Pinal County Corridors Definition Study

Final Report

ADOT Project No. T04-49-P0001
ADOT Purchase Order No. PGKG 2465

Prepared by:

Kimley-Horn and Associates, Inc.

In association with:
Cambridge Systematics, Inc.,
Kaneen Advertising and Public Relations

January 2007
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1. INTRODUCTION

The *Southeast Maricopa/Northern Pinal County Transportation Study* (*SEMNPTS*), completed in September 2003 by the Maricopa Association of Governments (MAG), the Central Arizona Association of Governments (CAAG), and the Arizona Department of Transportation (ADOT), recommended $12 to $14 billion in transportation improvements to meet the transportation needs of the over one million people that are projected to live in the area roughly bounded by US 60 and SR 79 on the east, Loop 101 and the Gila River Indian Community on the west, US 60 on the north, and Coolidge and Florence on the south, by the year 2030. Recommended improvements included nearly 3,000 lane miles of new and improved arterials, an enhanced transit system, improvements to existing freeway corridors, and 95 miles of new freeways. Specific *SEMNPTS* recommendations included the development and/or improvement of four highway corridors that would improve mobility within the region for both Maricopa and Pinal Counties:

- East Valley Corridor (I-10 to Florence Junction);
- Apache Junction/Coolidge (North-South) Corridor (I-10 to US 60);
- US 60 Freeway Re-route (Baseline to Ray Roads); and
- Williams Gateway Corridor (Loop 202 to US 60).

Since completion of the *SEMPTS*, several actions were taken to advance the development of the new freeway corridors including:

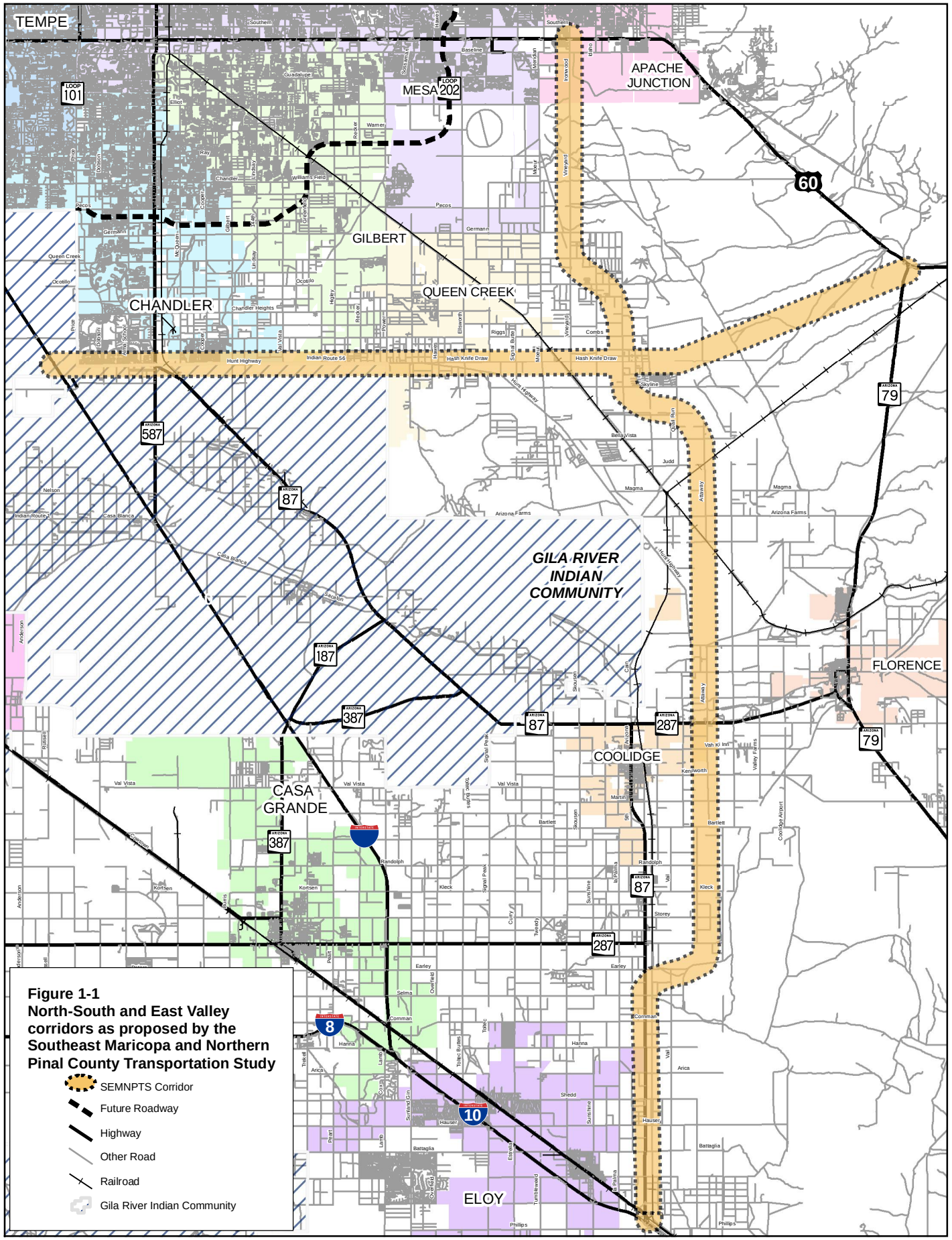
- The CAAG Regional Council adopted a resolution and requested that ADOT conduct transportation planning efforts on the four corridors.
- House Bill 2456 was passed by the Arizona Legislature assigning to MAG, CAAG, and ADOT the responsibility for carrying out further definition of the corridors identified in the *SEMNPTS* for right-of-way preservation and to provide the State Transportation Board with information to consider these corridors for adoption into the State Highway System by December 31, 2008.

ADOT assumed responsibility for initiating and managing the studies required by House Bill 2456 and conducted three separate studies for the four corridors – the *Williams Gateway Corridor Definition Study*, the *US 60 Corridor Definition Study*, and the *Pinal County Corridors Definition Study* (North-South Corridor and the East Valley Corridor).

In September 2004, ADOT awarded a contract for the *Pinal County Corridors Definition Study* to Kimley-Horn and Associates. The scope of the *Pinal County Corridors Definition Study* included the following activities:

- Confirm the need for the East Valley and the North-South corridors;
- Define planning-level corridor definition alternatives;
- Perform a technical assessment of engineering, environmental, and land use compatibility constraints opportunities for the planning-level corridor definition alternatives.
- Identify to the extent possible, feasible and preferred planning-level corridor definitions on the basis of the technical evaluation;
- Document planning-level costs of corridor development (including studies, design, construction, and right-of-way costs) for the preferred corridor definitions.

The *Pinal County Corridors Definition Study* resulted in sufficient detail to provide a basis for the future establishment of geometric roadway alignments and corridor design concepts, the preservation of right-of-way, and the identification of required environmental clearance studies.

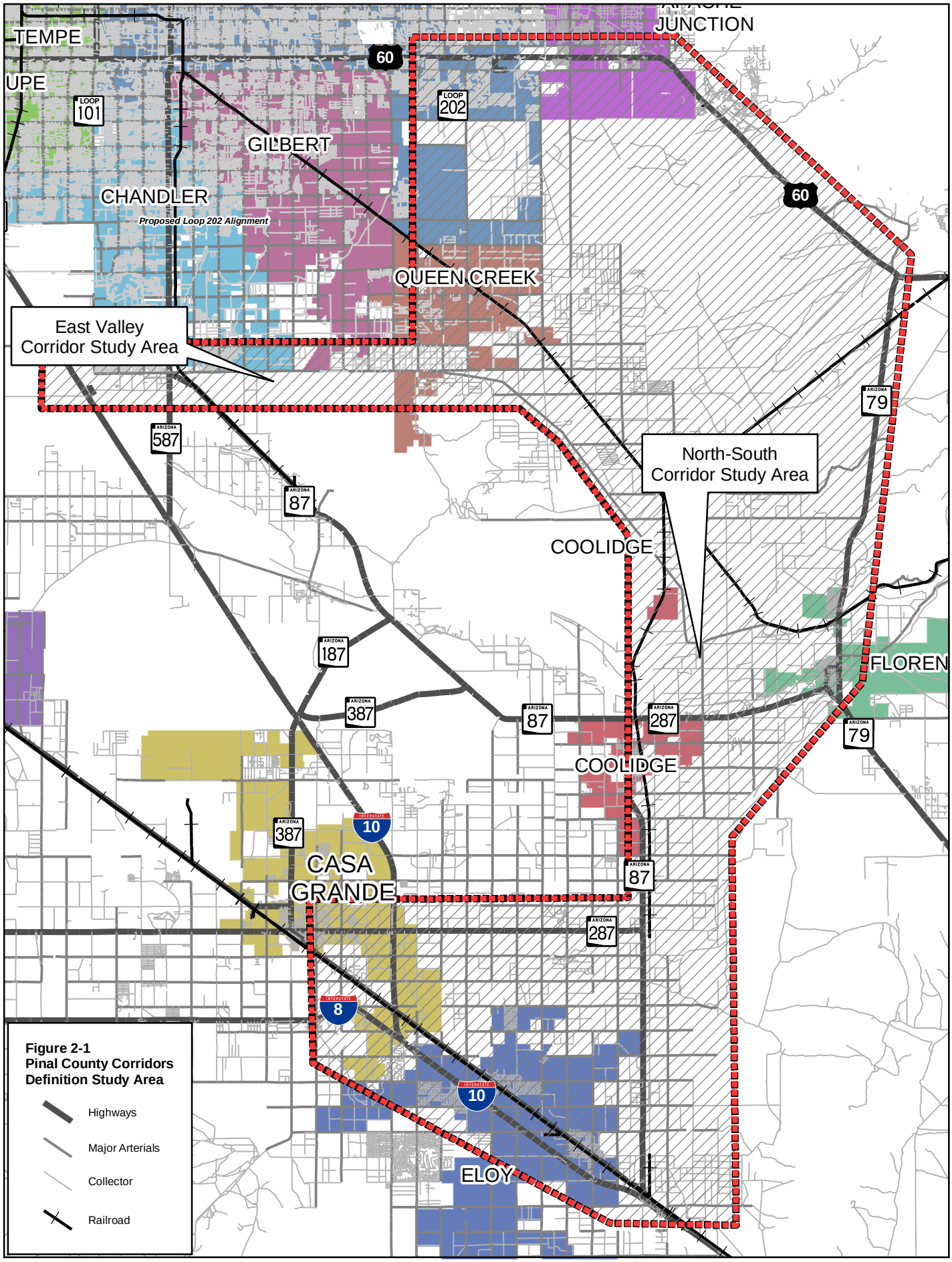

TEMPE
MESA
APACHE JUNCTION
GILBERT
QUEEN CREEK
CHANDLER
GILA RIVER INDIAN COMMUNITY
FLORENCE
COOLIDGE
CASA GRANDE
ELOY
LOOP 101
LOOP 202
60
79
587
87
187
387
287
8
10
Figure 1-1
North-South and East Valley corridors as proposed by the Southeast Maricopa and Northern Pinal County Transportation Study
SEMNPTS Corridor
Future Roadway
Highway
Other Road
Railroad
Gila River Indian Community
N
0 1 2 3 4 5 Miles
Data Source:
Arizona Land Resource Information System
PINAL COUNTY CORRIDORS DEFINITION STUDY
Kimley-Horn and Associates, Inc.
ADOT

2. CORRIDOR DEFINITION STUDY AREAS

The *Pinal County Corridors Definition Study* included two study areas – the East Valley study area and the North-South study area (refer to **Figure 2-1**).

The East Valley study area (I-10 to Florence Junction) included parts of Maricopa County, Chandler, Gilbert, the Gila River Indian Community, Queen Creek, and Pinal County and extends from I-10 to US 60 in Pinal County. This 31-mile long study area lies in the CAAG planning area, with 19 miles bordering the MAG planning area and the Gila River Indian Community.

The North-South study area is a 36-mile long area connecting US 60 near Apache Junction on the north to I-10 south of Coolidge.


TEMPE
UPE
LOOP 101
GILBERT
CHANDLER
Proposed Loop 202 Alignment
60
LOOP 202
JUNCTION
60
QUEEN CREEK
East Valley
Corridor Study Area
ARIZONA 587
ARIZONA 87
North-South
Corridor Study Area
ARIZONA 79
COOLIDGE
ARIZONA 187
FLOREN
ARIZONA 387
ARIZONA 87
ARIZONA 287
ARIZONA 79
COOLIDGE
ARIZONA 387
INTERSTATE 10
CASA
GRANDE
ARIZONA 87
ARIZONA 287
INTERSTATE 8
INTERSTATE 10
ELOY
Figure 2-1
Pinal County Corridors
Definition Study Area
Highways
Major Arterials
Collector
Railroad
N
0 1 2 4 6 8
Miles
Data Source:
Arizona Land Resource Information System
PINAL COUNTY CORRIDORS DEFINITION STUDY
Kimley-Horn
and Associates, Inc.
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3. PLANS AND STUDIES

The first task of the *Pinal Corridors Definition Study* was to compile available information and data and to prepare a summary of existing conditions within the corridor study areas. Relevant information on existing conditions as described in collected studies, reports, and other documents are summarized in *Working Paper No. 1*. Working Paper No. 1 can be accessed at ADOT's website at http://tpd.azdot.gov///planning/cds_pinal.php. **Table 3-1** provides a listing of the reviewed documents.

Table 3-1 – Summary of Collected Documentation

Doc. Type	Jurisdiction Agency	Author/ Originator	Document Title	Date
Proposal	Arizona State University	Morrison Institute for Public Policy	Conceptualization of a Future for "Superstitions Vistas"	September, 2004 (estimated)
Report	Central Arizona College	Applied Economics	Central Arizona College Bond Feasibility Study Demographic Analysis	May 14, 2004
Report	City of Apache Junction	Kirkham Michael Consulting Engineers	City of Apache Junction, Arizona Small Area Transportation Study	May, 2004
Hand-out	City of Apache Junction	City of Apache Junction	General Plan Land Use Element Summary	Not available
Report	City of Casa Grande	Lima & Associates	Casa Grande Multi-modal Transportation Study	December, 2001
Report	City of Chandler	DFD Architects	Chandler General Plan	November 1, 2001
Report	City of Chandler	Parsons Brinckerhoff	Chandler Transportation Study, Final Report	Revised October 23, 2003
Manual	City of Chandler	Not Available	Street Design and Access Control, Technical Design Manual #4	January, 2002
Report	City of Chandler, Valley Metro, MAG	BRW, Inc.	City of Chandler Transit Plan Update, Final Report	November, 2002
Report	City of Chandler, Valley Metro, MAG	BRW, Inc.	City of Chandler High Capacity Transit Major Investment Study	November, 2002
Report	City of Coolidge	Stantec Consulting	City of Coolidge General Plan Update	November 10, 2003
List	City of Coolidge	City of Coolidge	Developments Scheduled for Coolidge	January 19, 2005
Memor-andum	City of Coolidge	Tischler & Associates, Inc.	Demographic Data and Development Projections	February 12, 2004
Map	Maricopa Association of Governments	Maricopa Association of Governments	Roads of Regional Significance	Changes approved April 28, 1999

Table 3-1 – Summary of Collected Documentation (continued)

Doc. Type	Jurisdiction Agency	Author/ Originator	Document Title	Date
Report	Maricopa Association of Governments	Maricopa Association of Governments	Regional Transportation Plan	November 25, 2003
Report	Maricopa Association of Governments	Parsons Brinckerhoff	Southeast Maricopa/Northern Pinal County Area Transportation Study	September, 2003
Report	Maricopa County	Not Available	Maricopa County Major Streets and Routes Plan, Street Classification Atlas	Adopted April 18, 2001 Revised September, 2004
Report	Maricopa County Department of Transportation	Lee Engineering	Riggs Road Access Control and Corridor Improvement Study, Final Report, Volume I, II, and III of IV	July 20, 1999
Report	Maricopa County Department of Transportation	CH2M Hill	Corridor Study for Ellsworth Road, Elliot Road to Hunt Highway	November, 1997
Report	Maricopa County Department of Transportation	AGRA Infrastructure, Inc.	Final Access Control and Improvement Study, Power Road, Hunt Highway to Guadalupe Road	June, 2000
Report	Maricopa County Department of Transportation	Not Available	Bicycle Transportation System Plan	Adopted May 19,1999
Report	Pinal County	Lima & Associates	Pinal County Transportation Plan 2000 Update, Final Report and Executive Summary	September, 2000
Report	Pinal County	Entellus	Hunt Highway and Vineyard Road Limited Access Study	July 2, 2001
Report	Pinal County	Entranco, Inc.	Southern Pinal County Regional Transportation Plan	April 24, 2003
Report	Pinal County	Not Available	Pinal County Comprehensive Plan 2001	December 19, 2001
Report	Pinal County Department of Civil Works	JHK & Associates, Johnson-Brittain Associates	Hunt Highway Corridor Assessment Report	October, 1995
Letter, Support Material	Pinal County Department of Public Works	Kirkham Michael Consulting Engineers	Superstition Freeway Extension – Project Assessment	March 10, 2003

Table 3-1 – Summary of Collected Documentation (continued)

Doc. Type	Jurisdiction Agency	Author/ Originator	Document Title	Date
Report	Pinal County Department of Public Works	Curtis Lueck & Associates	Superstition Valley Transportation Study, Final Report	July 19, 1999
Report	Town of Florence	URS Corporation	Florence Area General Plan Update	April 9, 2003
Application	Salt River Project	Salt River Project	Application for a Certificate of Environmental Compatibility, Palo Verde to Pinal West 500kV Transmission Project	Not Available
Report	Town of Gilbert	Parsons Brinckerhoff	Town of Gilbert Arterial Street Plan	November, 2004
Report	Town of Gilbert	Parsons Brinckerhoff	Gilbert / East Valley Transit System Study, Long-Range Transit Plan	August, 2003
Report	Town of Queen Creek	Partners for Strategic Action, Lima & Associates, Design Workshop, PAA	Town of Queen Creek General Plan, 2002	May 15, 2002
Report	Williams Gateway Airport Authority, and the Maricopa County Department of Transportation	JHK & Associates, Lima & Associates, Transit Plus, Applied Economics	Williams Area Transportation Plan., Final Report and Executive Summary	March, 1997
Meeting Summary	Pinal County	Kimley-Horn and Associates, Inc.	Ironwood Drive DCR and Final Design	December 7, 2004
Site Plan	Dell Web	Dell Web	Preliminary site plan	December 9, 2004

4. EXISTING CONDITIONS DATA

In addition to the summary of existing conditions information gathered from other reports and studies (see chapter 3), supplemental existing conditions data were collected from local agencies and jurisdictions. This data were used in the needs and deficiencies evaluation process:

- Land use information;
- Roadway conditions;
- Travel data;
- Crash history of selected corridors;
- Traffic operations; and
- Socioeconomic conditions.

The following is a brief summary of information collected. The reader is referred to *Working Paper No. 1* for a comprehensive summary of this information.

4.1 Land use information

Land ownership within the study area is depicted in **Figure 4-1**, *Land Ownership*. As illustrated in **Figure 4-1,** the study area contains property within unincorporated Pinal County, City of Apache Junction and the Town of Florence. The largest landowner within the study area is the State of Arizona (Arizona State Trust Land). A significant portion of the study area lies within the Gila River Indian Community. The study area contains two land parcels owned by the United States Department of Defense. The first parcel is located adjacent to the CAP canal near Arizona Farms Road. The second parcel is the Rittenhouse Auxiliary Field (closed) located north of Queen Creek. The Bureau of Land Management controls several land parcels within the study area, most of which are located adjacent to the CAP.

Development patterns within the study area have in large part been influenced, and will continue to be influenced, by existing man-made features and geographic constraints including the CAP canal, and the Union Pacific and Magma Arizona Railroad. These and other existing and future man-made features are depicted in **Figure 4-2**, *Major Infrastructure and Utilities.*

Agricultural lands compose the southern and western portions of the study area with scattered residences throughout. The intensity of development and land use increases towards the northern and central portions of the study area. As seen in **Figure 4-3**, *Existing and Future Master Planned Communities*, development is particularly concentrated between Florence and Queen Creek along the Hunt Highway corridor.

Riggs Road and Hunt Highway are identified in the *SEMNPTS* study as potential alignment alternatives for the East Valley corridor. The western 1 ½ miles of Hunt Highway and Riggs Road between I-10 and Price Road is currently undeveloped land owned by the Gila River Indian Community. East of Price Road, significant development exists along both Hunt Highway and Riggs Road including the Sun Lakes community. Significant residential housing developments exist or are planned along Riggs Road and Hunt Highway between Price Road and the Maricopa County/Pinal County line.

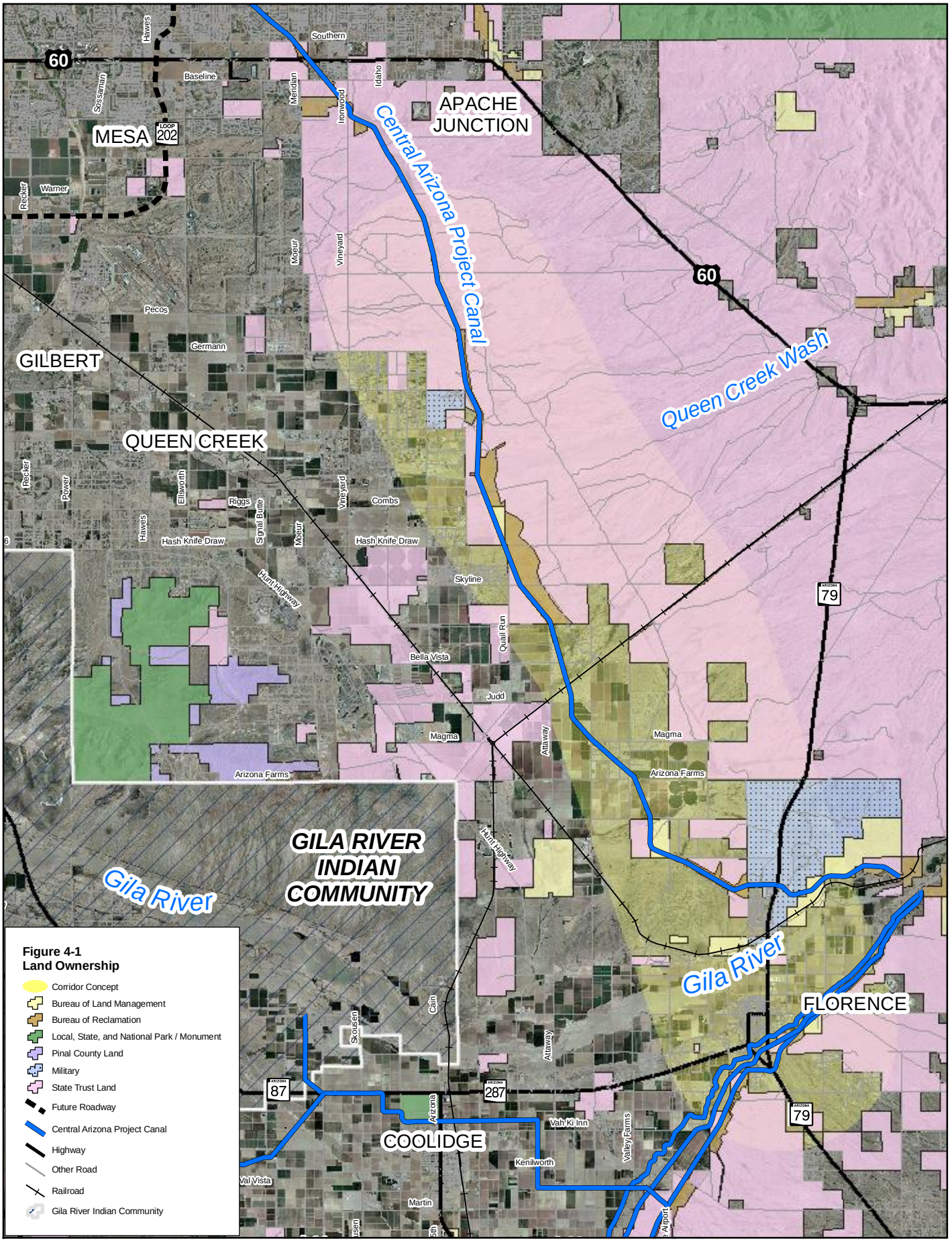

Figure 4-1
Land Ownership

- Corridor Concept
- Bureau of Land Management
- Bureau of Reclamation
- Local, State, and National Park / Monument
- Pinal County Land
- Military
- State Trust Land
- Future Roadway
- Central Arizona Project Canal
- Highway
- Other Road
- Railroad
- Gila River Indian Community

N

0 1 2 3 4 5 Miles

Data Source:
Arizona Land Resource Information System

PINAL COUNTY CORRIDORS DEFINITION STUDY

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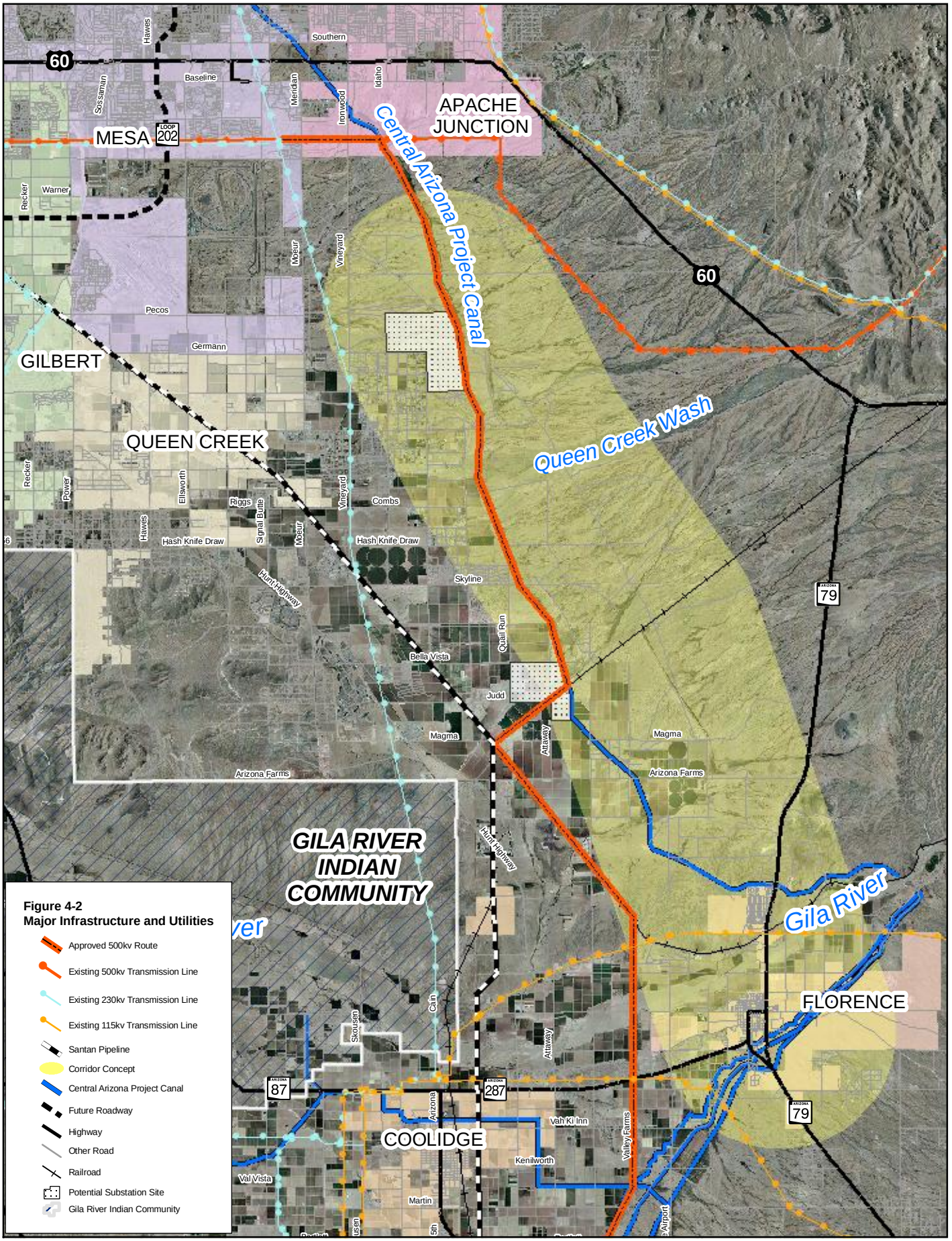
60
Hawes
Southern
Baseline
Sossaman
Meridian
Idaho
Ironwood
APACHE JUNCTION
MESA
LOOP 202
Central Arizona Project Canal
Recker
Warner
Moeur
Vineyard
60
Pecos
Germann
GILBERT
QUEEN CREEK
Queen Creek Wash
Power
Ellsworth
Riggs
Signal Butte
Combs
Hash Knife Draw
Hunt Highway
Skyline
79
Quail Run
Bella Vista
Judd
Magma
Attaway
Arizona Farms
GILA RIVER INDIAN COMMUNITY
Gila River
FLORENCE
Cain
Skousen
87
287
Arizona
COOLIDGE
Vah Ki Inn
Valley Farms
Kenilworth
Val Vista
Martin
Figure 4-2
Major Infrastructure and Utilities
Approved 500kv Route
Existing 500kv Transmission Line
Existing 230kv Transmission Line
Existing 115kv Transmission Line
Santan Pipeline
Corridor Concept
Central Arizona Project Canal
Future Roadway
Highway
Other Road
Railroad
Potential Substation Site
Gila River Indian Community
N
0 1 2 3 4 5 Miles
Data Source:
Arizona Land Resource Information System,
Salt River Project
PINAL COUNTY CORRIDORS DEFINITION STUDY
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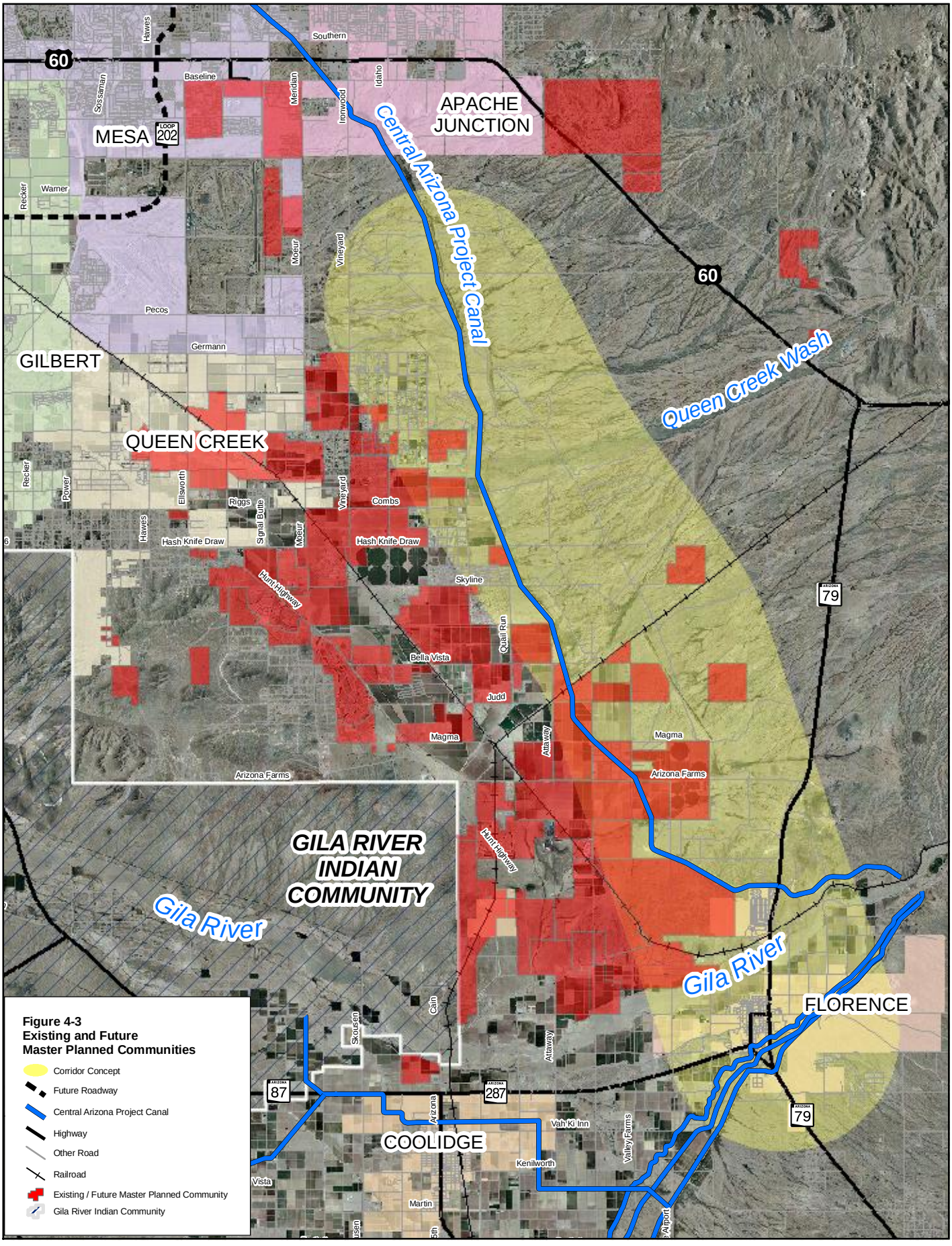

Figure 4-3
Existing and Future
Master Planned Communities

- Corridor Concept
- Future Roadway
- Central Arizona Project Canal
- Highway
- Other Road
- Railroad
- Existing / Future Master Planned Community
- Gila River Indian Community

N

0 1 2 3 4 5 Miles

Data Source:
Arizona Land Resource Information System

PINAL COUNTY CORRIDORS DEFINITION STUDY

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4.2 Existing (2004) Population and Employment Data

A travel demand model, referred to as the Pinal County Planning Model was developed to serve as the primary tool used to project existing and projected future traffic volumes within the study area. Base year (2004) socioeconomic projections were developed to support the Pinal Corridor Planning Model (PCPM).

