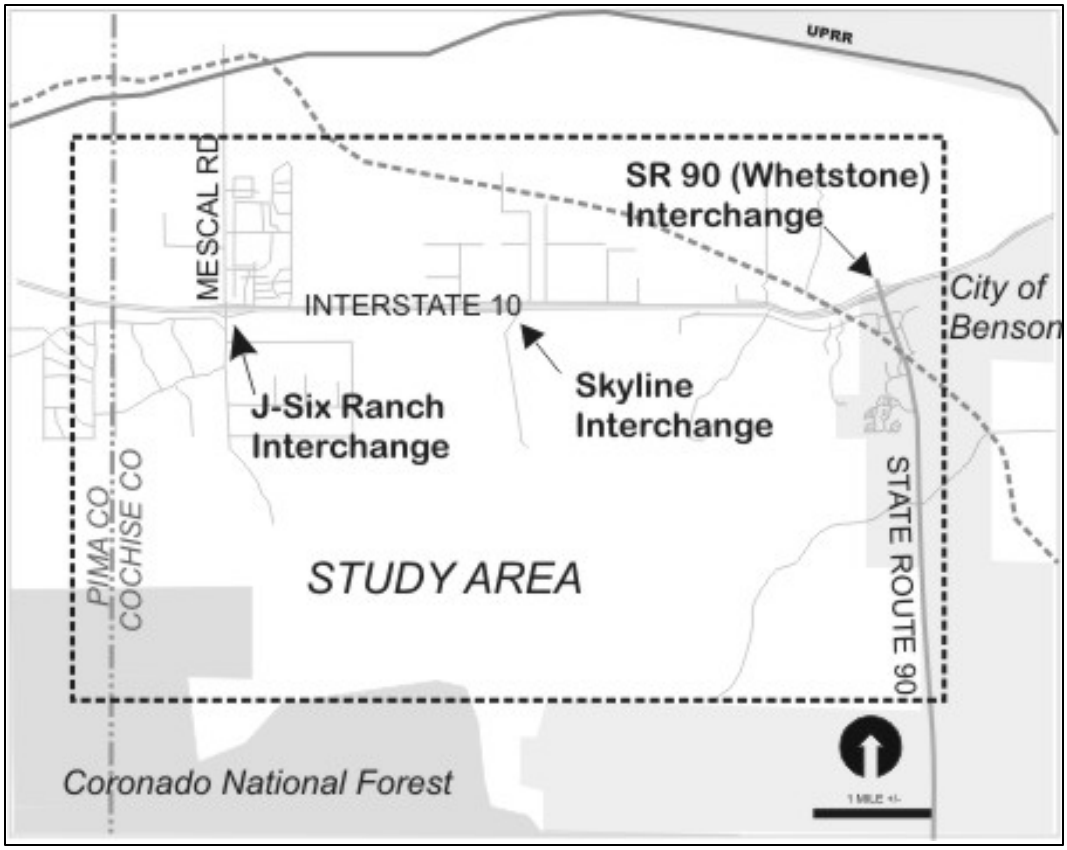
NORTHWEST COCHISE COUNTY TRANSPORTATION PLANNING STUDY

FINAL REPORT



Prepared by:
5460 West Four Barrel Court
Tucson, AZ 85743

July 29, 2005

NORTHWEST COCHISE COUNTY
TRANSPORTATION PLANNING STUDY

Prepared for:

Cochise County, Arizona

FINAL REPORT

Prepared by:
Curtis Lueck & Associates
5460 West Four Barrel Court
Tucson, AZ 85743
(520) 743-8748
FAX (520) 743-4210
Project No. 2004.04

Curtis Lueck, P.E., AICP, Principal
Marcos Esparza, P.E., Senior Associate
Cheryl Rader, Senior Planner/Analyst

July 29, 2005

Table of Contents

List of Exhibits

APPENDIX

Community Profiles
- Benson
- Cochise County
- Pima County

HURF Distribution FY 2004

State Highway System Log Excerpts
- I-10
- SR 90

Recorded Traffic Volumes (CLA)
- Recorded January 2004
- Recorded February, 2003

Florida DOT Capacity Charts
- LOS Worksheet

Right of Way/ Plats

Existing and Future Conditions Socioeconomic Data by Zone

Model Statistics / Travel Characteristics

Existing Conditions Calibration Map

Existing Conditions TAZ Map/Census Blocks Overlay

TAZ Map – Future Conditions (BUILDOUT)
- Alternate 1
- Alternate 2
- Alternate 3

1. Project Overview

Cochise County Highway & Floodplain Department has undertaken this Northwest Cochise County Transportation Study as a sub-regional assessment of existing roadway conditions and future needs within the project study area. The analysis is the first of its kind for this region of the County. It provides recommendations for transportation system improvements in the northwest region of Cochise County. The study also provides a framework for addressing the impacts of proposed land development within the study region.

The purpose of this report is to identify a transportation system, and its elements, that will be needed to accommodate the anticipated future development in the northwest Cochise County study area described in this report.

The study covers a 36 square mile area between the Pima/Cochise County line, State Route 90, one mile north of I-10, and south to the Forest Service boundary. The study examines future roadway options including arterial and collector streets, frontage roads, and freeway improvements.

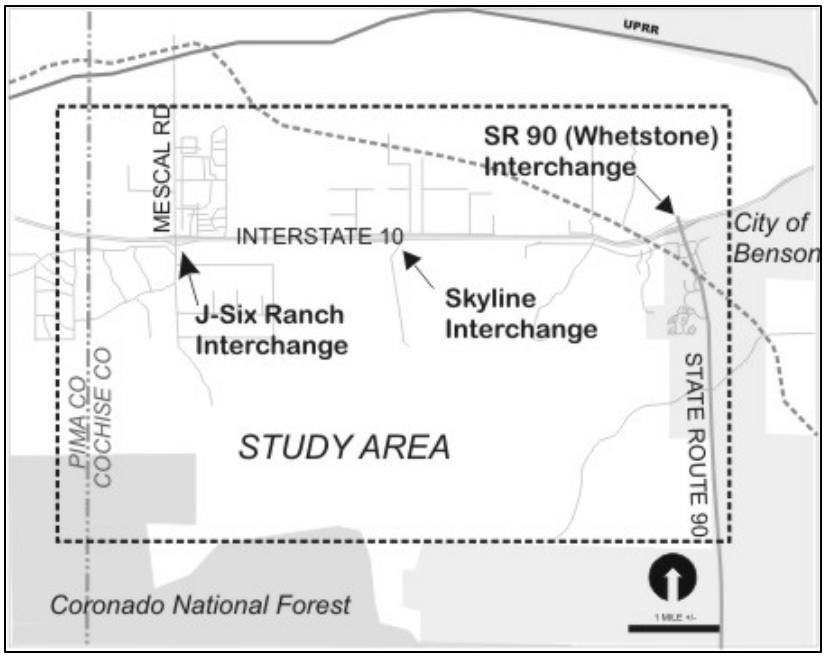
The objectives of this study are to:

- Document existing conditions in the project area;
- Inventory land uses and transportation plans and programs;
- Prepare a travel demand model for the study area;
- Evaluate alternative improvements and recommend a preferred alternative;
- Provide a transportation infrastructure and phasing plan;
- Coordinate with the Arizona Department of Transportation, Southeastern Arizona Governments Organization (SEAGO) the City of Benson, Pima County, Pima Association of Governments, and US Forest Service;
- Involve the public through two open house meetings and a study session;
- Prepare a final report for future use by Cochise County and other affected jurisdictions, and
- Summarize socioeconomic data, the results of analyses and mapping in a clear format to provide reviewers and users with useful illustrations of sufficient size for clarity and understanding.

Study Area

Exhibit 1, here and on the report cover, illustrates the project location in northwest Cochise County. The eastern boundary is within the incorporated City of Benson. The area is mostly rural, but includes commercial development at the SR 90 interchange, the Benson Municipal Airport, a community college campus, and motorist services. I-10 is the only continuous east-west corridor in the study area. There are no continuous north-south corridors through the area because SR 90 terminates at I-10.

Exhibit 1 Study Area



Project Setting

Benson, with a population of about 5,000, is on the eastern section of the study area. The Community Profile for this municipality is provided in the appendix. Tourist accommodations and freeway services have recently evolved in the vicinity of the State Route 90/I-10 traffic interchange mainly because of the opening of Kartchner Caverns State Park about 8 mile south of I10 on SR 90. Other than I10, this area currently experiences the heaviest traffic volumes within the project area. A motel, fast food restaurants, gas stations and truck stops are located on the south side of I-10 at the interchange.

According to the Arizona Department of Commerce, the year 2002 Cochise County population was 121,040, and the Year 2002 labor force was 42,149 persons. The major industries in the county are service, retail trade and construction. Cochise County is also an important agricultural area. For all of Cochise County, individual and corporate ownership account for 40 percent of the land; the state of Arizona, 34.6 percent; the U.S. Forest Service and Bureau of Land Management, 22.2 percent; and other public lands comprise the remaining 3.2 percent. The Cochise County seat is located in the Town of Bisbee, located approximately 50 miles south of the project limit.

Specific demographic data for the study area were determined based on year 2000 census block data. The data shows about 1,700 people in the study area, and based on a 2.3 percent county-wide population growth rate, the current (2004) population estimate is about 1,900 people.

The western limit of the study area is the Pima County/Cochise County line. On the Pima County side of the county line, the land is designated as Medium Intensity Rural (MIR) in the Pima County Comprehensive Plan. On the Cochise County side of the county line, the Cochise County Comprehensive Plan identifies the area as Rural Residential. The western section of the study area is now mostly undeveloped or low density residential.

The Tucson metropolitan area is about 30 miles west of the study limits. Tucson is fast growing. With almost a half million residents, it has major employment in the manufacturing, government, and tourism sectors. Tucson was the nation's 34th largest city in 1990 and the 30th largest in 2000. The Tucson Metropolitan Statistical Area, which includes eastern Pima County, has almost 1 million people and is the 57th largest MSA in the country. Many future residents will be drawn to the study area because it its proximity to Tucson. Newcomers will rely mainly on Tucson and Sierra Vista for jobs and services until they are provided within the area.

The northern limit includes a portion of the community of Mescal, north of the J-Six Ranch traffic interchange. The community of Mescal is the home of Old Tucson's second movie set location, located approximately 5 miles north of I-10. South of the movie set location are residential parcels with single family residences including mobile homes. An abandoned Southern Pacific Railroad bed lies roughly parallel to I-10 along the northern limit of the project area. The abandoned rail grade crosses SR 90 approximately ½ mile north of the I-10 interchange.

The southern limit of the study area is the northern boundary of a portion of the Coronado National Forest. The Sierra Vista Ranger District of the Coronado National Forest contains approximately 310,000 acres including the Huachuca, Patagonia and Whetstone Mountains. This area is a draw for recreational activities including hiking, camping and fishing. The Whetstone Mountains are an isolated range which lies approximately 30 miles north of Sierra Vista. Due to the remote location, rocky terrain and steep slopes, most of the Whetstones remain unreachable by motor vehicle. The USFS would like to see a public access road to the Whetstones.

Exhibit 3 shows the main roads in the area, distances to nearby communities, and roadway ownership.

Exhibit 2 Project Setting

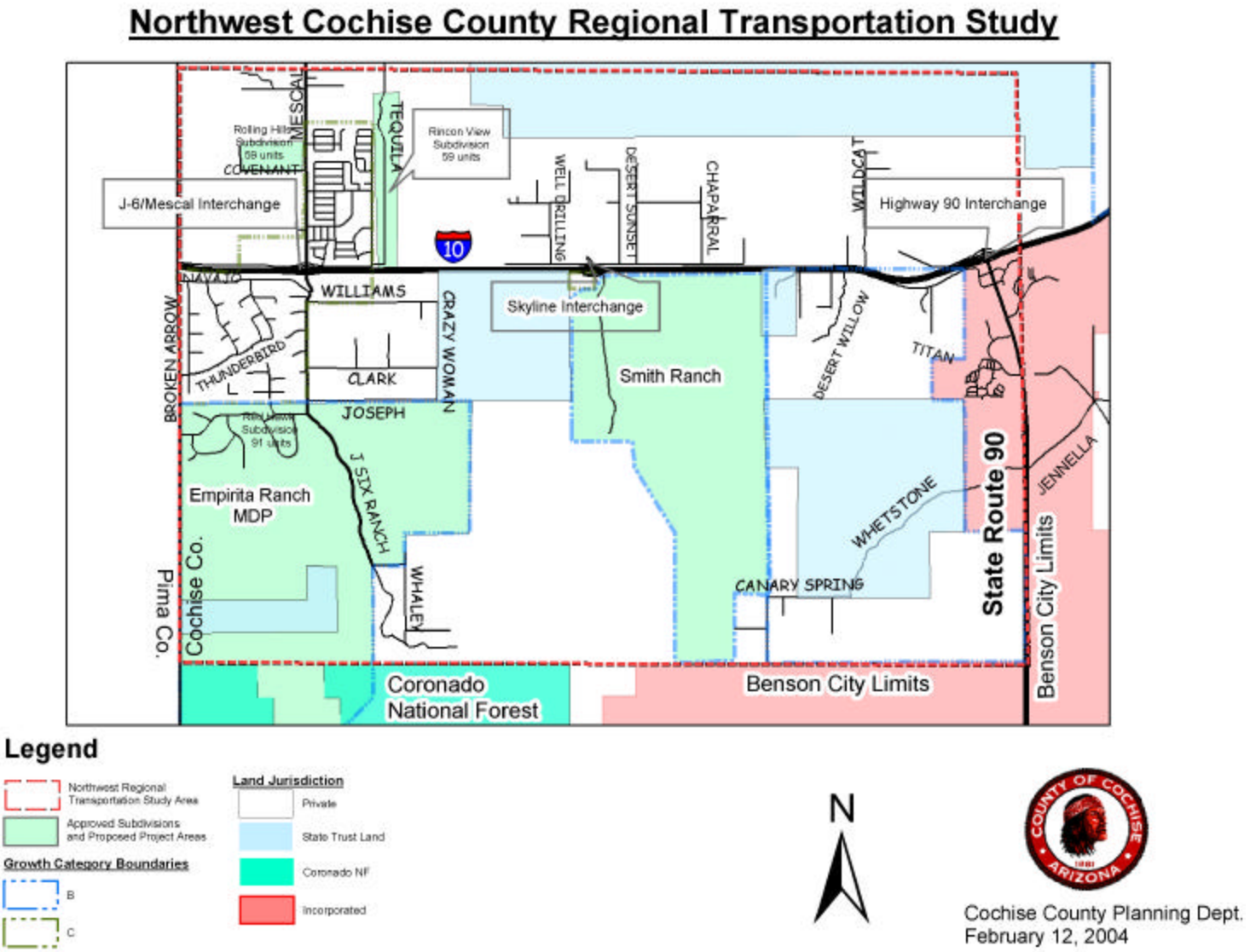
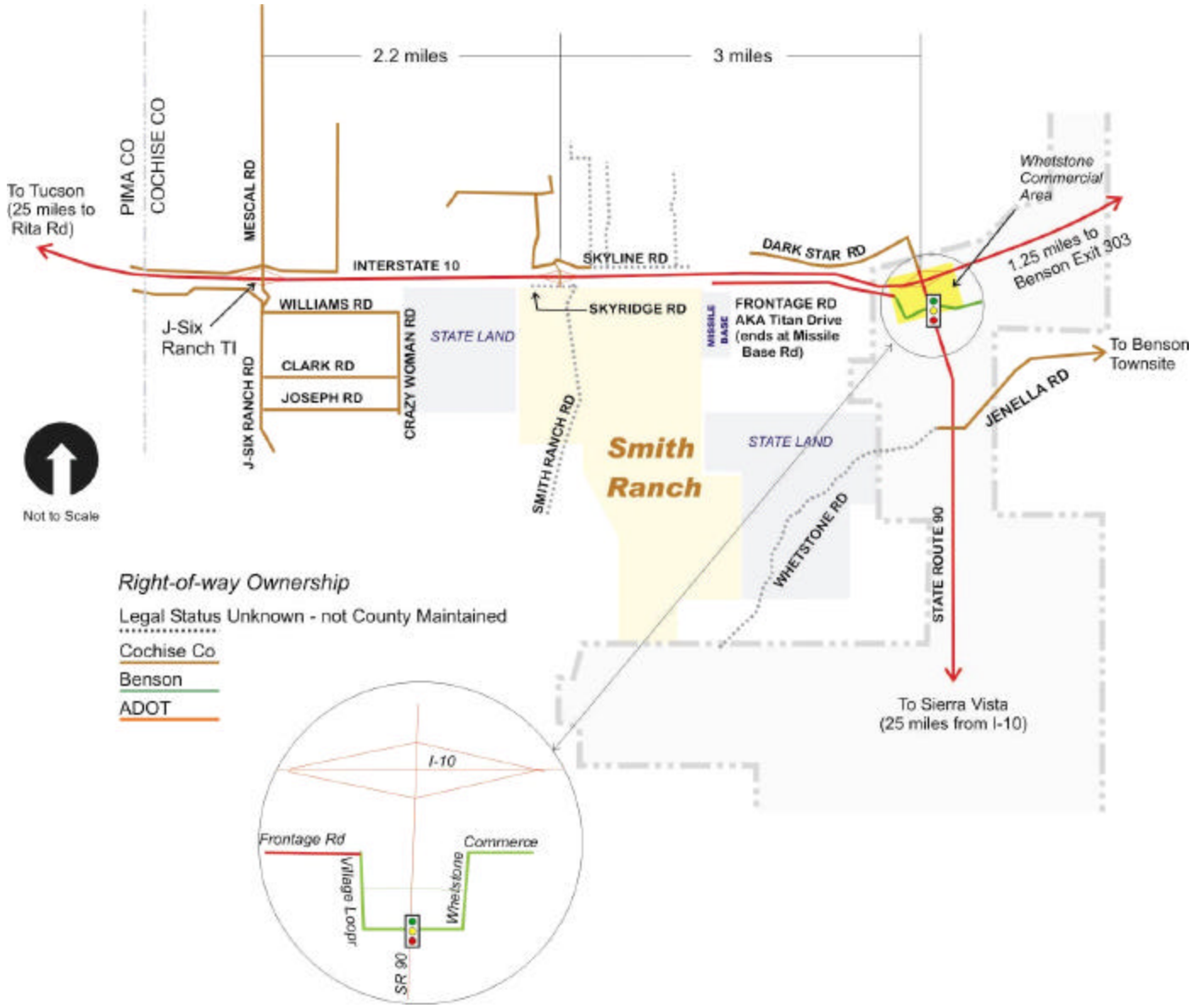


Exhibit 3 Area Roadways



Major Development in the Study Area

There are three master planned developments in the area south of I-10, two of which are approved. The third is now under review. One is on the east, one in the middle, and one on the west side of the area.

Whetstone Ranch is an approved master planned development located along both sides of State Route 90 (SR 90) between Interstate 10 (I-10) on the north and Kartchner Caverns State Park on the south. The entire development contains about 15,500 acres and is planned have about 19,000 homes at completion. The original planning commenced while Whetstone Ranch was in unincorporated Cochise County. It was subsequently annexed into Benson, and the entire site is now within city limits. Traffic reports have been prepared recently for the beginning phase of the development.

The center of the Northwest Cochise County study area includes the proposed 2,120 acre ***Smith Ranch*** project site, which is also shown in Exhibit 2. A traffic report for the Smith Ranch Master Development Plan was submitted to Cochise County by Benson Land Investor, LLC in July 2004. That report recommends phasing of access improvements to the Smith Ranch development, including the improvement of the Skyline interchange ramps, and potential access from the J-Six interchange and existing county roads.

The ***Empirita Ranch*** master planned development straddles the county line, which is a main reason why Pima County is a participant in this study. Both Cochise County and Pima County approved the development. Pima County voters recently approved open space acquisition bonds, including a project to rehabilitate historic buildings on the ranch. Land swaps to preserve open space are also contemplated.

Related Studies

Although this is the first transportation planning study for the area, there are numerous plans, reports, and resource documents including but not limited to the following:

- Cochise County Comprehensive Plan
- Benson General Plan
- Smith Ranch Master Development Plan Traffic Report
- Statewide Freeway Interchange Improvement Prioritization
- ADOT Transportation Improvement Program
- I-10 Corridor Study, I-19 to Cochise/Pima County Line
- ADOT Vision 21 (Ongoing)
- Benson Small Area Transportation Study (Ongoing)

These documents are hereby incorporated by reference.

2. Existing Transportation System

Study Area Roadways

Benson originated as a transportation hub in the late 1800's, although the pony express, stage coaches, and steam engines are long gone. The existing transportation system in the study area is predominately public roadways. There are no public transit services, although Amtrak provides infrequent long haul passenger service from Benson. This service does not accommodate commuter travel to Tucson.[1]

Interstate 10 and State Route 90 are the primary arterials in the area. I-10 begins on the west coast and continues to Florida. It is a major interstate and international trucking route, and it is common for I-10 to have more than 40% heavy trucks in the traffic stream.

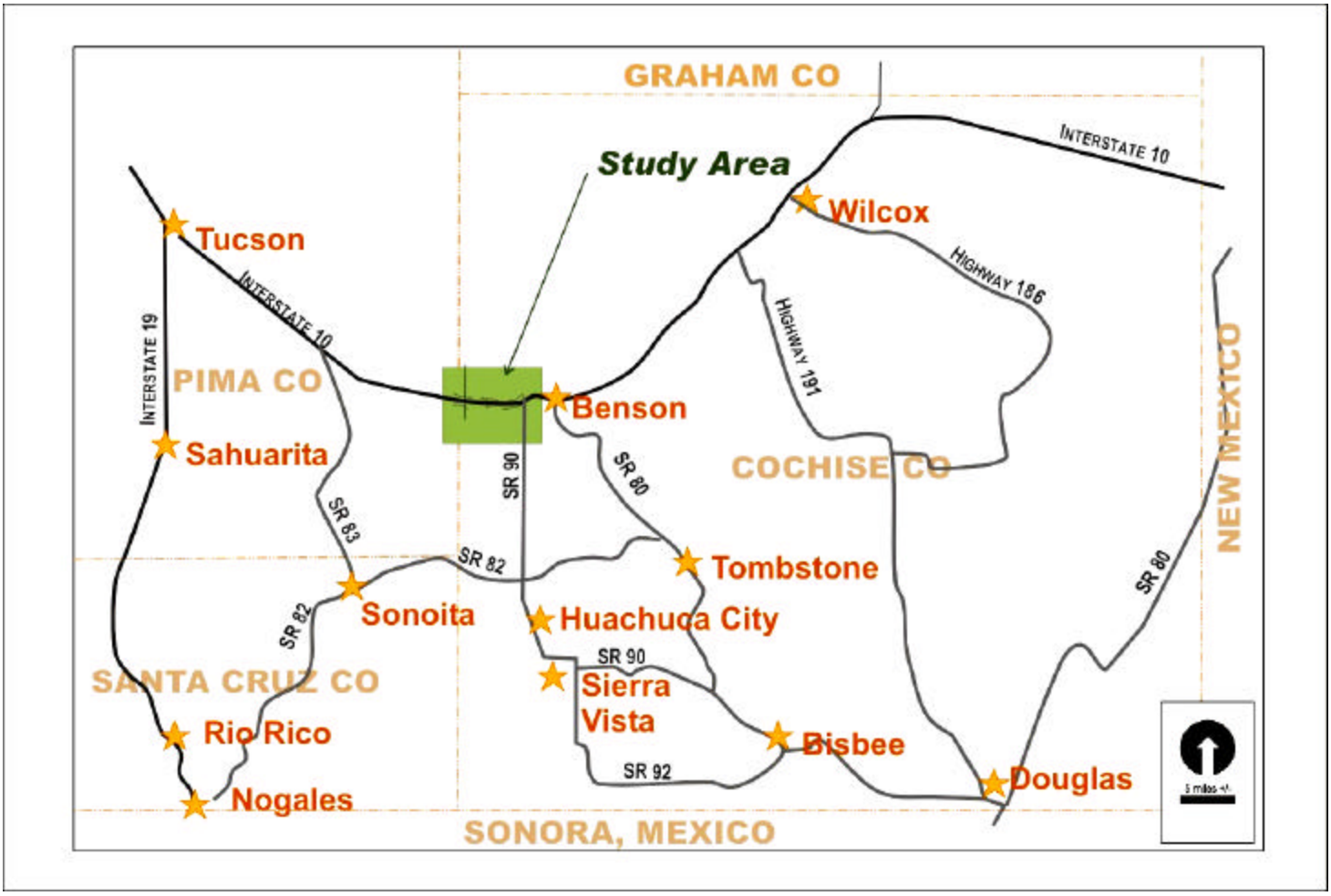
The regional and state highway system emanating from Benson makes it a gateway to southeastern Arizona. U.S. Highway 80 and State Route 90 originate in Benson and extend south to the principal cities of Cochise County. These highways also provide access to many of the tourist attractions of southeastern Arizona.

The Union Pacific Railroad's main line extends through the City of Benson allowing for the shipment of materials and products by rail. The line extends east to El Paso and beyond and west to Tucson, Phoenix, Los Angeles, and San Francisco. In conjunction with I-10, the study area is traversed by two major freight corridors.

Exhibit 4 shows the major roadways in the area. Alternatives for east-west travel in the I-10 corridor are non existent. If the freeway needs to be closed due to a crash or for other reasons, there would be a detour about 65 miles long, using SR 82. Since there are no alternative routes, bicycles are allowed to use the shoulder of I-10, which is neither safe nor desirable.

[1] The Sunset Limited departs Benson westbound at 6:53 PM on T, Th, and Sat. Eastbound departures are M, Th, and Sat at 9:37 AM. The round trip fare to Tucson is about $20.

Exhibit 4 Regional Map



Description of Existing Routes

Freeway, Traffic Interchanges, and Frontage Roads

Interstate 10

Interstate 10 is a federal facility operated and maintained by ADOT using federally allocated funds. It is a four-lane facility extending through Cochise County with two 12-foot travel lanes in each direction and a 76-foot-wide median. Within the project area the Federal Highways Administration (FHWA) classifies I-10 as a "Rural Principal Interstate."

There are three freeway interchanges within the project study area, the Mescal/J-Six Ranch TI, the Skyline TI, and the SR 90 (Whetstone) TI. The J-Six Ranch TI is located one mile east of the Pima County Line, and 2.2 miles west of Skyline Road. The SR 90/Whetstone TI is located 3 miles east of the Skyline TI. There are no continuous frontage roads connecting any of these three interchanges.

The 2002 recorded average annual daily traffic (AADT) along the project area of I-10 varied from 27,000 vehicles per day (vpd) to 33,000 vpd with a capacity of about 62,600. The posted speed limit along this rural section is 75 mph.

SR 90 (Whetstone) Traffic Interchange

The Whetstone Traffic Interchange is located at milepost 302.39, about three miles east of the Skyline Traffic Interchange. The only access to this interchange from Smith Ranch currently is via I-10.

The interchange connects to SR 90 to provide access to the Kartchner Caverns State Park, about eight miles south of the interchange and to Sierra Vista, about 25 miles south. The ramps are stop-controlled at SR 90 with an exclusive right-turn lane on the eastbound off-ramp and on northbound SR 90 at the eastbound on-ramp.

There is an estimated 18,000 vehicles per day total on all four ramps at this interchange, according to recent data recorded by CLA, with an approximate capacity for more than 32,000 vehicles per day.

The design of this interchange, along with the alignment of the I-10 mainline is problematic, and ADOT has begun to plan and program improvements. The interchange is sufficient for current traffic volumes, but it will need to be reconstructed eventually to

accommodate the commercial development just south of I-10 and all of the anticipated development in the Benson and Sierra Vista areas.

Skyline Traffic Interchange (MP 299.35)

The Skyline traffic interchange provides the sole paved vehicular access to properties to the north and south. Smith Ranch property is also accessed from this rural interchange, which was constructed in 1961 to serve the surrounding ranches. The single-lane underpass is a 14-foot +/- wide concrete box culvert with 14ft -2in vertical clearance. The on- and off-ramps are short and steep, and merge lanes on the mainline are short in both directions.

Traffic signs indicating "one lane tunnel" and "sound horn" are posted on each side of the box structure. The sound horn sign is placed apparently due to the restricted sight distances for vehicles turning from the ramps into the culvert to provide auditory warning of an approaching vehicle. There is no assignment of right-of-way at the underpass (stop or yield signs) and so the basic right-of-way rule applies. This interchange clearly does not meet contemporary design standards.

In recent years, the property north of the freeway has been divided into smaller parcels and, according to the 2000 census there are about 40 homes located on the north side of I-10 that use this interchange. Its capacity is constrained by the one lane box structure, and cannot be estimated with current analytical tools because of this unique configuration. Recent ramp counts show that about 300 vehicles per day travel through the single lane box structure.

ADOT's statewide inventory of interchanges describes this interchange as being structurally and operationally deficient.[2]

J-Six Ranch TI (MP 297.17)

The J-Six Ranch TI provides access from I-10 to the community of Mescal and several large ranches on the north, and to J-Six Ranch Road south of I-10. ADOT's

[2] *Traffic Interchange Improvement Prioritization Process Update, Lima and Associates, October 1999*.

interchange prioritization report, cited earlier, shows this interchange as 24th. The interim improvements recommend in the study have already been implemented by ADOT. The TI was recently improved by ADOT to include a cantilever pedestrian walkway on the east side of J-Six Ranch Road. Additional improvements have been recommended to mitigate sight distance issues on J-Six Ranch Road at the TI, and to lengthen merging areas onto I-10 from the on-ramps. The two-lane overpass is the main capacity constraint, and the two-way frontage roads result in intersections closely spaced with the ramps, posing operational constraints.

Exit 300 – US Air Force Exit Ramp

Until recently, an exit ramp was located at milepost 300 to allow access to a Titan II missile site. Military traffic from the site used the frontage road (also called Titan Road) to return to Davis-Monthan Air Force Base in Tucson. The Air Force decommissioned the site in the early 1980's, sold the land it was on, and the off ramp was recently removed by ADOT.

I-10 Frontage Roads

Several roads act as discontinuous frontage roads to I-10 within the project area. Some of them are located within the ADOT right of way, and some are not. Most of them provide the only vehicular access to homes and vacant land in the area.

At the J-Six Ranch/Mescal Interchange, there is an existing frontage road north of I-10.. It is a two-lane, two-way roadway with a posted speed limit of 50 mph. The roadway provides access to commercial uses near the interchange and local streets along the route.

West of this interchange, the frontage road continues approximately 2/3-mile. The frontage road becomes the Benson Highway west of the Pima County line and continues west to Empire Road where it ends. The west end of the frontage road provides access to several properties west of the County Line, in Pima County. East of the J-Six Ranch interchange the frontage road continues ½ mile east where it ends at Cherokee Trail, also providing access to residential parcels in the area.

A jurisdictional transfer to Cochise County is underway, pending concurrence by the Cochise County Board of Supervisors and pavement rehabilitation by ADOT. There are no frontage roads connecting to J-Six Ranch Road on the south side of I-10.

On the north side of the Skyline Road TI, Skyline Road parallels I-10 for ¾ mile west of the interchange and approximately 3 miles east of the interchange. This frontage road is outside the ADOT right of way and provides access to residential parcels north of I-10.

The City of Benson General Plan shows an extension of Whetstone Commerce Drive, a roadway on the east side of SR 90 near Gas City, to intersect with 4th Avenue (SR 80) just south of the Benson TI about one and one-quarter miles east of SR 90.

On the north side of I-10, SR 90 turns into Dark Star Road and curves to the west. It ends approximately 2.5 miles west of the I-10/SR 90 TI. A paved two-lane roadway, it provides access to Spear Ranch Road and few residential lots. A small farm products store is located at the end of Dark Star Road. On the east side of SR 90, north of I-10, a very short frontage road provides access to a private residence.

Titan Road

Titan Road is the existing two-lane, two-way frontage road south of I-10 from State Route 90 to the west. The easternmost segment of the roadway is a City of Benson street, and the rest is owned by ADOT. ADOT has proposed a possible jurisdictional transfer of the frontage road to the City and Cochise County.

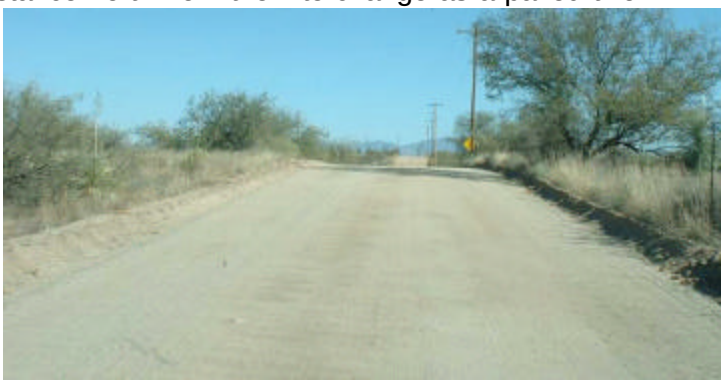
Titan Road currently ends at the entrance to a decommissioned Titan 2 missile site. As mentioned, until recently there was a slip ramp to I-10 that served the missile site. Just west of SR 90 it connects to Village Loop, a city street that extends south and then east to intersect with SR 90 at a signalized intersection. The Village Loop is also a two-way, two-lane roadway.

Looking north along Village Loop to intersection with Titan Road

Recent traffic counts show current average daily traffic on the frontage road west of Village Loop at 160 vehicles per day and about 1300 vpd on Village Loop west of SR 90.

Skyline Road

This road extends a short distance north from the interchange as a paved two-lane roadway. On the north side of I-10, the roadway continues in an east-west alignment parallel to I-10 as an unpaved road providing access to about 40 homes in the area. The road ends about one mile east and about one-quarter mile west of the interchange. There is also a church and a USPS gang mailbox at the northwest quadrant of the Skyline interchange.



