

# Rio Rico Walking and Biking Study

## Final Report

Task Assignment: MPD 80-12

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Photo Courtesy of Matt Hays



Prepared for:



Prepared by:





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## EXECUTIVE SUMMARY

Santa Cruz County was awarded funding from the Arizona Department of Transportation (ADOT) Planning Assistance for Rural Areas (PARA) program to prepare the Rio Rico Walking and Biking Study. The purpose of the PARA program is to provide assistance to counties, cities, towns and tribal communities in rural Arizona to address a wide variety of multimodal transportation planning issues, including roadway, non-motorized and transit modes of travel.

The Project Study Area encompasses the greater Rio Rico area which is approximately 62 square miles. Rio Rico is an unincorporated area of Santa Cruz County located approximately 10 miles north of the City of Nogales and the US/Mexico International border and 55 miles south of Tucson. Rio Rico, meaning “Rich River” in Spanish, began to develop in the late 1960’s by a master planned community developer from Florida. Miles of public roads were platted and constructed over the years, many not in conformance with typical or modern roadway design standards and specifications. In general, existing roadways in Rio Rico are noticeably devoid of facilities for bicycles and pedestrians.

### Study Purpose & Objectives

The purpose of the Rio Rico Walking and Biking Study is to enable Santa Cruz County to establish a program for the construction of bike lanes and sidewalks that are desired to provide safe and convenient pedestrian and bicycle access and connectivity to select Santa Cruz Valley Unified School District No. 35 facilities as well as use for the general public for transportation and recreational purposes.

Study objectives identified by project stakeholders include the following:

- Develop a program for the prioritization and construction of bike lanes and sidewalks in Rio Rico.
- Map a network of bicycle and pedestrian routes that safely connect the Rio Rico activity centers and adjacent land uses.
- Identify pedestrian and bicycle route deficiencies in terms of safety and system connectivity.
- Identify improvement projects that will address the deficiencies.
- Develop planning-level estimates for the improvements.



- Identify potential funding sources.
- Prioritize the improvements into near-term (5 year), mid-term (10 year), and long-term (20 year) implementation projects.
- Develop a Final Report that includes the plan of improvements and final recommendations.

## Community Outreach and Engagement

A Technical Advisory Committee (TAC) was established to provide local input and direction in guiding the consultant’s efforts throughout the Rio Rico Walking and Biking Study process. The TAC included representatives from the following agencies/organizations:

- Santa Cruz County
- Santa Cruz Valley Unified 35 School District
- Arizona Department of Transportation (ADOT)
- Southeastern Arizona Government Organization (SEAGO)
- Residents of Rio Rico
- Rio Rico Properties, Inc.
- University of Arizona – Santa Cruz County Cooperative Extension

In addition to the TAC guidance, the process included walking and biking surveys, a youth workshop with Rio Rico High School students and two community open house meetings conducted at key junctures in the planning process.

The study process was essentially conducted in three broad steps; 1) inventory of existing conditions and deficiencies, 2) exploration of future conditions and needs and, 3) the preparation of a plan of improvements. The Plan of Improvements is the focal point of the document as it identifies a series of pedestrian and bicycle-related improvement projects suggested for implementation in short term (5 year), medium term (10 year) and long term (20 year) time horizons.

## Existing Conditions and Deficiencies

An extensive body of existing data was collected by the consultant team in order to gain a comprehensive understanding and inventory of the existing conditions, opportunities and constraints of the Rio Rico study area. Existing studies, US Census data, extensive field investigations and anecdotal data pertinent to Rio Rico were reviewed and summarized. Existing topography, socioeconomic data, roadway inventory, crash data, traffic counts and



other related information was identified and documented. Existing facilities and deficiencies were categorized and described into the following categories: Safe Routes to Schools “Hot Spots”, difficult intersections, difficult pedestrian crossings, priority underserved roadways, narrow bridge crossings and key system disconnects. The various deficiency types are described and mapped.

## Future Conditions and Needs

Future population growth, land use types, socio-economics and planned transportation-related improvements are described in detail. The information introduces a variety of pedestrian and bicycle facility types, descriptions and design criteria associated with each facility type. Through input obtained from the survey, youth workshop, TAC and community open house, the focus of future conditions analysis focused on several significant study area corridors and key activity centers in Rio Rico. These key corridors and activity centers are; 1) Rio Rico High School/San Cayetano Elementary/Mountain View Elementary school cluster, 2) West Frontage Road (I-19), 3) Garrett’s (Rio Rico Plaza), 4) Pendleton Drive, 5) Rio Rico Drive from I-19 to Pendleton Drive, 6) Avenida Coatimundi, 7) Coatimundi Middle School, 8) Ruby Road from I-19 to the Santa Cruz River, and 9) Calabasas Middle School/Pena Blanca Elementary school area. For each of the nine (9) corridors and activity centers, extensive field investigations and analysis was conducted to identify various types of proposed projects to enhance the safety and non-motorized mobility in these areas.



### Plan of Improvements

Together with additional input received from the TAC and community workshops, a series of alternative projects were identified by the consultant team. The alternative projects were then screened using a series of eight (8) evaluation criteria designed to objectively and effectively evaluate various types of bicycle and pedestrian improvement projects for future implementation.

In total, the Plan for Improvements identifies 69 total short term, medium term and long term potential pedestrian and bicycle related improvement projects in Rio Rico. The breakdown of potential projects by facility type is as follows:

Bike Route/Shared Roadway	19
Intersection Improvements	3
Multipurpose Trails	5
Paved Shoulders	12
Shared Use Path	14
Sidewalks	4
Pedestrian Crossings	8
Narrow Bridge Crossings	4
<b>TOTAL</b>	<b>69</b>

A large matrix was utilized to describe each of the projects identified in the Plan of Improvements, each having its own description with notes citing opportunities and challenges specifically associated with each improvement project. The Plan of Improvements also includes a series of planning-level cost estimates for project stakeholders to better understand the magnitude of costs associated with each improvement type. Project level cost estimates are provided for a sampling of each facility type. An implementation plan accompanies the Plan of Improvements, offering the reader a broad overview of potential funding sources, cost sharing strategies and Safe Routes to School policies to enhance education and awareness of current programs.



## I. INTRODUCTION

Santa Cruz County was awarded funding from the Arizona Department of Transportation (ADOT) Planning Assistance for Rural Areas (PARA) program to prepare the Rio Rico Walking and Biking Study. The purpose of the PARA program is to provide assistance to counties, cities, towns and tribal communities in rural Arizona to address a wide variety of multimodal transportation planning issues, including roadway, non-motorized and transit modes of travel.

The University of Wisconsin and the Robert Wood Johnson Foundation recently ranked Santa Cruz County as the healthiest county in Arizona.

While this distinction certainly is worthy of some “bragging rights” for Santa Cruz County, one of the factors/criteria used in this ranking was “healthy recreation facilities” – in this category Santa Cruz County ranked dead last in Arizona. The study did find that on average, Santa Cruz County residents had increased physical activity and reduced obesity rates compared to the state and national averages. This bittersweet paradox is testimony to the need that local residents and visitors alike recognize in Rio Rico – additional sidewalks, trails and bicycle lanes are needed to enhance non-motorized mobility in the Rio Rico area.

### 1.1 Study Purpose and Intent

The purpose of the Rio Rico Walking and Biking Study is to enable Santa Cruz County to establish a program for the construction of bike lanes and sidewalks that are desired to provide safe and convenient pedestrian and bicycle access and connectivity to select Santa Cruz Valley Unified School District No. 35 facilities as well as use by the general public for transportation and recreational purposes. The School District and County have completed a handful of trail projects over the years, but providing additional sidewalk, bike lane and/or trail facilities to safely and adequately connect schools to other Rio Rico activity centers and

Figure 1: Regional Context Map





neighborhoods is the primary purpose of the Rio Rico Walking and Biking Study. Schools in particular are not well-served by bicycle and pedestrian access and the School District and County would like to enhance opportunities for bicycle and pedestrian modes of travel to engage residents in healthy lifestyle choices without the fear of bicycle and pedestrian conflicts with vehicles.

## 1.2 Study Objectives

Study objectives identified by the Project Team and supported by the TAC for the Rio Rico Walking and Biking Study are identified below.

- Develop a program for the prioritization and construction of bike lanes and sidewalks in Rio Rico.
- Map a network of bicycle and pedestrian routes that safely connect the Rio Rico activity centers and adjacent land uses.
- Identify pedestrian and bicycle route deficiencies in terms of safety and system connectivity.
- Identify improvement projects that will address the deficiencies.
- Develop planning-level estimates for the improvements.
- Identify potential funding sources.
- Prioritize the improvements into near-term (5 year), mid-term (10 year), and long-term (20 year) implementation projects.
- Develop a Final Report that includes the plan of improvements and final recommendations.

## II. SAFE ROUTES TO SCHOOLS PROGRAM

While the Rio Rico Walking and Biking Study evaluates existing conditions and recommends improvements across the Rio Rico community, many of the areas in which improvements will occur are directly adjacent to a school or will provide improved safety and convenience for students traveling to/from school on foot or by bicycle. Safe Routes to School funding and assistance may ultimately play a large role in implementing the recommended improvements. Therefore, the purpose and objectives of the federal Safe Routes to School program, the state Safe Routes to School program through ADOT, and local existing efforts will be considered in developing the Rio Rico Plan.



## 2.1 Federal Safe Routes to School Program

### *Safe Routes to School Program Under SAFETEA-LU*

The federal Safe Routes to School (SRTS) program is a Federal-Aid program of the U.S. Department of Transportation's Federal Highway Administration (FHWA). The program was initially created as part of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) in 2005. The program provides funds to states to substantially improve the ability of elementary and middle school students to walk and bicycle to school safely. The purposes of the SRTS program are:

1. to enable and encourage children, including those with disabilities, to walk and bicycle to school;
2. to make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age; and
3. to facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity (approximately 2 miles) of primary and middle schools (Grades K-8).

Each state administers its own program and develops its own procedures to solicit and select projects for funding. The program establishes two distinct types of funding opportunities: infrastructure projects (engineering improvements) and non-infrastructure related activities (such as education, enforcement and encouragement programs). While each state tailors its program to address state-wide needs, there are a number of desired outcomes for any SRTS program, including:

- Increased bicycle, pedestrian, and traffic safety;
- More children walking and bicycling to and from schools;
- Decreased traffic congestion;
- Improved childhood health;
- Reduced childhood obesity;
- Encouragement of healthy and active lifestyles;
- Improved air quality;
- Improved community safety;
- Reduced fuel consumption;
- Increased community security;
- Enhanced community accessibility;
- Increased community involvement;
- Improvements to the physical environment that increase the ability to walk and bicycle to and from schools;





- Improved partnerships among schools, local municipalities, parents, and other community groups, including non-profit organizations; and,
- Increased interest in bicycle and pedestrian accommodations throughout a community.

In order to achieve these desired outcomes, FHWA recommends that SRTS efforts incorporate five components, often referred to as the “5 E’s”. The 5 E’s are:

1. Engineering – Creating operational and physical improvements to the infrastructure surrounding schools that reduce speeds and potential conflicts with motor vehicle traffic, and establish safer and fully accessible crossings, walkways, trails and bikeways.
2. Education – Teaching children about the broad range of transportation choices, instructing them in important lifelong bicycling and walking safety skills, and launching driver safety campaigns in the vicinity of schools.
3. Enforcement – Partnering with local law enforcement to ensure traffic laws are obeyed in the vicinity of schools (this includes enforcement of speeds, yielding to pedestrians in crossings , and proper walking and bicycling behaviors), and initiating community enforcement such as crossing guard programs.
4. Encouragement – Using events and activities to promote walking and bicycling.
5. Evaluation – Monitoring and documenting outcomes and trends through the collection of data, including the collection of data before and after the intervention(s).

The federal Safe Routes to School Program that began under SAFETEA-LU apportioned nearly \$1.15 billion to states as of September 30, 2012. These dedicated funds have benefited more than 13,000 schools. Funds apportioned for the SRTS Program prior to the passage of the latest transportation bill, Moving Ahead for Progress in the 21<sup>st</sup> Century (MAP-21), are available until expended. The State of Arizona has less than \$5M in previous SRTS Program funds unexpended. ADOT has not announced when these remaining funds will be allocated to projects.

## **2.2 Transportation Alternatives and SRTS under MAP-21**

In July 2012, Congress passed a new transportation bill: Moving Ahead for Progress in the 21st Century (MAP-21). MAP-21 eliminated dedicated SRTS funds as of October 2012. SRTS activities are now eligible to compete for federal funding alongside other programs, including the Transportation Enhancements program and Recreational Trails program, as part of a new program called Transportation Alternatives.



Approximately \$800 million year in Transportation Alternatives funds flows to the state DOTs and large metropolitan planning organizations (MPOs) throughout the country. Arizona's Transportation Alternatives apportionment is \$16.8M for 2012 and \$17M for 2013. A portion is allocated to the Recreational Trails Program. Half of the remaining funds are allocated by population to metropolitan planning organizations and rural areas. Within each of those areas, funding will be allocated to individual projects and programs through grant competitions. Arizona has chosen to transfer the remaining 50 percent of the Transportation Alternatives funds to other programs, as allowed under MAP-21. As a result, the importance of this study in identifying and documenting deficiencies and improvement projects and their costs make for stronger grant applications in the face of reduced funding levels and increased competition.

The Transportation Alternatives projects funded under MAP-21 require applicants to make up to 20 percent of the project costs. Each state may provide some funding to offset the applicant's required match. In Arizona, the applicant must provide a 5.7 percent match (cash only) and the state will provide the remaining 14.3 percent.

### 2.3 State Safe Routes to School Program

ADOT administers the state Safe Routes to School program, providing funding for local projects and programs and assisting local jurisdictions through training and other technical assistance. ADOT has a Safe Routes to School Coordinator who serves as a central point of contact for the state.

The ADOT SRTS program continues the three main purposes defined in the federal SRTS program. ADOT is currently preparing guidance on the new Transportation Alternatives program that SRTS funds will be allocated under. The following information is reflective of the SRTS program under SAFETEA-LU funds. There may be changes to the types of projects and criteria used for SRTS funding as ADOT implements the new requirements of MAP-21.

The ADOT SRTS program continues the three main purposes defined in the federal SRTS program. There are two main criteria for eligibility for ADOT SRTS funding:

1. Program funding is only for elementary and middle schools.
2. Programs and projects must be within a two-mile radius of the school.

ADOT provides funding for projects/programs in four categories:

1. Infrastructure Projects
2. Non-infrastructure Projects



3. Materials and Regional Support Program
4. Planning Assistance

### 2.3.A Infrastructure Projects

Infrastructure projects include the planning, design, and construction of infrastructure-related projects that will substantially improve the ability of students to walk and bicycle to school. Infrastructure projects may include, but are not limited to:

- Sidewalk improvements - new sidewalks, sidewalk widening, sidewalk gap closures, sidewalk repairs, curbs, gutters, and curb ramps.
- Traffic calming and speed reduction improvements - roundabouts, bulb-outs, speed humps, raised crossings, raised intersections, median refuges, narrowed traffic lanes, lane reductions, full- or half-street closures, automated speed enforcement, and variable speed limits.
- Pedestrian and bicycle crossing improvements - crossings, median refuges, raised crossings, raised intersections, traffic control devices (including new or upgraded traffic signals, pavement markings, traffic stripes, in-roadway crossing lights, flashing beacons, bicycle-sensitive signal actuation devices, pedestrian countdown signals, permanent vehicle speed feedback signs, and pedestrian activated signal upgrades), and sight distance improvements.
- On-street bicycle facilities - new or upgraded bicycle lanes, widened outside lanes or roadway shoulders, geometric improvements, turning lanes, channelization and roadway realignment, traffic signs, and pavement markings.
- Off-street bicycle and pedestrian facilities - exclusive multi-use bicycle and pedestrian trails and pathways that are separated from a roadway.
- Secure bicycle parking facilities - bicycle parking racks, bicycle lockers, designated areas with safety lighting, and covered bicycle shelters. Traffic diversion improvements: separation of pedestrians and bicycles from vehicular traffic adjacent to school facilities, and traffic diversion away from school zones or designated routes to a school.
- Traffic diversion improvements in the vicinity of schools.

### 2.3.B Non-infrastructure Projects

Non-infrastructure projects are non-construction activities that focus on three areas of support and effort:



- Education – in-classroom, campus-wide or community wide efforts to educate students, parents and motorists about safe practices, the health effects of walking and biking, the impact to the environment, and the broad range of transportation choices.
- Enforcement - ensuring that traffic laws are obeyed (including enforcement of speeds, yielding to pedestrians in crossings and proper walking and bicycling behaviors, and initiating community enforcement activities).
- Encouragement - bike, pedestrian and school-related giveaways and other materials that encourage biking and walking to schools.

### *2.3.C Materials and Regional Support Program (MRSP)*

The MRSP serves state, regional, and local government agencies, as well as non-profit organizations by providing funding for purchasing educational and encouragement materials for use in regional, countywide, or school district wide SRTS programs, and providing funding for statewide, countywide, or school district wide workshops relating to SRTS. All activities must be statewide, countywide, school district wide or otherwise regional in scope.

### *2.3.D Planning Assistance Program*

The Planning Assistance Program is for small or resource-poor elementary and middle schools, school districts, non-profit organizations, and communities. The intent of the program is to provide the local jurisdiction or group technical resources needed to plan and implement their own SRTS projects. As a condition of the program, the applicant will apply for the next cycle of SRTS infrastructure and/or non-infrastructure funding.

### *2.3.E ADOT Traffic Safety for School Areas Guidelines*

In order to promote uniformity throughout Arizona and improve safety conditions around schools, ADOT has developed guidelines for traffic safety in school areas. This document provides guidance on key components that promote safety, from the siting of schools to the design of pedestrian overpasses. For additional information please see the following: <http://www.azdot.gov/docs/business/adot-traffic-safety-for-school-area-guidelines.pdf>

There are four sections within the guidelines that are most applicable to the conditions at and around the schools in Rio Rico:

- Section 5 Off-Site Safety
- Section 7 Arizona School Crossing Controls
- Section 8 Pedestrian Traffic Signals



➤ Section 9 Pedestrian Overpasses and Underpasses

These sections will be referenced when identifying potential improvements and developing design guidelines as part of the Rio Rico Walking and Biking Study.

## 2.4 Local Programs

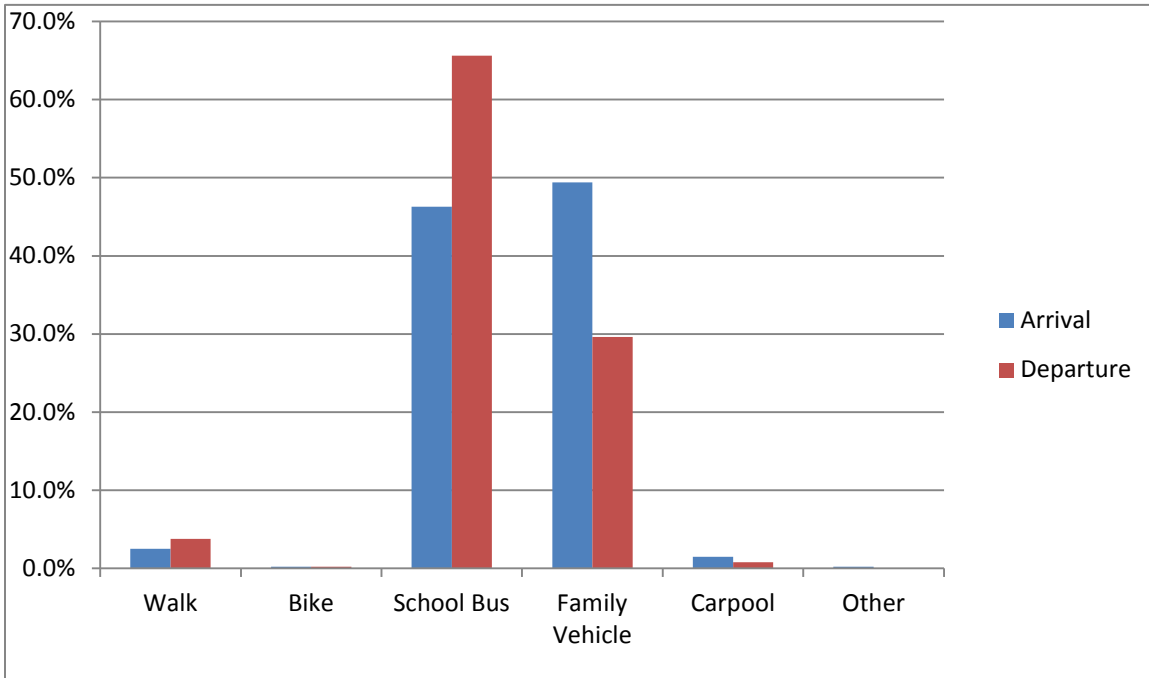
Local Safe Routes to School efforts provide for on-the-ground implementation of programs and projects. In Rio Rico, the University of Arizona Cooperative Extension provides SRTS program support at the three elementary schools and two middle schools. The program organizes regular Walk-to-School events, sponsors bike education and bike rodeos, and supports mileage clubs and "Fit & Fun! Challenges." The Cooperative Extension's work began in Rio Rico in 2009 and is funded through SRTS funding from ADOT.

In addition to the programmatic efforts at the Rio Rico schools, the Cooperative Extension has been collaborating with community members to evaluate and implement infrastructure improvements through donations and volunteer efforts. The Cooperative Extension has worked with the schools and the community to identify preliminary needs around the schools. These Existing Facilities and Needs Assessments for Mountain View Elementary School, Coatimundi Middle School, Pena Blanca Elementary School and Calabasas Middle School provide an inventory of on-the-ground facilities and identify potential improvements. The Rio Rico Walking and Biking Study builds upon these initial assessments and in many cases are included in the Plan for Improvements.

The five elementary and middle schools in Rio Rico conduct semi-annual student travel tallies to understand mode split for students traveling to/from school. The following charts represent the results from the most current tally, conducted in October 2012.

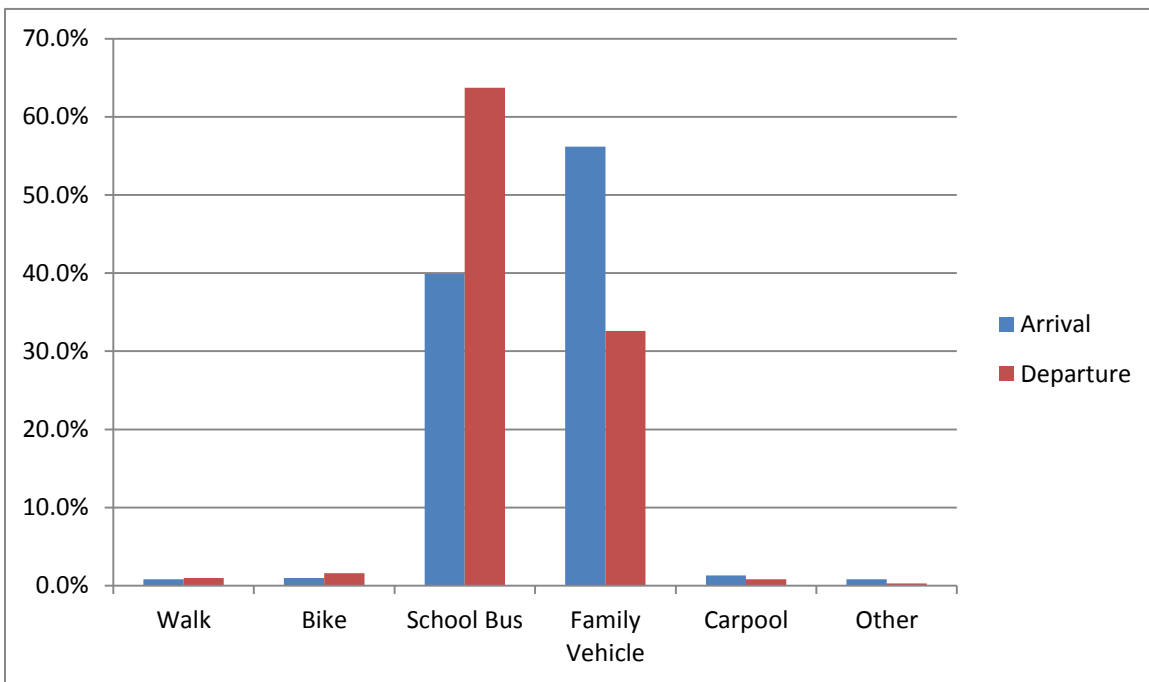


**Table 1: Mountain View Elementary School Mode Split**



Source: University of Arizona Cooperative Extension, SRTS

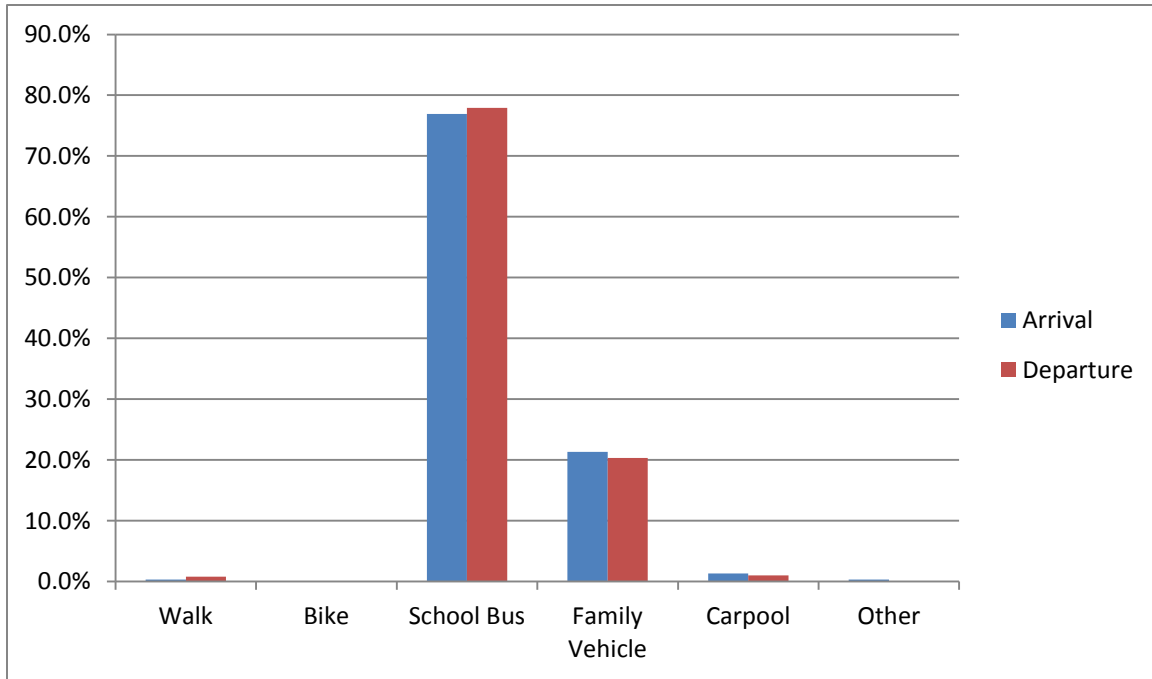
**Table 2: Pena Blanca Elementary School Mode Split**



Source: University of Arizona Cooperative Extension, SRTS

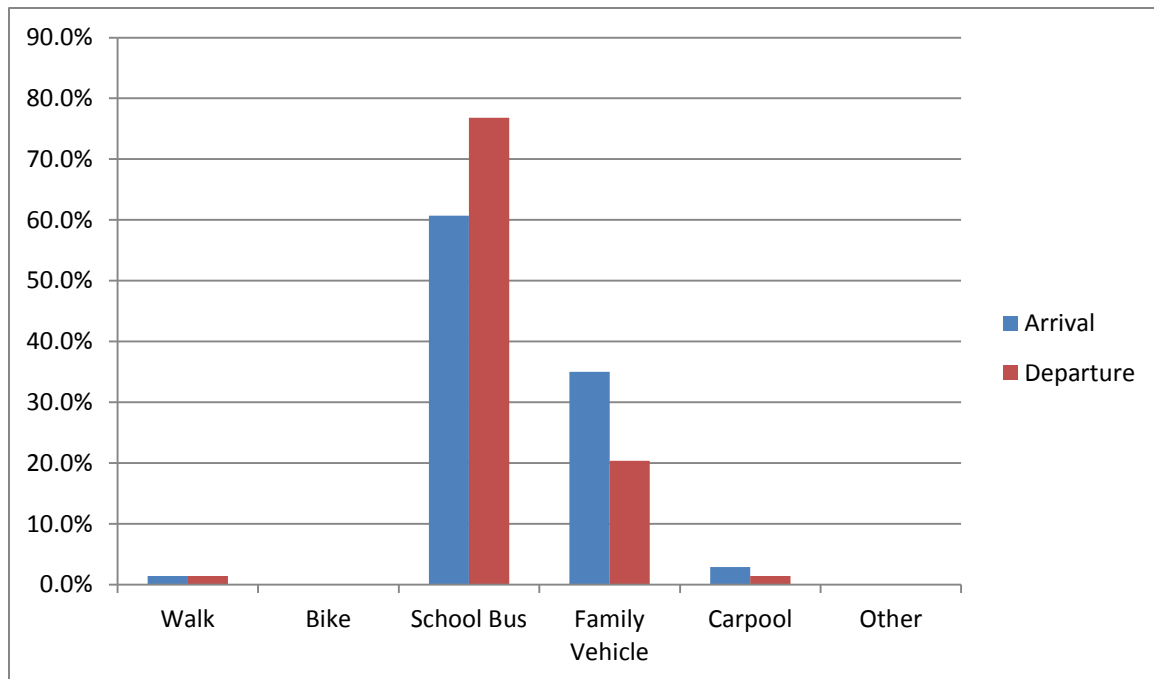


**Table 3: San Cayetano Elementary School Mode Split**



Source: University of Arizona Cooperative Extension, SRTS

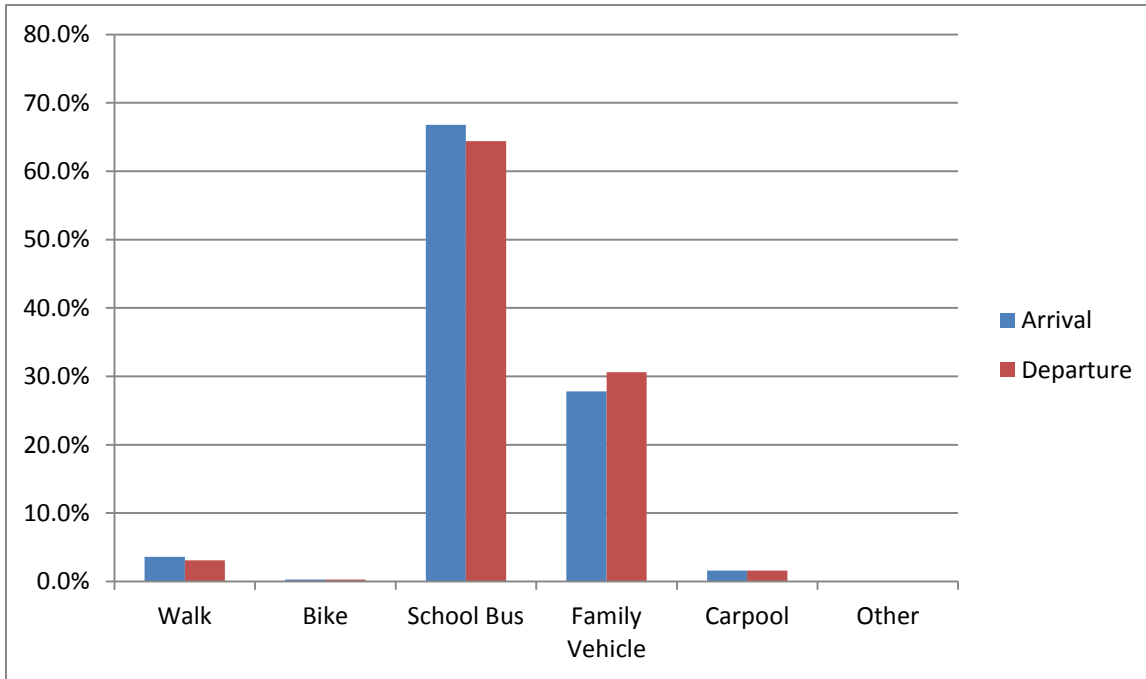
**Table 4: Calabasas Middle School Mode Split**



Source: University of Arizona Cooperative Extension, SRTS



**Table 5: Coatimundi Middle School Mode Split**



Source: University of Arizona Cooperative Extension, SRTS

What is evident in the review of Table’s 1-5 is that arrivals and departures from Rio Rico schools are disproportionately dependent upon the school bus and family vehicle modes of transportation. In each case, there are very few children currently walking or biking to school in Rio Rico.

### III. COMMUNITY & STAKEHOLDER ENGAGEMENT

Consistent with the values and mission embraced by the ADOT Communications division, the Rio Rico Walking and Biking Study provided for a broad dissemination of information to project stakeholders. The public involvement process embraced innovation, commitment, transparency and trustworthiness in working with all project stakeholders.

The success of the Rio Rico Walking and Biking Study was greatly enhanced by the inclusion of broad, meaningful, community-based forums to provide opportunities to inform residents and solicit their feedback and support at key junctures in the study process. Stakeholders with a vested interest in the Rio Rico Walking and Biking Study were afforded the opportunity to participate in the process, have their voice heard and documented for the





public record and learn how their input can affect decisions being made throughout the course of the study process.

### 3.1 Technical Advisory Committee

A Technical Advisory Committee (TAC) was established to guide and coordinate the consultant’s efforts throughout the Rio Rico Walking and Biking Study process. TAC input and oversight was instrumental to developing a plan that achieves plan objectives. The following agencies and individuals were included on the TAC for the Rio Rico Walking and Biking Study:

**Table 6: TAC Members**

AGENCY	CONTACT
AZ Dept. of Transportation	Justin Feek, Multimodal Planning Division, Project Manager
AZ Dept. of Transportation	Linda Ritter, Communication and Community Partnerships
AZ Dept. of Transportation	James Lemmon, Environmental Planning Group
AZ Dept. of Transportation	Danny Granillo, Tucson Engineering District
Santa Cruz County	Mary Dahl, Director of Community Development
Santa Cruz County	Jesus Valdez, Public Works Director
Santa Cruz Valley Unified 35 School District	Stephen Schadler, Director of Curriculum and Instruction Rich Rodney, Superintendent
Southeastern Arizona Governments Organization (SEAGO)	Randy Heiss
Residents of Rio Rico	Robin White
Rio Rico Properties, Inc.	Sheila Vasquez
UA-Santa Cruz Cooperative Extension	Sarah Prasek

Public and stakeholder engagement can essentially be identified in three project phases that are described below.



### 3.2 Project Initiation

A Project Initiation Meeting with the ADOT PM and Santa Cruz County staff members was held to gain a more clear understanding of study expectations and guide the final preparations of the work plan, schedule and budget.

On June 5, 2012, the first Technical Advisory Committee (TAC) Meeting was held at Santa Cruz county offices in Nogales. TAC members received a presentation on the project background and study objectives as well as discussed the role and expectations of the TAC. The focus of the meeting was to review the project work plan and schedule and to receive feedback from TAC members on existing conditions and/or studies they felt were an important influence on this study. TAC members also got to express study goals, objectives and concerns that they felt were important to evaluate over the course of the study.

On July 30, 2012, the Project Team conducted a Field Study of the Project Study Area. ADOT, Santa Cruz County, U of A Cooperative Extension SRTS and the project consultant spent the majority of one day traversing the Project Study Area by vehicle. The Project Team together explored and recorded many existing system inventory conditions and deficiencies, activity centers, key SRTS focus areas, safety trouble spots and crash locations.

### 3.3 Phase One Public Involvement: Existing and Future Conditions

The first phase of the public involvement process for the Rio Rico Walking and Biking Study focused on soliciting input on the existing and future conditions and deficiencies and exploring desired future improvements with residents, youth, community leaders and elected officials. A Youth Workshop and Community Open House were held.

#### 3.3.A Youth Workshop

The Rio Rico Walking and Biking Study Youth Workshop was held on October 4, 2012, at Rio Rico High School. Approximately 20 students representing student government (StuGo), advanced placement students and members of the Rio Rico High School cross country team attended this interactive session.

The purpose of the Youth Workshop was to conduct an interactive survey of walking and bicycling attitudes and behaviors of the high school students, as well as identify specific issues, concerns and/or future considerations for pedestrian and bicycle facilities in Rio Rico. To supplement the findings from the interactive survey, students were asked to fill out a form that identified what streets they tend to walk and bicycle the most frequently. This information allowed the Project Team to match the general trends to the specific areas/corridors that students are using in their daily routines.



Upon the completion of the interactive survey, the students participated in a mapping exercise. Youth survey findings are shown in Table 7. Students utilized a large aerial photograph of the study area to identify existing deficiencies at specific locations and identify areas where specific facility improvements should be made.



*Photos from Youth Workshop*

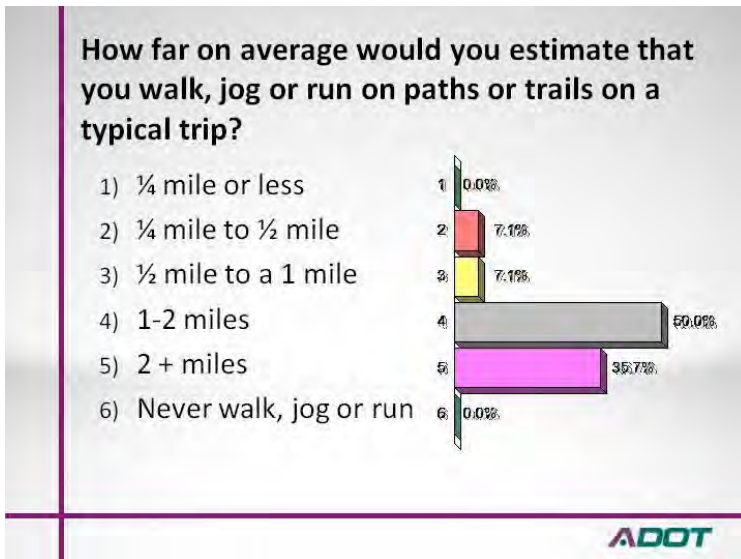


### 3.3.B Community Open House Meeting #1

On November 15, 2012, the first of two community open house meetings was held at Calabasas Middle School. The purpose of the open house was to present the existing conditions and deficiencies findings to the attendees, solicit their feedback on the information presented and to conduct an attitudes and behaviors survey in similar fashion to the Youth Workshop. Sixteen community members attended the community open house.



Attendees provided a tremendous amount of insight and guidance relating to existing conditions, thoughts on future improvements and were engaged in the interactive survey and mapping exercises. Please see Appendix C for a complete summary of Community Open House #1.





### 3.3.C Survey Findings

The following is a summary of the findings from the survey conducted to solicit feedback on Rio Rico resident pedestrian and bicycling attitudes and behaviors. This survey was conducted at the Youth Workshop and the Public Open House Meeting. It should be noted that the survey findings do not represent a statistically valid scientific survey, but is provided to draw a general understanding of youth and community user habits and patterns of existing pedestrian and bicycle facility deficiencies in Rio Rico.

**Table 7: Survey Findings**

Question	Youth Workshop	Community Open House #1
1) <b>Are you?</b> 1) Male 2) Female	1) 50% 2) 50%	1) 27% 2) 73%
2) <b>Are You at Least 16 Years or Older?</b> 1) Yes 2) No	1) 100% 2) 0%	N/A
3) <b>What Area of Rio Rico do You Live in?</b> 1) Northeast 2) Northwest 3) Southeast 4) Southwest	1) 17% 2) 33% 3) 33% 4) 17%	1) 58% 2) 0% 3) 17% 4) 25%
4) <b>How Long Have You Lived in Rio Rico?</b> 1) 0-2 years 2) 2-5 years 3) 5-10 years 4) 10-15 years 5) 15 + years	1) 20% 2) 40% 3) 20% 4) 20% 5) 0%	1) 8% 2) 25% 3) 25% 4) 25% 5) 17%
<b>How frequently do you walk, jog or run on local streets or paths?</b> 1) Once a month 2) Twice a month 3) 1-2 days a week 4) 3-4 days a week 5) 5-6 days a week 6) Everyday 7) Never	1) 0% 2) 0% 3) 17% 4) 17% 5) 67% 6) 0% 7) 0%	1) 7% 2) 7% 3) 14% 4) 37% 5) 28% 6) 7% 7) 0%
<b>How far on average would you estimate that you walk, jog or run on paths or trails on a typical trip?</b> 1) ¼ mile or less 2) ¼ mile to ½ mile 3) ½ mile to a 1 mile 4) 1-2 miles 5) 2 + miles	1) 17% 2) 17% 3) 0% 4) 17% 5) 33%	1) 0% 2) 7% 3) 7% 4) 50% 5) 36%



Question	Youth Workshop	Community Open House #1
6) Never walk, jog or run	6) 17%	6) 0%
<b>When walking, jogging or running, what types of facilities do you tend to use most frequently?</b>		
1) Shoulders of paved roads	1) 50%	1) 60%
2) Sidewalks	2) 17%	2) 7%
3) Shared use pathway	3) 33%	3) 13%
4) Bike path, walking path or trail	4) 0%	4) 0%
5) Unpaved roads	5) 0%	5) 20%
6) Grass or fields	6) 0%	6) 0%
<b>What is the typical purpose of your pedestrian (walk, jog, run) trip on a street, trail or path in Rio Rico?</b>		
1) School	1) 22%	1) 0%
2) Errands/shopping	2) 33%	2) 6%
3) Work	3) 0%	3) 0%
4) Visit a friend/relative	4) 0%	4) 0%
5) Recreation/Exercise	5) 44%	5) 87%
6) Walk dog	6) 0%	6) 7%
7) Running/training	7) 0%	7) 0%
<b>For those who walk to school (or who use existing pathways), what are the biggest needs to encourage walking to school?</b>		
1) Improve upon existing pedestrian facilities	1) 11%	1) 7%
2) Provide additional pedestrian facilities not in place today (sidewalks, bike lane, cross walk, lighting, etc)	2) 56%	2) 93%
3) Enforce traffic laws	3) 11%	3) 0%
4) Create a better route	4) 11%	4) 0%
5) Walking is not an option	5) 11%	5) 0%
<b>What are some typical reasons for not walking, jogging or running?</b>		
1) Other transportation is faster	1) 10%	1) 0%
2) Too busy/no opportunity	2) 0%	2) 13%
3) Lack of sidewalks or paths	3) 30%	3) 60%
4) Lack of safety/busy streets	4) 15%	4) 13%
5) Destination is too far	5) 45%	5) 7%
6) Other	6) 0%	6) 7%
<b>How frequently do you bicycle on local streets, paths or trails?</b>		
1) Once a month	1) 20%	1) 6%
2) Twice a month	2) 20%	2) 0%
3) 1-2 days a week	3) 20%	3) 27%
4) 3-4 days a week	4) 20%	4) 0%
5) 5-6 days a week	5) 20%	5) 7%
6) Everyday	6) 0%	6) 0%
7) Never	7) 0%	7) 60%
<b>How far on average would you estimate that you bicycle on paths or trails on a typical trip?</b>		
1) 1 mile or less	1) 0%	1) 0%
2) 1-2 miles	2) 100%	2) 7%
3) 2-5 miles	3) 0%	3) 0%



Question	Youth Workshop	Community Open House #1
4) 5-10 miles 5) 10 + miles 6) I do not bike	4) 0% 5) 0% 6) 0%	4) 29% 5) 14% 6) 50%
<b>When bicycling, what types of facilities do you tend to use most frequently?</b> 1) Shoulders of paved roads 2) Shared use pathway 3) Bike path, walking path or trail 4) Unpaved roads/trails 5) Other 6) I do not bike	1) 20% 2) 40% 3) 20% 4) 0% 5) 20% 6) 0%	1) 36% 2) 0% 3) 7% 4) 0% 5) 14% 6) 43%
<b>Which of the following best characterizes your bicycling tendencies?</b> 1) I only ride my bike in my neighborhood or on local streets with little traffic. 2) I will bicycle outside my neighborhood on off street pathways. 3) I am comfortable riding my bicycle in the roadway alongside vehicles if the shoulder is wide enough. 4) I am an experienced bicyclist and am willing to ride just about anywhere. 5) I do not bike.	1) 21% 2) 5% 3) 11% 4) 11% 5) 52%	1) 14% 2) 7% 3) 36% 4) 14% 5) 29%
<b>What is the typical purpose of your bicycle trip on a street, trail or path in Rio Rico?</b> 1) School 2) Errands/shopping 3) Work 4) Visit a friend/relative 5) Recreation/Exercise 6) Training 7) I do not bike	1) 25% 2) 25% 3) 25% 4) 25% 5) 0% 6) 0% 7) 0%	1) 7% 2) 0% 3) 0% 4) 0% 5) 62% 6) 0% 7) 31%
<b>For those who bicycle to school (or would bike to school), what are the biggest needs to improve / encourage walking to school?</b> 1) Increase road shoulder or bike lane width 2) Provide additional facilities not in place today (sidewalks, bike lanes, cross walks, lighting, etc) 3) Enforcing traffic laws 4) I will not bike to school	1) 17% 2) 50% 3) 17% 4) 17%	1) 0% 2) 100% 3) 0% 4) 0%
<b>What are some typical reasons for <u>not</u> bicycling?</b> 1) Other transportation is faster 2) Too busy/no opportunity 3) Lack of sidewalks or paths 4) Lack of safety/busy streets 5) Destination is too far 6) Not interested in bicycling	1) 25% 2) 50% 3) 25% 4) 0% 5) 0% 6) 0%	1) 0% 2) 14% 3) 36% 4) 36% 5) 0% 6) 14%
<b>Which of the following best represents the type of pedestrian and bicycle facility improvements you would like to see in Rio Rico?</b> 1) Construct more sidewalks near commercial or activity centers. 2) Construct more sidewalks in residential neighborhoods.	1) 0% 2) 20%	1) 7% 2) 0%



Question	Youth Workshop	Community Open House #1
3) Construct shared use paths along county roadways.	3) 20%	3) 50%
4) Stripe bicycle lanes on county roadways.	4) 20%	4) 7%
5) Increase bicycle lane or shoulder width of existing county roadways.	5) 0%	5) 21%
6) Develop a system of off-street pathways.	6) 20%	6) 14%
7) Sweep shoulder or bike lane.	7) 0%	7) 0%
8) Step up enforcement of motorist laws	8) 20%	8) 0%

### 3.4 Phase Two Public Involvement: Plan for Improvements

The purpose of the second Public Open House (May 22, 2013) was to provide interested residents and other project stakeholders with an overview and opportunity to comment on Working Paper # 2. Working Paper # 2 includes the suggested Plan of Improvements which identifies and prioritizes multi-modal transportation projects into short term (5 year), medium term (10 year) and long term (20 year) planning horizons. Other contents in Working Paper #2 presented at the second Public Open House included a series of supporting policies and design elements, evaluation criteria used for prioritizing projects, planning level cost estimates for select projects, and funding sources and cost sharing strategies that Santa Cruz County can seek out for the implementation of projects.

Meeting attendees were generally supportive of the Plan for Improvements and the implementation priorities that were identified. Attendees offered additional considerations to the project team that led to the re-prioritization of one project from a long term to medium term implementation timeline. Please see Appendix D for a complete summary of Community Open House #2.





## IV. STUDY AREA EXISTING CONDITIONS



### 4.1 Rio Rico Community Setting

The Project Study Area encompasses the greater Rio Rico area which is approximately 62 square miles. Rio Rico is an unincorporated area of Santa Cruz County located approximately 10 miles north of the City of Nogales and the US/Mexico International border and 55 miles south of Tucson. Please see *Figure 1: Regional Context Map*. Rio Rico is generally regarded as having four (4) quadrants: northeast, northwest, southeast and southwest. Please see *Figure 2: Project Study Area Map* for additional reference.

Rio Rico, meaning “Rich River” in Spanish, sits at the foot of the San Cayetano Mountains with a peak elevation of 6,500 feet. Rio Rico itself sits at an elevation of approximately 3,500 feet in the Santa Cruz valley. The Santa Cruz River which runs year round, provides a refuge for a wide variety of native wildlife found in Rio Rico that include hawks and various species of migratory birds, coyotes, fox, javelina and deer. The wetlands formed in and around the Santa Cruz River have over the years developed into a home for many migratory bird populations including various species of ducks and herons. As a result, bird watching has evolved into a large attraction for visitors to Rio Rico and is very complimentary to the eco-tourism component of the local economy that is influenced by the premier bird watching activities at nearby Patagonia Lake.



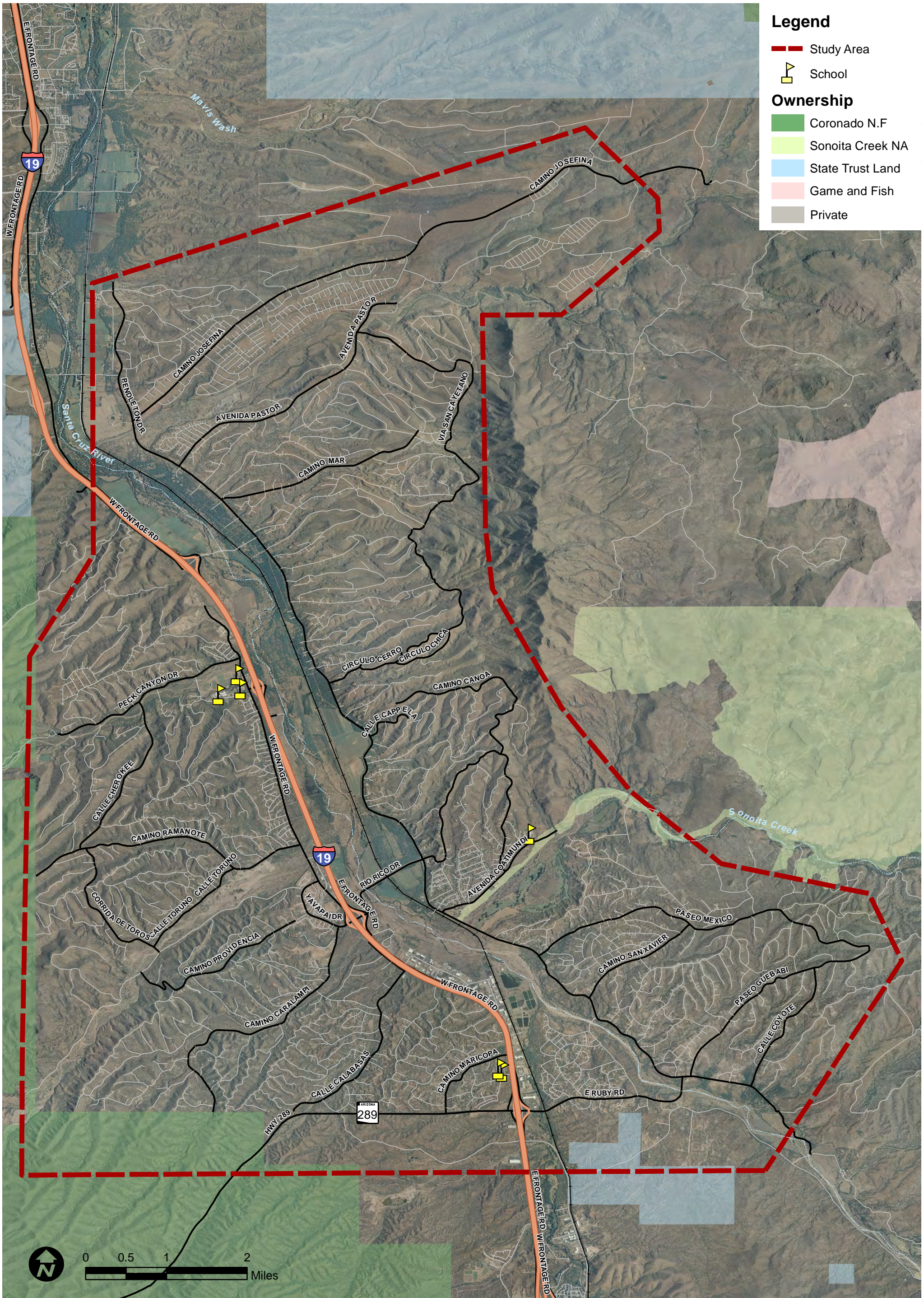


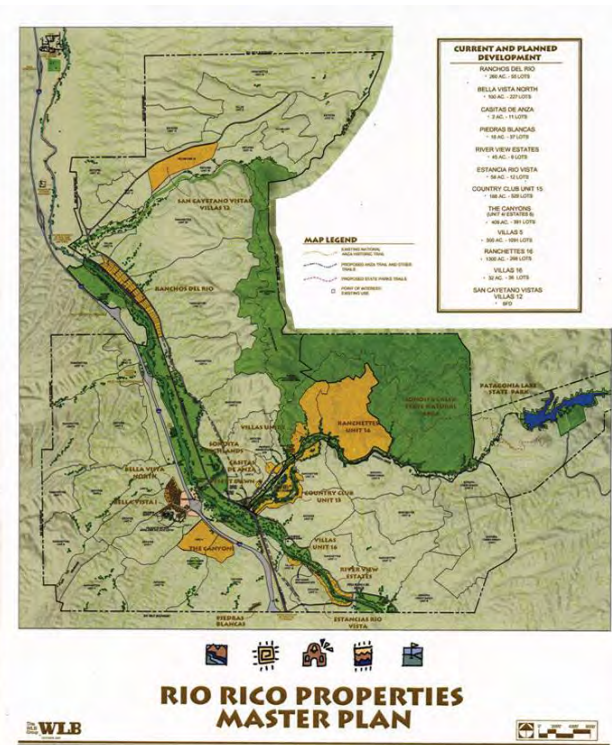
Figure 2: Study Area & Ownership Map



The area now known as Rio Rico was originally part of the Baca Float Land Grant, a tract of more than 100,000 acres granted to the heirs of the Luis Maria Baca family by the US Congress. The area was then divided into approximately 25,000 lots which was equal to one lot for every woman and child then living in the entire County of Santa Cruz.

Modern day Rio Rico began to develop in the late 1960's by a master planned community developer from Florida. Miles of public roads were platted and constructed over the years, many not in conformance with typical or modern roadway design standards and specifications. In general, existing

**Figure 3: Rio Rico Properties Master Plan**



roadways in Rio Rico are noticeably devoid of facilities for bicycles and pedestrians. Interstate 19 bifurcates Rio Rico and serves Rio Rico with 3 traffic interchanges.

## 4.2 Topography

The varying topography of the study area is a defining feature. The land adjacent to the Santa Cruz River is generally flat and then quickly rises into low foothills and then into the distant Atascosa Mountains to the west and San Cayetano Mountains to the east. Traveling from the western side of the study area to the river, there is approximately a 550-foot elevation change, and from the eastern side of the study area to the river there is an elevation change of roughly 700 feet. Within these elevation changes, moderate (5-15%) to steep (greater than 15%) slopes are found throughout the study area. Please see *Figure 4: Topography Map* for additional information regarding the distribution of slopes within the study area.

## 4.3 Cultural Resources

The National Register of Historic Places does not include any specific sites within the Rio Rico study area. However, for state and federally funded projects, prior to the planning and/or construction of future walking and biking corridors, the Arizona State Historic Preservation Office should be consulted to identify if certain sites within a proposed alignment may be eligible for listing on the National Historic Register.

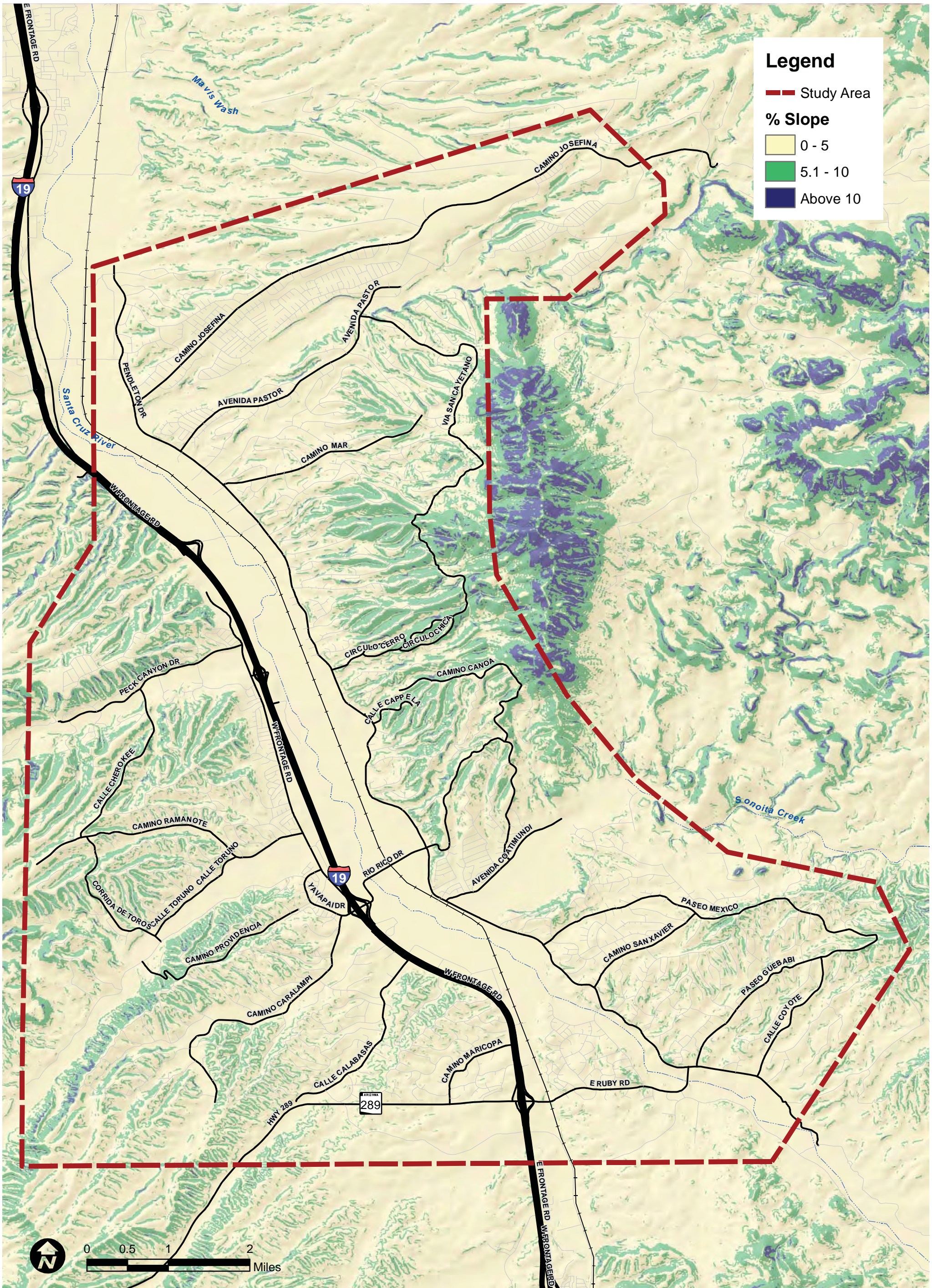


Figure 4: Topography Map



## 4.4 Land Use

The study area is generally divided into four districts: Rio Rico Northwest, Rio Rico Northeast, Rio Rico Southwest, and Rio Rico Southeast. Each of these districts includes a variety of existing land uses ranging from single family, multi-family, educational, and open space uses to agricultural, commercial, and industrial uses. The pedestrian and biking needs of the Rio Rico community are directly tied to the composition of these existing land uses. It is therefore important to understand the land uses within each district because the type, size, and location have a direct impact on the mobility demands of the overall study area.

In support of advancing a viable walking and biking system within Rio Rico, not only must there be a detailed analysis of the existing land uses within the study area, but a clear understanding of how the community is envisioned to grow in the future. Therefore, in addition to reviewing existing development patterns, a review of the Santa Cruz County Comprehensive Land Use Plan and Zoning Map was also conducted within each of the following districts. Please see *Figure 5: Comprehensive Plan Land Uses* and *Figure 6: Zoning Map* for further reference.

### 4.4.A Rio Rico Northwest

Housing is the dominant land use in this district. Due to the generally flat topography, a significant number of single family homes are concentrated parallel to I-19 on the west side of the Frontage Road. West of West Frontage Road, the density of single family homes decreases in response to the varying topography. In fact, one of the defining characteristics of the overall study area is the residential development patterns that follow the numerous ridge lines located throughout the Rio Rico area. While much of the roadway infrastructure is in place and therefore establishes the low density character of the area, there are also a significant number of vacant lots. Linking these isolated ridge line residential corridors to the greater Rio Rico area will be an important consideration during the next phase of this project.

Situated south of Peck Canyon and west of I-19 is a large grouping of schools consisting of Rio Rico High School, Mountain View Elementary, and San Cayetano Elementary. Rio Rico High School serves grades 9 – 12 and has a total enrollment of approximately 1,100 students.

Mountain View Elementary serves grades K – 5 and has a total enrollment of approximately 520 students. San Cayetano Elementary serves grades K – 5 and has a total enrollment of approximately 560 students. The presence of such a large concentration of children makes this specific grouping of schools a key land use and destination focus area within Rio Rico.



The Santa Cruz County Comprehensive Land Use Plan envisions that lands within the Northwest district will continue to develop for low density residential purposes, with more intense mixed-use development occurring along the I-19 frontage road. This future development pattern is supported by the Santa Cruz County Zoning Map which designates the majority of the Northwest district with a Residential Zoning – 18,000 sf/du (R2) zoning designation, complimented by a mixture of Multi Family (MF) and General Business (B2) zoning designations along the West Frontage Road and I-19.

#### 4.4.B Rio Rico Northeast

Single family housing is the predominant land use in this district. The majority of existing homes are located in the foothills of the Cayetano Mountains, east of Pendleton Drive. However, the highest density of residential development is located north of Avendia Coatimundi and is characterized by a mixture of single family homes and small pockets of multi-family developments. Although residential development and the necessary supporting roadway infrastructure exist throughout the area, there are large sections of the district that are predominantly undeveloped. Please see Section V – Community Characteristics, to gain a further understanding of the rate of development for these undeveloped areas.

The Coatimundi Middle School is located on the north end of Avendia Coatmundi, while a series of undeveloped lots, churches, and the Rio Rico Community Center are located on the south side, making this roadway a high traffic area for trail users. The Sonoita Highlands subdivision is located west of the school.

The linear corridor of the Santa Cruz River, located between I-19 and Pendleton Drive, is the most enduring open space section of the study area. Traversing the entire district from north to south, the Santa Cruz River includes significant natural riparian areas as well as large tracts of agricultural uses. In addition, the existing Juan Bautista De Anza National Historic Trail and the Union Pacific Railroad travel through this corridor. Due to its regional significance the Santa Cruz River open space corridor will serve as an important element to developing a community wide walking and biking system.

The Northeast district has no neighborhood commercial development, but does include an industrial sand and gravel operation. The lack of commercial attractors in this district indicates the greater need for walking and biking connections to existing commercial located on the west side of I-19.

Generally in sync with the existing development pattern, the Santa Cruz County Comprehensive Land Use Plan identifies future development within this district to consist of a variety of land uses. The Cayetano foothills are identified for Low Density Residential while



the Santa Cruz River corridor is identified for ranch style land uses. The southern portion of the district is envisioned to be more intense and shows Medium Density Residential north and High Density Residential south of Avenida Coatimundi. The Santa Cruz County Zoning Map generally supports this long range vision with R2 and Residential Zoning – 10,000 sf/du (R3) zoning over much of the district, along with Residential Zoning – 7,500 sf/du (R4), MF, Neighborhood Business (B1) and B2 uses adjacent to Avenida Coatimundi. However, contrary to the existing development patterns and the Comprehensive Plan, the Zoning Map does show several pockets of MF zoning.

#### 4.4.C Rio Rico Southwest

Similar to the northern districts of the study area, single-family residential uses dominate most of the Southwest area. Development in the higher elevations is characterized by meandering streets and larger lots. Conversely, residential densities increase along Yavapai Drive in the northern portion of the district as well as Camino Maricopa in the southern portion.

Pena Blanca Elementary School and Calabasas Middle School share an educational campus located at the southwest corner of the West Frontage Road and Camino Maricopa. The two schools combine to serve over 900 students, making this the second largest education facility in the study area and thus a major generator of walking and biking trips.

Most of the significant commercial activity found within the Southwest district and Rio Rico as a whole is concentrated at the northwest corner of the I-19 and Rio Rico Drive intersection. These predominantly automobile-oriented commercial uses extend from Garrett's north along the West Frontage Road to and along Circulo Mercado. Another notable non-residential use in this district is the Esplendor (Rio Rico) Resort located off of Camino Caralampi. These predominately commercial and tourist nodes present key opportunities where linkages should be provided to connect varying land uses within the study area.

Consistent with current development, the Santa Cruz County Comprehensive envisions a concentration of Mixed Use at the intersection of I-19 and Rio Rico Drive, along with Medium Density Residential and High Density Residential south of Camino Caralampi. The Zoning Map directly supports this vision with a mixture of Residential Zoning – 6,000 sf/du (R5), MF, and B2 zoning designations at or near the Rio Rico Drive intersection and R2 zoning over the remainder of the area. Again, much of the supporting roadway infrastructure is in place throughout the district. This condition, coupled with the existing topography, supports the



expectation that future development within this district will remain consistent with the existing character and current land use plans.

#### 4.4.D Rio Rico Southeast

Most industrial properties in the study area are located within the Southeast district in a linear cluster along the east side of I-19, between the I-19 East Frontage Road and Ruby Road. The existence of I-19 on the west and the Santa Cruz River and UPRR on the east boundary of the industrial area helps to create a definitive buffer from other land uses in the district, but it makes connectivity difficult. In addition, the Nogales International Wastewater Treatment Plant is situated between a majority of the industrial land uses and the residential development found further to the east.

Although it contains the preponderance of industrial land uses, the Southeast district, is primarily devoted to low-density single-family development. The residential development pattern mimics that of the other districts in the study area by consisting of oversized lots located along curvilinear streets, which are separated by large tracts of open space. The Rio Rico Golf Course, is located in the northern section of the district along the south side of Sonoita Creek and the Calabasas County Park is located at the southern limit of the district along Pendleton Drive.



Within the Southeast district, the Santa Cruz County Comprehensive Land Use Plan foresees that development will maintain a combination of Medium Density and High Density Residential development east of the Santa Cruz River and Mixed Use along the I-19 corridor. Similarly, the Santa Cruz County Zoning Map shows the majority of residential R2 zoning east of the Santa Cruz River, with more intense R5 zoning located around the Rio Rico Golf Course. Parallel to I-19, the Zoning Map designates this area for Light Industry (MI) zoning.