A detailed description of the methodology, data sources used, and the final socioeconomic projections are contained in *Working Paper No. 1* and in the *Socioeconomics Estimate and Forecast Report* that was prepared for the Corridor Definition Studies. The following is a brief summary of this data.

4.2.1 Data Sources

Population, dwelling unit, and employment estimates were based on data from three existing regional modeling systems:

- The 2003 Southeast Maricopa/Northern Pinal County Transportation Study (SEMNPTS) model that extended the Maricopa Association of Governments (MAG) model into Pinal County;
- The Pinal County model developed for the 2000 Pinal County Transportation Plan; and
- The Apache Junction model developed for the 2003 Apache Junction Small Area Transportation Study.

In addition, two sources of control data were used:

- The 2004 Arizona Department of Economic Security (ADES) estimates of city and county population; and
- The 2004 Bond Feasibility Study (BFS) developed by Applied Economics for the Central Arizona College.

4.2.2 Base Year Estimates

Figure 4-4 summarizes the total 2004 population estimates from each source listed above. Overall, the four data sources used produce relatively consistent estimates of current population. The SEMNPTS data are somewhat higher, but this is likely a function of the linear extrapolation method used to generate 2004 data.

Table 4-1 provides a summary of the BFS population estimates by study area. Each of the studies used somewhat different definitions of study areas, making a direct comparison between the estimates impossible at the study area level.

Final population estimates for 2004 are shown in **Figure 4-5** and final total employment estimates are shown in **Figure 4-5**.

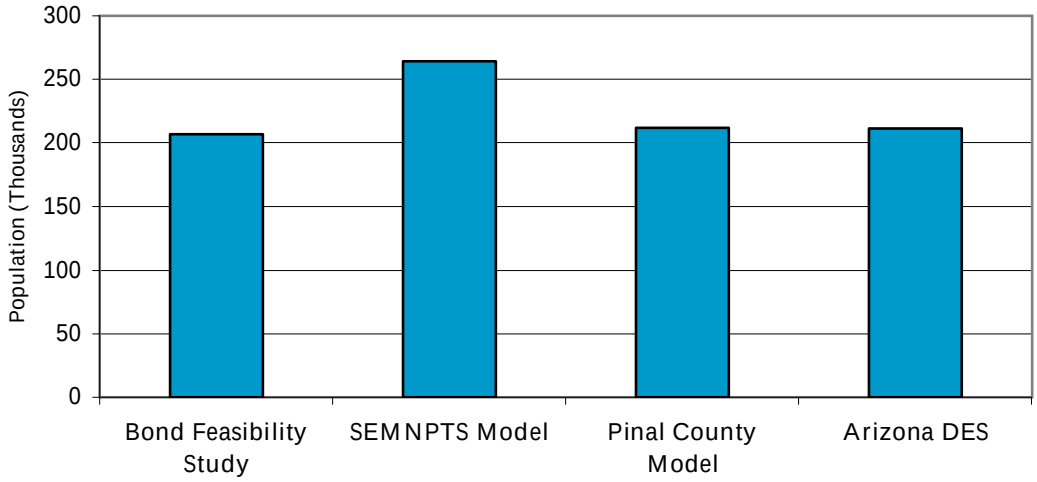


Figure 4-4 – Comparison of Pinal County Population Estimates, 2004

Source: Central Arizona College, 2004; Southeastern Maricopa County/Northern Pinal County Transportation Study, 2003; Pinal County, 2000; Apache Junction, 2003; and Cambridge Systematics, Inc., 2005.

Table 4-1 – BFS Population Estimates by Study Area

BFS Study Area		Population
1	Apache Junction	56,695
2	Superior	4,652
3	Maricopa-Stanfield	20,693
4	Casa Grande	52,486
5	Coolidge	14,933
6A	San Tan	18,663
6B	Florence	21,184
8	Eloy	17,497
Pinal County Total		206,803

Source: Central Arizona College, 2004.

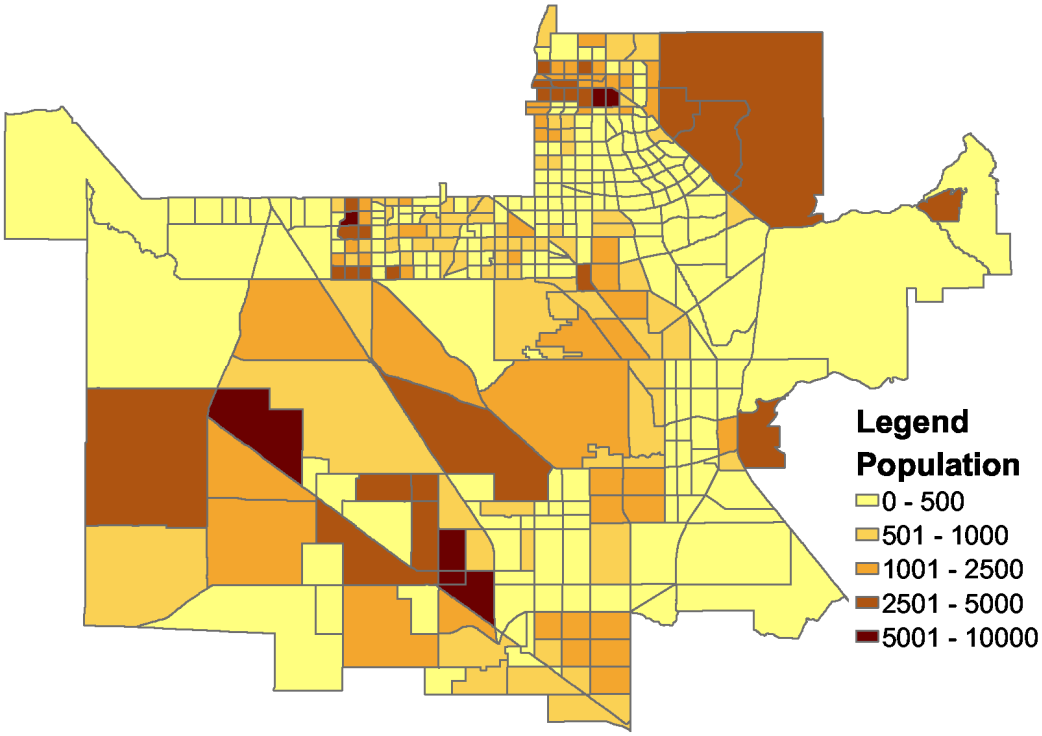


Figure 4-5 – PCPM 2004 Population Estimates by Zone

Source: Cambridge Systematics, Inc., 2005.

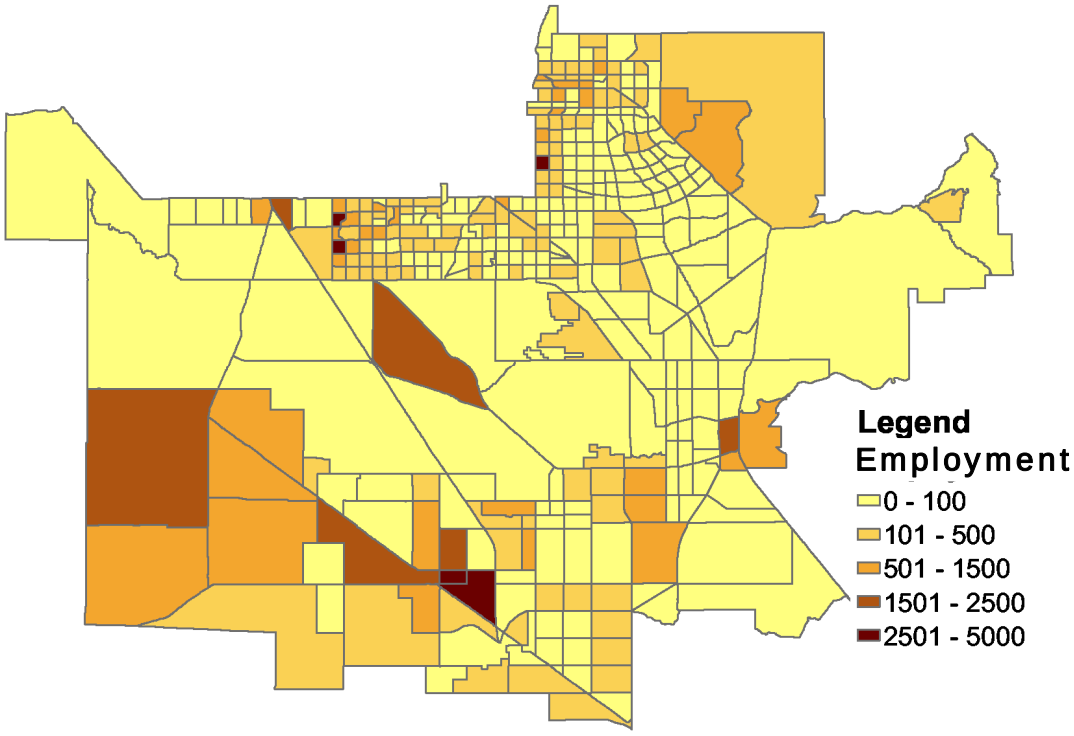
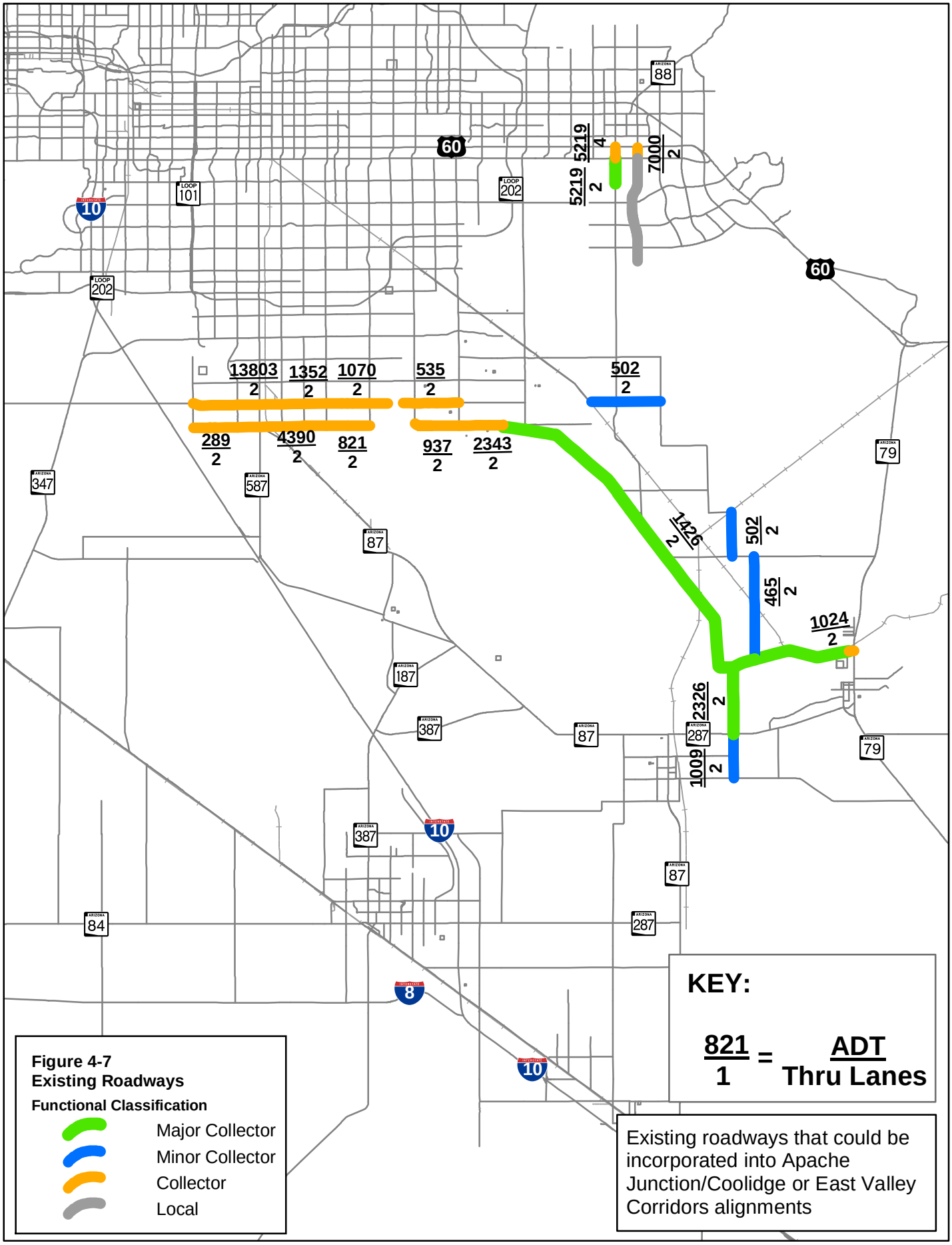


Figure 4-6 – PCPM 2004 Total Employment Estimates by Zone

Source: Cambridge Systematics, Inc., 2005.

4.3 Existing Roadway Conditions

The East Valley corridor and the North-South corridor as proposed by *SEMNPTS* could be constructed through a combination of improving existing roads and constructing new roadways. The functional classification, average annual daily traffic (AADT), and number of lanes for existing regionally significant roadways that could be considered incorporated into a future corridor alignment are shown in **Figure 4-7.**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LOOP 202
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7000 2
13803 2
1352 2
1070 2
535 2
502 2
289 2
4390 2
821 2
937 2
2343 2
1439 2
502 2
465 2
1024 2
2326 2
1009 2
KEY:
821 / 1 = ADT / Thru Lanes
Figure 4-7
Existing Roadways
Functional Classification
Major Collector
Minor Collector
Collector
Local
Existing roadways that could be incorporated into Apache Junction/Coolidge or East Valley Corridors alignments
N
0 2 4 6 8 10 Miles
Data Source:
Arizona Land Resource Information System, Salt River Project
PINAL COUNTY CORRIDORS DEFINITION STUDY
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4.3.1 Growth in Traffic Volumes between 2001 and 2003

The 2003 average annual daily traffic (AADT) for selected existing roadways within the corridor study areas is shown in **Figure 4-8**. 2001 traffic volumes were also obtained for selected major roadways that serve the region – Riggs Road, Hunt Highway, SR 87, Ellsworth Road, Meridian Road, and Vineyard Road. A comparison of the 2001 traffic volumes to the 2003 traffic volumes demonstrates (see **Figure 4-8**) that vehicles miles traveled increased significantly between 2001 and 2003, particularly on Hunt Highway, Riggs Road, and Ellsworth Road.

4.3.2 Crash Data Analysis

Crash data for 2001 to 2003 data were obtained for Riggs Road, Hunt Highway, SR 87, Ellsworth Road, Meridian Road, and Vineyard Road. An analysis of the data demonstrated (see **Figure 4-9)** that the number of crashes increased during the analysis period while the total number of fatalities decreased. This trend reflects the continued urbanization of the area where higher traffic volumes are resulting in more lower-speed crashes that are less severe (e.g. fewer fatalities). **Figure 4-10** shows a corresponding increase in the crash rate in million vehicles miles traveled (MVMT).

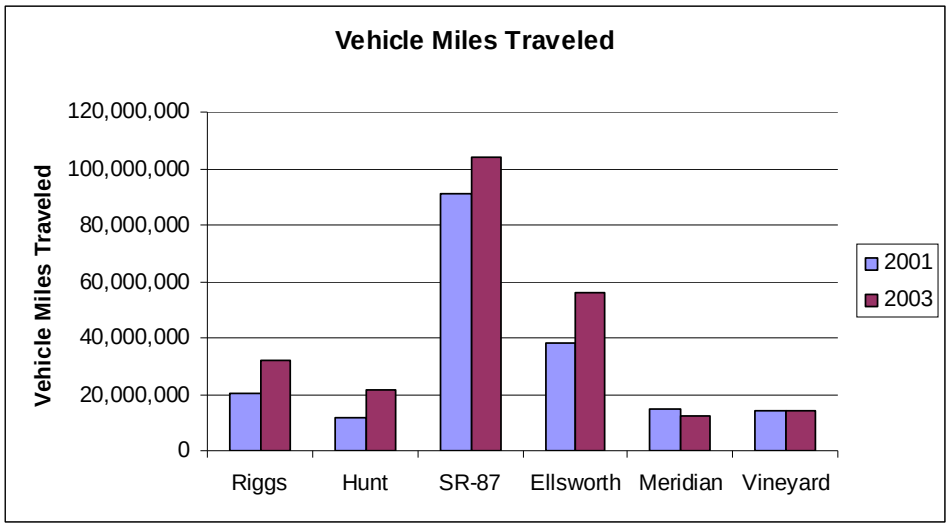


Figure 4-8 – Vehicle Miles Traveled, 2001 and 2003

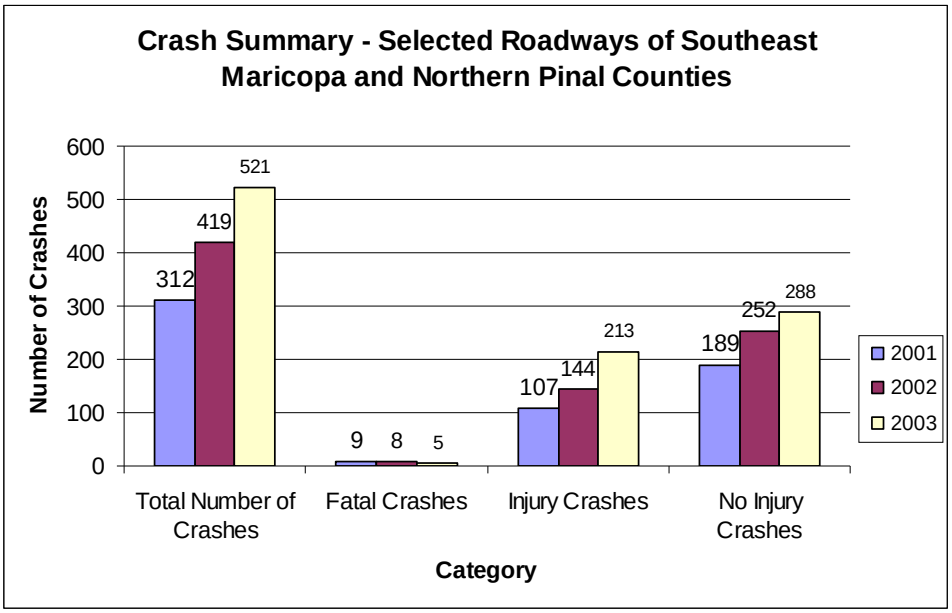


Figure 4-9 – Crashes, 2001 to 2003

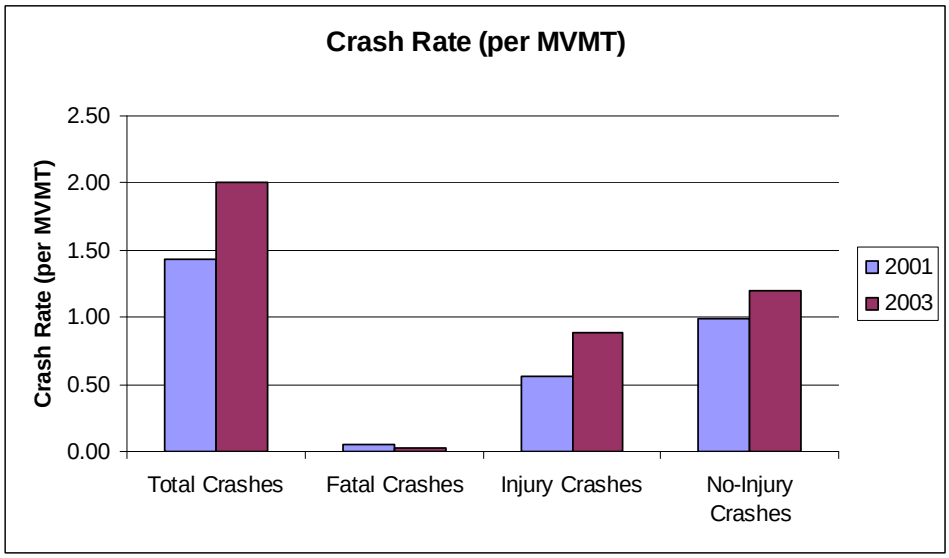
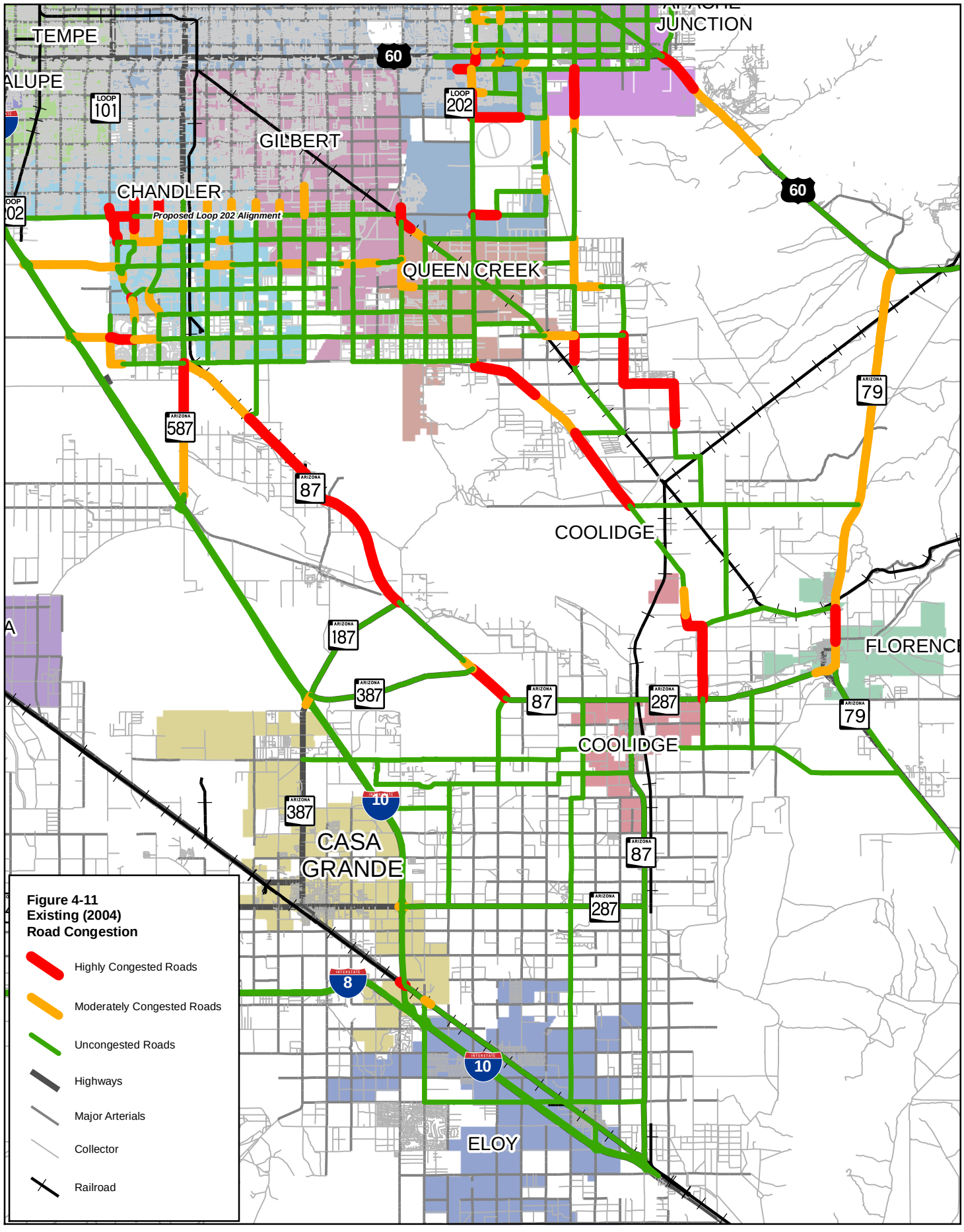


Figure 4-10 – Crash Rate, 2001 and 2003

4.3.3 Existing Traffic Congestion

The volume-to-capacity ratio (v/c) is a performance statistic commonly used to quantify congestion on a roadway. The volume-to-capacity ratio was calculated for each roadway within the study area using traffic volumes generated by the Pinal County Planning Model (2004 PCPM). The results are displayed in **Figure 4-11**. Roadway segments with a volume-to-capacity ratio of less than 0.8 are shown as uncongested. Roadway segments with a volume-to-capacity ratio between 0.8 and 1.0 are shown as moderately congested. Roadway segments with a volume-to-capacity ratio exceeding 1.0 are shown as highly congested.

While the 2004 PCPM was calibrated against available existing ground counts, the traffic volumes used in the volume-to-capacity calculations are generated by the model, and are not actual 'ground' counts. The volume-to-capacity calculation is based on a 24-hour average daily volume, and is not a peak-hour volume. As such, drivers may perceive congestion during the peak-hour that is not reflected on the map in **Figure 4-11**.


TEMPE
ALUPE
JUNCTION
GILBERT
CHANDLER
Proposed Loop 202 Alignment
QUEEN CREEK
COOLIDGE
COOLIDGE
FLORENCE
CASA GRANDE
ELOY
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LOOP 101
LOOP 202
LOOP 202
ARIZONA 587
ARIZONA 87
ARIZONA 187
ARIZONA 387
ARIZONA 387
ARIZONA 87
ARIZONA 287
ARIZONA 287
ARIZONA 87
ARIZONA 79
ARIZONA 79
INTERSTATE 10
INTERSTATE 8
INTERSTATE 10
Figure 4-11
Existing (2004)
Road Congestion
Highly Congested Roads
Moderately Congested Roads
Uncongested Roads
Highways
Major Arterials
Collector
Railroad
N
0 1 2 4 6 8
Miles
Data Source:
Arizona Land Resource Information System
PINAL COUNTY CORRIDORS DEFINITION STUDY
Kimley-Horn and Associates, Inc.
ADOT

5. PUBLIC AND JURISDICTIONAL PERSPECTIVES

Stakeholder and public perspectives are an important element of the study. The following activities were completed to receive stakeholder and public input.

§ Meetings were held with representatives from the following jurisdictions within the study area to receive input as to the preferred locations of the corridors, desired facility level, and community perspectives that may affect the corridors:

- § City of Apache Junction
- § Arizona State Land Department
- § City of Casa Grande
- § City of Chandler
- § City of Coolidge
- § City of Eloy
- § Central Arizona Association of Governments
- § Town of Gilbert
- § Pinal County
- § Town of Queen Creek
- § Salt River Project
- § Valley Metro
- § Town of Florence
- § Maricopa Association of Governments
- § Maricopa County Department of Transportation

The Gila River Indian Community was invited to participate in the jurisdictional meetings but postponed participation pending meetings with ADOT staff on this and other studies that affect the Community.

§ A presentation was made to the Chandler Transportation Commission on February 17, 2005.

§ A first round of open houses was held in the communities of Apache Junction, Coolidge (Central Arizona College), Queen Creek, and Chandler in April 2005. A summary of information presented and public comments received at the first round of open houses is contained in *Summary Report No. 1 – Public Involvement* and is available at http://tpd.azdot.gov///planning/cds_pinal.php.

§ A consultation meeting was held with Pinal County elected officials on August 15, 2005. A summary of information presented and comments received at consultation meeting is contained in *Working Paper No. 1* and is available at http://tpd.azdot.gov///planning/cds_pinal.php.

