parks and trails	Potential impacts on public parks and trails	Feet of trails (within route segment) for: <ul style="list-style-type: none"> ▪ adopted county corridor ▪ existing/planned multiuse trail corridor ▪ planned/existing off-highway vehicle trail ▪ proposed multiuse trail corridor ▪ proposed off-highway vehicle trail Note: There are no public parks along any segments
10A	Structures affected	Impacts on businesses and residences	Number of structures directly affected
11A	Noise	Potential impact to existing residences, planned residences and/or other sensitive receivers/land uses	Number of sensitive receivers within 1,750 feet of the centerline of the route alternative Explanation: alternatives are 1,500 feet wide; 1,750 feet to either side captures receivers within 1,000 feet of the outside edge of the alternative

Criteria		Description	Performance Measures
12A	AGFD Conservation Priority Area	Potential impact on Conservation Priority Areas as identified in coordination with AGFD	Acres of route segment within each AGFD conservation priority area (1 through 6)
12B	Wildlife corridors	Potential impact on wildlife corridors/linkages	Percentage of area of segment within wildlife corridor

Local Agency and Regional, State, and Federal Agency Input Criteria

13	Local stakeholder agency preferences (average rating of local agencies as submitted on rating form)	Apache Junction	Preference of route alternatives based on agency rating
		Coolidge	Preference of route alternatives based on agency rating
		Eloy	Preference of route alternatives based on agency rating
		Florence	Preference of route alternatives based on agency rating
		Pinal County	Preference of route alternatives based on agency rating
		Queen Creek	Preference of route alternatives based on agency rating
14	Regional, state, and federal agency preferences (average rating of regional, state, and federal agencies as submitted on rating form)	AGFD	Preference of route alternatives based on agency rating
		ADOT Roadway	Preference of route alternatives based on agency rating
		U.S. Army Corps of Engineers	Preference of route alternatives based on agency rating
		Arizona Army National Guard	Preference of route alternatives based on agency rating
		CAP	Preference of route alternatives based on agency rating
		U.S. Environmental Protection Agency	Preference of route alternatives based on agency rating
		Flood Control District of Maricopa County	Preference of route alternatives based on agency rating
		NRCS	Preference of route alternatives based on agency rating
		Pima Association of Governments	Preference of route alternatives based on agency rating
		Regional Public Transit Authority	Preference of route alternatives based on agency rating
		Arizona State Land Department	Preference of route alternatives based on agency rating

Public Input Criteria

15	Public input preferences (average rating of the public as submitted on comment forms at December public open houses)	At the December open house meeting, members of the public provided input to each route alternative through a mapping exercise. A rating has been developed based on the public input.	Preference of route alternatives based on agency rating
----	----------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------

Step 2: Evaluation Criteria for Continuous Route Alternatives (not completed)

16	Regional service and accessibility criteria		
17	System mobility	Separation of regional freeways	Sufficient lateral separation between freeway facilities
		Separation of system interchanges	Sufficient lateral separation between freeway-to-freeway system interchanges
		Separation of freeways, state highways, and major routes	Sufficient lateral separation between freeway facility, existing state highways, and major routes

Criteria		Description	Performance Measures
18	Congestion relief	Travel time/travel speed	Travel time/travel speed on corridor from northern terminus to southern terminus. Compares average travel speed on route alternatives; a higher average travel speed indicates traffic relief.
		Degree of arterial congestion relief provided by the facility	Percentage of travel in congested conditions on arterial streets. The more travel in congested conditions is reduced, the better the rating.
		Degree of freeway congestion relief provided by the facility	Percentage of travel in congested conditions on freeways. The more travel in congested conditions is reduced, the better the rating.
19	System linkage	Connectivity to regional freeways/state highways, and major routes	Provides seamless connections with existing or planned regional facilities (i.e., freeways, state highways, and regional arterials), located to serve the larger, regional area for short- and long-term needs
		Traffic interchanges access to serve existing and future arterial and regionally significant roads	Number of service traffic interchanges and connectivity with existing and planned roadway network
		Projects begin/end at logical termini	Project ends at a point of major traffic generation or ties in to a facility that will generate significant traffic flows
		Provides access to municipalities	Location of service interchanges convenient to municipalities
		Provides access to existing employment centers	Location of service interchanges convenient to existing employment centers
		Provides access to planned employment centers	Location of service interchanges convenient to future (planned) employment centers
		Provides access to existing residential areas	Location of service interchanges convenient to existing residential areas
Provides access to planned residential areas	Location of service interchanges convenient to planned residential areas		
20	Geometry	Relationship of route alternative to existing and planned crossroads and major intersections	Number of highly skewed (greater than 30 degrees from perpendicular) crossings of the route alternative to cross roads
21	Rail/transit/multimodal accommodation	Geometric accommodation of intercity rail	Number of horizontal curves that are less than minimum required (refer to North–South Corridor Study Stage 1 Design Criteria) to accommodate intercity rail
		Provides access to high-intensity activity centers	Proximity/compatibility to planned mid-intensity and high-intensity activity centers, as identified in the Pinal County Comprehensive Plan, Figure 3-20
		Provides access to other public transit services	Proximity to local transit networks.
		Provides nonautomobile access to municipalities	Location of route alternative to provide convenient nonautomobile access to municipalities
		Provides nonautomobile access to existing employment centers	Location of route alternative to provide convenient nonautomobile access to existing employment centers
		Provides nonautomobile access to planned employment centers	Location of route alternative to provide convenient nonautomobile access to future (planned) employment centers
Provides nonautomobile access to existing and planned residential areas	Location of route alternative to provide convenient nonautomobile access to existing and planned residential areas		
22	Economic development	Supports future local economic development	Degree of impact on planned economic development corridors

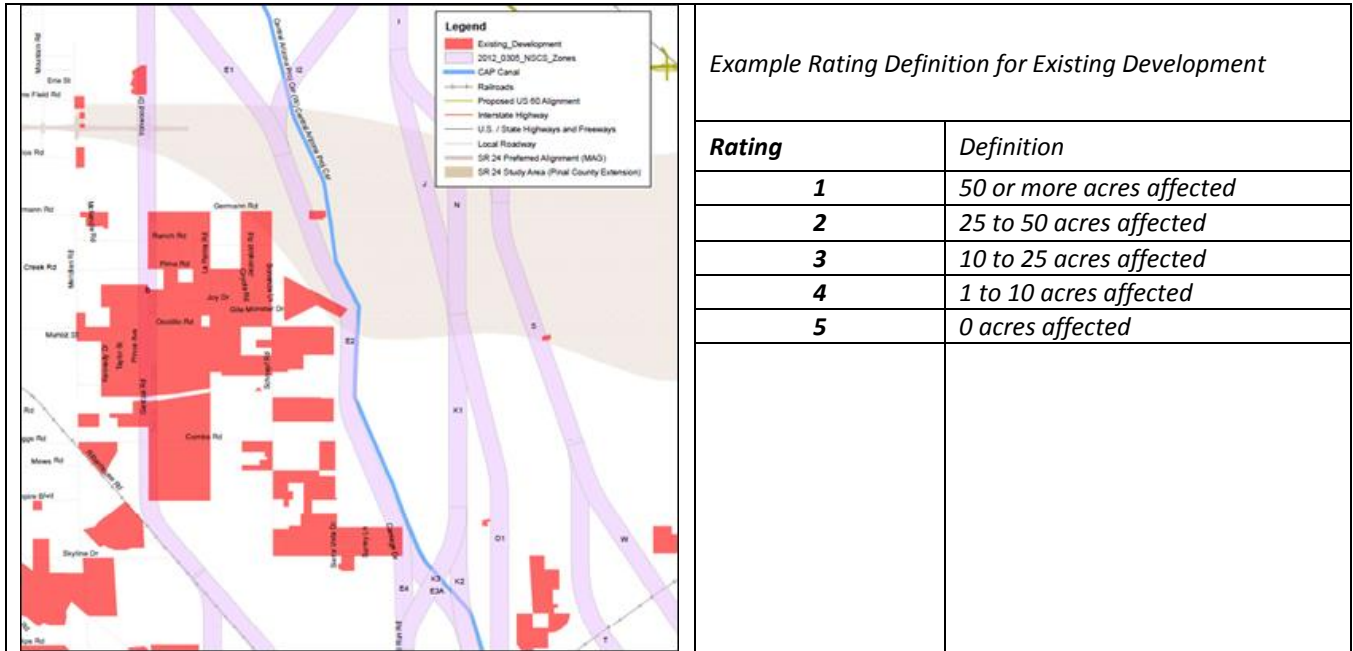
Criteria		Description	Performance Measures
23	Consistency with other regional transportation plans	Relationship of route alternative to existing and planned transportation infrastructure and traffic management systems	Compatibility with adopted transportation plans and future traffic management systems (i.e., RSRSM, Small Area Transportation Studies, ADOT Planning, etc.)
24	Consistency with other ADOT transportation planning	Consistency with SR 24 Study	Compatibility of route alternative to SR 24 alternatives
		Consistency with US 60 Reroute	Compatibility of route alternative with North–South/SR 24 system interchange
		Consistency with ADOT Passenger Rail Corridor Study	Consistency of route alternative with US 60 Reroute Preferred Alignment
		Consistency with ADOT Framework Study	Consistency of route alternative with input as provided by the ADOT Passenger Rail Corridor Study
Cost Criteria			
25	Corridor implementation phasing	Ability to separate corridor implementation into phases	Ability to separate corridor implementation into phases
	Estimated construction cost	Estimated planning-level design and construction cost	Compares planning-level costs of each route alternative. Freeway cost of \$35 million per mile (plus major structures, interchanges; excluding right-of-way) based on historical data
		Estimated right-of-way costs	Compares planning-level right-of-way costs of each route alternative, based on historical data
		Estimated environmental mitigation costs	To be determined

Notes: ADOT = Arizona Department of Transportation, AGFD = Arizona Game and Fish Department, CAP = Central Arizona Project, FEMA = Federal Emergency Management Agency, FRS = flood retarding structure, NRCS = U.S. Department of Agriculture Natural Resources Conservation Service, RSRSM = Regionally Significant Routes for Safety and Mobility, SR = State Route, US 60 = United States Route 60, USGS = U.S. Geological Survey

Appendix C contains a series of tables containing each impact evaluation criterion and the quantitative measurements of each criterion for each segment. Each table includes a description of how the quantitative impacts were converted to the “1” to “5” rating scale.

As an example, using GIS databases (**Figure 36**), the acreage of existing development within each route segment was calculated: 669 acres of existing development is within Segment B, 24 acres within Segment E2, and 0 acres within Segment K1. Consistent with the rating criteria definition, Segment B receives a rating of “1,” Segment E2 receives a rating of “3,” and Segment K1 receives a “5.”

Figure 36. Example application of route segment ratings



Local Stakeholder Agency Rating

Stakeholder agencies were provided a comment/rating form at the November 2011 stakeholder progress meeting that allowed each agency to rate each route segment alternative as favorable or unfavorable. Stakeholder agencies were categorized as a local stakeholder agency, or as a regional/state/federal stakeholder agency. Local stakeholder agencies that provided rating input are:

- City of Apache Junction
- City of Coolidge
- City of Eloy
- Town of Florence
- Town of Queen Creek
- Pinal County

Local stakeholder agency ratings (favorable/unfavorable) received were summarized for each route segment. The average rating for all local agencies was calculated. A rating of “5” reflects a favorable rating; a rating of “1” reflects an unfavorable rating. Unrated segments were assigned a rating of “3”. A map of local agency ratings is provided in **Figure 37**.

Regional, State, and Federal Stakeholder Agency Rating

Stakeholder agencies were provided a comment/rating form at the November 2011 stakeholder progress meeting that allowed each agency to rate each route segment alternative as favorable or unfavorable. The rating form is in Appendix D. Regional, state, and federal stakeholder agencies that provided rating input are:

- ADOT Roadway Design Group
- AZARNG
- AGFD
- ASLD
- CAP
- NRCS
- PAG
- USACE
- RPTA Phoenix
- USEPA

- FCDMC

Stakeholder agency ratings (favorable/unfavorable) received were summarized for each segment. The average rating for all regional/state/federal agencies was calculated. A rating of “5” reflects a favorable rating; a rating of “1” reflects an unfavorable rating. Unrated segments were assigned a rating of “3”. A map of regional, state, and federal stakeholder agency ratings is provided in **Figure 38**.

Public Preference Rating

Similarly, at the December 2011 workshops, members of the public were provided a comment/rating form (Appendix D) that allowed them to rate each route segment as favorable or unfavorable. Public segment ratings received during the public workshops were summarized for each route segment. The average rating for each route segment was calculated. A rating of “5” reflects a favorable rating; a rating of “1” reflects an unfavorable rating. Unrated segments were assigned a rating of “3”. A map of public preference ratings is provided in **Figure 38**.

Route Segment Ratings Results

The ratings for each of the Step 1 criteria (local stakeholders, regional/state/federal stakeholders, public, and impacts) were summed for each route segment. The ratings matrix is presented in **Table 13**. The segments were sorted in descending order according to the magnitude of the ratings summation. Segments were categorized as:

- High rating: Route segments within the top 15 percentile
- Mid rating: Route segments in the 16 percentile to 85 percentile range
- Low rating: Route segments in the bottom 15 percentile

The high rating route segments are generally associated with higher favorability from the public and stakeholder agencies and lower levels of impacts, requiring the lowest levels of mitigation.

The low rating route segments are generally associated with lower favorability from the public and stakeholders and higher levels of impacts, requiring high levels of mitigation.

Route segments in the middle percentiles (15 percentile to 85 percentile) were considered neutral (mid rating) favorability. These percentile ranges were selected based on inspection to provide a reasonable set of high rating route segments and a sufficient number of low rating route segments to provide meaningful results.

High rating route segments, based on the ratings summations, were connected to develop continuous route alternatives. The continuous route alternatives also include neutral route segments as needed to geographically connect high rating route segments. Low rating route segments were not included in the continuous route alternatives. In one instance, a high-rated route segment (M) was removed from further study because it connected to only low-rated route segments. Supporting reasons for rejecting the low rating route segments from further consideration are listed in Appendix E, **Table E1**.

The results of Step 1 (**Table 13**), when presented at a Core Team meeting, were considered to have used a diverse set of criteria and resulted in a sufficient and reasonable number of continuous route alternatives. It was determined that further screening of Step 1 continuous route alternatives, using Step 2 criteria, was unnecessary because the more detailed analysis during the EIS phase of the study would consider criteria that would have been applied in Step 2 of the screening process. The preliminary recommended continuous route alternatives (**Figure 40**) were presented at a stakeholder agency meeting on March 6, 2012.

