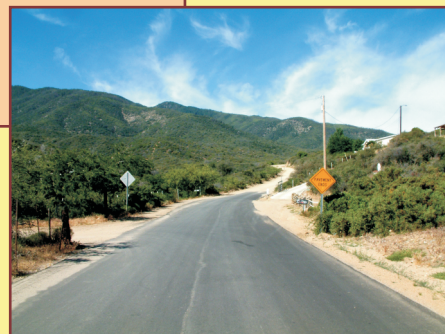
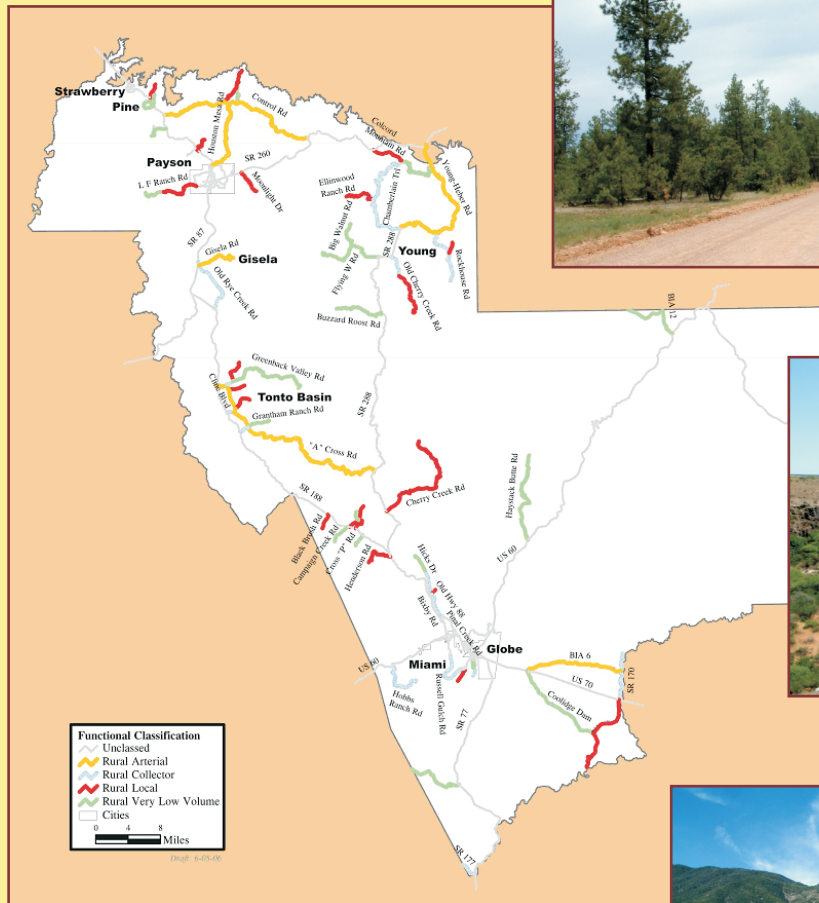




# GILA COUNTY

## SMALL AREA TRANSPORTATION STUDY

# FINAL REPORT



OCTOBER 2006



TETRA TECH, INC.



LIMA & ASSOCIATES  
Transportation - G.I.S.

psa

Partners for Strategic Action, Inc.

# TABLE OF CONTENTS

	<u>Page</u>
<b>1. INTRODUCTION AND SUMMARY OF FINDINGS .....</b>	<b>1</b>
PURPOSE AND VISION .....	1
BACKGROUND.....	1
STUDY PROCESS .....	3
SUMMARY OF FINDINGS.....	3
RECOMMENDATIONS .....	6
<b>2. REVIEW OF PREVIOUS STUDIES AND PLANS .....</b>	<b>7</b>
PREVIOUS STUDIES AND PLANS .....	7
STATEWIDE AND AREA PROGRAMMED IMPROVEMENTS .....	18
<b>3. SUMMARY OF EXISTING AND FUTURE CONDITIONS.....</b>	<b>24</b>
NATURAL ENVIRONMENT .....	24
SOCIOECONOMIC ENVIRONMENT .....	24
CURRENT LAND USE.....	51
CURRENT ROADWAY FACILITY CHARACTERISTICS.....	51
MULTIMODAL INVENTORY .....	67
FUTURE SOCIOECONOMIC AND TRANSPORTATION CONDITIONS .....	73
FIRST ROUND OF PUBLIC INVOLVEMENT .....	80
<b>4. MULTIMODAL TRANSPORTATION PLAN.....</b>	<b>82</b>
EVALUATION OF DEFICIENCIES AND NEEDS .....	82
SECOND ROUND OF PUBLIC INVOLVEMENT .....	88
PRIORITIZATION OF TRANSPORTATION PROJECTS .....	90
TRANSIT AND NON-MOTORIZED MODES .....	93
RAIL HIGHWAY CROSSINGS .....	101
GILA COUNTY ACCESS MANAGEMENT PRACTICES.....	101
<b>5. BEST PRACTICES IN RURAL TRANSPORTATION .....</b>	<b>105</b>
INTRODUCTION .....	105
ANALYSIS OF LOW VOLUME DIRT ROADS .....	105
PERFORMANCE MEASURES FOR RURAL TRANSPORTATION SYSTEMS.....	106
ANALYSIS OF HIGHWAY-RAIL GRADE CROSSINGS .....	108
ACTIVITY BASED BUDGETING.....	108
NEW PARADIGMS FOR RURAL AND SMALL URBAN TRANSIT SERVICE DELIVERY .....	110
RURAL TRANSIT ITS.....	111

**TABLE OF CONTENTS (Continued)**

	<u>Page</u>
<b>6. RECOMMENDATIONS AND IMPLEMENTATION STRATEGIES .....</b>	<b>114</b>
RECOMMENDATION AND STRATEGY .....	114
FUNDING AND REVENUE ESTIMATES .....	114
<b>APPENDIX A. ESTIMATING TRANSIT DEMAND .....</b>	<b>125</b>
<b>APPENDIX B. REVENUE SOURCES .....</b>	<b>129</b>
<b>REFERENCES .....</b>	<b>142</b>

## LIST OF TABLES

	<u>Page</u>
2-1. CAAG’S ROADS OF REGIONAL SIGNIFICANCE IN GILA COUNTY .....	9
2-2. GILA COUNTY PROJECTS INCLUDED IN GLOBE-MIAMI AREA TRANSPORTATION STUDY .....	12
2-3. GILA COUNTY NEEDS ESTIMATED BY ROADWAY NEEDS STUDY UPDATE .....	15
2-4. PINAL CREEK CORRIDOR MAJOR DESIGN ALIGNMENT DIFFERENCES AND COST ESTIMATES .....	17
2-5. PUBLIC WORKS CAPITAL IMPROVEMENT PROGRAM FY 2004 – 2005 .....	18
2-6. DRAFT CAAG TRANSPORTATION IMPROVEMENT PROGRAM FY 2006 - 2010 – PROJECTS IN GILA COUNTY .....	20
2-7. TENTATIVE 2006 - 2010 ADOT FIVE-YEAR TRANSPORTATION FACILITIES CONSTRUCTION PROGRAM – GILA COUNTY PROJECTS ...	22
2-8. MOVEAZ PROJECTS WITHIN GILA COUNTY .....	23
3-1. SUMMARY OF GILA COUNTY DEMOGRAPHIC DATA .....	25
3-2. FUNCTIONAL CLASSIFICATION OF GILA COUNTY MAINTAINED ROADWAYS .....	54
3-3. DAILY ROADWAY CAPACITIES USED IN DETERMINING LEVEL OF SERVICE IN GILA COUNTY .....	57
3-4. LEVEL OF SERVICE .....	58
3-5. CURRENT AADT PER LANE AND LEVEL OF SERVICE OF GILA COUNTY ROADWAYS .....	59
3-6. SUMMARY OF TRAFFIC CRASHES IN GILA COUNTY .....	63
3-7. SUMMARY OF ADOT BRIDGE INSPECTIONS FOR COUNTY- MAINTAINED STRUCTURES .....	65
3-8. PAVEMENT CONDITION OF GILA COUNTY ROADWAYS .....	69
3-9. POPULATION PROJECTIONS FOR GILA COUNTY COMMUNITIES .....	73

## LIST OF TABLES (Continued)

	<u>Page</u>
3-10. PARTICIPANTS IN THE FIRST ROUND OF PUBLIC INVOLVEMENT ....	81
4-1. PARTICIPANTS IN THE SECOND ROUND OF PUBLIC INVOLVEMENT ..	89
4-2. MINIMUM DRIVEWAY SPACING .....	103
4-3. SUGGESTED MINIMUM ACCESS SPACING BASED ON ROADWAY SPEED AND FUNCTIONAL CLASSIFICATION .....	104
5-1. SAMPLE LOW VOLUME UNPAVED ROADS EVALUATION MATRIX ....	107
6-1. TRANSPORTATION IMPROVEMENT PLAN PROJECT LIST - PHASE I.....	115
6-2. TRANSPORTATION IMPROVEMENT PLAN PROJECT LIST - PHASE II.....	116
6-3. IMPLEMENTATION ACTION PLAN .....	117
6-4. MATRIX OF FUNDING SOURCES .....	118
6-5. ARIZONA HIGHWAY USER REVENUE FUND DISTRIBUTIONS TO GILA COUNTY AND LOCAL JURISDICTIONS, FY 2001 – 2005 .....	121
6-6. GILA COUNTY HALF-CENT TRANSPORTATION TAX REVENUE.....	121
6-7. CASH FLOW ANALYSIS – PHASE I.....	124
6-8. CASH FLOW ANALYSIS – PHASE II.....	124

## LIST OF FIGURES

	<u>Page</u>
1-1. STUDY AREA .....	2
1-2. STUDY PROCESS .....	4
3-1-A. CURRENT TOTAL POPULATION PER SQUARE MILE (BY CENSUS BLOCK) .....	27
3-1-B. CURRENT TOTAL POPULATION PER SQUARE MILE (BY CENSUS BLOCK) – GLOBE AREA DETAIL .....	28
3-1-C. CURRENT TOTAL POPULATION PER SQUARE MILE (BY CENSUS BLOCK) – PAYSON AREA DETAIL .....	30
3-2-A. OCCUPIED DWELLING UNITS PER SQUARE MILE (BY CENSUS BLOCK) .....	31
3-2-B. OCCUPIED DWELLING UNITS PER SQUARE MILE (BY CENSUS BLOCK) – GLOBE AREA DETAIL .....	32
3-2-C. OCCUPIED DWELLING UNITS PER SQUARE MILE (BY CENSUS BLOCK) – PAYSON AREA DETAIL .....	33
3-3-A. AGE 65 AND OLDER POPULATION PER SQUARE MILE (BY CENSUS BLOCK) .....	35
3-3-B. AGE 65 AND OLDER POPULATION PER SQUARE MILE (BY CENSUS BLOCK) - GLOBE AREA DETAIL.....	36
3-3-C. AGE 65 AND OLDER POPULATION PER SQUARE MILE (BY CENSUS BLOCK) - PAYSON AREA DETAIL.....	37
3-4-A. MINORITY POPULATION PER SQUARE MILE (BY CENSUS BLOCK) .....	38
3-4-B. MINORITY POPULATION PER SQUARE MILE (BY CENSUS BLOCK) - GLOBE AREA DETAIL.....	39
3-4-C. MINORITY POPULATION PER SQUARE MILE (BY CENSUS BLOCK) - PAYSON AREA DETAIL.....	40

## LIST OF FIGURES (Continued)

	<u>Page</u>
3-5-A. POPULATION BELOW POVERTY LEVEL PER SQUARE MILE (BY CENSUS BLOCK GROUP) .....	42
3-5-B. POPULATION BELOW POVERTY LEVEL PER SQUARE MILE (BY CENSUS BLOCK GROUP) - GLOBE AREA DETAIL.....	43
3-5-C. POPULATION BELOW POVERTY LEVEL PER SQUARE MILE (BY CENSUS BLOCK GROUP) - PAYSON AREA DETAIL.....	44
3-6-A. MOBILITY-LIMITED POPULATION PER SQUARE MILE (BY CENSUS BLOCK GROUP) .....	45
3-6-B. MOBILITY-LIMITED POPULATION PER SQUARE MILE (BY CENSUS BLOCK GROUP) - GLOBE AREA DETAIL.....	46
3-6-C. MOBILITY-LIMITED POPULATION PER SQUARE MILE (BY CENSUS BLOCK GROUP) - PAYSON AREA DETAIL.....	47
3-7-A. HOUSEHOLDS WITHOUT AUTOMOBILES PER SQUARE MILE (BY CENSUS BLOCK GROUP) .....	48
3-7-B. HOUSEHOLDS WITHOUT AUTOMOBILES PER SQUARE MILE (BY CENSUS BLOCK GROUP) - GLOBE AREA DETAIL.....	49
3-7-C. HOUSEHOLDS WITHOUT AUTOMOBILES PER SQUARE MILE (BY CENSUS BLOCK GROUP) - PAYSON AREA DETAIL.....	50
3.8. EXAMPLES OF GILA COUNTY ROADWAYS .....	53
3-9. FUNCTIONAL CLASSIFICATION ASSIGNED TO COUNTY ROADWAYS .....	55
3-10. SIMULATION OF LEVELS OF SERVICE.....	56
3-11. EXAMPLES OF ROADWAY SAFETY ISSUES .....	62
3-12. EXAMPLES OF AT-GRADE RAIL CROSSINGS IN GLOBE AREA .....	66
3-13. EXAMPLES OF PAVEMENT CONDITIONS .....	68
3-14. CASINO TRANSPORTATION SERVICES.....	72
3-15. TRAFFIC ANALYSIS ZONES .....	75

## LIST OF FIGURES (Continued)

	<u>Page</u>
3-16-A. LEVEL OF SERVICE – GILA COUNTY ROADWAYS – 2030.....	76
3-16-B. LEVEL OF SERVICE – GILA COUNTY ROADWAYS – 2030 – GLOBE DETAIL .....	77
3-16-C. LEVEL OF SERVICE – GILA COUNTY ROADWAYS – 2030 - PAYSON DETAIL .....	78
4-1-A. LEVEL OF SERVICE – GILA COUNTY ROADWAYS – 2030 ACCELERATED GROWTH SCENARIO .....	85
4-1-B. LEVEL OF SERVICE – GILA COUNTY ROADWAYS – 2030 ACCELERATED GROWTH SCENARIO – GLOBE DETAIL .....	86
4-1-C. LEVEL OF SERVICE – GILA COUNTY ROADWAYS – 2030 ACCELERATED GROWTH SCENARIO – PAYSON DETAIL .....	87
4-2. PHASE I PROJECTS .....	91
4-3. PHASE II PROJECTS .....	92
4-4. DIFFERENT TYPES OF BUS SERVICE .....	97
4-5. HYPOTHETICAL BUS TRANSIT ROUTES .....	98



# **1. INTRODUCTION AND SUMMARY OF FINDINGS**

This document presents the Transportation Plan for Gila County as a result of the Small Area Transportation Study conducted between February 2005 and June 2006. The study was developed by Gila County cooperatively with the Arizona Department of Transportation (ADOT), Central Arizona Association of Governments, and the Tonto National Forest. In addition, area residents' and stakeholder input was solicited and incorporated in the study through public participation efforts.

## **PURPOSE AND VISION**

The purpose of the study has been to develop a 20-year transportation plan and implementation program to guide Gila County in meeting transportation needs into the future. Roadway and multimodal improvements were identified to address deficiencies and needs to improve mobility and safety in the County. The study also identified how and when these improvements should be implemented and funded. This long-range multimodal transportation plan is intended for use in day-to-day programming and funding of transportation improvements. In addition, transportation improvements have been prioritized to maximize project benefits within budget limitations. Funding strategies and sources have been included to aid the County in pursuing local, regional, state, and federal funding. The Study Area is shown in Figure 1-1.

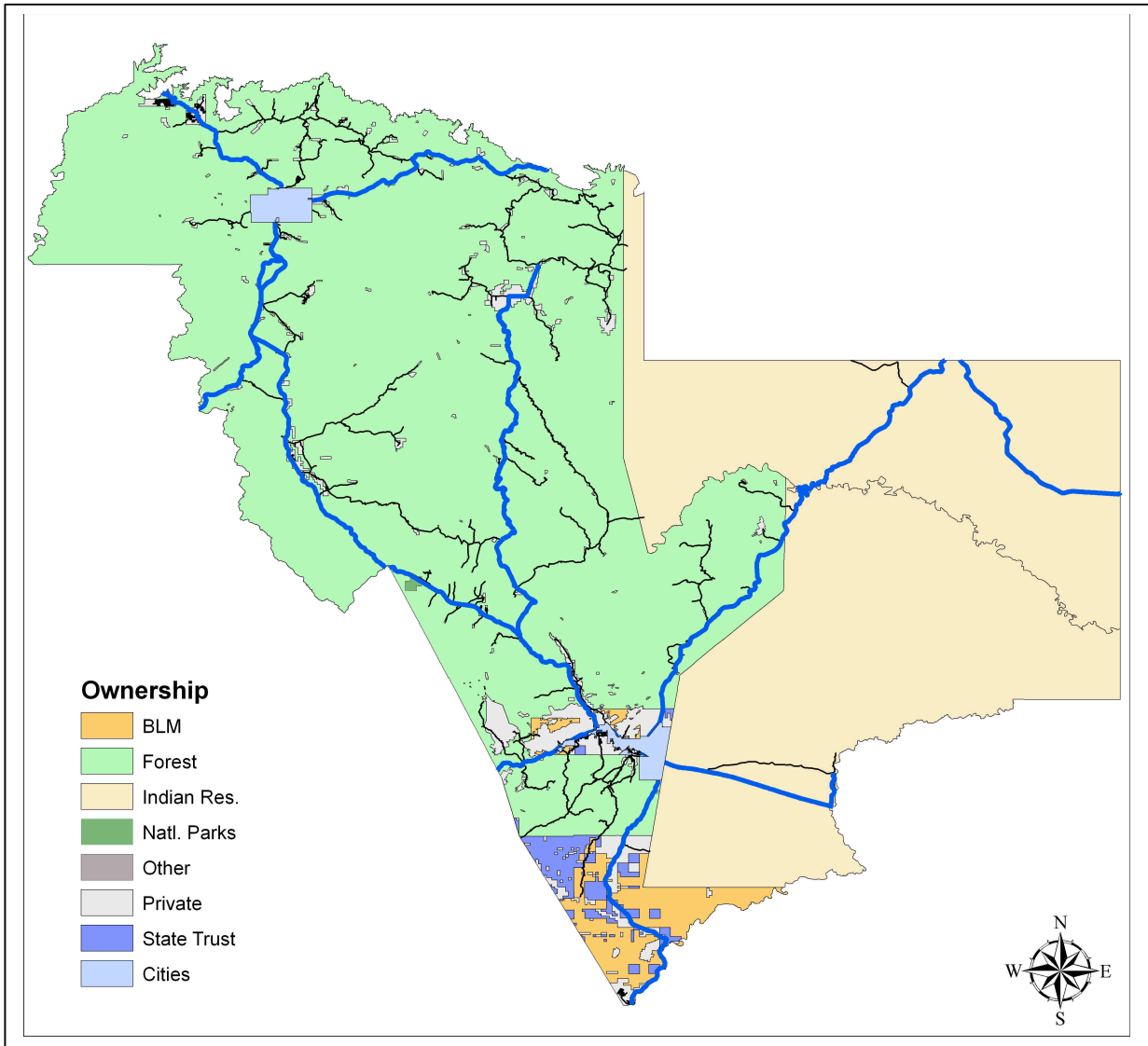
### **Study Vision**

The County's transportation system developed in cooperation with Federal, State, Tribal, and Local Jurisdictions, together with County residents and businesses. It will be efficient and safe and will meet Gila County's current and future transportation needs. Gila County will be served by a system of roadways providing connectivity between communities and rural areas throughout the County. The system will incorporate multimodal components such as ride-sharing, transit, bicycle, pedestrian, and airport access in addition to the needs of motorists. As a result, closer coordination between land use and transportation improvements will support future development and ensure roadway capacity for long-term reduction of delays.

## **BACKGROUND**

Gila County is located in central Arizona east and northeast of the Phoenix metropolitan area. The County covers nearly 4,800 square miles with 55.5 percent of the land within the Tonto National Forest, 37 percent within the Fort Apache and San Carlos reservations, and the remaining 7.5 percent is owned by the Bureau of Land Management, by the State Lands, or privately. Gila County is rich in topographic variety, ranging from 2,000 to

**FIGURE 1-1. STUDY AREA**



7,000 feet in elevation; the lower regions are referred to as the Copper Region and the higher elevations as the Timber Region.

The primary road network includes two US routes and four State Routes. The County road system is comprised of 644.05 miles of roadways, of which 155.38 miles are currently paved and 488.67 are unpaved. These mileages include roadways in the unincorporated areas of Gila County as well as Forest Service roads for which the US Department of Agriculture has contracted with the County for maintenance.

The majority of traffic in Gila County is concentrated on the US and State Routes. Transit service within Gila County is limited to dial-a-ride type programs. These programs,

provided by local communities or organizations, primarily serve the senior and disabled populations with access to medical facilities, senior programs, and other daily needs.

## **STUDY PROCESS**

The study process is illustrated in Figure 1-2. The study was guided by a Technical Advisory Committee comprised of representatives from the County, ADOT, Central Arizona Association of Governments (CAAG), and the Tonto National Forest. An intensive public participation process was undertaken, including two rounds of stakeholder meetings and open houses to identify issues, solicit comments, and receive feedback on the study process and recommendations.

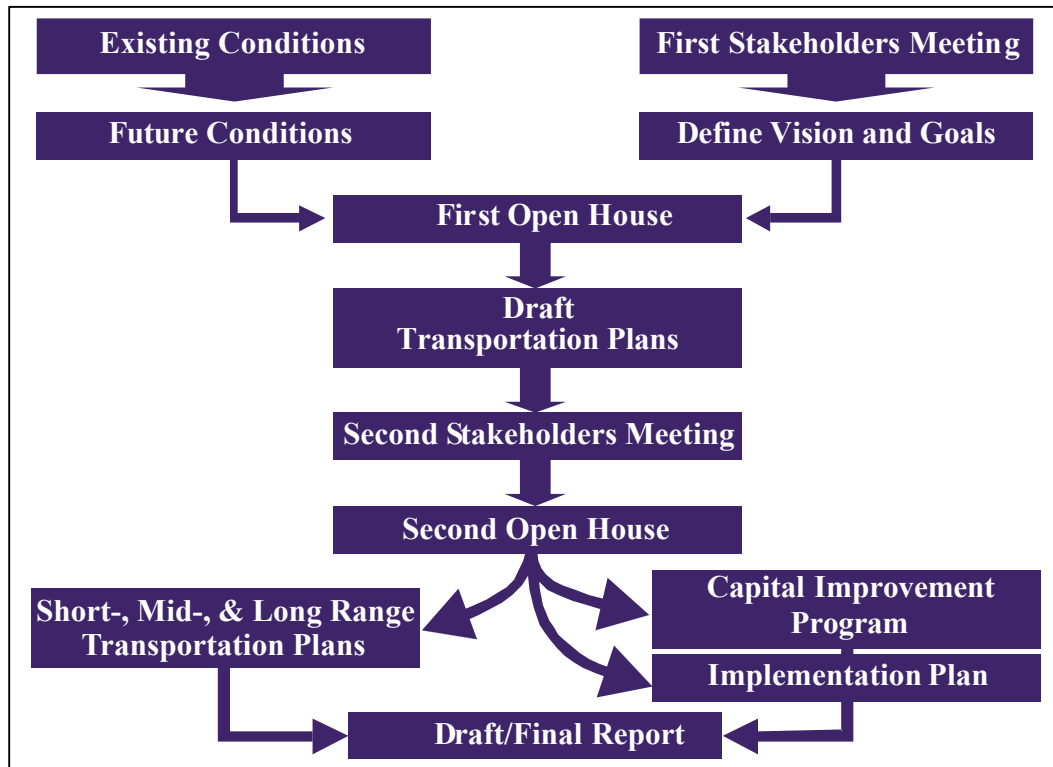
The first step of the technical analysis was to analyze the existing conditions and Environmental Justice concerns. A first stakeholder workshop was held to identify issues and vision components for the transportation plan. Stakeholders included County Supervisors, County Public Works Department personnel, elected officials from the City of Globe and the Towns of Miami and Payson, city and town staffs, business community representatives, Tribal representatives, and citizens.

An Open House was then held with the general public to present existing conditions, issues, and transportation vision. The next major step in the technical process was to analyze alternative roadway improvements. Based on the results of this analysis, a draft transportation plan was developed including a transit element. A second stakeholder workshop was held to review the draft transportation plan and identify constraints to the plan. The draft transportation plan was then presented to an Open House of the general public.

## **SUMMARY OF FINDINGS**

- Gila County is a beautiful, largely undeveloped area with dramatic desert and mountain scenery, lakes, rivers, and trails that has significant existing and future tourism potential.
- Gila County is projected to have a population growth rate significantly slower than other parts of Arizona, including neighboring Pinal County.
- The Arizona Department of Economic Security (DES) projects that County population will increase from 51,634 in 2005 to 66,378 in 2030.
- The percentage of County residents who are over age 65, live below the poverty level, or are disabled is higher than the State average. The percentage of County residents who are minority is lower than the State average.

**FIGURE 1-2. STUDY PROCESS**



- Nearly half the County population lives in the six incorporated communities of Globe, Hayden, Miami, Payson, Star Valley, and Winkelman. Much of the remainder lives in the unincorporated areas of Pine, San Carlos, Strawberry, Tonto Basin, Young, the newly-incorporated community of Star Valley, and several Mogollon Rim communities along SR 260 east of Star Valley. The remainder of the County is a virtual wilderness.
- Gila County’s roadway network is linked together by and dependent on two US Highways and five State Routes. The County also maintains 500 miles of roadways, including 256 miles of Forest Service Roadways. Overall, the paved roadways are in very good condition.
- The majority of the traffic in Gila County travels on the US and State Routes.
- None of the County owned or maintained roadways operate near capacity.
- From January 1999 through December 2003, 4,489 traffic crashes occurred in the County; most crashes occurred on state highways.
- Several awkward intersections on County roadways exist where motorists must make difficult turning movements or where sight-distances are limited.
- Transit service in the County is limited to dial-a-ride programs operated by the Town of Miami and the Payson Senior Center. Other than shuttles connecting

Payson with the Phoenix airport, no intercity service exists. County residents and visitors are almost entirely dependent on private automobile travel, the maintenance of good roads, and the availability of affordable gasoline.

- The Arizona Eastern Railway, in cooperation with the Globe Mainstreet Program and the Apache Gold Casino Resort, experimented with excursion rail service between downtown Globe and the Casino during the spring of 2006.
- Highway-rail crossings in the Globe-Miami area appear to be in need of reconstruction.
- The County is in the process of implementing a computerized pavement management system and a County-wide roadway geographic information system.
- A sketch model planning process forecasts degraded levels of service on State Routes within the County.
- Participants in the First Round of Public Involvement called for expanded public transit service, regional planning and coordination, and alternate routes for use in case of emergencies such as high water and wildfires.
- Best practices followed by peer jurisdictions that are reviewed and summarized include practices for:
  - ✓ Analysis of Low Volume Dirt Roads
  - ✓ Performance Measures for Rural Transportation Systems
  - ✓ Analysis of Highway-Rail Grade Crossings
  - ✓ Activity Based Budgeting
  - ✓ New Paradigms for Rural and Small Urban Transit Service Delivery
  - ✓ Rural Transit Intelligent Transportation Systems Technology (ITS)
- During the conduct of the Small Area Transportation Study, deficiencies and needs were evaluated in the following seven general areas:
  - ✓ Paving and Geometry Improvements
  - ✓ Bridge Construction and Design
  - ✓ Roadway Reconstruction
  - ✓ Intersection Improvements
  - ✓ Hazard Elimination and Safety
  - ✓ Highway Rail Crossings
  - ✓ Multimodal Studies
- The consultant proposes the adoption of a phased transportation plan that incorporates projects in each of the above areas. Seventeen short-term projects are included in Phase I to be completed by 2010 and seventeen additional projects are included in Phase II to be completed by 2030.
- The consultant believes that the DES 2030 population estimate of 66,378 is low and therefore has modeled an “Accelerated Growth” scenario that results in a forecasted 2030 population of 95,880. Under this scenario, several County roadways are

forecasted to be at or above capacity, including Chamberlain Trail and Pinal Creek Road.

- Participants in the Second round of Public Involvement approved the draft Phase I and Phase II plans and called for improved roadways to the community of Young and additional funding for transportation projects.
- Regional transit demand by 2030, exclusive of urban dial-a-ride and circulator services, is forecasted to be between 123 and 275 persons per day.
- Gila County access management policies are consistent with those employed by peer jurisdictions.

## **RECOMMENDATIONS**

The consultant team recommends that Gila County:

- Program the recommended Phase I and Phase II transportation improvements into the Capital Program
- Establish a process to coordinate County land use and transportation decisions on a regular basis
- Designate a transportation coordinator
- Conduct a regional bus service study
- Conduct a San Carlos Airport upgrade study
- Coordinate with the Town of Miami, the City of Globe, and the Town of Payson on local transit studies
- Conduct a Miami-Globe-San Carlos excursion passenger rail study
- Initiate a County bicycle and pedestrian plan
- Implement the street functional classifications and roadway design guidelines for new development
- Ensure that County access management policies are adhered to by new developments
- Coordinate with ADOT and CAAG on a regular basis on multimodal transportation improvements
- Establish a process to coordinate transit services with private and public agencies
- Monitor and update transportation plan and transit element

## **2. REVIEW OF PREVIOUS STUDIES AND PLANS**

This chapter presents a review of pertinent studies and plans that have previously been conducted concerning Gila County transportation. Also included is a review of area and statewide plans and programs including Gila County projects.

### **PREVIOUS STUDIES AND PLANS**

#### **SR 88 SR 188 Profile Corridor Study**

The SR 88 SR 188 Profile Corridor Study was completed in November 1999 by SR Beard & Associates for ADOT. The study profiled communities served by these two roadways and summarized the key issues in the corridor. Regional issues discussed include the traffic generated by the tourist appeal of corridor attractions such as the series of reservoirs on the Salt River, the designation of Gila County as an Enterprise Zone, and the projected population growth of Apache Junction. The physical and natural environment in the corridor was described, together with existing transportation facilities and services.

Existing and projected needs and deficiencies were described and evaluated and future travel demand was estimated. By 2017, the average annual daily traffic (AADT) on SR 88 in the Globe vicinity was projected to reach 22,423, up from 8,915 in 1997.

The Study evaluated a number of alternative recommendations for corridor improvements. Two major categories of criteria were used to prioritize the alternative recommendations: Transportation Utility and Project Impacts. Transportation Utility criteria included person trips served, travel time impacts, vehicle operations cost/motor vehicle usage, operation and maintenance costs, traffic accident rates, person hours of delay, and vehicle miles traveled. Project Impacts criteria included impact with respect to Title VI issues, impact on public land, impact on historic or archaeological sites, impact on visual resources, potential noise generation, and community support. These criteria were used to give potential projects a priority ranking.

State Route 88 between Roosevelt and Globe was renumbered as SR 188 to provide continuity from SR 87 to Globe effective August 1999. In 2001, SR 188 from Globe to the SR 87 junction was designated the Senator Hardt Highway in memory of A. V. "Bill" Hardt, a well-respected Globe business owner and political activist who served several terms as the City's mayor and 30 years in the Arizona Legislature. The highway is being improved and realigned as recommended in the study, with the work nearing completion as of March, 2006.

The study also recommended Daily round trip bus service between Superior and Miami/Globe and weekly bus service between Payson and Phoenix, which have not been implemented.

## **Regional Transportation Plan for the Central Arizona Association of Governments**

The Regional Transportation Plan for the CAAG was completed by David Evans and Associates in April 2000. The project was conducted to identify deficiencies along the regionally significant roadways and recommend necessary improvements for CAAG's short-term, mid-term, and long-term transportation plans. The plan consists of three stand-alone technical memorandums that document the existing conditions, levels of service, and recommended improvements, and selected projects and funding sources.

In Technical Memorandum #1, existing conditions of the regionally significant roadways are identified. An inventory that covered pavement condition, lane configuration traffic control, speed limit, on-street parking, terrain land use, Average Daily Traffic (ADT) volumes, safety issues, right-of-way, and the presence of curbs, gutters, or sidewalks was conducted for the regionally significant roadways. Existing deficiencies are also identified in this memorandum.

As part of the planning process, David Evans and Associates conducted an inventory of regionally significant roadways indicated by CAAG. The definition of a regionally significant roadway is one that links population centers, employment centers, and major highways, or is necessary for the efficient vehicular flow between intercity attractions. This inventory covered roadway systems in Gila County and Pinal County. The following characteristics were analyzed and/or obtained for the existing conditions inventory:

- Pavement Condition
- Lane Configuration
- Traffic Control
- Speed Limit
- On-Street Parking
- Terrain
- Development
- Average Daily Traffic Volumes
- Safety Issues (sight distance, railroad crossing, accidents)
- Right-of-way
- Sidewalks

The purpose of the regional transportation plan was to identify deficiencies along the significant roadways, and to recommend necessary improvements for CAAG's short term, mid-term, and long-term transportation improvement plans. Regionally significant roadways identified by the project located in Gila County are shown in Table 2-1.

Program improvements for CAAG during the fiscal year 1999 to the fiscal year 2003 were presented in Technical Memorandum #1. Gila County projects included in the current CAAG Transportation Improvement Plan (TIP) are presented in the following section of this chapter.

Technical Memorandum #2 analyzed existing and future traffic operations. This memorandum also identified improvement projects during each horizon year that would improve safety, increase Level of Service (LOS), or improve pavement conditions. The regionally significant routes analyzed in this report indicated roadway deficiencies that can be classified into three major categories: capacity deficiencies, safety deficiencies, pavement deficiencies.



**TABLE 2-1. CAAG'S ROADS OF REGIONAL SIGNIFICANCE  
IN GILA COUNTY**

<b>Roadway</b>	<b>Jurisdiction</b>	<b>Classification</b>
Houston Mesa Rd.	Gila County	Rural Major Collector
Colcord-Young Rd.	Gila County	Rural Minor Collector
Gisela Rd.	Gila County	Rural Major Collector
Fossil Creek Rd.	Gila County	Rural Minor Collector
Jesse Hayes Rd./Pioneer Rd./Six Shooter Rd./Ice House Rd.	Gila County	Urban Minor Arterial/ Urban Collector
Russell Rd.	Gila County	Urban Collector
Highland St./Walliman Rd.	Gila County	Urban Minor Arterial
Broad St.	Globe	Minor Arterial
Yuma St.	Globe	Local
Cedar St.	Globe	Local
Hackney Ave.	Globe	Local
Blake St.	Globe	Local
Sycamore St.	Globe	Local
Main St.	Globe/Gila Co.	Local
Sullivan St.	Miami	Local
Keystone Ave.	Miami	Urban Collector
Airport Rd.	Payson	Urban Minor Arterial
McLane Rd.	Payson	Urban Minor Arterial
Main St.	Payson	Urban Minor Arterial
Mud Springs Rd.	Payson	Urban Collector
Country Club Dr.	Payson	Urban Collector
Vista Rd.	Payson	Urban Collector
Aero Dr.	Payson	Urban Collector
Granite Dells Rd.	Payson	Urban Collector
Phoenix St.	Payson	Local
Tyler Parkway	Payson	Local
Velasco Ave.	Hayden	Rural Minor Collector
Lower Rd./San Pedro/ Canyon Rd./5th St./ Hayden Ave.	Hayden	Local
Golf Course Rd.	Hayden	Local
Quarelli St./Giffen Ave.	Winkelman	Local

Source: *Regional Transportation Plan for the CAAG*, David Evans and Associates, April 2000

The capacity analysis performed indicates that 66 percent of the CAAG regionally significant routes will operate at an acceptable LOS in the twenty-year horizon of 2018. This document addresses the necessary roadway improvements required for the remaining 33 percent to operate at an acceptable LOS in the future.

Accident rates were obtained from ADOT for the roadways of regional significance. Roadways examined for safety related improvements were listed, and those with accident rates in excess of the national standard were addressed with proposed solutions to decrease the high accident rates. Insufficient traffic control devices exist at many of the highway-railroad crossings in the roadways evaluated.

Pavement condition was analyzed for each individual roadway and was classified on a scale ranging from excellent to poor. The majority of the roadways surveyed typically fell in the category of good and fair. Recommended improvements were identified for the roadways exhibiting poor and fair pavement conditions.

Technical Memorandum #3 identified short-term, mid-term, and long-term transportation improvement projects and corresponding funding sources. The Memorandum analyzed the potential projects listed in Technical Memorandum #2 and prioritized them based on safety, capacity, and pavement condition criteria. Due to projected funding shortfalls, only those roadways that would experience significant safety, capacity, and/or pavement problems were identified for transportation improvements in The Memorandum. The study notes that the estimated costs for each of these projects do not include additional costs for right-of-way acquisition or utility relocation.

### **Payson Small Area Transportation Study Update**

The *Payson Small Area Transportation Study Update* was prepared for the Town of Payson by ASL Consulting Engineers in association with Lima & Associates and Partners for Strategic Action. The Study was completed in December 1999. An inventory of the area roadway network was conducted including roadway widths and number of lanes, types of intersection traffic control, average daily traffic count data, and crash data.

A transportation vision was developed and key opportunities and constraints were identified. Goals and policies were developed with regard to traffic safety, mobility improvement, land use integration, and economic development. Future socioeconomic and transportation conditions were forecast by means of a transportation modeling process that used current socioeconomic data and traffic analysis zones created using existing Payson area roadways and 1990 Census Block boundaries. By 2020, area population was projected to increase to 28,000 and area full-time employment to approximately 9,000.

Traffic volumes for the 2002, 2007, and 2020 horizon years were forecast, and roadway segments predicted to have unacceptable levels of service in each of these years were identified. Roadway projects were recommended to be completed by each horizon year that include widening of existing roadways, construction of extensions to existing roadways, and construction on new alignments. The most significant roadway construction recommended outside of Town limits was the Southeast Bypass that would connect SR 87 south of Payson with SR 260 east of Town. The study also recommended transit plan and non-motorized circulation-related improvements; however, these would take place within the limits of the Town of Payson. The report concluded with an implementation program and recommended policies and guidelines.

## **Globe-Miami Area Transportation Study**

The *Globe-Miami Area Transportation Study* was conducted by DMJM in association with Lima & Associates. The study was completed in June 1998. The study inventoried the Globe-Miami area's transportation system, developed a transportation and circulation plan for the area, and identified available sources of matching funds for transportation projects from Federal, State, County, and other sources. Four elements were developed as a result of the study: an executive summary, the *Globe-Miami Transportation Study*, the *Globe-Miami Area Initial Drainage Study*, and the *Globe-Miami Transportation Study Transit Element*.

Prioritized roadway projects recommended by the Globe-Miami Transportation Study in which Gila County was expected to participate are listed in Table 2-2.

The Transit Element recommendations included the following:

- Establishment of a transportation advisory committee with members from each funding agency and other community groups that would meet at least four times annually
- Establishment of frameworks for the sharing of vehicles and drivers between the two existing transit operators in the area
- Expansion of general public transit service to 24 hours per day by October 1999

## **Gila County Comprehensive Master Plan**

The Gila County Comprehensive Master Plan was developed by a consultant team comprised of LVA Urban Design Studio and Kimley-Horn and Associates. The Plan was adopted by the County Board of Supervisors in November 2003 and contains three primary elements: a Land Use Element, a Transportation Element, and a Community Facilities Element.

The Transportation Element inventories existing circulation facilities within the County, noting that the "primary routes within Gila County consist of State Routes, including: US 60, US 70, SR 87, SR 188, SR 288, and SR 260." The alternative modes inventory includes descriptions of pedestrian facilities, local and intercity transit services, rail freight services, and airports.

The Plan lists the following transportation related issues that were identified by County residents:

- Adequacy of emergency access
- All weather property accessibility
- Lack of alternative transportation mode facilities
- Unimproved roadway/dust control
- Deficiency in roadway construction and maintenance funding

**TABLE 2-2. GILA COUNTY PROJECTS INCLUDED IN  
GLOBE-MIAMI AREA TRANSPORTATION STUDY**

<b>Project No.</b>	<b>Project Name (Jurisdiction)</b>	<b>Description and Length</b>	<b>Justification/Purpose / Funding Source</b>	<b>Cost (1997 Dollars)</b>
<b>Five-Year Component</b>				
T-3	Sixshooter Canyon Rd Bridge No. 8193	Construct bridge on Sixshooter Canyon Rd just north of Icehouse Canyon Rd. Intersection.	Improved access to area during flooding. (Federal)	\$600,000
T-7	Miami Gardens link	Construct 2-lane roadway, extending Railroad Ave. from Ragus Rd. to Miami Gardens Rd. (0.27 mi.)	Alternate bypass to US 60. Would provide second access to hospital. (Local)	\$260,000
T-10	Pavement Rehabilitation	Pavement rehabilitation based on pavement condition survey.	Preserve investment in pavements. (Local)	\$200,000
<b>Ten-Year Component</b>				
P-15	Jesse Hayes Sidewalk (Gila Co., Globe)	Provide sidewalk on east side of Jesse Hayes, Pioneer, and Sixshooter Canyon from Ruiz Canyon Rd. to Eastern Arizona College. (2.2 mi.)	Improve comfort and safety level of pedestrians. (Local)	\$165,000
<b>Twenty-Year Component</b>				
P-12	Midlands – Focal Nodes (ADOT/Gila Co.)	Install lighting, vegetation, paving, and shelters at three intersections.	Enhance pedestrian environment. (Local, State, Federal)	\$100,000
P-13	Midlands – Intersection Enhancements (ADOT/Gila Co.)	Install lighting, vegetation, paving, and shelters at three intersections.	Improve pedestrian and bicyclist crossings at intersections. (Local, State, Federal)	\$100,000
P-14	Midlands – Bicycle Path (ADOT/Gila Co.)	Construct a bicycle path on north side of US 60. (1.85 mi.)	Provide connectivity for bicyclists. (Local, State, Federal)	\$75,000
T-18	Chaparral Loop (Alt 1) (Gila Co.)	Construct new 2-lane roadway along east side of railroad from Murphy St. to Pinaleno Pass. (1.6 mi)	Alternate bypass route to US 60. Recommend either T-18 or T-19. (Local)	\$1,500,000
T-19	Chaparral Loop (Alt 2) (Gila Co.)	Construct new 2-lane roadway along Pinal Creek to connect to Escudillo or Main St. Most of road is already present. (0.85 mo.)	Alternate bypass route to US 60. Recommend either T-18 or T-19. (Local)	\$800,000
T-20	Pueblo Street (Globe/ Gila Co.)	Construct new 2-lane roadway from Sixshooter Canyon Rd. near Pueblo St. to a point on SR 77, south of US 70. (1.9 mi.)	Alternate bypass route. Recommend either T-20 or T-21. (Local)	\$1,800,000

**TABLE 2-2. GILA COUNTY PROJECTS INCLUDED IN  
GLOBE-MIAMI AREA TRANSPORTATION STUDY (Continued)**

<b>Project No.</b>	<b>Project Name (Jurisdiction)</b>	<b>Description and Length</b>	<b>Justification/Purpose /Funding Source</b>	<b>Cost (1997 Dollars)</b>
T-21	Sixshooter Canyon Road Extension	Construct paved roadway, extending Sixshooter Canyon Rd. using existing alignments of primitive roads. (4.2 mi.)	Alternate bypass route. Recommend either T-20 or T-21. (Local)	\$4,000,000
<b>Drainage Projects</b>				
D-9	Box culvert crossing of Russell Gulch at Washburn Rd. (Gila Co.)	Realign Washburn Rd. and construct multi-span bridge over Russell Gulch.	Move Washburn Rd. out of the 100-year flood plain. (Local)	\$2,300,000
D-10	Box culvert at Pineway St./US 60 (Gila Co.)	ADOT reconstructed box culvert (project complete)	Increase culvert capacity to alleviate flooding on US 60. (State)	\$57,600
D-11	Culvert at Grover Canyon and US 60 (Gila Co.)	Install additional culvert crossing.	Alleviate flooding problems on US 60.	\$17,000
D-12	Culvert at New Street and US 60 (Gila Co.)	Construct culvert across US 60 to Bloody Tanks Wash. Requires modification of US 60 and New Street profiles.	Increase capacity and alleviate drainage from crossing railroad tracks and US 60. (State, Local)	\$60,000
D-13	Culvert at Railroad Avenue and Calle de Loma (Hill Street) (Gila Co.)	Construct drop inlet and install two 30-inch pipes to inlet. May need to raise the profile on US 60 to accommodate improvements.	Prevent flows from crossing US 60. (State, Local)	\$30,000
D-14	On-site storm drain system on US 60 between Latham Blvd. and New St. (Gila Co.)	Construct on-site storm drain system. Further study required to determine outlet design.	Alleviate ponding along median. (State, Local)	\$400,000

Source: *Globe-Miami Area Transportation Study*, DMJM in association with Lima & Associates, June 1998.

- Need for regional transportation planning
- Inadequate roads and rights-of-way

The goal of the Transportation Element is “A safe, efficient and cost effective multi-modal circulation system that provides for adequate mobility and access.” To support this goal, the following objectives are contained in the Plan:

Objective 5.0: Adopt a roadway classification system that is responsive to existing and projected traffic access and mobility demands and that compliments the County's land use planning efforts.

Objective 5.1: Provide a balanced transportation system that promotes multi-modal transportation opportunities and ensures adequate emergency access

Objective 5.2: Maximize the public benefit of limited roadway funding and optimize the expenditure of funds for roadway maintenance and construction.