§ A second round of public open houses was held in the communities of Apache Junction, Florence, Gilbert, and Queen Creek in August 2005. A summary of information presented and public comments received at the open houses is contained in *Summary Report No. 2 – Public Involvement, Round Two,* and is available at http://tpd.azdot.gov///planning/cds_pinal.php.

§ Three additional public open houses were held in January 2006 in Gilbert, Florence, and Apache Junction. These public open houses were sponsored by ADOT Communications and Community Partnerships.

§ A third round of public open houses was held at Central Arizona College on June 21, 2006. A summary of information presented and public comments received at the open house is contained in *Summary Report No. 3 – Public Involvement, Round Three,* and is available at http://tpd.azdot.gov///planning/cds_pinal.php.

§ A working meeting with the Florence Town Council was conducted on July 24, 2006 that was attended by representatives from ADOT Transportation Planning Division. This was advertised by the Town of Florence as a public meeting.

§ A public open house was held in Coolidge on August 30, 2006. This public open house was sponsored by ADOT Communications and Community Partnerships.

6. FUTURE CONDITIONS

The next step in the study was to estimate future population, employment, and travel volumes on study area roadways. Population and employment projections are used to estimate project the traffic conditions on the study corridors in the year 2030.

6.1 2030 Population and Employment

Population and employment projections were developed for all three corridor definitions studies. These projections are described in detail in the *Socioeconomic Estimates and Forecast Report* and are available at *http://tpd.azdot.gov///planning/cds_pinal.php*.

Figure 6-1 provides a comparison of 2030 Pinal County population projections from the Bond Feasibility Study, the Southeast Maricopa Northern Pinal Transportation Study model, the Pinal County model, and the Arizona Department of Economic Security. As demonstrated in **Figure 6-2,** the annual rate of population growth in the study area is projected to increase over the next several years. However, as the total population increases, the growth rate is expected to moderate over time.

For the purposes of the PCPM, the CAC Bond Feasibility projections were used for each of the study areas as control totals. These estimates are the best available estimates of population growth in Pinal County and were developed using sophisticated methods that take into account actual development plans, available developable land in the County, expected demographic changes, and other related information. Final population projections for 2030 are shown in **Figure 6-3** and final total employment projections are shown in **Figure 6-4.**

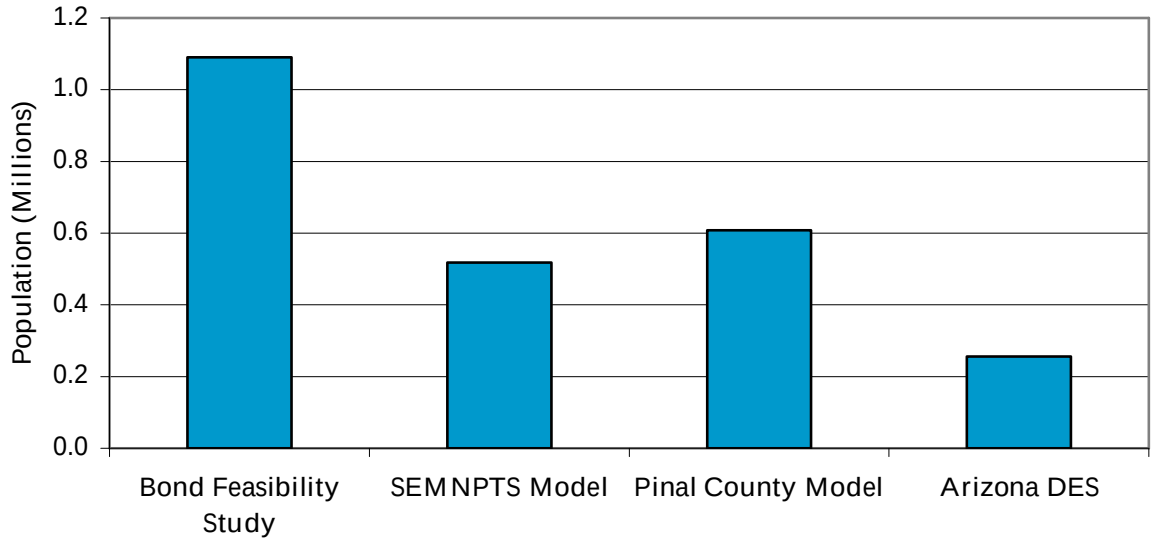


Figure 6-1 – Comparison of Pinal County Population Projections, 2030

Source: Central Arizona College, 2004; Southeast Maricopa/Northern Pinal County Transportation Study, 2003; Pinal County, 2000; Apache Junction, 2003; and Cambridge Systematics, Inc., 2005.

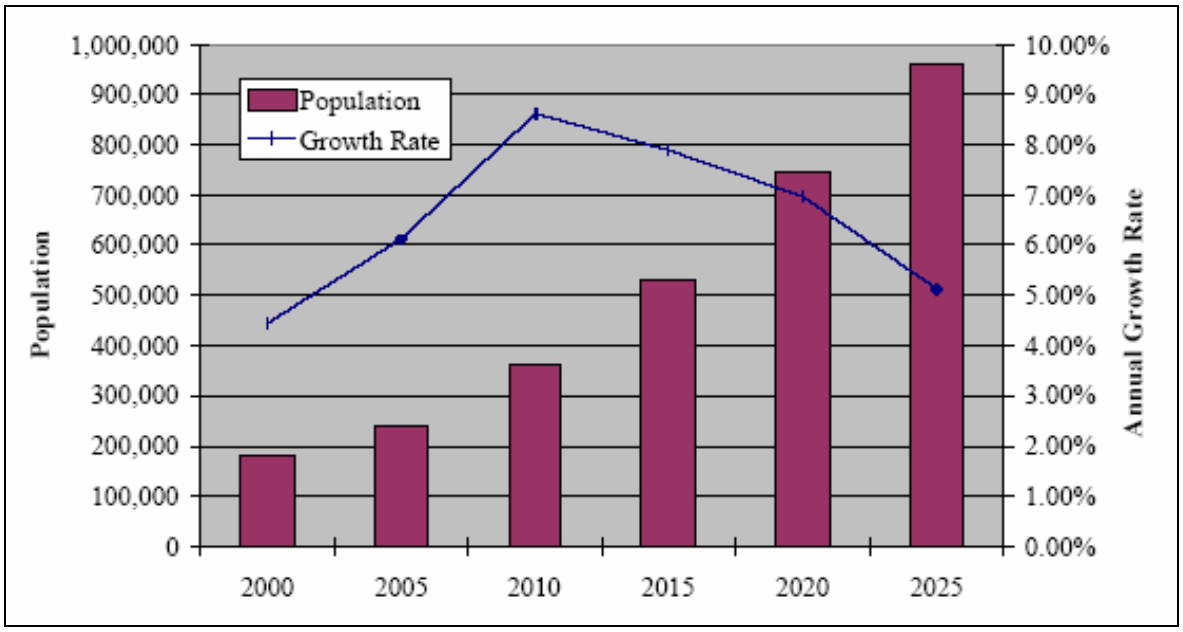
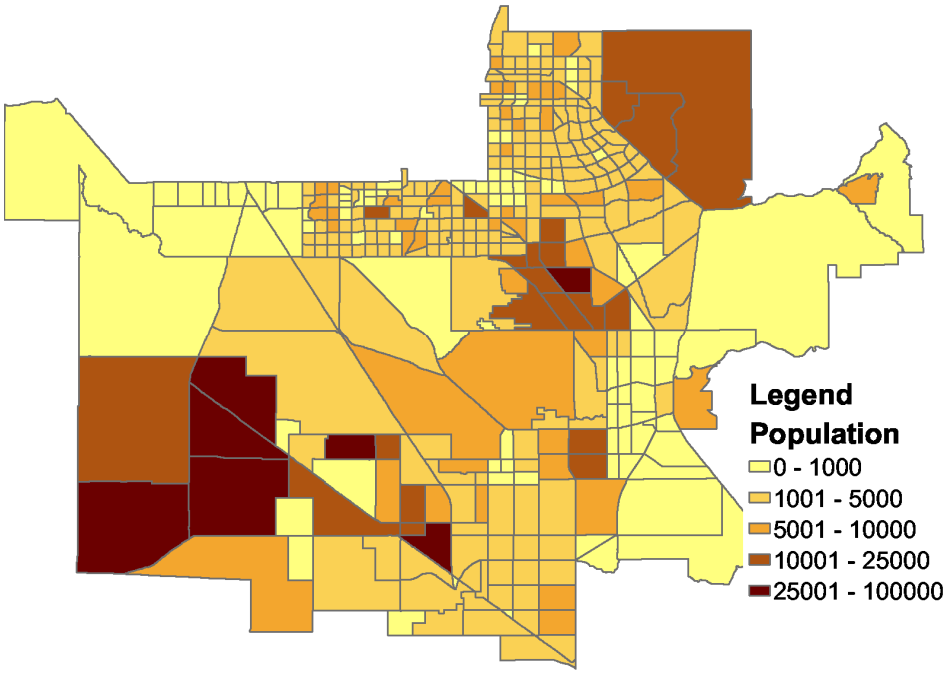


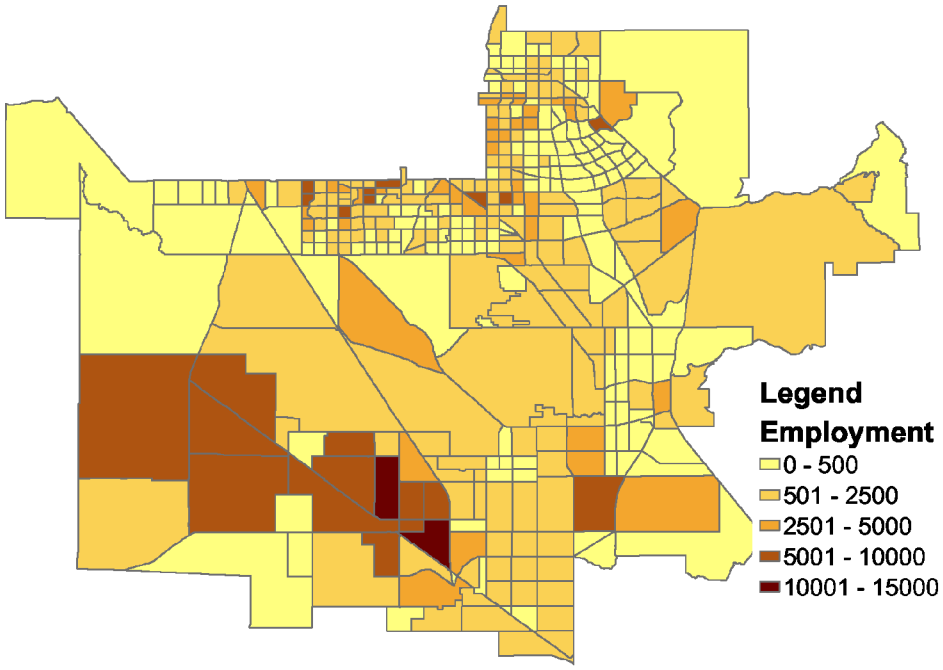
Figure 6-2 – Projected Population Growth in Pinal County

Source: Central Arizona College Bond Feasibility Study, 2003.



Source: Cambridge Systematics, Inc.

Figure 6-3 – PCPM 2030 Population Projections by Zone



Source: Cambridge Systematics, Inc., 2005.

Figure 6-4 – PCPM 2030 Employment Projections by Zone

6.2 2030 Travel Demand Volumes

Population and employment projects were input into the travel demand model that was developed for the ADOT Corridor Definition Studies. The primary output of the travel demand model is traffic volumes for each study area roadway from which the volume-to-capacity ratio of each roadway, a key measure of congestion, within the study area can be calculated. **Figure 6-5** depicts 2030 traffic congestion on study area roadways based on the volume-to-capacity ratio. Roads with a volume-to-capacity ratio of less than 0.8 are classified as uncongested roads. Roads with a volume-to-capacity ratio between 0.8 and 1.0 are classified as moderately congested roads. Finally, roads with a volume-to-capacity ratio exceeding 1.0 are classified as highly congested roads. The future 2030 transportation network depicted in **Figure 6-5** assumes the following:

- A comprehensive 4-lane arterial system will be developed in Pinal County by the year 2030.
- Roadway improvements depicted in Maricopa County are consistent with the Maricopa Association of Governments Regional Transportation Plan
- The number of lanes on state highways remains constant between 2004 and 2030.

Analysis of the 2030 future roadway network shows that a large percentage of roads will likely operate under congested conditions – 690 miles out of 1,111 total center-line miles of roads within the study area will operate at volume-to-capacity ratios exceeding 0.8.

The areas of highest congestion are in the northern sections of the study area including Chandler, Gilbert, Queen Creek, San Tan, and Apache Junction. As seen in **Figure 6-5**, roadways within these jurisdictions are expected to operate at near-capacity or over-capacity conditions. Roadways within the Coolidge and Florence areas are projected to operate reasonably well, though roadways carrying traffic to and from these areas, in a north/south direction, including Hunt Highway, SR 87, and SR 79, are projected to be congested in 2030.

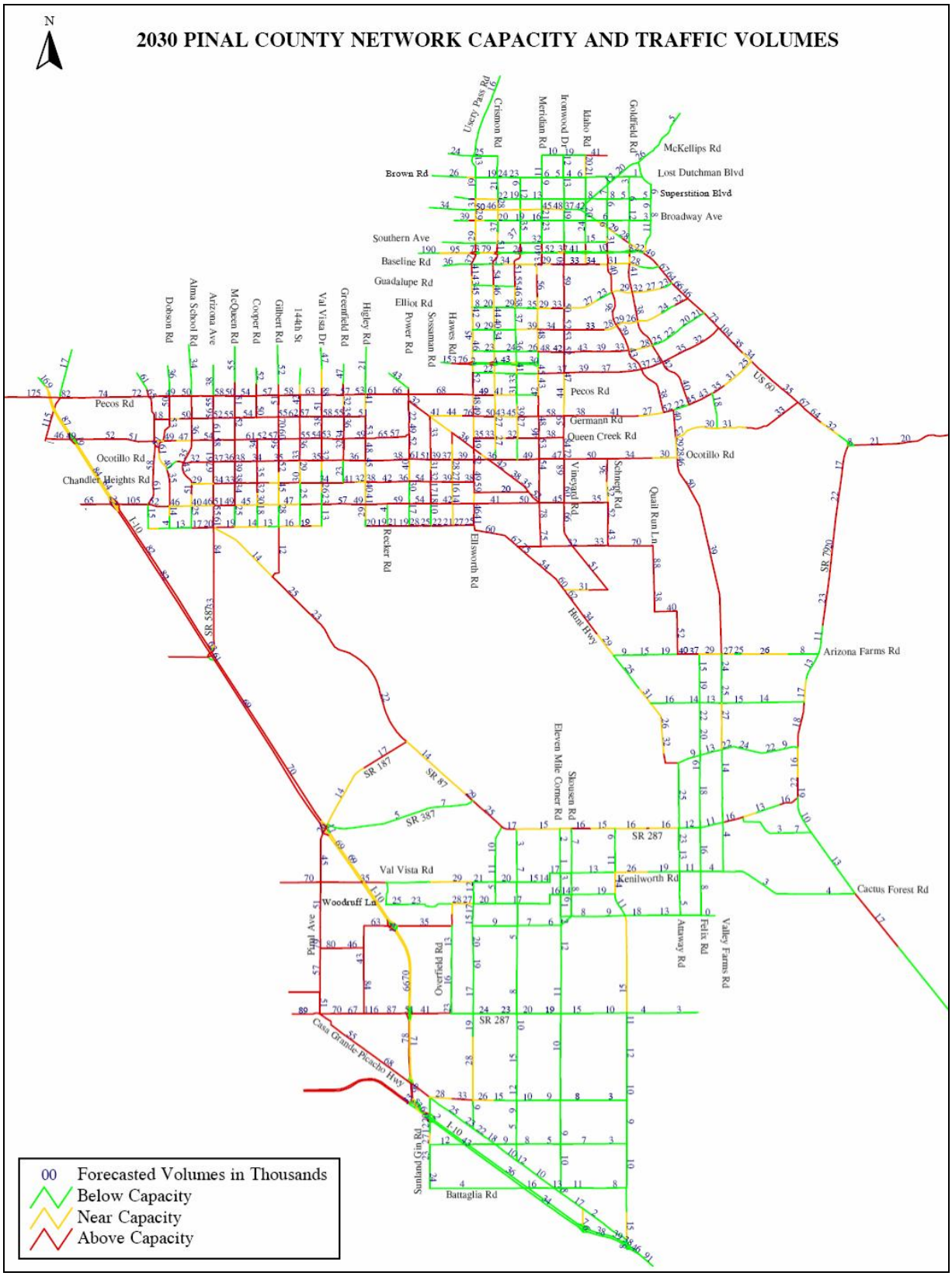


Figure 6- 5 –Road Congestion and Traffic Volumes on 2030 Transportation Network

7. TRANSPORTATION NEEDS AND DEFICIENCIES

A review of existing and future conditions reveals several transportation deficiencies within the Pinal County Corridors Study area. Identification of deficiencies provided a baseline for use in evaluating alternative planning level corridor definitions during the alternatives and feasibility analysis phases of the Corridor Definition Study.

- **Transportation Network Safety** - Crash statistics show that an increase crash rate has accompanied an increase in the number of vehicle miles traveled, characteristic of an urbanizing area.
- **Transportation Network Performance** - A limited arterial system currently provides connectivity between Pinal County and Maricopa County. As development continues, it is projected that the performance of roads such as Ironwood, Vineyard, and Hunt Highway, even if they are improved to major 6-lane arterials, will continue to degrade. As previously illustrated in **Figure 6-5**, a large percentage of roads may experience congestion in the year 2030 - even with an enhanced arterial network.
- **Local Transportation Planning -** Population increases and the associated increase in traffic have begun to exceed the capacity of the local and regional transportation system and in some cases are projected to exceed the capacity of planned system enhancements. Several local jurisdictions recognize that current general plans and transportation studies do not adequately account for the amount of development that has occurred and will continue to occur with the study area over the next several years. Agencies agree that the current and planned transportation network may not be able to accommodate the anticipated population. In an effort to respond to the rapid pace of development, several jurisdictions including Casa Grande, City of Maricopa, Florence, Coolidge, and Pinal County have conducted or are currently conducting Small Area Transportation Studies (SATS). The primary objective of a SATS is to develop a transportation plan to guide programming on local roads (i.e., city and county roads) over a 20-year time frame. However, a significant level of uncertainty exists within these jurisdictions' SATS until new corridors, even after adoption by the State Transportation Board, are programmed for funding. Regardless of whether funds are programmed for the construction of new corridors, local agencies must develop an arterial system within the study area to accommodate growth. This must happen whether or not new corridors are constructed. Furthermore, a local transportation network must accommodate traffic to and from the corridors.
- **Development Pressure within Study Area -** The rapid pace of development within the study area will continue to limit opportunities for transportation corridors. Corridor opportunities (e.g., large linear tracts of vacant land where a new transportation corridor could be constructed without negatively impacting existing homes and neighborhoods) are quickly disappearing as new homes and subdivisions are constructed. The corridors recommended by this study may eventually be infeasible to construct because of the high costs of right-of-way and the potential negative impact of the corridors on adjacent neighborhoods. Immediate action is required to preserve right-of-way for the recommended corridors.

8. ALTERNATIVES DEVELOPMENT AND FEASIBILITY ANALYSIS

The next phase of the Pinal County Corridors Definitions Study was to document transportation needs within the study area, develop alternative corridor definitions that meet transportation needs, and subject each alternative to a feasibility analysis.

The needs and feasibility analysis is documented in *Working Paper No. 2*, available at http://tpd.azdot.gov///planning/cds_pinal.php and is summarized in the following sections. Specifically, this chapter contains a summary of the following:

§ Findings and conclusions of the needs analysis;
§ Development of corridor definition alternatives;
§ Feasibility analysis of corridor definition alternatives;
§ Recommended corridor definition alternative;
§ Summary of the next steps that are required for corridor development.

8.1 Needs and Feasibility Evaluation Process

As previously stated, a primary purpose of the *Pinal County Corridors Definition Study* was to evaluate the need for and the feasibility of constructing state highway corridors in Pinal County to supplement the future transportation system to be developed in northeast Pinal County.

8.1.1 Needs Evaluation Criteria

The corridor needs evaluation process includes four primary criteria:

§ First, it must be demonstrated that the future (2030) transportation network (without the proposed corridors) will not be able to accommodate the projected vehicle demand in 2030.
§ Second, the state highway corridor(s) must attract enough volume in 2030 to warrant a new roadway. Corridors that do not attract enough volume to warrant a new roadway will not be recommended.
§ Third, the corridors must provide some degree of relief to other transportation facilities within the study area. Corridor segments that do not attract a sufficient amount of traffic will not be recommended.
§ Fourth, the corridors must establish connectivity with the existing state highway system. Policies of the State of Arizona Transportation Board assert that the State Highway System should include routes that are primarily designed to carry through traffic and that connect regions and population centers to improve mobility and commerce throughout the state. Corridors that primarily serve local traffic are the responsibility of local jurisdictions.

The results of the needs analysis are documented in **Section 9** of this report.

8.1.2 Feasibility Evaluation Overview

The next step following corridors needs analysis is to determine the feasibility of constructing the corridors. The purpose of the feasibility analysis is to identify potential opportunities and constraints for the location of the corridor and to identify any engineering, environmental, socioeconomic, and land use compatibility issues that would make it impractical to construct the corridor. The results of the feasibility analysis are presented in **Section 9** of this report.

8.2 Pinal County Planning Model

The needs analysis is based upon the projected number of vehicles that will use the roadway system within the study area in the year 2030. This vehicle demand is estimated by creating various scenarios in the PCPM travel demand model that was developed for the definition studies.

Several PCPM analysis scenarios were developed. These ranged from the base condition 'no-build' (no new corridors are constructed), to 'construct all new corridors'. These scenarios were incrementally analyzed to create a final scenario – the Corridor Concept. The Corridor Concept scenario includes the portions of the study corridors that meet the needs evaluation criteria listed in section 8.1.1.

Table 8-1 describes each step of the scenario modeling process that was followed to develop the Corridor Concept. The emergent Corridor Concept was then carried forward to the feasibility analysis that is described in **Section 9.0**.

Table 8-1 – Needs Analysis Scenarios

Scenario	Description
Step 1 –2030 Base Future Network	• No new freeway corridors; • All planned or programmed investments in Maricopa County consistent with 2030 Maricopa Association of Governments Regional Transportation Plan (MAG RTP); • Planned and programmed investments in Pinal County; as consistent with Pinal County Transportation Improvement Program, Pinal County Small Area Transportation Study, Apache Junction Small Area Transportation Study, plus a basic arterial infrastructure that will be required to support future development that will be constructed in conjunction with large developments and master planned communities. • Development of an arterial system through State Trust Lands; • Widening of existing arterials to 4 lanes throughout Pinal County; • No change to the existing state highway system, except for I-10, which is expected to be widened to 6 lanes.
Step 2 –2030 Enhanced Future Network (See **Figure 8-2**)	• No new freeway corridors; • Improvements as described in the 2030 Base Future Network, with the following modifications: - Widening the future arterial network in Pinal County from 4 to 6 lanes north of SR 287; - Widening the non-interstate state highway network from 2 to 4 lanes. • All planned or programmed investments in Maricopa County consistent with 2030 MAG RTP;
Step 3 –2030 Four-Corridors Network	• Improvements as described in the 2030 Base Future Network; • The four corridors proposed by the 2003 Southeast Maricopa-Northern Pinal Transportation Study; - North-South Corridor - East Valley Corridor - US 60 Re-route *(Refer to US 60 Corridor Study);* - Williams Gateway Corridor, extending from Pinal County line to US 60 (*Refer to MAG Williams Gateway Corridor Study*);

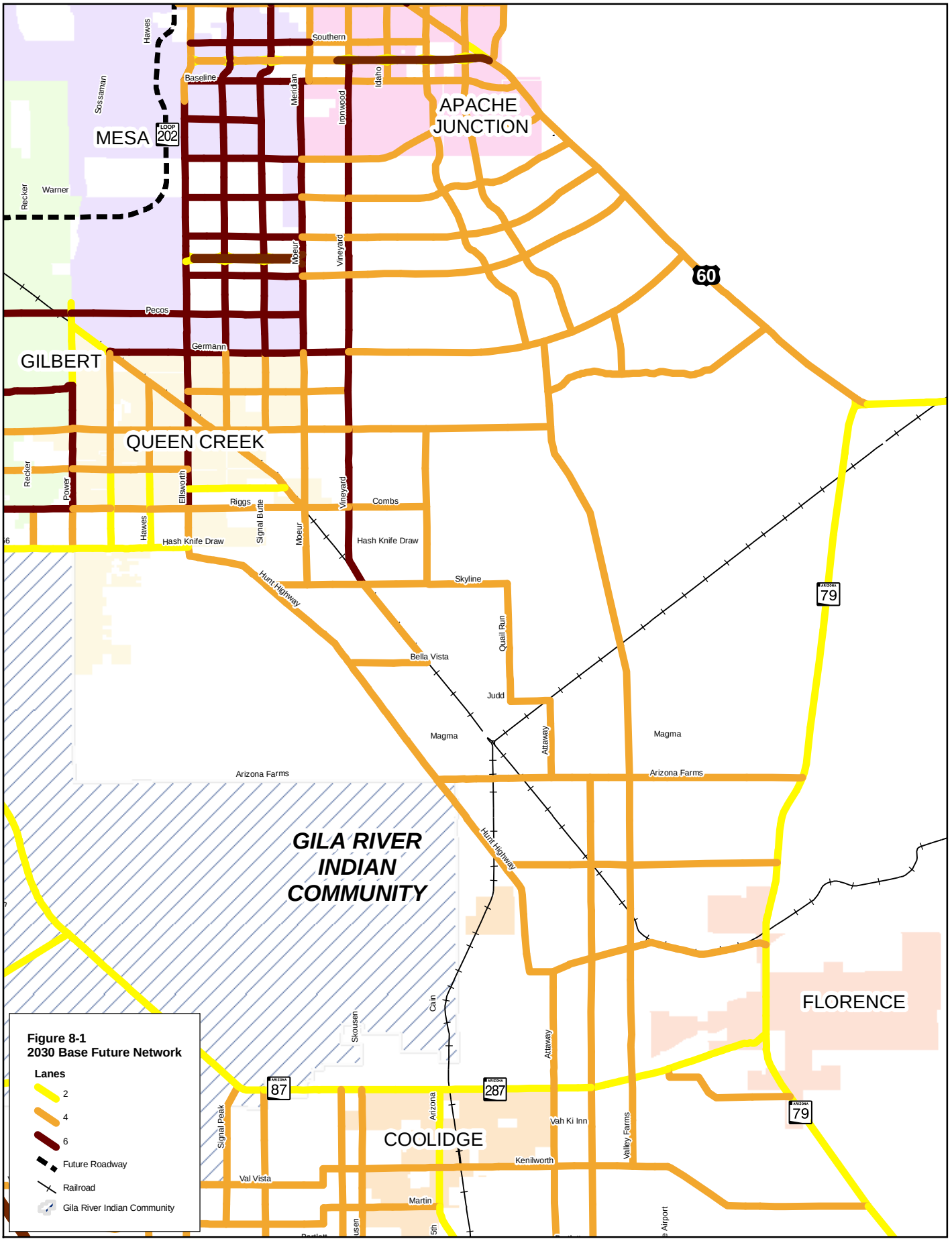
Table 8-1 – Needs Analysis Scenarios (continued)

Scenario	Description
Step 4 –2030 Corridor Concept Network	• Improvements as described in 2030 Base Future Network; • New corridors with facility level and number of lanes determined based upon a joint study team review of traffic volumes on the 2030 All Corridors Network, and from analysis of a number of "what-if" scenarios. The Corridor Concept includes: - North-South corridor extending from Williams Gateway corridor alignment (approx. Frye Road) to SR 287 in Florence. - US 60 Re-route *(Refer to US 60 Corridor Study);* - Williams Gateway corridor, extending from Pinal County line North-South corridor (*Refer to MAG Williams Gateway Corridor Study*);
Step 5 –2030 Corridor Concept Network (Plus State Highway Improvements)	• All improvements as described in Corridor Concept Network. • Improvement of existing non-interstate state highway facilities (e.g., SR 79, SR 287) to 4-lanes.

8.3 Needs Analysis Findings

Figure 8-1, **Figure 8-2,** and **Figure 8-3** illustrate the number of lanes modeled in the 2030 Base Future Network, 2030 Enhanced Network and the 2030 Four-Corridors Network scenarios, respectively. The resulting 2030 traffic volumes and level of congestion for the Base Network and for the All Network scenarios are shown in **Figure 8-4** and **Figure 8-5.** Level of congestion is determined by calculating a traffic volume-to-roadway capacity ratio for each roadway segment. Roads with a traffic volume-to-roadway capacity ratio of less than 0.8 are considered uncongested. Roads with a traffic volume-to-roadway capacity ratio between 0.8 and 1.0 are considered moderately congested, and roads with a volume-to-capacity ratio greater than 1.0 are considered congested.

To facilitate the needs analysis process, the study corridors were divided into segments consistent with the location of other infrastructure, proposed roads, and the level of traffic volume. The corridors segments are illustrated in **Figure 8-6**. Each segment was subsequently re-assigned the number of lanes commensurate with modeled traffic volumes. The PCPM was re-run yielding updated traffic volumes for each of the revised corridor segments, and for a number of additional 'what-if' scenarios as described in Working Paper No.2. Through this iterative process, a Corridor Concept was developed. The Corridor Concept is explained in detail in **Section 8.4**.


