Appendix B. Traffic Information

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Traffic Report

North-South Corridor Study

Federal-aid Project No. STP-999-A(365)X
ADOT Project No. 999 PN 000 H7454 01L
Pinal County, Arizona

prepared by
Arizona Department of Transportation
Federal Highway Administration

in cooperation with
Arizona Game and Fish Department
U.S. Army Corps of Engineers
U.S. Bureau of Indian Affairs – San Carlos Irrigation Project
U.S. Bureau of Land Management
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
Western Area Power Administration

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ADOT

U.S. Department of Transportation
Federal Highway Administration

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Acronyms

ADOT	Arizona Department of Transportation
ASR	Alternatives Selection Report
AZTDM2	Arizona Statewide Travel Demand Model
CAG	Central Arizona Governments
CAP	Central Arizona Project
Corridor	North-South Corridor
DDI	Diverging Diamond Interchange
DEIS	Draft Environmental Impact Statement
DHV	Design Hour Volume
FHWA	Federal Highway Administration
HCM	Highway Capacity Manual
HCS	Highway Capacity Software
IPA	Inland Port Arizona
L/DCR	Location/Design Concept Report
LOS	Level of Service
LPA	Locally Preferred Alternative
MAG	Maricopa Association of Governments
MUTCD	Manual on Uniform Traffic Control Devices
PLH	Pinal Land Holdings
PRS	Passenger Rail Study
RDG	Roadway Design Guidelines
RSRSM	Regionally Significant Routes Plan for Safety and Mobility
SCMPO	Sun Corridor Metropolitan Planning Organization
SR	State Route
TI	Traffic Interchange
TIA	Traffic Impact Analysis
UPRR	Union Pacific Railroad
US	United States
VHT	Vehicle Hours Traveled
VMT	Vehicle Miles Traveled

1 Introduction

The Arizona Department of Transportation (ADOT), in partnership with the Federal Highway Administration (FHWA), is studying the 45-mile-long North-South Corridor (Corridor) in Pinal County, Arizona. The Corridor is bound by United States Highway 60 (US 60) in Apache Junction to the north and by Interstate 10 (I-10) near Eloy to the south. The corridor includes the cities of Apache Junction, Coolidge, and Eloy and the towns of Florence and Queen Creek. The Gila River Indian Community is within the study area and approximately one mile west of the nearest action corridor alternative.

The proposed action would provide a new north-to-south transportation facility that connects the growing communities in central Pinal County with US 60 and I-10 and would extend Arizona State Route (SR) 24, which currently connects with the Santan Freeway (SR 202L) to the west of the Corridor. The action corridor alternatives consist of an Eastern Alternative and a Western Alternative (with two possible transitions points from east-to-west and several options), which are evaluated in the Tier 1 Draft Environmental Impact Statement (DEIS) for the proposed action. Each action corridor alternative is approximately 1,500 feet wide. The action corridor alternatives are divided into four segments that allow shifts from the east to the west, or from the west to the east, with the addition of two transition areas. The study limits, segments, and transition areas are shown in Figure 1.

This Draft Traffic Report is in support of the Tier 1 DEIS, and will help to inform the public, agencies, and other stakeholders about the No-Action alternative and action alternative corridors being considered by ADOT and the potential effects from a traffic perspective on human, built, and environmental resources. The horizon year for when future conditions are evaluated and when a north-south transportation corridor would be operational is 2040.

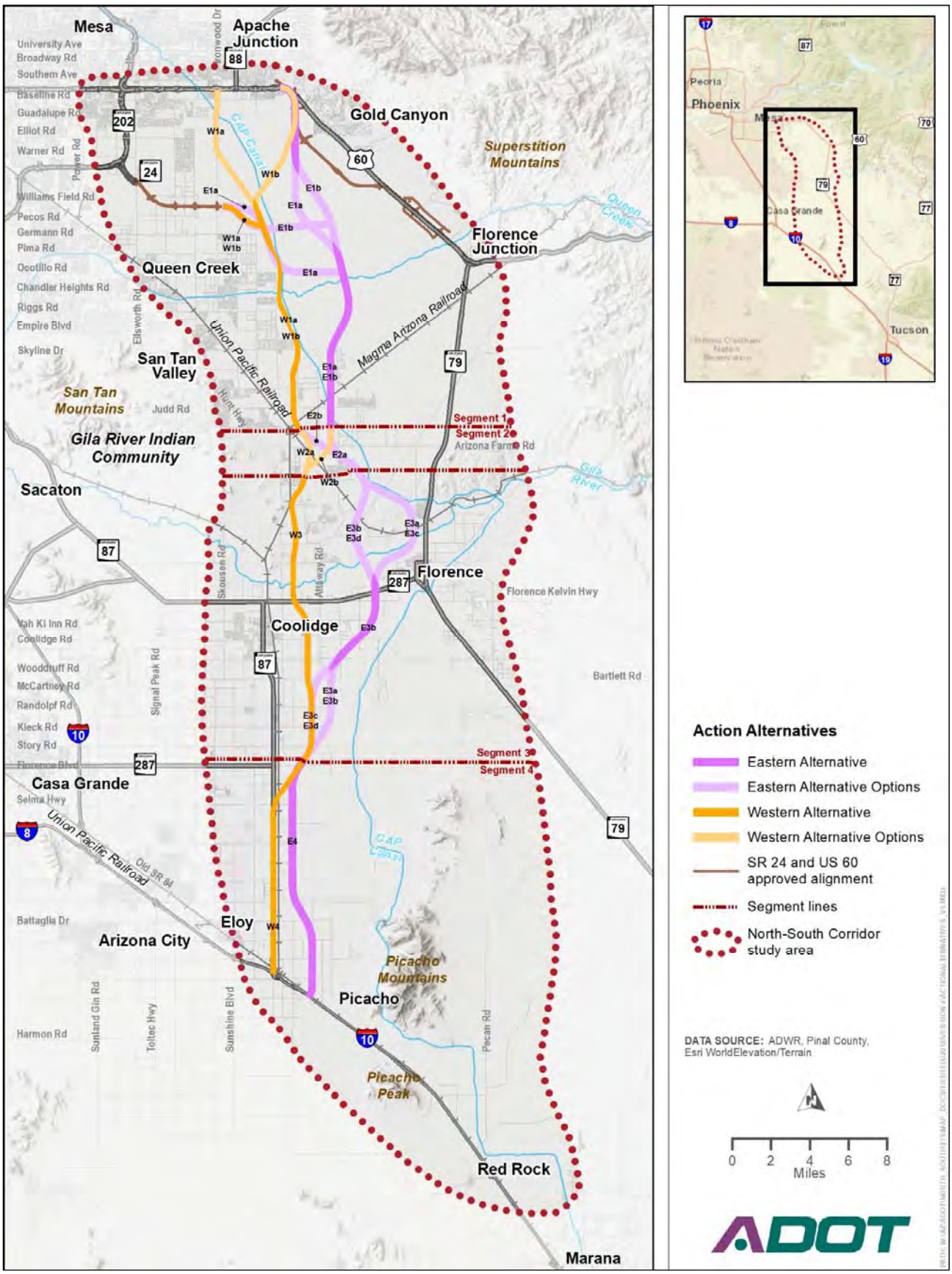
1.1 Action Corridor Alternatives

The Eastern Alternative begins east of Goldfield Road in Apache Junction, following a southerly alignment concurrent with the planned US 60 bypass for approximately 1.5 miles before continuing in a new alignment in mostly undeveloped, unincorporated Pinal County. Two options exist for a connection with the SR 24 extension—one just north of the Germann Road alignment (not currently constructed) and one at the Ocotillo Road alignment (also not currently constructed). South of the SR 24 connection, the Eastern Alternative crosses the Magma Arizona Railroad tracks and the Central Arizona Project (CAP) Canal and continues south and east to Florence. Two alignment options allow the Eastern Alternative to avoid the Poston Butte in western Florence; however, both options cross the Copper Basin Railroad tracks and the Gila River. The options converge just north of SR 287, and the alignment continues south and west to the Picacho Reservoir, where it then follows the Fast Track Road alignment south along a new alignment to I-10.

The Western Alternative starts at the US 60 and Ironwood Drive interchange in Apache Junction and generally follows the Ironwood Drive alignment for approximately three miles, then runs on a new alignment between the developed areas of unincorporated San Tan Valley and the CAP Canal. Near the Germann Road alignment, the SR 24 extension would tie into the Corridor. The alignment for the Western Alternative continues south and east, crossing the Magma Arizona Railroad and Copper Basin Railroad tracks and the Gila River before entering the northern part of the city of Coolidge. The alignment continues south through the eastern part of Coolidge and, just north of the Picacho Reservoir, the Western Alternative heads west across the Union Pacific Railroad tracks. The alignment then runs concurrently with SR 87 south to I-10.

With the availability of the transition areas, a preferred action corridor alternative may include any combination of Eastern and Western Alternative segments.

Figure 1. Study Area and Action Corridor Alternatives



1.2 Corridor Segments

This traffic report evaluates eight EIS Action Alternatives, as depicted in **Figure** 2. The alternatives are also included in Appendix A.

The Corridor is divided into four segments that incorporate transition areas to allow an action corridor alternative to shift east to west or west to east and to facilitate the evaluation of impacts resulting from the proposed action. In total, eight full-length action corridor alternatives are evaluated in this DEIS, as shown in Figure 2.

Table 1 identifies the approximate limits of the four segments, the options for transitioning from one action corridor alternative to the other, and other options.

Figure 2. Eight full-length action corridor alternatives

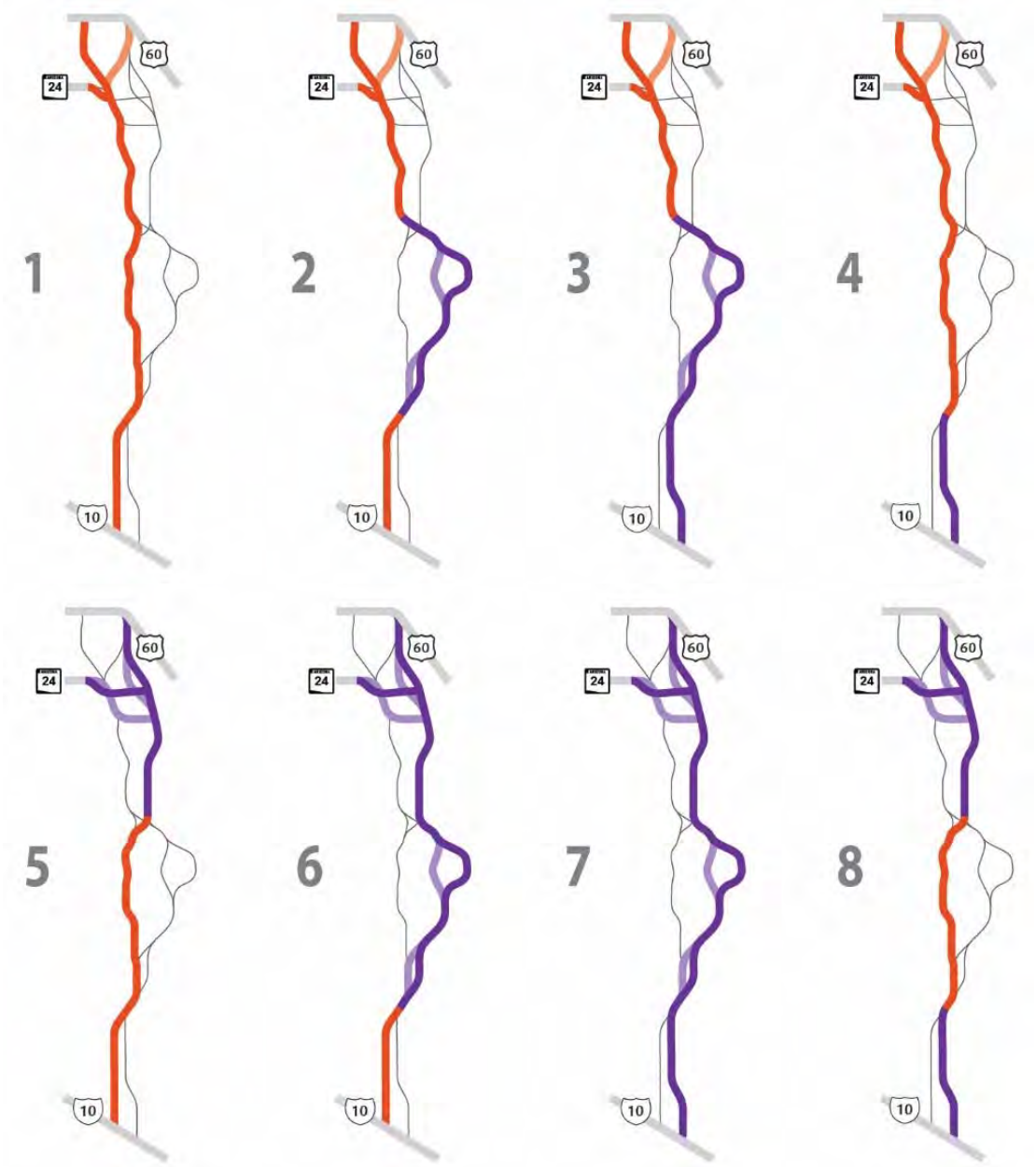


Table 1. North-South Corridor Segments

Segment	Approximate location		Action corridor alternatives and transitions
	Northern limit	Southern limit	
1	US 60	North of Arizona Farms Road	Segment 1 is approximately 18 miles long and includes two eastern alternatives and one western alternative that with a transition option to the east north of the tie-in to SR 24. **E1a Alternative** – begins east of Goldfield Road in Apache Junction, following a southerly alignment concurrent with the planned US 60 bypass for approximately 1.5 miles before continuing in a new alignment in mostly undeveloped, unincorporated Pinal County. The SR 24 connection is a southern route, which begins at the Ocotillo Road alignment and crosses the CAP Canal before heading north to join the existing SR 24. **E1b Alternative** – is coincident with the E1a Alternative, with the exception that the SR 24 connection is a northern route that follows the Germann Road alignment before it crosses the CAP Canal to join the existing SR 24. **W1a Alternative** – follows the Ironwood Drive alignment for approximately 3 miles and then runs on a new alignment between the developed areas of unincorporated San Tan Valley and the CAP Canal. **W1b Alternative** – north of the SR 24 connection and Germann Road, crosses the CAP Canal and joins US 60 at Goldfield Road.
2	North of Arizona Farms Road	South of Arizona Farms Road	Segment 2 is approximately 2 miles long to accommodate transitions from west to east or east to west. **E2a Alternative** – provides a transition from the E1a and E1b Alternatives to the E3a, E3b, E3c, and E3d Alternatives. **E2b Alternative** – provides a transition from the W1a and W1b Alternatives to the E3a, E3b, E3c, and E3d Alternatives. **W2a Alternative** – provides a transition from the W1a and W1b Alternatives to the W3 Alternative. **W2b Alternative** – provides a transition from the E1a and E1b Alternatives to the W3 Alternative.
3	South of Arizona Farms Road	North of Steele Road	Segment 3 is approximately 12 miles long. The Eastern Alternative includes two options, resulting in four alternatives, plus the Western Alternative. **E3a Alternative** – generally follows the CAP Canal before turning south approximately 1 mile east of SR 79 where it crosses the Gila River and then to the west around historic downtown Florence. The route turns south to the east of Valley Farms Road, crossing over SR 287 and then generally paralleling the Florence Canal to north of Steele Road. **E3b Alternative** – generally continues south across Copper Basin Railroad and Hunt Highway before crossing the Gila River and merging with the E3a Alternative. **E3c Alternative** – coincident with the E3a Alternative until Martin Road, where it continues to the southwest approximately 1 mile east of the E3a Alternative, merging with the E3a and E3b Alternatives north of Steele Road. **E3d Alternative** – coincident with E3b and E3c Alternatives. **W3 Alternative** – runs on a new alignment through undeveloped and agricultural land east of the Union Pacific Railroad and SR 87.
4	North of Steele Road	Interstate 10	Segment 4 is approximately 12 miles long and includes two eastern alternatives and one western alternative that includes a transition option to the east. **E4 Alternative** – from approximately Steele Road the alternative travels south past the Picacho Reservoir where it follows the Fast Track Road alignment south along a new alignment to I-10. **W4 Alternative** – from approximately Steele Road the alternative heads southwest from the Picacho Reservoir and across the Union Pacific Railroad tracks, where the alignment then runs concurrently with SR 87 south to I-10.

Notes: CAP = Central Arizona Project, I-10 = Interstate 10, SR = State Route, US 60 = United States Route 60

1.3 Project Need and Purpose

The need for a north-south transportation corridor has been under consideration at the local, regional, and state level for more than 15 years. The draft *North-South Corridor Study Purpose and Need* (August 25, 2017) describes the rationale for the project, and provides an overview of regulatory requirements, previous transportation studies, existing and future land use, population and employment projections, and existing and projected traffic volumes that support the purpose and need for the project. This purpose and need for the project are excerpted from this document, and are described as follows.

1.3.1 Project Need

The project need is summarized as follows:

- Insufficient infrastructure to accommodate projected population and employment growth and to support local, regional, and statewide planning efforts – As shown in the Southern Pinal/Northern Pima Corridors Definition Study Final Report, Pinal County Comprehensive Plan, the ADOT Framework Program, and other local and regional planning documents, population and employment in the study area (Pinal County) are expected to increase substantially by 2040. The 2040 population of Pinal County is estimated at approximately 800,000, nearly twice the 2015 population of approximately 407,000.
- Inadequate roadway capacity to meet future demand - Population and employment growth in Maricopa, Pima, and Pinal Counties will place additional demand on the existing fragmented and discontinuous transportation network in Pinal County and will result in a lack of adequate, continuous, north-south transportation capacity in southeastern Maricopa County and Pinal County.
- Lack of transportation system connectivity and need to enhance system linkages - A continuous north-south transportation corridor would provide a critical missing link in the southeastern Maricopa County and Pinal County transportation system.
- Limited alternatives to avoid congestion on I-10 - without unfragmented, north-south transportation alternatives to I-10, congestion is anticipated to worsen with the projected growth in the study area.

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

1.3.2 Project Purpose

To address transportation needs within the study area, the purpose of the proposed action is to provide the following:

- Enhanced transportation to accommodate existing and future populations – A Corridor consistent with state, regional, and municipal planning initiatives to accommodate anticipated growth in the study area and across the larger region.
- Improved access to future activity centers – A Corridor to benefit the study area's new activity and population centers and undeveloped lands identified for conversion that are in various stages of the local and/or regional planning processes.
- Improved regional mobility – An operational Corridor providing additional roadway capacity ahead of full build-out development to avoid congestion associated with anticipated growth.
- Alternative to avoid congestion on I-10 – An unfragmented north-south transportation alternative to I-10 to reduce traffic delays at full build-out development.
- North-south connectivity – a continuous, access controlled Corridor connecting eastern portions of the Phoenix metropolitan area with Pinal County and destinations to the south including Tucson.
- Integration of the region's transportation network – A critical missing link in the transportation network to provide regional connectivity.

1.4 Background

This section describes previous studies relating to the Corridor alternatives development, area transportation studies that helped identify transportation improvement needs in the region, and recent and planned transportation improvements in the study area.

1.4.1 Alternatives Selection Report

This traffic report relies on the *North-South Corridor Study Alternatives Selection Report* (March 2015). The ASR documents the alternatives development and screening process and recommends route alternatives for further detailed analysis in the Tier 1 DEIS. The route alternatives that emerged from the screening process of all reasonable and feasible route alternatives in the study area are represented as the Western Alternatives and the Eastern Alternatives. Western Alternatives 1 and 2 represent the route alternatives located west of the CAP Canal that responded to stakeholder comments representing federal, state, and local agencies. The Western and Eastern Alternatives include transition segments that enable the routes to be combined during the Tier 1 DEIS phase of the study to produce many combinations of reasonable and continuous route alternatives. The alternatives are previously described in Table 1.

1.4.2 Previous Transportation Studies in the Study Area

Transportation studies prepared by ADOT, Maricopa Association of Governments (MAG), Central Arizona Governments (CAG), Sun Corridor Metropolitan Planning Organization (SCMPO), and other local government agencies provide a baseline for evaluating a possible solution for meeting future transportation needs in the study area. Previous studies provide valuable information about current conditions, existing and anticipated system deficiencies, projected growth and development patterns, and municipal and stakeholder objectives. These studies have helped identify short- and long-term transportation improvements to enhance mobility, access, and safety in the study area. The preparation of these materials has helped foster partnerships and coordination efforts between and among the varying agencies that will facilitate the comprehensive planning efforts necessary to improve transportation mobility in the study area. Although this section focuses on studies conducted in the last ten years, needs for the Corridor were included in earlier studies, such as the *Southeast*

Maricopa/Northern Pinal County Area Transportation Study Final Report (2003) and *Pinal County Corridors Definition Study Final Report* (2007), and the 2004 *Statewide Long-Range Transportation Plan* (MoveAZ).

1.4.2.1 Phoenix to Tucson Passenger Rail Study (2016)

The purpose of implementing passenger rail transportation between Tucson and Phoenix is to help meet future travel demand in Pima, Pinal, and Maricopa counties. State and regional planning initiatives have recommended implementing passenger rail to add travel capacity to what is already offered by highways. Having an additional travel mode for the trip between Tucson and Phoenix could enhance highway safety and reduce air pollutant emissions by removing automobiles from already congested highways. A Final Tier 1 EIS and Record of Decision for this study was completed in December 2016.

The selected alternative (Yellow Corridor Alternative), illustrated in Figure 3, includes routing options in the area between SR 79 and I-10. It follows existing ADOT or Union Pacific Railroad (UPRR) right-of-way (ROW), including the UPRR Phoenix Subdivision's Southeast Branch. The selected alternative also includes an option that would utilize the Corridor right-of-way; as a result, the Corridor alternatives were developed to accommodate passenger rail from right-of-way and geometric perspectives.

1.4.2.2 Pinal County Regionally Significant Routes (2008, 2017)

The *Pinal County Regionally Significant Routes for Safety and Mobility* (2008, with updates in 2017) recommended right-of-way preservation and development of a system of regionally significant parkway, arterial, and collector streets.

Regionally significant routes (RSR) serve as a guide for Pinal County and other stakeholders, both public and private, to implement and fund and preserve right-of-way for these routes. The updated RSR are shown in Figure 4, and include the Corridor alignment with a note referencing that the alignment is currently under study by ADOT.

The RSRSM illustrates the Corridor as a "RTA Parkway" north of Kleck Road. South of Kleck Road, the Corridor is illustrated as an arterial following the Wheeler Road alignment.

1.4.2.3 Coolidge-Florence Transportation Study (2008)

The Coolidge-Florence Transportation Study developed a regional multimodal transportation system plan for the Coolidge and Florence region. Travel demand projections were developed for 2025 for this study. The plan recommended continued and coordinated efforts regarding a design concept study for the Corridor.

1.4.2.4 City of Coolidge Comprehensive Transportation Feasibility Study (2012)

Completed in 2012, this study was a cooperative effort of the City of Coolidge and ADOT. The study identified the need for the Corridor, a detailed access / interchange study and a park-and-ride location study.

1.4.2.5 Town of Queen Creek Multimodal Transportation Master Plan (2016)

This 2016 plan sought to identify and address long-term transportation planning issues for Queen Creek. While the study focused on areas within the Queen Creek municipal limits, it identified the Corridor as being in the study vicinity and recognized the need for coordinating future road systems to promote connectivity between and among communities.

1.4.2.6 City of Eloy Small Area Transportation Study (2010)

The City of Eloy Small Area Transportation Study (2010) developed recommendations for 2030 and 2050 time frames. An alternative that was modeled for future conditions included the addition of two potential freeway alignments. One new freeway alignment was the proposed "North-South" freeway that entered the Eloy planning area near the northeast corner and traverses the east side of the planning area to a connection with I-

10 near Picacho. The draft roadway networks recommended for both the 2030 and long-range horizons are one-mile grid systems of arterials.

1.4.2.7 US 60 Alignment Study: Superstition Freeway to Florence Junction Study (2011)

This study advanced the recommendations set forth in ADOT's *US 60 Corridor Definition Study* (2006) through the evaluation of improvements to US 60 between mileposts 199 and 211. Residential development has been significant in this area in recent years and is anticipated to increase in the future with the anticipated implementation of the Lost Dutchman Heights (formerly Portalis) and Superstition Vistas developments. In 2011, the US 60 project received environmental clearance with a finding of no significant impact (ADOT 2011).

1.4.2.8 Apache Junction Comprehensive Transportation Study (2012)

A joint effort between the City of Apache Junction and ADOT, this study sought to develop a long-range multimodal transportation plan to address the city's most critical current and future transportation needs. The study evaluated growing demands placed on the city's local roads and streets, the Lost Dutchman Heights (formerly Portalis) area, and the larger region and considered public transportation, bicycle, and pedestrian needs, and additional multimodal opportunities. The study identified a series of short-, mid-, and long-range improvements to the transportation network as well as the potential realignment of US 60 and the Corridor.

1.4.2.9 Southern Pinal County Regional Corridors Study (2015)

This study was jointly conducted with ADOT, Eloy, Marana, and Coolidge to address Southern Pinal County's existing and future multimodal travel demand, identify market opportunities, evaluate priority investment areas, and identify improvements to the regional transportation system. The study references the Corridor as an additional long-term high-capacity transportation corridor needing further detailed study.

1.4.2.10 City of Coolidge General Plan 2025

The City of Coolidge 2025 General Plan (adopted June 23, 2014, Figure 3.3, Transportation Plan Map) identifies potential Corridor interchange locations within the Coolidge planning area. Interchange locations are illustrated at Vah Ki Inn Road, Martin Road, McCartney Road, Kleck Road, Steele Road, Selma Highway, Hanna Road, Arica Road, and Houser Road.

