

PICTURE ROCKS

MULTIMODAL TRANSPORTATION STUDY

Working Paper No. 1

Current and Future Needs Assessment

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AND



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1. Introduction

1.1 PROJECT BACKGROUND AND STUDY AREA

Picture Rocks, Arizona, is a rural, unincorporated community in Pima County located approximately 20 miles northwest of the City of Tucson. The community is located on the western edge of the Tucson Mountains. The community borders the southern town limits of Marana and is adjacent to Saguaro National Park. A vicinity map is shown in **Figure 1** and study area map in **Figure 2**.

The Citizens for Picture Rocks, an advocacy group for the residents of the unincorporated community, approached Pima County staff and expressed concerns regarding transportation issues in the community. These concerns related to lack of transit service, safety-related issues, and need for pedestrian and bicycle facilities. As a result, with a letter of support from the Citizens for Picture Rocks, Pima County submitted an application to the ADOT Planning Assistance for Rural Areas (PARA) Program to conduct a comprehensive transportation study to address transportation issues in the community.

Members of the Citizens for Picture Rocks include representatives from the Picture Rocks Fire Department, Pima County Sheriff's Department, Picture Rocks American Association of Retired Persons, Picture Rocks Elder Initiative, and other active community champions and stakeholders.

1.2 PROJECT OVERVIEW

The purpose of the Picture Rocks Multimodal Transportation Study is to identify the most critical transportation infrastructure needs within the Picture Rocks study area and recommend a program of short-range (0-5 years), mid-range (6-10 years), and long-range (11-20 years) improvements that address needs for:

- Roadway safety
- Regional access and mobility
- Bicycle and pedestrian safety and mobility
- Transit opportunities

The study will serve as a guide for community and economic development, project funding applications and grants, and project implementation.

Study activities include the following:

1. Collect and update the inventory of existing and future conditions related to traffic volume data, crash data, socioeconomic/demographic data, and roadway conditions;
2. Evaluate the performance of the transportation system and document future deficiencies;
3. Project future travel demand and transportation mobility needs for 5-, 10-, and 20-year planning horizons;
4. Evaluate the demand and opportunity of providing local rural transit service;
5. Recommend improvements that address the identified needs and deficiencies and improve local and regional mobility and circulation.

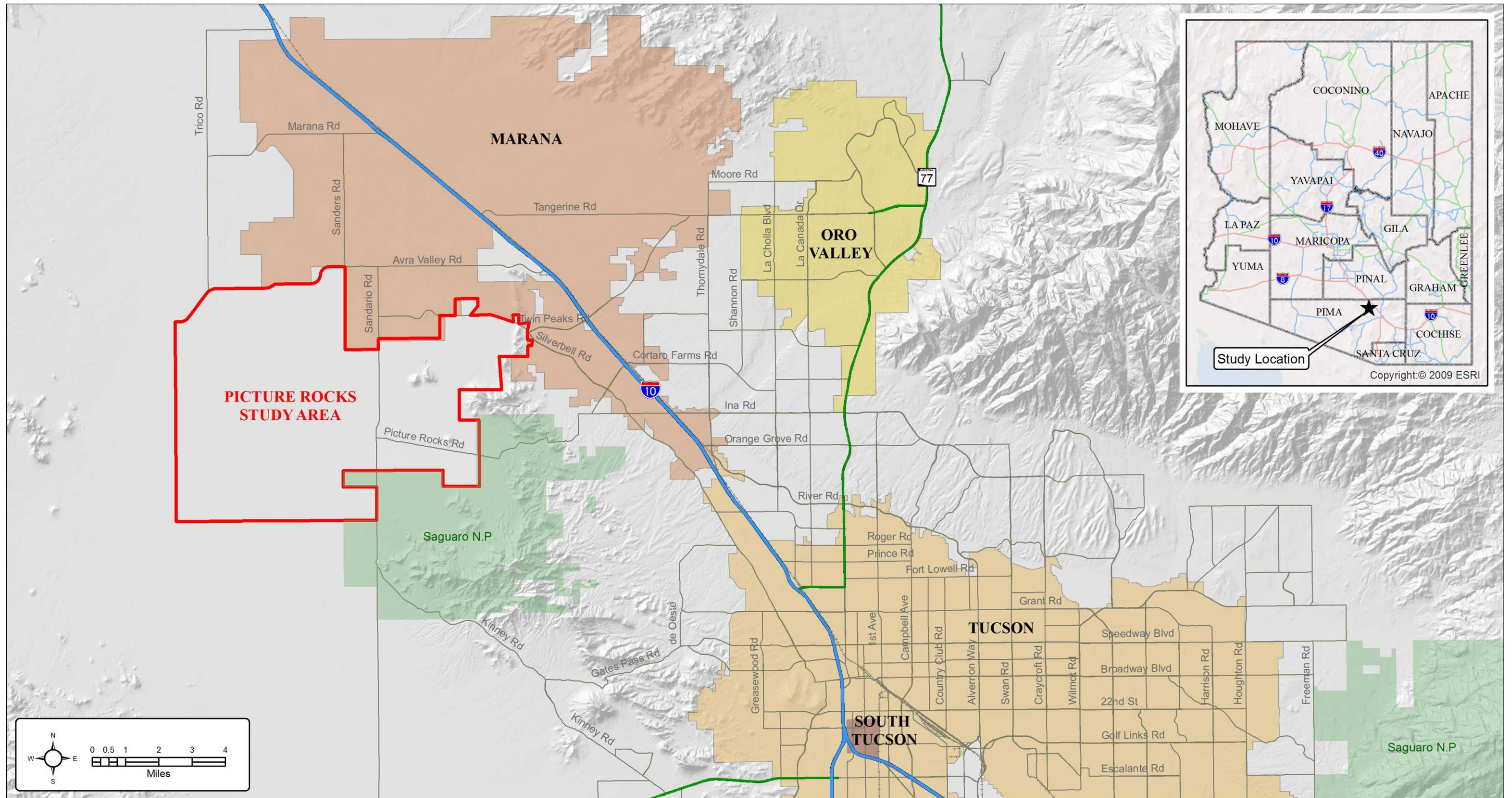


Figure 1 – Vicinity Map

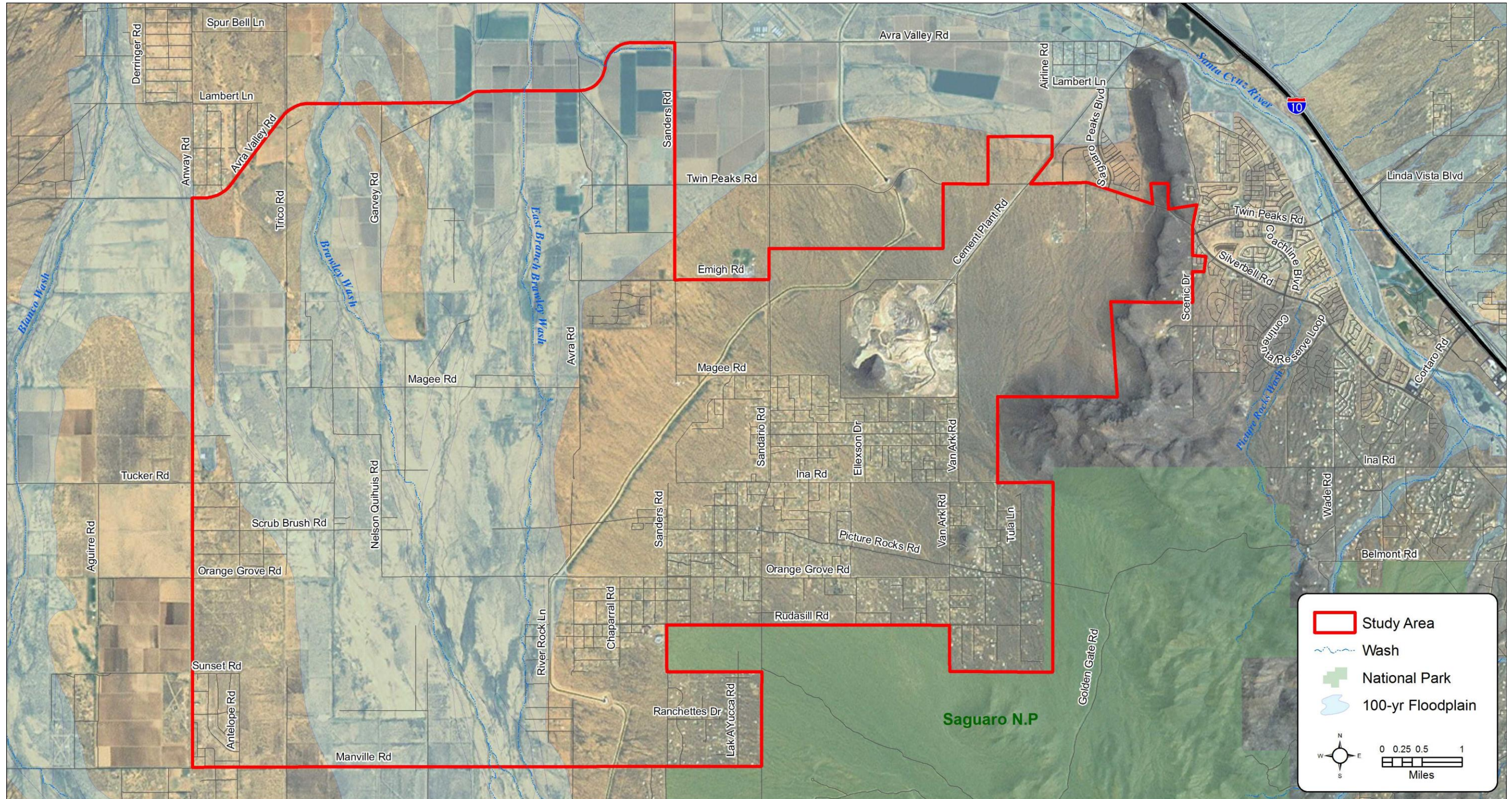


Figure 2 – Study Area Map

1.3 PUBLIC INVOLVEMENT PLAN

The public involvement plan developed for this study anticipated two rounds of public involvement meetings. The first round of meetings will focus on confirming transportation needs and the second round of meetings will obtain input on transportation projects recommended.

1.4 PROJECT PRELIMINARY PURPOSE AND NEED

The information in this section is consistent with ADOT's requirements for Planning and Environmental Linkages (PEL) for Transportation Studies.

1.4.1 PLANNING GOALS

Relevant Federal and State Legislation

The PARA study process must comply with all federal, state and local laws, regulations and policies that apply to long range transportation planning. These include, but are not limited to: 23CFR parts 450 and 500, 25 CFR Part 170, Title VI of the 1964 Civil Rights Act, 42USC 2000, Federal-aid Highway Act of 1973, 23 USC 324, Section 504 of the Rehabilitation Act of 1973, 29 USC 794, The Age Discrimination Act of 1975, 42 USC 6101, the Civil Rights Restoration Act of 1987, PL 100-259, Fair Housing Act Amendments of 1988 (42 USC 3601-3631), Americans with Disability Act of 1990, PL 101-336, the Religious Freedom Restoration Act of 1993, and the Stafford Act, as amended in 2000.

Summary of Relevant Statewide or Regional Transportation Plans and Studies

Regional transportation plans and studies reviewed in the development of this project are summarized in Section 3.1. These include the Pima Association of Governments (PAG) Regional Transportation Plan and the PAG Transportation Improvement Program.

Local and Regional Planned and Programmed Improvements

Projects identified in the 2040 PAG Regional Transportation Plan within or near the study area include the following:

- Avra Valley Road, Anway Road to Sanders Road: widen to three-lane roadway and safety improvements, late period project (2030 – 2040).
- Avra Valley Road, Sanders Road to I-10: widen to four-lane roadway, re-align, multi-purpose lanes and sidewalks, middle period project (2020 – 2030).
- Sandario Road, Ajo Way to Emigh Road: reconstruct two-lane roadway, middle period project (2020 – 2030).
- Twin Peaks Road, Sidewinder Lane to Silverbell Road: widen to four-lane roadway, middle period project (2020 – 2030).
- Twin Peaks Road, Silverbell Road to new I-10 interchange: construct four-lane roadway, bridge over Santa Cruz, early period project (2010 – 2020).
- Sandario Road, Picture Rocks Road: construct bike lanes/paved shoulders, and clear zones, early, middle, and late-period projects.

Planning-Level Goals and Objectives

Planning-level goals and objectives identified for this study include:

Goal:

The Picture Rocks Multimodal Transportation Study will result in a multimodal transportation plan containing recommendations for short-range (0-5 years), mid-range (6-10 years), and long-range (11-20 years) improvements that address identified needs for roadways, transit, and non-motorized modes.

Objectives:

1. Improve safety through recommendations for shoulder improvements, geometric improvements, and traffic control;
2. Identify feasible alternatives and recommendations for non-county-maintained roads to improve drivability, reduce dust pollution, and reduce vehicle maintenance costs;
3. Confirm the need for and provide recommendations for transit service in the Picture Rocks area;
4. Improve mobility through identification of projects for sidewalks, paths, and shoulders to accommodate bicyclists and pedestrians; and
5. Recommend improvements that address the identified needs and deficiencies and improve local and regional mobility and circulation.

Planning Horizons

The planning horizons for this study are 2018, 2030, and 2040.

1.4.2 PROJECT NEEDS

Socioeconomic conditions, population data, employment and growth patterns

The 2010 population in the Picture Rocks Census Designated Place (CDP) is 9,563 persons. This represents 3,689 households. Comparisons with the 2000 Census indicated that growth is approximately 1.63% per year.

Employment opportunities are limited within the study area; most working residents commute to the urbanized area of Tucson or Marana. Residents must also travel outside of Picture Rocks to access services such as education and vocational training programs, elderly, medical care, and retail and commercial centers.

Land use and development patterns

Land use within the study area is primarily low-density residential, with limited commercial development. Commercial development is primarily located near the Picture Rocks Road/Sandario Road intersection.

Existing traffic volumes, travel time, and level of service

Traffic volumes are generally low within the study area; level of service (measure of delay) is generally at acceptable levels.

However, primary roadways within Picture Rocks have experienced a high frequency of severe and injury crashes. Transportation needs within the study area have been identified based on safety and multimodal considerations.

Future no-build traffic volumes, travel time, and level of service

PAG maintains the regional travel demand models and databases. Projected traffic volumes for 2040 were obtained from the PAG regional travel demand model. The road segment level of service (LOS) analysis indicated that all road segments will operate at LOS C or better in 2040 with the exception of Sandario Road, for which traffic volumes are projected to exceed the planning-level threshold for LOS D in 2040.

Safety data and deficiencies

Crash data was reviewed for a five-year period. The vast majority of crashes (44%) were single-vehicle crashes. Rear-end crashes accounted for 25% of crashes. In addition, safety studies conducted on Picture Rocks Road and Sandario Road were reviewed and incorporated into the needs analysis and project development process.

Modes evaluated

Transportation modes evaluated for this project include bicycle, pedestrian, transit, and vehicular traffic.

Non-motorized circulation

Needs for pedestrian and bicycle facilities were identified as project needs. Existing roadways within the study area generally do not have sidewalks or other pedestrian facilities. Existing shoulders on major roads are generally gravel and insufficient for use by bicyclists. Transit service has been identified as a critical need to improve access to employment, social services, and commercial and retail centers.

Design standards, policies, and guidelines

Pima County and ADOT design standards and guidelines will be used as references in the development of proposed projects.

Deficiencies in existing facility conditions

Key deficiencies for existing roadway facilities were identified with respect to paving needs, shoulder width, drainage, traffic control, street lighting, signing and striping, and specific intersection improvements.

Summary of project needs

Project needs are described in detail in Chapter 4 and include the following types of transportation needs:

Roadway needs

- Paving for non-county-maintained roads
- Road improvements on county-maintained roads

- Traffic control
- New street lighting
- Drainage improvements
- Intersection improvements
- Upgraded signage
- Upgraded striping

Safety needs

- Education measures such as improved signage.
- Emergency access

Transit needs

- A transit service or transit service expansion of Route 411
- Park and ride lot

Pedestrian needs

- Pedestrian paths to link Picture Rocks Community Center to the Minit Mart and Marana High School
- Safe Routes to School program
- School bus pullouts along Sandario Road and Picture Rocks Road
- Crosswalks at Picture Rocks Road/Sandario Road intersection
- Trailhead parking areas

Bicycle needs

- Paved shoulders on key routes

1.4.3 PROJECT PURPOSE

Based on identified goals and needs, the primary objectives of the study are to:

1. Improve safety through recommendations for shoulder improvements, geometric improvements, and traffic control;
2. Identify feasible alternatives and recommendations for non-county-maintained roads to improve drivability, reduce dust pollution, and reduce vehicle maintenance costs;
3. Confirm the need for and provide recommendations for transit service in the Picture Rocks area;
4. Improve mobility through identification of projects for sidewalks, paths, and shoulders to accommodate bicyclists and pedestrians; identify drainage improvements needed to maintain mobility during flooding;
5. Recommend improvements that address the identified needs and deficiencies and improve local and regional mobility and circulation.

2. Project Area Description

This chapter provides information on environmental, land use, demographic, and economic characteristics of the Picture Rocks area.

2.1 ENVIRONMENTAL SETTING

This chapter provides a brief overview of the environmental features of the Picture Rocks area. More detail on environmental considerations is provided in **Appendix A**.

2.1.1 BIOLOGICAL COMMUNITY

According to *Biotic Communities: Southwestern United States and Northwestern Mexico*, the western portion of the study area is within the Lower Colorado River subdivision of the Sonoran Desertscrub biotic community and the eastern portion of the study area is located within the Arizona Upland subdivision of the Sonoran Desertscrub biotic community.¹

2.1.2 TOPOGRAPHY

According to the *Marana, Arizona 7.5-Minute United States Geological Survey (USGS) 7.5' Quadrangle Map*, the study area elevation generally ranges from 2,640 feet above mean sea level (MSL) in the southeast corner of the study area to 2,000 feet above MSL in the northern portion of the study area. The mountains in the study area generally range from 2,510 feet above MSL to 2,765 feet above MSL and are located in the eastern portion of the study area. The eastern portion of the study area drains to the north/northwest and the western portion of the study area primarily drains to the north.

2.1.3 THREATENED AND ENDANGERED SPECIES

The U.S. Fish and Wildlife Service (USFWS) threatened, endangered, proposed, and candidate species list for Pima County, Arizona (dated October 30, 2013) was reviewed by a qualified biologist to determine species that may occur in the project vicinity based on readily available information.

Suitable habitat for one federally endangered species (lesser long-nosed bat) and two candidate species (Sonoran Desert tortoise and Tucson shovel-nosed snake) is present in the study area. Potential impacts to these species (and those potentially listed in the future) should be evaluated during the environmental clearance process. Coordination with the USFWS and Arizona Game and Fish Department (AGFD) should also occur during the environmental clearance process. More detailed information on special status species known to occur in the study area is provided in **Appendix A (Table A-1)**.

2.1.4 IMPORTANT RIPARIAN AREA (IRA)

Portions of the study area are classified as an Important Riparian Area (IRA) regulated under Pima County Ordinance PC2005-FC2 and Chapter 16.30.050. As described in the Regulated Riparian Habitat Mitigation Standards and Implementation Guidelines, riparian habitat is a valuable resource and river systems are important corridors for resident and migratory birds, along with providing wildlife with the resources necessary to maintain their populations. IRAs occur along the major river systems and

¹ Brown, David E. 1994. *Biotic Communities: Southwestern United States and Northwestern Mexico*. University of Utah Press. Salt Lake City.

washes that provide critical watershed and water resource management functions as well as providing a framework for landscape linkages and biological corridors.

2.1.5 WILDLIFE MOVEMENT CORRIDORS

Wilderness areas and wildlife areas are important natural resources because they provide food, shelter, and other habitat requirements (including connectivity) to sustain many species of wildlife. Numerous wildlife species utilize the washes and undeveloped uplands within the study area to move between wildland blocks. Multiple species utilize the open spaces and undeveloped areas for foraging and/or shelter. Conversion of these lands into other uses may impact wildlife movement patterns and population maintenance processes (immigration/emigration/genetics), as well as the local availability of food resources. Future wildlife habitat fragmentation and loss will contribute to reduced biodiversity and population sizes in the region.

The Arizona Wildlife Linkages Assessment identified one potential linkage zone (PLZ) within or adjacent to the study area (PLZ152 Central Arizona Project Canal, **Appendix A, Figure 24**). PLZs are area of land between the wildland blocks, where current and future urbanization, roads, and other human activities threaten to prevent wildlife movement between the wildland blocks. Wildland blocks are defined as areas of land that consist of important wildlife habitat and can be expected to remain wild for at least 50 years.²

The Coyote - Ironwood - Tucson Linkage extends through the western portion of the study area along Brawley Wash and along the eastern portion of the study area overlapping the Tucson - Tortolita - Santa Catalina Mountains Linkage and extending into a wildland block that connects to Saguaro National Park. These linkages and potential linkage zones should be considered during project planning.

2.1.6 MIGRATORY BIRD TREATY ACT

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. §§ 703-712) statute makes it unlawful without a waiver to pursue, hunt, take, capture, kill, or sell migratory birds. Migratory birds may nest on the ground, on structures, or in trees, shrubs, or other vegetation within the project limits. In accordance with the MBTA, a pre-construction bird nesting survey must be conducted to survey active migratory bird nests in potentially impacted trees and shrubs prior to the beginning of construction.

2.1.7 SECTION 4(F) RESOURCES

Section 4(f) refers to the original section in the Department of Transportation Act of 1996. The 4(f) requirement, originally set forth in Title 49 United States Code (U.S.C.), Section 1653(f), considers publicly owned park and recreational lands, publicly owned wildlife and waterfowl refuges, and historic sites in transportation project development. Section 4(f) states that the FHWA "...may approve a transportation program or project requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of an historic site of national, state, or local significance (as determined by the federal, state, or local officials having jurisdiction over the park, area, refuge, or site) only if...there is prudent planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the

² Nordhaugen, S.E., Erlandsen, E., Beier, P., Eilerts, B.D., Schweinburg, R., Brennan, T., Cordery, T., Dodd, N., Maiefski, M., Przybyl, J., Thomas, S., Vacariu, K., Wells, S., 2006. Arizona's Wildlife Linkages Assessment. The Arizona Wildlife Linkages Workgroup, Phoenix, AZ.

use.” (49 U.S.C. 303[c]). Section 4(f) also establishes criteria by which public parks and recreation lands, wildlife, and waterfowl refuges and historic sites can be evaluated for consideration as 4(f) resources.

Section 4(f) properties within the study area include the following (also shown in **Figure 3**):

1. Saguaro National Park
 - Located at 2700 N. Kinney Road, Tucson, AZ 85743
 - Saguaro National Park is under the jurisdiction of the National Park Service. The park offers numerous trails and recreation activities and is open to the general public affording it Section 4(f) protection.
2. Picture Rocks Park and Community Center
 - Located at 5615 N. Sanders Road, Tucson, AZ 85743
 - Picture Rocks Park and Community Center is under the jurisdiction of Pima County. The park and community center is open to the general public and as such is protected under Section 4(f).
3. Central Arizona Project (CAP) National Recreational Trail
 - This trail is adjacent to the CAP Canal throughout the study area.

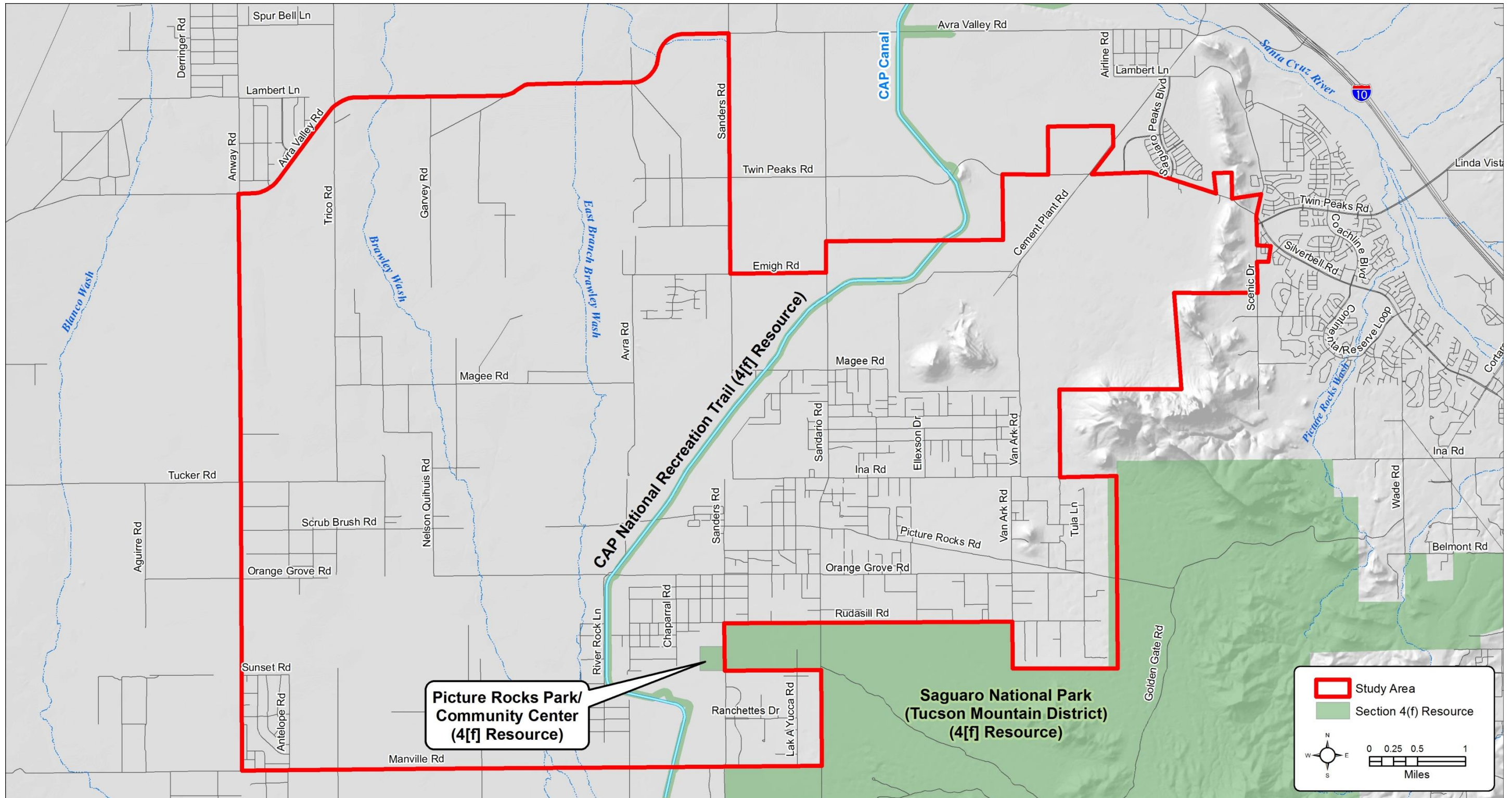


Figure 3 – Section 4(f) Resources

2.1.8 WATER QUALITY

Sections 404 and 401 of the Clean Water Act

The U.S. Army Corps of Engineers (Corps) regulates the discharge of dredge and/or fill material into waters of the U.S. (Waters) under Section 404 of the Clean Water Act (CWA). Any activity that will discharge dredge or fill material into jurisdictional waters, including wetlands, will require a CWA Section 404 Permit. Projects proposed under this study may potentially include these activities.

A preliminary desktop evaluation for the presence of potential jurisdictional Waters was conducted in the study area through a review of USGS topographical maps. The following named washes are included in the study area: Brawley Wash, East Branch of Brawley Wash, West Branch of Brawley Wash, and Los Robles Wash. Numerous unnamed features are also located within the project area and could potentially be considered Waters.

National Pollutant Discharge Elimination System/Storm Water Pollution Prevention Plan

The National Pollutant Discharge Elimination System (NPDES) is a national permit program under Section 402 of the CWA that regulates discharges of pollutants from point sources into Waters, including sediment and pollutants that can be generated during ground-disturbing activities and transported by stormwater runoff. The U.S. Environmental Protection Agency (EPA) has delegated to the Arizona Department of Environmental Protection (ADEQ) the authority to operate the permit program within Arizona. The state's version of the NPDES permit program is referred to as the Arizona Pollutant Discharge Elimination System (AZPDES). The AZPDES permit program requires a general permit for construction activities that disturb one or more acres of land as well as for construction activities that disturb Waters (Section 401 Certification). A Stormwater Pollution Prevention Plan (SWPPP) must be prepared as a part of the permit. If impacts are greater than one acre of land and/or Waters, a Section 401 Certification permit and SWPPP will be required during future project development.

2.2 LAND OWNERSHIP AND LAND USE

Land use and transportation are inextricably connected. Understanding how land use decisions affect the transportation system can improve the development of viable options for people to access goods and services to improve their quality of life. Furthermore, the design of transportation facilities (roads, transit service, and pedestrian facilities) has a defining impact on a community's development patterns, economic vitality, and character.

The following subsections provide an overview of land ownership and existing and planned land use in the Picture Rocks area.

2.2.1 LAND JURISDICTION AND OWNERSHIP

Land ownership within the study area is primarily under private ownership, the Bureau of Reclamation, and the Arizona State Land Department. Saguaro National Park is located southeast of the study area.

Roadways connecting to and from Picture Rocks traverse lands under the jurisdiction of Saguaro National Park and the Town of Marana. The Town of Marana is located to the north and comprises the northern portion of the study area boundary. Land ownership is shown in **Figure 4**.

