Apache Junction Comprehensive Transportation Study

Final Report

May 2012

Prepared for the:
Arizona Department of Transportation

Prepared by:
Jacobs
101 N. 1ST Ave.
Suite 3100
Phoenix, AZ 85003
P: 602.253.1200
F: 602.253.1202
www.jacobs.com

ACKNOWLEDGEMENTS

City of Apache Junction Council Members
Mayor John S. Insalaco
Robin Barker
Doug Coleman
Rick Dietz
Jeff Serdy
Clark Smithson
Chip Wilson

Technical Advisory Committee (TAC)
Charla Glendening, Project Manager, ADOT Multimodal Planning Division
Giao Pham, P.E, City Engineer/Interim Director, Public Works, City of Apache Junction
Steve Filipowicz, Director Economic Development, City of Apache Junction
Nick Blake, Parks Superintendent, City of Apache Junction
Brett Jackson, Police Lieutenant, Apache Junction Police Department
Dan Campbell, Fire Chief, Apache Junction Fire District
Dave Montgomery, Chief Fire Marshall, Apache Junction
Chad Wilson, Superintendent, Apache Junction Unified School District
Bill Leister, Transportation Director, Central Arizona Association of Governments
Michelle Green, Project Manager, Arizona State Land Department
Doug Hansen, Planning Section Chief, Pinal County
Greg Stanley, P.E., Director / County Engineer, Pinal County
Alan Sanderson, Deputy Transportation Director, City of Mesa
Ken Hall, AICP, Senior Planner, City of Mesa
Tim Oliver, Systems Planning Manager, Maricopa County Department of Transportation
Felicia Terry, Regional Planning Director, Maricopa County Flood Control District
Pat Brenner, Community Relations Manager, City of Apache Junction
Angelita Bulletts, District Manager, Bureau of Land Management - Phoenix District
Troy White, Director / Public Works, Town of Queen Creek
Tim Wolfe, District Engineer / Maintenance, Phoenix Maintenance District
Rob Samour District Engineer / Construction, State Engineer Office
Thor Anderson, Manager, ADOT Environmental Planning Group
Julian Avila, Community Relations, ADOT Communication and Community Partnerships
Sam Chavez, Transit, ADOT Multimodal Planning Division
Marsha Miller, Public Involvement Consultant, KDA Creative

TABLE OF CONTENTS

Page

1. INTRODUCTION 1
   - Purpose of the Study 1
   - Study Objectives 3
   - Study Process 3
2. EXISTING CONDITIONS 5
   - Existing Land Use and Socioeconomic Conditions 5
   - Transportation Conditions 20
3. FUTURE CONDITIONS 42
   - Future Socioeconomic Conditions 42
   - Future Transportation Conditions 42
4. EVALUATION OF TRANSPORTATION IMPROVEMENTS 53
   - Transportation Issues Summary 53
   - Evaluation Criteria and Process 53
   - Roadway Improvement Options 55
   - Evaluation of Transit Needs 95
   - Evaluation of Non-Motorized Modes of Transportation 97
5. MULTIMODAL TRANSPORTATION PLAN 98
   - Roadway Recommendations 98
   - Transit and Non-Motorized Modes Recommendations 107
   - Functional Classification 118
   - Build-Out Roadway Network Recommendations 118
   - Title VI and Environmental Justice Implications 121
   - Community Outreach 121
6. TRANSPORTATION PLAN IMPLEMENTATION 123
   - Funding Sources 123
   - Access Management 123
   - Implementation Actions 125

LIST OF TABLES

Page

2.1: Population and Housing Unit Growth Trends 7

2.2: Major Employers 8

2.3: Roadway Functional Classification Definition 21

2.4: Apache Junction Roads Pavement Condition 25

2.5: Bridge Condition 27

2.6: Crash Rate for Roadway Segments 30

2.7: Crash Rate for Intersections 30

3.1: Population Levels - Population, Housing Units, and Employment 42

4.1: Transportation Improvements Evaluation Criteria 55

4.2: Short-Term (Population Level 1 – 60K) Intersection LOS Conditions 58

4.3: Mid-Term (Population Level 2 – 75K) Intersection LOS Conditions 65

4.4: Long-Term (Population Level 3 – 130K) Intersection LOS Conditions 89

4.5: Minimum Consolidated Residential and Employment Densities for Various Type of Transit Services 95

4.6: Summary of Transit Demand Estimation 96

4.7: Summary of Transit Demand Estimation (WestGroup Research Model) 96

5.1: Short-Term (Population Level 1 - 60K) Improvements 99

5.2: Mid-Term (Population Level 2 - 75K) Improvements 102

5.3: Long-Term (Population Level 3 - 130K) Improvements 104

5.4: Regional Improvements 106

6.1: Funding Sources 126

LIST OF FIGURES

Page

1.1: Study Area and Project Influence Area 2

1.2: Study Process 4

2.1: Land Ownership 6

2.2: Population Density by TAZ 9

2.3: Occupied Dwelling Units and Employment by TAZ 10

2.4: Minority, Age 65 and Older, Mobility Limited, and Below Poverty Population Comparison 11

2.5: Minority Population (Census Block) 13

2.6: Elderly Population (Census Block) 14

2.7: Below Poverty Population (Census Block Group) 15

2.8: Mobility Limited Population (Census Block Group) 16

2.9: Natural Environmental Overview 18

2.10: Environmental Concerns 19

2.11: Existing Roadway Functional Classification 22

2.12: Existing Number of Lanes 23

2.13: Existing Posted Speed Limits 24

2.14: Pavement and Bridge Condition 28

2.15: Crash Locations 31

2.16: Crash Density 32

2.17: Illustration of LOS A through F 34

2.18: Existing 2010 Daily Traffic Counts 35

2.19: Average Daily Level of Service Conditions 37

2.20: Intersection Lane Configuration 38

2.21: Intersection Level of Service 39

2.22: Study Area Trails with Existing Bicycle and Pedestrian Facilities 41

3.1: Average Daily Traffic Volumes - Population Level 1 (60K) 44

3.2: Average Daily Level of Congestion - Population Level 1 (60K) 45

LIST OF FIGURES (CONTINUED)

Page

3.3: Average Daily Traffic Volumes - Population Level 2 (75K) 47

3.4: Average Daily Level of Congestion - Population Level 2 (75K) 48

3.5: Average Daily Traffic Volumes - Population Level 3 (130K) 51

3.6: Average Daily Level of Congestion - Population Level 3 (130K) 52

4.1: Transportation Issues 54

4.2: Number of Lanes for Short-Term Phase (Population Level 1 - 60K) 59

4.3: Average Daily Traffic Volumes for Short-Term Phase (Population Level 1 - 60K) 60

4.4: Average Daily Level of Congestion for Short-Term Phase (Population Level 1 - 60K) 61

4.5: Intersection Lane Configuration for Short-Term Phase (Population Level 1 - 60K) 62

4.6: Intersection Level of Service for Short-Term Phase (Population Level 1 - 60K) 63

4.7: Number of Lanes for Mid-Term Phase (Population Level 2 - 75K) 66

4.8: Average Daily Traffic Volumes for Mid-Term Phase (Population Level 2 - 75K) 67

4.9: Average Daily Level of Congestion for Mid-Term Phase (Population Level 2 - 75K) 68

4.10: Intersection Lane Configuration for Mid-Term Phase (Population Level 2 - 75K) 69

4.11: Intersection Level of Service for Mid-Term Phase (Population Level 2 - 75K) 70

4.12: Number of Lanes for Long-Term Phase (Population Level 3 - 130K) - Base Condition 73

4.13: Average Daily Traffic Volumes for Long-Term Phase (Population Level 3 - 130K) - Base Condition 74

4.14: Average Daily Level of Congestion for Long-Term Phase (Population Level 3 - 130K) - Base Condition 75

4.15: Average Daily Traffic Volumes for Long-Term Phase (Population Level 3 - 130K) – Alternative 1 78

4.16: Average Daily Level of Congestion for Long-Term Phase (Population Level 3 - 130K) – Alternative 1 79

4.17: Average Daily Traffic Volumes for Long-Term Phase (Population Level 3 - 130K) – Alternative 2 82

LIST OF FIGURES (CONTINUED)

Page

4.18: Average Daily Level of Congestion for Long-Term Phase (Population Level 3 - 130K) – Alternative 2 83

4.19: Average Daily Traffic Volumes for Long-Term Phase (Population Level 3 - 130K) – Alternative 3 86

4.20: Average Daily Level of Congestion for Long-Term Phase (Population Level 3 - 130K) – Alternative 3 87

4.21: Number of Lanes for Long-Term Phase (Population Level 3 - 130K) – Preferred Alternative 90

4.22: Average Daily Traffic Volumes for Long-Term Phase (Population Level 3 - 130K) – Preferred Alternative 91

4.23: Average Daily Level of Congestion for Long-Term Phase (Population Level 3 - 130K) – Preferred Alternative 92

4.24: Intersection Lane Configuration for Long-Term Phase (Population Level 3 – 130K) Preferred Alternative 93

4.25: Intersection Level of Service for Long-Term Phase (Population Level 3 – 130K) Preferred Alternative 94

5.1: Short-Term (Population Level 1 - 60K) Improvements 101

5.2: Mid-Term (Population Level 2 - 75K) Improvements 103

5.3: Long-Term (Population Level 2 - 130K) Improvements 105

5.4: Service Concept for Short-Term (Population Level 1 – 60K) 110

5.5: Core Area Circulator Detail for Short-Term (Population Level 1 – 60K) 111

5.6: Service Concept for Mid-Term (Population Level 2 – 75K) 112

5.7: Service Concept for Long-Term (Population Level 3 – 130K) 113

5.8: Proposed Pedestrian Facilities 114

5.9: Proposed Bicycle Facilities 115

5.10: Proposed Equestrian Facilities 116

5.11: Proposed Multimodal Facilities 117

5.12: Recommended Roadway Functional Classification 119

5.13: Recommended Roadway Network for Build-Out Population Levels 120

6.1: Access vs Mobility 123

1. INTRODUCTION

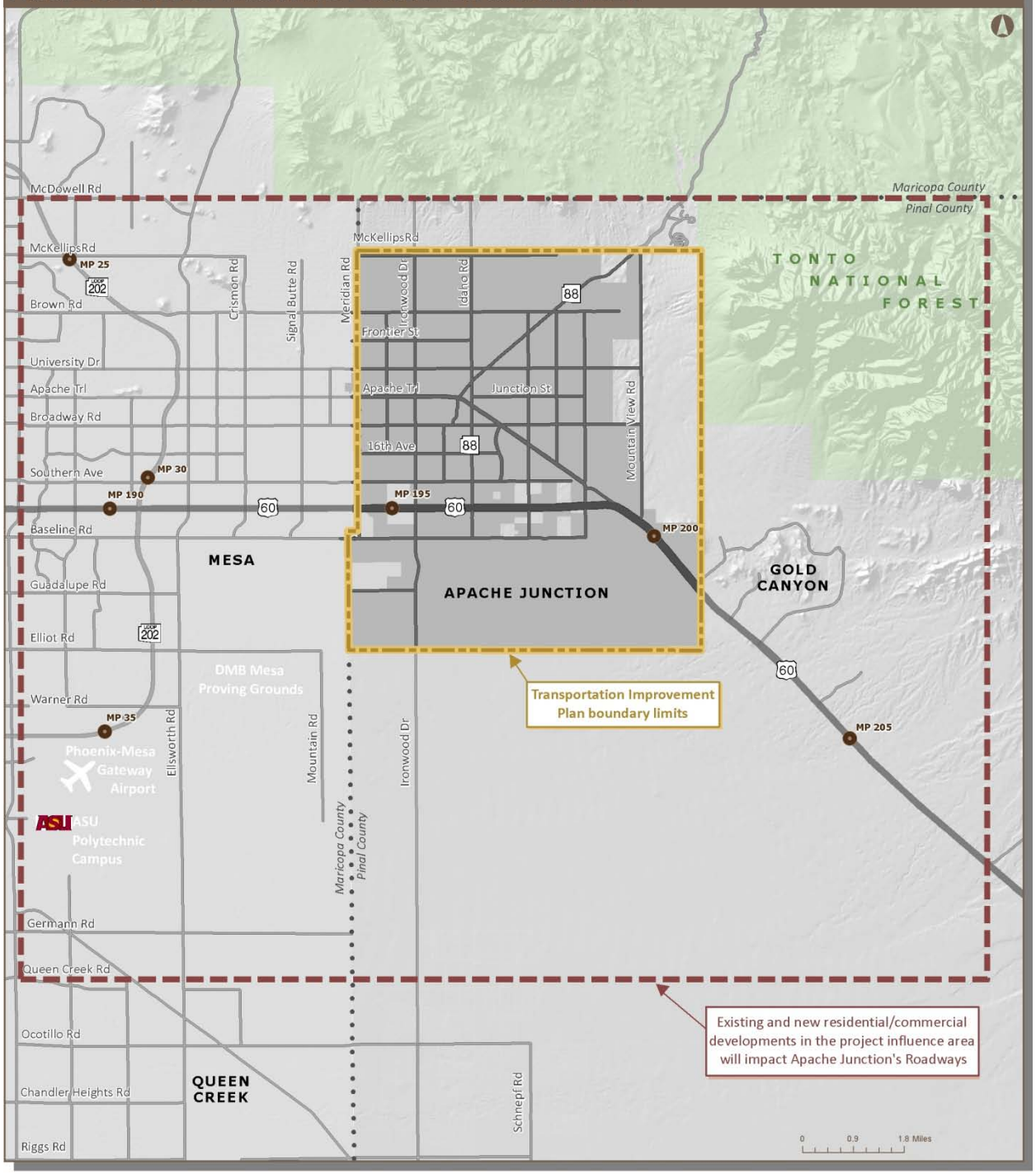
PURPOSE OF THE STUDY

The Apache Junction Comprehensive Transportation Study is a joint effort by the City of Apache Junction and the Arizona Department of Transportation (ADOT) to develop a long-range multimodal transportation plan to address the City's most critical current and future transportation needs. The study was funded by Federal Highway Administration's (FHWA) State Planning and Research Program and administered through ADOT's Multimodal Planning Division. Significant growth is anticipated in the Portalis area located in the southern portion of the City that could result in population growth, economic development, and increased traffic volumes. The study evaluated the growing demands placed on the City's local roads and streets by developments in study area, the Portalis area, and within the region. In addition, the study examined public transportation, bicycle and pedestrian needs, and additional multimodal opportunities necessary to accommodate growth and development.

The City of Apache Junction is located on the eastern edge of the Phoenix Metropolitan area. The City is situated in the northwest portion of Pinal County and a small portion is located in eastern section of Maricopa County. Due to the City's location, the Maricopa Association of Governments (MAG) and Central Arizona Association of Governments (CAAG) coordinate planning activities for Apache Junction. The study area is comprised of approximately 44 square miles and is bounded by Meridian Drive to the west, McKellips Road to the north, Elliot Road alignment to the south, and the Tonto National Forest on the east.

Figure 1.1 shows the study area boundary along with the project influence area. The study area represents the Transportation Improvements Plan boundary limits while the project influence area represents a geographic area beyond the study boundary that directly affects the study area. The project influence area is needed to identify and accurately quantify the impact of traffic generated outside the study area within the City's transportation system.

FIGURE 1.1: STUDY AREA AND PROJECT INFLUENCE AREA



LEGEND

- Study Area
- Influence Area
- City Limits
- Study Roadways
- Other Major Roadways
- County Line

Data Sources: City of Apache Junction, ALRIS, ADOT

STUDY OBJECTIVES

Large capital investments in transportation infrastructure will be required during the next twenty years to accommodate projected levels of growth and development in the Apache Junction area. With guidance from Apache Junction's General Plan's Circulation Element, the 2004 Small Area Transportation Study (SATS), the 2003 Street Circulation and Access Study, and interviews with members of the Technical Advisory Committee (TAC) and other local stakeholders, the following objectives were the focal point for this study:

- Establish a 20-year vision for transportation for the study area that preserves existing transportation system and enhances safety and efficiency.
- Enhance mobility, accessibility, and reliability of travel by providing additional transportation choices.
- Develop a demand responsive Transportation Plan that is based on an integrated land use and transportation system.
- Have continued communication with public and stakeholders.

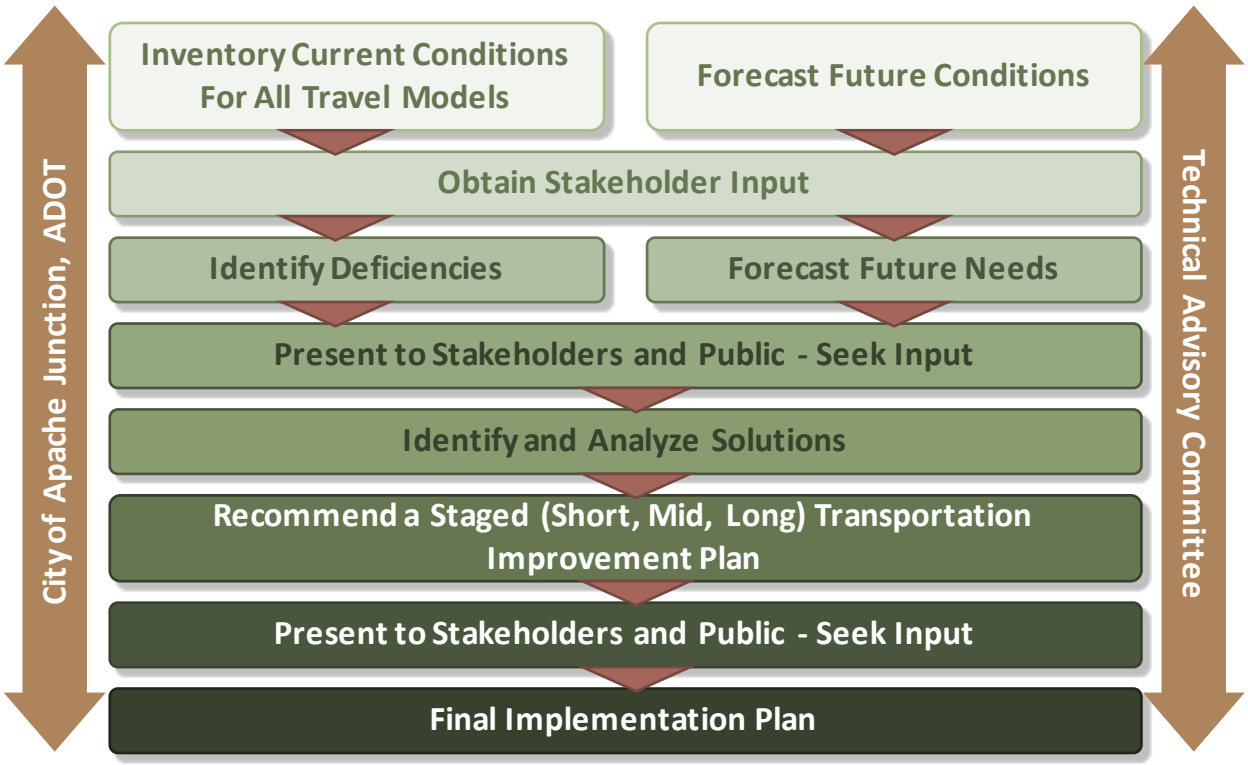
STUDY PROCESS

The study is guided by a Technical Advisory Committee (TAC) that includes representatives from:

- City of Apache Junction
- ADOT
- Pinal County
- CAAG
- City of Mesa
- Arizona State Land Department (ASLD)
- Maricopa County Department of Transportation (MCDOT)
- Bureau of Land Management (BLM)
- Town of Queen Creek
- Maricopa County Flood Control District (MCFCD)

The role of the TAC was to provide guidance, support, advice, suggestions, and recommendations, and to perform document reviews throughout the study process. The First Public Open House was conducted in March 2011 to present existing and projected transportation conditions and issues. The second round of public input involved extensive outreach through online social media and a presentation was given to the City Council of recommended transportation improvements. The study process is illustrated in Figure 1.2.

FIGURE 1.2: STUDY PROCESS



2. EXISTING CONDITIONS

EXISTING LAND USE AND SOCIOECONOMIC CONDITIONS

This section summarizes current land use, socioeconomic conditions, characteristics of the physical and natural environments, environmental justice population review (Title VI), and cultural resources inventory for the study area.

Land Ownership Status

The Apache Junction planning boundary covers approximately 44 square miles of land area. Approximately 53% of the land is privately owned, 35% is managed by ASLD, 9.4% is managed by the BLM, and less than 2% is managed by the Bureau of Reclamation. Figure 2.1 displays the current land ownership status in the study area.

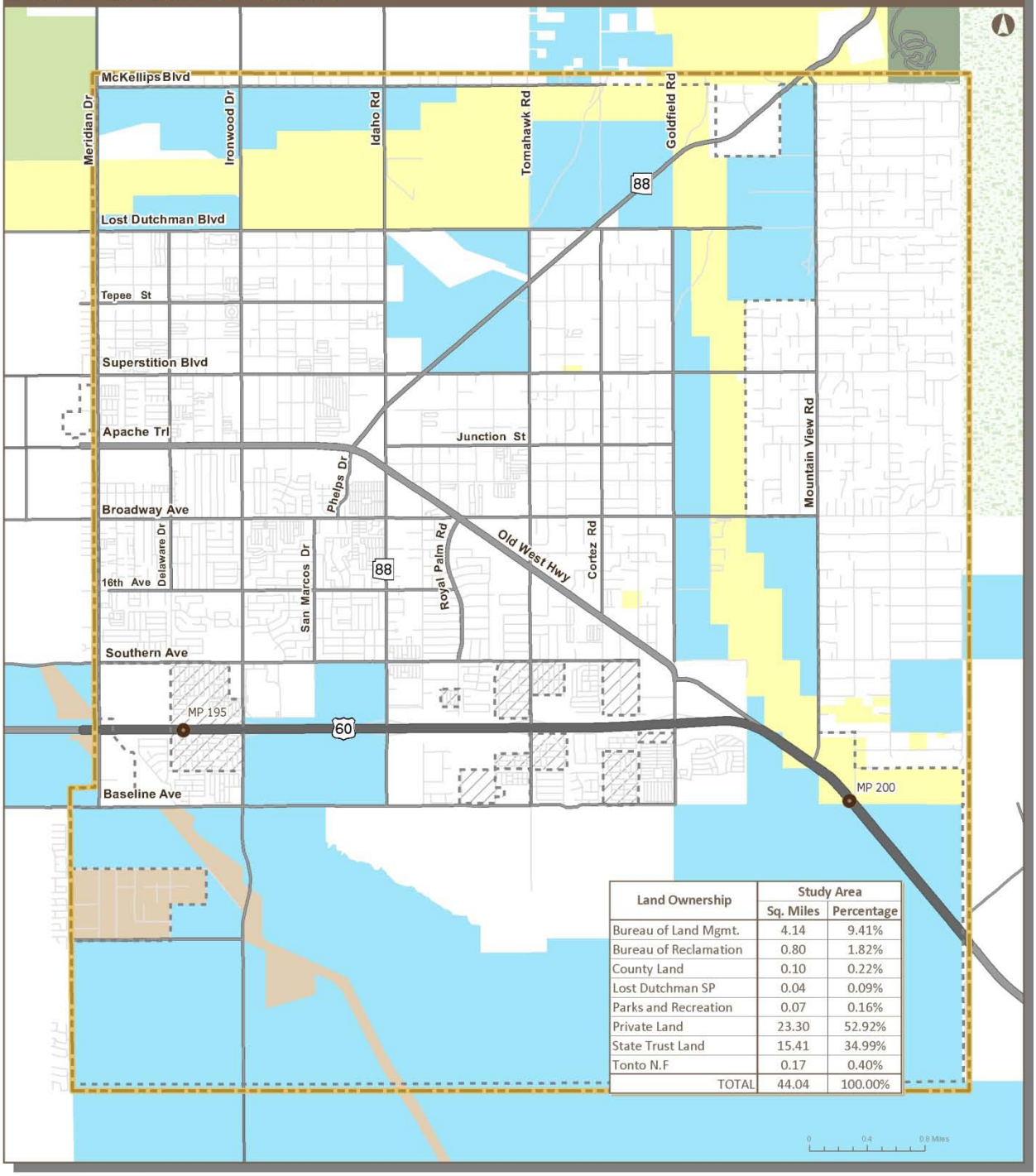
Socioeconomic Conditions

Creating an inventory of the study area's socioeconomic characteristics and understanding this data is a critical element for any transportation planning study. Socioeconomic data is one of the primary inputs to the travel demand modeling process that is used to forecast traffic volumes in the study area. Below is a list of key statistics for the study area:

- Land Area: 44.04 square miles
- Population (Year 2010): 43,474
- Total Housing Units (Year 2010): 27,137
- Occupied Housing Units (Year 2010): 18,978
- Median Age: 47.3*
- Median Household Income: $39,467*
- Below Poverty Percentage (Year 2000): 11.35%
- Principal Economic Activities: Recreation and retirement

** Source: U.S. Census Bureau, 2006-2010 American Community Survey*

FIGURE 2.1: LAND OWNERSHIP



Land Ownership	Study Area	
	Sq. Miles	Percentage
Bureau of Land Mgmt.	4.14	9.41%
Bureau of Reclamation	0.80	1.82%
County Land	0.10	0.22%
Lost Dutchman SP	0.04	0.09%
Parks and Recreation	0.07	0.16%
Private Land	23.30	52.92%
State Trust Land	15.41	34.99%
Tonto N.F	0.17	0.40%
TOTAL	44.04	100.00%

LEGEND

- Bureau of Land Management
- Bureau of Reclamation
- Lost Dutchman State Park
- Parks and Recreation
- State Trust Land
- Tonto National Forest
- Freeway
- Study Roadway
- Local Roadway
- City Boundary
- County Island
- Study Area

Data Sources: City of Apache Junction, ALRIS, ADOT

Population and Housing Unit Growth Trends

According to the 2000 U.S. Census, the study area had a population of approximately 38,095 people. Since 2000, the study area has experienced a population growth rate of 1.41% per year, which is lower than the average statewide growth rate of 2.46% per year and significantly lower than the Pinal County growth rate of 10.91% per year. Table 2.1 lists the population and housing growth trends from 2000 to 2010.

The study area also had a 0.31% per year housing unit increase since 2000; the 2000 U.S. Census counted 26,321 housing units in the study area and in 2010 approximately 27,137 housing units are within the study area boundary.

TABLE 2.1: POPULATION AND HOUSING UNIT GROWTH TRENDS

Geographic Area	Population		Population Growth Rate	Housing Units		Housing Units Growth Rate
	2000	2010		2000	2010	
Study Area	38,095	43,474	1.41%	26,321	27,137	0.31%
Pinal County	179,727	375,770	10.91%	81,154	159,222	9.62%
State of Arizona	5,130,632	6,392,017	2.46%	2,189,189	2,844,526	2.99%

Source: U.S. Census Bureau, Arizona Department of Commerce

Employment Overview

Recreation, in-migrating retirees, and seasonal residents are the primary drivers of Apache Junction's economy. Currently, the City of Apache Junction has approximately 9,600 jobs. Major employers in the community include City and County governments, the local school district, local industrial facilities, and several grocery and merchandise stores. In addition, Pinal County is a major employer at the Apache Junction Government Complex and the Pinal County Sherriff's Office (PCSO) sub-station located just outside the study limits along King's Ranch Road. Within the study area there are 10 schools: three elementary schools, two middle schools, one high school, three charter schools, and one community college. Table 2.2 lists the major employers within the study area.

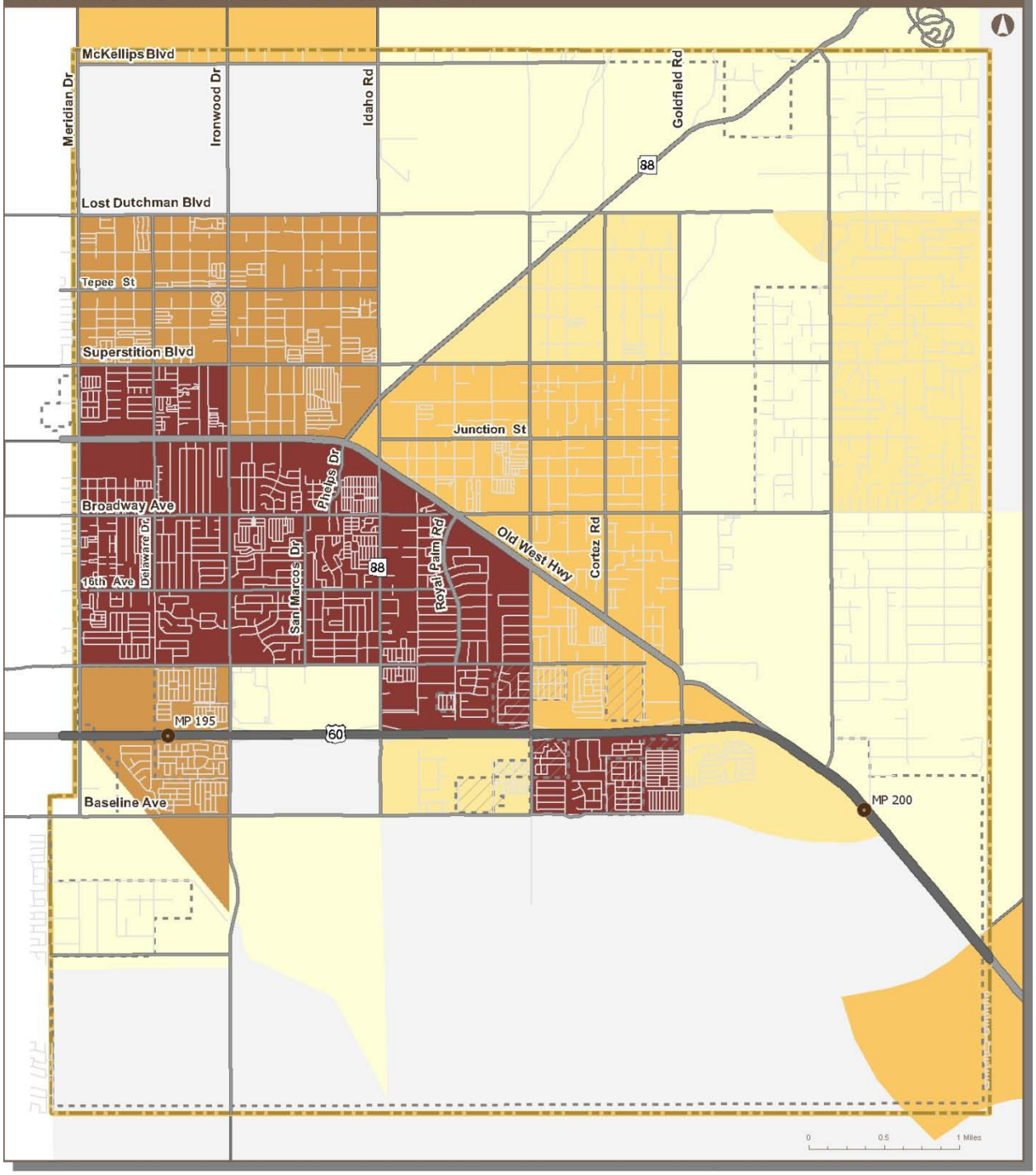
TABLE 2.2: MAJOR EMPLOYERS

Major Employers	Employees
Apache Junction Unified School District	607
Wal-Mart Supercenter Store #1831	352
Mountain Health & Wellness*	238
City of Apache Junction	221
Apache Junction Fire District	81
Apache Junction Medical Center	80
United States Postal Service	75
Empire Southwest	53
Fry's Food Stores	49
Central Arizona College – Superstition Mountain Campus	41
Safeway Stores	33

Source: City of Apache Junction, June 2011

Population, housing units, and various types of employment categories were inventoried for each Traffic Analysis Zones (TAZ) in the study area. TAZs are geographic subdivisions of the study area bounded by roads, political boundaries, natural and man-made geographical constraints (such as rivers, washes, etc.). For this study, Pinal County's countywide travel demand model was used. Forty-three TAZs included in the Pinal County travel demand model are within the Apache Junction study limits. Figure 2.2 illustrates the population density per TAZ and Figure 2.3 illustrates the occupied housing units and employment estimates and distribution at the TAZ level.

FIGURE 2.2: POPULATION DENSITY BY TAZ



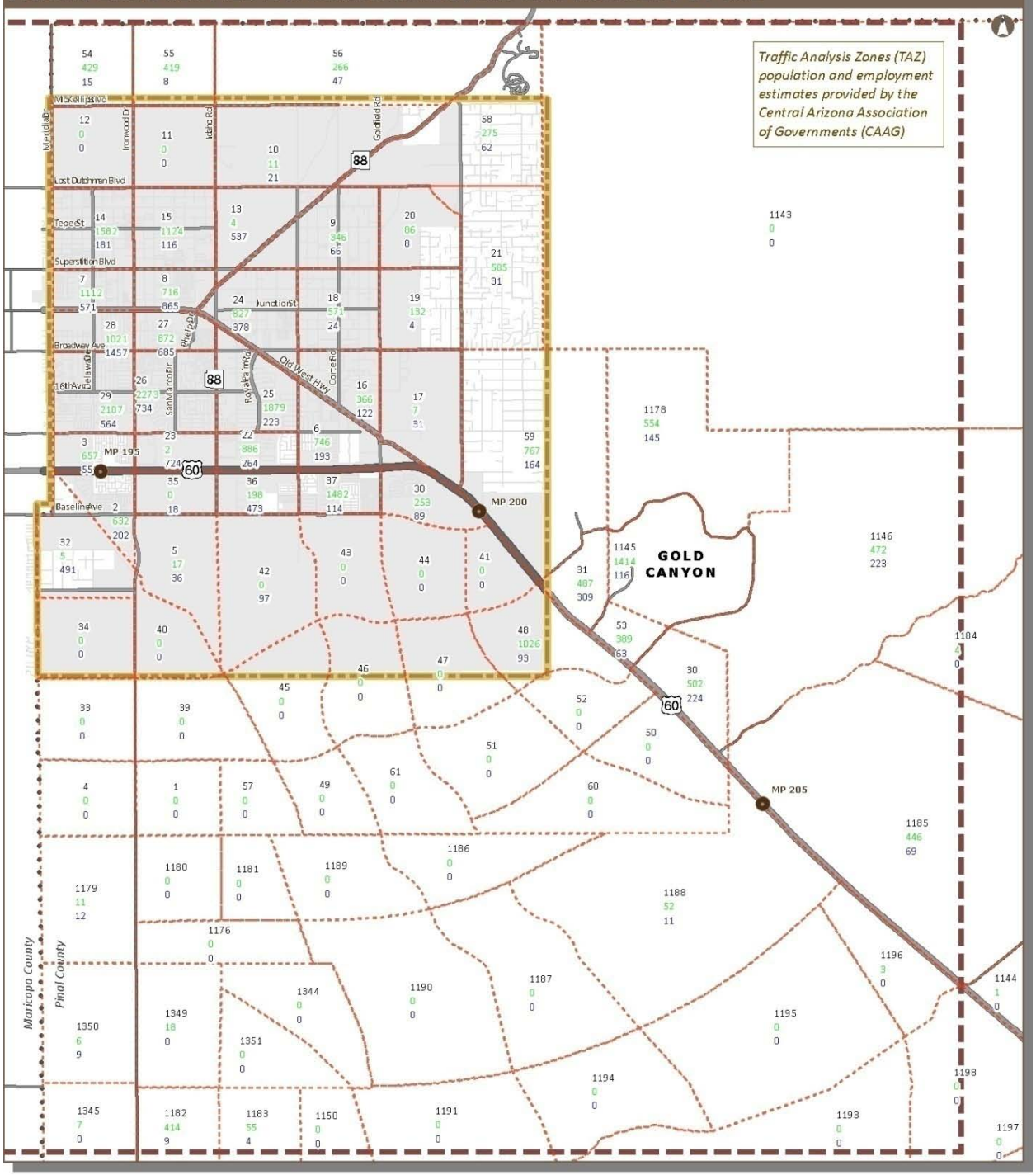
LEGEND

Population Per Square Mile

- 0
- 0 - 500
- 501 - 1,000
- 1,001 - 2,000
- 2,001 - 4,000
- 4,001 - 6,073
- Freeway
- Study Roadway
- Local Roadway
- City Boundary
- Study Area
- County Island

Data Sources: City of Apache Junction, CAAG, ALRIS, ADOT

FIGURE 2.3: OCCUPIED DWELLING UNITS AND EMPLOYMENT BY TAZ



LEGEND

XX TAZ Number

XX Occupied Dwelling Units

XX Total Employment

Freeway

Study Roadway

Local Roadway

TAZ Boundary

Study Area

Influence Area

County Line

City Limits

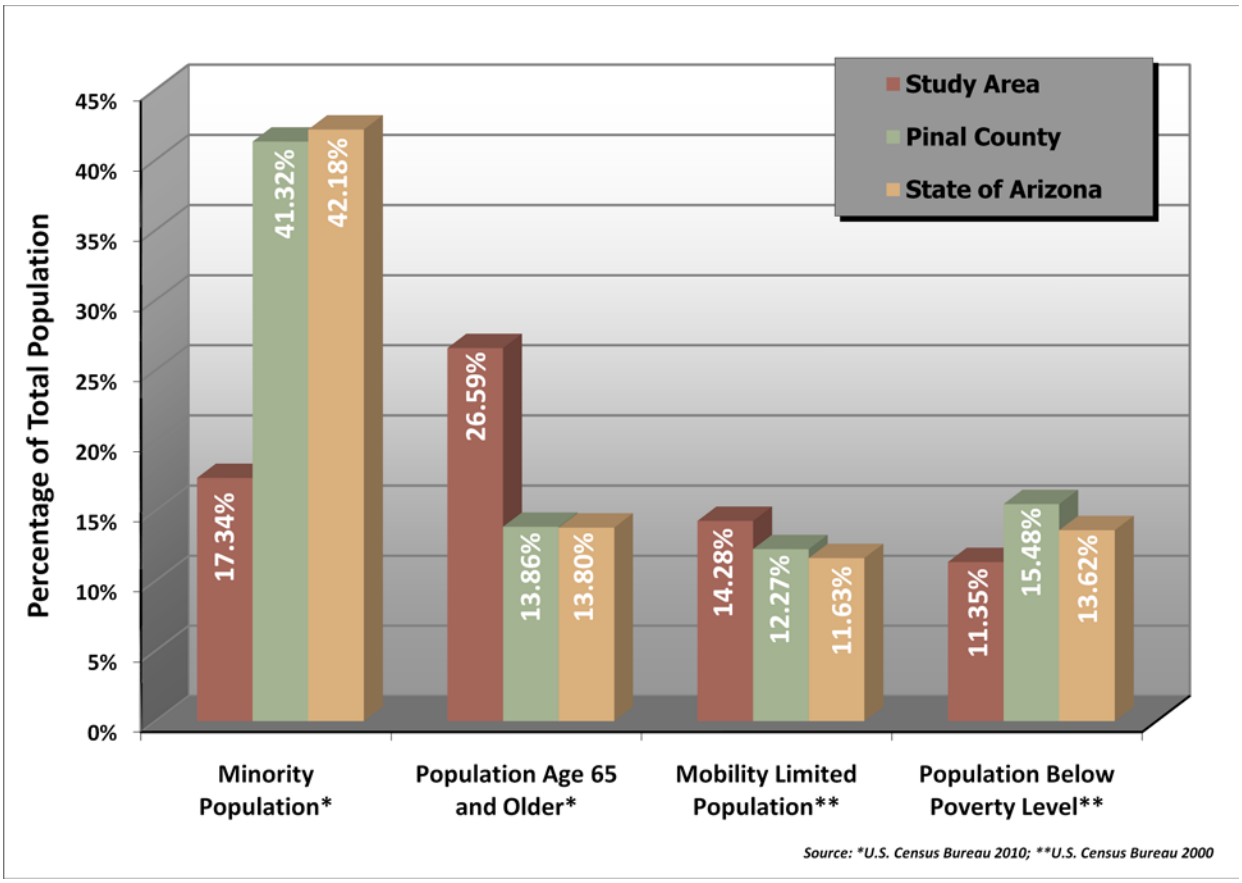
0 0.7 1.4 Miles

Data Sources: City of Apache Junction, ALRIS, CAAG, ADOT

Environmental Justice Review (Title VI)

Title VI of the Civil Rights Act of 1964 and related statutes require that individuals are not discriminated against based on race, color, national origin, age, sex, or disability. Executive Order 12898 on Environmental Justice dictates that any programs, policies, or activities to be implemented are not to have disproportionately high adverse human health and environmental effects on minority populations. Thus, in relation to this study, transportation improvements should not adversely impact such groups disproportionately. In addition to assuring that these policies are adhered to, a variety of possible alternatives should be developed and considered in order to make sure all groups are fairly represented in the amount and type of transportation services provided. Figure 2.4 compares the Title VI data reviewed for the study area, Pinal County, and the State of Arizona.

FIGURE 2.4: MINORITY, AGE 65 AND OLDER, MOBILITY LIMITED, AND BELOW POVERTY POPULATION COMPARISON



Minority Population

Minority population consists of individuals who are members of the following population groups: Native American or Alaskan Native, Asian or Pacific Islander, Black, and Hispanic. According to the 2010 U.S. Census data:

- 17.3% of the population is minority, with Hispanics as the largest minority group.
- Minority population is significantly less than the countywide and statewide estimates.

Figure 2.5 illustrates the minority population concentrations throughout the study area.

Population Age 65 and Over

According to the 2010 U.S. Census data:

- Median age in the City of Apache Junction is 47 years old
- Within the study area approximately 26.6% of the population is over 65 years of age.
- Population over 65 years of age is higher than the countywide and statewide estimates.

Figure 2.6 displays the age 65 and over population concentrations.

Below Poverty Population

The Census Bureau uses a set of income thresholds that vary by family size and composition to determine below poverty population. If a family's total income is less than the family's threshold, then that family and every individual in it is considered in poverty. The 2000 U.S. Census data shows that:

- 11.3% of the total population in the study area is classified as below poverty.
- Below poverty status is lower than the countywide and statewide estimates.

Figure 2.7 illustrates the below poverty population concentrations.

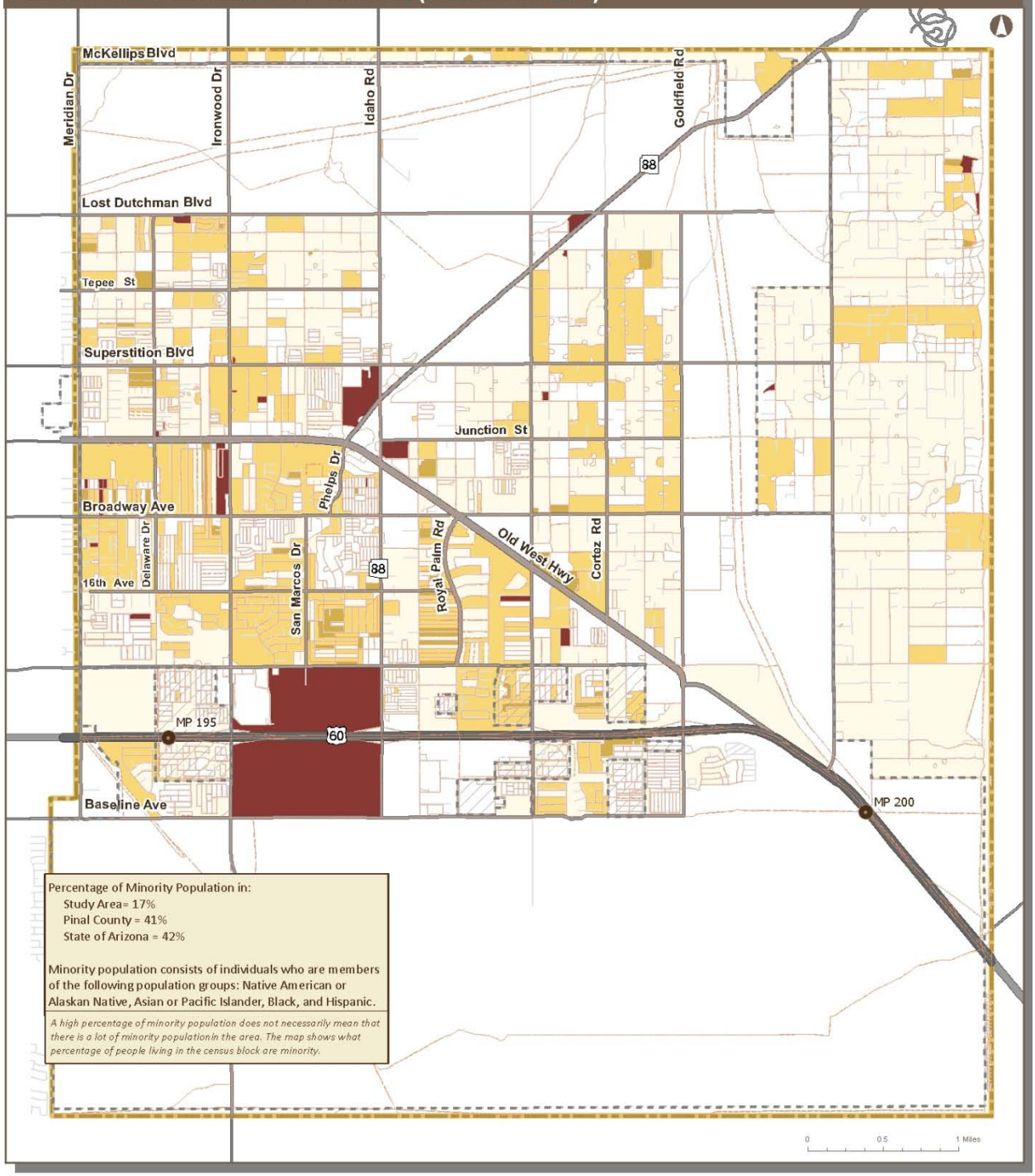
Mobility-Limited Population

The mobility-limited population is made up of individuals who have a physical or mental disability that prohibits them from operating an automobile. In general, mobility-limited population group requires access to public transportation and hence for transportation planning purposes, it is critical to identify the locations with high concentration of this population group. According to the 2000 U.S. Census:

- 14.3% of the total population in the study area is mobility-limited
- The study area's mobility limited population is higher than both the statewide and county's estimate of 11.6% and 12.3%.

Figure 2.8 shows the mobility-limited population concentrations in the study area.

FIGURE 2.5: MINORITY POPULATION (CENSUS BLOCK)



LEGEND

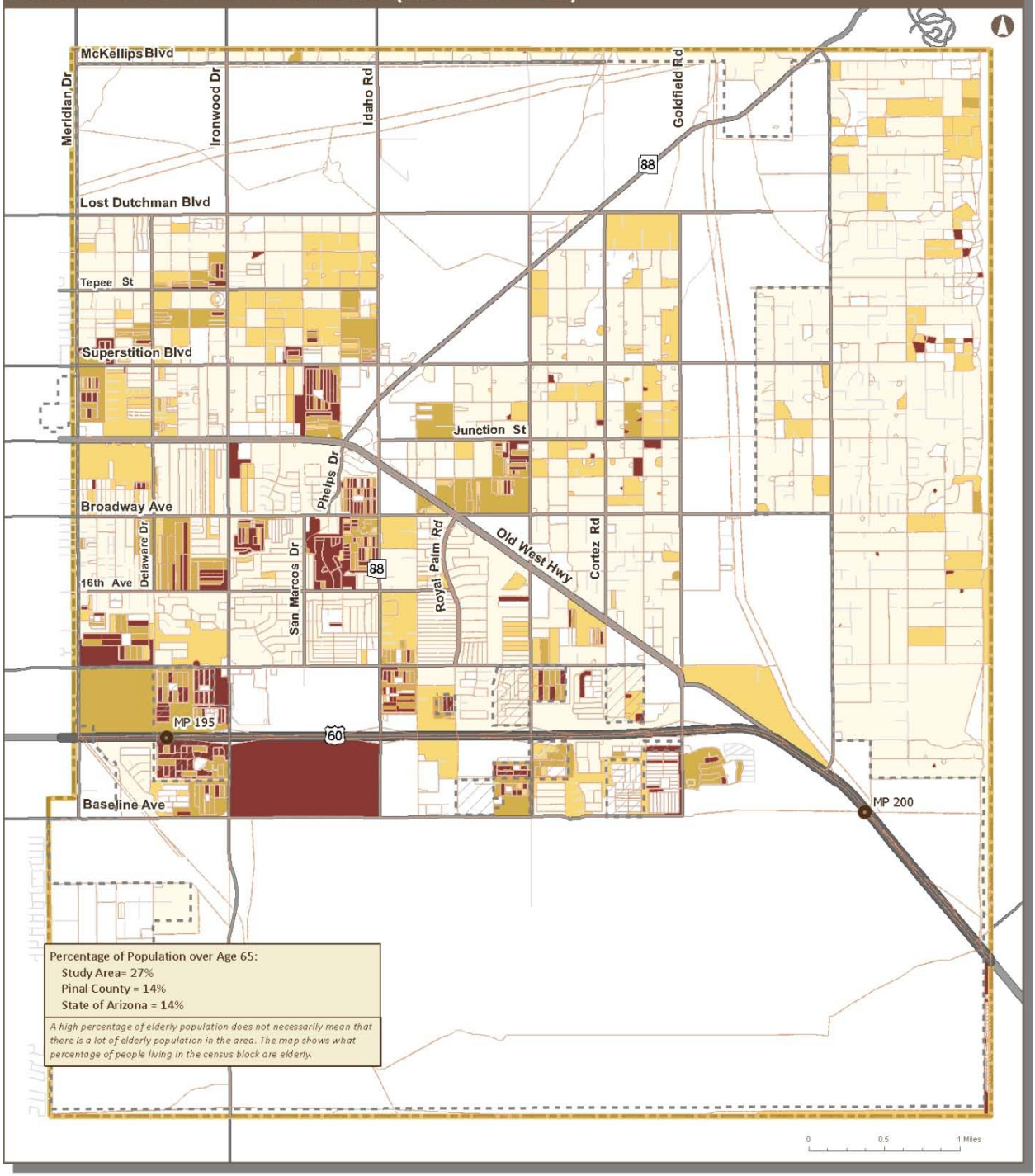
Minority Population Percentage By Census Block

Below Study Area Average	Above Study Area Average
0.0%	17.1% - 43%
0.1% - 17%	43.1% - 69%
	> 70%

Freeway
Study Roadway
Local Roadway
Study Area
City Boundary
County Island

Data Sources: City of Apache Junction, Census Bureau, Census of 2010 Summary 1 Data

FIGURE 2.6: ELDERLY POPULATION (CENSUS BLOCK)



Percentage of Population over Age 65:
Study Area= 27%
Pinal County = 14%
State of Arizona = 14%

A high percentage of elderly population does not necessarily mean that there is a lot of elderly population in the area. The map shows what percentage of people living in the census block are elderly.