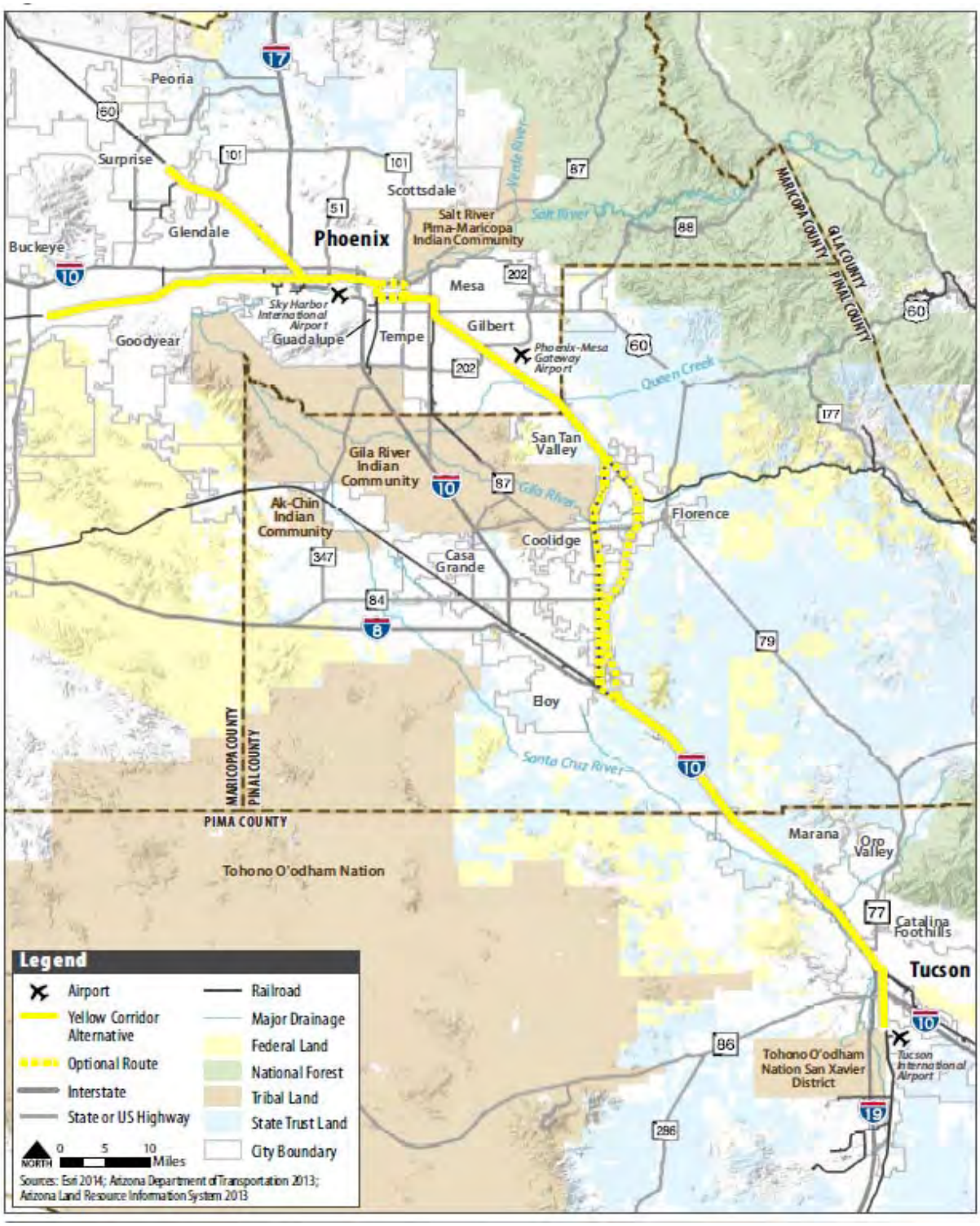
1.4.2.11 Inland Port Arizona & Pinal Logistics Park Traffic Impact Analysis

Pinal Land Holdings (PLH) proposes a new inland port and industrial site one quarter mile east of SR 87 between Hanna and Houser Roads in Eloy, Arizona. Inland ports are specialized locations that offer intermodal transfer facilities and frequently also offer international trade processing and other services.

A traffic impact study for the PLH development was completed in December 2015. The TIA assumed Corridor interchange locations at Hanna Road, Arica Road, and Houser Road. It should be noted that the assumption of an interchange at Arica Road as proposed by PLH and by the Coolidge General Plan is inconsistent with interchange location assumptions made within this Traffic Report. Interchange locations within this Traffic Report (see Section 3.4.5) are made considering spacing criteria and consistency with the Pinal County RSR.

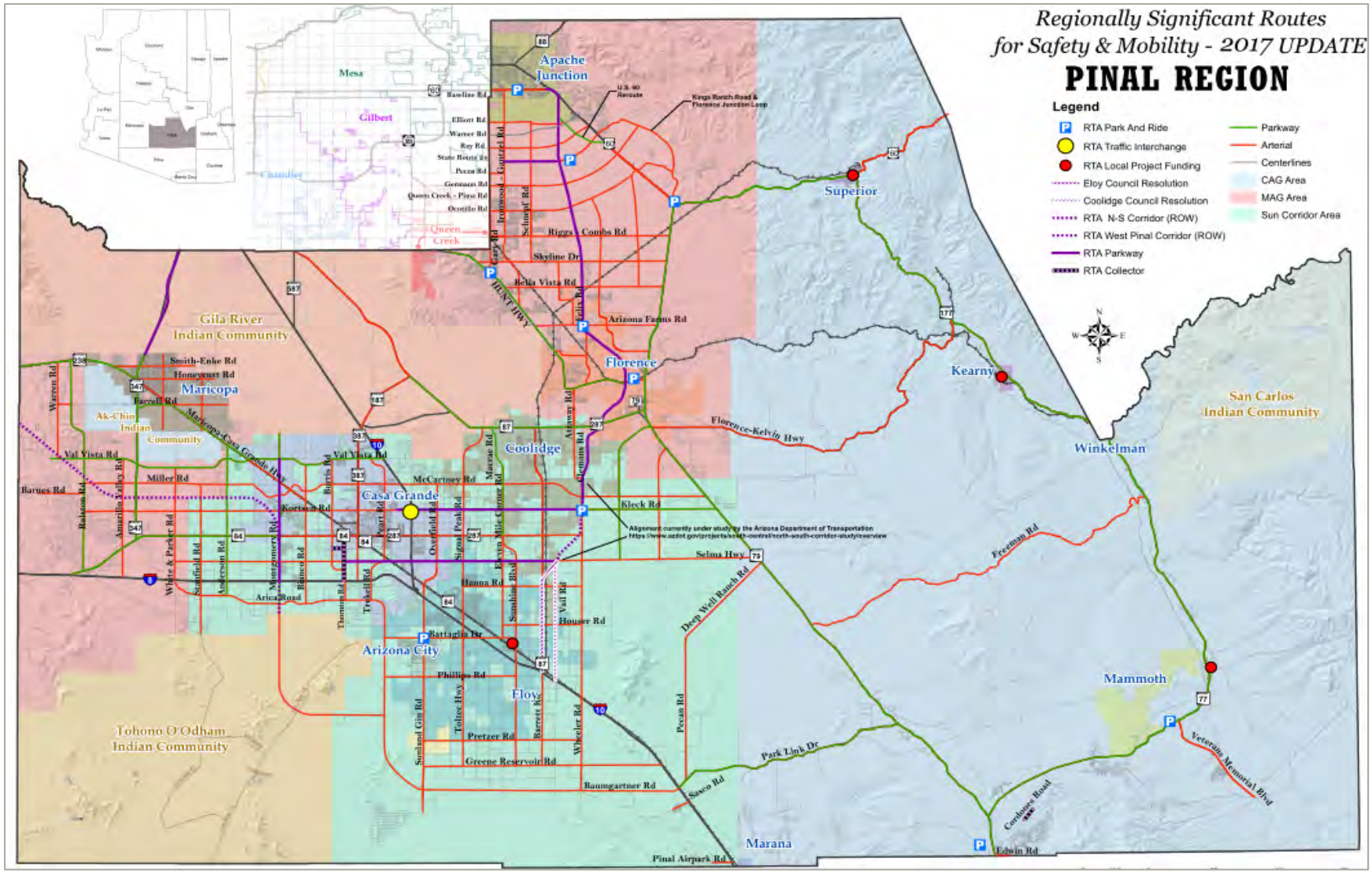
A review of the PLH TIA trip generation and distribution assumptions demonstrates that the traffic generated from PLH in the build-out phase (estimated to be complete in 2030) can be accommodated within the Corridor.

Figure 3. Passenger Rail Selected Corridor Alternative



Source: Arizona Passenger Rail Corridor Study, Tucson to Phoenix, Record of Decision, December 2017

Figure 4. Planned Regionally Significant Routes in Pinal County



Source: Pinal County

1.4.3 Regional Transportation Plans

The Metropolitan Planning Organizations (MPOs) in the region have identified the need for a Corridor through Pinal County. MAG's 2040 Regional Transportation Plan identifies the extension of SR 24 as a six-lane freeway from Ellsworth Road to Meridian Road as occurring in Group 3 (fiscal years 2027-2040) and right-of-way protection as a priority for the Corridor (including SR 24 between Meridian Road and the Corridor) in the Pinal County area of the MAG Metropolitan Planning Area.

The Pinal Regional Transportation Authority Plan (Proposition 416) was approved by voters in November 2017, along with a half-cent sales tax (Proposition 417), which identifies an estimated $640,000,000 in transportation funding over the 20-year period. The Plan includes the Pinal County contribution for construction of 36 miles of the Corridor as a limited access two-lane principal facility between US 60 in the City of Apache Junction on the north to Kortsen/Kleck Road on the south of Coolidge. It also includes funding towards preservation of right-of-way for the remainder of the Corridor from Kortsen/Kleck Road on the north to I-10 on the south near Eloy.

The CAG Regional Transportation Plan (2015) recognizes the need for a Corridor with a connection to SR 24 to provide an alternative for travel between I-10 and the Phoenix metropolitan area. The CAG Plan also notes that a freeway facility will support economic development and provide support for the growing communities of Eloy, Coolidge, and Florence as well as northern Pinal County.

The SCMPO Regional Transportation Plan (2016) recognizes the need for a continuous north-south route through central Pinal County. This project was listed as a strategic project supported by SCMPO, who will continue to collaborate with ADOT and regional planning partners on this project.

1.4.4 Recent and Planned Transportation Improvements in the Study Area

1.4.4.1 State Route 24 from Ironwood Drive to the North South Corridor

State Route 24 (SR 24), also known as the Williams Gateway Freeway, is a freeway in the southeastern region of the Phoenix metropolitan area. SR 24 is planned as a controlled-access highway to move traffic from the southeastern suburbs of Phoenix to planned suburbs in northwestern Pinal County. The first mile from Loop 202 to Ellsworth Road opened on May 4, 2014. Future plans include extending the highway southeast for 4.6 miles between Ellsworth Road and Ironwood Road. Phase 2 of this project includes construction of an interim roadway with two paved travel lanes in each direction separated by a graded median that would be constructed within the footprint of the future SR 24 freeway between Ellsworth Road and Ironwood Road. The interim roadway pavement surface would be used for the ultimate SR 24 freeway build-out.

In the fall of 2015, the extension of SR 24 to the North-South Corridor was incorporated into the Corridor Study. This addition combines the interrelated and previously distinct Corridor Study and SR 24 extension projects into one integrated project. The Corridor Study incorporates existing SR 24 study material, which began an evaluation of potential SR 24 extensions to the Corridor. Previously completed studies identified an alignment to extend SR 24 to Ironwood Road; the Corridor Study will continue the study from Ironwood Road to the east.

1.5 Traffic Report Objectives

The objectives of this traffic report are to provide traffic engineering perspectives to the evaluation of Corridor alternatives in the Tier 1 DEIS, including:

- Evaluate Corridor study area travel demand patterns and performance indicators
- Evaluate Corridor study area transportation capacity deficiencies and major points of congestion
- Macro-level traffic evaluation of Corridor improvement concepts

1.6 Traffic Report Organization

This Traffic Report relies on the draft Corridor Study Purpose and Need dated August 25, 2017, which documents the need for a continuous, non-fragmented transportation corridor connecting US 60 and I-10 and to reduce study area congestion created by projected growth and development in Pinal County.

The Traffic Report defines, develops, and evaluates alternatives for a continuous, fully access-controlled transportation facility on 400-foot-wide right-of-way connecting US 60 near Apache Junction and I-10 near Eloy. The facility is planned for build-out conditions and consists of three lanes in each direction with service interchanges generally located to support the arterial network as recommended in the 2008 *Pinal County Regionally Significant Routes Plan for Safety and Mobility* (RSRSM) study with 2017 updates.

The Arizona Statewide Travel Demand Model (AZTDM2) was used to evaluate each of the Corridor route alternatives. The performance of each route alternative was compared to the 2040 No-Action condition to inform the selection of a preferred route alternative in the Tier 1 DEIS. Subsequently, for each route alternative segment, the maximum volume was selected to form a single composite corridor to facilitate an evaluation of the corridor in the 2040 design year (2040).

The traffic report is organized into the following chapters: 1) Introduction; 2) Existing Conditions and Corridor Characteristics; 3) Future Conditions (2040); and 4) Conclusions.

2 Existing Conditions and Corridor Characteristics

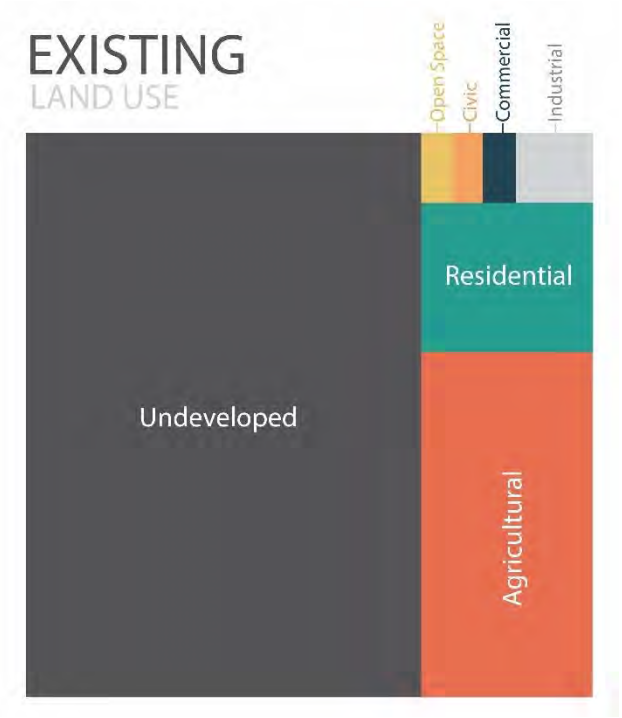
2.1 Overview of Transportation System

The transportation system in the Corridor area has developed over time in response to land uses. Pinal County has historically had primarily agricultural and undeveloped land uses. Figure 5 illustrates the relative percentage of land use types within the Corridor study area.

The road system in the study area has developed over time as a grid system in the Coolidge area, which extends to Eloy. Through Florence and areas north, the grid system is interrupted due to the Gila River, the Union Pacific, Copper Basin, and Magma Arizona railroads, the CAP canal, and other geographic constraints. This has hindered the development of a robust network.

A continuous north-south transportation corridor would provide a critical missing link in the southeastern Maricopa County and Pinal County transportation system. Currently, travelers heading north from the Tucson area on westbound I-10 who wish to reach areas east of central Phoenix while continuing to travel on a high-capacity roadway must go through central Phoenix to access the SR 202L or US 60 to the east. SR 79 provides access along the eastern edge of the study area north of the Town of Florence; south of the Town of Florence SR 79 travels southeast towards Oracle Junction, where it ends at its junction with SR 77, approximately 25 miles north of Tucson. SR 79 is not a high-capacity route, and operates as a local route through Florence with numerous access points and businesses along the route.

Figure 5. Existing Land Uses



An overview of the transportation system in the study area and operational performance is described in the following sections.

2.1.1 Transportation System

2.1.1.1 Interstate and U.S. Highways

Primary freeways within or near the study area include I-10, Interstate 8 (I-8), and US 60 (see Figure 6). These freeways are located on the outer edges of the study area and provide connections to secondary roadways, including SR 87, SR 79, SR 287, and Hunt Highway.

I-10 serves as the primary vehicular corridor between Tucson and Phoenix. Congestion on I-10 in Tucson and Phoenix and between the two cities continues to increase, particularly during peak travel times. The recently completed widening of I-10 between Picacho and Marana and planned widening of I-10 between -8 and Picacho (anticipated to start construction in 2018) have been designed to alleviate some of the pressure on the existing system.

US 60 is an east-west roadway in the northern part of the study area. In the west, it connects with I-10. In the northwestern part of the study area, US 60 connects with SR 202L and continues east through Apache Junction, where it turns southeast through Gold Canyon and connects with SR 79, which runs along the eastern edge of the study area.

2.1.1.2 State Highways

State highways carry most of the regional traffic in Pinal County and southeastern Maricopa County. Within the study area, these facilities include SR 24, SR 202L, SR 87, SR 287, and SR 79. SR 24, which extends from SR 202L to Ellsworth Road in far eastern Maricopa County, is developed as an urban freeway with two lanes in each direction. Plans are in place to extend SR 24 approximately 4.6 miles east from Ellsworth Road to Ironwood Road. SR 202L is an urban freeway with three general purpose lanes in each direction. Generally, SR 87, SR 287, and SR 79 have one lane in each direction in rural areas, with some wider cross-sections in more urbanized areas such as Coolidge and Florence.

In the study area, SR 87 runs east-west just north of downtown Coolidge. It connects with SR 287 in Coolidge and SR 79 in Florence. SR 287 continues south to Eloy while SR 79 runs north through Florence and connects with US 60 before it turns northwest toward Gold Canyon and Apache Junction.

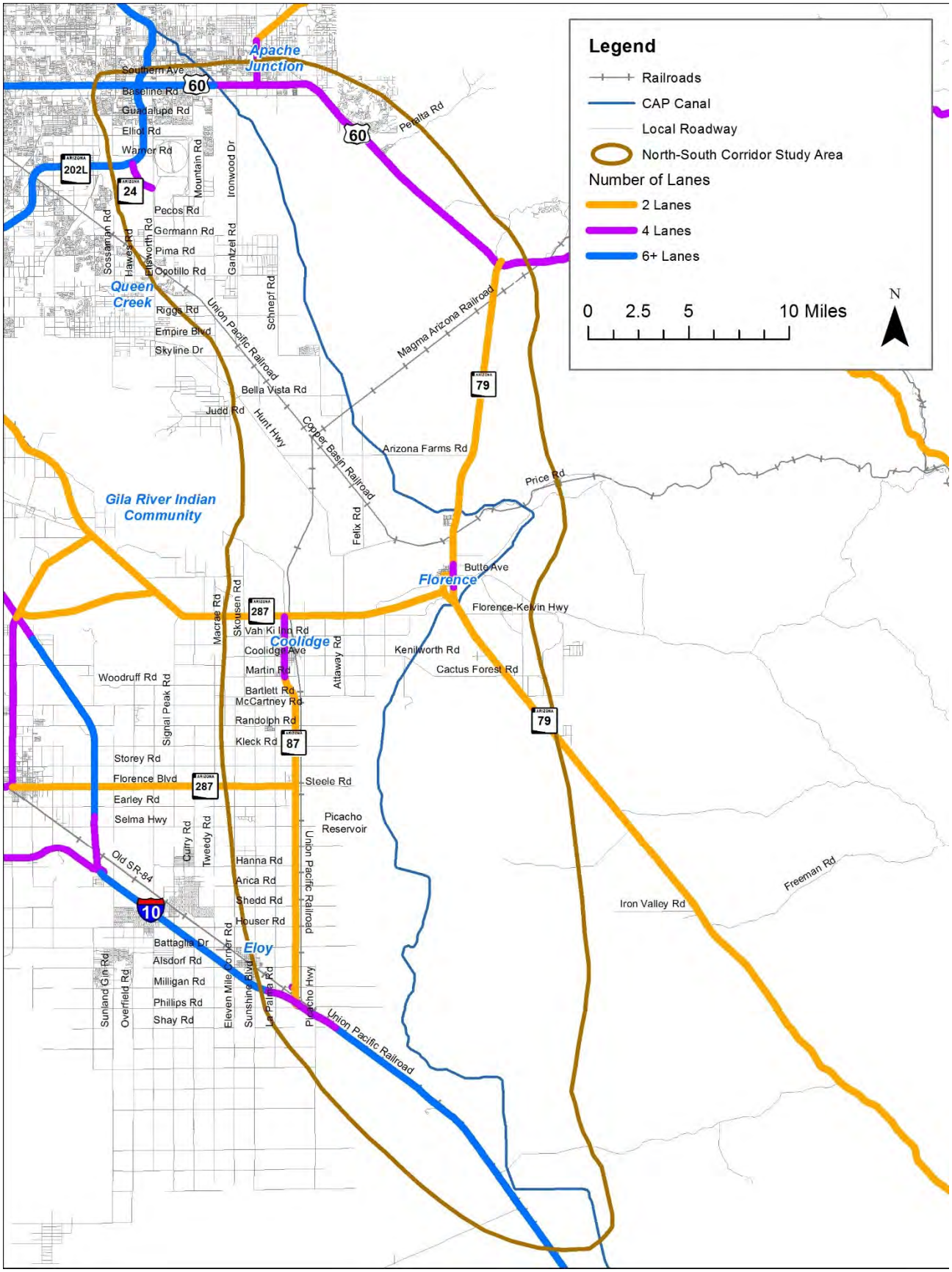
2.1.1.3 Arterial Streets and Regionally Significant Routes

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 such as Coolidge, Florence, and San Tan Valley include the following:

- Hunt Highway
- Ellsworth Road
- Ironwood Road/Gantzel Road
- Bella Vista Road
- Arizona Farms Road
- Attaway Road
- Cactus Forest Road

Figure 6 illustrates the number of lanes for the various facilities inside the study limits. In addition, the planned Pinal County RSR network is shown in Chapter 1**.** The RSRs serve as a guide for Pinal County and other stakeholders, both public and private, to implement and fund RSRs Routes and preserve right-of-way for these routes.

Figure 6. Existing Lane Characteristics for Key Roadways



2.1.1 4 Transit

Public transit service in Pinal County is limited. Current public transit options include the Central Arizona Regional Transit (CART) bus line that connects Florence, Coolidge, Central Arizona College, and Casa Grande and the Cotton Express bus system, which provides deviated fixed route bus service and on-demand service throughout the City of Coolidge Monday through Friday. Both of these services are operated by the City of Coolidge Transit Department.

The *Coolidge Transit Study* (2016) recommended further study for potentially expanding transit service to Eloy, Arizona City, San Tan Valley, and the Sacaton / Blackwater area.

The *Southeast Valley Transit Study (July 2015)*, conducted by MAG, identified a series of short-, mid-, and long- term recommendations to promote a transit system that connects the communities of the Southeast Valley and provides linkages to the existing and planned regional transit network. Participating communities in the study area included Apache Junction, Florence, Queen Creek, and the surrounding unincorporated parts of Pinal County.

The Corridor does not include a transit component, and any potential improved public transportation in the study area would be addressed separately.

2.1.1.5 Railroads

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 has recently completed double-tracking the transcontinental Sunset Route within the study area. Additionally, UPRR has developed plans for constructing a new railyard 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).

Stakeholder interviews with rail representatives identified that design for the 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 Railway

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.

2.1.1.6 Active Transportation

Bicycling and walking represent important modes of transportation. In the study area, Coolidge has approximately 11 miles of arterial and collector streets with sidewalks on either one or both sides of the road. Some roadways have striped shoulders that are suitable for bicycling. Eloy has sidewalks on a number of residential streets as well as on segments of Main Street. Paved shoulders that are four feet wide or greater exist on Frontier Street and on Sunshine Boulevard from I-10 to Frontier Street. Sections of Shedd Road and Giles Street have a striped bicycle lane.

In Florence, there is currently no continuous system of pedestrian or bicycle facilities. Sidewalks are proposed within new developments.

Pinal County residents and visitors have access to a wide variety of park, trail, and outdoor recreation opportunities. Pinal County is home to five State Parks, four Wilderness Areas, three National Monuments, two National Forests, and a National Scenic Trail. Pinal County also provides several neighborhood/community parks and manages approximately 60 miles of regional non-motorized multi-use trails. Bicycles are permitted on all state roads in Pinal County except I-10 and the segment of I-8 between Trekell Road and I-10.

2.2 Existing Operational Performance on RSR Corridors

Pinal County key RSR segments within the study area that will be significantly impacted by the Corridor are identified for further analysis to measure the traffic operational impacts of the Corridor.

A transportation network is designed to accommodate the expected transportation demand, that is, a certain volume of travel, at an acceptable level of service (LOS). Once that volume is exceeded, the network begins to operate inefficiently. When capacity deficiency occurs, or is projected to occur, improvements that would be necessary to address these deficiencies are typically identified in the jurisdiction's long-range transportation plan.

Traffic operational characteristics are typically described in terms of LOS. LOS is measured on a scale ranging from A to F, with A representing the best performance and F indicating the worst. As described in the Transportation Research Board's Highway Capacity Manual (2010), LOS A corresponds to minimal delay at signalized intersections and free-flow conditions on highways. LOS F means long delays at signalized intersections and congested stop-and-go conditions on highways.

Pinal County Traffic Impact Assessment Guidelines & Procedures, January 2007, defines LOS as the desired performance target:

> *If the resulting Level of Service and/or roadway capacity are below "C" then the author shall include within the report a recommendation of what minimum improvements are necessary to elevate any substandard conditions to that of LOS = C. Such will be considered as the background conditions for any horizon years, excluding the opening year.*

2.2.1 Existing Traffic Volumes and Level of Service

Daily 2015 average daily traffic (ADT) volumes and volume-to-capacity (V/C) ratios and LOS for key RSR segments contained in the 2015 No-Action travel demand model are summarized in Table 2. The performance is illustrated in Figure 7.