Looking east along Skyline Rd on north side of I-10

Skyridge Road

Looking east along Skyridge Rd on south side of I-10

On the south side of the Skyline Road TI, Skyridge Road is a short ¼ mile segment of "frontage road" that parallels I-10 on the south and is the connection between Smith Ranch on the east and the Benson Equipment Rental yard on the west. Upon inspection, it appears to be an ADOT facility, however it may be Cochise County's based on the (1) street name sign and the (2) lack of reference as a state facility in ADOT's system log. Cochise County staff state it is not a county road, and the street sign may be placed for addressing reasons only. Based on existing roadway as-builts, it appears that ADOT has jurisdiction up to the location of the cattle guards. Since this issue needs to be further clarified, and since the road appears to be within ADOT's right of way fence, we assume that it remains an ADOT facility. There is also documentation that this road and portions of I-10 are in an easement versus dedicated right-of-way.

State, County and City Arterials

State Route 90

SR 90 is a state highway that extends from I-10 on the north to Sierra Vista and then east from Sierra Vista to SR 80 near Bisbee. It is a four-lane, divided roadway from south of I-10 to SR 82 with a 300-foot right of way, where it continues through Sierra Vista as a four-lane, undivided roadway. Within the project area the Federal Highway Administration (FHWA) classifies I-10 as a "Rural Principal Other" roadway. There is a short section of raised median through the commercial area at the Whetstone traffic interchange (inside the Benson city limits).

The road is paved with rubberized asphalt that provides an exceptionally smooth and quiet surface. South of the commercial area near I-10, left-turn bays are provided at the existing median openings with a storage length of about 550 feet. It has a broad median to accommodate future roadway widening. Left turning traffic has stop control in the median.

SR 90 also provides access to Fort Huachuca and Kartchner Caverns State Park.

J-Six Road, looking north from Williams Road area

Mescal Road/J-Six Ranch Road

This county roadway is a two-lane major north-south collector that changes names at the I-10 corridor. ***Mescal Road*** continues north from the I-10 interchange, crossing the Southern Pacific Railroad tracks and north toward the Rincon Mountains. This road serves a low density rural residential area between the railroad tracks and I-10 and recreational activities toward the north. It has a posted speed of 50 mph. This road also provides access to a western movie town set location.

J-Six Ranch Road extends from the Mescal Road interchange to Deer Run Road, about three miles south. J-Six is a two-lane roadway, with a 15-mph reverse curve just south of the interchange. It serves large lot rural residential areas, and is intersected

by Williams, Clark, and Joseph Road, which extend east of J-Six to tie into Crazy Woman Road adjacent to state lands.

Williams, Clark, Joseph, Crazy Woman and Navajo Trail

These five roads are all low volume east-west County rural local streets, except for Crazy Woman Road which is on a north-south alignment. All are paved (chip seal) two-lane roads with unimproved shoulders, and none can be considered all-weather access. Each is posted as 25 mph except Navajo Trail (35 mph). Joseph Road abuts private land on the south.

Navajo Trail continues west from J-Six Ranch Road into Pima County and ends within the Empirita Ranch area.

Joseph Road, looking west from Crazy Woman.

Whetstone Road

This roadway is located on state land west of SR 90, about 1.5 miles south of I-10. It aligns with Jenella Road at a full median opening in SR 90 and extends in a southwesterly direction to connect to Canary Springs Road, a dedicated county roadway located southwest of the state trust land. There are about seven homes in that area according to the 2000 census.

We contacted the State Land Department and Cochise County Right-of-Way Department to try and determine what the legal status of this road is and were not able to find a dedicated public right-of-way.

The only road access is a state lease to Qwest in addition to a transmission line easement. According to County staff, the road may be considered a public right-of-way by virtue of ARS 28-7041 or ARS 28-7042 as described below.

Major Intersections

All of the intersections in the study area are unsignalized and controlled by either stop signs or right-of-way rule. The exception is the Village Loop/SR 90 intersection. This intersection, shown in the photo below, has a simple three-phase operation with permissive/protected left turn phasing for traffic on SR 90. Left turns on Village Loop are permitted during the single east-west phase. Right-turn on red in permitted on all four approaches, and pedestrian activation (call buttons) are present.

Eastbound approach of the Village Loop/SR 90 signalized intersection

SAFETY ISSUES

Traffic accident data was obtained from ADOT's Phoenix staff for ADOT facilities between milepost 298 and 302. In the three-year period of October 1, 1999 through September 30, 2002 there have been four accidents at the Skyline interchange and three on the (south) frontage road east of the project site. There have been an inordinately high number of accidents (111) on the mainline. The data are summarized below.

Skyline Interchange

- 1 accident SB on the crossing at the intersection with the WB ramps - Single Vehicle Accident, roadway under construction, wet surface, 10:45 at night - Violation - speed too fast for conditions.
- 1 accident on the WB Off Ramp at the crossing: two-vehicle angle accident - The violation was "running a stop sign"
- 2 accidents on the EB On Ramp (towards Benson): 1 was a semi on fire (single vehicle); and the other was an unusual two-car accident (It appears one vehicle was rolling backwards on the ramp) - violation is listed as "other"

Frontage Road Between SR 90 and Old Missile Base Road

- 1 Single Vehicle Accident –listed as "speed too fast for conditions"
- 1 single Vehicle Accident – Vehicle overturned; no violation listed
- 1 rear-end accident – violation listed as "speed too fast for conditions"

Whetstone TI

- 9 accidents on the EB Off Ramp
- 4 accidents on the EB On Ramp
- 1 accident on the WB Off Ramp
- 2 accidents on the WB On Ramp
- 1 accident on the crossing

I-10 Mainline

- A total of 111 accidents were reported
- 63% were single vehicle accidents
- 18% were sideswipe accidents (same direction)
- 12% were rear-end accidents
- There were a total of 4 fatalities

Alternate Modes

There are no existing sidewalks on any of the study area roadways, except on the Mescal interchange overpass, and the built up areas of Benson. SR 90 is considered a bikeable route on the ADOT system maps due to its paved shoulders. There are no other bike routes posted in the area at this time. Bicycles are allowed to use I-10 shoulders due to the lack of continuous frontage roads or parallel surface streets.

There is no public transit service available. Catholic Social Service provides limited transportation services through local vans and mini-buses to hospitals, nutrition centers and shopping. This service is provided through Local Transportation Assistance Fund (LTAF II) funding.

Rail passenger service is available via Amtrak's Sunset Limited line from the Benson station. The train operates three times per week in each direction. However service may someday be eliminated due to ongoing Amtrak budget problems.

Analysis of Existing Conditions

Existing Traffic Volumes and Levels of Service

Currently, all of the roads and intersections in the study area perform acceptably according to our analysis. Performance of study area roads was evaluated under existing conditions based on Florida Department of Transportation (FDOT) assessment methods[3], which are widely used for planning applications. [4] The FDOT methods are based on the most recent version of the *Highway Capacity Manual*. Estimated capacities for the different roadway types based on the FDOT criteria are shown below in Exhibit 5 for both Level of Service (LOS) C and LOS D conditions.

Level of service is a qualitative description of how well a facility (roadway, intersection, ramp junction, etc.) operates under prevailing traffic conditions. A grading system of A through F, similar to academic grades, is used to assess the operational performance of the facility. LOS A represents free-flowing traffic, whereas LOS F is forced flow and extreme congestion. In rural areas, LOS C is the general standard for

[3] This discussion applies to roadway segments only; intersections are analyzed with HCS operational methods.
[4] Florida is recognized nationally as a trendsetter in transportation planning, access management, and traffic engineering in high growth areas. Unlike Florida, ADOT has not yet adopted its own analytical methods for development projects.

acceptable roadway performance, and LOS D is generally considered acceptable for peak period intersection operations. For roadways in areas transitioning from rural, such as the Smith Ranch area, LOS D may be considered acceptable for peak periods.

The FDOT assessment methods apply level of service standards from the Highway Capacity Manual for freeways and highways based on criteria such as density, volume to capacity ratios and free-flow speeds. There are a limited number of assessment tools for estimating daily level of service on roadways. FDOT assessment methods have been applied throughout the country by state and local agencies for estimating roadway performance. The LOS standards and assessment methods are available online at www.dot.state.fl.us/planning/.

Arizona and Florida have similar driver populations with many older drivers and tourists. The two states also have similar growth trends, development patterns, and economies. In addition, both Arizona and Florida have military facilities which in Arizona include Fort Huachuca, a military base accessed in part by SR 90. Based on this, it is reasonable to apply the FDOT assessment methods on Arizona roadways.

Exhibit 5 FDOT LOS C and D Criteria for Roadway Types within the Study Area

Facility Type	LOS C Daily Capacity	LOS D Daily Capacity
Freeway (4 Lanes)	52,500	62,200
State Two-Way Arterials (4 Lane Divided, Class 1*)	32,800	34,200
Non-State Roadway (2 Lane Undivided, no Left Turn Lanes)	5,600	10,880

*Class 1 arterials have >0.00 to 1.99 signalized intersections per mile

We recorded roadway volumes in the study area in 2003 and 2004. Daily volumes for I-10 are ADOT data from 2002. Exhibit 6 shows the recorded average weekday volumes, as well as other roadway data including levels of service, for the roadways in the Phase 1 study area. The area roadways currently operate at LOS C or better. Capacity at LOS C and D is derived from FDOT Generalized Annual Average Daily Volumes for Areas Transitioning into Urbanized Area, FDOT Level of Service Handbook. A copy of the table from the handbook is provided in the appendix.

Exhibit 6 Existing Roadway Traffic Data Inventory

Roadway	*Segment*	*Existing Daily Traffic Count*	*Source*	*Year*	*No. Lanes*	*Speed Limit (mph)*	*Daily Capacity (LOS C)*	*Daily Capacity (LOS D)*	*LOS*	*Right-of-Way*
Titan Road										
	West end to Village Loop	160	CLA	2004	2	25-50*	5,600	10,880	C	In I-10 R/W
Village Loop Road										
	Titan Road to SR 90	1,300	CLA	2004	2	25	7,000	13,600	C	50 est
State Route 90										
	North of Village Loop	18,900	CLA	2004	4	35	24,400	30,600	C	300
	South of Village Loop	8,600	CLA	2004	4	55	24,400	30,600	C	300
Mescal Road										
	SPRR Railroad to I-10	1,350	CLA	2003	2	50	5,600	10,880	C	50 FT
J-Six Ranch Road										
	I-10 to Deer Run	2,350	CLA	2003	2	15-25	5,600	10,880	C	50 FT
Williams Road										
	J-Six Ranch Rd to Crazy Woman Rd	180	CLA	2003	2	25	3,520	7,520	C	50 FT
Clark Road										
	J-Six Ranch Rd to Crazy Woman Rd	160	CLA	2003	2	25	3,520	7,520	C	50 FT
Joseph Road										
	J-Six Ranch Rd to Crazy Woman Rd	100	CLA	2003	2	25	3,520	7,520	C	50 FT***
Navajo Trail										
	West of J-Six Ranch Rd	1,230	CLA	2003	2	35	4,620	9,870	C	80 FT
Skyline Road										
	at I-10	280	CLA	2003	2	NP	3,520	7,520	C	ADOT
Whetstone Road										
	East of SR 90	100	EST	current	2	NP	1,000*	1,000*	A	80
Dark Star Road										
	SR 90 to East End	160	CLA	2003	2	NP	3,520	7,520	C	ADOT
Interstate 10										
	Pima County Line to J-Six Ranch Rd	27,400	ADOT	2002	4	75	52,500	62,200	B	300
	J-Six Ranch Rd to Skyline TI	28,500	ADOT	2002	4	75	52,500	62,200	B	300
	Skyline TI to SR 90	33,000	ADOT	2002	4	75	52,500	62,200	B	300
	East of SR 90	19,900	ADOT	2002	4	75	52,500	62,200	B	300
Frontage Rd (Benson Hwy)										
	Cherokee Trail to Mescal Rd	1,750	ADOT	2002	2	50	4,000	9,440	C	ADOT
	Mescal Rd to Pima County Line	1,000	EST	current	2	50	4,000	9,440	C	ADOT
Skyridge Road										
	Smith Ranch to Equipment Yard	50	EST	current	2	NP	3,520	7,520	C	ADOT esmt

** - This roadway is posted at 25 mph in the westbound (dead end) direction and 50 mph in the eastbound direction at the westernmost section.*

***- Estimate of capacity for unpaved 2-lane local roadway.*

**** Some sections of Joseph Road have no recorded right-of-way*

Ramp Volumes

We also recorded ramp volumes on the study area I-10 ramps in 2003 and 2004. Exhibit 7 shows the average weekday ramp volumes for the three project area I-10 interchanges.

Exhibit 7 Existing I-10 Ramps Daily Volumes

Ramp Volumes - Daily (Highest Peak Hour)

Interchange	EB ON	EB OFF	WB ON	WB OFF	**Year of Count**
J-Six/Mescal	1,250 (150)	1,000 (120)	850 (95)	1,450 (130)	2003
Skyline	202 (17)	165 (20)	131 (14)	175 (21)	2004
SR 90	3,835 (294)	5,149 (375)	5,482 (481)	3,287 (266)	2004

SR 90/Village Loop Intersection

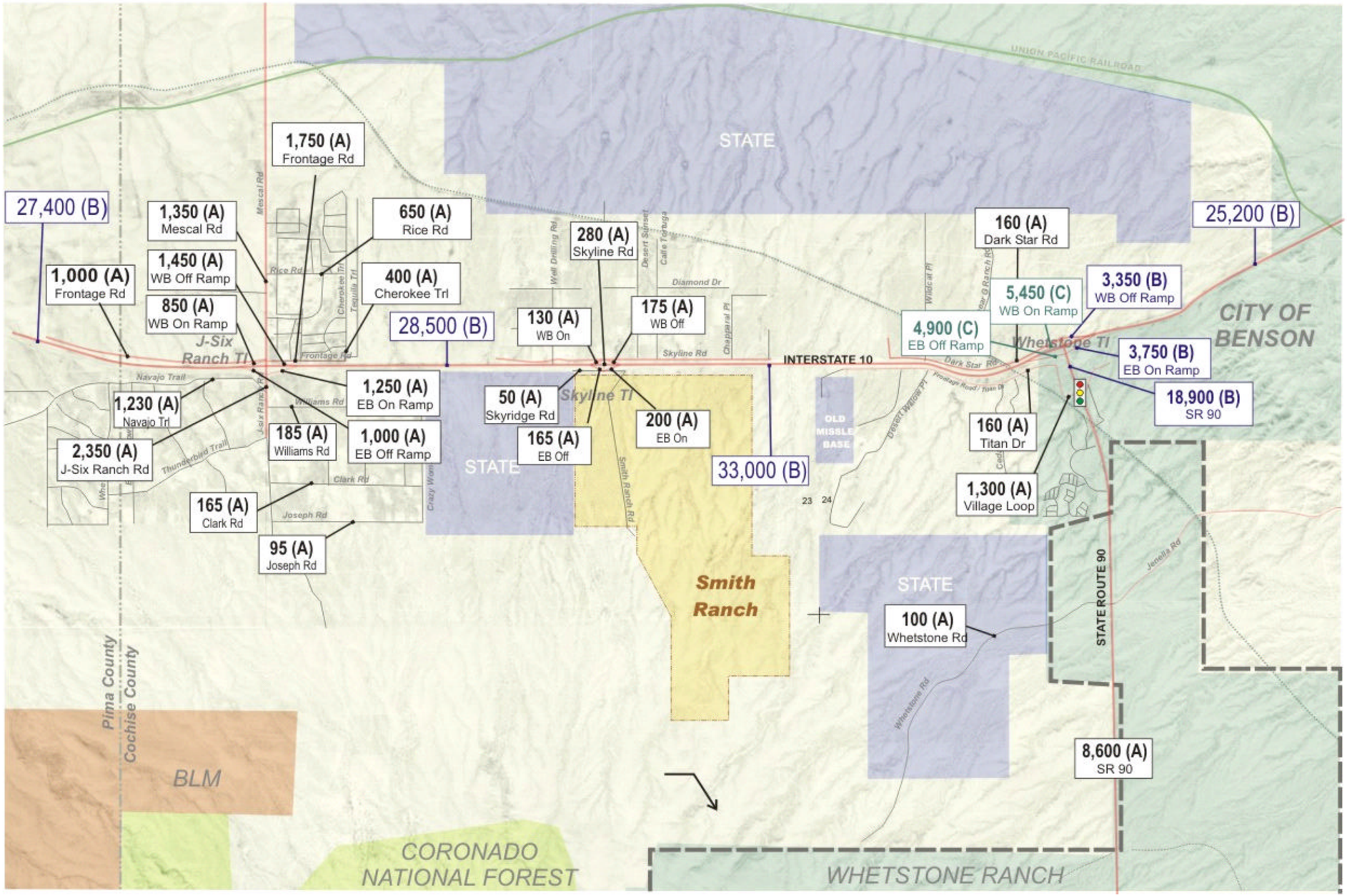
As shown in Exhibit 8, the existing performance at the intersection is LOS A with an average intersection delay of 9.7 seconds/vehicle in the AM peak hour and LOS B with an average delay of 10.2 seconds/vehicle in the PM peak hour. All of the approaches operate at LOS C or better during both periods. The current Highway Capacity Software methodology for analyzing signalized intersections was applied to estimate delay and LOS.

Exhibit 8 Existing Intersection Level of Service at Village Loop/SR 90

	EB Approach LOS/Delay (sec)	WB Approach LOS/Delay (sec)	NB Approach LOS/Delay (sec)	SB Approach LOS/Delay (sec)	Intersection LOS/Delay (sec)
AM Pk Hr	C/24.3	C/21.9	A/8.0	A/6.8	**A/9.7**
PM Pk Hr	C/25.1	C/22.3	A/8.4	A/6.9	**B/10.2**

Exhibit 9 on the next page summarizes traffic volumes and levels of service in the study area on a map.

Exhibit 9 Summary of Volumes and LOS



Future Rights-of-Way and Development Standards

Cochise County and Benson have adopted right-of-way standards for various roadway classifications. Cochise County has published roadway design standards based on MCDOT standards. The following information is from the *Cochise County Subdivision Regulations* – Article 4, General Requirements and from *Road Construction Standards for Public Improvements,* Section D – Cochise County Road Cross Sections and Other Details.

Street Class	***R/W width***	***Roadway Surface (Minimum)***	***Roadway Surface (With L/T)***	***Curb/Gutter Sidewalk****
Arterial	150	68		Yes (C)
Rural Major Collector	100	38	48	If required per (D)
Urban Major Collector	80	52	52	If required per (B)
Rural Minor Collector (1)	80	28	42	If required per (B)
Rural Minor Collector (2)	80	28		If required per (A) or (D)
Urban Minor Collector	60	40		Yes (RCS)
Rural Local Road (3)	60	24		If required per (D)
Rural Local Road (4)	50	20		If required per (D)
Urban Local Residential	50	32		Yes (RCS)

(1) = ADT is > 2,000
(2) = ADT is < 2,000
(3) = ADT is > 400
(4) = ADT is < 400
RCS = Road Construction Standards

*Section 405.04 Sidewalks, Curbs and Gutters and Other Access

(A) Sidewalks, curbs and gutters are required in all non-residential subdivisions along the front of the buildings and connecting all separate buildings and parking areas

(B) Sidewalks, curbs and gutters are required on local and collector streets for residential subdivisions when the lot size is ½ acre or smaller.

(C) Sidewalks, curbs and gutters are required on streets that are identified or function as arterial streets.

(D) Sidewalks, curbs and gutters are required in residential subdivisions when required by the County Engineer for storm water management and may be required when recommended by a city located within three (3) miles of the subdivision.

City of Benson Subdivision Regulations – Section 16-108, Street Planning

Street Class	***R/W width***	***Roadway Surface***	***Curb/ Gutter***	***Sidewalk***
Major Arterial	110	68	Yes	Yes
Minor Arterial	80	68	Yes	Yes
Major Collector	80	48	Yes	Yes
Minor Collector	60	40	Yes	Yes
Major Local Street	60	32	(1)	(2)
Minor Local Street	50	32	(1)	(2)

(1) Not required where the actual density is less than 1 residence per acre
(2) Not required where the smallest actual lot size is greater than 14,520 sf

ROADWAY IMPROVEMENTS AND PLANNING STUDIES

The study area is mostly in unincorporated Cochise County, close to Benson, and within ADOT's Safford Engineering District. The ADOT District Engineer has the responsibility and authority to champion improvements within the district, and to participate with local jurisdictions on all issues impacting the State Highway System. Traffic engineering support to the district comes from the "Baja Traffic Engineering" staff in Tucson, which also serves the Tucson District.

ADOT Projects

ADOT's proposed projects are identified in the Five-Year Bid Date Report. ADOT proposes to reconstruct the Whetstone interchange to improve vertical clearance at the underpass and to improve the geometry of the mainline. Signalization of the ramp/cross road intersections is also anticipated. This project has not yet been funded for construction.

Last year, ADOT selected an engineering consultant (URS) to conduct a design concept report for I-10 from the I-19 system interchange to the county line. The work began in January 2003, and was expected to take up to 18-months to complete. However, a delay in travel demand modeling at PAG has set back the project's schedule. A DCR includes an inventory of existing conditions, forecasts of future conditions, recommendations for improvements, and preliminary plans for future detailed design projects. The DCR could be extended east to Benson using information from this study as a base.

ADOT'S Safford District Active Project Status Report lists one project within the study area. This is construction of a passing lane on I-10 between SR 90 and Ocotillo TI in Benson. This project is currently scheduled for FY 2006.

PAG Projects

The Pima Association of Governments is undertaking an extensive study of arterial roadways in the area bounded by I-19 on the west, the Sonoita Highway (SR 83) on the east, I-10 and Valencia Road on the north, and Sahuarita Road on the south. The Sonoita Highway is about 17 miles west of Smith Ranch, which shows how the Tucson area is expanding east towards Benson.

Benson and Cochise County Projects

The City of Benson has approved the commission of a "Small Area Transportation Study" in partnership with the Arizona Department of Transportation. This study will typically examine current and future roadway and transit needs in the City's sphere of influence.

The developers of Whetstone Ranch are currently constructing an improved connection of Jenella Road at State Route 90. This connection will eliminate the need for east-west through traffic to pass through the Cochise Community College parking lot. When completed, this improvement will provide a viable alternate connection between SR 90 and SR 80 (Main Street) in Benson. ADOT and the developer of Whetstone Ranch are also proposing a future traffic signal at the intersection of SR 90/Jenella Road.

Cochise County has no programmed improvements in the study area.

3. Future Conditions Analysis

Overview

This study utilizes a computer-based simulation model of travel in the study area rather than the more traditional manual forecasts used for small-scale analysis projects.[5] The model used is QRSII, developed originally for the United States Department of Transportation by AJH Associates. The model has been used widely in Southern Arizona by the City of Sierra Vista, CLA and others. A brief description of the model is provided below. More detailed information about the model is available at http://my.execpc.com/~ajh/index.html and related links. The user manual is also available on the Internet.

The City of Benson recognized a need for traffic forecasts for the circulation element of the Benson General Plan. CLA was commissioned to prepare a model using the QRS II software. After the General Plan was adopted, the Pima Association of Governments began to include the Benson area in its model for eastern Pima County. The Benson model differs from PAG's regional travel demand model in two fundamental ways. First, the Benson model has much more detail within the study area, and can therefore be used for operational as well as planning-level studies. Second, the model has more up to date socio-economic, land use, and roadway network information. The Benson model was then updated and expanded for the Northwest Cochise County Transportation Planning Study. The County also purchased the software and can use the output for future analysis, if desired.

The future conditions models used for this study incorporate proposed and committed land development that have not yet been built, for example Whetstone Ranch, Smith Ranch, and Empirita Ranch are all included, along with commercial developments. It also includes probable land uses consistent with the General Plan and the County's Comprehensive Plan. City and County staff and other project participants provided critical input regarding the future conditions, both for roadway improvements and land use. The land development added to the model is expected to be built within about 30 years, and so the models represent a horizon year of about 2035.

Travel Demand Model

The Quick Response System II (QRSII) for Windows is a computer program for forecasting impacts of urban developments on highway traffic and for forecasting impacts of highway projects on travel patterns. In addition, QRSII has complete transit ridership forecasting capabilities, which are not used in this report. Quick Response System II runs the four-step planning process – trip generation, trip distribution, mode split, traffic assignment – for highway forecasting QRSII has two components - QRSII, the numerical model, and the General Network Editor (GNE).

GNE is a graphical user interface that permits the user to draw a network on the monitor screen, enter verbal descriptions and numerical data about each element of the network, edit the network and its data, compute intermediate results though a series of worksheets, and search for network elements that meet certain criteria. GNE can also be used for displaying results from QRSII. All data for QRSII are entered through GNE.

Roadway Network

QRSII uses networks, nodes, and links to describe the transportation system and land use setting. The highway system is described by a network. A network consists mainly of representations of streets and intersections. Streets are shown as links.

Intersections are shown as nodes. Streets and intersections have attributes that are important to QRSII such as the number of lanes and travel speed.

Traffic Analysis Zones

Traffic analysis zones, or TAZ's, are geographical subdivisions of the modeled area that contain a centroid, which is a node that contains socioeconomic data, such as the number of homes and employees within the TAZ. The centroid is connected to the roadway network with centroid connectors. A detailed model, such as the one used for this study will generally include roadways down to the local collector street serving a subdivision, but not the local access streets. The centroid is usually connected to the lowest level streets serving the TAZ. The model then distributes this traffic to the hierarchy of the roadway network to distribute trips between dwellings, and commercial and employment centers.

Maps are provided in the appendixes that identify the TAZ boundaries, socioeconomics, and the connections to the roadway network for both the existing condition and the future condition. We have also provided a table that lists the number of homes and jobs in each TAZ for both the existing and future conditions. The table in Exhibit 10 shows the summary of socioeconomics by subregion for the two conditions.

Exhibit 10 Summary of Socioeconomics for Existing and Future Conditions

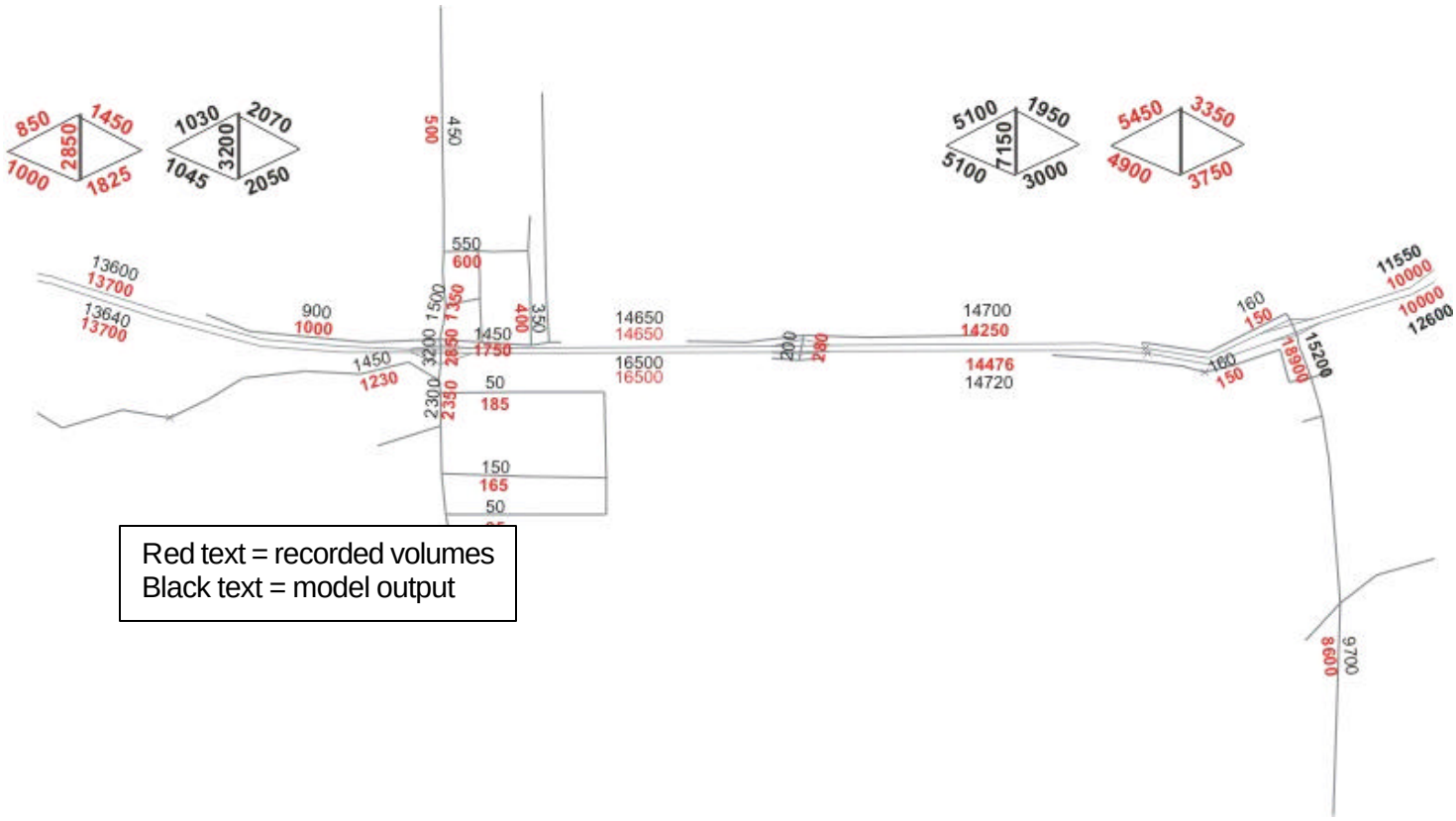
	Existing			Future		
	Retail	Non Retail	Dwelling	Retail	Non Retail	Dwelling
Benson	605	970	2,473	2,045	4,690	17,389
Whetstone Ranch	150	0	18	1,583	1,055	8,784
Northwest Cochise CO	30	135	2,360	435	520	11,843
	Number Increase			Percent Increase		
	Retail	Non Retail	Dwelling	Retail	Non Retail	Dwelling
Benson	1,440	3,720	14,915	238%	384%	603%
Whetstone Ranch	1,435	1,055	8,765	955%		48700%
Northwest Cochise CO	405	385	9,485	1350%	285%	402%

Trip Generation/Travel Characteristics

Existing Conditions

In order to determine the travel and trip generation characteristics of the study area, an existing conditions model was developed using the existing roadways as identified in Exhibit 6, Existing Roadway Traffic Data Inventory and socioeconomic data derived from information provided by Cochise County and the 2000 Census Data. The study area was appended to an existing conditions model that was developed for the City of Benson in 2002 for the Benson General Plan. The existing conditions in the study area are depicted on the map provided in the appendix entitled "Existing Conditions TAZ Map/Census Blocks Overlay". We then ran the model and made adjustments to QRS II parameters and trip generation by zone to calibrate the model output to the recorded volumes that we had taken in the field at several locations. The original Benson model had been calibrated to recorded field data and, so it was necessary to maintain the original travel characteristics of that area. We were able to calibrate the model very closely to field conditions as shown below in Exhibit 11, Calibrated Existing Conditions Model.

Exhibit 11 Calibrated Existing Conditions Model



Trip Generation

Information from the model output was analyzed to determine the travel characteristics of the area including travel between subregions (districts) and surrounding areas and trips made between the home for employment and non-employment purposes. These trips are classified as "Home Based Work" (HBW) and "Home Based Nonwork" (HBNW) trips. These home based trips represent driveway traffic at each dwelling unit. A third category of trips is the "Non-Home Based" (NHB) trip and represents pass-by and diverted link trips that occur as a secondary trip to the home based trip. Some of these non home based trips take place outside of the study area. For example, a resident of the study area may be employed in Tucson and make stops along the way or run errands from the office.

The table in Exhibit 12 provides the system-wide and study area (northwest) statistics for the current and future condition. These tables show that the system average residential trip rate at the dwelling is about 11.3 and the northwest area rate is about 7.0. This lower trip rate, which is still within the ITE trip generation range for single family dwelling units[6] is typical for the more rural, remote areas. There are minimal employment and commercial opportunities in these areas and, so the residents don't make as many trips on a daily basis as do residents of more urbanized areas. They tend to link and consolidate trips and run fewer single purpose errands. The statistics for the future condition show that the home based trip rates increases to about 8.4 in the northwest area and the NHB rate decreases. This is largely due to development of planned commercial and employment centers located closer to the residential areas of the

[6] The daily range of rates for Land Use Category 210 – Single Family Detached Housing – is 4.31 to 21.85

northwest area. This includes some business growth near the Mescal/J-Six Ranch TI and commercial development within the Smith Ranch area plan.

Exhibit 12 Travel Statistics

	Current Condition		Future Condition	
	System Wide	Northwest	System Wide	Northwest
Total Dwelling Units	3,645	1,065	38,704	14,007
Persons per Household	2.5	2.5	3	3
Total Population	9,110	2,660	96,760	35,020
TOTAL PERSON TRIPS	82,620	18,491	927,280	221,524
Person Trips per dwelling	23	17	24	16
Home based work (HBW) trips	22,664	4,545	259,858	55,718
HBW Percent of Total	36%	25%	35%	25%
Home based non-work (HBNW) trips	39,511	6,586	415,423	125,036
HBNW Percent of Total	43%	36%	42%	56%
Non-home based (NHB) trips	20,446	7,360	226,794	65,979
NHB Percent of Total	22%	40%	23%	30%
HBW Average Occupancy Rate	1.30	1.30	1.30	1.30
HBNW Average Occupancy Rate	1.67	1.67	1.67	1.67
NHB Average Occupancy Rate	1.60	1.60	1.60	1.66
Average Person Trips/Person (Productions)	9.1	7.0	9.6	6.3
TOTAL RESIDENTIAL TRIPS	53,872	12,040	590,393	157,478
Average Vehicle Trips per dwelling (Inc NHB)	14.8	11.3	15.3	11.2
Avg Vehicle Trip ends at Dwelling	11.3	7.0	11.6	8.4
Avg HBW Vehicle Trips per dwelling	4.8	3.3	5.2	3.1
Avg HBNW Vehicle Trips per dwelling	6.5	3.7	6.4	5.3
Avg NHB Vehicle Trips per dwelling	3.5	4.3	3.7	2.8
Avg Vehicle Trip ends per Employee	11.4	24.5	66.3	51.6

Trip Distribution

Exhibit 13 provides a table that shows the distribution of the Northwest Area trips to the Tucson, Benson, and Sierra Vista areas and Exhibit 14 is a more detailed table showing the trips between districts. The tables illustrate that the distribution will likely shift from Tucson to Benson over time and that, because of proposed commercial development and employment in the study area and nearby Benson community, more trips will remain within the northwest area.