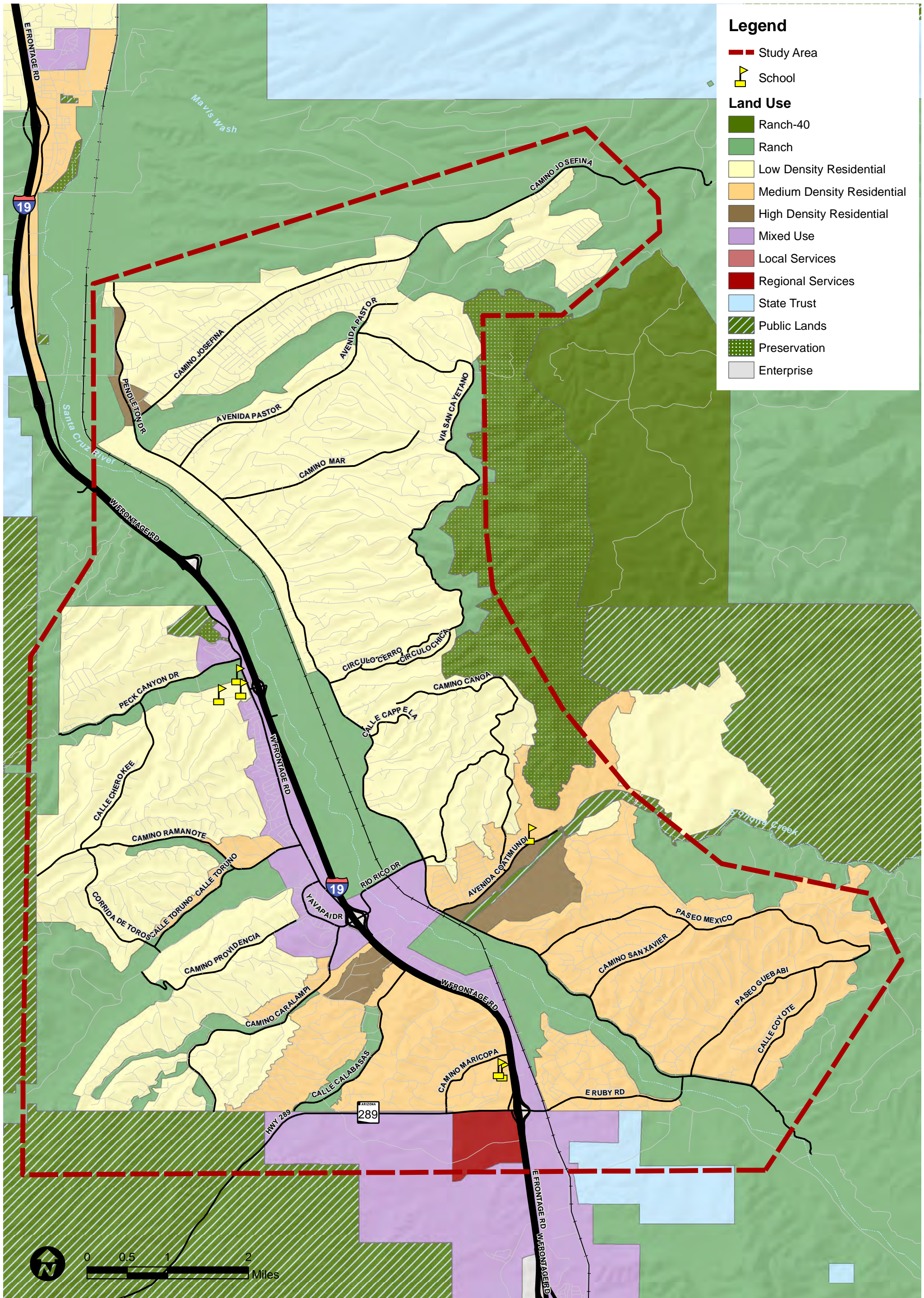


Figure 5: Santa Cruz County Comprehensive Plan - Land Use Map

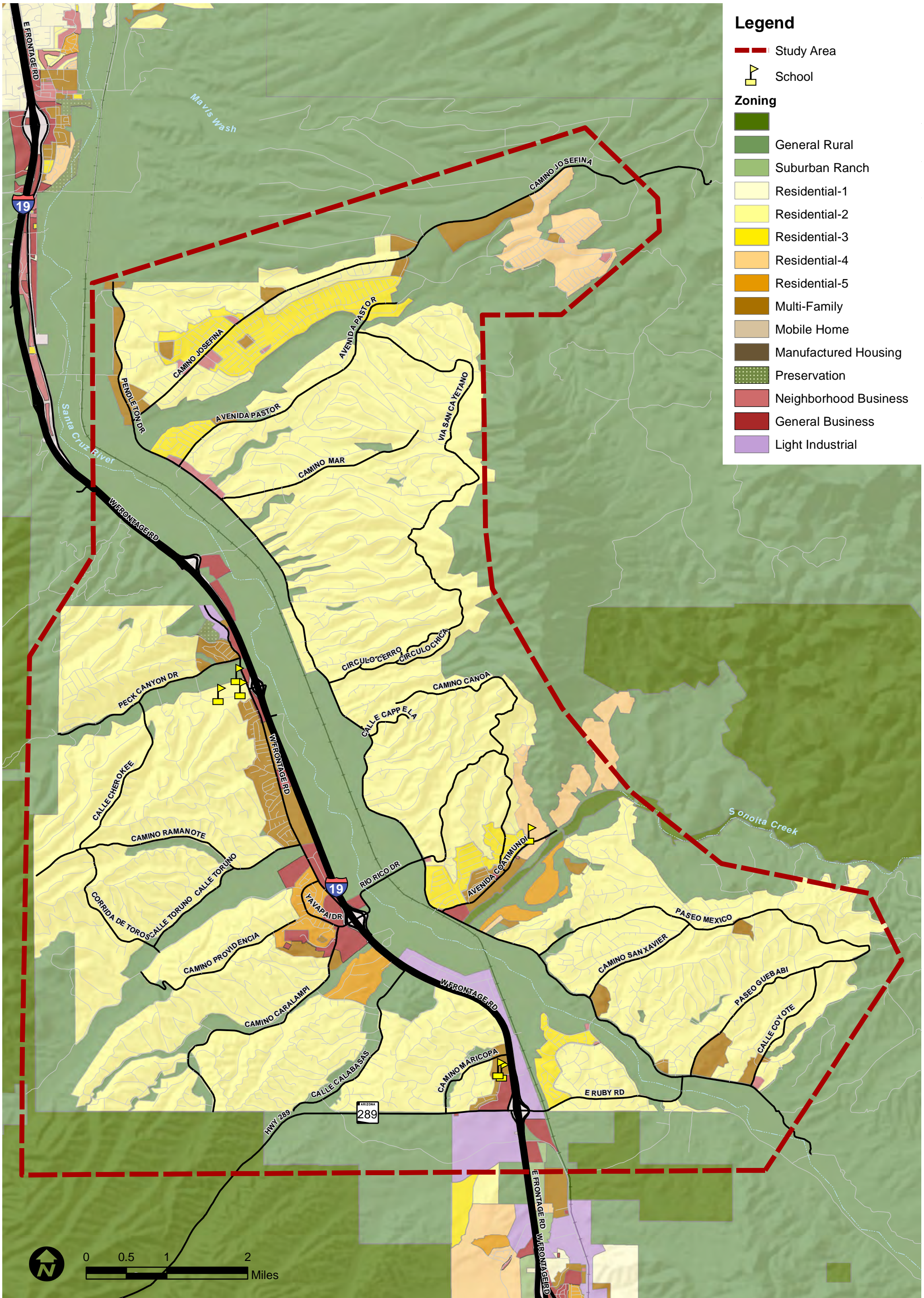


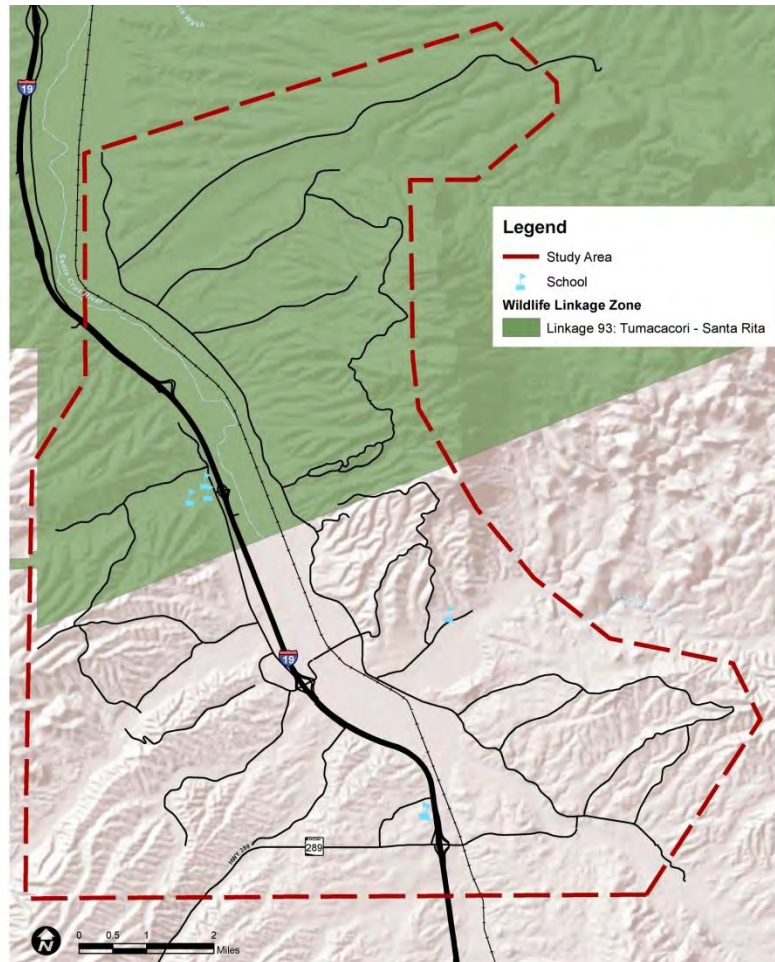
Figure 6: Santa Cruz County - Zoning Map



### 4.5 Wildlife Linkage Zone

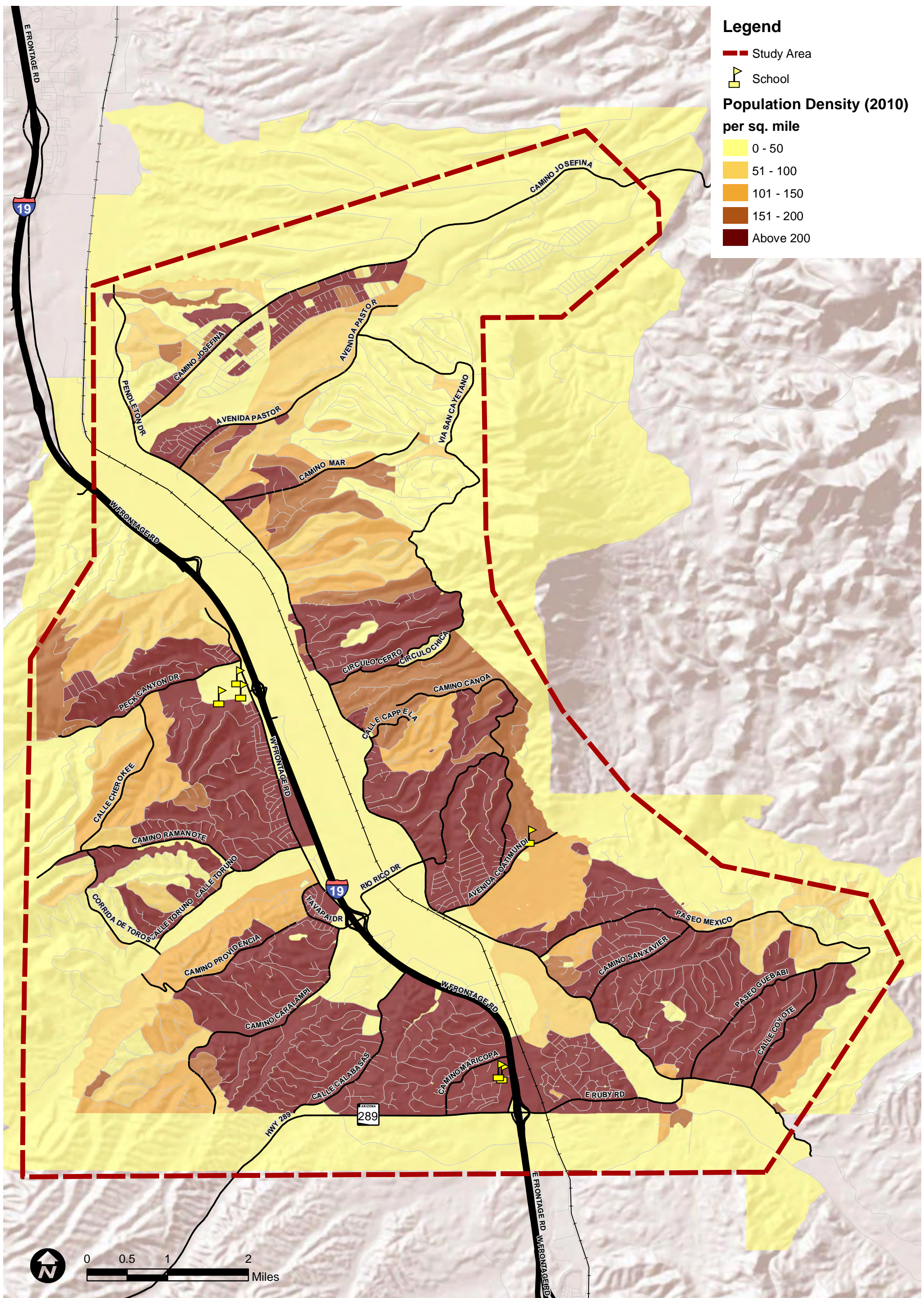
Natural hydrological corridors to any region can often serve multiple functions and benefits. A couple of those benefits often include wildlife linkage corridors and local/regional trails. The Arizona Wildlife Linkages Report, prepared by the Arizona Wildlife Linkages Workgroup (a collaboration of FHWA, ADOT, Arizona Game and Fish and the US Forest Service) identifies this project study area to be within Linkage 93. The following is a list of species (other than birds) identified to live and migrate within Linkage 93 including: jaguar, javelina, mountain lion, mule deer, and white-tailed deer. Hydrology features within Linkage 93 that may serve as potential wildlife corridors include: Santa Cruz River, Diablo Wash, Josephine Canyon and Tubac Creek. *Figure 7: Wildlife Linkage Zone* depicts the location of the wildlife linkage zone in Rio Rico.

Figure 7: Wildlife Linkage Zone



### 4.6 Density

The population density map (*Figure 8: Density Map*) illustrates how residents of Rio Rico are distributed within the study area. The highest population densities are found in the southern portion of the study area as well as along the I-19 corridor. Conversely, the lowest density levels within Rio Rico are predominantly concentrated in the northeast portion of the study area. Demographic studies conducted in the United States have continually demonstrated that areas with higher density housing tend to generate more pedestrian and bicycle trips. This is generally the result of increased populations and the fact that on average, higher density areas tend to have fewer households with access to an automobile.



**Legend**

- - - Study Area
- School

**Population Density (2010)  
per sq. mile**

- 0 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- Above 200

Figure 8: Population Density Map



#### 4.7 Existing Vehicular Traffic Patterns in Rio Rico

Table 8 below identifies the existing vehicular traffic on Rio Rico’s most traveled roadways. Santa Cruz County crews conducted the traffic counts in 2009. Analysis of the average daily trips (ADT) for each roadway will be important information for analysis when compared to the most frequently traveled roadways by bicyclists and pedestrians. The comparative analysis between the two will yield guidance in determining the most efficient and safe type of improvements for future recommended projects.

**Table 8: Existing Vehicular Traffic**

Roadway Studied	Average Daily Trips (ADT’s)
Ruby Rd @ Potrero Creek (by the Pilot	7,500 ADT
Ruby Rd @ Santa Cruz	4,200 ADT
Pendleton Dr. north of Rio Rico Dr.	3,201 ADT
Pendleton Dr. South of Rio Rico Dr.	3,026 ADT
Rio Rico Dr.	8,328 ADT
Avenida Coatimundi	3,780 ADT
West Frontage Rd	6,017 ADT
Lito Galindo	2,336 ADT
Peck Canyon	1,389 ADT
Yavapai Dr.	11,748 ADT
Camino Ramanote	2,085 ADT
Camino Caralampi	4,177 ADT
Paseo Venado	1,660 ADT
Camino Josefina	834 ADT

Source: Santa Cruz County

What becomes clear in the review of the traffic count information is that Yavapai Drive near Garrett’s, and Rio Rico Drive are the most traveled roadways on average in Rio Rico. West Frontage Road and Ruby Road are also well traveled roadways. Camino Caralampi accommodates fairly significant vehicle trips for a low density residential collector roadway. Please see Figure 9 for additional reference.

#### 4.8 Crash Data Analysis

Crash data was obtained from ADOT, which included reported incidents for the Rio Rico area from March 2007 through March 2012. Over this 5 year period, the study area experienced a total of 2 pedestrian and 3 bicycle related crashes, of which 1 resulted in a non-incapacitating injury, 3 resulted in possible injury and 1 resulted in no injury. All reported pedestrian and bicycle crashes occurred during clear weather conditions, with the majority occurring during daylight hours, however, one bicycle accident did occur at dusk. *Figure 9: Crash Data*, shows all bicycle and pedestrian crashes between 2007 and 2012 for the Rio Rico study area.

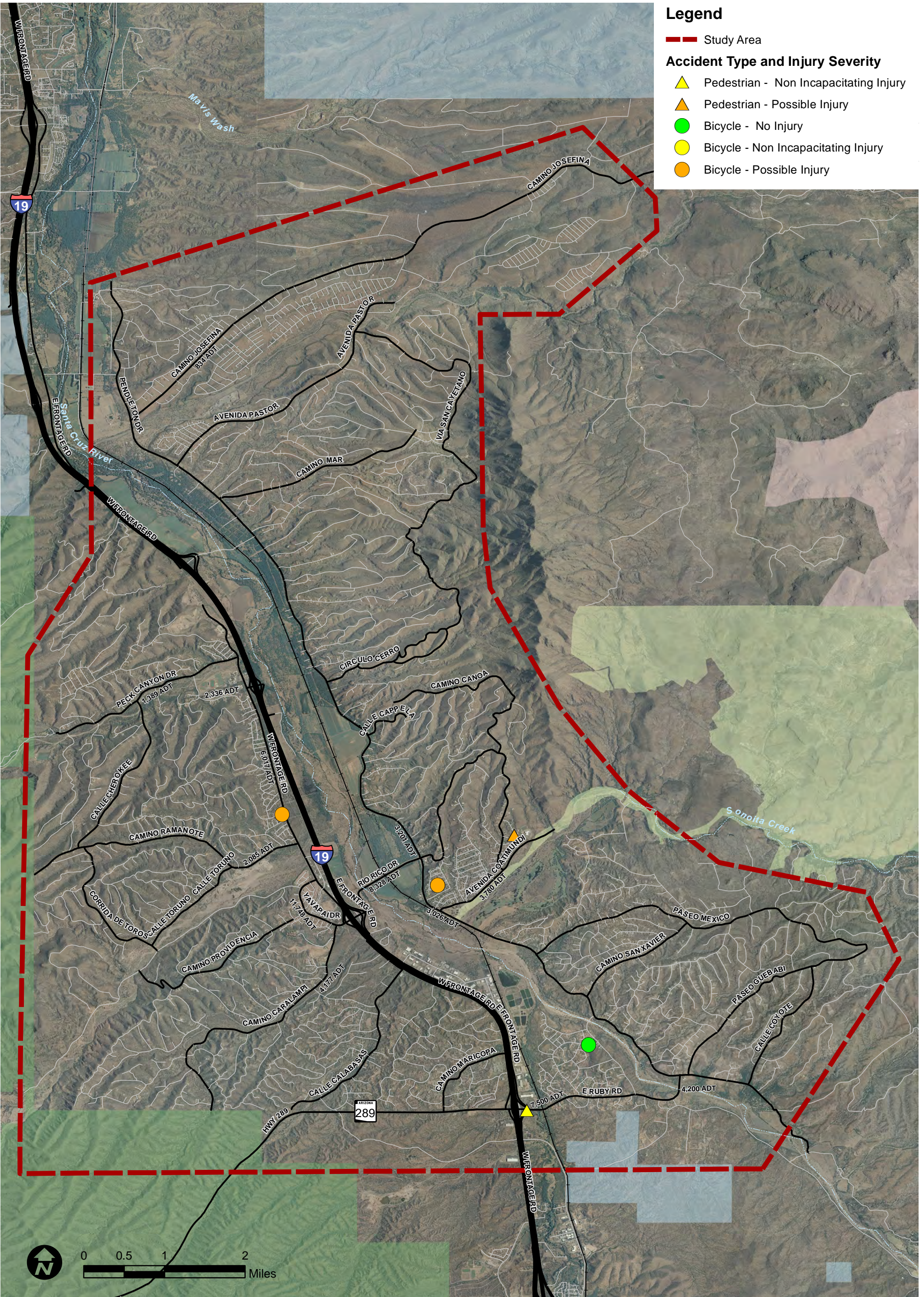


Figure 9: Pedestrian & Bicycle Crash Location Map with Local ADT's



## V. COMMUNITY CHARACTERISTICS – A DEMOGRAPHIC AND SOCIOECONOMIC REVIEW

In order to develop a greater understanding of the walking and biking attitudes, behaviors and needs of Rio Rico, it is important to recognize and evaluate the community’s demographic and socioeconomic characteristics. The following discussion assesses Rio Rico’s population, demographics, and environmental justice conditions in comparison to that of Santa Cruz County as well as the State of Arizona. Comparing Rio Rico to the larger region and state helps to establish a baseline for the socioeconomic characteristics of the community and in-turn identify potential focus areas.

Moreover, the following discussion provides a greater understanding of the distribution of age within Rio Rico which will provide a picture of those people who walk because they need to, either because they are too young or too old to drive. Furthermore, considering income can help to identify portions of the population that walk or bike because they cannot afford a car.

### 5.1 Population

According to the US Census Bureau the total population of the Rio Rico census-designated place (CDP) in 2000 was 10,413 people. The most recent 2010 Census identified the Rio Rico CDP with a population of 18,962. This represents an 82.1% increase in population over a 10-year period at an annual growth rate of 8.2%.

Over the same period, Santa Cruz County’s population grew from 38,381 in 2000 to 47,420 in 2010, while the State of Arizona’s population grew from 5,130,632 in 2000 to 6,392,017 in 2010. This represents a County and State population increase of 23.6% and 24.6% and an annual growth rate of 2.4% and 2.5% respectively as shown in Table 9. These findings show that over the last decade, Rio Rico’s population growth significantly outpaced that of Santa Cruz County and the State as a whole.

**Table 9: Rio Rico Population & Growth Rate**

Vicinity	2000 Population	2010 Population	Percent Change	Annual Growth Rate
Rio Rico (Study Area)	10,413	18,962	82.1%	8.2%
Santa Cruz County	38,381	47,420	23.6%	2.4%
Arizona	5,130,632	6,392,017	24.6%	2.5%

Source: 2000 and 2010 United States Census



## 5.2 Age

Table 10 shows the age distribution of Rio Rico’s existing population according to the 2010 US Census. A total of 11,830 residents are between the ages of 16 and 64, with the remaining 5,686 residents under the age of 15 and 1,446 residents over the age of 65. Making up 62.4% of the total Rio Rico population, the 16 – 64 age group is generally consistent with the County and State levels. However, at 30% of the total population, Rio Rico’s 15 and below age group is slightly higher than that of the County or State levels. Consequently, the median age in Rio Rico is 31.3 years old, while the median age for both the County and State is 35 years old. In general, this data indicates Rio Rico has a younger population than both the county and the state.

**Table 10: Rio Rico Age Distribution**

Vicinity	Age 15 and below	% of Pop.	Age 16 - 64	% of Pop.	Age 65 and above	% of Pop.	Median Age
Rio Rico (Study Area)	5,686	30.0%	11,830	62.4%	1,446	7.6%	31.3
Santa Cruz County	12,674	26.7%	28,522	60.1%	6,224	13.1%	35.6
Arizona	1,447,536	22.6%	4,062,650	63.6%	881,831	13.8%	35.9

Source: 2010 United States Census

## 5.3 Environmental Justice

The goal of Title VI/Environmental Justice (EJ) is to ensure that the services, benefits, and overall effects of any program, policy, or activity receiving Federal financial assistance is fairly distributed to all people, regardless of race, color, national origin, or income. Title VI/Environmental Justice, in relation to transportation programs, is achieved through:

- Avoiding, minimizing, or mitigating disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority and low-income populations.
- Ensuring the full and fair participation in the transportation decision making process by all potentially affected communities.
- Preventing the denial of, reduction in or significant delay in the receipt of benefits by minority and low-income populations.
- In order to adhere to the principles outlined above, this working paper first examined the prevalence of minority and low-income populations within the Rio Rico study





area. Additional information on race, ethnicity and income are further detailed in Sections 5.4 and 5.5. The results of this analysis will then be used during future phases of the project to ensure that fair participation is provided during the decision making process.

#### 5.4 Race and Ethnicity

Table 11 shows Rio Rico’s demographic breakdown compared with those of Santa Cruz County and the State of Arizona. As can be seen, the preponderance of Rio Rico’s residents identified themselves as either white (71%) or some other race (25.6%). This racial distribution is almost identical to that of Santa Cruz County and similar to the State as a whole.

However, it is important to distinguish that the U.S. Census only utilizes six categories to identify race: White, Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, and Some Other Race. This is because the U.S. Census views race and origin (or one’s ethnicity) as two separate and distinct concepts. Consequently, one’s Hispanic origin is viewed as the heritage, nationality group, lineage, or country of birth of the person or the person’s parents or ancestors before their arrival in the United States. Based on this condition, people who identify their origin as Hispanic, Latino, or Spanish may be any race.

Therefore, although the 2010 U.S. Census shows the majority of Rio Rico residents identified their race as White (71%) or Some Other Race (25.6%), approximately 85% of Rio Rico residents also identified their origin or ethnicity as Hispanic or Latino as shown in Table 11. In comparison, this Hispanic or Latino distribution is consistent with that of Santa Cruz County, but is considerably higher than that of the State (30%). Please see *Figure 10: Minority Populations* and *Figure 11: Hispanic Origins* for further reference.



**Table 11: 2010 Racial Demographics**

Population Group (One Race)	Rio Rico	Percentage of Population	Santa Cruz County	Percentage of Population	Arizona	Percentage of Population
White	13,472	71.0%	34,835	73.5%	4,667,121	73.0%
African American	75	0.4%	179	0.4%	259,008	4.1%
Native American	121	0.6%	328	0.7%	296,529	4.6%
Asian	94	0.5%	255	0.5%	176,695	2.8%
Native Hawaiian and Other Pacific	10	0.1%	15	0.0%	12,648	0.2%
Other Race	4,846	25.6%	10,855	22.9%	761,716	11.9%
Two or More Races	344	1.8%	953	2.0%	218,300	3.4%
<b>Total</b>	<b>18,962</b>	<b>100.0%</b>	<b>47,420</b>	<b>100.0%</b>	<b>6,392,017</b>	<b>100.0%</b>

Source: 2010 Census

**Table 12: 2010 Origin (Ethnicity Demographics)**

Population Group	Rio Rico	Percentage of Population	Santa Cruz County	Percentage of Population	Arizona	Percentage of Population
Hispanic or Latino (of any race)	16,179	85.3%	39,273	82.8%	1,895,149	29.6%
Not Hispanic or Latino	2,783	14.7%	8,147	17.2%	4,496,868	70.4%
<b>Total</b>	<b>18,962</b>	<b>100.0%</b>	<b>47,420</b>	<b>100.0%</b>	<b>6,392,017</b>	<b>100.0%</b>

Source: 2010 Census



### 5.5 Income

Rio Rico’s median family income (\$44,379) is higher than Santa Cruz County’s (\$39,272), but is lower than the state (\$55,353). Similarly, the Rio Rico community also has a lower percentage of families living below the poverty line (17 percent) than the county (22.2 percent), but it is still higher than that of the State (12.5 percent).

**Table 13: Median Family Income**

Population Group	Rio Rico	Percentage of Population	Santa Cruz County	Percentage of Population	Arizona	Percentage of Population
Females	9,687	51.1%	24,861	52.4%	3,216,194	50.3%
Males	9,275	48.9%	22,559	47.6%	3,175,823	49.7%
Median Family Income	\$44,379		\$39,272		\$55,353	
Percentage of families living below the poverty level	17%		22.2%		12.5%	

Source: 2010 Census



### 5.6 Rio Rico Commuting Habits

The American Community Survey (ACS) gathers information on demographic, economic, and housing characteristics, including journey to work information. As can be seen in Table 14, the ACS shows that Rio Rico has a greater percentage of workers 16 years and older that travel to work by car (82%) than both Santa Cruz County (77.9%) and the State of Arizona (76.5%). Especially important is the fact that only a combined 1.7% of Rio Rico’s workers walk or utilize other means (biking) to travel to work. This is well below the combined County-wide rate of 4.5% and the combined State-wide rate of 4.3%. This increased percentage of workers that travel to work by car and decreased level of workers who walk or bike to work supports the need for additional facilities within the Rio Rico community that promote alternative modes of transportation.

Table 14: Rio Rico Commuting Habits

Population Group	Rio Rico	Percentage of Work Force	Santa Cruz County	Percentage of Work Force	Arizona	Percentage of Work Force
Workers 16 yrs and over	6,689		16,795		2,621,839	
vehicle - drove alone	5,482	82.0%	13,086	77.9%	2,005,289	76.5%
vehicle - carpooled	889	13.3%	2,000	11.9%	305,162	11.6%
public transit	0	0.0%	37	0.2%	46,829	1.8%
walked	33	0.5%	451	2.7%	52,391	2.0%
other means	80	1.2%	305	1.8%	61,279	2.3%
worked at home	205	3.1%	916	5.5%	150,889	5.8%
mean travel time to work (minutes)	21.3		19.2		24.5	

Source: American Community Survey

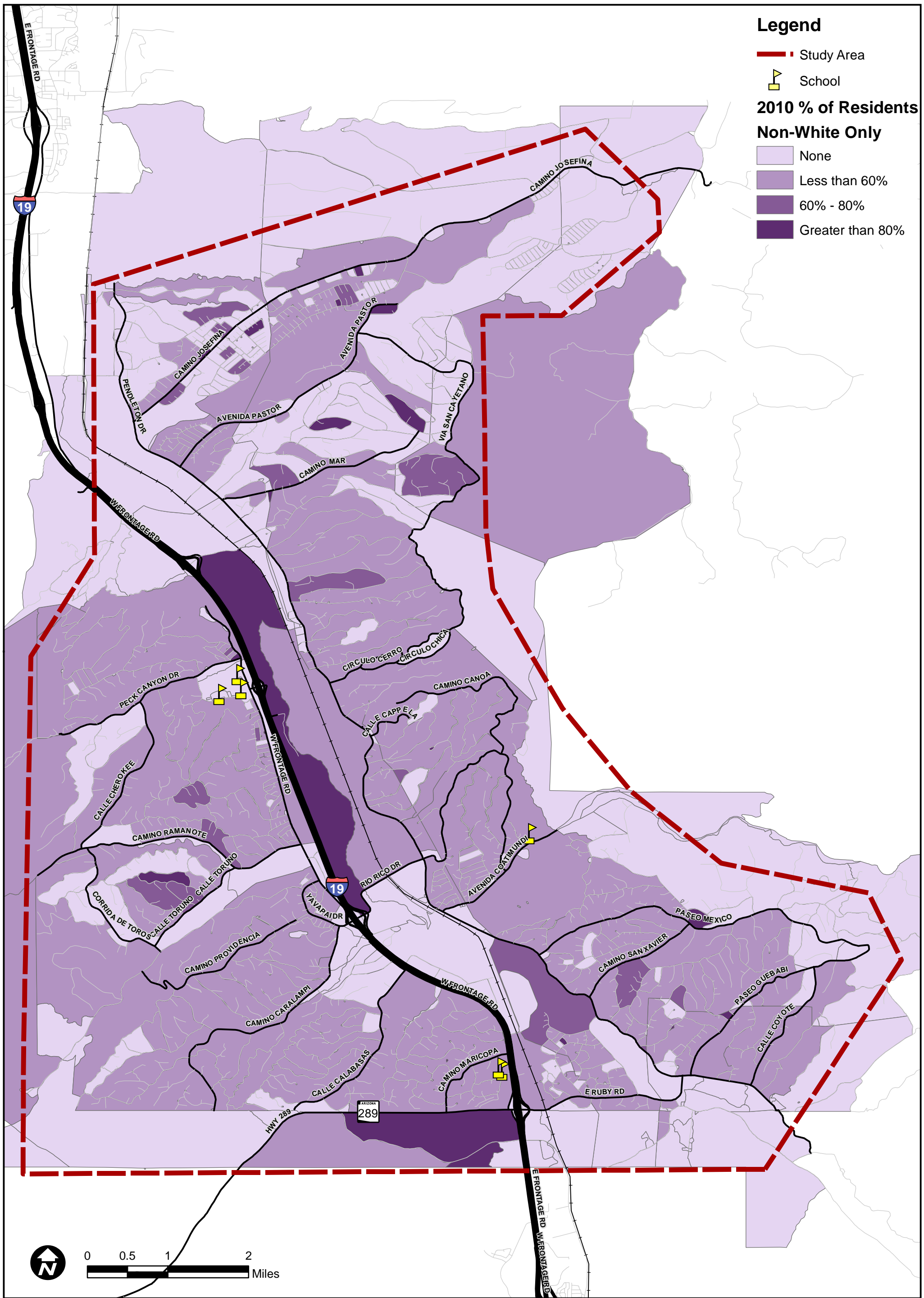
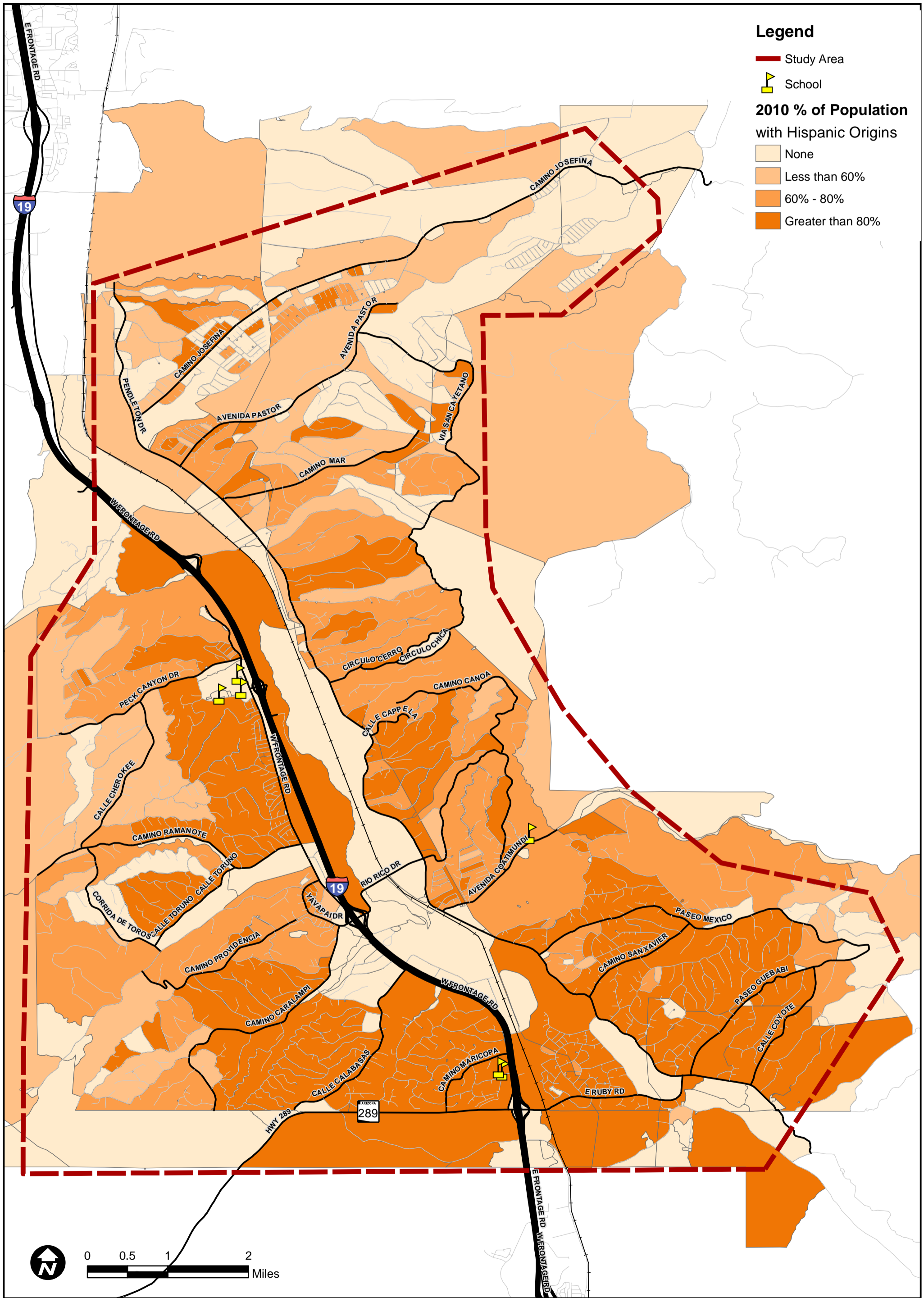


Figure 10: Minority Populations



**Legend**

- Study Area
- School

**2010 % of Population with Hispanic Origins**

- None
- Less than 60%
- 60% - 80%
- Greater than 80%

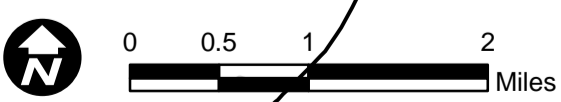
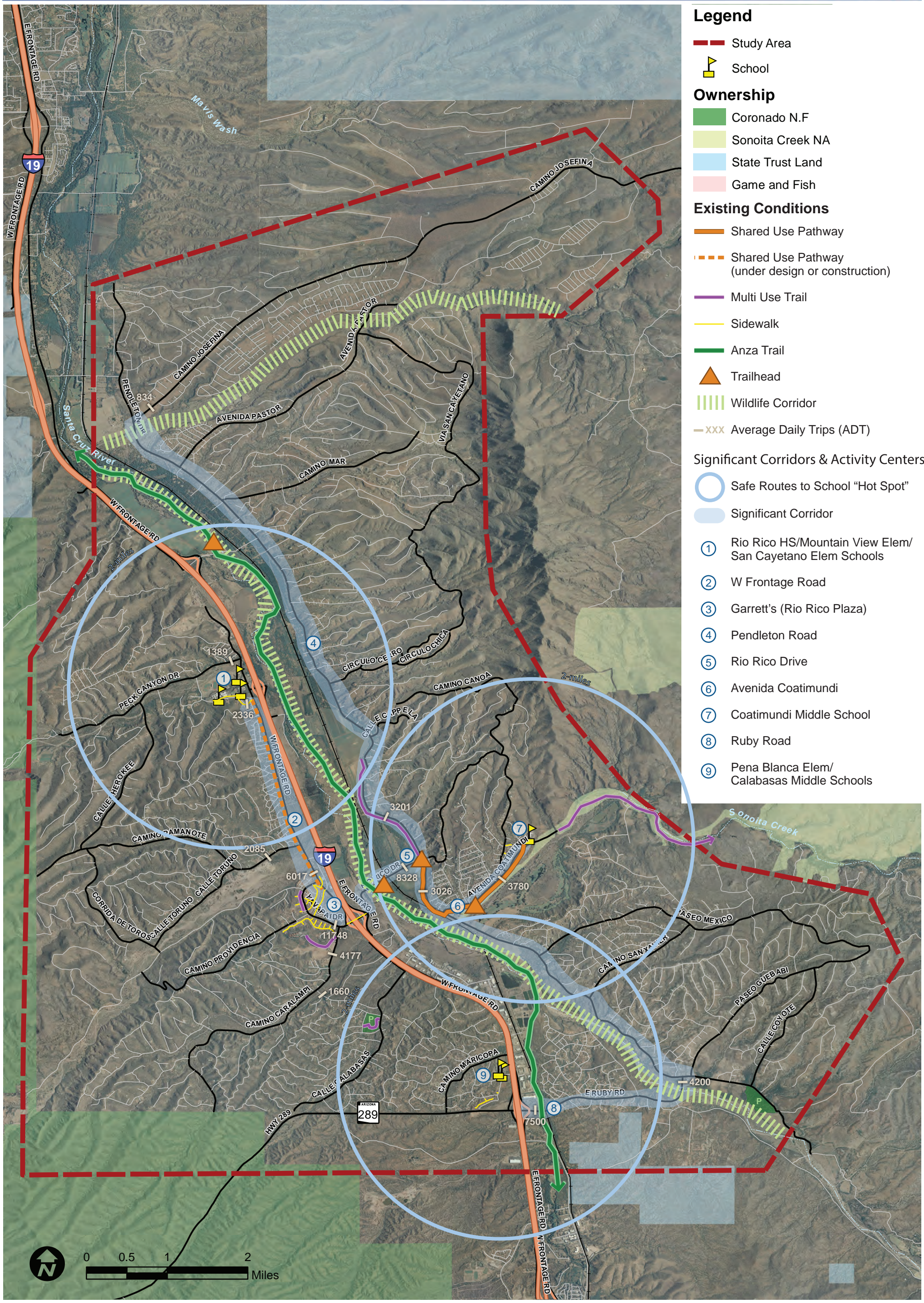


Figure 11: Populations with Hispanic Origins



## VI. SIGNIFICANT STUDY AREA CORRIDORS & ACTIVITY CENTERS

Data collection findings were overwhelmingly supported by input and discussions with TAC members, county staff, high school youth and local residents confirming that there was a need to focus on a key group of activity centers and roadway corridors. The corridors and activity centers introduced below are considered a priority for analysis and recommendation in the Rio Rico Walking and Biking Study. As previously noted, establishing safe routes to schools is a central focus of this study. A summary description of each of these priority activity centers and corridors include the following:



**Legend**

Study Area

School

**Ownership**

Coronado N.F

Sonoita Creek NA

State Trust Land

Game and Fish

**Existing Conditions**

Shared Use Pathway

Shared Use Pathway (under design or construction)

Multi Use Trail

Sidewalk

Anza Trail

Trailhead

Wildlife Corridor

xxx Average Daily Trips (ADT)

**Significant Corridors & Activity Centers**

Safe Routes to School "Hot Spot"

Significant Corridor

1 Rio Rico HS/Mountain View Elem/ San Cayetano Elem Schools

2 W Frontage Road

3 Garrett's (Rio Rico Plaza)

4 Pendleton Road

5 Rio Rico Drive

6 Avenida Coatimundi

7 Coatimundi Middle School

8 Ruby Road

9 Pena Blanca Elem/ Calabasas Middle Schools

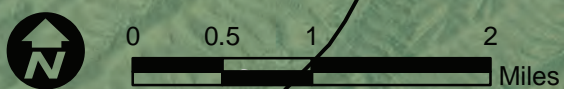


Figure 12: Existing Conditions & Focus Areas





### 6.1 Rio Rico High School /Mountain View Elementary/ San Cayetano Elementary School

Located south of Peck Canyon Drive, west of West Frontage Road in northwest Rio Rico. This grouping of three schools (“the schools”) are served by vehicular access from a series of smaller roads forming a looped road system from the West Frontage Road. A sidewalk currently exists in front of Rio Rico High School. This “loop” includes Peck Canyon, Via Patricia and Camino Lito Galindo. The steepness of Peck Canyon, blind spots created by gradient roadways, and a narrow bridge crossing (with poor visibility) of Peck Canyon on West Frontage Road are just a few of the challenges and deficiencies in this activity center.



*Camino Lito Galindo looking east*



*Camino Lito Galindo near Via Patricia, looking west*

This is a busy area for children walking to school from the adjacent residential neighborhoods and key facilities like sidewalks and adequate crossings are noticeably deficient in this area.



## 6.2 West Frontage Road

A two-lane frontage road to I-19 that traverses a majority of the north-south length of the Project Study Area from Peck Canyon Drive to Rio Rico Drive. This segment of roadway is one of the most traveled by vehicles and pedestrians in Rio Rico. A southern segment of West Frontage Road from Calle Calabasas south to Ruby Road also exists but is less of an emphasis for purposes of this study. West Frontage Road does not exist from Rio Rico Drive south to Calle Calabasas.



*West Frontage Road looking south near Camino Lito Galindo*

This important corridor serves motorized and non-motorized users to residential, schools and non-residential land uses located along both sides of the roadway. This corridor is anchored on the north end by the “school pod” including Rio Rico High School and on the south end by Garrett’s Commercial Center on Yavapai Drive. There is also a county landfill north of Peck Canyon that creates truck trips in this corridor.

Up and down the majority of the west side of the roadway is one of the largest concentrations and highest density residential neighborhoods in Rio Rico. This residential area utilizes the West Frontage Road as their primary ingress and egress. Some of these residential areas are home to Title VI populations.

The West Frontage Road corridor is the focus of the 2005 Drachman Institute study that initially defined and offered suggested guidance on the desire and ability to strengthen the connectedness of the schools, neighborhoods and commercial uses along the West Frontage Road corridor.



### 6.3 Garrett's (Rio Rico Plaza)

The Garrett's commercial center (Rio Rico Plaza) is home to Rio Rico's only grocery store and serves as Rio Rico's only commercial retail core. Garrett's driveway is off Yavapai Drive but is adjacent to West Frontage Road. Bicycle and pedestrian trips to Garrett's have continually increased over the past few years. The Bella Vista subdivision located immediately west of Garrett's is a suburban style community with smaller lots and



*West Frontage Road looking south near Camino del Patio*

density generally higher than most other areas in Rio Rico. The 2009 traffic counts taken by Santa Cruz County identify this area as the most traveled section of roadway in Rio Rico with an average daily trip count of over 11,700 vehicle trips per day.



*Intersection of Camino Caralampi and Yavapai Drive*



### 6.4 Pendleton Drive

Pendleton Drive is a two-lane roadway facility that runs north-south for the entire length of the Project Study Area along the east side of I-19 and the Santa Cruz River. It provides vehicular and non-vehicular connection to the northeast and southeast quadrants of Rio Rico. Because Pendleton Drive is a natural and primary connector roadway facility in Rio Rico, it has already been designated by Santa Cruz County as a “Major County Road” in the Comprehensive Plan.

The ¾ mile +/- segment of Pendleton Drive from Rio Rico Drive south to Avenida Coatimundi has been improved with a well-traveled shared use path detached from the roadway. A trailhead with limited parking exists at the southwest corner of Pendleton Drive and Rio Rico Drive and users often connect to the improved shared path crossing at Avenida Coatimundi. Pendleton Drive north of Rio Rico Drive to the study area northern limits and south below Avenida Coatimundi are desired segments to extend the existing shared use path system.



*John and Bette De Stefano Pathway along South Pendleton Drive*



*John and Bette De Stefano Pathway*



*Existing Pedestrian Crossing at Pendleton Drive and Avenida Coatimundi*



### 6.5 Rio Rico Drive to Pendleton Drive

There is an increasing need to evaluate the construction of a bicycle and pedestrian pathway providing connection from Garrett’s supermarket (west of I-19) east across the Rio Rico Drive overpass to Pendleton Drive and the Anza Trail Head at the Santa Cruz River. The Anza Trail is a scenic, regional recreational trail extending from Tubac down to Nogales along (sometimes informally) the Santa Cruz River.



**Guy Tobin Trailhead on Rio Rico Drive**



**Trailmarker at Intersection of Pendleton Drive and Rio Rico Drive**

There is increased pedestrian and bicycle user demand along Rio Rico Drive from residents living in the neighborhoods east of I-19 going to Garrett’s. This potential path also fronts the large agricultural fields adjacent to the Santa Cruz River (east of I-19) that often are home to bird watching activities as a variety of bird species tend to congregate in this area. A connection along Rio Rico Drive to Pendleton Drive and Anza Trailhead would also complete a connection of these popular activity centers and destinations that currently lack the non-vehicular connections that could enhance their appearance to residents and visitors alike. In addition, Santa Cruz County has recently relocated some of their government offices, including the Community Development Department, into the county satellite facility located in this area.



### 6.6 Avenida Coatimundi

The existing Boy Scout Trail (along Pendleton Drive north of Rio Rico Drive) is a popular and well planned trail that provides bike and pedestrian connectivity within the southeastern portions of the Rio Rico area east of Interstate 19. With the efforts of local trail enthusiast Hank Thysell and the Santa Cruz Valley Unified School District 35, a 1.2 mile extension of the existing 10-ft wide asphalt trail along Avenida Coatimundi was constructed from its existing terminus at the Rio Rico Community Center. This trail is formally known as the John and Bette De



*John and Bette De Stefano Pathway along Avenida Coatimundi*

Stefano Pathway and connects adjacent neighborhoods with the Fitness Center, Community Center and several churches along Avenida Coatimundi. The Catholic Church plans to expand their church and build primary and secondary school facilities thereby increasing pedestrian and bicycle demand in this area. This facility and any planned connecting trails will be needed in this more populous and well-traveled area of Rio Rico. The Rio Rico High School track team often meets at the fitness center for their practice runs and this trail will compliment their training regime. The Sonoita Creek State Natural Area is located just south of this pathway and Santa Cruz County is interested in exploring additional trail connections. Many local residents use the Sonoita Creek State Natural Area for nature/recreational hiking for about 8-9 miles to Patagonia Lake.



*John and Bette De Stefano Pathway near Calle Juan Legarra*



### 6.7 Coatimundi Middle School

The Coatimundi Walking Trail was constructed through a partnership between SRTS, Santa Cruz Valley Unified School District #35, Santa Cruz County, Rio Rico Properties, Green Valley Pecan Company, the University of Arizona and volunteers from health-focused organizations in the area. The Coatimundi Walking Trail provides much-needed pedestrian access to the rear entrance of the school. The Sonoita Highlands residential community is adjacent to the school to the west. Additional SRTS concerns for the focus area include the lack of neighborhood shortcuts and system connections to and from Sonoita Highlands to the school. There are many blind spots on some of the local roadways and sidewalks are very limited in this higher density subdivision. Another key consideration in need of additional analysis is the unsafe roadway crossing at Avenida Coatimundi and Calle Juan Legarra.



*Coatimundi Walking Trail*



*Potential shortcut location at the Sonoita Highlands community*



*Lack of Defined Pedestrian Crossing at Avenida Coatimundi and Calle Juan Legarra*



### 6.8 Ruby Road: I-19 east to the Santa Cruz River

Ruby Road is the southern-most I-19 traffic interchange in the study area. To the west, Ruby Road serves as the central vehicular roadway access for the residential subdivisions located immediately east of Pena Blanca Elementary School. Ruby Road also serves as State Route 289 primarily providing recreation access to Pena Blanca Lake in the Coronado National Forest approximately 8 miles west of Rio Rico.



*Ruby Road just east of I-19, looking west*

The more particular focus however is east of I-19 where Ruby Road provides vehicular and commercial truck access to a cluster of light industrial land uses that primarily consist of produce brokerage businesses. A Pilot Travel Center with a Wendy’s restaurant anchors the Ruby Road frontage pad serving as a “gateway” to the light industrial business cluster to the north. These produce brokerage businesses utilize the East Frontage Road as the primary vehicular access to this area. There is a



*Ruby Road Bridge at Potrero Creek*

second driveway on the east side of the Pilot Travel Center providing access and complicating turning movements at this strategic location. This node exhibits a high crash incident rate. Bicycle and pedestrian travel to and from the residential areas to the east is compromised by the lack of marked trails or bike paths, amount of traffic volume and turning movement conflicts in this area. Poor line of sight, lack of sidewalks or bike lane and narrow bridge crossings also pose challenges to improved non-motorized travel in this corridor.





### 6.9 Pena Blanca Elementary School/Calabasas Middle School

Pena Blanca Elementary School and Calabasas Middle School are also adjacent to the West Frontage Road and serve existing neighborhoods to the north, west and south of the school. Camino Maricopa to the north of the schools and Via San Luis Potosi/Paseo De Yucatan to the south are the local and collector roads that provide the primary vehicular and pedestrian access to the school. Both roads lack Safe Route to Schools design components like sidewalks, bike lanes or trails to encourage safe and efficient bike or pedestrian access to and from these neighborhoods. Camino Maricopa receives the heaviest volume of pedestrian traffic and in most places, there is a sizable dirt shoulder along the south side of the road that would accommodate formal sidewalk or multi modal trail improvements. About 1/2 mile west of the school on Camino Maricopa is another “problem area” at the three-point intersection of Camino Maricopa, Bosque Court and Paseo Queretaro. This three point intersection is located along an s-curve of Camino Maricopa with blind spots and is an area where children from the adjacent neighborhoods access Camino Maricopa. The safety of this area needs to be enhanced through adequate cross walk markings and a detached sidewalk due to line of sight distance challenges and speeding drivers that tend to be a safety threat at this location.



## VII. BICYCLE & PEDESTRIAN NEEDS & DEFICIENCIES

The analysis of the data collected, feedback from the TAC, Youth Workshop and Community Open House and consultant analysis began to reveal a series of categorical deficiencies that have been collectively mapped. Please see *Figure 13: Existing Needs and Deficiencies* for reference. These categories of needs and deficiencies include the following:

### 7.1 SRTS Hot Spots

As noted previously, a fundamental priority of the Rio Rico Walking and Biking Study is to identify and prioritize future bicycle and pedestrian improvement projects to enhance the safety and connectivity of the routes children travel to school on a daily basis.

The three SRTS “Hot Spots” are created to yield a closer and more interconnected review of the system of SRTS program elements. SRTS program elements that are common deficiencies to each SRTS Hot Spot include:

- lack of sidewalks,
- bike paths,
- traffic calming measures,
- traffic enforcement needs
- neighborhood shortcuts

The existing case study work completed by the SRTS Program at the University of Arizona Cooperative Extension provides a great baseline of knowledge to draw from when evaluating SRTS issues in Rio Rico.



*Possible neighborhood shortcut locations*



While each SRTS Hot Spot has common categories for consideration, each has a unique set of deficiencies that necessitate greater individual scrutiny distinctively within each SRTS Hot Spot. This level of analysis will result in a more cohesive and cost-effective approach to developing the plan of improvements for each SRTS Hot Spot.



*Camino Lito Galindo near Via Patricia*

### 7.2 Difficult Intersections

Intersections are commonly designed with a focus towards motor vehicles rather than pedestrians and bicyclists. Even the best network of streets with well-developed pedestrian facilities can suffer from low pedestrian use if there are inadequate facilities and obstacles at intersections.



*Camino Maricopa and Bosque Ct.*

Difficult intersections can include a wide variety of factors, but are generally defined as existing intersection facilities that have experienced vehicular or bicycle/pedestrian crashes, have geometric challenges, line of sight issues, poor level of service, lengthy crossing distances, indirect or unmarked crossings, or increased exposure to conflicts with vehicles.



*Ruby Road at Pilot Travel Center*

The topography in Rio Rico adds to the challenge of creating intersections that are safe and functional for motorized and non-motorized users alike. An example of a few difficult intersections in Rio Rico include Garrett's and Yavapai Drive, Ruby Road in front of the Pilot Travel Center, Camino Maricopa and Bosque Ct. and a couple of intersections with West Frontage Road. Please see *Figure 13: Existing Needs and Deficiencies Map* for additional reference.



### 7.3 Difficult Pedestrian Crossings

Rio Rico has numerous deficient pedestrian crossings. Many of these locations do not have a formal crosswalk or other typical crossing amenities, but nevertheless are locations in Rio Rico that are frequently utilized by bicyclists and pedestrians and common crossing locations.

A difficult pedestrian crossing is characterized by the existence of one or more of the following deficient features:

- inadequate sight distance,
- insufficient pavement markings,
- insufficient signage,
- insufficient lighting,
- insufficient driver warning particularly for mid-block crossings,
- insufficient refuge area away from the pavement.



**Avenida Coatimundi at Calle Juan Legarra**



**West Frontage Road at Family Dollar**

The most commonly identified difficult pedestrian crossings in Rio Rico include Western Frontage Road at Camino del Patio (Family Dollar), Avenida Coatimundi and Calle Juan Legarra, Garrett’s at Yavapai Drive and crossings close to school facilities as identified in *Figure 13: Existing Needs and Deficiencies Map*.

### 7.4 Narrow Bridge Crossings

Many existing road crossing are found over the multiple washes, tributaries and the Santa Cruz River that traverse the Rio Rico area. Bridges are an expensive infrastructure component and historically have not been designed and constructed with the pedestrian and bicyclist in mind. Retrofitting older structures with bike lanes or sidewalks is also an expensive and sometimes cost-prohibitive proposition. These issues are not unique to Rio Rico, but are common throughout the United States.



Many of the existing bridge structures in Rio Rico do not provide adequate accommodations for bicycle and pedestrian users. Some of these bridge structures are located in key locations that facilitate a non-motorized connection between destinations. The Potrero Creek bridge on Ruby Road and the Ruby Road and Rio Rico Drive crossings of the Santa Cruz River are a few such examples. Please see *Figure 13: Existing Needs and Deficiencies Map* for additional locations.



*Potrero Creek Bridge on Ruby Road*



### 7.5 Priority Underserved Roadways

Priority Underserved Roadways are existing roads in Rio Rico that experience frequent bicycle and pedestrian use on an average daily basis but lack the appropriate non-motorized facilities in the roadway corridor. Typically, these roadways also receive high numbers of average daily vehicle trips as well.



*Yavapai Drive looking west, near Garrett's*



*Camino Ramanote looking west*

The findings of attitudes and behaviors surveys conducted at the Youth Workshop and Community Open House indicate that the youth and community in general have a tendency to utilize select streets for their biking and walking routines. West Frontage Road, Camino Ramanote, Pendleton Drive North, Calle Calabasas, Camino Lito Galindo (and other roadways near the various school locations) as well as others are shown on *Figure 13: Existing Needs and Deficiencies Map*. Because these Priority Underserved Roadways also tend to be the busiest for vehicular traffic, there is a heightened sensitivity to the safety aspect of separating the pedestrian and vehicle movements.



*North Pendleton Road*



*West Frontage Road*



### 7.6 Key System Disconnects

“Key System Disconnects” identifies select areas where there is currently a lack of connection to an expanded or more complete network of existing or future path/ trail system that does not exist today. Improvements at these marked locations would greatly enhance path or trail connectivity and safety, and yield a more balanced and complete path and trail network throughout the study area. Examples of key system disconnects include: lack of neighborhood shortcuts between homes and the adjacent school, additional connection to the Anza Trail, additional trailheads needed for existing and future trail facilities or connections to areas like Josephine Canyon and Calabasas Park that are lacking today.



*Potential shortcut for Sonoita Highlands community*



*Calabasas Park looking west towards the Santa Cruz River*

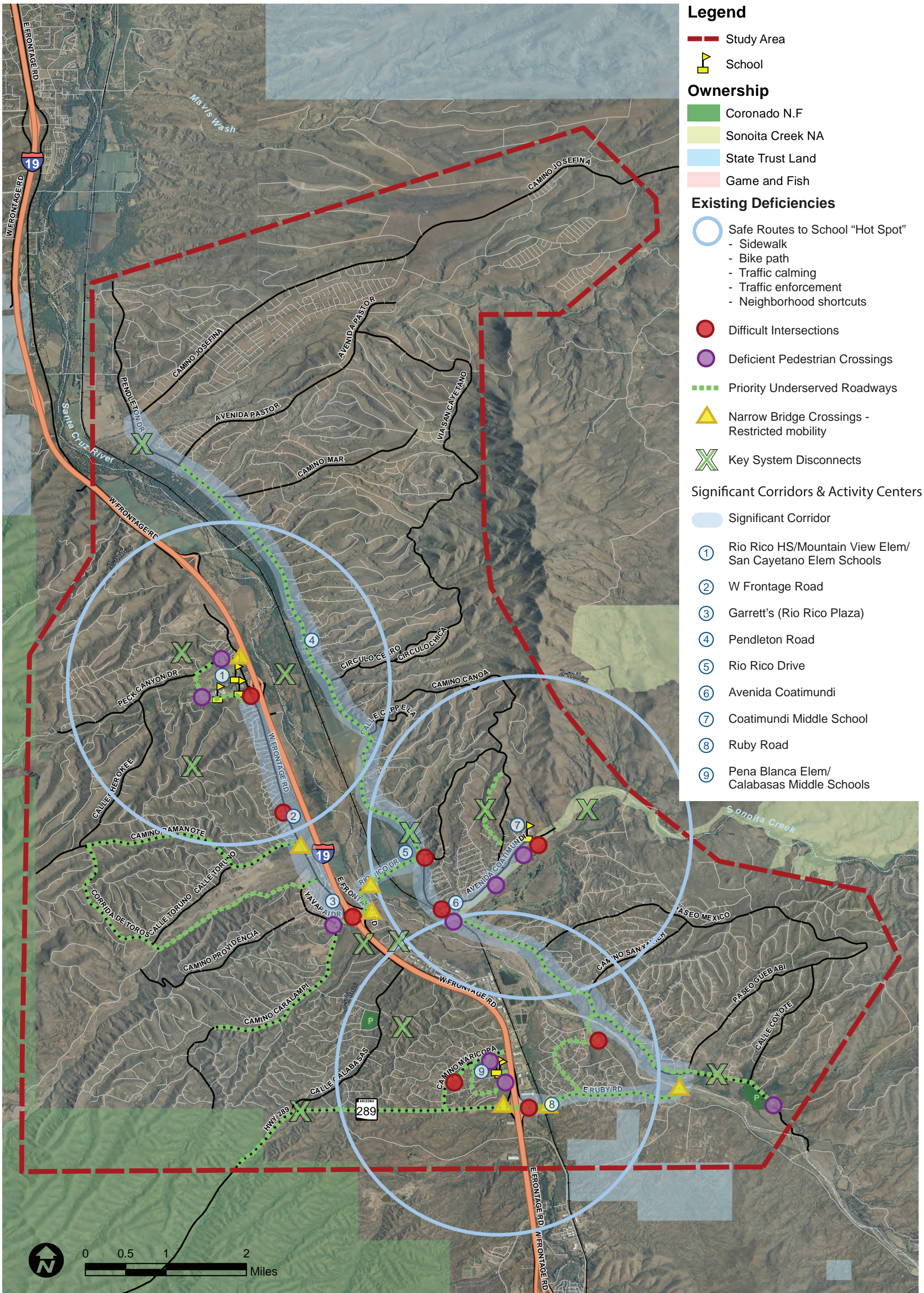


Figure 13: Existing Needs & Deficiencies





## VIII. INTRODUCTION OF MULTIMODAL FACILITY TYPES

This section defines specific terminology used for the Rio Rico Walking and Biking Study in the description, analysis, and assessment of existing and proposed bikeways and pedestrian facilities in the Rio Rico area.



### 8.1 Federal Highway Administration Four E's

The Federal Highway Administration has identified four design components to make bicycling and walking more viable and attractive. The "4-E" program emerged since the 1960's when communities' emphasis on bicycle use needed expanded perspective beyond only the provision of bicycle facilities. The 4-E's are defined below:

1. Engineering: Design bicycle facilities to the "best available practices" and beyond.
2. Education: Tailor education programs to adult and student bicyclists and to motorists to inform on safe cycling and driving.
3. Enforcement: Establish routine enforcement measures to enforce rules designed for the safety of the rider.
4. Encouragement: Offer encouragement activities and events that are fun, safe, and easy to entice would-be cyclists and reward children to ride effectively and safely.

### 8.2 Resource Documents

All documents and resources utilized in the development of the Rio Rico Walking and Biking Study are identified in Section XV: Resources and References. The following resource documents have applicability to bicycle and pedestrian facilities:

1. *The Arizona Revised Statutes Title 28 (Transportation)*
2. *The American Association of State Highway and Transportation Officials' (AASHTO) Guide for the Development of Bicycle Facilities (2012)*
3. *The Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) (2009 Edition)*



4. *The Arizona Department of Transportation (ADOT) Traffic Engineering Policies, Guides and Procedures (PGP)(January 2000, revised October 2012)*
5. *Arizona Department of Transportation (ADOT), Intermodal Transportation Division Policy, MGT 02-1, "Bicycle Policy" (February 27, 2007, reviewed February 27, 2010)*
6. *ADOT Roadway Design Guidelines, May 2012*
7. *The American Association of State Highway and Transportation Officials' (AASHTO), Guide for the Planning, Design, and Operation of Pedestrian Facilities, July 2004*

### **8.3 Bikeway and Pedestrian Facility Definitions**

The Arizona Revised Statutes (ARS) Title 28 provides definitions related to bicyclists and pedestrians, as well as rights granted to cyclists accessing roadways.

ARS 28-101 defines bicycle, pedestrian, and vehicle as follows:

6. *"Bicycle" means a device, including a racing wheelchair, that is propelled by human power and on which a person may ride and that has either:*

*(a) Two tandem wheels, either of which is more than sixteen inches in diameter.*

*(b) Three wheels in contact with the ground, any of which is more than sixteen inches in diameter.*

41. *"Pedestrian" means any person afoot. A person who uses an electric personal assistive mobility device or a manual or motorized wheelchair is considered a pedestrian unless the manual wheelchair qualifies as a bicycle. For the purposes of this paragraph, "motorized wheelchair" means a self-propelled wheelchair that is used by a person for mobility.*

57. *"Vehicle" means a device in, on or by which a person or property is or may be transported or drawn on a public highway, excluding devices moved by human power or used exclusively on stationary rails or tracks.*



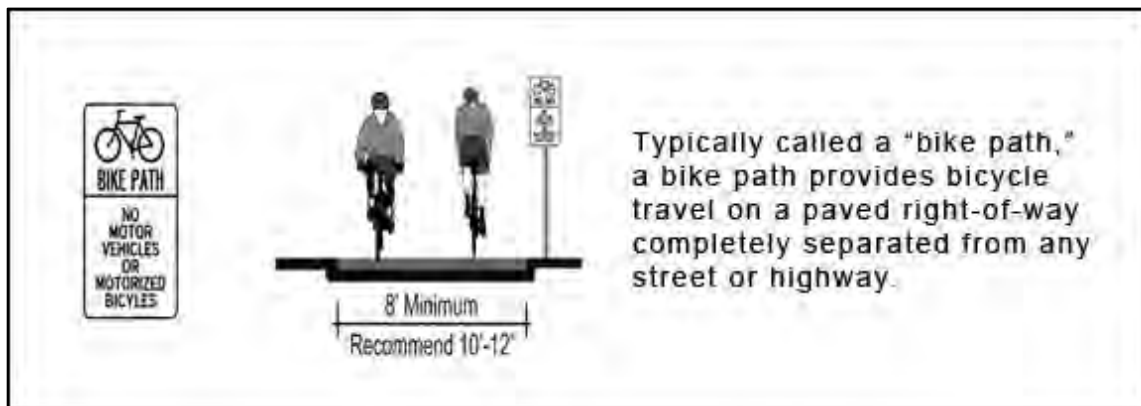
ARS 28-812 indicates the following:

*A person riding a bicycle on a roadway or on a shoulder adjoining a roadway is granted all of the rights and is subject to all of the duties applicable to the driver of a vehicle by this chapter and chapters 4 and 5 of this title, except special rules in this article and except provisions of this chapter and chapters 4 and 5 of this title that by their nature can have no application.*

The American Association of State Highway and Transportation Officials' (AASHTO) *Guide for the Development of Bicycle Facilities (2012)* provides definitions for bicycle facilities. The following definitions are utilized for this study:

**Bike Path** - Provides for bicycle travel on a paved right-of-way completely separated from a street or highway. Bicycle paths are often planned along uninterrupted linear rights-of-way, such as rivers and rail rights-of-way.