Table 2. Traffic Volumes and Level of Service Summary for Key Corridors

Corridor	Location	Existing (2015)		
		ADT	Volume/ Capacity (V/C)	Level of Service[1]
North-South RSRs				
Hunt Highway	Arizona Farms Road to Franklin Road	10,162	1.01	**LOS F**
SR 79	Hunt Highway to Diversion Dam Road	8,302	0.46	LOS A-C
Ironwood - Gantzel Road	Baseline Road to SR 24	17,377	0.87	**LOS E**
Schnepf Road	Combs Road to Skyline Drive	6,213	0.62	LOS A-C
Attaway Road	Hunt Highway to SR 287	4,135	0.41	LOS A-C
SR 87 (Arizona Boulevard)	Vah Ki Inn Road to Martin Road	7,532	0.21	LOS A-C
Hunt Highway	Belle Vista Road to Copper Mine Road	29,085	2.39	**LOS F**
East-West RSRs				
Riggs - Combs Road	Signal Butte Road to Schnept Road	10,111	1.01	**LOS F**
Skyline Drive	Schnept Road to Quail Run Lane	4,454	0.44	LOS A-C
Bella Vista Road	Gantzel Road to Quail Run Lane	5,907	0.59	LOS A-C
Arizona Farms Road	Hunt Highway to Copper Basin RR	2,000	0.26	LOS A-C
Coolidge Avenue	SR 87 to Attaway Road	966	0.10	LOS A-C
SR 287	Christenson Road to Attaway Road	6,580	0.37	LOS A-C
Selma highway	Eleven Mile Corner Road to SR 87	126	0.01	LOS A-C
US 60	Perlalta Road to SR 79	9,590	0.27	LOS A-C
Ocotillo Road	Rittenhouse Road to Ironwood Drive	19,760	1.00	**LOS F**
SR 287	Attaway Road to Valley Farms Road	5,606	0.31	LOS A-C
I-10	Sunshine Boulevard to SR 87	56,500	0.70	LOS A-C

1. Relationship of V/C Ratio and LOS:

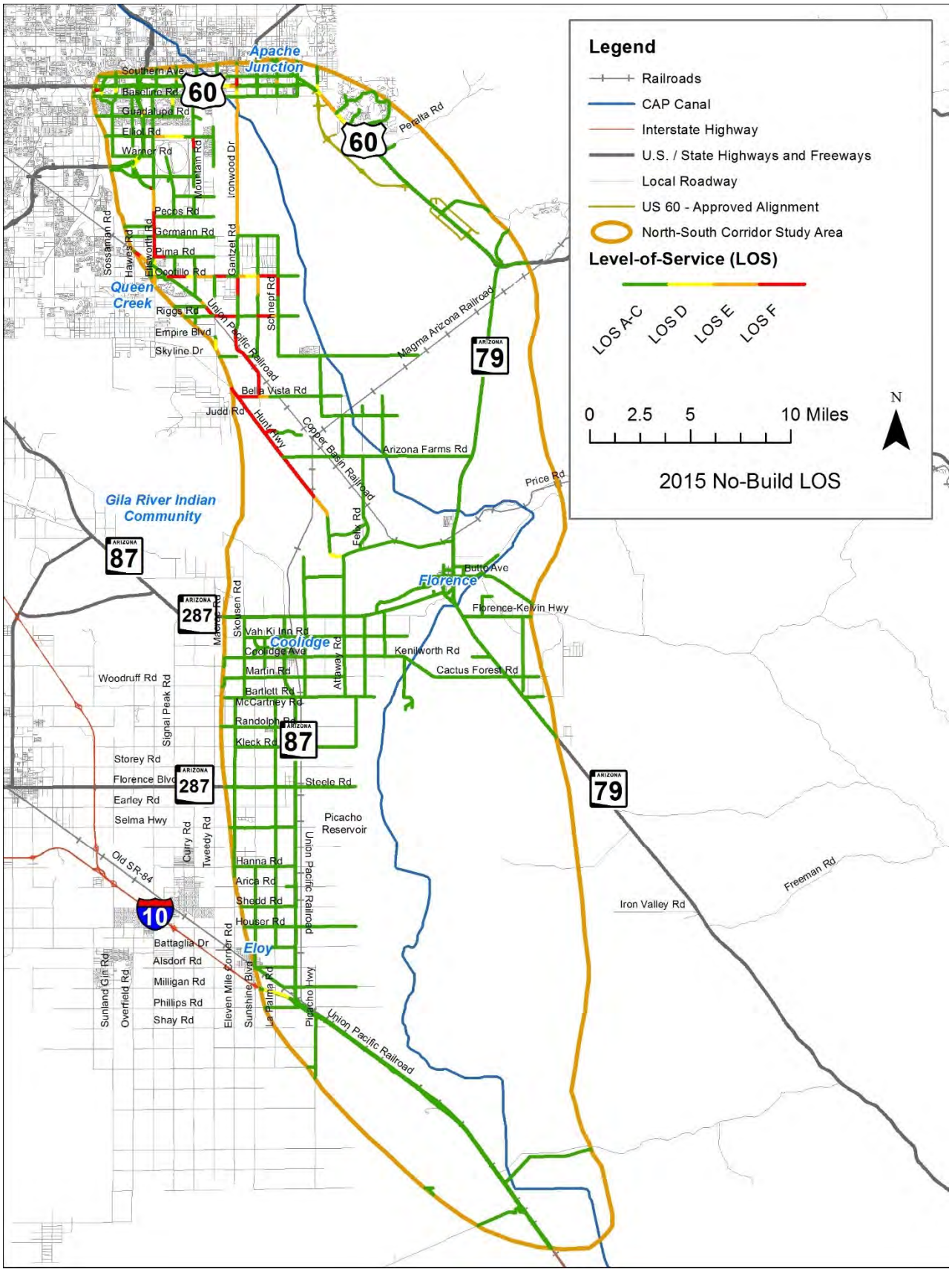
LOS A-C: V/C ≤ 0.72
LOS D: V/C > 0.72 & ≤ 0.84
LOS E: V/C > 0.84 & ≤ 1.00
LOS F: V/C > 1.00

The 2015 ADOT travel demand model traffic assignment results were evaluated to provide an indication of baseline traffic performance within the study area. The study area system performance results for all existing roadways the North-South corridor study area, in terms of vehicle-miles-traveled (VMT) and vehicle-hours-traveled (VHT) are summarized in Table 3. The results indicate that approximately 8% of roads within the study area (47 out of 613 miles) are congested.

Table 3. Existing Study Area Traffic Performance

Alternatives	Total VMT (daily)	Total VHT (daily)	Miles of Congested Roads
2015 Existing	5,002,600	108,900	47

Figure 7. 2015 Study Area-wide Performance



3 Future Conditions (2040)

3.1 2040 Socioeconomic and Land Use Forecast

3.1.1 Land Use

The study area is a mix of incorporated municipal and unincorporated county and Arizona State Land Department (ASLD) lands. Each incorporated municipality has an identified municipal planning area (MPA), which represents the respective municipality's area of planning concern and is based on the anticipated future incorporated boundaries of that municipality. The incorporation of these lands, and subsequent development, depends on annexation from the county or ASLD.

According to municipal and county land use plans, nearly 500,000 acres classified as agricultural or undeveloped today would be converted to residential and commercial development at full build-out development (there is no estimated timeframe for when full build-out will occur as it is dependent on the timing and intensity of development). According to these plans, future land use would be 50 percent residential and mixed use. Neighborhood land uses, which are a combination of residential and commercial with varying densities, would represent 13 percent of total study area lands.

Commercial land use is anticipated to increase to 14 percent, from less than 1 percent in existing conditions. Much of this commercial development would be concentrated in the northern part of the study area just south of Apache Junction, in and around the Phoenix-Mesa Gateway Airport, and in Coolidge where a new regional shopping area is planned. Open space areas would increase from under 1 percent to 13 percent. Most of the open space lands would be concentrated in the eastern and southern parts of the study area. Agricultural lands would decrease from approximately 20 percent under existing conditions to less than 1 percent.

3.1.2 Population and Employment Growth

Population and employment in the study area are expected to grow substantially by 2040. Existing and projected population and employment in Pinal, Pima, and Maricopa Counties (including those areas outside the study area) are presented in Table 4. There is significant population and employment growth forecast, particularly in Pinal County in terms of the percentage of growth.

Table 4. Population and Employment in Pima, Pinal, and Maricopa Counties, 2015 - 2040

Geographic area[a]	2015	2040	Percentage change
Population			
Pima County	1,009,371	1,276,700	26.5
Pinal County	406,468	800,700	97.0
Maricopa County	4,076,438	6,031,000	47.9
Employment			
Pima County	465,594	495,569	6.4
Pinal County	68,364	189,682	177.5
Maricopa County	1,923,012	2,863,967	48.9

Source: 2015 Population Estimates, Office of Employment & Population Statistics, Arizona Department of Administration, 2015.

2040 Population Projections, 2015-2050 State and County Population Projections, Office of Employment & Population Statistics, Arizona Department of Administration.

Employment Projections: ADOT Modeling & Forecasting Section (2017).

[a] includes all of Pima, Pinal, and Maricopa Counties

Within the study area, population and employment growth is summarized in Table 5. For the study area, existing population and employment numbers are available only from the current MPO projection series that reports figures in 10-year increments beginning in 2010. Population in the study area is projected to more than

double by 2040. Much of this growth will occur outside existing incorporated municipal limits but within identified MPAs. In their general plans, study area municipalities have identified how and to what extent land would be converted to support new residential development. In addition, these municipalities anticipate that a north-south transportation corridor would support and facilitate this growth.

Table 5. Study Area Population and Employment, 2010 – 2040

Demographic	2015	2040	Percentage change
Population	275,657	601,053	118.0
Employment	36,416	162,685	346.7

3.2 Travel Demand Model

Travel demand modeling was performed to forecast 2040 future travel demand conditions. The tasks included the development of a base highway network that is coded and input into the AZTDM2 travel demand model. The AZTDM2, maintained by ADOT, uses population and employment projections from the State Office of Employment and Population Statistics, metropolitan planning organizations, councils of governments, and other local agencies.

Development of the transportation network was based on input from stakeholders in the study area including MAG, SCMPO, and CAG. The base network represents their respective future transportation networks and long-range transportation plans.

Population and employment data assumed in the AZTDM2 travel demand model is shown graphically in Figures 8 and 9.

The future network was evaluated to determine what changes have occurred on RSRs in the study area. Improvements to principal corridors that are reflected in the 2040 network include:

- SR 287 is upgraded to a 4-lane cross-section west of Attaway Road
- Attaway Road is upgraded to a 4-lane cross-section
- Hunt Highway is upgraded to a 6-lane cross-section
- I-10 is upgraded to a 6-lane cross-section
- US 60 is upgraded to an 8-lane cross-section west of Ironwood Drive
- US 60 and SR 24 approved alignments

Figure 8. Population in the AZTDM2 Travel Demand Model, 2015 and 2040

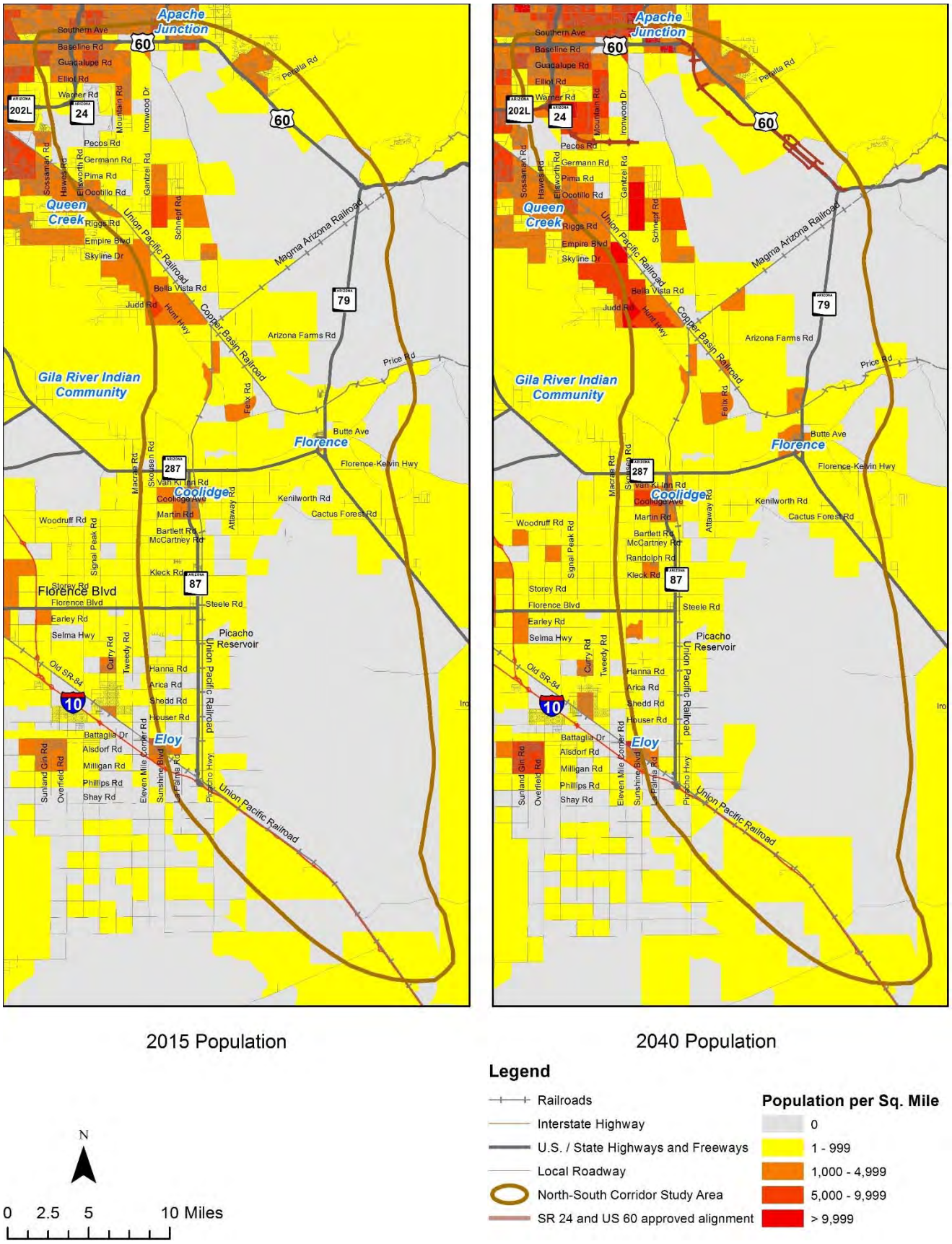
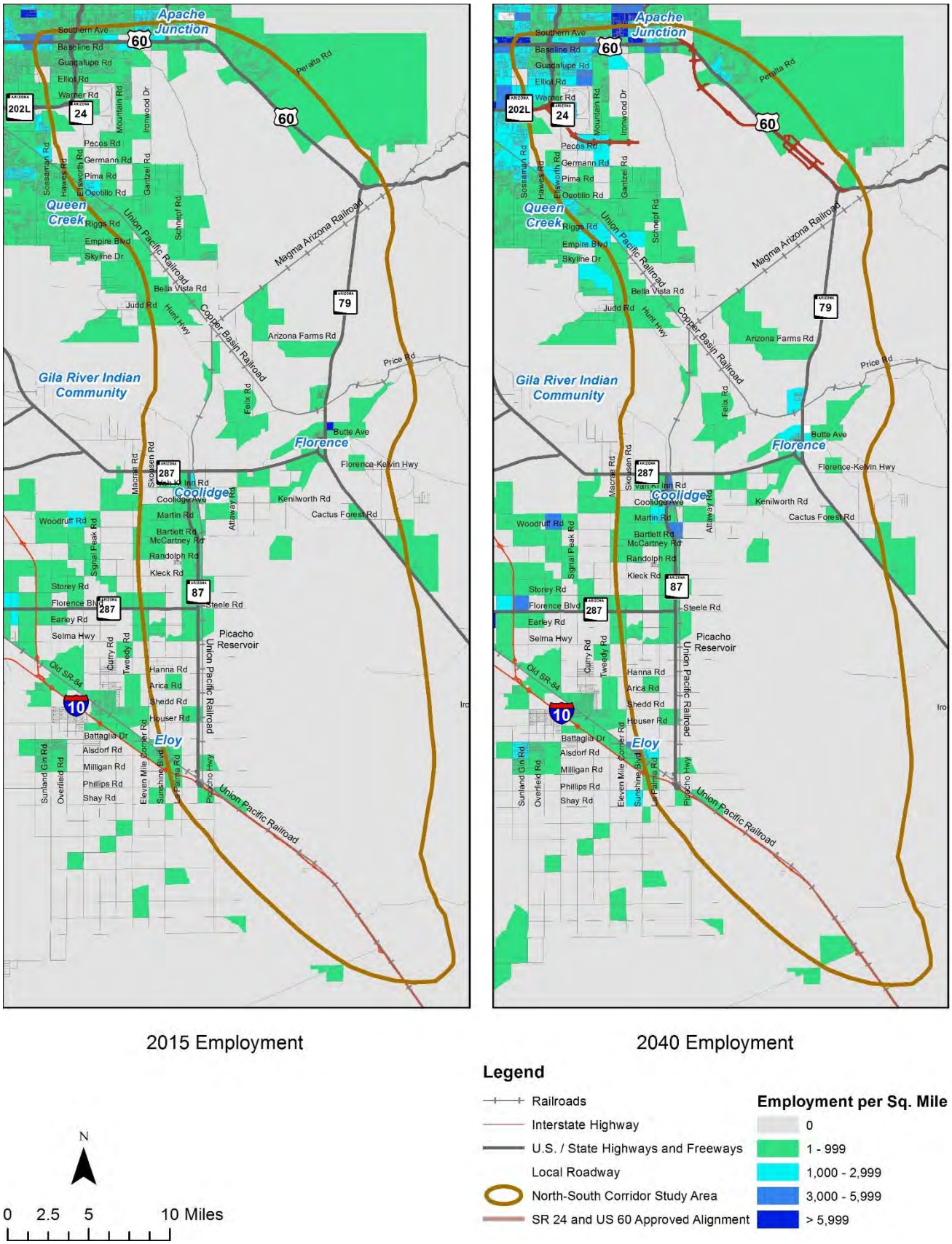


Figure 9. Employment in the AZTDM2 Travel Demand Model, 2015 and 2040



3.3 Travel Demand Model Calibration, Validation, and Reasonableness

This section describes ways that the AZTDM2 travel demand model is checked for accuracy. This information is excepted from *Development of the Arizona Statewide Travel Demand Model: Phase 2 (AZTDM2)* (2011).

Travel demand model calibration is a method of adjusting model parameters so that, when the models are applied to input data for a recent "base year", the number of people making each particular travel decision matches a "target".

After the model calibration, the model validation verifies the ability of the models to reproduce specific observations of travel patterns seen on the actual network, independent of the data used in the initial model development and estimation. Validation of AZTDM2 travel demand model was performed by comparing the results of the highway assignments to highway counts. After observing initial results from the highway validations, additional adjustments were made to key model components where the initial targets were at odds with the results from the validations to achieve a compromise that agreed with all sources to the greatest extent possible.

Each component (short distance person travel, long distance person travel, short distance truck travel, and long distance truck travel) of the AZTDM2 travel demand model contributes to the total travel in the state. The general strategy used to calibrate the model is to first calibrate the long-distance model components, because those can be compared to intercity volumes on major through-routes where long distance travel can be reasonably expected to dominate.

The long-distance traffic is then held as background traffic while the short distance models are calibrated. In the end, all are considered holistically.

3.3.1 Mode Share Assumptions

Mode choice is the process where the means of traveling is determined. A procedure in the travel demand model is used to convert to person-trips for the following modes:

- Drive alone
- Shared ride with 2 persons
- Shared ride with 3 or more persons
- Transit

The percent of trips assumed by transit varies according to the area type (central business district (CBD), urban, suburban, rural/small town CBD) and the trip purpose. After transit trips are factored out, a model is applied to choose the auto occupancy, which takes into account auto operating costs per mile, distance, value of time, and travel time specific to the mode. Person trips are later converted to vehicle trips.

3.3.2 Description of Forecast Uncertainties

3.3.2.1 ADOT Phoenix to Tucson Passenger Rail Study

Forecast uncertainties include the effect of passenger rail service on travel on the North-South corridor. There is currently no construction schedule and no funding identified for passenger rail system service between Tucson and Phoenix. Moving forward, the public and policymakers will decide how to generate the funding to pay for the project. Mode share for rail service is not included in the current AZTDM2 travel demand model.

3.3.2.2 Pinal Land Holdings

Pinal Land Holdings (PLH) proposes to construct a new inland port (Inland Port Arizona) and industrial site (Pinal Logistics Park) one quarter-mile east of SR 87 between Hanna Road and Houser Road, on land recently annexed into the City of Coolidge.

The proposed inland port and Pinal Logistics Park includes 1,493 acres and is to be constructed in three phases. According to the traffic impact analysis (*Traffic Impact Analysis, Inland Port Arizona & Pinal Logistics Park, State Route 87/Houser Road, December 2015*), Phase I of the development (opening year) is assumed to be constructed in 2020. Phase II is assumed to be constructed in 2025 and Phase III in 2030.

Trip generation and assumptions developed in the 2015 TIA for the full build-out scenario were reviewed to consider potential impacts to the North-South Corridor. For Phase 1 of the PLH development, 20,000 vehicles per day was forecasted. Phase 2 forecasted 40,144 vehicles per day, and Phase 3 forecasted 67,700 vehicles per day.

Applying the assumptions and trip distributions from the 2015 TIA, approximately 27% of forecasted trips, an additional 18,279 trips per day of Phase 3 (buildout) are anticipated to travel on the North-South Corridor from from/to the north to SR 24 or US 60. Approximately 35% of forecasted trips, an additional 23,695 trips per day of Phase 3, are assumed to travel from/to the south to I-10.

The results of the traffic analysis show that the North-South Corridor will be able to accommodate (under its definition as a six-lane, fully-access controlled freeway facility) the proposed PLH Inland Port development.

3.4 Proposed Functional Characteristics of the North-South Corridor

Attributes and characteristics of the Corridor were defined to facilitate an evaluation of route alternatives (recommended in the *Alternatives Selection Report* for further evaluation in the EIS phase of the Corridor Study) and an analysis of design year traffic operations. The project purpose and need are reviewed to functionally define the following key transportation features of the corridor. The corridor definition is subject to refinement as a result of further transportation studies in the study area.

3.4.1 Functional Classification

To accomplish its purpose and need, the Corridor will be a continuous transportation facility connecting US 60 in the vicinity of Apache Junction to I-10 in the vicinity of Eloy. Build-out population in the study area is expected to be approximately two million people, and studies of build-out conditions have recommended a fully access-controlled freeway facility. The corridor definition therefore includes a fully access-controlled freeway facility on the preferred route alternative selected in this phase of the Corridor Study.

3.4.2 Right-of-Way

The Tier 1 DEIS will identify a 1,500-foot wide alternative corridor; the Tier 2 study will define a 400-foot alignment within this corridor for the proposed facility.

A 400-foot right-of-way width is designed to accommodate both a fully accessed-controlled freeway and a passenger rail. The Corridor is included in the Locally Preferred Alternative (LPA) options for the Phoenix-to-Tucson passenger rail corridor.

This 400-foot right-of-way width was developed in consultation with the ADOT Passenger Rail Study.

The 400-foot right-of-way width also allows sufficient flexibility during corridor final design.

3.4.3 Design Year and Criteria

The design year for the Corridor is 2040. The northern portion of the study area (north of SR 287) is projected to experience higher development and urbanization than the southern portion of the study area. As such, the

northern reaches of the corridor may be designed and constructed as an urban freeway and the southern reaches as a rural freeway or other interim facility.

Preliminary design criteria for developing routes alternatives was prepared during the Tier 1 phase. Design criteria will be refined during the Tier 2 phase.

Both ADOT Roadway Design Guidelines (RDG) for urban and rural freeway facilities and design criteria for the passenger rail should be considered in establishing design criteria for the corridor. Generally, horizontal and vertical design criteria for the passenger rail will accommodate RDG design criteria for urban and rural freeways.

3.4.4 Number of Basic Lanes

Three basic freeway lanes in each direction are included in the corridor definition. A six-lane freeway facility provides sufficient corridor capacity to accommodate 2040 future growth and development, diversion of traffic during closures of I-10, during incidents/events on the Corridor which reduce capacity, and regional evacuation events.

3.4.5 Traffic Service Interchanges / System Interchanges

The corridor definition includes 14 “service” interchanges at the junction of access-controlled freeway and arterials and three “system” interchanges at the junction of three access-controlled freeways. Service interchanges are located at junctions with Pinal County Regionally Significant Routes, with consideration of desirable interchange spacing (2 to 3 miles). Service and system interchanges in the corridor definition are listed below from north to south (note: service interchange locations and some system interchanges are subject to change pending future transportation planning studies by MAG and ADOT). These interchange locations are:

- US 60 (system interchange)
- Elliot Road (service interchange)
- US 60 Bypass (service interchange, eastern alternative only)
- SR 24 (system interchange)
- Ocotillo Road (service interchange)
- Riggs Road (service interchange)
- Skyline Road (service interchange)
- Bella Vista Road (service interchange)
- Arizona Farms Road (service interchange)
- Hunt Highway (service interchange)
- SR 287 (service interchange)
- Martin Road (service interchange)
- Bartlett Road (service interchange)
- Kleck Road (service interchange)
- Steele Road (service interchange)
- Selma Highway (service interchange)
- Hanna Road (service interchange)
- Houser Road (service interchange)
- I-10 (system interchange)

4 Alternatives Evaluation

Modeled evaluation alternatives were prepared and modeled in the Arizona Statewide Travel Demand Model (AZTDM) to facilitate the evaluation of the eight alternatives (and options which allow for a total of forty different combinations of alternative route segments that could be incorporated into the recommended alternative).

Seven modeled evaluation alternatives were run to evaluate the eight EIS Action Alternatives and options. The EIS Action Alternatives, included in Appendix A, represent routes that are located in the western portion of the study area, eastern portion of the study area, and those that cross from east to west. EIS Action Alternatives also represent a northerly connection of SR 24 to the North-South Corridor, and a southerly connection of SR 24 to the North-South Corridor.

The seven modeled alternatives are depicted in Figure 10 through Figure 13. Table 6 lists the EIS Action Alternatives, the corresponding modeled alternative(s) used to develop the performance evaluation, and the corridor options within each alternative that comprise the selected model alternatives. Using the results of these model runs, the performance evaluation for each of the eight EIS Action Alternatives was derived. In some instances, the results are reported as a range to capture the differences resulting from the various options in Segments 1 (W1a and W1b for the western alternatives and E1a and E1b for the eastern alternative) and Segment 3 (the eastern alternative includes four options, E3a, E3b, E3c, and E3d). In Segment 3, the difference between the options E3a and E3c, and E3b and E3d, are insignificant from a traffic perspective; therefore, E3a and E3b results are representative of E3c and E3d, respectively.

Table 6. Modeled Evaluation Alternatives and Corridor Action Alternatives

Alternative	Description	Model	Modeled Corridor Action Alternatives			
			Segment 1	Segment 2	Segment 3	Segment 4
1	West connection to US 60[1] and west corridor in Segments 3, and 4	A	W1a	W2a	W3	W4
		D	W1b	W2a	W3	W4
2	West connection to US 60[1] with east corridor near Florence[2] and west connection to I-10	Composite with E	W1a, W1b	E2b	E3a	W4
		Composite with E2	W1a, W1b	E2b	E3b	W4
3	West connection to US 60[1] and east corridor near Florence[2] and east connection to I-10	Composite model result	W1a, W1b	E2b	E3a, E3b	E4
4	West connection to US 60[1] and west corridor near Coolidge and east connection to I-10	Composite model result	W1a, W1b	W2a	W3	E4
5	East connection to US 60[3] and west corridor in Segments 3, and 4	Composite model result	E1a, E1b	W2b	W3	W4
6	East connection to US 60 and east corridor near Florence[2] and west connection to I-10	Composite model result	E1a, E1b	E2a	E3a, E3b	W4
7	East connection to US 60[3] and east corridor near Florence[2] and east connection to I-10	C	E1a	E2a	E3a	E4
		B	E1b	E2a	E3a	E4
8	East connection to US 60[3] and west corridor near Coolidge and east connection to I-10	F	E1b	W2b	W3	E4

* Segment 2 is transition segment, allowing crossover from east to west and west to east.

Notes: Alternative E3a and E3b differ from Alternatives E3c and E3d, respectively, by less than one-tenth of a mile in length, and share interchanges and travel times; therefore, Alternative E3a and E3b are representative of Alternatives E3c and E3d, respectively

1. West connection to US 60 refers to the W1a and W1b Alternatives.
2. East connection near Florence refers to E3a (or E3c) and E3b (or E3d).
3. East connection to US 60 refers to the E1a and E1b Alternatives.

This chapter documents the performance evaluation of each of the action corridor alternatives, along with that of the 2040 No-Action Alternative in terms of their impact to:

- Reduce congestion on the RSR network (reduce 2040 v/c ratio on a defined RSR segment): RSR segments for which performance is evaluated were selected considering the RSR's connectivity to the North-South corridor and if the RSR segment serves as an alternative route to the North-South.

- Reduce the number of miles of congested roadways within the study area
- Reduce VMT (Vehicle-Miles Traveled) within the study area
- Reduce VHT (Vehicle-Hours Traveled) within the study area

In addition, the evaluation summary includes a qualitative description of the following:

1. Performance differences in Segment 1 between the eastern (E1a and E1b) and western (W1a and W1b) alternatives (e.g. does the choice of eastern or western options in Segment 1 impact corridor performance to the south)?
2. Performance differences to the north and south of Segment 3 for the eastern (E3a and E3b) alternatives and western (W1a) alternative.
3. Performance differences to the north of Segment 4 for the E4 and W4 Alternatives.