MESA
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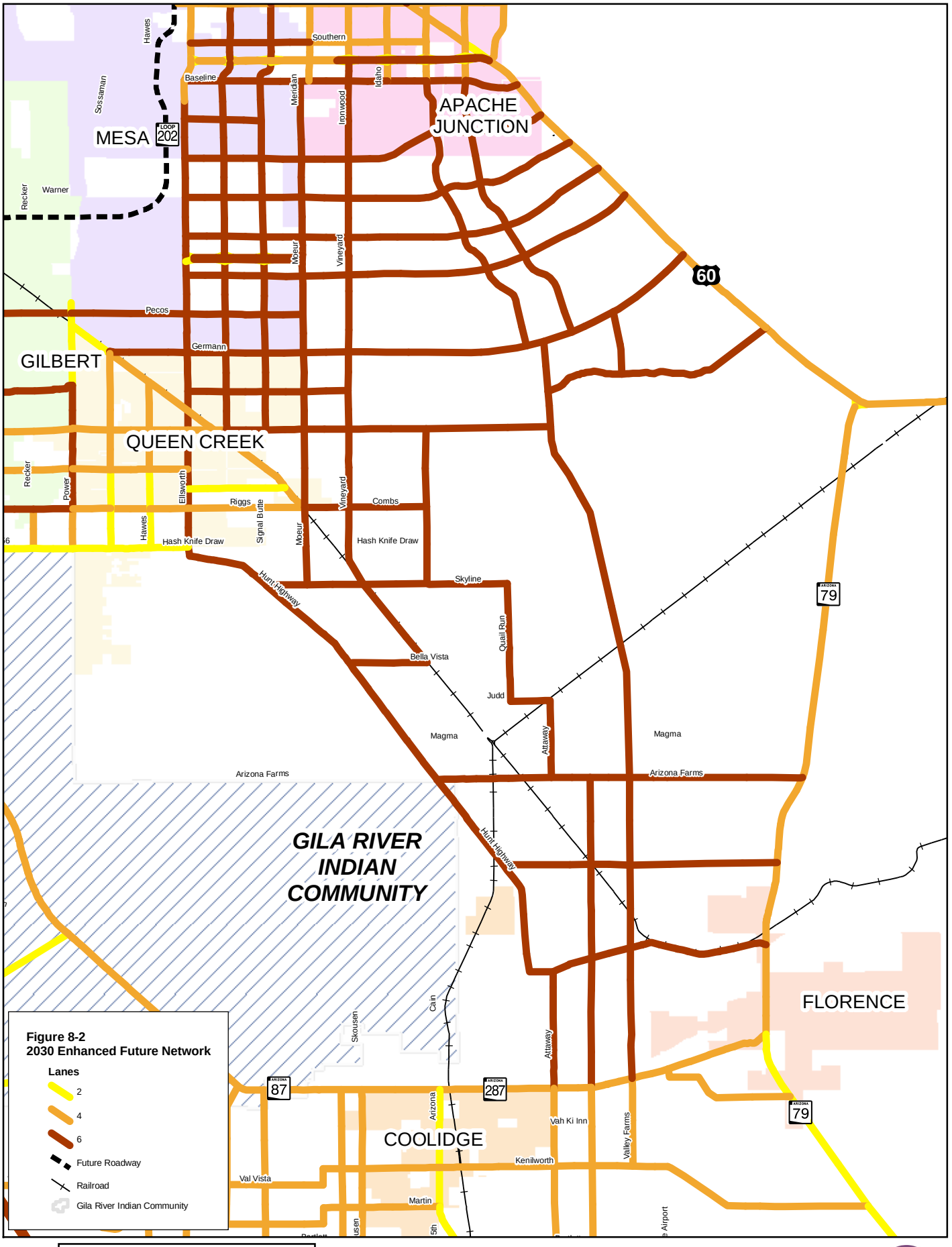
APACHE JUNCTION
GILBERT
QUEEN CREEK
COOLIDGE
FLORENCE
GILA RIVER INDIAN COMMUNITY
60
79
87
287
Hawes
Sossaman
Recker
Warner
Southern
Baseline
Meridian
Idaho
Ironwood
Vineyard
Moeur
Pecos
Germann
Power
Ellsworth
Riggs
Signal Butte
Combs
Hash Knife Draw
Hunt Highway
Skyline
Quail Run
Bella Vista
Judd
Magma
Attaway
Arizona Farms
Cain
Skousen
Arizona
Signal Peak
Vah Ki Inn
Valley Farms
Kenilworth
Val Vista
Martin
Figure 8-1
2030 Base Future Network
Lanes
2
4
6
Future Roadway
Railroad
Gila River Indian Community
N
0 1 2 3 4 5 Miles
Data Source:
Arizona Land Resource Information System
PINAL COUNTY CORRIDORS DEFINITION STUDY
Kimley-Horn and Associates, Inc.
ADOT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Southern
Baseline
Pecos
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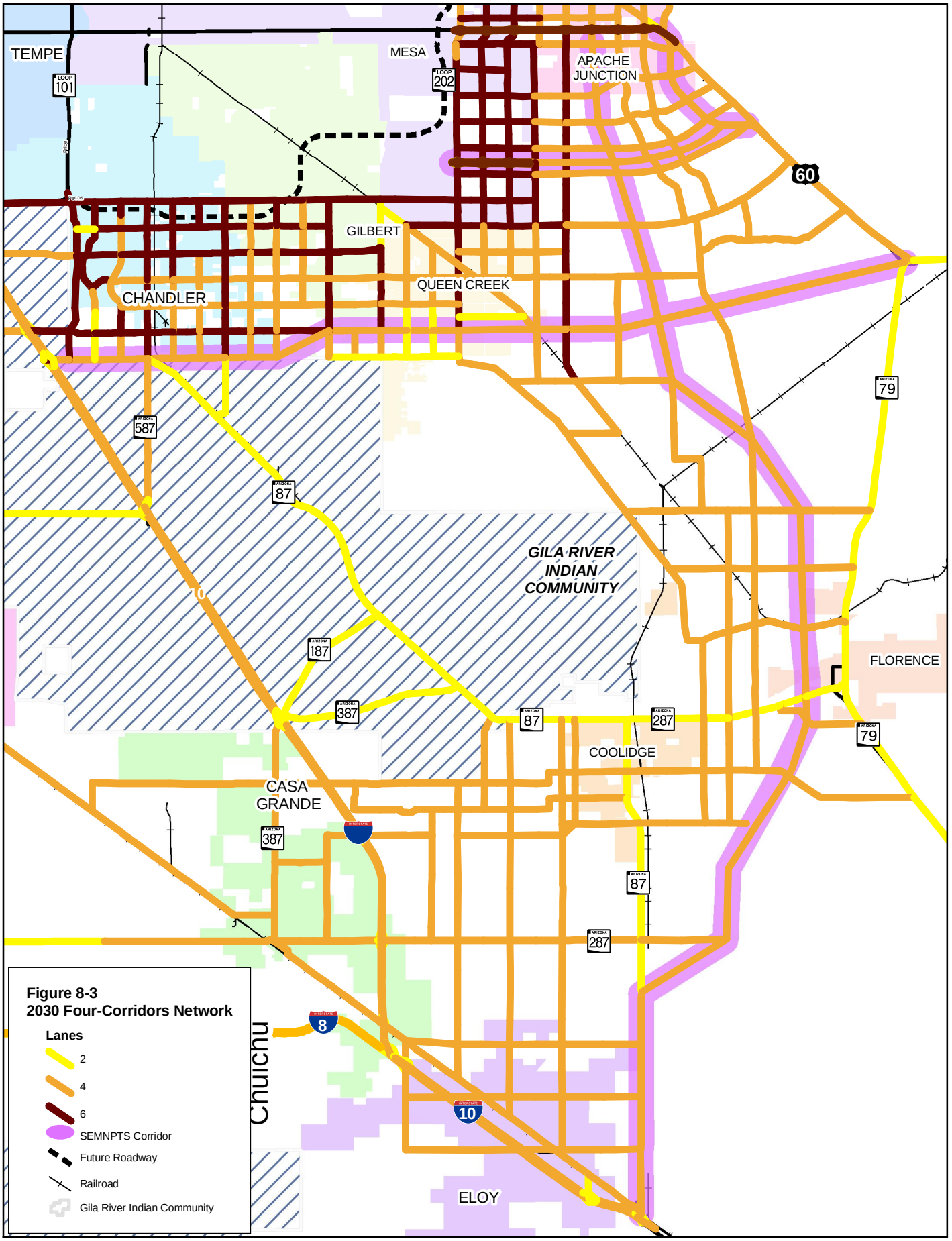
Riggs
Combs
Skyline
Hash Knife Draw
Hunt Highway
Bella Vista
Judd
Magma
Arizona Farms
Kenilworth
Val Vista
Martin
Vah Ki Inn
Hawes
Sossaman
Meridian
Idaho
Ironwood
Recker
Warner
Moeur
Vineyard
Power
Ellsworth
Signal Butte
Quail Run
Attaway
Cain
Skousen
Arizona
Valley Farms
Figure 8-2
2030 Enhanced Future Network
Lanes
2
4
6
Future Roadway
Railroad
Gila River Indian Community
N
0 1 2 3 4 5 Miles
Data Source:
Arizona Land Resource Information System
PINAL COUNTY CORRIDORS DEFINITION STUDY
Kimley-Horn and Associates, Inc.
ADOT


TEMPE
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APACHE JUNCTION
GILBERT
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CHANDLER
GILA RIVER INDIAN COMMUNITY
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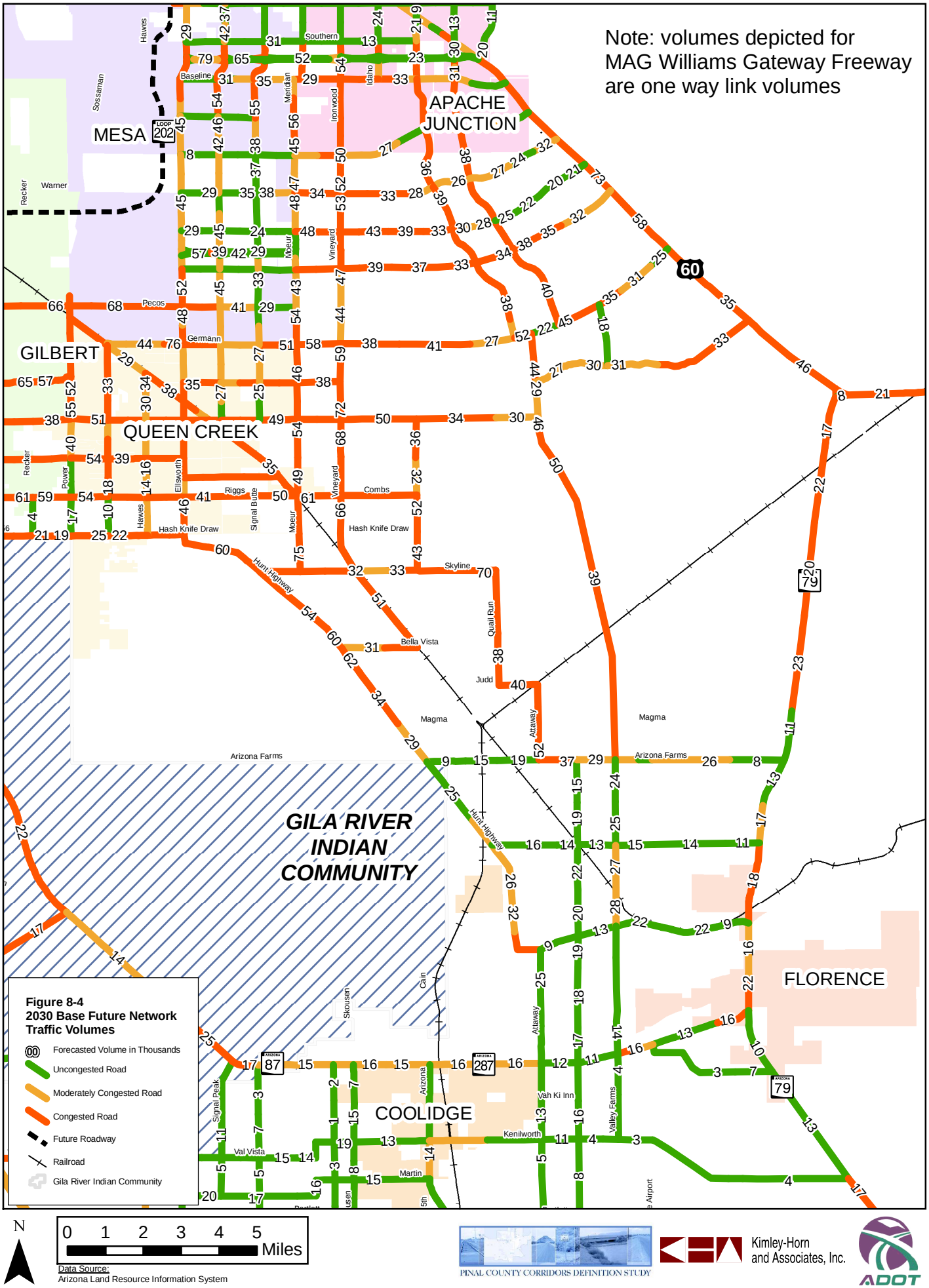
COOLIDGE
CASA GRANDE
ELOY
Chuichu
LOOP 101
LOOP 202
60
79
587
87
10
187
387
287
8
Figure 8-3
2030 Four-Corridors Network
Lanes
2
4
6
SEMNPTS Corridor
Future Roadway
Railroad
Gila River Indian Community
N
0 1 2 3 4 5
Miles
Data Source:
Arizona Land Resource Information System
PINAL COUNTY CORRIDORS DEFINITION STUDY
Kimley-Horn and Associates, Inc.
ADOT


Note: volumes depicted for MAG Williams Gateway Freeway are one way link volumes
MESA
APACHE JUNCTION
GILBERT
QUEEN CREEK
COOLIDGE
FLORENCE
GILA RIVER INDIAN COMMUNITY
Arizona Farms
Magma
Hash Knife Draw
Hunt Highway
Bella Vista
Skyline
Combs
Riggs
Germann
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Warner
Recker
Power
Ellsworth
Signal Butte
Meridian
Idaho
Ironwood
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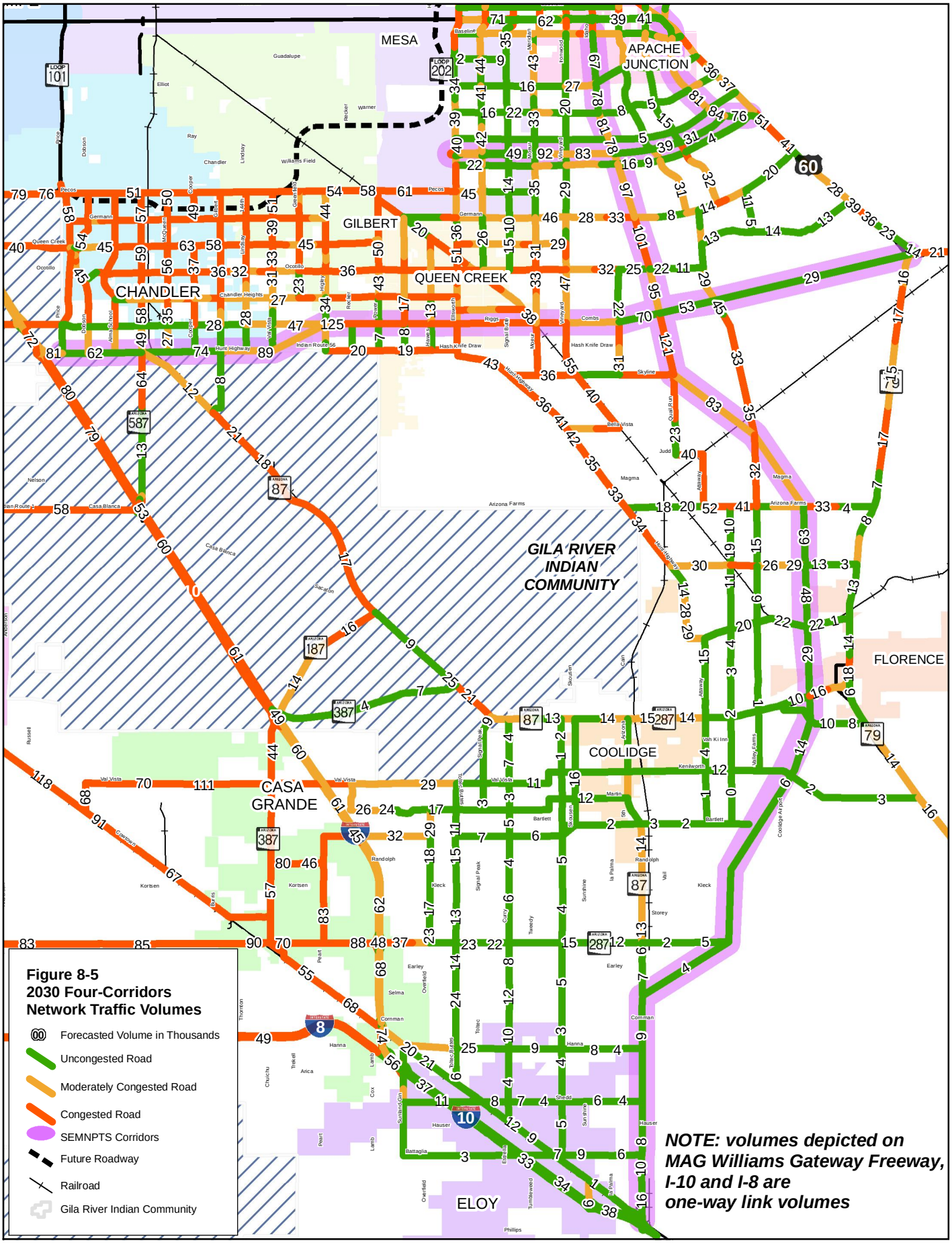
Hawes
Sossaman
Quail Run
Judd
Attaway
Cain
Skousen
Arizona
Signal Peak
Val Vista
Martin
Kenilworth
Valley Farms
Vah Ki Inn
Figure 8-4
2030 Base Future Network
Traffic Volumes
Forecasted Volume in Thousands
Uncongested Road
Moderately Congested Road
Congested Road
Future Roadway
Railroad
Gila River Indian Community
N
0 1 2 3 4 5 Miles
Data Source:
Arizona Land Resource Information System
PINAL COUNTY CORRIDORS DEFINITION STUDY
Kimley-Horn and Associates, Inc.
ADOT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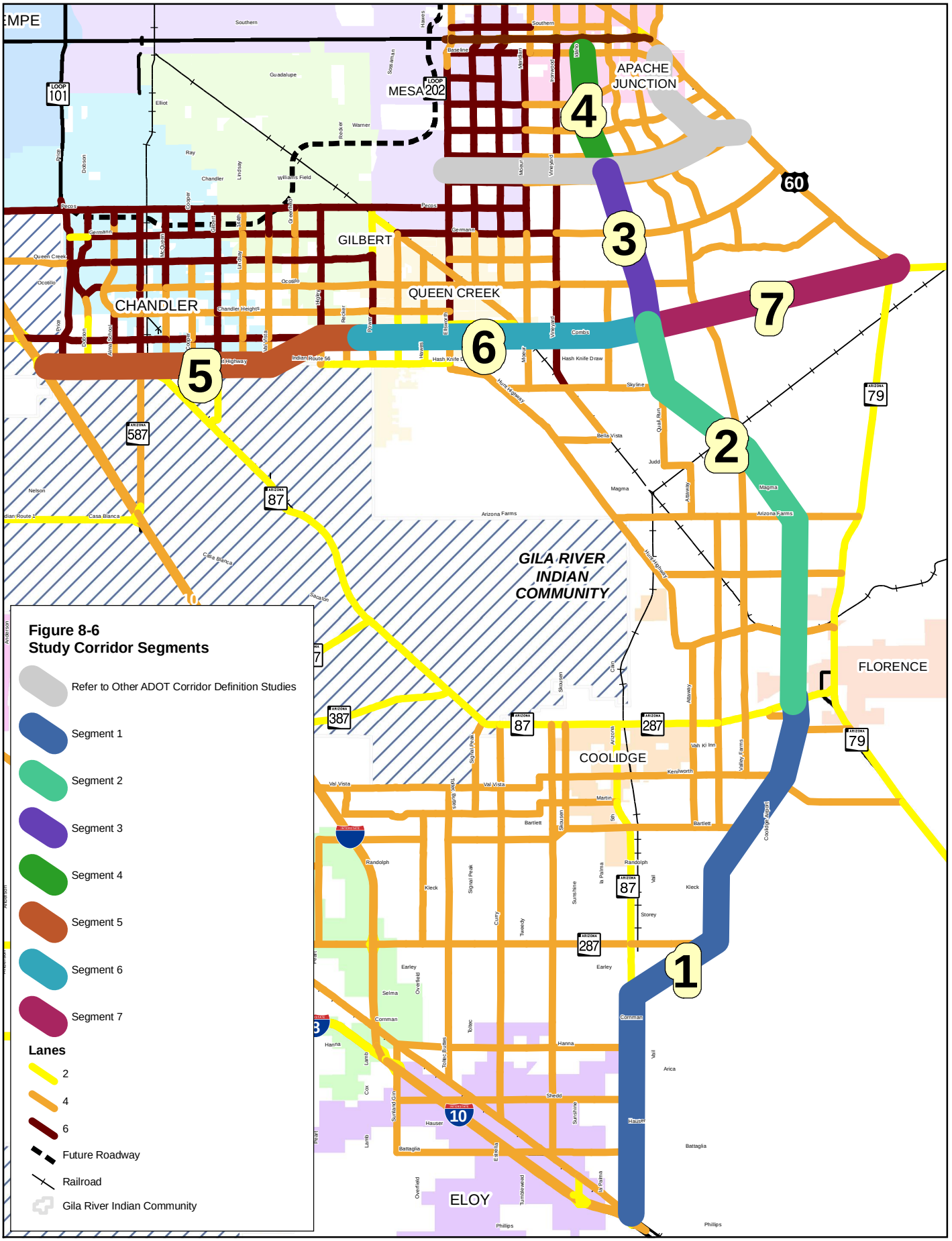
APACHE JUNCTION
GILBERT
QUEEN CREEK
CHANDLER
GILA RIVER INDIAN COMMUNITY
FLORENCE
COOLIDGE
CASA GRANDE
ELOY
Figure 8-5
2030 Four-Corridors
Network Traffic Volumes
Forecasted Volume in Thousands
Uncongested Road
Moderately Congested Road
Congested Road
SEMNPTS Corridors
Future Roadway
Railroad
Gila River Indian Community
NOTE: volumes depicted on MAG Williams Gateway Freeway, I-10 and I-8 are one-way link volumes
N
0 1 2 3 4 5 Miles
Data Source:
Arizona Land Resource Information System
PINAL COUNTY CORRIDORS DEFINITION STUDY
Kimley-Horn and Associates, Inc.
ADOT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QUEEN CREEK
CHANDLER
GILA RIVER INDIAN COMMUNITY
FLORENCE
COOLIDGE
ELOY
Figure 8-6
Study Corridor Segments
Refer to Other ADOT Corridor Definition Studies
Segment 1
Segment 2
Segment 3
Segment 4
Segment 5
Segment 6
Segment 7
Lanes
2
4
6
Future Roadway
Railroad
Gila River Indian Community
N
0 1 2 3 4 5
Miles
Data Source:
Arizona Land Resource Information System
PINAL COUNTY CORRIDORS DEFINITION STUDY
Kimley-Horn and Associates, Inc.
ADOT

8.3.1 Needs Analysis Findings for North-South Corridor

Needs analysis findings for each segment of the North-South corridor, and the degree to which 2030 travel on each corridor segment satisfies the required criteria are summarized in **Table 8-2**. The following conclusions can be drawn from the needs assessment for the North-South corridor:

§ In the future, major travel movement is forecast between northern Pinal and southeast Maricopa Counties. Residents in Florence, Coolidge, and along the Hunt Highway will require access to employment centers that will be located to the northwest in the Williams Gateway area and in Maricopa County. A need is demonstrated for the North-South corridor as an access controlled multi-lane freeway to accommodate the projected travel demand.

§ A need is demonstrated for the Williams Gateway corridor to be extended eastward into Pinal County until it intersects with the North-South corridor. The connection with the North-South corridor will establish connectivity between the Coolidge/Florence area and the MAG Freeway System, including in the Loop 202.

§ No need is demonstrated for the North-South corridor south of SR 287. The future arterial system will be able to accommodate the projected traffic demand.

§ No need is demonstrated for the North-South corridor north of the Williams Gateway corridor. A local parkway facility can accommodate the projected traffic volumes.

§ Implementation of the North-South corridor does not eliminate congestion issues on the arterial networks, but significantly improves their operations. This is particularly true for north-south arterials.

8.3.2 Needs Analysis Findings for East-West Corridor

Analysis of the PCPM scenarios reveals that while traffic volumes may justify the need for certain segments of an East-West corridor, other considerations do not demonstrate that an East-West corridor would provide a system-wide benefit. **Table 8-3** contains a summary of the needs analysis findings for each segment of the East-West corridor, and the degree to which 2030 travel on each corridor segment satisfies the required criteria. From the analysis, the following conclusions can be drawn:

§ No need is demonstrated for the East-West corridor along segment 5 between I-10 and Val Vista Road. Traffic volumes may be accommodated by an arterial facility.

§ Traffic volumes between Val Vista Road and the Central Arizona Project Canal (segment 6), may warrant a freeway-level facility. However, improving this segment to a freeway-level facility does not meet other criteria, including:

- Establishing regional connectivity between population centers. As segment 5 of the East-West corridor does not attract enough volume to warrant a freeway-level facility, the East-West corridor would not provide continuity with the existing state highway system.
- Segment 6 of the East-West corridor replicates the arterial system by primarily serving local traffic. Model results show that even if this corridor segment was developed as a freeway facility, the condition of parallel arterials would not considerably improve. The absence of a mature arterial network in Gilbert, and Queen Creek creates congestion that is not resolved by the East-West corridor

§ No need is demonstrated for the East-West corridor, as a freeway facility, east of the Town of Queen Creek/Central Arizona Project Canal (segment 7). In the future (beyond 2030), this segment may be considered for development by local jurisdictions as a semi-access controlled parkway or expressway facility.

A summary of the needs analysis findings for the North-South corridor and for the East-West corridor is presented in **Figure 8-7**.

8.3.3 High-Capacity Transit

Residents in Coolidge, Florence, San Tan, and along the Hunt Highway corridor will desire access to employment centers located to the northwest. However, significant geographic constraints (Gila River Indian Community, mountains, and regional parks), as well as continuing development pressures, limit the opportunity for multiple southeast-northwest corridors to accommodate them. As such, local jurisdictions and regional agencies should consider multi-modal alternatives in conjunction with roadway facilities within the study area, and particularly along the Hunt Highway corridor.

The Maricopa Association of Governments is already considering expanding high-capacity transit to the southeast valley. The MAG Regional Transportation Plan (funded by Proposition 400 that was approved by voters in 2004) contains $5 million dollars for the study, planning, and design of high-capacity transit from the Williams Gateway and Queen Creek area and connecting to Gilbert, Mesa, Tempe, and downtown Phoenix. Although the MAG Regional Transportation Plan does not allocate funding for high-capacity transit along this corridor until after the year 2025, local and regional jurisdictions recognize that the rapid pace of development may necessitate high-capacity transit alternatives in this area prior to the year 2025.

The availability of existing infrastructure may facilitate the implementation of high-capacity transit within the study area. The Union Pacific railroad line is a single-track facility with segments of double-tracked sidings. Sufficient right-of-way exists for double-tracking this corridor. A double-track facility would not only enhance the freight capacity of a rail corridor between Coolidge, Florence and the Phoenix metropolitan area, but would enable the rail line to be used for high-capacity transit. A high-capacity transit corridor could alleviate some of the congestion that is anticipated to occur within the study area by the year 2030 by providing an alternative mode of transportation to commuters and travelers. Commuter rail service from Florence with intermediate stops at five to ten mile spacing could address the peak trip needs of communities along the corridor and could reduce pressure on the regional road system.

Table 8-2 – Needs Analysis Summary: North-South Corridor

	Needs Analysis Criteria			
Segment No.	*Criteria # 1 – Is the 2030 local transportation system over-burdened?*	*Criteria # 2 – Are the corridor segments utilized (Do they 'load')?*	*Criteria # 3 – Do the corridor segments improve arterial operations in the study area without replicating arterials?*	*Criteria # 4 – Do the corridor segments improve or establish regional connectivity?*
1 – I-10 to SR 287	þ Local transportation system will be able to accommodate the projected travel demand in the year 2030. Projected traffic volumes on 2030 Base Network range from 6,000 vpd to 25,000 vpd – well within the capacity limits of a 4-lane arterial.	ý Traffic volumes do not warrant a freeway-level facility. The projected traffic volumes south of SR 287 range from less than 4,000 vpd to 18,000 vpd. Traffic volumes on the northern end of the segment approach 40,000 vpd at Hunt Highway.	ý Not applicable, as corridor segment does not meet criteria # 2.	ý Not applicable, as corridor segment does not meet criteria # 2.
2 – SR 287 to East Valley Corridor / Riggs Road	þ The 2030 local transportation system, without significant investment, will not be able to accommodate the projected traffic volumes. North-south and northwest-southeast diagonal arterials are particularly overburdened.	þ Traffic volumes increase from 30,000 – 40,000 vpd at Hunt Highway to more than 140,000 vpd.	þ Significantly off-loads parallel arterials. Portions of Hunt Highway are reduced in excess of 20,000 vpd. Traffic volumes on Attaway Rd, Felix Rd, and Valley Farms Rd, are reduced by up to 15,000 vpd. SR 79 is off-loaded by nearly 5,000 vpd.	þ Segment 2 improves connectivity between the Florence/Coolidge, and the Williams Gateway area. Segment 2 connects to the existing state highway system at SR 79 or alternatively at SR 287
3 – East Valley Corridor / Riggs Road to Williams Gateway Corridor	þ Volumes on north-south arterials (Ironwood, Meridian, Ellsworth, and Hunt Highway) range from 50,000 to 70,000 vpd –nearing the upper range for 6-lane arterials. Additional north-south capacity is needed.	þ This segment would serve nearly 140,000 vpd – a high-capacity, controlled access corridor is required to accommodate these volumes.	þ Segment significantly off-loads parallel north-south arterials. Volumes on Ironwood and Meridian, as well as future arterials on State Land are reduced by up to 30,000 vpd.	þ Segment enables connectivity to be established between Florence/Hunt Highway corridor and the Williams Gateway area.
4 – Williams Gateway Corridor to US 60	þ Traffic volumes on north-south arterials operate at conditions that approach the capacity of the roadways, though volumes on north-south corridors are somewhat less than those that parallel segment 3.	ý Traffic volumes on the corridor significantly decrease north of the Williams Gateway freeway. Traffic volumes south of the Williams Gateway exceed 120,000 vpd; volumes north of the Williams Gateway range from 30,000 – 70,000 vpd.	þ Corridor decreases volumes on parallel north-south arterials if corridor extends to US 60 as a freeway. However, if Idaho Rd is extended south to the Williams Gateway freeway as an arterial, in lieu of the North-South corridor, traffic volumes are redistributed to other north-south arterials.	ý Not applicable, as corridor segment does not meet criteria # 2.

