



Land Use Report

In support of the
Environmental Impact Statement

South Mountain Transportation Corridor in Maricopa County, Arizona

Arizona Department of Transportation
Federal Highway Administration
in cooperation with
U.S. Army Corps of Engineers
U.S. Bureau of Indian Affairs
Western Area Power Administration



November 2012

Federal-aid Project Number: NH-202-D(ADY)
ADOT Project Number: 202L MA 054 H5764 01L



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Abstract: This document assesses and describes the effects on land use-related resources that would occur as a result of the construction and operation of the proposed South Mountain Freeway, as adopted in the 2003 *Regional Transportation Plan*. Contents of this document will be presented in Chapter 4 of the South Mountain Transportation Corridor Environmental Impact Statement.

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List of Acronyms and Abbreviations

ADOT	Arizona Department of Transportation
A.R.S.	Arizona Revised Statutes
C	Central
Community	Gila River Indian Community
E	Eastern
E1	E1 Alternative
EIS	environmental impact statement
FHWA	Federal Highway Administration
FR	Full Reconstruction
I-10	Interstate 10
MAG	Maricopa Association of Governments
MF	multifamily
NZ	not zoned
PAD	planned area development
PR	Partial Reconstruction
R/W	right-of-way
SF	single family
sq. ft.	square feet
SMPP	Phoenix South Mountain Park/Preserve
SMTTC	South Mountain Transportation Corridor
SR	State Route
TI	traffic interchange
W	Western
W101CFR	W101 Alternative, Central Option, Full Reconstruction
W101CPR	W101 Alternative, Central Option, Partial Reconstruction
W101EFR	W101 Alternative, Eastern Option, Full Reconstruction
W101EPR	W101 Alternative, Eastern Option, Partial Reconstruction
W101WFR	W101 Alternative, Western Option, Full Reconstruction
W101WPR	W101 Alternative, Western Option, Partial Reconstruction
W59	W59 Alternative
W71	W71 Alternative

Glossary

affected environment	Those elements of the Study Area that may be changed by the proposed alternatives. These changes might be positive or negative in nature.
Arizona Department of Transportation (ADOT)	The State agency responsible for state roads and highways.
capacity	The maximum number of vehicles that a given section of road or traffic lane can accommodate.
cumulative impact	The impact on the environment that results from the incremental impact of the action when added to the other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. (40 Code of Federal Regulations § 1508.7)
density	Number of housing units per unit of area.
direct impacts	Changes that are caused by the action and occur at the same time and same place as the action.
Eastern Section	The portion of the Study Area located east of 59th Avenue.
environmental impact statement (EIS)	The project documentation prepared in accordance with the National Environmental Policy Act when the project is anticipated to have a significant impact on the environment.
Federal Highway Administration (FHWA)	A branch of the U.S. Department of Transportation responsible for administering the Federal-aid Program. The program provides financial resources and technical assistance for constructing, preserving, and improving the National Highway System along with other urban and rural roads.
floodplain	The part of the ground surface inundated with water on a recurring basis, usually associated with the 1 percent recurrence interval (100-year) flow.
indirect impacts	Changes that are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect impacts may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air, water, and other natural systems, including ecosystems.
mitigation	An action taken to reduce or eliminate an adverse impact stemming from construction, operation, or maintenance of a proposed action alternative. Mitigation could reduce the magnitude and extent of an impact from a level of significance to a level of insignificance. Mitigation includes <i>avoiding</i> the impact altogether by not taking a certain action or parts of an action; <i>minimizing</i> impacts by limiting the degree of magnitude of the action and its implementation; <i>rectifying</i> the impact by repairing, rehabilitating, or restoring the affected environment; <i>reducing or eliminating</i> the impact over time by preservation and maintenance operations during the life of the action; and <i>compensating</i> for the impact by replacing or providing substitute resources or environments. (40 Code of Federal Regulations § 1508.20)

right-of-way (R/W)	Publicly owned land used or intended to be used for transportation and other purposes.
Study Area	The geographic area within which action alternative solutions to the problem are developed.
Western Section	The portion of the Study Area located west of 59th Avenue.

1. Project Description and Purpose and Need

Project Description

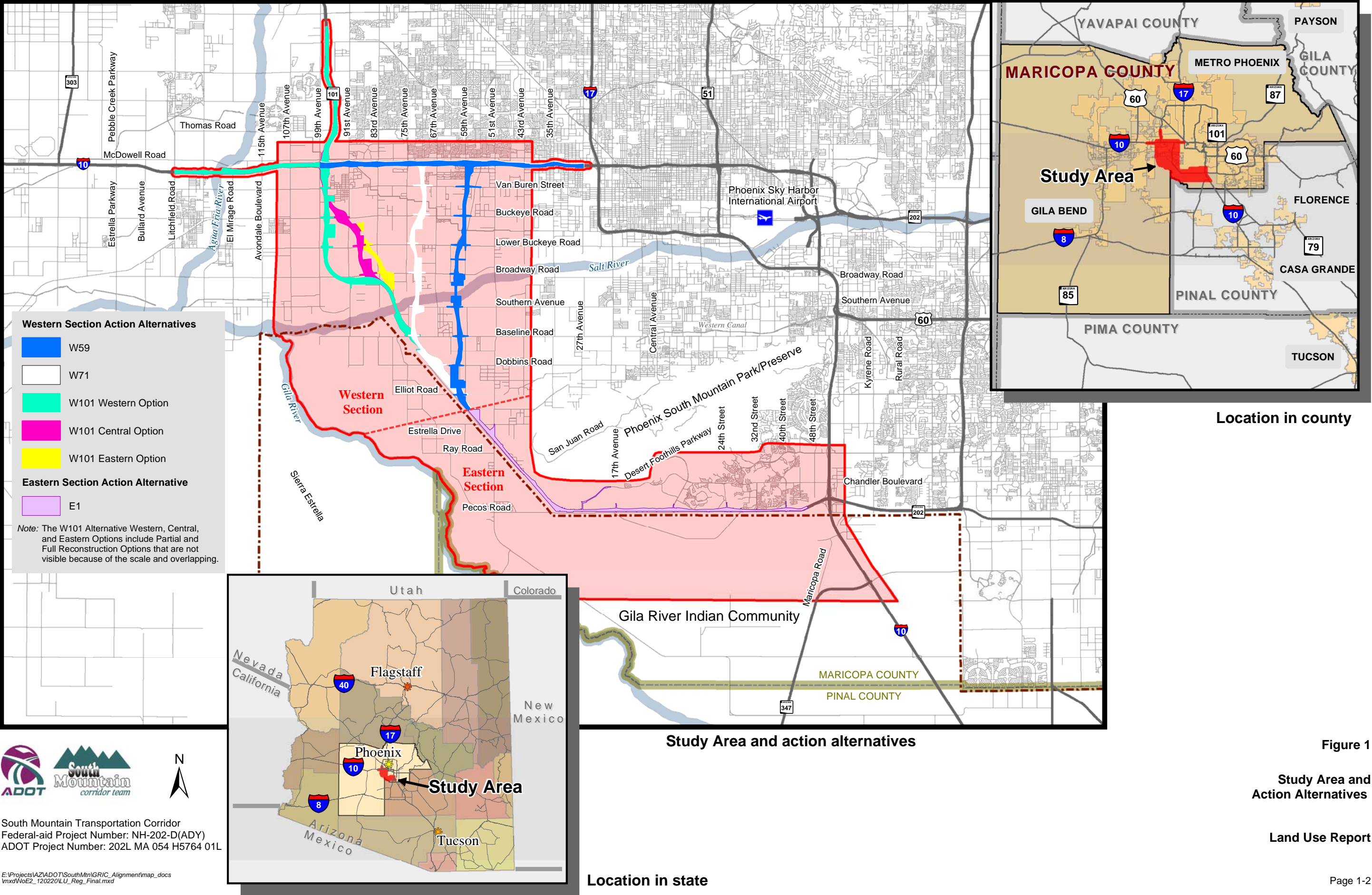
The Arizona Department of Transportation (ADOT) is studying the South Mountain Transportation Corridor (SMTC) in southern Phoenix, Maricopa County, Arizona. The South Mountain Freeway corridor was adopted into the Maricopa Association of Governments (MAG) regional freeway system in 1985 as part of the *MAG Freeway/Expressway Plan* (MAG 1985), at which time it was placed on the state highway system by the State Transportation Board. In 1988, ADOT prepared a design concept report and a state-level environmental assessment for the project, identified at that time as the South Mountain Parkway (ADOT 1988a, 1988b). As presented then, the project would connect Interstate 10 (I-10) (Maricopa Freeway) south of Phoenix with I-10 (Papago Freeway) west of the city, following an east-to-west alignment along Pecos Road through the western tip of the Phoenix South Mountain Park/Preserve (SMPP), then north to I-10 between 59th and 99th avenues. Because of the time elapsed since those documents were approved and to secure eligibility for federal funding for a proposed project within this corridor, ADOT and the Federal Highway Administration (FHWA) are now preparing an environmental impact statement (EIS) in accordance with the National Environmental Policy Act. In November 2004, the MAG *Regional Transportation Plan* (2003) was placed before Maricopa County voters, who approved the sales tax funding the plan. The South Mountain Freeway was included in this plan.

Alternatives considered for the SMTC included past freeway proposals as well as transportation system management, transportation demand management, transit improvements, arterial street network improvements, and land use controls. A freeway facility was determined to best address the project purpose and need. Therefore, this report discusses the potential impacts of a proposed freeway in the SMTC.

The Study Area for the EIS encompasses more than 156 square miles and is divided into a Western Section and an Eastern Section at a location common to all action alternatives (Figure 1). The division between sections occurs just east of 59th Avenue and south of Elliot Road.

Within the Western Section, three action alternatives are being considered for detailed study. These are the W59, W71, and W101 Alternatives. The W59 Alternative would connect to I-10 at 59th Avenue, while the W71 Alternative would connect at 71st Avenue. The W101 Alternative would connect to I-10 at the existing State Route (SR) 101L (Agua Fria Freeway)/I-10 system traffic interchange (TI) and has six associated options. The W101 Alternative options vary geographically among the Western (W), Central (C), and Eastern (E) Options and would vary geometrically based on a Partial Reconstruction (PR) or a Full Reconstruction (FR) of the system TI.

Improvements to I-10 (Papago Freeway) would occur for each Western Section action alternative (W59, W71, and W101). Improvements to SR 101L would occur for each option associated with the W101 Alternative.



Project Description and Purpose and Need

Within the Eastern Section of the Study Area, one action alternative is being considered. The E1 Alternative would begin near Elliot Road and 59th Avenue and proceed to the southeast to Pecos Road, which it would follow to the east until connecting to I-10 (Maricopa Freeway) at the Pecos Road/I-10/SR 202L (Santan Freeway) system TI.

The action alternatives and options are summarized in Table 1.

Table 1. Action Alternatives and Options

Section	Interstate 10 Connection	Action Alternative	Option – Broadway Road to Buckeye Road	Option – State Route 101L/ Interstate 10 Connection Reconstruction	Option Name
Western	59th Avenue	W59	— ^a	—	—
	71st Avenue	W71	—	—	—
	State Route 101L	W101	Western	Partial Reconstruction	W101WPR
				Full Reconstruction	W101WFR
			Central	Partial Reconstruction	W101CPR
				Full Reconstruction	W101CFR
			Eastern	Partial Reconstruction	W101EPR
				Full Reconstruction	W101EFR
Eastern	Pecos Road	E1	—	—	—

^a not applicable

The No-Action Alternative is being considered for the entire Study Area.