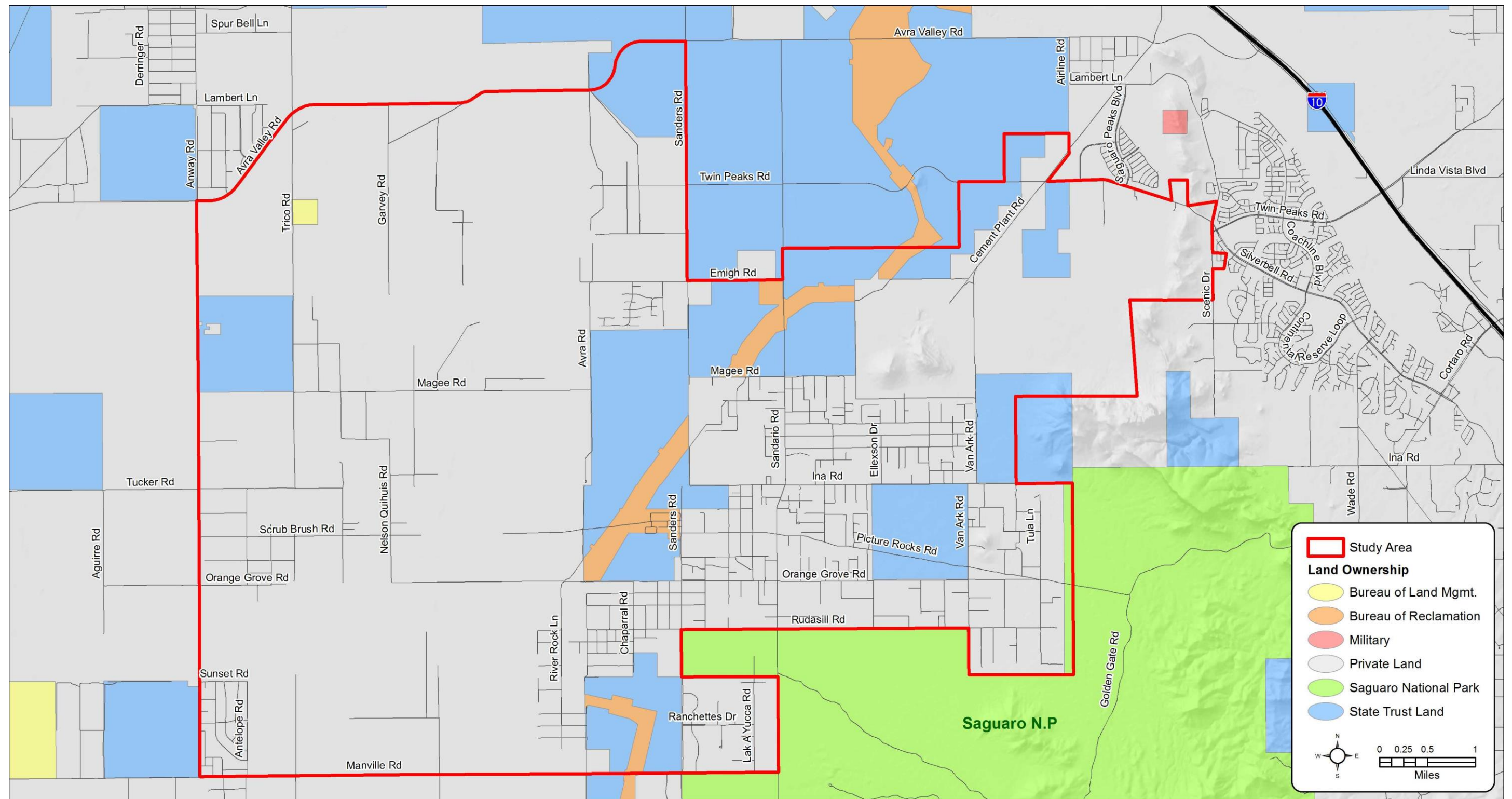


Figure 4 – Land Ownership

2.2.2 CURRENT LAND USE

This section describes current land use and zoning in the Picture Rocks area.

Zoning

Zoning in the Picture Rocks area was reviewed based on information from the Pima County Mapguide and Pima County Development Services. In general, zoning is primarily lower-density residential zoning. A zoning map is shown in **Figure 5**.

Residential

The Picture Rocks area is primarily zoned Rural Homestead Zone (RH). The principal uses allowed in this zoning are low-density residential, limited conditional commercial use, and agriculture use. The minimum lot area for this zoning is 180,000 square feet or approximately 4.13 acres.

The area roughly bounded by Magee Road to the north, Rudasill Road to the south, Avra Road to the west, and Tula Lane to the east is primarily zoned Rural Residential (GR-1). The principal uses allowed in this zoning are residential, agricultural, and limited conditional commercial use. The minimum lot area is 36,000 square feet, or 0.83 acres. Single-family homes are scattered throughout Picture Rocks with the majority concentrated within a three-mile radius of the Picture Rocks Road and Sandario Road intersection. The study area includes approximately 3,689 households according to the 2010 Census.

Commercial

In the area in and around the vicinity of the Sandario Road/Picture Rocks Road intersection, the zoning is commercial, either Local Business (CB-1) or General Business (CB-2). CB-1 zoning also occurs at the northeast corner of Anway Road and Avra Valley Road.

CB-2 zoning also exists at the intersection of Manville Road and Anway Road.

General Industrial (C1-2 zoning) covers the area at the Arizona Portland Cement Company. An area south of Avra Valley Road and east of Anway Road is zoned Heavy Industrial (C1-3) and appears to be undeveloped.

Special Area Policies

The Pima County Comprehensive Plan contains Special Area Policies for part of the Picture Rocks area that apply to sites typically composed of multiple parcels that share a unique physical feature or location over a relatively large area. Excerpts relating to transportation-related policies include:

S-6 Picture Rocks Rural Activity Center (TM/AV)

General location: T13S, R11E, portions of Sections 3 & 4.

Policies

- A. In order to create a pedestrian and equestrian scale streetscape, the development of unique street standards for Sandario Road will be encouraged. Such standards, to be developed by the Pima County Department of Transportation, in cooperation with the Picture Rocks Business Association, will result in slower traffic speeds and more attention to the street's relation to parking, sidewalks, and buildings. Examples of street design features include provision for on-street parking, sidewalks, and planters and street trees;

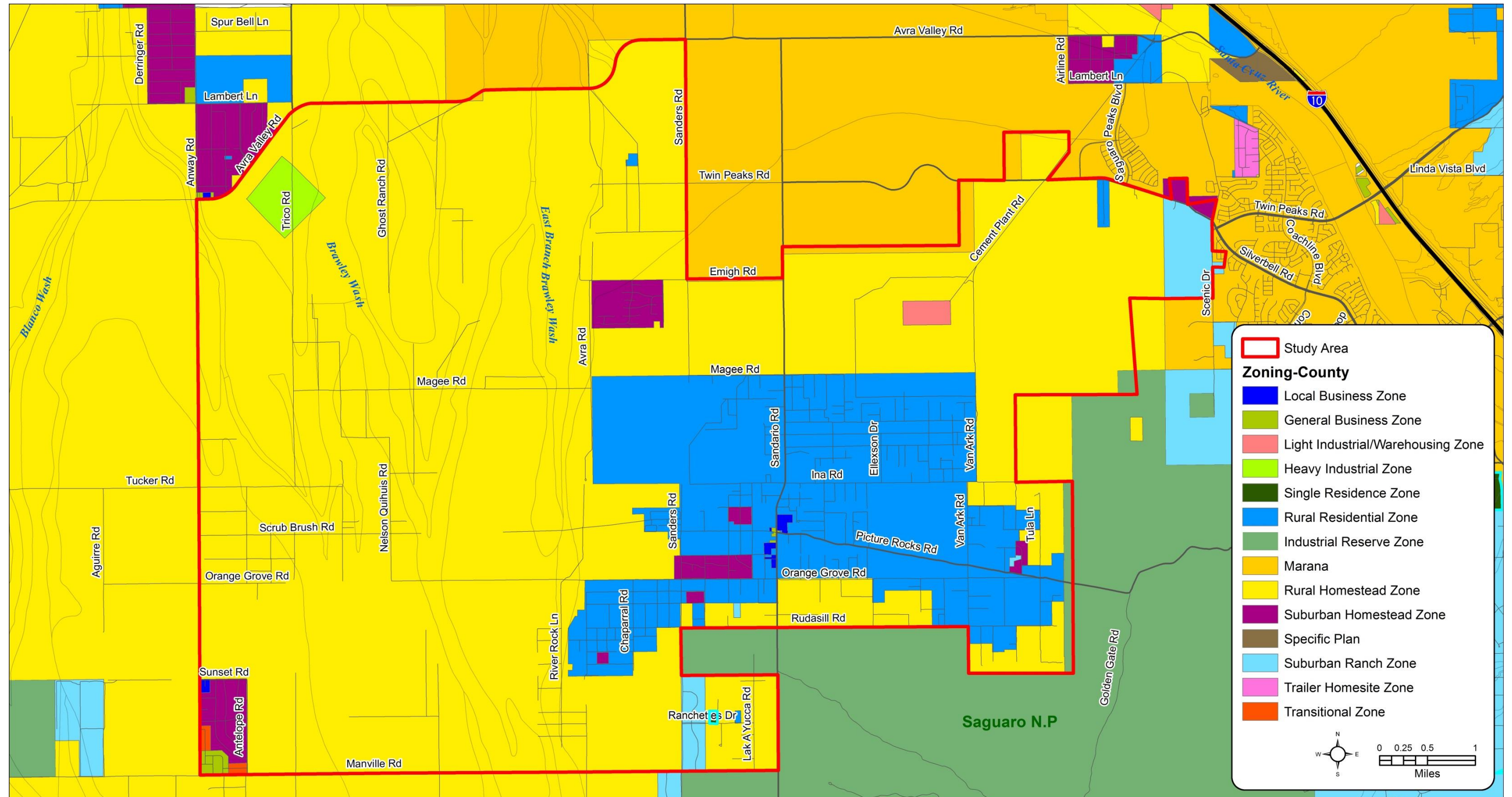


Figure 5 – Zoning

- B. Development shall enhance this pedestrian scale environment, avoid strip auto-oriented commercial, and support through site planning and development the traditional western “main street.” The following development guidelines should be considered:
1. Buildings shall have reduced front setbacks, with parking lots located to the rear or side of buildings;
 2. Access to parking lots shall be off of side roads rather than directly off Sandario Road; and
 3. Hitching areas and access to local businesses shall be provided for equestrians.

2.2.3 ACTIVITY CENTERS

This section provides an overview of current land uses and activity centers. Community features within Picture Rocks are shown in **Figure 6**, and are further described as follows.

Education Facilities

Two schools in the Marana Unified School District are located within the study area. Desert Winds Elementary School and Picture Rocks Intermediate School are located at the southwest corner of Sanders Road/Rudasill Road. Marana High School is just outside the study area to the north on Sandario Road. Three other elementary schools and a private school are located to the west of the study area on Silverbell Road.

Recreation Facilities

Two parks are located within the Picture Rocks study area. The largest is Saguaro National Park, which makes up the southwest corner of the study area. The other park and recreation area is Picture Rocks Park located on Sanders Road next to Picture Rocks Intermediate School.

Community Facilities

The Picture Rocks Community Center is located on Sanders Road, south of Rudasill Road, at 5615 Sanders Road.

Picture Rocks Community Center, Inc., Information and Services (PRCCI) is a locally run, all-volunteer non-profit organization that specializes in helping others with food and low-cost clothing. It is located just south of the Minit Market at 6691 Sanders Road.

Three churches are located in the study area near the Picture Rocks Road and Sandario Road intersection: Praise Center Assembly of God, Sandario Baptist Church, and the Chapel of Life.

Pima County Sheriff Substation is located at 6261 N. Sandario Road. Picture Rocks Fire District is located at 6625 N. Sandario Road.

Commercial

The Minit Market is located at the southwest corner of Picture Rocks Road/Sandario Road.

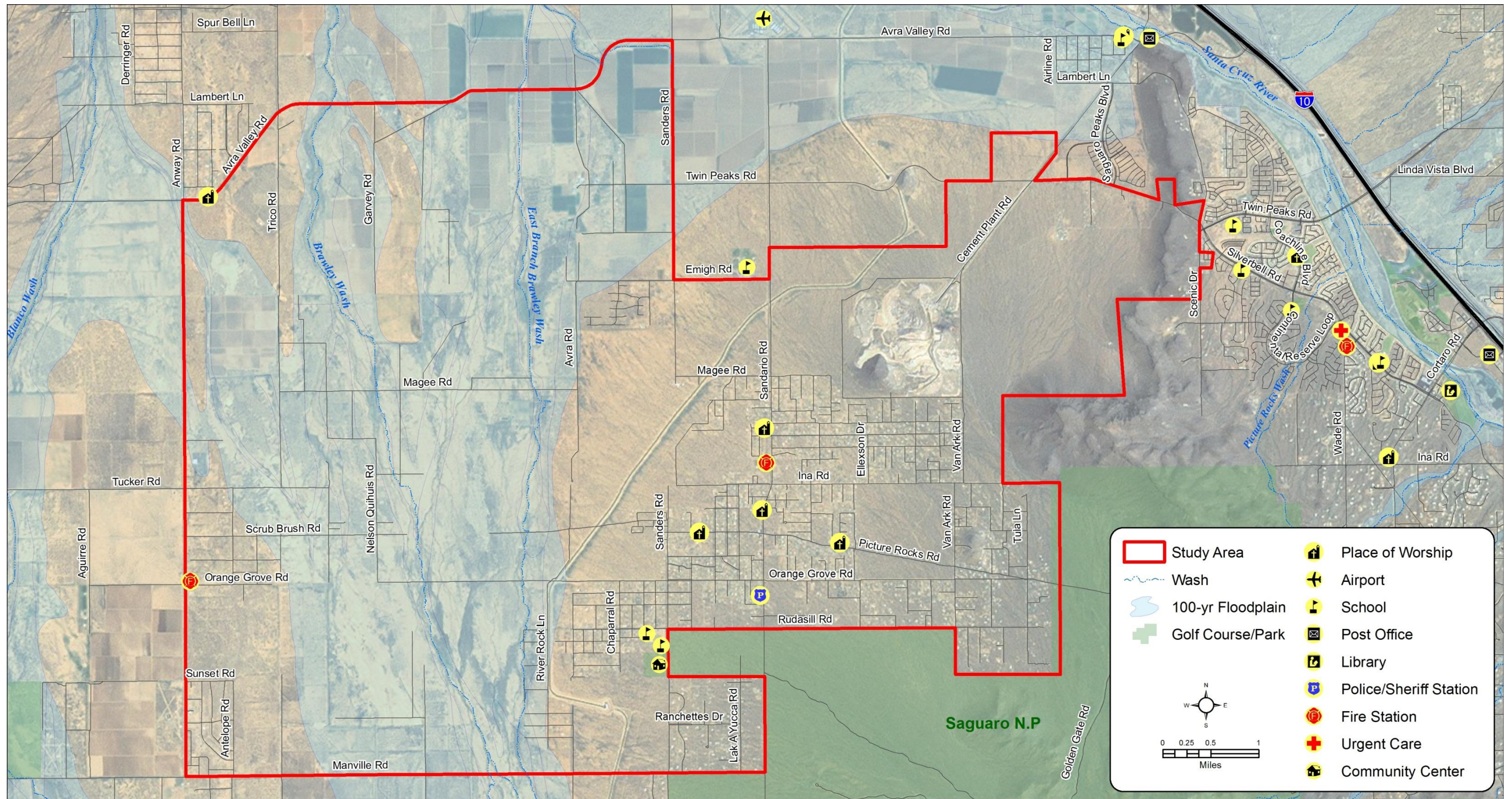


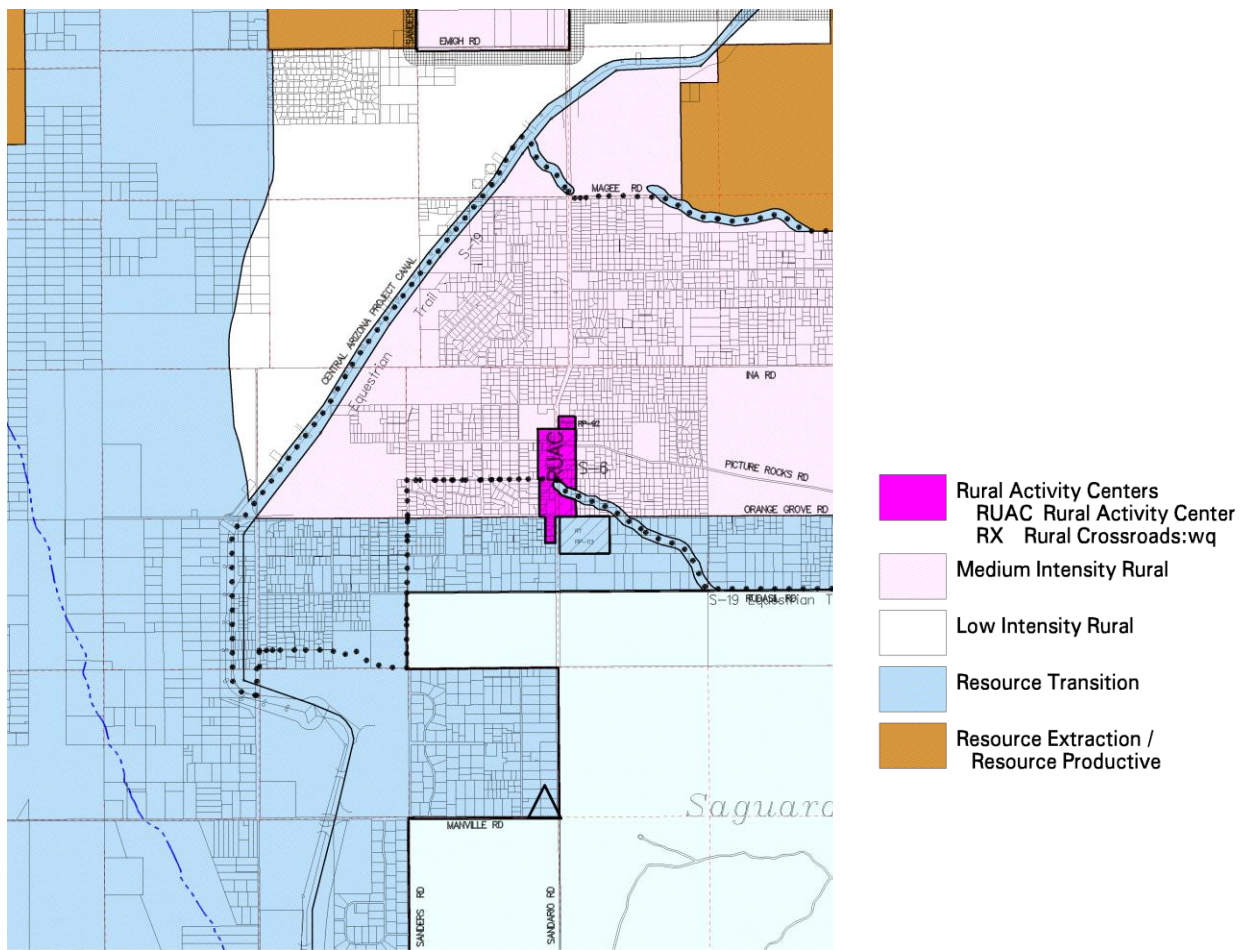
Figure 6 – Community Features

2.2.4 FUTURE LAND USE

Future land use for the Picture Rocks study area was obtained from the *Pima County Comprehensive Land Use Plan*. In general, land use is not planned to change significantly and this plan reflects a planned land use of medium-density residential within the area approximately bounded by the CAP Canal to the north and west, Van Ark Road to the east, and Orange Grove Road to the south.

The western portion of the study area (west of the CAP Canal) will remain low-density residential and resource transition areas. There is no anticipated change to State Trust land in the foreseeable future. Planned land uses are shown in **Figure 7**.

The *Pima County Comprehensive Land Use Plan* is currently in the process of being updated. The state deadline for adoption of the update is July 15, 2015.



Source: Pima County Comprehensive Land Use Plan, Planned Land Use, Northwest Subregion, December 18, 2001

Figure 7 – Planned Land Use

2.3 DEMOGRAPHICS AND SOCIOECONOMICS

An analysis of population and employment data was conducted and is summarized below.

2.3.1 POPULATION AND EMPLOYMENT

Population data was obtained from the 2000 and 2010 United States Census and is shown in **Table 1**. Picture Rocks is a census-designated place (CDP) as defined by the United States Census Bureau. The most recent data shows that there were 9,563 residents in 2010 compared to 8,139 residents in 2000. This represents a 17.5% increase in population and a 1.63% compound annual growth rate over the 10-year period.

The growth rate within Picture Rocks is similar to Pima County and the State of Arizona. The compounded annual growth rate for Pima County and the State of Arizona are 1.51% and 2.22%, respectively.

Table 1 – Current Study Area Population

Area	2000 Population	2010 Population	Compound Annual Growth Rate, 2000-2010
Picture Rocks	8,139	9,563	1.63%
Pima County	843,746	980,263	1.51%
State of Arizona	5,130,632	6,392,017	2.22%

Source: 2000 & 2010 United States Census Bureau

Population densities within the study area are shown in **Figure 8**. Higher areas of population are located near Sandario Road, Ina Road, Magee Road, and Picture Rocks Road.

Figure 9 shows the density of residents 65 and older from the 2010 Census, which is very similar to the general population.

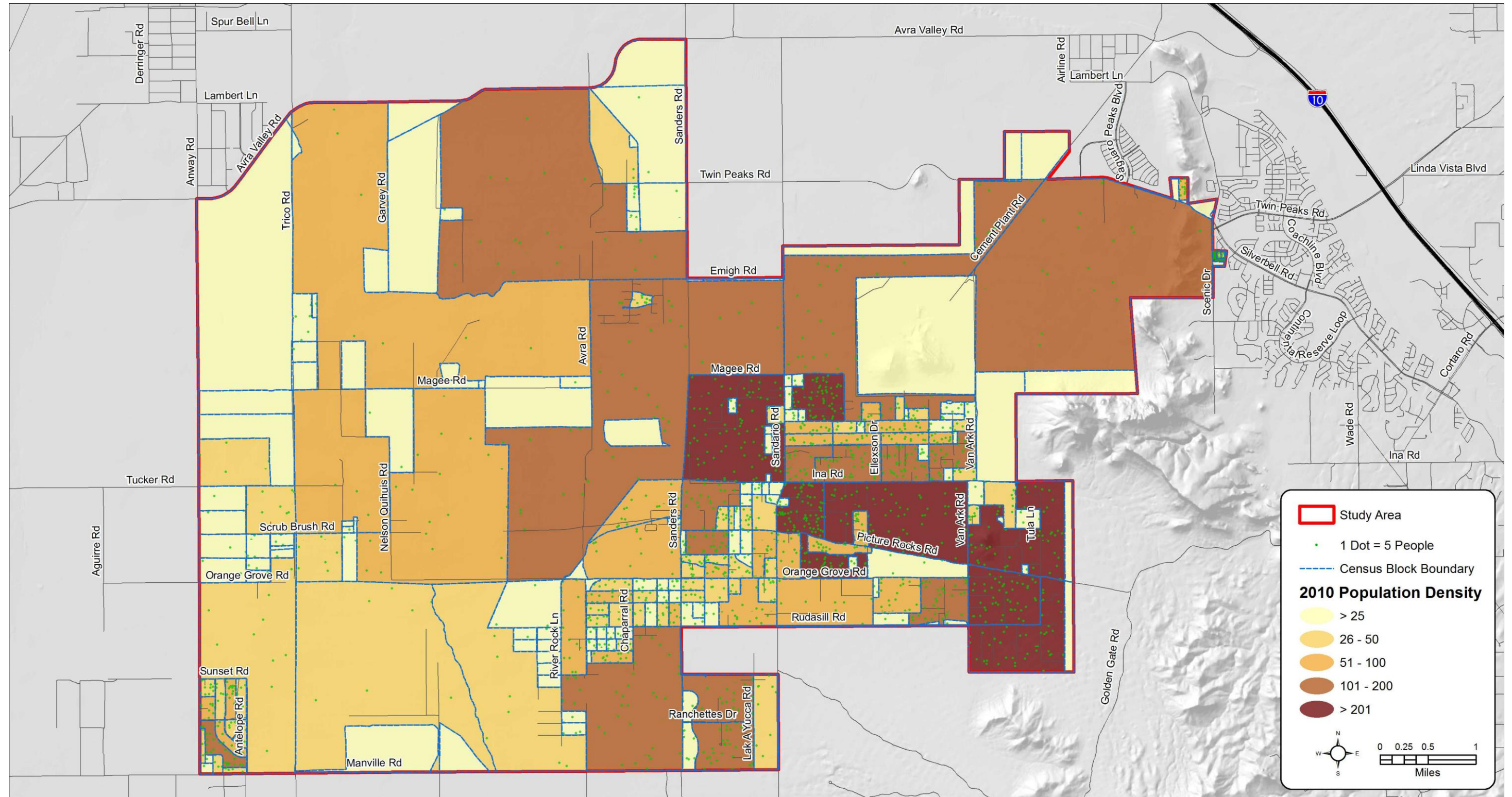


Figure 8 – 2010 Population Density

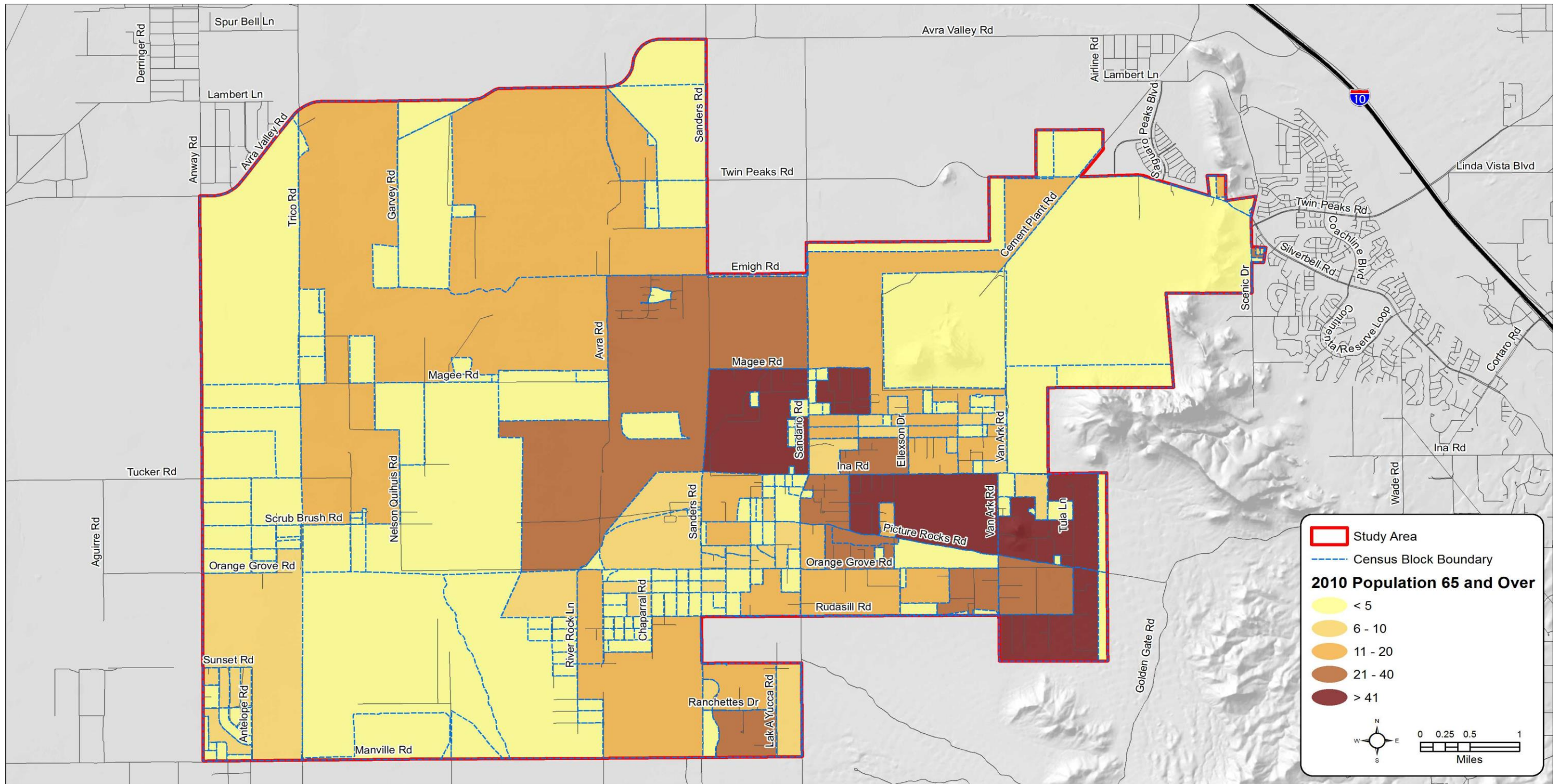


Figure 9 – Distribution of 2010 Populations 65 and Older

2.3.2 AGE DISTRIBUTION

The age distribution of residents from the 2010 Census is shown in Table 2 and in **Figure 10**. As can be seen from these data, the largest segment of the population is residents between ages 49-54 which comprise 27 percent of the population. As these residents age into retirement, they may have additional needs for transportation services. Residents 65 and older comprise nearly 14 percent of the population.

Table 2 – Age Distribution

Age	Number of Persons	Percent
Under 5 years	517	5.4
5 to 9 years	563	5.9
10 to 14 years	636	6.7
15 to 19 years	697	7.3
20 to 24 years	485	5.1
25 to 29 years	400	4.2
30 to 34 years	444	4.6
35 to 39 years	489	5.1
40 to 44 years	684	7.2
45 to 49 years	892	9.3
50 to 54 years	881	9.2
55 to 59 years	848	8.9
60 to 64 years	698	7.3
65 to 69 years	544	5.7
70 to 74 years	371	3.9
75 to 79 years	209	2.2
80 to 84 years	126	1.3
85 years and over	79	0.8
Median age (years)	42.2	-

Source: U.S. 2010 Census

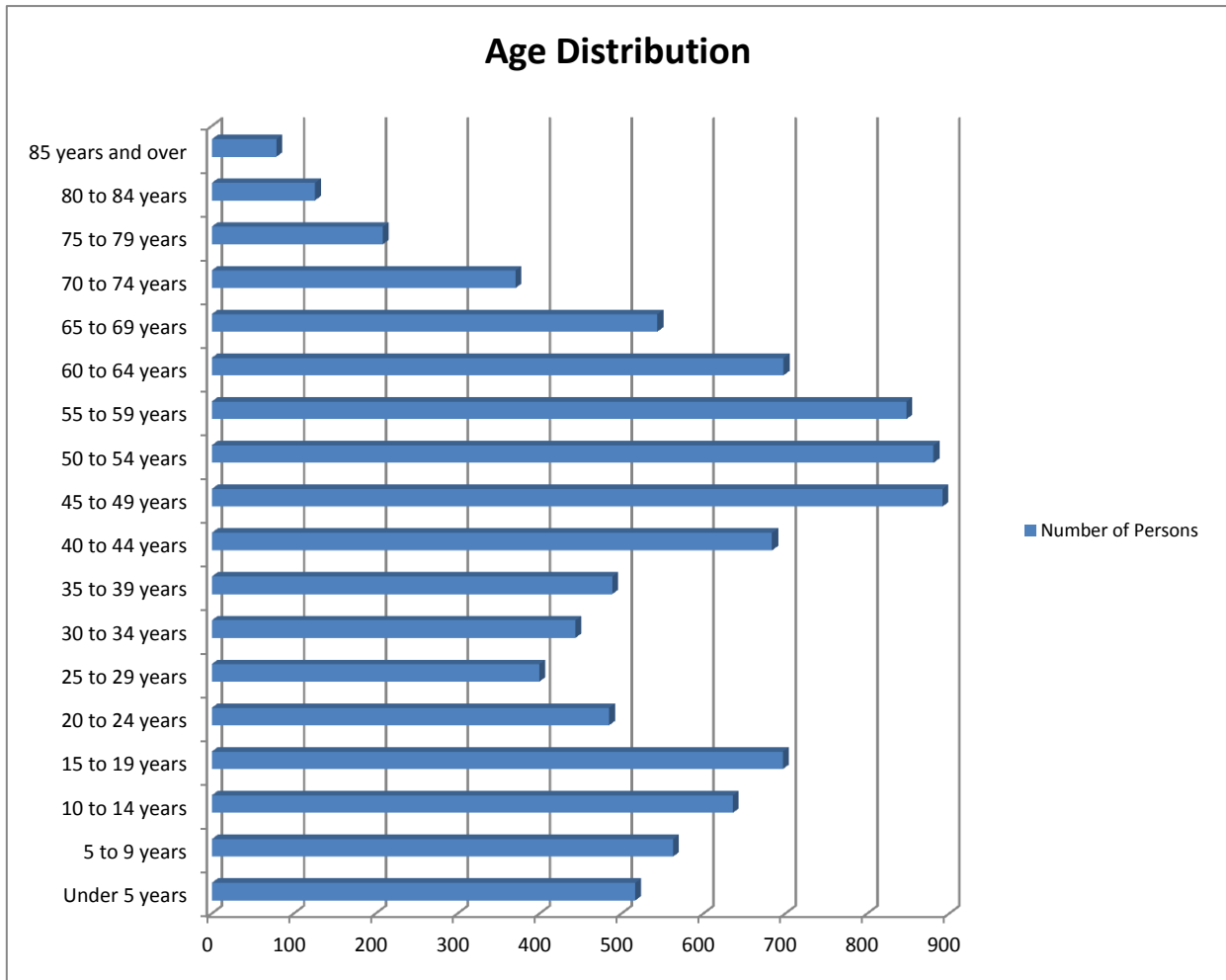


Figure 10 – Age Distribution

2.3.3 HOUSEHOLD SIZE AND VEHICLE AVAILABILITY

Household size and vehicle availability information is provided through the American Community Survey. Data for the Picture Rocks CDP is provided in **Table 3**.

