

## **EXECUTIVE SUMMARY**

Across the United States, natural and human-caused disasters have led to increasing levels of death, injury, property damage, and interruption of business and government services. The toll on families and individuals can be immense and damaged businesses cannot contribute to the economy. The time, money and effort to respond to and recover from these emergencies or disasters divert public resources and attention from other important programs and problems. With 54 federal or state declarations and a total of 524 other recorded events, the 28 jurisdictions contained within Maricopa County, Arizona and participating in this planning effort recognize the consequences of disasters and the need to reduce the impacts of natural and human-caused hazards. The County and jurisdictions also know that with careful selection, mitigation actions in the form of projects and programs can become long-term, cost effective means for reducing the impact of natural and human-caused hazards.

The elected and appointed officials of Maricopa County and the 27 other participating jurisdictions demonstrated their commitment to hazard mitigation in 2009-2010 by preparing the first update of the Maricopa County Multi-Jurisdictional Hazard Mitigation Plan (2009 Plan). The 2009 Plan covered all 28 participating jurisdictions and was approved by FEMA on April 30, 2010. In order to remain compliant with the congressional regulations, the county and jurisdictions must perform full plan update and obtain FEMA approval.

In response, the Maricopa County Department of Emergency Management (MCDEM) secured a federal planning grant and hired JE Fuller/ Hydrology & Geomorphology, Inc. to assist the County and participating jurisdictions with the update process. MCDEM reconvened a multi-jurisdictional planning team (MJPT) comprised of veteran and first-time representatives from each participating jurisdiction, and other various county, state, and federal departments and organizations such as the Arizona Division of Emergency Management, National Weather Service, Arizona Geologic Survey, and Arizona Public Service. The MJPT met monthly beginning in November 2014 and finishing in April 2015. Subsequent “catch up” meetings were conducted through June 2015 to assist several communities with finalizing assignments and the first draft of the updated 2015 Plan was issued in July 2015. The meetings and MJPT worked in a collaborative effort to review, evaluate, and update the 2009 Plan keeping the single, consolidated multi-jurisdictional plan format and approach. The accompanying Tribal Annexes for each of the two participating Indian Tribes, were also updated to address Tribal specific planning elements. The 2015 Plan will continue to guide the County and participating jurisdictions toward greater disaster resistance in full harmony with the character and needs of the community and region.

The Plan has been prepared in compliance with Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act or the Act), 42 U.S. C. 5165, enacted under Sec. 104 the Disaster Mitigation Act of 2000, (DMA 2000) Public Law 106-390 of October 30, 2000, as implemented at CFR 201.6 and 201.7 dated October, 2007. The Plan includes risk assessments for multiple natural hazards, a public outreach effort at two phases of the planning process, and development of a mitigation strategy that incorporates measures intended to eliminate or reduce the effects of future disasters throughout the County. The development of the various 2015 Plan elements was accomplished through a joint and cooperative venture by members of the Maricopa County MJPT, with MCDEM serving as the lead agency and primary point of contact for the planning effort.

TABLE OF CONTENTS

**SECTION 1: JURISDICTIONAL ADOPTION AND FEMA APPROVAL..... 1**

**1.1 DMA 2000 Requirements .....1**

        1.1.1 General Requirements .....1

        1.1.2 Update Requirements.....1

**1.2 Official Record of Adoption .....2**

**1.3 FEMA Approval Letter .....2**

**SECTION 2: INTRODUCTION..... 5**

**2.1 Plan History .....5**

**2.2 Plan Purpose and Authority.....6**

**2.3 General Plan Description .....6**

**SECTION 3: PLANNING PROCESS ..... 7**

**3.1 Update Process Description.....7**

**3.2 Previous Planning Process Assessment .....7**

**3.3 Planning Team .....7**

        3.3.1 General .....7

        3.3.2 Primary Point of Contact.....8

        3.3.3 Planning Team Assembly.....8

        3.3.4 Planning Team Activities .....13

        3.3.5 Agency/Organization Participation .....16

**3.4 Public Involvement .....18**

        3.4.1 Previous Plan Assessment.....18

        3.4.2 Plan Update.....18

**3.5 Reference Documents and Technical Resources .....18**

**3.6 Plan Integration Into Other Planning Mechanisms .....20**

        3.6.1 Past Plan Incorporation/Integration Assessment .....21

        3.6.2 Five Year Plan Integration/Incorporation Strategy.....21

        3.6.3 Plan Incorporation Process.....39

**SECTION 4: COMMUNITY DESCRIPTIONS ..... 47**

**4.1 General.....47**

**4.2 County Overview .....47**

        4.2.1 Geography .....47

        4.2.2 Climate.....47

        4.2.3 Population.....51

        4.2.4 Economy .....54

**4.3 Jurisdictional Overviews .....57**

        4.3.1 Avondale .....57

        4.3.2 Buckeye.....60

        4.3.3 Carefree.....63

        4.3.4 Cave Creek.....66

        4.3.5 Chandler .....69

        4.3.6 El Mirage.....72

        4.3.7 Fountain Hills.....75

        4.3.8 Fort McDowell Yavapai Nation.....78

        4.3.9 Gila Bend .....81

        4.3.10 Gilbert.....84

        4.3.11 Glendale.....88

        4.3.12 Goodyear .....91

        4.3.13 Guadalupe.....94

        4.3.14 Litchfield Park .....97

        4.3.15 Mesa.....100

        4.3.16 Paradise Valley.....103

4.3.17	Peoria.....	106
4.3.18	Phoenix .....	109
4.3.19	Queen Creek.....	114
4.3.20	Salt River Pima-Maricopa Indian Community.....	117
4.3.21	Salt River Project.....	120
4.3.22	Scottsdale.....	121
4.3.23	Surprise.....	125
4.3.24	Tempe.....	128
4.3.25	Tolleson.....	131
4.3.26	Wickenburg.....	134
4.3.27	Youngtown.....	137
<b>SECTION 5: RISK ASSESSMENT .....</b>		<b>141</b>
<b>5.1</b>	<b>Hazard Identification and Screening.....</b>	<b>141</b>
<b>5.2</b>	<b>Vulnerability Analysis Methodology .....</b>	<b>144</b>
5.2.1	General .....	144
5.2.2	Climate Change .....	144
5.2.3	Calculated Priority Risk Index (CPRI) Evaluation .....	145
5.2.4	Asset Inventory.....	147
5.2.5	Loss/Exposure Estimations .....	148
5.2.6	Development Trend Analysis.....	150
<b>5.3</b>	<b>Hazard Risk Profiles .....</b>	<b>150</b>
5.3.1	Dam Inundation .....	151
5.3.2	Drought.....	167
5.3.3	Extreme Heat .....	175
5.3.4	Fissure .....	183
5.3.5	Flood / Flash Flood .....	191
5.3.6	Levee Failure .....	201
5.3.7	Severe Wind .....	207
5.3.8	Subsidence.....	213
5.3.9	Wildfire .....	219
<b>5.4</b>	<b>Risk Assessment Summary.....</b>	<b>227</b>
<b>SECTION 6: MITIGATION STRATEGY.....</b>		<b>229</b>
<b>6.1</b>	<b>Hazard Mitigation Goals and Objectives.....</b>	<b>229</b>
<b>6.2</b>	<b>Capability Assessment .....</b>	<b>229</b>
6.2.1	Jurisdictional Capabilities .....	230
6.2.2	National Flood Insurance Program Participation.....	288
<b>6.3</b>	<b>Mitigation Actions/Projects and Implementation Strategy .....</b>	<b>310</b>
6.3.1	Previous Mitigation Actions/Projects Assessment .....	310
6.3.2	New Mitigation Actions / Projects and Implementation Strategy .....	357
<b>SECTION 7: PLAN MAINTENANCE PROCEDURES .....</b>		<b>425</b>
<b>7.1</b>	<b>Monitoring and Evaluation .....</b>	<b>425</b>
7.1.1	Past Plan Cycle.....	425
7.1.2	Proposed Schedule and Scope .....	426
<b>7.2</b>	<b>Plan Update .....</b>	<b>426</b>
<b>7.3</b>	<b>Continued Public Involvement.....</b>	<b>426</b>
<b>SECTION 8: PLAN TOOLS.....</b>		<b>437</b>
<b>8.1</b>	<b>Acronyms .....</b>	<b>437</b>
<b>8.2</b>	<b>Definitions .....</b>	<b>438</b>

LIST OF FIGURES

Figure 4-1: Map of general features for Maricopa County .....48  
Figure 4-2: Daily Temperatures and Extremes for Carefree Station, Arizona.....49  
Figure 4-3: Daily Temperatures and Extremes for Gila Bend Station, Arizona.....50  
Figure 4-4: Daily Temperatures and Extremes for Phoenix WSFO AP Station, Arizona .....50  
Figure 4-5: Monthly climate summary for the Carefree Station, Arizona .....51  
Figure 4-6: Monthly climate summary for the Gila Bend Station, Arizona.....51  
Figure 4-7: Monthly climate summary for the Phoenix WSFO AP Station, Arizona .....51  
Figure 4-8: 2010 population density for Maricopa County .....53  
Figure 4-9: 2010 employment concentration projections for Maricopa County.....55  
Figure 4-10: Avondale location map .....58  
Figure 4-11: Avondale growth areas map .....59  
Figure 4-12: Buckeye location map.....61  
Figure 4-13: Buckeye master planned communities map .....62  
Figure 4-14: Carefree location map .....64  
Figure 4-15: Carefree land use planning map.....65  
Figure 4-16: Cave Creek location map .....67  
Figure 4-17: Cave Creek land use planning map.....68  
Figure 4-18: Chandler location map .....70  
Figure 4-19: Chandler land use planning map .....71  
Figure 4-20: El Mirage location map .....73  
Figure 4-21: El Mirage land use planning map .....74  
Figure 4-22: Fountain Hills location map.....76  
Figure 4-23: Fountain Hills land use planning map .....77  
Figure 4-24: Fort McDowell Yavapai Nation location map.....79  
Figure 4-25: Fort McDowell Yavapai Nation land use map .....80  
Figure 4-26: Gila Bend location map .....82  
Figure 4-27: Gila Bend land use planning map .....83  
Figure 4-28: Gilbert location map.....86  
Figure 4-29: Gilbert growth area map.....87  
Figure 4-30: Glendale location map.....89  
Figure 4-31: Glendale land use planning map .....90  
Figure 4-32: Goodyear location map .....92  
Figure 4-33: Goodyear land use planning map.....93  
Figure 4-34: Guadalupe location map .....95  
Figure 4-35: Guadalupe land use map.....96

Figure 4-36: Litchfield Park location map .....98

Figure 4-37: Litchfield Park land use map.....99

Figure 4-38: Mesa location map .....101

Figure 4-39: Mesa growth area map .....102

Figure 4-40: Paradise Valley location map.....104

Figure 4-41: Paradise Valley development area map .....105

Figure 4-42: Peoria location map .....107

Figure 4-43: Peoria land use map.....108

Figure 4-44: Phoenix location map.....110

Figure 4-45: Phoenix land use map .....113

Figure 4-46: Queen Creek location map.....115

Figure 4-47: Queen Creek land use map .....116

Figure 4-48: Salt River Pima-Maricopa Indian Community location map .....118

Figure 4-49: Salt River Pima-Maricopa Indian Community land use map .....119

Figure 4-50: Scottsdale location map .....122

Figure 4-51: Scottsdale growth area map.....124

Figure 4-52: Surprise location map.....126

Figure 4-53: Surprise growth area maps.....127

Figure 4-54: Tempe location map.....129

Figure 4-55: Tempe projected land use map.....130

Figure 4-56: Tolleson location map .....132

Figure 4-57: Tolleson growth area map.....133

Figure 4-58: Wickenburg location map .....135

Figure 4-59: Wickenburg growth area map.....136

Figure 4-60: Youngtown location map.....138

Figure 4-61: Youngtown future land use map .....139

Figure 5-1: Average annual precipitation variance from a normal based on 1896-2014  
period for Maricopa County .....168

Figure 5-2: Annual historic precipitation for Maricopa County from 1896 to 2014 .....168

Figure 5-3: U.S. Drought Monitor Map for June 2, 2015.....170

Figure 5-4: U.S. Seasonal Outlook, May to August 2015 .....170

Figure 5-5: Arizona long term drought status map for April 2015.....171

Figure 5-6: Maricopa County 2013 heat associated deaths by temperature and date.....176

Figure 5-7: Phoenix excessive heat watch/warning criteria .....177

Figure 5-8: NWS Heat Index chart .....178

Figure 5-9: Heat caused/related deaths by age and gender for Maricopa County in 2013 .....180

Figure 5-10: Illustration of FEMA Wind Zones .....209

**LIST OF TABLES**

**Table 3-1: List of jurisdictional primary points of contact..... 9**

**Table 3-2: Summary of multi-jurisdictional planning team participants..... 12**

**Table 3-3: Summary of planning meetings convened as part of the plan update process..... 14**

**Table 3-4: List of agencies and organizations invited or participating in the planning process..... 16**

**Table 3-5: List of resource documents and references reviewed and incorporated in the Plan update process ..... 19**

**Table 3-6: Plan integration history and future strategy for Avondale ..... 21**

**Table 3-7: Plan integration history and future strategy for Buckeye ..... 22**

**Table 3-8: Plan integration history and future strategy for Carefree..... 22**

**Table 3-9: Plan integration history and future strategy for Cave Creek..... 23**

**Table 3-10: Plan integration history and future strategy for Chandler ..... 23**

**Table 3-11: Plan integration history and future strategy for El Mirage ..... 24**

**Table 3-12: Plan integration history and future strategy for Fort McDowell Yavapai Nation..... 25**

**Table 3-13: Plan integration history and future strategy for Fountain Hills ..... 25**

**Table 3-14: Plan integration history and future strategy for Gila Bend ..... 26**

**Table 3-15: Plan integration history and future strategy for Gilbert ..... 26**

**Table 3-16: Plan integration history and future strategy for Glendale ..... 27**

**Table 3-17: Plan integration history and future strategy for Goodyear..... 28**

**Table 3-18: Plan integration history and future strategy for Guadalupe..... 28**

**Table 3-19: Plan integration history and future strategy for Litchfield Park..... 29**

**Table 3-20: Plan integration history and future strategy for Maricopa County (Unincorporated) ..... 29**

**Table 3-21: Plan integration history and future strategy for Mesa..... 30**

**Table 3-22: Plan integration history and future strategy for Paradise Valley ..... 31**

**Table 3-23: Plan integration history and future strategy for Peoria..... 32**

**Table 3-24: Plan integration history and future strategy for Phoenix..... 33**

**Table 3-25: Plan integration history and future strategy for Queen Creek ..... 33**

**Table 3-26: Plan integration history and future strategy for Salt River Pima Maricopa Indian Community..... 34**

**Table 3-27: Plan integration history and future strategy for Salt River Project ..... 35**

**Table 3-28: Plan integration history and future strategy for Scottsdale ..... 36**

**Table 3-29: Plan integration history and future strategy for Surprise ..... 36**

**Table 3-30: Plan integration history and future strategy for Tempe..... 37**

**Table 3-31: Plan integration history and future strategy for Tolleson ..... 37**

**Table 3-32: Plan integration history and future strategy for Wickenburg ..... 38**

**Table 3-33: Plan integration history and future strategy for Youngtown .....38**

**Table 3-34: Jurisdictional standard operating procedures for integration of planning mechanisms.....40**

**Table 4-1: Summary of jurisdictional population estimates for Maricopa County.....52**

**Table 4-2: July 1<sup>st</sup> population, housing and employment statistics for Avondale .....57**

**Table 4-3: July 1<sup>st</sup> population, housing and employment statistics for Buckeye.....60**

**Table 4-4: July 1<sup>st</sup> population, housing and employment statistics for Carefree .....63**

**Table 4-5: July 1<sup>st</sup> population, housing and employment statistics for Cave Creek .....66**

**Table 4-6: July 1<sup>st</sup> population, housing and employment statistics for Chandler .....69**

**Table 4-7: July 1<sup>st</sup> population, housing and employment statistics for El Mirage .....72**

**Table 4-8: July 1<sup>st</sup> population, housing and employment statistics for Fountain Hills.....75**

**Table 4-9: July 1<sup>st</sup> population, housing and employment statistics for Fort McDowell Yavapai Nation.....78**

**Table 4-10: July 1<sup>st</sup> population, housing and employment statistics for Gila Bend .....81**

**Table 4-11: July 1<sup>st</sup> population, housing and employment statistics for Gilbert.....84**

**Table 4-12: July 1<sup>st</sup> population, housing and employment statistics for Glendale.....88**

**Table 4-13: July 1<sup>st</sup> population, housing and employment statistics for Goodyear .....91**

**Table 4-14: July 1<sup>st</sup> population, housing and employment statistics for Guadalupe .....94**

**Table 4-15: July 1<sup>st</sup> population, housing and employment statistics for Litchfield Park .....97**

**Table 4-16: July 1<sup>st</sup> population, housing and employment statistics for Mesa .....100**

**Table 4-17: July 1<sup>st</sup> population, housing and employment statistics for Paradise Valley.....103**

**Table 4-18: July 1<sup>st</sup> population, housing and employment statistics for Peoria .....106**

**Table 4-19: July 1<sup>st</sup> population, housing and employment statistics for Phoenix .....109**

**Table 4-20: July 1<sup>st</sup> population, housing and employment statistics for Queen Creek.....114**

**Table 4-21: July 1<sup>st</sup> population, housing and employment statistics for Salt River Pima Maricopa Indian Community .....117**

**Table 4-22: July 1<sup>st</sup> population, housing and employment statistics for Scottsdale.....121**

**Table 4-23: July 1<sup>st</sup> population, housing and employment statistics for Surprise.....125**

**Table 4-24: July 1<sup>st</sup> population, housing and employment statistics for Tempe .....128**

**Table 4-25: July 1<sup>st</sup> population, housing and employment statistics for Tolleson.....131**

**Table 4-26: July 1<sup>st</sup> population, housing and employment statistics for Wickenburg .....134**

**Table 4-27: July 1<sup>st</sup> population, housing and employment statistics for Youngtown .....137**

**Table 5-1: Summary of Initial Hazard Identification Lists .....142**

**Table 5-2: State and Federally Declared Natural Hazard Events That Included Maricopa County – January 1966 to December 2014.....143**

**Table 5-3: Maricopa County Historic Hazard Events – June 1955 to December 2012 .....143**

**Table 5-4: Summary of Calculated Priority Risk Index (CPRI) categories and risk levels.....146**

**Table 5-5: Summary of Critical and Non-Critical Facility counts by category and jurisdiction ..... 149**

**Table 5-6: Summary of ADWR safety categories ..... 152**

**Table 5-7: Summary of NID downstream hazard classifications ..... 153**

**Table 5-8: Summary count of NID and ADWR hazard classification dams ..... 153**

**Table 5-9: Summary of CPRI results by jurisdiction for dam inundation (emergency spillway flow and dam failure)..... 154**

**Table 5-10: Asset inventory exposure due to emergency spillway inundation ..... 156**

**Table 5-11: Asset inventory exposure due to dam failure inundation ..... 157**

**Table 5-12: Residential structures exposed to emergency spillway inundation ..... 159**

**Table 5-13: Residential structures exposed to dam failure inundation ..... 160**

**Table 5-14: Population sectors exposed to emergency spillway inundation ..... 162**

**Table 5-15: Population sectors exposed to dam failure inundation ..... 163**

**Table 5-16: CPRI results by jurisdiction for drought ..... 172**

**Table 5-17: CPRI results by jurisdiction for extreme heat ..... 179**

**Table 5-18: CPRI results by jurisdiction for fissure hazard..... 184**

**Table 5-19: Asset inventory exposure to high hazard fissure zones ..... 187**

**Table 5-20: Population sectors exposed to high hazard fissure zones ..... 188**

**Table 5-21: Residential structures exposed to fissure high hazard zones ..... 189**

**Table 5-22: CPRI results by jurisdiction for flooding hazard ..... 194**

**Table 5-23: Asset inventory exposure to high hazard flood zones ..... 196**

**Table 5-24: Population sectors exposed to high hazard flood zones ..... 197**

**Table 5-25: Residential structures exposed to high hazard flood zones ..... 198**

**Table 5-26: Repetitive loss property statistics for Maricopa County jurisdictions ..... 199**

**Table 5-27: CPRI results by jurisdiction for levee failure ..... 202**

**Table 5-28: Asset inventory exposure to high hazard levee failure areas..... 204**

**Table 5-29: Population sectors exposed to high hazard levee failure areas..... 205**

**Table 5-30: Residential structures exposed to high hazard levee failure areas..... 206**

**Table 5-31: Beaufort Wind Scale ..... 210**

**Table 5-32: Fujita Tornado Scale..... 210**

**Table 5-33: CPRI results by jurisdiction for severe wind ..... 211**

**Table 5-34: CPRI results by jurisdiction for subsidence ..... 214**

**Table 5-35: Asset inventory exposure to high hazard subsidence areas ..... 216**

**Table 5-36: Population sectors exposed to high hazard subsidence areas ..... 217**

**Table 5-37: Residential structures exposed to high hazard subsidence areas ..... 218**

**Table 5-38: CPRI results by jurisdiction for wildfire..... 221**

**Table 5-39: Asset inventory exposure to high hazard wildfire areas ..... 223**

**Table 5-40: Population sectors exposed to high hazard wildfire areas .....224**

**Table 5-41: Residential structures exposed to high hazard wildfire areas .....225**

**Table 5-42: Summary of hazards to be mitigated by each participating jurisdiction .....227**

**Table 6-1-1: Legal and regulatory capabilities for Avondale .....230**

**Table 6-2-1: Technical staff and personnel capabilities for Avondale .....231**

**Table 6-3-1: Fiscal capabilities for Avondale .....232**

**Table 6-1-2: Legal and regulatory capabilities for Buckeye .....232**

**Table 6-2-2: Technical staff and personnel capabilities for Buckeye .....233**

**Table 6-3-2: Fiscal capabilities for Buckeye .....233**

**Table 6-1-3: Legal and regulatory capabilities for Carefree .....234**

**Table 6-2-3: Technical staff and personnel capabilities for Carefree .....235**

**Table 6-3-3: Fiscal capabilities for Carefree .....235**

**Table 6-1-4: Legal and regulatory capabilities for Cave Creek .....236**

**Table 6-2-4: Technical staff and personnel capabilities for Cave Creek .....237**

**Table 6-3-4: Fiscal capabilities for Cave Creek .....237**

**Table 6-1-5: Legal and regulatory capabilities for Chandler .....238**

**Table 6-2-5: Technical staff and personnel capabilities for Chandler .....239**

**Table 6-3-5: Fiscal capabilities for Chandler .....239**

**Table 6-1-6: Legal and regulatory capabilities for El Mirage .....240**

**Table 6-2-6: Technical staff and personnel capabilities for El Mirage .....241**

**Table 6-3-6: Fiscal capabilities for El Mirage .....241**

**Table 6-1-7: Legal and regulatory capabilities for Fort McDowell Yavapai Nation .....242**

**Table 6-2-7: Technical staff and personnel capabilities for Fort McDowell Yavapai  
Nation .....242**

**Table 6-3-7: Fiscal capabilities for Fort McDowell Yavapai Nation .....243**

**Table 6-1-8: Legal and regulatory capabilities for Fountain Hills .....244**

**Table 6-2-8: Technical staff and personnel capabilities for Fountain Hills .....245**

**Table 6-3-8: Fiscal capabilities for Fountain Hills .....245**

**Table 6-1-9: Legal and regulatory capabilities for Gila Bend .....246**

**Table 6-2-9: Technical staff and personnel capabilities for Gila Bend .....246**

**Table 6-3-9: Fiscal capabilities for Gila Bend .....247**

**Table 6-1-10: Legal and regulatory capabilities for Gilbert .....247**

**Table 6-2-10: Technical staff and personnel capabilities for Gilbert .....249**

**Table 6-3-10: Fiscal capabilities for Gilbert .....250**

**Table 6-1-11: Legal and regulatory capabilities for Glendale .....251**

**Table 6-2-11: Technical staff and personnel capabilities for Glendale .....252**

**Table 6-3-11: Fiscal capabilities for Glendale .....252**

**Table 6-1-12: Legal and regulatory capabilities for Goodyear.....253**

**Table 6-2-12: Technical staff and personnel capabilities for Goodyear .....253**

**Table 6-3-12: Fiscal capabilities for Goodyear .....254**

**Table 6-1-13: Legal and regulatory capabilities for Guadalupe.....255**

**Table 6-2-13: Technical staff and personnel capabilities for Guadalupe .....256**

**Table 6-3-13: Fiscal capabilities for Guadalupe .....256**

**Table 6-1-14: Legal and regulatory capabilities for Litchfield Park .....257**

**Table 6-2-14: Technical staff and personnel capabilities for Litchfield Park .....258**

**Table 6-3-14: Fiscal capabilities for Litchfield Park .....258**

**Table 6-1-15: Legal and regulatory capabilities for Mesa .....259**

**Table 6-2-15: Technical staff and personnel capabilities for Mesa .....259**

**Table 6-3-15: Fiscal capabilities for Mesa .....260**

**Table 6-1-16: Legal and regulatory capabilities for Paradise Valley.....261**

**Table 6-2-16: Technical staff and personnel capabilities for Paradise Valley .....261**

**Table 6-3-16: Fiscal capabilities for Paradise Valley.....262**

**Table 6-1-17: Legal and regulatory capabilities for Peoria .....263**

**Table 6-2-17: Technical staff and personnel capabilities for Peoria .....264**

**Table 6-3-17: Fiscal capabilities for Peoria .....264**

**Table 6-1-18: Legal and regulatory capabilities for Phoenix.....265**

**Table 6-2-18: Technical staff and personnel capabilities for Phoenix .....266**

**Table 6-3-18: Fiscal capabilities for Phoenix .....267**

**Table 6-1-19: Legal and regulatory capabilities for Queen Creek.....268**

**Table 6-2-19: Technical staff and personnel capabilities for Queen Creek.....268**

**Table 6-3-19: Fiscal capabilities for Queen Creek.....269**

**Table 6-1-20: Legal and regulatory capabilities for Salt River Pima-Maricopa Indian  
Community.....270**

**Table 6-2-20: Technical staff and personnel capabilities for Salt River Pima-Maricopa  
Indian Community.....270**

**Table 6-3-20: Fiscal capabilities for Salt River Pima-Maricopa Indian Community.....271**

**Table 6-1-21: Legal and regulatory capabilities for Salt River Project.....271**

**Table 6-2-21: Technical staff and personnel capabilities for Salt River Project.....273**

**Table 6-3-21: Fiscal capabilities for Salt River Project.....274**

**Table 6-1-22: Legal and regulatory capabilities for Scottsdale .....275**

**Table 6-2-22: Technical staff and personnel capabilities for Scottsdale.....276**

**Table 6-3-22: Fiscal capabilities for Scottsdale.....276**

**Table 6-1-23: Legal and regulatory capabilities for Surprise.....277**

**Table 6-2-23: Technical staff and personnel capabilities for Surprise.....277**

**Table 6-3-23: Fiscal capabilities for Surprise.....278**

**Table 6-1-24: Legal and regulatory capabilities for Tempe.....279**

**Table 6-2-24: Technical staff and personnel capabilities for Tempe.....279**

**Table 6-3-24: Fiscal capabilities for Tempe.....280**

**Table 6-1-25: Legal and regulatory capabilities for Tolleson .....280**

**Table 6-2-25: Technical staff and personnel capabilities for Tolleson .....281**

**Table 6-3-25: Fiscal capabilities for Tolleson .....281**

**Table 6-1-26: Legal and regulatory capabilities for Unincorporated Maricopa County .....282**

**Table 6-2-26: Technical staff and personnel capabilities for Unincorporated Maricopa  
County.....283**

**Table 6-3-26: Fiscal capabilities for Unincorporated Maricopa County .....284**

**Table 6-1-27: Legal and regulatory capabilities for Wickenburg .....284**

**Table 6-2-27: Technical staff and personnel capabilities for Wickenburg .....285**

**Table 6-3-27: Fiscal capabilities for Wickenburg .....285**

**Table 6-1-28: Legal and regulatory capabilities for Youngtown.....286**

**Table 6-2-28: Technical staff and personnel capabilities for Youngtown.....287**

**Table 6-3-28: Fiscal capabilities for Youngtown.....287**

**Table 6-4: NFIP status and statistics for Maricopa County and participating  
jurisdictions .....288**

**Table 6-5: NFIP program assessment for Maricopa County and participating NFIP  
jurisdictions .....291**

**Table 6-6-1: Avondale assessment of previous plan cycle mitigation actions/projects .....311**

**Table 6-6-2: Buckeye assessment of previous plan cycle mitigation actions/projects.....312**

**Table 6-6-3: Carefree assessment of previous plan cycle mitigation actions/projects .....315**

**Table 6-6-4: Cave Creek assessment of previous plan cycle mitigation actions/projects .....316**

**Table 6-6-5: Chandler assessment of previous plan cycle mitigation actions/projects .....318**

**Table 6-6-6: El Mirage assessment of previous plan cycle mitigation actions/projects .....319**

**Table 6-6-7: Fort McDowell Yavapai Nation assessment of previous plan cycle  
mitigation actions/projects .....321**

**Table 6-6-8: Fountain Hills assessment of previous plan cycle mitigation  
actions/projects.....325**

**Table 6-6-9: Gila Bend assessment of previous plan cycle mitigation actions/projects .....326**

**Table 6-6-10: Gilbert assessment of previous plan cycle mitigation actions/projects.....326**

**Table 6-6-11: Glendale assessment of previous plan cycle mitigation actions/projects .....328**

**Table 6-6-12: Goodyear assessment of previous plan cycle mitigation actions/projects .....329**

**Table 6-6-13: Guadalupe assessment of previous plan cycle mitigation actions/projects .....330**

**Table 6-6-14: Litchfield Park assessment of previous plan cycle mitigation  
actions/projects.....330**

**Table 6-6-15: Mesa assessment of previous plan cycle mitigation actions/projects .....332**

**Table 6-6-16: Paradise Valley assessment of previous plan cycle mitigation actions/projects .....333**

**Table 6-6-17: Peoria assessment of previous plan cycle mitigation actions/projects .....334**

**Table 6-6-18: Phoenix assessment of previous plan cycle mitigation actions/projects .....336**

**Table 6-6-19: Queen Creek assessment of previous plan cycle mitigation actions/projects .....339**

**Table 6-6-20: Salt River Pima – Maricopa Indian Community assessment of previous plan cycle mitigation actions/projects .....341**

**Table 6-6-21: Salt River Project assessment of previous plan cycle mitigation actions/projects .....342**

**Table 6-6-22: Scottsdale assessment of previous plan cycle mitigation actions/projects .....344**

**Table 6-6-23: Surprise assessment of previous plan cycle mitigation actions/projects .....346**

**Table 6-6-24: Tempe assessment of previous plan cycle mitigation actions/projects .....347**

**Table 6-6-25: Tolleson assessment of previous plan cycle mitigation actions/projects .....349**

**Table 6-6-26: Unincorporated Maricopa County assessment of previous plan cycle mitigation actions/projects .....350**

**Table 6-6-27: Wickenburg assessment of previous plan cycle mitigation actions/projects .....354**

**Table 6-6-28: Youngtown assessment of previous plan cycle mitigation actions/projects .....354**

**Table 6-7-1: Mitigation actions and projects and implementation strategy for Avondale.....361**

**Table 6-7-2: Mitigation actions and projects and implementation strategy for Buckeye .....363**

**Table 6-7-3: Mitigation actions and projects and implementation strategy for Carefree.....365**

**Table 6-7-4: Mitigation actions and projects and implementation strategy for Cave Creek.....367**

**Table 6-7-5: Mitigation actions and projects and implementation strategy for Chandler.....368**

**Table 6-7-6: Mitigation actions and projects and implementation strategy for El Mirage.....369**

**Table 6-7-7: Mitigation actions and projects and implementation strategy for Fort McDowell Yavapai Nation .....373**

**Table 6-7-8: Mitigation actions and projects and implementation strategy for Fountain Hills .....375**

**Table 6-7-9: Mitigation actions and projects and implementation strategy for Gila Bend.....376**

**Table 6-7-10: Mitigation actions and projects and implementation strategy for Gilbert .....378**

**Table 6-7-11: Mitigation actions and projects and implementation strategy for Glendale .....381**

**Table 6-7-12: Mitigation actions and projects and implementation strategy for Goodyear .....383**

**Table 6-7-13: Mitigation actions and projects and implementation strategy for Guadalupe .....386**

**Table 6-7-14: Mitigation actions and projects and implementation strategy for Litchfield Park .....388**

**Table 6-7-15: Mitigation actions and projects and implementation strategy for Mesa.....389**

**Table 6-7-16: Mitigation actions and projects and implementation strategy for Paradise Valley .....392**

**Table 6-7-17: Mitigation actions and projects and implementation strategy for Peoria.....393**

**Table 6-7-18: Mitigation actions and projects and implementation strategy for Phoenix .....398**

**Table 6-7-19: Mitigation actions and projects and implementation strategy for Queen  
Creek.....400**

**Table 6-7-20: Mitigation actions and projects and implementation strategy for Salt  
River Pima-Maricopa Indian Community.....402**

**Table 6-7-21: Mitigation actions and projects and implementation strategy for Salt  
River Project .....404**

**Table 6-7-22: Mitigation actions and projects and implementation strategy for  
Scottsdale .....406**

**Table 6-7-23: Mitigation actions and projects and implementation strategy for Surprise .....409**

**Table 6-7-24: Mitigation actions and projects and implementation strategy for Tempe .....413**

**Table 6-7-25: Mitigation actions and projects and implementation strategy for Tolleson .....416**

**Table 6-7-26: Mitigation actions and projects and implementation strategy for  
Unincorporated Maricopa County .....418**

**Table 6-7-27: Mitigation actions and projects and implementation strategy for  
Wickenburg.....421**

**Table 6-7-28: Mitigation actions and projects and implementation strategy for  
Youngtown.....422**

**Table 7-1: Continued public involvement activities performed by jurisdictions during  
the 2009 Plan cycle.....427**

**Table 7-2: Continued public involvement activities or opportunities identified by each  
participating jurisdiction.....431**

**LIST OF MAPS**

- Maps 1A, 1B, and 1C – Dam Spillway Flood Hazard Map(s)**
- Maps 2A, 2B, and 2C – Potential Dam Failure Flood Hazard Map(s)**
- Maps 3A, 3B, and 3C – Earth Fissure Hazard Map(s)**
- Maps 4A, 4B, and 4C – Flood Hazard Map(s)**
- Maps 5A, 5B, and 5C – Potential Levee Failure Flood Hazard Map(s)**
- Maps 6A, 6B, and 6C – Subsidence Hazard Map(s)**
- Maps 7A, 7B, and 7C – Wildfire Hazard Map(s)**

**LIST OF APPENDICES**

- Appendix A: Official Resolution of Adoption**
- Appendix B: Planning Process Documentation**
- Appendix C: Public Involvement Records**
- Appendix D: Detailed Historic Hazard Records**
- Appendix E: Plan Maintenance Review Memorandums**

**ANNEX DOCUMENTS (under separate cover)**

- Tribal Plan Annex for Fort McDowell Yavapai Nation**
- Tribal Plan Annex for the Salt River Pima-Maricopa Indian Community**

**SUPPLEMENTAL DOCUMENTS (under separate cover)**

- Jurisdiction-Specific Executive Summaries**

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## SECTION 1: JURISDICTIONAL ADOPTION AND FEMA APPROVAL

**Requirement §201.6(c)(5):** *[The local hazard mitigation plan shall include...] Documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council). For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.*

**Requirement §201.6(d)(3):** *A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within five (5) years in order to continue to be eligible for mitigation project grant funding.*

### 1.1 DMA 2000 Requirements

#### 1.1.1 General Requirements

This 2015 update of the Maricopa County Multi-Jurisdictional Hazard Mitigation Plan (Plan) has been prepared in compliance with Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Stafford Act), 42 U.S.C. 5165, as amended by Section 104 of the Disaster Mitigation Act of 2000 (DMA 2000) Public Law 106-390 enacted October 30, 2000. The regulations governing the mitigation planning requirements for local mitigation plans are published under the Code of Federal Regulations (CFR) Title 44, Section 201.6 (44 CFR §201.6). Additionally, a DMA 2000 compliant plan that addresses flooding will also meet the minimum planning requirements for the Flood Mitigation Assistance program as provided for under 44 CFR §78.

DMA 2000 provides requirements for States, Tribes, and local governments to undertake a risk-based approach to reducing risks to natural hazards through mitigation planning<sup>1</sup>. The local mitigation plan is the representation of the jurisdiction's commitment to reduce risks from natural hazards, serving as a guide for decision makers as they commit resources to reducing the effects of natural hazards. Local plans will also serve as the basis for the State to provide technical assistance and to prioritize project funding.

Under 44 CFR §201.6, local governments must have a Federal Emergency Management Agency (FEMA)-approved local mitigation plan in order to apply for and/or receive project grants under the following Hazard Mitigation Assistance (HMA) programs:

- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)
- Severe Repetitive Loss (SRL)

FEMA, at its discretion, may also require a local mitigation plan under the Repetitive Flood Claims (RFC) program as well.

#### 1.1.2 Update Requirements

DMA 2000 requires that existing plans be updated every five years, with each plan cycle requiring a complete review, revision, and re-approval of the plan at both the state and FEMA level. Maricopa County, the incorporated communities of Avondale, Buckeye, Carefree, Cave Creek, Chandler, El Mirage, Fountain Hills, Gila Bend, Gilbert, Glendale, Goodyear, Guadalupe, Litchfield Park, Mesa, Paradise Valley, Peoria, Phoenix, Queen Creek, Scottsdale, Surprise, Tempe, Tolleson, Wickenburg, and Youngtown, the Fort McDowell Yavapai Nation and Salt River Pima-Maricopa Indian Community, and the Salt River Project are all currently covered under a FEMA approved multi-jurisdictional hazard mitigation plan. The Plan is the result of an update process performed by the

<sup>1</sup> FEMA, 2008, *Local Multi-Hazard Mitigation Planning Guidance*

participating jurisdictions to update the current 2009 version of the Maricopa County Multi-Jurisdictional Hazard Mitigation Plan (2009 Plan).

**1.2 Official Record of Adoption**

Promulgation of the Plan is accomplished through formal adoption of official resolutions by the governing body for each participating jurisdiction in accordance with the authority and powers granted to those jurisdictions by the State of Arizona and/or the federal government. Participating jurisdictions in the Plan include:

Counties	Tribes	Cities	Towns	Other
<ul style="list-style-type: none"> <li>• Maricopa</li> </ul>	<ul style="list-style-type: none"> <li>• Fort McDowell Yavapai Nation</li> <li>• Salt River Pima-Maricopa Indian Community</li> </ul>	<ul style="list-style-type: none"> <li>• Avondale</li> <li>• Chandler</li> <li>• El Mirage</li> <li>• Glendale</li> <li>• Goodyear</li> <li>• Litchfield Park</li> <li>• Mesa</li> <li>• Peoria</li> <li>• Phoenix</li> <li>• Scottsdale</li> <li>• Surprise</li> <li>• Tempe</li> <li>• Tolleson</li> </ul>	<ul style="list-style-type: none"> <li>• Buckeye</li> <li>• Carefree</li> <li>• Cave Creek</li> <li>• Fountain Hills</li> <li>• Gila Bend</li> <li>• Gilbert</li> <li>• Guadalupe Valley</li> <li>• Paradise Valley</li> <li>• Queen Creek</li> <li>• Wickenburg</li> <li>• Youngtown</li> </ul>	<ul style="list-style-type: none"> <li>• Salt River Project</li> </ul>

Each jurisdiction will keep a copy of their official resolution of adoption located in Appendix A of their copy of the Plan.

**1.3 FEMA Approval Letter**

The Plan was submitted to the Arizona Division of Emergency Management (ADEM), the authorized state agency, and FEMA, for review and approval. FEMA’s approval letter is provided on the following page.

*[Insert FEMA Approval Letter Here]*

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## SECTION 2: INTRODUCTION

### 2.1 Plan History

In 2003 and 2004, Maricopa County, two Indian Tribes, and all incorporated cities and towns in Maricopa County, participated in a multi-jurisdictional mitigation planning effort that resulted in the development of a multi-jurisdictional hazard mitigation plan with separate stand-alone annexes that covered each participating jurisdiction. The following is a list of those annexes:

- *Maricopa County Unincorporated Area Hazard Mitigation Plan*
- *City of Avondale Hazard Mitigation Plan*
- *Town of Buckeye Hazard Mitigation Plan*
- *Town of Carefree Hazard Mitigation Plan*
- *Town of Cave Creek Hazard Mitigation Plan*
- *City of Chandler Hazard Mitigation Plan*
- *City of El Mirage Hazard Mitigation Plan*
- *Fort McDowell Yavapai Nation Hazard Mitigation Plan*
- *Town of Fountain Hills Hazard Mitigation Plan*
- *Town of Gila Bend Hazard Mitigation Plan*
- *Town of Gilbert Hazard Mitigation Plan*
- *City of Glendale Hazard Mitigation Plan*
- *City of Goodyear Hazard Mitigation Plan*
- *Town of Guadalupe Hazard Mitigation Plan*
- *City of Litchfield Park Hazard Mitigation Plan*
- *City of Mesa Hazard Mitigation Plan*
- *Town of Paradise Valley Hazard Mitigation Plan*
- *City of Peoria Hazard Mitigation Plan*
- *City of Phoenix Hazard Mitigation Plan*
- *Town of Queen Creek Hazard Mitigation Plan*
- *Salt River Pima-Maricopa Indian Community Hazard Mitigation Plan*
- *City of Scottsdale Hazard Mitigation Plan*
- *City of Surprise Hazard Mitigation Plan*
- *City of Tempe Hazard Mitigation Plan*
- *City of Tolleson Hazard Mitigation Plan*
- *Town of Wickenburg Hazard Mitigation Plan*
- *Town of Youngtown Hazard Mitigation Plan*

Collectively and individually, these plans will be referred to herein as the 2004 Plan(s). The 2004 Plans received official FEMA approval on November 29, 2004. Additional planning was performed with the Fort McDowell Yavapai Nation to upgrade their 2004 Plan to a “state level” plan, which was approved by FEMA and retains the November 29, 2004 approval date.

In October of 2008, Maricopa County Department of Emergency Management (MCDEM) initiated a planning process with local and tribal jurisdictions to consolidate and update the 2004 Plans into a true multi-jurisdictional plan with annexes for the tribal elements corresponding to the Fort McDowell Yavapai Nation and the Salt River Pima-Maricopa Indian Community. The resulting 2009 *Maricopa County Multi-Jurisdictional Hazard Mitigation Plan*, complete with tribal annexes and herein referred to as the 2009 Plan, was submitted to FEMA and received official approval on April 30, 2010. The 2009 Plan is at the end of the 5-year planning cycle and expired April 30, 2015.

In early 2014, MCDEM worked to successfully secure grant funding to perform the required 5-year update. The planning process was officially kicked off in August 2014, with the first internal planning team meeting being convened on August 26, 2014.

## 2.2 Plan Purpose and Authority

The purpose of the Plan is to identify natural hazards that impact the various jurisdictions located within Maricopa County, assess the vulnerability and risk posed by those hazards to community-wide human and structural assets, develop strategies for mitigation of those identified hazards, present future maintenance procedures for the plan, and document the planning process. The Plan is prepared in compliance with DMA 2000 requirements and represents a multi-jurisdictional update of the 2009 Plan.

Maricopa County and all of the cities and towns are political subdivisions of the State of Arizona and are organized under Title 9 (cities/towns) and Title 11 of the Arizona Revised Statutes (ARS). The Salt River Project Agricultural Improvement and Power District is also a political subdivision of the State and is organized under Title 48 of the ARS. The Fort McDowell Yavapai Nation is a federally recognized sovereign nation that was created by Executive Order on September 15, 1903 and is governed by a Tribal Council that is elected by tribal members pursuant to the Tribe's Constitution. The Salt River Pima-Maricopa Indian Community was established by Executive Order on June 14, 1879 and is governed by a community council comprised of a president, vice president and tribal council. As such, each of these entities are empowered to formally plan and adopt the Plan on behalf of their respective jurisdictions.

Funding for the development of the Plan was provided through a PDM planning grant obtained by MCDEM through the State of Arizona from FEMA, with MCDEM providing the matching funds. JE Fuller/Hydrology & Geomorphology (JEF) was retained by MCDEM to provide consulting services in guiding the update planning process and Plan development.

## 2.3 General Plan Description

The Plan is generally arranged and formatted to be consistent with the 2013 State of Arizona Multi-Hazard Mitigation Plan (State Plan) and is comprised of the following major sections:

**Planning Process** – this section summarizes the planning process used to update the Plan, describes the assembly of the planning team and meetings conducted, and summarizes the public involvement efforts.

**Community Description** – this section provides an overall description of the participating jurisdictions and the County as a whole.

**Risk Assessment** – this section summarizes the identification and profiling of natural hazards that impact the County and the vulnerability assessment for each hazard that considers exposure/loss estimations and development trend analyses.

**Mitigation Strategy** – this section presents a capability assessment for each participating jurisdiction and summarizes the Plan mitigation goals, objectives, actions/projects, and strategy for implementation of those actions/projects.

**Plan Maintenance Strategy** – this section outlines the proposed strategy for evaluating and monitoring the Plan, updating the Plan in the next 5 years, incorporating plan elements into existing planning mechanisms, and continued public involvement.

**Plan Tools** – this section includes a list of Plan acronyms and a glossary of definitions.

## SECTION 3: PLANNING PROCESS

**§201.6 (b):** *Planning process. An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:*

- (1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;*
- (2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and*
- (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.*

**§201.6(c)(1):** *[The plan shall include...]* (1) *Documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.*

This section includes the delineation of various DMA 2000 regulatory requirements, as well as the identification of key stakeholders and planning team members within Maricopa County. In addition, the necessary public involvement meetings and actions that were applied to this process are also detailed.

### 3.1 Update Process Description

MCDEM applied for and received a PDM planning grant to fund a multi-jurisdictional effort to review and update the 2009 Plan. MCDEM solicited letters of support from all 2009 Plan towns, cities, and Tribes to aid in the preparation of the PDM planning grant application. Once the grant was received, the County then selected JE Fuller/ Hydrology & Geomorphology, Inc. (JEF) to work with the participating jurisdictions and guide the Plan update process. An initial project kick-off meeting between JEF and MCDEM was convened August 26, 2014 to line up the meeting dates and agendas for the coming planning efforts, discuss the plan format and potential changes to the Plan outline and content to address recent FEMA guidelines, request initial data, and other administrative tasks. Six planning team meetings, three make-up meetings, and several other individual community outreach meetings were conducted over the period of September 2014 to February 2015, along with all the work required to collect, process, document updated data, and make changes to the Plan. Details regarding updated key contact information and promulgation authorities, the planning team selection, participation, and activities, and public involvement are discussed in the following sections.

### 3.2 Previous Planning Process Assessment

The first task of preparation for the Plan update, was to evaluate the process used to develop the 2009 Plan. This was initially discussed by MCDEM and JEF in the August 26, 2014 kick-off meeting with the goal of establishing the framework for the planning effort ahead. The 2009 Plan process employed a multi-jurisdictional approach with representation from each participating jurisdiction in larger multi-jurisdictional planning team meetings wherein concepts would be presented and discussed, and work assignments would be made for completion by each jurisdiction. Supplemental follow-up sessions with one or more jurisdictions by both MCDEM and JEF were also employed on an as-needed basis to assist jurisdictions with completing assignments on schedule. MCDEM and JEF agreed to continue with the same approach due to the success of the 2008-2009 planning effort in getting to an approved plan both in time and budget.

The Plan update process was presented and discussed at the first multi-jurisdictional planning team meeting for comment and concurrence of the Plan jurisdictions. Over two-thirds of the planning team members were new to the hazard mitigation planning process altogether, so there was very little institutional knowledge of the prior process. Those that were returning team members felt the process worked well and were in favor of using it again.

### 3.3 Planning Team

#### 3.3.1 General

Two levels of planning teams were organized for this Plan update. The first was a Multi-Jurisdictional Planning Team (MJPT) that was comprised of one or more representatives from each participating jurisdiction. The second level planning team was the Local Planning Team (LPT).

The role of the MJPT was to work with the planning consultant to perform the coordination, research, and planning element activities required to update the 2009 Plan. Attendance by each participating jurisdiction was required for every MJPT meeting as the meetings were structured to progress through the plan update process. Steps and procedures for updating the 2009 Plan were presented and discussed at each MJPT meeting, and worksheet assignments were normally given. Each meeting built on information discussed and assignments made at the previous meeting. The MJPT representatives also had the responsibility of being the liaison to the LPT, and were tasked with:

- Conveying information and assignments received at the MJPT meetings to the LPT
- Ensuring that all requested worksheets were completed fully and returned on a timely basis
- Arranging for review and official adoption of the Plan

The function and role of the LPT was to:

- Provide support and data
- Assist the MJPT representative in completing each assignment
- Make planning decisions regarding plan update components
- Review the Plan draft documents

### *3.3.2 Primary Point of Contact*

Table 3-1 summarizes the primary points of contact (PPOC) identified for each participating jurisdiction.

### *3.3.3 Planning Team Assembly*

At the beginning of the update planning process, MCDEM organized and identified members for the MJPT by initiating contact with the PPOCs identified in the 2009 Plan, their equivalent, or the emergency manager for all 24 incorporated towns and cities, the two Tribes, and Salt River Project. In August 2014, MCDEM distributed a kick-off letter with an attached calendar of dates to the identified MJPT members announcing the start of the planning effort. The letter template and meeting schedule are provided in Appendix B. The participating members of the MJPT are summarized in Table 3-2. Returning planning team members from the 2009 Plan are highlighted.

Lists of LPT members and their respective roles for each jurisdiction are provided in Appendix B.

<b>Table 3-1: List of jurisdictional primary points of contact</b>					
Jurisdiction	Name	Department / Position	Address	Phone	Email
Avondale	Tiffany Rivas	Emergency Management – Emergency Management Officer	1825 N. 107 <sup>th</sup> Ave. Avondale, AZ 85323	623.333.1027	trivas@avondale.org
Buckeye	Travis Rand	Fire Department – Battalion Chief	21699 W. Yuma Rd., Ste. 101 Buckeye, AZ 85326	623.349.6700	trand@buckeyeaz.gov
Carefree	John Kraetz	Fire Department – Fire Chief	37401 N. Tom Darlington Dr. P.O. Box 753 Carefree, AZ 85377	602.616.6363	john_kraetz@rmetro.com
Cave Creek	Adam Stein	Marshal’s Office – Town Marshal / Emergency Services Coordinator	37622 N. Cave Creek Rd. Cave Creek, AZ 85331	480.488.6636	astein@cavecreek.org
Chandler	Keith Hargus	Fire, Health, and Medical Department – Battalion Chief	221 E. Boston St. Chandler, AZ 85225	480.782.2161	keith.hargus@chandleraz.gov
El Mirage	Jim Wise	Fire Department – Fire Chief	13601 N. El Mirage Rd. El Mirage, AZ 85335	623.251.3509	jwise@cityofelmirage.org
Fountain Hills	Randy Roberts	Fire Department – Fire Chief	16426 E. Palisades Blvd. Fountain Hills, AZ 85268	480.837.2820	rroberts@fh.az.gov
Fort McDowell Yavapai Nation	Mark Openshaw	Fire Department – Fire Chief	10755 N. Fort McDowell Rd., Ste. 4 Fort McDowell, AZ 85264	480.789.7520	mopenshaw@ftmcdowell.org
Gila Bend	Terry Weter	Public Works – Director	644 W. Pima St. P.O. Box A Gila Bend, AZ 85337	928.683.2255	tweter@gilabendaz.org
Gilbert	Sheri Gibbons	Fire Department – Emergency Manager	85 E. Civic Center Dr. Gilbert, AZ 85296	480.503.6333	sherig@ci.gilbert.az.us
Glendale	Anthony Butch	Fire Department-Office of Emergency Management – Captain / Emergency Planner	6829 N. 58th Dr., Glendale, AZ 85301	623.872.5090	abutch@glendaleaz.com

**MARICOPA COUNTY  
MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN**

2015

<b>Table 3-1: List of jurisdictional primary points of contact</b>					
Jurisdiction	Name	Department / Position	Address	Phone	Email
Goodyear	Othell Newbill	Fire Department – Emergency Manager	14455 W. Van Buren St., Ste. E-103 Goodyear, AZ 85338	623.882.7112	othell.newbill@goodyearaz.gov
Guadalupe	Wayne Clement	Fire Department – Fire Chief / Emergency Manager	8413 S. Avenida del Yaqui Guadalupe, AZ 85283	480.839.1112	wclement@guadalupeaz.org
Litchfield Park	Carla Reese	City Clerk and Emergency Manager	214 W. Wigwam Blvd. Litchfield Park, AZ 85340	623.935.5033	creece@litchfield-park.org
Maricopa County	Andrew Brady	Department of Emergency Management – Emergency Services Planner	5630 E. McDowell Rd. Phoenix, AZ 85008	602.273.1411	andrewbrady@mail.maricopa.gov
Mesa	Gabe Sezate	Fire and Medical Department – Emergency Manager	13 W. 1st Street Mesa, AZ 85201	480.644.3366	gabe.sezate@mesaaz.gov
Paradise Valley	Robert Lee	Building Safety – Building Safety Manager / Emergency Manager	6401 E. Lincoln Dr. Paradise Valley, AZ 85253	480.348.3631	rlee@paradisevalleyaz.gov
Peoria	Glenn Jones	Emergency Management – Emergency Management Coordinator	8401 W. Monroe Street Peoria, AZ 85345	623.773.5207	glenn.jones@peoriaaz.gov
Phoenix	Jake Van Hook	Fire Department – Fire Captain	150 S. 12th St. Phoenix AZ 85034	480.332.6917	jake.van.hook@phoenix.gov
Queen Creek	Joe LaFortune	Fire and Medical Department – Emergency Management Coordinator	22358 S. Ellsworth Rd. Queen Creek, AZ 85142	480.358.3502	joe.lafortune@queencreek.org
Salt River Pima- Maricopa Indian Community	Cliff Puckett	Fire Department-Office of Emergency Management – Emergency Manager	10005 E. Osborn Rd. Scottsdale, AZ 85256	480.362.7927	cliff.puckett@srbmic-nsn.gov
Salt River Project	Patrick O’Toole	Business Continuity and Emergency Management – Principal Planning Analyst	P.O. Box 52025, MS PAB342 Phoenix, AZ 85072	602.236.5294	patrick.otoole@srbnet.com
Scottsdale	Brent Olson	City Manager’s Office - Emergency Management Division – Emergency Management Coordinator	8401 E. Indian School Rd. Scottsdale, AZ 85251	480.312.1832	bolson@scottsdaleaz.gov

<b>Table 3-1: List of jurisdictional primary points of contact</b>					
Jurisdiction	Name	Department / Position	Address	Phone	Email
Surprise	Brenden Espie	Fire and Medical Department – Battalion Chief	14250 W. Statler Plaza, Ste. 101 Surprise, AZ 85374	623.222.5027	brenden.espie@surpriseaz.com
Tempe	Robert Downing	Fire Medical Rescue Departments – Special Operations Deputy Chief	P.O. Box 5002 Tempe, AZ 85280 or 1400 E. Apache Blvd. Tempe, AZ 85281	480-858-7213	robert_downing@tempe.gov
Tolleson	Bob Hansen	Fire Department – Battalion Chief	9169 W. Monroe St. Tolleson, AZ 85353	623.474.4981	bhansen@tollesonaz.org
Wickenburg	Ed Temerowski	Fire Department- Emergency Management Division – Fire Chief / Emergency Manager	155 N. Tegner, Ste. C Wickenburg, AZ 85390	602.399.1419	etemerowski@wickenburgaz.org
Youngtown	Mike Kessler	Public Safety Department – Public Safety Manager	12030 Clubhouse Sq. Youngtown, AZ 85363	623.933.8286	mkessler@youngtownaz.org

**Table 3-2: Summary of multi-jurisdictional planning team participants**

<b>Name</b>	<b>Jurisdiction / Organization</b>	<b>Department / Position</b>	<b>Planning Team Role</b>
Hector Andrade	Maricopa County	Department of Emergency Management	MJPT participant Provided planning assistance to cities and towns
John Bailey	Maricopa County	Sheriff's Office - Counterterrorism / Homeland Security	MJPT participant Provided EMAP input on human caused hazards
Meredith Bond	Maricopa County	Department of Emergency Management	MJPT PPOC, Jurisdictional PPOC and lead coordinator for LPT
Michael Boule	City of Surprise	Engineering	MJPT participant Engineering support
Anthony Butch	City of Glendale	Fire / Emergency Management	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Kendra Cea	APS	Technical Services	MJPT participant
Wayne Clement	Town of Guadalupe	Fire Department	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Sonny Culbreth	City of Litchfield Park	Emergency Management	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Brian Darling	City of Mesa	Fire Department	MJPT participant Proxy attendance for PPOC
Jesse Delmar	Fort McDowell Yavapai Nation	Police Department	MJPT participant Public safety input to LPT
Gary Ells	City of Tempe	Fire Department / Special Ops	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Brenden Espie	City of Surprise	Fire Department	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
William Finn	City of Phoenix	Fire Department	MJPT participant Proxy attendance for PPOC
Mark Frago	Flood Control District of Maricopa County	Floodplain Management	MJPT participant NFIP and CRS assistance
Joe Fusco	City of El Mirage	Fire Department	MJPT participant Assisted with completion of work assignments
Ken Galluppi	Arizona State University		MJPT participant Representation of ASU on MJPT
Sheri Gibbons	Town of Gilbert	Emergency Management	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Anne Guest	Department of Emergency and Military Affairs	Division of Emergency Management	MJPT participant Provided HMGP details for current disaster
Bob Hansen	City of Tolleson	Fire Department	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Keith Hargis	City of Chandler	Fire, Health, Medical	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Rob Harter	City of Glendale	Fire / Emergency Management	MJPT participant Assisted with completion of work assignments
Erin Hausauer	City of Avondale	Emergency Management	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Stacy Irvine	City of Peoria	Fire / Emergency Management	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Glenn Jones	City of Peoria	Emergency Management / Safety	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Tom Jones	Department of Emergency and Military Affairs	Division of Emergency Management	MJPT participant Provided HMGP details for current disaster
Mike Kessler	Town of Youngtown	Public Safety Department	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Kevin Kottmer	Maricopa County	Department of Transportation / Traffic Operations	MJPT participant Resource for county-wide transportation planning
John Kraetz	Town of Carefree	Fire Department	MJPT representative and jurisdictional PPOC Lead coordinator for LPT

**Table 3-2: Summary of multi-jurisdictional planning team participants**

<b>Name</b>	<b>Jurisdiction / Organization</b>	<b>Department / Position</b>	<b>Planning Team Role</b>
Mitchell Lach	Maricopa County	Department of Public Health - Office of Preparedness and Response	MJPT participant Provided EMAP input on human caused hazards
Joe LaFortune	Town of Queen Creek	Fire & Medical	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Sara Latin	Maricopa County	Department of Emergency Management	MJPT co-representative and LPT member Assisted with completing assignments
Bob Lee	Town of Paradise Valley	Emergency Management	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Ken Lewis	Salt River Project	Emergency Management	MJPT participant Assisted with completing assignments
John Moede	City of Scottsdale	Emergency Management	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Tim Murphy	Flood Control District of Maricopa County	Floodplain Management	MJPT participant Resource for County-wide floodplain management data and practices
Othell Newbill	City of Goodyear	Emergency Management / Fire Department	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Scott Ogden	JE Fuller/ Hydrology and Geomorphology, Inc.	Contract Consultant	Provide consulting guidance to MJPT
Mark Openshaw	Fort McDowell Yavapai Nation	Fire Department	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Patrick O'Toole	Salt River Project	Business Continuity and Emergency Management	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
John Padilla	APS	Transmission & Distribution	MJPT participant
Rudolfo Perez	Maricopa County	Department of Emergency Management	MJPT participant Provided planning assistance to cities and towns
Cliff Puckett	Salt River-Pima Maricopa Indian Community	Emergency Management	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Travis Rand	City of Buckeye	Fire Department	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Tiffany Rivas	City of Avondale	Emergency Management	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Randy Roberts	Town of Fountain Hills	Fire Department	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Gabe Sezate	City of Mesa	Fire Department	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Pete Shiple	City of Buckeye	Fire Department	MJPT participant Proxy attendance for PPOC
Adam Stein	Town of Cave Creek	Marshal's Office	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Farhad Tavassoli	Flood Control District of Maricopa County	Floodplain Management	MJPT participant NFIP and CRS assistance
Ed Termerowski	Town of Wickenburg	Fire / Emergency Management	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Jake Van Hook	City of Phoenix	Fire Department	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Pete Weaver	Maricopa County	Department of Emergency Management	MJPT representative and jurisdictional PPOC Lead coordinator for LPT
Jim Wise	City of El Mirage	Fire Department	MJPT representative and jurisdictional PPOC Lead coordinator for LPT

**3.3.4 Planning Team Activities**

The MJPT met for the first time on September 11, 2014 to begin the plan update process. One additional meeting covering the same material was convened on October 2, 2014 for jurisdictions unable to attend the September 11<sup>th</sup> meeting. Four more meetings and two make up sessions were convened on about a monthly basis to step through the plan review and update process. Each MJTP member was

requested to bring a copy of the 2009 Plan for review and reference, and was instructed to review the section being updated in advance of the meeting that section was discussed. Following each MJPT meeting, the PPOC for each jurisdiction would convene a meeting of the LPT to work through the assigned worksheets as needed. There were also six other outreach meetings conducted by MCDEM staff and JE Fuller, with individual communities to assist them in the development of the plan elements. Table 3-3 summarizes the MJPT, Tribal, and outreach meetings convened, along with a brief list of the agenda items discussed. Detailed meeting notes for all of the MJPT meetings are provided in Appendix B. There are no details of the LPT meetings.

<b>Table 3-3: Summary of planning meetings convened as part of the plan update process</b>	
<b>Meeting Type, Date, and Location</b>	<b>Meeting Agenda</b>
Pre-Planning Kick-Off Meeting  August 26, 2014  MCDEM Conference Room Phoenix, AZ	<ul style="list-style-type: none"> <li>• Discuss schedule of MJPT meetings</li> <li>• Discuss Plan outline and changes required by 2011 FEMA guidelines</li> <li>• Strategize the MJPT list</li> <li>• Discuss roles of MCDEM and JEF in the overall planning process</li> </ul>
MJPT Meeting No. 1  <u>Initial Meeting:</u> September 11, 2014 MC Animal Care and Control Room 103 Phoenix, AZ  <u>Make Up Meeting:</u> October 2, 2014 JEF Conference Room Tempe, AZ	<ul style="list-style-type: none"> <li>• <b>Initial Introductions</b></li> <li>• <b>Discussion of Scope And Schedule</b></li> <li>• <b>DMA2K Overview And Update Requirements</b> <ul style="list-style-type: none"> <li>○ General DMA2K Overview</li> <li>○ Update Requirements (New Crosswalk)</li> <li>○ Proposed Outline for New Plan</li> </ul> </li> <li>• <b>Planning Process</b> <ul style="list-style-type: none"> <li>○ Discussion Of Last Planning Process</li> <li>○ Planning Team Roles And Responsibilities</li> </ul> </li> <li>• <b>Public Involvement</b> <ul style="list-style-type: none"> <li>○ Discuss Past Strategy</li> <li>○ Formulate New Strategy</li> <li>○ Additional Invitations</li> </ul> </li> <li>• <b>Risk Assessment</b> <ul style="list-style-type: none"> <li>○ Initial Hazard List Identification</li> <li>○ Critical Facilities And Infrastructure Review And Update</li> <li>○ Initial Data Collection</li> </ul> </li> <li>• <b>Next Steps</b></li> </ul>
MJPT Meeting No. 2  <u>Initial Meeting:</u> October 14, 2014 FCDMC Ops Building Phoenix, AZ  <u>Make Up Meeting:</u> October 30, 2014 JEF Conference Room Tempe, AZ	<ul style="list-style-type: none"> <li>• <b>Task Assignment Status Review</b></li> <li>• <b>Mitigation Strategy</b> <ul style="list-style-type: none"> <li>○ Capability Assessment                             <ul style="list-style-type: none"> <li>▪ Legal And Regulatory (Codes / Ordinances)</li> <li>▪ Administrative And Technical Staff Resources</li> <li>▪ Fiscal Capabilities</li> <li>▪ Plans / Manuals / Guidelines / Studies</li> </ul> </li> <li>○ Plan Integration And Incorporation                             <ul style="list-style-type: none"> <li>▪ Past Plan Cycle</li> <li>▪ Future Strategy</li> </ul> </li> <li>○ Existing Mitigation Action/Project Assessment</li> <li>○ NFIP Statistics And Compliance</li> </ul> </li> <li>• <b>Action Item Review And Next Steps</b></li> </ul>

<b>Table 3-3: Summary of planning meetings convened as part of the plan update process</b>	
<b>Meeting Type, Date, and Location</b>	<b>Meeting Agenda</b>
Community Assistance Meeting for the Town of Guadalupe  November 18, 2014  MCDEM's Office Phoenix, AZ	<ul style="list-style-type: none"> <li>• <b>Provided assistance with completion of worksheet assignments</b></li> </ul>
Community Assistance Meeting for the City of Guadalupe  November 18, 2014  Phoenix City Hall Phoenix, AZ	<ul style="list-style-type: none"> <li>• <b>Provided assistance with completion of worksheet assignments</b></li> </ul>
MJPT Meeting No. 3  December 9, 2014  FCDMC - Adobe Room Phoenix, AZ	<ul style="list-style-type: none"> <li>• <b>Task Assignment Status Review</b></li> <li>• <b>Risk Assessment</b> <ul style="list-style-type: none"> <li>○ Review Hazard Profile Data and Mapping</li> <li>○ Historic Hazard Database Review</li> <li>○ CPRI Analysis</li> <li>○ Repetitive Loss Properties</li> <li>○ Development Trends                             <ul style="list-style-type: none"> <li>▪ Past Plan Cycle</li> <li>▪ Future Development</li> </ul> </li> </ul> </li> <li>• <b>Action Item Review And Next Steps</b></li> </ul>
Community Assistance Meeting for the City of Buckeye  December 11, 2014  MCDEM's Office Phoenix, AZ	<ul style="list-style-type: none"> <li>• <b>Provided assistance with completion of worksheet assignments</b></li> </ul>
Community Assistance Meeting for the City of Tempe  December 16, 2014  MCDEM's Office Phoenix, AZ	<ul style="list-style-type: none"> <li>• <b>Provided assistance with completion of worksheet assignments</b></li> </ul>
MJPT Meeting No. 4  January 6, 2015  FCDMC – Adobe Room Phoenix, AZ	<ul style="list-style-type: none"> <li>• <b>ADEM Update On AZ-DR-4203 HMGP</b></li> <li>• <b>Task Assignment Status Review</b></li> <li>• <b>Mitigation Strategy – Goals And Objectives</b> <ul style="list-style-type: none"> <li>○ Review State and Current Plan G&amp;Os</li> <li>○ Formulate G&amp;Os for 2015 Plan</li> </ul> </li> <li>• <b>Mitigation Strategy – Actions/Projects</b> <ul style="list-style-type: none"> <li>○ Action/Project Identification</li> <li>○ Implementation Strategy</li> </ul> </li> <li>• <b>Next Steps</b></li> </ul>

<b>Table 3-3: Summary of planning meetings convened as part of the plan update process</b>	
<b>Meeting Type, Date, and Location</b>	<b>Meeting Agenda</b>
MJPT Meeting No. 5  January 20, 2015  FCDMC – Adobe Room Phoenix, AZ	<ul style="list-style-type: none"> <li>• <b>Task Assignment Status Review</b></li> <li>• <b>Plan Maintenance Strategy</b> <ul style="list-style-type: none"> <li>○ Monitoring and Evaluation</li> <li>○ Plan Update Schedule</li> <li>○ Continued Public Involvement</li> </ul> </li> <li>• <b>Promulgation Process</b></li> <li>• <b>Public Involvement – Post Draft</b></li> <li>• <b>Next Steps</b></li> </ul>
Community Assistance Meeting for the City of Tolleson  January 29, 2015  MCDEM’s Office Phoenix, AZ	<ul style="list-style-type: none"> <li>• <b>Provided assistance with completion of worksheet assignments</b></li> </ul>
Community Assistance Meeting for the City of Tempe  May 27, 2015  JE Fuller’s Office Tempe, AZ	<ul style="list-style-type: none"> <li>• <b>Provided assistance with completion of worksheet assignments</b></li> </ul>

3.3.5 *Agency/Organization Participation*

The planning process used to develop the 2009 Plan included participation from several agencies and organizations which operate within or have jurisdiction over small and large areas of Maricopa County. For this update, a list of known and/or potential stakeholders not already involved in the MJPT was brainstormed and compiled at both the internal kickoff meeting and MJPT Meeting No. 1. Invitations were sent to the identified list via emails with an attached document that explains the DMA 2000 planning process and request for involvement. A copy of the letter attachment is provided in Appendix C. Personal invitations by MCDEM staff were also extended to the Gila, La Paz, Pinal, and Yavapai County emergency managers and mitigation staff at the Arizona Division of Emergency Management (ADEM), to participate in the planning meetings. In addition to the personal invitations, a broader invitation to all citizens within and near Maricopa County was indirectly extended via website postings and newspaper articles, which are discussed more thoroughly in Section 3.5.2. This approach was considered the best way to reach interested non-profits and businesses within the County and provide them an opportunity for participation in the planning process. Table 3-4 represents the list of all entities (except the participating jurisdictions) that were either directly invited or that responded to the public invitations:

<b>Table 3-4: List of agencies and organizations invited or participating in the planning process</b>	
<b>Agency / Organization</b>	<b>Contact Position</b>
Bureau of Indian Affairs	Josh Allen - Emergency Manager
Inter Tribal Council of Arizona	Nathan Nixon - Emergency Preparedness Program Coordinator
Bureau of Indian Affairs - Salt River Agency	Alan Sinclair - Fire Management Officer

<b>Table 3-4: List of agencies and organizations invited or participating in the planning process</b>	
<b>Agency / Organization</b>	<b>Contact Position</b>
Arizona State Land - Forestry Division	Jim Downey - District Forester
Bureau of Land Management - Phoenix District	Ken Shaver - Fire Prevention Specialist
Bureau of Land Management - Phoenix District	Fritz Mueller - Fire Operations Specialist
National Weather Service - Phoenix Forecast Office	Ken Waters - Warning Coordination Meteorologist
USFS - Tonto National Forest	Rocky Gilbert - Fire Management Officer
Arizona State University	Alan Clark - Emergency Manager Ken Galluppi –College of Technology and Innovation Professor
ASU State Climatologist Office	Nancy Selover - State Climatologist
Arizona Game and Fish Department	Fred Bloom - Engineering Supervisor
Arizona Geological Survey	Ann Youberg - Research Geologist
Southwest Gas	Kevin Thompson - Engineer
Arizona Public Service	John Padilla – Emergency Management Coordinator Kendra Cea – Technical Services Manager
Central Arizona Project	Randy Randolph - Civil Engineering Division Supervisor
Yavapai County Emergency Management	Denny Foulk - Emergency Management Coordinator
Pinal County Emergency Management	Chuck Kmet - Emergency Management Officer
La Paz County Emergency Services	Steve Biro - Emergency Services Director
Gila County Emergency Management	Debra Williams - Emergency Manager

An integral part of the planning process included coordination with agencies and organizations outside of the participating jurisdiction’s governance to obtain information and data for inclusion into the Plan or to provide more public exposure to the planning process. Much of the information and data that is used in the risk assessment is developed by agencies or organizations other than the participating jurisdictions. In some cases, the jurisdictions may be members of a larger organization that has jointly conducted a study or planning effort like the development of a community wildfire protection plan, participation in an area association of governments, or participation in a FEMA RiskMAP Discovery study. Examples of those data sets include the FEMA floodplain mapping, community wildfire protection plans, severe weather statistics, hazard incident reports, and regional comprehensive plans. The resources obtained, reviewed and compiled into the risk assessment are summarized in Section 3.6 and at the end of each subsection of Section 5.3 of this Plan. Jurisdictions needing these data sets

obtained them by requesting them directly from the host agency or organization, downloading information posted to website locations, or engaging consultants.

### **3.4 Public Involvement**

#### *3.4.1 Previous Plan Assessment*

The public involvement strategy for the 2009 Plan development included the publishing of public notices in the major newspapers that cover the greater Phoenix area, posting of similar public notices to jurisdiction websites with an included link to the full time website maintained on the Maricopa County servers. Additional notices inviting public participation were published in local and regional newspapers, jurisdictional newsletters, and flyer inserts to utility bills.

The second opportunity for public input was provided through the normal city/town/tribal council and/or county board of supervisors public meeting process associated with each jurisdiction's formal adoption of the 2009 Plan. The details of the meeting process varied from jurisdiction to jurisdiction, but typically included some form of advertisement of the meeting agenda two to four weeks in advance of the council/board meeting. In most cases, an informal, pre-adoption presentation of the 2009 Plan was made during a working session of the council/board. The final adoption of the resolutions was almost unanimously done as part of a consent agenda at a formal council/board meeting. There are no records of any public comment on the 2009 Plan adoption process. Because the process is required for any formal council/board action and has a built-in public notification and comment opportunity, the MJPT chose to continue using this process as one of the post-draft mechanisms for getting the Plan update before the public.

#### *3.4.2 Plan Update*

The opportunity for public involvement and input to the plan update process was accommodated using the same general strategy as the 2009 Plan. Public notices were published in the Arizona Republic and Valley Tribune. Participating jurisdictions also posted public notices to their respective websites that included a link to the full time website maintained on the Maricopa County servers. A copy of the 2009 Plan was made available on the County website along with contact information for the MJPT PPOC. Social media such as Facebook and Twitter were used by several jurisdictions to get the word out. There were also additional notices published in local newspapers, jurisdictional newsletters, and utility bill inserts.

No responses were received from the first round of notices and four people from the general public (an ASU professor and his intern) and stakeholder invitation list (representatives from APS) attended at least one of the MJPT meetings (See Table 3-2).

A second wave of post-draft public notices was posted to jurisdiction websites and a copy of the draft Plan was posted to the County website for review and comment. Interested citizens were also encouraged to participate in the local community adoption process which, depending upon the jurisdiction, included a formal public hearing and in some cases, a prior informal presentation.

Copies of the public notices, web pages, and newspaper notices are provided in Appendix C. Other than those mentioned, there were no substantive public comments received.

### **3.5 Reference Documents and Technical Resources**

Over the course of the update planning process, numerous other plans, studies, reports, and technical information were obtained and reviewed for incorporation or reference purposes. The majority of sources referenced and researched pertain to the risk assessment and the capabilities assessment. To a lesser extent, the community descriptions and mitigation strategy also included some document or technical information research. Table 3-5 provides a reference listing of the primary documents and technical resources reviewed and used in the Plan. Detailed bibliographic references for the risk assessment are provided at the end of each hazard risk profile in Section 5.3. Other bibliographic references are provided as footnotes throughout the Plan.

<b>Table 3-5: List of resource documents and references reviewed and incorporated in the Plan update process</b>		
<b>Referenced Document or Technical Source</b>	<b>Resource Type</b>	<b>Description of Reference and Its Use</b>
American Society of Civil Engineers	Technical Reference	Source for design wind speed data.
Arizona Department of Water Resources	Hazard Data	Source for dam failure, drought, and subsidence data
State of Arizona Hazard Mitigation Plan (2013)	Hazard Data Mitigation Data	Some of the hazard data and mitigation information published in the State Plan are used and incorporated into the Plan update.
Arizona Geological Survey	Hazard Data	Source for fissure, landslide and subsidence data
Arizona State Land Department – Forestry Division	Hazard Data	Source for wildfire data associated with State Land
Bureau Net (2015)	Website Database	Source for NFIP statistics.
Comprehensive Floodplain Management Plan and Program Report (FCDMC – 2009)	Technical and Planning Resource	The FCDMC’s Comprehensive Floodplain Management Plan is a source for flooding data and mitigation strategies envisioned for the areas served by the District.
Discovery Report for Phoenix Metro Valley Watersheds (2013)	Technical and Data Resource	Flood related hazard data, areas of mitigation interest, and mitigation strategies are identified in the Discovery Report and are incorporated as appropriate into the Plan.
InciWeb – Incident Information System (2015)	Wildfire Data	Source wildfire incident information for historical hazard and profile information, specifically for Horseshoe 2 and Monument Fire.
Environmental Working Group’s Farm Subsidy Database (2015)	Website Database	Source of disaster related agricultural subsidies. Used in the risk assessment.
Federal Emergency Management Agency	Technical and Planning Resource	Resource for HMP guidance (How-To series), floodplain and flooding related NFIP data (mapping, repetitive loss, NFIP statistics), and historic hazard incidents. Used in the risk assessment and mitigation strategy.
U.S. Global Change Research Program	Technical and Data Resource	Source for National Climate Assessment reports and documentation with discussions on climate change.
HAZUS-MH	Technical Resource	Based data sets within the program were used in the vulnerability analysis.
Maricopa Association of Governments	Technical and Data Resource	Source for current demographic and economic data for the county.
Maricopa County Multi-Jurisdictional Hazard Mitigation Plan (2009)	Hazard Mitigation Plan	FEMA approved hazard mitigation plan that formed the starting point for the update process.
Maricopa County Community Wildfire Protection Plan (2010)	CWPP	Source for wildfire history and risk data.

<b>Table 3-5: List of resource documents and references reviewed and incorporated in the Plan update process</b>		
<b>Referenced Document or Technical Source</b>	<b>Resource Type</b>	<b>Description of Reference and Its Use</b>
Maricopa County Community Wildfire Protection Plan – 5 Year Update (2014)	CWPP	Source for wildfire history and risk data, as well as updated mitigation strategies
National Climatic Data Center	Technical Resource	Online resource for weather related data and historic hazard event data. Used in the risk assessment.
National Integrated Drought Information System (2015)	Technical Resource	Source for drought related projections and conditions. Used in the risk assessment.
National Response Center	Technical Resource	Source of traffic related HAZMAT incidents and rail accidents. Used in the risk assessment.
National Weather Service	Technical Resource	Source for hazard information, data sets, and historic event records. Used in the risk assessment.
National Wildfire Coordination Group (2015)	Technical Resource	Source for historic wildfire hazard information. Used in the risk assessment.
Standard on Disaster/Emergency Management and Business Continuity Programs (2000)	Standards Document	Used to establish the classification and definitions for the asset inventory. Used in the risk assessment.
U.S. Army Corps of Engineers	Dam Inventory	Source for dam locations and characteristics
U.S. Bureau of Land Management	GIS Data	Source for land ownership data
U.S. Census Bureau	Technical Data	TIGER/Line shape file for county census block data was used to obtain block boundaries, population, and housing units
U.S. Forest Service	Technical Data	Source for local wildfire data. Used in the risk assessment.
U.S. Geological Survey	Technical Data	Source for geological hazard data and incident data. Used in the risk assessment.
Jurisdictional General Plans	Planning and Hazard Data	General Plans prepared by each of the various jurisdictions summarizes the long-term growth strategies and can provided data regarding development trends.
Western Regional Climate Center	Website Data	Online resource for climate data used in climate discussion of Section 5
Zillow Real Estate Values	Website Reference	Obtained home value indexes for incorporated and unincorporated areas of Maricopa County to use for residential values in vulnerability assessment.

### 3.6 Plan Integration Into Other Planning Mechanisms

Incorporation and/or integration of the Plan into other planning mechanisms, either by content or reference, enhances a community’s ability to perform hazard mitigation by expanding the scope of the Plan’s influence. It also helps a community to capitalize on all available mechanisms at their disposal to accomplish hazard mitigation and reduce risk.

*3.6.1 Past Plan Incorporation/Integration Assessment*

A poll of the participating jurisdictions revealed that success of incorporating the 2009 Plan elements into other planning programs has varied over the past planning cycle. Ways in which the 2009 Plan has been successfully incorporated or referenced into other planning mechanisms by each jurisdiction are summarized in Tables 3-6 through 3-32.

*3.6.2 Five Year Plan Integration/Incorporation Strategy*

With the efficacy of integrating the 2009 Plan during the last cycle in view, the MJPT identified typical ways to use and incorporate the Plan over the next five-year planning cycle, as follows:

- Use of, or reference to, Plan elements in updates/revisions to codes, ordinances, general and/or comprehensive planning documents, and other long-term strategic plans.
- Integration of defined mitigation A/Ps into capital improvement plans and programming.
- Reference to Plan risk assessments during updates or revisions to land use planning and zoning maps.
- Resource for developing and/or updating emergency operations plans, community wildfire protection plans, emergency response plans, etc.
- Reference during grant application processes.
- Use of the Plan as a resource during LEPC meetings.

Specific opportunities for integrating and/or referencing the Plan into other planning mechanisms over the next five years are summarized by jurisdiction in Tables 3-6 to 3-32. In all cases, the jurisdiction’s PPOC will take responsibility to ensure that the Plan, risk assessment, goals and mitigation strategies are integrated and/or incorporated into the listed planning mechanism by participating in those efforts as they occur.

<b>Table 3-6: Plan integration history and future strategy for Avondale</b>	
<b><u>Plan Integration Over the Past Plan Cycle:</u></b> None. Plan integration has been challenging for Avondale as the emergency management position has had three people in five years. An additional challenge includes personnel changes in the leadership of most of the city departments including the City Manager’s office.	
<b><u>Plan Integration Strategy for Next Five Years:</u></b>	
<b>Planning Mechanism</b>	<b>Description of Planning Mechanism Opportunity</b>
City of Avondale Emergency Operations Plan	The city’s Hazard Mitigation is integrated into the Emergency Operations Plan through the risk analysis and assessment process. The Emergency Operations Plan identifies response methodology for hazards that face our community.
National Flood Insurance Program	The City of Avondale is part of the National Flood Insurance Program and works to maintain and address all requirements of NFIP on an annual basis. As flooding is one of the identified risks in the hazard mitigation plan, these programs work well together.
Avondale General Plan 2030	The city’s General Plan is intended to guide growth and development through 2030. Integration of the Plan with future updates of the General Plan will provide additional input into the identification of problematic growth areas and possible areas of mitigation interest.

<b>Table 3-7: Plan integration history and future strategy for Buckeye</b>	
<b>Plan Integration Over the Past Plan Cycle:</b>	
The City of Buckeye has gone through an extensive personnel change at all levels and with that said, none of the current directors, department heads, and faculty have ever seen this plan. Therefore, the 2009 MCMJHM plan was never used in conjunction with all of our other plans and surveys.	
<b>Plan Integration Strategy for Next Five Years:</b>	
<b>Planning Mechanism</b>	<b>Description of Planning Mechanism Opportunity</b>
City of Buckeye Key Fiber Assets and Mapping Report	The City of Buckeye commissioned a fiber mapping and infrastructure report to better understand key fiber optic communications assets in the city. This critical infrastructure runs through various ROW through the city and is the backbone fiber between Downtown Phoenix and Southern California. This report will be integrated into key assets inventory within hazard mitigation activities.
City of Buckeye Economic Development Action Agenda	The City of Buckeye initiated a comprehensive Economic Development Plan and Action Agenda in 2012. The plan includes key strategies for the attraction of high impact economic development projects which include health care technology, Mission Critical, Higher Education, Manufacturing / Logistics / Distribution, Remote Sensing, Entrepreneurship, and Retail. Protection and enhancement of significant capital investment, infrastructure and employment centers will be recognized within the 2015 plan.
Town of Buckeye 2007 General Plan Update	The city's General Plan is intended to guide growth and development within the city and its planning areas. Integration of the Plan with future updates of the General Plan will provide additional input into the identification of problematic growth areas and possible areas of mitigation interest. The Plan will also serve as a reference source during annual amendments to the General Plan.

<b>Table 3-8: Plan integration history and future strategy for Carefree</b>	
<b>Plan Integration Over the Past Plan Cycle:</b>	
In 2012, the Town of Carefree's General Plan was updated and ratified by the voters. Within the General Plan:	
<ul style="list-style-type: none"> <li>• The Environmental Element focuses on limiting encroachment within delineated floodplains and ensuring desert sensitive design solutions for drainage mitigation.</li> <li>• The Streets Element outlines that the town should maintain a circulation plan which services the needs of the local residents by implementing measures to improve the safety and efficiency of the network.</li> <li>• The Open Space Element focuses on preserving floodplains and washes in their natural state.</li> <li>• The Public Facilities Element focuses on supporting ongoing efforts internally and with external agencies to maintain a reliable, efficient and quality level of public services which includes but is not limited to public safety and emergency services.</li> </ul>	
Additionally, the town is in the process of updating and approving the Town/County's Emergency Operations Plan. This Plan outlines responsibilities and resources to address and mitigate both natural and man-made emergency responses.	
<b>Plan Integration Strategy for Next Five Years:</b>	
<b>Planning Mechanism</b>	<b>Description of Planning Mechanism Opportunity</b>
Transportation Planning	Over the next five (5) years, depending upon available funding, the town could explore improvements to numerous washes crossing public streets. If funding becomes available the planning, design and priority will integrate and reference the Plan.
The Emergency Operation Plan	The EOP is currently under consideration by the town. Any changes or updates will integrate and/or reference the Plan.

<b>Table 3-8: Plan integration history and future strategy for Carefree</b>	
Flood Control District Drainage Area Master Plan	The FCDMC is currently working on a drainage area master plan which bisects the southwestern corner of the town. Such Master Plan should reference the Plan.
Town of Carefree General Plan (2012)	The town's General Plan is intended to guide growth and development within the town and its planning areas. Integration of the Plan with future updates of the General Plan will provide additional input into the identification of problematic growth areas and possible areas of mitigation interest. The Plan will also serve as a reference source during annual amendments to the General Plan.

<b>Table 3-9: Plan integration history and future strategy for Cave Creek</b>	
<b>Plan Integration Over the Past Plan Cycle:</b>	
The Current Maricopa County Multi-Hazard Mitigation Plan was adopted after the Town of Cave Creek General Plan was adopted (2005) as well as after the Technical Design Guidelines #1 Grading and Drainage was adopted (2007). The mitigation plan was included and referred to during the update of the CWPP. No other integration measures have been accomplished within the last 5-years.	
<b>Plan Integration Strategy for Next Five Years:</b>	
<b>Planning Mechanism</b>	<b>Description of Planning Mechanism Opportunity</b>
Town of Cave Creek Emergency Operations Plan. (2007)	The Town of Cave Creek Emergency Operations Plan, helps the Town of Cave Creek staff and its citizens plan for and respond to a varied list of emergencies which may occur within the Town of Cave Creek, including evacuation plans. Items identified within the Multi-Hazard Mitigation Plan are incorporated into the Emergency Operations Plan.
Town of Cave Creek General Plan (2005)	The Town of Cave Creek's General Plan includes goals and objectives directly impacting floodplain development. The General Plan is due for re-adoption in 2015 and will support further integration of the Multi-Hazard Mitigation Plan.
Zoning Ordinance and Technical Design Guidelines	The Town of Cave Creek Zoning Ordinance and Technical Design Guidelines include specific requirements related to floodplain development.
Community Wildfire Protection Plan	The Town of Cave Creek Community Wildfire Protection Plan cross references items identified within the Multi-Hazard Mitigation Plan.

<b>Table 3-10: Plan integration history and future strategy for Chandler</b>	
<b>Plan Integration Over the Past Plan Cycle:</b>	
The City of Chandler utilized the prior 2009 Plan while developing the current 10-year Capital Improvement Program (CIP) and the Emergency Operations Plan (EOP). Regarding the CIP, city personnel within the Transportation and Development Department referenced the 2009 Plan when putting forward decision packages which improved storm water capacity within the city. Additionally, the 2009 Plan was referenced by the Fire, Health and Medical Department when completing the EOP for the City of Chandler, specifically the risk assessment components.	
<b>Plan Integration Strategy for Next Five Years:</b>	
<b>Planning Mechanism</b>	<b>Description of Planning Mechanism Opportunity</b>

<b>Table 3-10: Plan integration history and future strategy for Chandler</b>	
Emergency Operations Plan	The purpose of this plan is to provide effective emergency operations within the City of Chandler using the existing governmental organization and resources to the maximum extent possible. This includes a comprehensive risk analysis and threat assessment. The EOP is due to be revised in 2015 and should reference the Plan.
Capital Improvement Program	The CIP serves as a multi-year planning instrument used to identify needs and financing sources for public infrastructure improvements. The CIP is revised annually and will continue to reference the Plan.
General Plan	The City of Chandler General Plan serves as an expression of development policies used to guide development decisions. Its purpose is to establish clear direction that spells out public expectations and preferences to sustain a desirable community. The General Plan is due to be revised in 2015 and should reference the Plan.

<b>Table 3-11: Plan integration history and future strategy for El Mirage</b>	
<b>Plan Integration Over the Past Plan Cycle:</b>	
<p>With each of the following activities, the City has either incorporated elements from, or referenced the 2009 Plan:</p> <ul style="list-style-type: none"> <li>• El Mirage now has a COOP plan that is currently under revision.</li> <li>• Capital Improvement Plans (CIP) has been established for mid-long range planning for public safety.</li> <li>• The Agent Application has been corrected and completed in 2014.</li> </ul> <p>Cooperation between Fire, Police and City staffers has never been greater. Public Safety and Public Works are in constant communication with how services can be improved based on the CIP, the COOP plan, and public safety.</p>	
<b>Plan Integration Strategy for Next Five Years:</b>	
<b>Planning Mechanism</b>	<b>Description of Planning Mechanism Opportunity</b>
City of El Mirage General Plan, CIP programs, and Council Goals	The El Mirage general plan provides long-term guidance to the city’s growth. Development of the general plan and council goals setting are elements that are informed by either reference or incorporation of the risks, goals and mitigation of the actions within the projects of the Plan.
City of El Mirage General Plan, CIP programs, and Council Goals	<p>The City of El Mirage is consciously aware of the future needs that are not limited to the items below. The city has either updated each of these items or is concurrently working towards an update. With each update, the city will incorporate and/or reference the Plan.</p> <ul style="list-style-type: none"> <li>• Comprehensive or General Plans</li> <li>• Stormwater Master Plans</li> <li>• Capital Improvement Programs</li> <li>• Regional Plans (Transportation, Land Use, etc.)</li> <li>• Emergency Operations/Response Plans</li> <li>• Community Wildfire Protection Plans</li> <li>• Development Plans</li> <li>• Development Guidelines and/or Regulations</li> <li>• Ordinance Updates or Revisions</li> </ul>

<b>Table 3-12: Plan integration history and future strategy for Fort McDowell Yavapai Nation</b>	
<b>Plan Integration Over the Past Plan Cycle:</b> The Wildland Fire Management Plan, 2012, was commissioned by the Bureau of Indian Affairs, Salt River Agency on behalf of three tribal Nations, one of which is the Fort McDowell Yavapai Nation. The wildland fire management plan incorporated some of the existing 2009 Plan components in its development.	
<b>Plan Integration Strategy for Next Five Years:</b>	
<b>Planning Mechanism</b>	<b>Description of Planning Mechanism Opportunity</b>
Capital Projects Five Year plan	The Nation’s Capital Projects Five Year Plan elements are potentially affected by the risks, goals, and mitigation actions of the Plan. The Plan will be integrated or referenced during future reviews and updates of the Nation’s CIP.
Emergency Operations Plan Update	The Nation’s Emergency Operations Plan is required to be updated at least every three years. The elements of the Emergency Operations Plan are directly correlated to the risks, hazards, goals, and mitigation actions of the Plan.
Threat and Hazard Identification and Risk Assessment (THIRA)	The THIRA is updated annually and incorporates several elements of the Plan.

<b>Table 3-13: Plan integration history and future strategy for Fountain Hills</b>	
<b>Plan Integration Over the Past Plan Cycle:</b> The 2009 Plan was referenced in the development and implementation of several Capital Improvement Projects including: <ul style="list-style-type: none"> <li>• An upgraded culvert crossing of Ashbrook Wash at Bayfield Drive (Double 7’x12’ RCB)(Constr. 2015)</li> <li>• An upgraded culvert crossing of Ashbrook Wash at Saguaro Blvd. (Double 8’s12’ RCB)(Const. 2015)</li> <li>• A storm drain relieving the Saguaro Blvd./Palisades Blvd. intersection (48” S.D.)(Const. 2015)</li> <li>• Added sidewalk crossings at Ashbrook Wash on Del Cambre Drive (2010), and at Oxford Wash and Balboa Wash on Fountain Hills Blvd. (2011)</li> <li>• Upgraded catch basins on Saguaro Blvd. at Parkview Drive and south of Avenue of the Fountains (2010)</li> </ul>	
<b>Plan Integration Strategy for Next Five Years:</b>	
<b>Planning Mechanism</b>	<b>Description of Planning Mechanism Opportunity</b>
Town of Fountain Hills – General Plan	The Fountain Hills General Plan – 2010 provides long-term direction for the town’s growth. Most of the town’s drainage is through preserved natural or re-graded wash areas. The Plan will be referenced with any amendments or updates to the General Plan.
Capital Improvement Program	The town’s Capital Improvement Program provides project development for drainage improvement projects. As before, the Plan will serve as a reference for the identification of future CIP projects.

<b>Table 3-14: Plan integration history and future strategy for Gila Bend</b>	
<b>Plan Integration Over the Past Plan Cycle:</b>	
The town’s general plan is currently being modified to incorporate any changes necessary to accommodate the hazard mitigation plan elements that would be viable to the community. All CIP programs have attempted to integrate the 2009 Plan elements. Ordinances incorporate the hazard mitigation elements into them for land development, land disturbances, and transportation construction. The general plan will consider areas that will be utilized as groundwater recharge areas within the floodplain limits. Development should be limited to grazing, nurseries, and recreation with no housing structures being built.	
<b>Plan Integration Strategy for Next Five Years:</b>	
<b>Planning Mechanism</b>	<b>Description of Planning Mechanism Opportunity</b>
Capital Improvement Programs Regional Plans (Transportation, Land Use, etc.)	The town’s CIP and Regional plans serve as guidance documents for the town’s growth and resources. Development of these plan elements are informed by either reference or incorporation of the risks, goals, and mitigation actions/projects of the Plan.
Economic Development Plans Development Guidelines and/or Regulations Ordinance Updates or Revisions	The town’s Economic, Development plans, and Ordinances provide long-term guidance to the town’s growth and development. Development of these plans and guideline elements are informed by either reference or incorporation of the risks, goals and mitigation actions/projects of the Plan.
Flood Mitigation Master Plan	The Flood Mitigation Master Plan was a multi-jurisdictional effort across various agencies. The town’s Flood Mitigation Master Plan provides long-term guidance to the town’s growth patterns. Development of the master plan elements are informed by either reference or incorporation of the risks, goals and mitigation actions/projects of the Plan.
Emergency Operations/Response Plans	These plans are being developed/revised and plan elements are informed by either reference or incorporation of the risks, goals and mitigation actions/projects of the Plan.

<b>Table 3-15: Plan integration history and future strategy for Gilbert</b>	
<b>Plan Integration Over the Past Plan Cycle:</b>	
The 2009 Plan was used as a reference for local natural hazard risks and capabilities in the development of the Town of Gilbert’s Water and Wastewater Emergency Response Plan and the Community Wildfire Protection Plan. It was also used in current updates of the Town of Gilbert’s Emergency Response Plan and Water Supply Reduction Management Plan.	
<b>Plan Integration Strategy for Next Five Years:</b>	
<b>Planning Mechanism</b>	<b>Description of Planning Mechanism Opportunity</b>
Town of Gilbert Water Reduction Plan and Ordinances	The town’s Water Reduction Plan slated for review and update in 2015, provides water demand management planning in an effort to protect the public’s health and safety while minimizing a potential disruption of water supply. The planning process could potentially reference and/or Incorporate risks, goals and mitigation actions of the Plan.
Town of Gilbert Emergency Operation Plan update	The Town of Gilbert’s Emergency Operation Plan slated for update in 2015, provides direction and guidance to the town’s response and recovery efforts in the event of a natural or manmade disaster. The planning process could potentially reference and/or incorporate risks, goals and mitigation actions of the Plan.

**Table 3-15: Plan integration history and future strategy for Gilbert**

Town of Gilbert Storm Water Management Plan	The Town of Gilbert Storm Water Management Plan slated for update in 2015, provides .....The planning process could potentially reference and/or incorporate risks, goals and mitigation actions of the Plan.
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**Table 3-16: Plan integration history and future strategy for Glendale**

**Plan Integration Over the Past Plan Cycle:**

In 2009 Glendale Hazard Mitigation Plan was approved by the elected officials of the City of Glendale demonstrating their continued commitment to hazard mitigation. The Hazard Mitigation Plan has been a guide for the City of Glendale in the city’s pursuit of reducing risks to life and property, limiting the risks to critical infrastructure, and implementation/integration of hazard mitigation planning to the City of Glendale.

Since adopting the 2009 Hazard Mitigation Plan the City of Glendale has incorporated the plan in various forms. The 2009 City of Glendale Transportation plan integrated the Hazard Mitigation Plan. The Transportation Department will be implementing and integrating the Hazard Mitigation Plan on the 2015 Transportation Plan revision.

The Glendale Division of Emergency Management utilized and implemented the Glendale Hazard Mitigation Plan into the revision of the 2015 Emergency Operation Plan.

The Hazard Mitigation Plan was utilized as a resource in numerous Storm Drain Projects within the city. The projects addressed localized flooding hazards throughout the City of Glendale. Furthermore the plan was presented during a FEMA audit to examine the floodplain.

The Hazard Mitigation Plan will be utilized in the in Capital Improvement Projects addressing the Flood Control measures being continued in carryover for 2015.

The updated mitigation plan will be incorporated into the City of Glendale Division of Emergency Management’s standards of operations, and planning/assessment documents..

**Plan Integration Strategy for Next Five Years:**

<b>Planning Mechanism</b>	<b>Description of Planning Mechanism Opportunity</b>
2015 City Glendale Transportation Plan	The City of Glendale’s Transportation Plan outlines the city’s involvement in transportation planning at the regional and sub-regional levels to assist in planning and reviewing the city’s transportation system. The 2015 Hazard Mitigation Plan will be incorporated to the updated Transportation Plan.
2015 City of Glendale Emergency Operation Plan	The City of Glendale conducted a revision of the Emergency Operation Plan during 2014. The Hazard Mitigation Plan was reviewed and utilized in the coordination between the two plans.
2015 Water Services Department Business Plan	The City of Glendale Water Services Department conducts a yearly Business Plan. The Hazard Mitigation Plan was utilized as a reference in the evaluation of the operation and ways to improve service delivery to the citizens of Glendale. The plan address water supply, wastewater, environmental, storm water and urban irrigation programs.
City of Glendale Capital Improvement Plan 2015-2024	The City of Glendale CIP Plan addresses various projects over a ten year span. The plan is outline for creating, maintaining present and future infrastructure needs. These needs will utilize the Hazard Mitigation Plan for a number of projects.

<b>Table 3-17: Plan integration history and future strategy for Goodyear</b>	
<b>Plan Integration Over the Past Plan Cycle:</b>	
The City of Goodyear utilized the 2009 Plan when seeking a location in our city to mitigate fuel in the wash in our communities. We used as one of our tools the 2009 Plan and chose a location in Estrella Mountain where the vegetation was encroaching on the neighborhood. We also used the 2009 Plan to update our 2014 Maricopa County Community Wildfire Protection Plan. The 2009 Plan helped in identifying areas of concern in our city.	
<b>Plan Integration Strategy for Next Five Years:</b>	
<b>Planning Mechanism</b>	<b>Description of Planning Mechanism Opportunity</b>
City of Goodyear Emergency Operations Plan	An all hazards plan that gives the general direction of how each department will respond during a large scale event (natural, man-made or terrorism). The EOP and Plan share common risk assessment elements and will continue to be integrated.
Bullard Wash Flood Response Plan	A comprehensive plan that looks at the flood zones within the City of Goodyear and the negative impacts it may have on our community. This document also assists the city in identifying areas that can be mitigated from flooding. Updates or changes to this plan will include reference to the Plan.
Maricopa County Community Wildfire Protection Plan	Development of this plan allows us to look at areas of urban/wild land interface. This plan gives the opportunity to look at which projects to include in the priority listing so that we can minimize the possibility of fires in our community. The CWPP and Plan will continue to be integrated to share risk assessment and mitigation data.

<b>Table 3-18: Plan integration history and future strategy for Guadalupe</b>	
<b>Plan Integration Over the Past Plan Cycle:</b>	
The hazard mitigation plan was referenced and considered in ongoing residential and commercial construction. The hazard mitigation plan was also used as a source of natural hazard risk information for the town's emergency operations plan.	
<b>Plan Integration Strategy for Next Five Years:</b>	
<b>Planning Mechanism</b>	<b>Description of Planning Mechanism Opportunity</b>
Town of Guadalupe Emergency Operation Plan	The Town of Guadalupe's EOP is planning for response to and mitigation to potential disasters. The EOP and Plan share common risk assessment elements and will continue to be integrated.
Building Plan Review	Building plans are reviewed to be compliant with location, elevation, and drainage codes.
Building codes	Building codes are to be reviewed and updated.

**Table 3-19: Plan integration history and future strategy for Litchfield Park**

**Plan Integration Over the Past Plan Cycle:**

Integration or reference to the 2009 Plan were accomplished with the following efforts:

- The City of Litchfield Park has incorporated references to hazard mitigation into the General Plan that was reviewed and amended in 2010 and 2011.
- The Wildfire protection plan was reviewed and updated to reflect protection to buildings and other properties both municipal and private.
- The City Emergency Operations Plan was reviewed and the Hazardous Material and mitigation plans were brought into line with the NIMS format.
- The Ground Water Protection Plan was reviewed and is monitored on a monthly basis by an independent engineering firm to make sure our city’s groundwater is not being contaminated by a potential source of hazardous waste from a nearby property.

**Plan Integration Strategy for Next Five Years:**

Planning Mechanism	Description of Planning Mechanism Opportunity
City of Litchfield Park General Plan	The LP General Plan was reviewed and adopted in 2010 and amended in 2011. Future reviews and amendments are anticipated and the Plan will be referenced and integrated as appropriate.
City Ordinance Updates	City ordinances are reviewed and amended as needed. Spend time reviewing all ordinances that address Hazardous materials or safety to the community.
Community Wildfire Protection Plans	Review the Regional Community Wildfire Protection Plans as it pertains to the City of Litchfield Park. Review City ordinances that require grass and weed abatement to reduce fuel sources for fire. This was reviewed and revised in 2014. Schedule a review every year and amend as needed.
Annual review of Emergency Operations Plan , EOP	Review plan and amend as needed for sections that address all Hazard Mitigation Procedures.

**Table 3-20: Plan integration history and future strategy for Maricopa County (Unincorporated)**

**Plan Integration Over the Past Plan Cycle:**

Integration or reference to the 2009 Plan were accomplished with the following efforts:

- Update and review of the Flood Control Comprehensive Plan. Integration of mitigation projects between the two plans.
- Possibly transportation improvement plan
- MCDOT Operations Projects identification
- The draft version of Vision 2030 - Maricopa County Comprehensive Plan supports the implementation of the 2009 Plan through specific language and policies.

**Plan Integration Strategy for Next Five Years:**

Planning Mechanism	Description of Planning Mechanism Opportunity
Community Wildfire Protection Plan	The CWPP identifies actions that will reduce the risk of wildfires to communities within the wild land urban interface zones. The plan was updated in 2014 and the Plan will be referenced with any future updates.
Emergency Operation Plan	The EOP identifies response and recovery actions in Maricopa County. The EOP is reviewed and updated annually and will include integration of risk assessment data from the Plan.
Transportation Improvement Plan	The TIP identifies transportation related projects within a 5 year plan. The TIP is updated annually and reference to the Plan will be made with each update.
Capital Improvement Plan (Flood, MCDOT, County)	The CIPs for each of the various agencies within the county are typically reviewed and updated annually. Integration of mitigation actions and projects between the CIPs and the Plan will be part of the process.

**Table 3-21: Plan integration history and future strategy for Mesa**

**Plan Integration Over the Past Plan Cycle:**

The City of Mesa 2040 General Plan was recently adopted by voters in November 2014. Chapter 11 of the General Plan addresses Public Safety and specifically the city’s dedication to plan to adequately respond to both natural and man-made disasters.

*Currently, the city works closely with the Flood Control District of Maricopa County, Maricopa County Department of Emergency Services, the State of Arizona Division of Emergency Management, FEMA and other agencies to provide emergency and disaster planning. Hazardous materials mapping and response is networked with all levels of government from the city Fire Department through the Maricopa County Local Emergency Planning Committee, and Arizona Emergency Response Commission. Through a network that is dedicated to responding to emergencies, and a comprehensive emergency management program coordinated through the Mesa Fire Department, the city is ready to address disasters of any size to protect its population (Mesa 2040 General Plan – pg. 11-3)*

The General Plan outlines specific policies and programs to ensure that the city is prepared and participating in local and regional mitigation efforts. Although the plan does not specifically name the 2009 Plan, it does outline the city’s commitment to hazard mitigation, maintenance of an Emergency Operation Plan and coordination with other local, county, state agencies.

*Develop and maintain an Emergency Operation Plan in accordance with Arizona state law, develop and maintain the resources necessary to carry out the EOP, and provide regular training to staff in emergency operations. This strategy includes the coordination necessary with surrounding jurisdictions as well as county, state, and federal agencies. (Mesa 2040 General Plan – Public Safety Strategy 1)*

**Plan Integration Strategy for Next Five Years:**

Planning Mechanism	Description of Planning Mechanism Opportunity
Mesa 2040 General Plan	Arizona state law (ARS 9-461.05.A) requires that each city adopt a comprehensive, long-range general plan to guide the physical development of the community. The Mesa City Charter also requires the existence of a general plan. The Mesa General Plan has the following three interrelated functions: <ul style="list-style-type: none"> <li>• An expression of community goals and priorities</li> <li>• A decision making guide</li> <li>• A fulfillment of a legal requirement of state law</li> </ul> While the Mesa General Plan responds to the legal requirements of the Arizona statutes, it is designed to be specific to the issues and needs of Mesa. It contains goals, policies and strategies to guide the community over a 25-year period. Its focus is on shaping the physical form of the city, yet it also includes policies and statements about other aspects of the community.
City of Mesa Emergency Operations Plan	The City of Mesa EOP mirrors the Plan by way of establishing policies and procedures that allow the City of Mesa organization to save lives, minimize injuries, protect property, preserve a functioning administration, and maintain activities essential to their survival and recovery from natural and man-made hazards. It establishes the guidelines for conducting efficient, effective, coordinated emergency management operations involving the use of all resources belonging to the City of Mesa or available to it.

**Table 3-22: Plan integration history and future strategy for Paradise Valley**

**Plan Integration Over the Past Plan Cycle:**

The 2009 Plan was either reviewed, referenced and/or integrated with the following planning mechanisms for Paradise Valley:

- **Updated 2012 General Plan Goals:** There are several goals that address components of the 2009 Plan. These include Goal WR 6.2.3: To ensure the safe and economic control of stormwater in the town. This goal includes six policies related to managing flood control facilities, encouraging preservation and restoration of natural washes, requiring wash maintenance easements should owners fail to maintain washes on private property, wash restoration, regional coordination, and on-site retention; Goal PFS 8.3.1: Provide coordinated fire protection and emergency medical services that support the needs of residents and visitors and maintain a safe and healthy community. This goal includes seven policies on response time, technology, and coordination with stakeholders.
- **Updated 2012 General Plan Policies:** There are several policies that address components of the 2009 Plan. These include: Policy CC&H 3.1.1.4: The town shall continue to promote design quality in all hillside development and ensure responsible hillside development to minimize the physical and visual disturbance and preserve natural features including prominent ridges and slopes, preserve drainage patterns and desert vegetation, eliminate fire hazards, maintain minimal night-time lighting levels, and preserve the non-suburban character; Policy EP 6.1.1.2: The town shall strongly promote the restoration of indigenous Sonoran Desert vegetation in areas that have been disturbed or scarred by development, neglect, or improper use, especially on hillsides or in washes. The town shall promote restoration practices that minimize potential wildfire hazards; Policy PFS 8.3.1.5: The town shall continue to require private property owners to remove excessive/overgrown vegetation (e.g., trees, shrubs, weeds) and rubbish to prevent and minimize fire risks to surrounding properties; Policy WR 6.2.1.3: The town shall encourage the water providers to continually make available water in the distribution system for water pressure for direct customers' use and for fire suppression; Policy WR 6.2.1.6: The town shall continue to pursue documentation and understanding of water pressure and delivery, working with the town's providers. The documentation should also identify future demand, available water sources, state of delivery system, and fire safety concerns; Policy S 7.2.4.4: The town shall limit the scope of new impervious surfaces and encourage reduction of existing impervious surfaces for all new developments in order to reduce storm water runoff.
- **Annual review of General Plan Implementation Measures:** This includes measures such as Environmental Planning and Water Resources Implementation Measures 15-17 that address flood control management, coordination and on-site retention; Sustainability Implementation Measures 1 and 2 that address coordinating with the Flood Control District of Maricopa County and compliance with the town's stormwater management plan; Water Resources Implementation Measure 19 that addresses coordination with water providers regarding water pressure related to fire suppression; Public Service Implementation Measures 2, 3, 4, 6 and 8 that address requiring an annual report on fire service levels; investment in and incorporation of new technology to deliver public safety services more efficiently and cost effectively, and coordination with stakeholders.
- **Enhanced Notification:** Town purchased an online notification subscription system that allows residents to receive texts/e-mails regarding various notices, including an option for notification of emergencies.

**Plan Integration Strategy for Next Five Years:**

Planning Mechanism	Description of Planning Mechanism Opportunity
Town of Paradise Valley General Plan	The town will likely begin another General Plan update process near or shortly after the 2015-2019 cycle of the Plan. However, the annual review of Implementation Measures that are derived from the General Plan goals and policies will continue the process of integrating and referencing the applicable components of the Plan for Paradise Valley.
Town of Paradise Valley Hillside Development Regulations	The town anticipates a major update to the hillside regulations for 2015-2016. The hillside regulations include grading, disturbed area and related requirements that can affect storm water impacts in the localized watershed.

<b>Table 3-22: Plan integration history and future strategy for Paradise Valley</b>	
Town of Paradise Valley Storm Water Management Plan	This plan was approved in 2003 and could be re-evaluated.
Town of Paradise Valley Capital Improvement Plan/Budget	This five-year plan is re-evaluated each year for capital projects that require funding. The annual budget reserves funding for various plans. Some examples of projects/plans related to the Plan that are underway or planned in the next five years include several local roadway improvements, construction of a new joint public safety communication project on Mummy Mountain between the town, Maricopa County, Regional Wireless Cooperative, and Phoenix Fire Department; Town Police Department training, software and other technology to improve mapping, reporting and emergency response times.

<b>Table 3-23: Plan integration history and future strategy for Peoria</b>	
<b>Plan Integration Over the Past Plan Cycle:</b>	
In the past five years the City of Peoria has worked with Maricopa County Department of Emergency Management to ensure that the 2009 Plan is maintained and updated as necessary. This includes using the 2009 Plan to assist with the development of the new emergency operation plan, flood response plan and wild land fire protection plan.	
<b>Plan Integration Strategy for Next Five Years:</b>	
<b>Planning Mechanism</b>	<b>Description of Planning Mechanism Opportunity</b>
Emergency Operations Plan	The City of Peoria Emergency Operation Plan uses the data developed from the hazard mitigation plan to develop operational data within the EOP to response and recovery from the disaster.
Community Fire Wild Protection Plan	The City of Peoria community wild fire protection plan is developed in conjunction with Maricopa County Department of Emergency Management. The data derived from the hazard mitigation plan was used to assist in the development of the community wild fire protection plan.
Flood Response Plan	The City of Peoria flood response plan was developed by the Flood Control District of Maricopa County in conjunction with the City of Peoria Office of Emergency Management and the Maricopa County Department of Emergency Management. The flood response plan used data provided by the hazard mitigation plan to develop flood response plan action guides.

