
Sun Valley Parkway Access Control and Corridor Improvement Study

FINAL REPORT

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Prepared for:



MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION

Prepared by:



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- B: Sun Valley Parkway Preferred Alternative Concept Plans (separate document)
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- H: Sun Valley Parkway Intersection Analysis (separate document)
- I: Sun Valley Parkway Public Meeting Summaries (separate document)
- J: Project Advisory Committee and Stakeholder Meeting Minutes (separate document)
- K: Agency Comments on Draft Final Report (separate document)
- L: Washington Street Median Closure Letter (separate document)
- M: Environmental Overview (separate document)

ABBREVIATIONS AND ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
ACIDS	Arizona CERCLA Information and Data System
ADEQ	Arizona Department of Environmental Quality
ADMS	Area Drainage Master Study
ADMP	Area Drainage Master Plan
ADT	Average Daily Traffic
AGFD	Arizona Game and Fish Department
AHD	Ahead
AMSL	Above Mean Sea Level
APS	Arizona Public Service
ARPA	Archaeological Resources Protection Act
ARS	Arizona Revised Statutes
ASTM	
B/C	Benefit Cost
BK	Back
BLM	Bureau of Land Management
BNSF	Burlington northern Santa Fe
CAP	Central Arizona Project
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CL	Centerline
DCR	Design Concept Report
EPA	Environmental Protection Agency
FCDMC	Flood Control District of Maricopa County
FHWA	Federal Highway Administration
GLO	General Land Office
GSI	Grade Separated Interchanges
HCM	Highway Capacity Manual
LOS	Level of Service
MAG	Maricopa Association of Governments
MCDOT	Maricopa County Department of Transportation
MPA	Municipal Planning Area
NAAQS	National Ambient Air quality Standards
NAC	Noise Abatement Criteria
NC	Normal Crown

ABBREVIATIONS AND ACRONYMS

NCHRP	National Cooperative Highway Research Program
NEPA	National Environmental Policy Act
NHPA	National historic Preservation Act
NPDES	National Pollutant discharge Elimination System
NPL	National Priority List
NRHP	National Register of historic Places
PCR	Pavement Condition Rating
PI	Point of Intersection
RAZ	Regional Analysis Zone
RC	Reverse Crown
RCRA	Resource Conservation and Recovery Act
RCRIS	Resource Conservation and Recovery Information System
RDM	Roadway Design Manual
RMS	Roadway Management System
RRS	Road of Regional Significance
SARA	Superfund Amendments and Reauthorization Act
SHPO	State Historic Preservation Office
SR	State Route
SRP	Salt River Project
TAZ	Traffic Analysis Zone
TSP	Transportation System Plan
US	United States
USFWS	United States Fish and Wildlife Service
UST	Underground Storage Tank
WAPA	Western Area Power Administration

EXECUTIVE SUMMARY

STUDY BACKGROUND

This improvement study was initiated in January 2005 by the Maricopa County Department of Transportation (MCDOT) to evaluate the future traffic demand, identify the functional classification and number of lanes needed to manage the demand, and identify what level of access control should be applied on existing Sun Valley Parkway between I-10 and Loop 303 to ensure the safe and efficient mobility of both local and regional travel. Another component of the study was to recommend a north-south corridor alignment to connect existing Sun Valley Parkway north to US 60 and/or SR 74 (approximately 12 miles in length).

Sun Valley Parkway traverses the Town of Buckeye, the City of Surprise, and unincorporated Maricopa County. The road section between I-10 and the Beardsley Canal (187th Avenue) was constructed as a 4-lane divided highway with a continuous median, left turn bays at the section line crossings and paved shoulders by a private entity in 1988-89. It was turned over to MCDOT to operate and maintain on February 28, 1989. Between the Beardsley Canal (187th Avenue) and Loop 303, Sun Valley Parkway is a developed 6-lane urban arterial with a raised median with signalized intersections. The proposed north-south segment between existing Sun Valley Parkway and US 60 in the vicinity of SR 74 remains undefined.

The majority of the land within this project study area is agricultural or undeveloped, but is rapidly being master-planned for development. The aggressive development of master-planned communities like Tartesso, Douglas Ranch, Festival Ranch, Sun City Festival, Trillium, Spurlock Ranch, Belmont and Sun Valley South are transforming Northwest Maricopa County into a suburb of Phoenix. A majority of residents from these and other west valley developments are or will be commuting to employment destinations throughout the Phoenix metropolitan area. The additional traffic generated by these residents will increase the demands on Sun Valley Parkway, I-10 and other arterial streets throughout the Northwest Valley.

The 32 miles of existing Sun Valley Parkway between I-10 and Loop 303 is currently identified as a Road of Regional Significance (RRS) in the MCDOT Major Streets and Routes Plan (MSRP) – Policy Document adopted in April, 2001 and revised in September 2004. Maricopa Association of Governments (MAG) Regional Council adopted the RRS concept and design guidelines in the spring of 1991. MAG has assigned this designation to a limited number of key arterials whose primary function is to provide mobility within the urbanized area by supplementing and interchanging with the freeway system. The RRS concept and guidelines were subsequently adopted by the Maricopa County Board of Supervisors in

October 1992. The RRS concept consists of a six-lane divided roadway maintained within 140 feet of right-of-way.

Sun Valley Parkway is classified in the *MSRP Street Classification Atlas* as an Enhanced Arterial, from I-10 to the future Sun Valley Parkway (SVP) extension and a Principal Arterial east of the SVP future extension. The future SVP extension is also classified as an Enhanced Arterial. According to the Policy Document for MSRP, an enhanced arterial provides a level of service below that of an expressway but greater than that of a principal arterial street. An enhanced arterial is characterized by a higher level of access control compared to a principal arterial using techniques such as access roads and raised medians. An enhanced arterial street has the following operational advantages:

- Efficiently serve longer trip lengths compared to a principal arterial
- Higher capacity than a principal arterial street
- Higher operating speeds than a principal arterial streets

STUDY RECOMMENDATIONS

The following sections summarize the recommendations for the Sun Valley Parkway Corridor Improvement Study.

Existing Sun Valley Parkway: I-10 to Beardsley Canal

Design year 2026 and Enhanced 2026 traffic projections were provided by MCDOT for use in this study. These projections were generated by MCDOT from the Maricopa Association of Governments (MAG) regional model operated by the County. This model included updated socioeconomic data developed from the master planned communities along the corridor, and roadway network data, which was updated based on input from agency staff. Full-build traffic projections were manually computed based upon proposed development plans and input from the Town of Buckeye and City of Surprise to estimate the traffic projections on Sun Valley Parkway.

Based upon traffic analysis, Sun Valley Parkway will require widening and pavement reconstruction to provide three lanes in each direction along its length to connect to the improved section at the Beardsley Canal (187th Avenue). The needed corridor improvements will provide sufficient roadway capacity to accommodate increased traffic from adjacent development. The quality of traffic flow on Sun Valley Parkway will not be adversely impacted by access to/from existing and future land uses along the corridor. This will be achieved through the implementation of the mutually acceptable access management guidelines developed during this study by the project agency partners.

The recommended preferred concept is a 6-lane facility that maintains the current narrow median. However because of the Project Advisory Committee member's interest in

evaluating an indirect left turn concept, the proposed right-of-way is 200 feet which will accommodate this innovative design concept or other unconventional intersection configurations. The cross section for the preferred concept is shown as alternative 1 in figure 8.2 and the indirect left turn concept is shown as alternative 2 in the same figure.

For the existing Sun Valley Parkway, the corridor was divided into five sections. The four sections within the Town of Buckeye were defined such that construction packages would be in the \$30-40 million range and were also consistent with development boundaries. The City of Surprise requested that the fifth section remain as one large package.

The five sections are as follows:

- I-10 to Camelback Road
- Camelback Road to Northern Avenue
- Northern Avenue to Greenway Road
- Greenway Road to 267th Avenue
- 267th Avenue to the Beardsley Canal (187th Avenue).

I-10 to Camelback Road

It is recommended that the preferred concept for this segment be carried through the Design Concept Report process within the next 5 years, which will allow for more detailed engineering design and further refinement of the preferred alignment. The preferred concept project cost for this segment is estimated at \$33.4 million.

Camelback Road to Northern Avenue

It is recommended that the preferred alternative intersection treatments identified in the forthcoming Sun Valley Parkway, I-10 to Camelback Road and 267th Avenue to Beardsley, Canal Design Concept Reports be considered for further evaluation and development in the Design Concept Report for this section of Sun Valley Parkway. A Design Concept Report should be prepared when traffic volumes along this segment of Sun Valley Parkway approach 15,000-20,000 vehicles per day. The preferred concept project cost for this segment is estimated at \$21.0 million.

Northern Avenue to Greenway Road

It is recommended that the preferred concept for this segment be carried through the DCR process when traffic volumes approach 15,000-20,000 vehicles per day, which will allow for more detailed engineering design and further refinement of the preferred alignment. Again, alternative intersection treatments explored in previous Design Concept Reports should be integrated in the design of this section to ensure consistent roadway configuration and operational characteristics throughout out the entire corridor. The preferred concept project cost for this segment was estimated at \$35.2 million.

Greenway Road to 267th Avenue

It is recommended that the preferred concept for this segment be carried through the DCR process when traffic volumes approach 15,000-20,000 vehicles per day. Again, alternative intersection treatments explored in previous Design Concept Reports should be integrated in the design of this section to ensure consistent roadway configuration and operational characteristics throughout out the entire corridor. The preferred concept project cost for this segment was estimated at \$38.7 million.

267th Avenue to Beardsley Canal

It is recommended that the preferred concept for this segment be carried through the DCR process within the next 5 years. The preferred concept project cost for this segment was estimated at \$72.0 million.

Table ES-1 presents a summary of the project cost for the section from I-10 to the Beardsley Canal. It includes the total project cost for the preferred concept, and for comparison, the total project cost for the indirect left concept. The costs are in 2006 dollars.

Table ES-1 - Summary of Project Costs (2006 Dollars in Millions)

Segment	Preferred Concept		Indirect Left Concept
	Construction Estimate	Total Project Estimate	Total Project Estimate
I-10 to Camelback Road	\$21.1	\$33.4	\$46.3
Camelback Road to Northern Avenue	\$13.6	\$21.0	\$29.2
Northern Avenue to Greenway Road	\$22.8	\$35.2	\$49.1
Greenway Road to 267 th Avenue	\$25.0	\$38.7	\$53.9
267 th Avenue to Beardsley Canal	\$46.5	\$72.0	\$100.4
Total Estimated Project Cost	\$129.0	\$200.3	\$278.9

Sun Valley Parkway – Northern Extension

The north extension of Sun Valley Parkway is intended to connect the east-west portion of Sun Valley Parkway with US 60. Generally, the study area is a four-mile wide corridor centered on 243rd Avenue from Sun Valley Parkway to Lone Mountain Road, then turning west to parallel US 60.

The north extension of Sun Valley Parkway was divided into three ½-mile wide corridors; the Western Corridor, Middle Corridor and Eastern Corridor. Based upon public and agency input, the Western Corridor was recommended for further evaluation. The next phase is a Location Study/Design Concept Report, which is recommended within the next 5

years. The main focus of the location study/design concept report would be to define the roadway centerline, right-of-way limits, and implementation of an access management guideline. Similar to the existing parkway, several PAC members are interested in implementing indirect left intersection treatment for the northern extension.

The Western Corridor starts at Sun Valley Parkway and 249th Avenue (extended), ¼ mile east of the 251st Avenue section line. The center of the corridor alignment continues north, crossing the CAP Canal at a right angle, until approximately ½ mile north of Pinnacle Peak Road, where it begins a reverse curve to the left, then to the right, ending approximately ½ mile south of Patton Road and ¼ mile west of the intersection of Patton Road and 251st Avenue.

The corridor continues north on an alignment ¼ mile west of 251st Avenue until approximately ½ mile south of Dixileta Drive where it begins another reverse curve to the left, then to the right, ending approximately ¼ mile north of Lone Mountain Road. At this point the center of the corridor is on 257th Avenue, ¼ mile east of 259th Avenue (extended).

The center of the corridor continues north along the 257th Avenue alignment approximately 4.5 miles until approximately one mile south of US 60 where it curves to the left to avoid the Morristown Overpass, then curves back to the right to avoid the Morristown Elementary School and the Morristown Cemetery. The corridor ends at SR 74 approximately 700 feet east of the SR 74 intersection with Castle Hot Springs Road.

The main advantage with the Western Corridor it is the most compatible with the City of Surprise's 2030 Roadway Plan by location and type; most importantly both public and agency opinion strongly favored the Western Corridor. The project cost was estimated at \$161.4 million. This consists of Construction at \$88.1 million, Design at \$10.6 million, Construction Management at \$13.3 million, Right-of-Way at \$35.5 million, Utility Relocation at \$5.0 million and Administration at \$8.9 million.

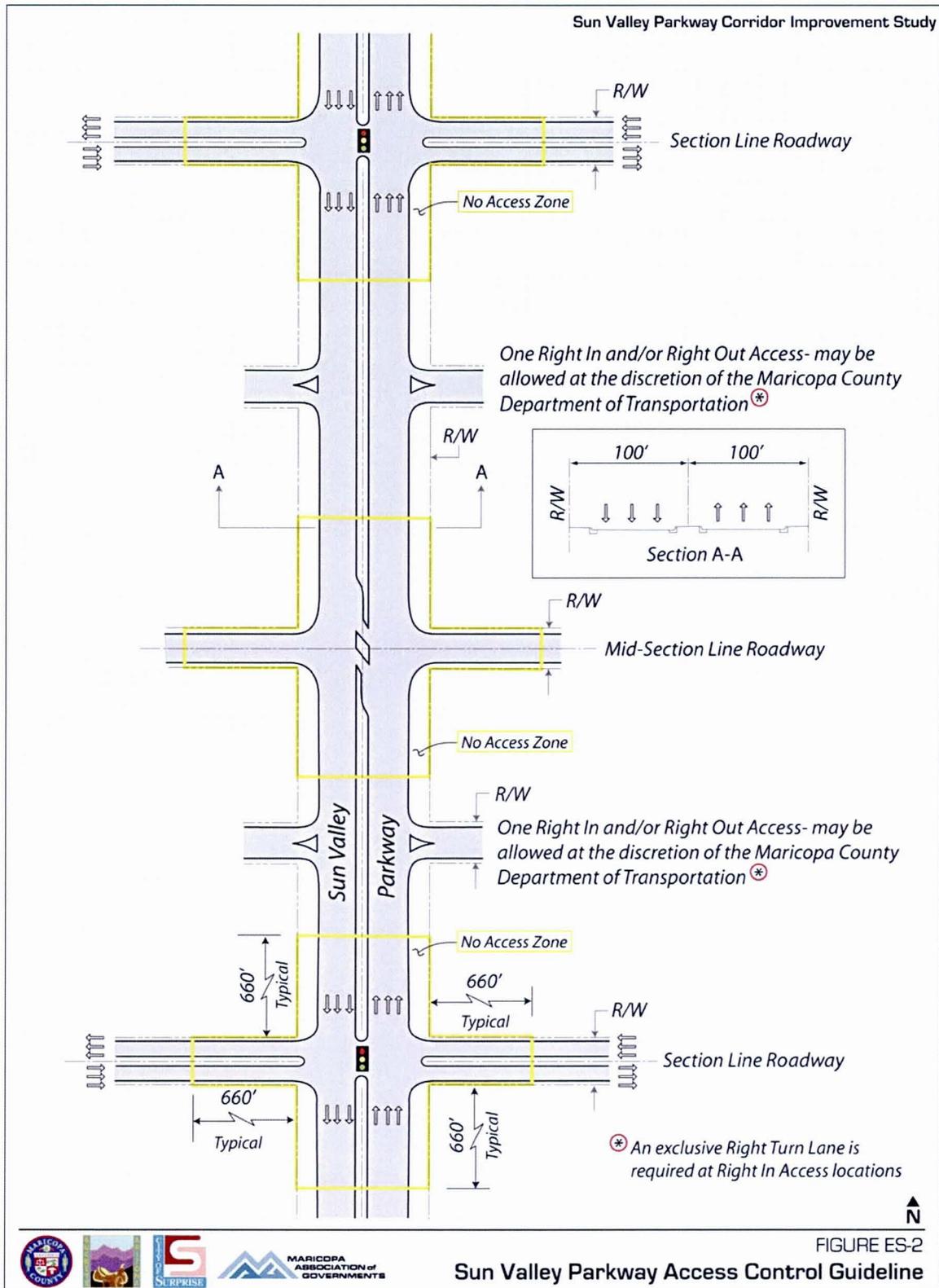
ACCESS MANAGEMENT

Recommended access management guidelines were developed for the Sun Valley Parkway corridor in an effort to achieve the expected traffic operational and safety benefits associated with effective access management practices. These guidelines are meant to preserve this regionally significant high capacity arterial corridor. The Access Control Guidelines that were established for Sun Valley Parkway received consensus among the public, the development community, and the Project Advisory Committee. The Access Management Guideline will assist affected agencies in providing a systematic control of the location, spacing, design, and operation of driveways, median openings and street connections to Sun Valley Parkway. Exhibits ES.1 and ES.2 present the corridor specific guidelines for right-of-way protection and access control.

Figure ES.1 - Guidelines for Right-of-Way Protection and Access Control

1. A right-of-way width of 200 feet, 100 feet each side of centerline, shall be preserved for future improvements on Sun Valley Parkway.
2. Full access onto and off of Sun Valley Parkway will be allowed at the section line roadways.
3. Left-In, Right In, and Right Out access to/from Sun Valley Parkway will be allowed at the mid-section mile roadways.
4. Left-Out access onto Sun Valley Parkway will not be allowed at the mid-section line roadway.
5. No access will be allowed on or off Sun Valley Parkway within 660 feet of a section line roadway right-of-way line.
6. No access will be allowed onto Sun Valley Parkway within 660 feet on either side of the mid-section line roadway right-of-way line.
7. No access will be allowed onto the new Sun Valley Parkway Extension (approximately 251st Avenue) within 660 feet from the proposed Sun Valley Parkway north right-of-way line.
8. No access will be allowed onto a section line roadway within 660 feet of the proposed Sun Valley Parkway right-of-way lines.
9. No access will be allowed onto a mid-section line roadway within 660 feet of the proposed Sun Valley Parkway right-of-way lines.
10. At the discretion of the Maricopa County Department of Transportation, a maximum of one (1) Right-In and/or Right-Out access may be permitted between the no access zone described in Items 5 and 6 above. An exclusive right turn lane is required at all allowed Right-In access locations.
11. No access will be allowed onto Sun Valley Parkway from the I-10 westbound off ramp curb return for a distance of 990 feet north.
12. No access will be allowed onto Sun Valley Parkway from the I-10 westbound on ramp from the beginning of the right turn lane taper for a distance of 1320 feet north.





1. INTRODUCTION

This Access Control and Corridor Improvement Study for Sun Valley Parkway was undertaken to address the continued high growth rate in Northwest Maricopa County, which places increasing burden on the transportation system. The purpose of this study is to:

- Evaluate the future traffic demand on the existing Sun Valley Parkway and identify what roadway section and classification is needed to manage that demand.
- Identify what level of access control should be applied along the existing Sun Valley Parkway Corridor to ensure the safe and efficient mobility of both local and regional travel.
- Recommend a north-south corridor alignment to connect existing Sun Valley Parkway to the north, extending approximately 12-miles to US 60 and/or SR 74.

1.1 PROBLEM STATEMENT

The Maricopa County Department of Transportation (MCDOT) completed its *Comprehensive Plan* in October 1997 (revised in August 2002), *Transportation System Plan (TSP)* in December 1997, and *Southwest Valley and Northwest Valley Small Area Transportation Studies* in 1997 and 1998, respectively. These documents provide guidance for the development of a comprehensive multi-model plan consisting of short-range, medium-range and long range-transportation plans to address transportation issues within the County.

Much of the land west of the White Tank Mountains has begun to experience the pressures of development. Existing Sun Valley Parkway between I-10 and Loop 303 is currently the only continuous transportation corridor serving this area. This north-south and east-west regional highway connection serves the northern part of the Town of Buckeye and the western and southern sections of the City of Surprise. Future traffic volumes are expected to exceed the existing capacity. This Study focuses upon the section of Sun Valley Parkway between I-10 and the Beardsley Canal (187th Avenue). The section of Sun Valley Parkway between the Beardsley Canal (187th Avenue) and Loop 303 is fully developed as a six (6) lane urban arterial with a raised median and no additional improvements were evaluated in this study.

The majority of the land within this project study area is agricultural or undeveloped, but is rapidly being master-planned for development. The aggressive development of master-planned communities like Tartesso, Douglas Ranch, Festival Ranch, Sun City Festival, Trillium, Spurlock Ranch, Belmont and Sun Valley South are transforming Northwest Maricopa County into a suburb of Phoenix. A majority of residents from these and other west valley developments are or will be commuting to employment destinations throughout the Phoenix

metropolitan area. The additional traffic generated by these residents will increase the demands on Sun Valley Parkway, I-10 and other arterial streets throughout the Northwest Valley.

Currently, most of the existing Sun Valley Parkway corridor, as well as the area being considered for the northern extension to US 60, traverses undeveloped land. However, there are several planned developments that are under construction and several others that will begin construction over the next few years.

Recent planning efforts documented in the September 2003, *Northwest Area Transportation Study*, prepared by the Maricopa Association of Governments (MAG) have confirmed results produced by MCDOT in the 1990's, which recommended that a new north-south corridor connect the existing Sun Valley Parkway to US 60 and/or SR 74. There is still an opportunity to reserve future right-of-way for a new north-south corridor before additional development occurs.

1.2 BACKGROUND

The existing Sun Valley Parkway between I-10 and the Beardsley Canal (187th Avenue) is a four-lane divided roadway with paved shoulders. The section of Sun Valley Parkway between the Beardsley Canal (187th Avenue) and Loop 303 is fully developed as a six (6) lane urban arterial with a raised median.

Sun Valley Parkway traverses the Town of Buckeye, the City of Surprise, and unincorporated Maricopa County. The road was constructed by a private entity, and then on February 28, 1989, it was turned over to MCDOT for operation and maintenance. The proposed north-south segment (approximately 12 miles) between existing Sun Valley Parkway and US 60 in the vicinity of SR 74 remains undefined. The study area is generally rural in nature and has a total length of approximately 44 miles.

1.3 STUDY AREA

For existing Sun Valley Parkway, the study limit zone of influence is a 1-2 mile band on either side of the existing roadway. Along the proposed north-south corridor, the study limits include a 4-mile strip approximately centered on the 243rd Avenue alignment between Sun Valley Parkway and Lone Mountain Road. North of Lone Mountain Road the study limits include a 4-mile strip bounded by Lone Mountain Road on the south, SR 74 on the north, the Hassayampa River on the west and US 60 on the east. The study area is shown in Figure 1.1.

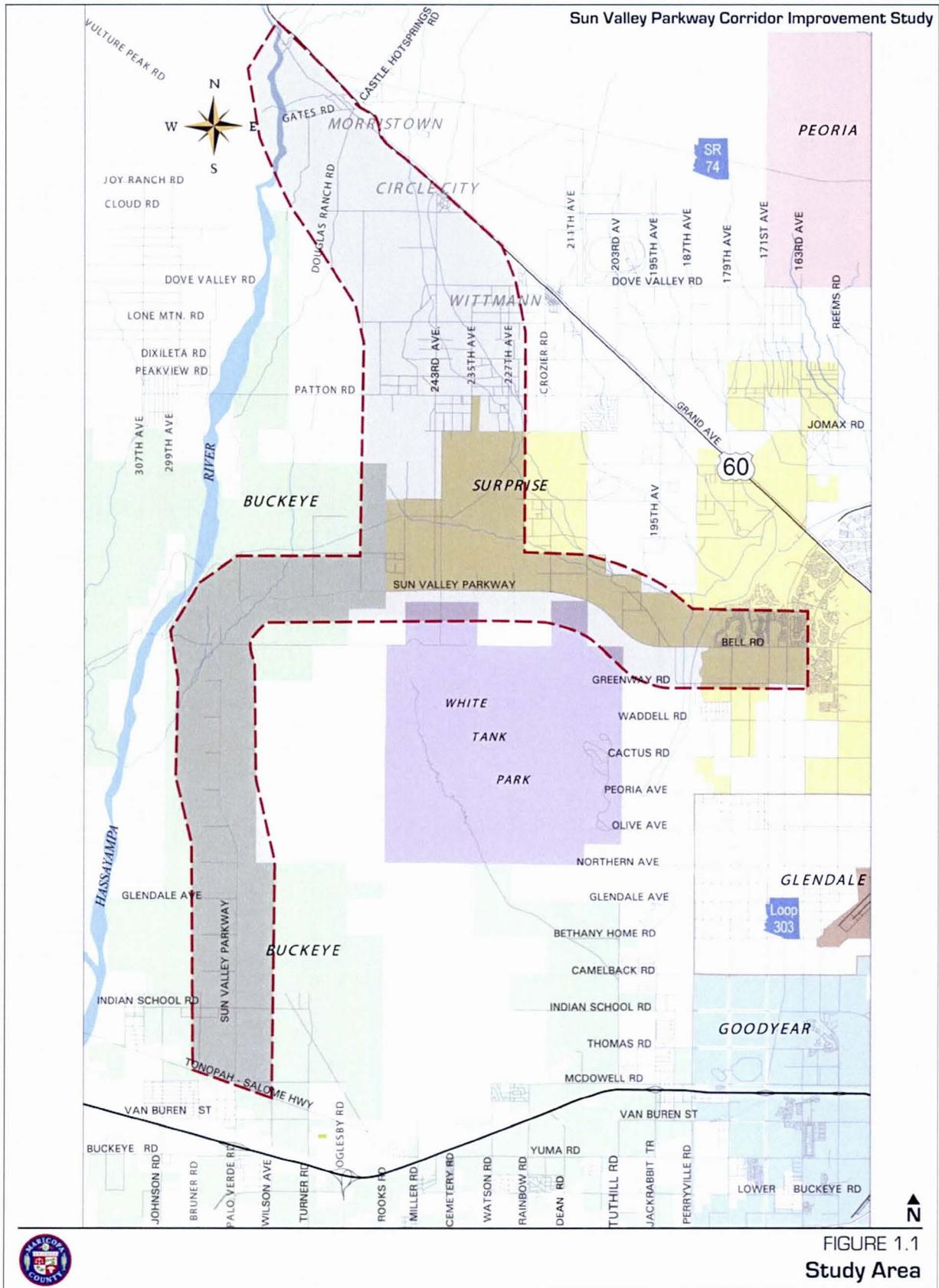


FIGURE 1.1
Study Area

2. CHARACTERISTICS OF THE CORRIDOR

2.1 OVERVIEW

The existing Sun Valley Parkway was constructed by a private development company in 1988 and 1989 as a 4-lane divided roadway with a continuous median, left turn bays provided at the major mile crossings and paved shoulders between I-10 and the Beardsley Canal (187th Avenue). Between the Beardsley Canal and Loop 303, Sun Valley Parkway is a developed 6-lane urban arterial with a raised median. There are several wash crossings that are conveyed under Sun Valley Parkway through box culverts and pipe culverts. Maricopa County assumed ownership and maintenance of the facility on February 28, 1989. The topography along the existing Sun Valley Parkway corridor is characterized by flat desert with a prevailing slope from the northeast to the southwest.

The existing land uses along Sun Valley Parkway are primarily undeveloped and rural in nature except for areas adjacent to I-10 and Loop 303. The existing land use maps for the Town of Buckeye and City of Surprise are shown in Figures 2.1 and 2.2, respectively. Between I-10 and McDowell Road, the land use adjacent to the roadway is rural in nature with some minor rural residential development. Between McDowell Road and the Beardsley Canal (187th Avenue), there are no intersecting roadways with Sun Valley Parkway and the land use adjacent to the parkway is undeveloped desert. Between the Beardsley Canal (187th Avenue) and Loop 303, there is some urban development with medium density residential and commercial development.

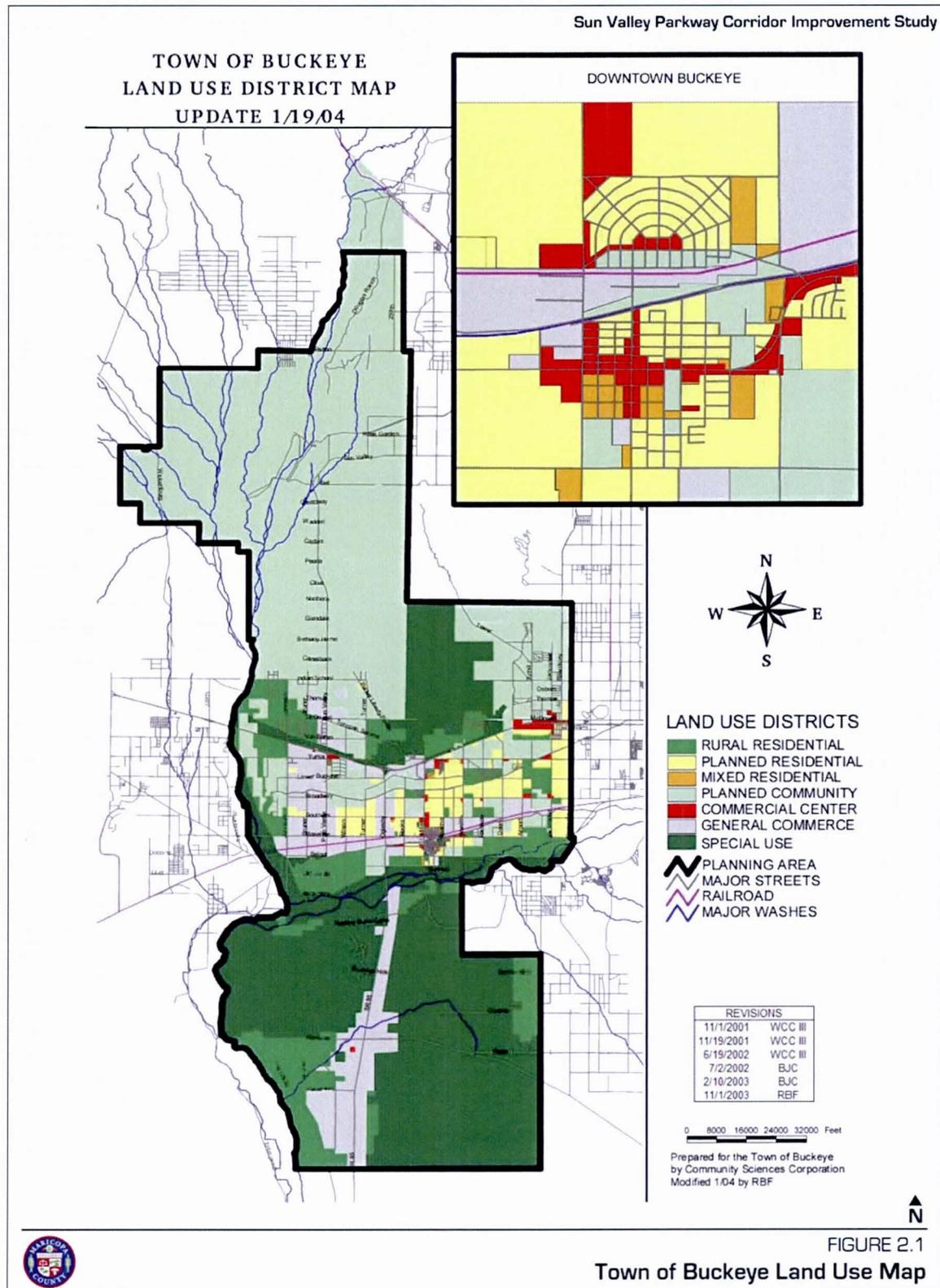
Sun Valley Parkway is located within northwestern Maricopa County and traverses through the City of Surprise, Town of Buckeye and unincorporated Maricopa County. The Town of Buckeye and their General Plan Development area is located along existing Sun Valley Parkway between I-10 and approximately 259th Avenue. The City of Surprise is located on the eastern end of Sun Valley Parkway between the Beardsley Canal (187th Avenue) and Loop 303.