Exhibit 13 Distribution of Northwest Area Trips

	Current Condition		Future Condition	
	Number	Percent	Number	Percent
Total Northwest Area Trips	5,720	100%	39,745	100%
To Tucson (WEST)	1,765	31%	6,415	16%
To Benson (EAST)	1,285	22%	9,435	24%
To Sierra Vista (SOUTH)	520	9%	1,280	3%
Remaining in Study Area	2,150	38%	22,615	57%

Exhibit 14 Trips Between Districts

	NORTHWEST AREA						
CURRENT CONDITIONS TOTAL TRIPS BETWEEN DISTRICTS	NW Cochise north	NW Cochise south	Freeway Commercial	Tucson	East of Benson	Benson	Sierra Vista/Bisbee
NW Cochise north	**50**	390	785	835	30	380	410
NW Cochise south		**5**	920	930	30	845	110
Freeway Commercial			**3355**	1,050	625	2,935	1,120
Tucson				**N/A**	15,000	2,515	6,400
East of Benson					**N/A**	750	2,100
Benson						**7220**	1,145
Sierra Vista/Bisbee							**N/A**

	NORTHWEST AREA								
FUTURE CONDITIONS TOTAL TRIPS BETWEEN DISTRICTS	NW Cochise North	NW Cochise South	Freeway Commercial	Smith Ranch	Tucson	East of Benson	Benson	Whetstone	Sierra Vista / Bisbee
NW Cochise North	**915**	1,150	3,625	2,530	1,865	10	4,000	1,985	30
NW Cochise South		**1705**	5,795	2,530	2,675	10	5,415	3,105	50
Freeway Commercial			**590**	14,080	150	245	26,975	13,770	80
Smith Ranch				**6595**	3,415	30	7,775	8,565	135
Tucson					**N/A**	56,000	2,115	795	6,400
Eastof Benson						**170**	340	90	4,200
Benson							**68375**	35,375	755
Whetstone								**19025**	680
Sierra Vista/Bisbee									**N/A**

Future Alternatives

There are opportunities for roadway extensions, new roadways as part of new development, and capacity expansion of existing roads. Our field inventory shows three possible corridors north of I-10 that could take advantage of existing rights-of-way and easements. The approximate alignments are shown in Exhibit 9.

The first is the abandoned rail bed that extends through the area. This also has a parallel overhead power line, as shown in the photo below. The second is an El Paso Natural Gas easement, and the third is the UPRR mainline right-of-way. Use of any of these corridors would require additional planning and engineering analysis, as well as coordination with the owners of these facilities.

Abandoned rail bed (top), EPNG easement (center) and UPRR mainline right-of-way (bottom).

Using land use and transportation input from the participants and other sources, the study team produced and reviewed a series of preliminary alternatives. Many of the alternatives conceptually used an existing alignment on the north side (discussed above) to connect Mescal Road with the SR 90 area. All of the alternatives also had one or more connections between J-Six Ranch Road and SR 90, which would connect with proposed roadway extensions into Benson. These connecting alignments are already on Benson's General Plan Circulation Element at Jennella Road, Whetstone Commerce Drive, and Post Road. These would connect the SR 90 corridor with Benson and with SR 80 in the heart of Benson. All of the alternatives also include a new or replacement Skyline traffic interchange, new interchanges at Mescal and Whetstone, and the extension of the SR 90 corridor north to Aviation Way.

The award winning Benson Municipal Airport is located just outside the study area, north of I-10 and west of Ocotillo Road. The airport has poor accessibility, and is now served only by a three mile long driveway that extends west from Ocotillo Road. The airport is near I-10 and the UPRR mainline and has potential for a regional Intermodal center.

The Benson General Plan shows the airport area as a major employment center. Accordingly, Benson representatives requested that a hypothetical extension of the SR 90 corridor north to the airport industrial area be included in the analysis, and then carried forward in the alternatives if it appeared viable. The connection was evaluated and carried almost enough traffic for a four-lane roadway, provided an interconnection between the SR 90 and Ocotillo interchanges, and so it was included in all the subsequent models.

After review and discussion, three alternatives were further refined and selected for continued analysis and evaluation. The following discussion provides interpretation of the model results. The exhibits supporting each alternative show the roadway cross section as color-coded. Black represents two-lane, red represents four lanes, and blue represents six lanes of capacity. The daily two-way traffic volumes are also shown rounded to the nearest 100 vehicles. Model statistics are provided n the appendix.

In all cases, the new alignments should be considered **very conceptual**. Prior to implementation, additional alignment, right-of-way, environmental, and design studies would be needed. These could take three or more years to fund and implement.

The traffic volumes on the I-10 ramps are shown in the exhibits above their actual location. All of the alternatives indicate that the three interchanges will need to be replaced with higher capacity contemporary facilities, and the off-ramp/cross road intersections will likely need to be signalized or have roundabouts.[7] These interchange projects could cost about $10 million or more each, and take up to eight years to implement, assuming funding will be available for construction.

All of the alternatives provide interconnectivity between the freeway interchanges either via frontage roads or east-west collector roadways tying in to current north-south routes. This provides alternatives for travel on the freeway for shorter trips, and would permit safer use of bicycles and walking for shorter trips.

Major arterial/arterial and arterial/collector intersections will very likely meet traffic signal warrants. The collector/collector intersections may need signalization, but they could also be designed as contemporary roundabout to negate the expense and delay associated with traffic signals. Signals should only be installed and activated when warrants contained in the *Manual on Uniform Traffic Control Devices* are met, and an engineering analysis demonstrates their need.

Alternative 1: One Way Frontage Roads

This alternative emphasizes a pair of one-way frontage roads adjacent to I-10 to serve east-west movements, and two additional local collector corridors connecting the Skyline interchange to SR 90 at Jennella and Post Road, thus connecting into existing Benson. Frontage roads would need to be either outside ADOT's right-of-way or a jurisdictional transfer of right-of-way from ADOT to local jurisdictions would need to take place.

The Jennella connection could occur through State Trust land, which should be acceptable to the Arizona State Land Department. The Post Road connection would require Sate and private land, as well as modification to the Whetstone Ranch master plan in Benson. This alternative has relatively obscure east-west connectivity, and the one-way frontage roads are not conducive for use by alternate modes due to the circuitous travel. However, the one-way operation would result in efficient interchange operation. Local vehicular access for parcels along the frontage roads would also become more circuitous.

The SR 90 and J-Six interchanges would function better with one-way versus the existing two-way frontage road operations. This is due to the potential for minimizing the number of intersections by joining the ramps with the frontage roads. The Skyline interchange would need to be reconstructed for capacity and safety, and the frontage roads could become part of the re-design effort.

[7] ADOT has a policy to assess the potential feasibility of roundabouts at all new or reconstructed intersections on the state system.

Alternative 2: Local Collector Connections

This alternative has two local collector roadways in east-west alignment (one north of I-10, the other south) and a north-south connection between them at the Skyline interchange. The southern route is a two-lane collector roadway following the Joseph alignment that connects J-Six Ranch Road to a four-lane Post Road connection. It utilizes State land between Smith Ranch and the existing Joseph Road right-of-way, which would need to be upgraded to County standards. The Post Road connection is the same as in Alternative 1.

The collector on the north could follow any of the three existing alignment options discussed above, be in new right-of-way, or some combination. It would need only two lanes of capacity. The north south connector would have different cross sections north and south of the freeway.

This alternative provides interconnection between the freeway interchanges via the new east-west collectors' that tie into existing north-south routes.

Alternative 3: Additional East-West Connection

This alternative is very similar to Alternative 2, except an additional east-west connection between J-Six Ranch Road and SR-90 is provided. The southern connection extends though Empirita Ranch, south of Smith through state and private land, and Whetstone Ranch, ultimately to Post Road.

As in Alternative 2, this alternative provides interconnection between the interchanges via the new east-west collectors' that tie into existing north-south routes.

Exhibit 15 Alternative 1

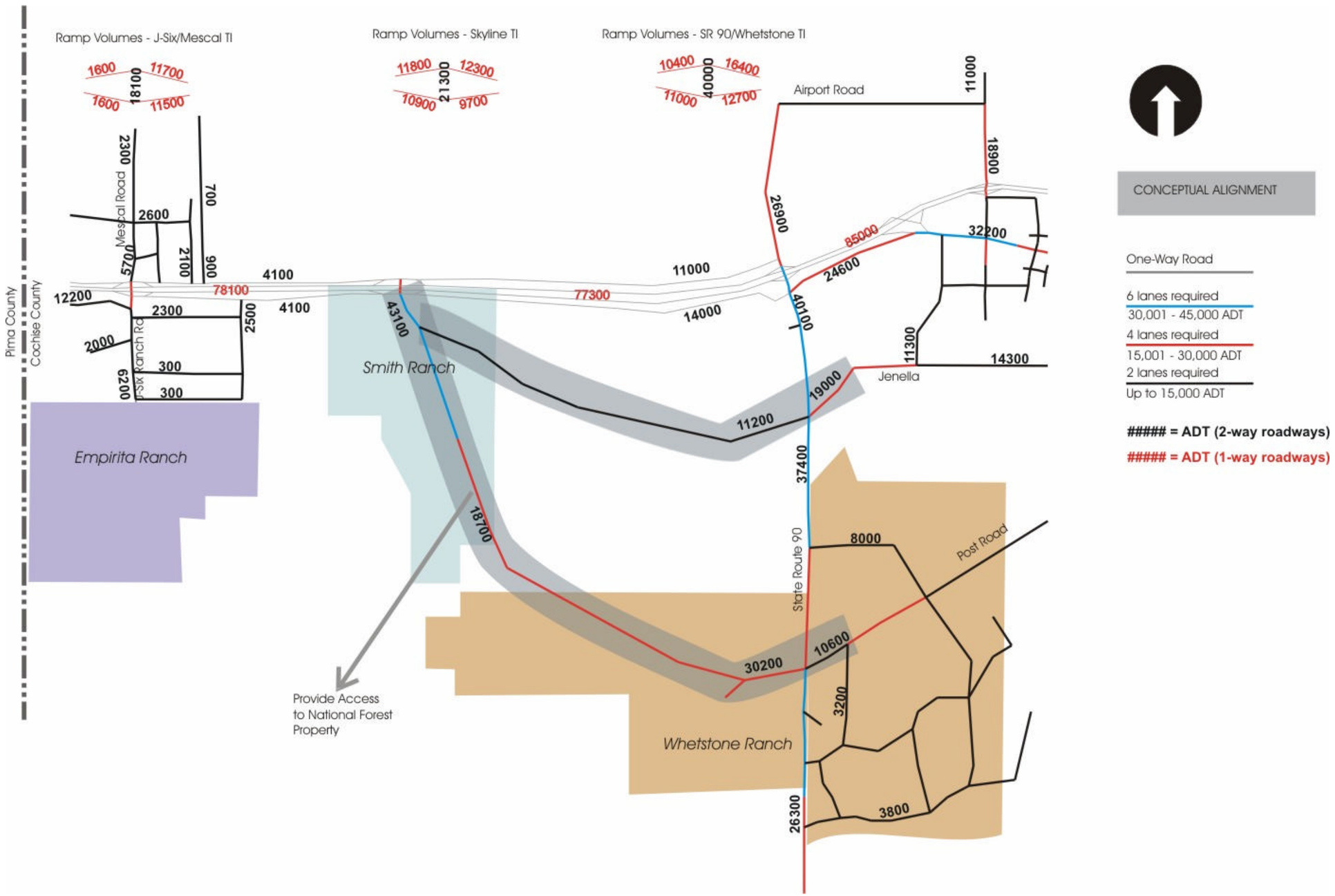


Exhibit 16 Alternative 2

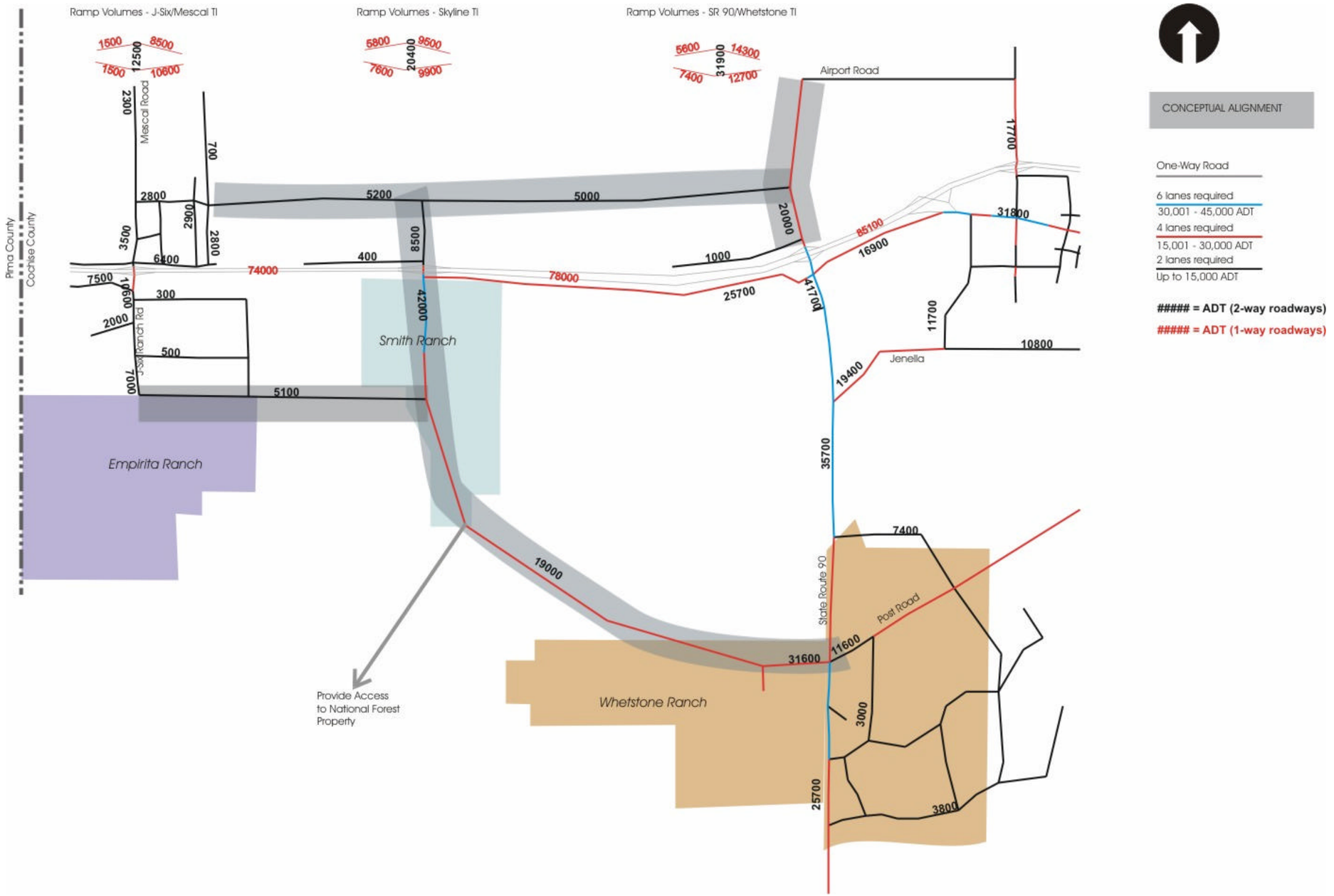
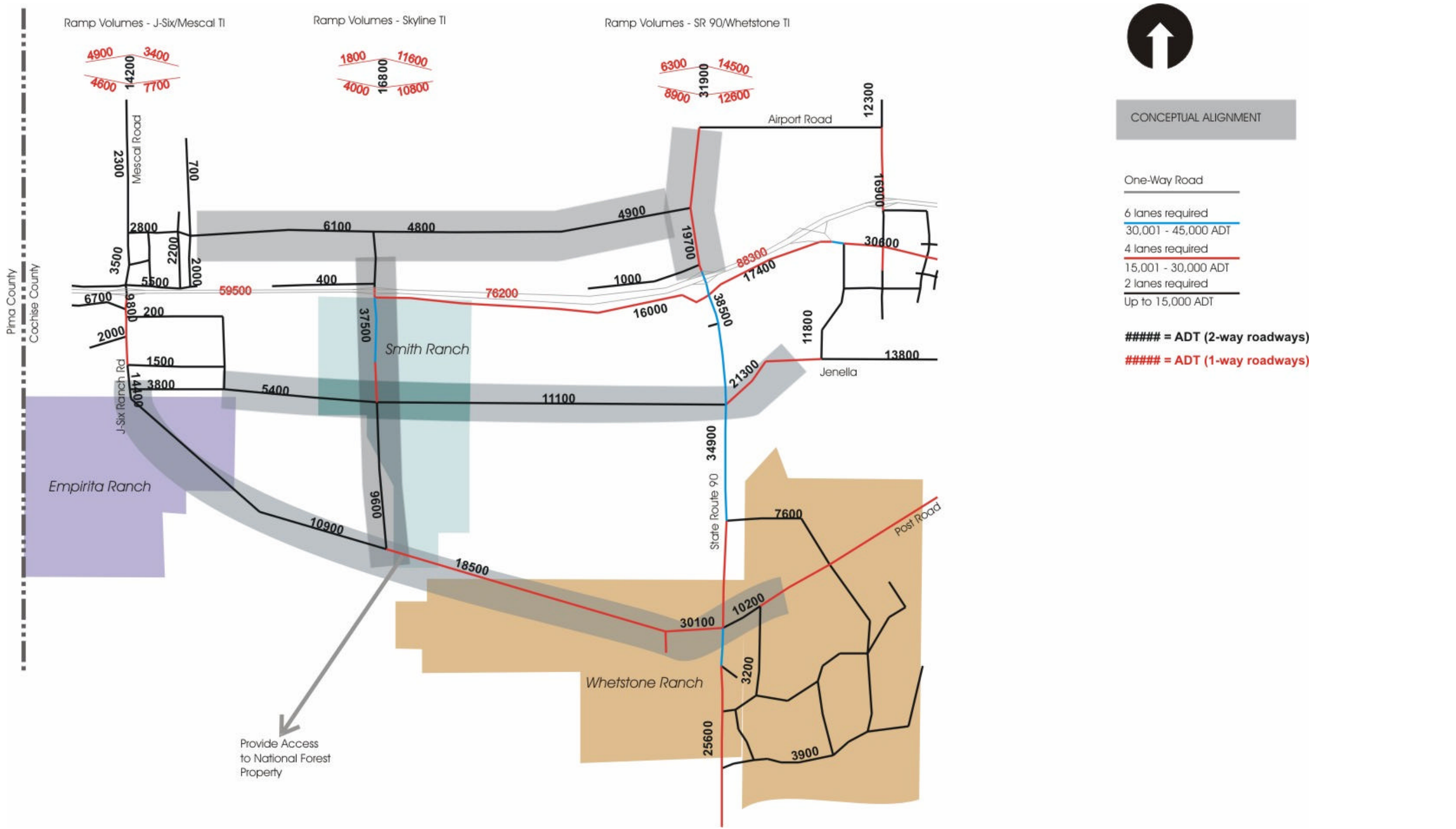


Exhibit 17 Alternative 3



Comparative Analysis of Freeway Volumes

The travel demand model will typically provide credible results, but it is always a good idea to check key results with other methods. For this study, we obtained historic traffic data for I-10 east of the Tucson metropolitan area for the past 45 years and extrapolated it forward using a trend line analysis. Then, we added projected traffic associated with expected development in the study area. The results are shown in Exhibit 13. The graph indicates that the capacity of a four lane freeway between Tucson and Benson would be exceeded about 15-years sooner than if Benson area growth did not occur. The forecasts for I-10 in the chart for 2035 are generally consistent with the model output, although the model results are a little higher.

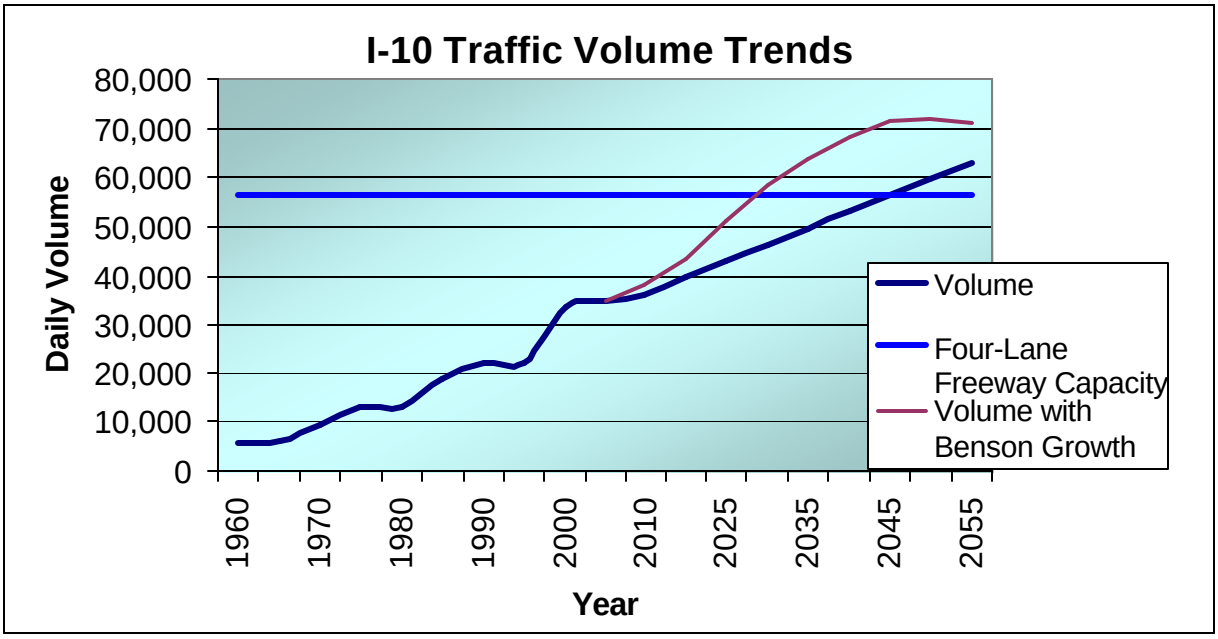


Exhibit 18 I-10 Traffic Volume Trends

4. Funding Options

TRANSPORTATION IMPROVEMENT FUNDING OPTIONS

There are several options for funding transportation improvements in the study area. They include the following, but many other innovative strategies are also possible. These revenues are described alphabetically, without prioritization of their applicability or the local jurisdictions' potential support for use of any of the sources.

The prevalent local funding sources for transportation projects in southern Arizona include development impact fees, construction sales tax, developer exactions, improvement districts, and community facility districts. Because of their successful use by neighboring jurisdictions, we recommend that these four sources be further considered.

Private Sector Funding

Improvement Districts: This is a special taxation district formed to build or repair a public facility such as a road. The statutory requirements are different for Arizona municipalities and counties. Formation of county IDs is much more difficult than for cities and towns.

Community Facilities Districts: A CFD is a special taxation district that funds the infrastructure within a new development. The costs are typically funded with general obligation bonds repaid by future tax receipts based on the improved property within the district. A CFD requires a board of directors, which is usually the municipal elected officials, but can be others. The financing is a hybrid form of tax increment financing and improvement district. Dove Mountain is a local example of a CFD. This is primarily an option for cities because counties can form CFDs for school purposes only.

Development Impact Fees: Arizona counties and municipalities are authorized to impose development impact fees that are levied against new construction projects. Arizona's Growing Smarter legislation updated and combined the DIF laws pertaining to all jurisdictions. The fees are typically collected at time of construction permitting or building occupancy, and they can only be used for infrastructure capacity augmentation. Pima County, Marana, Oro Valley, and Sierra Vista, among many others in Arizona have development fees, but Benson and Cochise County do not.

The pertinent statutes state the following:

> 11-1102. County development fees
>
> A. If a county has adopted a capital improvements plan, the county may assess development fees within the covered planning area in order to offset the capital costs for water, sewer, streets, parks and public safety facilities determined by the plan to be necessary for public services provided by the county to a development in the planning area.
>
> B. Development fees assessed under this section are subject to the following requirements:
>
> 1. Development fees shall result in a beneficial use to the development.
>
> 2. Monies received from development fees shall be placed in a separate fund and accounted for separately and may only be used for the purposes authorized by this section. Interest earned on monies in the separate fund shall be credited to the fund.

3. The county shall prescribe the schedule for paying the development fees. The county shall provide a credit toward the payment of the fee for the required dedication of public sites and improvements provided by the developer for which that fee is assessed. The developer of residential dwelling units shall be required to pay the fees when construction permits for the dwelling units are issued.

4. The amount of any development fees must bear a reasonable relationship to the burden of capital costs imposed on the county to provide additional necessary public services to the development. In determining the extent of the burden imposed by the development, the county shall consider, among other things, the contribution made or to be made in the future in cash by taxes, fees or assessments by the property owner toward the capital costs of the necessary public service covered by the development fee.

5. Development fees shall be assessed in a nondiscriminatory manner.

6. In determining and assessing a development fee applying to land in a community facilities district established under title 48, chapter 4, article 6, the county shall take into account all public infrastructure provided by the district and capital costs paid by the district for necessary public services and shall not assess a portion of the development fee based on the infrastructure or costs.

C. Before assessing or increasing a development fee, the county shall:

1. Give at least one hundred twenty days' advance notice of intention to assess a new or increased development fee.

2. Release to the public a written report including all documentation that supports the assessment of a new or increased development fee.

3. Conduct a public hearing on the proposed new or increased development fee at any time after the expiration of the one hundred twenty day notice of intention to assess a new or increased development fee and at least fourteen days before the scheduled date of adoption of the new or increased fee.

D. A development fee assessed pursuant to this section is not effective for at least ninety days after its formal adoption by the board of supervisors.

E. This section does not affect any development fee adopted before the effective date of this section.

11-1103. Development fees; intergovernmental agreements; purposes

A county may enter into an intergovernmental agreement to accept or disburse development fees for construction of a public facility pursuant to a benefit area plan, including an agreement with a city or special taxing district for the joint establishment of a needs assessment, the adoption of a benefit area plan and the imposition, collection and disbursement of development fees to implement a joint plan for development.

Developer Exactions: When private land is rezoned for development, governmental agencies usually require an evaluation of the development's impact on off-site facilities and services. The jurisdiction may require the developer to dedicate land for public use, build or expand certain facilities, or pay money in lieu of the dedications or improvements. When the rezoning is approved, these special conditions become effective. Exactions occur on a case-by-case basis, usually as the result of negotiation. All local jurisdictions impose exactions of some type.

Public Sector Funding

Construction Sales Tax: This is merely an increased sales tax rate applied to the materials used in contracted construction activities within a community. It applies to specific businesses that contract or sell building-related services or goods. It does not apply to individual consumer purchases at retail establishments. As examples, Marana,

Oro Valley, and Sahuarita now have construction sales taxes, and Tucson is contemplating the idea. The Town of Benson is considering a 4% construction sales tax to fund transportation improvements.

County General Excise (Sales) Tax: All Arizona counties, except Maricopa, may impose a sales tax up to 10% of the state tax rate, i.e., up to ½ percent. The tax may be imposed upon unanimous approval of the Board of Supervisors. The tax receipts may be used for any government purpose. All authorized Arizona counties with the exception of Pima have adopted this tax, and many use a portion of the proceeds for transportation projects. (See ARS 42-6103.) Cochise County originally used their sales tax for solid waste projects and may potentially have funding available for improvements in the area, particularly if sales tax revenues are generated by the project.

County Property Tax Levy for Roads: All Arizona counties are allowed by state law to impose a 25-cent per hundred-dollar property tax, the proceeds of which are dedicated to county roads. It is not known if any Arizona counties have enacted this tax. The levy can be imposed with a simple majority vote by the board of supervisors.

> 28-6712. Tax levies for county roads
>
> A. For road purposes the board of supervisors may levy a real and personal property tax of not more than twenty-five cents per one hundred dollars of property in the county as valued for tax purposes. The board of supervisors shall levy and collect the tax at the same time and in the same manner as other primary property taxes are levied and collected.
>
> B. The monies shall be paid into the county treasury for the benefit of the highways in the county and shall be spent by the board with other monies received for purposes of improvement of county roads.
>
> C. Notwithstanding any other law, in counties with an assessed valuation of two hundred million dollars or more, an amount of not more than twenty-five cents per one hundred dollars assessed valuation may be budgeted, levied, collected and spent for road purposes independently of and in addition to any other amounts lawfully available for road purposes. This levy is in lieu of the levy permitted under subsection A.

County Transportation Tax for Roads: Unlike municipalities, Arizona counties have virtually no authority to impose sales taxes. However, counties with a population less than 400,000 are authorized to request voters to approve up to a ½ cent sales tax for roads. The authorizing statute states the following.

> 42-6107. County transportation excise tax for roads; counties with population of four hundred thousand or less
>
> A. If a majority of the qualified electors voting at a countywide special election, or a majority of the qualified electors voting on the ballot proposition at a general election, approves the transportation excise tax, a county with a population of four hundred thousand or fewer persons shall levy and the department shall collect a tax:
>
> 1. At a rate of not more than ten per cent of the transaction privilege tax rate as prescribed by section 42-5010, subsection A applying, as of January 1, 1990, to each person engaging or continuing in the county in a business taxed under chapter 5, article 1 of this title.
>
> 2. In the case of persons subject to the tax imposed under section 42-5352, subsection A, at a rate of not more than .305 cents per gallon of jet fuel sold.

3. On the use or consumption of electricity or natural gas by retail electric or natural gas customers in the county who are subject to use tax under section 42-5155, at a rate equal to the transaction privilege tax rate under paragraph 1 applying to persons engaging or continuing in the county in the utilities transaction privilege tax classification. If a majority of the qualified electors in the county approved the transportation excise tax under this section before 1998, a tax under this paragraph may be approved by resolution adopted by a majority of the board of supervisors.

B. The net revenues collected under this section within a county shall be deposited in the county's regional area road fund pursuant to title 28, chapter 17, article 3.

C. The tax shall be levied under this section beginning January 1 or July 1, whichever date occurs first after approval by the voters, and may be in effect for a period of not more than twenty years.

County Capital Projects Tax: All Arizona counties except for Maricopa are allowed to impose up a ½ cent countywide sales tax for capital purposes. Laws require a unanimous vote of the board of supervisors, followed by a countywide election. Cochise County has a similar ½ cent tax already, but it was imposed under prior legislation.

42-6111. County capital projects tax

A. The board of supervisors of a county with a population of less than two million persons, on a unanimous vote, may submit a proposed county capital projects tax for approval at a countywide special election or at a general election. If a majority of the qualified electors voting on the proposition approves the tax, the board of supervisors may levy and the department shall collect a tax, in addition to all other taxes, at a rate that, by itself or together with any tax imposed pursuant to section 42-6106 or 42-6107, does not exceed ten per cent of the transaction privilege tax rate prescribed by section 42-5010, subsection A applying, as of the date of its initial levy, to each person engaging or continuing in the county in a business taxed under chapter 5, article 1 of this title.

B. If a tax is levied under subsection A of this section, a tax shall also be levied on the use or consumption of electricity or natural gas by retail electric or natural gas customers in the county who are subject to use tax under section 42-5155 at a rate equal to the transaction privilege tax rate under subsection A of this section applying to persons engaging or continuing in the county in the utilities transaction privilege tax classification.

C. The tax shall be levied under this section beginning on January 1 or July 1, whichever date first occurs at least forty-five days after the election. The tax may be in effect for a period of not more than twenty years.

D. The state treasurer shall deposit the net revenues collected pursuant to this section in a fund designated as that county's transportation and capital projects fund. The state treasurer shall hold the monies in the fund as trustee for the county. The county has the beneficial interest in the fund. The state treasurer shall invest the monies in the county transportation and capital projects fund and shall credit to the fund all interest and other income earned from investments.

E. Each month the state treasurer shall distribute the monies in the transportation and capital projects fund to the county in a manner prescribed by the board of supervisors. The county may only use the revenues for capital projects and to purchase, construct and lease buildings, structures, facilities, roads, highways and other real and personal property, including open space and development rights, for the use or benefit of the county.

F. The ballot in the election described in subsection A of this section shall list each project to be financed with the tax collected and the estimated costs of

each project. The tax terminates if and when the total amount of estimated costs for all of the projects has been raised.

Federal Funds: Are allocated to the States by formula. There are several funding pots applicable to freeway improvements within the study area. ***High Priority Projects Funding*** provides designated funding for specific projects (commonly referred to as demonstration projects or even "pork barrel funds"). Last year Arizona received about $10 million in these funds. ***Bridge Program (BR)*** funds provide for replacement of a structurally deficient or functionally obsolete highway bridge or to rehabilitate the structural integrity of a bridge. Last year Arizona received about $14 million in these funds. ***Interstate Maintenance*** (IM) provides funding for various projects on the Interstate System. Projects including resurfacing, restoration, and rehabilitation. Also, includes reconstruction of bridges, interchanges, and over crossings along existing Interstate routes, design, acquisition of right-of-way and preventive maintenance. In 2002, Arizona received $111 million.

General Funds: Myriad taxes, fees, and revenue sharing sources can be used at the discretion of the elected officials for any public purpose. These revenue sources do not require special accounting. General funds are sometimes used for transportation purposes such as labor, maintenance, public transit, or capital equipment acquisition. General funds are also used to retire general obligation bonds.

General Obligation (GO) Bonds: This bonded indebtedness is repaid using secondary property taxes versus the revenues created by the services or facilities provided by the bonds. Arizona statutes limit the level of debt for municipalities and counties.