**Table 3-24: Plan integration history and future strategy for Phoenix**

<p><b><u>Plan Integration Over the Past Plan Cycle:</u></b>                  The 2009 Plan was either reviewed, referenced and/or integrated with the following planning mechanisms for the City of Phoenix:</p> <ul style="list-style-type: none"> <li>• The City of Phoenix General Plan is adopted every 10 years and by state law must address a variety of issues. The following potential hazards are addressed by the plan:                         <ul style="list-style-type: none"> <li>○ Drought- The General Plan includes a Drought Management Plan as well as a Water Resources Plan that encourages native landscaping as well as other low water use landscaping features.</li> <li>○ Extreme Heat- The Tree and Shade Master Plan sets a benchmark of 25% shade coverage and encourages native landscaping.</li> <li>○ Flooding- Floodplains are recognized in the Land Use Map of the General Plan.</li> </ul> </li> <li>• The International Building Code adopted by the City of Phoenix addresses the following potential hazards:                         <ul style="list-style-type: none"> <li>○ Severe Wind- Section 1609 of the IBC designs states that designs must withstand minimum wind loads.</li> <li>○ Flooding- Section 1612.1 of the IBC requires designs that withstand flooding in designated flood areas.</li> <li>○ Wild Fire- Fire Resistant materials are required in commercial and residential construction per the IBC and IRC. This mitigates the spread of wildfire when it reaches urban areas.</li> <li>○ Extreme Heat- Phoenix has amended the IBC to account for cooling of the interior environment in chapter 1204.1.</li> <li>○ Subsidence and Fissures- Soils reports and Geo Technical Investigations are required for large construction and can be requested by the Building Official per Section 1803.5.2. of the IBC.</li> </ul> </li> </ul>	
<p><b><u>Plan Integration Strategy for Next Five Years:</u></b></p>	
Planning Mechanism	Description of Planning Mechanism Opportunity
City of Phoenix General Plan	The City of Phoenix General Plan provides the vision and policies that determine how Phoenix will grow and develop. As the long-range guide for the city, the plan addresses potential hazards that could impact the safety and livability of the residents of Phoenix.
City of Phoenix Capital Improvement Plan	The Capital Improvement Budget provides for the construction of large-scale projects such as bridges, storm drains, new street design and construction, major and collector street overlay, residential street resurfacing, sidewalk installation, dust control, traffic calming and freeway landscape.

**Table 3-25: Plan integration history and future strategy for Queen Creek**

<p><b><u>Plan Integration Over the Past Plan Cycle:</u></b>                  The 2009 Plan was reviewed on an annual basis. Staff from Fire Department, Public Works Division and the Development Services Department consulted to update the current list of mitigation actions and projects. The updated document was submitted to Maricopa County Department of Emergency Management (MCDEM).</p> <p>Fire Department staff would review the list of mitigation actions and projects when the Hazard Mitigation Grant Program (HMGP) guidance was issued annually. This was done to determine if any of the projects would be a viable candidate for submittal to the HMGP.</p> <p>The time period that the current hazard mitigation plan encompassed was one of unprecedented economic difficulty. The “Great Recession” caused both private development and the town’s infrastructure construction to come almost to a standstill. This coupled with high staff turnover caused the 2009 Plan to see very little use.</p>
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<b>Table 3-25: Plan integration history and future strategy for Queen Creek</b>	
<b>Plan Integration Strategy for Next Five Years:</b>	
<b>Planning Mechanism</b>	<b>Description of Planning Mechanism Opportunity</b>
Emergency Response Plan (EOP)	The town’s Emergency Response Plan (EOP) provides a guide as to how the community will respond to a disaster incident. The risk data may be utilized as one of the appendices to the EOP.
Community Wildfire Protection Plan (CWPP)	The risk data from the community wildfire protection plan serves as the basis of the hazard mitigation plan.
Capital Improvement Program (CIP)	The hazard mitigation plan can be utilized to inform and guide the submittal and funding of projects on an annual basis. This can occur both in the town’s CIP and outside partners such as the Flood Control District of Maricopa County.
Community Risk Assessment	The Fire and Medical Department will be developing a Community Risk Assessment to identify all of the hazards that may impact the community. The hazards may include train derailments, airplane crashes and natural hazards. The Hazard Mitigation Plan data can be incorporated into this document.

<b>Table 3-26: Plan integration history and future strategy for Salt River Pima Maricopa Indian Community</b>	
<b>Plan Integration Over the Past Plan Cycle:</b>	
The Salt River Indian Community incorporated the 2009 Plan in with the development of a Fire Management and Fuels Reduction Plan that were both created in the past 5 years. In addition, the document was utilized to some degree in the Tribal Emergency Response Commission planning process and in the development of the Community’s EOP which is in the process of being re-written to parallel the Plan update.	
<b>Plan Integration Strategy for Next Five Years:</b>	
<b>Planning Mechanism</b>	<b>Description of Planning Mechanism Opportunity</b>
Storm Water Study	Elements of this plan will be integrated into the SRPMIC Storm Water Study and the development of Master Plans for storm water management.
Transportation Plan	The Public Works Department has plans to develop a Tribal Transportation Plan. The Plan components will be a consideration in that plan development.
SRPMIC Tribal Emergency Response Commission (TERC)	The overall governing body for the Emergency Management Program is the SRPMIC TERC. This plan once completed will be reviewed by that Commission so that their planning efforts consider elements of the Plan.

**Table 3-27: Plan integration history and future strategy for Salt River Project**

**Plan Integration Over the Past Plan Cycle:**

The Salt River Project has integrated the data and information from the 2009 Plan into many other plans, projects and initiatives to better serve customers. The Crisis Management Team is the governing body that presides over hazard mitigation and emergency management. The data from the 2009 Plan is used by the CMT and several other departments to identify risks, assess current capabilities (Table 6-1-22 & 6-2-22), identify gaps and draft programs for mitigation (Table 6-3-22), response and improvement. The data also is used when crafting business continuity and corporate contingency plans.

The CPRI (risk assessment) from the 2009 Plan continues to be a vital tool in understanding the risks and vulnerabilities that should be planned for. The risk assessment data was integrated into the business continuity planning process to serve as an additional set of data that was used in writing and updating the portfolio of business continuity plans at SRP. The data also helped align mitigation projects that have been incorporated into the Salt River Project Six-Year Electric Systems Plan. Next, within the Electric Systems Plan, multiple capital improvement projects are outlined; many of which are directly tied to mitigating risks that are identified during the CPRI process.

On an ongoing basis, the Crisis Management Team along with Business Continuity & Emergency Management use the plan data for drafting new contingency plans, mitigation projects, capital improvement projects, disaster drills as well as future planning efforts and projects.

**Plan Integration Strategy for Next Five Years:**

Planning Mechanism	Description of Planning Mechanism Opportunity
SRP Plan #100 Crisis Management Plan	This plan describes how SRP will respond to incidents of any scope, duration and severity. It is overseen by the Crisis Management Team. Information from the plan is used to help identify gaps and known risks and is vital for crafting future plans, identifying risks and understanding where to exercise disaster scenarios. There are 18 corporate contingency plans that fall under the umbrella of the Crisis Management Plan.
SRP Plan #110 Business Continuity Plan	This plan is the overarching plan that outlines how the Business Continuity Program at SRP is administered. The corporate portfolio consists of 77 plans; all of which use data from the mitigation plan. The CPRI (risk assessment), as well as additional data from the mitigation plan serve as the foundation upon which plans are written.
SRP Six Year Electric System Plan	This is the strategic plan that plans for growth, improvement and reliability of the SRP electric system. It outlines many capital improvement projects that can be directly correlated to mitigating actions in the mitigation plan. Many capital improvement projects are aligned to mitigate risks identified in the CPRI (risk assessment).
SRP Plan #160 Emergency Reservoir Operations Procedure SRP Plan #210 Storm Operations Manual	Both of these plans are used in the event of flooding incidents where emergency procedures are activated at SRP dams and water facilities. The floodplain data outlined in the mitigation plan proves helpful for identifying areas of increased risk during flooding events, as well as areas to initiate new flood mitigation projects.

<b>Table 3-28: Plan integration history and future strategy for Scottsdale</b>	
<b>Plan Integration Over the Past Plan Cycle:</b>	
<p>The City of Scottsdale continues to strive for integration of all emergency plans. This integration will allow a multidisciplinary approach to preparing for, responding to and recovering from emergency and disaster events. The intent is to create structured effort that minimizes impact and increase efficiency. Coinciding with the update of the 2009 Plan is the update of the city’s Emergency Operation Plan, Community Wildfire Protection Plan, Continuity of Operations Plan, Local Emergency Planning Committee, and the Storm Water Working group. The goal has been to integrate hazard mitigations strategies into city and functional plans and demonstrate value added into zoning laws and codes.</p>	
<b>Plan Integration Strategy for Next Five Years:</b>	
<b>Planning Mechanism</b>	<b>Description of Planning Mechanism Opportunity</b>
Scottsdale Emergency Operations Plan (EOP)	Scottsdale’s “all hazard” approach to dealing with a range of emergencies. Provides the structure and processes that the city utilizes to respond to and initially recover from an event. The Plan identifies for planning purposes key threats known to the City of Scottsdale.
Local Emergency Planning Committee	Under the Emergency Planning and Community Right to Know Act this committee must develop an emergency response plan and provide information about chemicals in the community to citizens. The Plan ties into this planning by identifying Tier 1 and Tier 2 storage of chemicals.
Community of Operations Plan	The plan establishes priorities and procedures to sustain vital operations and services during a disaster event. The Plan provides the historical and potential emergencies to be prepared for.
Community Wildfire Protection Plan	The CWPP plan identifies at risk communities within or near the wildland/urban interface. The Plan provides historical evidence for mitigation of fires within the wildland/urban interface.

<b>Table 3-29: Plan integration history and future strategy for Surprise</b>	
<b>Plan Integration Over the Past Plan Cycle:</b>	
<p>The 2009 Plan was used as a reference for local natural hazard risks and capabilities in the development of the Water &amp; Wastewater Site Security Master Plan. The prescriptive projects identified within the 2009 Plan have been incorporated within the city’s capital improvement program.</p>	
<b>Plan Integration Strategy for Next Five Years:</b>	
<b>Planning Mechanism</b>	<b>Description of Planning Mechanism Opportunity</b>
City of Surprise General Plan	The city is currently refining the general plan to incorporate more region specific elements. The hazards identified within this study will be referenced within the applicable development regions.
City of Surprise Integrated Water Master Plan Update	The planning and siting of future water and wastewater facilities will incorporate the information gained from the Plan. We will also use the Plan to ensure that our Site & Security Master planning document is as up to date as possible.
City of Surprise Engineering Development Standards	During the review of civil improvement documents, our plan review staff will use the Plan to educate themselves of the potential regional hazards. Civil improvements to lessen these hazards may be recommended.
City of Surprise Unified Development Code	Staff will use the Plan to ensure that all of the planning elements within the city’s unified development code are up to date and recommend the Plan as a reference for developers and their consultants.

**Table 3-30: Plan integration history and future strategy for Tempe**

**Plan Integration Over the Past Plan Cycle:**  
 Water Utilities Division participated in AZWARN Training TTX on 10/29/2014 with simulated heavy rain/flood scenario. WUD has substantially completed an Emergency Response Plan with flooding scenarios, and Public Works Department is moving other divisions to do same. The MCMJHMP was used as a part of the TTX.

The current Emergency Operations Plan referenced the MCMJHMP during the May 2014 update.

**Plan Integration Strategy for Next Five Years:**

Planning Mechanism	Description of Planning Mechanism Opportunity
Community Wildfire Protection Plan	Plan to identify actions that will reduce the risk of wildfires to communities within the wild land urban interface zones. The plan was updated 2014.
Emergency Response Plans	Emergency Response Plans for various Public Works Divisions (Engineering/Transportation/Field Ops) are prepared and maintained to provide a blueprint for responding to emergency and disaster related events. Risk assessment elements of the hazard mitigation plan correlate with the ERP hazards.
Stormwater Master Plan	The city maintains a Stormwater Master Plan to guide planning and mitigation for stormwater related improvements and development. The SMP is scheduled to be updated when the Flood Control District of Maricopa County finishes updating the city’s flood hazard maps (anticipated by Q3 2016).
City of Tempe General Plan 2040	The 2040 General Plan provides general goals, objectives and strategies for guiding Tempe’s planning and redevelopment through 2040, with community based policies, standards and goals that enhance the quality of life and reflect a vital, sustainable, attractive and unique city.
Water / Wastewater Infrastructure Master Plan	A plan to provide overview and guidance documents for CIP investments for the Water Utilities Division over the next 5-, 10-, and 20-year build out horizons. The plan specifically addresses future scenarios including sustained drought, flooding, and infrastructure failure.

**Table 3-31: Plan integration history and future strategy for Tolleson**

**Plan Integration Over the Past Plan Cycle:**  
 The 2009 Plan was used as a reference for the Tolleson General Plan (2014), which contains twelve elements, each of which describes existing conditions, defines planning issues and recommends goals and action strategies to accomplish the city’s vision for the next decade. One of the aforementioned elements is Public Buildings and Services. One of the goals for this element stated in the General Plan 2014 is to “Provide effective and efficient public safety services and facilities throughout Tolleson; the leading strategy to accomplish this goal is stated as: “Maintain prompt services by police and fire departments for emergencies through adequate personnel, equipment, continuing education and certification; and provide better facilities to encourage more community-friendly departments.”

**Plan Integration Strategy for Next Five Years:**

Planning Mechanism	Description of Planning Mechanism Opportunity
Community Wildfire Protection Plan	Plan to identify actions that will reduce the risk of wildfires to communities within the wild land urban interface zones. The plan was updated 2014.
Emergency Operation Plan	Plan to identify response and recovery actions in Tolleson. Annual updates.

<b>Table 3-31: Plan integration history and future strategy for Tolleson</b>	
Annual Capital Improvement Programs	Plan to fund and implement construction projects to mitigate identified deficiencies in local flood protection, transportation corridors, and emergency operations.
Ordinance Updates or Revisions	Revisions to City Codes, as needed, to mitigate or improve shortcomings in current codes regarding public health, safety, and welfare.

<b>Table 3-32: Plan integration history and future strategy for Wickenburg</b>	
<b>Plan Integration Over the Past Plan Cycle:</b>	
None. There has been a significant turnover in department heads within the last 5 years. The Public Works, Planning, Code Enforcement, Flood administration, Town Clerk, Police, and Town Manager offices all hired new department directors. Emergency Operations is the only department that has not changed. It has been a learning experience with the new staffing on the 2009 Plan and future integration opportunities.	
<b>Plan Integration Strategy for Next Five Years:</b>	
Planning Mechanism	Description of Planning Mechanism Opportunity
Emergency Operations Plan, Town of Wickenburg	Provide template to larger scale planning, and contacts for other municipalities that may provide assistance in the event the Plan is activated.
Town of Wickenburg General Plan	With updates to the General plan, having the mitigation plan in place as a reference for overall impact of growth to the community
Capital Improvement Project Plans	Provide the information needed from the hazard mitigation standpoint to identify areas where CIP funds may be utilized in projects, i.e. infrastructure repair, transportation issues.

<b>Table 3-33: Plan integration history and future strategy for Youngtown</b>	
<b>Plan Integration Over the Past Plan Cycle:</b>	
The 2009 Plan was either reviewed, referenced and/or integrated with the following planning activities for the Town of Youngtown:	
<ul style="list-style-type: none"> <li>• In 2014, the Youngtown General Plan 2025 was updated and approved by the voters by an overwhelming 70%. The General Plan addressed the following:                             <ul style="list-style-type: none"> <li>○ Circulation &amp; Transportation – This element includes the goals, objectives, and policies for vehicular and non-vehicular mobility throughout Youngtown and between Youngtown and adjacent communities per the Small Area Transportation Study that the town worked with in collaboration with the MAG (Maricopa Association of Governments).</li> <li>○ Water Resources – Youngtown’s location on the east bank of the Agua Fria River provides it with an opportunity to implement the recommendations of the Agua Fria Watercourse Master Plan. The town continues to work with Maricopa County on areas that have potential for flooding within the town.</li> <li>○ Open Space &amp; Recreation – Town will continue to work with the City of El Mirage, the Flood Control District of Maricopa County and the U.S. Army Corps of Engineers to implement the Agua Fria River Watercourse Master Plan.</li> <li>○ Environmental Planning – The town has implemented the MAG 1997 PM-10 &amp; Carbon Monoxide Plan and in 1998, added additional measures to reduce PM-10 particulates to continue to meet air quality standards.</li> </ul> </li> <li>• The town has also worked with the Flood Control District of Maricopa County to determine appropriate actions to prevent flooding and development within the Agua Fria 100-year floodplain.</li> </ul>	
<b>Plan Integration Strategy for Next Five Years:</b>	
Planning Mechanism	Description of Planning Mechanism Opportunity

Commercial Development Checklist	Each new development is required to complete a comprehensive review outlining the possible effect on the town’s mitigation plan in conjunction with the growth to the community.
Flooding Resilience Planning	The town has identified streets that are prone to flooding and has applied for flood control assistance with Maricopa County in order to prevent street flooding and potential residential flooding.
Transportation Planning	The town has developed a transportation policy. The plan includes integration of pedestrian/bicycle non-motorized transportation into existing corridors in a safe manner; determined improvements and developed a plan to address residents’ needs, address local and regional mobility, and consider access-management issues, while understanding the values and future transportation needs of our community. Developed a comprehensive transportation master plan, identified a prioritized project list for short-term and long-term investments. Public input meetings, dialogue and involvement in the plan, was received to ensure the policy reflects the vision of the town residents and businesses. Bike/Pedestrian Path was another key component of the study for Youngtown to become a more walkable community.
Ordinances – Updates or Revisions	Ongoing collaboration between town council, town management and staff and the town clerk’s office
Design Review Board	The Town of Youngtown provides information on potential development from the hazard mitigation standpoint to identify areas where development may impact infrastructure, transportation issues, etc.

3.6.3 *Plan Incorporation Process*

Each jurisdiction has particular processes that are followed for officially incorporating and adopting planning documents and tools. Many of the processes and procedures are similar for jurisdictions with comparable government structures.

In general, planning documents prepared by the various departments or divisions of a particular jurisdiction are developed using an appropriate planning process that is overseen and carried out by staff, with the occasional aid of consultants. Each planning process is unique to the plan being developed, but all usually involve the formation of a planning or steering committee, and have some level of interagency/stakeholder coordination within the plan’s effective area. Public involvement may also be incorporated when appropriate and depending on the type of plan. New or updated plans are usually developed to a draft stage wherein they are presented to the respective governing body for initial review and comment. Upon resolution and address of all comments, which may take several iterations, the plans are then presented to the governing body for final approval and official adoption.

Integration or reference to the Plan into these various processes will be accomplished by the active participation of the MJPT PPOC representative(s) from each jurisdiction, in the other planning teams or committees to ensure that the Plan risk assessment, goals, and mitigation A/Ps are integrated and/or incorporated into the planning mechanism as appropriate.

Table 3-34 provides a summary of standard operating procedures that each of the participating jurisdictions follow when considering and incorporating official planning mechanisms, and how they apply to integration of the Plan.

<b>Table 3-34: Jurisdictional standard operating procedures for integration of planning mechanisms</b>	
<b>Jurisdiction</b>	<b>Description of Plan Integration Standard Operating Procedures</b>
Avondale	Departments are expected to research, develop and produce plans for their departments incorporating subject matter experts as necessary for the development of the plan. Once a plan is produced and reviewed it is provided to the City Manager’s Office for review. Following a review at the City Manager’s Office, plans are referred to the City Attorney for review prior to moving on for council action. Once the City Attorney and City Manager’s Office approve the plan it moves to either a work session or council meeting for additional review or approval by council and mayor.
Buckeye	All planning documents prepared by all departments for the City of Buckeye are developed by staff to a final draft stage and presented to the city council in a study work session for review and comment. Final approval and official adoption of any planning document or mechanism is normally done using a formal resolution process through the Buckeye City Council. The Maricopa County Multi-Jurisdictional Hazard Mitigation Plan will be reviewed and incorporated into future planning documents and mechanisms as developed or updated by the active participation of members of the City of Buckeye Planning Team. It is also understood that this plan will be used in accordance to other city plans, studies, and future strategies as needed.
Carefree	The town’s General Plan is vetted through a series of public open houses to outline and gain acceptance of all facets of the Plan prior to consideration and deliberation of the Planning and Zoning Commission and town council. The Planning and Zoning Commission typically holds numerous public meetings to further discuss and vet the plan prior to forwarding their recommendation to the town council. Upon recommendation from the commission, the town council considers the General Plan or any proposed update/change to the plan. Throughout this extensive review process, if relevant, additional items related to the Hazard Mitigation Plan can be added.
Cave Creek	General Planning documents are developed by staff and brought through the Public Involvement process including notification and public hearings. Plans are ultimately approved by the town council with a formal resolution prepared by the town clerk as well as with legal counsel.
Chandler	<p>Planning documents are created through a variety of means, including consultant and internal/ regional committee. The City of Chandler utilizes a process for planning document approval. All documents will have an official council memo and resolution assigned. These documents along with the resolution will be presented to mayor and council during a designated session. Resolution will be adopted or denied based on council vote. Adopted resolutions are then signed by the clerk’s office, city attorney, and mayor.</p> <p>The Plan, when completed, will follow the process described above. This will lead to formal city adoption of the plan and ensure the plans’ usefulness over the next planning period.</p>
El Mirage	In the City of El Mirage, General planning documents are prepared by all departments; they are developed by staff and presented to the city council for review and comment. Final approval and official adoption of any planning document is normally done using a formal resolution process through the mayor and city council. The Plan will be reviewed and incorporated into future planning documents and mechanisms; this is accomplished by the Mitigation Planning Team members in the development and update of those plans and current mechanisms.

<b>Table 3-34: Jurisdictional standard operating procedures for integration of planning mechanisms</b>	
<b>Jurisdiction</b>	<b>Description of Plan Integration Standard Operating Procedures</b>
Fort McDowell Yavapai Nation	<p>General planning documents in the Nation are prepared by department and staff members of these departments specific to their area of responsibility and combined into a final document. The planning document is presented to the Tribal Council for discussion and approval. Included in the presentation of the planning document as an Action Item on the council agenda is a formal resolution.</p> <p>The Plan will be reviewed, and as appropriate, incorporated into future planning documents for the Fort McDowell Yavapai Nation by the members of the Nation’s hazard mitigation planning team.</p>
Fountain Hills	<p>The General Plan is prepared by a consultant and staff, for consideration by the town council, and then voted on by the electorate at a General Election.</p> <p>Town staff prepares the Capital Improvement Plan for consideration by the town council.</p>
Gila Bend	<p>General Plans, Capital Improvement Programs and Regional Plans (Transportation, Land Use, etc.), Emergency Operations/Response Plans (utilities, fire, and facilities), and Flood Mitigation Master Plans are developed by staff and outside agencies to a final draft stage and presented to the town council in a study work session for review and comment. Final approval and official adoption of any planning document or mechanism is normally done using a formal ordinance/resolution process through the public hearing and then town council.</p> <p>The Plan will be reviewed and as appropriate, incorporated into future planning documents and mechanism by the active participation of the MJPT PPOC for the town, in the development or update of those plans and mechanisms.</p>
Gilbert	<p>The Town of Gilbert town management and town council participate in the general planning and development process for the Town of Gilbert. The Plan will be placed on the town council agenda for formal review and approval. The Plan will be reviewed and as appropriate incorporated in future planning processes and documents, facilitated by the Town of Gilbert Hazard Mitigation Planning Team members.</p>
Glendale	<p>General Planning process for the City of Glendale documents are prepared by the respective departments of the City of Glendale. Plans will coordinate with those departments or agencies that the plan affects. A planning team will be utilized until a draft plan is created and approved by the department. Upon the completion and approval of the plan from the review process, the plan will be reviewed by the City Attorney and City Manager for review. Final approval and official adoption of any planning document is completed using a formal resolution process through the city council.</p> <p>Per the City Manager Directives #33 the City of Glendale will maintain and implement a current Plan. The City of Glendale will be participants in the regional planning team in the development and updating of the Plan.</p>

<b>Table 3-34: Jurisdictional standard operating procedures for integration of planning mechanisms</b>	
<b>Jurisdiction</b>	<b>Description of Plan Integration Standard Operating Procedures</b>
Goodyear	<p>The City of Goodyear’s process is as follows: 1) once a plan has been discussed in the division/department and vetted the persons(s) responsible will submit a Council Action (COAC) document that will be seen by various departments to determine if the plan/document affects another department (this includes our legal department). 2) Once that is completed the plan/document will go through the City Manager’s office for review. 3) The plan/document will be placed on the council’s calendar and will be approved by consent or may be pulled for further discussion, then voted on by the city council.</p> <p>The Plan has gone through this process and will again go through this process for the City of Goodyear’s Council approval.</p>
Guadalupe	<p>Planning documents are prepared by staff and presented to town council as a final draft for review. The Planning documents are approved through resolution by the town council. Hazard Mitigation plans are then reviewed and updated as directed by program manager from the Maricopa County Department Emergency Management.</p>
Litchfield Park	<p>Planning documents are prepared by the appropriate staff in the department that is proposing the planning document. A review by the City Manager or his designee is made of each document in question. The document is sent to the City Attorney for review and formatting. The document is placed on a City Council Agenda for discussion, public hearing if required, and possible introduction. If the document is introduced by the city council, then it will appear on the next city council agenda for public hearing and adoption.</p>
Maricopa County (Unincorporated)	<p>The Maricopa County Board of Supervisors closely monitors the process of developing all general planning documents which impact the lives and wellbeing of the residents within Maricopa County. Maricopa County staff will present all planning documents to the Board of Supervisors in the scheduled Chief of Staff work group in order for final placement on the Board of Supervisors Agenda. The Agenda items will be placed on the next available Board Meeting. The Board of Supervisors will approve all agenda items through a formal process. The Plan will be reviewed and as appropriate, incorporated into future planning documents which will impact Maricopa County.</p>

**Table 3-34: Jurisdictional standard operating procedures for integration of planning mechanisms**

Jurisdiction	Description of Plan Integration Standard Operating Procedures
Mesa	<p>State statutes require general plans to be reviewed and updated every ten years.</p> <p>The General Plan is reviewed, updated, and prepared by the Planning Division incorporating input from all other City Departments and Divisions. A significant amount of citizen outreach is also incorporated into the preparation of the plan in order to receive as much community input as possible to ensure that the guiding vision and goals of the plan reflect the needs and desires of the community.</p> <p>After significant input into the preparation of the plan the final draft is submitted to the city council through a formal resolution process for approval of the plan and to place the plan on the General Election Ballot for the approval of the voters.</p> <p>The Mesa 2040 General Plan was adopted on November 4, 2014 by the voters of Mesa. An update to the overall plan is anticipated in the next 10 years. The General Plan can be amended from time to time by the city council through a formal resolution process to make minor updates to the language of the plan.</p> <p>As was the case with the current General Plan, future updates and drafts of the General Plan will incorporate the review and input of the various Public Safety and Hazard Mitigation agencies for input regarding the incorporation of supportive policies and strategies that are consistent with the Plan.</p>
Paradise Valley	<p><u>General Plan/Master Plans:</u> General Plans and Master Plans follow a multi-step process. This process generally includes interdepartmental staff review, public input sessions that may or may not include some type of advisory committee, followed by drafting of the plan by staff and/or consultant, followed by review via public advertised meeting(s) of the Planning Commission to get a recommendation on the plan, and concluding with study session(s) and a public hearing to adopt the plan. Adoption or approval of the General Plan occurs by town resolution followed by ratification of the voters for major amendments and minor amendments are approved by resolution. Master Plans described here relate to policy plans that are not of a technical nature (e.g. bike-pedestrian plan). Master Plans follow the same process as minor amendments to the General Plan. Updates to the General Plan or any Master Plans will include review of all applicable plans, including the Plan, and incorporate components as necessary.</p> <p><u>Technical Plans:</u> Technical plans include plans that relate to utilities, drainage, development impact fee and other such plans. The town Storm Water Management Plan is an example. The approval process for these types of plans involve interdepartmental review, typically include stakeholder input at select time periods in the process, drafting of the plan by staff and/or consultant, followed by a study session(s) to town council for review of the plan, and concludes with adoption of a resolution by the town council. Updates to any technical plans will include review of all applicable plans, including the Plan, and incorporate components as necessary.</p> <p><u>Implementation Documents:</u> These documents include the Town Code, Zoning Ordinance, Capital Improvement Plan, Impact Fees and budget. Amendments to the Town Code/Zoning Ordinance follow a process similar to the General Plan, except there is no ratification by the voters and the approval is by ordinance. The other implementation documents follow a similar process to technical plans. Updates to any technical plans will include review of all applicable plans, including the Plan, and incorporate components as necessary.</p>

<b>Table 3-34: Jurisdictional standard operating procedures for integration of planning mechanisms</b>	
<b>Jurisdiction</b>	<b>Description of Plan Integration Standard Operating Procedures</b>
Peoria	<p>The City of Peoria plan adoption process includes the following steps. (1) The development and/or updating of the hazard mitigation plan. (2) The plan is reviewed by the City Attorney Office. (3) The plan is submitted to the City Manager’s Office. (4) The plan is then submitted to our city council for approval and adoption.</p> <p>The Plan will be reviewed by the City of Peoria on an annual basis and more frequently as required.</p> <p>Wherever appropriate, the Plan will be used to provide guidance for the development of city based codes and regulations to reduce the potential damage caused by a disaster such as a flooding event, wild land fire or other incident that hampers the city’s ability to provide essential services.</p>
Phoenix	<p>The City of Phoenix General Plan update is formatted in two parts: Part I is visioning and included community outreach and committees. Part II is drafting goals, policies and implementation actions. Staff from the Planning Development Department and Planning Division drive the process and include staff from other departments as well as community members. Once a final draft is complete, it is presented to city council for approval, and then is placed on the ballot for a Citywide General Election. The Plan will be reviewed and as appropriate, incorporated into future planning documents and mechanism by the active participation of members of the City of Phoenix Mitigation Planning Team in the development or update of those plans and mechanisms.</p>
Queen Creek	<p>Planning mechanisms developed by town staff or by contracted consultants are typically advanced to a final draft stage. The draft is then reviewed by other town staff with input from the town attorney and then placed on a town council agenda for their review and discussion. This typically occurs either during the council’s Work Study Session or Regular Session. The official approval of the planning documents by the town council is accomplished through their adoption of a resolution.</p> <p>The Plan will be distributed to the Public Works and Development Services Departments and utilized in future planning documents where appropriate.</p>
Salt River Pima-Maricopa Indian Community	<p>General planning documents prepared by all departments for the Salt River Indian Community are developed by staff to a final draft stage and presented to the Tribal Council in a study work session for review and comment. Final approval and official adoption of any planning document or mechanism is normally done using a formal resolution process through the Tribal Council. The Plan will be reviewed and as appropriate, incorporated into future planning documents and mechanism by the active participation of members of the SRPMIC Mitigation Planning Team. Team members will be involved in the formal adoption processes described above, as well as the implementation of the plan into their respective department’s planning efforts.</p>

<b>Table 3-34: Jurisdictional standard operating procedures for integration of planning mechanisms</b>	
<b>Jurisdiction</b>	<b>Description of Plan Integration Standard Operating Procedures</b>
Salt River Project	<p>Crisis Management and Business Continuity Plans at the Salt River Project are written as a result of a formal Business Impact Analysis (BIA) that is conducted tri-annually. The plans are approved and overseen by the SRP Crisis Management Team and Business Continuity Team. Information from the Plan is widely used in crafting these plans.</p> <p>Once completed, the mitigation plan is presented to the Crisis Management Team for acceptance and approval. It is then incorporated into the Plan for approval by FEMA. Once the plan is approved by FEMA, it is presented to the Salt River Project District Board of Directors for final approval and official promulgation.</p> <p>SRP reviews and updates the mitigation plan on an annual basis in coordination with Maricopa County Department of Emergency Management.</p>
Scottsdale	<p>Planning documents and studies are usually initiated at the staff level. New plans are typically studied and developed within the department responsible for the plan. Existing plans are reviewed and updated based on the particular plan’s life cycle. Once plans have been developed and edited, they are presented to council for official approval. Wherever appropriate, the Plan will be reviewed and incorporated into future planning documents and mechanisms.</p>
Surprise	<p>The City of Surprise Management and City Council participate in the general planning and development process. The Plan will be placed on the council agenda for formal review and approval. The Plan will be reviewed and as appropriate incorporated in to future planning processes and documents.</p>
Tempe	<p>General planning documents prepared by all departments for the City of Tempe are developed by staff and outside consultants to a final draft stage and presented to the city council in a study work session for review and comment. Depending on the document, the action of the city council may include:</p> <ul style="list-style-type: none"> <li>• Council review only,</li> <li>• Council review and formal adoption via a resolution process, or</li> <li>• Council review with a recommendation to promulgate via a general public ballot measure/approval.</li> </ul> <p>All planning processes typically require a review of available reference material and plans, which will include but not be limited to the MCMJHMP. Staff serving on the Local Planning Team are often involved in other planning processes and will provide context and a nexus to the MCMJHMP.</p>
Tolleson	<p>General planning documents developed by city staff are presented to the city council for review and approval. Depending upon the complexity and/or breadth of the document or the plan, work study meetings or public hearings may be incorporated into the process. Final approval and official adoption of any document, policy, or mechanism is normally completed through a formal resolution process of the city council.</p>
Wickenburg	<p>Plans are developed by the department heads with help from other departments, depending on what details are needed within the document. The plan will be reviewed by the Town Manager’s office and Town Clerk’s office, prior to going to legal department for review. The legal department will provide further guidance and editing, then send plan back to department head for final review and move forward to council. The town council will then adopt the plan as a resolution during a regular council meeting. The plan will then stay on file with the town clerk and appropriate departments.</p>

**Table 3-34: Jurisdictional standard operating procedures for integration of planning mechanisms**

Jurisdiction	Description of Plan Integration Standard Operating Procedures
Youngtown	<p>Each development project is required to go through a formal pre-application process at which time the applicant will receive comments from various departments within the town. The comments generated by staff will include all aspects of development including the Plan as it relates to their perspective project. Comments generated by staff must be included in the design of the project prior to the formal approval.</p> <p>The town’s General Plan was formulated with the input of key community stakeholders, which included APS, Southwest Gas, EPCOR Water, Sun City Fire District, El Mirage, Surprise, Phoenix, Peoria, Sun City and Sun City West, the Arizona Commerce Authority and many others. Public meetings were held to provide input from our residents and business community. Planning and Zoning hearing was held and consideration by council, before going to vote in the General Election in November, 2014. Voters approved the plan by a vote of 70%.</p>

## SECTION 4: COMMUNITY DESCRIPTIONS

### 4.1 General

The purpose of this section is to provide updated basic background information on Maricopa County as a whole and includes information on geography, climate, population and economy. Abbreviated details and descriptions are also provided for each participating jurisdiction.

### 4.2 County Overview

#### 4.2.1 Geography

Maricopa County is located in central Arizona and encompasses 9,226 square miles. Situated in the upper Sonoran Desert and varying in elevation from 436 feet above sea level in the southwest to 7,645 feet at the northeast, the county contains several plant communities. At the lower elevations, desert scrub, punctuated with saguaro cactus, predominate. The higher elevations contain woodlands and sparse forests. Along the rivers, streams, and washes, riparian communities flourish and sustain the majority of the diverse plant and animal life found in the county. The Salt and Verde Rivers enter the county at the northeast quadrant, combine, and continue on a bisecting path at the Salt River until confluent with the Gila River in the central portion of the county near Avondale. The Gila River then continues bisecting the county as it journeys southwesterly towards the confluence with the Colorado River in Yuma, Arizona. The life-sustaining water this extensive river system brings to the region has defined life in Maricopa County from the earliest Native American settlements to the present day. Maricopa County has one of the most ample water supplies of any desert region in the west. The watershed of the Salt and Verde Rivers is impounded behind the dams of the Salt River Project. The Central Arizona Project canal which brings water from the Colorado River can supply more than a fifth of the total water for the county. In addition to this supply, the metropolitan area is situated over a prolific aquifer. To assure an adequate water supply for future generations, the state legislature adopted the Groundwater Management Act in 1980. This act requires careful water management and conservation measures to ensure water will be available for the influx of people expected in the next 20 years and beyond <sup>2</sup>.

Several major roadways support both local and regional transportation needs in Maricopa County. Interstates 10, 17, and 8 all intersect in or near Phoenix, and provide access to surrounding states. Several other state and US highways provide local and regional access throughout Arizona. Sky Harbor International Airport, located in central Phoenix, is one of the busiest air travel facilities in the United States.

Federal and state government entities own 50 percent of Maricopa County land, including the U.S. Bureau of Land Management (28 percent), the U.S. Forest Service (11 percent), and the State of Arizona (11 percent). An additional 16 percent is publicly owned, and 5 percent is Indian reservation land.

General County features are depicted in Figure 4-1.

#### 4.2.2 Climate

The climate in Maricopa County is characterized by the mild winters and hot summers typical of the upper Sonoran Desert regions. Temperatures and precipitation across the county vary somewhat due to the changes in elevation and orographic influences of local mountains and valleys. Climate statistics for weather stations within the county are produced by the Western Region Climate

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<sup>2</sup> Maricopa County Planning and Development Services, 2002, *Maricopa County Comprehensive Plan, 2020 Eye to the Future*, adopted October 20, 1997, revised August 7, 2002.

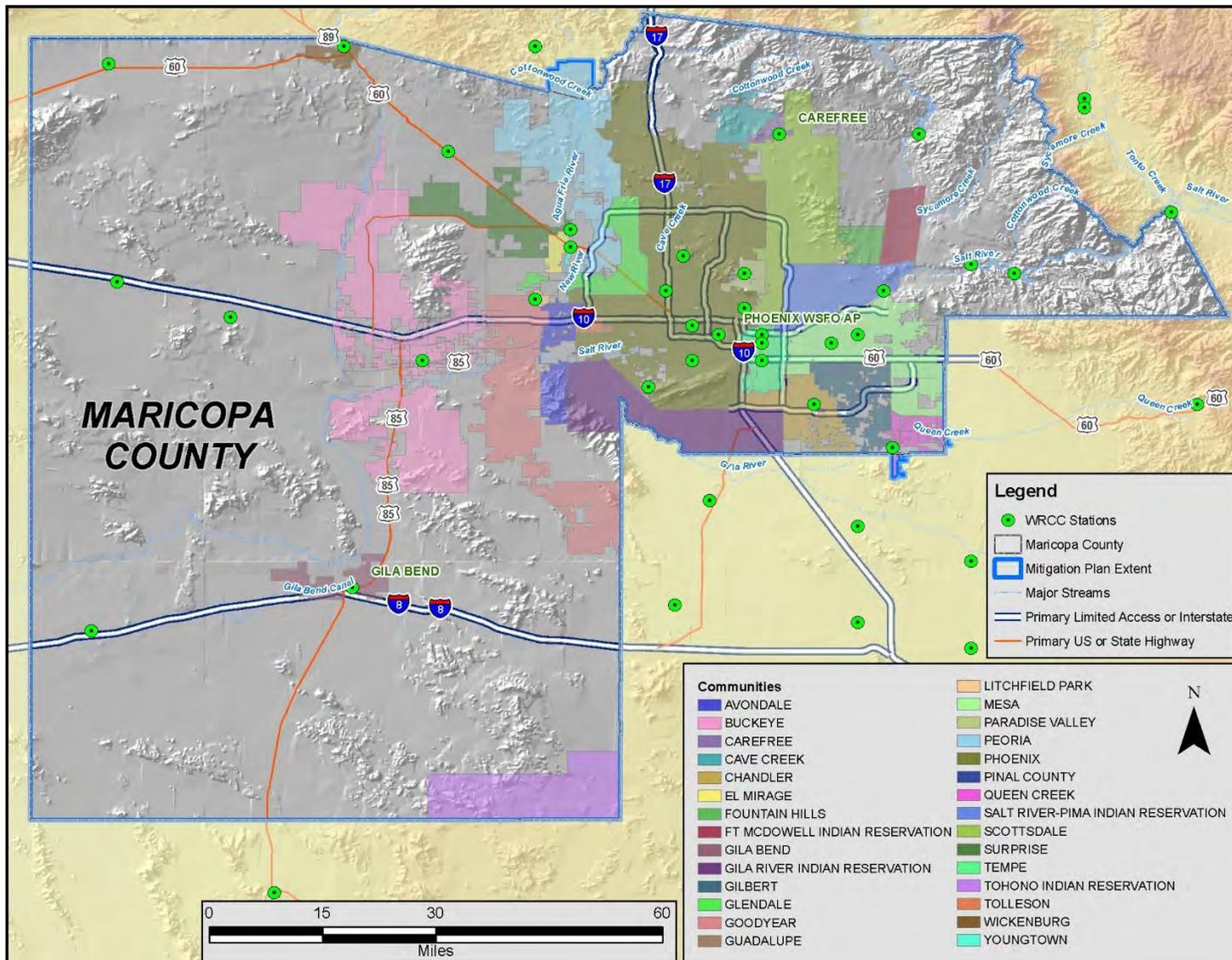


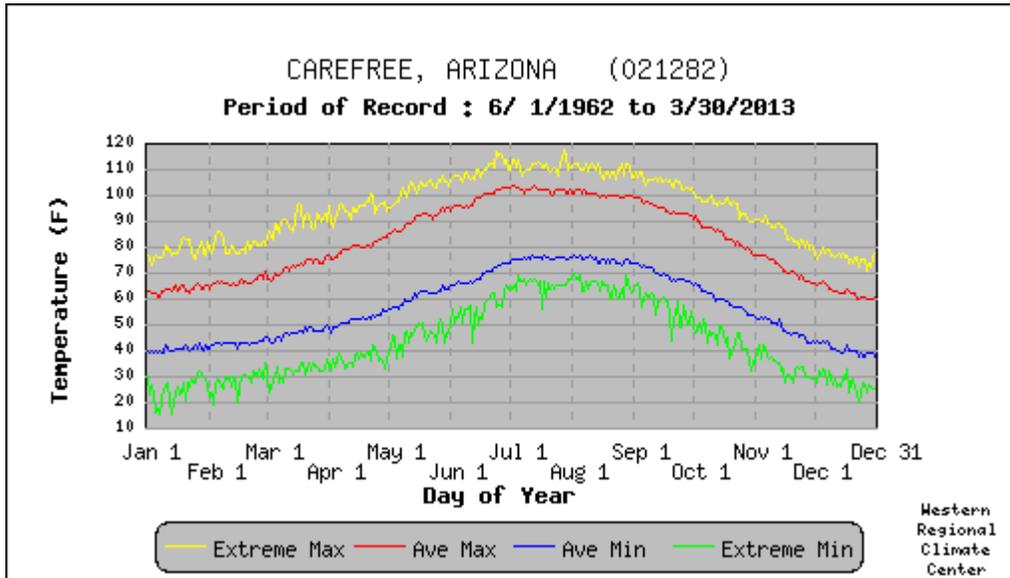
Figure 4-1: Map of general features for Maricopa County

Center<sup>3</sup> (WRCC) and span records dating back to the early 1900's. Locations for WRCC stations within Maricopa County are shown on Figure 4-1.

Average temperatures within the county ranges from near freezing during the winter months to over 110 degrees Fahrenheit during the hot summer months. The severity of temperatures in either extreme is highly dependent upon the location, and more importantly the altitude, within the county. For instance, temperature extremes in the northeastern portion of the county are notably different from those for the lower Gila River valley.

Figures 4-2, 4-3, and 4-4 present a graphical depiction of temperature variability and extremes throughout the year for the Carefree (elevation = 2,530 ft), Gila Bend (elevation = 730 ft), and Phoenix WSFO AP (elevation = 1,110 ft). In general, there is a ten degree reduction in temperatures between the lower and upper elevation stations.

Precipitation throughout the county is governed to a great extent by elevation and season of the year. From November through March, storm systems from the Pacific Ocean cross the state as broad winter storms producing longer duration precipitation events with low intensity rainfall and snowstorms at the higher elevations. Summer rainfall begins early in July and usually lasts until mid-September. Moisture-bearing winds move into Arizona at the surface from the southwest (Gulf of California) and aloft from the southeast (Gulf of Mexico). The shift in wind direction, termed the North American Monsoon, produces summer rains in the form of thunderstorms that result largely from excessive heating of the land surface and the subsequent lifting of moisture-laden air, especially along the primary mountain ranges. Thus, the strongest thunderstorms are usually found in the mountainous regions of the central southeastern portions of Arizona. These thunderstorms are often accompanied by strong winds, blowing dust, and infrequent hail storms<sup>4</sup>.



**Figure 4-2: Daily Temperatures and Extremes for Carefree Station, Arizona**

<sup>3</sup> Most of the data provided and summarized in this plan are taken from the WRCC website beginning at the following URL: <http://www.wrcc.dri.edu/CLIMATEDATA.html>

<sup>4</sup> Office of the State Climatologist for Arizona, 2004. Partially taken from the following web link: <http://geography.asu.edu/azclimate/narrative.htm>

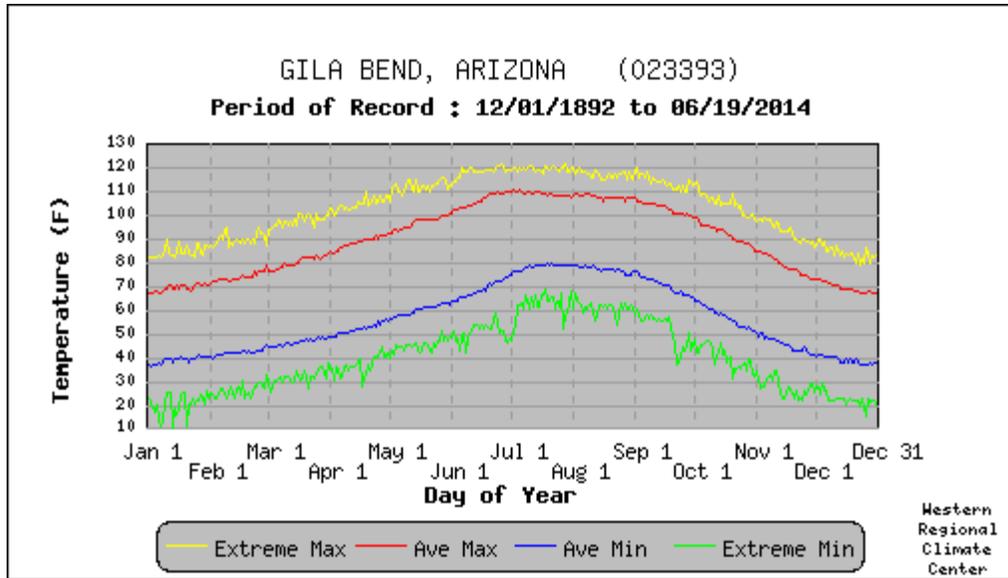


Figure 4-3: Daily Temperatures and Extremes for Gila Bend Station, Arizona

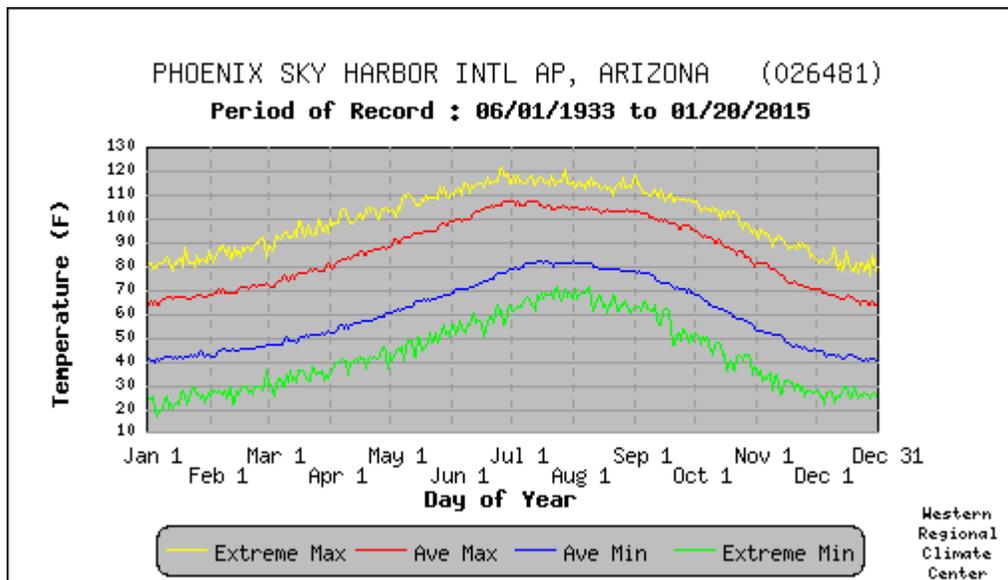


Figure 4-4: Daily Temperatures and Extremes for Phoenix WSFO AP Station, Arizona

Figures 4-5, 4-6, and 4-7 present tabular temperature and precipitation statistics for the Carefree, Gila Bend, and Phoenix Airport Weather Service Forecast Office (WSFO AP) Stations. It is noteworthy that average annual precipitation more than doubles from the lower elevation of the county to the upper regions.

### CAREFREE, ARIZONA (021282)

**Period of Record Monthly Climate Summary**

Period of Record : 6/ 1/1962 to 3/30/2013

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	63.5	66.6	72.2	79.9	90.3	98.7	102.0	100.2	95.0	84.3	71.7	62.6	82.3
Average Min. Temperature (F)	40.7	43.0	46.8	51.8	60.7	69.1	75.7	75.0	69.7	59.6	48.5	40.5	56.8
Average Total Precipitation (in.)	1.49	1.47	1.55	0.56	0.15	0.12	1.15	1.61	1.07	1.09	0.99	1.47	12.71
Average Total SnowFall (in.)	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.  
 Max. Temp.: 79.5% Min. Temp.: 79.5% Precipitation: 81% Snowfall: 81.7% Snow Depth: 81%  
 Check [Station Metadata](#) or [Metadata graphics](#) for more detail about data completeness.

Western Regional Climate Center; [wrc@ari.edu](mailto:wrc@ari.edu)

Figure 4-5: Monthly climate summary for the Carefree Station, Arizona

### GILA BEND, ARIZONA (023393)

**Period of Record Monthly Climate Summary**

Period of Record : 12/01/1892 to 06/19/2014

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	69.1	73.6	80.0	88.1	96.8	106.1	108.9	107.3	103.1	92.1	78.6	69.2	89.4
Average Min. Temperature (F)	38.8	41.8	46.3	51.9	59.8	68.4	78.4	77.1	70.3	57.3	45.4	38.8	56.2
Average Total Precipitation (in.)	0.61	0.62	0.61	0.21	0.13	0.05	0.73	0.99	0.51	0.38	0.50	0.68	6.02
Average Total SnowFall (in.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average Snow Depth (in.)							No	Data					

Percent of possible observations for period of record.  
 Max. Temp.: 83.9% Min. Temp.: 83.7% Precipitation: 90.6% Snowfall: 90.8% Snow Depth: 90.8%  
 Check [Station Metadata](#) or [Metadata graphics](#) for more detail about data completeness.

Western Regional Climate Center; [wrc@ari.edu](mailto:wrc@ari.edu)

Figure 4-6: Monthly climate summary for the Gila Bend Station, Arizona

### PHOENIX SKY HARBOR INTL AP, ARIZONA (026481)

**Period of Record Monthly Climate Summary**

Period of Record : 06/01/1933 to 01/20/2015

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	66.2	70.0	76.0	84.5	93.7	103.0	105.7	103.6	99.1	88.3	75.3	66.5	86.0
Average Min. Temperature (F)	41.7	44.5	49.2	55.9	64.3	72.9	80.6	79.4	73.1	61.0	48.5	41.8	59.4
Average Total Precipitation (in.)	0.78	0.76	0.84	0.28	0.13	0.09	0.86	1.02	0.68	0.57	0.55	0.90	7.46
Average Total SnowFall (in.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.  
 Max. Temp.: 100% Min. Temp.: 100% Precipitation: 100% Snowfall: 98% Snow Depth: 98%  
 Check [Station Metadata](#) or [Metadata graphics](#) for more detail about data completeness.

Western Regional Climate Center; [wrc@ari.edu](mailto:wrc@ari.edu)

Figure 4-7: Monthly climate summary for the Phoenix WSFO AP Station, Arizona

#### 4.2.3 Population

Maricopa County is home to more than half of Arizona’s overall population, with the 2014 count estimated at just over 4 million. In the 1990’s, the county was the fastest growing county in the United States, gaining nearly 1 million new residents with a growth rate of 44.8 percent during that decade. Since the economic crash of 2008, growth within the county has, in general, slowed

significantly, with a moderate 5.0 percent growth over the 2010 to 2014 period. Table 4-1 summarizes 2010 and 2014 jurisdictional population statistics for Maricopa County communities and the county as a whole. The county population is projected to exceed 4.5 million by the year 2020. Figure 4-8 is a map prepared by the Maricopa Association of Governments (MAG) that illustrates 2010 population densities for the county.

**Table 4-1: Summary of jurisdictional population estimates for Maricopa County**

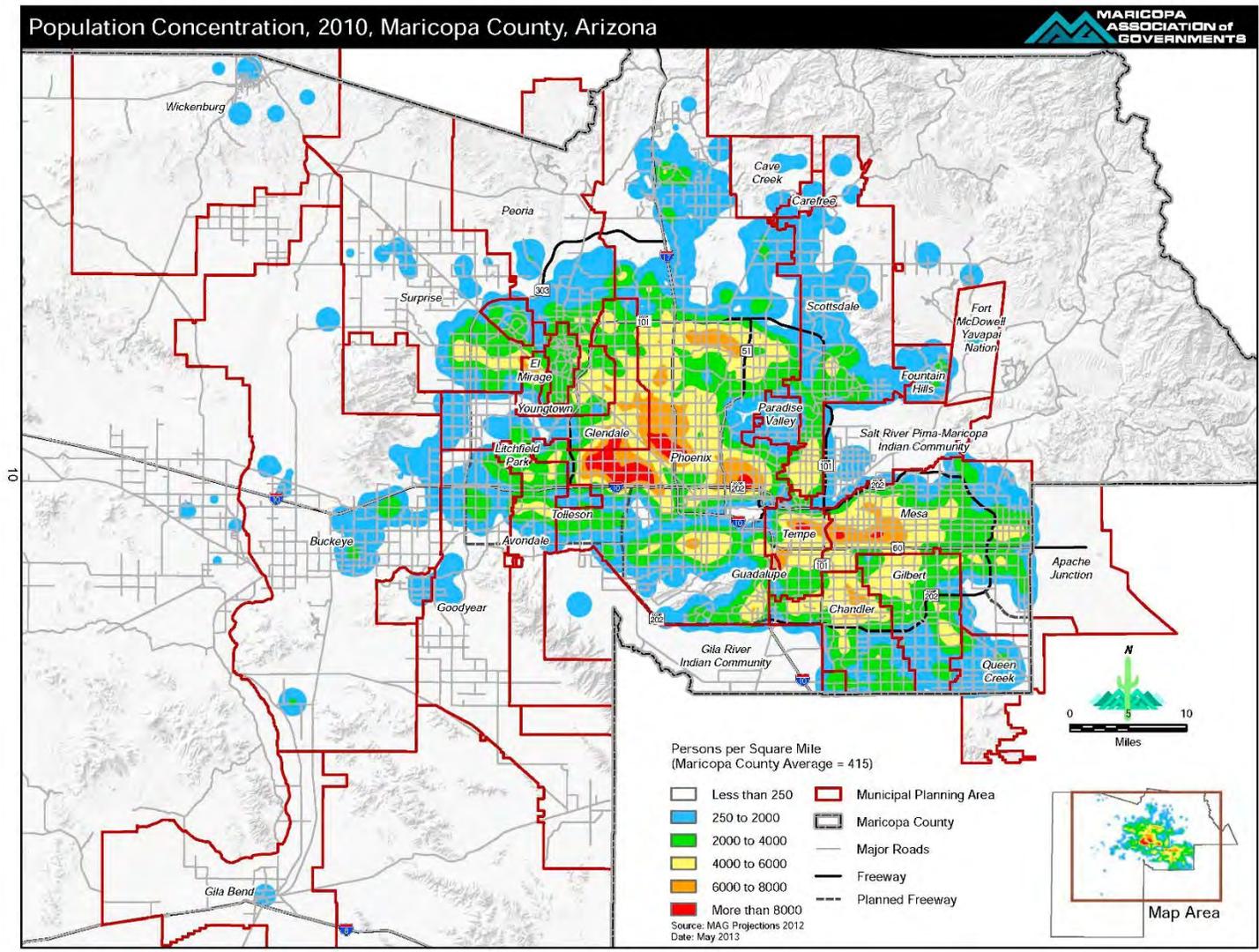
Jurisdiction	Total Population			Percent Change		Share	
	April 1, 2010 (Census 2010)	July 1, 2014	Change	Overall	Annual	Share of Growth	Share of County
Apache Junction*	294	300	6	2.0%	0.48%	0.0%	0.0%
Avondale	76,238	78,090	1,852	2.4%	0.57%	1.0%	1.9%
Buckeye	50,876	58,795	7,919	15.6%	3.46%	4.1%	1.5%
Carefree	3,363	3,453	90	2.7%	0.62%	0.0%	0.1%
Cave Creek	5,015	5,354	339	6.8%	1.55%	0.2%	0.1%
Chandler^	236,326	249,423	13,097	5.5%	1.28%	6.8%	6.2%
El Mirage	31,797	32,857	1,060	3.3%	0.77%	0.6%	0.8%
Fort McDowell Yavapai Nation	971	991	20	2.1%	0.48%	0.0%	0.0%
Fountain Hills	22,489	23,090	601	2.7%	0.62%	0.3%	0.6%
Gila Bend	1,922	1,960	38	2.0%	0.46%	0.0%	0.0%
Gila River*	2,994	3,059	65	2.2%	0.51%	0.0%	0.1%
Gilbert^	208,352	235,493	27,141	13.0%	2.92%	14.2%	5.9%
Glendale	226,721	232,680	5,959	2.6%	0.61%	3.1%	5.8%
Goodyear	65,275	74,743	9,468	14.5%	3.24%	4.9%	1.9%
Guadalupe	5,523	6,084	561	10.2%	2.30%	0.3%	0.2%
Litchfield Park	5,476	5,893	417	7.6%	1.74%	0.2%	0.1%
Mesa	439,041	455,567	16,526	3.8%	0.87%	8.6%	11.4%
Paradise Valley	12,820	13,457	637	5.0%	1.15%	0.3%	0.3%
Peoria*	154,058	163,832	9,774	6.3%	1.46%	5.1%	4.1%
Phoenix^	1,447,128	1,506,439	59,311	4.1%	0.95%	31.0%	37.6%
Queen Creek*	25,912	31,308	5,396	20.8%	4.55%	2.8%	0.8%
Salt River Pima Maricopa Indian Comm.	6,289	6,557	268	4.3%	0.99%	0.1%	0.2%
Scottsdale	217,385	225,698	8,313	3.8%	0.89%	4.3%	5.6%
Surprise	117,517	123,797	6,280	5.3%	1.23%	3.3%	3.1%
Tempe	161,719	169,529	7,810	4.8%	1.12%	4.1%	4.2%
Tolleson	6,545	6,777	232	3.5%	0.82%	0.1%	0.2%
Wickenburg	6,363	6,584	221	3.5%	0.81%	0.1%	0.2%
Youngtown	6,156	6,415	259	4.2%	0.97%	0.1%	0.2%
Balance of County^	272,552	280,426	7,874	2.9%	0.67%	4.1%	7.0%
<b>Totals</b>	<b>3,817,117</b>	<b>4,008,651</b>	<b>191,53</b>	<b>5.0%</b>	<b>1.16%</b>	<b>100.0%</b>	<b>100.0%</b>

**NOTES:**

- Totals may not add due to rounding
- \* Maricopa County portion only
- ^ Census 2010 counts adjusted to reflect Census Count Question Resolutions
- Approved by the Maricopa Association of Governments Regional Council, December 3, 2014

**Sources:**

- U.S. Census Bureau, Arizona State Demographer's Office, Maricopa Association of Governments
- [http://www.azmag.gov/Documents/IS\\_2014-12-15\\_Municipality-Population-and-Housing-Unit-Update\\_2014.pdf](http://www.azmag.gov/Documents/IS_2014-12-15_Municipality-Population-and-Housing-Unit-Update_2014.pdf)



Source: MAG, 2013, *Municipal Planning Area Socioeconomic Profiles Maricopa County, Arizona*.

**Figure 4-8: 2010 population density for Maricopa County**

#### 4.2.4 *Economy*

Maricopa County was originally inhabited by Native Americans, who abandoned the area during the 1300's for unexplained reasons. Agriculture was the prominent activity in the region and was reestablished during the 1860's as the first European settlers migrated to the Salt River Valley. Rapid growth and robust development have been the hallmark of Maricopa County ever since. In 1870, the town site of Phoenix was established, and on February 14, 1871, the Territorial Legislature created Maricopa County. By 1872, there were over 700 people in the county with 5,000 acres under cultivation. The arrival of the railroad in 1877 caused a surge in economic activity. In the early 1900s, the larger farm parcels scattered throughout the region were divided into small farm communities such as Chandler, Gilbert, and Tolleson. In 1902—at the request of President Theodore Roosevelt—after a series of devastating floods, Congress passed the Reclamation Act of 1902. Shortly thereafter, the U.S. Bureau of Reclamation started construction on Theodore Roosevelt Dam east of Phoenix. Irrigated agricultural production and population exploded after the completion of Roosevelt Dam in 1912, providing the region with a reliable water supply. Maricopa County quickly became one of the leading agricultural producing counties in the United States. During this period, the County also became a winter haven for tourists.

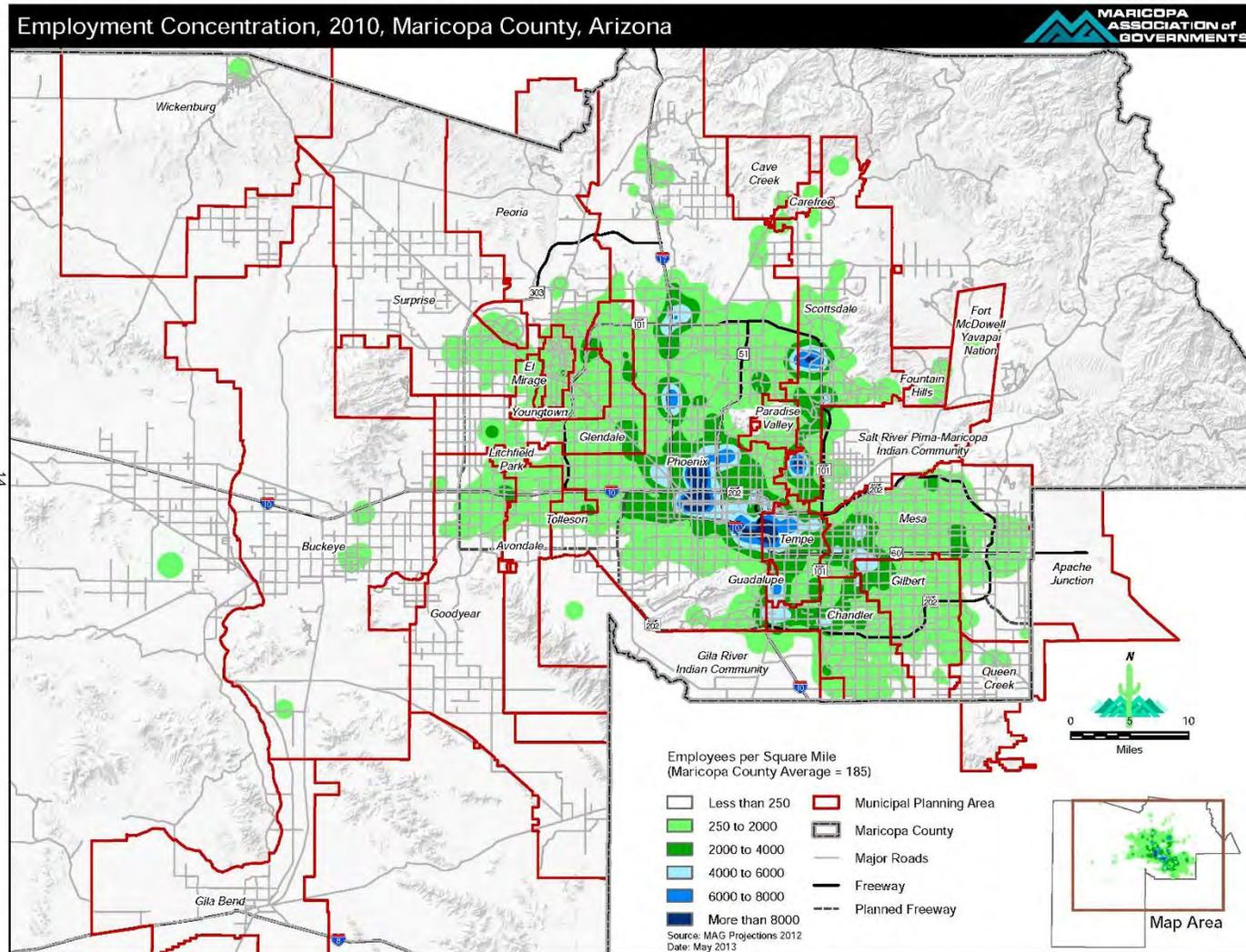
Growth in the area continued as tourism, automobile travel, military, and industrial activities came to the county. Construction continued on residential developments, highways, and commercial districts, making Maricopa County an increasingly popular place to live. Until the end of World War II, the traditional economic engines of both the State of Arizona and Maricopa County were known as the five “Cs”: Cotton, Copper, Cattle, Climate, and Citrus. Newly established wartime industries fueled the monumental growth of the county in the post-war era. By 1960, the population was over 660,000 people, and reached one million residents in the early 1970s. Combined with the general economic expansion of the 1980s and the rush to the Sun Belt, Maricopa County claimed over 2.2 million residents by 1990. Even with economic sluggishness in the early 1990s, the region continued to grow through 2007 at a rate of about four times the national average. Average and per capita 2007 incomes of \$76,465 and \$26,132 per year for the greater Phoenix area, tracked closely with national averages <sup>5</sup>.

During the 2009 Plan cycle, economic growth and employment rates within the county declined from the pre-2008 era highs. As of December, 2014<sup>6</sup>, the unemployment rate stands at 5.7 percent with a total non-farm employed labor force of over 1.8 million. Total revenue from sales for November 2014 exceeds \$6.0 billion. For 2014, a total of 18,813 residential building permits were issued. Figure 4-9 is a map prepared by MAG that shows employment densities across the county for the year 2010.

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<sup>5</sup> Greater Phoenix Economic Council, <http://www.gpec.org/media/docs/DemoandLabor%20-%20Fact%20Book%20Sheet.pdf>

<sup>6</sup> University of Arizona – Eller Economic & Business Research Center, 2015, URL at: <http://azeconomy.org/data/economic-indicators/maricopa-county/>



Source: MAG, 2013, *Municipal Planning Area Socioeconomic Profiles Maricopa County, Arizona*.

**Figure 4-9: 2010 employment concentration projections for Maricopa County**

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**4.3 Jurisdictional Overviews**

The following are brief overviews for each of the participating jurisdictions in the Plan. With this update, the socioeconomic details for each jurisdiction have been shortened and reader is referred to the comprehensive socioeconomic profiles developed by the Maricopa Association of Governments<sup>7</sup>. Excerpts from the MAG document are provided as appropriate. Additionally, updated development trend information provided by each jurisdiction is now included in this section.

*4.3.1 Avondale*

Situated along Interstate 10 approximately 15 miles west of downtown Phoenix, the City of Avondale lies immediately east of Goodyear and west of Tolleson in the west valley region of Maricopa County, as shown in Figure 4-10.

The Estrella Mountain Park lies to the south of Avondale, and the Gila River Native American Community influences the southeastern region of the city. Like most of the communities located in the greater metropolitan area, Avondale has experienced rapid growth in both population and land area. In 2008 the City of Avondale’s planning area encompassed nearly 94.4 square miles, which contrasts with the 40 square miles contained in the city’s planning area in 1990.

While Avondale reflects the common growth trends of its west valley neighbors, the city also has a unique natural climate due to the confluence of the Agua Fria and Gila River basins which form the Gila River junction in the southwest portion of the city. This unique feature compliments the diverse Estrella Mountain Regional Park in the southern region of Avondale’s planning area. The primary man-made features that influence Avondale’s land uses include: Interstate 10, which bisects the community’s north side; a Salt River Power transmission line which runs north-south through Avondale and meets its east-west counterpart in the south central portion of the city; and the St. Johns and Roosevelt Irrigation District Canals which transverse the city’s north and south sides, respectively. These features are complimented by an arterial roadway network in the portion of the city located north of the Estrella Mountains.

Avondale was founded in 1900 and became incorporated in 1946. Avondale is governed by a council-manager form of government with a seven member city council consisting of a mayor and six council members elected at-large for a term of four years. The city council appoints the city manager and other officers necessary to produce an orderly administration of the city’s affairs.

In 2014, the population of Avondale was 78,090. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-2.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	76,238	27,001	14,064
2020	96,591	31,417	27,170

Development Trends:

Development trends over the past five years have been at historical lows and tended to focus on infill projects in existing subdivisions. The city has only issued 152 residential building permits in the past five years, and they were all in existing subdivisions.

It is anticipated that the city will begin to see additional commercial and residential development over the next five years, with commercial development focused in existing commercial corridors along I-10 and major arterials. New residential development will primarily occur in the southern portion of the city in the vicinity of the Gila and Salt rivers. This is also the area in the vicinity of the city’s water reclamation facility. See Figure 4-11 for specific growth areas in the city.

<sup>7</sup> MAG, 2013, *Municipal Planning Area Socioeconomic Profiles Maricopa County, Arizona*. Web access at: <http://www.azmag.gov/Projects/Project.asp?CMSID=1132>

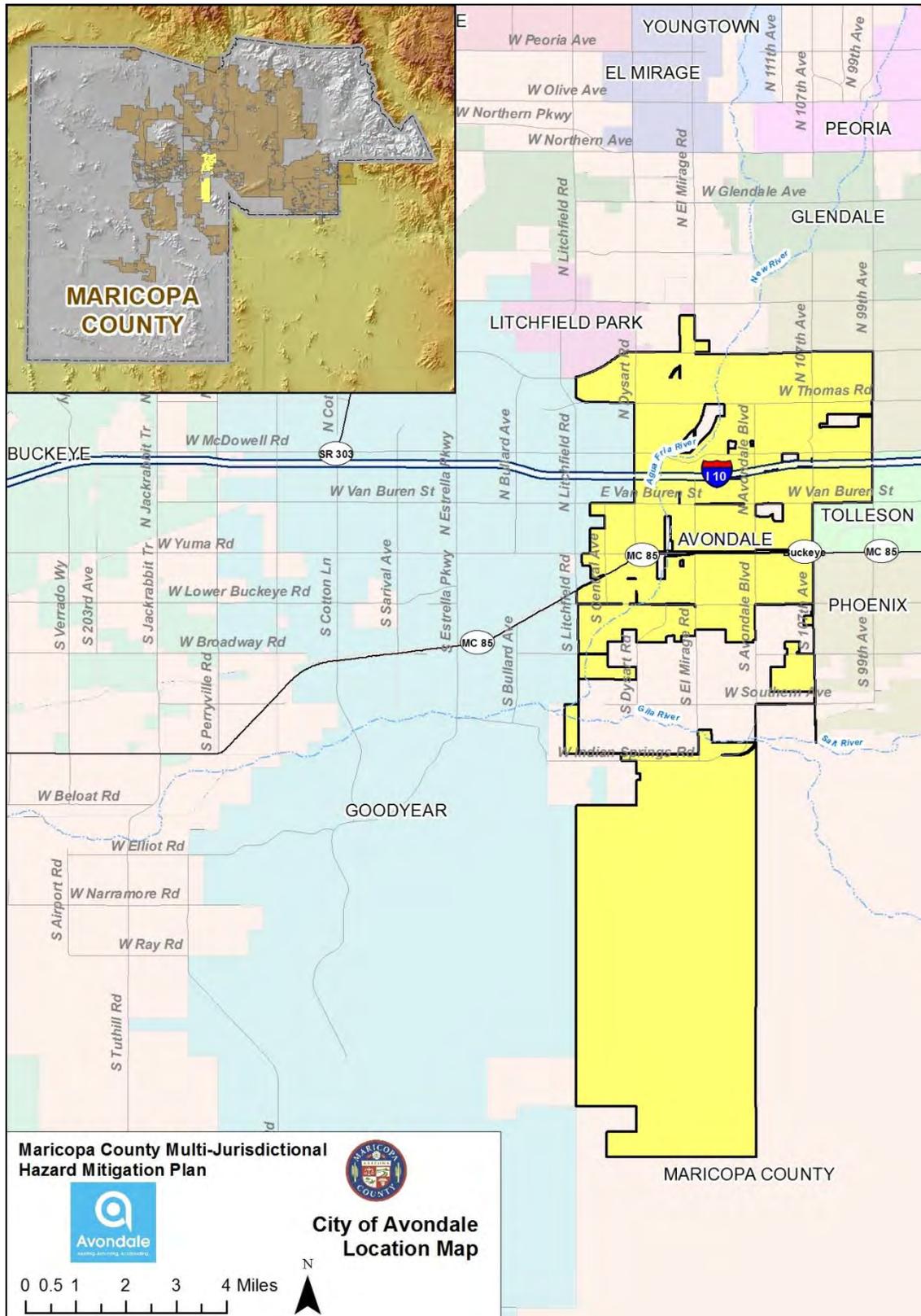


Figure 4-10: Avondale location map

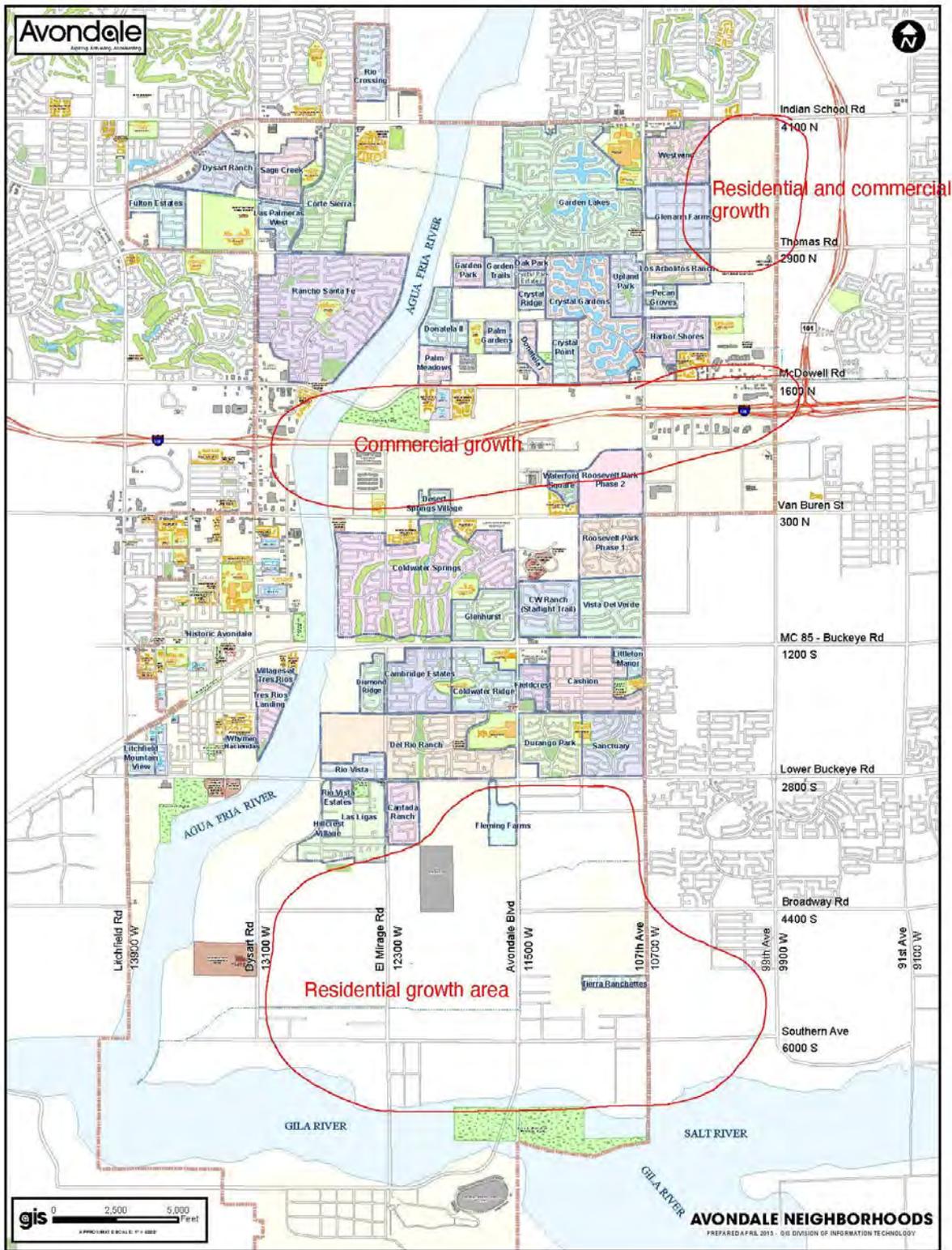


Figure 4-11: Avondale growth areas map

4.3.2 Buckeye

The City of Buckeye is positioned as the Western-most community in the greater metropolitan area, giving the community the unique title of "Western Gateway" for the Salt River Valley. Situated along Interstate 10 approximately 30 miles west of downtown Phoenix, the City of Buckeye lies immediately west of the communities of Goodyear and Surprise, as shown in Figure 4-12. Now encompassing all or portions of the west, south, and east sides of the White Tank Regional Park, Buckeye’s historical town center—located four miles south of Interstate 10 near State Route 85—lies many miles away from what is expected to become the city’s new growth area to the west of the White Tank Mountains. Like most of the communities located in the greater metropolitan area, Buckeye has been growing steadily for the past several decades. While it was once one of the smallest communities in Maricopa County, recent annexations and growth initiatives have resulted in significant expansion of Buckeye’s planning area.

The primary features that influence Buckeye’s land uses include: Interstate 10, which bisects the community’s south side; the White Tank Mountains, which effectively separate Buckeye from its eastern neighbors, and the Hassayampa River and its tributaries, which influence the north and west sides of Buckeye. Various overhead power lines transect the community’s southern half, as does a traditional network of arterial streets. The Sun Valley Parkway, a multi-lane, limited access roadway proceeds north from Interstate 10 through Buckeye and connects with the City of Surprise on the northeast section of the White Tank Regional Park.

Although prominent new growth in Buckeye will contribute steadily to the demographic, economic, and land use climate of the west valley, Buckeye is one of the older “outer ring” suburbs in Maricopa County. Founded in 1888 and incorporated in 1929, Buckeye’s rural-residential character is reinforced by its agricultural economic base—Buckeye is still among the largest producers of Pima Cotton in Maricopa County. Buckeye’s residents are governed under a council-city manager form of government, which includes a seven member city council consisting of a mayor and six council members elected at-large for a term of four years. The council appoints the city manager and other officers necessary to produce an administration of the community’s affairs.

In 2014, the population of Buckeye was 58,795. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-3.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	50,876	18,207	12,833
2020	103,550	35,825	29,183

Development Trends:

Development trends over the last five (5) years have primarily included the continued development of some of the city’s active master planned communities including Festival Ranch, Verrado, Sundance, and other smaller residential subdivisions. Additionally, development has largely been single-family detached homes, with some moderate commercial infill within the more populated areas that are within a few miles of the Interstate 10 freeway corridor. The city projects over 700 single-family permits to be issued in 2014, which is approximately a 45% increase from 2010.

Buckeye is projecting that many of the existing master planned communities including Verrado, Tartesso, Festival Ranch, Sundance, and other smaller subdivisions will be filling in over the next five years. Additionally, the city anticipates that some newer subdivisions will come online along with supporting retail within a few miles of the Interstate 10 corridor. Figure 4-13 is a map that identifies the master planned communities mentioned above.

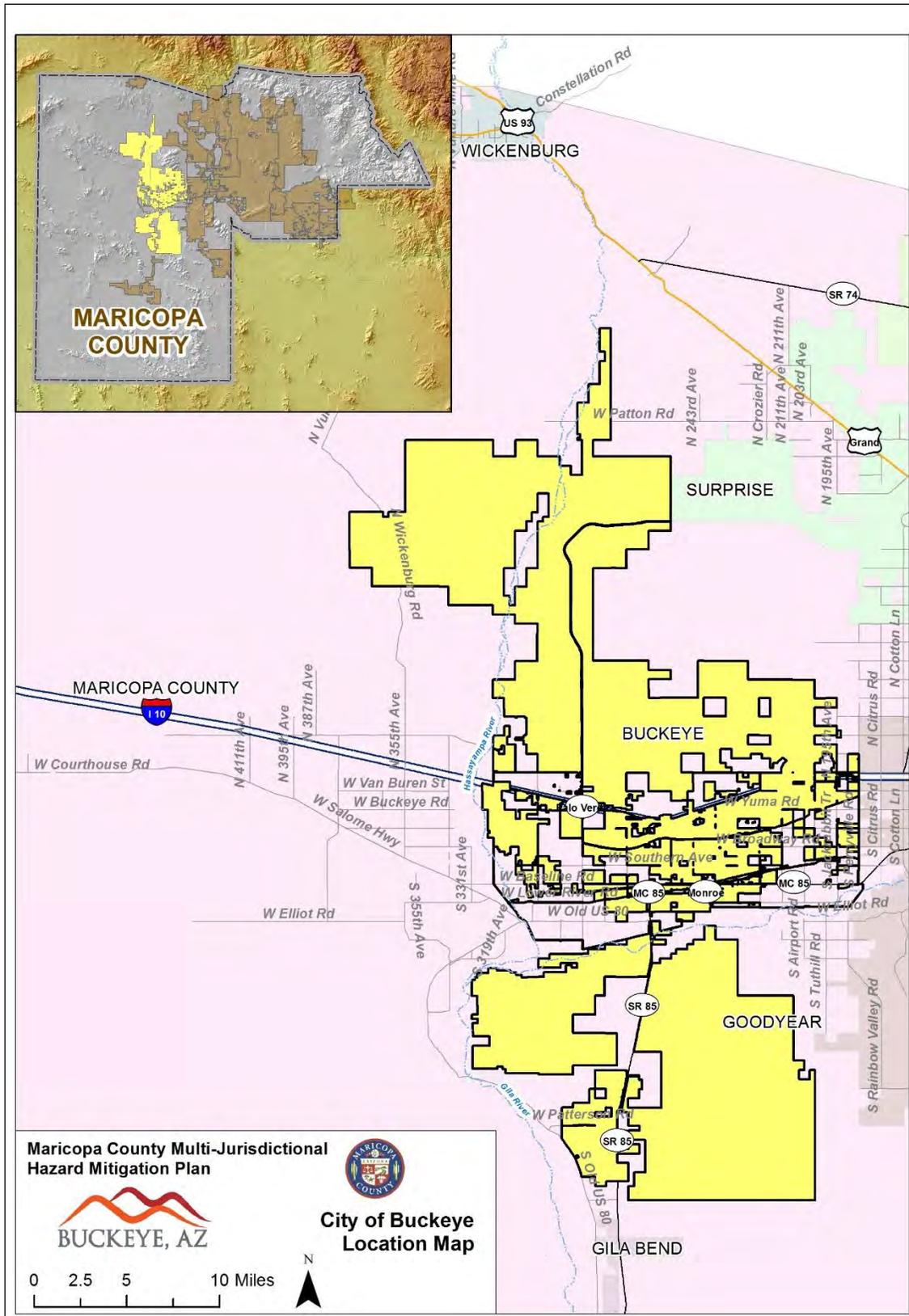


Figure 4-12: Buckeye location map

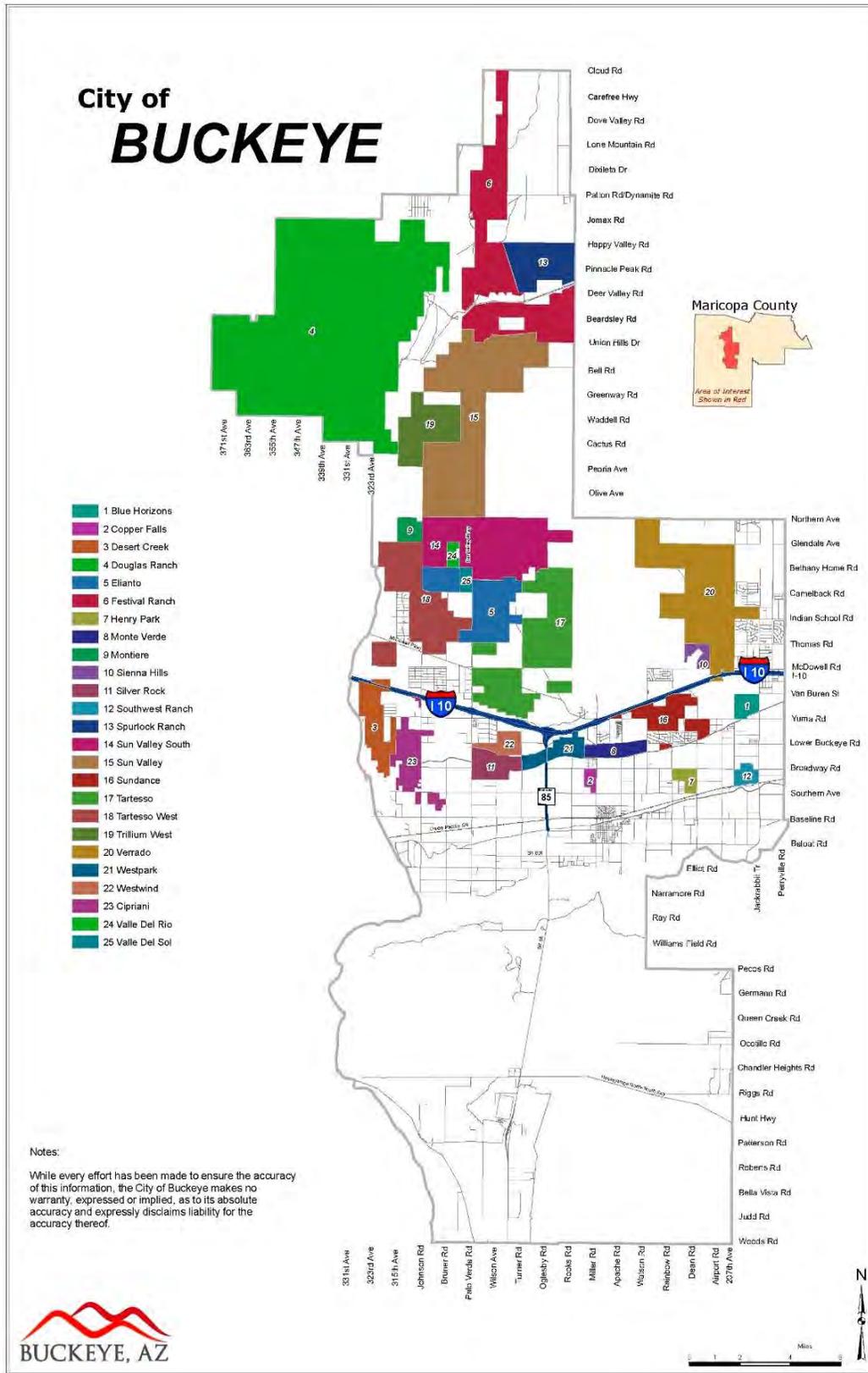


Figure 4-13: Buckeye master planned communities map

*4.3.3 Carefree*

The Town of Carefree is located in the far northeast portion of the Phoenix Metropolitan Area, approximately 25 miles from downtown Phoenix. To the west, Carefree is bordered for its full length by the Town of Cave Creek. On the south and east, it is bordered by Scottsdale and on the north by unincorporated Maricopa County. The City of Phoenix approaches within a mile from the southwest. Developed as a planned community in the 1950s and incorporated in 1984, the Town of Carefree has become known as a residential town with resort-style living. Historically, the Town of Carefree was master planned to be entirely distinct from the surrounding communities by allowing its small population to preserve a lifestyle that integrates with the surrounding desert environment. On December 4, 1984, the Maricopa County Board of Supervisors declared Carefree a legally incorporated town in the State of Arizona.

Illustrated in Figure 4-14, the primary east-west roadway into the area—the Carefree Highway—has been constructed as a four-lane arterial from Interstate 17 to Cave Creek Road. Other major roadway and infrastructure improvements to the south have been completed or are in the planning stages by the Cities of Scottsdale and Phoenix. Most of the vacant desert that once surrounded the Town of Carefree on the south, east, and west in the 1980’s is now developed with semi-rural urban uses. Recent development opportunities to the north of Carefree suggest that growth of the metropolitan area may continue with the potential to surround the town at some point in the future.

Today, Carefree’s residents are governed under a council-administrator form of government, which includes a seven member town council consisting of a mayor and six council members elected at-large for a term of four years. The town council appoints the town administrator and other officers necessary to manage the daily affairs of the town.

In 2014, the population of Carefree was 3,453. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-4.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	3,363	2,251	1,426
2020	3,770	2,563	1,899

Development Trends:

The Town of Carefree is 8.5 square miles in size and approximately one-third built out. Much of the town is primarily composed of single-family residential land use. At the heart of the town is approximately 80 acres of commercially zoned land that is approximately half built out. Over the last five years, due to the contraction in the economy, community growth/development has been relatively slow. Most building permits issued during this time were for residential remodels with only a few new single-family homes.

Over the next five years, the town expects an increase in new residential permits and remodels. Many of these new residences will be built on existing infill single-family lots. Additionally, the town anticipates redevelopment and further development of the commercially zoned land within its town center. This potential commercial development includes, but is not limited to, a multiple purpose cultural facility, a mixed use development project, which consists of two stories of residential condominiums over street level commercial, and some additional office space, restaurants and retail space.

Figure 4-15 shows a future land use map that is currently published in the town’s General Plan.

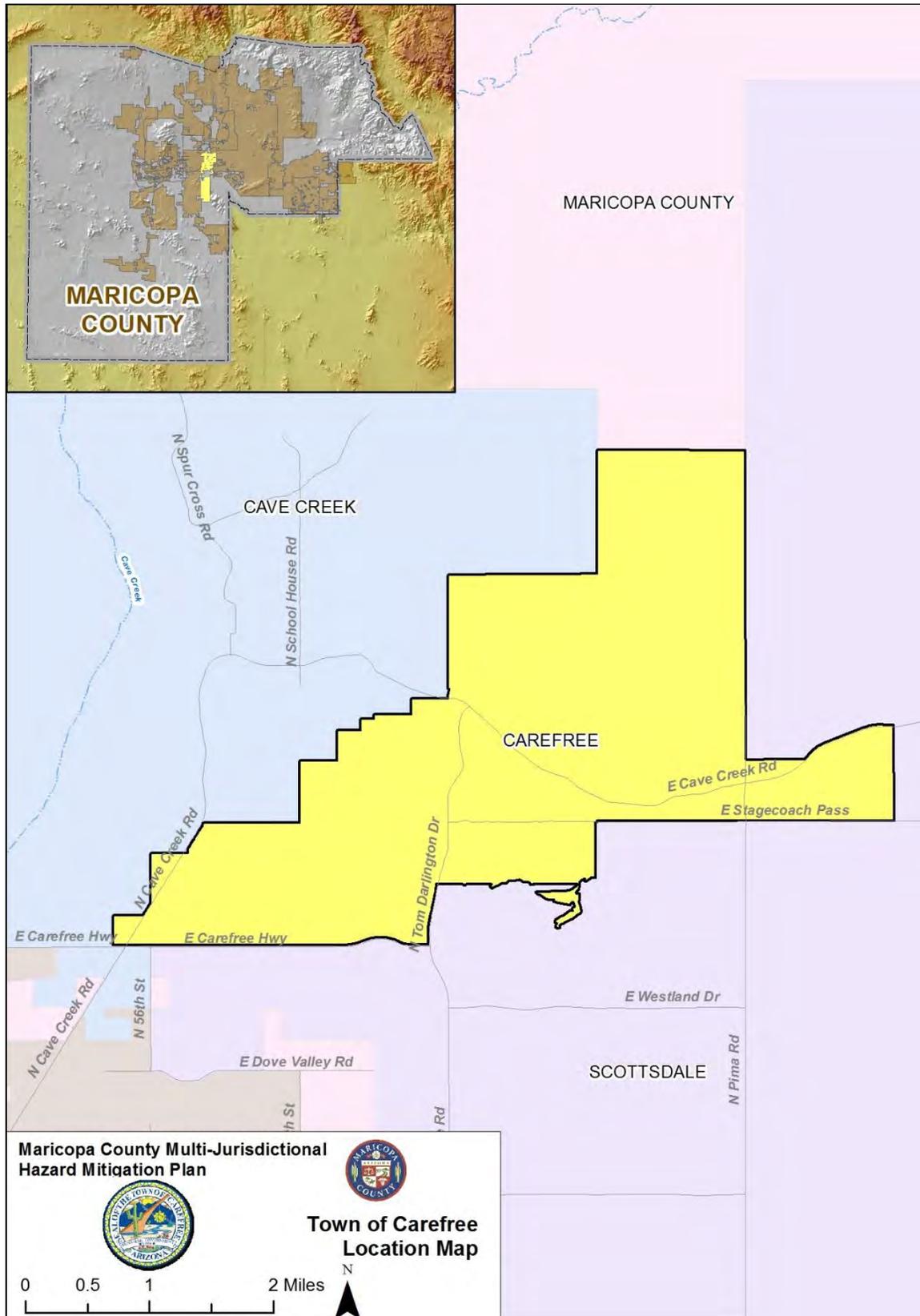


Figure 4-14: Carefree location map

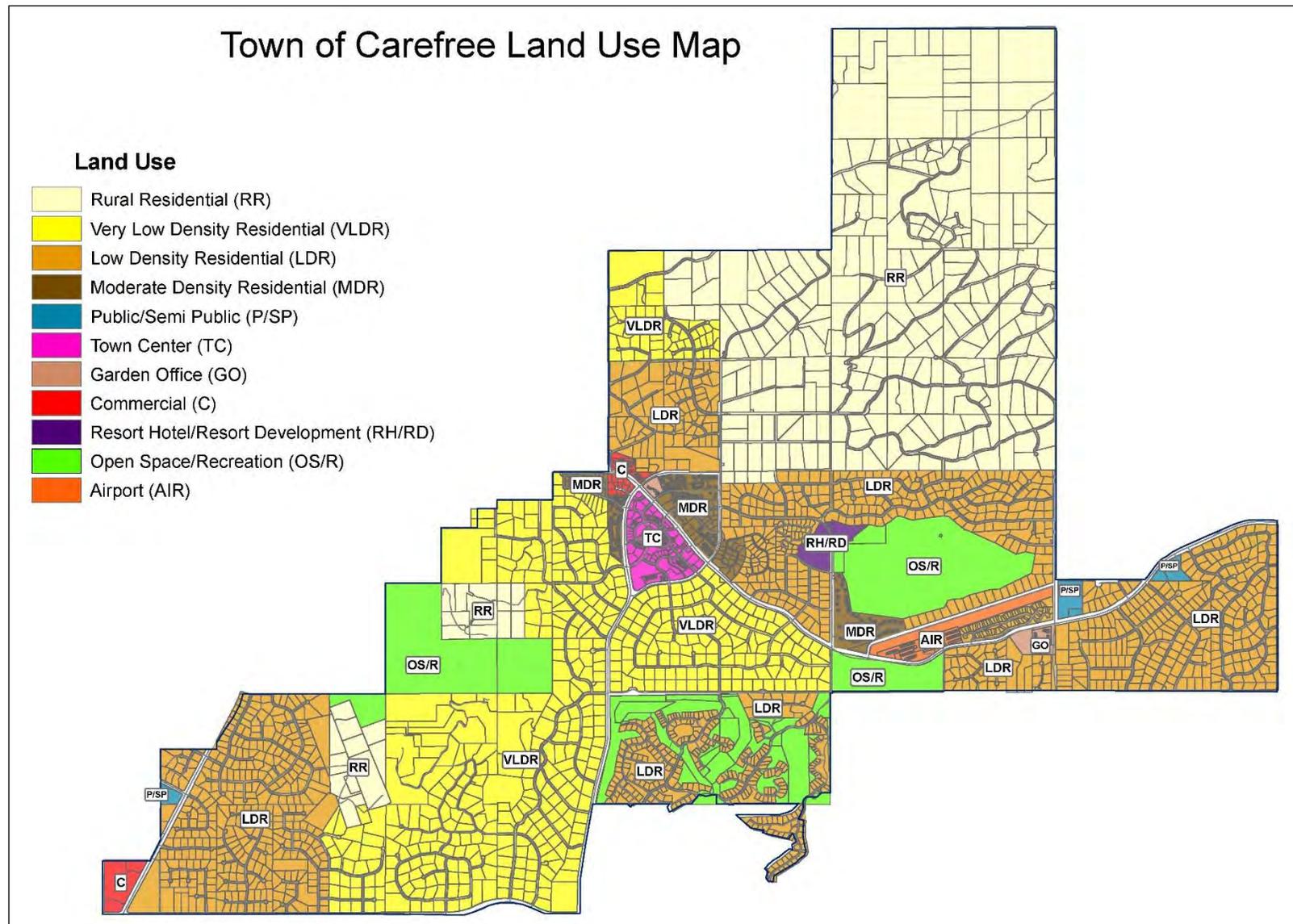


Figure 4-15: Carefree land use planning map

**4.3.4 Cave Creek**

One of the few communities in Maricopa County that has not experienced a rapid rate of growth, the Town of Cave Creek is located in the far northeast portion of the Greater Metropolitan Area, approximately 25 miles from downtown Phoenix. To the east, the Town of Carefree borders Cave Creek for its full length. On the south, it is bounded by Phoenix and on the north and west by unincorporated Maricopa County. A community more closely associated with a frontier and cowboy image than its “sister community” to the east, Carefree, the Town of Cave Creek exists in and near some of the most scenic country in Maricopa County. The area that now includes the Town of Cave Creek was originally settled in the late 1870s, and quickly became an active mining area during the 1880s. Incorporated in 1986, Cave Creek today is struggling to maintain its rural appearance while existing in a rapidly growing region of Maricopa County.

Illustrated in Figure 4-16, the primary east-west roadway into the area—the Carefree Highway—has been constructed as a four-lane arterial east from Interstate 17. This roadway intersects with the primary north-south access to the area, Cave Creek Road, on the south side of the town and runs north, bisecting the town. Sharing a development pattern that roughly parallels that of Carefree, most of the vacant desert that once surrounded the Town of Cave Creek in the 1980’s is now developed with semi-rural urban uses. Complementing the rugged landscape of the area has been a recent effort to preserve these natural amenities. Today the Spur Cross Ranch Conservation Area, Cave Creek Park, and Black Mountain Summit Preserve reflect this movement, and are located on the north, west, and southeast portions of Cave Creek, respectively. Recent development opportunities to the south of Cave Creek, especially in north Phoenix and Scottsdale, suggest that growth of the metropolitan area may continue with the potential to surround the town at some point in the future.

Cave Creek’s residents are governed under a council-town administrator form of government, which includes a seven member town council consisting of a mayor and six council members elected at-large for a term of four years. The town council appoints the town administrator and other officers necessary to manage the daily affairs of Cave Creeks’ residents.

In 2014, the population of Cave Creek was 5,354. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-5.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	5,015	2,579	1,838
2020	5,850	2,956	2,798

**Development Trends:**

The Town of Cave Creek has seen slow development over the past five years. One major retail shopping center was developed at Cave Creek and Oleson Roads. A multifamily housing unit was completed at Cave Creek and Surrey Roads bringing 80 new living units. Forty-two (42) single family dwellings were built at Basin and Mark Way. Fourteen (14) condominiums were built in the area of School House Road and Military Road. One new restaurant was built with an associated arena for bull riding within the 6500 block of Cave Creek Road.

Over the next five years, the town anticipates that the Carefree Highway and Cave Creek Road corridors will continue to see the establishment of more retail commercial. The town also estimates that approximately 150 new single family dwellings will be added at 32<sup>nd</sup> Street and Cahava Ranch Road; 24 single family homes will be added in the area of New River and Cloud Road; and Hidden Rock Estates will bring approximately 52 single family dwellings and live-work facilities within the 6500 Block of Cave Creek Road.

Figure 4-17 shows a current land use map that is published in the town’s General Plan.

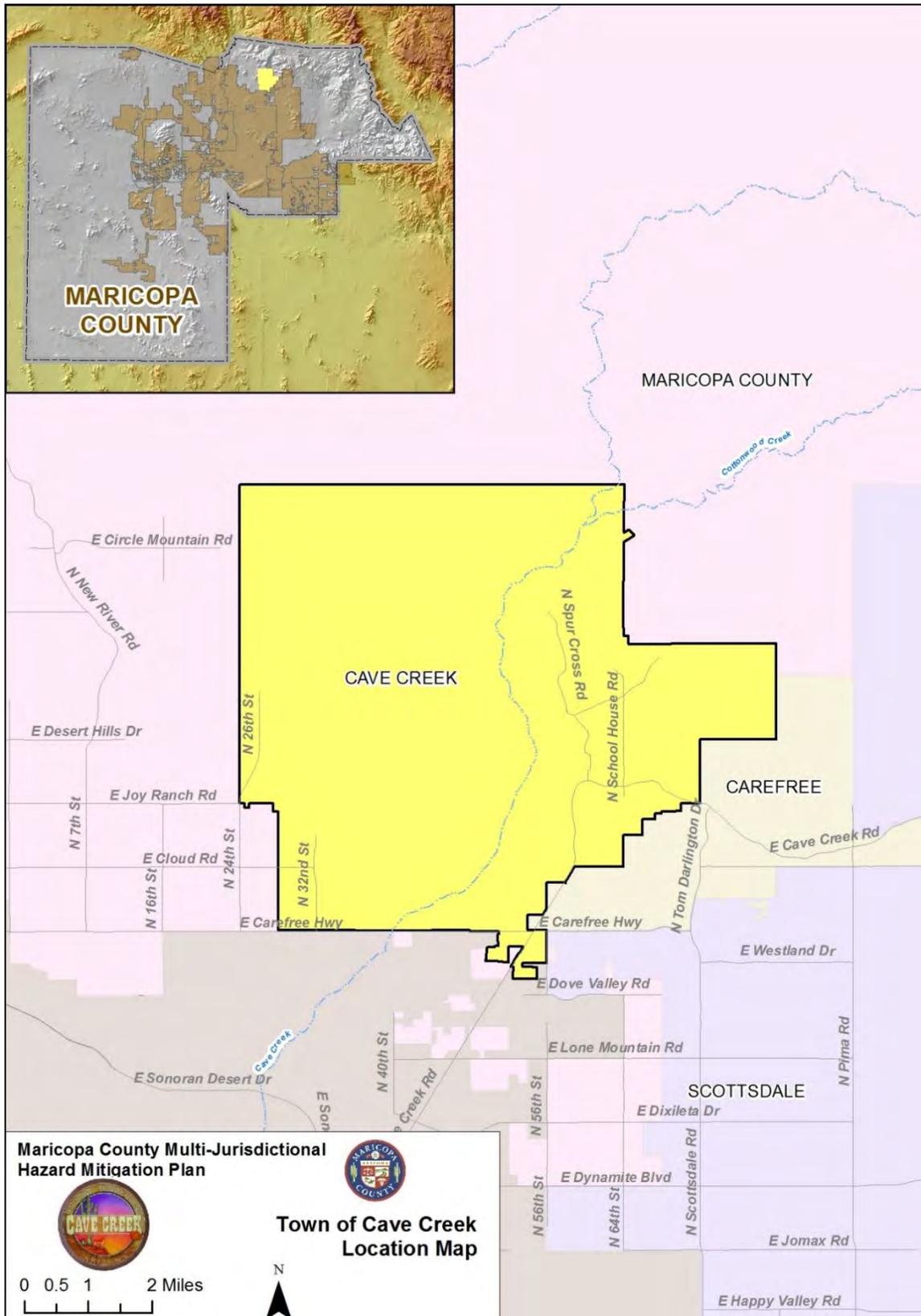


Figure 4-16: Cave Creek location map

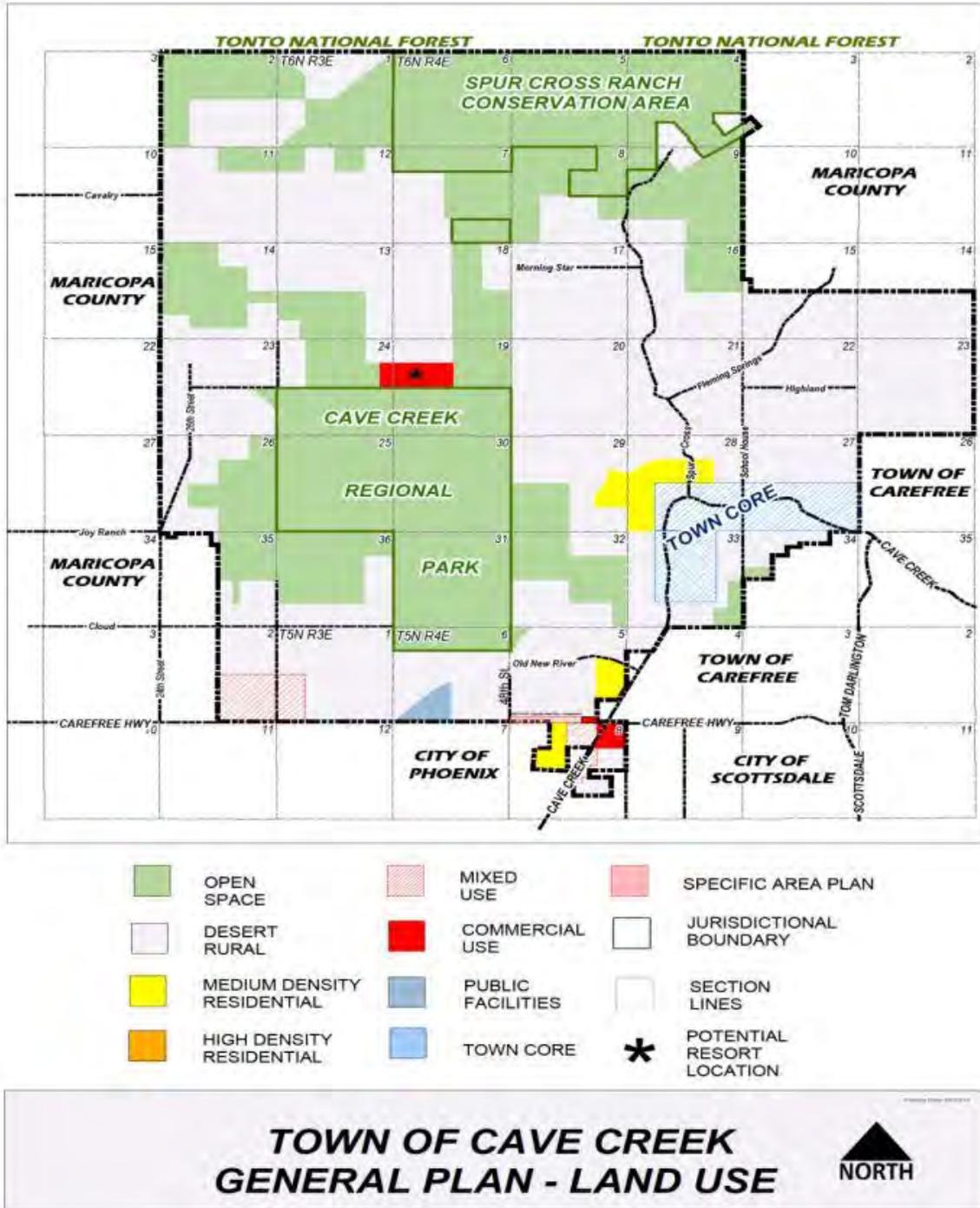


Figure 4-17: Cave Creek land use planning map

4.3.5 Chandler

Located approximately 19 miles east of downtown Phoenix, Chandler is located in the southeast Maricopa County. The City of Chandler was one of the fastest growing cities in Arizona and the United States, having grown 116 percent from 1990 to 2002. Chandler, known as the "Oasis of the Silicon Desert" was once a quiet tree-lined farming community. It has since blossomed into a city that is home to a dynamic high-tech industry. Its incorporated area is 63.6 square miles, and the city's planning area is 71.4 square miles.

Chandler is characterized by a generally flat landscape framed by views of the Santan Mountains to the southeast and the Superstition Mountains to the east as shown in Figure 4-18. The Loop 101 Freeway passes through the west-central portion of the city, the 202 (Santan) Freeway passes through the south-central portion of the city, and the existing State Route 60 provides access just north of the city's northern border. The Town of Gilbert borders the city to the east; Tempe and Mesa border Chandler to the north; Phoenix forms the western border; and the Gila River Indian Community lies to the south.

Incorporated in 1920, today Chandler's residents are governed under a council-manager form of government, which includes a seven member city council consisting of a mayor and six council members elected at-large for a term of four years. The city council appoints the city manager and other officers necessary to produce an orderly administration of the city's affairs.

In 2014, the population of Chandler was 249,423. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-6.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	236,123	94,404	112,851
2020	283,052	108,195	152,617

Development Trends:

During the past five years, more than 5.5 million square feet of non-residential buildings and 4,731 housing units were developed in the City of Chandler. New developments in the industrial sector included Intel's Fab 42, adding 1,685,146 square feet of manufacturing and office space at Intel's Ocotillo Campus. New commercial development included three new hotels, all generally located south of the intersection of the 101 and 202 freeways, and two new auto dealerships located northwest of the 202 Freeway and Gilbert Road. In the Public/Institutional category, Chandler's new city hall, consisting of 115,000 square feet, was completed, and the Chandler Gilbert Community College added a new 75,000 square foot facility. Non-residential developments were located throughout the city, but can be generally described as taking place mostly in the central and south portions of the city. The city has also experienced a surge in high density residential developments, with over 2,000 apartment units constructed, and most located within two miles of a freeway. Single-family homes were developed at an average rate of 45 homes per month, and were mostly located in South Chandler.

During the next five years, the city anticipates significant downtown development based on recently received zoning entitlements. These include multi-story, urban style apartments, a specialized cinema and a couple of mixed-use developments. More apartments, a hotel, office and additional retail are expected to be built around the Chandler Fashion Center Mall. Construction has already begun on a 410,000 square foot expansion of Wells Fargo's regional campus on Price Road, and a 302,000 square foot FedEx facility has also broken ground near the Chandler Municipal Airport. Except for another Intel Fab, the city anticipates continued growth in the non-residential sectors located throughout the city. The single-family development growth rate is expected to increase slightly. Most new single-family developments will be located in South Chandler. Figure 4-20 shows the land use planning map from Chandler's current General Plan<sup>8</sup>.