LEGEND

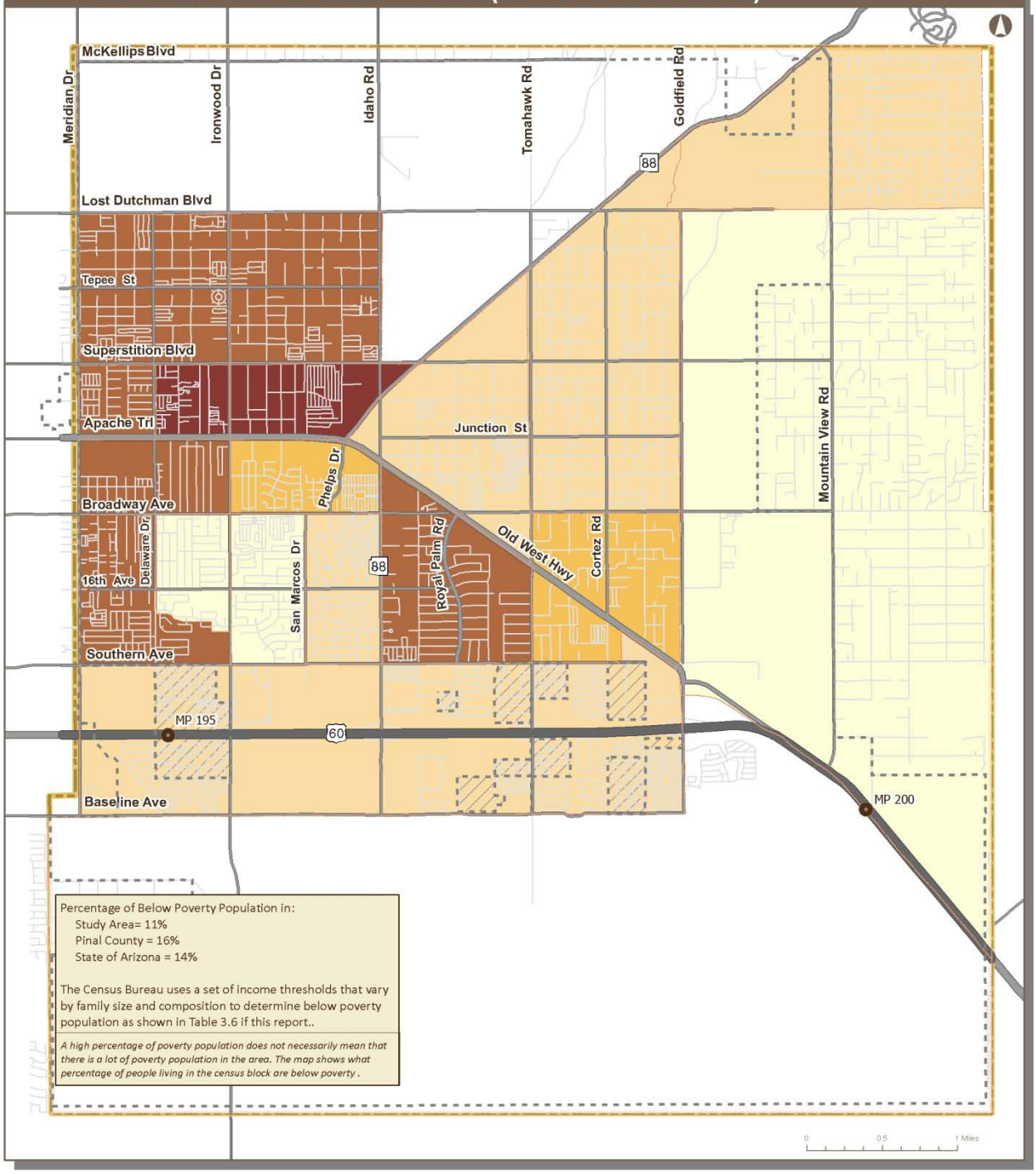
Elderly Population Percentage By Census Block

Below Study Area Average	Above Study Area Average
0.0%	27.1% - 50%
0.1% - 27.0%	50.1% - 75%
	> 75.1%

Freeway
Study Roadway
Local Roadway
Study Area
City Boundary
County Island

Data Sources: City of Apache Junction, Census Bureau, Census of 2010 Summary 1 Data

FIGURE 2.7: BELOW POVERTY POPULATION (CENSUS BLOCK GROUP)



LEGEND

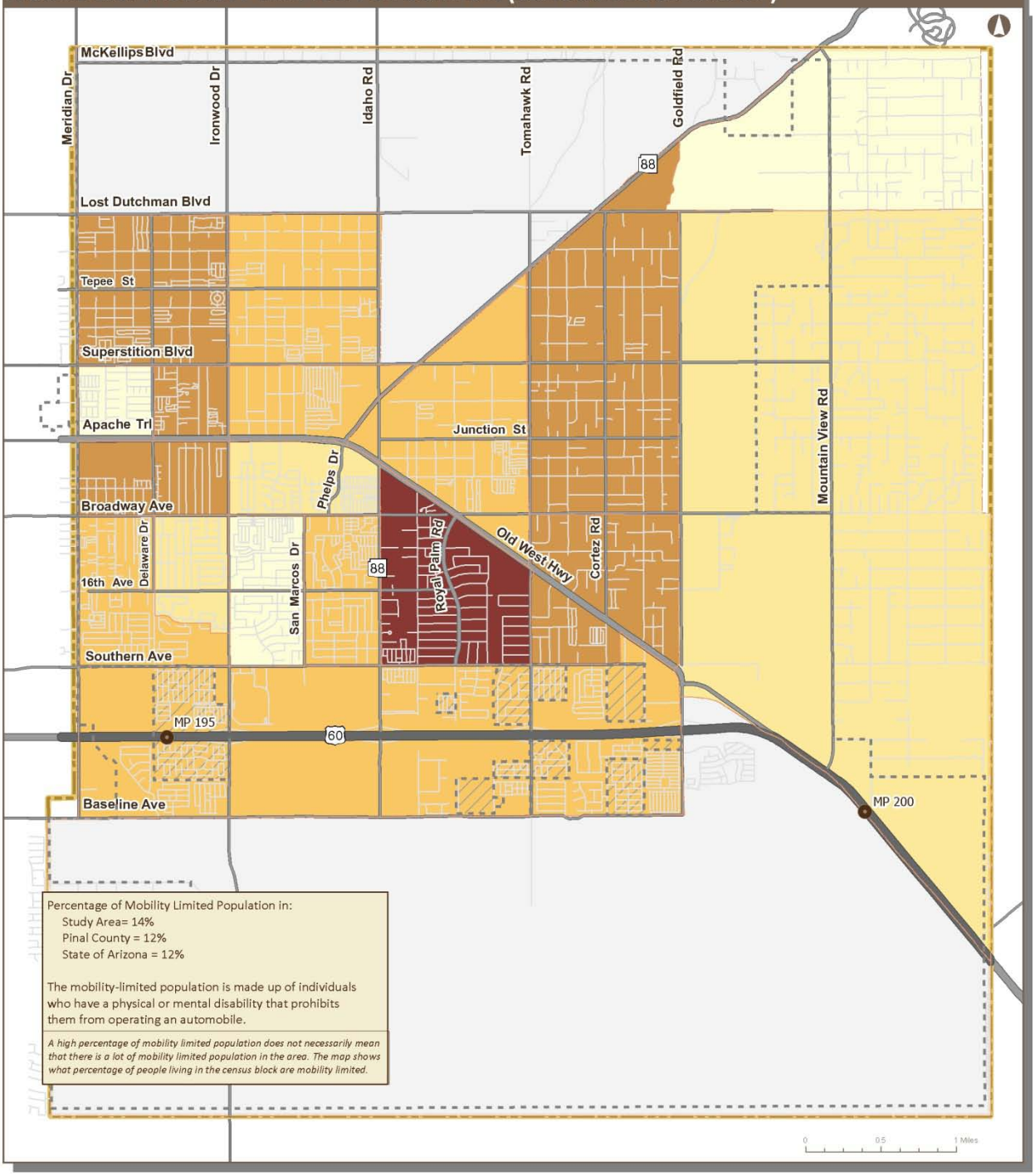
Below Poverty Population Percentage (By Census Block Group)

Below Study Area Average	Above Study Area Average
0%	11.1% - 15%
0.1% - 5.%	15.1% - 20%
5.1% - 11%	> 20%

Freeway
Study Roadway
Local Roadway
Study Area
City Boundary
County Island

Data Sources: City of Apache Junction, Census Bureau: Census 2000 Summary File 1 & Summary File 3 Data

FIGURE 2.8: MOBILITY LIMITED POPULATION (CENSUS BLOCK GROUP)



LEGEND

Limited Mobility Population Percentage (By Census Block Group)

Below Study Area Average
- 0%
- 0.1% - 7%
- 7.1% - 10%
- 10.1% - 14%

Above Study Area Average
- 14.1% - 20%
- > 20%

- Freeway
- Study Roadway
- Local Roadway
- Study Area
- City Boundary
- County Island

Data Sources: City of Apache Junction, Census Bureau: Census 2000 Summary File 1 & Summary File 3 Data

Environmental and Cultural Resources Overview

Inventory of the physical, natural, and cultural environment is an important component of the transportation planning process. When environmental conditions and concerns are reviewed in the early stages of the transportation planning process, transportation solutions can be developed to lessen the negative impacts on the natural environment.

Environmental Overview

Vegetation:	◆ Two types of vegetation exist in the study area; Arizona Upland Subdivision - Sonoran Desert Scrub and Lower Colorado River Subdivision - Sonoran Desert Scrub.
Water Features:	◆ Major hydrological features in the area include Central Arizona Project (CAP) canal, Weeks Wash, and Bulldog Wash.
Wildlife Habitat Block and Wildlife Linkage Zone:	◆ Located mostly in the northern portion of the study area, the wildlife habitat block traverses approximately 5% of the study area ◆ Wildlife Linkage Zone covers approximately 16% of the study area and traverses through the southwest portion of the study area.

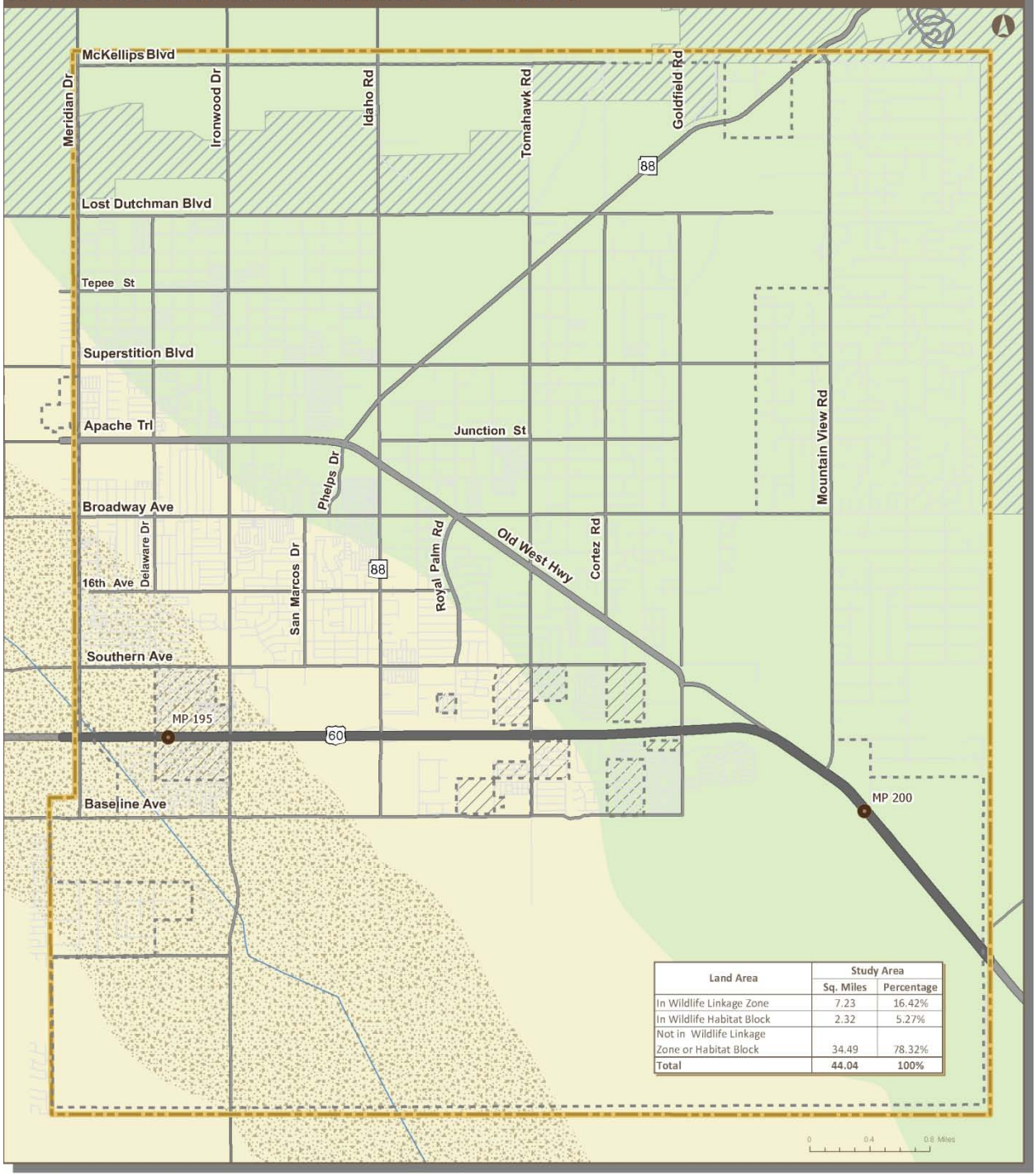
Figure 2.9 presents an environmental overview of the study area

Areas of Concern

Underground Storage Tanks:	◆ The Arizona Department of Environmental Quality (ADEQ) has identified 26 locations in the study area that are former or existing underground storage tank sites.
Air Quality:	◆ The study area is in the PM-10 and 8-hour Ozone Nonattainment Areas.
Flooding:	◆ The study streets that intersect Weeks Wash are prone to flooding during periods of heavy rainfall. ◆ The rolling terrain in the northeast portion of the study area creates many low-water crossings.
Earth Fissures:	◆ Nearly all fissures located in the vicinity of Apache Junction are located in the southwest corner of the study area.

Figure 2.10 illustrates environmental issues within the study area.

FIGURE 2.9: NATURAL ENVIRONMENTAL OVERVIEW



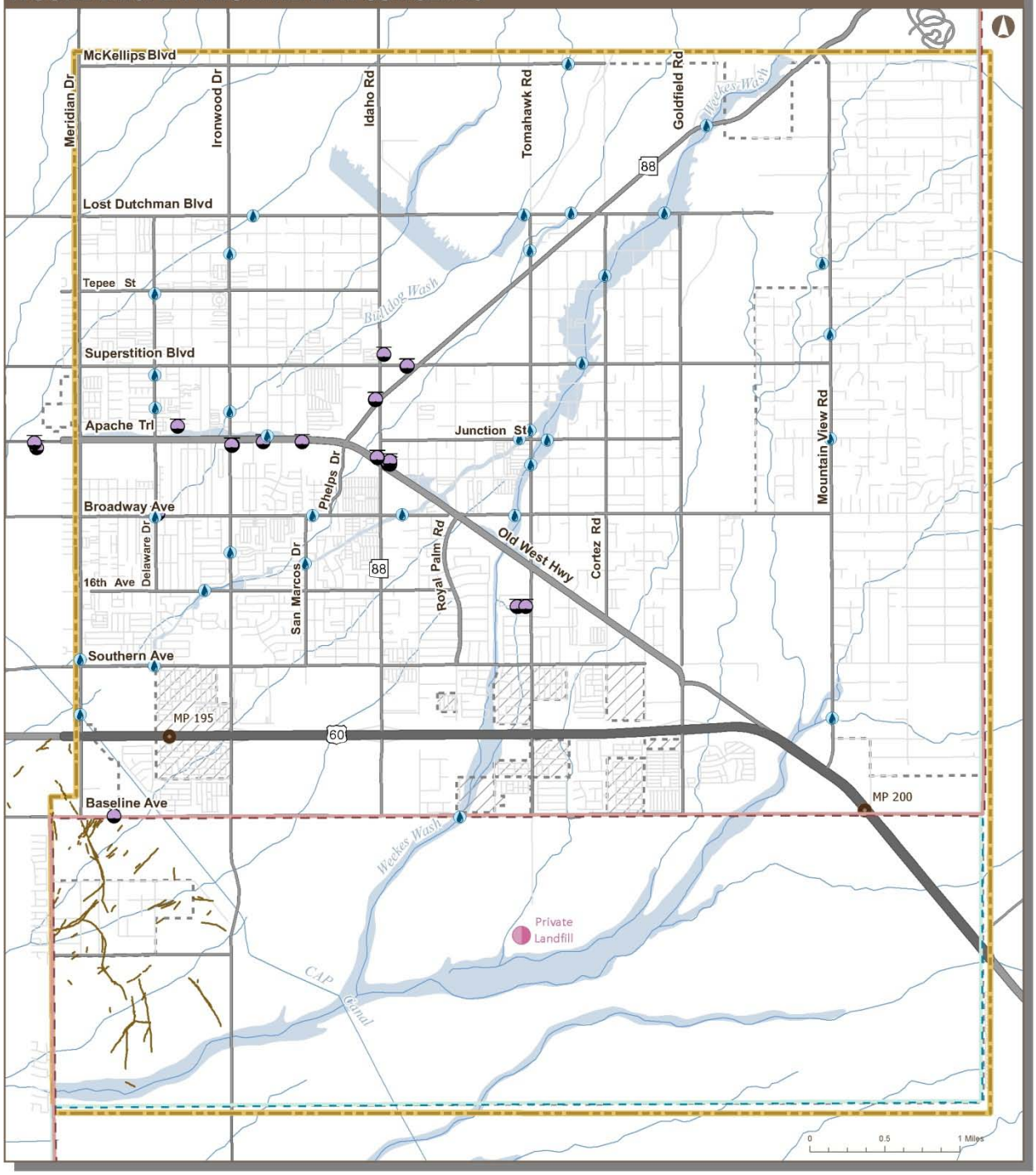
Land Area	Study Area	
	Sq. Miles	Percentage
In Wildlife Linkage Zone	7.23	16.42%
In Wildlife Habitat Block	2.32	5.27%
Not in Wildlife Linkage Zone or Habitat Block	34.49	78.32%
Total	**44.04**	**100%**

LEGEND

- Central Arizona Project Canal
- Wildlife Linkage Zone
- Habitat Block
- Arizona Upland Subdivision- Sonoran Desertscrub
- Lower Colorado River Subdivision- Sonoran Desertscrub
- Freeway
- Study Roadway
- Local Roadway
- Study Area
- City Boundary
- County Island

Data Sources: City of Apache Junction, ALRIS, ADOT

FIGURE 2.10: ENVIRONMENTAL CONCERNS



LEGEND

- Potential Roadway Flooding
- Leaking Underground Storage Tanks (ADEQ)
- Landfill
- Earth Fissure
- Streams and Washes
- Flood Hazard Areas
- PM10 Nonattainment Area
- 8-hour Ozone Nonattainment Area
- Freeway
- Study Roadway
- Local Roadway
- Study Area
- City Boundary
- County Island

Data Sources: City of Apache Junction, ALRIS, ADOT, ADEQ, ATIS, AZGS

TRANSPORTATION CONDITIONS

This section inventories major elements of the existing transportation system and documents the status/condition of each element. Major elements inventoried include bridges, pavement condition, crashes, traffic conditions, roadway performance, and other modes of transportation in the study area.

Existing Roadway System

Major Roadways

The study area is comprised of a network of major arterials, collectors, and local roadways. The following is a summary of characteristics of the major roadways that traverse the study area:

- *US 60* is an ADOT owned east-west highway that serves as a commuter freeway to the Phoenix metropolitan area and as a regional travel corridor.
- *SR 88/ Idaho Road* is an ADOT owned north-south urban principal arterial that begins at the junction of US 60 and travels northeast along the Superstition Mountains to Roosevelt Lake.
- *Ironwood Drive* is a major north-south corridor that serves local and regional traffic.
- *Apache Trail* is an east-west urban principal arterial that serves both local and regional traffic.
- Old West Highway is a northwest-southwest urban principal arterial that connects Apache Trail and SR 88 to US 60.

Roadway Functional Classification

Functional Classification is the grouping of streets and highways by the character of service they intend to provide. Table 2.3 lists the functional classification types and definitions for major roadways defined by the City of Apache Junction's General Plan.

Figure 2.11 displays the current FHWA approved functional classification for roadways within the study area. Many of the study roadways shown on the map operate at a classification different than those approved by FHWA in early 1990s. In order to qualify for federal funding, FHWA classification of a roadway should be collector or above. As shown in Figure 2.11, several roadways (shown as dashed lines) are not functionally classified. It is recommended that the City apply for reclassification of these roadways with FHWA with assistance from CAAG and ADOT.

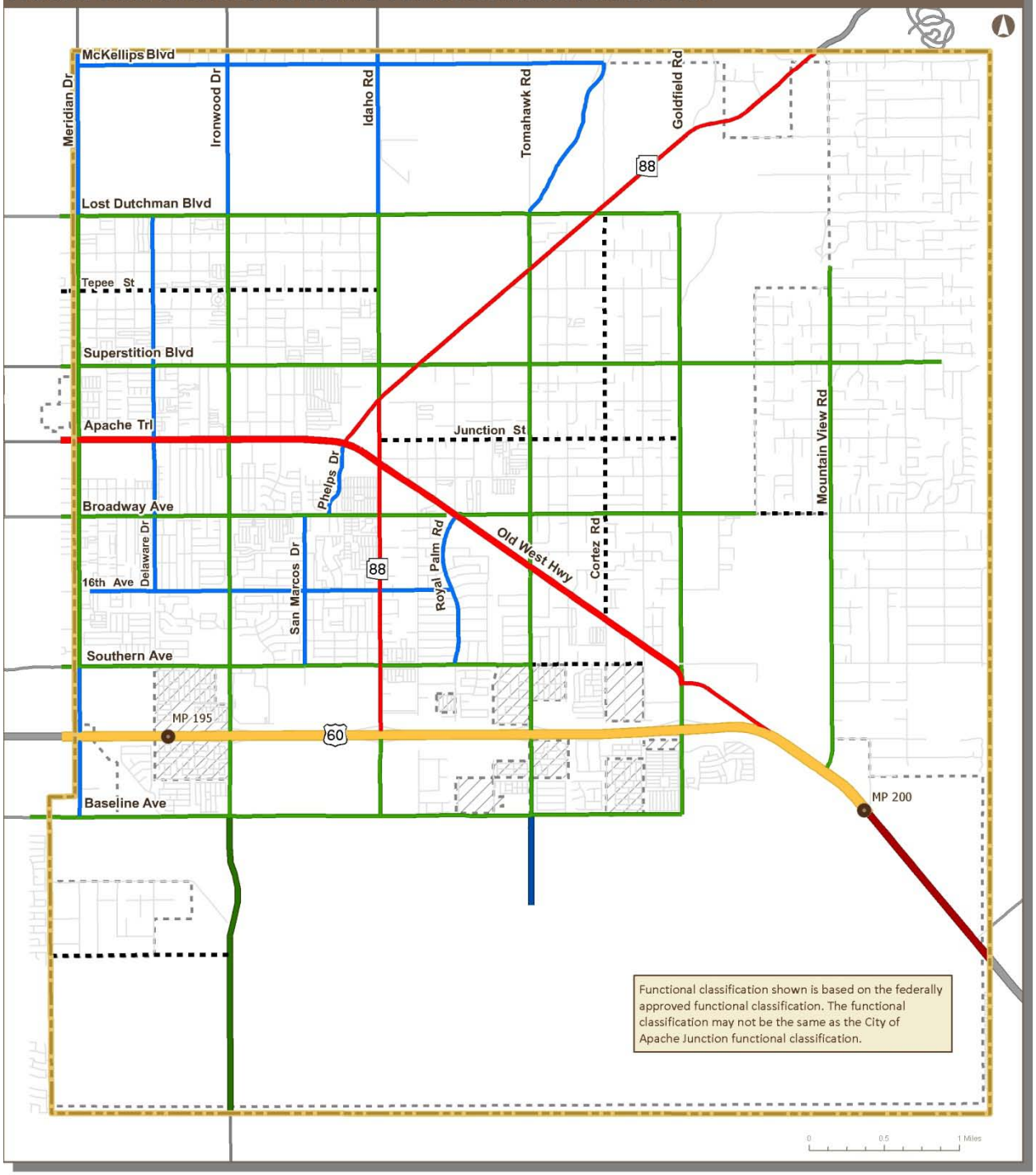
TABLE 2.3: ROADWAY FUNCTIONAL CLASSIFICATION DEFINITION

Classification	Description
Freeways	Freeways are divided highways with four or more travel lanes that are designed to carry large volumes of high-speed traffic and serve long, regional trips. Freeways have full access control, with entry and exit restricted to grade-separated traffic interchanges. All roadways classified as freeways are portions of the State and Federal Highway System and are under the jurisdiction of ADOT.
Parkways	Parkways are high capacity surface streets with substantial access control and potential grade separations that are designed to accommodate regional travel over significant distances. A minimum of six through lanes is the typical width for parkways.
Major Arterials	Major arterials are designed to move high volumes of traffic over substantial distances, but may also provide direct access to adjacent properties. Arterial streets are usually located on one-mile section lines and intersections are at-grade. Six through lanes is the normal width.
Minor Arterials	Minor arterials are similar to major arterials but with somewhat lower design requirements. Four through lanes is the normal width.
Collectors	Collector streets are designed to carry lower traffic volumes for shorter distances than arterials. Collector streets receive traffic from neighborhoods and distribute it to arterials and vice versa. They serve more of a land access function as opposed to providing mobility for long-distance traffic. Two to four through lanes is the typical width.
Local Streets	Local streets provide access directly to local property and are not designed to accommodate through traffic. Two lanes is the usual width.

Number of Lanes and Posted Speed Limits

A field review was conducted to inventory the number of lanes and posted speed limits for major roadways in the study area. In addition, traffic control type (signals, roundabouts, stop signs, etc.) at major intersections was also inventoried. Figure 2.12 displays the number of lanes for each roadway and Figure 2.13 presents the posted speed limits and traffic signal locations.

FIGURE 2.11: EXISTING ROADWAY FUNCTIONAL CLASSIFICATION

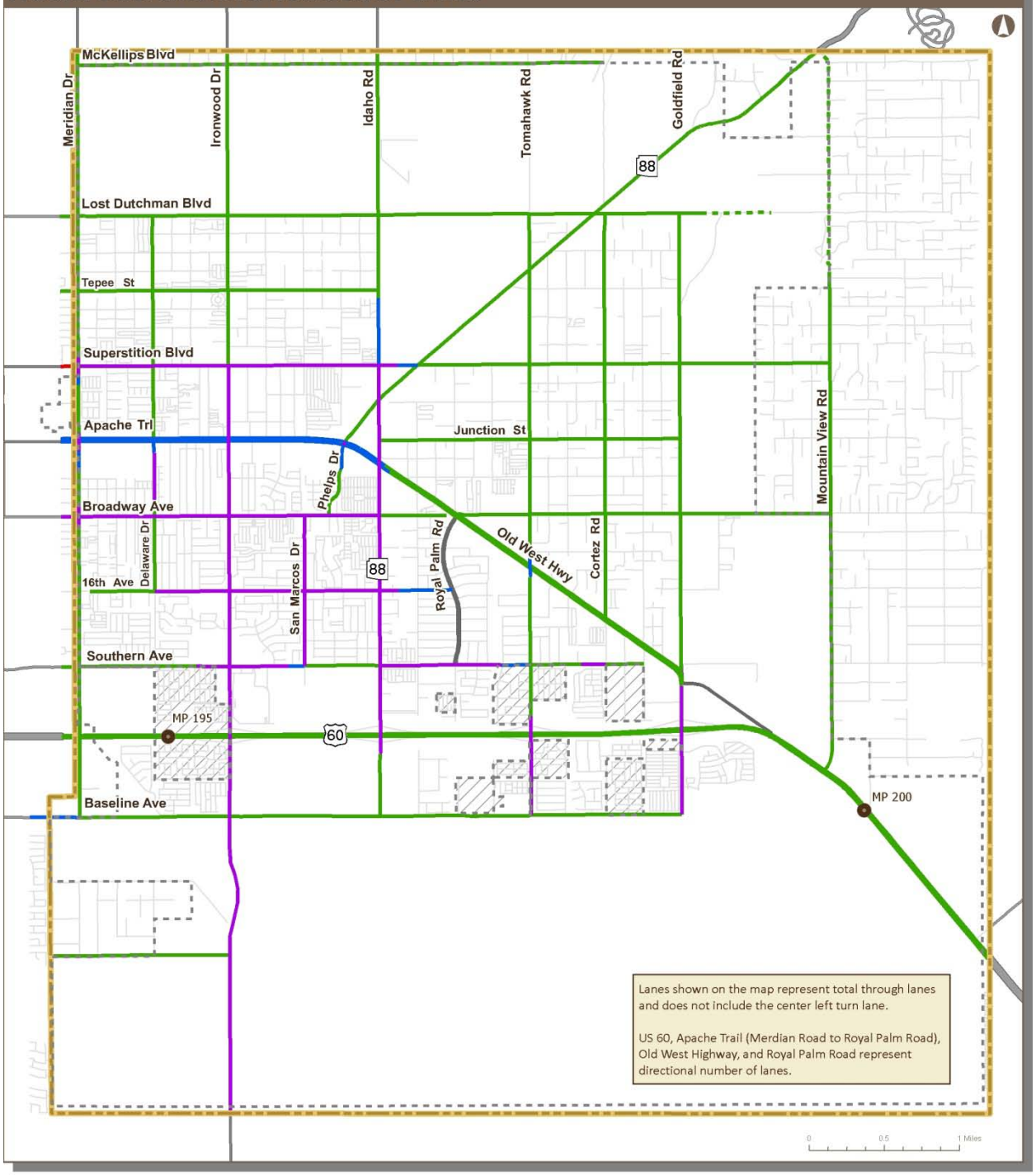


LEGEND

- Urban Other Freeway
- Urban Principal Arterial
- Urban Minor Arterial
- Urban Collector
- Rural Principal Arterial
- Rural Minor Arterial
- Rural Major Collector
- Study Roadways Not Federally Classified
- Local Roadway
- Study Area
- City Boundary
- County Island

Data Sources: City of Apache Junction, ADOT

FIGURE 2.12: EXISTING NUMBER OF LANES

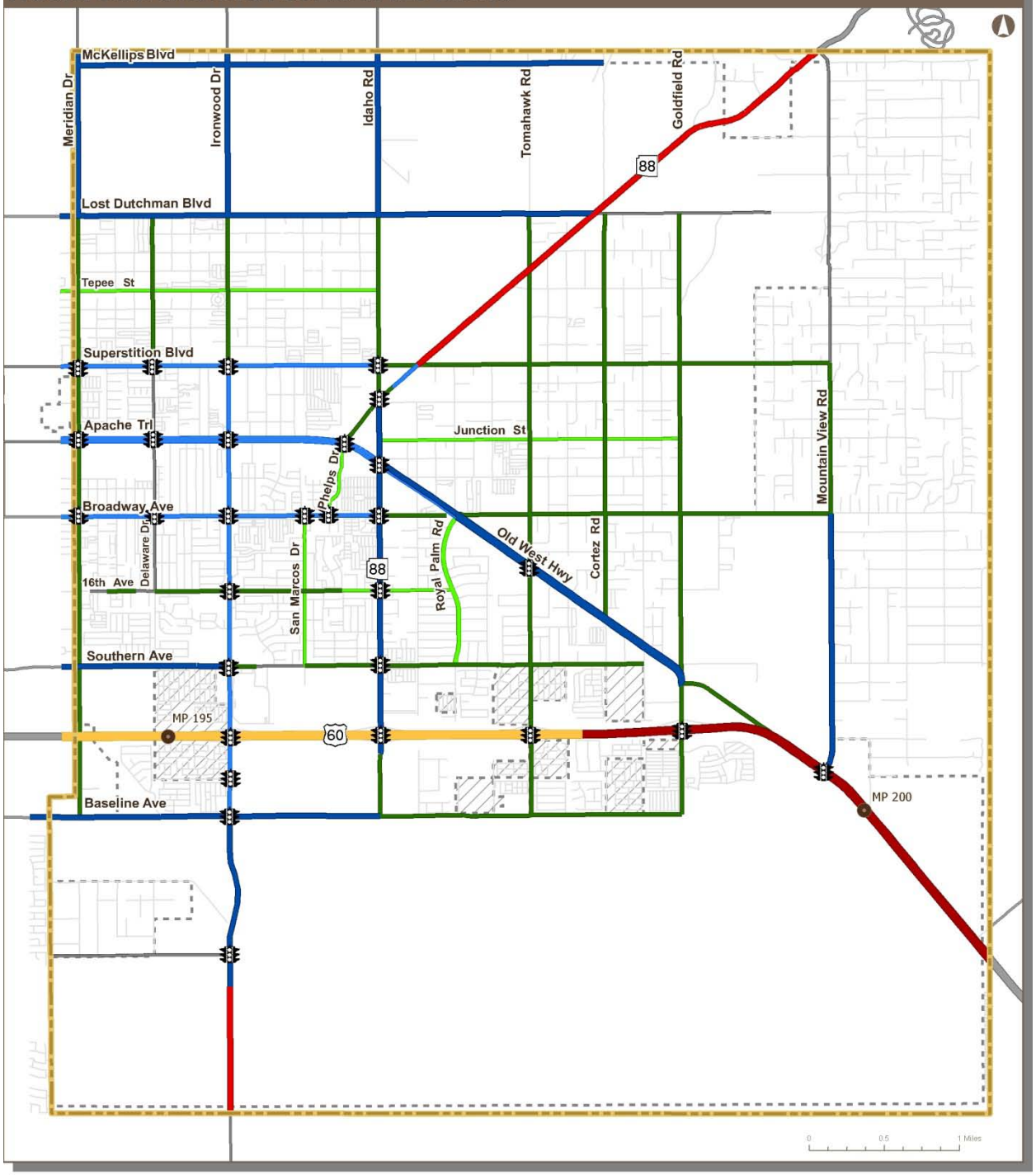


LEGEND

- 5 Lanes Paved
- 4 Lanes Paved
- 3 Lanes Paved
- 2 Lanes Paved
- 2 Lanes Unpaved
- 1 Lane Paved
- Local Roadway
- City Boundary
- Study Area
- County Island

Data Sources: City of Apache Junction, ADOT

FIGURE 2.13: EXISTING POSTED SPEED LIMITS



LEGEND

- Traffic Signal
- 25 MPH
- 30 MPH
- 35 MPH
- 40 MPH
- 45 MPH
- 50 MPH
- 55 MPH
- 65 MPH
- Study Area
- City Boundary
- County Island

Data Sources: City of Apache Junction, ADOT

Pavement Condition

Pavement condition information for US 60 and SR 88 in the study area was obtained from the ADOT Pavement Management System and pavement condition information for the remaining study roadway network was obtained from the City of Apache Junction. Not including US 60, the study area is comprised of 85.8 miles of roadway, in which:

- 2.2 miles are scheduled for street maintenance and treatment assessment.
- 13.4 miles are scheduled for street maintenance only.
- 23.3 miles are scheduled street treatment assessment only.

Table 2.4 lists the roads scheduled for maintenance or treatment assessment, and Figure 2.14 presents an illustration of these road segments.

TABLE 2.4: APACHE JUNCTION ROADS PAVEMENT CONDITION

Street Name	Beginning	Ending	Length (miles)	Condition
Meridian Road	McKellips Boulevard	US 60	4.6	Schedule Treatment Assessment
Ironwood Drive	McKellips Boulevard	0.50 mile north of Lost Dutchman Boulevard	0.5	Schedule Treatment Assessment
Ironwood Drive	0.50 mile north of Lost Dutchman Boulevard	Lost Dutchman Boulevard	0.5	Schedule Street Maintenance and Schedule Treatment Assessment
Ironwood Drive	Lost Dutchman Boulevard	Tepee Street	0.5	Schedule Street Maintenance
Ironwood Drive	Tepee Street	North of Mockingbird Street	0.3	Schedule Treatment Assessment
Ironwood Drive	Apache Trail	Broadway Avenue	0.5	Schedule Treatment Assessment
Ironwood Drive	Broadway Avenue	15th Avenue	0.4	Schedule Street Maintenance and Schedule Treatment Assessment
Ironwood Drive	15th Avenue	US 60	1.2	Schedule Street Maintenance
Phelps Drive	Apache Trail/Old West Highway	5th Avenue	0.3	Schedule Treatment Assessment
Idaho Road	McKellips Boulevard	Lost Dutchman Boulevard	1.0	Schedule Treatment Assessment
Royal Palm Road	Old West Highway	Southern Avenue	1.0	Schedule Treatment Assessment
Tomahawk Road	Manzanita Street	Broadway Avenue	1.3	Schedule Treatment Assessment
Tomahawk Road	Broadway Avenue	Old West Highway	0.4	Schedule Street Maintenance and Schedule Treatment Assessment
Tomahawk Road	Old West Highway	Southern Avenue	0.6	Schedule Treatment Assessment

TABLE 2.4: APACHE JUNCTION ROADS PAVEMENT CONDITION (CONTINUED)

Street Name	Beginning	Ending	Length (miles)	Condition
Tomahawk Road	US 60	Baseline Road	0.5	Schedule Treatment Assessment
Cortez Road	Lost Dutchman Boulevard	Old West Highway	2.7	Schedule Street Maintenance
Goldfield Road	Lost Dutchman Boulevard	0.3 mile north of Superstition Boulevard	0.7	Schedule Treatment Assessment
Goldfield Road	16th Avenue	Old West Highway	0.5	Schedule Treatment Assessment
Goldfield Road	Old West Highway	US 60	0.3	Schedule Street Maintenance
Lost Dutchman Boulevard	McKellips Boulevard	Cedar Drive	0.1	Schedule Treatment Assessment
Lost Dutchman Boulevard	Cedar Drive	Delaware Drive	0.3	Schedule Street Maintenance and Schedule Treatment Assessment
Lost Dutchman Boulevard	Delaware Drive	West of Plaza Drive	1.2	Schedule Treatment Assessment
Lost Dutchman Boulevard	West of Plaza Drive	Idaho Road	0.3	Schedule Street Maintenance and Schedule Treatment Assessment
Lost Dutchman Boulevard	Cortez Road	Goldfield Road	0.5	Schedule Street Maintenance
Lost Dutchman Boulevard	Goldfield Road	Mountain View Road	0.6	Schedule Treatment Assessment
Tepee Street	Ironwood Road	Valley Drive	0.25	Schedule Street Maintenance
Superstition Boulevard	McKellips Boulevard	Delaware Drive	0.5	Schedule Treatment Assessment
Superstition Boulevard	Ocotillo Drive	Ironwood Drive	0.3	Schedule Street Maintenance
Superstition Boulevard	San Marcos Drive	Plaza Drive	0.25	Schedule Treatment Assessment
Old West Highway	East of Idaho Road/SR 88	Royal Palm Road	0.6	Schedule Street Maintenance
Broadway Avenue	Ironwood Drive	Phelps Drive	0.7	Schedule Street Maintenance
Broadway Avenue	Old West Highway	Goldfield Road	1.5	Schedule Street Maintenance
16th Avenue	West of Cedar Drive	Winchester Road	2.2	Schedule Treatment Assessment
Southern Avenue	Idaho Road/SR 88	Winchester Road	0.3	Schedule Treatment Assessment
Southern Avenue	Tomahawk Road	East of Raindance Road	0.25	Schedule Treatment Assessment
Southern Avenue	East of Raindance Road	Cortez Road	0.25	Schedule Street Maintenance and Schedule Treatment Assessment
Southern Avenue	Cortez Road	Starr Road	0.25	Schedule Treatment Assessment
Baseline Avenue	Meridian Road	Ironwood Drive	1.0	Schedule Treatment Assessment

Bridges and Culverts

FHWA's National Bridge Inventory (NBI) database was used to identify the location of all bridges in the study area. A total of 48 bridges were identified, of which:

- Six bridges are eligible for rehabilitation.
  - Five located on US 60 (between interchanges beginning from Meridian Road to Goldfield Road).
  - One located on SR 88 in northern portion of the study area.
- 28 bridges are in good condition.
- The condition of 14 bridges is unknown; these bridges are located in rural areas within the study area (northern and eastern portions of the study area).

Table 2.5 lists the six bridges in Apache Junction that are eligible for rehabilitation. Bridge location and conditions are further illustrated in Figure 2.14.

TABLE 2.5: BRIDGE CONDITION

Bridge Name	Road Name	Crossing Feature	Sufficiency Rating	Condition
CAP Canal Bridge	US 60 (mp 194.40)	CAP Canal	72.22	Eligible for Rehabilitation
RCB	US 60 (mp 194.81)	Wash	71.21	Eligible for Rehabilitation
RCB	US 60 (mp 195.91)	Wash	75.99	Eligible for Rehabilitation
Weeks Wash RCB	US 60 (mp 196.91)	Wash	75.98	Eligible for Rehabilitation
RCB	US 60 (mp 197.70)	Wash	77.71	Eligible for Rehabilitation
Weeks Wash RCB	SR 88 (mp 199.07)	Wash	79.00	Eligible for Rehabilitation

FIGURE 2.14: PAVEMENT AND BRIDGE CONDITION

LEGEND

Bridge Condition

- Good Condition
- Eligible for Rehabilitation
- Unknown Condition

Scheduled Maintenance

- Scheduled Street Maintenance
- Scheduled Treatment Assessment
- Scheduled Street Maintenance and Scheduled Treatment Assessment

- Freeway
- Study Roadway
- Local Roadway
- Study Area

Data Sources: City of Apache Junction, ADOT

Crash Data

Crash analysis was conducted for major roadways in the study area to identify trends, patterns, predominant crash reasons, and high crash rate intersections and corridors. The purpose of the crash analysis is to identify safety hazards locations that need to be addressed to improve area safety. Data for crashes occurring between November 2004 and November 2009 was obtained from ADOT's Accident Location Identification Surveillance System (ALISS) database. During this five year period, a total of 2,819 crashes occurred within the study area. Figure 2.15 illustrates the location and number of crashes at each site during the analysis period, while Figure 2.16 presents the overall density of crashes along study roadways. As shown in the Figures, major corridors such as Apache Trail, Ironwood Drive, US 60, and portions of Old West Highway attribute to the majority of crashes in the study area. Analysis of the crash data found:

- Out of the total 2,819 crashes, 921 crashes (32.7%) resulted in injuries at various levels.
- There were a total of 16 fatal crashes, in which seven occurred on US 60.
- There were a total of 148 pedestrian or pedalcyclist crashes (5.3%) along study roadways. The intersection of Apache Trail and Delaware Drive had eight separate pedestrian or pedalcyclist involved injury type crashes.
- The City of Apache Junction had an unusually high percentage of intersection and driveway related crashes, totaling 61.5% of all crashes in the study area.
- The study area also had a significant number of rear-end and angle collisions, which make up approximately 63.4% of all study area crashes.
- "No Improper Action", "Inattention", and "Failed to Yield Right-of-Way" were the most cited violation types.

Crashes rates were estimated at 12 intersections and along ten corridors to identify high crash locations that create safety hazards within the study area. Table 2.6 lists the roadway segments with the highest crash rates and Table 2.7 lists the intersections with the highest crash rate. Crash rates for the roadway segments are expressed in terms of crashes per million vehicle miles traveled and crash rates for intersections are expressed in terms of crashes per million vehicles entering the intersection. Analysis of the data found:

- Ironwood Drive, between US 60 and Baseline Avenue, and Idaho Road, between SR 88 and Superstition Boulevard, had the highest crash rates with angle collisions and rear-ended collisions the majority collision types along these corridors.

- The intersections of Superstition Boulevard at SR 88 and Apache Trail at Delaware Drive experienced the highest crash rates within the study area.
- The US 60 at Ironwood Drive Eastbound Ramp intersection and the Apache Trail at Ironwood Drive intersection had the highest number of intersection related crashes.