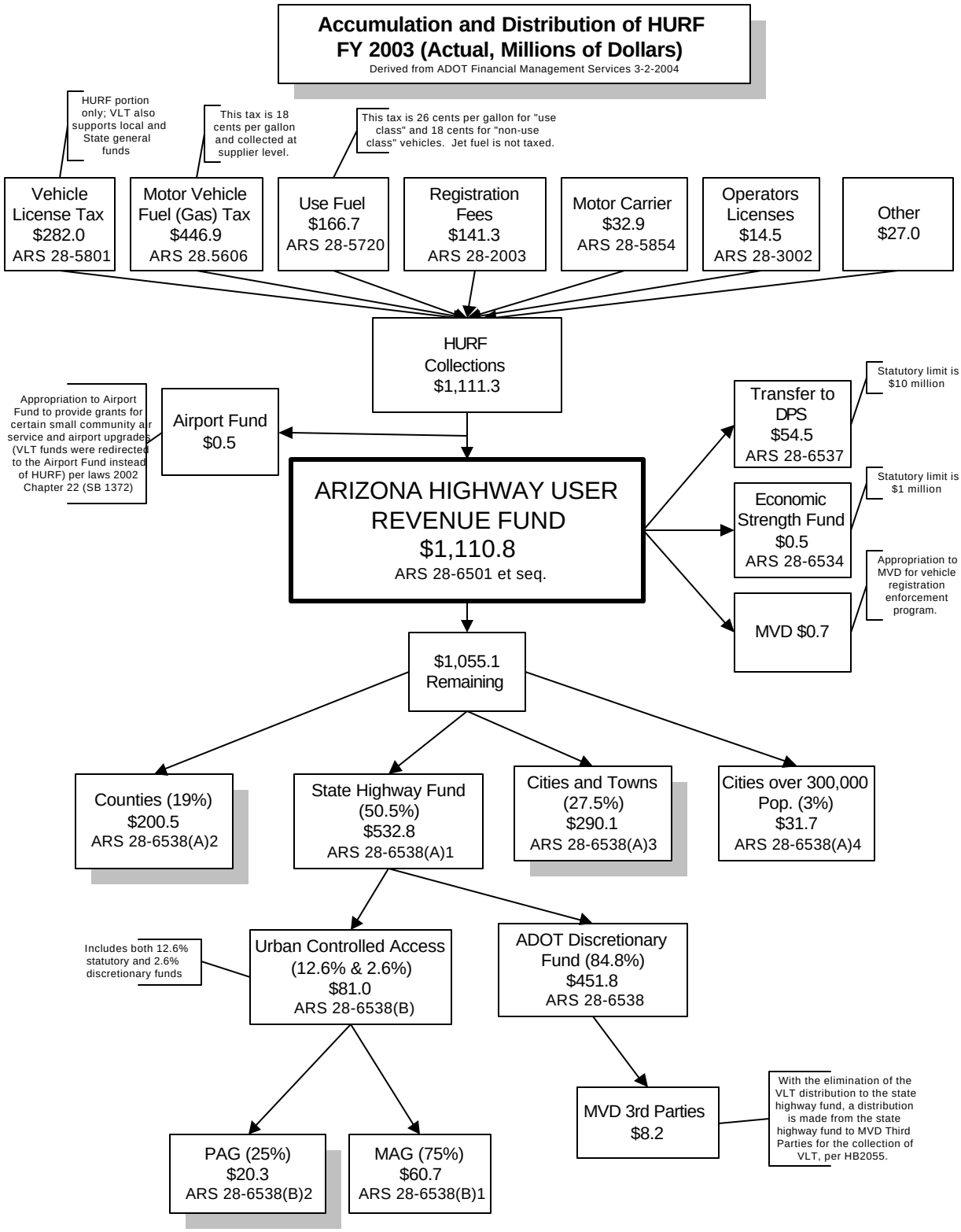
Highway Expansion and Extension Loan Program (HELP): HELP was enacted on August 21, 1998 as Arizona's State Infrastructure Bank, which provides loans and financial assistance for eligible highway projects in Arizona. The HELP fund is capitalized with federal and state dollars, as well as Board Funding Obligations that provide the capital for loans. As borrowers repay principal and interest on loans, the HELP fund is replenished and monies can be re-loaned. The fund is a self-sustaining mechanism to accelerate critical transportation projects. Due to the State budget deficit and other reasons, this fund should be considered bankrupt and unavailable statewide.

Highway User Revenue Funds (State and Local): This is the primary transportation revenue source in Arizona for local jurisdictions. It is also a major source for ADOT, but they also receive substantial federal funding. The HURF generated about $1.1 billion last year from Arizona's 18 cent per gallon gas tax, the vehicle license tax, and other minor sources. Revenues are allocated according to formula and can be used only for roadway purposes. The State Legislature is expected to continue to cut the VLT and to continue transferring HURF creatively to offset the very sizable State deficit.

Most local jurisdictions use HURF first for maintenance and staffing. If funds are left over, they will be used for new construction. In FY 2003, Cochise County received $7.1 million in HURF from the 19% allocated to counties. Benson received $369,000 from the 27.5% set aside for municipalities. On average, each new resident in Cochise County generates about $56 per year in HURF. The figure is about $78 for each new resident in Benson.

The complex structure of HURF is shown in the diagram on the next page. The boxes for city and county distribution are highlighted.

Exhibit 19 HURF Funding Diagram



Improvement Districts (ID): This is a special taxation district formed to build or repair a public facility such as a road. The statutory requirements are different for Arizona municipalities and counties. Formation of county IDs is much more difficult than for cities and towns.

Property Tax: Property taxes are based on the assessed value of real and personal property and tax rates per unit of value. The value of property is determined by the County Assessor, and the tax rate is set by the political body or governing board of the taxing entity. State law and the Department of Revenue establish assessment and rate procedures.

Revenue Bonds: These are bonds repaid by the revenues generated by the public services or facilities funded by the bonds. For example, toll roads might be funded through revenue bonds that are repaid from the tolls. Note that some jurisdictions have committed their HURF to repay construction bonds and refer to the bonds as "HURF Revenue Bonds." These are technically not revenue bonds because they are not repaid with funds created by the new roadways.

Sales Tax Earmarked for Transportation: Some communities will establish an sales tax increment and earmark it for transportation improvements. For example, Marana's Town Council recently adopted a ½ cent sales tax for transportation improvements with the Town. The Town utilized a steering committee to research the viability of the fee, and a citizen vote was not required. The additional half-cent sales tax begins October 1, 2004 and will generate over $3 million per year for Marana.

Transaction Privilege Tax (Sales Tax): Arizona has a transaction privilege tax (commonly called a sales tax) of 5.6%. Municipalities may impose an additional rate as they see appropriate, consistent with their charter. In some cases, an incremental tax rate may be earmarked for special purposes such as transportation. Numerous cities around the state have already done so. Many of the cities in Maricopa County, Glendale being one of the most recent, have such a tax. Statutes do not require a citizen vote on the matter, however many elected bodies ask for the vote anyhow.

> 42-6006. Municipal elections on tax issues
>
> A city or town ***may submit*** any issue relating to a transaction privilege tax, sales, use, franchise or other similar tax or fee, however denominated, to the qualified electors of the city or town at any regular or special municipal election, and may spend public monies of the city or town to cover the expenses of the election on that issue.

Toll Roads: The state and counties are allowed by law to establish toll roads, although none currently exist. Cities do not seem to have specific enabling legislation, but probably could establish a toll road in consort with ADOT or a county.

Utility Districts: Municipalities may form utility districts pursuant to Title 9, Arizona Revised Statutes. The statutes do not specifically include transportation facilities other than off-street parking, and so transportation utility districts may not be viable under

current law. For instance, Oro Valley has created a storm water utility to deal with controlling storm water runoff and surface water quality.

Fair Share Analysis

The report shows that although the roadway system performs acceptably in the study area, improvements and travel options are already necessary. All three interchanges have major operational and safety problems that ADOT recognized years, but has been unable to fund improvements. The ultimate solution is to replace these interchanges and upgrade other facilities in a rational manner that shares costs equitably between current and future users. Further, there are no east-west routes other than I-10, which forces traffic onto the truck laden freeway, degrades interchange performance, and discourages travel by alternate modes.

Current users have paid for the existing infrastructure, portions of which are obsolete or worn out. Future users will overtax some of the facilities unless they are expanded to meet their travel needs. With cooperation and commitment between public agencies and private developers, improvements can be funded and implemented in a timely manner.

Local and state agencies, as well as developers and the public, always express interest in how much they are asked to pay, and what is their fair share for improvements. There are numerous ways to calculate the fair share -- computer modeling is one – but the best ways are usually the easiest to understand. The proportionate share of public sector contribution could be the cost for curing deficiencies, less the private sector share for the new capacity provided by the cure used by new development. The private sector would also fund capacity expansion beyond what's provided by the project cure. For instance, if an expanded roadway will in the future carry 50% current traffic and 50% new traffic, the share would be 50/50.

Most regulatory agencies require traffic impact analysis for new development. Although these studies are not the appropriate venue for financial analysis, they do contain traffic information for current and future conditions. The data and forecasts can help define the fair share for project participants. ADOT and Cochise County already require traffic studies, but Benson apparently does not. Exhibit ZZ shows how the traffic report data can be used in a simplistic yet reasonable and defensible test of proportionality.

Exhibit 20 Example Traffic Proportionality Test

Facility	Private Project Traffic	Other Traffic	Total Traffic	Private Project Share
Freeway A	23,255	103,800	127,055	18%
State Arterial A	2,584	63,752	66,336	4%
State Arterial B	5,168	29,009	34,177	15%
State Arterial C)	18,087	29,009	47,096	38%
Local Collector A	7,752	4,385	12,137	64%
Local Collector B	2,584	215	2,799	92%

5: Recommendations

Development of Preferred Alternative

In developing this regional transportation plan, three alternatives were developed and refined for continued analysis and evaluation. The three alternatives emphasize east-west connectivity which is lacking throughout the study area, I-10 bypass opportunities, new north-south connections to I-10, connections from major developments to existing communities, the extension of existing I-10 frontage roads and a new road providing access to recreation activities in the Whetstone Mountains.

All of the alternatives included the reconstruction or relocation of the three freeway interchanges due to current deficiencies and in anticipation of the need for higher capacity facilities meeting contemporary design standards. The off-ramp/cross road intersections will likely need to be signalized or be reconstructed as roundabouts. These interchange projects could cost about $10 million each, and take up to eight years to implement, assuming funding will be available for construction.

All of the alternatives included interconnectivity between the freeway interchanges either via frontage roads or east-west collector roadways tying in to current and proposed north-south routes. This provides alternatives for travel on the freeway for shorter trips, and would permit safer use of bicycles and walking for shorter trips.

A "hybrid" alternative, Hybrid 1, incorporating the best elements of the three was established. Following public and agency review, modifications to the Hybrid 1 alternative were made and the final alternative, Hybrid 2, was established as the preferred alternative. A description of the two Hybrid alternatives follows.

Hybrid 1 Alternative

Following agency review of the three alternatives the Hybrid 1 alternative, shown conceptually in Exhibit 21, was developed that included the following major elements,

1) A new east-west route on the north side of I-10 that that would provide a connection between Mescal Road and an extension of SR 90 to the north, which ties in to the Benson Airport area and supports Benson's General Plan for that area,
2) Another new east-west route that would connect J-Six Ranch Road through the proposed Smith Ranch development to SR 90,
3) A potential third connection that would extend J-Six Ranch Road to the southeast on an alignment south of the Smith Ranch MDP area and intersect with SR 90 along the Post Road alignment.
4) A new north-south roadway that would connect the new east-west roadways closest to I-10 through a reconstructed or relocated Skyline Interchange.
5) An extension of the frontage road on the south side of I-10 from SR 90 east to SR 80.
6) The widening of SR 90 to six lanes from I-10 to south of Post Road.
7) The reconstruction of the J-Six Ranch/Mescal, Skyline and SR 90 interchanges at I-10.

Additional elements include the signalization of arterial-arterial and arterial-collector intersections where warranted (in the future) and planning studies (location reports, change of access analysis and other traffic studies) that would prepare for the specific improvements suggested in the Hybrid alternative. The City of Benson is preparing to manage its first city transportation study to identify project needs over a

future period. This study is included in the list of projects recommended for this planning study. The collector/collector intersections may need signalization, but they could also be designed as modern roundabouts to negate the expense and delay associated with traffic signals. Signals should only be installed and activated when warrants contained in the *Manual on Uniform Traffic Control Devices* are met, and an engineering analysis demonstrates their need.

The Hybrid 1 alternative did not include direct access by new development to Titan Road, nor were new frontage roads included in the Hybrid 1 Alternative.

Hybrid 2 Alternative (Preferred)

Following the receipt of public comments and another agency review period, a final and preferred alternative, Hybrid 2, was developed and further analyzed. This alternative is very similar in concept to the Hybrid 1 alternative. However, three significant modifications were made. The east-west connector north of I-10 is now envisioned to be more northern and the direct east-west connection from Smith Ranch to J-Six Ranch Road was removed. The eastern connection from Smith Ranch Road was also realigned to intersect SR 90 at a location about ½-mile north of the concept shown in the Hybrid 1 Alternative. This eastern roadway is tentatively named Nueva Jenella Road. All of these adjustments were made based on public and agency concerns about the impacts of future roads through existing rural neighborhoods, and incorporation of the zoning stipulations for the approved Smith Ranch Master Development Plan.

The roadway alignments identified in the Hybrid 2 alternative should be considered very conceptual. Prior to implementation, additional alignment, right-of-way, environmental, and design studies will be needed. The new roadways could take three or more years to fund and construct. Exhibit 22 illustrates the Hybrid 2 alternative.

Plan Implementation

The projects associated with the recommended Hybrid 2 alternative will have wide ranging costs, opportunities for cost sharing, and varying implementation lead times. The most complex projects will be those related to I-10 because of the Federal and State environmental requirements and access control regulations of the Federal Highway Administration. These will also be among the most expensive projects. Lead times could be eight years or more for new interchanges, assuming funds are committed and made available in a timely manner.

The easier improvements will likely be those along existing rights-of-way or across easily attainable rights-of-way. For instance, access across State land should be attainable if the State Land Department sees a benefit to the State Trust. Private land owners may dedicate land free, if access to their property (and therefore value) is enhanced.

Planning studies will be required for most improvements that are recommended. Locations studies will be necessary to identify specific alignments for new roadways. These studies will require environmental documentation and permitting, design concepts and public involvement. Pre-design efforts may require up to two years before actual design and construction occurs.

Since the new major corridors in the study area do not need to follow the section line, there are opportunities for the corridors to respond to terrain, natural resources, and cultural resources (if any) along their path. Guidelines on environmentally sensitive roadway design are contained in Pima County's Roadway Design Manual (Chapter 4) which could be a useful reference document when the corridor planning is undertaken by Cochise County.

ADOT should aggressively pursue its planning and design concepts for I-10 into Cochise County. The studies currently stop at the Cochise/Pima County line. Digital

orthophotography will be available in calendar year 2005 from the Pima Association of Governments, which should be suitable for planning and preliminary design purposes.

New funding sources dedicated to improvements of the existing roadways and network expansion will be needed. This report recommends using a new Cochise County roadway impact fee and the recently adopted City of Benson construction sales tax for these purposes, in addition to traditional sources like the Highway User Revenue Fund. Most of the revenue generated by these two sources will come from new development, and will be used for new roadways and capacity improvements.

It is anticipated that the projects identified in this study will take at least 25 years, possibly as long as 35 years, to fully implement. The status of development in the area, and the roadways needed to serve the development, should be monitored regularly by local and state agencies. This study should be updated periodically, perhaps every five years.

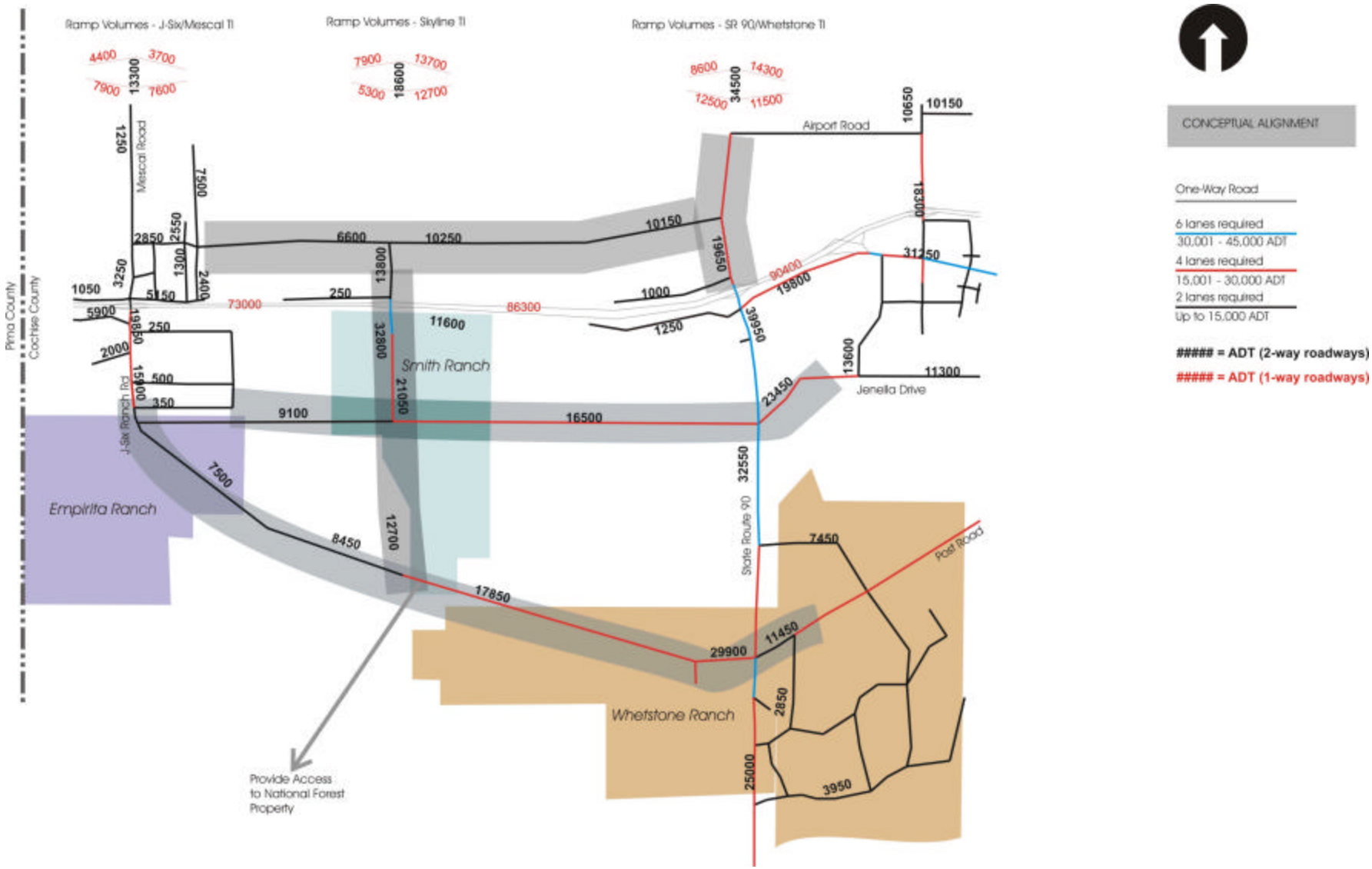
The cost of plan implementation should include expansion of Cochise County staff to oversee the effective completion of recommended projects. It is reasonable to expect the need for additional staff to manage, monitor and inspect the proposed plan.

Plan Phasing

The phasing of the roadway network improvements within the project area was based on two specific horizon years and a "Build out" year. The two horizon years, 2015 and 2025, represent periods when expected additions and improvements to the northwest Cochise County roadway system should be in place to accommodate anticipated growth and development, and so that the roadway network performance is satisfactory at different stages of area development.

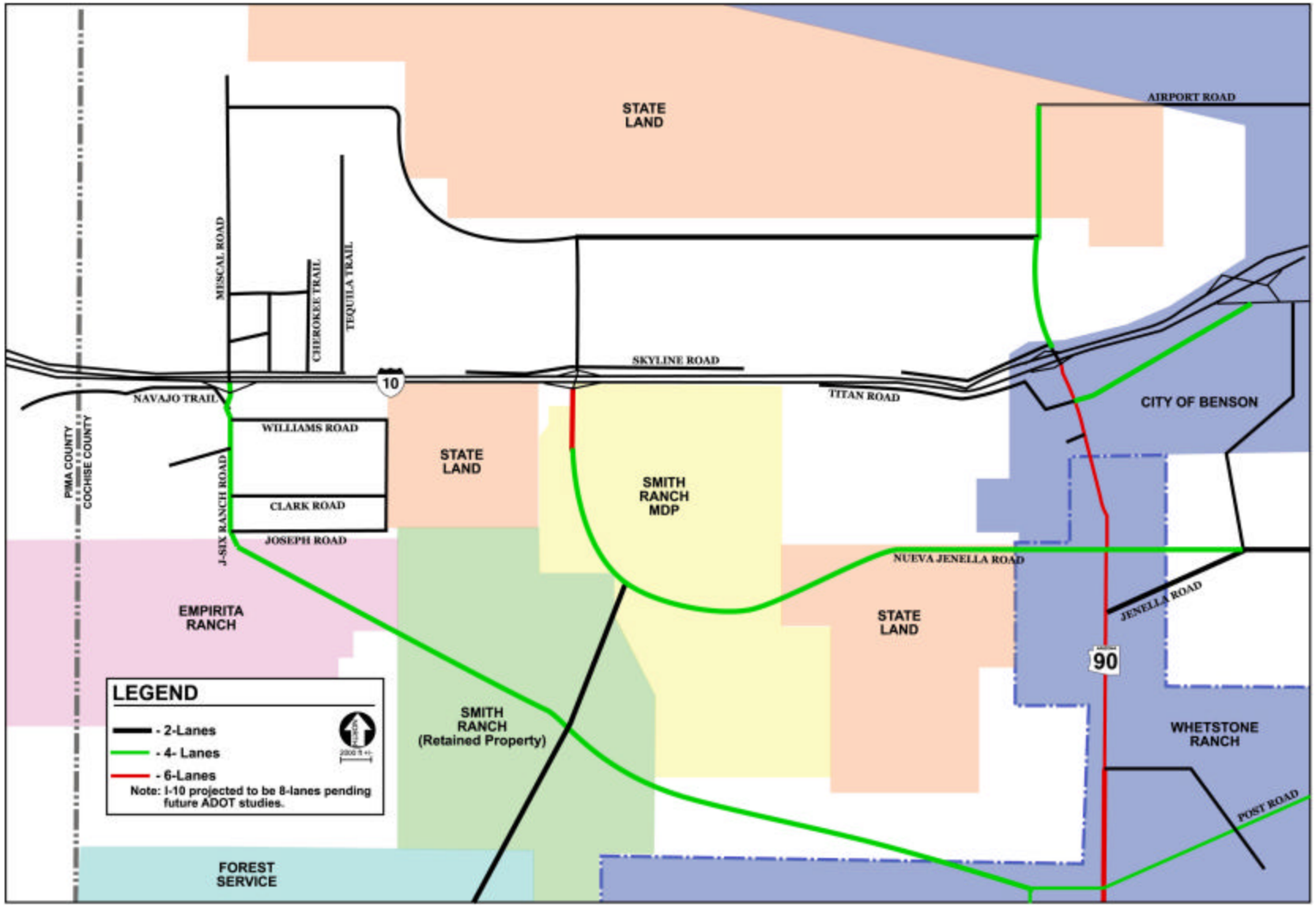
Inadequate roadway development supporting fast growing areas is a challenge. It is difficult to implement projects in areas where the existing traffic exceeds the capacity of the roadways, and public demand for short term solutions is high. However, short term solutions may be both costly and counterproductive in the implementation of permanent solutions. Therefore, Cochise County must monitor its infrastructure needs continually to ensure that projects are programmed and funding is identified prior to infrastructure elements exceeding their capacities.

Exhibit 21 Hybrid 1 Alternative



Curtis Lueck & Associates

Exhibit 22 Hybrid 2 Alternative



Implementation Costs

A preliminary work-up of project costs was developed from a basic set of unit costs for each type of facility construction or improvement. The typical unit costs which jurisdictions within the project area can expect to pay are consistent with current improvement costs experienced in nearby jurisdictions. Importantly, any of these costs could be reduced by as much as 30% if constructed by the private sector rather than as publicly bid projects.

These average costs presented in current year (2005) dollars include:

Exhibit 23 Approximate Unit Costs

3 lane collector	$2,500,000/Mile
4 lane divided arterial	$4,500,000/Mile
6 lane divided arterial	$6,500,000/Mile
Upgrade 2 lane divided to 4 lane divided	$3,500,000/Mile
Upgrade 4 lane divided to 6 lane divided	$5,000,000/Mile
Interchange	$10,000,000/Each

The above arterial and collector improvement costs include the cost of right of way, together with standard costs for drainage and utility improvements. It is expected that interchange improvements would occur within existing ADOT right of way.

The costs for local roads (most collectors, residential streets, alleys, etc) are not included in the costs in the table because these roads are generally constructed by the land developer.

Phasing by Horizon Year

The following section identifies the recommended projects that should be in place by the horizon year (2015, 2025, Build Out). A list of projects with a map key and a map showing the location and type of project is shown for each horizon year.

Between 2005 and Year 2015

Major projects through the year 2015 include a new road from the Smith Ranch development to SR 90. This road, tentatively name Nueva Jenella Road would intersect at SR 90 along an existing County section line. Nueva Jenella Road would continue east toward the City of Benson where it would tie into the existing City roadway system, thus providing a direct connection from the Smith Ranch development to the existing Benson area. Also, based on expected growth within Smith Ranch and along SR 90, the acceptable capacity of SR 90 is projected to be exceeded and SR 90 should be widened to a six-lane cross section north of the Nueva Jenella Road intersection. An extension of the frontage road south of I-10 from SR 90 east to Benson is included in these projects to be completed by 2015. Exhibit 24 is a table that describes the projects that are recommended to be in place by 2015 and the costs of implementation. Exhibit 25 illustrates the projects. The cost of the projects listed and shown is approximately $54 million in current (2005) year dollars.

Between 2016 and Year 2025

By the year 2025, recommended projects include a new east-west roadway from Mescal Road north of I-10 to a new roadway extending northward from a reconstructed or relocated Skyline interchange. Growth along SR 90 will increase, potentially requiring its widening to a six lane cross section south of Nueva Jenella Road. Exhibit 26 is a table that describes the projects that are recommended to be in place by 2025. Exhibit 27 illustrates the projects. The estimated cost of the projects listed and shown is approximately $27 million in current (2005) year dollars. The total cost of plan implementation through the year 2025 is about $81 million.

Build Out – After 2026

Projects forecast for the build out year include an extension of the new east-west roadway north of I-10 to SR 90. If a regional need for an additional southern east-west collector roadway develops, a new roadway would potentially extend from J-Six Ranch Road southeasterly and intersect with SR 90 at Post Road. SR 90 would also be widened south to Post Road. This could be a rural collector, depending on future travel demand. An extension of SR 90 north of I-10 to provide access to the Benson Airport is included in the project list. Exhibits 28 and 29 show the roadway network at build out. The total cost of plan implementation through build out is about $166 million.

Exhibit 24 List of Year 2015 Projects and Costs

Proposed Roadway Network by 2015							Studies Needed**			Potential Funding Sources					
Map Key*	**Project Description**	**Project Limits**	**Length (Miles)**	**Ultimate Functional Class**	**Existing Lanes**	**Estimated Cost ($M)**	**Advanced Planning**	**Location Study**	**Design/ Construction**	**Federal**	**State**	**County (1)**	**City (2)**	**Private (3)**	**Comments**
A	New Jennella/ Whetstone Connection - 4 Lanes	SR 90 - Smith Ranch	4.2	Arterial	N/A	$ 18.90	X	X	X			X		X	
B	Construct/Improve 3-lane Jennella Whetstone Connection	SR 90 to Benson	1.4	Arterial	2, Partial	$ 3.50	X	X	X				X	X	Included in Benson General Plan and Circulation Element
C	Widen SR 90 to 6 lanes	I-10 to Jennella	3.0	Arterial	4	$ 15.00	X		X		X		X	X	
D	Reconstruct SR-90 Interchange	Interchange Area	N/A	Interchange	N/A	$ 10.00	X		X	X	X				Previously identified as deficient by ADOT.
E	Construct South Side Frontage Road Connector	SR 90 east to City of Benson	1.5	Collector	N/A	$ 3.75	X	X	X				X		
F	Skyline Interchange Design Concept Report	Skyline Interchange Area	N/A	N/A	N/A	$ 0.15	X	X						X	This design concept report will address interchange design, location, and interstate access control issues.
G	Traffic Signal - Nueva Jennella/ SR 90	Intersection	N/A	N/A	N/A	$ 0.15	X		X	X	X			X	
N/A	Benson Transportation Study	Benson Sphere of influence	N/A	N/A	N/A	$ 0.15					X		X		Conduct traffic engineering and transportation planning study for City of Benson under ADOT's Small Area Transportation Study Program
N/A	I-10 Corridor Study	Pima - Cochise County Line to East of Benson	N/A	N/A	N/A	$ 0.20				X	X				This is a continuation of an ongoing study in Pima County (I-10 from I-19 to County line.)
N/A	Advance Planning, Location and Traffic Reports**	Improved or New Routes/ Facilities	N/A	N/A	N/A	$ 2.00	X	X		X	X	X	X	X	
	Costs ($M) by 2015					***$ 53.80***									

Exhibit 25 Year 2015 Projects

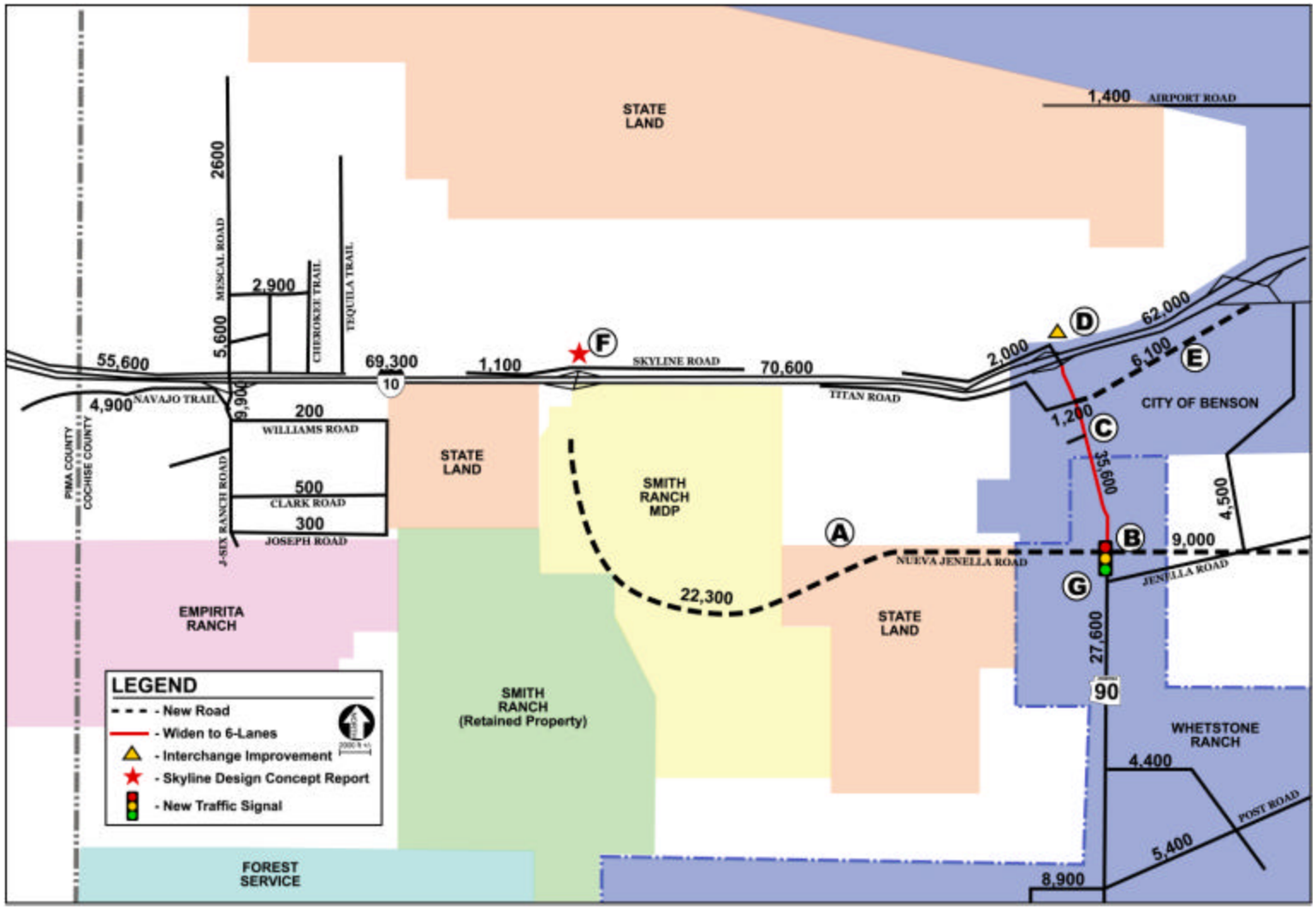


Exhibit 26 List of Year 2025 Projects and Costs

Proposed Roadway Network by 2025							Studies Needed**			Potential Funding Sources				
Map Key*	**Project Description**	**Project Limits**	**Length (Miles)**	**Ultimate Functional Class**	**Existing Lanes**	**Estimated Cost ($M)**	**Advanced Planning**	**Location Study**	**Design/ Construction**	**Federal**	**State**	**County (1)**	**City (2)**	**Private (3)**
H	Construct North Side Connector	Mescal Road to Skyline Extension	2.5	Collector	N/A	$ 6.25	X	X	X			X		X
I	Reconstruct or Relocate Skyline Interchange	Interchange Area	N/A	Interchange	N/A	$ 10.00	X	X	X	X	X	X		X
J	Widen SR 90 to 6 lanes	Jennella to Connector Road	1.5	Arterial	4	$ 7.50	X		X	X	X		X	
K	North-South Interconnect	Skyline Interchange to new East West Connector north of I-10	1.2	Collector	N/A	$ 3.00	X	X	X			X		X
L	Traffic Signals - SR 90 and Skyline Interchanges	Interchanges	N/A	N/A	N/A	$ 0.60	X		X	X	X		X	X
	Costs ($M) by 2025 - Includes 2015 Projects					***$ 81.15***								