Figure 37. Local stakeholder agency rating

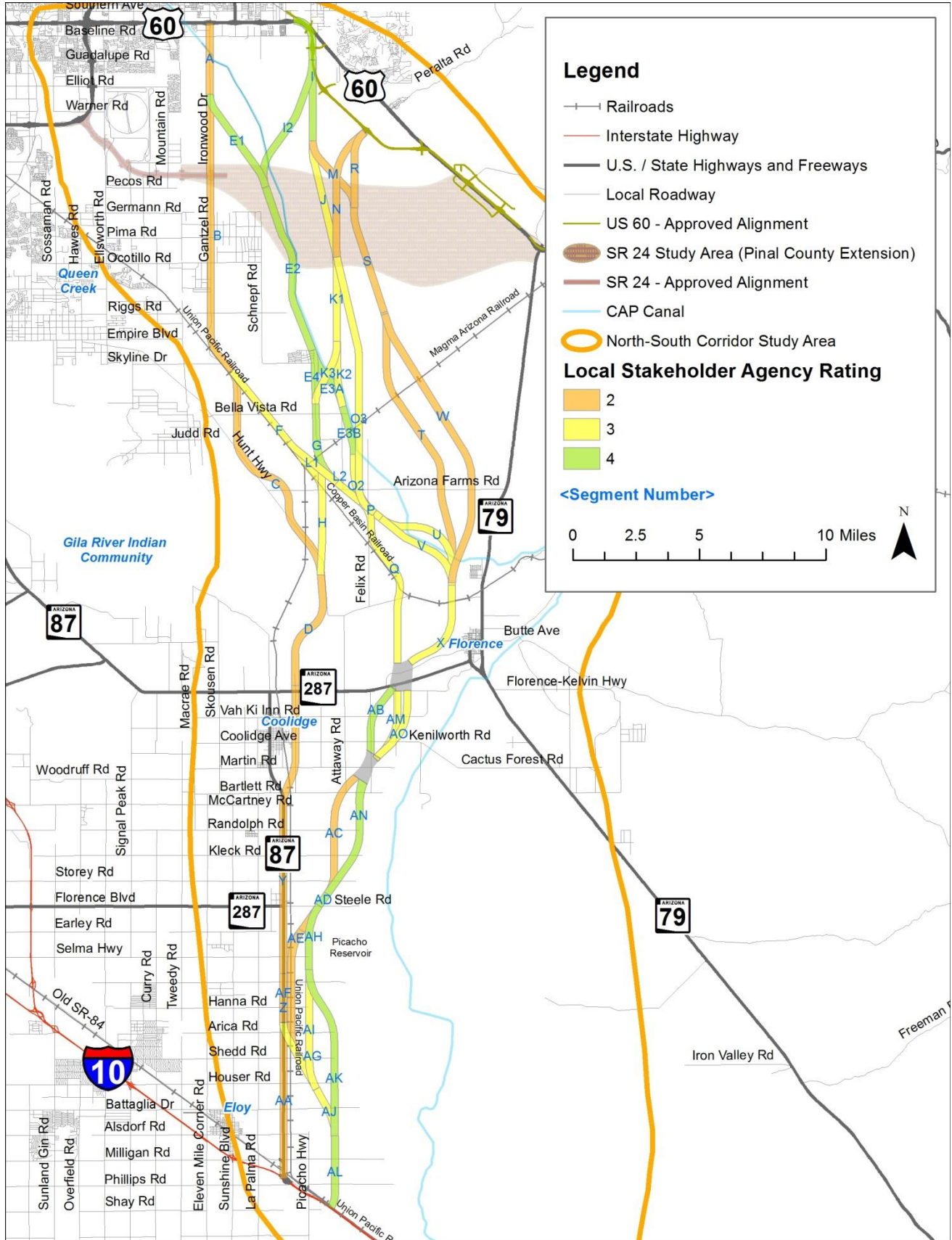


Figure 38. Regional, state, and federal stakeholder agency rating

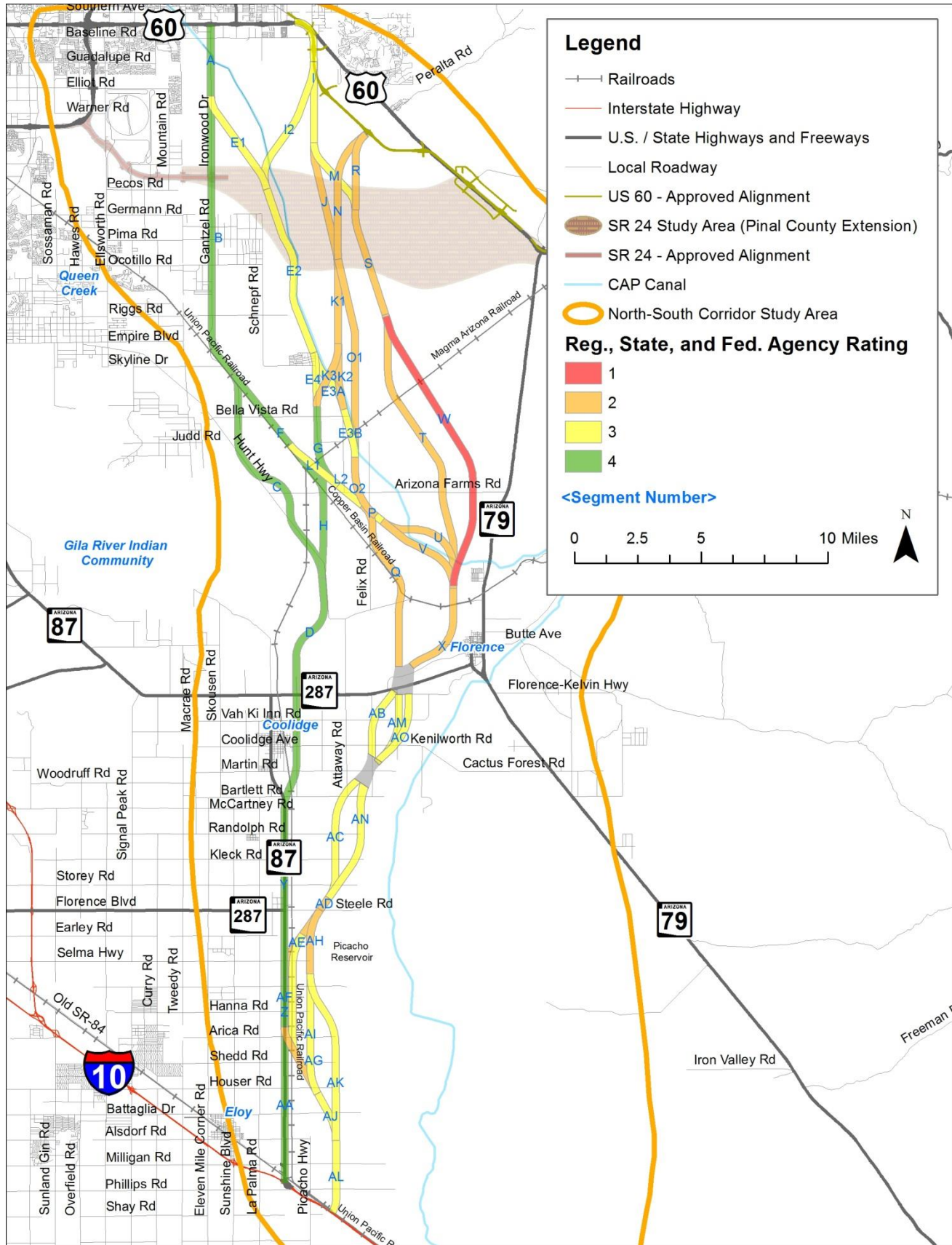


Figure 39. Public preference rating

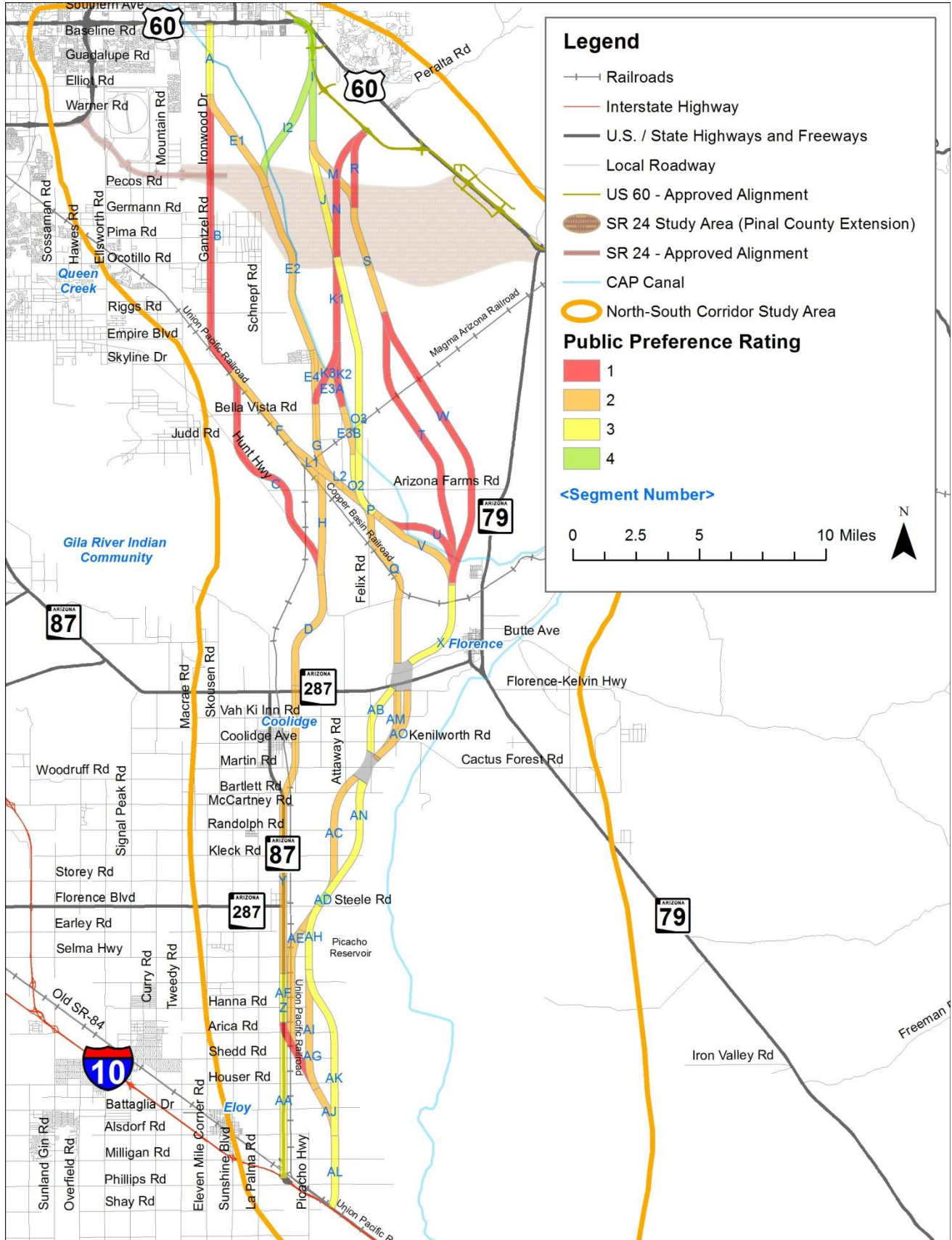


Table 13. Evaluation rating matrix

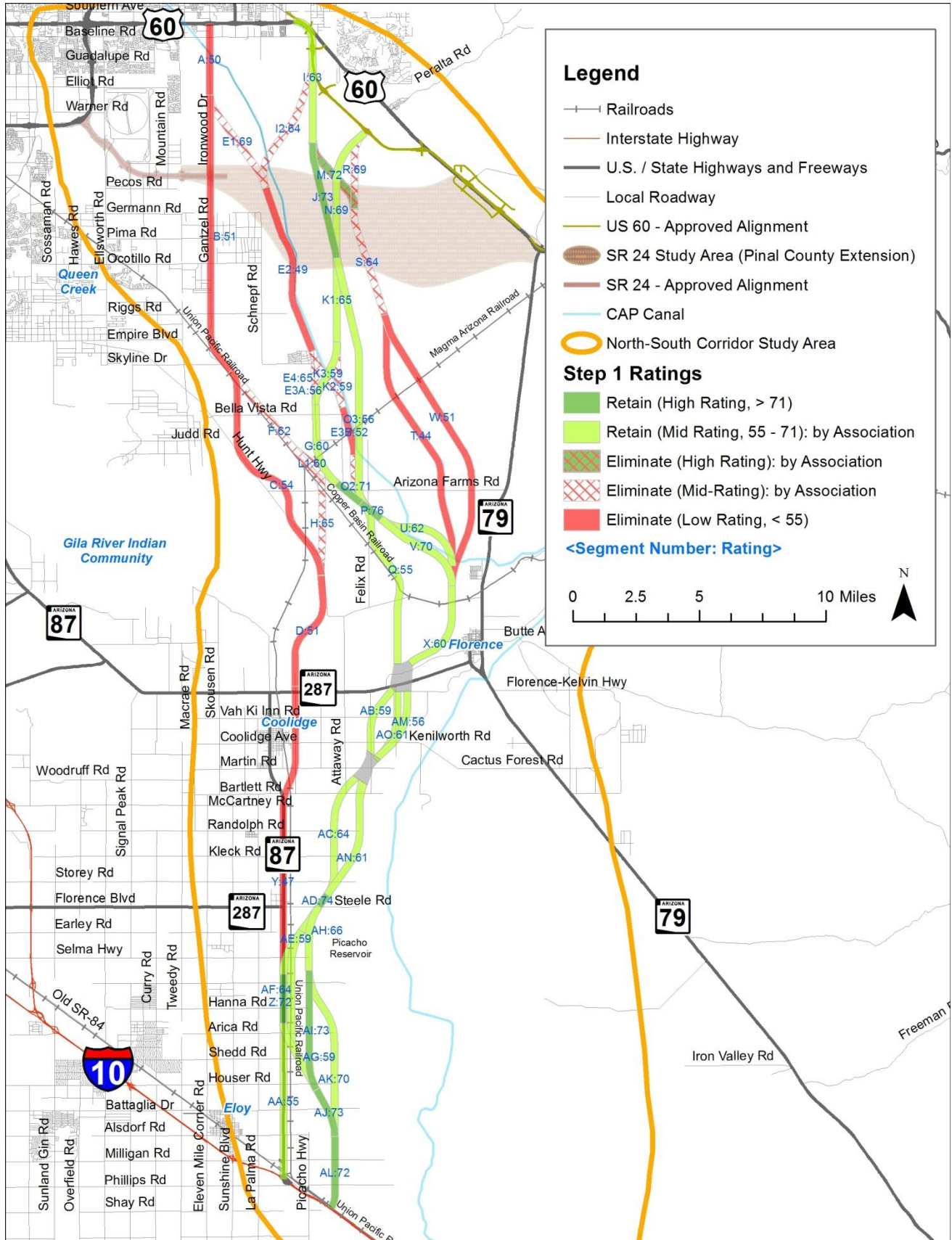
Segment	Agency rating		Public rating	Impacts rating																	Total of ratings	Step 1 recommendations ¹	
	Local	Regional, state, federal	Public input	Subsurface fissures	Subsidence	Structures affected	Wildlife corridors	Conservation Priority Areas	Threatened and endangered species	Public parks and trails	Noise	Cultural sites/resources	Existing development	Planned development	Natural drainage features (washes/rivers)	Human-made drainage features (canals, flood retarding structures)	Existing open space	Proposed open space	Utilities	Use of existing right-of-way			
P	3	3	2	3	2	5	5	2	3	5	4	5	5	3	5	5	5	5	5	5	1	76	1
L2	3	3	2	3	1	4	5	3	1	5	5	5	5	5	5	5	5	5	4	1	75	1	
AD	4	2	4	2	2	5	5	2	1	1	5	5	5	5	5	5	5	5	5	1	74	1	
J	3	2	3	3	2	5	5	2	1	5	5	5	5	5	1	5	5	5	5	1	73	1	
AI	3	3	2	3	2	5	5	1	1	1	5	5	5	5	5	3	5	5	4	5	73	1	
AJ	3	3	2	3	2	4	5	2	1	5	5	5	5	5	5	2	5	5	5	1	73	1	
M	2	3	2	3	2	5	5	2	1	5	5	5	5	5	1	5	5	5	5	1	72	88	
Z	2	4	3	2	2	4	5	2	1	5	1	3	4	5	5	5	5	5	4	5	72	1	
AL	4	3	3	3	1	5	5	1	1	5	5	3	3	5	5	3	5	5	4	3	72	1	
O2	3	2	3	3	1	5	3	2	1	5	5	5	5	3	5	5	5	4	5	1	71	88	
V	3	2	2	3	2	5	1	3	3	5	5	5	5	5	5	5	5	1	4	1	70	2	
AK	4	3	3	1	2	5	5	1	1	1	5	5	5	5	5	3	5	4	4	3	70	2	
E1	4	3	2	3	2	4	3	2	5	1	5	5	4	5	1	5	5	4	5	1	69	88	
N	2	2	1	3	2	5	5	2	1	5	5	5	5	5	1	5	5	5	4	1	69	2	
R	2	2	1	3	2	5	5	2	1	5	5	5	5	5	1	5	5	5	4	1	69	88	

¹ **Step 1 Ratings Legend**
 1 = Retain - 15% highest-rated segments
 2 = Retain (by association)
 88 = Eliminate (by association)
 99 = Eliminate - 15% lowest-rated segments

Segment	Agency rating		Public rating	Impacts rating																	Total of ratings	Step 1 recommendations ¹
	Local	Regional, state, federal		Subsurface fissures	Subsidence	Structures affected	Wildlife corridors	Conservation Priority Areas	Threatened and endangered species	Public parks and trails	Noise	Cultural sites/resources	Existing development	Planned development	Natural drainage features (washes/rivers)	Human-made drainage features (canals, flood retarding structures)	Existing open space	Proposed open space	Utilities	Use of existing right-of-way		
AH	4	2	3	3	2	4	5	2	1	1	5	1	5	5	5	1	5	5	4	3	66	2
E4	4	3	2	3	1	4	1	2	1	5	3	5	1	5	5	2	5	3	5	5	65	88
H	3	4	2	3	2	4	5	2	3	1	1	3	5	2	5	5	5	4	1	65	88	
K1	3	2	1	3	2	5	2	2	5	1	5	3	5	5	3	5	5	2	5	1	65	2
I2	4	3	4	3	2	5	3	1	3	1	5	5	5	5	2	1	5	1	5	1	64	88
S	2	2	2	3	2	5	5	2	3	1	5	3	4	5	2	5	5	2	5	1	64	88
AC	2	3	2	2	2	4	5	2	1	1	4	5	5	5	5	2	4	5	3	2	64	2
AF	2	3	2	3	2	5	5	1	1	1	5	1	5	5	5	3	5	5	4	1	64	2
I	4	3	4	3	2	4	5	2	3	1	1	3	4	5	1	5	3	5	4	1	63	2
F	3	4	2	3	2	4	5	1	1	1	1	1	4	3	5	4	5	5	3	5	62	88
U	3	2	1	3	2	4	1	3	5	1	5	5	5	5	5	1	5	1	4	1	62	2
AN	4	3	3	2	2	4	5	2	1	1	3	5	2	5	5	1	4	5	3	1	61	2
AO	3	3	2	3	2	4	5	2	1	1	4	1	5	5	5	1	4	5	4	1	61	2
G	4	4	2	3	2	5	5	2	1	1	5	1	1	2	5	3	5	5	2	2	60	2
L1	3	3	2	3	1	5	5	2	1	1	5	1	5	3	5	1	5	5	3	1	60	88
X	3	2	3	3	2	4	5	2	3	1	4	1	5	3	3	3	5	2	5	1	60	2
K2	3	2	1	3	2	5	1	2	1	1	5	5	4	5	5	3	5	1	4	1	59	88
K3	3	2	1	3	2	5	1	2	1	1	5	5	5	5	5	1	5	2	4	1	59	2
AB	4	3	3	3	1	4	5	1	1	1	3	3	3	5	3	1	4	5	5	1	59	2
AE	2	2	2	3	2	4	5	1	1	1	5	1	4	5	5	1	5	5	4	1	59	2
AG	3	2	1	3	2	5	5	1	1	1	1	1	4	5	5	3	5	5	5	1	59	2

Segment	Agency rating		Public rating	Impacts rating																	Total of ratings	Step 1 recommendations ¹
	Local	Regional, state, federal		Subsurface fissures	Subsidence	Structures affected	Wildlife corridors	Conservation Priority Areas	Threatened and endangered species	Public parks and trails	Noise	Cultural sites/resources	Existing development	Planned development	Natural drainage features (washes/rivers)	Human-made drainage features (canals, flood retarding structures)	Existing open space	Proposed open space	Utilities	Use of existing right-of-way		
O1	3	2	3	3	2	5	2	2	3	1	5	1	5	5	4	1	5	1	4	1	58	2
E3A	4	3	2	3	1	4	1	2	1	1	5	5	2	5	5	2	5	1	3	1	56	88
O3	3	2	3	3	2	4	2	2	3	1	5	1	5	3	4	1	5	1	5	1	56	2
AM	3	3	2	3	2	4	5	2	1	1	3	1	3	3	5	1	4	5	4	1	56	2
Q	3	2	2	3	2	4	5	2	3	1	1	1	5	2	4	4	5	2	3	1	55	2
AA	2	4	3	2	2	2	5	1	1	1	1	1	1	1	5	4	5	5	4	5	55	2
C	2	4	1	3	2	1	5	2	5	1	1	1	1	1	5	4	5	5	3	2	54	99
E3B	4	3	2	3	1	5	1	2	1	1	5	1	2	5	5	2	5	1	2	1	52	99
B	2	4	1	3	1	1	5	2	5	1	1	1	1	1	2	5	5	2	3	5	51	99
D	2	4	2	3	2	4	5	2	1	1	1	3	4	1	2	3	2	5	3	1	51	99
W	2	1	1	3	1	5	4	1	3	1	5	1	5	5	2	1	5	1	3	1	51	99
A	2	4	3	2	2	1	1	3	5	1	1	3	1	5	2	1	3	2	3	5	50	99
E2	4	3	2	3	1	5	1	1	3	1	1	3	3	2	1	4	5	1	4	1	49	99
Y	2	4	2	3	2	1	5	2	1	1	1	1	1	1	4	2	1	5	3	5	47	99
T	2	2	1	3	1	3	3	1	3	1	1	1	5	1	5	1	5	1	3	1	44	99

Figure 40. Step 1 evaluation ratings results (presented to stakeholders on March 6, 2012)



4.3.10 Refined Continuous Route Alternatives (presented to stakeholders on May 15, 2012)

The Step 1 continuous route alternatives recommendations (**Figure 40**) were presented at a Stakeholder Agency Group meeting on March 6, 2012. Verbal comments were recorded during the meeting from USEPA, AGFD, and USFWS. A letter containing comments from Pinal County was received after the meeting.

A consistent comment that was received from all commenting stakeholder agencies asked that continuous route alternatives west of the CAP Canal be retained for further evaluation. USEPA, AGFD, and USFWS expressed a common concern that the screening process did not address the indirect environmental impacts on natural resources. USEPA emphasized that as more detailed environmental analysis is completed, indirect impacts may become more apparent. These comments were supported by AGFD and USFWS. These agencies stated that an alternative adjacent to and west of the CAP Canal should remain in the study. A letter was received from Pinal County dated March 13, 2012, requesting the continued evaluation of an alternative located west of the CAP Canal. Pinal County provided a map illustrating that the alternative located west of the CAP Canal terminated at US 60 at the Ironwood Road interchange at near Mountain View Road. Justification for this alternative included that local agency preferences were not adequately represented in the screening process. Step 2 screening criteria may have identified advantages for alternatives located closer to “existing and planned infrastructure,” and inconsistencies with rating processes used in SR 24 corridor planning. Stakeholders also suggested that in areas where there are more than two route alternative options, the number of route alternatives be reduced.

The Core Team, during the consideration of agency stakeholder comments, determined that the process used for developing and evaluating alternatives produced defensible recommendations for continuous route alternatives for further evaluation in the EIS and L/DCR phase of the study. Further, it was determined that while the recommended route alternatives serve as the foundational recommendation, modifications could be considered and recommended without affecting the process that produced the foundational recommendations.

The Core Team agreed to refine the March 6, 2012 preliminary recommendations to retain for further evaluation continuous route alternatives west of the CAP Canal, and to reduce the number of route alternatives in areas where there are more than two alternative options.

This resulted in recommendations to remove the following segments from recommendations shown in **Figure 40**:

- **Segment U.** Segment U is a route segment that runs north of the CAP Canal. Segment U would require two crossings of the CAP in a 2-mile span, resulting in increased construction costs and possible mitigation costs associated with constructing a facility on the upstream (northern) side of the CAP canal. A similar construction project that ADOT recently completed was the SR 202L Red Mountain Freeway, Power to University, segment. The project required two CAP canal crossings, which cost approximately \$30 million to \$40 million. In addition, Segment U would result in an 8 percent increase in facility length (two-tenths of a mile) and construction costs over Segment V. A conservative range for the additional construction cost would be \$5 million to \$10 million.
- **Segment AM.** Segment AM is located south of SR 287. Other route alternatives in this area include Segments AO and AB. Segment AM received a rating of 56. Segment AB received a rating of 59, and Segment AO received a rating of 61. Segment AM was the lowest rated of the three segments. Two categories in which AM received lower ratings than AB or AO are planned development and cultural resources.

- Segment AK. Segment AK is the easternmost segment in the study area, approximately following Fast Track Road. In comparison with other route segments, Segment AK scored second lowest (score of 70). The primary differentiator between Segment AK and other segments is fissures.
- Segment AF. Segment AF parallels UPRR. The primary reason for removing Segment AF from further consideration is that selection of AF as a preferred segment would either require out-of-direction travel (from AL-AJ-AG to AF) or would provide a new parallel facility very close to SR 87. This would provide no benefit to ADOT or to Eloy. The close proximity of Segment AF to UPRR would create challenges in constructing cross streets over the railroad and connecting to the North–South Corridor.

The refined recommendations are presented in **Figures 41** and **42**. The refined recommended route alternatives demonstrate four independent continuous route alternatives: 1A, 1B, 2A, and 2B. Route Alternatives 1A and 1B represent the route alternatives that emerged from and are consistent with the screening process. Route Alternatives 2A and 2B represent the route alternatives, located west of the CAP Canal, that respond to stakeholder comments.

For display purposes only, Route Alternatives 1A and 2A consist of the westernmost route segments while Alternatives 1B and 2B consist of the easternmost route segments. Individual route segments may be combined in any reasonable fashion during the L/DCR and EIS phase of the study. The preliminary route alternatives were presented to and endorsed by the Stakeholder Agency Group on May 15, 2012.

Figure 41. Route Alternatives 1A and 1B (presented to stakeholders on May 15, 2012)

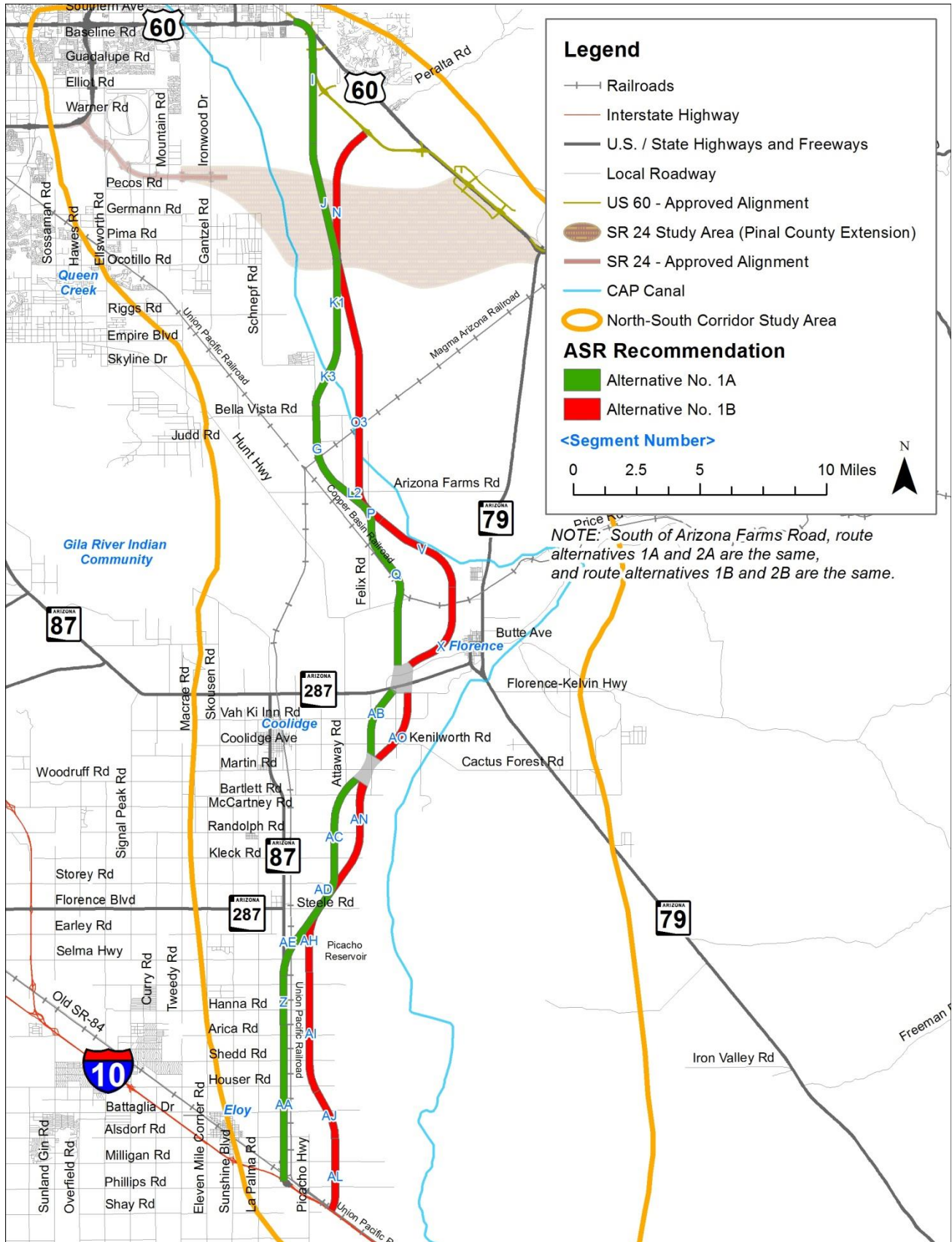
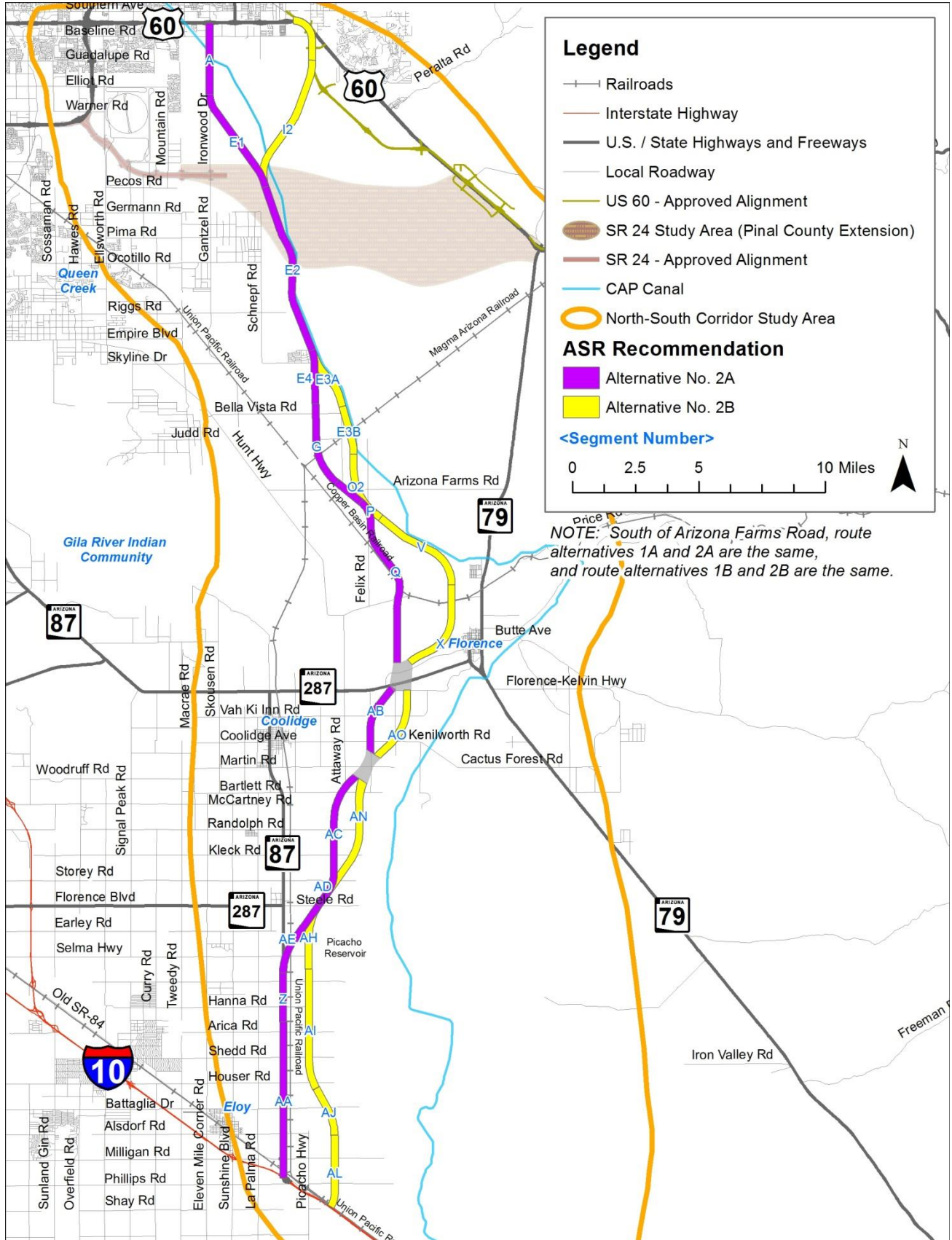


Figure 42. Route Alternatives 2A and 2B (presented to stakeholders on May 15, 2012)



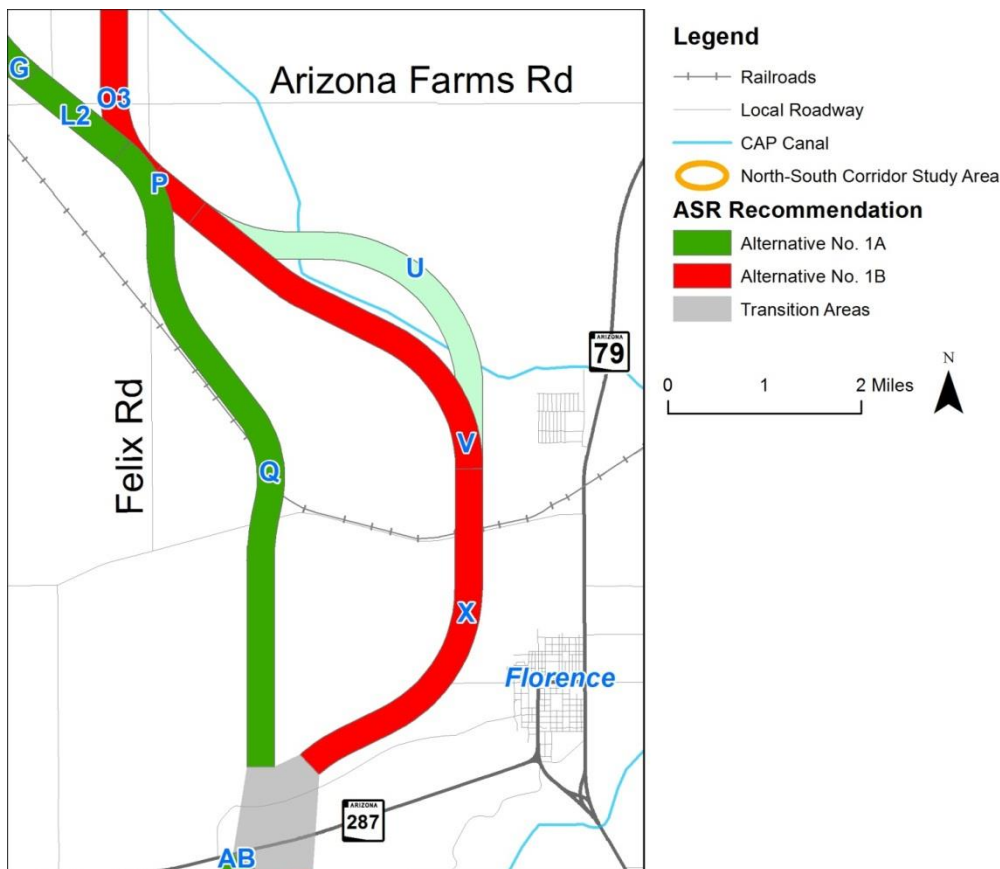
4.3.11 Additional Stakeholder Agency Comments on Recommended Continuous Route Alternatives

Additional comments were provided by stakeholder agencies in the weeks following the presentation on May 15, 2012, regarding the refined recommended continuous route alternatives. Stakeholder agency comments were received to retain Segment U and Segment AK for future consideration in the EIS and L/DCR phase of the Study. Analyses and decisions relating to stakeholder agency requests are documented below.