<sup>8</sup> City of Chandler, [http://www.chandleraz.gov/content/GP\\_FutureLandUsePlan.pdf](http://www.chandleraz.gov/content/GP_FutureLandUsePlan.pdf)

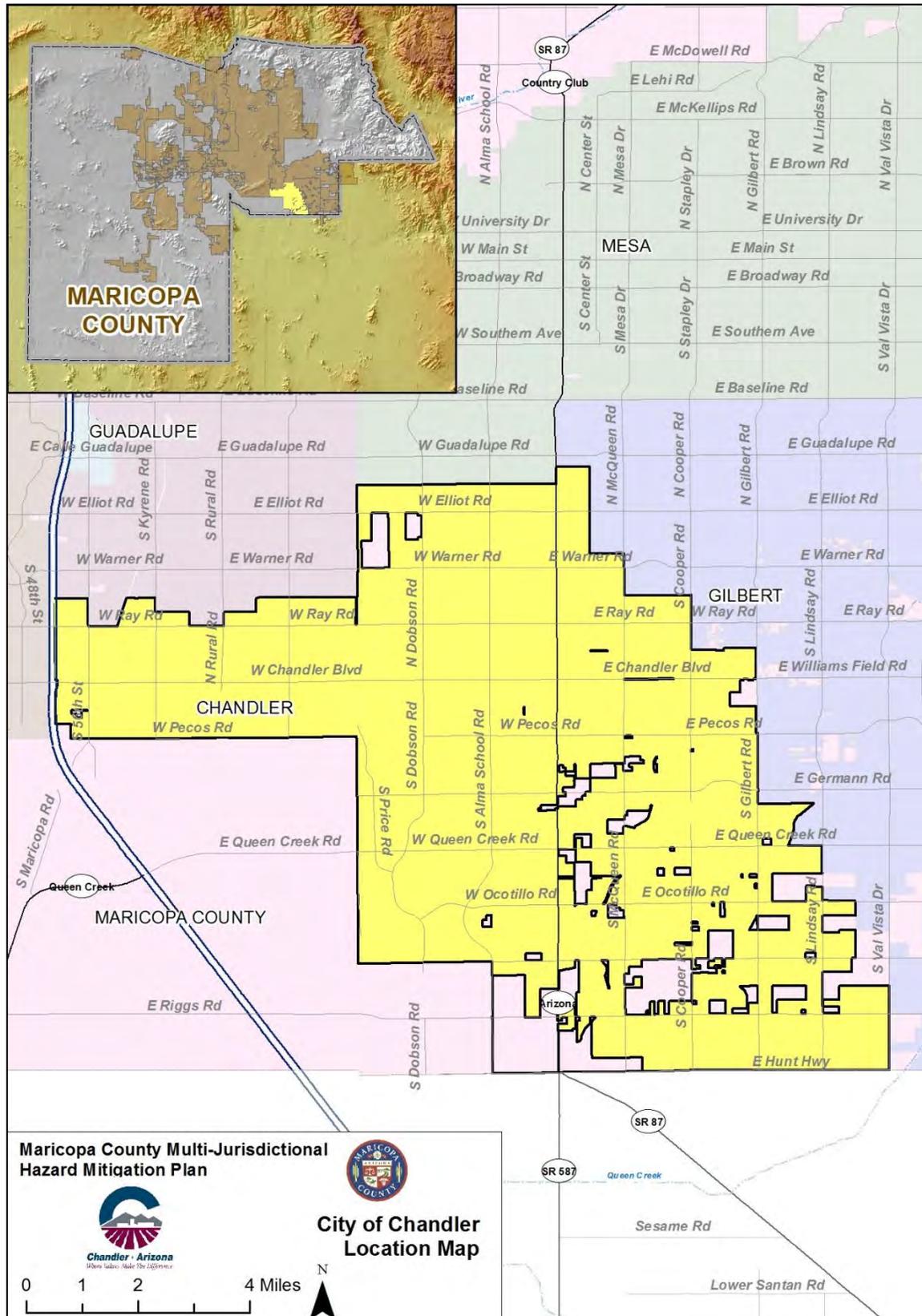


Figure 4-18: Chandler location map

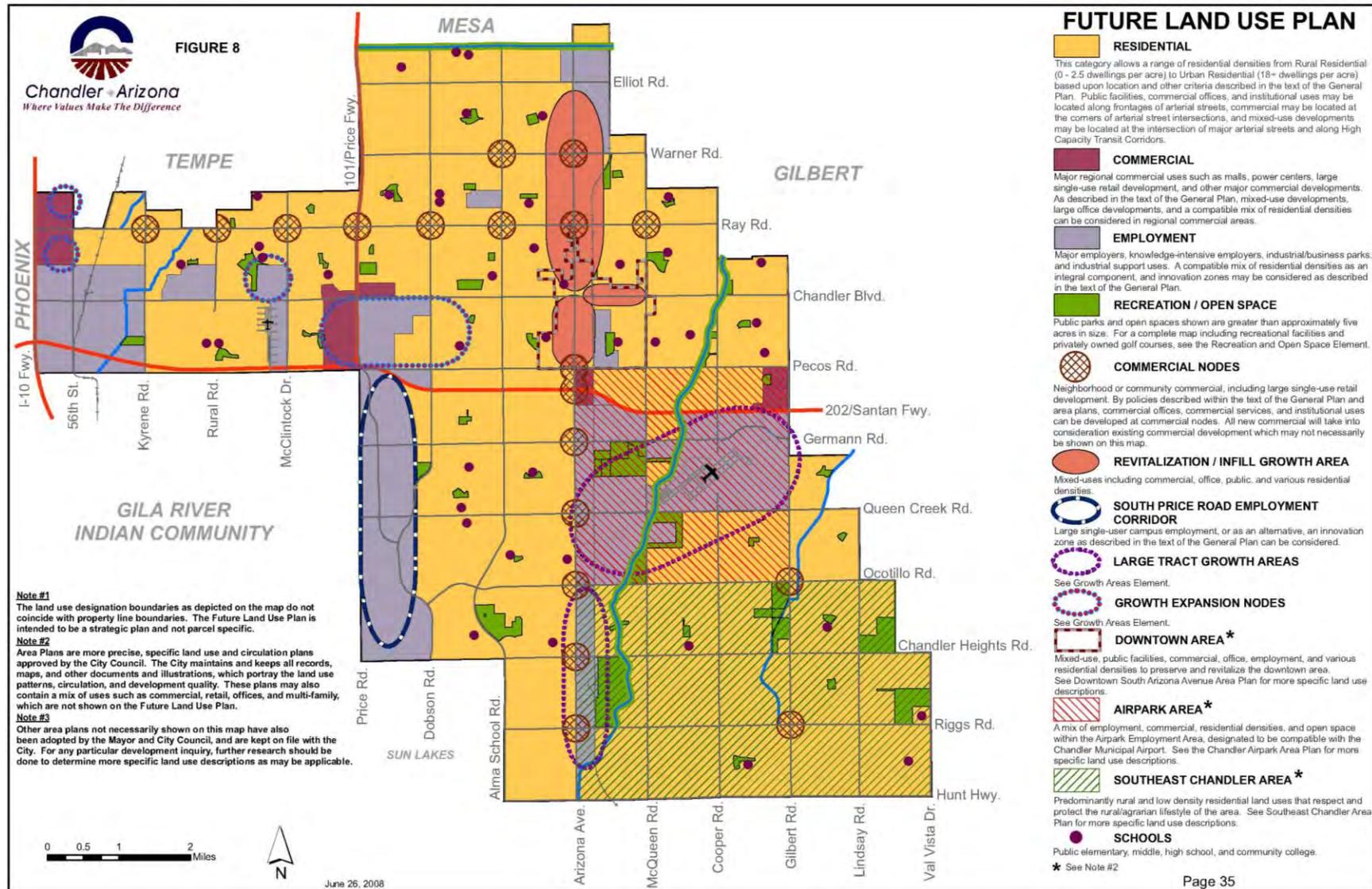


Figure 4-19: Chandler land use planning map

4.3.6 *El Mirage*

The City of El Mirage is located approximately 15 miles northwest of downtown Phoenix in the western portion of the Phoenix Metropolitan area. South of Peoria Avenue, El Mirage is bordered to the west and south by the City of Glendale. It is enclosed on the west and north by the City of Surprise. On the east, the city is bordered by the Town of Youngtown and unincorporated areas of Maricopa County. El Mirage sits on the west bank of the Agua Fria River, which runs the length of the city’s eastern border.

United States Highway 60, Grand Avenue, is a divided four to six lane road that extends from the Town of Wickenburg southeast to Van Buren Street in the City of Phoenix. As shown in Figure 4-20, Highway 60 diagonally traverses the north portion of El Mirage. The Burlington Northern Santa Fe (BNSF) Railroad runs along Grand Avenue’s east side through the City of El Mirage. The centerpiece of El Mirage’s recreation facilities is Gateway Park, located at the northwest corner of Thunderbird and El Mirage Roads. The Agua Fria River represents the city’s largest open space area, entailing 1,120 acres.

Originally a farming community, migrant farm workers founded El Mirage in 1937, and the city was incorporated in 1951. El Mirage’s residents are governed under a council-manager form of government, which includes a seven member city council consisting of a mayor and six council members elected at-large for a term of four years. The city council appoints the city manager and other officers necessary to produce an orderly administration of the city’s affairs.

In 2014, the population of El Mirage was 32,587. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-7.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	31,797	11,326	4,263
2020	34,596	11,838	5,931

Development Trends:

Over the past five years, the City of El Mirage has developed two public safety buildings, a YMCA and two strip malls, a Fresh and Easy and a Valero fuel station. These developments have been completed in the central areas of the city and do not affect our vulnerabilities or increase our risk factors.

Current known plans regarding new construction anticipated in the next five years include a large grow facility to the south of central El Mirage and a commercial building (Dollar Store) in the central portion of the city. There are no further known plans at this point. Figure 4-21<sup>9</sup> indicates the land use planning for the city based on the 2011 Amendment to the general plan, and shows primarily employment based uses for the southern half of the city and residential dominated uses in the northern half. Open space mostly coincides with the Agua Fria River and commercial development is primarily limited to small businesses located along Grand Avenue and Thunderbird Road.

<sup>9</sup> City of El Mirage, 2011, <http://www.cityofelmirage.org/DocumentCenter/View/9685>

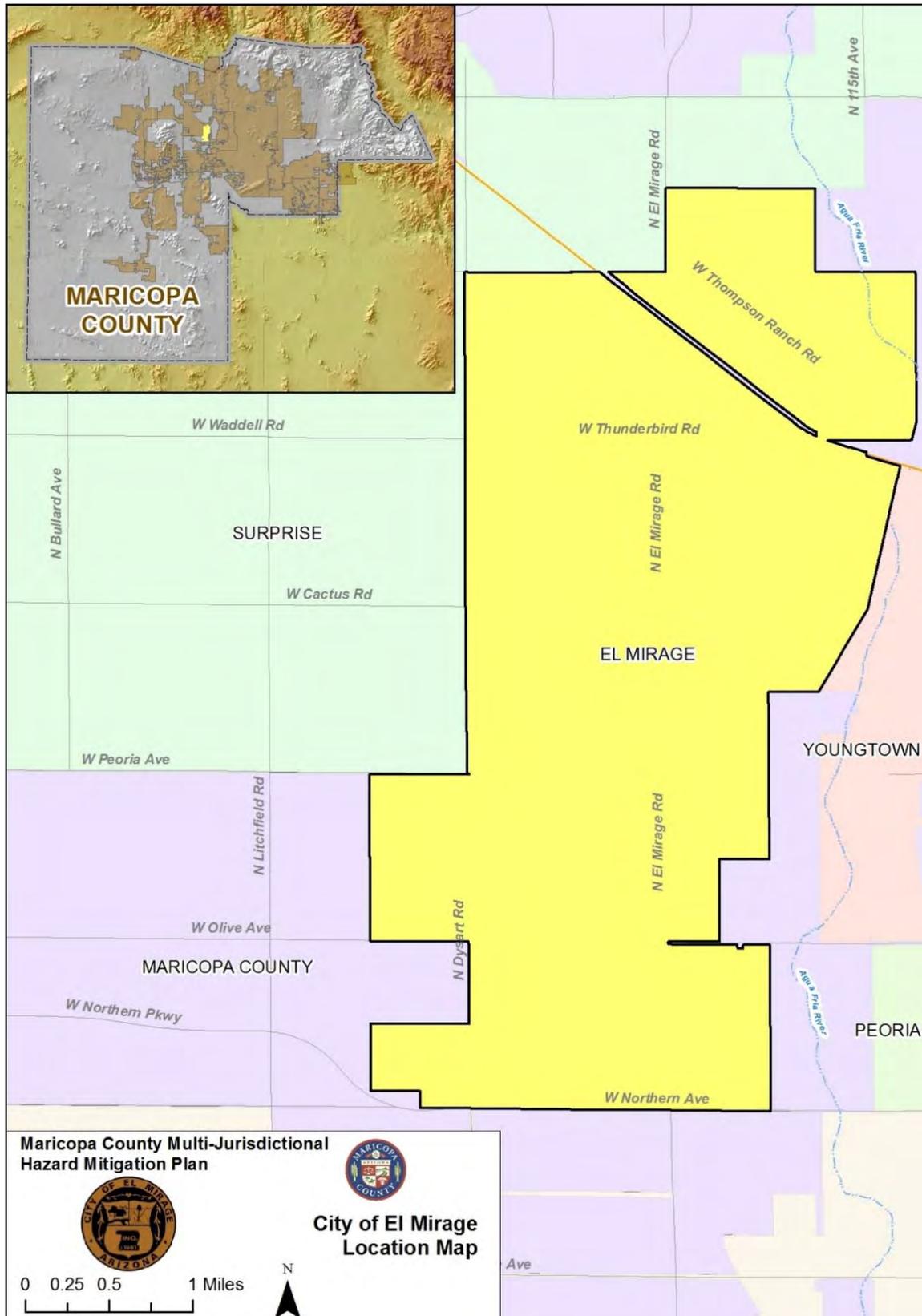


Figure 4-20: El Mirage location map

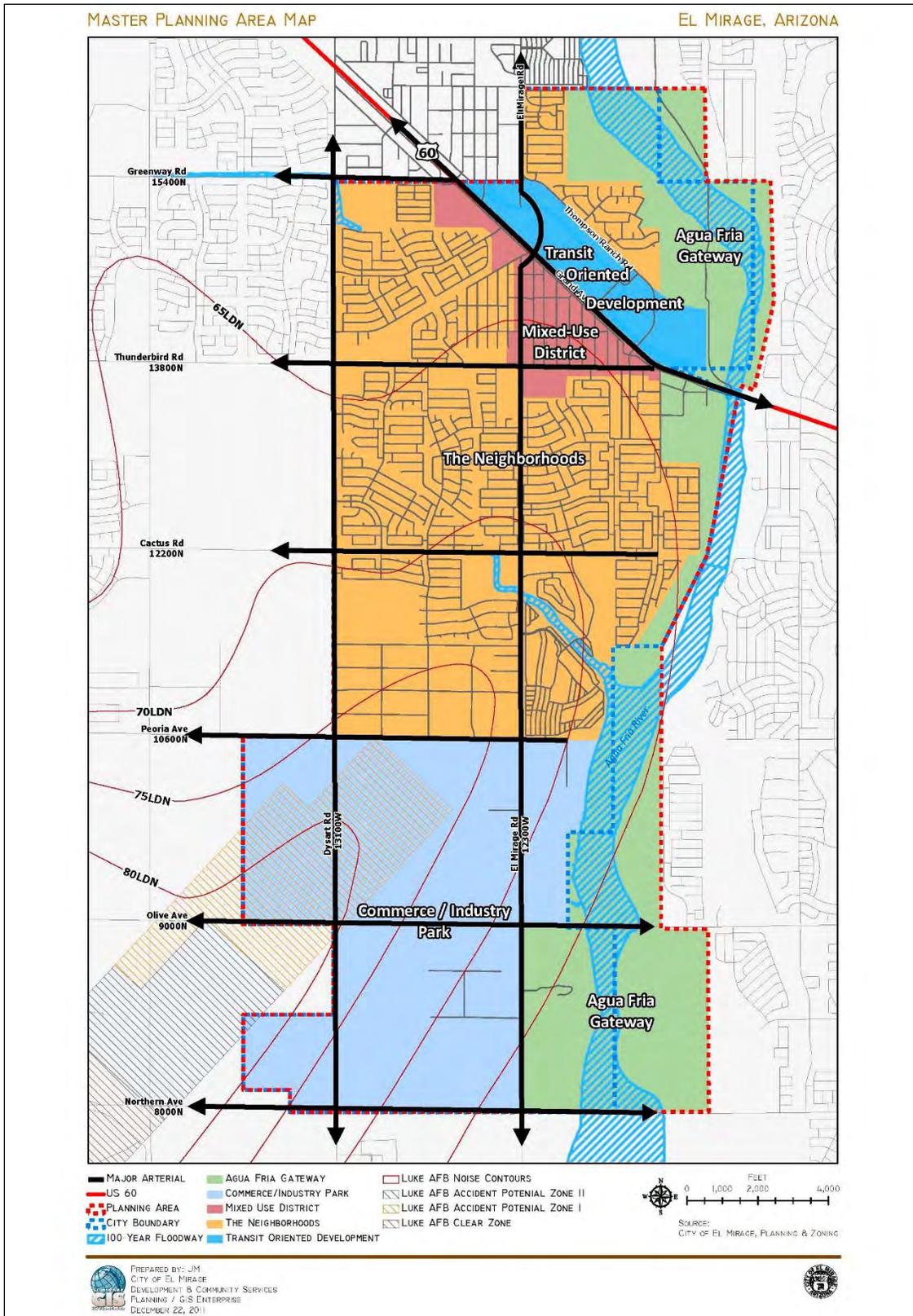


Figure 4-21: El Mirage land use planning map

*4.3.7 Fountain Hills*

The Town of Fountain Hills lies in the northeast quadrant of Maricopa County approximately 30 miles northeast of central Phoenix. The town’s hillside topography in the upper Sonoran Desert on the eastern slope of the McDowell Mountains provides the community with a rugged terrain and rich natural desert vegetation. Separated from much of greater Phoenix, the Town of Fountain Hills lies atop the McDowell Mountains, which create elevations in the Town between 1,510 and 3,170 feet—averaging about 400-500 feet higher than other Phoenix-area communities.

As shown in Figure 4-22, the town is bordered by City of Scottsdale on the west, the Salt River Pima-Maricopa Indian Community on the south, the Fort McDowell Yavapai Nation on the east, the McDowell Mountain Regional Park on the northwest, and State owned land on the northeast. Major access to Fountain Hills is provided via Shea Boulevard, which is the town’s primary connection to the greater metropolitan area to the west. To the east, adjacent to the town boundary, Shea Boulevard intersects State Highway 87 connecting the town to the south and east valley, including the cities of Mesa, Chandler, Gilbert, and also north toward the Verde River, the Salt River, and further north to Payson and the Mogollon Rim country.

The close proximity of both the Verde River and Fort McDowell, established in the late 1800’s, brought attention to a region that rapidly became known for ranching opportunities in the area. In 1968, still a ranching community, a large land holding in the area came into the possession of the McCulloch Oil Corporation. In 1970 this firm directed the development of a 12,000-acre model town, which would become the community of Fountain Hills. Among the many amenities these developers included with this planned development would be the world’s tallest fountain, which is still the community’s most prominent feature.

In December of 1989 the town was incorporated, and now operates under a council-mayor form of government, including a mayor and six council members elected at-large. Development of Fountain Hills continued steadily throughout the 1990’s, with land annexed to the south.

In 2014, the population of Fountain Hills was 23,090. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-8.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	22,489	13,176	5,538
2020	25,929	14,602	7,469

Development Trends:

Available land within the Town of Fountain Hills has been largely developed, with the town’s development activity peaking around 1998. In the middle of the last decade, Fountain Hills saw a shift in development trends from mostly single family development to an increasing number of multi-family complexes. Most recently, the town continues to experience a shift from new construction to remodeling of existing structures.

Over the next five years, the town anticipates construction of several approved developments including: 343 single family homes, townhouses, and condos in Adero Canyon; 245 single family homes in Eagles Nest; the 134 room Hemmingway assisted living facility; the 90 room Morningstar assisted living facility; 64 condos on Firerock Parcel B; and four apartments at Pallazo di Lusso. The town is currently processing development plans for 400 apartments and a 50,000 plus square foot commercial development named Park Place. Long-term, the town anticipates the development of 1,300 single family homes, a 5,000 square feet of commercial space, and a possible report on the Elman Property. Other potential large multi-family and/or commercial sites include the Bashas property on Avenue of the Fountains and the Catholic Church property on El Lago Boulevard.

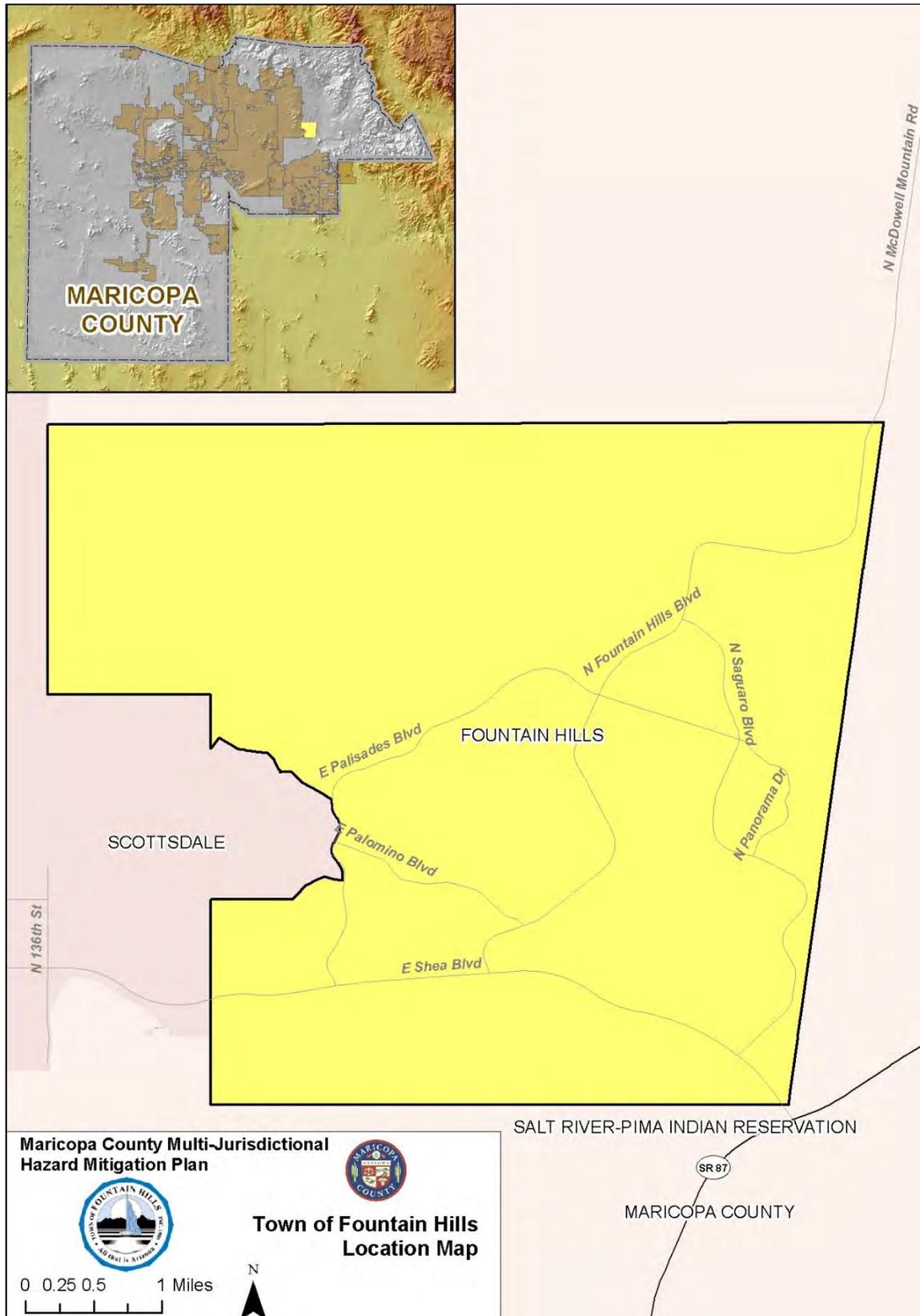


Figure 4-22: Fountain Hills location map

For an overall development picture, Figure 4-23<sup>10</sup> shows that low to mid-density single-family homes predominate throughout the community, and tend to follow the ridgelines. A large share of the undeveloped areas of Fountain Hills is devoted to open space, much of which includes the necessary gulches and valleys that facilitate runoff. Following its heritage as a planned community, Fountain Hills includes a fairly concentrated core area that includes residential, commercial, multi-family and some industrial uses. Highway commercial uses are scattered along Shea Boulevard to the south of Fountain Hills' core.

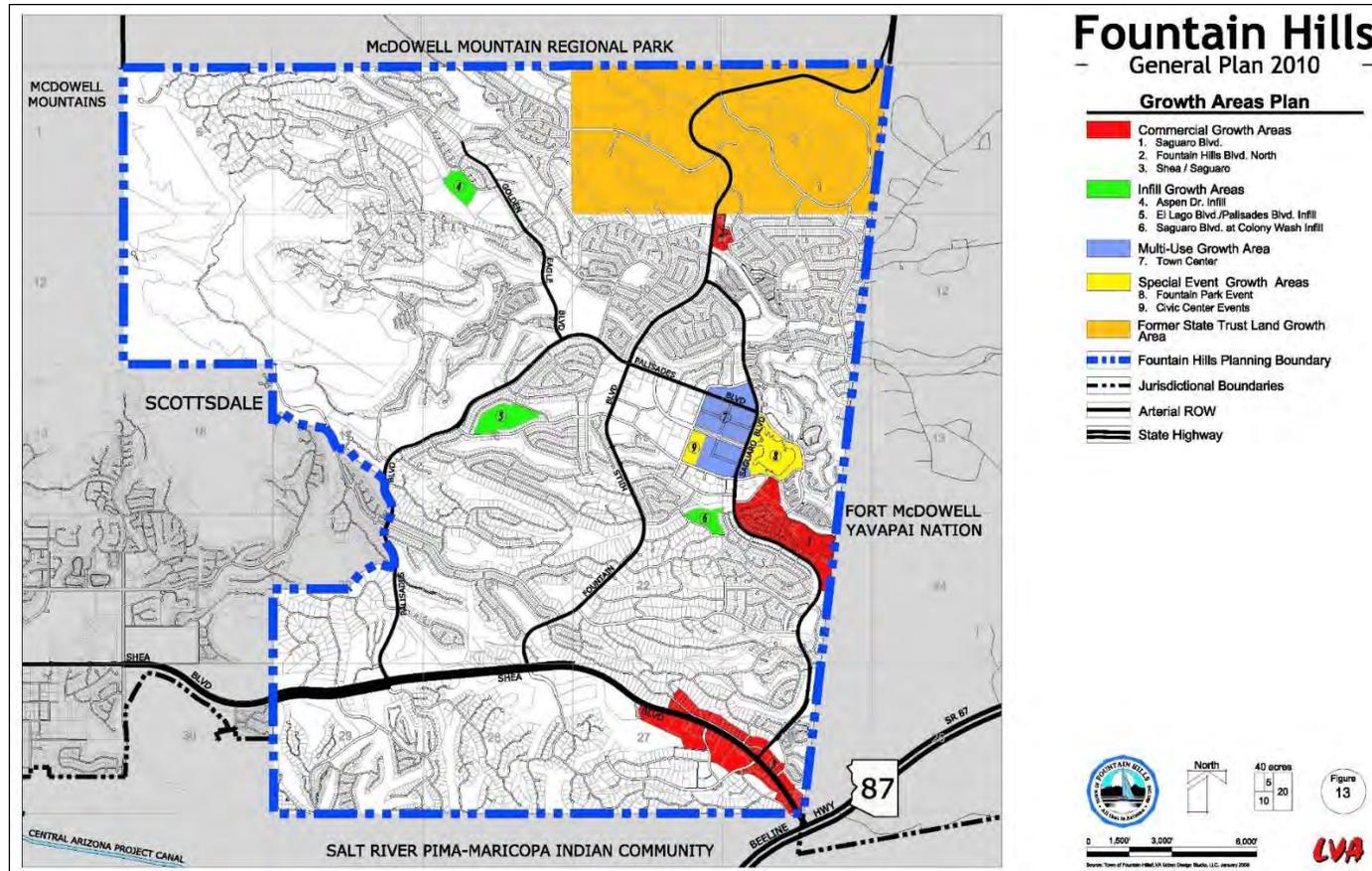


Figure 4-23: Fountain Hills land use planning map

<sup>10</sup> Town of Fountain Hills, 2010, <http://www.fh.az.gov/224/Fountain-Hills-General-Plan>

4.3.8 Fort McDowell Yavapai Nation

The Fort McDowell Yavapai Nation (FMYN) is located in the east portion of Maricopa County approximately 23 miles northeast of downtown Phoenix. The FMYN lies adjacent to the east side of the Town of Fountain Hills and the McDowell Mountain Park, and is linked to the north end of the Salt River Pima-Maricopa Indian Community, as shown in Figure 4-24.

With an average elevation of 1,350 feet, the area’s diverse landscape ranges from tree-lined bottomlands to cactus studded rolling hills. This desert landscape is contrasted by the riparian areas of the Verde River and Sycamore Creek. The 40-square mile area is now home to over 600 tribal members, while another 300 live off the reservation.

The FMYN was created by Executive Order on September 15, 1903. The community is governed by a tribal council that is elected by tribal members pursuant to the tribe's constitution.

In 2014, the population of the Fort McDowell Yavapai Nation was 991. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-9.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	971	308	1,480
2020	1,026	344	1,874

Development Trends:

The development trends in the nation over the last five years have been relatively stagnant. There has been only one new larger building project, the Early Education Center. Some of the existing structures have also been involved in remodeling and tenant improvement projects to maximize the efficiency of the square footage spaces. There have not been any new housing units built in the last few years. These projects have been constructed in compliance with the development processes. The projects have gone through a planning and review process to ensure the sites being developed are not in a floodplain, have been assessed for any environmental impacts, and cleared for any archeological significance or artifacts. Each of the projects has been inspected and monitored during construction for quality assurance and code compliance. All of these projects have been developed within the approximately 30% area of the southwest portion of the nation which contains existing infrastructure such as water, sewer, and electric services.

The most significant development in the next five years is likely to be the design and construction of a new entertainment complex in the south central portion of the Nation. In addition to this facility, additional individual housing units may be developed as needed. These development projects will occur in pre-designated areas with existing infrastructure, areas that are not located in a floodplain or other hazard zones, and will not affect the vulnerability of the nation. One exception to development within the existing infrastructure would be the extension of water, sewer, and electric services to the rodeo grounds in the south end of the nation on the east side of the Verde River.

Existing land use elements for FMYN are indicated on Figure 4-25<sup>11</sup>. Open space dominates most of the reservation land mass, with agricultural and very low density residential uses comprising the next two largest elements.

<sup>11</sup> MAG, 2013, *Municipal Planning Area Socioeconomic Profiles Maricopa County, Arizona*

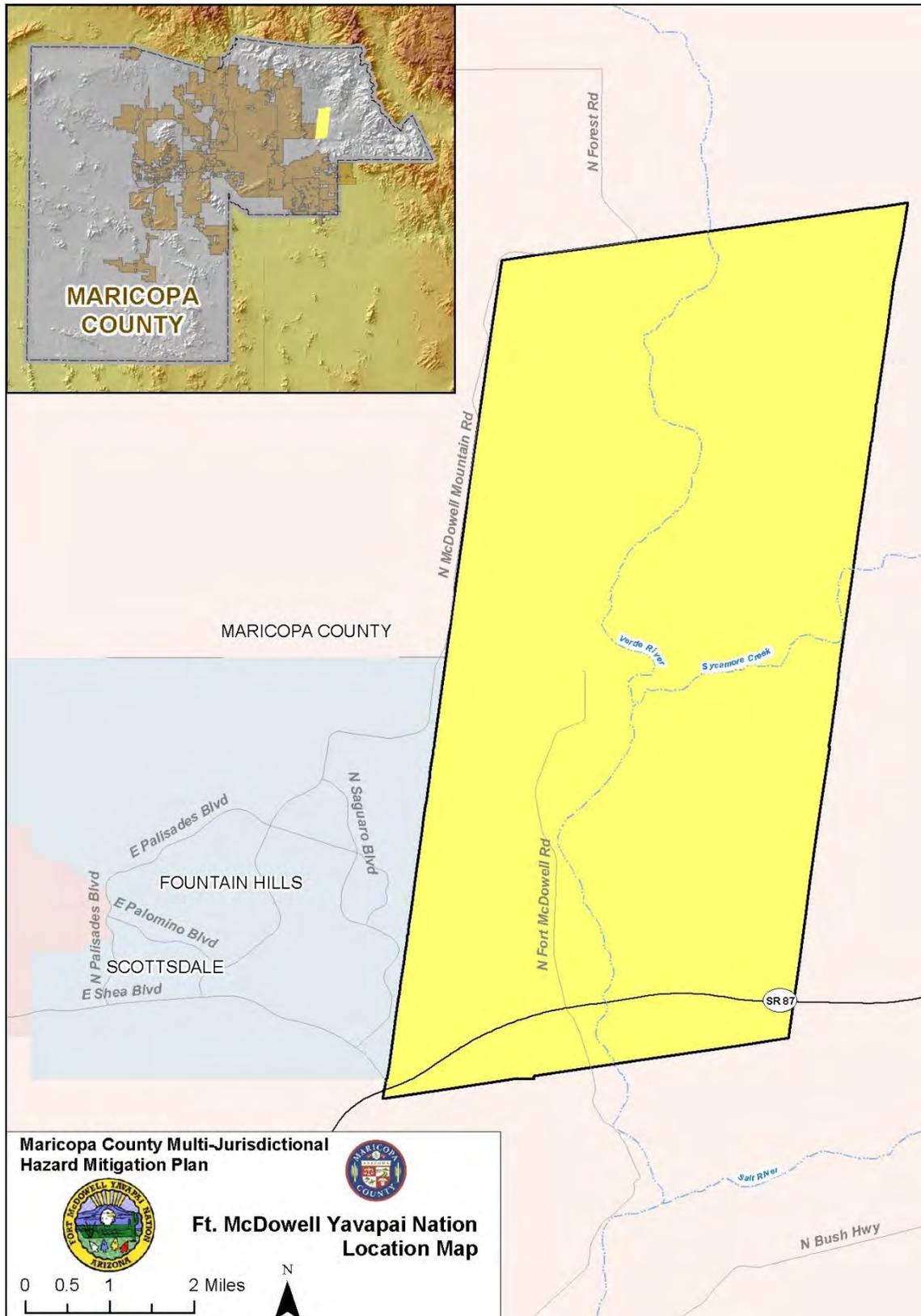


Figure 4-24: Fort McDowell Yavapai Nation location map

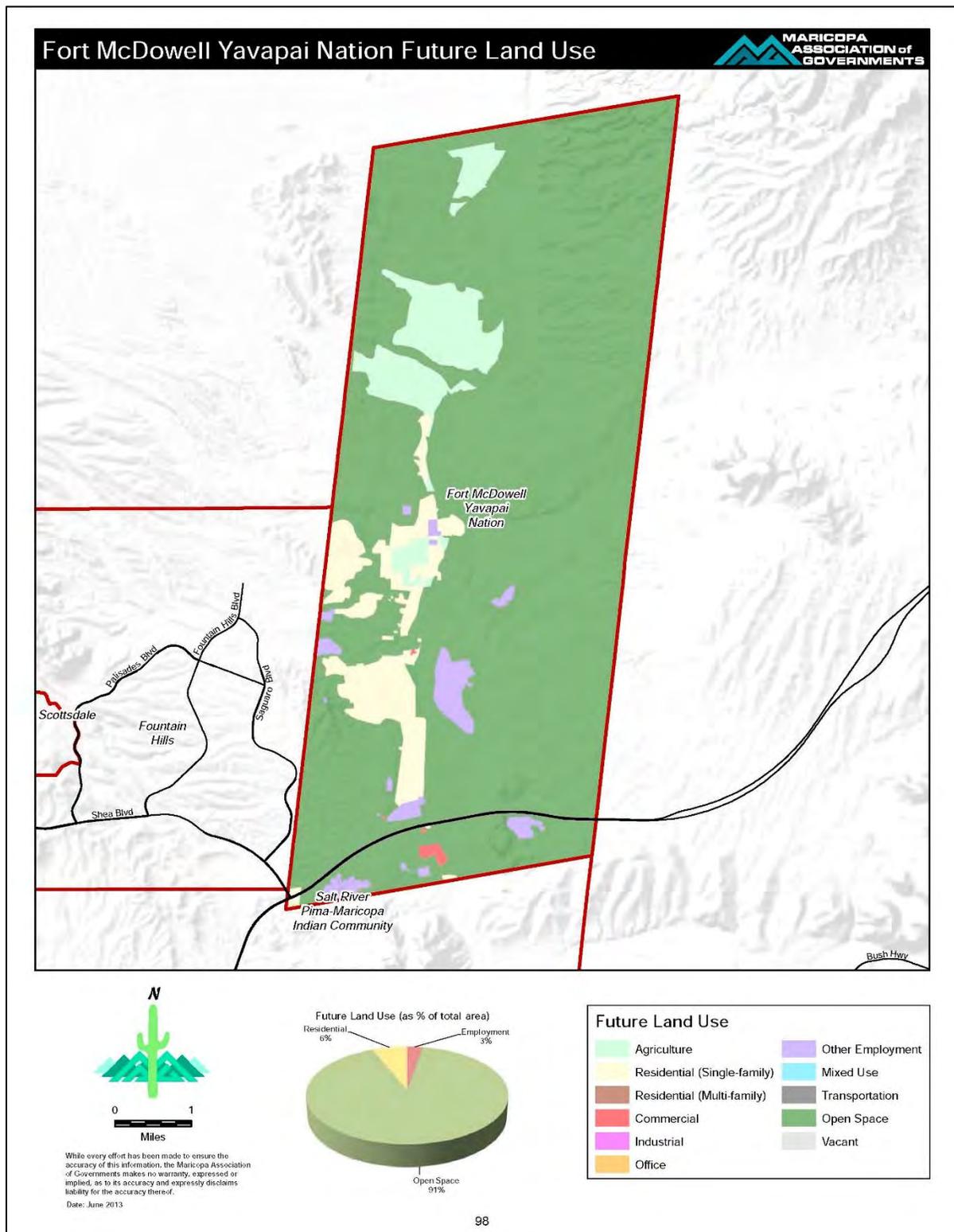


Figure 4-25: Fort McDowell Yavapai Nation land use map

*4.3.9 Gila Bend*

One of the few Maricopa County communities not adjacent to another municipality, the Town of Gila Bend is located at the intersection of State Highway 85 and Interstate 8 approximately 65 miles southwest of downtown Phoenix, as illustrated through Figure 4-26. Prominent land features that influence Gila Bend include the Woolsey Peak Wilderness approximately ten miles to the northwest, the North Maricopa Mountains Wilderness to the northeast, the South Maricopa Mountains Wilderness to the east, and the Barry M. Goldwater Gunnery Range to the immediate south of the community. The Tohono O’odham Nation’s San Lucy District sits adjacent to the town’s northern border. Incorporated in 1962, the town is appropriately named for a dramatic bend of the Gila River, which approaches the community from the north before heading west to join the Colorado River. Gila Bend sits at an elevation of 735 feet and includes approximately nine square miles, making the town one of the geographically smallest communities in Maricopa County.

In 2014, the population of Gila Bend was 1,960. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-10.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	1,922	943	791
2020	2,789	1,169	1,538

Development Trends:

There has been no significant residential development of Gila Bend in the past five years. The largest commercial development was the completion of the new APS Solar Power Plant located in the eastern and northern part of the town.

Within the next five years, the town anticipates development of an area near the Gila Bend Airport contingent upon the town being able to supply potable water to those lands. Gila Bend’s General Plan, adopted November 2006, indicates a dramatic mix of land uses as shown in Figure 4-27<sup>12</sup>. This diverse blend is highlighted by various industrial zoning districts, as well as several pockets of low density residential and larger agriculturally designated parcels. Higher density residential districts exist closer to the historical core of Gila Bend, as well as industrial land that is influenced by the Southern Pacific Railroad.

<sup>12</sup> Town of Gila Bend, <http://www.gilabendaz.org/vertical/Sites/%7B460CCFC8-4ABF-4D56-9D05-343DF365E86C%7D/uploads/%7BADBAFC26-4C10-424E-B173-E59B29CAA9C6%7D.PDF>

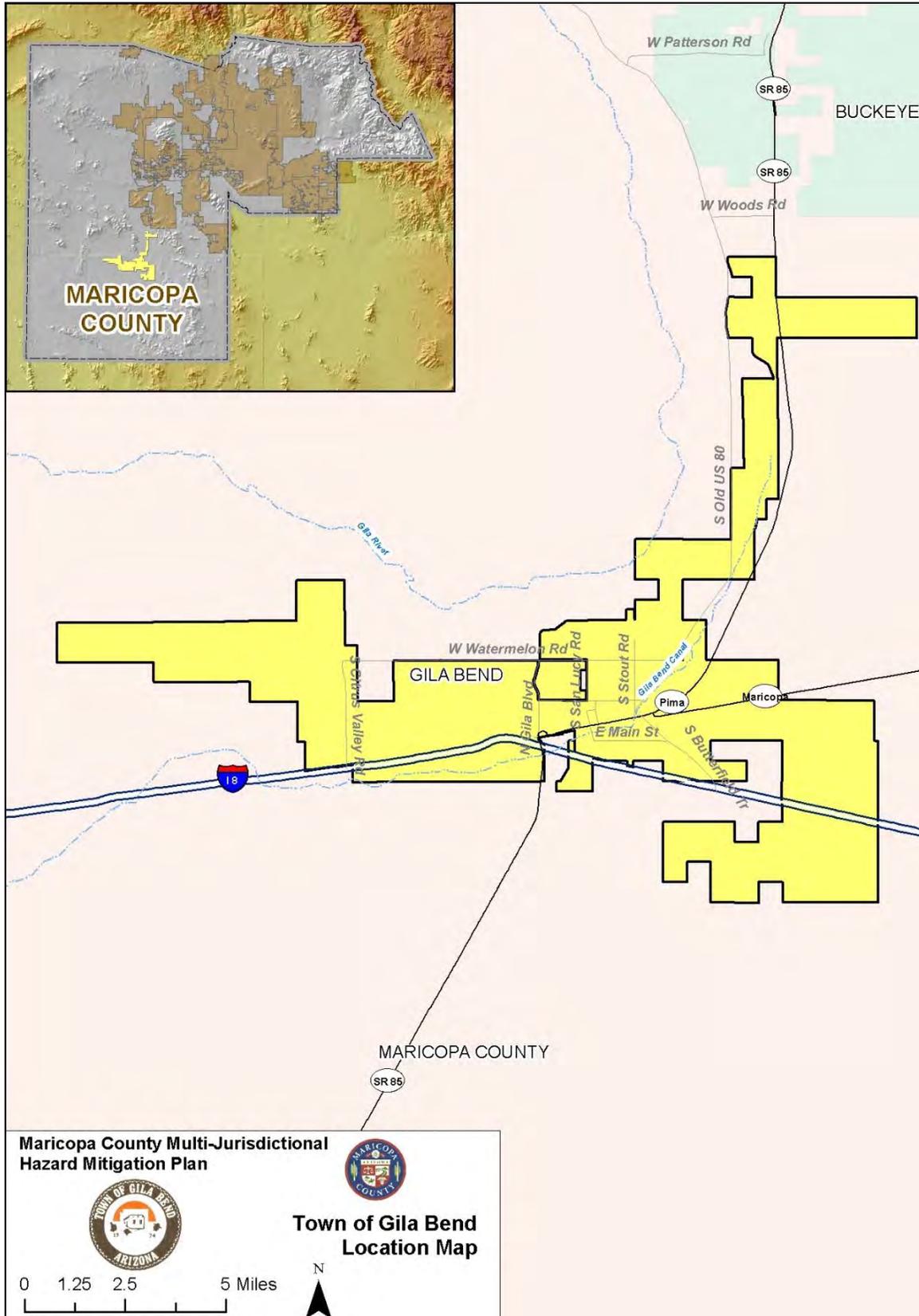


Figure 4-26: Gila Bend location map



*4.3.10 Gilbert*

The Town of Gilbert, located in the southeast valley, was incorporated in 1920. The original town site of just less than one square mile has grown rapidly today into a 74 square mile planning area in southeast Maricopa County. As shown in Figure 4-28, the town shares boundaries with the City of Mesa, City of Chandler, Town of Queen Creek, the Gila River Indian Community, and Pinal County. A region that is defined more by roadways than natural features, the town's northern boundary is Baseline Road; the eastern boundary is generally along Power Road; the southern boundary is Hunt Highway; and the western boundary is along several roads as it jogs between Arizona Avenue and Val Vista Road. Numerous pockets of unincorporated land dot the planning area, some of which are entirely surrounded by the town.

Like many communities in Maricopa County, Gilbert's origins lie in agriculture. In 1902, the Arizona Eastern Railway established a rail line between the towns of Phoenix and Florence. A rail siding was established on property owned by William "Bobby" Gilbert. The siding, and the town that sprung up around it, eventually became known as Gilbert. The town became an active farming community, fueled by the construction of the Roosevelt Dam and the Eastern and Consolidated Canals. It remained an agricultural town for many years, and was known as the "Hay Capital of the World" until the late 1920s. Gilbert began to take its current shape during the 1970s when the town council approved a strip annexation that encompassed 53 square miles of county land.

Today Gilbert's residents are governed under a council-manager form of government, which includes a seven member town council consisting of a mayor and six council members elected at-large for a term of four years. The council appoints the town manager and other officers necessary to produce an orderly administration of the town's affairs.

In 2014, the population of Gilbert was 235,493. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-11.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	208,453	74,907	74,558
2020	259,113	90,058	108,130

Development Trends:

Development in Gilbert over the past 5 years has been relatively steady. The housing market stayed steady in 2010 and grew stronger by 2012 and maintained momentum by construction within previously approved master planned communities north of Ocotillo Road. Previously approved zonings and standard plan approvals were amended to reflect buyer preferences and meet the homebuilders desire to be competitive. The town's long standing strategic initiatives to attract major employers in the health industry are met with hospitals and supporting medical clinics evenly disbursed in the community with one at Val Vista and the 202 and the other at Higley and the US60. Employment centers are approved but development is on hold. The Heritage District plans for dense development with a 4 story parking structure; however, development of the structure is put on hold. New car dealerships began to take interest at the Val Vista/202 location. Revitalization efforts are approved for a range of developments 15-25 plus years old. By 2012, Gilbert established a track record for successful infill developments, new interest in the Heritage District, two hotels, new interest in Agritopia's mixed use project for apartments and retail, and the town's successful bid to attract the VA Clinic on Val Vista near the 202. Rockefeller rezoned 160 acres for an employment and multi-family use. The momentum continued through 2013 and 2014 with The Bridges, a large subdivision on hold for several years with ten homebuilders; the first large regional commercial user at Power Road/202, Heliae, continued to invest on their leased property; a multiuser project in the Heritage District renewed a development agreement; car dealerships chose Gilbert; TopGolf, a large entertainment venue chose Gilbert; and Rivulon, a major employment center at Gilbert/202, actively began the first Phase of development. In addition, other indicators such as a large church on 160 acres rezoned 2/3rd of the area back to residential use to add rooftops to Gilbert.

The year 2014 finished strong with the Heritage District boasting a parking garage, several new apartment complexes, the development of St. Xavier University, several new restaurants in the Heritage District, continued growth of new medical facilities, Hampton Inn, Parc Lucero, Rivulon, and Epicenter.

Growth is expected to continue at the Santan Freeway intersections at Gilbert Road, Val Vista Road and Power Road. A new interchange is proposed at Lindsay Road to meet the needs of Parc Lucero, Rockefeller and Rivulon's uses over the next decade. Gilbert's six growth areas continue to attract users and are targeted for growth with sufficient infrastructure. The Gateway Character Area with the future Village Center at Recker/William Fields Road continues to grow at targeted densities and should begin to see activity in the Village Center in the next five years. The Heritage District Character Area is also very active with commercial growth and needs multi-family development and public amenities to balance the commercial growth. The Santan Character Area, generally, south of Germann, shows steady growth in the 2-3.5 DU/Acre range as farming is converted to housing. Commercial and public amenities/parks are needed in the Santan Character Area.

Gilbert's 2012 General Plan includes a growth area map which shows some of these areas and is shown in Figure 4-29<sup>13</sup>.

[This area is blank on purpose]

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<sup>13</sup> Town of Gilbert, <http://www.gilbertaz.gov/departments/development-services/planning-development/general-plan/general-plan-2012>

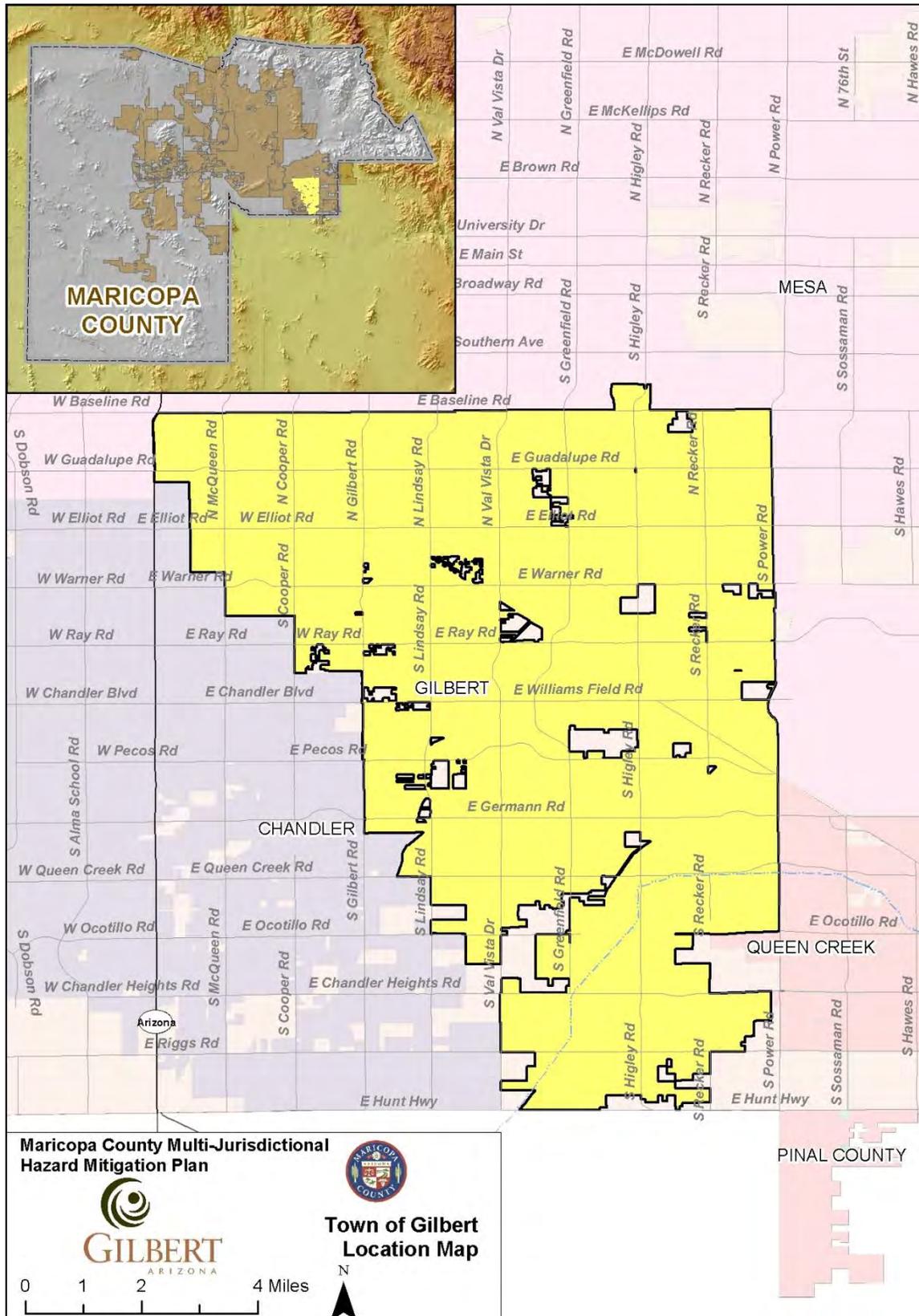


Figure 4-28: Gilbert location map

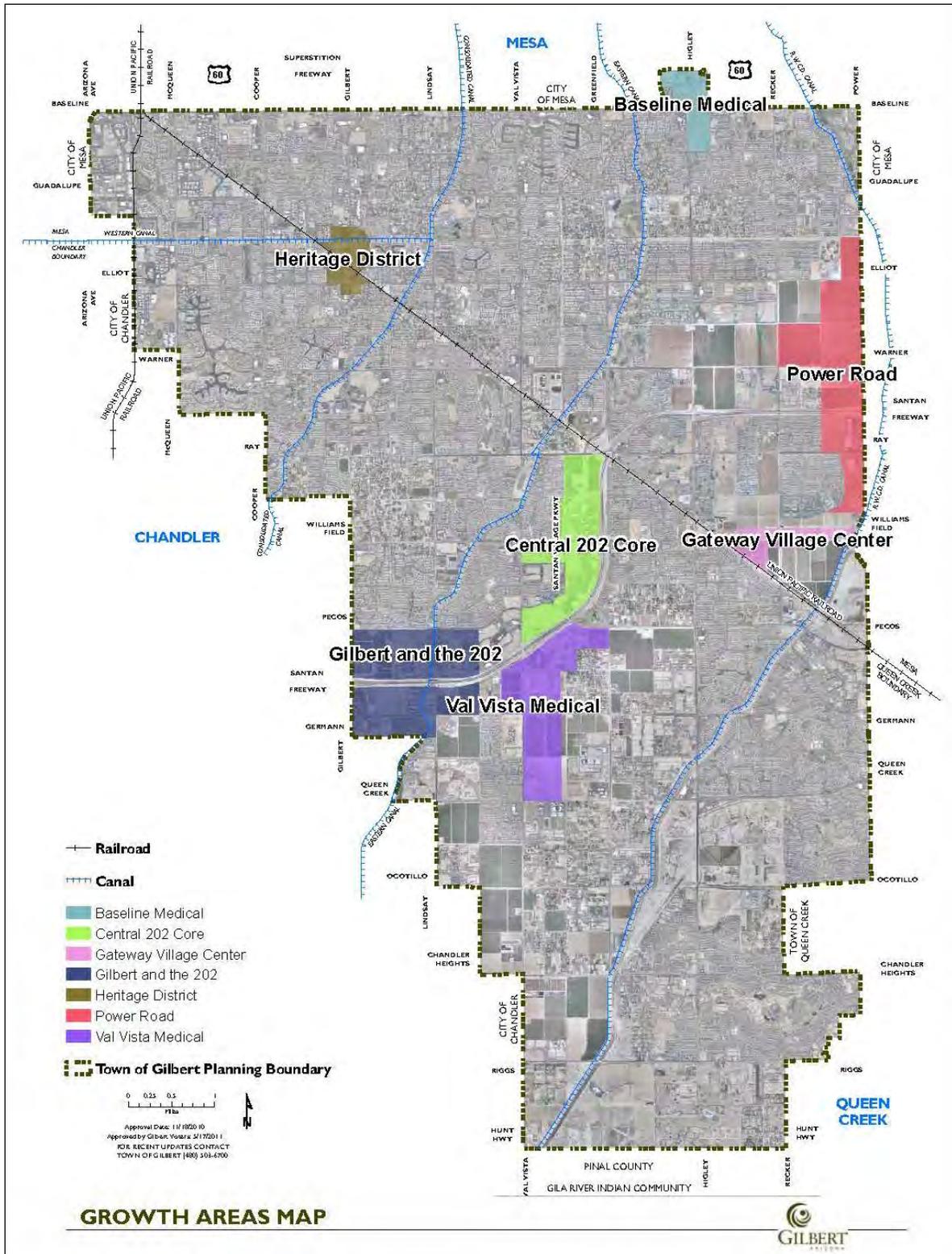


Figure 4-29: Gilbert growth area map

4.3.11 Glendale

Located on the western portion of the greater metropolitan area, Glendale is located approximately 13 miles from downtown Phoenix. Bordered on the east, north, and south by the City of Phoenix, and on the west by the City of Peoria, Glendale is one of the most rapidly growing and diverse cities in Maricopa County. Between 1990 and 2000, Glendale was the 19th fastest-growing large city in the country, and stands today as the fourth most populous community in Arizona. Strategically located in the northwest region of the metropolitan area, Glendale has aggressively pursued economic development forces including the Arizona Cardinals and Phoenix Coyotes professional sports franchises. Established in 1892 and incorporated in 1910, the city’s planning area now stretches west into unincorporated Maricopa County to an area immediately south of the communities El Mirage and Surprise. As shown in Figure 4-30, major access to Glendale is provided via the Loop 101 Freeway, which enters the city from the north and meets Interstate 10 on the south. Interstate 17 and US Highway 60 (Grand Avenue), provide alternate routes to other communities in the metropolitan area.

Today Glendale’s residents are governed under a council-manager form of government, which includes a seven member city council consisting of a mayor and six council members from various districts within the community who serve four-year terms. The city council appoints the city manager and other officers necessary to produce an orderly administration of the city’s affairs.

In 2014, the population of Glendale was 232,680. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-12.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	226,721	90,505	78,593
2020	291,461	106,014	116,435

Development Trends:

Glendale has been conservative in development over the past five years. The slow turning economy played a significant role in planning and development. The primary goal over the past five years has been to maintain smart growth. A majority of the commercial development was focused on the western portion of Glendale, near the “Westgate Entertainment District”. Minimal residential and multi-housing developments occurred since the 2009 Plan.

The city is anticipating a considerable increase in development in the next five years. There will be a number of new medical clinics and care facilities being developed in the east and west portions of the city, with varied sizes and occupancy types. There will also be extensive development (commercial/residential) in the west region of the city (101 Loop and 303 Loop). Some of the medical care facilities/clinics will be added to the critical infrastructure and asset inventory for the City of Glendale. The City of Glendale Planning Division will utilize and reference all development with the 2015 Multi-Jurisdictional Hazard Mitigation Plan to identify city vulnerable assets and critical infrastructure both current and future. The 2002 General Plan land use map is shown in Figure 4-31<sup>14</sup>,

<sup>14</sup> City of Glendale, <http://www.glendaleaz.com/planning/documents/GlendaleLandUseMap.pdf>



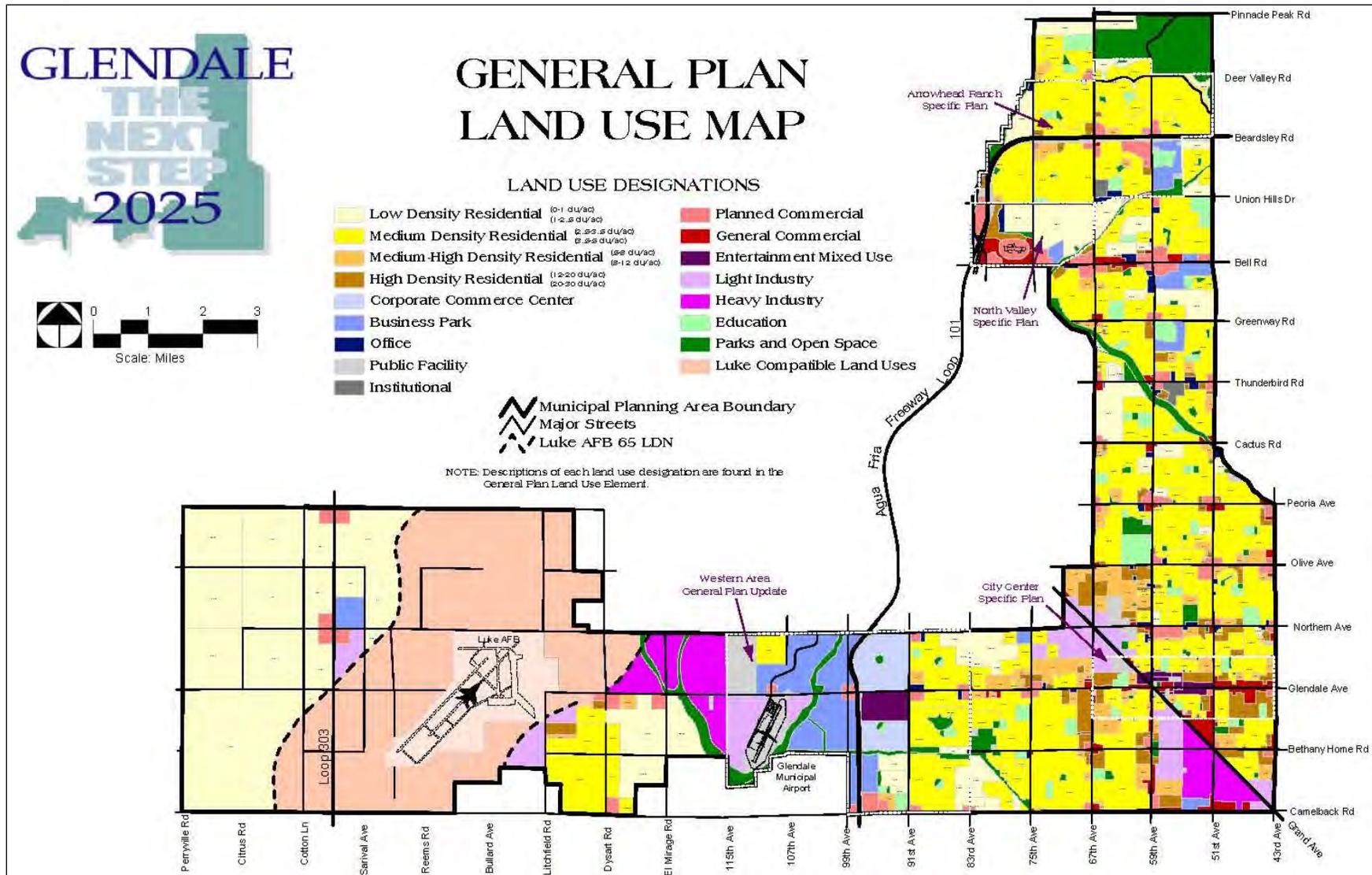


Figure 4-31: Glendale land use planning map

4.3.12 Goodyear

The City of Goodyear, located on the west side of the metropolitan area, was founded in 1916 by the Goodyear Tire and Rubber Company, which grew cotton in the area for use in its tire manufacturing. Later, a naval air station was established in Goodyear and a subsidiary, Goodyear Aircraft, began manufacturing flight decks for Navy seaplanes. Aerospace and food processing industries, and its proximity to California markets, have provided Goodyear with a strong economic base and have contributed to its rapid growth.

As illustrated through Figure 4-32, two major roadways contribute to the economic and residential growth in the city: Interstate 10, which bisects the city’s northern region, and Maricopa County Highway 85, which runs through central Goodyear and connects to Interstate 8. The Union Pacific Rail Line also runs through Goodyear, providing industrial sites with rail access. The two primary natural features that affect the City of Goodyear include the Estrella Mountains, which border a portion of Goodyear’s east side, and the Gila River watershed, which runs east to west bisecting the community. The incorporated area of Goodyear exhibits an elongated rectangular shape, ranging between 6 and 7 miles from east to west, and 22 miles from north to south. Currently Goodyear’s incorporated area contains approximately 117 square miles of land. The majority of its land area exhibits slopes less than 3 percent, draining to the middle of the planning area where the Gila River flows from east to west. The city incorporated on November 19, 1946.

Today Goodyear’s residents are governed under a council-manager form of government, which includes a seven member city council consisting of a mayor who serves a two-year term and six council members elected at-large for a term of four years. The city council appoints the city manager and other officers necessary to produce an orderly administration of the city’s affairs.

In 2014, the population of Goodyear was 74,743. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-13.

Year	Population	Housing	Employment
2010	65,275	25,027	24,227
2020	115,307	41,736	46,481

Development Trends:

Growth over the past five years has been seen across the city, with focused growth in Estrella Mountain Ranch located south of the Gila River, Canyon Trails in the central portion of the city between Interstate 10 and the Gila River, and the Pebble Creek and Palm Valley areas located north of Interstate 10.

Future growth over the next five years is expected to primarily occur south of Interstate 10 with a general shift of geographic distribution of the city to the south. Goodyear’s General Plan, which was ratified in November of 2003, reflects a community that is preparing for the massive growth opportunities and stresses that the city will be addressing in the coming decades. The Land Use Plan, shown in Figure 4-33<sup>15</sup>, encompasses 17 land use and three overlay categories including six residential, two commercial, one mixed-use, two industrial, three public use, two recreational, and one preservation designations. The three overlay designations respond to the desire for future resort development, village centers, and mixed land uses at selected locations or corridors within the planning area. This development of Goodyear will be continually challenged by several unique features of the region including the Luke Air Force Base flight routes, the Gila River basin, and the alignment of an Interstate 10 companion roadway that may be developed in the coming decade.

<sup>15</sup> City of Goodyear, <http://www.ci.goodyear.az.us/DocumentView.aspx?DID=4018>

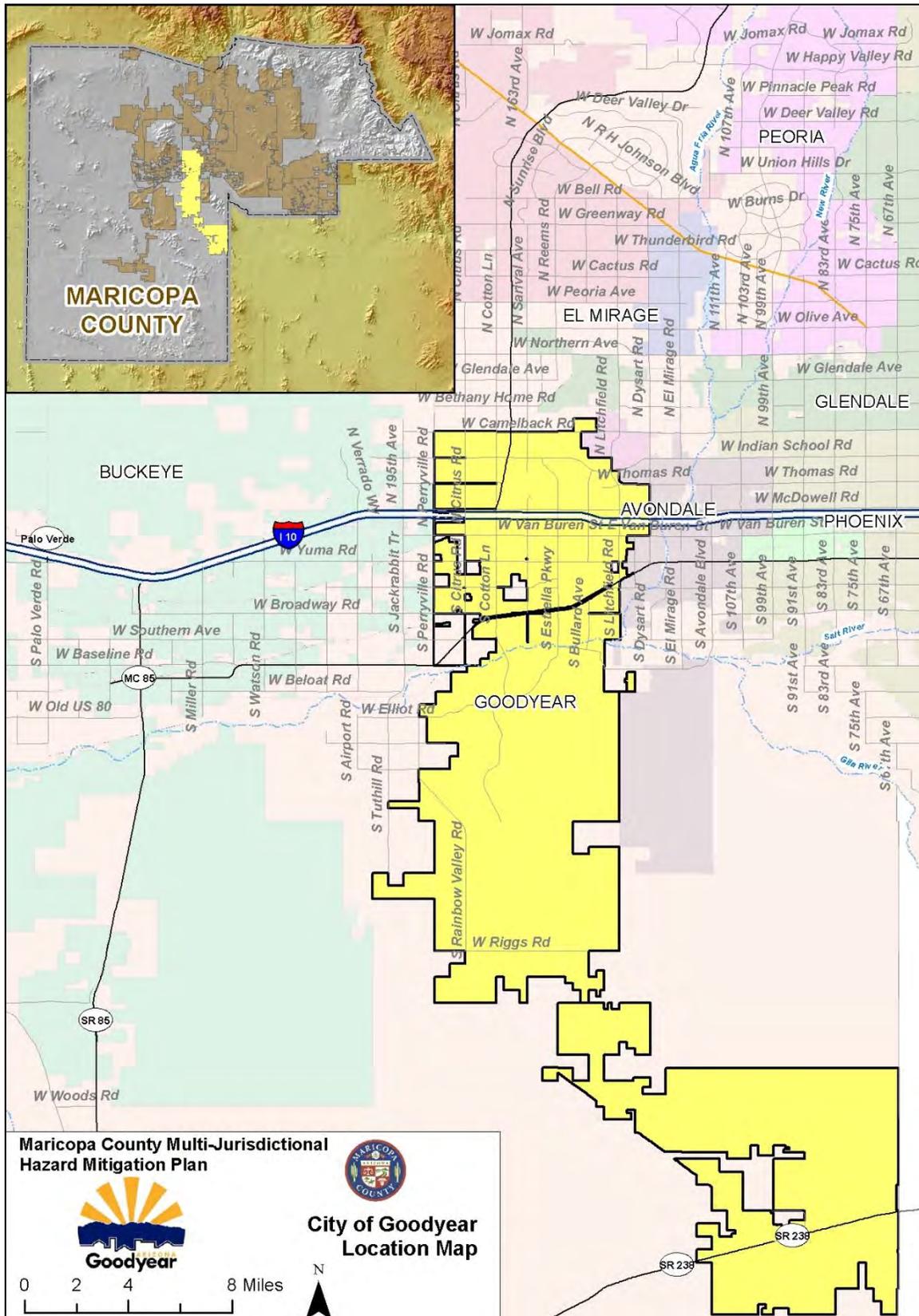


Figure 4-32: Goodyear location map

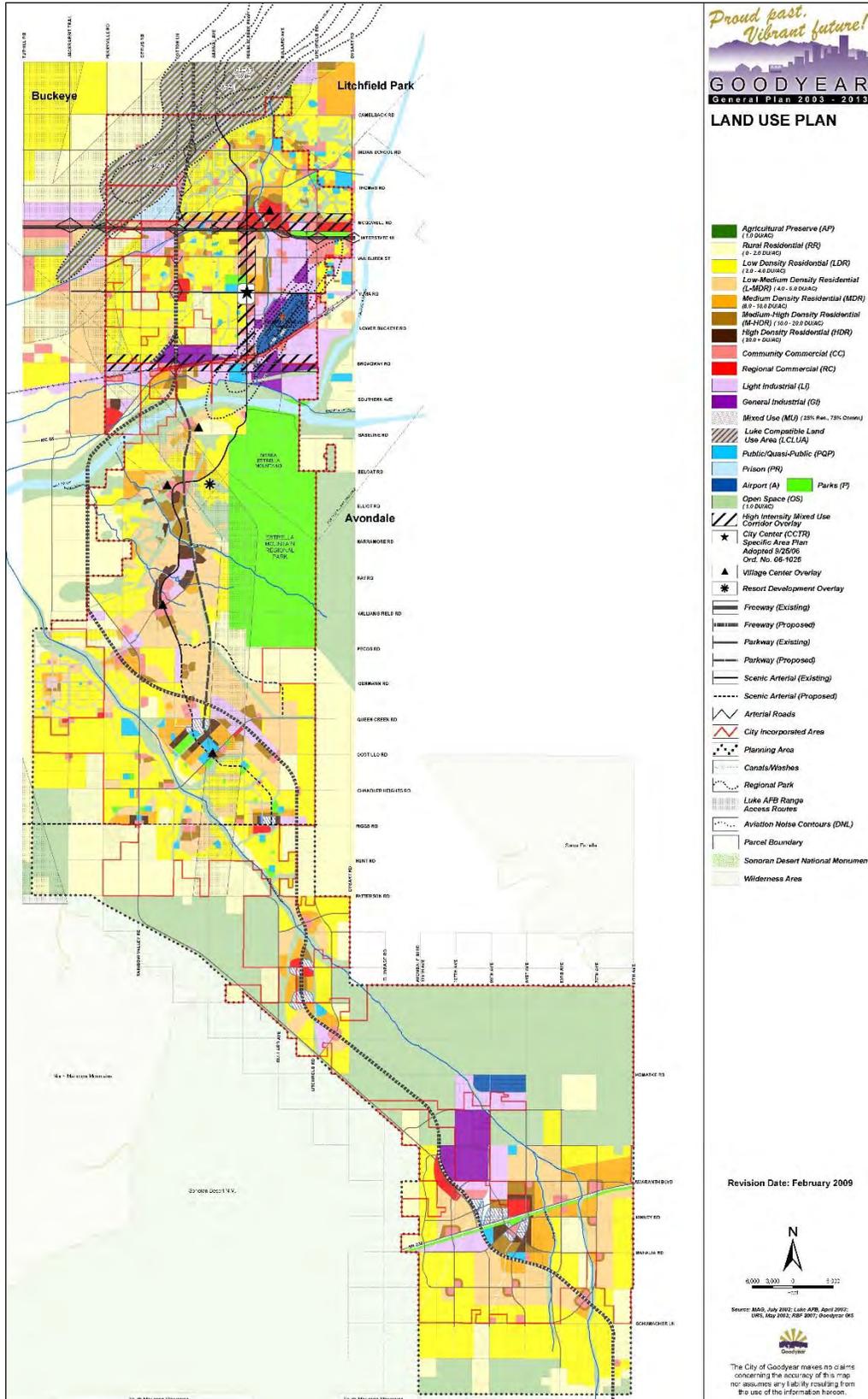


Figure 4-33: Goodyear land use planning map

4.3.13 *Guadalupe*

One of the smallest towns in Maricopa County, Guadalupe is a Native American and Hispanic community of about 6,000 residents sitting between Phoenix and Tempe at the base of South Mountain. Yaqui Indians founded Guadalupe around the turn of the century and the town proudly maintains a strong cultural and ethnic identity. The Town of Guadalupe was incorporated in 1975 and is approximately one square mile in area. Guadalupe is expected to retain its current shape because it is surrounded by man-made boundaries: Interstate 10 and the City of Phoenix on the west; Baseline Road and the City of Tempe on the North; the City of Tempe on the South; and the Highline Canal on the East. These features are illustrated through Figure 4-34.

The Town was founded in 1914 and today has a council-manager form of government. Municipal services are provided by the town or on a contractual basis, and the Maricopa County Sheriff's Department provides public safety services.

In 2014, the population of Guadalupe was 6,084. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-14.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	5,523	1,376	967
2020	6,036	1,513	1,120

Development Trends:

The Town of Guadalupe is landlocked and currently built out. No significant development has occurred in the last five years and none is expected for the next five years.

Figure 4-35<sup>16</sup> clearly illustrates the two most prominent land features of Guadalupe, namely, the preponderance of residential land uses and the town's inability to expand beyond its current borders. While residential land uses dominate the built environment of Guadalupe, other commercial and industrial areas along the border with Interstate 10 and in the town's eastern and southern regions also take advantage of the town's proximity to active regional features such as the Arizona Mills Mall and the dynamic retail core areas in Chandler.

<sup>16</sup> MAG, 2013, *Municipal Planning Area Socioeconomic Profiles Maricopa County, Arizona*

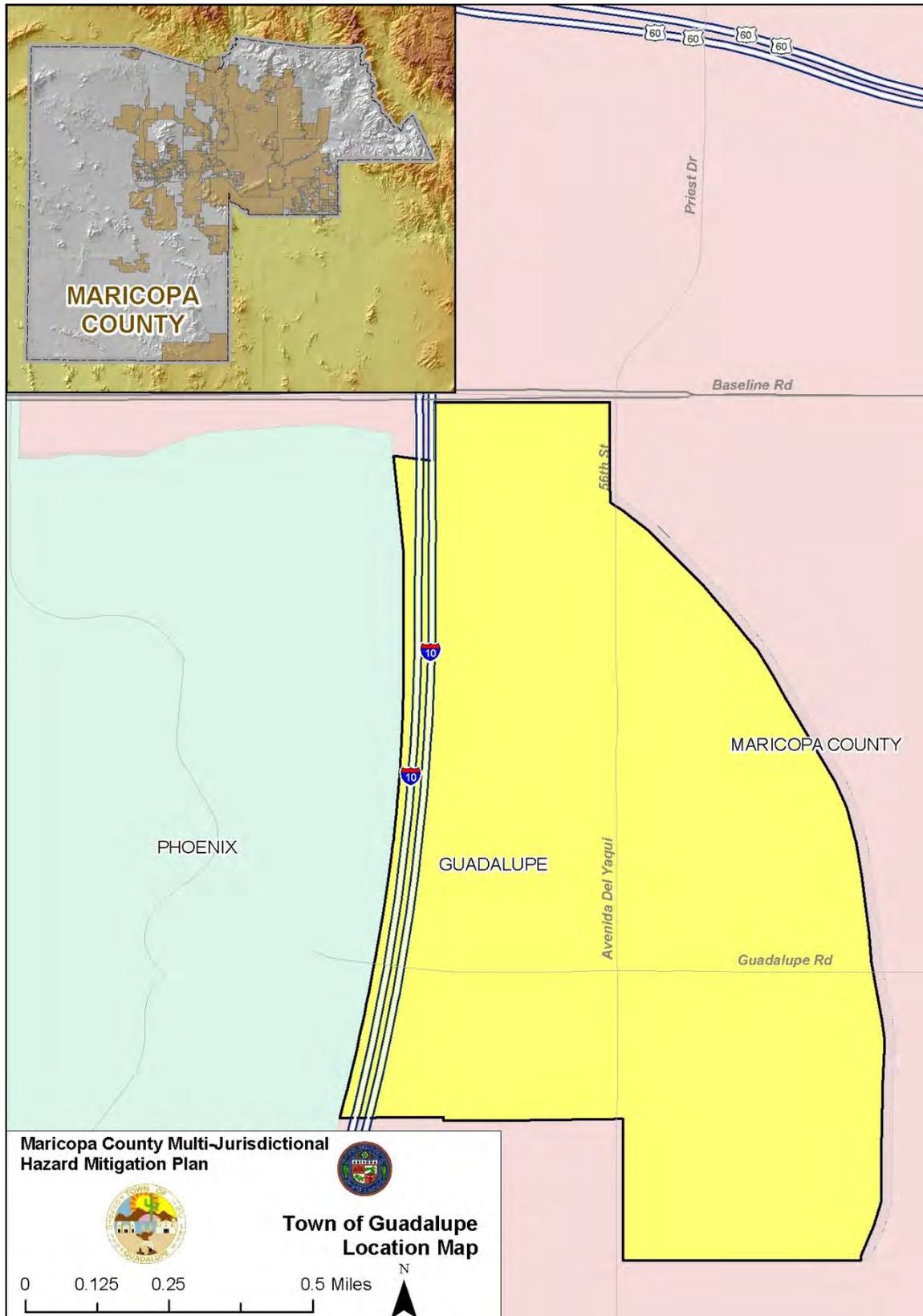


Figure 4-34: Guadalupe location map

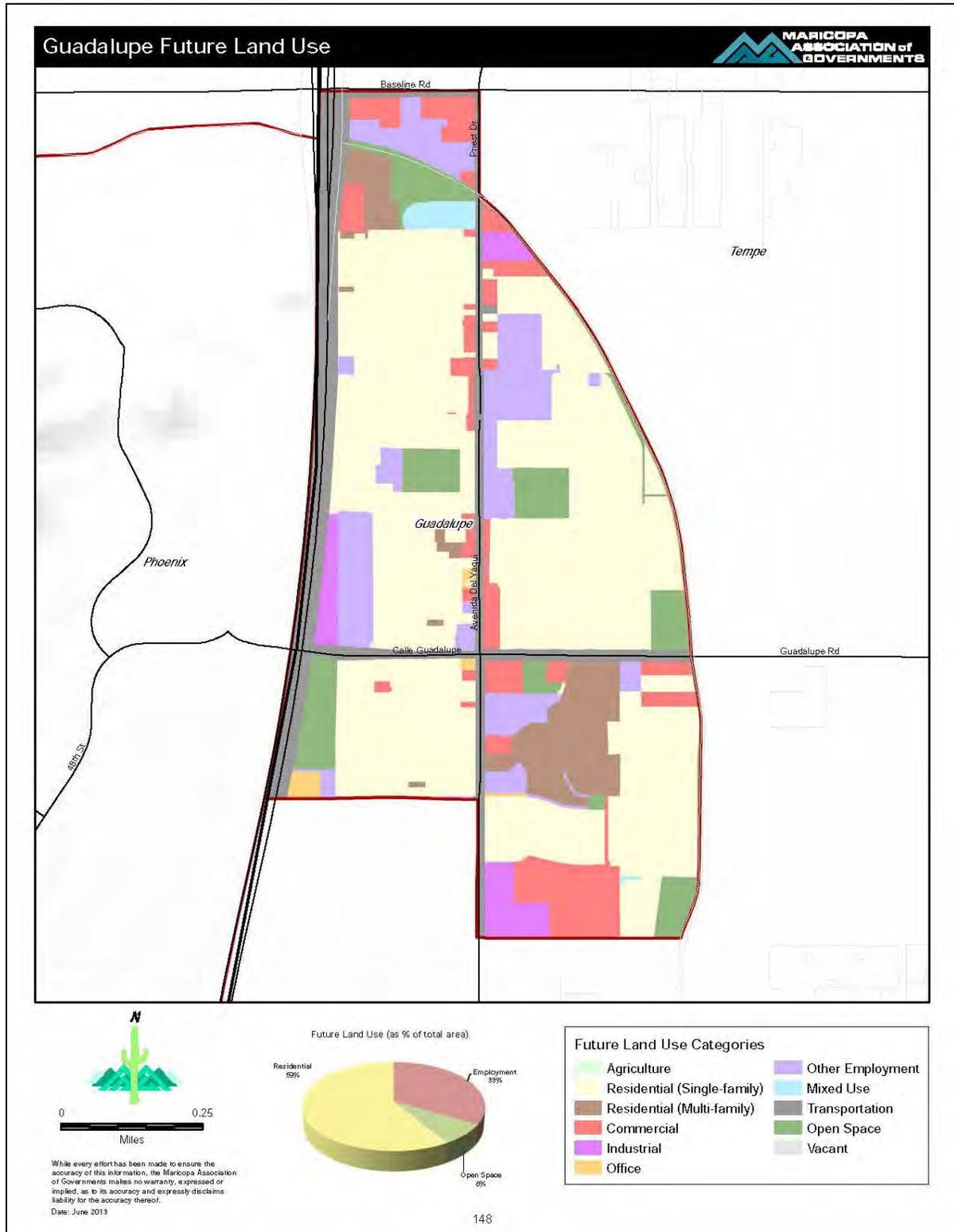


Figure 4-35: Guadalupe land use map

*4.3.14 Litchfield Park*

Situated north of Interstate 10 approximately 16 miles west of downtown Phoenix, the City of Litchfield Park lies immediately east of Goodyear and north of Avondale in the west valley region of Maricopa County, as shown in Figure 4-36. Litchfield Park is a planned residential community which incorporated in 1987. Litchfield Park began in 1917 when the Goodyear Tire and Rubber Company bought farmland to grow Egyptian long-staple cotton to use in tire cords. Litchfield Park eventually became the headquarters for Goodyear Farms, which had thousands of acres under cultivation. From 1931 to 1944, it was also the test site for Goodyear auto, truck and tractor tires. In the 1960's, Litchfield Park designed a master plan for development including several self-sufficient villages.

In 2014, the population of Litchfield Park was 6,084. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-15.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	5,476	2,716	2,042
2020	11,985	4,858	3,204

Development Trends:

The City of Litchfield Park has not seen any new development trends over the past five years. In 2010, the housing industry continued to slow. Remaining land zoned for residential development continued to be undeveloped. In 2014, the city did see a slight increase in residential development but has not seen any movement on land that is zoned for commercial. No new land has been annexed into Litchfield Park.

In 2014, the City of Litchfield Park received six General Plan Amendment Applications. One of the applications was taken off the table leaving five GPAs to be considered by the city's Planning and Zoning Commission and the city council. The GPAs were asking that the land use map for the community be changed from its current designations. Some asked to change land zoned commercial to be changed to mixed use or residential development. One new designation of "Agritourism" was requested. The GPAs took almost one year to obtain approval. Some approvals came with stipulations that must be met in a development agreement. The final impact of the GPAs, once developed, will add over 800 more residential homes, and many acres of commercial development. Figure 4-37 is the current General Plan land use map with polygons showing the GPA locations as follows:

- GPA 14-01 - Land use map changed 31 acres from resort, golf course, open space, and commercial to medium density residential. This passed and adds 167 homes and no commercial.
- GPA 14-02 changes the Land Use Map from 15 acres of commercial to mixed use. This passed and the number of housing dwellings is undetermined, but there must be a minimum of 75,000 square feet of commercial developed before any residential can be added.
- GPA 14-03 pertains to the Wigwam Golf Course and there has not been a specific plan given for this area. The purpose of changing from golf course open space is to allow for more Wigwam Resort rooms to be added.
- GPA 14-05 This adds approximately 38 acres of commercial to the area and adds a new term or designation for land use – "Agritourism". This allows for some farming and selling of the product farmed. This could become a destination place for people to visit in Litchfield Park.
- GPA 14-06 Changes 80 acres from commercial to a mixed use designation. 53 acres becomes 121 medium density homes and approximately 30 acres left as commercial.

Some development is projected to begin within the next six to nine months and some is projected to take several years to be developed. If commercial is not developed along with the residential development, this could have a negative impact on the community. If both commercial and residential are successfully developed together, the impact on the community could be very positive.

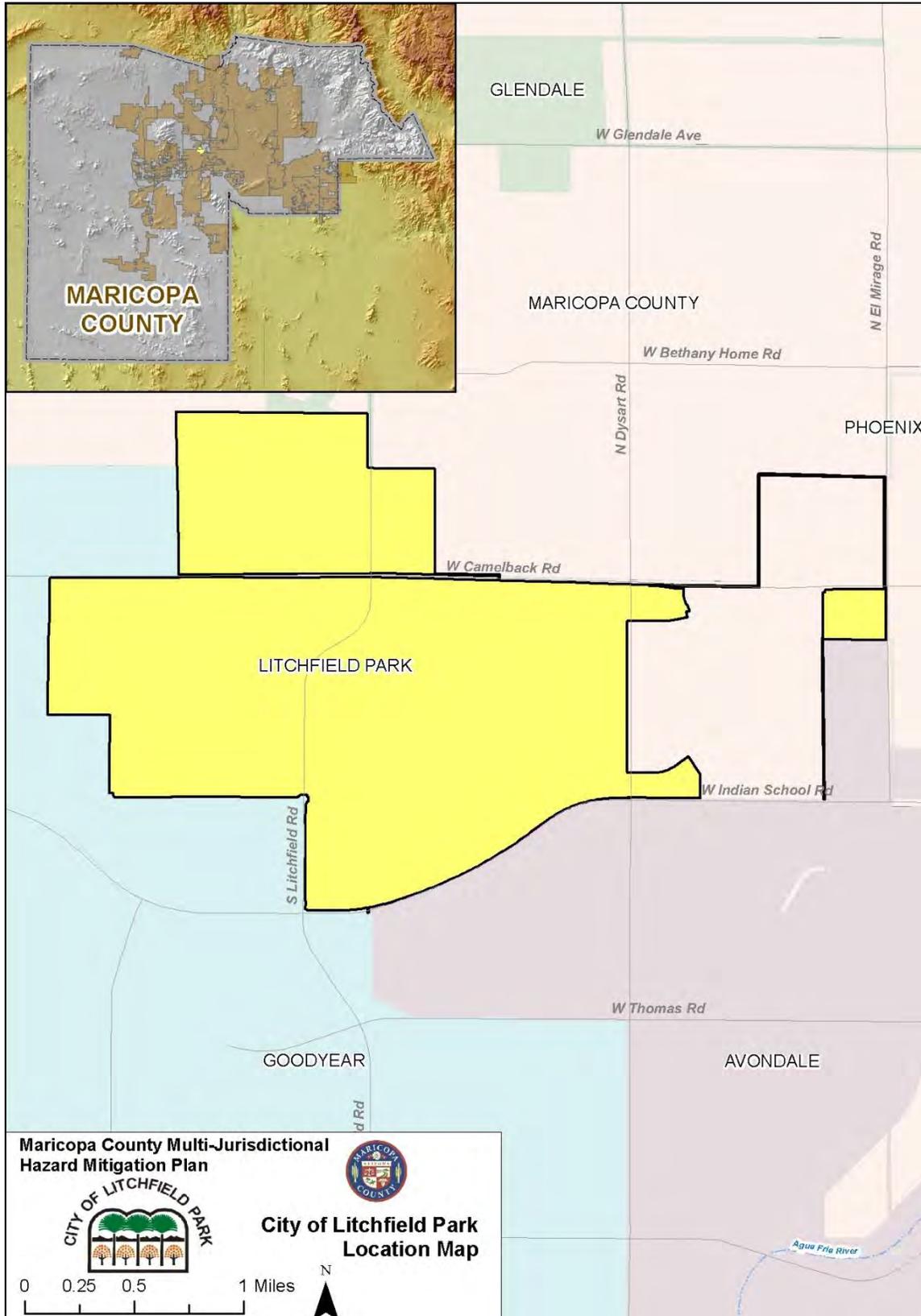


Figure 4-36: Litchfield Park location map

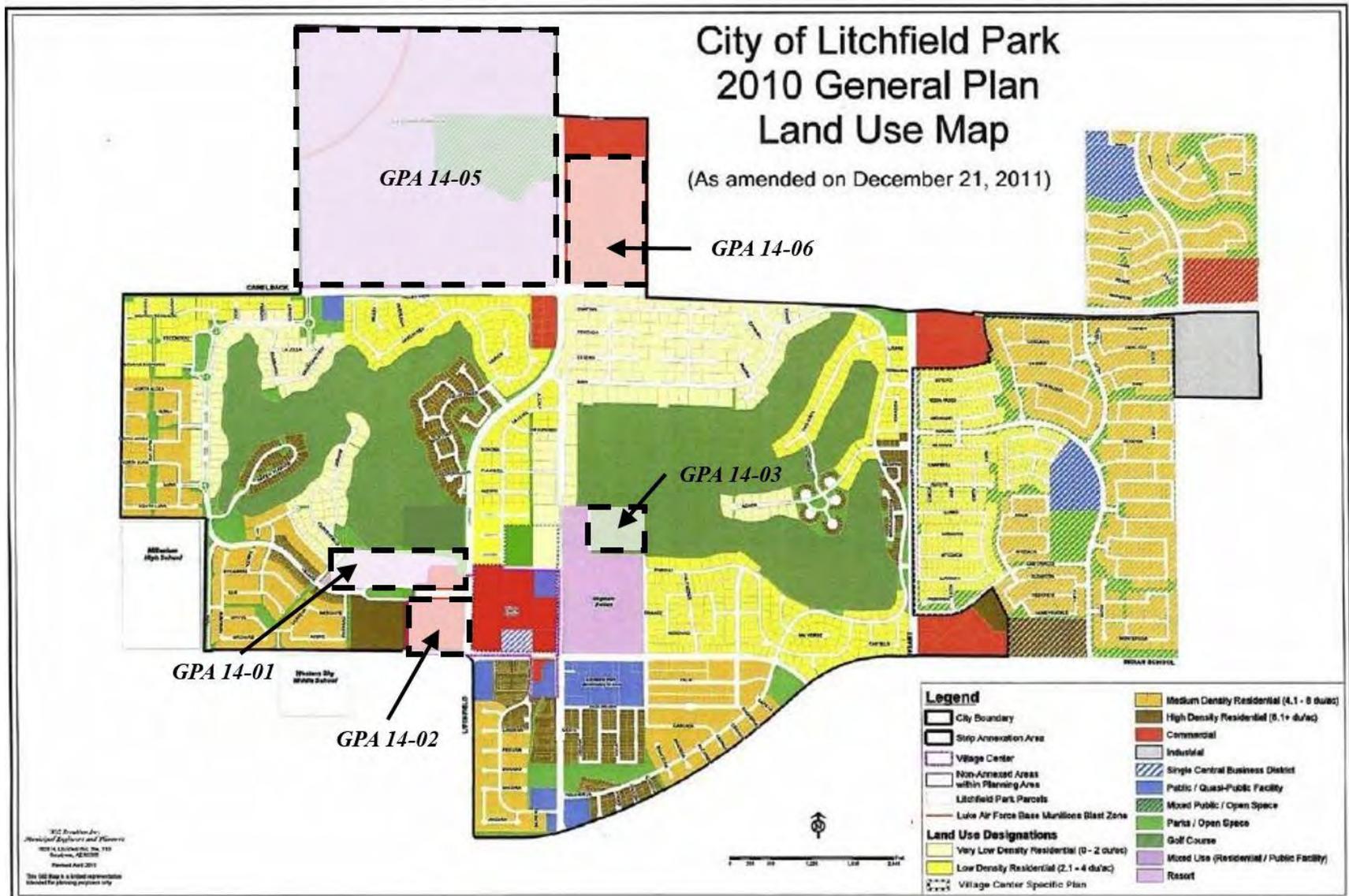


Figure 4-37: Litchfield Park land use map

4.3.15 Mesa

The City of Mesa, located in the southeast Phoenix valley, was incorporated in 1883. As shown in Figure 4-38, the city shares boundaries with the communities of Tempe, Gilbert, Queen Creek, and Apache Junction, and with the Salt River Pima-Maricopa Indian Community to the north. A region that is generally defined more by a roadway network than by natural features, the environment of north Mesa is enhanced by the presence of both the Salt River watershed and Red Mountain. Numerous notable pockets of unincorporated land dot the planning area, some of which are entirely surrounded by the city. As part of the greater metropolitan area, Mesa is the third-largest city in Arizona and the nation’s 40th-largest city. Just 15 miles east of downtown Phoenix, incorporated Mesa currently includes 129.7 square miles, with a future land area that will include more than 170 square miles.

Since its incorporation over 100 years ago, the City of Mesa has experienced tremendous growth. Mesa’s modern history began in 1877 when a group of Mormon colonists arrived in Lehi and built Fort Utah in the north-central portion of Mesa near the Salt River. In 1883, the City of Mesa was officially incorporated and had an estimated 200 residents. By 1980, boundaries had expanded significantly, increasing the city’s area to over 66 square miles.

Mesa’s early development was triggered partly by the influence of military training in the region. In 1941 two bases were constructed to provide training for World War II pilots. Falcon Field, now Falcon Field Airport, was built for the British Royal Air Force. Williams Field, later Williams Air Force Base, and now Williams Gateway Airport, was built for U.S. pilots. After the war, many military families decided to settle in Mesa. The decade of the 1950's brought more commerce and industry to Mesa, including early aerospace companies. However, until 1960 more than 50 percent of the residents earned their living directly or indirectly from farming, mainly citrus and cotton. The 1960's through 1990's saw more high-technology companies, now over 100 firms. Health facilities grew especially during the 1980's and 1990's to service the larger population.

The City of Mesa has an elected mayor and six city council members that are limited to two consecutive terms. The city operates under a charter form of government, with the mayor and city council setting policy. In 1998, a voter initiative changed the election of the council members from an at-large system to a system of six districts. Council members serve a term of four years, with three members elected every two years. The mayor is elected at-large every four years. The council appoints the city manager and other officers necessary to produce an orderly administration of the city’s affairs.

In 2014, the population of Mesa was 455,567. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-16.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	439,041	201,173	160,814
2020	543,353	241,270	215,396

Development Trends:

Over the past five years the City of Mesa has seen an increase in new residential development, particularly in the southeast area of Mesa. The Eastmark and Cadence master planned communities have consistently been platting hundreds of new lots on the old GM Proving Grounds site. The northeast area of Mesa has also seen an increase in new residential development with the Mountain Bridge Master Planned Community at Ellsworth Road and McKellips Road and the Lehi Crossing Community at Lindsay Road and McDowell Road. Commercial, retail, and employment development has focused around the Falcon Field Area, the Phoenix-Mesa Gateway Airport Area, and the Superstition Freeway Corridor (particularly on the east side of the city).

The city has identified four “Growth Areas” within the city’s General Plan. These areas include the Falcon Field Area, the Phoenix-Mesa Gateway Area, the Light Rail Corridor along Main Street, and the East Superstition Springs Freeway Corridor. Each of these is shown in Figure 4-39. It is also anticipated that significant amounts of redevelopment will occur along Main Street and the Fiesta District.

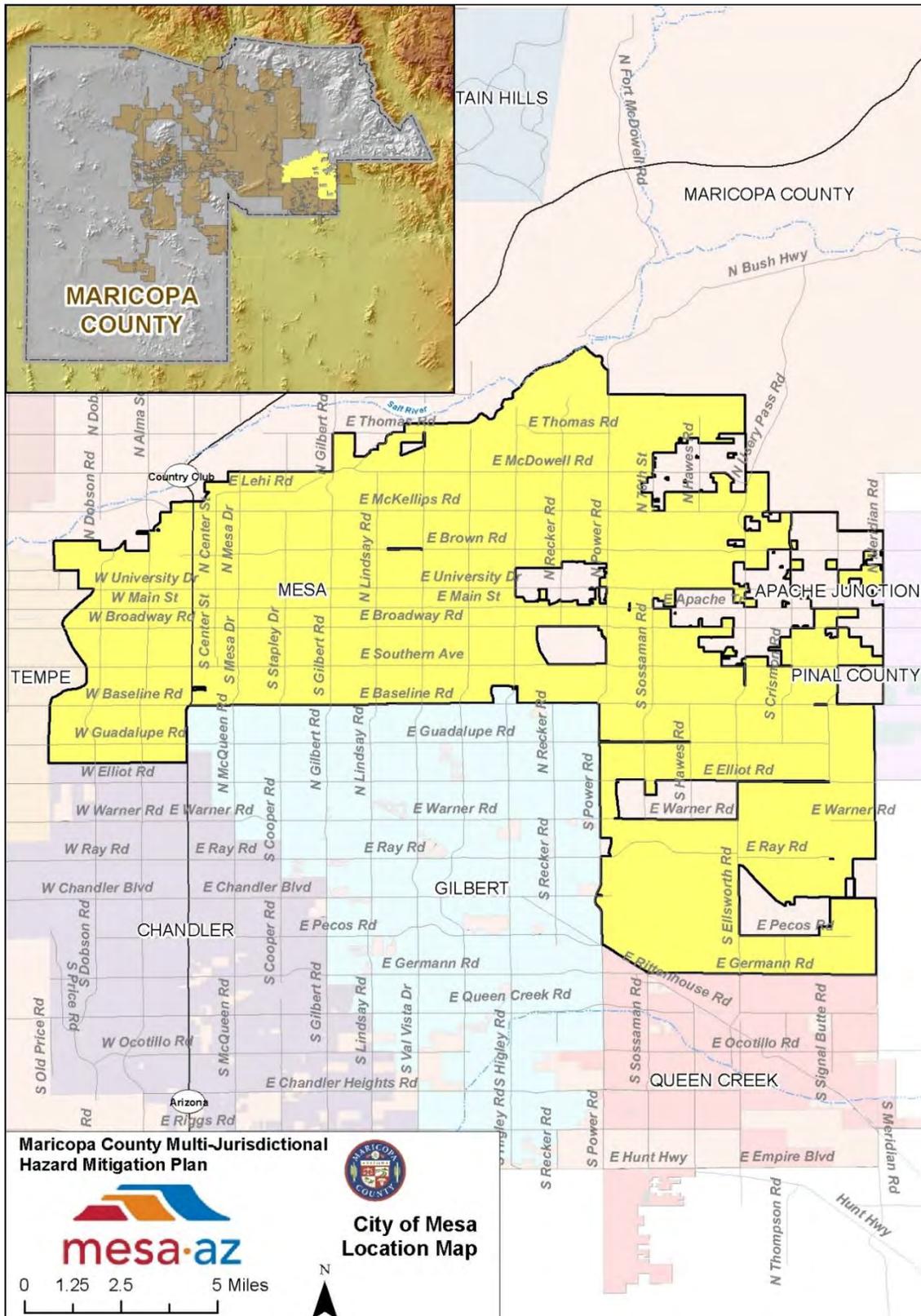


Figure 4-38: Mesa location map

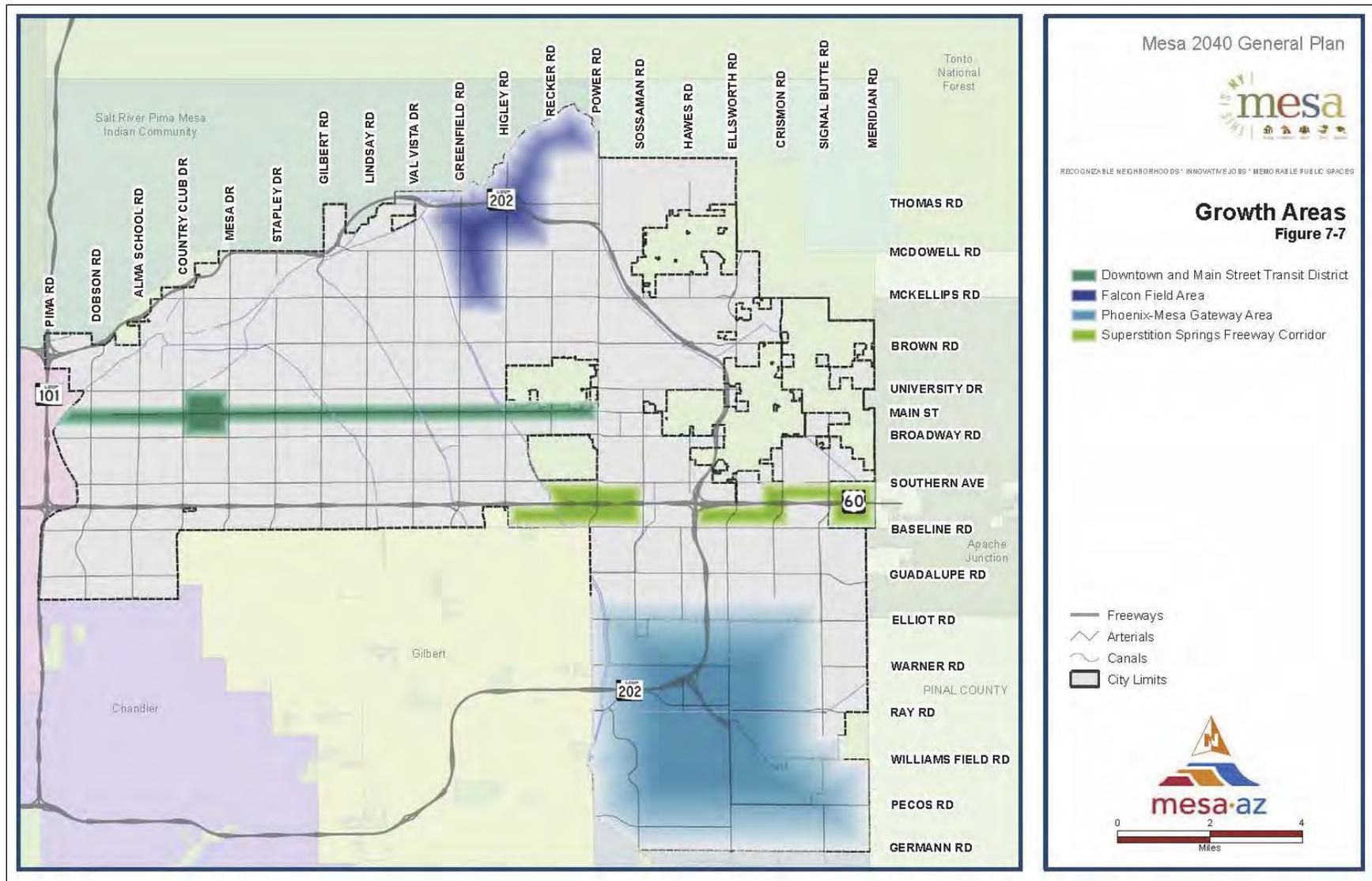


Figure 4-39: Mesa growth area map

4.3.16 Paradise Valley

Located approximately 10 miles northeast of downtown Phoenix, the Town of Paradise Valley lies in the central region of the metropolitan area between the cities of Phoenix and Scottsdale, as shown in Figure 4-40. Incorporated as a community in May of 1961, the town’s founders initiated the integration in response to concerns that the relaxed, sparsely populated desert lifestyle of their community was in danger of eroding due to threatened annexation by and the changing density and commercialization of neighboring Phoenix and Scottsdale. The area originally incorporated as the Town included 2.7 square miles. By 1970, Paradise Valley had grown to 13.3 square miles, and the population had reached 6,637 residents. By 1980, the town had a population of approximately 11,000 residents and included roughly 14 square miles. While Paradise Valley reflects a unique focus on low-density, resort style living, the town also has a rugged terrain that compliments the beautiful homes.

Today Paradise Valley’s residents are governed under a council-manager form of government, which includes a seven member town council consisting of a mayor and six council members elected at-large for a term of four years. The town council appoints the mayor and town manager and other officers necessary to produce an orderly administration of the town’s affairs.

In 2014, the population of Paradise Valley was 13,457. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-17.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	12,820	5,643	4,327
2020	12,951	5,799	6,253

Development Trends:

As a landlocked, fully developed residential community, development in Paradise Valley has been a combination of renovations of existing single family home structures and a limited number of new builds. During the same period there has been some upgrades done to the existing resorts in the town. Most of that development has taken place in the last three years. Development has not been localized in any particular part of town but pretty much community wide. As part of the Town Hall Campus, the Town of Paradise Valley also added a new Municipal Court Building during this period.

Development over the next five years will be much the same as the previous period as older homes are demolished and replaced with newer ones, and renovations are made to other existing single family homes. Three exceptions to the primarily residential development will be the redevelopment of the Mountain Shadows Resort in the center of the town, a proposed new resort on the eastern boundary, adjacent to the City of Scottsdale, and the redevelopment of the Cottonwoods Resort also on the eastern boundary with the City of Scottsdale. These three areas are identified on Figure 4-41 and are mapped as “56th Street and Lincoln” for the Mountain Shadows redevelopment, “East Lincoln North” for the new resort and “East Lincoln South” for the Cottonwoods Resort.

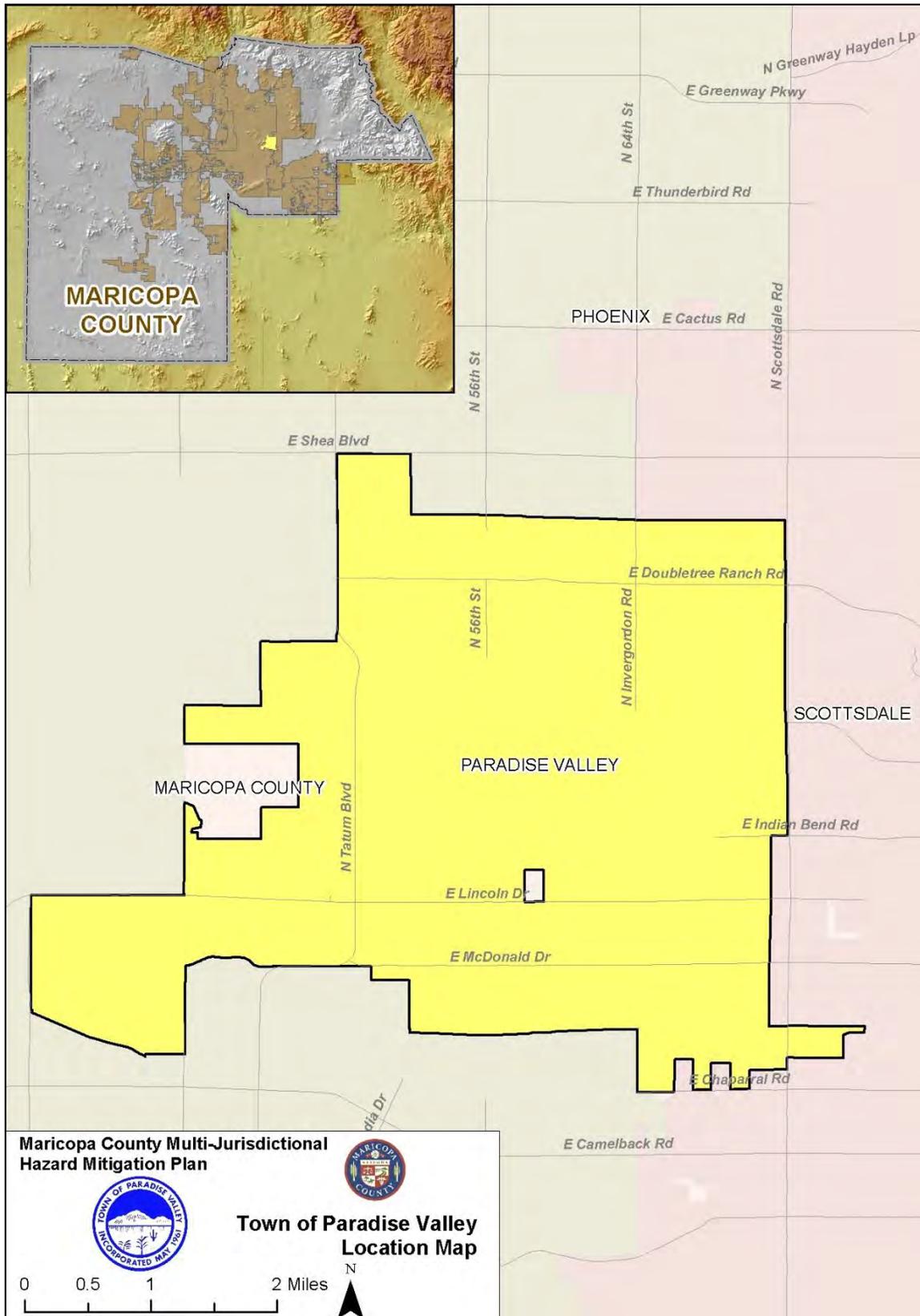


Figure 4-40: Paradise Valley location map

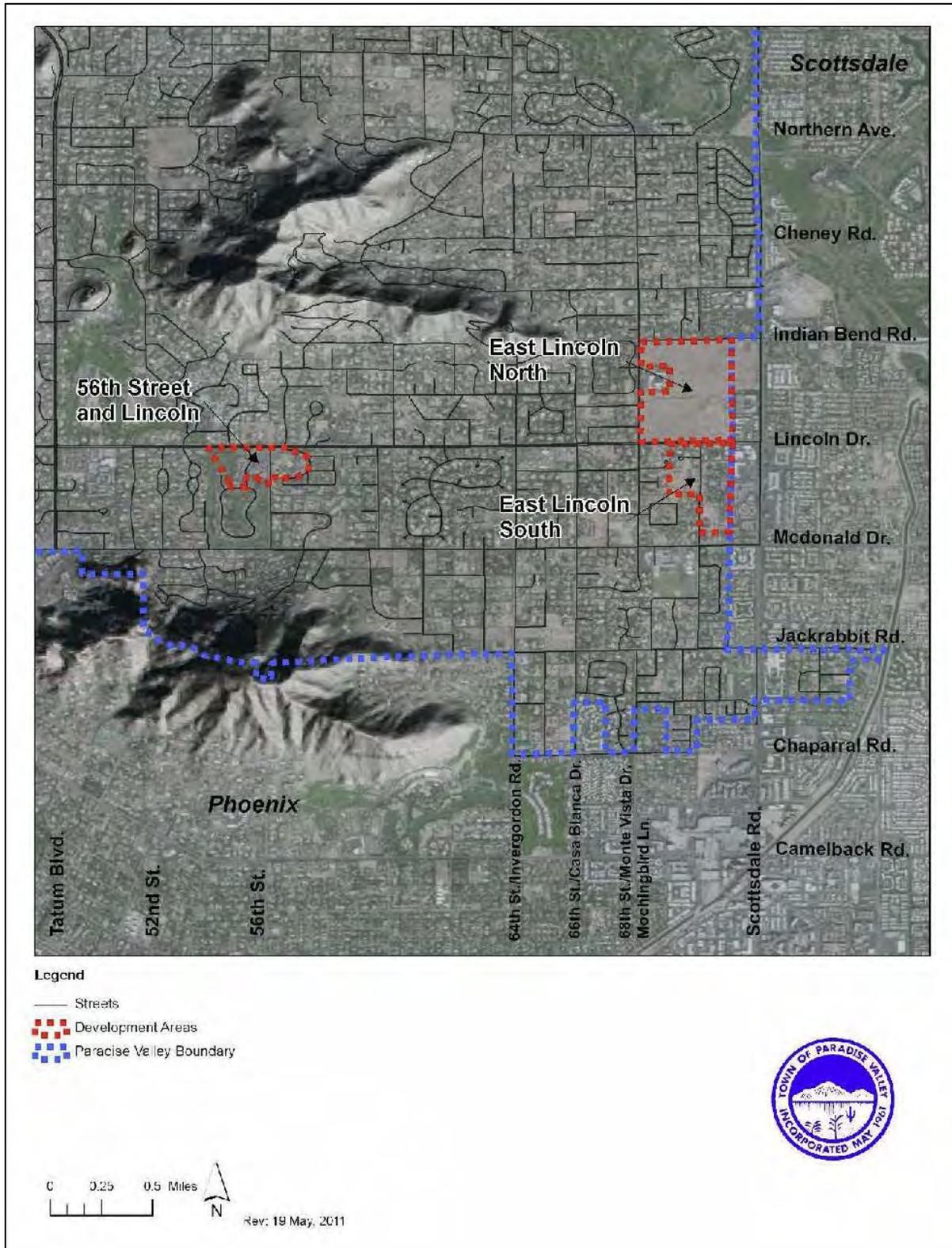


Figure 4-41: Paradise Valley development area map

4.3.17 Peoria

The City of Peoria was established in the 1880’s when local leader William J. Murphy’s vision for the Arizona Canal was completed in 1885. The city was incorporated in 1954, with boundaries covering only one square mile of land. The incorporated area of Peoria covers nearly 176 square miles. Northern Peoria’s planning area includes a landscape dominated by the Lake Pleasant Recreational Area. This park is complimented by both the Gila River and New River watersheds, which enter the city from the north and depart to the south. As shown in Figure 4-42, Peoria is provided access through various arterial roadways and major throughways. Most notably, State Route 74 provides access to the city’s north end, the Loop 101 Freeway bisects the city’s southern region, and the Loop 303 Freeway alignment affords access to the central and northern portion of the city.

Today, Peoria’s residents are governed under a council-manager form of government, which includes a seven member city council consisting of a mayor and six council members elected from six districts within the city for four-year terms. The city council appoints the city manager and other officers necessary to produce an orderly administration of the city’s affairs.

In 2014, the population of the portion of Peoria within Maricopa County was 163,832. The total Peoria population was estimated at 163,839. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-18.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	154,065	64,818	40,852
2020	214,412	84,425	62,563

Development Trends:

Over the last five years, development in the City of Peoria has largely consisted of new single-family residential construction and smaller commercial pads in established centers. Residential growth has been predominantly focused in three areas: (a) Large master-planned community of Vistancia generally located in the northwest part of the city near El Mirage Road and Vistancia; (b) Central Peoria corridor between Deer Valley Road and Jomax centered on Lake Pleasant Parkway; and (c) smaller infill parcels south of Bell Road. With the gradual improvement in the economy, entitlement and development activity has gained momentum within the last few years and is beginning to construct road and other infrastructure-related improvements associated with their approvals. New commercial construction has been primarily “nodal” in nature and occurring within pads at existing centers (e.g. Lake Pleasant Parkway and Happy Valley) and/or commercially-zoned land and arterial corners in southern Peoria (e.g. 75th/Thunderbird).

Given the limited amount of developable land in the southern portion of Peoria (south of Bell Road), new development is expected to continue to occur in the growth nodes identified above, Lake Pleasant/Deer Valley core, and vicinity of Vistancia. These areas are the “hot” areas for new sales and construction activities. Moreover, these areas have ample land zoned for residential and infrastructure in place or imminent within this term. Commercial development will continue primarily as part of these master-planned developments, will likely continue to be nodal, and will primarily be located at major arterial intersections throughout these areas. The Loop 303 corridor, while “pre-market” at the current time may begin to see development pressure at the Loop 303/Lake Pleasant node and Vistancia commercial core (near Loop 303/Vistancia). The city’s current Land Use Plan is shown on Figure 4-43<sup>17</sup>.