Purpose and Need

An analysis of population trends, land use plans, and travel demand shows that a considerable traffic problem in the Phoenix metropolitan area is projected for the future, resulting in the need for a new freeway in the SMTTC. This traffic problem is likely to worsen if plans are not made to accommodate the regional travel anticipated. The purpose of a freeway within the SMTTC is to support a solution to traffic congestion. Between the early 1950s and the mid-1990s, the metropolitan area grew by over 500 percent, compared with approximately 70 percent for the United States as a whole (MAG 2001). From 1980 to 2005, the Maricopa County population more than doubled, from 1.5 million to 3.7 million. The MAG region has been one of the fastest-growing metropolitan areas in the United States; Phoenix is now the fifth-largest city in the country, and the region ranks as the 12th-largest metropolitan area in the country.

Travel demand and vehicle miles driven in the metropolitan area are expected to increase at a faster rate than the population. MAG projections (conducted in collaboration with the Arizona Department of Economic Security) indicate Maricopa County's population will increase from 3.7 million in 2005 to 6.5 million in 2035 (MAG 2009). It is projected that in the next 25 years, daily vehicle miles traveled will increase from 101 million to 185 million.

Project Description and Purpose and Need

Even with anticipated improvements in light rail service, bus service, trip reduction programs, and existing roads and freeways, vehicle traffic volumes are expected to exceed the capacity of Phoenix metropolitan area streets and highways by as much as 11 percent in 2035. A freeway within the SMTTC would accommodate approximately 6 percentage points of the 11 percent of the unmet travel demand and would be part of an overall traffic solution.

2. Introduction

Phoenix is the capitol of Arizona and the fifth-largest city in the United States. The population of Phoenix was 1,575,423 in 2009, and the city had an area of 519 square miles (Arizona Department of Commerce 2010; City of Phoenix 2009). The greater Phoenix metropolitan area, which encompasses about 23 cities and towns, is the twelfth most populous metropolitan area in the United States, with approximately 4.3 million people (U.S. Census Bureau 2009).

The metropolitan area has grown rapidly in both population and developed land from the 1970s to 2008. As of 2000, the overall density is two households per acre—typical of low-density development patterns prevalent since the 1950s. Through 2008, the rate of population growth has been relatively constant (an average annual rate of 4.6 percent), while the rate of urban growth has decreased, resulting in increased density. Traffic congestion and quality of life factors, such as increased commute time to work, are getting worse as the city grows (U.S. Department of Transportation 2000).

This report describes the existing land use, zoning, development plans, future land use plans, and land ownership for the Study Area. Each topic is organized similarly with the following sections: an *Affected Environment* section discussing the overall Study Area in relation to the topic area, an *Environmental Consequences* section addressing the effects of the proposed action alternatives and No-Action Alternative on the topic area, and a *Mitigation Measures* section addressing potential mitigation measures that might be pursued for each action alternative, if one were to become the Selected Alternative.

The Study Area falls entirely within Maricopa County, Arizona, and includes portions of the cities of Avondale, Chandler, Glendale, Goodyear, Phoenix, and Tolleson, and the Gila River Indian Community (Community) (Table 2). Within the Study Area, each jurisdiction's planning area includes incorporated areas and unincorporated areas likely to be annexed in the future. These planning areas are regulated by the respective jurisdiction's general plan, which guides future growth, and the zoning ordinance, the principal tool used in implementing each general plan.

Land in the Phoenix planning area makes up the greatest percentage of Study Area land. The next largest land area included in the Study Area is within the Community. Tolleson follows, with the Study Area covering its entire incorporated area. Table 2 shows the number of acres within the Study Area, by jurisdiction.

Table 2. Planning Areas in the South Mountain Transportation Corridor Study Area

Jurisdiction	Acreage	Percentage of Study Area
Avondale	3,550	4
Chandler	773	1
Gila River Indian Community	43,086	43
Glendale	301	<1
Goodyear	192	<1
Phoenix	48,063	48
Tolleson	3,809	4
Study Area	99,774	100

Source: Maricopa Association of Governments (2005)

Note: A jurisdiction's planning area includes incorporated areas and unincorporated areas likely to be annexed in the future.

In addition to describing the Study Area in terms of jurisdictional boundaries, the Study Area can be defined by a number of specific environmental and social factors that influence the existing and future land use form. At approximately 16,500 acres, SMPP is referred to as the largest urban park in the United States (City of Phoenix 2005). SMPP is located in the Eastern Section of the Study Area. The Community is a sovereign nation of the Pima and Maricopa Tribes and consists of seven districts. Bisecting the Western Section of the Study Area from east to west is the Salt River, which converges with the Gila River at the western edge of the Study Area (Figure 2).

The Gila River and its broad alluvial floodplain define the southwestern border of the Study Area (refer to the *Floodplains Report* for further information).

All jurisdictions in the Study Area have increased in population since 2000 (Table 3). The increase in population from 2000 to 2008 ranged from a low of 14 percent in Glendale to a high of 214 percent in Goodyear. The Maricopa County population, as a whole, increased 30 percent during this same time period. Population growth for the Community between 1990 and 2000 is estimated at 18 percent (Arizona Department of Economic Security 2004). Overall population growth in the Phoenix metropolitan area has affected the pattern of land use and infrastructure needs through an increased number of vehicle trips, the growth of commercial and employment land uses, and necessary public services such as police and fire protection.

The northern edge of the Community is located within the SMTC Study Area. The Study Area encompasses portions of Districts 4, 6, and 7. This area of the Community is adjacent to the cities of Avondale, Phoenix, and Chandler. Avondale and Phoenix are located north of the Community portion of the Study Area. The primarily residential Ahwatukee Foothills area of Phoenix is located along the northern border of the Community from approximately 51st Avenue east to I-10 (Maricopa Freeway). Chandler is located north and east of the Community.

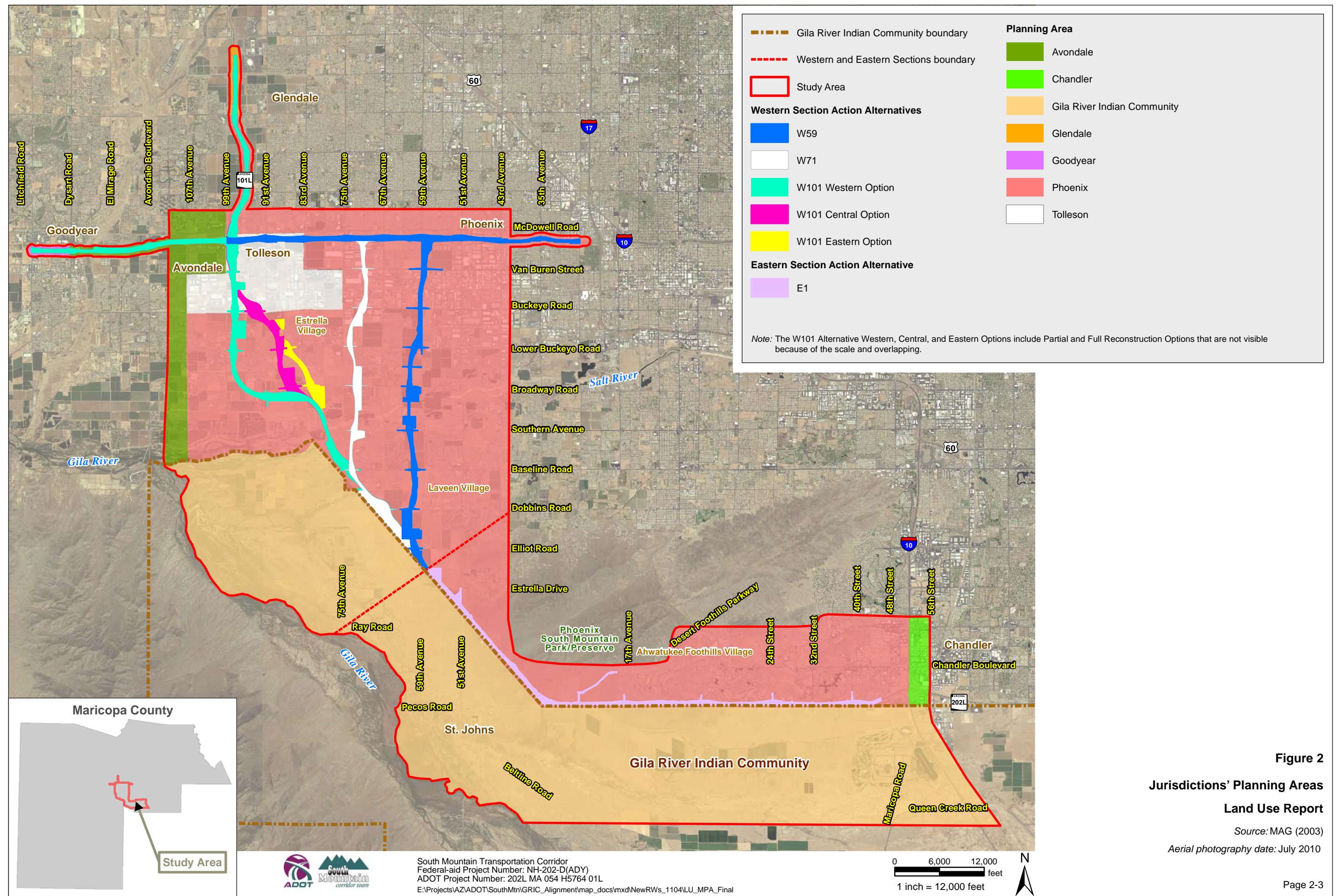


Figure 2
Jurisdictions' Planning Areas
Land Use Report

Source: MAG (2003)
Aerial photography date: July 2010

Table 3. Population of Planning Areas in the South Mountain Transportation Corridor Study Area, 1990–2008

Jurisdiction	Population			Percentage Change 1990–2008	Percentage Change 2000–2008	Average Annual Growth Rate ^a 2000–2008
	1990	2000	2008			
Avondale	16,169	35,883	76,648	374	114	10
Chandler	90,533	176,581	244,376	170	38	4
Glendale	148,134	218,812	248,435	68	14	2
Goodyear	6,258	18,911	59,436	850	214	15
Community ^b	9,540	11,257	— ^c	—	—	2 ^d
Maricopa County	2,122,101	3,072,149	3,987,942	88	30	3
Phoenix	983,403	1,321,045	1,561,485	59	18	2
Tolleson	4,434	4,974	6,833	54	37	4

Sources: U.S. Census Bureau (2000), Arizona Department of Commerce (2008)

Note: A jurisdiction's planning area includes incorporated areas and unincorporated areas likely to be annexed in the future.

^a percentage average growth, compounded annually

^b Gila River Indian Community

^c 2008 population estimates for the Gila River Indian Community are not known to be available.

^d The average compounded annual growth for the Gila River Indian Community is for 1990–2000.

By 2035, the Phoenix metropolitan area is forecast to have a population of 6.5 million, nearly 2.7 million dwelling units, and an employment level of just under 3.6 million (MAG 2009). The areas of greatest population growth are anticipated at the fringe of the metropolitan area (for example, Buckeye, Peoria, and Gilbert). Within the Study Area, the Phoenix areas anticipating growth in population at a rate approximately equal to that of the fringe areas are Laveen and Estrella villages. These areas are located to the south and east of the I-10/SR 101L connection, and the population is expected to increase 270 percent from 2005 to 2035 (MAG 2007).