Table 8-3 – Needs Analysis Summary: East Valley Corridor

	Needs Analysis Criteria			
Segment No.	*Criteria # 1 – Is the 2030 local transportation system over-burdened?*	*Criteria # 2 – Are the corridors segments utilized (Do they 'load')?*	*Criteria # 3 – Do the corridors segments improve arterial operations in the study area without replicating arterials?*	*Criteria # 4 – Do the corridor segments improve or establish regional connectivity?*
5 – I-10 to Val Vista Road	þ Local transportation system operates at near-capacity or over-capacity conditions. Roads that provide access to I-10 (Riggs Road between Price Rd and I-10 Rd is particularly over-burdened. Volumes on north-south arterials are generally higher than those on east-west arterials.	þ East Valley corridor along Hunt Highway, when modeled as a freeway facility, loads to approximately 60,000 to 80,000 vpd.	ý East Valley corridor replicates the arterial system. Traffic volumes on Riggs Road are shifted to Hunt Highway / East Valley corridor. East Valley corridor provides no significant benefit to east-west arterials north of Riggs Road.	ý Not applicable, as corridor segment does not meet criteria # 2.
6 – Val Vista Road to North-South corridor	þ Local transportation system is significantly distressed. Discontinuity of the arterial grid system because of diagonals (Rittenhouse Rd., railroad, canals), and geographic constraints (mountains) reduce the efficiency of the local arterial system.	þ Segment is characterized by discontinuous, localized loading between Val Vista and Vineyard Road. As corridor approaches Apache Junction interchange, volumes significantly decrease. These patterns indicate that the corridor is primarily serving local traffic, and not through trips.	þ Traffic volumes on east-west arterials are reduced by up to 10,000 vpd through Queen Creek area. East Valley corridor does not provide noticeable relief to north-south arterials.	ý Corridor, if implemented in its entirety, may improve connectivity between Queen Creek and I-10. However, as segment 5 does not meet criteria, implementation of segment 6 would not establish regional connectivity.
7 – North-South Corridor – US 60 at Florence Junction	ý The local transportation system appears to be able to accommodate traffic within the area that desires access from US 60 at Florence Junction to Queen Creek.	ý East Valley corridor does not attract volumes that warrant a freeway-level facility – projected volumes range from 30,000 to 50,000 vpd.	þ Traffic volumes are shifted from adjacent arterials to East Valley corridor. Adjacent arterials operate well below capacity.	þ Corridor would improve connectivity between US 60 at Florence Junction and Queen Creek.

8.4 2030 Corridor Concept

The proposed Corridor Concept was developed consistent with the findings presented for the study corridors needs analysis and findings (as presented in previous section), and from coordination with study teams for the Williams Gateway corridor and the US 60 corridors.

The Corridor Concept includes a North-South corridor from Florence north to the Williams Gateway Corridor which would then extend westward to connect with SR 202L. This combined corridor will significantly improve mobility between the Florence/Coolidge area and southeast Maricopa County. The Corridor Concept is depicted in **Figure 8-8** and explained in **Table 8-4**. Traffic volumes projected for the 2030 Corridor Concept are shown in **Figure 8-9.** The Corridor Concept includes the following:

§ Six-lane, fully access controlled, North-South freeway facility beginning in Florence and extending north to an intersection with the Williams Gateway freeway. Interchanges will be located at a preferred spacing of 2 miles, with a minimum spacing of 1 mile.

§ Six-lane Williams Gateway freeway facility extending from the connection with the North-South freeway westward to the Pinal County/Maricopa County line and connecting with the MAG Williams Gateway Freeway. The MAG Williams Gateway Freeway then continues west and connects to the Loop 202. For a comprehensive description of the Williams Gateway Corridor, please refer to the *ADOT Williams Gateway Corridor Definition Study.*

§ Six-lane US 60 Re-route. For a comprehensive description of this corridor, please refer to the *US 60 Corridor Definition Study*.

Each corridor segment that is included in the Corridor Concept meets the conditions set forth in the needs analysis criteria. Most importantly, the corridors significantly enhance connectivity between the Florence/Coolidge area, the Williams Gateway area, and the Loop 202, thereby providing relief to an over-burdened local arterial network.

Table 8-4 – Corridor Concept Segment Descriptions

Corridor Segment	Segment Description	Facility Level and Number of Lanes
North-South Corridor		
1	I-10 to SR 287	Not included in Concept. Corridor may be preserved for corridor implementation beyond the year 2030 by local zoning officials.
2	SR 287 to East Valley Corridor	Access controlled, 6 lane freeway facility
3	East Valley Corridor to Williams Gateway	Access controlled , 6 lane freeway facility
4	Williams Gateway to US 60	Not included in Corridor Concept. Local jurisdictions may consider developing corridor as a parkway, semi-access controlled facility.
East Valley Corridor		
5	I-10 to Queen Creek	Not included in Corridor Concept
6	Queen Creek to North/South Corridor	Not included in Corridor Concept. Local jurisdictions may consider developing Riggs Road/Combs Road as a parkway, semi-access controlled facility.
7	North/South Corridor to Florence Junction	Not included in Concept. Corridor may be preserved for corridor implementation beyond the year 2030 by local zoning officials.

8.5 Regional Traffic Performance

The network scenarios described in **Section 8.2** were evaluated using a common set of performance measures that are linked to key planning factors established by the ADOT's *MoveAZ* long-range transportation plan. The factors evaluated as part of this process include mobility, accessibility, safety, resource conservation and environmental justice. The results of the evaluation for mobility, accessibility, safety, and resource conservation are documented in the *Corridor Definition Study Performance Analysis* report. The performance analysis presented is one piece of the overall process, and needs to be evaluated in context with other information generated for these studies including:

- The demand for the proposed corridors;
- The impact of the proposed corridors on the congestion of the arterial network and the existing state transportation system;
- The feasibility of implementing a particular corridor based on engineering, social and environmental, and land use compatibility criteria along with stakeholder, and public input;
- The system performance and congestion benefits of a new corridor relative to the cost to develop that corridor.

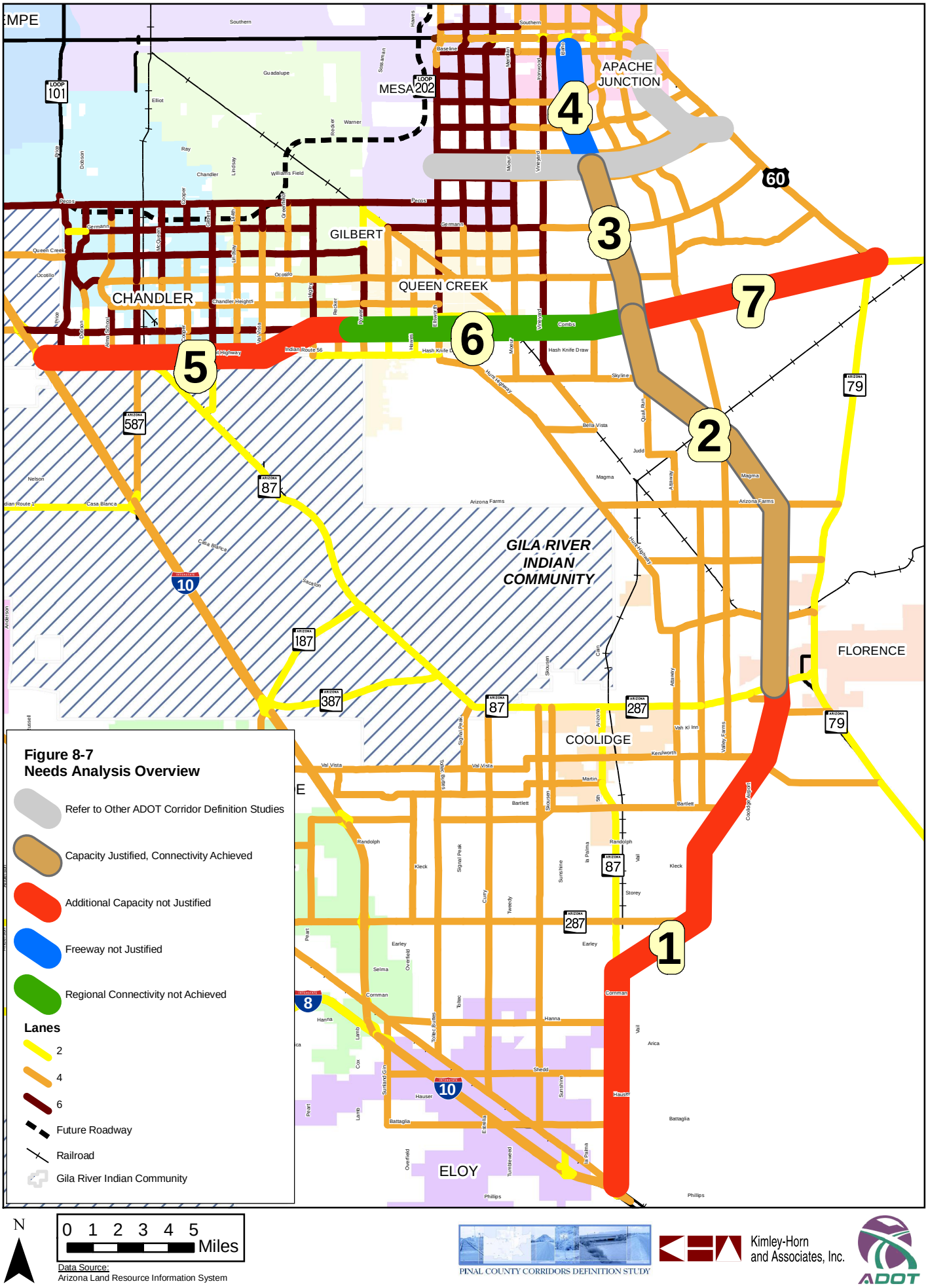
Results of the mobility performance assessment are presented in **Table 8-5**. The reader is referred to the *Performance Analysis Report* for information on the other performance factors including accessibility, safety, and resource conservation. The measures used to estimate mobility were vehicle miles of travel (VMT), vehicle hours of travel (VHT), and percent of miles in congested conditions. The mobility performance analysis shows that:

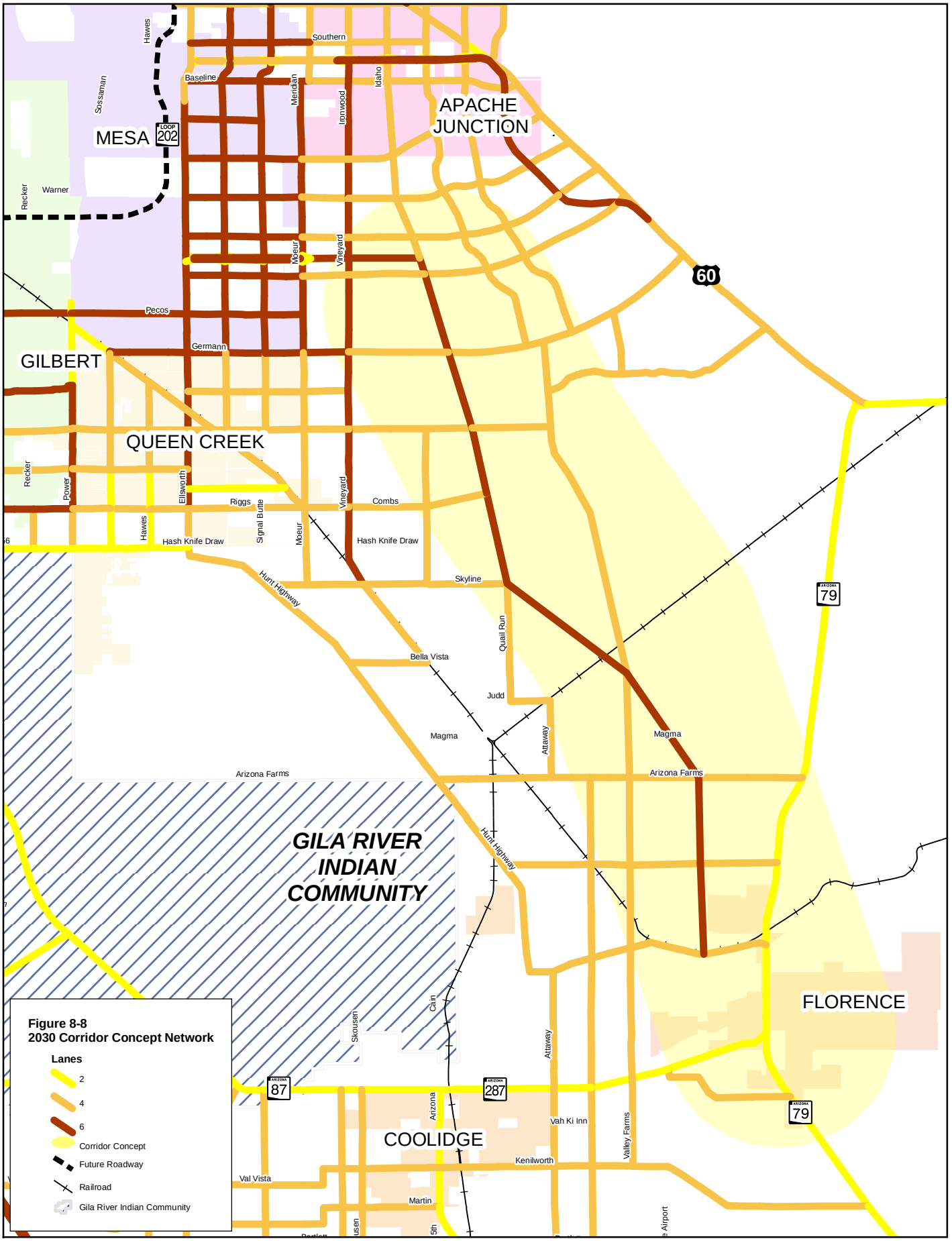
- Vehicles miles of travel (VMT) grow slightly over the base future scenario for all scenarios, except enhanced future. This growth represents additional latent demand that is not satisfied by the base future case. A decline in VMT for the enhanced future scenario suggests that trips are more direct in this scenario, but that the additional capacity does not provide improved mobility for the latent demand.
- Vehicle hours of travel decline significantly, representing improved travel conditions and the use of shorter travel paths for some trips.
- Overall congestion declines in each of the scenarios and mileage that is very congested improves significantly. Roadways that are very congested are reduced by over 50 percent in all scenarios.

Table 8-5 – Mobility Performance Measures by Scenario

Network Scenario	Total VMT	VMT Deviation from Base	Total VHT	VHT Deviation from Base	Percent of Network Congested	Percent of Network Very Congested
Base Future	32,113,122		4,551,023		41%	7.9%
Enhanced Future	31,619,784	-1.54%	3,261,492	-28.33%	32.2%	3.0%
SEMNPTS Corridors	32,973,195	2.68%	2,682,051	-41.07%	26.1%	2.1%
Refined All Corridors	32,955,369	2.62%	2,497,108	-45.13%	24.4%	1.7%
Corridor Concept	32,438,746	1.01%	3,207,121	-29.53%	29.2%	3.5%
Corridor Concept Plus	32,252,439	0.43%	2,994,424	-34.20%	27.9%	2.8%

Source: Cambridge Systematics, Corridor Definition Study Performance Analysis, August 2005


APACHE JUNCTION
MESA
GILBERT
QUEEN CREEK
CHANDLER
GILA RIVER INDIAN COMMUNITY
FLORENCE
COOLIDGE
ELOY
Figure 8-7
Needs Analysis Overview
Refer to Other ADOT Corridor Definition Studies
Capacity Justified, Connectivity Achieved
Additional Capacity not Justified
Freeway not Justified
Regional Connectivity not Achieved
Lanes
2
4
6
Future Roadway
Railroad
Gila River Indian Community
N
0 1 2 3 4 5 Miles
Data Source:
Arizona Land Resource Information System
PINAL COUNTY CORRIDORS DEFINITION STUDY
Kimley-Horn and Associates, Inc.
ADOT


MESA
LOOP 202
APACHE JUNCTION
GILBERT
QUEEN CREEK
GILA RIVER INDIAN COMMUNITY
FLORENCE
COOLIDGE
60
79
87
287
Hawes
Sossaman
Baseline
Southern
Meridian
Idaho
Ironwood
Recker
Warner
Moeur
Vineyard
Pecos
Germann
Power
Ellsworth
Riggs
Signal Butte
Combs
Hash Knife Draw
Skyline
Hunt Highway
Quail Run
Bella Vista
Judd
Magma
Attaway
Arizona Farms
Cain
Skousen
Arizona
Vah Ki Inn
Valley Farms
Kenilworth
Val Vista
Martin
Figure 8-8
2030 Corridor Concept Network
Lanes
2
4
6
Corridor Concept
Future Roadway
Railroad
Gila River Indian Community
N
0 1 2 3 4 5 Miles
Data Source:
Arizona Land Resource Information System
PINAL COUNTY CORRIDORS DEFINITION STUDY
Kimley-Horn and Associates, Inc.
ADOT

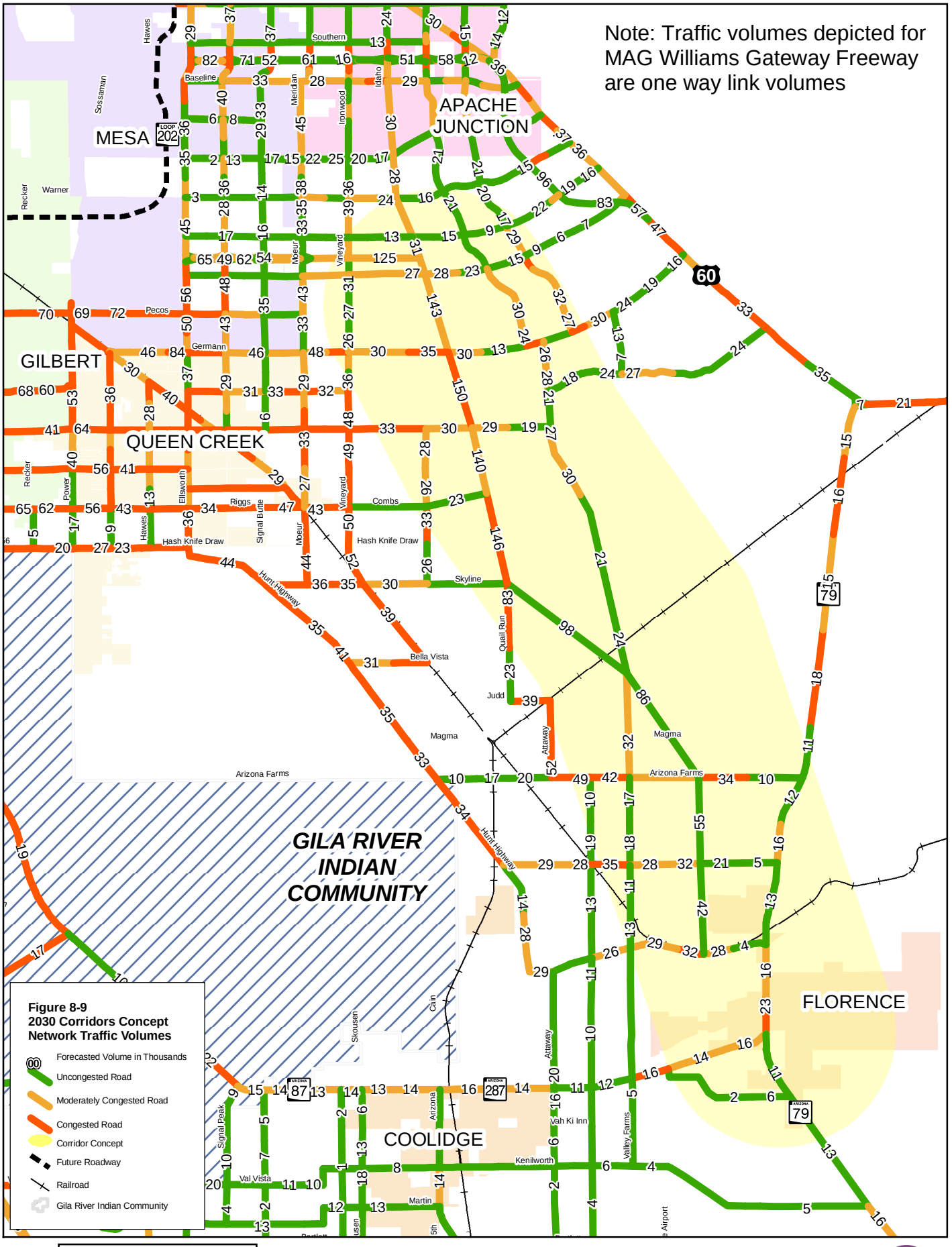


Figure 8-9
2030 Corridors Concept Network Traffic Volumes

- 00 Forecasted Volume in Thousands
- Uncongested Road
- Moderately Congested Road
- Congested Road
- Corridor Concept
- Future Roadway
- Railroad
- Gila River Indian Community

N

0 0.7 1.4 2.1 2.8 3.5 Miles

Data Source:
Arizona Land Resource Information System

PINAL COUNTY CORRIDORS DEFINITION STUDY

Kimley-Horn and Associates, Inc.

ADOT

9. CORRIDORS FEASIBILITY ANALYSIS

The next step in the *Pinal Corridors Definition Study* was to identify opportunities and constraints that may impact the corridor definition for the Corridors Concept introduced in Section 8.4. The feasibility analysis included an assessment of engineering considerations, social and environmental issues, land-use compatibility opportunities and constraints, and public and jurisdictional perspectives that would facilitate or prohibit future development of the Corridor Concept. Corridor definition alternatives with significant engineering, environmental, or land-use compatibility issues were not included in the final corridor definition recommendation presented in chapter 10.

The general location for new freeway corridors is depicted by the Corridor Concept in **Figure 8-8.** The land area generally represented by the Corridor Concept served as the starting point for the feasibility analysis. The feasibility analysis process refined and narrowed the Corridor Concept for the North-South corridor into a more specific corridor definition. The narrowing of the North-South Corridor Concept is accomplished by identifying opportunities and constraints that may significantly impact the future alignment of a new freeway corridor. A detailed summary of the feasibility analysis is presented in *Working Paper No. 2*. This chapter contains a summary of this information. Specifically, this chapter contains the following sections:

- **Section 9.1**: describes the feasibility analysis criteria.
- **Section 9.2:** describes the development of the North-South corridor definition alternatives that are considered in the feasibility analysis.
- **Section 9.3**: summarizes engineering opportunities and constraints.
- **Section 9.4**: summarizes social and environmental considerations.
- **Section 9.5**: summarizes land-use opportunities and constraints.

Information is presented in the above named sections for the North-South corridor only. The feasibility analyses for the Williams Gateway corridor and the US 60 reroute are contained in *Working Paper No. 2* that was developed for each of the Corridor Definition Studies. These reports are available at: *http://tpd.azdot.gov/planning/corridorstudies.php*.

9.1 Evaluation Criteria

The feasibility evaluation is comprised of four major components. These are physical and engineering, social and environmental, land use compatibility, and jurisdictional, stakeholder, and public perspectives.

- **Physical and Engineering:** Roadway conditions and structures, right-of-way, topography, geological characteristics, major drainage features, and major utilities within the study area. The outcome of this feasibility analysis will be the determination of challenges, issues, and opportunities associated with corridor development and construction.
- **Social and Environmental:** The environmental analysis reviews the socioeconomic environment, physical and natural environmental character, cultural resources, and section 4(f) resources of the Transportation Act in the study area. Environmental considerations, issues, and sensitive areas are identified.
- **Land-use Compatibility*:*** Land use compatibility criteria include issues of corridor compatibility with jurisdictional development and local land use plans.
- **Jurisdictional, Stakeholder, and Public Perspectives:** Jurisdictional input was received through input received from the Technical Advisory Committee and from two rounds of meetings held with each jurisdiction in the study area that were held in January and July, 2005. Public perspectives

input was received through two rounds of open houses held in April and August 2005, and from several meetings and briefings of local elected officials.

9.2 North-South Corridor Definition Development

The development of the corridor definition considered three principal inputs: (1) existing corridor conditions, (2) future corridor conditions, and (3) jurisdictional, stakeholder, and public perspectives.

9.2.1 Jurisdictional, Stakeholder, and Public Perspectives

Jurisdictional, stakeholder, and public perspectives are critical to the alternatives development process. In order to garner stakeholder and jurisdictional input into the corridor alternatives development process, the study team presented the needs analysis to representatives from each jurisdiction in the study area. The study team also participated in an ADOT Rural Consultation Meeting with Pinal County elected officials. Comments received from each of these outreach meetings are summarized in **Table 9-1**.

9.2.2 Alternative Corridor Definitions

Existing conditions, future conditions[1], and stakeholder and public input[2] were reviewed to develop a set of corridor definition alternatives that are consistent with the needs analysis and Corridor Concept described in **Section 8.4.** Portions of the study area that provide opportunities or present constraints for corridors definition alternatives were identified. Areas with significant adverse impacts or constraints were excluded from consideration.

Input received from stakeholders and jurisdiction representatives consistently pointed to a corridor definition that generally follows the CAP alignment from the Williams Gateway corridor (Frye Road alignment) south to the intersection of the CAP with the Arizona Magma Railroad. This definition is consistent with and is supported by information collected during the existing and future conditions analysis.

A corridor definition south of the Arizona Magma Railroad is less certain. Two potential alternative definitions are identified:

1. Connect the North-South corridor to SR 79 in the vicinity of Arizona Farms Road, or
2. Connect the North-South corridor to SR 287 near Valley Farms Road.

From a travel demand perspective, a connection to SR 287 (alternative #2) may provide more benefit to parallel north-south arterials than would a connection to SR 79 (alternative # 1). Future north-south traffic on Felix Road and Attaway Road, for example, may be higher alternative #2 if the corridor is connected to SR 79 rather than to SR 287. However, as described in the following sections, a connection to SR 287 is more impactful to future master-planned communities than is a connection to SR 79.

A summary of opportunities and constraints for the corridor definition alternatives from an engineering, environmental, land-use, and jurisdictional perspectives is presented in the section 9.3, section 9.4, and section 9.5.

[1] Pinal County Corridors Definition Study, Working Paper No. 1, Existing and Future Conditions, Needs and Deficiencies, June 1, 2005. Available at http://tpd.azdot.gov/planning/corridorstudies.php
[2] Pinal County Corridors Definition Study, Summary Report No. 1, Public Involvement Round One, May 19, 2005. Available at http://tpd.azdot.gov/planning/corridorstudies.php

Table 9-1 – Jurisdictional and Stakeholder Input

Jurisdiction	Key Input
Apache Junction	• The City supports the needs analysis and the corridor concept, as proposed. • After development patterns begin to emerge and some of the variables relating to State Lands are known, it is likely that another study will need to take another look at whether the Williams Gateway corridor should be extended to Florence Junction. • Apache Junction expressed support for a combined corridor alignment consisting of the CAP, SRP 500 kV line, and the corridor.
Arizona State Land Department	• Locating the corridor to the east of the CAP will require significantly more drainage infrastructure. ASLD strongly prefers that the corridor be located on the west side of the CAP. • ASLD has been looking at potential locations for interchanges, and that it will try to design the major arterial system at two-mile spacing. One-mile spaced interchanges would be the absolute minimum spacing. Frontage roads are not being considered for the corridor. • ASLD would support combining the 500 kV line, CAP, and the north/south corridor into a single utility corridor.
City of Casa Grande	• The city desires a corridor connecting to I-10 and I-8, but is not surprised that the needs analysis did not support this.
City of Chandler	• City of Chandler agrees with the needs analysis and preliminary findings.
City of Coolidge	• Coolidge, in general, agrees with the needs analysis, though Coolidge City Council would like the North-South corridor extended further into Coolidge. • City staff expressed a preference for the North-South corridor to intersect with SR 287 at the Clemens Road intersection and is preparing a General Plan Amendment that will begin preserving 500 feet of right-of-way for a future transportation corridor along Clemens Road. • Coolidge staff feels that the population projections may still be conservative. • This study should recommend that access on SR 87 and SR 287 be aggressively preserved.
City of Eloy	• The City of Eloy agrees with the needs analysis though they hope that a connection to I-10 will be considered in the future.
Town of Florence	• The Town sees significant issues trying to connect the North-South corridor to SR 287. Pulte Anthem, Sun City, and Merrill Ranch are all large master-planned communities that would be affected by the North-South corridor if it were to connect to SR 287. Felix Road will be 6-lanes through Anthem. • The Town doesn't see need for another bridge in the immediate future, though they recognize that additional all-weather crossings will be required in the long-term. • Right-of-way on SR 79 through Florence is limited. However, the Town feels that it is more feasible to improve SR 79 to accommodate the corridor than any other alignment.
Town of Gilbert	• Town of Gilbert largely agrees with the needs analysis findings. However, they believe that other infrastructure, and in particular sanitary sewer, will not be able available to accommodate the projected population by the year 2030.
Town of Queen Creek	• Queen Creek staff would like this study to identify specific alignments so that they are able to begin to preserve right-of-way.

Table 9-1 – Jurisdictional and Stakeholder Input (continued)

Jurisdiction	Key Input
Pinal County	• Pinal County agrees with the needs analysis. Significant issues will need to be resolved with both a connection to SR 287 or to SR 79. • Pinal County supports combining the corridor with other utilities. However, they believe that the corridor should be located further to the east because of the improvements that area occurring on Ironwood. Clemens Road is the preferred alignment. Valley Farms is too populated. • An additional crossing over the Gila River is important. • Pinal County staff stated that they will preserve the corridor if the study results in corridor definitions that are supported by the Board of Supervisors and associated policies for corridor preservation.
Valley Metro	• Proposition 400 has $5,000,000 designated for planning/design of high-capacity transit facilities to be initiated after 2025. Local jurisdictions recognize that this funding may need to be advanced because of the explosive growth in the area. • Existing and projected residential development follows alignment of Rittenhouse Road and then Hunt Highway down to Florence. This is also the alignment of a Union Pacific Railroad line. The Union Pacific Line is a single-track facility with segments of double-track. Sufficient right-of-way exists for double tracking the rail corridor which could also for an opportunity for commuter rail and freight operations within the corridor. Commuter rail service from Florence with intermediate stops at five to ten mile spacing could address the peak trip needs of emerging bedroom suburbs and reduce pressure on the regional road system. • Express bus service between bedroom communities in Pinal County and major employment centers in southeast Maricopa County could address work trips and address peak period congestion. Potential lines include San Tan Express, Chandler/Williams Field Road, Power Road, and Queen Creek routes that terminate in the Williams Gateway area.
Pinal County Rural Consultation Meeting with Elected Officials (August 15, 2005)	• Several elected officials and staff members voiced concern that the 2030 population projections that were used in the transportation planning model are low and do not properly reflect the rate of growth anticipated for Pinal County. • An elected official stated that it was preferable for the North-South corridor to cross the Gila River and connect to SR 287 rather than connect to SR 79. • An elected official stated that the location of the North-South corridor on the west side of the Central Arizona Project (CAP) was “too far west” and consideration should be given to placing the corridor east of the CAP. • An elected official supported the finding that a corridor was not needed along the Hunt Highway alignment in Maricopa County. • An elected official supported the effort to accommodate regional utilities within a single corridor. • An elected official stated that transfer of portions of US 60 was acceptable to Pinal County if the recommended US 60 corridor was developed and constructed.
Salt River Project	• The SRP preferred route is a 1000’ wide corridor on the west side of the CAP. SRP will ultimately require only a 160’ wide corridor. • A 30-acre substation is proposed immediately adjacent to the CAP between Germann Road and Ocotillo Road. • SRP would not object to a corridor directly adjacent to the power line easement. A 160’ ROW is sufficient for maintenance, etc. Vertical clearance would need to be considered.