TABLE 2.6: CRASHES RATE FOR ROADWAY SEGMENTS

Road	Beginning	Ending	Length	Average AADT	Crashes	Crash Rate
Ironwood Drive	US 60	Baseline Avenue	0.75	24,824	108	3.20
Idaho Road	SR 88	Superstition Boulevard	0.21	10,544	11	2.74
Apache Trail	Meridian Road	Apache Trail	1.86	22,261	157	2.08
Superstition Boulevard	Idaho Road	SR 88	0.22	4,343	3	1.72
Southern Avenue	Idaho Road	Royal Palm Road	0.50	6,376	9	1.55
Goldfield Road	US 60	Old West Highway	0.32	1,450	1	1.19
Ironwood Drive	US 60	Apache Trail	1.97	15,300	62	1.13
Broadway Avenue	Meridian Road	Ironwood Drive	0.99	10,886	21	1.07
US 60	Meridian Road	Study Boundary	6.77	39,338	295	0.61
Old West Highway	Apache Trail	Royal Palm Road	0.88	19,666	19	0.60

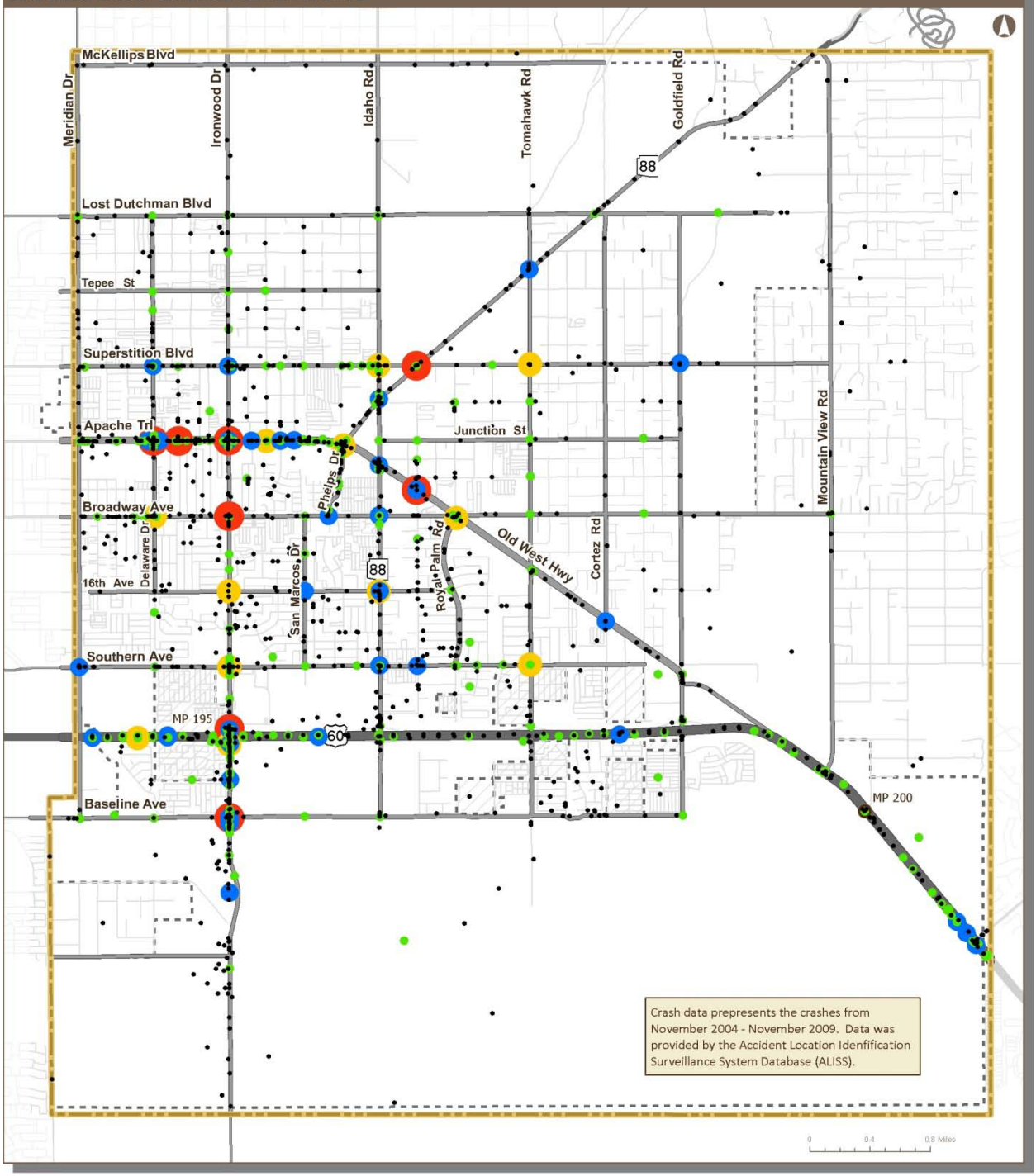
**Crash rate is expressed in terms of crashes per million vehicles miles traveled. Intersection related crashes are not included.*

TABLE 2.7: CRASH RATE FOR INTERSECTIONS

Intersection	Volume	Crashes	Crash Rate
Superstition Boulevard and SR 88	5,583	38	3.73
Apache Trail and Delaware Drive	16,980	45	1.45
US 60 and Ironwood Drive Westbound Ramp	19,771	50	1.39
Apache Trail and Ironwood Drive	21,238	52	1.34
US 60 and Ironwood Drive Eastbound Ramp	26,557	64	1.32
Old US Highway and Royal Palm Road	10,244	22	1.18
Southern Avenue and Ironwood Drive	19,483	28	0.79
US 60 and Baseline Avenue	30,820	43	0.76
Broadway Road and Ironwood Drive	22,209	28	0.69
Superstition Boulevard and Idaho Road	15,617	16	0.56
Old West Highway and Idaho Road	21,013	20	0.52
Idaho Road and SR 88	29,641	21	0.39

**Intersection crash rate is expressed in terms of crashes per million vehicles entering intersection*

FIGURE 2.15: CRASH LOCATIONS



LEGEND

Number of Crashes Per Location

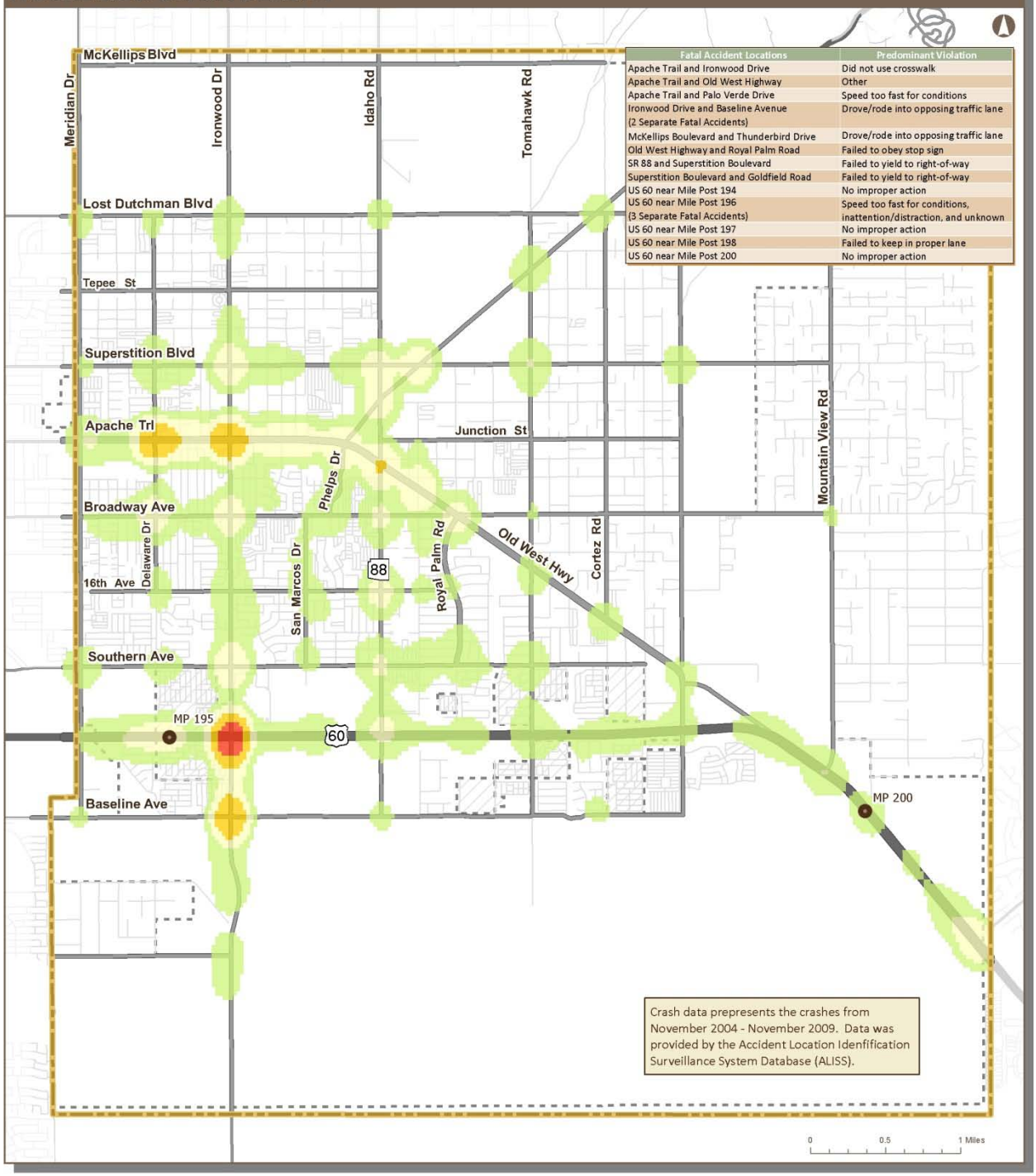
- 1
- 2 - 5
- 6 - 10
- 11 - 20
- 21 - 40

Freeway
Study Roadway
Local Roadway

Study Area
City Boundary
County Island

Data Sources: City of Apache Junction, ALRIS, ADOT, ALISS

FIGURE 2.16: CRASH DENSITY



Fatal Accident Locations	Predominant Violation
Apache Trail and Ironwood Drive	Did not use crosswalk
Apache Trail and Old West Highway	Other
Apache Trail and Palo Verde Drive	Speed too fast for conditions
Ironwood Drive and Baseline Avenue (2 Separate Fatal Accidents)	Drove/rode into opposing traffic lane
McKellips Boulevard and Thunderbird Drive	Drove/rode into opposing traffic lane
Old West Highway and Royal Palm Road	Failed to obey stop sign
SR 88 and Superstition Boulevard	Failed to yield to right-of-way
Superstition Boulevard and Goldfield Road	Failed to yield to right-of-way
US 60 near Mile Post 194	No improper action
US 60 near Mile Post 196 (3 Separate Fatal Accidents)	Speed too fast for conditions, inattention/distraction, and unknown
US 60 near Mile Post 197	No improper action
US 60 near Mile Post 198	Failed to keep in proper lane
US 60 near Mile Post 200	No improper action

Crash data prepresents the crashes from November 2004 - November 2009. Data was provided by the Accident Location Idenfification Surveillance System Database (ALISS).

LEGEND

Crash Density

Low

High

Freeway

Study Roadway

Local Roadway

Study Area

City Boundary

County Island

Data Sources: City of Apache Junction, ALRIS, ADOT, ALISS

Existing Traffic Conditions

Existing daily traffic count data was obtained from the City of Apache Junction, CAAG, and ADOT. Figure 2.18 displays the existing daily traffic counts. Key observations noted in Figure 4.10 include:

- US 60 carries the highest amount of traffic, with volumes ranging from 16,700 to 31,500.
- Ironwood Drive from the southern study area boundary to US 60 carries the highest amount of traffic on a local roadway, with volumes ranging from 11,650 to 25,954.
- Apache Trail, from the western study area boundary to Superstition Boulevard, carries the second highest amount of traffic on a local roadway, with volumes ranging from 12,029 to 19,316.

Traffic congestion levels for major roadways in the study area were estimated using existing traffic count data. The degree of traffic congestion is commonly expressed in terms of Level of Service (LOS). LOS is a measure of traffic flow conditions and its values range from LOS A to LOS F, with LOS A representing excellent traffic flow conditions where vehicles experience minimal delays, and LOS F represents failure conditions where vehicles experience long delays. Highway Capacity Manual published by the Transportation Research Board (TRB) characterizes LOS as:

LOS A:	Best, free flow operations (on uninterrupted flow facilities) and very low delay (on interrupted flow facilities). Freedom to select desired speeds and to maneuver within traffic is extremely high.
LOS B:	Flow is stable, but presence of other users is noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within traffic.
LOS C:	Flow is stable, but the operation of users is becoming affected by the presence of other users. Maneuvering within traffic requires substantial vigilance on the part of the user.
LOS D:	High density but stable flow. Speed and freedom to maneuver are severely restricted. The driver is experiencing a generally poor level of comfort and convenience.
LOS E:	Flow is at or near capacity. All speeds are reduced to a low, but relatively uniform value. Freedom to maneuver within traffic is extremely difficult. Comfort and convenience levels are extremely poor.
LOS F:	Worse, facility has failed, or a breakdown has occurred.

In general for suburban areas, LOS A and B represent no congestion, LOS C and D represent moderate congestion, and LOS E and F represent severe congestion. Figure 2.17 is a pictorial representation of LOS A thru F.

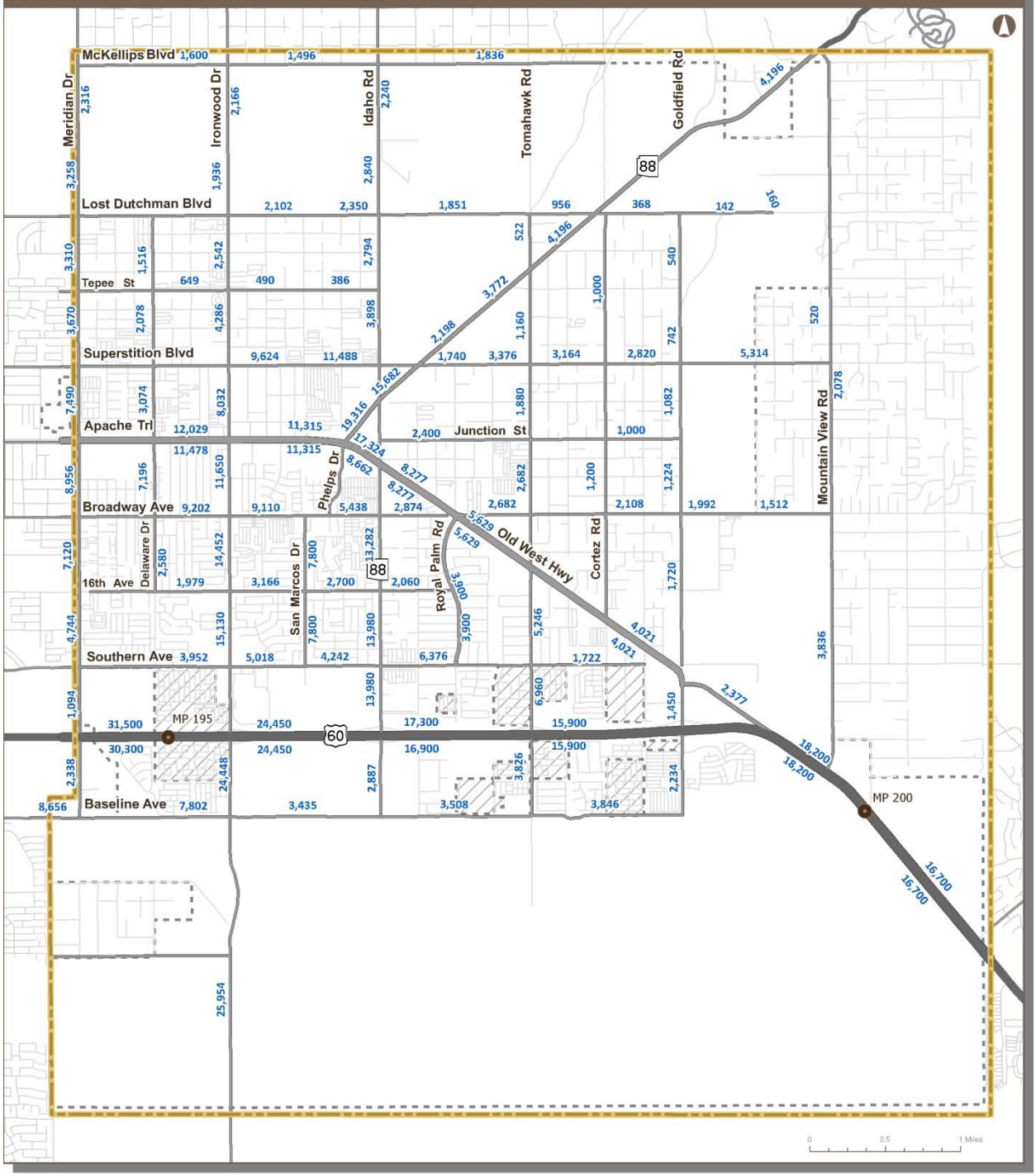
FIGURE 2.17: ILLUSTRATION OF LOS A THROUGH LOS F

LOS A and B

LOS C and D

LOS E and F

FIGURE 2.18: EXISTING 2010 DAILY TRAFFIC COUNTS



LEGEND

XXX Traffic Count

Freeway

Study Roadway

Local Roadway

Study Area

City Boundary

County Island

Data Sources: City of Apache Junction, ADOT

Current Roadway LOS

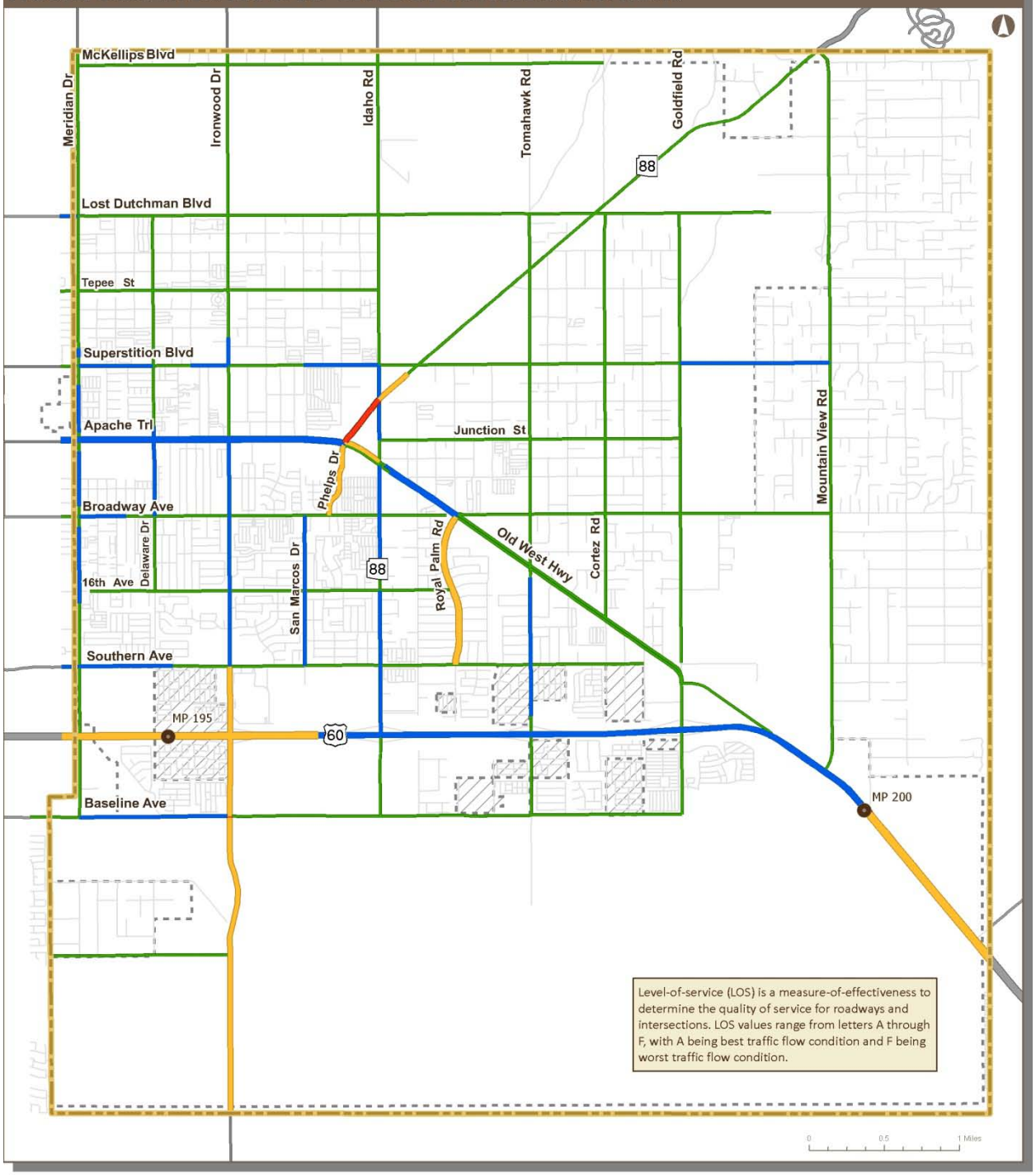
Figure 2.19 illustrates the current LOS for roadways within the study area. The following is a summary of the LOS conditions for the study area roadways:

LOS D:	◆ Apache Trail: Idaho Road to the Phelps Drive/Old West Highway intersection.
LOS C:	◆ US 60: Western study area boundary to MP 196. ◆ US 60: MP 200 to eastern study area boundary. ◆ SR 88: south of Superstition Boulevard to Idaho Road. ◆ Ironwood Drive: Southern Avenue to southern study area boundary. ◆ Old West Highway (Westbound): Apache Trail/ Phelps Drive intersection to Idaho Road. ◆ Royal Palm Road: Broadway Avenue to Southern Avenue. ◆ Phelps Drive: Apache Trail to Broadway Avenue.
LOS A and B:	◆ All other roads operate at LOS B or better.

Current Intersection Level of Service

Figure 2.20 displays the current intersection lane configuration and signal type for the major intersections and Figure 2.21 illustrates the current overall intersection LOS, and LOS at each turn movement for each leg/approach at each intersection.

FIGURE 2.19: AVERAGE DAILY LEVEL OF SERVICE CONDITIONS



LEGEND

- LOS D
- LOS C
- LOS B
- LOS A
- Local Roadway
- Study Area
- City Boundary
- County Island

Data Sources: City of Apache Junction, ADOT

FIGURE 2.20: INTERSECTION LANE CONFIGURATION

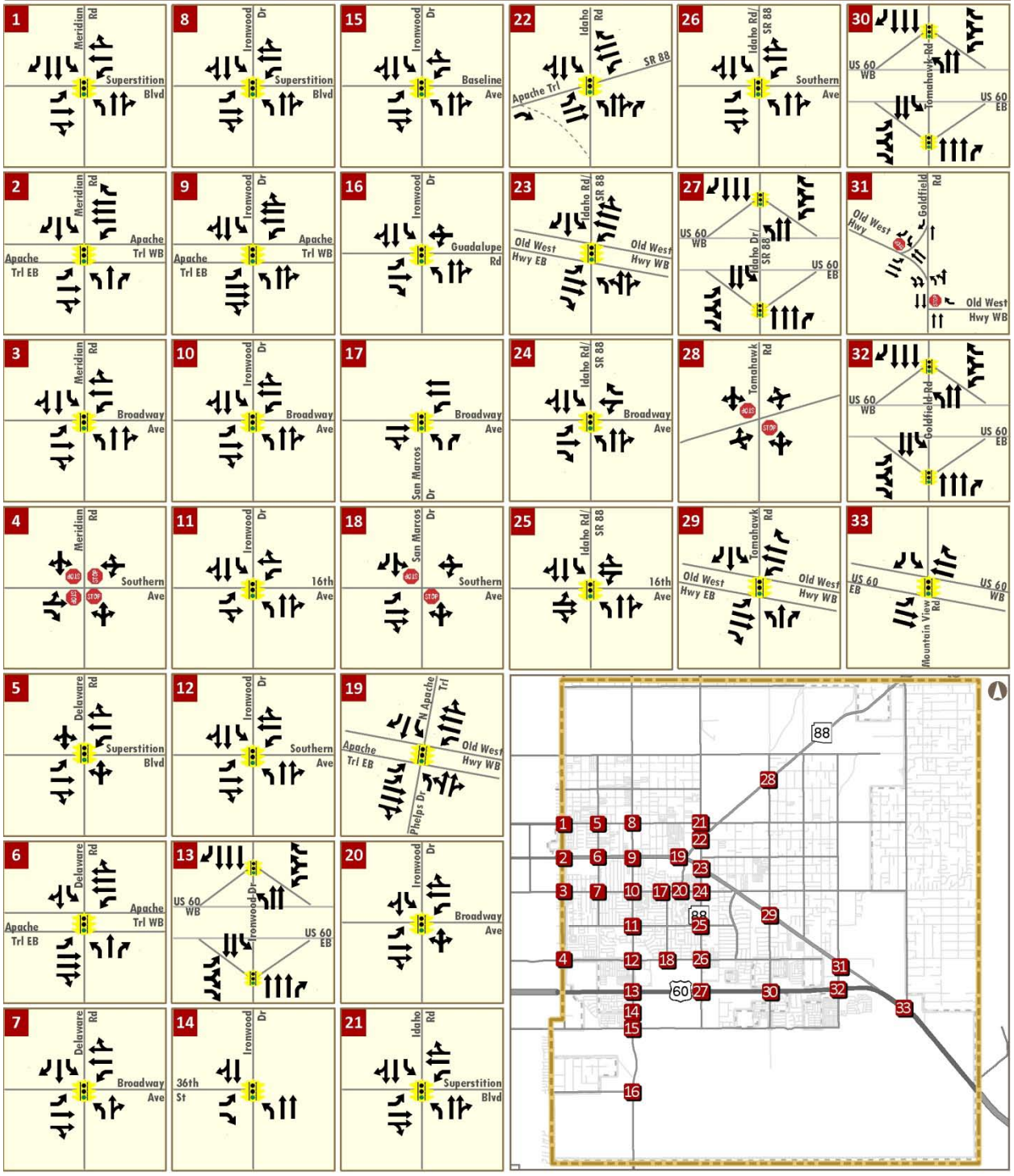
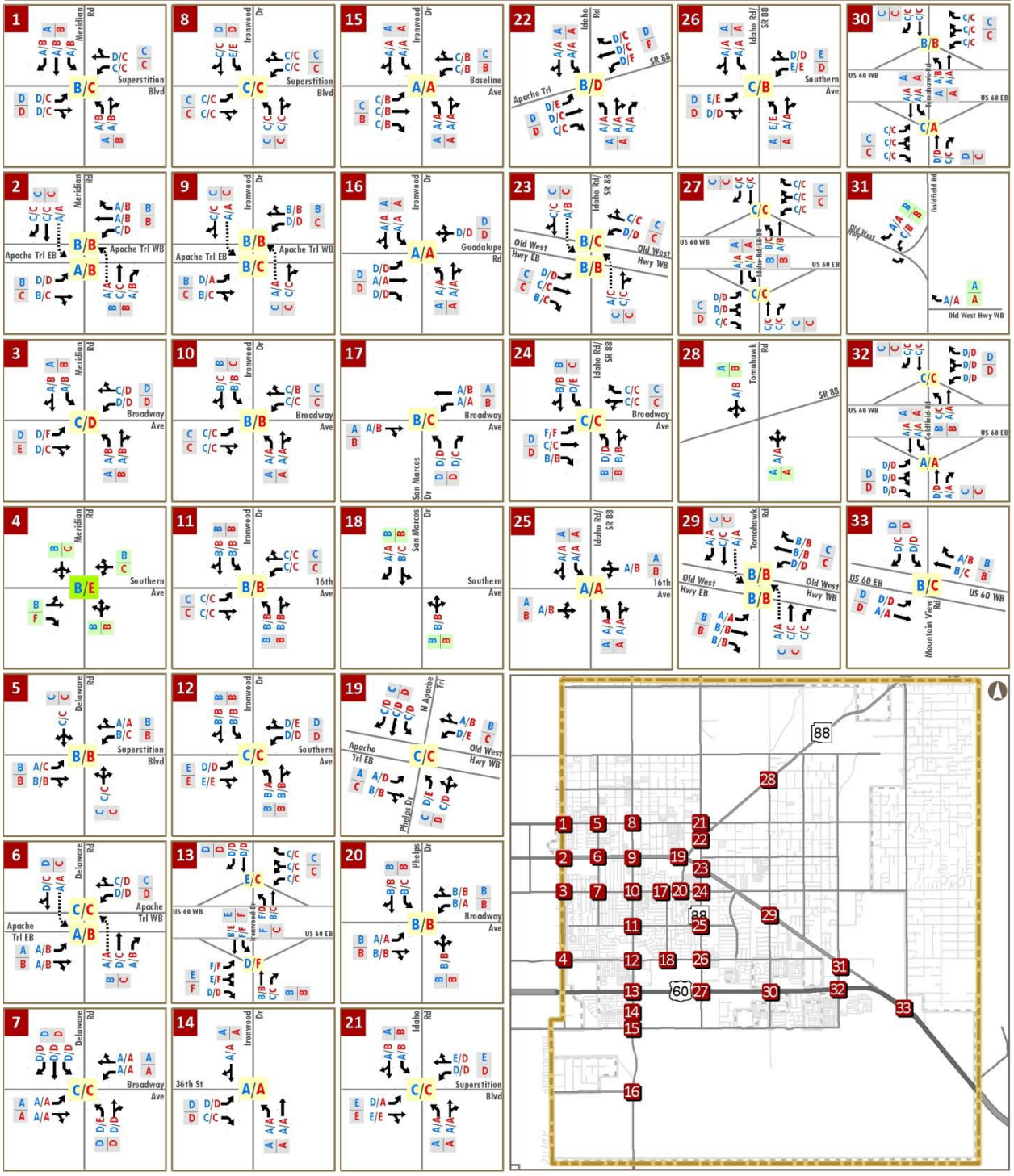


FIGURE 2.21: INTERSECTION LEVEL OF SERVICE



LEGEND

- X/X Signalized Intersection AM/PM Intersection Level of Service
- E/F Signalized Intersection AM/PM Approach Level of Service
- X/X Unsignalized Intersection AM/PM Intersection Level of Service
- E/F Unsignalized Intersection AM/PM Approach Level of Service
- X/X AM/PM Turn Movement Level of Service
- X Intersection ID

Data Sources: City of Apache Junction, ALRIS, ADOT

Other Modes of Transportation

Transit Conditions

As part of this Comprehensive Transportation Study, the City's 2005 Transit Feasibility Study is being updated and documented as a separate report. The following is a summary of existing transit providers in the Apache Junction area, as presented in that report.

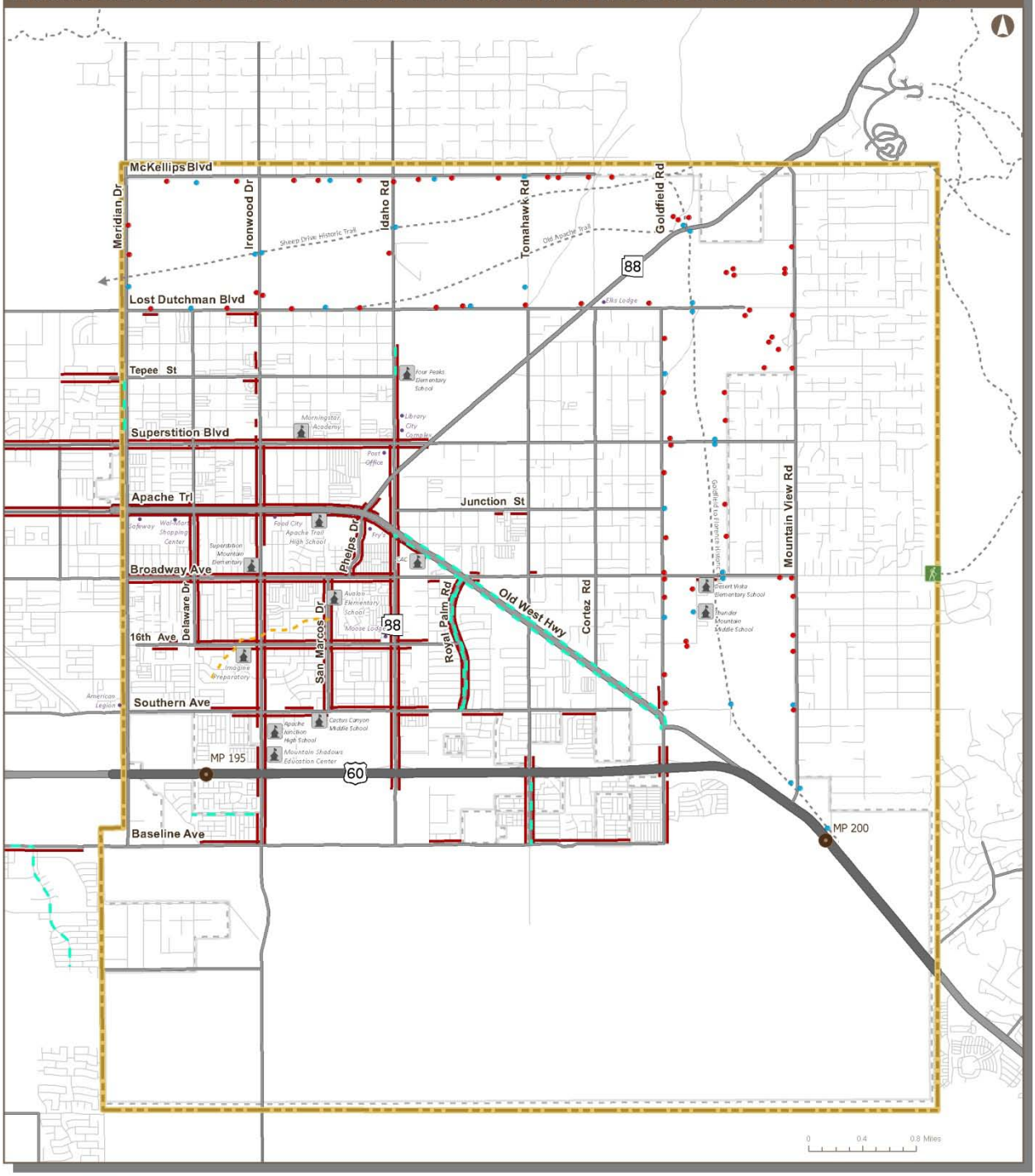
- Two Apache Junction-based private-sector operators, Cricket's Shuttle and Cactus Shuttle, currently provide demand-response public transportation service in the area.
- Many of the manufactured home communities operate their own shuttles for the convenience of full-time and seasonal community residents.
- Three assisted living facilities, Aurora House, Beehive House, and Horizon Bay, provide or arrange for medical and other transportation services for their residents. Triple R Behavioral Health maintains a Club House in the Study Area, and provides transportation to/from the Club House for clients.
- The Apache Junction Senior Center provides multi-service transportation to persons who no longer drive.

Non-Motorized Modes of Transportation

Figure 2.22 illustrates the current pedestrian, bicycle, and trails facilities in the study area. Key observations include:

- Sidewalks currently exist in the downtown core providing access to activity centers such as schools, shopping centers, post office, and the library.
- The City has very limited bike paths and bike lanes in both the downtown core and the rural areas.
- Portions of the study area to the east and the north consist of State and federal lands which are home to several equestrian, hiking, and multi-use trails. Access to these trails is available through several gates along the State and federal lands.

FIGURE 2.22: STUDY AREA TRAILS WITH EXISTING BIYCLE AND PEDESTRIAN FACILITIES



LEGEND

- Trailhead
- School
- Combination Vehicle/ Equestrian Gate
- Hiking/Equestrian Gate
- Existing Multi-Use Path
- Multi-Use Trail
- Existing Sidewalk
- Bike Lane
- Freeway
- Study Roadway
- Local Roadway
- Study Area
- City Boundary

Data Sources: City of Apache Junction, ALRIS, ADOT, USFS, City of Mesa

3. FUTURE CONDITIONS

FUTURE SOCIOECONOMIC CONDITIONS

Population, Housing Unit, and Employment Forecasts

The City of Apache Junction's future growth is a unique situation due to the proposed Portalis Master Plan. If the Portalis Master Plan becomes a reality the population of the City could more than double; however, development time frames for this area are uncertain. To account for this uncertainty, ***Population Growth Thresholds or Population Levels*** have been developed as benchmarks for the transportation plan. These benchmarks will allow the City to plan transportation improvements as each population growth threshold is reached, rather than anticipating improvements for a certain year based on projections that may or may not be accurate.

Three ***Population Levels*** were established based on Central Arizona Association of Governments (CAAG) projections for the study area and Pinal County; and Arizona State Lands Department's build out levels for the Portalis Master Plan area. Table 3.1 outlines the population, number of occupied housing units, and employment numbers for each of the ***Population Levels***.

TABLE 3.1: POPULATION LEVELS - POPULATION, HOUSING UNITS, AND EMPLOYMENT

	Short-Term Phase (Population Level 1 - 60K)		Mid-Term Phase (Population Level 2 - 75K)		Long-Term Phase (Population Level 3 - 130K)	
	Study Area	Pinal County	Study Area	Pinal County	Study Area	Pinal County
Population	60,000	441,000	75,000	607,000	130,000	1,083,000
Occupied Housing Units	26,000	156,000	31,000	214,000	51,000	380,000
Employment	16,000	108,000	24,000	170,000	43,000	325,000

FUTURE TRANSPORTATION CONDITIONS

The primary purpose of forecasting future traffic volumes is to estimate the additional travel demand added to existing roadways and to forecast congestion levels due to projected growth in population and employment. In addition, this analysis provides valuable insight into potential transportation solutions. Pinal County's countywide travel demand model was enhanced and

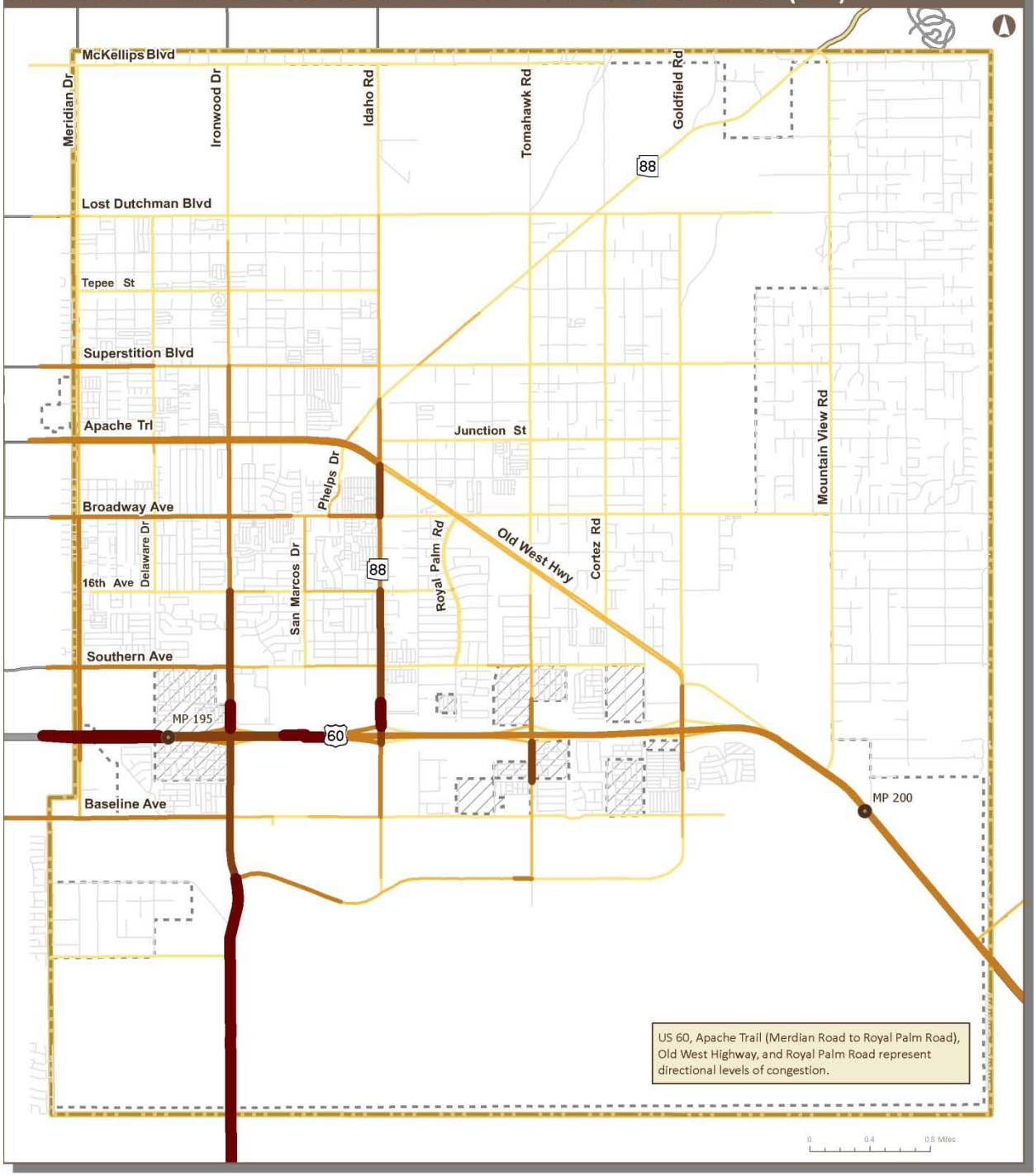
used to develop traffic forecasts for each Population Level discussed in the preceding section. Similar to existing traffic analysis, the degree of traffic congestion is expressed in terms of LOS.

Population Level 1 (60K) – Projected Traffic Conditions

Figure 3.1 displays the projected traffic volumes and Figure 3.2 displays the LOS for the current roadway system with the projected Population Level 1 socioeconomic conditions *if no roadway improvements are made (No-Build)*. Traffic volumes and LOS results in this section represent average annual daily traffic conditions. All roads located in the study area operate at low congestion levels (LOS A or B), except for the following:

Moderate Congestion (LOS C & D):	◆ US 60: MP 196 to SR 88 traffic interchange. ◆ US 60: Mountain View Road to eastern study area boundary. ◆ Ironwood Drive: Southern Avenue to north of US 60 traffic interchange. ◆ Ironwood Drive: South of US 60 traffic interchange to Baseline Avenue. ◆ Idaho Road: Baseline Avenue to south of the US 60 traffic interchange. ◆ Idaho Road: North of US 60 traffic interchange. ◆ Delaware Drive: South of Apache Trail. ◆ Baseline Avenue: Western study area boundary to Ironwood Drive.
High Congestion (LOS E & F)	◆ US 60: Western study area boundary to MP 195. ◆ SR 88: Between the ramp terminals at the US 60 traffic interchange. ◆ Ironwood Drive: Between the ramp terminals at the US 60 traffic interchange. ◆ Ironwood Drive: South of Baseline Avenue to southern study.

FIGURE 3.1: AVERAGE DAILY TRAFFIC VOLUMES- POPULATION LEVEL 1 (60K)

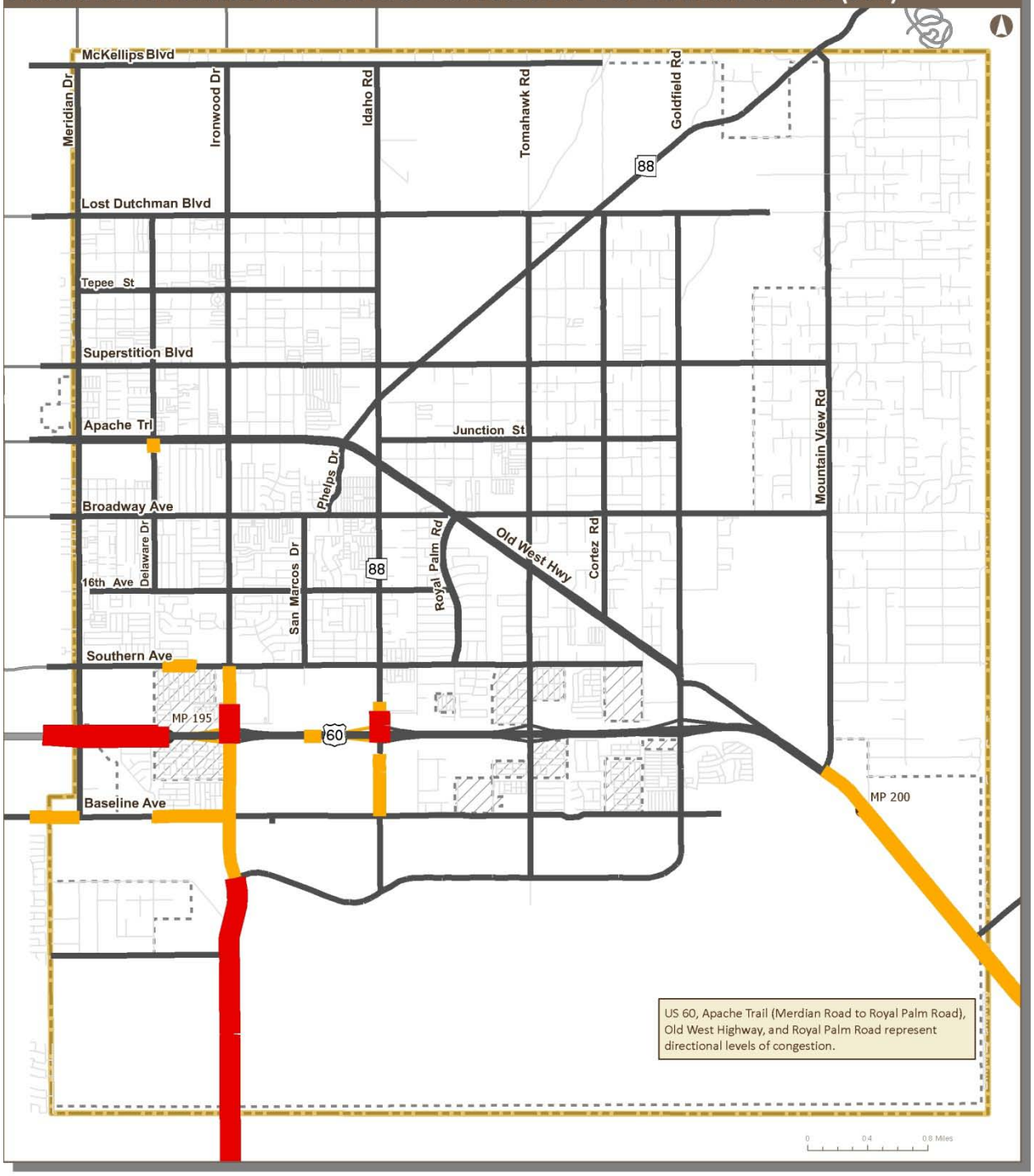


LEGEND

- 0 - 5,000
- 5,001 - 10,000
- 10,001 - 20,000
- 20,001 - 30,000
- > 30,000
- Local Roadway
- Study Area
- City Boundary
- County Island

Data Sources: City of Apache Junction, ADOT, CAAG, MAG

FIGURE 3.2: AVERAGE DAILY LEVEL OF CONGESTION- POPULATION LEVEL 1 (60K)



LEGEND

- High Congestion (LOS E & F)
- Moderate Congestion (LOS C & D)
- Low Congestion (LOS A & B)
- Local Roadway
- Study Area
- City Boundary
- County Island

Data Sources: City of Apache Junction, ADOT, MAG, CAAG

Population Level 2 (75K) – Projected Traffic Conditions

Figure 3.3 displays the projected traffic volumes and Figure 3.4 displays the LOS for the current roadway system with the projected Population Level 2 socioeconomic conditions *if no roadway improvements are made (No-Build)*. Traffic volumes and LOS results in this section represent average annual daily traffic conditions. All roads located in the study area operate at low congestion levels (LOS A or B), except for the following:

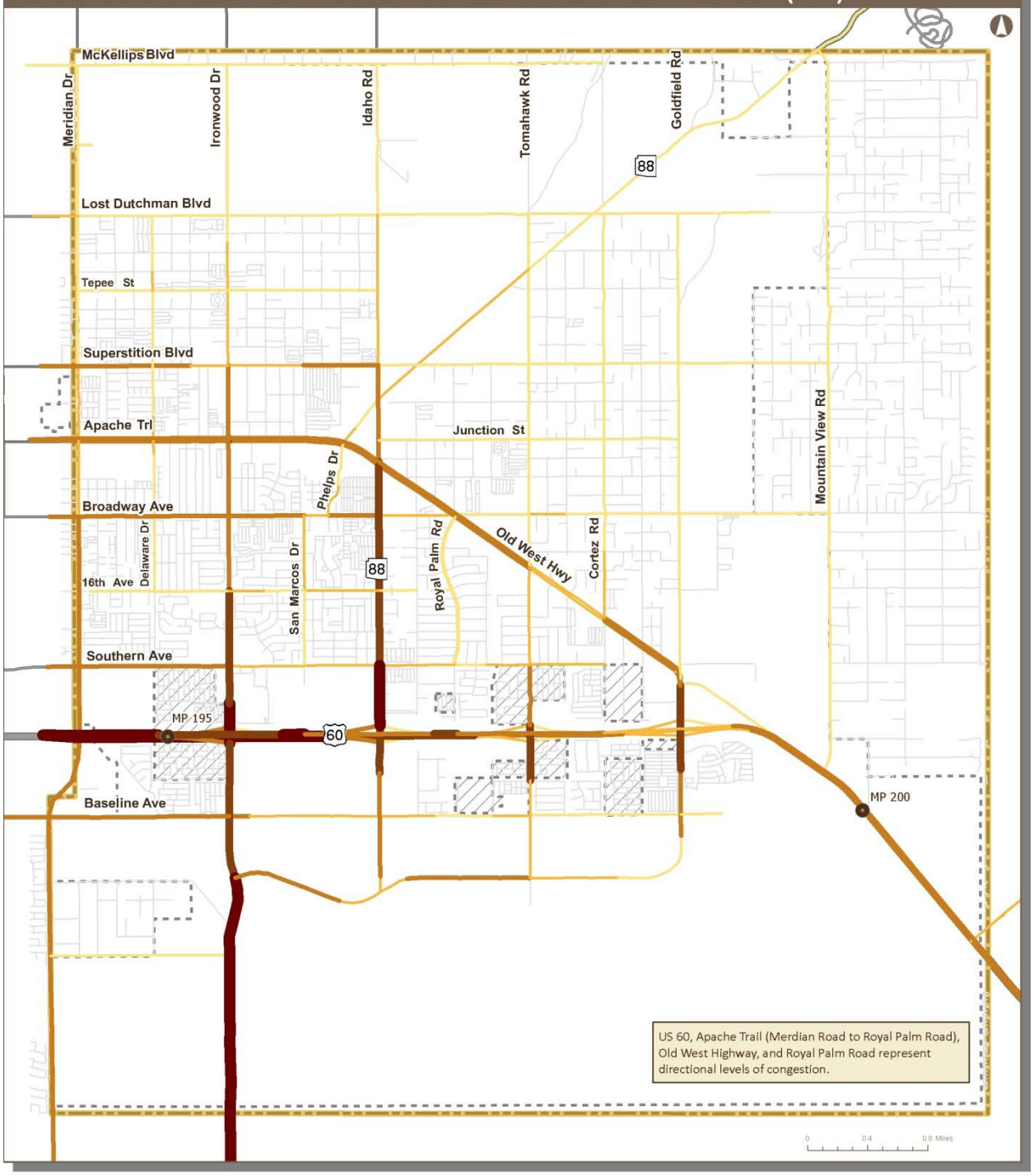
Moderate Congestion (LOS C & D):

- US 60: MP 195 to SR 88 traffic interchange.
- US 60: Mountain View Road to eastern study area boundary.
- Southern Avenue: Western study boundary to Ironwood Drive.
- Baseline Avenue: Western study area boundary to Ironwood Drive.
- Meridian Road: Southern Avenue to southern study boundary.
- Ironwood Drive: Southern Avenue to north of US 60 traffic interchange.
- Ironwood Drive: South of US 60 traffic interchange to Baseline Avenue.
- SR 88: Southern Avenue to north of US 60 traffic interchange.
- Tomahawk Road: Southern Avenue to south of US 60 traffic interchange.
- Delaware Drive: South of Apache Trail.