Population density varies greatly in the Study Area. The rural, agrarian areas of the Community have the lowest densities, with the greatest population densities in the Study Area occurring in the intensely developed I-10 corridor. Phoenix's Ahwatukee Foothills Village, located between the Community and SMPP, is nearly built-out, with population densities between these two extremes.

3. Existing Land Use

Introduction

Land use for the entire Study Area was analyzed to determine the effects of the proposed alternatives on the built environment. Existing land uses were identified and grouped into nine broad land use categories:

- ▶ agricultural
- ▶ commercial
- ▶ industrial (including sand and gravel mining activities)
- ▶ open space (active and passive parkland, golf courses, and water)
- ▶ public/quasi-public (public facilities, schools, churches, special event venues, and institutional uses)
- ▶ residential (multifamily)
- ▶ residential (single-family)
- ▶ transportation (freeways and railways)
- ▶ undeveloped (vacant and undisturbed desert)

Specific land uses were identified by site characteristics through the use of aerial imagery (ADOT 2009, 2010), field verification, and, when necessary, zoning data.

Affected Environment

As shown in Table 4, the area is primarily characterized by undeveloped and agricultural land (35 percent and 20 percent of the Study Area, respectively). Approximately 34 percent of the Study Area is developed with residential (18 percent single-family and 1 percent multifamily), commercial (3 percent), industrial (8 percent), transportation (2 percent), or public/quasi-public land uses (2 percent). The remaining 11 percent of the Study Area consists of open space.

Data in Table 4 convey that one-third of the Study Area in 2009 and 2010 was developed (developed land does not include agricultural, open space, or undeveloped land). The most intensely developed portion of the Study Area is along I-10 (Papago Freeway). Moving south, the Study Area is characterized by less dense development. At the southwestern extent, land uses are predominantly rural agrarian. Southeast of SMPP, adjacent to I-10 (Maricopa Freeway), Ahwatukee Foothills Village—located between Community land and SMPP—is nearly built-out with single-family residential, multifamily residential, and commercial land uses. The existing land use within the Study Area for each of the affected jurisdictions is discussed in the following sections (Figure 3).

Table 4. Existing Land Use, by Study Area Jurisdiction

Land Use	Avondale		Chandler		Community ^a		Glendale		Goodyear		Phoenix		Tolleson		Study Area	
	Acreage	% ^b	Acreage	%	Acreage	%	Acreage	%	Acreage	%	Acreage	%	Acreage	%	Acreage	%
Agricultural	1,260	36	— ^c	—	7,810	18	138	46	5	3	9,567	20	976	26	19,756	20
Commercial	403	11	247	32	308	1	17	5	25	13	1,355	3	152	4	2,507	3
Industrial	73	2	298	38	301	1	—	—	—	—	6,019	12	1,521	40	8,212	8
Open space	304	9	—	—	4,741	11	11	4	—	—	6,032	13	38	1	11,126	11
Public/ Quasi-public	53	1	—	—	449	1	—	—	7	4	1,590	3	125	3	2,224	2
Residential (multifamily)	35	1	20	3	—	—	—	—	14	7	959	2	34	1	1,062	1
Residential (single-family)	916	26	—	—	997	2	—	—	—	—	16,028	33	462	12	18,403	18
Transportation	210	6	113	15	161	<1	94	31	64	33	749	2	148	4	1,539	2
Undeveloped	296	8	95	12	28,319	66	41	14	77	40	5,764	12	353	9	34,945	35
Total	3,550	100	773	100	43,086	100	301	100	192	100	48,063	100	3,809	100	99,774	100

^a Gila River Indian Community^b percentage of jurisdiction's total land use in the Study Area^c not applicable^d multifamily^e single-family

Western Section

Avondale

Between 1990 and 2008, Avondale experienced a population percentage increase of 374 percent. For the period from 2000 to 2008, Avondale had the second-greatest percentage population change (114 percent) of the Study Area jurisdictions (Goodyear had the greatest population change for that period, increasing by 214 percent). This growth has changed Avondale from a rural farming community with a population of 16,169 in 1990 to a suburban community with a population of 76,650 in 2008 (Arizona Department of Commerce 2008). However, within the Study Area, agriculture remains a major land use in Avondale (35 percent), although urban uses (residential and commercial) make up the majority of land uses, at 27 and 11 percent, respectively. The area is anticipated to be built-out within the design year timeframe for this proposed project.



Avondale's population increased nearly 114 percent between 2000 and 2008.

Gila River Indian Community

The Community land in the Western Section is largely defined by the Gila and Salt rivers, the confluence of which is located along the western edge of the Study Area. The area is sparsely populated and agrarian in character.

Glendale

Glendale is Arizona's fourth-largest city, with a population in 2008 of 248,435. The Study Area extends into Glendale along SR 101L north of Camelback Road. Land uses near SR 101L are predominantly urban and agricultural. Glendale is included in the Study Area because of the capacity improvements along SR 101L associated with the W101 Alternative and Options.

Goodyear

Goodyear experienced the greatest population percentage increase (850 percent) of all affected municipalities from 1990 to 2008 (Table 3). For the period from 2000 to 2008, Goodyear had the greatest percentage population change (214 percent) of all Study Area jurisdictions. Forty percent of the Study Area land in Goodyear remains undeveloped. Goodyear is included in the Study Area because of capacity improvements along I-10 associated with the W101 Alternative and Options.

Phoenix

Within the Western Section, the Study Area encompasses two distinct areas: an area to the north and west of SMPP and south of the Salt River referred to as Laveen Village and the area to the north of the Salt River referred to as Estrella Village.

The City of Phoenix's Laveen Village is undergoing dramatic change, and residential subdivisions are replacing farmland. Laveen's current population of almost 25,000 residents is expected to grow to 56,000 by 2020 (Shoyeb 2005). A large area of land near the Salt River, south of Baseline Road, remains undeveloped because of flooding and access challenges.

In the City of Phoenix's Estrella Village, a number of industrial sites are near the Salt River, east of 91st Avenue. The density of industrial development increases from the Salt River north to I-10. Major industrial land use is located between Buckeye Road and I-10. West of 79th Avenue, industrial development is primarily north of Buckeye Road. East of 79th Avenue, industrial land is found south of Buckeye Road and near 59th Avenue extending all the way to the Salt River (Broadway Road alignment). North of I-10, in the City of Phoenix-designated Maryvale planning area, residential development becomes the predominant land use.

Tolleson

All 6 square miles of Tolleson lie completely within the Western Section of the Study Area. Originally an agricultural community, approximately 26 percent of its land area remains in agriculture today. I-10 runs east-to-west through the northern portion of the city, and the SR 101L/I-10 interchange is located in the northwestern corner of the city. Tolleson's proximity to I-10 and SR 101L has made it a distribution hub for companies delivering products throughout the Southwest, hence the large amount of industrial land (1,521 acres). Tolleson's residential district is in the city center, bounded by the Union Pacific Railroad to the south, I-10 to the north, 99th Avenue to the west, and 83rd Avenue to the east. The compact form of residential development has resulted in Tolleson having the third-smallest median (residential) lot size (6,863 sq. ft.) of incorporated cities in the Phoenix area (Morrison Institute for Public Policy 2000).

Eastern Section

Chandler

In 2008, Chandler's population was 244,376, an increase of 38 percent since 2000 (U.S. Census Bureau 2000; Arizona Department of Commerce 2008). Chandler is a suburban city with numerous high technology manufacturing centers. The Study Area includes approximately 773 acres located in the western portion of the city. The area is located east of I-10 and is primarily composed of industrial uses.

Gila River Indian Community

Two-thirds of the Community land within the Study Area is open desert and undeveloped land. Agricultural is the next-largest Community land use within the Study Area. Land in agricultural use is largely contained within a band located immediately south of the Broadacres Canal and in the area where the Gila and Salt rivers converge. In accordance with the Gila River Indian Community Water Settlement and the Pima-Maricopa Irrigation Project, the Community plans to bring additional agricultural land into production.

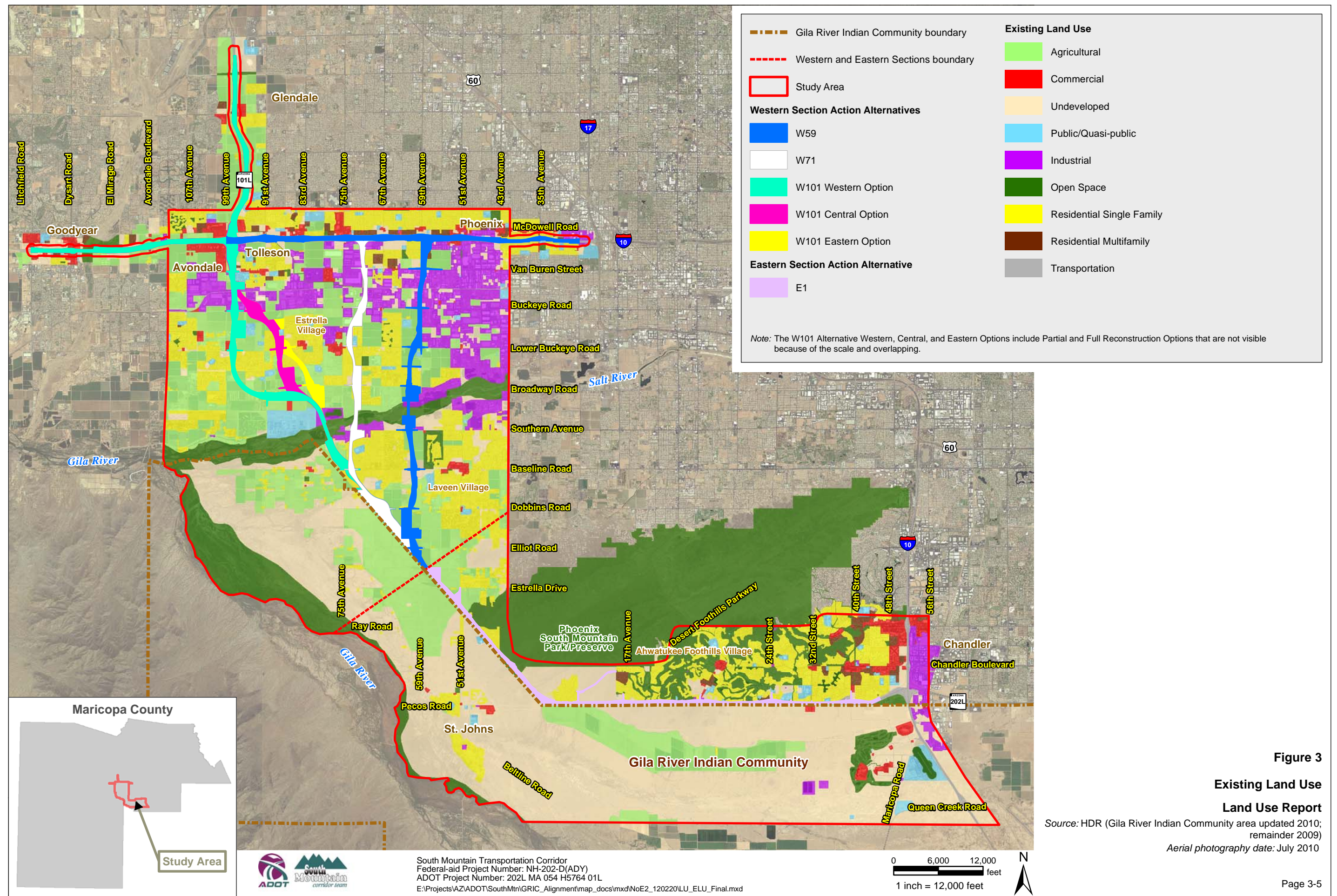


Figure 3
Existing Land Use
Land Use Report

Source: HDR (Gila River Indian Community area updated 2010; remainder 2009)
 Aerial photography date: July 2010

Commercial development is largely confined to the area near I-10. East of I-10 is the Lone Butte Industrial Development Park, which covers approximately 800 acres and includes commercial and light and heavy industrial uses. West of I-10 are several large commercial uses, among them the Wild Horse Pass Casino, Sheraton Wild Horse Pass Resort, Devil's Claw and Cattail golf courses, and Firebird International Raceway.