9.3 Engineering Opportunities and Constraints

Engineering, environmental, and land-use compatibility opportunities and constraints associated with the Corridor Concept and alternative corridor definitions were identified. These include a review of drainage and environmental characteristics, the potential for a combined corridor with the Salt River Project 500 kV line, crossings of the Gila River, and multi-modal/inter-modal opportunities within the study area.

9.3.1 Drainage

Major drainage features and characteristics within the study area are depicted in **Figure 9-1,** *Drainage Features*. Several issues were considered in selection of the corridor definition. These are:

- § Areas downstream of the flood retarding structures (Vineyard Road, Rittenhouse, and Powerline FRS) are protected from the 100-year return frequency storm event. The Central Arizona Project Canal adds additional flooding protection.
- § Lands immediately downstream of the dams and the Central Arizona Project canal also become the new apex for the alluvial fan areas downstream. Sediment movement and volume in this area is minimized by being cut off from the upstream sediment supply.
- § Drainage plans must consider the effects of alluvial fan formations and flooding in the upstream sections of the project areas.
- § Bridges or culverts crossing major washes should be designed to protect the roadway from impacts of scouring or erosion.
- § Any alteration to any Natural Resource Conservation Service structure – including the Vineyard Road, Rittenhouse, Magma, or Powerline Flood Retarding Structures, or any of the associated floodways would require the approval of the NRCS.
- § Alteration to the Sonoqui Detention Dam would require the approval of the CAP and or US Bureau of Reclamation.

9.3.2 Land Subsidence and Fissures

Land subsidence and earth-fissure damage are important considerations during the design of major engineering structures in areas of measured subsidence. Within the Pinal County Corridors study area, land subsidence and fissures are particularly evident near US 60 in the Apache Junction area and along Hunt Highway in southeast Maricopa County as depicted in **Figure 9-2**, *Land Subsidence and Earth Fissures*.

9.3.3 The Central Arizona Project Canal

The Central Arizona Project canal (CAP) comprises a 336-mile-long system of aqueducts, tunnels, pumping plants, and pipelines that extend from Lake Havasu to the southern boundary of the San Xavier Indian Reservation near Tucson. The CAP is managed and operated by the Central Arizona Water Conservation District (CAWCD).

The CAP passes through the heart of the Pinal County Corridors study area, approximately bisecting the study area in two. The average width of the canal is 80 feet across. Some segments of the canal are oversized sections that act as an internal reservoir system and are 160 feet across. Because of the CAP's geographic span and magnitude, new transportation corridors within the study area will have to consider the CAP throughout the corridor development process including grade-separated crossings, drainage, and environmental protection.

Because of the CAP's centralized location within the study area, and its northwest to southeast orientation, locating the transportation corridor directly west of the CAP has been suggested by multiple

stakeholders as a desirable alternative corridor for a transportation corridor. This is discussed in more detail in **Section 9.3.5**.

9.3.4 SRP 500 kV Line

The Arizona Corporation Commission voted on August 16, 2005 to confirm a Certificate of Environmental Compatibility for the Pinal West-to-Southeast Valley/Browning project. The project includes new 500 kilovolt (kV) and 230 kV transmission lines and substations that will serve Pinal and Maricopa Counties. The project is managed by SRP [3]. The approved route for the transmission line is depicted in **Figure 9-3**, *Approved Route for SRP 500 kV.* The approved route generally provides SRP with a 1000 ft. corridor of which it will ultimately select 160 feet for an easement.

In order to minimize the impact of the SRP 500 kV line and a transportation corridor on future master planned communities and developments, it has been suggested by multiple stakeholders to locate the transportation corridor, where feasible, adjacent to the 500 kV transmission line. This is discussed in more detail in **Section 9.3.6**.

9.3.5 Shared Use Paths and Trails

The Pinal County Trails Plan (2005) states that the CAP canal system that could provide a quality trail system for county residents. Discussions with Pinal County staff suggested that a transportation corridor may be compatible with a combined CAP/500kV/Trail corridor, as is discussed in **Section 9.3.6**.

9.3.6 Shared CAP/SRP 500 kV Line/Trails/North-South Corridor

As described above, the CAP, SRP 500 kV transmission line approved route and the North-South corridor all share a common element – transport of goods and commodities (e.g. water, electricity, and vehicles) in a northwest-southeast direction. Because of the potential common 'footprint' of these large, horizontal engineering structures (CAP and 500 kV line), and the potential for a new large transportation corridor (North-South corridor), stakeholders have suggested that where possible, the SRP line and the North-South corridor could be collocated into a common corridor. Consolidation of infrastructure into a common corridor would minimize adverse impacts to future residents and reduce the mitigation that will be required as development continues.

SRP has stated that they would not object to transportation corridor directly adjacent to the 500 kV line. SRP would need to consider a transportation corridor in the design and construction of the transmission line structures. The Arizona State Land Department, which owns much of the land over which the corridor crosses, has stated that they would prefer a common corridor be located on the west side of the CAP thus minimizing the impact to State Land east of the CAP. Furthermore, a corridor located on the west side of the CAP would receive much-needed protection from alluvial fan flooding that is seen to the east of the CAP.

9.3.7 Gila River Crossing

The Gila River is a major east-west feature that passes through the study area. The river, particularly during times of inclement weather, can significantly inhibit north-south travel. Stakeholders have expressed a strong desire for an additional crossing of the Gila River. A new crossing of the Gila River would be required in order to connect the North-South corridor to SR 287. A connection to SR 79 would not require a new crossing of the Gila River, though improvements to the existing crossing on SR 79 may be required.

[3] *Salt River Project, "AZ Power Planning for Arizona's Future, PW-SEV/BRG transmission project", August 12, 2005.* http://www.azpower.org/pwsevbob/

9.3.8 Right-of-Way Requirements

A new 6-lane, access controlled freeway corridor would require approximately 300 feet of right-of-way. Connections to both SR 79 and SR 287 would require that new right-of-way be obtained for the entire length of the corridor. Existing right-of-way within the study area is shown in **Figure 9-4**, *Existing ADOT Right-of-Way.*

9.3.9 Summary of Engineering Opportunities and Constraints

A summary of engineering opportunities and constraints for the definition alternatives is presented in **Table 9-1**.

Table 9-2 – Summary of Engineering Opportunities and Constraints

Corridor Definition Alternative	Engineering Opportunities	Engineering Constraints
North-South corridor from Williams Gateway Corridor (Frye Rd. alignment) **to Arizona Magma Railroad** near Judd Rd	• North-end connection of corridor definition can accommodate any alignment ultimately identified for Williams Gateway Corridor. • Corridor location west of CAP is preferable from drainage perspective. Areas downstream of the Flood Retarding Structures are protected from the 100-year return frequency storm event. The Central Arizona Project canal adds additional flooding protection. • A connection to SR 287 could parallel the approved 500 kV transmission line alignment where feasible. A shared corridor is compatible with both CAP and SRP 500 kV transmission line uses • Fissures and subsidence has been well documented along CAP alignment. Future fissures could be mitigated for both the CAP and transportation corridor.	• Design must consider effects of alluvial fan formations and flooding in upstream sections of the study area. Bridges or culverts crossing major washes should be designed to protect the roadway from impacts of scouring or erosion. • Any alteration to any Natural Resource Conservation Service structure – Powerline, Vineyard Road, Rittenhouse, or Magma Flood Retarding Structure, or any of the associated floodways would require the approval of the NRCS. • Alteration to the Sonoqui Detention Dam would require the approval of the CAP and or US Bureau of Reclamation. • Collocating corridor with railroad, CAP, and 500 kV transmission line increases the length of east-west grade-separated interchanges and crossings required. At potential interchange areas the corridor may need to be offset from the CAP, SRP 500 kV line and railroad by up to 1500 feet to provide the necessary vertical clearance above the railroad and under the transmission line. • Transmission lines may need to be constructed higher than would normally be required to provide minimum vertical clearance. • Proposed SRP substation sites are located adjacent to the CAP alignment. However, ultimate location for substations has not been selected, allowing opportunity to coordinate with SRP.
Alternative 1: North-South corridor from Arizona Magma Railroad near Judd Road to connection with SR 79	• A connection to SR 79 reduces the total project cost by ADOT as the overall corridor is shorter and a connection to SR 79 does not necessitate a new bridge over the Gila River • A connection to SR 79 via Magma Dam area is an opportunity	• A connection to SR 79 may require significant improvements to SR 79 in Florence including r/w acquisition that may significantly impact existing structures. This connection would also require access and interchange improvements at Corrections facilities and at SR 287 /SR 79 junction. • Connection to SR 79 'misaligns' the North-South corridor with Clemens Road alignment, which may become a major facility beyond the year 2030.

Table 9-2 – Summary of Engineering Opportunities and Constraints

Corridor Definition Alternative	Engineering Opportunities	Engineering Constraints
Alternative 2: North-South corridor from Arizona Magma Railroad near Judd Road to connection with SR 287 near Valley Farms Road.	• A connection to SR 287 could parallel the approved 500 kV transmission line alignment where feasible. • A connection to SR 287 would provide an additional crossing of the Gila River. Valley Farms, Felix, and Attaway Roads are assumed to be multi-lane roadways with bridges over the river. If these are not constructed as river crossings, then the SR 287 connection is desirable to provide a river crossing. • A connection to SR 287 near Valley Farms Road is more closely aligned with the Clemens Road alignment, which is envisioned by City of Coolidge to become a major transportation facility beyond 2030 that would provide access to the Coolidge airport, regional shopping centers, and to SR 87/I-10.	• A connection to SR 79 may require improvements to SR 79 in Florence including right-of-way acquisition that may significantly impact existing structures. This connection may also require access and interchange improvements at Corrections facilities and at SR 287 /SR 79 junction.

9.4 Social and Environmental Opportunities and Constraints

An overview of social and environmental conditions within the proposed Pinal County Corridor Study Area is contained within *Working Paper No. 2*. The purpose of the overview was to identify potential environmental concerns or "fatal flaws", obstacles, issues, and sensitive areas for future development of the Corridor Concept. The analysis documents the socioeconomic environment, physical and natural environmental character, cultural resources, and section 4(f) resources of the Transportation Act in the study area. The analysis also addressed surveying, permitting, and agency coordination requirements that would need to be addressed in future studies prepared in accordance with NEPA. The analysis is not intended to meet the requirements of the National Environmental Policy Act (NEPA). The area included in the social and environmental overview is shown in **Figure 9-5,** *Environmental Feasibility Study Area.*

The environmental overview included a summary of the existing natural environment within the study area in terms of wildlife, sensitive species, plants, water resources, visual character, air quality, noise, and hazardous material concerns. The inventory of the natural environment of the study area consisted of gathering data and information from various local, state, and federal agencies, including the Arizona Game and Fish Department (AGFD) and the U.S. Fish and Wildlife Service (USFWS). The characteristics of the natural environment were also identified based on a visual survey of the study area.

The environmental overview included an archaeological assessment and cultural resources overview was performed for the environmental feasibility study area[4]. The purpose of the overview was to identify any cultural resources sites that would significantly impact the definition of the future corridor. The full text of the *Archaeological Assessment and Cultural Resources Overview* is available separately from Working Paper No. 2. An over-view of areas that have been identified as containing a high concentration of cultural resources is depicted in **Figure 9-6**, *Cultural Resources*.

The following issues identified during the environmental overview must be considered during future corridor development:

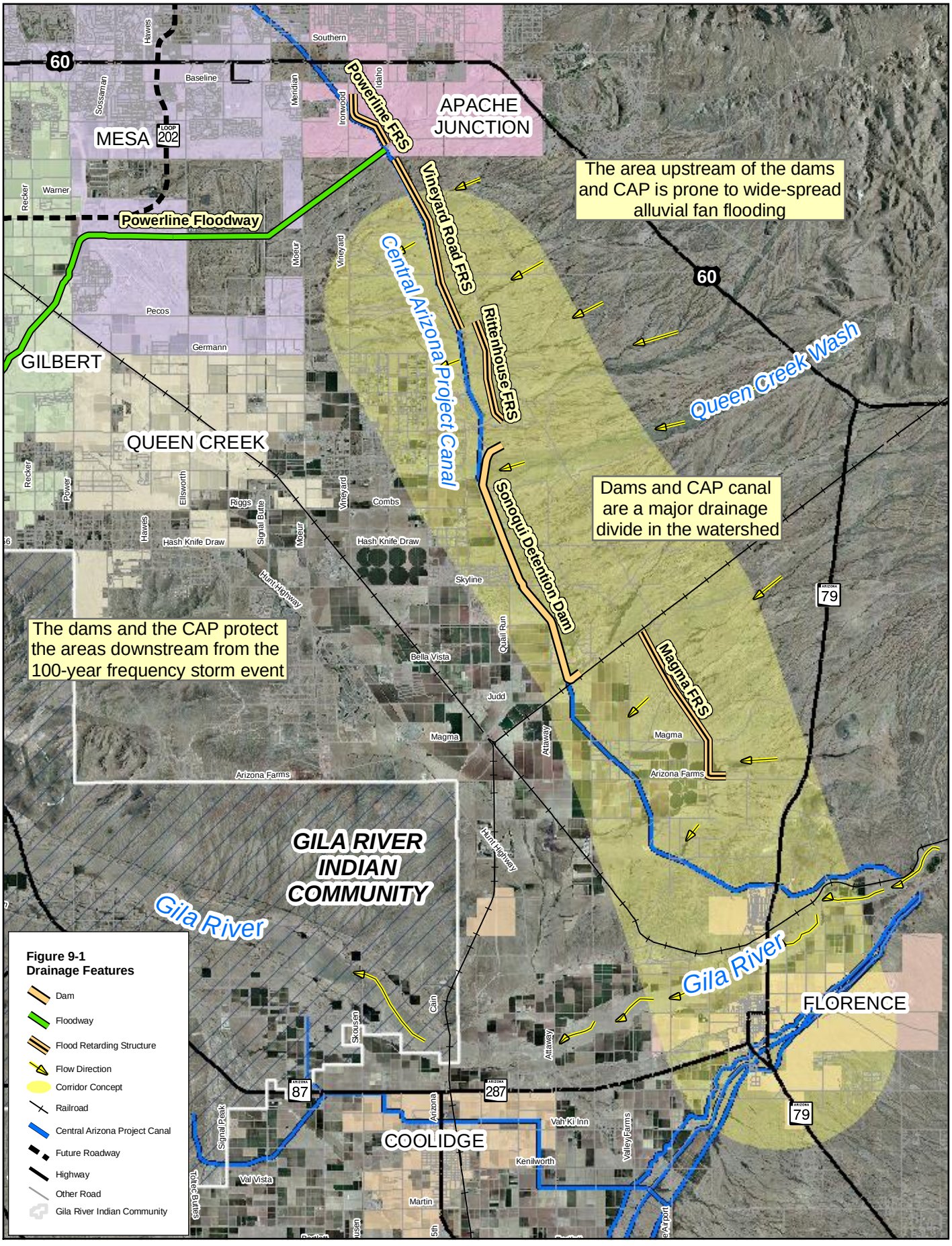
- During the Design Concept Report or Final Design new scoping letters should be submitted to the AGFD and USFWS and a biological evaluation should be completed to determine the potential affects to threatened and endangered species.
- It may be necessary to conduct a survey for burrowing owls and Sonoran desert tortoise.
- For any proposed roadway project, a survey will be required by a qualified noxious weed authority to determine if any noxious weeds are present within the project boundaries.
- A jurisdictional delineation would need to be conducted to determine waters of the United States. A Section 404 Permit would be required if the project impacts waters of the United States.
- A noise analysis would be required if the proposed roadway is located near noise receptors.
- If new right-of-way is to be acquired for future construction, a Phase I Environmental Site Assessment should be conducted to determine if potential hazmat concerns are Recognized Environmental Conditions.
- During the Design Concept Report or Final Design, the demographic composition and Title VI/Environmental Justice should be reevaluated and block groups be included in this reevaluation.
- The density and diversity of the cultural resources in the study area is high. Although only a small portion of the entire study area has been systematically surveyed, patterns of site distribution can be observed based on the existing data. The Queen Creek floodplain and the Gila River corridor are the areas of highest site density. The Corridor Concept and the North-South corridor in particular, will have to contend with the high site densities along Queen Creek and the Gila River that cut east to west across the study area. It is estimated that at least 50 percent of any newly recorded archaeological sites will require testing and/or data recovery investigations to mitigate the potential impacts related to the construction of the new transportation corridors.
- The CAP right-of-way has already been cleared of cultural resources.

A summary of environmental opportunities and constraints is presented in **Table 9-3.**

[4] An Archeological Assessment and Cultural Resources Overview of the Pinal County Transportation Corridors Definition Study Area in Northern Pinal County, Arizona. Soil Systems Technical Report No. 05-32. July, 2005.

Table 9-3 – Summary of Environmental/Social Opportunities and Constraints

Corridor Definition Alternative	Environmental/Social Opportunities	Environmental/Social Constraints
North-South corridor from Williams Gateway Corridor (Frye Rd. alignment) **to Arizona Magma Railroad** near Judd Rd **Alternative 1**: North-South corridor from Arizona Magma Railroad near Judd Road to connection with SR 79 **Alternative 2**: North-South corridor from Arizona Magma Railroad near Judd Road to connection with SR 287 near Valley Farms Road.	• The CAP right-of-way has already been cleared of cultural resources. • Construction of the corridor to the west of the CAP would have the least amount of environmental impacts, as the area to the east of the CAP remains largely undisturbed and thus provides more suitable habitat for wildlife and biotic communities.	• The density and diversity of the cultural resources in the study area is high. Although only a small portion of the entire study area has been systematically surveyed, patterns of site distribution can be observed based on the existing data. The Queen Creek floodplain and the Gila River corridor are the areas of highest site density. A connection that crosses, or approaches the Gila River will encounter a significant number of cultural resources. • 38 sites with underground storage tanks (UST) records are located within or immediately adjacent to the study area. See Working Paper No. 2 • Sixteen sites with leaking underground storage tanks (LUST) case files are located within or immediately adjacent to the study area. See Working Paper No. 2 • Eighteen hazardous material incidents occurred within or immediately adjacent to the study area, as recorded in the Hazardous Material Incident Logbook. The records are summarized in Working Paper No. 2 • Two landfills are located within the study area. The Apache Junction is located in the northern portion of the study area and the Ironwood Landfill is located in the southern portion. • The burrowing owl and Sonoran desert tortoise are known to occur within the project area. Potential impacts to these species should be evaluated during the environmental clearance process. • A review of the U.S. Department of Agricultural Soil Surveys for Pinal County indicates that prime irrigated farmland exists within the study area. If federal funds are used for any roadway improvements that would require right-of-way acquisition, a farmland impact assessment may need to be performed in accordance with the Farmland Protection Policy Act. • Populations considered in Title VI are relatively high within the study area. Additional considerations should be given to Title VI populations as the corridor is developed. • A Section 404 Permit would be required if the project impacts waters of the United States.


60
Hawes
Southern
Baseline
Sossaman
Meridian
Idaho
Ironwood
Powerline FRS
APACHE JUNCTION
MESA
LOOP 202
Recker
Warner
Powerline Floodway
Moeur
Vineyard
Vineyard Road FRS
Central Arizona Project Canal
Rittenhouse FRS
The area upstream of the dams and CAP is prone to wide-spread alluvial fan flooding
60
Pecos
Germann
GILBERT
Queen Creek Wash
QUEEN CREEK
Power
Ellsworth
Riggs
Signal Butte
Combs
Hawes
Hash Knife Draw
Sonoqui Detention Dam
Dams and CAP canal are a major drainage divide in the watershed
Skyline
Hunt Highway
79
The dams and the CAP protect the areas downstream from the 100-year frequency storm event
Quail Run
Bella Vista
Judd
Magma FRS
Magma
Attaway
Arizona Farms
GILA RIVER INDIAN COMMUNITY
Gila River
Cain
Skousen
FLORENCE
87
287
Arizona
Signal Peak
Vah Ki Inn
Valley Farms
COOLIDGE
Kenilworth
Val Vista
Toltec Parker
Martin
5th
Airport
Figure 9-1
Drainage Features
Dam
Floodway
Flood Retarding Structure
Flow Direction
Corridor Concept
Railroad
Central Arizona Project Canal
Future Roadway
Highway
Other Road
Gila River Indian Community
N
0 1 2 3 4 5
Miles
Data Source:
Arizona Land Resource Information System
PINAL COUNTY CORRIDORS DEFINITION STUDY
Kimley-Horn and Associates, Inc.
ADOT

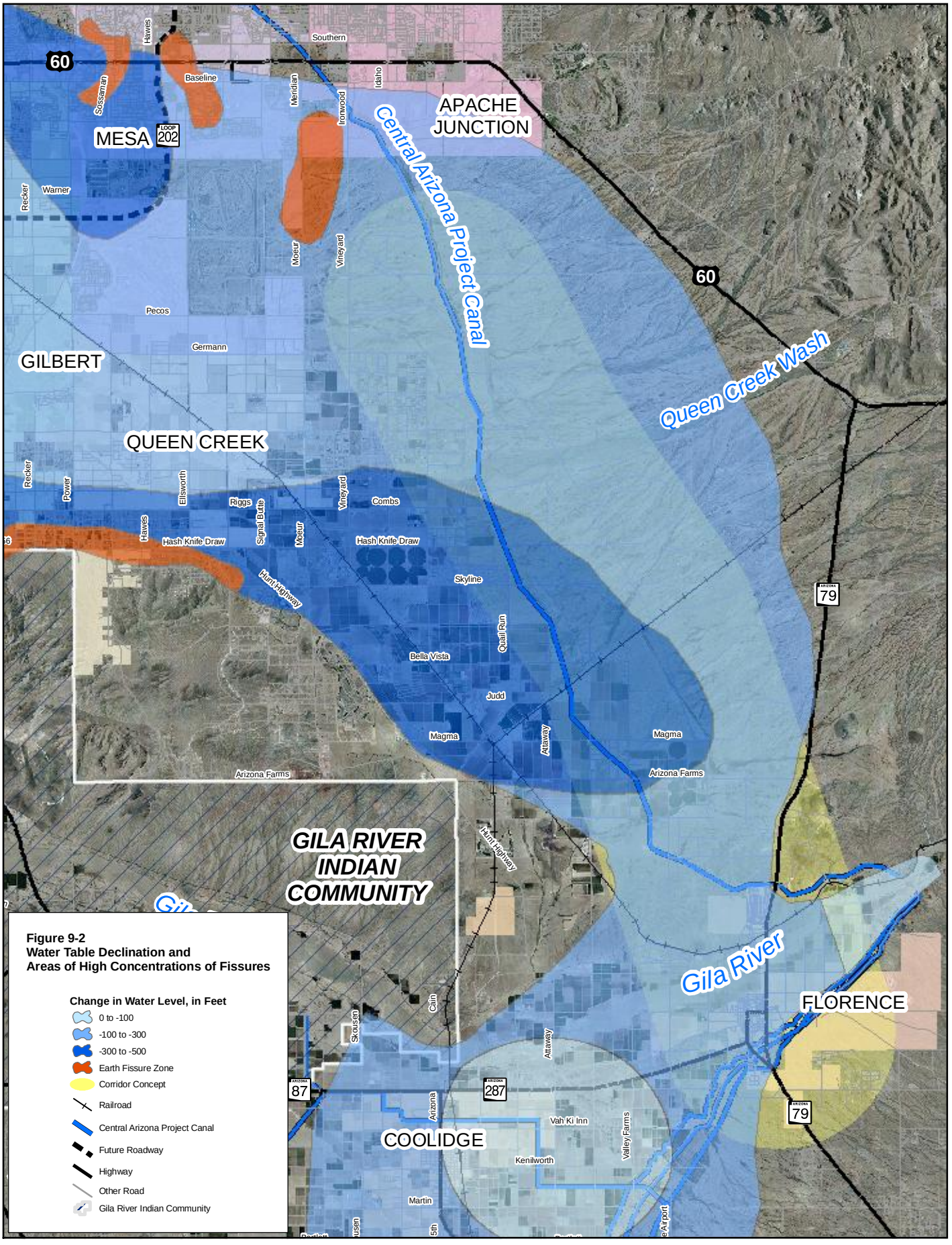


Figure 9-2
Water Table Declination and Areas of High Concentrations of Fissures

Change in Water Level, in Feet

- 0 to -100
- -100 to -300
- -300 to -500
- Earth Fissure Zone
- Corridor Concept
- Railroad
- Central Arizona Project Canal
- Future Roadway
- Highway
- Other Road
- Gila River Indian Community

N

0 1 2 3 4 5 Miles

Data Source:
Arizona Land Resource Information System

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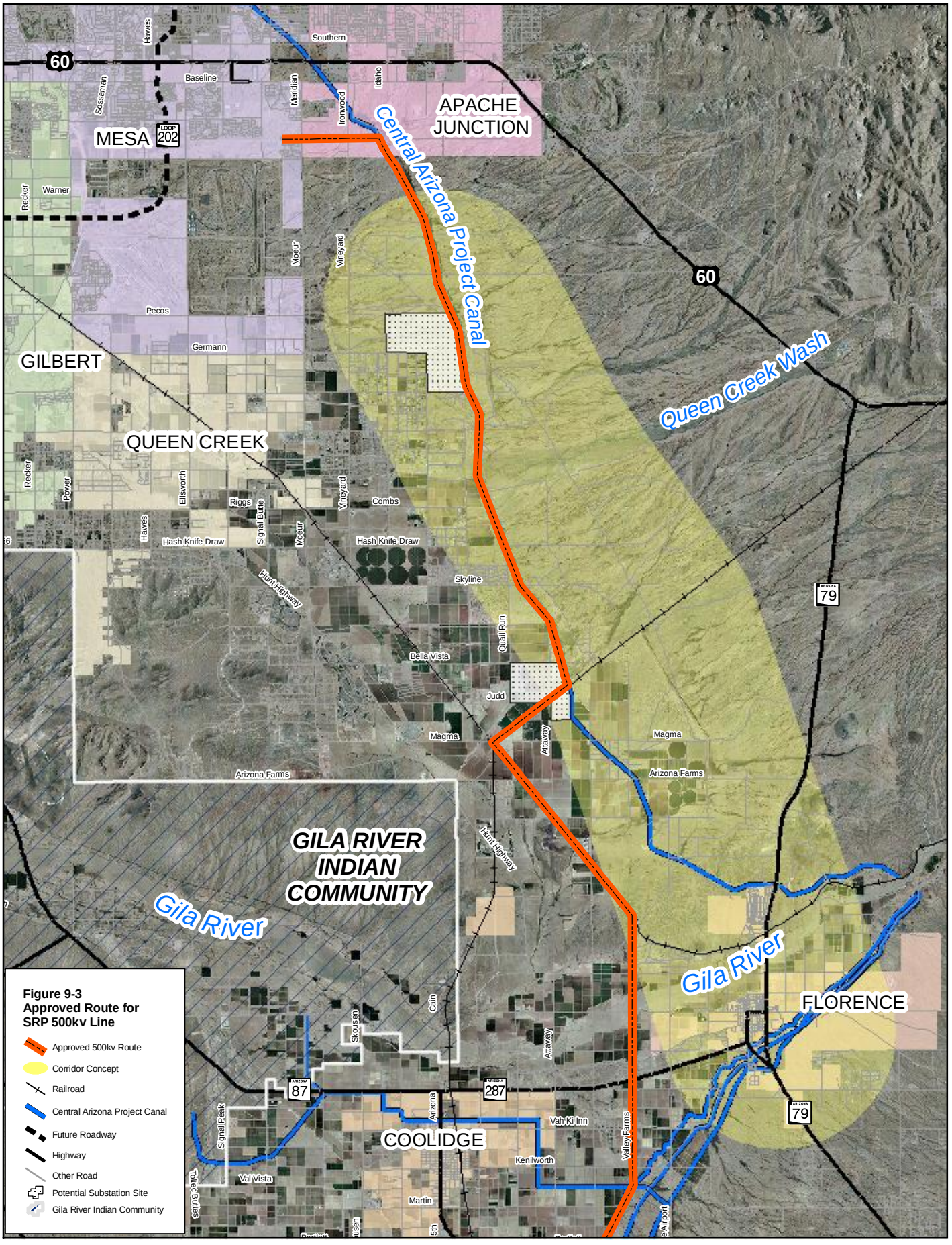

Figure 9-3
Approved Route for SRP 500kv Line

- Approved 500kv Route
- Corridor Concept
- Railroad
- Central Arizona Project Canal
- Future Roadway
- Highway
- Other Road
- Potential Substation Site
- Gila River Indian Community