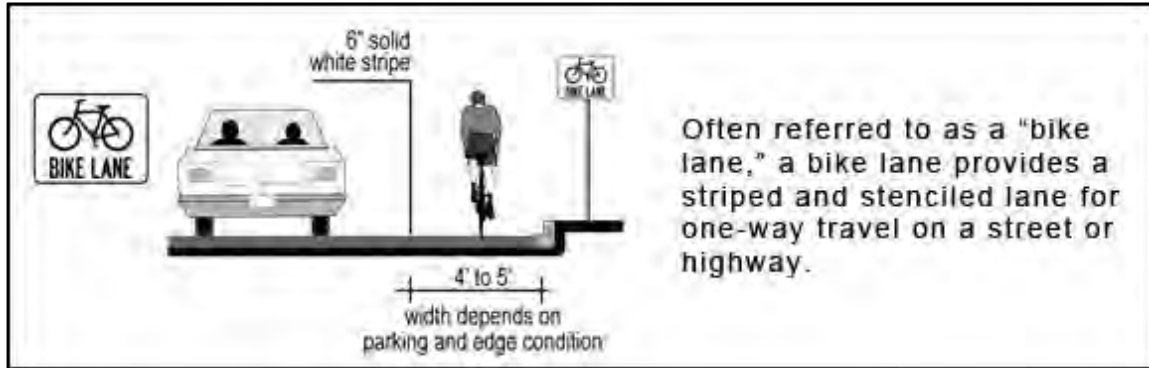
**Figure 14: Typical Bike Path Cross-section**



**Bicycle Lane** - Provides a dedicated portion of the roadway designated by striping, signing, and pavement markings for one-way bike travel. Can be buffered; see below. Some bicycle maps will identify grade and corresponding traffic volumes along bike lanes to convey to cyclists the potential level of difficulty or stress associated with riding those bike lanes. ADOT policy explicitly states bicycle lanes should not be designated on sidewalks.



Figure 15: Typical Bike Lane Cross-section



**Bicycle Route** - A preferred travel route for bicyclists, on which a separate lane or path is either not feasible or not desirable. The rightmost lane of a bicycle route is shared by bicyclists and cars. The route is marked with signs and can also be marked with sharrows. Sharrows (Shared Lane Marking) are defined in the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) (2009 Edition). ADOT policy explicitly states bicycle routes should not be designated on sidewalks.

Figure 16: Typical Bike Route Cross-section



- Bike routes can become more useful when coupled with such techniques as the following:
  - Route, directional, and distance signage
  - Wide curb lanes
  - Sharrow stencils painted in the traffic lane along the appropriate path of where a bicyclist would ride in the lane.
  - Accelerated pavement maintenance schedules
  - Traffic signals timed and coordinated for cyclists (where appropriate)
  - Traffic calming measures



**Paved Shoulder** - Provides for bicycle travel on rural or county roads with a paved area typically extending 4-feet or more beyond the roadway striping. The shoulder width generally increases with posted roadway speed. Shoulders composed of dirt or chip seal surface that does not provide uniform integrity would not be suitable shoulder surfaces for bicycling.

**Shared Use Path** - Provides for bicycle travel on a paved right-of-way completely separated from a street or highway. Shared use paths are often planned along uninterrupted linear rights-of-way, such as rivers, channels, and rail rights-of-way. A shared use path may be used by cyclists, pedestrians, skaters, wheelchair users, joggers, and other non-motorized users.

The following are enhanced bike lanes or bike routes which help to increase driver awareness of bicyclists:

**Buffered bike lanes** – Bike lanes with a painted buffer area usually outside the bike lane providing some space between bicycles and motor vehicles (left photo). The buffer may also go between parked cars and the bike lane (right photo).



**Colored Pavement for Bike Lanes** – FHWA has issued an Interim Approval for the optional use of green colored pavement in marked bicycle lanes and in extensions of bicycle lanes through intersections to regulate, warn or guide traffic. The green colored pavement is used to set aside for exclusive or preferential use by bicyclists and to enhance the conspicuity of a bicycle lane. As such, the green colored pavement is considered more than just an aesthetic treatment, it is considered to be a traffic control device.



This study utilizes the following definitions for facilities that are not planned for bicycle travel:



**Pedestrian Hybrid Beacon** – Also known as the High intensity Activated crossWalk (or HAWK) is a pedestrian-activated warning device located on the roadside or on mast arms over midblock pedestrian crossings. The beacon head consists of two red lenses above a single yellow lens. The beacon head is "dark" until the pedestrian desires to cross the street. At this point, the pedestrian will push an easy to reach button that activates the beacon. After displaying brief flashing and steady yellow intervals, the device displays a steady red indication to drivers and a "WALK" indication to pedestrians, allowing them to cross a major roadway while traffic is stopped. After the pedestrian phase ends, the "WALK" indication changes to a flashing orange hand to notify pedestrians that their clearance time is ending. The hybrid beacon displays alternating flashing red lights to drivers while pedestrians finish their crossings before once again going dark at the conclusion of the cycle.



**Local Trail** – An off-street path or trail for the use of non-motorized transportation (pedestrians, equestrians, bicyclists), which may or may not be paved. Local trails are not designed for the primary use of bicyclists and serve the surrounding area.





**Multipurpose Trail** – An off-street path or trail for the use of non-motorized transportation (pedestrians, equestrians, bicyclists), which may, but is usually not paved. Multipurpose trails are not designed for the primary use of bicyclists and serve local and regional needs.



**Greenway** – An off-street path or trail located within a larger landscape corridor. This type of facility may have associated amenities such as seating areas or recreational facilities. A greenway may also be designed around a natural feature such as a waterway.





### 8.4 Types of Bicyclists

Several types of bikeway users exist in every community, each with varying needs and values. An effective bikeway network takes all user group needs into consideration. Bicyclists who ride for recreation and/or transportation can be grouped into the following categories as defined in *Selecting Roadway Design Treatments to Accommodate Bicyclists (Federal Highways Administration, 1994)*:

**Advanced or experienced riders:** These riders generally ride for convenience and speed and want direct access to destinations with minimum detour or delay. They are typically comfortable riding with motor vehicle traffic, but still require sufficient operating space on the travel way or shoulder to eliminate the need for either themselves or a passing motor vehicle to shift position.



**Basic or novice riders:** These riders use their bicycles on a more casual basis, such as trips to the store or for occasional exercise, but prefer to avoid roads with fast and heavy motor vehicle traffic. Novice riders are comfortable riding on neighborhood streets and shared use paths and prefer designated facilities such as bike lanes or wide shoulder lanes on busier streets.



**Children:** Riding on their own or with their parents, children may not travel as fast as their adult counterparts, but still require access to key destinations in their community, especially schools, playgrounds, and other recreational facilities. Off-street paths and residential streets with low motor vehicle speeds are ideal for children. Busier streets with well-defined pavement markings between bicycles and motor vehicles can accommodate children without encouraging them to ride in the travel lane of major arterials.







## 8.5 Other Definitions

The following definitions are relevant to the Rio Rico Walking and Biking Study and trail and bikeways network in the area.

**Bicycle:** The AASHTO definition of a bicycle is “every vehicle propelled solely by human power which any person may ride, having two tandem wheels, except scooters and similar devices. The term ‘bicycle’ also includes three- and four-wheeled human-powered vehicles, but not tricycles for children.”

**Grade:** The slope of a facility. The maximum generally accepted grade for a bikeway is 5%, with 2% for sustained distances.

**At-grade crossing:** When a trail or bikeway intersects with a roadway at the same level as crossing traffic on the roadway. At-grade crossings may or may not be signaled, but are often controlled intersections.

**Grade separation:** When a trail or bikeway crosses over or under a roadway, allowing users to cross without interacting with automobile traffic. Grade separations in this Plan are also termed “overcrossings” and “undercrossings.”

**Amenities:** Physical features that enhance safety, aesthetics, and enjoyment of non-motorized transportation. Amenities may include landscaping, lighting, rest amenities, and end-of-trip facilities.

**End-of-trip facilities:** Include bicycle racks, bicycle or personal lockers, showers, or any other facility or amenity that provides bicycle commuters with a place to securely store belongings, or a place for bicyclists to change clothes and shower. End-of-trip facilities are especially important to bicycle commuters and are usually provided by employers.



## IX. EXISTING BICYCLE & PEDESTRIAN FACILITIES IN RIO RICO

This section describes the existing bike ways, trails and paths in the Rio Rico Study Area. Consistent with Santa Cruz County and Santa Cruz Valley Unified School District No. 35 objectives for this study, the primary focus of the data collection, analysis and mapping efforts was on existing and future facilities to serve each of the three SRTS Hot Spots and the nine other significant corridors and activity centers. Information on supporting regional trails has been collected and mapped in a more limited manner.

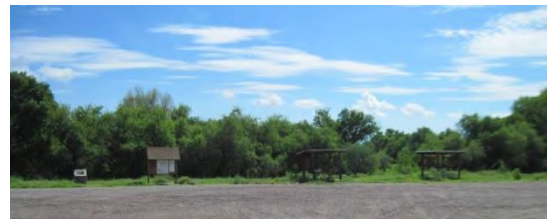
*Figure 12: Existing Conditions and Focus Areas* illustrates existing and currently planned/constructed bicycle and pedestrian facilities in Rio Rico. Each of the facility types and their locations are identified. Generally speaking, Rio Rico has a limited inventory of existing bicycle and pedestrian facilities and amenities due to the rural character and historical development pattern of the area.

### 9.1 Bicycle Lane/Bicycle Path

As noted in the Santa Cruz County Comprehensive Plan and again confirmed through the Field Study and other data collection efforts for this study, there are no formally designated bike paths or bike lanes in Rio Rico. Existing roadways are informally used by bicyclists of all types, but no formal striped and signed bicycle facilities currently exist in the study area.

### 9.2 Juan Bautista de Anza National Historic Trail (Anza Trail)

The Anza Trail traverses the Rio Rico study area within a corridor near the Santa Cruz River and Nogales Wash. In 1775-76, de Anza led more than 240 men, women and children on an overland journey across the frontier of New Spain to settle Alta California. Rio Rico has a formal trailhead – the Guy Tobin Trailhead. This trailhead is located on Rio Rico Drive and provides a formal access and interpretative information for trail users and enthusiasts. It is a popular destination for visitors to access the “living river” and all the various species of flora and fauna that attract trail users to this area.





### 9.3 Shared Use Paths

The Boy Scout Trail along North Pendleton Drive to Rio Rico Drive, the John and Bette De Stefano Pathway and the Henry Jimenez Pathway are the three examples of shared use paths in Rio Rico.

The Boy Scout Trail, the John and Bette De Stefano Pathway and the Henry Jimenez Pathway are well-traveled, paved facilities approximately 10 feet in width. There is an informal trailhead at the current southern terminus of the Boy Scout Trail located at the southwest corner of Pendleton Drive and Rio Rico Drive.

The John and Bette De Stefano Pathway segment begins south of Rio Rico Drive at this trailhead, is buffered from Pendleton Drive along the west side of the roadway and extends approximately ¾ mile in length to its connection to the intersection of Pendleton Drive and Avenida Coatimundi. A cross walk exists at this juncture to provide the connection across Pendleton Drive.

The John and Bette De Stefano Pathway continues on to the senior center along the south side of Avenida Coatimundi. This facility is very well traveled, often used by residents of the adjacent neighborhoods to access the fitness center and community center which are very popular destinations in Rio Rico. Constructed in phases, the Henry Jimenez Pathway extends the shared use path from the senior center eastward to the intersection of Avenida Coatimundi and Calle Juan Legarra whereby school children have improved access to the Coatimundi Middle School.

In addition, Santa Cruz County is currently in the process of clearing and grubbing for the improvement of an additional (and much



*John and Bette De Stefano Pathway along South Pendleton Drive and Avenida Coatimundi*



*Construction of West Frontage Road Shared Use Path*



needed) shared use path along the West Frontage Road. Ultimately, this shared use path, located on the west side of West Frontage Road will be designed and constructed in three phases. The first phase currently under construction will consist of a one mile segment from Camino del Patio (across from the Family Dollar store), north to its planned intersection with Camino Lito Gallindo. The second phase will then extend south from Camino del Patio to Camino Ramanote with the third and final phase planned from Camino Ramanote south to Yavapai Drive.

### 9.4 Trailheads

The Guy Tobin Trailhead is a very well planned and easily accessible formal trailhead to the Anza Trail along the Santa Cruz River. Located just beyond “the bend” in Rio Rico Drive west of the Santa Cruz River, visitors will experience ample parking and a series of information/ interpretative kiosks that describe and illustrate the historical significance of the Anza Trail as well as local flora and fauna that might be seen in the area.



A second, less formal trailhead is located behind the Rio Rico Community Center on Avenida Coatimundi. This trail head provides users access to the Sonoita Creek State Natural Area behind the community center.

A third trailhead is also an informal trailhead located at the southwest corner of Pendleton Drive and Rio Rico Drive. Users can gather here to access the Boy Scout Trail along Pendleton Drive.

The final trailhead is a newly designated trailhead providing connection to the Anza Trail at the Palo Parado Road alignment. A new bridge span over the Santa Cruz River is being designed that will provide vehicular connection from I-19 to Pendleton Road along the Palo Parado Road alignment. A new trailhead is being established in this area east of the Santa Cruz River and west of the railroad tracks to provide additional access to the Anza Trail for the northern areas of Rio Rico.

### 9.5 Sidewalks

As a general measure, sidewalks are very limited in Rio Rico primarily due to its rural character and historical development pattern. As shown in *Figure 12: Existing Conditions and Focus Areas*, the limited sidewalk inventory primarily exists with the Bella Vista residential neighborhoods west of Garrett’s. This smaller lot, more suburban style residential community has sidewalks on their local street system, but sidewalk on only one side of Yavapai Drive which is not connected to Garrett’s along its frontage.



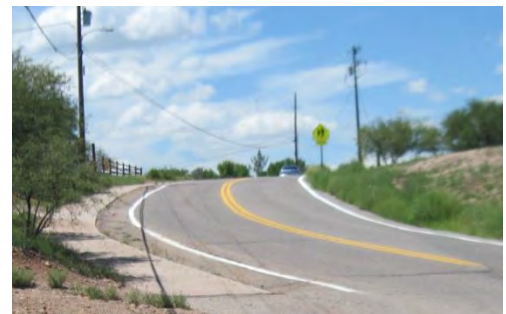
Sidewalks elsewhere in Rio Rico are also limited. Camino Lito Galindo near Rio Rico High School has a sidewalk on one side of the street which abruptly ends well before reaching the schools as it extends west towards the schools. *Figure 12: Existing Conditions and Focus Areas* also shows a limited number of sidewalks near Pena Blanca Elementary and Calabasas Middle School. Sidewalks are also sparse in the area near the schools where they are most needed. The residential community just west of the Coatimundi Middle School also has limited sidewalks – just on one side of one street, Highland Circle. Similar to the area around Calabasas Middle School, this community lacks sidewalks in proximity to the middle school where they would be most useful.



There are also a limited number of sidewalks located at the intersection of both West Frontage Road and East Frontage Road and Rio Rico Drive. What is most significant about these short segments of sidewalk is the absence of a connection of these sidewalks to Garrett’s where they are needed the most.

### 9.6 Shoulders

As previously noted, roadway shoulders are typically defined as an area that includes 4 feet of pavement extending beyond the roadway striping. A specific inventory of existing roadway shoulders that meets these criteria was not available. It is worth noting that there are a wide variety (both type and width) of shoulders on major and minor county roadways. These shoulders in certain areas do informally serve the multimodal needs in Rio Rico. Most notable are the existing shoulders along Rio Rico Drive and Pendleton Drive. These existing shoulders often do not meet certain design criteria to be counted in a formal inventory, but nevertheless can be a key factor in future recommended improvements.



### 9.7 Local Trails and Multiuse Trails

The Esplendor Resort Trail located along the Esplendor Resort entrance road and Camino Caralampi to Yavapai Drive are examples of formal multiuse trails in Rio Rico. Due to the nature of the terrain and number of washes and tributaries that traverse the study area, there are numerous informal multiuse trails that can be found in these areas that are not formally identified on *Figure 12: Existing Conditions and Focus Areas*.



### 9.8 Bikeable Residential Streets

The vast majority of the local residential streets in Rio Rico are similar in character and function – they are rural in nature, serve very low density residential areas and have limited daily traffic trips. When a local residential street serves low density areas with little traffic, these streets are deemed to be “bikeable residential streets” that do not warrant additional striping or sidewalks for pedestrian use. These local streets satisfactorily serve bicyclists and pedestrians in Rio Rico without the need for additional improvements.

## X. SUGGESTED FACILITIES & DESIGN ELEMENTS FOR RIO RICO

The bicycle and pedestrian facility design elements are intended to provide a baseline set of design parameters and policy considerations that should be followed when designing and constructing bicycle and pedestrian facilities in Rio Rico. Many of the concepts are extrapolated in whole or in part or are a combination of design guidance from AASHTO’s *Guide for the Development of Bicycle Facilities*, *Guide for the Planning, Design, and Operation of Pedestrian Facilities*, *Policy on Geometric Design of Highways and Streets* and the FHWA *Manual on Uniform Traffic Control Devices* (MUTCD). These documents are collectively sourced and utilized in providing nationally recognized guidance for the design and construction of these facilities. These resource manuals are supplemented with guidance from ADOT and professional experiences of the consultant as necessary.



## 10.1 Bike Routes/Shared Roadways

Bicyclists are generally permitted to operate on all roadways except where expressly prohibited by statute, regulation or local ordinance. Santa Cruz County does not have an ordinance or any other regulation that prohibits the operation of a bicycle on County roadways. According to the AASHTO *Guide for the Development of Bicycle Facilities* (4<sup>th</sup> Edition, 2012), there are no specific design specifications or standards for bike routes (shared lanes or roadways). However, there are certain roadway design considerations that can make shared roadways more compatible for bicyclists. Some of these include:

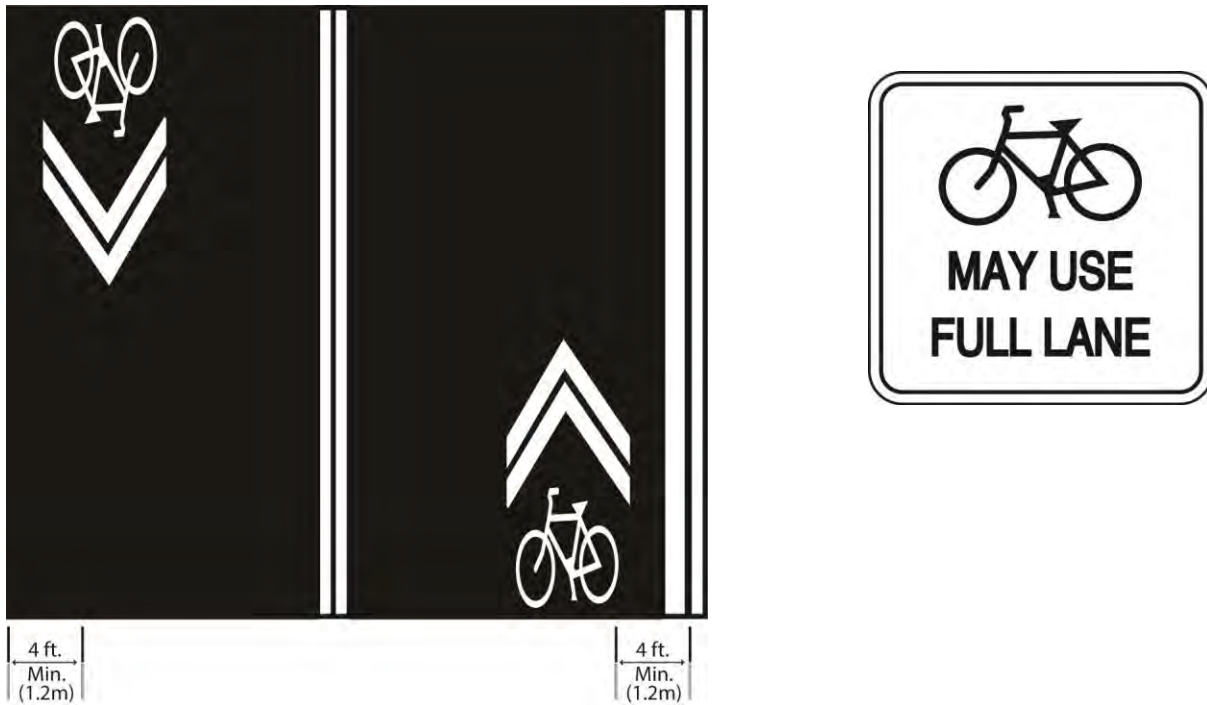
- 1) Good pavement quality
- 2) Adequate sight distance
- 3) Lower design speeds
- 4) Bike-compatible drainage grates and railroad crossings
- 5) Adequate lane width
- 6) Wider shoulders
- 7) Shoulders free of rumble strips
- 8) Appropriate signage

These design features are not always available in the existing roadway system. This can be particularly true in many areas of Rio Rico where topographic variations challenge sight distances and select roadway pavement sections are older and at times can pose hazards for cyclists. Cycling enthusiasts however prefer grade changes in their bicycle trails, especially in training regimens or racing settings. As a result, special attention and further study should be given to the placement of bicycle and driver warning signage on bike route designated streets with variations in grade change.

That said, rural roadways that operate with very low to low daily traffic volumes and have good sight distances may be suitable to accommodate shared roadways (bike routes) in their present condition. These roads can often provide an enjoyable and comfortable riding experience for bicyclists of all skill levels. There is often no need to provide a formal bike lane or other special accommodation for these roadways to be suitable for bicycling.



Figure 17: Typical Shared Roadway Marking with No On-Street Parking



In rural settings like Rio Rico, a narrow, curving roadway with low traffic volumes and low speeds is often more suitable and preferred by bicyclists over roadways with good geometrics, shoulders, and continuous traffic at higher speeds. Outside of urban areas, it is common that these types of shared roadways comprise a high percentage of designated and favorable bicycle routes.

In Rio Rico, the vast majority of the existing local and collector roadways identified in the Santa Cruz County Road Maintenance System are designated as local streets that have 24-foot pavement sections (two, 12-foot travel lanes). Some streets have 26-foot pavement sections (two, 13-foot travel lanes). Some of the roadways are marked with yellow center-line striping and white edge striping, but many are not. As the AASHTO *Guide for the Development of Bicycle Facilities* notes, lane widths of 13 feet or less make it likely that most motorists will encroach at least part way into the adjacent lane (or oncoming lane) to pass a bicyclist with adequate comfort and distance (typically 3-feet). Lane widths of 14 feet or greater allow vehicles to pass bicyclists without encroaching into the adjacent traffic lane. Roadways with lane widths of less than 14-feet can still function safely for bicyclists with proper bicycle guide-signage and/or shared roadway markings. Please see section 10.7 for additional detail on signage and pavement markings.

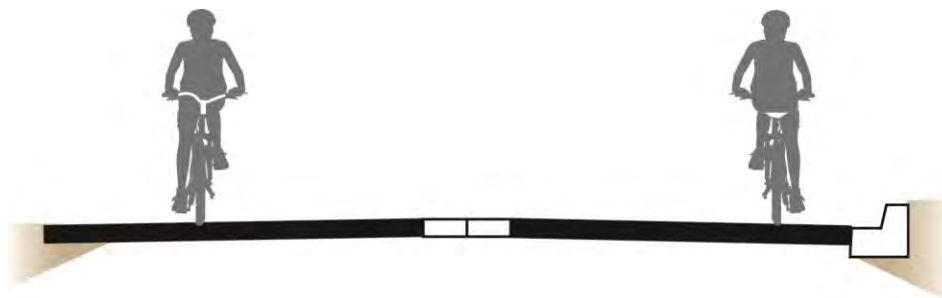
Many of the existing roadways in Rio Rico have a 24-foot pavement width. For roadways that experience a low to very low traffic volume, the installation of these signs along Priority





Underserved Roadways is the most logical, cost effective and meaningful short term benefit to promote and enhance a safe and rewarding bicycle experience in Rio Rico. The 24-foot wide roadways with no pavement markings such as Calle Cherokee, Camino Aqua Fria and Calle Calabasas were identified as Priority Underserved Roadways by community stakeholders, have two, 12-foot travel lanes. A vehicle can comfortably operate within 9-10 feet of that space. On a low-volume traffic roadway with no centerline striping and a posted speed limit of 35 mph or less, there is sufficient maneuverability for vehicles to comfortably avoid a bicyclist sharing that roadway. The lack of center line striping and low traffic volume enhances the ability for maneuverability on a low volume roadway.

**Figure 18: Typical Shared Roadway Cross Section**



This approach however would *not* be appropriate for a two lane road with center-line striping such as Camino Ramanote (a Priority Underserved Roadway) that experiences over 2,000 vehicle trips per day. The higher traffic volumes and center line striping do not provide for sufficient comfort and safety when a motorist needs to pass a bicyclist. Avoiding the cyclist would require the vehicle to encroach upon the approaching travel lane which naturally poses other safety issues and is, of course, a civil traffic violation. It is more favorable for these roadways to be retro-fitted with paved shoulders or striped bike lanes.

### 10.2 Paved Shoulders

When it comes to retro-fitting existing roadways in Rio Rico, the addition of bicycle improvements is best achieved together with road widening, reconfiguration or re-pavement of the existing roadway. In rural areas, the construction of paved shoulders is the most sensible and cost effective approach. The construction of a bike lane is preferred in roadways with higher traffic volumes, typically in urban or suburban settings.

Adding or improving paved shoulders can often enhance the bicyclist experience on roadways that have higher travel speeds, traffic volumes and/or limited existing lane width to adequately share the space with motorists. It is important to understand the difference between a paved shoulder



and a bike lane. According to AASHTO's, *A Policy on Geometric Design of Highways and Streets*, bike lanes are travel lanes and paved shoulders are not designated for travel but often serve as informal travel lanes, particularly in rural settings. Paved shoulders at intersection approaches often are maintained to the right edge of the right turn lane where bike lanes are configured differently by maintaining the bike lane to the inside (left edge) of the designated right turn lane. It is preferable to have paved shoulders on both sides of the roadway.

In Rio Rico, where the vast majority of existing roadways do not have curbing, the desired width for a paved shoulder is 4-feet. This width should be 5-feet from the face of any vertical obstructions such as a guard rail, vertical curb or other outside roadway barrier. If the adjacent travel lane is at least 12-feet in width (the majority of roadways in Rio Rico have a 24-foot roadway section, or two, 12-foot travel lanes), a 3-foot shoulder is acceptable. However, undesignated paved shoulders of a lesser width can enhance the safety and comfortable space for a bicyclist on constrained roadways in cases where it is not practical to achieve the desired paved shoulder width of 4 feet. The AASHTO *Guide for the Development of Bicycle Facilities* (4<sup>th</sup> Edition, 2012) and *A Policy on the Geometric Design for Highways and Streets* should be consulted for specific instructions regarding roadway retro-fitting.

### 10.3 Bike Lanes

As previously noted, there are currently no bicycle lanes or bicycle paths in Santa Cruz County. Bicycle lanes and bicycle paths share the roadway with motor vehicle traffic. Shared use paths, which are a paved facility completely separated from a roadway, are found in Rio Rico. Section 10.4 below offers additional discussion on shared use paths in Rio Rico.

Bicycle lanes are a portion of the roadway dedicated by signing, striping and pavement markings for one-way bike travel, typically in the same direction as the adjacent motor vehicle traffic. As the AASHTO *Guide for the Development of Bicycle Facilities* notes;

*“Bicycle lanes are the appropriate and preferred bike facilities for thoroughfares in both urban and suburban areas. Where desired, or where there is a high potential for bicycle use, bike lanes may be provided on rural roadways near urban areas”.*





This of course is an important distinction relative to the identification and prioritization of bike lane projects (or lack thereof) in Rio Rico. Paved shoulders can be designated as bike lanes with the appropriate MUTCD signage and pavement markings, especially in rural settings. The low to very low traffic volumes, low density/ intensity of existing and planned land uses, and existing circulation and carrying capacities of the rural roadways in Rio Rico collectively warrant the prudent application of shared roadway bike routes or construction of paved shoulders to accommodate a safe and cost effective expansion of a connective network of bicycle trails in Rio Rico.



### 10.4 Shared Use Paths

Shared use paths are designed and intended for use by bicyclists, pedestrians, joggers, skaters, and wheelchair users traveling together on a paved right-of-way (or easement) separate from the roadway facility. The Boy Scout Trail, John and Bette De Stefano and Henry Jimenez Pathways are current examples of shared use pathways in Rio Rico. Shared use paths are typically designed for two-way travel.

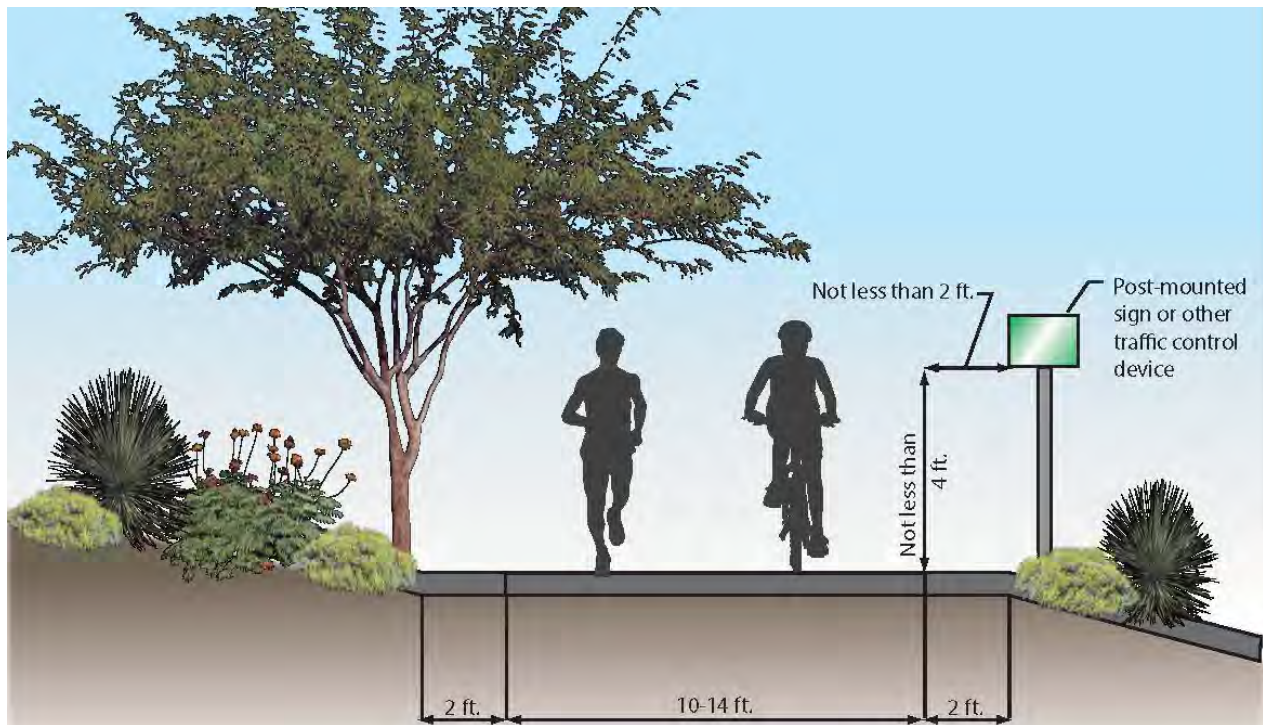
Shared use paths are typically designated for areas that can provide long, continuous and uninterrupted use. They are often located adjacent to water features, utility corridors, lengthy roadways, railroad corridors and other nature features. Shared use paths should not necessarily preclude other bicycle facilities in roadways, but in rural areas there is generally not a need for such redundant facilities.

Compliance with Americans with Disabilities Act (ADA) design provisions is required for shared use paths since they are accessible by pedestrians. In fact, designers of shared use paths in Rio Rico shall consult the Architectural and Transportation Barriers Compliance Board (Access Board) *Advanced Notice of Proposed Rulemaking on Accessibility Guideline for Shared Use Paths*.



Ten feet (10-feet) is the minimally accepted width for a paved two-directional shared use path. Typical desired widths vary from 10-feet to 14-feet depending on the mix and volumes of path users. Paths of 11-14 feet wide typically are provided for more intense usage of approximately 300 users in a peak hour or when more than 30% of the users are pedestrians or joggers. The existing shared use paths in Rio Rico are 10-feet in width which is also a sufficient width for future shared use paths in Rio Rico. The desired paved width can be reduced to 8-feet in isolated circumstances when dictated by a physical impediment, bridge structure, utility structure or fence. The MUTCD and *AASHTO Guide for the Development of Bicycle Facilities* should be consulted by designers for more specific design and signage guidelines for these circumstances.

**Figure 19: Typical Shared Use Path**



For a typical shared use path in Rio Rico where usage on a given day is less intense than that of urban areas, no striping is necessary for the shared use path. Where operational challenges exist, a solid yellow line to prohibit passing may be utilized. Any shared use path markings shall be retro-reflective.

Graded side shoulders consisting of compressed native or decomposed granite materials should be maintained at a minimum of two feet in width (preferably 3 feet to 5 feet) with a maximum cross slope of 6:1 (horizontal/vertical). Also, a minimum of two foot clearance area shall be maintained



from the edge of the shared use pathway (pavement edge) to bushes, rocks, pole signs, trash receptacles or other such objects. The preferred vertical clearance to any overhead obstruction is 10 feet.

Future shared use path designers shall refer to the AASHTO *Guide for the Development of Bicycle Facilities* and the *Advanced Notice of Proposed Rulemaking on Accessibility Guideline for Shared Use Paths* for detailed design provisions in circumstances where the shared use path is in close proximity to a roadway and for driveway conflicts.

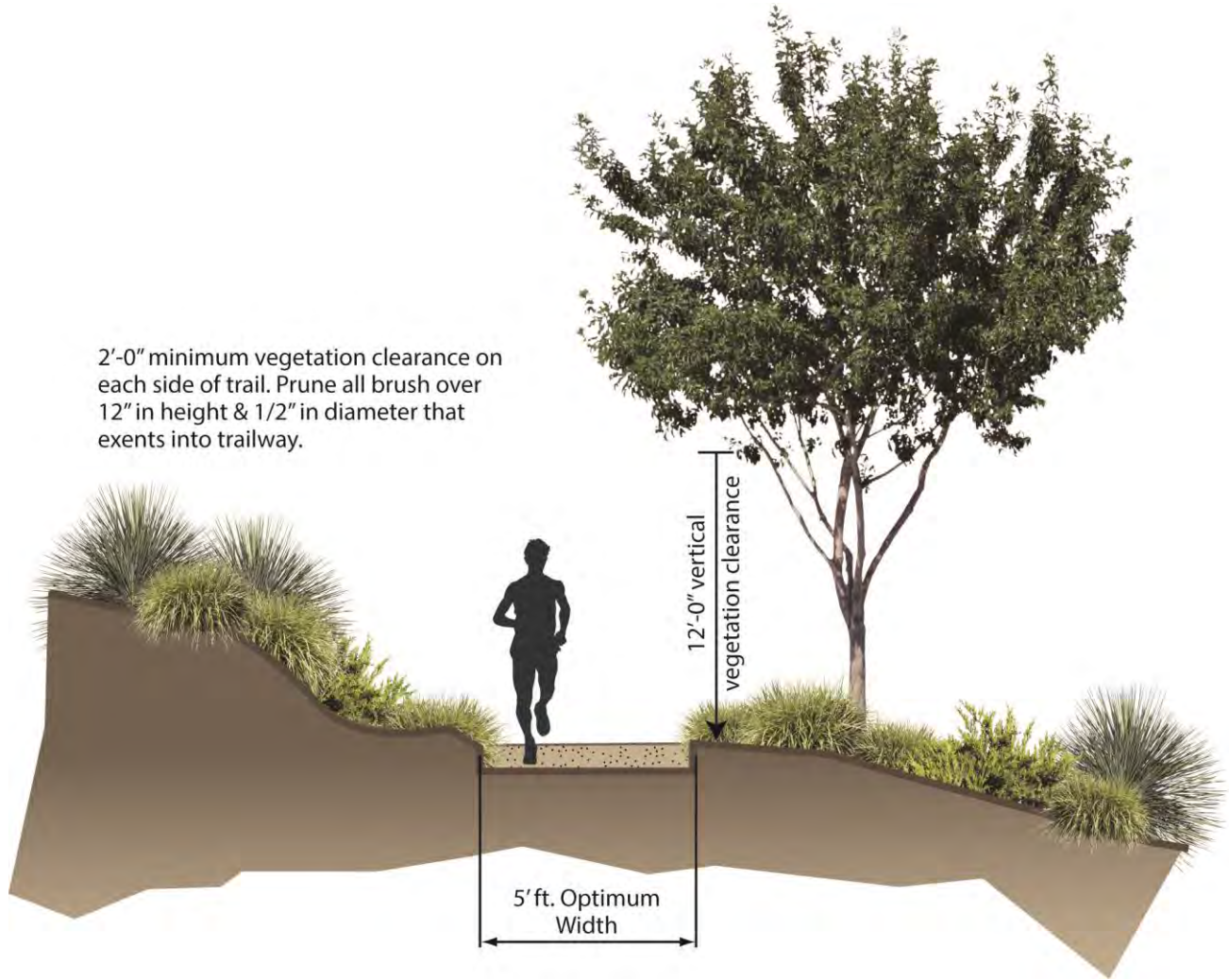
### 10.5 Multipurpose Trails

Multipurpose trails are off-road trails, typically unpaved that are intended for use by pedestrians, bicyclists or equestrian users. Multipurpose trails typically are set back from formal roadway facilities and often utilize natural and manmade features such as washes, rivers or utility corridors for recreational use. The Anza Trail is an example of a multipurpose trail in Rio Rico. There is no “one size fits all” approach when designing multipurpose trails as their design is highly influenced by local conditions including topography, physical impediments, and availability of right-of-way or easements.





Figure 20: Typical Multipurpose Trail



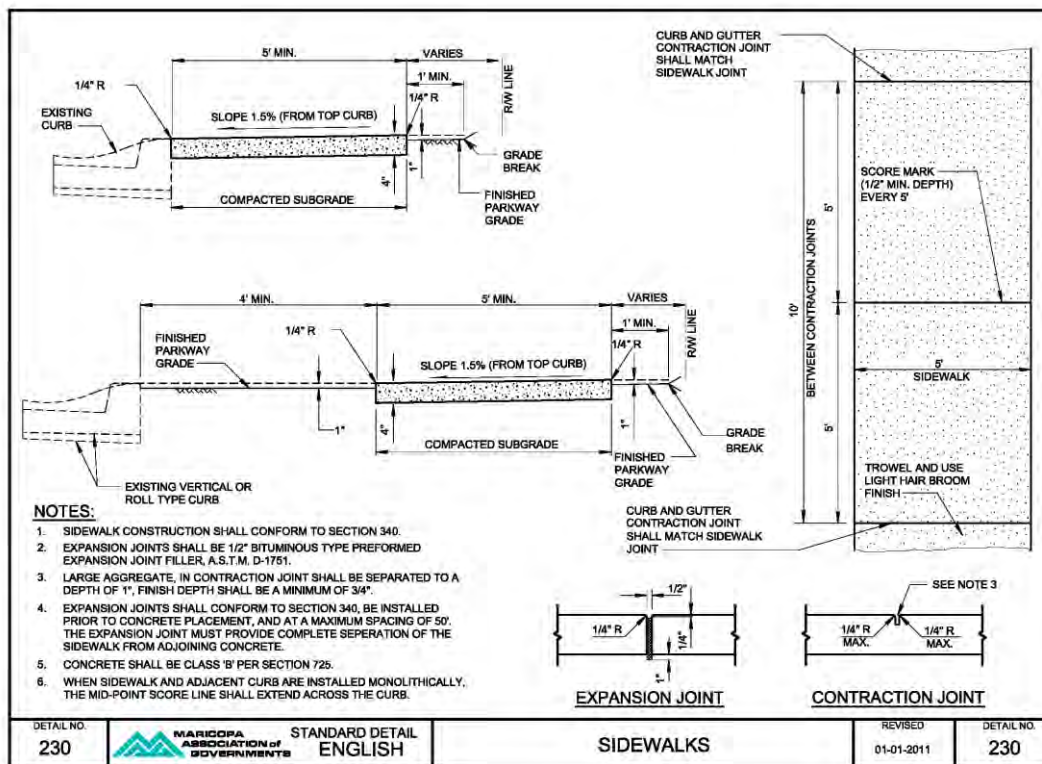


## 10.6 Sidewalks

Sidewalks generally provide the greatest degree of comfort for pedestrians when pedestrian use is found in close proximity to a roadway facility. In Rio Rico where much of the existing and planned land uses are rural and low density residential, sidewalks are not always necessary or desired. Generally, sidewalks are preferred in residential communities with an average lot size of 12,000 square feet or smaller. The population densities and vehicle trips generated in higher density subdivisions warrant the application of sidewalks to safely segregate the pedestrian from vehicular traffic. In residential areas with lower densities, paved shoulders or a shared use path on rural roadway sections can adequately serve pedestrian comfort and convenience.

Santa Cruz County utilizes Maricopa Association of Governments (MAG) standard specifications and details for the design and construction of sidewalks (*Figure 21: MAG Std. Detail 230*). The MAG detail calls for a 5-foot sidewalk width, however in areas where heavy pedestrian activity is anticipated, a six foot width is preferred. The minimum acceptable width of sidewalk for short distances is four feet.

**Figure 21: MAG Std. Detail 230**





### 10.7 Signage

All signage must comply with the current edition of the Manual on Uniform Traffic Control Devices (MUTCD). The minimum number of signs adequate to communicate the intended message is desirable in order to prevent information overload. In Rio Rico, the application of Bike Route signs will be the most prevalent use of signs.

The signs shown may be used on roadways without bike lanes or usable shoulders and where the road section may be too narrow for motorists and bicyclists to operate side by side within a lane. Alternately, W11-1 with W16-1P may be used in an area of concern where it is not feasible or cost prohibitive to modify a facility to better accommodate bicyclists.

Figure 22: MUTCD, W11-1



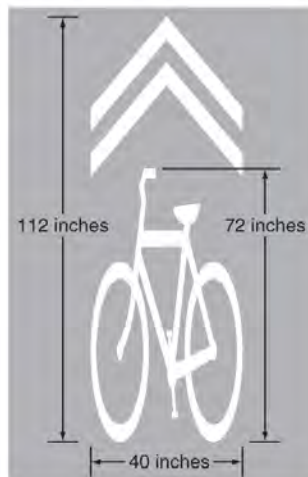
OR



Figure 23: MUTCD, W16-1P



Figure 24: Typical Bike Route Pavement Marking



Source: MUTCD



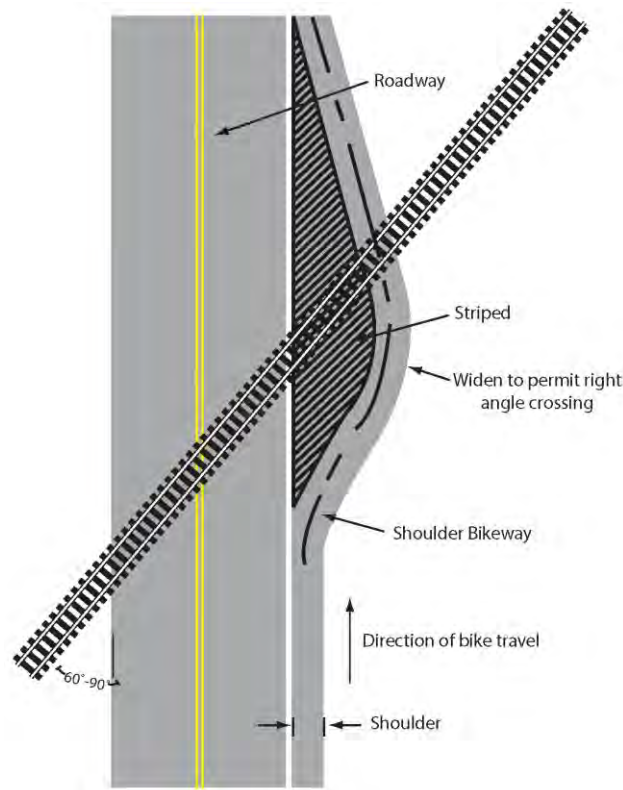


### 10.8 At-grade railroad crossings

Railroad crossings that cross a roadway at an angle can cause steering difficulties for bicyclists. Rio Rico has railroad crossings on county roadways at several locations, including Ruby Road as perhaps the most notable. Depending on the width and depth of the flange way opening and pavement unevenness, it is common for bicycles to get “pinched” and turned away from their desired course, causing accidents and injuries.

When evaluating new crossings for roadways or the construction of a shared use path, the accepted angle of the skew between the centerline of the tracks and the bike facility is 60-90 degrees with 90 degrees being preferred. Concrete surfacing should be applied for smoothest and safest ride as it performs better in wet conditions. Rubber crossings are slippery when wet and degrade over time, especially in the Arizona sun. *Figure 25: Desired Railroad Crossing Condition* below shows a desirable railroad crossing condition.

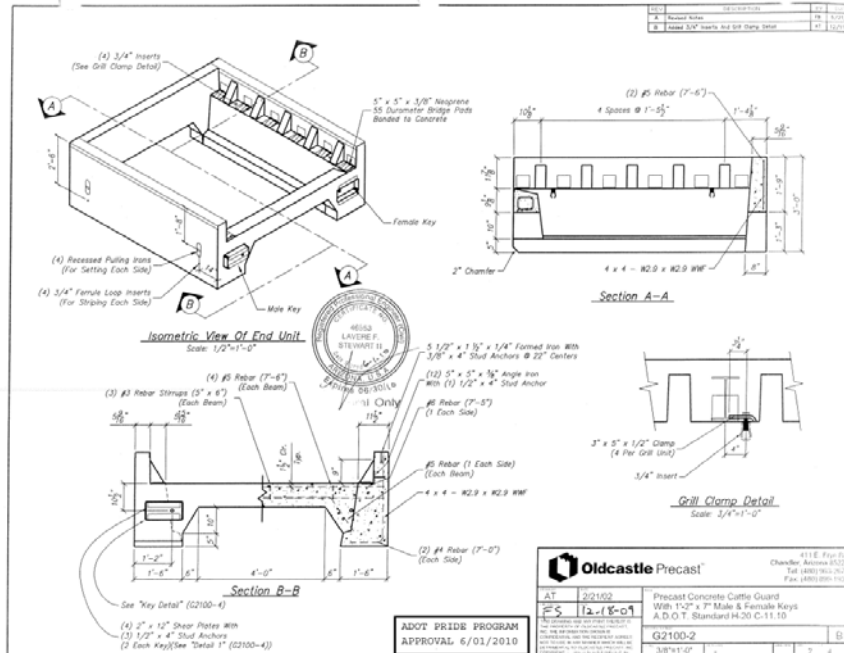
**Figure 25: Desired Railroad Crossing Condition**





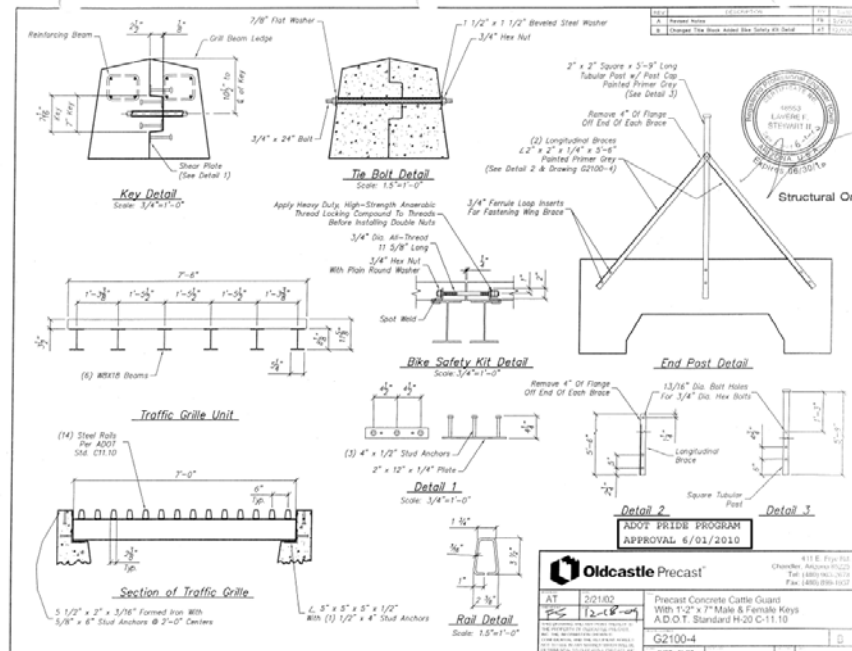
Rio Rico has numerous cattle guards on county and ADOT roadway facilities. Community and project stakeholders voiced concern that some of the cattle guards can pose a safety hazard for bicyclists when there is extra “gaps” in the grate rail or thread. This is often caused by the grate shifting from vehicles driving over the cattle guards. Figure 26(a) and 26(b) are standard cattle guard/grate details with a grill detail that helps mitigate this safety concern for bicyclists.

**Figure 26(a): Desired Cattle Guard Details**



**Figure 26(b): Grille Detail**

Source: ADOT



Source: ADOT



### 10.9 Narrow Bridges

Generally speaking, bridges should accommodate bicycles and pedestrians into their design. The type of bicycle facility should consider the function of the roadway (design speed), length of the bridge facility and existing conditions of the approach roadway. Paved shoulders (bicyclists) and sidewalks are the most common application in rural conditions such as Rio Rico. At a minimum, the addition of paved shoulders on the approach road should be included in any retrofit project. In conditions where the bicycle facility (paved shoulder) is adjacent to the edge of the bridge, a rail with a height of 42 to 48 inches (depending on design speed) should be utilized. Retrofitting existing bridges by reducing travel lane width to accommodate bicyclists and pedestrians is not a viable option in Rio Rico – the lane widths are already at 12 feet in most cases.

In conditions where existing bridge retro-fits are not practical or cost-effective, pedestrian and bicycle facilities (one shared use path) can be provided in a grade-separated crossing to enable the continuation of the existing bike or trail system in small washes. When it is necessary to provide for bicyclists on currently undersized bridges, “share the road” bicycle signage, pavement markings and driver warning signage should be utilized when widening options are not available such as Ruby Road and Rio Rico Drive crossings of the Santa Cruz River. For grade separated crossings that entail the shared use path to traverse an existing small wash facility, concrete is the preferred materials to minimize scour and erosion. Environmental permitting and hydrology studies may be necessary prior to design and construction of said facilities. This condition is only applicable to smaller wash crossings such as the West Frontage Road crossing of Aqua Fria Canyon or Ruby Road at Potrero Creek.

### 10.10 Mitigating Intersections with Unpaved Roadways

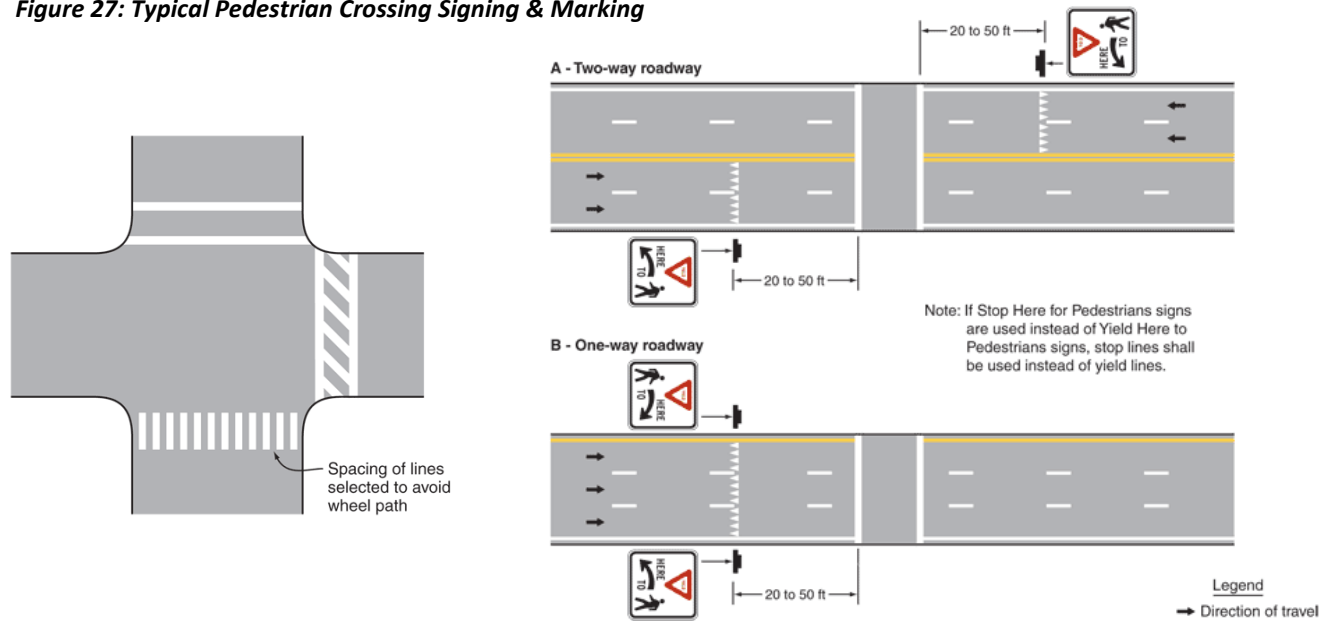
A common problem plaguing bicycle trail safety and maintenance in rural communities is loose gravel that becomes deposited on the bicycle trails from vehicle movements on approaching unpaved driveways. Small, loose gravel on bicycle trails creates a safety hazard for cyclists and a maintenance headache for local public works crews. When constructing a new paved shoulder, shared use path or bike lane facility, it is suggested that at a minimum 10-foot portion of the unpaved driveway approach be paved in order to reduce loose gravel depositing onto bike trails and creating crash hazards.



### 10.11 Pedestrian Crossings

Crosswalk markings provide guidance to pedestrians who are crossing roadways by delineating paths to and within signalized intersections. In conjunction with signs and other measures, crosswalk markings help to alert road users of a designated pedestrian crossing point across roadways at locations that are not controlled by traffic control signals or STOP or YIELD signs. At non-intersection locations, crosswalk markings legally establish the crosswalk. For approaching vehicles, appropriate pedestrian/bicycle crossing warning signage such as MUTCD W-11-2, W-11-15 or W-11-15P for vehicle approaches at intersections should be considered. Examples of typical signing and pavement markings are shown below.

Figure 27: Typical Pedestrian Crossing Signing & Marking



Source: MUTCD



## 10.12 Accessibility

The Americans with Disabilities Act of 1990 (ADA) is a comprehensive civil rights law which prohibits discrimination on the basis of disability. It requires, among other things, that newly constructed and altered “places of public accommodation” be readily accessible to and usable by individuals with disabilities. Accessibility guidelines are developed by the Architectural and Transportation Barriers Compliance Board (Access Board). Most accessibility standards (ADAAG, Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities) are not readily applicable to the natural environment. The most pertinent document to guide trail development is the “Draft Final Accessibility Guidelines for Outdoor Developed Areas” (2009) . The United States Department of Agriculture Forest Service (USFS) has developed Forest Service Trail Accessibility Guidelines (FSTG) based on the guidelines on outdoor developed areas. Although the USFS trail design parameters do not apply to the range of trails provided in this plan, the FSTG are helpful because they “provide guidance for maximizing accessibility of trails...while recognizing and protecting the unique characteristics of their natural setting.” These guidelines encourage design for increased accessibility but do not require unreasonable efforts to provide an accessible route in hiking trails in steep terrain without added surfacing. Where terrain allows accessible slopes, a range of surfacing choices from pavement to fine gravel to engineered wood fiber can create levels of accessibility that respond to the character and desired use of the trail.

Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (2011) contains guidance appropriate to facilities adjacent to roadways. <http://www.access-board.gov/prowac/nprm.htm> The Access Board has also given notice of proposed ruling making regarding Shared use paths. See Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way; Shared Use Paths <http://www.access-board.gov/sup/snprm.htm>

The Technical Provisions for ‘Access Routes’, ‘Outdoor Access Routes’, and ‘Accessible Trails’ gives the technical details of ADAAG and the Outdoor Developed Areas guidelines. The information contained in Table 15 is based on information contained in *Trail Planning, Design and Development Guidelines: Shared Use Paved Trails, Natural Surface Trails, Winter Use Trails, Bikeways* by the Minnesota Department of Natural Resources Trails and Waterways, 2006. ‘Access routes’ (ADAAG) relate to the built environment where all routes must meet accessibility requirements. ‘Outdoor access routes’ are in outdoor environments, e.g., parks where reasonable access is required, such as between a parking lot and a playground. ‘Accessible trails’ are those trails that meet the USFS guidelines. All refer to newly constructed or altered trails, not retroactively to existing trails. ‘Alteration’ differs from ‘maintenance’ by changing the trail from its original condition.



Table 15: Technical Accessibility Provisions

Technical Provision for Access Routes, Outdoor Access Routes and Accessible Trails			
	Access Route	Outdoor Access Route	Accessible Trail
<b>Surface</b>	Stable, firm and slip resistant	Firm and stable	Firm and stable*
<b>Minimum Clear Tread Width</b>	36 inches 32 inches for no more than 20 inches	36 inches 32 inches when * applies	36 inches 32 inches when * applies
Tread Obstacles			
<b>Maximum Cross Slope</b>	1:50 (2%)	1:33 (3.03%) 1:20 (5%) for drainage purposes	1:20 (5%) 1:10 (10%) at the bottom of an open drain where clear tread is a minimum of 42 inches
<b>Maximum Running Slope</b>	1:12 (8.33%)	1:20 (5%) for any distance 1:12 (8.33%) for maximum of 50 feet 1:10 (10%) for maximum of 30 feet	1:20 (5%) for any distance 1:12 (8.33%) for maximum of 50 feet 1:10 (10%) for maximum of 30 feet 1:8 (12.5%) for maximum of 10 feet 1:7 (14.3%) for 5 feet maximum for open drainage structures*



	<b>Access Route</b>	<b>Outdoor Access Route</b>	<b>Accessible Trail</b>
<b>Passing Space</b>	Every 200 feet where clear tread width is less than 60 inches, a minimum 60 X 60 inch space, or a T-shaped intersection of two walks or corridors with arms and stem extending a minimum of 48 inches.	Every 200 feet where clear tread width is less than 60 inches, a minimum 60 X 60 inch space, or a T-shaped intersection of two walks or corridors with arms and stem extending a minimum of 48 inches or every 300 feet where * applies.	Every 200 feet where clear tread width is less than 60 inches, a minimum 60 X 60 inch space, or a T-shaped intersection of two walks or corridors with arms and stem extending a minimum of 48 inches.*
<b>Resting Intervals</b>	Landings: 60 inch minimum length. Minimum width as wide the ramp run leading to it.	Landings: 60 inch minimum length. Minimum width at least as wide as the trail segment leading to the resting interval. A maximum slope of 5% is permitted for drainage purposes.	Landings: 60 inch minimum length. Minimum width at least as wide as the trail segment leading to the resting interval and a maximum slope of 1:20 (5%)*

*\*Exceptions to the technical provisions can be made in certain situations.*

Technical provisions for outdoor access routes and accessible trails may not apply if it cannot be provided because compliance would:

- 1) cause substantial harm to cultural, historic, religious or significant natural features or characteristics;
- 2) substantially alter the nature of the setting or purpose of the facility;
- 3) require construction methods or materials that are prohibited by Federal, state or local regulations or statutes; or
- 4) be infeasible due to terrain or prevailing construction practices.



### 10.13 Trailheads

Trailheads are staging areas at the point at which a path, usually intended primarily or solely for walking/hiking and/or equestrian traffic, begins. Modern trailheads often contain vehicular parking areas, restrooms, sign posts and kiosks containing information about the trail and its features.

Trailheads are located along key trails and at the entrance of important destinations. The trailheads are designed to provide specified levels of service to the identified trail user type. There are typically two trailhead types: major and minor. The Guy Tobin Trailhead providing access to the Anza Trail along the Santa Cruz River in Rio Rico is an example of a major trailhead.

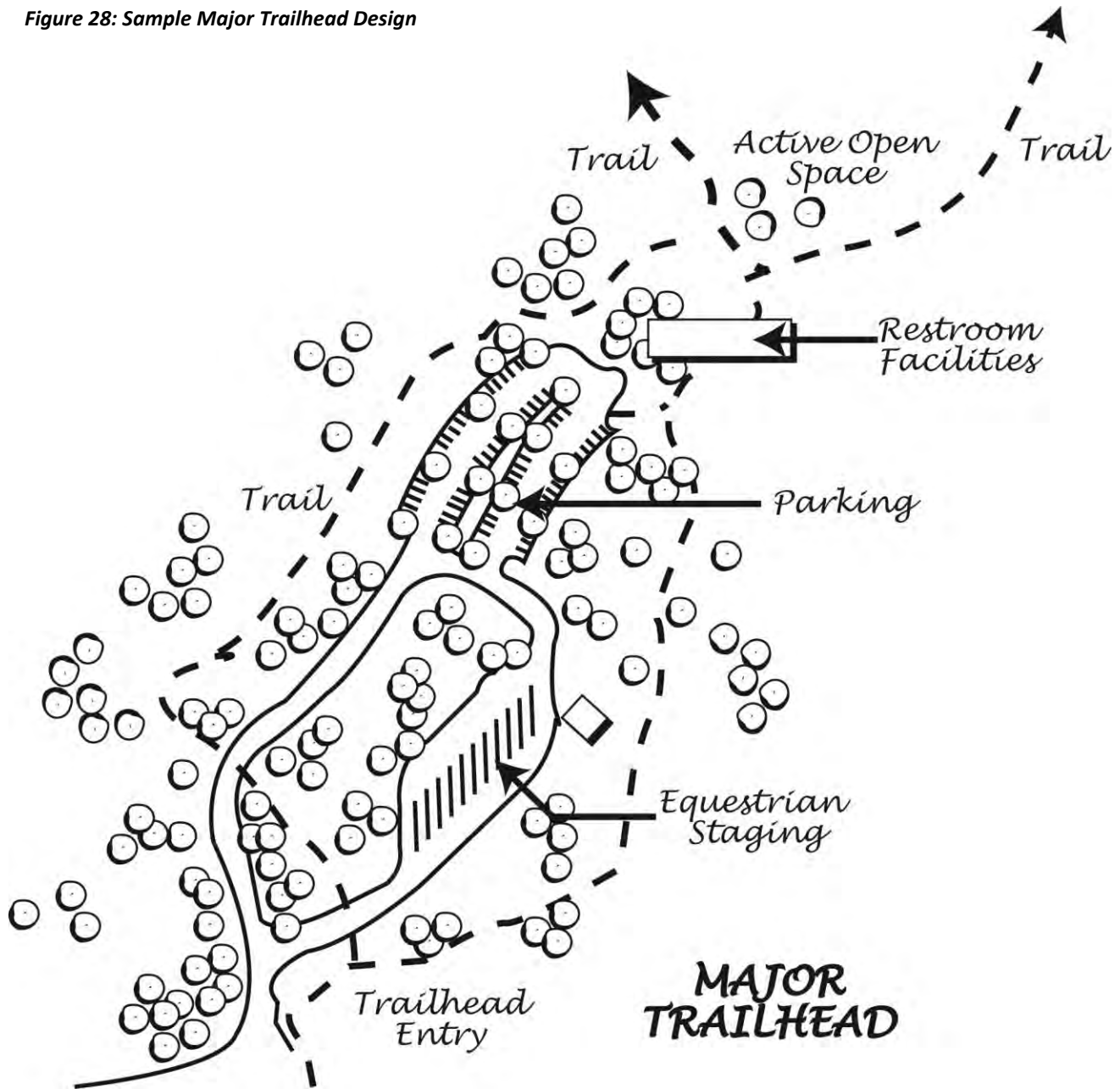
While there is no universal set of trailhead design standards, major trailheads are larger in size, located at significant destination points and often designed to accommodate equestrian users. A sample major trailhead design is shown in *Figure 28: Sample Major Trailhead Design*. Typical amenities often associated with a major trailhead design include:

- Equestrian parking (gravel or decomposed granite surfacing) to accommodate large trailers and queing space. The preferred parking space dimension is 15' wide by 70' long.
- Equestrian parking area design should allow the equestrian user the opportunity to enter and leave the trailhead (pull-through) without having to back-up or reverse the trailers.
- Standard parking (30-100 spaces)
- Ordinary mounting blocks, stumps or stones
- Drinking water source/water trough (for horses)
- Tether area
- Concrete bunker for manure disposal
- Picnic tables (2-4)
- Ramadas (2-4)
- Restrooms
- Separate parking and staging areas for non-equestrian users
- Garbage containers (2-3)
- Bench seating (2-3)
- Kiosk with trailing maps and interpretive information
- Trail signage clearly marked
- Dusk-to-dawn lighting





Figure 28: Sample Major Trailhead Design

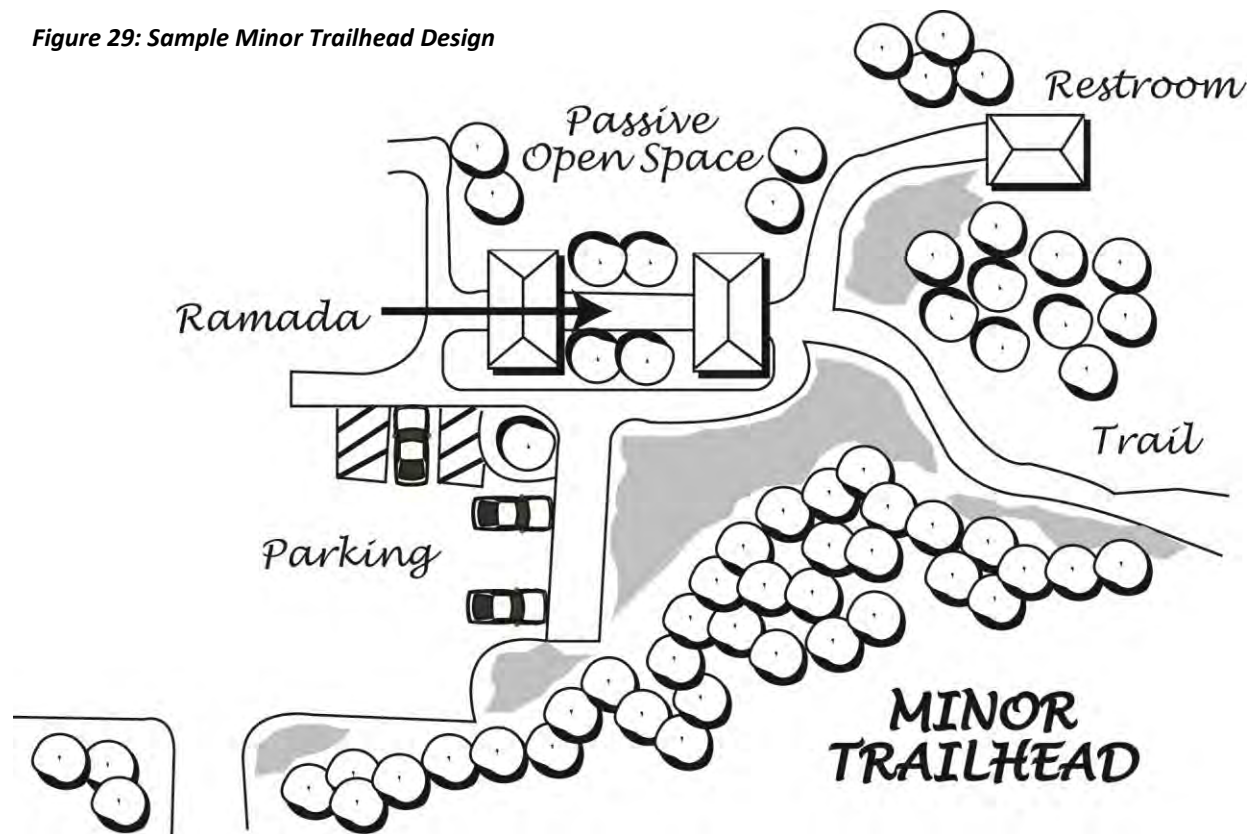




Minor trailheads are typically located in connection with another community facility such as a park or community center that serve as a staging area to an adjacent trail. Minor trailheads can also be located in areas that are not necessarily connected with another community facility but serve as a standalone staging area to a popular trail destination. *Figure 29: Sample Minor Trailhead Design* illustrates a typical minor trailhead design. Features commonly associated with a minor trailhead include:

- Standard parking (10-30 spaces)
- Drinking water source
- Picnic tables (1-2)
- Ramadas (1-2)
- Restrooms
- Garbage containers (1-2)
- Bench seating (1-2)
- Kiosk with trailing maps and interpretive information
- Trail signage clearly marked
- Dusk-to-dawn lighting

*Figure 29: Sample Minor Trailhead Design*





## XI. EVALUATION CRITERIA

### 11.1 The Importance of Evaluation Criteria

A key component in the Rio Rico Walking and Biking Master Plan is to provide for effective measures for Rio Rico community stakeholders, County staff and the project team to objectively and effectively evaluate various types of bicycle and pedestrian improvement projects for future implementation. Any master plan of this variety should be tailored to the community’s needs, enjoy the benefit of public support, and be realistic and practical in its implementation. Projects should be coordinated with existing County plans and policies, identify strategies for the phased implementation of larger projects and establish a series of priorities that are intended to guide County staff and elected officials in the decision making process.