2.2 CORRIDOR CHARACTERISTICS

The Sun Valley Parkway between Interstate 10 and the Beardsley Canal (187th Avenue) is approximately 28 miles in length.

Pavement Conditions

The roadway surface along the majority of Sun Valley Parkway consists of 4" asphaltic surface material over 4" Aggregate Base over 4" of select material. The section of Sun Valley Parkway between the Beardsley Canal (187th Avenue) and Loop 303 was not evaluated since it is outside of the improvement limits.



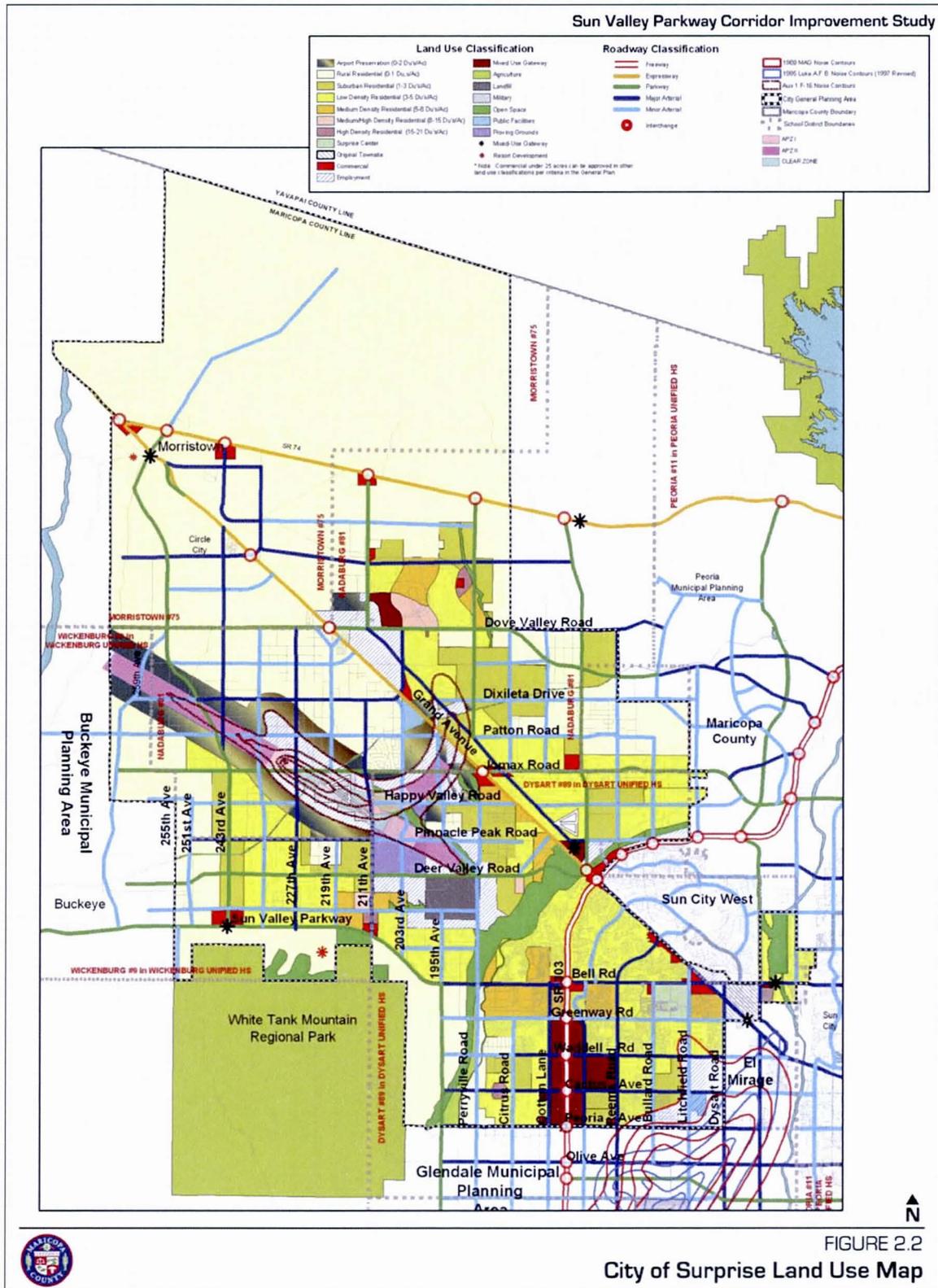


Table 2.1 summarizes the pavement condition of Sun Valley Parkway based upon the MCDOT Roadway Management System (RMS) received from MCDOT on December 20, 2005. The Pavement Condition Rating (PCR) is a composite evaluation of nine surface distress categories. A PCR of 71 to 84 is considered "very good"; 85 to 100 rates as "excellent". The entire pavement along existing Sun Valley Parkway rates as "very good".

Sufficiency Rating identifies how each portion of an arterial roadway compares to the MCDOT RDM standards for the applicable functional classification. The MCDOT Roadway Management Section maintains information on lane width, shoulder width, bottleneck features, drainage features, vertical sight distance, and horizontal sight distance. This information is then combined so that each road is scored on a scale from 1 to 100, with 100 representing a road in complete compliance with RDM standards. The Sufficiency Rating of existing Sun Valley Parkway is listed at 94.

Table 2.1 - Pavement Condition

Sun Valley Parkway Roadway Segment	PCR	Sufficiency Rating
I-10 to Van Buren	81	94
Van Buren to McDowell	81	94
McDowell to Indian School Road	79	94
Indian School to Camelback Road	77	94
Camelback Road to Greenway Road	79	94
Greenway Road to 259 th Avenue	81	94
259 th Avenue to 251 st Avenue	81	94
251 st Avenue to 243 rd Avenue	81	94
243 rd Avenue to 235 th Avenue	77	94
235 th Avenue to 227 th Avenue	81	94
227 th Avenue to 219 th Avenue	81	94
219 th Avenue to 211 th Avenue	81	94
211 th Avenue to 203 rd Avenue	81	94
203 rd Avenue to 195 th Avenue	79	94
195 th Avenue to Crozier Road	81	94
Crozier Road to Beardsley Canal	81	94



Existing Pavement Cracking along Sun Valley Parkway

The adjacent photos show the typical pavement condition along Sun Valley Parkway. MCDOT regularly maintains the pavement. The most recent pavement maintenance was applied to the pavement between 2000- 2001 where a rubberized seal coat was constructed between I-10 and the Beardsley Canal (187th Avenue).

Detailed information on the pavement condition and maintenance may be found in Appendix D.



Existing Pavement Cracking along Sun Valley Parkway

The pavement's structural integrity was discussed with the MCDOT Geotechnical Group in July 2006. The group indicated that the existing pavement will continue to crack as the traffic demands increase along Sun Valley Parkway. They recommend that the existing pavement be reconstructed when the traffic demand requires additional lanes.

Typical Section

For most of its length, Sun Valley Parkway consists of two 40-ft wide roadways separated by a 16-ft wide raised median for a total roadway width of 96 ft. The roadways are currently striped for two 12-ft travel lanes and a 16-ft paved shoulder. The outer two feet of the shoulder consists of either concrete curb and gutter (Interstate 10 to McDowell Road) or a concrete ribbon curb (McDowell Road to the Beardsley Canal).

Sun Valley Parkway becomes Bell Road on the Maricopa County assessor's maps at 195th Avenue. However, in terms of lane widths and typical section, Sun Valley Parkway ends where it crosses the Beardsley Canal, approximately 0.6 miles west of Citrus Road. East of the canal, Sun Valley Parkway is fully developed as a 6-lane arterial street with a raised, landscaped median. Land adjacent to the road is developed.

The roadway surface has a normal cross slope of 2 percent in tangent sections and a superelevation ranging from 2 percent to 5 percent depending on the horizontal curve radius. The axis of rotation for each roadway is at the outside edge of the median. The median is level between the tops of the two curbs, except on curves with 5 percent superelevation. Typical sections are shown in Figures 2.3 and 2.4.

Right-of-Way

According to the as-built right-of-way drawings dated March of 1989, the Sun Valley Parkway right-of-way is a minimum of 110 ft wide (55 ft on each side of the roadway centerline) from the ADOT right-of-way line at I-10 to McDowell Road. There are several locations where drainage and slope easements abut the roadway right-of-way.

Between McDowell Road and the Beardsley Canal (187th Avenue), the basic roadway right-of-way is 150 ft (75 ft on each side of the roadway centerline). Where the roadway passes through State Land, an additional right-of-way easement was obtained for drainage facilities and roadway slopes.

Table 2.2 documents the roadway right-of-way for Sun Valley Parkway between I-10 and the Beardsley Canal (187th Avenue).

Table 2.2 - Existing Right-of-Way

Roadway Section (Segment)	Right-of-Way Half Width	
	West/North of Centerline (CL)	East/South of Centerline (CL)
I-10 CL to 700' N of I-10 CL	100' min	100' min
700' N of I-10 CL to 1,165' N of I-10 CL	55'	105'
1,165' N of I-10 CL to Roosevelt St.	55'	55'
Roosevelt St. to 140' N. of Roosevelt St.	55'	95'
140 N. of Roosevelt St. to McDowell Rd.	55'	55'
McDowell Rd. to 350' W. of Beardsley Canal	75'	75'
350' W. of the Beardsley Canal to Beardsley Canal	Varies – 75' to 150'	Varies – 75' to 150'
At the Beardsley Canal (187 th Avenue)	90'	90'

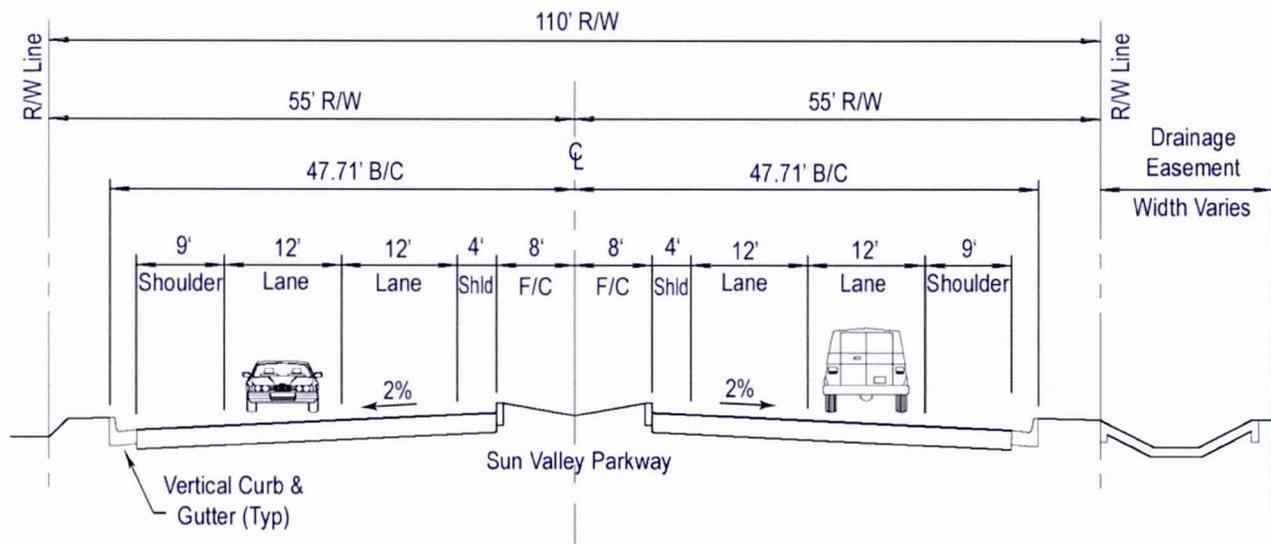


FIGURE 2.3
Typical Section
I-10 to McDowell Road



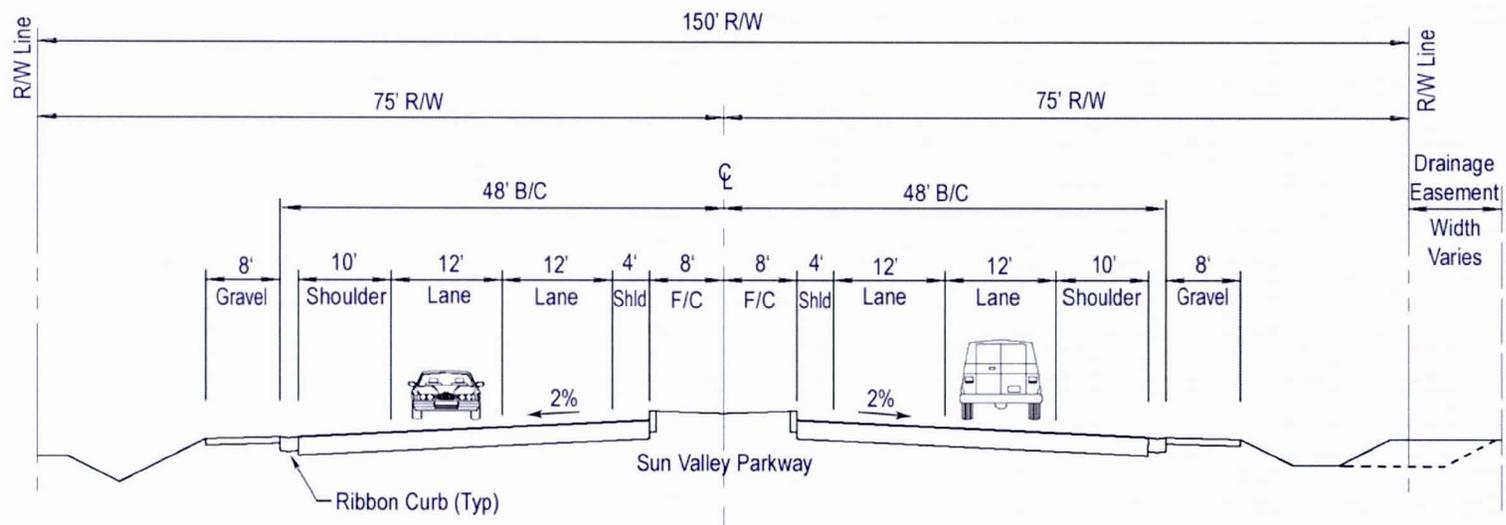


FIGURE 2.4
Typical Section
McDowell Road to Beardsley Canal



There are also numerous easements abutting the Sun Valley Parkway right-of-way for drainage ditches, slope easements, and fencing that vary in width and location.

The west roadway right-of-way lines overlap a 330-ft wide Salt River Power electric power transmission easement between the Bethany Home Road section line and approximately 0.3 miles north of the Northern Avenue section line. The east line of the SRP easement is 20 ft inside the west Sun Valley Parkway right-of-way line or 55 ft from the roadway centerline. The west right-of-way line and east easement line separate 0.2 miles further north, approximately 1/2-mile north of the Bethany Home Road section line.

Roadway Geometry

There are a total of 15 horizontal curves in the 28 miles of Sun Valley Parkway. Curve radii range from 18,500 ft to 3,300 ft corresponding to cross slopes of -2 percent (adverse crown in the direction of the curve) to 5 percent. A tabulation of the curve data is shown in Table 2.3.

The vertical alignment is generally flat on the west side of the White Tank Mountains and slightly rolling on the north side of the mountains approaching the Beardsley Canal. Grades vary from approximately 1.7 percent to 0.12 percent. There is no appreciable difference in grade between the west side and the north side. Vertical curves vary from 700 ft to 250 ft in length.

The design speed is not shown on the as-built plans, but based on the horizontal and vertical curve data provided; it is at least 60 miles per hour. The posted speed limit is 50 mph from Interstate 10 to McDowell Road, 55 mph from McDowell Road to the Beardsley Canal, and 45 mph east of the Beardsley Canal.

Intersections

Sun Valley Parkway crosses Washington Street (called Washington Road on the street sign), Van Buren Street, Roosevelt Street, McDowell Road, and Crozier Road. These intersections are controlled by stop signs on the cross streets. Another intersection is under construction on the west side of Sun Valley Parkway at Thomas Road. Left turn openings and storage lanes in the median are provided from northbound to westbound only at Washington Road and Roosevelt Street. The Van Buren Street and McDowell Road intersections provide left turn openings and storage lanes for northbound to westbound and for southbound to eastbound directions, even though the eastern legs of these intersections are not fully improved.

Table 2.3 - Existing Horizontal Alignment

PI Station	Centerline Radius, ft	Degree of Curve	Superelevation, %	Near Roadway (Extended)
171+45.11	11,500	0° 29' 54"	RC	Osborn Road
197+94.93	11,500	0° 29' 54"	RC	Indian School Rd.
322+26.54	18,500	0° 18' 35"	NC	1/4-mile north of Bethany Home Rd.
342+89.04	18,500	0° 18' 35"	NC	1/4-mile south of Glendale Avenue
361+33.10	18,500	0° 18' 35"	NC	Glendale Avenue
435+68.50	8,000	0° 42' 58"	2.8	1/2-mile north of Northern Avenue
494+62.67	5,700	1° 00' 19"	3.6	1/2-mile north of Olive Avenue
693+86.50	5,594.86	1° 01' 27"	3.3	Greenway Road
738+74.06	3,300	1° 44' 10"	5.0	Bell Road
808+40.31	3,300	1° 44' 10"	5.0	291 st Avenue*
867+39.68	5,500	0° 57' 36"	3.6	283 rd Avenue
943+67.93	5,500	0° 57' 36"	3.6	271 st Avenue
963+81.16	5,500	0° 57' 36"	3.6	267 th Avenue
286+39.21**	12,900	0° 26' 39"	NC	211 th Avenue (Tuthill Rd.)
400+49.70	5,422.54	1° 03' 24"	3.3	195 th Avenue (Jackrabbit Rd.)

NC = Normal Crown (2%)

RC = Reverse Crown

* Avenue intersecting Sun Valley Parkway; half mile between 259th and 251st Avenues due to half sections at west line of Township 4 North, Range 3 West

** Equation: Sta. 1024+52.92 Bk. = Sta. 0+00 Ahd.

Median Breaks

In addition to the breaks in the median for cross streets described above, median breaks generally correspond to one-mile intervals along the north-south portion of Sun Valley Parkway. Existing breaks in the median are provided at the following locations:

- Washington Street
- Van Buren
- Roosevelt Street
- McDowell Road
- Thomas Road
- Tartesso Parkway – (Indian School Road extended)

- Camelback Road
- Bethany Home Road
- Glendale Avenue
- Northern Avenue
- ¼-mile north of Olive Avenue
- 2,000 feet north of Peoria Avenue
- 1,850 feet north of Cactus Road
- Waddell Road
- Greenway Road
- Bell Road
- 1,200 ft south of Union Hills Road

It is noted that in September 2006, MCDOT approved the closure of the median break at Washington Street because of operational and safety concerns associated with left turn movements in proximity to traffic interchanges. The closure letter is included in Appendix J.

Median breaks along the east-west portion of the alignment exist at the following locations:

- 287^h Avenue
- 279^h Avenue
- 271st Avenue
- 263rd Avenue – (Canyon Springs Blvd.)
- 300 feet west of 251st Avenue
- 800 feet east of 243rd Avenue
- 235th Avenue
- 227th Avenue
- 400 feet east of 219th Avenue
- 211th Avenue
- 203rd Avenue
- 195th Avenue
- Crozier Road
- 187th Avenue (Beardsley Canal)
- 183rd Avenue
- Citrus Road
- 175th Avenue
- Cotton Lane
- Eastham Parkway
- Loop 303

The detailed locations of the median breaks can be found on the aerial mapping exhibits in Appendix B.

Access Points

Sun Valley Parkway currently contains private access points including 26 driveways to private properties and 15 access ramps to the electric transmission lines belonging to Salt River Project and the Western Area Power Administration (WAPA). The driveways are provided at cuts in the vertical curb and gutter on the west side of the roadway between the I-10 Traffic Interchange and McDowell Road. Only 15 of the properties served by driveways are improved; the other 11 properties are currently vacant.

There are many other informal access points along Sun Valley Parkway to adjacent properties, such as unimproved roads at 251st Avenue and 243rd Avenue.

Along the improved portion of Sun Valley Parkway east of the Beardsley Canal (187th Avenue), there are formal access points located less than one-eighth mile (660-ft) from section and mid-section line streets. These are shown in Table 2.4 below. The formal access points located east of the Beardsley Canal (187th Avenue) are as follows:

Table 2.4 - Access Points East of Beardsley Canal

Location	Type of Access
300 ft West of 175 th Avenue	Right In/Right Out
600 ft West of Cotton Lane	Full Access
300 ft East of Cotton Lane	Right In/Right Out
630 ft East of Cotton Lane	Right In/Right Out and Left In
420 ft West of Loop 303	Right In/Right Out

Onsite Drainage

There are several wash crossings that are conveyed under Sun Valley Parkway through box culverts and pipe culverts. The Flood Control District of Maricopa County conducted an inventory and evaluation of the existing culverts along Sun Valley Parkway in March 2005. The results of the evaluation are shown in Appendix E. Discussions with the Flood Control District of Maricopa County's Consultant performing the Sun Valley Parkway Area Drainage Master Plan have indicated that their analysis assumes that the existing cross culverts under Sun Valley Parkway will remain in service and only require extension as Sun Valley Parkway is widened in the future. Chapter 5 provides additional information associated with the Drainage Characteristics for the corridor.

Structures

There is only one bridge structure on Sun Valley Parkway, a two-span voided slab bridge over the Beardsley Canal. The bridge is 132'-10" between curb faces (66'-5" on each side

of the roadway and construction centerline), with a raised 16-ft wide median centered on the bridge. The bridge is striped for two travel lanes in each direction.

There are 86 concrete box culverts for drainage on Sun Valley Parkway, ranging in size from multiple-barrel 12' x 8' box culverts to single-barrel 6' x 3' box culverts.

2.3 LAND USE

The existing land use along Sun Valley Parkway includes residential, commercial, and unimproved desert. Mixed low-density residential and commercial development is currently limited to the west side of Sun Valley Parkway between I-10 and McDowell Road and the southeast corner of Sun Valley Parkway and Van Buren Street; land use along the rest of the existing roadway is vacant and either in private ownership or in trust to the Arizona State Land Department (ASLD).

However, much of the vacant land, including State land, along the roadway is being master-planned for development. One development, Tartesso West Unit I, is currently under construction in the southwest quadrant of Sun Valley Parkway and Indian School Road. Planned developments along the existing roadway include Sun Valley South, Sun Valley, Trillium, Sun City Festival, and Elianto. Other developments near the Sun Valley Roadway corridor that will have an impact on traffic include Douglas Ranch and Spurlock Ranch. A summary of proposed development in the study area is provided in Table 2.5. The location of these proposed developments is depicted graphically in Figure 2.5.

Table 2.5 - Proposed Developments Bordering Sun Valley Parkway Corridor

Name	Acres	Dwelling Units	Commercial Area, Acres
Tartesso	3,186	11,347	57
Tartesso West	5,124	19,667	189
Elianto	3,751	12,502	143
Sun Valley South	11,195	29,218	1,265
Sun Valley	16,266	41,370	413
Trillium	3,042	8,762	108
Sun City Festival	10,105	24,176	165
Total	52,669	147,042	2,340

The existing land use for the north extension area is primarily undeveloped with some residential development. Much of the residential area is wildcat subdivisions; however, planned subdivisions have started. Patton Place, Units 1-3 is complete, and new planned developments include Surprise Foothills, Peakview Estates, Broadstone Ranch, and Patton Place, Units 4 and 5.

2.4 KEY TRANSPORTATION ISSUES

There are several key issues included in the *Northwest Area Transportation Study* prepared by the Maricopa Association of Governments, dated September 2003. The following is a summary of those issues that may impact Sun Valley Parkway:

- Maintain, Protect and Enhance the Regional Arterial Grid: There is a broad consensus in the Northwest Valley that the arterial grid is essential to the orderly future growth of the area.
- Sun Valley Parkway/Bell Road Improvements: Heavy anticipated growth in the Town of Buckeye and the City of Surprise is expected to strain Bell Roads capacity because there are few east-west links in the area. This resulted in the desire to analyze future upgrades to existing Sun Valley Parkway as well as a possible extension north to Grand Avenue and SR 74 to divert traffic from Bell Road.
- High Capacity Roadway and Arterials: Stakeholder suggestions resulted in the desire to designate Sun Valley Parkway as a high capacity roadway and the desire to analyze additional connections east-west from Sun Valley Parkway to Phoenix along McDowell Road and Camelback Road.
- Transit Component: Stakeholder suggestions resulted in the desire to analyze the potential extension of Bus Rapid Transit Service / High Occupancy Vehicle lanes along I-10 to Sun Valley Parkway.

Town of Buckeye

The Town of Buckeye has numerous large, approved master-planned communities that will begin development in the next few years. A goal of the Town is that each new development must contribute positively to the transportation network by providing for and accommodating all modes of transportation.

According to the Town of Buckeye staff, completion of the east-west arterial street grid system and improving existing roadways to planned cross-sections will occur as development progresses. There has been an ongoing coordinated effort between the development community and the Town of Buckeye to design future development plans to limit access onto existing Sun Valley Parkway. The Town has been guiding developers to provide internal

north-south roadway networks within their planned communities that limit roadway connections to only the major east-west mile roadways.

City of Surprise

The City of Surprise has developed a 2030 roadway circulation element as a part of their General Plan. The 2030 roadway circulation element identifies several east-west parkways, major arterials and minor arterials that extend from the Hassayampa River to US 60, north of Sun Valley Parkway. The east-west 2030 roadway circulation element functional classification is summarized in Table 2.6.

**Table 2.6 - 2030 City of Surprise Circulation Element
Functional Classification for East-West Streets**

Roadway	Classification
Beardsley Road	Minor Arterial
Deer Valley Road	Parkway
Pinnacle Peak Road – Hassayampa River to 211 th Avenue	Major Arterial
Pinnacle Peak Road – 211 th Avenue to US 60	Minor Arterial
Happy Valley Road	Minor Arterial
Jomax Road	Parkway
Patton Road	Minor Arterial
Dixileta Drive	Major Arterial
Lone Mountain Road	Minor Arterial
Dove Valley Road	Parkway
Carefree Highway Extended	Minor Arterial
Black Mountain Road	Major Arterial

The City of Surprise's 2030 circulation element identifies several north-south extensions from Sun Valley Parkway to US 60 that also include parkways, major arterials and minor arterials. The north-south 2030 roadway circulation element is summarized in Table 2.7.

The City of Surprise has master-planned communities that will begin development in the next few years. Completion of the east-west and north-south arterial street grid system and improving existing roadways to the planned cross-sections will occur as development progresses.

**Table 2.7 - 2030 City of Surprise Circulation Element
Functional Classification for North-South Streets**

Roadway	Classification
251 st Avenue – Sun Valley Parkway to Happy Valley Road	Minor Arterial
243 rd Avenue – Sun Valley Parkway to Jomax Road, then northwesterly to 251 st Avenue at Lone Mountain, then 251 st Avenue from Lone Mountain to SR 74	Parkway
243 rd Avenue – Patton Road to US 60	Major Arterial
235 th Avenue – Sun Valley Parkway to Dove Valley Road	Minor Arterial
227 th Avenue – Sun Valley Parkway to Dove Valley Road	Major Arterial
219 th Avenue/Crozier Road – Sun Valley Parkway to Pinnacle Peak Road	Minor Arterial
219 th Avenue – Jomax Road to US 60	Minor Arterial
211 th Avenue – Sun Valley Parkway to Dixileta Drive	Major Arterial
203 rd Avenue – Sun Valley Parkway to US 60	Minor Arterial
195 th Avenue – Sun Valley Parkway to Beardsley Road	Minor Arterial
187 th Avenue – Bell Road to Happy Valley Road	Minor Arterial
187 th Avenue – Happy Valley Road to US 60 (on 203 rd Avenue alignment)	Minor Arterial
Citrus Road – Deer Valley Road to US 60	Minor Arterial

2.5 TRAFFIC DATA

The following provides a summary of the existing traffic conditions in the corridor. Additional data and analysis will be presented in Chapter 3, Traffic Analysis.

Traffic Counts

The Average Daily Traffic (ADT) for the study area was obtained from the 2004 Traffic Counts from the MCDOT web page. The 2004 traffic volumes on Sun Valley Parkway range from 664 vehicles per day to 958 vehicles per day. The peak hour volumes range from 8-11 percent of the daily volume.

Accident Data

Accident records were obtained from MCDOT for use in this study. These records contained all accidents recorded by the Maricopa County Sheriff's Office between January 1, 2002 and December 31, 2004. A total of 52 accidents were recorded during this 36 month period. Accident records were obtained from MCDOT for use in this study. Table 2.8

provides a summary of the accident data recorded at the major intersections along Sun Valley Parkway.

Table 2.8 - Accident Summary

Location	Number of Accidents (1/1/02 – 12/31/04)
Crozier Road Intersection	3
219 th Avenue Intersection	2
Akin Road Intersection	1
Citrus Road Intersection	2
175 th Avenue Intersection	1
McDowell Road Intersection	5
Roosevelt Road Intersection	1
Loop 303 and Bell Road Intersection	37

2.6 UTILITY CONDITIONS

Utility locations were obtained by reviewing the as-built plans, field investigation, and contacting the utility companies for utility maps. A summary of existing utilities on the Sun Valley Parkway corridor is shown in Table 2.9. In addition to the utilities shown, there are electrical pull boxes and PVC conduit installed across all legs of the intersections with Van Buren Street, Roosevelt Street, and McDowell Road and at all median openings along Sun Valley Parkway.

2.7 DRAINAGE CONDITIONS

This section provides a brief summary of the drainage characteristics related to the project. A more complete discussion is contained in Chapter 5, Drainage Overview. The Flood Control District of Maricopa County (FCDMC) has performed and is currently preparing Area Drainage Master Studies (ADMS) and Area Drainage Master Plans (ADMP) in the study area.