<sup>17</sup> City of Peoria, <http://www.peoriaaz.gov/NewSecondary.aspx?id=25810>

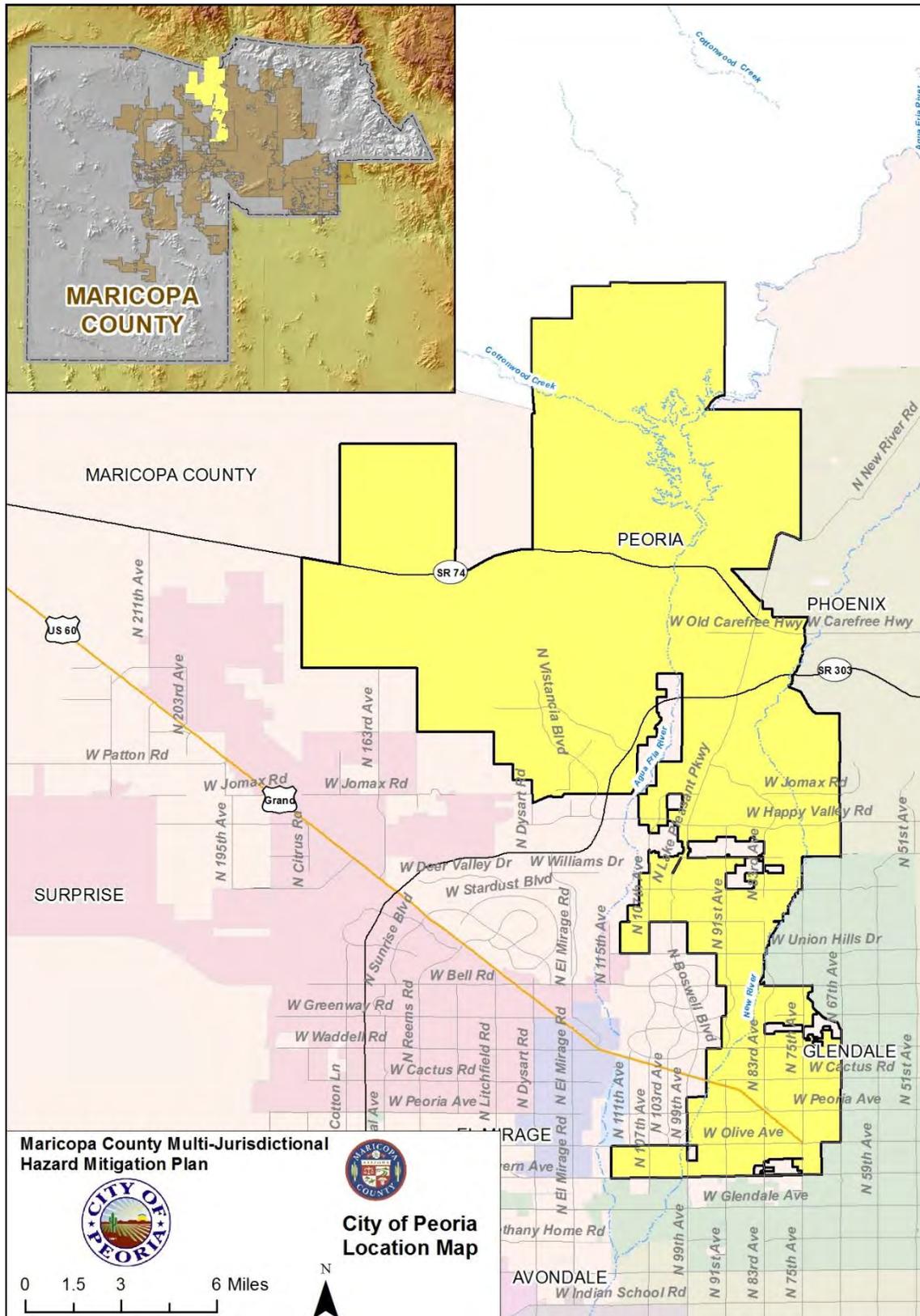


Figure 4-42: Peoria location map

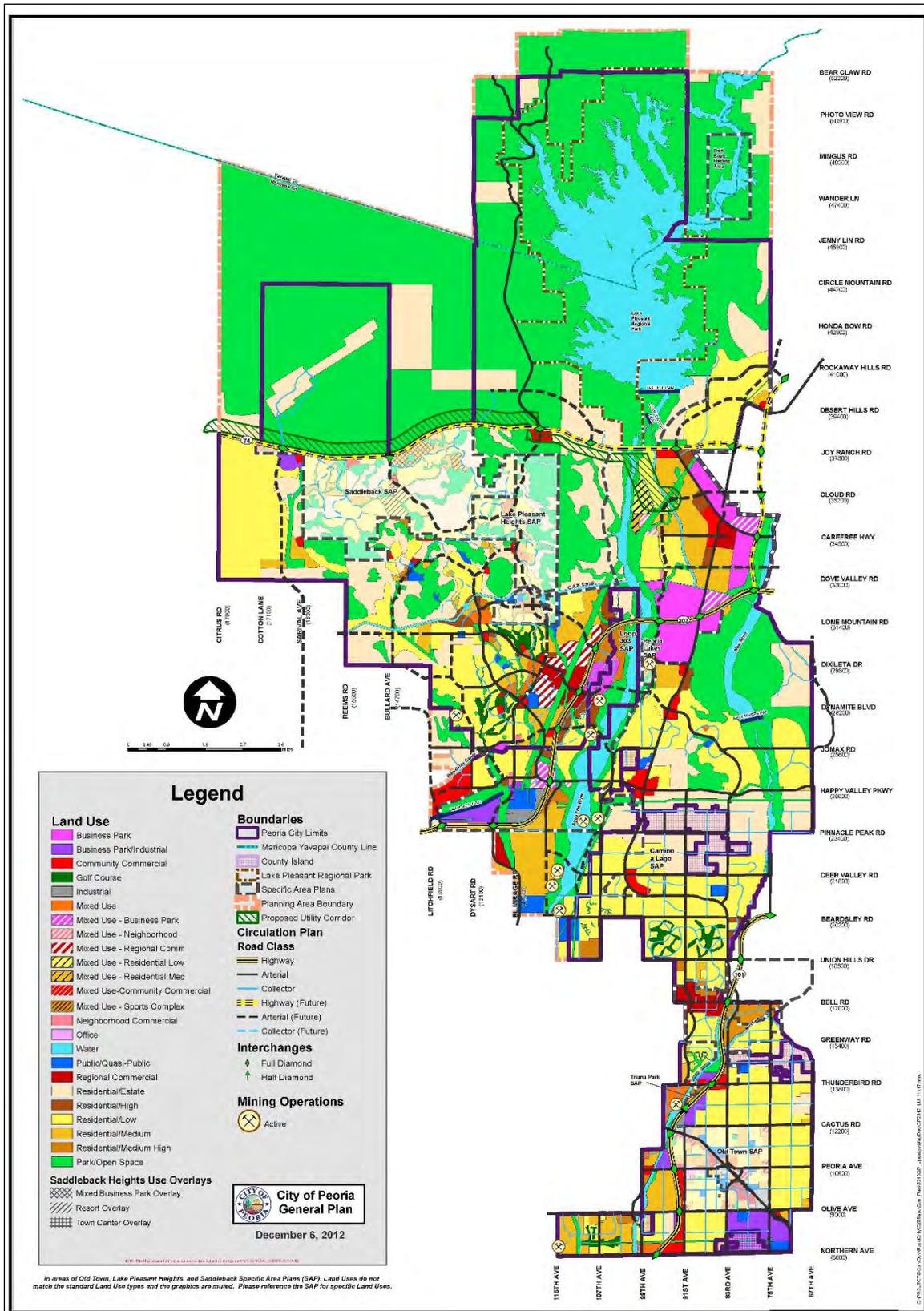


Figure 4-43: Peoria land use map

4.3.18 Phoenix

The City of Phoenix, located in the heart of the greater metropolitan area, dominates the political, economic, and cultural landscape not only of Maricopa County, but also much of Arizona. In 1867, Phoenix founder Jack Swilling formed a canal company and diverted water from the Salt River, helping to capitalize on the region’s agricultural value. In 1911, the Roosevelt Dam was completed and water supplies—vital to growth in the region—was stabilized. Strong growth in the region began during World War II when several military airfields were constructed in Maricopa County, and various defense industries followed. Formally incorporated in 1881, today the City of Phoenix includes over 500 square miles, and is the nation’s sixth most populous city. Phoenix is Arizona’s capitol and is located in the County Seat: Maricopa County.

As suggested through Figure 4-44, Phoenix has grown more north-south than east-west since its inception. To the south, Phoenix is bounded by the Gila River Indian Community, and on the north by unincorporated Maricopa County. Many smaller communities, including Tempe, Paradise Valley, and Scottsdale define the city to the east, and Peoria and Glendale form the city’s western border. The natural environment of Phoenix is typical of the Sonoran Desert climate. Rugged urban mountain parks, including South Mountain—the nation’s largest urban park—and the Phoenix Mountain Preserve create a memorable skyline. The region’s catalyst, the Salt River, now runs dry through the center of the city, and is complemented by various smaller watersheds. A massive arterial roadway network and, more recently, the development of a large freeway system, now serve Phoenix. The primary roadway network includes Interstates 17 and 10, with State Highway 51 and the Loop 101 and 202 Freeways also providing transportation service throughout the region. Phoenix and the region are served by Sky Harbor International Airport, located only two miles east of the city’s central business district.

The City of Phoenix has an elected mayor and eight city council members that represent various districts within the city. The city operates under a charter form of government, with the mayor and city council setting policy. The mayor and eight council members serve terms of four years. The mayor is elected at-large every four years. The council appoints the city manager and other officers necessary to produce an orderly administration of the city’s affairs.

In 2014, the Phoenix population was estimated at 1,506,439. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-19.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	1,445,632	590,149	747,669
2020	1,711,641	653,331	958,021

Development Trends:

The City of Phoenix Planning and Development Department has tracked development trends over the past five years and reported these trends to city management, the Development Advisory Board and the public. The most prominent development trends include:

**Infill Development:** The City of Phoenix's Infill Development District was created on January 1, 2014. The Infill Development District and associated policies remove some of the barriers to infill development and provide flexibility in standard development requirements. The goal is to promote growth and development in areas served by light rail and existing public infrastructure. Smaller builders are also finding their niches with infill lots. Developers are building eco-friendly and contemporary single-family homes aimed at young professionals who want to live closer to city amenities. New developments can be spotted across Phoenix and in many long-developed areas, including south Scottsdale, east Mesa, downtown Chandler and a Glendale neighborhood just north of Maryvale. According to Catherine Reagor and Kara G. Morrison with Arizona Republic, by percentage, growth of infill homebuilding is outpacing the rest of metro Phoenix’s new-home market. Infill projects in 2013 made up almost 13 percent of the estimated total of 11,500 new-home permits issued through November, according to a real-estate analysis by RL Brown Reports. Infill development has clearly been on the rise in both residential and commercial development, including construction of single family residential homes and vacant parcel infill.

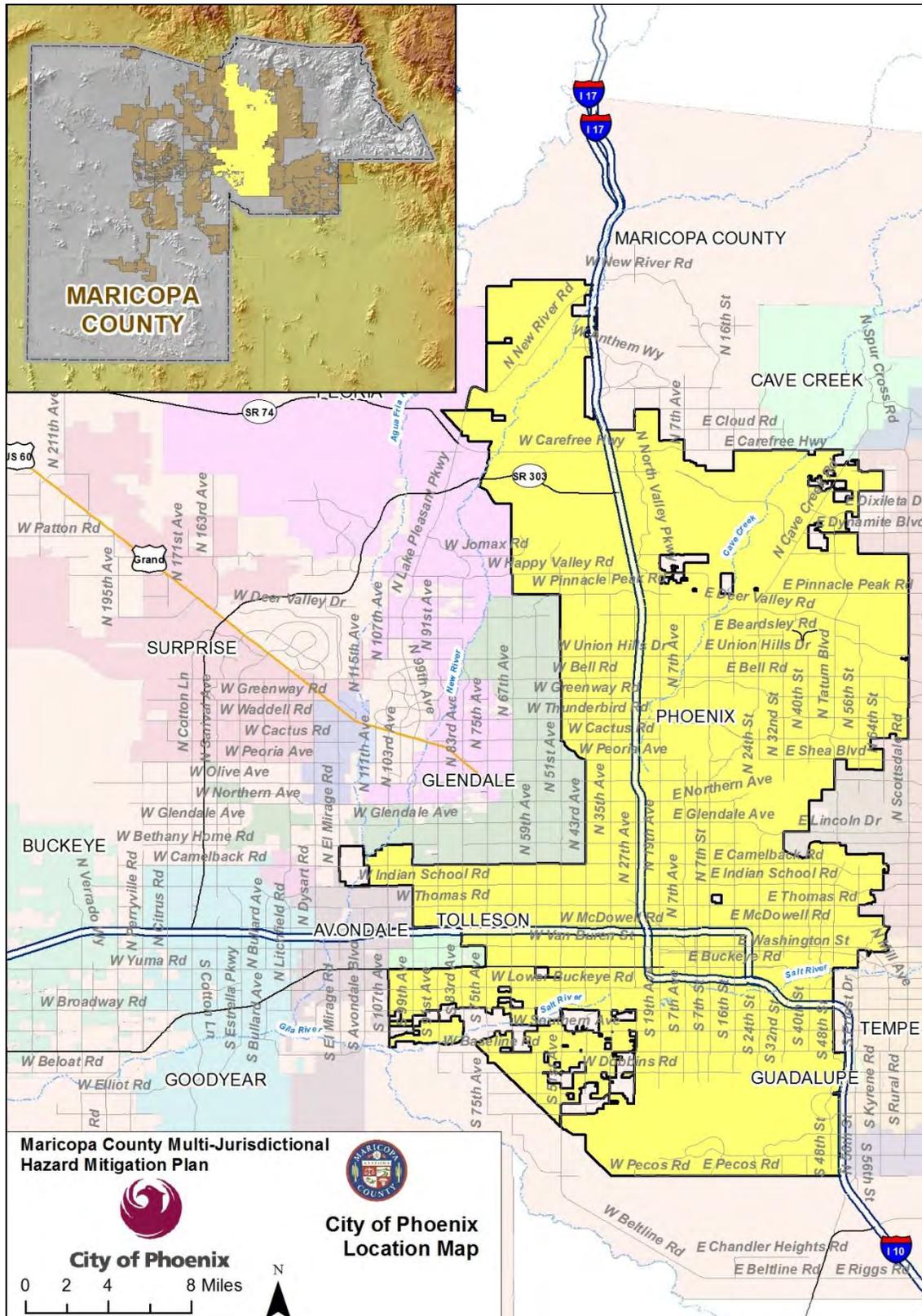


Figure 4-44: Phoenix location map

**Adaptive Reuse:** The City of Phoenix Planning and Development Department encourages adaptive reuse through their Adaptive Reuse program that launched in 2008 and has been increasing the use of developing current existing buildings and structures, instead of constructing new. The city's program was developed to provide regulatory relief and help streamline the process of renovating existing buildings for new uses. Projects meeting the program requirements may be provided special designation and related Adaptive Reuse policies are applied during the plan review, permit and inspection process. As a result, more businesses are embracing adaptive reuse as a viable development option, which retains the current structures and surrounding features that have proven to be self-sustaining. In 2011, there were 37 adaptive reuse projects and the following year 54. Adaptive reuse helps the environment as fewer materials end up in the landfills when buildings are renovated.

**Transit Orientated Development (TOD):** The City of Phoenix Planning and Development Department supports TOD's and encouraging public transportation. Transit Oriented Development is a development style that encourages transit usage by increasing the base of riders through complementary land uses, such as office, retail and housing, near transit stations. Mixed use development, such as multi-family housing projects with retail at street level, is more common, and attracts riders to the station areas. In order to maximize development and ensure development along light rail is increased, two new overlay districts were adopted. These overlays include TOD 1, which primarily applies to commercial and residential areas and TOD 2, which applies to industrial and support areas. As a result, ridership and development along the light rail has steadily increased over the past 5 years.

**Metro City Core Development:** In the heart of metro Phoenix's core communities, new houses and condo projects are planned on vacant parcels, in half-built subdivisions and in teardown projects replacing run-down buildings. Prospective buyers who want to live closer in instead of on the region's fringes are spurring builders, big and small, to develop infill housing at the fastest pace in valley history. In 2010, only about 200 houses were built in the region's central neighborhoods, defined as inside the Loop 202 and 101 freeways. In 2011, there were 1,311 houses built in this area, more than six times the number from three years ago. According to Reagor and Morrison, new houses going up near the Metro light rail are selling within days and sparking bidding wars. For-sale signs posted on lots vacant for decades are being replaced by dirt movers and contractors' pickups. (Reagor and Morrison, Housing market shifts back to metro Phoenix's Core)

**Sustainability:** Sustainability is a new trend over the past five years and the 2012 International Residential Code (IRC), adopted by the city, includes changes to code that encourages energy efficiency. These efforts, in addition to efforts by utility companies such as Arizona Public Service (APS) and Salt River Project (SRP), promote energy efficiency building practices which have led to increased energy efficiency for both residential and commercial buildings through the valley. Each code adoption cycle, City of Phoenix staff includes these sustainable partners and the entire public in the review process to provide feedback in the adoption of new codes.

Development trends anticipated by the city over the next five years include:

**Reinvent Phoenix:** Reinvent Phoenix is a collaborative partnership between the City of Phoenix, the U.S. Department of Housing and Urban Development, Arizona State University, St. Luke's Health Initiatives and numerous other organizations committed to developing walkable, opportunity-rich communities connected to light rail. Reinvent PHX's goal is to create action plans for districts along the light rail system. The plans will establish a community-based vision for the future and identify investment strategies to improve the quality of life for all residents. This process will establish a new, transit-oriented model for urban planning and development along the city's light rail system. As a result, these plans will continue to support future development along the light rail, around transit areas and transform Phoenix into a more walkable, sustainable community.

**Sustainability:** Another development trend predicted for the next five years is sustainability. It is anticipated that development of energy efficient homes, often with photovoltaic systems/solar panels, built to be airtight, and largely maintenance free, will increase Net-zero energy homes built on neighboring lots that share a common courtyard and have carports that contain solar panels. As residents, developers, and contractors embrace the new sustainability practices which are reflected in the new 2015 building codes, development will continue to move towards this sustainability model and improve

Phoenix's responses to hazard mitigation. As populations are living closer in proximity and closer to mass transit, the ability to respond and assist in rescue efforts is improved dramatically.

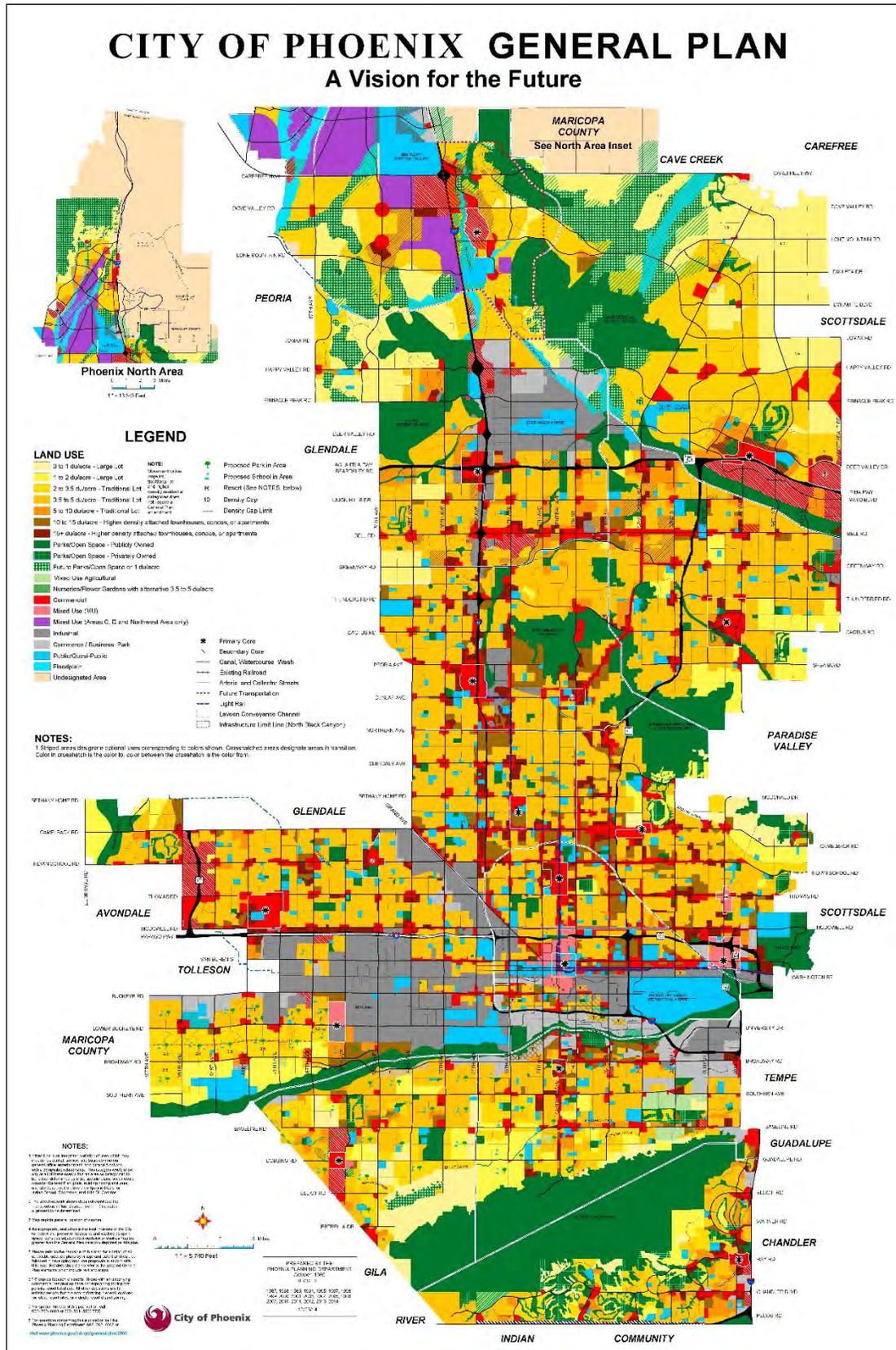
**Future Infill Development:** It is anticipated that the number of lots available for infill will decrease in the next five years. According to an Arizona Republic article in 2013, the available lots for new homes inside the boundaries of Loops 101 and 202 have fallen to about 2,350, which could raise competition for the best sites. There are more than 50 builders constructing infill houses in the central valley. Over the next five years the infill lots left will likely come with issues and challenges. Example of these challenges include an odd configuration or difficulty finding nearby comparable property prices that can justify the sales prices necessary for a new-construction luxury home.

Figure 4-45<sup>18</sup> shows the latest version of the city's land use plan.

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<sup>18</sup> City of Phoenix, <https://www.phoenix.gov/econdev/Reports-Maps>



4.3.19 Queen Creek

Like most of the communities located in the greater metropolitan area, Queen Creek has experienced rapid growth in both population and land area, yet is still known as a very rural community that is rich in agricultural and rustic lifestyles. The Town of Queen Creek is situated in the southeastern corner of Maricopa County and a portion of western Pinal County, as shown in Figure 4-46. The Gila River Indian Community borders the southwest boundary of Queen Creek, the Town of Gilbert lies to the immediate west, and Mesa forms the northern boundary of the town. The San Tan Mountains Regional Park boundary comprises the southern boundary of the planning area. Downtown Mesa is approximately 20 miles north, yet the southernmost border of Mesa is Germann Road, which forms the northern boundary of the Queen Creek planning area. Phoenix-Mesa Gateway Airport, a growing regional facility in Mesa, is only one mile north of the northern boundary of Queen Creek.

The Queen Creek planning area is 64.7 square miles while the current incorporated town area is approximately 26 square miles. Before it became a community, Queen Creek was a home for early Indian communities and the homesteaders who farmed and ranched along Queen Creek. By the time Arizona became a state in 1912, an organized farming town had been formed in the area. The Town of Queen Creek formally incorporated in 1989.

Large farms throughout the area grow a variety of crops including: citrus, pecans, cotton, corn, soybeans, wheat, potatoes, and alfalfa. The Union Pacific Railroad runs northwest to southeast through the town. Queen Creek and Sonoqui Wash also traverse the planning area, and periodically convey water flows generally due to flash floods. The San Tan Mountains and Goldmine Mountains are the most dramatic landform in the area, and lie immediately to the south. The Superstition Mountains, to Queen Creek’s northeast, can be seen from virtually anywhere within the planning area. Major arterials in the town are based on a grid system, with Rittenhouse Road crossing diagonally through the region. The southern section of the Loop 202 Freeway passes through Mesa and Gilbert several miles to the north, and will provide primary access to the metropolitan area.

In 2014, the population of the portion of Queen Creek within Maricopa County was 31,308. The total Queen Creek population was estimated at 31,767. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-20.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	26,361	8,557	5,913
2020	50,130	15,821	12,663

Development Trends:

The town has seen a significant increase in residential building permits over the past four years. The following residential communities have been rapidly developing: Hasting Farm, Victoria, and La Jara Farms.

The town has received a new 15-acre commercial development proposal in the town center area, located at the northeast corner of Ellsworth Loop Road and Maya Road. Over the next five years, the town anticipates commercial development at the northwest corner of Ellsworth Road and Riggs Road. Additionally, the following residential developments are expected to initiate development over the next five years: Fulton Estates at Queen Creek Station, Church Farm (William Lyon at Meridian), Sossaman 300 (second phase of Sossaman Estates), and Box Canyon.

The Town Land Use Plan for Queen Creek, shown on Figure 4-47<sup>19</sup>, provides a context for future land use planning and development.

<sup>19</sup> Town of Queen Creek, <http://www.queencreek.org/departments/community-development/planning-and-zoning/general-plan-and-map>

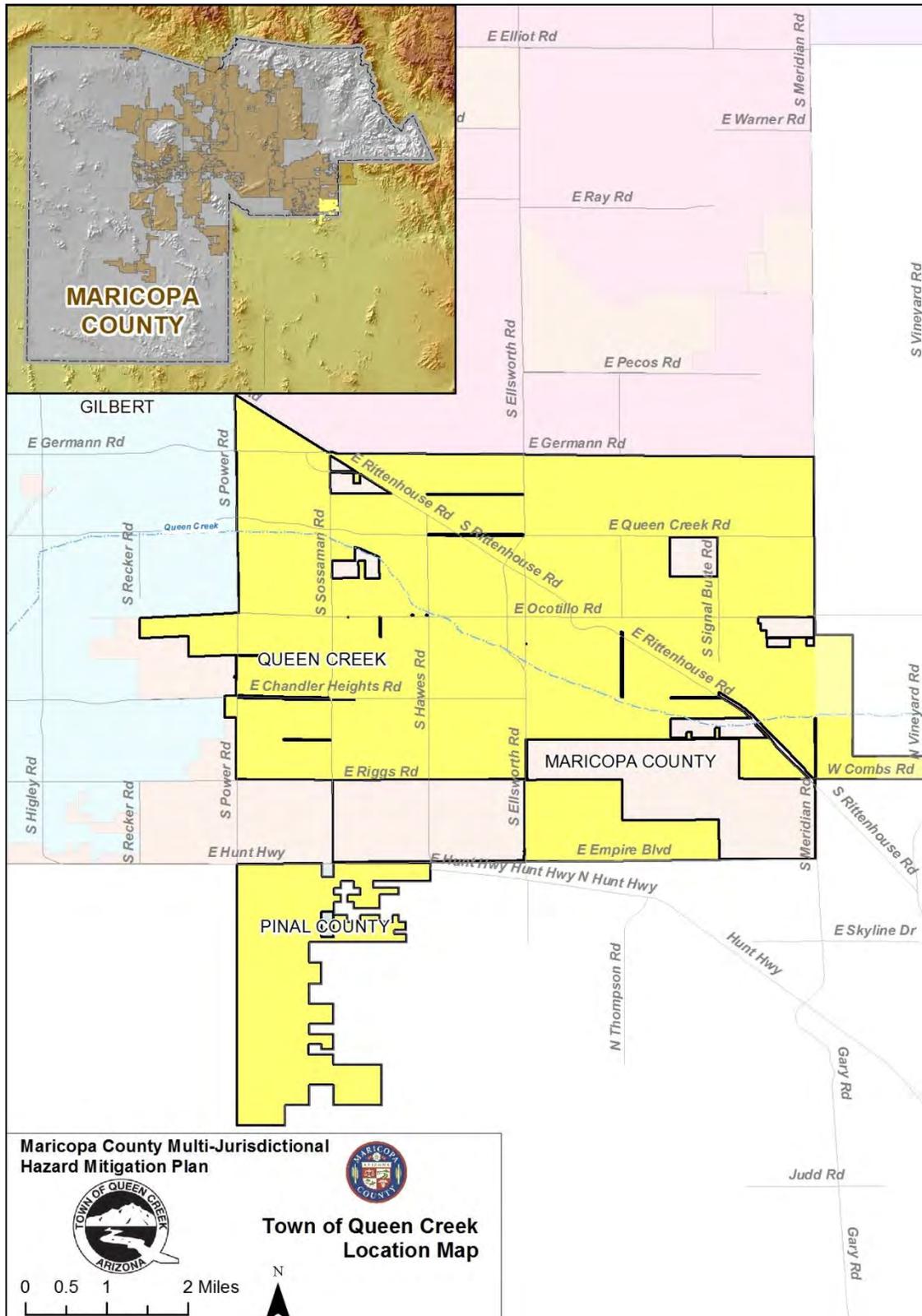


Figure 4-46: Queen Creek location map

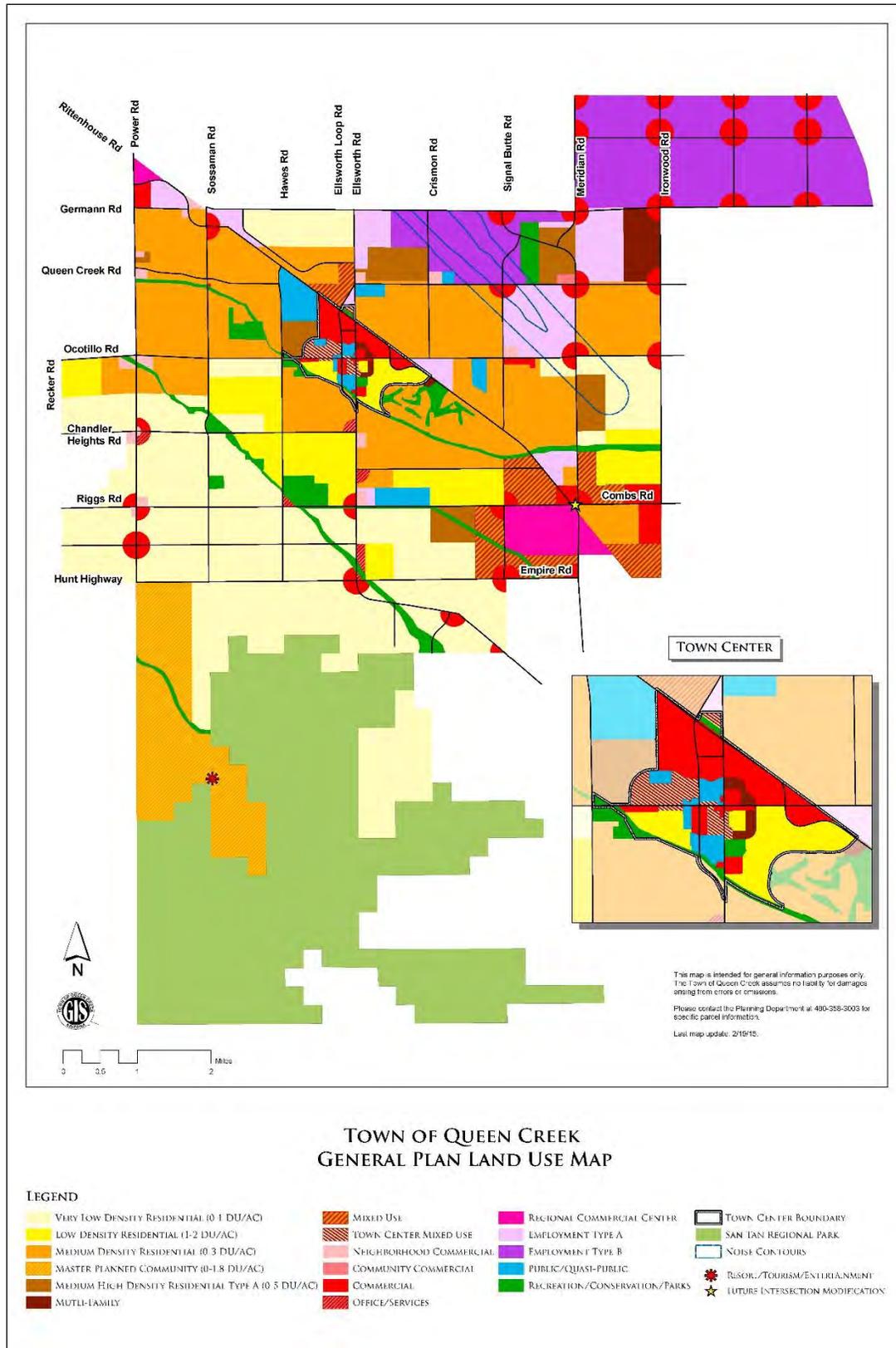


Figure 4-47: Queen Creek land use map

*4.3.20 Salt River Pima-Maricopa Indian Community*

The Salt River Pima-Maricopa Indian Community (SRPMIC) is located approximately 17 miles northeast of Phoenix, Arizona, and is bounded by Scottsdale to the north and west, Mesa and Tempe to the south, and Fountain Hills to the northeast. As a result of the community’s location in the Phoenix metropolitan area, it has experienced steady population and economic growth. Primary access to the community is offered through both the Loop 101 and 202 Freeways, and by State Highway 87, which runs north from Mesa to Payson through SRPMIC land. As shown through Figure 4-48, the most visible natural features of the region include the Salt River, which runs along the southern reservation border, and Red Mountain, a feature that exists on the community’s east side.

The SRPMIC was established in 1879 by an Executive Order signed by President Rutherford B. Hayes. The Executive Order enabled the Pima and Maricopa people to occupy the same 54,000 acres of fertile agricultural land as their ancestors.

The SRPMIC is governed by the Community Council, which is comprised of the Community President, Community Vice-President, and the Tribal Council. The president and vice president are elected at large and serve a four-year term. The council members serve a staggered term of four (4) years. The Community President and vice president oversee the management of the comprehensive government development, operations and services including: administration, general counsel, treasury, budgets and records, gaming regulatory office, self-governance, community development, economic development, construction and engineering, education, human resources, community relations, congressional and legislative affairs, cultural and environment, finance, fire, police, health and human services, judicial center, public works, transportation, recreation, museum, purchasing, and learning center.

In 2014, the population of the Salt River Pima Maricopa Indian Community was 6,557. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-21.

<b>Table 4-21: July 1<sup>st</sup> population, housing and employment statistics for Salt River Pima Maricopa Indian Community</b>			
<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	6,289	2,607	11,308
2020	6,428	2,704	20,495

Development Trends:

Over the past five years the main development for the SRPMIC has been the development of a commercial corridor which runs along the 101 Freeway on the west side of tribal lands. In addition to the development of multiple commercial retail buildings and office complexes in this area, the community has also constructed a year round sports complex and events center that also serves as the spring training facility for the Arizona Diamondbacks and Colorado Rockies professional baseball teams. A fifteen story high rise resort and casino was built in this area and two four story hotels. The community also started building on an entertainment district by completing a Butterfly Pavilion and Top Golf facility. Residential development continues to be scattered throughout the central area of tribal lands.

The SRPMIC anticipates additional commercial, retail and office space growth along the northern section of the 101 freeway corridor where most of the past growth has taken place. Expansion of an entertainment district in this area will include a large aquarium and additional facilities that will bring in tourists and locals to events and multiple entertainment facilities. New commercial development will most likely begin in the southern portion of the community boundaries that have not been built on in the past. This includes the area along the Salt River. Residential development will continue to be scattered throughout the central portion of tribal lands. A future land use planning map for the SRPMIC is shown in Figure 4-49<sup>20</sup>.

<sup>20</sup> Salt River Pima Maricopa Indian Community, <http://www.srpmic-nsn.gov/economic/>

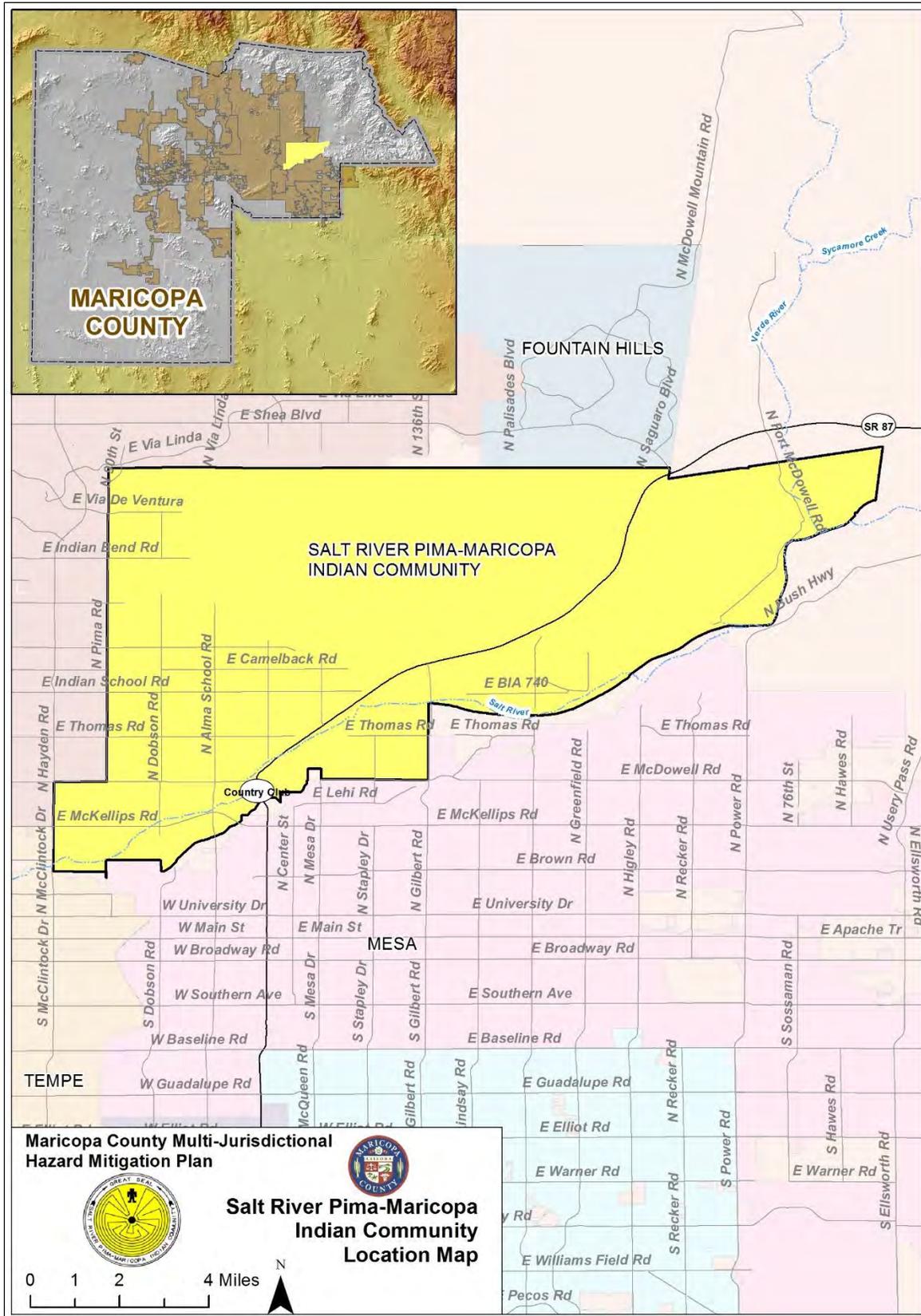
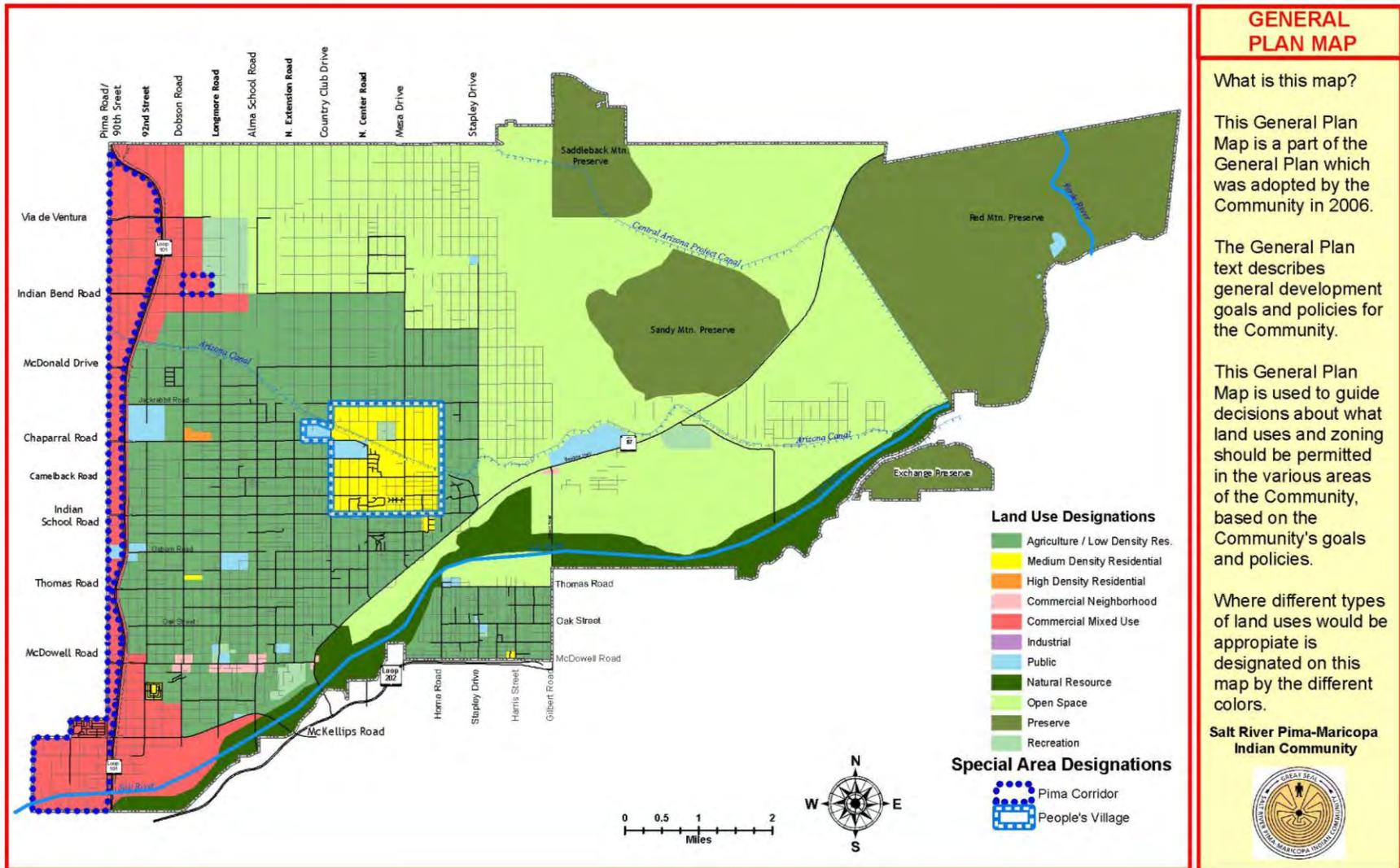


Figure 4-48: Salt River Pima-Maricopa Indian Community location map



*4.3.21 Salt River Project*

The Salt River Project (SRP) is comprised of: the Salt River Project Agricultural Improvement and Power District (District), which is a political subdivision of the state of Arizona, and the Salt River Valley Water Users' Association (Association), a private corporation. The District provides electricity to retail customers in the Phoenix area. It operates or participates in seven major power plants and numerous other generating stations, including thermal, nuclear and hydroelectric sources. The Association delivers nearly 1 million acre-feet of water to a service area in central Arizona. An extensive water delivery system is maintained and operated by the Association, including reservoirs, wells, canals and irrigation laterals. For the purpose of this Plan, the District is the eligible branch of SRP to receive funding under the DMA 2000 impacted mitigation grant programs.

The president is the chief executive officer and chairman of the board for each organization. The vice president fulfills the duties and responsibilities of the president during the president's absence. Together, they serve as the day-to-day representatives of the boards in the management of SRP.

In the District, landowners elect a president, a vice president, 14 board members and 30 council members. Each of the 10 voting divisions elects one board member and three council members. The president, vice president and four remaining board members are elected at-large from all of the voting divisions.

During the Great Depression, valley farmers were hard-pressed to make payments on the federal loans for Theodore Roosevelt Dam and other dams on the Salt River. To help reduce payments on the outstanding loans, the Arizona Legislature enacted a law in 1936 that allowed the 1937 formation of the Salt River Project Agricultural Improvement and Power District. As a political subdivision of the state, the District can issue tax-exempt municipal bonds, thereby reducing interest costs and saving SRP electric and water users millions of dollars.

As the valley's population has grown, the District has tapped many power sources to provide electricity to almost one million customers. Besides the time-honored hydroelectric generating units at the dams on the Salt River, the District owns or participates in 10 generating stations in the Southwest. Customers also are served by power drawn from various other generating facilities in the valley and state, as well as from contractual power purchases.

Development Trends:

In coordination with developers and city planners, SRP works to project growth and power demand trends to areas that are targeted for development. Over the past five years, SRP has experienced large scale commercial growth in the southeast valley along the Price Rd. corridor in Chandler as well as the east valley tech. corridor along Elliot Rd., between Signal Butte Rd. and Ellsworth Rd. in Mesa. A major manufacturing plant was constructed in southwest Mesa, creating the need to construct an additional substation to accommodate the increased load. In general, residential growth continued, albeit slower than the housing boom of the early 2000's, in the outlying areas of the west, east and southeast valley. Residential housing trends have slowly rebounded and increased in the extreme southeastern portion of the SRP service territory in Queen Creek and San Tan Valley. SRP recently completed the Palo Verde – Southeast Valley – Browning transmission project; a 150 mile, 500kV line that runs from Palo Verde Nuclear Generating Station in western Maricopa County to SRP's Browning substation in the east valley in Mesa.

In the next five years, the Salt River Project anticipates similar growth patterns along the Price Rd. corridor in Chandler as well as the east valley tech. corridor. Additionally, there is also potential increased commercial growth in south Mesa in the vicinity of the Mesa/Gateway Regional Airport. Similar projections are anticipated in the residential customer growth, especially in the east and southeast valley. SRP continues to enhance and increase the transmission capacity to accommodate new load growth as per the 2014-2023 Salt River Project Ten Year Plan Transmission Projects.

*4.3.22 Scottsdale*

Situated in the northeast portion of Maricopa County approximately 15 miles west of downtown Phoenix, the City of Scottsdale is bordered by several communities including Phoenix and Paradise Valley on the west, Tempe on the south, the Salt River Pima-Maricopa Indian Community on the east, and the Tonto National Forest to the north and east, as shown in Figure 4-50. Founded in 1888, Scottsdale has long been known as the “West’s Most Western Town”. Today the city is an example of a community that combines a rich western heritage with civic culture and a resort lifestyle. Contributing to these influences are several natural features that affect community lifestyle including the McDowell Mountain Park, the McDowell Sonoran Preserve, and the Salt River to the south.

The primary man-made features that influence Scottsdale’s land uses include: the Loop 101 Freeway, which runs along the east and north portions of Scottsdale, provides transportation to the rest of the valley, and offers opportunities for commercial growth; and the Scottsdale Road corridor, which runs north-south for the length of the community, and bisects Scottsdale into east and west halves. This roadway intersects the spectrum of Scottsdale land uses, including the Old Town shopping district in the south, the upscale shops and office areas near the Scottsdale Airpark, and the preserved open lands on the city’s far north area. These facilities compliment a wide array of resort and golf communities that have strengthened Scottsdale’s image as a destination community.

Scottsdale has evolved and grown since its founding in the late 1800's and incorporation in 1951, and currently includes over 184 square miles within its corporate boundary. Starting as a small residential community sprinkled with farms and citrus groves, Scottsdale has become a community that features a variety of land uses. Today, Scottsdale is governed by a council-manager form of government, which includes a mayor and six council members elected at-large for a period of four years.

In 2014, the population of Scottsdale was 225,698. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-22.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	217,385	124,001	165,809
2020	252,275	133,275	212,788

Development Trends:

Over the past five years the predominant development in Scottsdale was single family and multi-family projects with new and in-fill commercial development (including retail, office, light manufacturing and other commercial uses) occurring to a much lesser degree. Single family development occurred relatively evenly across all portions of the city (south, central and north). The most notable cluster of single family development is located in the central area (between Indian Bend Road to the south and Deer Valley Road to the north) of Scottsdale, just east of the largest AO flood zone and immediately north of Bell Road/Frank Lloyd Wright Blvd, as depicted on the attached Single Family Permits and FEMA Flood Zones Map. Multi-family residential development occurred predominantly in the southern (south of Indian Bend Road) and central portions of the city. The multi-family development located in the central area also falls within the largest AO flood zone located north of Bell Road/Frank Lloyd Wright Blvd., as depicted on the attached Multi-Family Permits and FEMA Flood Zones Map. Commercial development has occurred relatively evenly across all portions of the city (south, central and north). The greatest commercial clustering occurs in the southern and central areas, with only a handful of commercial development occurring in the north (north of Deer Valley Road to the city’s northernmost limit). Approximately half of the commercial development in the central area is located in the largest AO flood zone north of Bell Road/Frank Lloyd Wright Blvd., as depicted on the Commercial Permits and FEMA Flood Zones Map.

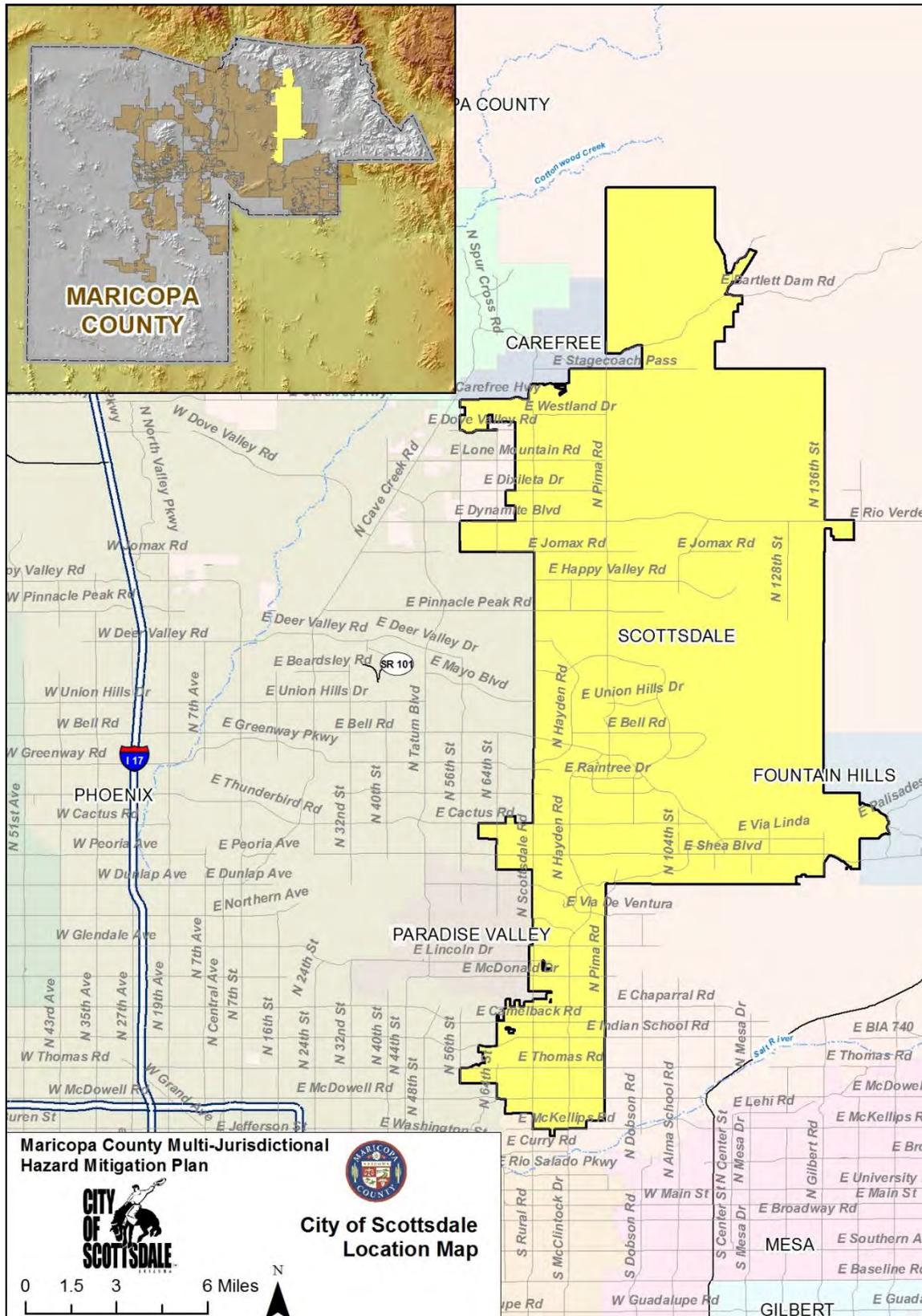


Figure 4-50: Scottsdale location map

Over the next five years (2015-2020), the majority of the development anticipated to occur in Scottsdale will primarily be located in the north and central portions of the community. This development is anticipated to be within the X flood zone, and includes an estimated 1,315 acres of development located north of Deer Valley Road (area outlined in yellow on the attached Map 1), and 1,026 acres located in the central area between Deer Valley Road and Indian Bend Road. In the north area, the majority of development at 1,067 acres is expected to be Rural Residential development (typically 1 unit per acre, single family residential). In the central area, the development is anticipated to be much more varied with the top land uses being a mix of Rural Residential at 218 acres (1 unit/acre), Urban Residential at 195 acres (9 units or more per acre), and Suburban Residential at 127 acres (2-8 units/acre). The remaining estimates include Retail at 172 acres, and Office at 136 acres. The south area, which is the oldest and most developed area of the community, (all portions of Scottsdale south of Indian Bend Road) is anticipated to see approximately 147 total acres of development of varying land uses. There is a focus on re-development of the McDowell Rd corridor and this will also include a significant amount of mixed commercial and multi-family redevelopment along with infill projects throughout the southern areas of the community. The city is currently updating its General Plan and has developed a draft map showing anticipated growth areas which is shown in Figure 4-51<sup>21</sup>.

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<sup>21</sup> City of Scottsdale, <http://www.scottsdaleaz.gov/Assets/Public+Website/generalplan/SGP2035TFRecommended.pdf>

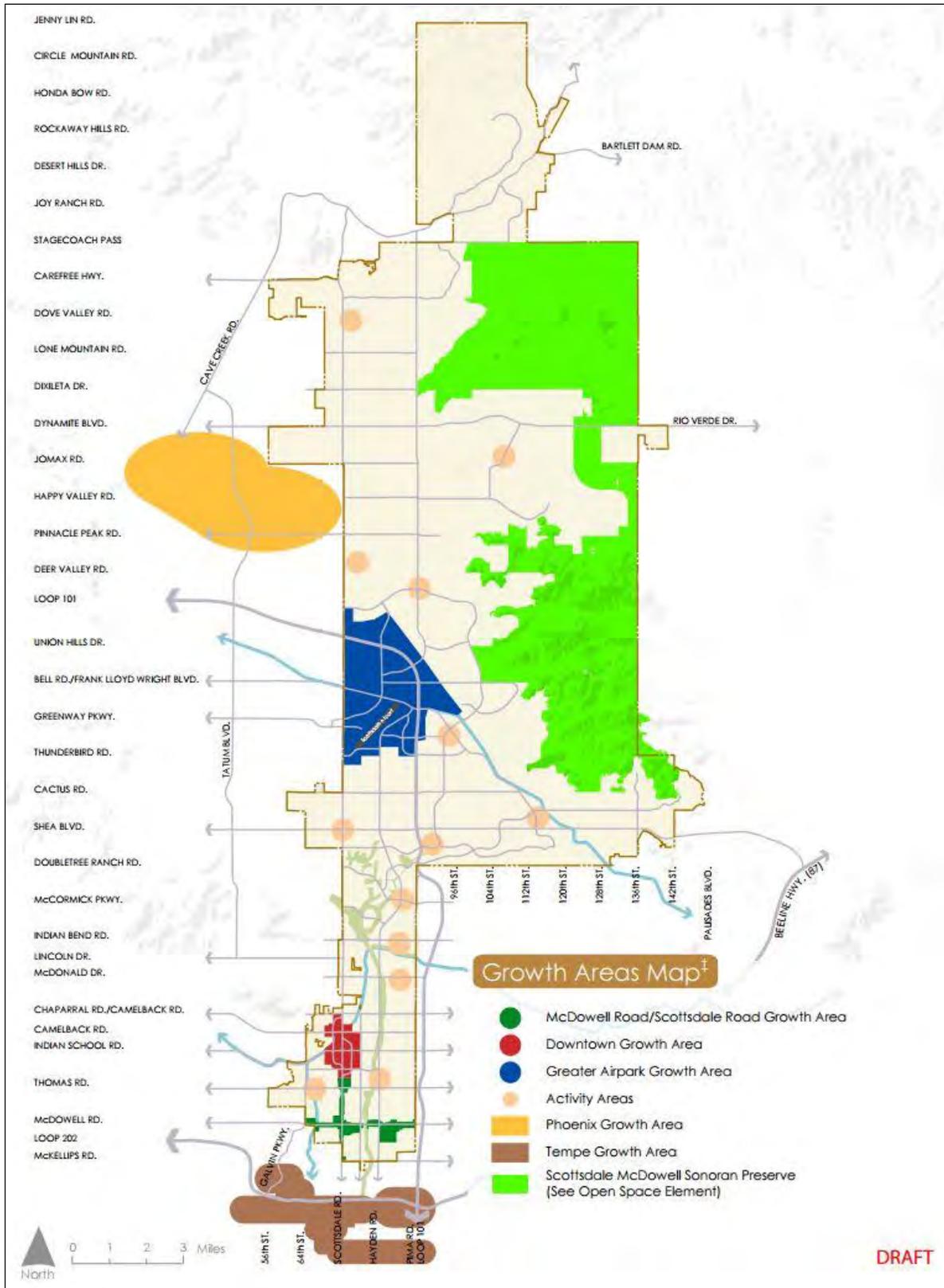


Figure 4-51: Scottsdale growth area map

4.3.23 Surprise

Surprise is located 25 minutes northwest of downtown Phoenix along US Route 60/State Highway 93 in the northwest valley of the metropolitan area. It is positioned about 13 miles west of Interstate 17, and 18 miles north of Interstate 10. Luke Air Force Base is 2.5 miles south of the Surprise planning area, located in the City of Glendale. As shown in Figure 4-52, the City of Surprise is bordered on the east by the cities of Peoria and El Mirage and on the west by the City of Buckeye. The unincorporated retirement communities of Sun City West and Sun City lie to the east of the City of Surprise, and Glendale lies immediately to the south of Surprise. The White Tank Mountain Regional Park is located in the southwest portion of the planning area and Lake Pleasant Regional Park is located approximately ten miles to the northeast.

Surprise became an incorporated town on December 12, 1960, and boasted a population of nearly 1,600 people located on a one square mile site. Today Surprise’s residents are governed by a council-manager form of government, which includes a mayor and six council members who are elected from six council districts for four-year terms.

In 2014, the population of Surprise was 123,798. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-23.

Year	Population	Housing	Employment
2010	117,517	52,586	19,516
2020	159,171	68,024	35,174

Development Trends:

Over the last five years, the city experienced slow residential growth from 2010 through 2014 as the population increased from 117,230 to 123,797, an increase of 6,567 residents. The city’s housing units have increased from 51,780 to 54,207 as depicted by Exhibit A in Figure 4-53. The chart to the right shows the square footage increases for office, retail and industrial buildings from 2010 to 2014. Exhibit B in Figure 4-53 depicts where the commercial / industrial growth has occurred within the City.

	2014	2010	% Increase
Office	1,110,946 SF	1,076,898 SF	3%
Retail	4,720,487 SF	4,362,425 SF	8%
Industrial	1,655,707 SF	787,056 SF	210%

Over the next five years, residential growth is anticipated to increase modestly. Exhibit A in Figure 4-53 depicts where the city projects the residential growth to occur. The city expects commercial/industrial growth to continue. The chart to the right shows the estimated square footage the city is anticipating for Office, Retail and Industrial by 2020. Exhibit B in Figure 4-53 depicts where the commercial/industrial growth is expected to occur.

	2020	% Increase
Office	2,006,421 SF	81%
Retail	6,648,227 SF	41%
Industrial	2,464,498 SF	49%



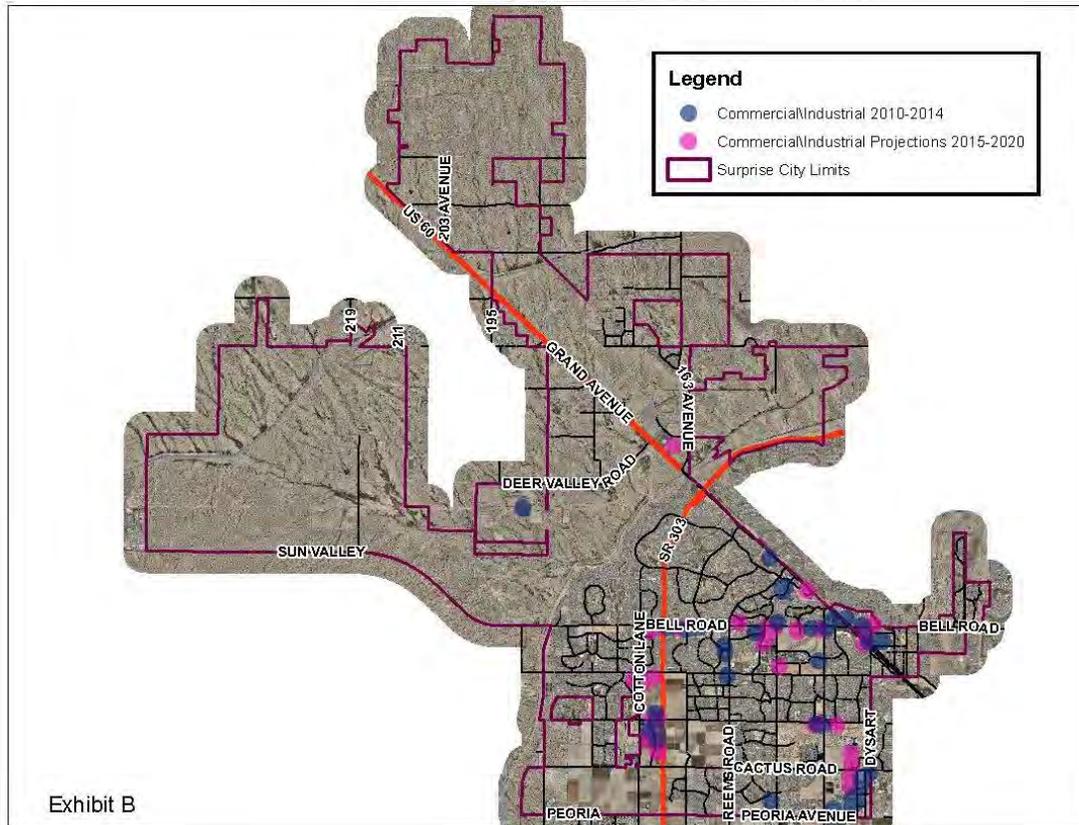
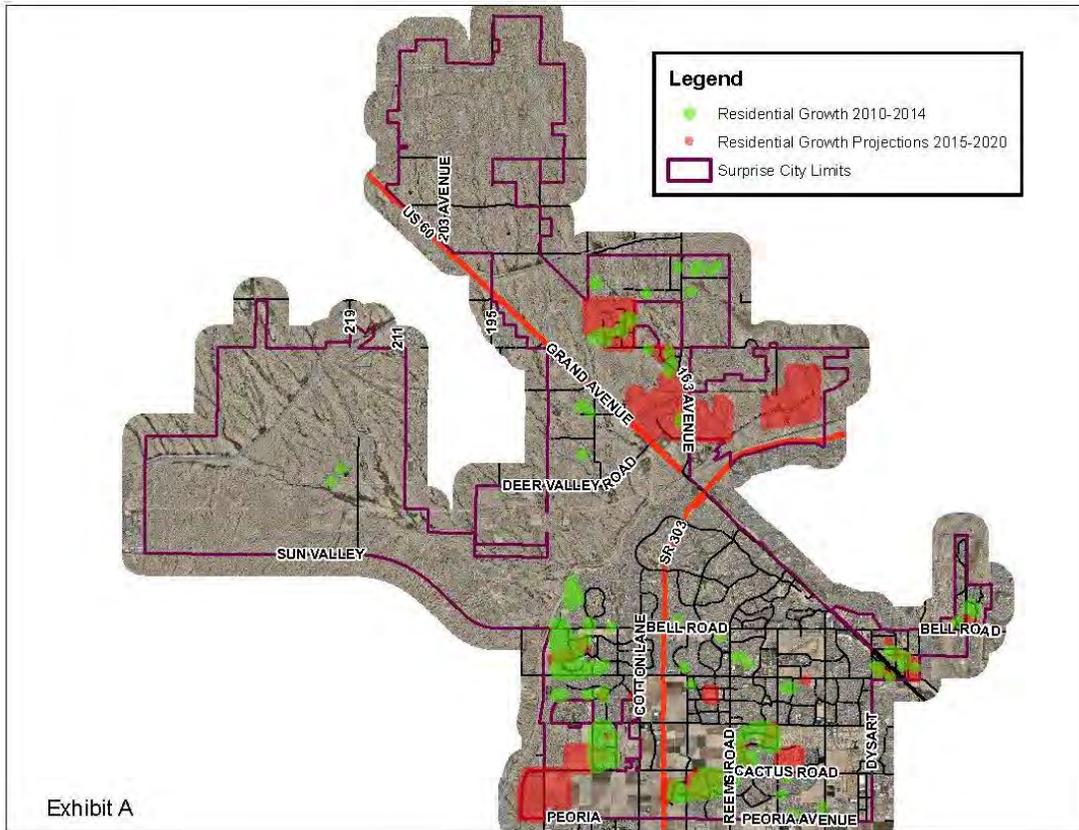


Figure 4-53: Surprise growth area maps

4.3.24 Tempe

The City of Tempe consists of 40 square miles in the heart of the metropolitan area. It straddles the Salt River and is generally bounded on the east and west by freeways, with two additional freeways bisecting the city and running across its northern section. As illustrated through Figure 4-54, the City of Tempe is landlocked on all sides by adjacent communities, Scottsdale to the north, the Salt River Pima-Maricopa Indian Community and Mesa to the east, Chandler to the south, and Guadalupe and Phoenix to the west. Tempe’s central location is augmented by its proximity to an intricate freeway network that provides access to and from these surrounding communities. Arizona State University, with a main campus of over 44,000 students, is located in Tempe. Tempe also includes several prominent natural land features including Hayden Butte, Papago Butte and the Tempe Town Lake, which is the only length of the Salt River in the Phoenix area that has a continuous supply of water.

Founded in 1894, Tempe is one of the oldest communities in the valley and historically has been one of the most densely populated. Its position in the region is both advantageous and challenging. Land-locked Tempe falls in the middle of a large transportation commute zone, significantly impacting land use planning, environmental issues and public health and safety. Tempe’s planning area is five miles wide by eight miles long, or about forty square miles. Within this area are approximately 24.2 linear miles of freeway, 23 miles of canal, 30 miles of power lines, 14 miles of active railroad lines, and five miles of departure/landing air flight corridor. In spite of these tremendous right-of-way impacts, Tempe has some of the most desirable residential and commercial areas in the valley. Today Tempe is administered by a council-manager form of government that includes a mayor and six council members elected at-large for a period of four years.

In 2014, the population of Tempe was 169,529. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-24.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	161,719	73,462	169,095
2020	183,864	77,255	221,367

Development Trends:

Development trends over the past five years include infill, brownfield conversion and densification of existing construction within the core or “downtown” areas with limited development outside those areas.

The city cannot expand its boundaries due to surrounding communities and there are very few undeveloped areas left in the city. Over the next five years, an increase in multi-family housing is anticipated, particularly along transit corridors and near the Arizona State University. Further expansion of commercial office space in those same areas is also anticipated. Tempe’s General Plan 2040 provides a projected land use map, shown in Figure 4-55<sup>22</sup>, to illustrate the anticipated land use patterns for the city.

<sup>22</sup> City of Tempe, <http://www.tempe.gov/city-hall/community-development/general-plan-2040>

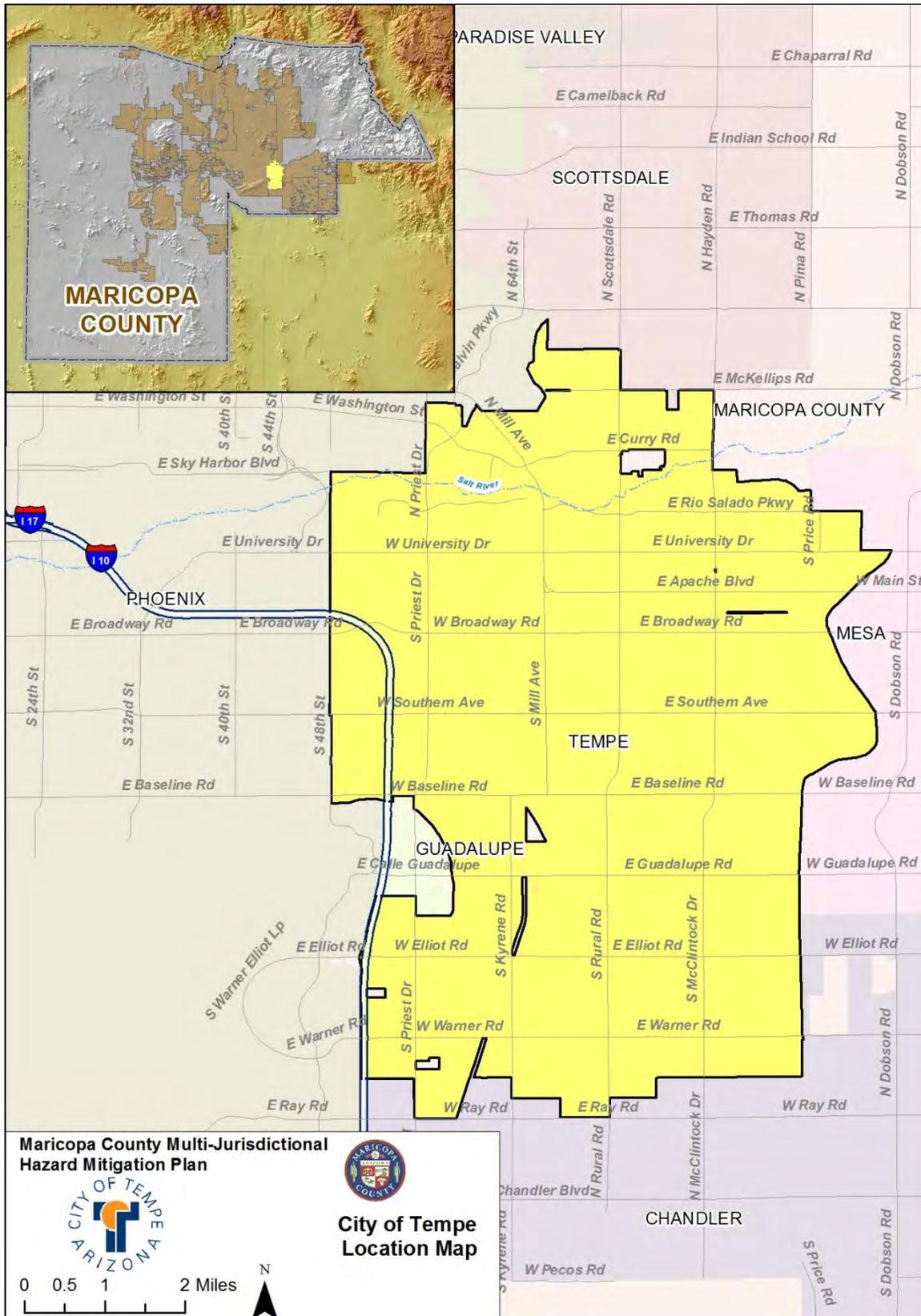


Figure 4-54: Tempe location map

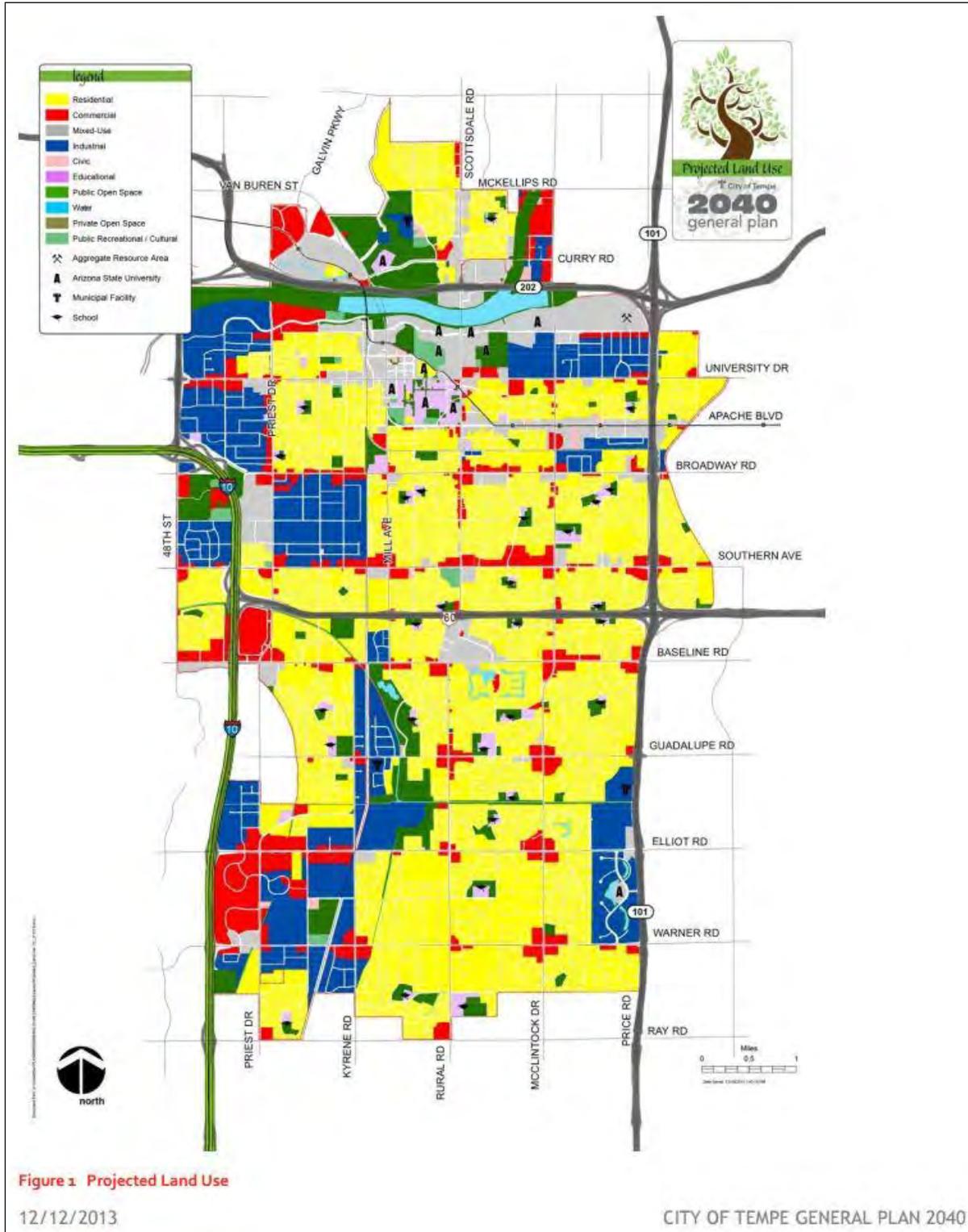


Figure 4-55: Tempe projected land use map

4.3.25 Tolleson

Situated along Interstate 10 approximately 14 miles west of downtown Phoenix, the small community of Tolleson lies in the west valley region of Maricopa County, and is surrounded by the City of Avondale on the west and Phoenix on the north, east, and south, as shown in Figure 4-56. Founded in 1912 and incorporated in 1929, the incorporated boundary of Tolleson measures only about five square miles in area.

Once dependent on agriculture, Tolleson today has a sound commercial and industrial base. Tolleson is served by the Papago Freeway, which is a segment of Interstate 10. Tolleson is also served by the Loop 101, which allows traffic headed toward Flagstaff to bypass downtown Phoenix and also connects the city to northeast Phoenix. To the west of Tolleson, Highway 85 intersects Interstate 10 and then runs south to Interstate 8 in Gila Bend. The Union Pacific rail line runs through Tolleson, providing a number of industrial sites with rail access. Today, Tolleson is administered by a council-manager form of government that includes a mayor and six council members elected at-large to four-year terms.

In 2014, the population of Tolleson was 6,777. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-25.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	6,545	2,169	10,628
2020	6,963	2,273	13,985

Development Trends:

Tolleson over the past five years has seen continued industrial development which has dominated the city for the past decade. Although the past five years have been economically difficult for much of the housing and commercial markets, Tolleson’s industrial base has continued to expand due to consolidation of operations within certain companies already located within Tolleson and due to relocation of certain companies to Tolleson from other cities or states which did not offer the economic or logistical advantages of this city and state.

Growth areas within Tolleson for the next several years are specifically addressed in the recently updated General Plan. Four specific growth areas have been identified: 1) 83rd Avenue Corridor 2) 91st Avenue Gateway 3) CORE District and 4) Industrial Area. The identified growth areas are shown in Figure 4-57<sup>23</sup>, which is taken from the City of Tolleson General Plan 2024.

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<sup>23</sup> City of Tolleson, <http://www.tollesonaz.org/index.aspx?nid=248>

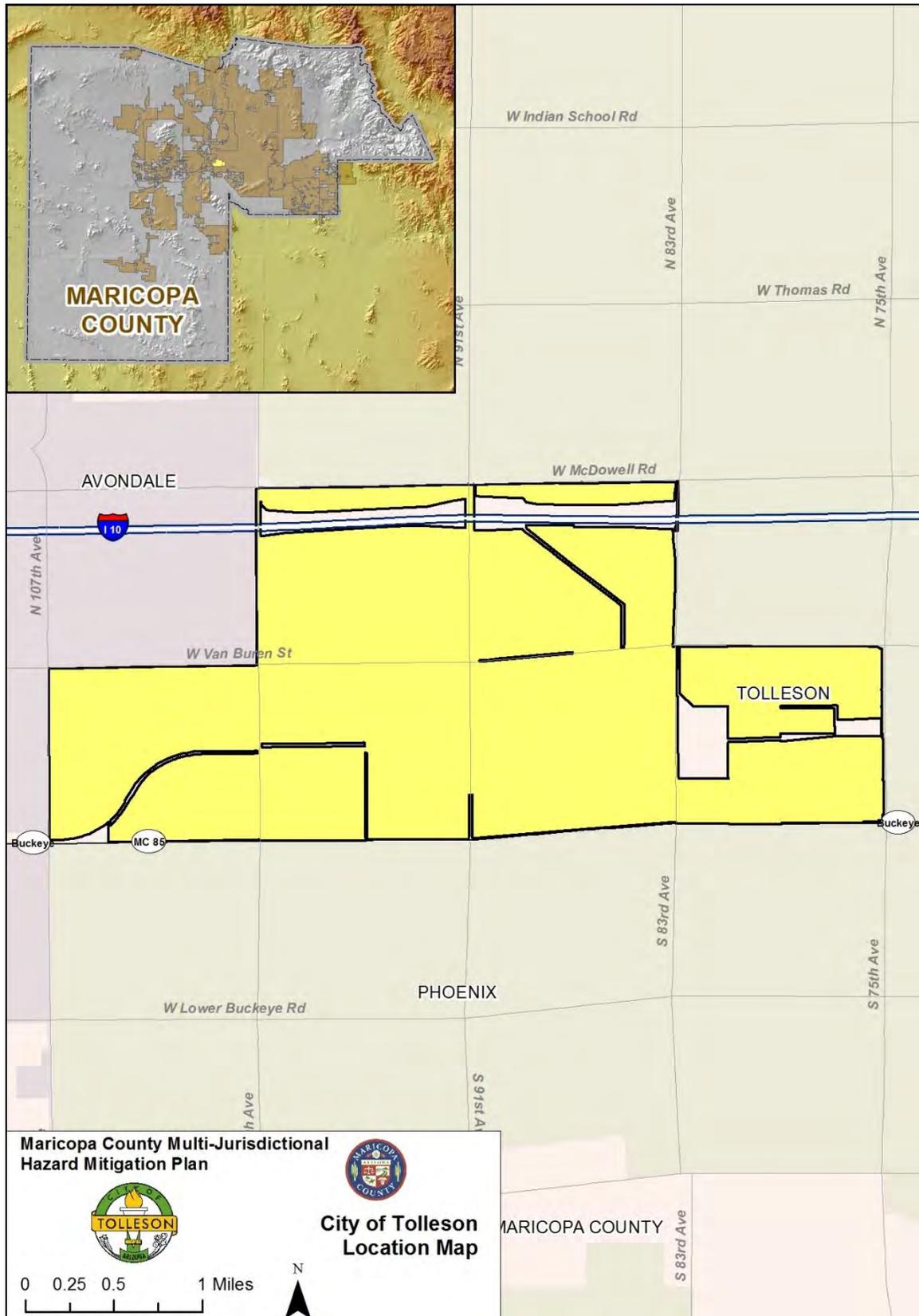


Figure 4-56: Tolleson location map

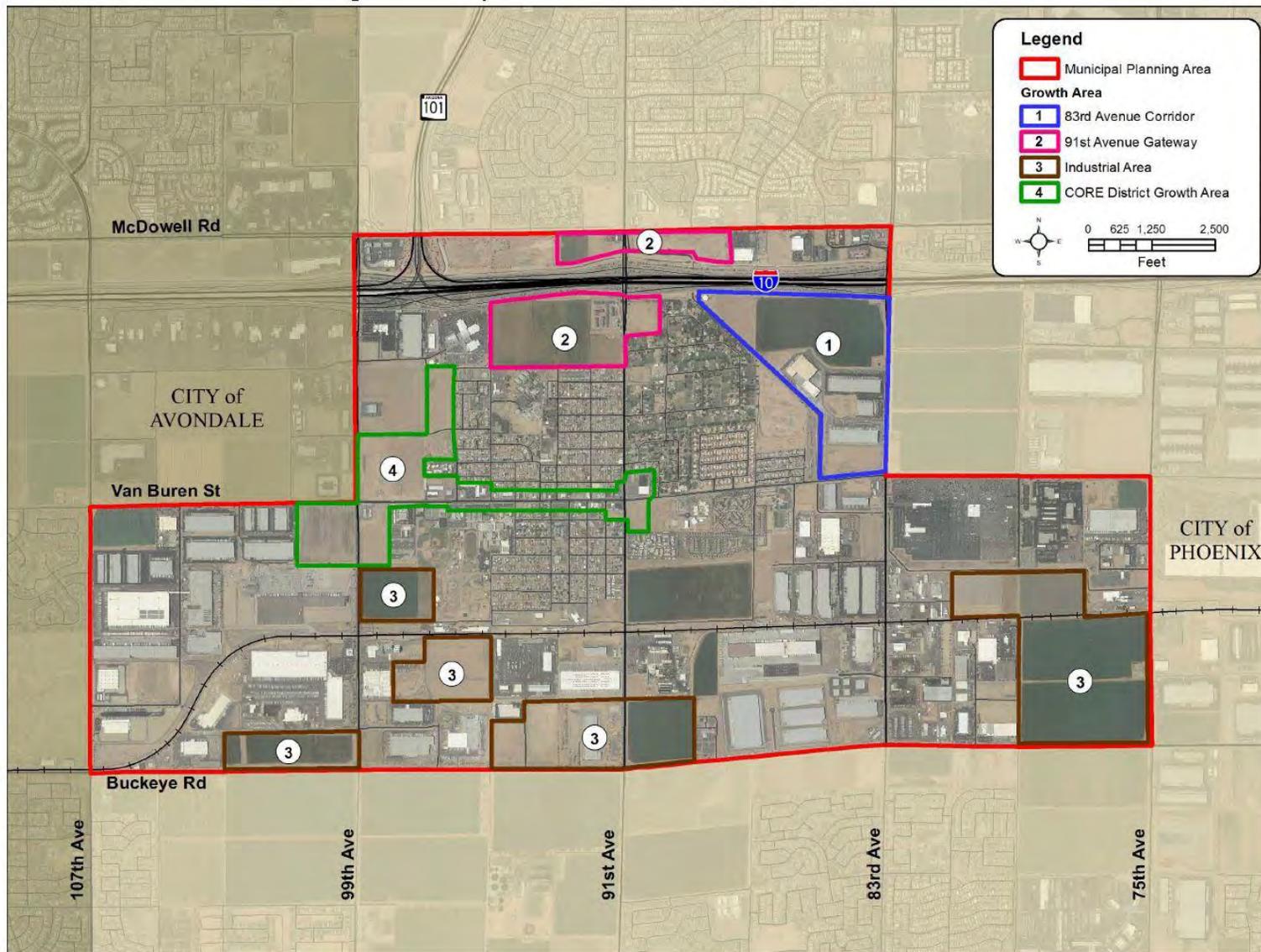


Figure 4-57: Tolleson growth area map

4.3.26 *Wickenburg*

One of Maricopa County’s most historic and scenic communities, the Town of Wickenburg lies in north central Maricopa County on the border with Yavapai County, approximately 60 miles from downtown Phoenix. The Town of Wickenburg is distinct from most of the communities in Maricopa County for its isolation from the greater Phoenix metropolitan area. Illustrated in Figure 4-58, Wickenburg is highlighted by the Hassayampa River and its tributaries, which are protected through the Hassayampa River Canyon Wilderness to the north of Wickenburg in Yavapai County. Wickenburg also serves as a crossroads of various highways in northwest Maricopa County, with US Highway 60 and Arizona Highways 93 and 89 providing access to Los Angeles, Las Vegas, and Prescott, respectively.

Along the town's main historic district, early businesses built structures that still exist in Wickenburg's downtown area. In the 1900’s Wickenburg’s clean air and wide-open spaces attracted guest ranches and resorts to the Wickenburg neighborhood. Later, the construction of Highway 60 from Phoenix to California brought even more tourists, making Wickenburg the unofficial dude ranch capital of the world. Today, some of these ranches still offer their unique brand of western hospitality.

Founded in 1863, Wickenburg operates under a council-manager form of government, which includes a seven member town council consisting of a mayor and six council members elected at-large for a term of four years. In Wickenburg, the town council functions as the legislature, and the town manager administers community policies.

In 2014, the population of Wickenburg was 6,584. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-26.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	6,363	3,619	3,504
2020	10,651	5,481	5,254

Development Trends:

The development over the past five years in the Town of Wickenburg has focused on the northwest portion of the town. The majority of the development is single family residential. Commercial development has mainly been focused in the downtown area as tenant improvements.

The town anticipates that the vast majority of new development will occur in the northwest portion of town where the only approved master planned community is under construction and higher growth trends are predicted.

Wickenburg’s General Plan 2025 includes a map of future growth nodes with land use estimates and is shown on Figure 4-59<sup>24</sup>.

<sup>24</sup> Town of Wickenburg, <http://www.ci.wickenburg.az.us/41/General-Plan>

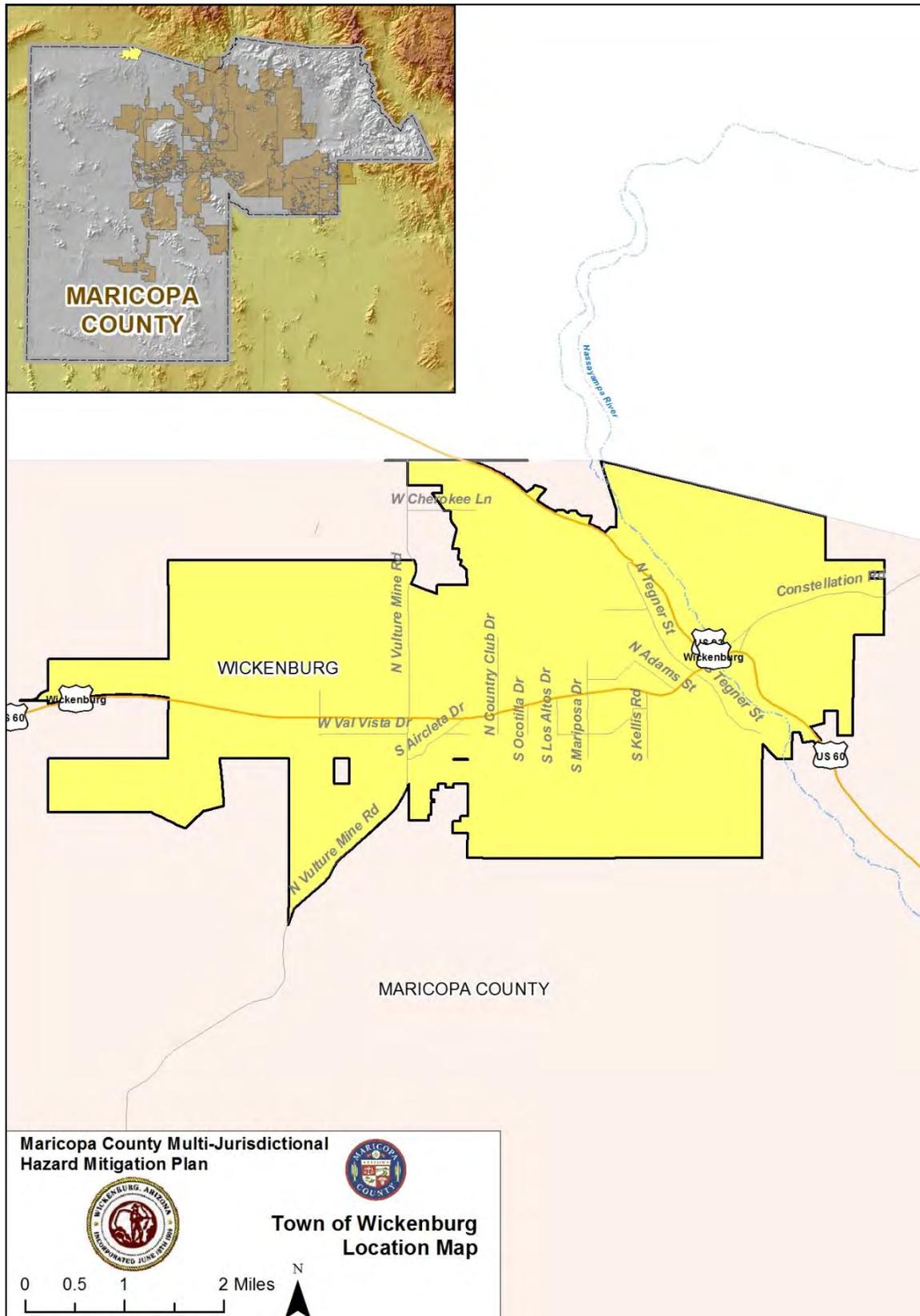


Figure 4-58: Wickenburg location map

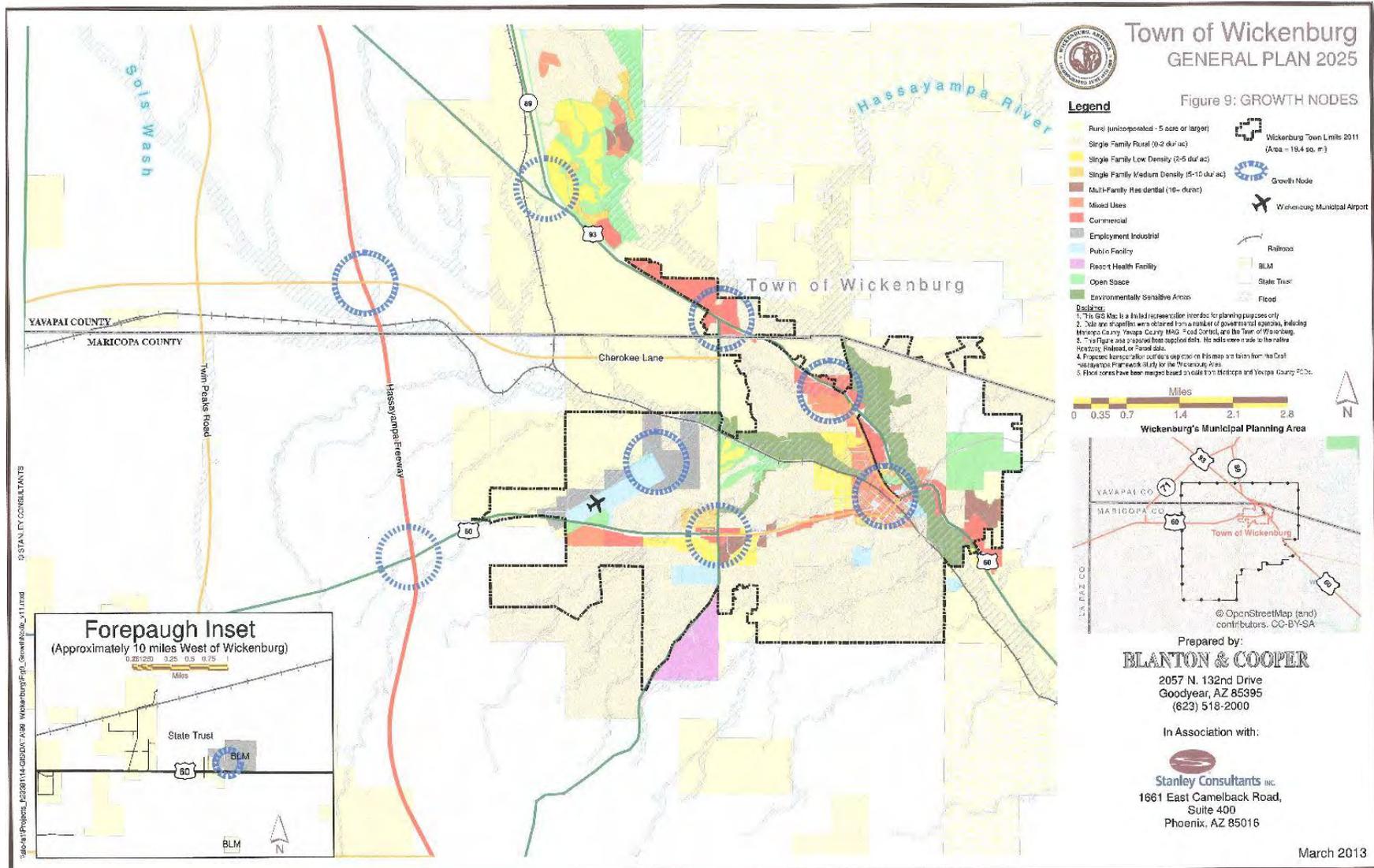


Figure 4-59: Wickenburg growth area map

4.3.27 *Youngtown*

Situated in the west central portion of the greater metropolitan area approximately 15 miles west of downtown Phoenix, the Town of Youngtown lies on the east bank of the Agua Fria River. Located just south of United States Highway 60, the Town of Youngtown is bordered on the west by El Mirage and on the east by the much larger retirement community of Sun City (Unincorporated Maricopa County), as shown in Figure 4-60. In 1954, real estate broker Ben Schleifer and banker Clarence Suggs bought 320 acres of farmland and built the first master-planned, adult community dedicated exclusively to retirees. It was the first town occupied solely by senior citizens and has the distinction of being designated as Chapter 1 by AARP. It is known for its more mature landscaping and lower housing costs. In 1998, age restrictions were removed allowing all ages to enjoy community life in Youngtown.

Youngtown’s residents are governed under a council-manager form of government, which includes a seven member town council consisting of a mayor and six council members elected at-large for a term of four years. The town council appoints the town manager who is in charge of all town departments and manages the town’s business.

In 2014, the population of Youngtown was 6,415. Population, housing and employment statistics and projections for April 1, 2010 and July 1, 2020 are summarized in Table 4-27.

<b>Year</b>	<b>Population</b>	<b>Housing</b>	<b>Employment</b>
2010	6,156	2,831	1,345
2020	6,583	2,896	1,686

Development Trends:

Youngtown’s development over the past five years has focused mainly on the creation of start-up businesses in existing commercial centers with the exception of one new major development. Englewood Development Company recently completed (last year) a new sixty-five (65) unit senior living apartment complex (Aurora Village) on approximately 1.86 acres.

The town is working towards future development within a Commerce Business Park (60± acres) within the next five years. The town also anticipates development at the Riverview Place Development (4.4 acres) within the next couple of years. Figure 4-61<sup>25</sup> shows the two future development areas on a future land use map.

<sup>25</sup> Town of Youngtown, <http://www.youngtownaz.org/vertical/Sites/%7B464715DD-87E9-4AA9-9EEF-3CDF5B7D33D6%7D/uploads/%7BFFC342FE-B7D1-415F-B73F-18097DF4B2E6%7D.PDF>

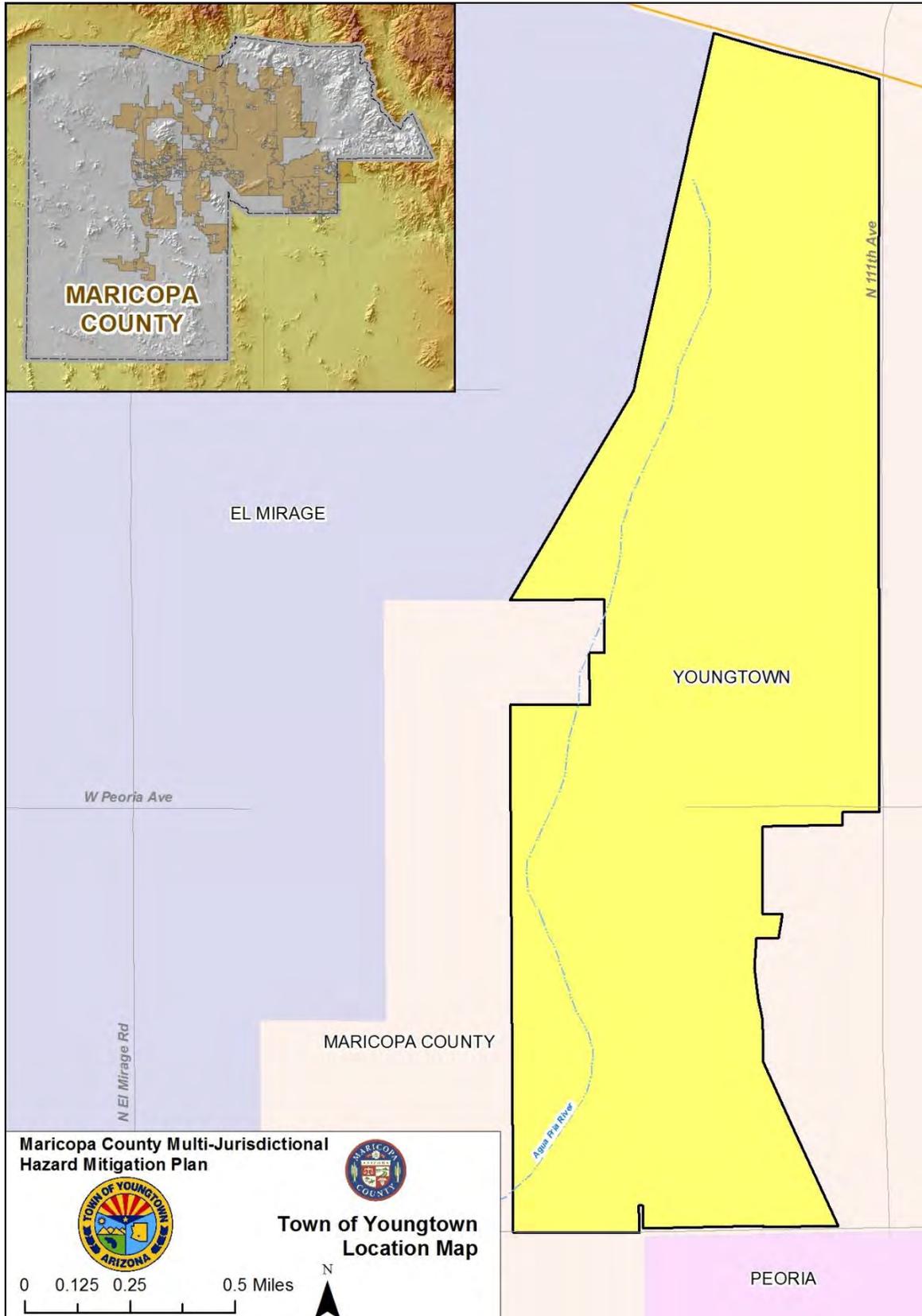


Figure 4-60: Youngtown location map

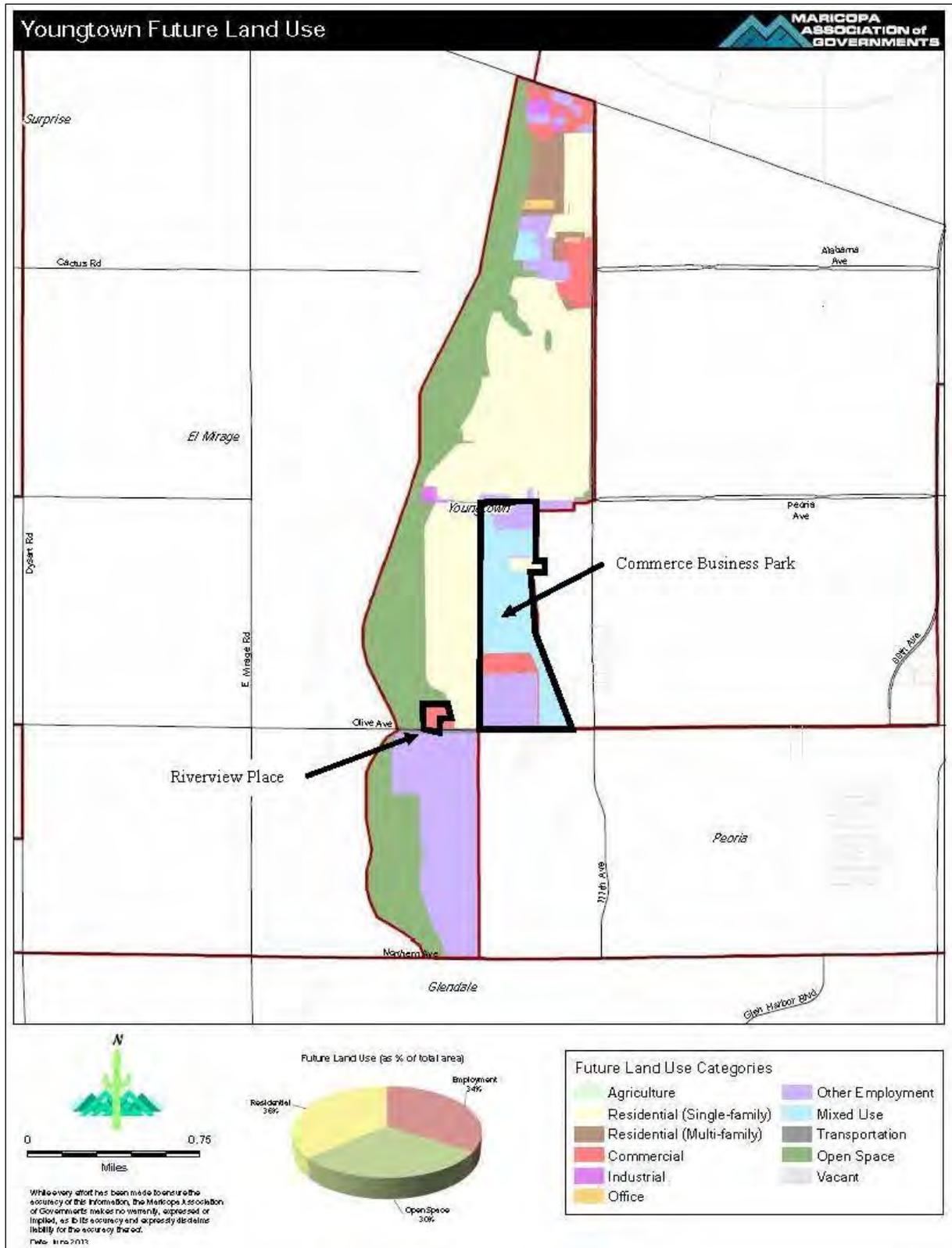


Figure 4-61: Youngtown future land use map

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## SECTION 5: RISK ASSESSMENT

**§201.6(c)(2):** [The plan shall include...] (2) A **risk assessment** that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards. The risk assessment shall include:

- (i) A description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.
- (ii) A description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. The plan should describe vulnerability in terms of:
  - (A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;
  - (B) An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate;
  - (C) Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.
- (iii) For multi-jurisdictional plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

One of the key elements to the hazard mitigation planning process is the risk assessment. In performing a risk assessment, a community determines “what” can occur, “when” (how often) it is likely to occur, and “how bad” the effects could be<sup>26</sup>. According to DMA 2000, the primary components of a risk assessment that answer these questions are generally categorized into the following measures:

- Hazard Identification and Screening**
- Hazard Profiling**
- Assessing Vulnerability to Hazards**

The risk assessment for Maricopa County and participating jurisdictions was performed using a county-wide, multi-jurisdictional perspective, with much of the information gathering and development being accomplished by the MJPT. This integrated approach was employed because many hazard events are likely to affect numerous jurisdictions within a consolidated urban area like Maricopa County, and are rarely relegated to a single jurisdictional boundary. The vulnerability analysis was performed in a way such that the results reflect vulnerability at an individual jurisdictional level, and at a countywide level.

### 5.1 Hazard Identification and Screening

Hazard identification is the process of answering the question; “*What hazards can and do occur in my community or jurisdiction?*” For this update, the list of hazards identified in the 2009 Plan was reviewed by the MJPT, who chose to continue a focus on natural hazards. The MJPT also compared and contrasted the 2009 Plan list to the comprehensive hazard list summarized in the 2013 State Plan<sup>27</sup> to ensure compatibility with the State Plan. Table 5-1 summarizes the 2009 Plan and 2013 State Plan hazard lists.

<sup>26</sup> National Fire Protection Association, 2000, *Standard on Disaster/Emergency Management and Business Continuity Programs*, NFPA 1600.

<sup>27</sup> ADEM, 2013, *State of Arizona Multi-Hazard Mitigation Plan*

Table 5-1: Summary of Initial Hazard Identification Lists	
2009 Plan Hazard List	2013 State Plan Hazard List
<ul style="list-style-type: none"> <li>• Dam Inundation</li> <li>• Drought</li> <li>• Extreme Heat</li> <li>• Fissures</li> <li>• Flood</li> <li>• Levee Failure</li> <li>• Severe Winds</li> <li>• Subsidence</li> <li>• Wildfire</li> </ul>	<ul style="list-style-type: none"> <li>• Dam Failure</li> <li>• Disease</li> <li>• Drought</li> <li>• Earthquake</li> <li>• Extreme Heat</li> <li>• Fissure</li> <li>• Flooding/Flash Flooding</li> <li>• Hazardous Materials Incidents</li> <li>• Landslides/Mudslides</li> <li>• Levee Failure</li> <li>• Severe Wind</li> <li>• Subsidence</li> <li>• Terrorism</li> <li>• Wildfires</li> <li>• Winter Storm</li> </ul>

The review included an initial screening process to evaluate each of the listed hazards based on the following considerations:

- Experiential knowledge represented by the MJPT with regard to the relative risk associated with the hazard
- Documented historic context for damages and losses associated with past events (especially events that have occurred during the last plan cycle)
- The ability/desire of MJPT to develop effective mitigation for the hazard under current DMA 2000 criteria
- Compatibility with the state hazard mitigation plan hazards
- Duplication of effects attributed to each hazard

One tool used in the initial screening process was the historic hazard database referenced in the 2009 Plan. With this update, the 2009 Plan database was reviewed and updated to include declared disaster events and significant non-declared events that have occurred during the last plan cycle. Declared event sources included Maricopa County Department of Emergency Management (MCDEM), Arizona Division of Emergency Management (ADEM), Federal Emergency Management Agency (FEMA), and United States Department of Agriculture (USDA). Non-declared sources included Arizona State Land Department (ASLD), National Weather Service (NWS), National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center (NCDC), United States Geological Survey (USGS), and United States Forest Service (USFS). The historic hazard database presented in this Plan primarily represent the period of June 1955 to December 2014. Two tables are used in this update to summarize the historic hazard events. Table 5-2 summarizes the federal and state disaster declarations that included Maricopa County. Table 5-3 summarizes all non-declared hazard events that meet the following selection criteria:

- 1 or more fatalities
- 1 or more injuries
- Any dollar amount in property or crop damages
- Significant event, as expressed in historical records or according to defined criteria above

Hazard	No. of	Recorded Losses		
	Declarations	Fatalities	Injuries	Damage Costs (\$)
Drought	13	0	0	\$303,000,000
Dam Failure	0	0	0	\$0
Earthquake	0	0	0	\$0
Extreme Heat/Cold	0	0	0	\$0
Fissure	0	0	0	\$0
Flooding / Flash Flooding	18	54	115	\$623,550,000
Hail	0	0	0	\$0
Lightning	0	0	0	\$0
Levee Failure	0	0	0	\$0
Subsidence	0	0	0	\$0
Thunderstorm / High Wind	4	0	0	\$0
Tornado / Dust Devil	0	0	0	\$0
Tropical Storm / Hurricane	1	0	0	\$375,000,000
Wildfire	18	0	0	\$0

Notes: Damage Costs are reported as is and no attempt has been made to adjust costs to current dollar values

Hazard	No. of	Recorded Losses		
	Records	Fatalities	Injuries	Damage Costs (\$)
Drought	0	0	0	\$0
Dam Failure	1	0	0	\$0
Earthquake	0	0	0	\$0
Extreme Heat/Cold	13	35	6	\$121,200,000
Fissure	2	0	0	\$2,500
Flooding / Flash Flooding	80	18	8	\$127,530,500
Hail	6	1	0	\$2,810,026,500
Lightning	10	1	0	\$819,000
Levee Failure	0	0	0	\$0
Subsidence	2	0	0	\$4,170,000
Thunderstorm / High Wind	352	10	191	\$428,543,500
Tornado / Dust Devil	48	1	57	\$37,277,900
Wildfire (2004-2012; over 100 acres))	10	0	6	\$0

Notes: Damage Costs are reported as is and no attempt has been made to adjust costs to current dollar values

Detailed historic hazard records are provided in Appendix D.

The culmination of the review and screening process by the MJPT resulted in a decision to retain the same hazard lists as the 2009 Plan for profiling and updating. Updated definitions for each hazard are provided in Section 5.3 and in Section 8.2:

- **Dam Inundation**
- **Drought**
- **Extreme Heat**
- **Fissure**
- **Flood**
- **Levee Failure**
- **Severe Wind**
- **Subsidence**
- **Wildfire**

## 5.2 Vulnerability Analysis Methodology

### 5.2.1 General

The following sections summarize the methodologies used to perform the vulnerability analysis portion of the risk assessment. For this update, the entire vulnerability analysis was either revised or updated to reflect the availability of new hazard and census data. Specific changes are noted below and/or in Section 5.3

For the purposes of this vulnerability analysis, updated hazard profile maps were developed for Dam Inundation, Fissure, Flood, Levee Failure, Subsidence and Wildfire to map the geographic variability of the probability and magnitude risk of the hazards as estimated by the planning team. Hazard profile categories of HIGH, LOW, and/or MEDIUM were used and were subjectively assigned based on the factors discussed in Probability and Magnitude sections below. Within the context of the county limits, the other hazards do not exhibit significant geographic variability and will not be categorized as such.

Unless otherwise specified in this Plan, the general cutoff date for new historic or hazard profile data is the end of February 2015.

### 5.2.2 Climate Change

In recent years, FEMA and others have begun to take a harder look at the impacts of climate change on natural hazards and the mitigation planning process. In March 2015, FEMA released new state mitigation planning guidance that will require all state hazard mitigation plans to address climate change beginning with all updates submitted after March 2016<sup>28</sup>. FEMA's National Advisory Council noted that the effects of climate change could manifest as a "threat multiplier". When considering probabilities of hazard events, it is typical to make the implicit assumption that the past is a prologue for the future; however, trending changes to climate related variables may require broader thinking and projections to develop mitigation actions and projects that account for those changes.