Objective 5.3: Encourage the formation of informal partnerships to coordinate mutually beneficial transportation improvements.

Objective 5.4: Actively work to reduce fugitive dust levels due to vehicular traffic on unimproved roadways.

### **Payson Area Public Transit Feasibility Study**

The *Payson Area Public Transit Feasibility Study* was conducted by Lima & Associates during 2004. Payson has higher than average percentage of senior population, significant tourist appeal, and is geographically isolated from other urban areas. Accordingly, public transportation both to and from and within the Town of Payson has been included in the potential needs examined by local and regional transportation studies and plans.

The *Town of Payson General Plan Update* completed in 2003 suggested that both additional intercity bus service serving Payson and a local transit system would be needed by 2007. The *Town of Payson Parking Plan*, prepared in 2001, included "transit planning" as a goal to reduce parking needs, and the *Payson Small Area Transportation Study Update* included an evaluation and recommendation of transit alternatives.

Local transit services in Payson are currently provided by several carriers including the Senior Center, two area nursing homes, a limousine service, and the Mazatzal Casino. With the exception of the limousine service, all of these services are designed for special use only. The limousine service and shuttles serving Phoenix Sky Harbor Airport constitute the services currently available to the general public.

Unmet needs were identified through the conduct of a Community Transit Workshop and a Public Open House and transit demand for Payson was estimated at 30,177 person trips per year using the Transit Cooperative Research Project (TCRP) Report 3, "Workbook for Estimating Demand for Rural Passenger Transportation."

The recommended transit service scenario consists of two loop routes. Each of the routes is structured as a "Figure 8" that intersects at the corner of Beeline and SR 260. Portions of the loops operate over the same roadways in opposite directions and other parts of the loops serve different areas of Town. The schedules are structured to facilitate transfer between loops at the Basha's shopping center, enabling passengers originating from stops served by only one route to reach destinations only served by the other route.

The draft funding scenario estimated a first year administration and operating cost of \$200,442, of which the local share would be \$70,615. The three vehicles required for the system would cost an estimated \$180,000 to purchase, of which the local share would be \$36,000. Following the conduct of a follow-up transit implementation study, the Town Council voted in December 2004 not to pursue transit implementation in the short-term.

### **Year 2004 Roadway Needs Study Update**

According to the Arizona Association of County Engineers Year 2000 *Roadway Needs Study Update*, the 2001 - 2010 Gila County road needs was estimated at \$104.1 million. Of the total needs, \$46.4 million were for new roads, \$27.3 million were for maintenance and operating, and \$14.8 million were for upgrading existing new roads. The total 2001 - 2010 estimated revenues were approximately \$70.0 million, leaving an unmet need in the County of \$34.0 million. Table 2-3 lists the estimated dollar amounts needed.

**TABLE 2-3. GILA COUNTY NEEDS ESTIMATED  
BY ROADWAY NEEDS STUDY UPDATE**

<b>Gila County Need</b>	<b>2005 - 2009</b>	<b>2010 - 2014</b>	<b>2005 - 2014</b>
Maintenance	\$14,187,763	\$14,187,763	\$28,375,526
Existing Bridges	405,720	405,720	\$811,440
New Bridges on Existing Roads	3,944,000	-0-	\$3,944,000
Upgrade Existing Roads	30,999,410	575,634	\$31,575,044
New Roads	43,966,000	10,726,000	\$54,692,000
Safety	9,492,167	2,731,389	\$12,223,556
Operating	1,418,776	1,418,776	\$2,837,552
<b>Total</b>	<b>\$104,413,836</b>	<b>\$30,045,283</b>	<b>\$134,459,119</b>

Source: Arizona Association of County Engineers Year 2004 *Roadway Needs Study Update*, January 2005, Tables 5A, 5B, and 5C

### **US 60 – Superior to Globe – Final Feasibility Report**

This engineering feasibility study was completed for ADOT by Jacobs Civil in October 2004. The purpose of the study was to identify candidate routes for a four-lane divided facility between the Superior and Globe areas (from MP 223.8 near the Boyce Thompson Arboretum west of Superior to MP 258 northeast of the intersection of US 60 and US 70 in Globe). Such a facility is deemed necessary to enhance safety and operational characteristics of the roadway and to provide an adequate LOS, given projected increases in traffic by the design year of 2025.

The study area was divided into six segments and several potential alignments were evaluated in each segment. Due to the estimated \$500 million cost of the entire project,

the feasibility study recommended that two separate design-concept reports be conducted, one in Pinal County and one in Gila County. The dividing line between the two segments would be near the community of Top of the World where the different route scenarios come together.

### **Tonto Creek Bridge Location Study**

The US Army Corps of Engineers (ACOE), acting upon a request and supporting appropriation arranged through First District Congressman Rick Renzi's office, conducted a "reconnaissance level" evaluation of candidate sites for a bridge across Tonto Creek in the area of Tonto Basin between Roosevelt Lake and Gun Creek. A comprehensive document published by the ACOE in September 2004 presents the findings of the preliminary study. The purpose of the study was to identify candidate sites for a bridge, identify socioeconomic, environmental, and engineering issues relating to each of the sites, and to develop a management plan for progressing to an environmental assessment of the sites, followed by a site selection and design-build process.

The five candidate sites evaluated were:

- New crossing site near the confluence of Gun Creek and Tonto Creek
- New crossing site "Kayler Crossing" between the Gun Creek site and the Upper Crossing
- Upper Crossing ("Punkin/Sheeps" Crossing)
- Middle Crossing ("Bar-X Road" Crossing)
- Lower Crossing ("A-Cross Road" Crossing)

The bridge is needed for the following reasons:

- Tonto Basin has some of the largest undeveloped tracts of deeded (privately held) land in Gila County
- Area population is projected to increase more rapidly than any other parts of the County except Payson and Globe-Miami
- Existing low-water crossings are hazardous to motorists and closed for extensive amounts of time during both periods of winter runoff and summer monsoon rains
- Steps taken after rainy periods to reopen the low water crossings may be adversely impacting the ecology of the area

Stakeholders and citizens who participated in the public involvement activities related to the ACOE project preferred the "Punkin/Sheeps" location over the other four. The project to assess, design, and construct a bridge at this location is estimated to cost \$18.3 million. The ACOE projected that the southern-most of the existing low-water crossings, A-Cross Road, will be under several feet of water if the water level of Roosevelt Lake reaches the level enabled by the recent enlargement of Roosevelt Dam.



## Pinal Creek Corridor Study

The Pinal Creek Corridor Study was conducted in 2004 for the City of Globe and the Gila County Public Works Division by C. L. Williams Consulting, Inc. The corridor evaluated is located southeast of the limits of the City of Globe between Beer Tree Crossing on the West and US Highway 70 and State Route 77 on the East. The overall purpose of the project was to respond to emergency access needs and forecasted future traffic demand due to regional growth and the need for access to future power transmission systems.

Five alternative alignments were evaluated. The major design alignment differences and cost estimates of the five alternatives are listed in Table 2-4.

**TABLE 2-4. PINAL CREEK CORRIDOR MAJOR DESIGN ALIGNMENT DIFFERENCES AND COST ESTIMATES**

<b>Alternative</b>	<b>Length of Project (ft)</b>	<b>Impact to Residential Structures*</b>	<b>Earthwork (yd<sup>2</sup>)</b>	<b>Estimate of Cost \$ 000s</b>
1. Beer Tree Crossing to SR 70	9,000	Possibly 1 Major	600,000	\$5,294
2. Beer Tree Crossing to SR 77	11,000	Possibly 1 Major	440,000	\$5,243
3. Walliman Road to SR 77	10,500	1 Major, 12 Minor	340,000	\$5,139
4. Walliman Road to SR 70	8,500	1 Major, 12 Minor	N/A	N/A
5. Jess Hayes Road to SR 70	9,500	2 Major, 3 Minor	600,000	\$5,594

\*Major Structure is generally a dwelling while a Minor structure may be a detached garage.

Source: City of Globe in Cooperation with the Gila County Public Works Division, *Pinal Creek Corridor Study*, C. L. Williams Consulting, Inc., September 2004

The alignment recommended by the study was Alternative 1, Beer Tree Crossing to SR 70. The consultant found that this alignment presented the fewest conflicts to design criteria elements and to surrounding structures. Alternative 1 was also preferred by the public, based on feedback obtained during the public involvement process. The consultant noted that the Pinal Creek crossing included in Alternative 5 would also benefit the project and should be considered for inclusion in the construction project.

An 8-step planning guide outline for completing the project was provided by the consultant. At the time the Final Report was drafted, City of Globe staff projected that between 6 and 10 years would be needed to construct the facility due to funding constraints.

## STATEWIDE AND AREA PROGRAMMED IMPROVEMENTS

### Gila County

The County has been working toward improving the regionally significant roads as well as other County roads. Table 2-5 presents the FY 2004 - 2005 Capital Improvement Program for County roads.

**TABLE 2-5. PUBLIC WORKS CAPITAL IMPROVEMENT PROGRAM  
FY 2004 – 2005**

<b>Project</b>	<b>Dollar Amount</b>
<b>Capital Projects Funded by HELP. Loan*</b>	
Fossil Creek Phase I	262,963
Six Shooter Road	963,181
<b>Capital Projects Funded by HELP. Matching Funds</b>	
Six Shooter Road	114,218
Ice House Bridge	160,206
Total HELP. Funded Capital Projects	1,500,568
<b>Engineering CIP Capital Projects</b>	
Pine Creek Canyon	100,000
Aerial Mapping	100,000
Small Area Transportation Study	30,000
Star Valley Yard Turn Lane	247,826
Fairgrounds Road	500,000
Bradshaw Road	75,000
Kellner Canyon Road	165,000
Professional Services	400,000
General Plan Update	42,699
Emergency CIP Reserve	25,000
Total Engineering Capital Projects	1,690,525
<b>Total Capital Projects</b>	<b>3,191,093</b>

Source: *Gila County Road Budget FY 2004-2005*

\**Highway Expansion and Extension Loan Program (HELP)*, explained in a subsequent section of this chapter

Fossil Creek Phase I has been constructed and Phase II is currently under design. Ice House Bridge is also under design and going through Section 404 clearance. The design for Sixshooter Canyon Road has been completed and the construction project is scheduled for bidding in October 2006.

## **Regional Planning**

The CAAG 2000 *Regional Transportation Plan* identified four regionally significant roads under Gila County jurisdiction. Houston Mesa Road runs from SR 87 in Payson to the north. The road is primarily used to access campgrounds and has very limited residential and commercial development. Fossil Creek road is a two-lane paved road that serves as the major road in Strawberry, with significant residential and commercial development along the road. The paved section ends approximately 2.5 miles west of SR 87, and continues as a gravel road for another 50 miles. Colcord-Young Road is a gravel road providing a connection between SR 260 and the community of Young. Development along the road is limited. Gisela Road is a narrow roadway connecting the community of Gisela to SR 87. The Regional Plan recommended installing guardrail on Gisela Road and addressing narrow sections with poor sight distance on Colcord-Young Road. The CAAG *Transportation Improvement Program* includes \$1.25 million for the replacement of Ice House Canyon Bridge and \$0.625 million for a hazard elimination/safety project for Jesse Hays Road as shown in Table 2-6.

## **ADOT Gila County Projects**

The ADOT *Five Year Transportation Facilities Construction Program* (FY 2005–FY 2009) includes approximately \$89.2 million of projects for US 60, SR 70, SR 77, SR 87, SR 188, and SR 260 in Gila County. The bulk of the funds, approximately \$62.7 million, are allocated for improvements to SR 260. Ten million dollars are allocated for constructing four miles of SR 188 and \$5.5 million is allocated to improve six miles of SR 77. Table 2-7 lists the projects.

## ***State Infrastructure Bank Loans***

In 1995, as a provision of the National Highway System Designation Act, Congress authorized states to establish State Infrastructure Banks to serve as funding mechanisms to bridge the gap between transportation improvement needs and available revenues. Arizona was one of the first states to take advantage of this program and, in 1998, established the *Highway Expansion and Extension Loan Program* (HELP) to facilitate the completion of transportation construction projects. Infrastructure banks function much as other banks do, lending monies on eligible projects. As the principal and interest on the loans are repaid, the bank is replenished and the repaid funds become available, in turn, for financing subsequent projects.

As of April 2006, HELP roadway reconstruction loans totaling \$3,425,000 on four projects located in Gila County were in various stages of maturity. Of this amount, \$1,100,000 was committed to the Town of Payson for the reconstruction of McLane Road within the Town. The remainder of \$2,325,000 in HELP financing was committed for three projects sponsored by the County.

**TABLE 2-6. DRAFT CAAG TRANSPORTATION IMPROVEMENT PROGRAM FY 2006 - 2010 –  
PROJECTS IN GILA COUNTY**

Sponsor / Project	Fiscal Year					Programmed (OA)	Projected Available (OA)
	2005	2006	2007	2008	2009		
Miami - Sullivan St. Ph. II	340000						
Miami - (Design / Engineering) Adonis	45,000						
Globe - (Design / Engineering) Broad Phase III	25,650						
Globe - Walliman Road (Broad Phase II)*De	60,000						
Globe - Walliman Road (Broad Phase II)*Co	340,000						
Globe - Broad Street (Phase III)* Construction	145,350						
Gila County - Six Shooter Canyon Road*	200,000						
CAAG Technology Transfer	10,000						
Regional Traffic Counting	50,000						
<b>TOTAL PROGRAMMED</b>	<b>\$1,216,000</b>						
						<b>1,335,768</b>	<b>3,398,724</b>
Miami - Adonis Avenue*		255,000				To Program	<b>2,062,956</b>
Payson - McLane Road Ph IV*		500,000					
CAAG Technology Transfer		10,000					
Regional Traffic Counting		50,000					
<b>TOTAL PROGRAMMED</b>		<b>\$815,000</b>					
						<b>895,272</b>	<b>1,591,850</b>
Gila County - Fossil Creek Road Phase II*			500,000			To Program	<b>696,578</b>
Payson - S. St. Philips			400000				
Regional Traffic Counting			50,000				
CAAG Technology Transfer			10,000				
<b>TOTAL PROGRAMMED</b>			<b>\$960,000</b>				
						<b>1,054,554</b>	<b>1,591,850</b>

\* = Highway user Revenue Fund (HURF) exchange project

**TABLE 2-6. DRAFT CAAG TRANSPORTATION IMPROVEMENT PROGRAM FY 2006 - 2010 –  
PROJECTS IN GILA COUNTY (Continued)**

Sponsor / Project	Fiscal Year					Programmed (OA)	Projected Available (OA)	
	2005	2006	2007	2008	2009			2010
Gila Co. - Ice House Canyon Rd. CAAG Technology Transfer Regional Traffic Counting <b>TOTAL PROGRAMMED</b>				50,0000			To Program     <b>615,156</b>	<b>537,296</b>
CAAG Technology Transfer <b>TOTAL PROGRAMMED</b>					10,000		<b>10,985</b>	<b>1,591,850</b>
							<b>\$10,000</b>	
Gila Co - Broadway/Old Oak Rd Payson - E. Bonita Street - Phase I CAAG Technology Transfer <b>TOTAL PROGRAMMED</b>						500,000.00 268,000.00 10,000	To Program   <b>854,628</b> To Program	<b>1,591,850</b> <b>1,580,865</b> <b>737,222</b>
							<b>\$778,000</b>	
							<b>Total (OA):</b>	<b>11,357,974</b>
							<b>Total Dollars:</b>	<b>\$4,339,000</b>

Sources: Gila County Public Works Department, Central Arizona Association of Governments

\* = HURF exchange project

Working assumptions:

CAAG is 19.0215 % of rural state population

Average obligation authority is 91.033767761 % over 5 year period 12/01/05

HURF exchange rate is 90% of obligation authority per ARS 28-6993

**TABLE 2-7. TENTATIVE 2006 - 2010 ADOT FIVE-YEAR TRANSPORTATION FACILITIES CONSTRUCTION PROGRAM – GILA COUNTY PROJECTS**

Route	BMP	Location	Length	Type of Work	Funding	Dollars in Thousands (\$000)				
						FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
60	236.2	County Line – Pinto Valley	3.30	RR 3” + ARFC & passing lane	HES	\$2,450	\$0	\$0	\$0	\$0
60	236.2	County Line – Pinto Valley	3.30	RR 3” + ARFC & passing lane	STP	\$4,033	\$0	\$0	\$0	\$0
70	253.4	Railroad Overpass to Jct. SR 77	1.0	Design roadway & railroad structure	State	\$0	\$0	\$0	\$0	\$340
70	253.4	Railroad Overpass to Jct. SR 77	1.0	Construct roadway & railroad structure	STP	\$0	\$0	\$0	\$0	\$3,400
77	141.0	Gila River recreational sites	3.50	Intersection improvements	GVT	\$421	\$0	\$0	\$0	\$0
77	145.0	MP 145 – MP 147	2.0	Roadway construction	STP	\$5,000	\$0	\$0	\$0	\$0
87	263.0	Tonto Natural Bridge	0.10	Construct road, Phase II	State	\$775	\$0	\$0	\$0	\$0
260	258.0	Lion Springs Section	2.00	Design (Roadway)	State	\$0	\$0	\$0	\$1,300	\$0
260	263.1	Little Green Valley	6.90	Reconstruct roadway	NH	\$0	\$0	\$21,700	\$0	\$0
260	269.0	Doubtful Canyon Section	0.20	Utility Relocation	State	\$0	\$0	\$0	\$30	\$0
260	269.0	Doubtful Canyon Section	3.50	Construction water	State	\$0	\$0	\$0	\$1,300	\$0
260	269.0	Doubtful Canyon Section	3.50	Reconstruct roadway	NH	\$0	\$0	\$0	\$31,100	\$0

Source, ADOT, *Tentative 2006-2010 Five-Year Transportation Facilities Construction Program*

## *MoveAZ*

*MoveAZ* is the Arizona Long Range Transportation Plan that is comprised of the findings of numerous planning studies previously conducted by ADOT, together with a comprehensive effort to identify transportation needs, develop solutions, and recommend specific roadway projects to address these solutions. *MoveAZ* was adopted by the Transportation Board on December 17th, 2004. *MoveAZ* identified eight projects that are either completely within or cross into Gila County. Projects range from major widening projects on US 60 and SR 260 to passing lane projects on US 60 and adding shoulders for a portion of SR 73. These projects are listed in Table 2-8.

**TABLE 2-8. MOVEAZ PROJECTS WITHIN GILA COUNTY**

<b>Route</b>	<b>Milepost</b>	<b>Proposed Project Type</b>	<b>Cost (Millions)</b>
US 60	223-254	Widen to 4 lanes	392.05
SR 260	256-282	Widen to 4 lanes	15.41
SR 77	153-171	Climbing lanes	10.50
US 70	253-287	Widen to 5 lane cross-section	66.30
US 60	252-337	Climbing Lanes, Passing Lanes	28.25
SR 73	310-335	Shoulders	13.10
US 60	241-242	Passing lanes	6.94
US 60	-	Passing/Climbing Lanes	2.25

Note: *MoveAZ* was adopted by the Transportation Board on December 17th, 2004.

The recently completed ADOT *Passing Lane/Climbing Lane Study* conducted by Lima & Associates includes three projects in Gila County: US 60 Eastbound, MP 277; US 60 Westbound, MP 308; and US 60 Westbound, MP 356.

### **3. SUMMARY OF EXISTING AND FUTURE CONDITIONS**

This chapter presents information regarding the existing and future socioeconomic, physical, and transportation conditions in Gila County. First the natural environment is summarized briefly. Next, a more comprehensive evaluation of the socioeconomic environment is described and illustrated with maps of the area developed using ArcView GIS. The current roadway facility characteristics including traffic volumes, crash data, and other safety concerns are summarized and a multimodal inventory is presented. Projected future population, employment, and roadway conditions are described, including the use of a sketch planning model in forecasting traffic volumes. The chapter concludes with a summary of the first round of the public involvement process.

#### **NATURAL ENVIRONMENT**

Geologists divide Arizona into three provinces: The Basin and Range Province includes the Sonoran and Mohave Desert areas in the southern and western portions of the State and the Colorado Plateau covers the northeastern part of the State. The Central Highlands, in which Gila County is located, lies in between the other two geologic provinces. The Mogollon Rim, a dramatic escarpment that extends from northwest to southeast across much of Arizona, defines both the boundary between the Central Highlands and the Colorado Plateau, and a portion of the northern boundary of Gila County.

Central Highlands' topography is characterized by a series of mountain ranges separated by narrow valleys. This topography has historically made the construction of highways and railroads within the area challenging and has also provided the County with dramatic scenery. The geological forces that formed the mountain ranges are also responsible for developing the mineral deposits upon which the County's important mining industry has been based.

#### **SOCIOECONOMIC ENVIRONMENT**

Gila County contains 4,796 square miles and has a 2003 estimated population of 53,555, for a county-wide average of just over 11 persons per square mile. Moreover, a 2003 estimated 25,785 persons, or nearly half the total, live in the five incorporated communities of Globe, Hayden, Miami, Payson, and Winkelman. As these five jurisdictions comprise a small fraction of the total land area within the County, the remainder of the County is sparsely populated. Another 9,791 persons live on the San Carlos Apache Reservation in the southeastern part of the County, many within or near the Tribal communities of Peridot and San Carlos. Other communities in the County include Claypool, Gisela, Pine, Rye, Strawberry, and Young. Much of the remainder is virtually wilderness. Table 3-1 presents a summary of County demographics.

In more heavily populated counties, proposals for transportation improvements must consider the adverse effect that widening a highway, for example, may have on the persons



**TABLE 3-1. SUMMARY OF GILA COUNTY DEMOGRAPHIC DATA**

	Total Population	Total Housing Units	Percentage Age 65+	Percent Minorities	% Population With Income Below Poverty	% Households With Income Below Poverty	% Mobility Limited (Aged 16 – 64)	
							Total 16 - 64	Percent With Disability
Arizona	5,130,632	2,189,189	13.02%	36.2%	13.9%	11.8%	3,169,173	18.83%
Gila County	51,335	28,189	19.79%	31.1%	17.4%	14.8%	29,181	24.78%
<b>Local Communities</b>								
Central Heights-								
Midland City CDP	2,694	1,175	16.67%	27.4%	16.7%	15.8%	1,596	21.55%
Claypool CDP	1,794	786	15.72%	44.3%	12.1%	12.7%	1,098	22.86%
Gisela CDP	532	295	20.11%	8.1%	11.2%	13.2%	309	63.43%
Globe city	7,486	3,172	15.62%	38.5%	11.4%	11.4%	4,152	21.41%
Hayden town	892	334	14.13%	86.7%	27.3%	22.3%	510	21.76%
Miami town	1,936	930	17.10%	57.6%	23.6%	24.1%	1,093	21.87%
Payson town	13,620	7,033	29.18%	8.7%	9.9%	9.9%	7,441	24.27%
Peridot CDP	1,266	346	5.53%	98.7%	58.9%	48.0%	711	16.74%
Pine CDP	1,931	2,242	22.89%	3.8%	9.3%	9.4%	1,190	19.58%
San Carlos CDP*	3,716	994	5.36%	95.6%	58.8%	56.5%	2,222	23.85%
Strawberry CDP	1,028	1,165	25.97%	5.4%	10.8%	9.8%	633	20.22%
Tonto Basin CDP	840	726	32.74%	4.8%	18.3%	18.9%	482	52.07%
Winkelman town	443	194	14.45%	76.3%	27.2%	27.4%	284	25.00%
Young CDP	561	446	21.03%	5.2%	20.5%	21.5%	327	31.80%

\*Note: San Carlos “Census Designated Place” (CDP) is partially located in Graham County

Source: Census 2000 Summary Files 1 and 3

living in the corridor. However, in many parts of Gila County, avoiding adverse impacts to the ecology and natural beauty of the area may be the primary concern.

Following are a series of maps created using the ArcView geographic information systems (GIS) application. Census data regarding seven key socioeconomic factors was obtained and depicted on the maps. The seven factors examined are: total population, occupied dwelling units (DU), population aged 65 and over, minority population, population living below the poverty level, mobility-limited population, and households without automobiles. Data for the first four factors is presented by census block. For privacy reasons, data for the last three is only available at the census block group level. For graphical presentation purposes, all of the data are normalized by square mile. For each factor, three maps are presented, one that depicts the entire County, one that presents a detail of the Globe-Miami area, and one that presents a detail of the Payson area. Note that Census 2000 data was used for these maps as 2003 estimates for the different factors other than total population were not available.

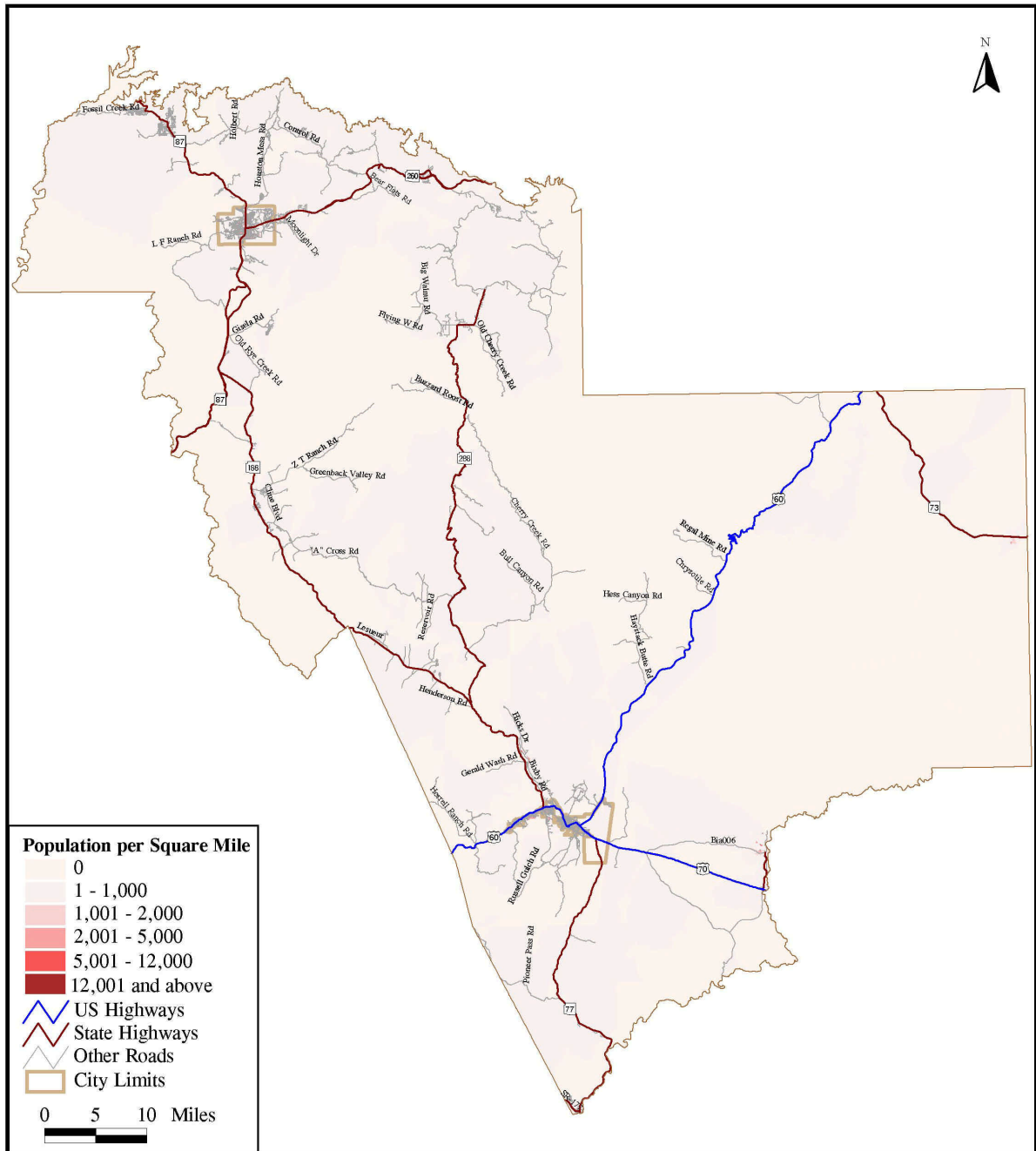
### **County Population Growth and Distribution**

Table 3-1 includes total population estimates obtained from the Arizona Department of Economic Security (DES) for Arizona, Gila County, and Census-designated places (CDBs) including the five incorporated jurisdictions within the County. The DES estimates that an estimated 25,895 persons, or approximately 48 percent, of the County's residents lived within incorporated communities. The other 52 percent live in unincorporated areas. Significant unincorporated areas include Tribal communities such as San Carlos and Peridot, as well as the communities of Claypool, Gisela, Pine, Strawberry, Young, and the Tonto Basin area. The DES estimates that, between the conduct of the April 2000 Census and July 2004, the population of the State as a whole increased by 13.7 percent while that of Gila County increased by 5.3 percent. Payson is the only community in the County with a growth rate approaching that of the State.

Figure 3-1-A shows the distribution of the current total population per square mile Countywide. The western half of the County is more populated than the east, although none of the County areas outside of Claypool, Globe, Hayden, Miami, Payson, Pine, San Carlos, Strawberry, or Winkelman has more than 1,000 persons per square mile. According to 2000 Census data, the County has an average population density of 10.8 persons per square mile.

Figure 3-1-B presents a detail of the Globe-Miami area. Note that portions of the unincorporated Claypool area are as densely populated as are the City of Globe or the Town of Miami. The urbanized area is clustered along the US 60 corridor, with few populated areas lying more than a mile from the highway. In several cases, these urbanized areas abut areas with no population such as the copper mining area north of the highway in Miami and an area within Globe city limits south of US 70 and centered on SR 77. The downtown areas of Globe and Miami are the most densely populated parts of the region.

**FIGURE 3-1-A. CURRENT TOTAL POPULATION PER SQUARE MILE  
(BY CENSUS BLOCK)**



**FIGURE 3-1-B. CURRENT TOTAL POPULATION PER SQUARE MILE (BY CENSUS BLOCK) – GLOBE AREA DETAIL**

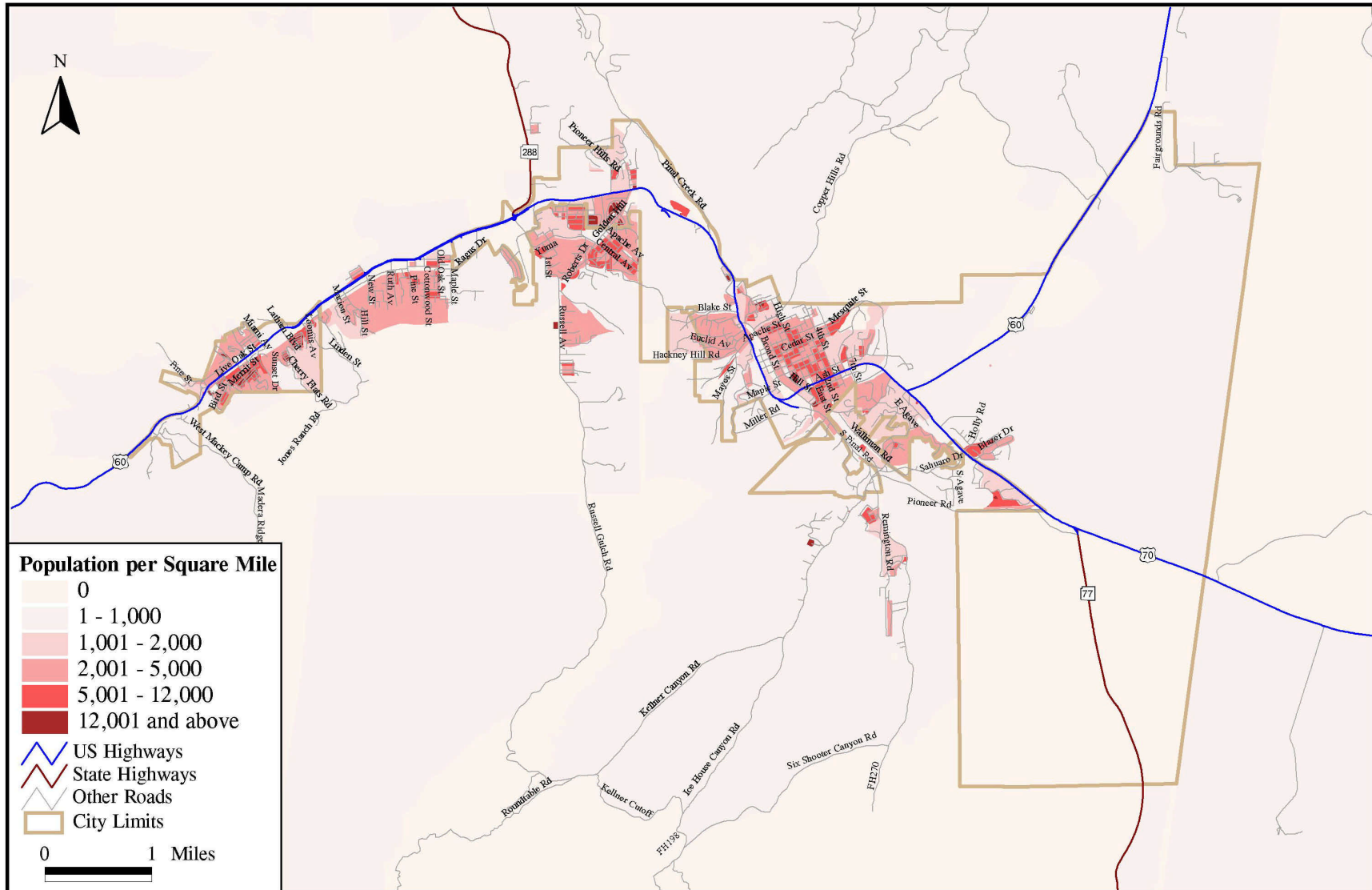


Figure 3-1-C presents a detail of the Payson area. Three principal areas of population concentration exist. The first, in the southern portion of town, ranges from the Green Valley Park area on the West to east and south of the Medical Center. The second is an area to the west of and served by McLane Road; and the third is an area north and east of the town hall complex. A smaller relatively dense area lies north and east of the airport and an outlying concentration exists in the far western part of Payson.

### **Number and Distribution of Dwelling Units**

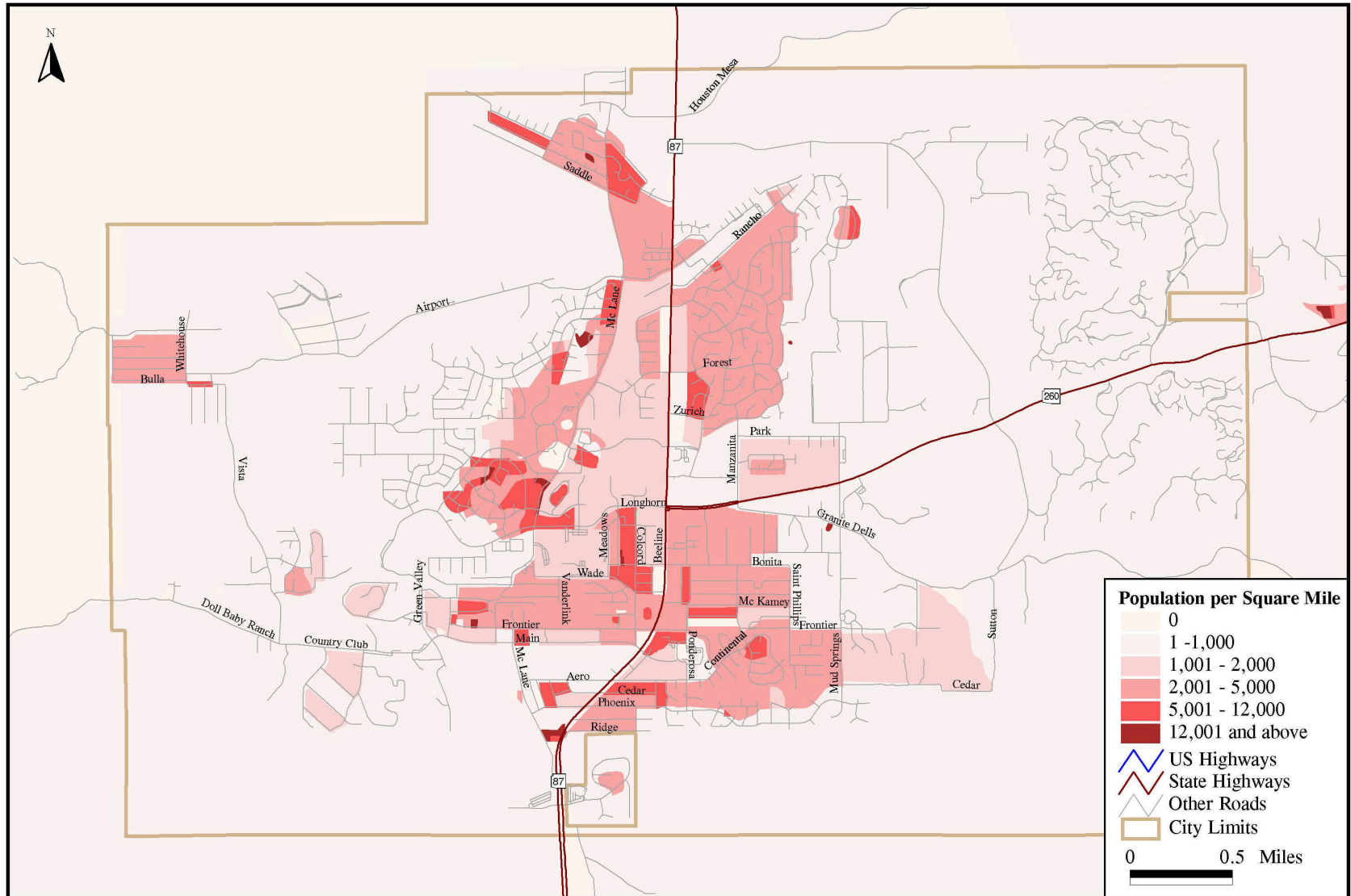
Table 3-1 lists the numbers of dwelling units in Arizona, Gila County, and the local communities within the County. The County percentage of vacant units, 28.6, is more than twice that for the state as a whole. This discrepancy is likely due to the large numbers of second homes in the County. Note that the mountain communities likely to serve as summer refuges for Phoenix area residents—Payson, Pine, and Strawberry—have the highest vacancy rates. The average number of persons per DU for the County, 2.50, is slightly less than the average for the entire state of 2.64. Note that the Tribal communities of San Carlos and Peridot have significantly higher average numbers of persons per DU than other County communities.

Figures 3-2-A, 3-2-B, and 3-2-C depict the distribution of occupied DU per square mile Countywide, in the Globe-Miami area, and in the Payson area respectively. The pattern shown in Figure 3-2-A is essentially identical to that in Figure 3-1-A. One can infer from the similarity of the two figures that the average number of persons per dwelling unit does not vary greatly from one region of the County to another with the exception of the Tribal communities discussed above.

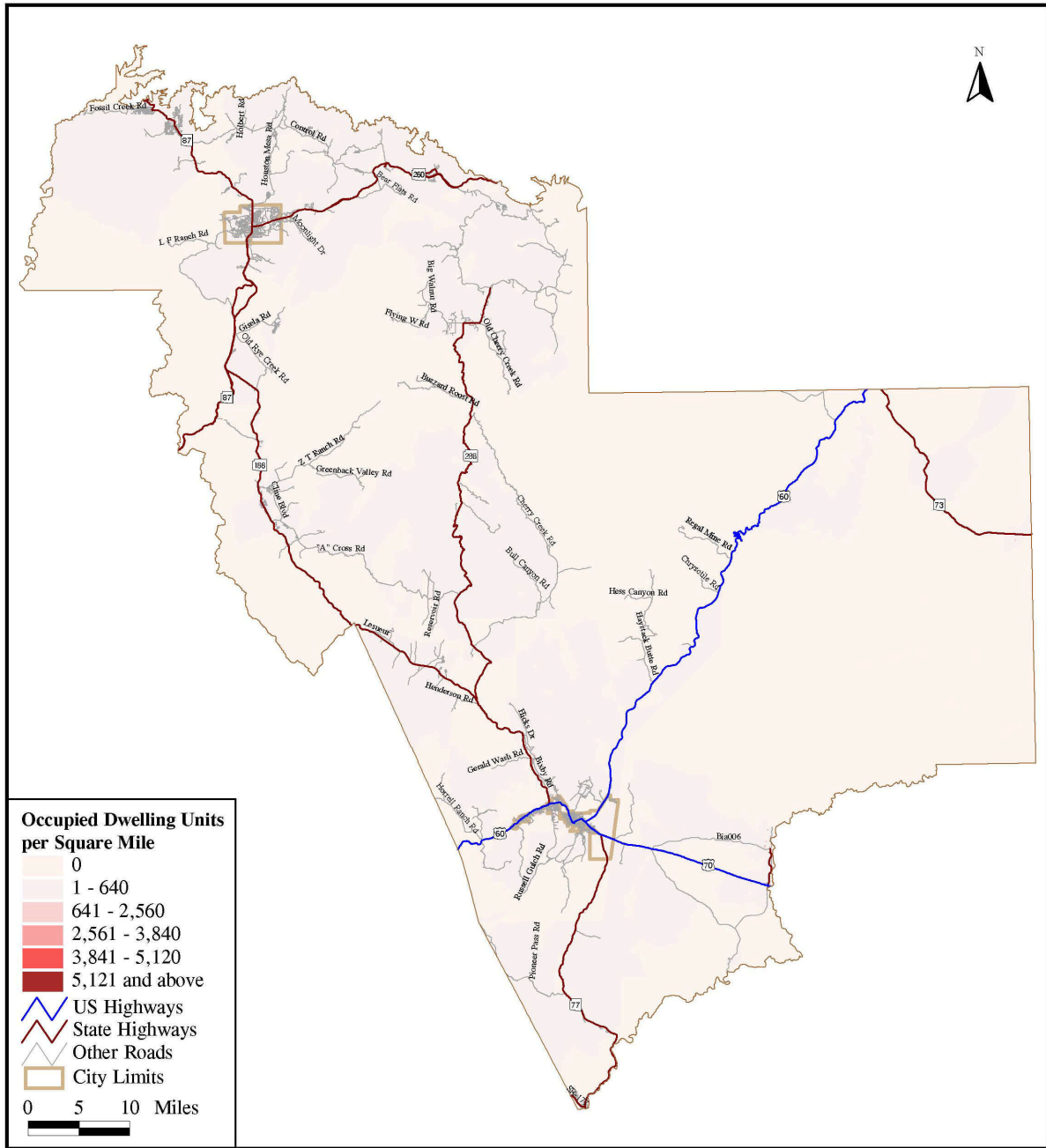
Comparison of Figures 3-1-B and 3-2-B shows that, in most neighborhoods in the Globe-Miami area, the average number of persons per dwelling unit does not vary. Close examination of the Claypool area, however, shows that in several blocks immediately south of US 60 and west of Golden Hill Road, the numbers of persons living in each dwelling unit appears to be higher. Similar situations exist in parts of Miami as well as in the extreme eastern part of the urban area within a half-mile of the US 70/SR 77 junction.

Comparison of Figures 3-1-C and 3-2-C also show that, within the Town of Payson, the average numbers of persons living in each dwelling unit varies somewhat from one neighborhood to another. Areas with higher numbers of persons living in each of the DU include the neighborhood west of Beeline and south of Longhorn, the area east of Beeline along Cedar in the southern part of Town, and the neighborhood east of McLane and north of Saddle in the northern end of Town.