High Congestion (LOS E & F)

- US 60: Western study area boundary to MP 195.
- SR 88: Between the ramp terminals at the US 60 traffic interchange.
- SR 88: US 60 traffic interchange to Baseline Avenue.
- Tomahawk Road: Between the ramp terminals at the US 60 traffic interchange.
- Ironwood Drive: Between the ramp terminals at the US 60 traffic interchange.
- Ironwood Drive: South of Baseline Avenue to southern study boundary.
- Meridian Road: South of US 60

FIGURE 3.3: AVERAGE DAILY TRAFFIC VOLUMES- POPULATION LEVEL 2 (75K)

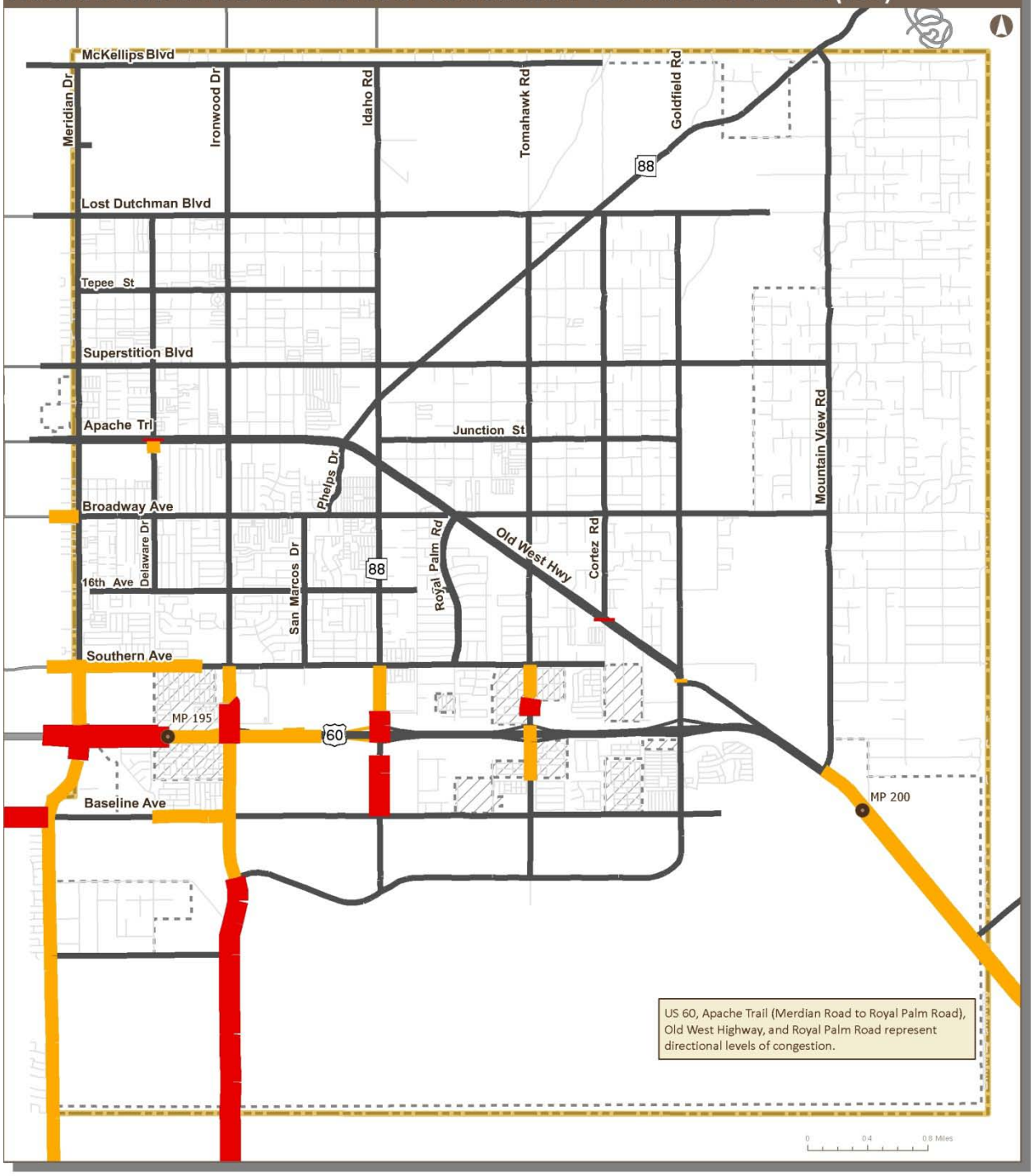


LEGEND

- 0 - 5,000
- 5,001 - 10,000
- 10,001 - 20,000
- 20,001 - 30,000
- > 30,000
- Local Roadway
- Study Area
- City Boundary
- County Island

Data Sources: City of Apache Junction, ADOT, CAAG, MAG

FIGURE 3.4: AVERAGE DAILY LEVEL OF CONGESTION- POPULATION LEVEL 2 (75K)



LEGEND

- High Congestion (LOS E & F)
- Moderate Congestion (LOS C & D)
- Low Congestion (LOS A & B)
- Local Roadway
- Study Area
- City Boundary
- County Island

Data Sources: City of Apache Junction, ADOT, MAG, CAAG

Population Level 3 (130K) – Projected Traffic Conditions

Figure 3.5 displays the projected traffic volumes and Figure 3.6 displays the LOS for the current roadway system with the projected Population Level 3 socioeconomic conditions *if no roadway improvements are made (No-Build)*. Traffic volumes and LOS results in this section represent average annual daily traffic conditions. All roads located in the study area operate at low congestion levels (LOS A or B), except for the following:

Moderate Congestion (LOS C & D):

- US 60: MP 195 to MP 196.
- US 60: SR 88 to Tomahawk Road - between the on/off ramp terminals.
- US 60: Mountain View Road to eastern study area boundary.
- Southern Avenue: Western study boundary to Delaware Drive.
- Southern Avenue: West of Tomahawk Road.
- Baseline Avenue: Small section to the east of Ironwood Drive.
- Old West Avenue: Cortez Road to Goldfield Road.
- Old West Avenue: West of Royal Palm Road.
- Meridian Road: North of Broadway Avenue to Southern Avenue.
- Meridian Road: Baseline Avenue to Guadalupe Alignment.
- Ironwood Drive: 1/2 mile north of Apache Trail to Southern Avenue.
- Ironwood Drive: Baseline Avenue to southern study boundary.
- Lost Dutchman: West of Tomahawk Road
- SR 88: Old West Highway to Southern Avenue.
- Goldfield Road: 1/2 mile south of Baseline Avenue.
- Mountain View Road: 1.25 miles between Broadway Avenue and US 60.
- Phelps Drive: North of Apache Trail.
- Phelps Drive: South of Apache Trail.
- Delaware Drive: North of Apache Trail.
- Delaware Drive: North of Broadway Avenue.
- Tomahawk Road: North of US 60.
- Tomahawk Road: South of Old West Highway.
- South Mountain View Road Alignment: South of US 60.

High Congestion (LOS E & F)

- US 60: Western study area boundary to MP 195.
- US 60: Ironwood Drive to SR 88 - between the on/off ramp terminals.
- Baseline Avenue: 1/2 mile east of Meridian Road to Ironwood Drive.
- Southern Avenue: 1/4 east of Delaware Drive.
- Old West Highway: SR 88 to Broadway Avenue.
- Meridian Road: Southern Avenue to Baseline Avenue.
- Ironwood Drive: Southern Avenue to Baseline Avenue.
- SR 88: Southern Avenue to Baseline Avenue.

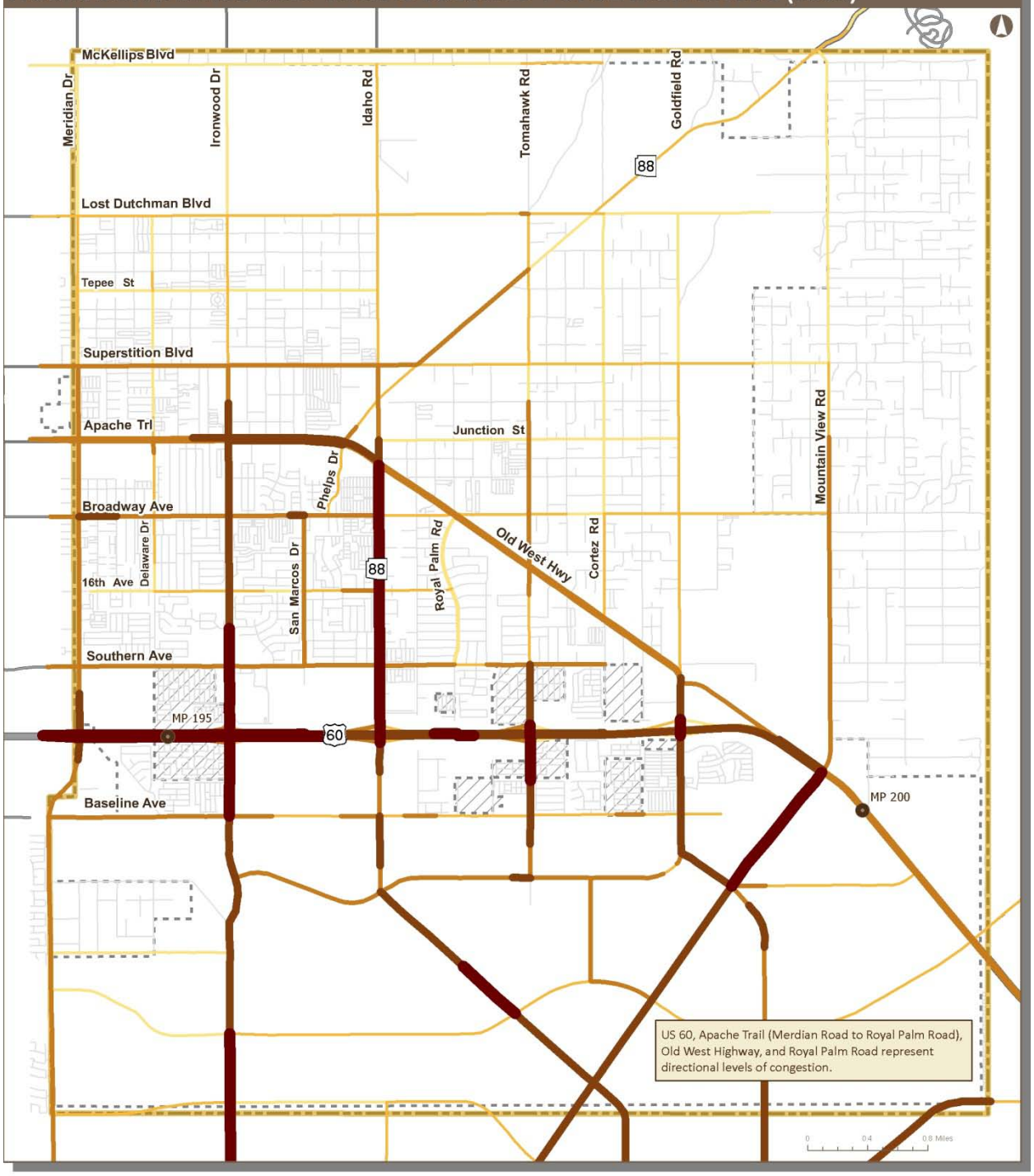
- Delaware Drive: South of Apache Trail
- Tomahawk Road: Southern Avenue to Baseline Avenue.
- Goldfield Road: Southern Avenue to Baseline Avenue.
- Mountain View Road: North of US 60
- Mountain View Road: South of Broadway Avenue

Summary of Future Conditions*

**If no roadway improvements are made (No-Build)*

- If population levels increase from current level to Population Level 3 (130K), traffic congestion increases primarily on roadways in the current core area of Apache Junction (south of Apache Trail and Old West Highway).
- Congestion on US 60 between the western study boundary to Tomahawk Road worsens progressively as population increases from Population Level 1 (60K) to Population Level 3 (130K).
- Congestion on US 60, to the east of Mountain View Road, also increases progressively due to increased regional and Gold Canyon traffic.
- To the south of US 60, traffic congestion on Meridian Road and Ironwood Drive increases significantly due to the north-south regional traffic exchange between Maricopa County and Pinal County south of the study area.
- Within the Apache Junction core area, traffic congestion increases to moderate levels on Meridian Road, Ironwood Drive, and Idaho Road.
- Majority of the north-south roadway segments in the study area between Southern Avenue and Baseline Avenue experience severe congestion by Population Level 3 (130K), due to increased north-south traffic movement and to access the traffic interchanges on US 60.
- Old West Highway between Apache Trail and Goldfield Road experiences increased traffic congestion as population levels increase.

FIGURE 3.5: AVERAGE DAILY TRAFFIC VOLUMES- POPULATION LEVEL 3 (130K)

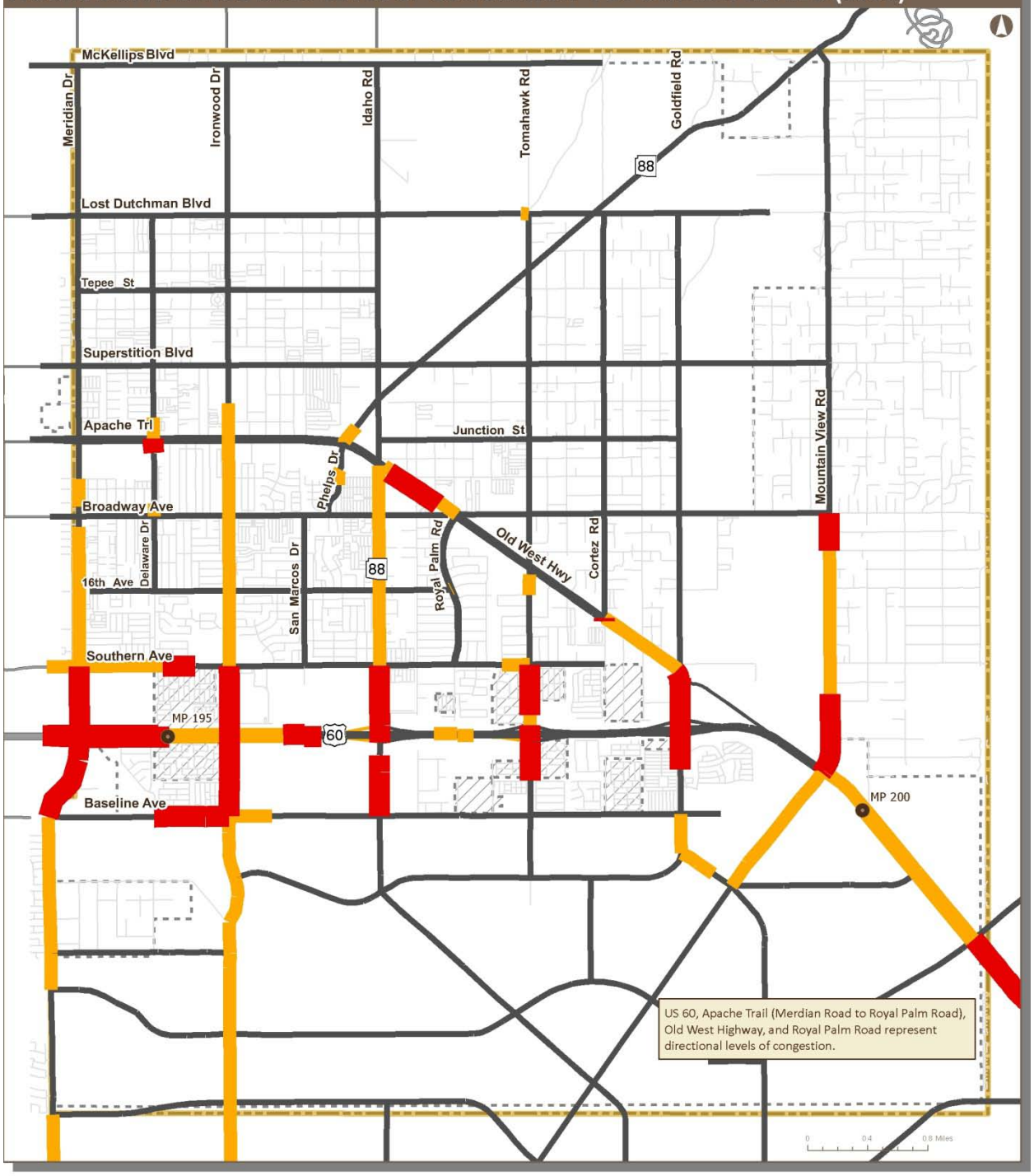


LEGEND

- 0 - 5,000
- 5,001 - 10,000
- 10,001 - 20,000
- 20,001 - 30,000
- >30,000
- Local Roadway
- Study Area
- City Boundary
- County Island

Data Sources: City of Apache Junction, ADOT, CAAG, MAG

FIGURE 3.6: AVERAGE DAILY LEVEL OF CONGESTION- POPULATION LEVEL 3 (130K)



LEGEND

- High Congestion (LOS E & F)
- Moderate Congestion (LOS C & D)
- Low Congestion (LOS A & B)
- Local Roadway
- Study Area
- City Boundary
- County Island

Data Sources: City of Apache Junction, ADOT, MAG, CAAG

4. EVALUATION OF TRANSPORTATION IMPROVEMENTS

TRANSPORTATION ISSUES SUMMARY

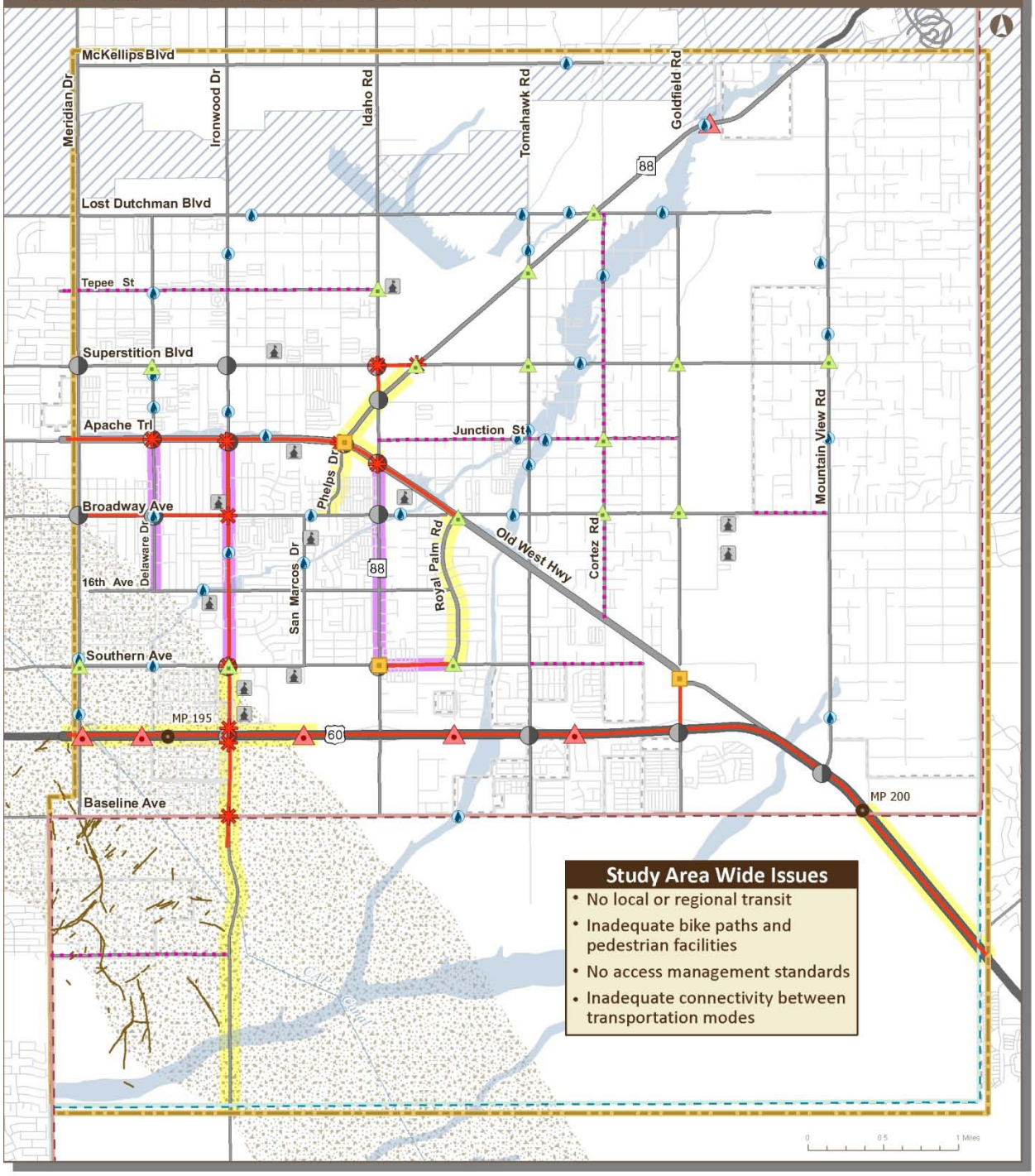
Based on an inventory and analysis of existing conditions, transportation system deficiencies and issues were identified. These issues and deficiencies form the basis for the next phase of the study which is the development of the long range transportation plan. Figure 4.1 displays the current major transportation issues in the study area.

EVALUATION CRITERIA AND PROCESS

Transportation system deficiency analysis and input from the public, various stakeholders, and Technical Advisory Committee (TAC) resulted in a comprehensive list of potential transportation improvement options. These options were carefully evaluated using both quantitative and qualitative criteria to identify projects/improvements that best serve the needs of the City of Apache Junction. Table 4.1 summarizes the criteria used in evaluating potential transportation improvement options. In addition, transportation improvements were prioritized and grouped into three categories based on short-, mid-, and long-term implementation phases.

- Projects within the short-term phase represent improvements that need to be made as the study area reaches Population Level 1 (60K).
- Projects within the mid-term phase represent improvements that need to be made as the study area reaches Population Level 2 (75K).
- Projects within the long-term phase represent improvements that need to be made as the study area reaches Population Level 3 (130K).

FIGURE 4.1: TRANSPORTATION ISSUES



LEGEND

Safety and Congestion Issues

- Intersection Congestion
- Intersection Configuration Issues
- Intersection Sight Distance and Approach Angle Issues
- High Crash Rate Intersections
- High Crash Rate Corridor
- Bridge Eligible for Rehabilitation
- Earth Fissure
- Study Roadways Not Federally Classified
- Heavy Traffic Congestion
- Access Management Issues

Environmental Issues

- Potential Roadway Flooding
- PM10 Nonattainment Area
- 8-hour Ozone Nonattainment Area
- Flood Hazard Areas
- Wildlife Linkage Zone
- Habitat Block
- School
- Study Area
- Freeway
- Study Roadway
- Local Roadway

Data Sources: City of Apache Junction, ALRIS, ADOT, ADEQ, ATIS, AZGS, ALISS

TABLE 4.1: TRANSPORTATION IMPROVEMENTS EVALUATION CRITERIA

Evaluation Criteria	Objectives
Safety and Security	◆ Reduce vehicle, pedestrian, bicycle collisions. ◆ Enhance alternate emergency routes. ◆ Reduce emergency response times.
Congestion/Level of Service	◆ Reduce congestion, bottlenecks and travel times for all modes.
Mobility and Access	◆ Improve linkages between transportation modes. ◆ Facilitate efficient internal traffic circulation options within the study area. ◆ Maintain travel reliability.
Economic Development Opportunity	◆ Promote transportation choices that support economic growth.
Environmental Impacts	◆ Protect and enhance natural, historical, and cultural environment by minimizing potential adverse impacts associated with transportation system development.
Infrastructure Preservation/Maintenance	◆ Preserve and maintain existing transportation infrastructure.
Cost Efficiency and Implementation Feasibility	◆ Minimize capital cost of transportation facilities, including preservation of ROW. ◆ Obtain additional ROW.
Regional Connectivity	◆ Enhance connectivity between the study area and nearby communities.
Transportation choices	◆ Promote transportation choices such as pedestrian, bicycle ways, multi-use paths, and transit.

ROADWAY IMPROVEMENT OPTIONS

Roadway improvement options for the short-, mid-, and long-term phases utilizing the criteria presented in Table 4.1, roadway improvement projects were identified by two different categories: capacity related improvement projects and non-capacity roadway improvement projects. Capacity related improvement projects include widening existing roadways and constructing new roadways. Non-capacity related improvements address safety concerns, intersection improvements, and the need to conduct additional planning studies. Capacity-related projects were evaluated using the Countywide TransCAD travel demand model developed for this study.

Potential Roadway Improvements for the Short-Term Phase (Population Level 1 -60K)

Transportation Improvement Programs (TIPs) for City of Apache Junction, Pinal County, CAAG, Maricopa Association of Governments (MAG) and ADOT were reviewed to identify transportation projects scheduled for implementation. In addition, potential new improvement projects were identified to meet the traffic demand as the study area reaches *Population Level 1 (60K)*. Below is a list of potential capacity and non-capacity roadway improvements that were evaluated for the short-term phase:

Capacity Related Roadway Improvements

New Interchange	◆ Half diamond interchange at US 60 and Meridian Drive
Widening to six lanes	◆ Baseline Avenue: Meridian Drive to Ironwood Drive
Widening to four lanes	◆ Meridian Drive: Broadway Avenue to Southern Avenue ◆ Meridian Drive: Southern Avenue to Baseline Avenue
Intersection Improvements	◆ Meridian Drive/Southern Avenue: New traffic signal design (Under Design) ◆ Meridian Drive/Southern Avenue: New traffic signal construction
Bridge Widening	◆ Baseline Avenue/CAP Canal: six lanes
Portalis Area Roads	◆ Figure 4.2 displays the potential new roadways in the Portalis area

Non-Capacity Related Roadway Improvements

Bridge Rehabilitation	◆ Apache Trail: 1/4 mile west of Mountain View Road ◆ US 60/Meridian Drive ◆ US 60: 1/2 mile east of Idaho Road ◆ US 60: 1/2 mile east of Ironwood Drive ◆ US 60: 1/2 mile east of Meridian Drive ◆ US 60: 1/4 mile east of Tomahawk Road
Safety Improvements (Enhance Signage, lighting, signal timing and striping)	◆ Apache Trail/Delaware Drive ◆ Apache Trail/Idaho Road ◆ Apache Trail/Ironwood Drive ◆ Apache Trail/Phelps Drive ◆ Idaho Road/Superstition Boulevard ◆ Idaho Road/Tepee Street ◆ Citywide Signage Improvements

Additional Safety and Planning Studies	◆ Apache Trail - Old West Highway to Lost Dutchman Boulevard: Conduct a corridor study to 1)assess the need for a roundabout, traffic signal, or intersection reconstruction to offset sight distance issues at each intersection 2) identify proper signage type and location to direct tourist traffic accessing the historic Apache Trail ◆ Ironwood Drive/Broadway Avenue, Ironwood Drive/Southern Avenue: Conduct intersection safety study to 1) identify safety improvements in the vicinity of the intersection 2) assess the need for photo enforcement ◆ Old West Highway: Apache Trail to US 60: Conduct a corridor study to 1)assess the need for a traffic signal or other intersection control type for each intersection to offset sight distance issues 2) identify proper signage type and location along the corridor
Intersection Improvements	◆ Cortez Road/Broadway Avenue, Cortez Road/Junction Street, Goldfield Road/Broadway Avenue, Goldfield Road/Superstition Boulevard: Clear brush and other debris in the vicinity of the intersection to enhance sight distance
New Culvert/Bridge	◆ Broadway Avenue: 1/4 mile east of Idaho Road
Resurfacing & Reconstruction	◆ Ironwood Drive: Broadway Avenue to Apache Trail (Under Design) ◆ Ironwood Drive: Lost Dutchman Boulevard to Tepee Street
Bridge Widening	◆ Baseline Avenue/CAP Canal

Figure 4.2 displays the number of lanes and Figure 4.3 displays the projected average daily traffic volumes when the study area reaches *Population Level 1 (60K).*

Roadway LOS

Figure 4.4 displays the average daily level of congestion for the study area roadway network. All roads located in the study area operate at low congestion levels (LOS A or B), except for the following:

Moderate Congestion (LOS C & D):	◆ US 60: Mountain View Road to eastern study boundary limits ◆ Meridian Drive: 1/2 mile north of US 60 traffic interchange ◆ Ironwood Drive: 1/2 mile north of US 60 traffic interchange to Houston Avenue ◆ Idaho Road: US 60 traffic interchange to Baseline Avenue ◆ Idaho Road: Between the ramp terminals at the US 60 traffic interchange ◆ Delaware Drive: 1/4 mile south of Apache Trail ◆ Southern Avenue: Meridian Drive to Delaware Drive
High Congestion (LOS E & F)	◆ Meridian Drive: Between the ramp terminals at the US 60 traffic interchange ◆ Ironwood Drive: Houston Avenue to southern study boundary limits

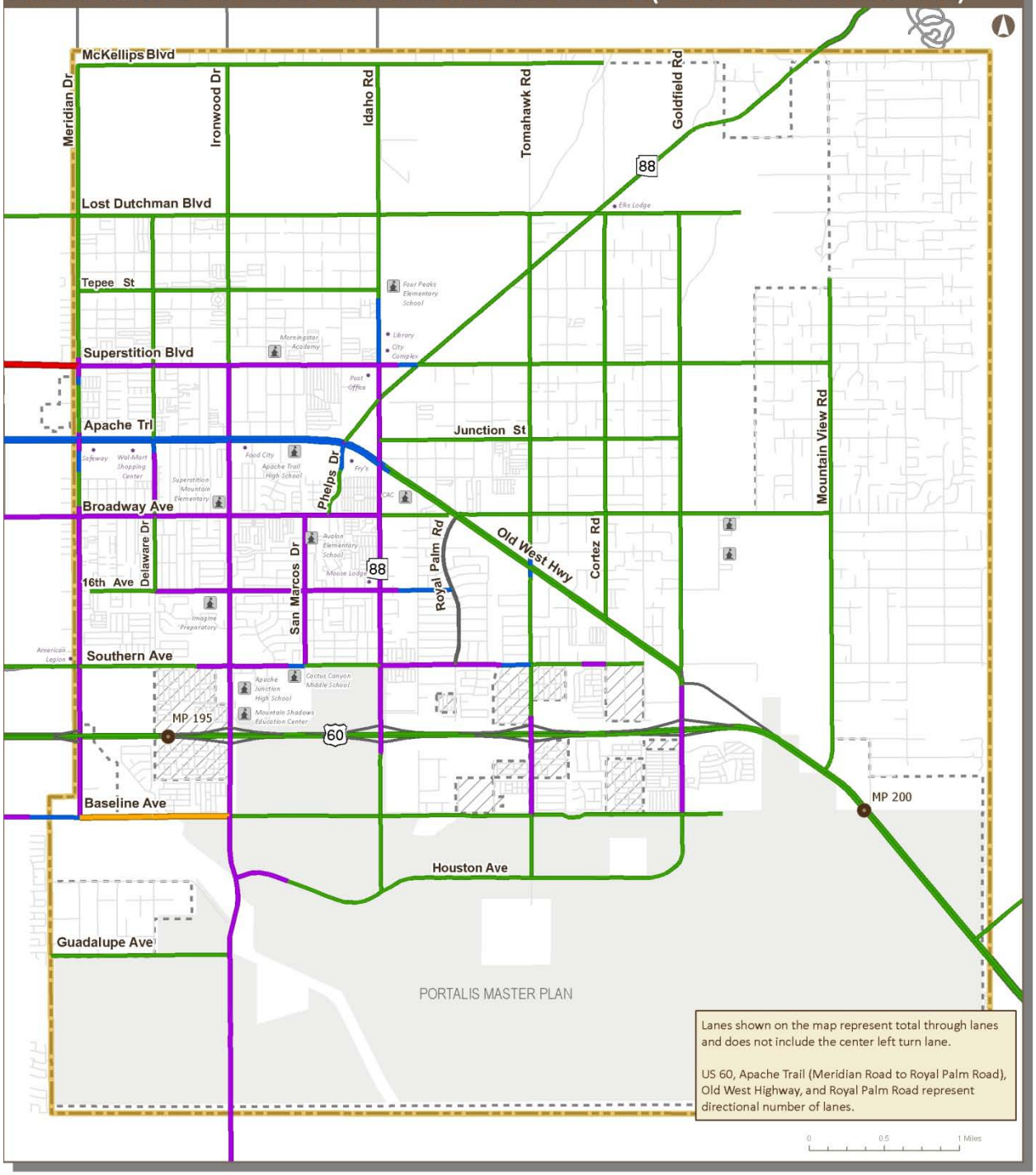
Intersection Level of Service

Table 4.2 summarizes the intersection LOS conditions at major intersections as the study area reaches *Population Level 1 (60K).* Figure 4.5 displays the intersection lane configuration and signal type; Figure 4.6 illustrates the overall intersection LOS, approach LOS, and turn movement LOS at each intersection.

TABLE 4.2: SHORT-TERM (POPULATION LEVEL 1 - 60K) INTERSECTION LOS CONDITIONS

LOS	Intersection Locations
LOS D	◆ Ironwood Drive/Baseline Avenue: PM only ◆ Old West Highway /Idaho Road: AM only
LOS C or Better	All other intersections operate at LOS C or better for AM and PM time periods

FIGURE 4.2: NUMBER OF LANES FOR SHORT-TERM PHASE (POPULATION LEVEL 1 - 60K)

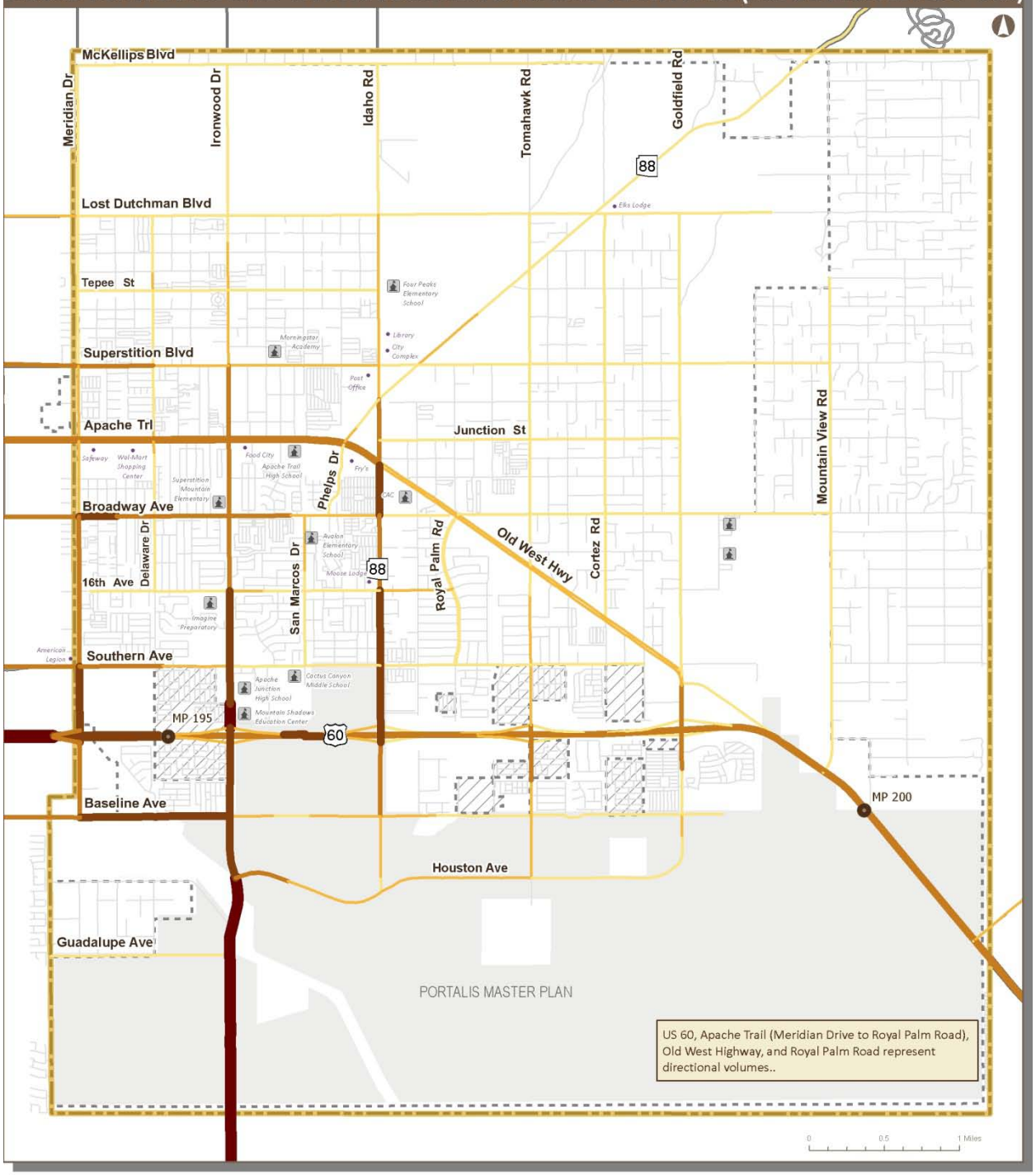


LEGEND

- 6 Lanes Paved
- 5 Lanes Paved
- 4 Lanes Paved
- 3 Lanes Paved
- 2 Lanes Paved
- 1 Lane Paved
- Local Roadway
- Study Area
- City Boundary
- County Island

Data Sources: City of Apache Junction, ADOT, CAAG, MAG

FIGURE 4.3: AVERAGE DAILY TRAFFIC VOLUMES FOR SHORT-TERM PHASE (POPULATION LEVEL 1 - 60K)

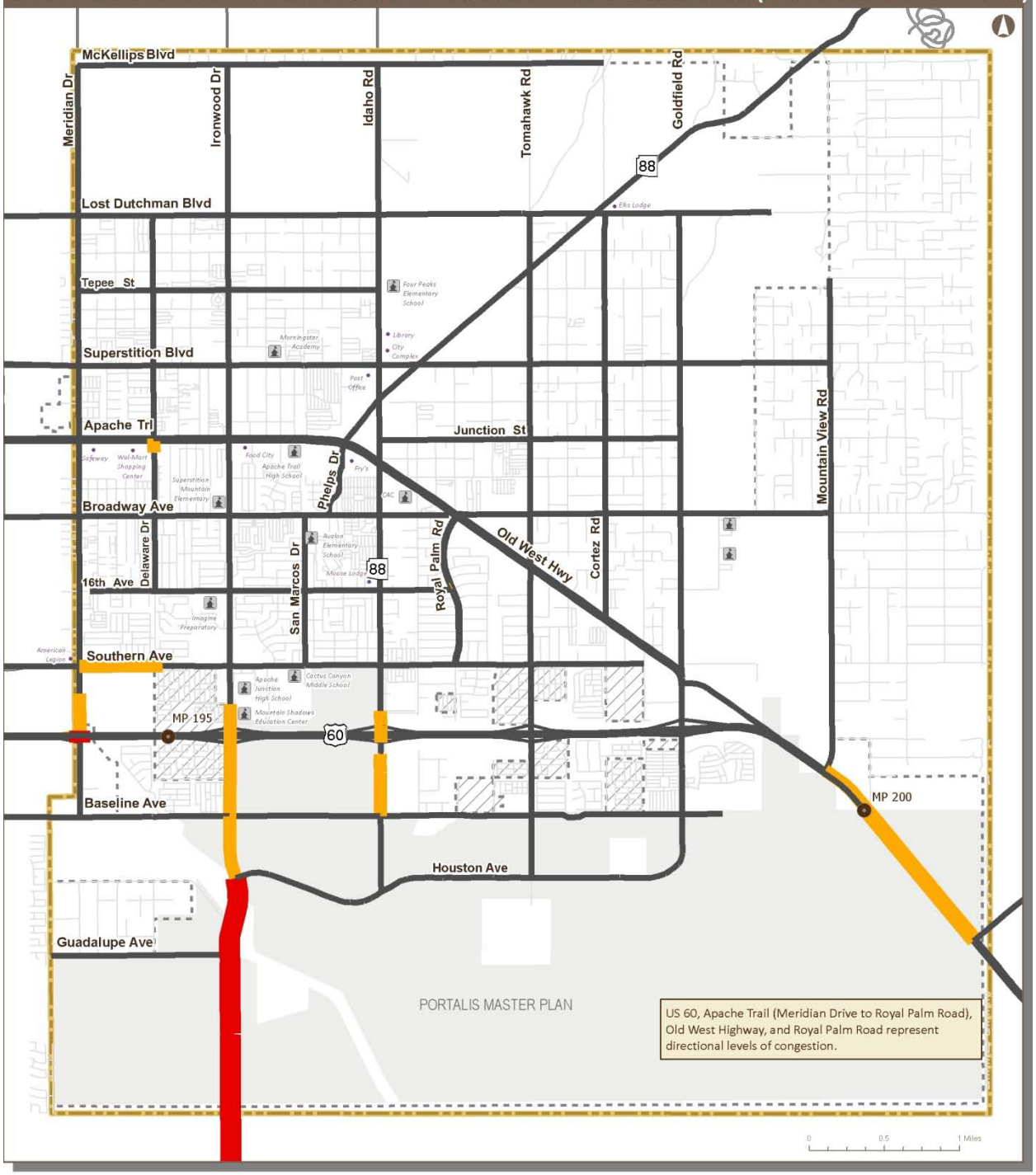


LEGEND

- 0 - 5,000
- 5,001 - 10,000
- 10,001 - 20,000
- 20,001 - 30,000
- > 30,000
- Local Roadway
- Study Area
- City Boundary
- County Island

Data Sources: City of Apache Junction, ADOT, CAAG, MAG

FIGURE 4.4: AVERAGE DAILY LEVEL OF CONGESTION FOR SHORT-TERM PHASE (POPULATION LEVEL 1 - 60K)

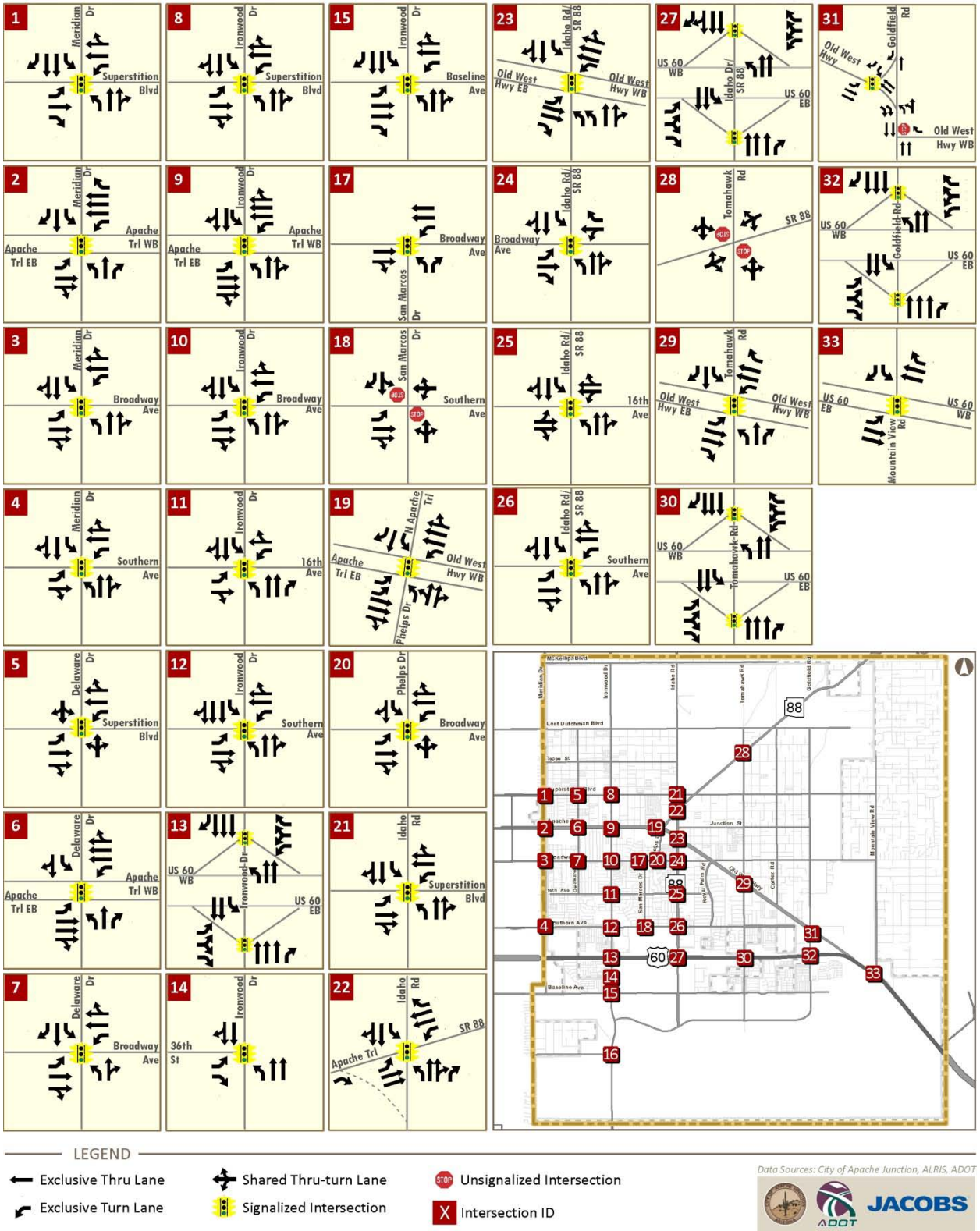


LEGEND

- High Congestion (LOS E & F)
- Moderate Congestion (LOS C & D)
- Low Congestion (LOS A & B)
- Local Roadway
- Study Area
- City Boundary
- County Island

Data Sources: City of Apache Junction, ADOT, MAG, CAAG

FIGURE 4.5: INTERSECTION LANE CONFIGURATION FOR SHORT-TERM PHASE (POPULATION LEVEL 1 - 60K)

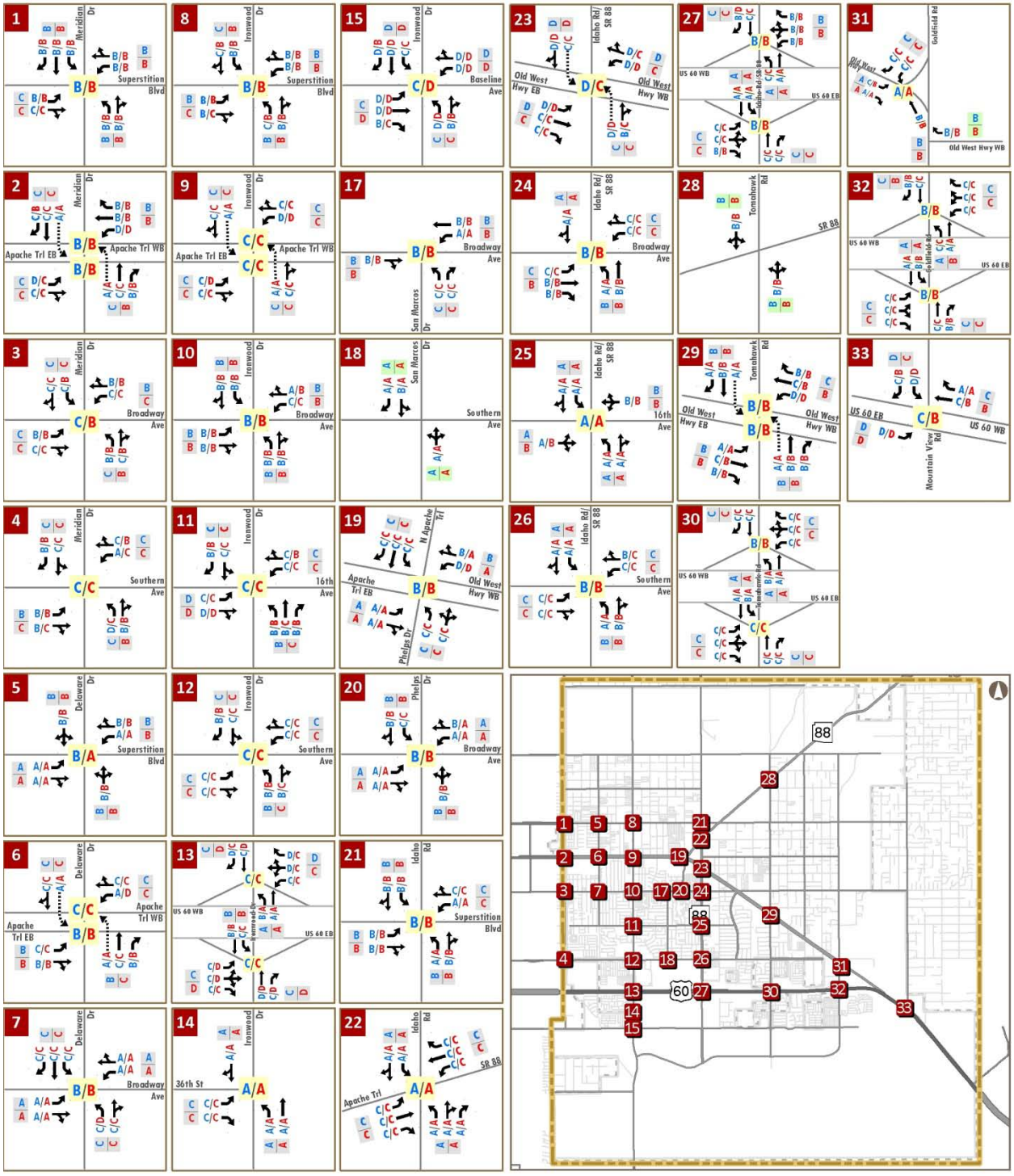


LEGEND

- Exclusive Thru Lane
- Exclusive Turn Lane
- Shared Thru-turn Lane
- Signalized Intersection
- Unsignalized Intersection
- X Intersection ID

Data Sources: City of Apache Junction, ALRIS, ADOT

FIGURE 4.6: INTERSECTION LEVEL OF SERVICE FOR SHORT-TERM PHASE (POPULATION LEVEL 1 - 60K)



LEGEND

X/X Signalized Intersection: AM/PM Intersection Level of Service

X Signalized Intersection: AM/PM
X Approach Level of Service

X/X Unsignalized Intersection: AM/PM Intersection Level of Service

X Unsignalized Intersection: AM/PM
X Approach Level of Service

X/X AM/PM Turn Movement Level of Service

X Intersection ID

Data Sources: City of Apache Junction, ALRIS, ADOT

Potential Roadway Improvements for the Mid-Term Phase (Population Level 2 -75K)

As the study area reaches *Population Level 2 (75K)*, additional transportation improvements are required to meet the higher traffic demand resulting from the increase in population and employment. Below is a list of potential capacity and non-capacity roadway improvements that were evaluated for the mid-term phase. These transportation improvements are in addition to those identified in the short-term phase.