The total number of households in the Picture Rocks study area estimated to be without a vehicle is 110 households, representing approximately 212 persons.

Table 3 – Households and Vehicle Availability, 2012

Picture Rocks CDP, 2011	Households
Total Households	3,320
No vehicle available	110
1 vehicle available	867
2 vehicles available	1,375
3 vehicles available	579
4 or more vehicles available	389
1 person household	794
No vehicle available	72
1 vehicle available	419
2 vehicles available	224
3 vehicles available	44
4 or more vehicles available	35
2 person household	1433
No vehicle available	0
1 vehicle available	245
2 vehicles available	736
3 vehicles available	255
4 or more vehicles available	197
3 person household	508
No vehicle available	12
1 vehicle available	119
2 vehicles available	200
3 vehicles available	129
4 or more vehicles available	48
4 person household	585
No vehicle available	26
1 vehicle available	84
2 vehicles available	215
3 vehicles available	151
4 or more vehicles available	109

Source: American Community Survey, 2011

2.3.4 EMPLOYMENT

Employment data was obtained from the 2010 United States Census Selected Economic Characteristics, DP03. **Table 4** provides a breakdown of the different types of employment sectors within the Picture Rocks study area. Major employment sectors include:

- Educational services, health care, and social assistance
- Retail Trade
- Professional, scientific, management, administrative and waste management
- Construction

These employment sectors are not available within the Picture Rocks area but require residents to travel to the metropolitan areas of Tucson and Marana for jobs.

Table 4 – Employers and Employment Sectors

Picture Rocks CDP Employees	Number of Employees	Percent of Employees
Civilian employed population 16 years and over	3,958	100
Agriculture, forestry, fishing and hunting, and mining	13	0.3
Construction	358	9.0
Manufacturing	108	2.7
Wholesale trade	91	2.3
Retail trade	659	16.6
Transportation and warehousing, and utilities	224	5.7
Information	86	2.2
Finance and insurance, and real estate and rental and leasing	156	3.9
Professional, scientific, and management, and administrative and waste management services	399	10.1
Educational services, and health care and social assistance	1,022	25.8
Arts, entertainment, and recreation, and accommodation and food services	322	8.1
Other services, except public administration	327	8.3
Public administration	193	4.9

Source: United States 2010 Census Table DP03

2.3.5 TOURISM

Tourism attractions include the Saguaro National Park, which is managed by the United States National Park Service. The Saguaro National Park is 143 square miles and makes up the southeast border of the study area.

According to the National Park Service, Saguaro National Park received 364,287 visitors in 2012. This means that a significant amount of seasonal traffic on the roads leading to the Saguaro National Park Visitors Center is unfamiliar with area roadways. Tourists also tend to drive more slowly, and tend to stop frequently to sight-see.

2.3.6 TRANSPORTATION MODES

Data that reflects how workers 16 years of age and older are traveling to work was obtained from the 2010 Census Selected Economic Characteristics Data. **Table 5** summarizes this information for the Picture Rocks area and shows how the modes of travel compare to the State of Arizona as a whole. The commuting data for Picture Rocks is similar to the State of Arizona in all but two categories. Picture Rocks has zero walking and public transportation commuters while Arizona as a whole is two percent higher in these categories.

Table 5 – Modes of Transportation for Workers 16 Years and Older

Mode of Transportation	Percent of Workers 16 and over	
	Picture Rocks	Arizona
Automobile – Drove Alone	80.4	75.8
Automobile – Carpooled	12.3	12.3
Public Transportation	0.0	2.0
Walked	0.0	2.1
Other Means (includes bicycling, other modes of transportation)	1.3	2.5
Worked at Home	6.0	5.4

Source: United States 2010 Census Table DP03

2.3.7 TITLE VI POPULATIONS AND ENVIRONMENTAL JUSTICE

Transportation projects that utilize United States federal aid are required to certify non-discrimination under the requirements of Title VI of the Civil Rights Act of 1964. Also, in 1997, the U.S. Department of Transportation issued the DOT Order to Address Environmental Justice in Minority Populations and Low-Income Populations to summarize and expand upon the requirements of Executive Order 12898 on Environmental Justice. In accordance with the intent of these federal requirements, analysis was completed to identify disadvantaged populations within the study area and any likely adverse impacts on those disadvantaged populations from proposed transportation improvements.

According to the 2010 U.S. Census, the racial composition of Picture Rocks is predominantly White (not Hispanic), as shown in **Table 6**, with a significant portion of Hispanic or Latinos. All other race percentages are insignificant.

Table 6 – 2010 Census Racial Demographic Percentages

Area	White Not Hispanic	African American	Native American	Asian	Native Hawaiian	Other	Two or More Races	Hispanic or Latino
Picture Rocks CDP	79.3%	0.7%	1.0%	0.5%	0.0%	0.3%	1.9%	16.3%

Source: 2010 Census Table DP-1

The Executive Order also requires the consideration of persons older than 60 years of age. According to the U.S. 2010 Census, approximately 21.2 percent of the population of Picture Rocks is 60 years or older. Title VI population data for the year 2010 for Picture Rocks is shown in **Table 7**.

Table 7 – 2010 Title VI Population Percentages

Population Category	Picture Rocks CDP
Females	49.4%
Males	50.6%
Minority Races	20.7%
Persons over age 60	21.2%
Persons with incomes below poverty level	9.2%

Source: 2010 Census Table DP-1, DP03

3. Traffic and Roadway Assessment

This chapter presents data on current and future transportation conditions to identify needs of the transportation system.

3.1 PREVIOUS PLANS AND STUDIES

The plans and studies listed in **Table 8** relating to transportation in the Picture Rocks area were reviewed. A summary of key information applicable to the Picture Rocks Multimodal Transportation Study is provided in **Table 8**.

Table 8 – Summary of Completed Plans and Studies

Document ID	Document Name	Organization/ Author	Key Information Applicable to Picture Rocks Multimodal Transportation Study
1	2014-2018 Transportation Improvement Program, adopted June 2013.	PAG	Short-range transportation projects planned in the study area or vicinity.
2	2040 Regional Transportation Plan, adopted July 1, 2010 and June 29, 2012 RTP Update	PAG	Long-range transportation projects planned in the study area or vicinity.
3	Tucson Regional Plan for Bicycling, September 2009	PAG	Bicycle routes and regional goals for bicycling.
4	Picture Rocks Road (Sandario to Wade) Sandario Road (Mile Wide to Picture Rocks) Road Safety Assessment, February 2012	ADOT – Arizona Road Safety Assessment Program	Identification of safety needs and potential projects on Picture Rocks Road and Sandario Road, in conjunction with Documents 5 and 6, below.
5	Traffic Safety Study – Picture Rocks Road, 7000 W – 11800 W, November 19, 2012	Pima County Department of Transportation – Traffic Engineering Division	Identification of safety needs and potential projects on this segment of Picture Rocks Road between Wade Road and Sandario Road.
6	Traffic Safety Study – Sandario Road, 2400 N – 8800 N	Pima County Department of Transportation – Traffic Engineering Division	Identification of safety needs and potential projects on this segment of Sandario Road north of Mile Wide Road and continuing northward to Emigh Road.
7	Intermountain West Corridor in Pima County – A Preliminary GIS-Based Roadway Alignment and Impact Study, June 21, 2013	Pima County Department of Transportation	This report describes an alternative roadway alignment for a theoretical new interstate route through Avra Valley that can connect to I-10 in Pinal County and I-19 south of Tucson. The route description was used as general reference in the study.

Document ID	Document Name	Organization/ Author	Key Information Applicable to Picture Rocks Multimodal Transportation Study
8	PAG Short Range Transit Program Implementation Plan, FY 2014-FY 2018	PAG	A future Route 411 transit route extension to Picture Rocks is included as a remaining RTA Expansion project in Appendix B of the report, which also describes prioritization process for programming regional transit funds (Appendix G). Note that funding is not available within the RTA to implement this project.

3.2 SUMMARY OF STAKEHOLDER INTERVIEWS/SURVEYS

Interviews with stakeholders were held to obtain information on transportation needs and improvement priorities.

Stakeholders were defined as persons whose jobs involve the transportation system. These persons have knowledge of the transportation system gained from on-the-job experience, knowledge, and expertise. Stakeholders include representatives from the following organizations:

- Pima County Sheriff’s Department
- Pima County Supervisor, District 3
- Picture Rocks Fire District
- Arizona State Land Department
- Picture Rocks Community Association (Citizens for Picture Rocks)
- Marana Unified School District
- National Park Service (Saguaro National Park)
- Pima County Department of Transportation Traffic Engineering Division

Stakeholder interviews were conducted in November 2013. Typical stakeholder questions included the following:

1. Tell me about your organization and the clientele/constituency that you serve.
2. What are the primary transportation needs within the Picture Rocks study area?
 - a. **Safety** – needs in the areas of emergency response, crashes, traffic control needs, signing/striping, speed, etc.)
 - b. **Transit** – needs regarding type of service, residents that would be served, destinations to be served, primary benefits to the community
 - c. **Roadways** – needs regarding lighting, temporary traffic control for flooding, geometry, capacity, access
 - d. **Intersections** – needs regarding traffic control, road and intersection capacity, currently uncontrolled intersections, crash experience at intersections
 - e. **Pedestrians/Bicyclists** – needs regarding safety improvements, sidewalks, paths, trails, crossings, school safety.

Table 9 summarizes the stakeholder discussions. Consistent comments made by the stakeholders include:

- Need for transit service and school bus pullouts

Picture Rocks Multimodal Transportation Study

- Need for road maintenance (non-county-maintained roads)
- Need for safety improvements on Sandario Road and Picture Rocks Road
- Need for roadway shoulders for bicyclists and pedestrians
- Need for speed control measures

Table 9 – Summary of Stakeholder Input on Transportation Needs

Topic	Pima County Sheriff's Department	Pima County Supervisor – District 3	Picture Rocks Fire District	Arizona State Land Department	Picture Rocks Community Association	Marana Unified School District	National Park Service	Pima County Department of Transportation Traffic Engineering Division
Tell me about your organization	Picture Rocks is served by Pima County Sheriff Department, Tucson Mountain District.	The Picture Rocks area is part of District 3 of Pima County.	Picture Rocks Fire District provides emergency response (fire and paramedic) to the Picture Rocks area.	The Arizona State Land Department manages approximately 9.2 million acres of State Trust lands within Arizona. These lands are held in trust and managed for the sole purpose of generating revenues for the 13 State Trust land beneficiaries, the largest of which is Arizona's K-12 education. The Arizona State Land Department manages several sections of land in Picture Rocks (refer to Figure 4) encompassing approximately 5,754 acres.	Citizens For Picture Rocks is a non-profit all-volunteer community improvement organization incorporated as a 501(c) (4). It was founded in 2002 by a group of residents concerned with crime in the community.	The District is located in south central Arizona, approximately 16 miles northwest of downtown Tucson. The district comprises 11 elementary schools, one intermediate school, two middle schools, two high schools, and one alternative school.	Saguaro National Park is located directly adjacent to the Picture Rocks area. The National Park Service owns lands adjacent to Picture Rocks Road, a primary access to and from the area from the Tucson metro area.	PCDOT Traffic Engineering Division has conducted several safety studies on area roadways including Picture Rocks Road and Sandario Road. Pima County owns and maintains roadways within the area.

Table 9 – Summary of Stakeholder Input on Transportation Needs, cont.

Topic	Pima County Sheriff's Department	Pima County Supervisor – District 3	Picture Rocks Fire District	Arizona State Land Department	Picture Rocks Community Association	Marana Unified School District	National Park Service	Pima County Department of Transportation Traffic Engineering Division
Safety Needs	<p>Vehicle speeds are an issue in general and in particular on major roadways such as Sandario Road.</p>	<p>Picture Rocks Road is currently of most concern; several serious injury and fatal crashes were experienced over the past few years (particularly in 2011 and 2012). Many involve motorcycles and speeding. DUI has also been identified as a concern on area roadways.</p> <p>A potential improvement is to install a variable message sign/boards to notify Picture Rocks residents when there are closures of Picture Rocks Road (e.g., due to a crash, etc.). These message boards would be placed on both sides of the Tucson Mountains, possibly at the Minit Market at Picture Rocks/Sandario Road, providing residents a choice to choose an alternative route.</p>	<p>There have been several crashes in Picture Rocks Road in 2011-2012. In 2012, there were 5 fatalities, in 2011 there were 4. In 2013, there is 1 crash year to date.</p> <p>There is a need for a center rumble strip on Picture Rocks Road. Almost every crash has been head-on to shave the corners to pick up speed.</p> <p>The Fire Station is located on Sandario Road, across from Cloud View. There is a need for a fire signal beacon to assist fire trucks entering Sandario Road.</p>	-	<p>Vehicle speeds and enforcement are key safety needs.</p>	<p>School buses use un-maintained county roads; following inclement weather, many of these roads are unpassable.</p>	<p>There have been several crashes on Picture Rocks Road through the areas with tight geometry. Picture Rocks Road is essentially a 'wagon road' that has been paved but never properly designed. There is an S-curve on Sandario Road that is a safety concern due to the geometry; in addition, this curve has a high rate of wildlife mortality.</p>	<p>There is a safety project in the planning stages for Picture Rocks Road at the S-curve where the Picture Rocks Wash crosses Picture Rocks Road; will also look at other S-curves where fatalities have occurred.</p> <p>The long-term desire is to install safety shoulders on sections of Sandario Road and Picture Rocks Road. These are both very expensive and currently un-funded projects.</p> <p>A contributing factor for crashes on Picture Rocks Road is local traffic using Orange Grove Road as an alternative, and then heading north to Picture Rocks Road; several crashes are at these intersections.</p> <p>PCDOT is going to initiate a study of the S-curve on Sandario Road near Kinney Road. They are also considering improving Sandario Road to three lanes from Picture Rocks Road to Saguaro National Park (Rudasill Road).</p>

Table 9 – Summary of Stakeholder Input on Transportation Needs, cont.

Topic	Pima County Sheriff's Department	Pima County Supervisor – District 3	Picture Rocks Fire District	Arizona State Land Department	Picture Rocks Community Association	Marana Unified School District	National Park Service	Pima County Department of Transportation Traffic Engineering Division
Transit Needs	<p>Transit is the most important need in the Picture Rocks area to provide access to social services, medical services, food, etc. Transit service would allow people to be able to be more independent. The ideal scenario is a small bus that transports and connects to an existing transit service. It needs to run early enough and late enough to be useful for people to use to get to work. Route 411 (in Marana) offers a connection opportunity. There could also be a benefit to transit service running south to Ajo Way as an alternative route to connect to Tucson.</p>	<p>Transit is the top priority for Picture Rocks. Elderly, teens and younger people are in need of transit to access social services, medical care, and employment opportunities. The community has been focused on obtaining transit service for 10 years. They would like to apply for 5310/5311. Funds. A large response to the recent PAG/Sun Tran survey illustrates the need for transit service. Options include an extension of Route 411 (from Marana) to Picture Rocks. Potential key destinations for transit are the Walmart and Fry's near Cortaro Road. The Marana Health Care Clinic is also a potential important health destination.</p>	<p>There has been consistent conversation related to transit over the past several years. The Fire Department transports a lot of people every year because they can't access medical care; they call an ambulance as an alternative. A lot of hitchhikers going into town. The economic downturn has made the situation more difficult for seniors and those potentially dependent upon transit service; lack of employment makes it so they can't afford vehicles, but need to commute to Tucson for employment.</p>	-	<p>They have suggested and explored an extension of Route 411, which connects to commuter service at Arizona Pavilions (Cortaro Farms Road/I-10). PAG conducted a study of this which determined that while there is a need, it is a lower-priority need than other regional needs. Marana hasn't supported the extension. Land use density along the route makes the feasibility of this route questionable. This route would serve Marana High School and connect to Picture Rocks Community Center. Service could be am and pm only. The lack of transit service forces elderly people to move away because of a lack of transportation options as they age. Access is needed within the community as well and access to stores in Marana. Connecting to Marana (410) doesn't work well because it is a very long route and doesn't directly access the services needed.</p>	<p>School buses utilize bus stops on Picture Rocks Road and turnarounds. Bus turnouts and waiting areas are needed along Sandario Road to get kids off of the road. There are several county unmaintained roads that are unpassable following rain storms.</p>	<p>There is a need for transit stops at trailheads and the visitor center. Idea would be for Saguaro National Park to have its own bus (branding/label).</p>	<p>Additional analysis of full-range of transit options is needed. PAG analysis focused on an evaluation as compared to regional needs and priorities. The evaluation also just focused on an extension of Route 411, and did not fully evaluate transit needs in the community.</p>

Table 9 – Summary of Stakeholder Input on Transportation Needs, cont.

Topic	Pima County Sheriff's Department	Pima County Supervisor – District 3	Picture Rocks Fire District	Arizona State Land Department	Picture Rocks Community Association	Marana Unified School District	National Park Service	Pima County Department of Transportation Traffic Engineering Division
Roadway Needs	<p>Roadways in Picture Rocks lack curb and sidewalk. Narrow shoulders provide little recovery for vehicles. A lack of shoulders makes it difficult for bicyclists.</p> <p>For example, the S-curve on Picture Rocks Road has no shoulder and has an edge drop-off of about 6 inches; vehicles that cross the edge are not able to recover.</p> <p>There is not a need for roadway lighting (except perhaps at focused intersections).</p>	<p>Most development in the area is unregulated lot-splitting (Arizona law allows property owners to split lots into five or fewer parcel and sell them without adhering to subdivision standards). This results in subdivisions without basic infrastructure such as streets, sewer lines, storm drain, etc. A majority of local streets in Picture Rocks are unmaintained county roads. In order for the County to maintain them, they must first be improved to county standards. Efforts to organize and establish roadway improvement districts have not been successful.</p> <p>Manville Road and Anway Road have flooding problems. These are not all-weather roads.</p>	<p>NPS doesn't like pullouts, widening, etc.</p> <p>Shoulders are broken off (white strip and then dirt).</p> <p>Picture Rocks was developed primarily as unregulated subdivisions. Most roads are easements. County doesn't maintain them and they are awful roads. Fire trucks get stuck during rainy season. People will use railroad ties to stabilize the road.</p> <p>As we get closer to the mountain the access for fire vehicles gets more difficult.</p> <p>Unmaintained roads are a big issue. Ina Road east of Sandario and Mars Road off of Anthony are big issues.</p> <p>Gets to the point where underground utilities are exposed and kids have to walk out to the main roads.</p> <p>Avra Valley Road accident. Hauling acid to the mine, doing 55 mph and then hit a jog in the road.</p> <p>The changing speed limits on Avra Valley Road create an issue.</p> <p>National Monument has threatened to close Picture Rocks Road.</p>		<p>Want to see long-term plan to address the non-maintained county roads. At least address the roads that are relied upon by school busses and fire trucks.</p> <p>School buses use Ina Road and stir up dust and create air pollution.</p>	<p>Non-county-maintained roads present a challenge for school buses.</p> <p>Kids are unable to travel to the bus on Massingale Road east of Dessert Pass Road.</p> <p>Mars Road closes due to weather from Ellexson Drive to Lydia Ave.</p> <p>Buses cannot travel on Ina Road from Ellexson Drive to west of Desert Post Lane.</p> <p>Ina Road from Sandario Road to Ellexson Drive is closed in inclement weather.</p> <p>Drainage improvements are needed on Manville Road at wash crossing.</p> <p>Drainage improvements are also needed on Anway Road just south of Avra Valley Road.</p> <p>Scrub Brush Road between Anway Road and Saltbrush Road closes during inclement weather.</p>	<p>Picture Rocks Road was not engineered to accommodate the current traffic volumes and speeds. It is essentially a wagon road that has been paved.</p> <p>A minor project to improve sight lines, install centerline rumble strips and raised pavement markers (RPMs) is underway.</p> <p>30' right of way from centerline and 100' from centerline of road is designated Wilderness.</p> <p>Long-term plan is to close Golden Gate Road from Picture Rocks Road to Sandario/Esparanza Trailhead. This would be a great pick up/drop off for visitors.</p> <p>Need enforcement for the 15,000 lb limit on Picture Rocks Road.</p> <p>Most park visitors use Picture Rocks Road. Way-finding sign on Avra Valley Road needs to be repaired. Preferably people would use Twin Peaks Road/Sandario Road to access the park. Signage is needed on I-10 directing people to use Twin Peaks Road.</p> <p>This will benefit the Town of Marana and the Picture Rocks community.</p>	<p>S-curve on Picture Rocks road needs realignment. A study is being developed for this project. HSIP funding is anticipated.</p> <p>Study will evaluate improving Picture Rocks Road to 3-lane section from Saguario National Park to Sandario Road.</p> <p>S-curve on Kinney Road near Sandario Road will also be studied (high crash area).</p> <p>PCDOT has identified a need to add a left turn lane and shoulders on Sandario Road between Ina Road and Emigh Road.</p> <p>Ina Road needs drainage improvements. Sanders Road from Picture Rocks Road to south of the community center needs drainage improvements.</p> <p>There is not an identified safety issue with non-county-maintained roads (from crash perspective); they would be identified within SMS. Speeds and volumes are so low.</p> <p>PCDOT is seeking funding for advanced warning flashers on Manville Road at Brawley Wash. AGFD is reviewing wildlife crossings locations.</p>

Table 9 – Summary of Stakeholder Input on Transportation Needs, cont.

Topic	Pima County Sheriff's Department	Pima County Supervisor – District 3	Picture Rocks Fire District	Arizona State Land Department	Picture Rocks Community Association	Marana Unified School District	National Park Service	Pima County Department of Transportation Traffic Engineering Division
Intersection Needs		Lighting is a need at the intersections of Rudasill/Sandario, Manville/Sandario and Mile Wide/Sandario.	On the weekends there is a swap meet at the intersection of Picture Rocks Road and Sandario Road (two gas stations kitty corner). Pedestrians cross the intersection access the market, etc. There is a need for defined crosswalks. Need for sidewalks and streetlights at the major intersections. Rudasill Road/Sandario Road Intersection needs improved traffic control or enforcement.		People are not stopping at the intersection of Sandario Road and Rudasill Road.			The intersection of Orange Grove Road/Sandario Road needs to be improved due to poor geometry (however, there has not been a crash history at this intersection).

Table 9 – Summary of Stakeholder Input on Transportation Needs, cont.

Topic	Pima County Sheriff's Department	Pima County Supervisor – District 3	Picture Rocks Fire District	Arizona State Land Department	Picture Rocks Community Association	Marana Unified School District	National Park Service	Pima County Department of Transportation Traffic Engineering Division
Pedestrian/ Bicyclist Needs	<p>Pedestrians are limited by how far they are going to walk and because of this very few people are walking.</p> <p>Pedestrian facilities would get minimal usage.</p> <p>Bicycle facilities within the community would get used. Limited shoulder width makes it uncomfortable for bicyclists to ride on major roadways.</p> <p>There are bicyclists in the community but they are not riding for inter-travel within the Picture Rocks area. There are lots of recreational cyclists who visit the community.</p> <p>Transit service would be a higher priority.</p>	<p>There are no shoulders or no room for pedestrians on major roads.</p> <p>This is a popular recreational riding area but there are no shoulders.</p> <p>Shoulder improvements would be a good transportation enhancement project.</p> <p>PCDOT added school bus stops.</p> <p>Focus on walking routes to the Community Center, Minit Market at Picture Rocks Road/Sandario Road, and from Marana High School to Rudasill Road.</p> <p>Rudasill Road needs improvements to the Community Center to accommodate pedestrians and bicyclists.</p> <p>There is a need for the Safe Routes to School program.</p>	<p>Very popular bike route</p>	-	<p>There are no bicycle and pedestrian facilities and people ride and walk at their own risk.</p> <p>Need for a complete streets with bike lane and sidewalk.</p> <p>In general there are no good places to walk and no safe route from the Community Center to Marana High School.</p> <p>Even though there are routes that could be followed, roads quickly change from county road to county unmaintained roads. When you get off the main roads you would need a mountain bike.</p> <p>Need for walking trails to bike paths.</p> <p>Picture Rocks Road does not have shoulders, etc. for bicyclists.</p>	<p>Extend path from schools to community center.</p>	<p>There is a trailhead on Sandario Road at Rudasill Road. There are currently no improvements and there is a need for modest parking areas to facilitate visitation to this trailhead.</p> <p>Contzen Pass at Box Canyon Wash: there are concerns with pedestrians and equestrians trying to cross Picture Rocks Road.</p> <p>Shoulders on Picture Rocks Road fits into the long-term perspective.</p> <p>Want to encourage bicycle use on Picture Rocks Road. Long term design would include bicycle use and access.</p>	-

Table 9 – Summary of Stakeholder Input on Transportation Needs, cont.

Topic	Pima County Sheriff's Department	Pima County Supervisor – District 3	Picture Rocks Fire District	Arizona State Land Department	Picture Rocks Community Association	Marana Unified School District	National Park Service	Pima County Department of Transportation Traffic Engineering Division
Other Comments	<p>Most of the traffic is not associated with Picture Rocks Community.</p> <p>There are lots of retirees because housing is inexpensive and it is close enough to needed services.</p> <p>There are advantages and disadvantages living in Picture Rocks: lack of transit service is a disadvantage; lack of bicycle and pedestrian facilities is another.</p> <p>Most people who are employed commute into Tucson.</p>	<p>Coordinate with the Town of Marana and Marana School District.</p> <p>82% of residents in Picture Rocks are uninsured or on Medicare or Medicaid.</p> <p>It is hard to get home nurses to residents in Picture Rocks because they don't pay mileage.</p> <p>Demographics show that the community is aging; families with youth are not moving into the area.</p> <p>The NPS would prefer to deemphasize Picture Rocks Road and emphasize Twin Peaks Road.</p>	<p>Picture Rocks is an economically depressed area. 82% of people are on Medicare/Medicaid or AHCCSS. This is an indicator of transit dependence.</p> <p>Non-county-maintained roads are an issue: do roads resort to public infrastructure after so many years? Local residents have a grader, but it's impossible to keep up.</p> <p>There is a culture of "I don't want to be part of Tucson"</p> <p>There are lots of people who ride quads and horses.</p>	<p>State Land parcels are not likely to develop because of lack of access to sewer infrastructure.</p> <p>There are too many high priority parcels (e.g., Gladden Farms area). These areas have access to infrastructure.</p>	<p>This study needs to clarify whether Picture Rocks is part of the urban area or part of a rural area.</p>	<p>Need bus staging area at the school for combined use of K-3 and 4-6.</p>	<p>I-11 alignment thorough Sandino road will not be acceptable to the community or to the National Park Service.</p>	<p>Consider removing Ina Road east of Sandario Road to the Tucson Mountains from the Pima County Major Streets and Routes Plan</p>

3.3 EXISTING ROADWAY NETWORK

The existing roadway network in the study area is composed of rural major collectors, rural minor collectors, urban collectors, and local streets. The functional classification of the major roadways will be explained later in the report.

Traffic entering into Picture Rocks is limited to a few roadways due to the community's geographical location next to Saguaro National Park and the Tucson Mountains to the east. No major roads or freeways connect Picture Rocks to the nearby towns of Marana and Tucson.

The main roadway into the Picture Rocks area from the east is Picture Rocks Road. Picture Rocks Road is the most direct route into the community and it connects to Ina Road, Silverbell Road, and ultimately to the I-10 freeway. Sandario and Twin Peaks roads provide access from Marana to the north. Kinney Road, Sanders Road, and Anway Road provide access from the south.

Paved and unpaved roads, as well as road maintenance responsibilities, are shown in **Figure 11**.

The limited number of paved roads and lack of all-weather crossings of these roadways limit travel options through the study area. This has been identified as an issue by emergency response stakeholders, as alternate routes are not available when primary routes are closed or impassable due to inclement weather.

A significant issue identified by stakeholders in the Picture Rocks area is road maintenance of non-county-maintained roads. In order for Pima County to bring non-county-maintained roads into the county-maintained road system, the roads need to be improved to County standards. Pima County Code of Ordinances, Section 10.04.030, Road Maintenance, states:

The board of supervisors, acting through the county engineer, shall expend public funds for such maintenance of public roads and streets located without the limits of an incorporated city or town in the county other than legally designated state and county highways as is vital to the public safety. In no event shall any maintenance be performed unless the road or street is laid out, opened and constructed as defined in this title without cost to the county, and in no event shall any rock products, cement or petroleum-product materials be purchased or used in performing such maintenance.