N

0 1 2 3 4 5 Miles

Data Source:
Arizona Land Resource Information System

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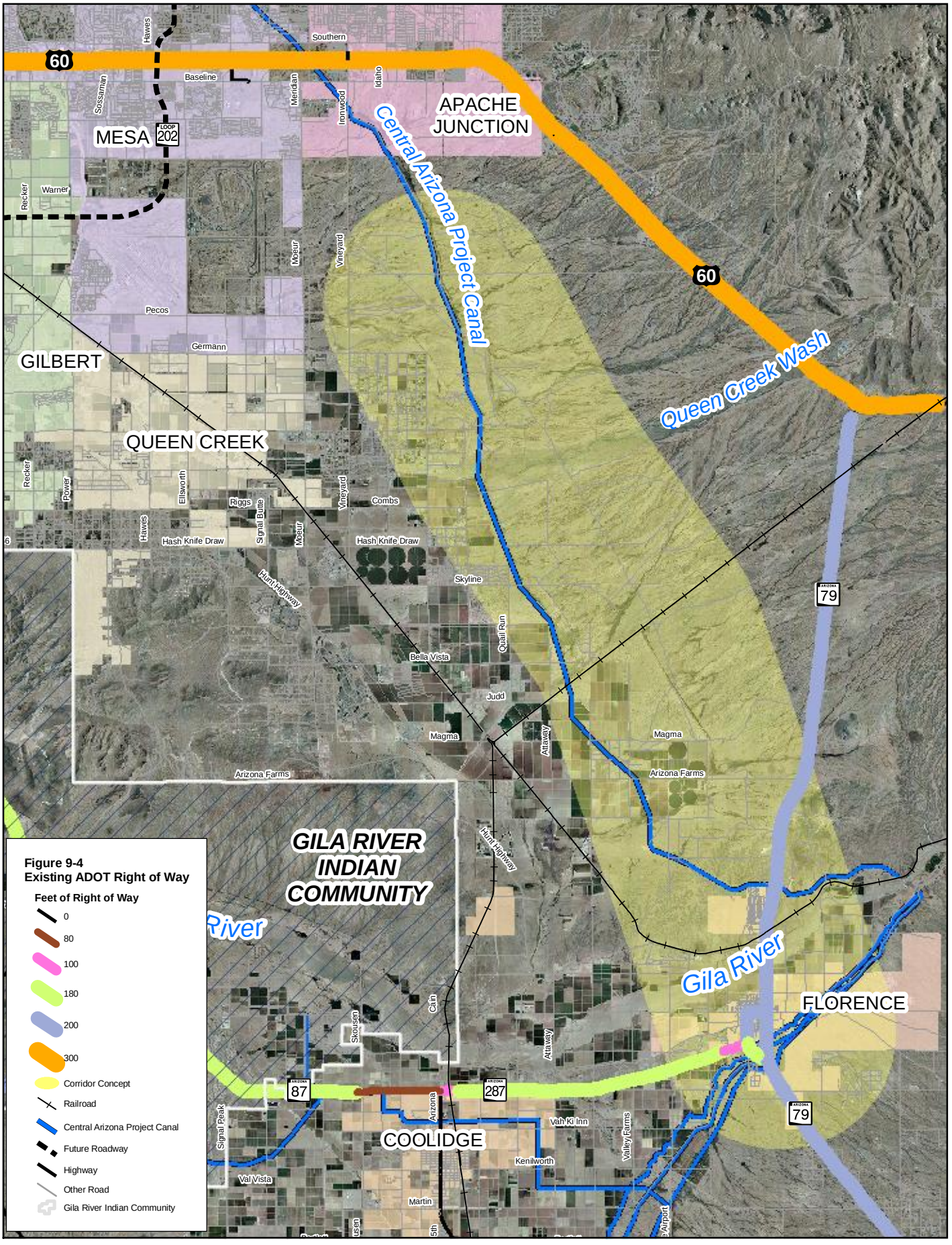
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Hawes
Southern
Baseline
Sossaman
Meridian
Idaho
Ironwood
APACHE JUNCTION
MESA
LOOP 202
Central Arizona Project Canal
Recker
Warner
Moeur
Vineyard
Pecos
Germann
GILBERT
Queen Creek Wash
QUEEN CREEK
Power
Ellsworth
Riggs
Signal Butte
Combs
Hash Knife Draw
Skyline
Hunt Highway
79
Quail Run
Bella Vista
Judd
Magma
Attaway
Arizona Farms
GILA RIVER INDIAN COMMUNITY
Gila River
FLORENCE
Cain
Skousen
87
287
Arizona
Vah Ki Inn
Valley Farms
COOLIDGE
Signal Peak
Kenilworth
Val Vista
Martin
Airport
Figure 9-4
Existing ADOT Right of Way
Feet of Right of Way
0
80
100
180
200
300
Corridor Concept
Railroad
Central Arizona Project Canal
Future Roadway
Highway
Other Road
Gila River Indian Community
N
0 1 2 3 4 5
Miles
Data Source:
Arizona Land Resource Information System
PINAL COUNTY CORRIDORS DEFINITION STUDY
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ADOT

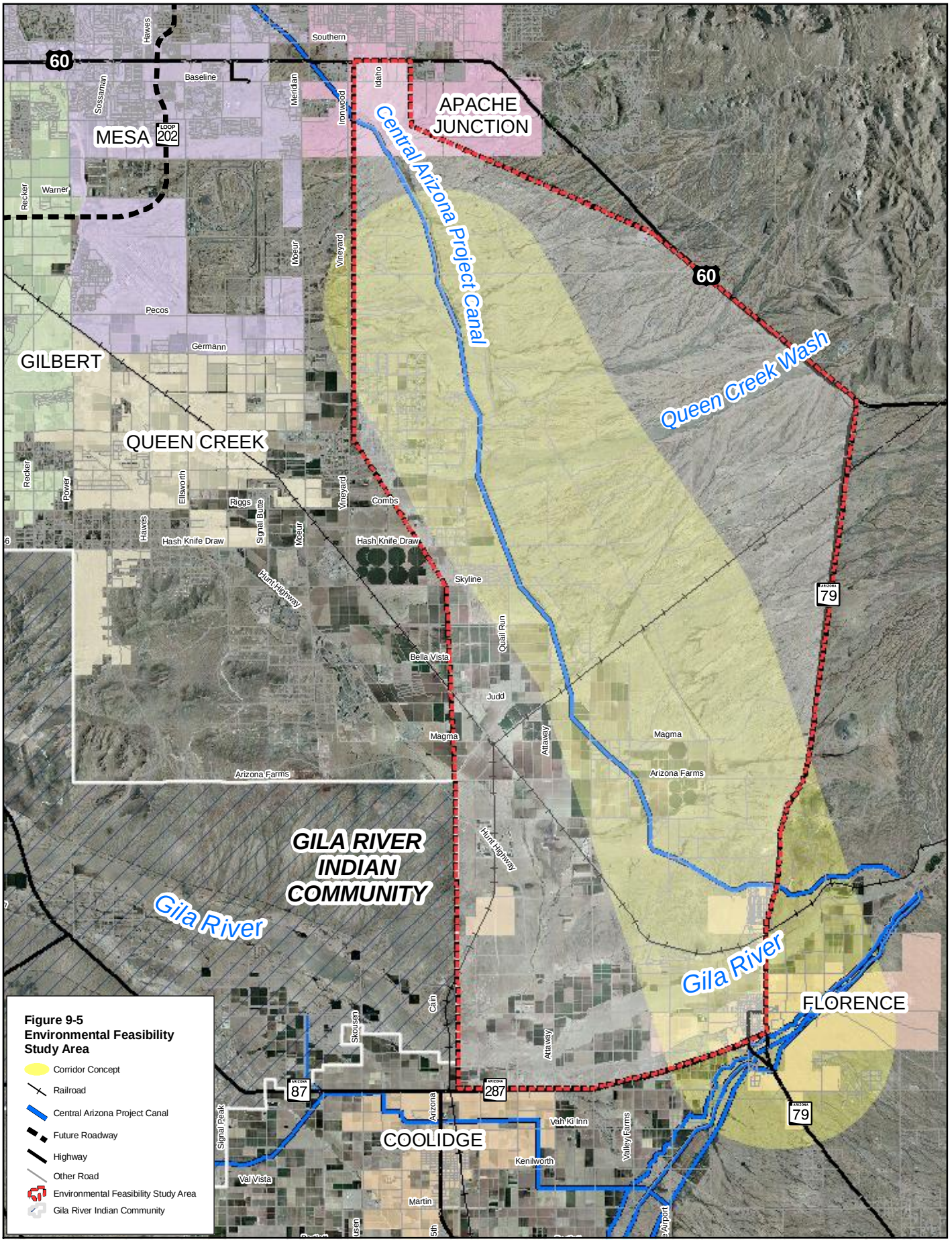

Figure 9-5
Environmental Feasibility Study Area

- Corridor Concept
- Railroad
- Central Arizona Project Canal
- Future Roadway
- Highway
- Other Road
- Environmental Feasibility Study Area
- Gila River Indian Community

N

0 1 2 3 4 5 Miles

Data Source:
Arizona Land Resource Information System

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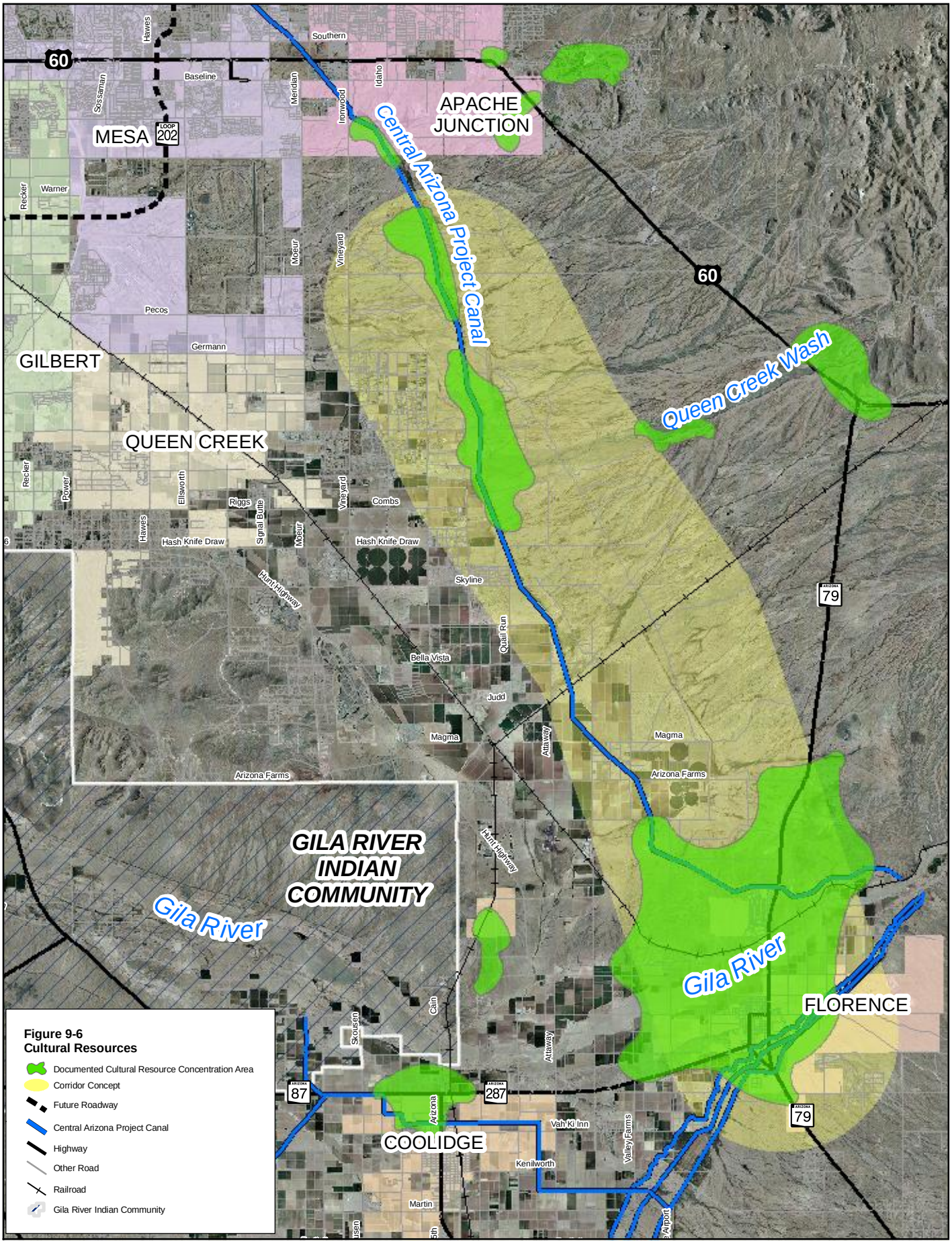
60
Hawes
Southern
Baseline
Sossaman
Meridian
Ironwood
Idaho
APACHE JUNCTION
MESA
LOOP 202
Central Arizona Project Canal
Recker
Warner
Moeur
Vineyard
Pecos
Germann
GILBERT
Queen Creek Wash
QUEEN CREEK
Power
Ellsworth
Riggs
Signal Butte
Combs
Hash Knife Draw
Hunt Highway
Skyline
ARIZONA 79
Quail Run
Bella Vista
Judd
Magma
Attaway
Arizona Farms
GILA RIVER INDIAN COMMUNITY
Gila River
FLORENCE
Cain
Skousen
ARIZONA 87
ARIZONA 287
Arizona
COOLIDGE
Vah Ki Inn
Valley Farms
Kenilworth
Martin
Figure 9-6
Cultural Resources
Documented Cultural Resource Concentration Area
Corridor Concept
Future Roadway
Central Arizona Project Canal
Highway
Other Road
Railroad
Gila River Indian Community
N
0 1 2 3 4 5
Miles
Data Source:
Arizona Land Resource Information System
PINAL COUNTY CORRIDORS DEFINITION STUDY
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9.5 Land-Use Compatibility Opportunities and Constraints

Land use compatibility criteria include issues of corridor compatibility with jurisdictional development and local land use plans. An outcome of this analysis is how the Corridor Concept alternative fits with adopted transportation and land use plans.

Both alternative corridor definitions (connection to SR 79 and a connection to SR 287) will impact to some degree future residential developments and master planned communities. A corridor connection to SR 79 affords the most opportunity to minimize wide-scale impact to existing and future master planned communities. In fact, a corridor definition could potentially be identified that would bypass most, it not all, of these communities.

A corridor connection to SR 287 provides fewer opportunities to avoid wide-scale impact to future master planned communities and residential development. However, collocation of the North-South corridor with the SRP 500 kV line could consolidate the infrastructure that would require mitigation, and would have less of an impact on future development than would a transportation corridor on a separate alignment.

A summary of opportunities and constraints from a land-use and local jurisdiction perspective is presented in **Table 9-4.**

Table 9-4 – Summary of Land-use and Local Jurisdictions Opportunities and Constraints

Corridor Definition Alternative	Land Use and Local Jurisdictions Perspectives Opportunities	Land Use and Local Jurisdictions Perspectives Constraints
North-South corridor from Williams Gateway Corridor (Frye Rd. alignment) **to Arizona Magma Railroad** near Judd Rd	• Agency and stakeholders have expressed support for collocation of the corridor with the CAP, to the extent feasible, to create a 'transport and utility corridor'. This corridor would also include the 500 kV line, and the railroad in some segments. This provide the following benefits: - Bisects the study area and serves future developments both east and west of the CAP. - Provides opportunity to integrate land use and freeway concepts on currently undeveloped State Trust Land. ASLD is interested in identifying potential locations of interchanges to integrate into their planning concepts. - Minimizes mitigation required as compared to separate power line and transportation corridors. • The majority of the corridor definition alternative is located on State Trust Land. This provides the opportunity for ADOT to identify and purchase right-of-way in advance of development. • Arizona State Land Department is currently conducting an infrastructure planning study for the Superstition Vistas and Lost Dutchman Heights areas. • Location of the North-South corridor on the west side of the CAP is consistent with ASLD land use plans. • This facility is consistent with Pinal County perspectives and plans. Pinal County is interested in combining the corridor with a linear trail system. • Terminus of freeway facility at Williams Gateway corridor is consistent with City of Apache Junction plans to develop a parkway facility through a commercial area that connects to the US 60.	• The US Bureau of Reclamation owns significant parcels of land that are located mostly on the east side of the CAP. In addition, large drainage and flood control easement exists on the east side of the CAP, limiting corridor opportunities directly to the east of the CAP. • The United States Military owns two parcels within the study area: 1) Florence Military Reservation is generally bounded on the north by Arizona Farms Road, on the south by the Union Pacific/Copper Basin Railroad. The parcel extends 1-mile to the east of SR 79. 2) Rittenhouse Auxiliary Airfield is located adjacent to the west side of the CAP and bounded by the Ocotillo Rd alignment on the north, Pima Rd alignment on the south, Tomahawk Rd alignment on the west, and Goldfield Road alignment on the east. • Because most of the corridor definition is located on State Trust Land, arterials to provide access to and from the corridor will likely not be developed until the ASLD land is sold for development. • Access to the corridor from the east side of the CAP will require crossings to be constructed. • While a corridor alignment can ultimately be identified that would minimally impact existing and proposed residential development, the following master planned communities may be impacted: - Castlegate - Lorado Ranch - Quail Run Estates - Bella Vista - Sonoran Village

Table 9-4 – Summary of Land-use and Local Jurisdictions Opportunities and Constraints (continued)

Corridor Definition Alternative	Land Use Opportunities	Land Use Constraints
Alternative 1: North-South corridor from Arizona Magma Railroad near Judd Road to connection with SR 79	• A connection to SR 79 is more consistent with goals and objectives of the Town of Florence. A definition could be identified that would minimally impact proposed master planned communities. • This alternative provides some opportunity to identify an alignment to minimize impact to existing and proposed master planned communities. • Magma Dam/Flood Retarding Structure may provide opportunities for corridor alignment. The NCRS recently retained a consultant to evaluate the condition of the structures. If it is determined that the structure requires reconstruction, corridor facility may be considered in the design.	• A new hospital is planned south of Hunt Highway, south of Main Street in Florence. Corridor definition would need to circumvent this facility. This alternative may also significantly impact Arizona Department of corrections facilities located on SR 79. • While a corridor alignment can ultimately be identified that would minimally impact existing and proposed residential development, the following master planned communities may be impacted: - Ocotillo Verde - Caballero - Magma Ranches II - Magma Ranches - Sky View Farms - Sun Valley Farms - Arizona Farms - Dobson Farms
Alternative 2: North-South corridor from Arizona Magma Railroad near Judd Road to connection with SR 287 near Valley Farms Road.	• Connection to SR 287 near Valley Farms Road positions the corridor for more direct access to a future extension of corridor to Coolidge airport. • However, future definitions could be identified to provide access to the airport if the corridor is connected to SR 79. • Enables collocation of the North-South corridor with the approved route of the 500 kV line. • City of Coolidge is preparing a General Plan Amendment that will enable preservation of a corridor for a future transportation facility on Clemens Road. A connection to SR 287 is more consistent with these plans than is a connection to SR 79. In addition, Westcor has purchased a large parcel of property near the Clemens Road alignment. A connection to SR 287 may improve access to and from the mall. • An additional crossing the Gila River is important for future mobility and accessibility within the study area.	• Connection to SR 79 disconnects the North-South corridor from 'straight-line' path connectivity to Clemens Road alignment, which is envisioned by City of Coolidge to become a major transportation facility. • Corridor alignment would likely impact the following existing and proposed master planned communities: - Dobson Farms - Arizona Farms - Anthem - Merrill Ranch - Wild Horse Estates - Mesquite Groves - Oasis at Magic Ranch - Sonoran Village • Collocation of the North-South corridor with the 500 kV line creates a large 'foot-print' area that may require a very wide right-of-way to accommodate utilities, the CAP, and the railroad.

10. CORRIDOR DEFINITION

The needs assessment phase of the corridor definition study identified the need for a corridor to connect SR 202L via the Williams Gateway corridor to the Florence/Coolidge area. Chapter 10 presents a preliminary recommended North-South corridor definition considering engineering, environmental, jurisdiction, and public perspectives opportunities and constraints that were presented in Chapter 9. A more detailed description of the recommended corridor definition is presented in *Working Paper No. 2*, and is available at *http://tpd.azdot.gov///planning/cds_pinal.php*

10.1 Description of Preliminary North-South Corridor Definition

As a final alignment has not been selected for the MAG Williams Gateway corridor, the proposed definition is flexible enough to accommodate whichever alignment is ultimately selected by ADOT and MAG for the Williams Gateway freeway.

The proposed North-South corridor definition begins at a future intersection with the Williams Gateway corridor at the CAP. The definition proceeds in a south-southeasterly direction along the CAP until the intersection with the Magma Arizona Railroad. The definition in this area is narrowly focused, approximately ¼ mile wide, and lies directly adjacent to the 1000 feet corridor that has been identified for the SRP 500 kV line.

As the definition reaches the Arizona Magma railroad, it broadens and becomes less specific. A future corridor alignment could be identified within this definition that extends to SR 79 or alternatively to SR 287. A connection to SR 79 would have less of an impact on future master planned communities, but may provide less relief and benefit to future north-south arterials within the Florence area. In addition, this definition would not provide an additional, and much needed, crossing of the Gila River.

The recent approval of the SRP 500 kV transmission line alignment provides an opportunity to connect the North-South corridor to SR 287, generally following the same alignment as the 500 kV transmission line resulting a consolidated transportation and utility corridor that impacts less land overall than would separate transmission line and transportation corridors. In addition, a connection to SR 287 better positions the corridor for future continuation south of SR 287. A connection to SR 287 is more centrally located within the study area and thus may provide more relief to future arterials. Finally, a connection to SR 287 provides an additional crossing of the Gila River.

An outline of the preliminary corridor definition is superimposed upon land ownership, master planned communities, drainage, environmental information in **Figures 10-1** through **10-4**.

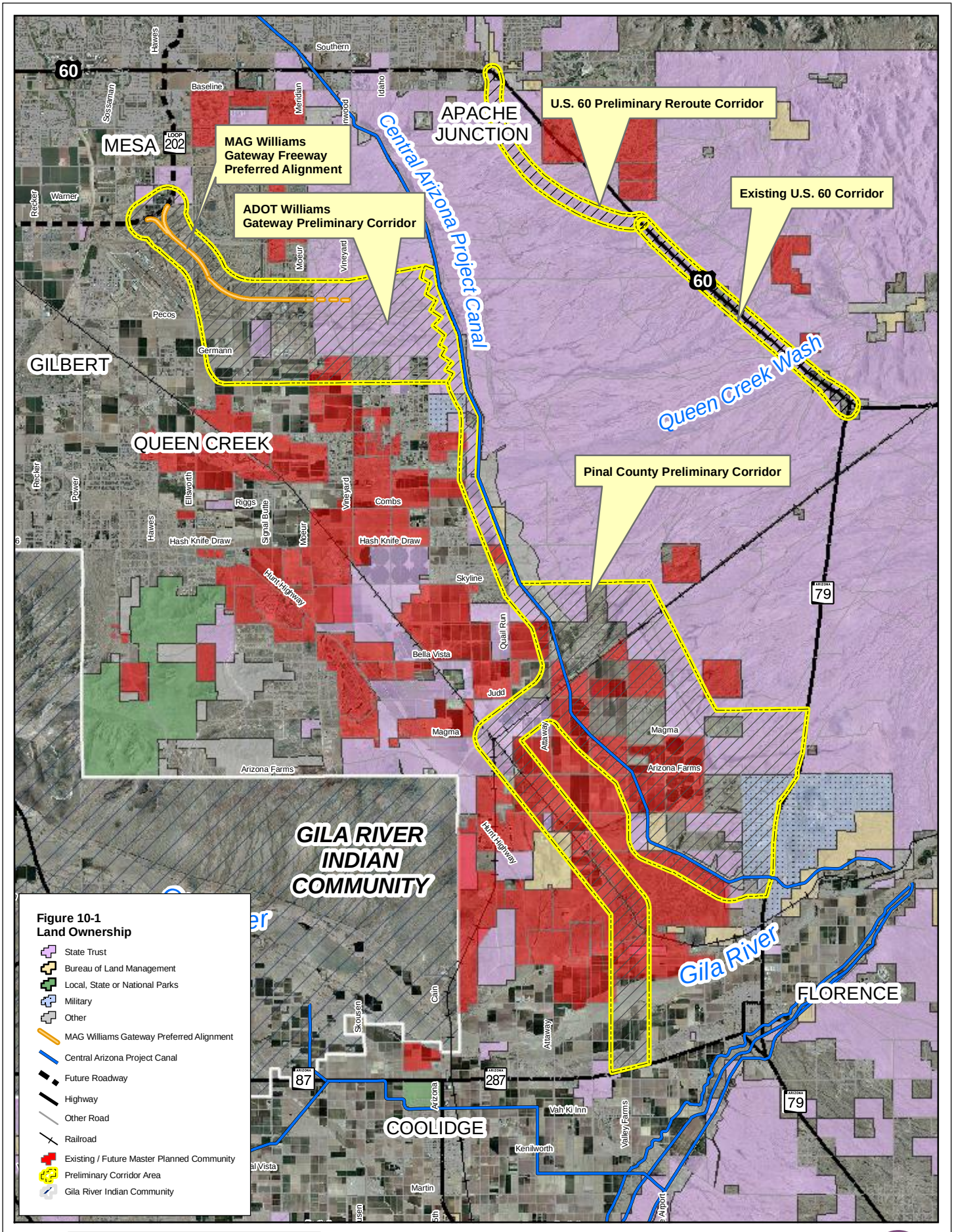

Figure 10-1
Land Ownership

- State Trust
- Bureau of Land Management
- Local, State or National Parks
- Military
- Other
- MAG Williams Gateway Preferred Alignment
- Central Arizona Project Canal
- Future Roadway
- Highway
- Other Road
- Railroad
- Existing / Future Master Planned Community
- Preliminary Corridor Area
- Gila River Indian Community

N

0 1 2 3 4 5 Miles

Data Source:
Arizona Land Resource Information System

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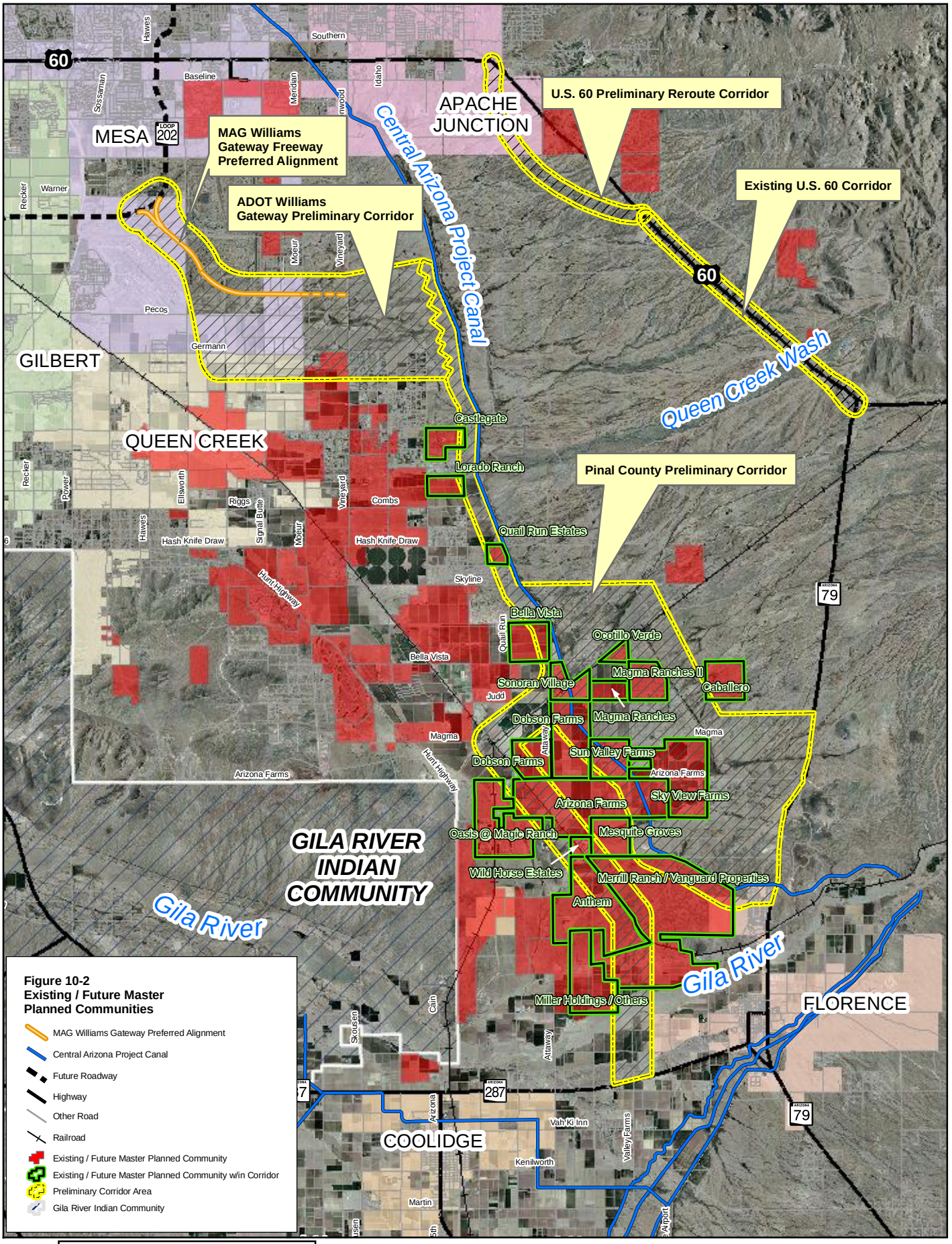

Figure 10-2
Existing / Future Master Planned Communities

- MAG Williams Gateway Preferred Alignment
- Central Arizona Project Canal
- Future Roadway
- Highway
- Other Road
- Railroad
- Existing / Future Master Planned Community
- Existing / Future Master Planned Community w/in Corridor
- Preliminary Corridor Area
- Gila River Indian Community

N

0 1 2 3 4 5 Miles

Data Source:
Pinal County, Town of Florence,
Commerce Realty Advisors Ltd.,
Arizona Land Resource Information System

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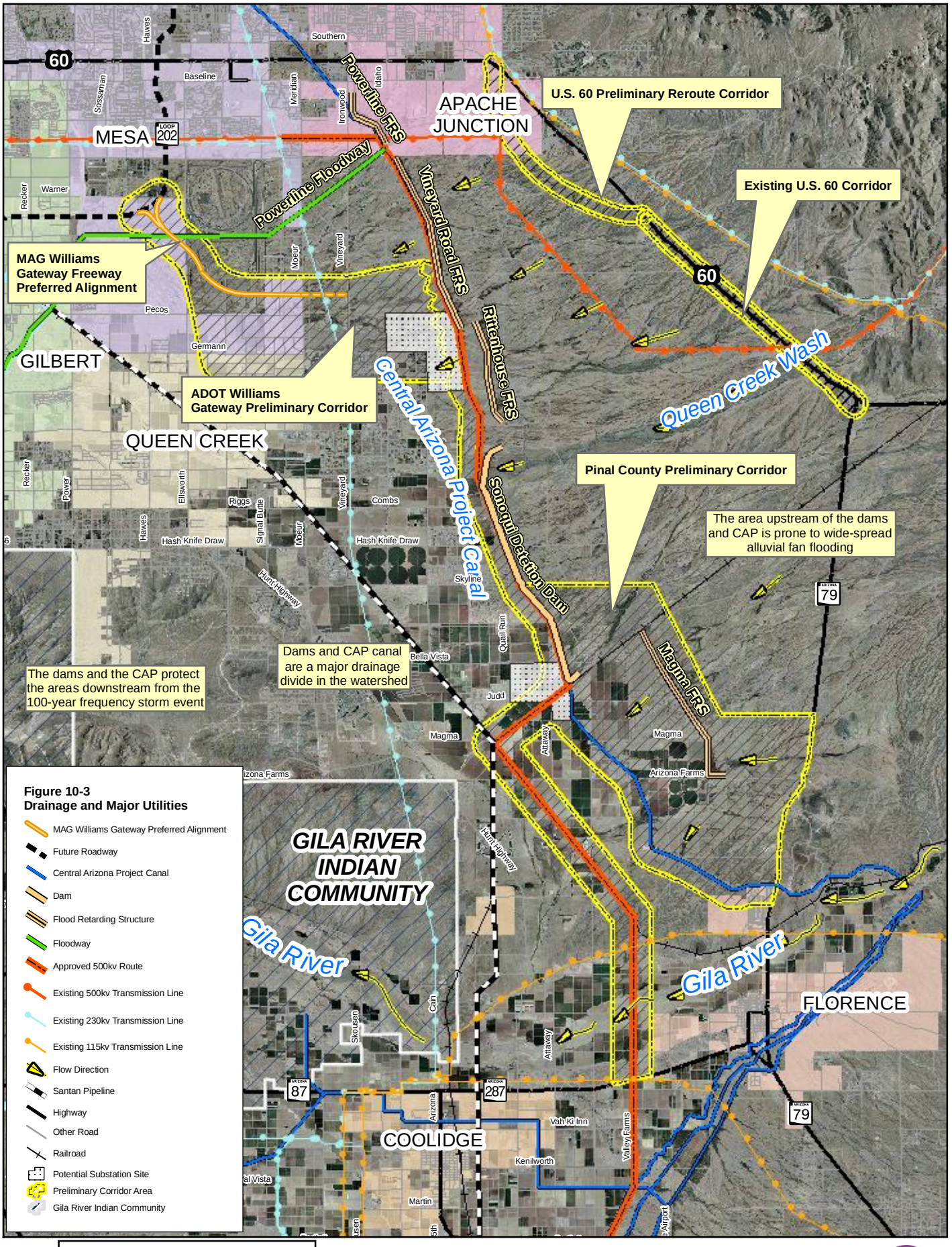

Figure 10-3
Drainage and Major Utilities

- MAG Williams Gateway Preferred Alignment
- Future Roadway
- Central Arizona Project Canal
- Dam
- Flood Retarding Structure
- Floodway
- Approved 500kv Route
- Existing 500kv Transmission Line
- Existing 230kv Transmission Line
- Existing 115kv Transmission Line
- Flow Direction
- Santan Pipeline
- Highway
- Other Road
- Railroad
- Potential Substation Site
- Preliminary Corridor Area
- Gila River Indian Community

N

0 1 2 3 4 5 Miles

Data Source:
Arizona Land Resource Information System,
Salt River Project

PINAL COUNTY CORRIDORS DEFINITION STUDY

Kimley-Horn and Associates, Inc.