West of the 40th Street alignment, which is the western extent of commercial development in the vicinity of I-10, the land use is largely agriculture south of the Broadacres Canal. At the junction of 51st Avenue and the Pecos Road alignment is the unincorporated town of Komatke (St. Johns). According to the 2000 Census, the area at that time had a population of approximately 1,200.

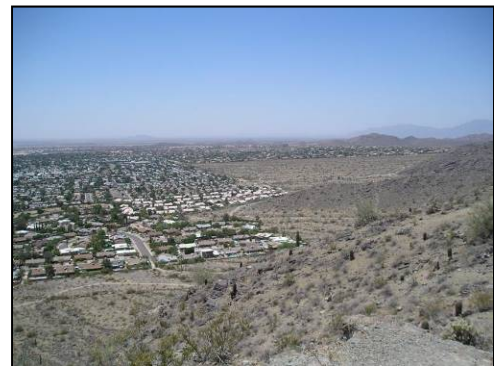
In addition to the residential land uses in Komatke, there are several commercial businesses and Community uses, including the Gila Crossing Community School, located west of 51st Avenue. East of 51st Avenue, along Pecos Road, are the Boys and Girls Club, the Senior Complex, a fire station, Gila Crossing North Campus, and the Gila River Health Care's Komatke Health Center.

At the southwestern edge of the South Mountains, off 51st Avenue and Komatke Lane, is the Vee Quiva Casino, one of two Community-owned casinos in the Study Area (the other casino in the Study Area is the Wild Horse Pass Casino mentioned previously; Lone Butte Casino, the third Community casino, is located on South Kyrene Road, just east of the Study Area, and south of SR 202L [Santan Freeway]).

Phoenix

Within Phoenix, the Eastern Section of the Study Area encompasses the Ahwatukee Foothills Village. Ahwatukee Foothills Village is south of SMPP. SMPP is part of the City of Phoenix's park/preserve system. The park has about 16,500 acres of lower Sonoran Desert and provides a visual backdrop for the entire Study Area.

The Ahwatukee Foothills Village area is bounded by I-10 to the east, the South Mountains to the north, and the Community on the south and west. Ahwatukee Foothills Village is largely built-out with master-planned communities, areas of active and passive open space, and several public schools and parks.



Ahwatukee Foothills Village's approximately 85,000 residents (U.S. Census Bureau 2000) are between the agricultural and open space of the Gila River Indian Community to the south and SMPP to the north.

Environmental Consequences

This section discusses the environmental consequences of the action alternatives by analyzing 1) the conversion of existing land uses to freeway-related uses, and 2) the compatibility of adjacent land uses with freeway related uses. Each of the action alternatives would result in displacements and relocations of residential, commercial, and industrial uses. These impacts and the effect of the alternatives on community character and cohesion are discussed in the *Social Conditions Report*.

The conversion of land uses resulting from the proposed action alternatives was determined by measuring the amount, type, and acreage of existing land uses within the proposed right-of-way (R/W). This is the actual measure of land uses affected. This conversion of land uses would affect the municipalities of Avondale, Phoenix, and Tolleson. The results of this analysis are presented in Table 5. There would be no direct impacts on land in the cities of Chandler, Glendale, or Goodyear; therefore, these jurisdictions are not included in Table 5.

The land use effects of all the action alternatives may extend beyond the proposed R/W and would include issues of access, community cohesion, economics, air quality, noise, cultural resources, visual impacts, and farmlands. These impacts are discussed in the *Traffic Analysis*, *Social Conditions*, *Economic Impacts*, *Air Quality*, *Noise*, *Cultural Resources*, *Visual Resources*, and *Prime and Unique Farmland* reports, respectively.

The compatibility of land uses with the action alternatives and the No-Action Alternative was assessed by considering land uses within a ¼-mile buffer of the action alternatives' proposed R/W.¹ The effects of a major transportation corridor on existing land uses may be positive or negative. To understand the potential impacts, a discussion of compatibility of the action alternatives with different land uses is presented here. Some of the potential mitigation measures that may be used are also noted. This list is presented by way of example and is not an indication of the breadth and depth of mitigation measures that could be available to avoid, reduce, or otherwise mitigate impacts. The land uses within a ¼-mile buffer of the action alternatives' proposed R/W are included in Table 6.

¹ The distance of ¼ mile was used because this is often referred to as a walkable distance, which equates to a walk of less than 10 minutes.

Table 5. Existing Land Uses within Proposed R/W of Action Alternatives

Land Use	W59		W71		W101WFR		W101WPR		W101CFR		W101CPR		W101EFR		W101EPR		E1	
	Acreage	%	Acreage	%	Acreage	%	Acreage	%	Acreage	%	Acreage	%	Acreage	%	Acreage	%	Acreage	%
Avondale																		
Commercial	— ^a	—	—	—	4	25	—	—	4	25	—	—	4	25	—	—	—	—
Transportation	—	—	—	—	12	75	—	—	12	75	—	—	12	75	—	—	—	—
Avondale subtotal	—	—	—	—	16	100	—	—	16	100	—	—	16	100	—	—	—	—
Phoenix																		
Agricultural	548	58	535	50	612	56	618	57	469	46	476	46	495	48	502	48	163	19
Commercial	8	1	1	<1	27	3	26	2	1	<1	0	0	1	<1	0	0	1	<1
Industrial	157	17	181	17	25	2	25	2	25	2	25	2	25	2	25	2	10	1
Open Space	40	4	20	2	22	2	21	2	24	2	23	2	24	2	23	2	92	10
Public/Quasi-public	1	<1	1	<1	0	0	0	0	0	0	0	0	0	0	0	0	12	1
Residential (MF ^b)	20	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Residential (SF ^c)	42	5	277	26	291	27	291	27	386	38	387	38	351	34	351	34	104	12
Transportation	1	<1	1	<1	0	0	3	0	0	0	3	<1	0	0	3	0	39	4
Undeveloped	118	13	45	4	107	10	106	10	121	12	118	11	145	14	143	14	462	52
Phoenix subtotal	935	100	1,061	100	1,084	100	1,090	100	1,026	100	1,032	100	1,041	100	1,047	100	883	100
Tolleson																		
Agricultural	—	—	—	—	67	32	81	37	85	35	99	39	85	35	99	39	—	—
Commercial	—	—	—	—	1	1	0	0	1	<1	0	0	1	1	0	0	—	—
Industrial	—	—	—	—	100	48	107	48	80	33	87	34	80	33	87	34	—	—
Public/Quasi-public	—	—	—	—	1	1	0	0	1	<1	1	<1	1	<1	1	<1	—	—
Transportation	—	—	—	—	23	11	27	12	23	10	27	10	23	9	27	10	—	—
Undeveloped	—	—	—	—	15	7	6	3	52	22	43	17	52	22	43	17	—	—
Tolleson subtotal	—	—	—	—	207	100	221	100	242	100	257	100	242	100	257	100	—	—
Study Area																		
Study Area total	935	—	1,061	—	1,307	—	1,311	—	1,284	—	1,289	—	1,299	—	1,304	—	883	—

Sources: Arizona Department of Transportation (2009, 2010); HDR Engineering, Inc., analysis of aerial imagery

Notes: These reported conversion acreages should not be considered final. Design of each action alternative, while conducted to an equal level, is still preliminary and subject to numerous changes as design is further refined. This process would likely continue after the Record of Decision into the final design process for the Selected Alternative, assuming the Selected Alternative is not the No-Action Alternative. No acreage conversion would occur with the No-Action Alternative. Additionally, because much of the Western Section of the Study Area continues to convert from agricultural use to residential suburban uses, these acreages and associated percentages are subject to slight changes.

^a not applicable ^b multifamily ^c single family

Table 6. Existing Land Uses within ¼ mile of Proposed R/W of Action Alternatives

Land Use	W59		W71		W101WFR		W101WPR		W101CFR		W101CPR		W101EFR		W101EPR		E1	
	Acreage	%	Acreage	%	Acreage	%	Acreage	%	Acreage	%	Acreage	%	Acreage	%	Acreage	%	Acreage	%
Avondale																		
Agricultural	— ^a	—	—	—	30	12	21	14	30	12	21	14	30	12	21	14	—	—
Commercial	—	—	—	—	197	78	116	77	197	78	116	77	197	78	116	77	—	—
Industrial	—	—	—	—	0	0	0	0	0	0	0	0	0	0	0	0	—	—
Transportation	—	—	—	—	25	10	14	9	25	10	14	9	25	10	14	9	—	—
Avondale subtotal	—	—	—	—	252	100	151	100	252	100	151	100	252	100	151	100	—	—
Gila River Indian Community																		
Agricultural	162	100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	394	22
Commercial	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	24	1
Public/Quasi-public	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17	1
Residential (SF ^b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	33	2
Undeveloped	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,337	74
Community subtotal	162	100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,805	100
Phoenix																		
Agricultural	2,236	45	1,517	35	1,950	48	1,993	48	1,351	37	1,393	37	1,326	35	1,369	36	596	14
Commercial	65	1	78	2	130	3	132	3	48	1	49	1	62	2	64	2	25	1
Industrial	897	18	839	19	110	3	110	3	110	3	110	3	113	3	113	3	16	<1
Open Space	244	5	172	4	194	5	195	5	218	6	218	6	205	5	205	5	624	15
Public/Quasi-public	62	1	66	2	138	3	144	3	121	3	127	3	107	3	112	3	123	3
Residential (MF ^c)	130	3	74	2	0	0	0	0	0	0	0	0	0	0	0	0	57	1
Residential (SF)	643	13	1,258	29	1,134	28	1,144	27	1,418	38	1,428	37	1,369	37	1,379	36	1,128	27
Transportation	94	2	45	1	33	1	63	2	33	1	63	2	33	1	63	1	84	2
Undeveloped	595	12	270	6	350	9	363	9	414	11	427	11	512	14	525	14	1,517	36
Phoenix subtotal	4,966	100	4,319	100	4,039	100	4,144	100	3,713	100	3,815	100	3,727	100	3,830	100	4,170	100
Tolleson																		
Agricultural	—	—	2	100	259	31	265	30	274	31	281	30	279	31	285	30	—	—
Commercial	—	—	0	0	21	2	21	2	21	2	21	2	21	2	21	2	—	—
Industrial	—	—	0	0	318	38	323	37	327	36	331	35	327	36	332	35	—	—
Open Space	—	—	0	0	0	0	2	<1	0	0	2	<1	0	0	2	<1	—	—
Public/Quasi-public	—	—	0	0	58	7	64	7	58	6	64	7	58	6	64	7	—	—
Residential (MF)	—	—	0	0	5	1	5	1	5	1	5	0	5	1	5	<1	—	—
Residential (SF)	—	—	0	0	55	7	71	8	55	6	71	8	55	6	71	8	—	—
Transportation	—	—	0	0	51	6	54	6	51	6	53	6	51	6	53	6	—	—
Undeveloped	—	—	0	0	68	8	73	8	110	12	115	12	110	12	115	12	—	—
Tolleson subtotal	—	—	2	100	835	100	878	100	901	100	943	100	906	100	948	100	—	—
Study Area																		
Study Area total	5,128	—	4,321	—	5,126	—	5,173	—	4,866	—	4,909	—	4,885	—	4,929	—	5,975	—

Sources: Arizona Department of Transportation (2009; 2010); HDR Engineering, Inc., analysis of aerial imagery

Notes: These reported conversion acreages should not be considered final. Design of each action alternative, while conducted to an equal level, is still preliminary and subject to numerous changes as design is further refined. This process would likely continue after the Record of Decision into the final design process for the Selected Alternative, assuming the Selected Alternative is not the No-Action Alternative. No acreage conversion would occur with the No-Action Alternative. Additionally, because much of the Western Section of the Study Area continues to convert from agricultural use to residential suburban uses, these acreages and associated percentages are subject to slight changes.