Table 2.9 - Summary of Existing Utilities

Station	Crossroad	Utility Name	Description	Comments
16+00 to 92+95	North of I-10 to McDowell Road	APS	Overhead electric power	On west side of roadway
16+00 to 92+95	North of I-10 to McDowell Road	Qwest	Overhead and underground telephone	Understory on APS poles
20+00	North of I-10	APS	Electric power transmission lines	On steel poles
84+70	South of McDowell Rd.	AT&T	Underground coaxial telephone cables	Two cables
87+98	South of McDowell Rd.	Sprint	Underground coaxial telephone cable	In Tonopah-Salome Hwy. right-of-way
92+95	McDowell Rd.	Local water	1-1/4" diameter water line	Relocated for project
248+00 to 433+00	Camelback Road to 1/2-mile north of Northern Ave.	Salt River Project (SRP)	3-500 kV electric power transmission lines	Parallels west side of road to Sta. 433+00 where crosses roadway
339+00 to 79+00*	1/2 mile north of Bethany Home Road to 243 rd Ave.	MCI	Fiber optic line	West and north sides of Sun Valley Parkway; north along 243 rd Ave. alignment
341+00	1/4-mile south of Glendale Ave.	Western Area Power Administration (WAPA)	2-230 kV and 2-161 kV electric power transmission lines	On 250 ft wide easement
494+50	1/2-mile north of Olive Ave.	WAPA	1-345 kV electric power transmission line	On 150 ft wide easement
879+00	281 st Ave.	SRP	3-500 kV electric power transmission lines	Second crossing

* Equation: Sta. 1024+52.92 Bk. = Sta. 0+00 Ahd.

The delineation of major contributing basins was completed in the Sun Valley/Buckeye ADMS and the Wittman ADMS Update. The existing and proposed corridors intersect waterways in six sub-basins as outlined below:

- White Tank Mountains Alluvial Fan
- Hassayampa River Tributaries
- Sun Valley
- Iona Wash
- Trilby Wash
- White Tanks

The drainage system for the existing Sun Valley Parkway consists of collector channels along the eastern side of the road that intercept overbank and sheet flows and convey them to cross culverts located at principal channels. The collector channel along the southern 1.75 miles of the Parkway before the I-10 Traffic Interchange is concrete-lined, and discharges into the flood pool of the Buckeye FRS.

As part of the Wittman Area Drainage Master Plan Study Update, the FCDMC prepared a culvert evaluation for Sun Valley Parkway, which is included as Technical Appendix E of this report.

2.8 ENVIRONMENTAL CONDITIONS

This section outlines selected environmental considerations related to the project. A more complete discussion is contained in Appendix M, Environmental Overview.

The study area is located in the Basin and Range physiographic province of Arizona. Specifically, the Sun Valley Parkway crosses the toes of alluvial fans emanating from the White Tank Mountains while the proposed northern spur crosses a generally flat desert plain bounded by the Hassayampa River to the west and the Agua Fria River to the east. The geology is older and younger Quaternary alluvial fill and talus slopes.

The proposed project will have no effect on any endangered, threatened, proposed, or candidate species. In addition, no designated critical habitat occurs within the project area; therefore, the proposed project will have no effect on any designated critical habitat. State sensitive species may be present. Further coordination with the Arizona Game and Fish Department is recommended prior to any project-related construction or ground-disturbing activities.

A hazardous materials records review was conducted for the appropriate ASTM 1527-00 search radius around the study area. Environmental database records were examined for relevance and potential affects on the project. A total of 151 federal and state environmental records were documented. Included were sites from the following databases: Resource Conservation and Recovery Act (RCRA) Compliance Facilities; Resource Conservation and Recovery Act (RCRA) Facilities; Registered Underground Storage Tanks (UST); Superfund Amendments and Reauthorization Act (SARA) Title III Extremely Hazardous Substances Sites; and ADEQ Dry Well Registration Data Base.

A literature review indicates that 39 cultural resource investigations have been conducted; resulting in the identification of at least 78 previously recorded cultural resources within the review area. Of these, 30 were considered eligible for listing on the National Register of Historic Places (NRHP), 27 were considered not eligible, and 21 required further research to

decide eligibility or were otherwise not evaluated. Six previously recorded cultural resources intersect with or are immediately adjacent to the existing Sun Valley Parkway. In addition to the six previously recorded sites, numerous historic roads may cross the existing parkway corridor. Evidence of these historic properties may have been obliterated by modern construction and agricultural activities.

Large sections of the review area have yet to be surveyed for cultural resources. There is a high potential for the presence of additional cultural resources in those areas not previously surveyed. It is recommended, therefore, that previously uninvestigated areas selected as potential routes for the Sun Valley Parkway extension receive a Class III cultural resources survey. In addition, parcels for which surveys were conducted ten or more years in the past should be reinvestigated to update information regarding the condition of sites within those parcels, as well as to determine if any additional cultural resources have become exposed through erosion or other formation processes.

2.9 ONGOING STUDIES

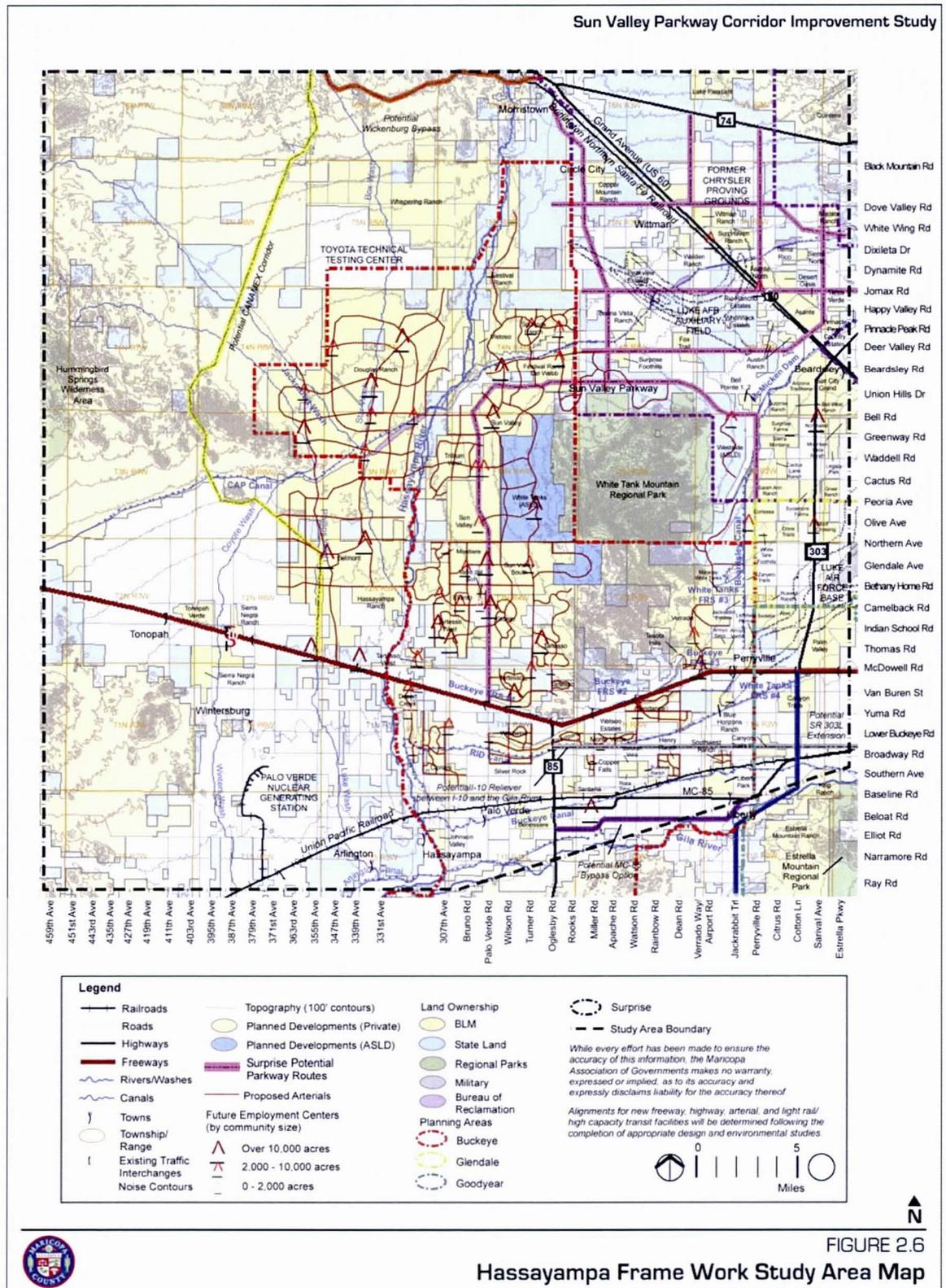
There are two ongoing studies that will address transportation along and adjacent to Sun Valley Parkway. They are the Maricopa Association of Governments (MAG) I-10 / Hassayampa Valley Roadway Framework Study and the MCDOT Access Control & Area Corridor Study for Patton Road and Jomax Road and Hassayampa River Crossing Candidate Assessment Report.

I-10/Hassayampa Valley Roadway Framework Study

MAG initiated the *I-10/Hassayampa Valley Roadway Framework Study* in May 2006. The study is expected to be completed in April 2007. According to MAG, this study is an attempt to provide advanced planning to accommodate a region with huge growth potential. The study will not only establish the framework for a future transportation system, but also provide feedback to local land use planners on how alternative development scenarios could be part of the regional transportation solution.

The study area is bounded by 459th Avenue on the west, Estrella Parkway on the east, Ray Road on the south, and ¼ mile north of the US 60/SR 74 future interchange on the north. The proposed study area is shown as Figure 2.6.

The study will use the Sun Valley Parkway socioeconomic data as a basis for the I-10 Hassayampa Valley Roadway Framework Study (HVRFS). As a part of the update of the regional socioeconomic forecasts for HVRFS, MAG has developed new build-out data. In some areas, there have been changes to the data used in the Sun Valley Parkway Study. Additionally, the recommendations from the Sun Valley Parkway Study will be incorporated into the I-10 Hassayampa Valley Roadway Framework Study and refined as appropriate.

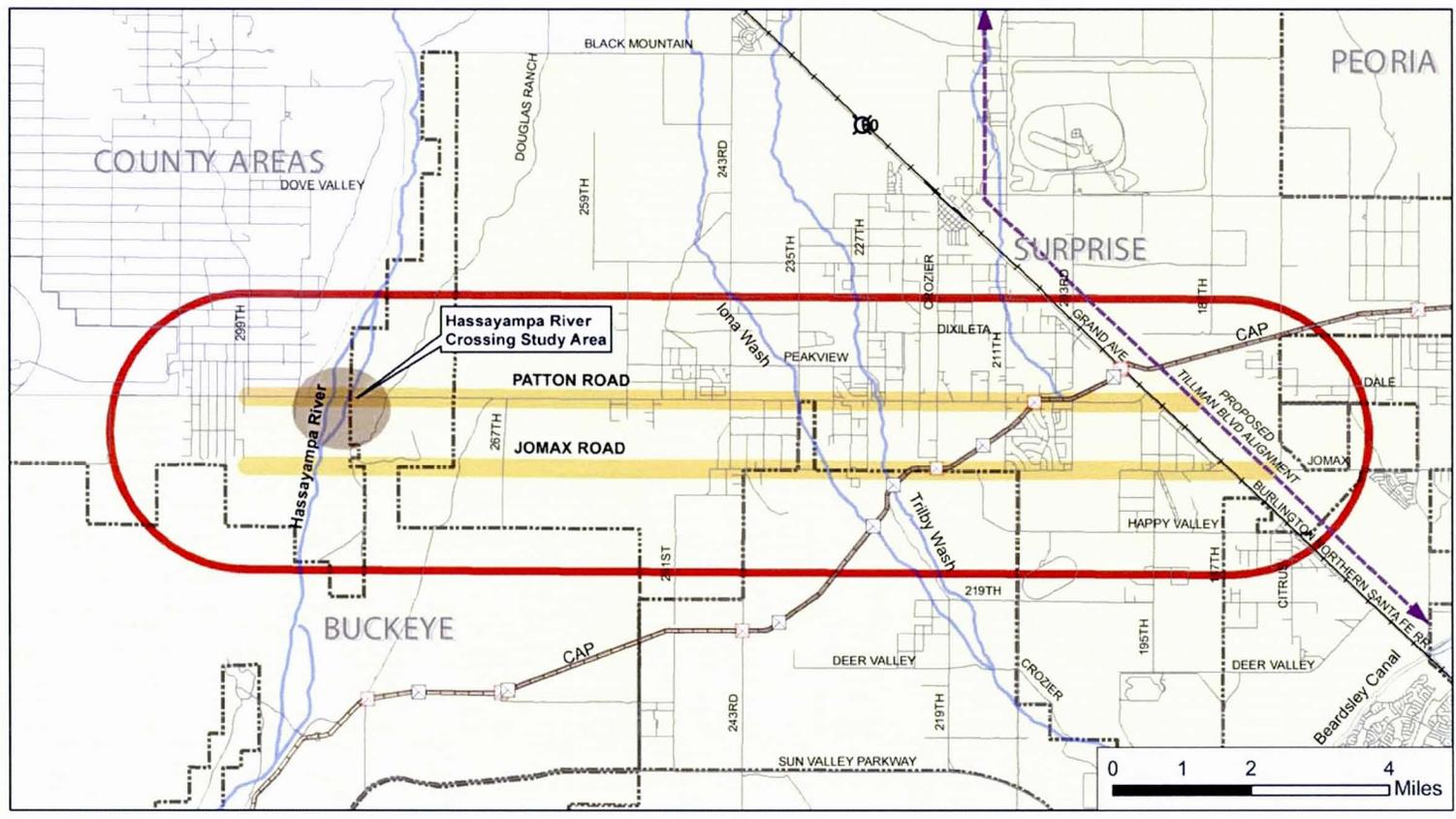


Access Control & Area Corridor Study for Patton Road and Jomax Road and Hassayampa River Candidate Assessment Report

The Access Control & Area Corridor Study for Patton Road and Jomax Road and Hassayampa River Candidate Assessment Report project started in December 2005 and is expected to be completed by May 2007. The study area includes a 4-mile wide buffer area along Patton Road and Jomax Road corridors from 299th Avenue to Tillman Boulevard (a potential corridor parallel to and east of Grand Avenue). Primary purposes of the study include:

1. Identify existing and future corridor needs associated with the present and forecasted travel demand and development along Patton Road and Jomax Road corridors.
2. Determine future roadway alignment and roadway type(s) i.e., functional classification, number of lanes, intersection spacing and access control. Identify ultimate right-of-way requirements.
3. Determine future implementation and phasing timeframe for the construction of recommended roadway improvements.
4. Develop viable bridge systems and structural alternatives for all-weather crossing(s) at Hassayampa River along Patton Road and/or Jomax Road.
5. Develop consensus among key stakeholders concerning future improvements along Patton and Jomax Road corridors as well as for the Hassayampa River crossing.

This ongoing study utilizes the socioeconomic data and roadway classifications from the Sun Valley Parkway Corridor Improvement Study as the basis for forecasting traffic volumes along the Patton/Jomax corridors. The proposed study area is shown as Figure 2.7.



Legend

- Study Corridors
- Corridor Study Area
- Roads
- Rail Road
- CAP Bridge Structure
- CAP Drainage Structure
- City Boundaries
- County Land
- Central Arizona Project Canal (CAP)
- Buckeye Planning Area
- City of Surprise Planning Area



FIGURE 2.7
Patton/Jomax CIS
Area Study Map

3. TRAFFIC ANALYSIS

The following chapter presents an overview of the existing and future traffic conditions along the corridor.

3.1 TRAFFIC VOLUME

The Average Daily Traffic (ADT) for the study area was obtained from the “2004 Traffic Counts” from the MCDOT web page. Table 3.1 presents a summary of the 2004 traffic data and Table 3-2 is a historical comparison of average daily traffic (ADT) volumes from 2000 to 2004. As can be seen in Table 3.2, there was little change in the daily volume at Crozier Road between 2000 and 2004. The daily volume at Salome Highway has increased between 2000 and 2004, but is still a relatively low volume. These traffic volumes are easily accommodated on a four-lane divided roadway.

Table 3.1 - 2004 Traffic Volume Data

LOCATION	AM PEAK HOUR	PM PEAK HOUR	DAILY
At Crozier Road	72	79	958
At Salome Highway	68	76	664

Table 3.2 - Historical Daily Volume Comparison

LOCATION	2004 ADT	2003 ADT	2002 ADT	2001 ADT	2000 ADT
At Crozier Road	958	852	884	1055	915
At Salome Highway	864	390	325	NA	328

3.2 ACCIDENT DATA

The accident data for the corridor is documented in Chapter 2, Accident Data.

3.3 TRAFFIC PROJECTIONS

The development of the traffic forecasts for the Sun Valley Parkway corridor was an iterative process. MCDOT performed the forecasting model runs using the Maricopa Association of Governments (MAG) regional travel forecasting model base data with a series of modifications as described below.

Socioeconomic Data

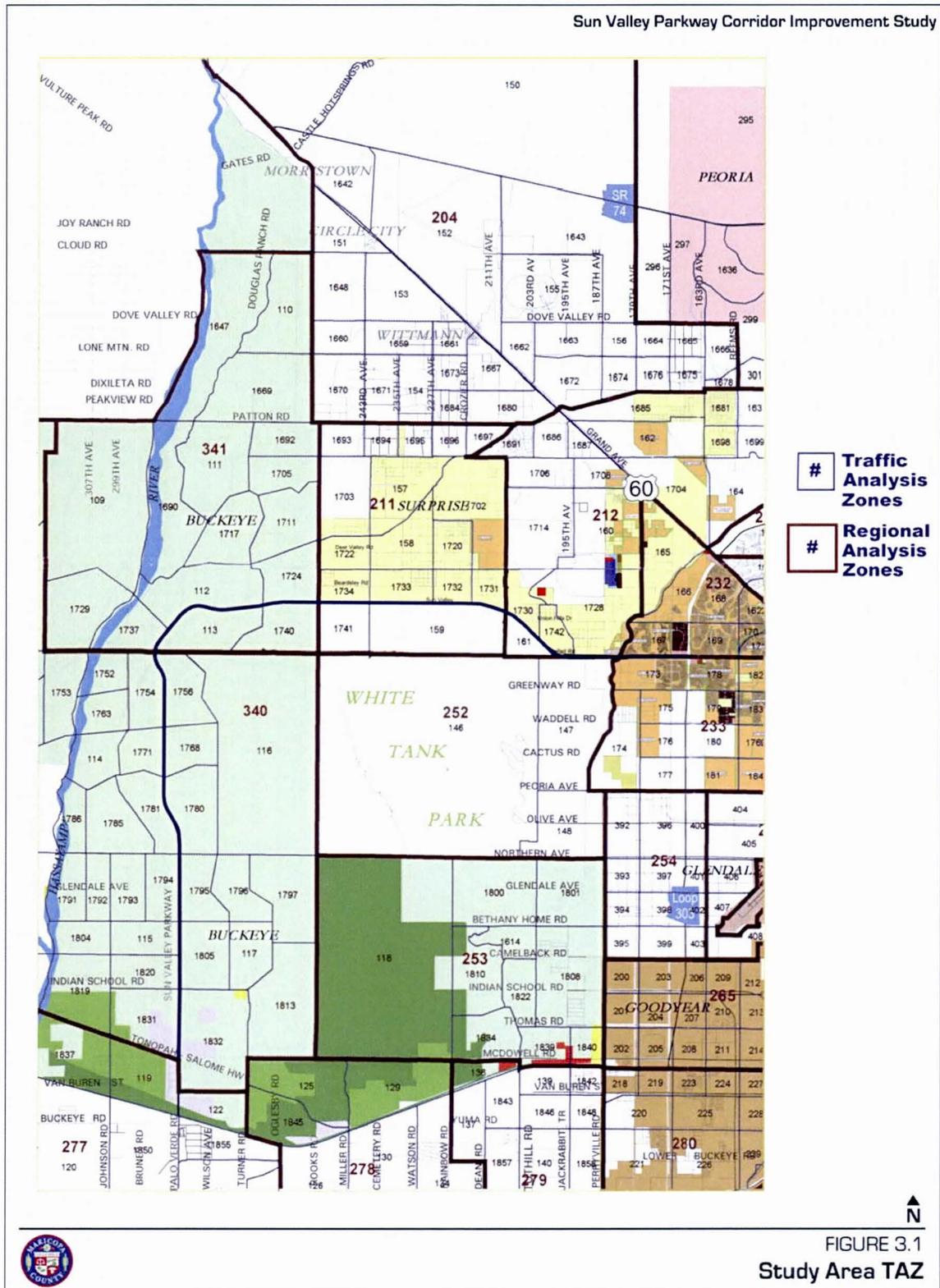
Maricopa County is subdivided into Municipal Planning Areas (MPAs), Regional Analysis Zones (RAZs) and Traffic Analysis Zones (TAZs). Municipal Planning Areas include the corporate limits of a municipality plus any adjacent areas that are anticipated to become a part of those corporate limits in the future. Regional Analysis Zones are subunits of MPAs, and are the basic unit used by the spatial allocation model to prepare sub regional projections. RAZs are further divided into Traffic Analysis Zones. The TAZ is the smallest unit for which MAG prepares projections. Their boundaries are defined using major streets and landmarks. Figure 3.1 shows the TAZs and RAZs within the study area.

The Maricopa Association of Governments (MAG) maintains a socioeconomic database of existing and future data that is used in conjunction with the travel forecasting and air quality models for the MAG planning area. Periodically, MAG updates these databases when new information is available. The following provides background information on the process used by MAG to develop socioeconomic projections. The development of population and socioeconomic projections requires the collection of a substantial amount of base data. The most recent Decennial or Special Census provides a good source of information for developing projections. Because the census is an actual population count as opposed to an estimate, it provides a more reliable base from which to prepare projections. Census information is collected by County, place, census tract, block group, and block. However, because MAG prepares projections by different geographical areas, MPA, RAZ, and TAZ, it is necessary to reallocate the census data to this MAG geography.

Total year 2000 employment at the County level was derived from a population control total developed by the Arizona Department of Economic Security. Total employment includes self-employed as well as wage and salary workers. Using the 2000 Maricopa County employment control total, 2000 sub regional employment estimates were prepared and reviewed by MAG member agencies.

An existing land use database identifies the current land use pattern in the urban area. The existing land use coverage is important to the projections process because it establishes areas that have already been developed or are not suitable for further development. The developed areas become ineligible for the allocation of population and employment growth, except where the area is planned for redevelopment. Non-developable areas include open space or environmentally sensitive lands, or areas where the relief makes construction infeasible.

The Future Land Use Database is based upon the plans of MAG member agencies and identifies both the type of development that is anticipated to occur in the future and the density of that development.



2026 Base Forecast

The initial traffic forecast model run was based on the MAG 2026 socioeconomic data set. The Town of Buckeye and City of Surprise RAZ data within the study influence area are summarized in Table 3.3. It should be noted that for the purpose of this study, only the traffic analysis zones within 1-2 miles of the study corridor were included and summarized by RAZ. However, RAZ 252, which is Arizona State Land Department land, was not included since there currently are no land use plans for this area.

The initial travel forecast model run output had future daily volumes on Sun Valley Parkway that ranged from 7,000 to 34,000 vehicles per day. The higher volumes occurred on the east-west portion near Loop 303. After reviewing the results with MCDOT, MAG, Surprise, and Buckeye staff; it was agreed that the 2026 base socioeconomic data did not reflect the current planning and growth that is being experienced in the west valley. It was then agreed that the 2026 base socioeconomic data set would be modified to incorporate current land use planning expected to occur by the year 2026.

Table 3.3 - Year 2026 Base Study Area Socioeconomic Data

MPA	RAZ	Population	Employment
Surprise	204	49,598	6,717
Surprise	211	40,807	6,456
Surprise	212	53,516	19,840
Surprise	232	38,477	5,336
Surprise	233	131,074	29,851
Surprise	234	13,078	2,089
Surprise	TOTAL	326,550	70,289
Buckeye	253	56,300	9,246
Buckeye	277	29,657	20,485
Buckeye	278	63,880	33,932
Buckeye	279	61,373	28,556
Buckeye	340	55,405	8,188
Buckeye	341	22,266	5,581
Buckeye	343	4,016	1,926
Buckeye	TOTAL	292,897	107,914
Surprise plus Buckeye	TOTAL	619,447	178,203

2026 Enhanced Forecast

The 2026 base socioeconomic data set was examined and reviewed by agency staff to determine appropriate revisions. The Town of Buckeye provided information regarding current approved or entitled master plans within the Sun Valley Parkway corridor. This information is summarized in Table 3.4, which shows planned and projected development, estimated population at full build, and estimated 2026 population.

**Table 3.4 - Sun Valley Parkway Corridor
Population and Employment Estimates**

Project Name	Total Acres	Dwelling Units	Projected Population ⁴	2026 Population ⁵
Douglas Ranch	35,250	84,000 ¹	231,000	57,500
Elianto	3,750	12,500 ¹	34,375	26,000
Festival Ranch	10,000	24,200 ¹	66,550	50,000
Spurlock Ranch	2,850	7,300 ¹	20,075	15,000
Sun City Festival	3,800	13,700 ¹	27,400	20,500
Sun Valley + Trillium	16,250	41,400 ¹	113,850	85,500
Sun Valley South	11,200	29,200 ¹	80,300	60,000
Tartesso	13,000	50,000 ¹	137,500	103,000
Developable Properties Not Included in Above				
Arizona State Land Trust	15,500	38,750 ²	106,600 ⁴	53,500
Additional Private Holdings	3,500	8,750 ²	24,000 ⁴	12,000
Master Plans Outside Town of Buckeye Planning Area with Access to SVP				
Belmont	20,800	72,800 ³	200,200 ⁴	50,500
Hassayampa Ranch	2,000	7,000 ³	19,250 ¹	5,000

¹ As specified in master plan

² 2.5 dwelling units per acre is used for most properties held by the Arizona State Land Department due to terrain. ASLD has indicated that they are investigating the potential release of their holdings over the next 5-10 years. A 50 percent build-out was used to calculate 2026 population.

³ 3.5 dwelling units per acre is generally used along the Sun Valley Parkway corridor.

⁴ 2.75 persons per household except in Sun City Festival where 2.0 persons per household was used due to the predominance of age-restricted housing.

⁵ 75 percent of build-out is used as an average for 2026 population except for Douglas Ranch, Belmont and Hassayampa Ranch where 25 percent was used.

The City of Surprise adjustments were based on the City's 2030 General Plan and discussions with planning staff. Based on this information, the residential population and total employment figures in the 2026 MAG base model were increased by 3 percent (from

326,550 to 336,823) and 37 percent (from 70,289 to 96,624), respectively for the study corridor.

It should be noted that these population and employment adjustments were only included in the TAZs within two miles of the study corridor. The overall results of these adjustments are summarized in Table 3.5 below. As can be seen from a comparison of Table 3.3 and Table 3.5, the study area population was increased 64 percent (from 619,447 to 1,013,109) and the employment was increased 43 percent (from 178,203 to 254,634).

Table 3.5 - Year 2026 Enhanced Study Area Socioeconomic Data

MPA	RAZ	Population	Employment
Surprise	204	51,392	15,717
Surprise	211	45,212	11,956
Surprise	212	55,496	24,840
Surprise	232	40,571	6,171
Surprise	233	131,074	35,851
Surprise	234	13,078	2,089
Surprise	TOTAL	336,823	96,624
Buckeye	253	56,300	9,246
Buckeye	277	31,592	24,485
Buckeye	278	63,880	36,932
Buckeye	279	61,373	28,556
Buckeye	340	302,600	33,687
Buckeye	341	156,525	23,178
Buckeye	343	4,016	1,926
Buckeye	TOTAL	676,286	158,010
Surprise plus Buckeye	TOTAL	1,013,109	254,634

In addition to the socioeconomic adjustments to the MAG base data set, revisions were made to the 2026 base model network to reflect current plans. New streets included in the City of Surprise 2030 circulation plan were added. New streets, street re-alignments, and new interchanges on I-10 were included for the Town of Buckeye. These network revisions, shown in Figure 3.2 were prepared in cooperation with the project Stakeholder and Project Advisory Committee members to ensure their accuracy. Table 3-6 summarizes the network additions included in the model run

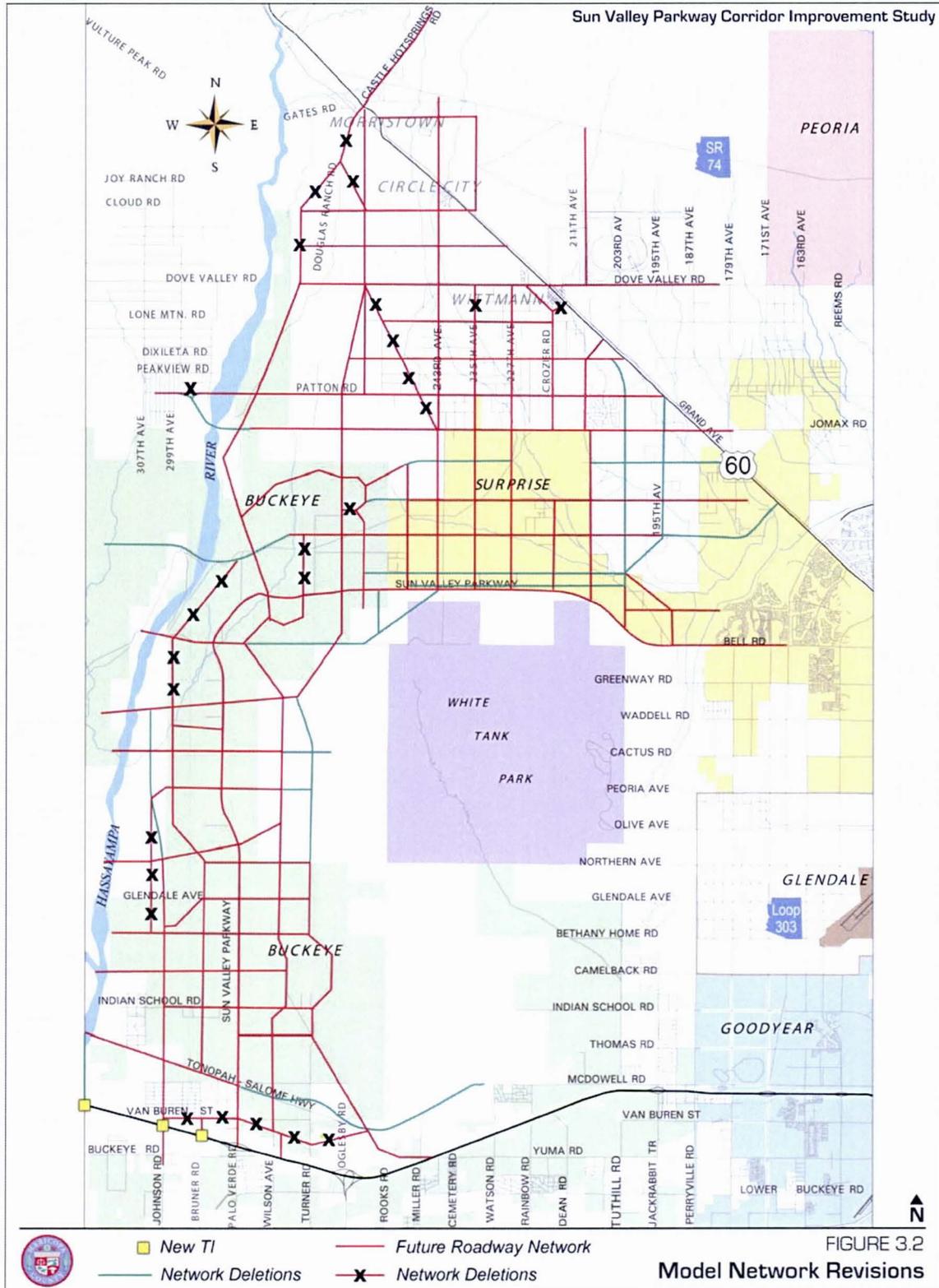


TABLE 3-6 - SUMMARY OF NETWORK MODIFICATIONS

STREET	LIMITS	CLASSIFICATION	NO. OF LANES	OFF-PEAK SPEED
Sun Valley Parkway	I-10 to 195 th Avenue	Expressway	6	57
Johnson Road	Northern to Greenway	Arterial	4	44
Turner Road	Northern to Greenway	Arterial	4	44
Happy Valley Road	Wilson Avenue west	Arterial	4	44
Bell Road	Wilson to 243 rd	Arterial	4	44
Beardsley Avenue	263 rd to 203 rd	Arterial	4	44
Deer Valley Road	195 th to US 60	Arterial	6	44
Happy Valley Road	251 st to 227 th	Arterial	4	44
Happy Valley Road	211 th to US 60	Arterial	4	44
235 th Avenue	Deer Valley to Jomax	Arterial	4	44
203 rd Avenue	Beardsley to Dixileta	Arterial	4	44
195 th Avenue	Beardsley to US 60	Arterial	4	44

Using these socioeconomic and network changes, MCDOT completed a 2026 “enhanced data” travel forecast model run. The results of this model run are shown in Figure 3.3. The daily forecasts range from 41,000 to 66,000 vehicles. Again, the higher volumes occurred on the east-west portion near Loop 303. After review of the results by the study team, there was still a concern that the model results did not adequately address the future needs on Sun Valley Parkway. After additional discussion with the project team, it was agreed that the study area socioeconomic data should be expanded to represent full build based on current planning.