ADOT

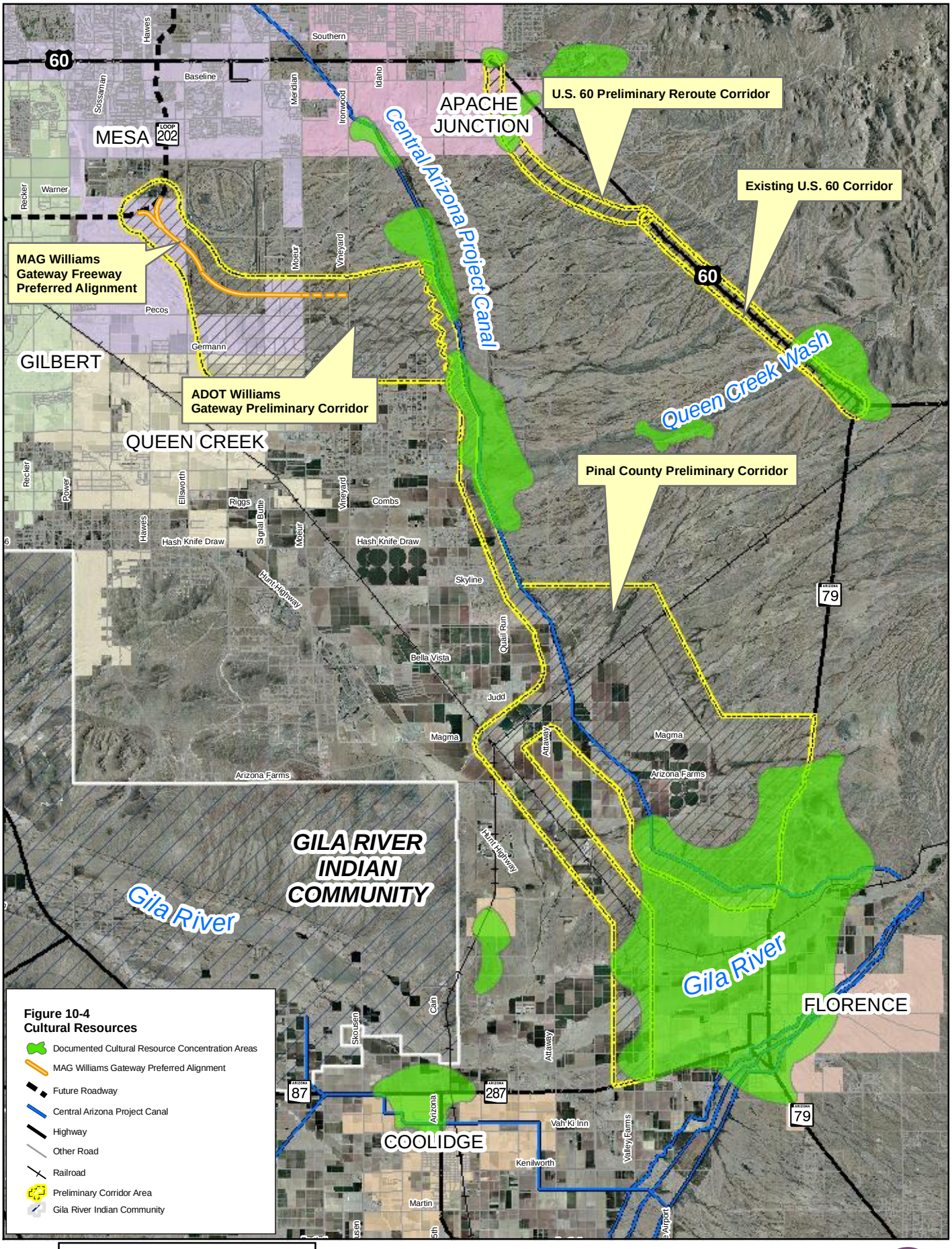

Figure 10-4
Cultural Resources

- Documented Cultural Resource Concentration Areas
- MAG Williams Gateway Preferred Alignment
- Future Roadway
- Central Arizona Project Canal
- Highway
- Other Road
- Railroad
- Preliminary Corridor Area
- Gila River Indian Community

N

0 1 2 3 4 5 Miles

Data Source:
Arizona Geological Survey, Arizona Land Resource Information System

PINAL COUNTY CORRIDORS DEFINITION STUDY

Kimley-Horn and Associates, Inc.

ADOT

10.2 Estimate of Probable Cost

Corridor planning-level cost estimates were developed to provide an approximation that is suitable for use in programming and the next steps of highway development. The developed cost estimates reflect the total highway development costs of planning and engineering studies, design, roadway construction, and right-of-way acquisition.

10.2.1 Planning, Engineering, and Construction Costs

Planning and engineering costs are based on per mile unit costs for constructing limited access roadway sections. The per mile construction costs include provisions for typical drainage improvements, structures, environmental mitigation, and other related infrastructure.

A recent report, *Performance Audit of Arizona Department of Transportation: Review of the Oversight and Management of the Maricopa County Regional Freeway System, June 2005*, provides average construction cost averages for freeway construction in the Phoenix Metropolitan area. The report states that capital construction costs for a selected number of segments in the MAG Regional Freeway System varied between $2.38 and $3.78 million per lane mile. For a 6-lane freeway, this is approximately $14 to $22 million per centerline mile. This figure does not include right-of-way, design, and landscaping costs. The audit report states that these costs are comparable with the construction cost standards adopted by the California Department of Transportation (CalTrans), where the actual costs per lane mile should be within the $5 million range.

In April of 2004 the Maricopa Association of Governments reported that the total cost per Regional Freeway System centerline mile was $39 million. This figure represents all costs associated with the design, property acquisition, utilities, landscape and construction of the freeway. Input received from ADOT staff indicates that future costs will be higher due to rising construction and right-of-way costs. ADOT staff has suggested that recent projects indicate that costs in the near future will be closer to $42 million per centerline mile due to increased land prices and escalating construction costs.

The MAG Williams Gateway Corridor, as estimated by the *MAG Williams Gateway Corridor Alignment Study, July 2005,* is projected to cost between $243 million to $333 million. This study does not provide a detailed break-down in costs, but this corridor would equate to an estimated unit cost of $54 million per mile for this 4.5 mile corridor. The study states that this estimated cost is within the amount allocated by the MAG Regional Transportation Plan, implying that this estimate includes total development costs including design, drainage facilities, system and service interchanges and right-of-way.

Based upon the various information sources cited above, an estimate of probable cost for a 6-lane North-South corridor extending from approximately the Frye Road alignment to either SR 79 or SR 287 is presented in **Table 10-1**. The estimate of probable cost assumes that the corridor would range from approximately 17 miles to 21 miles in length, depending upon the final alignment that is selected. A corridor that connects to SR 79 could range from 17 to 19 ½ miles in length, while a corridor connecting to SR 287 could be approximately 22 miles in length. The estimate assumes that the corridor would include 1 system interchange and 6 service interchanges at a spacing of approximately 2 miles.

Table 10-1 – Estimate of Probable Cost by Source

Item	Units	Number of Units	Estimated Unit Probable Cost	Total Estimated Probable Cost
6-Lane Freeway Facility	Miles	17	$10 million	$170 million
		22		$220 million
System Interchange	Each	1	$50 - $150 million	$75 - $150 million
Service Interchange	Each	6	$15 million	$90 million
Roadway Subtotal				$335 - $460 million
Construction Contingency	20% of Roadway Construction Cost			$67 - $92 million
Construction Administration	15% of Roadway Construction Cost			$50 - $69 million
Construction Total				$452 - $621 million
Pre-Design Studies	5% of Construction Total Cost			$23 - $31 million
Design Costs	10% of Construction Total Cost			$45 - $62 million
Total North-South Corridor Cost (excluding right-of-way)				**$520 - $714 million**
Total North-South Corridor Cost per Mile (excluding right-of-way)				**$30 - 32 million**

10.2.2 Right-of-Way Acquisition Costs

As land continues to appreciate each year within the study area, right-of-way costs will inevitably increase. As such, right-of-way costs for future corridors are nearly impossible to estimate with any degree of certainty. Furthermore, much of the land being considered for the corridor definition is within the jurisdiction of Arizona State Land Department which typically auctions land to the highest bidder.

Information provided by stakeholder committee members indicated that land within the study area is currently selling for approximately $45,000 per acre. Assuming that the corridor definition will require 300 feet of right-of-way, an estimate of probable cost for required right-of-way is presented in **Table 10-2.** This estimate does not include right-of-way required for system and service interchanges**.** As land values continue to increase, right-of-way costs will also increase.

Table 10-2 – Potential right-of-way costs (in 2004 land values)

Corridor Length	Right-of-way	Total Acres	Unit Cost / Acre	Total Right-of-Way Cost
17 miles	300 feet	618 acres	$45,000	$27.8 million
			$187,200	$115.7 million
22 miles	300 feet	800 acres	$45,000	$36 million
			$187,200	$149.8 million
Potential right-of-way cost per mile				**$1.6 – $6.8 million**

11. CORRIDOR DEVELOPMENT

This section discusses the steps and activities that will be required to develop the recommended corridors.

11.1 Steps Required for Pinal Corridors Development

While not explicitly spelled out in state statutes or ADOT policy, State Route designation by the State Transportation Board has historically made the route eligible for ADOT planning studies to develop, evaluate, and refine corridor alternatives and to resolve other planning issues to justify State Highway designation. Highway development is carried out by the ADOT Roadway Engineering Group in accordance with the ADOT Policy and Implementation Memorandum 89-5 which contains procedures for scoping studies, feasibility studies, location and design concept studies, and environmental studies.

Development of the corridors ultimately adopted by the State Transportation Board will require that the following reports and activities be performed.

- Feasibility Report
- Location/Design Concept Report and Environmental Clearance
- Construction Plans, Specifications, and Cost Estimates
- Right-of-way Acquisition
- Construction

11.2 Funding Options

As illustrated by the estimates of probable cost presented in **Table 11-1** and **Table 11-2,** development costs for the North-South corridor are considerable. This section describes potential state, federal, and local funding and financing options that have potential to be used on this project. Working Paper No. 2 contains a comprehensive description of state, federal, local and other potential funding sources for the corridors.

- State funding sources include Highway Users Revenue Fund (HURF) and Local Transportation Assistance Fund;
- Federal funding sources include the National Highway System and Surface Transportation Funds (STP Funds);
- Local funding sources include bonds and the Pinal County sales tax;
- Other funding sources include toll roads, cost sharing with developers, state land dedication.

11.3 Financing Options

Multiple financing options exist for corridor development. These include:

- HURF Bonds
- Highway Expansion and Extension Loan Program (HELP)
- Grant Anticipation Notes (GANs)
- Board Funding Obligations (BFOs)
- Transportation Infrastructure and Innovation Act (TIFIA)

12. FINAL CORRIDOR DEFINITION RECOMMENDATIONS

12.1 Combined Recommendation for Corridors Definition, Approved by the State Transportation Board

The preliminary North-South corridor definition presented in Chapter 10.1 of this report was presented at a series of public open houses in August 2005 to receive input from the public, stakeholders, and elected officials. Input received from public meetings resulted in a decision by ADOT to conduct a series of follow-up meetings with stakeholder groups in Pinal and Maricopa counties to obtained focused input on the information presented at the October open houses. ADOT staff held meetings with the following stakeholder groups in late 2005 and early 2006.

- § City of Mesa
- § Williams Gateway Airport Authority
- § Gila River Indian Community
- § Arizona State University
- § Town of Queen Creek
- § Town of Gilbert
- § City of Apache Junction
- § Maricopa County
- § General Motors Proving Grounds
- § Pinal County
- § Central Arizona Council of Governments
- § East Valley Partnership
- § Arizona State Land Department

Stakeholder input was combined by ADOT staff with the results of the public open houses to develop a recommendation for the Pinal County Corridor Definition Study that was presented for consideration by the State Transportation Board at their February 2006 meeting. The recommendation depicted in **Figure 12-1** was approved by the Board.

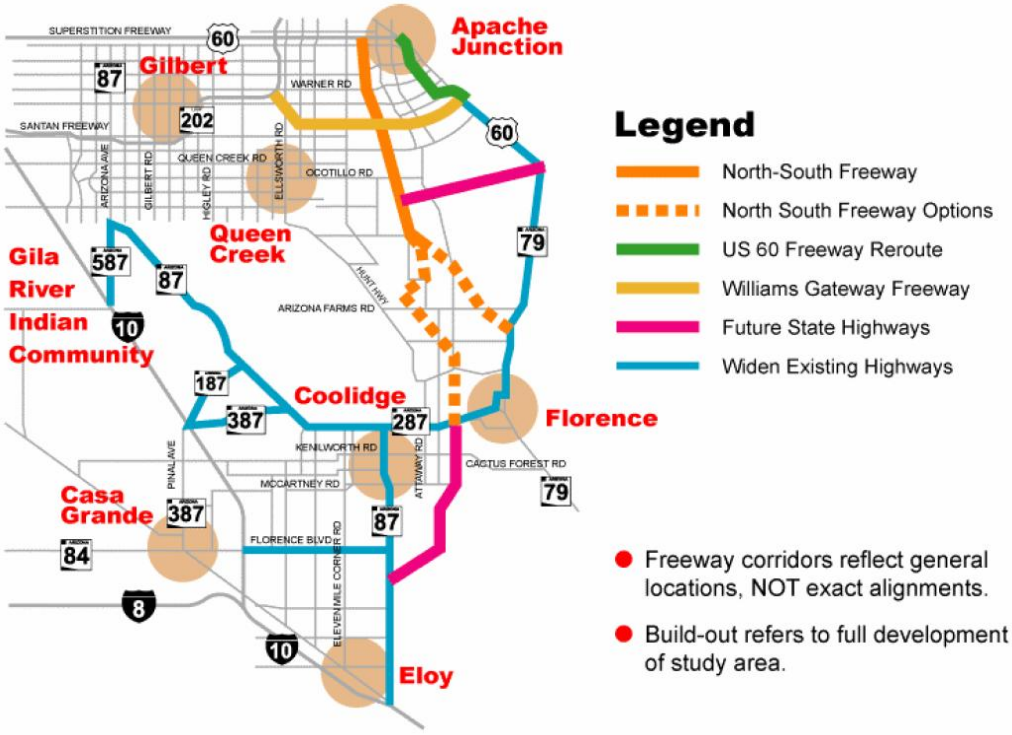

Figure 12-1 – Combined Recommendation for Corridors Definition, Approved by State Transportation Board

The recommendations approved by the State Transportation Board (refer to **Figure 12-1**) include the North-South Freeway between Apache Junction and the Florence-Coolidge area. The recommended North-South Freeway corridor definition begins at the US 60 and extends south to the Central Arizona Project (CAP) Canal. The definition continues in a south-southeasterly direction adjacent to the CAP alignment and the future Salt River Project 500 kV power line until it intersects with the Magma Arizona Railroad.

South of the intersection of the Arizona Magma Railroad, two alternative corridor definitions (orange-dash lines in **Figure 12-1** were recommended for further analysis that connect the North-South Freeway corridor to SR 79 or alternatively to SR 287. The two corridor definition alternatives are described as follows:

- **Alternative 1** connects the North-South Freeway corridor from the intersection with Magma Arizona Railroad near Judd Road to SR 79 north of Florence.
- **Alternative 2** connects the North-South Freeway corridor from the intersection with Arizona Magma Railroad near Judd Road to SR 287 generally along Valley Farms Road and following the approved future alignment for the Salt River Project (SRP) 500 kV utility corridor.

South of SR 287, a corridor definition was recommended that connects the North-South Freeway corridor to SR 87 south of Coolidge.

12.2 Evaluation of Corridor Definition Alternatives in the Florence and Coolidge Area

To resolve issues associated with the two North-South Freeway corridor definition alternatives identified above, additional planning-level analysis was performed to select a preferred corridor alternative as discussed in Section 12.2. Working Paper No. 3 entitled *Evaluation of Corridor Definition Alternatives in the Florence and Coolidge Area* documented the planning-level evaluation of the two North-South Freeway corridor definition alternatives described above. The study also considered refinements to the above described corridor alternatives that were identified during stakeholder meetings.

Stakeholder and public perspectives were an important element of the study. **Table 12-1** summarizes input received from stakeholder meetings and from public open houses held on June 21, 2006 and on August 30, 2006. The purpose of the open houses was to receive input from the public regarding the corridor definition alternatives. A comprehensive summary of public input received during the June 21 open house is contained in S*ummary Report No. 3*. Key input received during the public meetings included:

- City of Coolidge elected officials support the recommended corridor definition.
- Consider existing communities such as Florence Gardens and Valley Farms when formulating corridor definition. Impacts to and interests of current residents should be prioritized over those of future residents.
- The corridor definition should be located on Arizona State Trust Land as much as possible.
- Impacts to future master planned communities should be minimized.
- The SR 77/SR 79 corridor connects Phoenix and Tucson. Consideration should be given to locating the North-South Freeway corridor east of SR 79 and improving the SR 77/SR 79 corridor.
- More communication is needed between ADOT and the elected officials.

Table 12-1 – Summary of Jurisdictional and Stakeholder Input

Jurisdiction/Stakeholder Organization	Key Input
Arizona State Land Department	• The status of the reconstruction of the Magma Dam should be considered. • The corridor definition should minimize the distances required to cross washes, drainage ways, and the railroad (e.g. they should run perpendicular to washes and the railroad). • The corridor definition should not create unusable parcels of Arizona State Trust Land. • The corridor definition should take advantage of the natural topography. • ASLD recommended two alternative alignments, both of which connect to SR 79.
City of Coolidge	• Coolidge prefers the Valley Farms Road alignment within the Coolidge planning area. • A significant need exists for an additional crossing over the Gila River. • Corridor definition should serve Coolidge Airport and new commercial development planned near Bartlett Road and Attaway Road. • A Planned Area Development (Sontesta) shows 300' of right-of-way designated for a new freeway corridor. • Coolidge will update their General Plan to depict the North-South corridor. Coolidge is beginning to plan around the SRP 500kV line and freeway approved by the State Transportation Board. • Coolidge would not support a toll road.
Town of Florence	• Corridor definition should connect to SR 79 to avoid impact to future master planned communities in the Florence area. Corridor definition should not go through Anthem at Merrill Ranch. • A corridor connection to SR 79 could help preserve the Army National Guard testing range located north of Florence. However, there is a possibility that the testing range may be closed. • Several homes on SR 79 in the Florence area are on the Historic Register. • A corridor on SR 287 is acceptable. A natural division already exists with the river. • A corridor definition east of SR 79 and the Arizona Department of Corrections facilities should be considered. However, a bypass of Florence may not be acceptable. To date, there hasn't been interest expressed in development east of SR 79. • Right-of-way acquisition on SR 79 south of Butte Road is feasible. Acquisition on SR 79 north of Butte Road could be more difficult. Business impacts are a major consideration. Existing businesses that could potentially be impacted include McDonald's and Big-O Tire. Sand and gravel operations are an important consideration. Rinker Materials is a significant land owner. • The City of Florence could support a toll road. • A new crossing of the Gila River is desirable, but staff recognizes that it is expensive. • Providing access to the Coolidge Airport is an important planning consideration. • Residents along Valley Farms Road south of SR 287 would likely be opposed to a freeway in that area.

Table 12-1 – Summary of Jurisdictional and Stakeholder Input (continued)

Jurisdiction/Stakeholder Organization	Key Input
Salt River Project	• It is feasible to construct a roadway adjacent to the power line. • SRP is not aware of any legal challenges to the approved route for the 500 kV line. • There is a possibility that the Army National Guard intends to relocate the Papago facility to the Rittenhouse Airfield location. • SRP would like to work with ADOT in discussing possibilities for identifying a route for the SRP line across the Rittenhouse Airfield property.
Pinal County	• The City of Mesa is preparing to sell portions of its water rights holdings in Pinal County located west of SR 87 and south of Coolidge. This area of the County is zoned industrial and provides opportunities for a freeway corridor connecting to SR 87. • Pinal County does not support providing North-South corridor continuity with SR 287 and converting SR 287 to a freeway facility due to existing and future developments along SR 287 (east of Casa Grande) and a planned Westcor commercial development on the northeast corner of SR 287 and I-10. • The Pinal County Small Area Transportation Study identifies SR 287 from I-10 to the future North-South corridor as a route of regional significance. • Establishing North-South corridor continuity with SR 87 and converting to a freeway facility to I-10 in Eloy should be considered, but the corridor should be on an alignment other than the existing SR 87. The existing SR 87 is necessary for north-south mobility and access. However, Pinal County understands that utilizing existing available right-of-way on SR 87 would be the most economically feasible. • The following options were identified for connecting the North-South corridor segments north and south of SR 287: 1. Pinal County prefers a Plant Road alignment for the North-South corridor so that another bridge could be constructed across the Gila River. 2. A second option is to follow the canals south of SR 287 and develop a corridor east of the prison to connect with SR 79 in the vicinity of the military preserve. 3. A third option is for the North-South corridor to follow the canals south of SR 287 and to connect directly to SR 79 at the SR 287 / SR 79 intersection. However, this option is not preferred due to the loss of SR 79 as an arterial route for north-south mobility and access. • A connection of the North-South corridor to SR 79, north of Florence is favorable with respect to minimizing impacts on the Anthem and Merrill Ranch developments.
Property owner representatives	• Sunbelt Holdings, Pulte, and Merrill Ranch developments all favor a routing of the North-South corridor to SR 79.

12.3 Recommended Corridor Definition in the Florence and Coolidge Area

Based upon input received at the stakeholder meetings, public open houses, and the evaluation of additional data and information received, a corridor definition in the Florence and Coolidge area was recommended and is depicted in **Figure 12-2**.

As illustrated in **Figure 12-2**, the North-South corridor definition departs from the Central Arizona Project (CAP) Canal and the future Salt River Project (SRP) 500 kV line corridor south of Skyline Road and heads in an easterly direction towards the Magma Flood Retarding Structure (FRS). Impacts to existing or planned developments are minimal. Upon its arrival to the Magma FRS, the North-South corridor definition generally follows the Magma FRS south-southeast and will be accessible for future east-west arterials including Bella Vista, Judd, Magma, and Arizona Farms. After departing from the Magma FRS the corridor turns in a southerly direction and passes along the western edge of the Florence Military Reservation, crosses the CAP, passes west of Florence Gardens Mobile Home Park, and crosses the Magma Railroad. The corridor definition then bends west along the north side of the Gila River to approximately the vicinity of Plant Road or a location to be determined in future studies, and crosses the Gila River. After crossing the Gila River, the corridor definition turns west-southwest and returns to the SRP 500 kV line corridor south of the Gila River and crosses SR 287. The corridor definition follows the SRP 500 kV corridor until approximately Bartlett Road. At Bartlett Road, the corridor follows the Florence Canal to its termination in the vicinity of Storey Road. The corridor then turns to the west-southwest, passes north of the Picacho Reservoir, to connect to SR 87 south of SR 287.

The recommended North-South corridor definition provides the following features:

- Minimizes direct impact to master-planned communities, but is located near future population centers and areas of concentrated development so as to maximize congestion relief benefits to local arterial streets;
- Provides an additional crossing of the Gila River;
- Is accessible for east-west arterials including Bella Vista, Judd, Magma, and Arizona Farms Road in the Florence area, and for SR 287, Kenilworth, Bartlett, and Kleck in the Coolidge area.
- Along the majority of its length, the corridor definition is collocated with the SRP 500 kV line to the extent feasible to create a combined/shared utility corridor;
- Provides access to regional facilities such as the Coolidge Municipal Airport, and the future regional shopping center to be located near Attaway Road and Bartlett Road.

In addition to the corridor definition described in **Figure 12-2**, the Arizona State Land Department identified two alternative alignments for the North-South corridor definition. The recommended corridor definition presented in **Figure 12-2** does not exclude these two potential alignment alternatives for the North-South corridor. The two ASLD preferred alignments should be considered during the future alignment and environmental studies that will be conducted for the North-South corridor. As such, the two alternatives are included in **Figure 12-2** as potential definition alternatives.

12.4 State Transportation Board Approval

On January 19, 2007, the State Transportation Board approved a resolution to adopt the recommendations for the southern portion (through the Coolidge and Florence area) of the North-South corridor definition area as depicted in **Figure 12-2** into the MoveAZ Long Range Transportation Plan. As a reminder, the northern portion of the recommended corridor definition, as depicted in **Figure 12-1,** was adopted into MoveAZ on February 16, 2006.

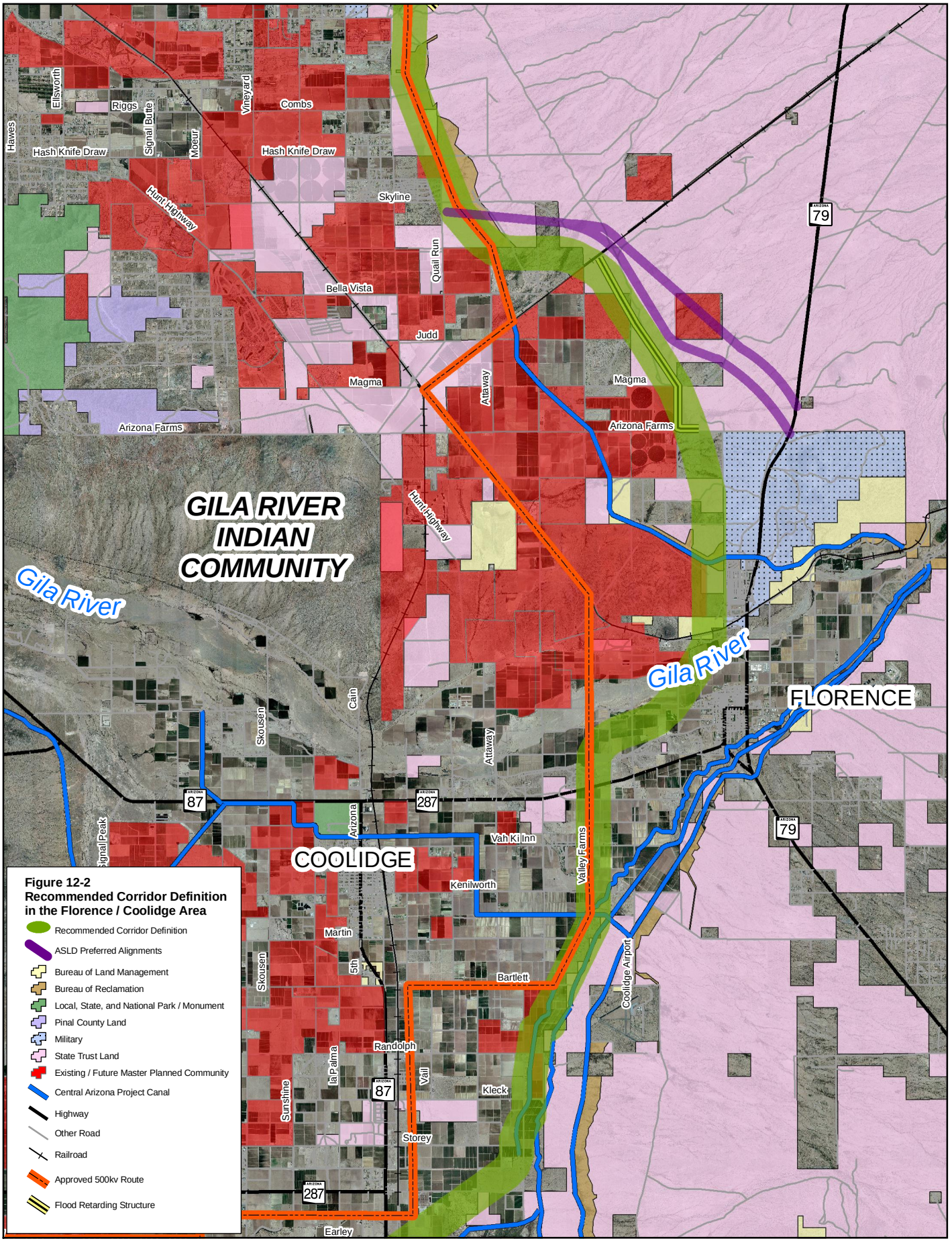

Figure 12-2
Recommended Corridor Definition in the Florence / Coolidge Area

- Recommended Corridor Definition
- ASLD Preferred Alignments
- Bureau of Land Management
- Bureau of Reclamation
- Local, State, and National Park / Monument
- Pinal County Land
- Military
- State Trust Land
- Existing / Future Master Planned Community
- Central Arizona Project Canal
- Highway
- Other Road
- Railroad
- Approved 500kv Route
- Flood Retarding Structure

N

0 1 2 3 4 5 Miles

Data Source:
Arizona Land Resource Information System

PINAL COUNTY CORRIDORS DEFINITION STUDY

Kimley-Horn and Associates, Inc.

ADOT