Development of evaluation criteria for Rio Rico is truly a blend of broad transportation industry criteria, professional experiences, and community input received through the planning process. These resources collectively are refined into a combination of evaluation criteria that are tailored to the objectives identified for the Rio Rico Walking and Biking Study. It is worth noting that projects that promote the improvement of facilities that meet Safe Routes to Schools program objectives receive a weighting factor of “2” since these improvements are highly desired by the community and were emphasized as one of the primary objectives of Santa Cruz County’s application to ADOT for funding of this project.

### 11.2 Introduction and Description of the Evaluation Criteria

<b>1</b>	<p><b>Criteria:</b> Project provides an improved linkage to existing or planned parks, trail or other public spaces or closes a gap in an existing trail or bicycle trail network.</p> <p><b>Description and Applicability:</b> Project will enhance the current condition by providing connection (or closing a gap) from an existing residential neighborhood, activity center or existing formal or informal trail to an existing or proposed park, trail (or trail system), shared use pathway or other public space.</p> <p><b>Score/Rank:</b> Yes = 1 point      No = 0 points</p>
<b>2</b>	<p><b>Criteria:</b> Noteworthy safety improvements based on 5 years of historical crash data and/or field observations.</p>



**Description and Applicability:** Project will enhance the current condition by improving the safety and functionality of deficient roadways, intersections and mid-block pedestrian crossings. Such improvements may consist of sidewalks on busy streets, pavement markings, signage, refuge areas, lighting or improved sight distances and driver warning systems.

**Score/Rank:** Yes = 1 point      No = 0 points

3

**Criteria:** Proposed improvements are located within a two mile radius of an elementary school or middle school.

**Description and Applicability:** Project will enhance the current condition by targeting select bicycle and/or pedestrian improvements in proximity to existing elementary and middle schools consistent with Safe Routes to Schools criteria and funding formulas. Such improvements may consist of sidewalk improvements (repairs, widening, gap closures, and curb ramps), crosswalks, traffic control devices, signage, and roadway/traffic calming on-street bicycle lanes or paths and off-street trail facilities that may provide a neighborhood connection or short-cut.

**Score/Rank:** Yes = 1 point      No = 0 points      Weighted Score = x2

4

**Criteria:** Complexity of Construction (Cost)

**Description and Applicability:** Projects will vary in complexity of physical construction techniques and cost. Highly complex projects will require additional planning, design, possible environmental permitting, right-of-way acquisition and include challenging physical constraints due to topography or existing infrastructure deficiencies that increase overall project cost. Less complex projects typically include those projects that can be designed and constructed in a more expedited fashion due to the availability of existing right-of-way, and/or the lack of physical, environmental or other related infrastructure deficiencies.

**Score/Rank:** Little Complexity = 2 points



Medium Complexity = 1 point

High Complexity = 0 points

5

**Criteria:** Construction of the project creates the potential to reduce vehicle trips in the immediate area.

**Description and Applicability:** Will the construction of the proposed project create the potential to experience a reduction in vehicle trips in the immediate area by creating an alternative mode to vehicular transportation? Improved multimodal connectivity between existing neighborhoods and from neighborhoods to retail, employment or other community services are emphasized here.

**Score/Rank:** High Potential = 2 points

Limited Potential = 1 point

Project will not reduce vehicle trips = 0 points

6

**Criteria:** The Rio Rico community has expressed a desire to improve upon an existing deficiency and supports the project as a means to improve safety, mobility or connectivity in the immediate area.

**Description and Applicability:** Community stakeholders have identified key deficiencies, concerns or desired improvements through community dialogue, TAC meetings, youth workshop or other feedback received by the project team.

**Score/Rank:** Broad Community Support = 2 point

Community Support = 1 points

Deficiency Identified but lacking pronounced community support = 0 points

7

**Criteria:** The proposed project may have the ability to cost share with supplemental funding sources in order to implement the construction of the project.



**Description and Applicability:** The proposed project may yield the ability to leverage funding support from outside agencies, property owners and/or federal, state or local governments, organizations and non-profit agencies to assist in sharing or reducing the overall construction costs of the project.

**Score/Rank:** Yes = 1 point No = 0 points

8

**Criteria:** The proposed project has the potential to enhance economic development and/or tourism opportunities in the Rio Rico area.

**Description and Applicability:** The proposed project may enhance overall economic development and tourism objectives by improving multimodal connectivity between residential neighborhoods and employment centers OR the project enhances the appeal of existing roadway or trail facilities that better complete (or help complete) a holistic network that may be used to draw regional events and tourism to Rio Rico. Examples vary and can include improvements or connections to the Anza Trail or Garrett’s or bicycle improvements to accommodate racing or training events.

**Score/Rank:** Yes = 1 point No = 0 points

## XII. PLAN OF IMPROVEMENTS

Table 16: Suggested Plan of Improvements identifies, discusses and prioritizes each of the 69 projects identified by project stakeholders for the Rio Rico area. Utilizing the evaluation criteria introduced in Section XI, each project was comparatively ranked amongst its peers for each of the following project types: sidewalks, shared use paths, multi-purpose trails, paved shoulders, bike route/shared roadways, difficult intersections, difficult pedestrian crossings, and narrow bridge crossings.

The “ranking” of each project type is provided as a means to guide the general comparison between projects. The rankings demonstrate a rational process by which project stakeholders can balance a multitude of considerations when evaluating and prioritizing various project types. The rankings are not intended to be a final, conclusive statement that projects must be completed in the order of which they were prioritized. As Santa Cruz County and other project stakeholders move forward with the implementation of select projects, further consideration must be given to the relative cost effectiveness of the project together with policy considerations and community



benefit that, together with the guidance of this matrix, ultimately influence the decision as to what project gets implemented over another. Based on rankings received, individual projects then are placed into short term (5-year), medium term (10-year) and long term (20-year) implementation time frames. Please refer to Appendix E for a more detailed review of how each project scored across each of the eight (8) criteria.

Choices need to be made on accommodating suggested improvements and how select roadways can be phased or retrofitted in order to provide safe and meaningful improvements that often times are tempered by budget realities. Technical, political and financial realities dictate that not all improvements will happen overnight.

This process becomes a balance of art and science whereby the science component is guided by standards and specifications and the art influenced by local conditions, community input and reasonable technical judgment. Utilizing the information and guidance contained in Table 16, short term (5-year), medium term (10-year) and long term (20 year) projects are highlighted below.

**Short term projects** are those that can be implemented with relative ease and little cost and yet demonstrate tangible progress of implementation to the community. Examples in Rio Rico will include the installation of bike route/shared lane signage and continued improvements to the West Frontage Road shared use path.

**Medium term projects** typically will be more complex and costly to implement. They may include the need for formal design and/or funding through a formal CIP or other County/grant program. Examples for Rio Rico include the construction of paved shoulders and select Safe Routes to Schools improvements.

**Long term projects** tend to be those that are a considerable investment and have a higher degree of complexity in design, construction and perhaps political vantage point.



Table 16: Suggested Plan of Improvements

Location	Approx. Length	Implementation Timeline	Project Notes & Additional Considerations
<b>Sidewalks</b>			
<b>Camino Lito Galindo"</b>	Apprx. 3,200 feet	<b>Short Term</b>	Camino Lito Galindo has a 50-foot right-of-way. The north side of Camino Lito Galindo is preferred for a continuous sidewalk connection and accessibility from adjoining neighborhoods to all three school sites. Sufficient right-of-way exists on each street for a sidewalk. Improvements also identified in the Cooperative Extension SRTS Needs Assessment Report.
<b>Yavapai Drive "Loop" – from West Frontage Road to West Frontage Road</b>	Apprx. 4,900 feet	<b>Short Term</b>	Attached sidewalk is recommended for the north/east sides of Yavapai Drive from the existing curb return at West Frontage Road along the entire "loop" with its reconnection to West Frontage Road to the north. This "urban" area of Rio Rico is home to the most densely populated residential area and Rio Rico Plaza (Garrett's) which serves as Rio Rico's commercial services core. Pedestrians routinely frequent this route and a sidewalk is needed for safety and separation from motorists as Yavapai Drive is the most traveled roadway with over 11,000 average trips per day. A striped crosswalk with pedestrian warning signage is needed at the Garrett's driveway location.
<b>Pena Blanca Elementary School entrance driveway</b>	Apprx. 200 feet	<b>Medium Term</b>	Sidewalk on the west side of this driveway is necessary to ensure safety by reducing potential for pedestrian/vehicle conflict at this strategic school entrance.
<b>Avenida Leon-Avenida Gandara Loop</b>	Apprx. 7,250 feet	<b>Long Term</b>	Two "local" streets that operationally function as collector roadways for the medium density residential neighborhoods it serves and in close proximity community services on Avenida Coatimundi. Sidewalks on both sides of the street will enhance the safety and operational efficiency of these busy residential collector roadways by separating the pedestrians from the vehicles in this well-traveled area. Challenges include fitting sidewalks within the existing right of way and multiple driveway conflicts.
<b>Shared Use Paths</b>			
<b>West Frontage Road –Camino De Patio to Camino Lito Galindo (Phase 1)</b>	Apprx. one mile	<b>Short Term</b>	Santa Cruz County is currently in the process of constructing Phase 1 of a shared use path along the west side of West Frontage Road. West Frontage Road has ample right-of-way at 150-feet and the shared use trail alignment is sufficiently buffered from the roadway prism. Suggesting appropriate pedestrian warning signage for vehicle approaches at intersections.





Location	Approx. Length	Implementation Timeline	Project Notes & Additional Considerations
<b>Shared Use Paths</b>			
<b>West Frontage Road –Camino De Patio to Camino Ramanote (Phase 2)</b>	Apprx. 4,300 feet	<b>Short Term</b>	Santa Cruz County is currently in the process of constructing Phase 1 of a shared use path. This segment is planned as Phase 2 along the west side of West Frontage Road. West Frontage Road has ample right-of-way at 150-feet and the shared use trail alignment is sufficiently buffered from the roadway prism. Suggesting appropriate pedestrian/bicycle crossing warning signage such as MUTCD W-11-15 or W-11-15P for vehicle approaches at intersections.
<b>West Frontage Road –Camino Ramanote to Yavapai Drive (Phase 3)</b>	Apprx. 2,600 feet	<b>Short Term</b>	Santa Cruz County is currently in the process of constructing Phase 1 of a shared use path. This segment is planned as Phase 3 along the west side of West Frontage Road. West Frontage Road has ample right-of-way at 150-feet and the shared use trail alignment is sufficiently buffered from the roadway prism. The narrow bridge crossing over Aqua Fria Canyon will be a design challenge and is discussed under the “Narrow Bridges” section. Suggesting appropriate pedestrian/bicycle crossing warning signage such as MUTCD W-11-15 or W-11-15P for vehicle approaches at intersections.
<b>West Frontage Road – Peck Canyon south to Camino Lito Galindo (Phase 4)</b>	Apprx. 2,675 feet	<b>Short Term</b>	Provide for the northerly extension of the West Frontage Road shared use path currently being designed and constructed by the County in three phases. Suggestion that this segment become phase four. Improvements also identified in the Cooperative Extension SRTS Needs Assessment Report.
<b>Camino Agua Fria</b>	Apprx. 500 feet from Yavapai Drive intersection	<b>Medium Term</b>	A shared use path along the south side of Camino Agua Fria is recommend from the intersection with Yavapai Drive for approximately 500 feet. This shared use path will provide an appropriate transition to the bike route planned along Camino Agua Fria and the sidewalk and shared use path system along Yavapai Drive adjacent to the more densely populated residential neighborhoods. The 80-feet of existing right-of-way is sufficient to accommodate the planned improvements.



Location	Approx. Length	Implementation Timeline	Project Notes & Additional Considerations
<b>Shared Use Paths</b>			
<p><b>Yavapai Drive “Loop” – from West Frontage Road to West Frontage Road</b></p>	<p>Apprx. 4,900 feet</p>	<p><b>Short Term</b></p>	<p>A shared use path is recommended for the south/west sides of Yavapai Drive from the existing sidewalk terminus at the West Frontage Road along the entire “outer loop” with its reconnection to West Frontage Road to the north. This “urban” area of Rio Rico is home to the most densely populated residential area and the Rio Rico Plaza (Garrett’s) which serves as Rio Rico’s commercial services core. To compliment a planned sidewalk across the street, a shared use path is desired to accommodate bicyclists as well as pedestrians for existing and planned “urban” subdivisions in this area. The shared use path will enhance multimodal connectivity to the West Frontage Road shared use path, separate bicyclists and pedestrians from the busiest roadway in Rio Rico and also provide connection to the existing multiuse pathway at Camino Caralampi and ultimately to the Esplendor Resort. An existing right-of-way width of 150 feet is sufficient to accommodate this improvement and the terrain is relatively flat in order to minimize necessary grading. Future connection to a planned bike route (paved shoulders) along the Rio Rico Drive overpass will greatly enhance system connectivity in this strategic location of Rio Rico.</p>
<p><b>Camino Maricopa – Ruby R. (SR 289) to West Frontage Road</b></p>	<p>Apprx. 5,800 feet</p>	<p><b>Medium Term</b></p>	<p>Camino Maricopa is classified as a local street with Santa Cruz County but functions more so as a collector roadway. The speed limit is posted at 30 mph. This roadway provides collector-level service connecting West Frontage Road to Ruby Road (SR 289) and is a central access point for adjacent residents wanting to access the schools and West Frontage Road. A shared use path along the east side of the roadway is recommended. Camino Maricopa has 100-feet of right-of-way and a 24-foot pavement section. There is sufficient right-of-way to construct a shared use pathway. The east side of the roadway has fewer topographic constraints than the west side and provides direct connectivity to the school entrance drive.</p>



Location	Approx. Length	Implementation Timeline	Project Notes & Additional Considerations
<b>Shared Use Paths</b>			
<p><b>Camino Caralampi – Yavapai Drive to Calle Amarillo</b></p>	<p>Apprx. 9,400 feet</p>	<p><b>Medium Term</b></p>	<p>This roadway already has over 4,000 vehicle trips per day. It is a 24-foot pavement section with a generous 100-foot right of way. The roadway maintains a center line stripe and there are no additional paved shoulders. At its northern terminus with Yavapai Drive, non-motorized users access Garrett’s and the Esplendor Resort multipurpose trail also connects to this area. A shared use path is desired to serve this frequently traveled area of Rio Rico to maintain separation of motorists and pedestrians and bicyclists. This shared use path could extend to a southern terminus at Calle Amarillo. This 9,400 foot length includes the most populous and most traveled portions of Camino Caralampi. The path is likely most desirable on the west side of the roadway to allow access from the majority of residents and thereby creating a seamless path system. The planned shared use path could connect to the existing multiuse trail near the Esplendor Resort or replace the existing portions of multiuse trail altogether. It should be noted that potential conflicts with driveway cuts and fence encroachments create challenges to design and construction costing along the west side of the roadway. Appropriate crosswalks and driver warning signage is needed at roadway intersections. Suggesting appropriate pedestrian/bicycle crossing warning signage such as MUTCD W-11-2, W-11-15 or W-11-15P for vehicle approaches at intersections.</p>
<p><b>Via San Potosi – Avenida Lirio to Paseo de Yucatan</b></p>	<p>Apprx. 1,600 feet</p>	<p><b>Medium Term</b></p>	<p>A shared use path to accommodate pedestrians and bicyclists is preferred on Via San Potosi. This is a primary corridor for school children accessing Pena Blanca Elementary School. Sidewalk improvements are identified in the Cooperative Extension SRTS Needs Assessment Report. A shared use path is preferred to minimize future County operation and maintenance concerns/costs. Design challenges to consider include limited 50-foot rights-of-way, fencing or other encroachments, on Via San Potosi and Avenida Lirio. Considerable changes in topographic grade also pose drainage considerations that will likely increase design and construction costs for improvements on these streets.</p>



Location	Approx. Length	Implementation Timeline	Project Notes & Additional Considerations
<b>Shared Use Paths</b>			
<b>Calle Calabasas – West Frontage Road to Circulo Guerrero</b>	Apprx. 12,000 feet	<b>Long Term</b>	Calle Calabasas provides area connectivity between the West Frontage Road and SR 289 and serving as a collector roadway for residents in the area. A fire station is located at the intersection of West Frontage Road. Robert Damon Park is a popular recreational facility frequented by local residents. Calle Calabasas is a minor collector road with 100-feet of right-of-way and a 24-foot pavement section with no center line striping. The speed limit is posted at 30 mph. A shared use path along the west side of the roadway is preferred to provide pedestrian and bicycle access for recreation users and bicycle and running enthusiasts as noted by several community members. A shared use path is more cost effective than a separate sidewalk and bike path system. This path alignment can be utilized along with the existing overhead utility power line easement traversing the west side of Calle Calabasas. Connection to a regional bike route along SR 289, the “west Rio Rico bike trail system” and access to Robert Damon Park are established. This segment includes a shared use path for the connection to SR 289 via Circulo Guerrero. As an interim measure, Calle Calabasas could be utilized as a Bike Route/Shared Road with appropriate signage and pavement markings as needed.
<b>Boy Scout Trail</b>	½ mile	<b>Medium term</b>	The Boy Scout Trail begins at the northwest corner of Pendleton Drive and Rio Rico Drive. There is no formal trailhead. The trail begins adjacent to Pendleton Drive but immediately diverges to the northwest as it meanders through a wooded area and runs due north approximately 475 feet west of Pendleton Road. The trail runs for approximately ½ mile before the formal trail dissipates into non-descript series of lesser paths in the area. Local-area Boy Scouts maintain this trail on a semi-regular basis. Extension of this trail to the north is desired.



Location	Approx. Length	Implementation Timeline	Project Notes & Additional Considerations
<b>Shared Use Paths</b>			
<b>Rio Rico Drive from Pendleton Drive to the Anza Trailhead along north side of Rio Rico Drive</b>	Apprx. 3,700 feet	<b>Short Term</b>	A shared use path proposed at this location provides connectivity to other existing and proposed shared use paths and the Anza Trail, establishing a strategic connection and link to the overall trail system in Rio Rico. This particular section of proposed shared use path has been nominated for inclusion on the Arizona State Trail Plan. Sufficient right-of-way appears to exist though the at-grade crossing of the existing railroad tracks will require safety/warning signage to alert path users. The use of compressed native materials for sections of this shared use path within the Santa Cruz River designated floodplain area should be considered in lieu of pavement due to scour and erosion concerns. Proposed construction of a trail within any USACOE 404 jurisdictional areas will likely need 404 permitting. Connection to the trailhead at the Anza Trail provides enhanced continuity and value in the overall trail network.
<b>South Pendleton Drive – Avenida Coatimundi to Calabasas Park</b>	Apprx. 4.6 miles	<b>Medium Term</b>	A southerly extension of the popular and well-traveled shared use path along Pendleton Drive from its existing terminus at Avenida Coatimundi to Calabasas Park is desired. This proposed shared use path is necessary to enhance non-motorized mobility and connectivity along Pendleton Drive which provides important north-south connectivity east of Interstate 19. Connections to Calabasas Park and the Anza Trail can enhance east-west mobility. The 50-foot right-of-way of Pendleton Drive is constraining and six fairly large wash crossings along this stretch will need to be considered in design and construction.
<b>West Frontage Road – Rio Rico Drive to Ruby Road</b>	Apprx. 3.15 miles	<b>Long Term</b>	The total length of the West Frontage Road alignment from Rio Rico Drive south to Ruby Road is approximately 3.15 miles. Of the 3.15 miles, approximately 2.4 miles are paved from Ruby Road north to approximately 400 feet north of its intersection with Calle Calabasas where the pavement currently terminates. There is no roadway for approximately .75 miles from the existing pavement terminus north to Rio Rico Drive. A shared use path is desired along this alignment to establish a southerly extension the existing and planned shared use path along West Frontage Road north of Rio Rico Drive. This segment would greatly enhance mobility by completing a seamless north-south non-motorized connection in Rio Rico west of Interstate 19.



Location	Approx. Length	Implementation Timeline	Project Notes & Additional Considerations
<b>Multi-Purpose Trails</b>			
<b>Fernando Court to Peck Canyon Drive</b>	<b>Apprx. 1,550 feet</b>	<b>Long Term</b>	An unpaved multiuse trail can serve as a neighborhood shortcut promoting non-motorized modes of travel for school-aged children accessing the three school sites from this neighborhood. An existing pathway/jeep trail already exists. Additional research on the potential need for an easement for public ingress/egress is necessary.
<b>Pena Blanca/Calabasas West Trail Entrance</b>		<b>Medium Term</b>	As a possible alternative and/or supplement to nearby sidewalk improvements to Via San Potosi, a multipurpose trail can be constructed to the west of the school property connecting Via San Potosi and Hiedra Ct. Steep sections will require the construction of stairs. An informal network of trails already exists in the area. Easements may be necessary to formally establish this trail. Improvements also identified in the Cooperative Extension SRTS Needs Assessment Report.
<b>Calle Calabasas to Avenida Palomas</b>	<b>Apprx. 1,000 feet</b>	<b>Long Term</b>	Identified as a “key system disconnect”, a multipurpose trail is recommended to enhance the non-motorized connection from the neighborhood near Avenida Palomas to Robert Damon Park. Currently, users must indirectly travel south or north on Avenida Palomas. A multipurpose trail to provide a more direct connection would greatly aid connectivity of this area and park amenity. A trail utilizing an existing wash approximately (125 north of Camino Caballo) and Suma Court is a possible alignment. Easements must be secured and terrain issues will need to be addressed in design and construction.
<b>Santa Cruz River (Anza Trail) to Calabasas Park</b>	<b>Apprx. 1,200 feet</b>	<b>Medium Term</b>	A multipurpose trail linking the Anza Trail to Calabasas Park is desired to eliminate a key system disconnect and promote trail system continuity to community assets that may support community based events and recreation opportunities.
<b>Anza Trail</b>	<b>Varies</b>	<b>Short Term Medium Term Long Term</b>	The southern and northern extension of the existing Anza Trail is recommended. Trail facilities should be incrementally expanded to the north and south from the Guy Tobin trailhead. Leveraging assistance from community volunteers, non-profit organizations and trail enthusiasts to participate in trail building efforts is highly recommended.



Location	Approx. Length	Implementation Timeline	Project Notes & Additional Considerations
<b>Paved Shoulders</b>			
Via Patricia- Peck Canyon Dr.	Apprx. 3,400 feet	Short Term	Peck Canyon Drive has a right-of-way of 100 feet. Where sufficient right of way is available, it is suggested that a striped paved shoulder be constructed and where right-of-way is limited, a bike route be provided through the use of signage and pavement markings in proximity to school facilities. Provide for safe and adequate transition to West Frontage Road future improvements. Improvements also identified in the Cooperative Extension SRTS Needs Assessment Report.
Camino Ramanote – West Frontage Road to Corrida De Toros	Apprx. 13, 400 feet (2.5 miles)	Medium Term	Identified as a Priority Underserved Roadway by community stakeholders, this two-lane roadway with center-line striping has a 24 foot pavement section in an 80-foot right-of-way. Westerly to its intersection with Corrida De Toros, the roadway has many curves, changes in grade and resulting blind spots. Camino Ramanote currently experiences just over 2,000 vehicle trips day. These collective roadway characteristics necessitate the improvement of a paved shoulder.
Peck Canyon Drive – Via Patricia to Circulo Sombrero	Apprx. 9,500 feet	Medium Term	From West Frontage Road to Circulo Sombrero, a designated bike lane (or paved shoulder in the alternate) is suggested to be constructed on the north side of the existing roadway. Peck Canyon Drive currently experiences 1,389 vehicle trips per day. Traffic will continue to increase as Rio Rico experiences additional growth and Peck Canyon Drive will likely transition from a local street to a collector road over time. Peck Canyon Drive’s intersection with West Frontage Road and serving access to the three school sites continue to place Peck Canyon Drive as high importance in providing motorized and non-motorized mobility in the area. Peck Canyon Drive has 100-feet of right-of-way and a 24-foot pavement section and center line stripe. The construction of a paved shoulder for this segment will complete a strategic segment that can contribute to two preferred bicycle recreation loop networks – Circulo Sombrero and the larger loop utilizing Calle Cherokee to Camino Ramanote and the West Frontage Road shared use path. For these reasons, a dedicated paved shoulder for this 9,500 foot segment is recommended.



Location	Approx. Length	Implementation Timeline	Project Notes & Additional Considerations
<b>Paved Shoulders</b>			
Camino Providencia		<b>Medium Term</b>	<p>Calle Providencia is a local street that radiates out from Yavapai Drive serving low to medium density residential neighborhoods in Rio Rico. While no existing vehicle trip data was able to be obtained for Calle Providencia, it is clear from the existing and planned land uses patterns in the area that continued residential growth will occur and so too will the motorized and non-motorized user demand. Calle Providencia is a 60-foot right of way with a 24-foot pavement section with no center line striping. Paved shoulders are suggested for both sides of Calle Providencia to its intersection with Camino Aqua Fria. Provides bicycle trail connectivity to the bike routes of Camino Aqua Fria and Camino Ramanote for larger route development in western Rio Rico.</p> <p>Based on its proximity to Yavapai Drive and to existing and future commercial retail activities, sidewalks are also recommended to compliment the paved shoulder improvements for the first 2,150 feet from Yavapai Drive to the intersection with Circulo Montosa.</p> <p>If right-of-way constraints, lack of funding or other development-related challenges persist, consider the use of a shared use path for the south side of Calle Providencia.</p>
North Pendleton Drive	<b>Apprx. 6 miles</b>	<b>Short Term</b>	<p>Pendleton Drive from Rio Rico Drive to Camino Josefina is approximately 6 miles long. Pendleton Drive is the only north-south collector roadway serving residents living east of I-19 and the Santa Cruz River. Pendleton Drive has an 80-foot right-of-way and a 24-foot pavement section in most locations. Community stakeholders commented on the desire to see bicycle facilities along Pendleton Drive. Extension of the popular Boy Scout Trail (shared use path separated from the roadway) was viewed as highly desirable by area residents as well. Santa Cruz County has received a grant to pave 5-foot shoulders along both sides of North Pendleton Drive for one mile north of Rio Rico Drive. These improvements will create 17-feet of pavement on each side of the roadway, sufficient for a signed bike route but not enough to warrant a bike lane.</p>





Location	Approx. Length	Implementation Timeline	Project Notes & Additional Considerations
<b>Paved Shoulders</b>			
<p><b>South Pendleton Drive (to Calabasas Park)</b></p>	<p><b>Apprx. 5.5 miles</b></p>	<p><b>Short Term</b></p>	<p>Pendleton Drive from Rio Rico Drive to Calabasas Park is approximately 5.5 miles. Pendleton Drive is the only north-south collector roadway serving residents living east of I-19 and the Santa Cruz River. Pendleton Drive has an 80-foot right-of-way and a 24-foot pavement section in most locations. Community stakeholders commented on the desire to see bicycle facilities along Pendleton Drive. Santa Cruz County has received a grant to pave 5-foot shoulders along both sides of South Pendleton Drive for a length of one mile from Rio Rico Drive. These improvements would create 14-feet of pavement on each side of the roadway, sufficient for a signed bike route but not enough to warrant a bike lane.</p>
<p><b>Rio Rico Drive – I-19 to Pendleton Drive</b></p>	<p><b>Apprx 6,500 feet</b></p>	<p><b>Short Term</b></p>	<p>Rio Rico Drive currently experiences over 8,000 vehicle trips daily and is one of the most traveled roadways in Rio Rico. The roadway in most areas is split into two one way roadways with paved shoulders of varying widths. The integrity of the existing pavement along the paved shoulders varies, becoming narrower in areas that experience increased degradation. ADOT is conducting an I-19 East Frontage Road Study that may recommend roadway improvements at the intersection of Rio Rico Drive and East Frontage Road. Paved shoulders of 3-4 foot in width are recommended and should be maintained / expanded with routine County roadway maintenance schedule for Rio Rico Drive. The addition of bike route signage is also recommended. Improved non-motorized facilities along Rio Rico Drive will improve the mobility of local residents but also for enhancing a broader connection of the recreational and outdoor experience for visitors by linking the Guy Tobin Trailhead to other recreation and commercial land uses.</p>



Location	Approx. Length	Implementation Timeline	Project Notes & Additional Considerations
<b>Paved Shoulders</b>			
<b>Paseo De Yucatan – from Pena Blanca School to Avenida Lirio</b>	<b>Approx. 1,250 feet</b>	<b>Medium Term</b>	Paved shoulders are recommended for both sides of roadway to accommodate school children from higher density subdivisions to the south. Through signage, encourage school aged children pedestrian use on west side only so as to separate pedestrians from truck traffic originating from business south and east of Pena Blanca Elementary School and for seamless, continuous access to school driveway. Topography challenges and limited 50-foot right-of-way along the southern portion of this corridor create challenges in construction. Bike lane facilities not suggested due to lack of right-of-way, topography and undesirable east side because of potential for truck traffic conflicts.
<b>Avenida Lirio – Camino Maricopa to Paseo Yucatan</b>	Apprx. 3,500 feet	<b>Short Term</b>	Paved shoulders on Avenida Lirio will greatly assist the mobility of the neighborhood and improve safety in access to the schools via Camino Maricopa and Paseo Yucatan.
<b>E. Ruby Road – I-19 to Pendleton Drive</b>	<b>Apprx. 2 miles</b>	<b>Short Term</b>	ADOT controls the right-of-way and ownership of Ruby Road from I-19 to approximately 600 feet to the east. East Ruby Road has 100-feet of right-of-way and is a 26-foot pavement section. ADOT is currently conducting an I-19 East Frontage Road Study that will likely recommend roadway improvements at the intersection of Ruby Road and East Frontage Road. At a minimum, paved shoulders on both sides of the roadway are recommended. With over 4,000 vehicle trips per day and growing, signage denoting a bike route is recommended. If the opportunity presents itself to complete additional roadway improvements funded by others, bike lane and sidewalks on both sides of the street are preferred from Potrero Creek bridge to East Frontage Road at this high traffic volume and turning movement location.
<b>Paseo Mexico</b>	<b>Apprx. 9,800 feet</b>	<b>Long Term</b>	Paseo Mexico is a minor collector roadway with 80 feet of right-of-way and a 24-foot pavement section with center line striping. Due to the striping, there is not adequate space to accommodate a vehicle and the bicyclist comfortably in one lane (bike route). Paseo Mexico connects with Camino San Xavier (Bike Route) to form a 3.3 mile bike trail loop serving residents in this area.



Location	Approx. Length	Implementation Timeline	Project Notes & Additional Considerations
<b>Paved Shoulders</b>			
Paseo Venado	Apprx. 4,000 feet	Long Term	Paseo Venado can provide a key bicycle trail connector linking Calle Calabazas and Camino Caralampi. Paseo Venado is an 80-foot right-of-way with an existing 24-foot pavement section with center line striping. Paseo Venado experiences 1,660 average daily trips and will grow. Because the pavement width is only 24 feet and has center line striping, its potential as a bike route/shared roadway is not recommended because a cyclist would only have a 2-foot spacing where a minimum of 3-4 feet is preferred. A Bicycle LOS Model could be performed to determine the feasibility of a bike route/shared lane facility.
<b>Bike Route/Shared Roadways</b>			
Yavapai Drive, I-19 to West Frontage Road	Apprx. 325 feet	Short Term	Within existing pavement conditions, a signed bike route is desired to complement the existing sidewalk and provide bicycle trail connectivity between the planned shared use path along Yavapai Drive and planned Rio Rico Drive overpass improvements.
Corrida De Toros	Apprx. 9,600 feet	Short Term	Corrida De Toros provides the strategic middle link in the proposed Camino Ramanote – Corrida De Toros – Camino Aqua Fria bike trail system to serve residents in this area. This segment is approximately 9,600 feet in length. This roadway receives very low traffic volumes and is ideal for signage and/or pavement markings as a bicycle route to complete a 6+ mile training loop.
Camino Aqua Fria	Apprx. 9,400 feet	Short Term	The third leg of the Camino Ramanote-Corrida De Toros-Camino Aqua Fria bike trail. After crossing Aqua Fria Canyon (low water crossing roadway), Camino Aqua Fria is an infrequently traveled roadway that is common for bicyclists and pedestrians to use for non-motorized trips to Garrett’s and other stores and restaurants in the Rio Rico Plaza. Camino Aqua Fria has a 24-foot pavement section with no center stripe within an 80-foot right-of-way. This section of roadway is approximately 9,400 feet to its connection with Yavapai Drive and the Bella Vista subdivision. The portion of Camino Aqua Fria adjacent to Bella Vista community is recommended for improvement with a shared use path on the south side of the roadway or sidewalks on both sides of the road for the initial 500 feet.



Location	Approx. Length	Implementation Timeline	Project Notes & Additional Considerations
<b>Bike Route/Shared Roadways</b>			
Calle Cherokee	Apprx. 11,000 feet	Short Term	This local street in Rio Rico has very few homes and experiences very low daily vehicle trips. Calle Cherokee has a 50-foot right-of-way and 24-foot pavement section. As such, Calle Cherokee is suggested for use as a bike route with the incorporation of the appropriate signage and or pavement markings as noted in the General Design Elements section. Calle Cherokee is an 11,000 foot (2+miles) segment provides an important and connection between Camino Ramanote and Peck Canyon Drive to offer residents of northwestern Rio Rico a value-added bicycle loop. Calle Cherokee was also identified by Rio Rico High School students as a route that is frequented to and from school on a daily basis.
Circulo Sombrero	Apprx. 2.25 mile loop	Medium Term	This loop road providing connection to Peck Canyon Drive to the east and the west provides a naturally ideal recreation bicycle loop experience. The road is a 50-foot right-of-way with 24-foot pavement section with very low average daily vehicular trips. Bike route signage and/or pavement markings on both sides of the roadway will safely provide the flexibility for a 2.25 mile route along Circulo Sombrero or an extended 3.5 mile complete loop route utilizing Peck Canyon Drive.
Camino Josefina	Apprx. 6 miles	Medium Term	Camino Josefina is already a preferred route by enthusiasts and skilled bikers. The very low density surrounding land use, uninterrupted length, scenic vistas, connection to broader wilderness areas, and grade changes of this road make it desirable for bicycling. It is a 24-foot pavement section with no center striping within a 180-foot right-of-way. Due to proximity to the bridge abutment, automobile rate of speed in this area and poor line of sight in areas, future connections to the planned Boy Scout Trail extension should consider a grade separated crossing and staging area with a connection to Pendleton Road south of the canyon.
Avenida Pastor – Circulo Alameda	Apprx. 1.3 miles	Long Term	Bike routes/shared roadways fit nicely in this community enclave. Marked crossings and signage will be necessary at the intersection with Pendleton Drive.
Camino Mar	Apprx. 2.3 miles	Long Term	Camino Mar is a two-way paved road 2.3 miles in length (where pavement ends) with a 26-foot pavement section. Grade changes, sight visibility and signage locations should be evaluated prior to implementation.



Location	Approx. Length	Implementation Timeline	Project Notes & Additional Considerations
<b>Bike Route/Shared Roadways</b>			
Camino Oceano	Apprx. 7,200 feet	Long Term	This stand-alone road is very suitable with its 26-foot pavement section serving less than two dozen homes. Future crossing design and connectivity to the Boy Scout Trail requires additional study.
Valley View Drive-Camino Magnifico-Camino Panama Loop	Apprx. 2.5 mile loop	Medium Term	A bike route/shared roadway is ideal for this pocket of Rio Rico that forms a self-contained bicycle loop in this area. This “loop” does not entirely connect without a connection at Pendleton Drive that requires further evaluation.
Kents Avenue	Apprx 4,000 feet	Medium Term	Provides linkage to Camino Pesqueria and Paseo Mexico.
Camino Pesqueiria	Apprx. 3,600 feet	Medium Term	Provides linkage to Paseo Mexico and Kents Avenue.
Willow Drive – Pendleton to Rio Rico Drive	Apprx. 3,700 feet	Short Term	Willow Drive serves as a local roadway providing important neighborhood connectivity between Pendleton Drive and Rio Rico Drive. The roadway has a 28-foot pavement section and a 50-foot right-of-way. Consideration must be given to a cross walk design and driver warning signage (especially northbound traffic) at Pendleton Drive for access to the shared use path across the street.
Camino San Xavier	Apprx. 7,700 feet	Medium Term	Camino San Xavier is a local road with an 80-foot right-of-way and 24-foot pavement section with no center line striping. Its connection to Paseo Mexico forms a 3.3 mile bike trail loop serving residents in the area. Future crossing of Pendleton Drive will require close examination for safety in design as the intersection is located at a radius in the roadway with limited sight visibility.
Paseo Guebabi	Apprx. 11,000 feet	Long Term	Paseo Guebabi is an 80 foot right-of-way with a 28-foot pavement section with no center line striping. This bike route segment forms a 3.8 mile bike trail loop serving residents in this area. Intersection/crosswalk design with Pendleton Drive needs to be planned in concert with the fire station driveway located directly across Pendleton Drive.
Calle Coyote	Apprx. 9,300 feet	Medium Term	Calle Coyote is a local street with an 80-foot right-of-way, 28-foot pavement section with no center line striping. This bike route segment connects with Paseo Guebabi to form a 3.8 mile bike trail loop for residents in this area.
Via Rosamorada – Ruby Road to Cerrado Sanchez	Apprx. 6,400 feet	Short Term	Via Rosamorada is a local street with a 50-foot right-of-way and 24-foot pavement section with no center line striping. It should be noted that Santa Cruz County’s street inventory indicates that only 25-feet of right-of-way exists in certain locations and thus may be limiting.



Location	Approx. Length	Implementation Timeline	Project Notes & Additional Considerations
<b>Bike Route/Shared Roadways</b>			
SR 289		Short Term	SR 289 (West Ruby Road) is an ADOT facility with a 26-foot pavement section and center line striping. According to ADOT traffic counts at SR 289 near Camino Maricopa, approximately 1,100 vehicle trips per day. Another traffic count taken another 6 miles to the west identified only 190 vehicle trips per day. The data indicates that the majority of SR 289 trips consist of residents of the neighborhoods near Calabasas Middle school and as you proceed west of town, the rate of vehicles drops substantially. In accordance with ADOT regulations, bicyclists are not prohibited from using SR 289. With the minimal volume of vehicle trips, continuation of the existing condition as a bike route, though not signed, is recommended for this facility that can attract biking enthusiasts seeking longer outings to Pena Blanca Lake.
Circulo Golondrina		Long Term	Local “loop road” serving immediate neighborhood surrounding Robert Damon Park. 50-feet of right-of-way with a 24-foot pavement section with no center line stripe.
<b>Intersection Improvements</b>			
Yavapai Drive/Camino Caralampi	n/a	Short Term	One of the busiest intersections in Rio Rico, a typical user will experience difficult cross-traffic and conflicting vehicular turning movement operations at this location. There are no crosswalks, signage or other markings to assist pedestrians and bicyclists wishing to cross Yavapai Dr at Camino Caralampi. A signalized intersection with marked crosswalks is recommended and likely warranted. Further evaluation of the need for a signal should also evaluate the proximity and current function and level of service of the West Frontage Rd intersection with Yavapai Dr. which is only 400 feet to the east.
Ruby Road/East Frontage Road/Pilot Travel Center Driveway Entrance	Approx 325 feet between centerlines	Short Term	The confluence of these two intersections – only 325 feet apart – is the busiest and most accident prone intersection(s) in Rio Rico. Numerous comments from project and community stakeholders have supported this assertion. Per County traffic counts, this area experiences 7,500 ADT and a poor LOS during the am and pm peak periods. Road widening to include a dedicated portion of the roadway for bike lanes and sidewalks on both sides of Ruby Road is needed. Signing, striping and pavement markings are necessary. Marked crosswalks and warning signage at the Pilot entrance drive is needed. Recommendations from the I-19 East Frontage Road study should influence the future design of improvements that will likely come as a result of future roadway construction projects.



Location	Approx. Length	Implementation Timeline	Project Notes & Additional Considerations
<b>Intersection Improvements</b>			
Rio Rico Drive/Pendleton Drive	South-west Corner	Medium Term	Existing parking facilities are lacking at this popular trailhead location. A small paved parking lot to serve 3 typical and 1 ADA accessible parking spaces is preferred. Suitable vehicular turning movement and driveway improvements from the adjacent roadway and marked crosswalks are suggested. If signal warrants for this intersection are met, access and driveway geometrics shall be evaluated. The parking area should be designed to maintain flexibility for future expansion as popularity continues to increase. Improvements to the shared use trails in the area enhance area connectivity and accessibility benefitting locals and tourists alike.
<b>Pedestrian Crossings</b>			
Camino Lito Galindo/Rio Rico High School	n/a	Short Term	Crosswalk needed at this priority high school crossing location. This improvement also identified in the Cooperative Extension SRTS Needs Assessment Report.
Peck Canyon Drive/Camino Estornino	n/a	Short Term	A crosswalk is needed at Camino Estornino’s intersection with Peck Canyon Drive to serve school-aged pedestrians and bicyclists from the adjacent residential neighborhood.
Via Patricia and Camino Lito Galindo	n/a	Short Term	Difficult intersection geometry, roadway radius and line of sight challenges require additional design studies for this location. A cross walk, pedestrian refuge and appropriate traffic calming signage is necessary to facilitate safe crossing at this location.
Pendleton Drive/Avenida Coatimundi	n/a	Medium Term	This existing crosswalk is in poor condition currently. Driving warning signage does exist. At a minimum, the current facility is in need of repainting and striping. Additional signage is likely warranted and low scale safety lighting for nighttime usage should be considered. As traffic volumes increase over 7,500 vehicles per day, design study of an enhanced crossing facility is suggested.
West Frontage Road/Camino del Patio (Family Dollar)	n/a	Short Term	A very popular informal crossing used by many adjacent residents walking or biking to the Family Dollar store. This location was also identified in the historical crash data. The field study revealed a mother pushing a baby in her stroller. No crosswalk facility exists. The Family Dollar driveway and Camino del Patio intersection is not symmetrical. The current ADT’s likely do not warrant a H.A.W.K. system, but a pedestrian count and design study specific to this location are needed to address the current acute deficiency.



Location	Approx. Length	Implementation Timeline	Project Notes & Additional Considerations
<b>Pedestrian Crossings</b>			
<b>Rio Rico Drive/I-19 Overpass</b>	Approx. 700 feet, including approaches and I-19 on ramps	Medium Term	The existing overpass facility serves one lane of vehicular travel in each direction and has 12-foot paved, striped shoulders (approximately) on each side. Pedestrian and bicycle users continue to increase as residents from the east frequent Garrett's. Suggested improvements recommended include a formal modification of the existing striped shoulder area to a striped and signed bike lane for one way travel together with a sidewalk in both directions. Particular attention must be given to the design of appropriate bicycle and pedestrian crossings at the freeway ramp terminals to ensure minimized vehicular conflicts. See AASHTO and ADOT standards for additional detail.
<b>Intersection of Via San Potosi and Paseo de Yucatan</b>	n/a	Short Term	A crosswalk is needed at this strategic juncture of two roadways serving as a primary pedestrian access way to Pena Blanca Elementary School.
<b>Avenida Coatimundi/Calle Juan Legarra</b>		Short Term	The shared use path along the south side of Avenida Coatimundi terminates at the Calle Juan Legarra alignment. Students using the shared use path cross Avenida Coatimundi at Calle Juan Legarra to access the Coatimundi Walking Trail school entrance at Feather Court. No cross walk currently exists but is needed at this location. Appropriate signage on Avenida Coatimundi warning drivers of a school crossing is suggested.
<b>Narrow Bridge Crossings</b>			
<b>West Frontage Road at Aqua Fria Canyon</b>	n/a	Medium Term	Existing County bridge structure at Aqua Fria Canyon wash crossing approx. 490 feet south of Camino Ramanote. Location poses a significant barrier to the seamless connection of the West Frontage Road shared use path system. The current structure is a two lane bridge with very narrow striped shoulders. Suggested design is to meander the planned shared use path to the west along the wash bottom rather than construct expensive bridge widening improvements. This shared use path crossing could be situated within the western portion of the existing 150 feet of West Frontage Road right of way and/or existing utility easement. Additional hydrology study and environmental permitting may be necessary for wash encroachment.





Location	Approx. Length	Implementation Timeline	Project Notes & Additional Considerations
<b>Narrow Bridge Crossings</b>			
<b>Ruby Road at Potrero Creek</b>	n/a	<b>Short Term</b>	<p>The existing width of the bridge deck is too narrow to enable comfortable and safe walking or cycling conditions. The preferred solution is to construct a second bridge for eastbound traffic and maintain the existing bridge for westbound traffic. Sufficient right-of-way exists for this improvement. Each bridge then should be designed to accommodate a sidewalk and bike lane/paved shoulder. In the absence of funding for a second bridge, a short term approach would be to construct multiuse trails separated from the roadway in Potrero Creek. A native tread trail to safely separate pedestrians and cyclists from the narrow bridge is needed. This can be achieved with the construction of one multi-purpose trail to accommodate both pedestrians and cyclists. The multi-purpose trail and signage would need to commence prior to the guardrail approaches to the bridge.</p>
<b>Ruby Road/Santa Cruz River</b>	n/a	<b>Medium Term</b>	<p>This important bridge spans approximately 275 feet over the Santa Cruz River. The existing bridge deck has a 26-foot pavement section including one-foot striped shoulders with center line striping. The north side of the bridge deck has a large vertical curb. Replacement/expansion of the existing facility to accommodate bike and pedestrians is preferred but not likely practical. "Share the Road" signage and pavement markings are necessary to improve the existing comfort and safety of bicyclists and pedestrians using this bridge. This is not an ideal solution, but most practical until bridge enhancements are completed.</p>
<b>Rio Rico Drive/Santa Cruz River</b>	n/a	<b>Medium Term</b>	<p>This important bridge spans approximately 300 over the Santa Cruz River. The existing bridge deck has a 26-foot pavement section including one-foot striped shoulders with center line striping. Both sides of the bridge deck have 2-foot raised sidewalks. Replacement/expansion of the existing facility to accommodate bike and pedestrians is preferred but not likely practical without additional government funding. "Share the Road" signage and pavement markings are necessary to improve the existing comfort and safety of bicyclists and pedestrians using this bridge. This is not an ideal solution, but most practical until bridge enhancements are completed.</p>



*Figure 30: Short Term (5-year) Plan of Improvements* illustrates each of the suggested short term improvement projects. *Figure 31: Medium Term Plan of Improvements* and *Figure 32: Long Term Plan of Improvements* shows the suggested medium term and long term projects respectively.

*Figure 33: Plan of Improvements – All Projects* combines each of the short, medium and long projects together on one unified map graphic.

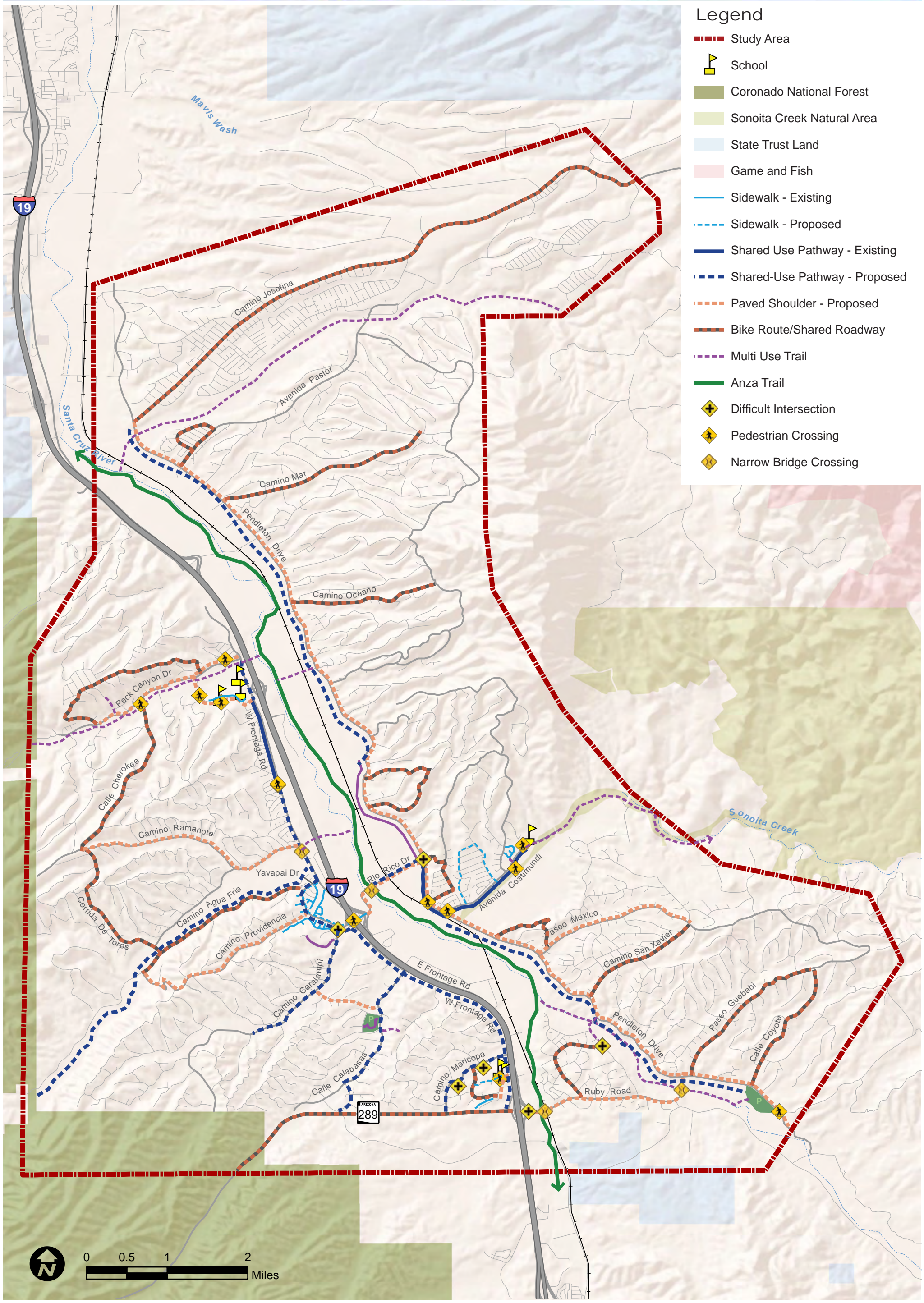


Figure 30: Sonoran Terra (Alyssa) Plan of improvements



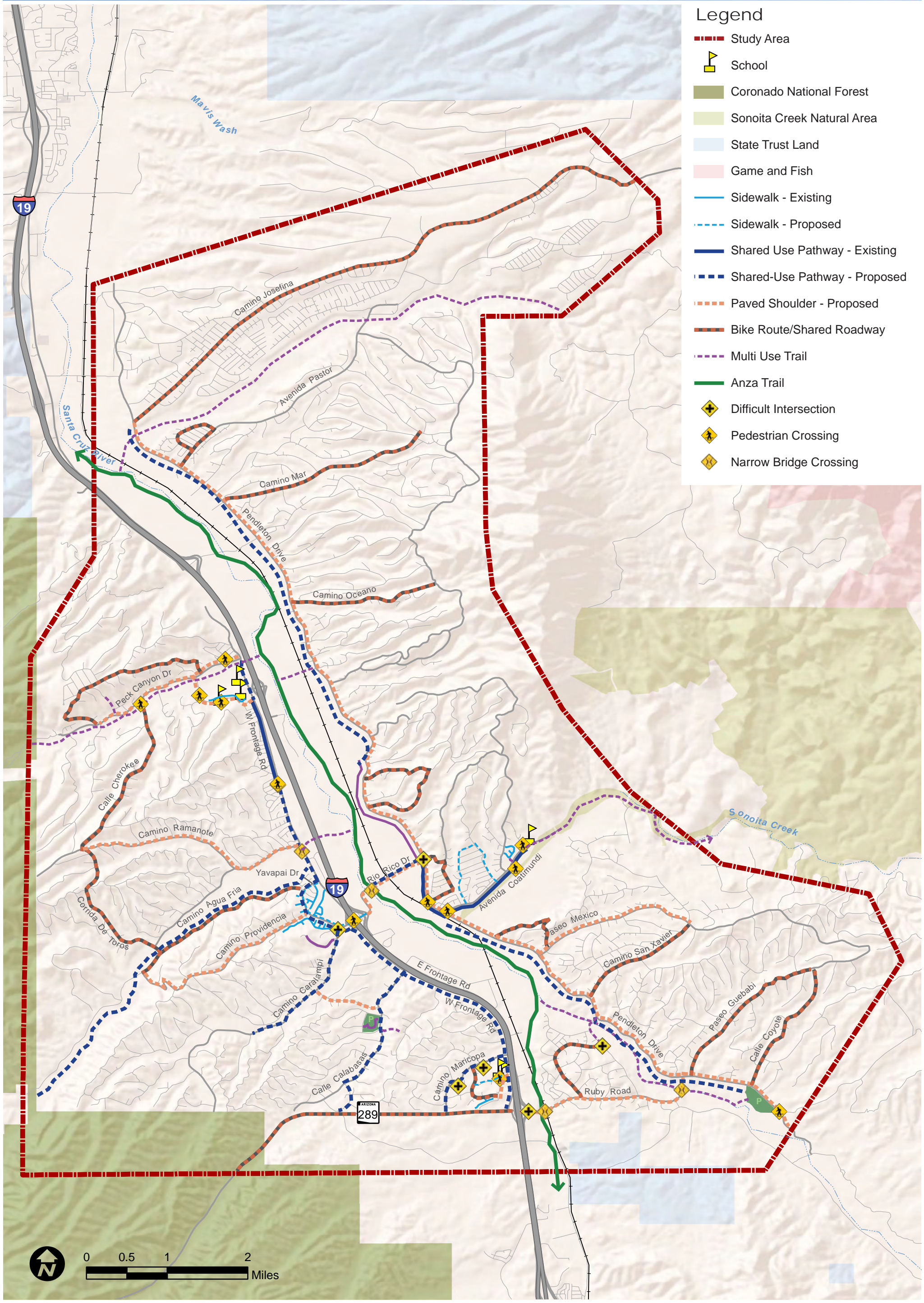


Figure 30: Long-Term (20-year) Plans for Improvements

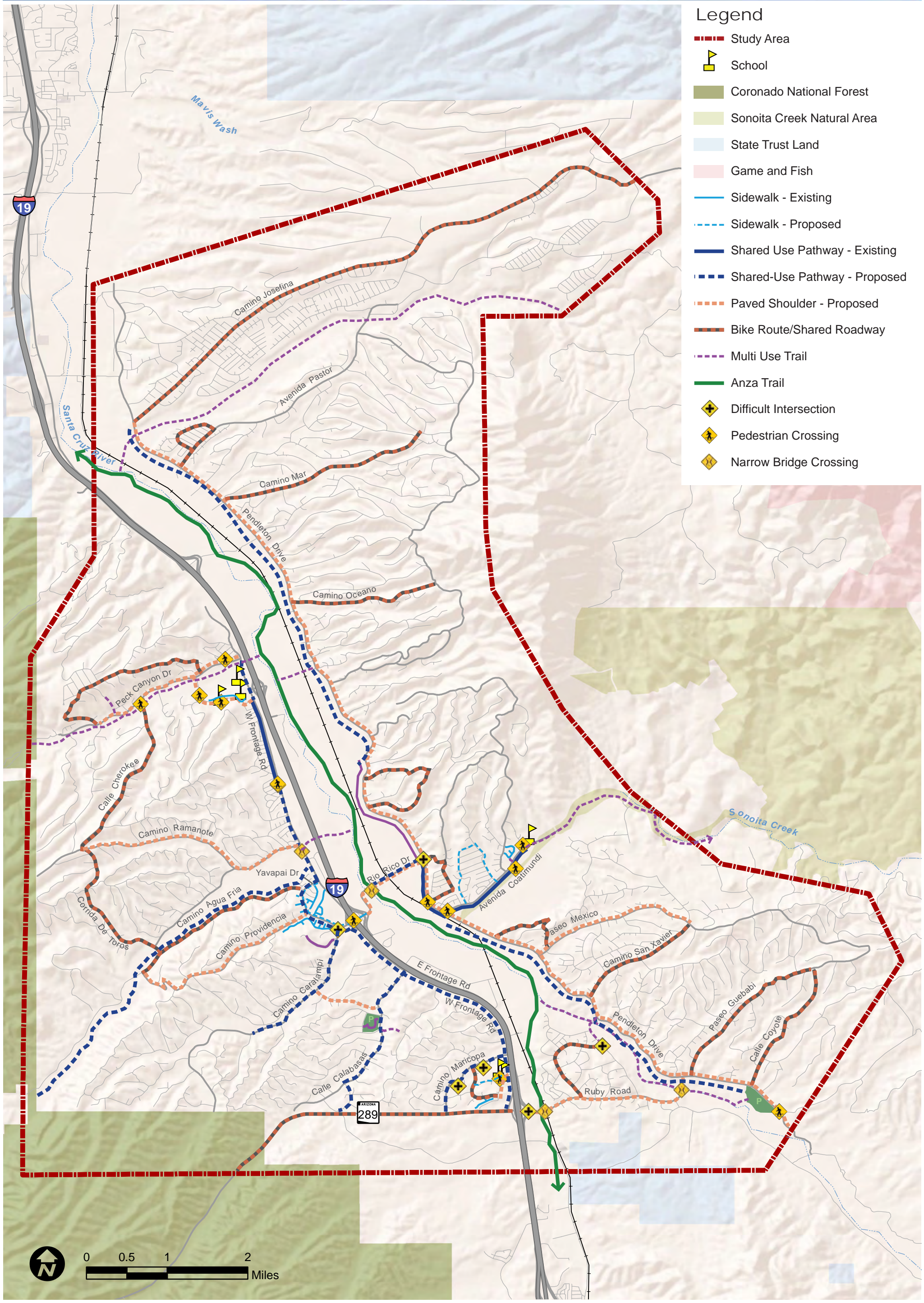


Figure 33: Composite (All Years) Plan of Improvements



**Table 17: Summary of Suggested Short, Medium and Long Term Projects**

	Short Term (5-year)	Medium Term (10-year)	Long Term (20-year)
Sidewalks	<ul style="list-style-type: none"> <li>Camino Lito Galindo</li> </ul>	<ul style="list-style-type: none"> <li>Pena Blanca Elementary School entrance driveway</li> </ul>	<ul style="list-style-type: none"> <li>Avenida Leon-Avenida Gandara Loop</li> </ul>
	<ul style="list-style-type: none"> <li>Yavapai Drive “Loop” – from West Frontage Road to West Frontage Road</li> </ul>		
Shared Use Paths	<ul style="list-style-type: none"> <li>West Frontage Road –Camino De Patio to Camino Lito Galindo (Phase 1)</li> </ul>	<ul style="list-style-type: none"> <li>Camino Maricopa – Ruby R. (SR 289) to West Frontage Road</li> </ul>	<ul style="list-style-type: none"> <li>Calle Calabasas – West Frontage Road to Circulo Guerrero</li> </ul>
	<ul style="list-style-type: none"> <li>West Frontage Road –Camino De Patio to Camino Ramanote (Phase 2)</li> </ul>	<ul style="list-style-type: none"> <li>Boy Scout Trail</li> </ul>	<ul style="list-style-type: none"> <li>West Frontage Road – Rio Rico Drive to Ruby Road</li> </ul>
	<ul style="list-style-type: none"> <li>West Frontage Road –Camino Ramanote to Yavapai Drive (Phase 3)</li> </ul>	<ul style="list-style-type: none"> <li>South Pendleton Drive – Avenida Coatimundi to Calabasas Park</li> </ul>	
	<ul style="list-style-type: none"> <li>West Frontage Road – Peck Canyon south to Camino Lito Galindo (Phase 4)</li> </ul>	<ul style="list-style-type: none"> <li>Camino Aqua Fria</li> </ul>	
	<ul style="list-style-type: none"> <li>Yavapai Drive “Loop” – from West Frontage Road to West Frontage Road</li> </ul>	<ul style="list-style-type: none"> <li>Via San Potosi – Avenida Lirio to Paseo de Yucatan</li> </ul>	
	<ul style="list-style-type: none"> <li>Rio Rico Drive from Pendleton Drive to the Anza Trailhead along north side of Rio Rico Drive</li> </ul>	<ul style="list-style-type: none"> <li>Camino Caralampi – Yavapai Drive to Calle Amarillo</li> </ul>	
Multi-purpose Trails	<ul style="list-style-type: none"> <li>Anza Trail</li> </ul>	<ul style="list-style-type: none"> <li>Pena Blanca/Calabasas West Trail Entrance</li> </ul>	<ul style="list-style-type: none"> <li>Fernando Court to Peck Canyon Drive</li> </ul>
		<ul style="list-style-type: none"> <li>Santa Cruz River (Anza Trail) to Calabasas Park</li> </ul>	<ul style="list-style-type: none"> <li>Calle Calabasas to Avenida Palomas</li> </ul>
Paved Shoulders	<ul style="list-style-type: none"> <li>Via Patricia- Peck Canyon Dr. “Loop”</li> </ul>	<ul style="list-style-type: none"> <li>Peck Canyon Drive – Via Patricia to Circulo Sombrero</li> </ul>	<ul style="list-style-type: none"> <li>Paseo Mexico</li> </ul>
	<ul style="list-style-type: none"> <li>North Pendleton Drive</li> </ul>	<ul style="list-style-type: none"> <li>Camino Ramanote – West Frontage Road to Corrida De Toros</li> </ul>	<ul style="list-style-type: none"> <li>Paseo Venado</li> </ul>
	<ul style="list-style-type: none"> <li>South Pendleton Drive</li> </ul>	<ul style="list-style-type: none"> <li>Camino Providencia</li> </ul>	
	<ul style="list-style-type: none"> <li>Rio Rico Drive (I-19 to Pendleton Dr,)</li> </ul>	<ul style="list-style-type: none"> <li>Paseo De Yucatan – from Pena Blanca School to Avenida Lirio</li> </ul>	
	<ul style="list-style-type: none"> <li>East Ruby Rd.</li> </ul>		
	<ul style="list-style-type: none"> <li>Avenida Lirio – Camino Maricopa to Paseo Yucatan</li> </ul>		



	Short Term (5-year)	Medium Term (10-year)	Long Term (20-year)
<b>Bike Route/Shared Roadways</b>	<ul style="list-style-type: none"> <li>• Yavapai Drive, I-19 to West Frontage Road</li> </ul>	<ul style="list-style-type: none"> <li>• Camino Josefina</li> </ul>	<ul style="list-style-type: none"> <li>• Paseo Guebabi</li> </ul>
	<ul style="list-style-type: none"> <li>• Calle Cherokee</li> </ul>	<ul style="list-style-type: none"> <li>• Ciculo Sombrero</li> </ul>	<ul style="list-style-type: none"> <li>• Ciculo Golondrina</li> </ul>
	<ul style="list-style-type: none"> <li>• Corrida de Toros</li> </ul>	<ul style="list-style-type: none"> <li>• Valley View Drive</li> </ul>	<ul style="list-style-type: none"> <li>• Camino Mar</li> </ul>
	<ul style="list-style-type: none"> <li>• Camino Aqua Fria</li> </ul>	<ul style="list-style-type: none"> <li>• Camino Pesqueira</li> </ul>	<ul style="list-style-type: none"> <li>• Avenida Pastor</li> </ul>
	<ul style="list-style-type: none"> <li>• Via Rosamorada</li> </ul>	<ul style="list-style-type: none"> <li>• Kents Ave.</li> </ul>	<ul style="list-style-type: none"> <li>• Camino Oceano</li> </ul>
	<ul style="list-style-type: none"> <li>• Willow Drive</li> </ul>	<ul style="list-style-type: none"> <li>• Camino San Xavier</li> </ul>	
	<ul style="list-style-type: none"> <li>• SR 289</li> </ul>	<ul style="list-style-type: none"> <li>• Calle Coyote</li> </ul>	
<b>Intersection Improvements</b>	<ul style="list-style-type: none"> <li>• Ruby Road/East Frontage Rd./Pilot Driveway</li> </ul>	<ul style="list-style-type: none"> <li>• Rio Rico Dr./Pendleton Dr.</li> </ul>	
	<ul style="list-style-type: none"> <li>• Yavapai Drive/Camino Caralampi</li> </ul>		
<b>Pedestrian Crossings</b>	<ul style="list-style-type: none"> <li>• Camino Lito Galindo/Rio Rico HS</li> </ul>	<ul style="list-style-type: none"> <li>• Pendleton Dr./Avenida Coatimundi</li> </ul>	
	<ul style="list-style-type: none"> <li>• West Frontage Rd/Family Dollar</li> </ul>	<ul style="list-style-type: none"> <li>• Rio Rico Dr./I-19 overpass</li> </ul>	
	<ul style="list-style-type: none"> <li>• Avenida Coatimundi/Calle Juan Legarra</li> </ul>		
	<ul style="list-style-type: none"> <li>• Peck Canyon Drive/Camino Estorino</li> </ul>		
	<ul style="list-style-type: none"> <li>• Via Patricia/Camino Lito Galindo</li> </ul>		
	<ul style="list-style-type: none"> <li>• Via San Potosi/Paseo de Yucatan</li> </ul>		
<b>Narrow Bridge Crossings</b>	<ul style="list-style-type: none"> <li>• Ruby Road @Potrero Creek</li> </ul>	<ul style="list-style-type: none"> <li>• Ruby Road @Santa Cruz River</li> </ul>	
		<ul style="list-style-type: none"> <li>• Rio Rico Dr. @ Santa Cruz River</li> </ul>	
		<ul style="list-style-type: none"> <li>• West Frontage Rd. @ Aqua Fria Canyon</li> </ul>	





### XIII. PRELIMINARY COST ESTIMATES

The primary focus of the Rio Rico Walking and Biking Study is to develop a program for the prioritization and construction of bicycle facilities and sidewalks in Rio Rico. This study identifies, for the first time, an inventory of existing conditions and deficiencies and maps a network of proposed bicycle and pedestrian routes to safely connect activity centers in Rio Rico. To supplement the primary objectives of this study, planning-level cost estimates are offered as an “order of magnitude” of costs for each facility type. These preliminary estimates can then be utilized by elected officials, County staff, or other project stakeholders to comparatively evaluate competing projects.