Retaining Segment U for Further Consideration

In a letter from the Town of Florence to ADOT dated July 27, 2012, the Town formally asked that ADOT reconsider the elimination of Segment U from further consideration. Segments U and V are depicted in **Figure 43**. Segment U would require two crossings of the CAP Canal. Segment V is located close to Segment U, but is located on the southern side of the CAP Canal. Segment V would not require any crossings of the CAP Canal.

Figure 43. Segments U and V



The ratings process (results presented in **Table 13**) helped the study team identify alternative route segments with the least impacts and that would require the least amount of mitigation. As depicted in **Table 13**, Segment V received an overall rating of 70 points, while Segment U received an overall rating of 62 points. As such, Segment V was identified as preferred in comparison with Segment U. Reasons that Segment V scored more favorably than Segment U are:

- **Planned Development:** Both segments scored equally for the Planned Development rating criteria. Impacts on planned development were considered for developments that are anticipated to materialize

before 2020. Planned development that is projected to occur prior to 2020 was identified based on information provided to the study team by CAG. The planned development database was developed in consultation with planning directors from each of the local agencies. According to this database, which was applied equally to the evaluation of all route segments, neither Segment U nor Segment V affect planned development that is projected to occur within the 2020 planning horizon.

- **Public Input:** At the public open house held on December 2011, Segment U was identified as “unfavorable” by 82 individuals. It received a “favorable” rating by 28 individuals. By comparison, Segment V received an “unfavorable” rating by 77 individuals and a favorable rating by 32 individuals, accounting for the difference between the “1” and “2” in the **Table 13**.
- **Trails:** Trails were evaluated against the GIS information provided by Pinal County. The linear feet of impacts for each of these categories were measured. Route segments that did not have any impacts on these trail categories received a “5.” Route segments that affected these trails received a “1.” Segment U affected 3,467 feet of “Adopted Country Trail Corridor.” Segment V did not affect any of the trails categories. As such, Segment U received a “1” and Segment V received a “5.”
- **Human-made Drainage Features:** Human-made drainage features reflect impacts on canals, retention basins, etc. Route segments that included a crossing of the CAP Canal received a “1” in the rating matrix to reflect the significant cost of potential crossings. A review of the mapping demonstrates that Segment U will cross the CAP Canal two times within a very short distance. In contrast, Segment V does not cross the CAP Canal. As such, Segment V received a “5” while Segment U received a “1.”
- **Socioeconomic:** Socioeconomic impacts were determined based on the number of existing structures that would be affected by the corridor. One structure was identified within Segment U and no structures were identified within Segment V. As such, Segment U was given a “4” (representing a very moderate impact), and Segment V was rated a “5” because of no impacts.

In response to the request from the Town of Florence to continue to include Segment U as an alternative, in a letter dated September 7, 2012, from ADOT to the Town of Florence, ADOT agreed to continue to include Segment U in the study recognizing the additional cost of Segment U. The letter stated that if Segment U becomes the recommended alternative, ADOT will look forward to working with the Town of Florence and will seek the Town’s assistance in offsetting the additional costs. The letter stated that consequently, as the various alternatives are vetted through the EIS and DCR process, ADOT will expect a Memorandum of Understanding between the Town of Florence and ADOT in order to keep Segment U under consideration. Furthermore, should Segment U be identified in the final implementation plan at the end of the study process, a formal Joint Project Agreement between the Town and ADOT will be required to fund the additional costs.

ADOT is currently awaiting a response from the Town of Florence to their September 7, 2012 letter and request to develop a Memorandum of Understanding in order to keep Segment U under consideration.

Retaining Segment AK

In a letter from the City of Eloy to ADOT dated August 6, 2012, the City formally asked that ADOT reconsider the elimination of Segment AK from further consideration. As illustrated in **Figure 44**, Segment AK is the easternmost segment in the study area, approximately following Fast Track Road. In comparison to other route segments in this area, Segment AK scored second lowest (score of 70). The primary differentiator between Segment AK and other segments is fissures. Within the ratings matrix, Segment AK received a “1” for “geotechnical – subsurface (fissures).” GIS analysis of data provided by the Arizona Geological Survey demonstrates that Segment AK has a half-dozen main fissures bodies within the segment that consist of up to 37 individual fissures within the 1,500-foot-wide route segment. Each of these has the potential to expand over

time. Segment AI does not cross any fissures. As such, Segment AI is overwhelmingly superior to Segment AK from a fissures perspective. The study team position is that a segment that avoids all fissures (e.g., AI), confirmed and unconfirmed, is preferable to a segment that has 37 fissures.

As illustrated in **Figure 44**, Segment AF parallels UPRR. Alternatives to AF are Segments Z, AI, and AK. Segment AF received a rating of 64. Segment AI received a rating of 73, and Segment AK received a rating of 70. In comparison to the four route alternatives in this area, Segment AF received the lowest rating. The primary reason for removing Segment AF from further consideration is that selection of AF as a preferred segment would either require out-of-direction travel (from AL-AJ-AG to AF), or would provide a new parallel facility very close to SR 87. This would provide no benefit to ADOT or to the City of Eloy. The close proximity of Segment AF to UPRR would create challenges in constructing cross streets over the railroad and connecting to the North–South Corridor.

In a letter from ADOT to the City of Eloy dated September 11, 2012, ADOT explained the reasoning for removing Segments AF and AK from the process and moving forward with AI, in addition to Z, as the two remaining route alternatives in this area.

Figure 44. Segments AK and AF



4.3.12 Additional Refinements by the Study Team

During the preparation of the ASR, coordination with the SR 24 study team resulted in a refinement to the May 15, 2012, recommended continuous route alternatives that eliminated Segment N from further consideration. In addition, coordination with SRP resulted in another refinement to eliminate Segment E3B from further consideration. The following sections document the rationale for these refinements.

Segment N

Segment N received relatively high ratings (favorable) within the ratings matrix (69 points; the highest rated segment received 76 points). Segment N rated high in the following categories:

- Socioeconomic Impacts: Affects no existing structures
- Wildlife Corridors: Affects 0 acres of wildlife corridor
- Trails: Does not affect any existing, adopted, or planned multiuse trails
- Noise: Does not affect any sensitive noise receives such as existing residences, golf course, and schools
- Cultural: No impacts on potential cultural sites
- Existing Development: No impacts on existing development
- Planned Development: No impacts on planned developments
- Human-made Drainage Features: No impacts on major drainage features such as the CAP Canal or FRSs
- Proposed Open Space: No impacts on proposed open space

Segment N received rating of “1” (lowest/most unfavorable) for the following evaluation criteria:

- Public Rating: 77 members of the public rated this as unfavorable (22 rated as favorable, 99 did not respond)
- Threatened and Endangered Species: Affects habitat for Sonoran Desert Tortoise (720 acres within habitat; total segment area is 969 acres)
- Existing ROW: Uses 0 miles of existing ROW, and requires over 5 miles of new ROW

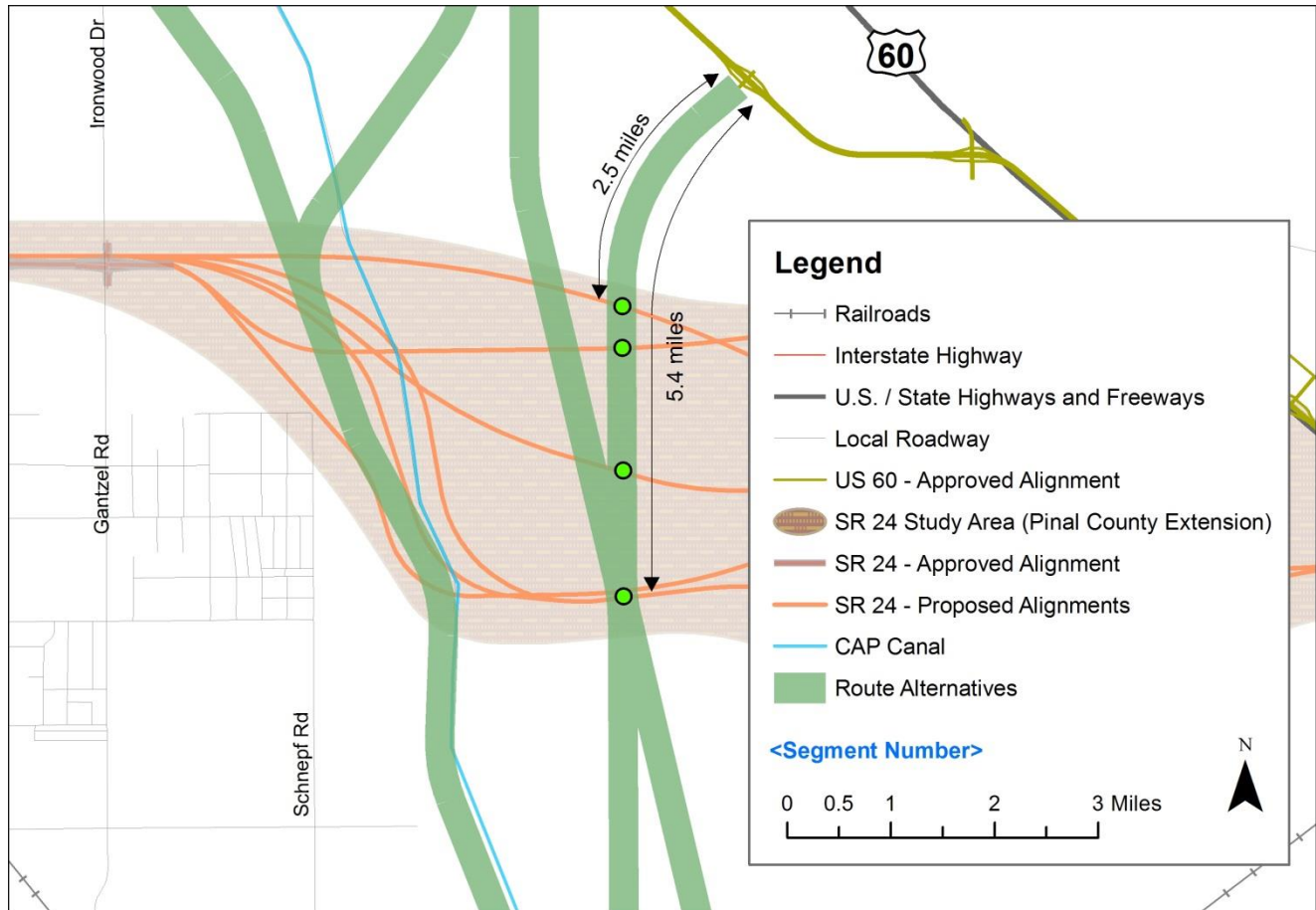
It should be noted that this segment does not have strong support from agencies or from the public. Local stakeholder agencies rated this segment as a “2” (three of six rated it as a “1,” including those most affected by this segment: Queen Creek, Florence, and Pinal County); federal, state, and regional agencies also rated this segment as a “2” (7 of 11 rated it as a “1”).

While the lack of public and stakeholder agency support is evident for this segment, the primary reason that the study team supports removing this segment from further consideration is incompatibility of Segment N with route alternatives proposed within the SR 24 Corridor Study.

The study area for the SR 24 Corridor Study extends approximately from Pecos Road south to Ocotillo Road, and crosses the entire width of the study area for the North–South Corridor. The connection of the North–South Corridor to SR 24 will require a future system (freeway-to-freeway) interchange. In addition, if Segment N is selected as a preferred route alternative, a system interchange with the North–South Corridor would also be required with the future US 60, resulting in two system interchanges within a relatively close distance.

If the southernmost SR 24 route alternatives are selected, the maximum available spacing of these two potential future interchanges (SR 24 and US 60 Realignment) with the North–South Corridor would be approximately 5 to 6 miles. If northern SR 24 alternatives are selected, the available spacing would be significantly less, and potentially only up to 2 to 3 miles. While there is not a definitive guideline for system-to-system interchange spacing, a minimum distance of 5 miles is preferred. **Figure 45** illustrates the approximate distances between potential future system interchanges with Segment N.

Figure 45. System Interchange Spacing with SR 24



As neither the SR 24 nor the North–South Corridor Study has selected a preferred alignment, the location of a system interchange cannot be determined. However, as Segment N would potentially require elimination of viable SR 24 alternatives, it is proposed that Segment N be eliminated from further consideration in the North–South Corridor Study.

Segment E3B

Segment E3B received low ratings (unfavorable) within the ratings matrix (52 points; other segments that were rejected due to low ratings received 54 points or lower). Segment E3B received low ratings in the following categories:

- Proposed Open Space: Affects 254 acres of proposed open space
- Geotechnical subsurface (NRCS): Soil characteristics need special mitigation measures that lead to considerable increase in construction and maintenance costs
- Wildlife Corridors: Affects 355 acres of wildlife corridor (the entire segment)
- Existing ROW: Uses 0 miles of existing ROW
- Threatened and Endangered Species: Affects habitat of Tucson shovel-nosed snake and western burrowing owl
- Trails: Affects nearly 0.3 mile of proposed multiuse trail corridor

- Cultural: Potential impact to one “Criterion A” cultural site (afforded protection under Section 4(f); can only affect if there is no feasible and prudent alternative)
- Public Rating: 83 members of the public rated segment “E” as unfavorable (52 rated as favorable, and 63 did not respond); note that Segment E3B was divided from Segment E based on public input received, and the public did not directly comment on Segment E2

Segment E3B was proposed to be rejected in the NSCS Alternatives Selection Report (ASR) Proposed Recommendations (memorandum dated April 26, 2012) because of its low rating. However, Segment E3B was retained in the draft ASR to provide an additional continuous route alternative located west of the CAP canal. After further evaluation, the study now proposes to eliminate Segment E3B for the following reasons:

- The study team has had subsequent discussions with SRP. SRP representatives estimate that relocation of the existing substation at Judd Road and Attaway Road could cost tens of millions of dollars.
- Segment G and Segment L2 satisfy the intent of stakeholder comments to retain a route alternative located west of the CAP Canal.

The study team, therefore, recommends that Segment E3B be removed from further consideration, not only because of its low rating, but because of the significant impacts that it would have on an existing SRP substation facility. In addition, Segment E3A and O2 are eliminated by association with E3B.

5 Recommendations

It was determined by the Core Team that comments by federal, state, and county stakeholder agencies, taken in their entirety, provide sufficient rationale for retaining continuous route alternatives west of the CAP Canal for further analysis in the L/DCR and EIS phase of the study. It was also determined that sufficient rationale exists for removing Segments AF, AK, N, and EB3, E3A, and O2 from further consideration.

It was further determined by the Core Team that comments received on the screening process did not provide sufficient justification for revising the Step 1 screening process nor undertaking the Step 2 screening process that will be undertaken during more detailed analyses in the EIS phase of the study.

Figure 46 presents the comprehensive set of route alternatives that were presented to the Core Team for presentation to the Stakeholder Agency Group. The resulting route alternatives were presented to the Stakeholder Agency Group on September 11, 2012. Based on input from both groups, it was agreed that the route alternatives illustrated in **Figure 46** should be included in the ASR and distributed for Stakeholder Agency and public review. The recommendations will be advanced to the L/DCR and EIS, including the no-build option.

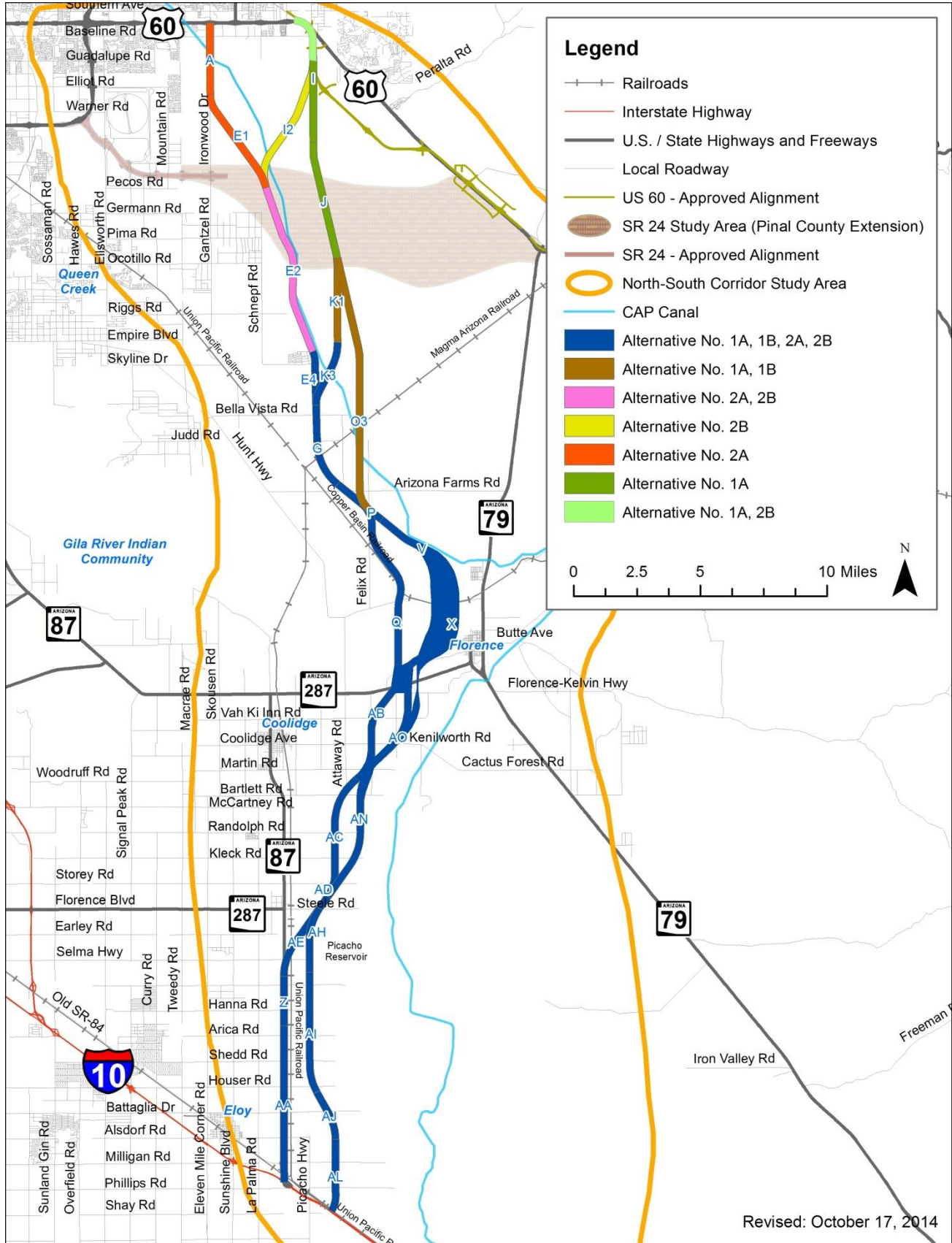
5.1 Supplemental Investigations

Social, economic, and environmental criteria were used to screen the route alternatives recommended in **Figure 46**. Information used for the screening was primarily limited to available data and previously recorded information. In July 2013, additional supplemental investigations were initiated to determine if specific areas of environmental sensitivity existed that might impact the recommended ASR route alternatives shown in **Figure 46**.

The supplemental investigations identified areas of environmental sensitivity associated with segments X and AO near the Gila River. To avoid or minimize impacts to these areas, an additional supplemental alternative was developed that avoids areas of environmental sensitivity in these areas. The route alternatives presented in **Figure 46**, with the expanded areas of segment X and AO, are recommended for advancement for detailed study in the EIS.

Although additional areas of environmental sensitivity may be discovered as the study advances into the EIS phase and the level of detailed analyses increases, it would be anticipated that any future adjustments to the ASR recommended route alternatives would be of a much smaller scale.