Exhibit 27 Year 2025 Projects

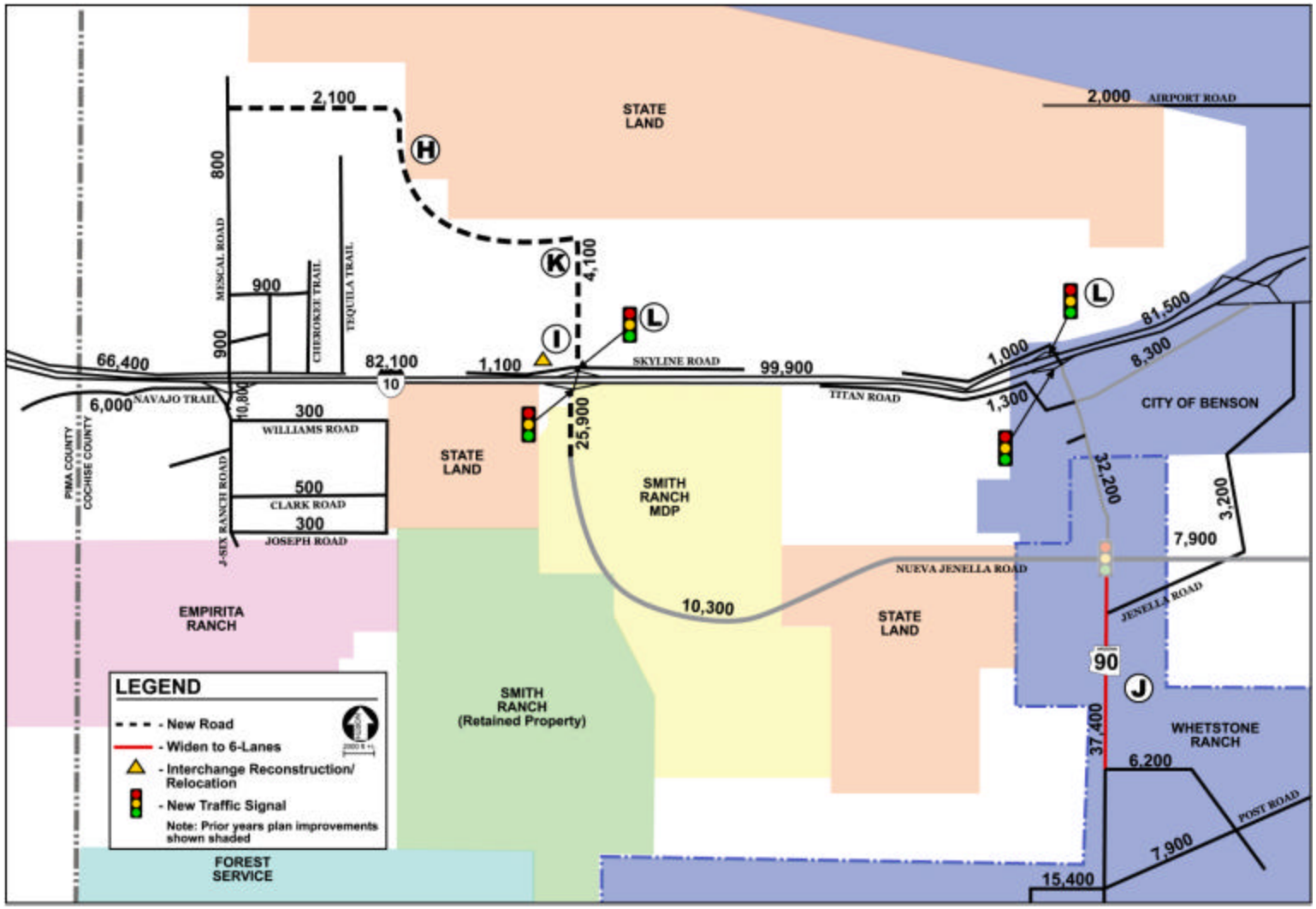
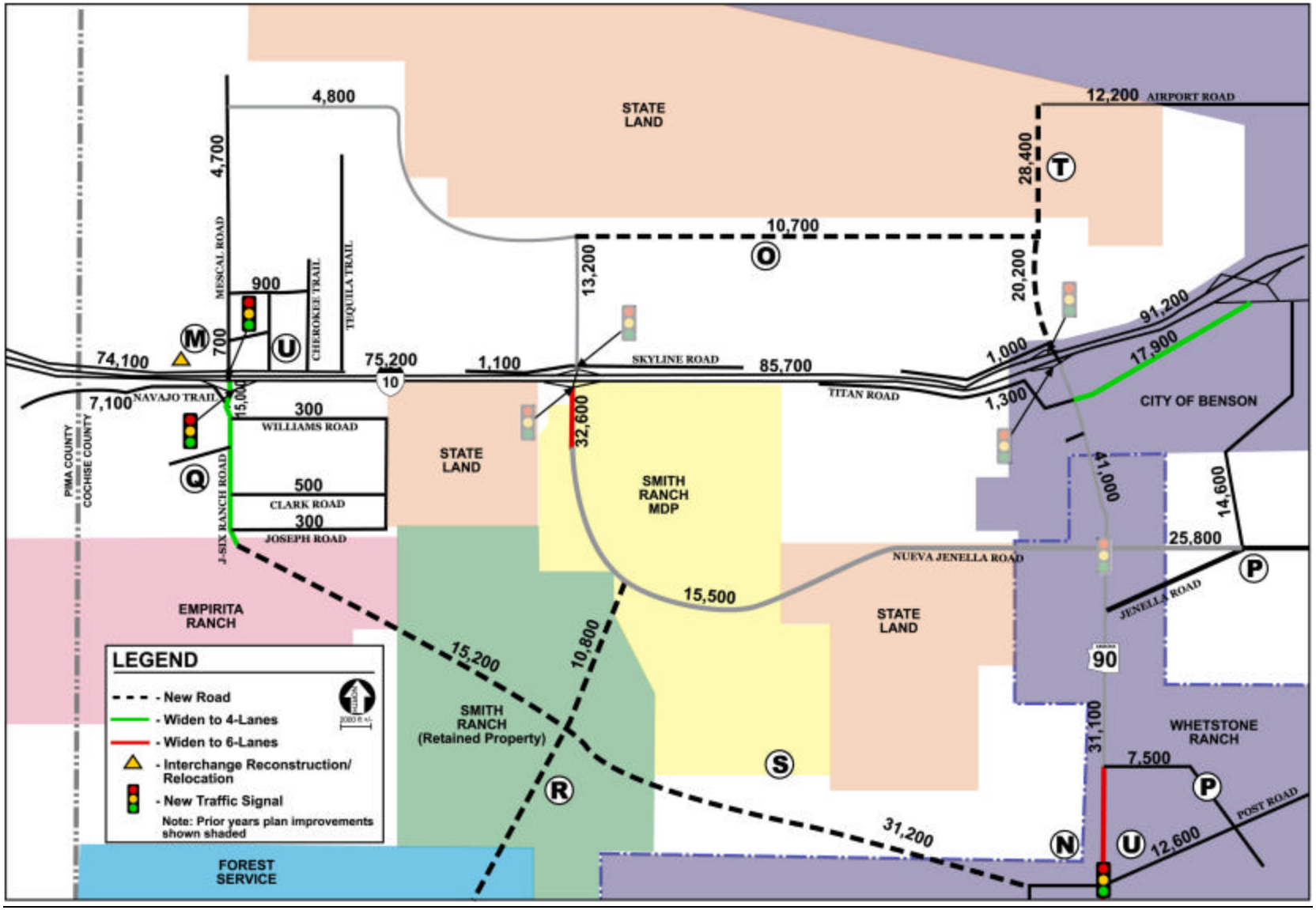


Exhibit 28 List of Build Out Projects and Costs

Proposed Roadway Network by Buildout							Studies Needed**			Potential Funding Sources				
Map Key*	**Project Description**	**Project Limits**	**Length (Miles)**	**Ultimate Functional Class**	**Existing Lanes**	**Estimated Cost ($M)**	**Advanced Planning**	**Location Study**	**Design/ Construction**	**Federal**	**State**	**County (1)**	**City (2)**	**Private (3)**
M	Reconstruct Mescal/J-Six Interchange	Interchange Area	N/A	Interchange	N/A	$ 10.00	X		X	X	X			
N	Widen SR 90 to 6 lanes	I-10 to North of Connector Road to South of Post Road	2.6	Arterial	4	$ 13.00	X		X	X	X		X	
O	Construct North Side Connector	Skyline Extention Road to SR 90 Extension	3.4	Collector	N/A	$ 8.50	X	X	X			X		X
P	Widen Jennella Road to 4 lanes	SR 90 to Prickly Pear (Benson)	1.5	Collector	2	$ 5.25	X		X			X	X	X
Q	Widen J-Six Ranch Road to 4 lanes	I-10 to New Southern East/West Connector	1.1	Collector	2	$ 3.85	X		X			X		X
R	Whetstone Mountains Recreational Access	Jennella Extension to Forest Boundary	1.5	Collector	N/A	$ 3.75	X	X	X	X		X		X
S	Southern East-West Connector - 4 Lanes	J-Six Ranch Road to SR 90/Post Road	7.3	Arterial	N/A	$ 32.85	X	X	X			X	X	X
T	State Route 90 Corridor Extension	I-10 to Airport Road	1.7	Arterial	N/A	$ 7.65	X	X	X	X	X		X	X
U	Traffic Signals - Mescal, J-Six TIs, SR90/Post Road	Interchanges	N/A	N/A	N/A	$ 0.45	X		X	X	X	X	X	X
	Costs ($M) by Build Out - Includes 2015, 2025 Pr					***$ 166.45***								

Exhibit 29 Build Out Projects



Freeway volumes in the vicinity of the study area are projected to exceed the current capacity of I-10. In general, when daily volumes on a 4-lane freeway exceed 50,000 vehicles per day (vpd), the acceptable capacity of the freeway is reached. Exhibit 30 shows that by 2015, I-10 will exceed this threshold. In fact, the acceptable capacity of a six-lane freeway is approximately 80,000 vpd, and most segments may be over this threshold by 2025. The provision of alternate east-west corridors within the project vicinity will alleviate some of the congestion at build out. However, the Arizona Department of Transportation must monitor traffic volumes on I-10 to plan for future widening and system improvements. Accordingly, this study further recommends that ADOT aggressively pursue its planning and design concepts for I-10 into Cochise County. The studies currently stop at the Cochise/Pima County line. Digital orthophotography will be available in calendar year 2005 from the Pima Association of Governments, which should be helpful for planning and preliminary design purposes.

Exhibit 30 Future I-10 Volumes

	2015			2025			BUILDOUT		
Segment	EB	WB	Total	EB	WB	Total	EB	WB	Total
West of Mescal	27,800	27,800	55,600	33,400	33,000	66,400	37,100	37,000	74,100
Mescal to Skyline	34,600	34,700	69,300	41,100	41,000	82,100	40,600	34,600	75,200
Skyline to SR 90	35,300	35,300	70,600	50,300	49,600	99,900	44,400	41,300	85,700
East of SR 90	31,200	30,800	62,000	40,500	41,000	81,500	44,300	46,900	91,200

APPENDIX

Community Profiles
Benson
Cochise County
Pima County

HURF Distribution FY 2004

State Highway System Log Excerpts
I-10
SR 90

Recorded Traffic Volumes (CLA)
Recorded January 2004
Recorded February, 2003

Florida DOT Capacity Charts
LOS Worksheet

Right of Way/ Plats

Existing and Future Conditions Socioeconomic Data by Zone

Model Statistics / Travel Characteristics

Existing Conditions Calibration Map

Existing Conditions TAZ Map/Census Blocks Overlay

TAZ Map – Future Conditions (BUILDOUT)
Alternate 1
Alternate 2
Alternate 3

Community Profiles

Benson

Cochise County

Pima County

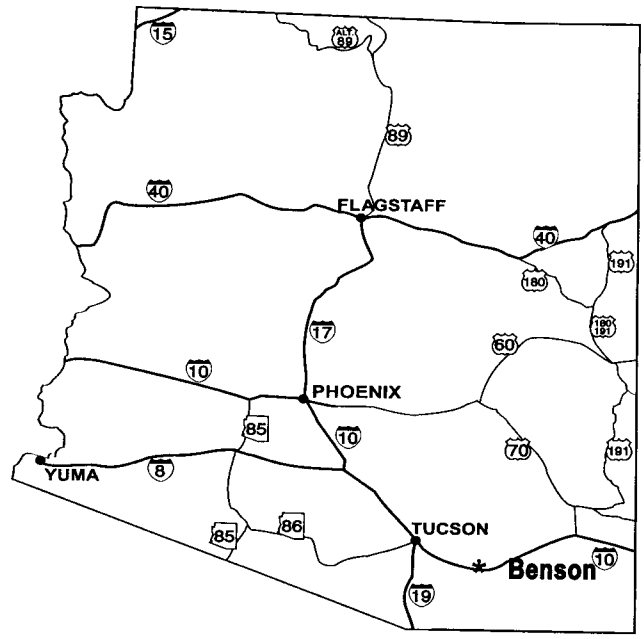
BENSON

Community Profile

Prepared by the ARIZONA DEPARTMENT OF COMMERCE

Benson serves as the western gateway to the scenic and historic attractions of Cochise County and has copyrighted the name "Home of Kartchner Caverns State Park." Located in the historical San Pedro Valley, it offers proximity to both Tucson and Sierra Vista. Its rugged mountains, grassy valleys, moderate climate, and proximity to many historical sites makes it a popular tourist attraction. The City of Benson was founded in 1880, when the Southern Pacific Railroad came through southern Arizona. Until 1910, Benson was the railroad hub of southern Arizona. It was named for Judge William B. Benson of California, a friend of Charles Crocker, then-president of the railroad.

FOUNDED: 1880
INCORPORATED: Yes - 1924
COUNTY: Cochise County
ELEVATION: 3,685 feet
DISTANCE TO PHOENIX: 156 miles
DISTANCE TO TUCSON: 45 miles
HIGHWAYS: SR-90, SR-80, I-10
ENTERPRISE ZONE AVAILABLE



POPULATION

	1990	2000	2004
Benson	3,824	4,711	4,785
Cochise County	97,624	117,755	130,220
Arizona	3,665,228	5,130,632	5,832,150

Sources: Arizona Department of Economic Security and U.S. Census Bureau.
NOTE: Local sources estimate the trade area population to be 10,000.

PRINCIPAL ECONOMIC ACTIVITIES

Benson is situated along several trade routes – Interstate 10, U.S. 80, state Highway 90 and the main line of the Union Pacific Railroad. AEPCO and Apache Nitrogen Products are major employers. Many residents work in Tucson or Sierra Vista. Both retail chain and specialty stores are available. The city supports a large retired population and is a winter refuge for people from colder climates. Its nearby historic and scenic sites are increasingly popular with tourists.

County Employment	2004
Educational & Health Srvs	3,800
Financial Activities	900
Government	11,550
Information	525
Leisure & Hospitality	4,000
Manufacturing	875
Mining & Construction	2,550
Professional & Business Srvs	3,550
Trade, Transportation & Utilities	6,300

Sources: Arizona Department of Economic Security
Figures are organized under the North American Industrial Classification System (NAICS).

Major Private Employers

AEPCO
Apache Nitrogen
Benson Hospital
Gas City
SEABHS

Major Public Employers

Benson Unified School
City of Benson

LABOR FORCE DATA

	1990	2000	2004
Civilian Labor Force	1,322	1,475	1,668
Unemployed	101	80	83
Unemployment Rate	7.6%	5.4%	5.0%

Sources: Arizona Department of Economic Security.

Growth Indicators	1990	2000	2004
New Bldg. Permit	67	105	N/R
Taxable Sales ($)	32,545,650	69,330,760	80,360,400
Net Assessed Valuation ($)	10,786,085	20,335,260	27,093,333

Sources: Arizona State University; AZ Dept. of Revenue; AZ Tax Research Foundation
N/R: No Report

SCENIC ATTRACTIONS

Cochise County, land of the great Apache chief Cochise and the notorious renegade Geronimo, was truly "the last frontier," subject to raids by the Chiricahua Apaches until the late 1880s. Nearby is the world famous "Kartchner Caverns State Park" and "Old Tucson's" Mescal movie site. Other attractions include: Tombstone, 20 miles from Benson; "Gammon's Gulch" Movie Set & Museum; historic Fort Huachuca, with its 1880's buildings and an Indian war days museum; the Amerind Museum which features remnants of prehistoric Indian cultures; and the Holy Trinity Monastery along the San Pedro Riparian Area are all "must see" local attractions. In addition, there are numerous mountain ranges that provide rock hounding, photography, picnicing, hiking, camping, bird watching and hunting opportunities.

BENSON

Community Profile

TAXES

Property Tax Rate	1990	2000	2004
Elem/High School	6.27	8.99	7.08
City/Fire District	0.47	0.62	0.65
Countywide	6.26	5.70	5.69
Total	$13.00	$15.31	$13.42

Sources: Arizona Tax Research Foundation
Note: Tax rate per $100 assessed valuation.

NOTE: School district participates in Cochise Technical District (CTD).

Sales Tax Rate

City	2.50%
County	0.50%
State	5.60%

Sources: League of Arizona Cities and Towns, Arizona Dept. of Revenue

Industrial Properties

Several sites with all utilities, railroad and freeway access are available. For more information contact the Benson Economic Development Committee.

Utilities

Electricity	Sulphur Springs Valley Electric Coope	520.586.2238
Natural Gas	Benson Municipal Natural Gas	520.586.2245
Telephone	Qwest (statewide)	800.244.1111
Water & Sewer	Benson Municipal Water & Sewer	520.586.2245

Cable Providers: Yes
Cable Internet Service Provider: No
Digital Switching Station: Yes
Fiber Optics: Yes
Internet Service Provider: Yes

COMMUNITY FACILITIES

Benson offers a broad range of community facilities including two parks, one golf course, four tennis courts, an Olympic-size pool, a bowling alley, a library, senior citizens center, many baseball, football, track and soccer fields. There is also a museum/gallery.

Educational Institutions	Public	Private
Community College	Y	N
Elementary	Y	Y
High School	Y	N
Middle School	Y	N
Vocational/Technical College	N	Y

Financial

Number of Banks: 4

Governmental Agencies

Fire Department: Staffed City/Local Fire Department

Law Enforcement: City Police Department

Airports

Benson Municipal Airport (E-95/elevation 3829) (Runway 10/28) (4,000 ft. x 75-ft.) (paved/lighted) (Jet A/100LL fuel available 24/7)

Medical

One community hospital.

Hotel and Lodging Facilities

Number of Rooms: 398

Meeting Rooms: 5

Capacity of Largest Facility: 150

Weather

Month	Average Temperature (°F) Daily Minimum	Daily Maximum	Average Total Precipitation (Inches)
January	28.8	63.0	0.68
February	32.0	66.4	0.74
March	36.6	72.3	0.51
April	42.1	79.2	0.23
May	49.1	87.8	0.10
June	58.5	96.6	0.37
July	65.7	96.4	2.69
August	64.1	93.5	2.79
September	57.1	91.1	1.32
October	44.8	83.0	0.62
November	34.1	71.7	0.57
December	29.7	63.1	0.71
Yearly Avg	45.2	80.3	11.34

Western Regional Climate Center, wrcc@dri.edu. Period of record 1894-1975. Average Total Snowfall 1.8".

This profile was prepared by the Arizona Department of Commerce Communications Division in cooperation with local sources.

For further information, contact:

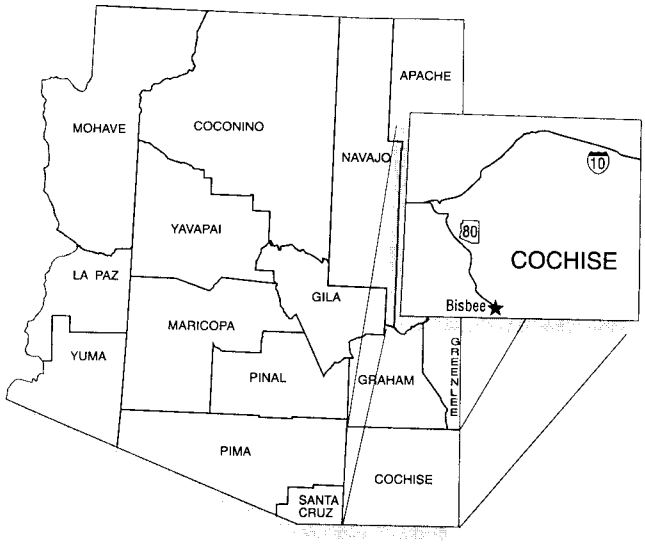
Benson-San Pedro Valley Chamber of Commerce
P.O. Box 2255
Benson, AZ 85602
520.586.2842 Fax: 520.586.1972
Email: info@bensonchamberaz.com
Web: www.bensonchamberaz.com

ARIZONA DEPARTMENT OF COMMERCE
Our Job is JOBS!
1700 W. Washington, Suite 600
Phoenix, AZ 85007
602.771.1100 FAX: 602.771.1200
http://www.azcommerce.com/

Prepared on 6/2005

Profile:

Cochise County, Arizona



Cochise County was named for the renowned Apache chief in 1881, when it was established during the 11th Territorial Assembly. Archeological finds date civilization along the San Pedro River to 9000-6000 B.C., when members of the Clovis civilization inhabited the area.

Tombstone, one of the largest cities in the western United States in 1881, was designated the first county seat. Tombstone's silver mines flooded in 1887, devastating the community, but the county seat stayed in Tombstone, the "town too tough to die," until 1929 when Bisbee became the county seat.

Like Tombstone, Bisbee was a mining town – site of the Copper Queen Mine and famous Lavender Pit, discovered in 1877. Mining continued there through much of the 20th century. Today Bisbee is a popular artist community and tourist destination.

Benson, founded in 1880, is on I-10 at the gateway to Kartchner Caverns State Park. Some 30 miles south are the thriving communities of Sierra Vista, by far the largest city in the county, and Huachuca City. Both are economic neighbors of Fort Huachuca, one of the largest civilian employers in southern Arizona. Fort Bowie, Coronado National Memorial and the Chiricahua National Monument are national park facilities.

Cochise County also is an important agricultural area. With 6,219 square miles, Cochise is as big as Rhode Island and Connecticut combined. Once known as the Cattle Capital of the nation, Willcox is the home of the largest weekly cattle auction in Arizona. Specialty crops and livestock, including exotic animals, play an important role in the local economy. Douglas, once dependent upon mining and agriculture, has developed a manufacturing base because of its location on the U.S.-Mexico border. All of Cochise County has been designated as an Enterprise Zone, except the northeast section of the county.

Cochise is one of only three counties in Arizona without an Indian reservation. Individual and corporate ownership account for 40 percent of the land; the state of Arizona, 35 percent; the U.S. Forest Service and Bureau of Land Management, 22 percent; and other public lands comprise the remaining 4 percent.

ARIZONA DEPARTMENT OF COMMERCE
Our Job is JOBS!
1700 West Washington Street, Phoenix, Arizona 85007 (602) 771-1100
www.azcommerce.com

Cochise County At-A-Glance

County Seat: Bisbee

2001 Population: 121,040

2001 Labor Force: 42,149

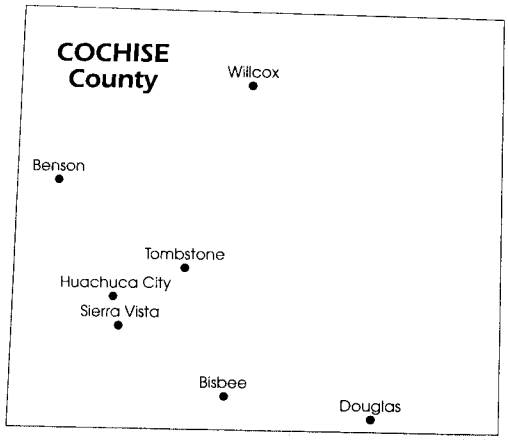
Unemployment Rate: 5.2%

Major Industries: Services, Retail Trade, Construction

Best Paying Industries: Transportation; Services; Finance, Insurance & Real Estate

Sources: Population Estimates, Population Statistics Unit, Research Administration and 2003 Preliminary Special Unemployment Report, Arizona Department of Economic Security.

Incorporated Cities



Population

	1990	2000	2003
Arizona	3,665,228	5,130,632	5,629,870
Cochise County	97,624	117,755	124,040
Major Cities			
Benson	3,824	4,711	4,745
Bisbee	6,288	6,090	6,140
Douglas	12,822	14,312	16,710
Huachuca City	1,782	1,751	1,800
Sierra Vista	32,983	37,775	40,415
Tombstone	1,220	1,504	1,535
Willcox	3,122	3,733	3,815

Source: U.S. Census Bureau and Arizona Department of Economic Security, Population Statistics Unit

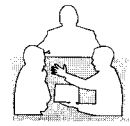
Age Distribution

	% of total
0-14	21.7%
15-24	13.9%
25-44	26.0%
45-64	23.7%
65+	14.7%

Population Composition

Race	% of total
White	76.7%
African American	4.5%
Native American	1.1%
Asian or Pacific Islander	1.6%
Other	15.8%
Totals	100%
Hispanic Heritage*	30.7%

Source: U.S. Census Bureau, April 1, 2000 Census
** Persons of Hispanic heritage may be of any race*



Labor Force

2003 Civilian Labor Force

	Labor Force	Unemployment Rate
Arizona	2,690,294	5.6%
Cochise County	45.965	5.2%
Major Cities		
Benson	1,635	6.1%
Bisbee	3,279	5.2%
Douglas	5,262	10.7%
Huachuca City	776	7.2%
Sierra Vista	16,343	4.0%
Tombstone	598	4.5%
Willcox	1,619	3.2%

Source: Arizona Department of Economic Security, 2003 Special Unemployment Report.

2003 Employment by Sector

Construction	2,225
Education & Health Services	3,575
Financial Activities	875
Government	11,400
Information	475
Leisure & Hospitality	3,625
Manufacturing	925
Professional & Business Services	3,450
Trade, Transportation & Utilities	6,125

Source: Arizona Economic Security
Figures are organized under the North American Industrial Classification System (NAICS).

2003 Total All Occupations*

Employment	34,800
Hourly Compensation	
Median Wage	$11.85
Average Wage	$14.86
Entry Wage	$ 6.28
Experienced	$18.44

2003 Employment by Occupation - Average Wages*

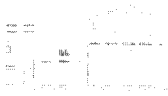
	Employment	Avg. Wages
Office & Administrative Support	6,450	$12.18
Education, Training & Library	2,750	$13.90
Sales & Related	3,100	$10.37
Protective Service	2,060	$18.15
Food Preparation & Serving Related	2,560	$7.05
Construction & Extraction	1,940	$13.67
Management	1,760	$30.47
Transportation & Material Moving	1,740	$9.83

Source: Prepared by the Ariz. Dept. of Economic Security, Research Administration in cooperation with the U.S. Department of Labor, Bureau of Labor Statistics, April, 2004

Major Employers

Employer	Employment Type
1. U.S. Army Fort Huachuca	Government
2. Sierra Vista Unified School District	Education
3. Cochise County, Bisbee	Government
4. U.S. Border Patrol	Government
5. Cochise College - Douglas/Sierra Vista	Colleges/Universities
6. Aegis, Sierra Vista	Customer Support Center
7. Sierra Vista Regional Health Center	Health Services
8. Arizona State Prison, Douglas	Government
9. Douglas Unified School District	Education
10. Wal-Mart - Douglas/Sierra Vista	Trade
11. City of Sierra Vista	Government
12. Safeway Stores, Inc.	Trade
13. New Tech, Ft. Huachuca	Aerospace
14. Sierra Southwest, Benson	Utility
15. Northrup Grumman, Sierra Vista	Aerospace
16. City of Douglas	Government
17. Willcox Unified School District	Education
18. Palominas Public Schools	Education
19. ILEX, Sierra Vista	Defense Contractors
20. Cochise Private Industrial Council, Sierra Vista	Non-Profit/Workforce Dev

Source: Cochise College Center for Economic Research, 2002



Utilities

Electric Service

Major Suppliers:

APS (Bisbee/Douglas/Tombstone)	(800) 253-9405
Sulphur Springs Valley Electric Co-op. (Benson)	(520) 586-2238
Sulphur Springs Valley Electric Co-op. (Huachuca City/Sierra Vista)	(520) 458-4691
Sulphur Springs Valley Electric Co-op. (Willcox)	(520) 458-4691

Natural Gas Service

Major Suppliers:

Southwest Gas Corp. (Bisbee/Douglas/ Huachuca City/Sierra Vista/Tombstone/Willcox)	(800) 766-9722

Water and Sewer

For information, see specific community profile and contact the community or the local chamber of commerce directly.

Telephone

Major Suppliers:

Qwest Communications	(800) 244-1111
Valley Telephone Cooperative, Inc. (Willcox)	(520) 384-2231

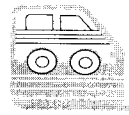
Medical

Major Hospitals:

Benson Hospital, Benson	(520) 586-2261
Copper Queen Community Hospital, Bisbee	(520) 432-5383
Northern Cochise Community Hospital, Willcox	(520) 384-3541
Sierra Vista Regional Health Center, Sierra Vista	(520) 458-4641
Southeast Arizona Medical Center, Douglas	(520) 364-7931

Education

Cochise College, Douglas, Sierra Vista	(520) 364-7943
University of Arizona, Sierra Vista, Douglas	(520) 458-8278
University of Phoenix, Ft. Huachuca	(520) 459-1093
Western International University, Ft. Huachuca	(520) 459-5040



Transportation

Highways

Interstate 10, U.S. 191, state Highway 80, state Highway 82, state Highway 90, state Highway 92, state Highway 181, state Highway 186

Bus Lines

Autobuses Crucero, Greyhound Bus Lines, Kit Shuttle, Angel Transportation

Rail Service

AMTRAK	(800) 872-7245
Union Pacific Railroad	(888) 870-8777

Trucking Service

Roadway Express Inc., C.F. Motor Freight, Maddux and Sons Inc., Echo Trucking Co., Dunagan's Trucking, Harrington Trucking Co., Inc.

Air Service

Major Airports

Airport Name: **Bisbee-Douglas International Airport**
(520) 364-2771
Functional Class: Business Service
Elevation: 4,151'
Ownership: Public
Use: Public
Nav-Aids: T-VOR
Runway: 17/35 Length: 7,292' Width: 150'
Surface: Asphalt

Airport Name: **Bisbee Airport** (520) 432-6030
Functional Class: Community Service
Elevation: 4,780'
Ownership: Public
Use: Public
Nav-Aids: None
Runway: 17/35 Length: 5,900' Width: 60'
Surface: Asphalt
Runway: 02/20 Length: 2,900' Width: 160'
Surface: Dirt

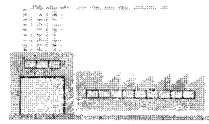
Airport Name: **Cochise College** (800) 966-7943
Location: Douglas
Functional Class: Community Service
Elevation: 4,120'
Ownership: Public
Use: Public, Education
Nav-Aids: None
Runway: 05/23 Length: 4,803' Width: 75'
Surface: Asphalt

Airport Name: **Cochise County** (520) 384-2908
Location: Willcox
Functional Class: Community Service
Elevation: 4,181'
Ownership: Public
Use: Public
Nav-Aids: None
Runway: 03/21 Length: 6,110' Width: 77'
Surface: Asphalt

Airport Name: **Douglas Municipal** (520) 364-3501
Functional Class: Community Service
Elevation: 4,181'
Ownership: Public
Use: Public
Nav-Aids: DUG-VOR 125 Radio 10NM
Runway: 03/21 Length: 5,760' Width: 60'
Surface: Asphalt
Runway: 18/36 Length: 4,146' Width: 98'
Surface: Dirt

Airport Name: **Sierra Vista Municipal** (520) 459-8575
Location: Sierra Vista
Functional Class: Commercial Service
Elevation: 4,664'
Ownership: Public
Use: Public
Nav-aids: VOR/NDB
Runway: 11/29 Length: 5,365' Width: 100'
Surface: Asphalt, concrete
Runway: 08/26 Length: 12,000' Width: 150'
Surface: Asphalt, concrete
Runway: 02/20 Length: 4,300' Width: 75'
Surface: Asphalt, concrete

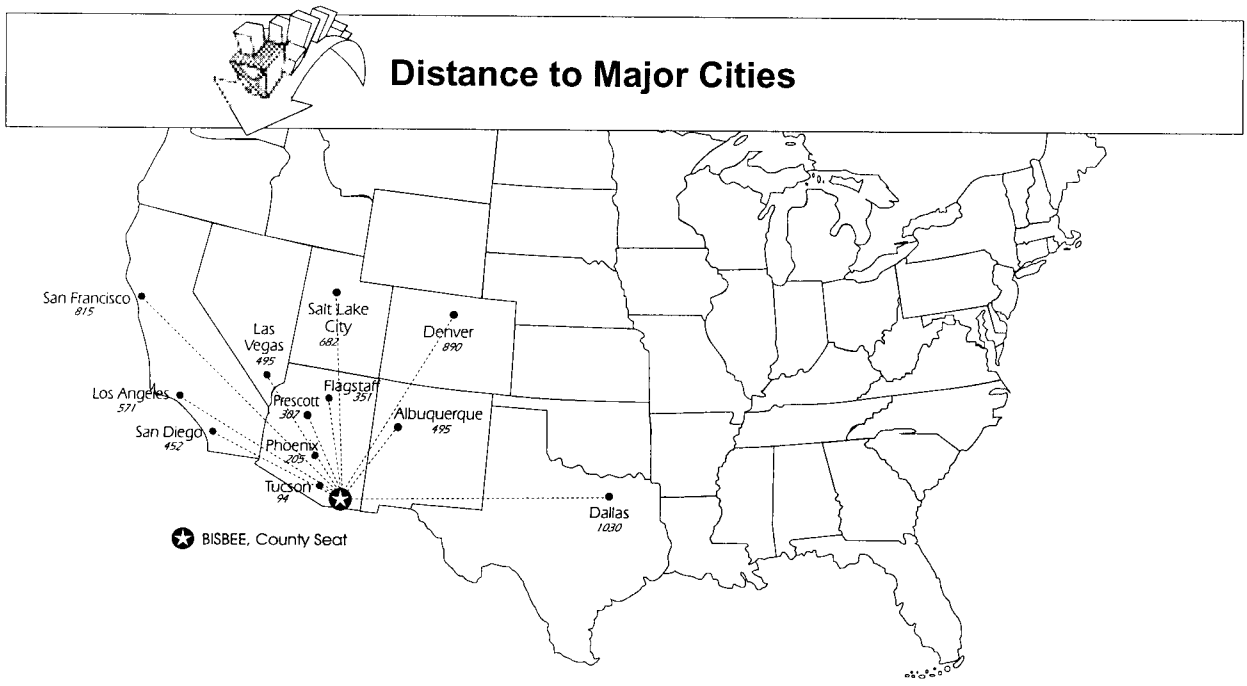
Sources: Department of Transportation, Arizona Airports Land Use Compatibility Study, and Cochise County Airport System Plan



Industrial Facilities

Benson

Several sites with all utilities, railroad and freeway access are available, including an 80-acre industrial park. For more information, contact the Benson Economic Development Committee at (520) 586-2245.