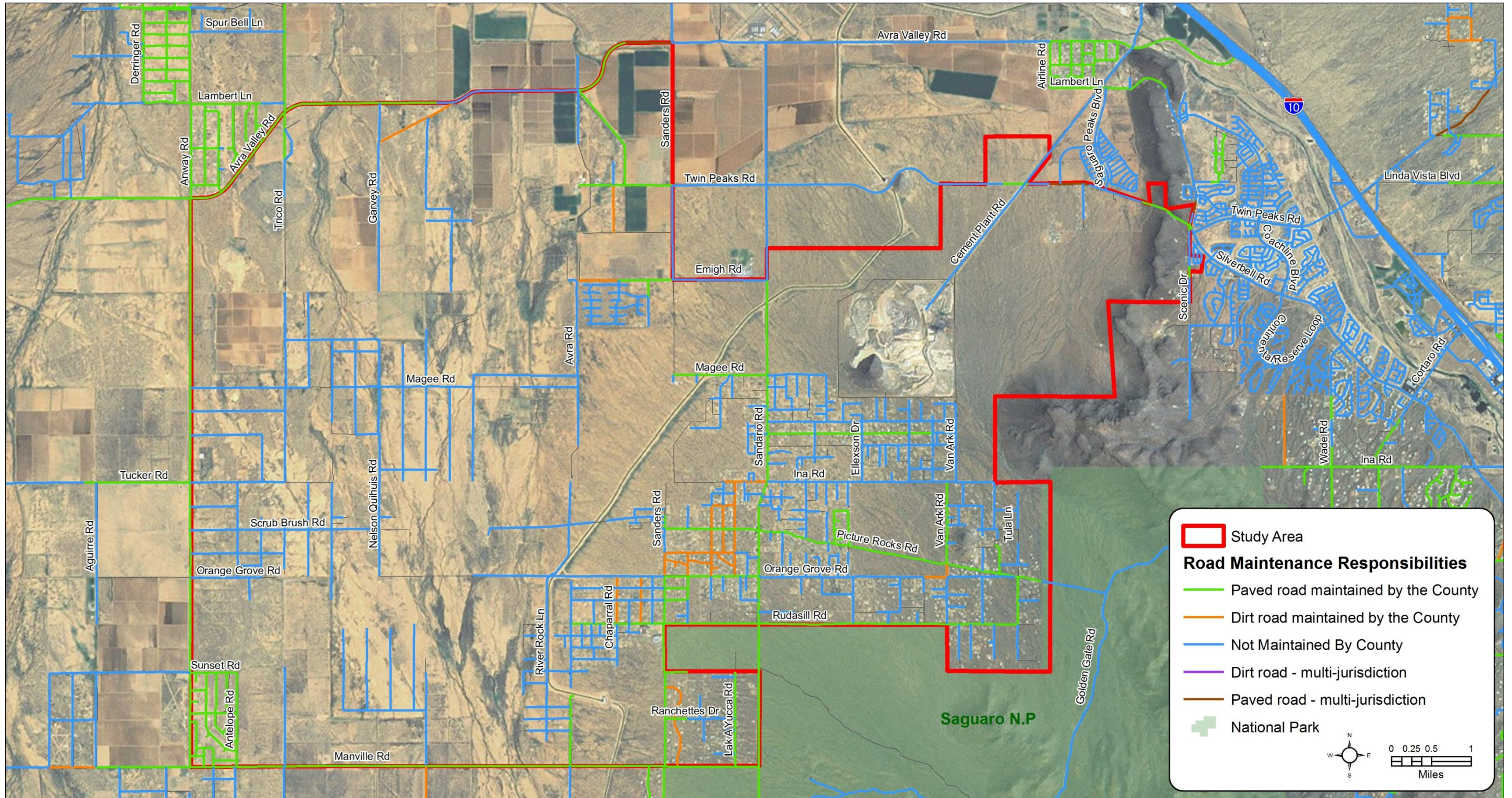


Figure 11 – Road Maintenance Responsibilities

3.4 FUNCTIONAL CLASSIFICATION

Functional classification is the process by which roadways are grouped according to the character of traffic service they are intended to provide. These classifications are used in transportation system planning, roadway design, and determining eligibility for federal roadway improvement funds.

The primary federal functional classifications are freeways, highways, arterials, collectors, and local roadways. These classifications are listed from highest to lowest as it relates to the degree of mobility provided and the degree to which access to adjacent land is restricted. The Federal Highway Administration (FHWA) determines the federal classification of roadways and seeks to maintain the distribution of the various classifications within a set range of percentages for urban and rural areas (where urban and rural areas are as defined by the U.S. Census Bureau). In order to utilize federal funding on roadway improvements, the roadway to be improved must have a federal functional classification. The study area roadways with federal functional classifications are shown graphically in **Figure 12**. The three main types of roadways within the Picture Rocks study area are rural minor collectors, rural major collectors, and urban collectors. The remaining roadways are classified as local streets.

Rural Minor Collector:

Anway Road – Anway Road runs north-south starting from West Manville Road and ending at West El Tiro Road. The roadway is two lanes and has a speed limit of 50 mph.

Manville Road – Manville Road starts at North Sandario Road and extends west outside of the study area. The portion of Manville Road in the study area is a six-mile-long segment from Sandario Road to Anway Road. Manville Road is a two-lane roadway and has a speed limit of 50 mph.

Twin Peaks Road – The rural minor collector portion of Twin Peaks Road is a one-mile stretch from North Sanders Road to North Avra Road. This portion of Twin Peaks Road is a two-lane roadway and the speed is reduced to 35 mph.

Rural Major Collector:

Avra Valley Road – Avra Valley Road runs from I-10 near Marana to N. Pump Station Road and is a two-lane roadway with a speed limit of 55 mph. Avra Valley Road makes up the northwest border of the study area, which is about six miles long.

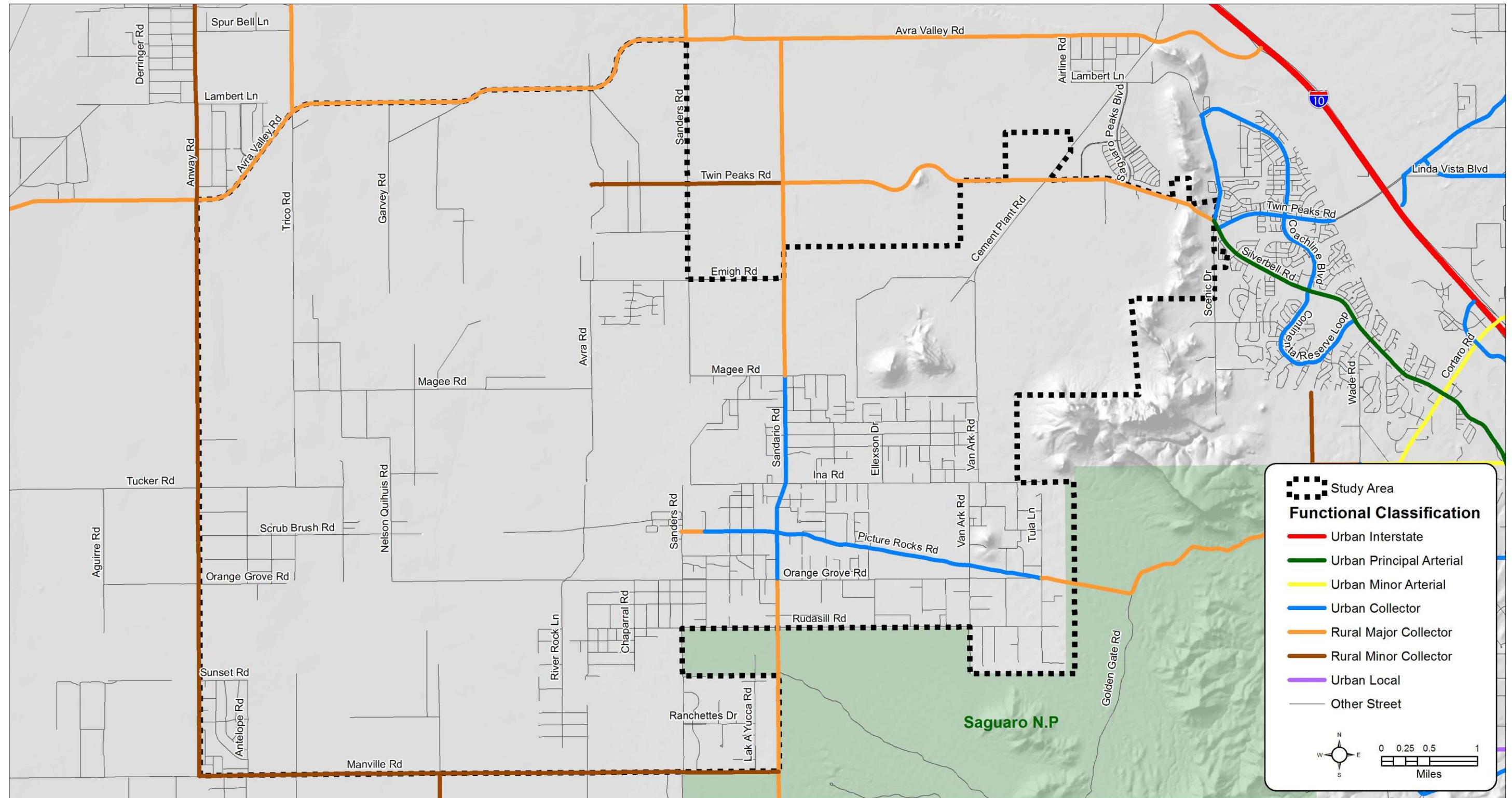
Twin Peaks Road – Twin Peaks Road is a 2 lane east-west collector that runs from I-10 to North Avra Road. Twin Peaks Road is broken up into 3 segments and crosses the study area in 2 sections. The rural major collector section is a 3 mile stretch from North Silverbell Road to west of Quarry Road. This segment has a speed limit of 45 MPH and makes up the north-east border of the study area.

Picture Rocks Road – Picture Rocks Road runs east-west and spans from North Wade Road to North Sanders Road. This portion spans 1.5 miles starting at the east boundary of the study area and ending at North Van Ark Road. This portion of Picture Rocks Road is a two-lane roadway with a speed limit of 40 mph.

Urban Collector:

Twin Peaks Road – The urban collector portion of Twin Peaks Road is about three miles long and runs from I-10 to the east side of the study area where it crosses Silverbell Road. The speed limit here is reduced to 35 mph due to crossing an urbanized area.

Picture Rocks Road – The urban segment is a three-mile stretch from North Van Ark Road to North Sanders Road. This portion of Picture Rocks Road is a two-lane roadway with a speed limit of 40 mph.



Source: Pima County

Figure 12 – Roadway Functional Classification

3.5 MAJOR ROUTES AND SCENIC ROADS

The Pima County Major Streets and Scenic Routes Plan (MSSRP) is both a map and an ordinance that establishes adequate future street widths and setback lines on certain "major" streets in the unincorporated areas of Pima County. Many of the major streets are already widened to their future right-of-way, but others do not have adequate right-of-way or may not have any right-of-way established yet. Major routes in the study area include Anway Road, Manville Road, Orange Grove Road, and portions of Picture Rocks Road, Avra Valley Road, Sandario Road, and Twin Peaks Road.

Scenic routes are designated to preserve and enhance the visual resources of the natural and built environment. The intent of scenic routes are to protect property values and the character of neighborhoods; protect and enhance the unique character of a community, including vegetation, architecture and geology; protect and enhance the economic value of tourism; and protect natural resources.

Scenic roads (also designated as major routes) are designated along sections of Twin Peaks Road, Sandario Road, and portions of Avra Valley Road.

3.6 POSTED SPEED LIMITS

Posted speed limits vary throughout the study area and are summarized in **Table 10**.

Table 10 – Speed Limits

Road Name	From	To	Speed Limits (mph)
Picture Rocks Road	Sandario Road	Wade Road	40
Sandario Road	Manville Road	Picture Rocks Road	35
Sandario Road	Picture Rocks Road	Twin Peaks Road	45
Manville Road	Anway Road	Sandario Road	50
Anway Road	Manville Road	Avra Valley Road	50
Twin Peaks Road	Sandario Road	Silverbell Road	35/45
Avra Valley Road	Anway Road	Trico Road	55
Avra Valley Road	Trico Road	Sanders Road	55
Local Roads	N/A	N/A	20

Source: Visual inspection, Google Earth

3.7 PLANNED AND PROGRAMMED TRANSPORTATION PROJECTS

Planned and programmed projects were obtained from the following sources:

- PAG 2040 Regional Transportation Plan
- PAG Regional Transportation Plan Update (June 29, 2012)
- 2014-2018 Transportation Improvement Program, adopted June 2013.

Planned projects are described further as follows.

PAG 2040 Regional Transportation Plan

Future planned projects in the Picture Rocks area were obtained from the PAG 2040 Regional Transportation Plan and the June 29, 2012 Regional Transportation Plan Update. Recommended projects for the Picture Rocks area are summarized in **Table 11**.

Table 11 – Recommended Projects from PAG 2040 Regional Transportation Plan

Time Period	Street Name	Project Name/Description	Comment
Late	Avra Valley Road	Avra Valley Corridor Project (Avra Valley Road #1), Anway Road to Sanders Road, 5.84 miles	Widen to three-lane roadway and safety improvements, \$17,000,000, Pima County sponsorship
Middle	Avra Valley Road	Avra Valley Corridor Project (Avra Valley Road #2), Sanders Road to I-10, 6.40 miles	Widen to four-lane roadway, re-align, multi-purpose lanes and sidewalks, \$62,700,000, Marana sponsorship
Middle	Sandario Road	Ajo Way to Emigh Rd, 17.20 miles	Reconstruct two-lane roadway, \$78,100,000; Pima County sponsorship
Middle	Twin Peaks Road	Twin Peaks Corridor Project (Twin Peaks Road #1), Sidewinder Lane to Silverbell Road, 1.20 miles	Widen to four-lane roadway, \$30,000,000; Pima County sponsorship
Early	Twin Peaks Road	Twin Peaks Corridor Project (Twin Peaks Road #2), Silverbell Road to new I-10 TI, 1.90 miles	Construct four-lane roadway, bridge over Santa Cruz, \$21,456,000; Marana sponsorship
Program	Sandario Road, Picture Rocks Road	Pima County Bicycle Improvements and Programs, Various Locations	Bike lanes/paved shoulders/clear zones

Source: PAG 2040 Regional Transportation Program and the June 29, 2012 Regional Transportation Plan Update

PAG 2014-2018 Regional Transportation Improvement Program

Short-term future projects are identified in the 5-Year Regional TIP, which includes projects in the Picture Rocks study area. These projects are shown in **Table 12**.

Table 12 – Recommended Projects from PAG 2014-2018 5-Year Transportation Improvement Program

Time Period	Street Name	Project Name/Description	Comment
Short-Range	Rudasill Road, Sanders Road	Picture Rocks & Desert Winds Safe Routes to School, Rudasill Road to Sunset Road	Add bike lanes and sidewalks.
Short-Range	Picture Rocks Road	Picture Rocks Road: Sandario to Saguaro National Park plus Sandario and Kinney, Picture Rocks Road from Sandario to Saguaro National Park	Develop project scope and estimate

Source: PAG 2014-2018 Regional Transportation Improvement Program

3.8 EXISTING TRAFFIC VOLUMES AND LEVEL OF SERVICE

Traffic volume data is important because it shows the extent of use of a road and serves as a criterion and justification for transportation improvements. In the Picture Rocks study area, traffic volumes are generally low.

Daily traffic volumes were obtained from the PAG roadway segment traffic counts. Since traffic counts were available for different years depending on the specific road, the traffic count data was projected to a 2013 basis by applying a growth rate (derived from the annualized average population growth rate) to the most recent daily traffic volumes. Traffic volume data is summarized in **Table 13**.

Table 13 – Annual Average Daily Traffic Volumes

Road Name	From	To	2009 Daily Traffic Volumes	2010 Daily Traffic Volumes	2011 Daily Traffic Volumes	2012 Daily Traffic Volumes	Estimated 2013 Traffic Volumes
Picture Rocks Road	Sandario Road	Wade Road	8,000		6,001		8,535
Sandario Road	Manville Road	Picture Rocks Road	4,000				4,267
Sandario Road	Picture Rocks Road	Twin Peaks Road		4,570			4,797
Manville Road	Anway Road	Sandario Road		993			1,042
Anway Road	Manville Road	Avra Valley Road		1,143		1,352	1,374

Table 13 – Annual Average Daily Traffic Volumes, cont.

Road Name	From	To	2009 Daily Traffic Volumes	2010 Daily Traffic Volumes	2011 Daily Traffic Volumes	2012 Daily Traffic Volumes	Estimated 2013 Traffic Volumes
Twin Peaks Road	Sandario Road	Silverbell Road		4,057			4,259
Avra Valley Road	Anway Road	Trico Road			4,212		4,350
Avra Valley Road	Trico Road	Sanders Road			3,888		4,016

Source: Pima Association of Governments

3.8.1 EXISTING ROADWAY LEVEL OF SERVICE

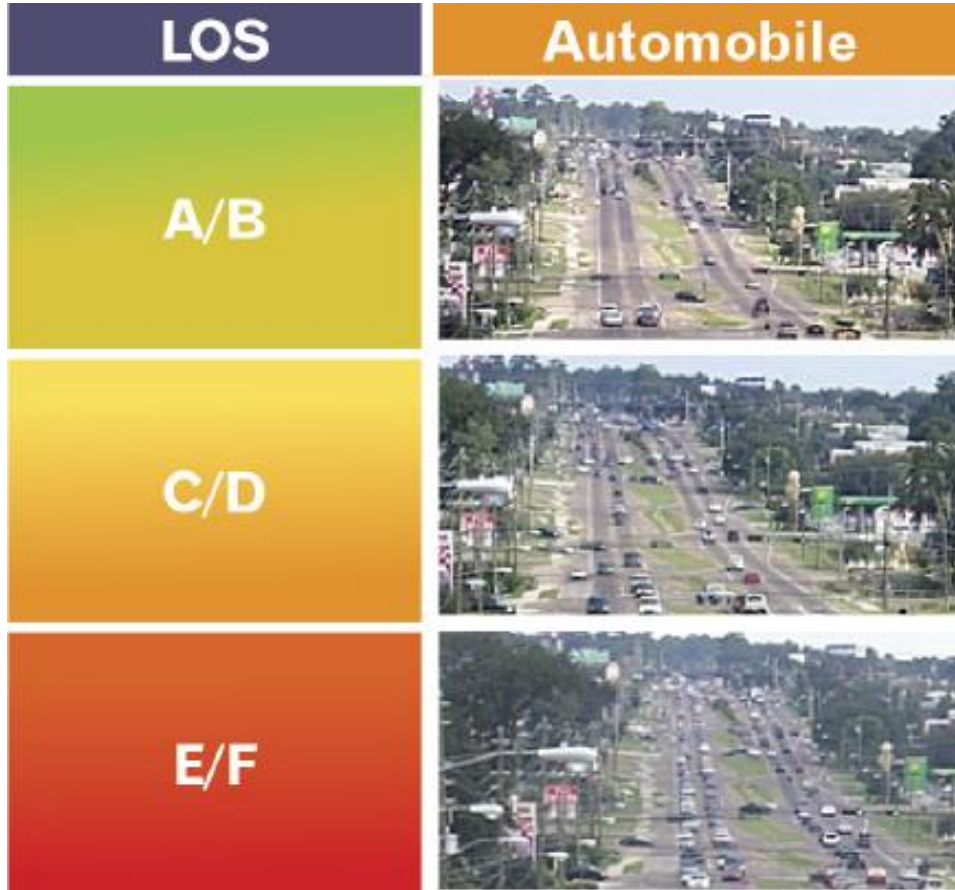
Roadway traffic operations are defined and categorized by the amount of delay experienced by an average driver. The operations are categorized by a grading system called Level of Service (LOS), which has a letter designation ranging from A (no delay) to F (severe congestion). LOS definitions and corresponding volume-to-capacity (v/c) ratios are given in **Table 14** as per the Transportation Research Board’s *Highway Capacity Manual 2000* (HCM). The LOS categories or levels are visually depicted in **Figure 13**.

Table 14 – LOS Definitions and V/C Ratios

Level of Service	Definition	V/C Ratio Range
A	Free flow conditions; virtually no delay	0.0 to 0.50
B	In the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable	0.51 to 0.60
C	Still in the range of stable flow, but marks the beginning of the range in which the operation of individual users becomes significantly affected by others	0.61 to 0.72
D	High-density but still stable flow. Speed and freedom to maneuver are severely restricted, and the driver or pedestrian experiences a generally poor level of comfort and convenience	0.73 to 0.84
E	Represents operating conditions at or near the capacity level. All speeds are reduced to a low but relatively uniform value	0.85 to 1.00
F	Traffic stream is defined as forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point	> 1.00

Source: Highway Capacity Manual (2000)

LOS can be determined from the v/c ratio of a roadway. As defined in the HCM, the vehicle capacity of a roadway is “the maximum number of vehicles that can pass a given point during a specified period under prevailing roadway, traffic, and control conditions.” The roadway capacity thresholds for various facility types shown in **Table 15** are derived from the Florida DOT Quality Level of Service Handbook (2013).



Source: Florida DOT Quality/Level of Service Handbook (2013)

Figure 13 – Level of Service

Table 15 – Uninterrupted Flow Highways

Lanes	Median	LOS B Volume Threshold (vehicles per day)	C Volume Threshold (vehicles per day)	D Volume Threshold (vehicles per day)	E Volume Threshold (vehicles per day)
2	Undivided	*	14,400	16,200	**
4	Divided	*	34,000	35,500	**
6	Divided	*	52,100	53,500	**

*Cannot be achieved using table input value defaults

** Not applicable at that LOS letter grade

Source: Florida DOT Quality/Level of Service Handbook (2013)

A review of the estimated 2013 traffic volumes indicate that all of the road segments in the Picture Rocks area are operating at Level of Service A/B levels currently, as shown in **Table 16**.

Table 16 – 2013 Level of Service

Road Name	From	To	Estimated 2013 Traffic Volumes	LOS
Picture Rocks Road	Sandario Road	Wade Road	8,535	A/B
Sandario Road	Manville Road	Picture Rocks Road	4,267	A/B
Sandario Road	Picture Rocks Road	Twin Peaks Road	4,797	A/B
Manville Road	Anway Road	Sandario Road	1,042	A/B
Anway Road	Manville Road	Avra Valley Road	1,374	A/B
Twin Peaks Road	Sandario Road	Silverbell Road	4,259	A/B
Avra Valley Road	Anway Road	Trico Road	4,350	A/B
Avra Valley Road	Trico Road	Sanders Road	4,016	A/B

Source: Calculations by Kimley-Horn and Associates

3.9 FUTURE TRAFFIC VOLUMES AND LEVEL OF SERVICE

PAG maintains regional travel demand models and databases. Projected traffic volumes for 2018, 2030, and 2040 were obtained from the PAG regional travel demand model, which has been calibrated and validated using traffic counts, census and household survey data, and other transportation data available in the PAG area. The forecasted traffic volume maps produced by PAG’s travel demand model are largely based on the best estimate of the population and employment in the Tucson region at the time when the model was used.

A traffic analysis zone (TAZ) is the unit of geography most commonly used in conventional transportation planning models. Zones are constructed by census block information. Typically these blocks are used in transportation models by providing socioeconomic data. This information helps to further the understanding of trips that are produced and attracted within the zone. There are eight TAZs in the Picture Rocks area. Assumptions for population, employment, and occupied housing units in the TAZs that comprise the Picture Rocks area are summarized in **Table 17**.

Table 17 – Traffic Analysis Zone Data, 2040

TAZ	Area (Sq. Mi.)	Population (2040)	Occupied Housing Units (2040)	Total Employment (2040)
680	2.7	2003	544	62
684	7.1	4294	1603	138
705	9.1	108	43	65
724	2.3	1515	580	119
727	2.1	923	363	102

Table 17 – Traffic Analysis Zone Data, 2040, cont.

TAZ	Area (Sq. Mi.)	Population (2040)	Occupied Housing Units (2040)	Total Employment (2040)
739	7.8	355	143	509
741	9.1	1082	420	198
767	22.0	762	295	41
TOTAL	62.2	11,040	3,691	1,234

Source: Pima Association of Governments, 2013

The project traffic volumes from the regional travel demand volumes are summarized in **Table 18**.

The LOS for the future travel demand volumes were estimated using the procedures described in the previous section and are summarized in **Table 19**. Sandario Road is estimated to operate at level of Service D or worse in 2040.

Table 18 – Future Traffic Volumes

Road Name	From	To	2013 Estimated Daily Traffic Volumes	2018 Daily Traffic Volumes	2030 Daily Traffic Volumes	2040 Daily Traffic Volumes
Picture Rocks Road	Sandario	Van Ark	8,535	7,519	10,940	12,945
Picture Rocks Road	Van Ark	Golden Gate	8,535	9,316	11,725	12,806
Manville Road	Anway	Reservation	1,042	1,510	1,886	4,668
Manville Road	Reservation	Sanders	1,042	1,386	2,185	1,676
Manville Road	Sanders	Sandario	1,042	3,159	4,190	3,730
Anway Road	Manville	Sunset	1,374	1,459	1,815	4,915
Anway Road	Sunset	Tucker	1,374	761	986	4,698
Anway Road	Tucker	Magee	1,374	846	1,072	4,928
Anway Road	Magee	Avra Valley	1,374	1,418	1,847	5,838
Sandario Road	Twin Peaks	Emigh	4,797	6,834	13,303	18,976
Sandario Road	Emigh	Massingale	4,797	5,685	12,363	17,627
Sandario Road	Massingale	Picture Rocks	4,797	5,548	14,672	16,262
Sandario Road	Picture Rocks	Orange Grove	4,267	8,402	14,188	20,993
Sandario Road	Orange Grove	Rudasill	4,267	6,843	11,514	18,232
Sandario Road	Rudasill	Sunset	4,267	5,995	10,425	17,022
Sandario Road	Sunset	Manville	4,267	5,969	10,038	16,806
Twin Peaks Road	Clayton	Sanders	4,259	922	1,449	NA

Table 18 – Future Traffic Volumes, cont.

Road Name	From	To	2013 Estimated Daily Traffic Volumes	2018 Daily Traffic Volumes	2030 Daily Traffic Volumes	2040 Daily Traffic Volumes
Twin Peaks Road	Sanders	Sandario	4,259	4,010	7,820	6,207
Twin Peaks Road	Sandario	Canal	4,259	4,055	8,180	7,080
Twin Peaks Road	Canal	Quarry	4,259	4,094	8,321	7,291
Twin Peaks Road	Quarry	Silverbell	4,259	4,566	8,567	7,686
Avra Valley Road	Anway	Trico	4,350	4,237	5,387	9,835
Avra Valley Road	Trico	Garvey	4,016	4,941	5,729	8,294
Avra Valley Road	Garvey	Clayton	4,016	5,590	7,389	10,255
Avra Valley Road	Clayton	Sanders	4,016	4,668	7,389	10,255

Source: Pima Association of Governments Travel Demand Model, 2013

Table 19 – Future Level of Service

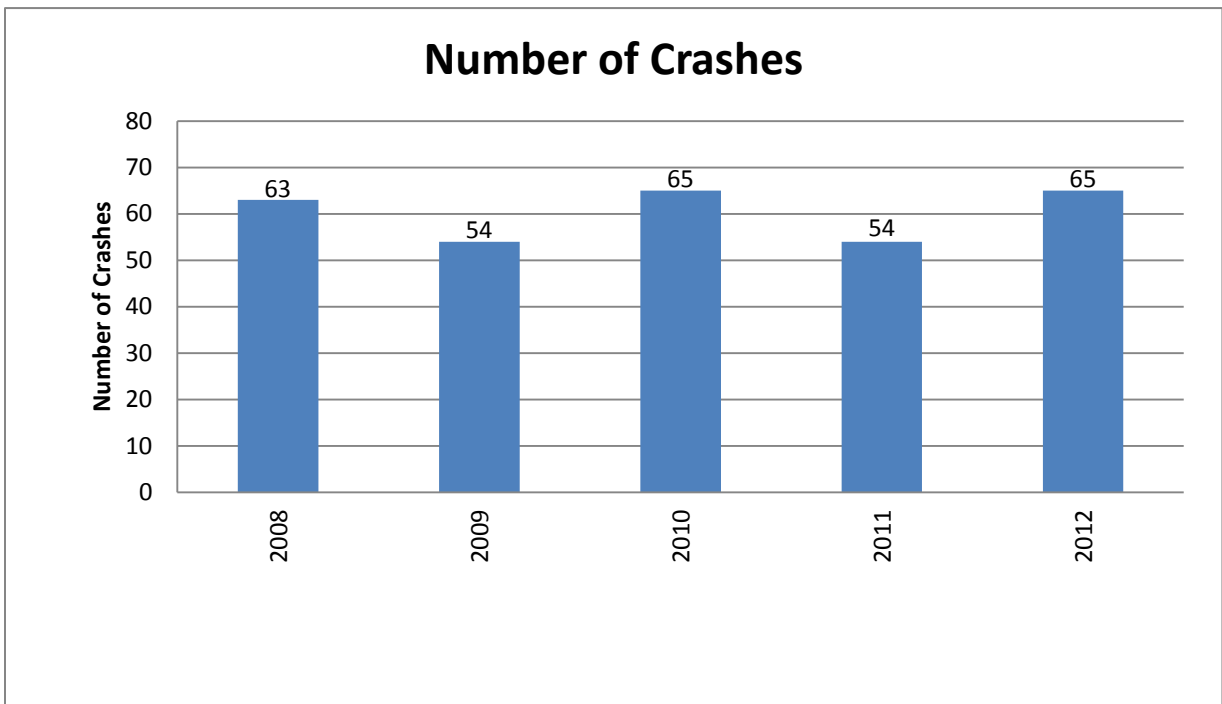
Road Name	From	To	2013 LOS	2018 LOS	2030 LOS	2040 LOS
Picture Rocks Road	Sandario	Van Ark	A/B	A/B	C	C
Picture Rocks Road	Van Ark	Golden Gate	A/B	C	C	C
Manville Road	Anway	Reservation	A/B	A/B	A/B	A/B
Manville Road	Reservation	Sanders	A/B	A/B	A/B	A/B
Manville Road	Sanders	Sandario	A/B	A/B	A/B	A/B
Anway Road	Manville	Sunset	A/B	A/B	A/B	A/B
Anway Road	Sunset	Tucker	A/B	A/B	A/B	A/B
Anway Road	Tucker	Magee	A/B	A/B	A/B	A/B
Anway Road	Magee	Avra Valley	A/B	A/B	A/B	A/B
Sandario Road	Twin Peaks	Emigh	A/B	A/B	C	D or worse
Sandario Road	Emigh	Massingale	A/B	A/B	C	D or worse
Sandario Road	Massingale	Picture Rocks	A/B	A/B	D	D or worse
Sandario Road	Picture Rocks	Orange Grove	A/B	A/B	C	D or worse
Sandario Road	Orange Grove	Rudasill	A/B	A/B	C	D or worse
Sandario Road	Rudasill	Sunset	A/B	A/B	C	D or worse
Sandario Road	Sunset	Manville	A/B	A/B	C	D or worse
Twin Peaks Road	Clayton	Sanders	A/B	A/B	A/B	A/B
Twin Peaks Road	Sanders	Sandario	A/B	A/B	A/B	A/B
Twin Peaks Road	Sandario	Canal	A/B	A/B	A/B	A/B
Twin Peaks Road	Canal	Quarry	A/B	A/B	A/B	A/B
Twin Peaks Road	Quarry	Silverbell	A/B	A/B	A/B	A/B
Avra Valley Road	Anway	Trico	A/B	A/B	A/B	C
Avra Valley Road	Trico	Garvey	A/B	A/B	A/B	A/B
Avra Valley Road	Garvey	Clayton	A/B	A/B	A/B	C
Avra Valley Road	Clayton	Sanders	A/B	A/B	A/B	C

Source: Pima Association of Governments Travel Demand Model, 2013 and calculations by Kimley-Horn and Associates

3.10 CRASH HISTORY

Crash data for the Picture Rocks area was obtained from ADOT’s Safety Data Mart for a five-year period from January 1, 2008 through December 31, 2013. A total of 301 motor vehicle crashes occurred on study area roadways within the analysis period. The highest number of crashes on roadways occurred in 2010 and 2012. The number of crashes per year is shown in **Figure 14**.