There are a wide variety of factors that influence the ultimate cost of any bicycle and pedestrian infrastructure improvements – area topography, line of sight, existing pavement conditions, right-of-way constraints and physical impediments such as walls/fences and utilities. Specific project-level design analysis of the precise field conditions and physical constraints is always necessary for any infrastructure improvement project and is beyond the intent and scope of this master plan.

The following planning-level cost estimates then are provided as a broad and preliminary reference point for the project stakeholders and are intended to be refined in the design stages of a given project.

#### *Bike Routes*

Where no physical roadway improvements are planned, that is, the existing facility is suitable for shared lane usage, Bike Route signs (D11-1) should be placed approximately 8 per mile, 4 in each direction. Cost per mile for sign, post and foundation and installation is approximately \$400 per sign times 8 signs equals approximately \$3,200 per mile. Labor costs savings could be realized if the signs were able to be installed by the Santa Cruz County Public Works Department rather than a contractor.

#### *Paved Shoulders*

The addition of paved shoulders in Rio Rico assumes that 4-foot of paved shoulder is added on each side of the roadway. Factors that influence the cost include the amount of earthwork needed and existing drainage facilities and patterns. The cost is estimated at approximately \$200,000 to \$300,000 per mile (both sides), including signs, pavement markings and installation.



## *Shared Use Paths*

The design and construction of a shared use path can vary significantly depending on the anticipated user volume, physical constraints, earthwork, clearing and grubbing, etc. Because shared use paths are also intended for pedestrians as well as bicyclists, shared use paths must be designed in accordance to ADA requirements which can also increase the cost of a shared use path. It was noted that shared use paths range from 10 to 14-feet in width. A typical 10-foot shared use path is conservatively estimated at approximately \$300,000 per mile including contingency.

## *Sidewalks*

The addition of sidewalks to any existing street can have a wide range of expected costs. This is primarily due to influencing factors such as existing drainage patterns and facilities (retrofitting existing bar ditch or not), existing pavement conditions, topography, ADA requirements, cross-slope, and driveway cuts to name a few. As a general rule of thumb, to add curb, gutter and sidewalk to both sides of an existing roadway will cost between \$500,000 and \$800,000 per mile.

## *Crosswalks*

Striping and markings for marked crosswalks at a typical intersection is estimated at approximately \$500.

Due to more rigorous striping detail and use of materials, signing and striping for mid-block crossings are estimated at approximately \$3,000.



## *Rio Rico Project Highlights*

The planning-level cost estimates per facility type described above serve as useful guides to generally estimating multi-modal facility improvement costs. Tables 18-20: Rio Rico Project Highlights, identifies a more refined cost estimate and design considerations for a sampling of short term, medium term and long term projects for each facility type.


There are a myriad of factors and variables that can influence the construction cost of any given project. Some of these are also described above. The Project Highlights below are provided in an attempt to provide an order of magnitude of costs for each project but also recognize that other influences such as environmental permitting and finer grain design components will ultimately influence the final project cost.



Table 18: Project Highlights – Sidewalks

SIDEWALKS			
	Project Name	Project Need & Benefit to Rio Rico	Estimated Project Cost
Short Term	Yavapai Drive "Loop" – from West Frontage Road to West Frontage Road	<p><b>Need:</b> Approximately 4,900 feet of sidewalk is recommended for the north/east sides of Yavapai Drive from the existing curb return at West Frontage Road along the entire "loop" with its reconnection to West Frontage Road to the north.</p> <p><b>Benefit:</b> This "urban" area of Rio Rico is home to the most densely populated residential area and Rio Rico Plaza (Garrett's) which serves as Rio Rico's commercial services core. Pedestrians routinely frequent this route and a sidewalk is needed for safety and separation from motorists as Yavapai Drive is the most traveled roadway with over 11,000 average trips per day.</p>	Scoping: \$80,000
			Design: \$120,000
			Construction: \$400,000
			2013 Estimated Cost: \$600,000
			<p><b>Additional Observations:</b> Ideally, said sidewalk improvements are best achieved with the future widening of Yavapai Drive. In the event this roadway widening is not feasible or not contemplated within the next five years, a more temporary paved surface pathway could be constructed near the toe of slope area between Garrett's and Via Bella Donna. From Via Bella Donna north, sidewalk construction can be accommodated behind the existing curb and gutter.</p>
		 <p><i>Yavapai Drive looking west at Camino Caralampi</i></p>  <p><i>Yavapai Drive looking west, near Via Bella Donna</i></p>	



SIDEWALKS			
	Project Name	Project Need & Benefit to Rio Rico	Estimated Project Cost
Medium Term	Pena Blanca School Entrance Driveway	<p><b>Need:</b> Construction of approximately 200 feet of sidewalk on the west side of this school driveway.</p> <p><b>Benefit:</b> This project will ensure safety by reducing potential for pedestrian/vehicle conflict at this busy, strategic school entrance.</p>	Scoping: \$3,000
			Design: \$4,500
			Construction: \$16,000
			2013 Estimated Cost: \$23,500
			<p><b>Additional Observations:</b> Sidewalk should be maintained west of the driveway entrance to provide safe separation from pedestrians and vehicles egressing driveway. Cost estimate assumes construction with federal grant funds and could be reduced if constructed with local funding sources.</p>
		 <p><i>Pena Blanca School Entrance Driveway Looking North</i></p>	






SIDEWALKS			
	Project Name	Project Need & Benefit to Rio Rico	Estimated Project Cost
Long Term	Avenida Leon- Avenida Gandara Loop	<p><b>Need:</b> Two “local” streets that operationally function as collector roadways for the medium density residential neighborhoods it serves and in close proximity community services on Avenida Coatimundi.</p> <p><b>Benefit:</b> Approximately 7,300 feet of sidewalks on both sides of the street will enhance the safety and operational efficiency of these busy residential collector roadways by separating the pedestrians from the vehicles in this well-traveled area.</p>	Scoping: \$120,000
			Design: \$180,000
			Construction: \$600,000
			2013 Estimated Cost: \$900,000
			<p><b>Additional Observations:</b> Both streets have 50-feet of right-of-way and the existing pavement section is 28-feet wide. In order to avoid a modification of existing drainage conveyance, a sidewalk facility with ribbon curbing that is flush with the roadway may be considered. Challenges include fitting sidewalks within the existing right of way and multiple driveway conflicts.</p>
	 <p><i>Avenida Leon Looking North</i></p>		



Table 19: Project Highlights – Shared Used Paths

SHARED USED PATHS			
	Project Name	Project Need & Benefit to Rio Rico	Estimated Project Cost
Short Term	Rio Rico Drive from Pendleton Drive to the Anza Trailhead along north side of Rio Rico Drive	<p><b>Need:</b> A shared use path of approximately 3,700 feet in length at this location provides connectivity to other existing and proposed shared use paths and the Anza Trail, establishing a strategic connection and link to some of the most frequented trails in Rio Rico.</p> <p><b>Benefit:</b> This particular section of proposed shared use path has been nominated for inclusion on the Arizona State Trail Plan and is an important link to the Anza Trail, the Boy Scout Trail and the Pendleton Drive Trail.</p>	<b>Scoping: \$40,000</b>
			<b>Design: \$60,000</b>
			<b>Construction: \$200,000</b>
			<b>2013 Estimated Cost: \$300,000</b>
			<p><b>Additional Observations:</b> Sufficient right-of-way appears to exist though the at-grade crossing of the existing railroad tracks will require safety/warning signage to alert path users. The use of compressed native materials for sections of this shared use path within the Santa Cruz River designated floodplain area should be considered in lieu of pavement due to scour and erosion concerns. Proposed construction of a trail within any USACOE 404 jurisdictional areas will likely need 404 permitting.</p>
		 <p><i>Proposed Trail alignment, looking west from Pendleton Drive</i></p>	



SHARED USED PATHS			
	Project Name	Project Need & Benefit to Rio Rico	Estimated Project Cost
Medium Term	Boy Scout Trail	<p><b>Need:</b> The existing Boy Scout Trail begins at the northwest corner of Pendleton Drive and Rio Rico Drive. This native trail runs for approximately ½ mile before the formal trail dissipates into non-descript series of lesser paths in the area. Local-area Boy Scouts maintain this trail on a semi-regular basis. A formal shared use path and trailhead is needed. The total length of this proposed project is approximately 6 miles to Josephina Canyon.</p> <p><b>Benefit:</b> Many members of the community expressed a desire to develop a formal shared use path as this trail meanders through a wooded area providing the many users in the area a secluded experience away from traffic yet also provides important linkage and is a key asset to the overall trail system in Rio Rico.</p>	<p><b>Scoping: \$400,000</b></p>
			<p><b>Design: \$600,000</b></p>
			<p><b>Construction: \$2,000,000</b></p>
			<p><b>2013 Estimated Cost: \$3,000,000</b></p>
			<p><b>Additional Observations:</b> The northerly extension of the Boy Scout Trail can create a connection to a planned multi-use path linking Josephina Canyon. Additional evaluation of a crossing type and location at Pendleton Drive and Josephina Canyon is necessary. Due to the extensive length and cost, phased construction of this project is suggested.</p>
			
		<p><i>Existing Boy Scout Trail, just north of Rio Rico Drive</i></p>	





SHARED USED PATHS			
	Project Name	Project Need & Benefit to Rio Rico	Estimated Project Cost
Medium Term	Camino Caralampi Yavapai Drive to Calle Amarillo	<p><b>Need:</b> This roadway already has over 4,000 vehicle trips per day. A shared use path is desired to serve this frequently traveled area of Rio Rico to maintain separation of motorists and pedestrians and bicyclists, particularly at its northern terminus with Yavapai Drive, where non-motorized users access Garrett's and the Esplendor Resort multipurpose trail also connects to this area.</p> <p><b>Benefit:</b> This 9,400 foot length includes the most populous and most traveled portions of Camino Caralampi – linking many residents in the area to Garrett's, the commercial hub of Rio Rico. The path is likely most desirable on the west side of the roadway to allow access from the majority of residents and thereby creating a seamless path system. The planned shared use path could connect to the existing multiuse trail near the Esplendor Resort or replace the existing portions of multiuse trail altogether.</p>	<p><b>Scoping: \$100,000</b></p>
			<p><b>Design: \$150,000</b></p>
			<p><b>Construction: \$500,000</b></p>
			<p><b>2013 Estimated Cost: \$750,000</b></p>
		 <p><i>Camino Caralampi near the Yavapai Drive intersection, looking south</i></p>	<p><b>Additional Observations:</b> Potential conflicts with driveway cuts and fence encroachments create challenges to design and construction costing along the west side of the roadway. Appropriate crosswalks and driver warning signage is needed at roadway intersections. Suggesting appropriate pedestrian/bicycle crossing warning signage such as MUTCD W-11-2, W-11-15 or W-11-15P for vehicle approaches at intersections.</p> <p>It is a 24-foot pavement section with a generous 100-foot right of way. The roadway maintains a center line stripe and there are no additional paved shoulders. A shared use path could extend to a southern terminus at Calle Amarillo.</p>







Table 20: Project Highlights – Paved Shoulders

PAVED SHOULDERS			
	Project Name	Project Need & Benefit to Rio Rico	Estimated Project Cost
Short Term	Via Patricia – Peck Canyon Dr.	<p><b>Need:</b> Proximity to the three school locations to enhance safety of pedestrian and bicycle school aged children. Approximately 4,300 feet in length.</p> <p><b>Benefit:</b> These Improvements are also identified in the Cooperative Extension Safe Route to Schools Needs Assessment Report.</p>	Scoping: \$35,000
			Design: \$50,000
			Construction: \$170,000
			2013 Estimated Cost: 255,000
			<p><b>Additional Observations:</b> Peck Canyon Drive has a right-of-way of 100 feet. Where sufficient right of way is available, it is suggested that a striped paved shoulder be constructed and where right-of-way is limited, a bike route be provided through the use of signage and pavement markings in proximity to school facilities.</p>
	 <p><i>Via Patricia looking southwest</i></p>		



PAVED SHOULDERS			
	Project Name	Project Need & Benefit to Rio Rico	Estimated Project Cost
Medium Term	Camino Ramanote – West Frontage Road to Corrida De Toros	<p><b>Need:</b> Many area residents and high school students identified Camino Ramanote as a facility used for walking and biking daily. Camino Ramanote currently experiences just over 2,000 vehicle trips day. The proposed project length is approximately 2.5 miles.</p> <p><b>Benefit:</b> This area will continue to see increased vehicular traffic and pedestrian and bicycle activity as Rio Rico grows. It is a popular roadway, particularly used by area youth accessing Rio Rico High School and the commercial services at Garrett’s.</p>	<p><b>Scoping: \$100,000</b></p>
			<p><b>Design: \$150,000</b></p> <p><b>Construction: \$500,000</b></p> <p><b>2013 Estimated Cost: \$750,000</b></p> <p><b>Additional Observations:</b></p> <p>This two-lane roadway with center-line striping has a 24-foot pavement section in an 80-foot right-of-way.</p> <p>Westerly to its intersection with Corrida De Toros, the roadway has many curves, changes in grade and resulting blind spots. These collective roadway characteristics lend themselves to the improvement of a paved shoulder.</p>
		 <p><i>Camino Ramanote looking west</i></p>	
		 <p><i>Camino Ramanote, near West Frontage Road looking west</i></p>	



PAVED SHOULDERS			
	Project Name	Project Need & Benefit to Rio Rico	Estimated Project Cost
Long Term	Paseo Venado	<p><b>Need:</b> Paseo Venado experiences 1,660 average daily trips and will continue to grow. Because the pavement width is only 24 feet and has center line striping, its potential as a bike route/shared roadway is not recommended because a cyclist would only have 2-foot spacing where a minimum of 3-4 feet is preferred.</p> <p><b>Benefit:</b> Paseo Venado can provide a key bicycle trail connector linking Calle Calabasas and Camino Caralampi and this 4,000 length of improvements creates a continuous bike route system linking northwest Rio Rico to southwest Rio Rico.</p>	Scoping: \$30,000
			Design: \$50,000
			Construction: \$160,000
			2013 Estimated Cost: \$240,000
			<p><b>Additional Observations:</b> Paseo Venado is an 80-foot right-of-way with an existing 24-foot pavement section with center line striping. A Bicycle LOS Model could be performed to determine the feasibility of a bike route/shared lane facility.</p>



## XIV. IMPLEMENTATION PLAN

The key to achieving the ultimate effectiveness of the Rio Rico Walking and Biking Study begins with leadership and initiative that rely upon allocated resources for implementation of successful projects. Santa Cruz County must rely on partnerships with governmental agencies, the development community and other means to begin to implement projects identified in this report.

This section offers decision-making principles and strategies for implementation that complement potential funding sources necessary for the comprehensive development of walking and biking trails and paths in Rio Rico. The success of this plan is based on attainable strategies that realistically provide Santa Cruz County, the Santa Cruz Valley School District No. 35 and other area stakeholders an approach to planning, constructing and maintaining a comprehensive trail and path system.

Municipalities possess the advantage of additional funding resources (bonding, General Fund, grants or other sources). Rio Rico is not an incorporated place and therefore lacks local taxation and bonding authority. Rio Rico historically has not had the luxury of obtaining trail resources through a Capital Improvements Plan (CIP), bonding or other means to publicly fund portions of trails in Rio Rico. This is true for the unincorporated place although Santa Cruz County could contemplate these things.

This implementation plan really becomes a “foundation plan” by which Santa Cruz County can critically and comprehensively identify the series of steps needed to ultimately develop financial resources, development community commitment and develop staff resources to achieve this plan’s objectives.

### 14.1 Funding Sources & Cost Sharing Strategies

There are a wide variety of federal, state and local funding sources available for bicycle and pedestrian projects. In most circumstances, federal funding sources are primarily targeted based on available funding levels and local needs. Of significant importance is *Moving Ahead for Progress in the 21<sup>st</sup> Century* (MAP-21), the most recent federal transportation act approved by Congress that replaces SAFETEA-LU.

#### *MAP-21 Overview*

MAP-21 became effective on October 1, 2012. A few key themes of MAP -21 are to strengthen America’s highways and transportation systems, accelerate project delivery, promote innovation, establish a performance-based Federal-aid program, substantially reduced programmatic elements, and change the federal funding formula. This includes the reduction of earmarks that historically provided for specific projects or programs in such a manner that the allocation



circumvents a merit-based or competitive allocation process and/or applies to a very limited number of individuals or entities.

Of the \$37 billion in annual authorized nationwide funding, \$10 billion is allocated to the Surface Transportation Program (STP). The STP program is the federal program from which the vast majority of bicycle and pedestrian-related improvements recommended in the Rio Rico Walking and Biking Study would seek funding assistance. STP funding includes Safe Routes to Schools (SRTS) projects but unfortunately there is no longer a set aside for these projects as was provided under SAFETEA-LU. SRTS projects must now compete with other “transportation alternative” projects which creates stiffer competition for SRTS projects as they compete with larger, traditional transportation projects. However, up to 50% of the STP funds are subject to sub-allocation based on population and there is a greater emphasis on funding for rural areas which may improve Rio Rico’s chances for obtaining funding.

### *Safe Routes to Schools*

For the past funding cycle under SAFETEA-LU, the application cycle for Safe Routes to Schools began in September with selected projects being announced in April of the following year. This past cycle was known as Cycle 6. The application cycle for the upcoming Cycle 7 year is in the process of being determined, pending further MAP-21 guidance from FHWA and ADOT for Cycle 7 applications.

For Cycle 6, there was approximately \$5,000,000 statewide available for new SRTS projects. According to ADOT, the likely maximum request/project limits will be \$45,000 for non-infrastructure projects such as education and awareness campaigns and traffic enforcement programs. Anticipated project limits will be \$450,000 for infrastructure projects. A key distinction is that now under MAP-21, SRTS projects will be required to compete against other transportation enhancement (transportation alternatives) projects for funding.

Please see Table 21: Potential Funding Sources for a complete summary of available funding sources.



Table 21: Potential Funding Sources

Source	Program	Description	Eligible Project Types	Requirements	Administration
Federal – MAP-21	National Highway Performance Program (NHPP)	The NHPP provides support for the condition and performance of the National Highway System (NHS), for the construction of new facilities on the NHS, and to ensure that investments of Federal-aid funds in highway construction are directed to support progress toward the achievement of performance targets established in a State's asset management plan for the NHS.	<ul style="list-style-type: none"> <li>Bicycle transportation and pedestrian walkways</li> </ul>	<p>NHPP projects must be on an eligible facility and support progress toward achievement of national performance goals for improving infrastructure condition, safety, mobility, or freight movement on the NHS, and be consistent with Metropolitan and Statewide planning requirements.</p> <p>Funding: Generally, 80% federal / 20% matching</p>	In general, obligated through competitive local or statewide grant programs
Federal – MAP-21	Surface Transportation Program (STP)	The Surface Transportation Program (STP) provides flexible funding that may be used by States and localities for projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals	<ul style="list-style-type: none"> <li>Recreational trails projects</li> <li>bicycle transportation and pedestrian walkways</li> <li>most transportation enhancement eligibilities (see below)</li> </ul>	<p>Projects must be identified in the STIP/TIP and they must be consistent with the Long-Range Statewide Transportation Plan and the Metropolitan Transportation Plan</p> <p>Funding: Generally, 80% federal / 20% matching</p>	In general, obligated through competitive local or statewide grant programs
Federal – MAP-21	Transportation Alternatives Program (TA) - Includes Recreational Trails Program set aside	MAP-21 establishes a new program to provide for a variety of alternative transportation projects. The TAP replaces the funding from pre-MAP-21 programs including Transportation Enhancements, Recreational Trails, Safe Routes to School, and several other discretionary programs	<ul style="list-style-type: none"> <li>Construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other nonmotorized forms of transportation</li> <li>Infrastructure-related projects and systems that will provide safe routes for non-drivers, including children, older adults, and individuals with disabilities to access daily needs</li> <li>Conversion and use of abandoned railroad corridors for trails for pedestrians, bicyclists, or other nonmotorized transportation users.</li> <li>recreational trails program</li> <li>Safe routes to school program</li> </ul>	<p>Funding: Generally, 80% federal / 20% matching</p>	In general, obligated through competitive local or statewide grant programs



Source	Program	Description	Eligible Project Types	Requirements	Administration
Federal – MAP-21	Congestion Mitigation and Air Quality Program (CMAQ)	The Congestion Mitigation and Air Quality (CMAQ) Improvement Program funds transportation projects to improve air quality and reduce traffic congestion in areas that do not meet air quality standards.	<ul style="list-style-type: none"> <li>Projects or programs that shifts traffic demand to non-peak hours or other transportation modes during peak hours</li> <li>Non-recreational bicycle transportation and pedestrian improvements that provide a reduction in single-occupant vehicle travel</li> </ul>	Funding: Generally, 80% federal / 20% matching	In general, obligated through competitive local or statewide grant programs
Federal – MAP-21	Highway Safety Improvement Program (HSIP)	The Highway Safety Improvement Program (HSIP) is a Federal Highway Administration (FHWA) program that funds highway safety projects aimed at reducing highway fatalities and serious injuries.	<ul style="list-style-type: none"> <li>Bike lanes, bike parking, crosswalks, and signage</li> </ul>	Bicycle safety must be included in state’s Strategic Highway Safety Plan (SHSP).  Funding: 90% federal / 10% matching	In general, obligated through competitive local or statewide grant programs
Federal – MAP-21	Federal Lands Program (Access and Transportation Programs)	The FLP funds projects that improve access to or transportation within the Federal estate (national forests, national parks, national wildlife refuges, national recreation areas, and other Federal public lands)	<ul style="list-style-type: none"> <li>Program administration, transportation planning, research, preventive maintenance, engineering, rehabilitation, restoration, construction, and reconstruction of Federal lands transportation facilities, and provision for pedestrians and bicycles</li> </ul>	Project must be within, adjacent to, or provide access to Federal Lands.  Funding: 100% Federal	In general, projects are selected by Federal Land Management Agency or statewide committee.
Federal	Federal Highway Safety (Section 402) Grant Program	Highway Safety Funds are used to support State and community programs to reduce deaths and injuries on the highways	<ul style="list-style-type: none"> <li>Conducting data analyses, developing safety education programs, and conducting community-wide pedestrian safety campaigns. Funds can also be used for some limited safety-related engineering projects</li> </ul>		Program administered through the Governor’s Office of Highway safety
Federal	Community Development Block Grants (CDBG)	The Community Development Block Grant (CDBG) program is a flexible program that provides communities with resources to address a wide range of unique community development needs.	<ul style="list-style-type: none"> <li>Public Facilities and Improvements (road and street improvements)</li> <li>Planning and Capacity Building (transportation plans)</li> </ul>		Submit an annual Regional Account Application to SEAGO



Source	Program	Description	Eligible Project Types	Requirements	Administration
State	Highway User Revenue Fund (HURF)	The State of Arizona taxes motor fuels and collects a variety of fees and charges relating to the registration and operation of motor vehicles on the public highways of the state. These collections include gasoline and use fuel taxes, motor carrier taxes, vehicle license taxes, motor vehicle registration fees, and other miscellaneous fees.	<ul style="list-style-type: none"> <li>Expenditures of HURF must be for improvements in the public roadway right-of-way. They can also be used for the acquisition of right-of-way. Examples of eligible expenditures can include the installation of new pavement, curbing, sidewalks, street lights, traffic control devices, landscaping, distinctive banner treatments and culverts. Administrative and engineering costs are also eligible expenses and will be included in the cost of any Back to Basics project</li> </ul>		HURF revenues are distributed to counties, cities, towns and the State Highway Fund for obligation
State	Heritage Fund	Arizona voters created the Heritage Fund in 1990, designating up to \$10 million a year from lottery ticket sales for the conservation and protection of the state's wildlife and natural areas.	<ul style="list-style-type: none"> <li>Projects that help to enhance wildlife viewing or provide access to public lands</li> </ul>		Funds obligated by Arizona Game and Fish Department
Local	Development Impact Fees	An impact fee is a fee that is determined by a municipality and is placed on a proposed project to help cover the additional costs associated with upgrading affected public facilities resulting from new construction.			
Local	Development Stipulations	Development requirements are typically placed on proposed projects at the time of entitlement approval to help develop necessary public facilities.		Project developer must agree to proposed stipulations prior to entitlement approval.	
Local	Sales Tax	Funds from a portion of a municipality's sales tax	<ul style="list-style-type: none"> <li>Pedestrian facilities and programs</li> </ul>		
Local	General Obligation bonds	Bonds are a common mechanism that counties use to borrow money for transportation projects. Most general obligation pledges at the local government level include a pledge to levy a property tax to meet debt service requirements.			





## 14.2 Acquisition & Development Strategies

One possible method of trail construction in Rio Rico will be conducted by property owners and/or the development community in conjunction with the improvements of planned residential communities and commercial/employment centers in Rio Rico. The following strategies are offered for consideration:

**Strategy** – Enter into and MOU or IGA with the Santa Cruz County Flood Control District for collaborative funding and development of paths trails in conjunction with the development or preservation of flood control or natural resource management facilities. Identify and select drainage conveyance designs that favor the use of shared use paths or multipurpose trails as a component of the flood conveyance design. Particular emphasis should be placed on the Santa Cruz River, Josephine Canyon, Aqua Fria Canyon, Nogales Wash, and Potrero Creek.

**Strategy** – Collaborate with developers during the master planning, platting and or site plan review processes to secure strategically significant trail corridors through dedication and/or conservation easements.

**Strategy** – In cases where extra-ordinary easements or rights-of-way are being sought from the development community, consider the use of transfer of development rights, impact fee credits or other incentives to offset the additional value of said dedication.

**Strategy** – As a condition of rezoning, work with the Community Development Department to stipulate conformance with the trail alignments, policies and design guidelines prescribed in this Master Plan.

**Strategy** – When constructed by the development community, allow “credit” towards project open space requirements for shared use trails or paths that support or immediately provide connection to active recreation activities/parks.

**Strategy** – Within three years of the Rio Rico Walking and Biking Study adoption, the County should continue to be responsive to the changing needs of Rio Rico’s residents by conducting a household resident survey to validate parks, trails and recreation priorities in Rio Rico.

**Strategy** – The County shall continue to reinforce the mutually beneficial partnership with the USFS and to determine precise portal access locations into the Coronado National Forest.



### 14.3 Awareness, Encouragement, Education & Volunteerism Strategies

Volunteerism and community awareness are often considered cornerstones to success for many established trails programs throughout the country. Community education and in-kind volunteering can allow Rio Rico to prioritize and expand its limited financial resources and accelerate the construction of paths and trails throughout Rio Rico.

Encouragement consists of activities and events used to promote walking and bicycling to school. Creating excitement and a culture of walking and bicycling among students can help increase the number of children who walk or bike to/from school. These activities and events may simply promote the benefits of walking and bicycling, or directly provide opportunities to walk and bike.

The University of Arizona Cooperative Extension has been dedicated to assisting Santa Cruz County with programs to assist in the education and awareness. Their successful efforts should continue to be maintained moving forward.

Strategies that Santa Cruz County should consider to promote awareness, education and volunteerism include:

**Strategy** – Develop an “adopt-a-trail” program for existing and future paths and trails (Anza Trail, Boy Scout Trail, John and Bette De Stefano Pathway and newly developing West Frontage Road shared use path). Look to local hiking, biking, and equestrian advocacy groups as the first entities to adopt a Rio Rico trail.

**Strategy** – Collaborate with neighborhood groups to adopt localized neighborhood volunteer efforts for periodic clean-ups and maintenance exercises within their respective communities.

**Strategy** – Periodically agenda trails planning and maintenance items on the Board of Supervisors meeting to continually elevate trail planning matters.

**Strategy** – Focus on showing economic development of trails through creation and implementation of signature special events, holding regional/national tournaments, incorporating or closely locating commercial uses with parks and recreation sources, drawing regional and national equestrian events and analyzing non-resident participation and attendance at recreation facilities and programs.



**Strategy** – Educate and continually remind Rio Rico residents that trails are intended for non-vehicular uses and that ATV’s are prohibited. Newspaper notices, notes in utility bills or posted notices at the library or schools are a few methods to deliver this message.

**Strategy** – Encourage and support volunteer groups to organize. Organizations such as youth, senior, school, church, healthcare, senior and other community-based organizations are already positioned to perform many maintenance functions, especially on trails.

**Strategy** – Promote the benefits of volunteer labor and material donations for trails development to expedite the development of trails and reduce the construction costs.

**Strategy** – Seek volunteer support from local area retailers, especially as Rio Rico grows, to assist with material donations in the development of trails.

**Strategy** – Develop a brochure and trail map of Rio Rico’s trail system, including rules and regulations and appropriate contact information.

**Strategy** – Upon the development of significant trails or bicycle facilities, devise a “name-that-trail contest” that will generate citizen interest and ownership and elevate a level of importance of walking and biking in Rio Rico.

#### 14.4 TOOLBOX OF EDUCATIONAL MATERIALS

The University of Arizona Cooperative Extension already contributes to the betterment of the SRTS program in Rio Rico by continuing to be an advocate and local resource for implementation of programs, and projects in Rio Rico. Below is a sampling of programs for consideration in Rio Rico.

##### *Special Events*

Assemblies and other special events at school can get the attention of students and create a fun atmosphere for learning about traffic safety. A number of nonprofit organizations and consultants specialize in creating these special events. Walk to School Days (see “Encouragement” section) provide another opportunity for instruction on safe walking behavior.



## Example: Bicycle Rodeo

A bicycle rodeo is a fun educational event where children can practice what they learn. It involves instruction on traffic rules and safety skills, and can also include bicycle maintenance and helmet fitting.

Students ride through an obstacle course where they apply the rules, practice safety skills, and negotiate hazards. Holding this event on a summer evening or a weekend can allow for parent involvement. Local bike shops may be interested in sponsorship opportunities at these events.



Photo courtesy of [www.pedbikeimages.org](http://www.pedbikeimages.org) / Mike Cynecki

## Classroom Instruction

Physical education classes are appropriate for direct instruction on “street smart” walking and bicycling. In Rockville, Maryland, bicycle and pedestrian safety has become a standard part of the school system’s teaching curriculum, coordinated by physical education teachers. Walking and bicycling as forms of transportation also relate to a range of educational topics, including health and the environment.

## Safety Campaigns

Educational campaigns to improve driving behavior around schools should send messages through multiple channels throughout the year. They will be most effective if they reinforce a few key points that are easy to remember.

Many cities, like this example from Mission Viejo, CA have a “School Traffic Safety” flyer reminding parents of key rules they should observe during dropoff and pickup to promote safety near the school, as well as tips to avoid congestion.





School principals also include messages about traffic safety in newsletters and emails to parents. Publications by the City and homeowners associations are other avenues for reaching parents and community members. Banners, signs, or other creative temporary displays near the school can be used to grab drivers' attention.

## *Community Programs*

Public safety officers in the community can be a key source of traffic safety education for children and adults. When geared toward adults, community programs can make drivers more alert and give parents skills to help teach traffic safety to their children. Some County Sheriff's Departments offer Childhood Watch safety training classes to children and parents, including a module on "Traffic Smarts."

## **14.5 TOOLBOX OF ENCOURAGEMENT IDEAS**

### *Walk/Bike to School Days*

Schools can promote walking and biking to school with regular events such as Walk to School Wednesdays. On designated days, school staff and parent volunteers walk with students from designated areas close to the school. The annual International Walk to School Day, in the first week of October, is timed to promote walking to school near the beginning of the year. New in 2012, a national Bike to School Day is being introduced on the Wednesday before Bike to Work Week in May.



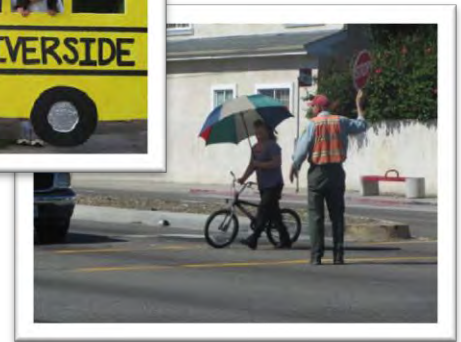
### *Competitions*

Class competitions can provide extra motivation as well as teaching opportunities. For instance, children can use pedometers or maps to track how far they walk each day, with their results tallied as a class or school. This kind of competition can incorporate exercises with graphs, maps, and measurements, and will be more fun if the students' progress is compared to, for instance, the distance from Rio Rico to Tucson or Phoenix. Other competitions could reward classes with the highest numbers of carpooling parents or participants in Walk to School Days.



## *Walking School Buses and Bike Trains*

In a walking school bus, parent/guardian volunteers “drive” a group of children to or from school. The bus can have regular stops like a school bus for picking up additional children. Similarly, a bike train is a group of student riders accompanied by adults on bicycle.



## *Carpooling Promotion*

Carpooling can be promoted by providing an online forum or matching program to connect interested parents to each other. The service can be provided using inexpensive or free online services such as Google documents and can be organized by the school or parent organization. Parents should be made aware of the program during school orientation and reminded throughout the year through newsletters and other announcements.

Access to the school parking lot or other desirable loading areas can be reserved as an incentive to carpool.



## 14.6 Other Supporting Policies

The suggested policy actions below are designed to supplement the implementation of the Plan of Improvements for the Rio Rico Walking and Biking Study.

**1) Collaborate with the Santa Cruz Valley Unified School District No. 35 and the University of Arizona Cooperative Extension**

Frequent collaboration to selectively target grant applications and funding for the construction of priority Safe Routes to Schools projects is particularly important in the face of funding authorization with the recent federal adoption of MAP-21. The County, school district and the Cooperative Extension should seek consultation from ADOT and others on fluid MAP-21 application requirements and strategies and regularly meet to identify and evaluate priority Safe Routes to Schools projects for grant application consideration.

**2) Install bicycle route/shared roadway signage for priority bike routes.**

The implementation of signage and pavement markings for priority bike routes/shared roadways is the least expensive and most meaningful way to implement short term projects and demonstrate Santa Cruz County's commitment to promoting bicycling in Rio Rico. Santa Cruz County should request budget authorization for the purchase of MUTCD signage for high priority bike routes in Rio Rico. Signage and select pavement marking should be installed by the County Public Works Department.

**3) Develop a County-wide bicycle safety and education campaign.**

The County should initially commence with a fairly simple, straight-forward campaign and education program on the implementation of bike route signage on select roadways in Rio Rico. As signage is installed, web-site and mail newsletters to residents can simply inform them of the installation of the signage, "road rule reminders" and safety concerns that also promote the expanded commitment to recreation, fitness and quality of life matters. As the construction of bicycle and pedestrian facilities increase over time, the campaign can expand its messages in unison. The County should consult with ADOT Bicycle and Pedestrian Program representatives regarding the content and usage of their bicycle and pedestrian safety campaign materials (*Share the Road Guide*) for reference.

**4) Incorporate paved shoulder improvements into annual or routine repair and resurfacing projects.**

Santa Cruz County should adopt a separate formal policy that the annual review of a CIP or street maintenance budget will incorporate the costs to construct paved shoulders



with routine street repair, resurfacing overlays or reconstruction jobs, and other bicycle and pedestrian related improvements into annual street repair budgeting process. Cost-effective improvements can be made incrementally over time.

**5) Adopt County development standards that require the construction of sidewalks, shared use paths or bike lanes for new development.**

When evaluating an incoming residential or non-residential development proposal, a policy requiring the incoming development to provide for the construction of pedestrian and/or bicycle improvements within the adjacent rights-of-way along the development's property frontage as opportunities arise. This is particularly important for the continuation of an existing network of pedestrian or bicycle improvements (or closing a gap) but also is required where this document or other County plans have identified these improvements even if not currently established.

**6) Adopt a formal policy and program for the regular maintenance and sweeping of shared use paths, paved shoulders and shared roadways.**

Santa Cruz County should consider adopting a formal policy supporting this measure so the annual funds and personnel can be properly allocated for this important provision. Community input received supports this practice. Biking enthusiasts noted that they love the shared use path on Avenida Coatimundi, however they have gotten many flat tires from stickers and other debris that tend to accumulate on that particular path. Routine sweeping of small rocks and pebbles on paved shoulders and bike facilities is necessary to avoid additional slipping by riders.

**7) Promote a policy that requires new development to provide bike racks and safe and convenient ingress and egress.**

Develop a specific policy to require the convenient placement of bike rack facilities and accessibility bike and pedestrian access routes on commercial, employment center and community service uses in Rio Rico.

**8) Consider enhanced bicycle and pedestrian facilities for intersection upgrades.**

Currently Rio Rico does not have any signalized intersections other than I-19 traffic interchanges at Ruby Road and Rio Rico Drive. As signalization of other intersections incrementally occur over time, said intersection improvements should accommodate a more urban or suburban standard for bike lanes and sidewalks in conjunction with the intersection improvements.





## XV. REFERENCES AND RESOURCES

Below is an inventory of technical documents that were utilized in the data collection, research and analysis phases of the Rio Rico Walking and Biking Study. To the extent information is available of the internet, the hyperlink is provided for convenience.

The Bicycle & Pedestrian Program of the Federal Highway Administration's Office of Human Environment.

[http://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/](http://www.fhwa.dot.gov/environment/bicycle_pedestrian/)

Santa Cruz County Comprehensive Plan, June 2004.

[http://co.santa-cruz.az.us/com\\_development/pdf/complete-plan-2005.pdf](http://co.santa-cruz.az.us/com_development/pdf/complete-plan-2005.pdf)

Santa Cruz County Trails Master Plan, May 2006.

Making the Connection: Community Fitness & the Rio Rico Community-School Greenway prepared by the Drachman Institute, 2005.

Various Rio Rico (Santa Cruz County) Planned Area Development (PAD) land use plans.

Preliminary case study reports prepared by the Safe Routes to Schools (SRTS) at the U of A Cooperative Extension, 2011.

Santa Cruz County CIP data.

Various Santa Cruz County GIS files.

Unified Nogales-Santa Cruz County Transportation Plan 2010.

[http://www.azdot.gov/planning/systems\\_planning/nogales\\_santacruz.asp](http://www.azdot.gov/planning/systems_planning/nogales_santacruz.asp)

Interstate 19 East Frontage Road (Ruby Road to Rio Rico Drive) Study, ongoing.

[http://www.azdot.gov/highways/projects/119\\_East\\_Frontage\\_Ruby\\_to\\_RioRico/index.asp](http://www.azdot.gov/highways/projects/119_East_Frontage_Ruby_to_RioRico/index.asp)



United States Census (2010).

[www.census.gov](http://www.census.gov)

<http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>

American Community Survey, 2006-2008.

5-year Crash Data – ADOT MPD. March 2007 through March 2012.

The Arizona Revised Statutes Title 28 (Transportation).

[www.azleg.state.az.us/arizonarevisedstatutes](http://www.azleg.state.az.us/arizonarevisedstatutes)

The American Association of State Highway and Transportation Officials' (AASHTO) Guide for the Development of Bicycle Facilities (2012).

<https://bookstore.transportation.org/>

The Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) (2009 Edition). <http://mutcd.fhwa.dot.gov/index.htm>

The Arizona Department of Transportation (ADOT) Traffic Engineering Policies, Guides and Procedures (PGP) (January 2000, revised October 2012).

Arizona Department of Transportation (ADOT, Intermodal Transportation Division Policy, MGT 02-1, "Bicycle Policy" (February 27, 2007, reviewed February 27, 2010).

<http://www.azdot.gov/docs/business/adot-bicycle-policy.pdf>

ADOT Statewide Bicycle and Pedestrian Plan Update, April 2013.

[http://azbikeped.org/azbikeped/pdf/Draft\\_Final\\_Report.pdf](http://azbikeped.org/azbikeped/pdf/Draft_Final_Report.pdf)

Designing Shared Use Trails to Include Equestrians, Anne M. O'Dell.

<http://atfiles.org/files/pdf/ODellEquesTrails.pdf>

FHWA Public Policies for Pedestrian and Bicycle Safety and Mobility.

<http://international.fhwa.dot.gov/pubs/pl10028/index.cfm>

[http://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/guidance/design\\_guidance/](http://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/design_guidance/)

FHWA Manuals and Guides for Trail Design, Construction, Maintenance, and Operation, and for Signs.

[http://www.fhwa.dot.gov/environment/recreational\\_trails/guidance/manuals.cfm](http://www.fhwa.dot.gov/environment/recreational_trails/guidance/manuals.cfm)



Americans with Disabilities Act Accessibility Guidelines. U.S Architectural and Transportation Barriers Compliance Board.

<http://www.access-board.gov/>

Trail Design Guidelines for Portland's Park System, May 2009.

<http://www.portlandoregon.gov/parks>

Draft Final Accessibility Guidelines for Trails, Outdoor Developed Areas Final Report.

[www.access-board.gov/outdoor/draft-final.htm](http://www.access-board.gov/outdoor/draft-final.htm)

Americans with Disabilities Act Accessibility Guidelines.

[www.access-board.gov/adaag/html/adaag](http://www.access-board.gov/adaag/html/adaag)

Trail Planning, Design and Development Guidelines: Shared Use Paved Trails, Natural Surface Trails, Winter Use Trails, Bikeways by the Minnesota Department of Natural Resources Trails and Waterways, 2006.

FHWA, Transportation Alternatives Program Guidance, June 13, 2013.

<http://www.fhwa.dot.gov/map21/guidance/guidetap.cfm>

ADOT Traffic Safety for School Areas Guidelines

<http://www.azdot.gov/docs/business/adot-traffic-safety-for-school-area-guidelines.pdf>

ADOT Roadway Design Guidelines, May 2012

<http://www.azdot.gov/docs/business/roadway-design-guidelines.pdf>

<https://www.carpooltoschool.com/Home.aspx>

<http://www.rideshareinfo.org/schoolpool.shtml>

An Organizer's Guide to Bicycle Rodeos (Cornell University).

[http://www.bike.cornell.edu/pdfs/Bike\\_Rodeo\\_404.2.pdf](http://www.bike.cornell.edu/pdfs/Bike_Rodeo_404.2.pdf)

Bicycle Rodeos (Bicycling Life).

<http://www.bicyclinglife.com/SafetySkills/BicycleRodeo.htm>

Maryland Pedestrian and Bicycle Safety Education Curriculum.

[www.saferoutesinfo.org/program-tools/maryland-pedestrian-and-bicycle-safety-education-curriculum-k-5](http://www.saferoutesinfo.org/program-tools/maryland-pedestrian-and-bicycle-safety-education-curriculum-k-5)



WalkBoston Walking for Health & the Environment Curriculum.

<http://www.walkboston.org/documents/srtsCurricAll.pdf>

Safe Routes to Schools

<http://www.walktoschool.org/resources/safety-environment.cfm>

[http://guide.saferoutesinfo.org/encouragement/mileage\\_clubs\\_and\\_contests.cfm](http://guide.saferoutesinfo.org/encouragement/mileage_clubs_and_contests.cfm)

Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (2011).

<http://www.access-board.gov/prowac/nprm.htm>

Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way; Shared Use Paths

<http://www.access-board.gov/sup/snprm.htm>

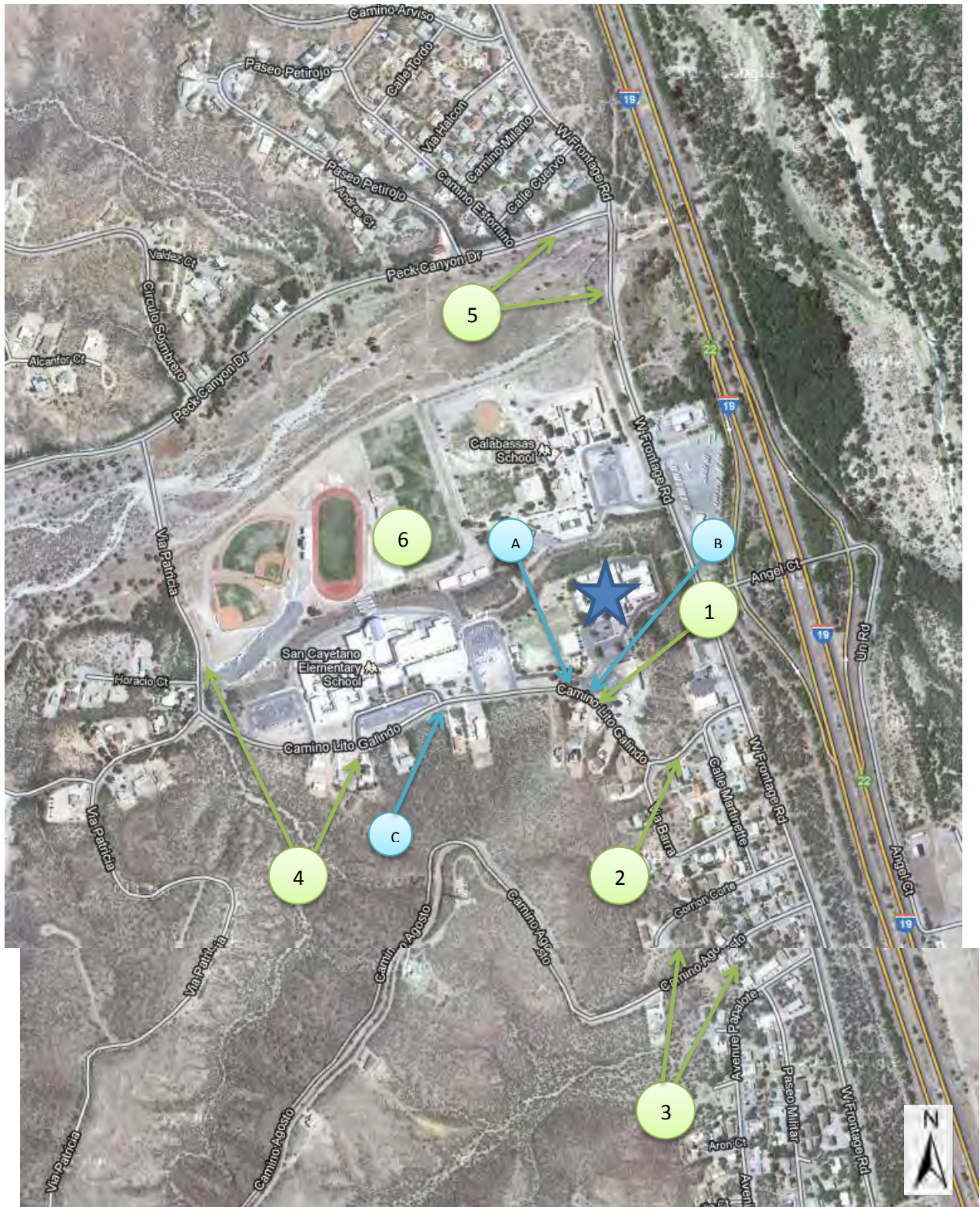
The American Association of State Highway and Transportation Officials' (AASHTO), Guide for the Planning, Design, and Operation of Pedestrian Facilities, July 2004



## Appendix A – University of Arizona Cooperative Extension SRTS Case Studies

- A.1 Mountain View Elementary School
- A.2 Pena Blanca Elementary and Calabasas Middle School
- A.3 Coatimundi Middle School

**Existing Facilities and Needs Assessment:  
Bicycle/Pedestrian Conditions at Mountain View Elementary School, Dec 2011**



Source: Google Maps 2011

Existing facilities and needs assessment information – see next page.

## Existing Facilities

- A. A sidewalk on the north side of Camino Lito Galindo connects school administration buildings, Mountain View Elementary, and Rio Rico High School. Sidewalks lead from the street to school buildings and have updated accessibility ramps.
- B. A well-maintained crosswalk leads from a sidewalk on the south side of Camino Lito Galindo to sidewalks on the school-side of the street. Signs improve visibility of the crosswalk here.
- C. Pavement warning strips (Bott's Dots) are located at several places along Camino Lito Galindo to slow traffic and keep drivers alert.

## Needs Assessment

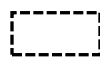

- 1. Crosswalk ramp: The accessibility ramp on Camino Lito Galindo's south sidewalk does not lead directly into the crosswalk. The crosswalk should be repainted to correspond to the ramp, or a new ramp should be installed here.
- 2. Sidewalk buffer: The sidewalk along the south side of Camino Lito Galindo is flush with the roadway and has very little buffer from traffic. Raising the sidewalk or installing other barriers (plantings, etc.) would serve to improve the safety and comfort of pedestrians.
- 3. Sidewalks: Sidewalks currently do not continue into southern neighborhoods. Installing sidewalks would improve walking conditions in an area where many students live. Alternately, a back pathway could be constructed that connects the neighborhood to the school behind (to the west of) streets and houses here. This option was suggested by SRTS Advisory Board members in October 2011.
- 4. Sidewalks/bike lane: Continuing the sidewalk around the school property as well as adding bike lanes to the Camino Lito Galindo-Via Patricia-Peck Canyon Dr. loop would increase safety of pedestrians/bicyclists from surrounding neighborhoods.
- 5. Bike/Ped pathway: Installing a bike/ped pathway set back from the Frontage Rd. would significantly increase foot traffic from northern neighborhoods along this route. Developing a pathway through northern school property would also serve to increase access/safety for residents in northern neighborhoods.
- 6. On-site mileage club circuit: Given obstacles to safe commuting in the area, an on-campus mileage club circuit would provide alternate opportunities for student fitness.

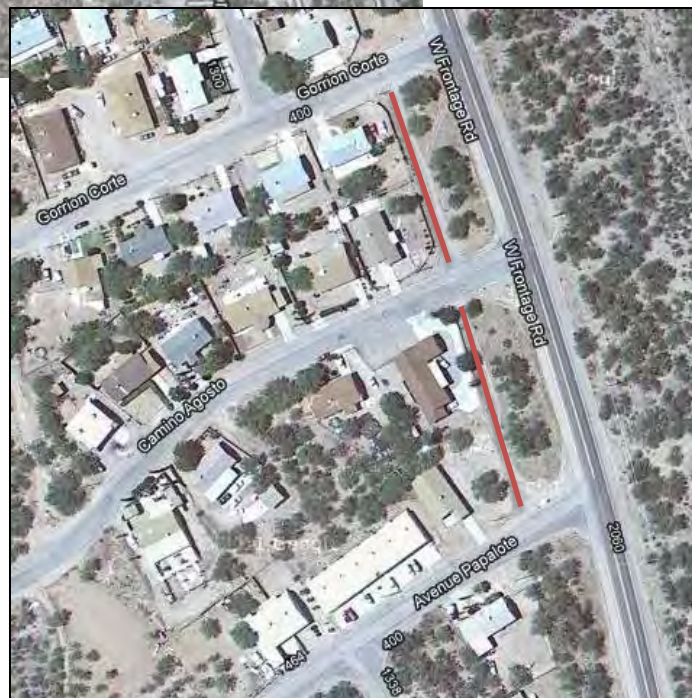
## Mountain View Frontage Rd Area Improvement Project

Improvements to existing easement/ROW paths off W Frontage Rd, south of Mountain View Elementary School, would increase the perception of safety and appeal of walking. Improvements will be especially beneficial beginning next school year when bus pick-up will end at Via Lechuza (to the south of this area); usage by walkers is expected to increase. A railroad tie/pecan shell pathway on the existing path, or off to the side if vehicle access must be maintained, is suggested. Plantings for shade/aesthetics are also an option.

### Mt. View Improvement Area Map



-  = Area of Detail
-  = Improvement Location



*To do: Determine property situation (County ROW/utility easement?) and pursue permission to make alterations. Organize materials and volunteers.*



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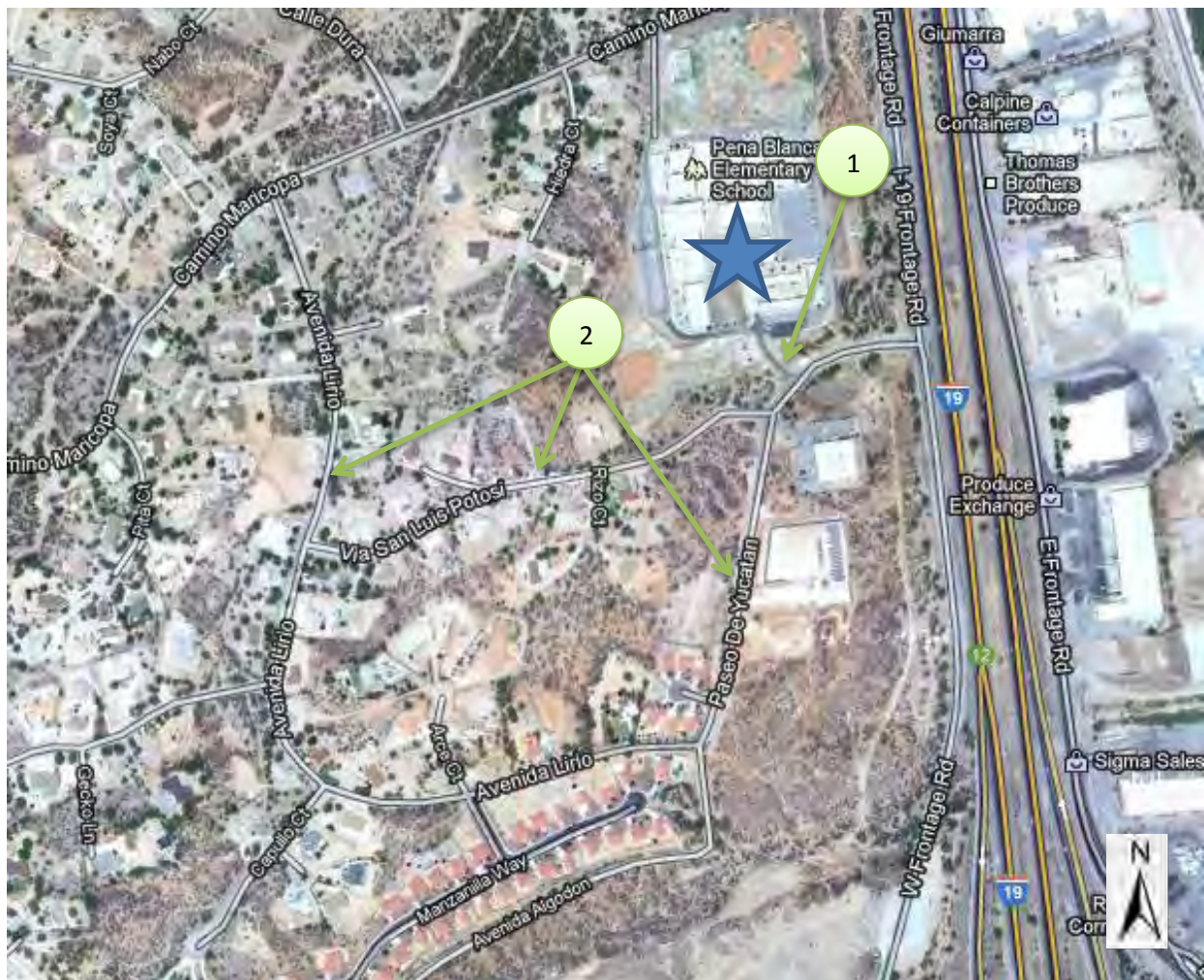
Project Update (from SRTS Report 5-4-12):

Purpose: Increase safety/appeal of walking along a section of W. Frontage Rd.

General info: SRTS and SCVUSD will not need to pursue this project. Santa Cruz County has plans to build a pathway from the entrance to San Cayetano Elementary, past Camino Lito Galindo, and continuing south to near El Destino housing. Construction on this project should begin August or September 2012.

## Existing Facilities and Needs Assessment:

### Bicycle/Pedestrian Conditions at Peña Blanca Elementary and Calabasas Middle Schools, Dec 2011



Source: Google Maps 2011

#### Existing Facilities

No sidewalks, crosswalks, or bike lanes connect residential areas to the school grounds.

#### Needs Assessment

1. Sidewalk and crosswalk: A new driveway on the south side of the school creates alternate access for pedestrians and bicyclists (as opposed to the busy Frontage Rd. access point). It was not designed with sidewalks/crosswalks or a pedestrian gate, however, so is limited in its safety and usability at this time. Pedestrian features are recommended.
2. Sidewalks/bike lanes: Sidewalks and bike lanes along streets, especially Paseo De Yucatan which leads to a higher-density neighborhood to the south, would significantly improve pedestrian/cyclist safety. Improving facilities along Camino Maricopa would also encourage walkers from northern and western neighborhoods.

## Peña Blanca/Calabasas West Trail Entrance Project

A system of existing trails to the west of Peña Blanca Elementary and Calabasas Middle Schools create an opportunity to easily connect western neighborhoods to the school grounds. Only a few improvements are necessary. These include:

- 1) Install a gate in the school fence and extend a path from the gate to the school parking lot/crosswalk. See Maps 1 & 2.
- 2) Improve steep section of trail at eastern extent of trail, just south of proposed gate location. See Maps 1 & 2.
- 3) Make minor improvements to trail as needed: trim tree branches, remove brush from path.

Other considerations/thoughts:

- 4) Possibly include a Tono Ct connection to publicized routes. This option should be explored further. See Maps 1 & 3.
- 5) Publicize routes through a letter & map distribution (possibly via bus drivers). Route Walk to School Days on these paths to raise awareness and accustom students to using them.
- 6) Ideally, install "Slow" or "Watch for Children" signs along Via San Luis Potosi (west of Rizo Ct./trail entrance).

Map 1 – PB/Cal Western Area Overview



### Map 2 – Eastern Extent of Trail & School Entry



Install gate & create path to school parking lot/crosswalk.

Improve steep section of trail with 3-5 simple railroad tie stairs.

Note: May want to build stairs to one side to allow for continued bike/other use

### Map 3 – Tono Ct Connection



This portion of the trail is seen on aerial maps, but not noted during a 2/14/12 site visit. Its potential as a walking trail should be explored further.

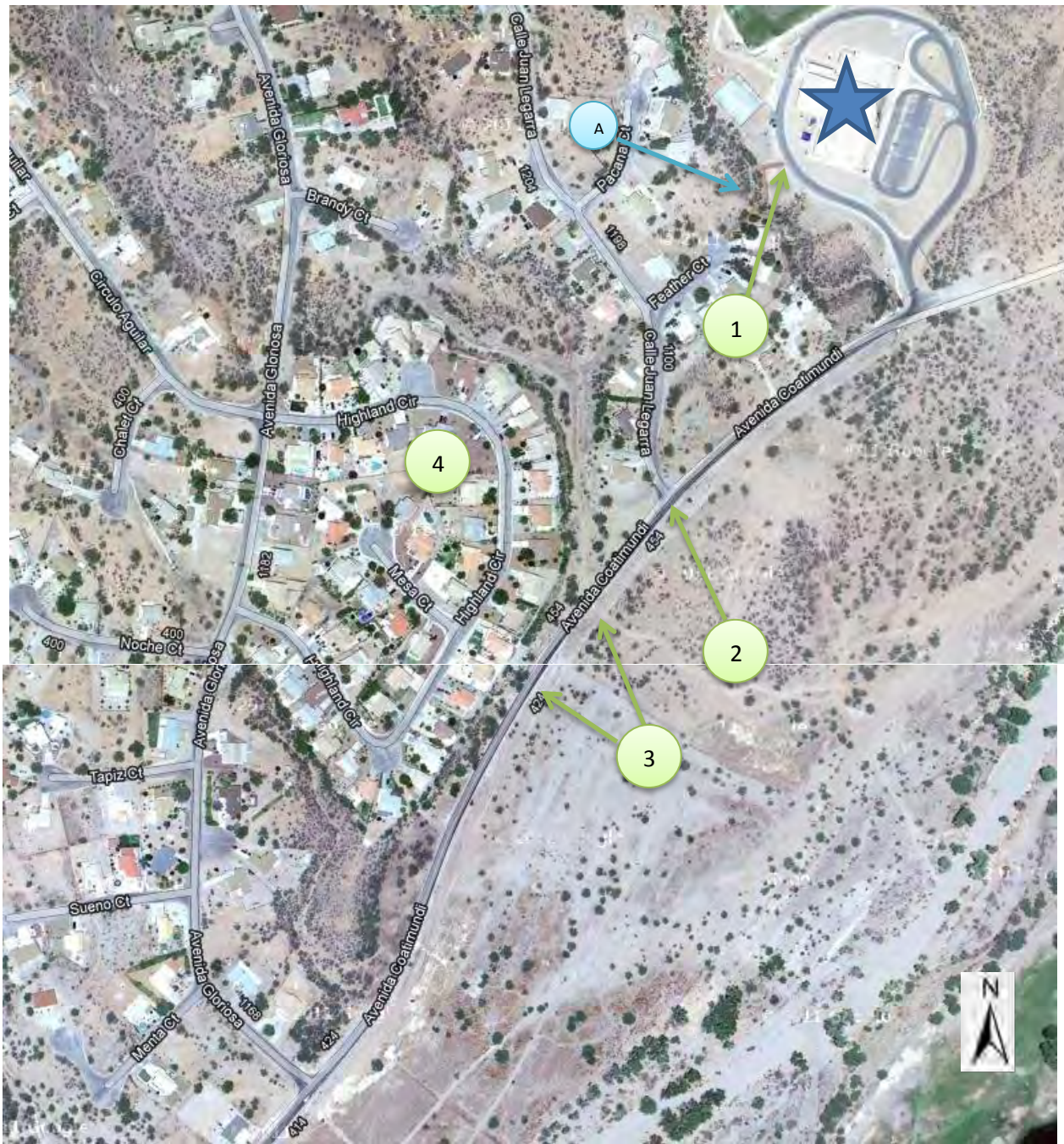
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Project Update (from SRTS Report 5-4-12):

Purpose: Provide safe passage for students traveling from western neighborhoods.

General info: A network of trails already exist through private property west of the schools; simple clean-up of the trails and advertisement of their location will encourage use; 3-5 stairs in one location will improve safety (property owner permission has been requested); a gate will need to be installed in school fencing. The Tono Ct. connection is viable and provides a link to housing directly west of the school site. A planning meeting with stakeholders will take place on June 11, 2012.

**Existing Facilities and Needs Assessment:  
Bicycle/Pedestrian Conditions at Coatimundi Middle School, Dec 2011**



Source: Google Maps 2011

*Existing facilities and needs assessment information – see next page.*

## Existing Facilities

- A. The Coatimundi Walking Trail was completed in summer 2010. It provides a back-door entrance to the school grounds from neighborhoods to the west.

## Needs Assessment

1. Crosswalk: A designated crosswalk leading from the walking trail to the school building would improve safety. While typically only bus traffic uses the drive that circles the building, a crosswalk would give a visual alert to drivers to watch for pedestrians here. Walkers would also be guided across at the safest/shortest-distance location.
2. Crosswalk: Most students, both on Walk to School event days and other days, walk along the southern side of Avenida Coatimundi. To reach the Coatimundi Walking Trail entrance, they must cross Avenida Coatimundi at Calle Juan Legarra and proceed north to Feather Court. A crosswalk at the Avenida Coatimundi-Calle Juan Legarra intersection is recommended.
3. Pathway/sidewalk: There are currently no pedestrian or bicycle facilities available along Avenida Coatimundi. A pathway along the southern side of the street is proposed and a project is being developed by Santa Cruz County, with the support of community members, the Santa Cruz Valley Unified School District (SCVUSD), and others.
4. Short-cut: Students living in the Highland Circle development must walk a long distance via Avenida Gloriosa to reach Avenida Coatimundi and continue east to Coatimundi Middle School. Locating an alternate route from the neighborhood to Avenida Coatimundi or Calle Juan Legarra would shorten the walk distance and increase the appeal of traveling to school by foot.

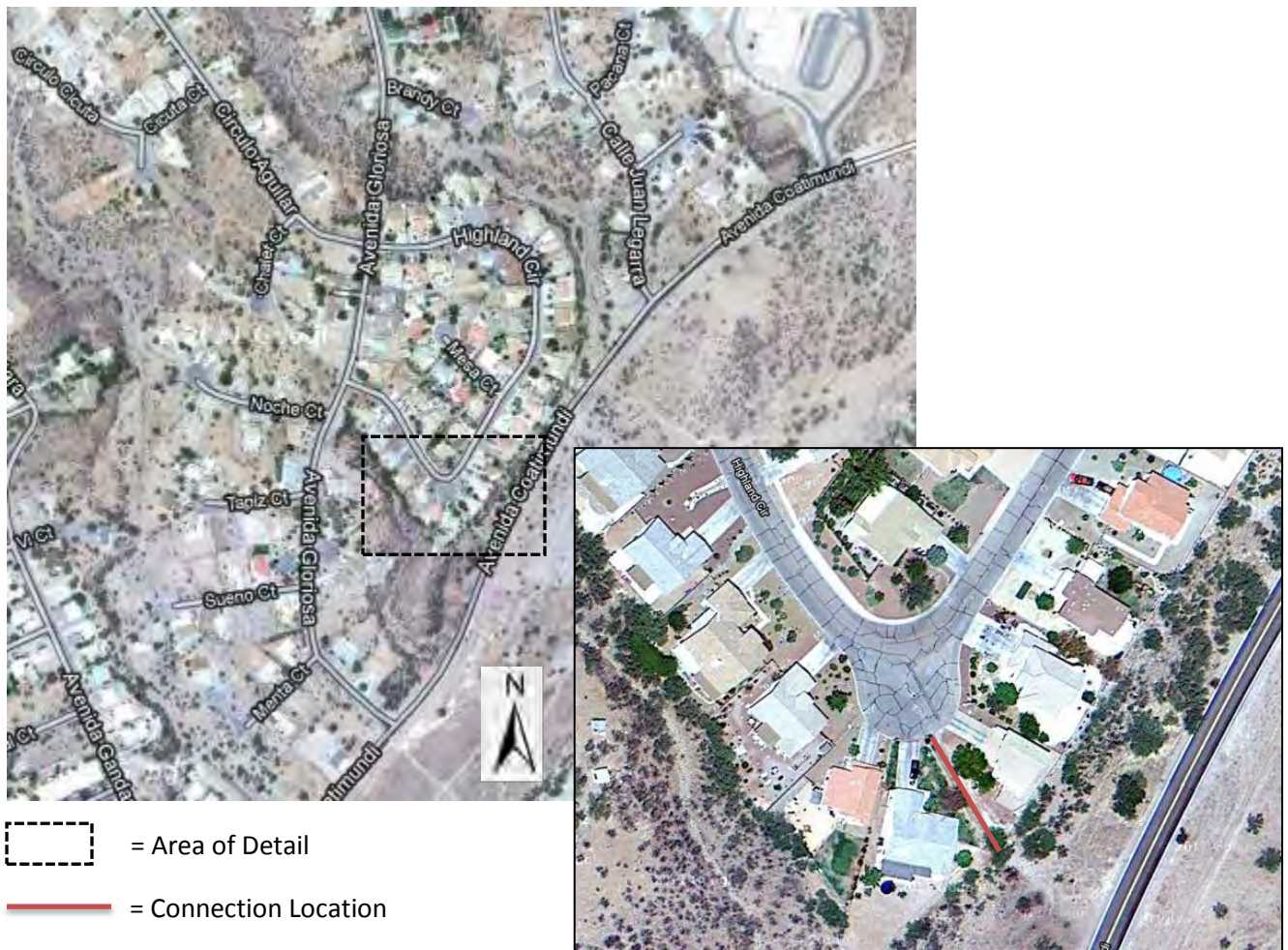
## Coatimundi Highland Cir Connection Project

Students living in the Highland Circle development must walk a long distance via Avenida Gloriosa to reach Avenida Coatimundi and continue east to Coatimundi Middle School. A short-cut would decrease walk distance and increase the appeal of traveling to school by foot.

A connection to Avenida Coatimundi (and its in-progress pathway) can be made through a drainage area at the south extent of Highland Circle. See Map. Necessary steps for this project include:

- 1) Determine ownership and building regulations for the drainage way; acquire appropriate permissions.
- 2) Construct stairway down steep short-cut area (see Photo). Estimate cement needed to construct stairway and acquire all needed materials, including hand rail. Rico Quiroz can assist with material estimation (via Contractor friends) and construction. Recruit volunteers.