Figure 46. Route alternatives recommended to be advanced for detailed study in the EIS



6 Bibliography

- Arizona Department of Transportation (ADOT). 2004. *MoveAZ Long Range Transportation Plan*. Prepared by Cambridge Systematics, Inc., and Lima & Associates. September. Phoenix.
- . 2007. *Pinal County Corridors Definition Study Final Report*. Prepared by Kimley-Horn and Associates, Inc., Cambridge Systematics, Inc., and Kaneen Advertising and Public Relations. January. Phoenix.
- . 2007. *State of Arizona Railroad Inventory and Assessment*. Prepared by RL Banks and Associates, Inc. May. Phoenix.
- . 2008. *Southern Pinal/Northern Pima Corridors Definition Study Final Report*. Prepared by Kimley-Horn and Associates, Inc. April.
- . 2008. Roadside Development Guidelines. <http://www.azdot.gov/highways/Roadway_Engineering/Roadside_Development/HwyBLM_USFS.asp>.
- . 2009. *Statewide Transportation Planning Framework, Central Arizona Regional Framework Study, Working Paper #3, Scenarios and Evaluation Development*. Prepared by Kimley-Horn and Associates, Inc. May. Phoenix.
- . 2010. *2010 Statewide Rail Framework Study*. Prepared by AECOM. February. Phoenix.
- . 2010. *2010 Statewide Transportation Planning Framework Final Report*. March. Phoenix.
- . 2011. *North–South Corridor Study Draft Purpose and Need*. Prepared by HDR Engineering, Inc. December.
- . 2011. *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) Section 6002 Coordination Plan for Agency and Public Involvement*. November.
- . 2011. *North–South Corridor Study Draft Agency and Public Scoping Summary*, Prepared by HDR Engineering, Inc., and Gordley Design Group. February.
- . 2012. *US 60 Alignment Study: Superstition Freeway to Florence Junction*. Final Design Concept Report. Prepared by Jacobs Engineering. January. Phoenix.
- . 2012. Passenger Rail Corridor Study. <<http://www.azdot.gov/passengerrail/Alternatives.asp>>.
- . 2012. City of Coolidge Comprehensive Transportation Feasibility Study. <http://www.azdot.gov/MPD/Systems_Planning/coolidge.asp>.
- . 2012. Policy and Implementation Memorandum 89-5. <http://www.azdot.gov/Highways/Roadway_Engineering/Roadway_Predesign/PDF/memos.pdf>.
- City of Coolidge, Town of Florence, Arizona Department of Transportation (ADOT). 2008. *Coolidge-Florence Regional Transportation Plan*. Prepared by Lima and Associates, Kimley-Horn and Associates, Inc., and Economic and Real Estate Consulting. April. Pinal County.
- Desert Xpress Rail Project. 2011. Appendix F-B. Highway Interface Manual, February 8, 2011.
- East Valley Partnership and Pinal Partnership. 2009. Superstition Vistas Scenario Report. <www.superstition-vistas.org>. Phoenix.
- . 2009. Superstition Vistas Area Planning Project. <www.superstition-vistas.org>. Phoenix.

- . 2010. *Superstition Vistas Scenario Report: A Sustainable Community for the 21st Century*. <www.superstition-vistas.org>. Phoenix.
- . 2010. *Superstition Vistas Unlocking Its Potential*. <www.superstition-vistas.org>. Phoenix.
- Maricopa Association of Governments (MAG), Central Arizona Association of Governments, Arizona Department of Transportation (ADOT). 2003. *Southeast Maricopa/Northern Pinal County Area Transportation Study Final Report*. Prepared by Parsons Brinckerhoff. September. Phoenix.
- Maricopa Association of Governments (MAG). 2003. *High Capacity Transit Study*. Prepared IBI Group. June. Phoenix.
- . 2008. *Commuter Rail Strategic Plan*. Prepared URS. March. Phoenix.
- . 2009. *Hidden Valley Transportation Framework Study*.
- . 2010. *Commuter Rail System Study*.
- Moore, Robert W. Corridor Design Issues for Florida High Speed Rail, American Railway Engineering and Maintenance-of-Way Association (AREMA) Conference, 2004. HNTB Corporation.
- Morrison Institute for Public Policy. 2008. *Megapolitan Arizona's Sun Corridor*. Arizona State University. Tempe.
- Pinal County. 2007. *Pinal County Open Space and Trails Master Plan*. Prepared by Logan Simpson Design, Inc. October. Phoenix.
- . 2008. *Pinal County Regionally Significant Routes Plan for Safety and Mobility*. Florence.
- . 2009. *We Create Our Future: Pinal County Comprehensive Plan*. Adopted November 18, 2009. Updated December 2011. Florence.
- . 2010. *Pinal County Area Drainage Master Plan Phase D – Picacho Reservoir Watershed*. February.
- . 2012. *Superstition Vistas Pinal County Comprehensive Plan Amendment*, December. <<http://www.superstition-vistas.org/2012/01/pinal-county-bos-approves-sv-comprehensive-plan-amendment/>>.
- Reichelt, Kurt. High Speed Rail & Existing Rail Corridors. Northwest Transportation Conference. February 11, 2010, HDR, Inc.
- Turner, R. M., and D. E. Brown, 1994. "Sonoran Desertscrub." In *Biotic Communities: Southwestern United States and Northwestern Mexico* (edited by D. E. Brown). University of Utah Press, Salt Lake City. Section 154.1, pp. 181–212
- Valley Metro/Regional Public Transportation Authority (RPTA). 2003. *Valley Metro/Regional Public Transportation Authority (RPTA) Regional Transit System Study*.

Appendix A

Alternatives Selection Process Milestones and Decisions

This page is intentionally left blank.

Table A1. Alternatives selection process milestones and decisions

Date	Milestone/Event	Audience/Details	Decisions
Jan. 2010	Presentation of NEPA/ADOT alternatives selection requirements and a draft alternatives selection process	Study team/special meeting	Refined NEPA/ADOT alternatives selection requirements and a refined draft alternatives selection process for presentation to Core Team
Feb. 2010	Presentation of study area, NEPA/ADOT alternatives selection requirements, and alternatives selection process	Core Team/scheduled meeting	Endorsed study area, NEPA/ADOT alternatives selection requirements, and a draft alternatives selection process (to be fine-tuned over time)
Mar. 2010	Presentation of study objectives, Native American consultation process, GRIC role and responsibility, and request whether to consider route alternatives within GRIC tribal land	GRIC TTT/meeting requested by ADOT	Formal response from the TTT regarding whether to consider route alternatives on GRIC tribal land was not received. Until notified otherwise, GRIC tribal land will be excluded from further consideration for route alternatives due to existing constraints north and south of GRIC.
June 2010	Presentation of study area data and initial COA	Core Team/scheduled meeting	Endorsed initial COA for presentation to Agency Stakeholder Group
July 2010	Presentation of study area, alternatives selection requirements, and initial COA	Agency Stakeholder Group/scheduled meeting	Endorsement of alternatives selection requirements and initial COA presentation at agency and public scoping meetings
Sept. 2010	Draft Purpose and Need Report posted Published Notice of Intent	Posted on ADOT project website and published in Federal Register	Official start to the NEPA process, alternatives development, and alternatives evaluation
Oct. 2010	Agency Scoping Meeting to provide agency representatives with overview of the study process, present the COA, and receive input on issues to be addressed	Attendees included 56 individuals representing 27 different local, regional, tribal, state, and federal agencies	Agency input received on alternatives development and evaluation. Agency input on the COA related to the extremely low development potential of the opportunity area to the east of the Picacho Mountains and the importance of avoiding adverse impacts on the planned UPRR Switch Yard at Red Rock. This input resulted in changes to the COA boundaries.
Oct. 2010	Public Scoping Meetings to provide an overview of the study process, discuss the environmental and engineering processes and schedule, present the COA, and provide the opportunity for the public to ask questions and provide feedback	Four public scoping meetings were held at separate locations in the study area	Public input received on alternatives development and evaluation
Nov. 2010	Presentation of input received from Agency and Public Scoping meetings	Core Team/scheduled meeting	Endorsed input received during scoping meetings for presentation to the Agency Stakeholder Group
Dec. 2010	Presentation of input received from Agency and Public Scoping meetings and presentation of travel demand modeling options	Agency Stakeholder Group/scheduled meeting	Endorsed input received during scoping meetings

Date	Milestone/Event	Audience/Details	Decisions
Jan. 2011	Meeting with AANG staff to discuss route alternative impacts on AANG facilities and infrastructure	Coordination meeting with AANG	AANG requested that route alternatives be located as far as possible from Rittenhouse Airfield (2-mile buffer around the airfield, minimum) to allow continuation of current training mission. Estimated cost of relocation of current training mission to another site is \$500,000.
Apr. 2011	Meeting with CAP staff to discuss route alternative impacts on CAP facilities and infrastructure	Coordination meeting with CAP	CAP staff requested that CAP Canal crossings be minimized, CAP Canal crossings be coordinated and comply with Bureau of Reclamation requirements, CAP Canal crossings minimize skew angle of crossings, route alternatives avoid CAP recharge areas, route alternatives consider impacts on CAP power lines. Route alternatives parallel to CAP Canal are acceptable if access is provided.
Apr. 2011	Meeting with SRP staff to discuss route alternative impacts on SRP facilities and infrastructure	Coordination meeting with SRP	SRP staff requested that SRP power line crossings be minimized, SRP power line crossings minimize skew angle of crossings, and route alternatives avoid SRP Fuels Gas Dome storage facilities. Route alternatives parallel to SRP are acceptable if access and design standards are met.
May 2011	Meeting with San Carlos Irrigation Project staff to discuss route alternative impacts on SCIP facilities and infrastructure	Coordination meeting with San Carlos Irrigation Project	A majority of San Carlos Irrigation Project canals are on alignments of historic and prehistoric canals. If crossing of a canal is required, environmental clearance will be required.
May 2011	Meeting with UPRR staff to discuss route alternative impacts on UPRR facilities and infrastructure	Coordination meeting with UPRR	Route alternatives in the vicinity of the Red Rock Rail Yard should be avoided. Traffic interchange spacing should be 6 to 7 miles from Rail Yard. Route alternatives should avoid Phoenix Line Y.
May 2011	Presentation of travel demand model options for use in alternatives evaluation and Portalis development plans	Core Team/scheduled meeting	No decisions
June 2011	Presentation of corridor segment analysis results	Core Team/scheduled meeting	Endorsed presentation of corridor analysis results to Stakeholder Agency Group
June 2011	Presentation of corridor segment analysis results	Agency Stakeholder Group/scheduled meeting	Endorsed corridor segment preferences from the analysis of drainage, geological, economic development, and traffic. Endorsed development of route alternatives in preferred corridor segments.
Aug. 2011	Presentation of Agency Stakeholder Group endorsement of corridor segment analysis results and initial route alternative development criteria and route alternatives	Core Team/scheduled meeting	Decision made expand initial route alternatives to include alternatives within and outside of the corridor segments based on public input, agency input, technical assessments, purpose and need criteria, independent utility, existing facilities, and rail and transit.

Date	Milestone/Event	Audience/Details	Decisions
Aug. 2011	Review of recent decisions on alternatives development and evaluation	ADOT Predesign staff/special meeting	Confirmed need to develop and evaluate alternatives committed to by FHWA in a letter to USEPA dated May 12, 2011, retain all corridor segments for consideration as areas for route alternatives, integrate rail design criteria with roadway design criteria in the development of route alternatives, establish 2050 as the design year of travel demand forecasting, and route alternatives should be 1,500 feet in width to provide flexibility for future alignment revisions.
Sept. 2011	Presentation on development criteria for route alternatives, rationale for expanding initial route alternatives, and evaluation criteria	Agency Stakeholder Group/scheduled meeting	Endorsed rationale for expanding initial route alternatives
Sept. 2011	Presentation of 2-stage alternatives evaluation process including development/evaluation of modal alternatives, followed by the development/evaluation of route alternatives. Initial evaluation criteria for each evaluation phase were presented.	Core Team/scheduled meeting	Endorsed 2-stage evaluation process and initial evaluation criteria for presentation to Agency Stakeholder Group
Sept. 2011	Presentation overview of 2-stage alternatives evaluation process including development/evaluation of modal alternatives, followed by the development/evaluation of route alternatives. Initial evaluation criteria for each evaluation phase were presented.	Agency Stakeholder Group/scheduled meeting	Endorsed 2-stage evaluation process and initial evaluation criteria
Oct. 2011	Presentation of Stage 1 modal alternatives evaluation results, update on Stage 2 route alternatives development, and update on Stage 2 evaluation criteria.	Core Team/scheduled meeting	Endorsed Stage 1 modal alternatives evaluation results, update on Stage 2 route alternatives development, and update on Stage 2 evaluation criteria for presentation to Agency Stakeholder Group
Nov. 2011	Presentation of Stage 1 modal alternatives evaluation results, update on Stage 2 route alternatives development, and update on Stage 2 evaluation criteria	Agency Stakeholder Group/scheduled meeting	Endorsed Stage 1 results that a high-capacity roadway will be required (along with other supplemental modes) to meet future (2050) travel demand
Dec. 2011	Public workshops	The purposes of the four public workshops were to present route alternatives and receive input on public preferences	Public survey forms were completed and used as criteria for evaluating public preferences on route alternatives.
Feb. 2012	Presentation of public and agency stakeholder preferences for route alternatives and an update on impact criteria screening	Core Team/scheduled meeting	Endorsed public and agency stakeholder preferences for route alternatives for presentation to Agency Stakeholder Group

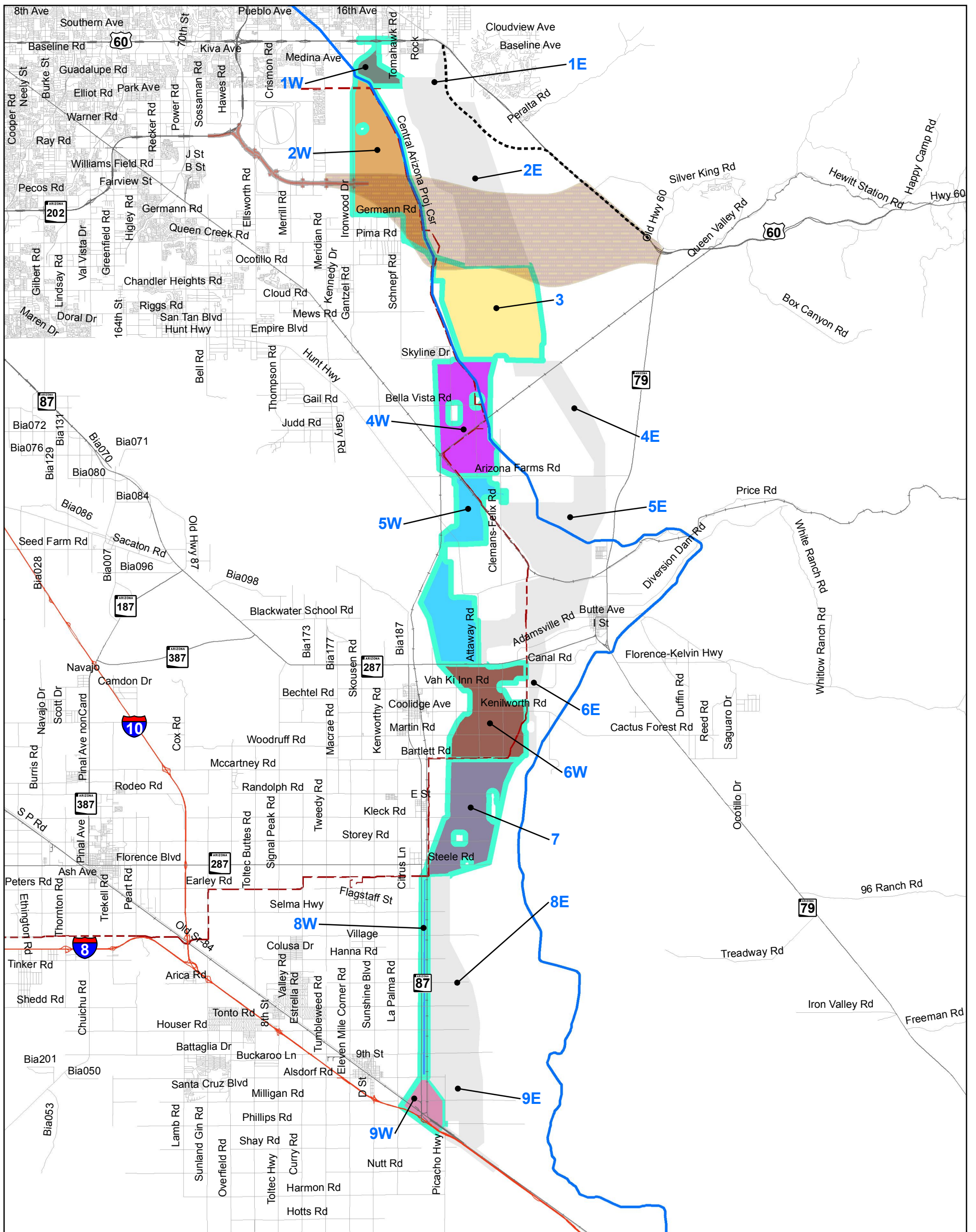
Date	Milestone/Event	Audience/Details	Decisions
Mar. 2012	Presentation of route alternatives recommended for further detailed analysis in the L/DCR and EIS phase	Agency Stakeholder Group/scheduled meeting	Comments received from federal and state stakeholder agencies requested that route alternatives west of the CAP Canal be retained for further detailed analysis in the L/DCR and EIS phase. Follow-up written comments from Pinal County requested that that route alternatives west of the CAP Canal be retained for further detailed analysis.
Mar. 2012	Presentation of rationale for inclusion of route alternatives east of the CAP Canal.	Core Team/scheduled meeting	Endorsed memorandum recommendation for presentation to the Agency Stakeholder Group

Notes: AANG = Arizona Air National Guard, ADOT = Arizona Department of Transportation, CAP = Central Arizona Project, COA = Corridor Opportunity Area, EIS = environmental impact statement, FHWA = Federal Highway Administration, GRIC = Gila River Indian Community, L/DCR = location/design concept report, NEPA = National Environmental Policy Act, SRP = Salt River Project, TTT = Transportation Technical Team, UPRR = Union Pacific Railroad, USEPA = U.S. Environmental Protection Agency

Appendix B

Purpose and Need Corridor Build Alternatives

This page is intentionally left blank.



Legend

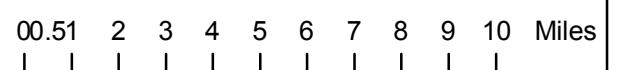
- Proposed US 60 Alignment
- SR 24 Preferred Alignment
- SR 24 Study Area
- CAP Canal
- Interstate Highway
- U.S. / State Highways and Freeways
- Local Roadway
- Railroad
- SRP 500 kV Line Easements
- <00> Corridor Number
- Scenario Corridors

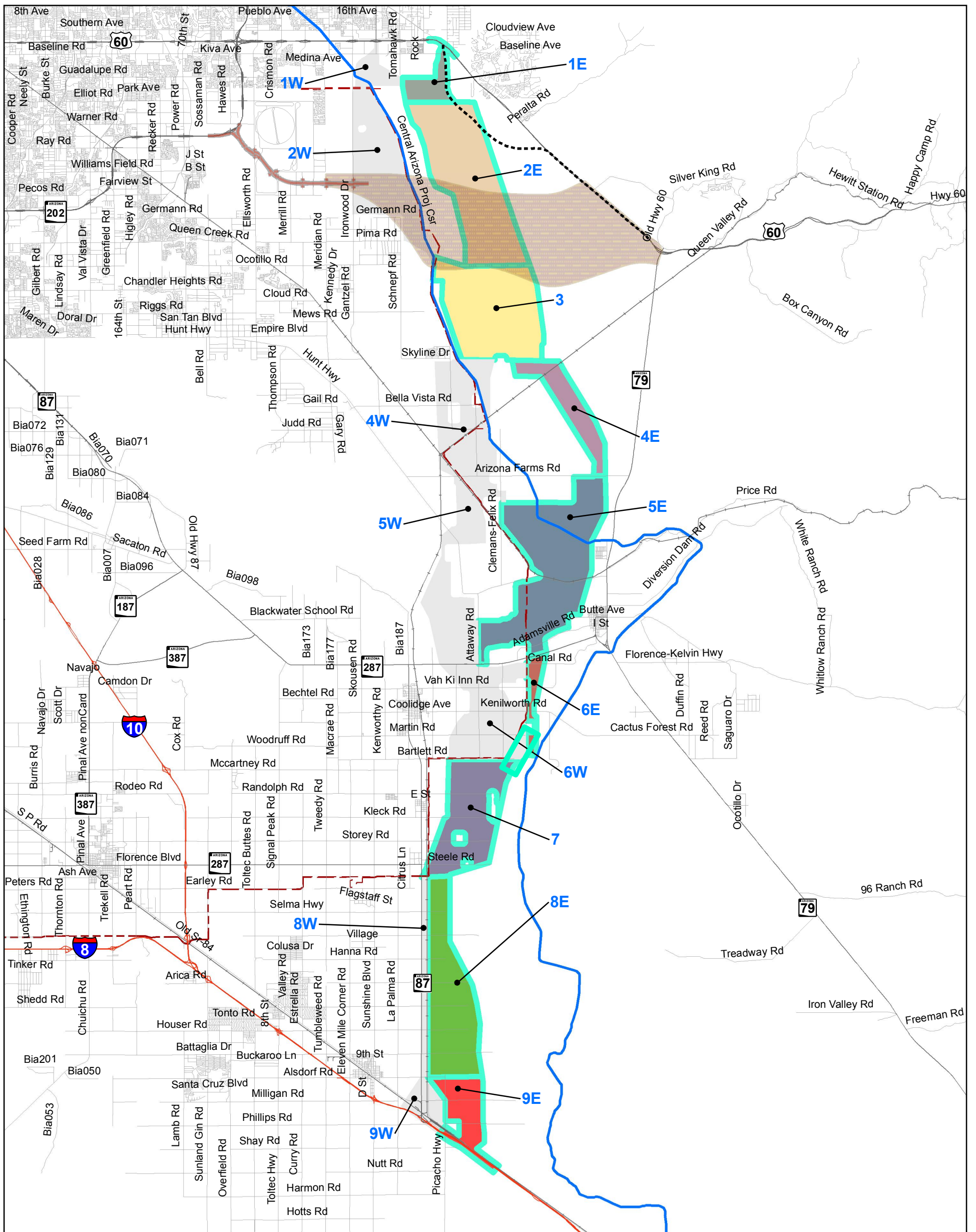
NORTH-SOUTH CORRIDOR STUDY

Scenario 1

NOT FOR PUBLIC DISTRIBUTION

DRAFT 3-8-2011
 Concepts are preliminary and subject to
 change/modification
 Federal Aid No. STP-999-A(BBM)





Legend

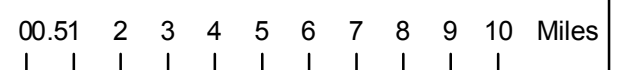
- Proposed US 60 Alignment
- SR 24 Preferred Alignment
- SR 24 Study Area
- CAP Canal
- Interstate Highway
- U.S. / State Highways and Freeways
- Local Roadway
- Railroad
- SRP 500 kV Line Easements
- <00> Corridor Number
- Scenario Corridors

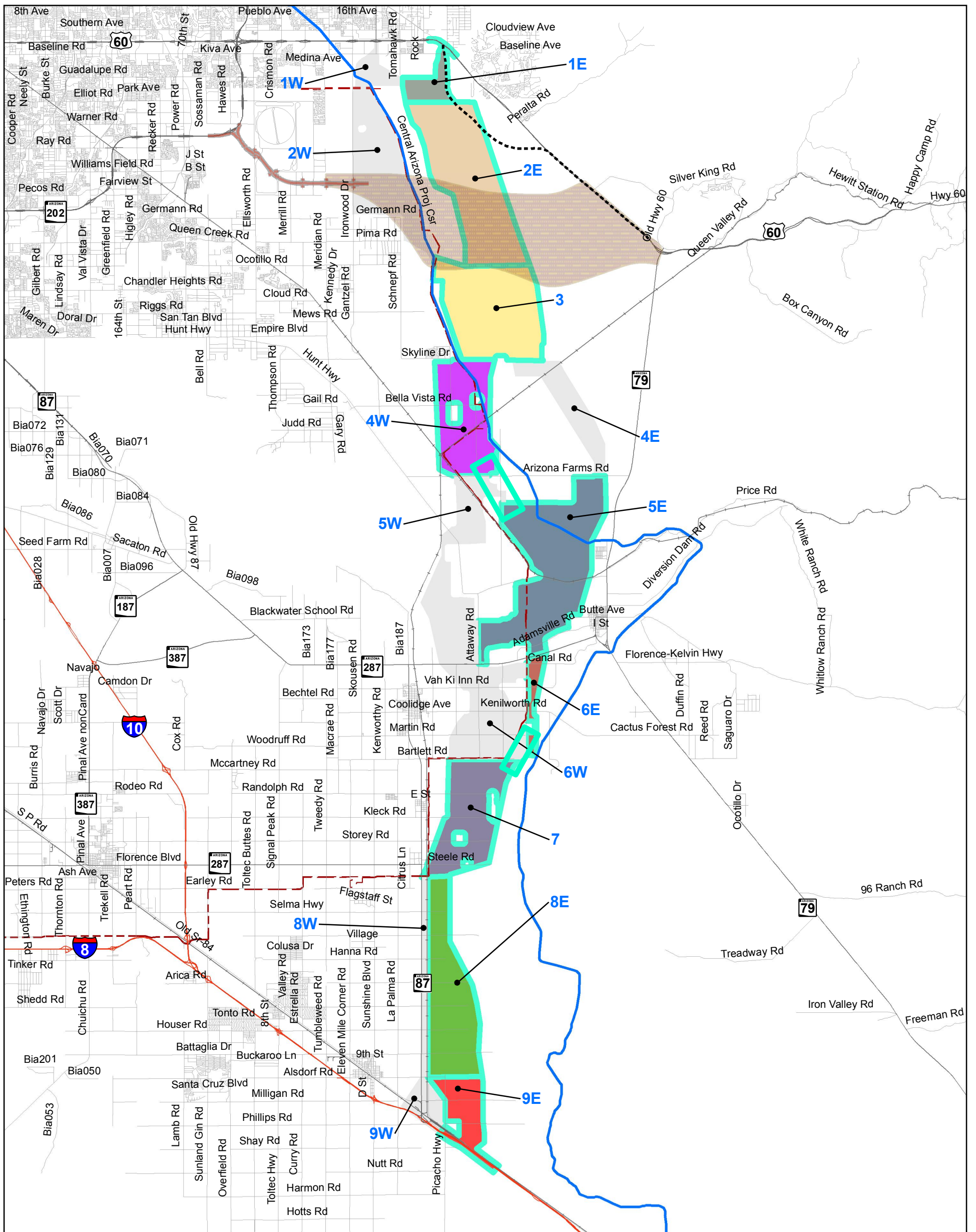
NORTH-SOUTH CORRIDOR STUDY

Scenario 2

NOT FOR PUBLIC DISTRIBUTION

DRAFT 3-8-2011
 Concepts are preliminary and subject to
 change/modification
 Federal Aid No. STP-999-A(BBM)