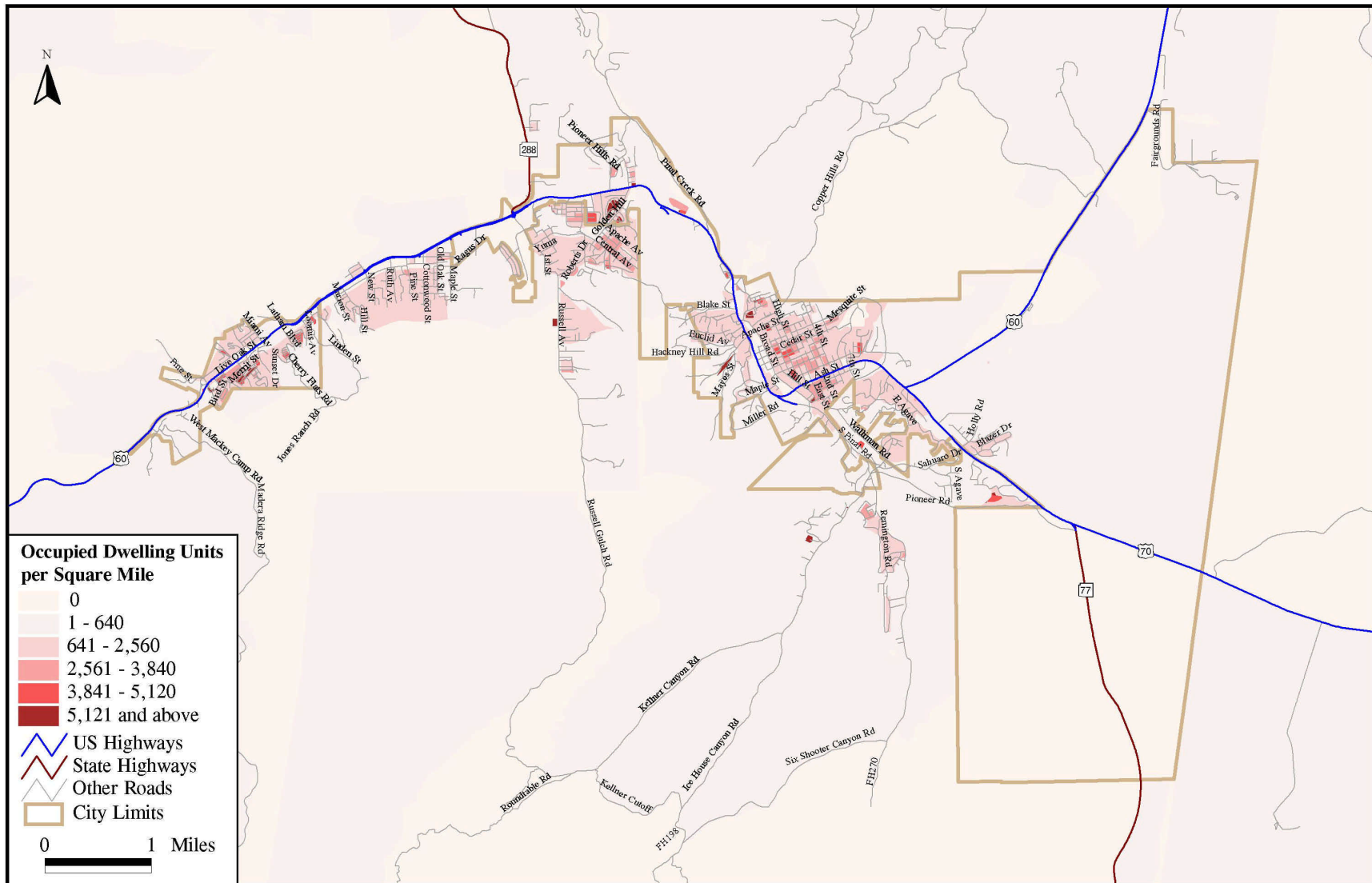
**FIGURE 3-1-C. CURRENT TOTAL POPULATION PER SQUARE MILE (BY CENSUS BLOCK) – PAYSON AREA DETAIL**



**FIGURE 3-2-A. OCCUPIED DWELLING UNITS PER SQUARE MILE  
(BY CENSUS BLOCK)**

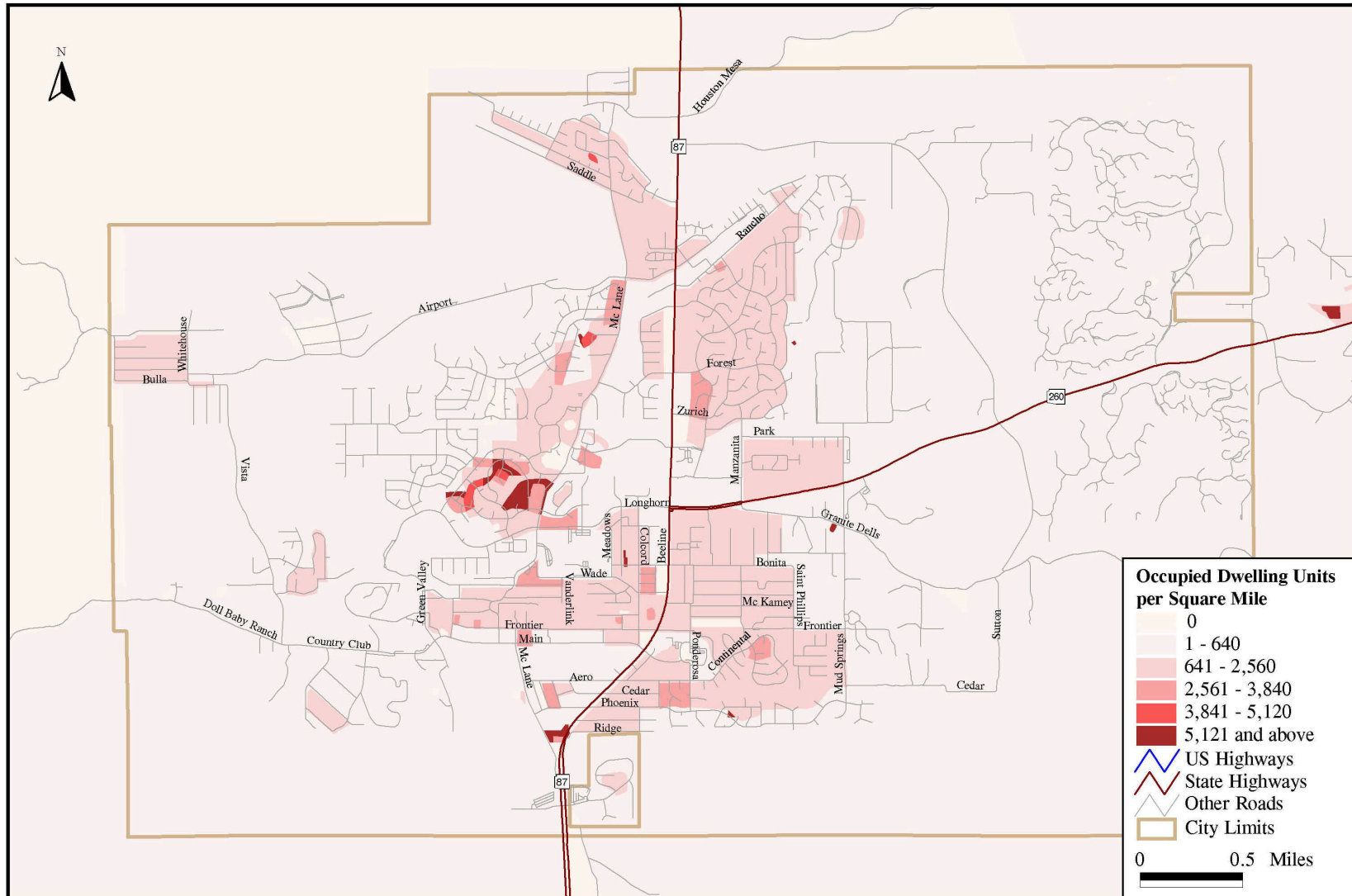


**FIGURE 3-2-B. OCCUPIED DWELLING UNITS PER SQUARE MILE (BY CENSUS BLOCK) –  
GLOBE AREA DETAIL**





**FIGURE 3-2-C. OCCUPIED DWELLING UNITS PER SQUARE MILE (BY CENSUS BLOCK) – PAYSON AREA DETAIL**



## **County Senior Population**

As Table 3-1 shows, the median age of Gila County residents is slightly higher than that of the state as a whole. The communities with the highest median age are those that have become popular with retirees such as Payson, Pine, Strawberry, and Tonto Basin. Note that the Tribal communities of Peridot and San Carlos have median ages significantly lower than those of the other County communities.

Figure 3-3-A depicts the total population per square mile of persons aged 65 and over Countywide. Comparison of Figure 3-3-A with Figure 3-1-A shows that seniors are relatively evenly distributed compared with the total population. Exceptions are the part of the San Carlos Apache Reservation directly east of Globe, as well as the area south of Globe and east of SR 77, both of which have comparatively few seniors.

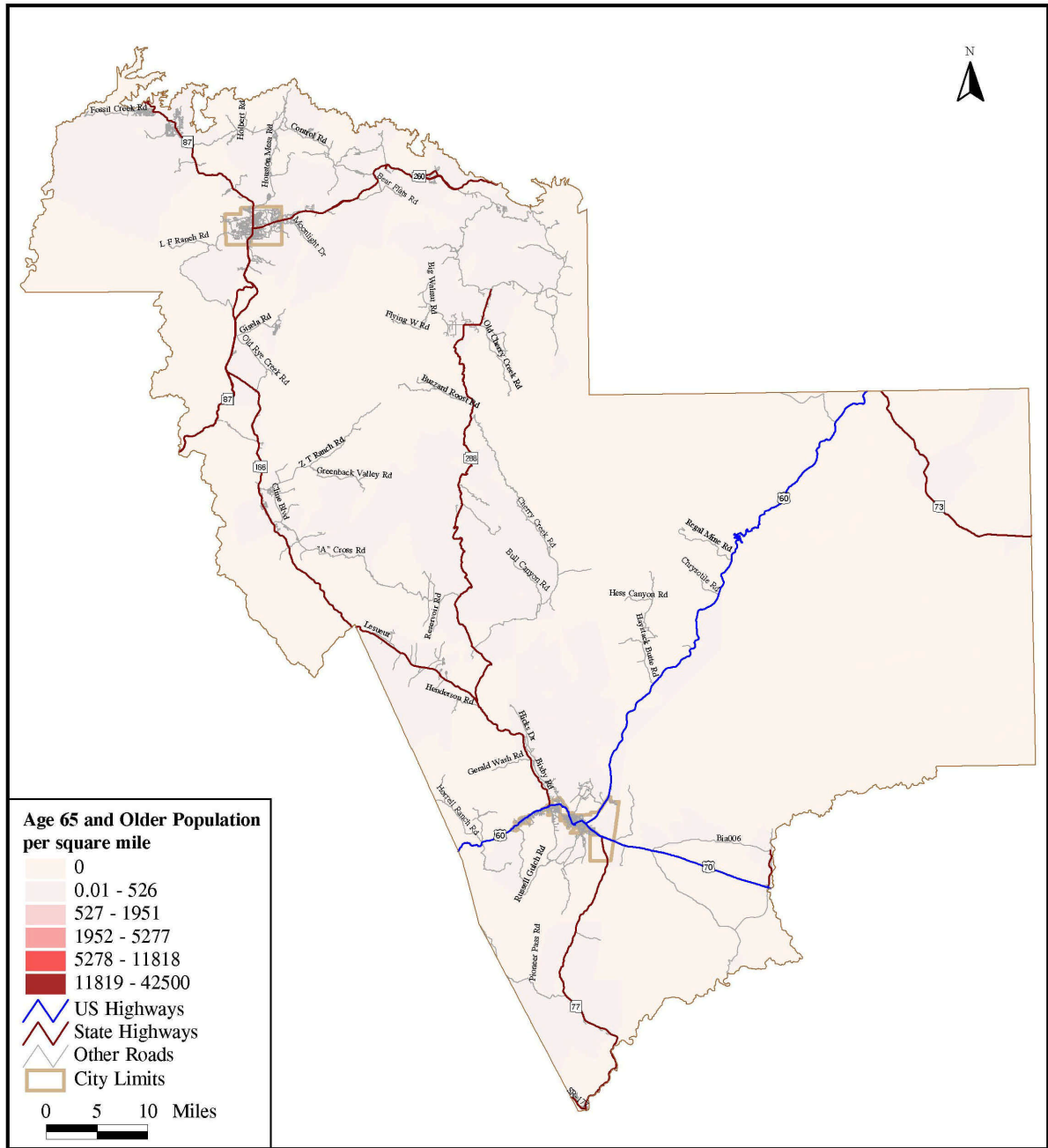
Comparison of Figure 3-3-B, which shows the distribution of persons aged 65 and over in the Globe-Miami area, with Figure 3-1-B reveals that seniors are fairly evenly distributed throughout the area. Figure 3-3-C shows the concentration of seniors 65 years of age and older in the Payson area. Within the same central corridor along SR 87, the pattern for seniors seems to emulate that of the total population. Some of the highest densities occur in the neighborhoods near McLane Road and Longhorn Road and SR 87 and Frontier Street. Also, the outlying population concentration in the western part of Payson does not have a concentration of seniors

## **Minority Population**

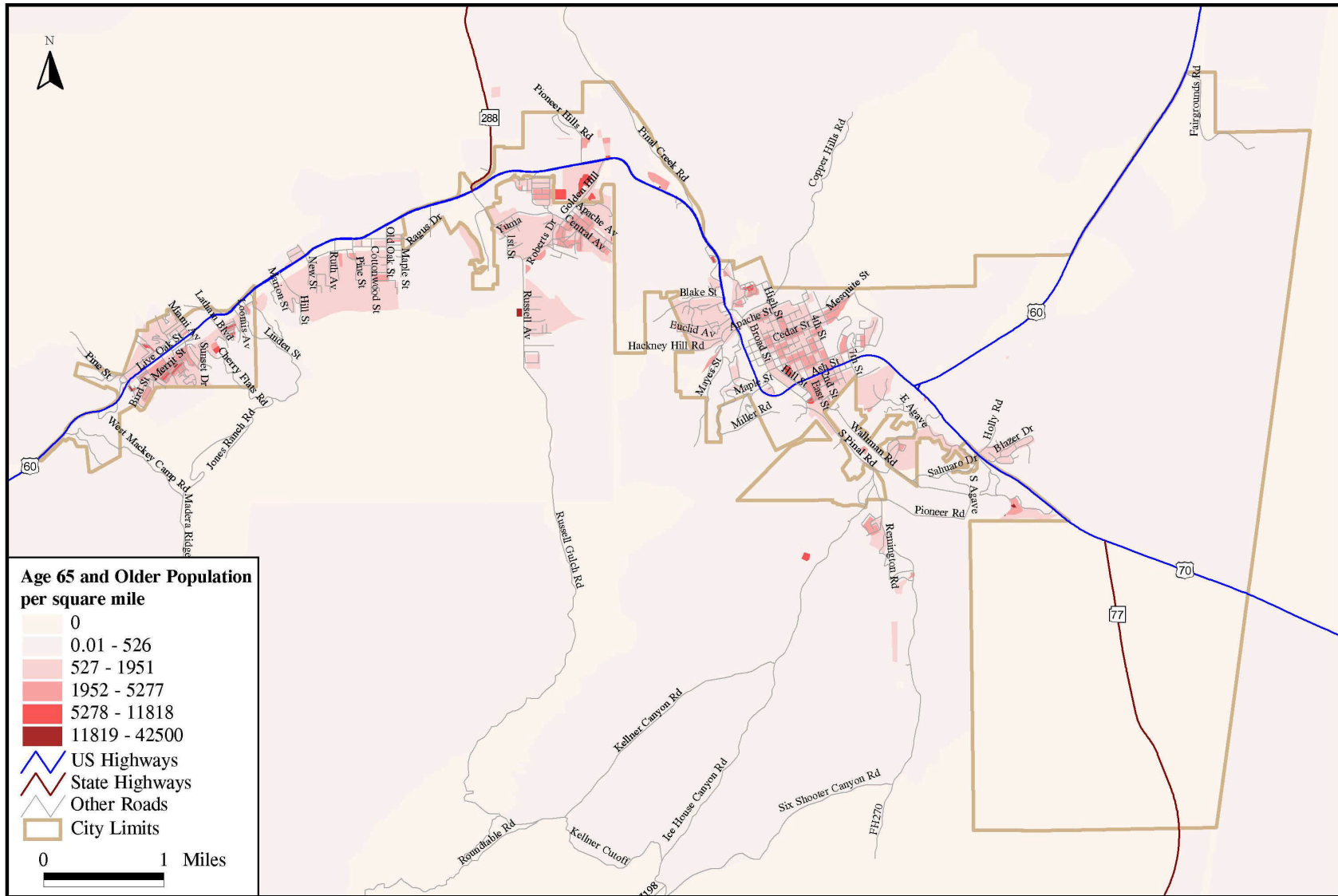
Table 3-1 also presents the numbers of minority persons in Arizona, Gila County, and the local communities within the County. Gila County actually has a slightly lower percentage of minority persons than the state as a whole. While the percentages of minority persons living in the Globe-Miami area are similar to those statewide, the communities in the northern part of the County such as Payson, Pine, Strawberry, and the Tonto Basin area have very low numbers of minorities.

Figures 3-4-A, 3-4-B, and 3-4-C show distribution of minority population per square mile Countywide, in the Globe-Miami area, and in the Payson area. Comparison of Figure 3-4-A with Figure 3-1-A reveals that minority populations are fairly evenly distributed Countywide except that northern portions of the County, specifically the Payson and Tonto Basin areas, have below average numbers of minorities. Comparing Figure 3-4-B with Figure 3-1-B reveals that the distribution of minority population in the Globe-Miami area closely mirrors that of the total population. However, a comparison of Figure 3-4-C with 3-1-C shows that the distribution of the minority population in Payson varies significantly from that of the general population. More of a minority population exists in the southern half of Payson, concentrated especially near SR 87 between Frontier Street and Bonita Street. The eastern portion of Payson is virtually devoid of a minority population.

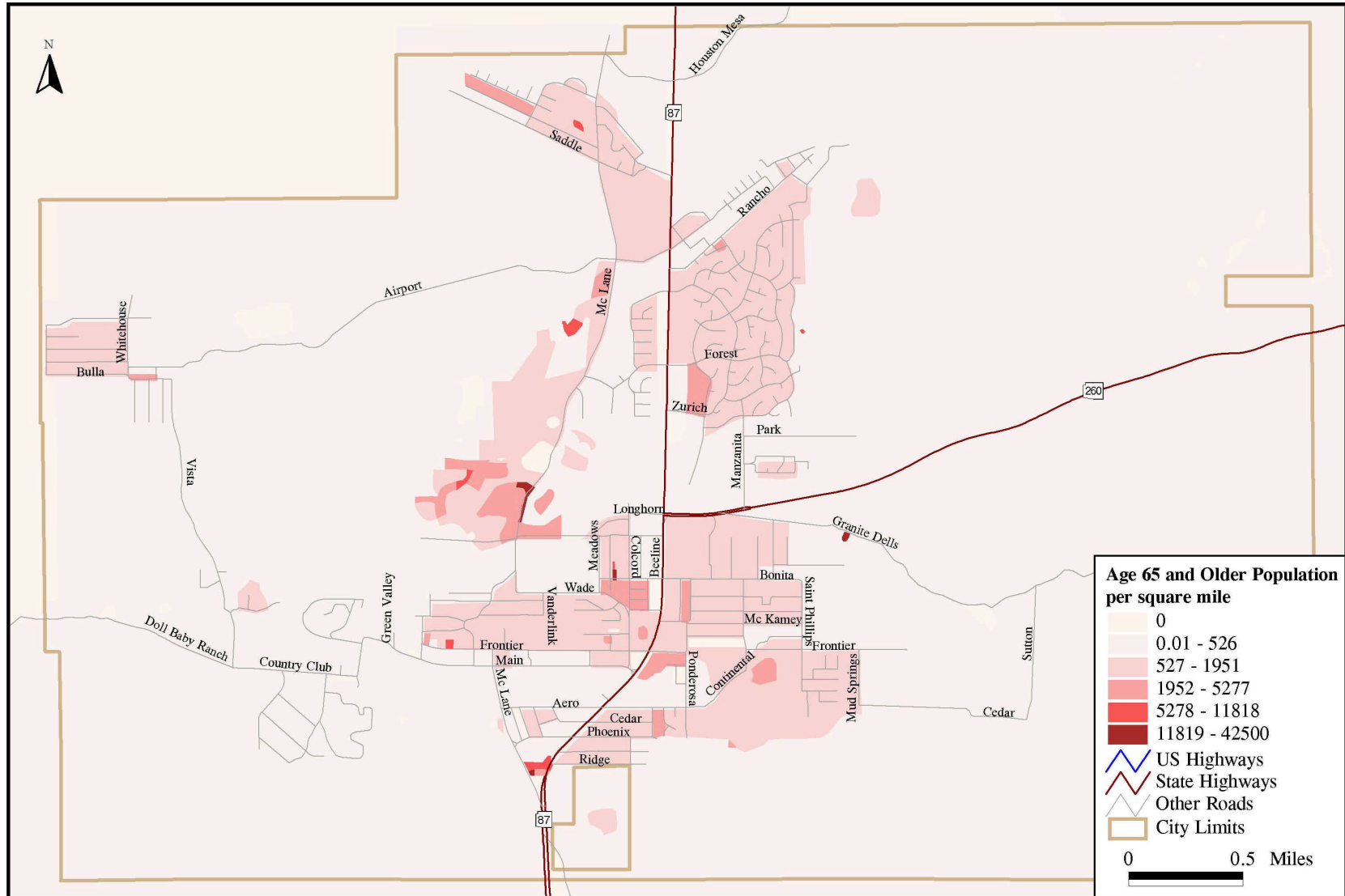
**FIGURE 3-3-A. AGE 65 AND OLDER POPULATION PER SQUARE MILE  
(BY CENSUS BLOCK)**



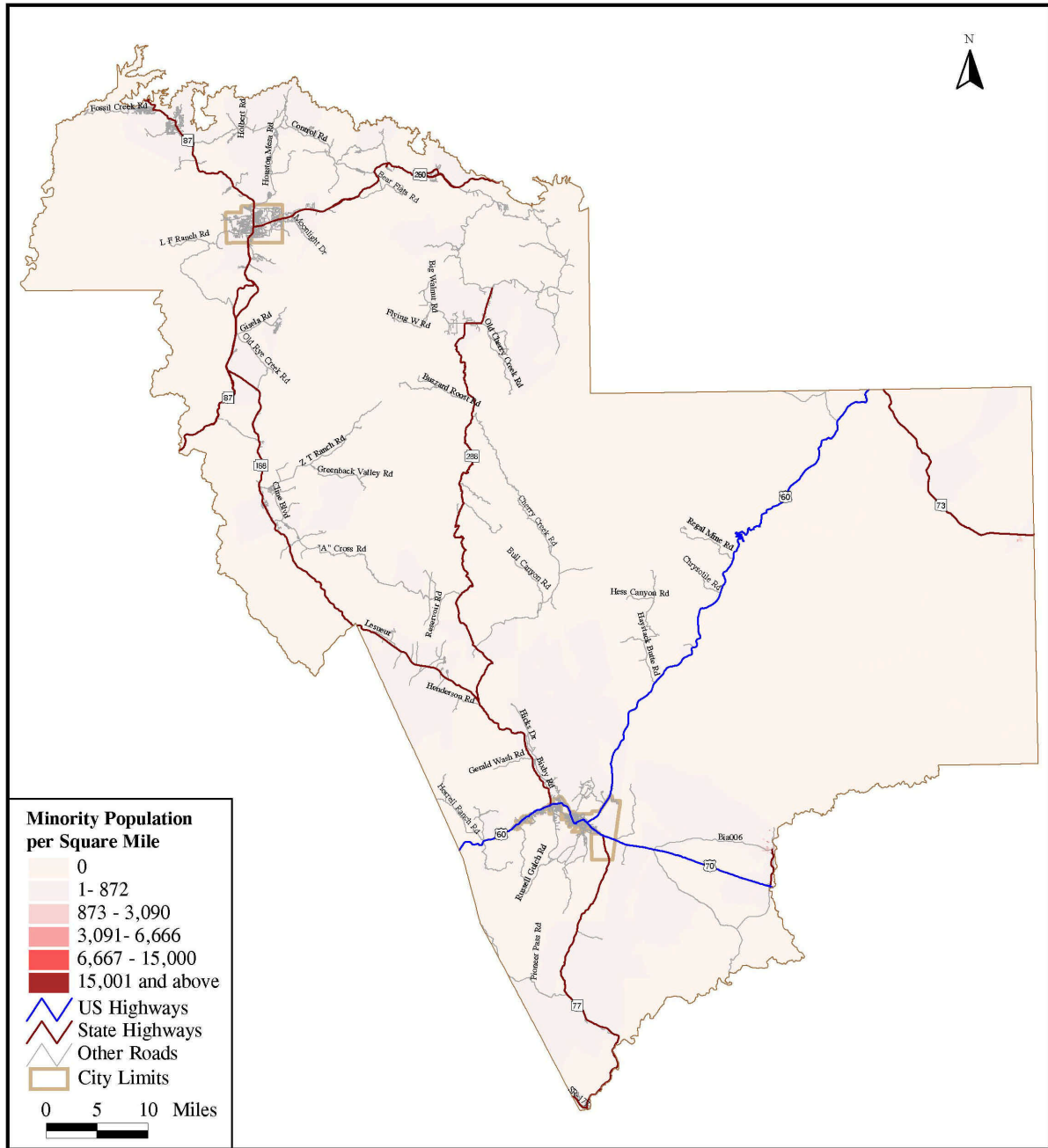
**FIGURE 3-3-B. AGE 65 AND OLDER POPULATION PER SQUARE MILE (BY CENSUS BLOCK) - GLOBE AREA DETAIL**



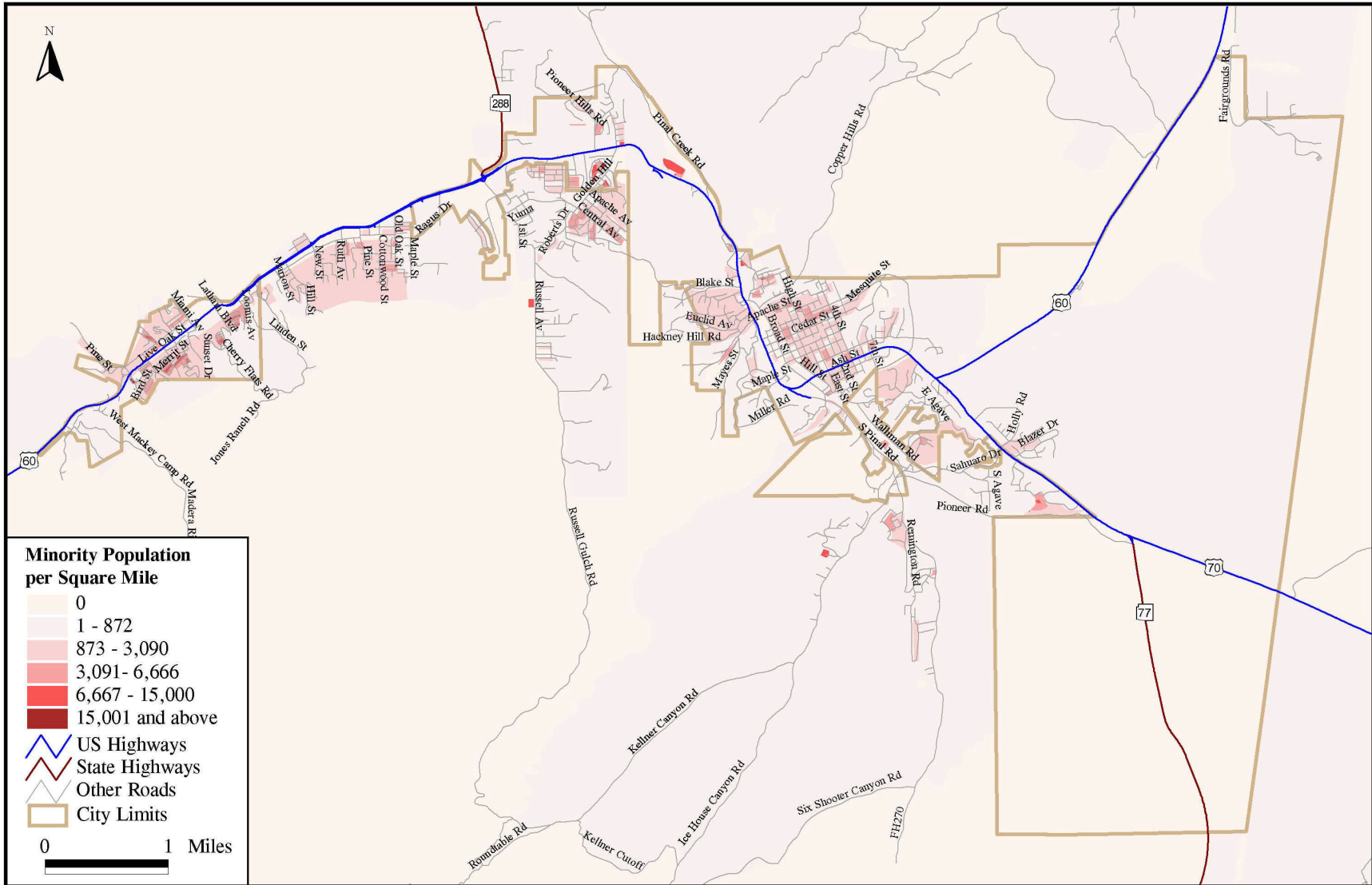
**FIGURE 3-3-C. AGE 65 AND OLDER POPULATION PER SQUARE MILE (BY CENSUS BLOCK) - PAYSON AREA DETAIL**



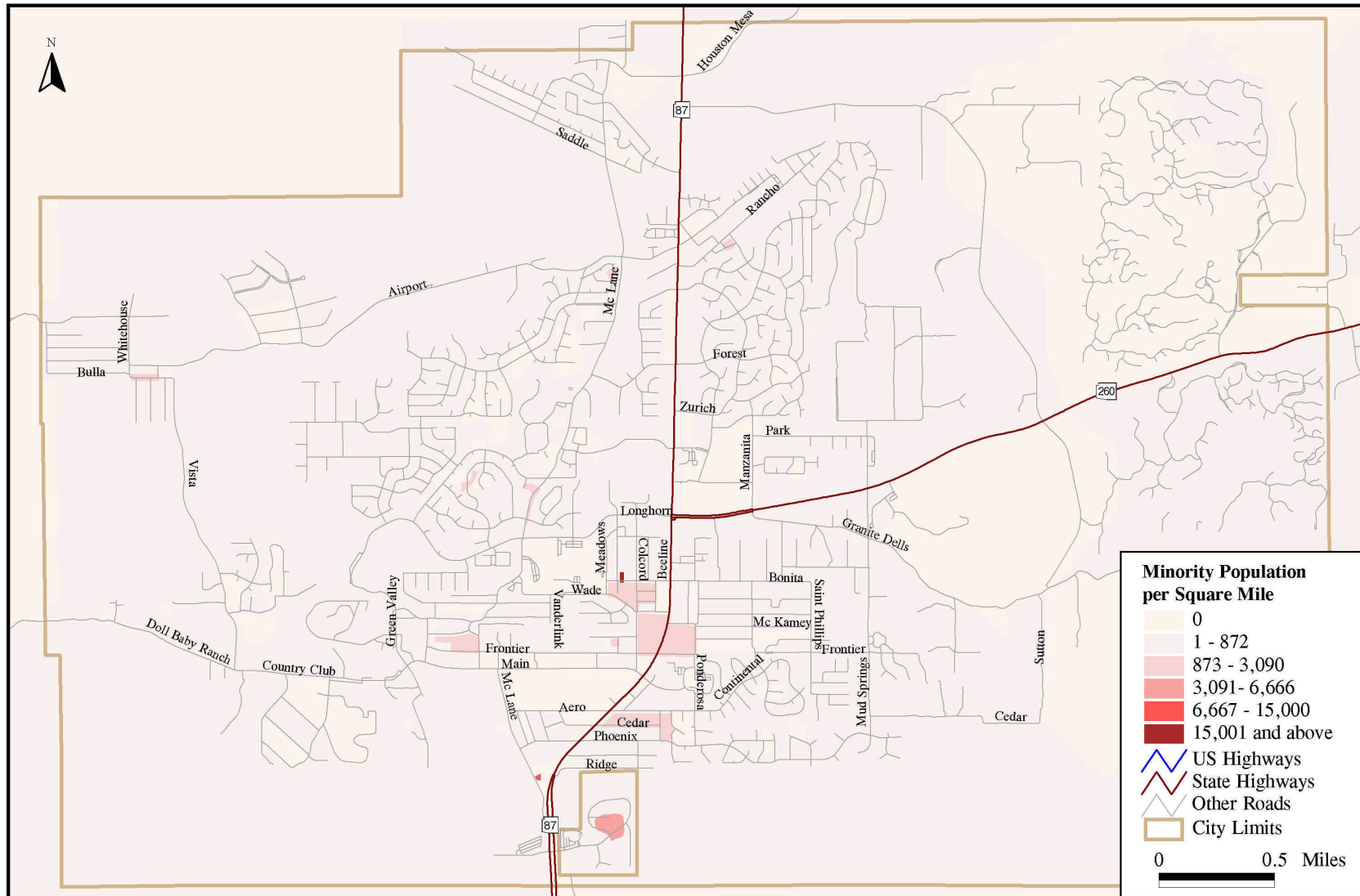
**FIGURE 3-4-A. MINORITY POPULATION PER SQUARE MILE  
(BY CENSUS BLOCK)**



**FIGURE 3-4-B. MINORITY POPULATION PER SQUARE MILE (BY CENSUS BLOCK) - GLOBE AREA DETAIL**



**FIGURE 3-4-C. MINORITY POPULATION PER SQUARE MILE (BY CENSUS BLOCK) - PAYSON AREA DETAIL**





## **Low Income Persons**

The average percentages of persons and households living below the poverty level in Gila County are higher than those for the state as a whole, as displayed in Table 3-1. The Tribal communities of Peridot and San Carlos have the highest percentages, while the communities of Payson, Pine, and Strawberry have the lowest. Concentrations of low income persons are shown by census block group in Figures 3-5-A, 3-5-B, and 3-5-C. Figure 3-5-A, which depicts the locations of low-income persons Countywide, shows a concentration of this population north of the San Carlos area, in the southeast portion of the County. While difficult to see on the Figure, the concentration of low-income persons in the Hayden area is significant. Figure 3-5-B shows significant concentrations of low-income individuals in central Miami and also in the Claypool area. Figure 3-5-C shows that the block group that comprises most of west-central Payson also has an average of between 214 and 458 persons per square mile living below the poverty level. The average income levels are higher in the outlying portions of the Town.

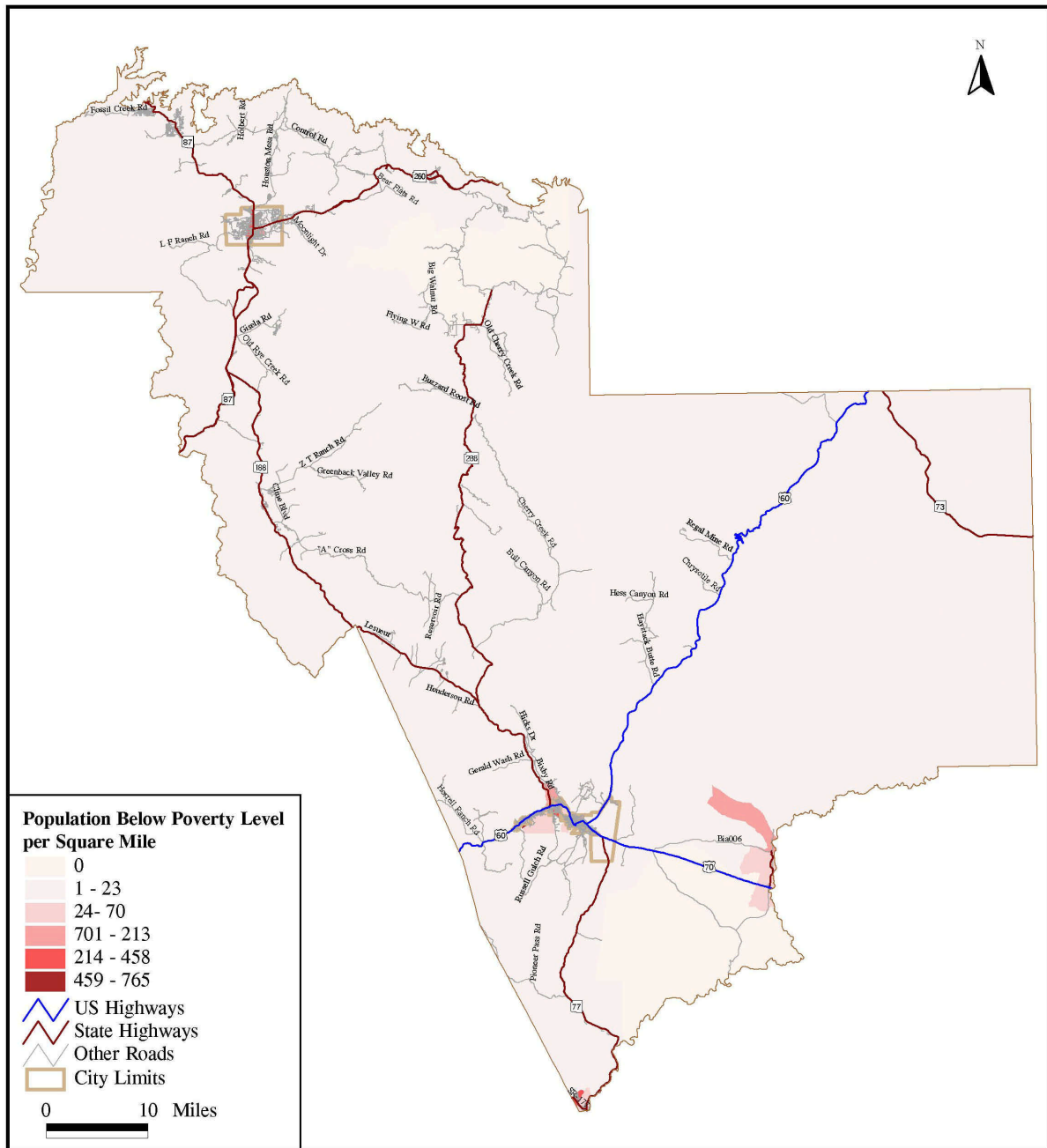
## **Mobility-Limited Populations**

Table 3-1 also shows that 24.78 percent of the persons between the ages of 16 and 64 living in Gila County reported having disabilities to the Census Bureau, compared with 18.83 percent of those statewide. Note that over 60 percent of the 309 residents of Gisela report having disabilities, as do 52 percent of those living in the Tonto Basin area. The Tribal community of Peridot is the only reporting community that has a percentage of disabled persons lower than the statewide figure.

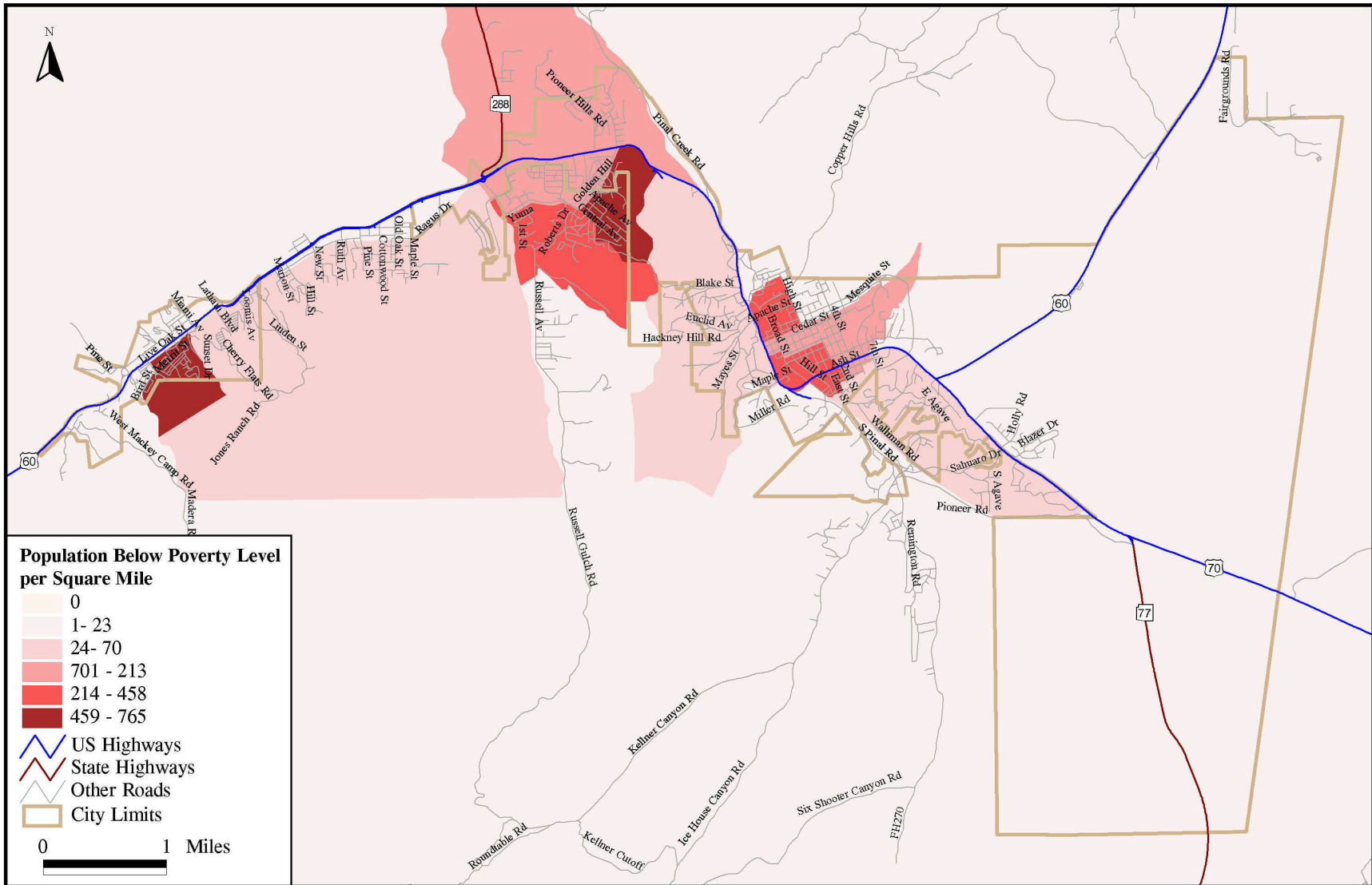
Figures 3-6-A, 3-6-B, and 3-6-C depict the concentrations of mobility-limited persons Countywide, in the Globe-Miami area, and in the Payson area respectively. Comparisons of these figures with the previous series of figures 3-5-A, 3-5-B, and 3-5-C, show that the locations of mobility-limited populations closely match those of low-income populations. Indeed, many mobility-limited persons have lower incomes, particularly in rural or small-urban areas because of the comparative lack of alternative transportation services and the consequent inability to commute to work.