2030 Full Build Forecast

The full build socioeconomic data for the Sun Valley Parkway corridor was developed from the 2030 MAG data set provided by MCDOT. The following revisions were made to the 2030 MAG data set for the Sun Valley Parkway study area. The full build population for the Town of Buckeye was based on the total projected population presented in Table 3.4. The estimate of full build employment was developed by Town staff based on the General Plan. For the City of Surprise, staff provided development information for any known projects regardless of status. In the remainder of the study area, the General Plan was used to estimate population and employment in the study area based on expected land use. The results of this analysis are presented in Table 3.7 where the full build population and employment is summarized for the study area zones.

As can be seen from a comparison of Table 3.5 and Table 3.7, full build population is 65 percent higher (from 1,013,109 to 1,668,372) than the 2026 enhanced and employment is 56 percent higher (from 264,998 to 414,721).

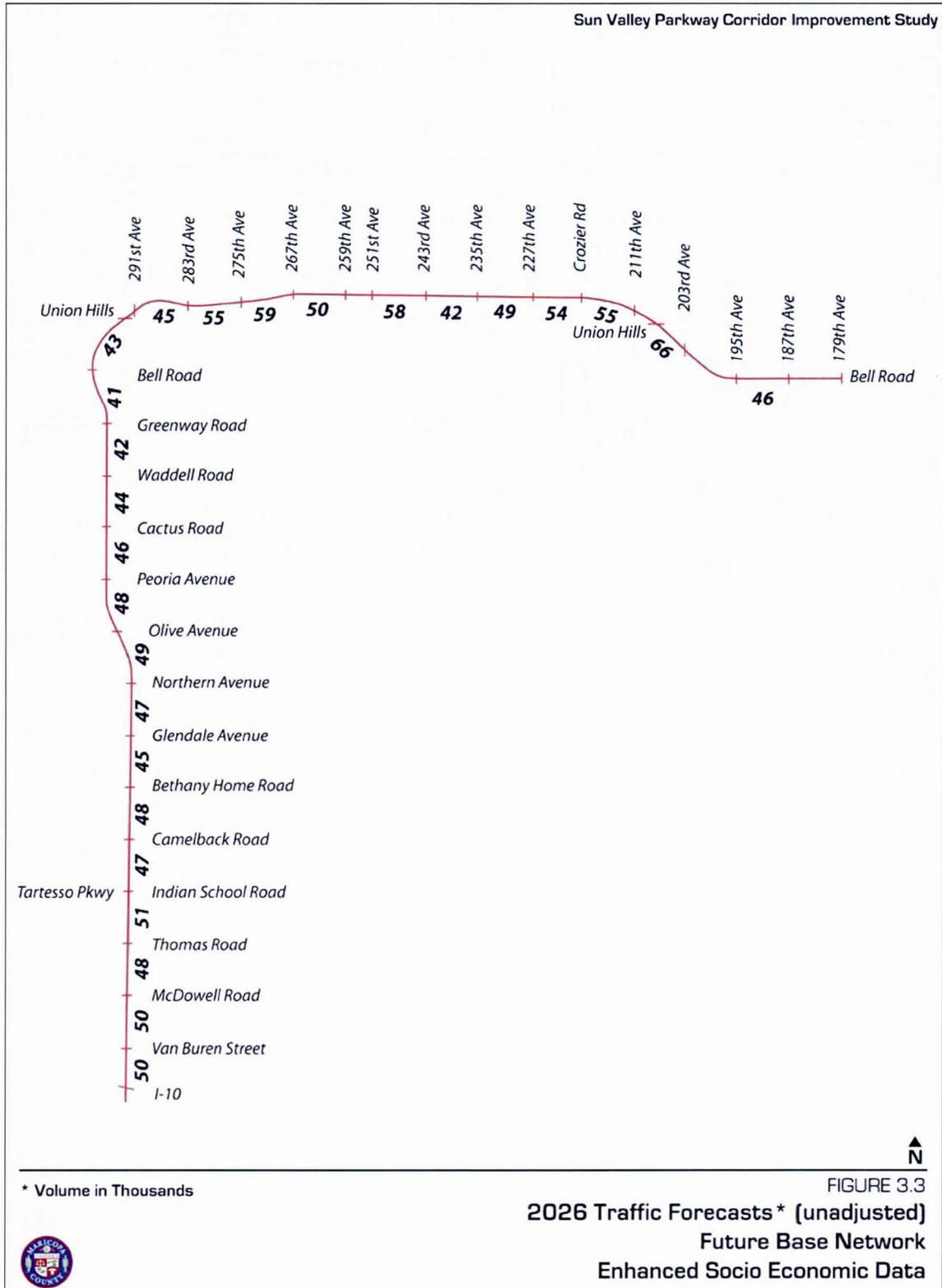


TABLE 3.7 - YEAR 2030 FULL BUILD STUDY AREA SOCIOECONOMIC DATA

MPA	RAZ	Population	Employment
Surprise	204	210,956	24,623
Surprise	211	106,152	30,657
Surprise	212	141,102	41,104
Surprise	232	42,087	7,925
Surprise	233	144,905	46,875
Surprise	234	13,143	2,976
Surprise	TOTAL	658,345	154,160
Buckeye	253	88,429	12,477
Buckeye	277	45,250	88,001
Buckeye	278	89,382	48,425
Buckeye	279	77,045	39,399
Buckeye	340	476,847	51,935
Buckeye	341	227,209	18,261
Buckeye	343	5,865	2,063
Buckeye	TOTAL	1,010,027	260,561
Surprise plus Buckeye	TOTAL	1,668,372	414,721

This updated 2030 socioeconomic “full build” data set was provided to MCDOT to prepare a new travel forecast model run. The revised network developed for the 2026 enhanced model run was used. The model run was not successful. Based on discussions with MCDOT and MAG staff, it was determined that the “full build” socioeconomic changes in the study area were too large for such a concentrated area with no additional network changes. After discussions with MCDOT staff, it was decided that no additional model runs would be performed, however, MCDOT staff wanted to assess the need for intersection improvements and alternative intersection options. As a result, it was agreed that “full build” traffic forecasts would be estimated for analysis purposes for the north-south section of Sun Valley Parkway based on the 2026 enhanced model run.

The following describes the process that was used to develop the “full build” traffic forecasts for Sun Valley Parkway. For the TAZs that are adjacent to the north-south portion of Sun Valley Parkway, the amount of population increase between 2026 enhanced and 2030 was divided by 2.75 to obtain dwelling units. For each TAZ, the number of dwelling units was multiplied by 10 to estimate the number of daily trips generated. For each TAZ, one-half of the trips were assigned to the section line road to the north and one-half were assigned to the section line road to the south. The trips were then assigned to Sun Valley Parkway with 50 percent in the northbound direction and 50 percent in the southbound direction. This

increment of daily traffic was then added to the 2026 enhanced traffic forecasts to develop 2030 “full build” forecasts. The 2030 full build forecasts are shown in Figure 3.4. It should be noted that this resulted in the addition of approximately 10,000-15,000 ADT above the 2026 enhanced forecasts onto Sun Valley Parkway and that some Project Advisory Committee members still believed that these forecasts were too low based on expected development. However, it was agreed that no additional forecasts would be prepared for this study, since the *MAG I-10/Hassayampa Valley Roadway Framework Study*, just underway, will include traffic forecast model runs that examine a broader geographic area.

3.4 CAPACITY ANALYSIS

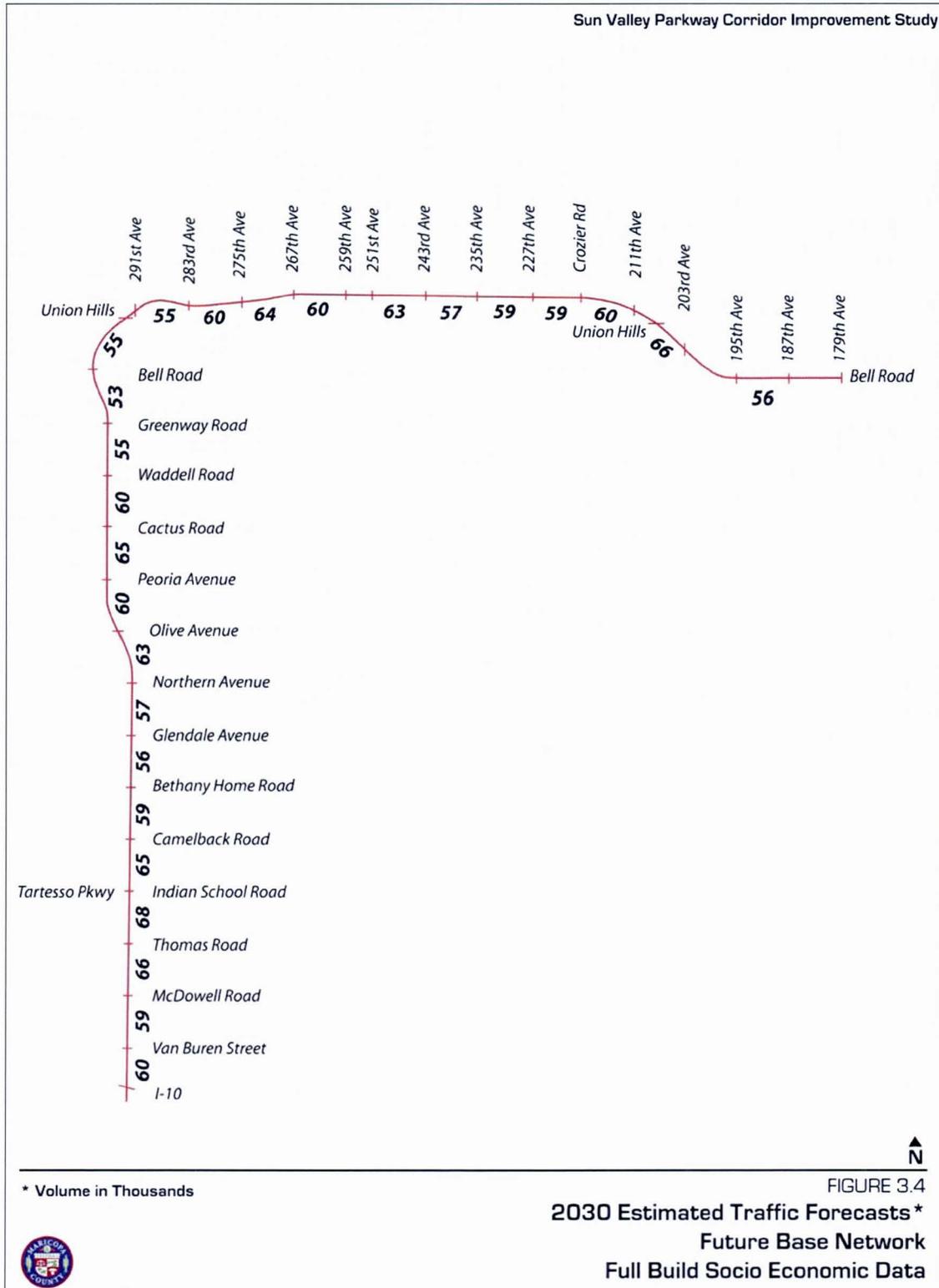
A capacity analysis was performed for several of the intersections along the north-south portion of Sun Valley Parkway to estimate the future level of service using the 2030 full build daily forecast estimates. Intersection turning movement volumes were developed for selected section line roadways based on the following turning movement assumptions:

- 9% of the total ADT on Sun Valley Parkway occurs in the peak hour ('k' factor)
- 15% of Sun Valley Parkway traffic turns left
- 15% of Sun Valley Parkway traffic turns right
- 70% of Sun Valley Parkway traffic is the through movement
- 30% of Crossroad traffic turns left
- 30% of Crossroad traffic turns right
- 40% of Crossroad traffic is the through movement

For this base case analysis, it was assumed that access to Sun Valley Parkway would be the same as today, i.e. access every mile. It is noted that the assumptions were reviewed with the Project Advisory Committee for consensus. There was some discussion about the turning movement assumptions, e.g., the 'k' factor and the turn percentages. However, for estimation purposes, these assumptions are reasonable. As development occurs and future studies are conducted, it is recommended that the assumptions listed above are confirmed.

Level of Service (LOS) is a term used to describe traffic operations. The various levels of service, which range from A to F, are generally defined as follows:

- **LEVEL OF SERVICE A** represents free flow operation.
- **LEVEL OF SERVICE B** is in the range of free flow, but the presence of other users in the traffic stream begins to be noticeable.
- **LEVEL OF SERVICE C** is in the range of stable flow, but marks the beginning of the range in which the operation of individual users becomes significantly affected by others.
- **LEVEL OF SERVICE D** represents high density but stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.



- **LEVEL OF SERVICE E** represents operating conditions at or near the capacity level. All speed is reduced to a low but relatively uniform value.
- **LEVEL OF SERVICE F** is used to define forced or stop and go travel. This condition exists wherever the amount of traffic approaching a point exceeds the amount that can traverse the point.

The level of service analysis for signalized intersections was performed utilizing the methodology presented in the 2000 Highway Capacity Manual. This method uses the critical volumes passing through the intersection in one hour and compares those volumes to the capacity of the intersection and an associated delay. The analysis incorporates the effects of traffic volumes, geometry, traffic signal operation, truck and local bus volumes, pedestrian activity, and peaking characteristics. The result is a level of service determination for each approach and for the intersection as a whole. The capacity criteria are presented in terms of average vehicle delay in Table 3.8.

Table 3.8 - Capacity Criteria for Signalized Intersections*

LEVEL OF SERVICE (LOS)	DELAY (SECONDS PER VEHICLE)
A	less than 10
B	10.1-20
C	20.1-35
D	35.1-55
E	55.1-80
F	over 80

*Source: Highway Capacity Manual

The Level of Service calculations were completed based on the operational analysis method set forth in Synchro 6, which is based on the HCM procedures described above. The results of the analysis are summarized in Table 3.9 and the worksheets are included in Appendix H. As shown in Table 3.9, all the intersections would operate at level of service F with substantial delays at full build with the existing roadway and access only every mile. The main reason is that traffic is concentrated at the 1-mile spaced signalized intersections.

**Table 3.9 - 2030 Base Intersection Level of Service Summary
Existing Sun Valley Parkway with One-Mile Signal Spacing**

Intersection/Approach	LOS	Delay (sec/veh)
Sun Valley Parkway & McDowell	F	369
Sun Valley Parkway & Thomas	F	275
Sun Valley Parkway & Indian School	F	299
Sun Valley Parkway & Camelback	F	167
Sun Valley Parkway & Bethany Home	F	153
Sun Valley Parkway & Glendale	F	115
Sun Valley Parkway & Northern	F	223
Sun Valley Parkway & Olive	F	219
Sun Valley Parkway & Peoria	F	245
Sun Valley Parkway & Cactus	F	297
Sun Valley Parkway & Waddell	F	144
Sun Valley Parkway & Greenway	F	293
Sun Valley Parkway & Bell	F	199

Alternatives to improve the level of service are presented in Chapter 7.

4. ENVIRONMENTAL SUMMARY

4.1 INTRODUCTION

This section presents a summary of the Environmental Overview that was conducted for this study. The complete Environmental Overview can be found in Appendix M. The purpose of the Environmental Overview is to generally describe the social, economic and environmental character of the area in the vicinity of the planned improvements. This description can then be used to identify potential “fatal flaws” and associated issues and to assist in the evaluation of alternatives for the future project.

The overview provides a general description of environmental conditions and potential impacts. The report is not intended to meet the requirements of the National Environmental Policy Act (NEPA). Additional environmental study and documentation will be required at future stages of project development.

The existing 32-mile Sun Valley Parkway connects the cities of Buckeye and Surprise and is currently surrounded by mostly undeveloped land. The White Tank Mountains Regional Park is located to the south. Several planned communities and developments are expected to begin construction in the study area within the next several years.

4.2 SOCIOECONOMIC ENVIRONMENT

The description of the socioeconomic environment of the study area includes an overview of the land jurisdiction and ownership, land use, zoning and future development, population and employment, and Title VI/environmental justice considerations.

Land Use and Ownership

The study area falls within the jurisdiction of the Town of Buckeye, the City of Surprise and Maricopa County.

The vast majority of the study area is undeveloped. Mixed low-density residential and commercial development is currently limited to the west side of Sun Valley Parkway between I-10 and McDowell Road and the southeast corner of Sun Valley Parkway and Van Buren Street. Land use along the rest of the existing roadway is unimproved desert either in private ownership or in trust to the Arizona State Land Department (ASLD).

The portion of the study area north of the east-west section of Sun Valley Parkway is mostly vacant. Scattered residences are located throughout this portion.

Much of the undeveloped land, including State land, along the roadway is being master-planned for development. One development, Tartesso West Unit I, located in the southwest quadrant of Sun Valley Parkway and Indian School Road is completed.

Demographic Composition

The demographic composition of the study area was determined from the U.S. Census 2000 Summary File. The existing population is limited to the west side of Sun Valley Parkway between I-10 and McDowell Road, the southeast corner of Sun Valley Parkway and Van Buren Street, and the area between Happy Valley Road and Lone Mountain Road.

Provisions of Title VI/Environmental Justice

Based on the current limited population of the study area, Title VI/Environmental Justice concerns do not exist.

4.3 PHYSICAL AND NATURAL ENVIRONMENT

Topography/Physiology

The study area is located within a flat bajada plain in the Basin and Range physiographic province of Arizona. Specifically, the Sun Valley Parkway crosses the toes of alluvial fans emanating from the White Tank Mountains, while the proposed northern spur crosses a generally flat desert plain bounded by the Hassayampa River to the west and the Agua Fria River to the east. Elevation ranges from approximately 1,200 ft above mean sea level (amsl) in the southern extent of the project area to approximately 1,900 ft amsl at the northern project limit.

Biological Resources

A preliminary assessment of the existence of threatened and endangered species and critical habitat for the Sun Valley Parkway Corridor was performed. A list of species was developed using the current federally listed species within Maricopa County as provided by the USFWS Arizona Ecological Services website and information from the Arizona Game and Fish Department's Heritage Data Management System. It is the conclusion of this biological assessment that the proposed project will have no effect on any endangered, threatened, proposed, or candidate species. In addition, no designated critical habitat occurs within the project area; therefore, the proposed project will have no effect on any designated critical habitat.

Although the focus of this report is on federally threatened and endangered species, a number of state sensitive species may potentially be impacted by the proposed action. In preparation for this report, a scoping letter describing the project was sent to the Arizona

Game and Fish Department (AGFD). Based on State sensitive species concerns, further coordination with the Arizona Game and Fish Department is recommended prior to any project-related construction or ground-disturbing activities.

Water Resources

Section 404 of the Clean Water Act establishes a permit program for activities that will discharge dredged or fill material into "waters of the United States". The delineation of such "waters of the United States" is the responsibility of the U.S. Army Corps of Engineers.

Various streams and drainage ways are present in the study area. A more detailed identification of these features will be necessary. Delineation of "waters of the United States" will be required, followed by the determination of the necessary Section 404 permits.

Impacts to floodplains typically occur when the topography within a floodplain is substantially modified either by placement or removal of materials within the floodplain. If five or more acres of land will be disturbed, a National Pollutant Discharge Elimination System (NPDES) permit will be required. The delineated floodplains in the project area are shown in Appendix G.

Noise

According to Federal Highway Administration (FHWA) procedures, noise abatement must be considered when implementation of a roadway project results in a substantial increase over the existing noise level. Abatement must also be considered when noise levels are expected to approach or exceed the criteria levels. Very few noise receptors are currently located in the study area. Future impact assessments will be necessary as the project is further defined. These assessments will reflect the receptors that may be present at that time.

Air Quality

The 1970 Clean Air Act and the 1990 Clean Air Act Amendments require that air quality impacts be considered in environmental evaluations. National Ambient Air Quality Standards (NAAQS) have been established for carbon monoxide (CO), particulate matter smaller than 10 microns in diameter (PM₁₀), ozone (O₃), and sulphur dioxide (SO₂).

Portions of the study area lie within a non-attainment area for CO, ozone, and PM₁₀. When specific roadway projects are identified that require NEPA documentation, the ambient air quality will need to be evaluated in terms of State and NAAQS compliance.

Hazardous Materials

Hazardous materials are regulated by the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The ADEQ implements CERCLA, commonly known as Superfund, and its amendment, the Superfund Amendments and Reauthorization Act (SARA) of 1986. The inherent environmental concerns associated with hazardous materials and solid waste landfills require a preliminary investigation into the location of permitted and non-regulated hazardous material sites and solid waste facilities within the study area.

A Preliminary Initial Site Assessment (PISA) for the Sun Valley Parkway Corridor Study was conducted. The purpose of the PISA is to provide an initial determination regarding the potential for hazardous materials to be located in the study area. Work conducted to complete the PISA included a hazardous materials records review, a review of topographic maps for the area, and a "windshield" survey of the project area conducted on September 8 and 10, 2005.

The location of known RCRA, UST, and SARA sites, the dry well locations, and the areas of environmental interest should be considered during the alternatives formulation analysis portion of this study. Additional analysis of these areas may be required during the alternatives formulation or pre-design process.

Farmland

The entire study area is comprised of natural desert terrain. No prime or unique farmlands are present.

4.4 CULTURAL RESOURCES

A Class I cultural resources literature review and cultural-and historical overview of the project area was prepared. The detailed results are described in *A Class I Cultural Resources Literature Review for the Proposed Sun Valley Parkway Expansion, Maricopa County, Arizona, September 30, 2005*.

Sources examined for this overview included historic property files at the State Historic Preservation Office (SHPO), and site and project files at the AZSite Cultural Resources Database (AZSite) and the Arizona Department of Transportation (ADOT). Also reviewed were historic General Land Office (GLO) maps at the BLM Arizona State Office. Future phases of this project will need to consult other important sources of information, including cultural resource inventory files at the BLM Phoenix Field Office, ASLD, Arizona State Archives, and the Phoenix historical society.

Numerous cultural resources have been documented in the review area. In addition, many Native American groups have a long history of use and/or settlement either within or in the vicinity of the review area. Although large portions of the review area have yet to be surveyed for the presence of cultural materials, the review area has the potential to be of high cultural sensitivity. Additional historic properties are likely to occur in the review area.

4.5 SECTION 4(F) RESOURCES

Section 4(f) of the Department of Transportation Act of 1966 (49 U.S.C. 303) stipulates the FHWA may not approve the use of land from a significant publicly owned park, recreation area, or wildlife and waterfowl refuge, or any significant historic site that is either listed on, or eligible for, listing on the NRHP under criterion, a, b, or c. Public schools are designated as 4(f) resources if public access to, and use of, sports facilities (e.g. baseball diamonds, tracks) on these properties is permitted.

The sites listed on the NRHP are considered Section 4(f) resources. Evaluation of direct and proximity impacts would be required as part of the NEPA process. If FHWA funds are used to construct future projects, any impacts to Section 4(f) resources in the study area would need to be identified.

5. DRAINAGE CHARACTERISTICS

This section summarizes data collected from original design documentation, Area Drainage Master Plan (ADMP) studies by the Flood Control District of Maricopa County (FCDMC), and field reviews. The data includes points of concentration, peak flows and field conditions. Evaluation of the data is the basis for identification of drainage impacts of proposed roadway improvement alternatives, the recommendation of solutions to challenges, and the planning of future enhancements.

5.1 ORIGINAL DESIGN DOCUMENTATION

The existing Sun Valley Parkway was designed in three phases. Separate Drainage Reports were prepared for each one of the phases by Collar, Williams and White Engineering.

- Phase I, Bell Road to R3W/R4W Section Line, March 1987, Revised April 1987
- Phase II, R3W/R4W Section Line to Northern Avenue, March 1987, Revised April 1987
- Phase III, Northern Avenue to I-10. March 1987, Revised April 1987
- Drainage Design Report for Sun Valley Parkway Drainage Enhancement, November 1988, Revised December 1988

5.2 FCDMC STUDIES

The FCDMC is currently active in the study of drainage conditions in the vicinity of the project. The Buckeye/Sun Valley Area Drainage Master Study (ADMS) has been completed. It is being followed by work on the Buckeye/Sun Valley Area Drainage Master Plan (ADMP), which is underway. The Wittman ADMS Update is also underway. Available publications from these studies used in our research include the following:

- Wittman Area Drainage Master Study Update - Technical Data Notebook Hydrology Report - Volume HY July, 2004 Revised October, 2004
- Wittman Area Drainage Master Study Update Sun Valley Parkway Culvert Evaluation March, 2005

5.3 HYDROLOGY - CONTRIBUTING BASINS AND EXISTING DRAINAGE SYSTEMS

The delineation of major contributing basins was completed in the Sun Valley/Buckeye ADMS and the Wittman ADMS Update. The existing and proposed corridors intersect waterways in six sub-basins, shown in Figure 5.1. The six sub-basins are as follows:

- White Tank Mountains Alluvial Fan
- Hassayampa River Tributaries

- Sun Valley
- Iona Wash
- Trilby Wash
- White Tanks

White Tank Mountains Alluvial Fan

The existing Sun Valley Parkway traverses along the western reaches of the basin. The watershed is comprised of the western slopes of the White Tank Mountains and the lower alluvial fan slopes. Elevations range from over 4,000 feet at the top of the mountains to less than 1,100 feet at the flood pool of the Buckeye Flood Retarding Structure (FRS), generally sloping to the southwest. The alluvial fan on this and all other sub-basins is characterized by numerous active washes, braided split-flow channels and overland sheet flow. While some of the channels on the northern side are incised with stable ridge lines, most of the channels in the remainder of the watershed are relatively unstable.

The drainage system for the existing Sun Valley Parkway consists of collector channels along the eastern side of the road that intercept overbank and sheet flows and convey them to cross culverts located at principal channels. The collector channel along the southern 1.75 miles of the Parkway before the I-10 Traffic Interchange is concrete-lined and discharges into the flood pool of the Buckeye FRS.

Hassayampa River Tributaries

The existing Sun Valley Parkway runs through the middle of the basin. The southern part of the watershed is comprised of the northwestern slopes of the White Tank Mountains and the lower alluvial fan slopes, while the northern part is characterized by Wagner Wash and its tributaries. The maximum elevation at the top of the mountains is just below 4,000 feet. Elevations along Wagner Wash range between approximately 2,000 feet to about 1,600 feet at the Parkway crossings. Major drainage patterns follow a southwesterly direction to their confluence with the Hassayampa River.

The majority of the washes that cross the Parkway along the north-south segment are incised and stable. As in the segment to the south, roadside channels are used to collect overland flows and convey them to the nearest culvert crossing. Along the east-west section of the Parkway a large collector channel system was constructed along the south side of the road. In this area flow patterns follow a northwesterly direction to their confluence with Wagner Wash. The collector channel runs for approximately 2.75 miles upstream from its discharge point at Wagner Wash.

Sun Valley

This basin is divided in two by the Central Arizona Project (CAP) canal, which flows in a northeasterly direction north of the existing Sun Valley Parkway. North of the CAP canal, drainage patterns follow a southerly direction until they are impounded and rerouted to the east by the embankment that protects the CAP canal from flooding. Channels in the northern part of the watershed are incised and stable.

The area south of the CAP canal is generally comprised of the alluvial fan slopes at the base of the northern side of the White Tank Mountains. Flow patterns follow a northerly direction to a wash that parallels the CAP canal before discharging into Iona Wash to the east.

The drainage system along the Sun Valley Parkway consists of collector channels on the south side that intercept overland and overbank flows and convey them to cross culverts constructed at larger washes. Detention basins were constructed at several culvert inlets in order to mitigate the increase in peak flows in major washes that results from the concentration of upstream flows by collector channels.

Iona and Trilby Washes

These two basins have similar characteristics. Their watersheds extend from several miles north of SR 74 and are crossed by significant man-made features such as SR 74, US 60 and the CAP canal. Within the project area the basins consist of several incised channels with capacity to contain small events. During large events channel banks are overtopped, resulting in overbank and sheet flows. The embankment that protects the CAP canal impounds flows and concentrates them at locations where overchutes have been constructed to allow their passage. The two washes join just north of the Sun Valley Parkway and discharge into the McMicken Dam reservoir area.