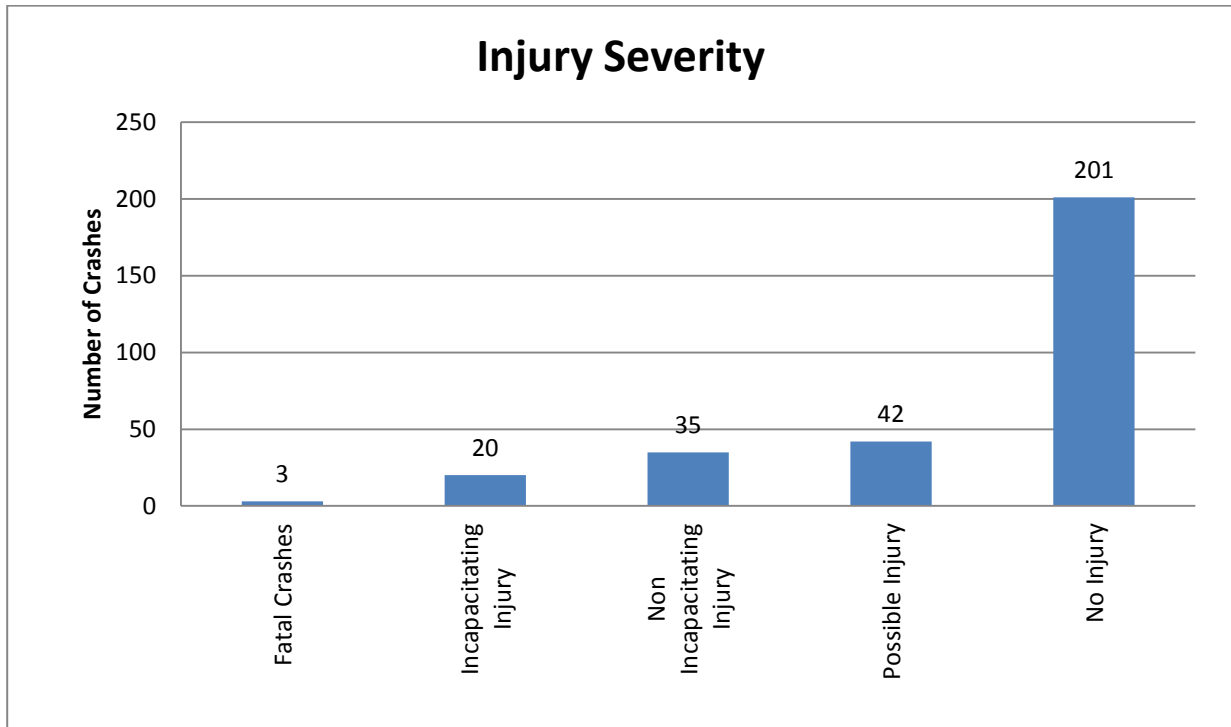
It should be noted that several crashes on Picture Rocks Road are not included in the crash statistics identified in **Figure 14**, as these crashes occurred outside of the study area for the Picture Rocks Multimodal Transportation Study. These crashes are depicted in the mapping on **Figure 16**. The Pima County Department of Transportation has conducted extensive analysis of crashes that occurred on Picture Rocks Road, which is summarized in this section.



Source: ADOT Safety Data Mart

Figure 14 – Number of Crashes, Picture Rocks Roadways, 2008 – 2012

Crash severity is shown in **Figure 15**. Of the 301 crashes, three fatal crashes and 97 injury crashes occurred within the study limits of Picture Rocks.



Source: ADOT Safety Data Mart

Figure 15 – Crash Severity, Picture Rocks Roadways, 2008 – 2012

Fatal crashes occurred at the following intersections:

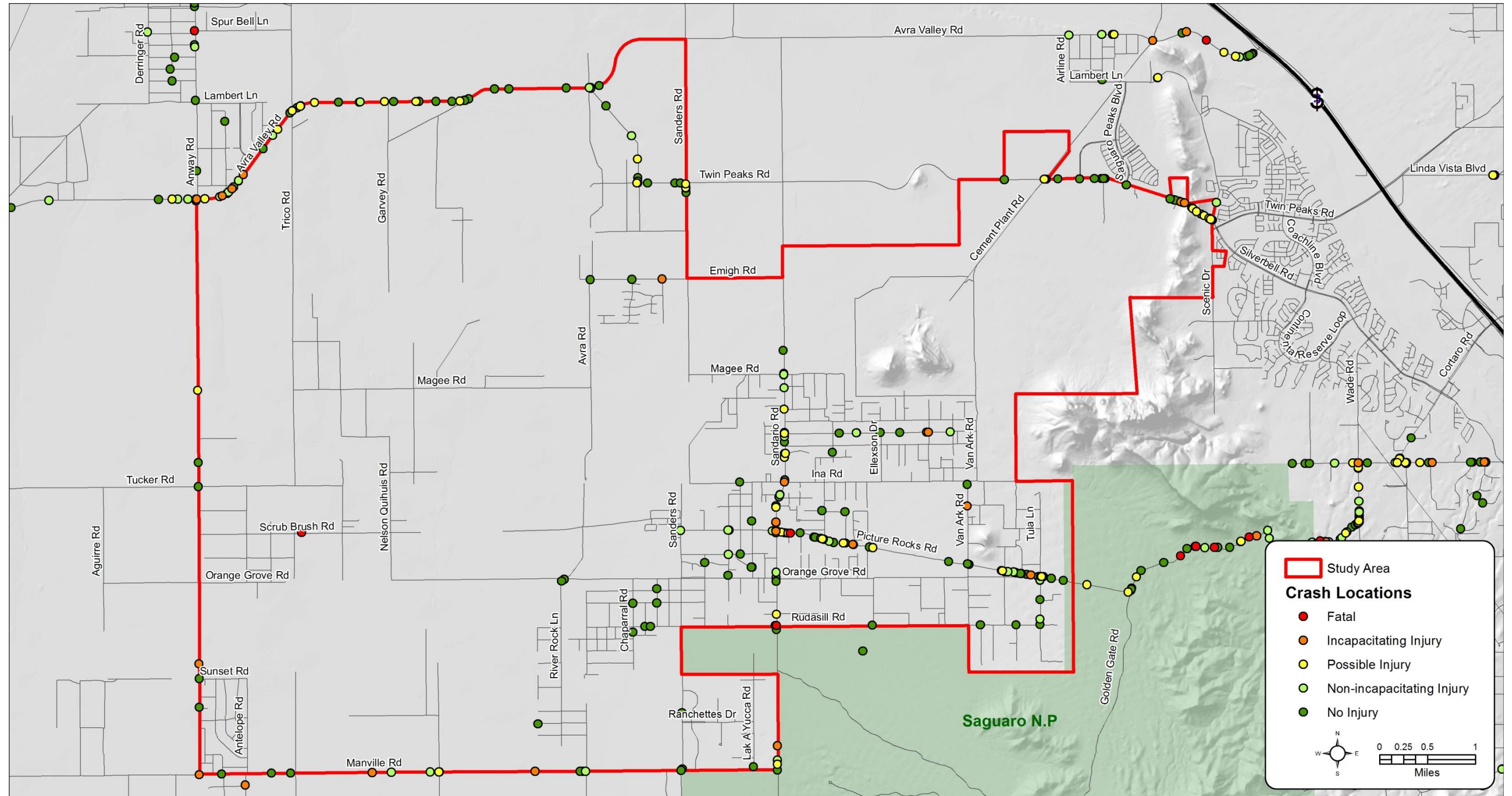
- Scrub Brush Road/Trico Road (2011): Passenger car (pickup), single vehicle rollover.
- Picture Rocks Road/Sandario Road (2012): Passenger car (station wagon), head-on collision from crossing center line.
- Sandario Road/Rudasill Road (2012): Passenger car (station wagon), angle collision from running a stop sign.

Two of the three fatal crashes within the Picture Rocks study area were drug related and the third involved failure to stop at a stop sign. All of the vehicles involved were passenger cars.

Of the 20 incapacitating crashes, seven were single-vehicle crashes. Alcohol was involved in four of the crashes, three involved distraction, and three were run-off-the-road crashes.

The locations of all 301 crashes are shown in **Figure 16**.

The collision manner of the crashes is shown in **Table 20** **Table 21**. The vast majority of crashes (44%) were single-vehicle crashes. Rear-end crashes accounted for 25% of crashes.



Source: ADOT Safety Data Mart

Figure 16 – Crash Locations

Table 20 – Crashes by Manner of Collision

Collision Manner	Crashes	Percentage of Crashes
Single Vehicle	133	44%
Rear End	74	25%
Angle (Front to Side-Other than Left Turn)	40	13%
Sideswipe Same Direction	16	5%
Left Turn	15	5%
Sideswipe Opposite Direction	9	3%
Other	6	2%
Head On	5	2%
Rear to Rear	2	1%
Rear to Side	1	0%
TOTAL	301	100%

Source: ADOT Safety Data Mart

Crash data for the study area segments with higher numbers of crashes per mile is presented in **Table 21**. Picture Rocks Road, between Sandario Road and the Saguaro National Park boundary, had the highest number of crashes per mile over the five-year period—17 per mile. This segment had 69 crashes occurring in an approximately four-mile segment. Twenty of the 69 crashes were run-off-the-road crashes.

Safety studies conducted on Picture Rocks Road and Sandario Road are discussed in the following section.

Five pedestrian and bicycle crashes were recorded over the five-year period. Two of these crashes occurred at the intersection of Anthony Drive and Lydia Avenue.

Table 21 – High Crash Segments

Road Name	From	To	Segment Length (miles)	Number of Crashes	Crashes per mile	Comments
Picture Rocks Road	Sandario Road	Saguaro National Park Border	4.06	69	17.00	Paved road 1 Fatal Crash 2 Incapacitating 9 Non-Incapacitating 11 Possible Injury 46 No Injury 20 Run Off Road Right
Sandario Road	Manville Road	Emigh Road	5.16	50	9.69	Paved road 1 Fatal Crash 4 Incapacitating 7 Non-Incapacitating 6 Possible Injury 32 No Injury 11 Inattention Distraction
Manville Road	Anway Road	Sandario Road	6.03	14	2.32	Paved road 2 Incapacitating 3 Non-Incapacitating 1 Possible Injury 8 No Injury
Anway Road	Manville Road	Avra Valley Road	6.02	8	1.33	Paved road 2 Incapacitating 6 No Injury
Twin Peaks Road	West Edge of Border	Silverbell Road	2.87	34	11.50	Paved road 2 Incapacitating 7 Possible Injury 25 No Injury
Twin Peaks Road	Clayton Road	Sanders Road	1.48	4	4.05	Paved road 1 Possible Injury 3 No Injury
Avra Valley Road	Anway Road	Sanders Road	6.83	52	7.61	Paved road 4 Incapacitating 8 Non-Incapacitating 10 Possible Injury 30 No Injury

Source: ADOT Safety Mart

3.10.1 SAFETY STUDIES IN THE PICTURE ROCKS AREA

Three safety studies have been conducted in the Picture Rocks area over recent years:

1. Traffic Safety Study Picture Rocks Road: 7000W – 11800W (November 19, 2012), Pima County Department of Transportation Traffic Engineering Division
2. Traffic Safety Study Sandario Road: 2400N-8800N (October 12, 2012)
3. Road Safety Assessment , Picture Rocks Road (Sandario to Wade Road) and Sandario Road (Mile Wide Road to Picture Rocks Road), February 2012

Key findings from these studies regarding improvement needs on county roads are summarized in **Table 22**.

Table 22 – Summary of Recommendations from Recent Safety Studies

Study Name	Recommendations
<p>Traffic Safety Study: Picture Rocks Road: 7000W – 11800 W (November 19, 2012)</p>	<p>Short-Term Recommendations</p>
	<p>Provide additional maintenance on vegetation overgrowth.</p>
	<p>Provide additional maintenance of shoulder within the drainage areas in the western area of Picture Rocks Road to stabilize shoulder surface, remove rutting, and sand/windrow buildup.</p>
	<p>Ball bank curves to determine proper curve, turn and advisory speeds.</p>
	<p>Review advance curve, turn, and winding road signs for consolidation and consistency of application, including possible addition of distance plaques.</p>
	<p>Review signing within the curves for consistency, spacing, and possible incorporation of speed advisories, night arrows, ad /or all-directional makers. Minimum chevron size should be standardized to new PCDOT/Traffic Engineering Division standard, with upsized signs where needed.</p>
	<p>Upgrade school bus stop signs to new standard (fluorescent yellow–green S1-4). Consult Marana Unified School District for school bus stop locations and relocate signs as needed.</p>
	<p>Review signing in area of Tula Lane for consolidation of advance intersection and curve signing, including review of chevrons for need/removal.</p>
	<p>Install “Don’t Drive Impaired” signing for both directions of travel outside the Saguaro National Park.</p>
	<p>Remove left-side winding road sign in the 7200W block and install a second right-side advance sign.</p>
<p>Upgrades to signing and striping in the curve area (7300W-7400W) and supplement advance warning signs with solar-powered flashing hazard beacons.</p>	
<p>Conduct turn lane needs study for the west residential areas of Picture Rocks Road.</p>	
<p>Request additional speed enforcement.</p>	
<p>Install thermoplastic longline striping on Picture Rocks Road from the east SNP boundary to Wade Road when funding is available (note: outside of this study area).</p>	
<p>Long-Term Recommendations</p>	
<p>Reconstruct Picture Rocks Road in the 7300-7400 W block to remove hairpin curve and improve drainage. This project should be referred to the Safety Management System (SMS) group for application of safety funding and subsequent design/construction.</p>	
<p>Widen Picture Rocks Road from Sandario Road to the Saguaro National Park west boundary to include a six-foot multi-use lane and remove minor kinks in the roadway alignment. Intersection radii should be standardized for all intersecting streets. This project should be referred to the SMS group for prioritization and evaluation of funding alternatives.</p>	
<p>Traffic Safety Study: Sandario Road: 2400N-8800N (October 12, 2012)</p>	<p>Provide additional maintenance on vegetation overgrowth</p>
	<p>Upsize stop signs on cross streets to 36 inches at all intersections except those with existing 48 inch signs.</p>
	<p>Upsize street name signs to 9 inch on intersecting minor streets.</p>
	<p>Install or upgrade the curve signing on Camper Road to Ina Road vicinity (curve sign and larger chevrons).</p>
	<p>Relocate and upsize advance cross road signs on Sandario Road on the approaches to both Mile Wide Road and Rudasill Road.</p>
	<p>Install perforated post “solar” intersection beacons on stop sign assemblies at Mile Wide Road and Rudasill Road for both the east and west direction of travel.</p>
	<p>Relocate guide signs for Saguaro National Park to provide greater advance notification and maneuvering time for slowing and turning into Saguaro National Park at Mile Wide Road, Kinney Road, and Golden Gate Road.</p>
	<p>Relocate guide signs for Picture Rocks School for greater advance notification at Rudasill Road.</p>
	<p>Close the northbound passing zone on Sandario Road between Picture Rocks Road and Camper Road in the vicinity of the convenience store and gas station driveways.</p>
	<p>At the Keogh Road intersection</p>
<p>Regrade intersection to provide better drainage and remove rutting and sandy, drop-off area.</p>	
<p>Add asphalt apron on intersection radii for better intersection delineation, to improve alignment at intersection and to eliminate shoulder deterioration.</p>	

Study Name	Recommendations
	<p>Relocate stop and street name signs to standard intersection right-side location after realignment is complete.</p> <p>Review the stop bar locations at the Picture Rocks Road intersection for relocation further back from the intersection.</p> <p>Request additional speed enforcement between Mile Wide Road and Orange Grove Road.</p> <p>Expand the existing project for installation of TWLTL on Sandario Road from Ina Road to Magee Road to begin 900 feet south of Picture Rocks Road to address private property ingress and egress issues at this intersection.</p> <p>Sandario Road S- curve area recommendations in coordination with Saguaro National Park</p> <p>Long-term recommendations include widening and realigning the road in the S-curve area.</p> <p>Short-term improvements include:</p> <ul style="list-style-type: none"> • Upgrading signing in advance of the curve • Removing vegetation on the inside of the curve • Reinstall increased width centerline • Remove existing centerline RPMs and install single centerline RPMs at 20 foot spacing from Kinney Rd to Golden Gate Road • Install rumble strips in advance of the curve
<p>Picture Rocks Road (Sandario to Wade) Sandario (Mile Wide to Picture Rocks) Road Safety Assessment</p>	<p>Sight Distance</p> <p>Remove or trim vegetation that limits sight distance at intersections and curves and that obstructs signs (Pima County and Saguaro National Park).</p> <p>Long term: evaluate crest vertical curves for lowering, especially at combination horizontal/vertical curves (Saguaro National Park).</p> <p>Lane Departure Crashes</p> <p>Long term: consideration should be given to improving the geometry of the roads, particularly at high-crash locations including the S-curve north of Kinney Road and the combination crest/compound horizontal curve approximately 0.7 miles east of Golden Gate Road. Geometric improvements could include lowering crest curves, increasing horizontal curve radius, and reconstructing compound curves into simple curves (Saguaro National Park).</p> <p>Long term: consider constructing a wash crossing structure just east of Contzen Pass to address the crashes occurring in the 15 mph advisory speed curves (Pima County).</p> <p>Short term/intermediate: install transverse rumble strips in advance of the sharpest curves and crest/horizontal curves, e.g., S-curves north of Kinney Road, curve approximately 0.7 miles east of Golden Gate Road, and curves just east of Saguaro National Park east boundary.</p> <p>Short term/intermediate: install center line rumble strips on the east end of Picture Rocks Road, west of Golden Gate Road to east of Contzen Pass (Pima County and Saguaro National Park).</p> <p>Short term/intermediate: install motorcycle use caution signs in advance of curves with high frequency of motorcycle crashes; e.g., S-curve north of Kinney Road, curve approximately 0.7 miles east of Golden Gate Road, and curves just east of Saguaro National Park east boundary (Pima County and Saguaro National Park).</p> <p>Short term/intermediate: at high crash locations, install dynamic curve warning signs with beacons that flash if a vehicle approaches the curve in excess of the advisory speed; e.g., S-curves north of Kinney Road, curve approximately 0.7 miles east of Golden Gate Road, and curves just east of Saguaro National Park east boundary (Pima County and Saguaro National Park).</p> <p>Short term/intermediate: install wider edge and centerline striping through curves (Pima County).</p> <p>Short term/intermediate: install lower advisory speed plaques on curve warning signs as appropriate on Picture rocks Road (Saguaro National Park).</p> <p>Short term/intermediate: provide shoulder maintenance at edge drop-off locations, e.g., just north of Kinney Road, and 0.2 and 0.6 miles west of Wade Road (Pima County).</p> <p>Short term/intermediate: evaluate the rock outcropping located approximately 0.8 miles east of Golden Gate Road for possible removal (Saguaro National Park).</p> <p>Lack of Paved Shoulders</p> <p>Long term: consideration should be given to providing paved shoulders 5 to 6 feet in width along Sandario Road and 4 to 5 feet in width along Picture Rocks Road (Pima County and Saguaro National Park).</p>

Study Name	Recommendations
	<p>Signing</p>
	<p>Conduct an evaluation of Saguaro National Park signing and provide signs as needed: advance signing for trails, picnic areas, intersections, pull offs. Could include advance warning signing with “distance” plaque in addition to signs with arrows at the turn locations, e.g., Visitor Center/Kinney Road, Camboh picnic area (Saguaro National Park).</p>
	<p>Evaluate the west end of Picture Rocks Road for the need for additional intersection warning signs (Pima County).</p>
	<p>Install Type 3 object markers on both sides of Saguaro National Park sign at east boundary (Saguaro National Park).</p>
	<p>Evaluate curve just west of Wade Road for the need for chevrons or delineators (Pima County).</p>
	<p>Replace curve signs with turn signs at 0.4 miles west of Saguaro National Park east boundary and at Yuma Mine Road intersection (Pima County and Saguaro National Park).</p>
	<p>Relocate westbound Picture Rocks Road 35 mph speed limit sign to the east side of the curve at Yuma Mine Road (Pima County).</p>
	<p>Install “Picture Rocks Road” plaque under the Sandario Road Southbound stop ahead sign (Pima County).</p>
	<p>Trail Crossings</p>
	<p>Install an eastbound advance equestrian crossing warning sign for the Roadrunner Trail (Saguaro National Park).</p>
	<p>Install 25 mph advisory specs plaques beneath the advance equestrian crossing warning signs (Saguaro National Park).</p>
	<p>Install high visibility crosswalk markings at the three trail crossings (Saguaro National Park).</p>
	<p>Crashes on West End of Picture Rocks Road</p>
	<p>Conduct left-turn lane warrant analysis for higher-volume side street intersections and construct turn lanes as needed; consider if two-way left-turn lane for this section is warranted (Pima County).</p>
	<p>Provide paved aprons as needed at the side street intersections (Pima County).</p>
	<p>Evaluate access management options for this section of Picture Rocks Road to determine if any intersections can be eliminated or combined into one intersection (Pima County).</p>
	<p>Additional Observations</p>
	<p>Evaluate strategies to discourage commuter traffic on Picture Rocks Road and/or encourage commuter traffic on other routes, e.g., Twin Peaks Road (Pima County and Saguaro National Park).</p>
<p>Improve park pull offs (paving, signing, relocate) to make them more visible to approaching drivers; this can also provide locations to conduct speed enforcement (Saguaro National Park).</p>	
<p>Use mobile speed enforcement (Pima County and Saguaro National Park).</p>	
<p>Install additional “speed enforcement by radar” signs (Pima County and Saguaro National Park).</p>	
<p>Repair the broken traffic counter at Golden Gate Road (Saguaro National Park).</p>	
<p>Install curbing on the northwest (Wagon Wheel store) and southwest (food trucks) corners for access control (Pima County).</p>	

3.11 BICYCLE AND PEDESTRIAN FACILITIES

Bicycle and pedestrian facilities are an important part of the multimodal transportation network in that they provide various options for travel.

Elements that make up bicycle networks can include designated bike routes, striped bike lanes, paved shoulders along roadways, wide curb lanes, multi-use paths, and sidewalks.

The only streets within the study area with striped shoulders for bike use are Rudasill Road from Avra Road to Calvin Road and Sanders Road from Rudasill Road to Sunset Road. These bike routes allow access to and around residential areas, parks and recreation facilities and Desert Winds Elementary School.

Pedestrian networks typically comprise sidewalks, trails, and multi-use paths. Sidewalks, crossings, and paths are limited within the Picture Rocks study area. Currently, the only sidewalks present run along Rudasill Road and Sanders Road where Desert Winds Elementary School and Picture Rocks Intermediate School are located. The sidewalks extend from Chaparral Road to Sanders Road on Rudasill Road and from Rudasill Road to Sunset Road on Sanders Road. A pedestrian crossing is located north of Desert Winds Elementary School.

One multi-use path crosses the entire study area along the CAP Canal from Manville Road to Twin Peaks Road (outside of the study area). The path is designed for hiking, mountain biking, and equestrian activities. Bicycle routes and trails are shown in **Figure 17**.

There are a few sections of key connecting streets in the study area, which are defined as streets that provide connectivity on popular bicycling routes which may be appropriate for experienced riders. These streets have more traffic, higher speeds and less width. The key connecting streets in the Picture Rocks study area are Sandario Road from Manville Road to Twin Peaks Road and Twin Peaks Road from east of Twin Peaks Road to Silverbell Road. These key connecting streets connect to bike routes with striped shoulders and shared-use paths in the North-East portion of the study area.

Stakeholders have indicated that needs for bike and pedestrian facilities include:

- Bicycle-accessible paved shoulders and/or bike lanes along Sandario Road, Picture Rocks Road and portions of Rudasill Road.
- Crosswalks are needed at the intersection of Picture Rocks Road/Sandario Road.
- Potential trailhead pedestrian and bicycle facilities at Manville Road/Sanders Road and Rudasill Road/Sanders Road.
- Route to the Picture Rocks Community center

3.12 AIRPORTS

The Palm Valley Tucson Airport is located just outside of the southwest corner of the study area near Anway Road and Manville Road. No information was available on this airport.

Taylor Field is a closed publicly owned airport near the study area boundary, at 5301 North Anway Road. The closest regional airport is Marana Regional Airport just outside the study area at the corner of Avra Valley Road and Sanders Road.

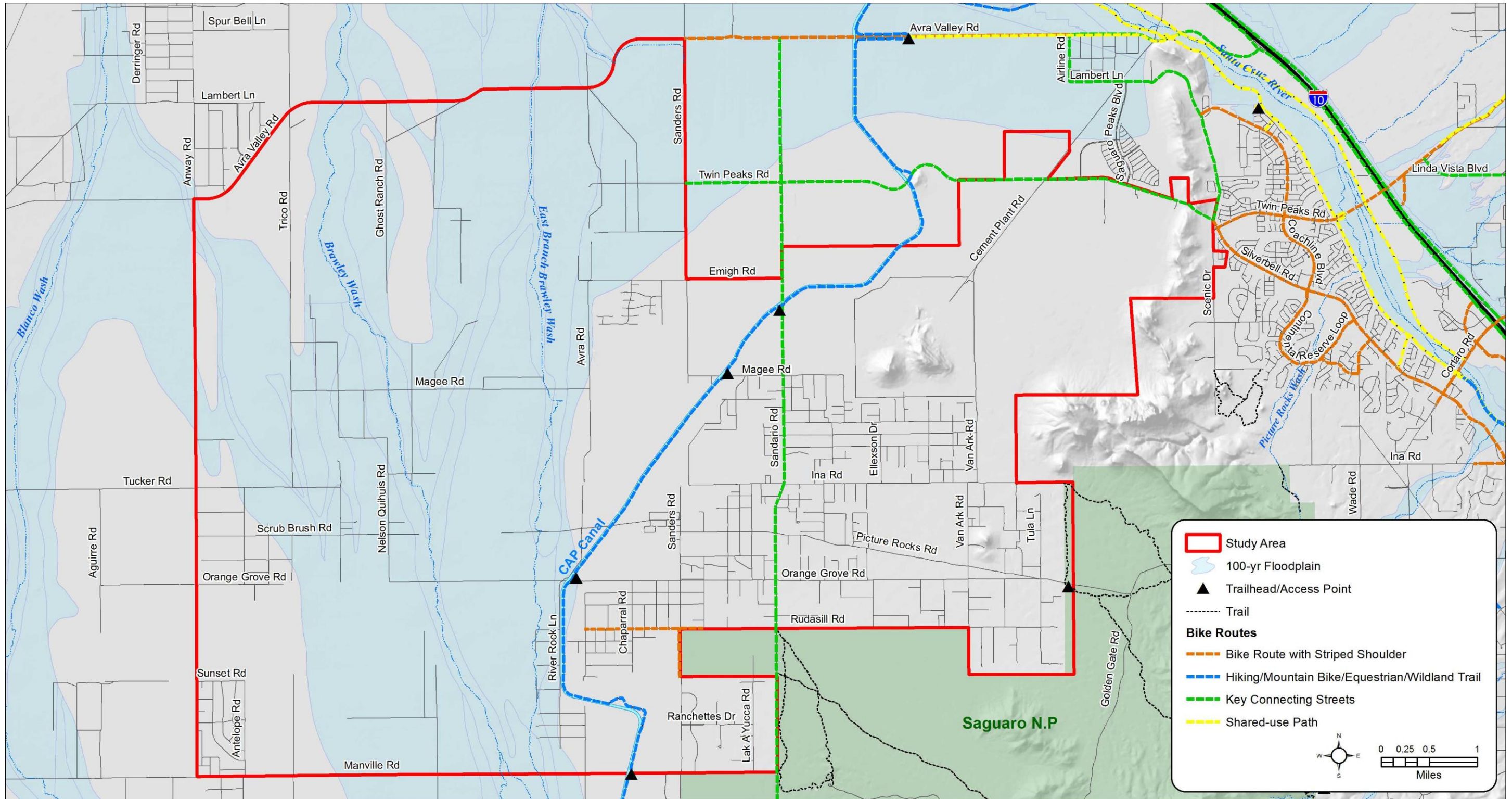


Figure 17 – Bike Routes and Trails

3.13 TRANSIT

The provision of transit services to the Picture Rocks area is a key focus area of the study and has been identified by numerous stakeholders and residents as the key need to be addressed by this study. This section provides information on transit and rideshare services located near the Picture Rocks area, previous studies that have been conducted regarding transit, a transit survey that was conducted in the Picture Rocks area, demographic data relating to transit needs, and potential demand for service and destinations that could potentially be served by a transit system. This analysis of needs will set the stage for identifying transit service options in Working Paper 2.

3.13.1 TRANSIT SERVICES NEAR THE PICTURE ROCKS AREA

No transit routes or stops are located within the Picture Rocks study area. Sun Tran is the region's public transportation system. Sun Tran serves approximately 20 million passenger trips per year and has 40 fixed routes. The majority of the transit routes and facilities are in the City of Tucson. Sun Shuttle routes serve more rural areas such as Marana, Oro Valley, Catalina, Sahuarita, Rita Ranch, Green Valley, San Xavier, Tucson Estates, and Ajo. Sun Van is also available for individuals unable to use Sun Trans's fixed-route service due to their disability. Sun Shuttle and Sun Tran routes are shown in **Figure 18**.

Sun Shuttle Route 410 – Anway/Trico serves the northwest corner of the study area with a bus stop at the corner of Anway Road and Avra Valley Road. This route runs on an approximate two-hour headway from 5:50 am to 5:30 pm Monday through Friday and from 9 am to 1 pm on Saturday. Other destinations on this route include the Marana Health Center and the Marana Municipal Complex.

Sun Shuttle Route 411 – Cortaro/Silverbell provides transit service along Silverbell Road, Twin Peaks Road, and Cortaro Road. The closest stop to the study area is at the intersection of Silverbell Road and Twin Peaks Road. Service operates every hour between 6:30 am to 6:30 pm on weekdays and from 9 am to 2:30 pm on Saturdays. Key destinations that this route serves include Arizona Pavilions Shopping Plaza near Cortaro Road/ Arizona Pavilions Road, Northwest Medical Center on Continental Reserve Drive, Sunflower Village Center near Twin Peaks Road and Regency Plaza near the Ina Road/ Thornydale Road intersection.

Sun Shuttle Route 413 – Marana/I-10 provides transit service to the key destinations of the Marana Health Center, the Marana Municipal Complex, Arizona Pavilions Shopping Center, and Regency Plaza Shopping Center at Ina Road/Thornydale Road. This route connects to routes 410 and 411 described above.