Not surprisingly, Figures 3-7-A, 3-7-B, and 3-7-C show that households without automobiles are located mostly in the same areas as the low income and mobility-limited persons. A comparison of Figures 3-5-B, 3-6-B, and 3-7-B shows that many persons who live in the Globe-Miami area who are low income and/or mobility-limited nevertheless do have automobiles, particularly in the area between Miami and Claypool and the portion of the Claypool area north of US 60. Comparison of 3-5-C, 3-6-C, and 3-7-C reveals significant differences between the locations of low-income persons, mobility-limited persons, and households without automobiles in Payson, however. For example, the area of Town east of Beeline, north of SR 260, and south of Forest has an average of over 900 persons per square mile with mobility limitations but no households without automobiles. In west-central Payson, between Beeline and McLane, the concentrations of low-income

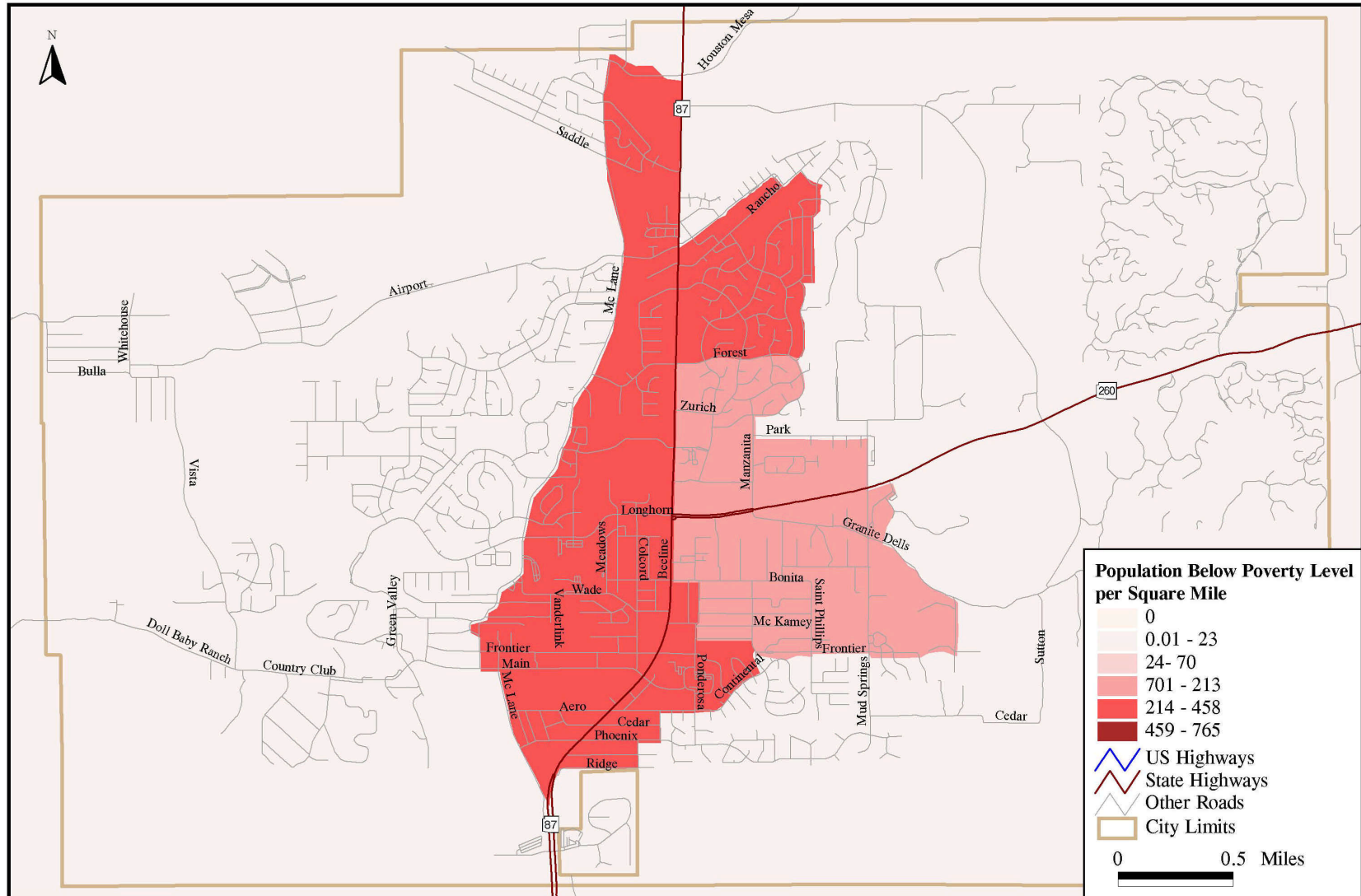
**FIGURE 3-5-A. POPULATION BELOW POVERTY LEVEL PER SQUARE MILE  
(BY CENSUS BLOCK GROUP)**



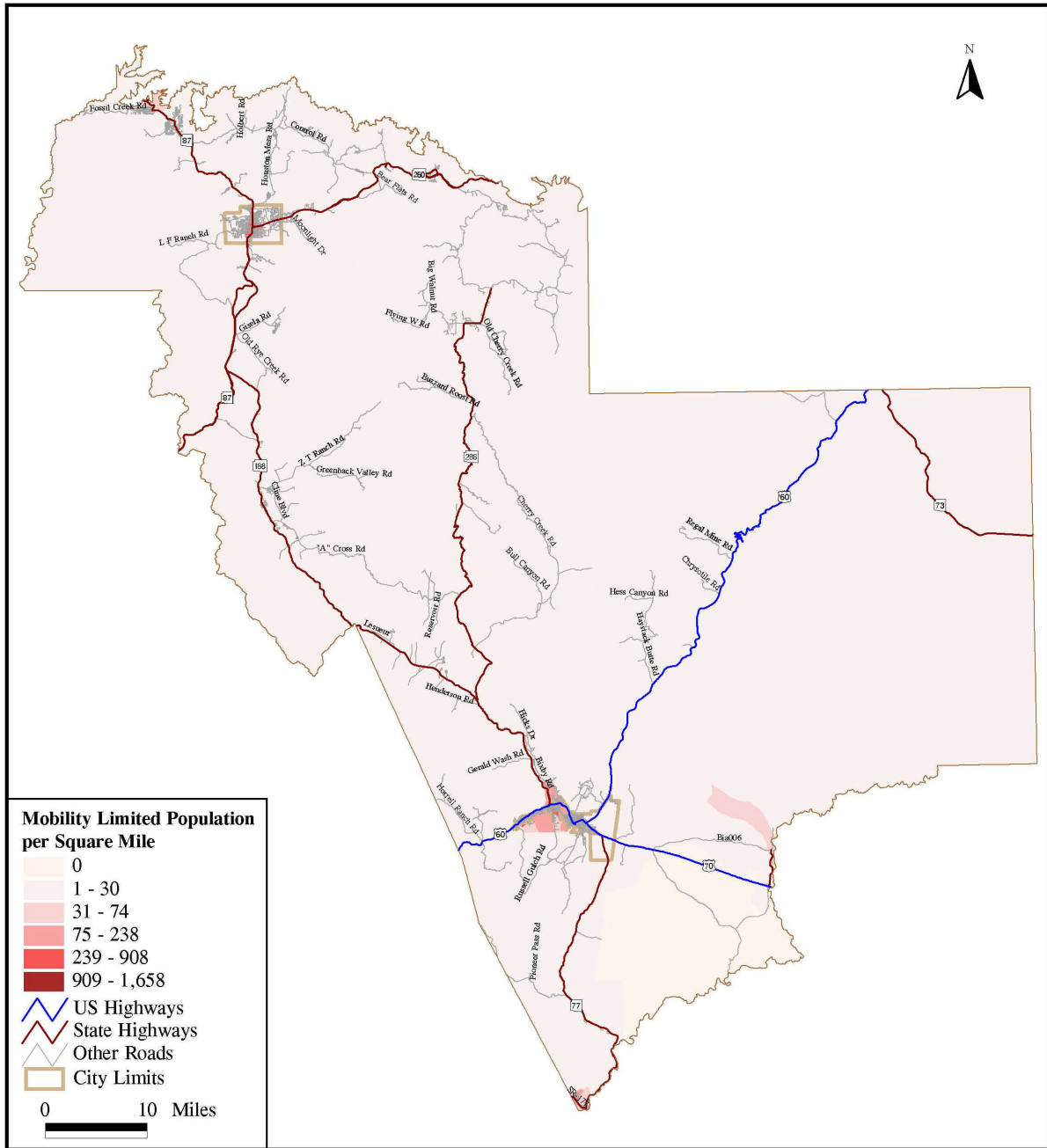
**FIGURE 3-5-B. POPULATION BELOW POVERTY LEVEL PER SQUARE MILE (BY CENSUS BLOCK GROUP) - GLOBE AREA DETAIL**



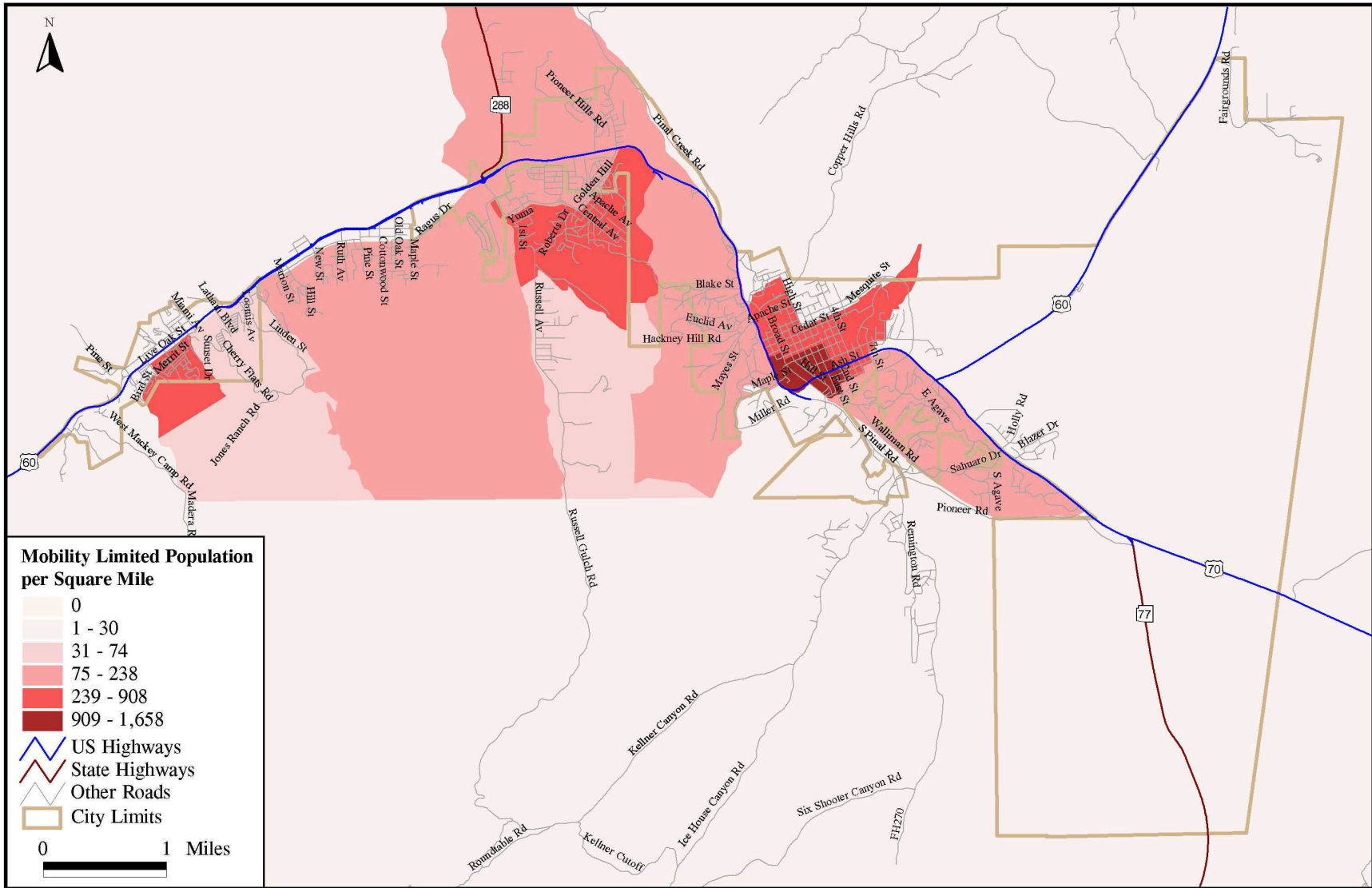
**FIGURE 3-5-C. POPULATION BELOW POVERTY LEVEL PER SQUARE MILE (BY CENSUS BLOCK GROUP) - PAYSON AREA DETAIL**



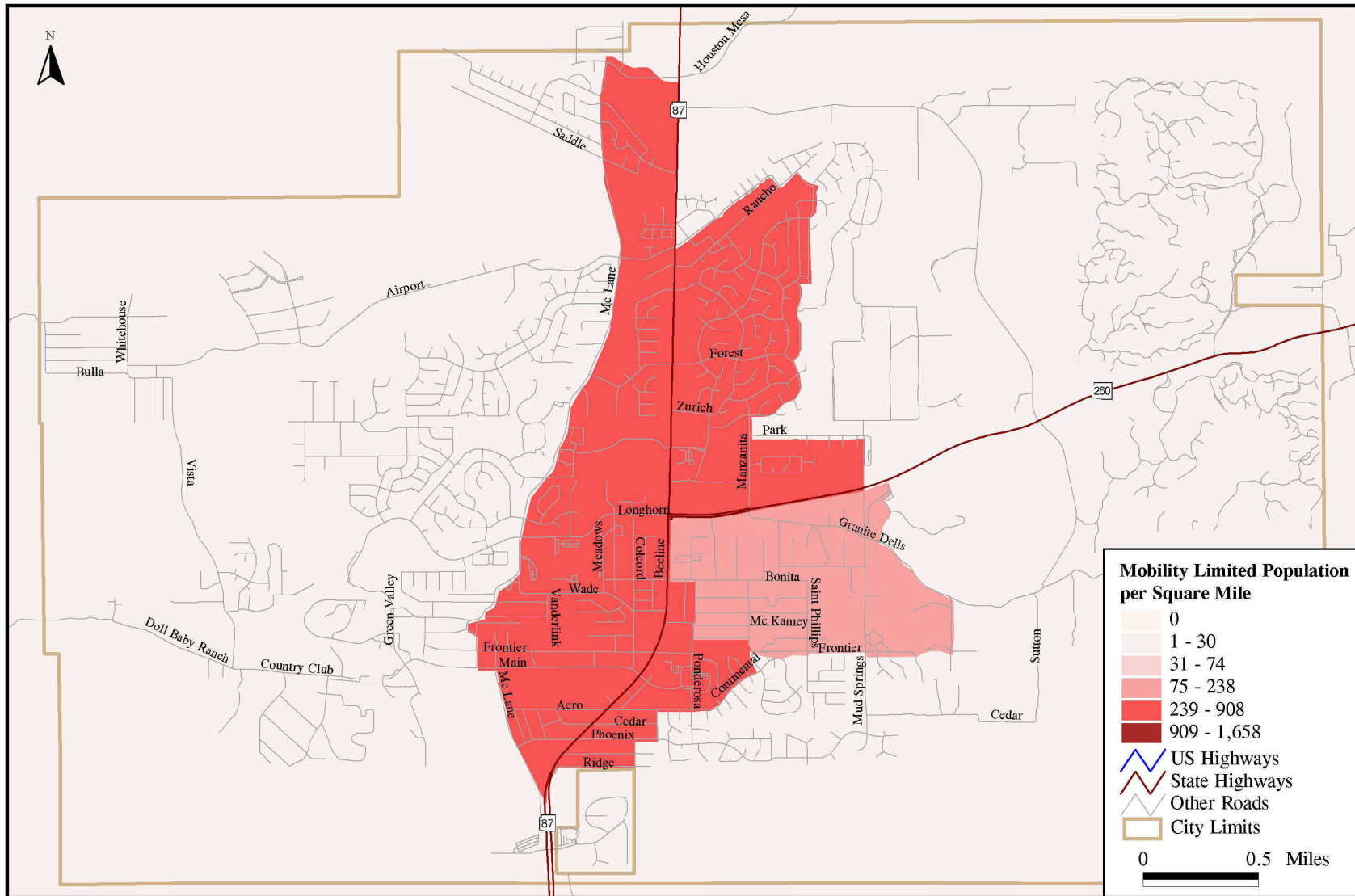
**FIGURE 3-6-A. MOBILITY-LIMITED POPULATION PER SQUARE MILE  
(BY CENSUS BLOCK GROUP)**



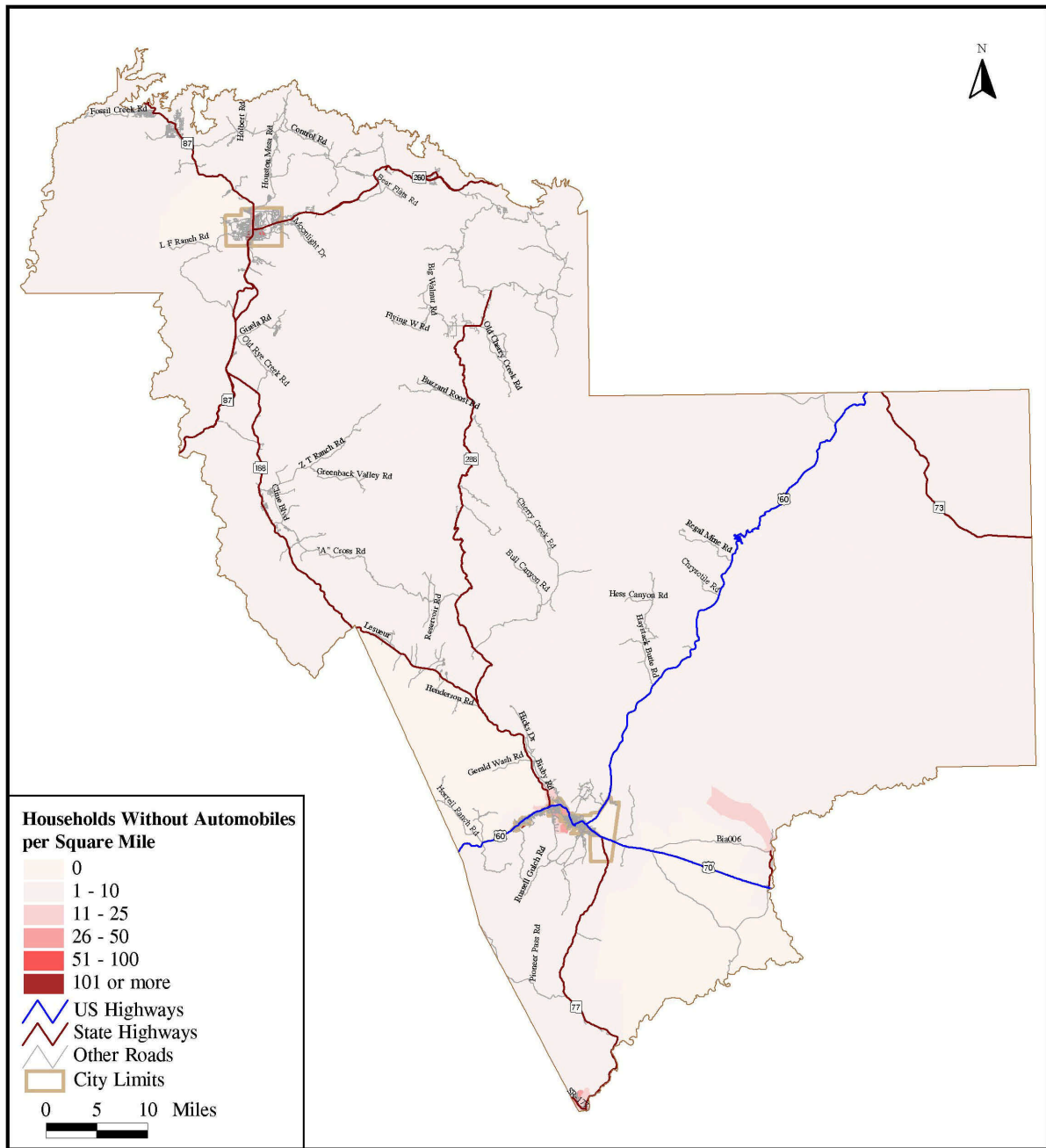
**FIGURE 3-6-B. MOBILITY-LIMITED POPULATION PER SQUARE MILE (BY CENSUS BLOCK GROUP) - GLOBE AREA DETAIL**



**FIGURE 3-6-C. MOBILITY-LIMITED POPULATION PER SQUARE MILE (BY CENSUS BLOCK GROUP) - PAYSON AREA DETAIL**

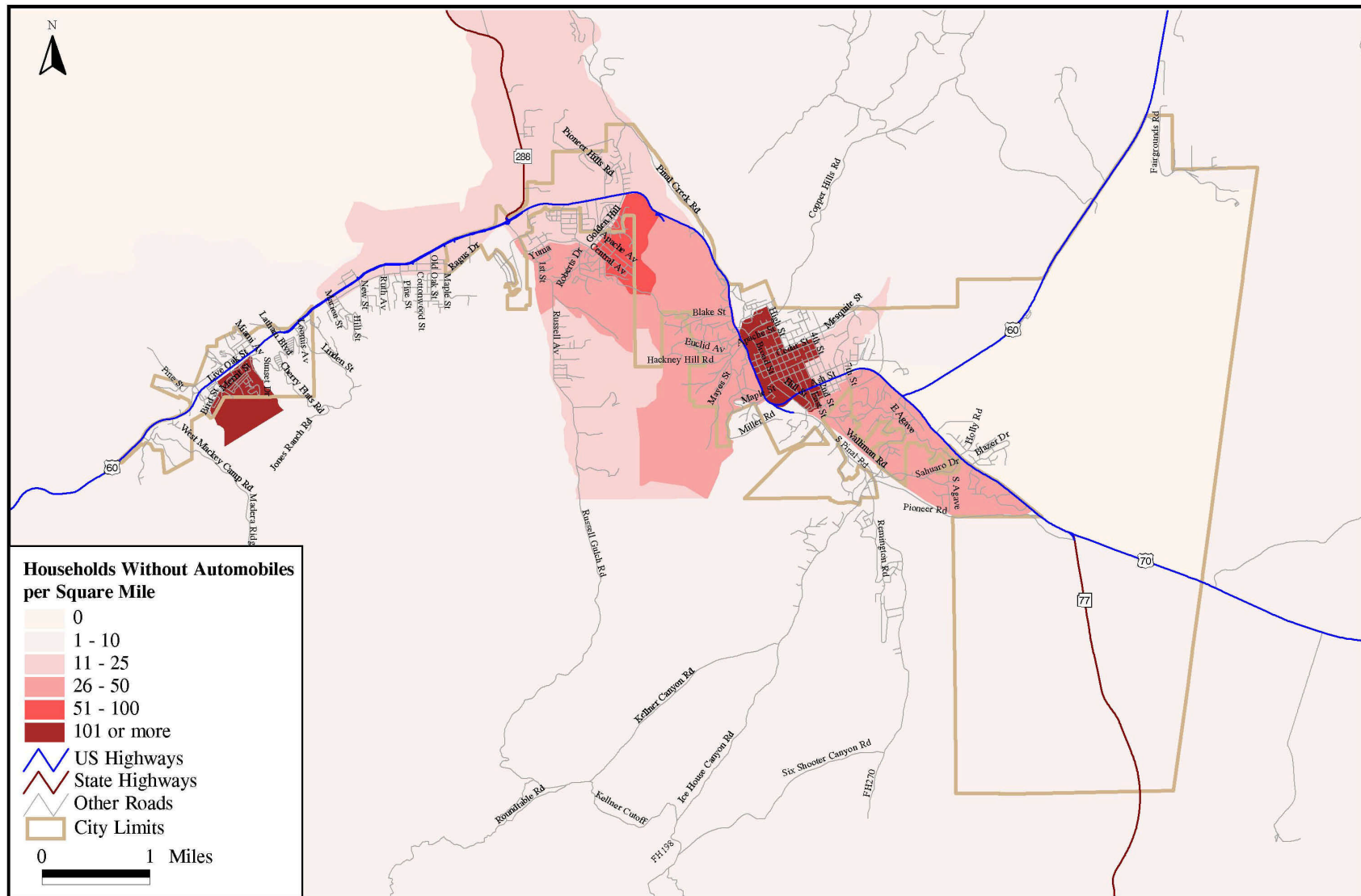


**FIGURE 3-7-A. HOUSEHOLDS WITHOUT AUTOMOBILES PER SQUARE MILE  
(BY CENSUS BLOCK GROUP)**

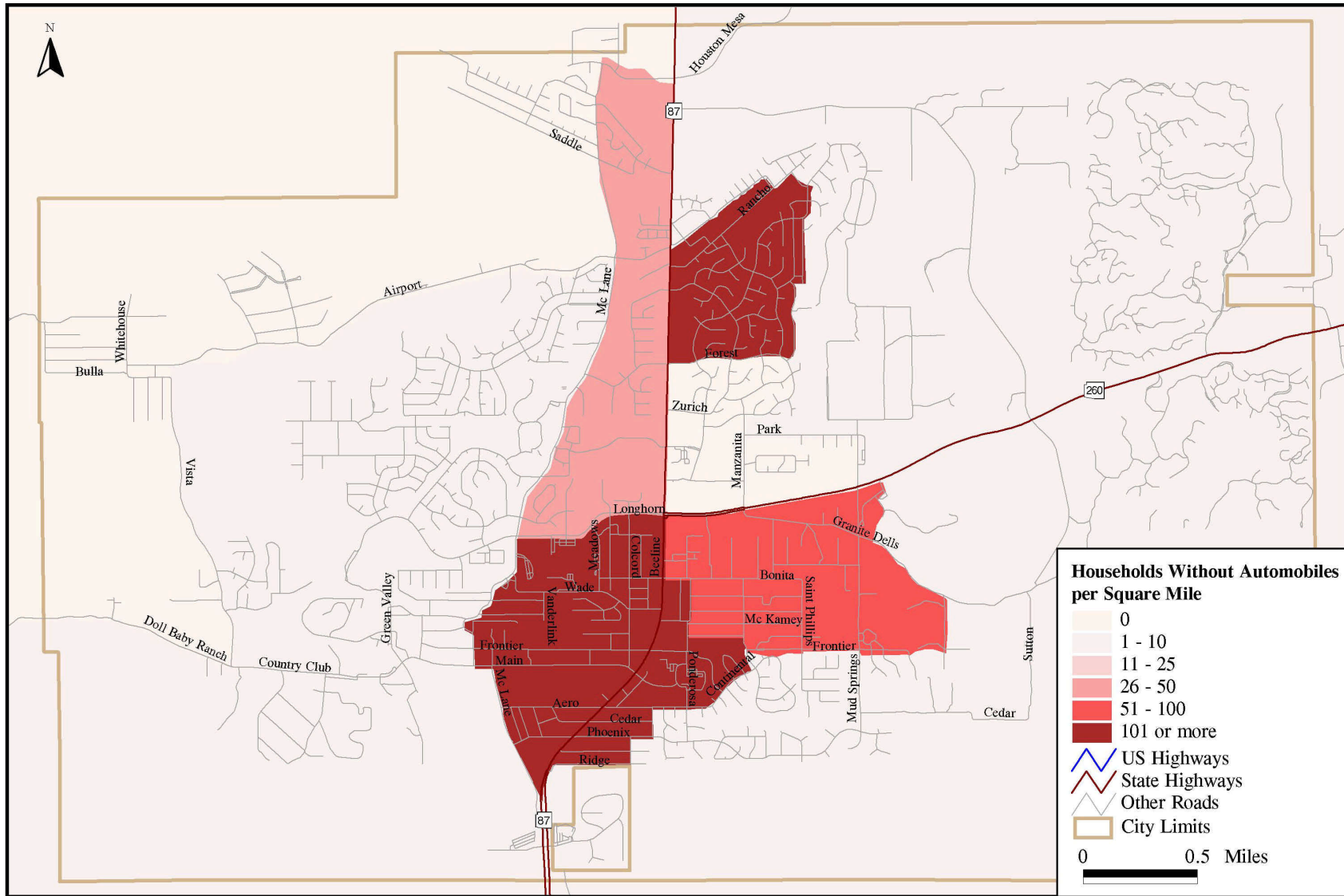




**FIGURE 3-7-B. HOUSEHOLDS WITHOUT AUTOMOBILES PER SQUARE MILE (BY CENSUS BLOCK GROUP) - GLOBE AREA DETAIL**



**FIGURE 3-7-C. HOUSEHOLDS WITHOUT AUTOMOBILES PER SQUARE MILE (BY CENSUS BLOCK GROUP) - PAYSON AREA DETAIL**



and mobility-limited persons are consistent from one end of Town to the other. However, the number of households without automobiles increases significantly south of Longhorn.

## **CURRENT LAND USE**

Of the nearly 4,800 square miles that comprise Gila County, only 3.5 percent is privately owned—or deeded—land. Of that, about 2 percent is owned by the mines, leaving about 1.5 percent for residential, commercial, and other industrial usage. Over 55 percent of the County lies within the Tonto National Forest, another 37 percent is Tribal land, and the remaining 5 percent is either Arizona State Trust land or owned by the US Bureau of Land Management.

The Tonto National Forest occupies nearly three million acres of land and is the fifth largest forest in the United States with approximately 5.8 million visitors annually. The San Carlos Apache Indian reservation encompasses 1,826,541 acres and is the fourth largest reservation in Arizona while the Fort Apache Reservation covers more than 1.6 million acres.

The *Gila County General Plan* outlines land usage for the deeded land portions of the County including the unincorporated rural communities of Pine and Strawberry, Young, Tonto Basin, Gisela, and Christopher Creek. Nearly all of the residential land is shown as being planned for 3.5 dwelling units or fewer per acre. Some higher density residential usage is planned for portions of the Claypool area abutting the City of Globe, planned communities near Roosevelt Lake, and within the communities of Pine and Gisela. Multifunctional corridor or Public Facilities areas are shown abutting some of the more heavily traveled State Routes and County roads.

Nearly all of the commercially planned or zoned land lies within local incorporated jurisdictions with the exception of a few parcels in Claypool, Gisela, Pine, Roosevelt, Star Valley, and Tonto Basin.

## **CURRENT ROADWAY FACILITY CHARACTERISTICS**

The existing Gila County transportation system consists of a network of primary roads connecting communities and providing access to the local and secondary roadways that serve land uses throughout the region. The primary road network includes two US routes: US 60 and US 70, and five State Routes: SR 77, SR 87, SR 188, SR 288, and SR 260. All US and State Routes are paved except significant portions of SR 288 between SR 188 and Young. The secondary road system branches off the primary routes to access private land in both rural areas and developed communities. Currently, 155.38 miles of the County's 644.05-mile roadway network are paved while the remaining 488.67 miles are unpaved. These mileages include roadways in the unincorporated areas of Gila County as well as Forest Service roads that the US Department of Agriculture has contracted with the County to maintain.

The majority of traffic in Gila County is concentrated on the US and State Routes. State Route 87 carries traffic volumes between 11,000 and 12,000 vehicles per day in the vicinity of Payson, and US 60 carries between 11,000 and 17,000 vehicles per day in the vicinity of Globe-Miami. State Route 288 carries the lowest traffic volume of the US and State Routes. County and Forest roads provide access to pockets of private land within the Tonto National Forest. Forest routes also provide access to recreational areas in the Forest. Traffic volumes in the County are the highest during summer months and the lowest during the winter months. Examples of County-maintained roadways are shown in Figure 3-8.

### **Roadway Functional Classification**

Different types of roadways are classified according to their function—the specific role that they perform in the vehicular mobility of the region. Generally, a roadway is classified based upon the extent to which it is designed to facilitate vehicular travel from one area, or neighborhood, to another, as opposed to facilitating access to abutting properties. Arterial roadways are designed for travel over longer distances, with access to or from abutting properties managed through the use of driveway spacing, center medians, or other means, or, in the case of freeways, limited to specific traffic interchanges. Local streets provide relatively unlimited access to the residential or commercial properties that abut them, but are comparatively inefficient routes for longer trips. Collector streets link the arterial streets that traverse an area with the area network of local streets, performing an intermediate role.

The *Gila County Roadway Design Standards Manual* includes five classes of rural roads:

- Rural Major Arterial
- Rural Arterial
- Rural Collector
- Rural Local
- Rural Very Low Volume Road

The *Manual* indicates different “cross section” specifications for each class of roadway that address the speed and traffic volume for which the roadway is designed, together with the maximum allowable grade, the width of the travel lanes, the width and design of the shoulders, and the thickness of pavement. The details of these specifications for the five rural classifications are listed in Table 3-2. Figure 3-9 depicts a draft assignment of the classifications to current County roadways by the consultant.

### FIGURE 3-8. EXAMPLES OF GILA COUNTY ROADWAYS



Forest Road 64, the Control Road, is unpaved for much of its length. The Control Road, if improved, would provide a bypass around the Payson area for travelers between the Verde Valley and the Rim Country. The road also provides access to summer home communities, including Tonto Village and Whispering Pines.

—Lima & Associates photo

Forest Road 512, also known as the Young-Heber Road, is unpaved for most of its length. The County-maintained roadway is programmed to be paved by 2010, providing improved access to the community of Young. The other access to Young, SR 288, is also unpaved for most of its length between the Young area and a junction with SR 188 south of Roosevelt.

—Lima & Associates photo



Ice House Canyon Road is paved and chip-sealed between its origin near the City of Globe and the National Forest boundary in the foothills of the Pinal Mountains. The road forms part of a loop route through the foothills that, if improved throughout its length, would provide an alternative route in case of a blockage of US 60. The roadway also serves as an escape route from area wildfires.

—Lima & Associates photo

**TABLE 3-2. FUNCTIONAL CLASSIFICATION OF GILA COUNTY MAINTAINED ROADWAYS**

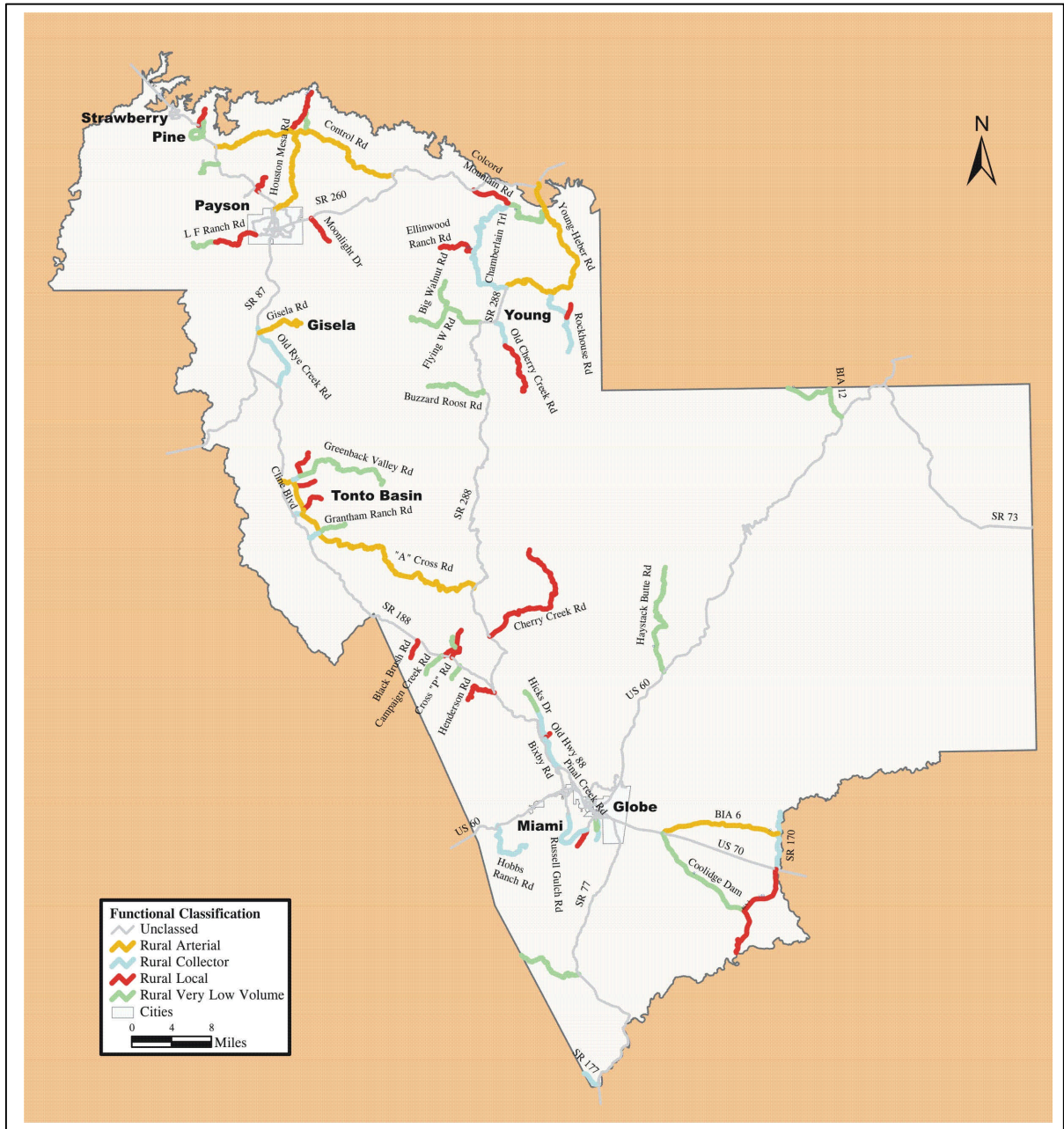
	Functional Classification				
	Rural Major Arterial Road	Rural Arterial Road	Rural Collector Road	Rural Local Road	Rural Very Low Volume Road
Description	Four-lane roadway providing regional continuity in rural areas	Two-lane roadway providing regional continuity in rural areas	Two-lane roadway providing traffic movement between arterial and local streets	Two-lane roadway providing direct access to abutting land uses and connecting with collector roads	Two-lane roadway designed to carry ADT of 175 VPD or less
Design Speed (mph)	65	65	45	35	25
Design ADT	> 15,000	3,000 – 15,000	1,000 – 5,000	175 – 1,000	< 175
Max. Longitudinal Grade (percent)	6	6	9	12% < 4,000' elev. 10% > 4,000' elev.	12% < 4,000 elev. 10% > 4,000 elev.
Min. R-O-W Req.	55' X 2	55' X 2	35' X 2	30' X 2	30' X 2
Travel lane surface	4" min. AC over 10" min. ABC	4" min. AC over 10" min. ABC	3" min. AC over 10" min. ABC	3" min. AC over 8" min. ABC	See Note 1.

ADT = average daily traffic. AC = asphaltic concrete; ABC = aggregate base course; VPD = vehicles per day.

Note 1. Bituminous penetration and double chip seal over 8" min. ABC < 4,000' elevation; 3" min. AC over 8" min. ABC > 4,000' elevation.

Source: *Gila County Roadway Design Standards Manual*, Kimley-Horn and Associates, Inc., December 2001

**FIGURE 3-9. FUNCTIONAL CLASSIFICATION ASSIGNED TO COUNTY ROADWAYS**

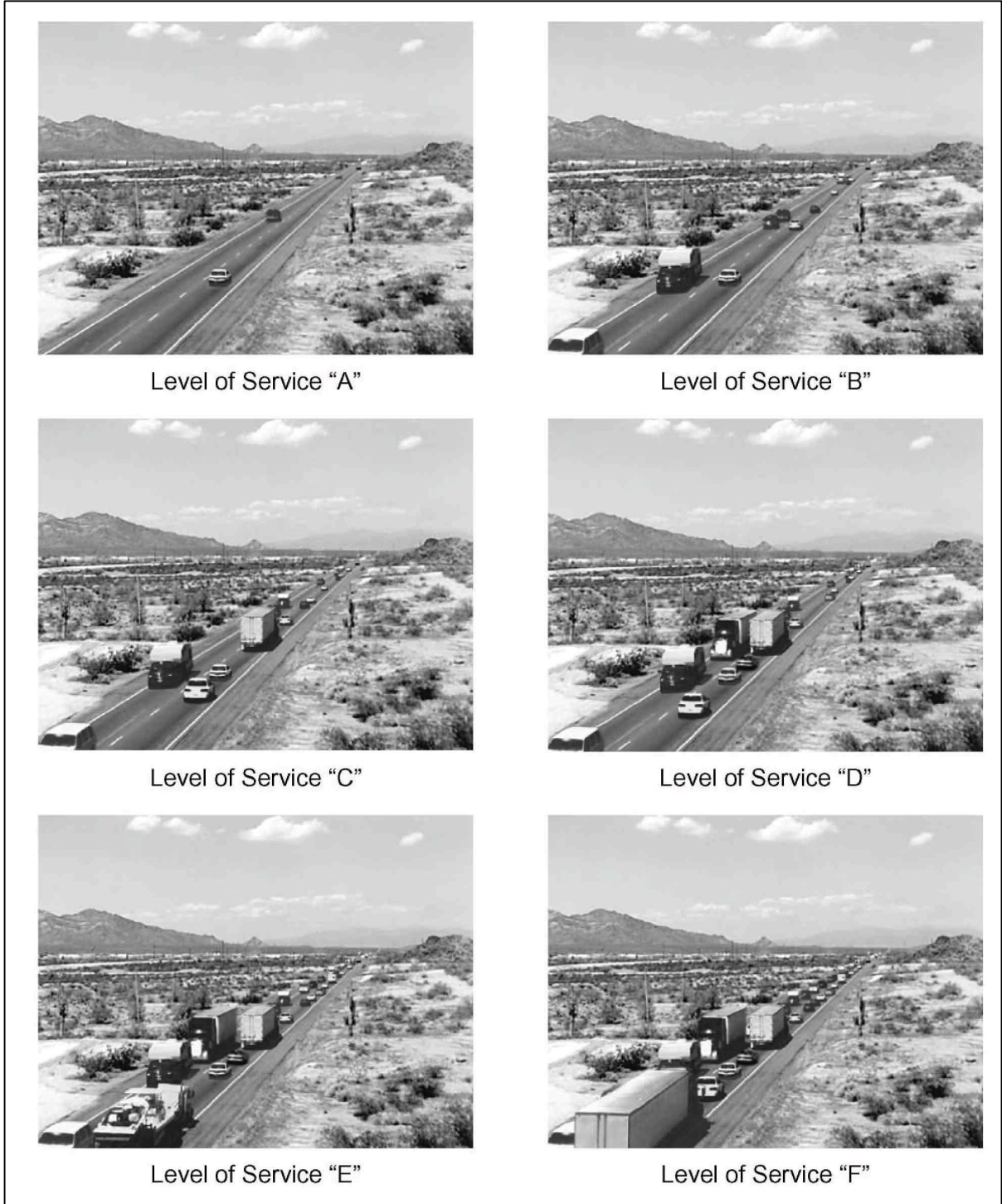


Source: Lima & Associates, Inc.

**Traffic Volumes and Current Levels of Service**

**Roadway Level of Service** is a measurement of how well a roadway operates. An LOS of “A” indicates a free flow condition and an LOS of “F” indicates forced traffic flow or breakdown. In rural areas of Gila County, LOS B is a logical goal. Figure 3-10 depicts

**FIGURE 3-10. SIMULATION OF LEVELS OF SERVICE**



Source: Jacobs Civil, Inc., *SR 89 to Wickenburg Interim Bypass Study*, August 2005



simulations of the different levels of service on an Arizona roadway. Perceived and actual roadway congestion occur due to a number of factors, including the number of lanes the roadway has; its functional classification; and whether it traverses a rural area, an urban area, or a city center. For example, a motorist expects to travel more slowly on a neighborhood street than on a rural highway. Drivers also expect more delays when driving through the central business district of an urban area than they do when driving in rural areas. Hence, the directional capacity of a roadway segment is based on the roadway’s functional classification and is expressed in vehicles per day.

Note that in Table 3-2, the “Design ADT,” or the average daily traffic for which the roadway is designed, is expressed in a range of numbers. For the purposes of determining current levels of service on County roadways in this project as well as estimating future levels of service it was necessary to assign specific per-lane capacities for each functional class of roadway. These are listed in Table 3-3.

**TABLE 3-3. DAILY ROADWAY CAPACITIES USED IN DETERMINING LEVEL OF SERVICE IN GILA COUNTY**

<b>Functional Classification</b>	<b>Area Type</b>	<b>Surface Type</b>	<b>Per Lane Capacity</b>
Principal Arterial	Urban	Paved	10,000
Minor Arterial	Urban	Paved	8,000
Collector	Urban	Paved	5,300
Principal Arterial	Rural	Paved	9,000
Minor Arterial	Rural	Paved	6,500
Major Collector	Rural	Paved	5,500
Major Collector	Rural	Unpaved	3,000
Minor Collector	Rural	Paved	4,000
Minor Collector	Rural	Unpaved	3,000

Source: Lima & Associates

Once the functional classification and the corresponding per-lane capacity for a roadway segment have been identified, the LOS on the segment can be estimated from the volume/capacity ratio (V/C), which is the average daily traffic volume divided by the daily capacity of the roadway. The relationship between LOS and the V/C ratio is provided in Table 3-4.

**TABLE 3-4. LEVELS OF SERVICE**

<b>LOS</b>	<b>Maximum V/C</b>
A	0.29
B	0.54
C	0.75
D	0.90
E	1.00
F	> 1.00

Source: Transportation Research Board,  
*Highway Capacity Manual*

Table 3-5 lists the current per-lane Annual ADT (AADT) and levels of service for major Gila County roadways. To obtain these figures, recent-year traffic counts for the roadways were factored up to 2005 levels, based on County population growth, and the functional classification of each roadway segment was used to determine the per-lane capacity. None of the locations counted indicates a near-capacity situation. Not surprisingly, the highest counts are in the Payson and Globe areas. The highest Payson area location is Moonlight Drive at SR 260, with an estimated 2005 V/C ratio of 0.36 and an LOS of “B.” All other locations tested have an LOS of “A.”

The location in the Globe area having the highest estimated 2005 per-lane AADT is Shooter Canyon Road at the Globe City Limits just south of Ice House Canyon Road, with 1,286. However, Old Oak Street actually has a higher V/C ratio due to being classified as an Urban Collector as opposed to an Urban Minor Arterial and thus having a lower per-lane capacity. Houston Mesa Road has a comparatively high per-lane AADT based on a count taken near its intersection with SR 87, as does Golden Hill Road based on a count taken at its intersection with US 60.

Current LOS issues that do exist in Gila County are limited to state highways, major arterials within local jurisdictions or— in most cases—major arterials within local jurisdictions that also function as state highways. Gila County is a tourist attraction in its own right and also has two corridors, the SR 87 route and the US 60 route, that connect the metro Phoenix area with the White Mountains. Tucson area residents use SR 77 in conjunction with US 60 to access the White Mountains in large numbers as well. Of course, these roadways are also used by Gila County residents traveling to and from the Phoenix and Tucson areas. However, these roadways are not maintained by the County and, hence, are not the primary focus of this project.

**TABLE 3-5. CURRENT AADT PER LANE AND LEVEL OF SERVICE OF GILA COUNTY ROADWAYS**

Roadway	Location	Fun Class	No. of Lanes	2005	Surface	Capacity	V/C Ratio	LOS
				AADT Per Lane		Per Lane		
Moonlight Drive	At SR 260	R Min C	2	1,421.0	Paved	4,000	0.36	B
Houston Mesa Road	At Town Limits near SR 87	R Maj C	2	1,310.0	Paved	5,500	0.24	A
Six Shooter Canyon Road	At City Limits just south of Ice House Canyon Rd.	U Min A	2	1,286.0	Paved	6,500	0.20	A
Golden Hill (at US 60)	Atlas Sheet 17	U Min A	2	1,278.0	Paved	6,500	0.20	A
Russell Rd.	South of Golden Hill Rd.	R Maj C	2	1,016.0	Paved	5,500	0.18	A
Old Oak St.	At Railroad Ave.	UC	2	944.5	Paved	4,000	0.24	A
Golden Hill (at 1st Street)	Atlas Sheet 17	UC	2	901.0	Paved	4,000	0.23	A
Roberts Rd.	At Russell Rd.	U Min A	2	838.0	Unpaved	8,000	0.10	A
Fossil Creek Road	At SR 87	R Min C	2	791.0	Paved	4,000	0.20	A
Whispering Pines Road	At SR 87	R Min C	2	738.0	Paved	4,000	0.18	A
Hardscrabble Mesa Road	At SR 87	R Maj C	2	714.5	Paved	5,500	0.13	A
Pineway St.	At Railroad Ave.		2	681.5		3,000	0.23	A
Ragus Road	At US 60	UC	2	550.5	Paved	5,300	0.10	A
Ice House Canyon Drive	At Six Shooter Rd.	R Maj C	2	548.0	Paved	5,500	0.10	A
Roberts Drive	At Russell	U Min A	2	518.0	Unpaved	8,000	0.06	A
Old SR 88	At SR 188 South End	R Min C	2	502.0	Paved	4,000	0.13	A
Bixby Rd. N. of RR tracks	1/4 mile N. of SR 188	R Min C	2	494.0	Paved	4,000	0.12	A
Bixby Road (North of SR 188)	At SR 188	R Min C	2	457.0	Paved	4,000	0.11	A
Old Oak St.	North of Wilson St.	UC	2	429.5	Paved	4,000	0.11	A
Pine Creek Canyon Rd.	At SR 87	R Maj C	2	390.5	Paved	5,500	0.07	A
Cherry Drive	Atlas Sheet 17		2	359.0		3,000	0.12	A
Baker Ranch Road	At SR 288		2	358.5		3,000	0.12	A
Mistletoe Drive	Atlas Sheet 118	R Min C	2	355.0	Unpaved	4,000	0.09	A
Bixby Road (South of Pinal Creek)	At Kelly Rd.	R Min C	2	352.5	Paved	4,000	0.09	A
New Street	At Railroad Ave.		2	337.0		3,000	0.11	A
Stagecoach Trail	At SR 188		2	342.0		3,000	0.11	A
Control Road North of SR 260	At SR 260	R Min C	2	341.0	Paved	4,000	0.09	A
Gisela Road	At SR 87	R Maj C	2	320.5	Paved	5,500	0.06	A
FDR 71 (Greenback Road)	At Old Hwy. 188	R Min C	2	281.0	Unpaved	4,000	0.07	A
Roosevelt Estates Blvd.	At SR 188	R Min C	2	264.0	Paved	4,000	0.07	A
Milky Way	At SR 260		2	257.0		3,000	0.09	A
Calle De Loma	At US 60		2	256.0		3,000	0.09	A
Tonto Creek Drive	At Gisela Rd.	R Min C	2	254.5	Paved	4,000	0.06	A

\*Gila County Street Atlas page that depicts location of count. U Min A = Urban Minor Arterial; UC = Urban Collector; R Maj C = Rural Major Collector; R Min C = Urban Minor Collector. Sources: Gila County Public Works Department, ADOT, CAAG.