4.1 Traffic Safety

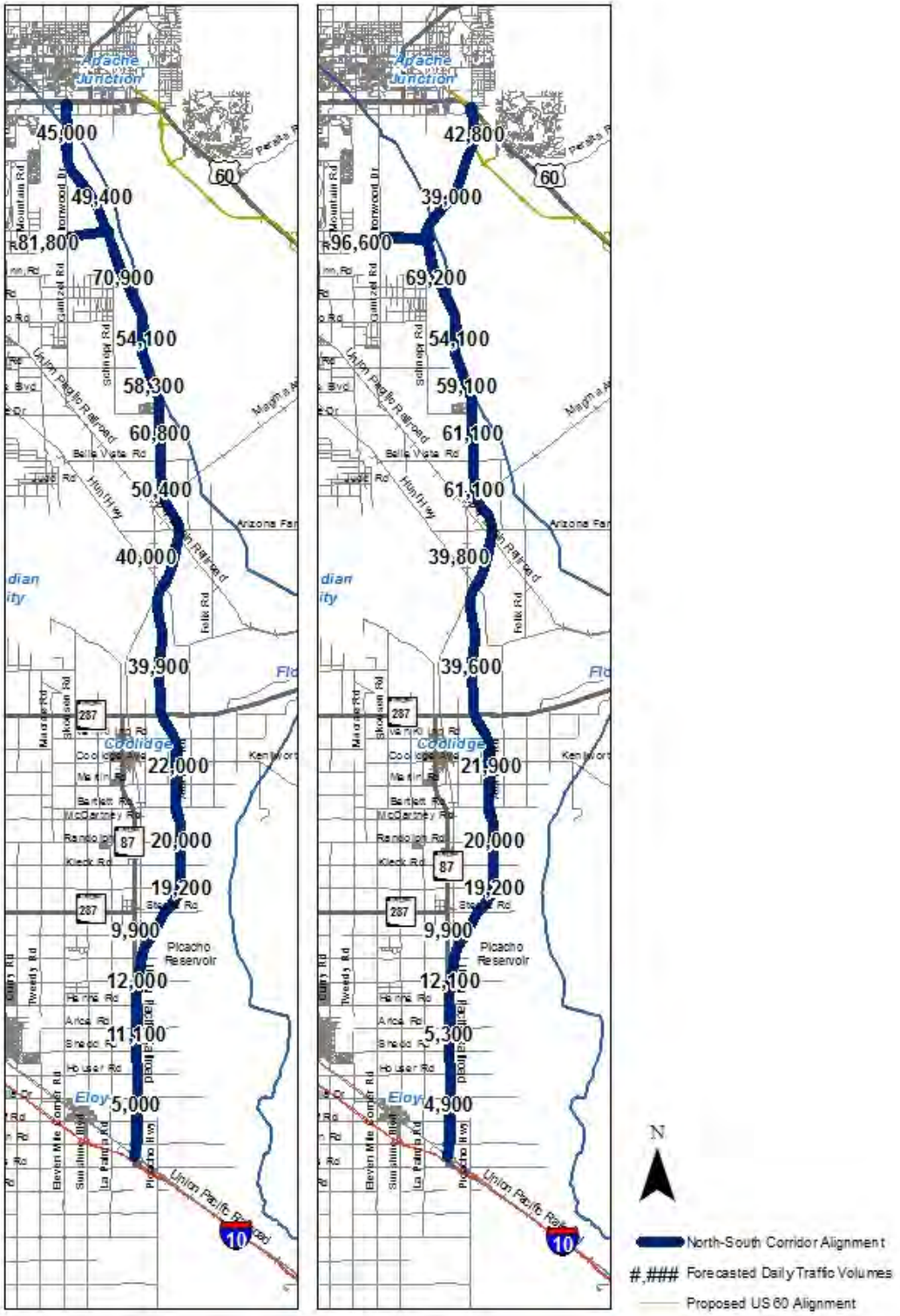
A detailed traffic safety analysis was not completed for the study area. Most the study area in which the Corridor will be constructed consists of undeveloped land void of improved roadways. Other portions of the Corridor will incorporate existing rural roadways. Rural roadways have higher crash rates than other types of roadways. Safety issues associated with rural roadways often include nighttime visibility, speeding, animal crossings, and fixed objects next to the roadway.

The Corridor is anticipated to decrease the number of crashes that occur on Pinal County RSR segments and other local streets as all Corridor alternatives will:

- Include a median-divided roadway
- Implement corridor access management (access provided at interchanges only)
- Separate higher-speed through traffic from local streets
- Incorporate other safety features such as delineation for horizontal curves, and longitudinal rumble strips and stripes
- Provide alternative route during incidents on I-10; Corridor alternatives will provide an alternative route with sufficient capacity to accommodate traffic volumes that would be diverted from I-10 between Eloy and Phoenix. Currently, no such alternative route exists. This will improve incident management during I-10 incidents, and reduce secondary crashes due to I-10 congestion during incidents.

Consideration of traffic safety will be an important element of future engineering and planning analysis. Safety should be considered as design criteria is established, and other design-level decisions such selection of interchange configurations.

Figure 10. North-South Modeled Alternatives A and D



EIS Action Alternative 1 with W1a (Modeled Alternative A)

EIS Action Alternative 1 with W1b (Modeled Alternative D)

Figure 11. North-South Modeled Alternatives E and E2

EIS Action Alternative 2 with E3a (Modeled Alternative E)

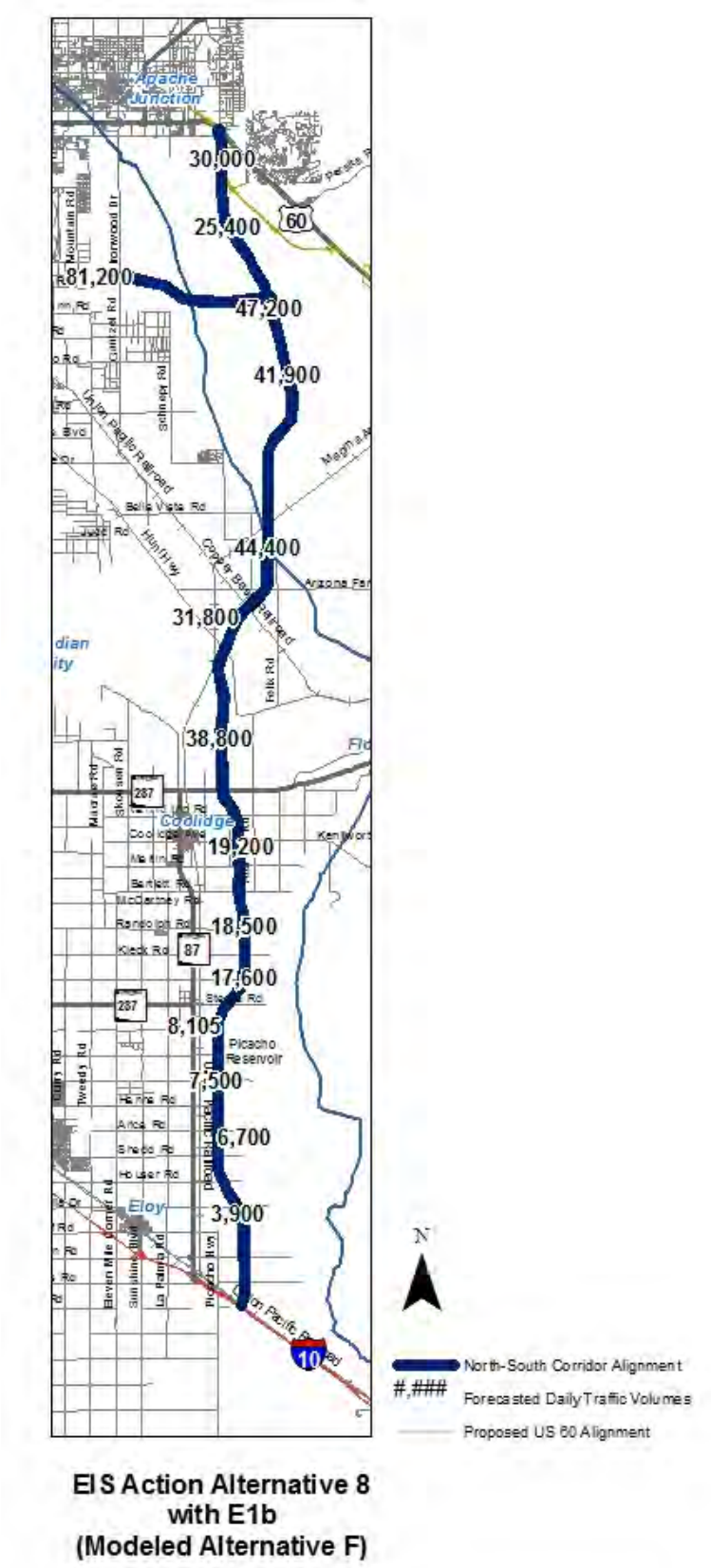
EIS Action Alternative 2 with E3b (Modeled Alternative E2)

Figure 12. North-South Modeled Alternatives B and C

EIS Action Alternative 7 with E1b (Modeled Alternative B)

EIS Action Alternative 7 with E3a (Modeled Alternative C)

Figure 13. North-South Modeled Alternatives F



4.2 2040 No-Action Alternative

The 2040 No-Action Alternative represents projected future traffic conditions without the Corridor.

The forecasted 2040 volumes for select RSR segments are summarized in Table 7. The 2040 results illustrate that the select RSRs are forecasted to have significant traffic growth compared to the 2015 traffic volumes. As shown, the model assignment indicates that many of the RSR segments are forecasted to experience poor LOS in terms of a volume-to-capacity relationship. A v/c ratio greater than 0.84 (LOS E) would indicate congestion.

Table 7. 2040 No-Action RSR Segments Comparison

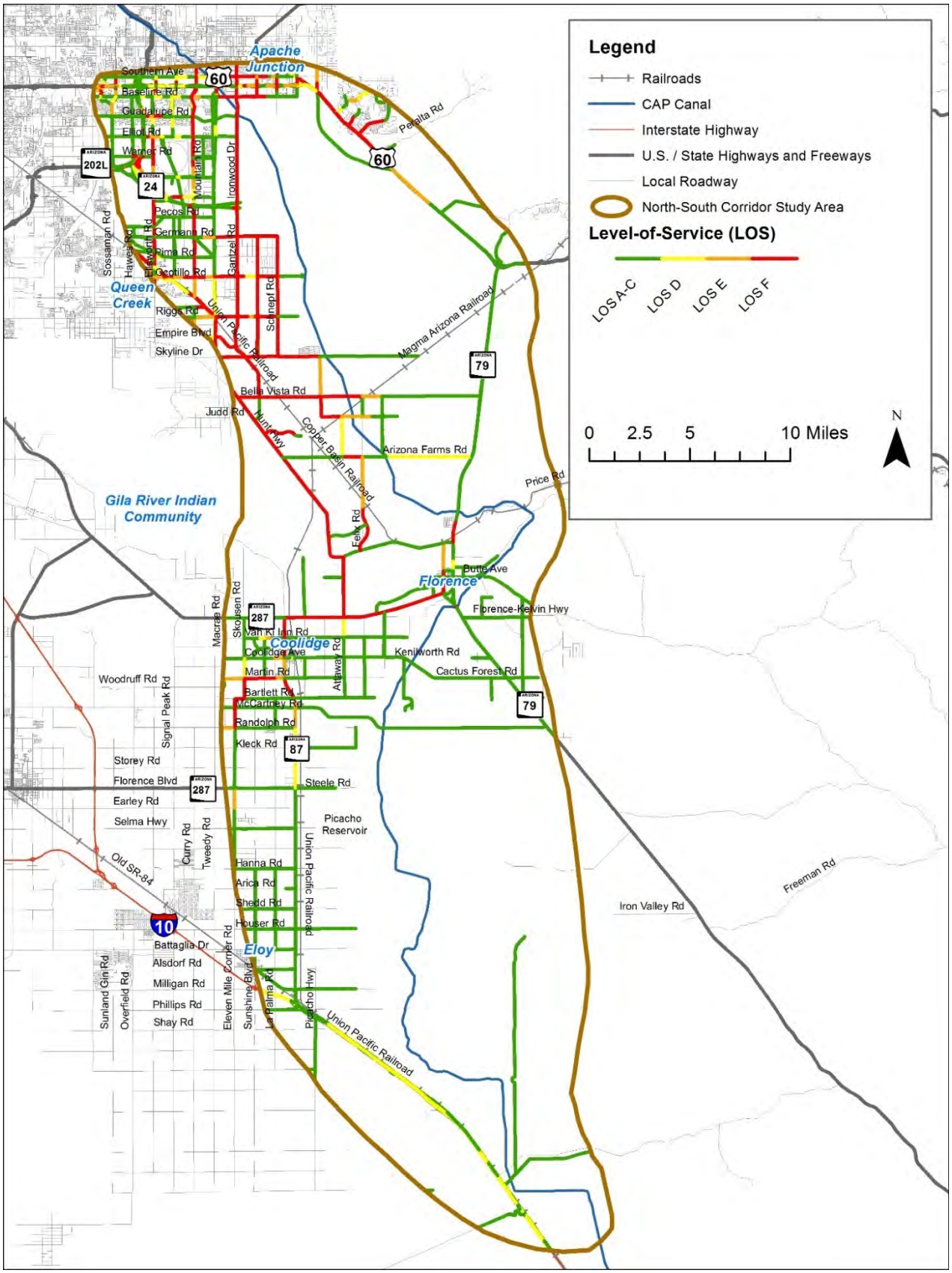
RSR Segment	Location	Existing (2015)	2040 No-Build		
		ADT	ADT	v/c	LOS
North-South RSRs					
Hunt Highway	Arizona Farms Road to Franklin Road	10,162	37,308	> 1.0	**LOS F**
SR 79	Hunt Highway to Diversion Dam Road	8,302	26,289	0.73	LOS D
Ironwood - Gantzel Road	Baseline Road to SR 24	17,377	26,752	> 1.0	**LOS F**
Schnepf Road	Combs Road to Skyline Drive	6,213	14,160	> 1.0	**LOS F**
Attaway Road	Hunt Highway to SR 287	4,135	25,593	> 1.0	**LOS F**
SR 87 (Arizona Boulevard)	Vah Ki Inn Road to Martin Road	7,532	36,556	> 1.0	**LOS F**
Hunt Highway	Belle Vista Road to Copper Mine Road	29,085	85,642	> 1.0	**LOS F**
East-West RSRs					
Riggs - Combs Road	Signal Butte Road to Schnepf Road	10,065	32,466	> 1.0	**LOS F**
Skyline Drive	Schnepf Road to Quail Run Lane	2,353	13,685	> 1.0	**LOS F**
Bella Vista Road	Gantzel Road to Quail Run Lane	6,196	10,648	> 1.0	**LOS F**
Arizona Farms Road	Hunt Highway to Copper Basin RR	2,611	6,502	0.65	LOS A-C
Coolidge Avenue	SR 87 to Attaway Road	2,323	6,276	0.62	LOS A-C
SR 287	Christenson Road to Attaway Road	10,952	41,435	> 1.0	LOS F
Selma highway	Eleven Mile Corner Road to SR 87	420	483	0.05	LOS A
US 60	Peralta Road to SR 79	13,929	24,799	0.68	LOS A-C
Ocotillo Road	Rittenhouse Road to Ironwood Drive	21,802	31,152	> 1.0	LOS F
SR 287	Attaway Road to Valley Farms Road	8,111	24,182	> 1.0	LOS F
I-10	Sunshine Boulevard to SR 87	56,500	96,000	0.79	LOS D

The results of a performance evaluation of the No-Action Alternative at a study area-wide level are summarized in **Table 8**. The total VMT (average weekday) within the defined study limits is forecasted to reach 12,626,500 miles. The VHT forecast is 372,800 hours. Congestion was determined using the v/c ratio equal to or greater than 0.84. According to the results, 185 miles of the 2040 network within the study area are forecasted to experience congestion as illustrated in Figure 14.

Table 8. Study area-wide Performance Measurements

Alternative	Total VMT (daily)	Total VHT (daily)	Miles of Congested Roads
2040 No-Action	12,626,500	372,800	185

Figure 14. 2040 No-Action Study Area-wide Performance



4.3 EIS Action Alternative 1 with W1a option

EIS Action Alternative 1 with the W1a option was modeled by Evaluation Alternative A. The north terminal is located at US 60 / Ironwood Drive and continues south along Ironwood Drive. The south terminal is located at I-10 / SR 87 and continues north along SR 87. The SR 24 extension connects to the Corridor from the west, just north of Pecos Road. Action Alternative 1 with the W1a option is illustrated in Figure 15.

Forecast 2040 volumes, v/c ratio, and LOS for RSR segments for EIS Action Alternative 1 with the W1a option are summarized in **Table** 9.

Table 9. EIS Action Alternative 1 with the W1a option, 2040 RSR Segments Comparison

RSR Segment	Location	2040 No-Action	2040 Alternative A		
		ADT	ADT	v/c	LOS
North-South RSRs					
Hunt Highway	Arizona Farms Road to Franklin Road	37,308	33,879	> 1.0	**LOS F**
SR 79	Hunt Highway to Diversion Dam Road	26,289	24,264	0.67	LOS A-C
Ironwood - Gantzel Road	Baseline Road to SR 24	26,752	10,019	0.5	LOS A-C
Schnepf Road	Combs Road to Skyline Drive	14,160	9,313	0.93	**LOS E**
Attaway Road	Hunt Highway to SR 287	25,593	4,611	0.23	LOS A-C
SR 87 (Arizona Boulevard)	Vah Ki Inn Road to Martin Road	36,556	29,923	0.83	LOS D
Hunt Highway	Belle Vista Road to Copper Mine Road	85,642	72,748	> 1.0	**LOS F**
East-West RSRs					
Riggs - Combs Road	Signal Butte Road to Schnept Road	32,466	11,600	> 1.0	**LOS F**
Skyline Drive	Schnept Road to Quail Run Lane	13,685	4,200	0.42	LOS A-C
Bella Vista Road	Gantzel Road to Quail Run Lane	10,648	30,000	0.83	LOS D
Arizona Farms Road	Hunt Highway to Copper Basin RR	6,502	7,00	0.70	LOS A-C
Coolidge Avenue	SR 87 to Attaway Road	6,276	23,500	0.65	LOS A-C
SR 287	Christenson Road to Attaway Road	41,435	29,300	> 1.0	**LOS F**
Selma highway	Eleven Mile Corner Road to SR 87	483	1,297	0.13	LOS A-C
US 60	Peralta Road to SR 79	24,799	23,496	0.65	LOS A-C
Ocotillo Road	Rittenhouse Road to Ironwood Drive	31,152	29,294	> 1.0	**LOS F**
SR 287	Attaway Road to Valley Farms Road	24,182	24,193	> 1.0	**LOS F**
I-10	Sunshine Boulevard to SR 87	96,000	94,400	0.78	LOS D

The results of a performance evaluation at a study area-wide level are summarized in Table 10. The total VMT within the defined study limits is forecasted to increase to 13,645,800 miles. The VHT forecast is 339,800 hours. According to the results, 153 miles of the 2040 network within the study limits are forecasted to experience congestion (LOS E or LOS F) as illustrated in Figure 16**.**

Table 10. EIS Action Alternative 1 with the W1a option, 2040 Study Area-wide and Corridor Performance

	Total VMT (daily)	Total VHT (daily)	Miles of Congested Roads
Study Area-wide Performance			
• EIS Action Alternative 1 with W1a Option	13,645,800	339,800	153
• 2040 No-Action	12,626,500	372,800	185
Corridor Performance			
• EIS Action Alternative 1 with W1a Option	1,659,477	27,146	-

Figure 15. EIS Action Alternative 1 with W1a option, 2040 Daily Traffic Volume

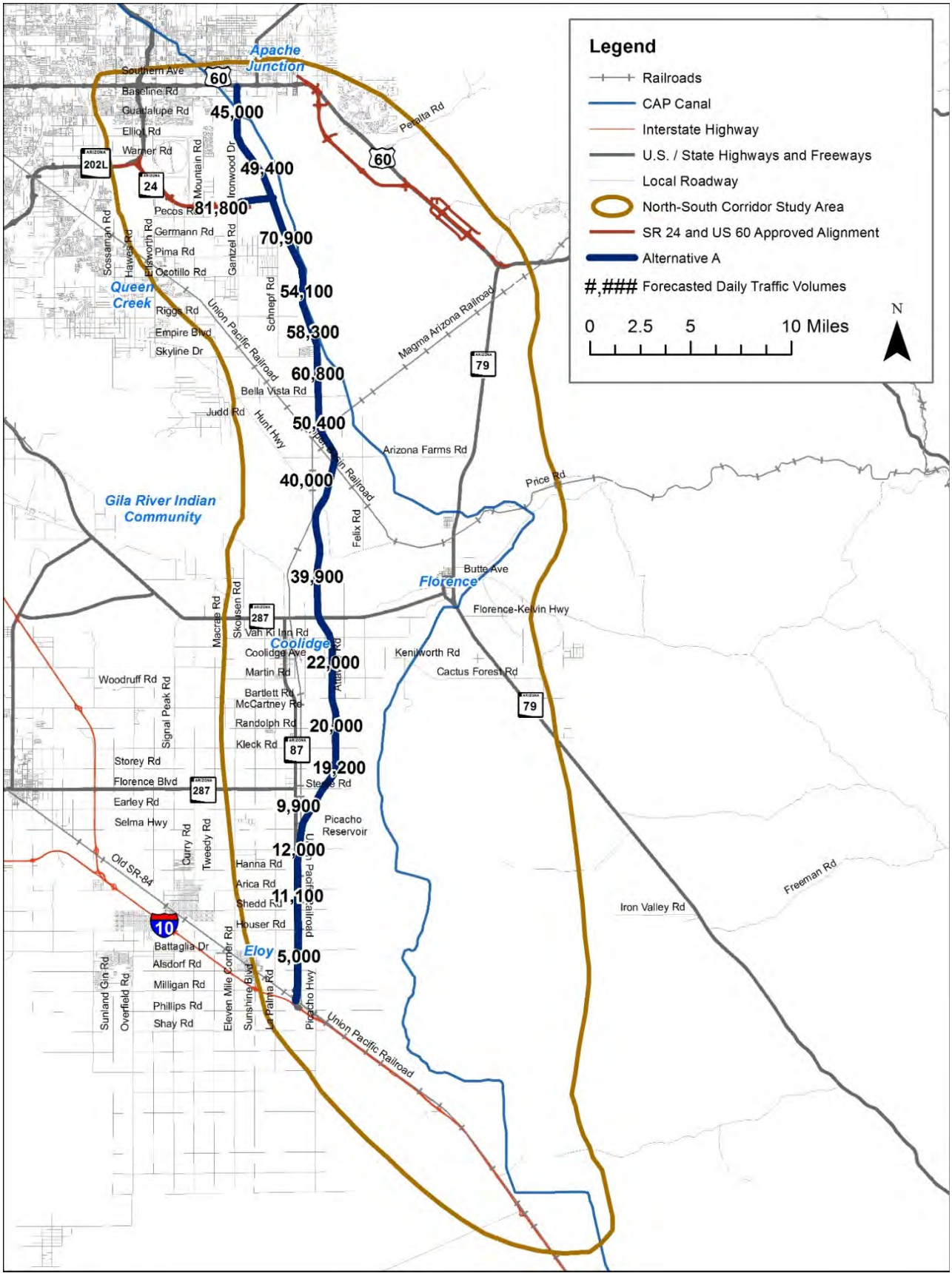
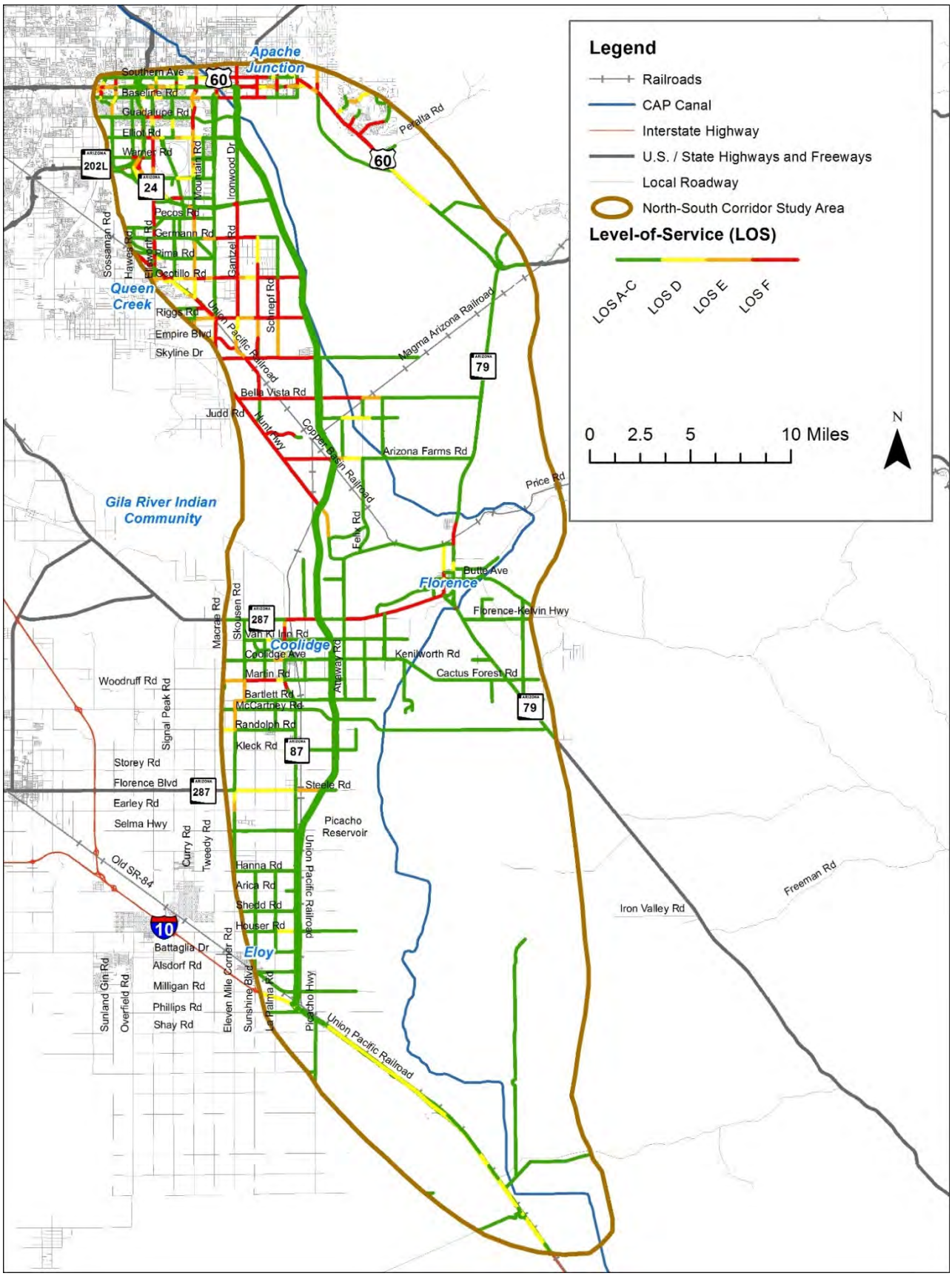


Figure 16. 2040 EIS Action Alternative 1 with W1a option, Study Area Performance



4.4 EIS Action Alternative 1 with W1b option

EIS Action Alternative 1 with W1b option was modeled by Evaluation Alternative D. The north terminal is located at US 60, east of Goldfield Road. The south terminal is located at I-10 / SR 87 and continues north along SR 87. The SR 24 extension connects to the Corridor from the west just north of Pecos Road.