Capacity Related Roadway Improvements in the Study Area

Widening to four lanes	◆ Baseline Avenue: Ironwood Drive to 1/4 mile east of Goldfield Road ◆ Delaware Drive: 1/2 mile north of Apache Trail to North of Apache Trail ◆ Delaware Drive: 1/2 mile south of Apache Trail ◆ Southern Avenue: Meridian Drive to Mountain View Road
Portalis Area Roads	◆ Figure 4.7 displays the potential new roadways in the Portalis area

Capacity Related Roadway Improvements in the Project Influence Area

New Roadway	◆ Meridian Drive (four lanes): Baseline Avenue to Hunt Highway

Non-Capacity Related Roadway Improvements

Safety Improvements	◆ New flood warning system at 16th Avenue: West of Ironwood Drive ◆ New bridge/culvert at Apache Trail: 1/4 mile east of Ironwood Drive ◆ New bridge/culvert at Baseline Avenue: 1/2 mile east of Idaho Road ◆ New culvert at Ironwood Drive/Foothill Street ◆ New bridge/culvert at San Marcos Drive: 1/4 mile south of Broadway Avenue ◆ Reconstruct intersection at Old West Highway/Goldfield Road ◆ Four Way Stop controlled intersection at Tomahawk Road/Superstition Boulevard
Additional Safety and Planning Studies	◆ Apache Trail: Meridian Drive to Phelps Drive: Conduct an Urban Corridor Planning Study to develop specialized 1. Land development standards 2. Infrastructure standards to accommodate walking, bicycling, transit, and driving. The study will identify specific improvements to enhance safety, promote economic development, and improve access to activity centers

Figure 4.7 displays the number of lanes and Figure 4.8 displays the projected average daily traffic volumes when the study area reaches *Population Level 2 (75K).*

Roadway LOS

Figure 4.9 displays the average daily level of congestion for the study area roadway network. All roads located in the study area operate at low congestion levels (LOS A or B), except for the following:

Moderate Congestion (LOS C & D):	◆ US 60: Western study boundary limits to MP 195 ◆ US 60: Mountain View Road to eastern study boundary limits ◆ Meridian Drive: Southern Avenue to US 60 traffic interchange ◆ Idaho Road: US 60 traffic interchange to 1/2 mile north of Houston Avenue ◆ Tomahawk Road: 1/4 mile north of the US 60 traffic interchange ◆ Ironwood Drive: Houston Avenue to southern study boundary limits
High Congestion (LOS E & F)	◆ Ironwood Drive: South ramp junction at US 60 traffic interchange to 1/2 mile south of Southern Avenue ◆ Idaho Road: South ramp junction at US 60 traffic interchange to 1/2 mile south of Southern Avenue

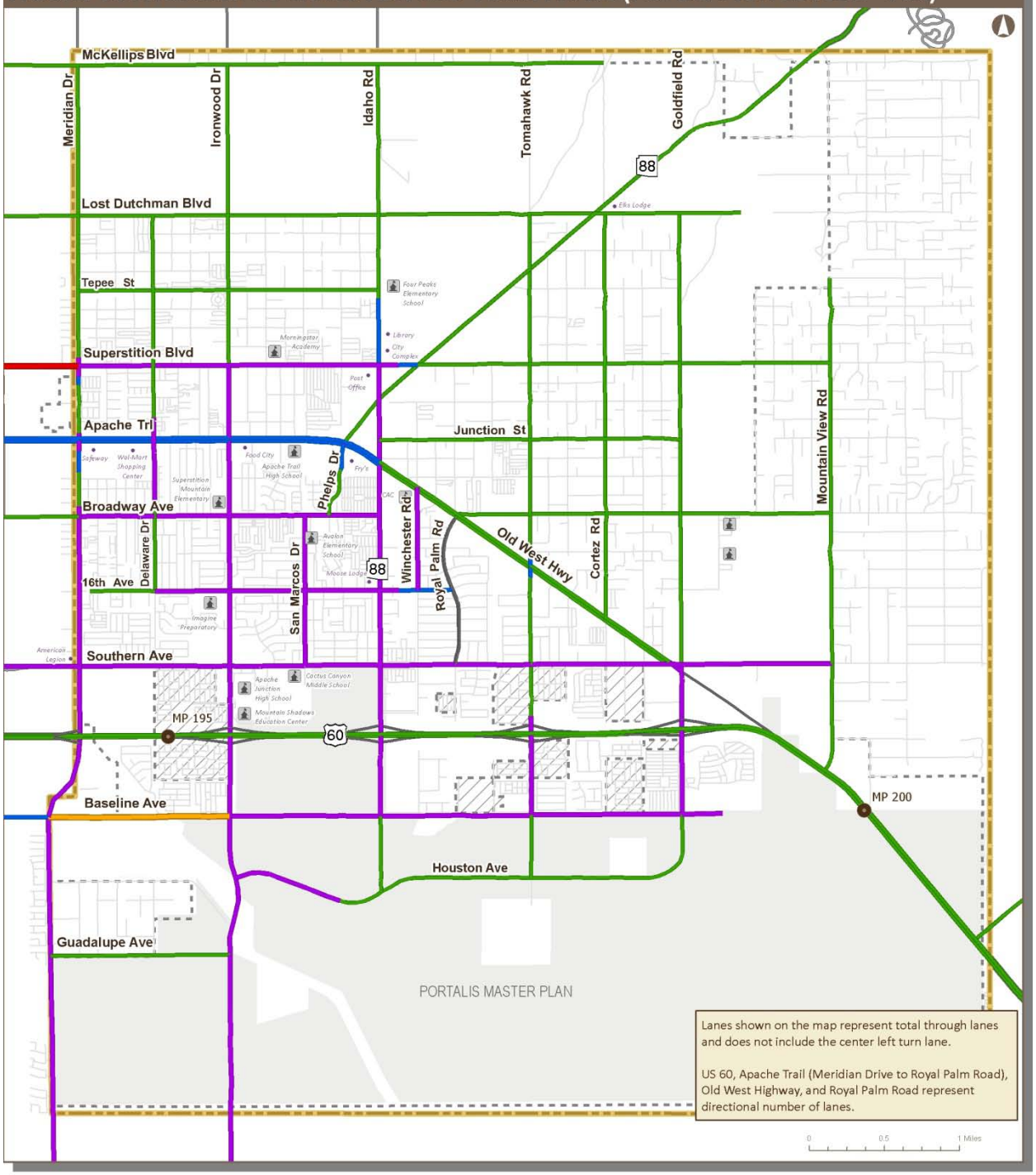
Intersection Level of Service

Table 4.3 summarizes the intersection LOS conditions at major intersections as the study area reaches *Population Level 2 (75K)*. Figure 4.10 displays the intersection lane configuration and signal type; Figure 4.11 illustrates the overall intersection LOS, approach LOS, and turn movement LOS at each intersection.

TABLE 4.3: MID-TERM (POPULATION LEVEL 2 - 75K) INTERSECTION LOS CONDITIONS

LOS	Intersection Locations
LOS D	◆ US 60/Ironwood Drive south ramp junction: PM only ◆ Old West Highway/Idaho Road: AM only
LOS C or Better	All other intersections operate at LOS C or better for AM and PM time periods

FIGURE 4.7: NUMBER OF LANES FOR MID-TERM PHASE (POPULATION LEVEL 2 - 75K)

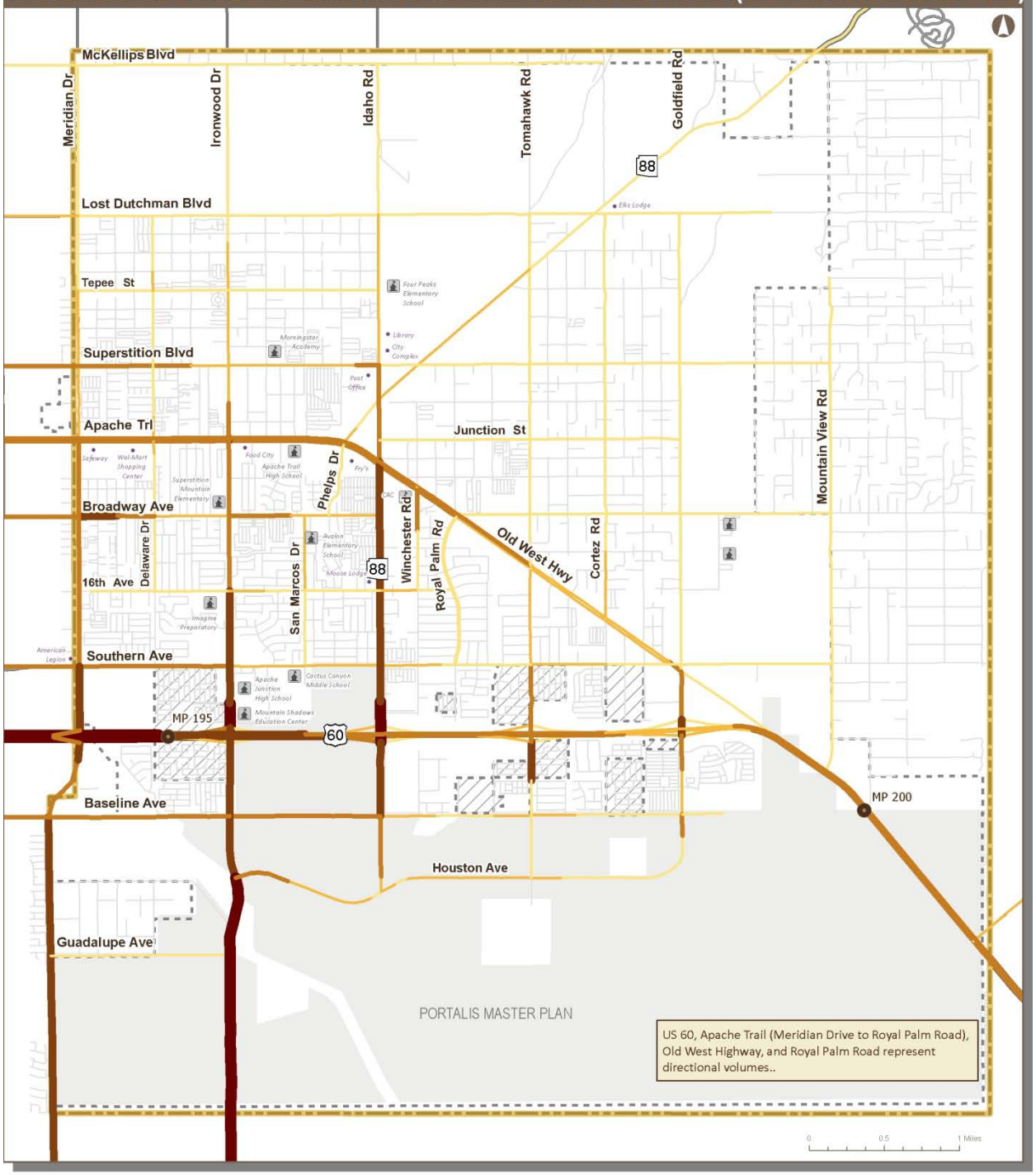


LEGEND

- 6 Lanes Paved
- 5 Lanes Paved
- 4 Lanes Paved
- 3 Lanes Paved
- 2 Lanes Paved
- 1 Lane Paved
- Local Roadway
- Study Area
- City Boundary
- County Island

Data Sources: City of Apache Junction, ADOT, CAAG, MAG

FIGURE 4.8: AVERAGE DAILY TRAFFIC VOLUMES FOR MID-TERM PHASE (POPULATION LEVEL 2 - 75K)

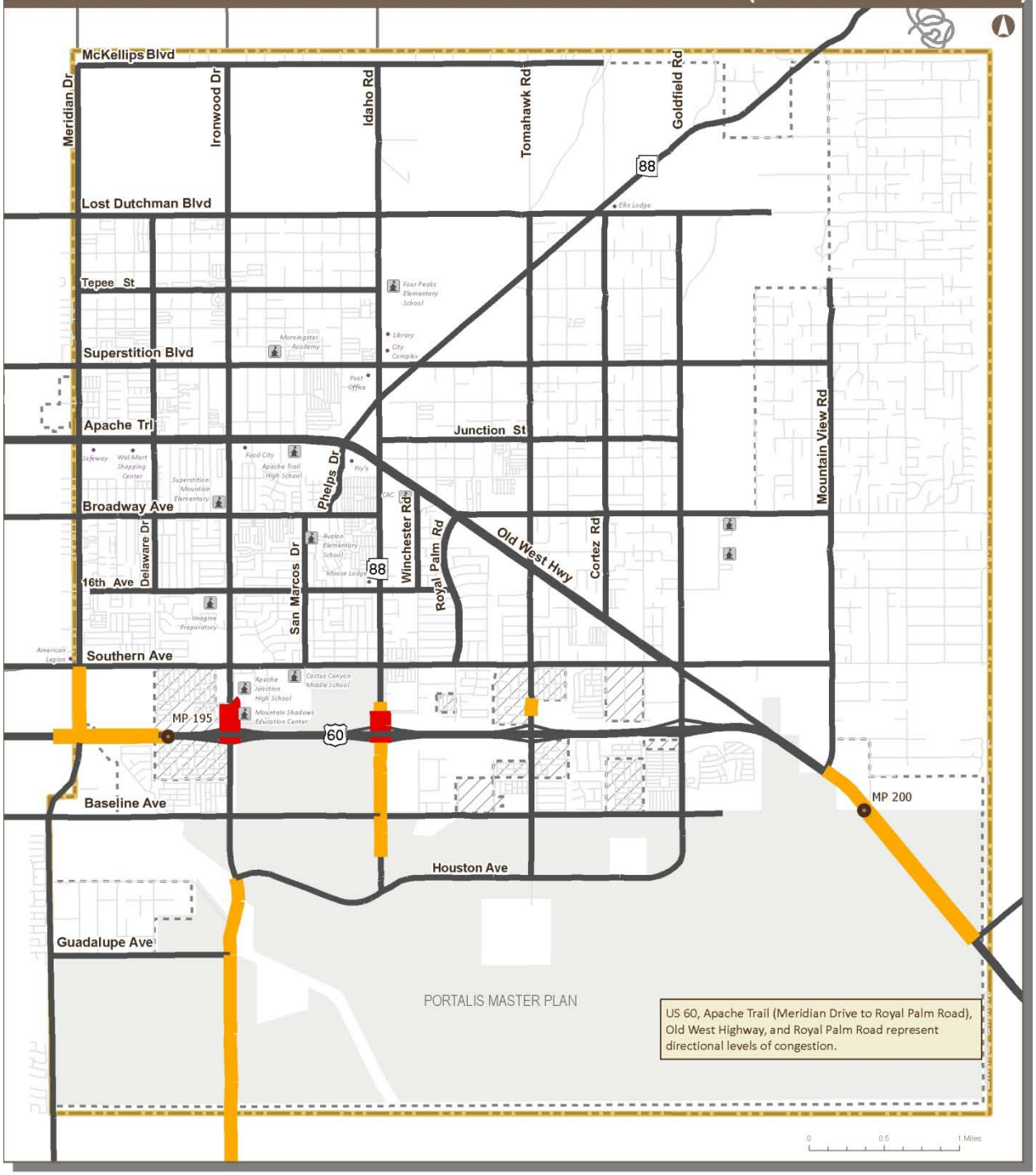


LEGEND

- 0 - 5,000
- 5,001 - 10,000
- 10,001 - 20,000
- 20,001 - 30,000
- > 30,000
- Local Roadway
- Study Area
- City Boundary
- County Island

Data Sources: City of Apache Junction, ADOT, CAAG, MAG

FIGURE 4.9: AVERAGE DAILY LEVEL OF CONGESTION FOR MID-TERM PHASE (POPULATION LEVEL 2 - 75K)



LEGEND

- High Congestion (LOS E & F)
- Moderate Congestion (LOS C & D)
- Low Congestion (LOS A & B)
- Local Roadway
- Study Area
- City Boundary
- County Island

Data Sources: City of Apache Junction, ADOT, MAG, CAAG

FIGURE 4.10: INTERSECTION LANE CONFIGURATION FOR MID-TERM PHASE (POPULATION LEVEL 2 - 75K)

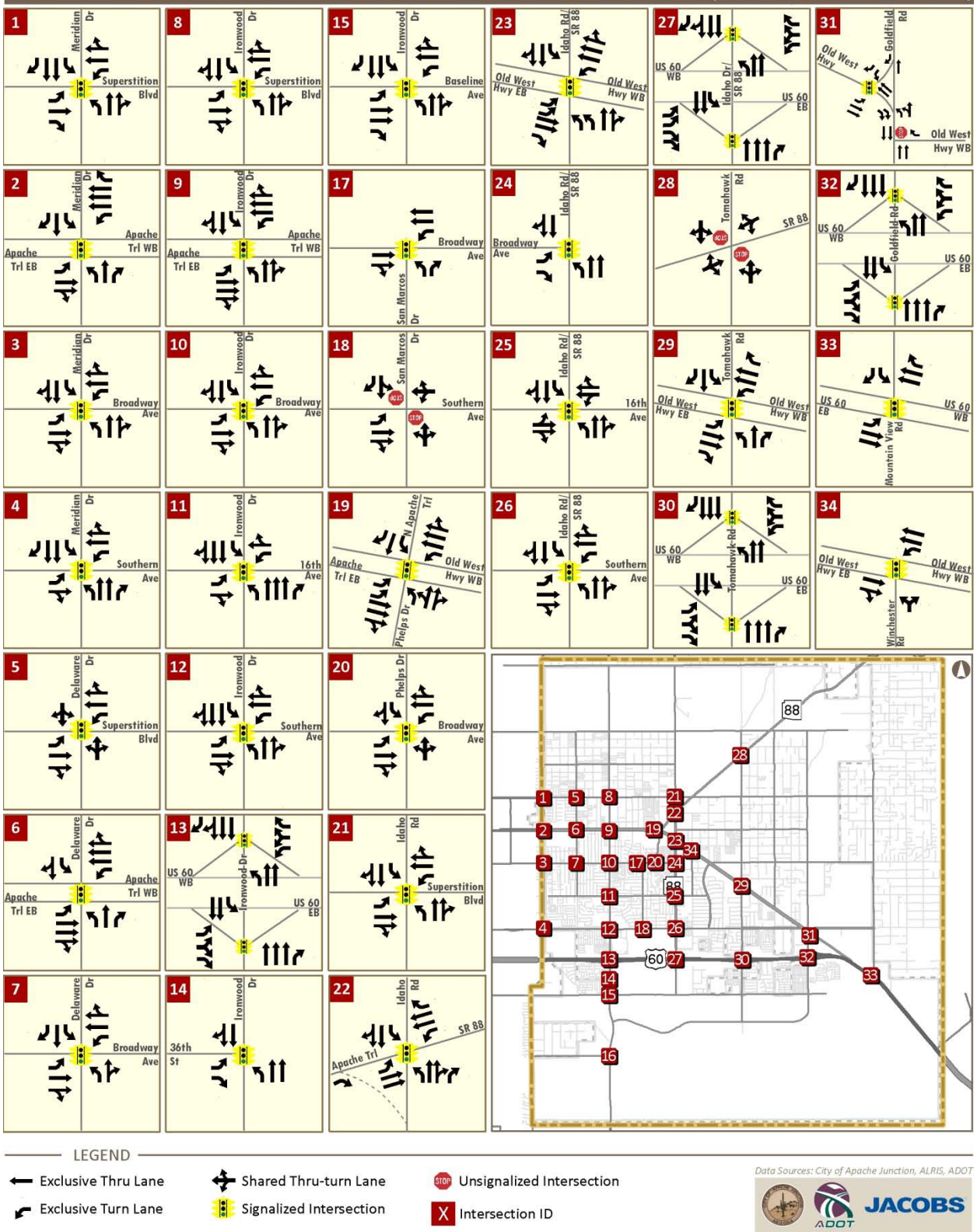
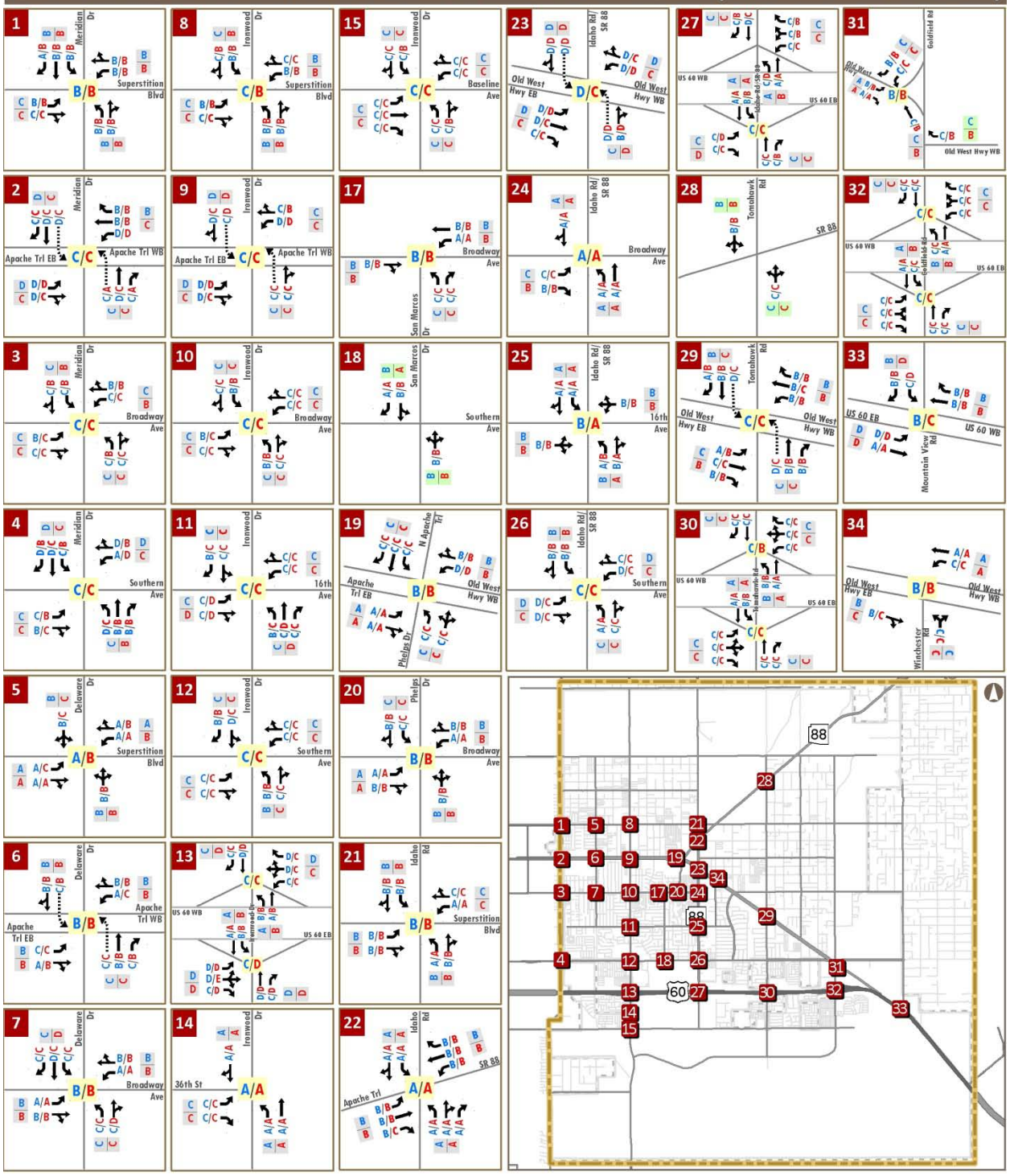


FIGURE 4.11: INTERSECTION LEVEL OF SERVICE FOR MID-TERM PHASE (POPULATION LEVEL 2 - 75K)



LEGEND

- X/X Signalized Intersection: AM/PM Intersection Level of Service
- X Signalized Intersection: AM/PM Approach Level of Service
- X/X Unsignalized Intersection: AM/PM Intersection Level of Service
- X Unsignalized Intersection: AM/PM Approach Level of Service
- X/X AM/PM Turn Movement Level of Service
- X Intersection ID

Data Sources: City of Apache Junction, ALRIS, ADOT

Potential Roadway Improvements for the Long-Term Phase (Population Level 3 -130K)

ADOT is currently in the planning/design stages of three major regional high capacity (freeway/expressway) corridors in Pinal County: US 60 Reroute Design Concept Report (DCR), SR 24, and North/South Freeway DCR. Several alignments for each corridor are being analyzed by ADOT and each alignment will have a significant impact on the study area roadways. Several roadway improvements scenarios were prepared and evaluated to address the following:

- Additional travel demand generated as the study area reaches *Population Level 3 (130K).*
- Additional regional traffic passing through the study area as a result of individual or a combination of any of the new regional corridors

Results from each scenario were discussed with the study team to develop four likely possible scenarios:

- Base Condition
- Alternative 1
- Alternative 2
- Alternative 3

Each alternative was further analyzed to develop a *Preferred Scenario*. This preferred scenario was ultimately used in identifying the most appropriate set of transportation improvements for the study area for the long term phase. Each scenario is discussed in the following section.

Base Condition

The Base Condition included the following capacity improvements. These improvements are in addition to those identified in the short-term and mid-term phases.

Capacity Related Improvements in the Study Area

New Roadway	◆ Junction Street: Idaho Road to Apache Trail ◆ Plaza Drive: Superstition Boulevard to Apache Trail
Widening to six lanes	◆ US 60: Western study boundary limits to Goldfield Road ◆ Ironwood Drive: Southern Avenue to Baseline Avenue ◆ Idaho Road : Southern Avenue to Baseline Avenue
Widening to four lanes	◆ Tomahawk Road: US 60 to Southern Avenue
Intersection Improvements	◆ Ironwood Drive/US 60: New northbound, two lane turn onto Westbound US 60
Portalis Area Roads	◆ Figure 4.12 displays the potential new roadways in the Portalis area

Capacity Related Improvements in the Project Influence Area

New Roadway

- SR 24: Loop 202 to Ironwood Drive
- Warner Road: Meridian Drive to US 60

Figure 4.12 displays the number of lanes and Figure 4.13 displays the projected average daily traffic volumes when the study area reaches *Population Level 3 (130K)* in Base Condition Alternative.

Roadway LOS

Figure 4.14 displays the average daily level of congestion for the study area roadway network.

The following roadways operate at a LOS C or worse:

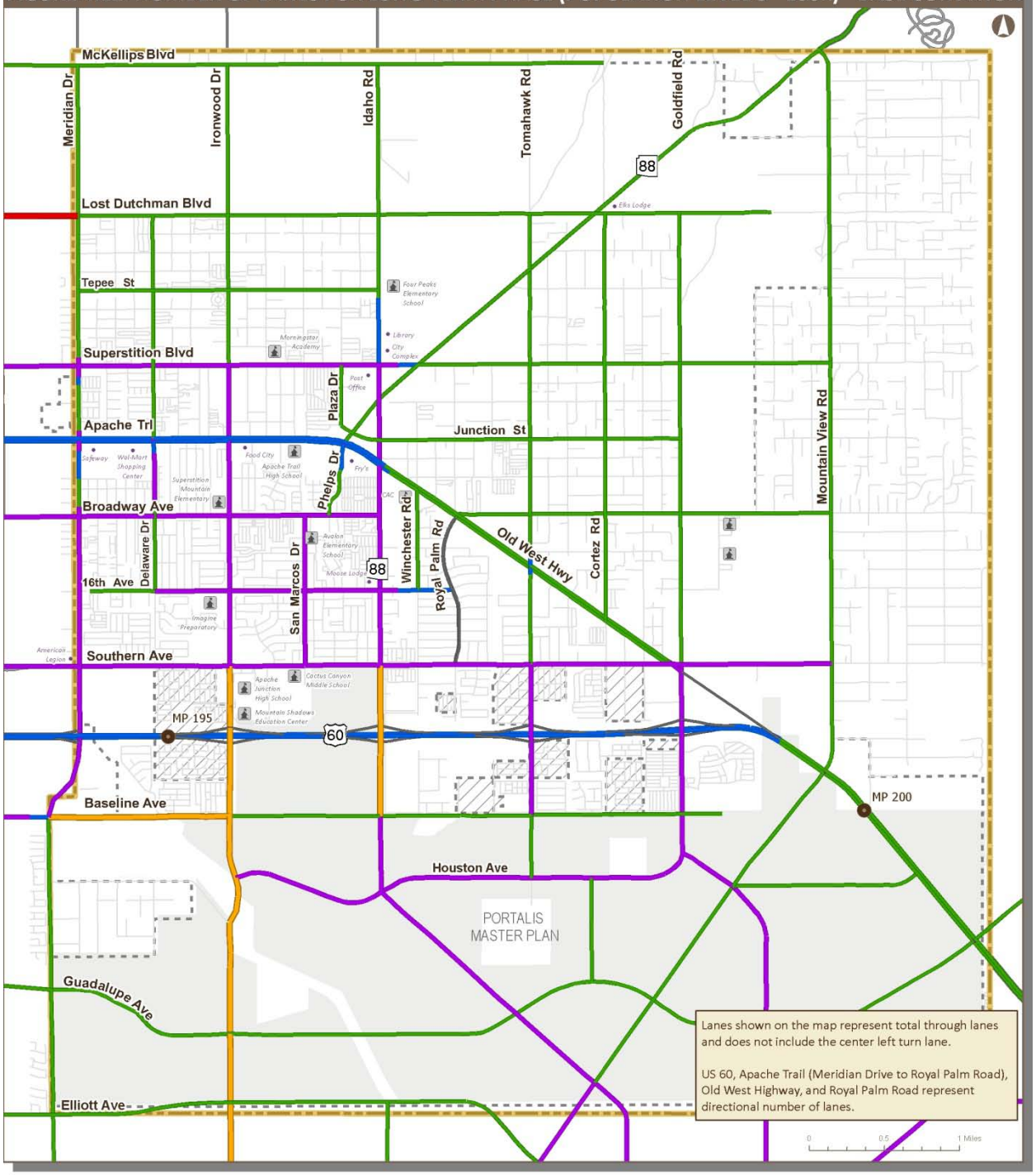
Moderate Congestion (LOS C & D):

- US 60: Mountain View Road to eastern study boundary limits
- Meridian Drive: Apache Trail to US 60 traffic interchange
- Meridian Drive: Baseline Avenue to Elliott Avenue
- Delaware Drive: North of Apache Trail
- Ironwood Drive: Broadway Avenue to Southern Avenue
- Ironwood Drive: 1/4 mile north of US 60 traffic interchange to Baseline Avenue
- Ironwood Drive: Houston Avenue to southern study boundary limits
- Idaho Road: Old West Highway to 1/4 mile south of the US 60 traffic interchange
- Idaho Road: 3/4 mile south of Baseline Avenue
- Idaho Road: 1/2 mile north of Guadalupe Road
- Winchester Road: 1/4 mile south of Old West Highway
- Tomahawk Road: South ramp terminal at the US 60 traffic interchange to 1/4 south of Southern Avenue
- Goldfield Road: Old West Highway to 1/4 mile south of US 60 traffic interchange
- Mountain View Road: 1/4 north of US 60 to Houston Avenue
- Mountain View Road: Guadalupe Avenue to Idaho Road
- Old West Highway: Idaho Road to Winchester Road
- Baseline Avenue: 1/4 mile east of Ironwood Drive

High Congestion (LOS E & F)

- Meridian Drive: Between the ramp terminals at the US 60 traffic interchange
- Idaho Road: Between the ramp terminals at the US 60 traffic interchange

FIGURE 4.12: NUMBER OF LANES FOR LONG-TERM PHASE (POPULATION LEVEL 3 - 130K) - BASE CONDITION

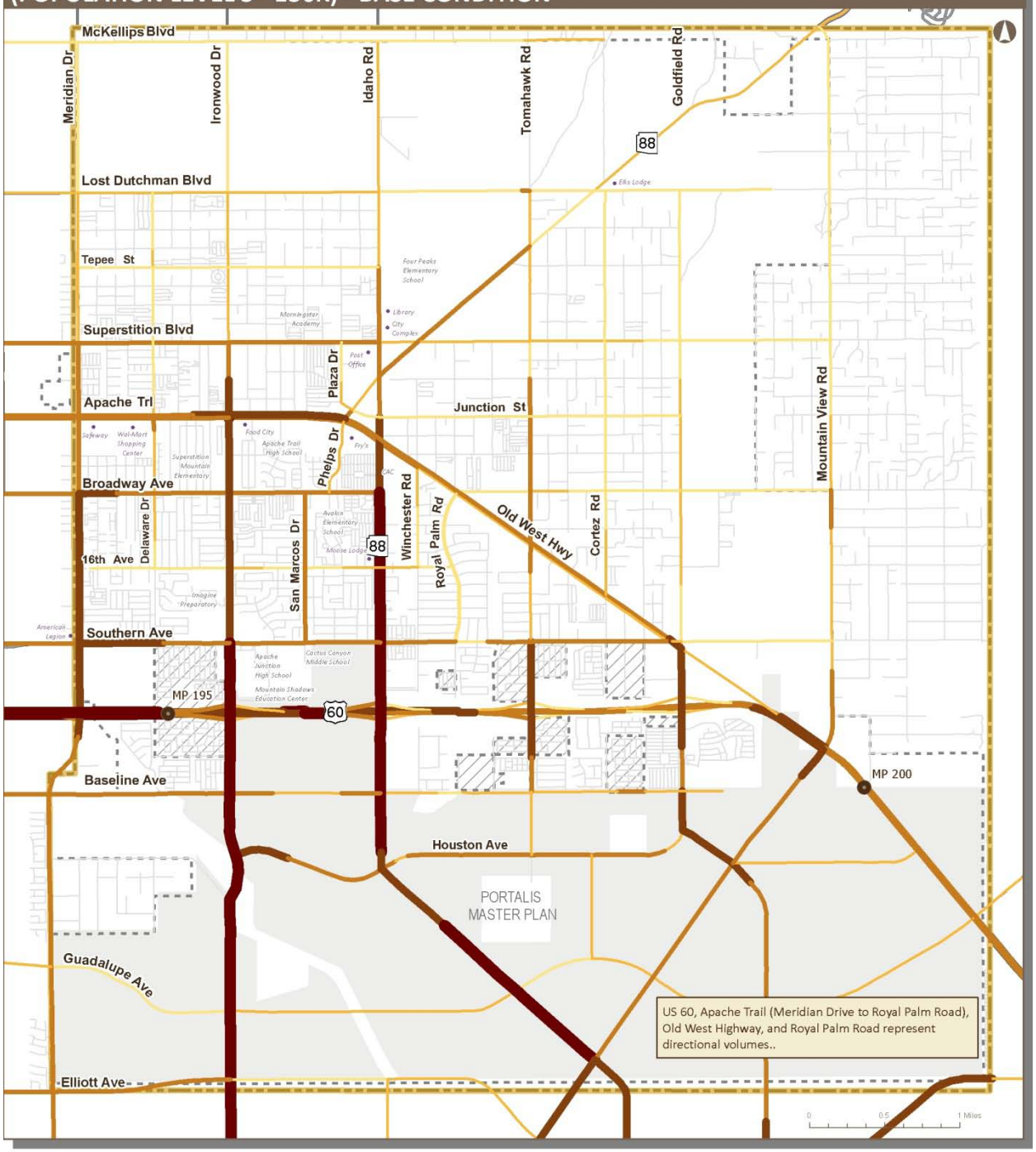


LEGEND

- 6 Lanes Paved
- 5 Lanes Paved
- 4 Lanes Paved
- 3 Lanes Paved
- 2 Lanes Paved
- 1 Lane Paved
- Local Roadway
- Study Area
- City Boundary
- County Island

Data Sources: City of Apache Junction, ADOT, CAAG, MAG

FIGURE 4.13: AVERAGE DAILY TRAFFIC VOLUMES FOR LONG-TERM PHASE (POPULATION LEVEL 3 - 130K) - BASE CONDITION

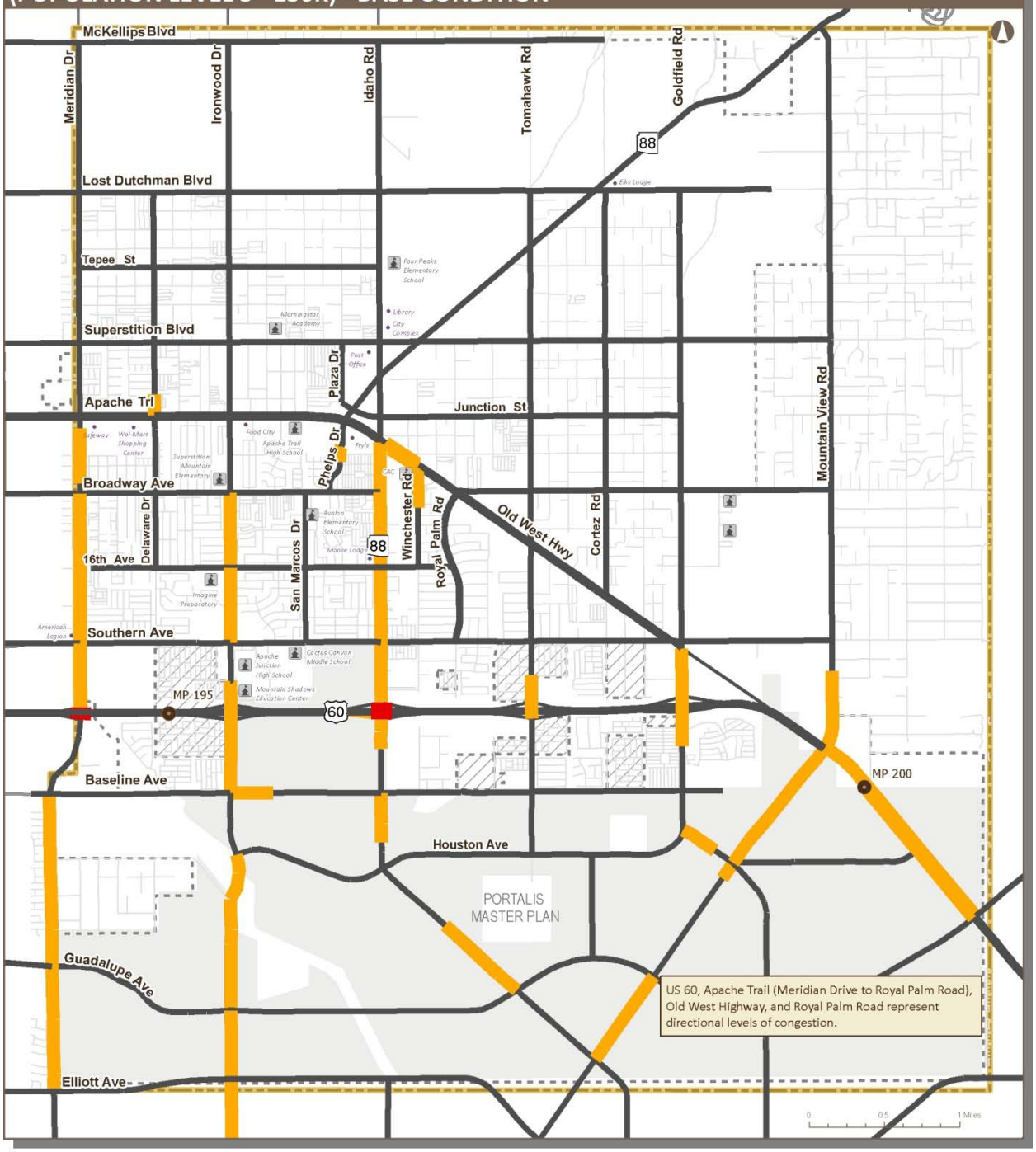


LEGEND

- 0 - 5,000
- 5,001 - 10,000
- 10,001 - 20,000
- 20,001 - 30,000
- > 30,000
- Local Roadway
- Study Area
- City Boundary
- County Island

Data Sources: City of Apache Junction, ADOT, CAAG, MAG

FIGURE 4.14: AVERAGE DAILY LEVEL OF CONGESTION FOR LONG-TERM PHASE (POPULATION LEVEL 3 - 130K) - BASE CONDITION



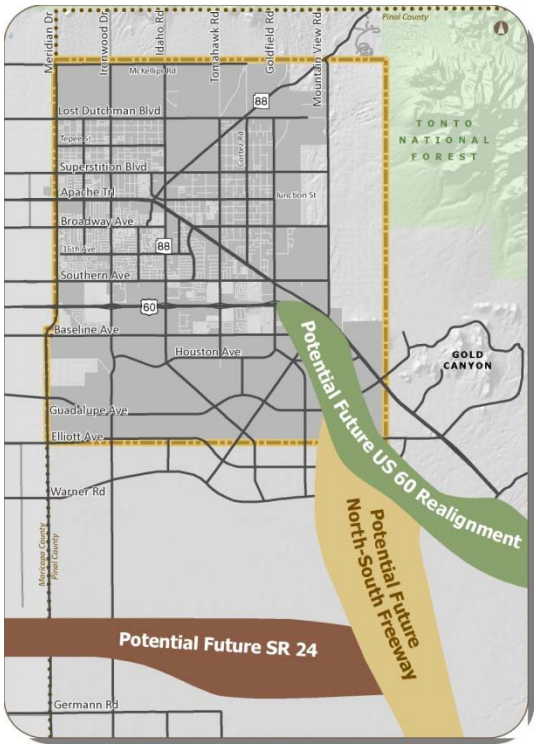
LEGEND

- High Congestion (LOS E & F)
- Moderate Congestion (LOS C & D)
- Low Congestion (LOS A & B)
- Local Roadway
- Study Area
- City Boundary
- County Island

Data Sources: City of Apache Junction, ADOT, MAG, CAAG

Alternative 1

Alternative 1 included the following capacity improvements. These improvements are in addition to those identified in the short-term and mid-term phases.



Capacity Related Improvements in the Study Area

New Roadway	◆ Junction Street: Idaho Road to Apache Trail ◆ Plaza Drive: Superstition Boulevard to Apache Trail
Widening to six lanes	◆ US 60: Western study boundary limits to Goldfield Road ◆ Ironwood Drive: Southern Avenue to Baseline Avenue ◆ Idaho Road : Southern Avenue to Baseline Avenue
Widening to four lanes	◆ Tomahawk Road: US 60 to Southern Avenue
Portalis Area Roads	◆ Figure 4.12 displays the potential new roadways in the Portalis area

Capacity Related Improvements in the Project Influence Area

New Roadway

- US 60 Reroute alignment
- North/South Corridor: From US 60 Reroute alignment towards Florence
- SR 24: Loop 202 to North/South Corridor
- Warner Road: Meridian Drive to US 60

Figure 4.12 displays the number of lanes and Figure 4.15 displays the projected average daily traffic volumes when the study area reaches *Population Level 3 (130K)* in Alternative 1.