### Highland Cir / Short Cut Area Map





**Photo – Drainage Area from Avenida Coatimundi**



Stairs should be built to one side of the rock channel and must be designed so as not to interfere with drainage function.

---

Project Update (from SRTS Report 5-4-12):


Purpose: Create a pedestrian short-cut from Highland Ct to Avenida Coatimundi.

General info: Santa Cruz County owns or has an easement on the short-cut property, though nearby neighbors will be informed. A letter was sent to property owner, Ruby Briggs, on March 22. A crosswalk on Ave. Coatimundi will need to be installed at the location, and donations & volunteer labor will be used. The pathway extension along Ave. Coatimundi is under construction and will be complete by May/June 2012.




## Appendix B – Youth Workshop

- B.1 PowerPoint Presentation
- B.2 Student Written Responses
- B.3 Student Regional Map Mark-up



# Rio Rico Walking and Biking Study

Youth Workshop  
Rio Rico High School  
October 4, 2012




## Project Team

Justin Feek, ADOT MPD  
- Project Manager


Kevin Kugler, AICP  
- Consultant – Baker/RBF Consulting

Mary Dahl  
- Santa Cruz County



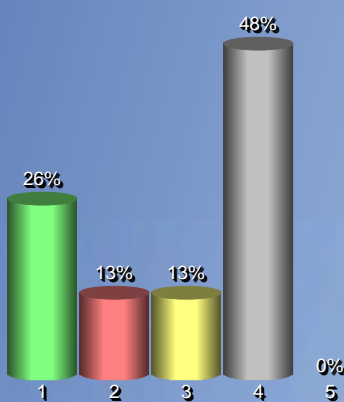
## Today's Agenda

- 1) Introduce Project
- 2) Pedestrian & Bicyclist Attitudes and Behaviors Survey
- 3) Group Discussion
- 4) Map Exercise



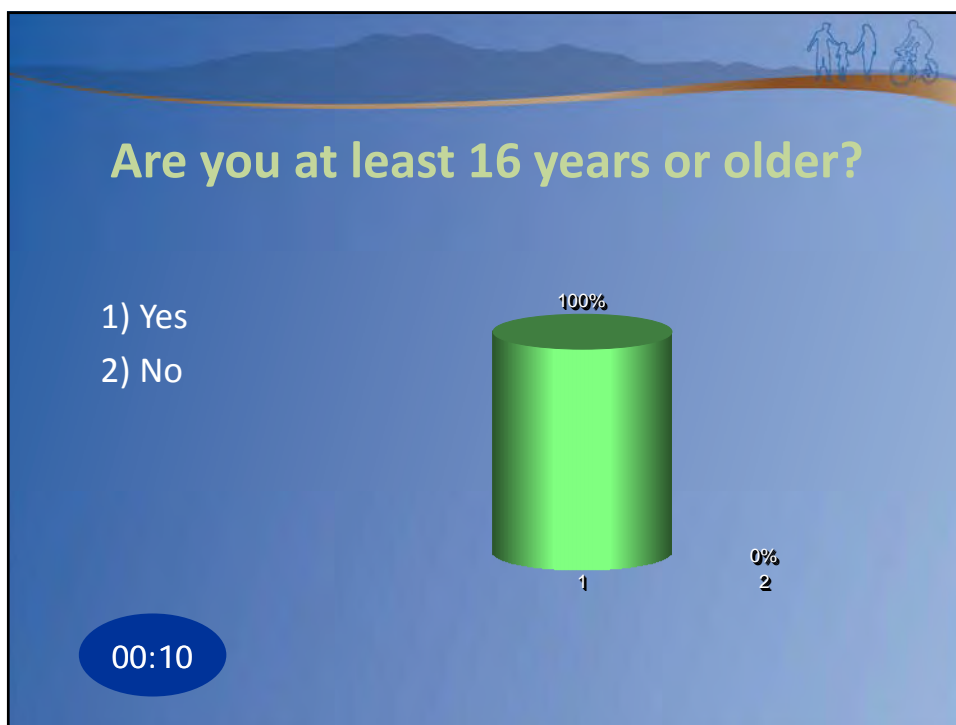
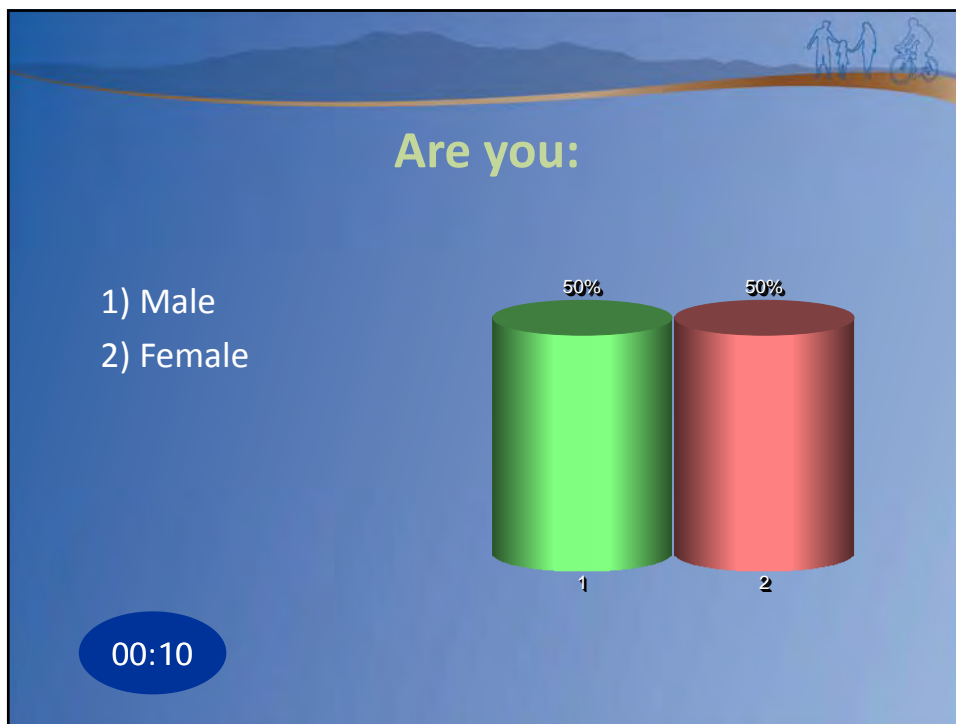
### If you were offered two front row tickets to a concert, which would you be most likely to attend?

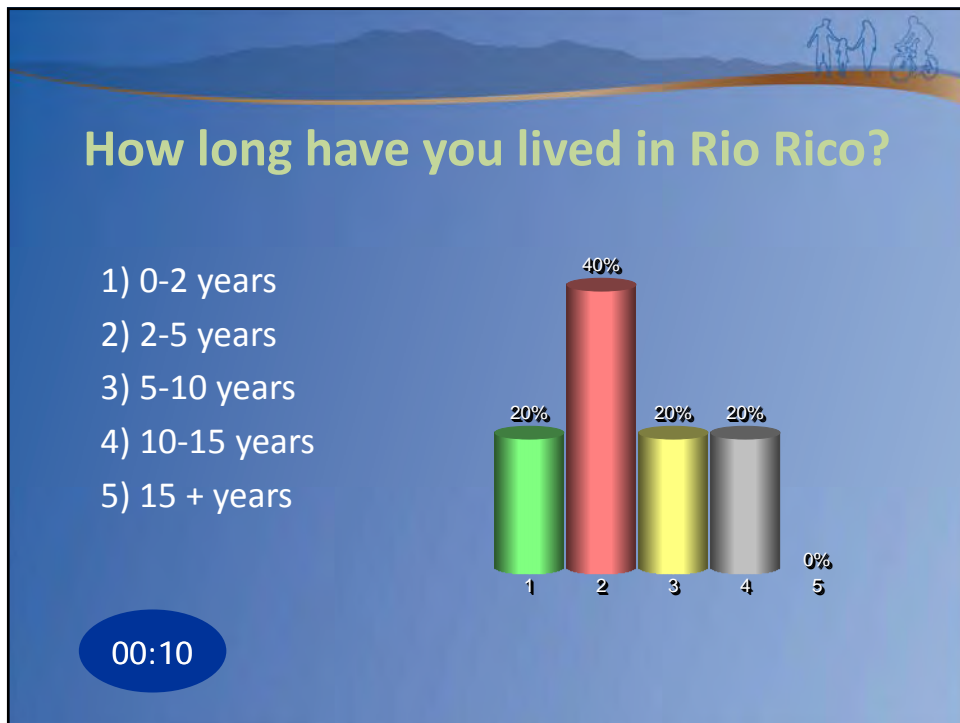
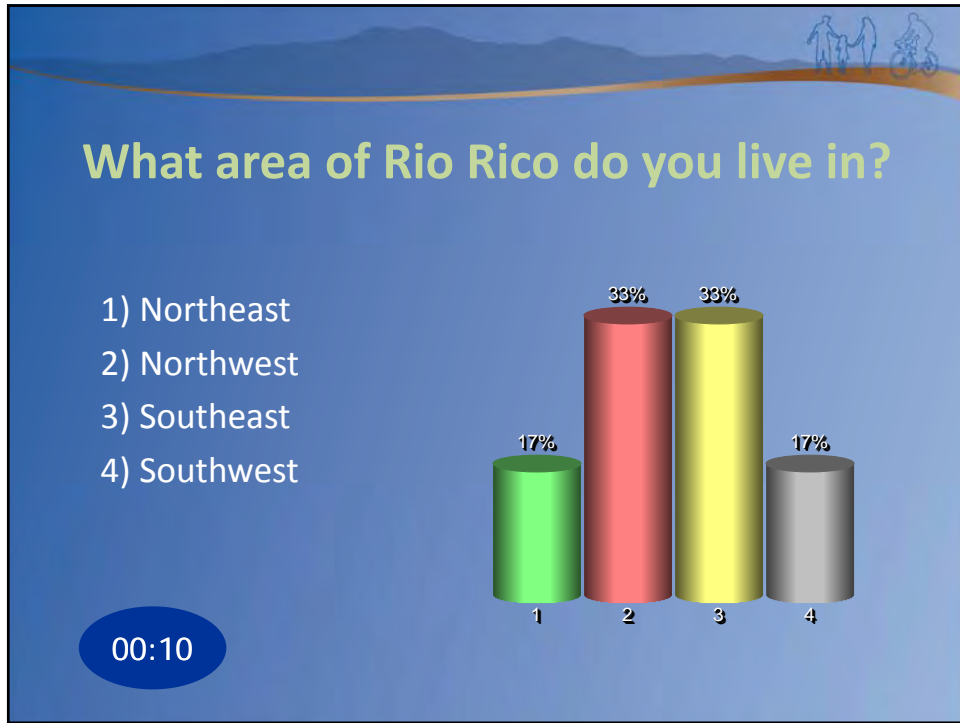
- 1) One Direction
- 2) Taylor Swift
- 3) Jay Z/Little Wayne
- 4) Green Day
- 5) Other

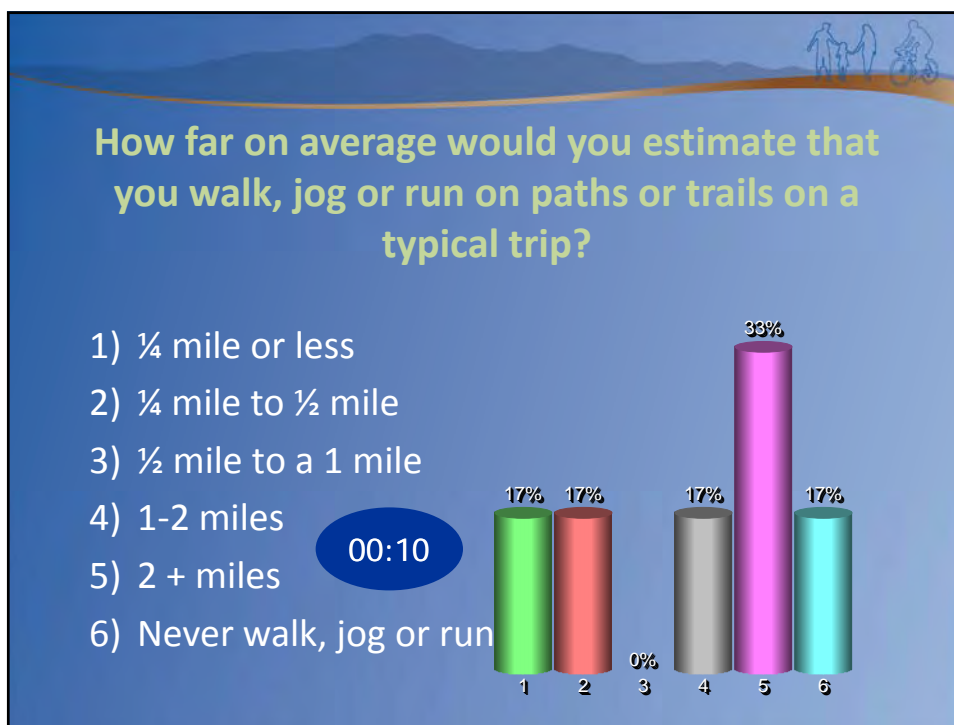
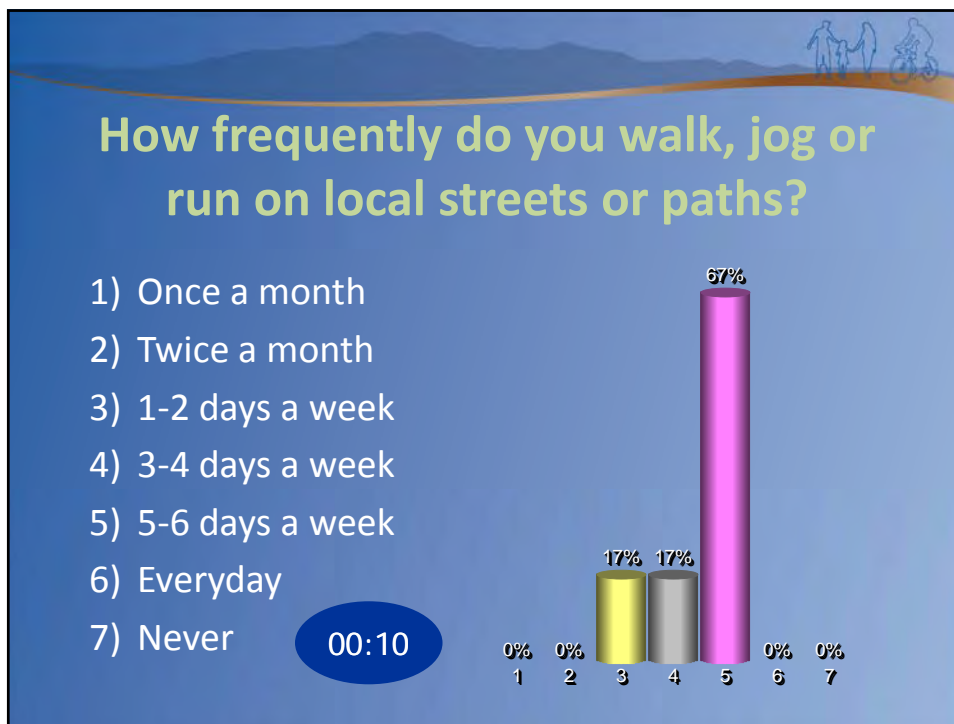


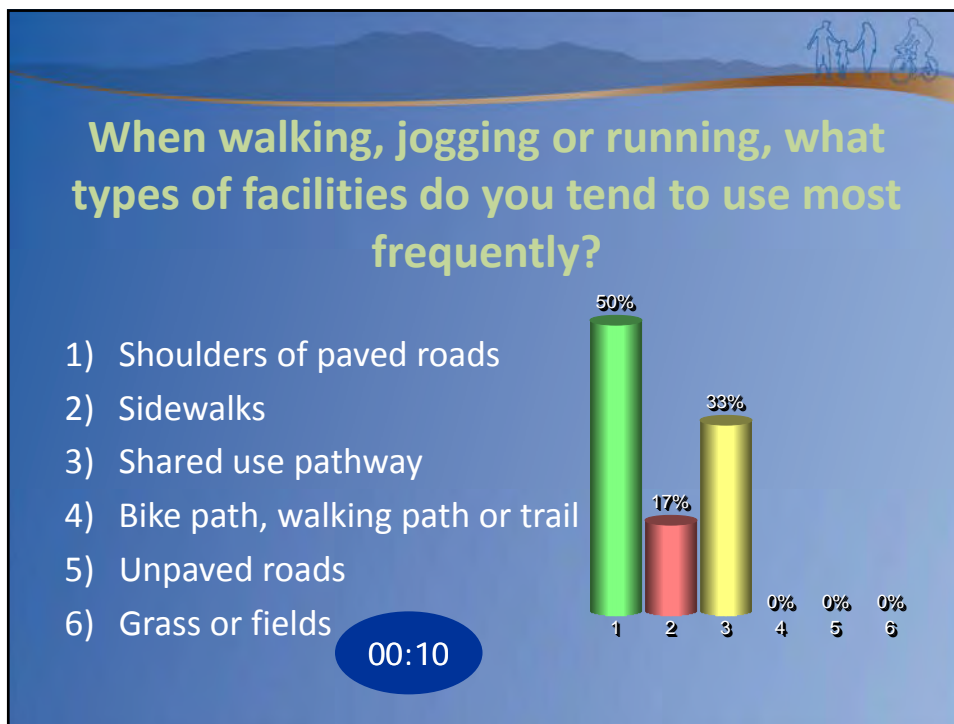
Option	Percentage
1) One Direction	26%
2) Taylor Swift	13%
3) Jay Z/Little Wayne	13%
4) Green Day	48%
5) Other	0%

00:10










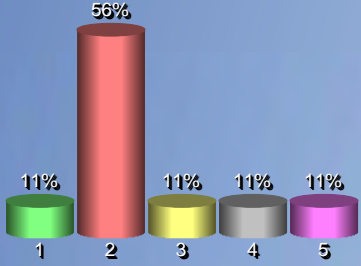





For those who walk to school (or would walk to school), what are the biggest needs to encourage walking to school?

- 1) Improve upon existing pedestrian facilities
- 2) Provide additional pedestrian facilities not in place today (sidewalks, bike lane, cross walk, lighting, etc)
- 3) Enforce traffic laws
- 4) Create a better route
- 5) Walking is not an option

00:10



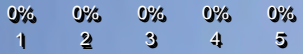
Need	Percentage
1) Improve upon existing pedestrian facilities	11%
2) Provide additional pedestrian facilities not in place today (sidewalks, bike lane, cross walk, lighting, etc)	56%
3) Enforce traffic laws	11%
4) Create a better route	11%
5) Walking is not an option	11%



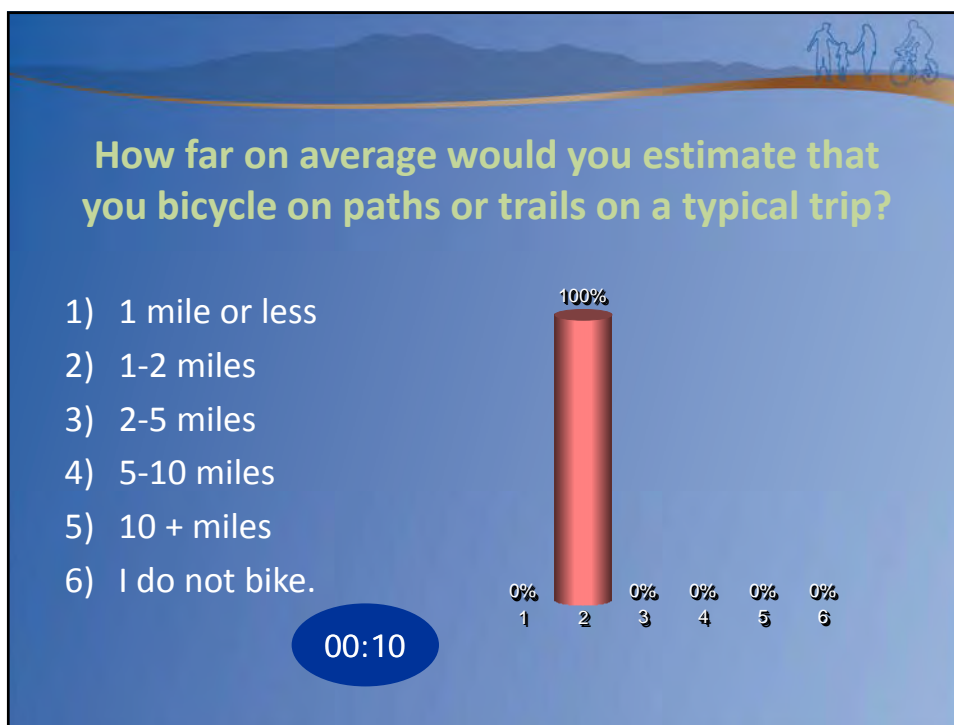
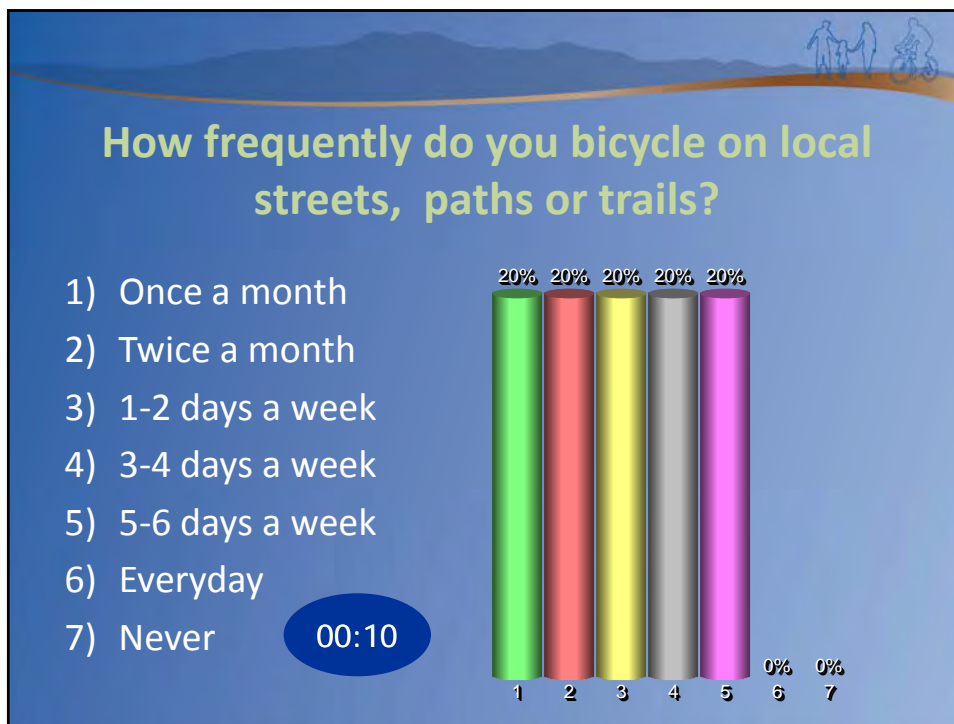
What are some typical reasons for not walking, jogging or running?

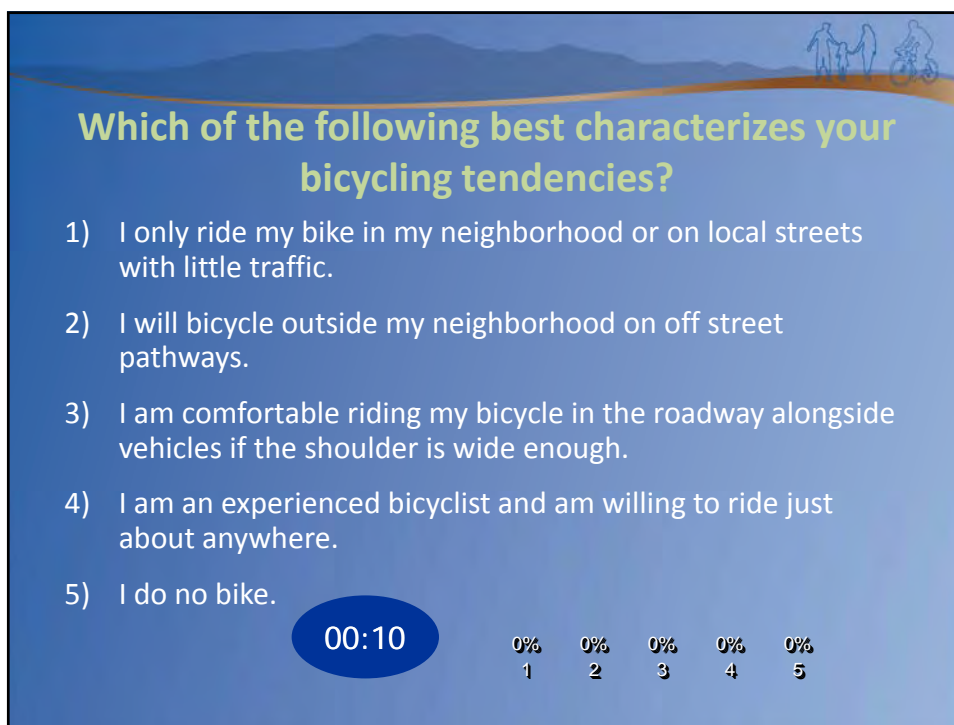
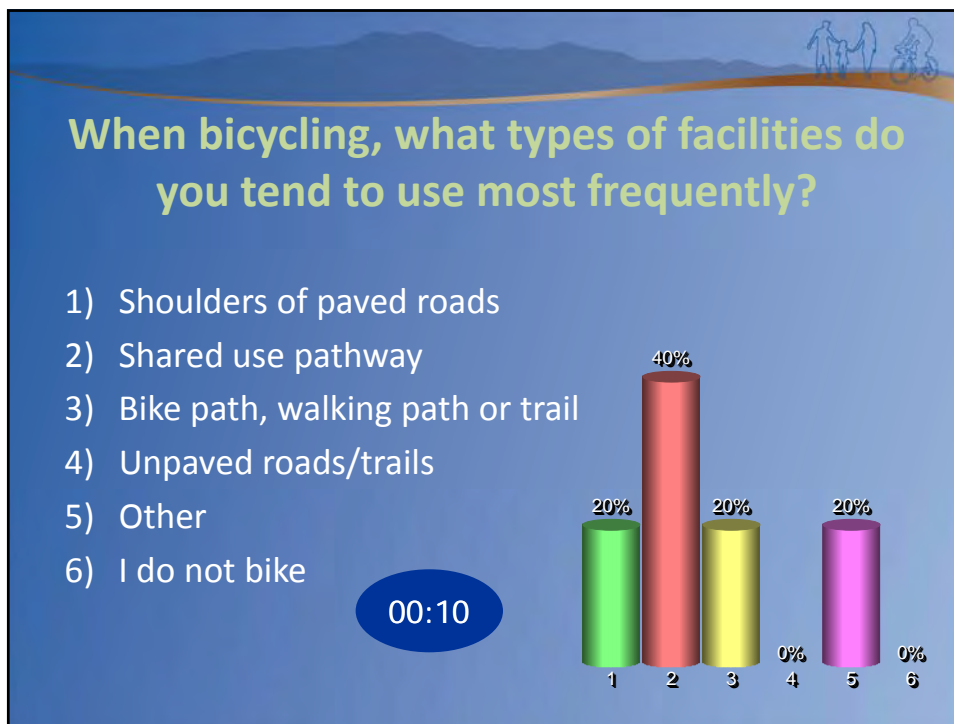
- 1) Other transportation is faster
- 2) Too busy/no opportunity
- 3) Lack of sidewalks or paths
- 4) Lack of safety/busy streets
- 5) Destination is too far

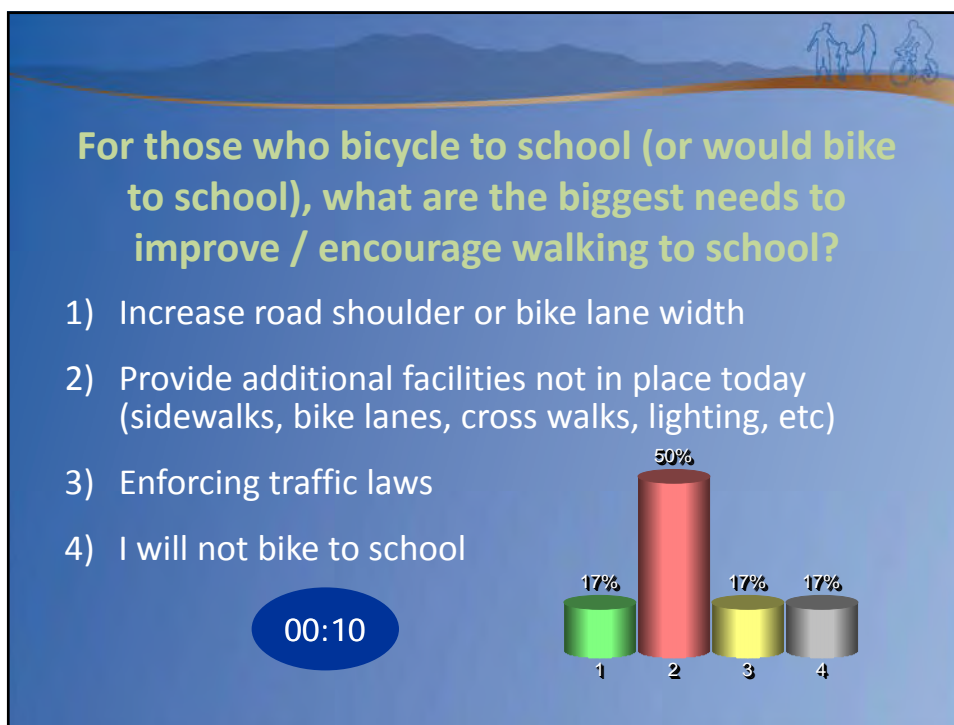
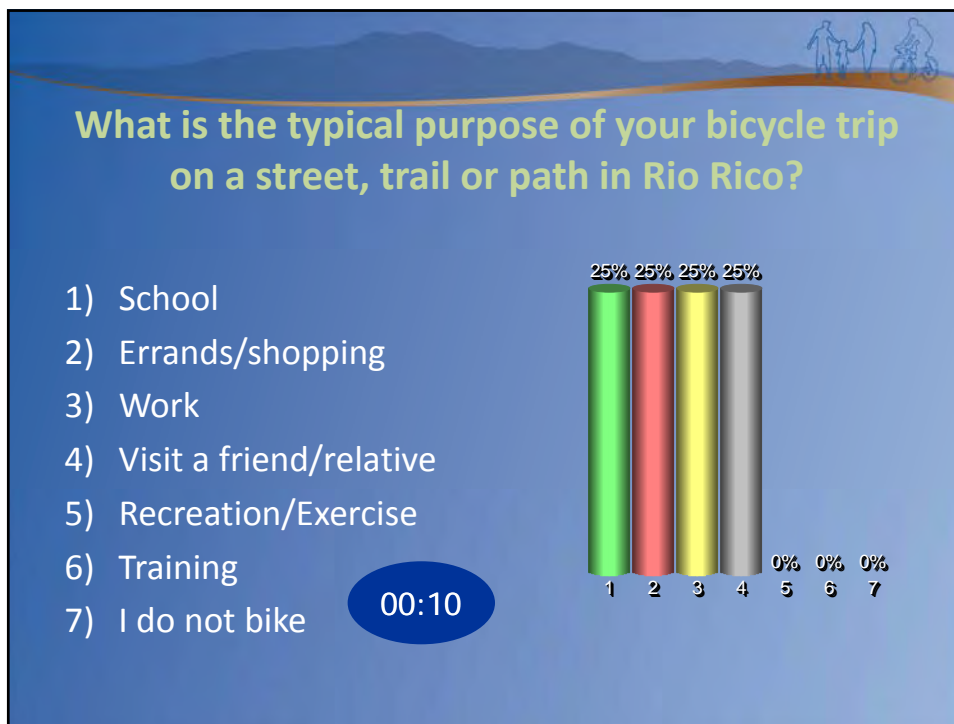
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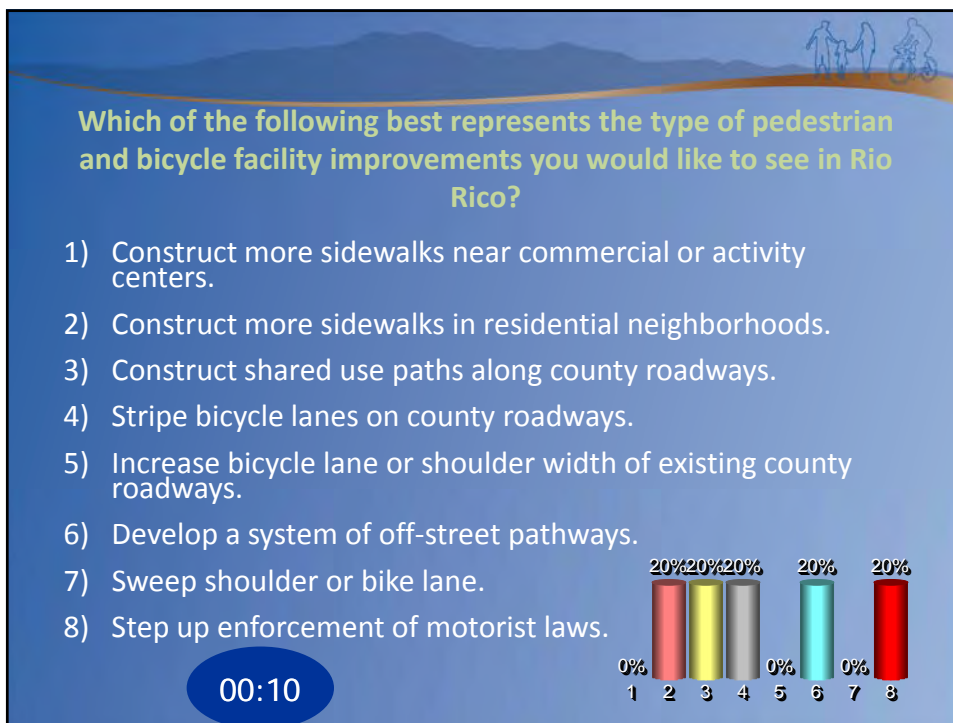
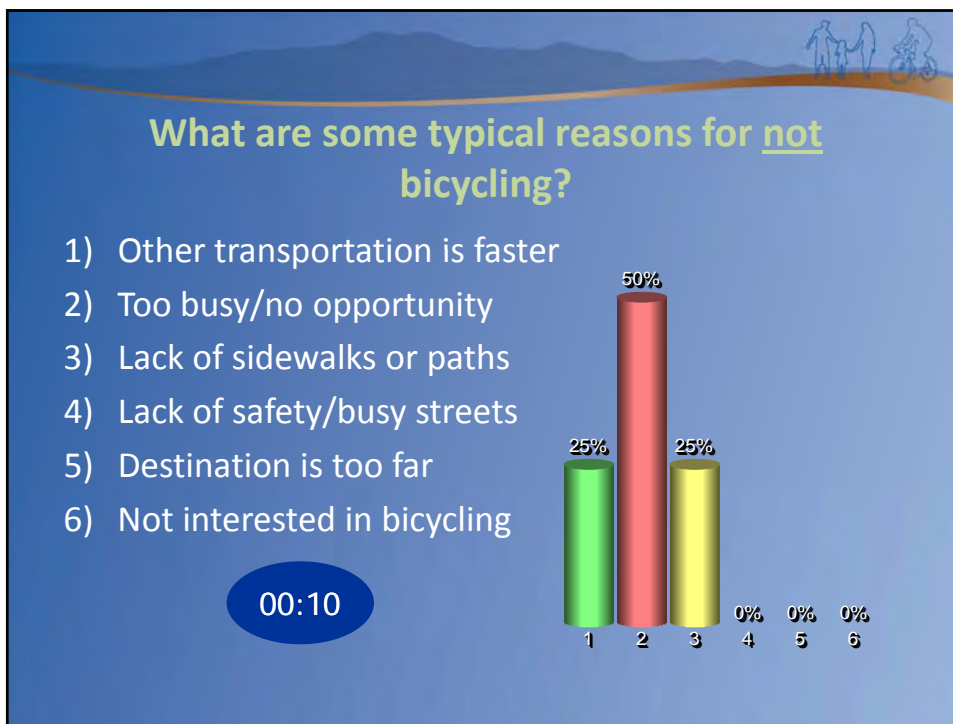



Reason	Percentage
1) Other transportation is faster	0%
2) Too busy/no opportunity	0%
3) Lack of sidewalks or paths	0%
4) Lack of safety/busy streets	0%
5) Destination is too far	0%











Please take a moment to complete the form that indicates what streets, paths or trails in Rio Rico that you typically walk, jog, run or bicycle on!



Questions?

Contact Information:

Kevin Kugler  
RBF Consulting  
[kkugler@rbf.com](mailto:kkugler@rbf.com)  
(602) 798-7521

# Rio Rico Walking and Biking Study

Youth Workshop October 4, 2012

Rio Rico High School



## ADOT – Santa Cruz County

Please list the street(s) or path(s) that you most commonly WALK along.

Camino del Patio

Ruby Road (east)

Camino Calcebanos

North Pendelton & streets along it

North Pendelton

# Rio Rico Walking and Biking Study

Youth Workshop October 4, 2012

Rio Rico High School



## ADOT – Santa Cruz County

Please list the street(s) or path(s) that you most commonly WALK along.

- Frontage Road

- Pendleton (N&S)

- Yavapi

- Caralampi

- Seville

- Peck Canyon

- Coatimundi

- Ruby Road

- Exit 12

- Rio Rico Drive

- North Pendleton

- Calabasas



# Rio Rico Walking and Biking Study

Youth Workshop October 4, 2012

Rio Rico High School



## ADOT – Santa Cruz County

Please list the street(s) or path(s) that you most commonly WALK along.

Peck Canyon

Avida Leon

West Frontage road

Avida coatmandi

Sykes circle

Calle Madrid

Willow Drive

Rio Rico Drive

Calle Cuervo

Camino Milano

Camino Estomino

Via halcon

Pasco Petirajo

Circulo sombrero

Via faxio

# Rio Rico Walking and Biking Study

Youth Workshop October 4, 2012

Rio Rico High School



## ADOT – Santa Cruz County

Please list the street(s) or path(s) that you most commonly WALK along.

Lito Galindo

W. Frontage Rd.

Pendleton

Rio Rico Drive

Peck Canyon Rd

Hombre de Oro

# Rio Rico Walking and Biking Study

Youth Workshop October 4, 2012

Rio Rico High School



## ADOT – Santa Cruz County

Please list the street(s) or path(s) that you most commonly WALK along.

1760 Circulo Corona

Verde Patria

Camino JoseFina

Pendelton (North)

Pasco Mexico

Pendleton, Near Golf course

# Rio Rico Walking and Biking Study

Youth Workshop October 4, 2012  
Rio Rico High School



## ADOT – Santa Cruz County

Please list the street(s) or path(s) that you most commonly BICYCLE along.

Via Patricia

Peck Canyon

Sombrero

Pendleton

Rio Rico Drive

Cherokee

Ruby Rd.

Frontage

Ruby Rd. (east)

Frontage

Pendleton

Vanderbilt

- Calabasas Middle School to Fire Station

# Rio Rico Walking and Biking Study

Youth Workshop October 4, 2012

Rio Rico High School



## ADOT – Santa Cruz County

Please list the street(s) or path(s) that you most commonly BICYCLE along.

Peck canyon

Avenida Leon

West Frontage Road

Avenida coats munti

Sykes circle

Calle Madrid

Willow Drive

penalтин

Rio Rico Drive

Calle Cuervo

Camino Milano

Camino Estomino

Via Halcon

Paseo Petirajo

Circulo Sombrero

Via Taxco

# Rio Rico Walking and Biking Study

Youth Workshop October 4, 2012

Rio Rico High School



## ADOT – Santa Cruz County

Please list the street(s) or path(s) that you most commonly BICYCLE along.

- calabasas st.

- Circulo Guerrero

# Rio Rico Walking and Biking Study

Youth Workshop October 4, 2012

Rio Rico High School



## ADOT – Santa Cruz County

Please list the street(s) or path(s) that you most commonly BICYCLE along.

Coatimudi Trail - Sonoita → heading towards Patagonia

Exit 12 Bridge

- Caralampi

- Yavapi

- Frontage

- Park Canyon

- Coatimundi and South Pediton



## Appendix C – Community Open House #1

- C.1 Sign in sheet
- C.2 PPT with survey results
- C.3 Scanned maps from mapping exercise
- C.4 Comment Forms



PUBLIC SIGN-IN SHEET

M

Rio Rico Walking and Biking Study

Public Open House

Thursday, November 15, 2012, 5:30 - 7:30 p.m.

Calabasas Middle School, 131 Camino Maricopa, Rio Rico, AZ 85648

Name	Organization	Address, City, ZIP Code	Telephone	Email
1. JEREMIE ROACH		24 RANCHOS del Rio Corte, Rio Rico, 85648	520-413-0143	Jetiro20@aol.com
2. Lee Jones		268 MANZANA Ct, Rio Rico	520-313-5663	LJONES@NFP.COM
3. Kathleen Vandervoet	Nogales International		398-2089	Kathleenvandervoet@gmail.com
4. Swan Kuntz	MCITC	1852 N. Mastick Way	795-6050	SKUNTZ@mariposachc.net
5. Cassalyn David	Santa Cruz County Adolescent wellness Network	1852 N. Mastick Way 85621	375-6050	cdavid@mariposachc.net
6. Joyce Sierra	Joyride Southwest Tours	P.O. Box 912 Green Valley, 85622	404-2254	backroadsjoy@gmail.com
7. ALMA LABOIGNET		144 VIA ORQUIDEA	223-7943	almalaboignet@hotmail.com
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				

Completion of this sign-in sheet is completely voluntary and helps the project team keep an accurate record of meeting attendees. Under state law, any identifying information provided above will become part of the public record and, as such, must be released to any individual upon request.



PUBLIC SIGN-IN SHEET

Rio Rico Walking and Biking Study

Public Open House

Thursday, November 15, 2012, 5:30 – 7:30 p.m.

Calabasas Middle School, 131 Camino Maricopa, Rio Rico, AZ 85648

Name	Organization	Address, City, ZIP Code	Telephone	Email
1. <del>Tim Roach</del>		<del>24 Rancho Del Rio Ct.</del>	<del>520 413-0143</del>	<del>Jetiro@aol.com</del>
2. ROBERT EASTMAN		P.O. Box 4740, Rio Rico	657-269-9982	304robert0123@gmail.com
3. Carmen Crisantes		345 Via de la Santa Cruz Ct	520/841-0959	ccrisantes@gmail.com
4. KATHI CAMPANA		1520 PENDLETON, Rio Rico	520-313-4291	kathicampana@yahoo.com
5. RON CAMPANA		" " "	520-281-8250	ronc1247@yahoo.com
6. Sarah Prasek		489 N Arroyo Blvd, Nogales <sup>(office)</sup>	520-281-2994 x106	sprasek@email.arizona.edu
7. Patty Molina		307 Costa Real Ct	520 841-2979	patty_molina@attlemon.com
8. German Cabello		144 Via Orquidia	520.980-1370	gcabello@doubletreccastleinc.com
9. MARY DAITL				
10.				
11.				
12.				
13.				
14.				
15.				

Completion of this sign-in sheet is completely voluntary and helps the project team keep an accurate record of meeting attendees. Under state law, any identifying information provided above will become part of the public record and, as such, must be released to any individual upon request.



# Rio Rico Walking and Biking Study

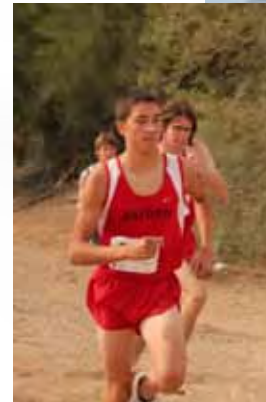
## Public Open House Meeting



November 15, 2012

# Meeting **Agenda**

- ▶ **Welcome & Introductions**
- ▶ **Project Background**
- ▶ **Project Overview**
- ▶ **Questions and Responses**
- ▶ **Walking and Biking Survey**
- ▶ **Next Steps**
- ▶ **Mapping Exercise**



Photos courtesy of Matt Hays

# Project Background

## Purpose and Intent



- ▶ Awarded funding from ADOT through the Planning Assistance for Rural Areas (PARA) program
- ▶ Establish a program for the construction of bike lanes and sidewalks to provide safe access to local Rio Rico school facilities as well as use by the general public



# Project Background

## Local Plans and Studies



- ▶ Santa Cruz County Comprehensive Plan
- ▶ The Drachman Institute Report
- ▶ Santa Cruz County Comprehensive Trails Plan
- ▶ U of A Cooperative Extension SRTS Case Studies



# Project Overview

## Study Area

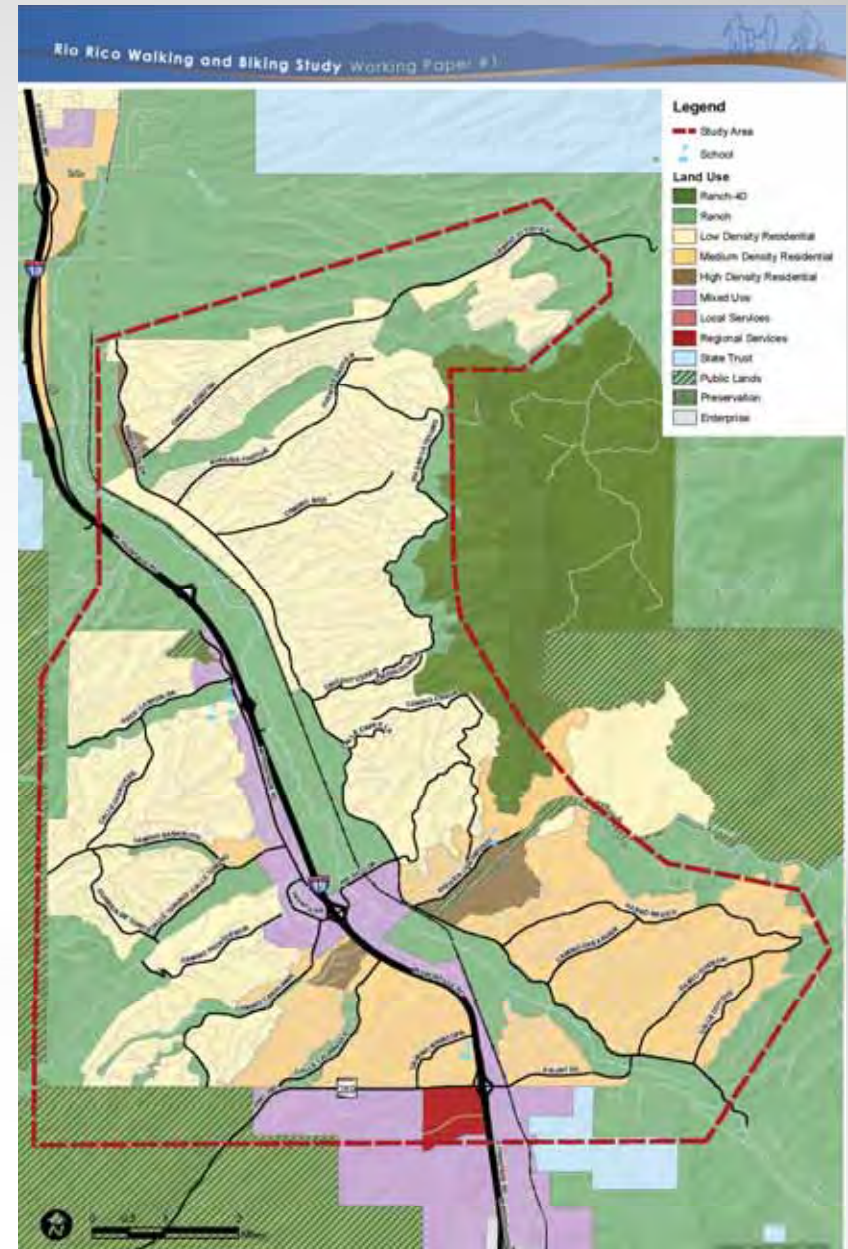
- ▶ Approximately 62 square miles
- ▶ Generally consists of four (4) quadrants: northeast, northwest, southeast and southwest.



# Project Overview

## Land Use

- ▶ Santa Cruz County Comprehensive Plan – Land Use Map
- ▶ The pedestrian and biking needs of Rio Rico are directly tied to the composition of these land uses.





# Project Overview

## Demographics



### ▶ Rio Rico Population/Growth

Vicinity	2000 Population	2010 Population	Percent Change	Growth Rate
Rio Rico (Study Area)	10,413	18,962	82.1%	8.2%
Santa Cruz County	38,381	47,420	23.6%	2.4%
Arizona	5,130,632	6,392,017	24.6%	2.5%

*Source: 2000 and 2010 United States Census*

### ▶ Rio Rico Age Distribution

Vicinity	Age 15 and below	% of Pop.	Age 16 - 64	% of Pop.	Age 65 and above	% of Pop.	Median Age
Rio Rico (Study Area)	5,686	30.0%	11,830	62.4%	1,446	7.6%	31.3
Santa Cruz County	12,674	26.7%	28,522	60.1%	6,224	13.1%	35.6
Arizona	1,447,536	22.6%	4,062,650	63.6%	881,831	13.8%	35.9

*Source: 2010 United States Census*

# Project Overview

## Demographics



### ► Rio Rico Commuting Habits

Population Group	Rio Rico	Percentage of Work Force	Santa Cruz County	Percentage of Work Force	Arizona	Percentage of Work Force
Workers 16 yrs and over	6,689		16,795		2,621,839	
vehicle - drove alone	5,482	82.0%	13,086	77.9%	2,005,289	76.5%
vehicle - carpooled	889	13.3%	2,000	11.9%	305,162	11.6%
public transit	0	0.0%	37	0.2%	46,829	1.8%
walked	33	0.5%	451	2.7%	52,391	2.0%
other means	80	1.2%	305	1.8%	61,279	2.3%
worked at home	205	3.1%	916	5.5%	150,889	5.8%
mean travel time to work (minutes)	21.3		19.2		24.5	

Source: American Community Survey

# Project Overview

## Safe Routes to Schools Program

- ▶ A central focus of this study
- ▶ Federal program designed to improve the ability of elementary and middle school students to safely walk and bike to school
- ▶ ADOT administers program on behalf of FHWA, UofA Cooperative Extension organizes locally
- ▶ Infrastructure Projects and Non-Infrastructure Projects supported
- ▶ Identify and prioritize potential improvement projects within a 2-mile school radius

# Project Overview

## Multi-Modal Facility Types

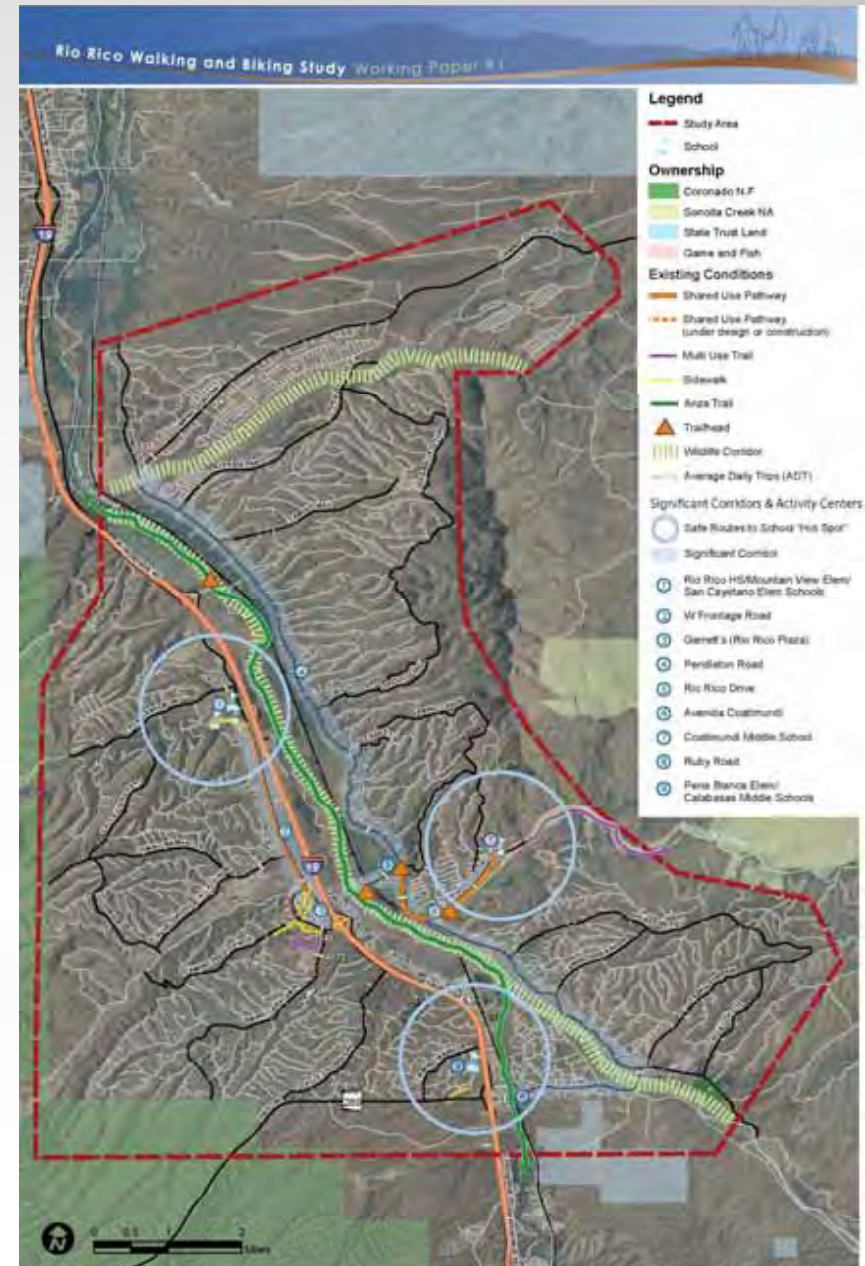
- ▶ **Class I - Bike Path:** a Class I bikeway provides bicycle travel on a paved right-of-way completely separated from any street or highway
- ▶ **Class II - Bike Lane:** a Class II bikeway provides a striped and stenciled lane for one-way travel on a street or highway
- ▶ **Class III - Bike Route:** a Class III bikeway provides for shared use with motor vehicle traffic and is identified only by signing.
- ▶ **Shared Use Path:** a shared use path provides for multiple modes of travel on a paved right-of-way completely separated from a street. A shared use path may be used by cyclists, pedestrians, skaters, joggers, and other non-motorized users.



# Project Overview

## Existing Bicycle and Pedestrian Facilities

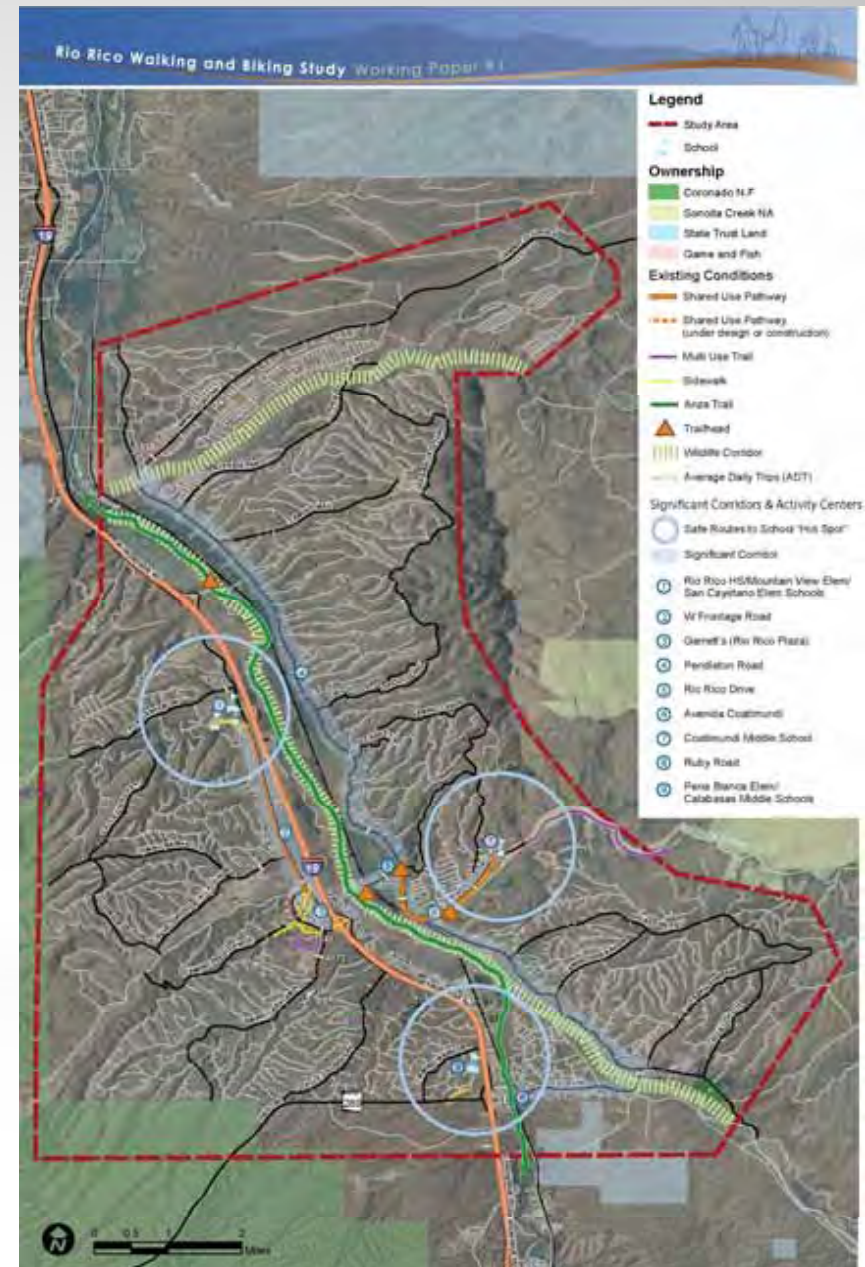
- ▶ **Bicycle Lane/Bicycle Path**
- ▶ **Juan Bautista de Anza National Historic Trail (Anza Trail)**
- ▶ **Shared Use Paths**
- ▶ **Trailheads**
- ▶ **Sidewalks**
- ▶ **Shoulders**
- ▶ **Local Trails and Multiuse Trails**
- ▶ **Bike-friendly Residential Streets**



# Project Overview

## Significant Study Area Corridors and Activity Centers

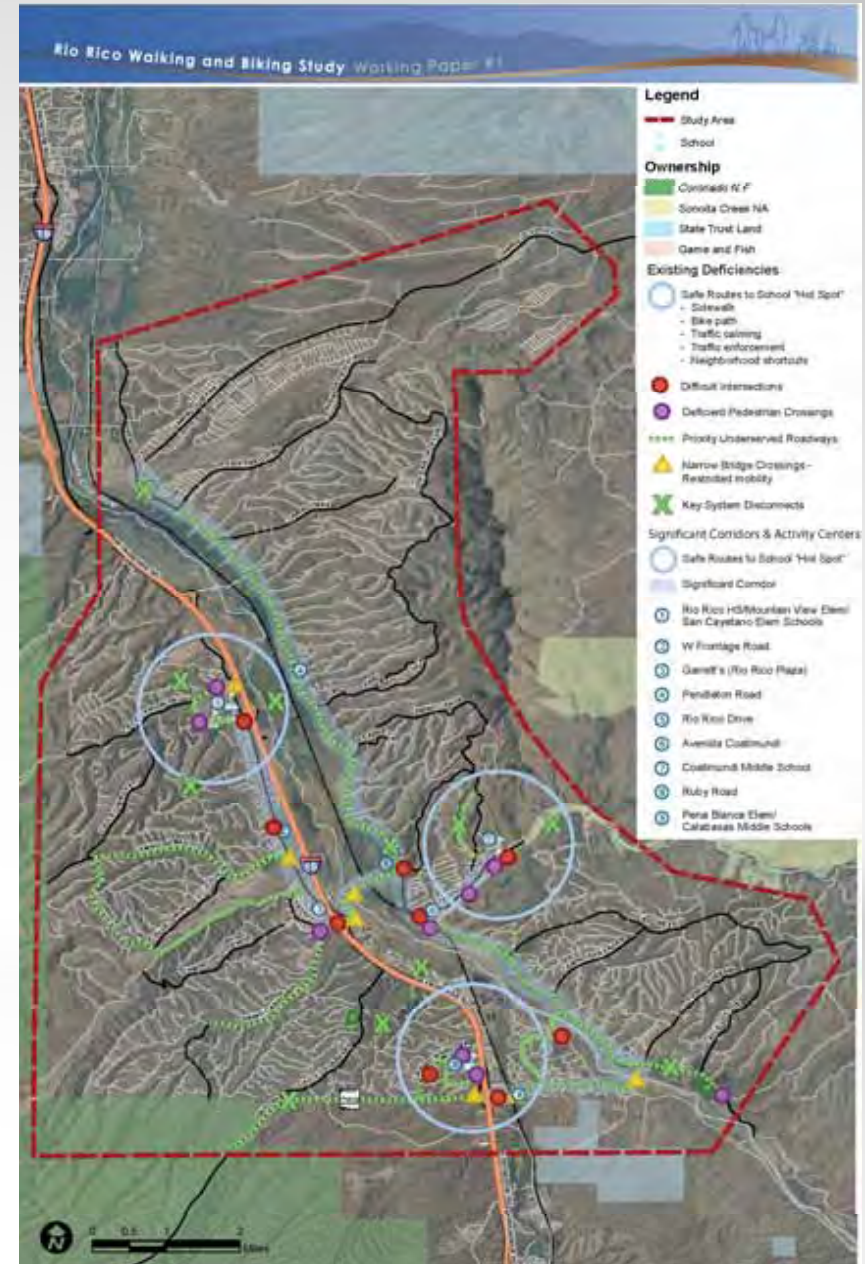
- ▶ Rio Rico High School /Mountain View Elementary/San Cayetano Elementary School
- ▶ West Frontage Road
- ▶ Garrett's (Rio Rico Plaza)
- ▶ Pendleton Drive
- ▶ Rio Rico Drive to Pendleton Drive
- ▶ Avenida Coatimundi
- ▶ Coatimundi Middle School
- ▶ Ruby Road: I-19 east to the Santa Cruz River
- ▶ Pena Blanca Elementary School/Calabasas Middle School



# Project Overview

## Bicycle and Pedestrian Needs

- ▶ Safe Routes to Schools Hot Spots
- ▶ Difficult Intersections
- ▶ Garrett's (Rio Rico Plaza)
- ▶ Difficult Pedestrian Crossings
- ▶ Narrow Bridge Crossings
- ▶ Ruby Road
- ▶ Priority Underserved Roadways
- ▶ Key System Disconnects





# Rio Rico Walking and Biking Study

## Questions and Responses



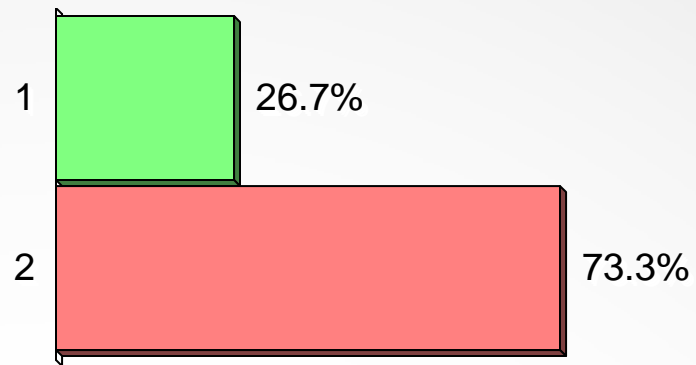


# Walking and Biking Survey

## We Want Your Input!

# Are you:

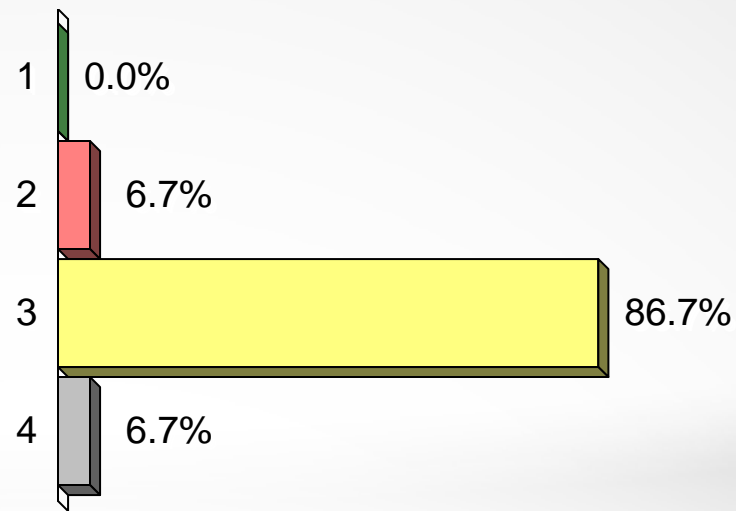
- 1) Male
- 2) Female



00:10

# What is your age group?

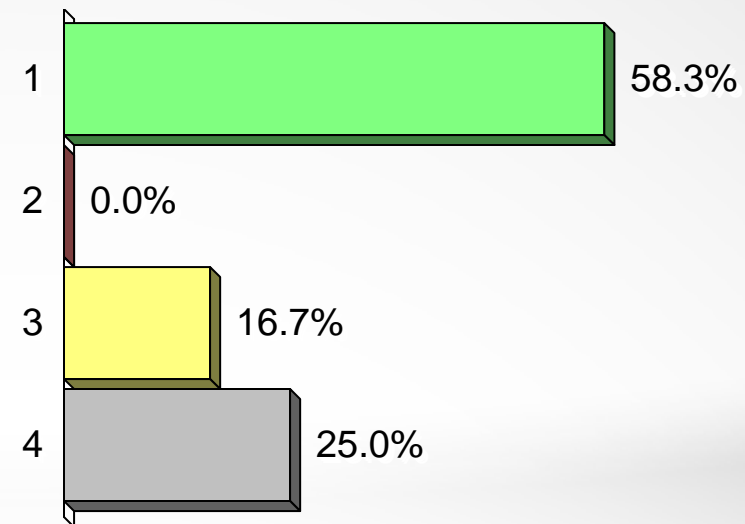
- 1) Under 16
- 2) 16 – 30
- 3) 30 – 65
- 4) Over 65



00:10

# What area of Rio Rico do you live in?

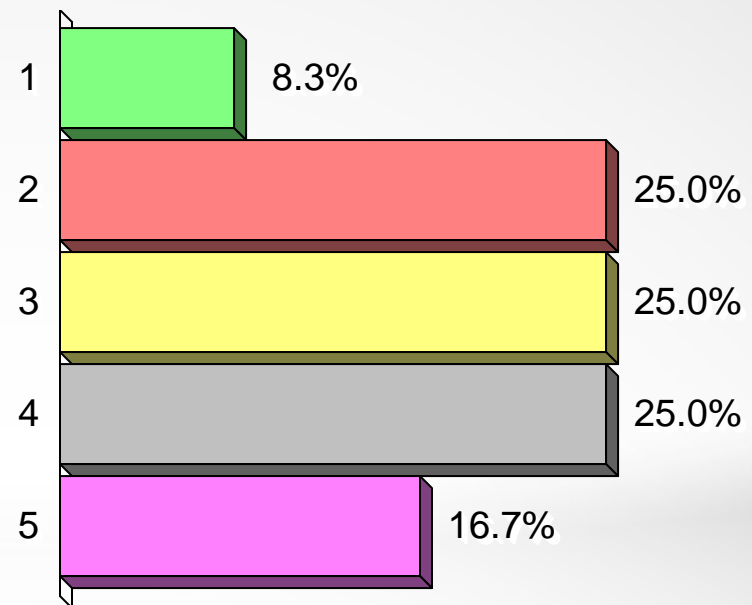
- 1) Northeast
- 2) Northwest
- 3) Southeast
- 4) Southwest