Legend

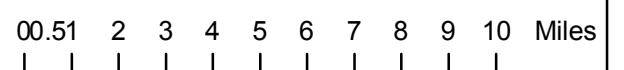
- Proposed US 60 Alignment
- SR 24 Preferred Alignment
- SR 24 Study Area
- CAP Canal
- Interstate Highway
- U.S. / State Highways and Freeways
- Local Roadway
- Railroad
- SRP 500 kV Line Easements
- <00> Corridor Number
- Scenario Corridors

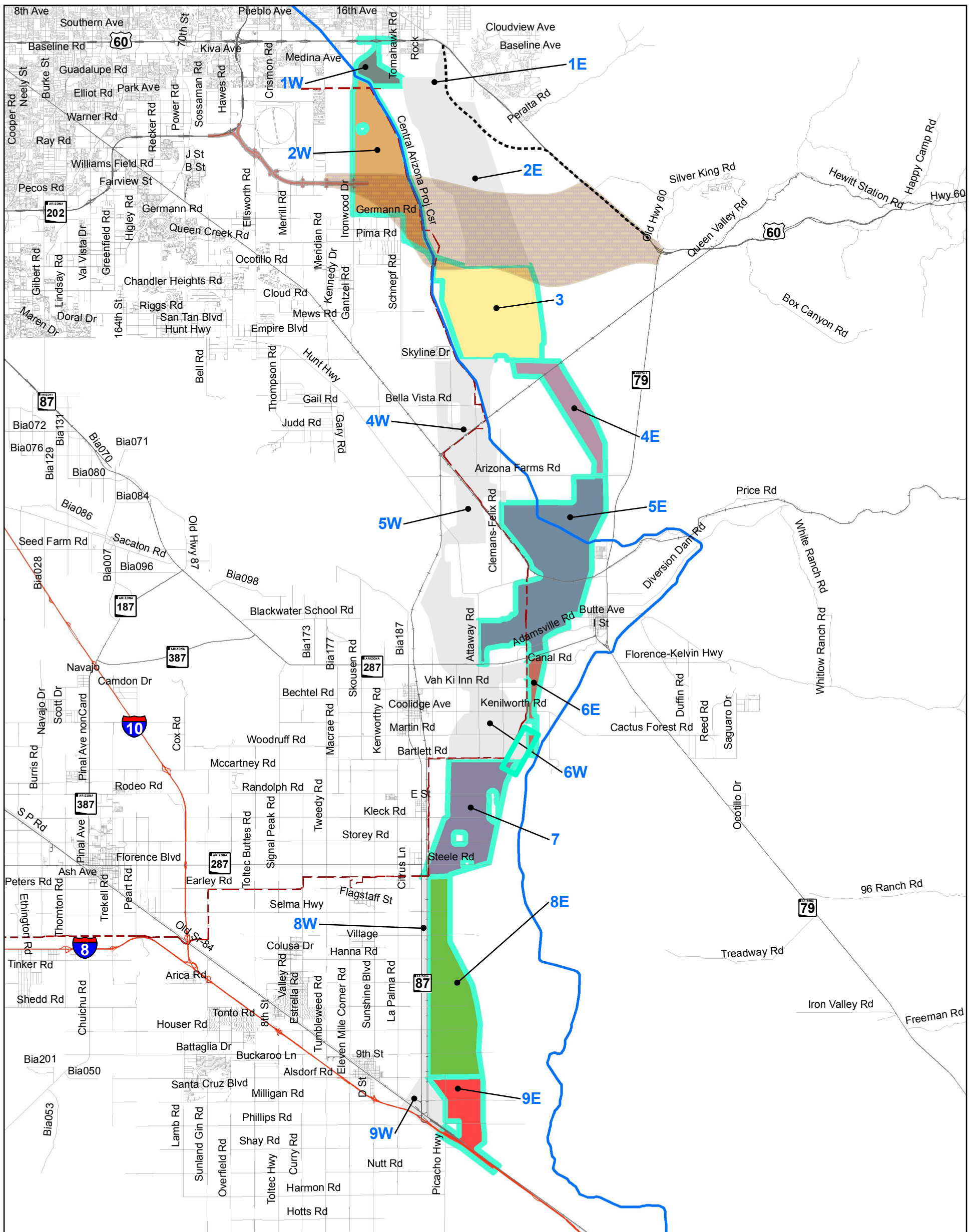
NORTH-SOUTH CORRIDOR STUDY

Scenario 3

NOT FOR PUBLIC DISTRIBUTION

DRAFT 3-8-2011
 Concepts are preliminary and subject to
 change/modification
 Federal Aid No. STP-999-A(BBM)





Legend

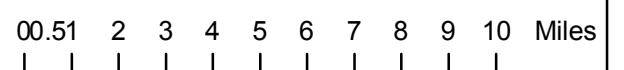
- Proposed US 60 Alignment
- SR 24 Preferred Alignment
- SR 24 Study Area
- CAP Canal
- Interstate Highway
- U.S. / State Highways and Freeways
- Local Roadway
- Railroad
- SRP 500 kV Line Easements
- <00> Corridor Number
- Scenario Corridors

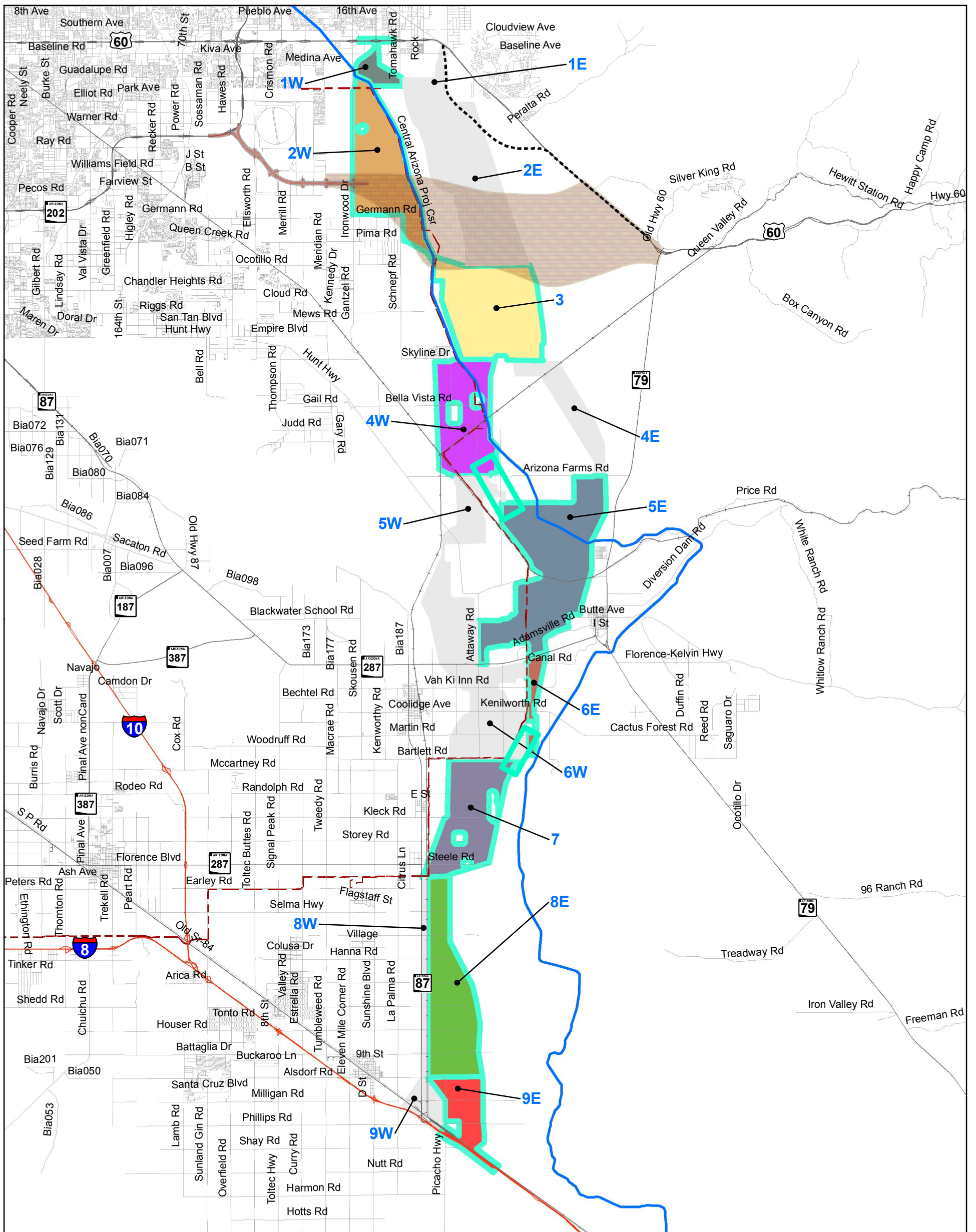
NORTH-SOUTH CORRIDOR STUDY

Scenario 4

NOT FOR PUBLIC DISTRIBUTION

DRAFT 3-8-2011
 Concepts are preliminary and subject to
 change/modification
 Federal Aid No. STP-999-A(BBM)





Legend

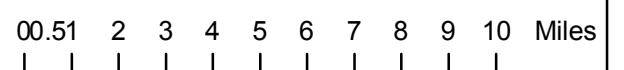
- Proposed US 60 Alignment
- SR 24 Preferred Alignment
- SR 24 Study Area
- CAP Canal
- Interstate Highway
- U.S. / State Highways and Freeways
- Local Roadway
- Railroad
- SRP 500 kV Line Easements
- <00> Corridor Number
- Scenario Corridors

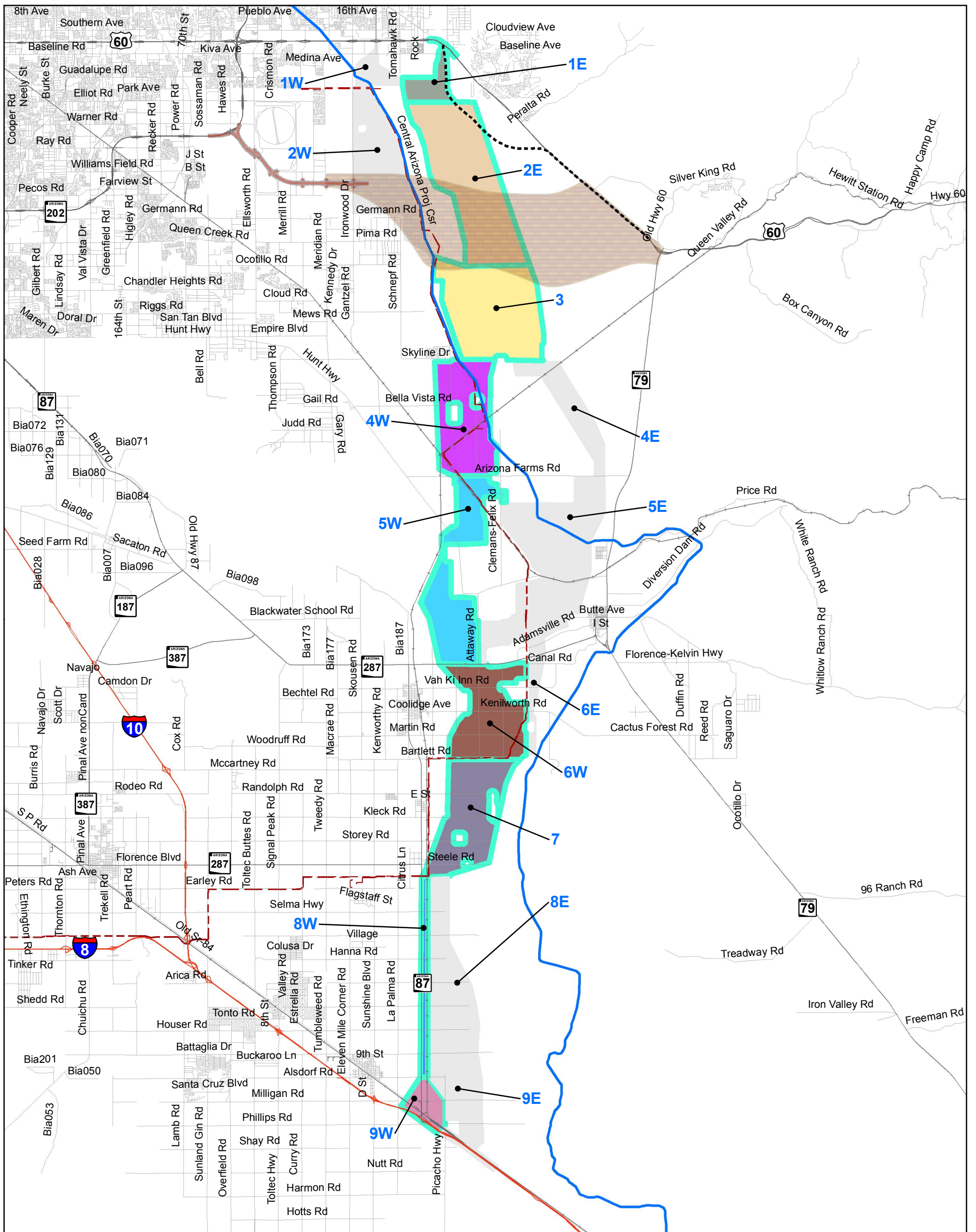
NORTH-SOUTH CORRIDOR STUDY

Scenario 5

NOT FOR PUBLIC DISTRIBUTION

DRAFT 3-8-2011
 Concepts are preliminary and subject to
 change/modification
 Federal Aid No. STP-999-A(BBM)





Legend

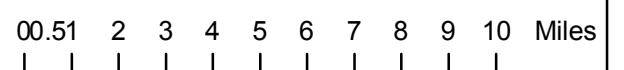
- Proposed US 60 Alignment
- SR 24 Preferred Alignment
- SR 24 Study Area
- CAP Canal
- Interstate Highway
- U.S. / State Highways and Freeways
- Local Roadway
- Railroad
- SRP 500 kV Line Easements
- <00> Corridor Number
- Scenario Corridors

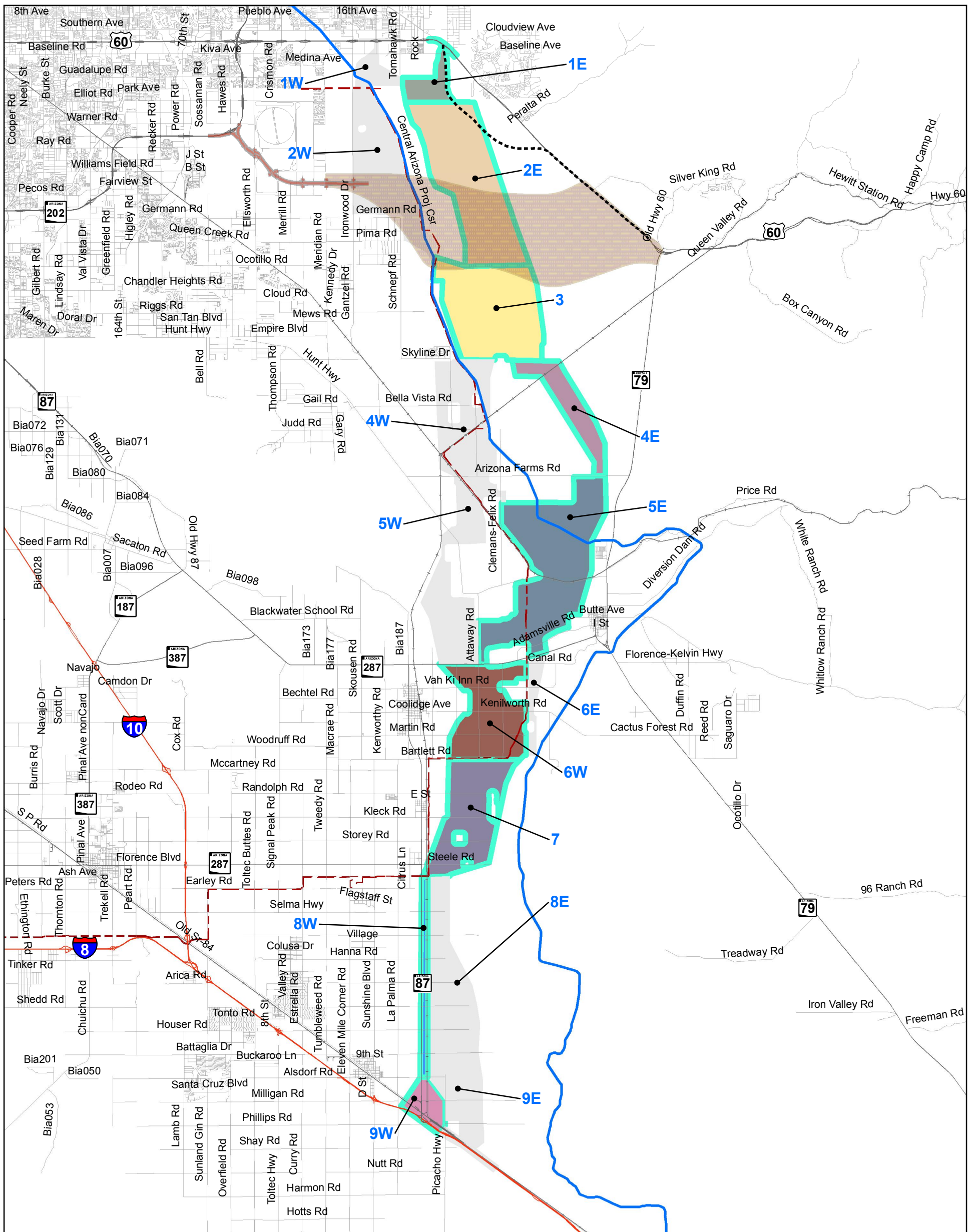
NORTH-SOUTH CORRIDOR STUDY

Scenario 6

NOT FOR PUBLIC DISTRIBUTION

DRAFT 3-8-2011
 Concepts are preliminary and subject to
 change/modification
 Federal Aid No. STP-999-A(BBM)





Legend

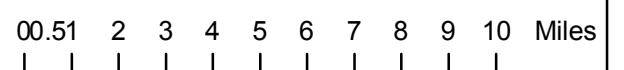
- - - - - Proposed US 60 Alignment
- SR 24 Preferred Alignment
- SR 24 Study Area
- CAP Canal
- Interstate Highway
- U.S. / State Highways and Freeways
- Local Roadway
- Railroad
- - - SRP 500 kV Line Easements
- <00> Corridor Number
- Scenario Corridors

NORTH-SOUTH CORRIDOR STUDY

Scenario 7

NOT FOR PUBLIC DISTRIBUTION

DRAFT 3-8-2011
 Concepts are preliminary and subject to
 change/modification
 Federal Aid No. STP-999-A(BBM)



Appendix C

Step 1 Route Alternatives Evaluation Results

This page is intentionally left blank.

Table C1. Impacts on water resources

Alternative route segment			Natural drainage features								Human-made drainage features					Comments	Total crossings				
Segment ID	Segment length	Segment area	River	Wash	In floodplain	Not in floodplain	Total natural	Crossings per mile (in floodplain)	Crossings per mile (not in floodplain)	Total natural water resources rating	Canal	Dam	Total human-made	Crossings per mile	Total human-made water resources rating	Total	In floodplain	Not in floodplain			
			<i>Rating</i>		<i>Definition (crossings per mile)</i>						<i>Definition (crossings per mile)</i>										
			1		0.5 or more, or impact to CAP, Queen Creek Wash, and Gila River						0.6 or more										
			2		0.3 to 0.5						0.4 to 0.6										
			3		0.2 to 0.3						0.2 to 0.4										
			4		> 0 to 0.2						> 0 to 0.2										
			5		0						0										
A	2.82	512.88	0	4	1	3	4	0.4	1.1	2	1	0	1	0.4	1	OVERWRITE - CAP, Flood Hazard Areas			5	1	4
B	11.21	2038.18	0	7	5	2	7	0.4	0.2	2	0	0	0	0.0	5	Queen Creek			7	5	2
C	9.44	1717.21	0	1	0	1	1	0.0	0.1	5	1	0	1	0.1	4				2	0	2
D	4.78	869.78	0	2	2	0	2	0.4	0.0	2	1	0	1	0.2	3	Gila River			3	2	1
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-	-	-
E1	4.32	785.95	0	5	3	2	5	0.7	0.5	1	0	0	0	0.0	5	Flood Hazard Areas			5	3	2
E2	6.81	1237.35	0	8	4	4	8	0.6	0.6	1	1	0	1	0.1	4	Queen Creek (west of CAP)			9	5	4
E3	2.56	821.16	0	0	0	0	0	0.0	0.0	5	2	0	2	0.8	1				2	0	2
E3A	1.95	465.81	0	0	0	0	0	0.0	0.0	5	1	0	1	0.5	2				1		
E3B	2.13	355.36	0	0	0	0	0	0.0	0.0	5	1	0	1	0.5	2				1		
E4	2.13	387.38	0	0	0	0	0	0.0	0.0	5	1	0	1	0.5	2				1	0	1
F	6.04	1097.91	0	0	0	1	0	0.0	0.2	5	1	0	1	0.2	4				1	0	1
G	4.85	646.67	0	0	0	1	0	0.0	0.2	5	1	0	1	0.2	3				1	0	1
H	4.13	750.47	0	1	0	1	1	0.0	0.2	5	0	0	0	0.0	5				1	0	1
I	5.22	949.52	0	7	4	3	7	0.8	0.6	1	0	0	0	0.0	5	Flood Hazard Areas			7	4	3
I2	5.52	1002.92	0	6	2	4	6	0.4	0.7	2	1	0	1	0.2	1	OVERWRITE -FRS, CAP, Flood Hazard			7	2	5
J	4.65	845.84	0	6	5	1	6	1.1	0.2	1	0	0	0	0.0	5	Flood Hazard Areas			6	5	1
K	5.99	1088.61	0	3	1	4	3	0.2	0.7	4	2	0	2	0.3	3	CAP, Queen Creek			5	1	4
K1	4.78	607.19	0	3	1	2	3	0.2	0.4	3	0	0	0	0.0	5	Queen Creek			3		
K2	2.59	472.17	0	0	0	0	0	0.0	0.0	5	1	0	1	0.4	3				1		
K3	1.20	481.42	0	0	0	0	0	0.0	0.0	5	2	0	2	1.7	1	CAP			2		
L	3.71	674.96	0	0	0	0	0	0.0	0.0	5	1	0	1	0.3	3				1	0	1
L1	2.49	453.07	0	0	0	0	0	0.0	0.0	5	2	0	2	0.8	1				2		
L2	1.22	221.89	0	0	0	0	0	0.0	0.0	5	0	0	0	0.0	5				0		
M	3.21	583.35	0	5	2	3	5	0.6	0.9	1	0	0	0	0.0	5	Flood Hazard Areas			5	2	3