^a not applicable ^b single family ^c multifamily

Agricultural

Population growth in the Phoenix metropolitan area is one reason agricultural uses are converting to urban uses such as residential development. In the Phoenix metropolitan area from 1975 to 2000, land in agricultural use decreased from 55 to 36 percent, while urban land uses increased from 32 to 52 percent (U.S. Environmental Protection Agency 2003). As the Study Area urbanizes (as has been planned by jurisdictions in the Study Area), and as greater areas convert from agricultural to residential and other urban uses, the incompatibility of residential development and agriculture has the potential to displace agricultural operations. A key accelerator of the agricultural-to-residential transition is proximity to transportation and other infrastructure necessary

for development to occur, such as water and sewer and rising land values. A major transportation corridor through agricultural land may hasten planned conversion to urban uses (residential, industrial, or commercial land uses) as a result of the improved access provided. Fragmentation of agricultural parcels that could occur as a result of the action alternatives may also make those parcels unsuitable for agriculture.



After undeveloped land, agricultural is the largest land use in the Study Area. Residential development (as seen on the horizon in this image) is largely supplanting agricultural uses.

Commercial

Commercial land uses are generally perceived as compatible with a transportation corridor. Improved access results in exposure to a larger market. As a result, regional and community commercial land uses would likely benefit from proximity to a freeway corridor. Commercial uses provide a buffer between a major transportation corridor and less intensive uses such as multifamily and single-family residential. Commercial land uses serving a local market may be negatively affected. The service areas for commercial uses such as neighborhood groceries and convenience stores may be divided by a transportation corridor, potentially resulting in limited local access and a negative effect on the market share necessary to sustain them.

Industrial

Industrial land uses are generally compatible with a transportation corridor. Access to regional transportation routes is one of the primary factors necessary for industry. The I-10 corridor is currently characterized by a large amount of industrial development. Industrial uses adjacent to freeways may not require any mitigation for noise and, therefore, provide a suitable buffer between a major transportation corridor and less intensive uses such as commercial and residential development.

Open Space

Open space near a transportation corridor may or may not be compatible; the degree of indirect impact depends on a number of factors, including the scale and purpose of the facility. A regional park may

benefit from the improved access provided by a transportation corridor. Open space may also provide a buffer between a transportation corridor and incompatible uses such as residential development. Open space set aside for habitat preservation may be adversely affected by a nearby transportation corridor if it provides increased access to the open space area or if noise from the facility disturbs wildlife. A transportation corridor effectively limiting access to a sensitive open space area may benefit the area. Fragmentation of an open space area may make the area a less suitable habitat for plants and animals. If the open space serves the local community, users may lose direct access to the facility.

Public/Quasi-public

Compatibility of public/quasi-public uses with a transportation corridor is largely dependent on the type of use. Generally speaking, regional facilities such as colleges and special event venues benefit from the greater access. Outdoor amphitheaters or other outside venues that may experience visual, noise, or other impacts attributable to the transportation corridor may be negatively affected. Facilities serving local communities, such as churches and schools, may be less compatible if their service area is bisected by the roadway, thus limiting user access.

Residential (Multifamily)

Residential land uses are generally not compatible with a transportation corridor. Residential land uses may be affected by proximity to a transportation corridor by noise, air quality, effects on community cohesion, and visual impacts. While residential use is not perceived as compatible with a freeway, one reason multifamily residential land uses are sometimes located on or near arterial streets and major transportation corridors is to mitigate the effect of increased intensity of land use and greater amounts of traffic generated per acre compared with single-family residential. The increased accessibility afforded by a freeway provides residents with improved mobility and, with proximity to an interchange, may mitigate the traffic impact of development on the local street network. Because a multifamily development has fewer exterior walls per dwelling unit, less noise mitigation is generally necessary for multifamily than for single-family residential development. However, the Phoenix metropolitan area is largely a commuter area. For some, residing close to a freeway provides easy access to the regional freeway system for commuting purposes.

Residential (Single-family)

Single-family residential use is generally not compatible with transportation corridors, although appropriate mitigation can reduce or eliminate the freeway-related impact. The existing residential development in the Study Area is relatively new, built as planned subdivisions with internal infrastructure, such as streets and parks, meant to serve the development. A transportation corridor affecting these developments may isolate portions, limiting access to infrastructure and services. A transportation corridor may have a similar effect on existing residential subdivisions. However, the Phoenix metropolitan area is largely a commuter area. Residing close to the regional freeway system provides access for commuting.

Undeveloped

Undeveloped land, with respect to the Study Area, is generally private land where there are no recent visible improvements to the land. The compatibility of undeveloped land with a transportation corridor is a function of its planned land use, which is determined by zoning and the jurisdiction's adopted general plan.

Action Alternatives and the No-Action Alternative

Table 5 shows the impacts to existing land use as a result of the action alternatives. The specific impacts of each of the action alternatives and the No-Action Alternative are discussed in the following sections below.

Western Section Action Alternatives

W59 Alternative

Implementation of the W59 Alternative would affect land in the Phoenix planning area. The W59 Alternative would have the least impact on existing residential land use of all action alternatives (62 acres—42 acres of single-family residential and 20 acres of multifamily residential). The largest existing land use affected by this action alternative would be agricultural land (548 acres) in the Phoenix planning area; this agriculture acreage is evidence of the amount of land that has been reserved from development in this corridor in anticipation of a future transportation corridor.

Within the ¼-mile buffer of the W59 Alternative, the majority of existing land use is currently agricultural (47 percent), followed by industrial uses (18 percent).

W71 Alternative

The W71 Alternative would be in the Phoenix planning area. The W71 Alternative would have the largest effect on industrial land use (181 acres) of all action alternatives. The largest existing land use affected by this alternative would be agricultural land (535 acres), followed by single-family residential.

Within the ¼-mile buffer of the W71 Alternative, the majority of land affected currently is agricultural land, followed by single-family residential and industrial uses.

W101 Alternative and Options

The W101 Alternative would predominantly affect agricultural land. The W101 Alternative Western Option Partial Reconstruction would affect the most agricultural land (618 acres), and the W101 Alternative Central Option Full Reconstruction would affect the least (469 acres). The next greatest acreage impact of the W101 Alternative (all options) would be on single-family residential land.

The effect of the W101 Alternative's options on other land uses would vary slightly based on each of the options' alignment. The W101 Alternative Central Option Partial and Full Reconstruction would affect the greatest area of single-family residential use (387 and 386 acres, respectively), and the

W101 Alternative Western Option Full and Partial Reconstruction would affect the least area of single-family residential use (291 acres for each).

Within the ¼-mile buffer of the W101 Alternative proposed R/W, the predominant effect would be on agricultural land, followed by single-family residential. Following this, the next predominant land use within the ¼-mile buffer would be undeveloped land.

Eastern Section Action Alternative

The E1 Alternative would affect land entirely within the Phoenix planning area. Approximately one half of the land affected, should the E1 Alternative be implemented, is currently undeveloped (462 acres). Following undeveloped land, the E1 Alternative would affect agricultural land (163 acres) and open space (92 acres, including 31.3 acres of SMPP). Effects on residential land use would include areas of small-lot, medium-lot, and large-lot single-family development (totaling 104 acres).

The majority of land within the ¼-mile buffer of the E1 Alternative to the south and west (the Community) is undeveloped, followed by agricultural use. Within the ¼-mile buffer of the alternative to the north and east (City of Phoenix), the land uses are predominantly single-family residential and undeveloped land. The E1 Alternative could indirectly affect largely suburban small- and medium-lot single-family residential subdivisions, residential development in the eastern portion of the section, and large-lot residential uses in the western portion.

No-Action Alternative

Development is occurring throughout the Study Area. In Phoenix, the Laveen area alone is anticipated to have a built-out population close to 100,000. This development places increasing demand on the street network. The Salt and Gila rivers interrupt the street network in the Study Area, creating a discontinuous grid that limits east-to-west and north-to-south mobility. According to U.S. Census Bureau estimates, Maricopa County added more people between 2000 and 2006 than any other county in the nation (U.S. Census Bureau 2007). Without the proposed action, the conversion of land from undeveloped and agricultural uses to residential, commercial, and industrial land uses would likely continue, placing a greater demand on the surface streets.

ADOT has preserved portions of the proposed R/W identified in an earlier study for the Eastern Section (E1 Alternative), and easements may have been secured on additional parcels in anticipation of the construction of a transportation facility. If the No-Action Alternative were to be selected, these parcels could be released, either through sale or other means, for future development. In this case, the existing zoning or the jurisdictions' general plans would provide guidance for future land uses on these properties.

Mitigation Measures

The following describes potential mitigation measures for ADOT to consider as future commitments to be implemented as part of the project to avoid, reduce, or otherwise mitigate environmental impacts associated with the project. The discussion of these measures in this report does not obligate ADOT to

these specific measures. ADOT, along with FHWA, may choose to modify, delete, or add measures to mitigate impacts.

In the instances where implementation of any of the action alternatives would create visual, noise, utility, economic, or other intrusions onto adjacent land uses, mitigation measures to reduce these impacts would be considered. Specific mitigation measures relating to these topic areas are described in the *Social Conditions, Noise, Visual Resources*, and *Section 4(f) and Section 6(f)* reports. To the extent an action alternative would be incompatible with adjoining land uses or create access issues or fragmentation, mitigation would be evaluated for each area of adverse effect.

For the W59 and E1 Alternatives, ADOT and FHWA would coordinate with the entities (Bureau of Land Management and Arizona State Land Department) managing affected public land and the various leaseholders to accommodate the proposed action.

4. Zoning

Introduction

Arizona Revised Statutes (A.R.S.) Title 9, Article 6.1 allows the legislative body of any municipality to institute zoning for the purposes of conserving and promoting public health, safety, and general welfare. Each of the jurisdictions in the Study Area has enacted zoning ordinances. The zoning ordinance is the principal tool in implementing the adopted general plan of a community and defines the site plan and subdivision requirements for each land use.

Affected Environment

To compare the extent and type of zoning for the Study Area, specific municipal zoning categories were grouped into eight broad zoning categories: agricultural, commercial, industrial, open space, planned area development (PAD), public/quasi-public, residential (multifamily), and residential (single-family). Areas not zoned are listed as “NZ.” Specific information on zoning was not provided by the Community for this analysis. Table 7 summarizes the zoning for the Study Area, by jurisdiction (with the exception of the Community, as noted).