White Tanks

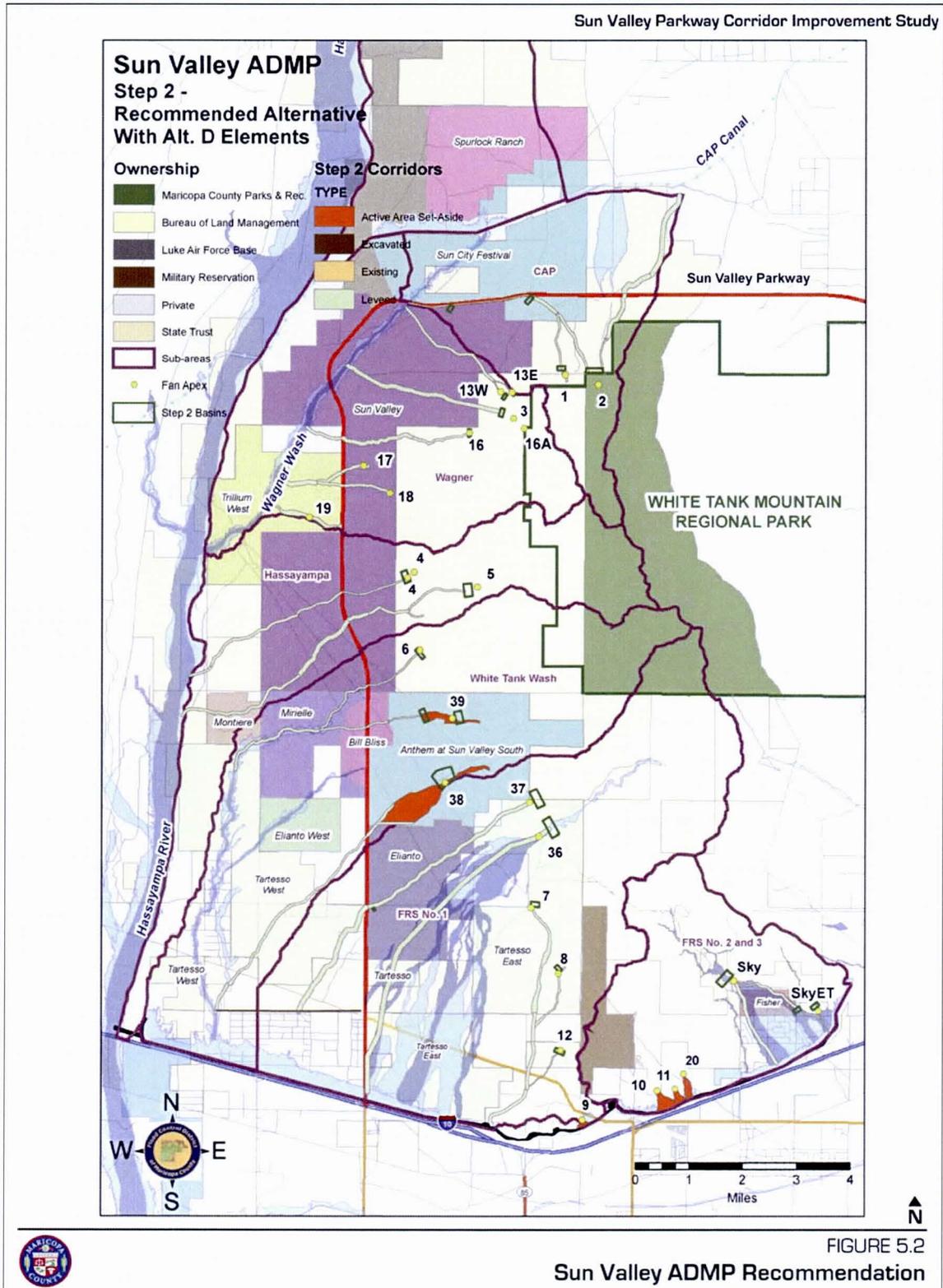
This basin is comprised of the northeastern slopes of the White Tank Mountains and the lower alluvial fan slopes. In the vicinity of the existing Sun Valley Parkway the ground is relatively flat and drains in a direction parallel to the highway. Two culvert structures were constructed under the road to allow leveling of the McMicken Dam reservoir.

5.4 SUN VALLEY ADMP RECOMMENDATION

The Sun Valley ADMP covers areas number 3 and 4 as designated in the Buckeye/Sun Valley ADMS.

Figure 5.2 shows the recommended alternative from the Sun Valley ADMP. The main objective of this alternative is to preserve as closely as possible current peak flows at major points of concentration along the existing Sun Valley Parkway for the buildout condition. This would be achieved with the construction of on-line detention basins at the apices of alluvial fans combined in some cases with additional detention basins downstream.

In the preferred alternative concept, only major designated channels are to be preserved acting as collectors for their surrounding watersheds. As a result of flow concentration and re-grading, flows approaching many of the minor existing interceptor channels and small culvert crossings along Sun Valley Parkway may vary in the buildout condition. Peak flows and conveyance capacity at major cross culverts are expected to remain at current levels for the post-development condition.



6. UTILITY OVERVIEW

Utilities serving residential and commercial users along existing Sun Valley Parkway are limited to the area between the interchange with I-10 and McDowell Road. Currently there are no occupied residences and no residential utilities north of McDowell Road, although several subdivisions are currently under construction.

6.1 ELECTRIC POWER

Electric power is provided by Arizona Public Service (APS). APS facilities consist of overhead electric lines on the west side of the roadway between Washington Street and McDowell Road as shown in Photo 1.



Photo 1-Overhead electric and telephone, looking north

At the northwest corner of the Sun Valley Parkway-Washington Street intersection there are several electric and telephone junction or control boxes, as shown in Photo 2.



Photo 2-Electric and telephone control boxes at Washington St.

6.2 ELECTRIC POWER TRANSMISSION

There are several major electric power transmission lines crossing or paralleling existing Sun Valley Parkway. The first major transmission line is located approximately 0.5 mile south of Van Buren Street, as shown in Photo 3. The poles carry 500 kV power and belong to APS and Salt River Project (SRP).



Photo 3-500 kV APS-SRP power south of Van Buren St.

APS also has a 69 kV transmission line crossing Sun Valley Parkway approximately 0.2 mile north of McDowell Road, as shown in Photo 4.



Photo 4-Overhead electric and telephone north of McDowell Road

At the approximate alignment of Camelback Road, electric power transmission towers belonging to SRP begin paralleling the road on the west side (Photo 5) for approximately

3.5 miles, at which point the road turns to the northwest to pass under the power lines (Photo 6).

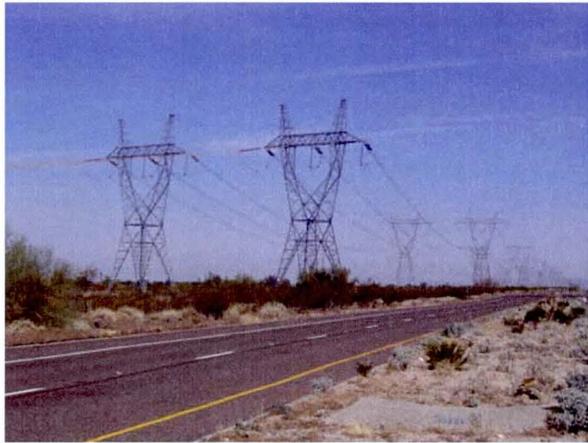


Photo 5-SRP power transmission towers

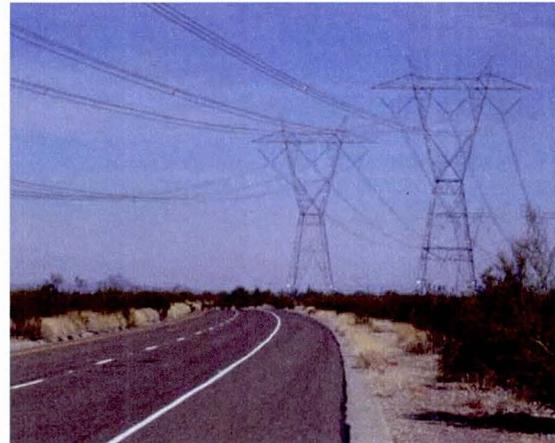


Photo 6-Sun Valley Parkway crosses under SRP towers

Sun Valley Parkway crosses back under the same transmission lines at the approximate alignment of 281st Avenue.

One of the SRP towers is close to the roadway, as shown in Photo 7. The face of the concrete barrier shown in the photograph is 66 ft from the roadway centerline or 30 ft from the present traveled way.

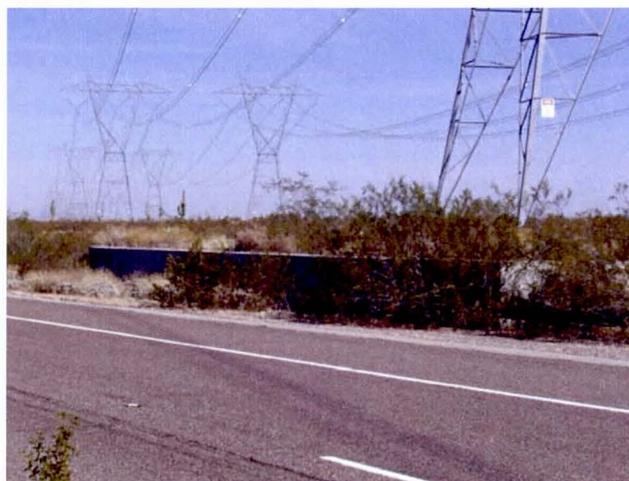


Photo 7-Concrete wall at SRP transmission tower

Other electric transmission facilities in the corridor include power lines operated by the Western Area Power Administration (WAPA), which cross Sun Valley Parkway

approximately ¼-mile south of the extension of Glendale Avenue and approximately ½-mile north of the Olive Avenue alignment, as shown in Photos 8 and 9, respectively.



Photo 8-WAPA power lines near crossing near Glendale Ave. (Extended)



Photo 9-WAPA power lines crossing near Olive Ave. (Extended)

6.3 TELEPHONE

Telephone service along existing Sun Valley Parkway is provided by Qwest. Qwest telephone lines are generally hung as understory on APS poles, although there are some underground lines to individual residences. As shown in Photo 3, there is an overhead Qwest line that crosses the road as understory to APS's 69 kV transmission line north of McDowell Road. The telephone line then goes underground and runs south back towards McDowell Road.

6.4 WATER

According to the Sun Valley Parkway construction plans, there is a 6" diameter water line on the west side of the road between a former fire station located approximately 500 ft south of Van Buren Street and the north side of the Van Buren Street intersection, where the line turns west. There is also a 1-1/4" diameter water line crossing Sun Valley Parkway on the south side of McDowell Road. No meter boxes, valve boxes, or fire hydrants that would locate this line were found in the field.

6.5 SEWER

There are no sanitary sewer lines crossing or installed in Sun Valley Parkway at this time.

6.6 FIBER OPTIC

AT&T has two fiber optic cables that cross Sun Valley Parkway approximately 830 ft south of the intersection with McDowell Road, as shown in Photo 10. Sprint has a fiber optic cable that crosses Sun Valley Parkway in the alignment of the Tonopah-Salome Highway, as shown in Photo 11.



Photo 10-AT&T Fiber Optic Cables south of McDowell Road

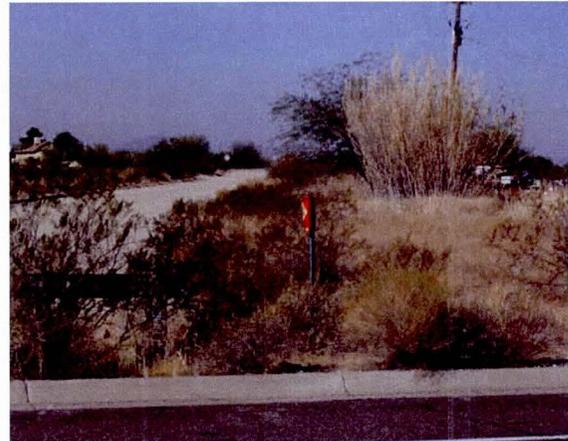


Photo 11-Sprint Fiber Optic Cable at Tonopah-Salome Highway

Beginning approximately $\frac{1}{4}$ -mile south of the Glendale Avenue alignment, at the WAPA power transmission lines shown in Photo 8, a fiber optic line belong to MCI crosses Sun Valley Parkway and follows the left-hand side of the road until the 243rd Avenue alignment, as shown in Photo 12. The fiber optic line continues north along the 243rd Avenue section line until Patton Road, where it turns east.

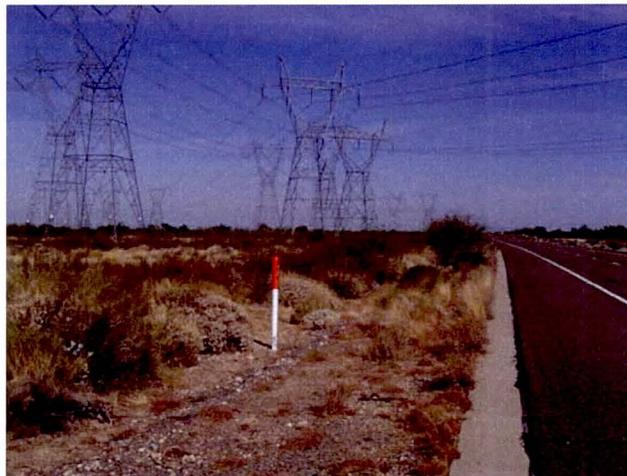


Photo 12-MCI fiber optic line along Sun Valley Parkway (looking north).

6.7 OTHER UTILITIES

When Sun Valley Parkway was constructed, pull boxes and conduits were installed at each median break for future traffic signals. A total of six pull boxes were installed at each median break, one in each median nose and one on each side of the road opposite the median, as shown in Photos 13 and 14.



Photo 13-Pull box on side of road



Photo 14-Pull box in median nose

7. ALTERNATIVE DEVELOPMENT AND EVALUATION

The alternative development for the Sun Valley Parkway corridor was divided into two segments. One is the existing Sun Valley Parkway, which extends from I-10 to the Beardsley Canal (187th Avenue) and the second is the proposed extension of Sun Valley Parkway from the east-west alignment north to US 60 and SR 74.

7.1 SUN VALLEY PARKWAY: I-10 TO BEARDSLEY CANAL

The existing section of Sun Valley Parkway is a limited access four-lane divided highway with right-of-way that varies from 110 feet to 150 feet. For the purpose of this study, it was determined that any alternative for this section of Sun Valley Parkway would use the existing roadway to the maximum extent possible. There are no physical constraints present that would prohibit widening the existing roadway. Therefore, the alternatives were limited to maintaining the existing centerline with added capacity, modifying the access control, and examining alternative intersection treatments. There was agreement among the PAC that the no-build scenario should not be considered, because the existing Sun Valley Parkway could not accommodate the projected growth along the corridor.

The existing section of Sun Valley Parkway between the Beardsley Canal and Loop 303 is fully developed as a six (6) lane urban arterial with raised median and auxiliary lanes at the major intersections. It was agreed that this section of Sun Valley Parkway would not be evaluated for widening or expansion since it is fully constructed as an urban principal arterial with three lanes in each direction with a raised median.

Widen Sun Valley Parkway

Based on the 2030 “full build” traffic forecasts and the results of the future base level of service analysis discussed in Chapter 3, one alternative that was examined was to widen Sun Valley Parkway and provide a six-lane facility. A six-lane facility would be consistent with MCDOT Planning Policy for a principal arterial urban roadway (e.g., 30,000-60,000 2-Way ADT per the April 2004 MCDOT Roadway Design Manual – Table 2.1) and with the vision of both the Town of Buckeye and City of Surprise for Sun Valley Parkway.

A new capacity analysis was conducted to document the level of service using the 2030 full build forecasts with a six lane Sun Valley Parkway. The assumptions for this alternative are as follows.

- Intersections are every mile at the section line streets
- Dual left turn lanes and a single right turn lane are provided on all Sun Valley Parkway approaches

- Crossroad approaches have four through lanes, single left turn lane (dual lanes if the peak hour volume is 250 or more), and a separate right turn lane

The results of the capacity analysis are shown in Table 7.1.

**Table 7.1 - 2030 Widen Sun Valley Parkway
Intersection Level of Service Summary**

Intersection/Approach	LOS	Delay (sec/veh)
Sun Valley Parkway & McDowell	F	166
Sun Valley Parkway & Thomas	F	128
Sun Valley Parkway & Indian School	F	186
Sun Valley Parkway & Camelback	E	64
Sun Valley Parkway & Bethany Home	E	77
Sun Valley Parkway & Glendale	C	27
Sun Valley Parkway & Northern	E	79
Sun Valley Parkway & Olive	F	175
Sun Valley Parkway & Peoria	F	100
Sun Valley Parkway & Cactus	F	141
Sun Valley Parkway & Waddell	E	58
Sun Valley Parkway & Greenway	F	101
Sun Valley Parkway & Bell	E	55

As can be seen from a comparison of Table 3.9 and Table 7.1, all the intersections show an improvement in average delay ranging from 44 seconds per vehicle to 203 seconds per vehicle. Seven intersections remain at level of service F, five improve to level of service E, and one improves to level of service C. However, even with three through lanes on Sun Valley Parkway and other turn lane modifications, 92 percent of the study intersections would operate at level of service E or F when access to Sun Valley Parkway is limited to one mile spacing. The disadvantage with one mile access and at grade intersections is that all the traffic using Sun Valley Parkway is concentrated at that single signalized location. As a result, many of the signalized intersections cannot accommodate the projected traffic at an acceptable level of service during the peak periods.

Traffic Interchanges

Other options were considered and discussed with the Project Advisory Committee. One option is to provide full grade separated traffic interchanges at one mile spacing with complete access control at those locations where at-grade intersections do not provide an

acceptable level of service. It was noted by the Consultant during Project Advisory Committee meetings that from a planning perspective, Grade Separated Interchanges (GSI) should be considered an option when the total intersection approach volume is 90,000-100,000 ADT. MCDOT Planning staff suggested that the right-of-way be preserved at key intersections (e.g., roadways that are identified as crossing the Hassayampa River); however, the Town of Buckeye and City of Surprise did not support this suggestion. The Project Advisory Committee members were not comfortable with the potential implementation of GSI's along Sun Valley Parkway because of the additional right-of-way required at the intersections (approximately 14 acres above the standard signalized intersection footprint), the added construction cost (approximately \$10-15 Million per interchange) and the interest in researching other intersection alternatives to accommodate high left turn volumes. The Project Advisory Committee member from MAG stated that the *I-10/Hassayampa Valley Roadway Framework Study* will look at a broader geographic area and address recommendations for future freeway and GSI locations other than Sun Valley Parkway. There was a consensus that GSI's along the Sun Valley Parkway will not be considered and that the *I-10/Hassayampa Valley Roadway Framework Study* would model Sun Valley Parkway as a high level parkway.

Half-Mile Access

Another option considered was to allow at-grade intersections at the half-mile point along with the signalized one-mile intersections. The concept would be to allow right in-right out, and left in, but no left out at the half mile point and no traffic signal. However, if a future traffic study could show justification for a traffic signal, a half-mile intersection could be modified to allow full access with a signal. A capacity analysis was conducted to test the impact on the one-mile signalized intersections if half-mile access is allowed. For this analysis, 20 percent of the east-west traffic volume at the one-mile intersections was assigned to each half-mile intersection to the north and to the south. The level of service summary is shown in Table 7.2. The result was that 46 percent of the mile intersections would operate at level of service E or F if half mile access is allowed.

The Project Advisory Committee members also expressed that they were not comfortable allowing a signalized intersection at the 1/2-mile crossroad locations because of their strong commitment to maintain a high level of access control on Sun Valley Parkway and requested that alternative methods to accommodate left turn movements be investigated.

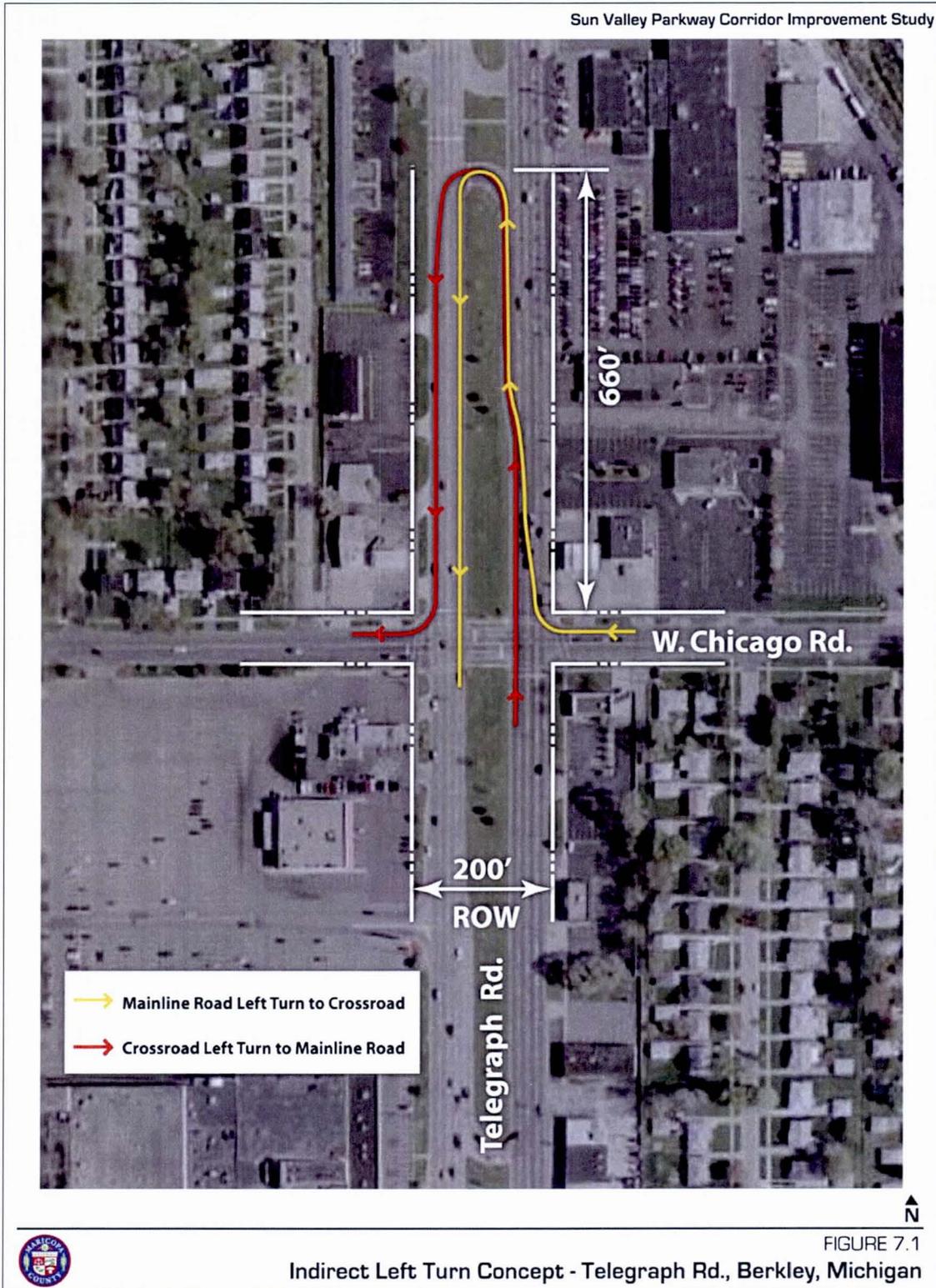
**Table 7.2 - 2030 Widen Sun Valley Parkway
with Half-Mile intersections - Level of Service Summary**

Intersection/Approach	LOS	Delay (sec/veh)
Sun Valley Parkway & McDowell	F	103
Sun Valley Parkway & Thomas	E	55
Sun Valley Parkway & Indian School	F	81
Sun Valley Parkway & Camelback	C	24
Sun Valley Parkway & Bethany Home	C	21
Sun Valley Parkway & Glendale	C	21
Sun Valley Parkway & Northern	E	65
Sun Valley Parkway & Olive	D	54
Sun Valley Parkway & Peoria	F	104
Sun Valley Parkway & Cactus	E	80
Sun Valley Parkway & Waddell	C	25
Sun Valley Parkway & Greenway	D	48
Sun Valley Parkway & Bell	C	33

Indirect Left Turns

Another option that was considered is an alternative intersection design known as indirect left turns. This is a concept that is used successfully at locations across the US, particularly in Michigan and Florida. The indirect left turn concept is depicted in Figure 7.1. With this alternative intersection design, left turns are not allowed at the major intersection, but are made approximately 660' beyond the intersection through a median opening that may or may not be signalized for opposing traffic. If the crossroad has a left turn phase and significant left turn volume, the indirect left turn concept could be used on the crossroad as well. The result is that the major intersections along the corridor operate as simple two phase traffic signals which maximizes the green time for the major street through movement.

The disadvantages with the indirect left turn concept are unfamiliarity in the Phoenix area, added through traffic at the major intersections especially when the left turn volumes are high, and added median breaks. Also a minimum median width of 60-ft minimum would be required to accommodate indirect left turns and existing Sun Valley Parkway has a median width of 16-ft, which would require complete reconstruction. The cost estimate for reconstructing Sun Valley Parkway to include indirect left turns is approximately \$6,500,000 per mile versus \$4,500,000 per mile for widening and installation of traditional signalized intersections. The cost estimates for both alternatives are included in Appendix F.



Some members of the Project Advisory Committee had first hand knowledge of indirect left turn operation and were very supportive of the concept. These members described the advantages as a 20-40% increase in intersection capacity because the signalized intersections are two-phase and are limited to the major mile roadways, a better control of vehicle platoons is realized, the concept can fit within a 200 foot right-of-way corridor, and access at the 1/2 mile roadways can be accommodated by aligning the turn around adjacent to it. The City of Surprise strongly supports the use of indirect left turns and they intend to implement them on all roadways functionally classified as parkways.

MCDOT is interested in investigating (in the future) other two-phased intersection configuration concepts that will improve the LOS at these intersections especially since the Project Advisory Committee members abandoned further discussions of GSI's. At this time MCDOT decided not to support a recommendation for the implementation of an indirect left turn concept for Sun Valley Parkway until further study and research can be conducted.

Access Control

"Access management is the systematic control of the location, spacing, design, and operation of driveways, median openings, interchanges, and street connections to a roadway. The purpose of access management is to provide vehicular access to land development in a manner that preserves the safety and efficiency of the transportation system."¹

Access management can be accomplished when the following principles are applied:

- Provide a specialized roadway system
- Limit direct access to major roadways
- Promote intersection hierarchy
- Locate signals to favor through movements
- Preserve the functional area of intersections and interchanges
- Limit the number of conflict points
- Separate conflict areas
- Remove turning vehicles from through traffic lanes
- Use non-traversable medians to manage left turn movements
- Provide a supporting street and circulation system

Access management is a useful tool to protect the integrity of a corridor and maximize its effectiveness for carrying through traffic. The original design and construction of Sun Valley Parkway allowed for intersection spacing at approximately one-mile intervals between I-10 and the Beardsley Canal (187th Avenue) except at locations where median breaks were provided at 1/4-mile north of Olive Avenue, 2,000 feet north of Peoria Avenue, 1,850 feet

¹ Access Management Manual, Transportation Research Board, 2003.

north of Cactus, 1,200 feet south of Union Hills, 300 feet west of 251st Avenue, 800 feet east of 243rd Avenue, 400 feet east of 219th Avenue, and at Roosevelt, ½ mile north of Van Buren.

Regardless of other improvements that are considered for Sun Valley Parkway in the future, MCDOT and the local jurisdictions intend to preserve a 200 foot right-of-way corridor and implement access control in order to provide maximum flexibility for future improvements. A 200 foot right-of-way will accommodate adjacent drainage facilities and auxiliary lanes (e. g., six lanes, dual left turn lanes and an exclusive right turn lane) at the intersections and provides the flexibility to accommodate the indirect left turn concept if desired. The 200 foot wide right-of-way preservation was discussed with the Project Advisory Committee and presented at the public meetings.

Access Control concepts were evaluated with the Project Advisory Committee and presented to the Public and Developer Community. Figure 7.2 presents guidelines for right-of-way preservation and access control. Figure 7.3 shows the access control guidelines for a typical one-mile section of Sun Valley Parkway. The functional area definition of 660 feet at an arterial intersection, 1,320 feet from an on-ramp to a freeway, and 990 feet from an off ramp from a freeway were recommended based upon data presented in the National Cooperative Highway Research Program (NCHRP) Synthesis 332. The NCHRP is administered by the National Research Board and sponsored by member departments of the American Association of State Highway and Transportation Officials (AASHTO) in cooperation with the Federal Highway Administration (FHWA). The Project Advisory Committee's intent was for access onto Sun Valley Parkway to occur at the crossroads. The Town of Buckeye has been directing adjacent development of this intent. The Town has been encouraging adjacent development to utilize a reverse frontage road concept known as a backage road. With this concept, developments access the crossroads a minimum of 660 feet from Sun Valley Parkway. The Project Advisory Committee concurred with the recommendations as there was a strong consensus to maintain a high level of access control along Sun Valley Parkway. The application of the access control guidelines for the entire Sun Valley Parkway corridor is in a separate document titled Recommended Proposed Right-of-Way in Appendix A.

In addition, MCDOT Management has informed the Transportation Advisory Board (TAB) of the intent for Sun Valley Parkway to be a high access controlled facility. At the May 2006 TAB meeting, MCDOT Management reminded the TAB that Bell Road was intended to be a high capacity east-west corridor, but the lack of access control has drastically reduced the capacity. An example of the lack of access control along Bell Road within the study limits is documented in Chapter 2, Table 2.4 where intersections and accesses directly onto Bell Road are more closely spaced than the recommendations proposed for Sun Valley Parkway in Figure 7.2.

Figure 7.2 - Guidelines for Right-of-Way Protection and Access Control

1. A right-of-way width of 200 feet, 100 feet each side of centerline, shall be preserved for future improvements on Sun Valley Parkway.
2. Full access onto and off of Sun Valley Parkway will be allowed at the section line roadways.
3. Left-In, Right In, and Right Out access to/from Sun Valley Parkway will be allowed at the mid-section mile roadways.
4. Left-Out access onto Sun Valley Parkway will not be allowed at the mid-section line roadway.
5. No access will be allowed on or off Sun Valley Parkway within 660 feet of a section line roadway right-of-way line.
6. No access will be allowed onto Sun Valley Parkway within 660 feet on either side of the mid-section line roadway right-of-way line.
7. No access will be allowed onto the new Sun Valley Parkway Extension (approximately 251st Avenue) within 660 feet from the proposed Sun Valley Parkway north right-of-way line.
8. No access will be allowed onto a section line roadway within 660 feet of the proposed Sun Valley Parkway right-of-way lines.
9. No access will be allowed onto a mid-section line roadway within 660 feet of the proposed Sun Valley Parkway right-of-way lines.
10. At the discretion of the Maricopa County Department of Transportation, a maximum of one (1) Right-In and/or Right-Out access may be permitted between the no access zone described in Items 5 and 6 above. An exclusive right turn lane is required at all allowed Right-In access locations.
11. No access will be allowed onto Sun Valley Parkway from the I-10 westbound off ramp curb return for a distance of 990 feet north.
12. No access will be allowed onto Sun Valley Parkway from the I-10 westbound on ramp from the beginning of the right turn lane taper for a distance of 1320 feet north.