The scope and severity of cause and impacts relating to climate change are still difficult to predict and highly debated. There is, however, a growing body of science and research that indicates a few noticeable trends that should be considered when evaluating natural hazard vulnerability and risk. In 1989, the U.S. Global Change Research Program (USGCRP) was established by Presidential Initiative and later mandated by Congress in the Global Change Research Act of 1990 with the stated purpose of assisting "the Nation and the world to understand, assess, predict, and respond to human-induced and natural processes of global change." In May 2014, the USGCRP released the 3<sup>rd</sup> National Climate Assessment (NCA), which is a comprehensive compilation of the latest body of work and science on the topic of climate change. The NCA results and discussion are divided into regions to focus the discussions and conclusions to a regional perspective. The Southwest region includes the states of Arizona, California, Colorado, Nevada, New Mexico, and Utah. According to Chapter 20 of the NCA<sup>29</sup>, the Southwest regional climate change impacts noted in the recent research include increased heat, drought, and insect outbreaks that result in more wildfires, declining water supplies, reduced agricultural yields,

<sup>28</sup> FEMA, 2015, *State Mitigation Plan Review Guide*, released March 2015, effective March 2016, FP 302-094-2

<sup>29</sup> Garfin, G., G. Franco, H. Blanco, A. Comrie, P. Gonzalez, T. Piechota, R. Smyth, and R. Waskom, 2014, *Ch. 20: Southwest. Climate Change Impacts in the United States: The Third National Climate Assessment*, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, 462-486. doi:10.7930/J08G8HMN

health impacts in cities due to heat, and flooding and erosion in coastal areas. In its 2014 report, the NCA released the following “Key Messages” for the Southwest Region:

1. Snowpack and streamflow amounts are projected to decline in parts of the Southwest, decreasing surface water supply reliability for cities, agriculture, and ecosystems. The Southwest produces more than half of the nation’s high-value specialty crops, which are irrigation-dependent and particularly vulnerable to extremes of moisture, cold, and heat. Reduced yields from increasing temperatures and increasing competition for scarce water supplies will displace jobs in some rural communities.
2. Increased warming, drought, and insect outbreaks, all caused by or linked to climate change, have increased wildfires and impacts to people and ecosystems in the Southwest. Fire models project more wildfire and increased risks to communities across extensive areas.
3. Flooding and erosion in coastal areas are already occurring even at existing sea levels and damaging some California coastal areas during storms and extreme high tides. Sea level rise is projected to increase as Earth continues to warm, resulting in major damage as wind-driven waves ride upon higher seas and reach farther inland.
4. Projected regional temperature increases, combined with the way cities amplify heat, will pose increased threats and costs to public health in southwestern cities, which are home to more than 90% of the region’s population. Disruptions to urban electricity and water supplies will exacerbate these health problems.

FEMA has established that future changes in probabilities and severity of hazard events influenced by climate change should be addressed during mitigation planning. Accordingly, a brief assessment of the potential effects that current climate change understanding may have on the Plan hazards is provided where appropriate in Section 5.3.

### 5.2.3 Calculated Priority Risk Index (CPRI) Evaluation

The first step in the vulnerability analysis (VA) is to assess the perceived overall risk for each of the plan hazards using a tool developed by the State of Arizona called the Calculated Priority Risk Index<sup>30</sup> (CPRI). The CPRI value is obtained by assigning varying degrees of risk to four (4) categories for each hazard, and then calculating an index value based on a weighting scheme. Table 5-4 summarizes the CPRI risk categories and provides guidance regarding the assignment of values and weighting factors for each category.

Application of the CPRI is illustrated by the following example. Assume that the project team is assessing the hazard of flooding, and has decided that the following assignments best describe the flooding hazard for their community:

- Probability = Likely
- Magnitude/Severity = Critical
- Warning Time = 12 to 24 hours
- Duration = Less than 6 hours

The CPRI for the flooding hazard would then be:

$$\text{CPRI} = [(3*0.45) + (3*0.30) + (2*0.15) + (1*0.10)]$$

$$\text{CPRI} = 2.65$$

<sup>30</sup> ADEM, 2003, *Arizona Model Local Hazard Mitigation Plan*, prepared by JE Fuller/ Hydrology & Geomorphology, Inc.

Table 5-4: Summary of Calculated Priority Risk Index (CPRI) categories and risk levels

CPRI Category	Degree of Risk			Assigned Weighting Factor
	Level ID	Description	Index Value	
Probability	Unlikely	<ul style="list-style-type: none"> <li>■ Extremely rare with no documented history of occurrences or events.</li> <li>■ Annual probability of less than 0.001.</li> </ul>	1	45%
	Possibly	<ul style="list-style-type: none"> <li>■ Rare occurrences with at least one documented or anecdotal historic event.</li> <li>■ Annual probability that is between 0.01 and 0.001.</li> </ul>	2	
	Likely	<ul style="list-style-type: none"> <li>■ Occasional occurrences with at least two or more documented historic events.</li> <li>■ Annual probability that is between 0.1 and 0.01.</li> </ul>	3	
	Highly Likely	<ul style="list-style-type: none"> <li>■ Frequent events with a well-documented history of occurrence.</li> <li>■ Annual probability that is greater than 0.1.</li> </ul>	4	
Magnitude/ Severity	Negligible	<ul style="list-style-type: none"> <li>■ Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure).</li> <li>■ Injuries or illnesses are treatable with first aid and there are no deaths.</li> <li>■ Negligible quality of life lost.</li> <li>■ Shut down of critical facilities for less than 24 hours.</li> </ul>	1	30%
	Limited	<ul style="list-style-type: none"> <li>■ Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure).</li> <li>■ Injuries or illnesses do not result in permanent disability and there are no deaths.</li> <li>■ Moderate quality of life lost.</li> <li>■ Shut down of critical facilities for more than 1 day and less than 1 week.</li> </ul>	2	
	Critical	<ul style="list-style-type: none"> <li>■ Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure).</li> <li>■ Injuries or illnesses result in permanent disability and at least one death.</li> <li>■ Shut down of critical facilities for more than 1 week and less than 1 month.</li> </ul>	3	
	Catastrophic	<ul style="list-style-type: none"> <li>■ Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure).</li> <li>■ Injuries or illnesses result in permanent disability and multiple deaths.</li> <li>■ Shut down of critical facilities for more than 1 month.</li> </ul>	4	
Warning Time	Less than 6 hours	Self-explanatory.	4	15%
	6 to 12 hours	Self-explanatory.	3	
	12 to 24 hours	Self-explanatory.	2	
	More than 24 hours	Self-explanatory.	1	
Duration	Less than 6 hours	Self-explanatory.	1	10%
	Less than 24 hours	Self-explanatory.	2	
	Less than one week	Self-explanatory.	3	
	More than one week	Self-explanatory.	4	

5.2.4 *Asset Inventory*

With this update, the 2009 Plan detailed asset inventory was reviewed and updated to reflect the current status and replacement cost information. In some cases, jurisdictions expanded or modified their inventory.

The 2013 State Plan defines assets as:

*Any natural or human-caused feature that has value, including, but not limited to people; buildings; infrastructure like bridges, roads, and sewer and water systems; lifelines like electricity and communication resources; or environmental, cultural, or recreational features like parks, dunes, wetlands, or landmarks.*

The asset inventory is generally tabularized into **critical** and **non-critical** categories. **Critical facilities and infrastructure** are systems, structures and infrastructure within a community whose incapacity or destruction would:

- Have a debilitating impact on the defense or economic security of that community.
- Significantly hinder a community's ability to recover following a disaster.

Following the criteria set forth by the Critical Infrastructure Assurance Office (CIAO), the State of Arizona has adopted eight general categories<sup>31</sup> that define critical facilities and infrastructure:

1. **Communications Infrastructure:** Telephone, data services, and internet communications, cell and radio towers, which have become essential to continuity of business, industry, government, and military operations.
2. **Electrical Power Systems:** Generation stations and transmission and distribution networks that create and supply electricity to end-users.
3. **Gas and Oil Facilities:** Production and holding facilities for natural gas, crude and refined petroleum, and petroleum-derived fuels, as well as the refining and processing facilities for these fuels.
4. **Banking and Finance Institutions:** Banks, financial service companies, payment systems, investment companies, and securities/commodities exchanges.
5. **Transportation Networks:** Highways, railroads, ports and inland waterways, pipelines, and airports and airways that facilitate the efficient movement of goods and people.
6. **Water Supply Systems:** Sources of water; reservoirs and holding facilities; aqueducts and other transport systems; filtration, cleaning, and treatment systems; pipelines; cooling systems; and other delivery mechanisms that provide for domestic and industrial applications, including systems for dealing with water runoff, wastewater, and firefighting.
7. **Government Services:** Capabilities at the federal, state, and local levels of government required to meet the needs for essential services to the public.
8. **Emergency Services:** Medical, police, fire, and rescue systems.

Other assets such as public libraries, schools, museums, parks, recreational facilities, historic buildings or sites, churches, residential and/or commercial subdivisions, apartment complexes, and so forth, are classified as non-critical facilities and infrastructure, as they are not necessarily "critical" per the definition set forth in Executive Order 13010. They are, however, still considered by the MJPT to be important facilities and critical and non-critical should not be construed to equate to important and non-important. For each asset, attributes such as name, description, physical address, geospatial position, and estimated replacement cost were identified to the greatest extent possible and entered into a GIS geodatabase.

<sup>31</sup> Instituted via Executive Order 13010, which was signed by President Clinton in 1996.

The updated asset inventory data was developed for each community using existing GIS data sets, on-line mapping utilities, and manual data acquisition by members of the local planning teams. Table 5-5 summarizes the facility counts by category for each of the participating jurisdictions in this plan.

5.2.5 *Loss/Exposure Estimations*

In the 2009 Plan, economic loss and human exposure estimates for each of the final hazards identified began with an assessment of the potential exposure of critical and non-critical assets and human populations to those hazards. Estimates of exposure to critical and non-critical assets identified by each jurisdiction were accomplished by intersecting the asset inventory with the hazard profiles. Human or population exposures were estimated by intersecting the same hazards with 2000 Census Data population statistics that had been re-organized into GIS compatible databases and distributed with HAZUS<sup>®</sup>-MH<sup>32</sup>. Additional exposure estimates for general residential, commercial, and industrial building stock not specifically identified with the asset inventory, were also accomplished using the HAZUS<sup>®</sup>-MH database, wherein the developers of the HAZUS<sup>®</sup>-MH database have made attempts to correlate building/structure counts to census block data.

Loss estimates for this Plan reflect current hazard map layers, an updated asset inventory, and the use of Census 2010 block level data for estimating the human (population) and residential structure impacts wherever possible. No industrial or commercial unit estimates are made for this update due to the lack of data at the time of this analysis. It is understood that a new release of the HAZUS<sup>®</sup>-MH database became available late in the planning process, but it was not available soon enough for this update. That data will be incorporated in the next Plan update. The procedures for developing loss estimates for this Plan are discussed below.

Economic loss and human exposure estimates for each of the final hazards identified in Section 5.1 begins with an assessment of the potential exposure of assets, human populations, and residential structures to those hazards. Asset exposure estimates are accomplished by intersecting the asset inventory with the hazard profiles in Section 5.3 and compiling the exposed facility count and replacement values by jurisdiction. Similarly, human population and residential unit exposures are estimated by intersecting the same hazards with the 2010 Census block population and residential unit count data sets. Structure and content replacement costs for assets were assigned to each facility by the corresponding jurisdiction. Structure and content replacement costs for the residential housing counts were geographically assigned based on census data places and average housing cost unit values data from the American Community Survey's 2008-2012 median home value data<sup>33</sup>. Content value for these buildings was assumed to equal 50% of the replacement cost.

Combining the exposure and/or loss results from the asset inventory and 2010 Census database provides a comprehensive depiction of the overall exposure of critical facilities, human population, and residential building stock and the two datasets are considered complimentary and not redundant.

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<sup>32</sup> U.S. Department of Homeland Security, Federal Emergency Management Agency, HAZUS<sup>®</sup>-MH.

<sup>33</sup> Census Bureau website accessed at: [http://quickfacts.census.gov/qfd/meta/long\\_HSG495213.htm](http://quickfacts.census.gov/qfd/meta/long_HSG495213.htm)

Table 5-5: Summary of Critical and Non-Critical Facility counts by category and jurisdiction

Participating Jurisdiction	Critical Facilities and Infrastructure								Non-Critical Facilities and Infrastructure				
	Communications Infrastructure	Electrical Power Systems	Gas and Oil Facilities	Banking and Finance Institutions	Transportation Networks	Water Supply Systems	Government Services	Emergency Services	Educational	Cultural	Business	Residential	Recreational
Avondale						45	7	8	2				12
Buckeye		8		3	2	46	17	7	12	1	2		5
Carefree						1	4	1					
Cave Creek		1				32	4	1					2
Chandler	16	24			1	86	24	17	78	3		25	3
El Mirage					3	13	3	3	6		6		
Fountain Hills						1	3	2	6			1	2
Fort McDowell Yavapai Nation						1	7	2	3	1	11		3
Gila Bend						2	3	1	1				
Gilbert	34			110		108	36	110	92		2206	193	
Glendale	3	19	1	45	51	52	41	91	183	108	164	360	96
Goodyear	32	5		14	34	27	13	9	24		1		
Guadalupe							3	1	2				1
Litchfield Park							1		2		1		1
Maricopa County					426								
Mesa		12	75		6	131	35	38	132	5	1	24	6
Paradise Valley	7	2				38	3	7	6	14	13	4	
Peoria					5	155	17	12	37	10	1	33	29
Phoenix		6	5		1	16	270	101	422	19		66	7
Queen Creek	16			8	11	21	3	6	22	15	10	8	9
Salt River Pima-Maricopa Indian Community	1	1	2		3		3	4	2	1	2		2
Salt River Project	SRP reported a total of 602 assets that are comprised of SRP main buildings/offices, substations, switchyards, receiving stations, and well sites. No further separation of asset categories was necessary.												
Scottsdale		1				2	15	25	54	15		18	2
Surprise		5			2	63	3	8					
Tempe			1			3	17	5	73	2	1	7	2
Tolleson						2	2	2	4				
Wickenburg		2	1				4	2	5				
Youngtown						1	3		2		1	5	

a – Number of water supply facilities that are not a part of the underground pipe network

Economic losses to structures and facilities are estimated by multiplying the exposed facility replacement cost estimates by an assumed loss to exposure ratio for the hazard. The loss to exposure ratios used in this Plan are summarized by hazard in Section 5.3, where appropriate. It is important to note the following when reviewing the loss estimate results:

- The loss to exposure ratios are subjective and the estimates are solely intended to provide an understanding of relative risk from the hazards and potential magnitude of losses.
- Potential losses reported in this Plan represent an inherent assumption that the hazard occurs county-wide to the magnitude shown on the hazard profile map. The results are intended to present a county-wide loss potential. Any single hazard event will likely only

impact a portion of the county and the actual losses would be some fraction of those estimated herein.

- No attempt has been made at developing annualized loss estimates, unless otherwise noted in Section 5.3.

It is also noted that uncertainties are inherent in any loss estimation methodology due to:

- Incomplete scientific knowledge concerning hazards and our ability to predict their effects on the built environment;
- Approximations and simplifications that are necessary to perform a comprehensive analysis economically; and,
- Lack of detailed data necessary to implement a viable statistical approach to loss estimations.

Several of the hazards profiled in this Plan will not include quantitative exposure and loss estimates. The vulnerability of people and assets associated with some hazards are nearly impossible to evaluate given the uncertainty associated with attempting to specify a geospatial correlation of the hazard event and loss potential without sufficient data to justify the estimation of geographically varied damages. Instead, a qualitative review of vulnerability will be discussed to provide insight to the nature of losses that are associated with the hazard. For subsequent updates of this Plan, the data needed to evaluate these unpredictable hazards may become refined such that comprehensive vulnerability statements and thorough loss estimates can be made.

#### 5.2.6 *Development Trend Analysis*

The 2009 Plan development trend analysis will require updating to reflect growth and changes in Maricopa County over the last planning cycle. The updated analysis will focus on the potential risk associated with projected growth patterns and their intersection with the Plan identified hazards.

### 5.3 Hazard Risk Profiles

The following sections summarize the risk profiles for each of the Plan hazards identified in Section 5.1. For each hazard, the following elements are addressed to present the overall risk profile:

- **Description**
- **History**
- **Probability and Magnitude**
- **Climate Change Impacts**
- **Vulnerability**
  - **CPRI Results**
  - **Loss/Exposure Estimations**
  - **Development Trend Analysis**
- **Sources**
- **Profile Maps (if applicable)**

County-wide profile maps are provided at the end of the section (if applicable) and jurisdiction specific maps are included in the Executive Plan Summary for that jurisdiction. Also, the maps are not included in the pagination count.

*5.3.1 Dam Inundation*

**Description**

There are two primary scenarios of downstream inundation risk associated with dams in Maricopa County: (1) Emergency Spillway Discharges, and (2) Dam Failure, and these were both addressed in the 2009 Plan. For this update, the MJPT chose to continue with the distinction between the downstream inundation risk due to emergency spillway discharges versus a dam failure. Accordingly, vulnerability for each scenario will be assessed separately.

Dams within or impacting Maricopa County can generally be divided into two groups: (1) storage reservoirs designed to permanently impound water and possibly generate power, and (2) single purpose flood retarding structures (FRS) designed to attenuate or reduce flooding by impounding stormwater for relatively short durations of time during flood events. The majority of dams within, or upstream of, Maricopa County are FRS and are typically earthen structures equipped with emergency spillways. The purpose of an emergency spillway is to provide a designed and protected outlet to convey runoff volumes exceeding the dam's storage capacity during extreme or back-to-back storm events. Dam failures may be caused by a variety of reasons including: seismic events, extreme wave action, leakage and piping, overtopping, material fatigue and spillway erosion. The risk associated with an emergency spillway discharge is different from a dam failure for several reasons:

- First, dams that are properly designed and maintained are considerably less likely to fail and assets located downstream of them are more likely to be impacted by an emergency spillway discharge than by a dam failure.
- Second, the emergency spillway is at a fixed location(s), and therefore, the downstream inundation limits can be more readily predicted as compared to a dam failure, which could occur anywhere along the structure.
- Lastly, the dynamics of the flood wave associated with an emergency spillway discharge are different than that of a dam failure. A dam failure is an uncontrolled release of water impounded behind a dam through a breach in the dam itself, and is usually catastrophically destructive. An emergency spillway discharge usually increases in magnitude gradually, and then decreases gradually as the structure drains.

**History**

Maricopa County has a limited history of dam failures and emergency spillway discharges that caused damaging inundation of downstream properties, and there have been no events of occurrence during the last plan cycle. The following are historic examples from the records available:

- In January-February 1993, a major statewide precipitation event caused major spillway releases from the Salt and Verde River system of dams, with a peak discharge of nearly 124,000 cfs from Granite Reef Dam. The unavoidable releases caused major flooding along the Salt and Gila River all the way to the county line, with over \$38 million in public and private damages reported and the evacuation of over 200 families. The flooding also caused the failure of Gillespie Dam<sup>34</sup> and forced peak spillway discharges of 25,600 cfs at Painted Rock Dam in the southwestern part of the county (USACE, 1994).
- In September 1997, Tropical Storm Nora moved through the western portion of Maricopa County dumping record breaking precipitation along the way. The Narrows Dam located just north of Maricopa County on Centennial Wash, began filling in the early part of the storm with flows reaching a depth of over two feet in the emergency spillway before the dam itself failed by breach in two locations. The peak discharge estimated from the dam spillway was 2,610 cfs (FCDMC, 1997).

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<sup>34</sup> Gillespie Dam was an irrigation diversion structure that was not regulated as a jurisdictional dam by ADWR.

**Probability and Magnitude**

The probability and magnitude of emergency spillway and dam failure discharges vary greatly with each dam. Most of the dams located within Maricopa County function as flood retarding structures (FRS) with a normally dry impoundment area. These FRS are typically designed to store, at a minimum, runoff from the one percent probability storm (100-year) in the flood-pool below the crest of the emergency spillway. Many of the FRS have sufficient capacity to store the 0.2 percent probability storm (500-year) or greater, without emergency spillway operation. Depending on the dam hazard classification, the emergency spillways will usually have capacity to pass the entire Inflow Design Flood (IDF) without any overtopping of the dam itself. The IDF is based on the hazard classification of the dam and is usually the probable maximum flood (PMF) or some fraction thereof. Other dams impacting Maricopa County that impound water on a continuous basis (Salt and Verde River systems for example) are typically equipped with primary and secondary spillways that are closely monitored and operated to provide an optimized level of flood protection, freeboard and reservoir storage for power generation, irrigation, and drinking water supplies. Probabilities and magnitudes of spillway discharge from these systems are dependent on several variables such as available reservoir capacity, time of year, and magnitude of storm causing the spillway discharge.

There are two sources of data that publish hazard ratings for dams impacting Maricopa County that are based on either an assessment of the consequence of failure and/or dam safety considerations. The hazard ratings are not tied to probability of occurrence. The first is the Arizona Department of Water Resources (ADWR) and the second is the National Inventory of Dams (NID).

ADWR has regulatory jurisdiction over the non-federal dams impacting the county and is responsible for regulating the safety of these dams, conducting field investigations, and participating in flood mitigation programs with the goal of minimizing the risk for loss of life and property to the citizens of Arizona. ADWR jurisdictional dams are inspected regularly according to downstream hazard potential classification. High hazard dams are inspected annually, significant hazard dams every three years, and low hazard dams every five years. Via these inspections, ADWR identifies safety deficiencies requiring correction and assigns each dam one of five safety ratings (listed in increasing severity): no deficiency, safety deficiency, unsafe non-emergency, unsafe non-emergency elevated risk, or unsafe emergency. Examples of safety deficiencies include: lack of an adequate emergency action plan, inability to safely pass the required IDF, embankment erosion, dam stability, etc. Further descriptions of each safety classification are summarized in Table 5-6.

**Table 5-6: Summary of ADWR safety categories**

ADWR Safety Rating	Definition
No Deficiency	No safety deficiencies found
Safety Deficiency	One or more conditions at the dam that impair or adversely affects the safe operation of the dam
Unsafe Non-emergency	Safety deficiencies in a dam or spillway could result in failure of the dam with subsequent loss of human life or significant property damage. Failure is not considered imminent.
Unsafe Non-emergency Elevated Risk	Safety deficiencies in a dam or spillway could result in failure of the dam with subsequent loss of human life or significant property damage. Concern the dam could fail during a 100-yr or smaller flood.
Unsafe Emergency	The dam is in imminent risk of failure.

Source: ADWR, 2009.

The NID database contains information on approximately 77,000 dams in the 50 states and Puerto Rico, with approximately 30 characteristics reported for each dam, such as: name, owner, river, nearest community, length, height, average storage, max storage, hazard rating, Emergency Action Plan (EAP), latitude, and longitude. Dams within the NID database are classified by hazard potential that is

based on an assessment of the consequences of failure. Table 5-7 summarizes those classifications and their criteria.

<b>Hazard Potential</b>	<b>Loss of Human Life</b>	<b>Economic, Environmental, Lifeline Losses</b>
Low	None expected	Low and generally limited to owner
Significant	None expected	Yes
High	Probable. One or more expected.	Yes (but not necessary for this classification)
Note: The hazard potential classification is an assessment of the consequences of failure, but not an evaluation of the probability of failure.		
Source: NID		

The NID database includes dams that are either:

- High or Significant hazard potential class dams, or,
- Low hazard potential class dams that exceed 25 feet in height and 15 acre-feet storage, or
- Low hazard potential class dams that exceed 50 acre-feet storage and 6 feet height.

There are 52 dams in the NID database that are located in Maricopa County, and 41 of those dams are under ADWR jurisdiction. There are also four more dams located in Pinal County that are owned and operated by the Flood Control District of Maricopa County and have a direct impact on Maricopa County communities. Table 5-8 provides a summary of the hazard and safety classifications by count for both the ADWR and NID databases. The location and hazard classifications for each dam are shown on Maps 1A, 1B, 1C and 2A, 2B, and 2C.

<b>Database Source</b>	<b>High</b>	<b>Significant</b>	<b>Low</b>	<b>Safety Deficiency</b>	<b>Unsafe (any sub-category)</b>
NID	39	8	5	N/A	N/A
ADWR	38	3	4	5	3
NOTES:					
<ul style="list-style-type: none"> <li>• Two of the unsafe dams require rehabilitation or removal and one is designated as non-emergency, elevated risk.</li> <li>• Four of the High hazard dams are located just east of Maricopa County in Pinal County.</li> <li>• One of the Safety Deficient dams is currently deemed as “out of service”</li> </ul>					
Source: FCDMC, ADWR and NID, 2014					

The magnitude of impacts due to emergency spillway flows and/or dam failure are usually depicted by mapping the estimated inundation limits based on an assessment of a combination of flow depth and velocity. These limits are typically a critical part of the emergency action plan. Of the 56 dams considered, 40 have emergency action plans.

The MJPT chose to assign profile categories separately for emergency spillway inundation and dam failure inundation, since the perceived probability and magnitude for each is distinctly different. For inundation resulting from emergency spillway flows, two classes of hazard risk are depicted as follows:

- HIGH Hazard = Inundation limits due to full emergency spillway flow
- LOW Hazard = All other areas outside the inundation limits

For inundation resulting from a dam failure, three classes of hazard are depicted as follows:

HIGH Hazard = Dam failure inundation limits downstream of any dam classified as “Unsafe” by ADWR.

MEDIUM Hazard = Dam failure inundation limits downstream of any dam classified as “Safety Deficient” by ADWR.

LOW Hazard = All other areas.

Extents of the emergency spillway and dam failure inundation hazard areas are shown on Maps 1A-C and 2A-C, respectively. It is duly noted that these hazard areas and maps depicting them continue to be a work in progress and may not reflect every dam spillway inundation or failure limit.

**Climate Change Impacts**

Climate change impacts to emergency spillway and dam failure inundation hazard are anticipated to occur in relation to the assumed increase in wildfire occurrences. Wildfires typically change a watershed’s hydrology with regard to rainfall-runoff processes, causing significant increases in peak discharge and runoff volumes during precipitation events. Dams and FRSs located in the county are typically not designed for post wildfire flooding volumes and flow rates and could pose significant increased risks of emergency spillway operation or failure should a large wildfire occur in the watershed. Other indirect impacts could be linked to increased presence of fissure and subsidence due to increased groundwater withdrawal due to reduced surface water supplies.

**Vulnerability – CPRI Results**

Dam inundation CPRI results for each community are summarized in Table 5-9.

**Table 5-9: Summary of CPRI results by jurisdiction for dam inundation (emergency spillway flow and dam failure)**

Participating Jurisdiction	Probability	Magnitude/Severity	Warning Time	Duration	CPRI Score
Avondale	Possibly	Limited	6 – 12 hours	< 24 hours	2.15
Buckeye	Unlikely	Critical	<6 hours	<6 hours	2.05
Carefree	Unlikely	Negligible	12-24 hours	<1 week	1.35
Cave Creek	Unlikely	Limited	>24 hours	<24 hours	1.40
Chandler	Unlikely	Limited	>24 hours	<24 hours	1.40
El Mirage	Possibly	Limited	<6 hours	<24 hours	2.30
Fountain Hills	Possibly	Limited	<6 hours	>1 week	2.50
Fort McDowell Yavapai Nation	Unlikely	Negligible	>24 hours	<24 hours	1.10
Gila Bend	Unlikely	Negligible	>24 hours	<6 hours	1.00
Gilbert	Unlikely	Limited	6-12 hours	>1 week	1.90
Glendale	Unlikely	Negligible	<6 hours	<6 hours	1.45
Goodyear	Unlikely	Critical	<6 hours	<24 hours	2.15
Guadalupe	Unlikely	Negligible	<6 hours	<6 hours	1.45
Litchfield Park	Unlikely	Limited	<6 hours	<24 hours	1.85
Unincorporated Maricopa County	Possibly	Critical	<6 hours	>1 week	2.80
Mesa	Unlikely	Critical	<6 hours	>1 week	2.35
Paradise Valley	Unlikely	Catastrophic	>24 hours	<24 hours	2.00
Peoria	Possibly	Catastrophic	<6 hours	<6 hours	2.80
Phoenix	Unlikely	Critical	12-24 hours	<24 hours	1.85
Queen Creek	Unlikely	Catastrophic	12-24 hours	<24 hours	2.15
Salt River Pima-Maricopa Indian Community	Possibly	Catastrophic	<6 hours	>1 week	3.10
Salt River Project	Unlikely	Catastrophic	<6 hours	<1 week	2.55
Scottsdale	Possibly	Negligible	6-12 hours	<24 hours	1.85
Surprise	Unlikely	Catastrophic	6-12 hours	<6 hours	2.20
Tempe	Unlikely	Catastrophic	6-12 hours	>1 week	2.50
Tolleson	Unlikely	Negligible	>24 hours	<1 week	1.20
Wickenburg	Possibly	Catastrophic	<6 hours	<24 hours	2.90
Youngtown	Likely	Critical	6-12 hours	<24 hours	2.90
<b>County-wide average CPRI =</b>					<b>2.04</b>

**Vulnerability – Loss/Exposure Estimations**

The estimation of potential exposures due to inundation from either an emergency spillway flow or a dam failure was accomplished by intersecting the human and facility assets with the inundation limits depicted on Maps 1A, 1B, and 1C. Since no common methodology is available for obtaining losses from the exposure values for these types of extreme events, no estimates of economic losses were made for this update. Any storm event, or series of storm events of sufficient magnitude to cause an emergency spillway to operate or cause a dam failure scenario, would have potentially catastrophic consequences in the inundation area. Floodwaves from these types of events travel very fast and possess tremendous destructive energy.

It should be noted that the MJPT recognizes that probability of an emergency spillway flow or dam failure occurring on multiple (or all) structures at the same time is essentially zero. Accordingly, the exposure estimates presented below are intended to serve as a collective evaluation of the potential exposure to high and medium hazard emergency spillway and dam failure inundation events.

Tables 5-10 and 5-11 summarize estimations of exposure to MJPT identified assets for emergency spillway and dam failure inundation hazards. Tables 5-12 and 5-13 summarize 2010 Census block residential building stock exposure estimates for the emergency spillway and dam failure inundation hazards. Table 5-14 and 5-15 summarize the estimated 2010 Census block population exposed to emergency spillway and dam failure inundation hazards.

In summary, \$2.94 billion, \$188.5 million and \$578.0 million in critical and non-critical MJPT identified assets are exposed to emergency spillway high hazard and dam failure high and medium hazard inundations, respectively, for the planning area. An additional \$60.3 billion, \$23.6 billion and \$12.9 billion of 2010 Census block residential structures are exposed to emergency spillway high hazard and dam failure high and medium hazard inundations, respectively, for the planning areas. Regarding human vulnerability, a total population of 532,734 people, or 13.95% of the total 2010 Census planning area population, is potentially exposed to an emergency spillway inundation event. Similarly, total populations of 189,706 and 112,903 people, or 5.0% and 3.0% of the total 2010 Census planning area population, are potentially exposed to a high or medium hazard dam failure inundation event. The potential for deaths and injuries are directly related to the warning time and type of event. Given the magnitude of such events, it is realistic to anticipate at least one death and several injuries. There is also a high probability of population displacement for most of the inhabitants within the inundation limits downstream of the dam(s).

#### **Vulnerability – Development Trend Analysis**

Most of the dams within Maricopa County serve as flood retarding structures (FRS) and typically sit empty for most of their design life. The flood protection afforded by these structures has encouraged development of lands immediately downstream of the structures. In some cases, the FRS are long linear structures that intercept runoff from multiple washes and have emergency spillways that are not always directed to a regional watercourse. All of the larger dams with some level of permanent reservoir storage direct emergency spillway flows to the regional watercourse they are constructed on. Emergency spillway flows from these structures typically coincide with FEMA regulated 100-year floodplains in the downstream watercourse, and are, therefore, not as potentially destructive as an emergency spillway flow from some of the FRS structures. A dam failure in any case, would be catastrophic.

The vulnerability analysis indicates that five to 14% of the county population is situated within the potential downstream inundation limits of an emergency spillway or elevated hazard dam failure. It is anticipated that over half of the county population is situated within dam failure inundation limits of some dam. Prohibition of development within those limits is not feasible. Instead, public awareness measures such as notices on final plats and public education on dam safety are mitigation efforts employed by local county and city/town officials. Also, Emergency Action Plans (EAPs) that establish notification procedures and thresholds are also prepared for response to potential dam related disaster events.

<b>Table 5-10: Asset inventory exposure due to emergency spillway inundation</b>					
<b>Community</b>	<b>Total Facilities Reported by Community</b>	<b>Impacted Facilities</b>	<b>Percentage of Total Community Facilities Impacted</b>	<b>Total Replacement Value of All Facilities Reported by Community (x \$1,000)</b>	<b>Estimated Replacement Value Exposed to Hazard (x \$1,000)</b>
<b>County-Wide Totals (Maricopa Only)</b>	<b>7545</b>	<b>933</b>	<b>12.37%</b>	<b>\$20,635,239</b>	<b>\$2,939,790</b>
Avondale	74	0	0.00%	\$179,460	\$0
Buckeye	103	46	44.66%	\$253,822	\$108,393
Carefree	6	0	0.00%	\$9,000	\$0
Cave Creek	40	0	0.00%	\$63,245	\$0
Chandler	277	0	0.00%	\$1,361,072	\$0
El Mirage	34	27	79.41%	\$285,542	\$206,293
Fountain Hills	28	0	0.00%	\$101,904	\$0
Fort McDowell Yavapai Nation	15	0	0.00%	\$411,000	\$0
Gila Bend	7	0	0.00%	\$36,000	\$0
Gilbert	2,889	124	4.29%	\$0	\$0
Glendale	1,214	315	25.95%	\$4,084,503	\$1,441,561
Goodyear	159	30	18.87%	\$148,573	\$7,800
Guadalupe	7	0	0.00%	\$10,800	\$0
Litchfield Park	5	0	0.00%	\$118,900	\$0
Unincorporated Maricopa County	426	43	10.09%	\$247,248	\$14,966
Mesa	450	32	7.11%	\$2,139,576	\$116,500
Paradise Valley	94	0	0.00%	\$469,000	\$0
Peoria	299	60	20.07%	\$282,333	\$19,247
Phoenix	913	102	11.17%	\$7,691,316	\$487,322
Queen Creek (Maricopa County Only)	124	112	90.32%	\$306,143	\$269,511
Salt River Pima-Maricopa Indian Community	21	0	0.00%	\$509,053	\$0
Salt River Project <sup>35</sup>	602	21	3.48%	N/A	N/A
Scottsdale	132	0	0.00%	\$55,000	\$0
Surprise	81	40	49.38%	\$444,613	\$256,197
Tempe	111	2	1.80%	\$1,373,300	\$12,000
Tolleson	10	0	0.00%	\$0	\$0
Wickenburg	14	0	0.00%	\$32,589	\$0
Youngtown	12	0	0.00%	\$21,247	\$0
Mesa (Pinal County Only)	15	0	0.00%	\$2,139,576	\$0
Queen Creek (Pinal County Only)	5	0	0.00%	\$306,143	\$0

<sup>35</sup> Facility count for Salt River Project is not included in overall County-Wide totals and all data was provided by SRP.

<b>Table 5-11: Asset inventory exposure due to dam failure inundation</b>					
<b>Community</b>	<b>Total Facilities Reported by Community</b>	<b>Impacted Facilities</b>	<b>Percentage of Total Community Facilities Impacted</b>	<b>Total Replacement Value of All Facilities Reported by Community (x \$1,000)</b>	<b>Estimated Replacement Value Exposed to Hazard (x \$1,000)</b>
<b>HIGH</b>					
<b>County-Wide Totals (Maricopa Only)</b>	<b>7545</b>	<b>2086</b>	<b>25.60%</b>	<b>\$20,635,239</b>	<b>\$188,538</b>
Avondale	74	0	0.00%	\$179,460	\$0
Buckeye	103	6	5.83%	\$253,822	\$17,315
Carefree	6	0	0.00%	\$9,000	\$0
Cave Creek	40	0	0.00%	\$63,245	\$0
Chandler	277	5	1.81%	\$1,361,072	\$7,658
El Mirage	34	0	0.00%	\$285,542	\$0
Fountain Hills	28	0	0.00%	\$101,904	\$0
Fort McDowell Yavapai Nation	15	0	0.00%	\$411,000	\$0
Gila Bend	7	0	0.00%	\$36,000	\$0
Gilbert	2,889	1965	68.02%	\$0	\$0
Glendale	1,214	0	0.00%	\$4,084,503	\$0
Goodyear	159	0	0.00%	\$148,573	\$0
Guadalupe	7	0	0.00%	\$10,800	\$0
Litchfield Park	5	0	0.00%	\$118,900	\$0
Unincorporated Maricopa County	426	16	3.76%	\$247,248	\$5,650
Mesa	450	35	7.78%	\$2,139,576	\$142,000
Paradise Valley	94	0	0.00%	\$469,000	\$0
Peoria	299	0	0.00%	\$282,333	\$0
Phoenix	913	0	0.00%	\$7,691,316	\$0
Queen Creek (Maricopa County Only)	124	7	5.65%	\$306,143	\$15,915
Salt River Pima-Maricopa Indian Community	21	0	0.00%	\$509,053	\$0
Salt River Project <sup>36</sup>	602	52	8.64%	N/A	N/A
Scottsdale	132	0	0.00%	\$55,000	\$0
Surprise	81	0	0.00%	\$444,613	\$0
Tempe	111	0	0.00%	\$1,373,300	\$0
Tolleson	10	0	0.00%	\$0	\$0
Wickenburg	14	0	0.00%	\$32,589	\$0
Youngtown	12	0	0.00%	\$21,247	\$0
Mesa (Pinal County Only)	15	0	0.00%	\$2,139,576	\$0
Queen Creek (Pinal County Only)	5	0	0.00%	\$306,143	\$0

<sup>36</sup> Facility count for Salt River Project is not included in overall County-Wide totals and all data was provided by SRP.

<b>Table 5-11: Asset inventory exposure due to dam failure inundation</b>					
<b>Community</b>	<b>Total Facilities Reported by Community</b>	<b>Impacted Facilities</b>	<b>Percentage of Total Community Facilities Impacted</b>	<b>Total Replacement Value of All Facilities Reported by Community (x \$1,000)</b>	<b>Estimated Replacement Value Exposed to Hazard (x \$1,000)</b>
<b>MEDIUM</b>					
<b>County-Wide Totals (Maricopa Only)</b>	<b>7545</b>	<b>129</b>	<b>1.58%</b>	<b>\$20,635,239</b>	<b>\$577,966</b>
Avondale	74	5	6.76%	\$179,460	\$3,851
Buckeye	103	3	2.91%	\$253,822	\$4,100
Carefree	6	0	0.00%	\$9,000	\$0
Cave Creek	40	0	0.00%	\$63,245	\$0
Chandler	277	0	0.00%	\$1,361,072	\$0
El Mirage	34	19	55.88%	\$285,542	\$123,370
Fountain Hills	28	0	0.00%	\$101,904	\$0
Fort McDowell Yavapai Nation	15	4	26.67%	\$411,000	\$185,500
Gila Bend	7	0	0.00%	\$36,000	\$0
Gilbert	2,889	0	0.00%	\$0	\$0
Glendale	1,214	14	1.15%	\$4,084,503	\$0
Goodyear	159	40	25.16%	\$148,573	\$32,110
Guadalupe	7	0	0.00%	\$10,800	\$0
Litchfield Park	5	0	0.00%	\$118,900	\$0
Unincorporated Maricopa County	426	10	2.35%	\$247,248	\$2,926
Mesa	450	0	0.00%	\$2,139,576	\$0
Paradise Valley	94	0	0.00%	\$469,000	\$0
Peoria	299	0	0.00%	\$282,333	\$0
Phoenix	913	0	0.00%	\$7,691,316	\$0
Queen Creek (Maricopa County Only)	124	0	0.00%	\$306,143	\$0
Salt River Pima-Maricopa Indian Community	21	0	0.00%	\$509,053	\$0
Salt River Project <sup>37</sup>	602	0	0.00%	N/A	N/A
Scottsdale	132	0	0.00%	\$55,000	\$0
Surprise	81	34	41.98%	\$444,613	\$226,109
Tempe	111	0	0.00%	\$1,373,300	\$0
Tolleson	10	0	0.00%	\$0	\$0
Wickenburg	14	0	0.00%	\$32,589	\$0
Youngtown	12	0	0.00%	\$21,247	\$0
Mesa (Pinal County Only)	15	0	0.00%	\$2,139,576	\$0
Queen Creek (Pinal County Only)	5	0	0.00%	\$306,143	\$0

<sup>37</sup> Facility count for Salt River Project is not included in overall County-Wide totals and all data was provided by SRP.

Community	Residential Building Count	Residential Building Exposure		Residential Building Replacement Value (x\$1,000)	Residential Building Value Exposed	
		Total	Percent		Total (x\$1,000)	Percent
<b>County-Wide Totals (Maricopa Only)</b>	<b>1,640,183</b>	<b>229,937</b>	<b>14.02%</b>	<b>\$513,435,920</b>	<b>\$60,259,495</b>	<b>11.74%</b>
Apache Junction (Maricopa County Portion)	280	280	100.00%	\$10,006	\$10,006	100.00%
Avondale	26,906	2	0.01%	\$5,303,222	\$167	0.00%
Buckeye	18,172	5,763	31.71%	\$4,109,349	\$1,030,774	25.08%
Carefree	2,249	0	0.00%	\$2,520,086	\$0	0.00%
Cave Creek	2,498	0	0.00%	\$2,157,129	\$0	0.00%
Chandler	94,181	0	0.00%	\$33,262,033	\$0	0.00%
El Mirage	11,306	9,889	87.47%	\$1,840,087	\$1,650,506	89.70%
Fountain Hills	308	0	0.00%	\$71,056	\$0	0.00%
Fort McDowell Yavapai Nation	13,107	978	7.47%	\$7,013,593	\$453,214	6.46%
Gila Bend	944	0	0.00%	\$89,786	\$0	0.00%
Gila River Indian Community	924	0	0.00%	\$117,456	\$0	0.00%
Gilbert	74,786	8,963	11.99%	\$27,321,667	\$3,345,454	12.24%
Glendale	90,351	19,968	22.10%	\$20,974,482	\$6,408,189	30.55%
Goodyear	25,052	6,875	27.44%	\$7,682,897	\$2,305,944	30.01%
Guadalupe	1,397	0	0.02%	\$202,819	\$91	0.05%
Litchfield Park	2,432	0	0.01%	\$1,036,335	\$61	0.01%
Unincorporated Maricopa County	142,950	17,361	12.14%	\$43,219,291	\$3,506,019	8.11%
Mesa	201,476	9,429	4.68%	\$46,756,733	\$2,556,842	5.47%
Paradise Valley	5,622	0	0.00%	\$8,385,999	\$0	0.00%
Peoria	64,807	18,483	28.52%	\$18,961,634	\$5,984,829	31.56%
Phoenix	590,454	94,823	16.06%	\$163,751,509	\$21,771,528	13.30%
Queen Creek	8,561	8,236	96.20%	\$3,043,070	\$2,906,045	95.50%
Salt River Pima-Maricopa Indian Community	2,621	0	0.00%	\$260,127	\$0	0.00%
Scottsdale	123,821	0	0.00%	\$77,330,425	\$0	0.00%
Surprise	52,623	27,086	51.47%	\$14,802,691	\$8,129,787	54.92%
Tempe	73,542	1,521	2.07%	\$21,418,707	\$131,024	0.61%
Tohono O'odham Nation	253	0	0.00%	\$29,312	\$0	0.00%
Tolleson	2,156	0	0.00%	\$348,281	\$0	0.00%
Wickenburg	3,609	276	7.66%	\$986,544	\$69,014	7.00%
Youngtown	2,793	0	0.00%	\$429,593	\$0	0.00%
Queen Creek (Pinal County Portion)	234	0	0.00%	\$56,074	\$0	0.00%
Peoria (Yavapai County Portion)	6	0	0.00%	\$1,344	\$0	0.00%

<b>Table 5-13: Residential structures exposed to dam failure inundation</b>						
Community	Residential Building Count	Residential Building Exposure		Residential Building Replacement Value (x\$1,000)	Residential Building Value Exposed	
		Total	Percent		Total (x\$1,000)	Percent
<b>HIGH</b>						
<b>County-Wide Totals (Maricopa Only)</b>	<b>1,640,183</b>	<b>68,792</b>	<b>4.19%</b>	<b>\$513,435,968</b>	<b>\$23,574,012</b>	<b>4.59%</b>
Apache Junction (Maricopa County Portion)	280	0	0.00%	\$10,009	\$0	0.00%
Avondale	26,906	0	0.00%	\$5,303,219	\$0	0.00%
Buckeye	18,179	51	0.28%	\$4,111,009	\$10,596	0.26%
Carefree	2,242	0	0.00%	\$2,518,427	\$0	0.00%
Cave Creek	2,498	0	0.00%	\$2,157,129	\$0	0.00%
Chandler	94,159	4,471	4.75%	\$33,256,924	\$1,324,786	3.98%
El Mirage	11,329	0	0.00%	\$1,845,196	\$0	0.00%
Fountain Hills	308	0	0.00%	\$71,056	\$0	0.00%
Fort McDowell Yavapai Nation	13,107	0	0.00%	\$7,013,593	\$0	0.00%
Gila Bend	944	0	0.00%	\$89,786	\$0	0.00%
Gila River Indian Community	924	0	0.00%	\$117,456	\$0	0.00%
Gilbert	74,795	52,115	69.68%	\$27,326,029	\$18,483,976	67.64%
Glendale	90,342	0	0.00%	\$20,970,120	\$0	0.00%
Goodyear	25,050	0	0.00%	\$7,681,879	\$0	0.00%
Guadalupe	1,399	0	0.00%	\$203,837	\$0	0.00%
Litchfield Park	2,432	0	0.00%	\$1,036,335	\$0	0.00%
Unincorporated Maricopa County	142,950	1,593	1.11%	\$43,219,339	\$502,484	1.16%
Mesa	201,476	10,271	5.10%	\$46,756,734	\$3,153,932	6.75%
Paradise Valley	5,618	0	0.00%	\$8,380,285	\$0	0.00%
Peoria	64,811	0	0.00%	\$18,967,348	\$0	0.00%
Phoenix	590,454	0	0.00%	\$163,751,508	\$0	0.00%
Queen Creek	8,561	291	3.40%	\$3,043,070	\$98,237	3.23%
Salt River Pima-Maricopa Indian Community	2,621	0	0.00%	\$260,127	\$0	0.00%
Scottsdale	123,944	0	0.00%	\$77,366,204	\$0	0.00%
Surprise	52,585	0	0.00%	\$14,784,216	\$0	0.00%
Tempe	73,573	0	0.00%	\$21,422,260	\$0	0.00%
Tohono O'odham Nation	138	0	0.00%	\$8,456	\$0	0.00%
Tolleson	2,156	0	0.00%	\$348,281	\$0	0.00%
Wickenburg	3,610	0	0.00%	\$986,793	\$0	0.00%
Youngtown	2,792	0	0.00%	\$429,344	\$0	0.00%
Queen Creek (Pinal County Portion)	234	0	0.00%	\$56,074	\$0	0.00%
Peoria (Yavapai County Portion)	5	0	0.00%	\$981	\$0	0.00%

<b>Table 5-13: Residential structures exposed to dam failure inundation</b>						
Community	Residential Building Count	Residential Building Exposure		Residential Building Replacement Value (x\$1,000)	Residential Building Value Exposed	
		Total	Percent		Total (x\$1,000)	Percent
<b>MEDIUM</b>						
<b>County-Wide Totals (Maricopa Only)</b>	<b>1,640,183</b>	<b>48,932</b>	<b>2.98%</b>	<b>\$513,435,968</b>	<b>\$12,890,211</b>	<b>2.51%</b>
Apache Junction (Maricopa County Portion)	280	0	0.00%	\$10,009	\$0	0.00%
Avondale	26,906	823	3.06%	\$5,303,219	\$82,649	1.56%
Buckeye	18,179	174	0.96%	\$4,111,009	\$39,815	0.97%
Carefree	2,242	0	0.00%	\$2,518,427	\$0	0.00%
Cave Creek	2,498	0	0.00%	\$2,157,129	\$0	0.00%
Chandler	94,159	0	0.00%	\$33,256,924	\$0	0.00%
El Mirage	11,329	9,862	87.05%	\$1,845,196	\$1,587,677	86.04%
Fountain Hills	308	0	0.01%	\$71,056	\$4	0.01%
Fort McDowell Yavapai Nation	13,107	1,485	11.33%	\$7,013,593	\$670,865	9.57%
Gila Bend	944	0	0.00%	\$89,786	\$0	0.00%
Gila River Indian Community	924	0	0.00%	\$117,456	\$0	0.00%
Gilbert	74,795	0	0.00%	\$27,326,029	\$0	0.00%
Glendale	90,342	1,796	1.99%	\$20,970,120	\$420,161	2.00%
Goodyear	25,050	4,751	18.97%	\$7,681,879	\$1,616,079	21.04%
Guadalupe	1,399	0	0.00%	\$203,837	\$0	0.00%
Litchfield Park	2,432	206	8.45%	\$1,036,335	\$85,564	8.26%
Unincorporated Maricopa County	142,950	1,092	0.76%	\$43,219,339	\$280,437	0.65%
Mesa	201,476	0	0.00%	\$46,756,734	\$0	0.00%
Paradise Valley	5,618	0	0.00%	\$8,380,285	\$0	0.00%
Peoria	64,811	0	0.00%	\$18,967,348	\$0	0.00%
Phoenix	590,454	0	0.00%	\$163,751,508	\$0	0.00%
Queen Creek	8,561	0	0.00%	\$3,043,070	\$0	0.00%
Salt River Pima-Maricopa Indian Community	2,621	0	0.00%	\$260,127	\$0	0.00%
Scottsdale	123,944	0	0.00%	\$77,366,204	\$0	0.00%
Surprise	52,585	27,702	52.68%	\$14,784,216	\$7,917,246	53.55%
Tempe	73,573	0	0.00%	\$21,422,260	\$0	0.00%
Tohono O'odham Nation	138	0	0.00%	\$8,456	\$0	0.00%
Tolleson	2,156	0	0.00%	\$348,281	\$0	0.00%
Wickenburg	3,610	0	0.00%	\$986,793	\$0	0.00%
Youngtown	2,792	1,041	37.28%	\$429,344	\$189,715	44.19%
Queen Creek (Pinal County Portion)	234	0	0.00%	\$56,074	\$0	0.00%
Peoria (Yavapai County Portion)	5	0	0.00%	\$981	\$0	0.00%

**Table 5-14: Population sectors exposed to emergency spillway inundation**

Community	Total Population	Population Exposed		Total Population Over 65	Population Over 65 Exposed	
		Total	Percent		Total	Percent
<b>County-Wide Totals (Maricopa Only)</b>	<b>3,819,188</b>	<b>532,734</b>	<b>13.95%</b>	<b>462,886</b>	<b>73,727</b>	<b>15.93%</b>
Apache Junction (Maricopa County Portion)	280	280	100.00%	173	173	100.00%
Avondale	75,819	2	0.00%	4,114	1	0.03%
Buckeye	50,786	15,157	29.84%	3,410	892	26.16%
Carefree	3,367	0	0.00%	1,182	0	0.00%
Cave Creek	4,824	0	0.00%	906	0	0.00%
Chandler	235,715	0	0.00%	18,311	0	0.00%
El Mirage	31,717	27,866	87.86%	2,049	1,751	85.49%
Fountain Hills	971	0	0.00%	56	0	0.00%
Fort McDowell Yavapai Nation	22,395	1,546	6.90%	6,228	432	6.94%
Gila Bend	1,936	0	0.00%	186	0	0.00%
Gila River Indian Community	3,346	0	0.00%	165	0	0.00%
Gilbert	208,043	23,930	11.50%	12,602	2,439	19.35%
Glendale	226,187	47,925	21.19%	20,712	5,191	25.06%
Goodyear	65,306	16,964	25.98%	7,066	3,347	47.37%
Guadalupe	5,535	0	0.00%	449	0	0.00%
Litchfield Park	4,924	0	0.01%	1,128	0	0.00%
Unincorporated Maricopa County	276,418	29,218	10.57%	89,501	13,443	15.02%
Mesa	439,089	23,494	5.35%	62,001	2,510	4.05%
Paradise Valley	12,735	0	0.00%	2,884	0	0.00%
Peoria	154,057	40,419	26.24%	22,056	7,655	34.71%
Phoenix	1,446,886	219,515	15.17%	122,001	20,817	17.06%
Queen Creek	26,365	25,326	96.06%	1,366	1,297	94.94%
Salt River Pima-Maricopa Indian Community	6,315	0	0.00%	1,080	0	0.00%
Scottsdale	217,137	0	0.00%	43,465	0	0.00%
Surprise	117,441	57,536	48.99%	22,338	12,976	58.09%
Tempe	161,957	2,966	1.83%	13,668	711	5.20%
Tohono O'odham Nation	722	0	0.00%	45	0	0.00%
Tolleson	6,502	0	0.00%	588	0	0.00%
Wickenburg	6,340	589	9.30%	1,996	92	4.62%
Youngtown	6,073	0	0.00%	1,160	0	0.00%
Queen Creek (Pinal County Portion)	611	0	0.00%	75	0	0.00%
Peoria (Yavapai County Portion)	9	0	0.00%	2	0	0.00%

<b>Table 5-15: Population sectors exposed to dam failure inundation</b>						
Community	Total Population	Population Exposed		Total Population Over 65	Population Over 65 Exposed	
		Total	Percent		Total	Percent
<b>HIGH</b>						
<b>County-Wide Totals (Maricopa Only)</b>	<b>3,819,188</b>	<b>189,706</b>	<b>4.97%</b>	<b>462,886</b>	<b>11,985</b>	<b>2.59%</b>
Apache Junction (Maricopa County Portion)	280	0	0.00%	173	0	0.00%
Avondale	75,819	0	0.00%	4,114	0	0.00%
Buckeye	50,802	139	0.27%	3,410	14	0.41%
Carefree	3,351	0	0.00%	1,182	0	0.00%
Cave Creek	4,824	0	0.00%	906	0	0.00%
Chandler	235,644	11,441	4.86%	18,301	669	3.66%
El Mirage	31,788	0	0.00%	2,058	0	0.00%
Fountain Hills	971	0	0.00%	56	0	0.00%
Fort McDowell Yavapai Nation	22,395	0	0.00%	6,228	0	0.00%
Gila Bend	1,936	0	0.00%	186	0	0.00%
Gila River Indian Community	3,346	0	0.00%	165	0	0.00%
Gilbert	208,068	144,617	69.50%	12,603	7,823	62.07%
Glendale	226,163	0	0.00%	20,711	0	0.00%
Goodyear	65,297	0	0.00%	7,066	0	0.00%
Guadalupe	5,544	0	0.00%	449	0	0.00%
Litchfield Park	4,924	0	0.00%	1,128	0	0.00%
Unincorporated Maricopa County	276,418	4,361	1.58%	89,501	526	0.59%
Mesa	439,089	28,233	6.43%	62,001	2,918	4.71%
Paradise Valley	12,725	0	0.00%	2,883	0	0.00%
Peoria	154,067	0	0.00%	22,057	0	0.00%
Phoenix	1,446,886	0	0.00%	122,001	0	0.00%
Queen Creek	26,365	915	3.47%	1,366	35	2.53%
Salt River Pima-Maricopa Indian Community	6,315	0	0.00%	1,080	0	0.00%
Scottsdale	217,346	0	0.00%	43,476	0	0.00%
Surprise	117,489	0	0.00%	22,333	0	0.00%
Tempe	161,913	0	0.00%	13,671	0	0.00%
Tohono O'odham Nation	510	0	0.00%	36	0	0.00%
Tolleson	6,502	0	0.00%	588	0	0.00%
Wickenburg	6,340	0	0.00%	1,996	0	0.00%
Youngtown	6,073	0	0.00%	1,160	0	0.00%
Queen Creek (Pinal County Portion)	611	0	0.00%	75	0	0.00%
Peoria (Yavapai County Portion)	7	0	0.00%	1	0	0.00%

<b>Table 5-15: Population sectors exposed to dam failure inundation</b>						
Community	Total Population	Population Exposed		Total Population Over 65	Population Over 65 Exposed	
		Total	Percent		Total	Percent
<b>MEDIUM</b>						
<b>County-Wide Totals (Maricopa Only)</b>	<b>3,819,188</b>	<b>112,903</b>	<b>2.96%</b>	<b>462,886</b>	<b>16,979</b>	<b>3.67%</b>
Apache Junction (Maricopa County Portion)	280	0	0.00%	173	0	0.00%
Avondale	75,819	2,350	3.10%	4,114	165	4.02%
Buckeye	50,802	449	0.88%	3,410	29	0.86%
Carefree	3,351	0	0.00%	1,182	0	0.00%
Cave Creek	4,824	0	0.00%	906	0	0.00%
Chandler	235,644	0	0.00%	18,301	0	0.00%
El Mirage	31,788	27,668	87.04%	2,058	1,716	83.35%
Fountain Hills	971	0	0.01%	56	0	0.00%
Fort McDowell Yavapai Nation	22,395	2,328	10.40%	6,228	592	9.51%
Gila Bend	1,936	0	0.00%	186	0	0.00%
Gila River Indian Community	3,346	0	0.00%	165	0	0.00%
Gilbert	208,068	0	0.00%	12,603	0	0.00%
Glendale	226,163	1,487	0.66%	20,711	4	0.02%
Goodyear	65,297	11,089	16.98%	7,066	1,742	24.65%
Guadalupe	5,544	0	0.00%	449	0	0.00%
Litchfield Park	4,924	456	9.27%	1,128	55	4.85%
Unincorporated Maricopa County	276,418	3,148	1.14%	89,501	221	0.25%
Mesa	439,089	0	0.00%	62,001	0	0.00%
Paradise Valley	12,725	0	0.00%	2,883	0	0.00%
Peoria	154,067	0	0.00%	22,057	0	0.00%
Phoenix	1,446,886	0	0.00%	122,001	0	0.00%
Queen Creek	26,365	0	0.00%	1,366	0	0.00%
Salt River Pima-Maricopa Indian Community	6,315	0	0.00%	1,080	0	0.00%
Scottsdale	217,346	0	0.00%	43,476	0	0.00%
Surprise	117,489	61,294	52.17%	22,333	12,201	54.63%
Tempe	161,913	0	0.00%	13,671	0	0.00%
Tohono O'odham Nation	510	0	0.00%	36	0	0.00%
Tolleson	6,502	0	0.00%	588	0	0.00%
Wickenburg	6,340	0	0.00%	1,996	0	0.00%
Youngtown	6,073	2,633	43.37%	1,160	253	21.84%
Queen Creek (Pinal County Portion)	611	0	0.00%	75	0	0.00%
Peoria (Yavapai County Portion)	9	0	0.00%	2	0	0.00%

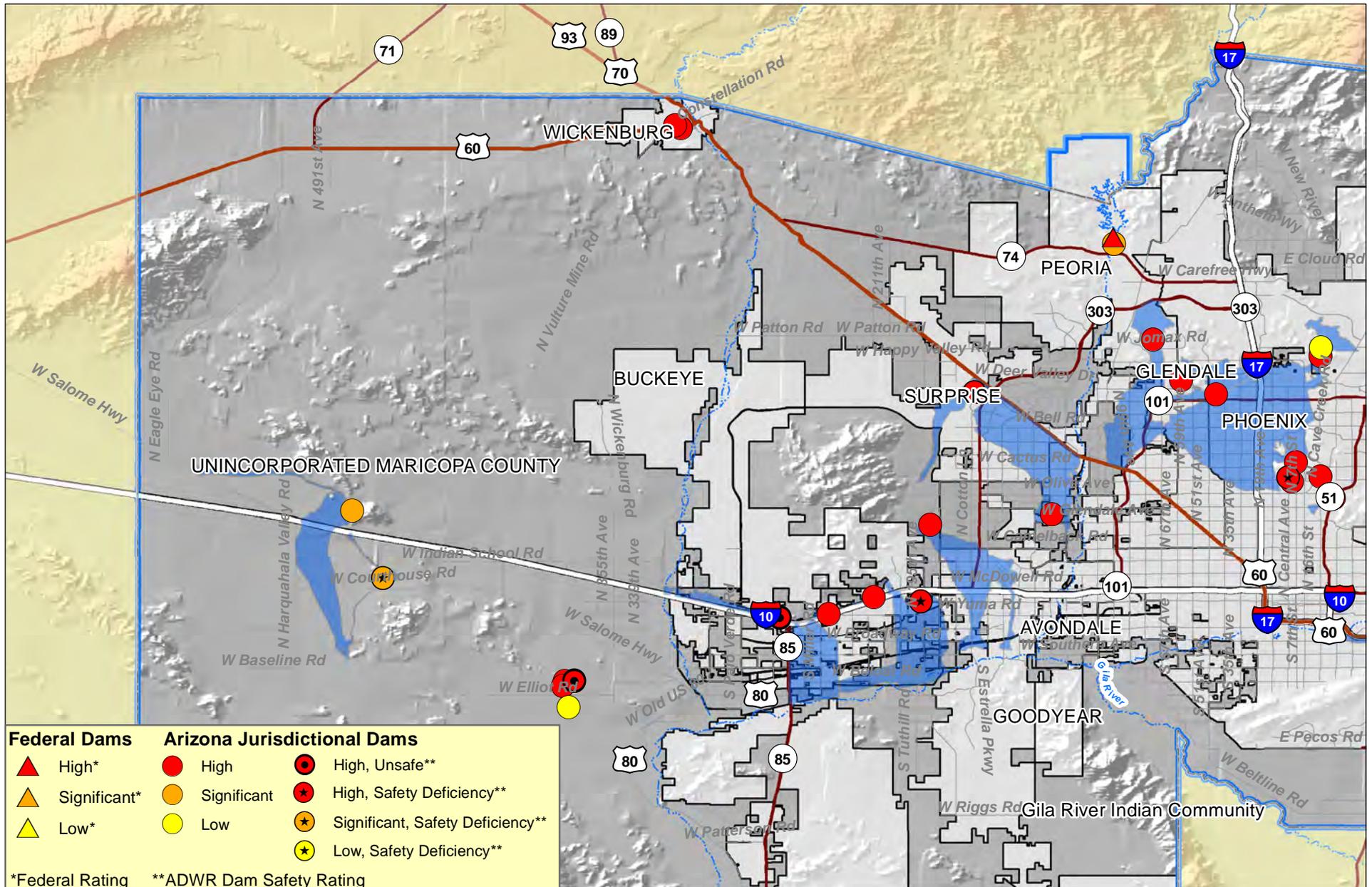
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**Profile Maps**

- Maps 1A, 1B, and 1C – Dam Spillway Flood Hazard Map
- Maps 2A, 2B, and 2C – Potential Dam Failure Flood Hazard Map

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**Legend**

- Maricopa County
- Mitigation Plan Extent
- Major Streams

**Emergency Spillway Flood Hazard Rating**

- High

NOTE: Emergency spillway inundation mapping has not been produced for the all dams impacting the county and the hazard zones depicted are not comprehensive

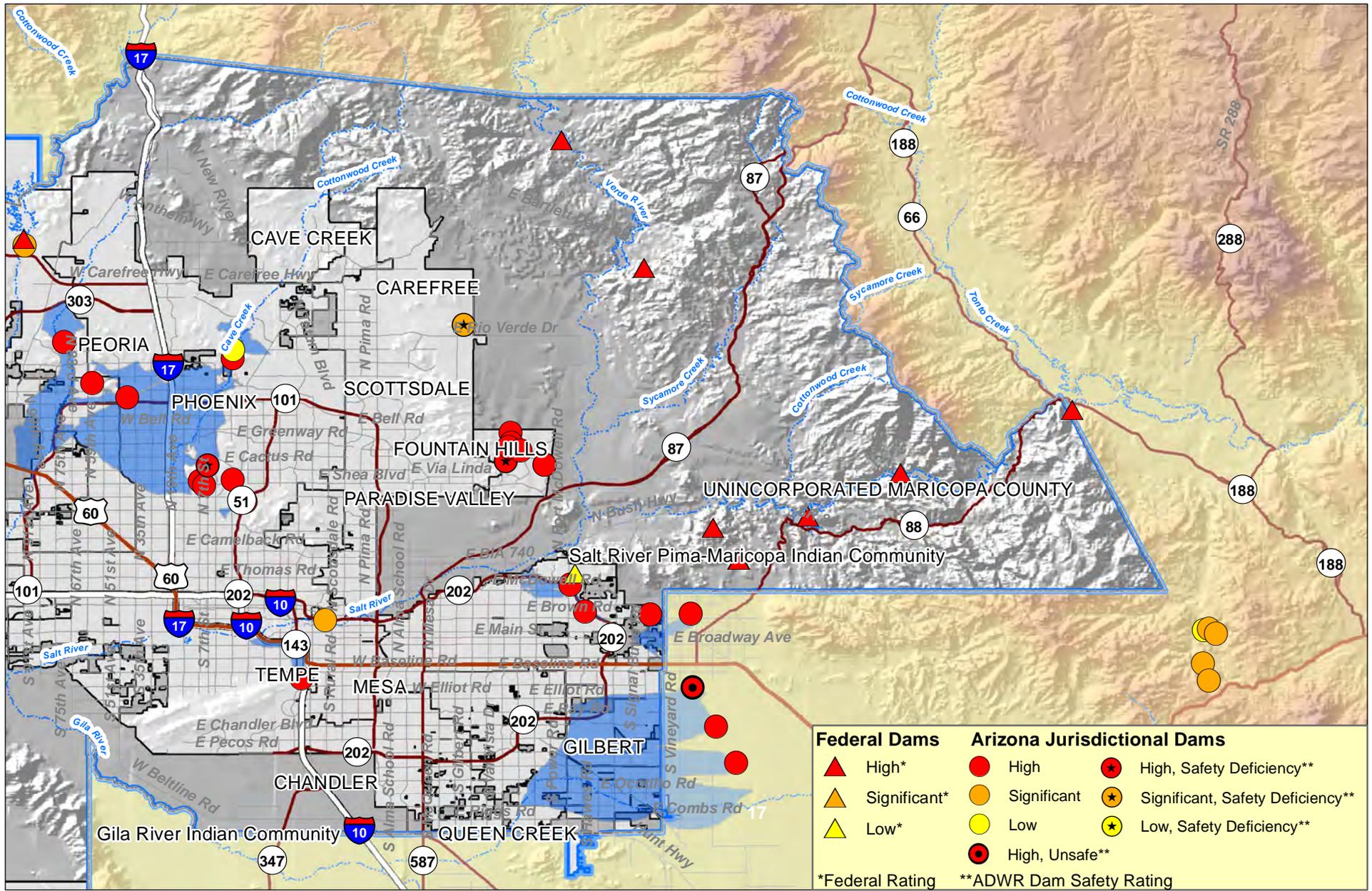
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Sources: JE Fuller 2014; NID 2014; FCDMC 2014; ADWR 2014; TIGER 2014



**Maricopa County Multi-Jurisdictional Hazard Mitigation Plan**

**Map 1A**  
**Maricopa County**  
**Emergency Spillway**  
**Flood Hazard Map**  
as of Dec 2014



**Legend**

- Maricopa County
- Mitigation Plan Extent
- Major Streams

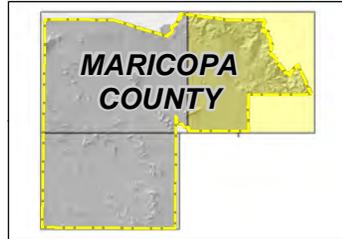
**Emergency Spillway Flood Hazard Rating**

- High

NOTE: Emergency spillway inundation mapping has not been produced for the all dams impacting the county and the hazard zones depicted are not comprehensive

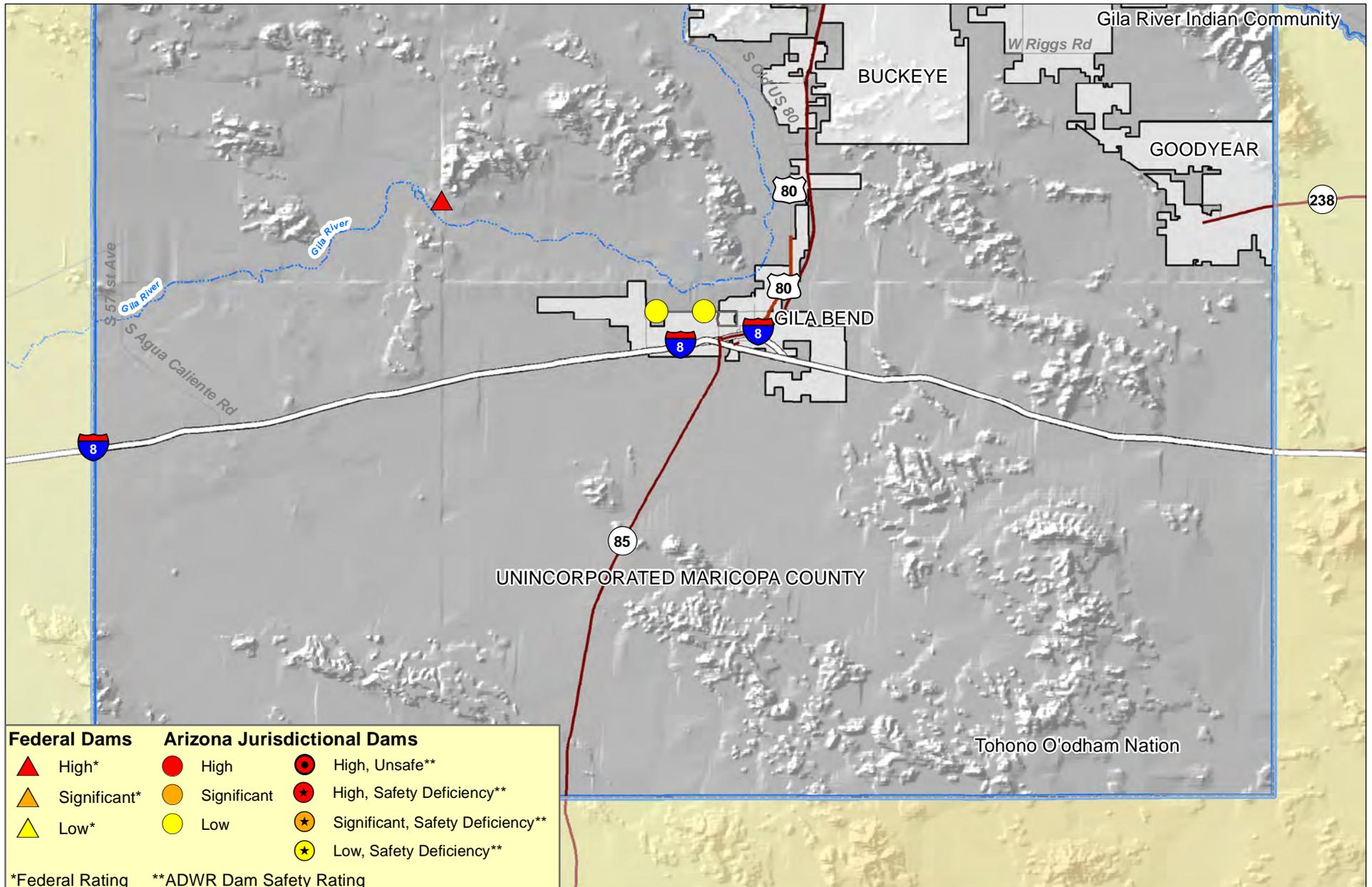
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Sources: JE Fuller 2014; NID 2014; FCDMC 2014; ADWR 2014; TIGER 2014



**Maricopa County Multi-Jurisdictional Hazard Mitigation Plan**

**Map 1B**  
**Maricopa County**  
**Emergency Spillway Flood Hazard Map**  
as of Dec 2014



**Legend**

- Maricopa County
- Mitigation Plan Extent
- Major Streams

**Emergency Spillway Flood Hazard Rating**

- High

NOTE: Emergency spillway inundation mapping has not been produced for the all dams impacting the county and the hazard zones depicted are not comprehensive

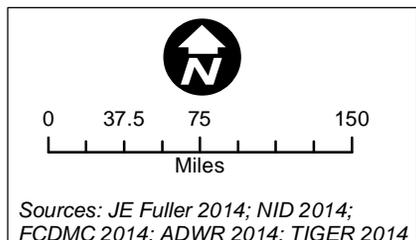
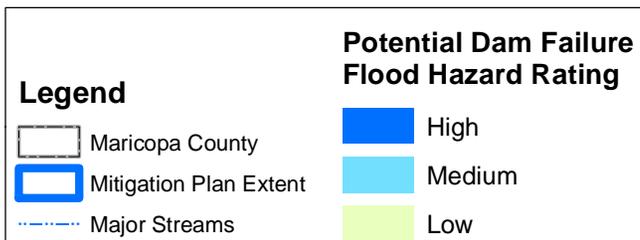
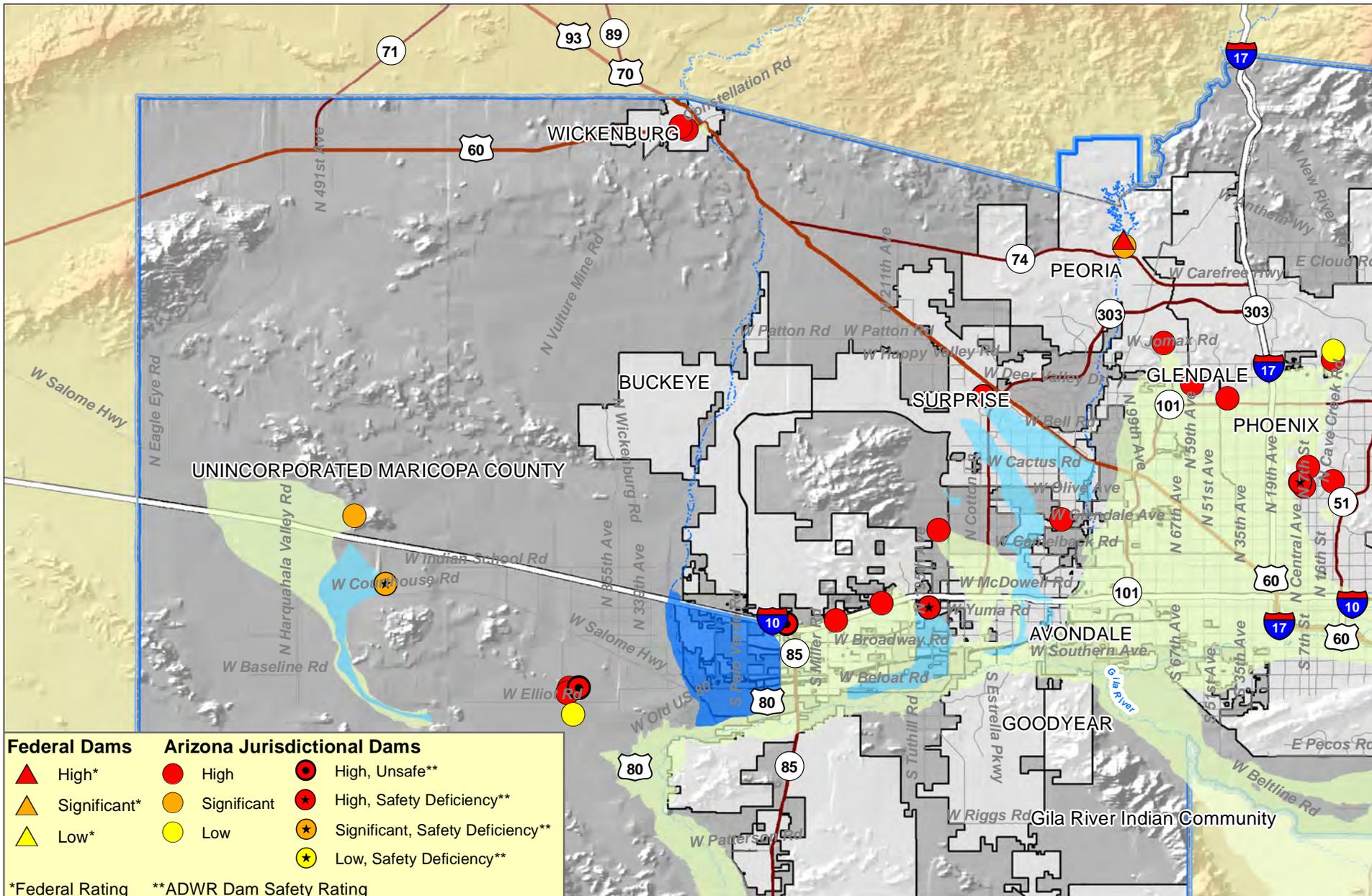
0 37.5 75 150  
Miles

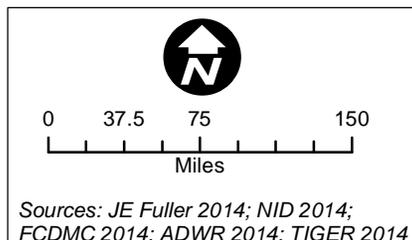
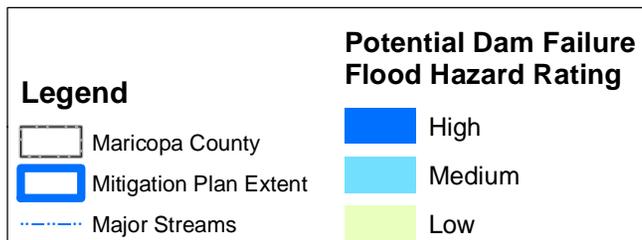
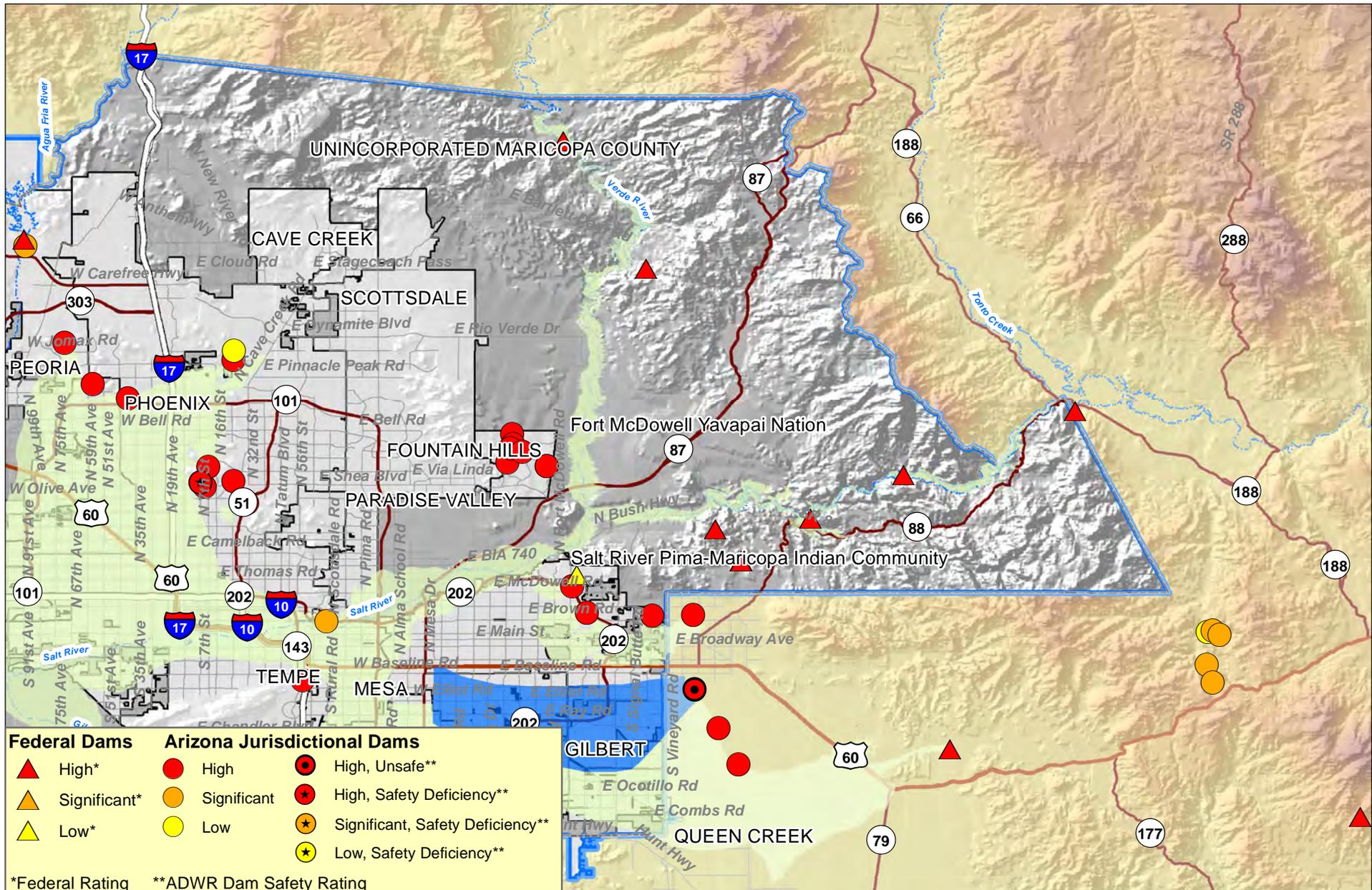
Sources: JE Fuller 2014; NID 2014; FCDMC 2014; ADWR 2014; TIGER 2014

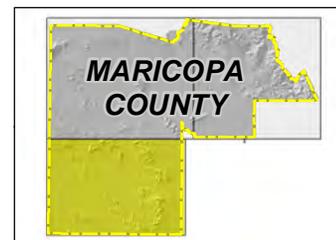
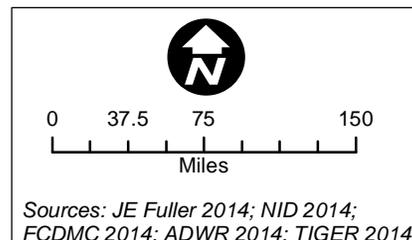
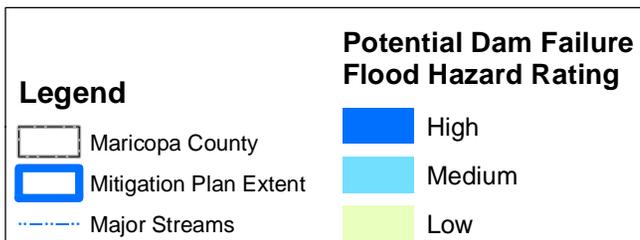
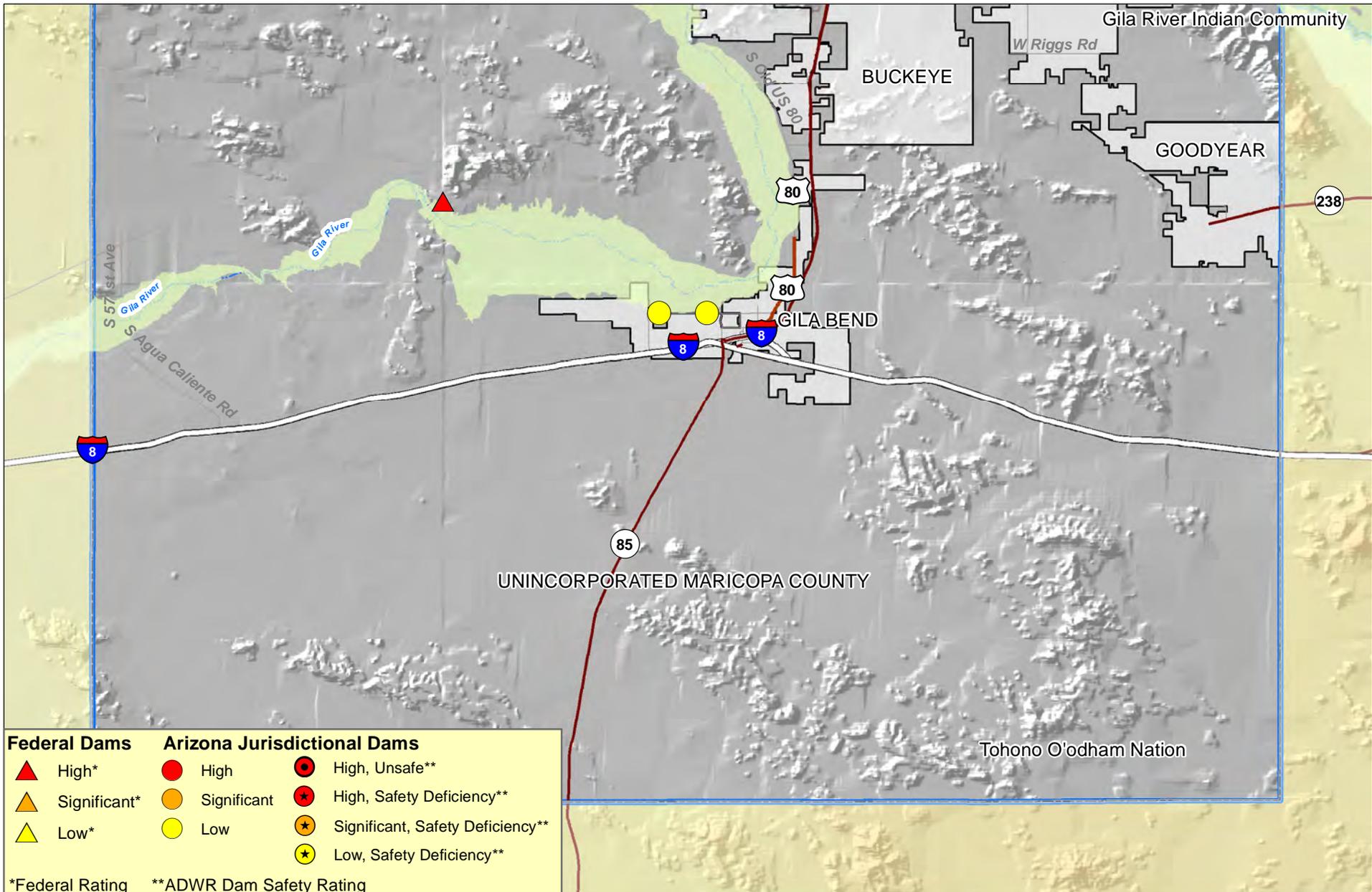


**Maricopa County Multi-Jurisdictional Hazard Mitigation Plan**

**Map 1C**  
**Maricopa County**  
**Emergency Spillway**  
**Flood Hazard Map**  
as of Dec 2014







5.3.2 *Drought*

**Description**

Drought is a normal part of virtually every climate on the planet, including areas of high and low rainfall. It is different from normal aridity, which is a permanent characteristic of the climate in areas of low rainfall. Drought is the result of a natural decline in the expected precipitation over an extended period of time, typically one or more seasons in length. The severity of drought can be aggravated by other climatic factors, such as prolonged high winds and low relative humidity (FEMA, 1997).

Drought is a complex natural hazard which is reflected in the following four definitions commonly used to describe it:

- Meteorological – drought is defined solely on the degree of dryness, expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
- Hydrological – drought is related to the effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
- Agricultural – drought is defined principally in terms of naturally occurring soil moisture deficiencies relative to water demands of plant life, usually arid crops.
- Socioeconomic – drought associates the supply and demand of economic goods or services with elements of meteorological, hydrologic, and agricultural drought. Socioeconomic drought occurs when the demand for water exceeds the supply as a result of weather-related supply shortfall. It may also be called a water management drought.

A drought's severity depends on numerous factors, including duration, intensity, and geographic extent as well as regional water supply demands by humans and vegetation. Due to its multi-dimensional nature, drought is difficult to define in exact terms and also poses difficulties in terms of comprehensive risk assessments.

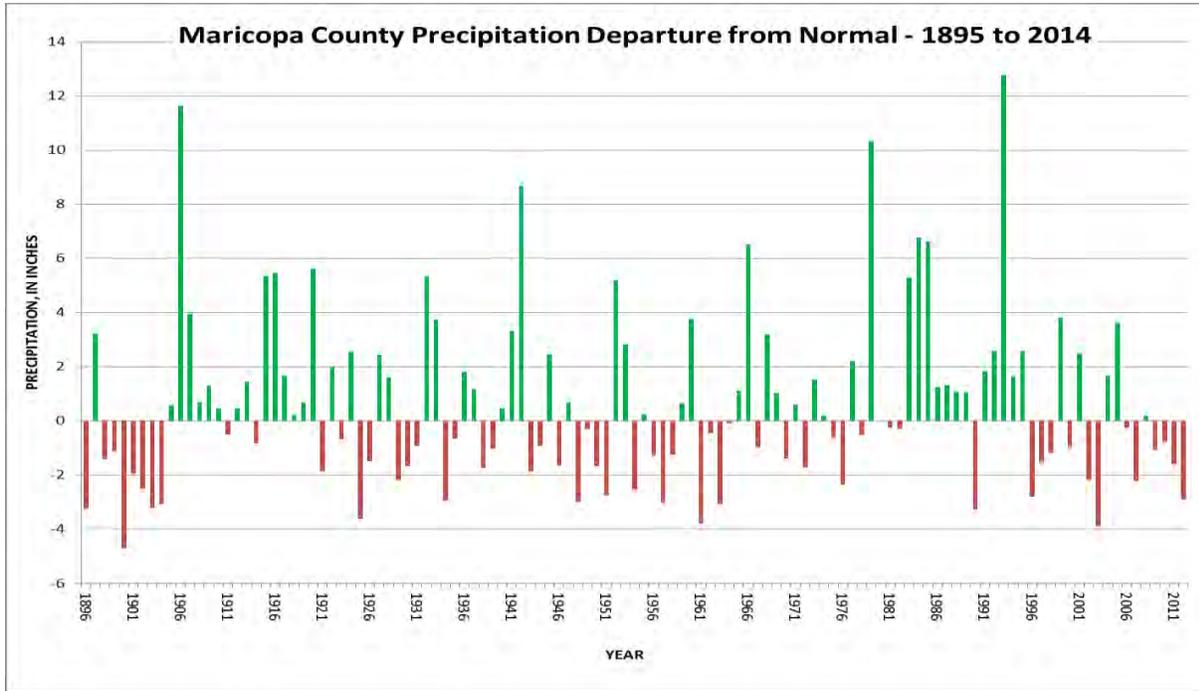
Drought differs from other natural hazards in three ways. First, the onset and end of a drought are difficult to determine due to the slow accumulation and lingering effects of an event after its apparent end. Second, the lack of an exact and universally accepted definition adds to the confusion of its existence and severity. Third, in contrast with other natural hazards, the impact of drought is less obvious and may be spread over a larger geographic area. These characteristics have hindered the preparation of drought contingency or mitigation plans by many governments.

Droughts may cause a shortage of water for human and industrial consumption, hydroelectric power, recreation, and navigation. Water quality may also decline and the number and severity of wildfires may increase. Severe droughts may result in the loss of agricultural crops and forest products, undernourished wildlife and livestock, lower land values, and higher unemployment.

**History**

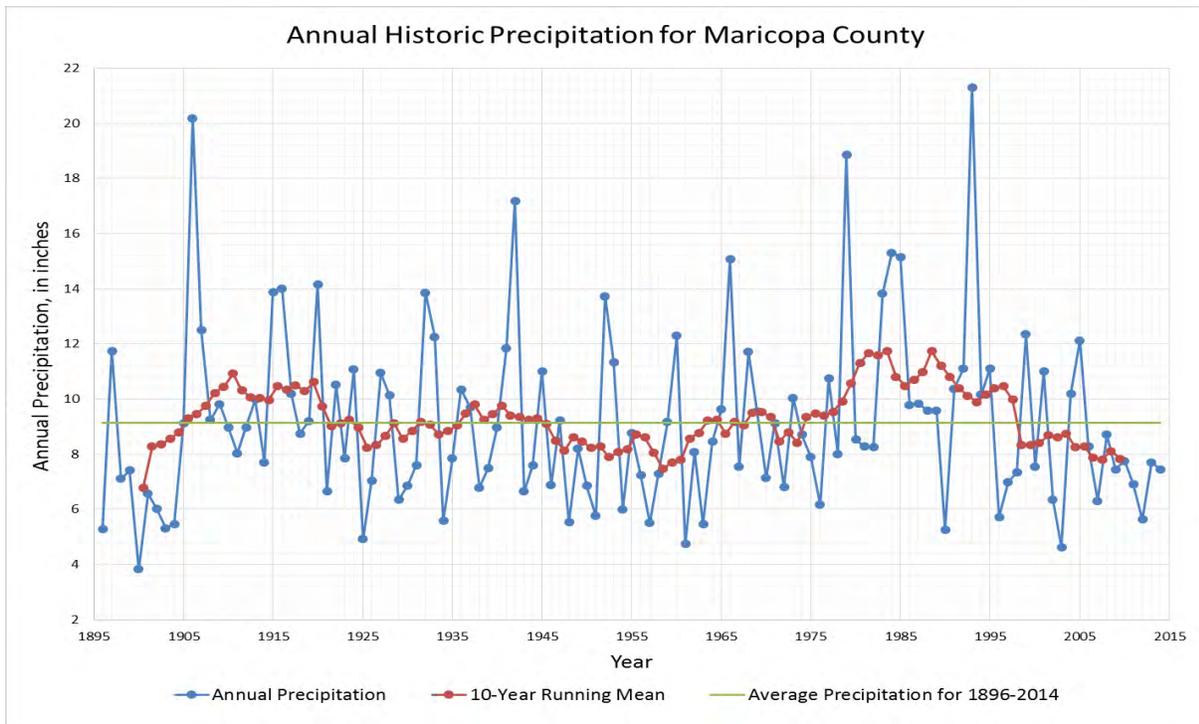
Beginning in June 1999<sup>38</sup>, Arizona has been under a continuous Gubernatorial declared drought emergency for 17 years. Over the past plan cycle (2010-2014), Maricopa County has been included in USDA Secretarial drought disaster declarations. Figures 5-1 and 5-2 depict the most recent precipitation data from NCDC regarding average statewide precipitation variances from normal. Between 1849 and 1905, the most prolonged period of drought conditions in 300 years occurred in Arizona (NOAA, 2003). Another prolonged drought occurred during the period of 1941 to 1965, during which time there were no spill releases into the Salt River (ADEM, 2001). The period from 1979-1983 appears to have been anomalously wet, while the rest of the historical records shows that dry conditions are most likely the normal condition for Arizona. Between 1998 and 2014, there have been more months with below normal precipitation than months with above normal precipitation, and definite indications of deficit trend in precipitation.

<sup>38</sup> Via the current declaration, PCA 99006, issued by the Governor in June 1999 and continued by Executive Order 2007-10.



Source: [http://cefa.dri.edu/Westmap/Westmap\\_home.php](http://cefa.dri.edu/Westmap/Westmap_home.php)

**Figure 5-1: Average annual precipitation variance from a normal based on 1896-2014 period for Maricopa County**



Source: [http://cefa.dri.edu/Westmap/Westmap\\_home.php](http://cefa.dri.edu/Westmap/Westmap_home.php)

**Figure 5-2: Annual historic precipitation for Maricopa County from 1896 to 2014**

Maricopa County remains in a drought cycle that began in 1995. Drought conditions gradually worsened until 2003, with a brief period of relief occurring during the period of winter 2004 to spring 2005 and again in 2008. Each year thereafter has resulted in less than normal precipitation. Other noteworthy dates include 1951 and 1991, which are the only two times in the Salt River Project's 100-year history that it has rationed water.

Compared to some areas of the state, Maricopa County and its surrounding communities are less affected by drought due to the availability of supplies from the Central Arizona Project (CAP), the Salt River Project (SRP), significant investments in recharge systems, and ground water sources (Jacobs and Morehouse, June 11-13, 2003). However, according to the Arizona Drought Task Force, the 2014 water year for the state recorded sub-normal precipitation for the 4<sup>th</sup> year in a row and the outlook for 2015 is not favorable to recovery with a substantially below normal winter snowpack.

### **Probability and Magnitude**

There are no commonly accepted return period or non-exceedance probability for defining the risk from drought (such as the 100-year or 1 percent annual chance of flood). The magnitude of drought is usually measured in time and the severity of the hydrologic deficit. There are several resources available to evaluate drought status and even project very near future expected conditions.

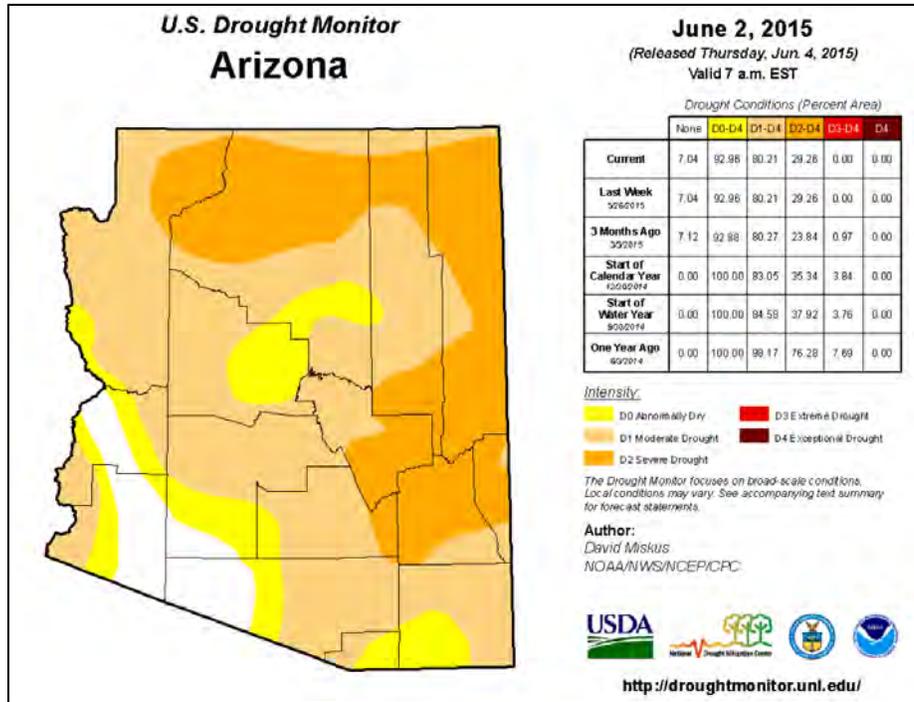
The National Integrated Drought Information System (NIDIS) Act of 2006 (Public Law 109-430) prescribes an interagency approach for drought monitoring, forecasting, and early warning (NIDIS, 2007). The NIDIS maintains the U.S. Drought Portal<sup>39</sup> which is a centralized, web-based access point to several drought related resources including the U.S. Drought Monitor (USDM) and the U.S. Seasonal Drought Outlook (USSDO). The USDM, shown in Figure 5-3, is a weekly map depicting the current status of drought and is developed and maintained by the National Drought Mitigation Center. The USSDO, shown in Figure 5-4, is a six month projection of potential drought conditions developed by the National Weather Service's Climate Prediction Center. The primary indicators for these maps for the Western U.S. are the Palmer Hydrologic Drought Index and the 60-month Palmer Z-index. The Palmer Drought Severity Index (PDSI) is a commonly used index that measures the severity of drought for agriculture and water resource management. It is calculated from observed temperature and precipitation values and estimates soil moisture. However, the Palmer Index is not considered to be consistent enough to characterize the risk of drought on a nationwide basis (FEMA, 1997) and neither of the Palmer indices is well suited to the dry, mountainous western United States.

In 2003, Governor Janet Napolitano created the Arizona Drought Task Force (ADTF), led by ADWR, which developed a statewide drought plan. The plan includes criteria for determining both short and long-term drought status for each of the 15 major watersheds in the state using assessments that are based on precipitation and stream flow. The plan also provides the framework for an interagency group which reports to the governor on drought status, in addition to local drought impact groups in each county and the State Drought Monitoring Technical Committee. Twice a year this interagency group reports to the governor on the drought status and the potential need for drought declarations. The counties use the monthly drought status reports to implement drought actions within their drought plans. The State Drought Monitoring Technical Committee uses a combination of the Standardized Precipitation Index (SPI) and streamflow records for the long-term drought status. Figure 5-5 presents the most current long term maps available as of the writing of this plan.

Each of the three maps show general agreement and indicate that the majority of Maricopa County currently remains in a drought condition with abnormally dry conditions and expected worsening over the next six months.

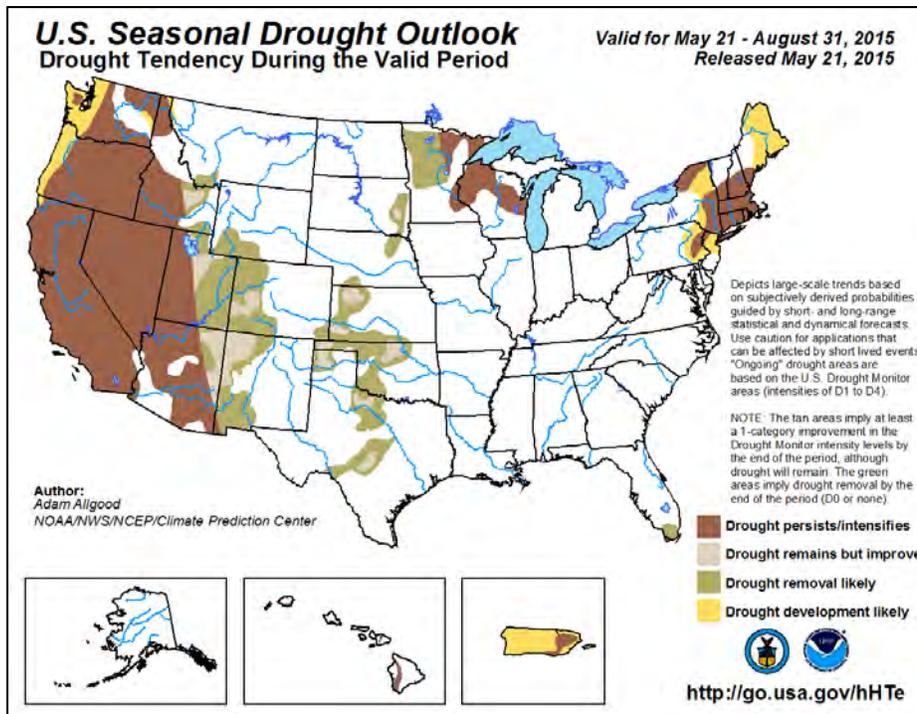
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<sup>39</sup> NIDIS U.S. Drought Portal website is located at: <http://www.drought.gov/portal/server.pt/community/drought.gov/202>



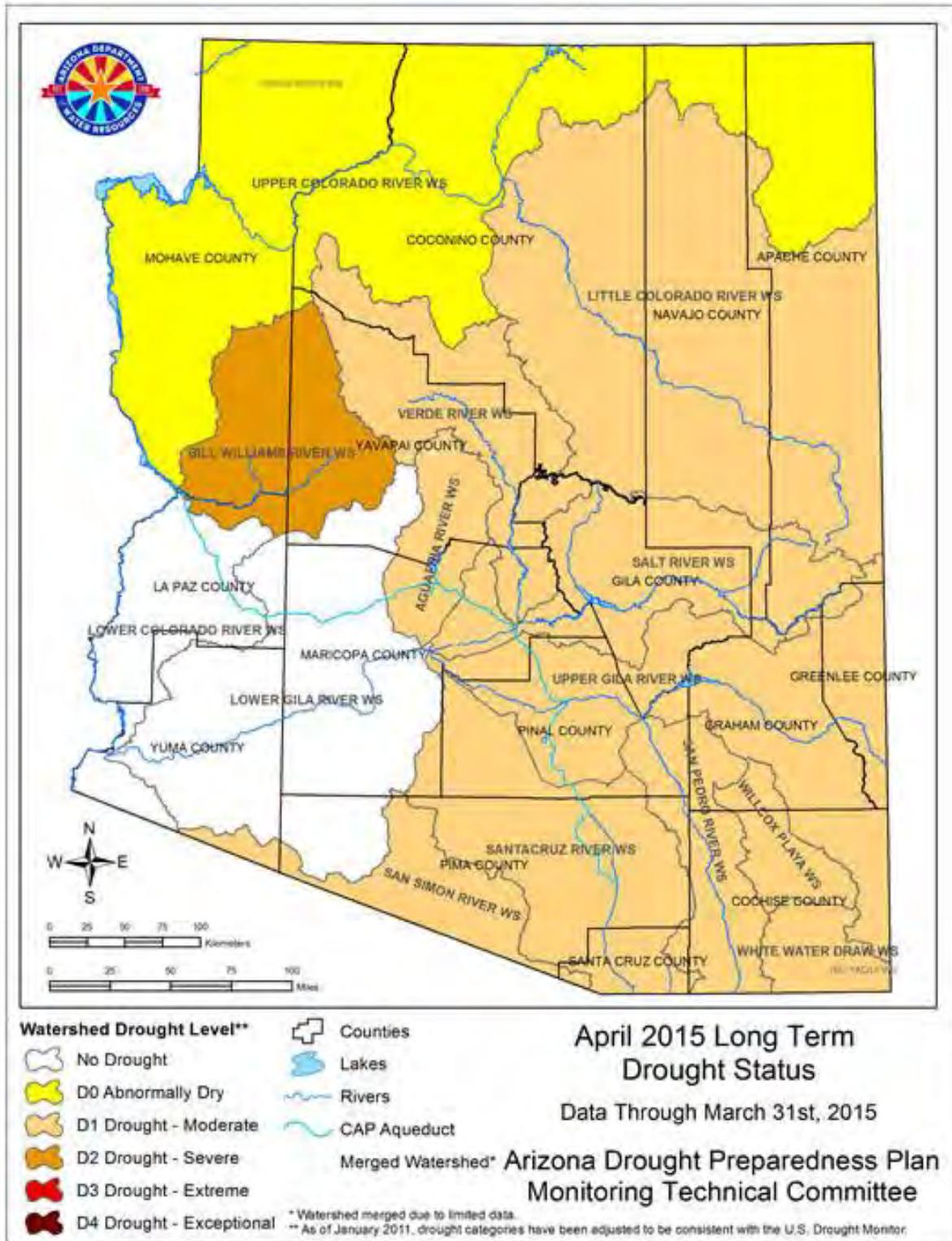
Source: [http://droughtmonitor.unl.edu/data/pngs/current/current\\_az\\_trd.png](http://droughtmonitor.unl.edu/data/pngs/current/current_az_trd.png)

Figure 5-3: U.S. Drought Monitor Map for June 2, 2015



Source: [http://www.cpc.ncep.noaa.gov/products/expert\\_assessment/sdo\\_summary.html](http://www.cpc.ncep.noaa.gov/products/expert_assessment/sdo_summary.html)

Figure 5-4: U.S. Seasonal Drought Outlook, May to August 2015



Source: <http://www.azwater.gov/AzDWR/StatewidePlanning/Drought/DroughtStatus2.htm>

Figure 5-5: Arizona long term drought status map for April 2015

When attempting to evaluate the probability and magnitude of drought in Maricopa County, it is helpful to remember that potable water in Maricopa County is derived from both surface water and groundwater. Surface water to Maricopa County users comes from two sources, the Colorado River, (through the Central Arizona Project (CAP) Canal), and in-state rivers (including streams and lakes). This surface water is a major renewable resource for the county, but can vary dramatically between years, seasons, and locations due to the state’s desert climate. In order to lessen the impact of such variations, water storage reservoirs and delivery systems have been constructed throughout the county, the largest of which are located on the Salt River, Verde River, Gila River, and Agua Fria River.

The other major source of water for Maricopa County is groundwater. This water has been pumped out of large subsurface natural reservoirs known as aquifers. While a significant supply of water remains stored in the aquifers, groundwater has historically been pumped out much more rapidly than it can be replenished through natural recharge, and has led to a condition known as overdraft. In 1980, Arizona implemented the Groundwater Management Code in order to promote conservation and long-range planning of water resources, including reducing reliance on groundwater supplies. Active Management Areas (AMAs) were formed based on groundwater basin areas and Maricopa County is mostly covered under the Phoenix AMA.

Reclaimed water, or effluent, is the only increasing source of water in the county, although it constitutes only a small amount of the overall water used. As the regional population grows; increasing amounts of reclaimed water will be available for agricultural, golf course, and landscape irrigation, as well as industrial cooling, and maintenance of wildlife areas.

**Climate Change Impacts**

Increased severity and duration of drought due to climate change is one of the “Key Messages” of the NCA report (Garfin, et.al., 2014). If current predictions are valid, the increase in drought will only magnify the current drought related challenges faced by the county. Accordingly, drought planning and contingencies for mitigating the impacts of drought should factor in longer than expected durations and possibly more frequent drought cycles.

**Vulnerability – CPRI Results**

Drought CPRI results for each community are summarized in Table 5-16 below.

<b>Table 5-16: CPRI results by jurisdiction for drought</b>					
<b>Participating Jurisdiction</b>	<b>Probability</b>	<b>Magnitude/ Severity</b>	<b>Warning Time</b>	<b>Duration</b>	<b>CPRI Score</b>
Avondale	Likely	Limited	>24 hours	>1 week	2.50
Buckeye	Likely	Limited	>24 hours	>1 week	2.50
Carefree	Highly Likely	Limited	12-24 hours	>1 week	2.95
Cave Creek	Highly Likely	Limited	>24 hours	>1 week	2.95
Chandler	Highly Likely	Limited	>24 hours	>1 week	2.95
El Mirage	Highly Likely	Critical	>24 hours	>1 week	3.25
Fountain Hills	Likely	Limited	>24 hours	>1 week	2.50
Fort McDowell Yavapai Nation	Possibly	Limited	>24 hours	>1 week	2.05
Gila Bend	Unlikely	Negligible	<6 hours	>1 week	1.75
Gilbert	Likely	Limited	>24 hours	>1 week	2.50
Glendale	Likely	Negligible	>24 hours	>1 week	2.20
Goodyear	Highly Likely	Limited	>24 hours	>1 week	2.95
Guadalupe	Unlikely	Negligible	<6 hours	<6 hours	1.45
Litchfield Park	Possibly	Negligible	>24 hours	>1 week	1.75
Unincorporated Maricopa County	Highly Likely	Negligible	>24 hours	>1 week	2.65
Mesa	Likely	Limited	>24 hours	>1 week	2.50
Paradise Valley	Likely	Limited	>24 hours	<1 week	2.40
Peoria	Highly Likely	Limited	>24 hours	>1 week	2.95
Phoenix	Likely	Limited	>24 hours	>1 week	2.50
Queen Creek	Possibly	Limited	>24 hours	>1 week	2.05
Salt River Pima-Maricopa Indian Community	Likely	Limited	>24 hours	>1 week	2.50
Salt River Project	Highly Likely	Limited	>24 hours	>1 week	2.95
Scottsdale	Possibly	Negligible	>24 hours	>1 week	1.75
Surprise	Possibly	Limited	>24 hours	>1 week	2.05
Tempe	Highly Likely	Limited	>24 hours	>1 week	2.95

**Table 5-16: CPRI results by jurisdiction for drought**

Participating Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Tolleson	Possibly	Critical	>24 hours	>1 week	2.35
Wickenburg	Highly Likely	Critical	>24 hours	>1 week	3.25
Youngtown	Likely	Critical	>24 hours	>1 week	2.80
<b>County-wide average CPRI =</b>					<b>2.50</b>

**Vulnerability – Loss/Exposure Estimations**

No standardized methodology exists for estimating losses due to drought and drought does not generally have a direct impact on critical and non-critical facilities and building stock. A direct correlation to loss of human life due to drought is improbable for Maricopa County. Instead, drought vulnerability is primarily measured by its potential impact to certain sectors of the county economy and natural resources include the following:

- Crop and livestock agriculture
- Municipal and industrial water supply
- Recreation/tourism
- Wildlife and wildlife habitat

Sustained drought conditions will also have secondary impacts to other hazards such as fissures, flooding, subsidence and wildfire. Extended drought may weaken and dry the grasses, shrubs, and trees of wildfire areas, making them more susceptible to ignition. Drought also tends to reduce the vegetative cover in watersheds, and hence decrease the interception of rainfall and increase the flooding hazard. Subsidence and fissure conditions are aggravated when lean surface water supplies force the pumping of more groundwater to supply the demand without the benefit of recharge from normal rainfall.