Roadway LOS

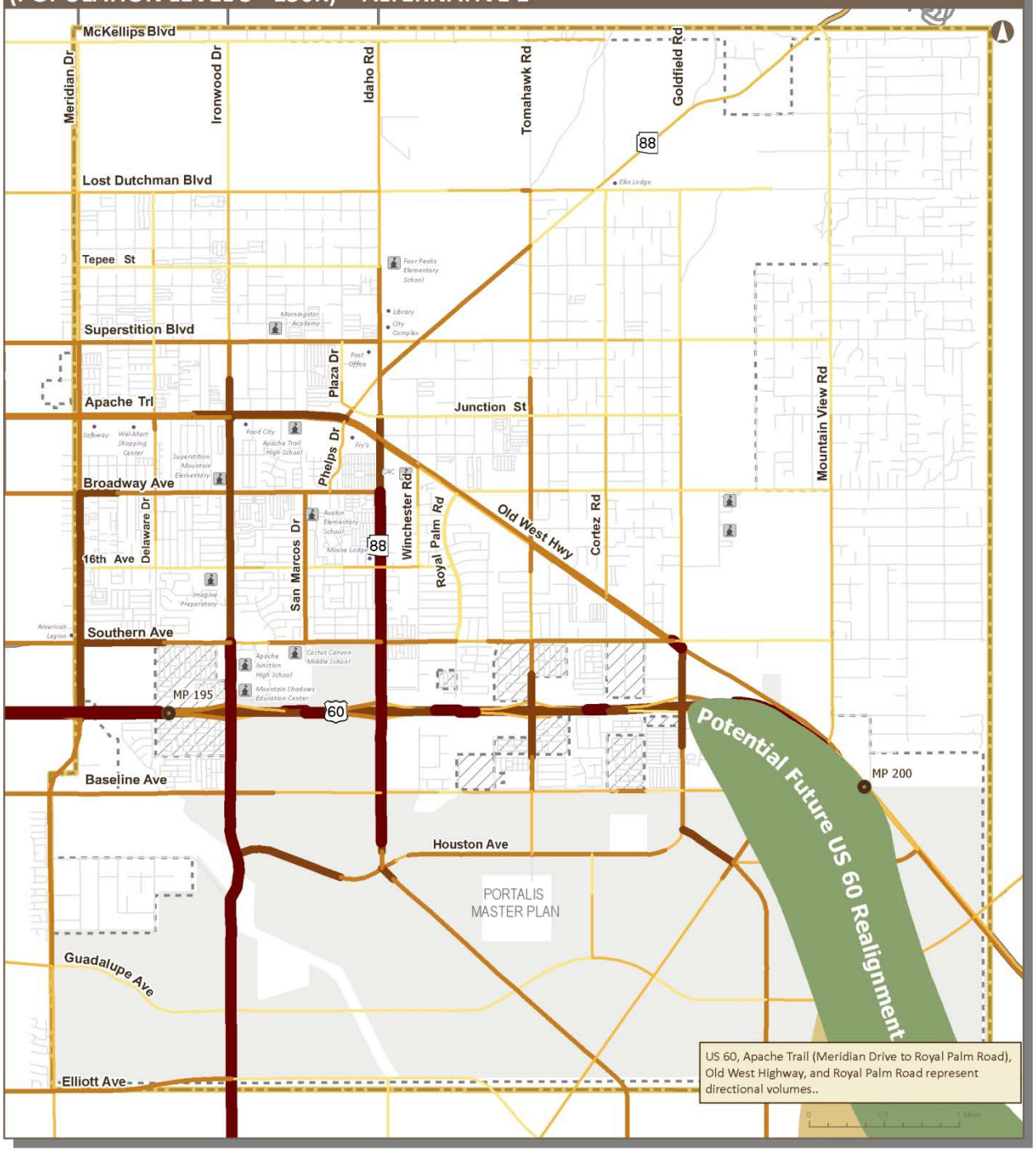
Figure 4.16 displays the average daily level of congestion for the study area roadway network. The following roadways operate at a LOS C or worse:

Moderate Congestion (LOS C & D):

- Meridian Drive: Apache Trail to Broadway Avenue
- Meridian Drive: 3/4 north of the US 60 traffic interchange
- Delaware Drive: 1/4 mile north of Apache Trail
- Ironwood Drive: Broadway Avenue to Southern Avenue
- Ironwood Drive: South ramp terminals at the US 60 traffic interchange to 1/4 south of Southern Avenue
- Ironwood Drive: 1/2 mile south of Houston Avenue

	◆ Ironwood Drive: Guadalupe Avenue to Elliott Avenue ◆ Idaho Road: Old West Highway to 1/4 mile south of the US 60 traffic interchange ◆ Idaho Road: 1/2 mile south of Baseline Avenue ◆ Winchester Road: 1/4 mile south of Old West Highway ◆ Tomahawk Road: Junction Street to Broadway Avenue ◆ Tomahawk Road: 1/4 mile south of US 60 traffic interchange ◆ Goldfield Road: Old West Highway to 1/4 mile south of US 60 traffic interchange ◆ Baseline Avenue: 1/4 mile east of Ironwood Drive
High Congestion (LOS E & F)	◆ Meridian Drive: Between the ramp terminals at the US 60 traffic interchange

FIGURE 4.15: AVERAGE DAILY TRAFFIC VOLUMES FOR LONG-TERM PHASE (POPULATION LEVEL 3 - 130K) – ALTERNATIVE 1



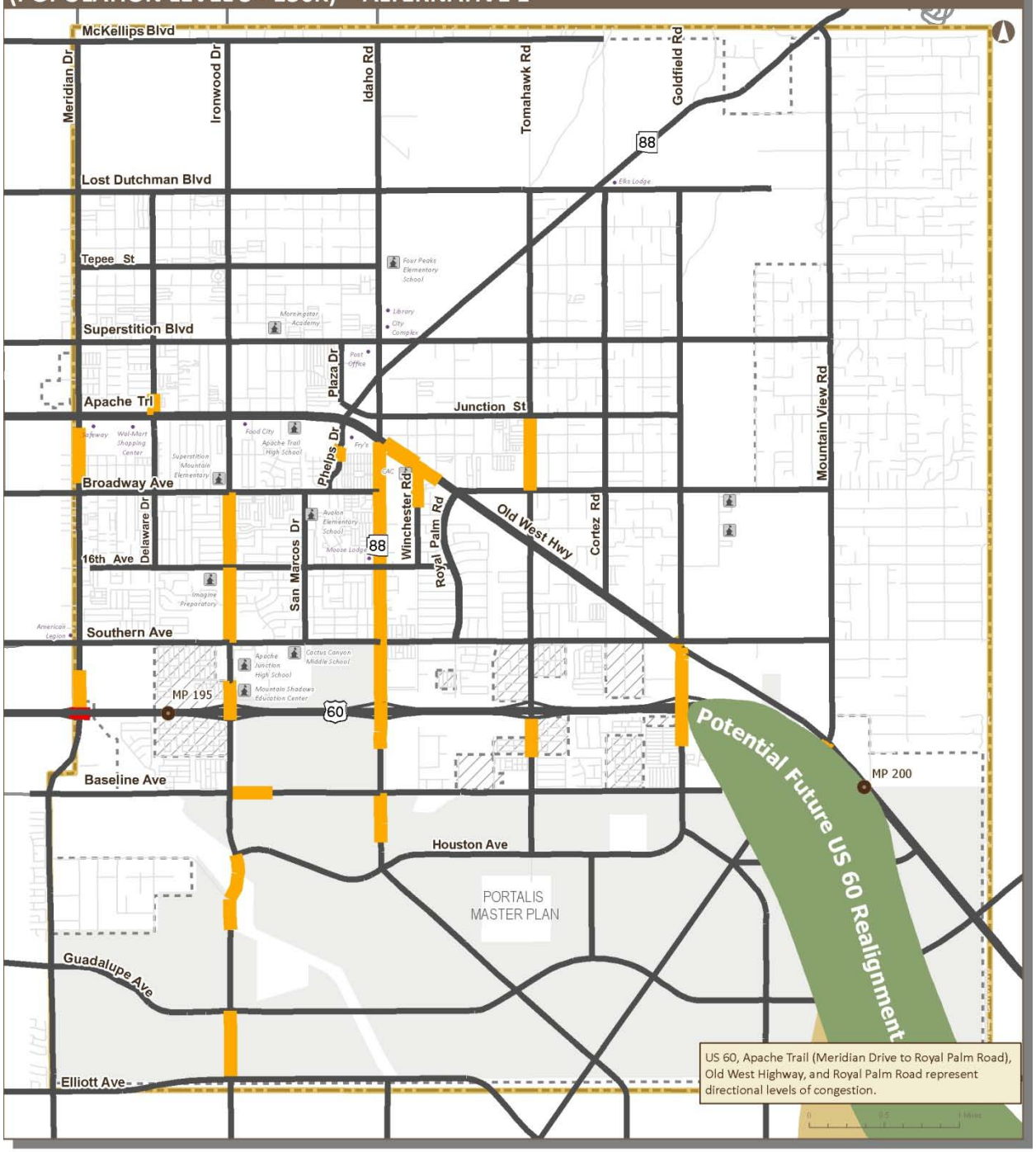
LEGEND

- 0 - 5,000
- 5,001 - 10,000
- 10,001 - 20,000
- 20,001 - 30,000
- > 30,000
- Local Roadway
- Study Area
- City Boundary
- County Island
- Potential Future US 60 Re-alignment Corridor
- Potential Future North-South Freeway Corridor

(Buffer is a mere graphical representation, does not represent a fix alignment)

Data Sources: City of Apache Junction, ADOT, CAAG, MAG

FIGURE 4.16: AVERAGE DAILY LEVEL OF CONGESTION FOR LONG-TERM PHASE (POPULATION LEVEL 3 - 130K) – ALTERNATIVE 1



LEGEND

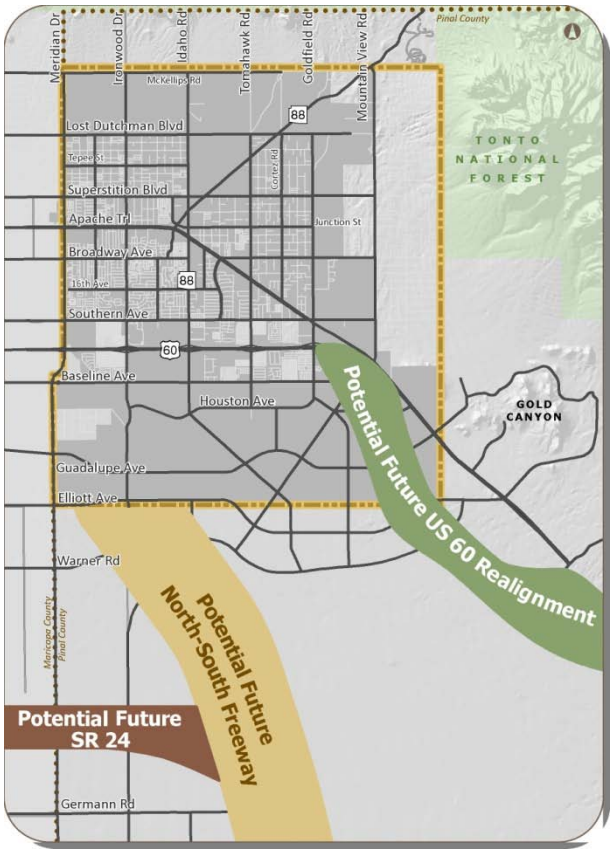
- High Congestion (LOS E & F)
- Moderate Congestion (LOS C & D)
- Low Congestion (LOS A & B)
- Local Roadway
- Study Area
- City Boundary
- County Island
- Potential Future US 60 Re-alignment Corridor
- Potential Future North-South Freeway Corridor

(Buffer is a mere graphical representation, does not represent a fix alignment)

Data Sources: City of Apache Junction, ADOT, MAG, CAAG

Alternative 2

Alternative 2 included the following capacity improvements. These improvements are in addition to those identified in the short-term and mid-term phases.



Capacity Related Improvements in the Study Area

New Roadway	◆ Junction Street: Idaho Road to Apache Trail ◆ Plaza Drive: Superstition Boulevard to Apache Trail
Widening to six lanes	◆ US 60: Western study boundary limits to Goldfield Road ◆ Ironwood Drive: Southern Avenue to Baseline Avenue ◆ Idaho Road : Southern Avenue to Baseline Avenue
Widening to four lanes	◆ Tomahawk Road: US 60 to Southern Avenue
Portalis Area Roads	◆ Figure 4.12 displays the potential new roadways in the Portalis area

Capacity Related Improvements in the Project Influence Area

New Roadway	◆ US 60 Reroute alignment ◆ Ironwood Drive is an expressway from US 60 to SR 24 ◆ North/South Corridor: Extends from SR 24 at Ironwood Drive expressway towards Florence ◆ SR 24: Loop 202 to North/South Corridor ◆ Warner Road: Meridian Drive to US 60

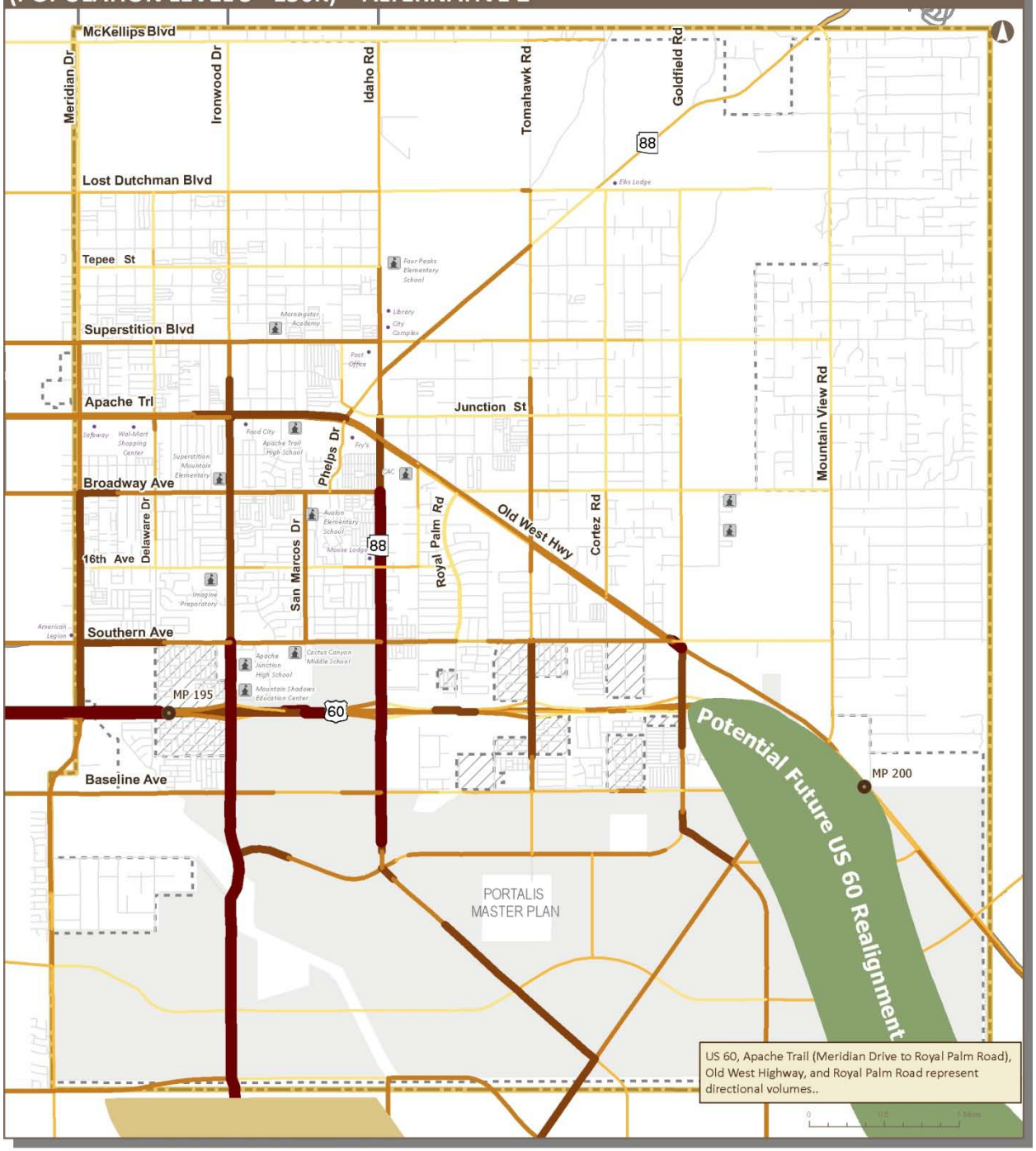
Figure 4.12 displays the number of lanes and Figure 4.17 displays the projected average daily traffic volumes when the study area reaches *Population Level 3* in Alternative 2.

Roadway LOS

Figure 4.18 displays the average daily level of congestion for the study area roadway network. The following roadways operate at a LOS C or worse:

Moderate Congestion (LOS C & D):	◆ Meridian Drive: Apache Trail to Broadway Avenue ◆ Meridian Drive: Southern Avenue to US 60 traffic interchange ◆ Delaware Drive: 1/4 mile north of Apache Trail ◆ Ironwood Drive: Apache Trail to Southern Avenue ◆ Ironwood Drive: 1/4 north of the north ramp terminal at US 60 traffic interchange ◆ Ironwood Drive: South ramp terminal at US 60 interchange to Guadalupe Avenue ◆ Idaho Road: Old West Highway to north ramp terminal at US 60 traffic interchange ◆ Idaho Road: 1/4 mile south of Baseline Avenue ◆ Winchester Road: 1/4 mile south of Old West Highway ◆ Tomahawk Road: Between the ramp terminals at the US 60 traffic interchange ◆ Goldfield Road: 1/4 east of Houston Avenue ◆ Old West Highway: 3/4 mile east of Idaho Road ◆ Baseline Avenue: 1/4 mile east of Ironwood Drive
High Congestion (LOS E & F)	◆ Meridian Drive: Between the ramp terminals at the US 60 traffic interchange ◆ Ironwood Drive: Between the ramp terminals at the US 60 traffic interchange ◆ Ironwood Drive: Guadalupe Avenue to Elliott Avenue ◆ Idaho Road: Between the ramp terminals at the US 60 traffic interchange

FIGURE 4.17: AVERAGE DAILY TRAFFIC VOLUMES FOR LONG-TERM PHASE (POPULATION LEVEL 3 - 130K) – ALTERNATIVE 2



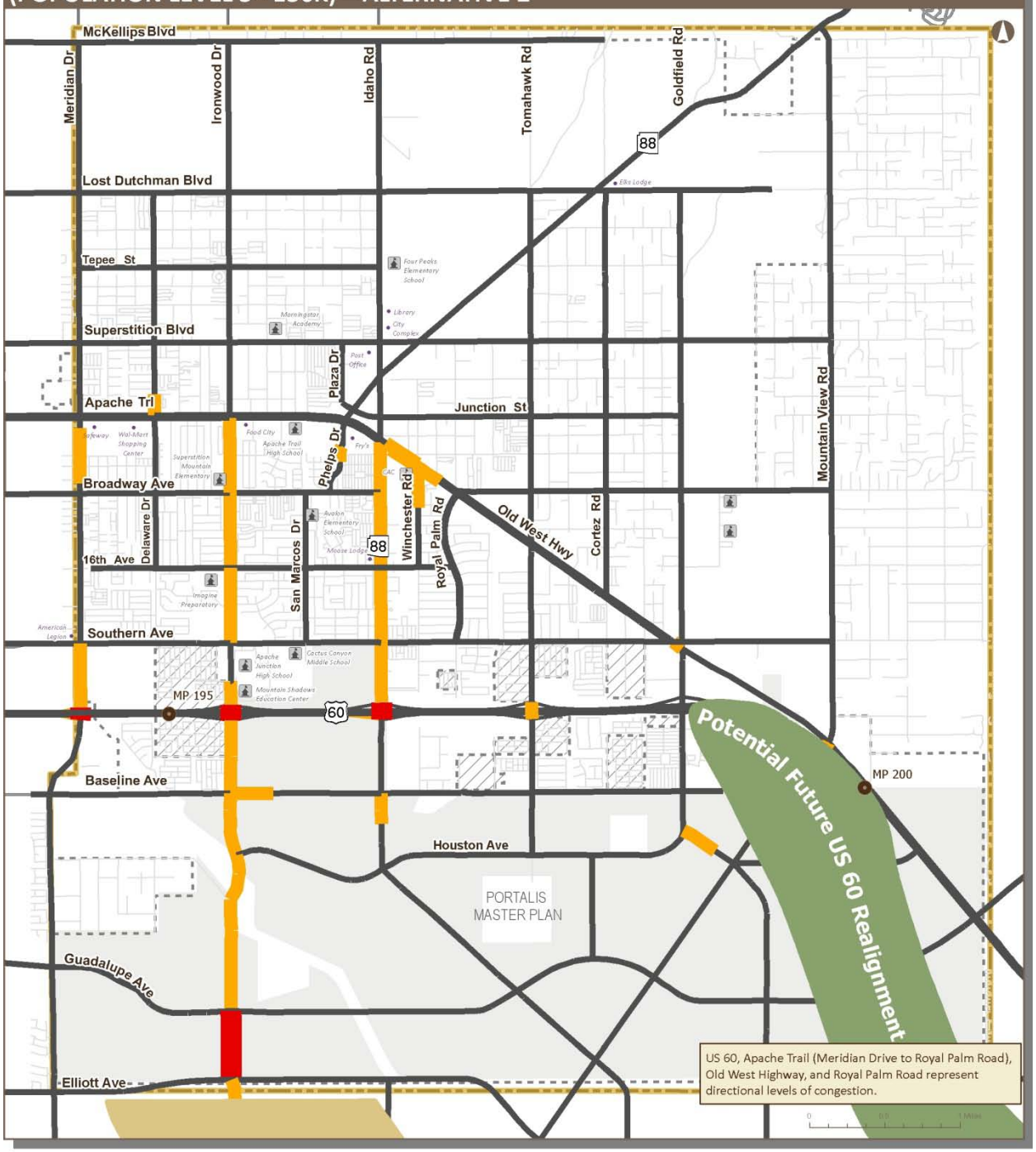
LEGEND

- 0 - 5,000
- 5,001 - 10,000
- 10,001 - 20,000
- 20,001 - 30,000
- > 30,000
- Local Roadway
- Study Area
- City Boundary
- County Island
- Potential Future US 60 Re-alignment Corridor
- Potential Future North-South Freeway Corridor

(Buffer is a mere graphical representation, does not represent a fix alignment)

Data Sources: City of Apache Junction, ADOT, CAAG, MAG

FIGURE 4.18: AVERAGE DAILY LEVEL OF CONGESTION FOR LONG-TERM PHASE (POPULATION LEVEL 3 - 130K) – ALTERNATIVE 2



LEGEND

- High Congestion (LOS E & F)
- Moderate Congestion (LOS C & D)
- Low Congestion (LOS A & B)
- Local Roadway
- Study Area
- City Boundary
- County Island
- Potential Future US 60 Re-alignment Corridor
- Potential Future North-South Freeway Corridor

(Buffer is a mere graphical representation, does not represent a fix alignment)

Data Sources: City of Apache Junction, ADOT, MAG, CAAG

Alternative 3

Alternative 3 included the following capacity improvements. These improvements are in addition to those identified in the short-term and mid-term phases.

Capacity Related Improvements in the Study Area

New Roadway	◆ Junction Street: Idaho Road to Apache Trail ◆ Plaza Drive: Superstition Boulevard to Apache Trail
Widening to six lanes	◆ US 60: Western study boundary limits to Goldfield Road ◆ Ironwood Drive: Southern Avenue to Baseline Avenue ◆ Idaho Road : Southern Avenue to Baseline Avenue
Widening to four lanes	◆ Tomahawk Road: US 60 to Southern Avenue
Portalis Area Roads	◆ Figure 4.12 displays the potential new roadways in the Portalis area

Capacity Related Improvements in the Project Influence Area

New Roadway	◆ US 60 Reroute alignment ◆ North/South Corridor: Extends from SR 24 and traverses towards Florence ◆ SR 24: Loop 202 to North/South Corridor ◆ Warner Road: Meridian Drive to US 60

Figure 4.12 displays the number of lanes and Figure 4.19 displays the projected average daily traffic volumes when the study area reaches *Population Level 3(130K)* in Alternative 3.

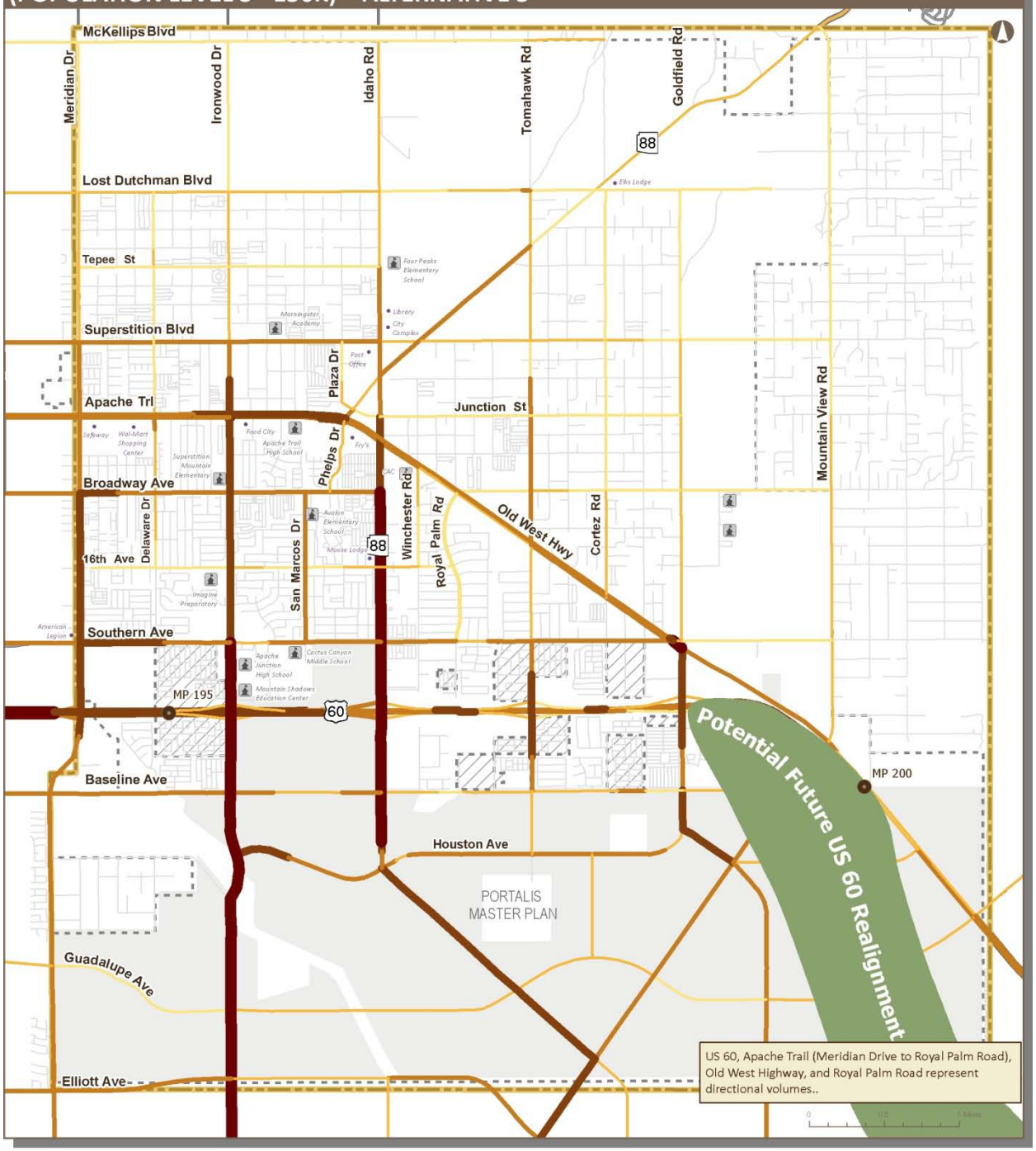
Roadway LOS

Figure 4.20 displays the average daily level of congestion for the study area roadway network. The following roadways operate at a LOS C or worse:

Moderate Congestion (LOS C & D):

- Meridian Drive: Apache Trail to Broadway Avenue
- Meridian Drive: South ramp terminal at the US 60 traffic interchange to 1/4 mile south of Southern Avenue
- Meridian Drive: Baseline Avenue to southern study boundary limits
- Delaware Drive: 1/4 north of Apache Trail
- Ironwood Drive: Broadway Avenue to Southern Avenue
- Ironwood Drive: South ramp terminal at the US 60 traffic interchange to 1/2 mile south of Southern Avenue
- Ironwood Drive: Houston Avenue to southern study boundary limits
- Idaho Road: Old West Highway to 1/4 south of the US 60 traffic interchange
- Idaho Road: 1/4 mile south of Baseline Avenue
- Winchester Road: 1/4 south of Old West Highway
- Tomahawk Road: Between the ramp terminals at the US 60 traffic interchange
- Goldfield Road: 1/4 mile east of Houston Avenue
- Old West Highway: 3/4 mile east of Idaho Road
- Baseline Avenue: 1/4 mile east of Ironwood Drive

FIGURE 4.19: AVERAGE DAILY TRAFFIC VOLUMES FOR LONG-TERM PHASE (POPULATION LEVEL 3 - 130K) – ALTERNATIVE 3



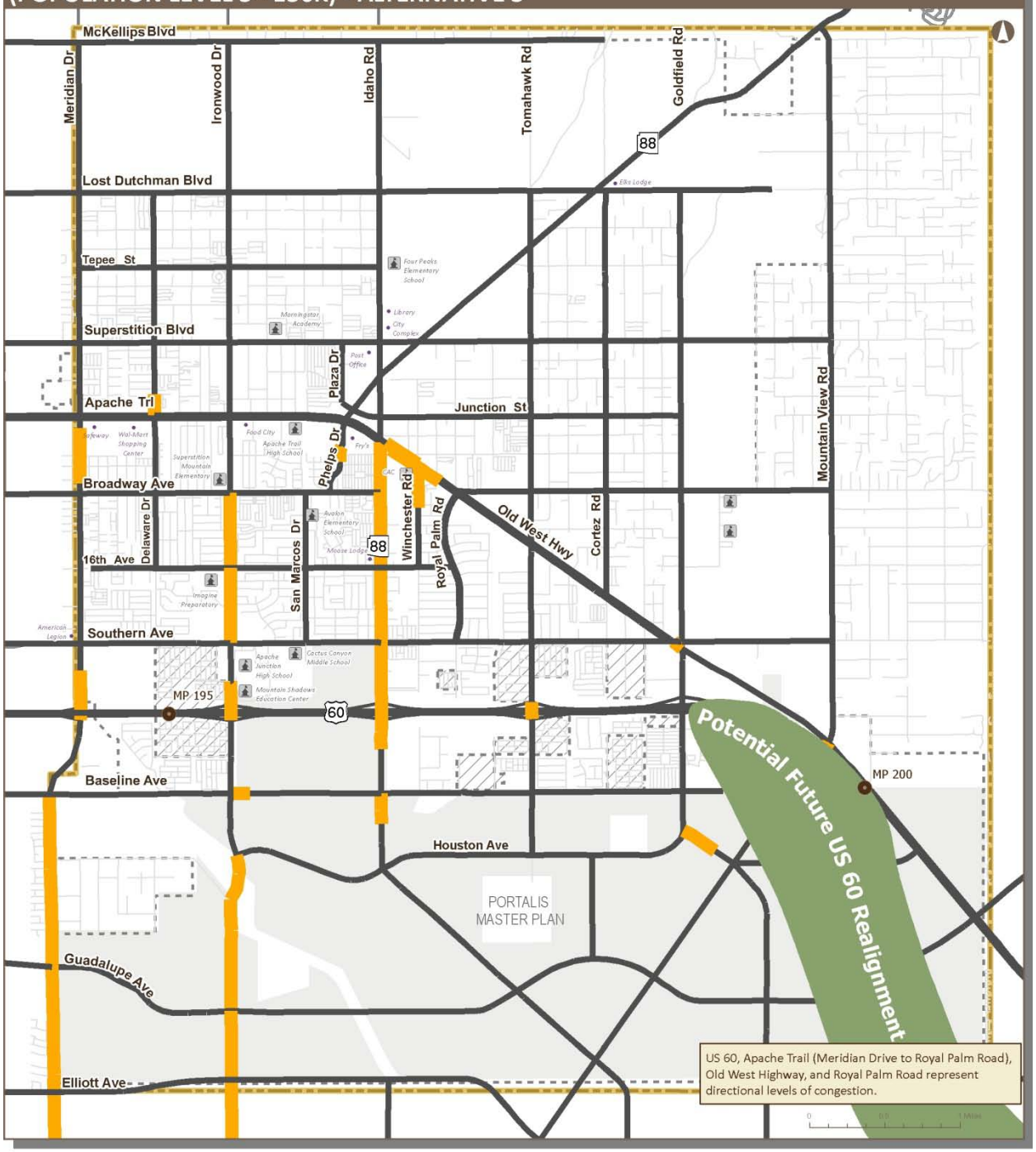
LEGEND

- 0 - 5,000
- 5,001 - 10,000
- 10,001 - 20,000
- 20,001 - 30,000
- > 30,000
- Local Roadway
- Study Area
- City Boundary
- County Island
- Potential Future US 60 Re-alignment Corridor

(Buffer is a mere graphical representation, does not represent a fix alignment)

Data Sources: City of Apache Junction, ADOT, CAAG, MAG

FIGURE 4.20: AVERAGE DAILY LEVEL OF CONGESTION FOR LONG-TERM PHASE (POPULATION LEVEL 3 - 130K) - ALTERNATIVE 3



LEGEND

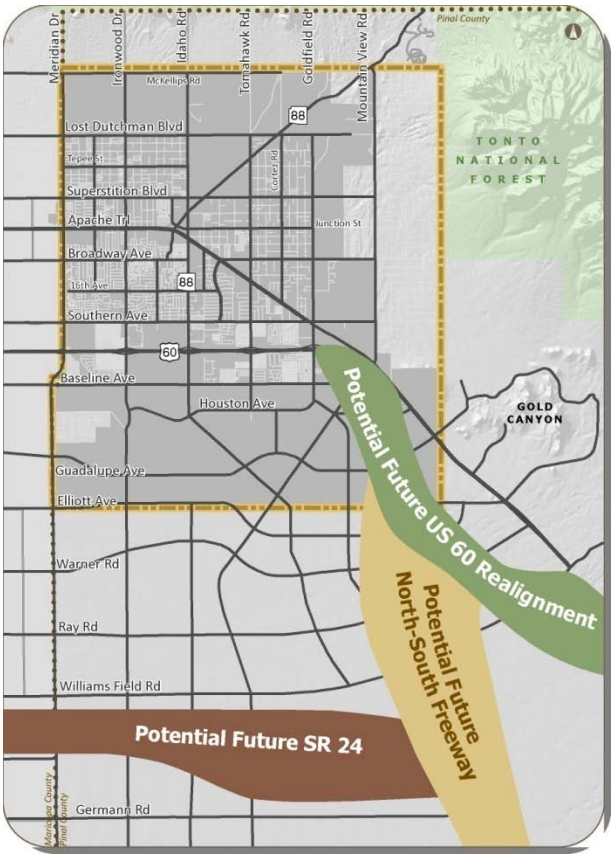
- High Congestion (LOS E & F)
- Moderate Congestion (LOS C & D)
- Low Congestion (LOS A & B)
- Local Roadway
- Study Area
- City Boundary
- County Island
- Potential Future US 60 Re-alignment Corridor

(Buffer is a mere graphical representation, does not represent a fix alignment)

Data Sources: City of Apache Junction, ADOT, MAG, CAAG

Preferred Alternative

Preferred Alternative included the following capacity and non-capacity roadway improvements. These improvements are in addition to those identified in the short-term and mid-term phases.



Capacity Related Improvements in the Study Area

New Roadway	◆ Junction Street: Idaho Road to Apache Trail ◆ Plaza Drive: Superstition Boulevard to Apache Trail
Widening to six lanes	◆ US 60: Western study boundary limits to Goldfield Road ◆ Meridian Drive: Apache Trail to Baseline Avenue ◆ Ironwood Drive: Apache Trail to Baseline Avenue ◆ Idaho Road : Old West Highway to Baseline Avenue ◆ Tomahawk Road: Old West Highway to Baseline Avenue ◆ Goldfield Road: Old West Highway to Baseline Avenue
Portalis Area Roads	◆ Figure 4.21 displays the potential new roadways in the Portalis area

Capacity Related Improvements in the Project Influence Area

New Roadway	◆ US 60 Reroute alignment ◆ North/South Corridor: From US 60 Reroute alignment towards Florence ◆ SR 24: Loop 202 to North/South Corridor ◆ Warner Road: Four lane roadway between Meridian Drive to US 60

Non-Capacity Related Improvements in the Study Area

New Bridge/Culvert	◆ Cortez Road: 1/2 mile south of Lost Dutchman Boulevard ◆ Junction Street: 1/4 mile east of Tomahawk Road ◆ Junction Street: West of Tomahawk Road

- Lost Dutchman Boulevard/Wickiup Road
- Lost Dutchman Boulevard: West of Goldfield Road
- Mountain View Road/Junction Street
- Mountain View Road: 1/4 mile north of US 60
- Tomahawk Road: 1/4 mile south of Lost Dutchman Boulevard

Figure 4.21 displays the number of lanes and Figure 4.22 displays the projected average daily traffic volumes when the study area reaches *Population Level 3 (130K)* in the Preferred Alternative.

Roadway LOS

Figure 4.23 displays the average daily level of congestion for the study area roadway network. The following roadways operate at a LOS C or worse:

Moderate Congestion (LOS C & D):

- Meridian Drive: Between the ramp terminals at the US 60 traffic interchange
- Ironwood Drive: 1/4 mile north of Apache Trail
- Ironwood Drive: 1/4 mile north of US 60 traffic interchange
- Ironwood Drive: Guadalupe Avenue to Elliott Avenue
- Idaho Road: South ramp terminal at the US 60 traffic interchange to 1/4 mile south of Southern Avenue
- Goldfield Road: 1/4 mile east of Houston Avenue

Intersection Level of Service

Table 4.4 summarizes the intersection LOS conditions at major intersections as the study area reaches *Population Level 3 (130K).* Figure 4.24 displays the intersection lane configuration and signal type; Figure 4.25 illustrates the overall intersection LOS, approach LOS, and turn movement LOS at each intersection.

TABLE 4.4: LONG-TERM (POPULATION LEVEL 3 - 130K) INTERSECTION LOS CONDITIONS

LOS	Intersection Locations
LOS D	◆ Ironwood Drive/16th Avenue: AM Only ◆ Ironwood Drive /Southern Avenue: AM and PM ◆ Ironwood Drive/South Ramp Terminal at US 60 Traffic Interchange: AM only ◆ Ironwood Drive/Baseline Avenue: AM Only ◆ Old West Highway/Idaho Road: PM Only
LOS C or Better	All other intersections operate at LOS C or better.

FIGURE 4.21: NUMBER OF LANES FOR LONG-TERM PHASE (POPULATION LEVEL 3 - 130K) PREFERRED ALTERNATIVE

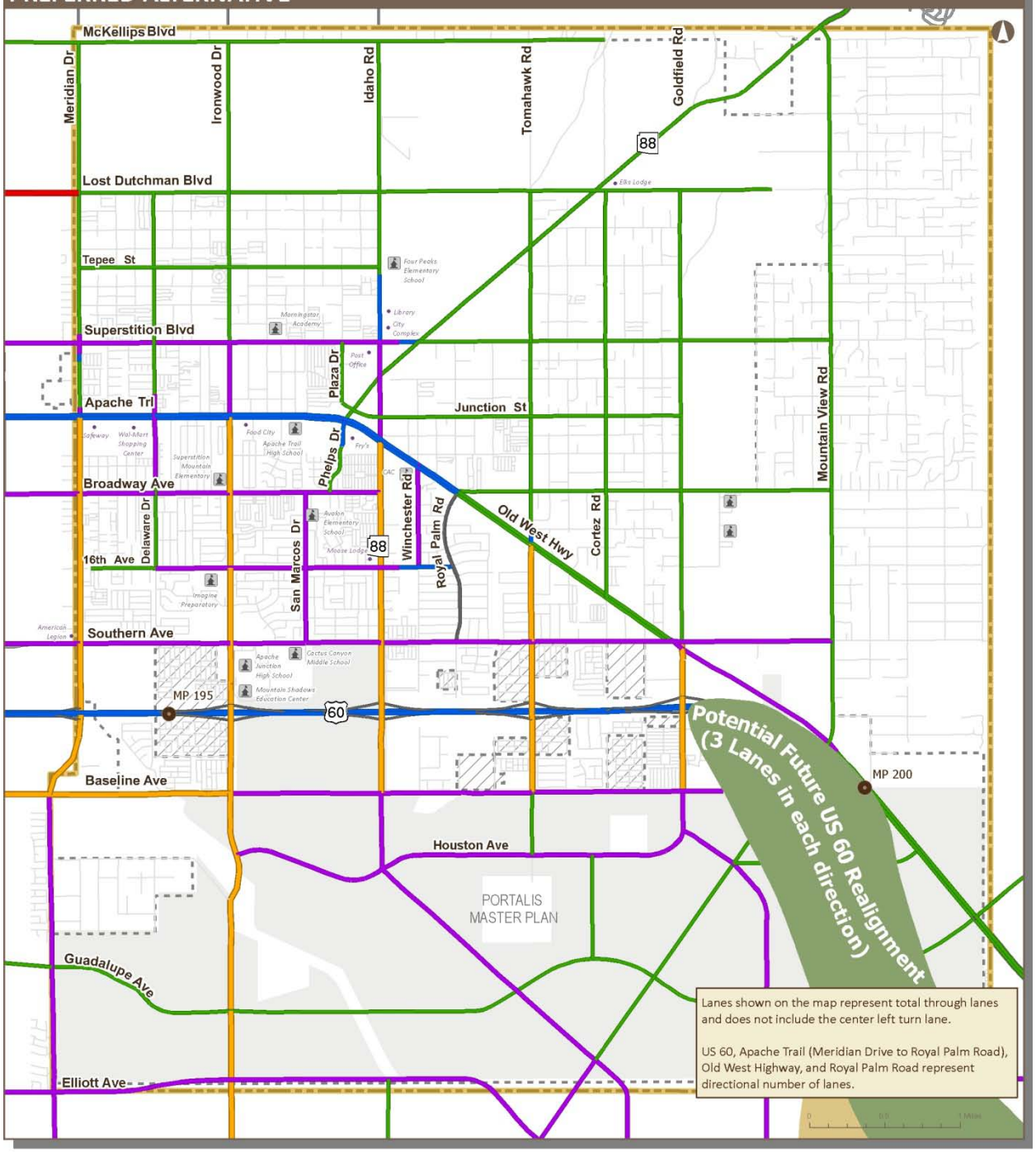
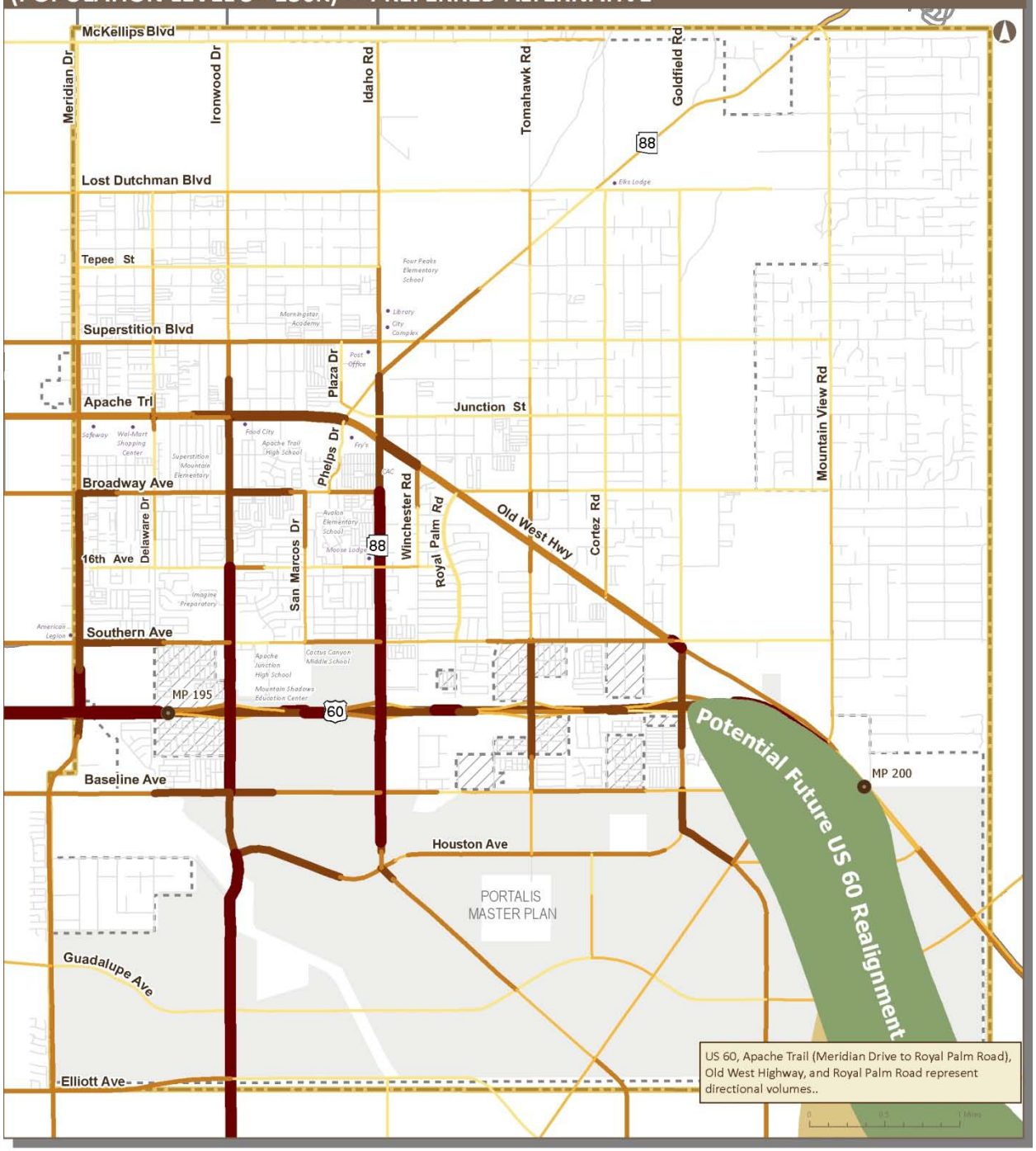


FIGURE 4.22: AVERAGE DAILY TRAFFIC VOLUMES FOR LONG-TERM PHASE (POPULATION LEVEL 3 - 130K) – PREFERRED ALTERNATIVE



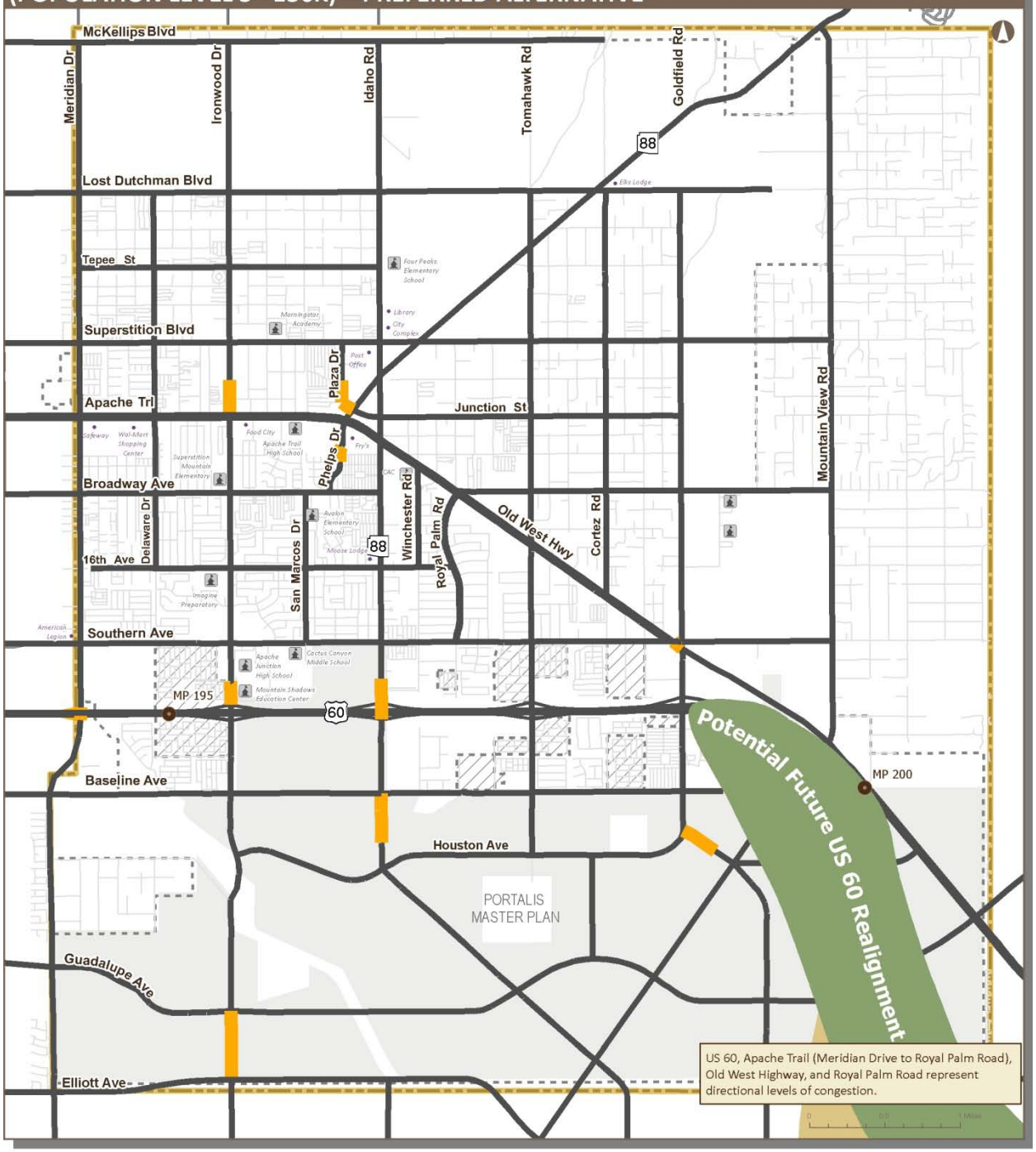
LEGEND

- 0 - 5,000
- 5,001 - 10,000
- 10,001 - 20,000
- 20,001 - 30,000
- > 30,000
- Local Roadway
- Study Area
- City Boundary
- County Island
- Potential Future US 60 Re-alignment Corridor
- Potential Future North-South Freeway Corridor

(Buffer is a mere graphical representation, does not represent a fix alignment)

Data Sources: City of Apache Junction, ADOT, CAAG, MAG

FIGURE 4.23: AVERAGE DAILY LEVEL OF CONGESTION FOR LONG-TERM PHASE (POPULATION LEVEL 3 - 130K) – PREFERRED ALTERNATIVE



LEGEND

- High Congestion (LOS E & F)
- Moderate Congestion (LOS C & D)
- Low Congestion (LOS A & B)
- Local Roadway
- Study Area
- City Boundary
- County Island
- Potential Future US 60 Re-alignment Corridor
- Potential Future North-South Freeway Corridor

(Buffer is a mere graphical representation, does not represent a fix alignment)

Data Sources: City of Apache Junction, ADOT, MAG, CAAG

FIGURE 4.24: INTERSECTION LANE CONFIGURATION FOR LONG-TERM PHASE (POPULATION LEVEL 3 – 130K) PREFERRED ALTERNATIVE

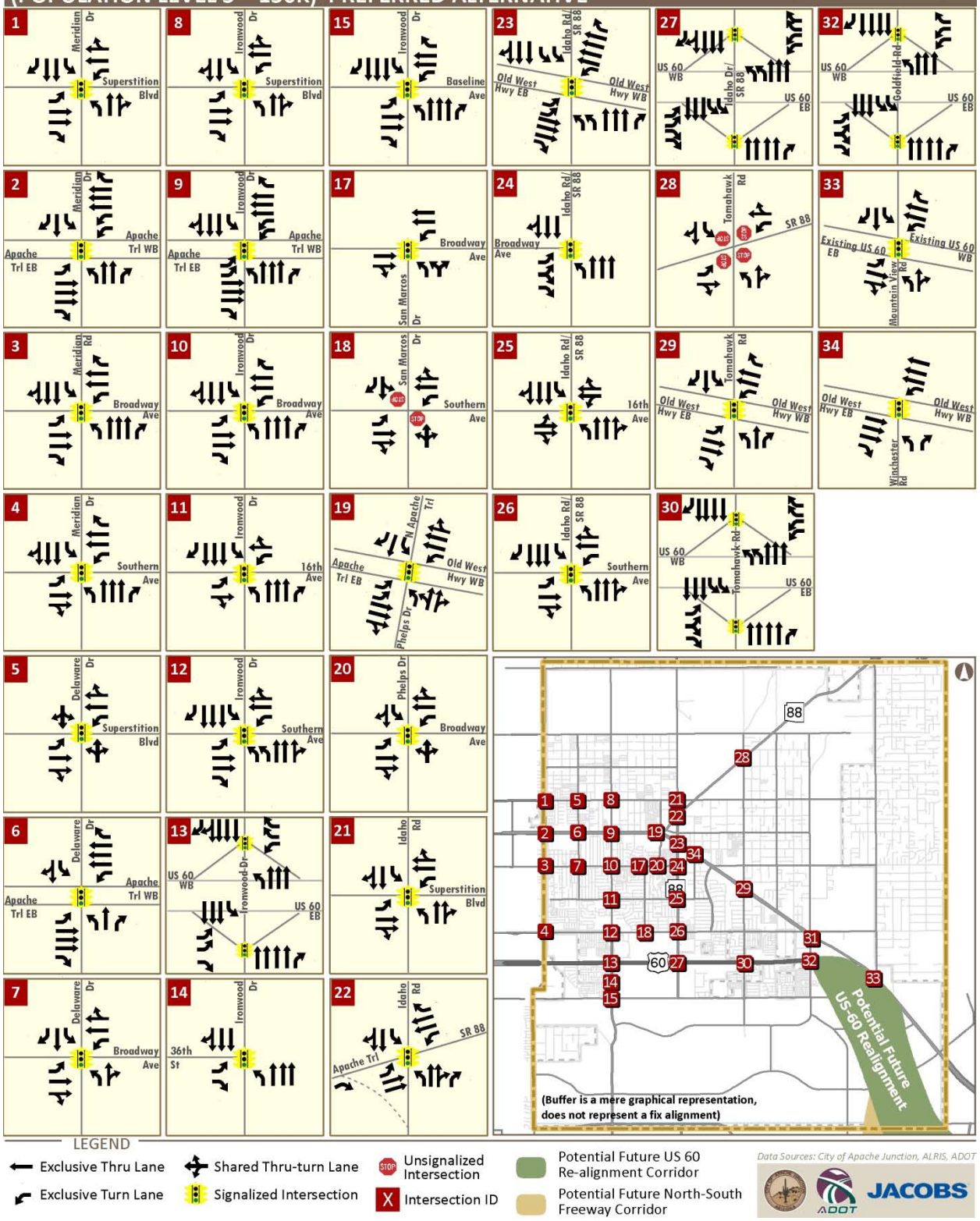
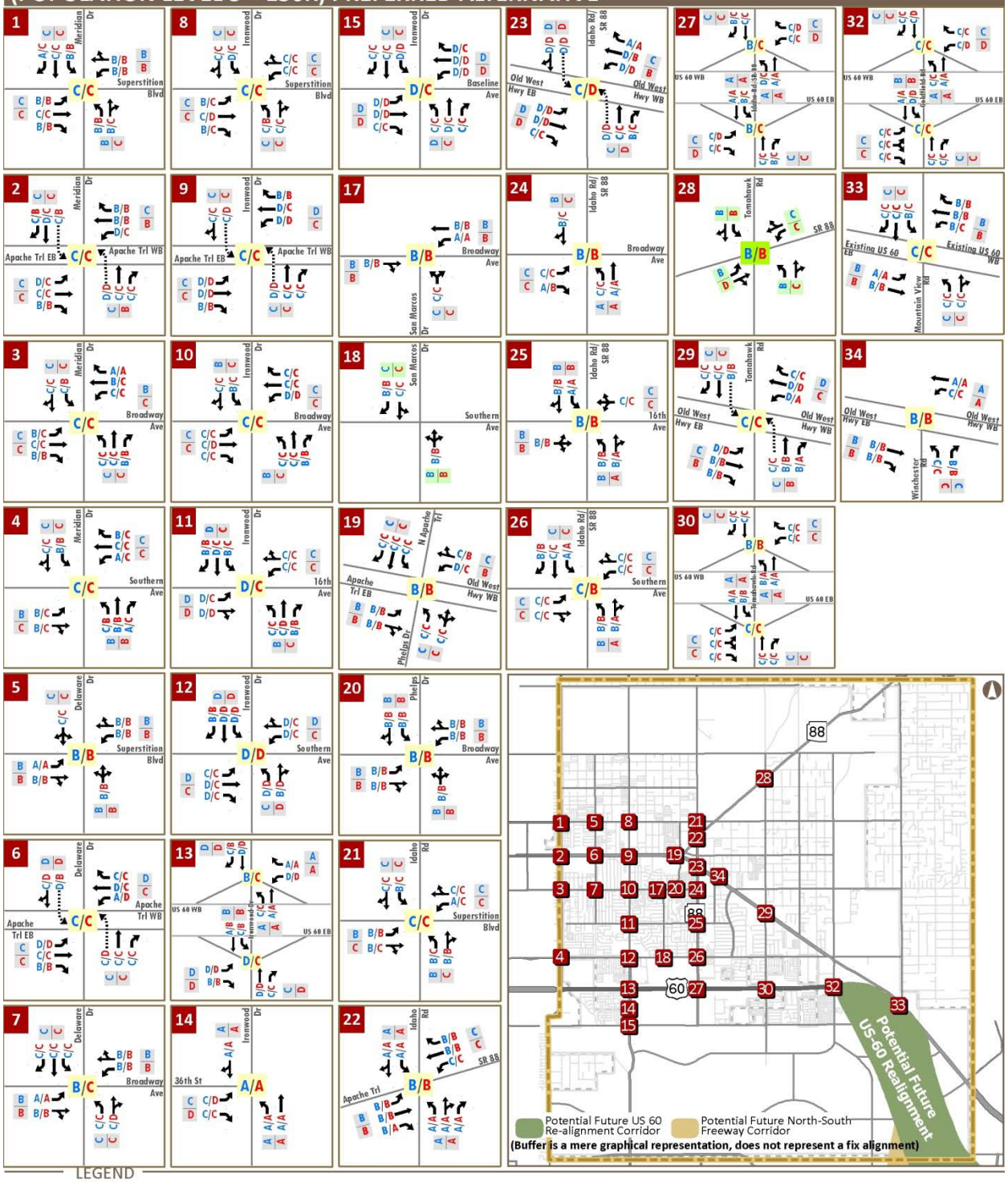


FIGURE 4.25: INTERSECTION LEVEL OF SERVICE FOR LONG-TERM PHASE (POPULATION LEVEL 3 – 130K) PREFERRED ALTERNATIVE



Data Sources: City of Apache Junction, ALRIS, ADOT

EVALUATION OF TRANSIT NEEDS

As part of this Comprehensive Transportation Study, the City's 2005 Transit Feasibility Study is being updated and documented as a separate report. Future transit conditions and transit conditions in the study area are described in detail in the *Transit Feasibility Update Working Paper 3 – Transit Plan*. This draft transit plan is based on a comparison of the forecasted concentrations of population and employment with accepted population and employment density levels shown to support different types of public transportation within urban areas.