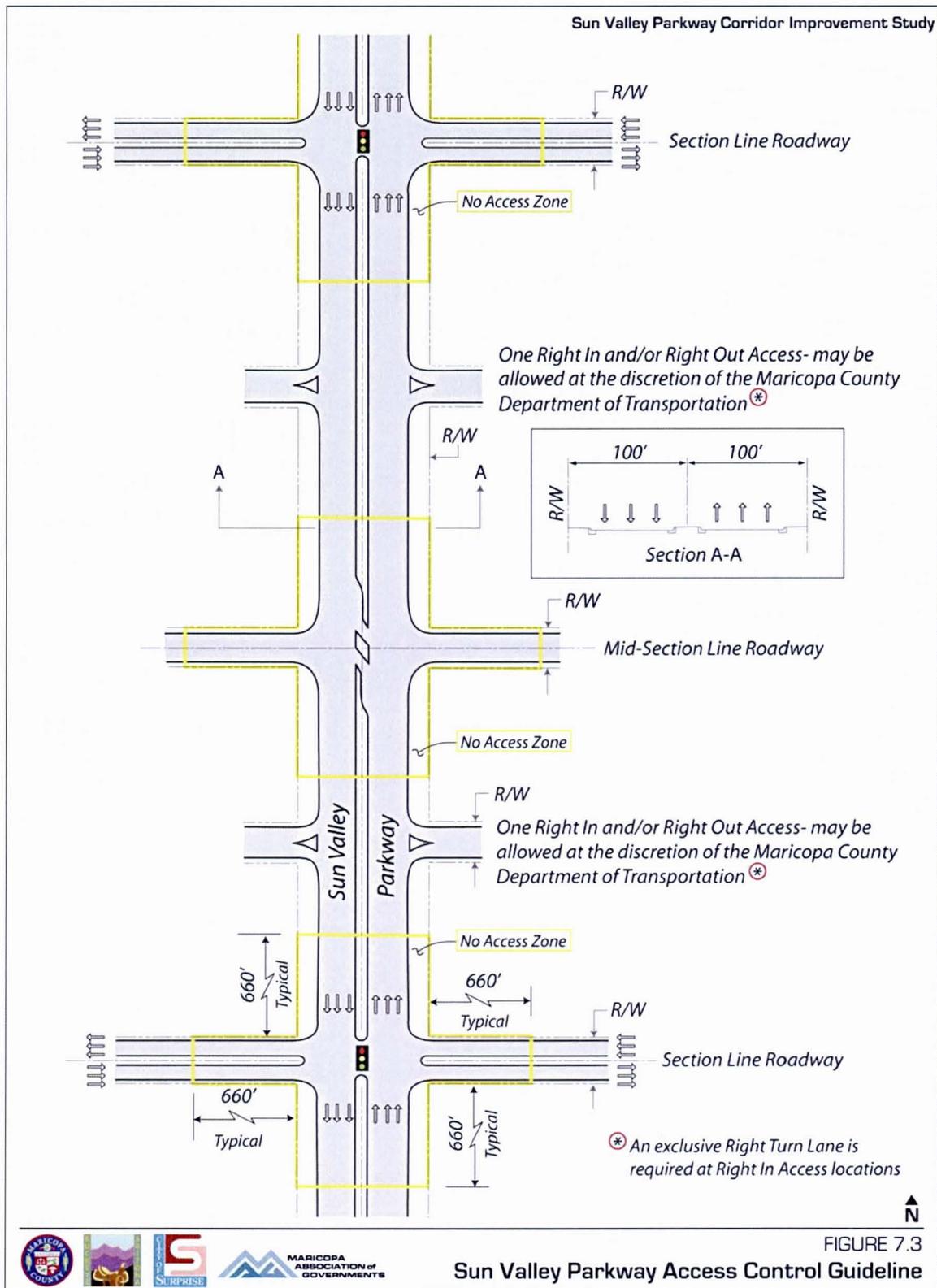


FIGURE 7.3
Sun Valley Parkway Access Control Guideline

7.2 SUN VALLEY PARKWAY: NORTHERN EXTENSION

A number of constraints exist in the area north of the east-west section of Sun Valley Parkway. The constraints were taken into consideration when conceptual alternatives were being identified and aided with the selecting of three alternatives considered for evaluation. These constraints are described below.

Constraints

A number of constraints exist in the area north of the east-west section of Sun Valley Parkway.

1. The proposed Wickenburg Bypass-US 60-SR 74 traffic interchange near the junction of State Route 74 (SR 74) and US 60. This interchange is still in development, but current concept plans show it to be over two miles long between outlying ramp termini. The Western Corridor was located a mile away from the proposed interchange to comply with ADOT and FHWA requirements.
2. The Morristown Elementary School. Located on the northwest corner of the intersection of Castle Hot Springs Road and Rockaway Hills Drive, removal or relocation of the school is not considered to be feasible.
3. The Morristown Cemetery. Located on Castle Hot Springs Road northeast of the elementary school, having a cemetery in a roadway corridor would definitely be considered a "fatal flaw." The process of relocating graves is long and involved and should be avoided.
4. The Morristown Overpass. Between 75th Avenue in Peoria and Morristown, the Burlington Northern Santa Fe Railroad (BNSF) tracks are on the north side of US 60 when traveling towards Wickenburg. At the Morristown Overpass, US 60 crosses the tracks on two grade-separation structures such that when continuing towards Wickenburg the tracks are on the south side of US 60. The length required for US 60 to develop the elevation to cross the railroad tracks and return to grade is approximately one mile from beginning to end. Reconstructing the Morristown Overpass as a part of corridor development was considered to be too costly.
5. A former Maricopa County landfill located north of the Morristown Overpass. Environmental requirements for removing the landfill would be formidable.
6. Existing subdivisions:
 - a. The Desert Oasis Mobile Home Park on US 60 just east of 243rd Avenue (extended).
 - b. Circle City, a 130-acre subdivision on US 60 between 243rd Avenue (extended) and 247th Avenue (extended), with 170 homes.

- c. Patton Place, a multi-phase subdivision at the northwest corner of the intersection of 243rd Avenue and Patton Avenue, much of which has been constructed in the last two years.
- d. Peakview Estates, a subdivision bounded by 235th Avenue on the west, 227th Avenue on the east, Dixileta Drive on the north and Patton Road on the south. At time of this report, there was no construction west of 231st Avenue.

Removal of all or part of an existing subdivision would incur public opposition and heavy right-of-way costs and should be avoided if possible.

7. Planned developments:

- a. Broadstone Ranch, a large development between 251st Avenue on the west, US 60 on the east, Black Mountain Road on the north and Dove Valley Road on the south.
- b. Spurlock Ranch, a large development south of Happy Valley Road and west of 259th Avenue in Buckeye corporate limits. The Western Corridor was located away from arterial streets proposed for this development.
- c. Sun City Festival, a development south of the CAP Canal and west of 259th Avenue in Buckeye corporate limits. The Western Corridor was located away from arterial streets proposed for this development.
- d. Surprise Foothills, located south of the CAP Canal between 243rd Avenue and 233rd Avenue.

Planned developments allow more latitude for future roadway development and so are not considered as critical as existing subdivisions.

8. Existing Utilities and Other Constraints. Existing utilities include water company well sites, electric power substations, electric power transmission lines, and the CAP Canal. The well sites and the substations do not necessarily have to be excluded from a corridor, although they do reduce alignment options within the corridor itself.

The CAP Canal will have to be bridged by all three corridors with a structure long enough to include the maintenance roads on each side of the canal. A right angle crossing is recommended to minimize structure cost.

The electric power transmission line crosses all three corridors. Final alignments will have to avoid transmission line towers and will be subject to landscaping and drainage restrictions.

There is an existing borrow pit located just west of the Morristown Overpass, considered to be a minor constraint to corridor development.

Description of the Corridors

The three corridors selected for evaluation are shown in Figure 7.4 and described below. The constraints previously described are also included on Figure 7.4.

Western Corridor

The center of the Western Corridor starts at Sun Valley Parkway and 249th Avenue (extended), ¼ mile east of the 251st Avenue section line. The center of the corridor alignment continues north, crossing the CAP Canal at a right angle, until approximately ½ mile north of Pinnacle Peak Road, where it begins a reverse curve to the left, then to the right, ending approximately ½ mile south of Patton Road and ¼ mile west of the intersection of Patton Road and 251st Avenue.

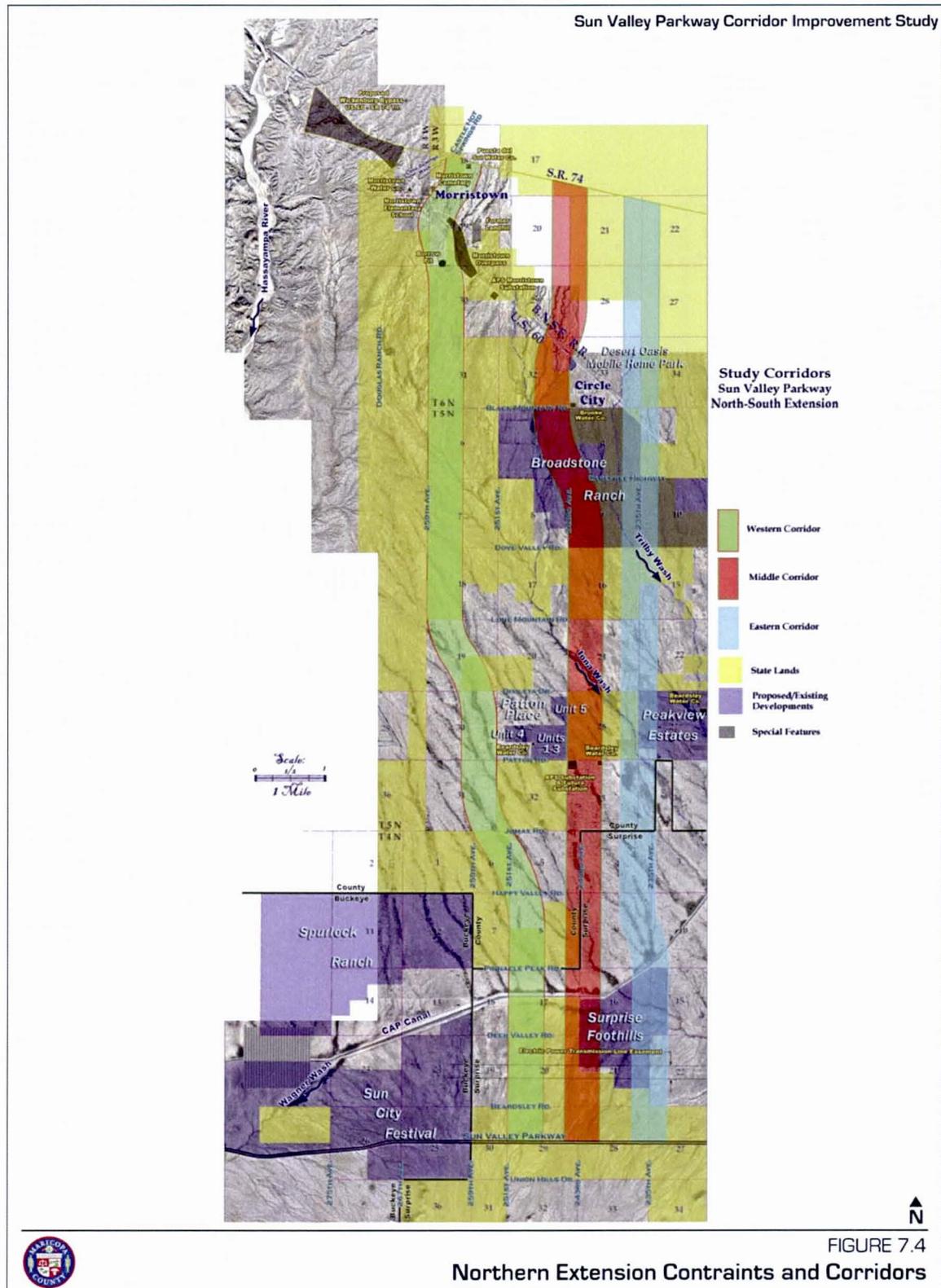
The center of the Western Corridor continues north on an alignment ¼ mile west of 251st Avenue until approximately ½ mile south of Dixileta Drive where it begins another reverse curve to the left, then to the right, ending approximately ¼ mile north of Lone Mountain Road. At this point the center of the corridor is at 257th Avenue, ¼ mile east of 259th Avenue (extended), which is also the range line between Range 4 West and Range 3 West.

The center of the Western Corridor continues north along the 257th Avenue alignment approximately 4.5 miles until approximately one mile south of US 60, it curves to the left to avoid the Morristown Overpass, then curves back to the right to avoid the Morristown Elementary School and the Morristown Cemetery, ending at SR 74 approximately 700 feet east of the SR 74 intersection with Castle Hot Springs Road.

Middle Corridor

The center of the middle corridor begins at Sun Valley Parkway approximately 300 ft to the east of the west quarter corner of Section 28, Township 4 North, Range 3 West, or approximately 300 ft east of 243rd Avenue, extended. The alignment continues north and crosses the CAP Canal at a right angle.

On the north side of the Jomax Road township line, the center of the Middle Corridor alignment is ¼ mile from the west section line of Section 33, T4N, and R3W, such that the corridor limits are 239th Avenue on the east and 243rd Avenue on the west. That alignment continues north four miles to Dove Valley Road where it begins a two-mile long reverse curve that ends at Black Mountain Road. The reverse curve is provided in order to avoid passing through Circle City. At Black Mountain Road, then, the center of the corridor is at 247th Avenue.



Approximately 1/2 mile north of Black Mountain Road, the corridor curves to the east, crosses US 60 and the Burlington Northern Santa Fe (BNSF) Railway tracks, and then curves west to line up with 243rd Avenue (extended) approximately 1/2 mile north of US 60. The alignment continues along the 243rd Avenue section line to its end at SR 74.

Eastern Corridor

Beginning at Sun Valley Parkway and east quarter corner of Section 28, Township 4 North, Range 3 West (235th Avenue, extended), the center of the corridor runs north along the section line 2.5 miles to the Pinnacle Peak Road alignment, where it turns slightly to the west to cross the Central Arizona Project (CAP) Canal. The alignment continues to the north northwest and then reverses to due north at the Happy Valley Road alignment. At this point the center of the corridor is approximately 1000 ft west of the east section line of Section 4, T4N, and R3W.

Jomax Road is a township line, with an offset of sections to the north of approximately 1000 ft to the west of sections to the south. Therefore, at Jomax Road, the center of the corridor lines up with the east line of Section 33, T5N, and R3W. The center of the Eastern Corridor stays on section line (235th Avenue) from Jomax Road to its end at SR 74.

Evaluation Criteria

In order to evaluate the three corridors, a number of criteria were established.

Engineering Criteria

- At-grade connection with US 60 and SR 74
- Interchange at US 60 and SR 74
- Relative earthwork balance
- Major drainage requirements
- Potential utility relocations

Environmental Criteria

- Biological resources
- Hazardous Materials
- 4f properties
- Recorded cultural sites

Traffic/Transportation Planning Criteria

- Traffic volume
- Compatibility with City of Surprise transportation plan
- Compatibility with Town of Buckeye transportation plan

Socioeconomic Criteria

- Impact on State land
- Impact to improved properties
- Impact to proposed developments
- Opinion from public meetings

Cost

- Relative cost
- Benefit/cost ratio

Comparison of the Corridor Alternatives

a. At-Grade Connection with US 60 and SR 74

Because the Middle and Eastern Corridors are south of the Morristown Overpass, the BNSF railroad tracks are north of US 60, allowing direct at-grade connections to US 60 that do not impact the railroad tracks. The Western Corridor, however, is north of the Morristown Overpass, placing the railroad tracks between existing Sun Valley Parkway and US 60. The distance between the tracks and US 60 is approximately 400 feet, not sufficient to bridge the tracks and return to US 60 at grade. Therefore, only feasible at-grade connection to US 60 by the Western Corridor is via an at-grade crossing of the railroad tracks. There is an existing at-grade crossing of the tracks at Gates Road. It is not likely that either BNSF or the Arizona Corporation Commission would support another at-grade railroad crossing so close to an existing one, requiring closing of the Gates Road crossing in favor of a new one in the Western Corridor. For that reason, the Western Corridor has a larger impact on an at-grade connection with US 60 than the other two corridors.

There are no impediments to an at-grade crossing with SR 74 for any of the three corridors, other than a minor realignment of Castle Hot Springs Road for the Western Corridor alternative. This realignment was not considered sufficient to rate the Western Corridor lower than the other two corridors.

b. Interchange with US 60 and SR 74

A grade-separated traffic interchange is feasible for all three corridors. The interchange at US 60 on the Western Corridor would be a diamond configuration, with separate grade separation structures over the BNSF railroad tracks and US 60. Construction of the entrance and exit ramps at US 60 would require relocation of a solid waste transfer station and minor street realignments to maintain access to existing properties.

The interchanges at the Middle and Eastern Corridors would be configured as partial cloverleaf interchanges because the railroad tracks are too close to US 60 for either a standard diamond interchange or a single-point urban interchange (SPUI). The partial cloverleaf configuration requires two signalized intersections on US 60 spaced approximately ¼-mile apart.

There are advantages and disadvantages to each interchange configuration but at this level of analysis the differences tend to cancel each other out. Since all the interchanges are reasonably feasible, they are all rated equally.

c. *Relative Earthwork Balance*

Based on USGS topographic maps, it appears that the amount of borrow material required decreases from west to east. There is less relative relief along the Western Corridor than the other two corridors, which provides less opportunity for cuts that would balance fills. Between the other two corridors, the Middle Corridor appears to require more borrow than the Eastern Corridor. Accordingly, with respect to relative earthwork balance, the corridors are rated thus: Western - most borrow; Middle - medium borrow; Eastern - least borrow.

d. *Major Drainage Requirements*

The major drainage features of the study area include the Hassayampa River and Trilby Wash. The Hassayampa River flows from north to south; Trilby Wash (and major tributaries such as Iona Wash) flow generally from northwest to southeast. The drainage divide separating the Hassayampa River basin from the Trilby Wash basin is approximately one mile to the west of the Western Corridor. Therefore, the drainage area of the Trilby Wash basin increases from west to east.

Because the drainage area increases from west to east, the area drainage area intercepted by the three corridors also increases from west to east. Since peak flow from a drainage basin is directly related to its area, the peak flows intercepted by the three corridors increase from west to east. In terms of peak flow intercepted, the corridors are ranked as follows: Western - lowest peak flows; Middle - intermediate peak flows; Eastern - largest peak flows.

The Middle Corridor intercepts fewer major washes, 14, than the Western Corridor (16) or the Eastern Corridor (17). However, the total of all peak flows intercepted by the corridors still ranks from lowest to highest going from west to east.

e. *Impact on Utilities*

All three corridors would require some relocation of existing utilities such as electric power, telephone, gas, and fiber optic that are currently located in public right-of-

way on dedicated streets. At this level of investigation it appears that the relocations required would be nearly the same for all three corridors. However, there is a difference in the possible impact the corridors might have on existing utilities on private property. Or, more correctly, there is a difference in the impact that existing private utilities on private land have on the three corridors.

There are two private utility properties in the Middle Corridor: an APS electric power substation on the southeast corner of Patton Road and 243rd Avenue and a Beardsley Water Company well and storage tank site on the southwest corner of Patton Road and 239th Avenue. There is one private utility property in the Western Corridor: a Puesta del Sol Water Company well site approximately 1,000 feet southeast of the intersection of SR 74 and Castle Hot Springs Road. There are no private utility properties in the Eastern Corridor.

In effect, these private utilities limit the options for roadway alignments in the affected corridors. The presence of the two private utilities on Patton Road effectively removes the area occupied by those utilities from consideration as a possible roadway alignment within the Middle Corridor since it would be less costly and less disruptive to avoid the utility sites than remove them. The same logic applies to the well site in the Western Corridor. The order of impact of utilities on the corridors, therefore, is as follows: Middle Corridor - most impact; Western Corridor - medium impact; Eastern Corridor - no impact.

f. *Biological Resources*

There appear to be no endangered species or critical habitat within any of the three Corridors. Therefore, the corridors have no impact on biological resources.

g. *Hazardous Materials*

A Phase 1 investigation of hazardous materials within the study area show no hazardous material sites or spills reported.

h. *4f Properties*

There are no 4f properties such as parks within the study area.

i. *Recorded Cultural Sites*

A literature survey of recorded cultural sites in the study area showed that there are three such sites in the Western Corridor, one in the Middle Corridor, and one in the Eastern Corridor.

Similar to private utility sites, the presence of recorded cultural sites limits the alignment options available in the corridors since under most circumstances it would

be preferable to avoid the sites rather than have to undertake documentation and recovery operations. Therefore, recorded cultural sites have the most impact in the Western Corridor and moderate impact in the Middle and Eastern Corridors.

j. Traffic Volume

Travel forecast model runs were conducted by MCDOT using the enhanced socioeconomic data to compare the north extension alternatives. The model run results are shown on Figures 7.5, 7.6, 7.7 and 7.8 for the No Build, Western Corridor, Middle Corridor and Eastern Corridor, respectively. The results indicate that the traffic volumes do not differ significantly for any of the three corridor alternatives. The designation as a parkway with higher capacity did not attract significant volume to the corridor either. In addition screen lines were examined to compare the alternatives and again there was no significant difference. The impact on traffic volumes, therefore, is low for all three alternatives.

k. Compatibility with Surprise Transportation Plan

The 2030 Roadway Plan prepared by the City of Surprise shows future roadways in all three corridors but only one designated as a parkway. The parkway alignment corresponds in the most part with the Western Corridor, therefore the Western Corridor is considered as “compatible by location and type” with the City’s transportation plan. The other two corridors are not parkway locations per the City’s plan, therefore they are considered as “compatible by location, but not by type.”

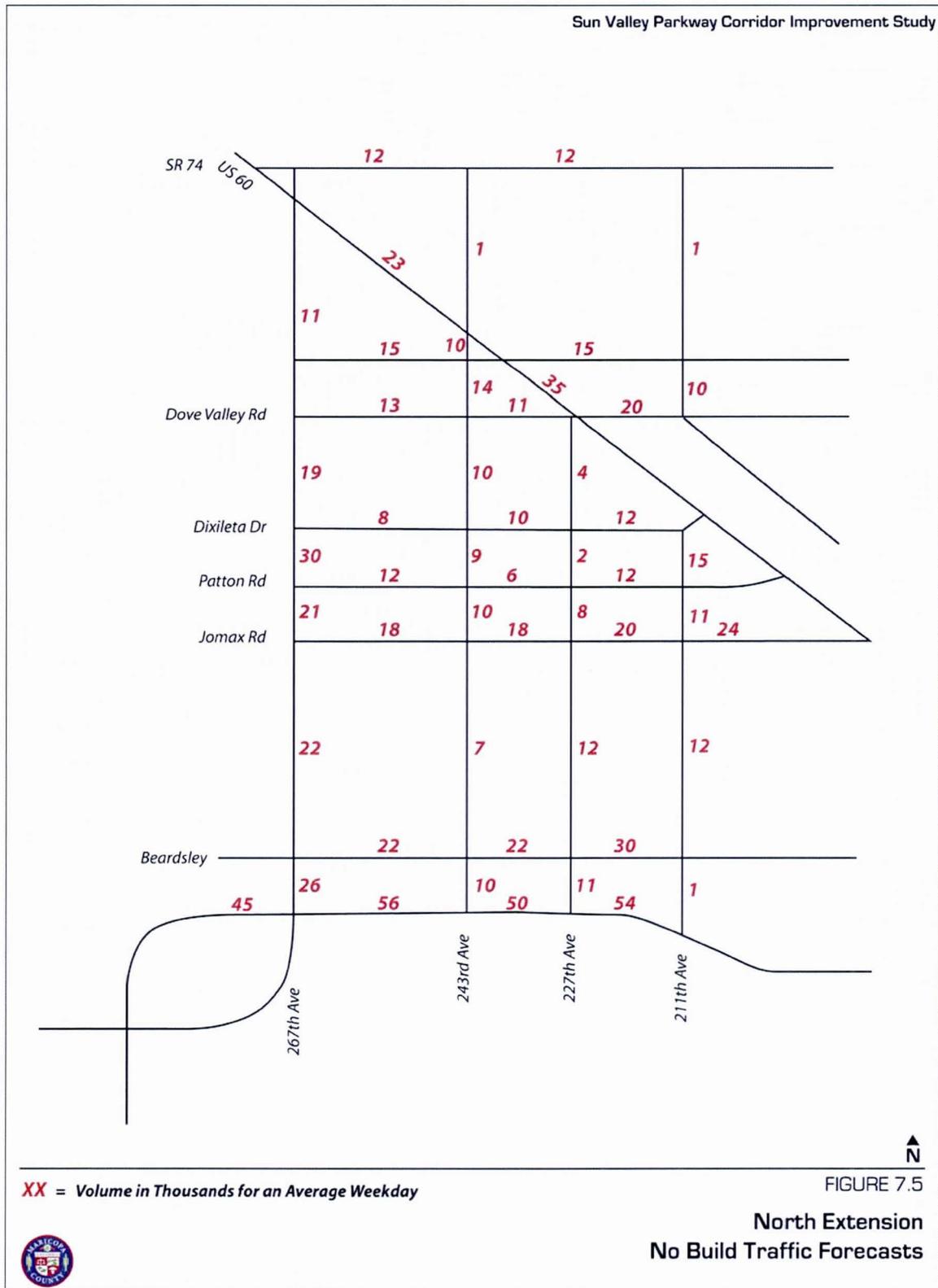
l. Compatibility with Buckeye Transportation Plan

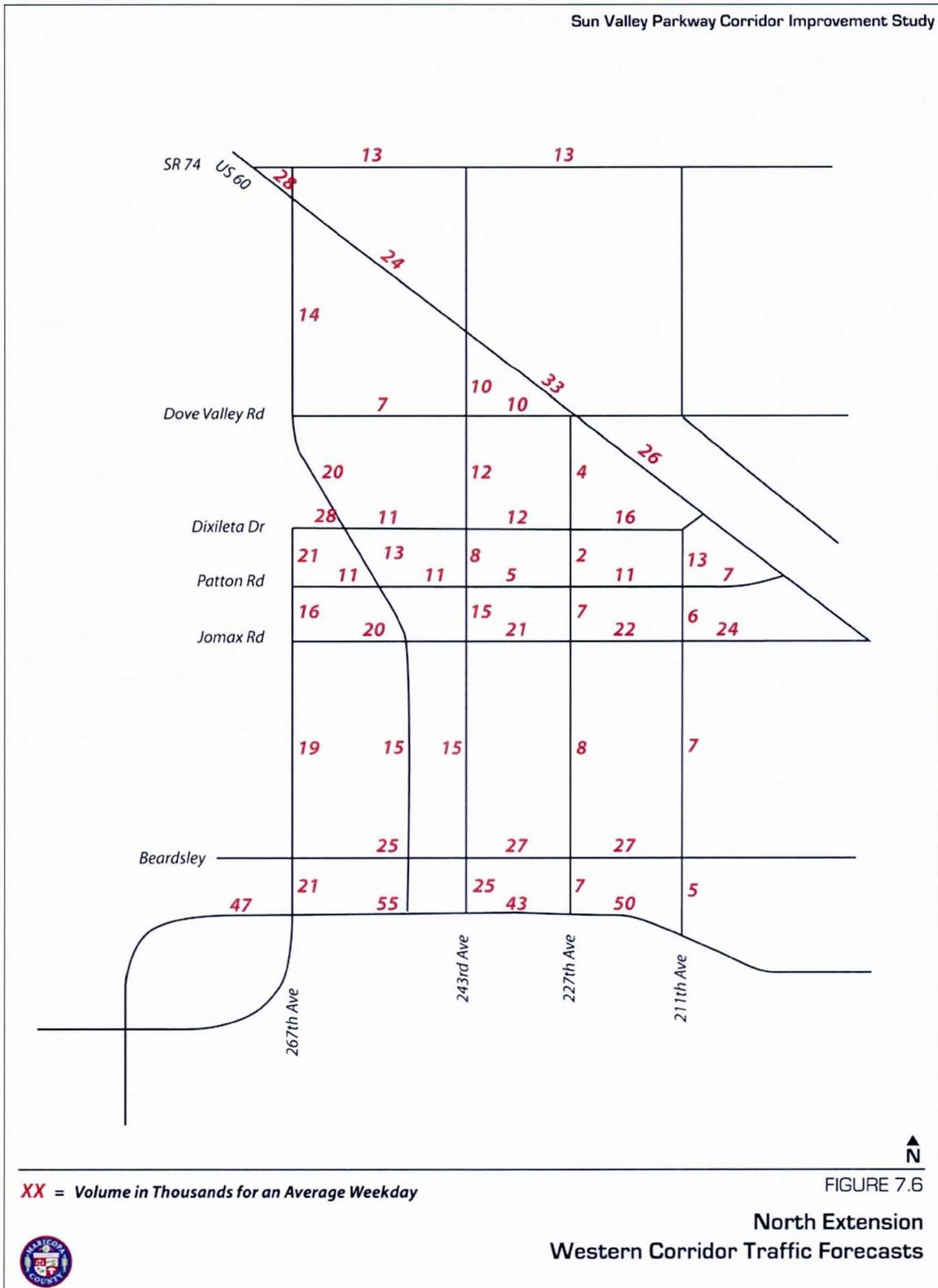
The Town of Buckeye requested that MCDOT locate the northern extension study area outside the Town of Buckeye corporate limits because it was not considered compatible with Town development plans. The three study corridors, therefore, have no impact on Town of Buckeye transportation plans.