These services offer deviated service, where a passenger can schedule a pick up or drop off within $\frac{3}{4}$ -mile of Sun Shuttle Routes 410, 411, and 413. For deviated services on a Monday, requests must be scheduled prior to 3 pm Saturday. Other deviated requests must be scheduled by 6 pm the previous day.

Fares for the Sun Shuttle routes are \$1.50 for a one-way trip, with discounted fares available for seniors, persons with disabilities, Medicare cardholders, low income, or children under 5. The discounted fare is \$0.50. One-way fare for the deviated service is \$3.00.

3.13.2 RIDESHARE MATCHING SERVICE

PAG operates Sun Rideshare, a regional commuter assistance program that provides commuter services through a free, online matching database for people interested in sharing rides.

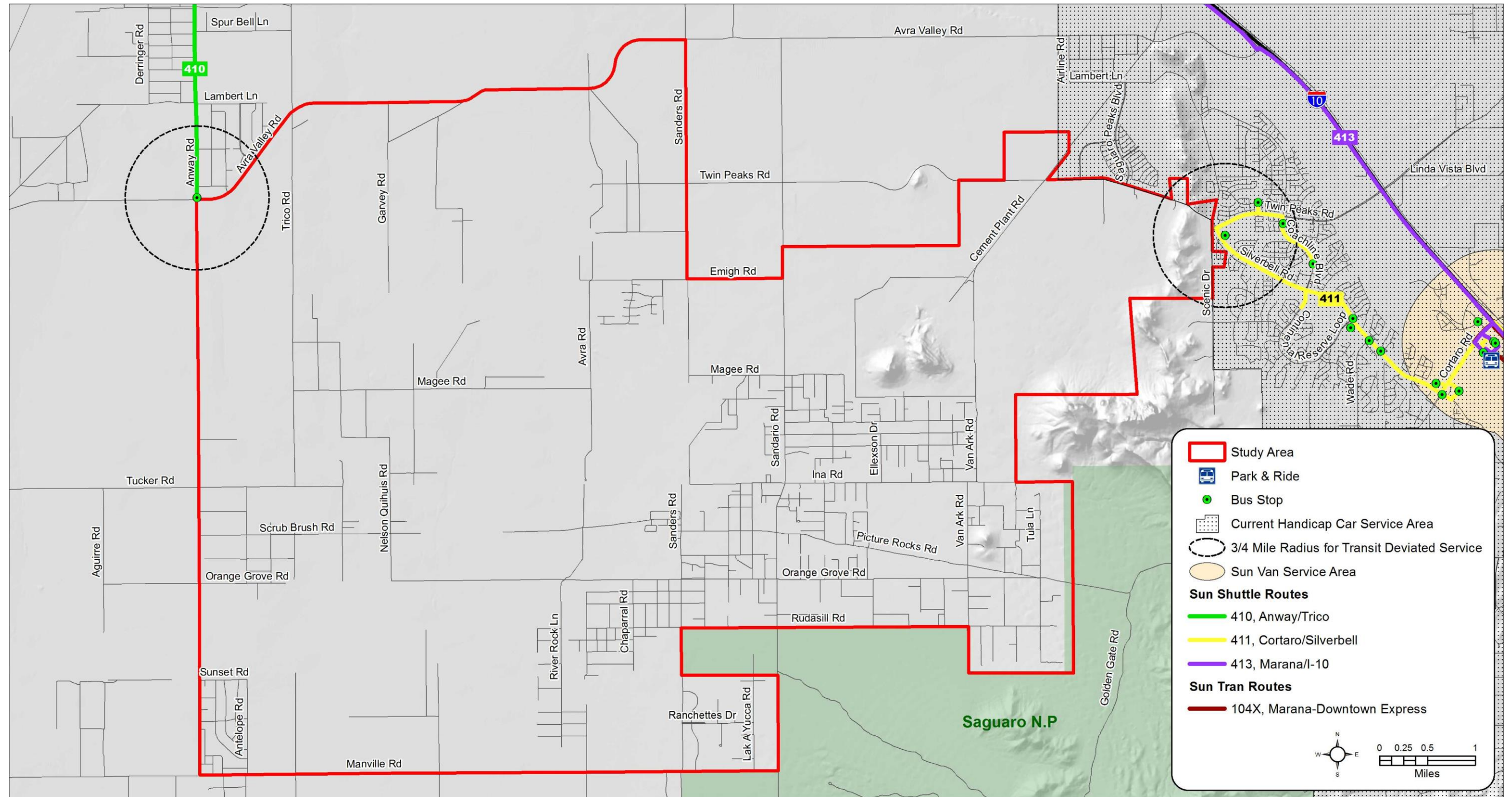


Figure 18 – Existing Transit Routes

Commuters sharing the ride may be eligible for the Guaranteed Ride Home program, which provides free taxi rides home from work when there is a family emergency or unscheduled overtime. Currently 143 persons are registered with PAG’s online rideshare database with a home address that includes a Picture Rocks zip code (85743). No information was available on whether persons registered with the rideshare matching service used the service, or were matched with rideshares or vanpools. PAG also works with employers to build a rideshare program for their employees.

3.13.3 OTHER TRANSPORTATION SERVICES

The Neighbors Care Alliance (NCA) is a program of “neighbors helping neighbors” and is a volunteer organization that is in the process of becoming established in the Picture Rocks area. The Pima Council on Aging provides consultation and training to neighborhood areas that want to set up this volunteer program. Each NCA program may offer these services:

- Ride to doctor
- Friendly phone call, visit
- Grocery shopping
- Meal preparation
- Light house or yard work
- Minor house repairs
- Caregiver respite assistance

A discussion with a Pima Council on Aging Outreach Coordinator indicated that the main focus of the NCA is typically transportation services for elderly and disabled clients. The outreach coordinator indicated that in the Picture Rocks area, volunteers are currently being trained and a coordinator for the service has been established. There is a mileage reimbursement for volunteer drivers.

3.13.4 SCHOOL TRANSPORTATION SERVICES AND STOPS

The Picture Rocks area is served by the Marana Unified School District. School bus stops are located throughout the Picture Rocks study area, with the majority of school bus stops located in the more densely populated areas within a 2.5-mile radius of the Picture Rocks Road and Sandario Road intersection. Two other areas with a number of bus stops include the subdivision at the northeast corner of Manville Road/Anway Road and near Twin Peaks Road/Sanders Road. School bus stops are primarily located on major roadways and residential areas where students are more densely concentrated. The roads with a large amount of bus stops (eight or more) include Sandario Road, Picture Rocks Road, Ina Road, Orange Grove Road, Rudasill Road, and Chaparral Road.

Transportation needs expressed by the Marana Unified School District include:

- In general, some county unmaintained roads are difficult to access by school bus and the road condition worsens when the weather is poor.
- Some county-maintained roads cannot be accessed by school buses due to poor weather; for example, Manville Road at the Brawley Wash and Anway Road at the Blanco Wash.
- School bus turnouts are needed along Sandario Road and Picture Rocks Road.
- A combined school bus stop is needed at the corner of Rudasill Road and Sanders Road for Desert Winds Elementary School and Picture Rocks Intermediate School.

3.13.5 PICTURE ROCKS TRANSPORTATION SURVEY

The Picture Rocks Transportation Survey was conducted by Sun Tran in conjunction with The Picture Rocks Community Conversation Transportation Committee, the Regional Transportation Authority (RTA), the Pictures Rocks AARP Community Group, and the Elder Initiative. The purpose of the survey was to gather information regarding the transportation needs of the Picture Rocks community and examine how the groups listed above might best meet those needs. The survey began on May 17th, 2013 and ended June 30th, 2013.

Survey notifications were mailed to households with zip codes in the Picture Rocks area. Participants were invited to take the survey in either Spanish or English on paper, online via surveymonkey.com, or by phone. A total of 425 valid responses were analyzed. Not every respondent answered every question.

Volunteers collected responses from individuals at the Picture Rocks Community Center, meetings of the Citizens for Picture Rocks group, meetings of the Senior Group, the food distribution line run by the Picture Rocks Community Center, Inc., and the local Community Garden. Each survey contained the questions in either English or Spanish:

1. *How many people currently live in your household?*
2. *Please indicate your age range.*
3. *How many working vehicles are available in your household?*
4. *Do you have a valid driver's license? How do you currently get to the places you need to go? (check all that apply)*
5. *In general, how many times per week do you currently travel from home to locations outside the Picture Rocks community?*
6. *On average, how often do you currently depend on someone else (family, friend, neighbor, taxi or shuttle) for your transportation needs beyond the Picture Rocks community?*
7. *How many times have you been unable to reach a destination in the past 30 days because of a lack of transportation?*
8. *Please choose three geographic areas that you most often need to travel to.*
9. *What is your top purpose for local travel?*
10. *What time of day (Monday through Friday) do you most frequently need to travel TO your most common destination?*
11. *What time of day (Monday through Friday) do you most frequently need to travel FROM your most common destination back to the Picture Rocks area?*
12. *Would you be willing to participate in a carpool with neighbors to connect to existing transit services such as Sun Shuttle or a Sun Express Bus?*
13. *If you answered "yes" to the previous question, would you be willing to drive your own vehicle for a carpool?*
14. *If a new service were to become available in Picture Rocks, what is the maximum distance you would be willing/able to walk, ride a bicycle or drive to access public transportation?*
15. *If a Park and Ride area for carpooling or vanpooling was made available in Picture Rocks, how often do you think you would use it?*
16. *How much would you be willing to spend per ROUND TRIP on a new transportation option that would better meet your needs?*
17. *Please estimate the CURRENT MONTHLY COST for your individual local transportation needs (including car payment, gas, insurance, maintenance and taxi or shuttle costs).*
18. *OPTIONAL: Please indicate your estimated total annual household income (before taxes).*
19. *OPTIONAL: Please provide any comments or ideas you have about transportation in the community of Picture Rocks.*

A further summary of survey responses is provided in **Appendix B**. Some key findings of the survey were:

- The predominant age of survey respondents is 55-64. Survey respondents that were 55 years of age or older made up 53 percent of survey respondents.
- Fifteen percent of the 422 respondents indicated they can't always get to where they need to go. An additional thirty-five percent of respondents catch a ride with friends or family, which may indicate potential need for additional transportation options.
- Survey responses indicated that the majority of respondents traveled outside of the Picture Rocks community three or more times per week. The largest response was "3-5 times per week."
- Approximately 47 percent of respondents indicated they depended on someone else for transportation outside of the Picture Rocks Community once a week or more.
- A significant number of respondents (48%) reported that they were unable to reach a destination in the past 30 days because of a lack of transportation.
- The survey responses indicated that top destinations were the Cortaro Road and I-10 area, followed by the Ina and Thornydale area. Downtown Tucson was another significant destination choice.
- The top purposes for local travel were shopping, followed by work trips and medical or social service related trips.
- The most frequent response to the question regarding the time of day the survey respondent needs to travel to their most common destination on a weekday was between the hours of 6 AM to 9 AM. A significant number of respondents, 39%, indicated the hours between 9 AM to 12 PM. In the afternoon/evening, the most frequent travel times were between the hours of 3 PM to 6 PM.
- A large number (51%) of respondents indicated they would be willing to participate in a carpool with neighbors to connect to an existing transit service.
- Thirty-five percent of respondents to this question said they would be willing to drive their vehicle for a carpool. The majority of respondents to this question indicated they would not be willing to drive their own vehicle.
- The responses to the question of how far one would be willing to travel to access public transportation varied considerably. Only a small percentage of respondents indicated they would be unable to access public transportation by walking, driving, or riding a bicycle.
- The responses to the question regarding how often one would use a park-and-ride area indicated that most respondents (68%) would use it once a week or more.

212 persons provided comments or ideas about transportation in the community of Picture Rocks. The comments focused primarily about the need for transit services. The main responses included:

- Need for transportation options for the elderly and disabled. These individuals expressed concerns about not being able to get to doctor appointments.
- Need for transportation for youth to get to community services and to jobs in and out of the Picture Rocks area.

- Need for transportation options for individuals without personal automobiles or in case personal automobiles break down. These individuals expressed concerns about getting to work or other important personal errands.

3.13.6 TRANSIT STUDIES

The 20-year RTA plan calls for improved and expanded transit service throughout the region over the 20-year life of the plan. Transit expansion projects identified as regional priorities during development of the RTA plan are reviewed annually and ranked according to weighted transit performance metrics.

The *PAG Short Range Transit Implementation Plan* (November 2013) describes a five-year schedule of regional transit capital and operating expenditures. It also describes transit policies and processes used by regional leadership to reach consensus-oriented transit decisions.

Jurisdictional and community requests for transit improvements are also evaluated, and if warranted, included in the ranking process. Service expansions that fall under this goal include service enhancements to existing routes, new service to underserved areas, and paratransit service expansion.

The extension of Route 411 to Picture Rocks is listed as an RTA Transit project that is yet to be implemented, and is listed in Appendix B of the report. The extension was estimated to require one additional van at a cost of \$151,622.

3.13.7 POTENTIAL TRANSIT DEMAND

Procedures as described in *Transit Cooperative Research (TCR) Program Report 161 – Method for Forecasting Demand and Quantifying Need for Rural Passenger Transportation: Final Workbook* was applied to available socioeconomic data and information in order to estimate potential transit needs. According to this procedure transit needs are defined in two ways:

1. The number of people in a given area likely to need passenger transportation, and
2. The number of trips required to provide individuals without personal vehicles with a level of mobility equal to those having personal vehicles.

Estimates of need for passenger transit service are represented by the number of persons residing in households with income below the poverty level plus the number of persons residing in households with no vehicles. This data is summarized in **Table 23**. It is estimated that approximately 1,293 persons have transportation needs.

Table 23 – Estimate of Persons with Transportation Needs

	Number of Persons
Persons residing in households with income below the poverty level	1081
Persons residing in households owning no automobile	212
Total Persons in Need of Passenger Transportation Services	1,293

Sources: U.S Census American Community Survey Tables B17001 and B08201

The **need for trips** is also estimated using a factor called the mobility gap. The mobility gap is the total number of trips not taken because members of zero vehicle households do not have the ease of mobility available to members of households with ready access to a vehicle. The need for trips is estimated using the formula:

Need (one-way trips per day) = Number of households having no car x mobility gap

The mobility gap has been estimated for different Census Divisions. The Mountain Division mobility gap was estimated by the TCR Report 161 to be 0.8.

Using this formula, the need in trips is estimated to be $110 \times 0.8 = 90$ one-way trips per day or 26,400 annual 1 way passenger trips.

Another consideration, not taken into account by this procedure, is the number of persons that are near the poverty level. It should also be noted that transit needs have also been demonstrated through the response to the Picture Rocks transit survey.

3.13.8 KEY DESTINATIONS FOR POTENTIAL TRANSIT SERVICE

Key activity centers within the region that could be potential destinations for transit service are summarized in **Table 24**. These locations were mentioned by stakeholders, listed on surveys, and identified through visual inspection.

Table 24 – Potential Transit Destinations

Destination Type	Tucson	Marana	Picture Rocks
Commercial, shopping	Foothills Mall Tucson Mall	Arizona Pavilions Continental Ranch Retail Center	
Community Services			Picture Rocks Community Center
Work	City of Tucson, Pima County, State of Arizona government offices and commercial businesses in downtown Tucson	Marana Municipal Complex	
Schools	Pima Community College	Marana High School	Picture Rocks Intermediate School Desert Winds Elementary School
Worship			Sandario Baptist Church Praise Center Assembly of God Chapel of Light
Medical	Northwest Medical Center	Marana Health Center Northwest Medical Center	Ortiz Community Health Center
Transit Stations	Tohono Tadaí Transit Center		
Recreation		Ted Walker Park Silverbell-Cortaro Park The Pines Golf Course	Saguaro National Park

4. Transportation Needs

This chapter provides an overview of needs for each of the modes of transportation, including roadway needs and alternate mode transportation needs, which include pedestrian, bicycle, and transit needs. The needs analysis was developed through a process that considered:

- Stakeholder/Technical Advisory Committee member/public input
- Traffic analysis
- Crash data assessment
- Field review of road conditions and pavement conditions
- Road Safety Assessment findings

4.1 ROADWAY NEEDS

Key roadway-related needs are described below and identified in **Figure 19**.

Paving for non-county-maintained roads – all-weather roads are needed on numerous non-county-maintained roads, particularly those roads that serve as school bus routes. Drainage improvement needs were identified on wash crossings on Scrub Brush Road and Ina Road. Pavement needs are depicted in **Figure 20**.

Road improvements on county maintained roads - locations for improvements were identified at:

- Sandario Road, Emigh Road to Rudasill Road – new left-turn lanes and shoulders. Future needs include widening roadway and intersection approaches and improving vertical alignments
- Rudasill Road, Sanders Road to Van Ark Road – new shoulders
- Manville Road – drainage improvements at Brawley Wash crossings
- Picture Rocks Road, Sandario to Saguaro National Park West Boundary – new shoulders, remove kinks in roadway alignment, standardize intersection radii. Need for left turn lanes between Tula Lane and Van Ark Road

The following is a list of major Pima County maintained roadways that do not have all-weather crossings:

- Manville Road at the Brawley Wash
- Anway Road at the Blanco Wash
- Avra Valley Road at the Brawley Wash
- Sandario Road north of Manville Road
- Sandario Road north of Magee Road

These are depicted in **Figure 19**.

Traffic control:

- A traffic signal beacon was requested to improve emergency access for the Picture Rocks Fire District at 6625 North Sandario Road
- A solar intersection beacon on stop signs at Sandario Road and Rudasill Road

Intersection Street lighting:

- Rudasill Road/Sandario Road
- Manville Road/Sandario Road
- Picture Rocks Road/Sandario Road

Drainage improvements:

- Manville Road at the Brawley Wash
- Anway Road, south of Avra Valley Road

Intersection improvement:

- Picture Rocks Road/Sandario Road – review stop bar location
- Sandario Road /Orange Grove Road – east leg of intersection needs to be realigned and stop sign control added

Signage:

- Upgrade school bus stop signs (S1-4) to new standard (fluorescent yellow-green)
- Additional warning signs for speed limit changes
- Relocate the guide signs for Picture Rocks School for greater advance notification at Rudasill Road
- Upsize street name signs on cross streets to Sandario Road to 36 inches at all intersections except those with 48-inch signs
- Upsize street name signs to nine-inch on intersecting minor streets with Sandario Road
- Upsize advance cross street signs on Sandario Road approach to Rudasill Road
- Install or upgrade the curve signing on Camper Road to Ina Road vicinity
- Guide signs on I-10 directing travelers to use Twin Peaks Road and Sandario Road (instead of Picture Rocks Road) to access Saguaro National Park

Striping Needs:

- Close the northbound passing zone on Sandario Road between Picture Rocks Road and Camper Road

4.2 SAFETY NEEDS

Safety needs identified through a review of crash data and through discussions with the Fire District, Pima County Traffic Engineering Division, and the Pima County Sheriff Department staff include:

Education:

- Need for signage such as “Don’t Drink and Drive” and “Speed Enforced by Radar” signs

Enforcement:

- Additional enforcement for speed control, particularly on Sandario Road and Picture Rocks Road, and Orange Grove Road. Other speed control measures might include solar speed monitors and more speed control signing
- Need was expressed to enforce the 15,000 lb weight limit on Picture Rocks Road

Emergency access:

- Need for variable message signs/boards to notify Picture Rocks residents when there is roadway closure due a crash, roadway flooding, etc. A potential location might be at the Minit Market at the intersection of Picture Rocks Road/Sandario Road.
- As mentioned above, the Fire District has also requested a signal beacon for improved emergency access.

4.3 TRANSIT NEEDS

Need for a transit system has been demonstrated through the large response to the transit survey, as well as needs demonstrated through an examination of demographic data relating to households without a vehicle and households that are below the poverty level. In addition, few options are available for alternative transportation. Key destinations for a potential service or service expansions include:

- Picture Rocks Community Center
- Sandario Road and Picture Rocks Road intersection
- Arizona Pavilions Shopping Center at Cortaro Road/I-10

Other potential destinations are shown in **Table 24**. Stakeholder input has suggested that a potential location for a park-and-ride lot may be at the Sandario Baptist Church at 6971 North Sandario Road. Transit needs are shown in **Figure 21**.

4.4 PEDESTRIAN NEEDS

Pedestrian needs identified include:

- There are limited pedestrian facilities. Suggestions for pedestrian paths were:
 - A route to link Picture Rocks Community Center to the Minit Mart and Marana High School.
 - Rudasill Road
- Development of a Safe Routes to School program
- School bus pullouts along Sandario Road and Picture Rocks Road as well as turn-around areas
- Crosswalks at Picture Rocks Road/Sandario Road (pending confirmation by crosswalk study)
- Pedestrian facilities and parking at potential trail head locations at Manville Road/Sanders Road and Rudasill Road/Sanders Road
- Lighted cross walks at elementary school: Desert Winds Elementary School (12675 W. Rudasill), Picture Rocks Intermediate School (5875 N. Sanders Road)

4.5 BICYCLE NEEDS

Bicycle needs include development of paved shoulders to provide bike lanes along Sandario Road, Picture Rocks Road, and sections of Rudasill Road. This would assist in developing a route to link Picture Rocks Community Center to the Minit Mart and Marana High School. Bicycle needs are shown in **Figure 22**.

4.5.1 PAVEMENT PRESERVATION NEEDS

Pima County administers an annual pavement preservation and rehabilitation program. The program varies annually depending on funding availability. Completed and in-progress pavement preservation and rehabilitation projects within the study area since 2012 are shown in **Figure 6**. Also shown in **Figure 6** are *Failed* and *Poor* pavement conditions collected by Pima County in 2013. The County-maintained roadway listed as *Failed* and *Poor* in **Figure 6** priorities for Pima County annual pavement preservation programs in the future.

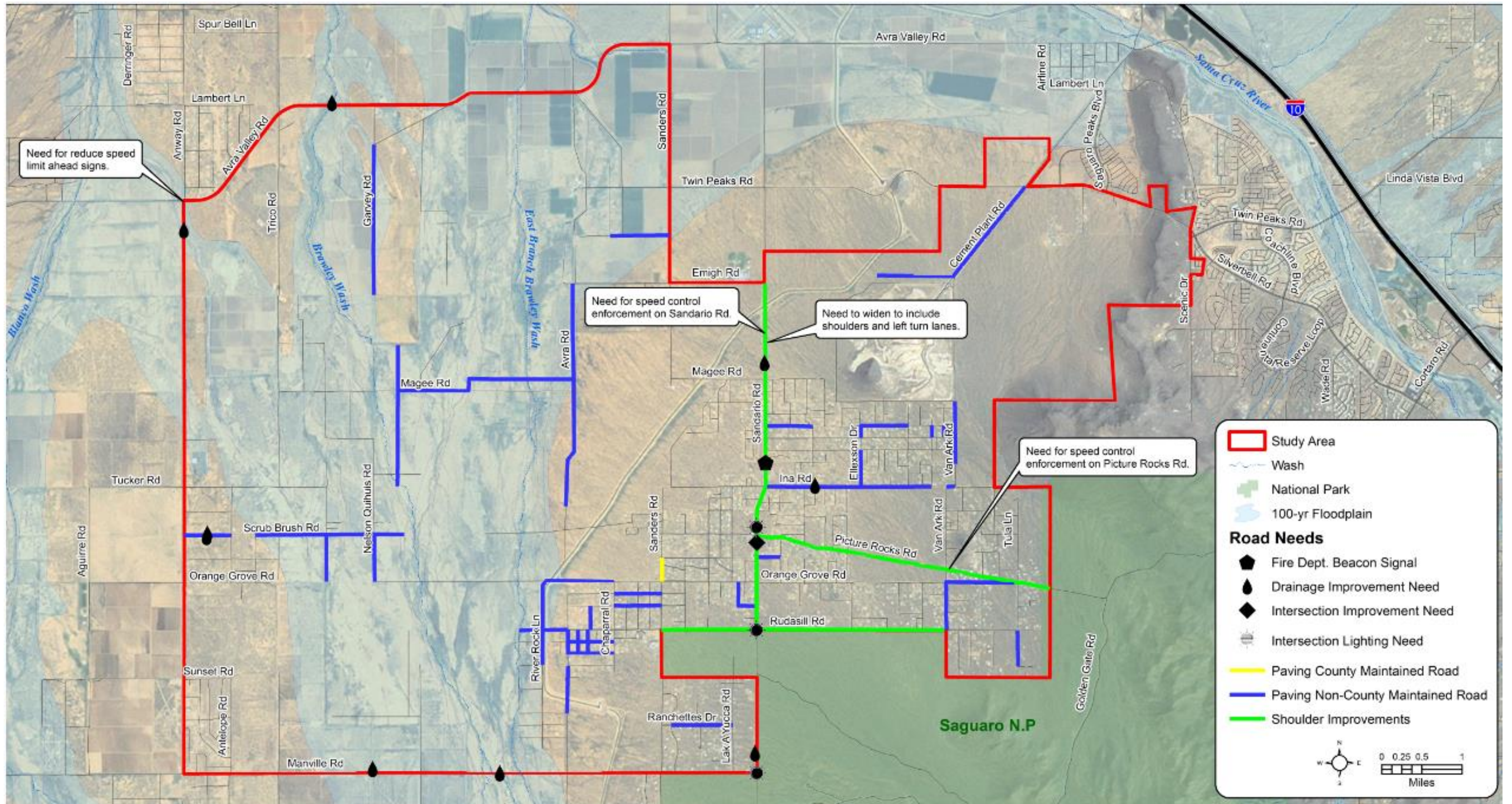
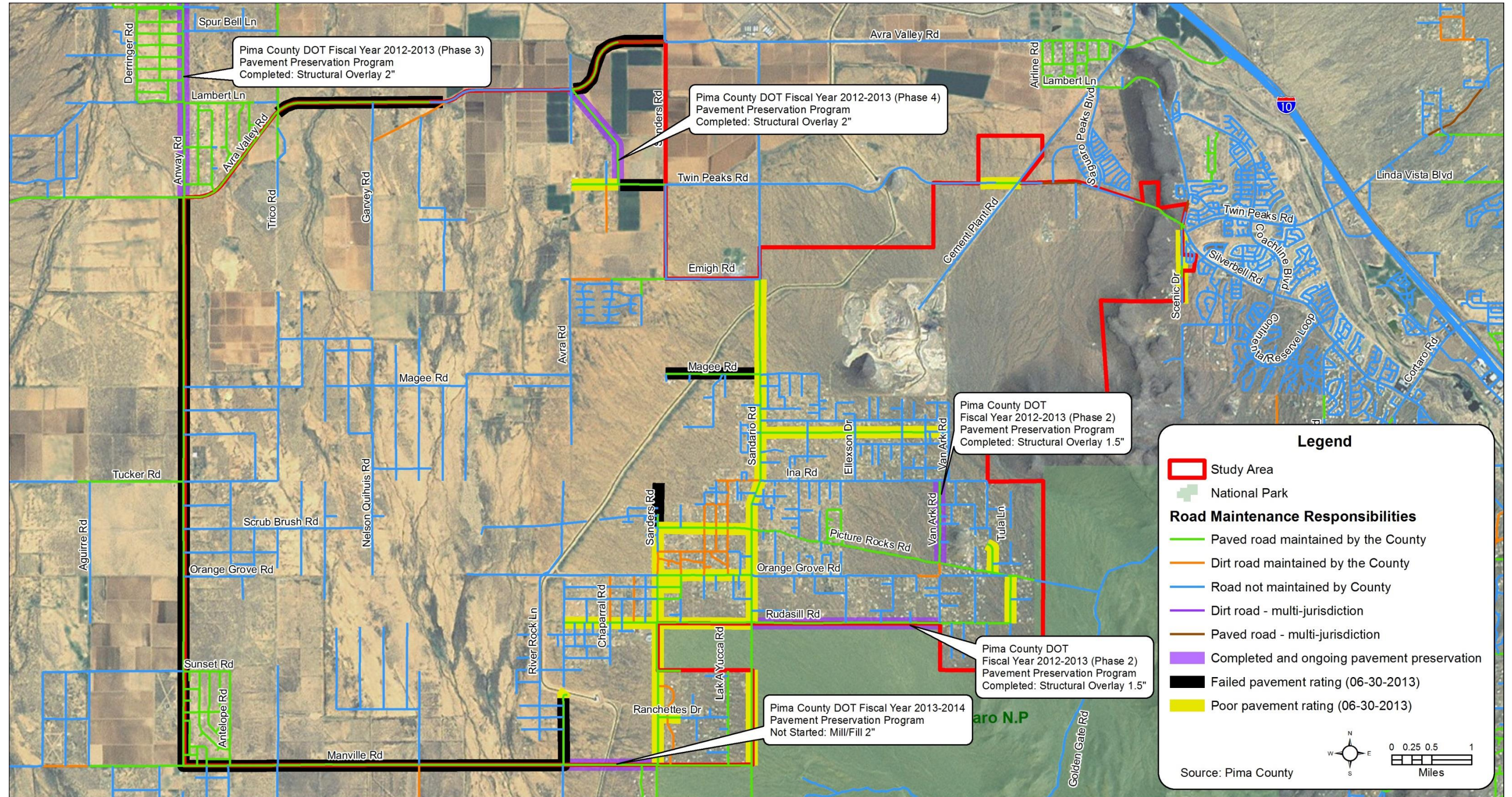