From 1995 to 2012, Maricopa County farmers and ranchers received over \$15.9 million in disaster related assistance funding from the U.S Department of Agriculture (USDA) for crop and livestock damages<sup>40</sup>. Over \$8.7 million of those funds were received from 1999 to 2003, which corresponds to the most severe period of the current drought cycle. According to the USDA, 35 to 55 percent of the disaster assistance money (USDA, 2004) in the last 10 years (1994-2004) can be attributed to drought related losses. Accordingly, at least \$5-8 million of these losses are likely drought related and \$4-5 million occurred in the span of 4 years. It is therefore realistic to expect at least \$1-2 million in agriculture related drought losses in a given year of severe drought conditions. Other direct costs such as increased pumping costs due to lowering of groundwater levels, and costs to expand water infrastructure to compensate for reduced yields or to develop alternative water sources, are a significant factor but very difficult estimate due to a lack of documentation. There are also the intangible costs associated with lost tourism revenues, and impacts to wildlife habitat and animals. Typically, these impacts are translated into the general economy in the form of higher food and agricultural goods prices and increase utility costs.

**Vulnerability – Development Trends**

Population growth in Maricopa County will also require additional water to meet the thirsty demands of potable, landscape, and industrial uses. All new residential, commercial, and/or industrial developments within the county that are comprised of six or more parcels and at least one parcel less than 36 acres in size, are required to demonstrate an Assured and Adequate Water Supply, as administered by ADWR. All water service providers operating within the Phoenix AMA are required to comply with this requirement. The ADTF is also working cooperatively with water providers within the state to develop System Water Plans that are comprised of three components:

<sup>40</sup> EWG Farm Subsidy Database, 2015, [http://farm.ewg.org/progdetail.php?fips=04013&progcode=total\\_dis](http://farm.ewg.org/progdetail.php?fips=04013&progcode=total_dis)

- *Water Supply Plan* – describes the service area, transmission facilities, monthly system production data, historic demand for the past five years, and projected demands for the next five, 10 and 20 years.
- *Drought Preparedness Plan* – includes drought and emergency response strategies, a plan of action to respond to water shortage conditions, and provisions to educate and inform the public.
- *Water Conservation Plan* – addresses measures to control lost and unaccounted for water, considers water rate structures that encourage efficient use of water, and plans for public information and education programs on water conservation.

The combination of these requirements will work to ensure that future development in Maricopa County will address and/or recognize drought.

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### **Profile Maps**

No profile maps are provided.

5.3.3 *Extreme Heat*

**Description**

Extreme Heat is the combination of very high temperatures and exceptionally humid conditions that exceed regionally based indices for perceived risk. The major human risks associated with extreme heat are as follows:

- *Heat Cramps:* May occur in people unaccustomed to exercising in the heat and generally ceases to be a problem after acclimatization.
- *Heat Syncope:* This refers to sudden loss of consciousness and is typically associated with people exercising who are not acclimated to warm temperatures. Causes little or no harm to the individual.
- *Heat Exhaustion:* While much less serious than heatstroke, heat exhaustion victims may complain of dizziness, weakness, or fatigue. Body temperatures may be normal or slightly to moderately elevated. The prognosis is usually good with fluid treatment.
- *Heatstroke:* Considered a medical emergency, heatstroke is often fatal. It occurs when the body's responses to heat stress are insufficient to prevent a substantial rise in the body's core temperature. While no standard diagnosis exists, a medical heatstroke condition is usually diagnosed when the body's temperature exceeds 105°F due to environmental temperatures. Rapid cooling is necessary to prevent death, with an average fatality rate of 15 percent even with treatment.

In addition to affecting people, extreme heat places significant stress on plants and animals leading to reduced agricultural yields and increased mortality rates.

**History**

For the period of 2006-2013, there were 632 confirmed deaths attributed to excessive natural heat in Maricopa County, with 106 and 110 of those deaths occurring in 2011 and 2012, respectively (MCDPH, 2014). The overwhelming majority of those deaths occurred during the hot summer months of June, July and August. Figure 5-6 is an excerpt from the Maricopa County Department of Public Health (MCDPH) report showing the distribution of deaths for 2013.

**Probability/Magnitude**

There are no recurrence or non-exceedance probabilities developed for extreme heat events in Maricopa County. The National Weather Service (NWS) Warning and Forecast Office (WFO) in Phoenix, with the technical support of the University of Maryland, designed a science-based, customized, extreme heat derivation technique developed specifically for the Phoenix metropolitan region. During Arizona's hottest months, the NWS WFO in Phoenix issues three types of heat-related messages, which are based on four factors – temperature, humidity, amount of cloudiness, and the expected duration of these conditions. The combination of factors that will trigger one of these heat-related messages varies according to the time of year. For example, a combination of factors that would result in an excessive heat warning in early May might not result in one in mid-July. The three NWS WFO products are:

- a. *Heat Advisory* – issued when the temperature is forecast to be unusually hot but not life-threatening.
- b. *Excessive Heat Watch* – issued when conditions are likely to result in a life-threatening heat emergency within the next 24 to 48 hours.
- c. *Excessive Heat Warning* – issued when a life-threatening heat emergency exists or is imminent.

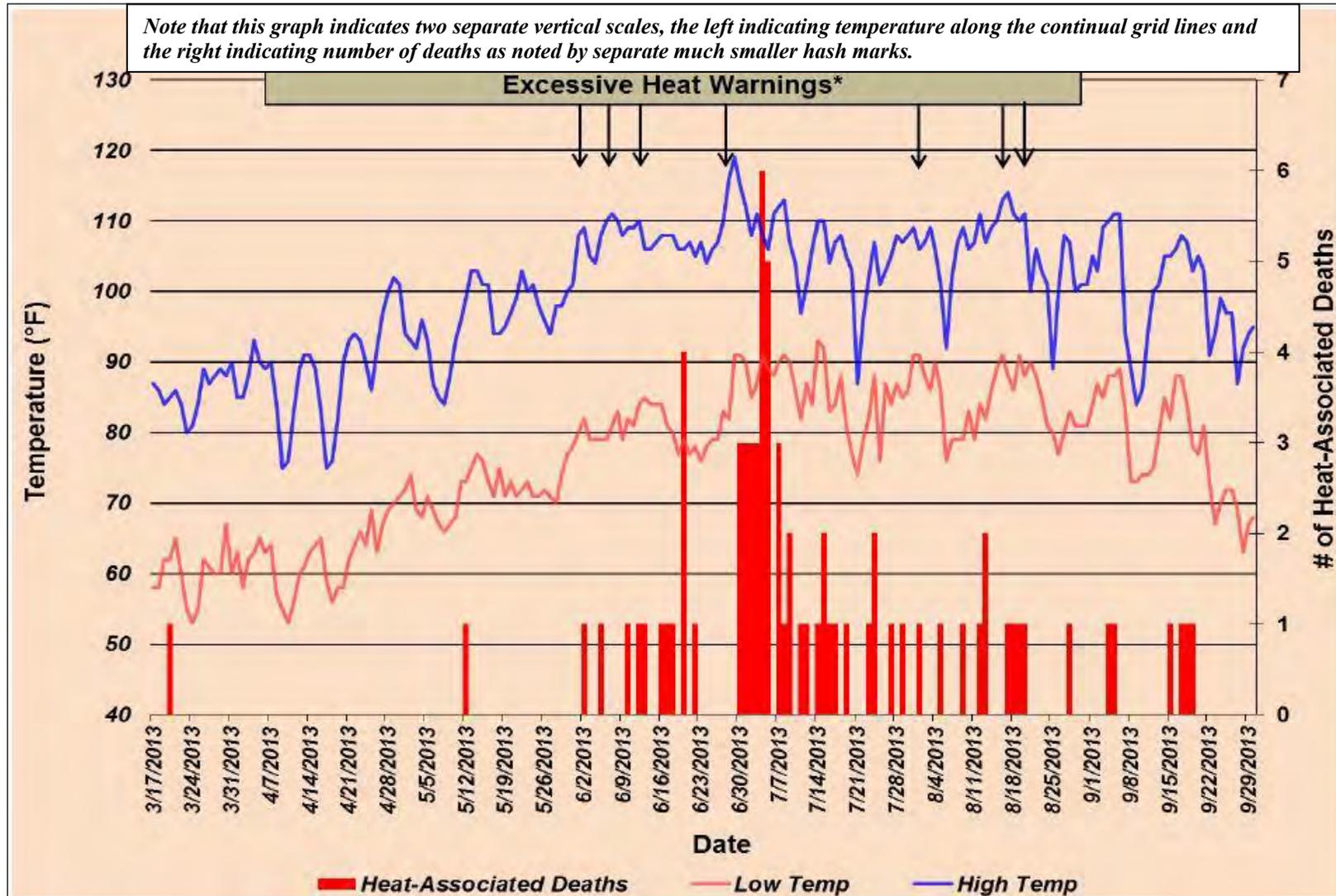


Figure 5-6: Maricopa County 2013 heat associated deaths by temperature and date

These products are intended to raise the public’s awareness to prevent heat illnesses from occurring. When the NWS WFO Phoenix issues one of its heat products, it should serve as a signal that on that day outdoor activities are not “business as usual”. If significantly hot weather is forecast, the NWS WFO Phoenix will issue an Excessive Heat Watch generally two to three days in advance. An Excessive Heat Watch is a way to give the public and emergency officials a “heads up” that extreme temperatures are expected. If significantly hot temperatures remain in the forecast for today or tomorrow, the Excessive Heat Watch will be upgraded to an Excessive Heat Warning, indicating that extreme heat has either arrived or is expected shortly (NWS-WFO Phoenix, 2015). Figure 5-7 shows a table of maximum and minimum excessive heat threshold values determined for the Phoenix metropolitan area and published by the NWS WFO Phoenix office.

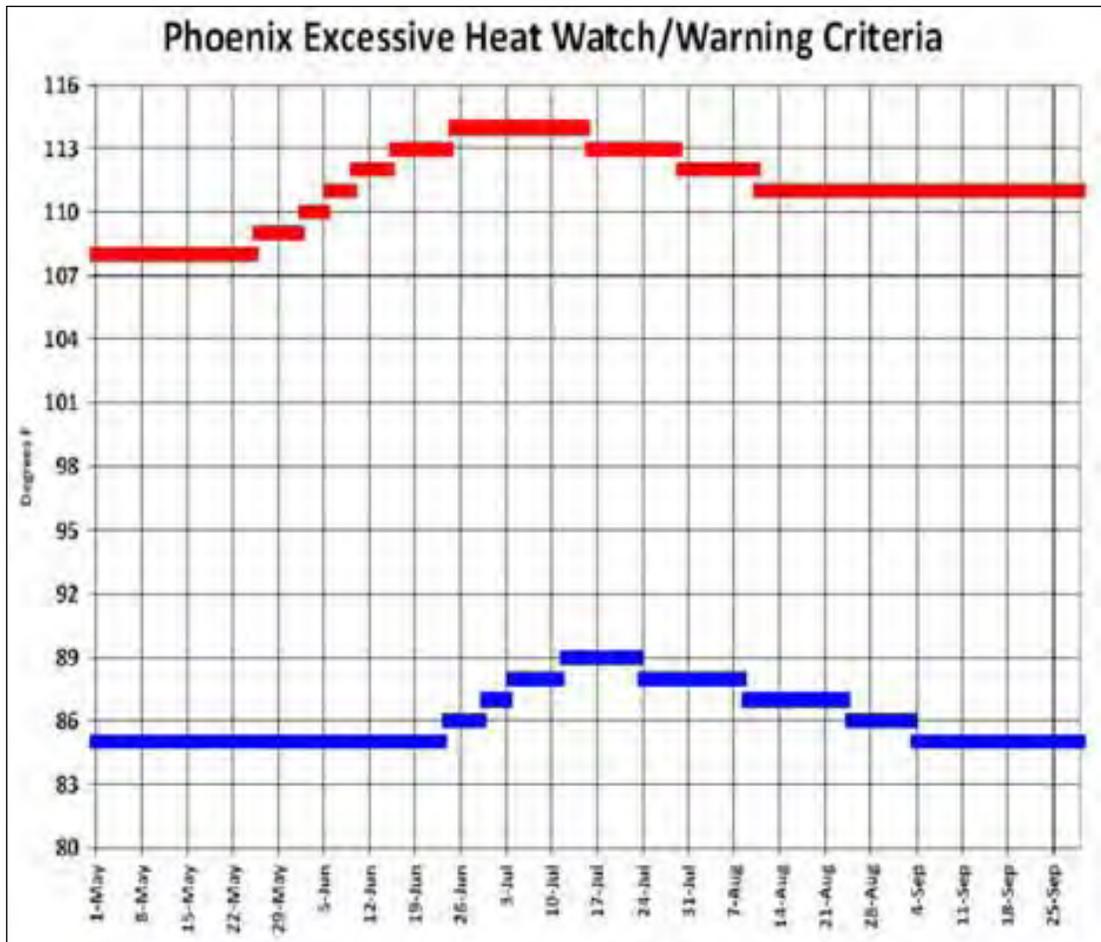


Figure 5-7: Phoenix excessive heat watch/warning criteria

Another indicator of the degree of danger associated with extreme heat is the Heat Index (HI) or the "Apparent Temperature". According to the NWS, the HI is an accurate measure of how hot it really feels when the Relative Humidity (RH) is added to the actual air temperature. Figure 5-8 is a quick reference published by the NWS that shows the HI based on current temperature and relative humidity, and levels of danger for HI values.

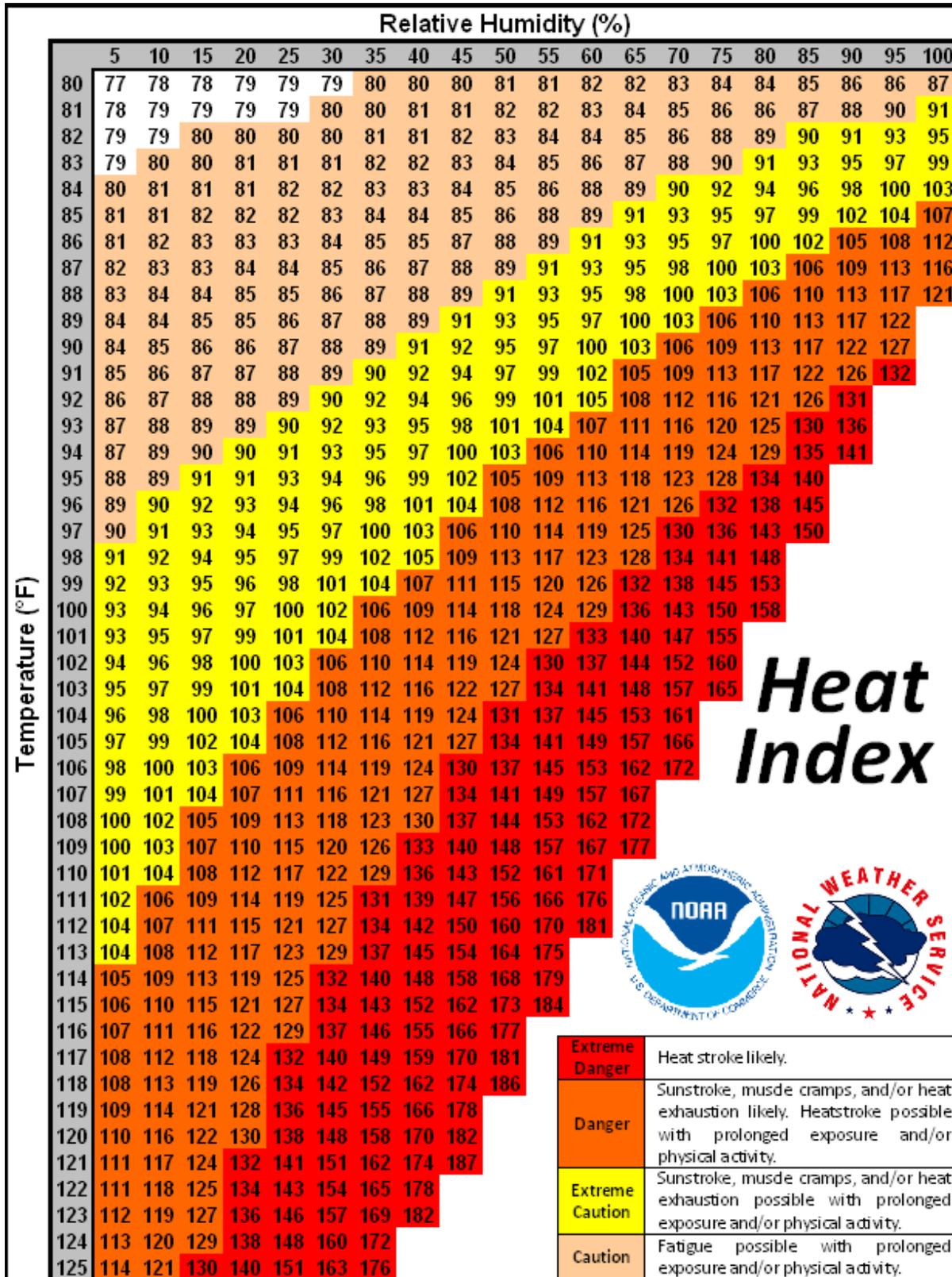


Figure 5-8: NWS Heat Index chart

**Climate Change Impacts**

Increased temperatures and durations associated with extreme heat events due to climate change is one of the “Key Messages” of the NCA report (Garfin, et.al., 2014). If current predictions are valid, the increase in both temperature and durations of extreme heat days within the urbanized areas of the county will magnify the current extreme heat related challenges faced by the county and participating jurisdictions. Extreme heat mitigation measures should probably consider that durations of events will be longer and the overall duration of hot summer temperatures is anticipated to lengthen as well.

**Vulnerability – CPRI Results**

Extreme Heat CPRI results for each community are summarized in Table 5-17 below.

**Table 5-17: CPRI results by jurisdiction for extreme heat**

Participating Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Avondale	Likely	Critical	>24 hours	>1 week	2.80
Buckeye	Highly Likely	Limited	12-24 hours	>1 week	3.10
Carefree	Highly Likely	Critical	12-24 hours	<6 hours	3.30
Cave Creek	Highly Likely	Limited	12-24 hours	<1 week	3.00
Chandler	Highly Likely	Critical	>24 hours	<1 week	3.15
El Mirage	Highly Likely	Critical	>24 hours	>1 week	3.25
Fountain Hills	Likely	Limited	12-24 hours	<1 week	2.55
Fort McDowell Yavapai Nation	Likely	Limited	>24 hours	>1 week	2.50
Gila Bend	Possibly	Limited	<6 hours	>1 week	2.50
Gilbert	Highly Likely	Limited	12-24 hours	<1 week	3.00
Glendale	Highly Likely	Critical	12-24 hours	>1 week	3.40
Goodyear	Highly Likely	Limited	>24 hours	<1 week	2.85
Guadalupe	Possibly	Negligible	<6 hours	<24 hours	2.30
Litchfield Park	Highly Likely	Limited	12-24 hours	>1 week	3.10
Unincorporated Maricopa County	Highly Likely	Critical	12-24 hours	<1 week	3.30
Mesa	Likely	Critical	>24 hours	<1 week	2.70
Paradise Valley	Highly Likely	Critical	>24 hours	<1 week	3.15
Peoria	Highly Likely	Critical	>24 hours	>1 week	3.25
Phoenix	Highly Likely	Critical	12-24 hours	<1 week	3.30
Queen Creek	Likely	Limited	12-24 hours	<1 week	2.55
Salt River Pima-Maricopa Indian Community	Highly Likely	Limited	>24 hours	>1 week	2.95
Salt River Project	Highly Likely	Limited	>24 hours	<1 week	2.85
Scottsdale	Likely	Limited	12-24 hours	<6 hours	2.35
Surprise	Likely	Critical	12-24 hours	<24 hours	2.75
Tempe	Highly Likely	Limited	>24 hours	>1 week	2.95
Tolleson	Likely	Critical	>24 hours	<1 week	2.70
Wickenburg	Highly Likely	Critical	12-24 hours	<1 week	3.30
Youngtown	Highly Likely	Critical	12-24 hours	<1 week	3.30
<b>County-wide average CPRI =</b>					<b>2.94</b>

**Vulnerability – Loss/Exposure Estimations**

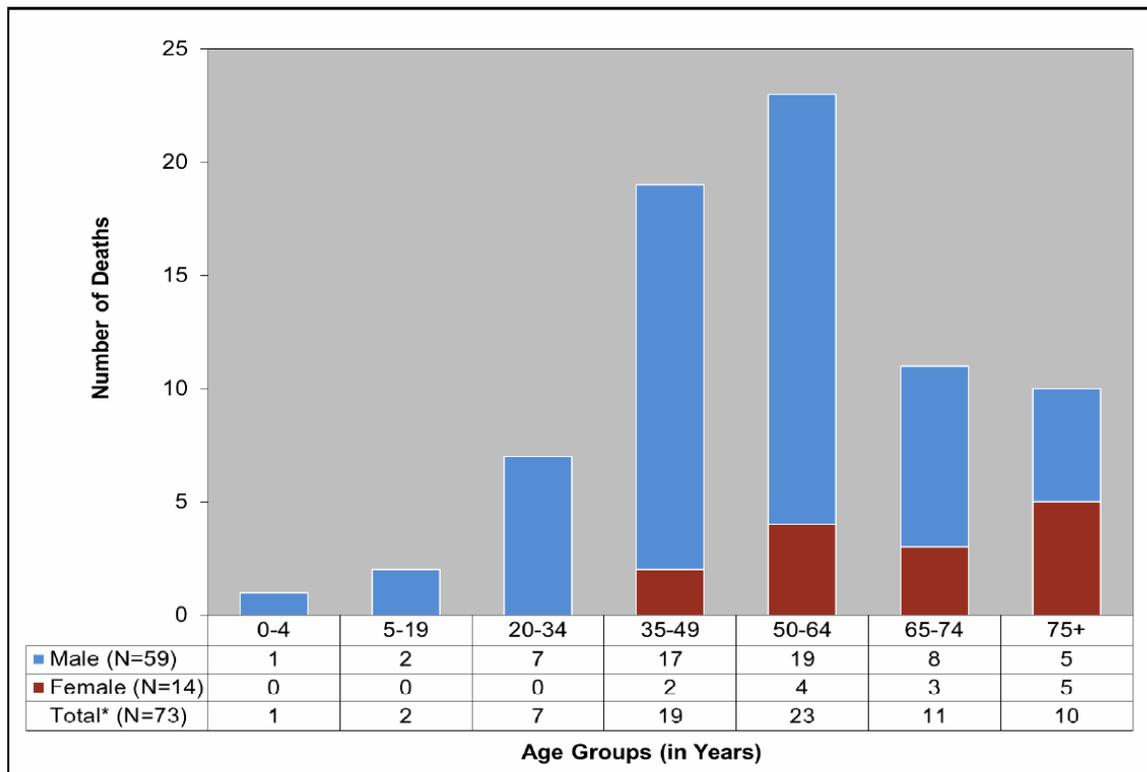
Losses due to extreme heat primarily occur in the form of death and illness. According to the MCDPH 2014 report, heat death statistics for Maricopa County for 2006-2013 are summarized as follows:

Year	Total Reported N	Confirmed N (%)	Ruled-Out N (%)	Pending N (%)
2006	104	85 (82%)	19 (18%)	0 (0%)
2007	131	51 (39%)	80 (61%)	0 (0%)
2008	97	50 (52%)	47 (48%)	0 (0%)
2009	114	74 (65%)	40 (35%)	0 (0%)
2010	142	82 (58%)	60 (42%)	0 (0%)
2011	144	106 (74%)	38 (26%)	0 (0%)
2012	173	110 (64%)	63 (36%)	0 (0%)
2013	145	74 (51%)	68 (47%)	3* (2%)
Total	1,050	632 (60%)	415 (40%)	3* (0%)

\* As of 03/21/2014, 3 cases were still pending a final cause of death.

Preliminary epidemiological studies by MCDPH bring to light a number of interesting potential variables at play in heat-caused and heat-related deaths. One noteworthy trend is how the deaths for 2013 track with high overnight temperatures as illustrated in Figure 5-6. Another variable indicating increased vulnerability is the number of deaths as they relate to age and gender, as shown in Figure 5-9.

There are currently no statistical analyses for projecting heat related deaths in Maricopa County; however, MCDPH continues to track data and monitor the above mentioned trends and other factors to determine if a statistical significance exists. Past history would indicate that multiple deaths due to extreme heat are highly likely.



\* One case was excluded due to unknown age.

**Figure 5-9: Heat caused/related deaths by age and gender for Maricopa County in 2013**

The towns of Carefree, Cave Creek, Fountain Hills, and Wickenburg are all located at higher elevations than the rest of the Plan jurisdictions. Accordingly, average maximum temperatures for these jurisdictions tend to be five to ten degrees Fahrenheit less than their neighboring communities, with average maximum summertime temperatures that range from 100° to 105° F. Extreme maximums for these communities occasionally push higher into the 110° to 115° F range, but with significantly less frequency than the other Plan jurisdictions. Accordingly, the hazard of Extreme Heat is considered to be more of a nuisance hazard for Carefree, Cave Creek, Fountain Hills and Wickenburg.

#### **Vulnerability – Development Trends**

In a metropolitan area, paved surfaces typically absorb and retain the heat of the day and then slowly release that heat back into the atmosphere through the night. When large areas are paved, the metropolitan area will develop an "urban heat island" effect, wherein temperatures in the center of the metropolitan area become much warmer than those on the outskirts of the valley due to the storage of heat during the day.

The metropolitan area of Maricopa County has grown dramatically in size over the last two decades, transforming a significant portion of the once natural desert and/or agricultural farm lands, into concrete and asphalt paved streets, roofs, driveways, sidewalks, parking lots, and other hardscapes. The result has been an intensification of the urban heat island effect and a steady increase in the nighttime low temperature. The impacts of this expansion include increased cooling costs and greater demand on power resources. According to the Arizona Republic, the Salt River Project estimates that for every degree increase in temperature, the utility's 610,000 residential customers pay \$3.2 million to \$3.8 million extra per month in cooling costs, or about \$5 to \$7 per customer per month (Az Republic, 1998).

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<http://www.wrh.noaa.gov/psr/general/safety/heat/>

#### **Profile Maps**

No profile maps are provided.

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5.3.4 *Fissure*

**Description**

Earth fissures are linear cracks, seams, or separations in the ground that extend from the groundwater table and are caused by tensional forces related to differential land subsidence. In many cases, fissures form as a direct result of subsidence caused by groundwater depletion. The surface expression of fissures ranges from less than a yard to several miles long and from less than an inch to tens of feet wide. The longest fissure is in Pinal County, near Picacho, and is over 10 miles long. Earth fissures occur at the edges of basins, usually parallel to mountain fronts, or above local bedrock highs in the subsurface, and typically cut across natural drainage patterns. Fissures can alter flood patterns, break buried pipes and lines, cause infrastructure to collapse, provide a direct conduit to the groundwater table for contaminants, and even pose a life safety hazard for both humans and animals.

**History**

In Arizona, fissures were first noted near Picacho in 1927. The number of fissures has increased dramatically since the 1950s because of groundwater depletion, first because of agriculture, and later because of exponential population growth. The risk posed by fissures is also increasing as the population expands into the outlying basin edges and mountain fronts. Several fissure case histories for the Maricopa County area are summarized below.

- San Tan Mountains, Maricopa and Pinal Counties
  - Foothills—undermining at least one home, and crossing several roads; dogs trapped in flash flood flowing through the fissure in 2007
  - Y-crack—crosses the Hunt Highway and San Tan Boulevard east of Sossaman Road; present at least by 1969; catastrophically re-opened from 195th Street and Happy Road to San Tan in 2005 and again in 2007, damaging roads, corrals, fences, driveways, stranding and trapping vehicles, and killing a horse
- Apache Junction/East Mesa, Maricopa County
  - Baseline and Meridian—fissure crosses diagonally under the intersection, fissure zone over one mile long
  - Ironwood and Guadalupe—industrial facilities built on top of several fissures in the area; fissures stop immediately east of subdivision; fissures crossing powerlines
- Mesa, Maricopa County
  - Loop 202 (Red Mountain Freeway)—fissure present at least since 1970s; attempted mitigation during construction cost \$200,000
  - Sossaman Road and University Drive—fissure runs diagonally through a subdivision along the entrance; fissure known in 1973 and subsequently backfilled
- Wintersburg, Maricopa County
  - Fissure runs perpendicular to power transmission lines near Palo Verde Nuclear Generating Station; made one road impassable
- Scottsdale, Maricopa County
  - CAP Canal—fissure paralleling the canal opened within a few feet of the lining on the east side in 2003
  - 40th St and Cholla—discovered in 1980s
- Flood retarding structures, Maricopa and Pinal Counties
  - McMicken Dam, White Tank Mountains—dam had to be removed and replaced; cost several million dollars

- Powerline FRS, Apache Junction—fissure just discovered within 1200 feet of the FRS; Flood Control District examining mitigation options

**Probability/Magnitude**

There are no methods of quantifiably predicting the probability and magnitude of earth fissures. The locations of potential fissures or extension of existing fissures may be predictable in specific areas if enough information about the subsurface material properties and groundwater levels are available. It is a fair assurance that continued groundwater depletion will result in more fissures. The magnitude of existing and new fissures is dependent upon several variables including the depth to groundwater, type and depth of surficial material present, amount and rate of groundwater depletion, groundwater basin depth, depth to bedrock, volume and rate of runoff due to precipitation entering the fissure, and human intervention.

The Arizona Geological Survey has mapped known and suspected fissure lineaments for certain areas of the county, with the latest update of GIS data having a version date of March 2014. In order to estimate the areas of immediate risk, the MJPT chose to create polygons that represent a 500-foot buffer along the mapped fissures and assign a HIGH hazard risk to areas within the buffered zone. These areas are indicated on Maps 3A, 3B, and 3C.

**Climate Change Impacts**

As previously stated, fissure development for most of the county is correlated to overdrafting of local and regional groundwater tables. The NCA report (Garfin, et.al., 2014) notes that one of the anticipated impacts of climate change for the Southwest is a reduction in precipitation and streamflow volumes. This impact could translate into a greater demand for groundwater which could further reduce groundwater levels and increase the formation of subsidence areas and fissure risk. The current management of groundwater withdrawals by the ADWR regulated active management areas (AMA) will likely serve to keep these impacts in check, but consideration for future expansion of fissures and subsidence zones could be warranted.

**Vulnerability – CPRI Results**

Fissure CPRI results for each community are summarized in Table 5-18 below.

<b>Participating Jurisdiction</b>	<b>Probability</b>	<b>Magnitude/ Severity</b>	<b>Warning Time</b>	<b>Duration</b>	<b>CPRI Score</b>
Avondale	Possibly	Negligible	<6 hours	>1 week	2.20
Buckeye	Unlikely	Negligible	>24 hours	<24 hours	1.10
Carefree	Unlikely	Negligible	>24 hours	<6 hours	1.00
Cave Creek	Unlikely	Negligible	>24 hours	<6 hours	1.00
Chandler	Unlikely	Negligible	>24 hours	<6 hours	1.00
El Mirage	Unlikely	Negligible	>24 hours	<24 hours	1.10
Fountain Hills	Possibly	Limited	<6 hours	>1 week	2.50
Fort McDowell Yavapai Nation	Unlikely	Negligible	6-12 hours	<24 hours	1.40
Gila Bend	Unlikely	Negligible	>24 hours	<6 hours	1.00
Gilbert	Likely	Negligible	<6 hours	<6 hours	2.35
Glendale	Likely	Negligible	12-24 hours	>1 week	2.35
Goodyear	Unlikely	Negligible	<6 hours	<6 hours	1.45
Guadalupe	Unlikely	Negligible	<6 hours	<6 hours	1.45
Litchfield Park	Unlikely	Negligible	<6 hours	<6 hours	1.45
Unincorporated Maricopa County	Likely	Limited	<6 hours	>1 week	2.95
Mesa	Highly Likely	Negligible	<6 hours	>1 week	3.10
Paradise Valley	Unlikely	Negligible	<6 hours	<1 week	1.65
Peoria	Possibly	Limited	<6 hours	>1 week	2.50
Phoenix	Unlikely	Negligible	<6 hours	>1 week	1.75
Queen Creek	Possibly	Negligible	<6 hours	<6 hours	1.90
Salt River Pima-Maricopa Indian Community	Likely	Limited	>24 hours	>1 week	2.50
Salt River Project	Possibly	Negligible	>24 hours	>1 week	1.75
Scottsdale	Possibly	Negligible	<6 hours	<6 hours	1.90

**Table 5-18: CPRI results by jurisdiction for fissure hazard**

Participating Jurisdiction	Probability	Magnitude/Severity	Warning Time	Duration	CPRI Score
Surprise	Possibly	Limited	<6 hours	<6 hours	2.20
Tempe	Possibly	Limited	>24 hours	>1 week	2.05
Tolleson	Unlikely	Negligible	>24 hours	>1 week	1.30
Wickenburg	Likely	Limited	>24 hours	>1 week	2.50
Youngtown	Unlikely	Limited	>24 hours	>1 week	1.60
<b>County-wide average CPRI =</b>					<b>1.82</b>

**Vulnerability – Loss/Exposure Estimations**

The Arizona Land Subsidence Group (ALSG) prepared a white paper in 2007 (ALSG, 2007) that summarizes fissure risk and various case studies. The following table is an excerpt from that report listing various types of damages that either have or could occur as a result of fissures:

**Table 1. Hazards Directly Associated with Earth Fissures**

<ul style="list-style-type: none"> <li>• Cracked or collapsing roads</li> <li>• Broken pipes &amp; utility lines</li> <li>• Damaged or breached canals</li> <li>• Cracked foundation/separated walls</li> <li>• Loss of agricultural land</li> <li>• Livestock &amp; wildlife injury or death</li> </ul>	<ul style="list-style-type: none"> <li>• Severed or deformed railroad track</li> <li>• Damaged well casing or wellhead</li> <li>• Disrupted drainage</li> <li>• Contaminated groundwater aquifer</li> <li>• Sudden discharge of ponded water</li> <li>• Human injury or death</li> </ul>
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*(After Pewe, 1990; Bell & Price, 1993; and Staff, 1993)*

Historic losses in Maricopa County due to fissures are mostly minor losses associated with damaged utilities, fences and dirt/gravel roads and driveways. The exception was the death of a horse in the town of Queen Creek’s Planning Area when a fissure opened up and engulfed the animal during a July 2007 storm. It is therefore very difficult to estimate economic losses due to a lack of an established methodology. Potential exposure of human and facility assets to high hazard fissure zones will be estimated instead, and no estimation of economic losses will be made. Table 5-19 summarizes the MJPT defined critical and non-critical facilities potentially exposed to a high hazard fissure zone. Table 5-20 summarizes population sectors exposed to the high hazard fissure zones. Residential structures exposed to high hazard fissure zones are summarized in Table 5-21.

In summary, \$27.4 million in critical and non-critical MJPT identified assets are exposed to high hazard fissure zones for the planning area. An additional \$76.2 million of Census 2010 residential structures are exposed to a high hazard fissure zone for the planning area. Regarding human vulnerability, a total population of 834 people, or 0.05% of the total 2010 Census population is potentially exposed to a high hazard fissure zone for the planning area. The potential for human death and/or injury is possible, although no occurrences have been documented to-date. Short and long-term displacement are also likely should structures become damaged.

**Vulnerability – Development Trends**

Earth fissures have been part of the landscape of southern and south central Arizona for at least the past seventy years (ALSG, 2007). As the communities of Maricopa County grow, it is inevitable that expansion into agricultural and undeveloped desert lands will occur, bringing the urban interface into more and more intersection with the geologic hazards related to fissures. The AZGS and state are working to provide better reporting and disclosure of fissure hazards, and county and local officials are becoming more aware of the dangers of not addressing them with development.

**Sources**

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URS, 2004, Maricopa County Hazard Mitigation Plan

**Profile Maps**

Map 3A, 3B, and 3C – Earth Fissure Hazard Map(s)

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<b>Community</b>	<b>Total Facilities Reported by Community</b>	<b>Impacted Facilities</b>	<b>Percentage of Total Community Facilities Impacted</b>	<b>Total Replacement Value of All Facilities Reported by Community (x \$1,000)</b>	<b>Estimated Replacement Value Exposed to Hazard (x \$1,000)</b>
<b>County-Wide Totals (Maricopa Only)</b>	<b>7545</b>	<b>9</b>	<b>0.11%</b>	<b>\$20,635,239</b>	<b>\$8,268</b>
Avondale	74	0	0.00%	\$179,460	\$0
Buckeye	103	0	0.00%	\$253,822	\$0
Carefree	6	0	0.00%	\$9,000	\$0
Cave Creek	40	0	0.00%	\$63,245	\$0
Chandler	277	0	0.00%	\$1,361,072	\$0
El Mirage	34	0	0.00%	\$285,542	\$0
Fountain Hills	28	0	0.00%	\$101,904	\$0
Fort McDowell Yavapai Nation	15	0	0.00%	\$411,000	\$0
Gila Bend	7	0	0.00%	\$36,000	\$0
Gilbert	2,889	1	0.03%	\$0	\$0
Glendale	1,214	3	0.25%	\$4,084,503	\$2,986
Goodyear	159	1	0.63%	\$148,573	\$0
Guadalupe	7	0	0.00%	\$10,800	\$0
Litchfield Park	5	0	0.00%	\$118,900	\$0
Unincorporated Maricopa County	426	2	0.47%	\$247,248	\$282
Mesa	450	1	0.22%	\$2,139,576	\$5,000
Paradise Valley	94	0	0.00%	\$469,000	\$0
Peoria	299	0	0.00%	\$282,333	\$0
Phoenix	913	0	0.00%	\$7,691,316	\$0
Queen Creek (Maricopa County Only)	124	1	0.81%	\$306,143	\$0
Salt River Pima-Maricopa Indian Community	21	0	0.00%	\$509,053	\$0
Salt River Project <sup>41</sup>	602	0	0.00%	N/A	N/A
Scottsdale	132	0	0.00%	\$55,000	\$0
Surprise	81	0	0.00%	\$444,613	\$0
Tempe	111	0	0.00%	\$1,373,300	\$0
Tolleson	10	0	0.00%	\$0	\$0
Wickenburg	14	0	0.00%	\$32,589	\$0
Youngtown	12	0	0.00%	\$21,247	\$0
Mesa (Pinal County Only)	15	0	0.00%	\$2,139,576	\$0
Queen Creek (Pinal County Only)	5	0	0.00%	\$306,143	\$0

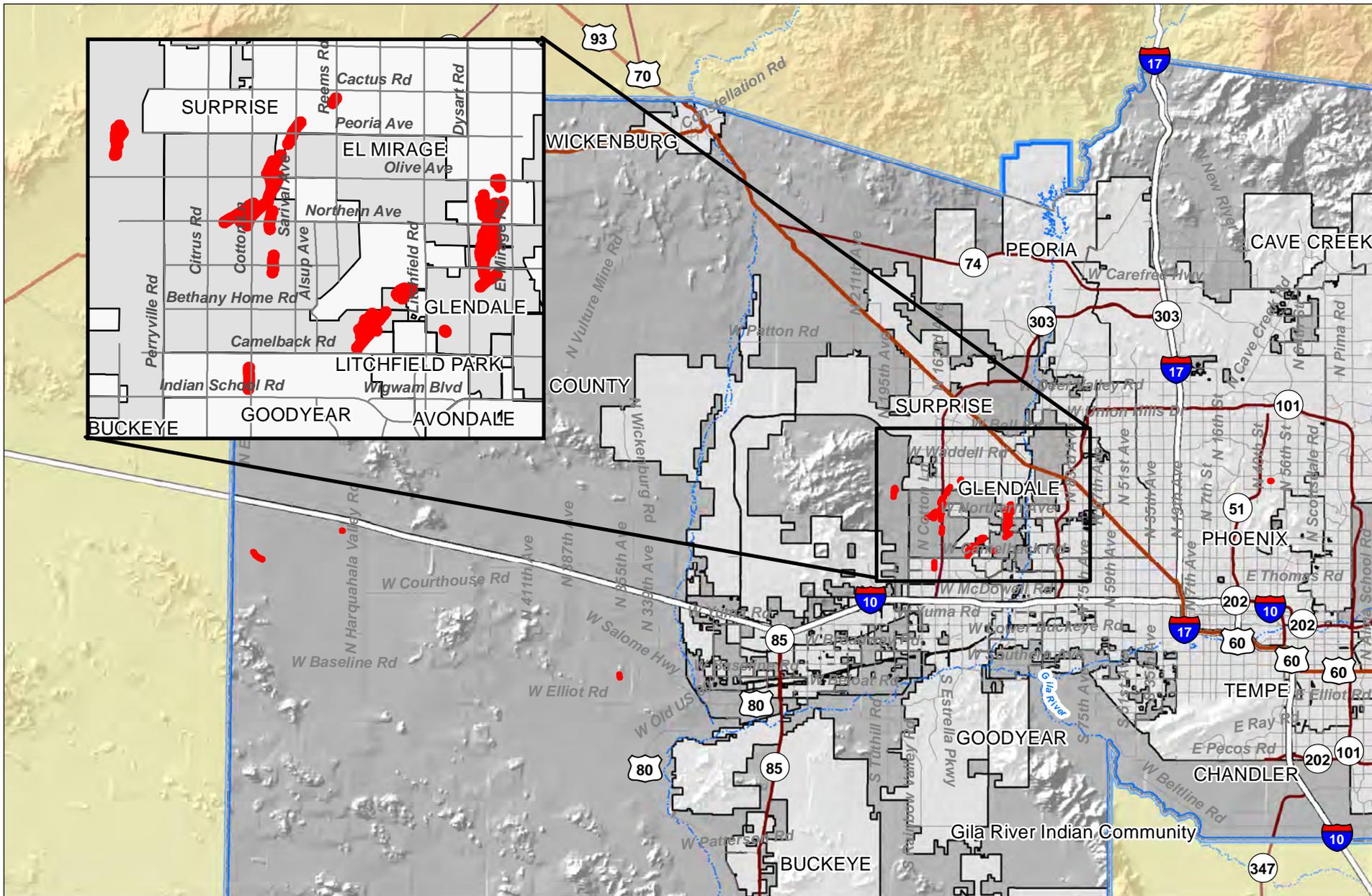
<sup>41</sup> Facility count for Salt River Project is not included in overall County-Wide totals and all data was provided by SRP.

**Table 5-20: Population sectors exposed to high hazard fissure zones**

Community	Total Population	Population Exposed		Total Population Over 65	Population Over 65 Exposed	
		Total	Percent		Total	Percent
<b>County-Wide Totals (Maricopa Only)</b>	<b>3,819,188</b>	<b>4,341</b>	<b>0.11%</b>	<b>462,886</b>	<b>1,002</b>	<b>0.22%</b>
Apache Junction (Maricopa County Portion)	280	0	0.00%	173	0	0.00%
Avondale	75,819	0	0.00%	4,114	0	0.00%
Buckeye	50,786	0	0.00%	3,410	0	0.00%
Carefree	3,367	0	0.00%	1,182	0	0.00%
Cave Creek	4,824	0	0.00%	906	0	0.00%
Chandler	235,715	0	0.00%	18,311	0	0.00%
El Mirage	31,717	0	0.00%	2,049	0	0.00%
Fountain Hills	971	0	0.00%	56	0	0.00%
Fort McDowell Yavapai Nation	22,395	0	0.00%	6,228	0	0.00%
Gila Bend	1,936	0	0.00%	186	0	0.00%
Gila River Indian Community	3,346	3	0.08%	165	0	0.02%
Gilbert	208,043	397	0.19%	12,602	26	0.21%
Glendale	226,187	7	0.00%	20,712	1	0.00%
Goodyear	65,306	0	0.00%	7,066	0	0.00%
Guadalupe	5,535	0	0.00%	449	0	0.00%
Litchfield Park	4,924	0	0.00%	1,128	0	0.00%
Unincorporated Maricopa County	276,418	1,352	0.49%	89,501	175	0.20%
Mesa	439,089	1,898	0.43%	62,001	713	1.15%
Paradise Valley	12,735	0	0.00%	2,884	0	0.00%
Peoria	154,057	0	0.00%	22,056	0	0.00%
Phoenix	1,446,886	198	0.01%	122,001	66	0.05%
Queen Creek	26,365	2	0.01%	1,366	0	0.01%
Salt River Pima-Maricopa Indian Community	6,315	0	0.00%	1,080	0	0.00%
Scottsdale	217,137	60	0.03%	43,465	13	0.03%
Surprise	117,441	423	0.36%	22,338	7	0.03%
Tempe	161,957	0	0.00%	13,668	0	0.00%
Tohono O'odham Nation	722	0	0.00%	45	0	0.00%
Tolleson	6,502	0	0.00%	588	0	0.00%
Wickenburg	6,340	0	0.00%	1,996	0	0.00%
Youngtown	6,073	0	0.00%	1,160	0	0.00%
Queen Creek (Pinal County Portion)	611	118	19.33%	75	15	20.18%
Peoria (Yavapai County Portion)	9	0	0.00%	2	0	0.00%

Community	Residential Building Count	Residential Building Exposure		Residential Building Replacement Value (x\$1,000)	Residential Building Value Exposed	
		Total	Percent		Total (x\$1,000)	Percent
<b>County-Wide Totals (Maricopa Only)</b>	<b>1,640,183</b>	<b>2,678</b>	<b>0.16%</b>	<b>\$513,435,920</b>	<b>\$579,361</b>	<b>0.11%</b>
Apache Junction (Maricopa County Portion)	280	0	0.00%	\$10,006	\$0	0.00%
Avondale	26,906	0	0.00%	\$5,303,222	\$0	0.00%
Buckeye	18,172	0	0.00%	\$4,109,349	\$0	0.00%
Carefree	2,249	0	0.00%	\$2,520,086	\$0	0.00%
Cave Creek	2,498	0	0.00%	\$2,157,129	\$0	0.00%
Chandler	94,181	0	0.00%	\$33,262,033	\$0	0.00%
El Mirage	11,306	0	0.00%	\$1,840,087	\$6	0.00%
Fountain Hills	308	0	0.00%	\$71,056	\$0	0.00%
Fort McDowell Yavapai Nation	13,107	0	0.00%	\$7,013,593	\$0	0.00%
Gila Bend	944	0	0.00%	\$89,786	\$0	0.00%
Gila River Indian Community	924	1	0.06%	\$117,456	\$48	0.04%
Gilbert	74,786	139	0.19%	\$27,321,667	\$62,268	0.23%
Glendale	90,351	3	0.00%	\$20,974,482	\$977	0.00%
Goodyear	25,052	0	0.00%	\$7,682,897	\$107	0.00%
Guadalupe	1,397	0	0.00%	\$202,819	\$0	0.00%
Litchfield Park	2,432	0	0.00%	\$1,036,335	\$0	0.00%
Unincorporated Maricopa County	142,950	578	0.40%	\$43,219,291	\$136,359	0.32%
Mesa	201,476	1,646	0.82%	\$46,756,733	\$253,324	0.54%
Paradise Valley	5,622	0	0.00%	\$8,385,999	\$0	0.00%
Peoria	64,807	0	0.00%	\$18,961,634	\$0	0.00%
Phoenix	590,454	116	0.02%	\$163,751,509	\$48,670	0.03%
Queen Creek	8,561	1	0.01%	\$3,043,070	\$306	0.01%
Salt River Pima-Maricopa Indian Community	2,621	0	0.00%	\$260,127	\$0	0.00%
Scottsdale	123,821	43	0.03%	\$77,330,425	\$34,435	0.04%
Surprise	52,623	152	0.29%	\$14,802,691	\$42,861	0.29%
Tempe	73,542	0	0.00%	\$21,418,707	\$0	0.00%
Tohono O'odham Nation	253	0	0.00%	\$29,312	\$0	0.00%
Tolleson	2,156	0	0.00%	\$348,281	\$0	0.00%
Wickenburg	3,609	0	0.00%	\$986,544	\$0	0.00%
Youngtown	2,793	0	0.00%	\$429,593	\$0	0.00%
Queen Creek (Pinal County Portion)	234	48	20.31%	\$56,074	\$11,391	20.31%
Peoria (Yavapai County Portion)	6	0	0.00%	\$1,344	\$0	0.00%

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**Legend**

- Maricopa County
- Mitigation Plan Extent
- Major Streams

**Earth Fissure Hazard Rating**

- High

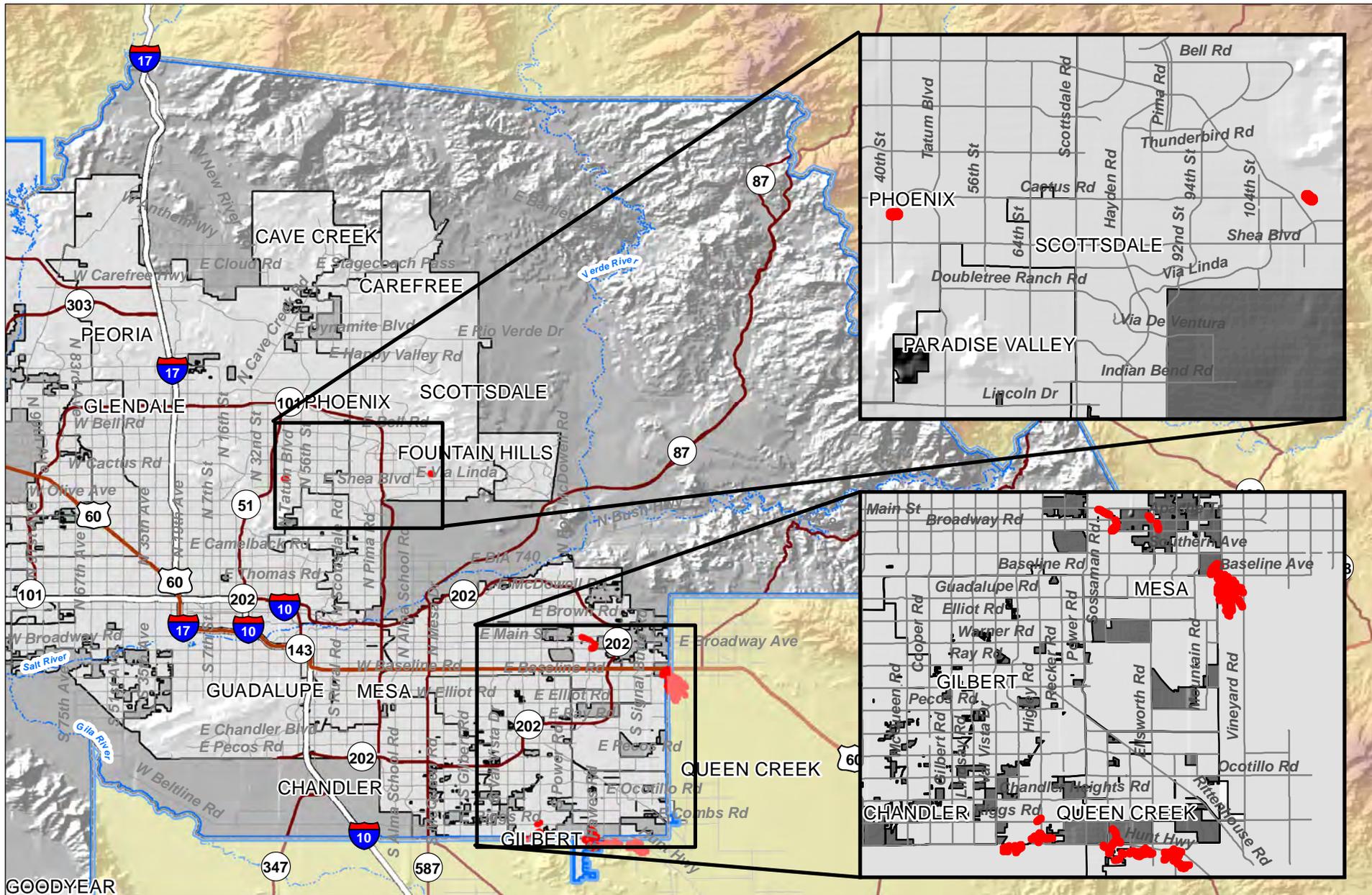
0 37.5 75 150  
 Miles

*Source: JE Fuller 2014; ALRIS 2006; AZGS 2014; TIGER 2014; MAG 2014*



**Maricopa County Multi-Jurisdictional Hazard Mitigation Plan**

**Map 3A**  
**Maricopa County**  
**Earth Fissure**  
**Hazard Map**  
 as of Dec 2014



**Legend**

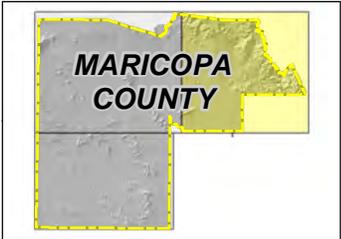
- Maricopa County
- Mitigation Plan Extent
- Major Streams

**Earth Fissure Hazard Rating**

- High

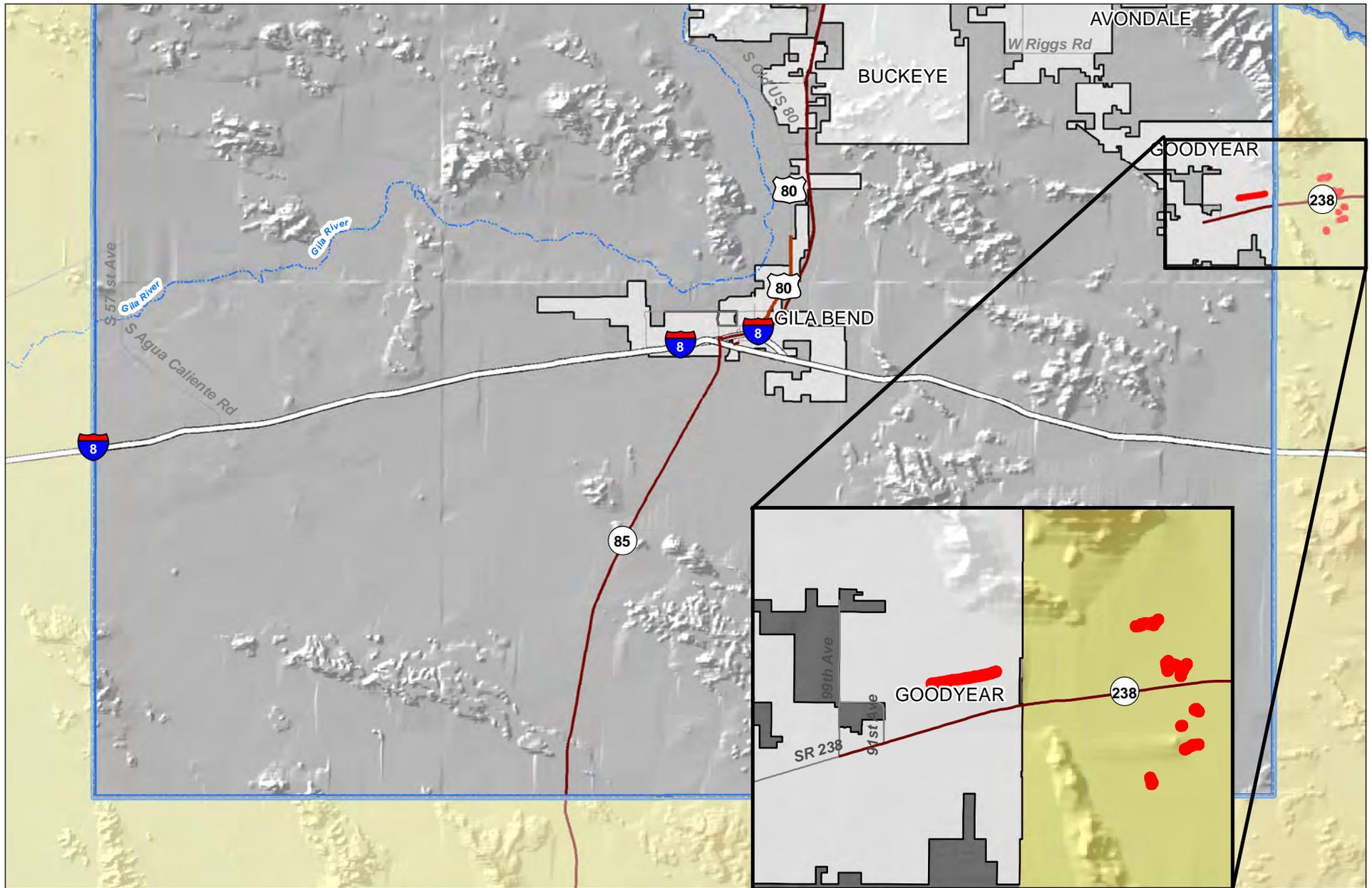
0 37.5 75 150  
 Miles

Source: JE Fuller 2014; ALRIS 2006; AZGS 2014; TIGER 2014; MAG 2014



**Maricopa County Multi-Jurisdictional Hazard Mitigation Plan**

**Map 3B**  
**Maricopa County**  
**Earth Fissure**  
**Hazard Map**  
 as of Dec 2014



**Legend**

-  Maricopa County
-  Mitigation Plan Extent
-  Major Streams

**Earth Fissure Hazard Rating**

-  High



0 37.5 75 150  
Miles

*Source: JE Fuller 2014; ALRIS 2006; AZGS 2014; TIGER 2014; MAG 2014*



**MARICOPA COUNTY**

**Maricopa County Multi-Jurisdictional Hazard Mitigation Plan**



**Map 3C**  
**Maricopa County Earth Fissure Hazard Map**  
as of Dec 2014

5.3.5 Flood / Flash Flood

**Description**

For the purpose of this Plan, the hazard of flooding addressed in this section will pertain to floods that result from precipitation/runoff related events. Other flooding due to dam and levee failures are addressed separately. The three seasonal atmospheric events that tend to trigger floods in Maricopa County are:

- *Tropical Storm Remnants:* Some of the worst flooding tends to occur when the remnants of a hurricane that has been downgraded to a tropical storm or tropical depression enter the state. These events occur infrequently and mostly in the early autumn, and usually bring heavy and intense precipitation over large regions causing severe flooding.
- *Winter Rains:* Winter brings the threat of low intensity; but long duration rains covering large areas can cause extensive flooding and erosion, particularly when combined with snowmelt.
- *Summer Monsoons:* A third atmospheric condition that brings flooding to Arizona is the annual summer monsoon. In mid to late summer the monsoon winds bring humid subtropical air into the state. Solar heating triggers afternoon and evening thunderstorms that can produce extremely intense, short duration bursts of rainfall. The thunderstorm rains are mostly translated into runoff and, in some instances, the accumulation of runoff occurs very quickly resulting in a rapidly moving flood wave referred to as a flash flood. Flash floods tend to be very localized and cause significant flooding of local watercourses.

Damaging floods in the county can be primarily categorized as either riverine, sheet flow, or local area flows. Riverine flooding occurs along established watercourses when the bank full capacity of a wash is exceeded by storm runoff and the overbank areas become inundated. There are also areas within the county where the watercourse is broad and generally shallow with ill-defined low flow paths and broad sheet flooding. Local area flooding is often the result of poorly designed or planned development wherein natural flow paths are altered, blocked or obliterated, and localized ponding and conveyance problems result. Erosion is also often associated with damages due to flooding.

**History**

Flooding is clearly a major hazard in Maricopa County as shown in Tables 5-2 and 5-3. Maricopa County has been part of 18 presidential disaster declarations for flooding and there have been at least 80 other reported flooding incidents that met the thresholds outlined in Section 5.1.

Over the past plan cycle, the following major flooding events have impacted the county:

- In January, 2010, severe winter weather hit the northern part of the state and heavy rains fell in the lower elevations causing significant flooding. In February, the governor declared a State of Emergency, and in March, the president declared a major disaster for Arizona (DR-1888). Preliminary damage assessment reports indicated that statewide, 51 residences were destroyed, 64 sustained major damage and 474 more were affected or received minor damage. The total Individual Assistance cost was estimated at \$3.6 million. Public assistance damages were primarily related to roads and bridges throughout the impacted areas with over \$11.4 million in damages estimated. The west side of Maricopa County was hit the hardest during the storms, with major flooding reported in the Tonopah, White Tanks, and Laveen areas. Damages across the county were estimated to exceed \$2.5 million (ADEM, 2014 and NCDC, 2014).
- In September 2014, heavy rainfall caused by the remnants of Hurricane Norbert resulted in extensive flooding throughout the state and especially in LaPaz, Maricopa and Pinal Counties. The Phoenix area experienced its wettest day in history, surpassing a record set in 1939. Preliminary damages assessments exceeded \$18 million. Among other impacts, major sections of freeways were closed, canals and flood control systems were overwhelmed, and two individuals perished in separate flash flood incidents. Several valley locations received rainfall that exceeded 500-year storm estimates. State search and rescue teams spent considerable resources performing numerous rescues of

stranded drivers and residents, in addition to services provided during flooding from two other hurricane remnants (Hurricane Lowell and Hurricane Odile), all of which impacted Arizona within a two-month period.

The following incidents represent older examples of major flooding that has impacted the county:

- In March 1978, a general winter storm centered over the mountains north and east of Phoenix, 35 miles north at Rock Springs. Extrapolation of intensity-probability data for one measurement of 5.73 inches of precipitation in a 24 hour period equates to a 400 year storm. The main source of flooding was due to Verde River runoff volume exceeding reservoir storage capacity above Bartlett Dam. Flooding also occurred along irrigation canals on the north side of the Phoenix metro area, and along tributaries of the Gila River and Queen Creek. There was one death countywide and \$37 million in total damages (USACE, 1978). Presidential Disaster Declaration 550-DR.
- In December 1978, a second major storm for the year hit hard with total precipitation that ranged from less than 1 inch in the northeastern and far southwestern portions of Arizona to nearly 10 inches in the Mazatzal Mountains northeast of Phoenix. A large area of the central mountains received over 5 inches. The main stems of the Gila, Salt, Verde, Agua Fria, Bill Williams, and Little Colorado Rivers, as well as a number of major tributaries, experienced especially large discharges. There were 4 deaths, \$16.3 million-public and \$5 million-agriculture losses estimated for Maricopa County (USACE, 1979). Presidential Disaster Declaration 570-DR.
- In February 1980, severe flooding in central Arizona set record discharges (later broken in 1993) in the Phoenix metro area on the Salt, Verde, Agua Fria and Gila Rivers, as well as on Oak Creek in north central Arizona. The Phoenix metro area was nearly cut in half with only two bridges remaining open over the Salt River. It took hours for people to move between Phoenix and the east valley using either the Mill Avenue or Central Avenue bridges. Even the Interstate 10 bridge was closed for fear that it had been damaged. Precipitation during this period at Crown King in the Bradshaw Mountains was 16.63 inches. Three people died statewide and damages were estimated at \$63,700,000 for Phoenix Metro Area (USACE, 1980). Presidential Disaster Declaration 614-DR.
- In January and February 1993, flooding damage occurred from winter storms associated with the El Nino phenomenon. These storms flooded watersheds throughout Arizona by dumping excessive rainfall amounts that saturated soils and increased runoff. Warm temperature snowmelt exacerbated the situation over large areas. Erosion caused tremendous damage and some communities along normally dry washes were devastated. Stream flow velocities and runoff volumes exceeded historic highs. Many flood prevention channels and retention reservoirs were filled to capacity and water was either diverted to the emergency spillways or the reservoirs were breached, causing extensive damage in some cases (e.g., Painted Rock Reservoir spillway). The new Mill Avenue Bridge and a large landfill in Mesa were washed away by the raging Salt River. The Gillespie Dam west of Phoenix was damaged as high water spread throughout low-lying areas. Many roads were closed and motorists were stranded by flooded dips and washes. Phoenix alone sustained at least \$4.2 million in damages from this prolonged period of heavy rains. County-wide, \$38 million in property and agricultural losses were estimated (USACE, 1993). Presidential Disaster Declaration 977-DR.
- In 1997, flooding from the remnants of Hurricane Nora resulted in the breaching of Narrows Dam. The calculated 24-hour, 100-year rainfall amount in NW Maricopa County exceeded at six ALERT measuring sites led to flash flooding in portions of NW Maricopa County. Two earthen dams gave way in Aguila and caused widespread flooding. One dike was located seven miles east of Aguila and the second in the center of the Martori Farms complex. Half of the cotton crop was lost at Martori Farms, as well as 300 to 500 acres of melons. Up to five feet of water filled Aguila. About 40 people were evacuated from the hardest hit area of the town. Water flowing down the Sols Wash was so high that the Sols Wash Bridge in Wickenburg was closed for more than two hours. There was some flooding below Sols Wash in the streets around Coffinger Park. Several houses in the area were also flooded. Highway 71 west of Wickenburg and Highway 95 north were closed due to high water from the storm.

- In October 2000, a large low pressure area dumped four to six inches of rain over parts of eastern LaPaz and western Maricopa County. This caused flash flooding in the upper part of the Centennial Wash between the Harcuvar and Harquahala mountain ranges. The heavy runoff flowed into the town of Wenden where water ran over the highway 60 bridge. At its peak, the wash was about 3/8ths of a mile wide and 12 feet deep. The resulting high water surged through the town of Wenden, with at least 400 residents evacuated. There was extensive damage to the town and for many miles downstream. The reported flow was in excess of 20,000 cfs. When the flood hit Wenden, it inundated some mobile homes, causing them to lift off their foundations and float down the wash. An estimated 125 mobile homes were affected. One migrant worker was killed when flood waters swept through the town during the early morning hours. Additional heavy rainfall hit this area several days later and complicated relief efforts for many of the homeless. A spotter in Wickenburg reported that route 93 was closed north of Wickenburg due to high water. Sols Wash was out of its banks and flooded Coffinger Park as well as nearby homes. The Vulture Mine road was closed and motorists had to be rescued. Flood water produced considerable damage to melon and cotton crops in northwest Maricopa County. The roads around Aguila were closed for several hours. A total of \$10.2 million in structure and crop damages was estimated (NCDC, 2008). Presidential Disaster Declaration 1347-DR.
- In late July – early August 2005, one of the heaviest rainfall events of the 2005 season struck the greater Phoenix metropolitan. Almost three inches of rain fell at many locations in the metro, causing roofs to collapse and streets to flood quickly. Up to 120 residents at the Crystal Creek Apartments in Phoenix were evacuated after 83 apartment units were damaged by flood waters. Additional roof damage was reported at the Scottsdale Community College, and Osco Drug store in Mesa, and a Frys grocery store in Tempe. In the Wickenburg area, very heavy rainfall caused flooding of low spots and washes. The peak flow in Hartman Wash was reported as 1,200 cfs. Major damage occurred at Bear Cat Manufacturing where a large robotic welding building was destroyed by the flood. Losses were estimated at over \$4 million (NCDC, 2009).
- In July 2007, very heavy rainfall accompanied thunderstorms over much of Maricopa County. Strong and gusty winds were also reported with some of the more intense storms. The storm closed roads in north Scottsdale and at least six water rescues were reported. Several automatic gauges reported between 1.5 and 2.0 inch per hour rainfall rates. Floodwaters caused \$2 million in damages at Desert Sun Elementary School in North Scottsdale.

Numerous other flood related incidents are summarized in the historic hazard database provided in Appendix D.

### **Probability and Magnitude**

For the purposes of this Plan, the probability and magnitude of flood hazard for Maricopa County jurisdictions are based on the one percent probability floodplains delineated on FEMA Flood Insurance Rate Maps (FIRMs), plus any provisional floodplain delineations used for in-house purposes by participating jurisdictions. FEMA and participating agencies and departments of Maricopa County jurisdictions have recently completed a map modernization program to update the FIRMs for the county into a digital FIRM (DFIRM) format and re-delineate a few select areas. The latest maps became effective in October 2013 and are the basis for flood hazard depictions in this Plan. Floodplain limits and GIS base files were provided by the FCDMC and National Flood Hazard Layer (NFHL) data from FEMA.

Two designations of flood hazard are used, with HIGH hazard areas being any “A” zone and MEDIUM flood hazard being all “Shaded X” zones. All “A” zones (e.g. – A, A1-99, AE, AH, AO, etc.) represent areas with a one percent (1%) probability of being flooded at a depth of one-foot or greater in any given year. All “Shaded X” zones represent areas with a 0.2 percent (0.2%) probability of being flooded at a depth of one-foot or greater in any given year. These two storms are often referred to as the 100-year and 500-year storm, respectively.

Maps 4A, 4B, and 4C present the high flood hazard areas for Maricopa County. When viewing the maps, the following should be noted:

- Neither the Fort McDowell Yavapai Nation, Salt River Pima-Maricopa Indian Community nor Salt River Project participate in the National Flood Insurance Program (NFIP). Consequently, neither of the tribes has FEMA mapped floodplains for their reservation boundaries except for Sycamore Creek and the Verde and Salt Rivers. The Local Planning Team for each tribe met and discussed identifying supplemental delineations of on reservation floodplains, and the results are indicated on the hazard profile maps.
- With the 2013 DFIRM update, a decision was made county-wide to map most of the non-Zone A areas as Shaded Zone X without the benefit of supporting hydrologic and hydraulic analysis. Obvious mountain and steep hillslope areas were excluded. For the sake of map clarity, only the high flood hazard areas are shown.

**Climate Change Impacts**

The NCA report (Garfin, et.al., 2014) notes that one of the anticipated impacts of climate change for the Southwest is a reduction in average annual precipitation and streamflow volumes. The report and supporting documents also indicate that winter storm intensities are anticipated to increase, which may lead to increased event-based flooding. This could be exacerbated by watersheds with reduced vegetation due to climate change induced drought or wildfire. Collectively these impacts could result in more severe winter season flooding and warrant mitigation efforts that design to less frequent storm events such as the 250- or 500-year (0.4 or 0.2% probability) recurrence intervals in anticipation of the impacts. Executive Order 13690<sup>42</sup>, titled “Federal Flood Risk Management Standard”, is a first step by the federal government in implementing requirements to look at less frequent storm events when establishing finished floor and flood elevation design standards for certain federally identified or funded facilities that are located with special flood hazard areas. Expansion of these policies to all floodplain development and flood mitigation may be warranted under the current climate change thinking.

**Vulnerability – CPRI Results**

Flooding CPRI results for each community are summarized in Table 5-22 below.

**Table 5-22: CPRI results by jurisdiction for flooding hazard**

Participating Jurisdiction	Probability	Magnitude/Severity	Warning Time	Duration	CPRI Score
Avondale	Likely	Limited	12-24 hours	<24 hours	2.45
Buckeye	Possibly	Critical	<6 hours	<24 hours	2.60
Carefree	Highly Likely	Limited	12-24 hours	<24 hours	2.90
Cave Creek	Highly Likely	Limited	6-12 hours	<6 hours	2.95
Chandler	Likely	Negligible	>24 hours	<24 hours	2.00
El Mirage	Highly Likely	Critical	12-24 hours	<24 hours	3.20
Fountain Hills	Possibly	Critical	6-12 hours	<1 week	2.55
Fort McDowell Yavapai Nation	Possibly	Limited	6-12 hours	<24 hours	2.15
Gila Bend	Possibly	Limited	<6 hours	<24 hours	2.30
Gilbert	Highly Likely	Limited	12-24 hours	<1 week	3.00
Glendale	Likely	Limited	12-24 hours	>1 week	2.65
Goodyear	Highly Likely	Limited	6-12 hours	<24 hours	3.05
Guadalupe	Possibly	Limited	<6 hours	<6 hours	2.20
Litchfield Park	Likely	Limited	12-24 hours	<24 hours	2.45
Unincorporated Maricopa County	Highly Likely	Critical	<6 hours	<24 hours	3.50
Mesa	Highly Likely	Limited	6-12 hours	<1 week	3.15
Paradise Valley	Possibly	Critical	12-24 hours	<24 hours	2.30
Peoria	Highly Likely	Critical	<6 hours	<24 hours	3.50
Phoenix	Likely	Critical	12-24 hours	<24 hours	2.75
Queen Creek	Highly Likely	Limited	12-24 hours	<24 hours	2.90
Salt River Pima-Maricopa Indian Community	Highly Likely	Critical	<6 hours	<1 week	3.60
Salt River Project	Highly Likely	Limited	6-12 hours	<6 hours	2.95
Scottsdale	Likely	Limited	<6 hours	<6 hours	2.65
Surprise	Highly Likely	Limited	<6 hours	<6 hours	3.10
Tempe	Highly Likely	Critical	6-12 hours	<1 week	3.45

<sup>42</sup> FEMA website access at: <https://www.fema.gov/federal-flood-risk-management-standard-ffirms>

**Table 5-22: CPRI results by jurisdiction for flooding hazard**

Participating Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Tolleson	Likely	Limited	12-24 hours	<24 hours	2.45
Wickenburg	Highly Likely	Catastrophic	<6 hours	<24 hours	3.80
Youngtown	Highly Likely	Catastrophic	<6 hours	<24 hours	3.80
<b>County-wide average CPRI =</b>					<b>2.87</b>

**Vulnerability – Loss/Exposure Estimations**

The estimation of potential exposure to high and medium flood hazards was accomplished by intersecting the human, residential and asset facilities with the flood hazard limits depicted on Maps 4A, 4B, and 4C. No loss estimations were made for this update. Only exposure of the human, residential and asset facilities are reported. Table 5-23 summarizes the MJPT identified critical and non-critical facilities potentially exposed to high hazard floods. Table 5-24 summarizes population sectors exposed to the high hazard flood areas. Residential structure exposures to high hazard flood areas are summarized in Table 5-25.

In summary, \$535.6 million in critical and non-critical MJPT identified assets are exposed to high hazard flood areas for the planning area. An additional \$14.5 billion of Census 2010 residential structures are located in high hazard flood areas for the planning area. Regarding human vulnerability, a total population of 104,120 people, or 2.73% of the total 2010 Census population, is potentially exposed to a high hazard flood area for the planning area. Based on the historic record, multiple deaths and injuries are plausible and a substantial portion of the exposed population is subject to displacement depending on the event magnitude.

It is duly noted that the exposure numbers presented above represent a comprehensive evaluation of the county as a whole. It is unlikely that a storm event would occur that would flood all of the delineated high flood hazard areas at the same time. Accordingly, actual event based losses and exposure are likely to be only a fraction of those summarized above.

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<b>Community</b>	<b>Total Facilities Reported by Community</b>	<b>Impacted Facilities</b>	<b>Percentage of Total Community Facilities Impacted</b>	<b>Total Replacement Value of All Facilities Reported by Community (x \$1,000)</b>	<b>Estimated Replacement Value Exposed to Hazard (x \$1,000)</b>
<b>County-Wide Totals (Maricopa Only)</b>	<b>7545</b>	<b>492</b>	<b>6.04%</b>	<b>\$20,635,239</b>	<b>\$535,579</b>
Avondale	74	11	14.86%	\$179,460	\$61,500
Buckeye	103	11	10.68%	\$253,822	\$24,838
Carefree	6	0	0.00%	\$9,000	\$0
Cave Creek	40	4	10.00%	\$63,245	\$2,000
Chandler	277	10	3.61%	\$1,361,072	\$36,216
El Mirage	34	2	5.88%	\$285,542	\$47,500
Fountain Hills	28	0	0.00%	\$101,904	\$0
Fort McDowell Yavapai Nation	15	0	0.00%	\$411,000	\$0
Gila Bend	7	2	28.57%	\$36,000	\$9,000
Gilbert	2,889	202	6.99%	\$0	\$0
Glendale	1,214	31	2.55%	\$4,084,503	\$0
Goodyear	159	21	13.21%	\$148,573	\$0
Guadalupe	7	0	0.00%	\$10,800	\$0
Litchfield Park	5	0	0.00%	\$118,900	\$0
Unincorporated Maricopa County	426	108	25.35%	\$247,248	\$144,262
Mesa	450	1	0.22%	\$2,139,576	\$5,000
Paradise Valley	94	2	2.13%	\$469,000	\$2,000
Peoria	299	4	1.34%	\$282,333	\$1,395
Phoenix	913	17	1.86%	\$7,691,316	\$116,002
Queen Creek (Maricopa County Only)	124	8	6.45%	\$306,143	\$24,500
Salt River Pima-Maricopa Indian Community	21	1	4.76%	\$509,053	\$13,366
Salt River Project <sup>43</sup>	602	43	7.14%	N/A	N/A
Scottsdale	132	12	9.09%	\$55,000	\$0
Surprise	81	2	2.47%	\$444,613	\$48,000
Tempe	111	0	0.00%	\$1,373,300	\$0
Tolleson	10	0	0.00%	\$0	\$0
Wickenburg	14	0	0.00%	\$32,589	\$0
Youngtown	12	0	0.00%	\$21,247	\$0
Mesa (Pinal County Only)	15	0	0.00%	\$2,139,576	\$0
Queen Creek (Pinal County Only)	5	0	0.00%	\$306,143	\$0

<sup>43</sup> Facility count for Salt River Project is not included in overall County-Wide totals and all data was provided by SRP.

**Table 5-24: Population sectors exposed to high hazard flood zones**

Community	Total Population	Population Exposed		Total Population Over 65	Population Over 65 Exposed	
		Total	Percent		Total	Percent
<b>County-Wide Totals (Maricopa Only)</b>	<b>3,819,188</b>	<b>104,120</b>	<b>2.73%</b>	<b>462,886</b>	<b>11,003</b>	<b>2.38%</b>
Apache Junction (Maricopa County Portion)	280	0	0.00%	173	0	0.00%
Avondale	75,819	1,111	1.47%	4,114	60	1.45%
Buckeye	50,786	479	0.94%	3,410	36	1.06%
Carefree	3,367	95	2.85%	1,182	34	2.84%
Cave Creek	4,824	385	7.97%	906	77	8.55%
Chandler	235,715	3,942	1.67%	18,301	273	1.49%
El Mirage	31,717	986	3.10%	2,058	111	5.40%
Fountain Hills	971	43	4.45%	56	6	10.24%
Fort McDowell Yavapai Nation	22,395	689	3.08%	6,228	181	2.91%
Gila Bend	1,936	420	21.69%	186	46	24.44%
Gila River Indian Community	3,346	74	2.21%	165	3	2.10%
Gilbert	208,043	5,503	2.64%	12,603	406	3.22%
Glendale	226,187	3,132	1.38%	20,711	112	0.54%
Goodyear	65,306	1,340	2.05%	7,066	150	2.13%
Guadalupe	5,535	122	2.19%	449	6	1.36%
Litchfield Park	4,924	61	1.23%	1,128	12	1.08%
Unincorporated Maricopa County	276,418	13,717	4.96%	89,501	1,526	1.70%
Mesa	439,089	2,875	0.65%	62,001	347	0.56%
Paradise Valley	12,735	307	2.41%	2,883	70	2.42%
Peoria	154,057	2,564	1.66%	22,057	378	1.71%
Phoenix	1,446,886	36,625	2.53%	122,001	2,176	1.78%
Queen Creek	26,365	320	1.22%	1,366	16	1.14%
Salt River Pima-Maricopa Indian Community	6,315	11	0.17%	1,080	0	0.04%
Scottsdale	217,137	25,245	11.62%	43,476	4,103	9.44%
Surprise	117,441	1,375	1.17%	22,333	341	1.53%
Tempe	161,957	983	0.61%	13,671	52	0.38%
Tohono O'odham Nation	722	0	0.00%	36	0	0.00%
Tolleson	6,502	399	6.14%	588	32	5.36%
Wickenburg	6,340	1,042	16.44%	1,996	340	17.06%
Youngtown	6,073	274	4.51%	1,160	109	9.42%
Queen Creek (Pinal County Portion)	611	46	7.54%	75	5	6.61%
Peoria (Yavapai County Portion)	7	0	0.00%	1	0	0.00%

Community	Residential Building Count	Residential Building Exposure		Residential Building Replacement Value (x\$1,000)	Residential Building Value Exposed	
		Total	Percent		Total (x\$1,000)	Percent
<b>County-Wide Totals (Maricopa Only)</b>	<b>1,640,183</b>	<b>46,923</b>	<b>2.86%</b>	<b>\$513,435,968</b>	<b>\$14,514,696</b>	<b>2.83%</b>
Apache Junction (Maricopa County Portion)	280	0	0.00%	\$10,009	\$0	0.00%
Avondale	26,906	402	1.49%	\$5,303,219	\$59,589	1.12%
Buckeye	18,179	181	0.99%	\$4,111,009	\$28,772	0.70%
Carefree	2,242	57	2.55%	\$2,518,427	\$43,419	1.72%
Cave Creek	2,498	209	8.38%	\$2,157,129	\$126,153	5.85%
Chandler	94,159	1,386	1.47%	\$33,256,924	\$277,608	0.83%
El Mirage	11,329	413	3.65%	\$1,845,196	\$41,867	2.27%
Fountain Hills	308	16	5.07%	\$71,056	\$2,402	3.38%
Fort McDowell Yavapai Nation	13,107	438	3.34%	\$7,013,593	\$141,191	2.01%
Gila Bend	944	264	27.96%	\$89,786	\$16,690	18.59%
Gila River Indian Community	924	21	2.22%	\$117,456	\$1,682	1.43%
Gilbert	74,795	1,982	2.65%	\$27,326,029	\$479,536	1.75%
Glendale	90,342	2,541	2.81%	\$20,970,120	\$365,830	1.74%
Goodyear	25,050	552	2.20%	\$7,681,879	\$123,480	1.61%
Guadalupe	1,399	30	2.17%	\$203,837	\$2,867	1.41%
Litchfield Park	2,432	29	1.20%	\$1,036,335	\$8,237	0.79%
Unincorporated Maricopa County	142,950	5,492	3.84%	\$43,219,339	\$1,348,738	3.12%
Mesa	201,476	1,441	0.72%	\$46,756,734	\$243,068	0.52%
Paradise Valley	5,618	130	2.32%	\$8,380,285	\$130,228	1.55%
Peoria	64,811	1,277	1.97%	\$18,967,348	\$274,168	1.45%
Phoenix	590,454	13,101	2.22%	\$163,751,508	\$3,263,922	1.99%
Queen Creek	8,561	103	1.20%	\$3,043,070	\$28,214	0.93%
Salt River Pima-Maricopa Indian Community	2,621	3	0.12%	\$260,127	\$192	0.07%
Scottsdale	123,944	14,418	11.63%	\$77,366,204	\$7,131,770	9.22%
Surprise	52,585	818	1.56%	\$14,784,216	\$98,602	0.67%
Tempe	73,573	615	0.84%	\$21,422,260	\$124,855	0.58%
Tohono O'odham Nation	138	0	0.00%	\$8,456	\$0	0.00%
Tolleson	2,156	125	5.82%	\$348,281	\$13,512	3.88%
Wickenburg	3,610	665	18.42%	\$986,793	\$118,802	12.04%
Youngtown	2,792	212	7.60%	\$429,344	\$19,303	4.50%
Queen Creek (Pinal County Portion)	234	20	8.57%	\$56,074	\$3,205	5.72%
Peoria (Yavapai County Portion)	5	1	19.62%	\$981	\$128	13.08%

**Vulnerability – Repetitive Loss Properties**

Repetitive Loss (RL) properties are those NFIP-insured properties that, since 1978, have experienced multiple flood losses. FEMA tracks RL properties with a particular interest in identifying Severe RL (SRL) properties. RL properties demonstrate a track record of repeated flooding for a certain location and are one element of the vulnerability analysis. RL properties are also important to the NFIP, since structures that flood frequently put a strain on the National Flood Insurance Fund. FEMA records dated January 31, 2015, (provided by ADWR) indicate that there are 188 identified RL properties in Maricopa County, 72 of which have been mitigated. The total payments made for building and contents for the record period is nearly \$6.9 million. Table 5-26 summarizes the RL property characteristics by jurisdiction. If a jurisdiction is not listed, then there are no RL properties for that jurisdiction.

<b>Jurisdiction</b>	<b>No. of Properties</b>	<b>No. of Properties Mitigated</b>	<b>Total Payments</b>
Avondale	1	0	\$9,865
Buckeye	7	0	\$182,818
Glendale	3	3	\$74,392
Goodyear	1	0	\$210,035
Unincorporated Maricopa County	72	15	\$2,382,980
Mesa	5	1	\$163,069
Paradise Valley	5	0	\$645,093
Peoria	2	0	\$43,849
Phoenix	73	40	\$2,695,860
Scottsdale	5	5	\$54,198
Tempe	4	3	\$203,327
Tolleson	7	5	\$142,463
Wickenburg	3	0	\$75,682

**Vulnerability – Development Trends**

For most Maricopa County jurisdictions, adequate planning and regulatory tools are in place to regulate future development. The FCDMC is very proactive in delineating floodplains ahead of development in the less populated areas of the county, and works cooperatively with all incorporated jurisdictions to update and refine existing floodplain mapping as needed.

**Sources**

Arizona Division of Emergency Management, 2013, State of Arizona Multi-Hazard Mitigation Plan, 2013 Update.

FEMA, 2001, Understanding Your Risks; Identifying Hazards and Estimating Losses, FEMA Document No. 386-2.

U.S. Army Corps of Engineers, Los Angeles District, 1978, Flood Damage Report, 28 February-6 March 1978 on the storm and floods in Maricopa County, Arizona, FCDMC Library #802.024.

U.S. Army Corps of Engineers, Los Angeles District, 1979, Flood Damage Report, Phoenix Metropolitan Area, December 1978 Flood, FCDMC Library #802.027.

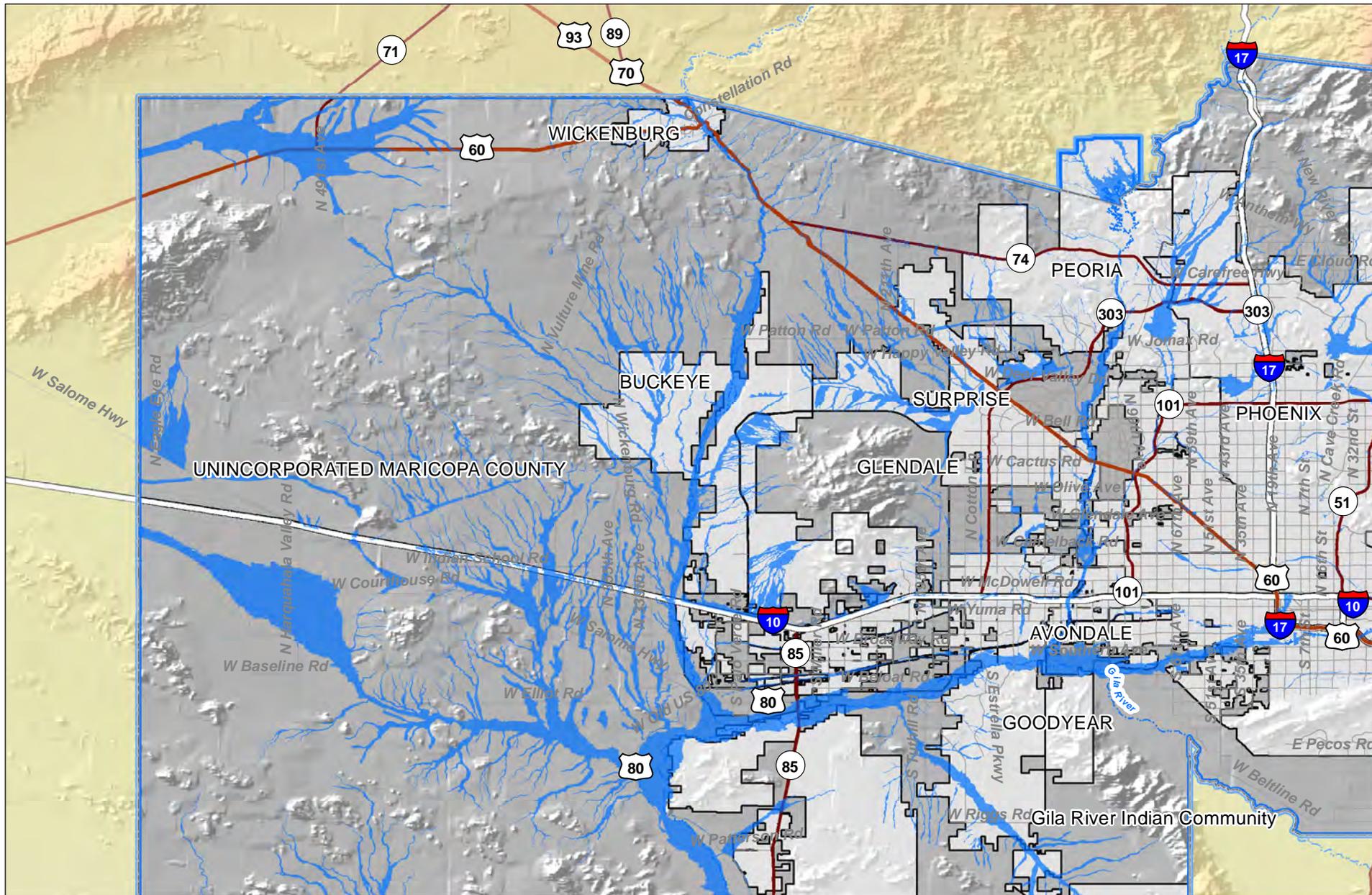
U.S. Army Corps of Engineers, Los Angeles District, 1980, Phoenix Flood Damage Survey, FCDMC Library #802.029.

U.S. Army Corps of Engineers, Los Angeles District, 1994, Flood Damage Report, State of Arizona, Floods of 1993.

**Profile Maps**

Maps 4A, 4B, and 4C – Flood Hazard Maps

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**Legend**

-  Maricopa County
-  Mitigation Plan Extent
-  Major Streams

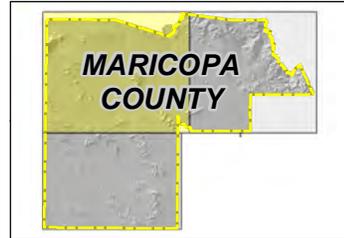
**Flood Hazard Rating**

-  High



0    37.5    75    150  
Miles

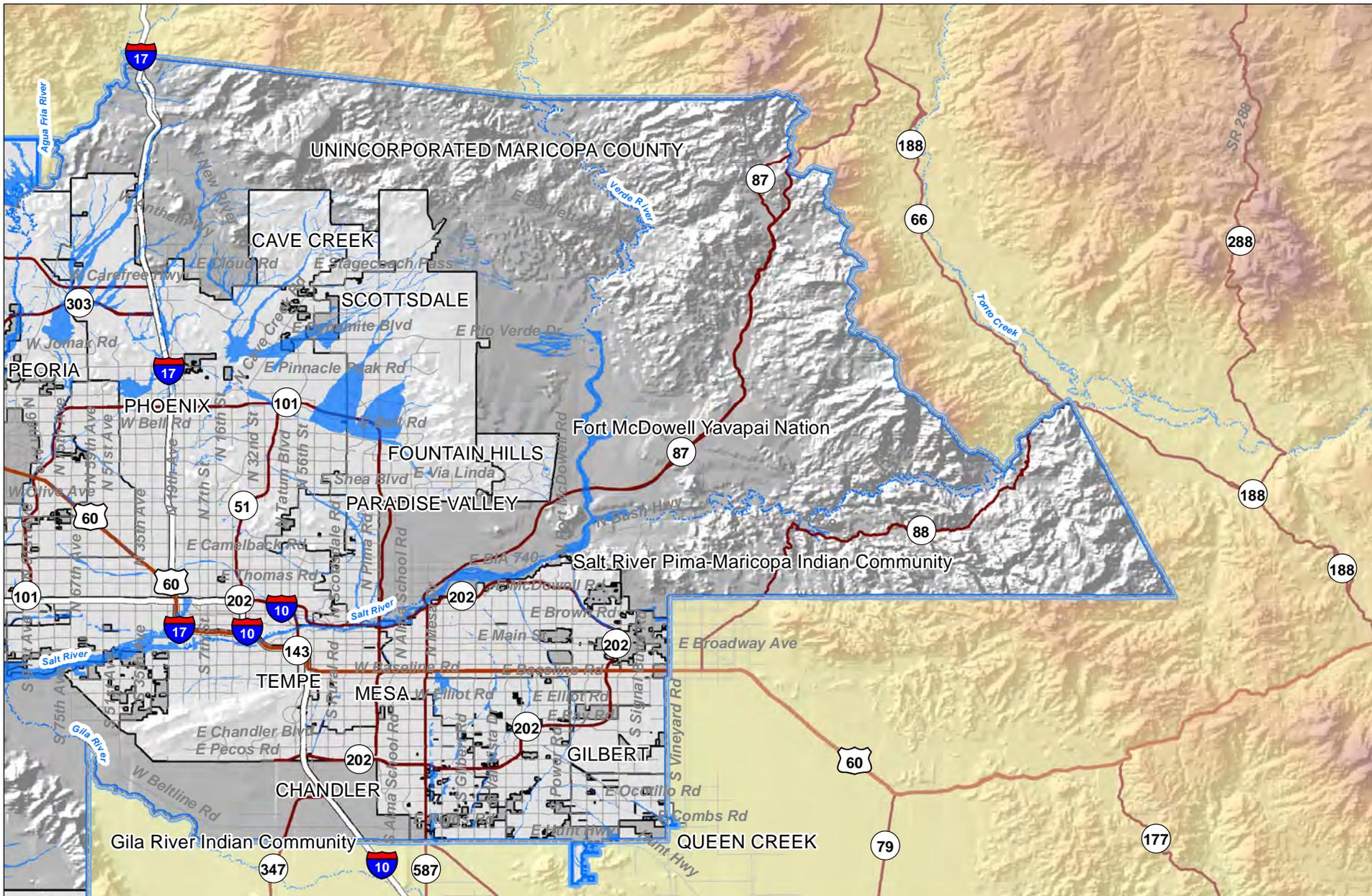
*Source: JE Fuller 2014; FEMA 2014; FCDMC 2014, MAG 2014; TIGER 2104*



**Maricopa County Multi-Jurisdictional  
Hazard Mitigation Plan**



**Map 4A  
Maricopa County  
Flood Hazard Map  
as of Dec 2014**



**Legend**

-  Maricopa County
-  Mitigation Plan Extent
-  Major Streams

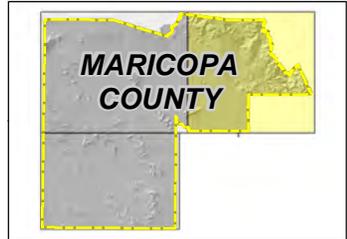
**Flood Hazard Rating**

-  High



0    37.5    75    150  
Miles

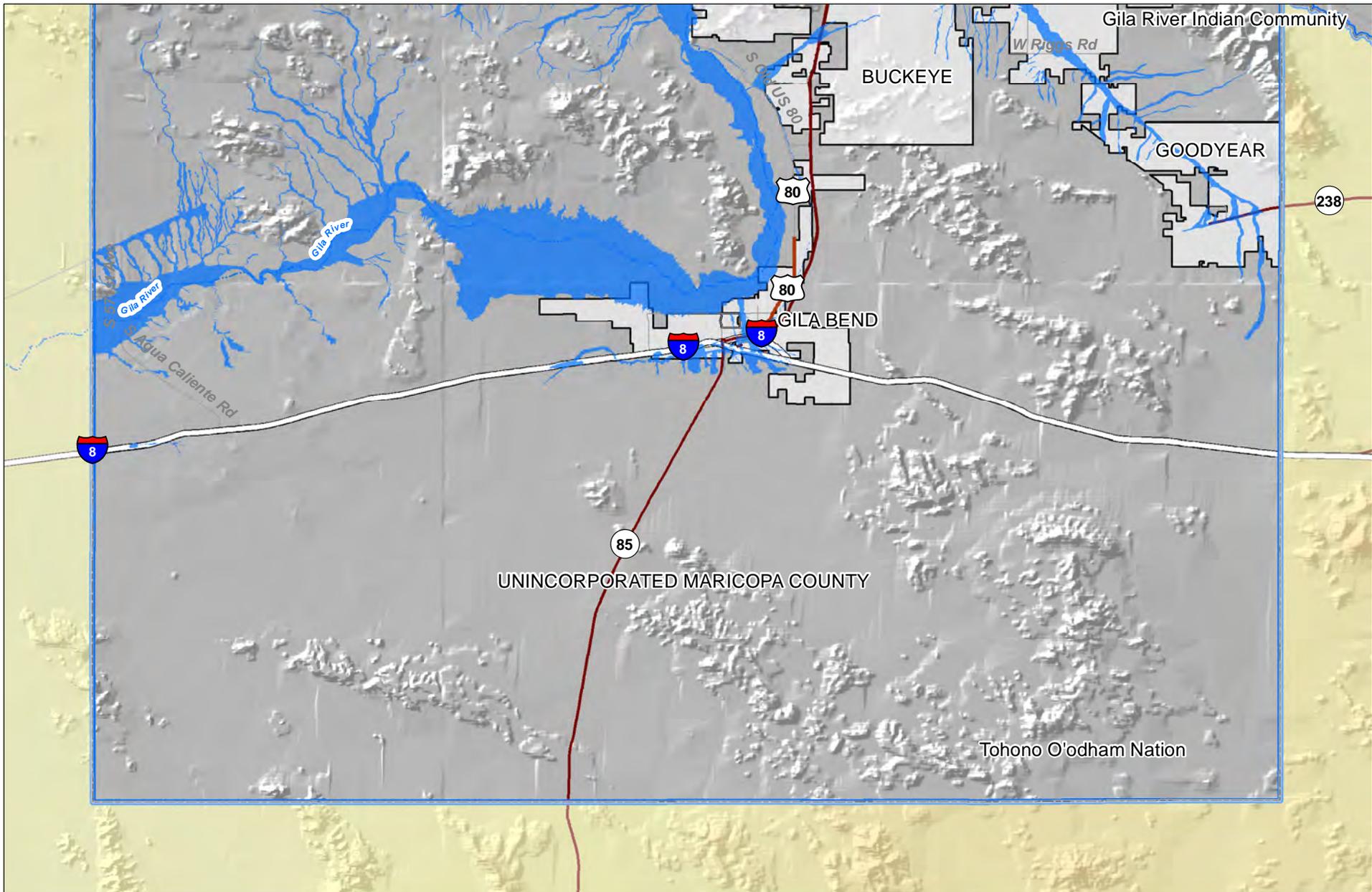
Source: JE Fuller 2014; FEMA 2014;  
FCDMC 2014, MAG 2014; TIGER 2104



**Maricopa County Multi-Jurisdictional  
Hazard Mitigation Plan**



**Map 4B  
Maricopa County  
Flood Hazard Map  
as of Dec 2014**



**Legend**

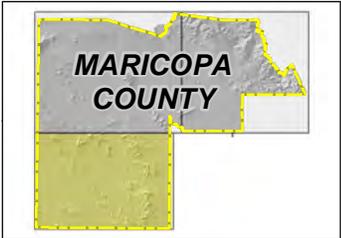
-  Maricopa County
-  Mitigation Plan Extent
-  Major Streams

**Flood Hazard Rating**

-  High

0 37.5 75 150  
Miles

Source: JE Fuller 2014; FEMA 2014; FCDMC 2014, MAG 2014; TIGER 2104



**Maricopa County Multi-Jurisdictional Hazard Mitigation Plan**



**Map 4C**  
**Maricopa County**  
**Flood Hazard Map**  
as of Dec 2014

5.3.6 *Levee Failure*

**Description**

FEMA defines levees as man-made structures, usually earthen embankments, that are designed and constructed in accordance with sound engineering practices to contain, control or divert the flow of water so as to provide protection from temporary flooding (FEMA, 2009). National flood policy now recognizes the term “levee” to mean only those structures which were designed and constructed according to sound engineering practices, have up to date inspection records and current maintenance plans, and have been certified as to their technical soundness by a professional engineer. FEMA has classified all other structures that impound, divert, and/or otherwise impede the flow of runoff as “non-levee embankments”. In Maricopa County, these might be comprised of features such as elevated roadway and railway embankments, canals, irrigation ditches and drains, and agricultural dikes.

Currently, there is no state levee safety program and no official state levee inventory. At a federal level, the two primary agencies involved with levee safety are the U.S. Army Corps of Engineers (USACE) and FEMA. Each of these agencies have different roles and responsibilities related to levees. FEMA addresses mapping and floodplain management issues related to levees, and accredits levees as meeting requirements set forth by the National Flood Insurance Program. USACE addresses a range of operation and maintenance, risk communication, risk management, and risk reduction issues as part of its responsibilities under the National Levee Safety Program. The USACE has also developed a National Levee Database<sup>44</sup> that is currently populated by USACE program levees only, but is eventually anticipated to be expanded to include non-USACE program levees as well. For Maricopa County, there are 24 levee reaches identified in the database.

Many levees and non-levee embankments cut across drainage features, impounding water on their upstream side as a result of storm events. FEMA urges communities to recognize that all areas downstream of levees and embankments are at some risk of flooding. There are no guarantees that a levee or embankment will not fail or breach if a large quantity of water collects upstream.

Mechanisms for levee failure are similar to those for dam failure. Failure by overtopping could occur due to an inadequate design capacity, sediment deposition and vegetation growth in the channel, subsidence, and/or a runoff that exceeds the design recurrence interval of the levee. Failure by piping could be due to embankment cracking, fissures, animal borings, embankment settling, or vegetal root penetrations.

**History**

Levees (certified or not) have been used in Maricopa County for over a hundred years to protect communities and agricultural assets, as well as to facilitate the delivery and removal of irrigation water. These levees range from simple earthen embankments pushed up by small equipment to large cement stabilized aggregate embankments lining both sides of a river. The structural integrity of levees with regard to flood protection and policy has been discussed at a national level since the early 1980s but was elevated to a high priority after the collapse and breach of New Orleans’ levees after Hurricane Katrina in 2005.

There are no documented failures of certified levees within Maricopa County, nor are there any documented records of non-levee embankment failures.

**Probability and Magnitude**

There are no established probability or magnitude criteria regarding levee failure due to variability in levee design and maintenance. For flood protection credit under the NFIP, FEMA has established certain design criteria that are based on the 1 percent (100-year) storm event. Federally constructed levees are usually designed for larger, more infrequent events that equate to 250 to 500 year events. All FEMA certified levees within Maricopa County are designed to safely convey the 100-year event, with a factor of safety provided by a minimum additional freeboard of three (3) feet.

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<sup>44</sup> The USACE National Levee Database can be accessed at: <http://nld.usace.army.mil/egis/f?p=471:1:0::NO>

In the latest DFIRM data for Maricopa County, FEMA has re-established new flood hazard zones downstream of non-levee embankments and a Shaded Zone X with a special “Areas Protected by Levee” descriptor for areas that are protected by certified levees. For this Plan cycle, The MJPT chose to map the new hazard areas downstream of non-levee embankments as a HIGH hazard. All other areas are defined as LOW.

**Climate Change Impacts**

The climate change impacts to levee failure are nearly identical to those discussed in the Flooding section (see Section 5.3.5). Increases in winter flood intensities, combined with the effects of reduced watershed vegetation due to drought and/or wildfire, could elevate the probability of levee failures in the county, and especially for levees that were not designed to convey/contain flows greater than the 100-year (1% probability) standard. Most federally sponsored levee design and construction will use, or have used, discharges that exceed the 100-year standard, but not all. Mitigation activities should consider using the 500-year event as the minimum design standard to anticipate the impacts of climate change.

**Vulnerability – CPRI Results**

Levee Failure CPRI results for each community are summarized in Table 5-27 below.

**Table 5-27: CPRI results by jurisdiction for levee failure**

Participating Jurisdiction	Probability	Magnitude/Severity	Warning Time	Duration	CPRI Score
Avondale	Possibly	Negligible	<6 hours	<24 hours	2.00
Buckeye	Unlikely	Negligible	<6 hours	<6 hours	1.45
Carefree	Unlikely	Negligible	>24 hours	<6 hours	1.00
Cave Creek	Unlikely	Negligible	<6 hours	<6 hours	1.45
Chandler	Unlikely	Negligible	>24 hours	<6 hours	1.00
El Mirage	Unlikely	Negligible	>24 hours	<6 hours	1.00
Fountain Hills	Unlikely	Negligible	<6 hours	<24 hours	1.55
Fort McDowell Yavapai Nation	Unlikely	Negligible	<6 hours	<24 hours	1.55
Gila Bend	Unlikely	Negligible	<6 hours	<24 hours	1.55
Gilbert	Possibly	Critical	<6 hours	<1 week	2.70
Glendale	Unlikely	Negligible	<6 hours	<24 hours	1.55
Goodyear	Unlikely	Negligible	<6 hours	<6 hours	1.45
Guadalupe	Unlikely	Negligible	<6 hours	<6 hours	1.45
Litchfield Park	Unlikely	Negligible	<6 hours	<6 hours	1.45
Unincorporated Maricopa County	Likely	Limited	<6 hours	<1 week	2.85
Mesa	Unlikely	Limited	<6 hours	<1 week	1.95
Paradise Valley	Possibly	Limited	<6 hours	<24 hours	2.30
Peoria	Possibly	Limited	<6 hours	<24 hours	2.15
Phoenix	Unlikely	Limited	6-12 hours	<6 hours	1.60
Queen Creek	Possibly	Negligible	<6 hours	<24 hours	1.85
Salt River Pima-Maricopa Indian Community	Possibly	Critical	<6 hours	<24 hours	2.60
Salt River Project	Unlikely	Negligible	6-12 hours	<24 hours	1.40
Scottsdale	Unlikely	Negligible	<6 hours	<6 hours	1.45
Surprise	Unlikely	Negligible	<6 hours	<24 hours	1.55
Tempe	Possibly	Limited	<6 hours	<1 week	2.40
Tolleson	Unlikely	Negligible	>24 hours	<1 week	1.20
Wickenburg	Possibly	Limited	<6 hours	<6 hours	2.20
Youngtown	Unlikely	Critical	<6 hours	<6 hours	2.45
<b>County-wide average CPRI =</b>					<b>1.75</b>

**Vulnerability – Loss/Exposure Estimations**

The estimation of potential exposure to high hazard levee failure areas was accomplished by intersecting the human and facility assets with the levee failure hazard limits depicted on Maps 5A, 5B, and 5C. Table 5-28 summarizes the MJPT identified critical and non-critical facilities potentially exposed to high hazard levee failure areas. Table 5-29 summarizes population sectors exposed to the high hazard levee failure areas. Residential structure exposures to high hazard levee failure areas are summarized in Table 5-30.

In summary, \$76.4 million in critical and non-critical MJPT identified assets are exposed to high hazard levee failure areas, for the planning area. An additional \$2.25 billion of Census 2010 residential structures are exposed to high hazard levee failure areas for the planning area. Regarding human vulnerability, a total population of 24,525 people, or 0.67% of the total 2010 Census population for the planning area, is potentially exposed to a high hazard levee failure. Should a levee structure fail suddenly, it is plausible that death and injury might occur. It can also be expected that a substantial portion of the exposed population is subject to displacement, depending on the event magnitude.

It is duly noted that the loss and exposure numbers presented above represent a comprehensive evaluation of the county as a whole. It is unlikely that a storm event would occur that would fail all of the levees at the same time. Accordingly, actual event based losses and exposure are likely to be only a fraction of those summarized above.

#### **Vulnerability – Development Trend Analysis**

With the new focus on residual downstream risk for the land-side of levees and a general refocusing of national levee regulation and policy, it is likely that new and old developments in these areas will need to be revisited to determine if additional measures are necessary for adequate flood protection. Many structures located downstream of non-levée embankments are being re-mapped into Special Flood Hazard Zones. New developments should be evaluated to determine if sufficient protection is proposed to mitigate damages should the upstream structure fail.

#### **Sources**

Arizona Division of Emergency Management, 2013, State of Arizona Multi-Hazard Mitigation Plan, 2013 Update.

FEMA, 2001, Understanding Your Risks; Identifying Hazards and Estimating Losses, FEMA Document No. 386-2.

FEMA, 2009, Web page at URL: [http://www.fema.gov/plan/prevent/fhm/lv\\_intro.shtm#3](http://www.fema.gov/plan/prevent/fhm/lv_intro.shtm#3)

FCDMC, 2015, Dam and Levee Safety group

USACE National Levee Database, 2015, website access at:  
<http://nld.usace.army.mil/egis/f?p=471:1:0::NO>

#### **Profile Maps**

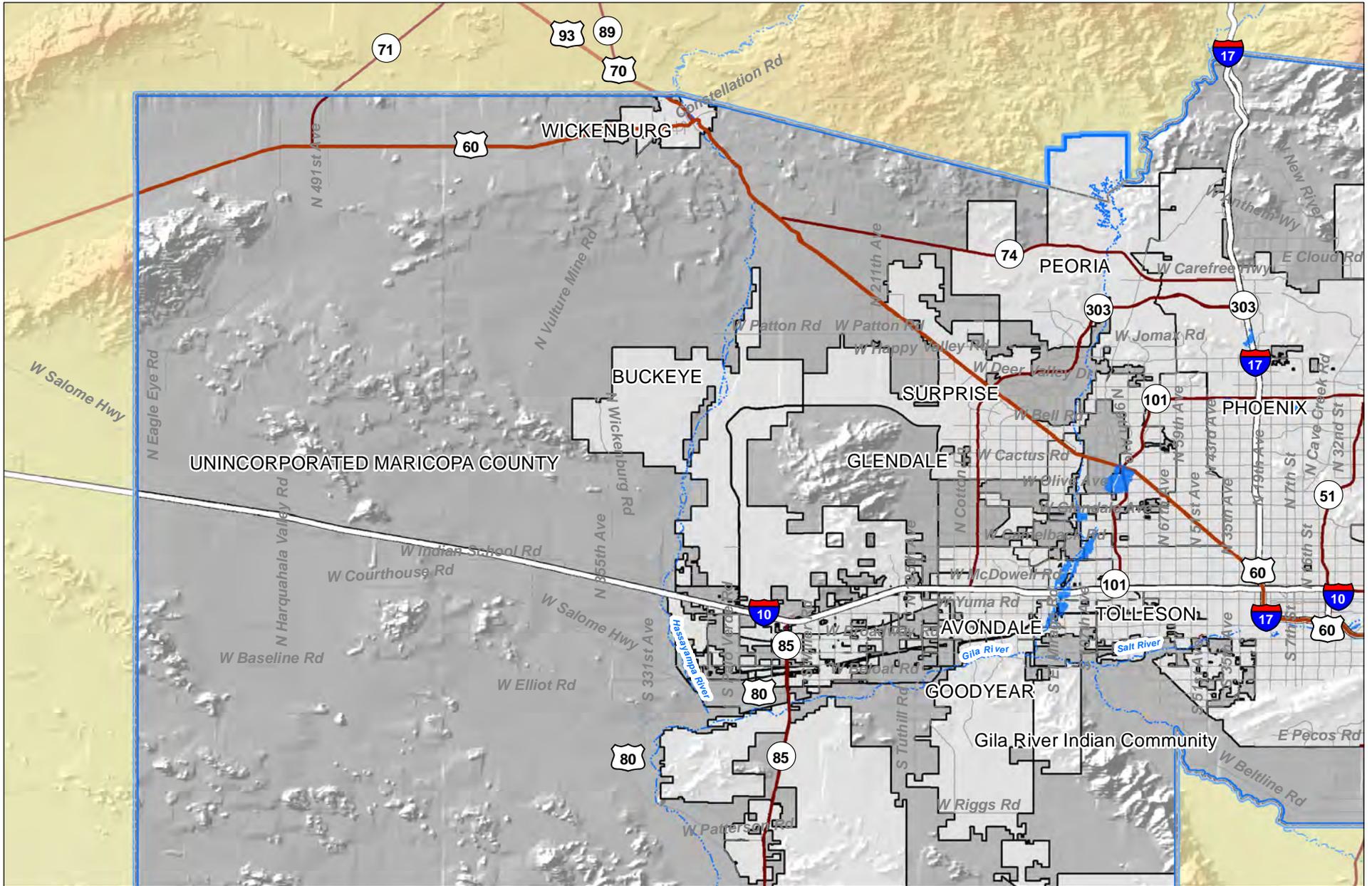
Maps 5A, 5B, and 5C – Potential Levee Failure Flood Hazard Map(s)

<b>Table 5-28: Asset inventory exposure to high hazard levee failure areas</b>					
<b>Community</b>	<b>Total Facilities Reported by Community</b>	<b>Impacted Facilities</b>	<b>Percentage of Total Community Facilities Impacted</b>	<b>Total Replacement Value of All Facilities Reported by Community (x \$1,000)</b>	<b>Estimated Replacement Value Exposed to Hazard (x \$1,000)</b>
<b>County-Wide Totals (Maricopa Only)</b>	<b>7545</b>	<b>41</b>	<b>0.50%</b>	<b>\$20,635,239</b>	<b>\$76,411</b>
Avondale	74	9	12.16%	\$179,460	\$17,500
Buckeye	103	0	0.00%	\$253,822	\$0
Carefree	6	0	0.00%	\$9,000	\$0
Cave Creek	40	0	0.00%	\$63,245	\$0
Chandler	277	0	0.00%	\$1,361,072	\$0
El Mirage	34	0	0.00%	\$285,542	\$0
Fountain Hills	28	0	0.00%	\$101,904	\$0
Fort McDowell Yavapai Nation	15	0	0.00%	\$411,000	\$0
Gila Bend	7	0	0.00%	\$36,000	\$0
Gilbert	2,889	16	0.55%	\$0	\$0
Glendale	1,214	2	0.16%	\$4,084,503	\$24,950
Goodyear	159	0	0.00%	\$148,573	\$0
Guadalupe	7	0	0.00%	\$10,800	\$0
Litchfield Park	5	0	0.00%	\$118,900	\$0
Unincorporated Maricopa County	426	2	0.47%	\$247,248	\$15,376
Mesa	450	1	0.22%	\$2,139,576	\$2,000
Paradise Valley	94	0	0.00%	\$469,000	\$0
Peoria	299	7	2.34%	\$282,333	\$1,810
Phoenix	913	2	0.22%	\$7,691,316	\$14,774
Queen Creek (Maricopa County Only)	124	0	0.00%	\$306,143	\$0
Salt River Pima-Maricopa Indian Community	21	0	0.00%	\$509,053	\$0
Salt River Project <sup>45</sup>	602	1	0.17%	N/A	N/A
Scottsdale	132	1	0.76%	\$55,000	\$0
Surprise	81	0	0.00%	\$444,613	\$0
Tempe	111	0	0.00%	\$1,373,300	\$0
Tolleson	10	0	0.00%	\$0	\$0
Wickenburg	14	0	0.00%	\$32,589	\$0
Youngtown	12	0	0.00%	\$21,247	\$0
Mesa (Pinal County Only)	15	0	0.00%	\$2,139,576	\$0
Queen Creek (Pinal County Only)	5	0	0.00%	\$306,143	\$0

<sup>45</sup> Facility count for Salt River Project is not included in overall County-Wide totals and all data was provided by SRP.