Western Section

In the Western Section, zoning north of Buckeye Road is largely industrial. South of Buckeye Road, zoning either reflects the existing rural character of the landscape (Rural-43, Maricopa County’s zoning designation for rural residential, with densities no greater than 1 dwelling unit per acre; S-1, Phoenix’s Ranch or Farm Residence District, low-density farm or residential uses to protect and preserve low-density areas in their present character) or is zoned for suburban residential development in advance of anticipated development (refer to the *Development Plans* section). Refer to the *Existing Land Use* section for a discussion of effects of the proposed action alternatives on existing development.

Eastern Section

Zoning in the Eastern Section to the west and north of SMPP is largely low-density residential (approximately one dwelling unit per acre), reflecting the rural agricultural character of this area. In Phoenix’s Ahwatukee Foothills Village, to the east, the zoning is primarily higher-density single-family residential, multifamily residential, and planned community district (*planned community district* is the City of Phoenix’s zoning designation that allows flexibility for planning large areas and is typically used for master-planned communities completed over several years). The Chandler portion of the Study Area (not shown in Table 7) is zoned commercial and industrial.

Table 7. Zoning, by Study Area Jurisdiction

Zoning	Avondale		Chandler		Glendale		Goodyear		Maricopa County		Phoenix		Tolleson		Study Area	
	Acreage	% ^a	Acreage	%	Acreage	%	Acreage	%	Acreage	%	Acreage	%	Acreage	%	Acreage	%
Agricultural	143	6	— ^b	—	—	—	116	67	45	1	6,113	15	31	1	6,448	12
Commercial	43	2	5	1	16	6	10	6	23	<1	1,987	5	562	15	2,646	5
Industrial	21	1	322	50	260	91	—	—	572	7	7,797	20	2,333	61	11,305	20
NZ ^c	—	—	—	—	—	—	—	—	742	9	186	1	252	7	1,180	2
Open space	—	—	—	—	—	—	—	—	—	—	173	<1	—	—	173	<1
PAD ^d	1,999	81	316	49	8	3	47	27	—	—	3,365	8	—	—	5,735	10
Public/ Quasi-public	—	—	1	<1	—	—	—	—	—	—	—	—	116	3	117	<1
Residential (MF ^e)	—	—	—	—	—	—	—	—	—	—	—	—	204	5	204	1
Residential (SF ^f)	248	10	—	—	—	—	—	—	7,036	83	20,308	51	293	8	27,885	50
Total	2,454	100	644	100	284	100	173	100	8,418	100	39,929	100	3,791	100	55,693	100

Note: Transportation right-of-way and other areas may not be zoned, so acreages do not equal jurisdiction's area. Information was current as of November 2009.

^a percentage of total zoned acreage

^b not applicable

^c not zoned

^d planned area development

^e multifamily

^f single-family

Environmental Consequences

This section evaluates how implementation of the action alternatives could affect existing zoning in the Study Area. Comparing the amount of agriculturally zoned land (Table 7) to existing agricultural land uses (Table 4) illustrates that much of the zoning necessary to convert agricultural and undeveloped land to more urbanized uses has already been put in place. Table 4 shows that industrial uses account for approximately 8,212 acres of existing land uses in the Study Area, whereas industrial zoning for the Study Area accounts for 11,305 acres. While the development of urbanized uses may be hastened by the action alternatives, review of the in-place zoning indicates that the process of conversion is already under way.

No-Action Alternative

The No-Action Alternative would not affect existing zoning, except in the instance of planned development where zoning is in place. Development plans are discussed in the *Development Plans* section of this report. Rural zoning, such as agricultural or very low-density residential (such as Maricopa County's R-43 Rural Zoning District, which allows one dwelling unit per acre, or the City of Phoenix's S-1 Ranch or Farm Residence District, which is meant to preserve low-density areas of farm or residential uses) would continue to be rezoned as the area becomes more suburban—consistent with the affected communities' long-range plans.

Mitigation Measures

The following describes potential mitigation measures for ADOT to consider as future commitments to be implemented as part of the project to avoid, reduce, or otherwise mitigate environmental impacts associated with the project. The discussion of these measures in this report does not obligate ADOT to these specific measures. ADOT, along with FHWA, may choose to modify, delete, or add measures to mitigate impacts.

In the instances where the action alternatives would create visual and noise intrusions onto adjacent land uses, mitigation measures to reduce these impacts may be considered. Such mitigation measures are described in the *Social Conditions*, *Noise*, *Visual Resources*, and *Section 4(f) and Section 6(f)* reports. Additional measures to avoid, reduce, or otherwise mitigate land use impacts may need to be considered in sensitive areas.

For the W59 and E1 Alternatives, ADOT and FHWA would coordinate with the entities (Bureau of Land Management and Arizona State Land Department) managing affected public land and the various leaseholders to accommodate the proposed action.

Mitigation initiated by private landowners as advocated by affected jurisdictions could be considered on a case-by-case basis to improve compatibility of land uses adjacent to the proposed action. (Measure implementation would be the responsibility of the affected jurisdiction[s] and landowner[s] and would be subject to the affected jurisdiction's land development approval process.)

Mitigation measures include:

- ▶ rezoning undeveloped land to more compatible uses
- ▶ using density transfers and/or land use buffers, recreational amenities, or development codes for areas along the proposed action

To maximize benefits of the proposed action, municipalities may be required to amend their respective general plans, depending on each individual municipality's amendment requirements and as stipulated by State law. A.R.S. § 9461.06 requires each municipality to prepare a plan for addressing major amendments to its general plan. Depending on the given municipality's requirements, a major amendment process may be triggered by changes to the land use plan to accommodate an action alternative or the No-Action Alternative (measure implementation would be the responsibility of the affected individual municipality). Municipalities may also consider creating specific area plans as a subset of the general plans to promote freeway-compatible land uses along the proposed corridor. For example, the City of Phoenix has adopted the Black Canyon/Maricopa Freeway Specific Plan, in which goals, strategies, objectives, and guidelines are established to promote compatible land development along Interstate 17 (Black Canyon Freeway).

5. Development Plans

Affected Environment

As of March 2009, planned developments were at various stages of development in the Study Area (prior to issuing the Draft EIS, investigation of additional planned developments may occur). While the economic downturn has slowed construction in the area, work continues on a number of developments that may end up taking longer to reach build-out than originally anticipated.

Planned developments that have been approved by a municipality and zoned represent an entitled right. The proposed action may have an effect on the implementation of these planned developments. The action alternatives could affect development plans by:

- ▶ converting portions of the development to project-related uses
- ▶ fragmenting land uses, rendering portions unsuitable for their approved purpose
- ▶ locating incompatible land uses adjacent to the action alternatives
- ▶ disrupting local road networks and affecting access

For these reasons, development plans are considered as part of the affected environment.

The affected municipalities were contacted for information on existing development plans. A total of 144 planned developments were identified in the Study Area.

Environmental Consequences

The action alternatives were overlaid on the identified developments in a geographical information system to ascertain the relationship of the action alternatives to the planned developments. Table 8 summarizes the project status and number of planned developments that would be affected by the action alternatives.

As shown in Table 8, all action alternatives would affect a number of developments, with the W101 Alternative Western Option Full Reconstruction affecting the greatest number of developments (12)—evidence of the development activity occurring in the Study Area.



The South Mountains as seen from Estrella Village in Phoenix. Agricultural land is being developed into urban uses, as evidenced by this notice announcing a proposed development.

Table 8. Planned Developments Potentially Affected by Action Alternatives

Status	Action Alternative								
	W59	W71	W101 WPR	W101 WFR	W101 CPR	W101 CFR	W101 EPR	W101 EFR	E1
Active ^a	0	4	3	4	4	5	5	6	0
Planned	11	5	8	8	4	4	4	4	2
Total	11	9	11	12	8	9	9	10	2

Sources: Cities of Avondale, Goodyear, Glendale, Phoenix, and Tolleson

^a Active developments are projects under construction as of November 1, 2009.

No-Action Alternative

The No-Action Alternative would affect the development plan for the approximately 480 acres bounded by 59th and 63rd avenues on the east and west and South Mountain Avenue and Elliot Road on the north and south. This area is planned for the “Laveen Core,” a mixed-use commercial development, and is based on proximity to the freeway alignment shown on the *Phoenix General Plan* land use map.

Mitigation Measures

The following describes potential mitigation measures for ADOT to consider as future commitments to be implemented as part of the project to avoid, reduce, or otherwise mitigate environmental impacts associated with the project. The discussion of these measures in this report does not obligate ADOT to these specific measures. ADOT, along with FHWA, may choose to modify, delete, or add measures to mitigate impacts.

Potential mitigation measures include:

- ▶ **Density transfers.** A jurisdiction may allow density in areas of a particular development to exceed the range allowed in its general plan, so long as the net density is maintained. Such a transfer may allow a planned project to balance out financially if the total number of units for the project is unchanged.
- ▶ **Zoning changes.** Zoning changes may be authorized for a parcel by a jurisdiction to allow freeway-compatible land uses near a transportation corridor to ensure the best and most compatible development pattern can occur.
- ▶ **Open space buffers.** Open space buffers would mitigate the effect of a transportation corridor on incompatible land uses (such as residential development) and would have the added incentive of providing a public amenity.
- ▶ **Recreational amenities.** Recreational amenities would work similarly to open space buffers, providing a sought-after public amenity near the transportation corridor.
- ▶ **Fee simple purchase.** Fee simple purchase would involve the transfer of ownership from the landowner to ADOT for the acquisition of sufficient R/W for the facility.

- ▶ **Development codes for corridors.** Jurisdictions may have adopted codes or ordinances addressing specific requirements for development occurring within a transportation corridor.
- ▶ **Depressed freeway.** Sections of a freeway may be depressed below ground level to minimize the effects of the freeway on existing or planned development.
- ▶ **Sound walls.** Sound walls lessen the impact of a transportation facility by blocking a portion of the noise that the facility produces. They are used to mitigate freeway noise where the facility is adjacent to residential or other incompatible land uses.

6. Land Use Plans

Introduction

A general plan is an expression of long-term community intentions regarding the future development and physical form of the community. It generally contains a community vision and the process necessary to make it a reality. This process is represented by maps, goals, objectives, and policies used to coordinate and implement land use decisions. In addition to transportation infrastructure, policies, impacts, and plans, other areas of the general plan address such issues as infrastructure, parks, recreation, open space, city services, housing supply and affordability, commercial and industrial locations, and public resources such as air and water. The general plan addresses each jurisdiction's planning area, which includes incorporated areas as well as unincorporated areas likely to be annexed in the future.

Affected Environment

All of the affected municipalities in the Study Area have developed comprehensive plans or general plans in accordance with A.R.S. § 9-461. This statute calls for the creation and implementation of a general plan for each municipality in the state. The plans are implemented through zoning ordinances and other policies. The general and comprehensive plans assist officials and residents alike in land development issues. General and comprehensive plans are required to include maps of planned land use and circulation systems. Table 9 summarizes the status of general plans for all the affected jurisdictions.

Table 9. Status of Affected Jurisdictions' General Plans and Plan Updates

Jurisdiction	Current Adopted Plan (Adoption Date)	Update Status
Avondale	<i>Avondale General Plan 2030</i> (2012)	Ratified by voters on August 28, 2012.
Chandler	<i>Chandler General Plan</i> (2008)	Ratified by voters on November 14, 2008.
Gila River Indian Community	Not available for general public review	Not applicable
Glendale	<i>General Plan 2025: The Next Step</i> (2002)	Ratified by voters on November 5, 2002.
Goodyear	<i>Goodyear General Plan 2003–2013</i> (2003)	Ratified by voters on November 4, 2003.
Maricopa County	<i>Eye to the Future – Maricopa County Comprehensive Plan</i> (1997)	Updated periodically to conform to state law.
Phoenix	<i>Phoenix General Plan</i> (2001)	Ratified by voters on March 12, 2002. Currently updating the 2002 plan.
Tolleson	<i>Tolleson General Plan</i> (2005)	Ratified by voters on December 13, 2005.