00:10

# How long have you lived in Rio Rico?

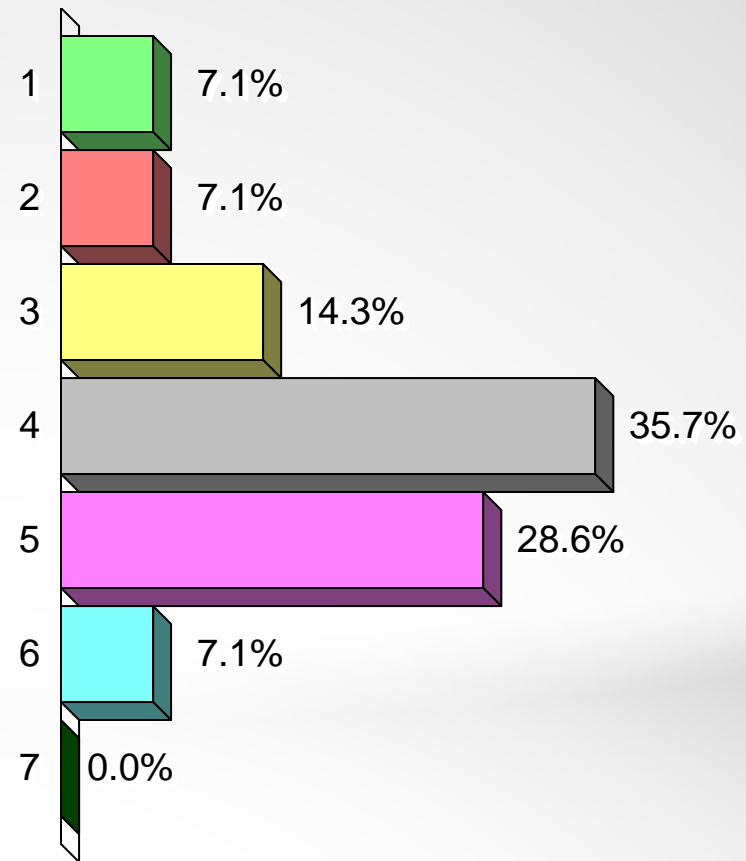
- 1) 0-2 years
- 2) 2-5 years
- 3) 5-10 years
- 4) 10-15 years
- 5) 15 + years



00:10

# How frequently do you walk, jog or run on local streets or paths?

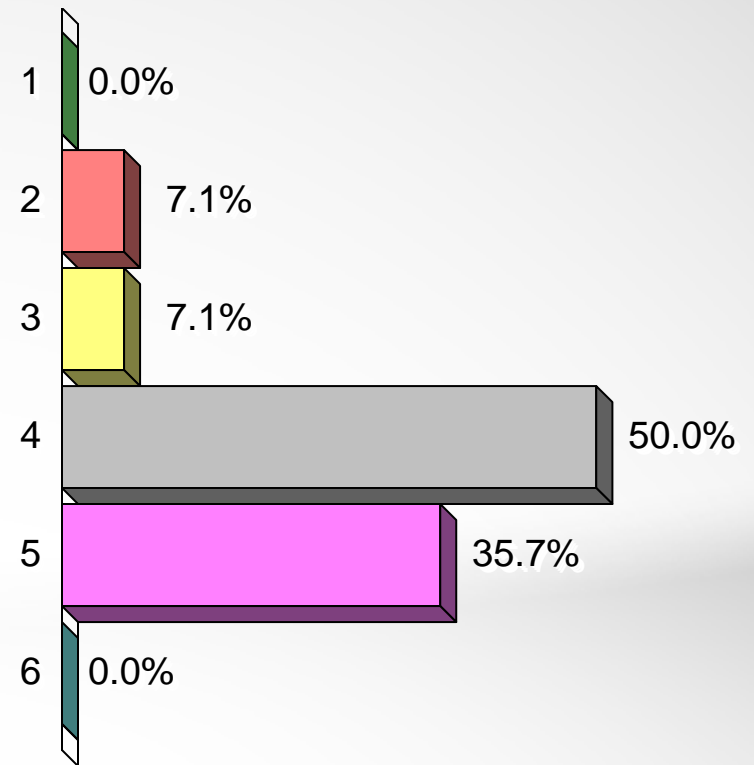
- 1) Once a month
- 2) Twice a month
- 3) 1-2 days a week
- 4) 3-4 days a week
- 5) 5-6 days a week
- 6) Everyday
- 7) Never



00:10

# How far on average would you estimate that you walk, jog or run on paths or trails on a typical trip?

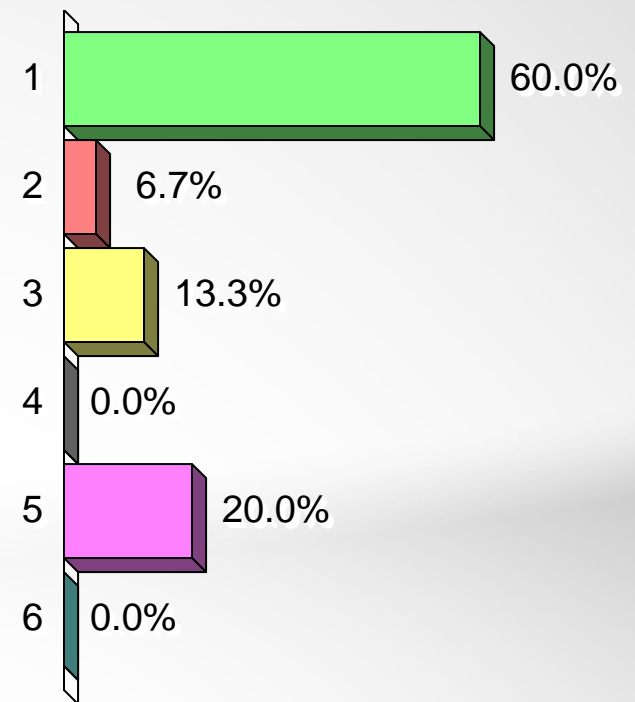
- 1)  $\frac{1}{4}$  mile or less
- 2)  $\frac{1}{4}$  mile to  $\frac{1}{2}$  mile
- 3)  $\frac{1}{2}$  mile to a 1 mile
- 4) 1-2 miles
- 5) 2 + miles
- 6) Never walk, jog or run



00:10

# When walking, jogging or running, what types of facilities do you tend to use most frequently?

- 1) Shoulders of paved roads
- 2) Sidewalks
- 3) Shared use pathway
- 4) Bike path, walking path or trail
- 5) Unpaved roads
- 6) Grass or fields

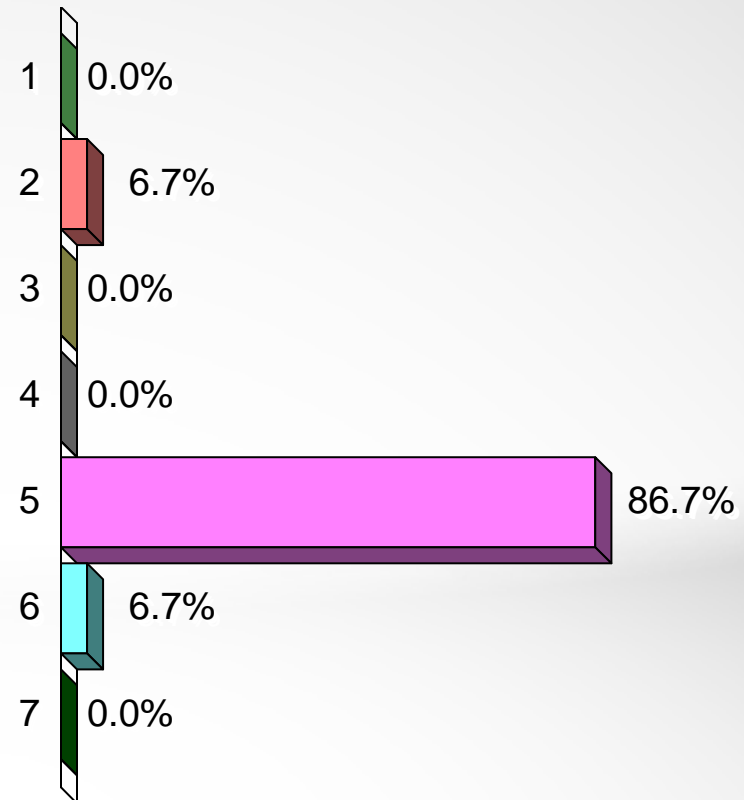


00:10



# What is the typical purpose of your pedestrian (walk, jog, run) trip on a street, trail or path in Rio Rico?

- 1) School
- 2) Errands/shopping
- 3) Work
- 4) Visit a friend/relative
- 5) Recreation/Exercise
- 6) Walk dog
- 7) Running/training

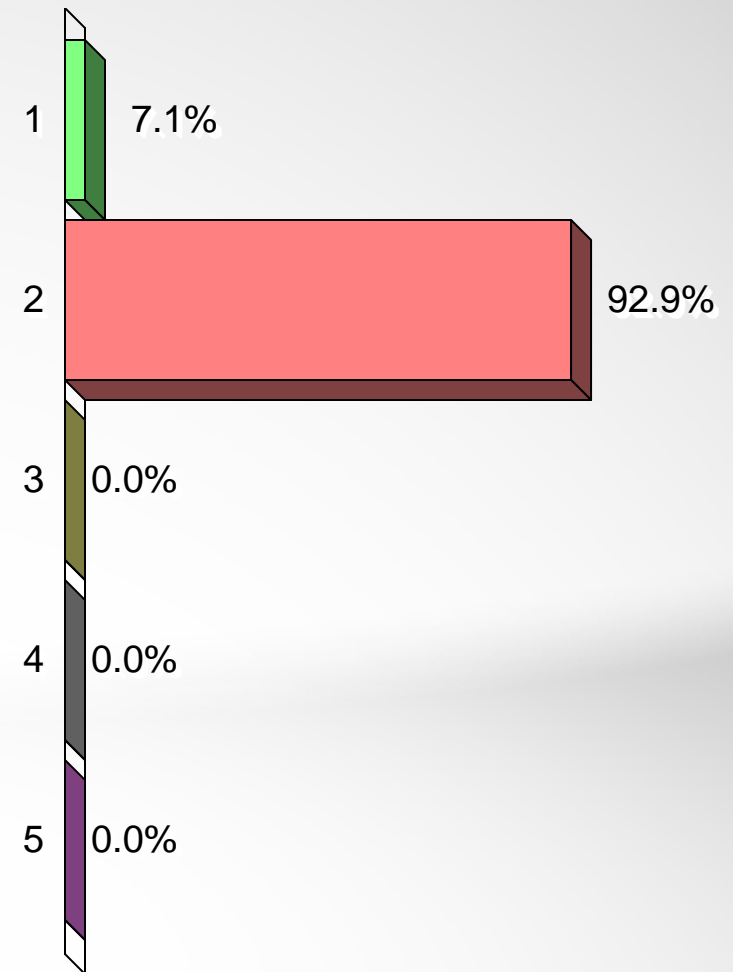


00:10

## For those who use existing pathways in Rio Rico, what are the biggest needs to encourage walking in Rio Rico?

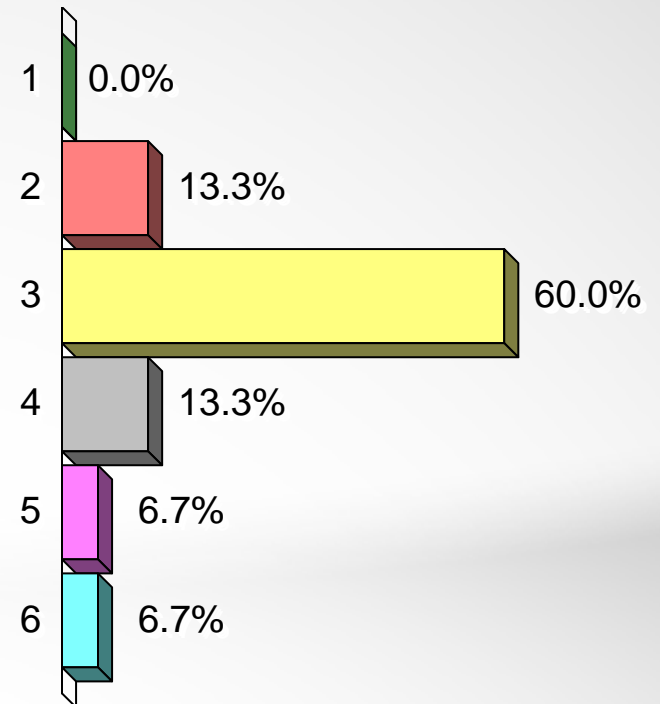
- 1) Improve existing pedestrian facilities
- 2) Provide additional pedestrian facilities not in place today (sidewalks, bike lane, cross walk, lighting, etc)
- 3) Enforce traffic laws
- 4) Create a better route
- 5) Walking is not an option

00:10



# What are some typical reasons for not walking, jogging or running?

- 1) Other transportation is faster
- 2) Too busy/no opportunity
- 3) Lack of sidewalks or paths
- 4) Lack of safety/busy streets
- 5) Destination is too far
- 6) Other

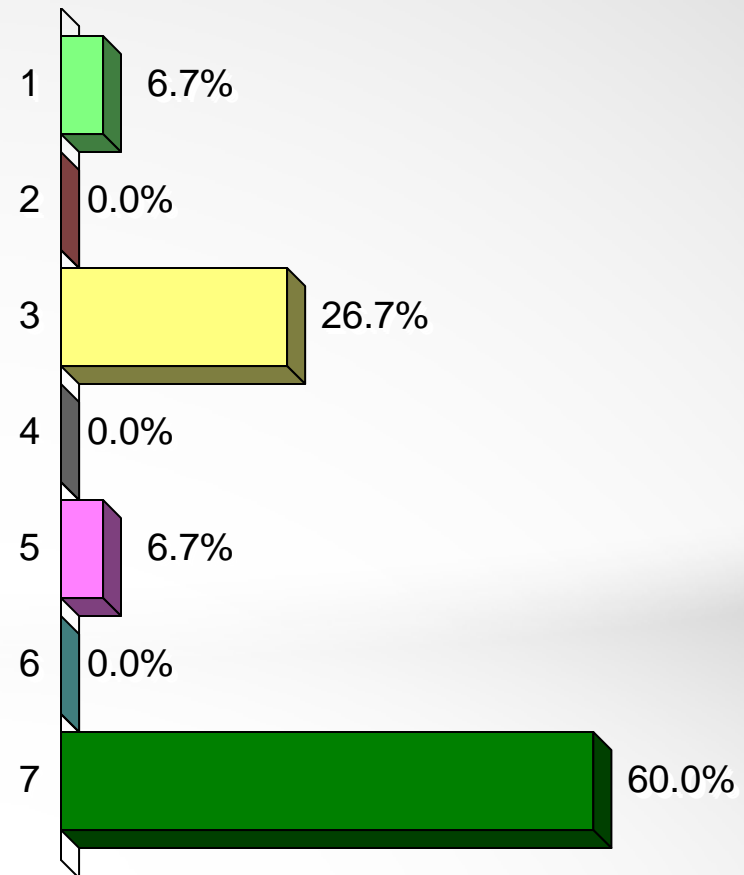


00:10

# How frequently do you bicycle on local streets, paths or trails?

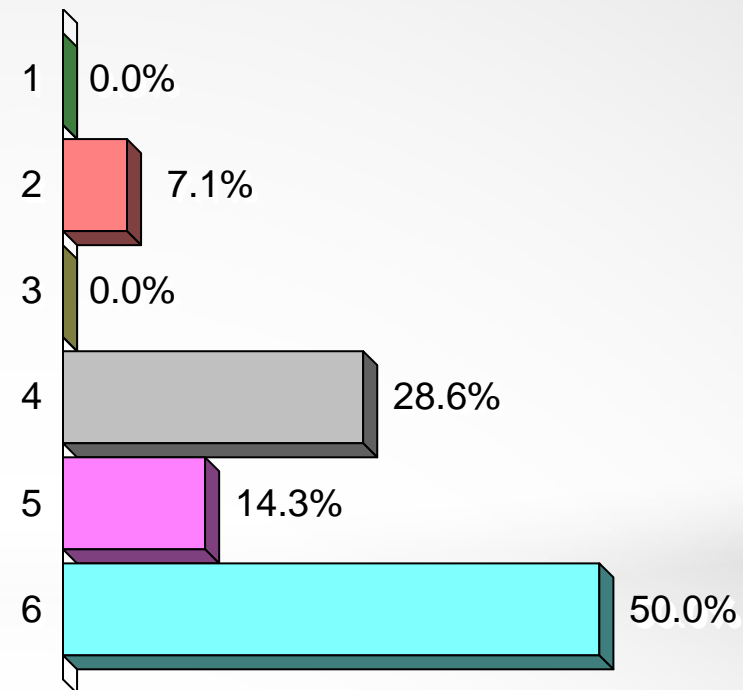
- 1) Once a month
- 2) Twice a month
- 3) 1-2 days a week
- 4) 3-4 days a week
- 5) 5-6 days a week
- 6) Everyday
- 7) Never

00:10



# How far on average would you estimate that you bicycle on paths or trails on a typical trip?

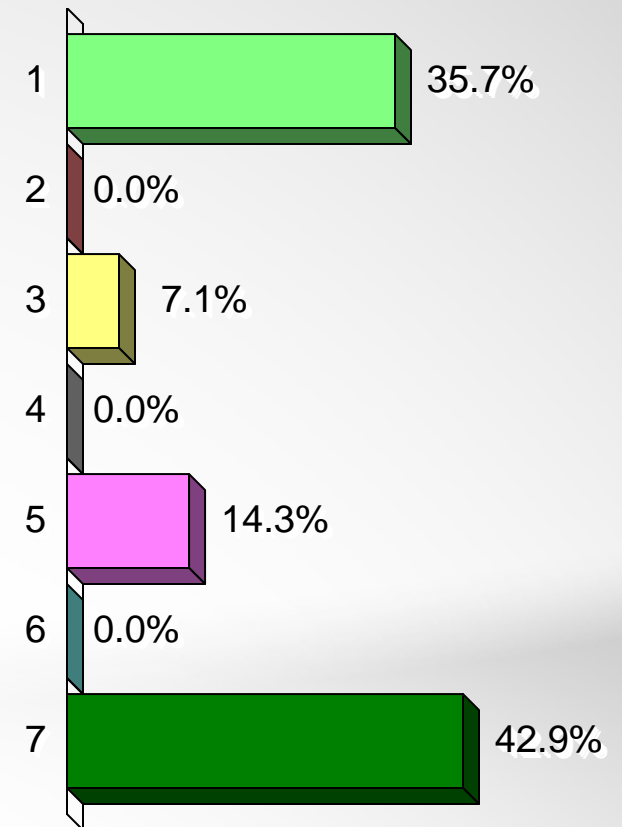
- 1) 1 mile or less
- 2) 1-2 miles
- 3) 2-5 miles
- 4) 5-10 miles
- 5) 10 + miles
- 6) I do not bike.



00:10

# When bicycling, what types of facilities do you tend to use most frequently?

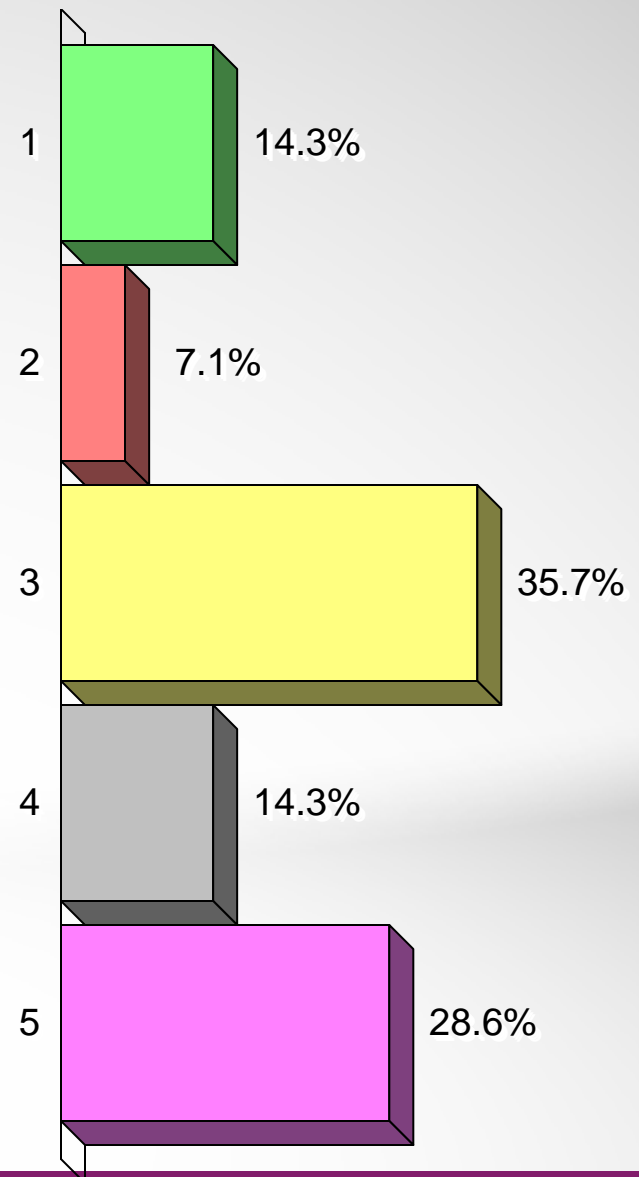
- 1) Shoulders of paved roads
- 2) Shared use pathway
- 3) Bike path, walking path or trail
- 4) Unpaved roads/trails
- 5) Existing paved roadways
- 6) Other
- 7) I do not bike



00:10

# Which of the following best characterizes your bicycling tendencies?

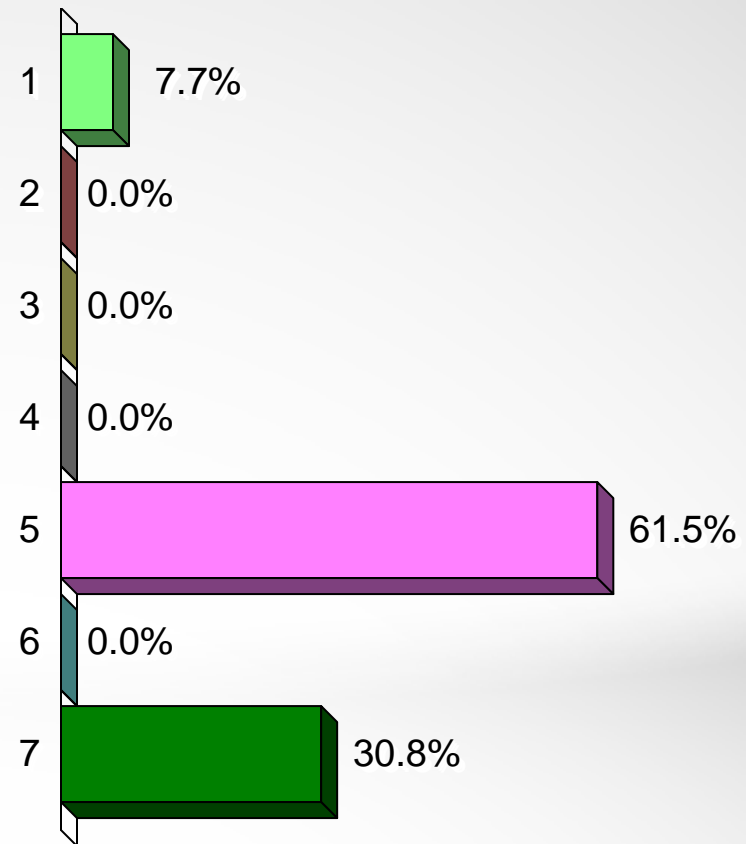
- 1) I only ride my bike in my neighborhood or on local streets with little traffic.
- 2) I will bicycle outside my neighborhood on off street pathways.
- 3) I am comfortable riding my bicycle in the roadway alongside vehicles if the shoulder is wide enough.
- 4) I am an experienced bicyclist and am willing to ride just about anywhere.
- 5) I do no bike.



00:10

# What is the typical purpose of your bicycle trip on a street, trail or path in Rio Rico?

- 1) School
- 2) Errands/shopping
- 3) Work
- 4) Visit a friend/relative
- 5) Recreation/Exercise
- 6) Training
- 7) I do not bike

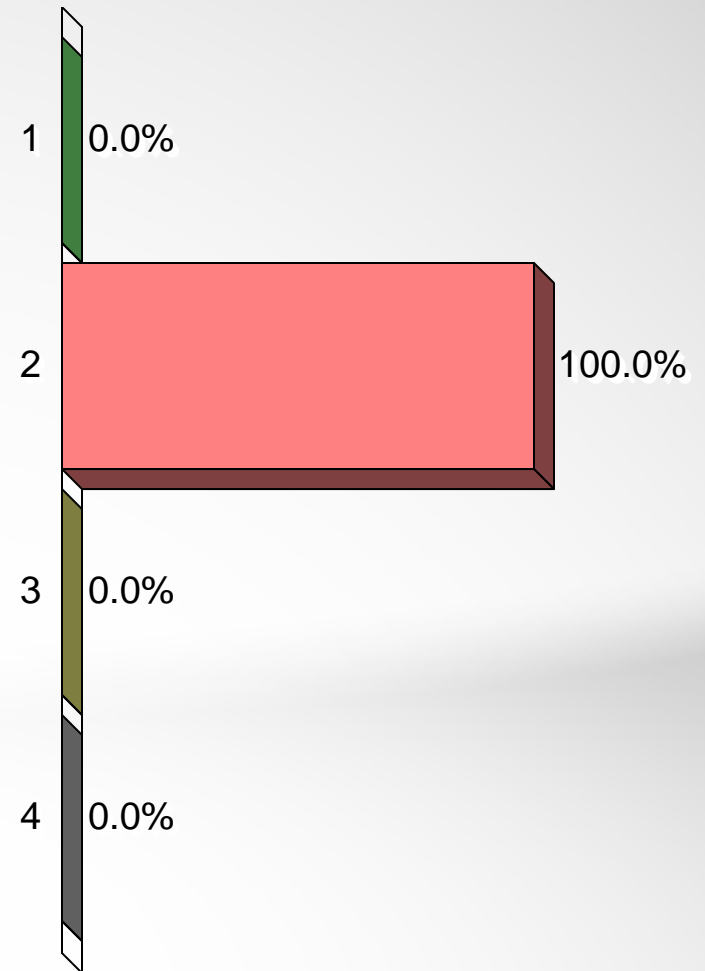


00:10



# For those who bicycle, what are the biggest needs to improve / encourage biking in Rio Rico?

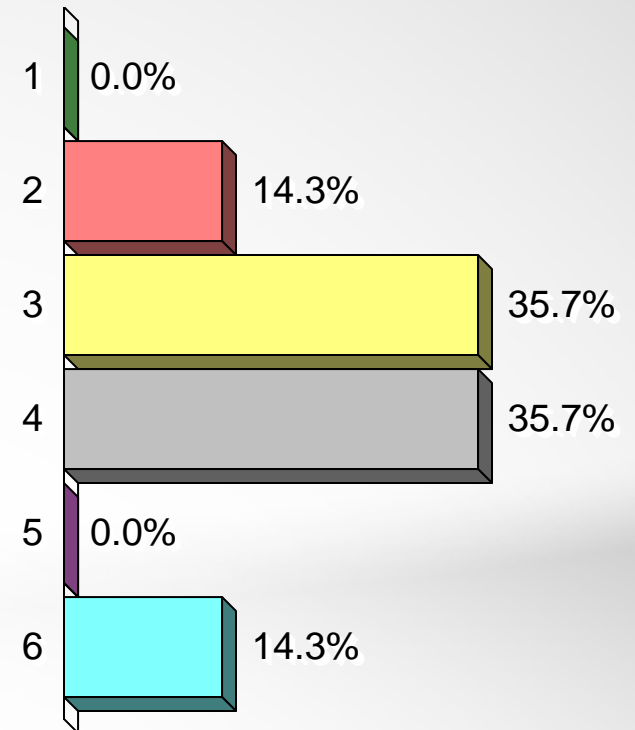
- 1) Increase existing road shoulder or bike lane width
- 2) Provide additional facilities not in place today (sidewalks, bike lanes, cross walks, lighting, etc)
- 3) Enforcing traffic laws
- 4) Other



00:10

## What are some typical reasons for not bicycling?

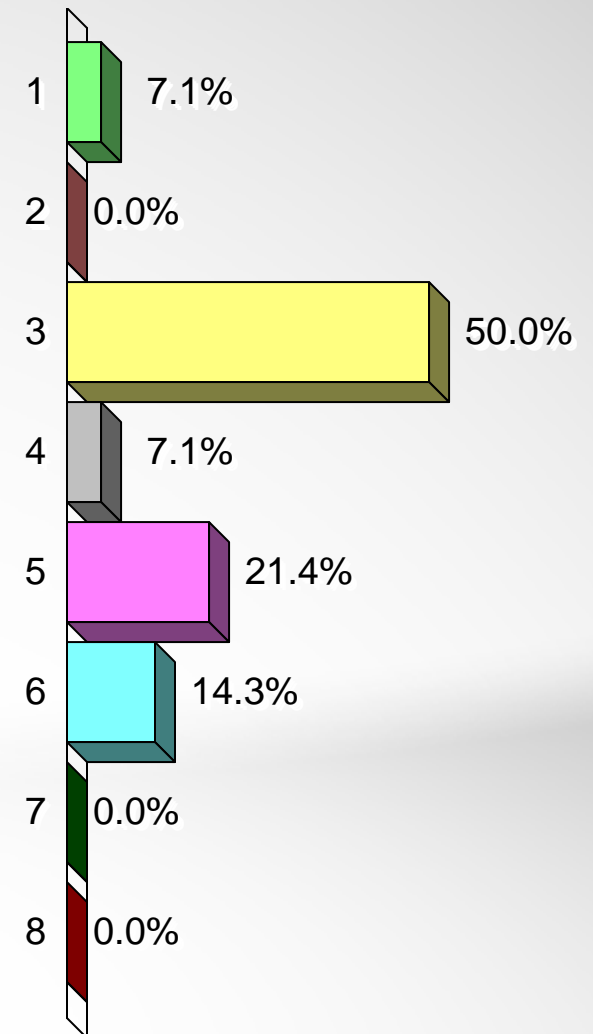
- 1) Other transportation is faster
- 2) Too busy/no opportunity
- 3) Lack of sidewalks or paths
- 4) Lack of safety/busy streets
- 5) Destination is too far
- 6) Not interested in bicycling



00:10

## Which of the following best represents the type of pedestrian and bicycle facility improvements you would like to see in Rio Rico?

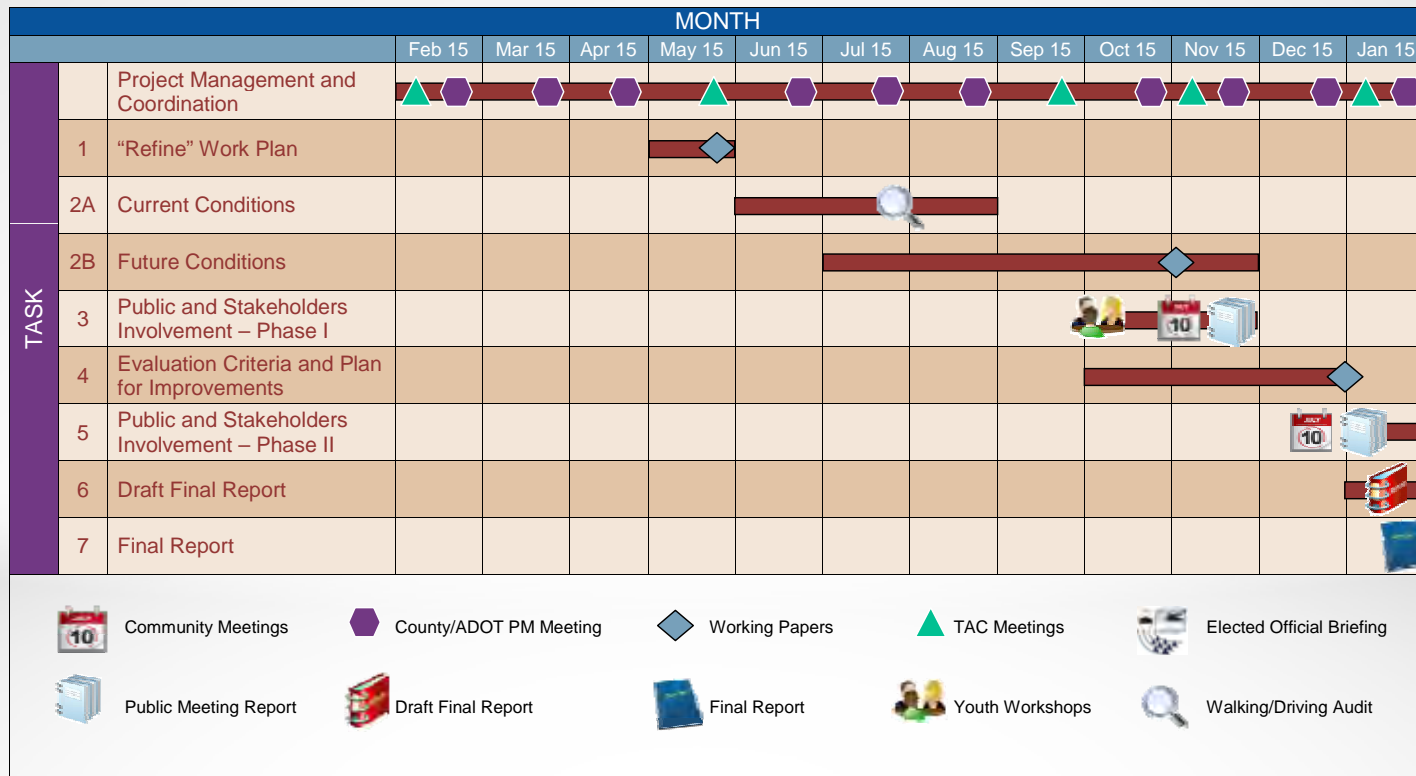
- 1) Construct more sidewalks near commercial or activity centers.
- 2) Construct more sidewalks in residential neighborhoods.
- 3) Construct shared use paths along county roadways.
- 4) Stripe bicycle lanes on county roadways.
- 5) Increase bicycle lane or shoulder width of existing county roadways.
- 6) Develop a system of off-street pathways.
- 7) Sweep shoulder or bike lane.
- 8) Step up enforcement of motorist laws.



00:10

# Next Steps

## Project schedule



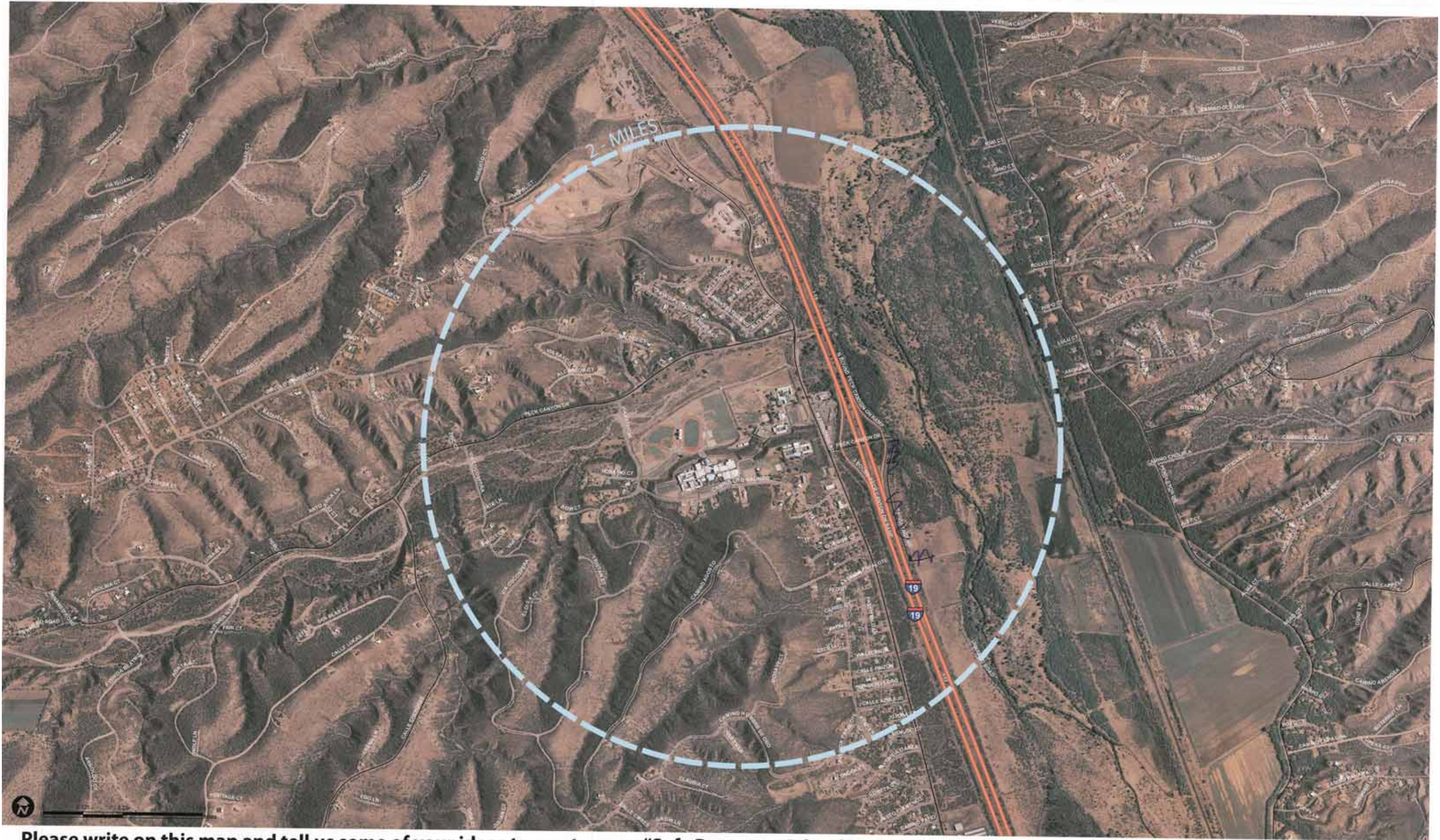
# Next Steps

## Contact Information



- ▶ **RBF Consulting**  
**Kevin Kugler, Project Manager**  
**Phone: 602-279-1234**  
[kkugler@rbf.com](mailto:kkugler@rbf.com)

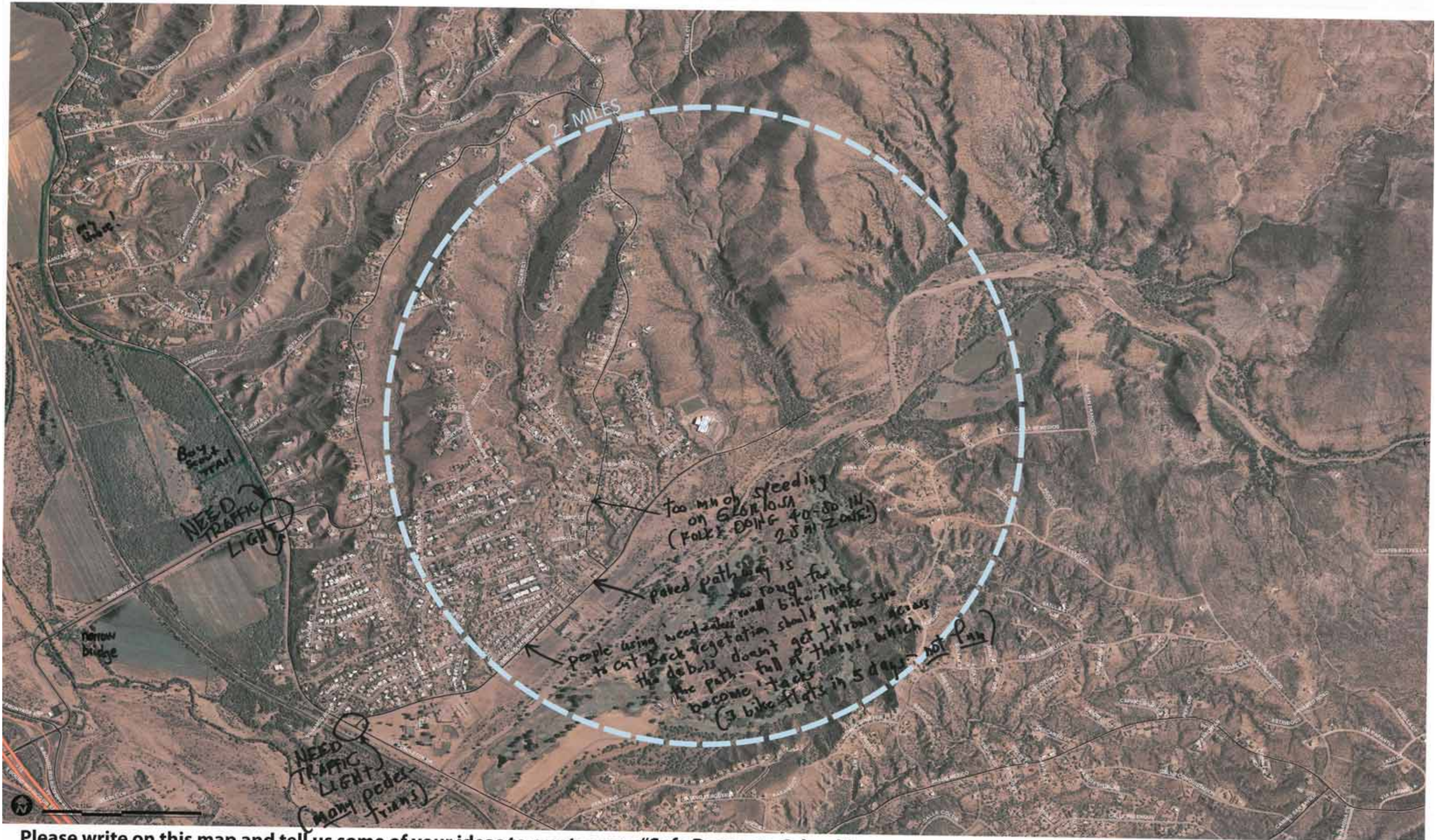




**Please write on this map and tell us some of your ideas to create more "Safe Routes to School"**

Some thoughts to get you started...

- Are there any key routes that need sidewalks?
- Is there a particular path that is commonly used by bicyclists?
- Does a specific street need traffic calming devices (i.e. speed bump) to discourage speeding?
- Is there a potential shortcut that could be developed to improve access to the school?



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Arizona Department of Transportation  
Rio Rico Walking and Biking Study  
Public Open House  
Calabasas Middle School  
Thursday, November 15, 2012

COMMENT FORM

What are the most important walking and biking issues/concerns in Rio Rico that need to be addressed right now?

*There are not enough paths for the number of homes + residents.*

What should be done now to plan for the future (20 years from now)?

*Plan for + build paths for walkers + bicycles that have a separation from roads for safety.*

In Rio Rico, do you have any suggestions for any of the following:

-Pedestrian Needs (sidewalks, pathways, trails)

*We need many more - 10 miles of trails + paths*

*Only build bike paths which are separated*

-Bicycle Needs (bike lanes/paths/safety/signs)

*We need more bike lanes + safety signs*

*frontage rd  
Open dead end between Calle Calabasas + Yavapai on West side of I-19*

-Improved routes for children to walk or bike to school (may include sidewalks, neighborhood shortcuts, traffic enforcement, reduction in "blind spots", etc.)

Are there any other concerns relating to walking and biking in Rio Rico that you wish to share?

*Recreation will have a positive impact on the economy.*

*It would be better to develop links to expand current paths rather than scatter some in separate areas.*

Public comments are an important part of the project and are welcome at any time for review and consideration. Comments returned by Thursday, November 29, 2012, will be included in the summary of this public meeting. Please send comments to ADOT Outreach Team, 2929 N. Central Ave., Suite 800, Phoenix, AZ 85012, (602) 798-7521, kkgugler@rbf.com

Please visit the study's web site: [azdot.gov/RioRico](http://azdot.gov/RioRico)



*I do not bike because there are no safe locations. I would like to bike ride*

Arizona Department of Transportation  
Rio Rico Walking and Biking Study  
Public Open House  
Calabasas Middle School  
Thursday, November 15, 2012

COMMENT FORM

What are the most important walking and biking issues/concerns in Rio Rico that need to be addressed right now?

Heavy traffic 2 lane roads with no shoulders  
bikers and walkers in danger especially near shopping

What should be done now to plan for the future (20 years from now)?

plan in for bikes and pedestrians near shopping + schools

In Rio Rico, do you have any suggestions for any of the following:

-Pedestrian Needs (sidewalks, pathways, trails)

sidewalks near shopping and schools

-Bicycle Needs (bike lanes/paths/safety/signs)

lanes near shopping and schools

-Improved routes for children to walk or bike to school (may include sidewalks, neighborhood shortcuts, traffic enforcement, reduction in "blind spots", etc.)

Are there any other concerns relating to walking and biking in Rio Rico that you wish to share?

the real dangers to people already walking and biking  
on inaccessible roads, roads too busy and small  
to safely support pedestrian use

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\* A large percentage of children in Rio Rico attend school in Nogales. Shopping access ped/bike seem quite important. Recreation paths

Arizona Department of Transportation  
Rio Rico Walking and Biking Study  
Public Open House  
Calabasas Middle School  
Thursday, November 15, 2012

★ Multi use  
(equestrian friendly)  
Trails needed  
in N.E. Rio Rico

★ Also:  
Cattle Guards on  
Palo Parado Rd. (Caballero Corte  
are hazards to pedestrians,  
dogwalkers and bikers.

COMMENT FORM

What are the most important walking and biking issues/concerns in Rio Rico that need to be addressed right now?

NORTH EAST RIO RICO NEEDS WALKING/BIKING PATHS.  
THE ONLY place for walkers is along dangerous high  
Traffic Pendleton Road. We have no parks, so a walking  
path along Pendleton would give residents access to  
outdoor recreation.

What should be done now to plan for the future (20 years from now)?

The population of N.E. Rio Rico will increase with the  
opening of the Palo Parado Bridge. Trails and Paths needed.

In Rio Rico, do you have any suggestions for any of the following:

-Pedestrian Needs (sidewalks, pathways, trails)

Pathway needed along Pendleton Rd, North of  
Rio Rico Drive, to Camino Josephina.

-Bicycle Needs (bike lanes/paths/safety/signs)

Bike lanes/paths needed along Pendleton Rd., from  
Rio Rico Dr. to Camino Josephina.

-Improved routes for children to walk or bike to school (may include sidewalks, neighborhood shortcuts, traffic enforcement, reduction in "blind spots", etc.)

Most children in Rio Rico ride School buses.  
There is more need for recreational trails.

Are there any other concerns relating to walking and biking in Rio Rico that you wish to share?

Pendleton Road is dangerous for walking and biking.  
Paths needed from Rio Rico Dr to Camino Josephina.  
Residents do not have access to any biking/walking  
Trails at the present time.

Public comments are an important part of the project and are welcome at any time for review and consideration. Comments returned by Thursday, November 29, 2012, will be included in the summary of this public meeting. Please send comments to ADOT Outreach Team, 2929 N. Central Ave., Suite 800, Phoenix, AZ 85012, (602) 798-7521, [kkugler@rbf.com](mailto:kkugler@rbf.com)

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Arizona Department of Transportation  
Rio Rico Walking and Biking Study  
Public Open House  
Calabasas Middle School  
Thursday, November 15, 2012

COMMENT FORM

What are the most important walking and biking issues/concerns in Rio Rico that need to be addressed right now?

SAFETY - NARROW ROADS W/ NO SHOULDER  
PREFERABLY SEPARATION OF ROAD & TRAIL

What should be done now to plan for the future (20 years from now)?

PROVIDE WIDE SHOULDERS ON MAJOR RURAL  
COLLECTORS, JOSEFINA, TENDLETON, RIO RICO DR &  
PERCYN, WEST FRONTAGE ROAD & PALO PARADO ROAD FOR  
RURAL ACCESS TO TRAILS, PARKS & CONNECTING VARIOUS  
DEMOGRAPHIC & GEOGRAPHIC AREAS

In Rio Rico, do you have any suggestions for any of the following:

-Pedestrian Needs (sidewalks, pathways, trails)

PATHWAYS - LESS COST & MAINTENANCE  
THAN SIDEWALKS & TRAILS & CAN BE  
CONSTRUCTED IN THE NEAR TERM.

-Bicycle Needs (bike lanes/paths/safety/signs)

CLASS II BIKE LANE AS A SHARED USE FACILITY  
INITIALLY USED PRIOR TO CONSTRUCTION OF  
SHARED USE PATH SEPARATED FROM TRAFFIC

-Improved routes for children to walk or bike to school (may include sidewalks, neighborhood shortcuts, traffic enforcement, reduction in "blind spots", etc.)

Are there any other concerns relating to walking and biking in Rio Rico that you wish to share?

CONNECTIVITY BETWEEN VARIOUS AREAS & LAND  
USES - ESP. COMPLETION OF WEST FRONTAGE  
ROAD BETWEEN RIO RICO DR. & CALABASAS W/ WIDE SHOULDERS  
FOR BOTH WALKING & BIKING. - WIDEN CAMINO JOSEFINA  
& THE ENTIRE LENGTH OF TENDLETON DRIVE TO PROVIDE

Public comments are an important part of the project and are welcome at any time for review and consideration. Comments returned by Thursday, November 29, 2012, will be included in the summary of this public meeting. Please send comments to ADOT Outreach Team, 2929 N. Central Ave., Suite 800, Phoenix, AZ 85012, (602) 798-7521, kkgugler@rbf.com

Please visit the study's web site: [azdot.gov/RioRico](http://azdot.gov/RioRico)



## **Klyszeiko, Matthew**

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**From:** Gerardo Castelo [[mailto:jerry\\_castelo@hotmail.com](mailto:jerry_castelo@hotmail.com)]

**Sent:** Tuesday, November 27, 2012 1:25 PM

**To:** Justin Feek

**Subject:** RE: ADOT Rio Rico Contact Information

Good afternoon: Mr. Justin Feek, I was talking to you around an hour ago i lived by Circulo Guerrero and Main Street Ruby Road. Like i was saying to you it's real hard to drive on Ruby Road when people are walking or riding the bicycle, there is a section were you got two rail guards on both sides of the road and sometimes its real difficult to drive thru those rails especially when people are walking or riding the bikes the road is narrow and theirs no way to drive thru those rail guards you have to slow down and wait for the other car to pass and the speed limit is 55 mph on Ruby Road and I also wanted to make a comments about Circulo Guerrero st. we don't have side walks and every summer it's a nightmare for our neighborhood, the reason why is when it rains i don't have any access to my house and water jumps onto the street and i almost lost my water meter this following summer, people walk on the street, and there is no side walk and beside that the county don't even trim the trees I've been living here for the pass seven years and i haven't seen any one trimming the trees. i hope you guys take this in consideration and help us build a wash or whatever it takes to prevent the flooding in our neighborhood we all wonder were our taxes go. sincerely a resident of Circulo Guerrero of Rio Rico.

---

**From:** [JFeek@azdot.gov](mailto:JFeek@azdot.gov)

**To:** [jerry\\_castelo@hotmail.com](mailto:jerry_castelo@hotmail.com)

**Subject:** FW: ADOT Rio Rico Contact Information

**Date:** Tue, 27 Nov 2012 20:13:06 +0000

**From:** Justin Feek

**Sent:** Tuesday, November 27, 2012 12:53 PM

**To:** '[jerrycastelo@hotmail.com](mailto:jerrycastelo@hotmail.com)'

**Subject:** ADOT Rio Rico Contact Information

[jfeek@azdot.gov](mailto:jfeek@azdot.gov)

**Justin Feek**  
**Program Manager**  
**Multimodal Planning Division**  
**Arizona Department of Transportation**  
**206 South 17th Ave 310B**  
**Phoenix, AZ 85007**

**Phone: (602) 712-6196**

**Fax: (602) 712-3046**



## Appendix D – Community Open House #2

- D.1 Meeting Summary
- D.2 Sign in sheet
- D.3 Meeting Notice
- D.4 Fact Sheet
- D.5 Presentation Boards
- D.6 Written Comments Received



## Public Open House # 2 Meeting Summary

**Meeting Date/Time:** Wednesday, May 22, 2013 (5:30 pm - 7:30 pm)

**Meeting Location:** Calabasas Middle School  
131 Camino Maricopa  
Rio Rico, AZ 85648

**Meeting Participants:** Seven (7) community members attended  
Sign-in Sheet attached in Appendix A

**Study Team:** Justin Feek, ADOT Project Manager  
Paki Rico, ADOT Communications  
Mary Dahl, Santa Cruz County  
Jesus Valdez, Santa Cruz County  
Kevin Kugler, Baker/RBF

### Project Purpose & Intent

The purpose of the Rio Rico Walking and Biking Study is to enable Santa Cruz County to establish a program for the construction of bike lanes and sidewalks that are desired to provide safe and convenient pedestrian and bicycle access to select Santa Cruz Valley Unified School District No. 35 school district facilities and for community-wide multi-modal transportation and recreational purposes. The School District and County have completed trail projects over the years, but providing additional sidewalk, bike lane and/or trail facilities to safely and adequately connect schools to other Rio Rico activity centers and neighborhoods is the primary purpose of the Rio Rico Walking and Biking Study. Schools in particular are not well-served by bicycle and pedestrian access and the School District and County would like to enhance opportunities for bicycle and pedestrian modes of travel to engage residents in healthy lifestyle choices without the fear of bicycle and pedestrian conflicts with vehicles.



Figure 1: Calabasas Middle School





## **Public Open House #2 Purpose**

As part of the overall corridor study process, the Study Team developed a comprehensive and interactive Public Involvement Plan to inform and include the public in the transportation planning process.

The Public Involvement Plan focused on meetings with stakeholders and the public scheduled at key technical milestones in the study process. The goal of this approach is to ensure that input and feedback provided by citizens and stakeholders will be effectively integrated and considered in the development of the final study and in the conception of project recommendations. The initial Public Involvement Report outlined the public involvement effort that was performed as part of Public Meeting/Open House #1 held on November 15, 2012. This report summarizes the second Public Meeting/Open House conducted on May 22, 2013.

The purpose of the second Public Open House was to provide interested residents and other project stakeholders with an overview and opportunity to comment on Working Paper # 2. Working Paper # 2 includes the suggested Plan of Improvements which identifies and prioritizes multi-modal transportation projects into short term (5 year), medium term (10 year) and long term (20 year) planning horizons. Other contents in Working Paper #2 presented at the second Public Open House include a series of supporting policies and design elements, evaluation criteria used for prioritizing projects, planning level cost estimates for select projects, and funding sources and cost sharing strategies that Santa Cruz County can seek out for the implementation of projects.

## **Public Open House Notification**

The Study Team considered several methods to notify the public of the first Public Open House meeting. Given the mostly rural nature of Rio Rico, it was determined that:

The newspaper display advertisement was published in the May 14, 2013 and May 21, 2013 editions of the Santa Cruz Valley Sun and Nogales International newspapers. The advertisements also appeared electronically on the Santa Cruz Valley Sun's website. A copy of the advertisement is located in *Appendix B* for reference. The advertisements provided a brief project description and meeting location information regarding the Public Open House meeting. The advertisement was also disseminated electronically by the ADOT Communications staff to numerous interested Rio Rico and Santa Cruz County-area stakeholder list service subscribers. The meeting notice was also posted electronically on the Santa Cruz County website. A copy of the Fact Sheet made available for the public is attached in *Appendix C*.



## **Public Meeting Overview**

In total, an estimated 7 people attended the Open House meeting.

The formal presentation began promptly at 6:00 pm with Justin Feek, ADOT Project Manager briefly welcoming the group and thanking all for attending. Mr. Feek encouraged attendees to sign-in and help themselves to project information material, comment cards and surveys that were located at the meeting entrance. He also explained that all the project information being presented tonight would be available online at [www.azdot.gov/RioRico](http://www.azdot.gov/RioRico). Mr. Feek then introduced Kevin Kugler, Project Manager with RBF Consulting, to begin the formal presentation.

Mr. Kugler began the presentation by recognizing and thanking the individuals for their attendance and that they would have an ample opportunity to provide much-needed input and feedback for the project. He noted that a Technical Advisory Committee (TAC) had been formed to provide consultant oversight and guidance for this project and that the TAC met earlier in the day to review the same information.

Mr. Kugler briefly explained what items were going to be covered at the meeting, explaining that after the presentation, attendees were encouraged to fill out comment cards with any observations they felt would benefit the project.

Mr. Kugler first reminded the attendees of the history of the project and what work had been performed in Working Paper #1. He stated that the central focus of the Rio Rico Walking and Biking Study was to establish a program for the construction of bike lanes and sidewalks to provide safe access to local Rio Rico school facilities, as well as multi-modal facilities for use by the general public.

Mr. Kugler then gave an overview of the basic types of pedestrian and bicycle facilities presented in the Rio Rico Walking and Biking Study. Mr. Kugler described the characteristics and differences between bike routes/shared roadways, paved shoulders, bike lanes, bike paths, shared use paths, sidewalks and different crossing types. The discussion also focused on the application of the different facility types more specifically in the Rio Rico area.

Mr. Kugler then reminded the attendees of the different types of multi-modal facility deficiencies inventoried in the Rio Rico Study Area. He explained that the Plan of Improvements was developed in response to the initial set of deficiencies identified by the TAC, residents, project stakeholders and the consultant team. He emphasized that enhancing the safety of multi-modal access to local areas



schools using the guidelines of the Safe Route to Schools Program (SRTS) was important to identify the need to enable Santa Cruz County to pursue federal funding. He briefly reminded the attendees that SRTS is a federal program designed to improve the ability of elementary and middle school students to safely walk and bike to school. SRTS will support infrastructure projects and non-infrastructure projects and that this study will identify and prioritize potential improvement projects within a 2-mile radius of each school in Rio Rico.

Utilizing the large presentation board graphics, Mr. Kugler then identified the evaluation criteria and scoring system used by the project team to prioritize projects into the short term (5 year), medium term (10 year) and long term (20 year) implementation time horizons. My Kugler noted that the priorities assigned to the various projects represent a guide for Santa Cruz County to follow. The priorities in no way suggest that all projects must be implemented in any exact order, but does provide Santa Cruz County elected official



Figure 2: Presentation Boards

and staff with a barometer and general sense of what project's received a higher priority by way of safety needs, as well as expressed community desires and deficiencies. He went on to note that local influence, funding availability and a wide variety of variables can affect the timing of any given project. He noted that if a funding source can be secured for a given project sooner than what has identified in this report, the priority assigned in this report should never stand in the way of implementation that improves the overall non-motorized access and connectivity of Rio Rico.

Using a large presentation board, Mr. Kugler then gave a brief overview of the eight (8) evaluation criteria employed by the project team. He explained that each criterion was assigned a numeric value and each proposed project then received a rank or score that could be used comparatively against one another. The criteria were developed out of a compilation of expressed community needs, desires and deficiencies, transportation industry standards and metrics, and consultant experiences. Mr. Kugler noted that projects located within a two mile radius of a school received a weighted score to reflect the importance of the SRTS in the Rio Rico Walking and Biking Study. The eight criteria and the numeric scores assigned to each criterion are shown in *Appendix D*.



Mr. Kugler then gave an overview of the each of the short term (5 year), medium term (10 year), and long term (20 year) proposed projects. The projects were presented using one large map presentation board for the short, medium and long term project types. An additional board summarizing all projects into one large table was also used extensively in explaining the various projects over each of the time horizons. Please see *Appendix D* for reference to each of these map graphics. Mr. Kugler explained many of the more than 60 projects identified and prioritized for implementation.

Mr. Kugler noted that shared use paths, paved shoulders and bike routes/shared roadways represented the most projects. Sidewalks had the fewest and that was by design. Mr. Kugler went on to explain that bike routes/shared roadways, when the roadway design allows, represent a great way to begin to demonstrate the implementation of a local bicycle program at little cost. This is especially true in rural areas where formal bike lanes are not necessarily needed or desirable. Rio Rico has a number of roadways that are suitable for bike route signage and fairly inexpensive signage can increase bicycle awareness, health and safety and demonstrate progress towards implementation.

Mr. Kugler continued to explain the various projects recommended for implementation. He concluded by discussing some ballpark costs for the typical construction of the various types of improvements. Mr. Kugler noted that construction costs for these projects are never cheap, especially for a small county like Santa Cruz County with limited budget availability. He explained that this report also is providing Santa Cruz County with a series of potential funding sources. This index of potential funding sources lists a variety of federal, state and local government resources as well as foundation and other grant funding opportunities. Mr. Kugler noted that he would be glad to discuss these in more detail if anyone were interested.

At the conclusion of the presentation, Mr. Kugler asked if there were any questions.

### **Questions Posed During the Question & Response Period**

The following is a summary of questions and responses provided by the project team during the conclusion of the presentation.

Q: What exactly is planned for the loop road around Rio Rico High School? It looks like there are a few projects in that area, but shown on different maps. Can you clarify?

*R: Yes, that is correct. The Peck Canyon Drive- Via Patricia-Camino Lito Galindo "loop" around Rio Rico High School is comprised of a series of different projects. Camino Lito*



*Galindo is recommended for a sidewalk in the short term. This sidewalk would extend from the short reach of existing sidewalk at Camino Lito Galindo and West Frontage Road. A pedestrian crosswalk is also recommended across Camino Lito Galindo connecting to the schools entrance. Peck Canyon Drive and Via Patricia are recommended for paved shoulders, both as short term (5 year) projects. There is sufficient right-of-way existing on both streets and paved shoulders are a cost effective alternative to accommodate both pedestrians and bicyclists.*

Q: The plan certainly looks very thorough and has many projects identified. What is the recommendation for the Anza Trail?

*R: The Anza Trail is a multi-purpose trail and is recommended to be incrementally extended both to the north and the south in the short, medium and long term. Santa Cruz County has already identified the Anza Trail as being extended in their Comprehensive Plan and this study of course supports that continued objective. Funding availability is always a challenge and we suggest the County continue its existing practice of working with local trail enthusiasts and volunteer organizations for the continued development and maintenance of this important trail. The continued expansion of the Anza Trail is of course a benefit for residents but can also promote eco-tourism opportunities in Rio Rico.*

Q: I live off Camino Caralampi and I see that a shared use path is identified but is in the 20-year plan. Why is it in the long term plan? This is a busy street and connects to Garrett's which is a very busy intersection. I like the idea of a shared use path, but we need it sooner than 20 years.

*R: It is interesting that you make that observation. In our Technical Advisory meeting earlier today, the group discussed that this may be one project worth taking another look at in terms of its assigned priority in the 20 year versus something sooner. Now your comment places more emphasis on that initial team discussion. You are correct that Camino Caralampi is a busy street – it currently has over 4,000 vehicles per day traveling on it. The path from the El Splendor Resort does not connect all the way to Yavapai Drive and this area could certainly benefit from having a designated path here. Its intersection with Yavapai Drive across from Garrett's is not the most ideal configuration, especially from a pedestrian or bicyclist perspective. The project team will take another look at Camino Caralampi. Please feel free to complete a comment form if you would like to get your comments in writing for the project record.*



After the conclusion of the question and response period, Mr. Kugler reminded the group to fill out comment cards, hand them out to any neighbors or friends unable to attend the meeting. Comments could be emailed or sent by traditional mail but must be received by June 5, 2013. The meeting adjourned at approximately 7:22 pm.

After the conclusion of the Question & Response period, Mr. Kugler invited the meeting attendees to notate their specific issues or comments on the roll-plots located at the back of the room. He also said that the project team would continue to be on-hand to answer any additional questions. Individual and small group discussions between meeting attendees and project team members continued until approximately 7:25 pm.



**Public Open House**

Wednesday, May 22, 2013 | 5:30 - 7:30 p.m.

Calabasas Middle School

131 Camino Maricopa, Rio Rico, AZ 85648

Sign In Sheet

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# Please Join Us

RIO RICO WALKING AND BIKING STUDY PUBLIC OPEN HOUSE

**Calabasas Middle School**  
**131 Camino Maricopa**  
**Rio Rico, AZ 85648**

**Wednesday, May 22, 2013**  
**5:30 - 7:30 p.m.**  
**Brief presentation at 6 p.m.**

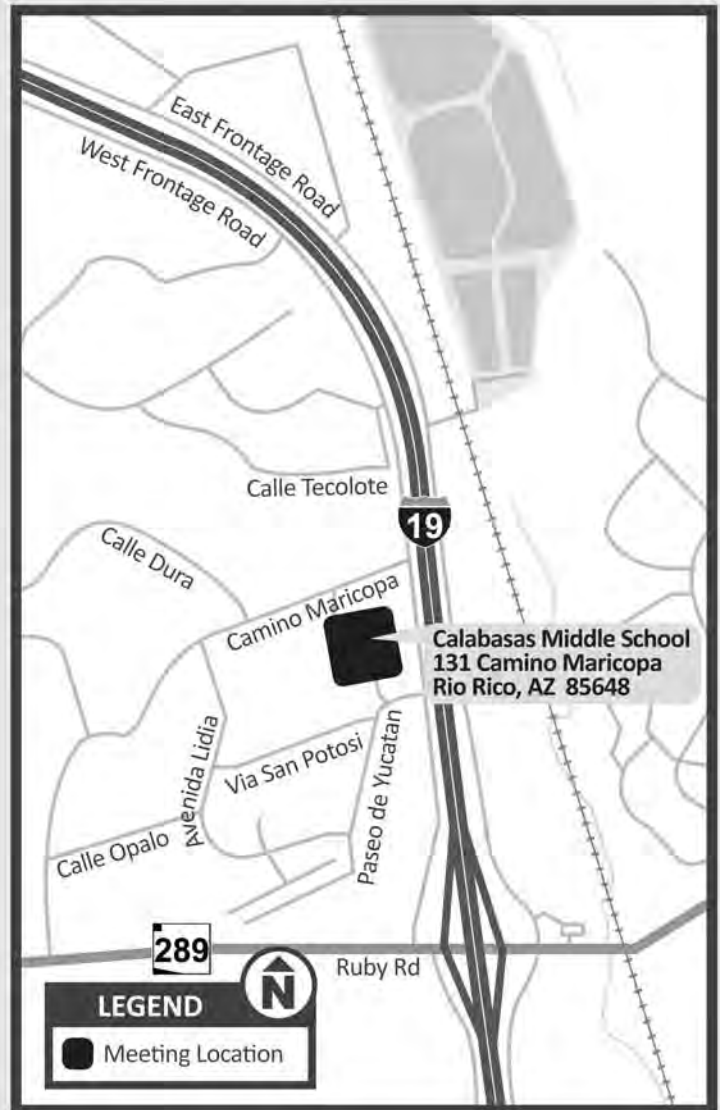
The focus of this open house is to:

- ▶ Review the recommended Plan of Improvements for short term (5-year), medium term (10-year) and long term (20-year) pedestrian and bicycle improvement projects for Rio Rico
- ▶ Review supporting policies and design elements for pedestrian and bicycle improvement projects in Rio Rico
- ▶ Identify and review project cost estimates, potential funding sources and cost-sharing strategies

## PROJECT DESCRIPTION

ADOT and Santa Cruz County are working together on the Rio Rico Walking and Biking Study to identify ways to improve bicycle and pedestrian mobility in the Rio Rico area. The plan will document existing conditions, identify future conditions and needs, and recommend bicycle and pedestrian improvement projects for 5, 10 and 20 year time frames. When complete, this plan will serve as a blueprint to help guide the development, funding and implementation of bicycle and pedestrian projects in Rio Rico.