Community	Total Population	Population Exposed		Total Population Over 65	Population Over 65 Exposed	
		Total	Percent		Total	Percent
<b>County-Wide Totals (Maricopa Only)</b>	<b>3,819,188</b>	<b>25,425</b>	<b>0.67%</b>	<b>462,886</b>	<b>4,417</b>	<b>0.95%</b>
Apache Junction (Maricopa County Portion)	280	0	0.00%	173	0	0.00%
Avondale	75,819	8,731	11.52%	4,114	522	12.69%
Buckeye	50,786	0	0.00%	3,410	0	0.00%
Carefree	3,367	0	0.00%	1,182	0	0.00%
Cave Creek	4,824	0	0.00%	906	0	0.00%
Chandler	235,715	0	0.00%	18,311	0	0.00%
El Mirage	31,717	0	0.00%	2,049	0	0.00%
Fountain Hills	971	0	0.00%	56	0	0.00%
Fort McDowell Yavapai Nation	22,395	0	0.00%	6,228	0	0.00%
Gila Bend	1,936	0	0.00%	186	0	0.00%
Gila River Indian Community	3,346	0	0.00%	165	0	0.00%
Gilbert	208,043	718	0.35%	12,602	26	0.21%
Glendale	226,187	2	0.00%	20,712	0	0.00%
Goodyear	65,306	0	0.00%	7,066	0	0.00%
Guadalupe	5,535	0	0.00%	449	0	0.00%
Litchfield Park	4,924	0	0.00%	1,128	0	0.00%
Unincorporated Maricopa County	276,418	2,720	0.98%	89,501	1,529	1.71%
Mesa	439,089	12	0.00%	62,001	1	0.00%
Paradise Valley	12,735	0	0.00%	2,884	0	0.00%
Peoria	154,057	8,462	5.49%	22,056	2,032	9.21%
Phoenix	1,446,886	4,024	0.28%	122,001	148	0.12%
Queen Creek	26,365	0	0.00%	1,366	0	0.00%
Salt River Pima-Maricopa Indian Community	6,315	0	0.00%	1,080	0	0.00%
Scottsdale	217,137	727	0.33%	43,465	151	0.35%
Surprise	117,441	0	0.00%	22,338	0	0.00%
Tempe	161,957	0	0.00%	13,668	0	0.00%
Tohono O'odham Nation	722	0	0.00%	45	0	0.00%
Tolleson	6,502	0	0.00%	588	0	0.00%
Wickenburg	6,340	30	0.48%	1,996	8	0.38%
Youngtown	6,073	0	0.00%	1,160	0	0.00%
Queen Creek (Pinal County Portion)	611	0	0.00%	75	0	0.00%
Peoria (Yavapai County Portion)	9	0	0.00%	2	0	0.00%

<b>Table 5-30: Residential structures exposed to high hazard levee failure areas</b>						
Community	Residential Building Count	Residential Building Exposure		Residential Building Replacement Value (x\$1,000)	Residential Building Value Exposed	
		Total	Percent		Total (x\$1,000)	Percent
<b>County-Wide Totals (Maricopa Only)</b>	<b>1,640,183</b>	<b>11,361</b>	<b>0.69%</b>	<b>\$513,435,920</b>	<b>\$2,246,376</b>	<b>0.44%</b>
Apache Junction (Maricopa County Portion)	280	0	0.00%	\$10,006	\$0	0.00%
Avondale	26,906	3,286	12.21%	\$5,303,222	\$629,853	11.88%
Buckeye	18,172	0	0.00%	\$4,109,349	\$0	0.00%
Carefree	2,249	0	0.00%	\$2,520,086	\$0	0.00%
Cave Creek	2,498	0	0.00%	\$2,157,129	\$0	0.00%
Chandler	94,181	0	0.00%	\$33,262,033	\$0	0.00%
El Mirage	11,306	0	0.00%	\$1,840,087	\$0	0.00%
Fountain Hills	308	0	0.00%	\$71,056	\$0	0.00%
Fort McDowell Yavapai Nation	13,107	0	0.00%	\$7,013,593	\$0	0.00%
Gila Bend	944	0	0.00%	\$89,786	\$0	0.00%
Gila River Indian Community	924	0	0.00%	\$117,456	\$0	0.00%
Gilbert	74,786	209	0.28%	\$27,321,667	\$96,464	0.35%
Glendale	90,351	0	0.00%	\$20,974,482	\$97	0.00%
Goodyear	25,052	0	0.00%	\$7,682,897	\$0	0.00%
Guadalupe	1,397	0	0.00%	\$202,819	\$0	0.00%
Litchfield Park	2,432	0	0.00%	\$1,036,335	\$0	0.00%
Unincorporated Maricopa County	142,950	1,815	1.27%	\$43,219,291	\$362,478	0.84%
Mesa	201,476	5	0.00%	\$46,756,733	\$2,080	0.00%
Paradise Valley	5,622	0	0.00%	\$8,385,999	\$0	0.00%
Peoria	64,807	4,288	6.62%	\$18,961,634	\$714,789	3.77%
Phoenix	590,454	1,383	0.23%	\$163,751,509	\$308,263	0.19%
Queen Creek	8,561	0	0.00%	\$3,043,070	\$0	0.00%
Salt River Pima-Maricopa Indian Community	2,621	0	0.00%	\$260,127	\$0	0.00%
Scottsdale	123,821	356	0.29%	\$77,330,425	\$127,612	0.17%
Surprise	52,623	0	0.00%	\$14,802,691	\$0	0.00%
Tempe	73,542	0	0.00%	\$21,418,707	\$0	0.00%
Tohono O'odham Nation	253	0	0.00%	\$29,312	\$0	0.00%
Tolleson	2,156	0	0.00%	\$348,281	\$0	0.00%
Wickenburg	3,609	19	0.53%	\$986,544	\$4,741	0.48%
Youngtown	2,793	0	0.00%	\$429,593	\$0	0.00%
Queen Creek (Pinal County Portion)	234	0	0.00%	\$56,074	\$0	0.00%
Peoria (Yavapai County Portion)	6	0	0.00%	\$1,344	\$0	0.00%



**Legend**

-  Maricopa County
-  Mitigation Plan Extent
-  Major Streams

**Potential Levee Failure Flood Hazard Rating**

-  High

  
 0 37.5 75 150  
 Miles

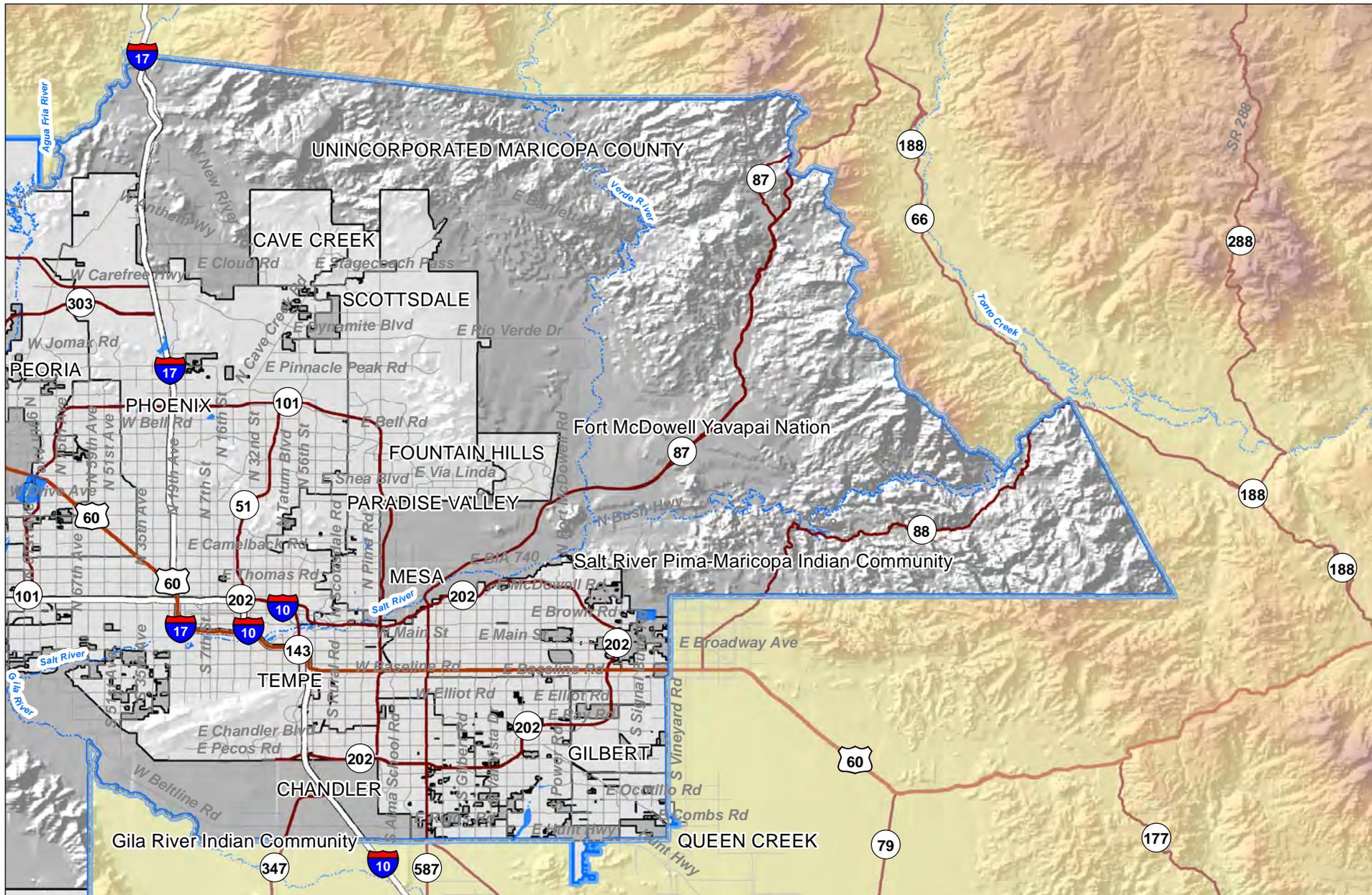
*Source: JE Fuller 2014; FEMA 2014; FCDMC 2014; MAG 2014; TIGER 2014*



**Maricopa County Multi-Jurisdictional Hazard Mitigation Plan**



**Map 5A**  
**Maricopa County**  
**Potential Levee Failure Flood Hazard Map**  
 as of Dec 2014



**Legend**

-  Maricopa County
-  Mitigation Plan Extent
-  Major Streams

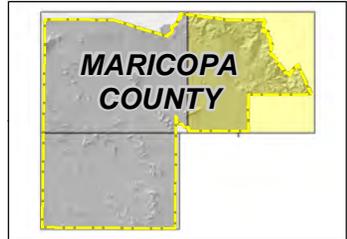
**Potential Levee Failure Flood Hazard Rating**

-  High



0    37.5    75    150  
Miles

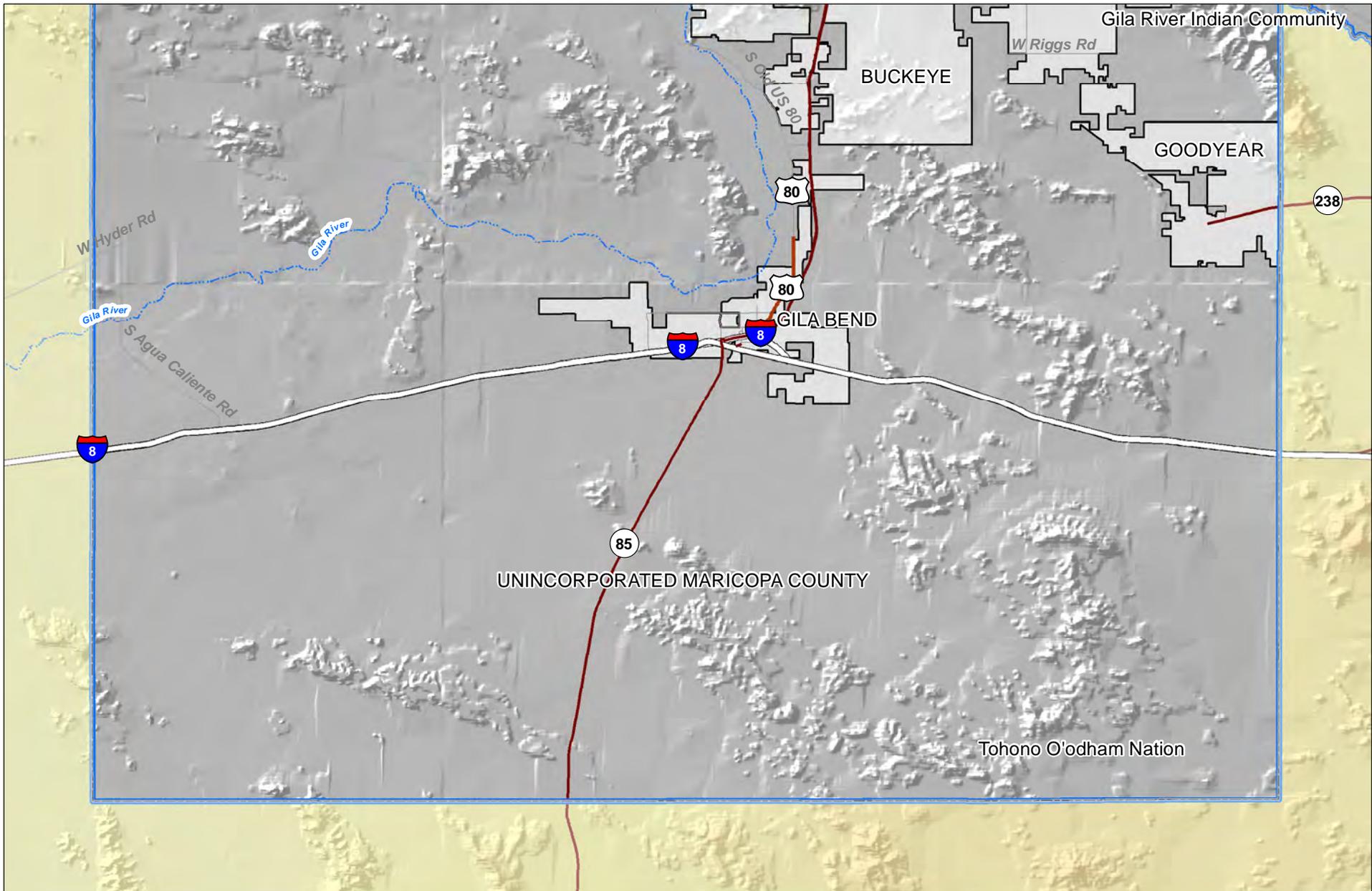
*Source: JE Fuller 2014; FEMA 2014; FCDMC 2014; MAG 2014; TIGER 2014*



**Maricopa County Multi-Jurisdictional Hazard Mitigation Plan**



**Map 5B  
Maricopa County  
Potential Levee Failure  
Flood Hazard Map  
as of Dec 2014**



**Legend**

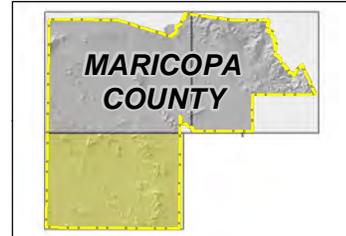
-  Maricopa County
-  Mitigation Plan Extent
-  Major Streams

**Potential Levee Failure Flood Hazard Rating**

-  High

  
 0 37.5 75 150  
 Miles

*Source: JE Fuller 2014; FEMA 2014; FCDMC 2014; MAG 2014; TIGER 2014*



**Maricopa County Multi-Jurisdictional Hazard Mitigation Plan**



**Map 5C**  
**Maricopa County**  
**Potential Levee Failure Flood Hazard Map**  
 as of Dec 2014

5.3.7 *Severe Wind*

**Description**

For this Plan, the hazard of Severe Wind encompasses all climatic events that produce damaging winds. For Maricopa County, severe winds usually result from either extreme pressure gradients that usually occur in the spring and early summer months, or from thunderstorms. Occasionally, tropical storm activity (remnant hurricanes) can be accompanied by severe winds, but the wind speeds usually dissipate by the time the tropical storm front approaches the county. Thunderstorms can occur year-round and are usually associated with cold fronts in the winter, monsoon activity in the summer, and tropical storms in the late summer or early fall.

Three types of damaging wind related features typically accompany a thunderstorm; 1) downbursts, 2) straight line winds, and infrequently, 3) tornadoes.

Downbursts are columns of air moving rapidly downward through a thunderstorm. When the air reaches the ground, it spreads out in all directions, creating horizontal wind gusts of 80 mph or higher. Downburst winds have been measured as high as 140 mph. Some of the air curls back upward with the potential to generate a new thunderstorm cell. Downbursts are called macrobursts when the diameter is greater than 2.5 miles, and microbursts when the diameter is 2.5 miles or less. They can be either dry or wet downbursts, where the wet downburst contains precipitation that continues all the way down to the ground, while the precipitation in a dry downburst evaporates on the way to the ground, decreasing the air temperature and increasing the air speed. In a microburst the wind speeds are highest near the location where the downdraft reached the surface, and are reduced as they move outward due to the friction of objects at the surface. Typical damage from downbursts includes uprooted trees, downed power lines, mobile homes knocked off their foundations, block walls and fences blown down, and porches and awnings blown off homes.

Straight line winds are developed similarly to downbursts, but are usually sustained for greater periods as a thunderstorm reaches the mature stage, traveling parallel to the ground surface at speeds of 75 mph or higher. These winds are frequently responsible for generating dust storms and sand storms, reducing visibility and creating hazardous driving conditions.

A tornado is a rapidly rotating funnel (or vortex) of air that extends toward the ground from a cumulonimbus cloud. Most funnel clouds do not touch the ground, but when the lower tip of the funnel cloud touches the earth, it becomes a tornado and can cause extensive damage. For Maricopa County, tornadoes are the least common severe wind to accompany a thunderstorm.

**History**

According to Tables 5-2 and 5-3, Maricopa County has been included in four state and/or federal disaster declarations involving thunderstorms. There are also an additional 352 thunderstorm/high wind events, and 48 tornadoes, with a combined loss of approximately \$470 million to structures and agriculture, 11 deaths, and over 248 injuries. The following are examples of documented events that have occurred during the last Plan cycle.

- In September 2014, a severe squall line moved across the greater Phoenix valley causing major damage to trees, power poles, roofs, cars, and small aircraft at several valley airports. Gusts exceeding 70 mph were measured and reported damages exceeded \$200,000 (NCDC, 2015).
- In January 2010, severe wind gusts in Scottsdale destroyed a large tent at the Russo Steele Auction near Mayo Blvd and Scottsdale Rd and blew it onto nearby State Highway Loop 101 when winds collapsed the tent onto many classic cars. There was also damage to facilities at the nearby Barrett Jackson Auction. Three minor injuries were reported and damages were in excess of \$1.5 million.

Other significant past events include:

- In January 1993, a category F2 tornado moved through Scottsdale damaging 18 homes, four with major damage, and damaging many trees and signs. The most damage occurred when the tornado moved east from 59th and Clinton to 72nd and Cholla. Controllers from the nearby Scottsdale

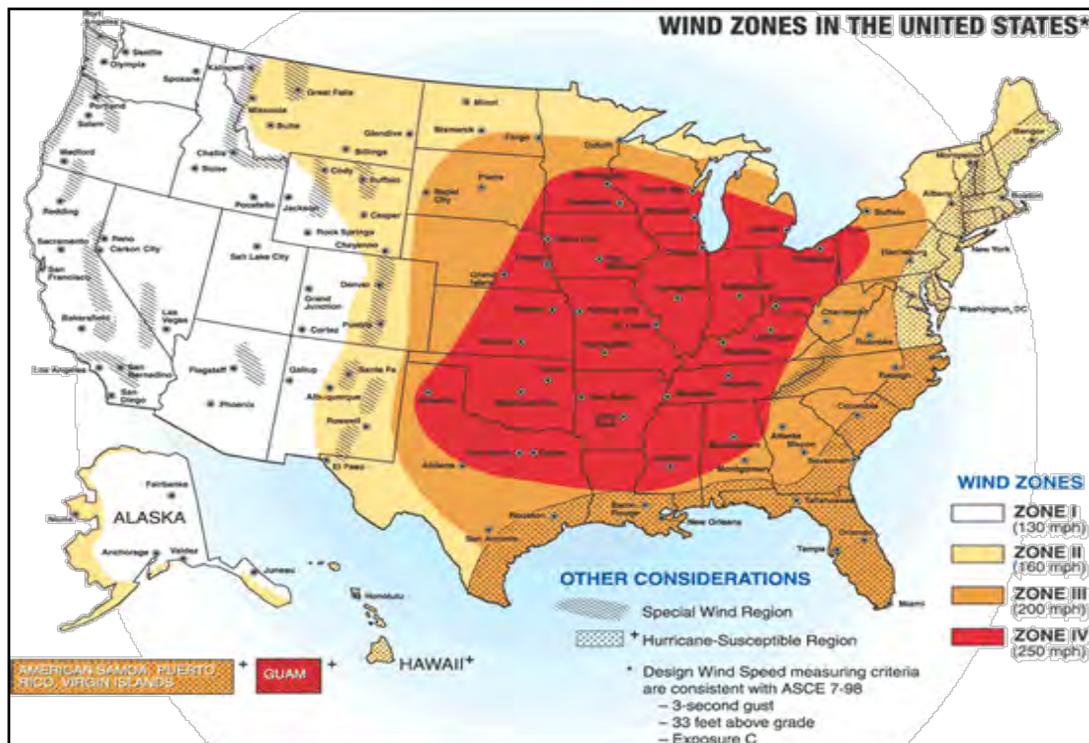
- Airport watched the tornado move through this north Scottsdale residential area. Damages were estimated to exceed \$5 million (NCDC, 2009).
- In August 1993, strong winds from nearby thunderstorms exceeded 50 mph in many areas of the valley. Homes and businesses sustained damage, trees were uprooted and power lines were downed. Arizona Public Service reported 10,000 customers without power. An 8-year-old boy in Avondale was severely injured just after 1800 MST when a window burst and glass cut his jugular vein. The roof of a convenience store was blown off, and damage occurred to a church and an elementary school. A 1-mile section of a 69,000-volt power line near Perryville was knocked down. High winds blew tree limbs onto power poles and took shingles off several homes. Damages were estimated to exceed \$5 million (NCDC, 2009).
  - In September 1994, a microburst struck a school building at the Littleton Elementary School in the community of Cashion, two miles SW of Tolleson. The roof was torn from about eight classrooms with one teacher and eight children being injured. A National Weather Service Storm Survey Team estimated winds of 100 mph. A teacher reported the ground covered with hail, some golf ball-size. A weather spotter at 75th Avenue and Camelback Road reported 1.25 inch hail. A mile long stretch of power poles were downed near 107th Avenue and Interstate 10. Damage to the school was estimated in excess of \$500,000 and storm wide estimates exceeded \$5 million (NCDC, 2009).
  - In September 1996, a massive thunderstorm moved through the western half of the Phoenix Metropolitan Area, with nearly every west valley community reporting some damage. The hardest hit areas were in northwest Phoenix, Glendale, and Peoria. Other towns that sustained damage were Sun City, Surprise, El Mirage, Tolleson, Avondale, Goodyear, and Buckeye. Approximately 400 power poles were knocked down throughout these towns, 100 owned by SRP and 300 owned by APS. There were from 70,000 to 75,000 homeowner claims for about \$100 million in damage (NCDC, 2009).
  - In August 2001, a large thunderstorm complex developed over northwest Maricopa County and moved to the south and southwest. The thunderstorm induced gust front, at times over 60 miles long, west to east, caused widespread electric power outages in the Gila Bend area south to Ajo in west Pima County. In the immediate Gila Bend area, thirty-eight 230kv poles downed, and thirty-nine 69kv poles were downed. A substation was damaged as well as telephone lines. The reported wind gust of 66 knots was recorded at the Gila Bend municipal airport at 0245. As the gust front moved further to the south and southwest, a total of 140 power poles were blown over as reported by the Arizona Public Service. Electric power services were disrupted up to 5 days. State PCA No. 22001 (ADEM, 2009).
  - In July 2006, several cities throughout the central portion of Maricopa County had major wind damage as a series of thunderstorms and microbursts moved across the area. According to SRP, an estimated 65 power poles were blown down in parts of Scottsdale, Tempe and Mesa. At one point, about 20,000 customers were without power. APS reported about 8,000 customers were without power. At Phoenix Sky Harbor Airport, the official peak wind gust was 59 mph. However, winds at Williams Gateway Airport gusted to 86 mph and flipped a small twin-engine plane atop another aircraft. In Mesa, 35 schools reported damages due to the storm. Storm wide losses were estimated to exceed \$150 million.
  - In August 2008, several waves of severe thunderstorms moved westward across the central and eastern portions of Maricopa County with wind gusts estimated to exceed 85 mph. In Tempe, an 18 year-old man was injured by a falling tree. Winds on the ASU campus were measured at 69 mph and severely damaged the indoor football practice facility. At 16th St and Thomas, widespread damage occurred to homes and businesses, and windows were knocked out in at least one Phoenix high-rise. Numerous power poles were downed and many trees uprooted. Some damage also occurred at the Arizona State Capitol in Phoenix. Trees were uprooted at 48th street and McDowell and nearby homes were damaged. Microburst winds hit Chandler Airport and flipped at least two planes. Over \$26 million in losses were reported Valley-wide (NCDC, 2009).

**Probability and Magnitude**

For thunderstorms, the probability of a severe thunderstorm occurring with high velocity winds increases as the average duration and number of thunderstorm events increases. According to NCDC, 290 separate severe wind events have been reported for Maricopa County over the past 30 years (NCDC, 2015). Of those events, 112 were reported as damaging with a total of approximately \$420 million in estimated losses, three deaths and 27 injuries. It is very likely that on average, approximately 10 severe wind events will occur per year and approximately one-third of those events will cause damage.

The NWS issues a severe thunderstorm watch when conditions are favorable for the development of severe thunderstorms. The local NWS office considers a thunderstorm severe if it produces hail at least 3/4-inch in diameter, wind of 58 mph or higher, or tornadoes. When a watch is issued for a region, residents are encouraged to continue normal activities but should remain alert for signs of approaching storms, and continue to listen for weather forecasts and statements from the local NWS office. When a severe thunderstorm has been detected by weather radar or one has been reported by trained storm spotters, the local NWS office will issue a severe thunderstorm warning. A severe thunderstorm warning is an urgent message to the affected counties that a severe thunderstorm is imminent. The warning time provided by a severe thunderstorm watch may be on the order of hours, while a severe thunderstorm warning typically provides an hour or less warning time. All of the 290 storms that were documented over the last 30 years would qualify as a severe thunderstorm.

The American Society of Civil Engineers (ASCE) has identified a 3-second wind gust speed as the most accurate measure for identifying the potential for damage to structures. The 3-second wind gust criteria is recommended as a normal wind loading design standard. All of Maricopa County is designated with a standard design 3-second gust wind speed of 90 mph, indicating relatively low levels of risk from severe winds when compared to other regions of the country (ASCE, 1999). FEMA has taken the work from ASCE and further identified wind speed zones for use in designing community shelters and safe-rooms that can withstand tornado and hurricane winds. Maricopa County is entirely located in Zone I, as illustrated in Figure 5-10. In these zones, a design wind speed of 130 mph is recommended for the design and construction of community shelters.



Source: FEMA Website at the following URL: [http://www.fema.gov/plan/prevent/saferoom/tsfs02\\_wind\\_zones.shtm](http://www.fema.gov/plan/prevent/saferoom/tsfs02_wind_zones.shtm)

**Figure 5-10: Illustration of FEMA Wind Zones**

The Beaufort Wind Scale, indicated by Table 5-31 shown below, provides a measure of wind magnitude versus expected damages. The Beaufort scale is useful because it specifically addresses wind effects over land based on wind speed. Wind speeds in the Beaufort Number 10-11 range annually impact the county. On rare occasions, wind gusts in the county can creep into the low end of the Beaufort Number 12 category.

**Table 5-31: Beaufort Wind Scale**

Beaufort Number	Wind Speed mph	Description	Land Conditions
0	0	Calm	Calm. Smoke rises vertically.
1	1-3	Light air	Wind motion visible in smoke.
2	4-7	Light breeze	Wind felt on exposed skin. Leaves rustle.
3	8-12	Gentle breeze	Leaves and smaller twigs in constant motion.
4	13-18	Moderate breeze	Dust and loose paper rises. Small branches begin to move.
5	19-24	Fresh breeze	Smaller trees sway.
6	25-31	Strong breeze	Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult.
7	32-38	Near gale	Whole trees in motion. Effort needed to walk against the wind.
8	39-46	Gale	Twigs broken from trees. Cars veer on road.
9	47-54	Strong gale	Light structure damage.
10	55-63	Storm	Trees uprooted. Considerable structural damage.
11	64-73	Violent storm	Widespread structural damage.
12	73-95	Hurricane	Considerable and widespread damage to structures.

Source: New Mexico Natural Hazard Mitigation Plan

Tornado damage severity is measured by the Fujita Tornado Scale, which assigns a numerical value of 0 to 5 based on wind speeds, as shown in Table 5-32, with the letter F preceding the number (e.g., FO, F1, F2). Most tornadoes last less than 30 minutes, but some last for over an hour. The path of a tornado can range from a few hundred feet to miles in length. The width of a tornado may range from tens of yards to more than a quarter of a mile.

**Table 5-32: Fujita Tornado Scale**

Category	Wind Speed	Description of Damage
F0	40-72 mph	Light damage. Some damage to chimneys; break branches off trees; push over shallow-rooted trees; damage to sign boards.
F1	73-112 mph	Moderate damage. The lower limit is the beginning of hurricane speed. Roof surfaces peeled off; mobile homes pushed off foundations or overturned; moving autos pushed off roads.
F2	113-157 mph	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.
F3	158-206 mph	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; cars lifted off ground and thrown.
F4	207-260 mph	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	261-318 mph	Incredible damage. Strong frame houses lifted off foundations and carried considerable distance to disintegrate; automobile-sized missiles fly through the air in excess of 100-yards; trees debarked.

Source: FEMA, 1997.

The probability of tornadoes occurring is much less frequent than thunderstorms. For the past 30-year period (1985-2014), the NCDC reports 16 tornado events, with 11 resulting in damages of approximately \$5.4 million and one injury. The period average is approximately one tornado per every three years. Of the 16 recorded tornadoes, 15 were category F0, four were category F1, and one was a category F2. According the NCDC, there has been only one F3 tornado recorded in the history of Maricopa County on August 4, 1957.

**Climate Change Impacts**

The NCA report (Garfin, et.al., 2014) is silent regarding the impact of climate change on severe wind events in the Southwest and no other sources were found that address a correlation of climate change to severe wind events in the Southwest region. Until such time as data or studies are available, no adjustments or extra consideration will be given to climate change impacts to severe wind events in the county.

**Vulnerability – CPRI Results**

Severe Wind CPRI results for each community are summarized in Table 5-33 below.

**Table 5-33: CPRI results by jurisdiction for severe wind**

<b>Participating Jurisdiction</b>	<b>Probability</b>	<b>Magnitude/ Severity</b>	<b>Warning Time</b>	<b>Duration</b>	<b>CPRI Score</b>
Avondale	Likely	Limited	<6 hours	<6 hours	2.65
Buckeye	Highly Likely	Critical	<6 hours	<6 hours	3.40
Carefree	Highly Likely	Limited	12-24 hours	<1 week	3.00
Cave Creek	Highly Likely	Limited	12-24 hours	<6 hours	2.80
Chandler	Highly Likely	Negligible	6-12 hours	<6 hours	2.65
El Mirage	Highly Likely	Critical	>24 hours	<1 week	3.15
Fountain Hills	Likely	Critical	6-12 hours	<1 week	3.00
Fort McDowell Yavapai Nation	Highly Likely	Limited	12-24 hours	<6 hours	2.80
Gila Bend	Possibly	Limited	<6 hours	<24 hours	2.30
Gilbert	Highly Likely	Limited	<6 hours	<24 hours	3.20
Glendale	Highly Likely	Limited	<6 hours	<6 hours	3.10
Goodyear	Highly Likely	Negligible	12-24 hours	<24 hours	2.60
Guadalupe	Possibly	Limited	<6 hours	<24 hours	2.30
Litchfield Park	Highly Likely	Limited	<6 hours	<24 hours	3.20
Unincorporated Maricopa County	Highly Likely	Critical	<6 hours	<6 hours	3.40
Mesa	Highly Likely	Limited	<6 hours	<1 week	3.30
Paradise Valley	Highly Likely	Limited	6-12 hours	<24 hours	3.05
Peoria	Highly Likely	Critical	<6 hours	<24 hours	3.50
Phoenix	Highly Likely	Negligible	<6 hours	<6 hours	2.80
Queen Creek	Likely	Limited	<6 hours	<6 hours	2.65
Salt River Pima-Maricopa Indian Community	Highly Likely	Critical	6-12 hours	<1 week	3.45
Salt River Project	Highly Likely	Critical	<6 hours	<6 hours	3.40
Scottsdale	Likely	Limited	12-24 hours	<6 hours	2.35
Surprise	Highly Likely	Limited	<6 hours	<6 hours	3.10
Tempe	Highly Likely	Critical	<6 hours	<24 hours	3.50
Tolleson	Likely	Limited	12-24 hours	<24 hours	2.45
Wickenburg	Highly Likely	Critical	<6 hours	<6 hours	3.40
Youngtown	Highly Likely	Critical	<6 hours	<24 hours	3.50
<b>County-wide average CPRI =</b>					<b>3.00</b>

**Vulnerability – Loss/Exposure Estimations**

Exposure to severe wind events is generally the same across the county, although communities situated close to the mountains like Carefree, Cave Creek, and Fountain Hills, may not be as susceptible to tornadoes as other communities within the county. Based on the historic record over the last 30 years, it is feasible to expect average annual losses of \$10 million (county-wide). It is difficult to estimate losses for individual jurisdictions within the county due to the lack of discrete data.

**Vulnerability – Development Trend Analysis**

Future development will expand the exposure of life and property to the damaging effects of severe wind events. Enforcement and/or implementation of modern building codes to regulate new developments is probably the best way to mitigate against losses.

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U.S. Dept of Commerce, NOAA National Weather Service, Storm Prediction Center, Fujita Scale information at the following URL: <http://www.spc.noaa.gov/faq/tornado/ef-scale.html>

**Profile Maps**

No profile maps provided.

5.3.8 *Subsidence*

**Description**

Subsidence occurs when the original land surface elevation drops due to changes in the subsurface. Causes of subsidence include, but are not limited to, removal of fluids (water, oil, gas, etc.), mine collapse, and hydrocompaction. Of these causes, hydrocompaction and mine collapse tend to be localized events, while fluid removal may occur either locally or regionally. The main cause for subsidence in Maricopa County is excessive groundwater withdrawal, wherein the volume of water withdrawn exceeds the natural recharge. Once an area has subsided, it is likely the ground elevation will not rise again due to consolidation of the soils, even if the pumped groundwater is replaced.

Subsidence can cause regional drainage patterns to change. Impacts include unexpected flooding, storm drain backwater, reversal of channel drainage patterns, and damages to infrastructure both in the subsurface (water and electric lines, well casings, etc.) and surface (roads, canals, drainages, surveyed benchmarks, etc.). Subsidence also can be accompanied by the development of fissures, which are discussed in Section 5.3.4.

Land-use areas that are predominantly agricultural tend to experience the most intense subsidence due to groundwater based irrigation practices. Subsidence is not, however, restricted to only rural areas since exponential population growth also places great demands on groundwater.

**History**

Over the past plan cycle, no significant changes in subsidence activity have been noted. Active subsidence has been occurring in certain areas of Maricopa County for over 60 years and is primarily due to groundwater overdraft. By 1980 ground-water levels had declined at least 100 feet county-wide and between 300 and 500 feet in some areas (Carpenter, 1999). These groundwater declines have resulted in areas of significant subsidence, as summarized in the following examples:

- Luke Air Force Base – by 1992, ground-water level declines of more than 300 feet generated land subsidence of as much as 18 feet about 20 miles west of Phoenix on and near Luke Air Force Base (Carpenter, 1999).
- Queen Creek – by 1977, an area of almost 230 square miles had subsided more than 3 feet (Carpenter, 1999).
- Harquahala Plain – subsidence of about 0.6 feet occurred in response to about 300 feet of water-level decline (Carpenter, 1999).
- East Mesa/Apache Junction – a total of 5.2 feet of subsidence was measured along the CAP near the Superstition Freeway, for the period of 1971 to 2001 (AMEC, 2006).
- Paradise Valley – between 1965 and 1982, over 5 feet subsidence occurred (Carpenter, 1999).
- Scottsdale/CAP – canal subsided about 1 foot since construction (Carpenter, 1999).

The following are two examples of documented damages that are directly attributable to subsidence:

- Dysart Drain Flow Reversal – Subsidence near Luke Air Force Base led to flow reversal in a portion of the Dysart Drain, which is an engineered flood conveyance channel. In 1992, surface runoff from four inches of precipitation caused the sluggish Dysart Drain to spill over flooding the base runways, damaging more than 100 homes, and forcing the base to close for 3 days. Total damage was on the order of \$3 million (ALSG, 2007).
- Central Arizona Project Canal Repair – sections of the CAP canal in Scottsdale traverse an area that has subsided up to 1.5 feet over a 20-year period, threatening the canal's maximum flow capacity. In response, CAP raised the canal lining 3 feet over a one-mile segment of affected area at a cost of \$350,000. A second and much larger subsidence area was later identified near the Scottsdale Airport. Plans for raising the canal lining will cost an estimated \$820,000. Recently, a third

subsidence area has been identified east of the Scottsdale Airpark in the Scottsdale West World area which will likely require further repair (ALSG, 2007).

Land subsidence has been detected over the years using surveying techniques such as differential leveling and high accuracy Global Positioning System (GPS) surveying. In the early 1990's, scientists began to use a satellite based technology called Synthetic Aperture Radar (SAR) and interferometric processing (InSAR) to detect land surface elevation changes. InSAR has been developed into a highly reliable land subsidence monitoring technique that has been utilized by ADWR since 2002. ADWR has identified numerous subsidence features around the state and continues to monitor the extent and rates of these features on an annual basis (ADWR, 2009). In Maricopa County, ADWR monitors 7 geographical areas using InSAR and is developing data for an eighth.

**Probability and Magnitude**

There are no statistical probability estimates for subsidence. The magnitudes of severity depend on geography, with estimates summarized in the previous section above. The MJPT reviewed and chose to use the zones currently being monitored by ADWR to depict the subsidence hazard for the county. Areas defined by ADWR as active subsidence areas were mapped as HIGH hazard zones and all other areas were assigned a LOW hazard. The high hazard subsidence zones are presented on Maps 6A, 6B, and 6C.

**Climate Change Impacts**

As previously stated, active subsidence for most of the county is correlated to overdrafting of local and regional groundwater tables. The NCA report (Garfin, et.al., 2014) notes that one of the anticipated impacts of climate change for the Southwest is a reduction in precipitation and streamflow volumes. This impact could translate into a greater demand for groundwater which could further reduce groundwater levels and increase the formation of subsidence areas and fissure risk. The current management of groundwater withdrawals by the ADWR regulated active management areas (AMA) will likely serve to keep these impacts in check, but consideration for future expansion of subsidence zones and fissures could be warranted.

**Vulnerability – CPRI Results**

Subsidence CPRI results for each community are summarized in Table 5-34 below.

<b>Participating Jurisdiction</b>	<b>Probability</b>	<b>Magnitude/ Severity</b>	<b>Warning Time</b>	<b>Duration</b>	<b>CPRI Score</b>
Avondale	Possibly	Limited	<6 hours	<6 hours	2.50
Buckeye	Unlikely	Negligible	>24 hours	<6 hours	1.00
Carefree	Unlikely	Negligible	>24 hours	<6 hours	1.00
Cave Creek	Unlikely	Negligible	>24 hours	<6 hours	1.0
Chandler	Unlikely	Negligible	>24 hours	<6 hours	1.00
El Mirage	Possibly	Limited	>24 hours	<6 hours	1.75
Fountain Hills	Possibly	Limited	<6 hours	>1 week	2.50
Fort McDowell Yavapai Nation	Unlikely	Negligible	>24 hours	>1 week	1.30
Gila Bend	Unlikely	Negligible	>24 hours	<6 hours	1.00
Gilbert	Highly Likely	Limited	>24 hours	<1 week	2.85
Glendale	Possibly	Limited	>24 hours	>1 week	2.05
Goodyear	Unlikely	Negligible	<6 hours	<6 hours	1.45
Guadalupe	Unlikely	Negligible	<6 hours	<6 hours	1.45
Litchfield Park	Unlikely	Negligible	<6 hours	<6 hours	1.45
Unincorporated Maricopa County	Highly Likely	Limited	>24 hours	>1 week	2.95
Mesa	Highly Likely	Limited	< 6 hours	>1 week	2.95
Paradise Valley	Unlikely	Negligible	<6 hours	<1 week	1.65
Peoria	Unlikely	Limited	<6 hours	<6 hours	1.75
Phoenix	Unlikely	Limited	<6 hours	<6 hours	1.75
Queen Creek	Possibly	Negligible	<6 hours	<6 hours	1.90
Salt River Pima-Maricopa Indian Community	Possibly	Critical	<6 hours	>1 week	2.80
Salt River Project	Possibly	Limited	>24 hours	>1 week	2.05
Scottsdale	Unlikely	Negligible	<6 hours	<6 hours	1.45
Surprise	Possibly	Limited	>24 hours	>1 week	2.05

**Table 5-34: CPRI results by jurisdiction for subsidence**

Participating Jurisdiction	Probability	Magnitude/Severity	Warning Time	Duration	CPRI Score
Tempe	Possibly	Limited	<6 hours	>1 week	2.50
Tolleson	Unlikely	Negligible	>24 hours	<1 week	1.20
Wickenburg	Highly Likely	Limited	>24 hours	>1 week	2.95
Youngtown	Highly Likely	Negligible	<6 hours	>1 week	2.65
<b>County-wide average CPRI =</b>					<b>1.89</b>

**Vulnerability – Loss/Exposure Estimations**

The estimation of potential exposure to high hazard subsidence areas was accomplished by intersecting the human and facility assets with the subsidence high hazard limits depicted on Maps 6A, 6B, and 6C. No losses are estimated for facilities located within the high hazard subsidence areas due to lack of appropriate loss-to-exposure data. Table 5-35 summarizes the MJPT identified critical and non-critical facilities potentially exposed to high hazard subsidence areas. Table 5-36 summarizes population sectors exposed to the high hazard subsidence areas. Residential structures exposed to high hazard subsidence areas are summarized in Table 5-37.

In summary, \$8.2 billion in critical and non-critical MJPT identified assets are located within high hazard subsidence areas. An additional \$181.8 billion of Census 2010 residential structures are located within high hazard subsidence areas across the planning area. Regarding human vulnerability, a total population of 1.7 million people, or 45.1% of the total 2010 Census population areas across the planning area, are located within a high hazard subsidence area. It is unlikely that death and injury might be the direct result of subsidence, however, secondary impacts such as fissures and flooding due to slope reversal, may.

**Vulnerability – Development Trend Analysis**

As ADWR continues its mapping and tracking programs, more data will become available for use in regulating future development. Public awareness of the hazard is a key element to any effective mitigation measure, as well as the need to slow the depletion of groundwater sources. New regional drainage features and structures should always refer to the maps in this plan to determine the need for special design considerations that address subsidence.

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**Profile Maps**

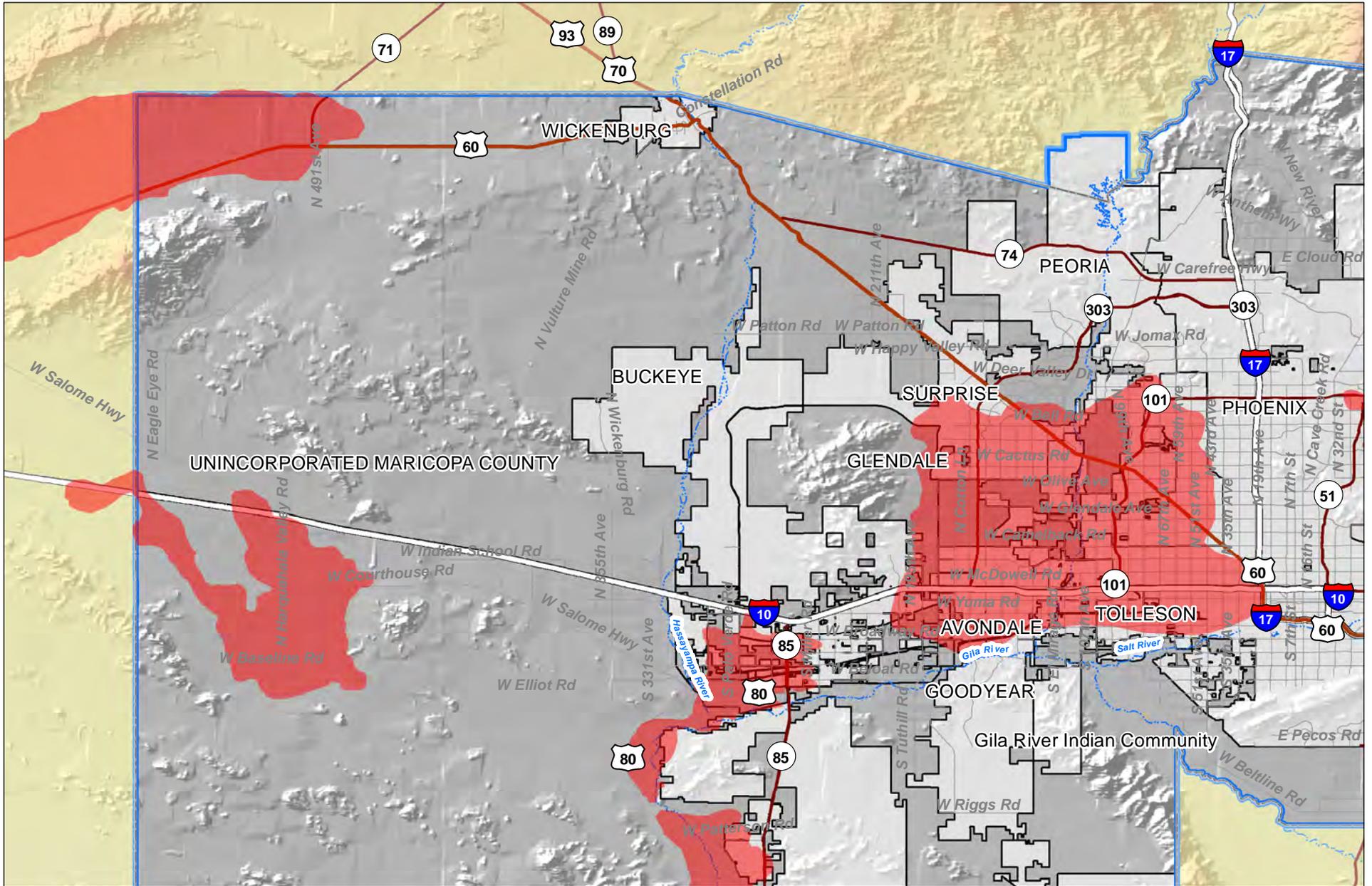
Maps 6A, 6B, and 6C – Subsidence Hazard Map(s)

<b>Community</b>	<b>Total Facilities Reported by Community</b>	<b>Impacted Facilities</b>	<b>Percentage of Total Community Facilities Impacted</b>	<b>Total Replacement Value of All Facilities Reported by Community (x \$1,000)</b>	<b>Estimated Replacement Value Exposed to Hazard (x \$1,000)</b>
<b>County-Wide Totals (Maricopa Only)</b>	<b>7545</b>	<b>67</b>	<b>90.54%</b>	<b>\$20,635,239</b>	<b>\$8,152,880</b>
Avondale	74	8	7.77%	\$179,460	\$123,010
Buckeye	103	0	0.00%	\$253,822	\$13,214
Carefree	6	0	0.00%	\$9,000	\$0
Cave Creek	40	124	44.77%	\$63,245	\$0
Chandler	277	34	100.00%	\$1,361,072	\$515,030
El Mirage	34	0	0.00%	\$285,542	\$285,542
Fountain Hills	28	0	0.00%	\$101,904	\$0
Fort McDowell Yavapai Nation	15	7	100.00%	\$411,000	\$0
Gila Bend	7	2795	96.75%	\$36,000	\$36,000
Gilbert	2,889	952	78.42%	\$0	\$0
Glendale	1,214	125	78.62%	\$4,084,503	\$3,349,133
Goodyear	159	0	0.00%	\$148,573	\$121,773
Guadalupe	7	5	100.00%	\$10,800	\$0
Litchfield Park	5	128	30.05%	\$118,900	\$118,900
Unincorporated Maricopa County	426	297	66.00%	\$247,248	\$124,703
Mesa	450	1	1.06%	\$2,139,576	\$1,519,423
Paradise Valley	94	208	69.57%	\$469,000	\$6,000
Peoria	299	110	12.05%	\$282,333	\$257,329
Phoenix	913	5	4.03%	\$7,691,316	\$532,501
Queen Creek (Maricopa County Only)	124	19	90.48%	\$306,143	\$11,650
Salt River Pima-Maricopa Indian Community	21	341	56.64%	\$509,053	\$489,040
Salt River Project <sup>46</sup>	602	36	27.27%	N/A	N/A
Scottsdale	132	73	90.12%	\$55,000	\$55,000
Surprise	81	18	16.22%	\$444,613	\$389,733
Tempe	111	10	100.00%	\$1,373,300	\$182,300
Tolleson	10	2	14.29%	\$0	\$0
Wickenburg	14	12	100.00%	\$32,589	\$1,350
Youngtown	12	0	0.00%	\$21,247	\$21,247
Mesa (Pinal County Only)	15	0	0.00%	\$2,139,576	\$0
Queen Creek (Pinal County Only)	5	67	90.54%	\$306,143	\$0

<sup>46</sup> Facility count for Salt River Project is not included in overall County-Wide totals and all data was provided by SRP.

Community	Total Population	Population Exposed		Total Population Over 65	Population Over 65 Exposed	
		Total	Percent		Total	Percent
<b>County-Wide Totals (Maricopa Only)</b>	<b>3,819,188</b>	<b>1,722,580</b>	<b>45.10%</b>	<b>462,886</b>	<b>202,165</b>	<b>43.67%</b>
Apache Junction (Maricopa County Portion)	280	55	19.67%	173	37	21.46%
Avondale	75,819	72,701	95.89%	4,114	3,959	96.22%
Buckeye	50,786	2,100	4.14%	3,410	101	2.95%
Carefree	3,367	0	0.00%	1,182	0	0.00%
Cave Creek	4,824	0	0.00%	906	0	0.00%
Chandler	235,715	102,227	43.37%	18,311	7,222	39.44%
El Mirage	31,717	31,717	100.00%	2,049	2,049	100.00%
Fountain Hills	971	0	0.00%	56	0	0.00%
Fort McDowell Yavapai Nation	22,395	0	0.00%	6,228	0	0.00%
Gila Bend	1,936	1,762	91.02%	186	161	86.64%
Gila River Indian Community	3,346	0	0.00%	165	0	0.00%
Gilbert	208,043	184,596	88.73%	12,602	10,217	81.07%
Glendale	226,187	179,410	79.32%	20,712	15,879	76.67%
Goodyear	65,306	56,006	85.76%	7,066	6,214	87.94%
Guadalupe	5,535	0	0.00%	449	0	0.00%
Litchfield Park	4,924	4,924	100.00%	1,128	1,128	100.00%
Unincorporated Maricopa County	276,418	111,937	40.50%	89,501	44,726	49.97%
Mesa	439,089	328,829	74.89%	62,001	37,912	61.15%
Paradise Valley	12,735	83	0.65%	2,884	19	0.64%
Peoria	154,057	116,539	75.65%	22,056	17,529	79.48%
Phoenix	1,446,886	291,862	20.17%	122,001	16,409	13.45%
Queen Creek	26,365	1,536	5.83%	1,366	63	4.60%
Salt River Pima-Maricopa Indian Community	6,315	6,284	99.50%	1,080	1,072	99.20%
Scottsdale	217,137	83,673	38.53%	43,465	16,459	37.87%
Surprise	117,441	105,102	89.49%	22,338	16,108	72.11%
Tempe	161,957	28,301	17.47%	13,668	3,131	22.91%
Tohono O'odham Nation	722	359	49.75%	45	22	49.27%
Tolleson	6,502	6,502	100.00%	588	588	100.00%
Wickenburg	6,340	0	0.00%	1,996	0	0.00%
Youngtown	6,073	6,073	100.00%	1,160	1,160	100.00%
Queen Creek (Pinal County Portion)	611	0	0.00%	75	0	0.00%
Peoria (Yavapai County Portion)	9	0	0.00%	2	0	0.00%

Community	Residential Building Count	Residential Building Exposure		Residential Building Replacement Value (x\$1,000)	Residential Building Value Exposed	
		Total	Percent		Total (x\$1,000)	Percent
<b>County-Wide Totals (Maricopa Only)</b>	<b>1,640,183</b>	<b>712,285</b>	<b>43.43%</b>	<b>\$513,435,920</b>	<b>\$181,779,075</b>	<b>35.40%</b>
Apache Junction (Maricopa County Portion)	280	47	16.70%	\$10,006	\$1,671	16.70%
Avondale	26,906	25,977	96.55%	\$5,303,222	\$5,130,934	96.75%
Buckeye	18,172	814	4.48%	\$4,109,349	\$175,411	4.27%
Carefree	2,249	0	0.00%	\$2,520,086	\$0	0.00%
Cave Creek	2,498	0	0.00%	\$2,157,129	\$0	0.00%
Chandler	94,181	40,565	43.07%	\$33,262,033	\$10,641,089	31.99%
El Mirage	11,306	11,306	100.00%	\$1,840,087	\$1,840,086	100.00%
Fountain Hills	308	0	0.00%	\$71,056	\$0	0.00%
Fort McDowell Yavapai Nation	13,107	0	0.00%	\$7,013,593	\$0	0.00%
Gila Bend	944	871	92.22%	\$89,786	\$82,573	91.97%
Gila River Indian Community	924	0	0.00%	\$117,456	\$0	0.00%
Gilbert	74,786	66,174	88.48%	\$27,321,667	\$23,712,616	86.79%
Glendale	90,351	71,730	79.39%	\$20,974,482	\$15,706,804	74.89%
Goodyear	25,052	21,298	85.01%	\$7,682,897	\$6,300,437	82.01%
Guadalupe	1,397	0	0.00%	\$202,819	\$0	0.00%
Litchfield Park	2,432	2,432	100.00%	\$1,036,335	\$1,036,335	100.00%
Unincorporated Maricopa County	142,950	63,099	44.14%	\$43,219,291	\$14,000,244	32.39%
Mesa	201,476	145,434	72.18%	\$46,756,733	\$32,347,511	69.18%
Paradise Valley	5,622	37	0.67%	\$8,385,999	\$18,678	0.22%
Peoria	64,807	50,146	77.38%	\$18,961,634	\$12,882,603	67.94%
Phoenix	590,454	95,185	16.12%	\$163,751,509	\$18,309,403	11.18%
Queen Creek	8,561	426	4.98%	\$3,043,070	\$146,068	4.80%
Salt River Pima-Maricopa Indian Community	2,621	2,604	99.37%	\$260,127	\$247,485	95.14%
Scottsdale	123,821	49,652	40.10%	\$77,330,425	\$23,138,843	29.92%
Surprise	52,623	45,164	85.83%	\$14,802,691	\$11,784,959	79.61%
Tempe	73,542	14,295	19.44%	\$21,418,707	\$3,490,115	16.29%
Tohono O'odham Nation	253	80	31.62%	\$29,312	\$7,586	25.88%
Tolleson	2,156	2,156	100.00%	\$348,281	\$348,281	100.00%
Wickenburg	3,609	0	0.00%	\$986,544	\$0	0.00%
Youngtown	2,793	2,792	99.96%	\$429,593	\$429,344	99.94%
Queen Creek (Pinal County Portion)	234	0	0.00%	\$56,074	\$0	0.00%
Peoria (Yavapai County Portion)	6	0	0.00%	\$1,344	\$0	0.00%



**Legend**

-  Maricopa County
-  Mitigation Plan Extent
-  Major Streams

**Subsidence Hazard Rating**

-  High



0    37.5    75    150  
Miles

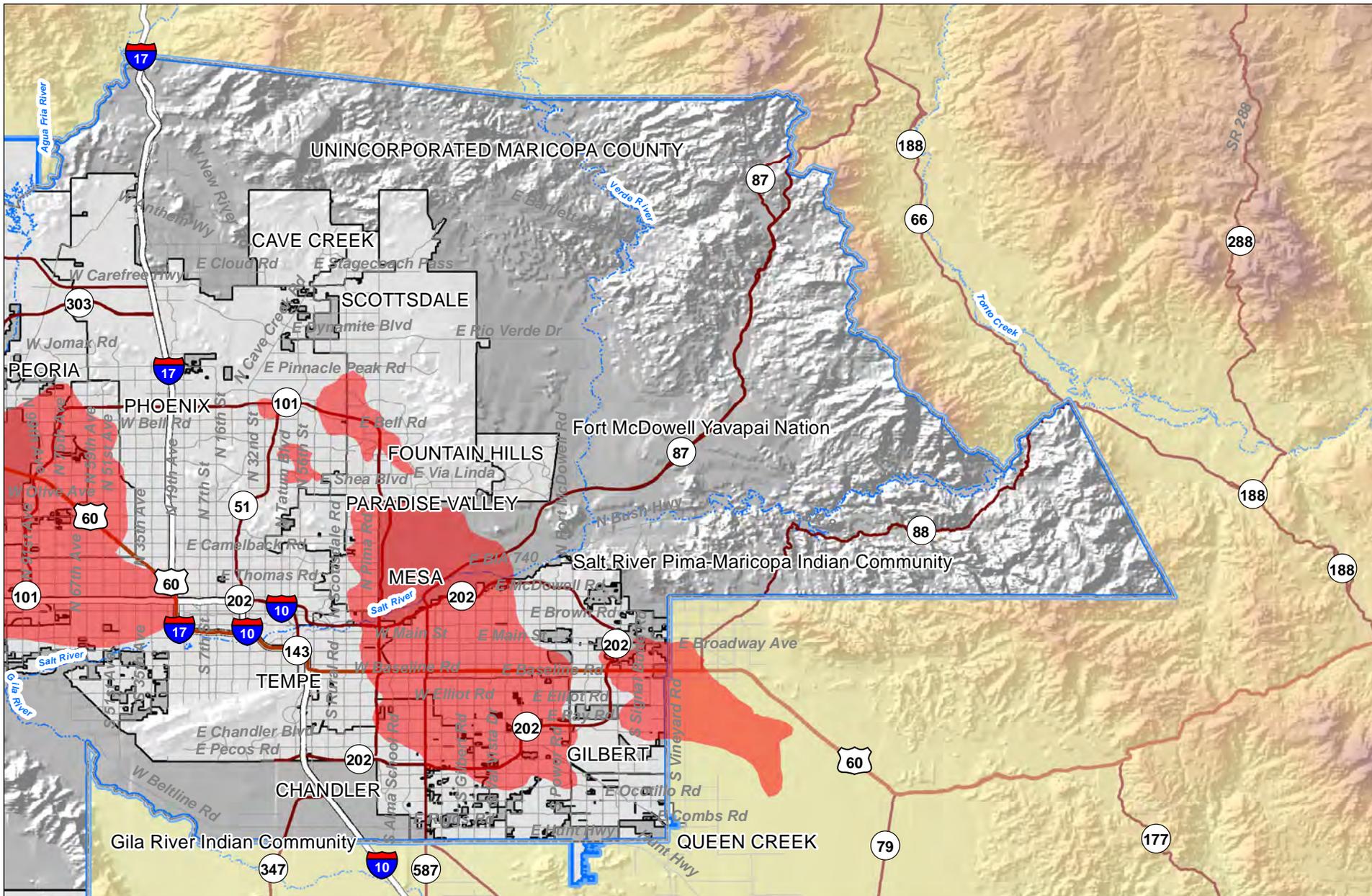
*Source: JE Fuller 2014; ADWR 2014; MAG 2014; TIGER 2014; AZGS 2014*



**Maricopa County Multi-Jurisdictional Hazard Mitigation Plan**



**Map 6A  
Maricopa County  
Subsidence Hazard Map  
as of Dec 2014**



**Legend**

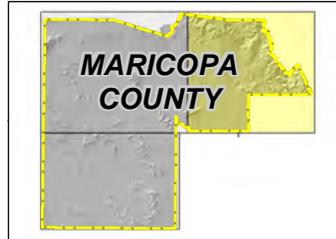
- Maricopa County
- Mitigation Plan Extent
- Major Streams

**Subsidence Hazard Rating**

- High

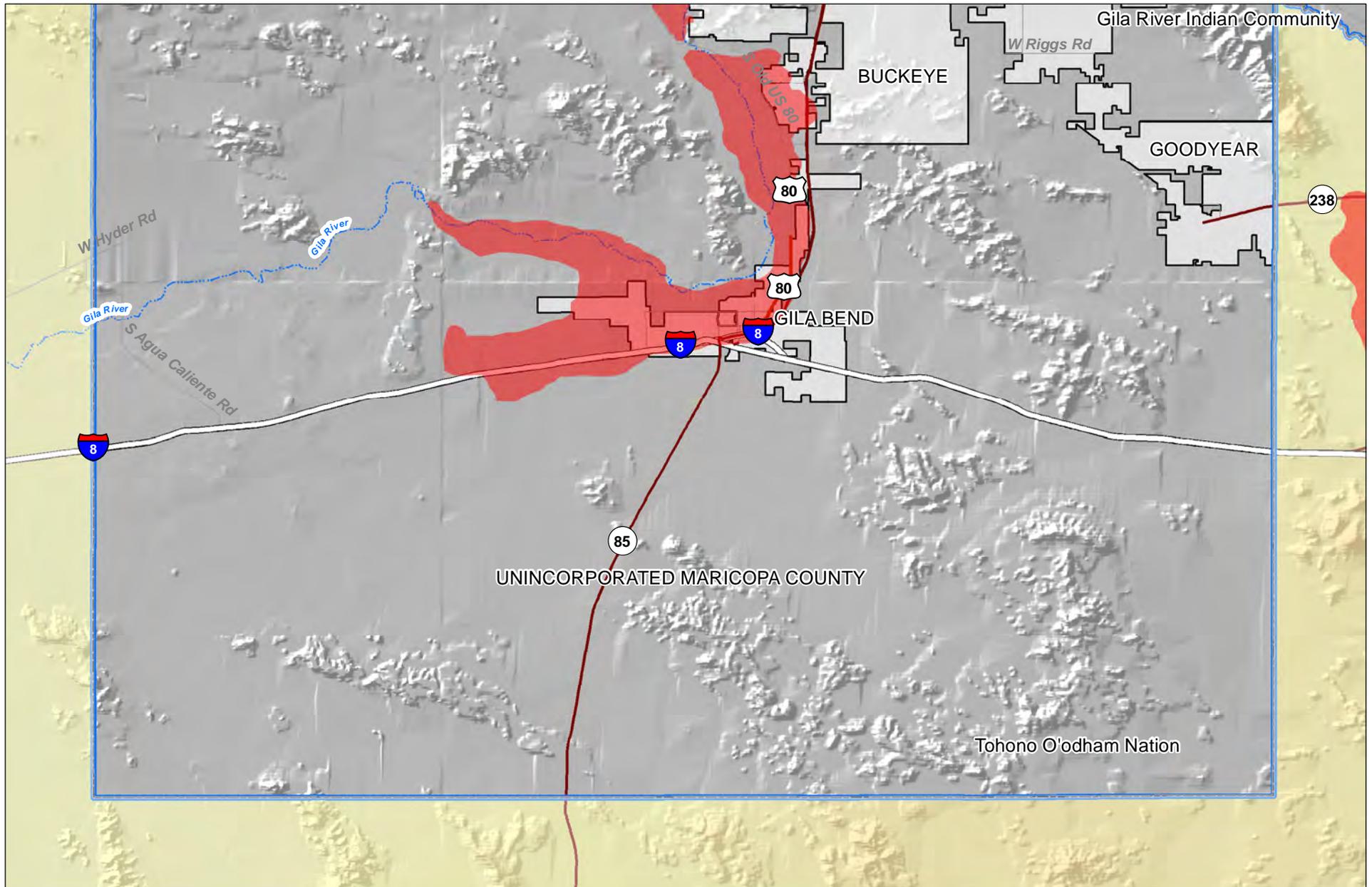
0 37.5 75 150  
Miles

Source: JE Fuller 2014; ADWR 2014; MAG 2014; TIGER 2014; AZGS 2014



Maricopa County Multi-Jurisdictional Hazard Mitigation Plan

Map 6B  
Maricopa County Subsidence Hazard Map as of Dec 2014



**Legend**

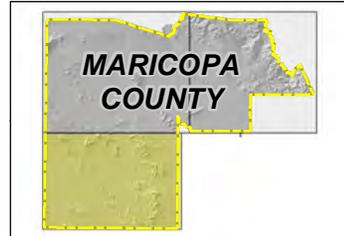
-  Maricopa County
-  Mitigation Plan Extent
-  Major Streams

**Subsidence Hazard Rating**

-  High

  
 0 37.5 75 150  
 Miles

*Source: JE Fuller 2014; ADWR 2014; MAG 2014; TIGER 2014; AZGS 2014*



**Maricopa County Multi-Jurisdictional Hazard Mitigation Plan**



**Map 6C**  
**Maricopa County**  
**Subsidence**  
**Hazard Map**  
**as of Dec 2014**

5.3.9 *Wildfire*

**Description**

A wildfire is an uncontrolled fire spreading through wildland vegetative fuels and/or urban interface areas where fuels may include structures. They often begin unnoticed, spread quickly, and are usually signaled by dense smoke that may fill the area for miles around. Wildfires can be human-caused through acts such as arson or campfires, or can be caused by natural events such as lightning. If not promptly controlled, wildfires may grow into an emergency or disaster. Even small fires can threaten lives, resources, and destroy improved properties.

The indirect effects of wildfires can also be catastrophic. In addition to stripping the land of vegetation and destroying forest resources and personal property, large, intense fires can harm the soil, waterways and the land itself. Soil exposed to intense heat may temporarily lose its capability to absorb moisture and support life. Exposed soils in denuded watersheds erode quickly and are easily transported to rivers and streams thereby enhancing flood potential, harming aquatic life and degrading water quality. Lands stripped of vegetation are also subject to increased landslide hazards.

**History**

The Sonoran desert vegetation typically found in the majority of Maricopa County is less dense than other areas of the state. That fact, combined with relative density of urban area, makes wildfire risk within the county relatively low when compared to the more densely forested areas of the state. However, the risk of wildfire still exists within Maricopa County and can pose a real threat to those who live and/or work within the wildland urban interface. Historic events that have occurred during the last Plan cycle included:

- In June 2010, the Sycamore Fire, located in northern Maricopa County near MP209 on Highway 87, burned 187 acres and forced a temporary closure of the main thoroughfare between Phoenix and Payson while fire crews battled the blaze. There were no reported damages, injuries or deaths and fire suppression costs were estimated to exceed \$146K (NWCG, 2014).
- In May 2012, the Sunflower Fire, located in northern Maricopa County approximately 30 miles north of Mesa, burned 17,446 acres. There were 6 reported firefight related injuries and no reported deaths. The fire threatened 2 residences, 2 out-buildings, the Cross F Ranch, and an APS 345 KV power line, but firefighters were able to protect assets in the area. Fire suppression costs were estimated to exceed \$600K (NWCG, 2014).

Other historic wildfire incidents include:

- In March 2004, The Citris Fire located west of Gila Bend burned over 5,700 acres along the Gila River, which included state, private and federal lands.
- In June 2005, lightning touched off the Cave Creek Complex Fire in the northern part of Maricopa County about 5 miles northeast of Carefree. The fire threatened 440 homes in the Tonto Hills and Camp Creek areas, as well as major power lines serving Phoenix. There were damages reported to 11 residences and 3 out-buildings in Camp Creek (USFS, 2009).
- In June 2008, lightning touched off the Ethan Brush Fire in the heavily vegetated Gila River bed south of Laveen. Approximately 50 residents of 18 homes were evacuated overnight and allowed to return their undamaged homes the next day. The fire ultimately consumed about 7,000 acres (AZ Republic, 2008).
- In August 2008, the Robins Butte Fire burned about 500 acres of the Gila River bottom located four miles west of State Route 85, south of Palo Verde Road, and near Buckeye (AZ Republic, 2008).

**Probability and Magnitude**

The probability and magnitude of wildfire incidents for Maricopa County are influenced by numerous factors including vegetation densities, previous burn history, hydrologic conditions, climatic conditions such as temperature, humidity, and wind, ignition source (human or natural), topographic

aspect and slope, and remoteness of area. Two sources of wildfire hazard data were used by the MJPT to develop a composite hazard profile for the county. The first and primary data source is the recently updated Maricopa County Community Wildfire Protection Plan (LSDI, 2014) and the second is a statewide coverage developed by State of Arizona. Each of these is discussed below.

In 2009, Maricopa County communities, tribes, and state and federal officials tasked with managing wildfires within the county came together to develop the Maricopa County Community Wildfire Protection Plan (CWPP). The CWPP (LSDI, 2010) was developed in response to the Healthy Forests Restoration Act of 2003 (HFRA) for the at-risk communities and unincorporated areas in Maricopa County, Arizona, located in and around public lands administered by the US Department of the Interior Bureau of Land Management (USDI BLM) Phoenix District Office, and the Tonto National Forest (TNF). Two core teams were formed to implement the agency and public collaboration necessary to develop a CWPP compliant with HFRA: the Eastern Core Team includes all identified at-risk communities in Maricopa County located east of Interstate 17 (I-17) and east of Interstate 10 (I-10), and the Western Core Team includes all identified at-risk communities west of I-17 and I-10. The Core Teams identified 44 communities and analyzed 3,103,370 acres for potential risk from catastrophic wildland fire within Maricopa County. The CWPP has been recently updated in late 2014, however the base hazard data developed in the 2010 CWPP remained unchanged with the update.

The Maricopa County CWPP established the Wildland Urban Interface (WUI) areas for the county and mapped various wildfire risk elements such as vegetative fuels and densities, topographical slope and aspect, previous burn areas and ignition points, and prior treatment areas, etc. One product of the CWPP work was the development of a county-wide wildland fuel hazard coverage for both a typical fire season and extraordinary rainfall years. Components considered in the development of the wildland fuel hazard coverage included vegetation type and density, previously burned areas, and terrain slope and aspect. The composite coverage resulted in a raster grid categorized as High, Medium, or Low hazard. The procedures used by the CWPP planning team to develop the hazard designation are documented in the CWPP. The MJPT chose to use the typical fire season data set to best represent the wildland fuel hazard for the county.

The 2003/04 Arizona Wildland Urban Interface Assessment (AWUIA) project (Fisher, 2004) was used to identify the wildfire hazard for the areas located outside of the CWPP WUI. The purpose of the AWUIA was to attempt to conduct an analysis on a statewide basis using a common spatial model, for validation of those communities listed in the federal register as WUI, and further identify possible other communities at risk. The AWUIA approach used four main data layers:

- TOPO – aspect and slope derived from 30 meter Digital Elevation Model data from USGS.
- RISK – historical fire density using point data from fire record years 1986–1996 from all wildland agencies.
- HAZARD – fuels, natural fire regimes and condition class.
- HOUSE – houses and/or structures

A value rating of 1-15 was used for all layers. Two separate results were developed. The first coverage used an applied weighting scheme that combined each of the four data layers to develop a ranking model for identifying WUI communities at greatest risk. The second coverage, referred to as the “Land Hazard”, also applied a weighting scheme that combined only the TOPO, RISK, and HAZARD layers, as follows:

$$\text{LAND HAZARD} = (\text{HAZARD} * 70\%) + (\text{RISK} * 20\%) + (\text{TOPO} * 10\%)$$

Weighting percentages were determined through discussion with the Arizona Interagency Coordinating Group. The “Land Hazard” layer produced from this model is based on a 250-meter raster grid (some data originated at 1,000-meter). The resultant raster values range from 1-15 and were classified into three groups to depict wildfire hazard without the influence of structures: HIGH (values of 10-15), MEDIUM (values of 7-9), and LOW (values of 1-6).

The combination of these two data sets provides a complete geospatial coverage for the planning area.

**Climate Change Impacts**

One of the “Key Messages” from the NCA report (Garfin, et.al., 2014) is the projection that wildfire risk and incidents within the Southwest region will likely increase due to climate change. Reduced precipitation, increased temperatures and longer, more severe periods of drought all factor into the assessment. Response to this amplification of current wildfire risk will likely include a greater need for vegetation management planning and greater enforcement of wildland urban interface best building practices. Incorporation of climate change impacts into the CWPP is also something the county and participating jurisdictions should consider.

**Vulnerability – CPRI Results**

Wildfire CPRI results for each community are summarized in Table 5-38 below.

**Table 5-38: CPRI results by jurisdiction for wildfire**

Participating Jurisdiction	Probability	Magnitude/Severity	Warning Time	Duration	CPRI Score
Avondale	Likely	Limited	<6 hours	<1 week	2.85
Buckeye	Likely	Limited	<6 hours	<24 hours	2.75
Carefree	Highly Likely	Critical	6-12 hours	>1 week	3.55
Cave Creek	Likely	Critical	<6 hours	<1 week	3.15
Chandler	Possibly	Negligible	<6 hours	<6 hours	1.90
El Mirage	Possibly	Limited	6-12 hours	<6 hours	2.05
Fountain Hills	Likely	Critical	<6 hours	<1 week	3.15
Fort McDowell Yavapai Nation	Possibly	Limited	<6 hours	<1 week	2.40
Gila Bend	Unlikely	Negligible	<6 hours	<6 hours	1.45
Gilbert	Unlikely	Negligible	>24 hours	<6 hours	1.20
Glendale	Possibly	Negligible	<6 hours	<24 hours	1.80
Goodyear	Likely	Negligible	<6 hours	<24 hours	2.45
Guadalupe	Unlikely	Negligible	<6 hours	<6 hours	1.45
Litchfield Park	Possibly	Limited	<6 hours	<24 hours	3.20
Unincorporated Maricopa County	Highly Likely	Critical	<6 hours	>1 week	3.70
Mesa	Unlikely	Negligible	<6 hours	<6 hours	1.45
Paradise Valley	Possibly	Critical	>24 hours	<1 week	2.25
Peoria	Likely	Critical	<6 hours	<6 hours	2.95
Phoenix	Unlikely	Negligible	<6 hours	<6 hours	1.45
Queen Creek	Possibly	Limited	<6 hours	>1 week	2.50
Salt River Pima-Maricopa Indian Community	Likely	Critical	<6 hours	<1 week	3.25
Salt River Project	Likely	Critical	<6 hours	<1 week	3.15
Scottsdale	Likely	Limited	<6 hours	<24 hours	2.75
Surprise	Possibly	Limited	<6 hours	<24 hours	2.30
Tempe	Unlikely	Negligible	<6 hours	<6 hours	1.45
Tolleson	Unlikely	Negligible	>24 hours	<6 hours	1.00
Wickenburg	Highly Likely	Critical	<6 hours	<1 week	3.60
Youngtown	Possibly	Critical	<6 hours	<1 week	2.70
<b>County-wide average CPRI =</b>					<b>2.42</b>

**Vulnerability – Loss/Exposure Estimations**

The estimation of potential exposure to high and medium wildfire hazards was accomplished by intersecting the human and facility assets with the wildfire hazard limits depicted on Maps 7A, 7B, and 7C. No loss estimations were made for this update. Only exposure of the human, residential and asset facilities are reported. Table 5-39 summarizes the MJPT identified critical and non-critical facilities potentially exposed to high wildfire hazard areas. Tables 5-40 and 5-41 summarize the population sectors and residential structures exposed to the high wildfire hazard areas.

In summary, \$179.3 million in critical and non-critical MJPT identified assets are located within high hazard wildfire areas. An additional \$11.1 billion of Census 2010 residential structures are located within high hazard wildfire areas across the planning area. Regarding human vulnerability, a total population of 47,856 people, or 1.25% of the total 2010 Census population areas across the planning

area, are located within a high hazard subsidence area. Typically, deaths and injuries not related to firefighting activities are rare. However, it is feasible to assume that at least one death and/or injury may be plausible. There is also a high probability of population displacement during a wildfire event, especially in the urban wildland interface areas.

It is duly noted that the exposure numbers presented above represent a comprehensive evaluation of the county as a whole. It is unlikely that wildfires would burn county-wide at the same time. Accordingly, actual event based losses and exposure are likely to be only a fraction of those summarized above.

**Vulnerability – Development Trend Analysis**

By its very definition, the WUI represents the fringe of urban development as it intersects with the natural environment. As communities push further out, more WUI is created. The current CWPP provides a comprehensive approach to reducing wildfire risk through targeted activities and projects that are designed to establish a baseline for effective mitigation against wildfire damages in the WUI of Maricopa County. Future development that expands the WUI should consult the CWPP and this Plan for guidance on sound development practices and wildfire risk reduction measures.

**Sources**

Arizona Division of Emergency Management, 2013, State of Arizona Multi-Hazard Mitigation Plan, 2013 Update.

FEMA, 2001, Understanding Your Risks; Identifying Hazards and Estimating Losses, FEMA Document No. 386-2.

Fisher, M., 2004, Arizona Wildland Urban Interface Assessment, 2003, prepared for the Arizona Interagency Coordination Group.  
<http://www.azsf.az.gov/UserFiles/PDF/Arizona%20Wildland%20Urban%20Interface%20Assessment%2005MAR04.pdf>

Logan Simpson Design, Inc., 2010, Maricopa County Community Wildfire Protection Plan

MCDEM, 2014, Maricopa County Community Wildfire Protection Plan Update

**Profile Maps**

Maps 7A, 7B, and 7C – Wildfire Hazard Map(s)

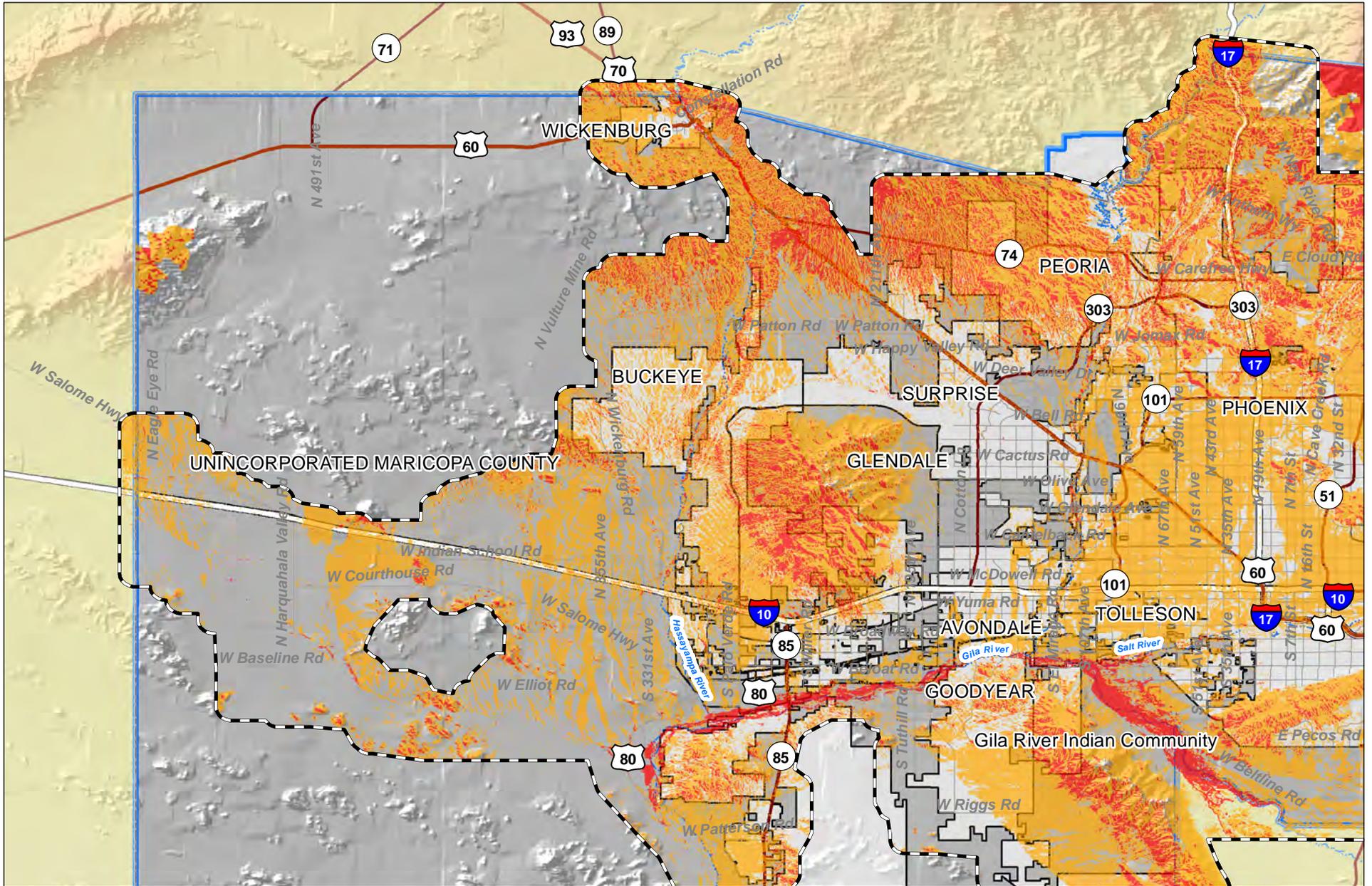
<b>Table 5-39: Asset inventory exposure to high hazard wildfire areas</b>					
<b>Community</b>	<b>Total Facilities Reported by Community</b>	<b>Impacted Facilities</b>	<b>Percentage of Total Community Facilities Impacted</b>	<b>Total Replacement Value of All Facilities Reported by Community (x \$1,000)</b>	<b>Estimated Replacement Value Exposed to Hazard (x \$1,000)</b>
<b>County-Wide Totals (Maricopa Only)</b>	<b>7545</b>	<b>97</b>	<b>1.19%</b>	<b>\$20,635,239</b>	<b>\$179,291</b>
Avondale	74	1	1.35%	\$179,460	\$1,500
Buckeye	103	2	1.94%	\$253,822	\$6,400
Carefree	6	0	0.00%	\$9,000	\$0
Cave Creek	40	3	7.50%	\$63,245	\$650
Chandler	277	0	0.00%	\$1,361,072	\$0
El Mirage	34	1	2.94%	\$285,542	\$20,000
Fountain Hills	28	0	0.00%	\$101,904	\$0
Fort McDowell Yavapai Nation	15	0	0.00%	\$411,000	\$0
Gila Bend	7	0	0.00%	\$36,000	\$0
Gilbert	2,889	1	0.03%	\$0	\$0
Glendale	1,214	3	0.25%	\$4,084,503	\$23,897
Goodyear	159	1	0.63%	\$148,573	\$0
Guadalupe	7	0	0.00%	\$10,800	\$0
Litchfield Park	5	0	0.00%	\$118,900	\$0
Unincorporated Maricopa County	426	42	9.86%	\$247,248	\$74,104
Mesa	450	12	2.67%	\$2,139,576	\$17,800
Paradise Valley	94	0	0.00%	\$469,000	\$0
Peoria	299	13	4.35%	\$282,333	\$1,200
Phoenix	913	5	0.55%	\$7,691,316	\$23,180
Queen Creek (Maricopa County Only)	124	1	0.81%	\$306,143	\$2,500
Salt River Pima-Maricopa Indian Community	21	2	9.52%	\$509,053	\$8,060
Salt River Project <sup>47</sup>	602	6	1.00%	N/A	N/A
Scottsdale	132	4	3.03%	\$55,000	\$0
Surprise	81	0	0.00%	\$444,613	\$0
Tempe	111	0	0.00%	\$1,373,300	\$0
Tolleson	10	0	0.00%	\$0	\$0
Wickenburg	14	0	0.00%	\$32,589	\$0
Youngtown	12	0	0.00%	\$21,247	\$0
Mesa (Pinal County Only)	15	0	0.00%	\$2,139,576	\$0
Queen Creek (Pinal County Only)	5	0	0.00%	\$306,143	\$0

<sup>47</sup> Facility count for Salt River Project is not included in overall County-Wide totals and all data was provided by SRP.

Community	Total Population	Population Exposed		Total Population Over 65	Population Over 65 Exposed	
		Total	Percent		Total	Percent
<b>County-Wide Totals (Maricopa Only)</b>	<b>3,819,188</b>	<b>47,856</b>	<b>1.25%</b>	<b>462,886</b>	<b>4,412</b>	<b>0.95%</b>
Apache Junction (Maricopa County Portion)	280	0	0.00%	173	0	0.00%
Avondale	75,819	179	0.24%	4,114	7	0.16%
Buckeye	50,802	2,505	4.93%	3,410	201	5.90%
Carefree	3,351	151	4.49%	1,182	54	4.58%
Cave Creek	4,824	521	10.81%	906	79	8.69%
Chandler	235,644	96	0.04%	18,301	5	0.03%
El Mirage	31,788	100	0.32%	2,058	7	0.34%
Fountain Hills	971	91	9.34%	56	6	11.38%
Fort McDowell Yavapai Nation	22,395	215	0.96%	6,228	59	0.94%
Gila Bend	1,936	3	0.17%	186	1	0.37%
Gila River Indian Community	3,346	254	7.59%	165	14	8.48%
Gilbert	208,068	20	0.01%	12,603	0	0.00%
Glendale	226,163	181	0.08%	20,711	23	0.11%
Goodyear	65,297	379	0.58%	7,066	31	0.44%
Guadalupe	5,544	0	0.00%	449	0	0.00%
Litchfield Park	4,924	2	0.04%	1,128	2	0.17%
Unincorporated Maricopa County	276,418	9,077	3.28%	89,501	940	1.05%
Mesa	439,089	3,800	0.87%	62,001	319	0.51%
Paradise Valley	12,725	113	0.89%	2,883	34	1.18%
Peoria	154,067	3,881	2.52%	22,057	233	1.06%
Phoenix	1,446,886	16,409	1.13%	122,001	1,042	0.85%
Queen Creek	26,365	342	1.30%	1,366	16	1.14%
Salt River Pima-Maricopa Indian Community	6,315	19	0.29%	1,080	1	0.10%
Scottsdale	217,346	8,740	4.02%	43,476	1,173	2.70%
Surprise	117,489	315	0.27%	22,333	55	0.25%
Tempe	161,913	35	0.02%	13,671	0	0.00%
Tohono O'odham Nation	510	0	0.00%	36	0	0.00%
Tolleson	6,502	0	0.00%	588	0	0.00%
Wickenburg	6,340	330	5.20%	1,996	81	4.04%
Youngtown	6,073	97	1.60%	1,160	29	2.54%
Queen Creek (Pinal County Portion)	611	13	2.18%	75	2	2.76%
Peoria (Yavapai County Portion)	9	2	22.22%	2	0	0.00%

Community	Residential Building Count	Residential Building Exposure		Residential Building Replacement Value (x\$1,000)	Residential Building Value Exposed	
		Total	Percent		Total (x\$1,000)	Percent
<b>County-Wide Totals (Maricopa Only)</b>	<b>1,640,183</b>	<b>20,375</b>	<b>1.24%</b>	<b>\$513,435,968</b>	<b>\$11,112,131</b>	<b>2.16%</b>
Apache Junction (Maricopa County Portion)	280	0	0.00%	\$10,009	\$0	0.00%
Avondale	26,906	77	0.29%	\$5,303,219	\$16,156	0.30%
Buckeye	18,179	988	5.44%	\$4,111,009	\$209,595	5.10%
Carefree	2,242	73	3.24%	\$2,518,427	\$80,602	3.20%
Cave Creek	2,498	236	9.44%	\$2,157,129	\$177,960	8.25%
Chandler	94,159	35	0.04%	\$33,256,924	\$14,456	0.04%
El Mirage	11,329	35	0.31%	\$1,845,196	\$4,491	0.24%
Fountain Hills	308	29	9.52%	\$71,056	\$6,765	9.52%
Fort McDowell Yavapai Nation	13,107	121	0.92%	\$7,013,593	\$76,009	1.08%
Gila Bend	944	3	0.27%	\$89,786	\$243	0.27%
Gila River Indian Community	924	77	8.34%	\$117,456	\$10,320	8.79%
Gilbert	74,795	6	0.01%	\$27,326,029	\$2,634	0.01%
Glendale	90,342	67	0.07%	\$20,970,120	\$30,955	0.15%
Goodyear	25,050	156	0.62%	\$7,681,879	\$57,542	0.75%
Guadalupe	1,399	0	0.00%	\$203,837	\$0	0.00%
Litchfield Park	2,432	1	0.06%	\$1,036,335	\$760	0.07%
Unincorporated Maricopa County	142,950	3,811	2.67%	\$43,219,339	\$1,527,122	3.53%
Mesa	201,476	1,584	0.79%	\$46,756,734	\$757,752	1.62%
Paradise Valley	5,618	60	1.06%	\$8,380,285	\$89,428	1.07%
Peoria	64,811	1,505	2.32%	\$18,967,348	\$671,290	3.54%
Phoenix	590,454	6,521	1.10%	\$163,751,508	\$2,832,099	1.73%
Queen Creek	8,561	111	1.29%	\$3,043,070	\$30,522	1.00%
Salt River Pima-Maricopa Indian Community	2,621	5	0.21%	\$260,127	\$1,119	0.43%
Scottsdale	123,944	4,436	3.58%	\$77,366,204	\$4,418,424	5.71%
Surprise	52,585	159	0.30%	\$14,784,216	\$28,072	0.19%
Tempe	73,573	29	0.04%	\$21,422,260	\$6,814	0.03%
Tohono O'odham Nation	138	0	0.00%	\$8,456	\$0	0.00%
Tolleson	2,156	0	0.00%	\$348,281	\$7	0.00%
Wickenburg	3,610	186	5.15%	\$986,793	\$51,697	5.24%
Youngtown	2,792	65	2.31%	\$429,344	\$9,296	2.17%
Queen Creek (Pinal County Portion)	234	5	2.34%	\$56,074	\$1,314	2.34%
Peoria (Yavapai County Portion)	5	0	4.30%	\$981	\$42	4.30%

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**Legend**

- Wildland Urban Interface
- High
- Medium
- Maricopa County
- Mitigation Plan Extent
- Major Streams

Note: The hazards depicted reflect 2009 CWPP data and the Arizona Wildland Urban Interface Assessment March 2004 data outside the CWPP

0 37.5 75 150  
 Miles

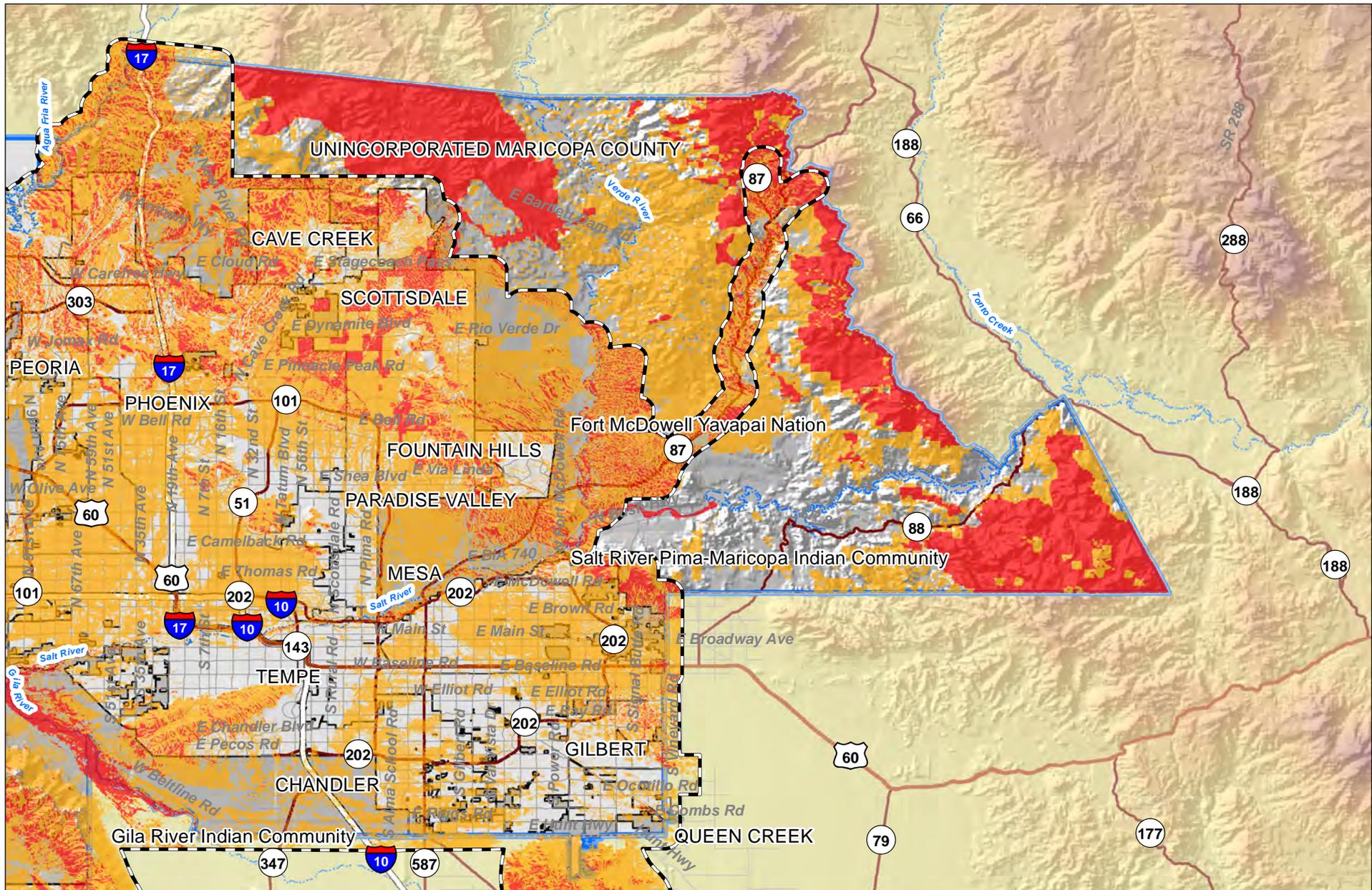
Source: JE Fuller 2014; MAG 2014; MCCWPP 2014; TIGER 2014; LSD 2014; AWUIA 2004; USGS 2014



**Maricopa County Multi-Jurisdictional Hazard Mitigation Plan**



**Map 7A**  
**Maricopa County**  
**Wildfire Hazard Map**  
 as of Dec 2014



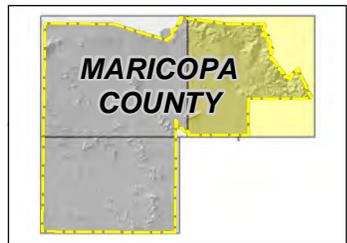
**Legend**

- Wildland Urban Interface
- High
- Medium
- Maricopa County
- Mitigation Plan Extent
- Major Streams

Note: The hazards depicted reflect 2009 CWPP data and the Arizona Wildland Urban Interface Assessment March 2004 data outside the CWPP

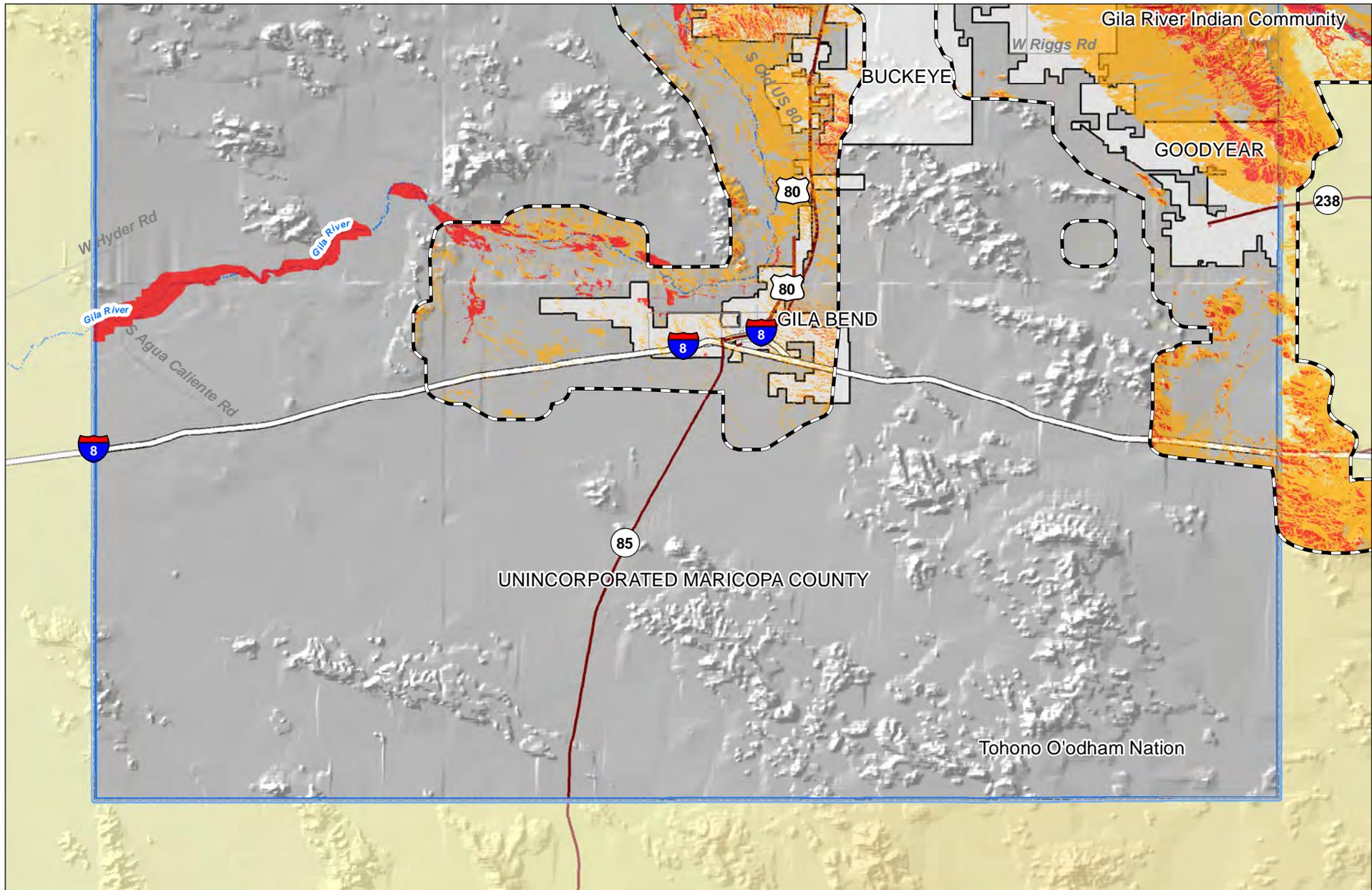
0 37.5 75 150  
Miles

Source: JE Fuller 2014; MAG 2014; MCCWPP 2014; TIGER 2014; LSD 2014; AWUIA 2004; USGS 2014



**Maricopa County Multi-Jurisdictional Hazard Mitigation Plan**

**Map 7B**  
**Maricopa County**  
**Wildfire Hazard Map**  
**as of Dec 2014**



**Legend**

- Wildland Urban Interface
- Maricopa County
- Mitigation Plan Extent
- Major Streams

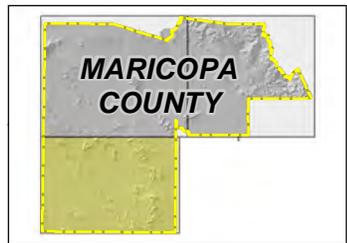
**Wildfire Hazard Rating**

- High
- Medium

Note: The hazards depicted reflect 2009 CWPP data and the Arizona Wildland Urban Interface Assessment March 2004 data outside the CWPP

0 37.5 75 150  
Miles

Source: JE Fuller 2014; MAG 2014; MCCWPP 2014; TIGER 2014; LSD 2014; AWUIA 2004; USGS 2014



**Maricopa County Multi-Jurisdictional Hazard Mitigation Plan**

**Map 7C**  
**Maricopa County**  
**Wildfire Hazard Map**  
as of Dec 2014

5.4 Risk Assessment Summary

The jurisdictional variability of risk associated with each hazard assessed in Section 5.3 is demonstrated by the various CPRI and hazard exposure results. Accordingly, each jurisdiction has varying levels of need regarding the hazards to be mitigated, and may not consider all of the hazards as posing a great risk to their individual communities. Table 5-42 summarizes the hazards selected for mitigation by each jurisdiction and will be the basis for each jurisdictions mitigation strategy.

<b>Jurisdiction</b>	<b>Dam Inundation</b>	<b>Drought</b>	<b>Extreme Heat</b>	<b>Fissure</b>	<b>Flood</b>	<b>Levee Failure</b>	<b>Severe Wind</b>	<b>Subsidence</b>	<b>Wildfire</b>
Avondale	M	M	M	NV	M	M	M	M	M
Buckeye	M	M	M	NV	M	NV	M	M	M
Carefree	NV	M	NH	NV	M	NV	M	NV	M
Cave Creek	NV	M	NH	NV	M	NV	M	NV	M
Chandler	M	M	M	NV	M	NV	M	M	NH
El Mirage	M	M	M	M	M	NV	M	M	NH
Fort McDowell Yavapai Nation	M	M	M	NV	M	NV	M	NV	M
Fountain Hills	M	M	NH	NV	M	NV	M	NV	M
Gila Bend	NV	M	M	NV	M	NV	M	M	M
Gilbert	M	M	M	M	M	M	M	M	NH
Glendale	M	M	M	M	M	M	M	M	M
Goodyear	M	M	M	M	M	NV	M	M	M
Guadalupe	M	M	M	NV	M	NV	M	NV	NV
Litchfield Park	M	M	M	NV	M	NV	M	M	NH
Unincorporated Maricopa County	M	M	M	M	M	M	M	M	M
Mesa	M	M	M	M	M	M	M	M	M
Paradise Valley	NV	M	M	NV	M	NV	M	M	M
Peoria	M	M	M	NV	M	M	M	M	M
Phoenix	M	M	M	M	M	M	M	M	M
Queen Creek	M	M	M	M	M	NV	M	M	M
Salt River Pima-Maricopa Indian Community	M	M	M	NV	M	NV	M	M	M
Salt River Project	M	M	M	NV	M	NV	M	M	M
Scottsdale	M	M	M	M	M	M	M	M	M
Surprise	M	M	M	M	M	NV	M	M	M
Tempe	M	M	M	NV	M	M	M	M	NH
Tolleson	M	M	M	NV	M	NV	M	M	NH
Wickenburg	M	M	NH	NV	M	M	M	NV	M
Youngtown	M	M	M	NV	M	NV	M	M	M

M – Mitigation A/Ps will be identified  
 NH – Nuisance hazard - no mitigation is warranted  
 NV – Jurisdiction is not vulnerable to hazard – no mitigation is warranted

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## SECTION 6: MITIGATION STRATEGY

**§201.6(c)(3):** [The plan shall include...] (3) A **mitigation strategy** that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools. This section shall include:

- (i) A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.
- (ii) A section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.
- (iii) An action plan describing how the actions identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.
- (iv) For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

The mitigation strategy provides the “what, when, and how” of actions that will reduce or possibly remove the community’s exposure to hazard risks. According to DMA 2000, the primary components of the mitigation strategy are generally categorized into the following:

- ☑ **Goals and Objectives**
- ☑ **Capability Assessment**
- ☑ **Mitigation Actions/Projects and Implementation Strategy**

The entire 2009 Plan mitigation strategy was reviewed and updated by the MJPT, including the addition or augmentation of the section describing National Flood Insurance Program (NFIP) compliance. Specifics of the changes and updates are discussed in the subsections below.

### 6.1 Hazard Mitigation Goals and Objectives

The 2009 Plan goals and objectives were reviewed by the MJPT and were determined to be adequate and current with the overall mitigation planning goals of all the participating jurisdictions. No changes were made, and the one goal and four clear objectives that will be carried forward for the Plan are as follows:

- **GOAL:** Reduce or eliminate the risk to people and property from natural hazards.
  - ◆ **Objective 1:** Reduce or eliminate risks that threaten life and property in the incorporated, unincorporated, and tribal jurisdictions within Maricopa County.
  - ◆ **Objective 2:** Reduce risk to critical facilities and infrastructure from natural hazards.
  - ◆ **Objective 3:** Promote hazard mitigation throughout the incorporated, unincorporated, and tribal jurisdictions within Maricopa County.
  - ◆ **Objective 4:** Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and tribal jurisdictions within Maricopa County.

### 6.2 Capability Assessment

An important component of the Mitigation Strategy is a review of each participating jurisdiction’s resources in order to identify, evaluate, and enhance the capacity of local resources to mitigate the effects of hazards. The capability assessment is comprised of several components:

- ✓ **Legal and Regulatory Review** – a review of the legal and regulatory capabilities, including ordinances, codes, plans, manuals, guidelines, and technical reports that address hazard mitigation activities.

- ✓ Technical Staff and Personnel – this assessment evaluates and describes the administrative and technical capacity of the jurisdiction’s staff and personnel resources.
- ✓ Fiscal Capability – this element summarizes each jurisdiction’s fiscal capability to provide the financial resources to implement the mitigation strategy.
- ✓ National Flood Insurance Program (NFIP) Participation – the NFIP contains specific regulatory measures that enable government officials to determine where and how growth occurs relative to flood hazards. Participation in the NFIP is voluntary for local governments, but the program is promoted by FEMA as a basic first step for implementing and sustaining an effective flood hazard mitigation program, and is a key indicator for measuring local capability as part of this assessment.

For this update, the MJPT reviewed the information provided in Section 6.2 of the 2009 Plan and updated data in the tables of Section 6.2.1 as appropriate. The MJPT chose to remove and not update Section 6.2.2 and Tables 6.4 and 6.5 for this Plan. The 2009 Plan Section 6.2.3 is renamed to Section 6.2.2 herein and has been augmented to summarize more detail of each jurisdiction’s participation in the NFIP program.

*6.2.1 Jurisdictional Capabilities*

Tables 6-1-1 through 6-1-28 summarize the legal and regulatory mitigation capability for each jurisdiction. Information provided includes a brief listing of current codes, mitigation relevant ordinances, plans, and studies/reports. Tables 6-2-1 through 6-2-28 summarize the staff and personnel resources employed by each jurisdiction that serve as a resource for hazard mitigation. Tables 6-3-1 through 6-3-28 summarize the fiscal capability and budgetary tools available to each participating jurisdiction. Each of these three tables are listed below by jurisdiction.