The jurisdictions with authority for land use designations in the Study Area have used approximately 50 different general plan land use categories. To better understand the regional land use distribution of densities and intensities of land uses for the affected jurisdictions, the land use categories for each municipality have been aggregated into nine broad land uses: agricultural, commercial, industrial, mixed

use, open space, public/quasi-public, single-family residential, multifamily residential, and transportation. (These land use categories were derived from those used in the municipalities' planning documents and differ slightly from the categories of actual existing land uses as shown on page 3-1 and Figure 3.)

Figure 4 shows the distribution of these land uses based on the municipalities' general plans.

Environmental Consequences

Introduction

This section assesses the compatibility of the action alternatives and the No-Action Alternative with the general plans for the affected jurisdictions. The effects of the action alternatives and the No-Action Alternative on the community's general plan are reviewed first from the perspective of the community's vision. Following this, the effects of the action alternatives and No-Action Alternative on the general plan designated land uses within a ¼-mile of the proposed R/W are considered.

Because the purposes and goals of each jurisdiction's land use plans are unique to that community, the discussion of environmental consequences is organized by jurisdiction.

Action Alternatives and No-Action Alternative

Avondale

The City of Avondale *General Plan 2030* (2012) vision provides guidance for its land use decisions. This vision includes revitalizing the historic downtown, creating transportation linkages to the metropolitan area, enhancing the cultural heritage of the area, supporting diversity within neighborhoods and the community, providing employment opportunities and economic stability, conserving and preserving existing natural resources, creating a strong voice in regional issues, and becoming a place where residents, businesses, and government celebrate diversity and work together toward common goals.

The Avondale land use map designates land adjacent to and near I-10 for commercial and employment uses. The southeastern area of Avondale that defines the western boundary of the Study Area is primarily designated for Medium Density Residential (2.5 to 4 dwelling units per acre). The southernmost portion of the Study Area is designated for Rural Low Density Residential (0 to 1 dwelling units per acre).

With the exception of the proposed R/W required for widening I-10 as a result of implementation of the action alternatives, the action alternatives would be outside of Avondale. For the adjacent land, implementation of the W101 Alternative and Options would provide improved transportation access to the commercial and employment uses in Avondale adjacent to I-10 and, therefore, would be compatible with the Avondale *General Plan*.

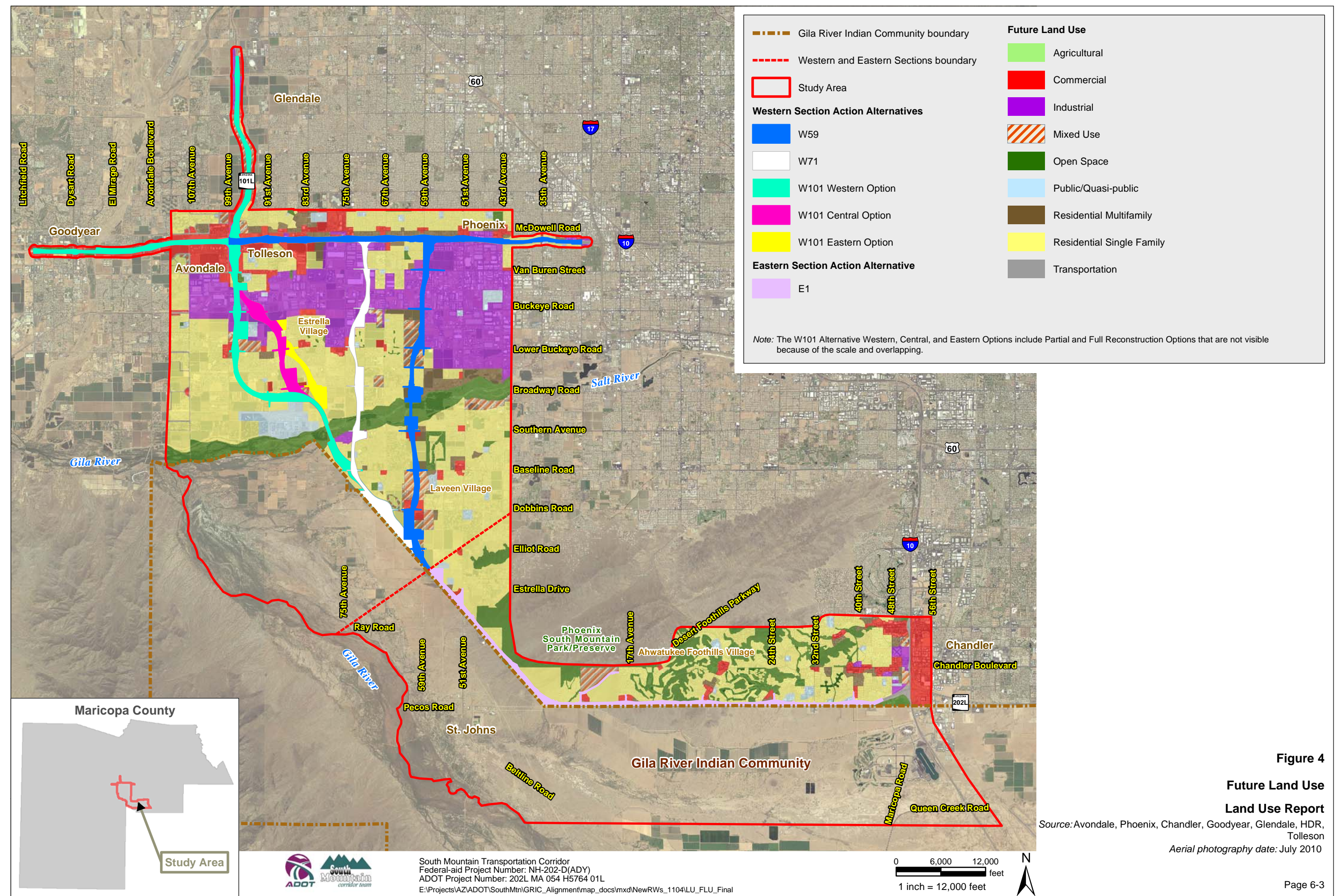


Figure 4

Future Land Use

Land Use Report

Source: Avondale, Phoenix, Chandler, Goodyear, Glendale, HDR, Tolleson
 Aerial photography date: July 2010

Chandler

Only a small portion of Chandler is located in the Study Area. This area of approximately 773 acres is located in the northern corner of the West Chandler planning area. The entire portion of Chandler within the Study Area is designated for Commercial or Employment, defined as “proposed or existing industrial parks or developments as well as industrial support uses designated to house Chandler’s industrial base” (City of Chandler 2008).

The E1 Alternative would be adjacent to but outside of Chandler. The land adjacent to the corridor is planned for employment uses. The City of Chandler’s land use plan includes the proposed action along the Pecos Road alignment. Existing and planned land uses near the E1 Alternative and the proposed interchange with I-10 are industrial and would be compatible with a transportation facility and the existing SR 202L (Santan Freeway).

Maricopa County

Maricopa County’s comprehensive plan, *Eye to the Future*, designates future land uses and development policies for the unincorporated areas of Maricopa County. Where unincorporated areas are within a municipal planning area, the Maricopa County plan is subordinate to the municipal general plan (Maricopa County 1997). A.R.S. § 11-831 stipulates that Maricopa County shall use the adopted general plan of a city or town as a guideline in making a land use determination on unincorporated areas completely surrounded by a city or town. The existing unincorporated land in the future land use map is shown as part of the adjacent municipalities, so plans for this land would be subordinate to the appropriate municipality’s general plan.

Phoenix

In 2001, Phoenix adopted its updated *General Plan*. The vision presented in the *General Plan* is for Phoenix to remain a large and growing city with a dynamic, sustainable economy. The City is interested in preserving its Sonoran Desert environment and promoting its diverse cultural heritage, job opportunities, and lifestyle choices. The City is committed to strong public involvement in decision making to preserve a sense of community. The mission of the City of Phoenix’s *General Plan* is to help achieve this vision by preserving the culture, heritage, and natural and human-made environment. At the same time, it addresses where future growth, both new and redevelopment, should occur. The *General Plan* is to be implemented through many individual private decisions, together with government actions, to achieve a common vision. Phoenix is divided into 15 planning areas referred to as villages. The Study Area includes portions of the Estrella, Ahwatukee Foothills, and Laveen villages, and a small portion of Maryvale Village (north of I-10). Estrella and Laveen villages are identified as “growth areas.” Phoenix has established these growth areas to enable them to provide cost-effective public facilities and expanded city services for anticipated housing and employment development.

The Phoenix *General Plan* land use map shows the freeway alignment as “Future Transportation.” The Phoenix *General Plan* alignment generally follows the W59 and E1 Alternatives. The Phoenix village plans for both Laveen and Estrella villages indicate “cores” along the W59 Alternative surrounded by

commercial/mixed-commercial uses. In addition to the planned commercial cores called out in the Phoenix *General Plan*, the land uses north of the Salt River near the W59 Alternative are largely industrial and, therefore, considered more compatible with the freeway land use.

The W71 Alternative and the W101 Alternative and Options would traverse larger areas of planned residential development than the W59 Alternative and would present greater areas of incompatible use.

The E1 Alternative in the western portion of the Eastern Section would affect areas of residential multifamily, residential single-family, and commercial land uses in Phoenix. The E1 Alternative would continue across areas of single-family residential land along the western and southern edge of SMPP. South of SMPP, the E1 Alternative would generally follow the alignment identified in the Phoenix *General Plan* as future transportation.

All of the action alternatives would create issues of community fragmentation that are further discussed in the *Social Conditions Report*.

Tolleson

Tolleson occupies approximately 6 square miles, all of which is contained within the Study Area. The adopted *General Plan* (2005) does not include descriptions of land use categories identified on the land use map. The majority of Tolleson is planned for industrial uses (nearly 60 percent of the planning area). Residential areas are located near Van Buren Street and 91st Avenue. Tolleson plans to retain what it refers to as its “compact, neighborhood-oriented land use form.” Tolleson’s *General Plan* identifies two important issues for the community. The issues are economic development (more retail, recreation and entertainment, an enhanced downtown, and strengthened and expanded tax revenues) and community character (protect existing neighborhoods, enhance bicycling and pedestrian connections, provide more quality housing, rehabilitate existing housing, and retain connection to agricultural roots).

The effects of the W101 Alternative and Options on Tolleson are magnified by the limited land area of the city (6 square miles). The W101 Alternative and Options would bisect the western side of Tolleson and affect an area of future residential, industrial, and commercial land uses. This action alternative and options would create community and land use fragmentation issues, further discussed in the *Social Conditions Report*. The W101 Alternative and Options may additionally affect the economic development potential of the City. The economic impacts are further discussed in the *Economic Impacts Report*. The *General Plan* vision for the City of Tolleson, to create economic development areas and community character, might be more difficult to achieve if the W101 Alternative and Options were to be implemented.

The W71 Alternative is adjacent to Tolleson. Implementation of this alternative would provide access to the commercial and industrial areas of Tolleson, and the footprint of the freeway would not reduce the amount of land available for development. This alternative would aid in providing access to a planned employment corridor in Tolleson. The W71 Alternative would not adversely affect Tolleson.