**TABLE 3-5. CURRENT AADT PER LANE AND LEVEL OF SERVICE OF GILA COUNTY ROADWAYS (Continued)**

Roadway	Location	Fun Class	No. of Lanes	2005 AADT Per Lane	Surface	Capacity Per Lane	V/C Ratio	LOS
Arbor Avenue	Atlas Sheet 17		2	253.5		3,000	0.08	A
Fairgrounds Road	At US 60	R Min C	2	250.0	Paved	4,000	0.06	A
FDR 470 (Bar X Crossing)	At SR 188		2	250.0		3,000	0.08	A
Pine Canyon Drive	At SR 87		2	231.5		3,000	0.08	A
Bradshaw Drive	At SR 87	R Min C	2	211.5	Paved	4,000	0.05	A
East Verde Estates Entrance Road from SR 87	Atlas Sheet 115	R Min C	2	206.5	Paved	4,000	0.05	A
Beaver Flat Road	At Houston Mesa Rd.		2	203.0		3,000	0.07	A
Kellner Canyon Road	At Ice House Canyon Rd.	R Maj C	2	196.0	Paved	5,500	0.04	A
Rimwood Drive	At Fossil Creek Rd.	R Min C	2	195.5	Paved	4,000	0.05	A
Hicks Drive	At Old SR 88	R Min C	2	194.5	Paved	4,000	0.05	A
Store Crossing Near Old 188	Near Old Hwy. 188		2	184.0		3,000	0.06	A
Walliman Road	Atlas Sheet 14	UC	2	182.0	Paved	5,300	0.03	A
Copper Hills Road	At City Limits	R Min C	2	160.5	Paved	4,000	0.04	A
Randall Place	At SR 87		2	158.0		3,000	0.05	A
Bar X Road near SR 188	Near SR 188		2	146.5		3,000	0.05	A
Grover Canyon Rd.	At Railroad Ave.		2	137.0		3,000	0.05	A
Strawberry Drive	Atlas sheet 120		2	123.0		3,000	0.04	A
FDR 60 (A Cross)	At SR 188	R Min C	2	114.0	Unpaved	3,000	0.04	A
Winchester Rd.	At Six Shooter Canyon Rd.	UC	2	108.5	Paved	5,300	0.02	A
Colcord Road	At SR 260	R Min C	2	103.5	Unpaved	3,000	0.03	A
Dealer's Choice	At SR 260		2	94.5		3,000	0.03	A
Control Road	At SR 87	R Min C	2	85.5	Unpaved	3,000	0.03	A
Control Road East of SR 87	At SR 87	R Min C	2	66.0	Unpaved	4,000	0.02	A
A Cross Road @ SR 188 Cattle Guard	At SR 188	R Min C	2	58.5	Unpaved	4,000	0.01	A
Sleepy Hollow Drive (Beaver Valley)	At Forest Rd 199A		2	58.5		3,000	0.02	A
Ralls Drive	At SR 87	R Min C	2	58.0	Paved	4,000	0.01	A
Control Road	West side Forest Rd. 32	R Min C	2	47.5	Unpaved	3,000	0.02	A
San Carlos Drive	At US 60	R Min C	2	45.5	Paved	4,000	0.01	A
Strawberry Hollow North of Apache	Atlas Sheet 118		2	31.5		3,000	0.01	A
N. Strawberry Drive	Atlas Sheet 120		2	30.0		3,000	0.01	A
Fuller Road	At Fossil Creek Rd.	R Min C	2	29.5	Paved	4,000	0.01	A

\*Gila County Street Atlas page that depicts location of count. U Min A = Urban Minor Arterial; UC = Urban Collector; R Maj C = Rural Major Collector; R Min C = Urban Minor Collector. Sources: Gila County Public Works Department, ADOT, CAAG.

## **Hazard Elimination and Safety Issues**

This section summarizes hazard elimination and safety issues on County roadways. Examples of sites with safety issues are shown in Figure 3-11. Three specific safety areas are discussed below: crashes, bridge inspections, and highway-rail crossings.

### *Crashes*

From January 1999 through December 2003, 4,489 traffic crashes occurred in Gila County. Most of the crashes occurred on state highways, as the first segment of Table 3-6 shows. According to the Accident Location Identification Surveillance System (ALISS) Database, 61 crashes, or 13 percent of the total, took place on Tonto National Forest service roads within the County. Another 26 crashes, or 5.63 percent of the total, occurred on Bureau of Indian Affairs Roadway (BIA) 6, the roadway on the San Carlos Apache Reservation that serves as a short cut between the Tribal community of San Carlos and the Globe-Miami area. In the Payson area, 21 crashes occurred on Control Road during the time period, and 18 crashes occurred on Houston Mesa Road. In the Globe area, 13 crashes took place on both Broad Street and Russell Avenue. Just over 10 percent of the crashes took place on County roads. The remaining segments of Table 3-5 present data exclusively related to crashes on County roads.

Depending upon the speed involved, roadway geometrics at the crash location, road and weather conditions, driver reaction, and other issues, a traffic crash may involve one or more phases. For example, two cars may first collide; subsequently one or both may overturn, strike a third vehicle, or strike a fixed object. The **First Harmful Definition** is the first action that causes damage to a motor vehicle, its occupants, a pedestrian, or a fixed object.

Of the crashes reported during the time period, 181, or 39.18 percent, began as a collision of a motor vehicle with a fixed object. The second most frequent “first harmful definition” was a collision between two motor vehicles, of which 140 crashes, or 30.30 percent of the total, were recorded.

Most crashes on Gila County roads did not take place at intersections. However, 16.67 percent of the crashes were intersection related and another 6.49 percent were driveway access related. Over a third of the motorists involved in crashes were cited for “Speed Too Fast for Conditions” and another 17.75 percent were cited for “Inattention.” Over 9 percent were not cited.

In summary, 55.63 percent of the crashes were caused by either overturning or collision with a fixed object and that 72.51 percent of the crashes were of the single vehicle type. “Speed Too Fast for Conditions” was the most common violation listed.

**FIGURE 3-11. EXAMPLES OF ROADWAY SAFETY ISSUES**



Houston Mesa Road is the only paved route between Payson and the Whispering Pines area. When either of two low-water crossings such as this are flooded, motorists must make a lengthy detour over the largely-unpaved Control Road. However, bridge construction would also close the road for weeks, necessitating the same detour.

—Lima & Associates photo

Heading west, pavement on the Control Road ends at the east end of Tonto Village. Note that the narrow bridge further limits the ability of motorists heading east on Control Road to make the acute left turn into the Tonto Village area. The street sign, which implies that the roadway entering from the right in the foreground is “Tonto Village,” adds to the confusion.

—Lima & Associates photo



Shown here is the “T” intersection with Ice House Canyon Road, as seen from the Kellner Canyon Road approach. Vegetation at right, together with the steep grade of the approach, limits sight distance so that a motorist turning left onto Ice House Canyon Road must pull nearly half way out into the roadway to see whether the way is clear.

—Lima & Associates photo

**TABLE 3-6. SUMMARY OF TRAFFIC CRASHES IN GILA COUNTY**

<b>Jurisdiction Where Crash Occurred</b>	<b>No. of Crashes</b>	<b>Percentage</b>	<b>First Harmful Definition</b>	<b>No. of Crashes</b>	<b>Percentage</b>
Crashes on City Streets	551	12.27%	Overturning	76	16.45%
Crashes on County Roadways	462	10.29%	Collision with other Motor Vehicle	140	30.30%
Crashes on State Highways	3,476	77.43%	Collision with Pedestrian	3	0.65%
<b>Total</b>	<b>4,489</b>	<b>100.00%</b>	Collision with Animal or Livestock	16	3.46%
<b>Relationship of Crash to Intersection</b>	<b>No. of Crashes</b>	<b>Percentage</b>	Collision with Fixed Object	181	39.18%
Occurred at Intersection	77	16.67%	Miscellaneous	46	9.96%
Non-Intersection Related	355	76.84%	<b>Total</b>	<b>462</b>	<b>100.00%</b>
Driveway Access Related	30	6.49%	<b>Injury Severity</b>	<b>No. of Crashes</b>	<b>Percentage</b>
<b>Total</b>	<b>462</b>	<b>100.00%</b>	Non-injury Crashes	368	79.65%
<b>Predominant Violation</b>	<b>No. of Crashes</b>	<b>Percentage</b>	Injury Crashes	82	17.75%
Speed Too Fast for Conditions	166	35.93%	Fatal Crashes	12	2.60%
Inattention	82	17.75%	<b>Total</b>	<b>462</b>	<b>100.00%</b>
Unknown	76	16.45%	<b>Type of Crash</b>	<b>No. of Crashes</b>	<b>Percentage</b>
No Improper Driving	42	9.09%	Single Vehicle	335	72.51%
Failed to Yield Right-Of-Way	22	4.76%	Angle	25	5.41%
Other	22	4.76%	Backing	19	4.11%
Drove in Opposing Traffic Lane	16	3.46%	Head-on	13	2.81%
Exceeded Lawful Speed	13	2.81%	Left Turn	4	0.87%
Followed Too Closely	9	1.95%	Other	16	3.46%
Ran Stop Sign	6	1.30%	Rear-End	24	5.19%
Made Improper Turn	5	1.08%	Sideswipe (Opposite Direction)	18	3.90%
Knowingly Operated with Faulty or Missing Equipment	1	0.22%	Sideswipe (Same Direction)	6	1.30%
Other Unsafe Passing	1	0.22%	U-Turn	2	0.43%
Unsafe Lane Change	1	0.22%	<b>Total</b>	<b>462</b>	<b>100.00%</b>
<b>Total</b>	<b>462</b>	<b>100.00%</b>			

Source: Accident Location Identification Surveillance System (ALISS) Database for ADOT (Jan 1999-Dec 2003)

### ***Bridge Inspections***

Every two years, ADOT Bridge Management conducts inspections of Gila County-maintained bridges. The results of the most recent inspections, conducted in April 2004, are summarized in Table 3-7. Four of the structures, Icehouse Canyon Bridges 1 and 2, Star Valley Bridge, and Thompson Draw Bridge, were found to be in need of repairs. However, as of June 2005, none of the minor repairs recommended had been performed.

### ***Rail Highway Crossings***

A total of ten at-grade railroad crossings in the Globe-Claypool area were reviewed. This area is served by the Arizona Eastern Railway, a short line railroad that operates from Miami through Claypool and Globe to Safford and connects with the Union Pacific at Bowie, Arizona. The day-to-day operations are managed by clerical personnel from an office in Claypool and by the train crews themselves. The project team was unable to contact railroad management. The Railway and the County both informed the consultant that, due to the low volume of both train traffic and motor vehicle traffic on the cross streets, few incidents have occurred at the crossings.

All of the ten crossings examined appear to be in poor condition. Examples of the crossings are shown in Figure 3-12. The protection provided at the crossings ranges from cross bucks only to cross bucks with flashing lights and gates. In some cases, asphalt appears to have been spread between the rails in lieu of installing a crossing. In the case of Silver Hill Road, which was recently accepted as a country dirt road by the County, the crossing area looks as if dirt were simply spread between the rails. In order for the gravel ballast upon which the railroad tracks rest to function properly in holding the ties and rails in place, and in order to prolong the useful life of the crossties, it is essential for proper drainage to occur. Piling dirt on top of the ballast degrades the ballast material and inhibits drainage, accelerating crosstie failure. Such crossings must be crossed by motorists at very low speeds to avoid motor vehicle damage and can be dangerous for motorcyclists or bicyclists to cross. Options for rail-highway crossing repairs or reconstruction will be discussed in a subsequent chapter.

### ***Pavement Conditions***

Gila County's computerized pavement management system is based on "Street Saver" software developed by the Bay Area Metropolitan Transportation Commission. The software is designed to be used as a tool to help the County make informed and timely decisions about pavement conditions, to prevent problems through appropriate maintenance procedures, and to identify and repair defective pavement cost effectively.

The county is upgrading its pavement management approach, including the acquisition of additional computer software that has the potential for more integration of pavement



**TABLE 3-7. SUMMARY OF ADOT BRIDGE INSPECTIONS FOR COUNTY-MAINTAINED STRUCTURES**

<b>Struc. No.</b>	<b>Date of Inspection</b>	<b>Structure Name</b>	<b>Road Name</b>	<b>Location</b>	<b>Sufficiency Rating</b>	<b>Maintenance/Repair</b>
7862	4/27/2004	Pine Creek Bridge	Cedar Meadow Lane	0.25 mi. S of Cedar Lane	88.68	None required
7871	4/27/2004	E. Verde River Bridge	Houston Mesa Rd.	6.9 mi. N of SR 87	98.96	None required
7880	4/27/2004	Bray Creek Bridge	Geronimo Estates Rd.	0.1 mi. S. of Control Rd.	62.78	None required
7881	4/27/2004	E. Verde River Bridge	Rim Trail Estate Rd.	0.5 mi. S of Int. Rte. 199	76.00	None required
7882	4/27/2004	Thompson Draw Bridge	Johnson Blvd.	1.1 mi. N of SR 260 MP 267	21.27	See Note 1
8193	4/21/2004	Icehouse Canyon Bridge	Sixshooter Canyon Rd.	1 mi. S Jct. US 60	60.21	None required
8194	4/21/2004	Pinal Creek RCB	Sixshooter Canyon Rd.	3.6 mi. S of US 60	75.97	None required
8197	4/21/2004	Icehouse Canyon Bridge 2	Pinal View Drive	0.8 mi. S of Sixshooter Rd. Jct.	54.96	See Note 2
8198	4/21/2004	Icehouse Canyon Bridge 1	Albany Drive	0.5 mi. S of Sixshooter Rd. Jct.	89.23	See Note 3
8604	4/21/2004	Pinal Creek Bridge	Dickison Drive	1.6 mi. S of US 60	66.12	None recommended
8605	4/21/2004	Pinal Creek RCB	Bixby Road	0.5 mi. E of Old SR 88	99.92	None required
8706	4/21/2004	Pinal Creek Bridge	Hicks Rd.	0.1 mi. E of Old SR 88	91.78	None recommended
8914	4/21/2004	Icehouse Canyon Bridge 3	Alamo Way	3.8 mi. S of US 60	97.97	None required
8995	4/27/2004	Star Valley Bridge	Rainbow Drive	0.82 mi. SE of Jct. SR 260	91.24	See Note 4

Note 1. Repair/replace the loose rail posts on the S. side and E. end of North side. (Bridge No. 7882)

Note 2. Fill and seal the erosion/scour under the grouted bank protections on the N side, especially the NE (Bridge No. 8197)

Note 3. Fill the scoured area below and under the outlet apron with rocks and cap with concrete. (Bridge No. 8198)

Note 4. Fill the erosion/void under the downstream end of the outlet apron and seal with concrete. (Bridge No. 8995)

Source: Arizona Department of Transportation, *Bridge Inspection Reports for Gila County*, April 2004

**FIGURE 3-12. EXAMPLES OF AT-GRADE RAIL CROSSINGS IN GLOBE AREA**



The Old Oak Road crossing is protected by gates and flashing lights; however, the crossing is in poor condition. The pavement has deteriorated and portions of the pavement at the edges of the roadway have eroded. The rough crossing represents a potential hazard to motorists.

—Gila County Public Works photo

The Pinal Creek Road crossing is protected by cross bucks only. The pavement in the crossing area has deteriorated. The condition of the rail line itself suggests that some bad cross ties in need of replacement may exist beneath the crossing. If warranted by roadway traffic volume, this crossing would be a candidate for reconstruction.

—Gila County Public Works photo



Silver Hill Road has now been accepted as a country dirt road. The intersection of the roadway and the railroad is protected by cross bucks, but no actual crossing has been installed. Instead, dirt has simply been dumped on top of the cross ties. The result is a rough crossing for motorists and a potentially dangerous one for bicycle and motorcycle riders. If roadway traffic increases, an approved crossing should be built.

—Gila County Public Works photo

condition tracking and other roadway maintenance and improvement issues into an integrated GIS-based system. As a result of periodic field view, the County assigns each pavement segment an index number from 1 to 100. Numbers 1 through 24 are in the “Very Poor” range, 25 through 49 fall within the “Poor” range, 50 through 69 fall within the “Good” range, and any index number of 70 or higher is considered “Very Good.” Figure 3-13 provides examples of these different conditions.

Gila County currently maintains over 127 miles of paved roads. Overall, the roadways are in very good condition. The average pavement condition index assigned to the roadways is 71.57, in the “Very Good” range. Table 3-8 lists the roadway mileage indexed in the four categories.

The most recent field view of the roadway surfaces for index assignment purposes was conducted in 2002, and the more heavily traveled portions of the roadways have likely deteriorated somewhat since then, except where maintenance has been performed in the meantime.

## **MULTIMODAL INVENTORY**

Alternative transportation modes within Gila County are currently very limited and opportunities for alternative modes are limited by the disconnected County Road System. Transit service within Gila County is limited to dial-a-ride type programs. These programs provided by local communities or organizations, primarily serve the senior and disabled populations with access to medical facilities, senior programs, and other daily needs. Bicycle and pedestrian facilities are limited within the County, and located almost entirely within local communities. The Tonto National Forest provides a number of hiking trails.

This section summarizes multimodal services and facilities within the County including intercity bus service, dial-a-ride, special need services, and Casino-oriented bus and excursion rail services.

### **Intercity Bus Service**

Until March 2005, Greyhound Lines provided intercity bus service along the US 70-US-60 corridor connecting Globe and Miami with Safford and points east as well as with the Phoenix metro area. Effective March 2005, Greyhound Lines implemented a service restructuring that resulted in the elimination of bus service to approximately half of the Arizona communities that had been served, including Globe and Miami. Currently, no intercity passenger transportation serves Globe or Miami.

Two shuttle services currently operate between Phoenix Sky Harbor Airport and Payson, and between Payson and Show Low, Pinetop-Lakeside, and Springerville. White Mountain Passenger Lines provides one round trip six days per week, and Timberline VIP operates one round trip daily.

### FIGURE 3-13. EXAMPLES OF PAVEMENT CONDITIONS

#### Very Good

Pavement Structure is stable, with no cracking, no patching, and no deformation evident. Roadways in this category are usually fairly new. Riding qualities are excellent. Nothing would improve the roadway at this

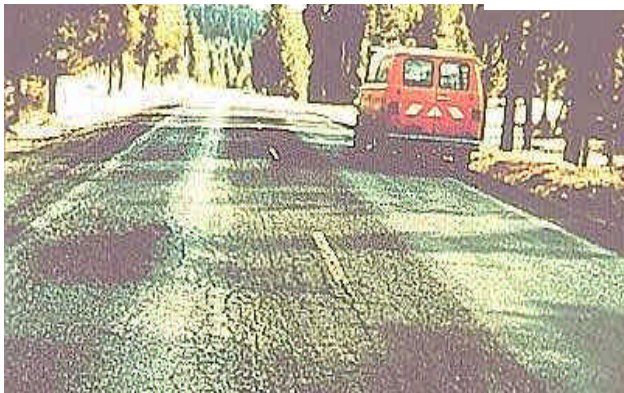


#### Good

Stable, minor cracking, generally hairline and hard to detect. Minor patching and possibly some minor deformation evident. Dry or light colored appearance. Very good riding qualities. Rutting less than 1/2".

#### Poor

Areas of instability, marked evidence of structural deficiency, large crack patterns (alligatoring), heavy and numerous patches, deformation very noticeable. Riding qualities range from acceptable to poor. Rutting greater than 3/4".



#### Very Poor

Pavement is in extremely deteriorated condition. Numerous areas of instability. Majority of section is showing structural deficiency. Riding quality is unacceptable (probably should slow down).

Source: Oregon Department of Transportation

**TABLE 3-8. PAVEMENT CONDITION OF GILA COUNTY ROADWAYS**

<b>Pavement Condition Index</b>	<b>Linear Miles of Roadway</b>	<b>Percentage of Total</b>
100	1.69	1.32%
90 and above	10.26	8.02%
70 and above	68.96	53.64%
50 and above	28.44	22.24%
25 and above	16.83	13.16%
Below 25	1.69	1.32%
<b>Total</b>	<b>127.86</b>	<b>100.00%</b>

Source: Gila County Public Works Department

**White Mountain Passenger Lines** provides passenger bus and express package delivery service from Arizona White Mountain communities to the Phoenix metro area. The firm has been operating since 1937. White Mountain Passenger Lines operates daily except Sundays and the following Holidays: Memorial Day, July 4th, Labor Day, Thanksgiving, Christmas Day and New Years Day.

The bus line’s only Gila County stop is in Payson at Payson Packaging. The one-way fare from Payson to Mesa, Phoenix, Show Low, or Snowflake is \$25. The fare from Payson to Heber is \$20; Payson to Forest Lakes, \$15; and Payson to Christopher Creek or Kohl’s Ranch, \$10. A Senior Citizen Discount of 10 percent is available for seniors age 62 and over. Children under 10 years of age pay half fare when riding with an adult. The company charges an additional \$5.00 for pick-up at Sky Harbor Airport and asks that passengers wishing to be picked up at the airport call ahead to confirm.

**Timberline VIP** makes round trips daily, including weekends and holidays, between Springerville, Arizona, and Phoenix Sky Harbor International Airport. Several scheduled stops are made along the way, including Scottsdale and Mesa. The Gila County community served is Payson.

The fare between Payson and Phoenix Sky Harbor is \$25.00. Timberline VIP uses a shuttle vehicle manufactured by Mercedes Benz that Timbeline claims is quieter, roomier, safer, and more comfortable than a typical 15-passenger van. Passenger luggage is carried in a trailer painted to match the vehicle’s distinctive paint scheme.

**Dial-a-Ride and Special Needs Services in the Globe-Miami Area**

One dial-a-ride system, the Cobre Valley Community Transit, operates within the County. In addition, the Globe and Miami Senior Centers provide transportation and related services for qualifying seniors who have enrolled at their programs. Several private senior care facilities in the area also provide transportation services for residents.

**Cobre Valley Community Transit**, also known as “Miami Dial-a-Ride,” provides demand-response transit services throughout the Globe-Miami area. The system serves the general public. The rate charged is \$1.00 for pick-ups scheduled in advance and \$2.00 for same day calls. Fees are for round trips. The vans are air conditioned and equipped with wheel chair lifts for handicapped and elderly customers.

**Globe Senior Center** has a new 8-passenger van that is wheelchair lift equipped. The Van is used to bring clients to the Center in the morning, for meals and activities, and return them home in the afternoon. During the middle of the day, the vehicle is used to transport “meals on wheels” to those who are homebound. They are able to provide meals to a maximum of 35 persons because of the topographical constraints of the area.

The Federal Transit Administration (FTA) Section 5310 program, which was used to purchase the new van, provides capital funds only, and funds for operating expenses such as fuel and drivers’ wages must be raised through other means. The Center had been using volunteer drivers; however, using volunteers now makes insurance rates prohibitively expensive. The Center believes that sufficient need for transportation to the Center and for meals on wheels services exists to justify the purchase of another vehicle and funding is likely available.

**Miami Senior Center** also offers both congregate meals at the center as well as “meals on wheels” type service for homebound seniors.

**Copper Mountain Inn** is an elder care facility that has approximately 90 residents. The Inn has a wheelchair lift-equipped Ford van that is used for medical transportation for residents. Residents are taken to local clinics or to specialists in the Phoenix area as needed for treatment. The Inn recently purchased a 2005 Cutaway bus on a Ford chassis that has two wheelchair positions and 12 seats for ambulatory passengers. The bus is used for resident activities such as shopping trips, trips to the ice cream parlor, and other tours and events.

**Heritage Health Care Center** is an elder care facility that has 96 residents. The Center has a cutaway minibus with 10 seats and four wheelchair positions that is used for both medically related trips as well as tours. Favorite tour activities include picnics, holiday lights tours in season, and shopping trips.

### **Special Needs Services in the Payson Area**

Local special needs transit services in Payson are currently provided by several carriers. Safe Ride Services provides transportation services for the disabled. The senior center operates a bus and a van that are used to bring seniors to the center for meals and activities and to deliver meals to shut-ins. The Senior Center has received funding to expand their hours of transportation service to all day from mornings only. During the twelve months ended July 31, 2004, an average of 364 persons was carried to other destinations monthly by the Senior Center, and an average of 220 persons per month were brought to the Center for lunch.

Two nursing homes in Payson, the **Payson Care Center** and **Rim Country North**, use vehicles to transport their residents. The **Payson Care Center** vehicle has 17 seats plus room for two wheelchairs. Activities for which the bus is used include shopping, scenic drives, and transporting residents to and from their homes or families in nearby communities. The bus is also used to transport patients from the Medical Center to the Care Center, or to their homes.

**Rim Country North** operates a 15-passenger van for the use of residents only. The vehicle can only handle one wheelchair bound passenger at a time. The van is used primarily for medical trips paid for by patients' insurance coverage, although occasional shopping trips are made. A third nursing home in the community, the Powell House, does not possess a vehicle for transporting residents, but relies on those provided by the Senior Center.

**Touch of Class Limousine Service** operates two Lincoln Town Cars with capacities of eight and ten persons. They charge \$10 for any trip within the Payson town limits. The firm also provides service to/from Phoenix Sky Harbor Airport for \$75.00 each way per carload. Touch of Class has expressed an interest in being a contract operator of a transit service for the Town of Payson.

### **Casino Transportation**

Native American communities operate casinos in both the Globe and Payson areas. The San Carlos Apache Tribe operates the Apache Gold Casino east of Globe and the Tonto Apache Tribe operates the Mazatzal Casino south of Payson. Both Casinos offer transportation as a means of attracting patrons to their facilities. Example of Casino-related transportation services are shown in Figure 3-14.

The **Apache Gold Casino** operates a comprehensive schedule of "Fun Bus" trips departing from various locations in the Phoenix and Tucson metro areas. In addition, group tours and charters can be arranged.

The **Mazatzal Casino** operates a bus on a demand-response basis to bring tourists from Payson area motels and residences to the Casino. Mazatzal Casino also operates group tours to bring patrons from the Phoenix area to Payson and vice versa. No scheduled service is provided.

### ***Demonstration Excursion Rail Service***

The **Arizona Eastern Railway**, in cooperation with the **Historic Globe Mainstreet Program** and the **Apache Gold Casino Resort**, is operating a demonstration excursion rail service between downtown Globe and the Apache Gold Casino in early 2006 to evaluate the feasibility of implementing permanent excursion rail service between those two points.

**FIGURE 3-14. CASINO TRANSPORTATION SERVICES**



“Spike,” the 1930 rail car used for the demonstration excursion service between Globe and the Apache Gold Casino, prepares to depart from the Globe depot. The car is reminiscent of the old electric “interurban” cars that were early 20<sup>th</sup> Century precursors to modern suburban rail services such as those operated in Philadelphia and Chicago.

—Lima & Associates photo

The San Carlos Apache Tribe constructed a solidly-built covered platform to serve as a depot. The stop is located approximately 50 yards from the entrance to the casino. The Tribe is interested in evaluating rail as a commuter service between the Tribal communities of Bylas and San Carlos and the Globe-Miami area.

—Lima & Associates photo



The Mazatzal Casino just south of the Town of Payson operates this bus to pick-up and drop off casino patrons anywhere in the Payson area free of charge. The bus operates on an “on call” basis. Trips to the metro Phoenix area are also made periodically.

—Lima & Associates photo



The equipment used for the runs is a restored self-propelled 38-passenger gas-mechanical rail car originally manufactured by the Brill Company in 1930.

The rail car, nicknamed “Spike” for the duration of the demonstration, makes four round trips on Thursdays, Fridays, Saturdays, and Sundays. Fares of \$5 one-way and \$10 round trip are charged. According to Arizona Eastern Railway, the operation is not profitable, and would likely need to receive some sort of subsidy in order to become permanent. However, the trips are becoming increasingly popular, and many of the weekend runs sell out. In addition to the casino excursions, the concept of regional passenger rail service along the US 60 – US 70 corridor between Bylas, Globe, and Miami is also being evaluated.

## FUTURE SOCIOECONOMIC AND TRANSPORTATION CONDITIONS

This section summarizes the projected socioeconomic and transportation conditions and includes an explanation of the sketch planning model process used to forecast future traffic volumes on County roadways.

### Future Socioeconomic Conditions

Table 3-9 presents future population projections for Gila County and for communities within the County. The data was obtained from the DES.

**TABLE 3-9. POPULATION PROJECTIONS  
FOR GILA COUNTY COMMUNITIES**

	2005	2010	2015	2020	2025	2030
ARIZONA	5,553,849	6,145,108	6,744,754	7,363,604	7,993,039	8,621,114
Gila County	51,644	54,603	57,613	60,757	63,757	66,378
<b>Local Communities</b>						
Central Heights-						
Midland City CDP	3,436	3,558	3,681	3,809	3,932	4,039
Claypool CDP	2,215	2,216	2,218	2,219	2,221	2,222
Globe city	7,841	8,107	8,378	8,661	8,931	9,167
Hayden town	911	912	912	913	914	914
Miami town	2,079	2,094	2,110	2,127	2,143	2,157
Payson town	15,565	17,427	19,320	21,297	23,184	24,833
Peridot CDP	1,541	1,784	2,027	2,248	2,450	2,634
San Carlos CDP	3,428	3,534	3,643	3,755	3,863	3,957
Winkelman	420	422	423	425	426	428

Source: Arizona Department of Economic Security, Population Statistics Unit

By 2030, the State of Arizona is projected to increase in population by 55.23 percent, from 5,553,849 to 8,621,114, while Gila County is projected to grow by 28.53 percent, from 51,644 to 66,378. However, the projected population growth rates vary widely among the communities within the County. The smaller mining communities such as Hayden, Miami, and Winkelman are forecast to experience minimal growth over the next 25 years. Other communities, such as Payson and Peridot, are expected to grow even faster than the state as a whole. Payson is projected to increase in size by over 59 percent, while Peridot is predicted to grow by over 70 percent.

### **Future Transportation Conditions**

The consultant team developed forecasted traffic volumes for roadways within Gila County for the 2030 horizon year. Both “Base” conditions, which assume a rate of population growth based on Arizona Department of Economic Security population projections for the County, and “Accelerated Growth” conditions, which assume a faster rate of population growth, were evaluated. The Accelerated Growth approach will be discussed in the next chapter.

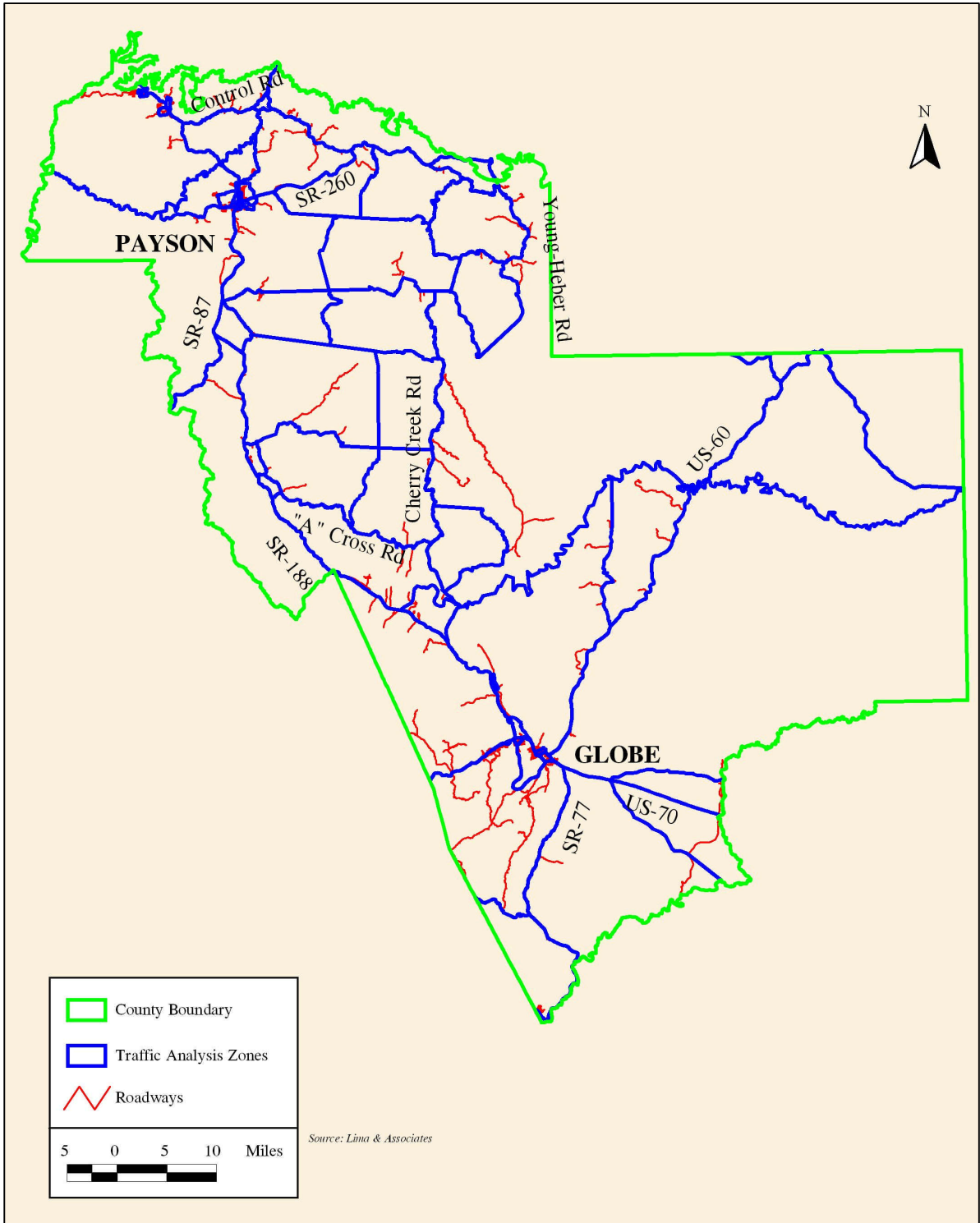
A Countywide sketch planning model was developed using TransCAD integrated GIS and travel demand model software. The product of this process is a representation of a transportation network depicting Year 2030 traffic volumes on network segments in Gila County.

For the development of the model, 72 draft Transportation Analysis Zones (TAZs) were defined to spatially represent the current land use and socioeconomic conditions for the communities including: Payson, Pine/Strawberry, Globe-Miami, and Young. Figure 3-15 shows the draft TAZ structure. Delineation of the zone boundaries was based on the alignments of principal roadways, together with topographical constraints that impact travel patterns such as watercourses, lakes and reservoirs, and mountain ranges. The extents of current urban areas and rural communities were also considered.

Land use data obtained from the County and Census 2000 data obtained from the US Census Bureau were used in the development of the 2030 projected socioeconomic data. In addition, socioeconomic projections from the most recent Payson and Globe-Miami area transportation studies were used. All data was apportioned to the respective TAZs.

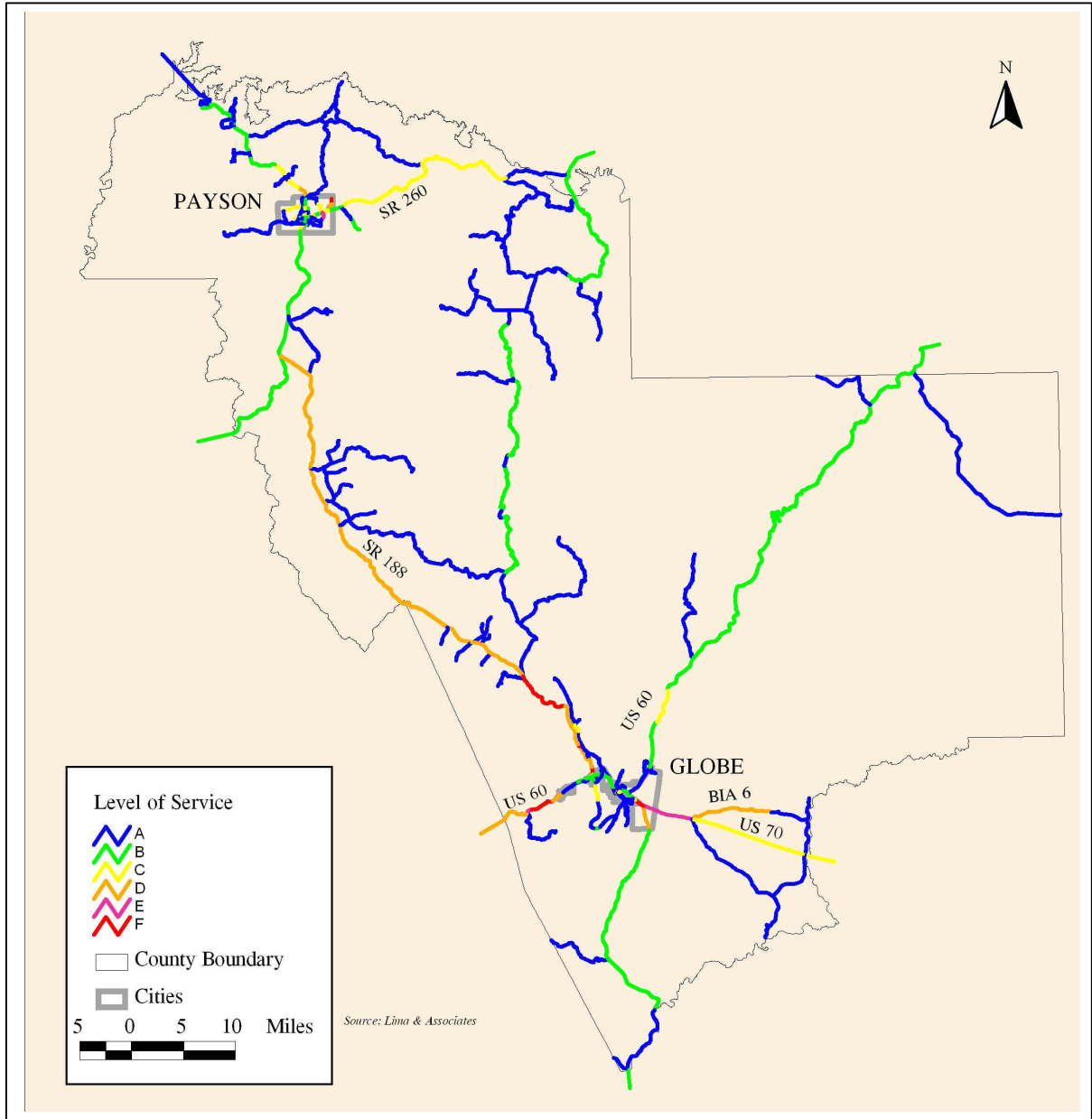
The underlying GIS database includes US and State Highways and all the roads maintained by the County. However, the planning sketch model was developed based primarily on the state highways and selected major county and forest roads. Given the TAZ system and highway network, vehicle trips were estimated and assigned to the network. Trips generated by “External” origins or destinations—places outside of Gila County such as metropolitan Phoenix, Tucson, the White Mountains, Northern Arizona, and the upper Gila Valley—were important elements in the development of the model.

**FIGURE 3-15. TRAFFIC ANALYSIS ZONES**

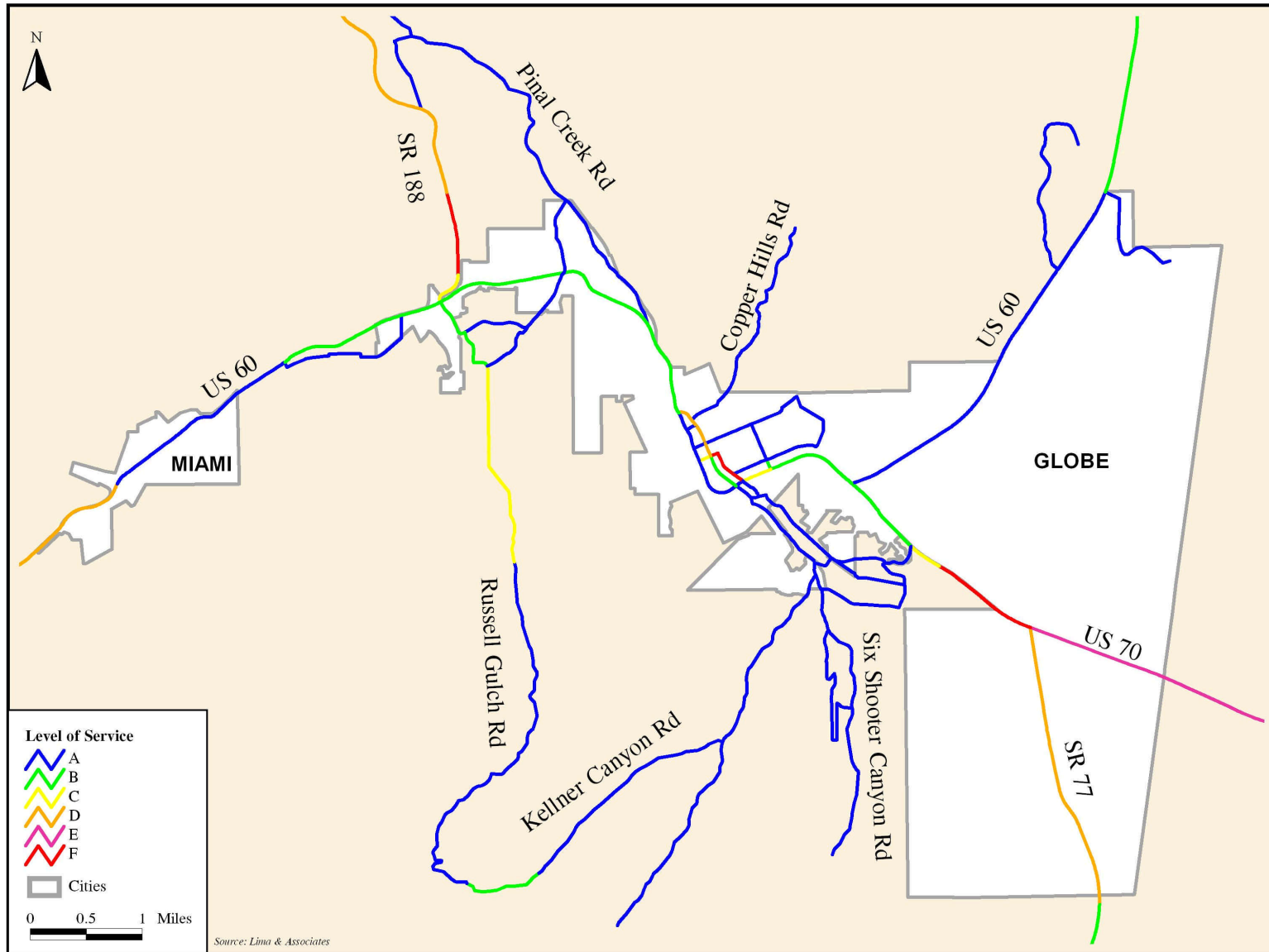


Figures 3-16-A, 3-16-B, and 3-16-C present the forecasted levels of service derived from the sketch-planning model for Gila County and for the Globe and Payson areas. The figures show that essentially all County roadways will remain at LOS “A” in the 2030 horizon year, due in large part to the moderate growth rates forecasted for most non-urban areas of the County. These forecasts suggest that issues such as safety, mobility, and air quality should be given precedence over capacity when improvements to the County roadways are planned or programmed.