Potential Transit Dependent Population

Combined residential and employment projections were analyzed against the transit threshold levels developed by MAG to determine potential transit service areas. The transit service thresholds, shown in Table 4.5, developed in the *2003 MAG High Capacity Transit Study* were utilized to determine transit threshold levels.

TABLE 4.5: MINIMUM CONSOLIDATED RESIDENTIAL AND EMPLOYMENT DENSITIES FOR VARIOUS TYPES OF TRANSIT SERVICES

Transit Service Type	Persons/Sq Mile*
Bus–minimum service	4,500
Bus–intermediate service	7,780
Bus–frequent service	16,670
Light Rail	10,000
Rapid Transit	13,300

* Calculated from Maricopa Association of Governments *High Capacity Transit Study*, 2003

Bus minimum service = 1/2 mi between routes, 20 buses/day
Bus intermediate service = 1/2 mi between routes, 40 buses/day
Bus frequent service = 1/2 mi between routes, 120 buses/day

Detailed calculations for both the Burkhardt and Millar Model and the SG & Associates Arkansas Model were utilized to determine the future transit demand within the Study Area, as shown in Table 4.6. In addition, analysis conducted by WestGroup Research in 2003 was updated to analyze future ridership. The results of this ridership analysis are presented in Table 4.7.

TABLE 4.6: SUMMARY OF TRANSIT DEMAND ESTIMATION

Unlinked Passenger Trips per Year	Population Level		
	60,000	75,000	130,000
Burkhardt and Millar Model	435,767	544,709	944,161
SG & Associates Arkansas Model	445,103	556,379	964,390
Average	440,435	550,544	954,276

TABLE 4.7: SUMMARY OF TRANSIT DEMAND ESTIMATION (WESTGROUP RESEARCH MODEL)

Year 2005 Population		32,161	Total Trips per day				Modal Split	
Transportation Situation (From 2003 Survey)	Percent	Total	Per Person	Total	Transit Service Days	Total Trips per Year	Transit Percent	Annual Transit Trips
Satisfactory	82.00%	26,372	2	52,744	312	16,456,140	0.33%	54,305
Less than satisfactory	12.00%	3,859	2	7,719	312	2,408,216	0.75%	18,062
Poor	5.00%	1,608	2	3,216	312	1,003,423	1.33%	13,346
No opinion	1.00%	321	2	643	312	200,685	0.50%	1,003
		32,161			Total	20,068,464	**Transit share**	**86,716**
60,000 Population Threshold		**60,000**	**Total Trips per day**				**Modal Split**	
Transportation Situation (From 2003 Survey)	Percent		Per Person	Total	Transit Service Days	Total Trips per Year	Transit Percent	Annual Transit Trips
Satisfactory	82.00%	49,200	2	98,400	312	30,700,800	0.33%	101,313
Less than satisfactory	12.00%	7,200	2	14,400	312	4,492,800	0.75%	33,696
Poor	5.00%	3,000	2	6,000	312	1,872,000	1.33%	24,898
No opinion	1.00%	600	2	1,200	312	374,400	0.50%	1,872
		60,000			Total	37,440,000	**Transit share**	**161,778**
75,000 Population Threshold		**75,000**	**Total Trips per day**				**Modal Split**	
Transportation Situation (From 2003 Survey)	Percent		Per Person	Total	Transit Service Days	Total Trips per Year	Transit Percent	Annual Transit Trips
Satisfactory	82.00%	61,500	2	123,000	312	38,376,000	0.33%	126,641
Less than satisfactory	12.00%	9,000	2	18,000	312	5,616,000	0.75%	42,120
Poor	5.00%	3,750	2	7,500	312	2,340,000	1.33%	31,122
No opinion	1.00%	750	2	1,500	312	468,000	0.50%	2,340
		75,000			Total	46,800,000	**Transit share**	**202,223**
130,000 Population Threshold		**130,000**	**Total Trips per day**				**Modal Split**	
Transportation Situation (From 2003 Survey)	Percent		Per Person	Total	Transit Service Days	Total Trips per Year	Transit Percent	Annual Transit Trips
Satisfactory	82.00%	106,600	2	213,200	312	66,518,400	0.33%	219,511
Less than satisfactory	12.00%	15,600	2	31,200	312	9,734,400	0.75%	73,008
Poor	5.00%	6,500	2	13,000	312	4,056,000	1.33%	53,945
No opinion	1.00%	1300	2	2,600	312	811,200	0.50%	4,056
		130,000			Total	81,120,000	**Transit share**	**350,520**

EVALUATION OF NON-MOTORIZED MODES OF TRANSPORTATION

Alternative modes of transportation, such as sidewalks, bike paths/routes, and trails (including equestrian), are an important aspect of the multimodal transportation network as they provide mobility for those not able to operate or without access to a vehicle and also for recreational purpose. Sidewalks currently exist in the downtown core providing access to activity centers such as schools, shopping centers, post office, and the library. In the rural portions of the study area, sidewalks are needed in the vicinity of schools and other activity centers. The City has very limited bike paths and bike lanes in both the downtown core and the rural areas. Portions of the study area to the east and the north consist of State and federal lands which are home to several equestrian, hiking, and multi-use trails. Access to these trails are available through several gates along the State and federal lands.

Needs Analysis

The City of Apache Junction has already prepared preliminary plans to expand the pedestrian, bicycle, and trails (including equestrian) facilities throughout the study area.

5. MULTIMODAL TRANSPORTATION PLAN

This section presents the draft Multimodal Transportation Plan for the short-, mid-, and long-term phases. This transportation plan is the result of the deficiency analysis from Working Paper 1, Working Paper 2, and Public Open House input. It is a multimodal plan that includes roadway, transit, pedestrian, bicycle, and trails improvements. Each project is assigned a unique project number that the City can use to track project progress. Unless otherwise noted, the recommended projects are not yet funded.

ROADWAY RECOMMENDATIONS

Short-Term (Population Level 1 – 60K) Transportation Recommendations

Short-term phase projects are recommended to be completed as the study area reaches *Population Level 1 (60K).* Table 5.1 lists the transportation recommendations for this phase, as well as the project number*, location, description, and estimated costs for each project. Figure 5.1 is a graphical representation of the short-term transportation recommendations.

Mid-Term (Population Level 2 – 75K) Transportation Recommendations

Mid-term phase projects are recommended to be completed as the study area reaches *Population Level 2 (75K).* Table 5.2 lists the transportation recommendations for this phase, as well as the project number*, location, description, and estimated costs for each project. Figure 5.2 is a graphical representation of the mid-term transportation recommendations.

Long-Term (Population Level 3 – 130K) Transportation Recommendations

Long-term phase projects are recommended to be completed as the study area reaches *Population Level 3 (130K).* Table 5.3 lists the transportation recommendations for this phase, as well as the project number*, location, description, and estimated costs for each project. Figure 5.3 is a graphical representation of the long-term transportation recommendations.

Estimated costs for each project are expressed in 2011 dollars and are general estimates. Actual costs for projects could vary at the time of implementation; therefore, a detailed analysis should be performed on a case-by-case basis to determine actual costs.

** The Project Identification Number (eg: ST -1) does NOT represent the priority of the project; rather it is an identification number to track project progress in the future.*

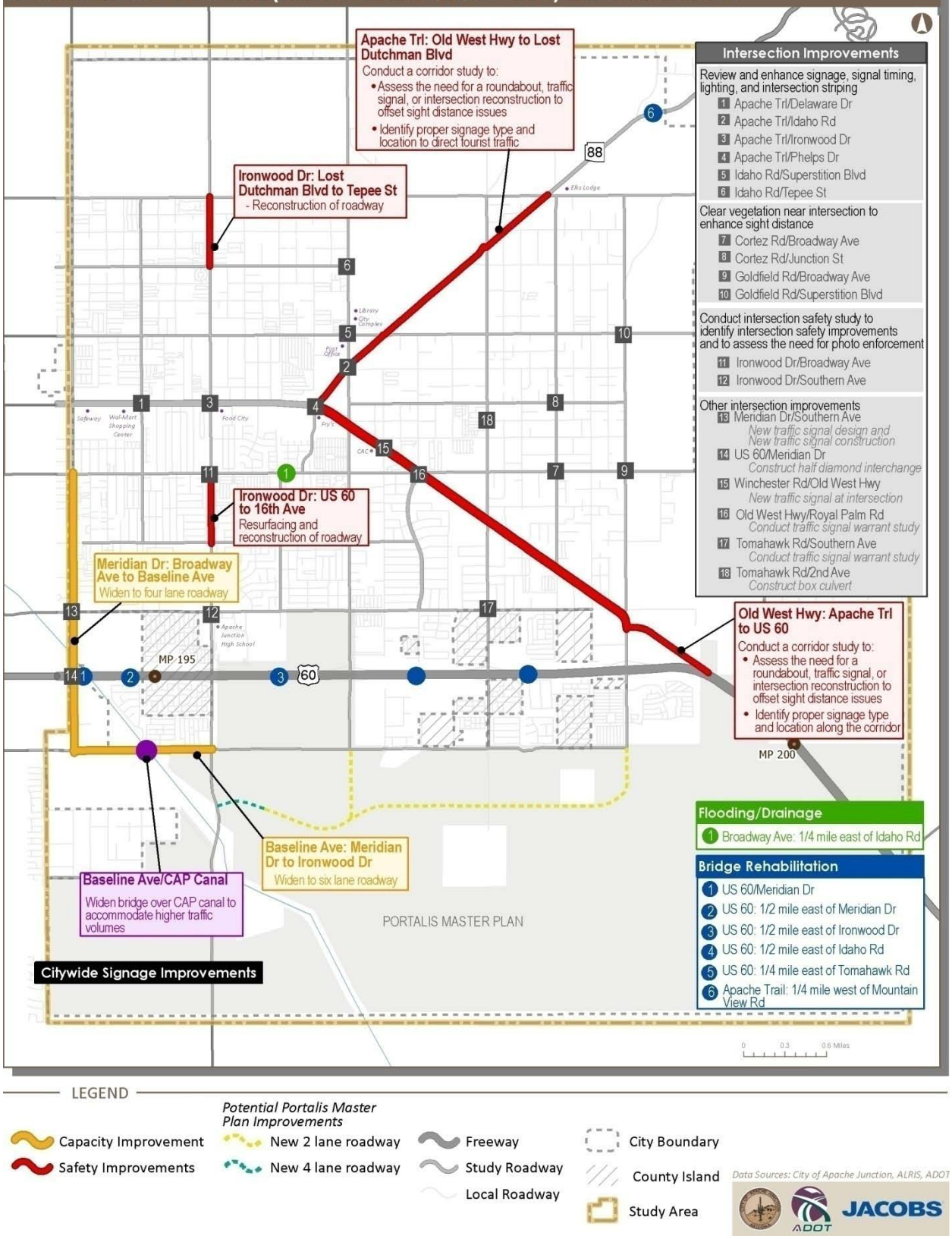
TABLE 5.1: SHORT-TERM (POPULATION LEVEL 1 – 60K) IMPROVEMENTS

ID	Project Location	Project Type	Issue Addressed	Project Description	Cost	Agency	Comment
ST-1	Apache Trail: 1/4 mile west of Mountain View Road	Bridge	Safety	Bridge rehabilitation	$3,200,000	ADOT	
ST-2	US 60/Meridian Drive	Bridge	Safety	Bridge rehabilitation	$2,500,000	ADOT	
ST-3	US 60: 1/2 mile east of Idaho Road	Bridge	Safety	Bridge rehabilitation	$2,500,000	ADOT	
ST-4	US 60: 1/2 mile east of Ironwood Drive	Bridge	Safety	Bridge rehabilitation	$2,500,000	ADOT	
ST-5	US 60: 1/2 mile east of Meridian Drive	Bridge	Safety	Bridge rehabilitation	$2,500,000	ADOT	
ST-6	US 60: 1/4 mile east of Tomahawk Road	Bridge	Safety	Bridge rehabilitation	$2,500,000	ADOT	
ST-7	Baseline Avenue: Meridian Drive to Ironwood Drive	Capacity Improvement	Traffic congestion	Widen to six lane roadway for 1 mile	$2,500,000	MAG/Apache Junction	Included in MAG TIP for 4 lane widening
ST-8	Meridian Drive/Southern Avenue	Capacity Improvement	Traffic congestion	New traffic signal design	$1,510,000	Apache Junction	Included in Apache Junction TIP
ST-9	Meridian Drive/Southern Avenue	Capacity Improvement	Traffic congestion	New traffic signal construction	$1,200,000	Apache Junction	
ST-10	Meridian Drive: Broadway Avenue to Southern Avenue	Capacity Improvement	Traffic congestion	Widen to four lane roadway for 1 mile	$2,800,000	MAG/Apache Junction	Included in MAG TIP
ST-11	Meridian Drive: Southern Avenue to Baseline Avenue	Capacity Improvement	Traffic congestion	Widen to four lane roadway for 1 mile	$2,800,000	MAG/Apache Junction	Included in MAG TIP
ST-12	US 60/Meridian Drive	Capacity Improvement	Traffic congestion	Construct half diamond interchange	$12,500,000	ADOT	Included in ADOT STIP
ST-13	Winchester Road/Old West Highway	Capacity Improvement	Traffic congestion and Central Arizona College expansion	New traffic signal at intersection	$1,200,000	Apache Junction	Included in Apache Junction TIP
ST-14	Broadway Avenue: 1/4 mile east of Idaho Road	Flooding / Drainage	Flooding	Bridge/Culvert	$350,000	Apache Junction	
ST-15	Apache Trail/Delaware Drive	Safety	Safety: High crash location	Review and enhance signage, lighting, and intersection striping	$45,000	Apache Junction	
ST-16	Apache Trail/Idaho Road	Safety	Safety: High crash location	Review and enhance signage, striping, lighting, and signal timing	$45,000	Apache Junction	
ST-17	Apache Trail/Ironwood Drive	Safety	Safety: High crash location	Review and enhance signage, lighting, and intersection striping	$45,000	Apache Junction	
ST-18	Apache Trail/Phelps Drive	Safety	Safety: High crash location	Review and enhance signage, lighting, and intersection striping	$45,000	Apache Junction	
ST-19	Apache Trail: Old West Highway to Lost Dutchman Boulevard	Safety	Safety: Sight distance issues, high crash locations	Conduct a corridor study for 2.5 miles of roadway to: 1)assess the need for a roundabout, traffic signal, or intersection reconstruction to offset sight distance issues at each intersection 2) identify proper signage type and location to direct tourist traffic accessing the historic Apache Trail	$350,000	ADOT	

TABLE 5.1: SHORT-TERM (POPULATION LEVEL 1 – 60K) IMPROVEMENTS (CONTINUED)

ID	Project Location	Project Type	Issue Addressed	Project Description	Cost	Agency	Comment
ST-20	Citywide Signage Improvements	Safety	Safety	Signage improvement	$285,390	CAAG/Apache Junction	Included in CAAG TIP
ST-21	Cortez Road/Broadway Avenue	Safety	Safety: Sight distance issues	Clear brush and other debris in the vicinity of the intersection to enhance sight distance	$25,000	Apache Junction	
ST-22	Cortez Road/Junction Street	Safety	Safety: Sight distance issues	Clear brush in the vicinity of the intersection to enhance sight distance	$25,000	Apache Junction	
ST-23	Goldfield Road/Broadway Avenue	Safety	Safety: Sight distance issues	Clear brush and other debris in the vicinity of the intersection to enhance sight distance	$25,000	Apache Junction	
ST-24	Goldfield Road/Superstition Boulevard	Safety	Safety: Sight distance issues	Clear brush in the vicinity of the intersection to enhance sight distance	$25,000	Apache Junction	
ST-25	Idaho Road/Superstition Boulevard	Safety	Safety: High crash location	Review and enhance signage, lighting, and intersection striping	$45,000	Apache Junction	
ST-26	Idaho Road/Tepee Street	Safety	Safety: Lack of designated turn lanes	Review and enhance signage and intersection striping	$45,000	Apache Junction	
ST-27	Ironwood Drive/Broadway Avenue	Safety	Safety: High crash location. School zone	Conduct intersection safety study to: 1) identify safety improvements in the vicinity of the intersection 2) assess the need for photo enforcement	$55,000	Apache Junction	
ST-28	Ironwood Drive/Southern Avenue	Safety	Safety: High crash location. School zone	Conduct intersection safety study to : 1) identify safety improvements in the vicinity of the intersection 2) assess the need for photo enforcement	$55,000	Apache Junction	
ST-29	Old West Highway/Royal Palm Road	Safety	Safety	Conduct traffic signal warrant study to assess the need for a traffic signal	$55,000	Apache Junction	
ST-30	Tomahawk Road/Southern Avenue	Safety	Safety	Conduct traffic signal warrant study to assess the need for a traffic signal	$55,000	Apache Junction	
ST-31	Tomahawk Road/2nd Avenue	Safety	Safety	Construct box culvert	$350,000	Apache Junction	
ST-32	Ironwood Drive: 16th Avenue to Broadway Avenue	Safety	Safety	Resurfacing and reconstruction of roadway for 0.5 miles of roadway	$1,486,790	CAAG/Apache Junction	Included in CAAG & AJ TIP
ST-33	Ironwood Drive: Lost Dutchman Boulevard to Tepee Street	Safety	Safety	Reconstruction of roadway	$374,220	Apache Junction	Included in Apache Junction TIP
ST-34	Old West Highway: Apache Trail to US 60	Safety	Safety: Sight distance issues, high crash locations	Conduct a corridor study for 3 miles of roadway to: 1)assess the need for a traffic signal or other intersection control type for each intersection to offset sight distance issues 2) identify proper signage type and location along the corridor	$350,000	Apache Junction	
ST-36	Baseline Avenue/CAP Canal	Bridge	Functionally obsolete	Widen bridge over CAP canal to accommodate higher traffic volumes	$2,500,000	ADOT	

FIGURE 5.1: SHORT-TERM (POPULATION LEVEL 1 - 60K) IMPROVEMENTS



LEGEND

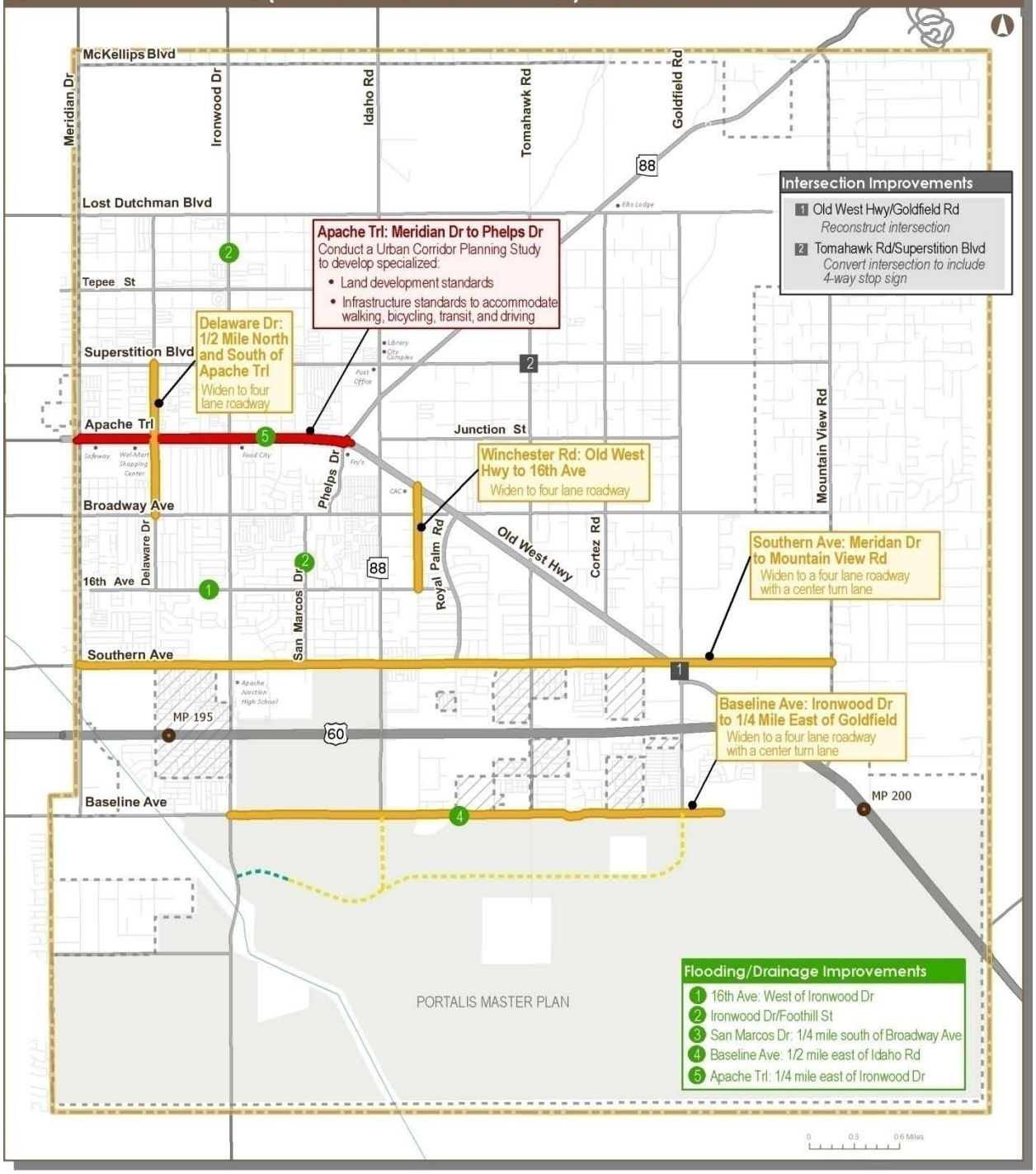
- Capacity Improvement
- Safety Improvements
- *Potential Portalis Master Plan Improvements*
  - New 2 lane roadway
  - New 4 lane roadway
- Freeway
- Study Roadway
- Local Roadway
- City Boundary
- County Island
- Study Area

Data Sources: City of Apache Junction, ALRIS, ADOT

TABLE 5.2: MID-TERM (POPULATION LEVEL 2 – 75K) IMPROVEMENTS

ID	Project Location	Project Type	Issue Addressed	Project Description	Cost	Agency	Comment
MT-1	Baseline Avenue: Ironwood Drive to 1/4 Mile East of Goldfield Road	Capacity Improvement	Traffic congestion and future economic development	Widen to a four lane roadway with a center turn lane for 3.25 miles	$9,250,000	Apache Junction	
MT-2	Delaware Drive: 1/2 Mile North of Apache Trail	Capacity Improvement	Traffic congestion	Widen from two lanes to a four lane roadway for 0.5 miles	$1,600,000	Apache Junction	
MT-3	Delaware Drive: 1/2 Mile South of Apache Trail	Capacity Improvement	Traffic congestion	Widen from two lanes to a four lane roadway for 0.5 miles	$1,600,000	Apache Junction	
MT-4	Southern Avenue: Meridian Drive to Mountain View Road	Capacity Improvement	Traffic congestion and alternative emergency route to US 60	Widen from two lanes to four lane roadway with a center turn lane for 3.25 miles	$9,750,000	Apache Junction	
MT-5	Winchester Road: Old West Highway to 16th Avenue	Capacity Improvement	Traffic congestion	Widen from two lanes to four lane roadway for 0.75 miles	$2,250,000	Apache Junction	
MT-6	16th Avenue: West of Ironwood Drive	Flooding/Drainage	Flooding	Flood warning system	$350,000		
MT-7	Apache Trail: 1/4 mile east of Ironwood Drive	Flooding/Drainage	Flooding	Bridge/Culvert	$350,000	Apache Junction	
MT-8	Baseline Avenue: 1/2 mile east of Idaho Road	Flooding/Drainage	Flooding	Bridge/Culvert	$350,000	Apache Junction	
MT-9	Ironwood Drive/Foothill Street	Flooding/Drainage	Flooding	Culvert	$350,000	Apache Junction	
MT-10	San Marcos Drive: 1/4 mile south of Broadway Avenue	Flooding/Drainage	Flooding	Bridge/Culvert	$350,000	Apache Junction	
MT-11	Old West Highway/Goldfield Road	Safety	Safety: Sight distance issues and complex intersection design lead to driver confusion	Reconstruct intersection	$950,000	Apache Junction	
MT-12	Tomahawk Road/Superstition Boulevard	Safety	Safety: Sight distance issues	Convert intersection to 4-way stop sign controlled intersection	$15,000	Apache Junction	
MT-13	Apache Trail: Meridian Drive to Phelps Drive	Safety and economic development	Safety and economic development: High crash corridor. Divided Highway causes signal timing coordination issues, excessive business access driveways	Conduct an Urban Corridor Planning Study for 2 miles of roadway to develop specialized" 1) land development standards 2) infrastructure standards to accommodate walking, bicycling, transit, and driving. The study will identify specific improvements to enhance safety, promote economic development, and improve access to activity centers	$190,000	Apache Junction	

FIGURE 5.2: MID-TERM (POPULATION LEVEL 2 - 75K) IMPROVEMENTS



LEGEND

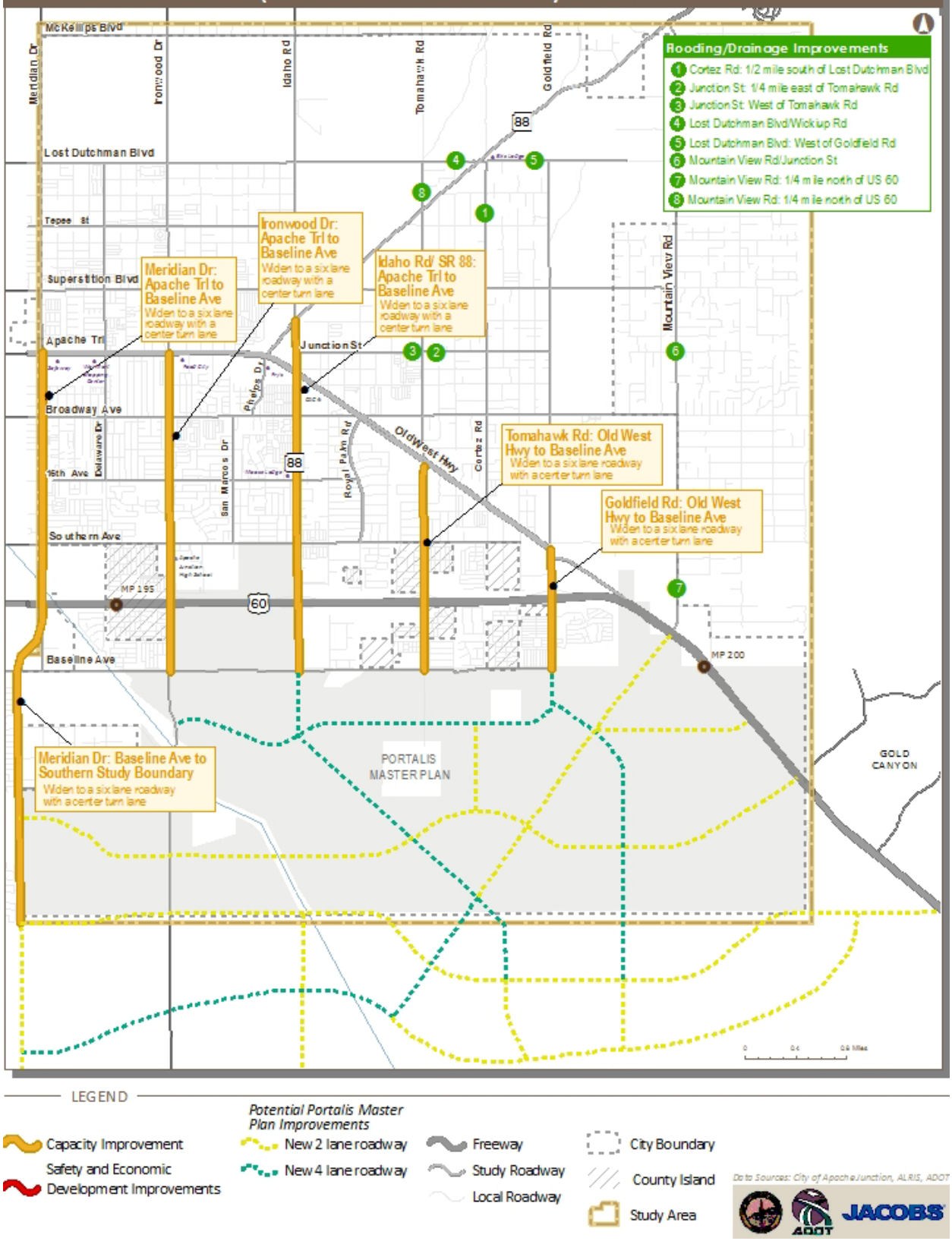
- Capacity Improvement
- Safety and Economic Development Improvements
- *Potential Portalis Master Plan Improvements*
  - New 2 lane roadway
  - New 4 lane roadway
- Freeway
- Study Roadway
- Local Roadway
- City Boundary
- County Island
- Study Area

Data Sources: City of Apache Junction, ALRIS, ADOT

TABLE 5.3: LONG-TERM (POPULATION LEVEL 3 – 130K) IMPROVEMENTS

ID	Project Location	Project Type	Issue	Project Description	Cost	Agency	Comment
LT-1	Goldfield Road: Old West Highway to Baseline Avenue	Capacity Improvement	Traffic congestion	Widen from two lanes to a six lane roadway with a center turn lane for 0.75 miles	$1,900,000	Apache Junction	
LT-2	Idaho Road/ SR 88: Apache Trail to Baseline Avenue	Capacity Improvement	Traffic congestion	Widen from four lanes to a six lane roadway with a center turn lane for 1.25 miles	$5,600,000	Apache Junction	
LT-3	Ironwood Drive: Apache Trail to Baseline Avenue	Capacity Improvement	Traffic congestion	Widen from four lanes to a six lane roadway with a center turn lane for 2.5 miles	$6,250,000	Apache Junction	
LT-4	Meridian Drive: Apache Trail to Baseline Avenue	Capacity Improvement	Traffic congestion	Widen from four lanes to a six lane roadway with a center turn lane for 2.5 miles	$6250,000	Apache Junction	
LT-5	Tomahawk Road: Old West Highway to Baseline Avenue	Capacity Improvement	Traffic congestion	Widen from two lanes to a six lane roadway with a center turn lane for 1.5 miles	$4,500,000	Apache Junction	
LT-6	Cortez Road: 1/2 mile south of Lost Dutchman Boulevard	Flooding/Drainage	Flooding	Bridge/Culvert	$350,000		
LT-7	Junction Street: 1/4 mile east of Tomahawk Road	Flooding/Drainage	Flooding	Bridge/Culvert	$350,000	Apache Junction	
LT-8	Junction Street: West of Tomahawk Road	Flooding/Drainage	Flooding	Bridge/Culvert	$350,000	Apache Junction	
LT-9	Lost Dutchman Boulevard/Wickiup Road	Flooding/Drainage	Flooding	Culvert	$350,000	Apache Junction	
LT-10	Lost Dutchman Boulevard: West of Goldfield Road	Flooding/Drainage	Flooding	Bridge/Culvert	$350,000	Apache Junction	
LT-11	Mountain View Road/Junction Street	Flooding/Drainage	Flooding	Culvert	$350,000	Apache Junction	
LT-12	Mountain View Road: 1/4 mile north of US 60	Flooding/Drainage	Flooding	Culvert	$350,000	Apache Junction	
LT-13	Tomahawk Road: 1/4 mile south of Lost Dutchman Boulevard	Flooding/Drainage	Flooding	Culvert	$350,000	Apache Junction	

FIGURE 5.3: LONG-TERM (POPULATION LEVEL 3 - 130K) IMPROVEMENTS



Regional Roadway Improvements

The transportation improvements recommended above are based on the implementation of additional regional improvements as outlined in Table 5.4.

TABLE 5.4: REGIONAL IMPROVEMENTS

Regional Improvements		
Project Location	**Project Description**	**Phase**
Meridian Drive: Southern Study Boundary Limits to SR 24 Alignment	Widen to a four lane roadway	Mid
Idaho Road: Elliott Avenue to Warner Road	New 0.75 mile, four lane roadway	Long
Goldfield Road: Elliott Avenue to Warner Road	New 1 mile, four lane roadway	Long
Meridian Drive: Southern Study Boundary Limits to SR 24 Alignment	Widen to a six lane roadway	Long
Warner Road: Meridian Drive to Elliott Avenue	New four lane roadway	Long

Portalis Area Roadway Improvements

As the Portalis area is developed in the future, several new roadways are needed to meet the traffic demand. The new roadways required in the Portalis area for the short, mid, and long term phases are illustrated in Figures 5.1, 5.2, and 5.3.

TRANSIT AND NON-MOTORIZED MODES RECOMMENDATIONS

Transit Recommendations

The *Apache Junction Transit Feasibility Study Update,* conducted in conjunction with this study, outlines specific transit recommendations for the study area.

Short-Term (Population Level 1 – 60K) Transit Recommendations

- Implement a local circulator serving the areas of the City that have the highest combined residential and employment density, together with regional commuter services connecting the Study Area with Valley Metro and, hence, with the remainder of the Phoenix metropolitan area.
    - If the East Valley Connector is implemented as an extension of Valley Metro "Link" bus rapid transit (BRT) service, it could continue east on Main Street/Apache Trail into downtown Apache Junction.
    - If the connector is established as a "Rapid" commuter bus operation, it would be more likely to follow US 60 west, emulating existing freeway-based "Rapid" services
- Establish a Core Area Circulator that would both serve the "core" area of the City having the highest existing residential and employment density and would also serve as the "core" of the local transit system. This service could be provided with a single vehicle; however, entry-level operations typically acquire two or more vehicles in order to have spares. As ridership increase, an additional clockwise loop could be implemented to double the hourly capacity of the service.

Figure 5.4 presents an overview of the service concept including alternate routes for the regional service, including park-and-ride lots, color-coded to the routing of the regional service that would make use of them. Figure 5.5 illustrates the potential Core Area Circulator route.

Mid-Term (Population Level 2 – 75K) Transit Recommendations

- Add three additional routes to the local circulator and establish a transit hub near the Chamber of Commerce. Figure 5.6 presents an overview of the recommended transit system for the mid-term phase as the study area reaches *Population Level 2 (75K).* The three additional routes include:
    - *Route 2 - Idaho Road/Baseline Avenue Route*: Provides service on Idaho Road between Superstition Boulevard and Baseline Avenue, and would link the City's Public Works department with the main City Hall Complex. The route would also

serve the local Pinal County offices and ADOT's Department of Motor Vehicles office, as well as the Central Arizona College campus and the proposed park-and-ride facility on Idaho Road south of US 60. Restaurants and shops within walking distance of the Transit Hub would also be served.

- *Route 3 – Ironwood Drive:* Provides service on Ironwood Drive between Broadway Avenue and Baseline Avenue, together with service in both directions through the new development south of Baseline Avenue, and a connection to the park-and-ride facility on Idaho Road. Route 3 would provide eastbound service on Apache Trail between Wal-Mart and the Transit Hub, connecting the Hub with Wal-Mart, Walgreens, Apache Junction High School, and other activity centers.
- Route 4 – Meridian Drive: Provides additional service to the Central Core area. Route 4 would provide westbound service on Apache Trail between the Transit Hub and Wal-Mart, complementing the eastbound service provided by Route 3, and would serve the westernmost portion of the core area.

Figure 5.6 presents an overview of the recommended transit system for the mid-term phase as the study area reaches *Population Level 2 (75K).*

Long-Term (Population Level 3 – 130K) Transit Recommendations

- Route 1 Circulator would remain as proposed for short-term phase *(Population Level 1 - 60K).*
- Route 2 – Idaho Road/Baseline Avenue and Route 3 – Ironwood Drive would remain as proposed for mid-term phase *(Population Level 2 - 75K).*
- Add additional connection to the East Valley Connector, which may include one of the following:
  - A "Link" bus rapid transit connection from the Transit Hub to the end of the Metro light rail line in Mesa
  - A diesel-powered "Sprinter" light rail vehicle connecting with the electrified Metro system
  - An extension of the electrified Metro light rail system itself
  - These services could also be supplemented by "Rapid" commuter bus service operating over US 60 into the downtown Phoenix area
- Restructuring Route 4- Meridian Drive to include service to Baseline Avenue

- Add two additional routes to the local transit system
    - *Route 5 – Idaho Road/Southern Avenue*: Provides service in both directions on Idaho Road between Superstition Boulevard and Southern Avenue and will provide additional service to the medical facilities located on Southern Avenue west of Ironwood Drive. Additional service to the ADOT DMV and Central Arizona College will also be provided.
    - Route 6 – Tomahawk Road: Address potential transit demand east of Idaho Road and south of Old West Highway. This loop would also provide additional service along Apache Trail and Broadway and link the residential areas east of Idaho Road with the downtown Transit Hub and the remainder of the proposed local transit system.

Figure 5.7 presents an overview of the recommended transit system for the long-term phase as the study area reaches *Population Level 3 (130K).*

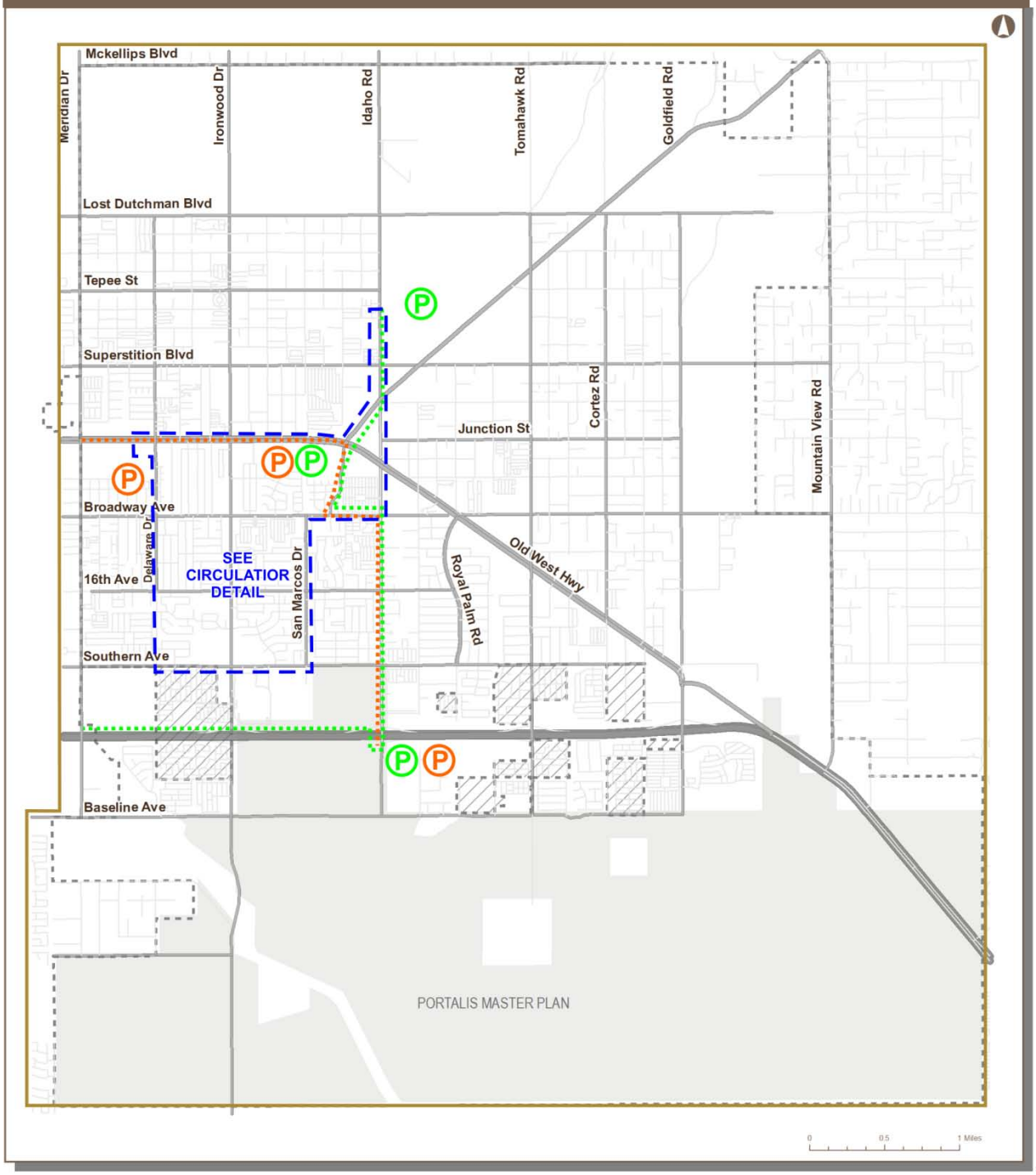
Regional Options

- Extending service to newer areas, including but not limited to:
    - Deviated fixed route service or dial-a-ride service can be extended east on US 60 toward Gold Canyon
    - Peak period only "commuter bus" service can be extended to outlying areas while the core of the city receives service throughout the day
    - Park-and-ride lots at the extents of fixed-route or high-capacity lines, can be complemented by dial-a-ride service into the newer neighborhoods to bring mobility-limited persons within reach of the other services
- Provide rural transit services from the downtown Transit Hub to areas communities east of Apache Junction, communities in eastern Pinal County, and new developments in the Superstition Vistas area.
- Market park and ride facilities located either downtown or on Idaho Road to motorists and carpools to utilize public transit to Mesa, Tempe, or Phoenix.

Pedestrian, Bicycle, and Trails Facilities

The City of Apache Junction has already prepared preliminary plans to expand the pedestrian, bicycle, and trails (including equestrian) facilities throughout the study area and are illustrated in Figure 5.8 through 5.11.