EIS Action Alternative 1 with the W1b option is illustrated in **Figure** 17. The forecast 2040 volumes, v/c ratio, and LOS for selected RSR segments are summarized in **Table** 11.

Table 11. EIS Action Alternative 1 with the W1b option, 2040 RSR Segments Comparison

Corridor	Location	2040 No-Action	2040 Alternative D		
		ADT	ADT	v/c	LOS
North-South RSRs					
Hunt Highway	Arizona Farms Road to Franklin Road	37,308	33,851	> 1.0	**LOS F**
SR 79	Hunt Highway to Diversion Dam Road	26,289	24,213	0.67	LOS A-C
Ironwood - Gantzel Road	Baseline Road to SR 24	26,752	15,063	0.75	LOS D
Schnepf Road	Combs Road to Skyline Drive	14,160	9,289	0.93	**LOS E**
Attaway Road	Hunt Highway to SR 287	25,593	4,641	0.23	LOS A-C
SR 87 (Arizona Boulevard)	Vah Ki Inn Road to Martin Road	36,556	29,907	0.83	LOS D
Hunt Highway	Belle Vista Road to Copper Mine Road	85,642	72,721	> 1.0	**LOS F**
East-West RSRs					
Riggs - Combs Road	Signal Butte Road to Schnept Road	32,466	31,154	> 1.0	**LOS F**
Skyline Drive	Schnept Road to Quail Run Lane	13,685	11,336	> 1.0	**LOS F**
Bella Vista Road	Gantzel Road to Quail Run Lane	10,648	17,169	> 1.0	**LOS F**
Arizona Farms Road	Hunt Highway to Copper Basin RR	6,502	11,899	> 1.0	**LOS F**
Coolidge Avenue	SR 87 to Attaway Road	6,276	4,233	0.42	LOS A-C
SR 287	Christenson Road to Attaway Road	41,435	30,028	0.83	LOS D
Selma highway	Eleven Mile Corner Road to SR 87	483	1,288	0.13	LOS A-C
US 60	Perlalta Road to SR 79	24,799	23,825	0.66	LOS A-C
Ocotillo Road	Rittenhouse Road to Ironwood Drive	31,152	29,479	> 1.0	**LOS F**
SR 287	Attaway Road to Valley Farms Road	24,182	24,205	>1.0	**LOS F**
I-10	Sunshine Boulevard to SR 87	96,000	94,500	0.79	LOS D

The results of a performance evaluation at a study area-wide level are summarized in Table 12. The total VMT within the study area is forecasted to increase to 13,693,500 miles. The VHT forecast is 341,300 hours. The results show that 154 miles of the 2040 network are forecasted to experience congestion as illustrated in **Figure** 18**.**

Table 12. EIS Action Alternative 1 with the W1b option, 2040 Study Area-wide and Corridor Performance

	Total VMT (daily)	Total VHT (daily)	Miles of Congested Roads
Study Area-wide Performance			
• EIS Action Alternative 1 with W1b Option	13,693,500	341,300	154
• 2040 No-Action	12,626,500	372,800	185
Corridor Performance			
• EIS Action Alternative 1 with W1b Option	1,601,983	26,0389	-

Figure 17. EIS Action Alternative 1 with W1b option

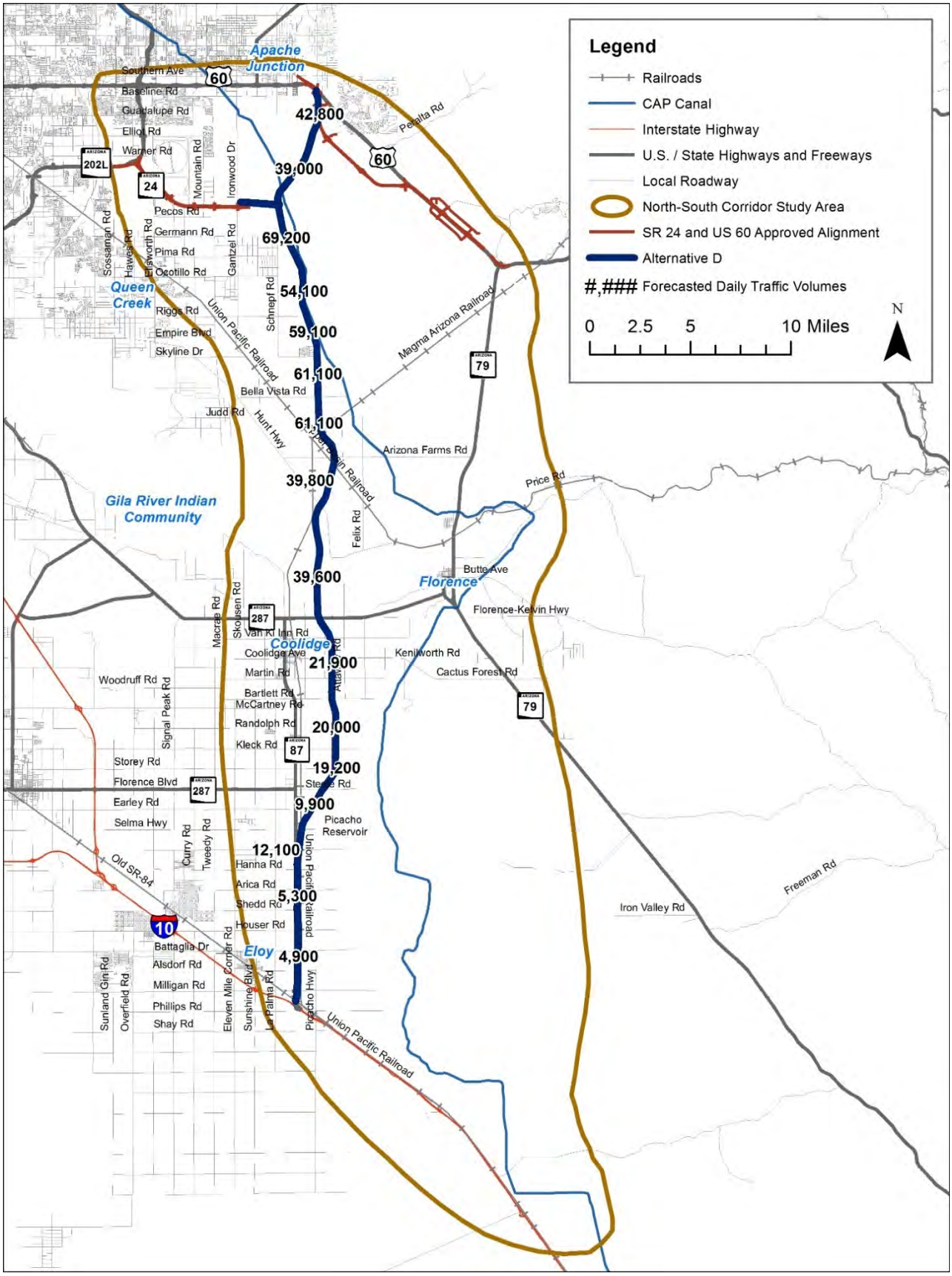
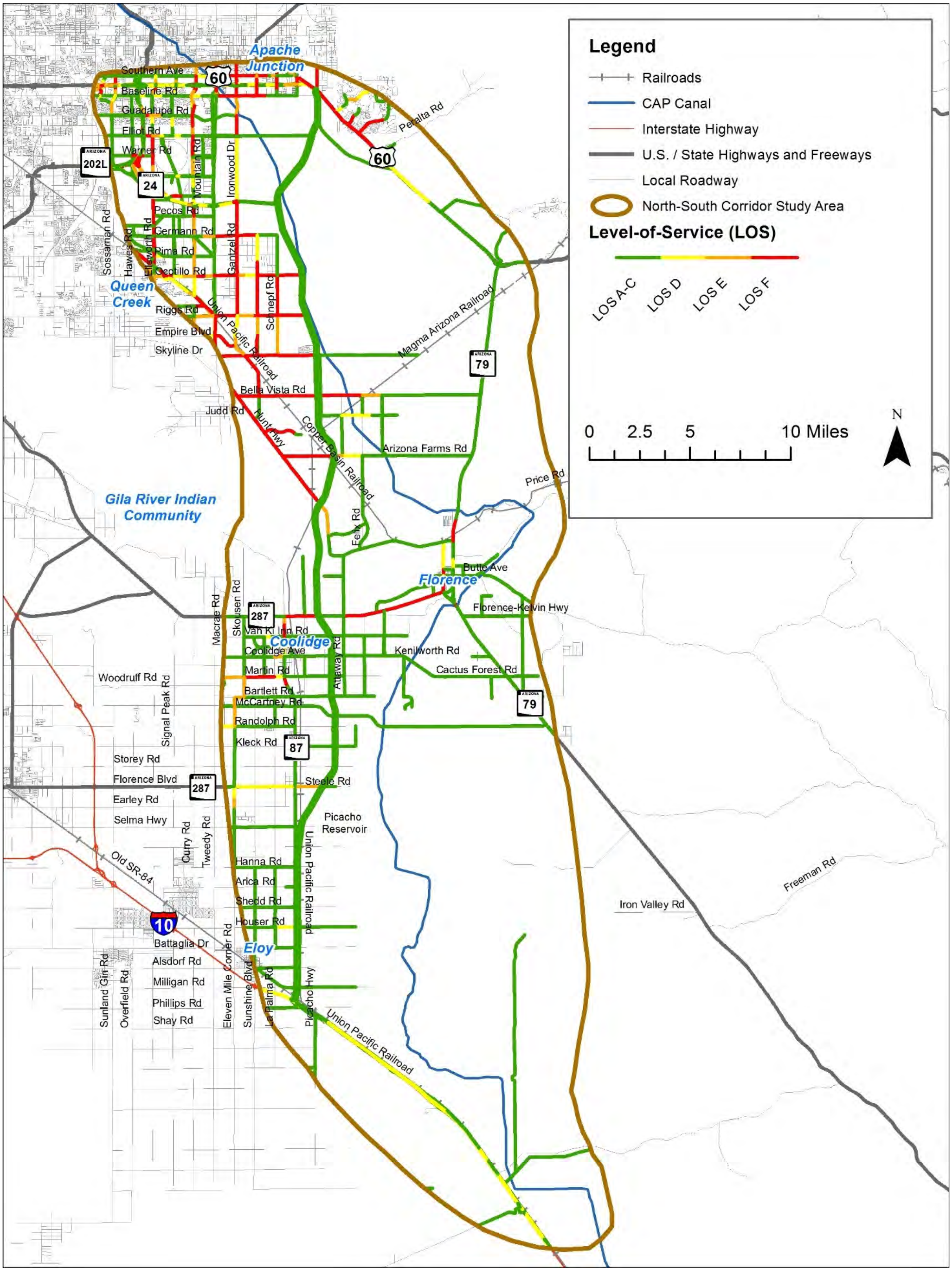


Figure 18. EIS Action Alternative 1 with W1b option, 2040 Study Area Performance



4.5 EIS Action Alternative 2 with W1a and E3a options

EIS Action Alternative 2 with W1a and E3a options was modeled by Evaluation Alternative E. The north terminal is located at US 60 / Ironwood Drive and continues south along Ironwood Drive. The south terminal is located at I-10 / SR 87 and continues north along SR 87. The SR 24 extension connects to the Corridor from the west, just north of Pecos Road.

EIS Action Alternative 2 with W1a and E3a options is illustrated in Figure 19.

The forecast 2040 volumes, v/c ratio, and LOS for selected RSR segments are summarized in **Table** 13.

Table 13. EIS Action Alternative 2 with W1a and E3a options, 2040 RSR Segments Comparison

Corridor	Location	2040 No-Action	2040 Alternative D		
		ADT	ADT	v/c	LOS
North-South RSRs					
Hunt Highway	Arizona Farms Road to Franklin Road	37,308	29,731	0.99	**LOS F**
SR 79	Hunt Highway to Diversion Dam Road	26,289	26,184	0.83	LOS D
Ironwood - Gantzel Road	Baseline Road to SR 24	26,752	9,435	0.47	LOS A-C
Schnepf Road	Combs Road to Skyline Drive	14,160	9,156	0.92	**LOS E**
Attaway Road	Hunt Highway to SR 287	25,593	18,951	0.95	**LOS E**
SR 87 (Arizona Boulevard)	Vah Ki Inn Road to Martin Road	36,556	29,922	0.83	LOS D
Hunt Highway	Belle Vista Road to Copper Mine Road	85,642	77,509	> 1.0	**LOS F**
East-West RSRs					
Riggs - Combs Road	Signal Butte Road to Schnept Road	32,466	30,479	> 1.0	**LOS F**
Skyline Drive	Schnept Road to Quail Run Lane	13,685	10,984	> 1.0	**LOS F**
Bella Vista Road	Gantzel Road to Quail Run Lane	10,648	20,323	> 1.0	**LOS F**
Arizona Farms Road	Hunt Highway to Copper Basin RR	6,502	9,641	0.96	**LOS E**
Coolidge Avenue	SR 87 to Attaway Road	6,276	5,026	0.5	LOS A-C
SR 287	Christenson Road to Attaway Road	41,435	31,986	0.89	LOS D
Selma highway	Eleven Mile Corner Road to SR 87	483	1,544	0.15	LOS A-C
US 60	Perlalta Road to SR 79	24,799	23,033	0.64	LOS A-C
Ocotillo Road	Rittenhouse Road to Ironwood Drive	31,152	29,183	> 1.0	**LOS F**
SR 287	Attaway Road to Valley Farms Road	24,182	19,656	> 1.0	**LOS F**
I-10	Sunshine Boulevard to SR 87	96,000	94,700	0.79	LOS D

The results of a performance evaluation at a study area-wide level are summarized in **Table** 14. Total VMT within the study limits is forecasted to increase to 13,417,084 miles. The VHT forecast is 339,568 hours. The results show 161 miles of the 2040 network are forecasted to experience congestion as illustrated in **Figure** 20**.**

Table 14. EIS Action Alternative 2 with W1a and E3a options, 2040 Study Area-wide and Corridor Performance

	Total VMT (daily)	Total VHT (daily)	Miles of Congested Roads
Study Area-wide Performance			
• EIS Action Alternative 1 with W1a and E3a Options	13,417,100	339,600	161
• 2040 No-Action	12,626,500	372,800	185
Corridor Performance			
• EIS Action Alternative 1 with W1a and E3a Options	1,477,826	23,925	-

Figure 19. EIS Action Alternative 2 with W1a and E3a options, 2040 Daily Traffic Volumes

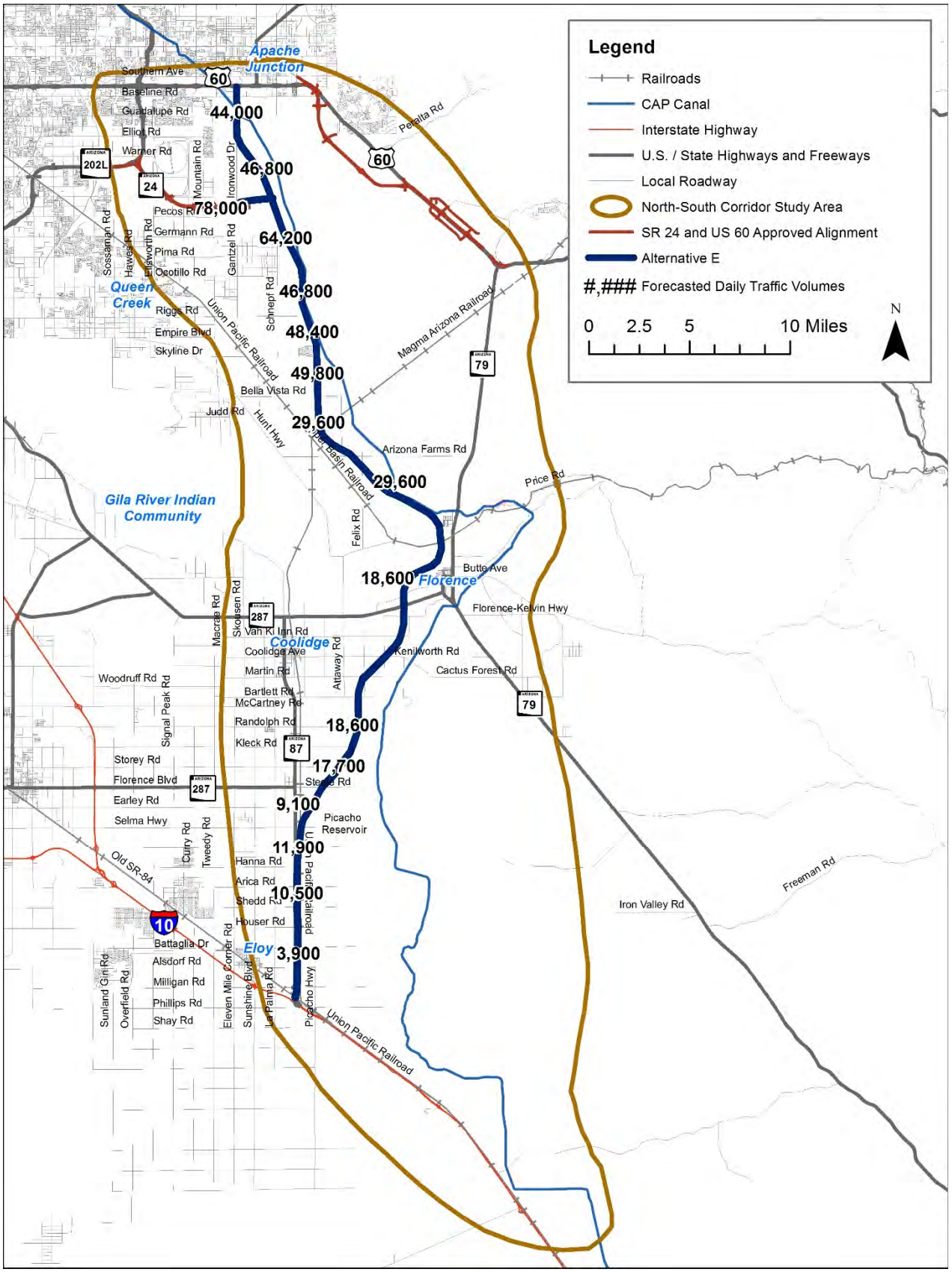
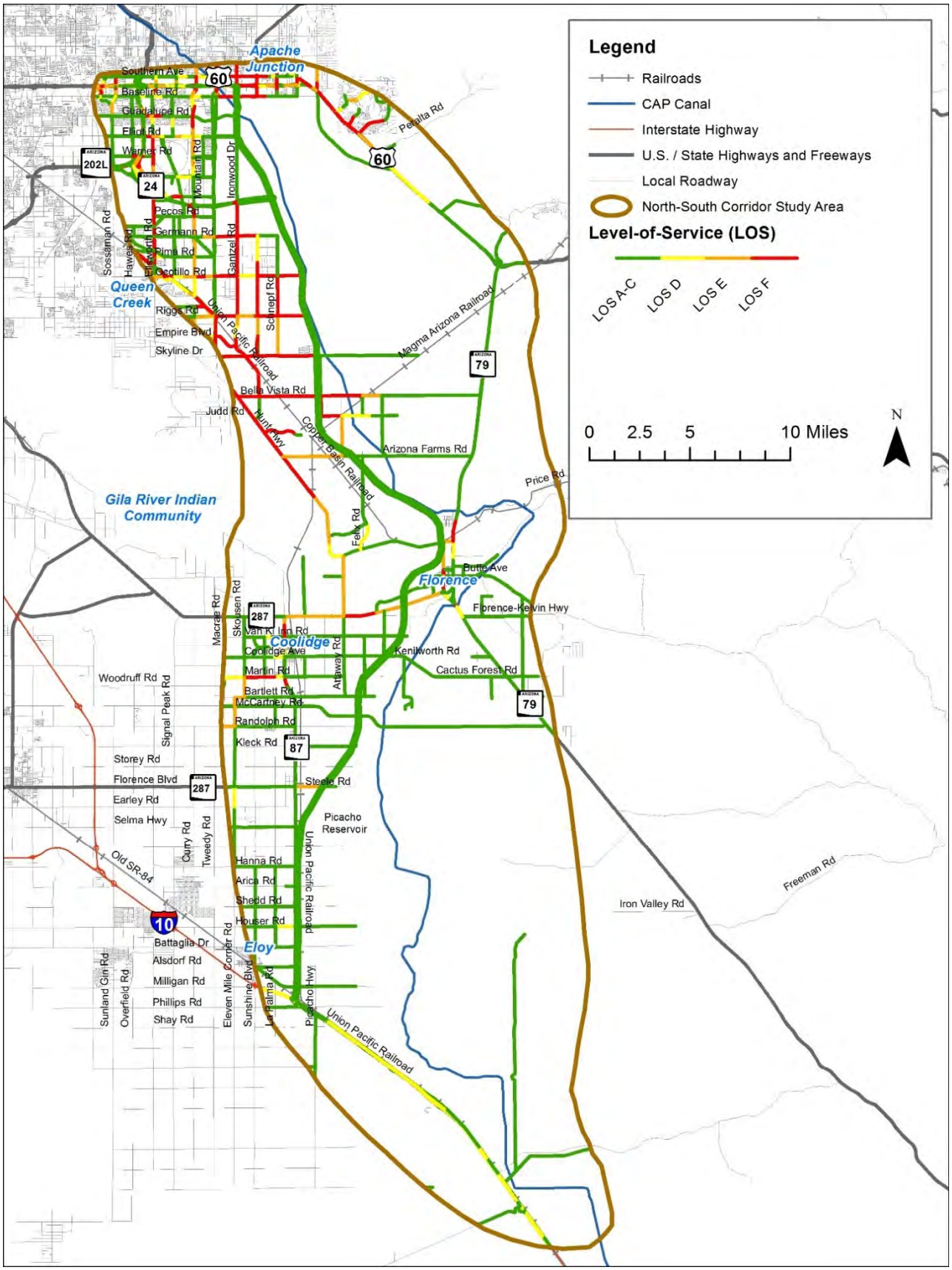


Figure 20. EIS Action Alternative 2 with W1a and E3a options , 2040 Study Area Performance



4.6 EIS Action Alternative 2 with W1a and E3b options

EIS Action Alternative 2 with W1a and E3b options was modeled by Evaluation Alternative E2. The north terminal is located on US 60, east of Goldfield Road. The south terminus follows SR 87 to the junction with I-10. is located at I-10 just east of SR 87 and continues parallel to SR 87. The SR 24 extension connects to the Corridor from the west along Ocotillo Road.

EIS Action Alternative 2 with W1a and E3b options is illustrated in Figure 21.

The forecast 2040 volumes, v/c ratio, and LOS for selected RSR segments are summarized in **Table** 15.

Table 15. EIS Action Alternative 2 with W1a and E3b options 2040 Segments Comparison

Corridor	Location	2040 No-Action	2040 Alternative D		
		ADT	ADT	v/c	LOS
North-South RSRs					
Hunt Highway	Arizona Farms Road to Franklin Road	37,308	29,731	0.99	**LOS F**
SR 79	Hunt Highway to Diversion Dam Road	26,289	26,184	0.83	LOS D
Ironwood - Gantzel Road	Baseline Road to SR 24	26,752	9,435	0.47	LOS A-C
Schnepf Road	Combs Road to Skyline Drive	14,160	9,156	0.92	**LOS E**
Attaway Road	Hunt Highway to SR 287	25,593	18,951	0.95	**LOS E**
SR 87 (Arizona Boulevard)	Vah Ki Inn Road to Martin Road	36,556	29,922	0.83	LOS D
Hunt Highway	Belle Vista Road to Copper Mine Road	85,642	77,509	> 1.0	**LOS F**
East-West RSRs					
Riggs - Combs Road	Signal Butte Road to Schnept Road	32,466	30,486	2.49	**LOS F**
Skyline Drive	Schnept Road to Quail Run Lane	13,685	11,078	1.11	**LOS F**
Bella Vista Road	Gantzel Road to Quail Run Lane	10,648	18,926	1.89	**LOS F**
Arizona Farms Road	Hunt Highway to Copper Basin RR	6,502	9,534	0.95	**LOS E**
Coolidge Avenue	SR 87 to Attaway Road	6,276	4,945	0.49	LOS A-C
SR 287	Christenson Road to Attaway Road	41,435	31,159	0.87	LOS D
Selma highway	Eleven Mile Corner Road to SR 87	483	1,547	0.15	LOS A-C
US 60	Perlalta Road to SR 79	24,799	23,914	0.66	LOS A-C
Ocotillo Road	Rittenhouse Road to Ironwood Drive	31,152	29,177	1.59	**LOS F**
SR 287	Attaway Road to Valley Farms Road	24,182	18,175	1	**LOS F**
I-10	Sunshine Boulevard to SR 87	96,000	94,300	0.79	LOS D

The results of a performance evaluation at a study area-wide level are summarized in **Table** 16. The total VMT within the defined study limits is forecasted to increase to 13,469,265 miles. The VHT forecast is 339,673 hours. According to the results, 156 miles of the 2040 network within the study limits are forecasted to experience congestion as illustrated in **Figure** 22**.**

Table 16. EIS Action Alternative 2 with W1a and E3b options, 2040 Study Area-wide and Corridor Performance

	Total VMT (daily)	Total VHT (daily)	Miles of Congested Roads
Study Area-wide Performance			
• EIS Action Alternative 1 with W1a and E3b Options	13,469,265	339,700	156
• 2040 No-Action	12,626,500	372,800	185
Corridor Performance			
• EIS Action Alternative 1 with W1a and E3b Options	1,483,234	23,860	-

Figure 21. EIS Action Alternative 2 with W1a and E3b options, 2040 Daily Traffic Volumes