Alternative route segment			Natural drainage features								Human-made drainage features					Comments	Total crossings		
Segment ID	Segment length	Segment area	River	Wash	In floodplain	Not in floodplain	Total natural	Crossings per mile (in floodplain)	Crossings per mile (not in floodplain)	Total natural water resources rating	Canal	Dam	Total human-made	Crossings per mile	Total human-made water resources rating	Total	In floodplain	Not in floodplain	
N	5.33	969.58	0	7	6	1	7	1.1	0.2	1	0	0	0	0.0	5	7	6	1	
O	10.44	1898.51	0	4	1	4	4	0.1	0.4	4	1	0	1	0.1	1	5	1	4	
O1	7.89	1434.26	0	5	1	4	5	0.1	0.5	4	1		1	0.1	1	6			
O2	2.55	464.24	0	0	0	0	0	0.0	0.0	5	0		0	0.0	5	0			
O3	10.18	1848.04	0	6	1	5	6	0.1	0.5	4	1		1	0.1	1				
P	1.01	183.75	0	0	0	0	0	0.0	0.0	5	0	0	0	0.0	5	0	0	0	
Q	6.83	1241.79	1	2	1	3	3	0.1	0.4	4	1	0	1	0.1	4	4	1	3	
R	3.10	563.36	0	4	2	2	4	0.6	0.6	1	0	0	0	0.0	5	4	2	2	
S	4.39	797.94	0	4	2	2	4	0.5	0.5	2	0	0	0	0.0	5	4	2	2	
T	11.46	2083.96	0	8	0	8	8	0.0	0.7	5	2	1	3	0.3	1	11	0	11	
U	3.77	686.01	0	3	0	3	3	0.0	0.8	5	2	0	2	0.5	1	5	0	5	
V	4.06	737.96	0	3	0	3	3	0.0	0.7	5	0	0	0	0.0	5	3	0	3	
W	11.66	2119.39	0	11	4	7	11	0.3	0.6	2	2	0	2	0.2	1	13	4	9	
X	3.86	701.5	1	1	1	1	2	0.3	0.3	3	1	0	1	0.3	3	3	1	2	
Y	11.46	2084.14	0	1	1	1	1	0.1	0.1	4	5	0	5	0.4	2	6	1	5	
AA	6.18	1123.39	0	0	0	0	0	0.0	0.0	5	1	0	1	0.2	4	1	0	1	
Z	1.94	351.93	0	0	0	1	0	0.0	0.5	5	0	0	0	0.0	5	0	0	0	
AB	4.51	512.92	0	1	1	0	1	0.2	0.0	3	4	0	4	0.9	1	5	1	4	
AC	5.72	902.09	0	0	0	0	0	0.0	0.0	5	3	0	3	0.5	2	3	0	3	
AD	0.56	102.18	0	0	0	0	0	0.0	0.0	5	0	0	0	0.0	5	0	0	0	
AE	3.23	563.18	0	0	0	0	0	0.0	0.0	5	2	0	2	0.6	1	2	0	2	
AF	5.11	929.91	0	0	0	0	0	0.0	0.0	5	2	0	2	0.4	3	2	0	2	
AG	2.94	535.23	0	0	0	0	0	0.0	0.0	5	1	0	1	0.3	3	1	0	1	
AH	2.62	475.76	0	0	0	0	0	0.0	0.0	5	2	0	2	0.8	1	2	0	2	
AI	4.76	865.41	0	0	0	0	0	0.0	0.0	5	1	0	1	0.2	3	1	0	1	
AJ	2.03	369.48	0	0	0	0	0	0.0	0.0	5	1	0	1	0.5	2	1	0	1	
AK	6.80	1237.26	0	1	0	1	1	0.0	0.1	5	2	0	2	0.3	3	3	0	3	
AL	2.85	518.96	0	0	0	0	0	0.0	0.0	5	1	0	1	0.4	3	1	1	0	
AM	2.95	535.58	0	0	0	0	0	0.0	0.0	5	4	0	4	1.4	1	4	1	3	
AN	7.53	901.27	0	0	0	0	0	0.0	0.0	5	7	0	7	0.9	1	7	0	7	
AO	3.41	547.59	0	0	0	0	0	0.0	0.0	5	4	0	4	1.2	1	4	1	3	
Transition 1		596.66	0	0			0				0	0	0			0	0	0	
Transition 2		383.47	0	0			0				0	0	0			0	0	0	

Table C2. Utilities conflicts (number of crossings)

Alternative route segment			Utility conflict ratings								
Segment ID	Segment length	Segment area	Number of conflicts with existing 230–500 kV power lines	Existing power lines rating	Number of conflicts with proposed 230–500 kV power lines	Proposed power lines rating	Conflicts with gas pipelines	Gas pipeline rating	Substations	Substations rating	Overall utility rating
Criteria Definition: If route segment crosses a utility line, rating is "0". Otherwise, rating is "5". Overall Utility Rating is the average of the individual utility ratings.											
A	2.82	512.88	1	1	3	1		5		5	3
B	11.21	2038.18	2	1	0	5	1	1		5	3
C	9.44	1717.21	0	5	2	1	2	1		5	3
D	4.78	869.78	0	5	3	1	1	1		5	3
E	-	-	-	-	-	-	-	-	-	-	-
E1	4.32	785.95	0	5	0	5		5		5	5
E2	6.81	1237.35	0	5	0	5		5	SRP Germann Substation RS-19	1	4
E3	2.56	821.16	0	5	0	5		5		5	5
E3A	1.95	465.81	1	1	1	1		5		5	3
E3B	2.13	355.36			3	1		5	SRP Abel Substation	1	2
E4	2.13	387.38	0	5	0	5		5		5	5
F	6.04	1097.91	0	5	3	1	1	1		5	3
G	4.85	646.67	1	1	3	1		5	SRP Bella Vista / Corbell Substation	1	2
H	4.13	750.47	0	5	1	1		5		5	4
I	5.22	949.52	2	1	0	5		5		5	4
I2	5.52	1002.92	0	5	0	5		5		5	5
J	4.65	845.84	0	5	0	5		5		5	5
K	5.99	1088.61	1	1	3	1		5		5	3
K1	4.78	607.19				5		5		5	5
K2	2.59	472.17			2	1		5		5	4
K3	1.20	481.42	1		2	1		5		5	4
L	3.71	674.96	0	5	3	1	1	1		5	3
L1	2.49	453.07				2	1	1		5	3
L2	1.22	221.89				2		5		5	4
M	3.21	583.35	0	5	0	5		5		5	5
N	5.33	969.58	1	1	0	5		5		5	4
O	10.44	1898.51	0	5	4	1		5		5	4
O1	7.89	1434.26		5	3	1		5		5	4
O2	2.55	464.24		5		5		5		5	5
O3	10.18	1848.04	0	5	0	5	0	5		5	5
P	1.01	183.75	0	5	0	5		5		5	5
Q	6.83	1241.79	0	5	1	1	1	1		5	3
R	3.10	563.36	1	1	0	5		5		5	4
S	4.39	797.94	0	5	0	5		5		5	5
T	11.46	2083.96	0	5	1	1	1	1		5	3
U	3.77	686.01	0	5	0	5	1	1		5	4
V	4.06	737.96	0	5	0	5	1	1		5	4

Alternative route segment			Utility conflict ratings								
Segment ID	Segment length	Segment area	Number of conflicts with existing 230–500 kV power lines	Existing power lines rating	Number of conflicts with proposed 230–500 kV power lines	Proposed power lines rating	Conflicts with gas pipelines	Gas pipeline rating	Substations	Substations rating	Overall utility rating
W	11.66	2119.39	0	5	1	1	1	1		5	3
X	3.86	701.5	0	5	0	5		5		5	5
Y	11.46	2084.14	0	5	3	1	2	1		5	3
AA	6.18	1123.39	0	5	0	5	1	1		5	4
Z	1.94	351.93	0	5	1	1		5		5	4
AB	4.51	512.92	0	5	0	5		5		5	5
AC	5.72	902.09	0	5	1	1	1	1		5	3
AD	0.56	102.18	0	5	0	5		5		5	5
AE	3.23	563.18	0	5	2	1		5		5	4
AF	5.11	929.91	0	5	2	1		5		5	4
AG	2.94	535.23	0	5	0	5		5		5	5
AH	2.62	475.76	0	5	2	1		5		5	4
AI	4.76	865.41	0	5	1	1		5		5	4
AJ	2.03	369.48	0	5	0	5		5		5	5
AK	6.80	1237.26	0	5	1	1		5		5	4
AL	2.85	518.96	0	5	0	5	1	1		5	4
AM	2.95	535.58	0	5	1	1		5		5	4
AN	7.53	901.27	0	5	1	1	1	1		5	3
AO	3.41	547.59	0	5	1	1		5		5	4
Transition 1		596.66	0	5	1	1		5		5	4
Transition 2		383.47	0	5	0	5		5		5	5

Table C3. Impacts on existing and planned development, use of existing right-of-way, and threatened and endangered species ratings

Alternative route segment			impacts on existing development						Impacts on planned development				use of existing right-of-way				impacts on threatened and endangered species (acres)							
Segment ID	Segment length	Segment area	Number of parcels affected	Number of acres affected parcels	Number of acres existing development affected	Percentage segment affected	Rating	Comments	Number of developments affected	Beyond 2020 development (acres)	Before 2020 development (acres)	Rating	Use of existing right-of-way (miles)	New right-of-way (miles)	% of segment on existing right-of-way	Rating	Great egret, yellow-billed cuckoo, least bittern, Yuma clapper rail	Sonoran desert tortoise	Tucson shovel-nosed snake	Western burrowing owl	Western burrowing owl, Tucson shovel-nosed snake	Total	Combined rating (threatened and endangered species)	
			Rating	Definition					Definition				Definition				Definition							
			1	50 or more acres affected					100 or more acres affected				< 25 percent existing r/w				More than 50 percent of segment is within T&E area							
			2	25 to 50 acres affected					50 to 100 acres affected				25 to 50 percent existing r/w				-							
			3	10 to 25 acres affected					5 to 50 acres affected				50 to 75percent existing r/w				More than 50 percent of segment is within T&E area							
			4	1 to 10 acres affected					1 to 5 acres affected				-				-							
			5	0 acres affected					0 acres affected				75 percent or more				0 acres is within T&E area							
A	2.82	512.88	19	513	92	0.18	1					5	2.8	0.0	1.00	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0
B	11.21	2038.18	919	2038	669	0.33	1		5		333	1	10.2	1.0	0.91	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0
C	9.44	1717.21	1138	1717	161	0.09	1		8	48	353	1	3.5	5.9	0.37	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0
D	4.78	869.78	93	870	5	0.01	4	Minor impacts	3	6	286	1	0.5	4.3	0.09	1	0.0	728.5	0.0	151.7	0.0	880.1	1.0	
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
E1	4.32	785.95	12	786	3	0.00	4	Minor impacts	0			5		4.3		1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0
E2	6.81	1237.35	23	1237	24	0.02	3	Impacts on Rittenhouse	1		91	2		6.8		1	0.0	0.0	0.0	136.2	0.0	136.2	3.0	
E3	2.56	821.16	81	821	74	0.09	1		4	212	1	5		4.5		1	0.0	0.0	585.2	820.7	0.0	1405.8	1.0	
E3A	1.95	465.81			47	0.10	2			101	1	5				1	0.0	0.0	230.02	465.54	0.0	695.6	1.0	
E3B	2.13	355.36			27	0.08	2			111	0	5				1	0.0	0.0	355.15	355.15	0.0	710.3	1.0	
E4	2.13	387.38	67	387	53	0.14	1		4	103	1	5	1.8	0.3	0.86	5	0.0	0.0	110.9	387.2	0.0	498.1	1.0	
F	6.04	1097.91	66	1098	6	0.01	4	Minor impacts	7	78	36	3	4.8	1.2	0.80	5	0.0	0.0	2.0	718.4	0.0	720.4	1.0	
G	4.85	646.67	227	647	62	0.10	1		6	298	60	2	1.7	3.2	0.35	2	0.0	0.0	506.9	646.3	0.0	1153.2	1.0	
H	4.13	750.47	49	750			5		11	475	64	2		4.1		1	0.0	0.0	0.0	246.9	0.0	246.9	3.0	
I	5.22	949.52	17	950	3	0.00	4	Minor impacts	1		3	5		5.2		1	0.0	292.9	0.0	0.0	0.0	292.9	3.0	
I2	5.52	1002.92	12	1003			5		0			5		5.5		1	0.0	27.3	0.0	0.0	0.0	27.3	3.0	
J	4.65	845.84	13	846			5					5		4.7		1	0.0	502.7	0.0	0.0	0.0	502.7	1.0	
K	5.99	1088.61	24	1089			5		3	84		5		6.0		1	0.0	0.0	169.3	434.6	0.0	604.0	3.0	
K1	4.78	607.19			0	0.00	5					5				1						0.0	5.0	
K2	2.59	472.17			5	0.01	4			83		5				1			241.31	423.27		664.6	1.0	
K3	1.20	481.42			0	0.00	5			84		5				1			169.32	434.64		604.0	1.0	
L	3.71	674.96	38	675			5		9	393	18	3	0.3	3.4	0.07	1	0.0	0.0	105.4	674.6	0.0	780.0	1.0	
L1	2.49	453.07					5			178	18	3	0.3		0.10	1			105.43	452.81		558.2	1.0	
L2	1.22	221.89					5			215		5				1				221.76		221.8	1.0	
M	3.21	583.35	14	583			5					5		3.2		1	0.0	583.0	0.0	0.0	0.0	583.0	1.0	

Alternative route segment			impacts on existing development					Impacts on planned development				use of existing right-of-way				impacts on threatened and endangered species (acres)							
Segment ID	Segment length	Segment area	Number of parcels affected	Number of acres affected parcels	Number of acres existing development affected	Percentage segment affected	Rating	Comments	Number of developments affected	Beyond 2020 development (acres)	Before 2020 development (acres)	Rating	Use of existing right-of-way (miles)	New right-of-way (miles)	% of segment on existing right-of-way	Rating	Great egret, yellow-billed cuckoo, least bittern, Yuma clapper rail	Sonoran desert tortoise	Tucson shovel-nosed snake	Western burrowing owl	Western burrowing owl, Tucson shovel-nosed snake	Total	Combined rating (threatened and endangered species)
N	5.33	969.58	23	970			5					5		5.3		1	0.0	720.1	0.0	0.0	0.0	720.1	1.0
O	10.44	1898.51	297	1898			5		13	546	16	3		10.4		1	0.0	0.0	722.4	996.2	0.0	1718.6	1.0
O1	7.89	1434.26					5			104	0	5				1			637.63	635.12		1272.7	3.0
O2	2.55	464.24					5			442	16	3				1			84.774	361.04		445.8	1.0
O3	10.18	1848.04		26			5			536	15	3		9.9		1			637.63	635.12		1272.7	3.0
P	1.01	183.75	489	184			5		13	156	23	3		1.0		1	0.0	0.0	0.0	19.0	0.0	19.0	3.0
Q	6.83	1241.79	524	1242			5		15	806	94	2		6.8		1	0.0	450.3	0.0	180.7	0.0	631.1	3.0
R	3.10	563.36	9	563			5					5		3.1		1	0.0	563.0	0.0	0.0	0.0	563.0	1.0
S	4.39	797.94	11	798	4	0.00	4	Minor impacts				5		4.4		1	0.0	166.0	0.0	0.0	0.0	166.0	3.0
T	11.46	2083.96	364	2084			5		10	200	437	1		11.5		1	0.0	92.5	808.9	0.0	0.0	901.4	3.0
U	3.77	686.01	102	686			5		8	167		5		3.8		1	0.0	0.0	0.0	0.0	0.0	0.0	5.0
V	4.06	737.96	96	738			5		8	596		5		4.1		1	0.0	91.4	0.0	0.0	0.0	91.4	3.0
W	11.66	2119.39	41	2119			5		5	332		5		11.7		1	0.0	77.0	790.7	0.0	0.0	867.7	3.0
X	3.86	701.5	28	701			5		4	311	6	3		3.9		1	0.0	266.3	0.0	74.1	0.0	340.4	3.0
Y	11.46	2084.14	475	2084	237	0.11	1		4	182	125	1	10.0	1.5	0.87	5	0.0	0.0	0.0	2083.0	0.0	2083.0	1.0
AA	6.18	1123.39	188	1123	193	0.17	1		4	277	189	1	6.2		1.00	5	0.0	0.0	0.0	1122.7	0.0	1122.7	1.0
Z	1.94	351.93	28	352	4	0.01	4	Minor impacts				5	1.9		1.00	5	0.0	0.0	0.0	351.7	0.0	351.7	1.0
AB	4.51	512.92	68	513	16	0.03	3		4	108		5	1.0	3.5	0.22	1	0.0	0.0	0.0	512.6	0.0	512.6	1.0
AC	5.72	902.09	39	902			5		1	113		5	2.5	3.2	0.43	2	0.0	0.0	0.0	901.6	0.0	901.6	1.0
AD	0.56	102.18	10	102			5					5		0.6		1	0.0	0.0	0.0	102.1	0.0	102.1	1.0
AE	3.23	563.18	46	563	1	0.00	4	Minor impacts				5		3.2		1	0.0	0.0	0.0	562.9	0.0	562.9	1.0
AF	5.11	929.91	51	930			5					5		5.1		1	0.0	0.0	0.0	929.4	0.0	929.4	1.0
AG	2.94	535.23	33	535	1	0.00	4	Minor impacts	2	104		5		2.9		1	0.0	0.0	0.0	534.9	0.0	534.9	1.0
AH	2.62	475.76	31	476			5					5	1.5	1.1	0.58	3	28.8	0.0	0.0	475.5	0.0	504.3	1.0
AI	4.76	865.41	29	865			5		4	168		5	3.8	1.0	0.79	5	1.1	0.0	0.0	864.9	0.0	866.0	1.0
AJ	2.03	369.48	22	369			5		2	84		5		2.0		1	0.0	0.0	0.0	369.3	0.0	369.3	1.0
AK	6.80	1237.26	45	1237			5		2	306		5	4.1	2.7	0.60	3	1.4	0.0	0.0	1236.5	566.5	1804.4	1.0
AL	2.85	518.96	13	519	14	0.03	3	Undeveloped river bed				5	1.9	0.9	0.67	3	0.0	0.0	0.0	518.7	0.0	518.7	1.0
AM	2.95	535.58	65	536	14	0.03	3	Residential impacts	6	91	33	3		2.9		1	0.0	0.0	0.0	535.3	0.0	535.3	1.0
AN	7.53	901.27	66	901	25	0.03	2		1	136		5	1.6	5.9	0.21	1	0.0	0.0	0.0	900.7	52.1	952.8	1.0
AO	3.41	547.59	43	548			5		4	97		5		3.4		1	0.0	0.0	0.0	547.3	0.0	547.3	1.0
Transition 1		596.66	50	597	64	0.11	1		8	190		5				1	0.0	0.0	0.0	596.3	0.0	596.3	1.0
Transition 2		383.47	10	383			5					5				1	0.0	0.0	0.0	383.2	0.0	383.2	1.0

Table C4. Potential impacts on cultural sites/sources, and of geotechnical features ratings

Alternative route segment			Cultural sites/resources					Potential Impact of known subsurface fissure/subsidence sites			Potential impact of NRCS (near surface) features						
Segment ID	Segment Length	Segment Area	Criterion A	Criterion B	Criterion C	Criterion D	Rating	Number of Fissure Crossings	Acres of Subsidence	Rating	Potential impact of fines (% passing #200 sieve)	Potential impact Plasticity Index (PI)	Potential impact of Linear Extensibility (LE)	Potential impact of Corrosion to Concrete	Potential impact of Gypsum	Potential impact of pH	NRCS Features Combined Rating
			Rating	Definition				Definition			Definition						
			1	Criterion A, B, and C sites > 0				High number of fissure crossings			80 % to 100 % passing # 200 Sieve	-	7.1 to 8.9 LE	-	-	-	Minimum Value of Ratings
			2	-				Moderate number of fissure crossings (greater than 1)			20 % to 80 %	20 to 50 plasticity index	1.8 to 7.1 LE	High Concrete Corrosion Potential	6% to 10% Gypsum Content	-	
			3	Criterion D sites > 0				1 or fewer fissure crossings			0 to 20 %	0 to 20 %	0 to 1.8 LE	Low to Moderate	0 to 6% Gypsum Content	7 to 11 pH values	
			4	-				-			-	-	-	-	-	-	
			5	No cultural sites				-			-	-	-	-	-	-	
A	2.82	512.88	0	0	0	1	3	5	513	2	2	3	2	3	3	3	2
B	11.21	2038.18	2	0	0	0	1		473	3	1	3	3	3	3	3	1
C	9.44	1717.21	2	0	0	1	1			3	2	2	2	3	3	3	2
D	4.78	869.78	0	0	0	1	3		95	3	2	3	3	3	3	3	2
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E1	4.32	785.95	0	0	0	0	5		786	3	2	3	2	3	3	3	2
E2	6.81	1237.35	0	0	0	3	3		96	3	1	3	2	3	3	3	1
E3	2.56	821.16	1	0	0	1	1		0	3	2	2	1	3	3	3	1
E3A	1.95	465.81	0	0	0	0	5		0	3	1	2	1	3	3	3	1
E3B	2.13	355.36	1	0	0	0	1		0	3	2	2	1	3	3	3	1
E4	2.13	387.38	0	0	0	0	5		0	3	2	2	1	3	3	3	1
F	6.04	1097.91	3	0	0	1	1			3	2	2	2	3	3	3	2
G	4.85	646.67	1	0	0	1	1			3	2	2	2	3	3	3	2
H	4.13	750.47	0	0	0	2	3			3	2	3	2	3	3	3	2
I	5.22	949.52	0	0	0	2	3		378	3	2	3	2	3	3	3	2
I2	5.52	1002.92	0	0	0	0	5		822	3	2	3	2	3	3	3	2
J	4.65	845.84	0	0	0	0	5		647	3	2	3	2	3	3	3	2
K	5.99	1088.61	0	0	0	1	3			3	2	3	2	3	3	3	2
K1	4.78	607.19	0	0	0	1	3		0	3	2	3	2	3	3	3	2
K2	2.59	472.17	0	0	0	0	5		0	3	2	3	2	3	3	3	2