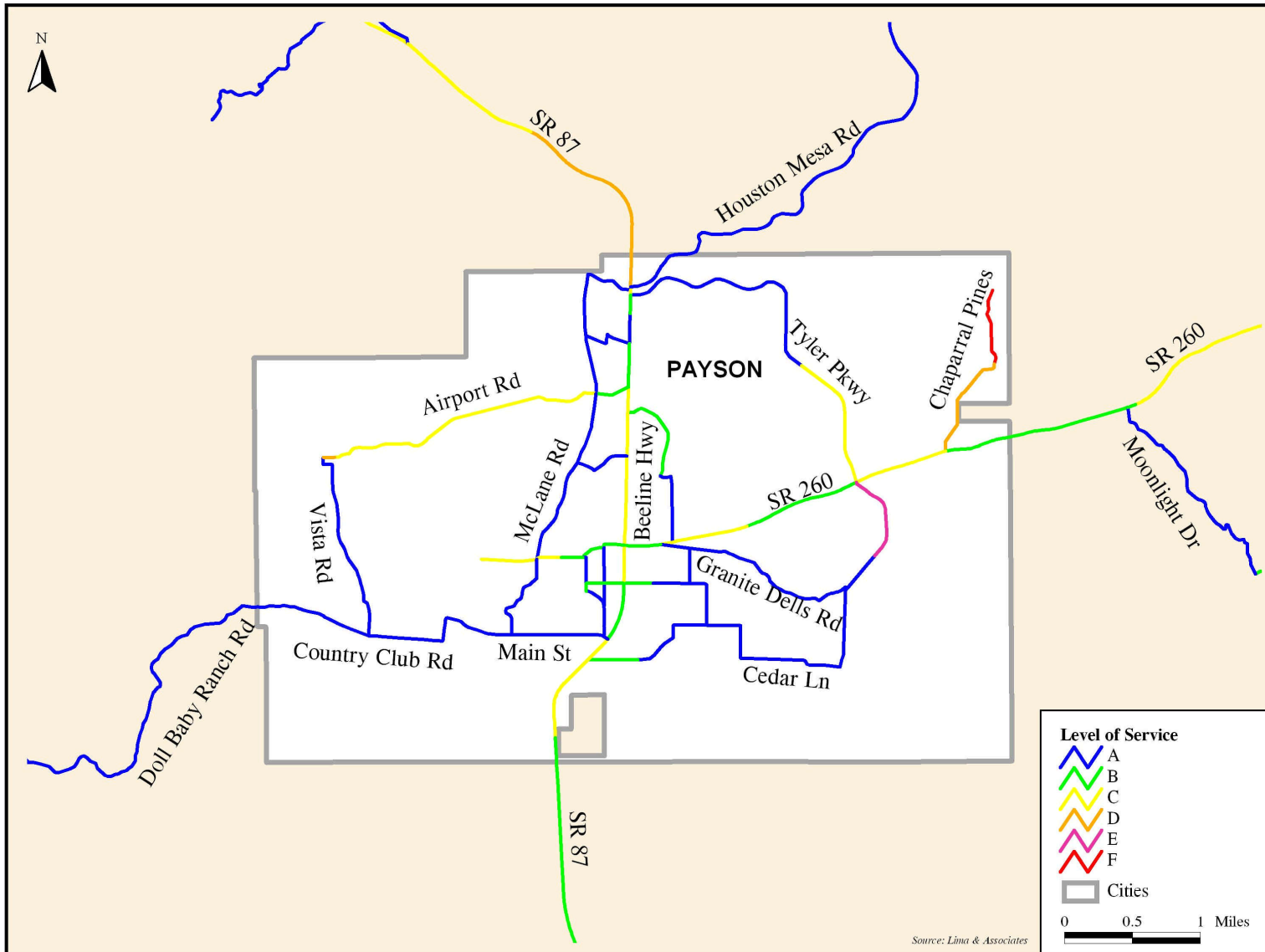
**FIGURE 3-16-A. LEVEL OF SERVICE – GILA COUNTY ROADWAYS - 2030**



**FIGURE 3-16-B. LEVEL OF SERVICE – GILA COUNTY ROADWAYS – 2030 – GLOBE DETAIL**



**FIGURE 3-16-C. LEVEL OF SERVICE - GILA COUNTY ROADWAYS - 2030 - PAYSON DETAIL**



While County roads are expected to remain at LOS “A,” levels of service over significant portions of the County’s US and State Highways are projected to degrade as population and vehicle traffic increase.

In particular, the levels of service on US 60 between Gila County and the Phoenix area are forecasted to deteriorate, as are portions of US 70 between the Globe-Miami area and the Upper Gila Valley. Most significantly, SR 188 between the Globe-Miami area and its junction with SR 87 north of Punkin Center is projected to be at LOS “D” for most of its length, with portions between Globe and Roosevelt at LOS “F.” Even though the connecting County roadways are projected to remain at LOS “A,” the degraded LOS on the State Route is likely to impact these roads—particularly at their junctions with SR 188.

Traffic signals, roundabouts, or other strategies may be needed to ensure continued access to SR 188 from these adjoining roadways, and, of course, any widening of the State Route that is programmed in an effort to maintain mobility will have a residual effect on all roadways in the area.

### **Unpaved Roadways and Air Quality**

The maintenance of acceptable air quality is particularly important in Gila County because of the natural scenic beauty that exists throughout the County and the consequent importance of tourism to the economy of the area. Clean air is important for the health and quality of life of County residents as well.

An important means of preserving air quality is the mitigation of fugitive dust generation. Fugitive dust is dust that does not occur naturally, but is generated directly by human activity—such as high traffic volumes on unpaved roadways. Fugitive dust can also be created by failing to restore protective ground cover to disturbed areas such as slag piles or plowed fields, but these activities are not transportation related and are outside the scope of this study.

In Maricopa County, fugitive dust has become a critical issue because the County has failed to attain the National Ambient Air Quality Standards (NAAQS) for PM-10, or particulate matter of 10 microns or less in diameter, which is a significant component of fugitive dust. Hence, Maricopa County has implemented a number of measures aimed at reducing the levels of PM-10, including a program to pave all of the roads in the County with significant traffic volumes. The roadways are prioritized for paving based on the daily traffic volumes.

The Payson area was once in non-attainment of the PM-10 standards, as well, and is currently considered a “PM-10 maintenance area” by the Environmental Protection Agency and the Arizona Department of Environmental Quality. Air quality is monitored closely in Payson to ensure that the levels of PM-10 remain within acceptable levels.

As population and traffic volumes in Gila County increase, portions of unpaved roadways are forecasted to exceed the 150-vehicles-per-day threshold for paving currently employed by the Maricopa County PM<sub>10</sub> Roads Program. Unpaved roadways projected to carry more than 150 vehicles per day by 2030 include large sections of SR 288, the Young-Heber Road, and the Control Road.

## **FIRST ROUND OF PUBLIC INVOLVEMENT**

The first round of public involvement included a series of two Stakeholders Workshops, and a series of two Public Open Houses. Stakeholders Workshops were scheduled for both Globe and Payson on Wednesday, May 18, 2005. Prior to that date, flyers were mailed to a list of County stakeholders that was provided by the County. Seven persons attended the Globe Workshop—in addition to three members of the consultant team—and two persons attended the Payson Workshop. The top three issues identified at the Globe Workshop were:

1. Need for regional planning to ensure future needs are met
2. Expand public transit service
3. Insufficient funding despite existence of ½ cent sales tax

Due to the small number of persons participating, the Payson Workshop was less formal. Key issues discussed included the need for bridges to replace low-water crossings on Houston Mesa Road, the need to pave Control Road between SR 87 and SR 260, and the need for a bridge across Tonto Creek in the Tonto Basin area.

In addition to consultant team members, 17 persons attended the Globe Public Open House conducted on June 1, 2005, and 12 persons attended the Payson Public Open House held the following day. Participants in the first round of public involvement are listed in Table 3-10.

The top three issues identified at the Globe Open House were:

- Expand public transit
- Need for regional planning to ensure future needs are met
- Access roads improved to campgrounds in the Pinal Mountains

The top three issues identified at the Payson Open House were:

- Need for coordination among ADOT, County, Tribes, and local jurisdictions
- Need for all-weather emergency access
- Need for regional planning to ensure future needs are met

A Report summarizing the findings of the First Round of Public Involvement was sent to the County Project Manager and the TAC for review and comment.



**TABLE 3-10. PARTICIPANTS IN THE FIRST ROUND OF PUBLIC INVOLVEMENT**

<b>Participant</b>	<b>Affiliation</b>	<b>Globe Stakeholders workshop</b>	<b>Globe Open House</b>	<b>Payson Open House</b>
G.L. Bellesteris			•	
Fred Carpenter	Town of Payson			•
Tina Chaffin	Gila County		•	
Edd Dawson			•	
Shirley Dawson	Gila County		•	
Martin deMasi	Payson			•
Gordon Ellis				•
Charlotte Farr				•
Jerry Farr				•
Scott Flake	Payson EDC			•
Mayor Stanley Gibson	City of Globe	•	•	
Sherry Grice	Gila County	•		
Renee Hartman	AZDES	•		
Rita Hussard	Copper Country News		•	
Mitchell Hutch			•	
Bill Leister	CAAG	•		
Mayor Paul Licano	Town of Miami		•	
Tommie Martin	Gila County			•
Robert Mawson	Town of Miami	•		
Mary Anne Moreno	Chamber/EDC	•	•	
Mikis Nyt	Chamber/EDC		•	
Cliff Potts	Town of Payson			•
Richard Powers	ADOT		•	
Ingo Radicke	Gila County consultant		•	
Dick Reese	Town of Payson			•
Larry Richardson			•	
Shirley Rittenbach	Arizona Silver Belt		•	
Steve Sanders	Gila County	•	•	•
Sue Sanders				•
Dennis Stevenson	AZDES		•	
John R. Whesen				•
Rob Bohannan*	Lima & Associates	•	•	•
Ralph Bossert*	Tetra Tech		•	•
Peggy Fiandaca*	PSA	•	•	•
Forrest Switzer*	Tetra Tech	•		

\*Members of consultant team

## 4. MULTIMODAL TRANSPORTATION PLAN

This chapter presents a draft Multimodal Transportation Plan for Gila County based upon the recommendations of previous plans and studies, consultant research and field views, input from the public involvement process, and additional input from County officials. First, the process of evaluating transportation system deficiencies and needs is summarized. Next, candidate short-term (Phase I) and long-term (Phase II) projects are presented. A summary of the second round of public involvement is presented, followed by an estimation of transit demand and a discussion of access management techniques.

### EVALUATION OF DEFICIENCIES AND NEEDS

During the conduct of the Small Area Transportation Study, deficiencies and needs were evaluated in the following seven general areas:

- Paving and Geometry Improvements
- Roadway Reconstruction
- Hazard Elimination and Safety
- Multimodal Studies
- Bridge Construction and Design
- Intersection Improvements
- Highway Rail Crossings

The consultant team made the following observations regarding existing deficiencies and needs in the County transportation system:

- With the exception of urban areas and State Highway segments, the assessment of which was outside the scope of this study, no significant traffic congestion or level of service issues exist on roadways within the County in 2006.
- The mobility of County residents is dependent upon the maintenance and improvement of the State Highways that traverse the County and function as “spines” that tie the County roadway network together.
- In many areas of the County, alternative routes are inconvenient or non-existent. This causes problems when the main route is closed due to a traffic crash or natural causes such as high water, floods, accumulated snow, or wildfires. Specific areas of concern are:
  - ✓ Alternative ingress or egress to summer homes and year-round residences in the areas south of Globe and north of Payson in case of wildfires
  - ✓ Low water crossings on Houston Mesa Road and in the East Verde Estates area
  - ✓ The need for a bridge across Tonto Creek above Roosevelt Lake
- The County Public Works Department is well-informed regarding the deficiencies and needs of the roadway system and programs maintenance, improvement, or reconstruction projects as funding permits.
- In accordance with the “Environmental Justice” provisions of Title VI, efforts are made to ensure that potential disruption of disadvantaged populations is avoided

when new construction, such as the proposed Pinal Creek Parkway, is contemplated in developed areas.

- All of the subgroups living within the County will benefit from the roadway projects already programmed by the County, as well as additional projects proposed in this Report.
- Continued levels of mobility for County residents and visitors are almost entirely dependent on private automobile travel, the maintenance of good roads, and the availability of affordable gasoline.
- Intersections on County roadways exist, as previously depicted in Figure 3-10, where motorists must make difficult turning movements or where sight-distances are limited.
- Highway-rail crossings in the Globe-Miami area appear to be in need of reconstruction. However, due to the low volume of both train traffic and motor vehicle traffic on the cross streets, few incidents have occurred at the crossings.
- The County is in the process of implementing a computerized pavement management system and a County-wide roadway geographic information system. Both of these will facilitate the efficient prioritization and management of roadway pavement and reconstruction projects.
- Intercity transit services provided by Greyhound Lines along the US 60/US 70 corridor through Globe Miami and by White Mountain Passenger Lines along the US 60 corridor have ceased. No alternative transportation is provided.
- No public transportation exists between Payson, the County's second largest urban area, and Globe, the County seat.
- Unmet needs for additional local transit service may exist in the Globe-Miami area. Unmet transit needs also exist in the Payson area.
- The potential may exist for excursion rail service in the Globe-Miami area. This will be examined in another report.

### **The Potential for Accelerated Population Growth in Gila County**

A key factor affecting the future transportation related deficiencies in the County is the real possibility that population growth will occur at a much faster rate than anticipated. In the "Future Socioeconomic and Transportation Conditions" section of Chapter 3, the development and use of the Sketch Planning Model was explained and a 2030 Base Scenario based on DES projections was presented. Under this scenario, Gila County would grow from a 2000 population of 51,335 living in 20,140 dwelling units to a 2030 population of 70,284 living in 27,777 dwelling units—an increase in population of approximately 37 percent.

While the DES projections are based on historical trends, they may be unrealistically low given the demographic changes forecasted to take place elsewhere in Arizona. Within the

same time frame, neighboring Pinal County is projected to grow from a 2000 population of 179,727 to over 1.9 million persons by 2030. The metropolitan Phoenix area is also expected to add several million inhabitants by 2030. From a 2006 perspective, opportunities exist in Pinal and Maricopa Counties for additional freeways and/or the potential implementation of high-capacity transit services that do not appear feasible in Gila County given the mountainous topography that is present between Gila County urban areas and the Phoenix area. By 2030, however, alternative sources of power for motor vehicles may exist that will make commuting from Gila County more attractive, particularly if US 60 is completed as a four-lane roadway connecting metropolitan Phoenix with the Globe-Miami area.

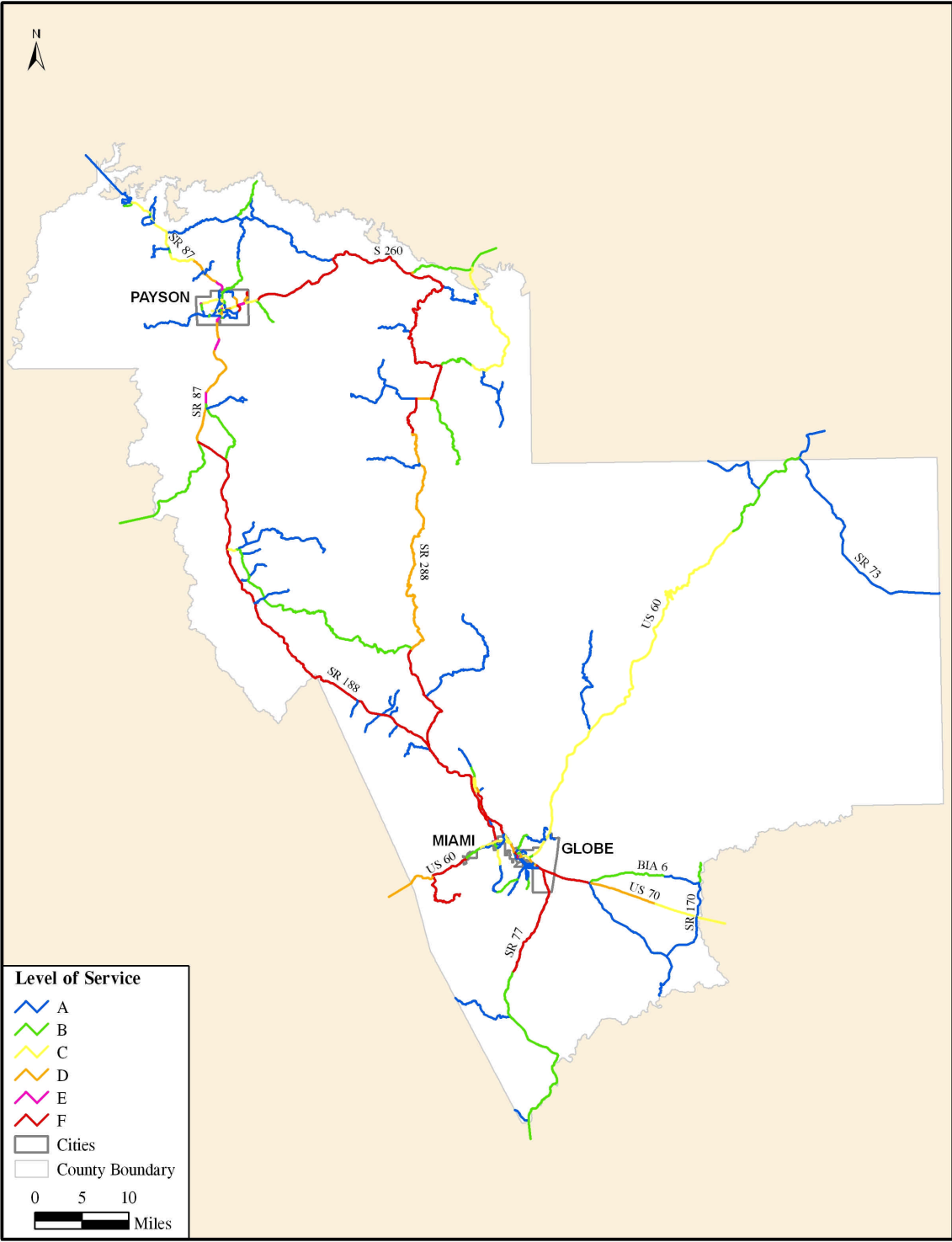
One constraint in Gila County that may retard population growth compared with that of neighboring counties is the relative lack of developable acreage. Much of the undeveloped land in the County is owned by the National Forest, Native American Tribes, and other agencies and is unlikely to be developed. However, significant blocks of privately-owned acreage do exist, and an “Accelerated Growth” scenario was developed to examine the impact of development in these areas as follows:

- Locations of available deeded land parcels in the County were determined
- The proximity of these parcels to existing or planned communities was evaluated
- For every two acres of deeded land near existing or planned communities, a minimum of one dwelling unit was forecasted
- In deeded land parcels located near existing or planned communities, a minimum of one dwelling unit for every two acres was forecasted
- In deeded land parcels located in more remote areas of the County, a minimum of one dwelling unit for every 10 acres of deeded land was forecasted
- An occupancy rate of approximately 2.5 persons to each dwelling unit was assumed

Application of this Accelerated Growth Scenario to the traffic forecasting process results in a projected population of 95,880 living in 38,282 dwelling units. In the future, large undeveloped privately owned parcels (e.g. ranches) will be offset by densities significantly higher than one dwelling unit for every two acres near communities. Figures 4-1-A, 4-1-B, and 4-1-C depict the 2030 levels of service forecasted for the segments of the roadway network in the County as a result of modeling this scenario. Note that abrupt changes in level of service reflect changes in roadway functional classification as well as changes in forecasted traffic volumes.

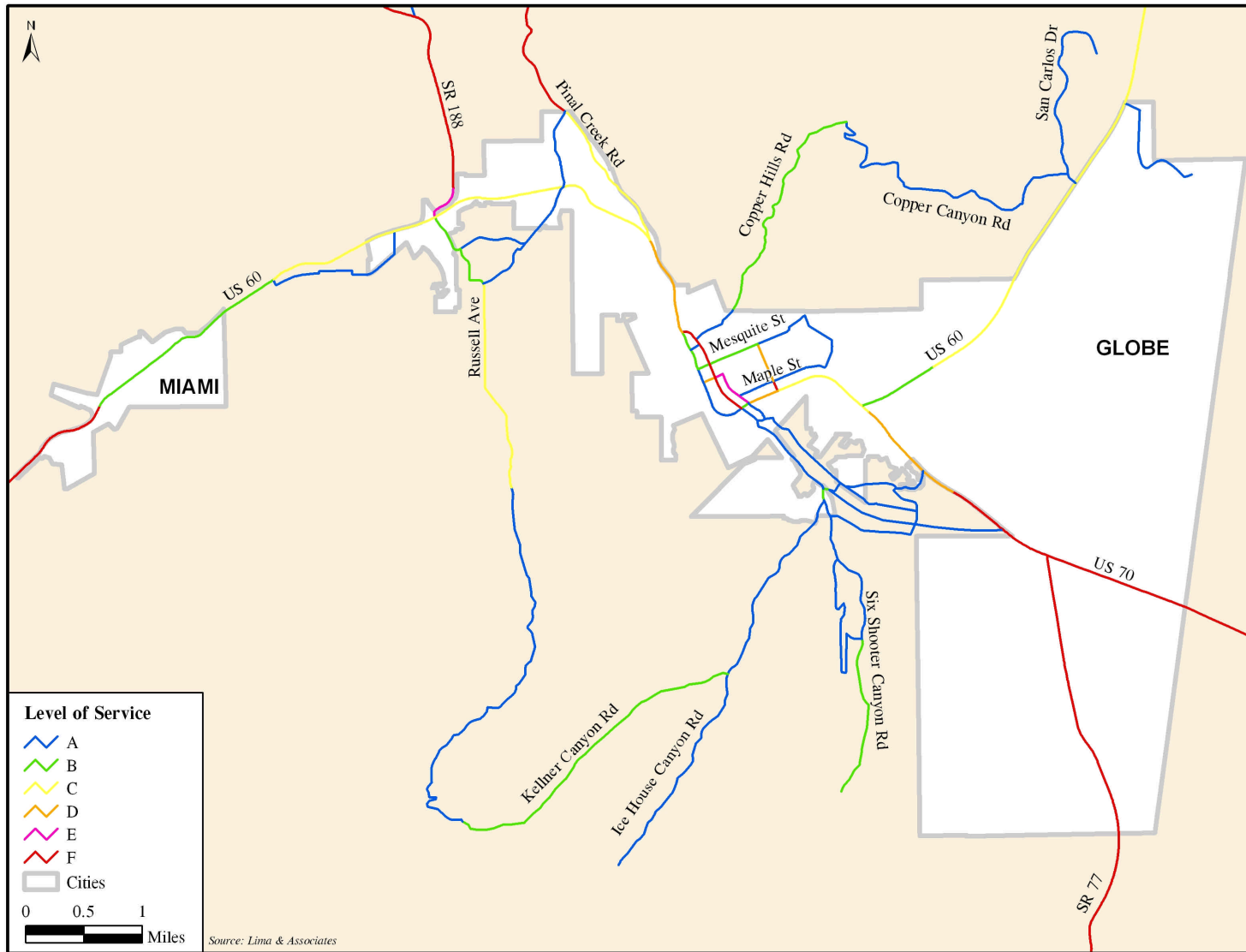
The results of the traffic forecasting using both the 2030 Base Scenario and the 2030 Accelerated Growth Scenario were presented to County stakeholders and the general public during the second round of public involvement in March 2006.

**FIGURE 4-1-A. LEVEL OF SERVICE – GILA COUNTY ROADWAYS – 2030 ACCELERATED GROWTH SCENARIO**

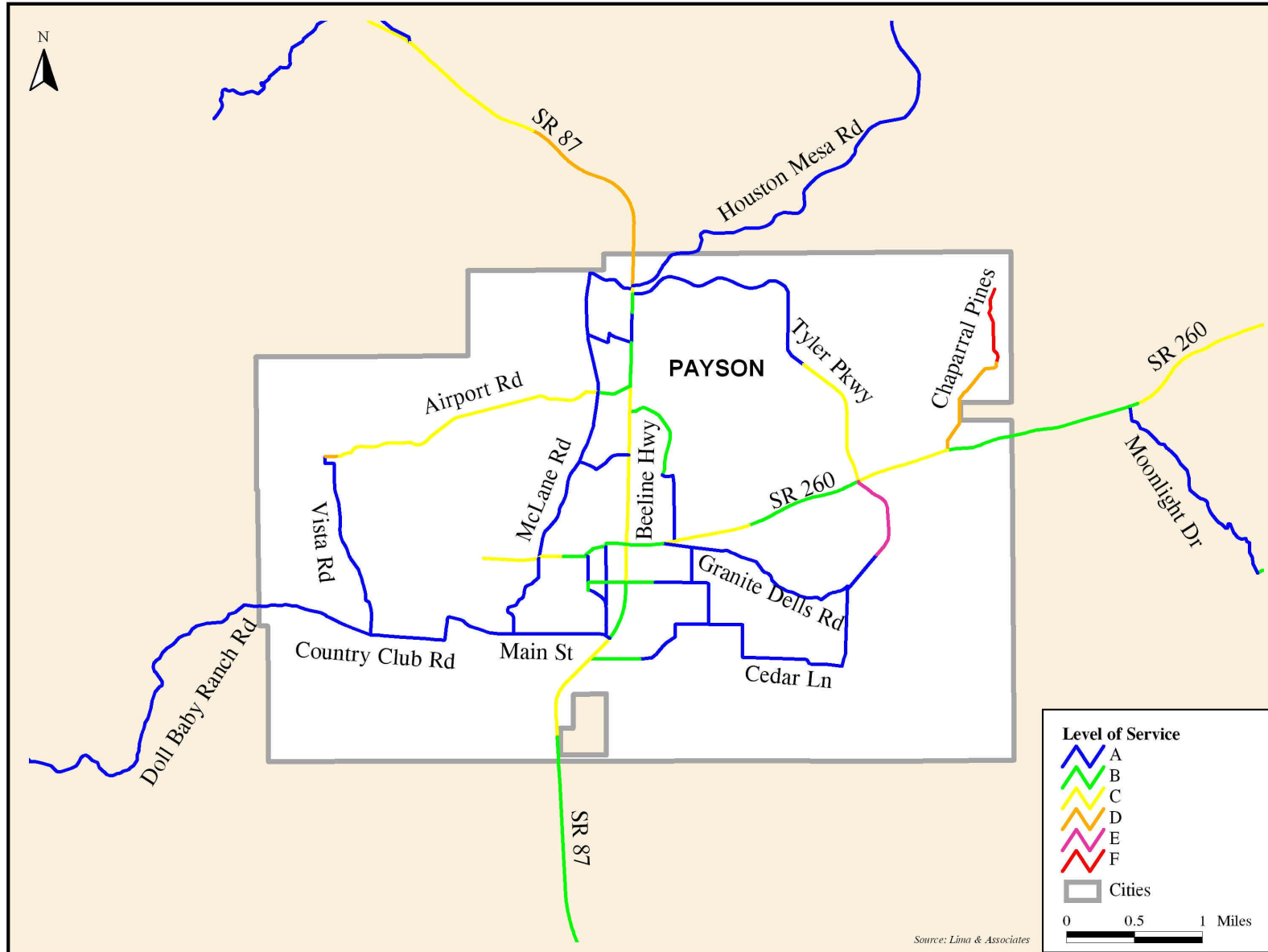


Source: Lima & Associates

**FIGURE 4-1-B. LEVEL OF SERVICE – GILA COUNTY ROADWAYS –  
2030 ACCELERATED GROWTH SCENARIO – GLOBE DETAIL**



**FIGURE 4-1-C. LEVEL OF SERVICE – GILA COUNTY ROADWAYS –  
2030 ACCELERATED GROWTH SCENARIO – PAYSON DETAIL**



## **SECOND ROUND OF PUBLIC INVOLVEMENT**

The second round of public involvement, like the first, included a series of two Stakeholder Workshops and a series of two Public Open Houses.

At these events, attendees were given a presentation explaining roadway functional classification and the application of the sketch modeling process using both the Base and Accelerated Growth scenarios. The consultant team presented a draft map of candidate Phase I and Phase II projects and solicited comments and suggestions.

Stakeholder Workshops were scheduled for both Globe and Payson on Wednesday, February 15, 2006. Prior to that date, flyers were mailed to a list of County stakeholders that was provided by the County. Seven persons attended the Globe Workshop and five persons attended the Star Valley Workshop.

Key concerns raised at the Globe Workshop were:

- Need for improving access to the community of Young
- Need for providing alternative or emergency roadways in the Globe-Miami area
- Sources of funding for proposed projects

Key concerns raised at the Star Valley Workshop were:

- Need to add future Payson area projects, such as a Loop Road and transit service to the Plan
- Need to improve access to Young

In addition to consultant team members, 21 persons attended the Globe Public Open House conducted on February 22, 2006, and 9 persons attended the Payson Public Open House held the following day. Table 4-1 lists the participants in the Second Round of Public Involvement and indicates the event or events attended by each participant.

The key concerns raised at the Globe Open House were the same as those that had been brought up at the Globe Stakeholder Workshop the week before, with additional issues being raised regarding the non-motorized trails in the Globe Miami area.

The issues raised at the Star Valley Open House related to the improvement of mobility and roadway connectivity in the Payson area, including improved access to the hospital and safety improvements to area intersections.

Input from the public involvement process was used in refining the maps of short-term (Phase I) and long-term (Phase II) transportation projects presented in the following section.

A Report summarizing the findings of the Second Round of Public Involvement was sent to the County Project Manager and the TAC for review and comment.



**TABLE 4-1. PARTICIPANTS IN THE SECOND ROUND OF PUBLIC INVOLVEMENT**

<b>Participant</b>	<b>Affiliation</b>	<b>Globe Stakeholders workshop</b>	<b>Star Valley Stakeholders workshop</b>	<b>Globe Open House</b>	<b>Star Valley Open House</b>
Ed Armenta	Forest Service				•
Don Ascoli	Verde Glen				•
Morris Ashki	Phelps Dodge	•			
Jim Atterby				•	
John Beene	Gila County	•			
Fred Carpenter	Town of Payson		•		•
Liza Carrillo				•	
Margaret Celix				•	
Kip Culver	Globe Mainstreet			•	
Gordon Ellis	Senior Center				•
Barbara Ganz	PREDC				•
LaRon Garrett	Town of Payson		•		•
Mayor Stanley Gibson	City of Globe	•		•	
Liz Gipple				•	
Tom Goodman				•	
Robert Henley	Town of Payson		•		
Roger Hopt	ADOT		•		
Bill Leister	CAAG			•	
Mayor Paul Licano	Town of Miami			•	
Mitch Malkovich				•	
Robert Mawson	Town of Miami			•	
Clay Mills				•	
Mary Anne Moreno	Chamber/EDC			•	
Brandon Parker				•	
Richard Powers	ADOT	•		•	
Ingo Radicke	Gila County consultant	•		•	
Larry Richardson				•	
Steve Sanders	Gila County	•	•	•	•
Diana Sexton					•
Irene Sommers				•	
Phon D. Sutton					•
Manoj Vyas	City of Globe	•			
Cindy Walters				•	
Irv Wilson				•	
Rob Bohannan*	Lima & Associates	•	•	•	•
Ralph Bossert*	Tetra Tech		•		•
Peggy Fiandaca*	PSA	•	•	•	•
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\*Members of consultant team

## **PRIORITIZATION OF TRANSPORTATION PROJECTS**

As soon as the study was initiated, the Consultant Team, the County Project Manager, and the Technical Advisory Committee began to identify candidate projects for inclusion in the short-term and long-term transportation programs. As has been pointed out, State Routes and US Highways form spines in the County's roadway network and perform an essential function of tying the County-maintained roadways together. Hence, it was necessary to evaluate the current and future performance of these roadways during the course of the project. However, the Project Team was given a clear directive to consider improvements to County roadways *only*, together with multimodal projects. In the short term, ADOT plans to study the State Highways within Gila County in the context of Regional Transportation Profiles that will identify deficiencies and recommend improvements.

### **Candidate Transportation Projects**

Candidate projects were identified by considering the need and the feasibility of implementation. The following criteria were evaluated:

#### *Need*

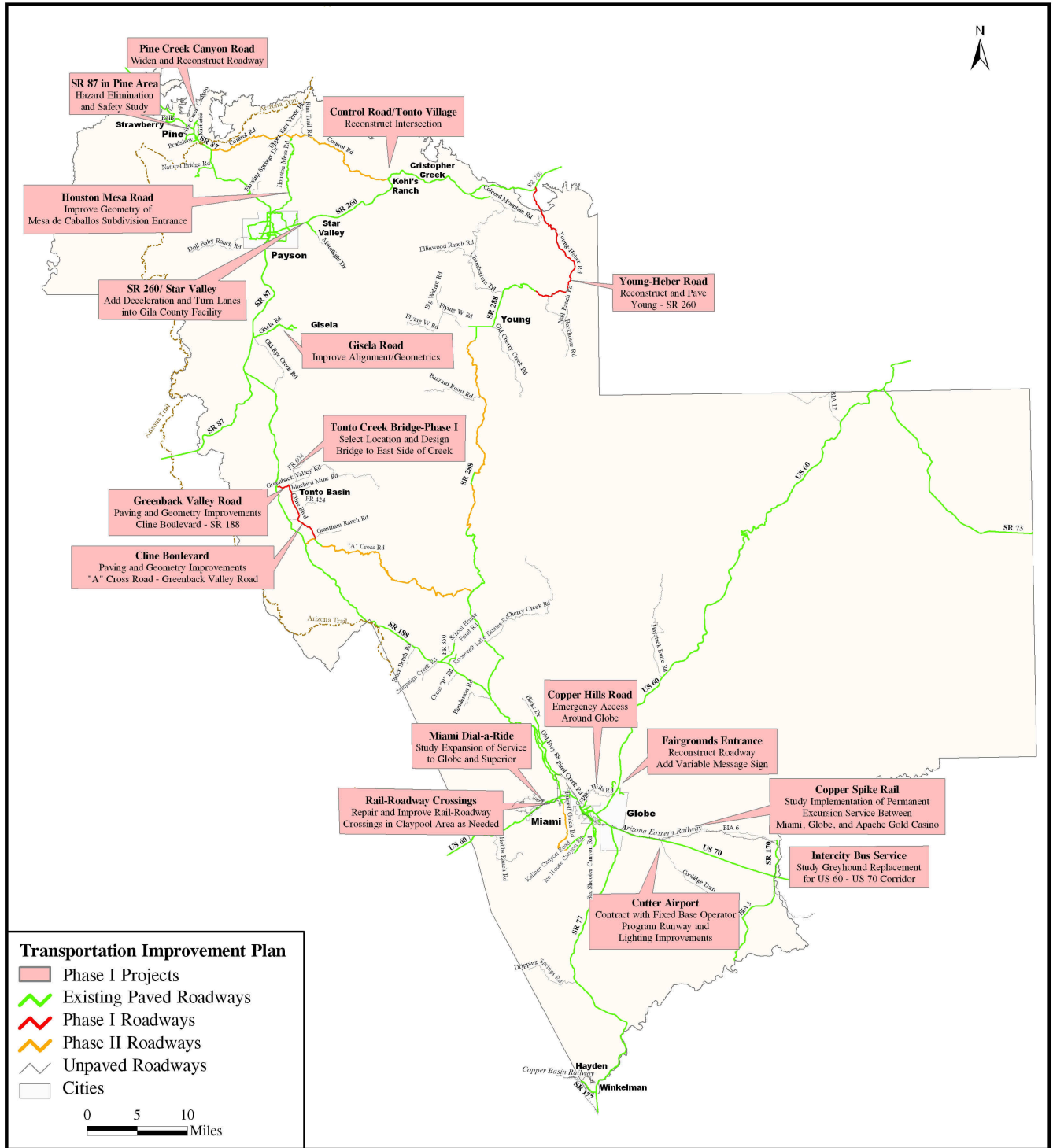
- Potential to address travel demand
- Potential to serve residents
- Potential to provide connectivity and/or improve mobility between places and major roads

#### *Feasibility*

- Environmental and physical impacts
- Topographical constraints
- Constructability

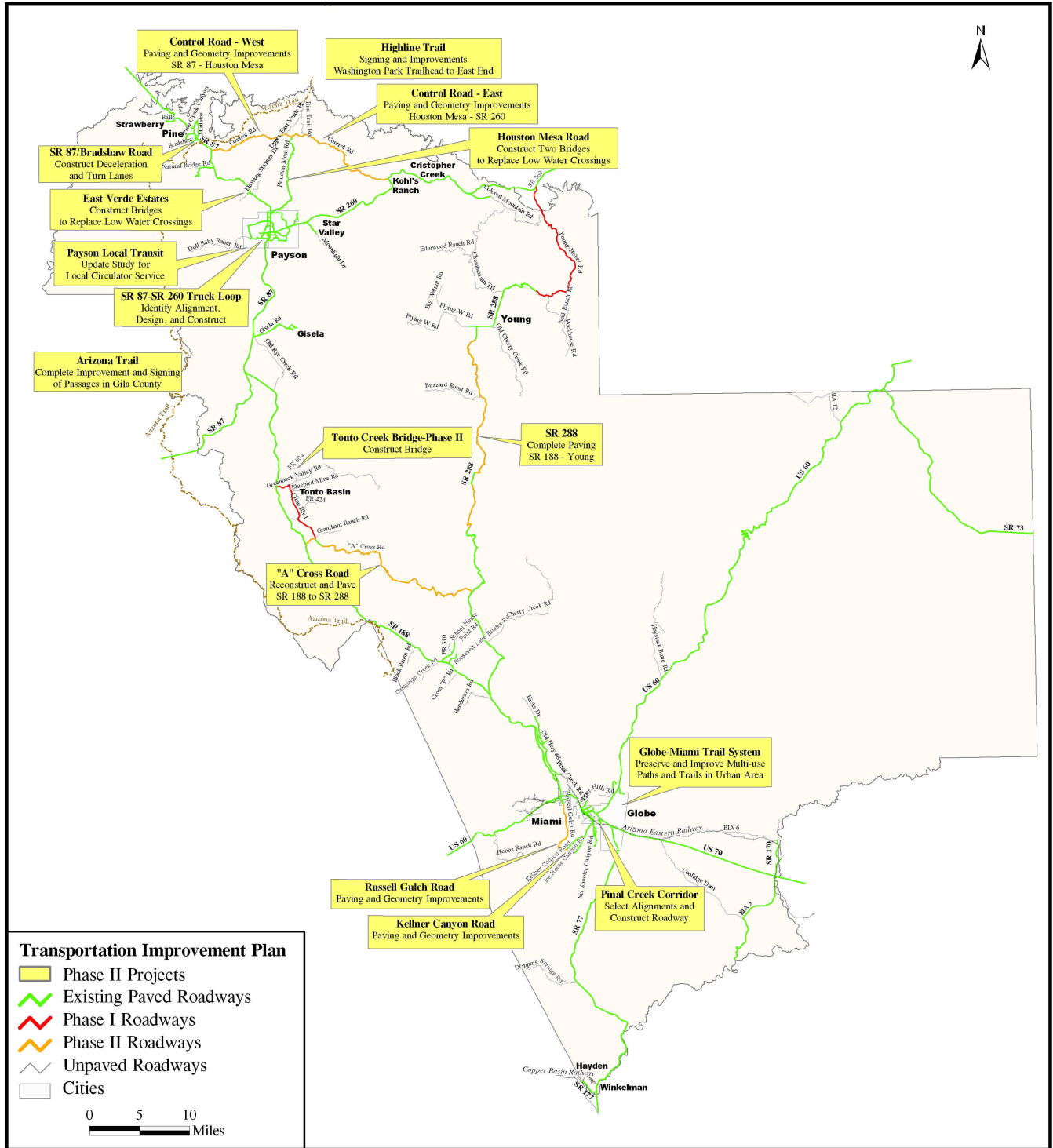
Concurrent with the first round of public involvement, the consultant conducted a field view of key candidate project sites identified by the County Project Manager. These include the area south of Globe and Miami, the Tonto Basin and Young areas, and portions of Control and Houston Mesa Roads. A draft transportation plan was developed, and candidate short-term and long-term projects were plotted and presented to the County Project Manager and the TAC. The draft plan was revised based on TAC input for presentation at the second round of public involvement. After the findings of the second round of public involvement had been summarized, the consultant team and the County Project Manager met to review the recommendations of the stakeholders and others who had participated in the public involvement sessions, together with the observations of the consultant team and the County Public Works Department itself. The selection of Phase I and Phase II transportation projects was refined for incorporation in this Report. Figure 4-2 presents the locations of the 17 proposed Phase I projects. Figure 4-3 presents the locations of the 17 proposed Phase II projects.

**FIGURE 4-2. PHASE I PROJECTS**



Source: Lima & Associates, Inc.

**FIGURE 4-3. PHASE II PROJECTS**



Source: Lima & Associates, Inc.

## **Discarded Candidate Projects**

Subsequent to the development of the draft transportation project map, based on the results of the traffic forecasting process, additional field views were made to compare field conditions with selected model forecasts. In particular, several rural roadways that traverse rugged and/or mountainous terrain had been recommended for upgrading and paving by the forecasting process, based solely on the projected future development of the land abutting these roadways. However, as a practical matter, roads such as Old Rye Creek Road and Chamberlain Trail may never be paved—at least not in their entirety or along their existing alignments. The output of the forecasting process with respect to such roadways can be properly interpreted as indicating that, when area development and population warrant, some sort of additional or improved roadway access into the area will be needed. Most likely, these will be roadways constructed on partially or completely new alignments. Hence, candidate projects appearing on the draft project map dealing with proposed paving or improvement to existing roadways with curves and grades severe enough to preclude cost-effective upgrading were eliminated.

## **Additional Projects**

At the suggestion of stakeholders, additional projects were added to the transportation plan that had not appeared on the draft map. These projects included a future truck route loop connecting SR 87 south of Payson with SR 260 east of Payson, as well as a future update of the Payson Public Transit Feasibility Study. Note that projects already included in the CAAG transportation plan are not shown on Figure 4-2 but are included on the list of projects presented in the following chapter. Where possible, the County should strive to preserve rights-of-way for future transportation corridors as these are identified.

## **Improvements to State Routes**

The scope of this project specified an emphasis on County owned or maintained roads only. However, during the conduct of the study it became clear that some of the most pressing future needs will exist on the State Routes that traverse the County. State Routes 188 and 260, in particular, will become increasingly congested.

## **TRANSIT AND NON-MOTORIZED MODES**

The multimodal plan provides recommendations regarding transit and non-motorized modes of travel in Gila County, including types of transit and associated cost and funding mechanisms. The Plan also includes recommendations for incorporating bicycle and pedestrian travel into the Plan and supports ways to accommodate these modes as the circulation system of the County and local jurisdictions evolve.

## **Transit Element**

Existing special needs transportation services within Gila County were summarized in Chapter 3. This section suggests and describes potential services, facilities, and equipment and presents the findings of an estimation of 2030 demand for intercity transit. Some best practices for rural transit operation are summarized in Chapter 5, and Federal, State, and local sources of transit funding are summarized in Chapter 6.

### ***Potential Services and Facilities***

This section presents the options for area public transportation to be considered by the County. Two general forms of public transportation have been identified as being particularly suitable for meeting the local and regional needs of Gila County residents over the next twenty-five years: Transportation Demand Management (TDM) alternatives and four types of transit service.

**Transportation Demand Management** consists of a wide range of programs and services that enable people to get around without driving alone. Included are alternative transportation modes such as carpooling, vanpooling, transit, bicycling, and walking, as well as programs that alleviate traffic and parking problems such as telecommuting, variable work hours, and parking management.

Transportation Demand Management can address the needs of those traveling long distances with rideshare options such as vanpools and carpools. These types of services are vital in moving people around large areas, whether for work or for traveling to regional centers that have special services, medical facilities, or retail stores.

**Rideshare Matching Programs** provide service by identifying people who live and work close to each other and then facilitate carpooling and vanpooling. Matching services can pair full-time partners, or simply someone to call in an emergency. Rideshare matching can be done by individual employers or on a community-wide basis. In addition to commute trips, travelers can be matched with others participating in the same extracurricular school function, medical-related trip, shopping trip, or community activity.

Rideshare matching is typically done through a computerized system. A variety of vendors have created inexpensive, effective software that makes this process easy to use. Rideshare services can also be offered on-line.

Two common forms of ridesharing are carpools and vanpools.

Carpool participation is higher than the national average in rural Arizona, suggesting that a potential for developing additional carpools in the area exists. Strategies for formalizing and increasing carpooling in Gila County follow:

- The carpooling that is already established needs to be quantified and documented. This process could be an employer-based registration system that provides an incentive for filling out an information/registration card. Incentives might be as simple as a chance to be entered in a drawing for dinner for two at a popular restaurant. Periodic updates and opportunities for future carpooling incentives would be an option for carpoolers.
- A benefit of registering carpools is that the informal carpools might be able to serve another commuter who works the same shift, or an additional participant in the same periodic activity. The baseline data forms the beginning of destination-driven ride matching.
- Once the baseline data quantifies a level of carpool usage, goals for increasing participation and incentives to attract more new carpools can be identified and implemented.

Vanpools are also an alternative to be considered for area commuting. The methodology described above for carpools is one way to begin building a database for informal vanpools. By asking vehicle capacity on the registration card, the information helps organizers build an “excess capacity” database.

This type of vanpool is very informal and maintains its schedule based on employee needs. Matching commuters from the same or other businesses is the growth potential. Again, the object is to quantify and document existing vanpool commuters and build the program where possible.

Another option is to provide businesses with an incentive to let the vehicle be used for a formal vanpool program with a wider group of employees. If the vehicle becomes a part of a formal program, maintenance, insurance and vehicle upkeep can be offered as an incentive. Such a fleet of vanpool vehicles can be used as “guaranteed ride home” vehicles for bus/rideshare commuters who have an unscheduled midday need to get home.

There are a few issues that arise with shared-use vehicles as described above. If the driver of the vanpool is an employee who is also commuting to work, the type of insurance needed is different than if the driver is paid or if the vehicles are used for other service during the day. As with any formal bus service, vanpools need back-up vehicles or a plan for alternate service.

### *Coordinating Local Human Services Transportation Programs*

**Arizona Rides** is a statewide effort to coordinate provision of human services transportation within counties or regions of counties to increase efficiency, limit service duplication and confusion, and save costs. Arizona Rides was initiated in response to the federal “United We Ride” program established in 2004. “Pinal Rides,” a pilot project of the program, funded a study of the concept in Central Pinal County. The Final Report of

the pilot project was published in December 2005. The pilot project consisted of two phases. In the first phase, existing human services transportation providers in Pinal County were inventoried and potential areas of service duplication and inefficiency were identified. In the second phase, specific implementation objectives were identified, together with impediments to service coordination, and key service providers were selected for participation in a model coordination project. Recommendations included the establishment of a transit coordinating council for the study area and the implementation of service along two regional corridors. Future transit studies in the Globe-Miami and Payson areas should assess ways in which special needs transit providers can coordinate services and avoid duplication and inefficiency.