Figure 19 – Roadway and Intersection Needs



Source: Pima County

Figure 20 – Pavement Preservation Priorities

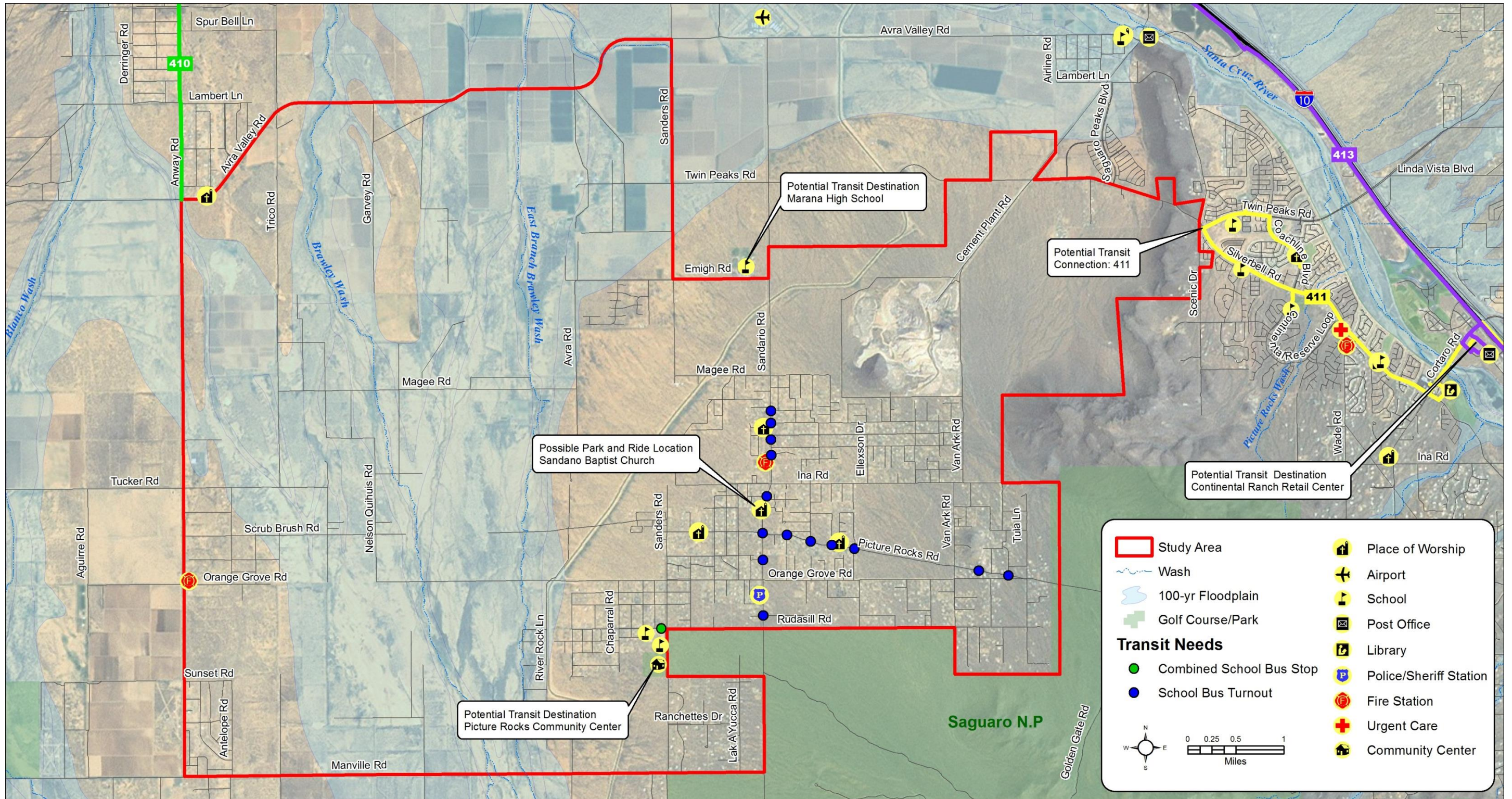


Figure 21 – Transit Needs

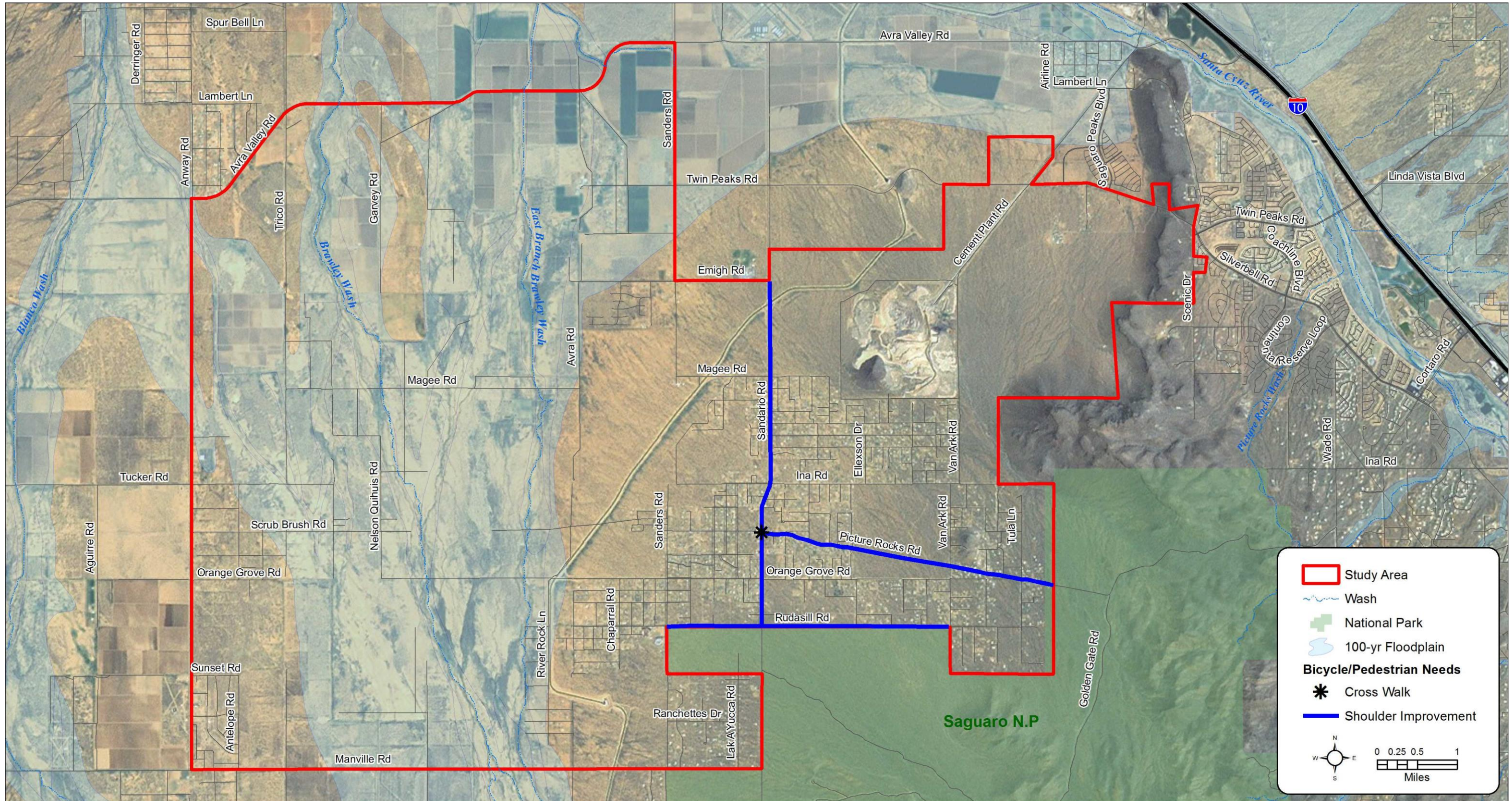


Figure 22 – Bicycle Needs

Appendix A – Environmental Overview

BIOLOGICAL RESOURCES

BIOLOGICAL COMMUNITY

According to *Biotic Communities: Southwestern United States and Northwestern Mexico*, the western portion of the study area is within the Lower Colorado River subdivision of the Sonoran Desertscrub biotic community and the eastern portion of the study area is located within the Arizona Upland subdivision of the Sonoran Desertscrub biotic community.³

TOPOGRAPHY

According to the *Marana, Arizona 7.5-Minute United States Geological Survey (USGS) 7.5' Quadrangle Map*, the study area elevation generally ranges from 2,640 feet above mean sea level (MSL) in the southeast corner of the study area to 2,000 feet above MSL in the northern portion of the study area. The mountains in the study area generally range from 2,510 feet above MSL to 2,765 feet above MSL and are located in the eastern portion of the study area. The eastern portion of the study area drains to the north/northwest and the western portion of the study area primarily drains to the north.

THREATENED AND ENDANGERED SPECIES

The U.S. Fish and Wildlife Service (USFWS) threatened, endangered, proposed, and candidate species list for Pima County, Arizona (dated October 30, 2013) was reviewed by a qualified biologist to determine species that may occur in the project vicinity based on readily available information.

Suitable habitat for one federally endangered species (lesser long-nosed bat) and two candidate species (Sonoran Desert tortoise and Tucson shovel-nosed snake) is present in the study area. Potential impacts to these species (and those potentially listed in the future) should be evaluated during the environmental clearance process. Coordination with the USFWS and AGFD should also occur during the environmental clearance process.

SPECIAL STATUS SPECIES OCCURRENCES/CRITICAL HABITAT/TRIBAL LANDS WITHIN THREE MILES OF PROJECT VICINITY

The AGFD Heritage Database Management System (HDMS) on-line environmental review tool was accessed to determine special status species known to occur in the project vicinity. The AGFD on-line environmental review tool included a list of special status species (federal and/or state protected) that are known to occur within three miles of the project vicinity. The species listed by the on-line environmental review tool that were addressed in **Table 25** include:

Tucson shovel-nosed snake
Sonoran Desert tortoise
Yellow-billed cuckoo

³ Brown, David E. 1994. *Biotic Communities: Southwestern United States and Northwestern Mexico*. University of Utah Press. Salt Lake City.

Table 25 – USFWS Threatened, Endangered, Proposed, and Candidate Species for Pima County, Arizona⁴

Common Name	Scientific Name	Status*	Habitat	Notes
acuna cactus	<i>Echinomastus erectocentrus</i> var. <i>acunensis</i>	E	Elevation range: 1,198 – 3,773 feet Habitat: Well drained knolls and gravel ridges in Sonoran desertscrub. The range for this species in Arizona is western Pima, Maricopa, and Pinal counties. The plant community that this species is associated with is the Arizona Upland Subdivision of Sonoran desert scrub (Palo-Verde/ Sahuaro Association). Critical habitat is being proposed for a total of 18,921 acres in Maricopa, Pima, and Pinal counties.	A portion of the study area is within the Arizona Upland Subdivision; however, the study area is not within the distribution range for this species and proposed critical habitat is not in the vicinity of the study area. Therefore, the probability of this species being in the study area is low.
California least tern	<i>Sterna antillarum browni</i>	E	Elevation range: < 2,000 feet Habitat: Open, bare or sparsely vegetated sand, sandbars, gravel pits, or exposed flats along shorelines of inland rivers, lakes, reservoirs, or drainage systems. Nests in a simple scrape on sandy or gravelly soil.	Nesting habitat is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity.
Chiricahua leopard frog	<i>Lithobates chiricahuensis</i>	T	Elevation range: 3,281 – 8,890 feet Habitat: Restricted to springs, livestock tanks, and streams in upper portion of watersheds that are free from nonnative predators or where marginal habitat for nonnative predators exists. Critical habitat is designated for 10,346 acres in Apache, Cochise, Gila, Graham, Greenlee, Pima, Santa Cruz, and Yavapai counties in Arizona.	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity. Critical habitat is not within three miles of the study area.
desert pupfish	<i>Cyprinodon macularius</i>	E	Elevation range: < 4,000 feet Habitat: Shallow springs, small streams, and marshes. Tolerates saline and warm water. Critical habitat includes Quitobaquito Springs, Pima County, portions of San Felipe Creek, Carrizo Wash, and Fish Creek Wash, Imperial County, California.	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity.
Gila chub	<i>Gila intermedia</i>	E	Elevation range: 2,000 – 5,500 feet Habitat: Pools, springs, cienegas, and streams. Critical habitat	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the

⁴ U.S. Fish and Wildlife Service (USFWS) threatened, endangered, proposed, and candidate species list for Pima County, Arizona (dated October 30, 2013)

Common Name	Scientific Name	Status*	Habitat	Notes
			includes Cochise, Gila, Graham, Greenlee, Pima, Pinal, Santa Cruz, and Yavapai counties.	project vicinity.
Gila topminnow	<i>Poeciliopsis occidentalis</i>	E	Elevation range: < 4,500 feet Habitat: Small streams, springs, and cienegas vegetated shallows.	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity.
Huachuca water umbel	<i>Lilaeopsis schaffneriana</i> ssp. <i>recurva</i>	E	Elevation range: 3,500 – 6,500 feet Habitat: Cienegas, perennial low gradient streams, wetlands. Critical habitat includes Cochise and Santa Cruz counties.	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity.
jaguar	<i>Panthera onca</i>	E	Elevation range: 1,600 – 9,000 feet Habitat: Found in Sonoran desertscrub up through subalpine conifer forest. Critical habitat is being proposed for a total of 838,232 acres in Cochise, Pima, and Santa Cruz counties, Arizona.	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity.
Kearney's blue star	<i>Amsonia kearneyana</i>	E	Elevation range: 3,600 – 3,800 feet Habitat: West-facing drainages in the Baboquivari Mountains. Plants grow in stable, partially shaded, coarse alluvium along a dry wash in the Baboquivari Mountains.	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity. The Baboquivari Mountains are approximately 33 miles southwest of the study area.
lesser long-nosed bat	<i>Leptonycteris curasoae yerbabuena</i>	E	Elevation range: 1,600 – 7,500 feet Habitat: Desertscrub habitat with agave and columnar cacti present as food plants. The plant communities this species is typically associated with are Palo Verde/Saguaro, Semidesert Grassland, and Oak Woodland. Day roosts in caves and abandoned tunnels. Forages at night on nectar, pollen, and fruit of paniculate agaves and columnar cacti. This species is migratory and is present in Arizona usually from April to September and south of the border the remainder of the year.	This species has not been documented by AGFD within three miles of the project vicinity; however, the study area could provide suitable habitat for this species.

Common Name	Scientific Name	Status*	Habitat	Notes
masked bobwhite	<i>Colinus virginianus ridgewayi</i>	E	Elevation range: 1,000 – 4,000 feet Habitat: Desert grasslands with diversity of dense native grasses, forbs, and brush. Species is closely associated with Prairie acacia (<i>Acacia angustissima</i>). Formerly occurred in Altar and Santa Cruz valleys, as well as Sonora, Mexico. Presently only known from reintroduced populations on Buenos Aires National Wildlife Refuge.	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity.
Mexican spotted owl	<i>Strix occidentalis lucida</i>	T	Elevation range: 4,100 – 9,000 feet Habitat: Nests in canyons and dense forests with multi-layered foliage structure. Generally nest in older forests of mixed conifer or ponderosa pine/gambel oak type, in canyons, and use variety of habitats for foraging. Sites with cool microclimates appear to be of importance or are preferred. Critical habitat was finalized on August 31, 2004 (69 FR 53182) in Arizona in Apache, Cochise, Coconino, Gila, Graham, Greenlee, Maricopa, Navajo, Pima, Pinal, Santa Cruz, and Yavapai counties.	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity.
Nichol Turk's head cactus	<i>Echinocactus horizonthalonius</i> var. <i>nicholii</i>	E	Elevation range: 2,400 – 4,100 feet Habitat: Sonoran desertscrub. Found in unshaded microsites in Sonoran desertscrub on dissected alluvial fans at the foot of limestone mountains and on inclined terraces and saddles on limestone mountain sides. This species range is Koht Kohl Hill and the Waterman Mountains in Pima County and the plant community that this species is typically associated with is Paloverde-Cactus Shrub community in the Arizona Upland subdivision.	This species has not been documented by AGFD within three miles of the project vicinity. Koht Kohl Hill and the Waterman Mountains are approximately 9 miles west of the study area. Therefore, the probability of this species being in the study area is low.
northern Mexican gartersnake	<i>Thamnophis eques megalops</i>	PT	Elevation range: 130 – 8,497 feet Habitat: Cienegas, stock tanks, large-river riparian woodlands and forests, streamside gallery forests. Core population areas in Arizona include mid/upper Verde River drainage, mid/lower Tonto Creek, and the San Rafael Valley and surrounding area. Status on tribal lands unknown. Strongly associated with the presence of a native prey base including leopard frogs and native fish.	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity.
ocelot	<i>Leopardus pardalis</i>	E	Elevation range: < 8,000 feet Habitat: Desert scrub in Arizona. Little is known about ocelot habitat use in Arizona; however, ocelots are typically associated with areas of dense cover. Four confirmed reports of ocelots have	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity.

Common Name	Scientific Name	Status*	Habitat	Notes
			been received from Gila (one) and Cochise (three) counties since 2009. Based on photographic evidence, two of the reports from Cochise County were most likely of the same ocelot.	
Pima pineapple cactus	<i>Coryphantha scheeri</i> <i>var. robustispina</i>	E	Elevation range: 2,300 – 5,000 feet Habitat: Lower Sonoran Desertscrub and Semi-desert Grassland. Occurs in alluvial valleys or on hillsides in rocky to sandy or silty soils.	This species has not been documented by AGFD within three miles of the project vicinity. Although the study area contains Sonoran desertscrub, this area is located north of the known range of this species. Therefore, the probability of this species being in the study area is low.
Sonoran pronghorn	<i>Antilocapra americana sonoriensis</i>	E	Elevation range: 2,000 – 4,000 feet Habitat: Broad intermountain alluvial valleys with creosote-bursage and palo verde-mixed cacti associations. In Arizona, they are found on the Cabeza Prieta National Wildlife Refuge, the Organ Pipe Cactus National Monument, the Luke Air Force Barry M. Goldwater Gunnery Range, and possibly the Tohono O’odham Indian Reservation.	This species has not been documented by AGFD within three miles of the project vicinity. Although the study area contains Sonoran desertscrub, this area is located outside this species distribution range.
southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	E	Elevation range: < 8,500 feet Habitat: Cottonwood/willow and tamarisk vegetation communities along rivers and streams. A revised critical habitat designation was finalized on January 3, 2013, for areas in Apache, Cochise, Gila, Graham, Greenlee, La Paz, Maricopa, Mohave, Pima, Pinal, Santa Cruz, and Yavapai counties.	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity.
yellow-billed cuckoo	<i>Coccyzus americanus</i>	PT	Elevation range: 6,500 feet Habitat: Large blocks of riparian woodlands (cottonwood, willow, or tamarisk galleries). Nesting cuckoos are associated with relatively dense, wooded, streamside riparian habitat, with varying combinations of Fremont cottonwood, willow, velvet ash, Arizona walnut, mesquite, and tamarisk. Some cuckoos have also been detected nesting in velvet mesquite, netleaf hackberry, Arizona sycamore, Arizona alder, and some exotic neighborhood shade trees.	Suitable habitat for this species is not present in the study area. This species has been documented by AGFD within three miles of the project vicinity (likely the Santa Cruz River).
Sonoran Desert tortoise	<i>Gopherus morafkai</i>	C	Elevation range: < 7,800 feet Habitat: Primarily rocky (often steep) hillsides and bajadas of	Suitable habitat for this species is present in the study area and this species has been

Common Name	Scientific Name	Status*	Habitat	Notes
			Mohave and Sonoran desertscrub but may encroach into desert grassland, juniper woodland, interior chaparral habitats, and even pine communities. Washes and valley bottoms may be used in dispersal.	documented by AGFD within three miles of the project vicinity.
Sonoyta mud turtle	<i>Kinosternon sonoriense longifemorale</i>	C	Elevation range: 1,100 feet Habitat: Ponds and streams. Found only in Quitobaquito Springs in Organ Pipe Cactus National Monument, Arizona.	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity. Organ Pipe National Monument is approximately 88 miles southwest of the study area.
Tucson shovel-nosed snake	<i>Chionactis occipitalis klauberi</i>	C	Elevation range: 785 – 1,662 feet Habitat: Sonoran Desertscrub; associated with soft, sandy soils having sparse gravel. Found in creosote-mesquite floodplain environments, finds refuge under desert shrubs, active during crepuscular (dawn and dusk) and daylight hours.	Suitable habitat for this species is present in the study area and this species has been documented by AGFD within three miles of the project vicinity.

*C = Candidate for federal listing under the Endangered Species Act (ESA); E = Federally listed as Endangered under the ESA; T = Federally listed as Threatened under the ESA; PT = listed as Proposed Threatened under the ESA

Species listed that have not been previously addressed included:

Western burrowing owl (*Athene cunicularia hypugaea*)

Suitable habitat for this species is present within the study area. The burrowing owl is listed as a species of concern by the USFWS and they are also protected federally by the Migratory Bird Treaty Act (MBTA) and Arizona state law (ARS Title 17). According to the AGFD website the western burrowing owl utilizes well drained grasslands, steppes, deserts, prairies, and agricultural lands, often associated with burrowing mammals. Western burrowing owls are known to occupy vacant lots near human habitation, golf courses, or airports.⁵

Cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*)

Suitable habitat for this species is present within the study area. The pygmy-owl is listed as a species of concern by the USFWS and wildlife of special concern for the AGFD. This species is primarily found in Sonoran desertscrub and occasionally in riparian drainages and woodlands within semi-desert grassland communities. The pygmy-owl prefers to nest in cavities in saguaro cacti, but has been found in low-density suburban developments that include natural open spaces. The pygmy-owl is not recognized as a protected taxonomic entity under the ESA, but protected from direct take of individuals and nests/eggs under the MBTA. A 2006 petition for relisting under the ESA is currently being evaluated.⁶

California leaf-nosed bat (*Macrotus californicus*)

Suitable habitat for this species is present within the study area. The California leaf-nosed bat is listed as a species of concern by the USFWS and as wildlife of special concern by AGFD. Habitat for this species is described as Sonoran desertscrub. This bat primarily roosts in mines, caves, and rock shelters. This species prefers roost sites with large areas of ceiling and flying space. The bat feeds on large flying insects such as grasshoppers, moths, and flying beetles and may also feed on fruits, including those of cacti.⁷

Cave myotis (*Myotis velifer*)

Suitable habitat for this species is present within the study area. The cave myotis is listed as a species of concern by the USFWS. Habitat for this species is described as desertscrub: creosote, brittlebush, paloverde, and cacti. This bat roosts in caves, tunnels, and mineshafts, and under bridges, and sometimes in buildings within a few miles of water. There are a number of records of one or a few individuals roosting in cliff and barn swallow nests. Small moths are the most common prey item for this species, but they also eat weevils, ant lions, and small beetles.⁸

⁵AGFD. 2001. *Athene cunicularia*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. 6 pp.

⁶ U.S. Fish and Wildlife Service (USFWS) threatened, endangered, proposed, and candidate species list for Pima County, Arizona (dated October 30, 2013)

⁷ AGFD. 2001. *Macrotus californicus*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. 7 pp.

⁸AGFD. 2002. *Myotis velifer*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. 7 pp.

Fulvous whistling-duck (*Dendrocygna bicolor*)

Suitable habitat for this species is present within the study area (pastures). This species is listed as a species of concern by the USFWS and has become sporadic in occurrence eastward to Phoenix and Picacho Lake; most observations still being along the Colorado River south of Cibola. Breeding habitat for this species includes freshwater wetlands, marshes, and open-water zones vegetated with floating aquatic plants. Upland nesting occurs in pastures, haylands, and small grain fields adjacent to ricefields.⁹

Specific surveys to determine the presence or absence of this species and/or other species that may be protected at that time should be performed prior to construction of projects.

Texas horned lizard (*Phrynosoma cornutum*)

Suitable habitat for this species is not present within the study area and the study area is outside the species elevation range. This species is listed as a species of concern by the USFWS. Habitat for the Texas horned lizard is described as Chihuahuan Desert and desert-grassland; sandy to gravelly flat ground with or without rocky cover, usually with scattered desert and grassland shrubs or on mesquite dominated flats. This species is found at 3,580 – 4,940 feet above mean sea level (MSL) in Arizona.¹⁰

The study area contains suitable habitat for the following protected native plants that are listed as salvage restricted by the Arizona Department of Agriculture (ADA). Pima Indian mallow is also considered a species of concern by the USFWS.

- Kelvin cholla (*Cylindropuntia x kelvinensis*)
- Pima Indian mallow (*Abutilon parishii*)
- Thornber fishhook cactus (*Mammillaria thornberi*)
- Staghorn cholla (*Opuntia versicolor*)
- Desert night-blooming cereus (*Peniocereus greggii* var. *transmontanus*)
- Tumamoc globeberry (*Tumamoca macdougalii*)

Prior to construction, a native plant survey should be conducted to determine if any protected native plant species would be impacted as a result of the project. Coordination with the ADA should be conducted if any protected native plants are identified. In addition, impacts to native plants may require a Notice of Intent and/or specific permitting prior to construction per Article 11: Arizona Native Plants. Also prior to construction, a presence/absence survey should be conducted to determine if any invasive/noxious weeds are present within the construction area and to determine if any mitigation measures are necessary per Executive Order 13112 and the Arizona Native Plant Law.

Important Riparian Area (IRA)

Portions of the study area are classified as an Important Riparian Area (IRA) regulated under Pima County Ordinance PC2005-FC2 and Chapter 16.30.050. As described in the Regulated Riparian Habitat Mitigation Standards and Implementation Guidelines, riparian habitat is a valuable resource and river systems are important corridors for resident and migratory birds, along with providing wildlife with the resources necessary to maintain their populations. IRAs occur along the major river systems and

⁹ AGFD. 2001. *Dendrocygna bicolor*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. 6 pp.

¹⁰ AGFD. 2002. *Phrynosoma cornutum*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. 5 pp.

washes that provide critical watershed and water resource management functions as well as providing a framework for landscape linkages and biological corridors. They are valued for their higher water availability, vegetation density, and biological productivity, as compared to adjacent upland habitats. Mesoriparian habitats are generally associated with perennial or intermittent watercourses or shallow groundwater. Plant communities may be dominated by species that are also found in drier habitats (e.g., mesquite) but contain some preferential riparian plant species such as velvet ash (*Fraxinus velutina*) or netleaf hackberry (*Celtis laevigata*). Xeroriparian habitats (Classes A-D) are generally associated with an ephemeral water supply (see **Figure 23**). These plant communities typically contain species also found in upland habitats; however, these plants are typically larger and/or occur at higher densities than adjacent uplands.¹¹

The study area contains Mesoriparian (337 acres), Xeroriparian B (95 acres), Xeroriparian C (1,235 acres), and Xeroriparian D (4,341 acres) habitats. Impacts to this habitat should be avoided to the extent practicable and mitigation will likely be required for unavoidable impacts. These areas are depicted in **Figure 23**.

Wildlife Movement Corridors

Wilderness areas and wildlife areas are important natural resources because they provide food, shelter, and other habitat requirements (including connectivity) to sustain many species of wildlife. Numerous wildlife species utilize the washes and undeveloped uplands within the study area to move between wildland blocks. Multiple species utilize the open spaces and undeveloped areas for foraging and/or shelter. Conversion of these lands into other uses may impact wildlife movement patterns and population maintenance processes (immigration/emigration/genetics), as well as the local availability of food resources. Future wildlife habitat fragmentation and loss will contribute to reduced biodiversity and population sizes in the region.

The Arizona Wildlife Linkages Assessment identified one potential linkage zone (PLZ) within or adjacent to the study area (PLZ152 CAP Canal, **Figure 24**). PLZs are area of land between the wildland blocks, where current and future urbanization, roads, and other human activities threaten to prevent wildlife movement between the wildland blocks. Wildland blocks are defined as areas of land that consist of important wildlife habitat and can be expected to remain wild for at least 50 years.¹²

The Coyote - Ironwood - Tucson Linkage extends through the western portion of the study area along Brawley Wash and along the eastern portion of the study area overlapping the Tucson - Tortolita - Santa Catalina Mountains Linkage and extending into a wildland block that connects to Saguaro National Park.

Coyote - Ironwood - Tucson Linkage

The Coyote - Ironwood - Tucson Linkage design includes a Coyote-Ironwood linkage strand and an Ironwood-Tucson linkage strand. The Coyote-Ironwood linkage runs between the Coyote wildland

¹¹Pima County Regional Flood Control District. 2011. Regulated Riparian Habitat Mitigation Standards and Implementation Guidelines. Supplement to Title 16 Chapter 16.30 of the Watercourse and Riparian Habitat Protection and Mitigation Requirements Ordinance No. 2010 FC5.

¹² Nordhaugen, S.E., Erlandsen, E., Beier, P., Eilerts, B.D., Schweinburg, R., Brennan, T., Cordery, T., Dodd, N., Maiefski, M., Przybyl, J., Thomas, S., Vacariu, K., Wells, S., 2006. Arizona's Wildlife Linkages Assessment. Arizona Wildlife Linkages Workgroup, Phoenix, AZ.

block and the Ironwood wildland block, across State Route 86. It spans about 13 miles in a straight line between each wildland block used in this analysis. The Ironwood – Tucson linkage runs through Avra Valley from Ironwood Forest National Monument to the Tucson Mountains. The linkage spans approximately 8.5 miles in a straight-line between each wildland block used.¹³

¹³ Arizona Game and Fish Department. 2012. Pima County Wildlife Connectivity Assessment: Detailed Linkages. Coyote – Ironwood – Tucson Linkage Design. Report to the Regional Transportation Authority of Pima County.