Alternative route segment			Cultural sites/resources					Potential Impact of known subsurface fissure/subsidence sites			Potential impact of NRCS (near surface) features						
Segment ID	Segment Length	Segment Area	Criterion A	Criterion B	Criterion C	Criterion D	Rating	Number of Fissure Crossings	Acres of Subsidence	Rating	Potential impact of fines (% passing #200 sieve)	Potential impact Plasticity Index (PI)	Potential impact of Linear Extensibility (LE)	Potential impact of Corrosion to Concrete	Potential impact of Gypsum	Potential impact of pH	NRCS Features Combined Rating
K3	1.20	481.42	0	0	0	0	5		0	3	2	3	2	3	3	3	2
L	3.71	674.96	2	0	0	1	1			3	2	2	1	3	3	3	1
L1	2.49	453.07	2	0	0	0	1		0	3	2	2	1	3	3	3	1
L2	1.22	221.89	0	0	0	0	5		0	3	2	2	1	3	3	3	1
M	3.21	583.35	0	0	0	0	5		583	3	2	3	2	3	3	3	2
N	5.33	969.58	0	0	0	0	5		771	3	2	3	2	3	3	3	2
O	10.44	1898.51	1	0	0	2	1			3	2	3	2	3	3	3	2
O1	7.89	1434.26	1	0	0	1	1		0	3	2	3	2	3	3	3	2
O2	2.55	464.24	0	0	0	0	5		0	3	2	2	1	3	3	3	1
O3	10.18	1848.04	1	0	0	1	1		0	3	2	3	2	3	3	3	2
P	1.01	183.75	0	0	0	0	5			3	2	3	3	3	3	3	2
Q	6.83	1241.79	3	0	1	14	1			3	2	3	3	3	2	3	2
R	3.10	563.36	0	0	0	0	5		505	3	2	3	2	3	3	3	2
S	4.39	797.94	0	0	0	1	3		529	3	2	3	2	3	3	3	2
T	11.46	2083.96	1	0	0	1	1			3	1	3	1	3	3	3	1
U	3.77	686.01	0	0	0	0	5			3	2	3	3	3	2	3	2
V	4.06	737.96	0	0	0	0	5			3	2	3	2	3	2	3	2
W	11.66	2119.39	1	0	0	2	1			3	1	3	1	3	2	3	1
X	3.86	701.5	2	0	1	5	1			3	2	3	2	3	3	3	2
Y	11.46	2084.14	4	0	1	7	1		2084	3	2	3	2	2	3	3	2
AA	6.18	1123.39	1	0	1	3	1		8	2	2	3	2	2	3	3	2
Z	1.94	351.93	0	0	0	2	3		4	2	2	3	3	2	3	3	2
AB	4.51	512.92	0	0	0	1	3		505	3	1	3	2	3	3	3	1
AC	5.72	902.09	0	0	0	0	5		902	2	2	3	2	3	3	3	2
AD	0.56	102.18	0	0	0	0	5		102	2	2	3	2	2	3	3	2
AE	3.23	563.18	3	0	0	4	1		563	3	2	3	2	2	3	3	2
AF	5.11	929.91	3	0	0	2	1		930	3	2	3	3	2	3	3	2
AG	2.94	535.23	1	0	0	1	1		535	3	2	3	2	2	3	3	2
AH	2.62	475.76	2	0	0	3	1		476	3	2	3	2	2	3	3	2
AI	4.76	865.41	0	0	0	0	5		865	3	2	3	2	2	3	3	2
AJ	2.03	369.48	0	0	0	0	5		1	3	2	3	2	2	3	3	2
AK	6.80	1237.26	0	0	0	0	5		37	1	2	3	2	2	3	3	2
AL	2.85	518.96	0	0	0	1	3		519	3	2	2	1	3	3	3	1
AM	2.95	535.58	1	0	1	2	1		513	3	2	3	2	3	3	3	2

Alternative route segment			Cultural sites/resources					Potential Impact of known subsurface fissure/subsidence sites			Potential impact of NRCS (near surface) features						
Segment ID	Segment Length	Segment Area	Criterion A	Criterion B	Criterion C	Criterion D	Rating	Number of Fissure Crossings	Acres of Subsidence	Rating	Potential impact of fines (% passing #200 sieve)	Potential impact Plasticity Index (PI)	Potential impact of Linear Extensibility (LE)	Potential impact of Corrosion to Concrete	Potential impact of Gypsum	Potential impact of pH	NRCS Features Combined Rating
AN	7.53	901.27	0	0	0	0	5	2	901	2	2	3	2	3	3	3	2
AO	3.41	547.59	1	0	1	1	1		546	3	2	3	2	3	3	3	2
Transition 1		596.66	0	0	0	4	3		210								
Transition 2		383.47	1	0	1	1	1		406								

Table C5. Impacts on existing and proposed open space and trails ratings, structures affected

Alternative route segment			Existing open space		Proposed open space		Public parks and trails (feet)							Structures affected	
Segment ID	Segment length	Segment area	Acres	Rating	Acres	Rating	Adopted county trail corridor	Existing/Planned multiuse trail corridor	Planned/Existing OHV trail	Proposed multiuse trail corridor	Proposed OHV trail	Total	Rating	Existing structures affected	Rating
		Rating	Criteria		Criteria		Criteria								
		1	Impacts on 150 or more acres		Impacts on 150 or more acres		Summation of trails impacts is greater than 0								
		2	Impacts 100 to 150 acres		Impacts 100 to 150 acres		Note: there are no public parks along any segments								
		3	Impacts on 50 or more acres		Impacts on 50 or more acres		-								
		4	Impacts on 1 to 50 acres		Impacts on 1 to 50 acres		-								
		5	0 acres affected		0 acres affected		No impacts on trails								
A	2.82	512.88	54	3	138	2	2145	1562	0	0	0	3707	1	255	1
B	11.21	2038.18	0	5	110	2	0	15500	0	5644	0	21144	1	644	1
C	9.44	1717.21	0	5	0	5	0	0	0	5872	0	5872	1	933	1
D	4.78	869.78	121	2	0	5	0	0	0	1501	0	1501	1	5	4
E															
E1	4.32	785.95	0	5	21	4	0	1737	0	0	0	1737	1	1	4
E2	6.81	1237.35	0	5	804	1	9641	1100	0	0	0	10741	1	0	5
E3	2.56	821.16	0	5	619	1	2471	0	0	1616	0	4087	1	17	4
E3A	1.95	465.81	0	5	364	1	2471.1	0	0		0	2471	1	17	4
E3B	2.13	355.36	0	5	254	1	0	0	0	1615.8	0	1616	1	0	5
E4	2.13	387.38	0	5	65	3	0	0	0	0	0	0	5	19	4
F	6.04	1097.91	0	5	0	5	0	0	0	33935	0	33935	1	1	4
G	4.85	646.67	0	5	0	5	0	0	0	1975	0	1975	1	0	5
H	4.13	750.47	0	5	0	5	0	0	0	2782	0	2782	1	1	4
I	5.22	949.52	95	3	0	5	0	2827	0	1518	2041	6385	1	15	4
I2	5.52	1002.92	0	5	189	1	2506	0	0	1532	0	4038	1	0	5
J	4.65	845.84	0	5	0	5	0	0	0	0	0	0	5	0	5
K	5.99	1088.61	0	5	243	1	1627	0	0	1992	0	3619	1	0	5
K1	4.78	607.19	0	5	141	2		0	0	1992	0	1992	1	0	5
K2	2.59	472.17	0	5	226	1	3864.6	0	0	0	0	3865	1	0	5
K3	1.20	481.42	0	5	102	2	1627.2	0	0	0	0	1627	1	0	5
L	3.71	674.96	0	5	0	5	0	0	0	2599	0	2599	1	1	4

Alternative route segment			Existing open space		Proposed open space		Public parks and trails (feet)							Structures affected	
Segment ID	Segment length	Segment area	Acres	Rating	Acres	Rating	Adopted county trail corridor	Existing/Planned multiuse trail corridor	Planned/Existing OHV trail	Proposed multiuse trail corridor	Proposed OHV trail	Total	Rating	Existing structures affected	Rating
L1	2.49	453.07	0	5	0	5	0	0	0	2599.1	0	2599	1	0	5
L2	1.22	221.89	0	5	0	5	0	0	0	0	0	0	5	1	4
M	3.21	583.35	0	5	0	5	0	0	0	0	0	0	5	0	5
N	5.33	969.58	0	5	0	5	0	0	0	0	0	0	5	0	5
O	10.44	1898.51	0	5	503	1	8267	0	0	3445	0	11711	1	0	5
O1	7.89	1434.26	0	5	486	1	8266.5	0	0	3444.7		11711	1	0	5
O2	2.55	464.24	0	5	17	4		0	0			0	5	0	5
O3	10.18	1848.04	0	5	482	1	8266.5	0	0	3444.7		11711	1	7	4
P	1.01	183.75	0	5	0	5	0	0	0	0	0	0	5	0	5
Q	6.83	1241.79	0	5	125	2	0	0	0	1537	0	1537	1	11	4
R	3.10	563.36	0	5	0	5	0	0	0	0	0	0	5	0	5
S	4.39	797.94	0	5	107	2	0	0	0	1531	0	1531	1	0	5
T	11.46	2083.96	0	5	233	1	1630	0	0	1507	0	3137	1	47	3
U	3.77	686.01	0	5	226	1	3467	0	0	0	0	3467	1	1	4
V	4.06	737.96	0	5	273	1	0	0	0	0	0	0	5	0	5
W	11.66	2119.39	0	5	222	1	1501	0	9764	1508	0	12772	1	0	5
X	3.86	701.5	0	5	111	2	0	0	0	2043	0	2043	1	2	4
Y	11.46	2084.14	328	1	0	5	0	29399	0	4501	0	33900	1	120	1
AA	6.18	1123.39	0	5	0	5	0	1500	0	0	0	1500	1	55	2
Z	1.94	351.93	0	5	0	5	0	0	0	0	0	0	5	2	4
AB	4.51	512.92	2	4	0	5	0	498	0	7777	0	8276	1	16	4
AC	5.72	902.09	24	4	0	5	0	1516	0	1264	0	2781	1	4	4
AD	0.56	102.18	0	5	0	5	0	0	0	555	0	555	1	0	5
AE	3.23	563.18	0	5	0	5	0	0	0	1526	0	1526	1	2	4
AF	5.11	929.91	0	5	0	5	0	39	0	1505	0	1544	1	0	5
AG	2.94	535.23	0	5	0	5	0	1711	0	0	0	1711	1	0	5
AH	2.62	475.76	0	5	0	5	0	0	0	1578	0	1578	1	1	4
AI	4.76	865.41	0	5	0	5	0	1500	0	0	0	1500	1	0	5
AJ	2.03	369.48	0	5	0	5	0	0	0	0	0	0	5	1	4
AK	6.80	1237.26	0	5	13	4	0	0	0	1438	0	1438	1	0	5
AL	2.85	518.96	0	5	0	5	0	0	0	0	0	0	5	0	5
AM	2.95	535.58	35	4	0	5	0	2099	0	0	0	2099	1	12	4
AN	7.53	901.27	30	4	0	5	0	1856	0	1278	0	3134	1	12	4
AO	3.41	547.59	31	4	0	5	0	2176	0	0	0	2176	1	4	4
Transition 1		596.66	0	5	0	5	0	0	0	0	0	0	5	2	4
Transition 2		383.47	29	4	0	5	0	1159	0	0	0	1159	1	1	4

Table C6. Impacts on Conservation Priority Areas and potential noise impacts

Alternative route segment		AGFD Conservation Priority Area (acres)													Noise				
Segment ID	Segment length	1	Rating	2	Rating	3	Rating	4	Rating	5	Rating	6	Rating	Combined AGFD rating	Number of residences	Rating	Other noise-sensitive	Rating	Noise rating
	Rating	Criteria													Criteria				
	1	Acres Impact to Area 6 > 0													Minimum of Individual Conservation Priority Area Rating	Impacts > 100 residences		Impacts "other noise sensitive"	Minimum of ratings of "Number of Noise Residences" and "Other Noise Sensitive"
	2	Acres Impact to Area 5 > 0														Impacts 50 to 100 residences		-	
	3	Acres Impact to Area 3 > 0, Acres Impact to Area 4 > 0														Impacts 25 to 50 residences		-	
	4	Acres Impact to Area 2 > 0														Impacts 5 to 25 residences		-	
	5	Acres Impact to Area 1 > 0														Impacts less than 5 residences		No impacts on "other noise sensitive"	
A	2.82	243.5	5	0.8	4	103.3	3	165.0	3	0.0	5	0.0	5	3	603	1	golf course	1	1
B	11.21	720.7	5	233.0	4	703.5	3	359.4	3	20.5	2	0.0	5	2	2199	1	2 golf courses, school, hospital	1	1
C	9.44	285.3	5	444.3	4	688.5	3	293.3	3	4.8	2	0.0	5	2	2301	1	golf course, school, church	1	1
D	4.78	220.6	5	200.6	4	54.4	3	287.3	3	106.5	2	0.0	5	2	249	1	0	5	1
E																5			5
E1	4.32	744.6	5	7.0	4	3.1	3	20.0	3	10.9	2	0.0	5	2	1	5	0	5	5
E2	6.81	721.5	5	59.7	4	17.7	3	184.5	3	251.3	2	1.9	1	1	218	1	0	5	1
E3	2.56	483.4	5	8.3	4	26.0	3	287.8	3	15.2	2	0.0	5	2	46	3	0	5	3
E3A	1.95	296.9	5	7.6687	4	7.3979	3	139.07	3	14.476	2	0.0	5	2		5		5	5
E3B	2.13	186.5	5	0.6672	4	18.556	3	148.77	3	0.6759	2	0.0	5	2		5		5	5
E4	2.13	210.8	5	0.4	4	105.8	3	70.0	3	0.1	2	0.0	5	2	37	3	0	5	3
F	6.04	205.0	5	91.2	4	628.7	3	164.0	3	8.1	2	0.2	1	1	141	1	school	1	1
G	4.85	109.4	5	1.7	4	490.7	3	42.5	3	2.1	2	0.0	5	2	0	5	0	5	5
H	4.13	32.1	5	339.5	4	195.4	3	163.9	3	19.2	2	0.0	5	2	460	1	golf course	1	1
I	5.22	232.6	5	88.9	4	0.2	3	133.3	3	493.9	2	0.0	5	2	122	1	0	5	1
I2	5.52	436.4	5	102.5	4	0.4	3	113.7	3	349.1	2	0.3	1	1	0	5	0	5	5
J	4.65	419.6	5	102.1	4	0.3	3	117.6	3	205.7	2	0.0	5	2	0	5	0	5	5
K	5.99	575.5	5	65.5	4	108.7	3	94.7	3	243.7	2	0.0	5	2	0	5	0	5	5
K1	4.78	276.41	5	48.453	4	0.0	5	69.03	3	212.94	2		5	2		5		5	5
K2	2.59	290.01	5	24.186	4	6.2146	3	97.014	3	54.469	2		5	2		5		5	5
K3	1.20	299.05	5	17.023	4	108.67	3	25.626	3	30.763	2		5	2		5		5	5
L	3.71	74.1	5	4.7	4	508.5	3	85.2	3	2.2	2	0.0	5	2	2	5	0	5	5
L1	2.49	74.052	5	4.661	4	341.08	3	30.837	3	2.1787	2		5	2		5		5	5
L2	1.22		5		5	167.39	3	54.364	3		5		5	3		5		5	5
M	3.21	189.6	5	84.9	4	0.6	3	92.6	3	215.3	2	0.0	5	2	0	5	0	5	5

Alternative route segment		AGFD Conservation Priority Area (acres)													Noise				
Segment ID	Segment length	1	Rating	2	Rating	3	Rating	4	Rating	5	Rating	6	Rating	Combined AGFD rating	Number of residences	Rating	Other noise-sensitive	Rating	Noise rating
N	5.33	321.9	5	121.9	4	0.0	5	128.2	3	396.9	2	0.0	5	2	1	5	0	5	5
O	10.44	663.2	5	97.9	4	246.1	3	579.8	3	309.9	2	0.5	1	1	23	4	0	5	4
O1	7.89	663.21	5	97.871	4	8.778	3	353.18	3	309.92	2		5	2		5		5	5
O2	2.55		5		5	237.3	3	226.67	3	0.4655	2		5	2		5		5	5
O3	10.18		5	97.871	4	8.778	3	353.18	3	309.92	2		5	2		5		5	5
P	1.01	30.7	5	0.0	5	3.3	3	149.2	3	0.4	2	0.0	5	2	18	4	0	5	4
Q	6.83	300.7	5	55.7	4	163.4	3	711.4	3	9.8	2	0.0	5	2	128	1	0	5	1
R	3.10	97.1	5	80.2	4	0.0	5	82.4	3	303.4	2	0.0	5	2	0	5	0	5	5
S	4.39	417.8	5	60.5	4	0.6	3	83.1	3	235.5	2	0.0	5	2	0	5	0	5	5
T	11.46	970.2	5	66.2	4	102.9	3	881.8	3	60.8	2	0.9	1	1	66	2	0	1	1
U	3.77	327.5	5	0.0	5	0.4	3	357.8	3	0.0	5	0.0	5	3	0	5	0	5	5
V	4.06	243.6	5	3.1	4	0.7	3	490.1	3	0.0	5	0.0	5	3	0	5	0	5	5
W	11.66	997.3	5	58.9	4	8.8	3	974.9	3	77.7	2	0.4	1	1	0	5	0	5	5
X	3.86	20.6	5	10.7	4	13.8	3	647.0	3	9.0	2	0.0	5	2	11	4	0	5	4
Y	11.46	43.4	5	10.8	4	725.6	3	92.5	3	1210.6	2	0.0	5	2	277	1	park, state complex? (offices or housing?)	1	1
AA	6.18	320.1	5	46.2	4	383.5	3	12.1	3	360.0	2	0.8	1	1	99	2	prison (notable, but not noise-sensitive)	1	1
Z	1.94	47.1	5	67.1	4	113.9	3	5.3	3	118.2	2	0.0	5	2	2	5	prison (notable, but not noise-sensitive)	1	1
AB	4.51	14.3	5	0.1	4	1.9	3	62.7	3	433.4	2	0.2	1	1	49	3	0	5	3
AC	5.72	79.7	5	2.3	4	38.9	3	26.8	3	753.8	2	0.0	5	2	14	4	0	5	4
AD	0.56	0.2	5	0.0	5	0.0	5	0.0	3	101.9	2	0.0	5	2	0	5	0	5	5
AE	3.23	22.2	5	1.4	4	203.0	3	17.8	3	316.7	2	1.8	1	1	3	5	0	5	5
AF	5.11	112.0	5	1.6	4	138.2	3	17.8	3	658.0	2	1.8	1	1	4	5	0	5	5
AG	2.94	138.9	5	2.2	4	13.6	3	2.9	3	377.3	2	0.2	1	1	0	5	pris	1	1
AH	2.62	43.6	5	2.7	4	51.1	3	21.4	3	356.7	2	0.0	5	2	2	5	0	5	5
AI	4.76	65.9	5	1.4	4	134.0	3	19.1	3	644.4	2	0.1	1	1	2	5	0	5	5
AJ	2.03	240.9	5	1.9	4	0.0	5	0.8	3	125.7	2	0.0	5	2	2	5	0	5	5
AK	6.80	763.1	5	3.9	4	197.3	3	61.8	3	209.6	2	0.7	1	1	1	5	0	5	5
AL	2.85	93.7	5	7.0	4	9.1	3	4.1	3	404.8	2	0.0	1	1	0	5	0	5	5
AM	2.95	0.1	5	0.0	5	0.0	5	0.0	5	535.2	2	0.0	5	2	31	3	0	5	3
AN	7.53	34.3	5	1.6	4	6.1	3	7.8	3	850.9	2	0.0	5	2	27	3	0	5	3
AO	3.41	0.0	5	0.0	5	0.0	5	0.0	5	547.3	2	0.0	5	2	11	4	0	5	4
Transition 1		41.7	5	13.4	4	81.8	3	313.1	3	146.3	2	0.0	5	2	10	4	0	5	4
Transition 2		0.0	5	0.0	5	0.0	5	0.0	5	383.2	2	0.0	5	2	2	5	0	5	5

Table C7. Impacts on wildlife corridors ratings

Segment ID	Segment length	Segment area	Acres	Percentage of area of segment within wildlife corridor	Rating
		Ratings	Criteria		
		1	75 % or more of segment within wildlife corridor		
		2	50 % to 75% of segment within wildlife corridor		
		3	25% to 50% of segment within wildlife corridor		
		4	10 % to 25% of segment within wildlife corridor		
		5	Less than 10% of segment within wildlife corridor		
A	2.82	512.88	464	0.90	1
B	11.21	2038.18	0	0.00	5
C	9.44	1717.21	0	0.00	5
D	4.78	869.78	0	0.00	5
E	-	-	-	-	-
E1	4.32	785.95	377	0.48	3
E2	6.81	1237.35	1237	1.00	1
E3	2.56	821.16	821	1.00	1
E3A	1.95	465.81	466	1.00	1
E3B	2.13	355.36	355	1.00	1
E4	2.13	387.38	314	0.81	1
F	6.04	1097.91	0	0.00	5
G	4.85	646.67	0	0.00	5
H	4.13	750.47	0	0.00	5
I	5.22	949.52	0	0.00	5
I2	5.52	1002.92	456	0.45	3
J	4.65	845.84	0	0.00	5
K	5.99	1088.61	744	0.68	2
K1	4.78	607.19	324	0.53	2
K2	2.59	472.17	472	1.00	1
K3	1.20	481.42	419	0.87	1
L	3.71	674.96	0	0.00	5
L1	2.49	453.07		0.00	5
L2	1.22	221.89		0.00	5
M	3.21	583.35	0	0.00	5

Segment ID	Segment length	Segment area	Acres	Percentage of area of segment w/in wildlife corridor	Rating
N	5.33	969.58	0	0.00	5
O	10.44	1898.51	1085	0.57	2
O1	7.89	1434.26	865	0.60	2
O2	2.55	464.24	220	0.47	3
O3	10.18	1848.04	1024	0.55	2
P	1.01	183.75	3	0.02	5
Q	6.83	1241.79	0	0.00	5
R	3.10	563.36	0	0.00	5
S	4.39	797.94	0	0.00	5
T	11.46	2083.96	536	0.26	3
U	3.77	686.01	670	0.98	1
V	4.06	737.96	714	0.97	1
W	11.66	2119.39	431	0.20	4
X	3.86	701.5	2	0.00	5
Y	11.46	2084.14	0	0.00	5
AA	6.18	1123.39	0	0.00	5
Z	1.94	351.93	0	0.00	5
AB	4.51	512.92	0	0.00	5
AC	5.72	902.09	0	0.00	5
AD	0.56	102.18	0	0.00	5
AE	3.23	563.18	0	0.00	5
AF	5.11	929.91	0	0.00	5
AG	2.94	535.23	0	0.00	5
AH	2.62	475.76	0	0.00	5
AI	4.76	865.41	0	0.00	5
AJ	2.03	369.48	0	0.00	5
AK	6.80	1237.26	0	0.00	5
AL	2.85	518.96	0	0.00	5
AM	2.95	535.58	0	0.00	5
AN	7.53	901.27	0	0.00	5
AO	3.41	547.59	0	0.00	5

Table C8. Stakeholder agency ratings

Segment ID	Regional, state, and federal agency ratings											Local agency ratings						Totals				
	USACE	ASLD	AGFD	RPTA	CAP	AANG	FCDMC	USEPA	PAG	ADOT Roadway	NRCS	Apache Junction	Florence	Coolidge	Queen Creek	Pinal County	Eloy	Local agency average rating	Regional, state, and federal agency average rating	All agencies average rating	Local agencies total	Regional, state, and federal agencies total
A	5	1	5	1	5	5	5	5	5	1	5	1	1	3	1	1	3	1.7	3.9	3.1	10	43
B	5	1	5	5	5	5	5	5	5	1	3	3	1	3	1	1	3	2.0	4.1	3.4	12	45
C	5	1	5	3	5	5	3	5	3	3	5	3	1	3	3	1	3	2.3	3.9	3.4	14	43
D	5	1	5	3	5	5	3	5	5	3	5	3	1	3	3	1	3	2.3	4.1	3.5	14	45
E	5	1	5	3	1	1	1	3	3	3	3	3	5	3	5	5	3	4.0	2.6	3.1	24	29
E1	5	1	5	3	1	1	1	3	3	3	3	3	5	3	5	5	3	4.0	2.6	3.1	24	29
E2	5	1	5	3	1	1	1	3	3	3	3	3	5	3	5	5	3	4.0	2.6	3.1	24	29
E3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.0	2.6	3.1	0	0
E3A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.0	2.6	3.1	0	0
E3B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.0	2.6	3.1	0	0
E4	5	1	5	3	1	1	1	3	3	3	3	3	5	3	5	5	3	4.0	2.6	3.1	24	29
F	5	1	5	5	5	5	3	5	5	3	3	3	1	3	3	3	3	2.7	4.1	3.6	16	45
G	5	3	5	3	5	5	3	5	3	3	3	3	5	3	3	5	3	3.7	3.9	3.8	22	43
H	5	1	5	3	5	5	3	5	5	3	3	3	1	3	3	3	3	2.7	3.9	3.5	16	43
I	1	5	1	3	5	5	5	1	3	3	1	5	5	3	5	3	3	4.0	3.0	3.4	24	33
I2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	4.0	3.0	3.4	0	0
J	1	3	1	3	5	5	1	1	3	3	1	5	5	3	1	1	3	3.0	2.5	2.6	18	27
K	1	5	1	3	1	5	3	1	3	3	1	3	5	3	3	1	3	3.0	2.5	2.6	18	27
K1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	2.5	2.6	0	0
K2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	2.5	2.6	0	0
K3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	2.5	2.6	0	0
L	1	5	1	3	5	5	3	1	3	3	3	3	5	3	3	3	3	3.3	3.0	3.1	20	33
L1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.3	3.0	3.1	0	0
L2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.3	3.0	3.1	0	0
M	1	3	1	3	5	5	5	1	3	3	1	3	1	3	1	1	3	2.0	2.8	2.5	12	31
N	1	1	1	3	5	5	1	1	3	1	1	3	1	3	1	1	3	2.0	2.1	2.1	12	23
O	1	1	1	3	1	5	3	1	3	3	1	3	5	3	3	1	3	3.0	2.1	2.4	18	23
O1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	2.1	2.4	0	0
O2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	2.1	2.4	0	0
O3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	2.1	2.4	0	0
P	1	3	1	3	5	5	3	1	3	3	1	3	5	3	3	3	3	3.3	2.6	2.9	20	29
Q	1	1	1	3	5	5	3	1	3	3	1	3	1	3	3	3	3	2.7	2.5	2.5	16	27
R	1	1	1	1	1	5	5	1	3	1	1	3	1	3	1	1	3	2.0	1.9	1.9	12	21
S	1	1	1	1	1	5	3	1	3	1	1	3	1	3	1	1	3	2.0	1.7	1.8	12	19
T	1	1	1	1	1	5	3	1	3	3	1	3	1	3	3	1	3	2.3	1.9	2.1	14	21