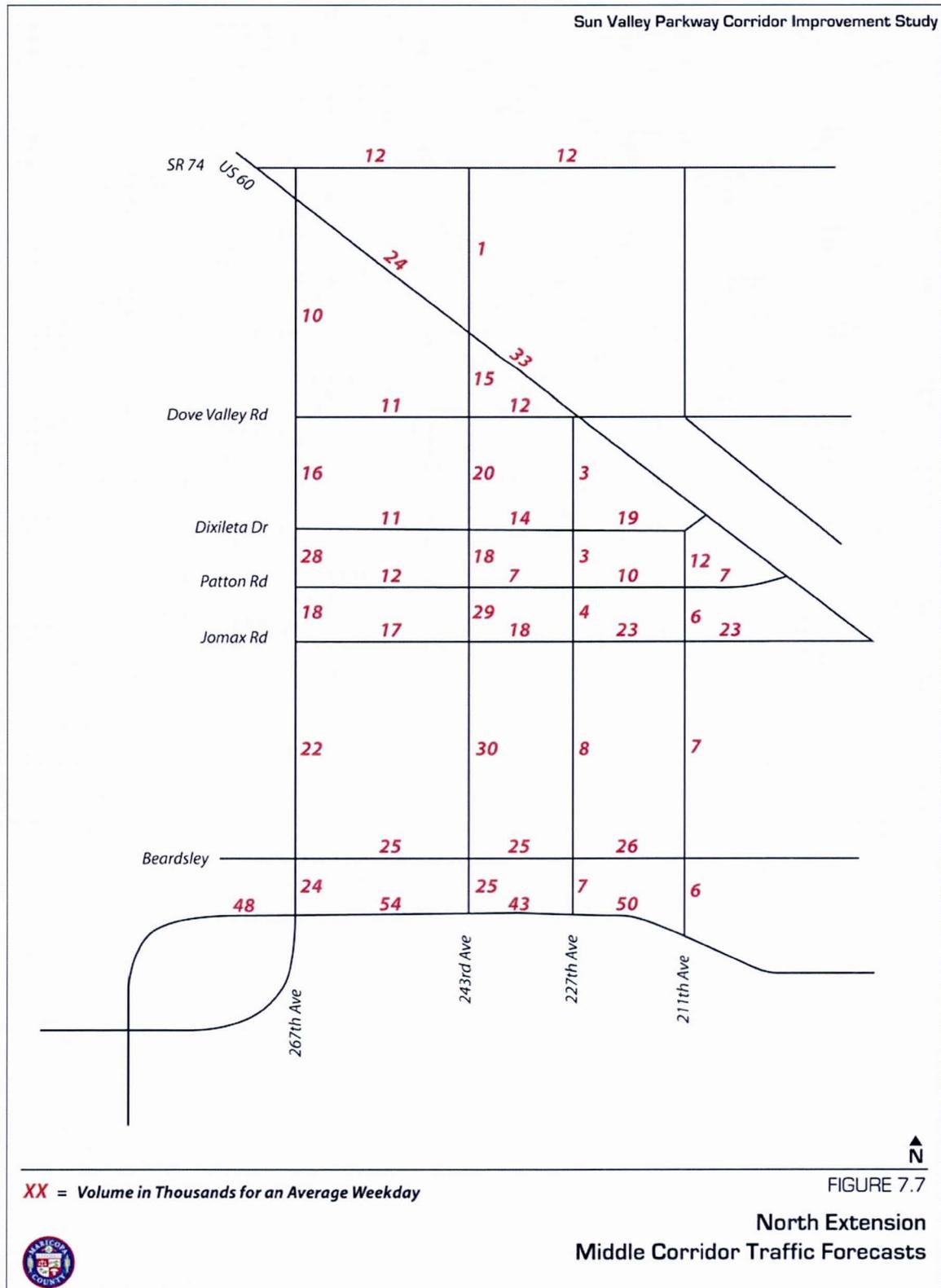
m. Impact on State Land

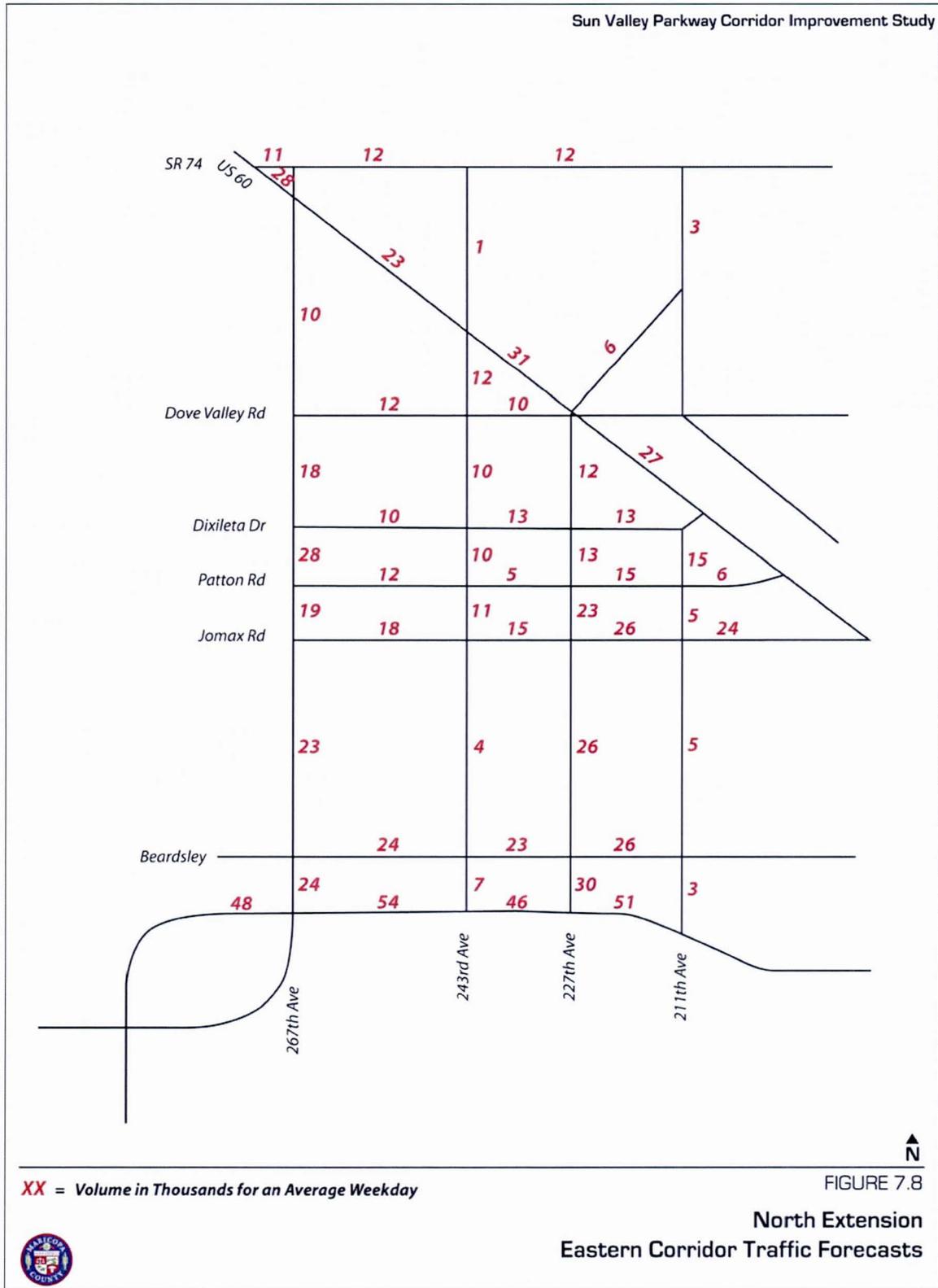
Sixty percent (60%) of the land in the Western Corridor is State of Arizona trust land. That figure diminishes eastward, with a state land percentage of total corridor area of 42% for the Middle Corridor and 33% for the Eastern Corridor.

A high percentage of state land in a corridor is not necessarily negative. One of the advantages to state land is the absence of improvements that would have to be acquired and removed. Also, the size of state land parcels sold to developers is often conducive to constructing long segments of roadway, something not often attainable on developments of private land. In terms of impact, however, the Western Corridor has the largest impact on state land and vice versa.









n. *Impact to Improved Properties*

Based on aerial photographs taken in 2005, there are 95 improved properties in the Western Corridor, 61 improved properties in the Middle Corridor, and 15 improved properties in the Eastern Corridor. ("Improved" means that a parcel has a house, garage, or other building on it. An improved parcel partially inside the corridor was counted even if the improvement on that parcel was outside the corridor boundary.) While these numbers do not reflect the actual number of improved properties to be acquired for a specific roadway alignment, they are useful as a relative measure of the corridors' potential right-of-way costs.

o. *Impact to Proposed Developments*

As of December 2005, there were three developments in the planning stage or partially under construction that would be impacted by the proposed corridors: Broadstone Ranch, Surprise Foothills, and Peakview Estates. The Western Corridor is outside all three developments, the Middle Corridor passes through Broadstone Ranch and Surprise Foothills, and the Eastern Corridor passes through all three. The Eastern Corridor has the greatest impact on these developments with a total "footprint" of 870 acres, followed by the Middle Corridor with 640 acres. There is no land currently under development in the Western Corridor.

p. *Opinion from Public Meetings*

A total of three meetings were held in Buckeye and Surprise to present the proposed Sun Valley Parkway northern extension corridors to the public. There was no comment regarding the northern extension from attendees at the Buckeye meetings. People attending the Surprise meetings generally had a negative opinion of the Middle Corridor and a favorable opinion of the Western Corridor. There were few comments, if any, about the Eastern Corridor.

The City of Surprise is also in favor of the Western Corridor since it more closely matches the Surprise 2030 Roadway Plan.

q. *Relative Cost*

Cost estimates were prepared for all three corridor alternatives, based on a 6-lane roadway with a raised, landscaped median. Roadway costs were prepared on a per-mile basis since the level of study involved did not permit a more detailed estimate of roadway excavation and embankment quantities and drainage facilities.

Each alternative cost estimate assumes a full traffic interchange at US 60 and an at-grade intersection at SR 74. Structure costs include bridges over the Central Arizona Project (CAP) Canal, the BNSF railroad tracks, and US 60. In the case of the Middle and Eastern Corridors, one structure spans both the railroad tracks and US 60,

similar to the existing Patriot Bridge on the Estrella Roadway (Loop 303). Two structures are needed at the Western Corridor-US 60 interchange.

The Western Corridor is the most expensive of the three at \$161.4 million, followed by the Middle Corridor at \$159.7 million and the Eastern Corridor at \$157.8 million.

r. Benefit/Cost Ratio

MCDOT calculated a benefit/cost ratio (B/C) for each alternative, as follows:

Western Corridor:	B/C =	10.23
Middle Corridor:	B/C =	10.68
Eastern Corridor:	B/C =	8.68

The B/C difference between the Western and Middle Corridors is considered to be minor.

A summary of the evaluation can be found in Table 7.3.

Table 7.3 - Evaluation Matrix

Criterion	No Build – Alt. 1	West Corridor—Alt 2.	Middle Corridor—Alt. 3	East Corridor— Alt. 4
Earthwork Balance	No earthwork	Large borrow job	Medium borrow job	Small borrow job
Connection to US 60	No connection	No feasible direct connection	Direct connection feasible	Direct connection feasible
Connection to SR 74	No connection	Feasible but requires relocation of Castle Hot Springs Rd. intersection	Feasible	Feasible
Utility Relocations	No impact	Minor utility relocations	Minor utility relocations and possible impact to APS substation	Minor utility relocations
Major Drainage Requirements	No requirements	66 washes crossed	63 washes crossed	64 washes crossed
Construction Cost (Sun Valley Parkway to SR 74)	No cost	\$56 million	\$55 million	\$54 million
State Land Impact	No impact	2726 ac. state land = 60% of corridor area	1834 ac. state land = 42% of corridor area	1395 ac. state land = 33% of corridor area
Compatibility with Surprise 2030 Roadway Plan	Not compatible	Compatible by location and type	Compatible by location but not by type	Compatible by location but not by type
Compatibility with Buckeye Transportation Goals	Compatible	Compatible	Compatible	Compatible
Compatibility with Future Development	No impact	0 acres under development	640 acres under development	468 acres under development
Intersections with Major Cross Streets	No intersections	3 of 13 mile street intersections on skew	2 of 13 mile street intersections on skew	1 of 13 mile street intersections on skew
Socioeconomic	No impact	95 improved properties in corridor	61 improved properties in corridor	15 improved properties in corridor
Recorded Cultural Sites	No impact	3 sites in corridor	1 site in corridor	1 site in corridor
Biological Resources	No impact	No impact to federal endangered species; impact to state sensitive species not known	No impact to federal endangered species; impact to state sensitive species not known	No impact to federal endangered species; impact to state sensitive species not known
Hazardous Materials	No impact	No hazmat sites in corridor	No hazmat sites in corridor	No hazmat sites in corridor
4f Properties Impacted	No impact	No 4f properties in corridor	No 4f properties in corridor	No 4f properties in corridor

8. RECOMMENDATIONS

The previous section presented the results of the Sun Valley Parkway corridor analysis for the two segments. This section describes the recommended actions for corridor implementation.

8.1 OVERALL DESIGN CRITERIA

The major design features recommended for this corridor are discussed below and summarized in Table 8-1. It should be emphasized that these design criteria are for urban roadway sections, and that they apply to the recommended cross-section of Sun Valley Parkway. Interim construction within the corridor may not include all of these elements. Any design feature not shown should follow guidelines established in the MCDOT Roadway Design Manual.

Typical Section

- The proposed typical section for the Sun Valley Parkway corridor will contain six travel lanes in the areas warranted by traffic projections.

Design Year

- The design year will be 2026.

Design Vehicle

- The specified design vehicle is WB-50.

Design Speed

- The specified design speed is 60 miles per hour (urban). It is noted that the City of Surprise will seek to design their parkways with a 65 miles per hour design speed.

Pavement Design Life

- The pavement is to be designed for a 20-year service life.

Number of Lanes

- A minimum of six through lanes should be provided where required by traffic volumes.

Roadway Width

The proposed pavement width is at least 101 feet from face-of-curb to face-of-curb, in order to provide six travel lanes with a raised median. For the north extension of Sun Valley Parkway within the City of Surprise, however, a 140-foot roadway width is proposed, to accommodate six travel lanes and a 60 foot wide median. (See Figure 8.2 for preliminary typical sections.)

Table 8.1 - Major Design Features

Description	Sun Valley Parkway
Standard Typical Section	Urban Principal Arterial
Design Year	2026
Design Vehicle	WB-50
Pavement Design Life	20 years
Number of Lanes	Ultimate: 6 through lanes (Interim: may use existing 4 lanes on existing Sun Valley Parkway and 4 lanes if 6 are not needed to meet travel demand on the north extension of Sun Valley Parkway)
Roadway Width	101 feet minimum
Drainage (Pavement)	10-year event
Drainage (Off site)	Culverts are to be designed to convey at least the 50-year offsite peak discharge with no flow crossing over the roadway. Additionally, the flow depth over the roadway shall be limited to 0.5 feet for the 100-year peak flow.
Standard Right-of-Way Requirements	200 feet
Lane Widths	12 feet
Clear Zone Width	30 feet desirable
Median	14-ft minimum
Maximum Superelevation Rate	New Construction $E_{max}=4\%$ (urban) Widen upon Existing $E_{max}=Existing$
Maximum Gradient	5%
Minimum Radius @ normal crown	New Construction $R=10,000$ feet Widen upon Existing $R=Existing$
Deceleration Lanes	Per MCDOT Roadway Design Manual Section 6.1.

Intersection Geometry

Intersection layout and geometry are based on allowing the WB-50 design vehicle to maneuver within its own lane. Median nose geometry should be based on this design vehicle.

Drainage

In accordance with MCDOT policy, any roadway drainage appurtenances will a design based upon the 10-year design storm.

Right-of-Way Requirements

The minimum right-of-way normal required for a MCDOT urban principal arterial is 130 feet. The design guidelines for a MAG urban Road of Regional Significance call for a 140 foot right-of-way width. However, this project calls for a minimum right-of-way width of 200 foot to accommodate drainage culvert extensions, adjacent ditch/channels and auxiliary lanes at the intersections.

Lane Widths

The preferred lane width is 12 feet, measured from the face-of-curb or the adjacent travel lane. This width is applicable to all vehicle travel lanes.

Clear Zone Width

If the typical section includes vertical curb and gutter, an absolute minimum clearance of 1.5 feet from face of curb is required to be clear of obstruction. A clearance of 3 feet is desirable. Wherever possible, power poles and irrigation structures should be placed as close to the right-of-way as possible. The desirable clear zone width is approximately 30 feet, assuming over 6,000 vehicles per day and 6:1 side slope per Figure 5.25 in the MCDOT Roadway Design Manual.

Medians

Medians shall be constructed with either single curb or curb and gutter. The typical median width is 14 feet minimum. However, the existing median along existing Sun Valley Parkway is 16 feet wide. The proposed median width along the north extension of Sun Valley Parkway shall be 60 feet width to accommodate the City of Surprise requirements for a parkway section.

8.2 SUN VALLEY PARKWAY: I-10 TO BEARDSLEY CANAL

According to Table 2.1 of the MCDOT Roadway Design Manual, April 2004, the planning capacity of a four-lane principal arterial in a rural setting is 10,000-40,000 vehicles per day. The existing volumes on Sun Valley Parkway are far below this capacity level, however, development is starting to occur and an implementation plan was developed to provide guidance on recommended actions. The implementation plan is shown in Figure 8.1. The following summarizes the recommendations for this segment of Sun Valley Parkway.

- Preserve 200 feet of right-of-way
- Implement the access management policy per Figures 7.2 and 7.3
- Prepare a Design Concept Report (DCR)
- Design and construct widening to six lanes
- Continue research on indirect left turns
- Develop cross road lane requirements

It should be noted that the lane needs for the crossroads along Sun Valley Parkway have not been determined. The County and the Town of Buckeye have had preliminary discussions regarding the roadway classification and the right-of-way needs for the crossroads along the north-south portion of Sun Valley Parkway. This is summarized in Table 8.2. These are subject to change pending the results of the *I-10 Hassayampa Valley Roadway Framework Study* as well as more detailed analysis that will be conducted as part of the Sun Valley Parkway DCR's. It is important that the cross roads along Sun Valley Parkway provide the needed lanes in order to maintain the integrity and operation of Sun Valley Parkway.

Table 8.2 – Preliminary Cross Road Requirements

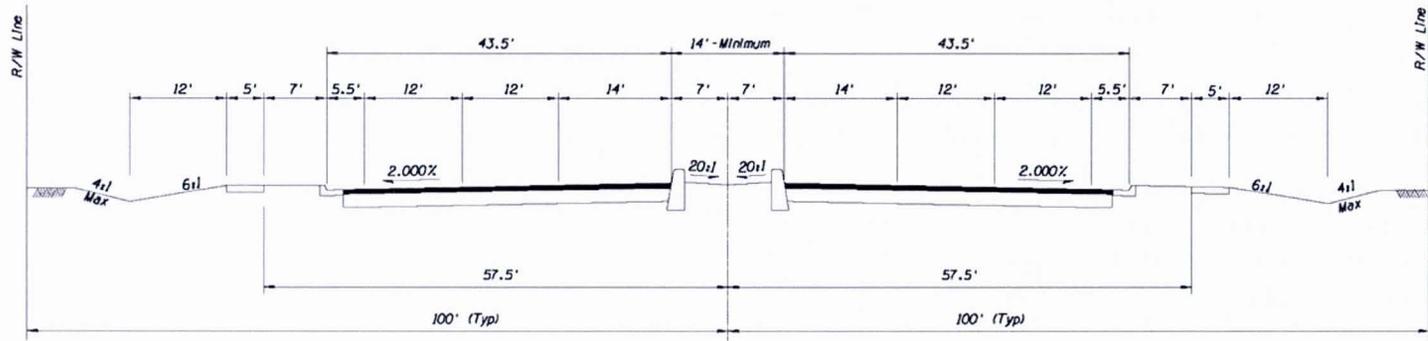
Street	Classification	Right-of-Way
Hummingbird Springs Road	Principal Arterial	130 feet
Bell Road	Parkway	200 feet
Greenway Road/Douglas Ranch Parkway	Principal Arterial	130 feet
Cactus Road/Trillium Parkway	Parkway	200 feet
Peoria Avenue	Minor Arterial	110 feet
Olive Avenue	Principal Arterial	130 feet
Northern Avenue	Parkway	200 feet
Glendale Avenue	Minor Arterial	110 feet
Bethany home road	Minor Arterial	110 feet
Camelback Road	Parkway	200 feet
Indian School Road/Tartesso Parkway	Minor Arterial	110 feet
Thomas Road	Principal Arterial	130 feet
McDowell Road	Principal Arterial	130 feet

As shown in Figure 8.1, the corridor is divided into five sections for implementation. The four sections within in the Town of Buckeye were defined such that construction packages would be in the \$30-40 million range. The City of Surprise requested that the fifth section remain as one large package. The five sections are as follows:

- I-10 to Camelback Road
- Camelback Road to Northern Avenue
- Northern Avenue to Greenway Road
- Greenway Road to 267th Avenue
- 267th Avenue to the Beardsley Canal (187th Avenue)

Currently MCDOT does not have funds earmarked in the Transportation Improvement Program to further develop these sections and therefore the right-of-way preservation and access management implementation should be ongoing activities addressed by the respective agency.

ALTERNATIVE 1 - MCDOT Modified Urban Principal Arterial*



*Proposed R/W=200' vs. 130' for Urban Principal Arterial

ALTERNATIVE 2 - City of Surprise Parkway Section

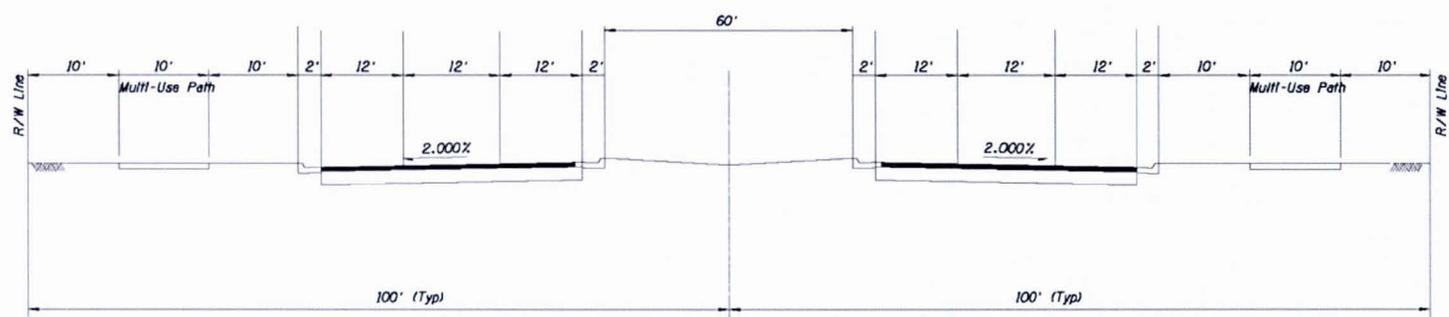
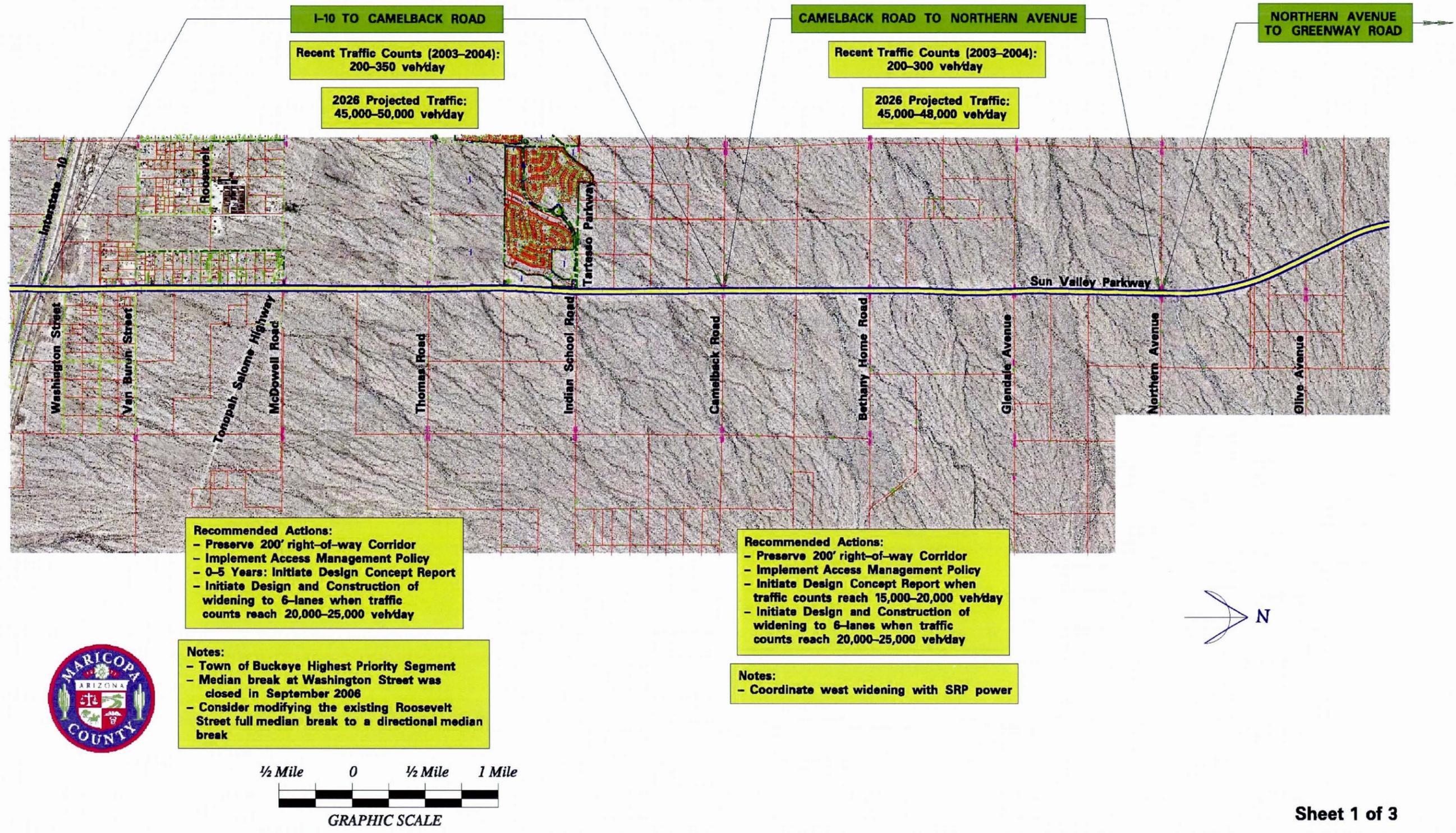
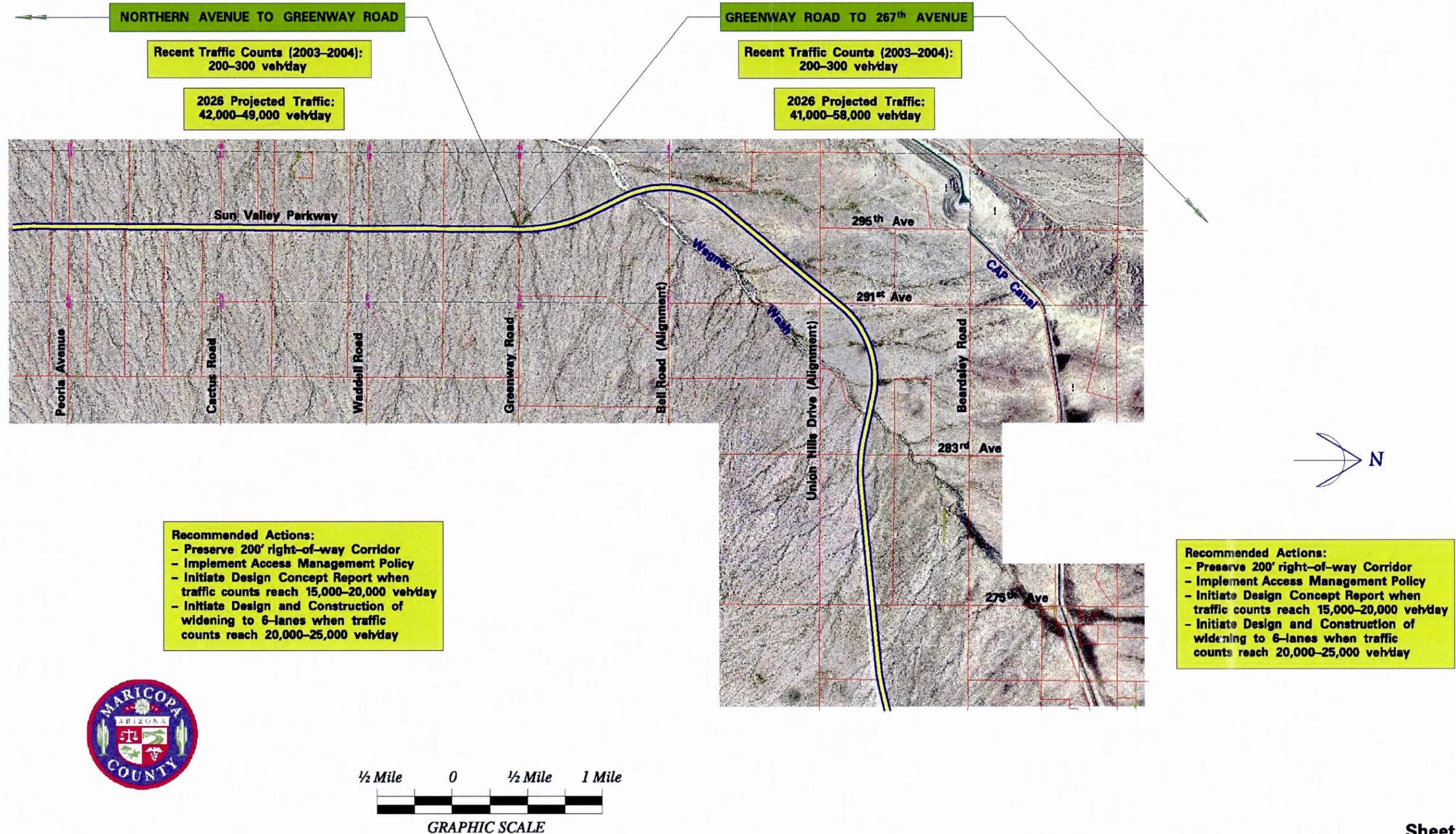


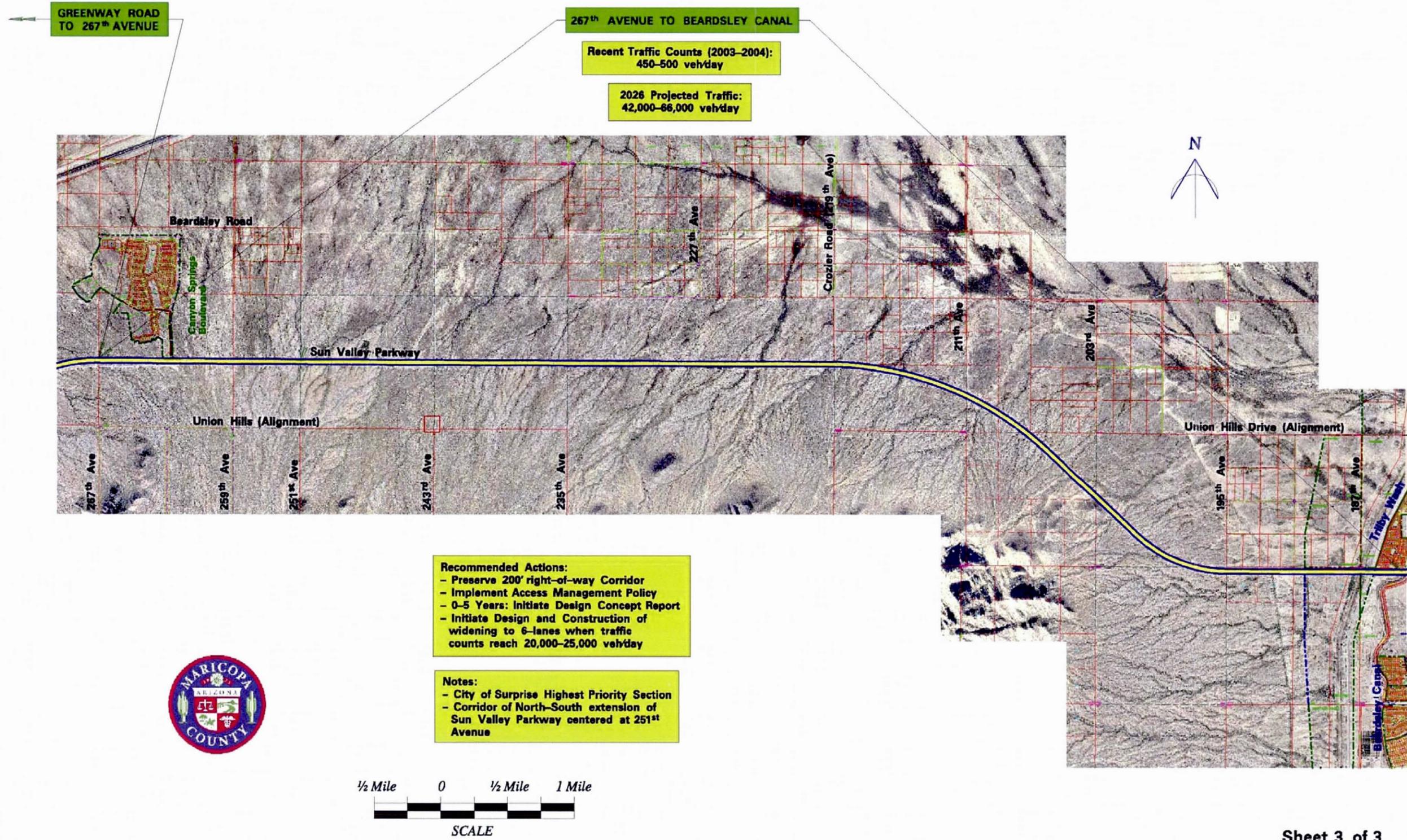
FIGURE 8.2 Preliminary Six-Lane Typical Section