Bisbee

Several properties with all utilities are available, including the Bisbee Airport Industrial Park. There are also several commercial properties suitable for light industry. One industrial park, located in Naco, Sonora, Mexico, opereates on the "twin plant" concept which allows U.S. companies to operate in Mexico. For more information, contact the City of Bisbee at (520) 432-6000.

Douglas

Three industrial parks (Cochise Industrial Park with 75 acres, Douglas IDA Park with 33 acres and Phelps Dodge Industrial Park with 30 acres) are available. All utilities accessible upon request. Air and truck transportation available. For further information, contact the City of Douglas, Economic Development Office at (520) 805-4047.

Huachuca City

Huachuca City has one 46-acre industrial park. Utilities and state Highway 90 are accessible. For more information, contact the Town of Huachuca City at (520) 456-1354.

Pearce/Sunsites

Pearce/Sunsites has an 800-acre park, with utilities, railroad and highway access. For more information, contact Arizona Electric Co-op., P.O. Box 670, Benson, AZ 85602, or phone (520) 586-3631.

Sierra Vista

Sierra Vista has two parks (50 acres) with Foreign Trade Zone opportunities and all utilities available. Contact the Sierra Vista Economic Development Foundation at (520) 458-6948. Sierra Vista is a Foreign Trade Zone grantee.

Willcox

Willcox has one industrial park with utilities. Rail and truck routes are accessible. Contact the Economic Development Division, Willcox Chamber of Commerce, c/o Eddie Browning at (520) 384-2995.

Financial Authorities

Industrial Development Authorities

Industrial Development Authority of Cochise County
Mr. Robert Fernandez
P.O. Box 780
Douglas, AZ 85607
(520) 432-9200/Fax: (520) 364-8335

Industrial Development Authority of the City of Douglas
Mr. Martin F. Ryan, Statutory Agent
Martin F. Ryan, Ltd.
6262 N. Swan Road, Suite 255
Tucson, AZ 85718-3600
(520) 299-8117/Fax: (520) 299-7860

Note: This information is as current as the date of this publication and was taken from reliable sources; however, we do not guarantee its completeness nor does the Arizona Department of Commerce endorse any particular individual.

This information is provided as a service only.

Commercial Banks

Arizona Bank
Armed Forces Bank
Bank of America
Bank One
National Bank of Arizona
Norwest Bank
Stockman's Bank
Wells Fargo Bank

State Corporate Income Tax

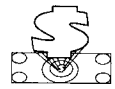
Corporate income tax rate is 6.968 percent effective for taxable years beginning from and after December 31, 2000.

Source: Arizona Department of Revenue

Property Tax

Community	*School District*	*City/Fire*	*Countywide*	*Total*
Benson*	7.34	0.62	5.71	13.67
Bisbee	6.95	2.37	5.71	15.03
Douglas	6.88	1.09	5.71	13.68
Huachucha City*	5.60	1.00	5.71	12.31
Sierra Vista	5.48	0.15	5.71	11.34
Tombstone	5.60	1.19	5.71	12.50
Willcox	4.68	1.06	5.71	11.45

Source: Arizona Tax Research Foundation, 2003 (Rate is per $100 of assessed value)
** School district participates in Cochise Technical District (CTD).*



Taxes

Sales Tax

The state imposes a 5.6 percent transaction privilege (sales) tax on most business activities. Cochise County imposes a 1/2 cent general sales tax. Huachuca City and Sierra Vista have a 1.5 percent sales tax. Willcox has a 3 percent sales tax. The cities of Benson, Bisbee, Douglas and Tombstone have a 2.5 percent sales tax. Additional hotel/motel (bed) taxes are as follows: Benson 2 percent; Bisbee 2.5 percent; Tombstone 3 percent; and Sierra Vista 4 percent.

Payroll Tax

Payroll taxes in Arizona are computed based on federal filing by employers and employees. Generally, withholding for state payroll taxes is between 10 and 37 percent of federal withholding based on employees' income.

Source: Arizona Department of Revenue

For Further Information

Benson Economic Development Committee, Inc.
P.O. Box 2223
Benson, AZ 85602
(520) 586-2245
FAX: (520) 586-3375
www.cityofbenson.com/

Benson-San Pedro Valley Chamber of Commerce
Benson Industrial Development Authority
P.O. Box 2255
Benson, AZ 85602
www.bensonchamberaz.com
(520) 586-2842
FAX: (520) 586-1972
Email: info@bensonchamberaz.com

Bisbee Chamber of Commerce
P.O. Box Drawer BA
Bisbee, AZ 85603
www.arizonaguide.com/bisbee
(520) 432-3030
FA:X (520) 432-3308
Email: chamber@bisbeearizona.com

Bowie Chamber of Commerce
P.O. Box 287
Bowie, AZ 85605
(520) 847-2510
FAX: (520) 847-2584
Email: mtviewrv@vtc.net

Cochise County Board of Supervisors
1415 W. Melody Lane, Building B
Bisbee, AZ 85603
http:/www.co.cochise.az.us
(520) 432-9200
FAX: (520) 432-5016
Email: board@co.cochise.az.us

Douglas Chamber of Commerce
1125 Pan America Avenue
Douglas, AZ 85607
(520) 364-2477
FAX: (520) 364-6304

City of Douglas, Community & Economic Development
425 10th St.
Douglas, AZ 85607
http://www.douglasaz.gov/
(520) 805-4047
FAX: (520) 364-1585

Town of Huachuca City
500 N. Gonzales Blvd.
Huachuca, AZ 85616
(520) 456-1354

Pearce-Sunsites Chamber of Commerce
133 Frontage Rd.
P.O. Box 308
Pearce, AZ 85625
(520) 826-3535

Greater Sierra Vista Area Chamber of Commerce
21 E. Wilcox Dr.
Sierra Vista, AZ 85635
www.sierravistachamber.org
(520) 458-6940
FAX: (520) 452-0878
Email: execdir@c212.com

Sierra Vista Economic Development Foundation
P.O. Box 2380
311 E. Wilcox
Sierra Vista, AZ 85636
www.c2i2.com/~svedf
(520)458-6948
FAX: (520) 458-7453
Email: svedf@c2i2.com

Tombstone Chamber of Commerce
P.O. Box 995
Tombstone, AZ 85638
www.tombstone.org
(520) 457-9317
FAX: (520) 457-2458
Email: tombstonechamber@theriver.com

Willcox Chamber of Commerce
1500 N. Circle I Rd.
Willcox, AZ 85643
www.willcoxchamber.com
(520) 384-2272
FAX: (520) 384-0293
Email: willcoxchamber@vtc.net

County profiles are produced by the Communications Division of the Arizona Department of Commerce.

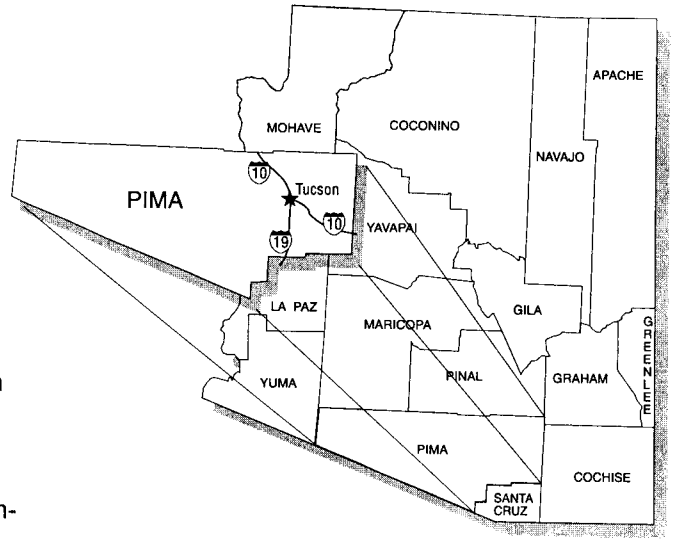
Janet Napolitano
Governor of Arizona

Gilbert Jimenez, Director
Arizona Department of Commerce

Profile:

Pima County, Arizona

Pima County, the second largest of the four original counties, was created in 1864 and included approximately all of southern Arizona acquired from Mexico by the Gadsen Purchase. Settlement of the region goes back to the arrival in the 1690s of the Spanish who encountered Native Americans already living there.



About the middle of the 18th century, silver and gold were discovered and prospectors from Mexico entered the area in droves. The latter part of the century saw expansion of mining and ranching in Pima County and an increase in population, despite the threat of attack from roaming bands of Apaches.

The Royal Presidio de San Augustín del Tucson was completed by 1781, and it remained the northern-most outpost of Mexico until the arrival of American soldiers in 1856. From a population of 395 in 1820, Tucson has grown to be the second largest city in Arizona. It has always served as the Pima County seat and was the Arizona Territorial capital from 1867 to 1877. Tucson is home to the University of Arizona and offers many historical and cultural attractions.

Just south of Tucson is the Mission of San Xavier del Bac, founded in 1697 by Father Kino and still in use today. Within Pima County are two cactus forests – Saguaro National Park to the northeast and Organ Pipe Cactus National Monument in the southwestern portion.

Although greatly reduced from its original size, Pima County still covers 9,189 square miles. It ranges in elevation from 1,200 feet to the 9,185-foot peak of Mount Lemmon. The San Xavier, Pascua Yaqui and Tohono O'odham reservations together account for ownership of 42 percent of land located in Pima County. The state of Arizona owns 15 percent; the U.S. Forest Service and Bureau of Land Management, 13 percent; other public lands, 16 percent; and individual or corporate ownership, 14 percent. Pima County has Enterprise Zones in the central areas of the cities of Tucson and South Tucson and a central portion of Pima County.

ARIZONA DEPARTMENT OF COMMERCE
Our Job is JOBS!

1700 W. Washington Street, Phoenix, Arizona 85007 (602) 771-1186
www.azcommerce.com

Pima County At-A-Glance

County Seat: Tucson

2003 Population: 910,950

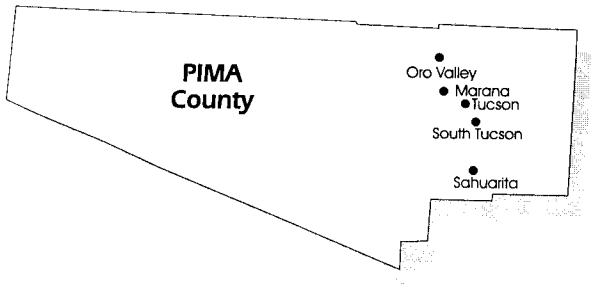
2003 Labor Force: 426,018

Unemployment Rate: 4.3%

Major Industry Clusters:
Aerospace,
Bioindustry,
Environmental Technology,
Information Technology,
Manufacturing,
Optics,
Plastics & Advanced Composite Materials
Software
Teleservices

Sources: Population Estimates, Population Statistics Unit, Research Administration.nd 2003 Preliminary Special Unemployment Report, Arizona Department of Economic Security.

Incorporated Cities



Population

	1990	2000	2003
Arizona	3,665,228	5,130,632	5,629,870
Pima County	666,880	843,746	910,950
Major Cities/Communities			
Ajo	2,919	3,705	4,000*
Catalina	4,864	7,025	7,585*
Green Valley	20,644	17,283	18,660*
Marana	2,187	13,556	20,600
Oro Valley	6,670	29,700	37,225
Pascua Yaqui Reservation	2,412	3,315	3,579*
Sahuarita	1,629	3,242	7,425
Sells/Tohono O'odham Reservation	2,750	2,799	3,022*
South Tucson	5,093	5,490	5,550
Tucson	405,390	486,699	514,725

Source: U.S. Census Bureau and Arizona Department of Economic Security, Population Statistics Unit.
** Based on county growth rate*

Age Distribution

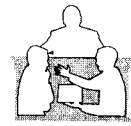
	% of total
0-14	20.6%
15-24	14.9%
25-44	28.4%
45-64	21.9%
65+	14.2%

Source: U.S. Census Bureau, April 1, 2000 Census

Population Composition*

Race	% of total
White	75.1%
African American	3.0%
Native American	3.2%
Asian or Pacific Islander	2.1%
Other	16.5%
Totals	99.9%
Hispanic Heritage*	29.3%

Source: U.S. Census Bureau, April 1, 2000 Census
** Persons of Hispanic heritage may be of any race*



Labor Force

2003 Civilian Labor Force

	Labor Force	Unemployment Rate
Arizona	2,690,294	5.6%
Pima County	426,018	4.3%
Major Cities/Communities		
Ajo	1,010	6.2%
Catalina	2,721	4.7%
Green Valley	2,819	2.9%
Marana	1,350	3.2%
Oro Valley	15,129	2.9%
Pascua Yaqui Indian Reservation	979	28.7%
Sells District	826	9.7%
South Tucson	2,285	10.9%
Tucson	265,189	4.8%

Source: Arizona Department of Economic Security, 2003 Special Unemployment Report.

2003 Employment by Sector

	in thousands
Construction	22.9
Manufacturing	28.7
Trade, Transportation & Utilities	54.4
Information	7.6
Financial Activities	15.1
Professional & Business Services	41.3
Educational and Health Services	45.6
Leisure and Hospitality	36.5
Government	78.2

Source: Arizona Department of Economic Security
Figures are organized under the North American Industrial Classification System (NAICS).

2003 Total All Occupations

Employment	335,160
Hourly Compensation	
Median Wage	$12.40
Average Wage	$15.68
Entry Wage	$ 6.54
Experienced	$19.13

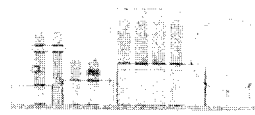
2003 Employment by Occupation Average Wages

	Employment	*Avg. Wages*
Office & Administrative	55,790	$12.42
Sales & Related	32,490	$13.04
Food Preparation & Serving Related	30,300	$ 7.43
Education, Training & Library	24,160	$17.24
Construction & Extraction	23,170	$13.84
Management	18,350	$33.74
Production	16,170	$12.97

Source: Prepared by the Ariz. Dept. of Economic Security, Research Administration in cooperation with the U.S. Department of Labor, Bureau of Labor Statistics, April, 2004

Major Employers in Pima County and Southern Arizona

Employer	*Employment Type*
Arizona Air National Guard, Tucson	Military
Amphitheater Public Schools, Tucson	Education
Bashas' Inc., (Oro Valley, Sahuarita, Sells, Tucson	Trade
Carondelet Health Network, Tucson	Health Services
CheckMate Professional Employer,	Professional/Business Services
City of Tucson	Government
Davis-Monthan Air Force Base, Tucson	Military
Fry's Food & Drug Stores, (Marana, Oro Valley, Tucson)	Trade
International Business Machines Corp., Tucson	Manufacturing
Marana Unified School District	Education
Northwest Medical Center, Tucson	Services
Pascua Yaqui Tribe, Tucson	Government
Phelps Dodge Mining Company, Safford	Mining
Pima Community College, Tucson	University and Colleges
Pima County, Tucson	Government
Pinal County	Government
Raytheon Missile Systems, Tucson	Military Manufacturing
Safeway Stores Inc., (Douglas, Green Valley, Oro Valley, Sierra Vista, Tucson)	Trade
Southern Arizona VA Health Care System,	Health Services
State of Arizona, Tucson	Government
Sunnyside Unified School District, Tucson	Education
TMC HealthCare, Tucson	Health Services
Tohono O'Odham Nation	Government
Tucson Unified School District, Tucson	Education
UniSource Energy Corporation, Tucson Electric Power Company	Utilities
University Medical Center Corporation, Tucson	Health Services
University of Arizona, Tucson	Universities and Colleges
U.S Army Intelligence Center & Fort Huachuca	Government
U.S. Border Patrol, Tucson	Government
Wal-Mart Stores Inc., (Green Valley, Marana, Oro Valley, Sahuarita, Tucson)	Trade



Utilities

Electric Service

Major Suppliers:	
APS	(800) 253-9407
Tohono O'odham Tribal Utility Authority	(520) 889-7563
Trico Electric Cooperative	(520) 744-2944
Tucson Electric Power	(520) 623-7711

Natural Gas Service

Major Supplier:	
Southwest Gas Corporation	(800) 889-5600
Tohono O'odham Tribal Utility Authority	(520) 889-7563

Water and Sewer

For information, see specific community profile or contact the local chamber of commerce directly.

Telephone

Major Suppliers:	
Tohono O'odham Tribal Utility Authority	(520) 889-7563
Qwest	(800) 244-1111

Medical

Major Hospitals:	
Carondelet St. Joseph's Hospital, Tucson	(520) 296-3211
St. Mary's Hospital, Tucson	(520) 872-3000
Northwest Medical Center	(520) 742-9000
Davis Monthan Air Force Base Hospital	(520) 228-2816
El Dorado Hospital and Medical Center, Tucson	(520) 886-6361
Kino Community Hospital, Tucson	(520) 294-4471
Palo Verde Mental Health Services, Tucson	(520) 324-4340
Tucson Heart Hospital, Tucson	(520) 696-2328
Tucson Medical Center, Tucson	(520) 327-5461
University Medical Center, Tucson	(520) 694-0111
Southern Arizona Veterans Affairs Healthcare System, Tucson	(520) 792-1450

Education

Chapman University, Tucson (Davis Monthan AFB)	(520) 745-6324
ITT Technical Institute	(520) 408-7488
Northern Arizona University	(520) 879-7900
Park College, Tucson (Davis Monthan AFB)	(520) 748-8266
Pima Community College, Tucson	(520) 206-4500
Prescott College	(520) 319-9868
Tucson Open University, Tucson	(520) 622-0170
University of Arizona, Tucson	(520) 621-2211
University of Phoenix, Tucson	(520) 881-6512

Tranportation

Highways

Interstate 10, I-19, state Highway 79, state Highway 83, state Highway 85, state Highway 86, state Highway 286, state Highway 386, Indian Route 15, Indian Route 19, Indian Route 21, Indian Route 34

Bus Lines

Greyhound Bus Lines and Sun-Tran

Rail Service

Union Pacific Railroad Company	(520) 629-2261
AMTRAK	(520) 623-4442

Trucking Service

Arkansas Best Freight Systems (ABF) Freight System Inc., Arizona Express, CFI, Citizen Express Lines, Consolidated Freight Ways, Con-Way Western Express, Danny Herman Trucking, DATS Trucking Inc., Dependable Highway Express, GI Trucking Co., Hurley Trucking, Lynden Air Freight, Motor Cargo, NW Transport Service Inc., Overnite Transportation Co., Pro Aire Transport, Roadway Express, Tucson Transport Inc., United Freight Services Inc., Viking Freight Inc., Willard Trucking & Brokerage, Yellow Freight Systems Inc.

Air Service

Major Airports

Airport Name: **Ajo Municipal** (520) 740-6449
Functional Class: Basic Service
Elevation: 1,458'
Ownership: Public
Use: Public/Military
Nav-Aids: None
Runway: 12/30 Length: 3,784' Width: 60'
Surface: Asphalt

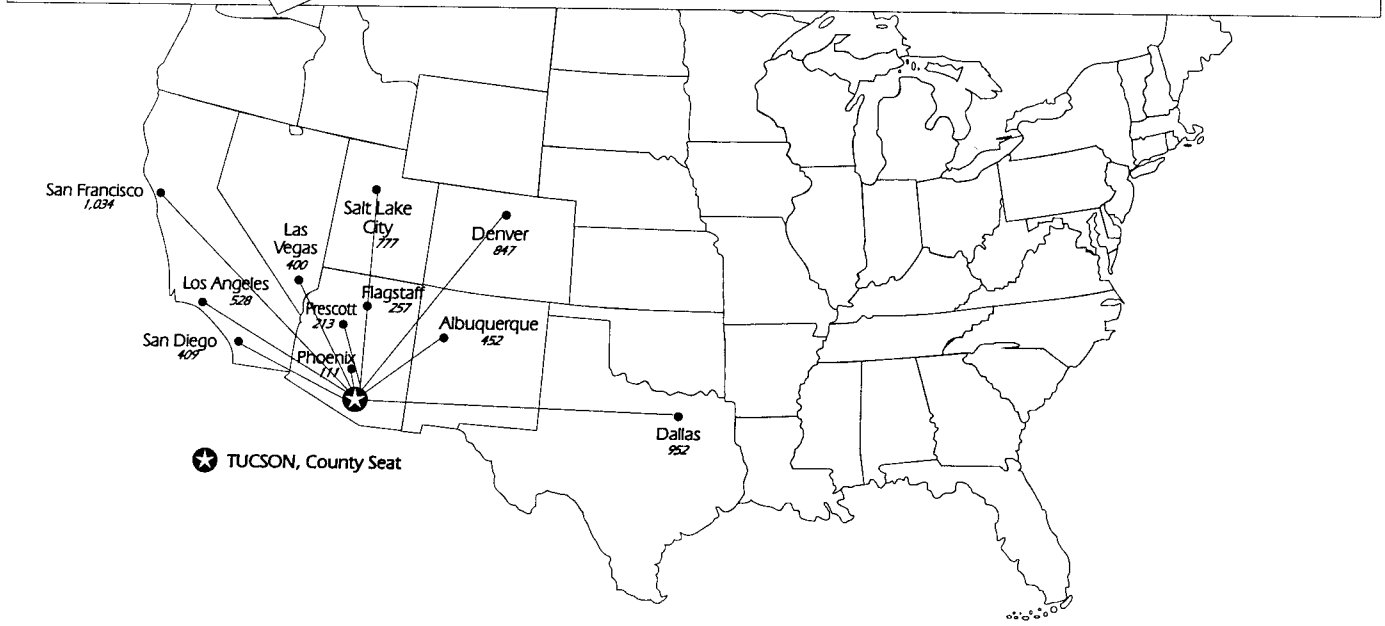
Airport Name: **Marana NorthWest Regional Airport**
(formerly Avra Valley Airport) (520) 740-6449
Location: Marana
Functional Class: Corporate Reliever
Elevation: 2,025'
Ownership: Public
Use: Public/Commercial
Nav-Aids: NDB (245.0) / AWOS
Runway: 03/21 Length: 4,200' Width: 75'
Surface: Asphalt
Runway: 12/30 Length: 6,900' Width: 100'
Surface: Asphalt

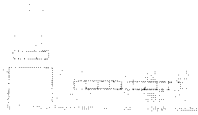
Airport Name: **Ryan Airfield** (520) 573-4820
Location: Tucson
Functional Class: Business Service
Elevation: 2,415'
Ownership: Public
Use: Public/Military
Nav-Aids: ILS/AWOS/VASI
Runway: 06/24 Length: 5,504' Width: 75'
Surface: Asphalt
Runway: 15/33 Length: 4,000' Width: 75'
Surface: Asphalt

Airport Name: **Tucson International** (520) 573-8100
Functional Class: Commercial Service
Elevation: 2,641'
Ownership: Public
Use: Public/Commercial/Military
Nav-Aids: ILS/DME
Runway: 03/21 Length: 7,000' Width: 150'
Surface: Asphalt
Runway: 11L/29R Length: 10,994' Width:150'
Surface: Asphalt
Runway: 11R/29L Length: 9,129' Width: 75'
Surface: Asphalt

Source: Department of Transportation, Arizona Airports Land Use Compatibility Study

Distance to Major Cities





Industrial Facilities

Marana

The Continental Ranch Industrial park is fully developed on 275 acres. More than 2,000 acres near I-10, the railroad, and the Marana NW Regional Airport are zoned for industrial use. For more information, contact the Town of Marana at (520) 682-3401 or the Marana Chamber of Commerce at (520) 682-4314.

Oro Valley

There are 956 acres available for industrial development of light, clean businesses in a campus park setting. More sites have all utilities available at the lot line. For current property information, contact the Economic Development Administrator, (520) 297-2591.

Sells/Tohono O'odham Reservation

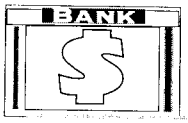
There is one industrial park with utilities located on the San Xavier Reservation, seven miles southwest of downtown Tucson along U.S. 89 and adjacent to I-10. Foreign Trade Zone opportunities are available. For further information, contact the San Xavier Development Authority or Northill-Papago, Ltd., 7800 S. Nogales Hwy., Tucson, AZ 85706; (520) 746-3692.

South Tucson

Located in a State Enterprise Zone, South Tucson is able to fast track inspection and permitting. Additionally, incentives for industrial development are offered. For further information, contact the City of South Tucson, (520) 792-2424.

Tucson

Many industrial properties are available with space for light or heavy industry, office, warehouse, commercial and storage. Parcels vary in size and can be obtained by monthly or annual leases. Current information is available from the Greater Tucson Economic Council, (520) 882-6079, and the City of Tucson Office of Economic Development, (520) 791-5093.



Financial Authorities

Industrial Development Authorities

Industrial Development Authority of Pima County
Mr. Mario Yrun, President
c/o Russo, Cox and Russo
1820 E. River Road, Suite 230
Tucson, AZ 85718
(520) 529-1515/Fax: (520) 529-9040

Industrial Development Authority of South Tucson
Mr. Edward Lopez, President
P.O. Box 7307
Tucson, AZ 85725
(520) 792-2424/Fax: (520) 628-9616

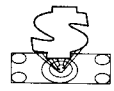
Industrial Authority of Tucson
Mr. Jaime Gutierrez, President
c/o Squire, Sanders & Dempsey
40 N. Central Avenue, Suite 2700
Phoenix, AZ 85004-4440
(602) 528-4092/Fax: (602) 253-8129

Note: This information is as current as the date of this publication and was taken from reliable sources; however, we do not guarantee its completeness nor does the Arizona Department of Commerce endorse any particular individual.

This information is provided as a service only.

Commercial Banks

There are 24 financial institutions with branch offices throughout Tucson and Pima County.



Taxes

State Corporate Income Tax

Corporate income tax rate is 6.968 percent effective for taxable years beginning from and after December 31, 2000.

Source: Arizona Department of Revenue

2003 Property Tax

Community	*School District*	*City/Fire*	*Countywide*	*Total*
Ajo	5.30	0.00	7.58	12.88
Catalina Foothills	7.03	0.00	7.58	14.61
Green Valley	2.32	1.75	7.58	11.65
Marana	6.80	0.00	7.58	14.38
Oro Valley	6.76	0.00	7.58	14.34
Sahuarita	9.01	0.00	7.58	16.59
South Tucson	8.76	0.25	7.58	16.59
Tucson	8.76	1.16	7.58	17.50

Source: Arizona Tax Research Foundation, 2003 (Rate is per $100 of assessed value)

Sales Tax

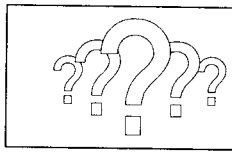
The state imposes a 5.6 percent transaction privilege (sales) tax on most business activities. The cities of Marana, Oro Valley, Sahuarita and Tucson have a 2 percent city sales tax rate. The City of South Tucson has a 2.5 percent sales tax. The following communities have an additional hotel/motel tax: Marana and Oro Valley, 3 percent; Sahuarita, 2 percent. The City of Tucson has a hotel/motel tax rate of 6 percent and a $1 per per room rented surcharge. Unincorporated areas of Pima County have an additional 2 percent hotel/motel tax.

Source: Arizona Department of Revenue, June 2004

Payroll Tax

Payroll taxes in Arizona are computed based on federal filing by employers and employees. Generally, withholding for state payroll taxes is between 10 and 37 percent of federal withholding based on employees' income.

Source: Arizona Department of Revenue



For Further Information

Ajo District Chamber of Commerce
400 Taladro St.
Ajo, AZ 85321
www.ajoinaz.com
(520) 387-7742
FAX: (520) 387-3641
Email: ajocofc@tabletoptelephone.com

Arivaca Mercantile Company
P.O. Box 104
Arivaca, AZ 85601
(520) 398-2702

Green Valley Chamber of Commerce
P.O. Box 566
Green Valley, AZ 85622
www.greenvalleyazchamber.az
(520) 625-7575
FAX: (520) 648-6154
Email: gvchamber@aol.com

Northern Pima County Chamber of Commerce
200 W. Magee, Suite 120
Tucson, AZ 85704
www.the-chamber.com
(520) 297-2191
FAX: (520) 742-7960
Email: director@the.chamber.com

Marana Chamber of Commerce
13881 N. Casa Grande Highway
Marana, AZ 85653
www.maranachamber.com
(520) 682-4314
FAX: (520) 682-22303
Email: maranac@mindspring.com

Town of Oro Valley Economic Development
11000 N. La Canada Dr.
Oro Valley, AZ 85737
(520) 229-4731/Fax: (520) 297-0428

Pascua Yaqui Tribe of Arizona
Economic and Community Development
7474 S. Camino de Oeste
Tucson, AZ 85746
Email: pyit@liveline.com
(520) 879-6305/FAX: (520) 879-6304

Town of Sahuarita
850B W. Sahuarita Road
Sahuarita, AZ 85629
(520) 648-1972
FAX: (520) 625-9879

City of South Tucson
1601 S. 6th Ave.
South Tucson, AZ 85713
(520) 792-2424

Tohono O'odham
Research & Planning Department
P.O. Box 837
Sells, AZ 85634
(520) 383-2221 ext. 215
FAX: (520) 383-3379

City of Tucson Economic Development
P.O. Box 27210
Tucson, AZ 85726-7210
www.ci.tucson.az.us/oed
(520) 791-5093
FAX: (520) 791-5413

Greater Tucson Economic Council
33 N. Stone, Suite 800
Tucson, AZ 85701
(520) 882-6079
FAX: (520) 622-6413
www.opportunitytucson.org

Tucson Metropolitan Chamber of Commerce
P.O. Box 991
Tucson, AZ 85702
www.tucsonchamber.org
(520) 792-2250
FAX: (520) 882-5704
Email: jcamper@tucsonchamber.org

County profiles are produced by the
ARIZONA DEPARTMENT OF COMMERCE
Our Job is JOBS!