Segment ID	Regional, state, and federal agency ratings											Local agency ratings						Totals				
	USACE	ASLD	AGFD	RPTA	CAP	AANG	FCDMC	USEPA	PAG	ADOT Roadway	NRCS	Apache Junction	Florence	Coolidge	Queen Creek	Pinal County	Eloy	Local agency average rating	Regional, state, and federal agency average rating	All agencies average rating	Local agencies total	Regional, state, and federal agencies total
U	1	1	1	5	1	5	3	1	3	3	1	3	5	3	3	3	3	3.3	2.3	2.6	20	25
V	1	3	1	1	5	5	3	1	3	3	1	3	5	3	3	3	3	3.3	2.5	2.8	20	27
W	1	1	1	1	1	1	3	1	3	1	1	3	1	3	3	1	3	2.3	1.4	1.7	14	15
X	1	3	1	1	5	5	3	1	3	3	1	3	5	3	3	3	3	3.3	2.5	2.8	20	27
Y	1	1	5	3	5	5	3	5	5	3	3	3	1	1	3	3	1	2.0	3.5	3.0	12	39
Z	1	1	5	5	5	5	3	5	5	3	5	3	1	1	3	3	1	2.0	3.9	3.2	12	43
AA	1	1	5	5	5	5	3	5	5	3	5	3	1	1	3	3	1	2.0	3.9	3.2	12	43
AB	1	3	1	3	5	5	3	1	3	3	1	3	5	5	3	3	3	3.7	2.6	3.0	22	29
AC	1	3	1	3	5	5	3	1	3	3	1	3	1	1	3	3	3	2.3	2.6	2.5	14	29
AD	1	1	1	3	5	5	3	1	3	3	1	3	5	5	3	3	3	3.7	2.5	2.9	22	27
AE	1	1	1	3	5	5	3	1	3	3	1	3	1	1	3	3	3	2.3	2.5	2.4	14	27
AF	1	1	1	5	5	5	3	1	3	3	1	3	1	1	3	3	3	2.3	2.6	2.5	14	29
AG	1	1	1	3	5	5	3	1	3	3	1	3	1	3	3	3	3	2.7	2.5	2.5	16	27
AH	1	1	1	3	5	5	3	1	3	3	1	3	5	5	3	3	3	3.7	2.5	2.9	22	27
AI	1	3	1	3	5	5	3	1	3	3	1	3	5	3	3	3	3	3.3	2.6	2.9	20	29
AJ	1	3	1	3	5	5	3	1	3	3	1	3	5	3	3	3	3	3.3	2.6	2.9	20	29
AK	1	5	1	3	5	5	3	1	3	3	1	3	5	3	3	3	5	3.7	2.8	3.1	22	31
AL	1	5	1	3	5	5	3	1	3	3	1	3	5	3	3	3	5	3.7	2.8	3.1	22	31
AM	1	5	1	3	5	5	3	1	3	3	1	3	5	3	3	3	3	3.3	2.8	3.0	20	31
AN	1	3	1	3	5	5	3	1	3	3	1	3	5	5	3	3	3	3.7	2.6	3.0	22	29
AO	1	3	1	3	5	5	3	1	3	3	1	3	1	3	3	3	3	2.7	2.6	2.6	16	29

Table C9. Public preference rating

Segment ID	Public preference rating					
	Favorable	Unfavorable	No response	Points	Rating	Rating normalized
A	86	73	39	620	3	22
B	54	107	37	488	1	17
C	23	108	67	424	1	15
D	68	78	52	574	2	20
E	52	83	63	532	2	19
E1	52	83	63	532	2	19
E2	52	83	63	532	2	19
E3*	52	83	63	532	2	19
E3A*	52	83	63	532	2	19
E3B*	52	83	63	532	2	19
E4	52	83	63	532	2	19
F	46	91	61	504	2	18
G	65	68	65	588	2	21
H	60	80	58	554	2	20
I	100	42	56	710	4	25
I2*	100	42	56	710	4	25
J	81	51	66	654	3	23
K	36	84	78	498	1	18
K1*	36	84	78	498	1	18
K2*	36	84	78	498	1	18
K3*	36	84	78	498	1	18
L	44	81	74	523	2	18
L1*	44	81	74	523	2	18
L2*	44	81	74	523	2	18
M	33	73	92	514	2	18
N	22	77	99	484	1	17
O	71	52	75	632	3	22
O1*	71	52	75	632	3	22
O2*	71	52	75	632	3	22
O3*	71	52	75	632	3	22

Segment ID	Public preference rating					
	Favorable	Unfavorable	No response	Points	Rating	Rating normalized
P	39	81	78	510	2	18
Q	67	67	64	594	2	21
R	24	82	92	478	1	17
S	34	78	86	506	2	18
T	24	89	85	464	1	16
U	28	82	88	486	1	17
V	32	77	89	504	2	18
W	30	83	85	488	1	17
X	63	58	77	604	3	21
Y	54	61	83	580	2	20
Z	61	52	85	612	3	22
AA	59	49	90	614	3	22
AB	51	41	107	617	3	22
AC	37	50	111	568	2	20
AD	77	23	98	702	4	25
AE	29	61	108	530	2	19
AF	21	62	115	512	2	18
AG	18	65	115	500	1	18
AH	62	34	103	653	3	23
AI	31	55	112	546	2	19
AJ	32	53	113	552	2	19
AK	52	36	110	626	3	22
AL	69	29	100	674	3	24
AM	45	42	111	600	2	21
AN	60	35	103	644	3	23
AO	27	53	118	542	2	19

Note: *These segments were added following and in response to the November 2011 Public Meetings. Public ratings for these segments were assumed to be the same for the "parent" segment (E, I, K, and O).

Appendix D

Route Alternatives Stakeholder Agency Rating Form

This page is intentionally left blank.

North–South Corridor Study Stakeholder Agency Input Form

Date: November 1, 2011
Subject: Stakeholder Input to Route Alternatives Screening
Project: North–South Corridor Study (NSCS)
US 60 to I-10, Pinal County, Arizona
Federal Aid No. STP-999-A (BBM), ADOT Project No. 999 PN 000 H7454 01L

Please submit your comments by **November 15, 2011** to:

Trent Kelso
HDR Engineering, Inc.
3200 E. Camelback Road
Suite 350
Phoenix, AZ 85018-2311
Trent.Kelso@hdrinc.com

Please fill out the contact information below. Only one comment form should be submitted per stakeholder agency.

Name:	
Agency:	
Address:	
Email:	
Telephone:	

1. Attached you will find maps with various possible route alternatives for your review. **For route alternatives segments that you have the most interest in, please highlight or circle the segments you find “favorable.” Please cross or “x” out the segments that you find “undesirable.”** You

don't have to rate all of the segments. The segments that you don't indicate as "favorable" or "undesirable" will be rated as "neutral".

2. **Please tell us why you "favor" the segments, or find them "undesirable."** You may use the letters in the circles on the possible route alternatives map to reference segments in your comments.

Terminus/ Segment	Agency Rating	Please tell us specific reasons that you "favor" or find "undesirable" the possible route alternatives segments. You don't have to rate or comment on all of the segments.
Terminus 1 (Ironwood Drive/US 60)	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Terminus 2 (Mountain View/US 60)	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Terminus 3 (Peralta/US 60)	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Terminus 4 (SR 87/I-10)	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Terminus 5 (Fast Track Road/I-10)	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment A	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment B	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	

Terminus/ Segment	Agency Rating	Please tell us specific reasons that you “favor” or find “undesirable” the possible route alternatives segments. You don’t have to rate or comment on all of the segments.
Segment C	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment D	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment E	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment F	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment G	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment H	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment I	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment J	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	

Terminus/ Segment	Agency Rating	Please tell us specific reasons that you “favor” or find “undesirable” the possible route alternatives segments. You don’t have to rate or comment on all of the segments.
Segment K	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment L	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment M	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment N	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment O	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment P	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment Q	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment R	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	

Terminus/ Segment	Agency Rating	Please tell us specific reasons that you “favor” or find “undesirable” the possible route alternatives segments. You don’t have to rate or comment on all of the segments.
Segment S	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment T	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment U	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment V	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment W	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment X	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment Y	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment Z	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	

Terminus/ Segment	Agency Rating	Please tell us specific reasons that you “favor” or find “undesirable” the possible route alternatives segments. You don’t have to rate or comment on all of the segments.
Segment AA	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment AB	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment AC	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment AD	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment AE	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment AF	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment AG	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment AH	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	

Terminus/ Segment	Agency Rating	Please tell us specific reasons that you “favor” or find “undesirable” the possible route alternatives segments. You don’t have to rate or comment on all of the segments.
Segment AI	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment AJ	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment AK	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	
Segment AL	<input type="checkbox"/> Favorable <input type="checkbox"/> Undesirable	

3. What is most important to you in determining where a possible route alternative may go? Please place a check next to the three you consider most important.

- Best relieves traffic on local streets
- Best relieves traffic on other highways and freeways
- Best connects to employment centers
- Best connects to other destinations (e.g. school/shopping/recreation)
- Best connects to cities and towns
- Best connects to other major routes (I-10, US 60, etc.)
- Lowest cost
- Least impact to existing development
- Least impact to planned future development
- Least impact to natural areas and open space
- Makes best use of existing roads
- Based on input received from agencies and jurisdictions
- Based on input received from the public

4. Other Comments



Please submit this comment form by **November 15, 2011**, to a member of the study team. You may mail, fax, or email to:

Trent Kelso
HDR Engineering
3200 E. Camelback Road
Suite 350
Phoenix, AZ 85018-2311
Trent.Kelso@hdrinc.com
Fax (602) 522-7707

Appendix E

Step 1 Route Alternatives Segment Rejection Matrix

This page is intentionally left blank.

Table E1. Summary of segments rejected in Step 1

Segment	Length (miles)	Step 1 rating	Reasons for rejection
A	2.82	50	<p>REJECT SEGMENT FROM FURTHER CONSIDERATION</p> <p>Received rating of 1 (lowest/most unfavorable) for the following evaluation criteria:</p> <p>No. 1B Human-made Drainage Features: Crosses the CAP Canal</p> <p>No. 3A Existing Development: Affects 92 acres of existing development</p> <p>No. 12B Wildlife Corridors: Affects 464 acres of wildlife corridor (more than 90 percent of the area of Segment A)</p> <p>No. 10A Socioeconomic Impacts: Affects 255 existing structures</p> <p>No. 9A Trails: Affects 0.4 mile of adopted county trail corridor and 0.3 mile of existing and planned multiuse trail corridor</p> <p>No. 11A Noise: Located near 603 existing residences, golf course, school (sensitive noise receptors)</p> <p style="text-align: center;"><i>Summary of public and stakeholder agency inputs:</i></p> <p>No. 13 Local Agencies Rating : 4 of 6 local agencies rated this as “unfavorable”</p> <p>No. 14 State, Federal, and Regional Agencies: 3 of 11 agencies rated this as “unfavorable”</p> <p>No. 15 Public Rating: 73 members of the public rated this as unfavorable (86 rated as favorable, 39 did not respond)</p>
B	11.21	51	<p>REJECT SEGMENT FROM FURTHER CONSIDERATION</p> <p>No. 7A Geotechnical subsurface (NRCS): Soil characteristics will need special mitigation measures that will lead to considerable increase in construction and maintenance costs.</p> <p>No. 3A Existing Development: Affects 669 acres of existing development (1/3 of the area of total segment area)</p> <p>No. 3B Planned Development: Affects 5 planned developments, 333 acres of near-term (before 2020) or in progress planned development</p> <p>No. 10A Socioeconomic Impacts: Affects 644 existing structures</p> <p>No. 9A Trails: Affects nearly 3 miles of existing and planned multiuse trail corridor and 1 mile of proposed multiuse trail corridors</p> <p>No. 11A Noise: Located near 2,199 existing residences, golf course, school (sensitive noise receptors)</p> <p style="text-align: center;"><i>Summary of public and stakeholder agency inputs:</i></p> <p>No. 13 Local Agencies Rating : 4 of 6 local agencies rated this as “unfavorable”</p> <p>No. 14 State, Federal, and Regional Agencies: 3 of 11 agencies rated this as “unfavorable”</p> <p>No. 15 Public Rating: Received an unfavorable rating by the public. 107 members of the public rated this segment as unfavorable (54 rated it as favorable, and 37 did not respond)</p>

Segment	Length (miles)	Step 1 rating	Reasons for rejection
C	9.44	54	<p>REJECT SEGMENT FROM FURTHER CONSIDERATION</p> <p>No. 3A Existing Development: Affects 161 acres of existing development</p> <p>No. 3B Planned Development: Affects 8 planned developments, 353 acres of near-term (before 2020) or in progress planned development</p> <p>No. 10A Socioeconomic Impacts: Affects 933 existing structures</p> <p>No. 9A Trails: Affects over 1 mile of proposed multiuse trail corridors</p> <p>No. 11A Noise: Located near 2,301 existing residences, golf course, school (sensitive noise receptors)</p> <p>No. 6 Cultural: Potential impact to two “Criterion A” cultural sites [afforded protection under Section 4(f); can only affect if there is no feasible and prudent alternative]</p> <p style="text-align: center;"><i>Summary of public and stakeholder agency inputs:</i></p> <p>No. 13 Local Agencies Rating : 2 of 6 local agencies rated this as “unfavorable”</p> <p>No. 14 State, Federal, and Regional Agencies: 1 of 11 agencies rated this as “unfavorable”</p> <p>No. 15 Public Rating: Received an unfavorable rating by the public: 108 members of the public rated this segment as unfavorable (23 rated as favorable, and 67 did not respond)</p>
D	4.78	51	<p>REJECT SEGMENT FROM FURTHER CONSIDERATION</p> <p>No. 3B Planned Development: Affects 3 planned developments, and 286 acres of near-term (before 2020) or in progress planned development</p> <p>No. 4A Existing ROW: Uses 0.5 mile of existing ROW, and requires over 4 miles of new ROW</p> <p>No. 5A Threatened and Endangered Species: Affects habitat for Sonoran Desert Tortoise, Tucson shovel-nosed snake, western burrowing owl</p> <p>No. 9A Trails: Affects 0.3 mile of proposed multiuse trail corridor</p> <p>No. 11A Noise: Located near 249 existing residences (sensitive noise receptors)</p> <p><i>Segment D also received low rating (2) for the following:</i></p> <p>No. 8A Existing Open Space: Affects 121 acres of existing open space</p> <p>No. 7A Geotechnical subsurface (NRCS): Soil characteristics will need special mitigation measures that will lead to considerable increase in construction and maintenance costs.</p> <p>No. 1A: Crosses two washes/rivers</p> <p>No. 12A AGFD Conservation Priority Areas: impacts areas designated as Priority Area 5 (second highest conservation value)</p> <p style="text-align: center;"><i>Summary of public and stakeholder agency inputs:</i></p> <p>No. 13 Local Agencies Rating : 2 of 6 local agencies rated this as “unfavorable”</p> <p>No. 14 State, Federal, and Regional Agencies: 1 of 11 agencies rated this as “unfavorable”</p> <p>No. 15 Public Rating: 78 members of the public rated this segment as unfavorable (68 rated as favorable, and 52 did not respond)</p>

Segment	Length (miles)	Step 1 rating	Reasons for rejection
E1	4.32	69	<p>REJECT SEGMENT FROM FURTHER CONSIDERATION</p> <p>This route connects to routes that are rejected due to low rating. This route is rejected from further consideration as the only way to connect to these routes is through a route that was rejected due to low ratings.</p>
E2	6.81	49	<p>REJECT SEGMENT FROM FURTHER CONSIDERATION</p> <p>No. 8B Proposed Open Space: Affects 804 acres of proposed open space</p> <p>No. 7A Geotechnical subsurface (NRCS): Soil characteristics will need special mitigation measures that will lead to considerable increase in construction and maintenance costs.</p> <p>No. 1A: Crosses multiple (8) washes/rivers</p> <p>No. 12B Wildlife Corridors: Affects 1,237 acres of wildlife corridor (the entire segment)</p> <p>No. 4A Existing ROW: Uses 0 miles of existing ROW, and requires over 6.8 miles of new ROW</p> <p>No. 12A AGFD Conservation Priority Areas: Affects areas designated as Priority Area 6 (highest conservation value)</p> <p>No. 9A Trails: Affects nearly 2 miles of adopted county trail corridor, and 0.2 mile of existing/planned multiuse trail corridor</p> <p>No. 11A Noise: Located near 218 existing residences (sensitive noise receptors)</p> <p style="text-align: center;"><i>Summary of public and stakeholder agency inputs:</i></p> <p>No. 14 State, Federal, and Regional Agencies: 4 of 11 agencies rated this as “unfavorable”</p> <p>No. 15 Public Rating: 83 members of the public rated segment “E” as unfavorable (52 rated as favorable, and 63 did not respond) – Note that Segment E2 was divided from Segment E based on public input received. The public did not directly comment on Segment E2.</p>
E3A	1.95	56	<p>REJECT SEGMENT FROM FURTHER CONSIDERATION</p> <p>This route connects to routes that are rejected due to low rating. This route is rejected from further consideration as the only way to connect to these routes is through a route that was rejected due to low ratings.</p>

Segment	Length (miles)	Step 1 rating	Reasons for rejection
E3B	2.13	54	<p>REJECT SEGMENT FROM FURTHER CONSIDERATION</p> <p>No. 8B Proposed Open Space: Affects 254 acres of proposed open space</p> <p>No. 7A Geotechnical subsurface (NRCS): Soil characteristics will need special mitigation measures that will lead to considerable increase in construction and maintenance costs.</p> <p>No. 12B Wildlife Corridors: Affects 355 acres of wildlife corridor (the entire segment)</p> <p>No. 4A Existing ROW: Uses 0 miles of existing ROW</p> <p>No. 5A Threatened and Endangered Species: Affects habitat of Tucson shovel-nosed snake and western burrowing owl</p> <p>No. 9A Trails: Affects nearly 0.3 mile of proposed multiuse trail corridor</p> <p>No. 6 Cultural: Potential impact to one "Criterion A" cultural site [afforded protection under Section 4(f); can only affect if there is no feasible and prudent alternative]</p> <p style="text-align: center;"><i>Summary of public and stakeholder agency inputs:</i></p> <p>No. 15 Public Rating: 83 members of the public rated segment "E" as unfavorable (52 rated as favorable, and 63 did not respond) – Note that Segment E3B was divided from Segment E based on public input received. The public did not directly comment on Segment E2.</p>
E4	2.13	65	<p>REJECT SEGMENTS FROM FURTHER CONSIDERATION</p> <p>These routes connect to routes that are rejected due to low rating. These routes are rejected from further consideration as the only way to connect to these routes is through a route that was rejected due to low ratings.</p>
F	6.04	62	
H	4.13	65	
I2	5.52	64	
K2	2.59	59	
L1	2.49	60	
M	3.21	72	
O2	2.55	71	
R	3.10	69	
S	4.39	64	

Segment	Length (miles)	Step 1 rating	Reasons for rejection
T	11.46	44	<p>REJECT SEGMENT FROM FURTHER CONSIDERATION</p> <p>Received rating of 1(lowest/most unfavorable) for the following evaluation criteria:</p> <p>No. 15 Public preference rating</p> <p>No. 7B Geotechnical subsurface (NRCS): Soil characteristics will need special mitigation measures that will lead to considerable increase in construction and maintenance costs</p> <p>No. 12A AGFD Conservation Priority Areas: Affects areas designated as Priority Area 6 (highest conservation value)</p> <p>No. 9A Trails: Crosses adopted county trail corridor and proposed multiuse trail corridor</p> <p>No. 11A Noise: Located near 66 existing residences (sensitive noise receptors)</p> <p>No. 6 Cultural: Potential impact to one “Criterion A” cultural site [afforded protection under Section 4(f); can only affect if there is no feasible and prudent alternative]</p> <p>No. 3B Planned Development: Affects 10 planned developments, over 400 acres of near-term (before 2020) or in progress planned development, and 200 acres of long-term planned development (beyond 2020)</p> <p>No. 1B: Crosses the CAP; affects Magma FRS</p> <p>No. 8B: Affects 233 acres of planned designated open space</p> <p>No. 4A Use of Existing ROW: Requires purchase of ROW for the entire length of the segment</p> <p><i>Summary of public and stakeholder agency inputs:</i></p> <p>No. 13 Local Agencies Rating : 2 of 6 local agencies rated this as “unfavorable”</p> <p>No. 14 State, Federal, and Regional Agencies: 7 of 11 agencies rated this as “unfavorable”</p> <p>No. 15 Public Rating: 89 members of the public rated this segment as unfavorable (24 rated as favorable, and 85 did not respond)</p>
W			<p>REJECT SEGMENT FROM FURTHER CONSIDERATION</p> <p>Received rating of 1 (lowest/most unfavorable) for the following evaluation criteria</p> <p>No. 14 State, Federal, and Regional Agencies: 9 of 11 agencies rated this as “unfavorable”</p> <p>No. 15 Public Rating: 83 members of the public rated this segment as unfavorable</p> <p>No. 7B Geotechnical subsurface (NRCS): Soil characteristics will need special mitigation measures that will lead to considerable increase in construction and maintenance costs</p> <p>No. 12A AGFD Conservation Priority Areas: Affects areas designated as Priority Area 6 (highest conservation value)</p> <p>No. 9A Trails: Crosses adopted county trail corridor, planned/existing and proposed multiuse trail corridor</p> <p>No. 6 Cultural: Potential impact to one “Criterion A” cultural site [afforded protection under Section 4(f); can only affect if there is no feasible and prudent alternative]</p> <p>No. 1A: Crosses multiple (11) washes</p> <p>No. 8B Proposed Open Space: Affects 222 acres of proposed open space</p> <p>No. 4A Use of Existing ROW: Requires purchase of ROW for the entire length of the segment</p>

Segment	Length (miles)	Step 1 rating	Reasons for rejection
Y	11.46	47	<p>REJECT SEGMENT FROM FURTHER CONSIDERATION</p> <p>Received rating of 1 (lowest/most unfavorable) for the following evaluation criteria</p> <p>No. 8A Existing Open Space: Affects 328 acres of existing designated open space</p> <p>No. 3A Existing Development: Affects 237 acres of existing development</p> <p>No. 3B Planned Development: Affects 4 planned developments, 125 acres of near-term (prior to 2020) planned development</p> <p>No. 10A Structures Affected: Affects 120 existing structures (homes and businesses)</p> <p>No. 5A Threatened and Endangered Species: Affects 2,083 acres of western burrowing owl, Tucson shovel-nosed snake habitat</p> <p>No. 9A Trails: Affects 5.6 miles of existing trail corridor, ¼ mile of proposed trail corridor</p> <p>No. 11A Noise: Affects 277 existing residences (sensitive receivers), 1 park</p> <p>No. 6 Cultural Sites: Affects 4 “Criterion A” cultural sites or structures</p> <p style="text-align: center;"><i>Summary of public and stakeholder agency inputs:</i></p> <p>No. 13 Local Agencies Rating : 3 of 6 local agencies rated this as “unfavorable”</p> <p>No. 14 State, Federal, and Regional Agencies: 1 of 11 agencies rated this as “unfavorable”</p> <p>No. 15 Public Rating: 61 members of the public rated this segment as unfavorable (54 rated as favorable, and 83 did not respond)</p>