### **Different Types of Transit Service**

A number of roadway-based and fixed-guide way forms of transit service exist, including bus service, light rail, commuter rail, subways, and monorail. Four modes of transit have been identified as likely candidates for eventual implementation in Gila County:

- Dial-A-Ride and Paratransit Service
- Deviated Fixed Route Service
- Fixed Route Service including local, express, and limited stop services
- Scheduled or Excursion Rail Service

Figure 4-4 summarizes the features of the three types of bus services listed above. The scheduled and excursion rail service issues will be evaluated and described in detail in a separate report.

### **Estimating Transit Demand**

Estimating demand for transit in Gila County provides a general idea of what type of services may be feasible and how many people may be expected to use a transit system. To estimate possible demand for transit service in the County, TCRP Report 3, *Workbook for Estimating Demand for Rural Passenger Transportation*, was utilized. This workbook provides a methodology for estimating transit demand for rural systems, using population data for the year of proposed service start-up and assumptions of service area size and route lengths.

Note that this procedure results in estimated demand for regional bus service only. The Globe-Miami area is already served by the Cobre Valley Community Transit (CVCT) dial-a-ride system. Estimating the future level of demand for increases in the Cobre Valley service area, or for adding a deviated fixed route element to the CVCT service, are beyond the scope of this study and should be addressed in a separate transit feasibility study. A Transit feasibility study addressing the issue of local service in the Payson area was conducted in 2004 as discussed in Chapter 2. Potential demand for rail transit services in the Globe area will be addressed in a future report.



#### FIGURE 4-4. DIFFERENT TYPES OF BUS SERVICE



—Lima & Associates photo

**“Dial-a-Ride” Service** is a demand-response service. Vehicles do not operate on a fixed route or schedule, but pick-up patrons at their origins and deliver them directly to their destinations. Before the trip begins, and during the course of the trip, the driver receives information from a dispatcher concerning pick-up and drop-off requests.

This cutaway vehicle, comprising a minibus body constructed on a recreational vehicle chassis, is used by Valley Metro for paratransit services. However, similar vehicles are typically used in both deviated fixed route and downtown or neighborhood circulator services.



—Flagstaff Mountain Line photo

**Deviated Fixed Route Service**, sometimes referred to as “checkpoint” service, is considered an intermediate step between dial-a-ride, which targets transit dependent riders, and fixed route service, which is more efficient in larger cities having significant volumes of transit ridership. A deviated fixed route stops at scheduled “time points”—or “checkpoints”—much as a fixed route service does. However, the route taken between points can vary from trip to trip. This mid-size transit coach is also used for fixed route service in smaller cities—as is being done in Flagstaff.

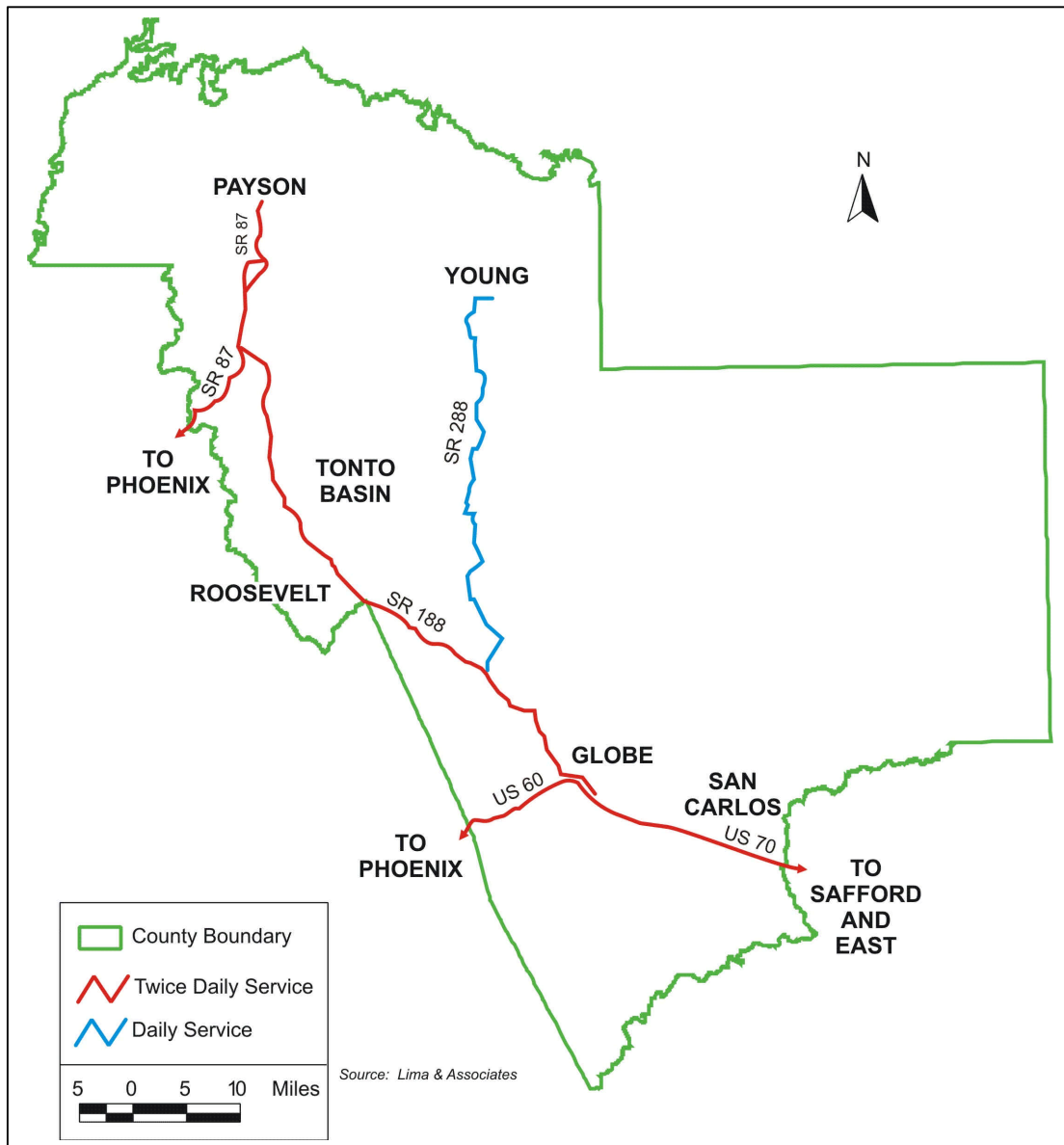


—Lima & Associates photo

**Fixed Route Buses** follow a route and schedule that never varies from one week to the next. Variations such as reduced or extended weekend hours and weekend route differences are published in advance. Fixed route systems are typically structured either as radial systems with routes radiating out from a central transit center to different residential or commercial areas, as grid systems with routes operating on the major arterial streets, or as some combination of the two structures. Such systems comprise the dominant form of public transit in most major metro areas in North America.

The demand methodology outlined in TCRP Report 3 required that a hypothetical system be developed for analysis purposes only. A system developed for this procedure is depicted in Figure 4-5. Note that the routes depicted in Figure 4-5 are for demand-estimating purposes only and do not necessarily represent a recommended system. Even if the methodology did not require the identification of such a hypothetical system, the sparse population of large portions of the County, including the National Forest areas, would necessitate this approach in order to obtain realistic results. To conduct the demand estimation procedure, the following assumptions were made:

**FIGURE 4-5. HYPOTHETICAL BUS TRANSIT ROUTES**



- The service area for the hypothetical system is defined as the TAZs that abut or are traversed by any of the roadway segments depicted as being transit served
- Every resident of the universe of transit-served TAZs is a potential user of the system
- The percentages of County residents aged 65 and over, having mobility limitations, or living below the poverty level will be the same in 2030 as they were in 2000
- The population figures forecasted under the “Accelerated Growth” scenario are used
- Demand estimates are based on route mileage and population within Gila County only
- It was assumed that service would be provided twice daily between Globe and Payson, and twice daily along the US 60/US 70 Corridor through Globe. One round trip daily would be made connecting the Young area with Payson via the Young-Heber Road and SR 260.

Documentation of the transit demand estimating process is provided in Appendix A.

### ***Summary of Transit Demand Estimation***

The demand methodology in TCRP Report 3 included both base and alternative methods of demand estimation. The consultant conducted both procedures to compare the results from each. The base and alternative methods of transit demand estimation resulted in daily estimates of 126 and 282 trips, respectively. Given the distances involved and the low service frequencies used in the hypothetical example, the lower estimate of 126 trips per day is probably more accurate.

While 126 trips per day is not a large number, consider how such a ridership level might affect the hypothetical system shown in Figure 4-5. If the system were operated with vehicles having, for example, 12-passenger capacities (e.g. seating for 10 and two wheelchair positions), the total “seats per day” that would be offered would be 168, or 12 times the 14 vehicle trips. If the 126 daily riders were distributed evenly among the 14 vehicle trips, each vehicle would be approximately three-fourths full. Note that the demand procedure estimated the number of riders originating or terminating in Gila County only. Schedules on the US 60/US 70 corridor would likely be carrying passengers to and from Safford and other “external” destinations. The Phoenix-Payson routes might extend east along SR 260 to White Mountain destinations, in which case these schedules would also be carrying passengers beyond Gila County.

### **Non-motorized Modes**

The development of the transportation system within Gila County should, where practicable, accommodate bicycle, equestrian, and pedestrian travel as it grows. Incorporating multiuse paths and trails into roadway corridor plans and development plans ensures ongoing improvement in conditions for those who wish to bike, ride, or hike in this scenic county.

### ***Bicycle Travel***

Bicycle travel within the County can be accommodated through the inclusion of bike lanes as roadways are paved or widened. The cross-sections for urban arterials and urban collectors in the *Gila County Roadway Design Standards Manual* all include six-foot bike lanes as a standard feature. However, accommodating regional bicycle travel is important as well. Rising fuel prices may cause many persons to consider using bicycles for shorter trips, and consideration should be given to providing alternate rural arterial and collector cross-sections that provide for safe bicycle use as traffic volumes increase.

### ***Equestrian Trails***

Gila County is traversed by the Arizona Trail, which connects Mexico with Utah, and also has many local trails used for horseback riding, hiking, and mountain biking. Many of these trails are maintained by the U.S. Forest Service, with much of the day-to-day trail improvement and preservation conducted by volunteer groups and associations of trail users. These trails do cross County roadways, and, as roadways are paved, widened, or improved, the enjoyment and safety of trail users can be adversely affected. Horseback riding, hiking, and mountain biking are all popular ways to access the scenic beauty of the County, and preserving the utility of these trails is vital to County tourism. Safe trail crossings and, in high traffic volume areas, even grade separated crossings should be considered. Such crossings could also preserve wildlife corridors as roads are paved.

### ***Pedestrians***

To accommodate walking the urban arterial and collector street cross-sections in the *Gila County Roadway Design Standards Manual* include five-foot sidewalks as a standard feature. However, these sidewalks are not separated from the back of the curb. Separating the sidewalks from the back of the curb, would keep pedestrians a comfortable distance from auto traffic—particularly along higher speed or busier arterials, and encourage walking. In addition to the sidewalk network, The County and local jurisdictions should investigate opportunities for developing, improving, or preserving off-street paths or trails. These may be located in or along natural features like washes and could be an opportunity to connect neighborhoods, parks, and provide recreation.

### **Recommended Actions Related to Transit and Non-motorized Modes**

- Designate a County Transportation Coordinator and consider the establishment of a Countywide regional ride-sharing program
- Construct initial park-and-ride facilities for use by the car pools and van pools
- Monitor number of citizens requesting dial-a-ride and/or transit service both Countywide and in different areas of the County
- Conduct follow-up studies to address the following:

- ✓ Feasibility and implementation of replacement for previous Greyhound service along the US 60/US 70 Corridor
- ✓ Expansion of Cobre Valley Transit dial-a-ride service and addition of deviated fixed route service
- ✓ Feasibility of future transit service between the Globe and Payson areas
- ✓ Future update of the Payson Area Public Transit Study
- A study of excursion rail service on the Arizona Eastern Railway in the Miami-Globe-San Carlos corridor is already programmed as an add-on to this project.

## **RAIL HIGHWAY CROSSINGS**

As the population of the Globe-Miami area increases, the motor vehicle traffic on roadways that cross the Arizona Eastern Railway will likely increase. At the same time, increases in mining activity, the development of additional rail-served industries, and/or the possible implementation of future passenger excursion service could increase the number of daily train movements. These traffic increases should be monitored and warrant studies conducted to upgrade the crossings by the addition of signals, gates, or other devices as appropriate. As roadway segments are improved or widened, rebuilding the surfaces of the crossings themselves should be programmed.

## **GILA COUNTY ACCESS MANAGEMENT PRACTICES**

This section includes a definition of access management and a brief summary of the access management policies adopted by Gila County.

### **Definition of Access Management**

Access management is defined as the regulation of vehicular access to public roadways from adjoining property. It is provided through legal, administrative, and technical strategies available to a political jurisdiction under its police powers in order to maintain the health, safety, and welfare of the jurisdiction's residents. It also regulates the level of access control on roadways and is needed to help retain the capacity of public highways, access to private land, and maintain public safety.

In general, property owners have a right of reasonable access to an adjacent roadway. However, governments may restrict the use of private property to protect or advance the public safety and general welfare to prevent public injury or where demanded by public interest. Private rights of abutting landowners to access their property are generally subservient to the rights of the public to free and safe use of the public street system.

Different types of roadways are administered by different entities, such as the State, a municipality, or a county. The land use decisions made by the local jurisdiction a roadway is passing through will influence the functionality of that particular roadway. An example is the functionality of State Route 188, which is administered by ADOT. The functionality

is very much dependent on the land use decisions made by the City of Globe as well as existing and future communities and developments that abut the highway through the Tonto Basin area and north to its junction with SR 87. ADOT is preparing statewide access management guidelines to address issues on State Highways.

All agencies and jurisdictions responsible for transportation systems and land use planning should adopt formal access management guidelines. These may be published as a separate document, contained in zoning codes, established in roadway planning and development procedures, or in some combination. The implementation of the guidelines or regulations should be a shared responsibility of both the planning and engineering departments. The regulations should be approved by the jurisdiction's elected body and be readily available for use by developers, real estate agents, and the general public.

### **Gila County Practice**

The Consultant reviewed the provisions relating to access management contained in the *Gila County Roadway Design Standards Manual*. The Manual includes specific standards relating to the following:

- Median types and spacing
- Access control by functional classification
- Driveway types
- Location and spacing of driveways
- Driveway design

In each of these categories, the adopted standards are consistent with those employed by peer jurisdictions as well as those recommended by the consultant for adoption by jurisdictions without existing access management policies.

### ***Current Driveway Spacing Practice***

The minimum amount of spacing allowed by the County between adjacent driveways, depending upon the land use and street type, are listed in Table 4-2.

According to the *Gila County Roadway Design Standards Manual*, a new driveway or a driveway with changed access will not be allowed under the following conditions:

- Within 10 feet of any commercial property line, except when it is a joint-use driveway serving two abutting commercial properties and access agreements have been exchanged and recorded by the two abutting property owners.
- Within 25 feet of a guardrail ending.
- Within 100 feet of a bridge or other structure, except canal service roads.
- Within the minimum spacing as established in Table 5-8

**TABLE 4-2. MINIMUM DRIVEWAY SPACING**

Land Use	Street Type	Driveway Type*	Min. Spacing (ft)
Single Family	All	S-1	50**
Multi-family	All	M-1	165
		M-2	330
Commercial	Minor Collector/Local	CL-1	165
	Major Collector/Minor Arterial	CH-1	330
	Major Arterial	CH-1	660
		CH-2, CH-3	1320
Commercial	Minor Collector/Local	CL	165
	Major Collector/Minor Arterial	CH-1	330
	Major Arterial	CH-1	660
		CH-2, CH-3	1320
	Parkway/Expressway	CH-2, CH-3	1320

Source: *Gila County Roadway Design Standards Manual*

\*Refers to driveway designs depicted on pages 48 through 52 of the Manual

\*\*Spacing required for more than one driveway per parcel only

- When adequate sight distance cannot be provided for vehicles on the driveway attempting to access the street, since those movements will be prohibited.
- When the nearest edge of any driveway flare or radius must be at least 2 feet from the nearest projection of a fire hydrant, utility pole, drop inlet and/or appurtenances, traffic signal, or light standards.
- For parking or loading areas that require backing maneuvers in a public right-of-way, except for single-family or duplex residential uses on local roads.

The *Manual* further provides

If a property has frontage on more than one street, access will be permitted only on those street frontages where standards contained in this manual and other County Regulations can be met.

If a property cannot be served by any access point meeting these standards, the County may designate one or more access point(s) based on traffic safety, operational needs, and conformance to as many of the requirements of these guidelines as possible. This does not constitute a guarantee by the City to provide access to a property.

Variances for residential developments may be made by the Gila County Engineering Department where the application of these standards would create an undue hardship to the abutting property owners and good traffic engineering practice can be maintained. Variances for commercial and industrial development must be made by the Gila County Board of Supervisors.

## Recommended Access Management Practice

In many peer jurisdictions, the speed and functional classification of the roadway, as well as the abutting land use, are taken into consideration. Table 4-3 presents some basic guidelines for spacing of access points from roadways to abutting properties depending upon the functional classification and design speed of the roadway. Note that the proposed standards for Rural Very Low Volume Roads provide for future increases in traffic volume and the consequent reclassification of the roadway.

**TABLE 4-3. SUGGESTED MINIMUM ACCESS SPACING  
BASED ON ROADWAY SPEED AND FUNCTIONAL CLASSIFICATION**

Roadway Category	Speed	Public Road Spacing	Private Direct Access	Private Access Spacing	Private Access Geometrics	Private Access Remarks
Rural Major Arterial	35-45 mph 50-60 mph 60+ mph	660 feet 0.25 mile 0.50 mile	Allowed Limited Limited	250 feet min. 450 feet min. 660 to 1,320 feet min.*	Right turns allowed, turn lanes may be required.	One access per parcel, two large development when spacing standards can be met.
Rural Arterial	35-45 mph 50-60 mph 60+ mph	660 feet 0.25 mile 0.50 mile	Allowed Limited Limited	330 feet min. 450 feet min. 660 feet min.	Right turns allowed, turn lanes may be required.	One access per parcel, two large development when spacing standards can be met.
Rural Collector	35-45 mph	660 feet	Allowed	165 feet min.	Right turns allowed, turn lanes may be required.	One access per parcel, two for large development when spacing standards can be met.
Rural Local	25-35 mph	660 feet	Allowed	50 feet min.**	Right turns allowed.	One per parcel
Rural Very Low Volume	25-35 mph 35-45 mph	660 feet 660 feet	Allowed Allowed	50 feet min.** 150 feet min.	Right turns allowed.	One per parcel

Source: Lima & Associates, Inc., adapted from Nevada Draft Access Management System and Standards

\*660 ft. for CH-1 driveways; 1,320 ft. for CH-2 and CH-3 driveways

\*\*Spacing required for more than one driveway per parcel only

As population increases and additional development abutting County roadways occurs, the County should continue to enforce access management policies as part of the permitting process.



## 5. BEST PRACTICES IN RURAL TRANSPORTATION

### INTRODUCTION

The purpose of this chapter is to present selected transportation practices that Gila County may want to consider for improving the planning and programming of transportation options. These practices include the following:

- Analysis of Low Volume Dirt Roads
- Performance Measures for Rural Transportation Systems
- Analysis of Highway-Rail Grade Crossings
- Activity Based Budgeting
- New Paradigms for Rural and Small Urban transit Service Delivery
- Rural Transit ITS

### ANALYSIS OF LOW VOLUME DIRT ROADS

Gila County maintains approximately 124 miles of unpaved roads. As the County population increases, keeping a concise inventory of unpaved roadway segments and prioritizing paving of these segments in order to handle increased traffic volumes or control dust will become critical. The following describes a methodology to inventory data for unpaved roads and prioritize paving projects.

Maricopa County Department of Transportation (MCDOT) has initiated a program to pave low volume unpaved roads throughout the entire county. The county has a current paving program focused on roadways within the PM10 non-attainment area to help control dust within the metropolitan parts of the county. The Transportation Advisory Board (TAB) recommended an annual program of \$3 million, which, based on past experience, would allow for paving between seven and eight miles of roadway per year. The County initiated a study to provide a comprehensive GIS inventory of unpaved roadways and to use adopted evaluation criteria for selecting future paving projects. The results of the study are documented in the *Final Candidate Assessment Report: Identification and Analysis of Low Volume Dirt Roads*, completed in 2005 for MCDOT by Lima & Associates. The required work included developing a set of detailed maps of the county unpaved road system and a complete listing of the entire roadway inventory with detail on all evaluation criteria. The key components of the methodology to analyze dirt roads include:

***Unpaved Roads Map Atlas*** - Detailed maps covering the entire county were developed from existing data sources based on recorded surface type with additional unpaved roads added from aerial photography. The maps can be used to understand, for any given area, how many and what type of unpaved roads are present.

***Low Volume Unpaved Roads Evaluation Matrix*** – The MCDOT Transportation Advisory Board adopted a specific set of evaluation criteria, including:

- What Supervisor District the segment is located in.
- Length of the roadway segment (miles).
- If the road segment is located inside or outside the PM10 area.
- If the road segment is County maintained or not.
- The Major Streets and Routes Plan classification.
- Average Daily Traffic (ADT) count.
- If the road segment connects to an existing paved road.
- The percent of Right-of-Way that exists.
- If the segment serves a public facility.
- If there are any safety concerns (high accident rate for instance).
- The cost per mile.
- The total project cost

***Low Volume Unpaved Roads Data*** – A report on the data includes all of the adopted evaluation criteria and additional data items to provide MCDOT even more detailed information on each roadway segment. This information can help in sorting and prioritizing roads for paving projects. Table 4-1 lists an inventory for a sample of dirt roads along with priority for paving.

## **PERFORMANCE MEASURES FOR RURAL TRANSPORTATION SYSTEMS**

Performance measures can be used to evaluate the performance of the Gila County transportation system. A guidebook is under development by the California Department of Transportation for measuring, assessing, and improving the performance of a rural transportation system. The development of the guidebook was described in a presentation made to the California Association for Coordinated Transportation Conference, held October 6, 2005. The guidebook is scheduled for completion by the end of May 2006.

Performance measures that have been identified include:

- Mobility/Reliability/Accessibility
- Productivity
- System Preservation
- Environmental Quality
- Coordinated Transportation and Land Use
- Economic Development
- Equity
- Return on Investment
- Customer Satisfaction
- Transit Cost Effectiveness
- Provide Alternative Modes of Transportation

**TABLE 5-1. SAMPLE LOW VOLUME UNPAVED ROADS EVALUATION MATRIX**

Proposed Projects	Township Range	BOS District	Length (Miles)	PM10 Area	County Maintained Road	Road Classification	ADT Count	Connects to Paved Road	Percent of ROW Existing	Public Facility Served	Safety Concern	Cost/Mile (000's)	Total Project Cost	Priority
132nd St: At Chandler Heights Rd	T02SR05E	1	0.50	Yes	Yes	Urban Local	106	Yes	100		No	\$ 155,506	\$ 77,749	
142nd St	T02SR06E	1	0.25	Yes	No	Rural Local	0	Yes	0		No	\$ 337,589	\$ 85,587	
142nd St	T02SR06E	1	0.24	Yes	No	Rural Local	0	No	0		No	\$ 337,590	\$ 81,911	
146th St: At Spur Rd	T02SR06E	1	0.25	Yes	Yes	Rural Local	33	Yes	100		No	\$ 155,507	\$ 38,877	
164th St	T02SR06E	1	0.39	Yes	No	Rural Local	0	Yes	0		No	\$ 276,894	\$ 107,925	
164th St	T02SR06E	1	0.50	Yes	No	Rural Local	0	Yes	0		No	\$ 276,896	\$ 138,547	
174th St	T02SR06E	1	0.51	Yes	No	Rural Local	0	Yes	0		No	\$ 276,893	\$ 141,089	
180th St	T02SR06E	1	0.26	Yes	No	Rural Local	0	Yes	0		No	\$ 276,893	\$ 70,674	
182nd St	T02SR06E	1	0.26	Yes	No	Rural Local	0	Yes	0		No	\$ 276,892	\$ 70,617	
182nd St	T02SR06E	1	0.25	Yes	No	Rural Local	0	No	0		No	\$ 276,895	\$ 70,465	
183rd St	T02SR06E	1	0.26	Yes	No	Rural Local	0	Yes	0		No	\$ 276,896	\$ 70,999	
183rd St	T02SR06E	1	0.26	Yes	No	Rural Local	0	No	0		No	\$ 276,895	\$ 70,769	
194th St	T02SR07E	1	0.25	Yes	No	Rural Local	0	Yes	0		No	\$ 276,894	\$ 69,892	
194th St	T02SR07E	1	0.25	Yes	No	Rural Local	0	Yes	0		No	\$ 276,896	\$ 70,064	
194th St	T02SR07E	1	0.25	Yes	No	Rural Local	0	Yes	0		No	\$ 276,895	\$ 69,072	

Source: Maricopa County Department of Transportation, *Final Candidate Assessment Report: Identification and Analysis of Low Volume Dirt Roads*, Lima & Associates, 2005.

Rural counties in California have been categorized by population, population growth rate, and ratio of peak month to average annual daily traffic. The guidebook will identify performance data, develop definitions, and describe data collection procedures.

## **ANALYSIS OF HIGHWAY-RAIL GRADE CROSSINGS**

One tool for Gila County to use in evaluating the impact of at-grade railroad crossings along the Arizona Eastern Railway is the Federal Rail Administration (FRA) GradeDEC.NET highway-rail grade crossing investment analysis tool. This tool was developed to provide grade crossing investment decision support. GradeDEC.NET is a web-based application that has been available to the public since 2003 (<http://gradedec.fra.dot.gov/>). The application provides a full set of standard benefit/cost metrics for a rail corridor, a region, or an individual grade crossing. The model output allows a comparative analysis of grade crossing alternatives that are designed to mitigate highway-rail grade crossing accident risk and other components of user costs including highway delay and queuing, air quality, and vehicle operating costs. The application calculates the economic rate of return by comparing the streams of expected economic benefits over time with the streams of investment, operation and maintenance, and other life-cycle costs. The model discounts later year benefits and costs to reflect the opportunity cost of capital. This process of discounting converts all values to present value equivalents, thus enabling the comparison of benefits and cost realized in different time periods.

GradeDec.NET is a stand-alone software package that enables the analysis of impacts from grade crossing improvements and supports resource allocation and investment decisions. The application evaluates the benefit cost of grade crossing improvements while explicitly reporting the results for each grade crossing and each benefits category including safety, time savings, vehicle operating costs, reduced emissions, network benefits, and local benefits. GradeDec.NET's analysis of grade crossing improvements can be performed both at the individual grade crossing and at the corridor or regional level within separate modules in the application. The corridor analysis module evaluates crossing improvements along a single rail alignment and accounts for impacts on the adjacent highway network and shifts by motorists to routes with improved crossings. The module for regional analysis evaluates crossing improvements in a region regardless of the crossings being located on single or multiple rail alignments. Outputs of the model include result metrics for the individual grade crossings and for the corridor or region as a whole.

## **ACTIVITY BASED BUDGETING**

The Roads Division of Clackamas County, Oregon uses a "Road Fund Activity-Based Budget" to allocate limited revenues to road maintenance activities. Instead of traditional line item budgeting, the Division created a system for prioritizing work activities by identifying value added activities balanced against rising service demand and declining

resources. This system focuses on required activities, expected service level or outcomes, and coordination of resources to budget \$31 million worth of services. The purpose of creating the “Road Fund Activity Based Budget” was to increase the accountability, effectiveness, and credibility of the budget process. To achieve this goal, Clackamas County worked to develop and implement a budget process using existing resources. The County involved all staff levels, ranging from department managers to field employees, in creating benchmarks for each activity.

### **Activity Documentation**

The “Road Fund Activity Based Budget” details each activity performed within the road fund and resources required to produce expected results. The budget process details all activities required to maintain service levels in the Clackamas County Road Fund Strategic Plan. The budget is structured with descriptions of each activity. Activity documentation with expected outcomes provides managers a tool for adjusting expenditures to achieve the greatest value from varied revenue scenarios. The elements used to describe an activity are the following:

- ***Description of Activity:*** A description of each activity is developed providing general overview information regarding the activity or process.
- ***Regulatory Requirements:*** A description of any mandate or agency regulation required by the activity.
- ***Benefits of Maintaining Present Level of Service:*** The benefits of continuing to fund a specific activity at the current level-of-service.
- ***Consequences of Reduction in Activity:*** Description of the consequences by reducing funding for a specific activity.
- ***Expected Outcomes:*** Description of the product achieved, as a result of funding this activity.
- ***Expenditures/Revenue at Present Level of Activity:*** A detail of all resources and materials required to fund the activity. Any revenue generated by completing this activity is documented.

### **Responsiveness to Public**

One of the County’s main goals of creating a new budget process was to more effectively communicate to voters, legislators, and policy makers expected specific budget outcomes. The “Activity Based” budget process has become an effective communication tool to show citizens, as well as their own staff, why funds are allocated to certain areas and not allocated to others. The activity based budget helped identify and reduce competition for available dollars between divisions within the Transportation Department.

## **Success of Program**

Clackamas County considers the “Road Fund Activity-Based Budget” a very successful program, praised alike by managers, policy makers, county commissioners, citizens, and County employees. Clackamas County describes the success of the program by the following measures:

***Effective Communication Tool*** - The Road Fund Activity-Based Budget has been used successfully in public meetings to communicate the Road Fund output goals. It has become a document that can be used to inform the public and policy makers what level-of-service can be provided under varied funding scenarios.

***Reduced Interdepartmental Competition for Funds*** - The Activity Based Budget process has identified activities that have traditionally over allocated resources and increased fund variances. Large complex activities require the involvement of numerous functional units within County government. This created situations where one functional area did not know what the other was doing.

***Increased Accountability and Stewardship of Resources by all Stakeholders*** - The documentation of detailed clear descriptions of expenditures and outcomes for each activity has established performance benchmarks for each activity. Employees involved with each activity have been consulted and informed of the budget restraints and expected outcomes.

***Increased Accuracy of Budget Projections*** - Fund variance and overall accuracy of the budget has improved from prior years.

***More Efficient Process which increases Staff Efficiency*** - The activity-based budget process has achieved a 20 percent reduction in staff time required to complete the annual budget process.

## **NEW PARADIGMS FOR RURAL AND SMALL URBAN TRANSIT SERVICE DELIVERY**

The Transit Cooperative Research Program (TCRP) *Report 99 Embracing Change in a Changing World*, published in 2004 documents four case studies of transit systems that have adapted to the changing and growing rural areas. Rural transit operators need to adapt transit service strategies to deliver effective service. Development is pushing farther into rural areas and businesses are moving to the urban fringes. The four case studies that were documented are: 1) Advance Transit serving communities in New Hampshire and Vermont; 2) COAST providing transit service in Colfax, Washington; 3) Hill County Transit District (HCTD) providing transportation in nine counties of central Texas; and 4) Capital Area Rural Transportation System (CARTS) providing transportation services for a nine-county area surrounding Austin, Texas. The new paradigms reflected by these systems are:

- *Serving as Community Agents of Change* by understanding changes in the community and adapting to these changes through active involvement with the community.
- *Optimizing Rural Resources* by stretching resources, sharing costs, and contracting using innovative approaches to providing more service.
- *Adopting Technology* by implementing intelligent transportation systems (ITS) for rural areas to benefit the transit system operations and users.
- *Acting as Entrepreneurs* by operating as businesses seeking to provide services to both the private and public sectors reducing reliance on governmental funding.
- *Providing Effective Service* by attracting ridership, bringing in significant revenue, and enhancing quality of life.
- *Maintaining Multiple Functions and Fiscal Diversity* by doing more such as selling advertising, maintain other organization's vehicles, operating maintenance services.

## **RURAL TRANSIT ITS**

Best practices in rural ITS were documented in the US DOT *Final Report, Rural Transit ITS Best Practices*, March 2003. The following information is cited in the final report.

Project objectives were to:

- Identify rural transit operators that exhibit best practices for ITS User Services in operating their transit systems using ITS technology;
- Target case study sites to cover a range of rural transit services using ITS technology including, to the extent possible, fixed route, flexible routes and paratransit services;
- Report functional and limited technical information on the technologies and applications that the case study sites have applied to their rural transit services;
- Report on the lessons learned by the case study participants; and
- Summarize overall considerations for the application of ITS to rural transit learned from the case studies.

The report documented the following case studies:

**River Valley Transit:** Located in Williamsport, Pennsylvania, the agency provides real-time customer information at its transit center. River Valley Transit installed automatic vehicle location (AVL) and mobile data terminals (MDT) on its fixed-route buses to provide real-time, in-terminal customer information. The technology allows the agency to inform customers both visually and audibly as to which of the 10 loading bays buses will arrive at and depart from. It also gives customers a 20-second notification before buses

depart on their next trip. The system even notifies drivers when they have pulled into the wrong bus bay. River Valley Transit is looking at ways to extend the utility of the system and has investigated other ITS technologies.

**Florida Commission for the Transportation Disadvantaged (CTD):** Through the CTD, a number of primarily rural counties have created low-cost ITS applications using seed funding from the FTA. The deployments are part of a statewide Rural ITS initiative. The project has been implemented in two phases. In addition to information from the CTD, the case study also includes information gathered during site visits at two of the Phase I counties (St. Johns and Putnam), and one of the Phase II counties (Marion). Marion and St. Johns counties have been using a demand-response software suite developed by RouteLogic. The software has a range of modules including vehicle scheduling, staff scheduling, trip scheduling, call-intake, and payroll. As of February 2002, the system had been in place for over a year in these two counties. It has turned the operation in St. Johns County from a struggling service to a thriving, cost-effective one. Putnam County, by contrast, has opted to use a proprietary software system it had developed and integrated with AVL. The RouteLogic application is being used as the model to improve the operations and management of other rural transit operators in the state.

**Capital Area Rural Transit System (CARTS):** Providing rural transit service in a large area outside of Austin, Texas, CARTS is a partner in the Lower Colorado River Authority's (LCRA) communications system. The system provides CARTS with voice channels on LCRA's 900MHz radio system, which replaced the patchwork of unreliable radio links CARTS used previously. This new communication system has allowed CARTS to reorganize and more efficiently provide its paratransit service. CARTS's agreement with LCRA was negotiated to provide enough communication capacity in the future so that CARTS could add AVL/MDT or other ITS technologies. The agency has started work on deploying AVL/MDT technology.

**Ottumwa Transit Authority (OTA):** OTA is responsible for providing bus service in Ottumwa, Iowa and the surrounding 10-county area covering 5,000 square miles. After attempting to share resources with nearby Linn County, OTA installed a four-tower, 150 MHz radio system to provide communications for its AVL/MDT system throughout its large service area. At the time of the site visit, the package had been in place for about 18 months. One unique feature of OTA's system is a form-based MDT log-on/pre-trip procedure that requires drivers to transmit information to central dispatch regarding the mechanical condition of a vehicle. This feature is especially useful for the approximately 40 vehicles that are garaged at drivers' homes, some of which are over 50 miles away from OTA headquarters. The OTA uses the pre-trip information to determine if maintenance should be scheduled at the agency's central garage or could be repaired by one of its subcontracted, out-of-county mechanics.

**New Mexico Statewide Rural Internet-Based Ridership and Financial Tracking System:** Led by the Alliance for Transportation Research Institute (ATRI), this project is an interagency effort that includes the New Mexico Human Services Department Income



Support Division and rural transit service providers. The project was chosen because it is a statewide, multifunctional, Web-based application that has a number of unique features.

The project is being deployed in three parts. During part one, ATRI developed a Web-based software program to authorize and schedule trips, track riders, bill trips, and generate reports. The Web-based application is designed to save costs of and the time required to install, troubleshoot, and upgrade the software by having a single application reside on a Web server that is accessible to users over the Internet. Part two involves establishing the Internet connections between the central server and the rural agencies so they can report trips and expenditures to a central server. This phase was completed in October 2002. Part three of the project currently is procuring a multipurpose electronic fare card system and card readers for transit vehicles and integrating them with the software system. The system will use the state's electronic benefits transfer (EBT) card to track transportation benefits for clients. General public riders will also be able to buy disposable, magnetic stripe passes that can be used on transit vehicles.

## **6. RECOMMENDATIONS AND IMPLEMENTATION STRATEGIES**

This chapter presents findings and recommendations, together with implementation strategies. Funding sources that may be applicable for the recommended projects are summarized.

### **RECOMMENDATION AND STRATEGY**

Working with the TAC and the County Project Manager, the consultant team developed cost estimates for both the 17 proposed Phase I and the 17 proposed Phase II transportation projects presented in the previous chapter.

Phase I projects are recommended for completion during the short-term (2006 – 2010) time frame. In addition, CAAG has seven projects programmed for the same time frame, which are listed in Table 6-1, but not shown in Figure 5. The estimated costs of the 17 Phase II projects recommended for completion during the long-term (2011 – 2030) time frame are presented in Table 6-2.

The consultant recommends that the County program the projects for implementation following the action plan outlined in Table 6-3, provided that sufficient funding can be identified. Included in the following section are funding sources and revenue estimates. The following section also includes a cash flow analysis that projects a shortfall between the monies needed to complete the projects and the funds projected to be available during the time frame of each Phase.

### **FUNDING AND REVENUE ESTIMATES**

This section summarizes multimodal revenue sources and estimates that are applicable to Gila County, together with financial constraints and opportunities pertaining to needed roadway improvements. A number of funding mechanisms exist that could be used to fund multimodal improvements for Gila County. These include federal, state, regional, and local sources, as shown in Table 6-4. Additional information is provided in Appendix A.

Likely sources of funding include

- Surface Transportation Program (STP) funds
- Highway User Revenue Fund (HURF)
- Local Transportation Assistance Fund (LTAF I and LTAF II)
- Gila County Half-Cent Transportation Tax
- Potential Sources of Additional Funding

A summary of each source follows.

**TABLE 6-1. TRANSPORTATION IMPROVEMENT PLAN PROJECT LIST - PHASE I**

<b>Project Name</b>	<b>Location</b>	<b>Work Type</b>	<b>Comments</b>	<b>Estimated Cost</b>
Adonis Avenue	Miami		Included in CAAG 2006 TIP	\$255,000
McLane Road Phase IV*	Payson		Included in CAAG 2006 TIP	\$500,000
Fossil Creek Road - Phase II*	Gila County -Globe area		Included in CAAG 2007 TIP	\$500,000
S. St. Philips	Payson		Included in CAAG 2007 TIP	\$400,000
Ice House Canyon Road	Gila Co. - Globe area		Included in CAAG 2008 TIP	\$500,000
Broadway/Old Oak Road	Gila Co. - Globe area		Included in CAAG 2010 TIP	\$500,000
E. Bonita Street - Phase I	Payson		Included in CAAG 2010 TIP	\$268,000
Bradshaw/SR 87	Pine	Deceleration and turn lanes*		\$135,000
Cline Boulevard	A Cross - Greenback Valley	Paving / Geometry		\$1,532,000
Control Road Tonto Village	Tonto Village	Reconstruct intersection		\$400,000
Copper Hills Road	Connect to US 60	Provide Connection		\$2,000,000
Copper Spike Rail Study	Miami - Apache Gold	Study Permanent Service		\$26,160
Fairground Road	Globe	reconstruct entrance, WMS		\$500,000.
Gisela Road	SR 87 - Gisela	Improve Alignment and Geometry		\$1,150,000
Greenback Valley Road	Cline Blvd. - SR 188	Paving / Geometry		\$624,000
Houston Mesa Road	Mesa de Caballos	Improve Geometry		200,000
Miami Dial-a-Ride Study	Superior - Globe	Study Service Expansion*		\$87,600
Pine Creek Canyon Road	Pine	Widen and reconstruct roadway		Not Available
Rail - Roadway Crossings	Claypool	Repair or Rebuild		\$750,000
Regional Bus Service Study	US 60 - US - 70 corridor	Study Greyhound Replacement*		\$86,640
San Carlos Airport Study	Cutter Airport	Study facility upgrade		\$95,760
SR 260	Star Valley	Deceleration and turn lanes*		\$135,000
Tonto Creek Bridge I	TBD - Tonto Creek	Select Site and design Bridge		\$3,400,000
Young - Heber Road	Young - SR 260	Reconstruct and Pave		\$12,000,000
<b>Total Phase I Projects</b>				<b>\$23,100,160</b>

\*ADOT has ultimate responsibility for projects involving State Highways.

**TABLE 6-2. TRANSPORTATION IMPROVEMENT PLAN PROJECT LIST - PHASE II**

<b>Project Name</b>	<b>Location</b>	<b>Work Type</b>	<b>Comments</b>	<b>Estimated Cost</b>
A Cross Road	SR 188 - SR 288	Reconstruct and Pave		\$18,430,000
Arizona Trail	Gila County Passages	Signing / Improvements		\$575,000
Control Road - East	Houston Mesa - SR 260	Paving / Geometry		\$4,932,000
Control Road - West	SR 87 - Houston Mesa	Reconstruct and Pave		\$16,940,400
East Verde Estates Road	Low Water Crossing	Construct Bridge		\$540,000
Globe - Miami Trail system	Globe - Miami area	Signing / Improvements		\$100,000
Highline Trail	N. of Control Road	Improve		\$255,000
Houston Mesa Road	Low Water Crossings	Construct Two Bridges		\$1,080,000
Kellner Canyon Road	S. of Globe	Paving / Geometry		\$288,000
Pinal Creek Corridor	SE Globe area	Design and Construct Roadway		\$5,300,000
Russell Gulch Road	S. of Globe	Paving / Geometry		\$1,488,000
SR 288	Jct. SR 188 - Young	Complete Paving*		\$13,320,000
Tonto Creek Bridge II	TBD - Tonto Creek	Construct Bridge		\$18,300,000
Bradshaw/SR 87	Pine	Deceleration and turn lanes*		\$135,000
Payson Transit Study Update	Payson	Update Study of local system		\$100,000
SR 87 - SR 260 Truck Loop	Payson area	Design and Construct Roadway*		\$30,000,000
Total Phase II Projects				\$111,783,400

\*ADOT has ultimate responsibility for projects involving State Highways.

**TABLE 6-3. IMPLEMENTATION ACTION PLAN**

<b>Implementation Strategy</b>	<b>Responsible Entities</b>
Adopt the Gila County Small Area Transportation Plan and Transit Element	County Board of Supervisors
Program the recommended Phase I and Phase II transportation improvements into the Capital Program	County Public Works Department
Establish a process to coordinate County land use and transportation decisions on a regular basis	County Public Works and Community Development Departments
Designate a Transportation Coordinator	County Board of Supervisors
Conduct a Regional Bus Service Study	County Public Works Department, CAAG, ADOT
Conduct a San Carlos Airport Upgrade Study	County Public Works, CAAG, San Carlos Apache Tribe, ADOT
Coordinate with the Town of Miami, the City of Globe, and the Town of Payson on local transit studies	County Public Works Department
Conduct a Miami-Globe-San Carlos excursion passenger rail feasibility study	ADOT, County Public Works Department
Initiate a County Bicycle and Pedestrian Plan	County Board of Supervisors
Implement the street functional classifications and roadway design guidelines for new development	County Public Works Department
Ensure that County access management policies are adhered to by new developments	County Planning and Zoning and Public Works Departments
Coordinate with ADOT and CAAG on a regular basis on multimodal transportation improvements	County Public Works Department
Establish a process to coordinate transit services with private and public agencies	County Public Works Department, CAAG, ADOT
Monitor and update plan Transportation Plan and Transit Element	County Public Works Department, CAAG, ADOT

**TABLE 6-4. MATRIX OF FUNDING SOURCES**

<b>Fund Name</b>	<b>Description</b>	<b>Eligible Uses</b>	<b>Application Process</b>	<b>Sample Project</b>
<b>Federal</b>				
STP	Federal funds, administered by FHWA and ADOT	Variety of capital projects including highways, bridges, transit and enhancement projects	Programmed and distributed through CAAG and ADOT District	Fairgrounds entrance, highway-rail crossings
Bridge Replacement and Rehabilitation	Federal funds, administered by FHWA and ADOT	Used for bridge replacement or rehabilitation for eligible bridges located on public roads	Programmed through ADOT	
FTA Section 5310 funds	Federal funds administered by ADOT	Local jurisdictions and private non-profit agencies	Programmed through ADOT Public Transportation Division	Mini-bus for Senior Center
FTA Section 5311 funds	Federal funds administered by ADOT	Used for rural transit services and communities of less than 50,000 population including Tribal communities	Programmed through ADOT Public Transportation Division	Dial-A-Ride Services
High Risk Rural Roads	Federal funds, administered by FHWA and ADOT	Correct safety problems on roadways classified as rural major collectors, rural minor collectors and rural local roads	Programmed through ADOT	Correct safety problems on rural roads
Safe Routes to School Program	Federal funds, administered by FHWA and ADOT	sidewalk, traffic calming and speed reduction improvements, pedestrian and bicycle crossing improvements, traffic diversion improvements near schools	Programmed through ADOT	Traffic calming improvement in school zone
<b>State</b>				
HURF	State funds, derived from fuel tax and VLT, administered by ADOT	Nearly any capital project related to roadway improvements	Funds allocated to jurisdiction as proportion of population	Improvements to County Road
LTAF	State funds derived from lottery sales	General transportation improvements	Funds allocated to jurisdiction as proportion of population	Extension of County Road
LTAF II	State funds derived from PowerBall lottery sales	Used as local matching funds for FTA transit funds	Funds allocated to jurisdiction as proportion of population	Match 5311 funds for provision of dial-a-ride service

**TABLE 6-4. MATRIX OF FUNDING SOURCES (Continued)**

<b>Fund Name</b>	<b>Description</b>	<b>Eligible Uses</b>	<b>Application Process</b>	<b>Sample Project</b>
<b>County</b>				
Gila County Transportation Tax	½ cent sales tax dedicated to road improvements within Gila County	General transportation improvements	Funds allocated to jurisdiction by proportion of population	Gila County Roads
Impact Fees*	Fee imposed by local jurisdiction on development on per unit basis	Used to fund a variety of infrastructure needs including transportation	Locally administered	Gila County Roads
Development Stipulations*	Requirements that developers dedicate appropriate ROW and build streets adjacent to project	Benefits are derived by offsetting cost of acquiring ROW and building infrastructure	Locally administered	ROW dedication adjacent to new Tonto Basin developments

\*If Enacted

## **Federal Funds**

The Federal government funds a variety of transportation programs, most applicable to the County would be the Surface Transportation Program (STP) funds. Arizona receives about \$152 million in STP funds per year. These funds can be used on state highways or for bridge rehabilitation, transportation enhancements, and safety projects. The County would work through ADOT and CAAG to utilize STP funds.