Glendale and Goodyear

These two municipalities are excluded from the future land use discussion because there would be no direct impacts beyond approximately 1 mile from the action alternatives' junctions with I-10 and SR 101L, which are outside of these jurisdictions' planning areas. Development associated with any of the action alternatives and the No-Action Alternative would have similar indirect impacts on these communities.

No-Action Alternative

The No-Action Alternative would affect the City of Phoenix future land use plan, which identifies village cores for Laveen and Estrella villages. These cores are predicated on proximity to the freeway corridor shown on the land use plan (the corridor approximates that of the W59 Alternative). Roadway capacity and land use plans and regulations are two major factors affecting development. Land use plans and regulations ultimately determine the location and type of development; however, available road capacity determines how much of this development can actually occur. It is expected that development would slow in those locations where future traffic volumes would approach and/or exceed the maximum capacity of local roads, as would likely occur with the No-Action Alternative.

Mitigation Measures

The following describes potential mitigation measures for ADOT to consider as future commitments to be implemented as part of the project to avoid, reduce, or otherwise mitigate environmental impacts associated with the project. The discussion of these measures in this report does not obligate ADOT to these specific measures. ADOT, along with FHWA, may choose to modify, delete, or add measures to mitigate impacts. Mitigation measures that may be considered include:

- ▶ General plan amendments may be needed depending on individual municipality amendment requirements as stipulated by State law. A.R.S. § 9-461.06 requires each municipality to prepare a plan for addressing major amendments to its general plan. Depending on the municipality requirements, a major amendment process may be triggered by changes to the land use plan to accommodate an action alternative or the No-Action Alternative. By statute, major amendments may be considered only once per calendar year.
- ▶ Work with the community to establish community connections across the facility (bridge multiuse paths, etc.).
- ▶ Implement density transfers to allow same overall density in area.
- ▶ Implement clustering or allow new development patterns to accommodate a transportation corridor through the area.
- ▶ Retrofit/rehabilitate to compensate for noise, visual impacts, etc.
- ▶ Build sound walls along the highway.
- ▶ Depress the highway below grade in residential areas.

For the W59 and E1 Alternatives, ADOT and FHWA would coordinate with the entities (Bureau of Land Management and Arizona State Land Department) managing affected public land and the various leaseholders to accommodate the proposed action.

7. Land Ownership

This section describes the major public landowners in the Study Area. Information in this section was verified by communication with representatives of each of the public landowners identified in the Study Area. Contact information is contained in Appendix A.

Affected Environment

Table 10 shows the acreage of the Study Area managed by each State, federal, and tribal entity. Almost one-half of the Study Area (43 percent) is Community land. Federal and State land encompasses about 1 percent of the Study Area. Figure 5 shows these land ownership parcels in relation to the Study Area.

Table 10. State, Federal, and Tribal Land Ownership within the Study Area

Owner	Acreage
Bureau of Land Management	192
Arizona Game and Fish Department	57
Arizona State Land Department	781
Gila River Indian Community	43,086

Source: Arizona State Land Department (2009)

Environmental Consequences

The majority of the land potentially affected by the action alternatives is privately owned, with the exception of three major parcels that would be affected by the E1 Alternative and the W59 Alternative. The effects of all of the action alternatives and the No-Action Alternative on public land ownership are discussed below. Additional information may be found in the *Section 4(f) and Section 6(f) Report*.

Action Alternatives

W59 Alternative

At the Salt River, the W59 Alternative would cross the eastern half of a Bureau of Land Management parcel. This parcel includes a number of easements and R/Ws, including a R/W for ditches and canals constructed by the authority of the United States, rights for a 12-inch-diameter water pipeline granted to the City of Phoenix by R/W number AZA-28612 (recently amended to accommodate a 54-inch-diameter water pipeline), and a 150-foot-wide road easement granted to the Maricopa County Department of Transportation. In addition, the City of Phoenix has a lease on this parcel under the provisions of the Recreation and Public Purposes Act for inclusion in the proposed Rio Salado Oeste (West) Project. As such, this property is considered a Section 4(f) parcel and is addressed in the *Section 4(f) and Section 6(f) Report*.

W71 Alternative

The W71 Alternative would not have any impacts on federal or State land.

W101 Alternative and Options

The W101 Alternative and Options would not have any impacts on federal or State land.

E1 Alternative

Within the city of Phoenix, the E1 Alternative would cross the southern end of a section of land owned by the Arizona State Land Department and referred to as South Mountain 620. The City of Phoenix purchased the northern 247 acres in April 2009 for expansion of SMPP, to include a trailhead, active parkland, and public facilities. The parcel is zoned “planned community district,” and the development plans proposed for this parcel have been consistent with the single-family residential development occurring in Phoenix to the east and west.

At present, the City of Phoenix and Salt River Project together have five easements for public utilities through this parcel.

As the E1 Alternative’s proposed R/W footprint turns north past the South Mountains, the alternative crosses over the western edge of SMPP, which extends to the Community. The E1 Alternative would affect approximately 31.3 acres of SMPP. Additional information on SMPP may be found in the *Section 4(f) and Section 6(f) Report*.

No-Action Alternative

The No-Action Alternative would have no adverse effect on public land ownership within the Study Area. Failure to develop a freeway along the E1 Alternative might result in the release of an easement that ADOT has acquired for R/W through the southern portion of the South Mountain 620 parcel. Not developing the freeway would be unlikely to cause an adverse impact on this parcel because the property is zoned for residential and neighborhood commercial development and would likely be readily converted to those uses.

Mitigation Measures

The following describes potential mitigation measures for ADOT to consider as future commitments to be implemented as part of the project to avoid, reduce, or otherwise mitigate environmental impacts associated with the project. The discussion of these measures in this report does not obligate ADOT to these specific measures. ADOT, along with FHWA, may choose to modify, delete, or add measures to mitigate impacts.

The siting of a freeway within the E1 and W59 Alternatives’ proposed R/Ws would require coordination with the entities managing the public land and the various leaseholders described herein to accommodate roadway, electric, and underground utilities through them.

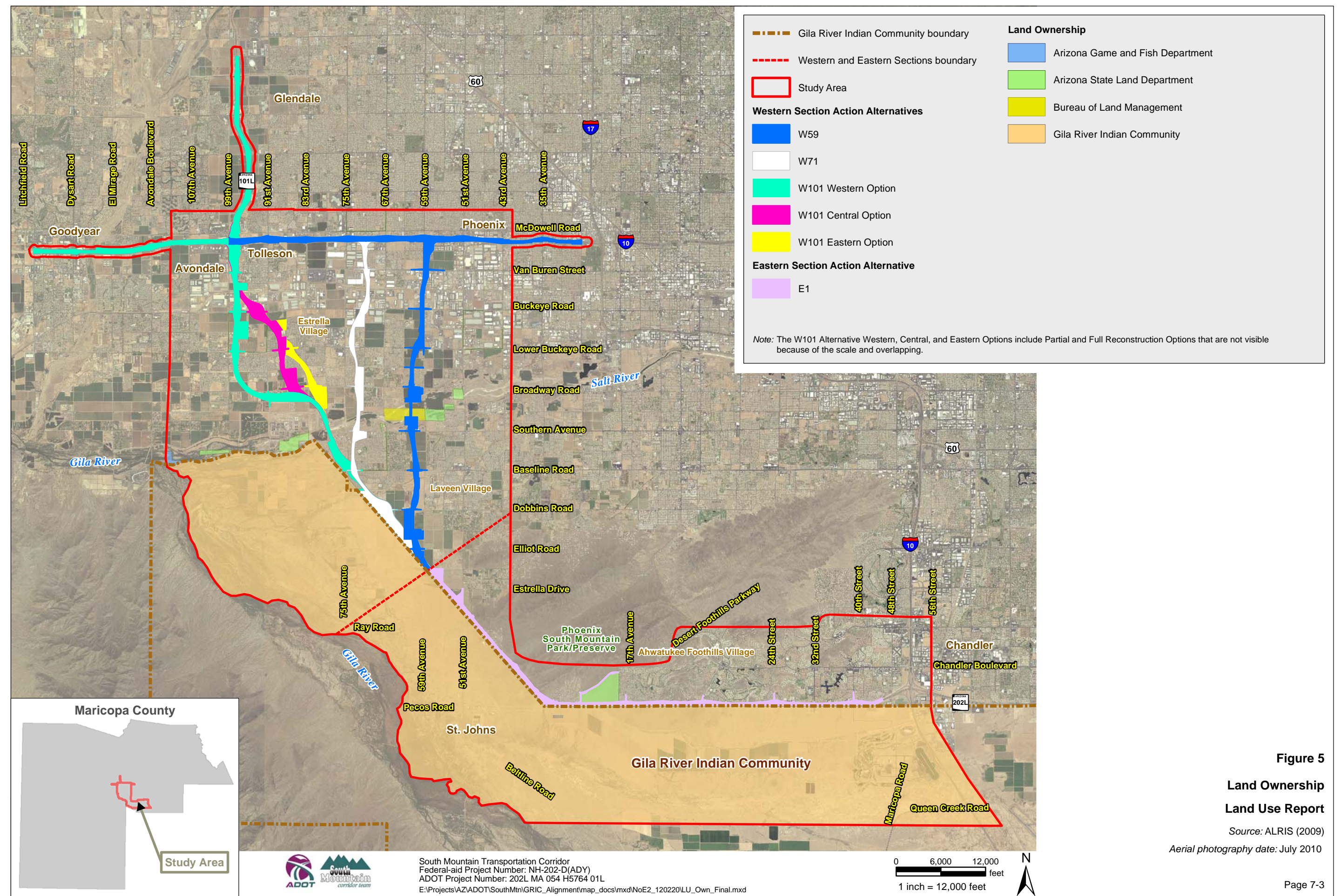


Figure 5
Land Ownership
Land Use Report

Source: ALRIS (2009)
Aerial photography date: July 2010

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Appendix A

Agencies Contacted for the Study

Arizona Game and Fish Department
Tom Hildebrandt
2221 W. Greenway Rd.
Phoenix, AZ 85023-4399
(480) 981-9400

Bureau of Land Management
Tina Maria Coladonato
222 N. Central Ave.
Phoenix, AZ 85004
(602) 417-9200

City of Chandler
Planning and Development
215 E. Buffalo St., Suite 104
Chandler, AZ 85225
(480) 782-3000

City of Goodyear
Stephen Careccia, AICP
Planning and Zoning
190 N. Litchfield Rd.
Goodyear, AZ 85338
(623) 932-3005

City of Phoenix
Planning Department
Phoenix City Hall
200 W. Washington St.
Phoenix, AZ 85003

Gila River Indian Community
Fred Ringlero, Jr.
Land Use Planning and Zoning
192 South Skill Center Rd., Suite 200
Sacaton, AZ 85247

Maricopa County
Jose Macias
501 N. 44th St., Suite 100
Phoenix, AZ 85008
(602) 506-8540

Arizona State Land Department
1616 W. Adams
Phoenix, AZ 85007
(602) 542-4621

City of Avondale
Nathan R. Crane
525 N. Central Ave.
Avondale, AZ 85323
(623) 932-6088

City of Glendale
Ronald Short, FAICP
5850 West Glendale Ave.
Glendale, AZ 85301
(623) 930-2592

City of Phoenix
Jeff Spellman
Parks, Recreation, and Library Department
Natural Resources Division
2700 N. 15th Ave.
Phoenix, AZ 85007

City of Tolleson
Ralph Velez
9555 West Van Buren St.
Tolleson, AZ 85353
(623) 936-7111

Gila River Indian Community Enrollment/
Census Department
Jane Johnson-Woody, Director
P.O. Box 97
Sacaton, AZ 85247