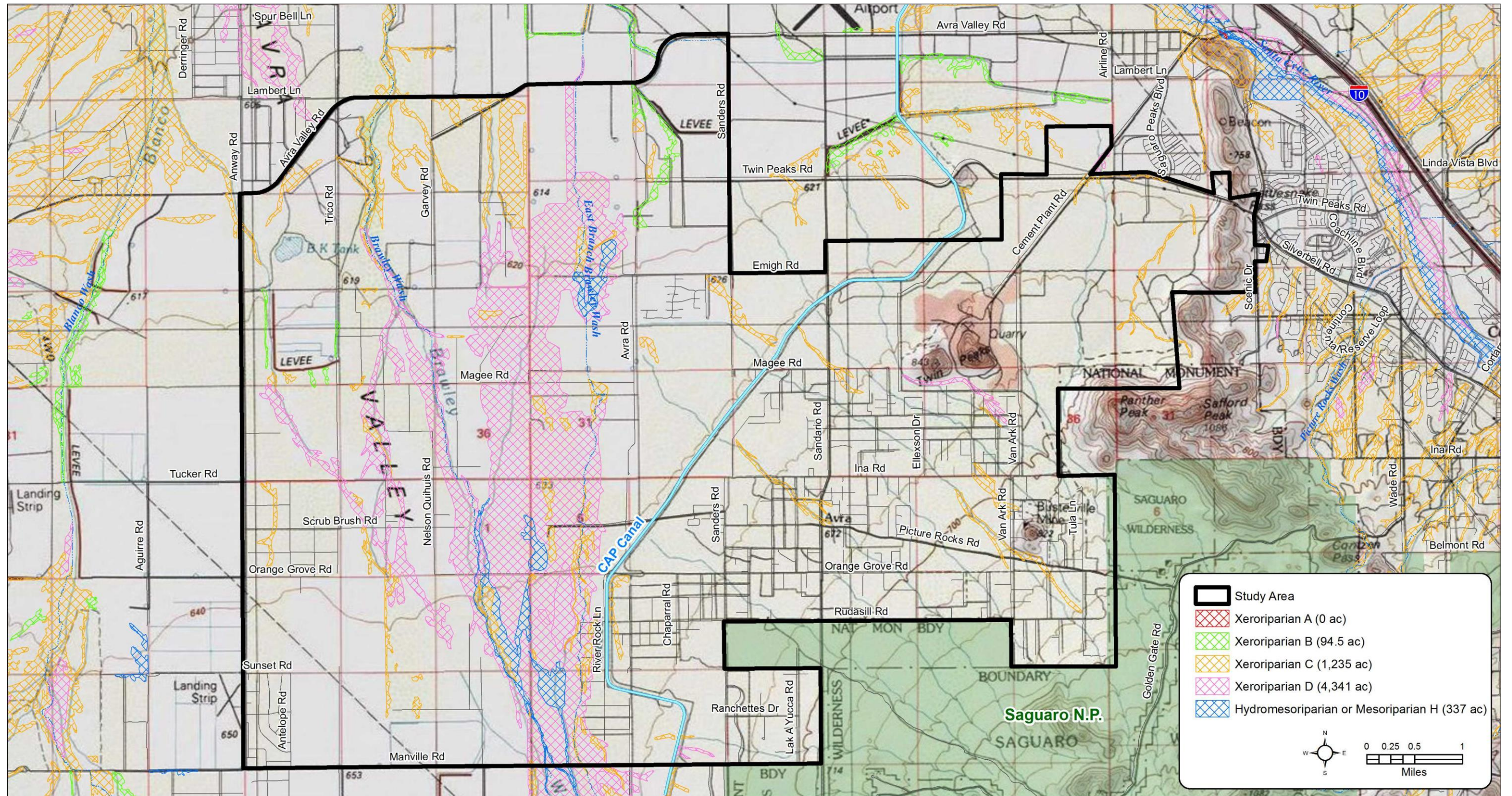


Figure 23 – Important Riparian Areas

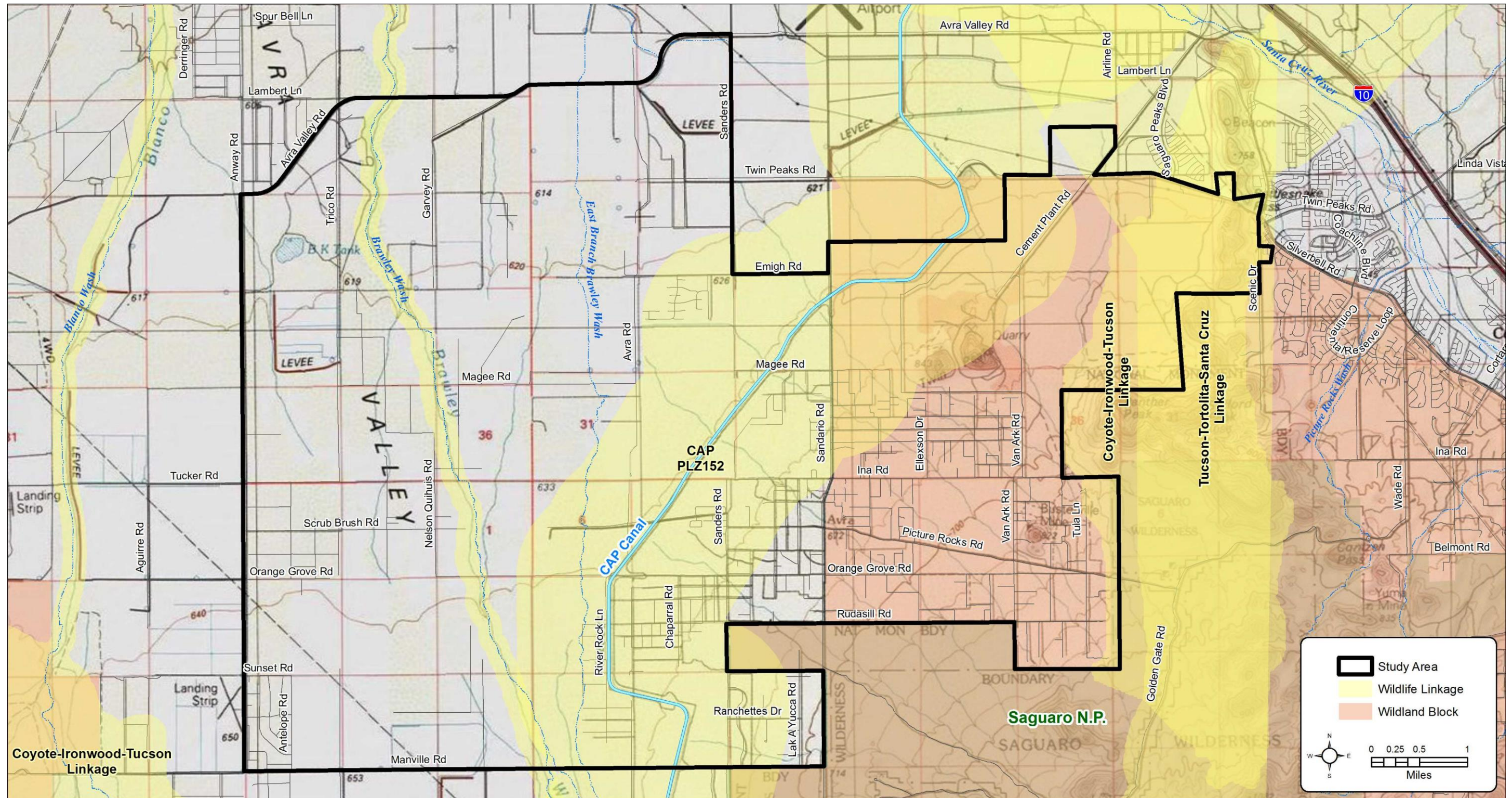


Figure 24 – Wildlife Linkages / Wildland Block

Tucson - Tortolita - Santa Catalina Mountains Linkage

The Tucson - Tortolita - Santa Catalina Mountains Linkage includes a Tucson Mountains-Tortolita Mountains Linkage and a Tortolita Mountains-Santa Catalina Mountains Linkage. The Tucson Mountains-Tortolita Mountains Linkage runs from the Tucson Mountains, across Interstate 10, to the Tortolita Mountains. It is about 14.3 miles long. The Tortolita Mountains-Santa Catalina Mountains Linkage runs through the Oro Valley and across SR-77 between the Tortolita Mountains and the Santa Catalina Mountains. The linkage is approximately 8.7 miles long.¹⁴

These linkages and potential linkage zones should be considered during project planning.

MIGRATORY BIRD TREATY ACT

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. §§ 703-712) statute makes it unlawful without a waiver to pursue, hunt, take, capture, kill, or sell migratory birds. Migratory birds may nest on the ground, on structures, or in trees, shrubs, or other vegetation within the project limits. In accordance with the MBTA, a pre-construction bird nesting survey must be conducted to survey active migratory bird nests in potentially impacted trees and shrubs prior to the beginning of construction.

SECTION 4(F) RESOURCES

Section 4(f) refers to the original section in the Department of Transportation Act of 1966. The 4(f) requirement, originally set forth in Title 49 United States Code (U.S.C.), Section 1653(f), considers publicly owned park and recreational lands, publicly owned wildlife and waterfowl refuges, and historic sites in transportation project development. Section 4(f) states that the FHWA "...may approve a transportation program or project requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of an historic site of national, state, or local significance (as determined by the federal, state, or local officials having jurisdiction over the park, area, refuge, or site) only if 1) there is no prudent and feasible alternative that avoids the property, and 2) if there is no prudent and feasible alternative, that the project incorporates all possible planning to minimize harm that results from the use of those resources.

planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use." (49 U.S.C. 303[c]). Section 4(f) also establishes criteria by which public parks and recreation lands, wildlife, and waterfowl refuges and historic sites can be evaluated for consideration as 4(f) resources.

A "use" of a Section 4(f) resource, as defined in Title 23, CFR, Part 771.135(p), "occurs: (1) when land is permanently incorporated into a transportation facility; (2) when there is a temporary occupancy of land that is adverse in terms of the statute's preservationist purposes; or (3) when there is a constructive use of land. A constructive use of a Section 4(f) resource occurs when the transportation project does not incorporate land from a Section 4(f) resource, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired."

¹⁴ Beier, P., E. Garding, and D. Majka. 2006. Arizona Missing Linkages: Tucson – Tortolita – Santa Catalina Mountains Linkage Design. Report to Arizona Game and Fish Department. School of Forestry, Northern Arizona University.

A historic site, property, or resource means any prehistoric or historic district, site, building, structure or object included in or eligible for inclusion on the National Register of Historic Places (NRHP). Section 4(f) does not apply if archaeological resources are important chiefly because of what can be learned by data recovery (NRHP criterion D). Consequently, Section 4(f) applies to historic properties listed on or eligible for the NRHP under criteria A, B, and/or C.

Section 4(f) properties are often identified in two categories: Parks Plus (+) (parks, recreation areas, wildlife or waterfowl refuges) and Historic Sites. There are currently three protected 4(f) properties in the Parks+ category as depicted on **Figure 25**:

1. Saguaro National Park
 - Located at 2700 N. Kinney Road, Tucson, AZ 85743.
 - Saguaro National Park is under the jurisdiction of the National Park Service. The park offers numerous trails and recreation activities and is open to the general public affording it Section 4(f) protection.
2. Picture Rocks Park and Community Center
 - Located at 5615 N. Sanders Road, Tucson, AZ 85743.
 - Picture Ricks Park and Community Center is under the jurisdiction of Pima County. The park and community center is open to the general public and as such is protected under Section 4(f).
3. Central Arizona Project (CAP) National Recreational Trail
 - Adjacent to the CAP Canal throughout the study area.

The CAP is managed by the Central Arizona Water Conservation District (CAWCD), a quasi-governmental entity. The Pima County Natural Resources, Parks and Recreation Department has executed a recreational development agreement with the federal Bureau of Reclamation, the developer of the canal. In addition, the County completed a CAP Trail Master Plan in 2009. Construction of the trail through the project area is expected to be complete in 2014. Because of the development agreement between Pima County and the Bureau of Reclamation and the fact that the trail is open to the general public for recreational purposes, the CAP National Recreational Trail is afforded protection under Section 4(f).

A recent review of the AZSITE database did not identify any cultural sites that would qualify for Section 4(f) protection.

The evaluation of sites identified in future cultural resource survey investigations for their potential as 4(f) resources must be considered should there be USDOT agency funding/involvement in the design or construction of the facility. In addition, the presence of publicly owned recreational lands and publicly owned wildlife and waterfowl refuges within the study area will require formal consultation with the managing agencies as to the disposition of these lands as Section 4(f) resources.

The FHWA has published a policy paper (FHWA Section 4(f) Policy Paper, 2005) that serves as a guide for the applicability of Section 4(f) and outlines an evaluation process and alternative analysis procedures. As this study progresses, early identification and evaluation of potential 4(f) resources and analysis of the facility's potential impact on them will be important to the effective and efficient planning of the study should FHWA involvement be anticipated.

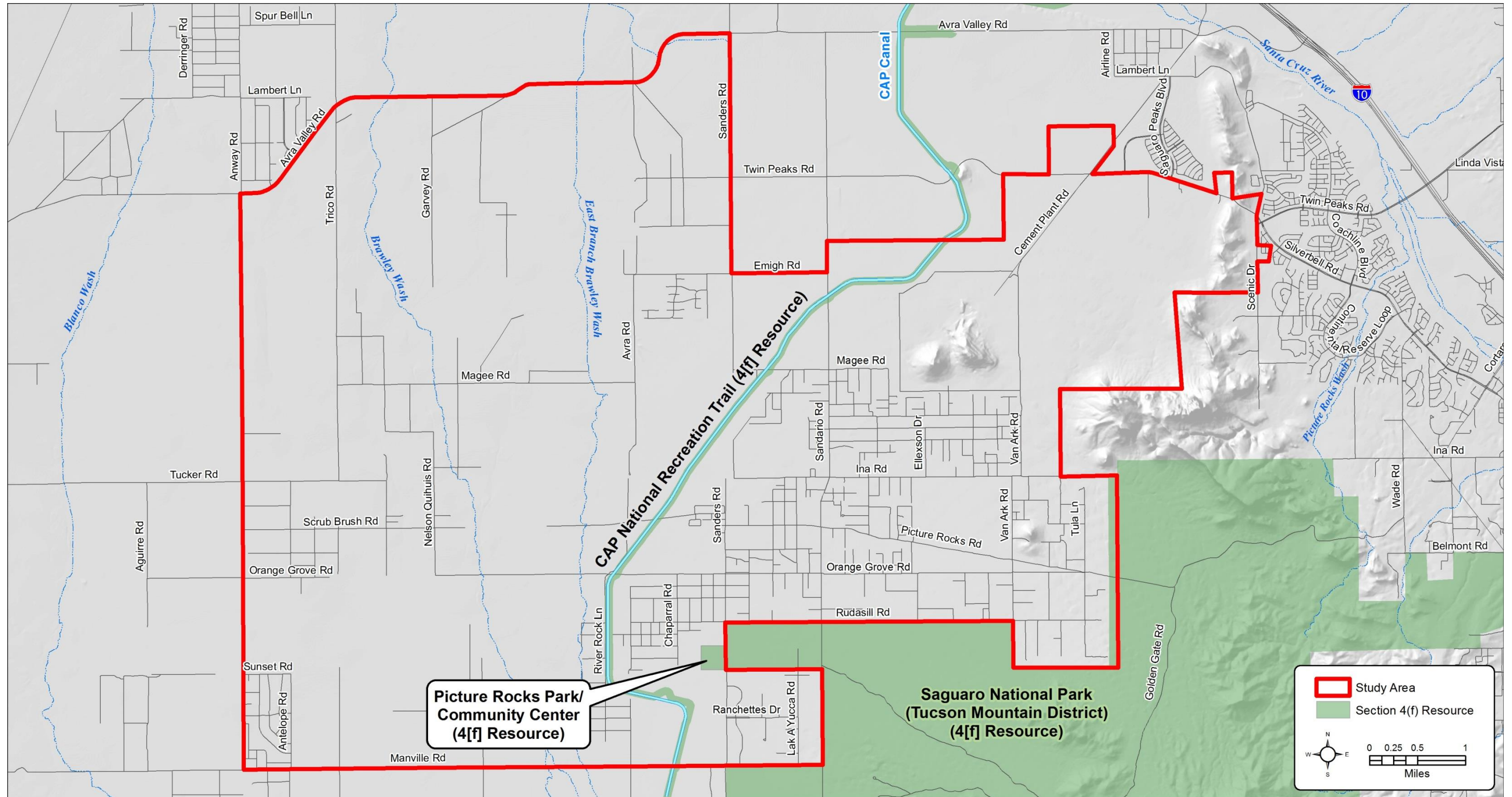


Figure 25 – Section 4(f) Resources

WATER QUALITY

SECTIONS 404 AND 401 OF THE CLEAN WATER ACT

The U.S. Army Corps of Engineers (Corps) regulates the discharge of dredge and/or fill material into waters of the U.S. (Waters) under Section 404 of the Clean Water Act (CWA) (33 U.S.C. §1251 et seq. (1972)).

Any activity that will discharge dredge or fill material into jurisdictional waters, including wetlands, will require a CWA Section 404 Permit [Nationwide Permit (NWP), Individual Permit (IP), etc.]. These activities include, but are not limited to, the installation of riprap, channel maintenance activities, bank protection, new bridges or extensions of bridges, corrugated metal pipes, and box culverts.

A preliminary desktop evaluation for the presence of potential jurisdictional Waters was conducted in the study area through a review of U.S. Geological Survey topographical maps. The following named washes are included in the study area: Brawley Wash, East Branch of Brawley Wash, West Branch of Brawley Wash, and Los Robles Wash. Numerous unnamed features are also located within the project area and could potentially be considered Waters.

An evaluation to determine boundaries of Waters should be conducted during the design phase of the project through a Preliminary Jurisdictional Determination (PJD) or an Approved Jurisdictional Determination (AJD) to aid in avoiding and minimizing impacts to the regulated areas. A PJD is a non-binding delineation that is typically pursued in the planning and design phases of a project. An AJD is a delineation that is binding for five years that requires more data and processing time through the Corps. After the delineation is complete, the project should be designed to avoid and minimize impacts to Waters. If there are unavoidable impacts to Waters, a Section 404 permit will then be required along with compensatory mitigation activities for the proposed impacts to Waters. Water quality certifications under Section 401 of the Clean Water Act would be required from the Environmental Protection Agency (EPA).

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM/STORM WATER POLLUTION PREVENTION PLAN

The National Pollutant Discharge Elimination System (NPDES) is a national permit program under Section 402 of the CWA that regulates discharges of pollutants from point sources into Waters, including sediment and pollutants that can be generated during ground-disturbing activities and transported by stormwater runoff. The U.S. EPA has delegated to the Arizona Department of Environmental Protection (ADEQ) the authority to operate the permit program within Arizona. The state's version of the NPDES permit program is referred to as the Arizona Pollutant Discharge Elimination System (AZPDES). The AZPDES permit program requires a general permit for construction activities that disturb one or more acres of land as well as for construction activities that disturb Waters (Section 401 Certification). A Stormwater Pollution Prevention Plan (SWPPP) must be prepared as a part of the permit. If impacts are greater than one acre of land and/or Waters, a Section 401 Certification permit and SWPPP will be required during future project development.

Appendix B – Picture Rocks Transportation Survey Responses

A summary of the responses to each question is provided as follows. Questions on whether to take the survey in English or Spanish (Question 1), contact information (Questions 22), was not tabulated.

2. How many people currently live in your household?

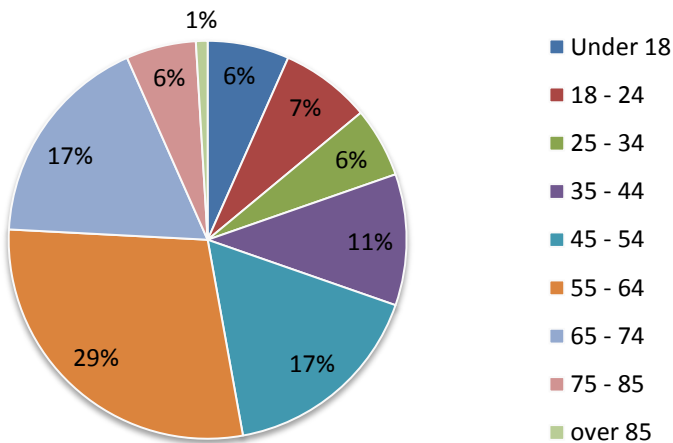
Answer Options	Number	Percent
1	80	19
2	154	36
3	59	14
4	59	14
5	34	8
More than 5 (please specify #)	36	9
<i>answered question</i>	422	100

The responses to Question 2 indicate that the majority of survey respondents live in two person households.

3. Please indicate your age range:

Answer Options	Number	Percent
Under 18	28	6
18 - 24	31	7
25 - 34	24	6
35 - 44	45	11
45 - 54	71	17
55 - 64	121	29
65 - 74	74	17
75 - 85	24	6
over 85	4	1
<i>answered question</i>	422	100

Age of Survey Respondents



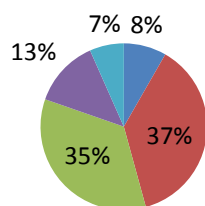
The predominant age of survey respondents is 55-64. Survey respondents that were 55 years of age or older comprised 53 percent of survey respondents.

4. How many working vehicles are available in your household?

Answer Options	Number	Percent
None	35	8
1	158	37
2	146	35
3	55	13
4 or more	28	7
<i>answered question</i>	422	100

How many working vehicles are in your household?

■ None ■ 1 ■ 2 ■ 3 ■ 4 or more



A review of responses regarding how many working vehicles available indicated that 7% of households had no working vehicle. These data, coupled with data on how many persons are in these households, indicate transit needs. Another indicator is the household size as compared to the number of vehicles available. For example, a two-person household may have potential transit needs when there is only one vehicle available. A review of census data will provide more information on these types of needs.

5. Do you have a valid driver’s license?

Answer Options	Number	Percent
Yes	362	86
No	57	14
<i>answered question</i>	419	100

The majority of survey respondents (86%) have a valid driver’s license.

6. How do you currently get to the places you need to go? (check all that apply)

Answer Options	Number	Percent
I drive myself	318	75
Take a taxi or shuttle	23	5
Catch a ride with friend or family member	148	35
Walk	57	14
Bike	34	8
Carpool	37	9
Other	23	5
I can't always get to where I need to go because... (please specify)	62	15
<i>answered question</i>	422	N/A

The responses to Question 6 are interesting because they indicate potential transportation needs. Fifteen percent of respondents indicated they can’t always get to where they need to go. An additional

thirty-five percent of respondents catch a ride with friends or family, which may indicate potential need for additional transportation options.

7. In general, how many times per week do you currently travel from home to locations outside the Picture Rocks community?

Answer Options	Number	Percent
Less than once a week	33	8
1 - 2 times per week	70	17
3 - 5 times per week	136	32
6 - 7 times per week	85	20
8 or more times per week	95	23
<i>answered question</i>	419	100

Survey responses indicated that the majority of respondents traveled outside of the Picture Rocks community three or more times per week. The largest response was “3-5 times per week.”

8. On average, how often do you currently depend on someone else (family, friend, neighbor, taxi or shuttle) for your transportation needs beyond the Picture Rocks community?

Answer Options	Number	Percent
Less than once a week	219	53
1 - 2 times per week	71	17
3 - 5 times per week	73	18
6 - 7 times per week	23	6
8 or more times per week	27	6
<i>answered question</i>	413	100

Approximately 47 percent of respondents indicated they depended on someone else for transportation outside of the Picture Rocks Community once a week or more.

9. How many times have you been unable to reach a destination in the past 30 days because of a lack of transportation?

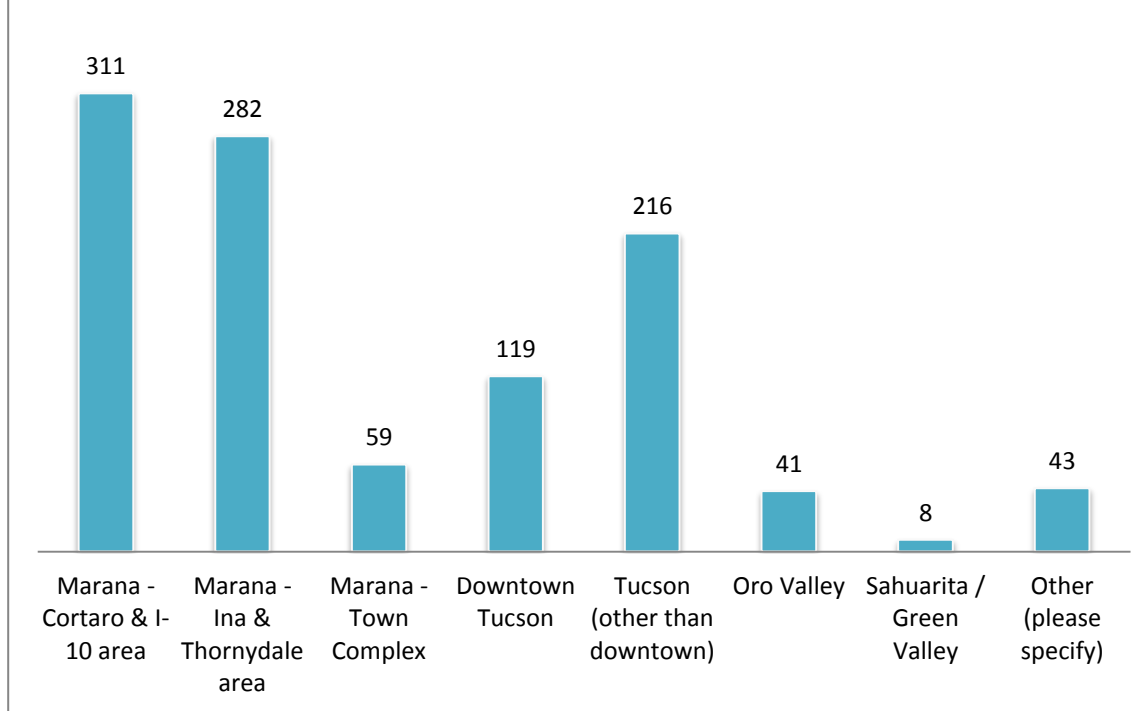
Answer Options	Number	Percent
None	220	52
1 - 3 times	118	28
4 - 6 times	46	11
7 or more times	36	9
<i>answered question</i>	420	100

A significant number of respondents (48%) reported that they were unable to reach a destination in the past 30 days because of a lack of transportation.

10. Please choose three geographic areas that you most often need to travel to:

Answer Options	Number
Marana - Cortaro & I-10 area	311
Marana - Ina & Thornydale area	282
Marana - Town Complex	59
Downtown Tucson	119
Tucson (other than downtown)	216
Oro Valley	41
Sahuarita / Green Valley	8
Other (please specify)	43
<i>answered question</i>	420

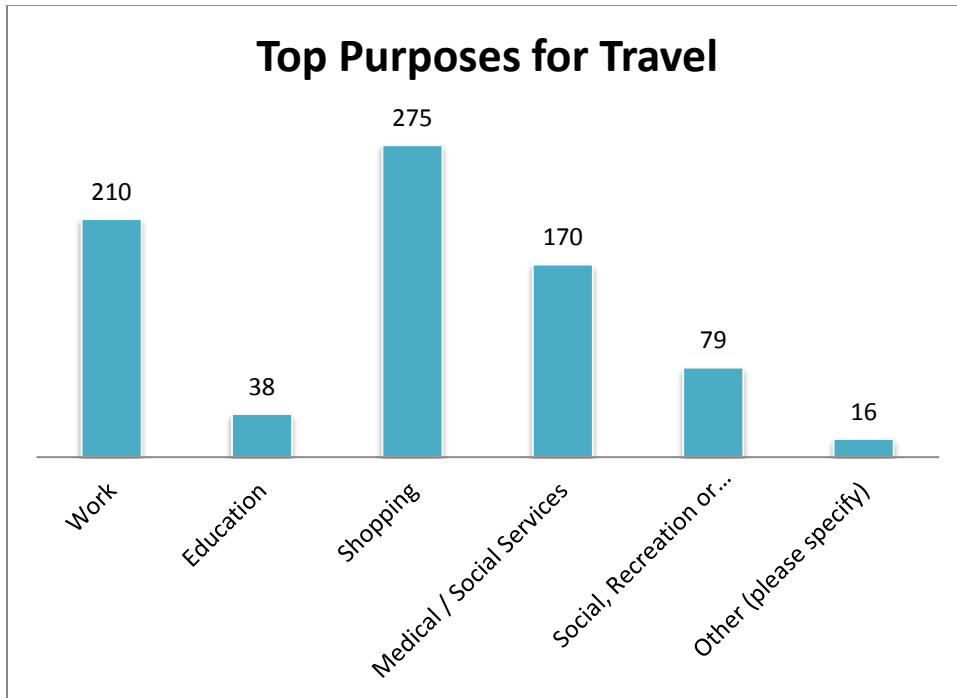
Geographic Travel Destinations



The survey responses indicated that top destinations were the Cortaro Road and I-10 area, followed by the Ina and Thornydale area. Downtown Tucson was another significant destination choice.

11. What is your top purpose for local travel? (Select no more than two)

Answer Options	Number
Work	210
Education	38
Shopping	275
Medical / Social Services	170
Social, Recreation or Entertainment	79
Other (please specify)	16
<i>answered question</i>	415



The top purposes for local travel were shopping, followed by work trips and medical or social service related trips.

12. What time of day (Monday through Friday) do you most frequently need to travel TO your most common destination?

Answer Options	Number	Percent
6 AM to 9 AM	186	45
9 AM to 12 PM	159	39
12 PM to 3 PM	36	9
3 PM to 6 PM	20	5
After 6 PM	8	2
<i>answered question</i>	409	100

The most frequent response to question 12 regarding the time of day the survey respondent needs to travel to their most common destination on a weekday was between the hours of 6 AM to 9 AM. A significant number of respondents, 39%, indicated the hours between 9 AM to 12 PM.

13. What time of day (Monday through Friday) do you most frequently need to travel FROM your most common destination back to the Picture Rocks area?

Answer Options	Number	Percent
6 AM to 9 AM	16	4
9 AM to 12 PM	56	14
12 PM to 3 PM	82	20
3 PM to 6 PM	186	45
After 6 PM	69	17
<i>answered question</i>	409	100

The most frequent response to the Question 13 was the hours of 3 PM to 6 PM.

14. Would you be willing to participate in a carpool with neighbors to connect to existing transit services such as Sun Shuttle or a Sun Express Bus?

Answer Options	Number	Percent
Yes	208	51
No	198	49
<i>answered question</i>	406	100

There was a large level of support for willingness to participate in a carpool with neighbors to connect to existing transit services. Fifty one percent of respondents indicated they would be willing to participate in a carpool with neighbors to connect to an existing transit service.

15. If you answered "yes" to the previous question, would you be willing to drive your own vehicle for a carpool?

Answer Options	Number	Percent
Yes	100	35
No	190	65
<i>answered question</i>	290	100

Thirty-five percent of respondents to this question said they would be willing to drive their vehicle for a carpool. The majority of respondents to this question indicated they would not be willing to drive their own vehicle.

16. If a new service were to become available in Picture Rocks, what is the maximum distance you would be willing /able to walk, ride a bicycle or drive to access public transportation?

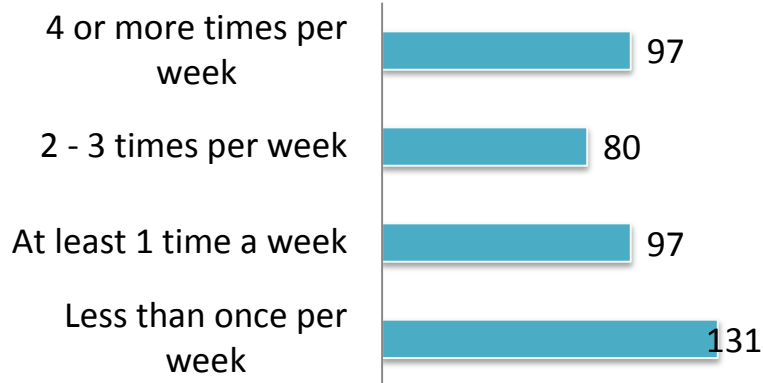
Answer Options	Number	Percent
Up to 1/4 mile	99	24
Up to 1/2 mile	79	19
Up to 1 mile	108	26
More than a mile	85	21
Unable to walk, drive or ride bike	29	7
<i>answered question</i>	400	100

The responses to the question of how far one would be willing to travel to access public transportation varied considerably. Only a small percentage of respondents indicated they would be unable to access public transportation by walking, driving, or riding a bicycle.

17. If a Park and Ride area for carpooling or vanpooling was made available in Picture Rocks, how often do you think you would use it?

Answer Options	Number	Percent
Less than once per week	131	32
At least 1 time a week	97	24
2 - 3 times per week	80	20
4 or more times per week	97	24
<i>answered question</i>	405	100

**If a Park and Ride area for
carpooling or vanpooling was
available, how often would
you use it?**



The responses to the question regarding how often one would use a park and ride area indicated that most respondents (68%) would use it once a week or more.

18. How much would you be willing to spend per ROUND TRIP on a new transportation option that would better meet your needs?

<i>Answered question</i>	361

19. Please estimate the CURRENT MONTHLY COST for your individual local transportation needs (including car payment, gas, insurance, maintenance and taxi or shuttle costs).

<i>Answered question</i>	352

20. OPTIONAL: Please indicate your estimated total annual household income (before taxes):	
Answer Options	
Less than \$10,000	46
\$10,000 - \$15,000	50
\$15,000 - \$25,000	65
\$25,000 - \$35,000	51
\$35,000 - \$50,000	53
\$50,000 - \$75,000	40
More than \$75,000	26
<i>answered question</i>	331

21. Please provide any comments or ideas you have about transportation in the community of Picture Rocks.

212 persons provided comments or ideas about transportation in the community of Picture Rocks.