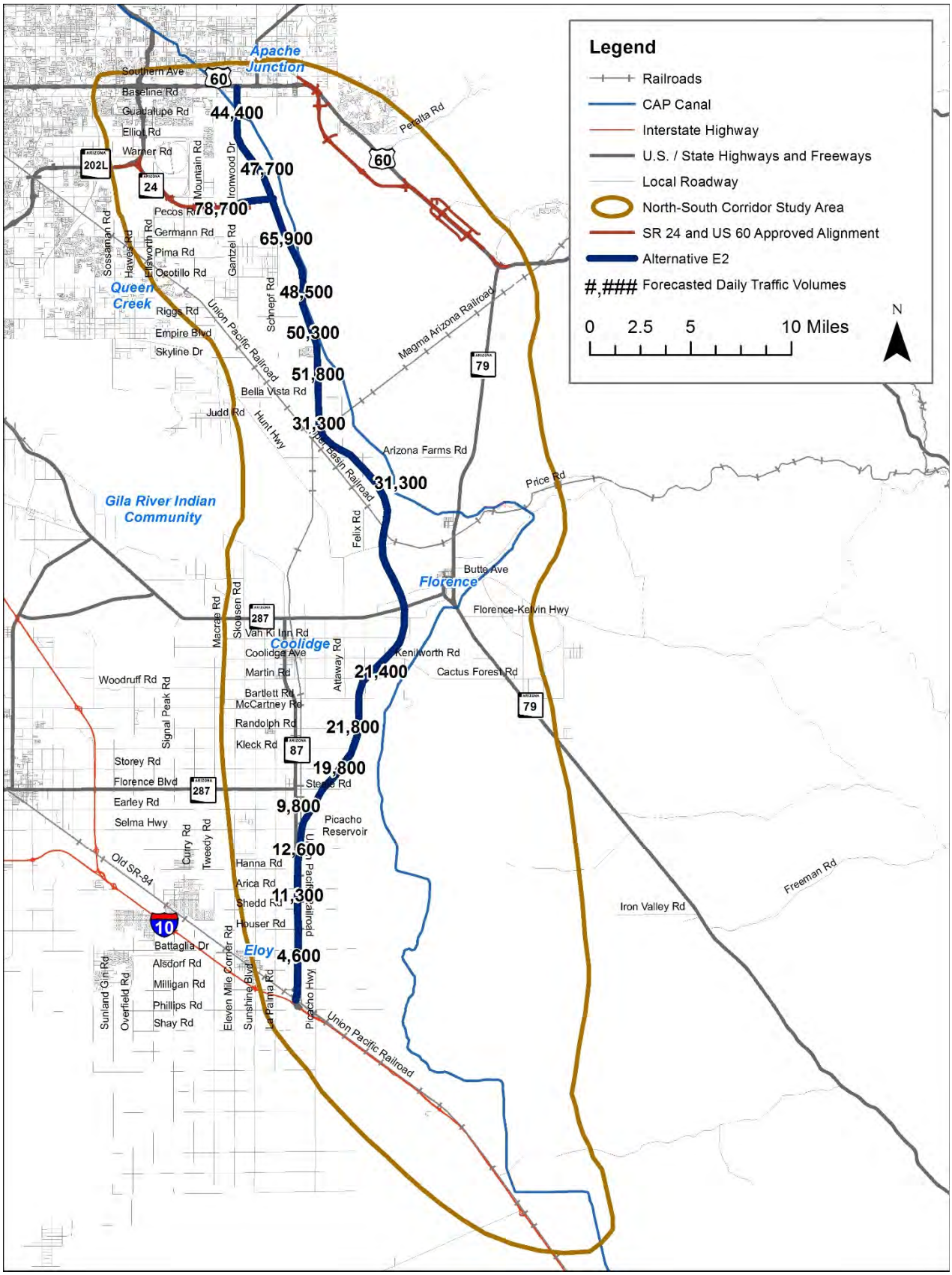
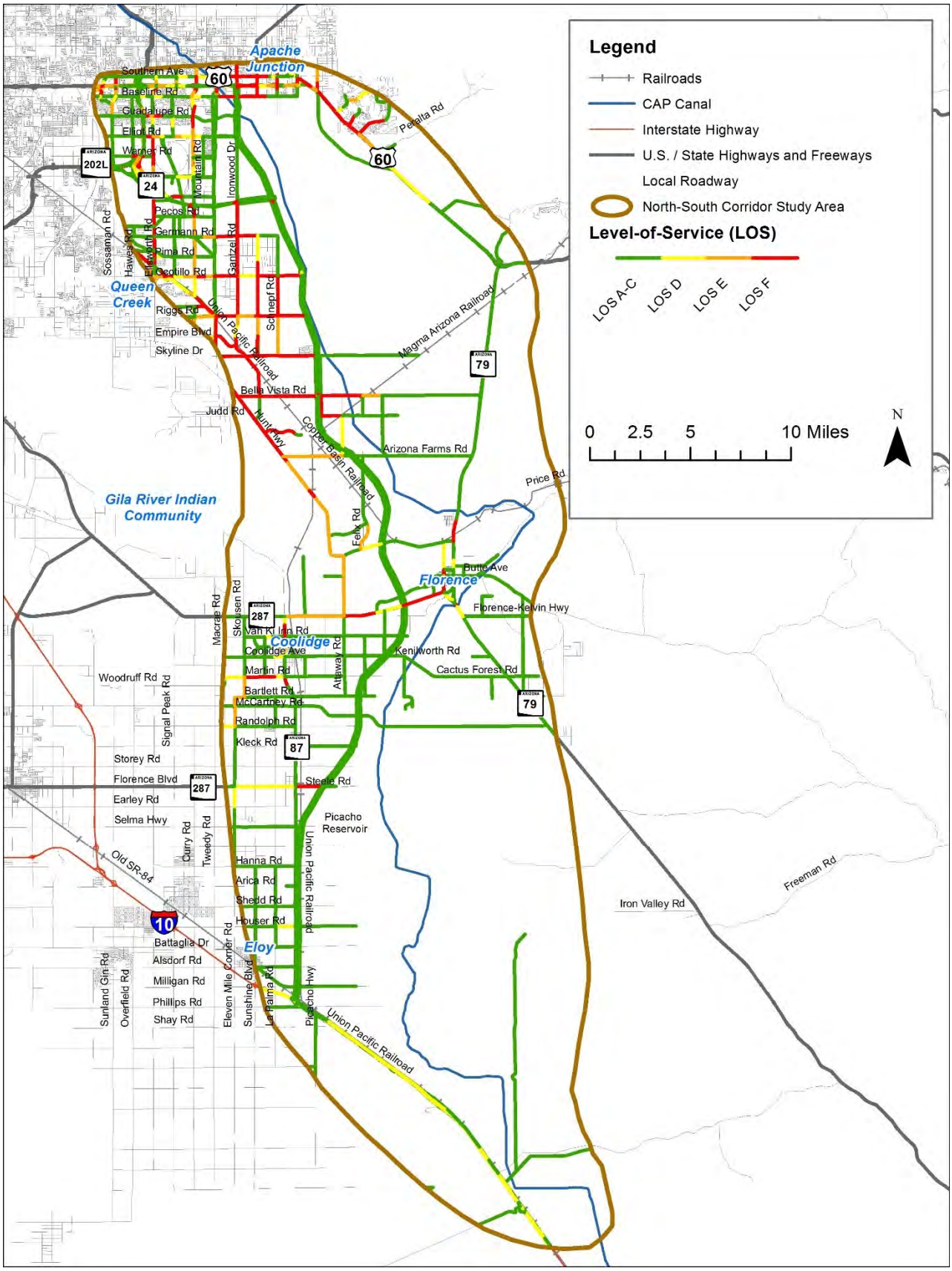


Figure 22. EIS Action Alternative 2 with W1a and E3b options, Study Area Performance



4.7 EIS Action Alternative 7 with E1b and E3a options

EIS Action Alternative 7 with E1b and E3a options was modeled by Evaluation Alternative B. The north terminal is located at the far east of US 60, east of Goldfield Road. The south terminal is located at I-10 just east of SR 87 and continues parallel to SR 87. The SR 24 extension connects to the Corridor from the west just north of Pecos Road. EIS Action Alternative 7 with the E1b and E3a options is illustrated in Figure 23.The forecast 2040 volumes, v/c ratio, and LOS for selected RSR segments for EIS Action Alternative 7 are summarized in **Table** 17.

Table 17. EIS Action Alternative 7 with E1b and E3a options, 2040 RSR Segments Comparison

Corridor	Location	2040 No-Action	2040 Alternative D		
		ADT	ADT	v/c	LOS
North-South RSRs					
Hunt Highway	Arizona Farms Road to Franklin Road	37,308	31,057	> 1.0	**LOS F**
SR 79	Hunt Highway to Diversion Dam Road	26,289	27,737	0.77	LOS D
Ironwood - Gantzel Road	Baseline Road to SR 24	26,752	16,845	0.84	**LOS E**
Schnepf Road	Combs Road to Skyline Drive	14,160	10,948	> 1.0	**LOS F**
Attaway Road	Hunt Highway to SR 287	25,593	19,423	0.97	**LOS E**
SR 87 (Arizona Boulevard)	Vah Ki Inn Road to Martin Road	36,556	30,983	0.86	**LOS E**
Hunt Highway	Belle Vista Road to Copper Mine Road	85,642	77,955	> 1.0	**LOS F**
East-West RSRs					
Riggs - Combs Road	Signal Butte Road to Schnept Road	32,466	30,782	> 1.0	**LOS F**
Skyline Drive	Schnept Road to Quail Run Lane	13,685	12,356	> 1.0	**LOS F**
Bella Vista Road	Gantzel Road to Quail Run Lane	10,648	16,092	> 1.0	**LOS F**
Arizona Farms Road	Hunt Highway to Copper Basin RR	6,502	10,669	> 1.0	**LOS F**
Coolidge Avenue	SR 87 to Attaway Road	6,276	4,653	0.47	LOS A-C
SR 287	Christenson Road to Attaway Road	41,435	32,792	0.91	**LOS E**
Selma highway	Eleven Mile Corner Road to SR 87	483	1,242	0.12	LOS A-C
US 60	Perlalta Road to SR 79	24,799	23,236	0.64	LOS A-C
Ocotillo Road	Rittenhouse Road to Ironwood Drive	31,152	29,641	> 1.0	**LOS F**
SR 287	Attaway Road to Valley Farms Road	24,182	20,298	> 1.0	**LOS F**
I-10	Sunshine Boulevard to SR 87	96,000	94,600	0.79	LOS D

The results of a performance evaluation at a study area-wide level are summarized in Table 18. Total VMT within the study limits will increase to 13,415,300 miles. The VHT forecast is 347,400 hours. The results show 174 miles of the 2040 network are forecasted to experience congestion as illustrated in Figure 24**.**

Table 18. EIS Action Alternative 7 with E1b and E3a options, 2040 Study Area-wide and Corridor Performance

	Total VMT (daily)	Total VHT (daily)	Miles of Congested Roads
Study Area-wide Performance			
• EIS Action Alternative 7 with E1b and E3a options	13,415,300	347,400	174
• 2040 No-Action	12,626,500	372,800	185
Corridor Performance			
• EIS Action Alternative 7 with E1b and E3a options	1,028,322	16,114	-

Figure 23. EIS Action Alternative 7 with E1b and E3a options, 2040 Daily Traffic Volumes

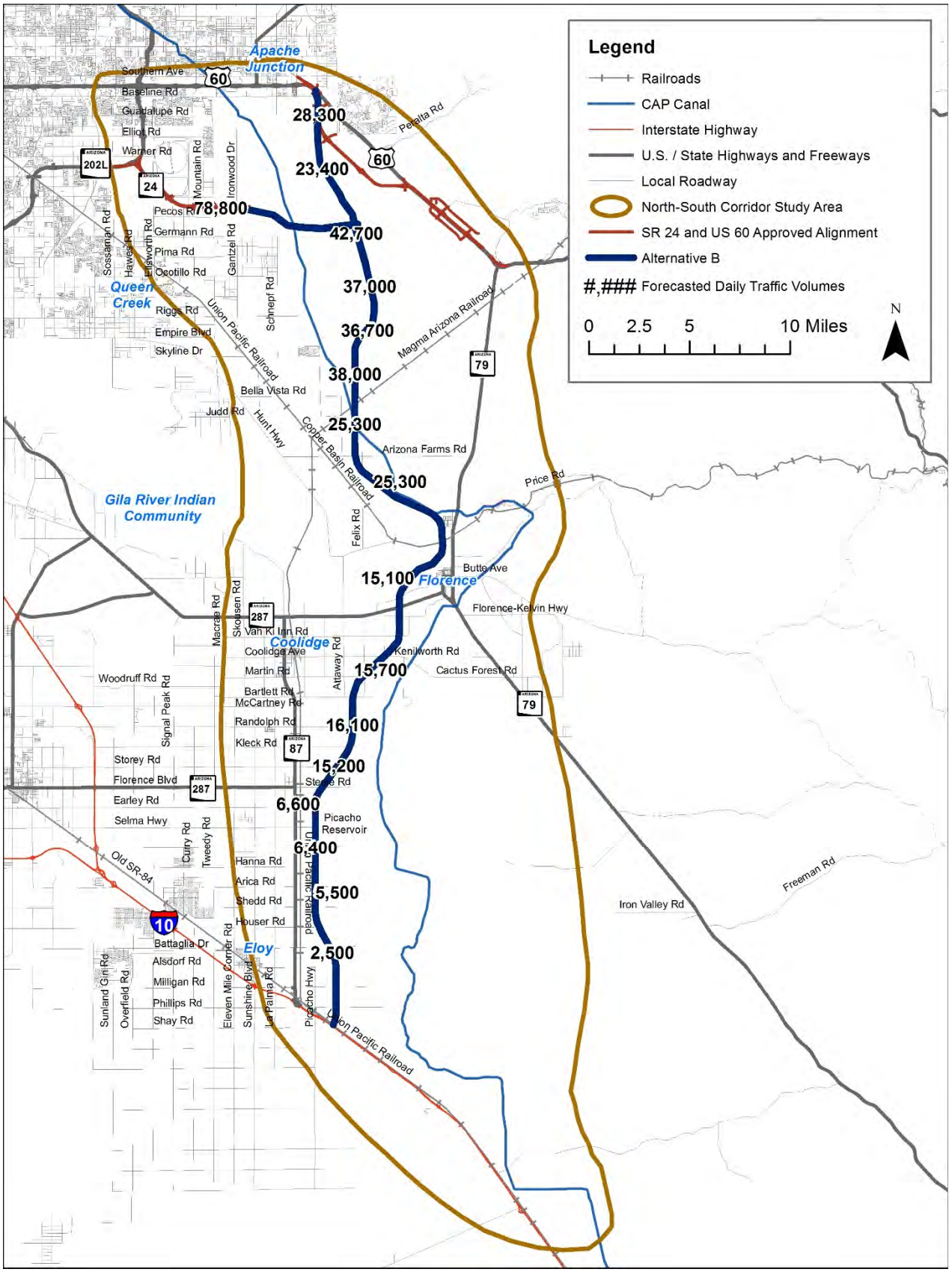
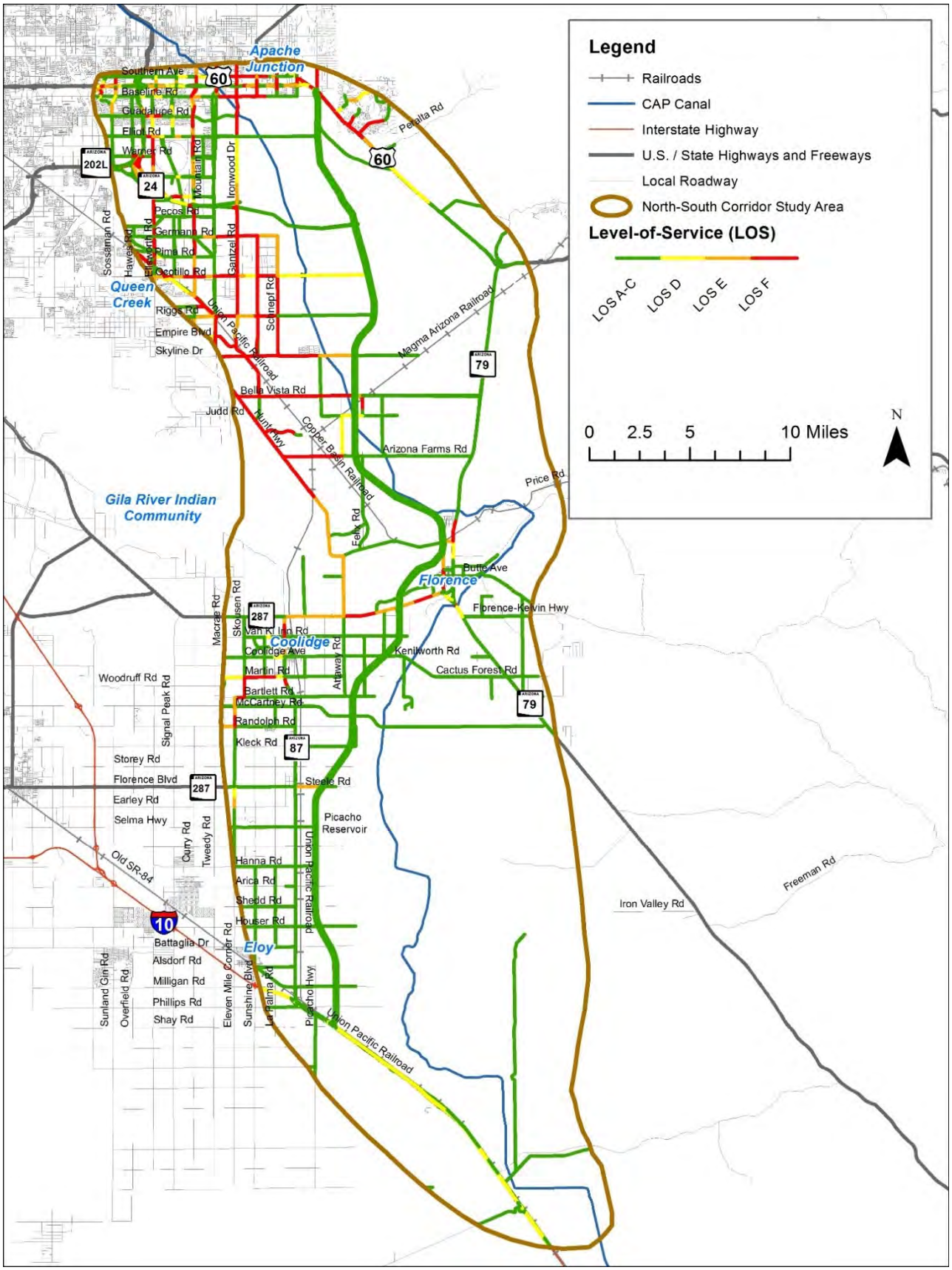


Figure 24. EIS Action Alternative 7 with E1b and E3a options, 2040 Study Area Performance



4.8 EIS Action Alternative 7 with E1a and E3a options

EIS Action Alternative 7 with E1a and E3a options was modeled by Evaluation Alternative C. The south terminal is located at I-10 just east of SR 87 and continues parallel to SR 87. The north terminal is located on US 60, east of Goldfield Rd. The SR 24 extension connects to the Corridor from the west along Ocotillo Rd. EIS Action Alternative 7 with E1a and E3a options is illustrated in **Figure** 25. The forecast 2040 volumes, v/c ratio, and LOS for selected RSR segments are summarized in **Table** 19.

Table 19. EIS Action Alternative 7 with E1a and E3a options 2040 RSR Segments Comparison

Corridor	Location	2040 No-Action	2040 Alternative D		
		ADT	ADT	v/c	LOS
North-South RSRs					
Hunt Highway	Arizona Farms Road to Franklin Road	37,308	30,998	> 1.0	**LOS F**
SR 79	Hunt Highway to Diversion Dam Road	26,289	27,703	0.77	LOS D
Ironwood - Gantzel Road	Baseline Road to SR 24	26,752	19,027	0.95	**LOS E**
Schnepf Road	Combs Road to Skyline Drive	14,160	11,045	> 1.0	**LOS F**
Attaway Road	Hunt Highway to SR 287	25,593	19,360	0.96	**LOS E**
SR 87 (Arizona Boulevard)	Vah Ki Inn Road to Martin Road	36,556	30,984	0.86	**LOS E**
Hunt Highway	Belle Vista Road to Copper Mine Road	85,642	77,988	> 1.0	**LOS F**
East-West RSRs					
Riggs - Combs Road	Signal Butte Road to Schnept Road	32,466	30,805	> 1.0	**LOS F**
Skyline Drive	Schnept Road to Quail Run Lane	13,685	12,354	> 1.0	**LOS F**
Bella Vista Road	Gantzel Road to Quail Run Lane	10,648	15,842	> 1.0	**LOS F**
Arizona Farms Road	Hunt Highway to Copper Basin RR	6,502	10,722	> 1.0	**LOS F**
Coolidge Avenue	SR 87 to Attaway Road	6,276	4,646	0.46	LOS A-C
SR 287	Christenson Road to Attaway Road	41,435	32,752	0.91	**LOS E**
Selma highway	Eleven Mile Corner Road to SR 87	483	1,228	0.12	LOS A-C
US 60	Perlalta Road to SR 79	24,799	23,236	0.65	LOS A-C
Ocotillo Road	Rittenhouse Road to Ironwood Drive	31,152	29,351	> 1.0	**LOS F**
SR 287	Attaway Road to Valley Farms Road	24,182	20,308	> 1.0	**LOS F**
I-10	Sunshine Boulevard to SR 87	96,000	94,600	0.79	LOS D

The results of a performance evaluation at a study area-wide level are summarized in Table 20. Total VMT within the study limits will increase to 13,397,700 miles. The VHT forecast is 345,500 hours. The results show 174 miles of the 2040 network within the study limits will experience congestion as illustrated in **Figure** 26.

Table 20. EIS Action Alternative 7 with E1a and E3a options, 2040 Study Area-wide and Corridor Performance

	Total VMT (daily)	Total VHT (daily)	Miles of Congested Roads
Study Area-wide Performance			
• EIS Action Alternative 7 with E1a and E3a Options	13,397,700	345,500	174
• 2040 No-Action	12,626,500	372,800	185
Corridor Performance			
• EIS Action Alternative 7 with E1a and E3a Options	936,828	14,556	-

Figure 25. EIS Action Alternative 7 with E1a and E3a options, 2040 Daily Traffic Volumes

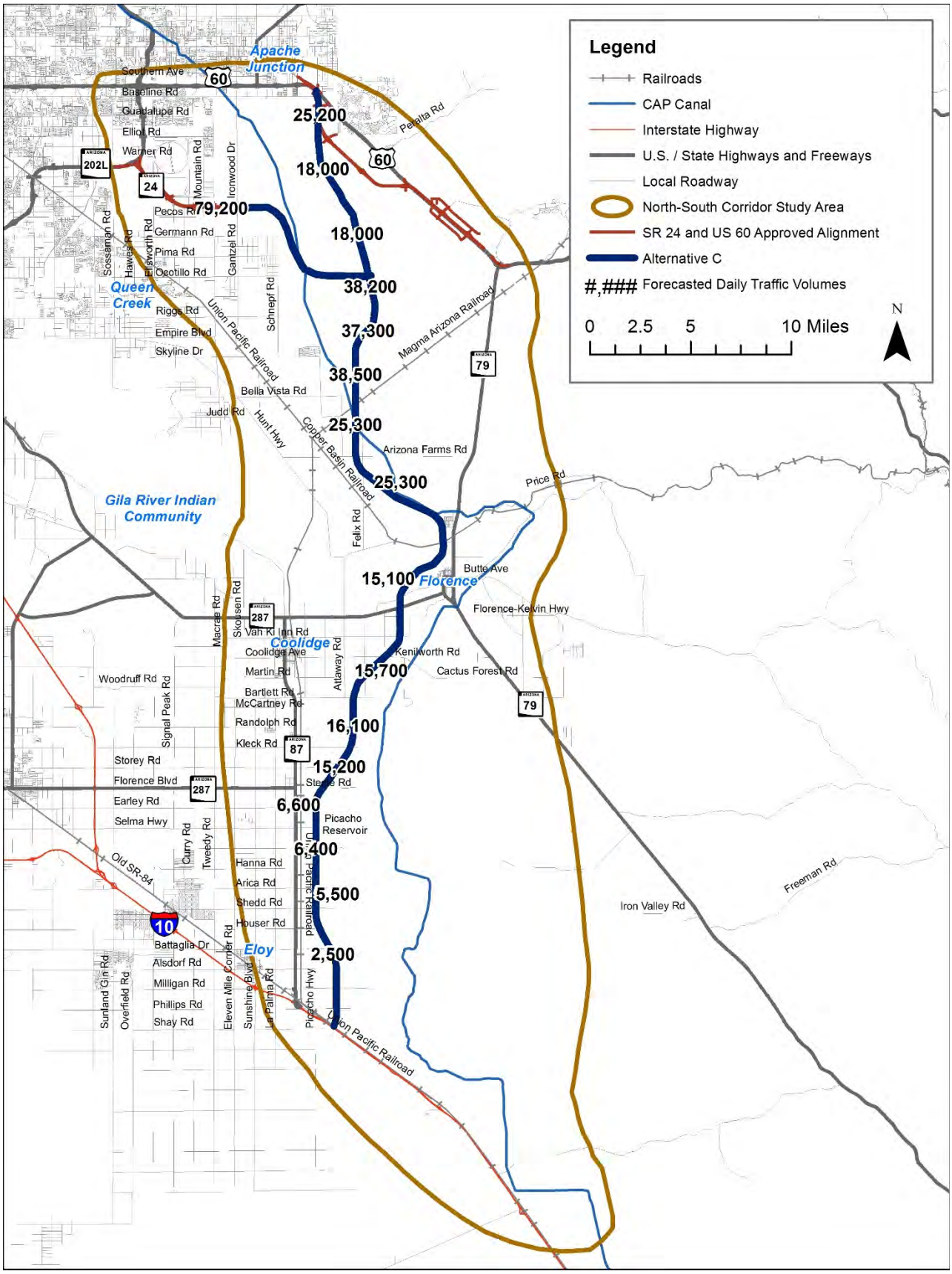
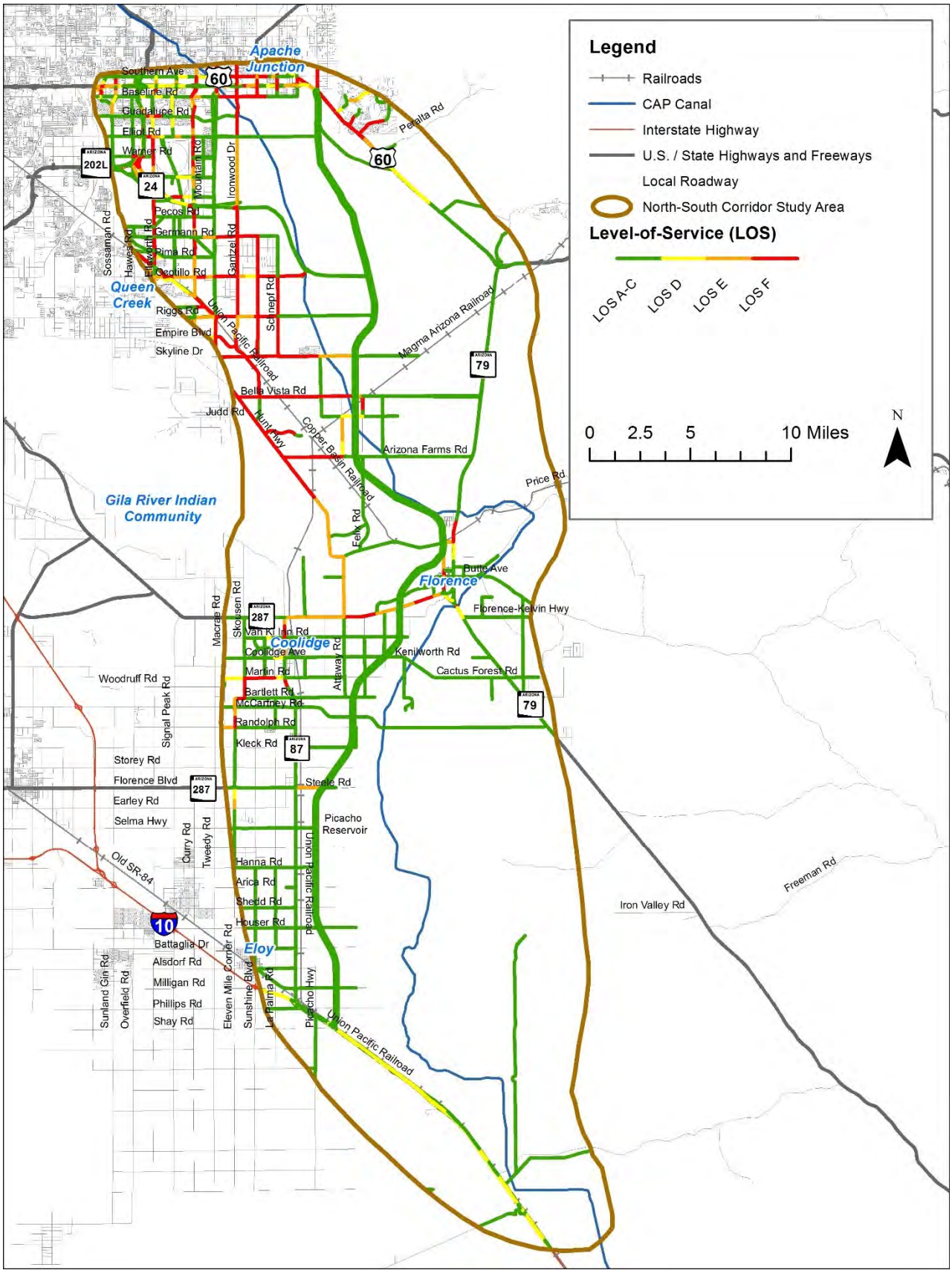


Figure 26. EIS Action Alternative 7 with E1a and E3a options, 2040 Study Area Performance



4.9 EIS Action Alternative 8 with E1b option

EIS Action Alternative 8 with e1b was modeled by evaluation alternative F. The south terminal is located at I-10 just east of SR 87 and continues parallel to SR 87. The north terminal is located on US 60, east of Goldfield Road. The SR 24 extension connects to the Corridor from the west along Ocotillo Road.