Janet Napolitano
Governor of Arizona

Gilbert Jimenez, Director
Arizona Department of Commerce

HURF Distribution FY 2004

Arizona Highway User Revenue Fund
Distributions to Cities, Towns and Counties
FY2004

COUNTY	CITY	COUNTY	CITY
Apache		$6,817,862.44	
	Eagar		$907,901.17
	Springerville		$444,681.58
	St. Johns		$815,925.45
Cochise		$7,757,348.33	
	Benson		$393,074.21
	Bisbee		$507,828.92
	Douglas		$1,423,460.88
	Huachuca City		$145,921.27
	Sierra Vista		$3,154,432.74
	Tombstone		$125,428.44
	Wilcox		$311,587.97
Coconino		$9,456,018.26	
	Flagstaff		$6,975,350.72
	Fredonia		$137,314.02
	Page		$897,929.89
	Williams		$374,614.77
	Sedona		$390,604.75
Gila		$3,629,075.46	
	Globe		$834,605.15
	Hayden		$99,384.41
	Miami		$216,082.25
	Payson		$1,517,333.76
	Winkelman		$49,175.46
Graham		$2,279,911.80	
	Pima		$155,970.70
	Safford		$724,806.06
	Thatcher		$315,257.28
Greenlee		$803,059.82	
	Clifton		$222,868.18
	Duncan		$69,681.33

FISCAL YEAR 2003-2004 TOTALS:	
CITIES:	$344,491,271.87
COUNTIES:	$214,601,120.27

COUNTY	CITY	COUNTY	CITY
La Paz		$3,482,245.72	
	Parker		$1,000,121.61
	Quartzite		$1,069,076.69
Maricopa		$86,519,857.88	
	Apache Junction		$19,728.03
	Avondale		$2,484,542.31
	Buckeye		$589,048.56
	Carefree		$202,157.83
	Cave Creek		$258,017.56
	Chandler		$12,225,099.99
	El Mirage		$527,561.37
	Fountain Hills		$1,400,448.16
	Gila Bend		$137,210.59
	Gilbert		$7,594,672.02
	Glendale		$15,148,769.01
	Goodyear		$1,309,368.78
	Guadalupe		$362,420.84
	Litchfield Park		$263,780.76
	Mesa		$33,640,946.14
	Paradise Valley		$945,965.54
	Peoria		$7,501,865.23
	Phoenix		$111,756,744.89
	Queen Creek		$291,574.94
	Scottsdale		$14,034,411.74
	Surprise		$2,135,342.84
	Tempe		$10,981,726.18
	Tolleson		$345,131.53
	Wickenburg		$351,088.58
	Youngtown		$207,920.93
Mohave		$10,689,243.18	
	Bullhead City		$3,519,502.63
	Colorado City		$347,124.55
	Kingman		$2,091,776.53
	Lake Havasu City		$4,371,506.13
Navajo		$8,128,222.21	
	Pinetop/Lakeside		$562,057.63
	Holbrook		$771,804.20
	Show Low		$1,209,403.24
	Snowflake		$700,773.12
	Taylor		$498,128.20
	Winslow		$1,496,171.48

COUNTY	CITY	COUNTY	CITY
Pima		$39,829,978.53	
	Marana		$1,092,521.22
	Oro Valley		$2,560,690.60
	South Tucson		$442,282.19
	Tucson		$46,712,006.24
	Sahuarita		$261,322.22
Pinal		$11,515,102.88	
	Apache Junction		$2,787,070.92
	Casa Grande		$2,228,692.09
	Coolidge		$687,962.47
	Eloy		$916,576.15
	Florence		$1,331,322.48
	Kearny		$198,371.14
	Mammoth		$155,109.42
	Superior		$287,149.31
	Queen Creek		$10,611.11
	Winkelman		$197.98
	Maricopa		$129,640.46
Santa Cruz		$3,097,135.94	
	Nogales		$2,595,077.95
	Patagonia		$109,919.23
Yavapai		$10,529,477.00	
	Camp Verde		$888,191.35
	Chino Valley		$772,346.88
	Clarkdale		$321,272.63
	Cottonwood		$862,813.22
	Jerome		$30,728.00
	Prescott		$3,190,899.40
	Prescott Valley		$2,213,107.15
	Sedona		$679,327.55
	Peoria		$53.18
Yuma		$10,066,580.82	
	Somerton		$673,205.60
	San Luis		$1,420,375.86
	Welton		$169,324.91
	Yuma		$7,198,891.24

State Highway System Log Excerpts

I-10

SR 90

Theor. Route Mile	MilePost	Sym	Project	Year Built	Trav. Surf.	Shldr. Surf.	Rdwy. Length	No. Lanes	Lt. Shldr.	Trav. Surf.	Rt. Shldr.	Bridge Length, Type	Vert. Clear.	1998 AADT
297.77	297.17	TI	Mescal UP (EB)	58			0.52	1	2	12	8		15 ' - 09"	
		TI	Mescal UP (WB)	58			0.51	1	8	12	2		16 ' - 02"	
298.59	297.99	J	Median Cross-Over											
298.80	298.20	TCS												23000
299.95	299.35	J	Exit # 299											-----
		TI	Skyline OP (EB)	61			0.44	1	2	12	8	260 ft Conc		
		TI	Skyline OP (WB)	61			0.43	1	8	12	2	260 ft Conc		
300.70	300.10	TCS												22895
301.27	300.67	J	Exit # 300 USAF Exit Ramp											
301.45	300.85	FR	Two Way Frontage Rd Right			MBH	1.54	2	1	24	1			
301.75	301.15	FR	Two Way Frontage Rd Left			MBH	1.28	2	1	24	1			
302.99	302.39	J	Exit # 302 at S 090 E											-----
		TI	Whetstone OP (EB)	67			0.55	1	2	12	8	104 ft Conc		
		TI	Whetstone OP (WB)	67			0.53	1	8	12	2	104 ft Conc		
303.45	302.85	JB	WCL Benson Elev 3685											
303.67	303.07	DH	IM-10-5(70)					4						
		EB	IM-10-5(70)	95	AC	AC	0.17	2	4	24	10			
		WB	I10 5 52 47 41	79	AC	MBH	0.17	2	10	24	4			
		MD	76 ft Soil Median											
303.80	303.20	TCS												22400
303.84	303.24	DH	IM-10-5(70)					4						
		EB	IM-10-5(70)	95	AC	AC	0.01	2	4	24	10			
		WB	IM-10-6(114)	93	AC	AC	0.01	2	10	24	4			
		MD	76 ft Soil Median											
303.85	303.25	DH	IM-10-6(114)					4						
		EB	IM-10-6(114)	93	AC	AC	4.42	2	4	24	10			
		WB	IM-10-6(114)	93	AC	AC	4.42	2	10	24	4			
		MD	76 ft Soil Median											
304.47	303.87	J	Exit # 303 at SB010 E											-----
		TI	W Benson OP (EB)	69			0.78	1	2	12	8	127 ft Conc		
		TI	W Benson OP (WB)	69			0.41	1	8	12	2	137 ft Conc		
304.92	304.32	OP	Union Pacific RR (EB)	70				2	4	24	10	156 ft Conc		
		OP	Union Pacific RR (WB)	70				2	10	24	4	156 ft Conc		
305.10	304.50	TCS												21311
305.52	304.92	J	Exit # 304 at SS010 E											-----
		TI	Ocotillo Rd OP (EB)	70			0.48	1	2	12	8	104 ft Conc		
		TI	Ocotillo Rd OP (WB)	70			0.47	1	2	12	8	104 ft Conc		
		FR	Two Way Frontage Rd Right			MBH	0.24	2	1	24	1			
306.40	305.30	TCS												25307
307.34	306.74	EQ	MP 306.74 Back Equals 306.24 Ahead											

Theor. Route Mile	MilePost	Sym	Project	Year Built	Trav. Surf.	Shldr. Surf.	Rdwy. Length	No. Lanes	Lt. Shldr.	Trav. Surf.	Rt. Shldr.	Bridge Length, Type	Vert. Clear.	1998 AADT
257.21	586.89	UH	FH 28D 3	40	BST	BST	1.17	2	2	24	2			
258.38	588.06	UH	F-037-3-512	94	AC	AC	1.19	3	2	36	1			
259.57	589.25	UH	FH 28D 3	40	BST	BST	0.87	2	2	24	2			
260.44	590.12	UH	FH 28D 2	39	BST	BST	3.34	2	1	24	1			
263.78	593.46	JB	Leave Kaibab NF											
		UH	F037 3 506FH28D2	80	AC	MBH	1.07	2	1	24	1			
264.85	594.53	UH	F037 3 506F132	80	AC	MBH	5.47	2	2	24	2			
270.32	600.00	UH	F037 3 504F132	80	AC	MBH	8.49	2	2	24	2			
277.97	607.65	J	Ryan Rd (Fredonia)											-----
278.32	608.00	TCS												1339
278.81	608.49	UH	F037 3 504F132	80	AC	MBH	0.51	2	2	24	2			
278.97	608.65	JB	SCL Fredonia Elev 4800											
279.32	609.00	UH	F037 3 502FLH9A	82	AC	MBH	0.23	4	4	48	4			
		MD	12 ft Painted Median											
279.55	609.23	J	S 389 West											-----
		UH	F037 3 502FAP95	82	AC	MBH	0.97	4	4	48	4			
		MD	12 ft Painted Median											
		X	Curb to Left and Right											
280.50	610.18	IS	Inspection Station											
280.52	610.20	UH	F037 3 504 95A2	80	AC	MBH	2.55	2	2	24	2			
280.62	610.30	TCS												3932
282.89	612.57	JB	NCL Fredonia											
283.07	612.75	UH	F037 3 504 95A2	80	AC	MBH	0.28	2	2	24	2			
283.35	613.03	J	End UA089 at AZ/UT Line											-----

Main Direction Route Length: 88.96 mi. **Opposite Direction Route Length: 0.00 mi.** **Lengths of Frontage Roads and Others: 0.00 mi.**

S 090

0.00	289.59	J	Beg S 090 at I 010 Exit #302											-----
		JB	Inside Cochise County											
		UH	F 013 1 3	63	AC	MBH	8.81	2	8	24	8			
0.01	289.60	JB	Enter Benson											
		TI	I 010 UP EB	67			0.00	2	8	24	8		15 ' - 05"	
2.11	291.70	JB	Temp Leave Benson											
2.91	292.50	TCS												8052
3.12	292.71	JB	Reenter Benson											
7.57	297.16	JB	SCL Benson											
8.81	298.40	UH	N-900-549	93	AC	AC	0.29	2	8	24	8			
8.92	298.51	J	Kartchner Caverns State Park Ent Rd	[R14]										

Recorded Traffic Volumes (CLA)

Recorded January 2004

Whetstone TI WB Off Ramps

End Time	EB	WB	Total	K
1:00 AM	0	37	37	1%
2:00 AM	0	44	44	1%
3:00 AM	0	39	39	1%
4:00 AM	0	28	28	1%
5:00 AM	0	58	58	2%
6:00 AM	0	87	87	3%
7:00 AM	0	126	126	4%
8:00 AM	0	157	157	5%
9:00 AM	0	204	204	6%
10:00 AM	0	185	185	6%
11:00 AM	0	228	228	7%
12:00 PM	0	245	245	7%
1:00 PM	0	198	198	6%
2:30 PM	0	209	209	6%
3:00 PM	0	242	242	7%
4:00 PM	0	244	244	7%
5:00 PM	0	255	255	8%
6:00 PM	0	174	174	5%
7:00 PM	0	146	146	4%
8:00 PM	0	136	136	4%
9:00 PM	0	101	101	3%
10:00 PM	0	68	68	2%
11:00 PM	0	65	65	2%
12:00 AM	0	42	42	1%
	0	3318	3318	100%

Whetstone TI WB On Ramp

End Time	EB	WB	Total	K
1:00 AM	0	44	44	1%
2:00 AM	0	31	31	1%
3:00 AM	0	37	37	1%
4:00 AM	0	46	46	1%
5:00 AM	0	71	71	1%
6:00 AM	0	156	156	3%
7:00 AM	0	236	236	4%
8:00 AM	0	279	279	5%
9:00 AM	0	362	362	7%
10:00 AM	0	463	463	8%
11:00 AM	0	365	365	7%
12:00 PM	0	319	319	6%
1:00 PM	0	331	331	6%
2:30 PM	0	341	341	6%
3:00 PM	0	363	363	7%
4:00 PM	0	385	385	7%
5:00 PM	0	401	401	7%
6:00 PM	0	349	349	6%
7:00 PM	0	275	275	5%
8:00 PM	0	173	173	3%
9:00 PM	0	150	150	3%
10:00 PM	0	132	132	2%
11:00 PM	0	85	85	2%
12:00 AM	0	54	54	1%
			5448	100%

Whetstone EB Off Ramp

End Time	EB	WB	Total	K
1:00 AM	84	0	84	2%
2:00 AM	59	0	59	1%
3:00 AM	54	0	54	1%
4:00 AM	53	0	53	1%
5:00 AM	61	0	61	1%
6:00 AM	116	0	116	2%
7:00 AM	198	0	198	4%
8:00 AM	288	0	288	6%
9:00 AM	297	0	297	6%
10:00 AM	279	0	279	6%
11:00 AM	291	0	291	6%
12:00 PM	268	0	268	5%
1:00 PM	283	0	283	6%
2:30 PM	299	0	299	6%
3:00 PM	292	0	292	6%
4:00 PM	309	0	309	6%
5:00 PM	339	0	339	7%
6:00 PM	341	0	341	7%
7:00 PM	261	0	261	5%
8:00 PM	188	0	188	4%
9:00 PM	163	0	163	3%
10:00 PM	158	0	158	3%
11:00 PM	128	0	128	3%
12:00 AM	111	0	111	2%
			4920	100%

Whetstone TI EB On Ramp

End Time	EB	WB	Total	K
1:00 AM	42	0	42	1%
2:00 AM	37	0	37	1%
3:00 AM	52	0	52	1%
4:00 AM	37	0	37	1%
5:00 AM	61	0	61	2%
6:00 AM	82	0	82	2%
7:00 AM	155	0	155	4%
8:00 AM	219	0	219	6%
9:00 AM	237	0	237	6%
10:00 AM	222	0	222	6%
11:00 AM	241	0	241	6%
12:00 PM	221	0	221	6%
1:00 PM	218	0	218	6%
2:30 PM	231	0	231	6%
3:00 PM	289	0	289	8%
4:00 PM	238	0	238	6%
5:00 PM	265	0	265	7%
6:00 PM	249	0	249	7%
7:00 PM	198	0	198	5%
8:00 PM	145	0	145	4%
9:00 PM	123	0	123	3%
10:00 PM	73	0	73	2%
11:00 PM	68	0	68	2%
12:00 AM	70	0	70	2%
			3773	100%

North Frontage Road (Dark Star Road)

End Time	NB	SB	Total	K
1:00 AM	1	2	3	1%
2:00 AM	0	0	0	0%
3:00 AM	0	0	0	0%
4:00 AM	0	0	0	0%
5:00 AM	3	1	4	2%
6:00 AM	4	0	4	2%
7:00 AM	4	1	5	2%
8:00 AM	4	2	6	3%
9:00 AM	5	5	10	5%
10:00 AM	4	8	12	6%
11:00 AM	7	6	13	6%
12:00 PM	5	5	10	5%
1:00 PM	4	8	12	6%
2:30 PM	8	7	15	7%
3:00 PM	9	8	17	8%
4:00 PM	5	9	14	7%
5:00 PM	7	11	18	9%
6:00 PM	6	7	13	6%
7:00 PM	4	12	16	8%
8:00 PM	3	6	9	4%
9:00 PM	10	2	12	6%
10:00 PM	5	4	9	4%
11:00 PM	1	2	3	1%
12:00 AM	0	4	4	2%
			209	100%

SR 90 s/o I-10

End Time	EB	WB	Total	K
1:00 AM	83	144	227	1%
2:00 AM	45	123	168	1%
3:00 AM	79	111	190	1%
4:00 AM	100	102	202	1%
5:00 AM	136	118	254	1%
6:00 AM	304	220	524	3%
7:00 AM	419	367	786	4%
8:00 AM	574	517	1091	6%
9:00 AM	596	556	1152	6%
10:00 AM	694	524	1218	7%
11:00 AM	610	538	1148	6%
12:00 PM	556	549	1105	6%
1:00 PM	537	486	1023	5%
2:30 PM	553	484	1037	6%
3:00 PM	637	544	1181	6%
4:00 PM	612	578	1190	6%
5:00 PM	703	619	1322	7%
6:00 PM	621	597	1218	7%
7:00 PM	562	487	1049	6%
8:00 PM	373	355	728	4%
9:00 PM	279	314	593	3%
10:00 PM	229	287	516	3%
11:00 PM	169	229	398	2%
12:00 AM	153	203	356	2%
			18676	100%

South Frontage Road (Titan Drive)

End Time	EB	WB	Total	K
1:00 AM	0	0	0	0%
2:00 AM	0	0	0	0%
3:00 AM	0	0	0	0%
4:00 AM	0	0	0	0%
5:00 AM	0	0	0	0%
6:00 AM	7	1	8	4%
7:00 AM	10	3	13	7%
8:00 AM	10	5	15	8%
9:00 AM	4	3	7	4%
10:00 AM	8	5	13	7%
11:00 AM	8	5	13	7%
12:00 PM	6	7	13	7%
1:00 PM	2	2	4	2%
2:30 PM	4	6	10	6%
3:00 PM	2	3	5	3%
4:00 PM	5	5	10	6%
5:00 PM	5	8	13	7%
6:00 PM	7	12	19	11%
7:00 PM	5	11	16	9%
8:00 PM	2	3	5	3%
9:00 PM	4	5	9	5%
10:00 PM	1	3	4	2%
11:00 PM	1	0	1	1%
12:00 AM	0	0	0	0%
			178	100%

Village Loop

End Time	EB	WB	Total	K
1:00 AM	0	5	5	0%
2:00 AM	2	1	3	0%
3:00 AM	0	0	0	0%
4:00 AM	1	2	3	0%
5:00 AM	3	3	6	0%
6:00 AM	15	5	20	2%
7:00 AM	37	6	43	3%
8:00 AM	43	14	57	4%
9:00 AM	50	13	63	5%
10:00 AM	65	20	85	7%
11:00 AM	68	28	96	8%
12:00 PM	78	34	112	9%
1:00 PM	82	39	121	9%
2:30 PM	59	36	95	7%
3:00 PM	77	41	118	9%
4:00 PM	57	30	87	7%
5:00 PM	64	25	89	7%
6:00 PM	63	29	92	7%
7:00 PM	38	17	55	4%
8:00 PM	28	20	48	4%
9:00 PM	19	16	35	3%
10:00 PM	16	11	27	2%
11:00 PM	5	6	11	1%
12:00 AM	4	3	7	1%
			1278	100%

SR 90 at MP 297

End Time	EB	WB	Total	K
1:00 AM	20	51	71	1%
2:00 AM	10	30	40	0%
3:00 AM	11	27	38	0%
4:00 AM	14	28	42	0%
5:00 AM	49	43	92	1%
6:00 AM	80	104	184	2%
7:00 AM	142	221	363	4%
8:00 AM	216	309	525	6%
9:00 AM	258	310	568	7%
10:00 AM	296	288	584	7%
11:00 AM	268	320	588	7%
12:00 PM	264	305	569	7%
1:00 PM	268	280	548	6%
2:30 PM	298	262	560	6%
3:00 PM	290	299	589	7%
4:00 PM	311	339	650	8%
5:00 PM	344	332	676	8%
6:00 PM	276	325	601	7%
7:00 PM	180	201	381	4%
8:00 PM	122	176	298	3%
9:00 PM	86	146	232	3%
10:00 PM	70	123	193	2%
11:00 PM	50	110	160	2%
12:00 AM	32	61	93	1%
			8645	100%

NAME OF PROJECT: Mescal Road

Date: Tuesday 2/25/2003

	Mescal Rd NB			Mescal Rd SB			I-10 EB Off ramp		
END	Left		Right	Left		Right	Left		Right
Time	Turn	THRU	Turn	Turn	THRU	Turn	Turn	THRU	Turn
7:15 AM	0	19	5	7	5	0	2	0	0
7:30 AM	0	19	17	15	8	0	5	1	0
7:45 AM	0	19	25	33	11	0	1	1	0
8:00 AM	0	13	17	18	15	0	4	0	2
8:15 AM	0	19	16	10	22	0	2	0	4
8:30 AM	0	7	13	11	5	0	4	1	0
8:45 AM	0	10	14	14	8	0	6	1	1
9:00 AM	0	11	11	21	7	0	4	0	3
7:00 to 8:00 AM	0	70	64	73	39	0	12	2	2
7:15 to 8:15 AM	0	70	75	76	56	0	12	2	6
7:30 to 8:30 AM	0	58	71	72	53	0	11	2	6
7:45 to 8:45 AM	0	49	60	53	50	0	16	2	7
8:00 to 9:00 AM	0	47	54	56	42	0	16	2	8
7:00 to 9:00 AM	0	117	118	129	81	0	28	4	10

	Mescal Rd NB			Mescal Rd SB			I-10 EB Off ramp		
END	Left		Right	Left		Right	Left		Right
Time	Turn	THRU	Turn	Turn	THRU	Turn	Turn	THRU	Turn
4:15 PM	0	8	4	12	16	0	12	0	8
4:30 PM	0	4	4	13	17	0	19	1	12
4:45 PM	0	4	10	18	17	0	18	1	10
5:00 PM	0	6	9	7	18	0	20	2	11
5:15 PM	0	8	9	12	19	0	14	0	10
5:30 PM	0	7	3	13	18	0	6	0	9
5:45 PM	0	6	12	14	17	0	18	0	14
6:00 PM	0	6	4	14	25	0	10	0	16
4:00 to 5:00 PM	0	22	27	50	68	0	69	4	41
4:15 to 5:15 PM	0	22	32	50	71	0	71	4	43
4:30 to 4:30 PM	0	25	31	50	72	0	58	3	40
4:45 to 5:45 PM	0	27	33	46	72	0	58	2	44
5:00 to 6:00 PM	0	27	28	53	79	0	48	0	49
4:00 to 6:00 PM	0	49	55	103	147	0	117	4	90

NAME OF PROJECT: Mescal Road

Date: Tuesday 2/25/2003

	Mescal Rd NB			Mescal Rd SB			I-10 WB Off ramp		
END	Left		Right	Left		Right	Left		Right
Time	Turn	THRU	Turn	Turn	THRU	Turn	Turn	THRU	Turn
7:15 AM	11	10	0	0	8	13	4	0	6
7:30 AM	6	18	0	0	17	12	6	0	3
7:45 AM	13	7	0	0	40	8	4	0	5
8:00 AM	6	11	0	0	27	13	6	0	9
8:15 AM	10	11	0	0	19	7	13	0	7
8:30 AM	6	5	0	0	14	6	2	0	3
8:45 AM	5	11	0	0	18	4	4	0	4
9:00 AM	10	5	0	0	25	4	3	0	3
7:00 to 8:00 AM	67	46	0	0	92	46	20	0	23
7:15 to 8:15 AM	56	47	0	0	103	40	29	0	24
7:30 to 8:30 AM	35	34	0	0	100	34	25	0	24
7:45 to 8:45 AM	27	38	0	0	78	30	25	0	23
8:00 to 9:00 AM	31	32	0	0	76	21	22	0	17
7:00 to 9:00 AM	67	78	0	0	168	67	42	0	40

	Mescal Rd NB			Mescal Rd SB			I-10 WB Off ramp		
END	Left		Right	Left		Right	Left		Right
Time	Turn	THRU	Turn	Turn	THRU	Turn	Turn	THRU	Turn
4:15 PM	2	18	0	0	16	9	12	0	20
4:30 PM	3	20	0	0	15	6	15	1	30
4:45 PM	2	20	0	0	23	3	12	1	17
5:00 PM	3	24	0	0	17	2	8	0	16
5:15 PM	3	18	0	0	19	6	12	0	20
5:30 PM	3	10	0	0	16	3	15	0	13
5:45 PM	2	22	0	0	15	3	17	0	20
6:00 PM	4	12	0	0	16	5	22	1	19
4:00 to 5:00 PM	10	82	0	0	71	20	47	2	83
4:15 to 5:15 PM	11	82	0	0	74	17	47	2	83
4:30 to 4:30 PM	11	72	0	0	75	14	47	1	66
4:45 to 5:45 PM	11	74	0	0	67	14	52	0	69
5:00 to 6:00 PM	12	62	0	0	66	17	66	1	72
4:00 to 6:00 PM	22	144	0	0	137	37	113	3	155

NAME OF PROJECT: Mescal Road

Date: Thursday 2/27/2003

	Mescal Rd SB			I-10 WB Off ramp			Mescal Rd NB		
END	Left		Right	Left		Right	Left		Right
Time	Turn	THRU	Turn	Turn	THRU	Turn	Turn	THRU	Turn
7:15 AM	0	15	17	1	1	1	13	7	0
7:30 AM	0	27	15	3	1	8	8	12	0
7:45 AM	0	44	19	5	0	7	15	11	0
8:00 AM	0	26	10	3	0	11	5	13	0
8:15 AM	0	23	11	13	0	8	5	11	0
8:30 AM	0	23	9	5	0	4	6	8	0
8:45 AM	0	17	8	6	0	3	6	2	0
9:00 AM	0	16	10	5	0	10	4	7	0
7:00 to 8:00 AM	0	112	61	12	2	27	62	43	0
7:15 to 8:15 AM	0	120	55	24	1	34	49	47	0
7:30 to 8:30 AM	0	116	49	26	0	30	31	43	0
7:45 to 8:45 AM	0	89	38	27	0	26	22	34	0
8:00 to 9:00 AM	0	79	38	29	0	25	21	28	0
7:00 to 9:00 AM	0	191	99	41	2	52	62	71	0

	Mescal Rd SB			I-10 WB Off ramp			Mescal Rd NB		
END	Left		Right	Left		Right	Left		Right
Time	Turn	THRU	Turn	Turn	THRU	Turn	Turn	THRU	Turn
4:15 PM	0	18	1	13	0	23	1	16	0
4:30 PM	0	10	4	17	0	18	3	14	0
4:45 PM	0	12	6	13	0	21	1	16	0
5:00 PM	0	16	3	9	1	19	3	17	0
5:15 PM	0	17	5	18	0	21	7	11	0
5:30 PM	0	19	3	13	0	19	3	22	0
5:45 PM	0	12	4	9	0	13	3	17	0
6:00 PM	0	9	1	16	0	15	1	20	0
4:00 to 5:00 PM	0	56	14	52	1	81	8	63	0
4:15 to 5:15 PM	0	55	18	57	1	79	14	58	0
4:30 to 4:30 PM	0	64	17	53	1	80	14	66	0
4:45 to 5:45 PM	0	64	15	49	1	72	16	67	0
5:00 to 6:00 PM	0	57	13	56	0	68	14	70	0
4:00 to 6:00 PM	0	113	27	108	1	149	22	133	0

NAME OF PROJECT: Mescal Road

Date: Thursday 2/27/2003

	Mescal Rd SB			Frontage Road WB			Mescal Rd NB			Frontage Road EB		
END	Left		Right	Left		Right	Left		Right	Left		Right
Time	Turn	THRU	Turn	Turn	THRU	Turn	Turn	THRU	Turn	Turn	THRU	Turn
7:15 AM	2	18	2	10	0	0	0	2	6	0	4	4
7:30 AM	1	23	0	18	1	0	1	6	13	0	2	1
7:45 AM	0	26	0	32	0	0	1	4	13	0	3	5
8:00 AM	2	18	0	15	3	1	2	11	11	0	3	3
8:15 AM	1	13	0	18	0	0	1	5	13	0	0	3
8:30 AM	1	15	0	13	0	0	2	3	7	0	2	4
8:45 AM	0	15	0	10	0	0	0	2	3	0	3	0
9:00 AM	0	9	1	15	0	0	2	6	9	0	2	2
7:00 to 8:00 AM	5	85	2	75	4	1	4	23	43	0	12	13
7:15 to 8:15 AM	4	80	0	83	4	1	5	26	50	0	8	12
7:30 to 8:30 AM	4	72	0	78	3	1	6	23	44	0	8	15
7:45 to 8:45 AM	4	61	0	56	3	1	5	21	34	0	8	10
8:00 to 9:00 AM	2	52	1	56	0	0	5	16	32	0	7	9
7:00 to 9:00 AM	7	137	3	131	4	1	9	39	75	0	19	22

	Mescal Rd SB			Frontage Road WB			Mescal Rd NB			Frontage Road EB		
END	Left		Right	Left		Right	Left		Right	Left		Right
Time	Turn	THRU	Turn	Turn	THRU	Turn	Turn	THRU	Turn	Turn	THRU	Turn
4:15 PM	2	7	0	11	2	0	3	16	20	1	1	1
4:30 PM	0	4	0	10	0	1	2	17	13	0	1	0
4:45 PM	0	7	0	10	1	0	1	23	13	0	2	1
5:00 PM	1	12	0	5	2	0	2	24	10	0	0	2
5:15 PM	1	7	0	13	0	0	4	17	11	0	0	2
5:30 PM	0	10	0	12	0	0	3	21	17	0	0	0
5:45 PM	1	13	0	3	0	1	0	21	9	0	0	0
6:00 PM	1	6	0	4	0	1	3	12	20	0	1	0
4:00 to 5:00 PM	3	30	0	36	5	1	8	80	56	1	4	4
4:15 to 5:15 PM	2	30	0	38	3	1	9	81	47	0	3	5
4:30 to 4:30 PM	2	36	0	40	3	0	10	85	51	0	2	5
4:45 to 5:45 PM	3	42	0	33	2	1	9	83	47	0	0	4
5:00 to 6:00 PM	3	36	0	32	0	2	10	71	57	0	1	2
4:00 to 6:00 PM	6	66	0	68	5	3	18	151	113	1	5	6

I-10 Eastbound Off Ramp @ Mescal T 02/18/2003

End Time	EB	WB	Total	K
1:00 AM	20	0	20	0.02
2:00 AM	13	0	13	0.01
3:00 AM	6	0	6	0.01
4:00 AM	11	0	11	0.01
5:00 AM	10	0	10	0.01
6:00 AM	11	0	11	0.01
7:00 AM	18	0	18	0.02
8:15 AM	22	0	22	0.02
9:15 AM	38	0	38	0.04
10:15 AM	41	0	41	0.04
11:15 AM	42	0	42	0.04
12:15 PM	25	0	25	0.03
1:15 PM	34	0	34	0.04
2:15 PM	49	0	49	0.05
3:15 PM	52	0	52	0.05
4:15 PM	82	0	82	0.08
5:15 PM	119	0	119	0.12
6:15 PM	103	0	103	0.11
7:15 PM	90	0	90	0.09
8:15 PM	53	0	53	0.05
9:15 PM	47	0	47	0.05
10:15 PM	47	0	47	0.05
11:15 PM	32	0	32	0.03
12:00 AM	0	0	0	0.00
	965	0	965	1.00

I-10 Eastbound On Ramp

End Time	EB	WB	Total	K
1:00 AM	9	0	9	0.01
2:00 AM	8	0	8	0.01
3:00 AM	2	0	2	0.00
4:00 AM	6	0	6	0.00
5:00 AM	12	0	12	0.01
6:00 AM	25	0	25	0.02
7:00 AM	45	0	45	0.04
8:15 AM	98	0	98	0.08
9:15 AM	86	0	86	0.07
10:15 AM	78	0	78	0.06
11:15 AM	93	0	93	0.08
12:15 PM	85	0	85	0.07
1:15 PM	89	0	89	0.07
2:15 PM	83	0	83	0.07
3:15 PM	75	0	75	0.06
4:15 PM	84	0	84	0.07
5:15 PM	85	0	85	0.07
6:15 PM	72	0	72	0.06
7:15 PM	70	0	70	0.06
8:15 PM	35	0	35	0.03
9:15 PM	36	0	36	0.03
10:15 PM	25	0	25	0.02
11:15 PM	17	0	17	0.01
12:00 AM	0	0	0	0.00
	1218	0	1218	1.00

I-10 Westbound Off Ramp

End Time	EB	WB	Total	K
1:00 AM	0	8	8	0.01
2:00 AM	0	4	4	0.00
3:00 AM	0	4	4	0.00
4:00 AM	0	4	4	0.00
5:00 AM	0	2	2	0.00
6:00 AM	0	8	8	0.01
7:00 AM	0	20	20	0.01
8:15 AM	0	61	61	0.04
9:15 AM	0	63	63	0.04
10:15 AM	0	75	75	0.05
11:15 AM	0	81	81	0.06
12:15 PM	0	98	98	0.07
1:15 PM	0	87	87	0.06
2:15 PM	0	108	108	0.08
3:15 PM	0	98	98	0.07
4:15 PM	0	110	110	0.08
5:15 PM	0	134	134	0.09
6:15 PM	0	133	133	0.09
7:15 PM	0	106	106	0.07
8:15 PM	0	77	77	0.05
9:15 PM	0	79	79	0.06
10:15 PM	0	51	51	0.04
11:15 PM	0	25	25	0.02
12:00 AM	0	0	0	0.00
	0	1436	1436	1.00

I10 Westbound On Ramp

End Time	EB	WB	Total	K
1:00 AM	0	2	2	0.00
2:00 AM	0	4	4	0.00
3:00 AM	0	2	2	0.00
4:00 AM	0	9	9	0.01
5:00 AM	0	23	23	0.03
6:00 AM	0	59	59	0.07
7:00 AM	0	128	128	0.16
8:15 AM	0	95	95	0.12
9:15 AM	0	74	74	0.09
10:15 AM	0	44	44	0.05
11:15 AM	0	50	50	0.06
12:15 PM	0	44	44	0.05
1:15 PM	0	26	26	0.03
2:15 PM	0	35	35	0.04
3:15 PM	0	38	38	0.05
4:15 PM	0	44	44	0.05
5:15 PM	0	36	36	0.04
6:15 PM	0	31	31	0.04
7:15 PM	0	24	24	0.03
8:15 PM	0	15	15	0.02
9:15 PM	0	17	17	0.02
10:15 PM	0	16	16	0.02
11:15 PM	0	3	3	0.00
12:00 AM	0	0	0	0.00
	0	819	819	1.00

Mescal Bridge over I-10

End Time	EB	WB	Total	K
1:00 AM	8	10	18	0.01
2:00 AM	10	9	19	0.01
3:00 AM	4	3	7	0.00
4:00 AM	7	6	13	0.00
5:00 AM	6	14	20	0.01
6:00 AM	32	38	70	0.03
7:00 AM	44	77	121	0.04
8:15 AM	132	74	206	0.07
9:15 AM	107	65	172	0.06
10:15 AM	106	45	151	0.05
11:15 AM	117	59	176	0.06
12:15 PM	117	31	148	0.05
1:15 PM	116	49	165	0.06
2:15 PM	125	51	176	0.06
3:15 PM	115	59	174	0.06
4:15 PM	132	72	204	0.07
5:15 PM	139	79	218	0.08
6:15 PM	130	78	208	0.08
7:15 PM	123	71	194	0.07
8:15 PM	64	29	93	0.03
9:15 PM	67	28	95	0.03
10:15 PM	46	27	73	0.03
11:15 PM	26	22	48	0.02
12:00 AM	0	0	0	0.00
	1773	996	2769	1.00

Mescal WB Frontage Rd East End

End Time	EB	WB	Total	K
1:00 AM	3	1	4	0.01
2:00 AM	1	1	2	0.01
3:00 AM	1	0	1	0.00
4:00 AM	0	2	2	0.01
5:00 AM	0	0	0	0.00
6:00 AM	1	7	8	0.02
7:00 AM	0	9	9	0.03
8:15 AM	3	29	32	0.09
9:15 AM	9	19	28	0.08
10:15 AM	8	8	16	0.04
11:15 AM	9	22	31	0.09
12:15 PM	9	19	28	0.08
1:15 PM	10	6	16	0.04
2:15 PM	6	8	14	0.04
3:15 PM	8	16	24	0.07
4:15 PM	10	16	26	0.07
5:15 PM	4	15	19	0.05
6:15 PM	18	11	29	0.08
7:15 PM	14	15	29	0.08
8:15 PM	5	8	13	0.04
9:15 PM	5	6	11	0.03
10:15 PM	6	5	11	0.03
11:15 PM	1	2	3	0.01
12:00 AM	0	0	0	0.00
	131	225	356	1.00

WB Frontage Road e/o Mescal Road

End Time	EB	WB	Total	K
1:00 AM	9	5	14	0.01
2:00 AM	10	11	21	0.01
3:00 AM	5	6	11	0.01
4:00 AM	9	9	18	0.01
5:00 AM	6	11	17	0.01
6:00 AM	15	21	36	0.02
7:00 AM	20	37	57	0.03
8:15 AM	45	74	119	0.07
9:15 AM	55	60	115	0.07
10:15 AM	53	52	105	0.06
11:15 AM	68	66	134	0.08
12:15 PM	58	55	113	0.07
1:15 PM	57	0	57	0.03
2:15 PM	49	0	49	0.03
3:15 PM	70	42	112	0.07
4:15 PM	71	55	126	0.07
5:15 PM	77	77	154	0.09
6:15 PM	75	60	135	0.08
7:15 PM	58	46	104	0.06
8:15 PM	36	27	63	0.04
9:15 PM	38	34	72	0.04
10:15 PM	27	20	47	0.03
11:15 PM	19	14	33	0.02
12:00 AM	0	0	0	0.00
	930	782	1712	1.00