**WE HOPE THAT YOU WILL JOIN US!**



## FOR MORE INFORMATION

Justin Feek, ADOT Program Manager, (602) 712-6196, [jfeek@azdot.gov](mailto:jfeek@azdot.gov)



FOR MORE INFORMATION:  
[azdot.gov/RioRico](http://azdot.gov/RioRico)



# Rio Rico Walking and Biking Study

May 2013

ADOT and Santa Cruz County are working together on the Rio Rico Walking and Biking Study that will identify ways to improve bicycle and pedestrian mobility in the Rio Rico area.

Rio Rico is an unincorporated area of Santa Cruz County located approximately 10 miles north of the City of Nogales and the U.S./Mexico International border and 55 miles south of Tucson.

The purpose of the Rio Rico Walking and Biking Study is to assist Santa Cruz County in establishing a bike lane and sidewalk construction program for safe and convenient pedestrian and bicycle access and connectivity throughout the Santa Cruz Valley Unified School District.

#### The plan will:

- Document existing conditions
- Identify future conditions and needs
- Recommend bicycle and pedestrian improvement projects for 5, 10 and 20 year time frames

When complete, this plan will serve as a blueprint that will help guide the development, funding and implementation of bicycle and pedestrian projects in Rio Rico.

## STUDY AREA

The project study area covers approximately 62 square miles of the greater Rio Rico area.

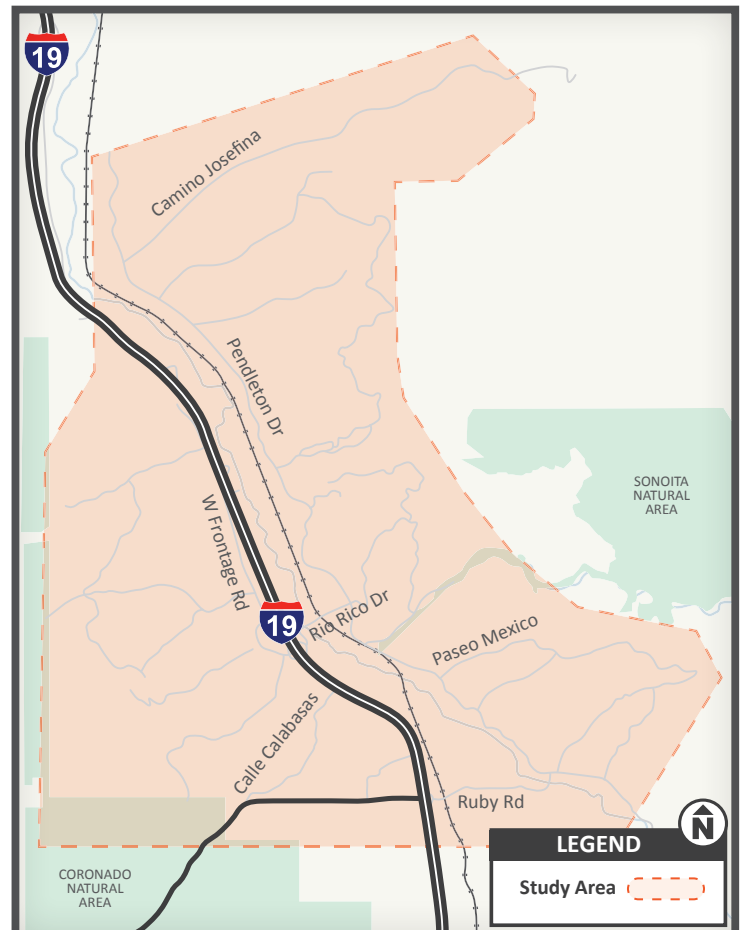
## STUDY OBJECTIVES

- Develop a program for the prioritization and construction of bike lanes and sidewalks in Rio Rico.
- Establish a network of bicycle and pedestrian routes that safely connect Rio Rico activity centers and other area destinations.
- Identify safety and connection needs along existing pedestrian and bicycle routes.
- Prioritize the improvements into near-term (5 year), mid-term (10 year), and long-term (20 year) implementation projects.

## PUBLIC INVOLVEMENT IMPORTANCE

Incorporating the community's ideas and concerns into the study process is very important to the study's outcomes. Two public meetings will be held throughout the study process to gather information and suggestions from Rio Rico residents. A study website has also been created to provide easy access to information:

[www.azdot.gov/RioRico](http://www.azdot.gov/RioRico)



## CONTACT INFORMATION

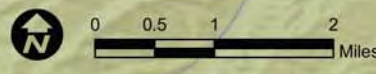
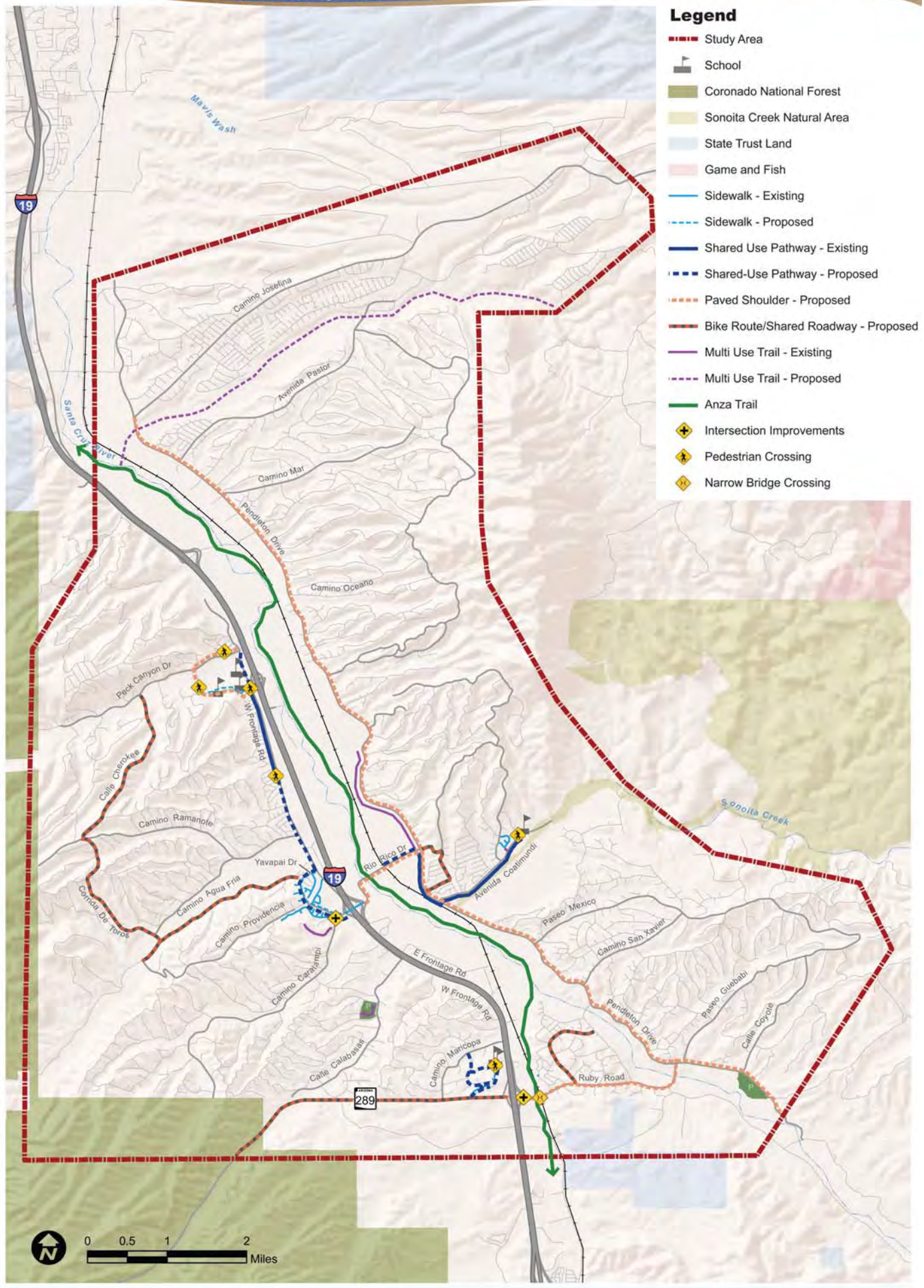
Arizona Department of Transportation

**Justin Feek**

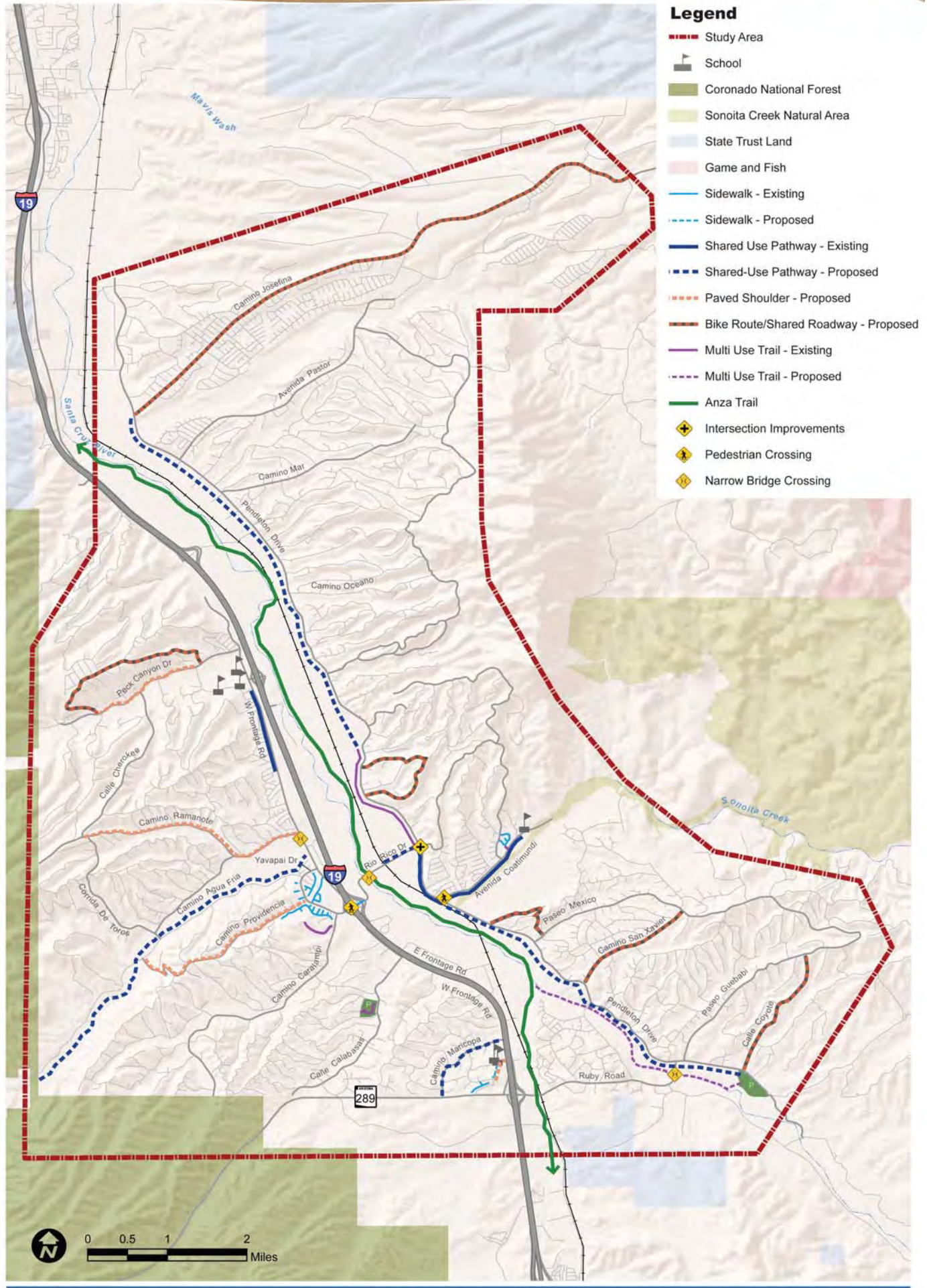
Project Manager  
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jfeek@azdot.gov



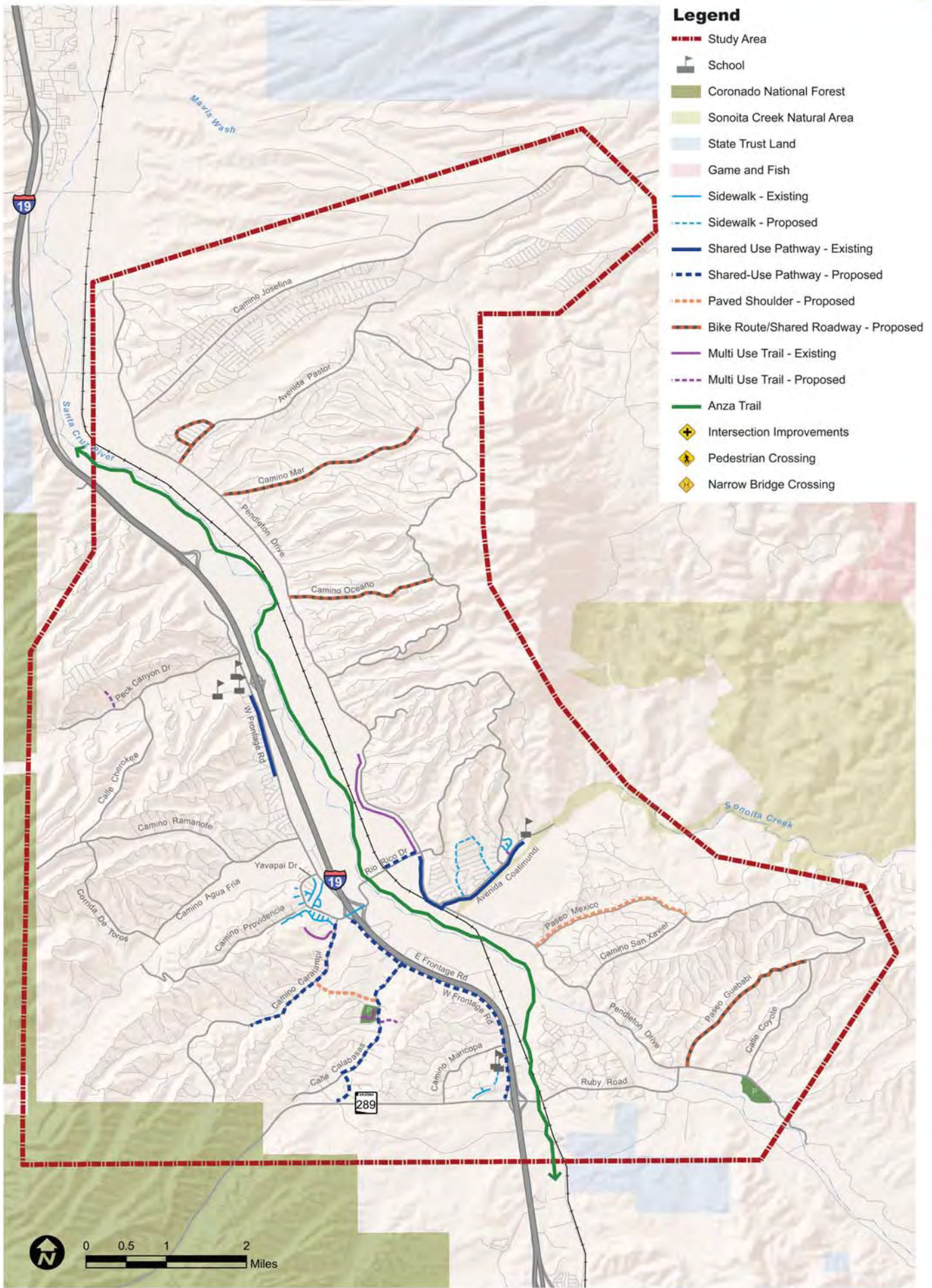
1	<p><b>Criteria:</b> Project provides an improved linkage to existing or planned parks, trail or other public spaces or closes a gap in an existing trail or bicycle trail network.</p> <p><b>Description and Applicability:</b> Project will enhance the current condition by providing connection (or closing a gap) from an existing residential neighborhood, activity center or existing formal or informal trail to an existing or proposed park, trail (or trail system), shared use pathway or other public space.</p> <p><b>Score/Rank:</b> Yes = 1 point No = 0 points</p>
2	<p><b>Criteria:</b> Noteworthy safety improvements based on 5 years of historical crash data and/or field observations.</p> <p><b>Description and Applicability:</b> Project will enhance the current condition by improving the safety and functionality of deficient roadways, intersections and mid-block pedestrian crossings. Such improvements may consist of sidewalks on busy streets, pavement markings, signage, refuge areas, lighting or improved sight distances and driver warning systems.</p> <p><b>Score/Rank:</b> Yes = 1 point No = 0 points</p>
3	<p><b>Criteria:</b> Proposed improvements are located within a two mile radius of an elementary school or middle school.</p> <p><b>Description and Applicability:</b> Project will enhance the current condition by targeting select bicycle and/or pedestrian improvements in proximity to existing elementary and middle schools consistent with Safe Routes to Schools criteria and funding formulas. Such improvements may consist of sidewalk improvements (repairs, widening, gap closures, and curb ramps), crosswalks, traffic control devices, signage, and roadway/traffic calming on-street bicycle lanes or paths and off-street trail facilities that may provide a neighborhood connection or short-cut.</p> <p><b>Score/Rank:</b> Yes = 1 point No = 0 points Weighted Score = x2</p>
4	<p><b>Criteria:</b> Complexity of Construction (Cost)</p> <p><b>Description and Applicability:</b> Projects will vary in complexity of physical construction techniques and cost. Highly complex projects will require additional planning, design, possible environmental permitting, right-of-way acquisition and include challenging physical constraints due to topography or existing infrastructure deficiencies that increase overall project cost. Less complex projects typically include those projects that can be designed and constructed in a more expedited fashion due to the availability of existing right-of-way, and/or the lack of physical, environmental or other related infrastructure deficiencies.</p> <p><b>Score/Rank:</b> Little Complexity = 2 points Medium Complexity = 1 point High Complexity = 0 points</p>
5	<p><b>Criteria:</b> Construction of the project creates the potential to reduce vehicle trips in the immediate area.</p> <p><b>Description and Applicability:</b> Will the construction of the proposed project create the potential to experience a reduction in vehicle trips in the immediate area by creating an alternative mode to vehicular transportation? Improved multimodal connectivity between existing neighborhoods and from neighborhoods to retail, employment or other community services are emphasized here.</p> <p><b>Score/Rank:</b> High Potential = 2 points Limited Potential = 1 point Project will not reduce vehicle trips = 0 points</p>
6	<p><b>Criteria:</b> The Rio Rico community has expressed a desire to improve upon an existing deficiency and supports the project as a means to improve safety, mobility or connectivity in the immediate area.</p> <p><b>Description and Applicability:</b> Community stakeholders have identified key deficiencies, concerns or desired improvements through community dialogue, TAC meetings, youth workshop or other feedback received by the project team.</p> <p><b>Score/Rank:</b> Broad Community Support = 2 point Community Support = 1 points Deficiency Identified but lacking pronounced community support = 0 points</p>
7	<p><b>Criteria:</b> The proposed project may have the ability to cost share with supplemental funding sources in order to implement the construction of the project.</p> <p><b>Description and Applicability:</b> The proposed project may yield the ability to leverage funding support from outside agencies, property owners and/or federal, state or local governments, organizations and non-profit agencies to assist in sharing or reducing the overall construction costs of the project.</p> <p><b>Score/Rank:</b> Yes = 1 point No = 0 points</p>
8	<p><b>Criteria:</b> The proposed project has the potential enhance economic development and/or tourism opportunities to the Rio Rico area.</p> <p><b>Description and Applicability:</b> The proposed project may enhance overall economic development and tourism objectives by improving multimodal connectivity between residential neighborhoods and employment centers OR the project enhances the appeal of existing roadway or trail facilities that better complete (or help complete) a holistic network that may be used to draw regional events and tourism to Rio Rico. Examples vary and can include improvements or connections to the Anza Trail or Garrett's or bicycle improvements to accommodate racing or training events.</p> <p><b>Score/Rank:</b> Yes = 1 point No = 0 points</p>



Plan of Improvements - Short Term (5-years)



Plan of Improvements - Medium Term (10-years)



Plan of Improvements - Long Term (20-years)



	Short Term (5-year)	Medium Term (10-year)	Long Term (20-year)
Sidewalks	<ul style="list-style-type: none"> <li>Camino Lito Galindo</li> </ul>	<ul style="list-style-type: none"> <li>Pena Blanca Elementary School entrance driveway</li> </ul>	<ul style="list-style-type: none"> <li>Avenida Leon-Avenida Gandara Loop</li> </ul>
	<ul style="list-style-type: none"> <li>Yavapai Drive "Loop" – from West Frontage Road to West Frontage Road</li> </ul>		
Shared Use Paths	<ul style="list-style-type: none"> <li>West Frontage Road –Camino De Patio to Camino Lito Galindo (Phase 1)</li> </ul>	<ul style="list-style-type: none"> <li>Camino Maricopa – Ruby R. (SR 289) to West Frontage Road</li> </ul>	<ul style="list-style-type: none"> <li>Camino Caralampi – Yavapai Drive to Calle Amarillo</li> </ul>
	<ul style="list-style-type: none"> <li>West Frontage Road –Camino De Patio to Camino Ramanote (Phase 2)</li> </ul>	<ul style="list-style-type: none"> <li>Boy Scout Trail</li> </ul>	<ul style="list-style-type: none"> <li>Calle Calabasas – West Frontage Road to Circulo Guerrero</li> </ul>
	<ul style="list-style-type: none"> <li>West Frontage Road –Camino Ramanote to Yavapai Drive (Phase 3)</li> </ul>	<ul style="list-style-type: none"> <li>South Pendleton Drive – Avenida Coatimundi to Calabasas Park</li> </ul>	<ul style="list-style-type: none"> <li>West Frontage Road – Rio Rico Drive to Ruby Road</li> </ul>
	<ul style="list-style-type: none"> <li>West Frontage Road – Peck Canyon south to Camino Lito Galindo (Phase 4)</li> </ul>	<ul style="list-style-type: none"> <li>Camino Aqua Fria</li> </ul>	
	<ul style="list-style-type: none"> <li>Yavapai Drive "Loop" – from West Frontage Road to West Frontage Road</li> </ul>	<ul style="list-style-type: none"> <li>Via San Potosi – Avenida Lirio to Paseo de Yucatan</li> </ul>	
	<ul style="list-style-type: none"> <li>Rio Rico Drive from Pendleton Drive to the Anza Trailhead along north side of Rio Rico Drive</li> </ul>		
Multi-purpose Trails	<ul style="list-style-type: none"> <li>Anza Trail</li> </ul>	<ul style="list-style-type: none"> <li>Pena Blanca/Calabasas West Trail Entrance</li> </ul>	<ul style="list-style-type: none"> <li>Fernando Court to Peck Canyon Drive</li> </ul>
		<ul style="list-style-type: none"> <li>Santa Cruz River (Anza Trail) to Calabasas Park</li> </ul>	<ul style="list-style-type: none"> <li>Calle Calabasas to Avenida Palomas</li> </ul>
Paved Shoulders	<ul style="list-style-type: none"> <li>Via Patricia- Peck Canyon Dr. "Loop"</li> </ul>	<ul style="list-style-type: none"> <li>Peck Canyon Drive – Via Patricia to Circulo Sombrero</li> </ul>	<ul style="list-style-type: none"> <li>Paseo Mexico</li> </ul>
	<ul style="list-style-type: none"> <li>North Pendleton Drive</li> </ul>	<ul style="list-style-type: none"> <li>Camino Ramanote – West Frontage Road to Corrida De Toros</li> </ul>	<ul style="list-style-type: none"> <li>Paseo Venado</li> </ul>
	<ul style="list-style-type: none"> <li>South Pendleton Drive</li> </ul>	<ul style="list-style-type: none"> <li>Camino Providencia</li> </ul>	
	<ul style="list-style-type: none"> <li>Rio Rico Drive (i-19 to Pendleton Dr.)</li> </ul>	<ul style="list-style-type: none"> <li>Paseo De Yucatan – from Pena Blanca School to Avenida Lirio</li> </ul>	
	<ul style="list-style-type: none"> <li>East Ruby Rd.</li> </ul>		
	<ul style="list-style-type: none"> <li>Avenida Lirio – Camino Maricopa to Paseo Yacatan</li> </ul>		
Bike Route/Shared Roadways	<ul style="list-style-type: none"> <li>Yavapai Drive, I-19 to West Frontage Road</li> </ul>	<ul style="list-style-type: none"> <li>Camino Josefina</li> </ul>	<ul style="list-style-type: none"> <li>Paseo Guebabi</li> </ul>
	<ul style="list-style-type: none"> <li>Calle Cherokee</li> </ul>	<ul style="list-style-type: none"> <li>Ciculo Sombrero</li> </ul>	<ul style="list-style-type: none"> <li>Ciculo Golondrina</li> </ul>
	<ul style="list-style-type: none"> <li>Corrida de Toros</li> </ul>	<ul style="list-style-type: none"> <li>Valley View Drive</li> </ul>	<ul style="list-style-type: none"> <li>Camino Mar</li> </ul>
	<ul style="list-style-type: none"> <li>Camino Aqua Fria</li> </ul>	<ul style="list-style-type: none"> <li>Camino Pesqueira</li> </ul>	<ul style="list-style-type: none"> <li>Avenida Pastor</li> </ul>
	<ul style="list-style-type: none"> <li>Via Rosamorada</li> </ul>	<ul style="list-style-type: none"> <li>Kents Ave.</li> </ul>	<ul style="list-style-type: none"> <li>Camino Oceano</li> </ul>
	<ul style="list-style-type: none"> <li>Willow Drive</li> </ul>	<ul style="list-style-type: none"> <li>Camino San Xavier</li> </ul>	
	<ul style="list-style-type: none"> <li>SR 289</li> </ul>	<ul style="list-style-type: none"> <li>Calle Coyote</li> </ul>	
Intersection Improvements	<ul style="list-style-type: none"> <li>Ruby Road/East Frontage Rd./Pilot Driveway</li> </ul>	<ul style="list-style-type: none"> <li>Rio Rico Dr./Pendleton Dr.</li> </ul>	
	<ul style="list-style-type: none"> <li>Yavapai Drive/Camino Caralampi</li> </ul>		
Pedestrian Crossings	<ul style="list-style-type: none"> <li>Camino Lito Galindo/Rio Rico HS</li> </ul>	<ul style="list-style-type: none"> <li>Pendleton Dr./Avenida Coatimundi</li> </ul>	
	<ul style="list-style-type: none"> <li>West Frontage Rd/Family Dollar</li> </ul>	<ul style="list-style-type: none"> <li>Rio Rico Dr./I-19 overpass</li> </ul>	
	<ul style="list-style-type: none"> <li>Avenida Coatimundi/Calle Juan Legarra</li> </ul>		
	<ul style="list-style-type: none"> <li>Peck Canyon Drive/Camino Estorino</li> </ul>		
	<ul style="list-style-type: none"> <li>Via Patricia/Camino Lito Galindo</li> </ul>		
	<ul style="list-style-type: none"> <li>Via San Potosi/Paseo de Yucatan</li> </ul>		
Narrow Bridge Crossings	<ul style="list-style-type: none"> <li>Ruby Road @Potrero Creek</li> </ul>	<ul style="list-style-type: none"> <li>Ruby Road @Santa Cruz River</li> <li>Rio Rico Dr. @ Santa Cruz River</li> <li>West Frontage Rd. @ Aqua Fria Canyon</li> </ul>	





## Appendix E – Plan of Improvements Matrix



**Suggested Plan of Improvements Matrix**

Location	Approx. Length	Enhanced connection to public spaces/closes gap	Noteworthy Safety Improvement	Proximity to Schools	Complexity of Construction	Reduction in vehicle trips	Community Support	Cost Sharing Potential	Economic/ Tourism Potential	Total Points	Notes
<b>Sidewalks</b>											
Camino Lito Galindo	Apprx. 3,200 feet	1	1	2	1	2	2	1	0	10	Camino Lito Galindo has a 50-foot right-of-way. The north side of Camino Lito Galindo is preferred for a continuous sidewalk connection and accessibility from adjoining neighborhoods to all three school sites. Sufficient right-of-way exists on each street for a sidewalk. Improvements also identified in the Cooperative Extension SRTS Needs Assessment Report.
Yavapai Drive "Loop" – from West Frontage Road to West Frontage Road	Apprx. 4,900 feet	1	1	0	2	2	2	0	1	9	Attached sidewalk is recommended for the north/east sides of Yavapai Drive from the existing curb return at West Frontage Road along the entire "loop" with its reconnection to West Frontage Road to the north. This "urban" area of Rio Rico is home to the most densely populated residential area and Rio Rico Plaza (Garrett's) which serves as Rio Rico's commercial services core. Pedestrians routinely frequent this route and a sidewalk is needed for safety and separation from motorists as Yavapai Drive is the most traveled roadway with over 11,000 average trips per day. A striped crosswalk with pedestrian warning signage is needed at the Garrett's driveway location.
Pena Blanca Elementary School entrance driveway	Apprx. 200 feet	0	1	2	2	1	1	1	0	8	Sidewalk on the west side of this driveway is necessary to ensure safety by reducing potential for pedestrian/vehicle conflict at this strategic school entrance.
Avenida Leon-Avenida Gandara Loop	Apprx. 7,250 feet	1	1	0	0	1	0	0	0	3	Two "local" streets that operationally function as collector roadways for the medium density residential neighborhoods it serves and in close proximity community services on Avenida Coatimundi. Sidewalks on both sides of the street will enhance the safety and operational efficiency of these busy residential collector roadways by separating the pedestrians from the vehicles in this well-traveled area. Challenges include fitting sidewalks within the existing right of way and multiple driveway conflicts.
<b>Shared Use Paths</b>											
West Frontage Road – Camino De Patio to Camino Lito Galindo (Phase 1)	Apprx. one mile	1	1	2	1	2	2	1	1	11	Santa Cruz County is currently in the process of constructing Phase 1 of a shared use path along the west side of West Frontage Road. West Frontage Road has ample right-of-way at 150-feet and the shared use trail alignment is sufficiently buffered from the roadway prism. Suggesting appropriate pedestrian warning signage for vehicle approaches at intersections.
West Frontage Road – Camino De Patio to Camino Ramanote (Phase 2)	Apprx. 4,300 feet	1	1	0	1	2	2	1	1	9	Santa Cruz County is currently in the process of constructing Phase 1 of a shared use path. This segment is planned as Phase 2 along the west side of West Frontage Road. West Frontage Road has ample right-of-way at 150-feet and the shared use trail alignment is sufficiently buffered from the roadway prism. Suggesting appropriate pedestrian/bicycle crossing warning signage such as MUTCD W-11-15 or W-11-15P for vehicle approaches at intersections.
West Frontage Road – Camino Ramanote to Yavapai Drive (Phase 3)	Apprx. 2,600 feet	1	1	0	1	2	2	1	1	9	Santa Cruz County is currently in the process of constructing Phase 1 of a shared use path. This segment is planned as Phase 3 along the west side of West Frontage Road. West Frontage Road has ample right-of-way at 150-feet and the shared use trail alignment is sufficiently buffered from the roadway prism. The narrow bridge crossing over Aqua Fria Canyon will be a design challenge and is discussed under the "Narrow Bridges" section. Suggesting appropriate pedestrian/bicycle crossing warning signage such as MUTCD W-11-15 or W-11-15P for vehicle approaches at intersections.

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<b>West Frontage Road – Peck Canyon south to Camino Lito Galindo (Phase 4)</b>	Apprx. 2,675 feet	1	1	2	1	1	2	1	0	9	Provide for the northerly extension of the West Frontage Road shared use path currently being designed and constructed by the County in three phases. Suggestion that this segment become phase four. Improvements also identified in the Cooperative Extension SRTS Needs Assessment Report.
<b>Camino Agua Fria</b>	Apprx. 500 feet from Yavapai Drive intersection	0	1	0	2	1	2	0	0	6	A shared use path along the south side of Camino Agua Fria is recommend from the intersection with Yavapai Drive for approximately 500 feet. This shared use path will provide an appropriate transition to the bike route planned along Camino Agua Fria and the sidewalk and shared use path system along Yavapai Drive adjacent to the more densely populated residential neighborhoods. The 80-feet of existing right-of-way is sufficient to accommodate the planned improvements.
<b>Yavapai Drive “Loop” – from West Frontage Road to West Frontage Road</b>	Apprx. 4,900 feet	1	1	0	2	2	2	1	1	10	A shared use path is recommended for the south/west sides of Yavapai Drive from the existing sidewalk terminus at the West Frontage Road along the entire “outer loop” with its reconnection to West Frontage Road to the north. This “urban” area of Rio Rico is home to the most densely populated residential area and the Rio Rico Plaza (Garrett’s) which serves as Rio Rico’s commercial services core. To compliment a planned sidewalk across the street, a shared use path is desired to accommodate bicyclists as well as pedestrians for existing and planned “urban” subdivisions in this area. The shared use path will enhance multimodal connectivity to the West Frontage Road shared use path, separate bicyclists and pedestrians from the busiest roadway in Rio Rico and also provide connection to the existing multiuse pathway at Camino Caralampi and ultimately to the Esplendor Resort. An existing right-of-way width of 150 feet is sufficient to accommodate this improvement and the terrain is relatively flat in order to minimize necessary grading. Future connection to a planned bike route (paved shoulders) along the Rio Rico Drive overpass will greatly enhance system connectivity in this strategic location of Rio Rico.
<b>Camino Maricopa – Ruby R. (SR 289) to West Frontage Road</b>	Apprx. 5,800 feet	1	0	2	1	1	1	1	0	7	Camino Maricopa is classified as a local street with Santa Cruz County but functions more so as a collector roadway. The speed limit is posted at 30 mph. This roadway provides collector-level service connecting West Frontage Road to Ruby Road (SR 289) and is a central access point for adjacent residents wanting to access the schools and West Frontage Road. A shared use path along the east side of the roadway is recommended. Camino Maricopa has 100-feet of right-of way and a 24-foot pavement section. There is sufficient right-of-way to construct a shared use pathway. The east side of the roadway has fewer topographic constraints than the west side and provides direct connectivity to the school entrance drive.
<b>Camino Caralampi – Yavapai Drive to Calle Amarillo</b>	Apprx. 9,400 feet	1	1	0	0	1	1	0	1	5	This roadway already has over 4,000 vehicle trips per day. It is a 24-foot pavement section with a generous 100-foot right of way. The roadway maintains a center line stripe and there are no additional paved shoulders. At its northern terminus with Yavapai Drive, non-motorized users access Garrett’s and the Esplendor Resort multipurpose trail also connects to this area. A shared use path is desired to serve this frequently traveled area of Rio Rico to maintain separation of motorists and pedestrians and bicyclists. This shared use path could extend to a southern terminus at Calle Amarillo. This 9,400 foot length includes the most populous and most traveled portions of Camino Caralampi. The path is likely most desirable on the west side of the roadway to allow access from the majority of residents and thereby creating a

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											seamless path system. The planned shared use path could connect to the existing multiuse trail near the Esplendor Resort or replace the existing portions of multiuse trail altogether. It should be noted that potential conflicts with driveway cuts and fence encroachments create challenges to design and construction costing along the west side of the roadway. Appropriate crosswalks and driver warning signage is needed at roadway intersections. Suggesting appropriate pedestrian/bicycle crossing warning signage such as MUTCD W-11-2, W-11-15 or W-11-15P for vehicle approaches at intersections.
<b>Via San Potosi – Avenida Lirio to Paseo de Yucatan</b>	Apprx. 1,600 feet	0	1	2	1	1	1	1	0	7	A shared use path to accommodate pedestrians and bicyclists is preferred on Via San Potosi. This is a primary corridor for school children accessing Pena Blanca Elementary School. Sidewalk improvements are identified in the Cooperative Extension SRTS Needs Assessment Report. A shared use path is preferred to minimize future County operation and maintenance concerns/costs. Design challenges to consider include limited 50-foot rights-of-way, fencing or other encroachments, on Via San Potosi and Avenida Lirio. Considerable changes in topographic grade also pose drainage considerations that will likely increase design and construction costs for improvements on these streets.
<b>Calle Calabasas – West Frontage Road to Circulo Guerrero</b>	Apprx. 12,000 feet	1	0	0	1	0	1	1	0	4	Calle Calabasas provides area connectivity between the West Frontage Road and SR 289 and serving as a collector roadway for residents in the area. A fire station is located at the intersection of West Frontage Road. Robert Damon Park is a popular recreational facility frequented by local residents. Calle Calabasas is a minor collector road with 100-feet of right-of-way and a 24-foot pavement section with no center line striping. The speed limit is posted at 30 mph. A shared use path along the west side of the roadway is preferred to provide pedestrian and bicycle access for recreation users and bicycle and running enthusiasts as noted by several community members. A shared use path is more cost effective than a separate sidewalk and bike path system. This path alignment can be utilized along with the existing overhead utility power line easement traversing the west side of Calle Calabasas. Connection to a regional bike route along SR 289, the “west Rio Rico bike trail system” and access to Robert Damon Park are established. This segment includes a shared use path for the connection to SR 289 via Circulo Guerrero. As an interim measure, Calle Calabasas could be utilized as a Bike Route/Shared Road with appropriate signage and pavement markings as needed.
<b>Boy Scout Trail</b>	½ mile	1	0	0	1	1	2	1	1	7	The Boy Scout Trail begins at the northwest corner of Pendleton Drive and Rio Rico Drive. There is no formal trailhead. The trail begins adjacent to Pendleton Drive but immediately diverges to the northwest as it meanders through a wooded area and runs due north approximately 475 feet west of Pendleton Road. The trail runs for approximately ½ mile before the formal trail dissipates into non-descript series of lesser paths in the area. Local-area Boy Scouts maintain this trail on a semi-regular basis. Extension of this trail to the north is desired.
<b>Rio Rico Drive from Pendleton Drive to the Anza Trailhead along north side of Rio Rico Drive</b>	Apprx. 3,700 feet	1	1	0	2	2	2	1	1	10	A shared use path proposed at this location provides connectivity to other existing and proposed shared use paths and the Anza Trail, establishing a strategic connection and link to the overall trail system in Rio Rico. This particular section of proposed shared use path has been nominated for inclusion on the Arizona State Trail Plan. Sufficient right-of-way appears to exist though the at-grade crossing of the existing railroad tracks will require safety/warning signage to alert path users. The use of compressed

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											native materials for sections of this shared use path within the Santa Cruz River designated floodplain area should be considered in lieu of pavement due to scour and erosion concerns. Proposed construction of a trail within any USACOE 404 jurisdictional areas will likely need 404 permitting. Connection to the trailhead at the Anza Trail provides enhanced continuity and value in the overall trail network.
<b>South Pendleton Drive – Avenida Coatimundi to Calabasas Park</b>	Apprx. 4.6 miles	1	0	0	1	1	1	1	1	6	A southerly extension of the popular and well-traveled shared use path along Pendleton Drive from its existing terminus at Avenida Coatimundi to Calabasas Park is desired. This proposed shared use path is necessary to enhance non-motorized mobility and connectivity along Pendleton Drive which provides important north-south connectivity east of Interstate 19. Connections to Calabasas Park and the Anza Trail can enhance east-west mobility. The 50-foot right-of-way of Pendleton Drive is constraining and six fairly large wash crossings along this stretch will need to be considered in design and construction.
<b>West Frontage Road – Rio Rico Drive to Ruby Road</b>	Apprx. 3.15 miles	1	0	0	1	1	1	1	0	5	The total length of the West Frontage Road alignment from Rio Rico Drive south to Ruby Road is approximately 3.15 miles. Of the 3.15 miles, approximately 2.4 miles are paved from Ruby Road north to approximately 400 feet north of its intersection with Calle Calabasas where the pavement currently terminates. There is no roadway for approximately .75 miles from the existing pavement terminus north to Rio Rico Drive. A shared use path is desired along this alignment to establish a southerly extension the existing and planned shared use path along West Frontage Road north of Rio Rico Drive. This segment would greatly enhance mobility by completing a seamless north-south non-motorized connection in Rio Rico west of Interstate 19.
<b>Multi-Purpose Trails</b>											
<b>Fernando Court to Peck Canyon Drive</b>	Apprx. 1,550 feet	0	0	2	0	1	0	0	0	3	An unpaved multiuse trail can serve as a neighborhood shortcut promoting non-motorized modes of travel for school-aged children accessing the three school sites from this neighborhood. An existing pathway/jeep trail already exists. Additional research on the potential need for an easement for public ingress/egress is necessary.
<b>Pena Blanca/Calabasas West Trail Entrance</b>		1	0	2	0	1	1	1	0	6	As a possible alternative and/or supplement to nearby sidewalk improvements to Via San Potosi, a multipurpose trail can be constructed to the west of the school property connecting Via San Potosi and Hiedra Ct. Steep sections will require the construction of stairs. An informal network of trails already exists in the area. Easements may be necessary to formally establish this trail. Improvements also identified in the Cooperative Extension SRTS Needs Assessment Report.
<b>Calle Calabasas to Avenida Palomas</b>	Apprx. 1,000 feet	1	0	0	0	1	0	0	0	2	Identified as a “key system disconnect”, a multipurpose trail is recommended to enhance the non-motorized connection from the neighborhood near Avenida Palomas to Robert Damon Park. Currently, users must indirectly travel south or north on Avenida Palomas. A multipurpose trail to provide a more direct connection would greatly aid connectivity of this area and park amenity. A trail utilizing an existing wash approximately (125 north of Camino Caballo) and Suma Court is a possible alignment. Easements must be secured and terrain issues will need to be addressed in design and construction.
<b>Santa Cruz River (Anza Trail) to Calabasas Park</b>	Apprx. 1,200 feet	1	0	0	1	0	1	1	1	5	A multipurpose trail linking the Anza Trail to Calabasas Park is desired to eliminate a key system disconnect and promote trail system continuity to community assets that may support community based events and recreation opportunities.

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Anza Trail	Varies	1	0	0	2	0	2	1	1	7	The southern and northern extension of the existing Anza Trail is recommended. Trail facilities should be incrementally expanded to the north and south from the Guy Tobin trailhead. Leveraging community volunteers and trail enthusiasts to conduct such trail building efforts is highly recommended.
<b>Paved Shoulders</b>											
Via Patricia- Peck Canyon Dr.	Apprx. 3,400 feet	1	1	2	1	2	2	1	0	10	Peck Canyon Drive has a right-of-way of 100 feet. Where sufficient right of way is available, it is suggested that a striped paved shoulder be constructed and where right-of-way is limited, a bike route be provided through the use of signage and pavement markings in proximity to school facilities. Provide for safe and adequate transition to West Frontage Road future improvements. Improvements also identified in the Cooperative Extension SRTS Needs Assessment Report.
Camino Ramanote – West Frontage Road to Corrida De Toros	Apprx. 13, 400 feet (2.5 miles)	0	1	0	1	1	2	1	1	7	Identified as a Priority Underserved Roadway by community stakeholders, this two-lane roadway with center-line striping has a 24 foot pavement section in an 80-foot right-of-way. Westerly to its intersection with Corrida De Toros, the roadway has many curves, changes in grade and resulting blind spots. Camino Ramanote currently experiences just over 2,000 vehicle trips day. These collective roadway characteristics necessitate the improvement of a paved shoulder.
Peck Canyon Drive – Via Patricia to Circulo Sombrero	Apprx. 9,500 feet	0	1	2	1	1	1	1	1	8	From West Frontage Road to Circulo Sombrero, a designated bike lane (or paved shoulder in the alternate) is suggested to be constructed on the north side of the existing roadway. Peck Canyon Drive currently experiences 1,389 vehicle trips per day. Traffic will continue to increase as Rio Rico experiences additional growth and Peck Canyon Drive will likely transition from a local street to a collector road over time. Peck Canyon Drive’s intersection with West Frontage Road and serving access to the three school sites continue to place Peck Canyon Drive as high importance in providing motorized and non-motorized mobility in the area. Peck Canyon Drive has 100-feet of right-of-way and a 24-foot pavement section and center line stripe. The construction of a paved shoulder for this segment will complete a strategic segment that can contribute to two preferred bicycle recreation loop networks – Circulo Sombrero and the larger loop utilizing Calle Cherokee to Camino Ramanote and the West Frontage Road shared use path. For these reasons, a dedicated paved shoulder for this 9,500 foot segment is recommended.
Camino Providencia		1	1	0	1	1	1	1	1	7	Calle Providencia is a local street that radiates out from Yavapai Drive serving low to medium density residential neighborhoods in Rio Rico. While no existing vehicle trip data was able to be obtained for Calle Providencia, it is clear from the existing and planned land uses patterns in the area that continued residential growth will occur and so too will the motorized and non-motorized user demand. Calle Providencia is a 60-foot right of way with a 24-foot pavement section with no center line striping. Paved shoulders are suggested for both sides of Calle Providencia to its intersection with Camino Aqua Fria. Provides bicycle trail connectivity to the bike routes of Camino Aqua Fria and Camino Ramanote for larger route development in western Rio Rico. Based on its proximity to Yavapai Drive and to existing and future commercial retail activities, sidewalks are also recommended to compliment the paved shoulder improvements for the first 2,150 feet from Yavapai Drive to the intersection with Circulo Montosa.

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											If right-of-way constraints, lack of funding or other development-related challenges persist, consider the use of a shared use path for the south side of Calle Providencia.
<b>North Pendleton Drive</b>	<b>Apprx. 6 miles</b>	1	1	0	1	2	2	1	1	<b>9</b>	Pendleton Drive from Rio Rico Drive to Camino Josefina is approximately 6 miles long. Pendleton Drive is the only north-south collector roadway serving residents living east of I-19 and the Santa Cruz River. Pendleton Drive has an 80-foot right-of-way and a 24-foot pavement section in most locations. Community stakeholders commented on the desire to see bicycle facilities along Pendleton Drive. Extension of the popular Boy Scout Trail (shared use path separated from the roadway) was viewed as highly desirable by area residents as well. Santa Cruz County has received a grant to pave 5-foot shoulders along both sides of North Pendleton Drive for one mile north of Rio Rico Drive. These improvements will create 17-feet of pavement on each side of the roadway, sufficient for a signed bike route but not enough to warrant a bike lane.
<b>South Pendleton Drive (to Calabasas Park)</b>	<b>Apprx. 5.5 miles</b>	1	1	0	1	2	2	1	1	<b>9</b>	Pendleton Drive from Rio Rico Drive to Calabasas Park is approximately 5.5 miles. Pendleton Drive is the only north-south collector roadway serving residents living east of I-19 and the Santa Cruz River. Pendleton Drive has an 80-foot right-of-way and a 24-foot pavement section in most locations. Community stakeholders commented on the desire to see bicycle facilities along Pendleton Drive. Santa Cruz County has received a grant to pave 5-foot shoulders along both sides of South Pendleton Drive for a length of one mile from Rio Rico Drive. These improvements would create 14-feet of pavement on each side of the roadway, sufficient for a signed bike route but not enough to warrant a bike lane.
<b>Rio Rico Drive – I-19 to Pendleton Drive</b>	<b>Apprx 6,500 feet</b>	1	1	0	2	1	2	1	1	<b>9</b>	Rio Rico Drive currently experiences over 8,000 vehicle trips daily and is one of the most traveled roadways in Rio Rico. The roadway in most areas is split into two one way roadways with paved shoulders of varying widths. The integrity of the existing pavement along the paved shoulders varies, becoming narrower in areas that experience increased degradation. ADOT is conducting an I-19 East Frontage Road Study that may recommend roadway improvements at the intersection of Rio Rico Drive and East Frontage Road. Paved shoulders of 3-4 foot in width are recommended and should be maintained / expanded with routine County roadway maintenance schedule for Rio Rico Drive. The addition of bike route signage is also recommended. Improved non-motorized facilities along Rio Rico Drive will improve the mobility of local residents but also for enhancing a broader connection of the recreational and outdoor experience for visitors by linking the Guy Tobin Trailhead to other recreation and commercial land uses.
<b>Paseo De Yucatan – from Pena Blanca School to Avenida Lirio</b>	<b>Approx. 1,250 feet</b>	0	1	2	1	1	1	1	0	<b>7</b>	Paved shoulders are recommended for both sides of roadway to accommodate school children from higher density subdivisions to the south. Through signage, encourage school aged children pedestrian use on west side only so as to separate pedestrians from truck traffic originating from business south and east of Pena Blanca Elementary School and for seamless, continuous access to school driveway. Topography challenges and limited 50-foot right-of-way along the southern portion of this corridor create challenges in construction. Bike lane facilities not suggested due to lack of right-of-way, topography and undesirable east side because of potential for truck traffic conflicts.

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<b>Avenida Lirio – Camino Maricopa to Paseo Yucatan</b>	Apprx. 3,500 feet	1	1	2	1	1	2	1	0	9	Paved shoulders on Avenida Lirio will greatly assist the mobility of the neighborhood and improve safety in access to the schools via Camino Maricopa and Paseo Yucatan.
<b>E. Ruby Road – I-19 to Pendleton Drive</b>	Apprx. 2 miles	1	1	0	1	2	2	1	1	9	ADOT controls the right-of-way and ownership of Ruby Road from I-19 to approximately 600 feet to the east. East Ruby Road has 100-feet of right-of-way and is a 26-foot pavement section. ADOT is currently conducting an I-19 East Frontage Road Study that will likely recommend roadway improvements at the intersection of Ruby Road and East Frontage Road. At a minimum, paved shoulders on both sides of the roadway are recommended. With over 4,000 vehicle trips per day and growing, signage denoting a bike route is recommended. If the opportunity presents itself to complete additional roadway improvements funded by others, bike lane and sidewalks on both sides of the street are preferred from Potrero Creek bridge to East Frontage Road at this high traffic volume and turning movement location.
<b>Paseo Mexico</b>	Apprx. 9,800 feet	1	0	0	1	1	1	0	0	4	Paseo Mexico is a minor collector roadway with 80 feet of right-of-way and a 24-foot pavement section with center line striping. Due to the striping, there is not adequate space to accommodate a vehicle and the bicyclist comfortably in one lane (bike route). Paseo Mexico connects with Camino San Xavier (Bike Route) to form a 3.3 mile bike trail loop serving residents in this area.
<b>Paseo Venado</b>	Apprx. 4,000 feet	1	1	0	2	1	1	0	1	7	Paseo Venado can provide a key bicycle trail connector linking Calle Calabasas and Camino Caralampi. Paseo Venado is an 80-foot right-of-way with an existing 24-foot pavement section with center line striping. Paseo Venado experiences 1,660 average daily trips and will grow. Because the pavement width is only 24 feet and has center line striping, its potential as a bike route/shared roadway is not recommended because a cyclist would only have a 2-foot spacing where a minimum of 3-4 feet is preferred. A Bicycle LOS Model could be performed to determine the feasibility of a bike route/shared lane facility.
<b>Bike Route/Shared Roadways</b>											
<b>Yavapai Drive, I-19 to West Frontage Road</b>	Apprx. 325 feet	1	1	0	2	2	2	1	1	10	Within existing pavement conditions, a signed bike route is desired to complement the existing sidewalk and provide bicycle trail connectivity between the planned shared use path along Yavapai Drive and planned Rio Rico Drive overpass improvements.
<b>Corrida De Toros</b>	Apprx. 9,600 feet	1	1	0	2	1	2	0	1	8	Corrida De Toros provides the strategic middle link in the proposed Camino Ramanote – Corrida De Toros – Camino Aqua Fria bike trail system to serve residents in this area. This segment is approximately 9,600 feet in length. This roadway receives very low traffic volumes and is ideal for signage and/or pavement markings as a bicycle route to complete a 6+ mile training loop.
<b>Camino Aqua Fria</b>	Apprx. 9,400 feet	1	1	0	2	1	2	0	1	8	The third leg of the Camino Ramanote-Corrida De Toros-Camino Aqua Fria bike trail. After crossing Aqua Fria Canyon (low water crossing roadway), Camino Aqua Fria is an infrequently traveled roadway that is common for bicyclists and pedestrians to use for non-motorized trips to Garrett’s and other stores and restaurants in the Rio Rico Plaza. Camino Aqua Fria has a 24-foot pavement section with no center stripe within an 80-foot right-of-way. This section of roadway is approximately 9,400 feet to its connection with Yavapai Drive and the Bella Vista subdivision. The portion of Camino Aqua Fria adjacent to Bella Vista community is recommended for improvement with a

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											shared use path on the south side of the roadway or sidewalks on both sides of the road for the initial 500 feet.
<b>Calle Cherokee</b>	<b>Apprx. 11,000 feet</b>	1	0	2	2	1	1	1	1	<b>9</b>	This local street in Rio Rico has very few homes and experiences very low daily vehicle trips. Calle Cherokee has a 50-foot right-of-way and 24-foot pavement section. As such, Calle Cherokee is suggested for use as a bike route with the incorporation of the appropriate signage and or pavement markings as noted in the General Design Elements section. Calle Cherokee is an 11,000 foot (2+miles) segment provides an important and connection between Camino Ramanote and Peck Canyon Drive to offer residents of northwestern Rio Rico a value-added bicycle loop. Calle Cherokee was also identified by Rio Rico High School students as a route that is frequented to and from school on a daily basis.
<b>Circulo Sombrero</b>	<b>Apprx. 2.25 mile loop</b>	0	0	2	2	0	1	0	0	<b>5</b>	This loop road providing connection to Peck Canyon Drive to the east and the west provides a naturally ideal recreation bicycle loop experience. The road is a 50-foot right-of-way with 24-foot pavement section with very low average daily vehicular trips. Bike route signage and/or pavement markings on both sides of the roadway will safely provide the flexibility for a 2.25 mile route along Circulo Sombrero or an extended 3.5 mile complete loop route utilizing Peck Canyon Drive.
<b>Camino Josefina</b>	<b>Apprx. 6 miles</b>	1	0	0	2	0	2	0	1	<b>6</b>	Camino Josefina is already a preferred route by enthusiasts and skilled bikers. The very low density surrounding land use, uninterrupted length, scenic vistas, connection to broader wilderness areas, and grade changes of this road make it desirable for bicycling. It is a 24-foot pavement section with no center striping within a 180-foot right-of-way. Due to proximity to the bridge abutment, automobile rate of speed in this area and poor line of sight in areas, future connections to the planned Boy Scout Trail extension should consider a grade separated crossing and staging area with a connection to Pendleton Road south of the canyon.
<b>Avenida Pastor – Circulo Alameda</b>	<b>Apprx. 1.3 miles</b>	0	0	0	2	0	0	0	0	<b>2</b>	Bike routes/shared roadways fit nicely in this community enclave. Marked crossings and signage will be necessary at the intersection with Pendleton Drive.
<b>Camino Mar</b>	<b>Apprx. 2.3 miles</b>	0	0	0	2	0	0	0	0	<b>2</b>	Camino Mar is a two-way paved road 2.3 miles in length (where pavement ends) with a 26-foot pavement section. Grade changes, sight visibility and signage locations should be evaluated prior to implementation.
<b>Camino Oceano</b>	<b>Apprx. 7,200 feet</b>	0	0	0	2	0	0	0	0	<b>2</b>	This stand-alone road is very suitable with its 26-foot pavement section serving less than two dozen homes. Future crossing design and connectivity to the Boy Scout Trail requires additional study.
<b>Valley View Drive- Camino Magnifico- Camino Panama Loop</b>	<b>Apprx. 2.5 mile loop</b>	0	1	0	2	0	1	1	0	<b>5</b>	A bike route/shared roadway is ideal for this pocket of Rio Rico that forms a self-contained bicycle loop in this area. This “loop” does not entirely connect without a connection at Pendleton Drive that requires further evaluation.
<b>Kents Avenue</b>	<b>Apprx 4,000 feet</b>	0	1	0	2	0	0	1	0	<b>4</b>	Provides linkage to Camino Pesqueria and Paseo Mexico.
<b>Camino Pesqueiria</b>	<b>Apprx. 3,600 feet</b>	0	1	0	2	0	1	1	0	<b>5</b>	Provides linkage to Paseo Mexico and Kents Avenue.
<b>Willow Drive – Pendleton to Rio Rico Drive</b>	<b>Apprx. 3,700 feet</b>	1	1	0	2	1	1	1	0	<b>7</b>	Willow Drive serves as a local roadway providing important neighborhood connectivity between Pendleton Drive and Rio Rico Drive. The roadway has a 28-foot pavement



**Suggested Plan of Improvements Matrix**

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											section and a 50-foot right-of-way. Consideration must be given to a cross walk design and driver warning signage (especially northbound traffic) at Pendleton Drive for access to the shared use path across the street.
Camino San Xavier	Apprx. 7,700 feet	0	0	0	2	0	1	1	0	4	Camino San Xavier is a local road with an 80-foot right-of-way and 24-foot pavement section with no center line striping. Its connection to Paseo Mexico forms a 3.3 mile bike trail loop serving residents in the area. Future crossing of Pendleton Drive will require close examination for safety in design as the intersection is located at a radius in the roadway with limited sight visibility.
Paseo Guebabi	Apprx. 11,000 feet	0	0	0	2	1	0	0	0	3	Paseo Guebabi is an 80 foot right-of-way with a 28-foot pavement section with no center line striping. This bike route segment forms a 3.8 mile bike trail loop serving residents in this area. Intersection/crosswalk design with Pendleton Drive needs to be planned in concert with the fire station driveway located directly across Pendleton Drive.
Calle Coyote	Apprx. 9,300 feet	0	0	0	2	1	1	0	0	4	Calle Coyote is a local street with an 80-foot right-of-way, 28-foot pavement section with no center line striping. This bike route segment connects with Paseo Guebabi to form a 3.8 mile bike trail loop for residents in this area.
Via Rosamorada – Ruby Road to Cerrado Sanchez	Apprx. 6,400 feet	1	1	0	2	1	1	1	1	8	Via Rosamorada is a local street with a 50-foot right-of-way and 24-foot pavement section with no center line striping. It should be noted that Santa Cruz County’s street inventory indicates that only 25-feet of right-of-way exists in certain locations and thus may be limiting.
SR 289		1	1	0	2	0	1	1	1	7	SR 289 (West Ruby Road) is an ADOT facility with a 26-foot pavement section and center line striping. According to ADOT traffic counts at SR 289 near Camino Maricopa, approximately 1,100 vehicle trips per day. Another traffic count taken another 6 miles to the west identified only 190 vehicle trips per day. The data indicates that the majority of SR 289 trips are serving residents of the neighborhoods near Calabasas Middle school and as you proceed west of town, the rate of vehicles drops substantially. In accordance with ADOT regulations, bicyclists are not prohibited from using SR 289. With the minimal volume of vehicle trips, continuation of the existing condition as a bike route, though not signed, is recommended for this facility that can attract biking enthusiasts seeking longer outings to Pena Blanca Lake.
Circulo Golondrina		1	0	0	2	0	0	0	0	3	Local “loop road” serving immediate neighborhood surrounding Robert Damon Park. 50-feet of right-of-way with a 24-foot pavement section with no center line stripe.
<b>Intersection Improvements</b>											
Yavapai Drive/Camino Caralampi	n/a	1	1	0	1	1	2	1	1	8	One of the busiest intersections in Rio Rico, a typical user will experience difficult cross-traffic and conflicting vehicular turning movement operations at this location. There are no crosswalks, signage or other markings to assist pedestrians and bicyclists wishing to cross Yavapai Dr at Camino Caralampi. A signalized intersection with marked crosswalks is recommended and likely warranted. Further evaluation of the need for a signal should also evaluate the proximity and current function and level of service of the West Frontage Rd intersection with Yavapai Dr. which is only 400 feet to the east.

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Ruby Road/East Frontage Road/Pilot Travel Center Driveway Entrance	Approx 325 feet between centerlines	1	1	0	1	1	2	1	1	8	The confluence of these two intersections – only 325 feet apart – is the busiest and most accident prone intersection(s) in Rio Rico. Numerous comments from project and community stakeholders have supported this assertion. Per County traffic counts, this area experiences 7,500 ADT and a poor LOS during the am and pm peak periods. Road widening to include a dedicated portion of the roadway for bike lanes and sidewalks on both sides of Ruby Road is needed. Signing, striping and pavement markings are necessary. Marked crosswalks and warning signage at the Pilot entrance drive is needed. Recommendations from the I-19 East Frontage Road study should influence the future design of improvements that will likely come as a result of future roadway construction projects.
Rio Rico Drive/Pendleton Drive	SWC	1	0	0	2	0	1	1	1	6	Existing parking facilities are lacking at this popular trailhead location. A small paved parking lot to serve 3 typical and 1 ADA accessible parking spaces is preferred. Suitable vehicular turning movement and driveway improvements from the adjacent roadway and marked crosswalks are suggested. If signal warrants for this intersection are met, access and driveway geometrics shall be evaluated. The parking area should be designed to maintain flexibility for future expansion as popularity continues to increase. Improvements to the shared use trails in the area enhance area connectivity and accessibility benefitting locals and tourists alike.
<b>Pedestrian Crossings</b>											
Camino Lito Galindo/Rio Rico High School	n/a	1	1	2	2	1	2	1	0	10	Crosswalk needed at this priority high school crossing location. This improvement also identified in the Cooperative Extension SRTS Needs Assessment Report.
Peck Canyon Drive/Camino Estornino	n/a	1	1	2	2	1	1	1	0	9	A crosswalk is needed at Camino Estornino’s intersection with Peck Canyon Drive to serve school-aged pedestrians and bicyclists from the adjacent residential neighborhood.
Via Patricia and Camino Lito Galindo	n/a	1	1	2	1	1	2	1	0	9	Difficult intersection geometry, roadway radius and line of sight challenges require additional design studies for this location. A cross walk, pedestrian refuge and appropriate traffic calming signage is necessary to facilitate safe crossing at this location.
Pendleton Drive/Avenida Coatimundi	n/a	1	1	0	2	1	1	0	1	7	This existing crosswalk is in poor condition currently. Driving warning signage does exist. At a minimum, the current facility is in need of repainting and striping. Additional signage is likely warranted and low scale safety lighting for nighttime usage should be considered. As traffic volumes increase over 7,500 vehicles per day, design study of an enhanced crossing facility is suggested.
West Frontage Road/Camino del Patio (Family Dollar)	n/a	1	1	0	2	2	2	1	1	10	A very popular informal crossing used by many adjacent residents walking or biking to the Family Dollar store. This location was also identified in the historical crash data. The field study revealed a mother pushing a baby in her stroller. No crosswalk facility exists. The Family Dollar driveway and Camino del Patio intersection is not symmetrical. The current ADT’s likely do not warrant a H.A.W.K. system, but a pedestrian count and design study specific to this location are needed to address the current acute deficiency. (HIGHLIGHT CURRENT COUNTY CONSTRUCTION)

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Rio Rico Drive/I-19 Overpass	Apprx. 700 feet, including approaches and I-19 on ramps	1	1	0	1	1	1	1	1	7	The existing overpass facility serves one lane of vehicular travel in each direction and has 12-foot paved, striped shoulders (approximately) on each side. Pedestrian and bicycle users continue to increase as residents from the east frequent Garrett's. Suggested improvements recommended include a formal modification of the existing striped shoulder area to a striped and signed bike lane for one way travel together with a sidewalk in both directions. Particular attention must be given to the design of appropriate bicycle and pedestrian crossings at the freeway ramp terminals to ensure minimized vehicular conflicts. See AASHTO and ADOT standards for additional detail.
Intersection of Via San Potosi and Paseo de Yucatan	n/a	1	1	2	2	1	1	1	0	9	A crosswalk is needed at this strategic juncture of two roadways serving as a primary pedestrian access way to Pena Blanca Elementary School.
Avenida Coatimundi/Calle Juan Legarra		1	1	2	2	1	2	1	0	10	The shared use path along the south side of Avenida Coatimundi terminates at the Calle Juan Legarra alignment. Students using the shared use path cross Avenida Coatimundi at Calle Juan Legarra to access the Coatimundi Walking Trail school entrance at Feather Court. No cross walk currently exists but is needed at this location. Appropriate signage on Avenida Coatimundi warning drivers of a school crossing is suggested.
<b>Narrow Bridge Crossings</b>											
West Frontage Road at Aqua Fria Canyon	n/a	1	1	0	2	1	1	1	0	7	Existing County bridge structure at Aqua Fria Canyon wash crossing apprx. 490 feet south of Camino Ramanote. Location poses a significant barrier to the seamless connection of the West Frontage Road shared use path system. The current structure is a two lane bridge with very narrow striped shoulders. Suggested design is to meander the planned shared use path to the west along the wash bottom rather than construct expensive bridge widening improvements. This shared use path crossing could be situated within the western portion of the existing 150 feet of West Frontage Road right of way and/or existing utility easement. Additional hydrology study and environmental permitting may be necessary for wash encroachment.
Ruby Road at Potrero Creek	n/a	1	1	0	1	2	2	1	1	9	The existing width of the bridge deck is too narrow to enable comfortable and safe walking or cycling conditions. The preferred solution is to construct a second bridge for eastbound traffic and maintain the existing bridge for westbound traffic. Sufficient right-of-way exists for this improvement. Each bridge then should be designed to accommodate a sidewalk and bike lane/paved shoulder. In the absence of funding for a second bridge, a short term approach would be to construct multiuse trails separated from the roadway in Potrero Creek. A native tread trail to safely separate pedestrians and cyclists from the narrow bridge is needed. This can be achieved with the construction of one multi-purpose trail to accommodate both pedestrians and cyclists. The multi-purpose trail and signage would need to commence prior to the guardrail approaches to the bridge.
Ruby Road/Santa Cruz River	n/a	1	1	0	2	1	1	1	1	8	This important bridge spans approximately 275 feet over the Santa Cruz River. The existing bridge deck has a 26-foot pavement section including one-foot striped shoulders with center line striping. The north side of the bridge deck has a large vertical curb. Replacement/expansion of the existing facility to accommodate bike and

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											pedestrians is preferred but not likely practical. "Share the Road" signage and pavement markings are necessary to improve the existing comfort and safety of bicyclists and pedestrians using this bridge. This is not an ideal solution, but most practical until bridge enhancements are completed.
<b>Rio Rico Drive/Santa Cruz River</b>	n/a	1	1	0	2	1	1	1	1	<b>8</b>	This important bridge spans approximately 300 over the Santa Cruz River. The existing bridge deck has a 26-foot pavement section including one-foot striped shoulders with center line striping. Both sides of the bridge deck have 2-foot raised sidewalks. Replacement/expansion of the existing facility to accommodate bike and pedestrians is preferred but not likely practical without additional government funding. "Share the Road" signage and pavement markings are necessary to improve the existing comfort and safety of bicyclists and pedestrians using this bridge. This is not an ideal solution, but most practical until bridge enhancements are completed.

\*As a general observation, additional future crosswalk facilities located at proposed bike route locations that intersect with Pendleton Drive in order to access the future Pendleton Drive shared use path are necessary but premature to define crosswalk type without the known location of the shared use pathway.