EIS Action Alternative 8 with e1b is illustrated in Figure 27.

The forecast 2040 volumes, v/c ratio, and LOS for selected RSR segments are summarized in **Table** 21.

Table 21. EIS Action Alternative 8 with e1b, 2040 RSR Segments Comparison

Corridor	Location	2040 No-Action	2040 Alternative D		
		ADT	ADT	v/c	LOS
North-South RSRs					
Hunt Highway	Arizona Farms Road to Franklin Road	37,308	37,212	> 1.0	**LOS F**
SR 79	Hunt Highway to Diversion Dam Road	26,289	17,818	0.88	LOS D
Ironwood - Gantzel Road	Baseline Road to SR 24	26,752	16,697	0.83	LOS D
Schnepf Road	Combs Road to Skyline Drive	14,160	10,941	> 1.0	**LOS F**
Attaway Road	Hunt Highway to SR 287	25,593	6,484	0.32	LOS A-C
SR 87 (Arizona Boulevard)	Vah Ki Inn Road to Martin Road	36,556	29,737	0.83	LOS D
Hunt Highway	Belle Vista Road to Copper Mine Road	85,642	76,281	> 1.0	**LOS F**
East-West RSRs					
Riggs - Combs Road	Signal Butte Road to Schnept Road	32,466	30,594	> 1.0	**LOS F**
Skyline Drive	Schnept Road to Quail Run Lane	13,685	12,230	> 1.0	**LOS F**
Bella Vista Road	Gantzel Road to Quail Run Lane	10,648	14,263	> 1.0	**LOS F**
Arizona Farms Road	Hunt Highway to Copper Basin RR	6,502	7,495	0.75	LOS D
Coolidge Avenue	SR 87 to Attaway Road	6,276	5,804	0.58	LOS A-C
SR 287	Christenson Road to Attaway Road	41,435	28,014	0.78	LOS D
Selma highway	Eleven Mile Corner Road to SR 87	483	1,245	0.12	LOS A-C
US 60	Perlalta Road to SR 79	24,799	23,338	0.65	LOS A-C
Ocotillo Road	Rittenhouse Road to Ironwood Drive	31,152	29,589	> 1.0	**LOS F**
SR 287	Attaway Road to Valley Farms Road	24,182	22,717	> 1.0	**LOS F**
I-10	Sunshine Boulevard to SR 87	96,000	94,100	0.78	LOS D

The results of a performance evaluation at a study area-wide level are summarized in Table 22. Total VMT within the study limits is forecasted to increase to 13,557,445 miles. The VHT forecast is 346,982 hours. The results show 165 miles of the 2040 network are forecasted to experience congestion as illustrated in Figure 28.

Table 22. EIS Action Alternative 8 with e1b, 2040 Study Area-wide and Corridor Performance

	Total VMT (daily)	Total VHT (daily)	Miles of Congested Roads
Study Area-wide Performance			
• EIS Action Alternative 8 with e1b	13,557,445	347,000	165
• 2040 No-Action	12,626,500	372,800	185
Corridor Performance			
• EIS Action Alternative 8 with e1b	1,209,042	19,173	-

Figure 27. EIS Action Alternative 8 with E1b option, 2040 Daily Traffic Volumes

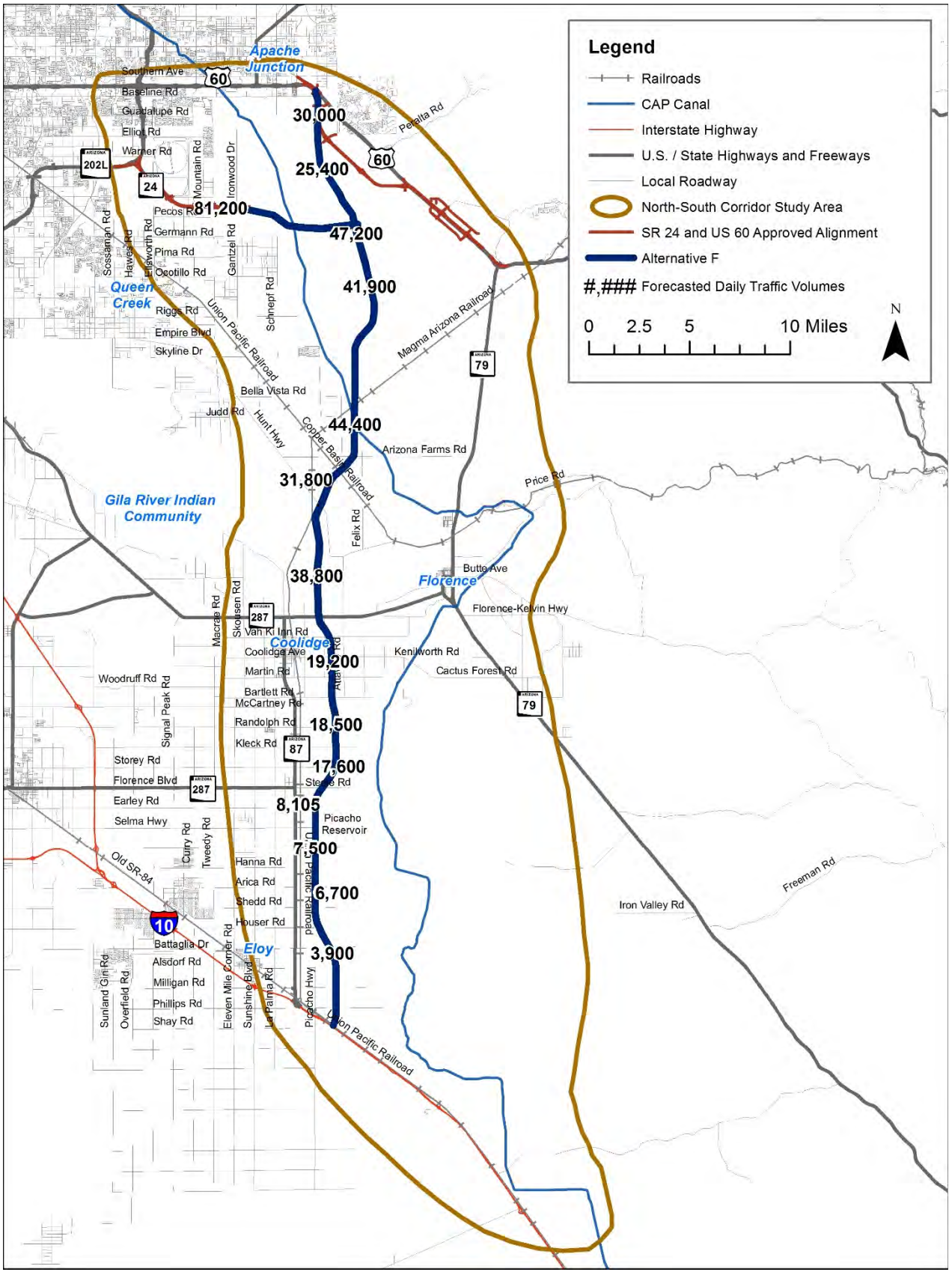
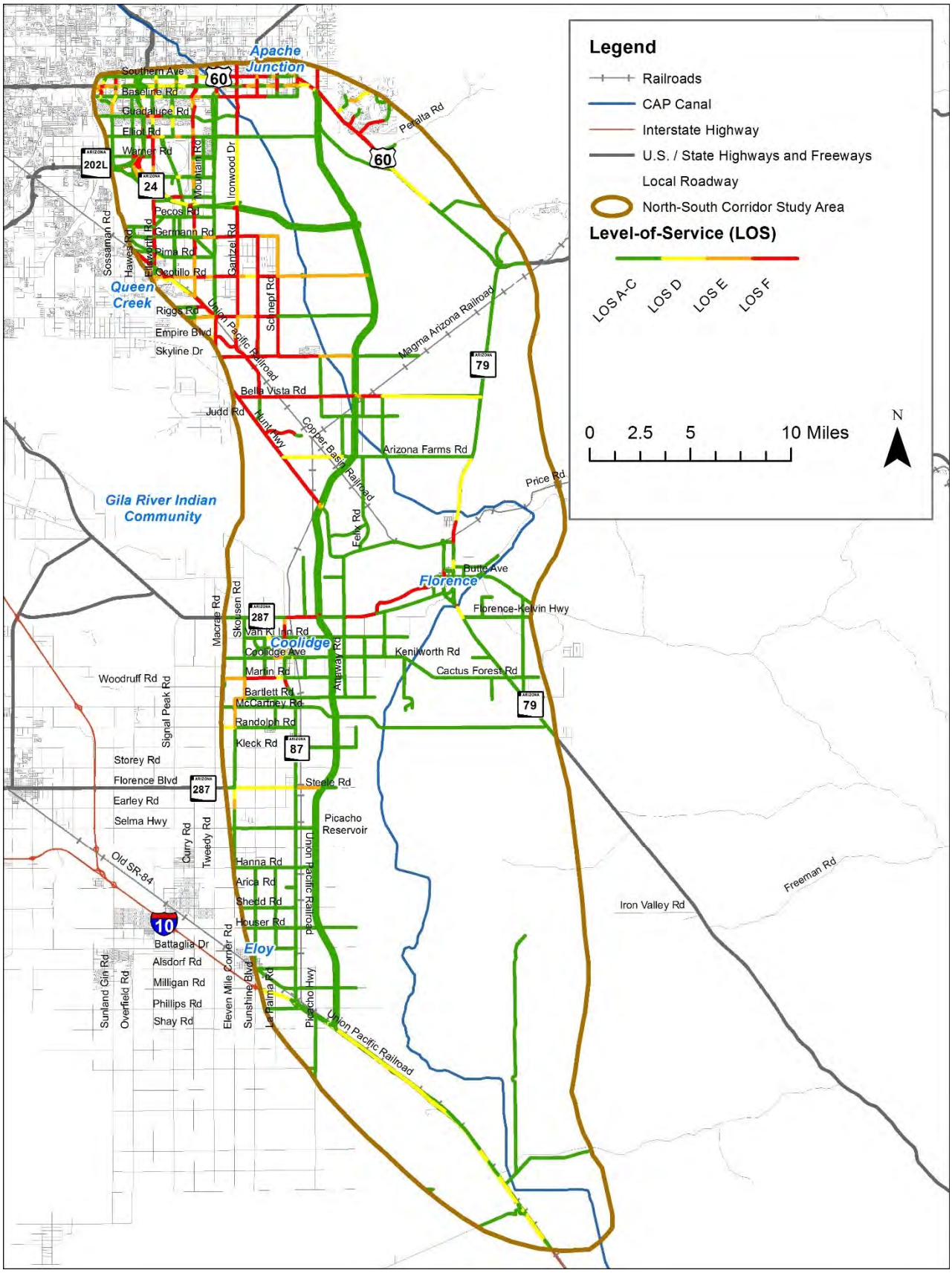


Figure 28. EIS Action Alternative 8 with E1b option, 2040 Study Area Performance



5 Performance Summary

The Study area-wide performance results for each of the action alternatives are summarized in Table 23 and Table 24. The study area was divided based on the segmentation shown in Figure 1. From there, each action alternative's performance was interpolated based on the action alternative segments from the modeled results. The corridor would remove non-localized traffic from key roadways within the study area, resulting in lower congestion and decreased travel time as the Corridor provides a more direct route from I-10 to US 60 in Apache Junction.

The results show an increase in study area-wide VMT for each build alternative, compared to the 2040 No-Action scenario. The increase of the total VMT within the study area roadway network indicates an increase in attraction to the North-South Corridor.

In addition, a decrease of total VHT is anticipated with the construction of both the Corridor and the SR 24 extension. This decrease in VHT with the corridor indicates that travelers are more efficiently able to reach their desired destinations. The results also show that the Action Alternatives reduce the number of hours for which the study area is congested (LOS F).

Table 24 shows that EIS Action Alternative 3 has the fewest miles of study area congested roads.

Table 25 summarizes 2040 daily traffic volumes for each EIS Action Alternative, organized by screenlines.

Table 23. Total Area-wide Traffic Performance Summary

	Segment Area 1				Segment Area 2				Segment Area 3				Segment Area 4				Total			
	VMT	% Congested VMT	VHT	% Congested VHT	VMT	% Congested VMT	VHT	% Congested VHT	VMT	% Congested VMT	VHT	% Congested VHT	VMT	% Congested VMT	VHT	% Congested VHT	VMT	% Congested VMT	VHT	% Congested VHT
2040 No-Action	8,740,400	55%	291,300	73%	219,500	61%	7,200	61%	1,442,000	55%	40,900	61%	2,235,200	1%	33,800	1%	12,637,100	46%	373,200	65%
EIS Action Alt 1[1]	9,436,000 - 9,477,400	42% - 44%	259,600 - 261,200	59% - 60%	287,400 – 290,000	46% - 47%	8,200 – 8,300	64% - 66%	1,575,800 – 1,578,100	27%	36,200 – 36,300	33%	2,345,000 – 2,345,100	1%	35,800	2%	13,644,200 – 13,690,600	33% - 35%	339,800 – 341,600	50% - 50%
EIS Action Alt. 2[2]	9,281,800 - 9,295,000	43%	260,000 - 261,400	60% - 61%	198,600 – 198,900	61% - 65%	5,700	70% - 75%	1,626,200 – 1,645,200	30% - 32%	37,500 – 38,600	37% - 38%	2,320,100 – 2,338,600	1%	35,300 – 35,700	1% - 2%	13,426,700 – 13,477,700	34% - 35%	338,500 – 341,400	52%
EIS Action Alt. 3[3]	9,281,800 - 9,295,000	43%	260,000 - 261,400	60% - 61%	198,600 – 198,900	61% - 65%	5,700	70% - 75%	1,585,500 – 1,645,200	30% - 36%	36,900 – 38,600	37% - 43%	2,303,700 – 2,303,900	1%	35,100	2%	13,369,600 – 13,443,000	35%	337,700 – 340,800	52% - 53%
EIS Action Alt. 4[4]	9,436,000 - 9,477,400	42% - 44%	259,600 - 261,200	59% - 60%	287,400 – 290,000	46% - 47%	8,200 – 8,300	64% - 66%	1,575,800 – 1,578,100	27%	36,200 – 36,300	33%	2,334,200	1%	35,700	2%	13,633,400 – 13,679,700	34% - 35%	339,700 – 341,500	50% - 51%
EIS Action Alt. 5[5]	9,344,000 - 9,473,800	48%	267,500 - 269,500	63% - 64%	297,100	37%	8,500	49%	1,457,200	27%	35,500	37%	2,345,000 – 2,345,100	1%	35,800	2%	13,443,300 – 13,573,200	38%	347,300 – 349,300	54% - 55%
EIS Action Alt. 6[6]	9,344,000 - 9,473,800	48%	267,500 - 269,500	63% - 64%	174,700 – 174,900	74%	6,200	79%	1,585,500 – 1,645,200	30% - 36%	36,900 – 38,600	37% - 43%	2,320,100 – 2,338,600	1%	35,300 – 35,700	1% - 2%	13,424,300 – 13,632,500	39%	345,900 – 350,000	55%
EIS Action Alt. 7[7]	9,344,000 - 9,360,800	48% - 49%	267,600 - 269,500	64%	174,700 – 174,900	74%	6,200	79%	1,585,500 – 1,586,300	36%	36,900	43%	2,303,700 – 2,303,900	1%	35,100	2%	13,407,900 – 13,425,900	39%	345,800 – 347,700	56%
EIS Action Alt. 8[8]	9,477,400	48%	261,400	63%	174,900 – 297,100	37% - 74%	6,200 – 8,500	49% - 79%	1,457,200 – 1,585,500	27% - 36%	35,500 – 36,900	37% - 43%	2,303,900 – 2,334,200	1%	35,100 – 35,700	2%	13,413,400 – 13,694,200	38%	338,200 – 342,500	54% - 55%

Table 24. Total Area-Wide Miles of Congested Roads

	2040 No-Action	EIS Action Alt.1[1]	EIS Action Alt. 2[2]	EIS Action Alt. 3[3]	EIS Action Alt. 4[4]	EIS Action Alt. 5[5]	EIS Action Alt. 6[6]	EIS Action Alt. 7[7]	EIS Action Alt. 8[8]
Segment Area 1	142.0	123.8 - 124.8	123.8 - 125	123.8 - 125	123.8 - 125	136.4 - 141.1	136.4 - 141.1	136.4 - 138.3	136.4 - 141.1
Segment Area 2	-	-	-	-	-	-	-	-	-
Segment Area 3	36.2	20.4	24.0 – 26.3	24.0 – 27.6	20.4	18.8	24.0 – 27.6	27.6	18.8 – 27.6
Segment Area 4	1.6	2.4	1.8	2.4	2.4	2.4	1.8	2.4	2.4
Total	184.8	152.5 – 153.5	155.5 – 159.8	156.1 – 161.7	152.5 – 153.7	160.5 – 165.2	168.1 – 176.4	172.3 – 174.2	160.5 – 177.0

Notes:

#. Cells with a single value indicates no distinguishable range of performance criteria
1. Min-max of modeled Alternative A and D
2. Min-max of modeled Alternative E and E2

Notes, continued:

3. Segment Area 1: Derived from the min-max of the modeled Alternative E, E2; Segment Area 2: Derived from the min-max of modeled Alternative E, E2; Segment Area 3: Derived from the min-max of modeled Alternative E, E2, C, B; Segment Area 4: Derived from the min-max of modeled Alternative B, C
4. Segment Area 1: Derived from the min-max of modeled Alternative A, D; Segment Area 2: Derived from the min-max of modeled Alternative A, D; Segment Area 3: Derived from the min-max of modeled Alternative A, D; Segment Area 4: Derived from the min-max of modeled Alternative F
5. Segment Area 1: Derived from the min-max of modeled Alternative C, B, F; Segment Area 2: Derived from the min-max of modeled Alternative F; Segment Area 3: Derived from the min-max of modeled Alternative F; Segment Area 4: Derived from the min-max of modeled Alternative A, D
6. Segment Area 1: Derived from the min-max of modeled Alternative C, B, F; Segment Area 2: Derived from the min-max of modeled Alternative C, B; Segment Area 3: Derived from the min-max of modeled Alternative E, E2, C, B; Segment Area 4: Derived from the min-max of modeled Alternative E, E2
7. Min-max of modeled Alternative C and B
8. Min-max of modeled Alternative C and F

Table 25. Corridor Performance Comparison with Alternatives

		Vehicles Per Day (VPD)							
		EIS Action Alt.1[1]	EIS Action Alt. 2[2]	EIS Action Alt. 3[3]	EIS Action Alt. 4[4]	EIS Action Alt. 5[5]	EIS Action Alt. 6[6]	EIS Action Alt. 7[7]	EIS Action Alt. 8[8]
Segment 1	US-60 to Elliot Road	42,800 - 45,000	44,000 - 44,400	44,000 - 44,400	42,800 - 45,000	25,200 - 30,000	25,200 - 30,000	25,200 - 28,300	25,200 - 30,000
	Elliot Road to SR-24	39,000 - 49,400	46,800 - 47,700	46,800 - 47,700	39,000 - 49,400	18,000 - 25,400	18,000 - 25,400	18,000 - 23,400	18,000 - 25,400
	SR-24 to Ocotillo Road	69,200 - 70,900	64,200 - 65,900	64,200 - 65,900	69,200 - 70,900	18,000 - 47,200	18,000 - 47,200	18,000 - 42,700	18,000 - 47,200
	Ocotillo Road to Riggs/Combs	54,100[1]	46,800 - 48,500	48,500 - 46,800	54,100[1]	38,200 - 41,900	37,000 - 41,900	37,000 - 38,200	37,000 - 41,900
	Riggs/Combs to Skyline Drive	58,300 - 59,100	48,400 - 50,200	48,400 - 50,200	58,300 - 59,100	37,300 - 42,100	36,700 - 42,100	36,700 - 37,300	36,700 - 42,100
	Skyline Drive to Bella Vista Road	60,800 - 61,100	49,800 - 51,800	49,800 - 51,800	60,800 - 61,100	38,500 - 44,400	38,000 - 44,400	38,000 - 38,500	38,000 - 44,400
	Bella Vista Road to Arizona Farms Road	50,400 - 50,700	29,600 - 31,300	29,600 - 31,300	50,400 - 50,700	25,300 - 31,800	25,300 - 31,800	25,300[#]	25,300 - 31,800
Segment 2	Arizona Farms Road to Hunt Highway	39,800 - 40,000	29,600 - 31,300	29,600 - 31,300	39,800 - 40,000	31,800[2]	25,300[#]	25,300[#]	31,800[5]
Segment 3	Hunt Highway to SR-287	39,600 - 39,900	18,600 - 19,900	15,100 - 19,900	39,600 - 39,900	38,800[2]	15,100 - 19,900	15,100[#]	38,800[5]
	SR-287 to Bartlett Road (Martin Road)	21,900[#]	17,800 - 21,400	15,700 - 21,400	21,900[#]	19,200[2]	15,700 - 21,400	15,700[#]	19,200
Segment 4	Bartlett Road (Martin Road) to Kleck Road	20,000[#]	18,600 - 21,800	16,100 - 21,800	20,000[#]	18,500[2]	16,100 - 21,800	16,100[#]	18,500
	Kleck Road to Steele Road	19,200[#]	17,700 - 19,800	15,200[#]	17,600[#]	19,200[1]	17,700 - 19,800	15,200[#]	17,600
	Steele Road to Selma Highway	9,900[#]	9,100 - 9,900	6,600[#]	8,100[#]	9,900[1]	9,100 - 9,800	6,600[#]	8,100
	Selma Highway to Hanna Road	12,000 - 12,100	11,900 - 12,600	6,400[#]	7,500[#]	12,000 - 12,100	11,900 - 12,600	6,400[#]	7,500
	Hanna Road to Houser Road	5,300[#]	10,500 - 11,300	5,500[#]	6,700[#]	5,300 - 11,100	10,500 - 11,300	5,500[#]	6,700
	Houser Road to I-10	4,900 - 5,000	3,900 - 4,600	2,500[#]	3,900[#]	4,900 - 5,000	3,900 - 4,600	2,500[#]	3,900

Notes:

#. No distinguishable range of values.
1. Min-max of modeled Alternative A and D
2. Min-max of modeled Alternative E and E2
3. Segment Area 1: Derived from the min-max of the modeled Alternative E, E2; Segment Area 2: Derived from the min-max of modeled Alternative E, E2; Segment Area 3: Derived from the min-max of modeled Alternative E, E2, C, B; Segment Area 4: Derived from the min-max of modeled Alternative B, C
4. Segment Area 1: Derived from the min-max of modeled Alternative A, D; Segment Area 2: Derived from the min-max of modeled Alternative A, D; Segment Area 3: Derived from the min-max of modeled Alternative A, D; Segment Area 4: Derived from the min-max of modeled Alternative F
5. Segment Area 1: Derived from the min-max of modeled Alternative C, B, F; Segment Area 2: Derived from the min-max of modeled Alternative F; Segment Area 3: Derived from the min-max of modeled Alternative F; Segment Area 4: Derived from the min-max of modeled Alternative A, D
6. Segment Area 1: Derived from the min-max of modeled Alternative C, B, F; Segment Area 2: Derived from the min-max of modeled Alternative C, B; Segment Area 3: Derived from the min-max of modeled Alternative E, E2, C, B; Segment Area 4: Derived from the min-max of modeled Alternative E, E2
7. Min-max of modeled Alternative C and B
8. Min-max of modeled Alternative C and F

Travel from I-10 near Eloy to the East Valley of the Phoenix metropolitan area requires use of a fragmented set of roads and highways. Typically, the common route (in the northbound direction) would include:

- SR 287
- SR 79
- SR 87
- Hunt Highway
- Bella Vista Road
- Gantzel Road
- Ironwood Road

The Corridor would provide a more direct route that facilitates travel during 2040 conditions. As summarized in Table 26**,** the travel time during existing conditions is just over 1 hour (65 minutes). The travel time is forecasted to increase to 100 minutes in the 2040 No-Action conditions. Each of the EIS Action Alternatives reduces 2040 travel time, as the route is more direct and no longer fragmented.

The results show that EIS Action 1 (with w1a and w1b) provide the largest travel time savings. EIS Action Alternative 2 and 7 provide the longest travel times, largely due to out of direction travel in the Florence area.