Sheet 1 of 3
FIGURE 8.1
RECOMMENDED IMPLEMENTATION PLAN



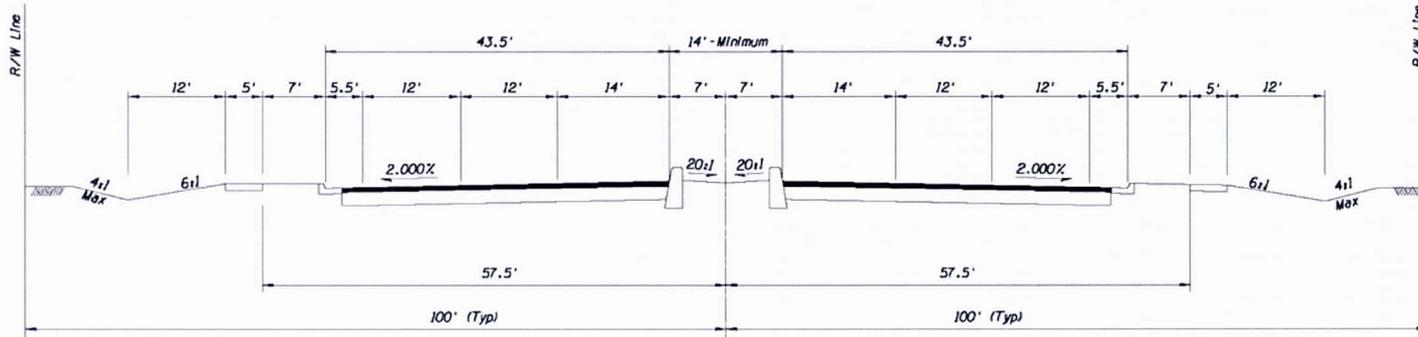
Sheet 2 of 3
FIGURE 8.1
RECOMMENDED IMPLEMENTATION PLAN



Sheet 3 of 3

**FIGURE 8.1
RECOMMENDED IMPLEMENTATION PLAN**

ALTERNATIVE 1 - MCDOT Modified Urban Principal Arterial*



*Proposed R/W=200' vs. 130' for Urban Principal Arterial

ALTERNATIVE 2 - City of Surprise Parkway Section

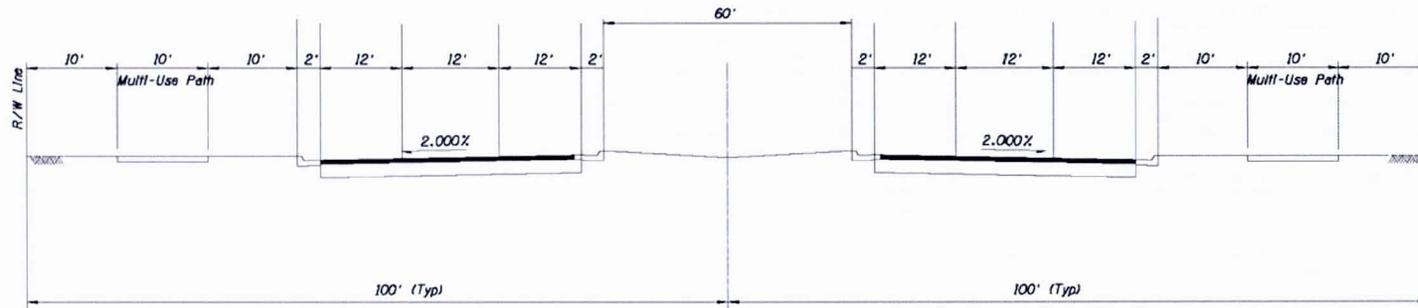


FIGURE 8.2 Preliminary Six-Lane Typical Section

I-10 to Camelback Road

The preferred alternative for this approximately 4.5-mile segment includes the widening of Sun Valley Parkway to provide three lanes in each direction of travel. This is the Town of Buckeye's highest priority segment for development. Within this segment transitions from the I-10 traffic interchange ramps are required. Widening would occur symmetrically about the existing centerline of Sun Valley Parkway as the inside two travel lanes in each direction and raised median exist along the entire segment.

Figure 8.2 shows the generalized typical section within this segment. Appendix B contains plan sheets showing the conceptual design of the preferred alternative. Suggested access management techniques are discussed in Chapter 7, while Appendix F contains an estimate of probable cost per mile of improvement.

Intersection Improvements

Within this segment, the section line roads are Van Buren Street, McDowell Road, Thomas Road, Tartesso Parkway (Indian School Road extended) and Camelback Road. The preferred alternative includes improvements to these intersections to accommodate travel demand projected for the design year 2026. More detailed analysis and refined traffic projections will be required in the future planning and design projects. The median break at Washington Street that previously existed was closed for safety purposes in September 2006. The Roosevelt Street median break should be evaluated for modification to a directional median break.

Drainage

Within this segment 12-box culvert crossings ranging in size from 1-10-ft X 3-ft to 6-10-ft X 4-ft and 2-RCP crossings (30-inch and 42-inch in diameter) will require extension to accommodate the widened roadway. These culvert and pipe extensions will require coordination with the Sun Valley ADMP currently being prepared by the Maricopa County Flood Control District for assurance that the sizes are compatible with offsite drainage flows. The Maricopa County Flood Control District has indicated that for the Sun Valley ADMP that they have assumed that the existing culverts will be extended with the widening. For the onsite pavement drainage it is assumed that a storm drain system could be designed to discharge flows to the offsite cross culverts.

Utilities

There are numerous overhead power lines (owned by APS) with under hung telephone lines (owned by Qwest and AT&T) as well as underground water (Privately owned), coaxial cable (owned by Sprint) that are located within the project limits and may require relocation. A summary of the existing utilities located within the corridor are described in Chapter 2 (Table 2.3).

Right-of-Way and Access Issues

There are several private driveways that access directly onto Sun Valley Parkway between Washington Street and McDowell Road. In order to maintain a high level of access control in accordance to the recommendation described in Chapter 7, alternative access must be addressed for these private driveways. The segment between I-10 and McDowell Road is typically centered within a 110-ft wide right-of-way (55 ft on either side of the centerline). Additional right-of-way will be required to attain the desired 200 foot wide roadway corridor. Also, the PAC members indicated that backage roads, which provide rear access to connect to the mile intersections, will be encouraged for all new developments.

Transition to Adjacent Segments

A six lane urban arterial is recommended for this section. This section will require pavement tapers to connect into the existing interchange ramps on I-10.

Camelback Road to Northern Avenue

The preferred alternative for this approximately 3-mile segment includes the widening of Sun Valley Parkway to provide three lanes in each direction of travel. This is the Town of Buckeye's second priority segment for development. Widening would occur symmetrically about the existing centerline of Sun Valley Parkway as the inside two travel lanes in each direction and raised median exist along the entire segment.

Figure 8.2 shows the generalized typical section within this segment. Appendix B contains plan sheets showing the conceptual design of the preferred alternative. Suggested access management techniques are discussed in Chapter 7, while Appendix F contains an estimate of probable cost per mile of improvement.

Intersection Improvements

Within this segment, the section line roads are Bethany Home Road, McDowell Road, Glendale Road and Northern Avenue. The preferred alternative includes improvements to these intersections to accommodate travel demand projected for the design year 2026. More detailed analysis and refined traffic projections will be required in the future planning and design projects. Existing median breaks occur at Bethany Home Road, Glendale Avenue and Northern Avenue, which is compatible with one-mile traffic signal spacing.

Drainage

Within this segment 13 box culvert crossings ranging in size from 1-6-ft X 3-ft to 6-10-ft X 4-ft and 5 RCP crossings (from 30-inch to 42-inch in diameter) will require extension to accommodate the widened roadway. These culvert and pipe extensions will require coordination with the Sun Valley ADMP currently being prepared by the Maricopa County Flood Control District for assurance that the sizes are compatible with offsite drainage flows.

The Maricopa County Flood Control District has indicated that for the Sun Valley ADMP they have assumed that the existing culverts will be extended with the widening. For the onsite pavement drainage it is assumed that a storm drain system could be designed to discharge flows to the offsite cross culverts.

Utilities

Between Bethany Home Road and Northern Avenue on the west side of Sun Valley Parkway there are three 500 kV electric power transmission lines centered within a 330-foot wide easement owned by Salt River Power (SRP). Coordination will be required with SRP to obtain an easement for the roadway widening. It is noted that the existing Sun Valley Parkway right-of-way line is located 20-feet inside of the SRP 330-foot wide easement. There are other miscellaneous overhead power lines located along this segment as well as a fiber optic line owned by WAPA and MCI, respectively. A summary of the existing utilities located within the corridor are described in Chapter 2 (Table 2.3).

Right-of-Way and Access Issues

As mentioned above the existing roadway's west right-of-way line between Bethany Home Road and Northern Avenue is located within 20-feet within an existing SRP Easement. Initial discussions with SRP indicate that they are open to allowing the widening of Sun Valley Parkway on their easement. Since the existing roadway is located with the power line easement, it was not considered as a constraint during the alternative selection process. The segment between Camelback Road and Northern Avenue is typically centered within a 150-ft wide right-of-way (75 ft on either side of the centerline). Additional right-of-way will be required to attain the desired 200 foot wide roadway corridor.

Transition to Adjacent Segments

A six lane urban arterial is recommended for this section. As DCR's are conducted along this corridor, transitioning from one segment which is six-lanes wide to a segment which is 4-lanes wide will need to be taken into consideration.

Northern Avenue to Greenway Road

The preferred alternative for this approximately 5-mile segment includes the widening of Sun Valley Parkway to provide three lanes in each direction of travel. This is the Town of Buckeye's third priority segment for development. Widening would occur symmetrically about the existing centerline of Sun Valley Parkway as the inside two travel lanes in each direction and raised median exist along the entire segment.

Figure 8.2 shows the generalized typical section within this segment. Appendix B contains plan sheets showing the conceptual design of the preferred alternative. Suggested access management techniques are discussed in Chapter 7, while Appendix F contains an estimate of probable cost per mile of improvement.

Intersection Improvements

Within this segment, the section line roads are Olive Avenue, Cactus Road, Waddell Road and Greenway Road. The preferred alternative includes improvements to these intersections to accommodate travel demand projected for the design year 2026. More detailed analysis and refined traffic projections will be required in the future planning and design projects. Existing median breaks occur at ¼-mile north of Olive Avenue, Cactus Road, 1,850 feet north of Cactus Road and Waddell Road for use a future signalized intersections.

Drainage

Within this segment several 25 box culvert crossings ranging in size from 1-6-ft X 3-ft to 3-12-ft X 6-ft and 30 Corrugated Steel Pipe elliptical pipe crossings will require extension to accommodate the widened roadway. These culvert and pipe extensions will require coordination with the Sun Valley ADMP currently being prepared by the Maricopa County Flood Control District for assurance that the sizes are compatible with offsite drainage flows. The Maricopa County Flood Control District has indicated that for the Sun Valley ADMP they have assumed that the existing culverts will be extended with the widening. For the onsite pavement drainage it is assumed that a storm drain system could be designed to discharge flows to the offsite cross culverts.

Utilities

There are some overhead power lines owned by WAPA and SRP in the vicinity for this segment but they all appear to be clear of conflict with the roadway widening. A summary of the existing utilities located within the corridor are described in Chapter 2 (Table 2.3).

Right-of-Way and Access Issues

The segment between Northern Avenue and Greenway Road is typically centered within a 150-ft wide right-of-way (75 ft on either side of the centerline). Additional right-of-way will be required to attain the desired 200 foot wide roadway corridor.

Transition to Adjacent Segments

A six lane urban arterial is recommended for this section. As DCR's are conducted along this corridor, transitioning from one segment which is six-lanes wide to a segment which is 4-lanes wide will need to be taken into consideration.

Greenway Road to 267th Avenue

The preferred alternative for this approximately 5-mile segment includes the widening of Sun Valley Parkway to provide three lanes in each direction of travel. This is the Town of Buckeye's fourth priority segment for development. Widening would occur symmetrically

about the existing centerline of Sun Valley Parkway as the inside two travel lanes in each direction and raised median exist along the entire segment.

Figure 8.2 shows the generalized typical section within this segment. Appendix B contains plan sheets showing the conceptual design of the preferred alternative. Suggested access management techniques are discussed in Chapter 7, while Appendix F contains an estimate of probable cost per mile of improvement.

Intersection Improvements

Within this segment, the section line roads are Bell Road alignment, Union Hills/291st Avenue alignment, 283rd Avenue, 275th Avenue and 267th Avenue. The preferred alternative includes improvements to these intersections to accommodate travel demand projected for the design year 2026. More detailed analysis and refined traffic projections will be required in the future planning and design projects. Existing median breaks occur at Bell Road alignment, 1,200-feet south of Union Hills Road, 279th Avenue and 271st Avenue for use a future signalized intersections. It is noted that as the DCR is implemented, close coordination between adjacent development plans must be conducted to ensure that the intersections are located no closer than one-mile spacing.

Drainage

Within this segment, 14 box culvert crossings ranging in size from 1-2-ft X 3-ft to 4-12-ft X 6-ft and miscellaneous Corrugated Steel Pipe elliptical pipe crossings will require extension to accommodate the widened roadway. These culvert and pipe extensions will require coordination with the Sun Valley ADMP currently being prepared by the Maricopa County Flood Control District for assurance that the sizes are compatible with offsite drainage flows. The Maricopa County Flood Control District has indicated that for the Sun Valley ADMP they have assumed that the existing culverts will be extended with the widening. For the onsite pavement drainage it is assumed that a storm drain system could be designed to discharge flows to the offsite cross culverts.

Utilities

There are some overhead power lines owned by WAPA and SRP in the vicinity for this segment but they all appear to be clear of conflict with the roadway widening. A summary of the existing utilities located within the corridor are described in Chapter 2 (Table 2.3).

Right-of-Way and Access Issues

The segment between Greenway Road and 267th Avenue is typically centered within a 150-ft wide right-of-way (75 ft on either side of the centerline). Additional right-of-way will be required to attain the desired 200 foot wide roadway corridor.

Transition to Adjacent Segments

A six lane urban arterial is recommended for this section. As DCR's are conducted along this corridor, transitioning from one segment which is six-lanes wide to a segment which is 4-lanes wide will need to be taken into consideration.

267th Avenue to Beardsley Canal (187th Avenue)

The preferred alternative for this approximately 14-mile segment includes the widening of Sun Valley Parkway to provide three lanes in each direction of travel. This is the City of Surprise's first priority segment for development. The City indicated that they desire to study the entire segment as one large project. Widening would occur symmetrically about the existing centerline of Sun Valley Parkway as the inside two travel lanes in each direction and raised median exist along the entire segment.

Figure 8.2 shows the generalized typical section within this City of Surprise segment. Appendix B contains plan sheets showing the conceptual design of the preferred alternative. Suggested access management techniques are discussed in Chapter 7, while Appendix F contains an estimate of probable cost per mile of improvement.

Intersection Improvements

Within this segment, the section line roads are 259th Avenue, 251st Avenue (section line shift between 259th Avenue and 251st Avenue. There is only ½ mile between the two), 243rd Avenue, 235th Avenue, 227th alignment, Crozier Road (219th Avenue), 211th Avenue, 203rd Avenue alignment, 195th Avenue, 187th Avenue (Beardsley Canal). The preferred alternative includes improvements to these intersections to accommodate travel demand projected for the design year 2026. More detailed analysis and refined traffic projections will be required in the future planning and design projects. Existing median breaks occur at 263rd Avenue, 251st Avenue, 800 feet east of 243rd Avenue, 235th Avenue, 227th Avenue, 219th Avenue, 211th Avenue, 195th Avenue and 187th Avenue (Beardsley Canal). It is noted that as the DCR is implemented, close coordination between adjacent development plans and the Sun Valley Parkway north extension must be conducted to ensure that the intersections are located no closer than one-mile spacing.

Drainage

Within this segment, 26 box culvert crossings ranging in size from 1-2-ft X 3-ft to 4-12-ft X 6-ft and miscellaneous Corrugated Steel Pipe elliptical pipe crossings will require extension to accommodate the widened roadway. These culvert and pipe extensions will require coordination with the Sun Valley ADMP currently being prepared by the Maricopa County Flood Control District for assurance that the sizes are compatible with offsite drainage flows. The Maricopa County Flood Control District has indicated that for the Sun Valley ADMP they have assumed that the existing culverts will be extended with the widening. For the onsite

pavement drainage it is assumed that a storm drain system could be designed to discharge flows to the offsite cross culverts.

Utilities

There are some overhead power lines owned by WAPA and SRP in the vicinity for this segment but they all appear to be clear of conflict with the roadway widening. A summary of the existing utilities located within the corridor are described in Chapter 2 (Table 2.3).

Right-of-Way and Access Issues

The segment between 267th Avenue and 187th Avenue is typically centered within a 150-ft wide right-of-way (75 ft on either side of the centerline). Additional right-of-way will be required to attain the desired 200 foot wide roadway corridor.

The City of Surprise Community Development Department is considering the implementation of a scenic overlay district to retain the visual character and open spaces between 259th Avenue and 187th Avenue (Beardsley Canal). The scenic overlay district would apply to all lands within the city limits and that are 2-miles to the south of Sun Valley Parkway. It is noted that the Maricopa County Major Streets and Routes Policy Document, dated September 2004, does not currently identify Sun Valley Parkway as a scenic corridor.

Transition to Adjacent Segments

A six lane urban arterial is recommended for this section. As DCR's are conducted along this corridor, transitioning from one segment which is six-lanes wide to a segment which is 4-lanes wide will need to be taken into consideration.

8.3 SUN VALLEY PARKWAY: NORTHERN EXTENSION

The results of the traffic analysis (in Chapter 7) for the three alternatives did not provide obvious conclusions for the need of a high-capacity facility between Sun Valley Parkway and SR 74. The primary reason is that the City of Surprise has planned for a roadway grid system that will adequately move traffic in a dispersed fashion for the years to come. However, the discussions with the City indicated a desire to proceed forward with an alignment study on the preferred alternative to preserve a future right-of-way corridor.

Based on the results of the engineering and environmental evaluation, the Western Corridor is recommended for further study for the northern extension of Sun Valley Parkway. While there are some disadvantages to the Western Corridor such as recorded cultural sites and potential impact to improved properties, the difference in cost and in benefit/cost ratio between the Western Corridor and the other two corridors are considered to be negligible. More importantly, both public and agency opinion strongly favor the Western Corridor, and

that support is critical to further corridor development and implementation. A more detailed description follows.

Sun Valley Parkway to SR 74

The preferred alternative for this approximately 12-mile segment includes development the ½-mile wide corridor and a corridor centerline. Appendix C contains plan sheets showing the conceptual layout. Figure 8.2 shows the typical section that would be implemented within this City of Surprise segment.

Intersection Crossings

Within this segment, the section line roads are Beardsley Road, Deer Valley Road, Pinnacle Peak Road, Happy Valley Road, Jomax Road, Patton Road, Dixileta Drive, Lone Mountain Road, Dove Valley Road, Carefree Highway alignment, Black Mountain Road, and Cloud Road. To date Patton Road and US 60 are the only paved roads that cross the proposed corridor.

Drainage

Within this corridor an alignment study for a new roadway should consider the following design criteria in accordance with the MCDOT Drainage Design Guidelines. It should be noted that box culvert heights may be more than the minimum if the crossing is part of the Maricopa County trail system.

- Design storm for cross culverts: 50-year peak flow, no flow crossing the roadway; flow depth over the roadway shall be limited to 0.5 feet for the 100-year peak flow.
- Minimum pipe culvert diameter: 24-inches
- Minimum pipe culvert cover: 18-inches
- Preferred minimum box culvert height: 5 feet over natural stream bed (desert wash)
- Absolute minimum box culvert height: 4 feet over natural stream bed
- Minimum box culvert cover: 12-inches
- Design storm for pavement drainage: 10-year, no curb overtopping
- Spread criteria: Maintain one dry 12-foot driving lane in each direction

A new bridge over the Central Arizona Project (CAP) Canal will be required. It should be noted that levees upstream of the canal create impoundments and convey runoff to over chutes that allow the passage of concentrated flows across the canal. The canal and associated structures must be spanned by any proposed bridge(s). CAP guidelines for the construction of new bridges over the canal must be followed in the design of proposed structures.

The corridor crosses 16 points where a concentration of offsite drainage will cross. It is envisioned that multi-barrel culverts will be needed at those crossings in order to meet design criteria. Also, longitudinal encroachment of the proposed roadway along major washes should be avoided.

Utilities

There is one private utility property located within the preferred corridor, the Puesta del Sol Water Company well site is approximately 1,000 feet southeast of the intersection of SR 74 and Castle Hot Springs Road. There are other existing utilities in the corridor such as power, telephone, gas and fiber optic lines that are located on dedicated streets.

Right-of-Way and Access Issues

The City of Surprise has indicated a 200 foot wide corridor be preserved within the corridor. Currently there is no public right-of-way preserved for the western corridor. The right-of-way foot width of 200 feet is compatible with the City typical section shown in Figure 8.2.

Transition to Adjacent and Roadways

An evaluation of an intersection with Sun Valley Parkway on the south and traffic interchanges with US 60 and SR 74 on the north would be required as a part of a future alignment study. Preliminary cursory review of interchange concepts were developed with this study, and it was concluded that a diamond interchange at US 60 would be feasible for the preferred alternative as well as an interchange at SR 74.

Recommendations for Further Evaluation

The recommendation for the northern extension of Sun Valley Parkway is to prepare a location study/design concept report for the Western Corridor in the next five years. The study would define the roadway centerline and right-of-way footprint and implementation of an access management guideline. Since the entire corridor is located with the City of Surprise, it would primarily be funded by the City of Surprise.

Currently, the City of Surprise does not have funds set aside in their Capital Improvement Plan to further develop the northern extension, and therefore the right-of-way preservation and access management implementation should be ongoing activities by the City as development occurs.

8.4 Corridor Management Including Intelligent Transportation System (ITS)

It is recommended that MCDOT provide operational oversight and be responsible for the traffic management of the corridor for the foreseeable future. Sun Valley Parkway should be added to the AZTECH OVERLAY as described in the Maricopa County Major Streets and Routes Plan Policy Document. It is recommended that the following elements be considered:

- Implement a traffic management system for Sun Valley Parkway incorporating Time of Day and Traffic Responsive Plan Selection capabilities. All traffic control devices installed in the corridor should be compatible with MCDOT's current traffic management system or any successor system. Traffic signal controllers shall be NTCIP compliant.
- Conduit Installation for future fiber optic cable should be implemented to provide communications within the corridor.
- Interconnect conduit should be provided concurrently with traffic signal installation at the section line roadways.

8.5 Recommendations for Further Evaluation and Project Partnering

The next step in the development of the existing Sun Valley Parkway corridor is to initiate a Design Concept Report (DCR) for each of the sections, or for multiple sections, if appropriate. A DCR provides more detailed engineering design and further refinement of the preferred alignment. For the existing sections of Sun Valley Parkway, further actions will be a collaborative effort between MCDOT and the appropriate local agency, either the Town of Buckeye or the City of Surprise. Both entities have expressed an interest in cost sharing with MCDOT to develop the DCR, but to date do not include funds in their Capital Improvement Plan. The Town of Buckeye is currently conducting a Regional Impact Fee Study to obtain funds for the DCR. An Intergovernmental Agreement (IGA) between the partners will be the technique used to implement cost sharing for the DCR and eventually construction.

It should be noted that the preferred concept utilizes the narrow median from Figure 8.1 primarily to maximize the use of existing improvements. However, both the City and Town have expressed a desire to consider the evaluation of the indirect left turn concept (discussed in Chapter 7) as a part of the DCR process. Also, the preparation of the DCR should utilize the latest socioeconomic data and traffic forecasts developed for the *I-10 Hassayampa Valley Roadway Framework Study*.

For the existing Sun Valley Parkway, both Buckeye and Surprise have indicated a desire to have MCDOT provide operational oversight and be responsible for the traffic management of the corridor for the foreseeable future.

For the northern extension of Sun Valley Parkway, the next step is a location study/design concept report. The study would define the roadway centerline and right-of-way footprint and implementation of an access management guideline. Since the entire corridor is located within the City of Surprise, it would primarily be their responsibility. The City of Surprise does not have funds set aside in their Capital Improvement Plan to further develop the northern extension, therefore right-of-way preservation and access management should be ongoing activities by the City as development occurs.

9. PROJECT COSTS

9.1 I-10 TO BEARDSLEY CANAL COST ASSUMPTIONS

Table 9-1 presents a summary of the project cost for the section from I-10 to the Beardsley Canal. It includes the total project cost for the preferred concept, and for comparison, the total project cost for the indirect left concept. The costs are in 2006 dollars.

Table 9-1 - Summary of Project Costs (2006 Dollars in Millions)

Segment	Preferred Concept		Indirect Left Concept
	Construction	Total Project	Total Project
	Estimate	Estimate	Estimate
I-10 to Camelback Road	\$21.1	\$33.4	\$46.3
Camelback Road to Northern Avenue	\$13.6	\$21.0	\$29.2
Northern Avenue to Greenway Road	\$22.8	\$35.2	\$49.1
Greenway Road to 267th Avenue	\$25.0	\$38.7	\$53.9
267th Avenue to Beardsley Canal	\$46.5	\$72.0	\$100.4
Total Estimated Project Cost	\$129.0	\$200.3	\$278.9

The following assumptions were used in estimating the project costs for the five segments between I-10 and Beardsley Canal (187th Avenue). The detailed cost breakouts for the five segments are included in Appendix F.

Construction Costs

- Unit costs were established comparing similar elements and quantities of work from recent construction projects for MCDOT, City of Flagstaff and Arizona Department of Transportation.

Utility Relocation

- Based upon \$100,000/mile

Right-of-Way

- Based upon \$100,000/acre

Design, Construction Management and Administration

- Design – Based upon 12% of the construction cost
- Construction Management – Based upon 15% of the construction cost
- Administration – Based upon 10% of the construction cost

I-10 to Camelback Road

The project cost (based upon a 200 foot wide right-of-way corridor) was estimated at \$33.4 million. This consists of Construction at \$21.1 million, Design at \$2.5 million (based upon 12% of construction cost), Construction Management at \$3.1 million (based upon 15% of construction cost), Right-of-Way at \$3.9 million (based upon \$100,000/acre), Utility Relocation at \$470,000 (based upon \$100,000/mile) and Administration at \$2.1 million (based upon 10% of construction cost).

Camelback Road to Northern Avenue

The project cost (based upon a 200 foot wide right-of-way corridor) was estimated at \$21.0 million. This consists of Construction at \$13.6 million, Design at \$1.6 million (based upon 12% of construction cost), Construction Management at \$2.0 million (based upon 15% of construction cost), Right-of-Way at \$2.1 million (based upon \$100,000/acre), Utility Relocation at \$300,000 (based upon \$100,000/mile) and Administration at \$1.4 million (based upon 10% of construction cost).

Northern Avenue to Greenway Road

The project cost (based upon a 200 foot wide right-of-way corridor) was estimated at \$35.2 million. This consists of Construction at \$22.8 million, Design at \$2.7 million (based upon 12% of construction cost), Construction Management at \$3.4 million (based upon 15% of construction cost), Right-of-Way at \$3.5 million (based upon \$100,000/acre), Utility Relocation at \$500,000 (based upon \$100,000/mile) and Administration at \$2.3 million (based upon 10% of construction cost).

Greenway Road and 267th Avenue

The project cost (based upon a 200 foot wide right-of-way corridor) was estimated at \$38.7 million. This consists of Construction at \$28.0 million, Design at \$3 million (based upon 12% of construction cost), Construction Management at \$3.7 million (based upon 15% of construction cost), Right-of-Way at \$3.9 million (based upon \$100,000/acre), Utility Relocation at \$500,000 (based upon \$100,000/mile) and Administration at \$2.5 million (based upon 10% of construction cost).

267th Avenue to the Beardsley Canal

The project cost (based upon a 200 foot wide right-of-way corridor) was estimated at \$72.0 million. This consists of Construction at \$46.5 million, Design at \$5.6 million (based upon 12% of construction cost), Construction Management at \$7.0 million (based upon 15% of construction cost), Right-of-Way at \$7.2 million (based upon \$100,000/acre), Utility Relocation at \$1.0 million (based upon \$100,000/mile) and Administration at \$4.7 million (based upon 10% of construction cost).

9.2 SUN VALLEY PARKWAY – NORTH EXTENSION COST ASSUMPTIONS

The following assumptions were used for estimating the project costs for the north extension of Sun Valley Parkway. The detailed cost breakouts for the north extension are included in Appendix F.

Construction Costs

- Unit costs were established comparing similar elements and quantities of work from recent construction projects for MCDOT, City of Flagstaff and Arizona Department of Transportation.

Utility Relocation

- Used \$400,000/mile

Right-of-Way

- Used \$100,000/acre

Design, Construction Management and Administration

- Design – Based upon 12% of the construction cost
- Construction Management – Based upon 15% of the construction cost
- Administration – Based upon 10% of the construction cost

Sun Valley Parkway - Northern Extension

The project cost (based upon a 200 foot wide right-of-way corridor) was estimated at \$161.4 million. This consists of Construction at \$88.1 million (for Roadway and Structures), Design at \$10.6 million (based upon 12% of construction cost), Construction Management at \$13.3 million (based upon 15% of construction cost), Right-of-Way at \$35.5 million (based upon \$100,000/acre), Utility Relocation at \$5.0 million (based upon \$400,000/mile) and Administration at \$8.9 million (based upon 10% of construction cost).