## **Arizona State Shared Revenue**

### ***Highway User Revenue Fund (HURF)***

One of the main sources of State transportation funds are derived from the Highway User Revenue Fund. These funds are comprised of gasoline taxes, use fuel tax, motor carrier fees, vehicle license taxes, and other registration fees. The estimated revenue for HURF in 2006 is over \$1.2 billion dollars. HURF funds are allocated through ADOT and distributed as an entitlement to cities, towns, and counties based on population. Gila County received \$3,923,590 of HURF funds in 2005. Table 6-5 lists the funds received by the County and local jurisdictions from Fiscal Year 2001 through Fiscal Year 2005. As the population of the County increases, the proportion of HURF funds for the County are expected to increase as well.

### ***Local Transportation Assistance Fund (LTAF I and LTAF II)***

Other State funding programs include LTAF I, which is funded by Arizona Lottery receipts other than PowerBall, and LTAF II, which is funded by PowerBall receipts. These funds are also distributed based on population. Larger cities, those over 300,000, must use LTAF I revenue for public transit; smaller communities can use the funds for other transportation projects. LTAF II monies must be used for transit by nearly all jurisdictions. The State also administers Federal transit funding within the Section 5311 and 5310 programs. These programs provide for small urban and rural transit services as well as special needs transit services.

## **Gila County Half-Cent Transportation Tax**

Gila County has an existing transportation tax, the revenue from which is used for road construction, improvement, and preservation throughout the County. The revenue generated by this tax for the last five fiscal years is shown in Table 6-6.

## **Potential Sources of Additional Funding**

In Gila County, the half-cent tax described above generates revenue for the County only. However, in Maricopa and Pinal Counties, the County half-cent transportation taxes are



**TABLE 6-5. ARIZONA HIGHWAY USER REVENUE FUND DISTRIBUTIONS TO GILA COUNTY AND LOCAL JURISDICTIONS, FY 2001 - 2005**

Jurisdiction	Distributions				
	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Total Counties in State	\$192,222,098	\$194,432,532	\$200,465,084	\$214,601,120	\$226,464,153
Gila County	\$3,248,195	\$3,177,018	\$3,202,973	\$3,629,075	\$3,923,590
City of Globe	\$775,522	\$706,297	\$702,573	\$834,605	\$912,020
Town of Hayden	\$99,675	\$84,039	\$83,626	\$99,384	\$108,740
Town of Miami	\$222,188	\$182,611	\$181,828	\$216,082	\$236,408
Town of Payson	\$1,228,322	\$1,287,910	\$1,279,669	\$1,517,334	\$1,659,435
Town of Winkelman	\$71,834	\$41,139	\$41,304	\$49,175	\$53,794

Source: Arizona Department of Transportation, Financial Management Services, May 17, 2006

**TABLE 6-6. GILA COUNTY HALF-CENT TRANSPORTATION TAX REVENUE**

Fiscal Year	Revenue
FY 2002	\$2,684,235.24
FY 2003	\$2,634,919.85
FY 2004	\$2,717,227.54
FY 2005	\$2,755,933.64
FY 2006*	\$2,243,565.73

Source: Office of the Arizona Treasurer, May 16, 2006

\*Ten months ended April 30, 2006

structured so that local jurisdictions within the counties receive distributions that can be used as local matching funds for transportation projects. When the tax is next up for renewal by the voters, the County may want to work with the local jurisdictions to develop an approach similar to that used in Maricopa and Pinal Counties. Alternatively, additional local taxes could be enacted to provide monies for Area Road Funds in the Globe-Miami and Payson urban areas.

***Impact Fees, Right-of-Way, Facilities In-Lieu***

Traffic impact fees, development impact fees, dedication of right-of-way, and/or construction of facilities in-lieu are additional local funding sources. As areas of Gila County with available deeded land develop, the improvement of County roads to and within these areas may require additional rights-of-way. In order to acquire additional rights-of-way in these areas, private developers should be required to incorporate potential rights-of-way into their plans. In addition, right-of-way exactions from developers should be sought through the coordination with planning and zoning authorities in local jurisdictions as areas are annexed or incorporated.

## Cash Flow Analysis

The consultant conducted a cash flow analysis comparing the estimated costs of the projects in Phases I and II with the funds likely to be available from the various sources during the time-frames of the phases. Table 6-7 presents the result for Phase I and Table 6-8 presents the result for Phase II. As mentioned in the previous chapter, a shortfall between the funds needed for the projects, together with on-going maintenance, and the funds available exists in both phases.

### *Methodology*

The cost of each of the projects was estimated by the consultant team, with input from the County Project Manager, based on the known costs of similar projects. Where available, dollar amounts from existing reports were used (e.g. the Pinal Creek Parkway).

Revenues were forecasted as follows:

- **HURF:** Arizona's share of the HURF appears to increase at a little over one percent annually, and Gila County's share of the Arizona HURF is approximately 1.67 percent. However, since 2006 dollars were used to estimate the project costs, a constant 2006 level HURF revenue figure of \$3.9 million was used for consistency. The Phase I figure represents five years of revenue and the Phase II figure represents 20 years of revenue. In the cash flow analysis, monies received by the City of Globe and the Town of Payson were not used. However, these are significant amounts and are likely applied to segments of projects located within these jurisdictions.
- **Gila County ½ Cent Transportation Tax:** The County ½ Transportation Tax also increases at the rate of approximately one percent per year. However, for the sake of consistency with the project cost numbers, a constant 2006 level sales tax revenue figure of \$2.8 million was used. Five years and 20 years of revenue were assumed for Phases I and II respectively.
- **STP:** Transportation Enhancement Funds are shown for the Fairgrounds Road and Section 130 funds are shown for the highway-rail crossings in Phase I. When analyzing cash flow, it was not possible to estimate with certainty the amount of FLEX funds that could be counted on annually, hence FLEX funds were not counted. If Gila County's average share of these funds equals 1.67 percent of the State total, as is the case with the HURF funds, then the average annual revenue from STP FLEX funds would be approximately \$2 million.
- The **Tonto Creek Bridge** was assumed to be funded by a separate Congressional earmark.
- The source of matching funds for the **multimodal studies** was not specified, although an 80-20 match ratio was assumed.

- Future levels of **LTAF** funds are difficult to predict. Hence, LTAF funds were not considered.
- The Maintenance Estimate was derived from the County's Road Maintenance and Repair Budget. Gila County's budget for this section also appears to be increasing at the rate of approximately one percent per year. In this instance, the one percent factor was applied. As projects in the Phases are completed, a greater percentage of the roadway miles for which the County is responsible will be paved, and paved roadways cost more per mile to maintain than unpaved ones.

The dollar amounts shown in Tables 6-7 and 6-8 are preliminary amounts for internal discussion only and are not intended to represent a definitive finding with regard to future monies that might be available to implement the recommended Phases of the project.

Funding devices such as impact fees, the use of which could become common in the future, were not considered. Other devices for funding or accelerating the completion of projects such as bonding, the passage of specific initiatives by the voters, or the use of the State Infrastructure Bank HELP funds were not considered. In reality, any or all of these devices will likely be employed at the time that the projects are actually programmed.

### *Summary*

If STP FLEX funds can be used for projects such as the reconstruction and paving of the Young-Heber Road, then programming most or all of the projects recommended for Phase I may be feasible. If, on the other hand, HURF monies themselves are the only source of funds for the paving of SR 288 and the design and construction of the SR-87 – SR-260 truck loop in Phase II, then the shortfall for that Phase will be significantly higher.

**TABLE 6-7. CASH FLOW ANALYSIS – PHASE I**

<b>Projects and Roadway Maintenance Costs</b>		
Phase I Projects	\$ 23,100,160	
Five-year Maintenance Estimate	23,300,000	
<b>Estimated Costs</b>		<b>\$ 46,400,160</b>
<b>Five Year Revenue Projection - 2006 - 2010</b>		
HURF	\$ 19,500,000	
Gila 1/2 Cent Tax	14,000,000	
		\$ 33,500,000
<b>Matching Funds/Other</b>		
Trans. Enhancement Funds - Fairground Road	\$ 500,000	
ADOT/FTA - Miami DAR Study	70,080	
ADOT/FHWA Sec. 130 - Grade Crossings	750,000	
ADOT/FTA - Regional Bus Service Study	69,312	
ADOT/FAA - San Carlos Airport Study	76,608	
ADOT match - Copper Spike Rail Study	20,928	
Tonto Creek Bridge I - Earmark	3,400,000	
		\$ 4,886,928
<b>Total Revenue Projections</b>		<b>\$ 38,386,928</b>
<b>Shortfall</b>		<b>\$ 8,013,232</b>

Source: Lima & Associates, Inc.

**TABLE 6-8. CASH FLOW ANALYSIS – PHASE II**

<b>Projects and Roadway Maintenance Costs</b>		
Phase II Projects	\$ 111,783,400	
20-year Maintenance Estimate	105,500,000	
<b>Estimated Costs</b>		<b>\$ 217,283,400</b>
<b>Twenty Year Revenue Projection - 2011 - 2030</b>		
HURF	\$ 78,000,000	
Gila 1/2 Cent Tax	56,000,000	
		\$ 134,000,000
<b>Matching Funds/Other</b>		
ADOT - SR 288	\$ 11,988,000	
Tonto Creek Bridge II	18,300,000	
ADOT/FTA - Payson Transit Study Update	80,000	
ADOT - SR 87 - SR 260 Truck Loop	27,000,000	
		\$ 57,368,000
<b>Total Revenue Projections</b>		<b>\$ 191,368,000</b>
<b>Shortfall</b>		<b>\$ 25,915,400</b>

Source: Lima & Associates, Inc.

## **APPENDIX A. ESTIMATING TRANSIT DEMAND**

## ESTIMATING TRANSIT DEMAND

The TCRP estimations were developed based on specific population groups within the hypothetical service area presented in Figure 4-5. These population groups are typically referred to as transit dependent populations, and statistically are the most likely to use transit if available. The groups include (as defined by the Census); person aged 65 or over, persons aged 16 to 64 with mobility limitations, and persons aged 64 or under, residing in households with incomes below the poverty level. Table A-1 shows the total 2030 forecasted populations for each group in the hypothetical service area.

**TABLE A-1. 2030 POPULATION OF SERVICE GROUPS IN SERVICE AREA**

Service Group	2030 AG* Population
Persons aged 65 or over	18,212
Persons aged 16 to 64 with mobility limitations	12,018
Persons aged 64 or under, residing in households with incomes below the poverty level	16,012

Source: Lima & Associates, Inc.

\*Accelerated Growth Scenario

The TCRP workbook also requires estimations of vehicle miles per year, and subsequently vehicle miles per square mile. These estimations are used to understand the level, or amount of transit that will be available to a defined service area. Preliminary assumptions for the number of trips per day, service days per year, and length of the transit routes were also made. It was assumed that service would be provided twice daily between Globe and Payson, and twice daily along the US60/US70 Corridor through Globe. One round trip daily would be made connecting the Young area with the Globe-Payson line. These trips would result in 632 vehicle miles per day. Assuming that service was provided six days per week, or 312 service days per year, the annual vehicle miles for the hypothetical system would be 197,184. Table A-2 shows the process used for calculating the vehicle miles per square mile.

**TABLE A-2. CALCULATION OF VEHICLE MILES PER SQUARE MILE**

Calculations	Data
Estimated vehicle miles per day =	632
Estimated service days per year =	X 312
Estimated vehicle miles per year =	197,184
Size of service area (square miles) =	3,885
vehicle miles / service area =	197,184 / 3,885
Vehicle miles per square mile =	51

Source: Lima & Associates, Inc.

The calculations from Table A-2, specifically the vehicle miles per square mile, are input into a formula provided in the TCRP workbook to create a service factor for each population group. These formulas rely on given factors which are related to the vehicle miles per square mile. Table A-3 shows the calculation of the service factors needed for calculating the estimate of transit demand.

**TABLE A-3. SERVICE FACTOR CALCULATIONS**

<b>Population Group</b>	<b>Vehicle Miles per Square Mile</b>	<b>Multiplied by TCRP Factor 1</b>	<b>Plus TCRP Factor 2</b>	<b>Divided by 1 million</b>	<b>Equals Service Factor</b>
Over 65	51	2.682	376	1,000,000	0.000512782
Mobility Limited	51	1.57	1010	1,000,000	0.00109007
Below Poverty	51	2.45	525	1,000,000	0.00064995

Source: Lima & Associates, Inc.

These derived service factors, based on the frequency of service and size of the service area, are part of the final calculations to estimate demand. Table A-4 shows the formula provided in the TCRP workbook, which includes a standard factor, population of each group, and the service factor. Table A-4 shows the estimated demand for each population group and the total estimated demand for transit. This methodology estimates a total yearly demand (all trips made during a year period) for Gila County of 39,416 trips, an average of about 126 trips per day (assuming 312 days of service).

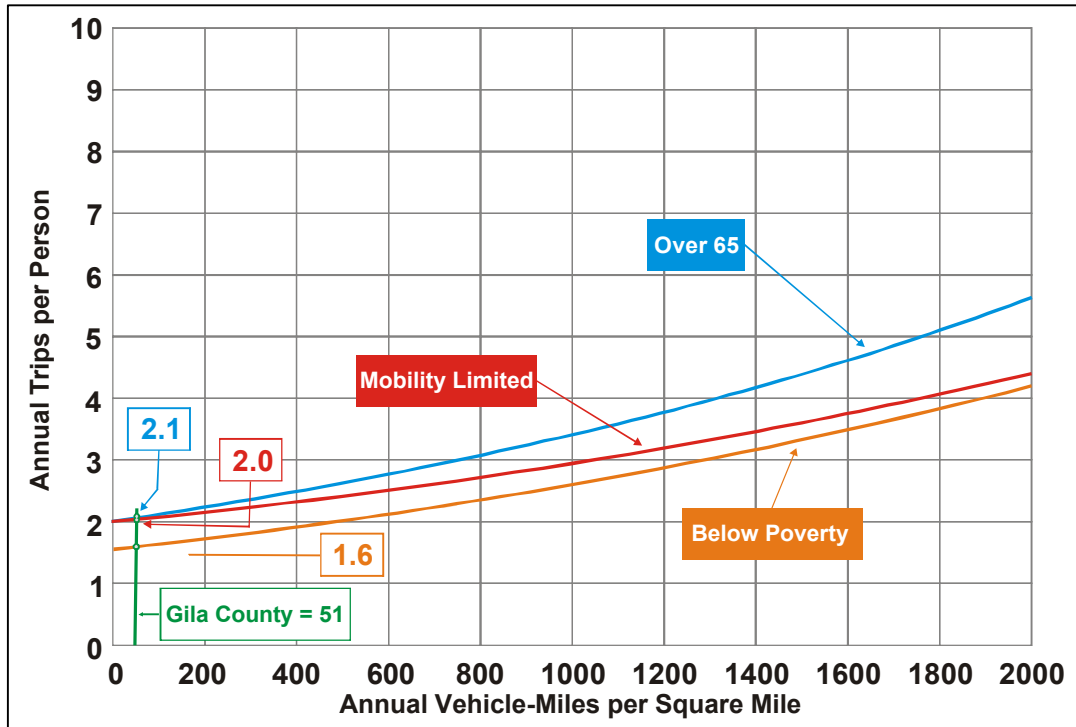
**TABLE A-4. ESTIMATION OF TRANSIT DEMAND**

<b>Population Group</b>	<b>TCRP factor</b>	<b>x</b>	<b>Population</b>	<b>x</b>	<b>Service Factor</b>	<b>=</b>	<b>Estimated Annual Demand</b>
Over 65	1,200	x	17,790	x	0.000512782	=	11,206
Mobility Limited	1,200	x	11,740	x	0.00109007	=	15,721
Below Poverty	1,200	x	15,641	x	0.00064995	=	12,489
<b>Total Estimated Annual Transit Demand =</b>							<b>39,416</b>

Source: Lima & Associates, Inc.

The TCRP workbook includes an alternative method for estimating demand. This alternative method provides a secondary demand estimate that can be compared against the first. This alternative method is based on pre-calculated trip rate curves created from research and analysis of other rural transit programs. The chart compares vehicle miles per square mile (as derived in Table A-2) against annual trips per person as shown in Figure A-1.

**FIGURE A-1. TRIP RATES FOR ALTERNATIVE ESTIMATION PROCEDURE**



Source: Adapted from: TCRP Report 3, *Workbook for Estimating Demand for Rural Passenger Transportation*, Figure 6, pg 45.

The estimated trip rates for the hypothetical Gila County service based on 51 vehicle miles per square mile for each population group are overlaid on the chart taken from the TCRP workbook, and shown above in Figure A-1.

The estimated trip rates taken from Figure A-1 are used to estimate the demand for each population group as shown in Table A-5. The total estimated demand, using this alternative method, is 87,901 annual trips, or 282 trips per day (assuming 312 service days).

**TABLE A-5. ESTIMATION OF TRANSIT DEMAND - ALTERNATIVE METHOD**

Population Group	Population in Service Area	Trip Rate (from Figure A-1)	Estimated Demand (Pop. x Trip Rate)
Over 65	17,790	2.1	38,425
Mobility Limited	11,740	2.0	24,037
Below Poverty	15,641	1.6	25,620
Total Estimated Trip Demand =			87,901

Source: Lima & Associates, Inc.



## **APPENDIX B. REVENUE SOURCES**

## REVENUE SOURCES

This Appendix presents an overview of sources of revenue for capital improvements, annual operating, and maintenance expenses for roadway and other modes on a statewide level. Federal Transportation Funds are introduced, followed by an overview of Arizona's Highway User Revenue Fund. The last section presents a summary of other available funding sources.

### FEDERAL TRANSPORTATION FUNDS

This section briefly summarizes key provisions of the Safe, Accountable, Flexible, Efficient Transportation Equity Act - A Legacy for Users (SAFETEA-LU), which authorizes federal highway and transit programs through Fiscal Year (FY) 2009. The bill was signed into law on August 10, 2005.

*Highway Trust Fund (HTF)* is composed of the Highway Account and the Mass Transit Account, and is the source of funding for most of the programs in SAFETEA-LU. Specific funding levels depend on how much revenue is generated for the Highway Trust Fund. Federal motor fuel taxes are the major source of income into the Highway Trust Fund. SAFETEA-LU allocates funding based on four major goals: improving safety, rebuilding America's infrastructure, protecting our environment, and advancing research and technology.

Arizona has been allocated a total of \$1.57 billion between 2005 and 2007. The estimated funding levels for Arizona are summarized in Table B-1 for Fiscal Years 2004 - 2005, 2005 - 2006, and 2006 - 2007. The distribution of these apportionments to Metropolitan Planning Organizations (MPOs) is also shown. Table B-2 shows the detailed distribution of federal revenue sources for Fiscal 2004. Major funding categories of federal funds in SAFETEA-LU include the following:

*Surface Transportation Program (STP)* is federal funds allocated to ADOT that may be programmed on any segment of the interstate system or state highway. Portions of this fund may also be used for bridge rehabilitation, transportation enhancements, and safety projects, such as hazard elimination and environmentally related activities. A new provision permits a portion (up to 15 percent) of funds reserved for rural areas to be spent on rural minor collectors. Apportioned funds are to be distributed based on the following factors:

- 25 percent based on total lane miles of Federal-aid highways
- 40 percent based on vehicle miles traveled on lanes on Federal-aid highways
- 35 percent based on estimated tax payments attributable to highway users in the States into the Highway Account of the Highway Trust Fund (often referred to as "contributions" to the Highway Account)

Each State is to receive a minimum of one-half percent of the funds apportioned for STP.

**TABLE B-1. ESTIMATED FEDERAL AID HIGHWAY APPORTIONMENTS AND ALLOCATION FOR ARIZONA (In Millions of Dollars)**

Description	Estimated Apportionments		
	FY 04-05	FY 05-06	FY 06-07
Apportionments			
Interstate Maintenance	\$115.9	\$115.9	\$115.9
National Highway System	125.5	125.5	125.5
Surface Transportation	142.3	142.3	142.3
Bridge	14.3	14.3	14.3
Congestion Air Quality	41.5	41.5	41.5
Recreational Trails	1.2	1.2	1.2
Highway Planning and Research	10.4	10.4	10.4
Metro Planning	4.5	4.5	4.5
Equity Bonus (Minimum Guarantee)	70.2	70.2	70.2
<b>Subtotal</b>	<b>\$525.80</b>	<b>\$525.80</b>	<b>\$525.80</b>
Apportionment Distribution by Entity			
MAG	84.1	84.1	84.1
PAG	16.3	16.3	16.3
ADOT	399.6	399.6	399.6
Optional Use by MAG, PAG, Other Locals	14.7	14.7	14.7
Other Locals	11.1	11.1	11.1
<b>Subtotal</b>	<b>\$525.80</b>	<b>\$525.80</b>	<b>\$525.80</b>
	<b>Grand Total FY 05 - 07</b>	<b>\$1,577.4</b>	

Source: Arizona Department of Transportation, *State Transportation Improvement Plan, 2005 - 2007*  
 Portion of State Transportation Funds are flexed to FTA for Transit projects Statewide

The total funding for the STP over the three fiscal years shown in Table B-1 for Arizona is \$426.9 million. Arizona's allocation is based on the state's lane-miles of Federal-aid highways; total vehicle-miles traveled on those Federal-aid highways, and estimated contributions to the Highway Account of the HTF.

*The National Highway System (NHS)* funds are for improvement to the National Highway System which consists of an interconnected system of principal arterial routes which serve major population centers, international border crossings, airports, public transportation facilities, and other intermodal transportation facilities as well as major travel destinations. The NHS funding level for Arizona over the three fiscal years in shown Table B-1 is \$376.5 million. Arizona's share is based the state's lane-miles of principal arterials (excluding Interstate), vehicle-miles traveled on those arterials, diesel fuel used on the state's highways, and per capita principal arterial lane-miles.

*Interstate Maintenance (IM)* funds are for reconstruction of bridges, interchanges, and over crossings along existing Interstate routes, acquisition of right-of-way, and preventative maintenance. These funds are not to be used for the construction of new travel lanes other than high occupancy vehicle lanes or auxiliary lanes. The IM funding level for Arizona over the three fiscal years shown in Table B-1 is \$347.7 million. The allocation

**TABLE B-2. FY 2005 ADOT REVENUE SOURCES - FEDERAL**  
(In Millions of Dollars)

Description	FY 05 Arizona Obligation Authority	FY 05 National Apportionments
National Highway System (NH)	\$140.3	\$5,525.0
Interstate Maintenance (IM)	\$128.3	\$4,522.5
Surface Transportation Program (STP)	\$122.2	\$5,173.9
Safety (STP)	\$15.3	\$646.7
Enhancement (STP)	\$15.3	\$646.7
Equity Bonus	\$71.6	\$5,702.8
Congestion Mitigation & Air Quality Program (CMAQ)	\$43.1	\$1,578.1
High Priority Projects	\$6.5	\$1,201.7
Bridge Replacement Program	\$19.1	\$3,863.7
Safe Routes to School	\$1.0	\$51.0
Safety Incentives (0.08 BAC)	\$1.2	\$89.0
Recreational Trails Program	\$1.3	\$59.2
Coordinated Border Infrastructure Program	\$5.9	\$123.0
State Planning & Research (SPR)	\$10.4	N/A
Metropolitan Planning	\$5.6	\$293.9
Motor Carrier Safety Assistance	\$0.3	N/A
Intelligent Transportation System	\$0.01	N/A
Local Technical Assistance Program	\$0.1	N/A
Miscellaneous Allocations	\$7.8	N/A

Source: Arizona Department of Transportation, Financial Management Services, May 17, 2006

of these funds is based on the state's lane-miles of Interstate routes open to traffic, vehicle-miles traveled, and contributions to the Highway Account of the Highway Trust Fund attributable to commercial vehicles. A State may transfer up to 50 percent of its IM apportionment to its NHS, STP, CMAQ, Highway Bridge Replacement and Rehabilitation, or Recreational Trails apportionment.

Equity Bonus ensures that the State will have a guaranteed return on its contributions to the Highway Account of the Highway Trust Fund. The specified percentages are 90.5 percent for 2005 and 2006, 91.5 percent for 2007, and 92 percent for 2008 and 2009. Arizona's State Transportation Improvement Plan estimates the amount of \$210.6 million for Fiscal Years 2004 - 2007 for the Equity Bonus funding itself. This SAFETEA-LU program replaces TEA-21's Minimum Guarantee program.

*Congestion Mitigation & Air Quality (CMAQ)* funds in the amount of \$124.5 million are allotted to Arizona between Fiscal Years 2004 and 2007 for projects likely to contribute to attainment of national ambient air quality standards and congestion mitigation. These funds are programmed for both freeway management projects, demand management projects, as well as other related air quality projects including bicycles facilities. Currently, CMAQ funds are only spent in Maricopa County.

**Bridge Replacement and Rehabilitation** funds in the amount of \$42.9 million are authorized for Arizona. This allotment can be used for bridge replacement or rehabilitation for eligible bridges located on any public road. The State has the option to transfer up to 50 percent of its bridge funds to NHS or STP funds.

**The Hazard Elimination System (HES)** is a program that was previously identified as the Candidate Locations for Operations and Safety Evaluations (CLOSE) program. The primary objective of the HES program is for reducing the number and severity of traffic crashes and decreasing the potential for crashes on state highways.

Authorized funding for the HES program is under Section 924 of the Highway Safety Improvement Program of Title 23 of U.S.C. 105(f), 152, 315, and 402; Section 203 of the Highway Safety Act of 1973, as amended; 49 CFR 1.48(b). The program is funded for the amount of \$50.5 million for FYs 2003-2007 based on the ADOT Five-Year Transportation Facilities Construction Program.

Most types of public surface transportation facility improvement may be approved for funding, provided that the sole purpose of the improvement is to substantially improve safety or to eliminate traffic hazards. However, improvements primarily for capacity enhancements with safety as a by-product will not be approved.

**Federal Lands Highways (FLH)** funds can be used for Indian Reservation Roads, Park Roads and Parkways, Public Lands Highways, and Refuge Roads. FLH funds also can be used for transit facilities within public lands, national parks, and Indian reservations. The funds can also be used as the State/local match for most types of Federal-aid highway funded projects. Program authorizations through 2009 total \$4.5 billion for projects nationwide.

**Transportation Enhancement** funds are one type of federal funds, which are available directly for local projects. These funds are set aside in order to add community or environmental value to a completed or ongoing transportation project. Currently, Arizona receives about \$13.9 million per year for transportation enhancement projects that are divided between ADOT and local government projects. The Arizona State Transportation Board retains fifty percent of the Transportation Enhancement funds for ADOT projects. The remaining enhancement funds are available for local projects recommended by the MPOs and rural councils of governments (COGs).

**Metropolitan Planning Funds** in Arizona are funded with \$13.5 million over the 3-year horizon. These funds are used to improve the planning process to meet metropolitan and State transportation needs.

**Funds for the Recreation Trails Program** are provided by the Federal Highway Administration in apportionments to the Recreational Trails Program, with an allocation of \$3.6 million over the next three years to Arizona. A state recreational trails advisory committee represents both motorized and non-motorized recreational trail users. The

allocated funds are split into 30 percent for motorized use, 30 percent for non-motorized use, and 40 percent for diverse trails.

### **New SAFETEA-LU Programs**

In addition to continuing the programs outlined above, SAFETEA-LU created a number of new transportation programs. Three programs of particular interest to counties are summarized below by Robert Fogel, the Senior Legislative Director for the National Association of Counties (NACo):

***Highway Safety Improvement Program (HSIP)*** replaces the safety set-aside that was formerly part of the Surface Transportation Program. Over the next four years, an average of \$1.265 billion will be distributed by formula to the states that can be used on a broad array of safety improvement projects to reduce the number and severity of highway-related crashes and to decrease the potential for projects on all highways. That means on any road owned by county government. This includes projects aimed at intersection safety improvement, pavement and shoulder widening, rumble strips, signage, and guardrails. County officials need to get involved in this program at an early stage and document the projects they want funded. Every state is required to develop a Strategic Highway Safety Plan (SHSP) that involves a comprehensive, collaborative and data driven approach of highway safety. This plan is required to lay out projects and strategies for which the federal will be used to reduced or eliminate safety hazards. For counties, it is important to note that the SHSP must be developed in collaboration with key safety stakeholders in the State, which includes local officials, and the SHSP must be data driven. The presumption is that the federal safety funds must be invested in projects where the data (fatalities, crashes, police records, etc.) supports the need for investment.

As a part of the HSIP, there is a specific set aside for ***High Risk Rural Roads***. This was a NACo priority. While any of the \$1.2 billion annually can be spent on rural roads, \$90 million is specifically targeted for safety problems on roadways classified as rural major collectors, rural minor collectors and rural local roads. The funds can be used for construction and operational improvements related to safety but must be used on roads that have a crash rate and for fatalities and incapacitating injuries that exceeds the statewide average for those functional classes of roads. A second set aside on the HSIP program is for Railway-Highway Grade Crossing. At \$220 annually, this program is increased by approximately \$65 million beyond TEA-21 levels. This program is basically unchanged and is aimed at funding projects on any public road that eliminates hazards at rail grade crossings, including the separation or protection, reconstruction and relocation of grade crossings.

The ***Safe Routes to School Program*** is a totally new program focused on enabling and encouraging children to safely walk and bicycle to school. This is another

program for which counties and all the roads they own are eligible. County leaders should work vigorously to get their projects at the top of the funding list. An average of \$122 annually will be distributed by formula to each State to be used by state, counties and cities, and regional agencies, including non-profit organizations, to further this objective. Each state has to designate a coordinator for this new program, a person county officials should contact. Project eligible include sidewalk improvements, traffic calming and speed reduction improvements, pedestrian and bicycle crossing improvements, traffic diversion improvements near schools, and a variety of projects to encourage the use of bicycles. Each State must use between 10–30 percent of the funds for non-infrastructure related activities, such as public awareness campaigns, traffic education and enforcement near schools and student sessions on [pedestrian and bicycle safety.

### **ARIZONA HIGHWAY USER REVENUE FUND**

Monies from the Highway User Revenue Fund (HURF) are intended for the improvement of the State’s highways and bridges. Once collected, the HURF revenues are distributed to ADOT, and in turn distributed as an entitlement share to cities, towns, and counties in proportion to population and to the Economic Strength Project Fund. HURF distributions may be used as debt service for revenue bond projects. The principal sources of revenue are presented in Table B-3:

**TABLE B-3. FY 2005 ADOT REVENUE SOURCES - STATE  
(In Millions of Dollars)**

<b>Description</b>	<b>FY-05 Actual</b>
Gasoline Tax	\$ 481.3
Use Fuel Tax	194.4
Motor Carrier Fee	38.0
Vehicle License Tax	328.2
Registration	154.1
Other	33.0
<b>Total</b>	<b>\$1,245.6</b>

Source: Arizona Department of Transportation, Financial Management Services, May 17, 2006

- Gasoline Taxes. Arizona’s motor vehicle fuel tax of 18 cents per gallon is the largest source of revenue for HURF.
- Use Fuel Taxes. Use fuel taxes are taxes on diesel fuel and range between 18 cents per gallon for passenger cars to 26 cents per gallon for commercial trucks and buses. These taxes provide the third largest source of revenue.

- Motor Carrier Fees. These fees, based on the weight of the vehicle, are the smallest source of funding for HURF.
- Vehicle License Taxes (VLT). Vehicle license taxes are linked to the value of the vehicle being taxed and are the second largest source of funds for HURF. These VLT funds are the only one of the four major HURF revenue sources that are tied to inflation and increase as vehicle prices increase. In recent years, the VLT tax rate has been reduced to be more in line with that of neighboring states.
- Other fees include: motor vehicle registration fees, border crossing fees, and other miscellaneous fees.

The HURF is the primary source for state highway funding and HURF funds are limited to highway use by the Arizona Constitution. Table B-4 presents the HURF revenue forecast for FY 2006 - 2015. Table B-5 presents the HURF distribution forecast for the same fiscal years.

**TABLE B-4. HIGHWAY USER REVENUE FUND REVENUE FORECAST  
(IN MILLIONS OF DOLLARS)**

<b>Fiscal Year</b>	<b>Gasoline</b>	<b>Use Fuel</b>	<b>Motor Carrier</b>	<b>VLT</b>	<b>Registration</b>	<b>Other</b>	<b>HURF Total</b>
2006	\$497.20	\$205.00	\$40.30	\$350.30	\$160.30	\$53.20	\$1,306.30
2007	528.8	211	39.7	378.9	162.3	54.4	1,375.10
2008	550.5	218.9	40.8	409.3	167.1	56.7	1,443.30
2009	572.3	226.7	42	441.5	171.8	59	1,513.30
2010	594.6	234.2	43.3	474.5	176.9	61.3	1,584.80
2011	616.4	241.9	45	510.9	182.7	63.7	1,660.60
2012	639.7	249.8	46.9	550.4	189	66.2	1,742.00
2013	663.9	258.3	48.9	592.5	195.4	68.9	1,827.90
2014	689.8	267.1	51.3	637.9	202.7	71.7	1,920.50
2015	717.8	276.8	53.6	688.7	210.2	74.6	2,021.70

Source: Arizona Department of Transportation, Financial Management Services, May 17, 2006

## **OTHER FUNDING SOURCES**

Several other funding sources exist and are summarized below.

### **Local Transportation Assistance Fund (LTAF)**

The LTAF is funded by the Arizona Lottery for use by cities and towns requesting the funds. The LTAF funds are allocated in proportion to the relative population of all



**TABLE B-5. HIGHWAY USER REVENUE FUND DISTRIBUTION FORECAST  
(IN MILLIONS OF DOLLARS)**

Fiscal Year	HURF	DPS/ESP	Net HURF	Forecast Distribution				
				ADOT 50.5%		Cities/ Towns 27.5%	Cities Over 300k 3%	Counties 19%
				ADOT	DPS Parity			
2006	\$1,306.30	\$64.80	\$1,241.50	\$624.30	\$2.70	\$341.40	\$37.20	\$235.90
2007	1,375.10	11	1,364.10	686	2.9	375.1	40.9	259.2
2008	1,443.30	11	1,432.30	720.2	3.1	393.9	43	272.1
2009	1,513.30	11	1,502.30	755.3	3.4	413.1	45.1	285.4
2010	1,584.80	11	1,573.80	791.2	3.6	432.8	47.2	299
2011	1,660.60	11	1,649.60	829.2	3.9	453.6	49.5	313.4
2012	1,742.00	11	1,731.00	870	4.2	476	51.9	328.9
2013	1,827.90	11	1,816.90	913	4.5	499.6	54.5	345.2
2014	1,920.50	11	1,909.50	959.4	4.9	525.1	57.3	362.8
2015	2,021.70	11	2,010.70	1,010.20	5.3	552.9	60.3	382

Source: Arizona Department of Transportation, Financial Management Services, May 17, 2006

Arizona cities and towns. Each requesting municipality is guaranteed a minimum of ten thousand dollars. Currently, \$23 million may be deposited in the LTAF from the State lottery fund each fiscal year. Cities and towns with a population of more than 300,000 persons must use LTAF funds for public transportation. In addition, up to 10 percent of funds may be used for the arts, or for disabled and handicapped assistance.

In 2000, the Arizona Legislature enacted the LTAF II program, with revenues derived from the Arizona's share of the multi-state Powerball lottery. These funds are apportioned in a manner similar to LTAF funds, except that any jurisdictions receiving more than \$2,500 in LTAF II funds are required to use all of the funds received for transit-related purposes including provision of local matching funds for FTA programs, operating funds, and transit planning. However, Powerball revenues have fluctuated widely and LTAF II has not proved to be a stable source of funding for operations.

### Public Transit

The Federal Government funds transit capital and operating assistance programs for systems in designated urban areas. In some instances, the MPOs such as those in Flagstaff and Yuma, serve as conduits for this funding to local operators. However, larger cities including Phoenix and Tempe receive their funding directly. Two federal public transit programs administered by ADOT primarily fund Arizona's small urban and rural transit services. One is the Section 5311 program for general public service in rural areas. The other transit program is the Section 5310 program which funds vehicles for organizations providing specialized transportation services for the elderly or disabled.

SAFETEA-LU significantly increases funding levels for these programs. A new formula based on land area addresses the needs of low-density states. Indian tribes are now eligible recipients of Section 5311 funds, and a portion of funding is set aside each year for Tribal projects. Currently, the total funding in Arizona for general public systems in rural and small urban areas is approximately \$4.9 million annually.

Additional sources of revenue available for transit services include the following:

- Welfare to Work Act
- Older American Act Title III funds, Department of Economic Security
- Division of Developmental Disability funds
- Transportation funding through Medicaid administered through the Arizona Health Care Cost Containment System
- Head Start, Behavioral Health Funding
- Transit fares

A total of \$40 million in small urban and rural transit revenue is expected to be generated in the next decade.

### **Economic Strength Projects Fund**

Local governments are eligible sponsors and co-sponsors of transportation projects financed by the Arizona Economic Strength Projects fund. This fund is sponsored by the Arizona Department of Commerce and funded by HURF. A local match must provide at least 10 percent of the project cost. The fund finances selected road projects that support economic development objectives.

### **Governor's Office of Highway Safety**

Federal funds are allocated to finance state and local government highway safety projects. These program funds, in the form of reimbursable contracts, are administered by the Governor's Office of Highway Safety. Funds are provided under the National Highway Safety Act and funded through grants from the FHWA and the National Highway Traffic Safety Administration (NHSTA). The safety priority areas are listed below:

NHSTA Priority Program areas:

- Police traffic services
- Impaired driving
- Traffic records
- Pedestrian/bicycle safety
- Emergency medical services
- Occupant protection
- Motorcycle safety

FHWA Priority Program areas:

- Corridor safety improvement programs
- Safety studies of specific safety problems
- Outreach programs
- Rural and local technical assistance programs
- Pedestrian and bicycle safety
- Safety management systems

### **Pedestrian/Bicyclist Funding**

Revenue sources for bicycle facilities primarily for transportation are available from the following sources:

- Federal funds are available to construct bicycle transportation facilities and pedestrian walkways on land adjacent to any highway on the NHS.
- Federal Lands Highway Funds are available to construct bicycle facilities and pedestrian walkways in connection with roads, highways, and parkways. These funds are at the discretion of the department administering the funds.

Other funds for bicycle and pedestrian facilities are:

- National Recreational Trails Fund, which provides funds for recreational programs for bicyclists and pedestrians.
- Scenic Byways Program can fund bicycle facilities along highways.
- Federal Transit Funds can be used to provide bicycle and pedestrian access to transit facilities including shelters and bicycle parking facilities.
- Additional funding is available through the new “Safe Routes to Schools” program explained in the previous section.

Another potential funding source for trails is the Heritage Fund. The Arizona State Parks Board Heritage Fund legislation stipulated the use of Arizona Lottery Fund revenues for trails. Eligible projects are trail land acquisition, design, engineering, development and renovation activities, and trail support facilities.

### **Community Development Block Grants**

Community Development Block Grant (CDBG) is funds provided by the Federal Office of Housing and Urban Development. The CDBG funds can be used in the construction of capital improvement projects such as sewer, streets, water and wastewater treatment plants, housing, and parks that benefit low to medium income groups. Projects that

alleviate slums or address an urgent need such as circumstances caused by a natural disaster can also use CDBG funds. For a transportation improvement to be eligible for CDBG funding, the project must be located in a census tract or block group with at least 51 percent of the population in the low and moderate-income group.

## REVENUE ESTIMATES

The 2001 Governor's Transportation Vision 21 Task Force Report estimated that \$41 billion from existing sources of transportation related revenue in Arizona will be received between 2000 and 2020. Of this amount, \$33,783.8 billion is roadway related, \$4,106.1 is derived from transit related sources, and \$3,164.3 from aviation. The comparison of needs and revenues is shown in Table B-6.

**TABLE B-6. COMPARISON OF NEEDS AND REVENUES STATEWIDE  
(IN MILLIONS OF CONSTANT 2000 DOLLARS)**

Sources	Use	FY 2001- 2005	FY 2006- 2010	FY 2011- 2015	FY 2016- 2020	Total
Revenue From	Roadway	\$7,955.1	\$8,432.6	\$8,580.1	\$8,816.0	\$33,783.8
Existing Sources	Transit	\$1,133.3	\$1,050.9	\$986.8	\$935.1	\$4,106.1
	Aviation	\$846.7	\$795.5	\$771.0	\$751.1	\$3,164.3
	<b>Total Revenue</b>	<b>\$9,935.1</b>	<b>\$10,279.0</b>	<b>\$10,337.9</b>	<b>\$10,502.3</b>	<b>\$41,054.3</b>
Needs	Roadway	\$12,601.0	\$12,601.0	\$12,601.0	\$12,601.0	\$50,404.0
	Transit	\$1,705.0	\$1,705.0	\$1,705.0	\$1,705.0	\$6,820.0
	Aviation	\$1,027.8	\$1,027.8	\$1,027.8	\$1,027.8	\$4,111.0
	<b>Total Needs</b>	<b>\$15,333.8</b>	<b>\$15,333.8</b>	<b>\$15,333.8</b>	<b>\$15,333.8</b>	<b>\$61,335.0</b>
Additional	Roadway	\$4,645.9	\$4,168.4	\$4,020.9	\$3,785.0	<b>\$16,620.2</b>
Revenue Required	Transit	\$571.7	\$654.1	\$718.2	\$769.9	<b>\$2,713.9</b>
to Meet Needs	Aviation	\$181.0	\$232.3	\$256.8	\$276.6	<b>\$946.7</b>
	<b>Total Additional Revenue Required</b>	<b>\$5,398.6</b>	<b>\$5,054.8</b>	<b>\$4,995.9</b>	<b>\$4,831.4</b>	<b>\$20,280.7</b>

Source: *Revenue Consultant Report to Governor's Transportation Vision 21 Task Force*, Wilbur Smith Associates, November 2001

## ADOT's Five-year Transportation Facilities Construction Program

Table B-7 lists ADOT's *Five-year Transportation Facilities Construction Program* allocations for the five-year period covering Fiscal Years 2005 through 2009. For this period, ADOT has allocated a total of \$764 million for highway system preservation, \$2.7 billion for system improvements, and \$354 million for system management for a total of \$3.78 billion.

**TABLE B-7. ADOT FIVE-YEAR TRANSPORTATION FACILITIES  
CONSTRUCTION PROGRAM RESOURCE ALLOCATIONS**  
(In Thousands of Dollars)

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Total
System Preservation	\$149,800	\$152,148	\$155,718	\$153,190	\$153,290	\$764,146
System Management	\$76,727	\$70,393	\$68,818	\$68,818	\$68,878	\$353,634
System Improvements	\$863,672	\$730,090	\$377,388	\$377,181	\$320,863	\$2,669,194
Total Resource Allocations	\$1,090,199	\$952,631	\$601,924	\$599,189	\$543,031	\$3,786,974

Source: Arizona Department of Transportation, *Five-year Transportation Facilities Construction Program*

The five-year program also includes an allocation for District minor projects that is used by the ADOT Districts for minor improvement projects such pavement widening, shoulders, guardrail, drainage improvements, intersection improvements, and other minor improvements. The total five year allocation in the FY 2005 – 2009 Program for District minor projects is approximately \$104 million, approximately \$10 million per District.

### **Funding for Railroad Crossing Improvements**

The Utility and Engineering Services Section of ADOT has developed criteria for prioritizing the expenditure of funds for the construction of new highway-rail crossings, the improvement of existing crossings, or the construction of grade separated facilities. Federal funds are provided for these purposes through Title 23 United States Code, Section 130 (Section 130 Funds) and also in SAFETEA-LU. The intent of allocating these funds is expressly for the purpose of reducing or eliminating the hazards represented by the crossings. The funds are allocated on a 90/10 basis, with the federal share being 90 percent and a 10 percent match provided by the local jurisdiction or the railroad. In some cases the Federal Government will pay 100 percent of the cost. ADOT administers the Section 130 Funds in Arizona provided by the FHWA.

Under SAFETEA-LU, the Surface Transportation Program also provides for \$560,000 to be set aside each year to fund *Operation Lifesaver*, an outreach program conducted jointly by railroads and law enforcement agencies. Operation Lifesaver teaches the public about the dangers of highway-rail crossings and the importance of obeying highway-rail crossing-related traffic laws.

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