Table 26. North-South Corridor Travel Time Comparison

EIS Action Alternative	Model Evaluation Alternative	Current (2018) Average Travel (minutes), Eloy to Apache Junction	2040 Average Travel Time (minutes) Eloy to Apache Junction	2040 Travel Time Savings Eloy to Apache Junction
Existing*	-	65	-	-
2040 No-Action	-	-	100	-
EIS Action Alt. 1 with W1a option	A	-	56	44
EIS Action Alt. 1 with W1b option	D	-	54	46
EIS Action Alt. 2 with W1a and E3a options	E	-	59	40
EIS Action Alt. 2 with W1a and E3b options	E2	-	57	42
EIS Action Alt. 3	Similar to Alt 2, Model Alt. E, E2	-	57-59	40-42
EIS Action Alt. 4	Similar to Alt 1, Model Alt. A, D	-	54-56	44-46
EIS Action Alt. 5	Similar to Alt 8, Model Alt. F	-	56	43
EIS Action Alt. 6	Similar to Alt 7, Model Alt. B	-	59	40-41
EIS Action Alt. 7 with E1b and E3a	B	-	59	40

Table 26. EIS Action Alternative 7 with E1a and E3a options 2040 RSR Segments Comparison, continued

EIS Action Alternative	Model Evaluation Alternative	Current (2018) Average Travel (minutes), Eloy to Apache Junction	2040 Average Travel Time (minutes) Eloy to Apache Junction	2040 Travel Time Savings Eloy to Apache Junction
EIS Action Alt. 7 with E1a and E3a options	C	-	59	41
EIS Action Alt. 8 with e1b	F	-	56	43

*Existing travel time derived from Google Maps

Appendix A – Action Alternatives

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Figure A-1. Alternative 1

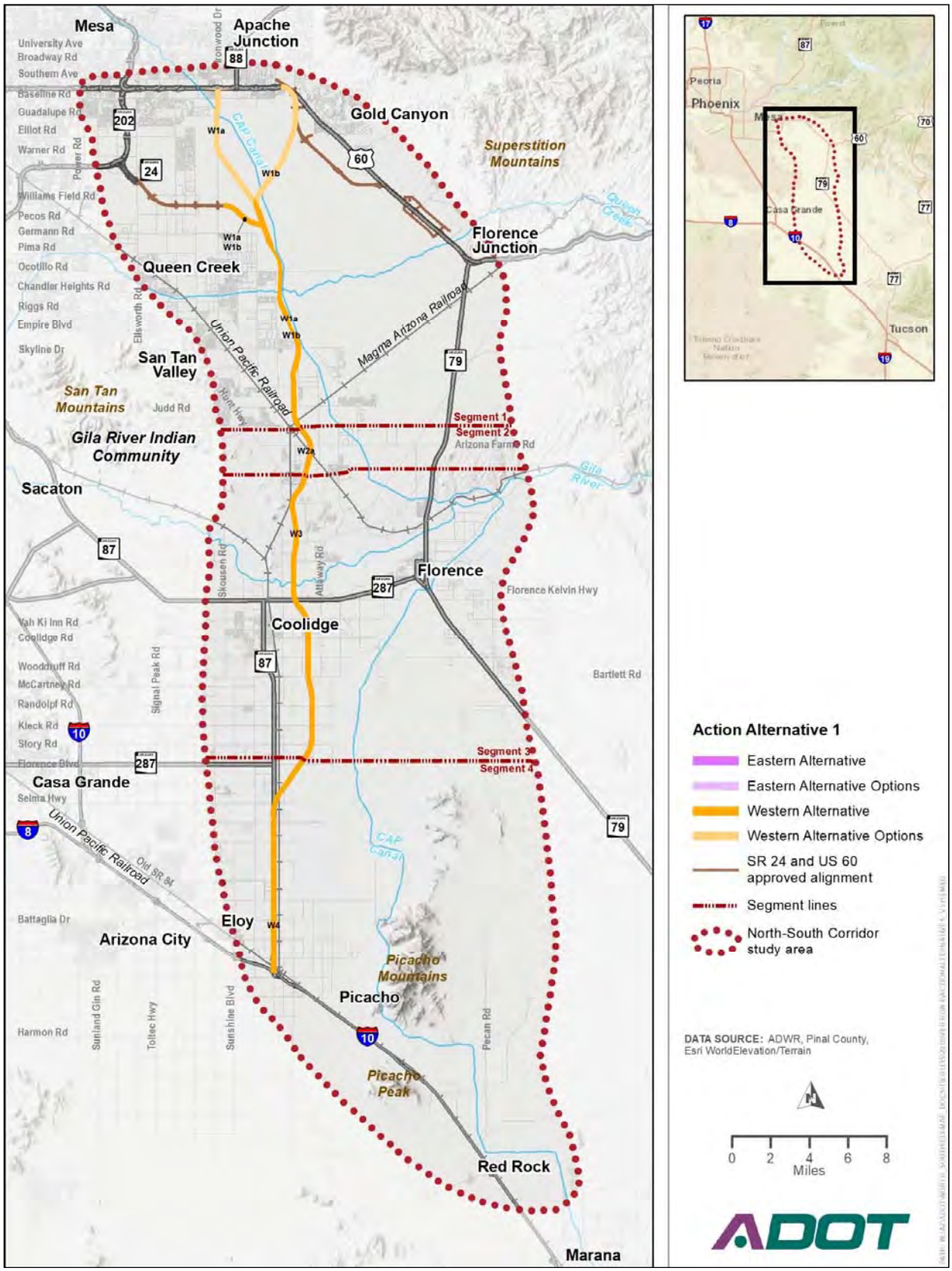

Figure A-2. Alternative 2

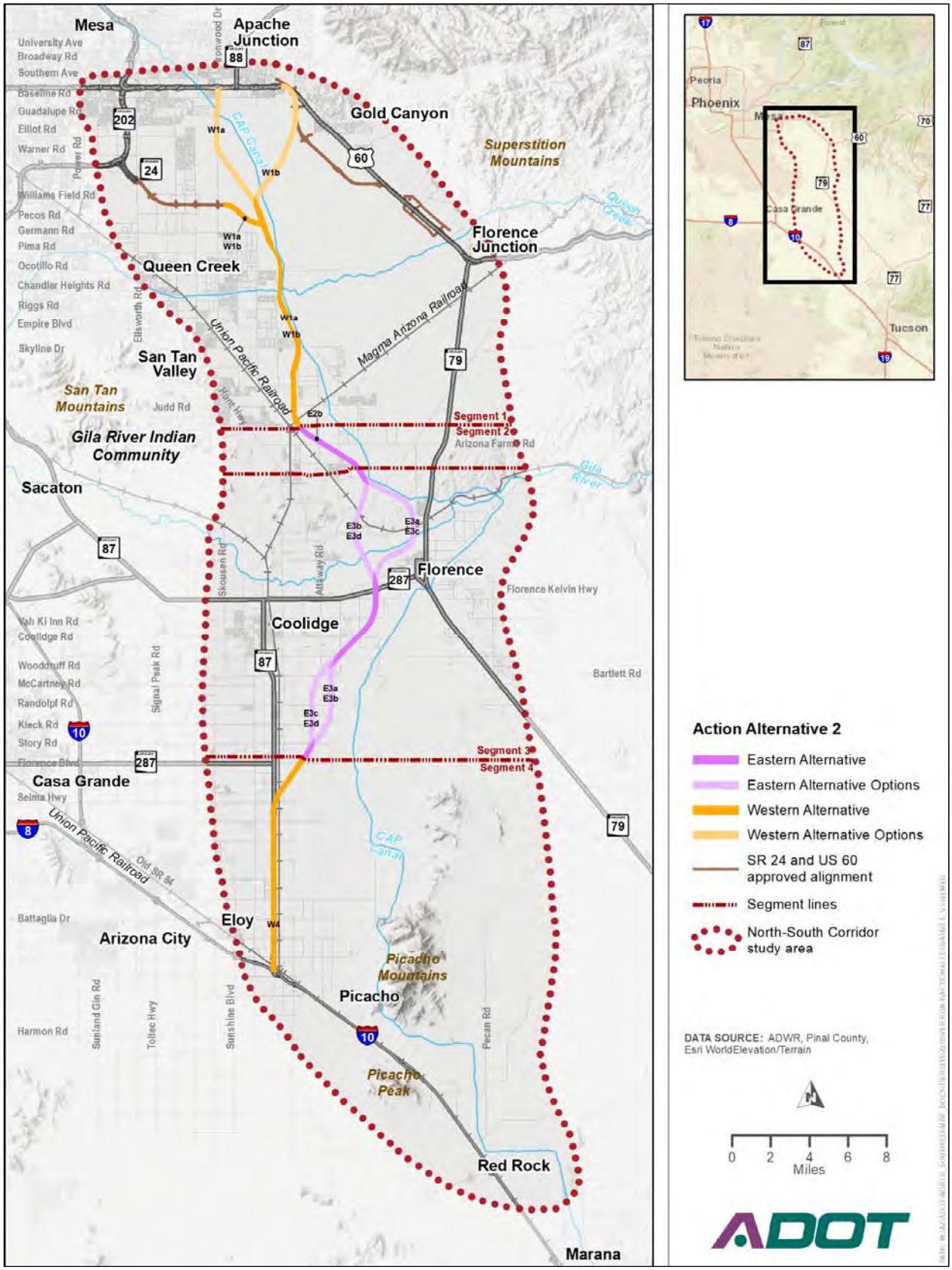

Figure A-3. Alternative 3

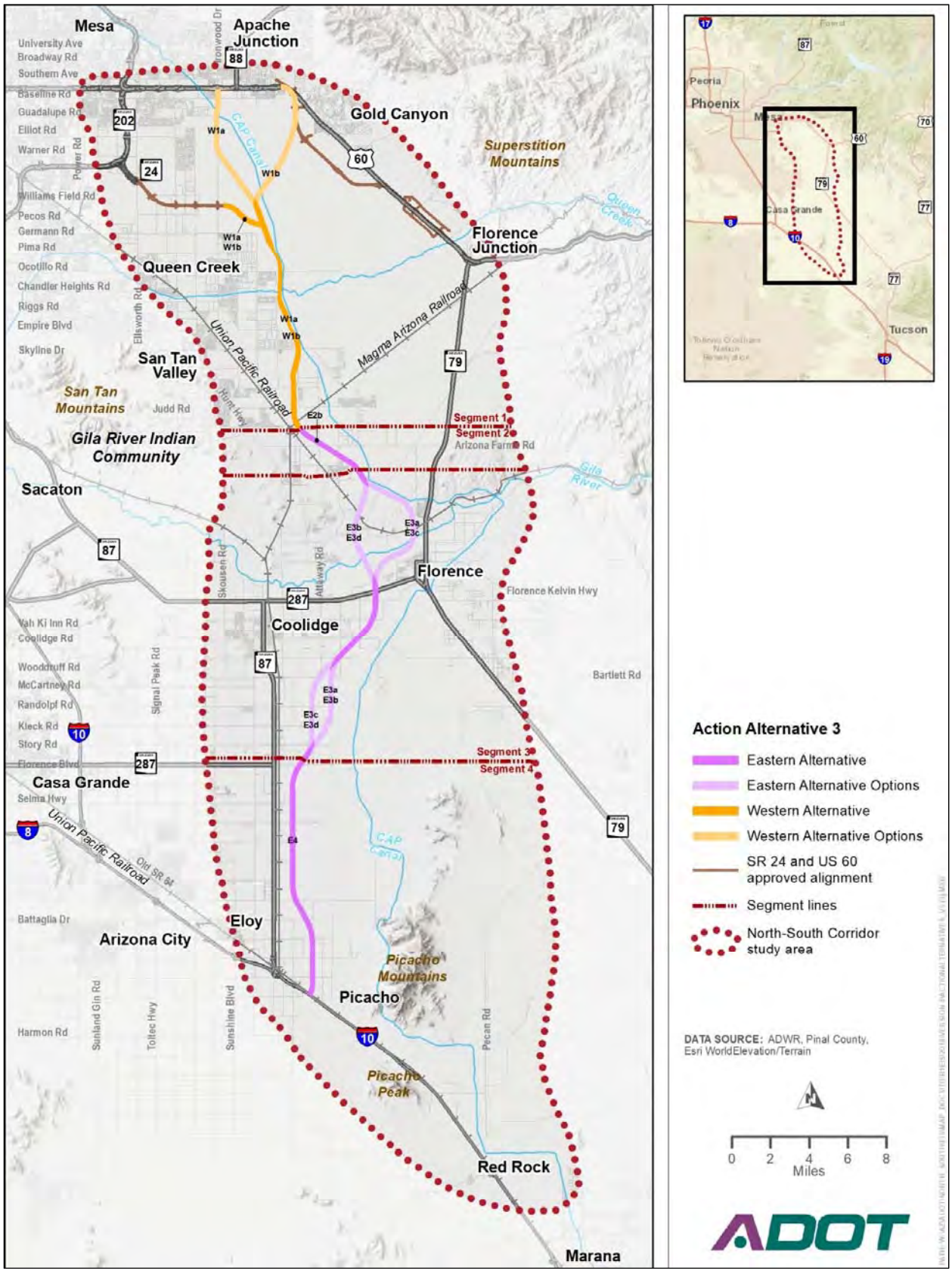

Figure A-4. Alternative 4

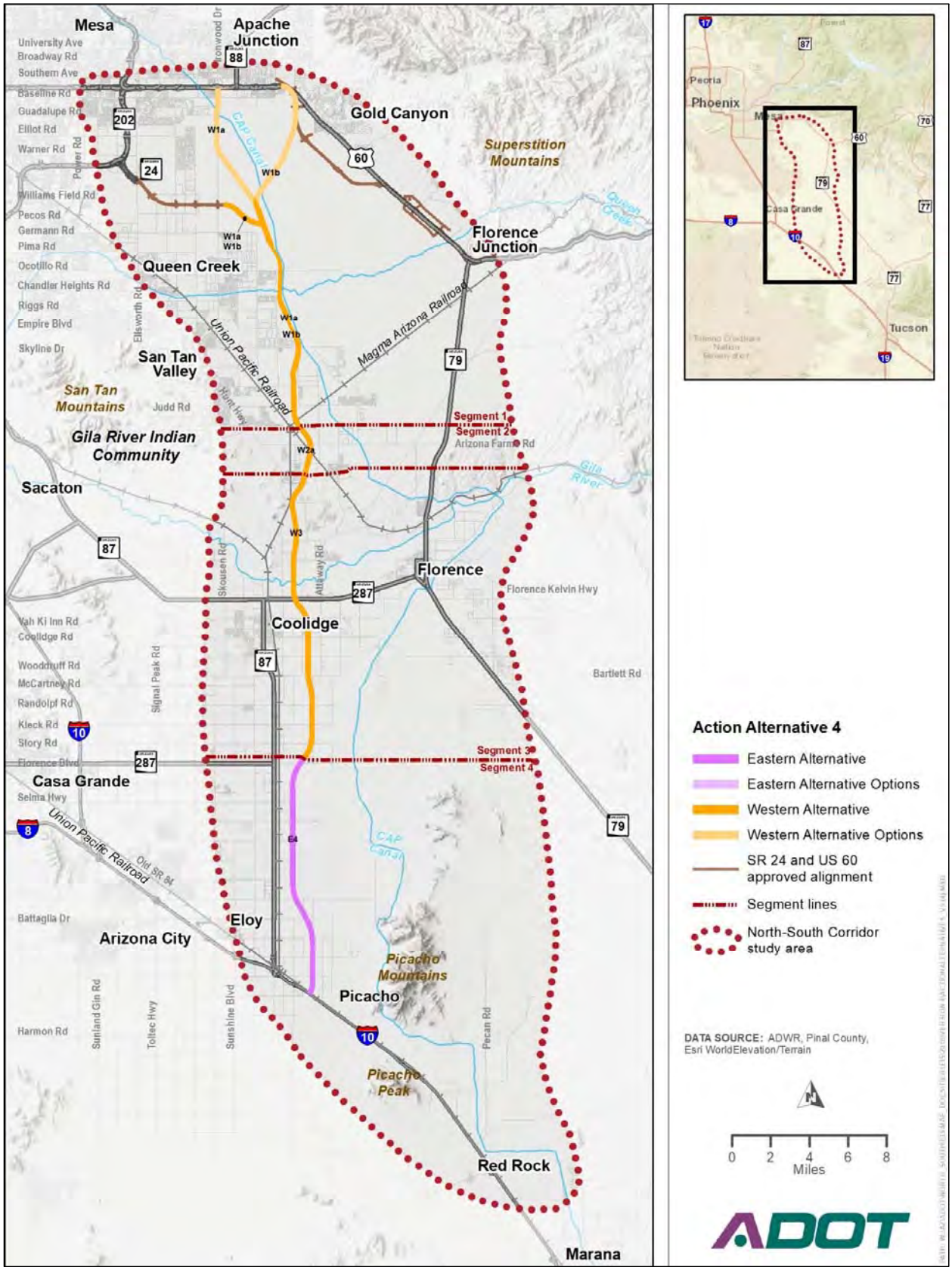

Figure A-5. Alternative 5

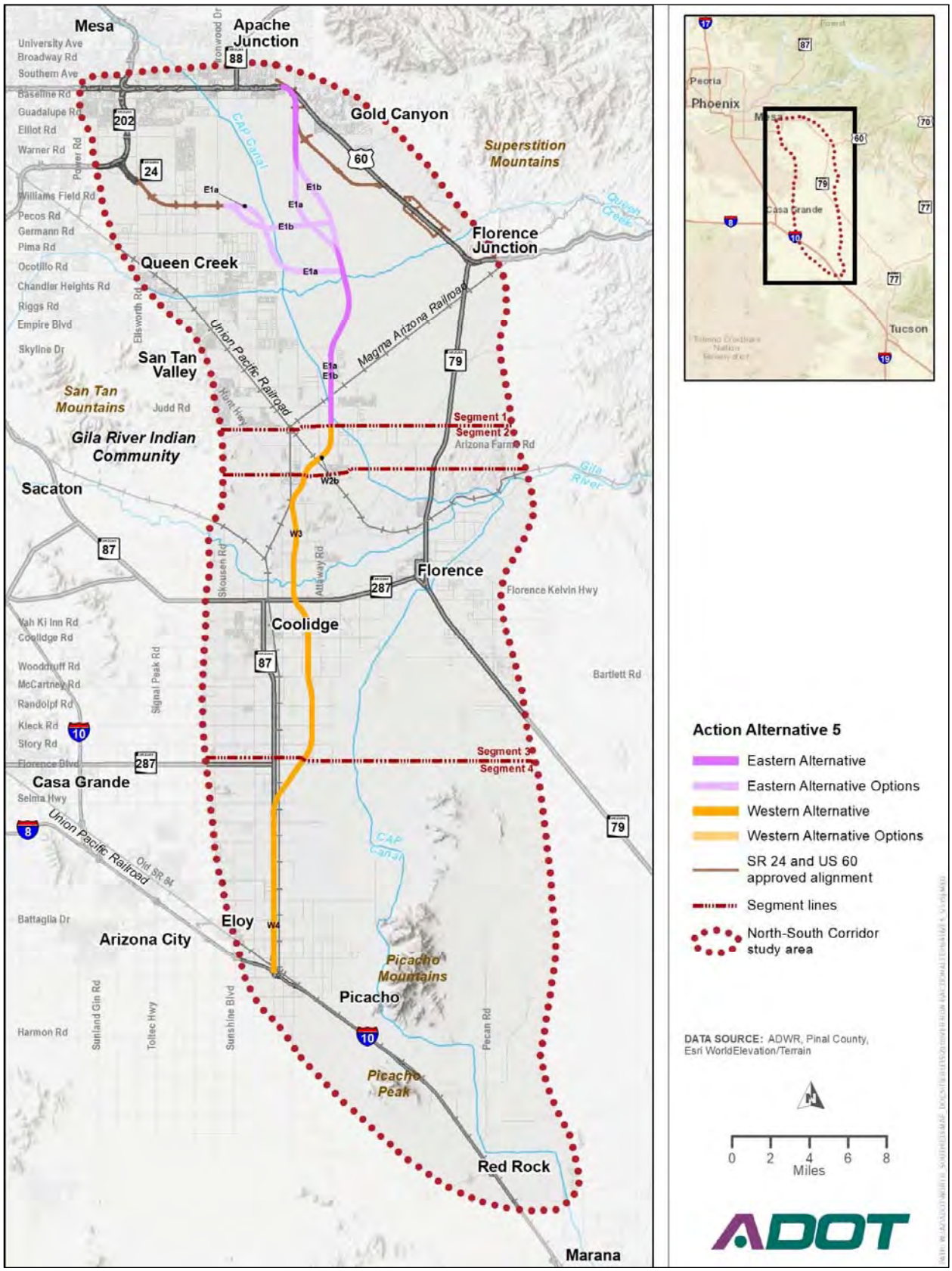

Figure A-6. Alternative 6

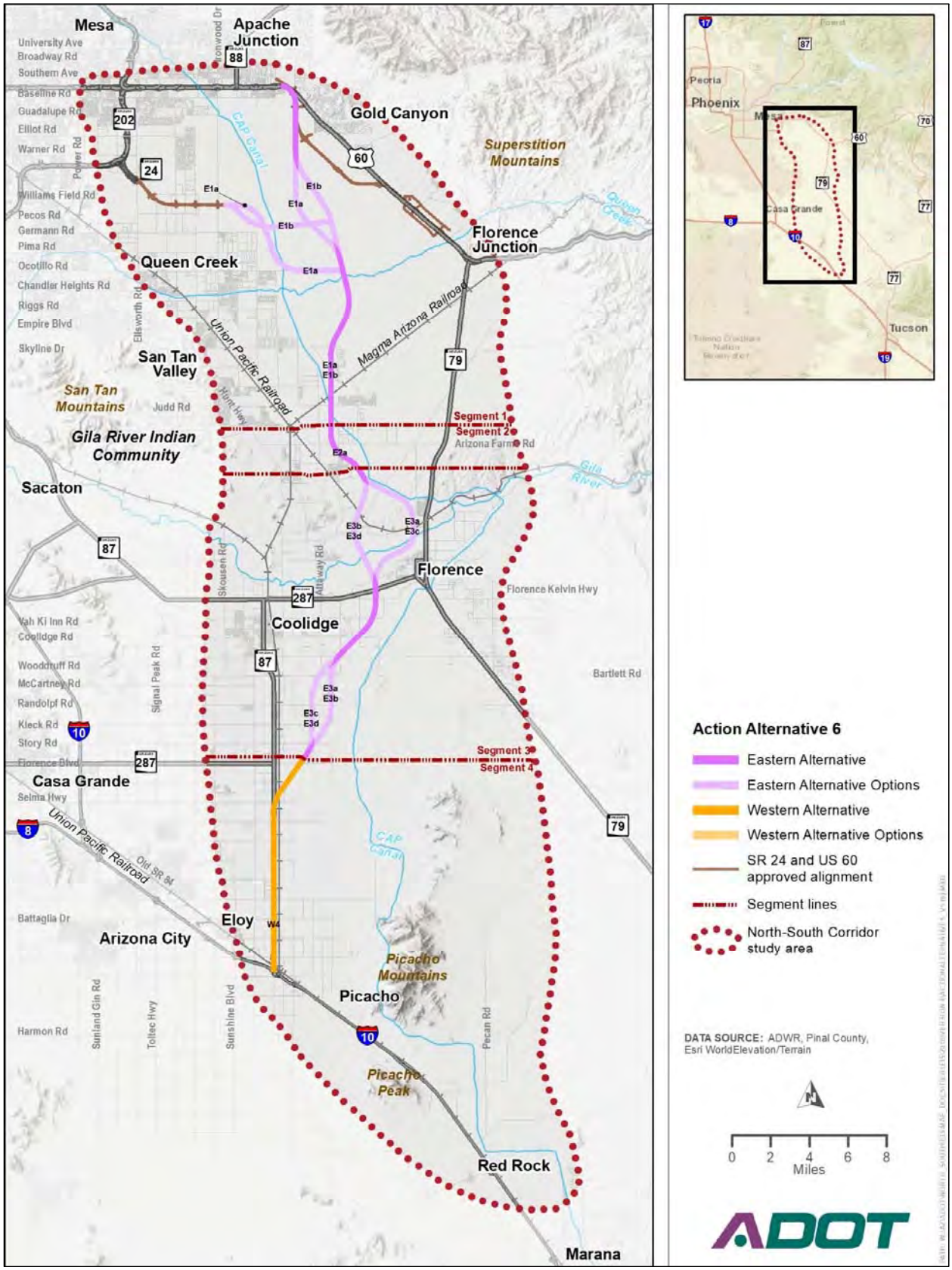

Figure A-7. Alternative 7

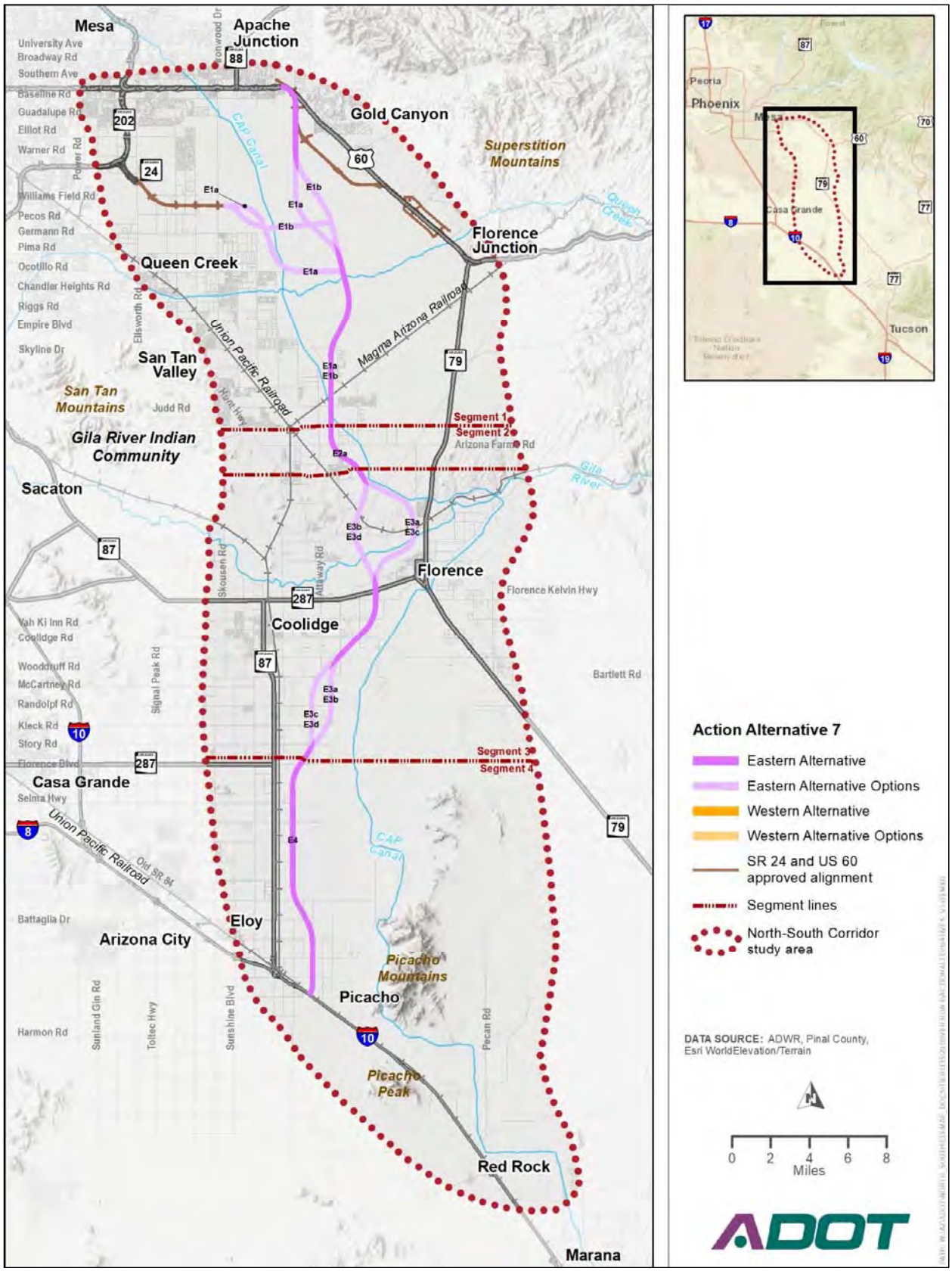

Figure A-8. Alternative 8