Mescal Rd 1000 n/o Frontage

End Time	EB	WB	Total	K
1:00 AM	8	4	12	0.01
2:00 AM	5	4	9	0.01
3:00 AM	3	3	6	0.00
4:00 AM	3	2	5	0.00
5:00 AM	1	8	9	0.01
6:00 AM	4	24	28	0.02
7:00 AM	15	57	72	0.05
8:15 AM	25	85	110	0.08
9:15 AM	30	59	89	0.07
10:15 AM	25	55	80	0.06
11:15 AM	39	58	97	0.07
12:15 PM	46	23	69	0.05
1:15 PM	49	0	49	0.04
2:15 PM	58	0	58	0.04
3:15 PM	55	0	55	0.04
4:15 PM	58	32	90	0.07
5:15 PM	83	38	121	0.09
6:15 PM	73	44	117	0.09
7:15 PM	64	40	104	0.08
8:15 PM	30	18	48	0.04
9:15 PM	34	18	52	0.04
10:15 PM	22	12	34	0.03
11:15 PM	20	5	25	0.02
12:00 AM	0	0	0	0.00
	750	589	1339	1.00

Mescal Rd 1000' n/o MP1

End Time	EB	WB	Total	K
1:00 AM	0	0	0	0.00
2:00 AM	2	1	3	0.01
3:00 AM	1	2	3	0.01
4:00 AM	3	1	4	0.01
5:00 AM	1	3	4	0.01
6:00 AM	5	9	14	0.03
7:00 AM	7	20	27	0.06
8:15 AM	9	24	33	0.07
9:15 AM	9	15	24	0.05
10:15 AM	13	14	27	0.06
11:15 AM	19	12	31	0.07
12:15 PM	13	5	18	0.04
1:15 PM	21	0	21	0.05
2:15 PM	16	0	16	0.04
3:15 PM	15	10	25	0.06
4:15 PM	23	11	34	0.08
5:15 PM	32	9	41	0.09
6:15 PM	32	8	40	0.09
7:15 PM	23	11	34	0.08
8:15 PM	10	4	14	0.03
9:15 PM	12	5	17	0.04
10:15 PM	9	6	15	0.03
11:15 PM	5	0	5	0.01
12:00 AM	0	0	0	0.00
	280	170	450	1.00

Rice Road w/o Mescal Rd

End Time	EB	WB	Total	K
1:00 AM	6	4	10	0.02
2:00 AM	3	2	5	0.01
3:00 AM	1	1	2	0.00
4:00 AM	1	0	1	0.00
5:00 AM	1	5	6	0.01
6:00 AM	1	11	12	0.02
7:00 AM	6	19	25	0.04
8:15 AM	13	41	54	0.08
9:15 AM	13	24	37	0.06
10:15 AM	11	25	36	0.05
11:15 AM	14	22	36	0.05
12:15 PM	22	14	36	0.05
1:15 PM	23	0	23	0.03
2:15 PM	35	0	35	0.05
3:15 PM	31	0	31	0.05
4:15 PM	31	22	53	0.08
5:15 PM	39	21	60	0.09
6:15 PM	36	25	61	0.09
7:15 PM	31	23	54	0.08
8:15 PM	18	15	33	0.05
9:15 PM	12	9	21	0.03
10:15 PM	12	9	21	0.03
11:15 PM	8	4	12	0.02
12:00 AM	0	0	0	0.00
	368	296	664	1.00

Florida DOT Capacity Charts

LOS Worksheet

							Adjustments		
Roadway	***Segment***	***Classification***	***Divided***	***Left-turn Lanes***	LOS C	LOS D	Divided / Undivided	No Left-turn lanes	Adjustment Factor
Titan Road									
	West end to Village Loop	Non-State	N	N	7000	13600	0%	-20%	0.80
Village Loop Road									
	Titan Road to SR 90	Non-State	N	Y	7000	13600	0%	0%	1.00
State Route 90									
	North of Village Loop	State II	Y	Y	24400	30600	0%	0%	1.00
	South of Village Loop	State II	Y	Y	24400	30600	0%	0%	1.00
Mescal Road									
	SPRR Railroad to I-10	Non-State	N	N	7000	13600	0%	-20%	0.80
J-Six Ranch Road							0%		
	I-10 to Deer Run	Non-State	N	N	7000	13600	0%	-20%	0.80
Williams Road							0%		
	J-Six Ranch Rd to Crazy Woman Rd	Other	N	N	4400	9400	0%	-20%	0.80
Clark Road							0%		
	J-Six Ranch Rd to Crazy Woman Rd	Other	N	N	4400	9400	0%	-20%	0.80
Joseph Road							0%		
	J-Six Ranch Rd to Crazy Woman Rd	Other	N	N	4400	9400	0%	-20%	0.80
Navajo Trail							0%		
	West of J-Six Ranch Rd	Other	Y	N	4400	9400	5%		1.05
Skyline Road							0%		
	at I-10	Other	N	N	4400	9400	0%	-20%	0.80
Whetstone Road									
	East of SR 90	Other	N	N					
Dark Star Road							0%		
	SR 90 to East End	Other	N	N	4400	9400	0%	-20%	0.80
Interstate 10							0%		
	Pima County Line to J-Six Ranch Rd	Freeway	Y	N/A	52500	62200	0%	0%	1.00
	J-Six Ranch Rd to Skyline TI	Freeway	Y	N/A	52500	62200	0%	0%	1.00
	Skyline TI to SR 90	Freeway	Y	N/A	52500	62200	0%	0%	1.00
	East of SR 90	Freeway	Y	N/A	52500	62200	0%	0%	1.00
Frontage Rd (Benson Hwy)									
	Cherokee Trail to Mescal Rd	State III	N	N	5000	11800	0%	-20%	0.80
	Mescal Rd to Pima County Line	State III	N	N	5000	11800	0%	-20%	0.80
Skyridge Road									
	Smith Ranch to Equipment Yard	Other	N	N	4400	9400	0%	-20%	0.80

Right of Way/ Plats

Existing and Future Conditions Socioeconomic Data by Zone

AREA	TAZ	EXISTING			FUTURE		
		Retail	Non Ret	Dwelling	Retail	Non Ret	Dwelling
BENSON	Benson Municipal airport	0	50	0	200	1200	0
BENSON	C1	30	20	0	90	50	0
BENSON	C10	0	25	0	0	50	0
BENSON	C11	75	0	0	15	0	0
BENSON	C12	50	0	0	20	10	0
BENSON	C13	95	105	0	270	145	0
BENSON	C14	25	45	0	135	70	0
BENSON	C15	100	65	0	100	55	0
BENSON	C16	10	0	0	10	5	0
BENSON	C17	0	20	0	0	40	0
BENSON	C18	0	25	0	0	150	0
BENSON	C19	0	115	0	0	230	0
BENSON	C2	50	0	0	300	0	0
BENSON	C20	0	45	0	0	45	0
BENSON	C201				50	0	0
BENSON	C202				50	0	0
BENSON	C203				50	0	0
BENSON	C204				120	0	0
BENSON	C21	0	30	0	0	35	0
BENSON	C22	0	15	0	0	50	0
BENSON	C23	0	5	0	150	0	0
BENSON	C24	5	10	0	100	0	0
BENSON	C25	0	30	0	35	20	0
BENSON	C3	20	0	0	35	0	0
BENSON	C4	10	0	0	20	0	0
BENSON	C5	10	0	0	15	0	0
BENSON	C6	20	5	0	90	45	0
BENSON	C7	25	10	0	25	15	0
BENSON	C8	0	100	0	0	170	0
BENSON	C9	40	0	0	75	40	0
BENSON	FR12/13				0	0	467
BENSON	FR6				0	0	1336
BENSON	FR7				0	0	1506
BENSON	I1	0	60	0	0	1000	0
BENSON	I102				0	490	0
BENSON	I104				0	220	0
BENSON	I105				60	90	0
BENSON	I106				0	200	0
BENSON	I2	0	100	0	0	220	0
BENSON	MUN	0	80	0			
BENSON	PARK1	0	0	0	0	20	0
BENSON	R1	0	0	300	0	10	300
BENSON	R10	0	0	36	0	0	36
BENSON	R11	30	0	50	30	10	50
BENSON	R12A	0	0	75	0	0	75
BENSON	R12B	0	5	163	0	0	163
BENSON	R12C	0	0	49	0	0	49

AREA	TAZ	EXISTING			FUTURE		
		Retail	Non Ret	Dwelling	Retail	Non Ret	Dwelling
BENSON	R12D	0	0	44	0	0	44
BENSON	R13	0	0	30	0	0	50
BENSON	R13A	0	0	111	0	0	111
BENSON	R13B	0	0	99	0	0	99
BENSON	R2	0	0	300	0	5	300
BENSON	R202				0	0	663
BENSON	R204				0	0	113
BENSON	R205				0	0	19
BENSON	R208				0	0	371
BENSON	R209				0	0	513
BENSON	R210				0	0	914
BENSON	R211				0	0	525
BENSON	R212				0	0	3400
BENSON	R213				0	0	350
BENSON	R214				0	0	2675
BENSON	R3	0	0	25	0	0	25
BENSON	R4A	0	0	75	0	0	75
BENSON	R4B	0	0	20	0	0	20
BENSON	R5A	5	0	45	0	0	45
BENSON	R5B	5	5	95	0	0	95
BENSON	R6A	0	0	274	0	0	274
BENSON	R6B	0	0	88	0	0	88
BENSON	R7	0	0	192	0	0	192
BENSON	R8	0	0	85	0	0	85
BENSON	R9	0	0	36	0	0	36
BENSON	RA	0	0	330	0	0	2377
BENSON	RD	0	0	0	0	0	275
WEST	NW1	0	0	0	0	0	90
WEST	NW2	0	0	20	0	0	30
WEST	NW3	0	0	40	0	0	40
WEST	NW4	0	0	50	0	0	50
WEST	NW5	0	0	40	0	0	80
WEST	NW6	0	0	0			
WEST	NW7	0	0	44	0	0	200
WEST	NW8	0	0	0	0	0	375
WEST	NW9	0	0	20	0	0	20
WEST	NW10	0	0	60	0	0	60
WEST	NW11	0	0	0	70	100	0
WEST	NW12	0	0	0	0	0	80
WEST	NW13				0	0	1000
WEST	NW14	0	0	12	0	0	320
WEST	NW15	0	0	95	0	0	185
WEST	NW16	0	0	300	0	0	375
WEST	NW17	0	0	122	0	0	204
WEST	NW18	0	0	17	0	0	17
WEST	NW19	0	0	6	0	0	21

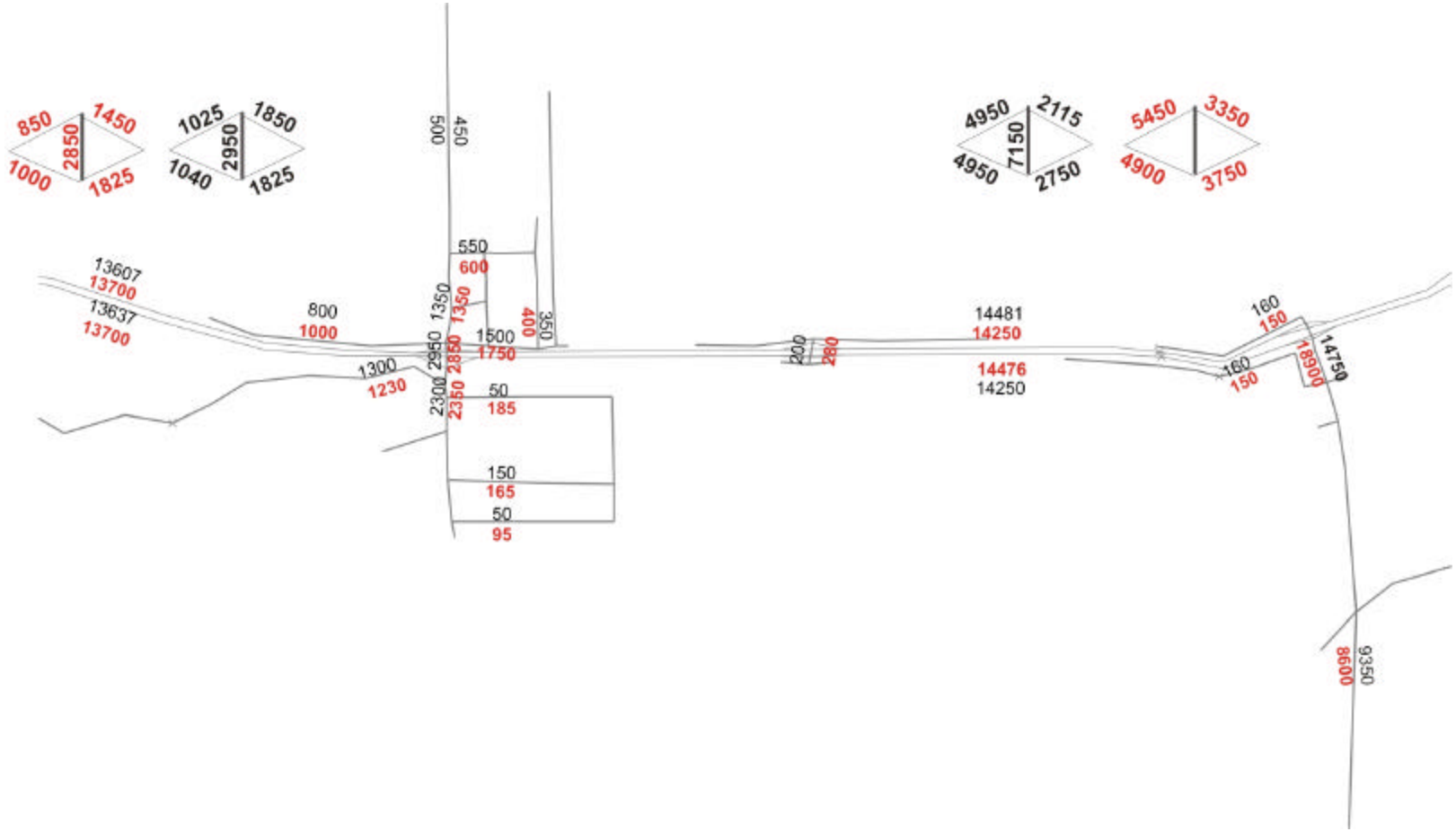
AREA	TAZ	EXISTING			FUTURE		
		Retail	Non Ret	Dwelling	Retail	Non Ret	Dwelling
WEST	NW20	0	0	15	0	0	15
WEST	NW21	0	0	25	0	0	160
WEST	NW22	0	0	52	0	0	160
WEST	NW23	0	0	52	0	0	52
WEST	NW24	0	0	69	0	0	80
WEST	NW25	0	0	33	0	0	40
WEST	NW26	0	0	15	0	0	160
WEST	NW27	0	0	60	0	0	140
WEST	NW28	0	0	40	0	0	160
WEST	NW29	0	0	39	0	0	160
WEST	NW30	0	0	0	0	0	40
WEST	NW31	0	0	76	0	0	80
WEST	NW32	30	5	0	60	60	0
WEST	NW33	0	0	90	0	0	90
WEST	NW34	0	0	360	0	0	360
WEST	NW35	0	0	240	0	0	250
WEST	NW36	0	0	95	0	0	95
WEST	NW37	0	0	10	0	0	20
WEST	NW38	0	0	2	10	25	5
WEST	NW39	0	0	88	0	0	88
WEST	NW40	0	80	0	155	85	0
WEST	NW41	0	50	0	0	50	0
WEST	NW42	0	0	68	0	0	68
WEST	NW43	0	0	102	0	0	160
WEST	NW44	0	0	5	0	0	59
WEST	NW45	0	0	4	0	0	6000
WEST	NW46				140	200	0
WEST	NW47	0	0	18			
WHETSTONE	Area 1				0	0	2400
WHETSTONE	Area 1 Commercial				360	0	0
WHETSTONE	Area 2				0	0	240
WHETSTONE	Area 4				0	0	690
WHETSTONE	Area 4 Commercial				100	270	0
WHETSTONE	Area 5 AG1				0	0	300
WHETSTONE	Area 5 AG2				0	0	150
WHETSTONE	Area 5 Commercial 1				0	200	0
WHETSTONE	Area 5 Commercial 2				200	0	0
WHETSTONE	Area 5 SFR1				0	0	300
WHETSTONE	Area 5 SFR2				0	0	150
WHETSTONE	Area 6 AG1				0	0	411
WHETSTONE	Area 6 AG2				0	0	411
WHETSTONE	Area 6 SFR1				0	0	411
WHETSTONE	Area 6 SFR2				0	0	411
WHETSTONE	Area 7 AG1				0	0	300
WHETSTONE	Area 7 AG2				0	0	300
WHETSTONE	Area 7 AG3				0	0	300

AREA	TAZ	EXISTING			FUTURE		
		Retail	Non Ret	Dwelling	Retail	Non Ret	Dwelling
WHETSTONE	Area 7 Commecial 2				75	0	0
WHETSTONE	Area 7 Commercial 1				90	60	0
WHETSTONE	Area 7 SFR1				0	0	300
WHETSTONE	Area 7 SFR2				0	0	300
WHETSTONE	Area 7 SFR3				0	0	300
WHETSTONE	Area 8 AG1				0	0	480
WHETSTONE	Area 8 Commercial 1				500	0	0
WHETSTONE	Area 8 Commercial 2				120	0	0
WHETSTONE	Area 8 SFR2				0	0	480
WHETSTONE	Area 9 AG				0	0	450
WHETSTONE	Area 9 commercial				0	150	0
WHETSTONE	Area6 Commercial 1				0	300	0
WHETSTONE	Area6 Commercial 2				188	105	0
BENSON	Kartchner Caverns	150	0	0	63	0	0
WHETSTONE	Whetstone WEst 2 Commercial				75	75	0
WHETSTONE	Whetstone West2				0	0	300

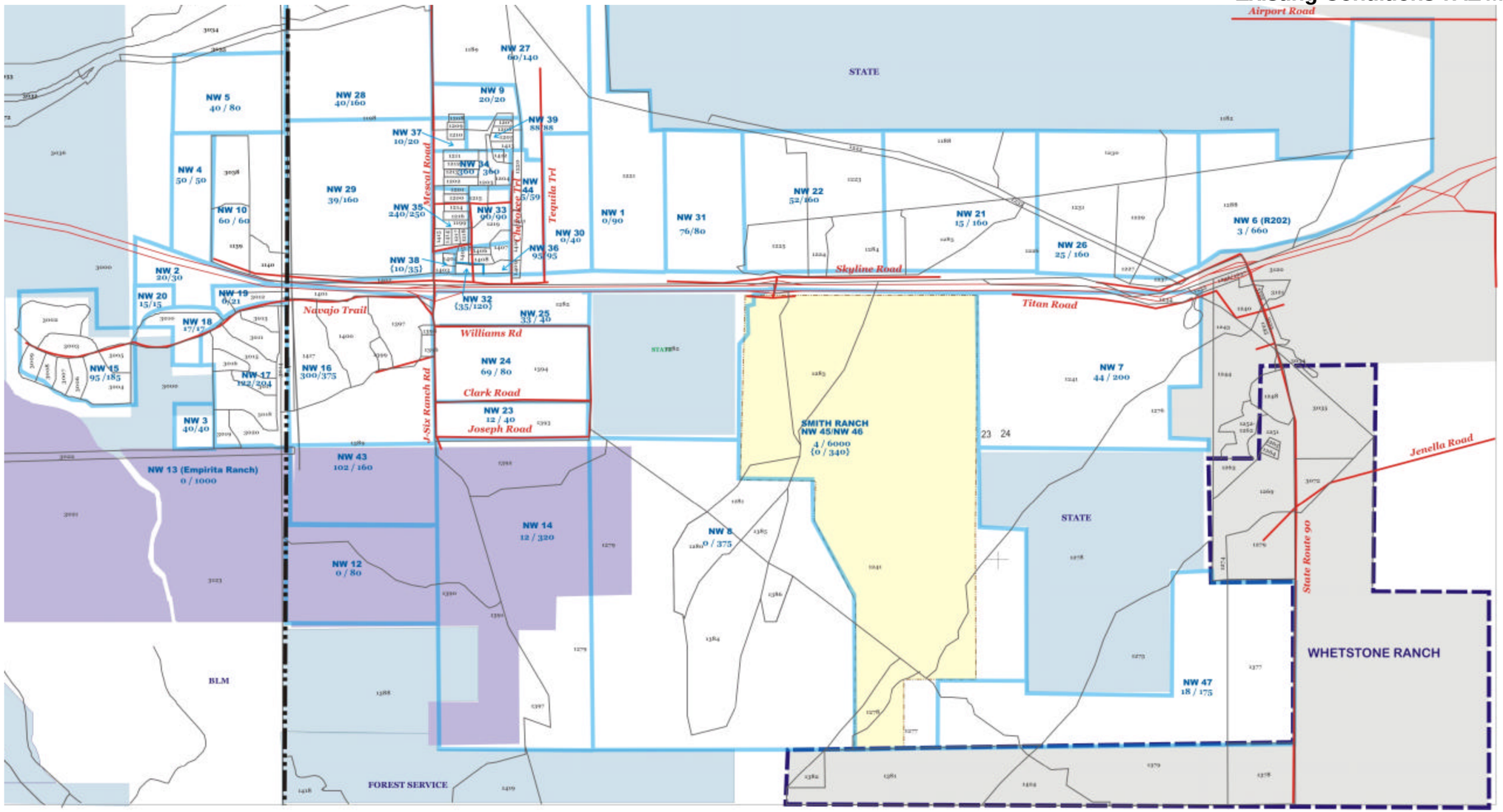
Model Statistics / Travel Characteristics

Existing Conditions Calibration Map

Red text is recorded volume
Black text is model output volume

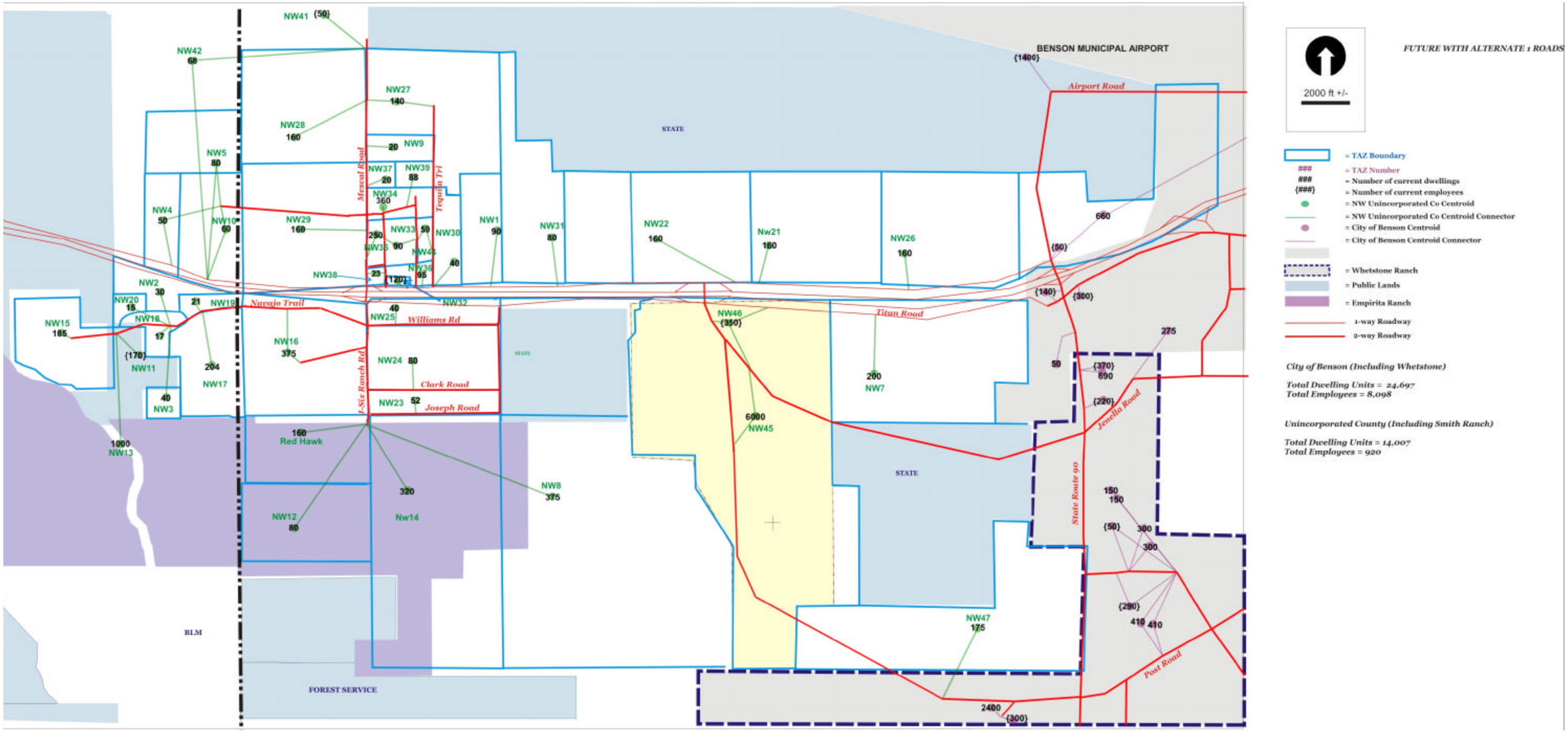


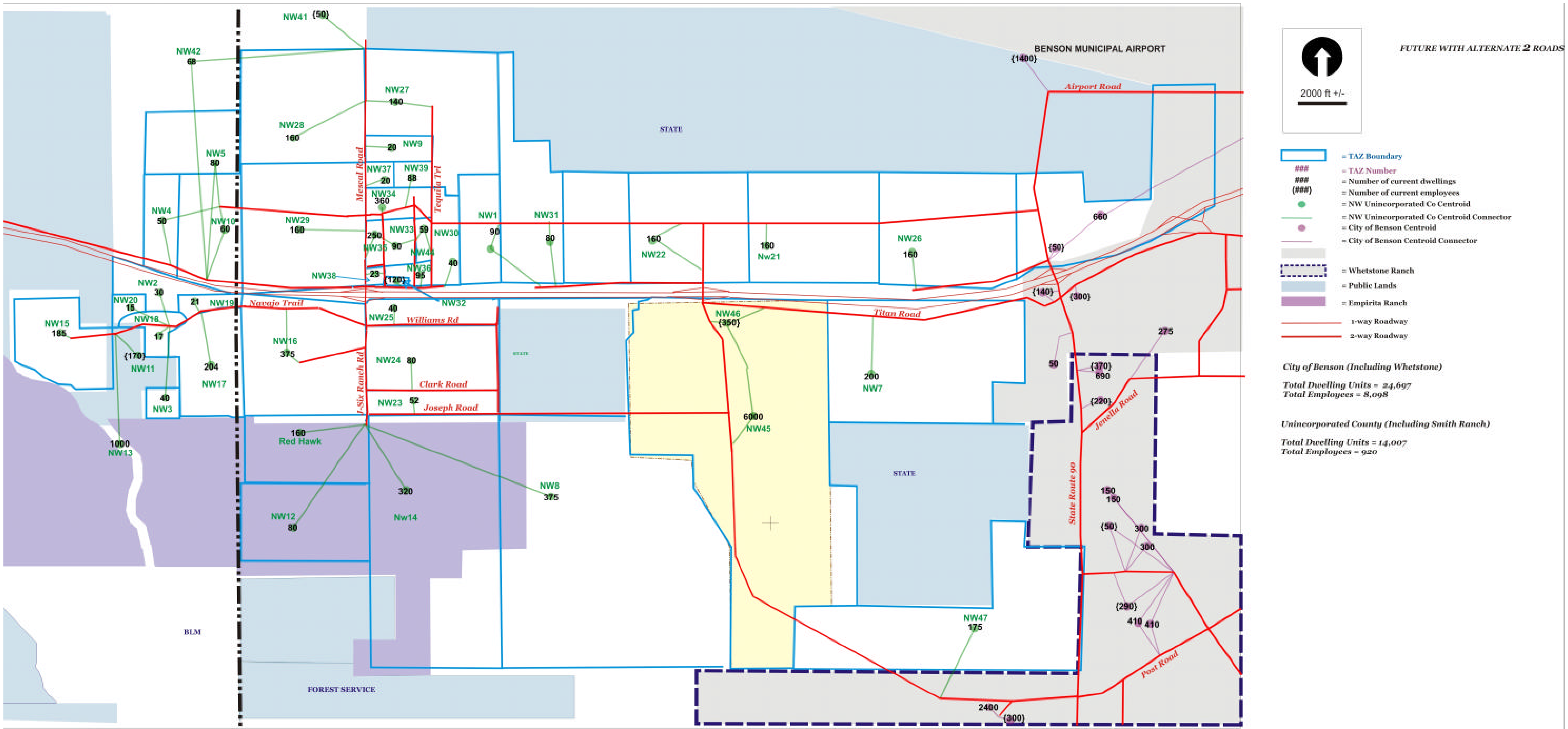
Existing Conditions TAZ Map/Census Blocks Overlay

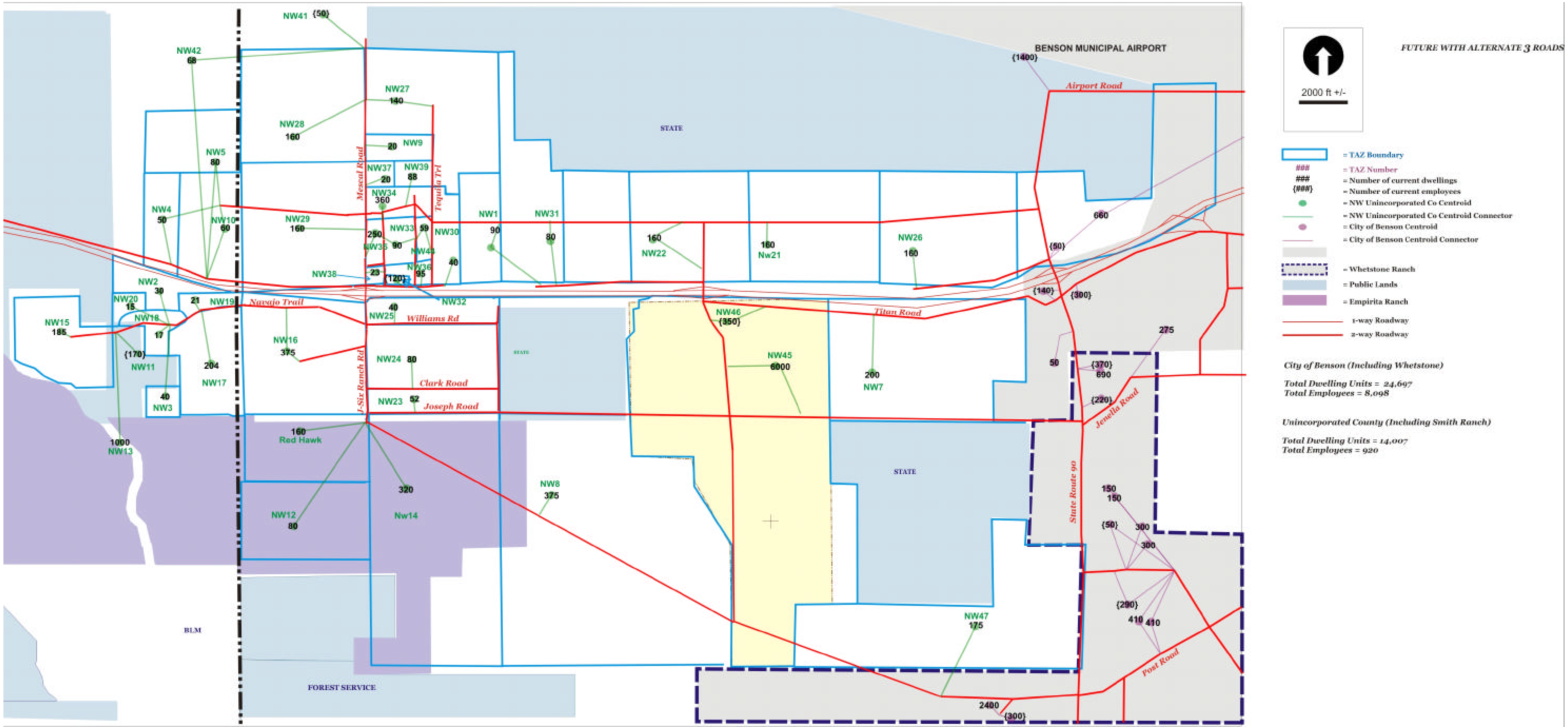


TAZ Map – Future Conditions (BUILDOUT)

Alternate 1




FUTURE WITH ALTERNATE 2 ROADS
2000 ft +/-
BENSON MUNICIPAL AIRPORT
Airport Road
STATE
BLM
FOREST SERVICE
Navajo Trail
Williams Rd
Clark Road
Joseph Road
Titan Road
Mescal Road
Tequila Trl
J-Six Ranch Rd
State Route 90
Jenella Road
Post Road
Red Hawk
= TAZ Boundary
= TAZ Number
= Number of current dwellings
= Number of current employees
= NW Unincorporated Co Centroid
= NW Unincorporated Co Centroid Connector
= City of Benson Centroid
= City of Benson Centroid Connector
= Whetstone Ranch
= Public Lands
= Empirita Ranch
1-way Roadway
2-way Roadway
City of Benson (Including Whetstone)
Total Dwelling Units = 24,697
Total Employees = 8,098
Unincorporated County (Including Smith Ranch)
Total Dwelling Units = 14,007
Total Employees = 920


FUTURE WITH ALTERNATE 3 ROADS
2000 ft +/-
= TAZ Boundary
= TAZ Number
= Number of current dwellings
= Number of current employees
= NW Unincorporated Co Centroid
= NW Unincorporated Co Centroid Connector
= City of Benson Centroid
= City of Benson Centroid Connector
= Whetstone Ranch
= Public Lands
= Empirita Ranch
1-way Roadway
2-way Roadway
City of Benson (Including Whetstone)
Total Dwelling Units = 24,697
Total Employees = 8,098
Unincorporated County (Including Smith Ranch)
Total Dwelling Units = 14,007
Total Employees = 920
BENSON MUNICIPAL AIRPORT
Airport Road
STATE
BLM
FOREST SERVICE
Navajo Trail
Williams Rd
Clark Road
Joseph Road
Titan Road
Mescal Road
Tequila Trl
J-Six Ranch Rd
State Route 90
Jenella Road
Post Road
Red Hawk