FIGURE 5.4: SERVICE CONCEPT FOR SHORT-TERM (POPULATION LEVEL 1 – 60K)



LEGEND

- Freeway
- Study Roadway
- Local Roadway
- City Boundary
- County Islands
- Study Area
- Candidate Park-and-Ride Locations
- East Valley Connector
- East Valley Connector Alternate Route
- Local Circulator

Data Sources: City of Apache Junction, ALRIS, ADOT, ATIS

FIGURE 5.5: CORE AREA CIRCULATOR DETAIL FOR SHORT-TERM (POPULATION LEVEL 1 - 60K)

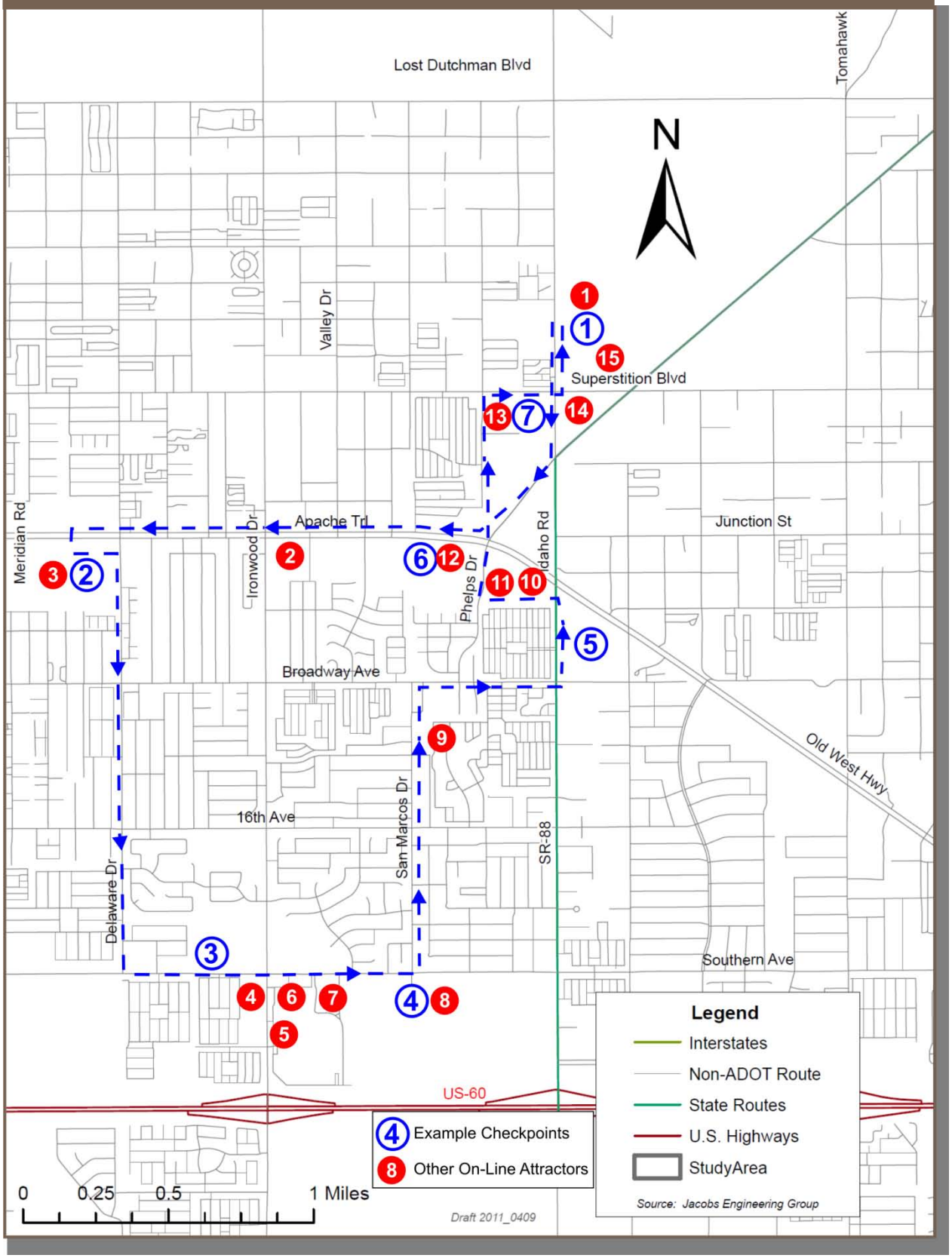
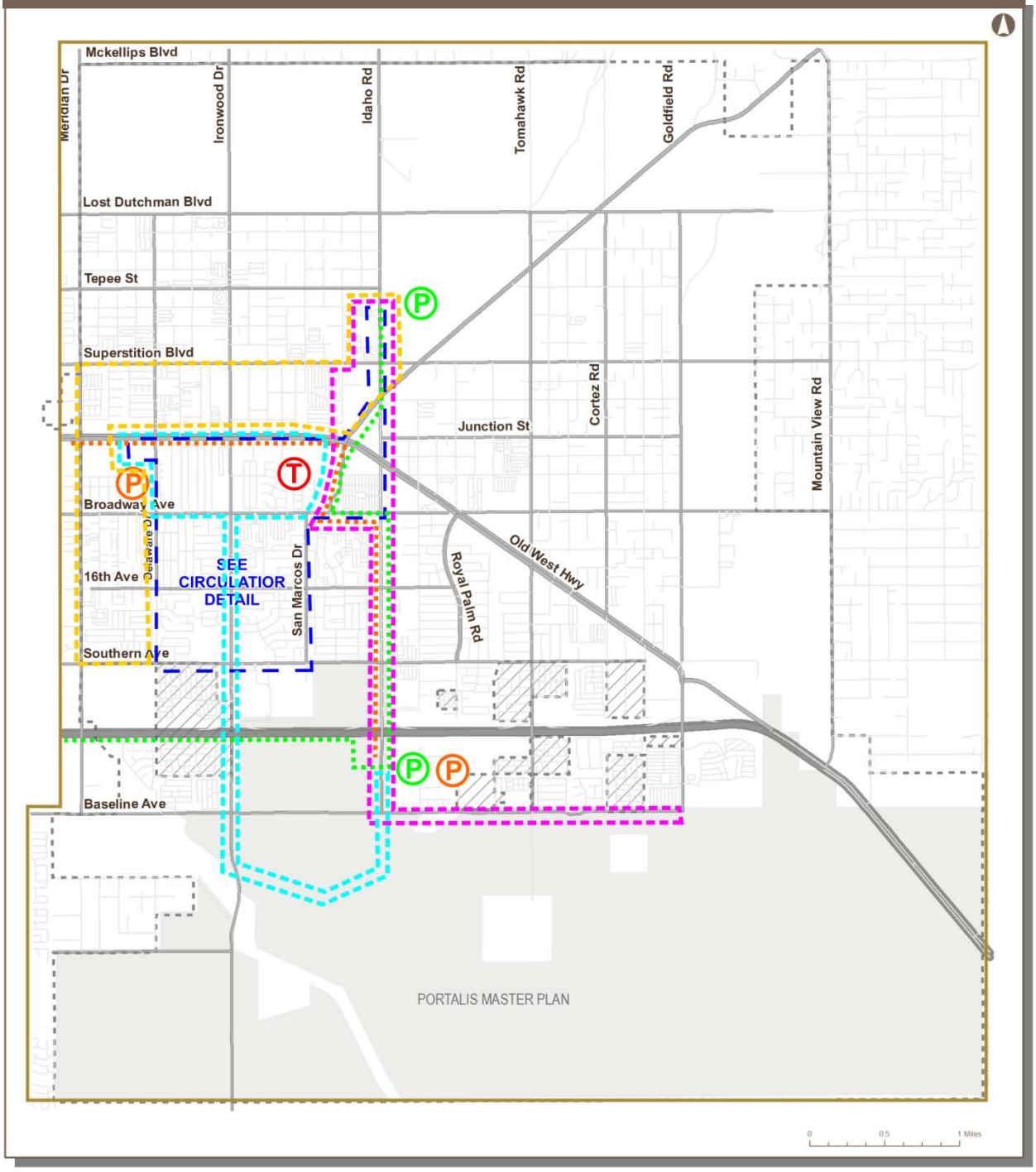


FIGURE 5.6: SERVICE CONCEPT FOR MID-TERM (POPULATION LEVEL 2 – 75K)

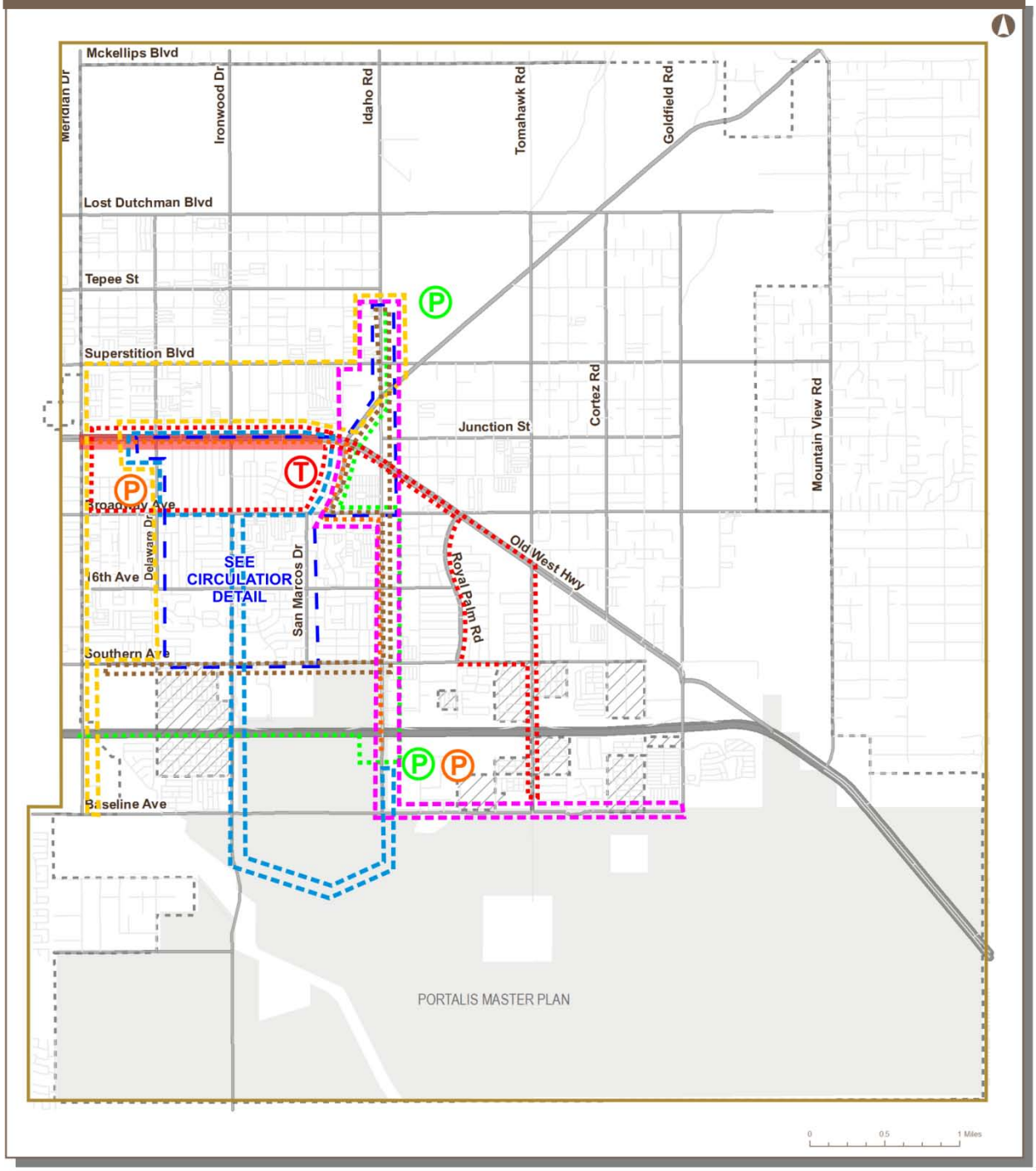


LEGEND

- Freeway
- Study Roadway
- Local Roadway
- City Boundary
- County Islands
- Study Area
- Candidate Park-and-Ride Locations
- East Valley Connector
- East Valley Connector Alternate Route
- Route 1 - Local Circulator
- Route 2 - Baseline
- Route 3 - Ironwood
- Route 4 - Meridian

Data Sources: City of Apache Junction, ALRIS, ADOT, ATIS

FIGURE 5.7: SERVICE CONCEPT FOR LONG-TERM (POPULATION LEVEL 3 – 130K)

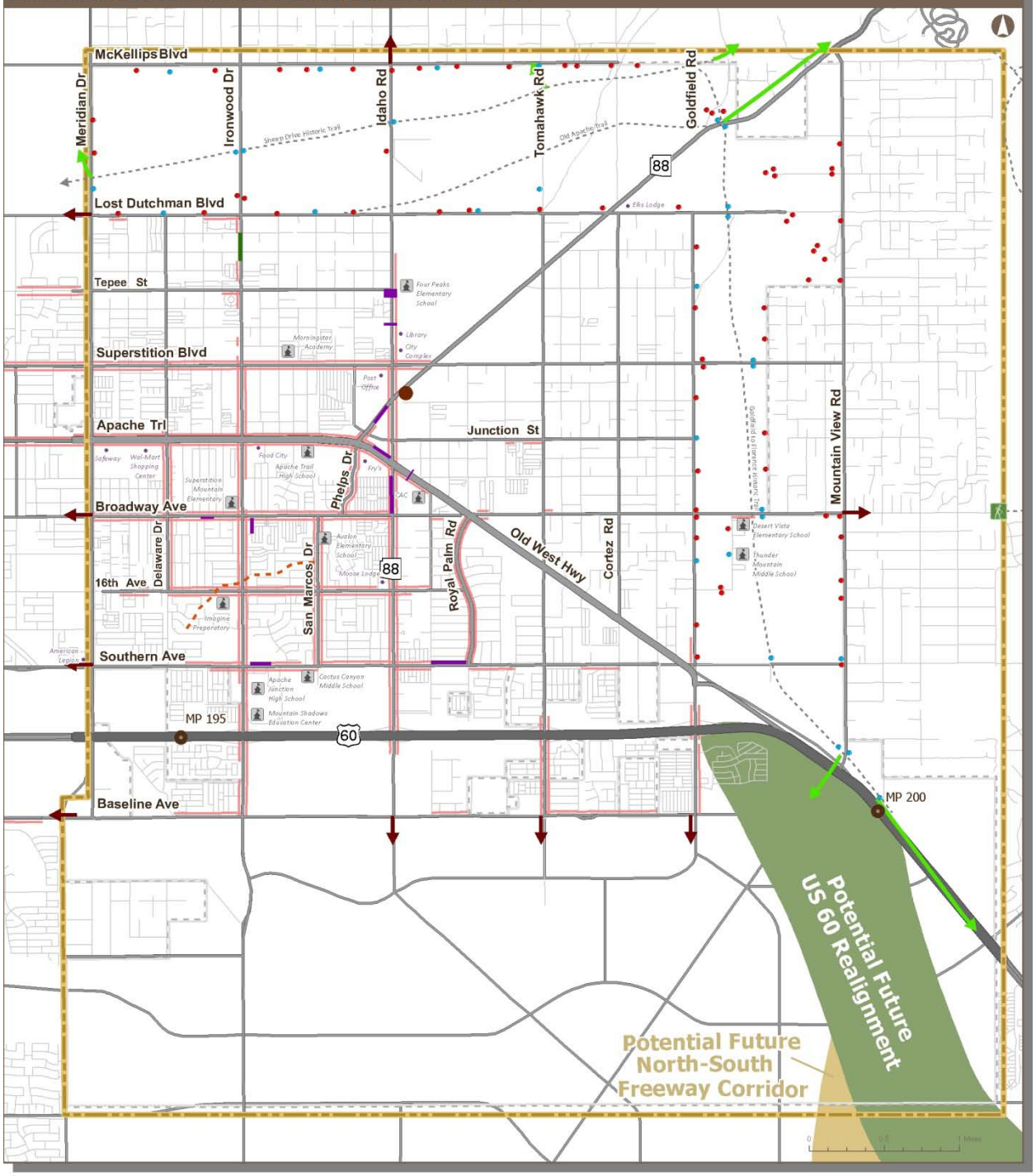


LEGEND

- Freeway
- Study Roadway
- Local Roadway
- City Boundary
- County Islands
- Study Area
- High Capacity Corridor
- Candidate Park-and-Ride Locations
- East Valley Connector
- East Valley Connector Alternate Route
- Route 1 - Local Circulator
- Route 2 - Baseline
- Route 3 - Ironwood
- Route 4 - Meridian
- Route 5 - Idaho/Southern
- Route 6 - Tomahawk/Broadway

Data Sources: City of Apache Junction, ALRIS, ADOT, ATIS

FIGURE 5.8: PROPOSED PEDESTRIAN FACILITIES

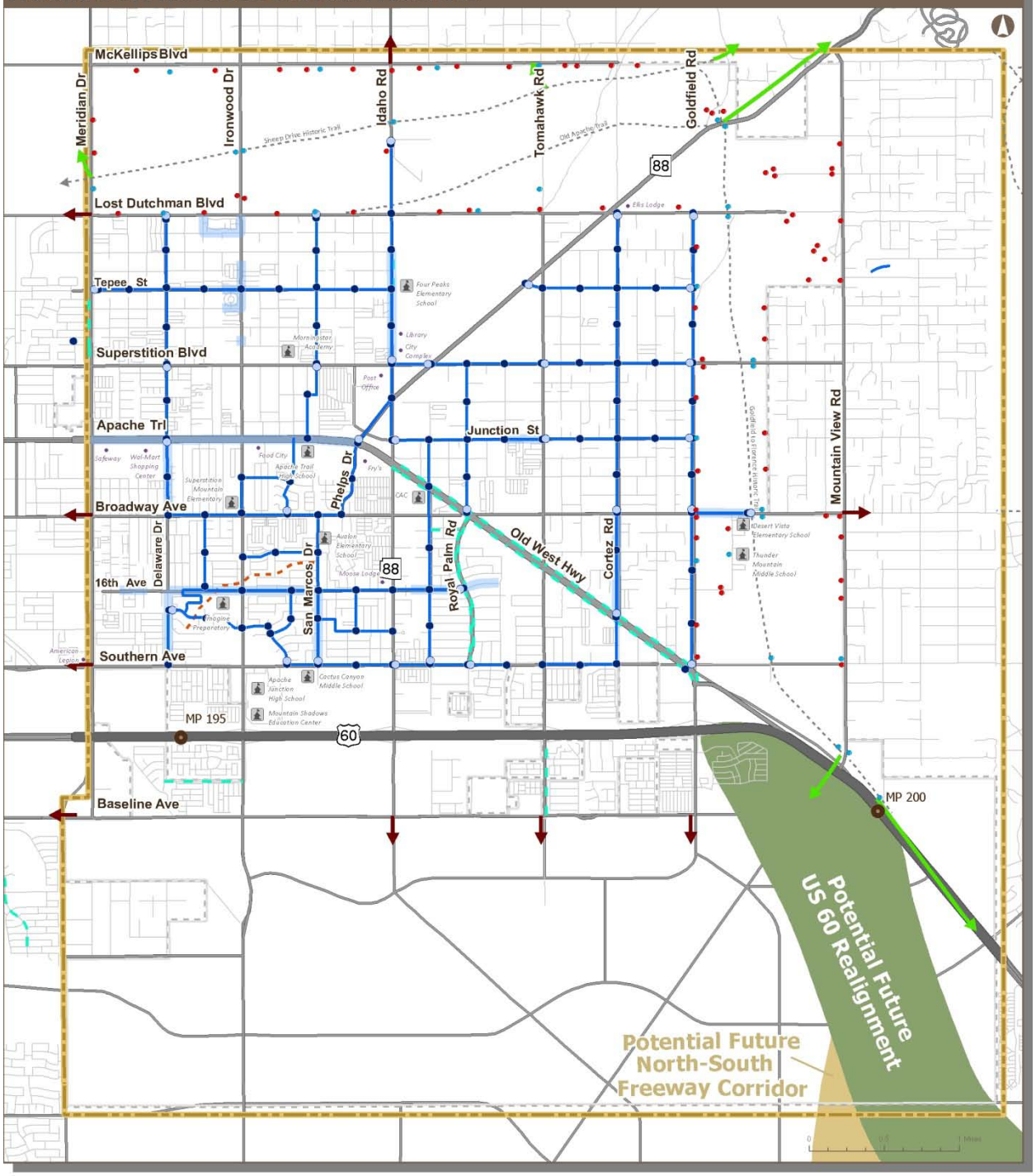


LEGEND

- Trail Head
- Proposed Sidewalk (City Funded)
- Proposed Sidewalk (Roadway Project)
- Proposed Regional Bike Lane or Multi-use Trail Connection (Roadway)
- Potential Regional Trail Connection (No Adjacent Roadway)
- Existing Trailhead
- School
- Combination Vehicle/ Equestrian Gate
- Hiking/Equestrian Gate
- Existing Multi-Use Path
- Multi-Use Trail
- Existing Sidewalk

Data Sources: City of Apache Junction, ALRIS, ADOT, USFS, City of Mesa

FIGURE 5.9: PROPOSED BICYCLE FACILITIES



LEGEND

- Bike Route - Share the Road
- Bike Route
- Bike Routes
- Proposed Bike Lanes
- Proposed Regional Bike Lane or Multi-use Trail Connection (Roadway)
- Potential Regional Trail Connection (No Adjacent Roadway)
- School
- Combination Vehicle/ Equestrian Gate
- Hiking/Equestrian Gate
- Existing Multi-Use Path
- Multi-Use Trail
- Existing Bike Lane

Data Sources: City of Apache Junction, ALRIS, ADOT, USFS, City of Mesa

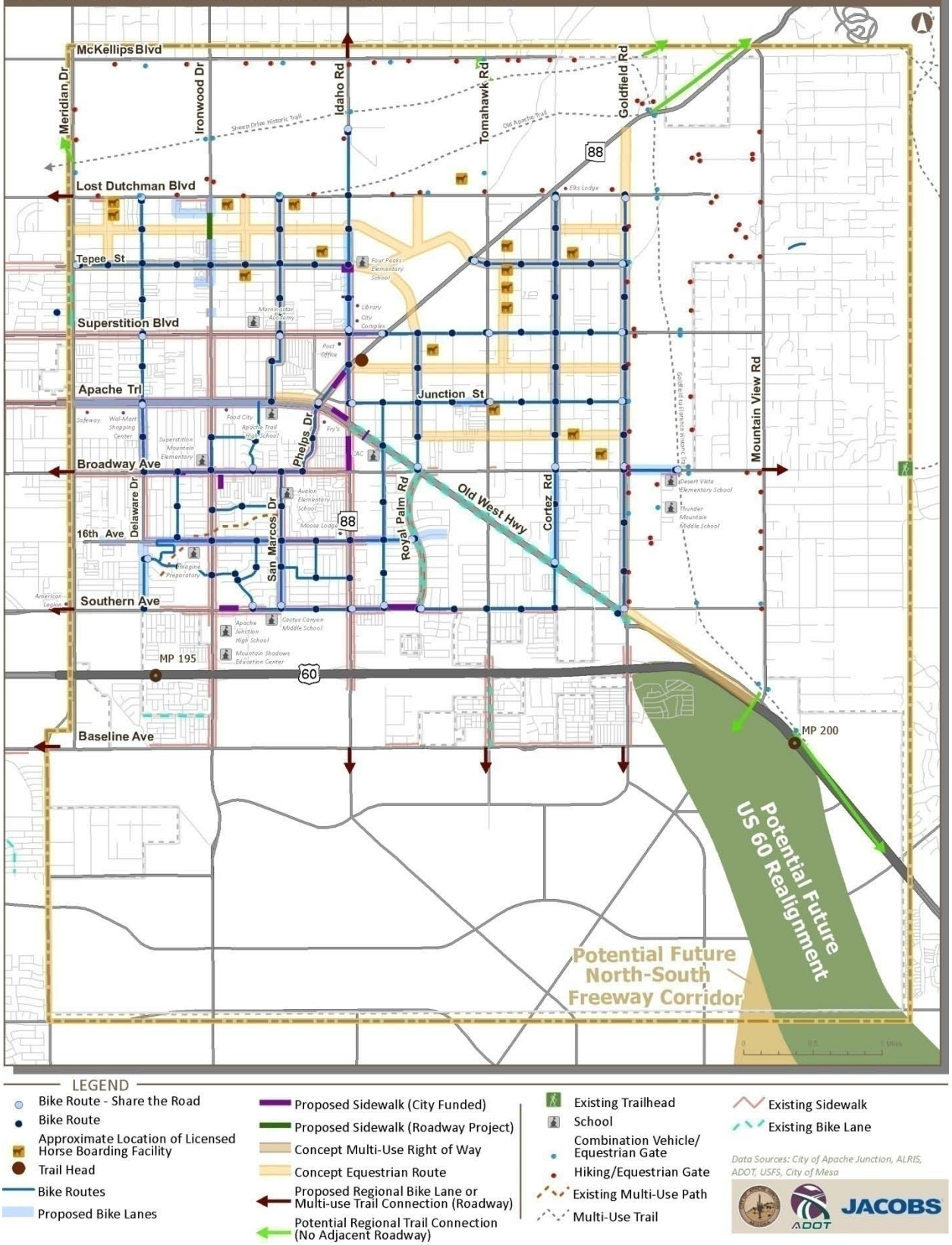
FIGURE 5.10: PROPOSED EQUESTRIAN FACILITIES

LEGEND

- Approximate Location of Licensed Horse Boarding Facility
- Trail Head
- Concept Multi-Use Right of Way
- Concept Equestrian Route
- Proposed Regional Bike Lane or Multi-use Trail Connection (Roadway)
- Potential Regional Trail Connection (No Adjacent Roadway)
- Existing Trailhead
- Combination Vehicle/ Equestrian Gate
- Hiking/Equestrian Gate
- School
- Existing Multi-Use Path
- Multi-Use Trail

Data Sources: City of Apache Junction, ALRIS, ADOT, USFS, City of Mesa

FIGURE 5.11: PROPOSED MULTIMODAL FACILITIES



LEGEND

- Bike Route - Share the Road
- Bike Route
- Approximate Location of Licensed Horse Boarding Facility
- Trail Head
- Bike Routes
- Proposed Bike Lanes
- Proposed Sidewalk (City Funded)
- Proposed Sidewalk (Roadway Project)
- Concept Multi-Use Right of Way
- Concept Equestrian Route
- Proposed Regional Bike Lane or Multi-use Trail Connection (Roadway)
- Potential Regional Trail Connection (No Adjacent Roadway)
- Existing Trailhead
- School
- Combination Vehicle/ Equestrian Gate
- Hiking/Equestrian Gate
- Existing Multi-Use Path
- Multi-Use Trail
- Existing Sidewalk
- Existing Bike Lane

Data Sources: City of Apache Junction, ALRIS, ADOT, USFS, City of Mesa

FUNCTIONAL CLASSIFICATION

Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide. ADOT leads the functional classification efforts for the State of Arizona. According to the FHWA and ADOT guidelines, projects are eligible for federal funding if they are classified as a collector or above. The study area's current adopted roadway functional classification is old and needs to be updated. Several roadways recommended for improvements in this study function as collectors or above, but are currently classified as local roads.

ADOT has guidelines in place to request reclassification of roadways. They can be accessed from the web link shown below.

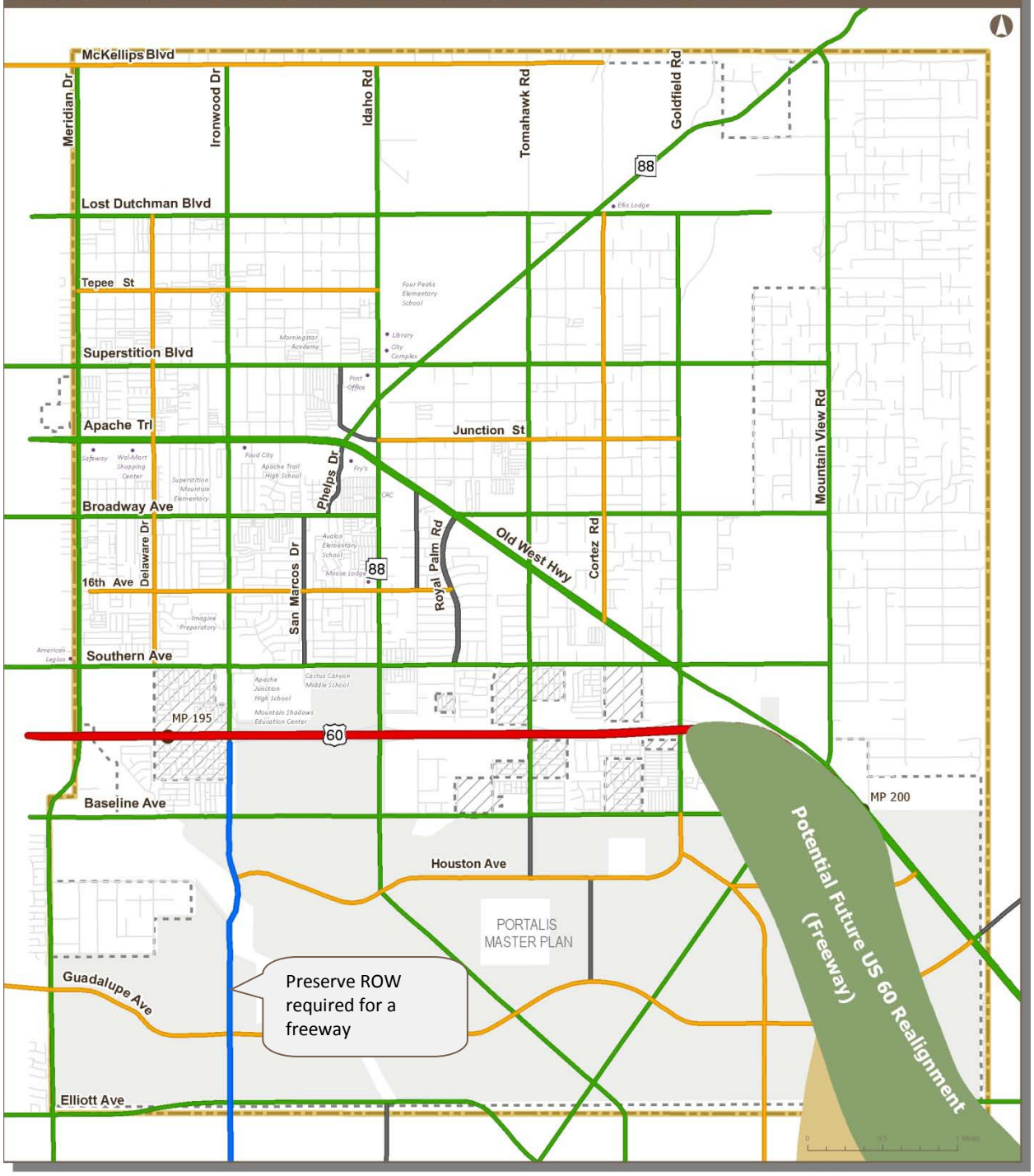
http://tpd.azdot.gov/mpd/gis/fclass/index.asp

Figure 5.12 illustrates the recommended functional classification of the roadways in the study area. The City of Apache Junction should first coordinate with CAAG to prepare the appropriate applications to reclassify the roadways. Applications must be submitted to ADOT through CAAG. Final roadway classification will be forwarded to the FHWA for final approval.

BUILD-OUT ROADWAY NETWORK RECOMMENDATIONS

The Countywide TransCAD travel demand model was used to forecast traffic volumes for the build-out population scenario to subsequently develop the build-out roadway network. Figure 5.13 illustrates the proposed build-out roadway network for the study area.

FIGURE 5.12: RECOMMENDED ROADWAY FUNCTIONAL CLASSIFICATION



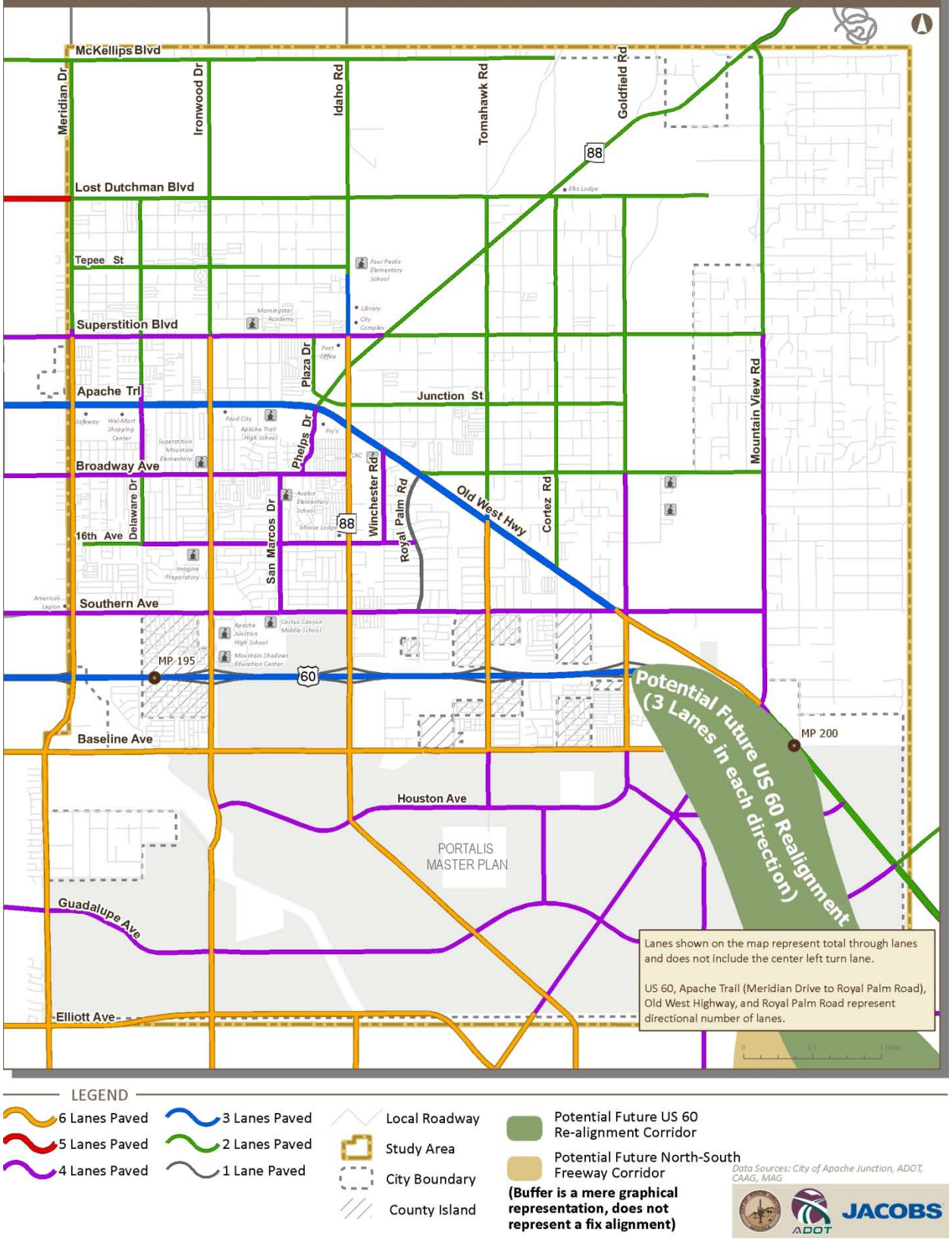
LEGEND

- Freeway
- Expressway
- Principal Arterial
- Minor Arterial
- Collector
- Local Roadway
- Study Area
- City Boundary
- County Island
- Potential Future US 60 Re-alignment Corridor
- Potential Future North-South Freeway Corridor

(Buffer is a mere graphical representation, does not represent a fix alignment)

Data Sources: City of Apache Junction, ADOT

FIGURE 5.13: RECOMMENDED ROADWAY NETWORK FOR BUILD-OUT POPULATION LEVELS



LEGEND

- 6 Lanes Paved
- 5 Lanes Paved
- 4 Lanes Paved
- 3 Lanes Paved
- 2 Lanes Paved
- 1 Lane Paved
- Local Roadway
- Study Area
- City Boundary
- County Island
- Potential Future US 60 Re-alignment Corridor
- Potential Future North-South Freeway Corridor

(Buffer is a mere graphical representation, does not represent a fix alignment)

Data Sources: City of Apache Junction, ADOT, CAAG, MAG

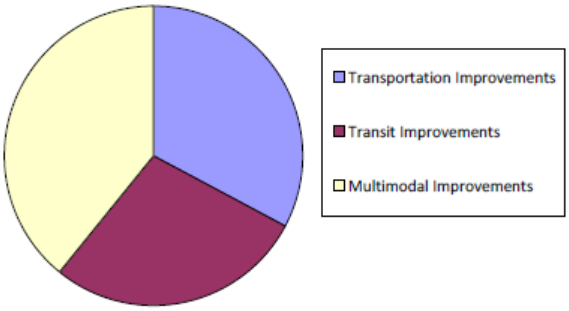
TITLE VI AND ENVIRONMENTAL JUSTICE POPULATION IMPLICATIONS

In accordance to federal requirements, this study identified Title VI and Environmental Justice populations within the study area. Proposed transportation improvement projects recommended by this study may impact these populations differently than other residents. A preliminary review of the study's recommended projects indicates no potentially negative impacts to the Title VI population groups. Title VI review should be revisited during the design phase of each project when actual roadway alignments are established.

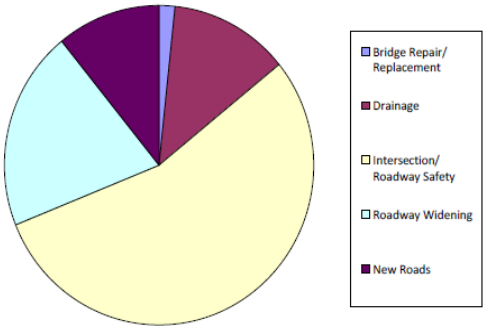
COMMUNITY OUTREACH

The goal of community outreach is to educate stakeholders and the public about the study, provide opportunities for community input, and to create a process to build consensus in support of the study recommendations. For this study, community outreach was conducted in two phases. Phase one, conducted in March 2011, introduced the study to the community and solicited input in regards to the current transportation issues and opportunities within the study area. The second phase of community outreach, conducted in November 2011, consisted of an online survey that garnered input on the recommended transportation improvements within the study area. A total of 66 residents completed the survey; key input received included:

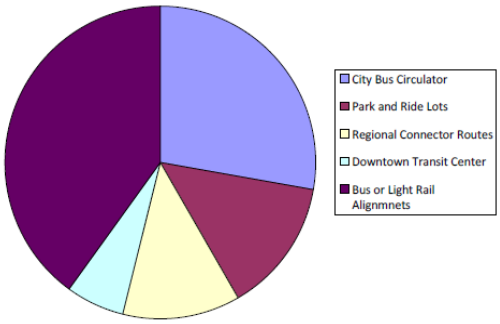
- Transportation Improvements, transit improvements, and multimodal improvements were all identified as important improvements to the City's existing transportation system



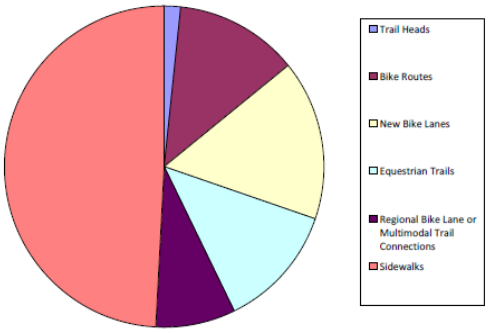
- Intersection and roadway safety was cited as the area that the City should focus future funding efforts for future transportation improvements.



- Bus or Light Rail alignments, followed closely by a Downtown Transit Center and a City Bus Circulator, were identified as the areas future transit funding efforts should address.



- Improving City sidewalks was listed as the leading area of future multimodal funding efforts. New bike routes and new bike lanes were deemed the second most important area for future multimodal funding efforts.



- Additional write-in comments addressed the need for separate bicycle and equestrian trail locations and increased transit service to and within the City.

All comments were analyzed and found to be in support of the proposed recommended improvements. The *Apache Junction Comprehensive Transportation Study Summary of Survey Results* further outlines comments obtained from community outreach activities.

6. TRANSPORTATION PLAN IMPLEMENTATION

This section discusses available funding sources, roadway standards and policies, and implementation actions to help implement the Transportation Plan.

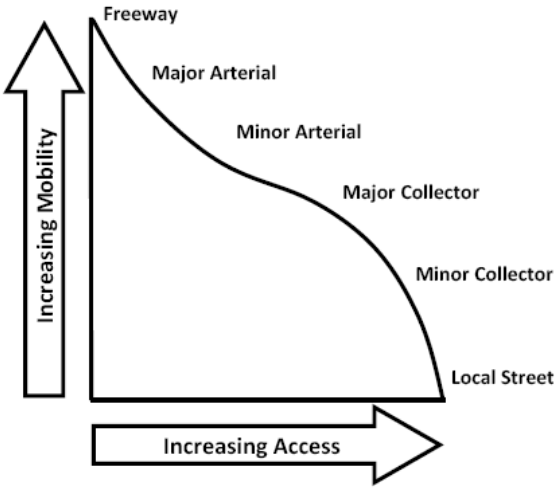
FUNDING SOURCES

The successful implementation of the Apache Junction Comprehensive Transportation Plan is contingent upon the availability of funding for design and construction of the improvement projects. Primary funding sources for the City include federal programs, ADOT, and other regional government agencies such as CAAG. Table 5.5 is a comprehensive funding matrix of funding sources that the City of Apache Junction can apply for funding of transportation projects identified in this study.

ACCESS MANAGEMENT

Access management enhances the flow of traffic on a corridor or roadway system by improving safety, capacity, and speed. Effective access management programs control the number of driveways and vehicular curb cuts, remove slower turning vehicles, and reduce the number of vehicular conflict points. It is important to implement these controls without overly restricting reasonable access to property. Controlling access improves mobility and is linked to the function of a particular roadway. Low volume, low speed facilities (such as local roads) serve to provide direct and frequent access to properties. Roadways with higher speeds and higher traffic volumes serve to provide mobility and restrict direct access to adjacent land uses, such as freeways, which are completely access controlled. The amount of appropriate access is related to the level of mobility and specific function of a road as illustrated in Figure 6.1.

FIGURE 6.1: ACCESS VS MOBILITY



Benefits of Access Management

Improved traffic flow is one of the many benefits of applying access management techniques. Roadways utilizing access management techniques are likely to be safer and provide for better circulation while improving travel times. These techniques include increasing driveway spacing, utilizing turning lanes, grade-separating intersections, and installing medians. The frequency of intersections greatly influences the capacity and function of roadways. Roadways with more access points and intersections have more opportunities for conflicts, and significant friction to through-traffic, which contributes to congestion and crashes. Applying access management techniques can enhance the livability of a community. Access management has been shown to reduce crashes while also improving pedestrian/bicycle safety. The mobility benefits to a community include increases in roadway capacity and reductions in travel time. The potential economic benefits of access management include reserving the market area for businesses, improving customer safety and convenience, providing more efficient freight movement, and raising property values. Communities that have implemented access management have more area for landscaping, while preserving community/scenic character and promoting more efficient land and site design. Additionally, access management can reduce emissions and fuel consumption due to improved traffic progression, and can help avoid substandard access to lot splits caused by excessive driveways.

Access Management Recommendations

The challenge of managing access is establishing a program of legal, administrative, and technical strategies with the appropriate balance between private property access rights and the need to control access to serve public need. Ideally, these strategies will be implemented through planning practices, rules, engineering standards, and procedures resulting in access decisions that successfully, fairly, and consistently determine access management for each unique situation. As a long-term undertaking, the City of Apache Junction should work towards-

- Developing a comprehensive access management standards guidebook. This guidebook should comprehensively categorize the roadway system by access management categories, provide specific guidelines for each category, and define the design criteria for each category.
- Implement an access management ordinance that provides the specific guidance for access to land uses.

In the interim, the City could use access management strategies outlined in Appendix A.

IMPLEMENTATION ACTIONS

The following action items are recommended for the City of Apache Junction to successfully implement the Multimodal Transportation Plan presented in Chapter 5.

- Present the Transportation Plan to the City Council for approval and adoption.
- Coordinate with CAAG and ADOT to request change in functional classification of roadways identified in Figure 5.12.
- Apply for funding sources for each project in the transportation plan.
- Include high-priority projects in the City's Transportation Improvement Program (TIP).
- Establish a transit department.
- Coordinate with ADOT to initiate a Transit Implementation Plan.
- Develop policies and procedures to promote alternative modes of transportation. Review and update street design standards, develop comprehensive access management standards, and detailed traffic impact guidelines procedures.
- Promote alternative modes of transportation through improved developer collaboration.
- Create aesthetically appealing gateways into the City at key roadway entry points.
- Increase communication, cooperation, and collaboration with ADOT, CAAG, the City Council, neighboring jurisdictions including the City of Mesa, MAG, Town of Queen Creek, and Pinal County. Work in partnership with each agency to address transportation needs and implement the plan.
- Offer opportunities for public involvement throughout the plan implementation process.
- Promote Public-Private partnerships between the City and the private sector.
- Monitor progress on the transportation plan on a quarterly basis.
- Update the transportation plan on a five year cycle.

TABLE 6.1: FUNDING SOURCES

Program	Description	Requirements	Eligible Uses	Source	Application
Surface Transportation Program (STP)	Federal funds, managed by FHWA and ADOT	- Located on Federal-aid highway - Bridge project on any public road - Transit capital products - Intracity/intercity bus terminals and facilities.	General transportation, environmental, and transit projects	Federal	Programmed by ADOT and local MPO or COG
Highway Safety Improvement Program (HSIP)	Federal funds, managed by FHWA and ADOT	Project must be used on safety improvement projects to reduce number and/or severity of highway related crashes	Safety improvement projects	Federal	The Strategic Highway Safety Plan (SHSP) analyzes highway safety data
Transportation Enhancement	Funds provide funding for bicycle, pedestrian, historic and beautification projects.	Must be surface transportation- related	- Bicycle projects - Pedestrian projects - Historic & beautification projects.	Federal	Applications considered yearly through MPO and COG
Transportation and Community and System Preservation Pilot Program (TCSP)	Funds projects that address the link between land use, community quality of life, and transportation.	Favors projects that partner with private sector interests	-Improve the efficiency of the transportation system - Reduce environmental impacts of transportation - Reduce the need for costly future public infrastructure investments - Ensure efficient access to jobs, services and centers of trade - Examine development patterns and identify strategies to encourage compatible private sector development patterns.	Federal	Jurisdictions are eligible recipients of these grant funds, and there is no maximum on the dollar amount of the award.
Transit Funds – Section 5310, 5311, 5313	Provides funding for local transit.		- 5310 program funds transit programs for elderly and disabled - 5311 program funds local transit systems in non-urbanized areas - 5313 program funds state planning and research programs	Federal	Applications for funds are generally made available in January through ADOT
Job Access and Reverse Commute (Section 5316) Grants (JARC)	Provides financing for projects that providing access to jobs, promoting use of transit and transit vouchers for welfare recipients and eligible low income individuals, and promoting use of employer provided transportation.		Capital planning and operating expenses for projects that transport low income individuals to and from jobs and activities related to employment, and for reverse commute projects.	Federal	- Applications for funds are generally made available through MPO and ADOT, depending upon the size of the urban population.
New Freedom Program (Section 5317) Grants	Grants provide competitive grants for improved public transportation services and alternatives for people with disabilities beyond those required by the Americans with Disabilities Act (ADA) of 1990		Capital and operating expenses for new public transportation services and new public transportation alternatives beyond those required by the American with Disabilities Act of 1990 (ADA), that are designed to assist individuals with disabilities.	Federal	Applications for funds are generally made available through MPO and ADOT, depending upon the size of the urban population.
Safe Routes to School	Focused on enabling and encouraging children to safely walk and bicycle to school	State must use between 10-30 percent of the funds for non-infrastructure related activities	- Projects can include sidewalk, traffic - Calming and speed reduction - Improvements, pedestrian and bicycle - Crossing improvements, traffic diversion improvements near schools.	Federal	Programmed through ADOT

TABLE 6.1: FUNDING SOURCES (CONTINUED)

Program	Description	Requirements	Eligible Uses	Source	Application
Highway Bridge Replacement and Rehabilitation	Funding for States to improve the condition of their highway bridges through replacement, rehabilitation, and systematic preventive maintenance	Preventative maintenance on Federal-aid and non-Federal-aid highway systems	Preventative maintenance on Federal-aid and non-Federal-aid highway systems	Federal	Applications available year-round
Governor's Office of Highway Safety	Finances State and local government highway safety projects.	Cannot be used for the construction, design, or maintenance of highways or for highway construction research projects.	Inventories, need studies, engineering studies, systems development, program implementation, or for purchasing equipment.	State	
State and Community Highway Safety Grants	Funds to assist jurisdictions in the development and implementation of highway safety programs designed to reduce traffic crashes, deaths, injuries and property damage.		- Alcohol countermeasures - Occupant protection - Police traffic services (e.g. enforcement) - Emergency medical services - Traffic records - Motorcycle safety - Pedestrian and bicycle safety (jointly administered by FHWA and NHTSA) - Non-construction aspects of roadway safety (administered by FHWA) - Speed control (jointly administered by NHTSA and FHWA)	Federal	Formula based funds are distributed to States
Community Development Block Grants (CDBG)	Managed by Federal Office of Housing and Urban Development	Located in a census tract or block group with at least 51% of population in low to the moderate income group	Sidewalk improvements and possible roadway projects	Federal	
National Highway System	Funding for construction, reconstruction, resurfacing, restoration, rehabilitation, and safety improvements on the National Highway System	Must be located on the National Highway System	A wide variety of transportation improvement projects	Federal	
Congestion Mitigation and Air Quality Improvement Program (CMAQ)	Funds transportation projects that reduce emissions in nonattainment and maintenance areas.	Located in nonattainment or maintenance areas	A wide range of transportation and transit programs	Federal	
Recreational Trails Program (RTP)	Provide funds to develop and maintain recreation trails		A wide range of recreational improvement projects	Federal	Available annually through Arizona State Parks
Highway User Revenue Fund (HURF)	Funds derived from fuel taxes, vehicle license tax, registration fees and other fees.	Project must be on highway	Highway construction, improvements, and other related expenses	State	Distributed directly to jurisdictions based on population
Vehicle License Tax (VLT)	Arizona tax paid by vehicle owners			State	
Arizona Game and Fish Department Heritage Funds	Funds derived from lottery proceeds to preserve natural and cultural resources		Public Access Environmental Education Schoolyard Habitat Urban Wildlife and Urban Wildlife Habitat IIAPM	State	Available annually in November through Arizona State Parks

TABLE 6.1: FUNDING SOURCES (CONTINUED)

Program	Description	Requirements	Eligible Uses	Source	Application
Development Impact Fees	Impact fees or development requirements for targeted projects or areas.	Amount of the assessment needs to be in direct proportion to the magnitude of the need created by the project		Local	
Development Stipulations	Developers dedicate appropriate ROW and build adjacent streets			Local	
Hotel Bed Tax	Tax added to hotel room charge that is paid to the state during tax returns and refunded to the local jurisdiction by the state of Arizona.			Local	
Sales Tax	Funds from a portion of a municipality's sales tax		Motorized and non-motorized improvements	Local	
Developer Exactions	Require developers to construct off-site facilities necessary to serve their development.			Local	
Equity Bonus	Funding to States based on equity considerations				Applications available year-round
Community Facilities District (CFD)	Special District created for the purpose of financing the acquisition, construction, operation and maintenance of public infrastructure improvements.		- Water and sewer projects - Police and fire facilities (and sites) - Public buildings (and sites) - Flood control and drainage projects - Roadways - Public parking structures - Landscaping and lakes - Lighting and traffic control - Parks and recreational facilities - Schools and school sites - Pedestrian malls - Enhanced public services	Local	Applications available year-round