**Table 6-1-1: Legal and regulatory capabilities for Avondale**

<b>Regulatory Tools for Hazard Mitigation</b>	<b>Description</b>	<b>Responsible Department/Agency</b>
CODES	<ul style="list-style-type: none"> <li>• 2012 International Building Code</li> <li>• 2012 International Residential Code</li> <li>• 2012 International Mechanical Code</li> <li>• 2012 International Plumbing Code</li> <li>• 2012 International Energy Conservation Code</li> <li>• 2011 National Electrical Code</li> <li>• January 2015 International Fire Code</li> </ul>	<ul style="list-style-type: none"> <li>• Building Official</li> <li>• Code Enforcement</li> <li>• Fire Marshal</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• City of Avondale Ordinances (as Adopted) &amp; Weed Abatement Ordinance/Planning</li> <li>• International Property Maintenance Code (IPMC) - 302.4</li> <li>• Subdivision/Zoning Ordinance</li> <li>• Zoning Ordinance and Subdivision Regulations 2006 – Chapter 5 Planned Area Development District</li> </ul>	<ul style="list-style-type: none"> <li>• Code Enforcement</li> <li>• Planning &amp; Zoning</li> </ul>

**Table 6-1-1: Legal and regulatory capabilities for Avondale**

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>• General Plan/City Ordinance</li> <li>• Capital Improvement Project Plan</li> <li>• Development Guidelines and Policies</li> <li>• City Emergency Operations Plan</li> <li>• Pandemic Preparedness and Response Plan</li> <li>• Flood Control and Response Plan (McMicken Dam)</li> <li>• Nation Response Framework</li> <li>• State and Local Mitigation Plan (as adopted)</li> </ul>	<ul style="list-style-type: none"> <li>• Planning &amp; Zoning</li> <li>• Building Official</li> <li>• Fire</li> <li>• Code Enforcement</li> <li>• Safety/Risk</li> </ul>
STUDIES	<ul style="list-style-type: none"> <li>• Maricopa County Mass Evacuation Planning Group</li> </ul>	<ul style="list-style-type: none"> <li>• Fire</li> </ul>

**Table 6-2-1: Technical staff and personnel capabilities for Avondale**

Staff/Personnel Resources	<input checked="" type="checkbox"/>	Department/Agency - Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Brett Harris-Chief Building Official
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Charles Andrews-City Engineer
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Charles Andrews-City Engineer
Floodplain Manager	<input checked="" type="checkbox"/>	Charles Andrews-City Engineer
Surveyors		
Staff with education or expertise to assess the community's vulnerability to hazards	<input checked="" type="checkbox"/>	Brett Harris-Chief Building Official
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	Greg Beard-GIS
Scientists familiar with the hazards of the community		
Emergency manager	<input checked="" type="checkbox"/>	Erin Hausauer – Emergency Management Officer
Grant writer(s)	<input checked="" type="checkbox"/>	Janice Simpson – Grants Administrator
Others		

<b>Financial Resources</b>	<b>Accessible or Eligible to Use (Yes, No, Don't Know)</b>	<b>Comments</b>
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	Fees for water and sewer services
Impact fees for homebuyers or new developments/homes	Yes	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Other		

<b>Regulatory Tools for Hazard Mitigation</b>	<b>Description</b>	<b>Responsible Department/Agency</b>
CODES	<ul style="list-style-type: none"> <li>• 2012 International Building Code</li> <li>• 2012 International Residential Code</li> <li>• 2012 International Mechanical Code</li> <li>• 2012 International Plumbing Code</li> <li>• 2011 National Electrical Code</li> <li>• 2012 International Fuel Gas Code</li> <li>• 2012 International Energy Conservation Code</li> <li>• 2012 International Property Maintenance Code</li> <li>• 2012 International Existing Building Code</li> <li>• 2012 International Fire Code</li> </ul>	<ul style="list-style-type: none"> <li>• Development Services</li> <li>• Fire Department</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• Floodplain Management (Ord. No. 27-11, § 2, 7-19-2011)</li> <li>• Airport (Ord. No. 5-11, § 2, 3-1-2011)</li> <li>• Procurement (Ord. No. 2-11, § 2, 2-15-2011)</li> <li>• Health and Sanitation (Ord. No. 15-13, § 3, 9-17-2013)</li> </ul>	<ul style="list-style-type: none"> <li>• Public Works</li> </ul>
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>• 2007 Airport Master Plan</li> <li>• Development Code Update</li> <li>• Site Plan Review Requirements</li> <li>• Capital Improvements Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Public Works</li> <li>• Economic Development</li> </ul>
STUDIES	<ul style="list-style-type: none"> <li>• City of Buckeye Fiber Infrastructure Mapping</li> <li>• City of Buckeye Economic Development Action Agenda</li> <li>• Part 150 Noise Compatibility Study (Airport)</li> <li>• 2012 Downtown Storm Drain Improvement Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Economic Development</li> <li>• Economic Development</li> <li>• Public Works</li> </ul>

<b>Staff/Personnel Resources</b>	<input checked="" type="checkbox"/>	<b>Department/Agency - Position</b>
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Planning, Planners
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Engineering, Engineers – Architecture, Architects
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Planning, Engineering, Water Services Dept, Development Services Dept
Floodplain Manager	<input checked="" type="checkbox"/>	Street, Transportation Dept
Surveyors	<input checked="" type="checkbox"/>	Street, Public Works, Water Services Dept
Staff with education or expertise to assess the community’s vulnerability to hazards	<input checked="" type="checkbox"/>	Neighborhood Services Dept, Human Services, Emergency Management, Development Services, Fire Dept, Police Dept, Public Works, Streets, Engineering, Architecture, Water Services Dept
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	ITD, Fire Dept, Police Dept
Scientists familiar with the hazards of the community	<input checked="" type="checkbox"/>	Police Dept, Water Services Dept, Fire Dept
Emergency manager	<input checked="" type="checkbox"/>	Fire Dept, Fire Chief
Grant writer(s)	<input checked="" type="checkbox"/>	Every Dept
Others		

<b>Financial Resources</b>	<b>Accessible or Eligible to Use (Yes, No, Don’t Know)</b>	<b>Comments</b>
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	
Impact fees for homebuyers or new developments/homes	Yes	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Other		

**Table 6-1-3: Legal and regulatory capabilities for Carefree**

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
CODES	<ul style="list-style-type: none"> <li>• 2003 International Building Code</li> <li>• 2002 National Electrical Code</li> <li>• 2003 International Mechanical Code</li> <li>• 1994 International Plumbing Code</li> <li>• 2003 International Residential Code</li> </ul>	<ul style="list-style-type: none"> <li>• Building Department (all)</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• Abatement Ordinance Town Code 6-1 2006</li> <li>• Adult Oriented Business Town Zoning Ordinance 2006</li> <li>• Dark Sky Ordinance Town Building Code 2003</li> <li>• Noise Ordinance Town Code 6-2(P-23) 2006</li> <li>• Town Zoning Ordinance 2003</li> </ul>	<ul style="list-style-type: none"> <li>• Zoning Administrator</li> <li>• Town Marshal</li> <li>• Town Council</li> </ul>
REGULATIONS	<ul style="list-style-type: none"> <li>• Zoning and Planning Addressing Regulations</li> <li>• Flood Control District</li> <li>• Dust Abatement Regulations</li> <li>• Town Subdivision Regulations</li> </ul>	<ul style="list-style-type: none"> <li>• Zoning Administrator</li> </ul>
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>• Town Plan for Area Land Use In 2002 General Plan</li> <li>• 2008 Town Transportation Plan</li> <li>• Comprehensive Planning Amendments</li> <li>• Guidelines included in 2002 General Plan</li> <li>• Planning and Development included in 2002 General Plan and 2006 Carefree Zoning Ordinances</li> <li>• Development Master Plan Guidelines included in Carefree 2002 General Plan</li> <li>• Area Drainage Master Plan completed via 2004 Flood Control District of Maricopa County</li> <li>• Watercourse Master Plan completed via 2004 Flood Control District of Maricopa County</li> </ul>	<ul style="list-style-type: none"> <li>• Zoning Administrator</li> <li>• Town Hydrologist</li> <li>• Town Engineer</li> </ul>
STUDIES	<ul style="list-style-type: none"> <li>• Dam Safety Studies / Emergency Action Plans 2006</li> <li>• Area Drainage Master Studies</li> <li>• Corridor Studies 2007 Traffic Study</li> <li>• Emergency Routes Evaluation 2008</li> </ul>	<ul style="list-style-type: none"> <li>• Zoning Administrator</li> <li>• Town Hydrologist</li> <li>• Town Engineer</li> </ul>

<b>Table 6-2-3: Technical staff and personnel capabilities for Carefree</b>		
<b>Staff/Personnel Resources</b>	<input checked="" type="checkbox"/>	<b>Department/Agency - Position</b>
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Planning and Development - Planners Environmental Services – Inspectors
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Planning and Development - Planners Environmental Services – Inspectors
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Planning and Development - Planners Emergency Management - Planners
Floodplain Manager		None on Staff
Surveyors	<input checked="" type="checkbox"/>	Planning and Development - Planners Transportation – Engineer Patrick Neal Emergency Management – Planners
Staff with education or expertise to assess the community’s vulnerability to hazards	<input checked="" type="checkbox"/>	Planning and Development – GIS Staff Emergency Management – GIS Staff Sheriff’s Office – Marshal Elections – Town Clerk/GIS Staff Environmental Services – GIS Staff Air Quality – GIS Staff
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	Contract On Staff – Hydrologist Erich Korsten
Scientists familiar with the hazards of the community	<input checked="" type="checkbox"/>	Emergency Management - Director/Marshal/Planners
Emergency manager	<input checked="" type="checkbox"/>	Emergency Management - Marshal Fire Department – Grant writer Water Department - Manager
Grant writer(s)	<input checked="" type="checkbox"/>	Planning and Development - Planners Environmental Services – Inspectors
Others		

<b>Table 6-3-3: Fiscal capabilities for Carefree</b>		
<b>Financial Resources</b>	<b>Accessible or Eligible to Use (Yes, No, Don’t Know)</b>	<b>Comments</b>
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	
Impact fees for homebuyers or new developments/homes	Yes	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Other		

**Table 6-1-4: Legal and regulatory capabilities for Cave Creek**

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
CODES	<ul style="list-style-type: none"> <li>• 2009 International Building Code</li> <li>• 2009 International Residential Code</li> <li>• 2009 International Plumbing Code</li> <li>• 2009 International Mechanical Code</li> <li>• 2009 International Fire Code</li> <li>• 2008 National Electric Code</li> <li>• 2009 Energy Conservation Code</li> </ul>	<ul style="list-style-type: none"> <li>• Chief Building Official &amp; Cave Creek Fire Official</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• 2012 Cave Creek Zoning Ordinance</li> <li>• 2011 Cave Creek Sub-Division Ordinance</li> <li>• 2005 Town of Cave Creek General Plan</li> <li>• 2012 Town of Cave Creek Town Core and Implementation Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Planning and Zoning Administrator</li> </ul>
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>• 2008 Town of Cave Creek DMP Flood Response Plan</li> <li>• 2008 Town of Cave Creek Master Drainage Plan</li> <li>• 2009 Town of Cave Creek Multi-Hazard Mitigation Plan (currently being updated)</li> <li>• 2009 Town of Cave Creek Emergency Operations Plan</li> <li>• 2008 Town of Cave Creek Master Water Plan</li> <li>• 2008 Town of Cave Creek Water Emergency Operations Plan</li> <li>• Grading and Drainage Technical Design Guidelines</li> <li>• Trails Technical Design Guidelines</li> <li>• Transportation Technical Guidelines</li> <li>• </li> </ul>	<ul style="list-style-type: none"> <li>• Maricopa County Flood Control</li> <li>• Town of Cave Creek Engineer</li> <li>• Town Marshal</li> <li>• Town Utilities Manager</li> </ul>
STUDIES	<ul style="list-style-type: none"> <li>• 2006 Water Acquisition Feasibility Study</li> <li>• 1998 Transportation Study Plan</li> <li>• 2004 Development Fee Study</li> <li>• 2009 Water Rate study</li> <li>• 2009 Sewage Rate Study</li> <li>• 2014 Carefree / Cave Creek Transportation Framework Study</li> <li>• Cave Creek Carefree Bike Lane Study</li> <li>• Development Fee and Capacity Study</li> </ul>	<ul style="list-style-type: none"> <li>• Town Engineer</li> <li>• Town Manager</li> <li>• Town Council</li> </ul>

<b>Staff/Personnel Resources</b>	<input checked="" type="checkbox"/>	<b>Department/Agency - Position</b>
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Planning and Zoning Staff, Town Engineer, Town Manager, Town of Cave Creek Building Official
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Town of Cave Creek Building Official, Town Engineer, Town Utilities Manager
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Planning and Zoning Staff, Town Engineer, Town Manager, Town of Cave Creek Building Official
Floodplain Manager	<input checked="" type="checkbox"/>	Town of Cave Creek Engineer
Surveyors		Out Sourced
Staff with education or expertise to assess the community's vulnerability to hazards	<input checked="" type="checkbox"/>	Town Marshal Town Engineer Utilities Manager
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	Town Planning Staff Town IT Administrator
Scientists familiar with the hazards of the community	<input checked="" type="checkbox"/>	Town Engineer Town Utilities Manager
Emergency Manager	<input checked="" type="checkbox"/>	Town Marshal
Grant writer(s)	<input checked="" type="checkbox"/>	Staff
Others		

<b>Financial Resources</b>	<b>Accessible or Eligible to Use (Yes, No, Don't Know)</b>	<b>Comments</b>
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	
Impact fees for homebuyers or new developments/homes	Yes	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Other		

**Table 6-1-5: Legal and regulatory capabilities for Chandler**

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
CODES	<ul style="list-style-type: none"> <li>• 2012 International Building Code</li> <li>• 2011 National Electrical Code</li> <li>• 2012 International Plumbing Code</li> <li>• 2012 International Mechanical Code</li> <li>• 2012 International Residential Code</li> <li>• 2012 International Fuel Gas Code</li> <li>• 2012 International Energy Conservation Code</li> <li>• 2012 International Fire Code</li> <li>• 2012 International Existing Building Code</li> <li>• Chandler Code of Ordinances (Municode.com)</li> </ul>	<ul style="list-style-type: none"> <li>• Transportation and Development</li> <li>• Fire, Health and Medical Department</li> <li>• City Clerk</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• Chandler Code of Ordinances (Municode.com): Floodplain Administration Ord. No. 3311 Weed Abatement Ord No. 3879 Land Use Zoning Ord. No. 3063</li> </ul>	<ul style="list-style-type: none"> <li>• Transportation and Development</li> </ul>
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>• Engineering Standard Details and Specifications</li> <li>• Technical Design Manuals</li> <li>• Stormwater Prevention Plan</li> <li>• Flood Control District Floodplain Maps</li> <li>• Stormwater Master Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Transportation and Development</li> </ul>
STUDIES	<ul style="list-style-type: none"> <li>• Chandler\Gilbert Floodplain Delineation Study - Ph 1 Eastern Canal</li> <li>• Chandler\Gilbert Floodplain Delineation Study - Ph 2 Consolidated Canal</li> <li>• Chandler\Gilbert Floodplain Delineation Study - Ph 3 Union Pacific RR and Arizona Av</li> <li>• Higley Area Drainage Master Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Transportation and Development</li> <li>• Flood Control District of Maricopa County</li> </ul>

<b>Staff/Personnel Resources</b>	<input checked="" type="checkbox"/>	<b>Department/Agency - Position</b>
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Transportation and Development– Planners
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Transportation and Development – Engineers
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Transportation and Development, Municipal Utilities – planners and engineers
Floodplain Manager	<input checked="" type="checkbox"/>	Transportation and Development
Surveyors		
Staff with education or expertise to assess the community’s vulnerability to hazards	<input checked="" type="checkbox"/>	Fire, Health and Medical Department
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	Information technology, Transportation and Development, Police, Fire, Health and Medical
Scientists familiar with the hazards of the community	<input checked="" type="checkbox"/>	Municipal Utilities, Transportation and Development
Emergency manager	<input checked="" type="checkbox"/>	Fire, Health and Medical Department
Grant writer(s)	<input checked="" type="checkbox"/>	All Departments
Others		

<b>Financial Resources</b>	<b>Accessible or Eligible to Use (Yes, No, Don’t Know)</b>	<b>Comments</b>
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	
Impact fees for homebuyers or new developments/homes	Yes	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Other		

**Table 6-1-6: Legal and regulatory capabilities for El Mirage**

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
CODES	<ul style="list-style-type: none"> <li>• El Mirage City Code</li> <li>• 2006 International Building Code</li> <li>• 2006 International Fire Code</li> <li>• 2005 National Electric Code</li> <li>• 1997 Dangerous Building Code</li> <li>• 2006 International Fuel Gas Code</li> <li>• 2006 International Energy Conservation Code</li> <li>• 1997 Uniform Administrative Code</li> </ul>	<ul style="list-style-type: none"> <li>• City Clerk</li> <li>• Building Department</li> <li>• Fire Department</li> <li>• City Clerk</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• Chapter 19 - Off Site Construction</li> <li>• Chapter 30.28 - Emergency Purchases</li> <li>• Chapter 30.65-30.70 - Civil Preparedness and Disaster</li> <li>• Chapter 33 - City Court</li> <li>• Chapter 34 - Police and Fire Department</li> <li>• Chapter 50 - Water Supply System</li> <li>• Chapter 51 - Sewers</li> <li>• Chapter 52 - Sanitation</li> <li>• Chapter 53 - Storm Water Quality Protection</li> <li>• Chapter 90 - Nuisance and Neighborhood Preservation</li> <li>• Chapter 94 - Air Pollution Regulations; Dust Control</li> <li>• Chapter 96 - International Fire Code and Alarm Systems</li> <li>• Chapter 150 - Building Code – 2006; International Plumbing Code – 2006; National Electrical Code – 2005; International Mechanical Code – 2006; Dangerous Building Code – 1997; Mobile and Manufactured Housing Standards; International Energy Conservation Code – 2006; International Fuel Gas Code – 2006; Uniform Administrative Code- 1997.</li> <li>• Chapter 153 - Floodplain Management</li> <li>• Chapter 154 - Zoning Code                         <ul style="list-style-type: none"> <li>• Section 21-5-13 Floodway overlay</li> <li>• Section 21-5-14 Floodplain overlay</li> <li>• Section 21-5-15 Airfield Impact overlay</li> </ul> </li> <li>• Chapter 155 - Subdivisions</li> </ul>	<ul style="list-style-type: none"> <li>• Engineering</li> <li>• Finance</li> <li>• City Manager</li> <li>• Municipal Judge</li> <li>• Police Department</li> <li>• Public Works</li> <li>• Code Compliance</li> <li>• Fire Department</li> </ul>
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>• 2003 General Plan</li> <li>• 2008 Emergency Action Plan for El Mirage Employees</li> <li>• El Mirage Emergency Operations Plan</li> <li>• Engineering General Notes &amp; Guidelines</li> <li>• Maricopa Association of Governments (MAG) Standards</li> <li>• District Flood Control Standard</li> </ul>	<ul style="list-style-type: none"> <li>• Planning Department</li> <li>• Human Resources</li> <li>• Fire Department</li> <li>• Engineering</li> <li>• Maricopa Association of Governments</li> <li>• Maricopa County Flood Control</li> </ul>

Table 6-1-6: Legal and regulatory capabilities for El Mirage		
Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
STUDIES	<ul style="list-style-type: none"> <li>Flood Insurance Study by Flood Control District of Maricopa County</li> <li>Floodplain Study by Flood Control District of Maricopa County</li> <li>Dam Safety Study by Flood Control District of Maricopa County</li> </ul>	<ul style="list-style-type: none"> <li>Maricopa County</li> </ul>

Table 6-2-6: Technical staff and personnel capabilities for El Mirage		
Staff/Personnel Resources	<input checked="" type="checkbox"/>	Department/Agency - Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Community Development Director, City Engineer, City Planner
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	City Engineer, Engineering Technicians, Building Official
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	City Engineer, Building Official, Fire Chief
Floodplain Manager	<input checked="" type="checkbox"/>	City Engineer
Surveyors	<input checked="" type="checkbox"/>	City Engineering & Public Works staff
Staff with education or expertise to assess the community's vulnerability to hazards	<input checked="" type="checkbox"/>	City Engineer, Building Official, Fire Chief,
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	City GIS Technician, Information Technology Director
Scientists familiar with the hazards of the community		
Emergency manager	<input checked="" type="checkbox"/>	Fire Chief, Police Chief
Grant writer(s)	<input checked="" type="checkbox"/>	City Grants Coordinator
Others		

Table 6-3-6: Fiscal capabilities for El Mirage		
Financial Resources	Accessible or Eligible to Use (Yes, No, Don't Know)	Comments
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	
Impact fees for homebuyers or new developments/homes	Yes	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Other		

<b>Regulatory Tools for Hazard Mitigation</b>	<b>Description</b>	<b>Responsible Department/Agency</b>
TRIBAL CODES	<ul style="list-style-type: none"> <li>• 2009 International Building Code</li> <li>• 2009 National Electrical Code</li> <li>• 2009 International Mechanical Code</li> <li>• 2009 International Plumbing Code</li> <li>• 2009 International Fire Code</li> </ul>	<ul style="list-style-type: none"> <li>• Planning/Development Dept.</li> <li>• Fire Department</li> </ul>
TRIBAL ORDINANCES	<ul style="list-style-type: none"> <li>• Floodplain Management</li> <li>• Hazard Abatement</li> <li>• Subdivision</li> <li>• Noise</li> </ul>	<ul style="list-style-type: none"> <li>• Planning/Development Dept.</li> <li>• Emergency Manager</li> <li>• License &amp; Property Use Dept.</li> <li>• Environmental Department</li> </ul>
TRIBAL REGULATIONS	<ul style="list-style-type: none"> <li>• Wildfire Prevention</li> <li>• Addressing</li> <li>• Drainage/Stormwater</li> <li>• Site Plan Reviews</li> <li>• Land Use Restrictions</li> </ul>	<ul style="list-style-type: none"> <li>• Fire Department</li> <li>• Planning/Development Dept.</li> <li>• License &amp; Property Use Dept</li> </ul>
PLANS, MANUALS, GUIDELINES, and/or STUDIES	<ul style="list-style-type: none"> <li>• Wildland Fire Management Plan (2012)</li> <li>• Fuels Management Plan (2012)</li> <li>• All, as required by Tribal Council (SEE TRIBAL ANNEX)</li> </ul>	<ul style="list-style-type: none"> <li>• Bureau of Indian Affairs, Salt River Agency</li> <li>• Community and Economic Development Division (SEE TRIBAL ANNEX)</li> </ul>

<b>Staff/Personnel Resources</b>	<input checked="" type="checkbox"/>	<b>Department/Agency - Position</b>
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Planning and Development - Planners/ Planning and Building - Committee Environmental Services - Inspectors/Analysts General Managers office – General Manager Land Use - Manager Housing - Manager
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Planning and Development - Building Inspectors Flood Control - Engineers Transportation - Engineers/Consultants Environmental Services - Air/Water Quality Testers /Analysts Fire Department- Fire Inspectors
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Planning and Development - Planners Emergency Management - Fire Chief, Police Chief, Environmental Director, Public Works Director
Floodplain Manager	<input checked="" type="checkbox"/>	Planning and Development – Director and Engineers
Surveyors		
Staff with education or expertise to assess the community’s vulnerability to hazards	<input checked="" type="checkbox"/>	Planning and Development – Planners, Engineers Transportation – Engineers, Police Chief, Fire Chief, Emergency Manager Emergency Management – Police Chief, Fire Chief, Emergency Manager, Planners

**Table 6-2-7: Technical staff and personnel capabilities for Fort McDowell Yavapai Nation**

Staff/Personnel Resources	<input checked="" type="checkbox"/>	Department/Agency - Position
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	Planning and Development –Staff Emergency Management –Staff Police Department–Staff Fire Department - Staff Environmental Services –Staff
Scientists familiar with the hazards of the community		
Emergency manager	<input checked="" type="checkbox"/>	Emergency Management - General Manager, Fire Chief
Grant writer(s)	<input checked="" type="checkbox"/>	All Departments – Grants and Contracts Administrator
Others		

**Table 6-3-7: Fiscal capabilities for Fort McDowell Yavapai Nation**

Financial Resources	Accessible or Eligible to Use (Yes, No, Don't Know)	Comments
Community Development Block Grants	Yes	Accessible but historically not obtained
Capital Improvements Project funding	Yes	Tribal Capital Improvement Programs funded by tribal enterprise revenue
Authority to levy taxes for specific purposes	Yes	Eligible to impose direct assessments for use of tribal lands
Fees for water, sewer, gas, or electric service	Yes	Eligible to assess Water, Sewer, Solid Waste, and Transfer station fees.
Impact fees for homebuyers or new developments/homes	Yes	Limited Use
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Other: Grants, Inter-governmental Agreements and Specific Planning and Project Grants	Yes	Eligible for federal, state, tribal directed grants and IGA's

**Table 6-1-8: Legal and regulatory capabilities for Fountain Hills**

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
CODES	<ul style="list-style-type: none"> <li>• 2012 IBC, IRC, IPC, IMC, IECC, IFC. 2005 NEC. 97 UCADB</li> </ul>	<ul style="list-style-type: none"> <li>• Building Safety</li> <li>• Fire Department</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• Amendments to the IBC,IRC,IFC</li> <li>• Including fire sprinklers in all structures</li> </ul>	<ul style="list-style-type: none"> <li>• Building Safety</li> <li>• Fire Department</li> </ul>
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>• 2010 General Plan</li> <li>• 2006 Stormwater Management Plan</li> <li>• 1996 – Fountain Hills Area Drainage Master Plan</li> <li>• 1997 - Fountain Hills Area Drainage Master Plan, Emergency Access Plan and Routes Evaluation</li> <li>• 2001 - Emergency Action Plan for Golden Eagle Park Dam Modifications</li> <li>• Check lists and minimum mandatory submittal documents and specifications</li> </ul>	<ul style="list-style-type: none"> <li>• Planning and Zoning</li> <li>• Development Services</li> </ul>
STUDIES	<ul style="list-style-type: none"> <li>• 1994 - Fountain Hills North Floodplain Delineation Study</li> <li>• 1994 - Fountain Hills South Floodplain Delineation Study</li> <li>• 1996 - Fountain Hills Retardation Structure Emergency Action Plan</li> <li>• 1997 - Town of Fountain Hills, Dam Break Analysis for Golden Eagle Park Dam, Hesperus Wash Dam, Aspen Dam, North Heights Dam, Sun Ridge Canyon Dam</li> <li>• ISO rating for building safety</li> </ul>	<ul style="list-style-type: none"> <li>• Development Services</li> <li>• Building Safety</li> </ul>

Staff/Personnel Resources	<input checked="" type="checkbox"/>	Department/Agency - Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Public Works/Town Engineer/Randy Harrel, PE
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Public Works/Town Engineer/Randy Harrel, PE
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Public Works/Director/Tom Ward Public Works/Town Engineer/Randy Harrel, PE
Floodplain Manager	<input checked="" type="checkbox"/>	Public Works/Town Engineer/ Randy Harrel, PE
Surveyors		None
Staff with education or expertise to assess the community's vulnerability to hazards	<input checked="" type="checkbox"/>	Public Works/Director/Tom Ward
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	CAD Services/GIS Tech/Ken Valverde
Scientists familiar with the hazards of the community		None
Emergency manager	<input checked="" type="checkbox"/>	Scott LaGreca/Fire Chief Public Works/ Director/ Tom Ward
Grant writer(s)	<input checked="" type="checkbox"/>	Scott LaGreca/Fire Chief Public Works/Town Engineer/ Randy Harrel, PE
Others		None

Financial Resources	Accessible or Eligible to Use (Yes, No, Don't Know)	Comments
Community Development Block Grants	No	
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	Requires citizen vote
Fees for water, sewer, gas, or electric service	No	
Impact fees for homebuyers or new developments/homes	Yes	
Incur debt through general obligation bonds	Yes	Requires citizen vote
Incur debt through special tax bonds	Yes	Requires citizen vote
Other	Yes	Local Sales Tax

<b>Table 6-1-9: Legal and regulatory capabilities for Gila Bend</b>		
<b>Regulatory Tools for Hazard Mitigation</b>	<b>Description</b>	<b>Responsible Department/Agency</b>
CODES	<ul style="list-style-type: none"> <li>International Building Code</li> </ul>	<ul style="list-style-type: none"> <li>Community Development Services</li> <li>Public Works &amp; Engineering</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>Floodplain Management Ordinance</li> <li>Subdivision/Zoning Ordinance</li> </ul>	<ul style="list-style-type: none"> <li>Community Development Services</li> <li>Public Works &amp; Engineering</li> </ul>
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>General Plan</li> <li>CIP Plan</li> <li>Airport Master plan</li> </ul>	<ul style="list-style-type: none"> <li>Community Development Services</li> <li>Public Works &amp; Engineering</li> </ul>
STUDIES	<ul style="list-style-type: none"> <li>Water, streets, sewer studies</li> <li>Maps (FEMA, Effective date of September 2005)</li> <li>Gila Bend Aquifer Study</li> </ul>	<ul style="list-style-type: none"> <li>Community Development Services</li> <li>Public Works &amp; Engineering</li> <li>Flood Control District of Maricopa County</li> </ul>

<b>Table 6-2-9: Technical staff and personnel capabilities for Gila Bend</b>		
<b>Staff/Personnel Resources</b>	<input checked="" type="checkbox"/>	<b>Department/Agency - Position</b>
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Town Engineer
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure		Contract personnel
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards		Contract personnel
Floodplain Manager		Managed by FCDMC
Surveyors		Contract personnel
Staff with education or expertise to assess the community's vulnerability to hazards	<input checked="" type="checkbox"/>	Public Works Director Fire Chief EMS
Personnel skilled in GIS and/or HAZUS		Contract personnel
Scientists familiar with the hazards of the community		Contract personnel
Emergency manager	<input checked="" type="checkbox"/>	Public Works Director
Grant writer(s)		Contract personnel
Others		

**Table 6-3-9: Fiscal capabilities for Gila Bend**

<b>Financial Resources</b>	<b>Accessible or Eligible to Use (Yes, No, Don't Know)</b>	<b>Comments</b>
Community Development Block Grants	Yes	Potable water related project
Capital Improvements Project funding	Yes	WIFA, HURF, Rural Development
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	Water, trash and sewer fees
Impact fees for homebuyers or new developments/homes	Yes	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Other	Yes	WIFA, Rural Development

**Table 6-1-10: Legal and regulatory capabilities for Gilbert**

<b>Regulatory Tools for Hazard Mitigation</b>	<b>Description</b>	<b>Responsible Department/Agency</b>
CODES	<ul style="list-style-type: none"> <li>• 1996 Code Town of Gilbert, Arizona</li> </ul> *There have been revisions and amendments since original adoption date <ul style="list-style-type: none"> <li>• 2012 International Fire Code</li> <li>• 2012 International Building Code</li> <li>• 2012 International Residential Code</li> <li>• 2012 International Mechanical Code</li> <li>• 2012 International Plumbing Code</li> <li>• 2012 International Fuel Gas Code</li> <li>• 2012 International Energy Conservation Code</li> <li>• 2011 National Electrical Code</li> </ul> *The Bldg & Fire codes adopted and amended through the Building and Construction Regulations Code of the Town of Gilbert, Arizona- 2013 Edition. <ul style="list-style-type: none"> <li>• The Arizonans with Disabilities Act &amp; Implementing Rules</li> </ul>	<ul style="list-style-type: none"> <li>• Developmental Services</li> <li>• Fire Department</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• 2005 Town of Gilbert Land Development Code*</li> </ul> * There have been revisions and amendments since original adoption date <ul style="list-style-type: none"> <li>• 1987 The Flood Damage Prevention Ordinance of the Town of Gilbert, Arizona</li> <li>• 2013 Town of Gilbert Amendments to Chapter 34 Floodplain Management Ordinance 245 is Chapter 34 of Town Code</li> </ul>	<ul style="list-style-type: none"> <li>• Development Services</li> </ul>

**Table 6-1-10: Legal and regulatory capabilities for Gilbert**

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>• 2003 Town of Gilbert Storm Water Management Program</li> <li>• 2003 Gilbert Water Supply Reduction Management Plan</li> <li>• 2015-2019 Capital Improvement Plan</li> <li>• 2010 Town of Gilbert Emergency Operation Plan (revision in progress)</li> <li>• 2012 General Plan Town of Gilbert</li> <li>• 2010 Town of Gilbert Multi-Hazard Mitigation Plan (currently being updated)</li> <li>• 200 Town of Gilbert Land Development Code Ordinance No. 1625 Latest Revision: June 1, 2014</li> <li>• 2009 Town of Gilbert Public Works and Engineering Standards and Details</li> </ul>	<ul style="list-style-type: none"> <li>• Public Works</li> <li>• Fire Department</li> <li>• Development Services</li> <li>• Management Office</li> </ul>
STUDIES	<ul style="list-style-type: none"> <li>• 2005 Chandler/Gilbert Floodplain Delineation Study Phase 1 “Eastern Canal Watershed” Revised 2007.</li> <li>• 2008 Chandler/Gilbert Floodplain Delineation Study Phase 2 “Consolidated Canal Watershed”.</li> <li>• 2009 Chandler/Gilbert Floodplain Delineation Study Phase 3 “UPRR/Arizona Avenue Watershed”.</li> <li>• 2013 Flood Insurance Study for “Maricopa County, Arizona and Unincorporated Areas” Volumes 1 thru 23.</li> <li>• FEMA Flood Insurance Rate Maps (FEMA, Effective date of October 2013)</li> <li>• 2013 San Tan West Area Drainage Master Study (ADMS)</li> <li>• 2008 Earth Fissure Map of the Chandler Heights Study Area: Pinal and Maricopa Counties County</li> </ul> <p>(Includes Gilbert Area) Per Ariz. Rev. Stat. § 27-152.01(3) September 21, 2006</p>	<ul style="list-style-type: none"> <li>• Public Works</li> </ul>

**Table 6-2-10: Technical staff and personnel capabilities for Gilbert**

Staff/Personnel Resources	<input checked="" type="checkbox"/>	Department/Agency - Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Development Services Department - Planner, Business Development Manager, Business Development Specialists
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Development Services Department – Buildings – Plan Review & Inspection Manager, Building/Fire Inspection Administrator, Senior Building Inspectors, Building Inspector II’s, Building Inspector I’s, Fire Inspectors, Senior Building Plans Examiners, Building Plans Examiner.  Development Services Department -Infrastructure – Engineering/Planning Inspection Administrator, Engineering Inspector II’s, Engineering/Planning Plan Review Administrator, Senior Engineering Plans Examiner, Engineering Plans Examiner.  Public Works – Engineering Services Manager, Assistant Town Engineer, Town Engineer, Utility Field Supervisors, Water Manager, Senior Utility Workers, Utility Workers, Utility Electrician, Instrumentation Technician, Water Treatment Plant Mechanic, Well Technician, Lift Station Technicians, and Instrumentation Technicians
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Development Services - Associate Engineer  Public Works Department - Public Works Director  Fire Department - Emergency Management Coordinator
Floodplain Manager	<input checked="" type="checkbox"/>	Public Works Department - Engineer
Surveyors		
Staff with education or expertise to assess the community’s vulnerability to hazards	<input checked="" type="checkbox"/>	Gilbert Fire Department - Emergency Management Coordinator  Gilbert Public Works Department - Public Works Director
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	Support Services Department - GIS Technician I and II GIS Database Analysis, GIS Administrator
Scientists familiar with the hazards of the community	<input checked="" type="checkbox"/>	Public Works Department - Water Quality Supervisor/Chemist
Emergency manager	<input checked="" type="checkbox"/>	Fire Department - Emergency Management Coordinator
Grant writer(s)	<input checked="" type="checkbox"/>	Fire Department - Emergency Management Coordinator, Police Department - Police Plan and Research Coordinator
Others		

**Table 6-3-10: Fiscal capabilities for Gilbert**

<b>Financial Resources</b>	<b>Accessible or Eligible to Use (Yes, No, Don't Know)</b>	<b>Comments</b>
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	Gas and electric are private/public utilities
Impact fees for homebuyers or new developments/homes	Yes	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Other		

**Table 6-1-11: Legal and regulatory capabilities for Glendale**

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
CODES	<ul style="list-style-type: none"> <li>• 2012 International Residential Code</li> <li>• International Building Code</li> <li>• 2012 International Mechanical Code, Uniform Plumbing Code</li> <li>• Existing Building Code</li> <li>• 2011 National Electrical Code</li> <li>• 2010 Americans with Disabilities Act</li> <li>• Accessibility Guidelines and the City Code</li> <li>• 2012 International Fuel Gas Code</li> <li>• 202 International Plumbing</li> <li>• 2012 Energy Codes</li> <li>• 2009 International Fire Code</li> </ul>	<ul style="list-style-type: none"> <li>• Building Safety</li> <li>• Engineering</li> <li>• Fire Marshalls Office</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• City of Glendale Zoning Ordinance and associated PAD and PRD documents, Landscape Ordinance</li> <li>• Floodplain Ordinance</li> <li>• Grading and Drainage Ordinance</li> <li>• Sub-Division Ordinance</li> </ul>	<ul style="list-style-type: none"> <li>• Building Safety</li> <li>• Engineering</li> <li>• Planning</li> </ul>
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>• City Department SOP's</li> <li>• City of Glendale Emergency Operations Plan</li> <li>• Multi-Jurisdictional Mitigation Plan</li> <li>• General Plan 2025</li> <li>• North Valley Specific Area Plan</li> <li>• Glendale Centerline</li> <li>• Western Area Plan</li> <li>• West Glendale Avenue Development Plan</li> <li>• Commercial and Industrial Design Guidelines</li> <li>• Residential Design &amp; Development Manual</li> <li>• Adopted State Erosion Standard</li> <li>• Engineer Design and Construction Standards</li> <li>• Middle New River Master Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Emergency Management</li> <li>• Engineering</li> <li>• Planning</li> </ul>
STUDIES	<ul style="list-style-type: none"> <li>• 2003 Maricopa County Transportation Study</li> <li>• 2001 COG Transportation Plan</li> <li>• Storm Water Master Plan Update</li> </ul>	<ul style="list-style-type: none"> <li>• Transportation</li> <li>• Planning</li> </ul>

<b>Table 6-2-11: Technical staff and personnel capabilities for Glendale</b>		
<b>Staff/Personnel Resources</b>	<input checked="" type="checkbox"/>	<b>Department/Agency - Position</b>
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Planning, Planners
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Engineering, Engineers – Architecture, Architects Building Safety-Structural Engineers and Architects
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Planning, Engineering, Utilities Dept, Building Safety
Floodplain Manager	<input checked="" type="checkbox"/>	Engineering Dept
Surveyors		Street, Public Works, Utilities Dept
Staff with education or expertise to assess the community’s vulnerability to hazards	<input checked="" type="checkbox"/>	Neighborhood Services Dept, Human Services, Emergency Management, Building Safety, Fire Dept, Police Dept, Public Works, Streets, Engineering, Architecture, Utilities Dept
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	IT Department, Fire Dept, Police Dept
Scientists familiar with the hazards of the community	<input checked="" type="checkbox"/>	Police Dept, Utilities Dept, Fire Dept
Emergency manager	<input checked="" type="checkbox"/>	City Manager’s Office, Emergency Manager
Grant writer(s)	<input checked="" type="checkbox"/>	All Depts
Others		

<b>Table 6-3-11: Fiscal capabilities for Glendale</b>		
<b>Financial Resources</b>	<b>Accessible or Eligible to Use (Yes, No, Don’t Know)</b>	<b>Comments</b>
Community Development Block Grants	Yes	Community Partnerships
Capital Improvements Project funding	Yes	Finance Department/Management and Budget
Authority to levy taxes for specific purposes	Yes	Function of Legislation (see COG website-Appendix 18 FAQ under levy taxes)
Fees for water, sewer, gas, or electric service	Yes	Utility Department
Impact fees for homebuyers or new developments/homes	Yes	Public Works Administration
Incur debt through general obligation bonds	Yes	Management and Budget
Incur debt through special tax bonds	Yes	Management and Budget
Other		

**Table 6-1-12: Legal and regulatory capabilities for Goodyear**

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
CODES	<ul style="list-style-type: none"> <li>• International Building Code, 2006</li> <li>• International Residential Code, 2006</li> <li>• International Mechanical Code, 2006</li> <li>• International Property Maintenance Code, 2006</li> <li>• International Energy Conservation Code, 2006</li> <li>• NFPA 70, The National Electrical Code including Annex A – G, 2015</li> <li>• NFPA 99, Health Care Facilities, 2015</li> <li>• ICC/ANSI A117.1 Accessible and Usable Buildings and Facilities, 2003</li> <li>• 2010 ADA Standards for Accessible Design</li> <li>• International Residential Code, 2006</li> <li>• International Fire Code Appendix B,D,E,F and G 2006</li> </ul>	<ul style="list-style-type: none"> <li>• Fire Building and Life Safety</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• Flood Damage Prevention Ordinance, 2005</li> <li>• Zoning Ordinance, 2013</li> <li>• Subdivision Regulations, 2012</li> <li>• Engineering Design Standards and Policies Manual, 2012</li> </ul>	<ul style="list-style-type: none"> <li>• Engineering</li> </ul>
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>• General Plan, 2014</li> <li>• General Plan Amendments, 2004 through 2009</li> <li>• Design Guidelines, 2008</li> <li>• City Center Specific Plan, 2009</li> <li>• Storm Water Management Plan – Amended, 2014</li> </ul>	<ul style="list-style-type: none"> <li>• Community Development</li> </ul>
STUDIES	<ul style="list-style-type: none"> <li>• Sonoran Valley Planning Area document, 2007</li> <li>• White Tank Area Drainage Master Plan, 2003</li> <li>• Waterman Wash Floodplain Delineation Study, 2006</li> <li>• Rainbow Valley Area Drainage Master Plan, in progress, 2010</li> </ul>	<ul style="list-style-type: none"> <li>• Community Development</li> </ul>

**Table 6-2-12: Technical staff and personnel capabilities for Goodyear**

Staff/Personnel Resources	<input checked="" type="checkbox"/>	Department/Agency - Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Community Development – Director Engineering – City Engineer
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Community Development - Director Fire Department - Chief Building Official Engineering – City Engineer

**Table 6-2-12: Technical staff and personnel capabilities for Goodyear**

Staff/Personnel Resources	<input checked="" type="checkbox"/>	Department/Agency - Position
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Fire Department - Chief Community Development - Director Fire Department – Chief Building Official Engineering – City Engineer Contract out as needed
Floodplain Manager	<input checked="" type="checkbox"/>	Engineering – City Engineer
Surveyors		Contract out as needed
Staff with education or expertise to assess the community’s vulnerability to hazards	<input checked="" type="checkbox"/>	Fire Department - Chief Community Development - Director Fire Department – Chief Building Official Engineering – City Engineer Contract out as needed
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	Engineering – City Engineer Engineering – GIS Coordinator Contract out as needed
Scientists familiar with the hazards of the community		Contract out as needed
Emergency manager	<input checked="" type="checkbox"/>	Fire Department - Chief
Grant writer(s)	<input checked="" type="checkbox"/>	City Administration – Grants Administrator
Others		

**Table 6-3-12: Fiscal capabilities for Goodyear**

Financial Resources	Accessible or Eligible to Use (Yes, No, Don’t Know)	Comments
Community Development Block Grants	Yes	Water, sewer, and building rehabilitation projects
Capital Improvements Project funding	Yes	Annual CIP Budget Five-year CIP IGAs with FCDMC, MCDOT
Authority to levy taxes for specific purposes	Yes	Improvement Districts Community Facilities Districts
Fees for water, sewer, gas, or electric service	Yes	Adopted water and sewer connection fees and utility usage fees
Impact fees for homebuyers or new developments/homes	Yes	Adopted impact fees for water, sewer, reclaimed water, water resources, library, parks and recreation, fire, police, public works, general government, arterial streets, and regional transportation
Incur debt through general obligation bonds	Yes	Sell G.O. Bonds
Incur debt through special tax bonds	Yes	Sell Revenue Bonds, Improvement District Bonds, and Community Facilities Bonds
Cooperative Agreement Grants and Specific Planning and Project Grants	Yes	FEMA, NRCS, State Land, etc.

**Table 6-1-13: Legal and regulatory capabilities for Guadalupe**

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
CODES	<ul style="list-style-type: none"> <li>• 1997 Uniform Building Code</li> <li>• 1994 Plumbing Code</li> <li>• 1997 Mechanical Code</li> <li>• 1997 Fire Code</li> <li>• 1998 Town Code of Guadalupe</li> </ul>	<ul style="list-style-type: none"> <li>• Town Council</li> <li>• Town Inspector</li> <li>• Town Fire Department</li> <li>• Legal Council</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• 1993 Town of Guadalupe Planning &amp; Zoning Ordinance</li> <li>• 1999 Town of Guadalupe Subdivision Regulations</li> </ul>	<ul style="list-style-type: none"> <li>• Town Council</li> <li>• Town Manager</li> <li>• Legal Council</li> </ul>
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>• 2009 Town of Guadalupe Multi-Hazard Mitigation Plan (in process)</li> <li>• 2010 Town of Guadalupe 5-year Consolidated Plan (in process)</li> <li>• 2007 Town of Guadalupe Emergency Operation Plan</li> <li>• 1991 Capital Improvement Program</li> <li>• 2010 Guadalupe Master Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Community Development Director</li> <li>• Town Manager</li> <li>• Fire Chief / EM</li> <li>• Legal Council</li> </ul>
STUDIES	<ul style="list-style-type: none"> <li>• 2009 Town of Guadalupe Environmental Study</li> <li>• 2009 Town of Guadalupe Floodplain Housing Study</li> <li>• 2008 ADOT Guadalupe Rd. Pedestrian Bridge &amp; Pathway from South Mountain Park to Tempe City Line</li> <li>• Town Flood Control Management and Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Town Manager</li> <li>• Community Development Director</li> <li>• Town Engineer</li> <li>• Flood Control District of Maricopa County</li> </ul>

<b>Table 6-2-13: Technical staff and personnel capabilities for Guadalupe</b>		
<b>Staff/Personnel Resources</b>	<input checked="" type="checkbox"/>	<b>Department/Agency - Position</b>
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Town Manager Consultant (Sunrise Engineering)
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure		Consultant (Sunrise Engineering)
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Guadalupe Fire Department Consultant (Sunrise Engineering)
Floodplain Manager		Consultant (Sunrise Engineering)
Surveyors		Consultant (Sunrise Engineering)
Staff with education or expertise to assess the community's vulnerability to hazards	<input checked="" type="checkbox"/>	Town Manager Fire Chief
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	Guadalupe Fire Department Consultant (Sunrise Engineering)
Scientists familiar with the hazards of the community		NA
Emergency manager	<input checked="" type="checkbox"/>	Fire Chief
Grant writer(s)	<input checked="" type="checkbox"/>	Community Development Guadalupe Fire Department Consultant/ Contractor
Others		

<b>Table 6-3-13: Fiscal capabilities for Guadalupe</b>		
<b>Financial Resources</b>	<b>Accessible or Eligible to Use (Yes, No, Don't Know)</b>	<b>Comments</b>
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	Water
Impact fees for homebuyers or new developments/homes	No	
Incur debt through general obligation bonds	No	
Incur debt through special tax bonds	No	
Other	No	

<b>Table 6-1-14: Legal and regulatory capabilities for Litchfield Park</b>		
<b>Regulatory Tools for Hazard Mitigation</b>	<b>Description</b>	<b>Responsible Department/Agency</b>
CODES	<ul style="list-style-type: none"> <li>• 2006 International Building Code</li> <li>• 2006 International Residential Code</li> <li>• 2006 International Plumbing Code</li> <li>• 2006 International Mechanical Code</li> <li>• 2003 International Fire Code</li> <li>• 2005 National Electric Code</li> <li>• 2006 International Energy Conservation Code</li> <li>• 2006 International Fuel Gas Code</li> <li>• 2008 Litchfield Park City Code update as needed</li> </ul>	<ul style="list-style-type: none"> <li>• Building Department</li> <li>• City Clerk/ City Council</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• City of Litchfield Park Zoning Code Ordinances</li> <li>• Weed Abatement Ordinance</li> <li>• Public Nuisance Ordinance</li> <li>• Property Maintenance Ordinance</li> <li>• Hazardous Material Storage and Disposal Ordinance</li> </ul>	<ul style="list-style-type: none"> <li>• Planning &amp; Zoning</li> <li>• City Clerk/ City Council</li> </ul>
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>• Handbook for Arizona Communities, Floodplain Management</li> <li>• Storm Water Management Plan</li> <li>• 2012 Emergency Management Response Guidebook</li> <li>• 2009 Litchfield Park General Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Planning &amp; Zoning</li> <li>• City Manager's Office, Emergency Management</li> </ul>
STUDIES	<ul style="list-style-type: none"> <li>• 2009 Flood Emergency Action Plan Exercise</li> </ul>	<ul style="list-style-type: none"> <li>• City Manager's Office, Emergency Management</li> </ul>

Staff/Personnel Resources	<input checked="" type="checkbox"/>	Department/Agency - Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Planning, Planners
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Engineering, Engineers, Building, Building Inspectors
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Planning, Engineers
Floodplain Manager	<input checked="" type="checkbox"/>	Engineering, Engineers
Surveyors		Contract Surveyors
Staff with education or expertise to assess the community's vulnerability to hazards		Contract Staff through MCSO and Rural Metro Fire
Personnel skilled in GIS and/or HAZUS		Contract Emergency Services
Scientists familiar with the hazards of the community		Contract Emergency Services
Emergency manager	<input checked="" type="checkbox"/>	City Manager, Assistant City Manager
Grant writer(s)	<input checked="" type="checkbox"/>	All Departments, Individuals within each Dept.
Others		

Financial Resources	Accessible or Eligible to Use (Yes, No, Don't Know)	Comments
Community Development Block Grants	No	No area of the city meets the basic requirements due to income
Capital Improvements Project funding	Yes	CIP City Budget
Authority to levy taxes for specific purposes	Yes	Requires a vote of the people
Fees for water, sewer, gas, or electric service	No	All of these services are privately owned
Impact fees for homebuyers or new developments/homes	Yes	Impact fees not currently required of developers/builders. Sales tax on developments are collected
Incur debt through general obligation bonds	Yes	This would be hard for us at this time because we do not have a bond rating
Incur debt through special tax bonds	Yes	
Other	No	

<b>Table 6-1-15: Legal and regulatory capabilities for Mesa</b>		
<b>Regulatory Tools for Hazard Mitigation</b>	<b>Description</b>	<b>Responsible Department/Agency</b>
CODES	<ul style="list-style-type: none"> <li>• 2006 International Building Code</li> <li>• 2006 International Fire Code</li> <li>• 2007 National Electric Safety Code</li> <li>• 2005 National Electric Code</li> </ul>	<ul style="list-style-type: none"> <li>• City of Mesa Development &amp; Sustainability</li> <li>• Fire Department</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• City of Mesa Charter and Ordinances 2013</li> <li>• Maricopa County Flood Control Standards and Requirements</li> </ul>	<ul style="list-style-type: none"> <li>• Mesa City Council</li> <li>• City of Mesa Engineering (Floodplain Mgr.)</li> </ul>
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>• American Public Power Association</li> <li>• COM Operations, Maintenance, Construction Practice &amp; Emergency Plan Manual</li> <li>• Code of Federal Regulations Title 49 Part 192</li> <li>• City of Mesa Detailed Electrical Standards</li> <li>• 2013 City of Mesa Engineering &amp; Design Standards</li> <li>• Uniform Standard Specifications &amp; Details for Public Works Construction 2013</li> <li>• City of Mesa Engineering Manual</li> </ul>	<ul style="list-style-type: none"> <li>• City of Mesa Energy Resources (Electric)</li> <li>• City of Mesa Engineering</li> <li>• City of Mesa Energy Resources (Gas)</li> </ul>
STUDIES	<ul style="list-style-type: none"> <li>• City of Mesa Electrical Master Plan</li> <li>• City of Mesa Storm Drain Master Plan 2010</li> <li>• City of Mesa Water System Master Plan 2013</li> <li>• City of Mesa Wastewater Master Plan 2011</li> <li>• City of Mesa Gas Master Study 2014</li> </ul>	<ul style="list-style-type: none"> <li>• City of Mesa Energy Resources (Electric)</li> <li>• City of Mesa Engineering</li> <li>• City of Mesa</li> <li>• City of Mesa Water Resources (Wastewater)</li> <li>• City of Mesa Energy Resources (Gas)</li> </ul>

<b>Table 6-2-15: Technical staff and personnel capabilities for Mesa</b>		
<b>Staff/Personnel Resources</b>	<input checked="" type="checkbox"/>	<b>Department/Agency - Position</b>
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	City of Mesa Development Services
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	City of Mesa Engineering
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Assistant City Engineer City of Mesa
Floodplain Manager	<input checked="" type="checkbox"/>	Engineering City of Mesa
Surveyors	<input checked="" type="checkbox"/>	Engineering City of Mesa
Staff with education or expertise to assess the community's vulnerability to hazards	<input checked="" type="checkbox"/>	City of Mesa Police (Homeland Defense), Mesa Fire (Terrorism Liaison Officers), City of Mesa Energy Resources

Table 6-2-15: Technical staff and personnel capabilities for Mesa		
Staff/Personnel Resources	<input checked="" type="checkbox"/>	Department/Agency - Position
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	City of Mesa GIS Supervisor City of Mesa GIS Manager City of Mesa GIS Specialist
Scientists familiar with the hazards of the community		N/A
Emergency manager	<input checked="" type="checkbox"/>	Emergency Management Coordinator Deputy Chief Emergency Management
Grant writer(s)	<input checked="" type="checkbox"/>	City of Mesa Grant Coordinators Office
Others		

Table 6-3-16: Fiscal capabilities for Mesa		
Financial Resources	Accessible or Eligible to Use (Yes, No, Don't Know)	Comments
Community Development Block Grants	Yes	May be done in conjunction with Floodplain Master Plans
Capital Improvements Project funding	Yes	May include funding for new or existing city infrastructure
Authority to levy taxes for specific purposes	Yes	Through city council approval
Fees for water, sewer, gas, or electric service	Yes	As necessary , through city council approval
Impact fees for homebuyers or new developments/homes	Yes	Impact Fees provide revenue to cover added public services
Incur debt through general obligation bonds	Yes	CIP Bonds, storm drains, electrical, parks, streets, fire, police, utilities
Incur debt through special tax bonds	Yes	Urban Area Security Initiative , Proposition 202 (Gaming)
Other	No	

<b>Regulatory Tools for Hazard Mitigation</b>	<b>Description</b>	<b>Responsible Department/Agency</b>
CODES	<ul style="list-style-type: none"> <li>• 2012 International Building Code</li> <li>• 2012 International Residential Code</li> <li>• 2012 International Plumbing Code</li> <li>• 2012 International Gas Code</li> <li>• 2012 International Mechanical Code</li> <li>• 2012 International Fire Code</li> <li>• 2011 National Electric Code</li> <li>• Town Code of the Town of Paradise Valley</li> </ul>	<ul style="list-style-type: none"> <li>• Building Safety Division</li> <li>• Planning Division</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• Floodplain Administration Ordinance (Town Code Article 5-11)</li> <li>• Weed Abatement Ordinance (Town Code Article 8-1-12)</li> <li>• Zoning Ordinance (Town Code Article I thru Article XXV)</li> <li>• Hillside Ordinance (Town Code Article XXII)</li> </ul>	<ul style="list-style-type: none"> <li>• Engineering Department</li> <li>• Planning Division</li> </ul>
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>• Paradise Valley General Plan 2010</li> <li>• Town of Paradise Valley Storm Drainage Manual (3/12/87)</li> <li>• Capital Improvement Project Program</li> </ul>	<ul style="list-style-type: none"> <li>• Engineering Department</li> <li>• Planning Division</li> </ul>
STUDIES	<ul style="list-style-type: none"> <li>• Federal Insurance Rate Map 10/16/13</li> </ul>	<ul style="list-style-type: none"> <li>• Engineering Department</li> </ul>

<b>Staff/Personnel Resources</b>	<input checked="" type="checkbox"/>	<b>Department/Agency - Position</b>
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Planning & Building Department – Director Engineering Department – Town Engineer
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Engineering Department – Town Engineer Building Safety Division – Building Safety Manager
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Planning & Building Department – Director
Floodplain Manager	<input checked="" type="checkbox"/>	Engineering Department – Town Engineer
Surveyors		None
Staff with education or expertise to assess the community’s vulnerability to hazards	<input checked="" type="checkbox"/>	Building Safety Division – Building Safety Manager
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	Information Technology Department – IT Manager
Scientists familiar with the hazards of the community		None
Emergency manager	<input checked="" type="checkbox"/>	Building Safety Division – Building Safety Manager
Grant writer(s)	<input checked="" type="checkbox"/>	Planning & Building Department – Director Planning & Building Department – Senior Planner

**Table 6-3-16: Fiscal capabilities for Paradise Valley**

<b>Financial Resources</b>	<b>Accessible or Eligible to Use (Yes, No, Don't Know)</b>	<b>Comments</b>
Community Development Block Grants	Yes	Technically eligible but PV has no Section 8 housing or "moderate income" persons
Capital Improvements Project funding	Yes	Capital Projects Accumulation Fund with voter approval
Authority to levy taxes for specific purposes	Yes	Property Tax with voter approval
Fees for water, sewer, gas, or electric service	Yes	No utilities but bill residents on Scottsdale Sewer. PV sets the rates.
Impact fees for homebuyers or new developments/homes	Yes	Pursuant to ARS approval process
Incur debt through general obligation bonds	Yes	With voter approval
Incur debt through special tax bonds	Yes	PV can sell bonds issued by Municipal Property Corporation
Other		Expenditures are subject to state imposed expenditure limitation law

**Table 6-1-17: Legal and regulatory capabilities for Peoria**

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
CODES	<ul style="list-style-type: none"> <li>• 2012 International Building Code</li> <li>• 2012 International Residential Code</li> <li>• 2012 International Fire Code</li> <li>• 2012 International Mechanical Code</li> <li>• 2012 International Property Maintenance Code</li> <li>• 2011 National Electrical Code</li> <li>• 2012 International Plumbing Code</li> <li>• 2012 International Fuel Gas Code</li> </ul>	<ul style="list-style-type: none"> <li>• Planning &amp; Community Development</li> <li>• Public Works Division</li> <li>• Utilities Division</li> <li>• Fire</li> <li>• Emergency Management</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• Zoning Ordinance</li> <li>• Floodplain Ordinance</li> <li>• Grading &amp; Drainage Ordinance</li> </ul>	<ul style="list-style-type: none"> <li>• Planning &amp; Community Development</li> <li>• Emergency Management</li> <li>• Engineering</li> <li>• Economic Development Services</li> </ul>
PLANS, MANUALS, and/or GUIDELINES  Standard Operating Procedures (SOP)	<ul style="list-style-type: none"> <li>• Process Safety Management – Risk Management/Emergency Response Plan</li> <li>• Drought Protection Plan</li> <li>• Public Water System Emergency Operations Plan (ADEQ-04-07-520-Revised 9/4/13)</li> <li>• New River Interconnection Operation (PW-UT PLT Ops-OP005) Revised Date 5/7/13</li> <li>• Pyramid Peak Emergency Shutdown (PW-UT Admin-PL022) Revised Date 7/15/13</li> <li>• B204 Jomax-In-Line Booster Station Zone 4E (PW-UT FLD Ops 054) Revised Date 2/5/13</li> <li>• Utilities Emergency Generators and Power Supply Transformers Maintenance Plan (11-2012)</li> <li>• Capacity, Management, Operations and Maintenance Program (CMOM- 6-2003)</li> <li>• Infrastructure Design Guidelines</li> <li>• Maricopa County Drainage Design Manual</li> <li>• Maricopa Association of Governments (MAG) Standards and Specifications for Public Works Construction</li> <li>• FEMA DFIRMS</li> <li>• Manual on Uniform Traffic Control Devices (MUTCD)</li> <li>• AASHTO Green Book</li> <li>• City’s Circulation Plan &amp; Street Classification Map</li> </ul>	<ul style="list-style-type: none"> <li>• Utilities Division</li> <li>• Engineering</li> <li>• Economic Development Services</li> </ul>
STUDIES	<ul style="list-style-type: none"> <li>• Vulnerability Assessment</li> <li>• Storm Drain Master Plans</li> <li>• Water Course Master Plans</li> </ul>	<ul style="list-style-type: none"> <li>• Utilities Division</li> <li>• Engineering</li> <li>• Economic Development Services</li> </ul>

Staff/Personnel Resources	<input checked="" type="checkbox"/>	Department/Agency - Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Planning – Planners; Engineering – City Engineer, Staff Engineers; Economic Development Services – Director, Building Inspector
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Engineering – Engineers; Architecture – Architects; Economic Development Services – Director, Building Inspector
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Planning, Engineering, Utilities Dept, Development Services Dept; Economic Development Services – Director, Building Inspector
Floodplain Manager	<input checked="" type="checkbox"/>	Engineering – City Engineer, Staff Engineers
Surveyors		Engineering – City Engineer, Staff Engineers; Finance Dept using Contract Services
Staff with education or expertise to assess the community’s vulnerability to hazards	<input checked="" type="checkbox"/>	Neighborhood Services Dept, Human Services, Emergency Management, Development Services, Fire Dept, Police Dept, Public Works, Streets, Engineering, Architecture, Utilities Dept; Economic Development Services – Director, Building Inspector
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	ITD, Fire Dept, Police Dept
Scientists familiar with the hazards of the community		Police Dept, Utilities Dept, Fire Dept
Emergency manager	<input checked="" type="checkbox"/>	City Manager’s Office, Emergency Manager
Grant writer(s)	<input checked="" type="checkbox"/>	Every dept is responsible
Others		

Financial Resources	Accessible or Eligible to Use (Yes, No, Don’t Know)	Comments
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	
Impact fees for homebuyers or new developments/homes	Yes	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Other		

**Table 6-1-18: Legal and regulatory capabilities for Phoenix**

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
CODES	<ul style="list-style-type: none"> <li>• 2010 ASME</li> <li>• 2011 National Electrical Code</li> <li>• 2012 International Building Code Administrative Provisions</li> <li>• 2012 International Building Code</li> <li>• 2012 International Energy Conservation Code</li> <li>• 2012 International Existing Building Code</li> <li>• 2012 International Fire Code</li> <li>• 2012 International Fuel Gas Code</li> <li>• 2012 International Green Construction Code</li> <li>• 2012 International Mechanical Code</li> <li>• 2012 International Residential Code</li> <li>• 2012 International and Uniform Plumbing Codes</li> <li>• 2012 International Fire Code</li> <li>• 2011 National Electrical Code/NFPA-70</li> </ul>	<ul style="list-style-type: none"> <li>• Planning Development</li> <li>• Fire</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• Phoenix Code of Ordinances</li> </ul>	<ul style="list-style-type: none"> <li>• Law</li> </ul>
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>• 2015 Phoenix General Plan (Scheduled for completion in Spring 2015)</li> <li>• 2009 City of Phoenix Major Emergency Response and Recovery Plan</li> <li>• 2015 Maricopa County Regional Multi-Hazard Mitigation Plan (currently being updated)</li> <li>• 2013 Water Services Department Design Standards Manual for Water And Wastewater Systems</li> <li>• 2013 Street Transportation Department Storm Water Policies and Standards (3<sup>rd</sup> Edition)</li> <li>• 2014 Aviation Department Multi-Sector General Permit Stormwater Pollution Prevention Plan</li> <li>• Aviation Department Wildlife Management Plan</li> <li>• Aviation Department Rules and Regulations</li> <li>• Metro Phoenix Area Drainage Master Plan</li> <li>• Hohokam Area Drainage Master Plan</li> <li>• Water Services Facility Stormwater Management Plans</li> <li>• Water Services Facility Stormwater Pollution Prevention Plans</li> </ul>	<ul style="list-style-type: none"> <li>• Planning Development</li> <li>• Emergency Management</li> <li>• Water Services</li> <li>• Street Transportation</li> <li>• Aviation</li> </ul>

Table 6-1-18: Legal and regulatory capabilities for Phoenix		
Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
STUDIES	<ul style="list-style-type: none"> <li>• 2015 City of Phoenix Threat and Hazard Identification and Risk Assessment</li> <li>• FEMA DFIRM Maps</li> <li>• Dam Safety Studies and Emergency Action Plans</li> <li>• 7R/25L Runway Safety Area Environmental Assessment – Conditional Letter of Map Revision</li> <li>• Flood Insurance Studies (FIS)</li> <li>• Levee Studies</li> </ul>	<ul style="list-style-type: none"> <li>• Street Transportation</li> <li>• Aviation</li> </ul>

Table 6-2-18: Technical staff and personnel capabilities for Phoenix		
Staff/Personnel Resources	<input checked="" type="checkbox"/>	Department/Agency - Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Planning Development Dept. – Principal Planner, Planner III, Village Planner & Planner II, Civil Engineers, Principal Engineering Technicians Water Services – Deputy Directors, Project Engineers, Civil Engineers, Project Coordinators, Principal Engineering Technicians, Principal Planners
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Street Transportation Dept. - Civil Engineers Water Services – Deputy Directors, Civil Engineers, Project Coordinators, Principal Engineering Technicians Planning Development Dept.- Structural Engineers, Civil Engineers, Electrical Engineers, Mechanical Engineers, Inspectors and Plan Reviewers- General Residential, Electrical, Plumbing/Mechanical, Structural, Elevator, Civil, Fire and Backflow
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Planning Development Dept. – Principal Planner, Planner III, Village Planner & Planner II, Civil Engineers, Principal Engineering Techs, Structural Engineers Water Services – Deputy Directors, Civil Engineers, Principal Engineering Technician, Hydrologist
Floodplain Manager	<input checked="" type="checkbox"/>	Street Transportation Dept. - Civil Engineer III
Surveyors	<input checked="" type="checkbox"/>	Street Transportation Dept. – Survey Teams
Staff with education or expertise to assess the community’s vulnerability to hazards	<input checked="" type="checkbox"/>	Water Services – Environmental Programs Coordinator, Civil Engineers, Water Quality Inspectors
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	Information Technology Services – Info Tech Analyst/Programmers and Info Tech Specialists Fire Dept. – Fire Protection Engineer Planning Development Dept. – Senior GIS Technician Police Dept. – Senior User Technology Specialist Street Transportation Dept. - Info Tech Analyst/ Programmer II and Senior GIS Technician Water Services Dept. – GIS and Senior GIS Technicians

<b>Table 6-2-18: Technical staff and personnel capabilities for Phoenix</b>		
<b>Staff/Personnel Resources</b>	<input checked="" type="checkbox"/>	<b>Department/Agency - Position</b>
Scientists familiar with the hazards of the community	<input checked="" type="checkbox"/>	Aviation Department – Environmental Quality Specialist City Managers/Office of Environmental Programs – Environmental Quality Specialists Personnel Department – Industrial Hygienists Water Services – Chemists, Environmental Quality Specialist, Laboratory Technician, Environmental Programs Coordinator City Manager’s Office- Chief Sustainability Officer
Emergency manager	<input checked="" type="checkbox"/>	City Manager’s Office - Emergency Management Coordinator
Grant writer(s)	<input checked="" type="checkbox"/>	Aviation Department – Planner II Fire Dept. – Volunteer Coordinator and Fire Captains Planning Development Dept. – Principal Planner, Planner III, Village Planner & Planner II Police Dept. – Police Research Analysts Public Transit Dept
Others		

<b>Table 6-3-18: Fiscal capabilities for Phoenix</b>		
<b>Financial Resources</b>	<b>Accessible or Eligible to Use (Yes, No, Don’t Know)</b>	<b>Comments</b>
Community Development Block Grants	Yes	Housing, Neighborhood Services, and Water Services projects
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	Water, Sewer, and Solid Waste Fees/Rates
Impact fees for homebuyers or new developments/homes	Yes	For new developments inside impact fee areas-zones only. The Impact Fees are charged to new developments.
Incur debt through general obligation bonds	Yes	This excludes the Water Services and Aviation Departments
Incur debt through special tax bonds	Yes	Excise (sales) taxes
Other	Yes	FAA and Arizona Dept of Transportation grants to the Aviation Department  Water resources fees, Environmental fees, Improvement Districts

**Table 6-1-19: Legal and regulatory capabilities for Queen Creek**

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
CODES	<ul style="list-style-type: none"> <li>• Town Code of the Town of Queen Creek</li> <li>• 2012 International Building Code</li> <li>• 2012 International Residential Code</li> <li>• 2012 Uniform Plumbing Code</li> <li>• 2012 International Mechanical Code</li> <li>• 2012 International Fire Code</li> <li>• 2012 International Property Maintenance Code</li> <li>• 2012 International Existing Building Code</li> <li>• 2012 International Energy Conservation Code</li> <li>• 2012 International Urban-Wildland Interface Code</li> <li>• 2011 National Electrical Code</li> </ul>	<ul style="list-style-type: none"> <li>• Development Services</li> <li>• Fire &amp; Medical Department</li> <li>• Town Clerk</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• Abatement Ordinance</li> <li>• Adult Oriented Business</li> <li>• Dark Sky Ordinance</li> <li>• Military Airport Zoning Ordinance</li> <li>• Noise Ordinance</li> <li>• Zoning Ordinance</li> <li>• Subdivision Ordinance</li> <li>• Floodplain Ordinance</li> </ul>	<ul style="list-style-type: none"> <li>• Development Services</li> </ul>
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>• Addressing Regulations</li> <li>• Drainage Regulations</li> <li>• Dust Abatement Regulations</li> <li>• Subdivision Regulations</li> <li>• HUD Consolidated Planning Regulations</li> <li>• Floodplain Regulations</li> </ul>	<ul style="list-style-type: none"> <li>• Development Services</li> <li>• Public Works</li> <li>• Flood Control District</li> </ul>
STUDIES	<ul style="list-style-type: none"> <li>• Town of Queen Creek General Plan 2008</li> <li>• Area Land Use Plan</li> <li>• Comprehensive Plans: Planning &amp; Development</li> <li>• Transportation Plan</li> <li>• Desert Foothills Plan</li> <li>• Comprehensive Planning Amendments Guidelines</li> <li>• Development Master Plan Guidelines</li> <li>• Area Drainage Master Plan</li> <li>• Watercourse Master Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Development Services</li> <li>• Public Works</li> <li>• Flood Control District</li> </ul>

**Table 6-2-19: Technical staff and personnel capabilities for Queen Creek**

Staff/Personnel Resources	<input checked="" type="checkbox"/>	Department/Agency - Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Development Services – Planners/Engineers Public Works – Engineers

Staff/Personnel Resources	<input checked="" type="checkbox"/>	Department/Agency - Position
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Development Services – Planners/Engineers/Inspectors Fire & Medical Department – Fire Marshal/Plans Examiner Public Works – Engineers
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Development Services – Planners/Engineers/Inspectors Fire & Medical Department – Emergency Mgmt Coordinator Public Works – Engineers
Floodplain Manager	<input checked="" type="checkbox"/>	Development Services – Floodplain Administrator/Engineers/Inspectors
Surveyors		N/A
Staff with education or expertise to assess the community’s vulnerability to hazards	<input checked="" type="checkbox"/>	Development Services – Planners/Engineers/Inspectors Fire & Medical Department – Emergency Mgmt Coordinator Public Works – Engineers
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	Workforce & Technology – GIS Staff
Scientists familiar with the hazards of the community		N/A
Emergency manager	<input checked="" type="checkbox"/>	Town Manager – Director Fire & Medical Department – Emergency Mgmt Coordinator
Grant writer(s)	<input checked="" type="checkbox"/>	Communications & Marketing – Management Assistant Fire & Medical Department – Emergency Mgmt Coordinator Parks Division – Management Assistant Public Works – Engineers/Project Managers
Others		

Financial Resources	Accessible or Eligible to Use (Yes, No, Don’t Know)	Comments
Community Development Block Grants	Yes	A Five-year Consolidated Plan is prepared with the public adoption of annual application submittals
Capital Improvements Project funding	Yes	Town CIP
Authority to levy taxes for specific purposes	Yes	<ul style="list-style-type: none"> <li>• Fire/EMS/Law Enforcement Property Tax</li> <li>• Improvement Districts</li> <li>• Direct Assessment Special District</li> </ul>
Fees for water, sewer, gas, or electric service	Yes	Water and sewer service
Impact fees for homebuyers or new developments/homes	Yes	<ul style="list-style-type: none"> <li>• Wastewater</li> <li>• Parks, Trails, &amp; Open Space</li> <li>• Town Buildings and Vehicles</li> <li>• Transportation</li> <li>• Library</li> <li>• Public Safety</li> <li>• Fire</li> </ul>
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Other - Cooperative Agreement Grants and Specific Planning and Project Grants	Yes	

**Table 6-1-20: Legal and regulatory capabilities for Salt River Pima-Maricopa Indian Community**

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
TRIBAL CODES	<ul style="list-style-type: none"> <li>• 2009 International Building Codes</li> <li>• 2009 International Fire Codes</li> </ul>	<ul style="list-style-type: none"> <li>• Engineering Construction Services</li> <li>• Fire Department</li> </ul>
TRIBAL ORDINANCES	<ul style="list-style-type: none"> <li>• Salt River Pima-Maricopa Indian Community Ordinance</li> <li>• 1981 Zoning Ordinance</li> </ul>	<ul style="list-style-type: none"> <li>• SRPMIC Administration</li> <li>• Tribal Council</li> <li>• Community Development</li> </ul>
TRIBAL REGULATIONS	<ul style="list-style-type: none"> <li>• Emergency Operations Plan</li> <li>• Tribal Emergency Response Commission Guide</li> <li>• 2006 General Use Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Fire Department</li> <li>• Tribal Emergency Response Commission</li> <li>• Community Development</li> </ul>
PLANS, MANUALS, GUIDELINES, and/or STUDIES	SEE TRIBAL ANNEX	(SEE TRIBAL ANNEX)

**Table 6-2-20: Technical staff and personnel capabilities for Salt River Pima-Maricopa Indian Community**

Staff/Personnel Resources	<input checked="" type="checkbox"/>	Department/Agency - Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Engineering and Construction Services (ECS), Community Development Department (CDD)
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	ECS, Fire Department, Public Works
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	ECS, Environment Protection of Natural Resources(EPNR), CDD, Public Works, Fire Department/Emergency Manager
Floodplain Manager	<input checked="" type="checkbox"/>	ECS, Public Works
Surveyors	<input checked="" type="checkbox"/>	Public Works, ECS,
Staff with education or expertise to assess the community's vulnerability to hazards	<input checked="" type="checkbox"/>	Police, Fire, Emergency Management, ECS, CDD, Public Works
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	ECS, CDD, EPNR
Scientists familiar with the hazards of the community	<input checked="" type="checkbox"/>	Public Works, CDD, EPNR, ECS
Emergency manager	<input checked="" type="checkbox"/>	Fire Department
Grant writer(s)	<input checked="" type="checkbox"/>	Grants and Contracts
Others		

**Table 6-3-20: Fiscal capabilities for Salt River Pima-Maricopa Indian Community**

<b>Financial Resources</b>	<b>Accessible or Eligible to Use (Yes, No, Don't Know)</b>	<b>Comments</b>
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	
Impact fees for homebuyers or new developments/homes	Yes	Not for homes
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Other		

**Table 6-1-21: Legal and regulatory capabilities for Salt River Project**

<b>Regulatory Tools for Hazard Mitigation</b>	<b>Description</b>	<b>Responsible Department/Agency</b>
CODES	<ul style="list-style-type: none"> <li>• North American Electric Reliability Corporation (NERC) Reliability Standards for the Bulk Electric Systems of North America (11/17/2014)</li> <li>• North American Electric Reliability Council (NERC) Standard FAC-003-03 – Transmission Vegetation Management</li> <li>• 2012 National Electric Safety Code (NESC): 7<sup>th</sup> Edition.</li> <li>• American National Standards Institute (ANSI standards)</li> <li>• National Fire Protection (NFPA) 1600</li> <li>• Occupational Safety &amp; Health Administration (OSHA standards)</li> <li>• Applicable Municipal Codes</li> </ul>	<ul style="list-style-type: none"> <li>• Transmission &amp; Generation Operations</li> <li>• Power Systems Planning &amp; Engineering</li> <li>• Electric System Operations</li> <li>• Transmission &amp; Distribution Services</li> <li>• System Operations</li> <li>• Base Load Generation</li> <li>• Vegetation Management, Line Clearing</li> <li>• Fire Protection Services</li> <li>• Risk Management</li> <li>• Facility Services</li> <li>• Water Resource Operations</li> <li>• Water Transmission &amp; Communications</li> <li>• Water Delivery Services</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• Meet Maricopa Association of Governments (MAG) specifications</li> <li>• Applicable Municipal Ordinances</li> </ul>	<ul style="list-style-type: none"> <li>• Engineering &amp; Construction Services</li> <li>• Customer &amp; System Improvements</li> <li>• Water Engineering &amp; Groundwater</li> <li>• Survey</li> </ul>

**Table 6-1-21: Legal and regulatory capabilities for Salt River Project**

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
<p>PLANS, MANUALS, and/or GUIDELINES</p>	<ul style="list-style-type: none"> <li>• 2014/15 – 2019/20 SRP Electric System Plan</li> <li>• Distribution Operation Center Operating Procedures (EOP) as per NERC Reliability Standards for the Bulk Electric Systems of North America</li> <li>• 2014 SRP Crisis Management Plan</li> <li>• 2014 SRP Business Continuity Coordination Plan</li> <li>• 2014 SRP Emergency Restoration Plan, Electric System Line Maintenance</li> <li>• 2014 SRP Storm Operations Manual</li> <li>• 2014 SRP Emergency Reservoir Operating Procedures</li> <li>• 2015 Maricopa County Multi-Jurisdictional Hazard Mitigation Plan (currently being updated)</li> <li>• 2014 Business Continuity Plan #2410 – Reactive Maintenance (Transmission/Distribution)</li> <li>• 2009 Comprehensive Floodplain Management Plan and Program, Flood Control District of Maricopa County</li> <li>• 1997 Water Control Manual Modified Roosevelt Dam (Theodore Roosevelt Dam), Salt and Gila Rivers, Arizona – US Army Corps of Engineers, Los Angeles District</li> <li>• SRP Line Design Standards, Policies and Procedures</li> <li>• SRP Electrical Clearance Standards – based on NESC</li> <li>• Guidelines for Electric System Planning</li> <li>• Electric System Engineering Equipment Ratings</li> </ul>	<ul style="list-style-type: none"> <li>• Business Continuity &amp; Emergency Management</li> <li>• Transmission &amp; Generation Operations</li> <li>• Power Systems Planning &amp; Engineering</li> <li>• Electric System Operations</li> <li>• Transmission &amp; Distribution Services</li> <li>• System Operations</li> <li>• Base Load Generation</li> <li>• Vegetation Management, Line Clearing</li> <li>• Fire Protection Services</li> <li>• Risk Management</li> <li>• Facility Services</li> <li>• Water Resource Operations</li> <li>• Water Transmission &amp; Communications</li> <li>• Water Delivery Services</li> <li>• Apparatus Engineering</li> </ul>
<p>STUDIES</p>	<ul style="list-style-type: none"> <li>• 2013 Theodore Roosevelt Lake Sedimentation Survey, U.S. Department of the Interior, Bureau of Reclamation</li> <li>• LIDAR Study &amp; NERC Compliance Clearance Mitigation Study</li> <li>• Water resources planning and management at the Salt River Project, Arizona, USA – Daniel H. Phillips &amp; Yvonne Reinink &amp; Timothy E. Skarupa &amp; Charles E. Ester III &amp; Jon A. Skindlov, Irrigation and Drainage Systems, Springer Netherlands, On line First, April 29, 2009</li> <li>• Electric Power Research Institute (EPRI) studies on a variety of topics</li> <li>• Power Systems Engineering Research Center (PSerc) studies on various topics</li> <li>• Annual Distribution Planning and Operating Studies</li> <li>• 2012 SRP Business Impact Analysis (BIA)</li> <li>• 2014/15 – 2019/20 Electric System Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Business Continuity &amp; Emergency Management</li> <li>• Water Resource Operations</li> <li>• Customer &amp; System Improvements</li> <li>• Water Engineering &amp; Groundwater</li> <li>• Transmission Planning</li> <li>• Electric System Engineering &amp; Performance</li> <li>• Power System Protection &amp; Control</li> </ul>

**Table 6-2-21: Technical staff and personnel capabilities for Salt River Project**

Staff/Personnel Resources	<input checked="" type="checkbox"/>	Department/Agency - Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>• Land Acquisitions &amp; Management – 17 Land Management Agents</li> <li>• Land Rights Management – 5 Land Management Agents, 8 Right of Way Technicians, 1 Real Estate Appraiser</li> <li>• Land and Papago Park, 1 Property Developer</li> </ul>
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>• Electric System Engineering &amp; Performance – 32 Engineers</li> <li>• Transmission Planning – 14 Engineers</li> <li>• Line Asset Management – 7 Underground Electrical Inspectors, 3 Engineering Technicians</li> <li>• Maintenance Engineering – 3 Engineers</li> </ul>
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>• Water Transmission &amp; Communications – 1 Manager</li> <li>• Water Resource Operations - 3 Staff Scientists/Meteorologists, 2 Senior Hydrologists, 1 Senior Engineer (PE)</li> <li>• Business Continuity &amp; Emergency Management – 2 Principal Analysts</li> <li>• Line Asset Management – 7 Underground Electrical Inspectors, 3 Engineering Technicians</li> <li>• Maintenance Engineering – 3 Engineers</li> </ul>
Floodplain Manager		N/A
Surveyors	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>• SRP Survey Department – 1 Field Supervisor, 17 Surveyors, 12 Survey Technicians</li> </ul>
Staff with education or expertise to assess the community’s vulnerability to hazards	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>• SRP Business Continuity &amp; Emergency Management Dept</li> <li>• Line Asset Management – 7 Underground Electrical Inspectors</li> <li>• Safety Services – 2 Industrial Hygienist, 6 Health &amp; Safety Specialists</li> </ul>
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>• GIS Services – 11 GIS Analysts</li> <li>• Cartographic &amp; GIS Services – 9 GIS Analysts</li> <li>• Graphic Records – 5 GIS Specialists</li> <li>• Maintenance Engineering – 1 GIS/Design Technicians</li> </ul>
Scientists familiar with the hazards of the community	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>• Air Quality and Lab Services – 4 Scientist/Engineer</li> <li>• Environmental Health and Safety – 3 Scientist/Engineer</li> <li>• Laboratory &amp; Field Services Dept – 7 Scientist/Engineer</li> </ul>
Emergency manager	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>• Business Continuity &amp; Emergency Management Dept - 2 Certified Emergency Managers (CEM)</li> <li>• Business Continuity &amp; Emergency Management Dept - 2 Certified Business Continuity Professionals (CBCP)</li> </ul>
Grant writer(s)		N/A
Others		

**Table 6-3-21: Fiscal capabilities for Salt River Project**

<b>Financial Resources</b>	<b>Accessible or Eligible to Use (Yes, No, Don't Know)</b>	<b>Comments</b>
Community Development Block Grants	n/a	
Capital Improvements Project funding	Yes	<ul style="list-style-type: none"> <li>• 2014/15 – 201920 Electric System Capital Project Plan</li> <li>• DOR-826: Underground cable replacement – primary and feeders</li> <li>• DOR-829: Distribution Pole Asset Management (DPAM)</li> <li>• DOR-831 Underground secondary wire replacement</li> <li>• DOR-1296: Line Maintenance repairs and preventative maintenance for distribution equipment</li> <li>• DOR-1575: Underground cable rehabilitation &amp; commissioning</li> <li>• TOR-825: Transmission Pole Asset Management (TPAM)</li> <li>• DLG: Distribution load growth capacitor bank additions</li> <li>• TLG: Transmission load growth capacitor bank additions</li> <li>• Multiple other capital improvement projects</li> </ul>
Authority to levy taxes for specific purposes	n/a	
Fees for water, sewer, gas, or electric service	Yes	SRP Performs regular maintenance tasks on existing structures to preserve strength, functionality and public safety
Impact fees for homebuyers or new developments/homes	n/a	
Incur debt through general obligation bonds	n/a	
Incur debt through special tax bonds	n/a	
Other	Yes	SRP Mobile Substation fleet

**Table 6-1-22: Legal and regulatory capabilities for Scottsdale**

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
CODES	<ul style="list-style-type: none"> <li>• 2012 International Fire Code</li> <li>• 2012 International Building Code</li> <li>• 2012 International Mechanical Code</li> <li>• 2012 International Plumbing Code</li> <li>• 2012 National Electric Code</li> <li>• 2012 International Energy Conservation Code</li> <li>• International Residential Code</li> <li>• Public Nuisance and Property Maintenance Code</li> <li>• Uniform Code for the Abatement of Dangerous Buildings</li> <li>• Uniform Housing Code</li> </ul>	<ul style="list-style-type: none"> <li>• Fire Department</li> <li>• Public Works</li> <li>• Water Resources</li> <li>• Planning, Neighborhood and Transportation</li> <li>• Economic Vitality</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• Zoning Ordinance</li> <li>• Floodplain and Stormwater Ordinance</li> <li>• Dust Control</li> <li>• Environmentally Sensitive Lands Ordinance</li> <li>• Foothills Overlay Zoning District</li> <li>• Hillside Zoning District</li> <li>• Historic Preservation</li> <li>• Subdivision Ordinance</li> </ul>	<ul style="list-style-type: none"> <li>• Economic Vitality</li> <li>• Planning, Neighborhood and Transportation</li> <li>• Public Works and Water Resources</li> </ul>
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>• Cityshape 2020</li> <li>• Scottsdale General Plan 2014</li> <li>• Scottsdale Visioning</li> <li>• Green Building Program</li> <li>• Transportation/Mobility Plans</li> <li>• Streetscapes</li> <li>• Area Plans</li> <li>• Neighborhood Planning</li> <li>• Downtown Plan</li> <li>• Citywide Design Guidelines</li> <li>• Desert Areas</li> <li>• Historic Preservation</li> <li>• 2015 SFD – Standard of Coverage Evaluaiton</li> </ul>	<ul style="list-style-type: none"> <li>• Planning, Neighborhood and Transportation</li> <li>• Transportation and Streets</li> <li>• Community Services</li> <li>• Economic Vitality</li> </ul>

<b>Staff/Personnel Resources</b>	<input checked="" type="checkbox"/>	<b>Department/Agency - Position</b>
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Planning & Development – Planners Flood Control Planner Wastewater Planners
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Chief Engineer and General Manager, Water Services, Development Services
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Planning, Engineering, Water Services, Development Services
Floodplain Manager	<input checked="" type="checkbox"/>	Stormwater Management – Planners
Surveyors	<input checked="" type="checkbox"/>	Streets and Transportation Department
Staff with education or expertise to assess the community’s vulnerability to hazards	<input checked="" type="checkbox"/>	Neighborhood Services, Human Services, Emergency Management, Development Services, Fire Department, Police Department, Public Works, Streets, Engineering, Architecture, Water Services
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	IT Department, Fire Department, Police Department
Scientists familiar with the hazards of the community	<input checked="" type="checkbox"/>	Police Department, Water Services, Fire Department
Emergency Manager	<input checked="" type="checkbox"/>	City Manager’s Office/Scottsdale Fire Department Emergency Management Coordinator
Grant writer(s)	<input checked="" type="checkbox"/>	Every Department
Others		

<b>Financial Resources</b>	<b>Accessible or Eligible to Use (Yes, No, Don’t Know)</b>	<b>Comments</b>
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	
Impact fees for homebuyers or new developments/homes	Yes	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Other		

<b>Table 6-1-23: Legal and regulatory capabilities for Surprise</b>		
<b>Regulatory Tools for Hazard Mitigation</b>	<b>Description</b>	<b>Responsible Department/Agency</b>
CODES	<ul style="list-style-type: none"> <li>International Series of Codes:</li> <li>2012 Building, Plumbing, Electrical</li> <li>2012 Fire</li> </ul>	<ul style="list-style-type: none"> <li>Community Development</li> <li>Fire</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>COS Municipal Codes: Surprise Unified Development Code, Chapter 122</li> <li>COS Municipal Codes: Buildings and Regulations, Chapter 105</li> <li>COS Municipal Codes: Storm Water Management, Chapter 117</li> <li>Emergency Management and Emergency Services, Chapter 18</li> </ul>	<ul style="list-style-type: none"> <li>Community Development</li> <li>City Administration</li> <li>Public Works</li> <li>Police</li> <li>Fire Medical</li> <li>Water Resources</li> </ul>
REGULATIONS	<ul style="list-style-type: none"> <li>Addressing Regulations</li> <li>Drainage Regulations</li> <li>Dust Control Regulations</li> <li>Subdivision Regulations</li> </ul>	<ul style="list-style-type: none"> <li>Community Development</li> <li>Public Works</li> <li>City Administration</li> </ul>
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>General Plan 2030</li> <li>Area Land Use Plan</li> <li>Surprise Unified Development Code</li> <li>Area Drainage Master Plan</li> <li>Engineering Development Standards</li> <li>Maricopa Association of Governments Standards</li> <li>2015 Hazard Mitigation Plan Update</li> <li>2015 Emergency Operations Plan</li> </ul>	<ul style="list-style-type: none"> <li>Community Development</li> <li>Public Works</li> <li>Fire Medical</li> </ul>
STUDIES	<ul style="list-style-type: none"> <li>Flood Insurance Studies</li> <li>Floodplain Delineation Studies</li> <li>Area Drainage Master Studies</li> <li>Transportation Studies</li> <li>Integrated Water Master Plan</li> </ul>	<ul style="list-style-type: none"> <li>Community Development</li> <li>Public Works</li> </ul>

<b>Table 6-2-23: Technical staff and personnel capabilities for Surprise</b>		
<b>Staff/Personnel Resources</b>	<input checked="" type="checkbox"/>	<b>Department/Agency - Position</b>
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Planning and Development – Planners, Long Range Planners, Planning Manager Public Works – Development Engineering Manager; Plan Reviewers
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Public Works – Development Review Engineer, Traffic Engineer, Capital Program Manager Community Development- Building Official
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Planning and Development – Planners Public Works - Engineers
Floodplain Manager	<input checked="" type="checkbox"/>	Flood Control District of Maricopa County is Floodplain Administrator City Engineer – Certified Floodplain Managers on staff
Surveyors	<input checked="" type="checkbox"/>	Public Works – Registered Land Surveyor

Staff/Personnel Resources	<input checked="" type="checkbox"/>	Department/Agency - Position
Staff with education or expertise to assess the community's vulnerability to hazards	<input checked="" type="checkbox"/>	Planning and Development - Planners Public Works – Staff Police Dept – Staff Fire Dept - Staff
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	GIS – GIS Staff Public Works Survey Staff
Scientists familiar with the hazards of the community		None
Emergency manager	<input checked="" type="checkbox"/>	Fire Chief - Coordinator
Grant writer(s)	<input checked="" type="checkbox"/>	Parks – Staff Police – Staff Public Works – Staff Fire Dept – Staff Grants Administrator- Sr. Staff
Others		

Financial Resources	Accessible or Eligible to Use (Yes, No, Don't Know)	Comments
Community Development Block Grants	Yes	A Five-year Consolidated Plan is prepared with the public adoption of an Annual Action Plan.
Capital Improvements Project funding	Yes	City General Fund CIP, Regional Transportation Plan; HURF funding; Grand Funding
Authority to levy taxes for specific purposes	Yes	City council
Fees for water, sewer, gas, or electric service	Yes	Solid Waste, Water, Sewer
Impact fees for homebuyers or new developments/homes	Yes	Impact fees for the costs associated with the development of applicable infrastructure.
Incur debt through general obligation bonds	Yes	Through bond elections regulated by the state
Incur debt through special tax bonds	Yes	Through elections initiated by the city or developers. Subject to review and approval by council.
Other	Yes	FEMA, NRCS, State Land, etc.

**Table 6-1-24: Legal and regulatory capabilities for Tempe**

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
CODES	<ul style="list-style-type: none"> <li>2006 International Building code and International Fire Code</li> </ul>	<ul style="list-style-type: none"> <li>Fire Department</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>Weed Abatement Ordinance</li> </ul>	<ul style="list-style-type: none"> <li>Public Works</li> <li>Development Services</li> </ul>
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>Tempe Emergency Operations Plan Revised October 2008</li> <li>Capital Improvement Plan, 2009-10, including Storm Drain Modifications</li> <li>Economic Development Plan</li> <li>General Plan</li> </ul>	<ul style="list-style-type: none"> <li>Fire Department</li> <li>Financial Services</li> <li>Community Development</li> <li>Development Services</li> </ul>
STUDIES	<ul style="list-style-type: none"> <li>Floodplain Delineation Study</li> </ul>	<ul style="list-style-type: none"> <li>Public Works</li> </ul>

**Table 6-2-24: Technical staff and personnel capabilities for Tempe**

Staff/Personnel Resources	<input checked="" type="checkbox"/>	Department/Agency - Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Public Works/Engineering, Planning
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Public Works/Engineering Community Development/Building Safety
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Public Works/Engineering Public Works/Water Utilities Division
Floodplain Manager	<input checked="" type="checkbox"/>	Public Works/Engineering
Surveyors	<input checked="" type="checkbox"/>	Public Works/Engineering Public Works/Water Utilities Division
Staff with education or expertise to assess the community's vulnerability to hazards	<input checked="" type="checkbox"/>	Fire Department, Police Department, Community Development, Public Works/Engineering, Streets Public Works/Water Utilities Division
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	Public Works/Engineering, Field Operations Information Technology Department Fire Department Police Department Public Works/Water Utilities Division
Scientists familiar with the hazards of the community		Fire Department Public Works/Water Utilities Division
Emergency manager	<input checked="" type="checkbox"/>	Fire Department
Grant writer(s)	<input checked="" type="checkbox"/>	All City Departments
Others		

**Table 6-3-24: Fiscal capabilities for Tempe**

<b>Financial Resources</b>	<b>Accessible or Eligible to Use (Yes, No, Don't Know)</b>	<b>Comments</b>
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	Can only occur through city council and city vote
Fees for water, sewer, gas, or electric service	Yes	
Impact fees for homebuyers or new developments/homes	Yes	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Other		

**Table 6-1-25: Legal and regulatory capabilities for Tolleson**

<b>Regulatory Tools for Hazard Mitigation</b>	<b>Description</b>	<b>Responsible Department/Agency</b>
CODES	<ul style="list-style-type: none"> <li>• 2012 International Fire Code</li> <li>• 2012 National Fire Code &amp; Standards</li> <li>• 2012 International Building Code</li> <li>• 2012 International Mechanical Code</li> <li>• 2012 International Electrical Code</li> <li>• 2011 National Electrical Code</li> <li>• Tolleson City Code</li> <li>• 2012 International Residential Code</li> <li>• 2012 International Plumbing Code</li> <li>• 2012 International Property Maintenance Code</li> <li>• 2012 International Fuel Gas Code</li> </ul>	<ul style="list-style-type: none"> <li>• Fire Department</li> <li>• Building Department</li> <li>• City Clerk's Office</li> <li>• Engineering Department</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• 2211 N.S. Amending the Tolleson City Code Chapter 7 relating to fire codes</li> <li>• 2014 Tolleson City Ordinances</li> <li>• 2014 Dust and Airborne Particulate Control</li> <li>• 2014 Zoning Code</li> <li>• 2014 Storm Water Runoff Pollution/Prevention</li> </ul>	<ul style="list-style-type: none"> <li>• Fire Department</li> <li>• Building Department</li> </ul>
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>• Fire Protection Handbook, 18<sup>th</sup> edition</li> <li>• ANSI/IIAR 2-1999, Equipment Design, and Installation of Ammonia Mechanical Refrigerating Systems</li> <li>• Fire Department Plan Review Guidelines as adopted by Ordinance 463 N.S.</li> <li>• 2014 Tolleson General Plan</li> <li>• 2014 City of Tolleson Codes</li> </ul>	<ul style="list-style-type: none"> <li>• Fire Department</li> <li>• Building Department</li> <li>• City Clerk's Office</li> <li>• City Council / Staff</li> </ul>
STUDIES	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• All City Departments</li> </ul>

<b>Staff/Personnel Resources</b>	<input checked="" type="checkbox"/>	<b>Department/Agency - Position</b>
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	City Engineering
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Engineering, Building Departments
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Engineering, Fire Department, Police Department, Field Operations
Floodplain Manager	<input checked="" type="checkbox"/>	City Engineering
Surveyors	<input checked="" type="checkbox"/>	City Engineering
Staff with education or expertise to assess the community's vulnerability to hazards	<input checked="" type="checkbox"/>	Street Department, Field Operations, City Engineering, Building Department, Fire Department
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	I.T. Department
Scientists familiar with the hazards of the community		Police Department, Water Services, Fire Department
Emergency manager	<input checked="" type="checkbox"/>	Fire Department
Grant writer(s)	<input checked="" type="checkbox"/>	Each Individual City Department
Others		

<b>Financial Resources</b>	<b>Accessible or Eligible to Use (Yes, No, Don't Know)</b>	<b>Comments</b>
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	
Impact fees for homebuyers or new developments/homes	Yes	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Don't Know	
Other		

**Table 6-1-26: Legal and regulatory capabilities for Unincorporated Maricopa County**

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
CODES	<ul style="list-style-type: none"> <li>• 2012 International Building Code</li> <li>• 2012 National Electrical Code</li> <li>• 2012 International Mechanical Code</li> <li>• 2012 International Plumbing Code</li> <li>• 2012 International Residential Code</li> <li>• 2012 International Green Construction Code (optional)</li> <li>• 2012 International Energy Conservation Code (optional)</li> </ul>	<ul style="list-style-type: none"> <li>• Planning and Development</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• Abatement Ordinance (P-11)</li> <li>• Adult Oriented Business (P-10)</li> <li>• Dark Sky Ordinance</li> <li>• Military Airport Zoning Ordinance (P-16)</li> <li>• Noise Ordinance (P-23)</li> <li>• Zoning Ordinance (P-18)</li> </ul>	<ul style="list-style-type: none"> <li>• Planning and Development</li> </ul>
REGULATIONS	<ul style="list-style-type: none"> <li>• Addressing Regulations</li> <li>• Drainage Regulations</li> <li>• Dust Abatement Regulations</li> <li>• Subdivision Regulations</li> <li>• HUD Consolidated Planning Regulations</li> <li>• Floodplain Regulations</li> </ul>	<ul style="list-style-type: none"> <li>• Planning and Development</li> <li>• Air Quality</li> <li>• Transportation</li> <li>• Community Development</li> <li>• Flood Control District</li> </ul>
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>• Area Land Use Plan</li> <li>• Comprehensive Plan</li> <li>• Transportation Plan</li> <li>• Scenic Corridors</li> <li>• Comprehensive Planning Amendments Guidelines</li> <li>• Development Master Plan Guidelines</li> <li>• Area Drainage Master Plan</li> <li>• Watercourse Master Plan</li> <li>• Flood Response Plan/Emergency Actions Plan</li> <li>• Comprehensive Report &amp; Program 2015</li> </ul>	<ul style="list-style-type: none"> <li>• Planning and Development</li> <li>• Transportation</li> <li>• Environmental Services</li> <li>• Flood Control District</li> </ul>
STUDIES	<ul style="list-style-type: none"> <li>• Flood Insurance Studies</li> <li>• Floodplain Delineation Studies</li> <li>• Dam Safety Studies</li> <li>• Area Drainage Master Studies</li> <li>• Corridor Studies</li> <li>• Emergency Routes/Mass Evacuation</li> <li>• Fissure / Subsidence Risk Studies</li> <li>• Air Quality Planning Area Maps</li> </ul>	<ul style="list-style-type: none"> <li>• Planning and Development</li> <li>• Environmental Services</li> <li>• Flood Control District</li> <li>• Transportation</li> <li>• Emergency Management</li> <li>• AZ Geological Survey</li> <li>• Air Quality</li> </ul>

<b>Table 6-2-26: Technical staff and personnel capabilities for Unincorporated Maricopa County</b>		
<b>Staff/Personnel Resources</b>	<input checked="" type="checkbox"/>	<b>Department/Agency - Position</b>
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Planning and Development – Planners Flood Control District – Engineers/Planners Transportation – Engineers/Planners Environmental Services – Inspectors
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Planning and Development – Planners Flood Control District – Engineers/Inspectors Transportation – Engineers/Surveyors Environmental Services – Inspectors Air Quality - Inspectors
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Planning and Development – Planners Flood Control District - Engineers Transportation – Engineers/Planners Emergency Management - Planners
Floodplain Manager	<input checked="" type="checkbox"/>	Flood Control District – Engineers
Surveyors	<input checked="" type="checkbox"/>	Flood Control District – Surveyors Transportation – Surveyors
Staff with education or expertise to assess the community’s vulnerability to hazards	<input checked="" type="checkbox"/>	Planning and Development – Planners Flood Control District - Engineers Transportation - Engineers Emergency Management – Planners
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	Planning and Development – GIS Staff Flood Control District – GIS Staff Transportation – GIS Staff Emergency Management – GIS Staff Assessor’s Office – GIS Staff Sheriff’s Office – GIS Staff Elections – GIS Staff Environmental Services – GIS Staff Air Quality – GIS Staff
Scientists familiar with the hazards of the community	<input checked="" type="checkbox"/>	Flood Control District – Hydrologist Flood Control District- Meteorologist Risk Management-Industrial Hygienist Risk Management-Environmental Engineer
Emergency manager	<input checked="" type="checkbox"/>	Emergency Management - Director/Planners
Grant writer(s)	<input checked="" type="checkbox"/>	Emergency Management – Administrative Manager Parks –Grant writer Sheriff’s Office – Grant writer Community Development – Grant writer Human Services – Grant writer Transportation - Grant writer/Fed. Aid Coordinator Flood Control District – CIP Manager
Others		

**Table 6-3-26: Fiscal capabilities for Unincorporated Maricopa County**

<b>Financial Resources</b>	<b>Accessible or Eligible to Use (Yes, No, Don't Know)</b>	<b>Comments</b>
Community Development Block Grants	Yes	A Five-year Consolidated Plan is prepared with the public adoption of an Annual Action Plan
Capital Improvements Project funding	Yes	<ul style="list-style-type: none"> <li>• FCD's CIP</li> <li>• County General Fund CIP</li> <li>• Transportation Improvement Program</li> <li>• Regional Transportation Plan</li> </ul>
Authority to levy taxes for specific purposes	Yes	Improvement District, Direct Assessment Special District
Fees for water, sewer, gas, or electric service	No	Solid Waste only: Transfer station and waste tire collection fees
Impact fees for homebuyers or new developments/homes	Yes	Limited Use
Incur debt through general obligation bonds	Yes	Lease Revenue Bonds
Incur debt through special tax bonds	Yes	
Other: Cooperative Agreement Grants and Specific Planning and Project Grants	Yes	FEMA, NRCS, State Land, etc.

**Table 6-1-27: Legal and regulatory capabilities for Wickenburg**

<b>Regulatory Tools for Hazard Mitigation</b>	<b>Description</b>	<b>Responsible Department/Agency</b>
CODES	<ul style="list-style-type: none"> <li>• 2006 International Building Code</li> <li>• 2005 National Electrical Code</li> <li>• 2006 International Mechanical Code</li> <li>• 2006 International Plumbing Code</li> <li>• 2006 International Residential Code</li> </ul>	<ul style="list-style-type: none"> <li>• Community Development</li> <li>• Public Works</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• Dark Sky Ordinance</li> <li>• Noise Ordinance (P-23)</li> <li>• Zoning Ordinance (P-18)</li> </ul>	<ul style="list-style-type: none"> <li>• Community Development</li> <li>• Public Works</li> <li>• Manager's Office</li> </ul>
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>• Addressing Regulations</li> <li>• Drainage Regulations</li> <li>• Dust Abatement Regulations</li> <li>• Subdivision Regulations</li> </ul>	<ul style="list-style-type: none"> <li>• Community Development</li> <li>• Public Works</li> <li>• Manager's Office</li> </ul>
STUDIES	<ul style="list-style-type: none"> <li>• Area Land Use Plan</li> <li>• Flood Response Plan</li> <li>• Development Master Plan Guidelines</li> <li>• Area Drainage Master Plan</li> <li>• Watercourse Master Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Community Development</li> <li>• Public Works</li> </ul>

<b>Table 6-2-27: Technical staff and personnel capabilities for Wickenburg</b>		
<b>Staff/Personnel Resources</b>	<input checked="" type="checkbox"/>	<b>Department/Agency - Position</b>
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Planning and Development – Planners Public Works – Engineer
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure		Contract
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Planning and Development - Planners Emergency Management - Planners
Floodplain Manager		Contract with Flood Control District – Engineers
Surveyors		Contract
Staff with education or expertise to assess the community’s vulnerability to hazards	<input checked="" type="checkbox"/>	Planning and Development - Planners Public Works – Staff Police Dept – Staff Fire Dept - Staff Emergency Management – Coordinator
Personnel skilled in GIS and/or HAZUS	<input checked="" type="checkbox"/>	Planning and Development – GIS Staff
Scientists familiar with the hazards of the community		None
Emergency manager	<input checked="" type="checkbox"/>	Emergency Management - Coordinator
Grant writer(s)	<input checked="" type="checkbox"/>	Emergency Management - Coordinator Parks –Grant writer Police – Grant writer Public Works – Grant writer Fire Dept – Grant writer
Others		

<b>Table 6-3-27: Fiscal capabilities for Wickenburg</b>		
<b>Financial Resources</b>	<b>Accessible or Eligible to Use (Yes, No, Don’t Know)</b>	<b>Comments</b>
Community Development Block Grants	No	A Five-year Consolidated Plan is prepared with the public adoption of an Annual Action Plan
Capital Improvements Project funding	Yes	Town General Fund CIP Regional Transportation Plan
Authority to levy taxes for specific purposes	Yes	Town council
Fees for water, sewer, gas, or electric service	Yes	Solid Waste, Water, Sewer, Electric
Impact fees for homebuyers or new developments/homes	No	
Incur debt through general obligation bonds	Yes	Town council
Incur debt through special tax bonds	Yes	Town council
Other: Cooperative Agreement Grants and Specific Planning and Project Grants	Yes	FEMA, NRCS, State Land, BLM, ACF

**Table 6-1-28: Legal and regulatory capabilities for Youngtown**

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
CODES	<ul style="list-style-type: none"> <li>• 2012 International Building Code</li> <li>• 2012 International Residential Code</li> <li>• 2012 International Plumbing Code</li> <li>• 2012 International Mechanical Code</li> <li>• 2012 International Fire Code</li> <li>• 2012 International Existing Building Code</li> <li>• 2011 National Electric Code</li> <li>• Town Code of the Town of Youngtown</li> <li>• <b>Adopted 2012 version of codes in January of 2014</b></li> <li>• Town adopted various local zoning and building codes</li> </ul>	<ul style="list-style-type: none"> <li>• Building Safety Division</li> <li>• Code Compliance Division</li> <li>• Public Works Department</li> </ul>
ORDINANCES	<ul style="list-style-type: none"> <li>• 2008 Town of Youngtown Planning &amp; Zoning Ordinance</li> <li>• Town of Youngtown Floodplain Ordinance</li> <li>• Various Town of Youngtown Weed &amp; Debris Abatement ordinances</li> <li>• 2008 Town of Youngtown Subdivision Zoning Regulations</li> <li>• Debris Ordinances adopted</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Building Safety Division</b></li> <li>• Public Works Department</li> <li>• Town Clerk's Office</li> </ul>
PLANS, MANUALS, and/or GUIDELINES	<ul style="list-style-type: none"> <li>• <b>2025</b> General Plan and Comprehensive Plan adopted</li> <li>• <b>2014</b> Town of Youngtown Emergency Operations Plan (currently being updated)</li> <li>• Community Wildfire Protection Plan (Adopted by SCFD)</li> </ul>	<ul style="list-style-type: none"> <li>• Public Works Department</li> <li>• Public Safety Department</li> <li>• Fire Department (Town is a member of Sun City Fire District)</li> </ul>
STUDIES	<ul style="list-style-type: none"> <li>• <b>2013</b> Flood Insurance Studies</li> <li>• <b>2012</b> Floodplain Delineation Studies</li> </ul>	<ul style="list-style-type: none"> <li>• Public Works Department</li> </ul>

<b>Staff/Personnel Resources</b>	<input checked="" type="checkbox"/>	<b>Department/Agency - Position</b>
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Community Development - Manager
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Town Engineer and Building Inspector/Plans Reviewer, Community Development – Manager
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Community Development – Manager and Public Works – Manager
Floodplain Manager	<input checked="" type="checkbox"/>	Town Engineer by Ordinance
Surveyors	<input checked="" type="checkbox"/>	Town Engineer’s Staff
Staff with education or expertise to assess the community’s vulnerability to hazards	<input checked="" type="checkbox"/>	Town Engineer; Public Works/Emergency Services Manager; Public Safety Manager; various Staff Members
Personnel skilled in GIS and/or HAZUS		
Scientists familiar with the hazards of the community		
Emergency Manager	<input checked="" type="checkbox"/>	Public Works Manager/Emergency Services Manager; Public Safety/Manager
Grant writer(s)	<input checked="" type="checkbox"/>	Town Engineer; Public Works Manager; Public Safety Manager, Town Manager; various Staff Members
Others		

<b>Financial Resources</b>	<b>Accessible or Eligible to Use (Yes, No, Don’t Know)</b>	<b>Comments</b>
Community Development Block Grants	Yes	Member of MCCD/CDAC Small Cities
Capital Improvements Project funding	Yes	Local Funds & MAG
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	No	Utilities, including water/sewer owned by private providers
Impact fees for homebuyers or new developments/homes	No	.
Incur debt through general obligation bonds	Yes	Unlikely, since water/sewer not owned by town. Also, town does not have primary property tax.
Incur debt through special tax bonds	Yes	Unlikely, since water/sewer not owned by town. Also, town does not have primary property tax.
Other		

6.2.2 *National Flood Insurance Program Participation*

Participation in the NFIP is a key element of any community’s local floodplain management and flood mitigation strategy. Maricopa County and all 24 incorporated jurisdictions participate in the NFIP at varying levels. The Fort McDowell Yavapai Nation and Salt River Pima-Maricopa Indian Community do not currently participate in the NFIP. Salt River Project is not organized like a municipality, does not regulate development, and therefore, is not a participant in the NFIP either.

Joining the NFIP requires the adoption of a floodplain management ordinance that requires jurisdictions to follow established minimum standards set forth by FEMA and the State of Arizona when developing in the floodplain. These standards require that all new buildings and substantial improvements to existing buildings will be protected from damage by the 100-year flood, and that new floodplain development will not aggravate existing flood problems or increase damage to other properties. Maricopa County and some other communities, have adopted standards that are more stringent than the federal minimum to ensure better flood mitigation practices. As a participant in the NFIP, communities also benefit from having Flood Insurance Rate Maps (FIRM) that map identified flood hazard areas and can be used to assess flood hazard risk, regulate construction practices and set flood insurance rates. FIRMs are also an important source of information to educate residents, government officials and the private sector about the likelihood of flooding in their community. Table 6-4 summarizes the NFIP status and statistics for each of the jurisdictions participating in this Plan.

<b>Jurisdiction</b>	<b>Community ID</b>	<b>NFIP Entry Date</b>	<b>Current Effective Map Date</b>	<b>Number of Policies</b>	<b>Amount of Coverage (x \$1,000)</b>	<b>Floodplain Management Role</b>
Maricopa County	040037	7/2/1979	10/16/2013	2,516	\$588,500	Provides floodplain management for the Unincorporated County and the City/Towns noted below
Avondale	040038	6/15/1979	10/16/2013	59	\$15,186	Provides in-house floodplain management
Buckeye	040039	2/15/1980	10/16/2013	53	\$13,007	Floodplain management provided by the Flood Control District of Maricopa County
Carefree	040126	7/2/1979	10/16/2013	27	\$8,217	Floodplain management provided by the Flood Control District of Maricopa County
Cave Creek	040129	6/9/1988	10/16/2013	82	\$21,769	Floodplain management provided by the Flood Control District of Maricopa County
Chandler	040040	7/16/1980	10/16/2013	303	\$80,778	Floodplain management provided by the Flood Control District of Maricopa County
El Mirage	040041	12/1/1978	10/16/2013	10	\$1,698	Floodplain management provided by the Flood Control District of Maricopa County
Fountain Hills	040135	2/10/1994	10/16/2013	32	\$8,153	Provides in-house floodplain management

<b>Table 6-4: NFIP status and statistics for Maricopa County and participating jurisdictions</b>						
<b>Jurisdiction</b>	<b>Community ID</b>	<b>NFIP Entry Date</b>	<b>Current Effective Map Date</b>	<b>Number of Policies</b>	<b>Amount of Coverage (x \$1,000)</b>	<b>Floodplain Management Role</b>
Gila Bend	040043	12/4/1979	10/16/2013	11	\$2,092	Floodplain management provided by the Flood Control District of Maricopa County
Gilbert	040044	1/16/1980	10/16/2013	363	\$109,559	Provides in-house floodplain management
Glendale	040045	4/16/1979	10/16/2013	171	\$50,057	Provides in-house floodplain management
Goodyear	040046	7/16/1979	10/16/2013	106	\$27,721	Provides in-house floodplain management
Guadalupe	040111	4/1/1994	10/16/2013	4	\$605	Floodplain management provided by the Flood Control District of Maricopa County
Litchfield Park	040128	8/19/1988	10/16/2013	9	\$2,406	Floodplain management provided by the Flood Control District of Maricopa County
Mesa	040048	5/15/1980	10/16/2013	386	\$100,311	Floodplain management provided by the Flood Control District of Maricopa County
Paradise Valley	040049	5/1/1980	10/16/2013	127	\$45,373	Provides in-house floodplain management
Peoria	040050	11/17/1978	10/16/2013	240	\$65,570	Provides in-house floodplain management
Phoenix	040051	12/4/1979	10/16/2013	4,573	\$1,097,011	Provides in-house floodplain management
Queen Creek	040132	7/22/1992	10/16/2013	46	\$11,507	Floodplain management provided by the Flood Control District of Maricopa County
Scottsdale	045012	9/21/1973	10/16/2013	8,744	\$2,278,366	Provides in-house floodplain management
Surprise	040053	12/15/1978	10/16/2013	204	\$55,690	Floodplain management provided by the Flood Control District of Maricopa County
Tempe	040054	8/15/1980	10/16/2013	196	\$55,791	Provides in-house floodplain management
Tolleson	040055	1/16/1980	10/16/2013	36	\$11,100	Floodplain management provided by the Flood Control District of Maricopa County
Wickenburg	040056	1/5/1978	10/16/2013	43	\$8,902	Floodplain management provided by the Flood Control District of Maricopa County

Table 6-4: NFIP status and statistics for Maricopa County and participating jurisdictions						
Jurisdiction	Community ID	NFIP Entry Date	Current Effective Map Date	Number of Policies	Amount of Coverage (x \$1,000)	Floodplain Management Role
Youngtown	040057	11/15/1978	10/16/2013	1	\$280	Floodplain management provided by the Flood Control District of Maricopa County
Fort McDowell Yavapai Nation		Not a participant in the NFIP				
Salt River Project		Not a participant in the NFIP				
Salt River Pima-Maricopa Indian Community		Not a participant in the NFIP				
Sources: Policy Statistics - <a href="http://bsa.nfipstat.fema.gov/reports/1011.htm">http://bsa.nfipstat.fema.gov/reports/1011.htm</a> (8/31/2014) ; NFIP Status - <a href="http://bsa.nfipstat.fema.gov/comm_status/index.html">http://bsa.nfipstat.fema.gov/comm_status/index.html</a> (9/24/2014)						

Each of the participating jurisdictions performed an overall assessment of their participation in the NFIP program by responding to the following questions:

- Question 1:** Describe your jurisdiction’s current floodplain management / regulation process for construction of new or substantially improved development within your jurisdiction.
- Question 2:** Describe the status and/or validity of the current floodplain hazard mapping for your jurisdiction.
- Question 3:** Describe any community assistance activities (e.g. – help with obtaining Elevation Certificates, flood hazard identification assistance, flood insurance acquisition guidance, public involvement activities, etc.)
- Question 4:** Describe identified needs in your floodplain management program. This could include things like updating the floodplain management code/regulation, establishing written review procedures, modifying or adding flood hazard area mapping, etc.

Responses were provided by all jurisdictions regardless of their participation status in the NFIP program. Table 6-5 summarizes the responses provided by each of the currently participating jurisdictions

<b>Table 6-5: NFIP program assessment for Maricopa County and participating jurisdictions</b>	
<b>Participating Jurisdiction</b>	<b>Responses to Questions 1-4</b>
Avondale	Q1 Our City Engineer is a certified floodplain manager. As the floodplain manager he works with floodplain zones, answers resident and business owner’s questions, assists realtors, and maintains documentation for future reference. Any construction that takes place involving a permit is evaluated and tracked in regard to location of floodplains to proposed construction area. This data is maintained electronically in the Engineering Department. City Engineer/Floodplain Manager also participate in audits of the program as requested.
	Q2 Floodplain maps and DFIRMS for the city were recently updated as a part of the overall county update.
	Q3 The Engineering department assists residents and businesses with questions they may have in regard to property contained within the floodplain. In some instances when FIRM maps are not accurate, Engineering Department assists property owner with an appeal to have a re-determination done to re-evaluate the property. In some instances physical map revisions are made in coordination with Flood Control District of Maricopa County and FEMA.
	Q4 Having more floodplain information including mapping available on the website.

<p>Buckeye</p>	<p>Q1</p>	<p>The following procedures are used in coordination with the Flood Control District of Maricopa County for structures that require Floodplain Use Permits as well as City of Buckeye (COB) Building Permits.</p> <ol style="list-style-type: none"> <li>1) The applicant applies for a building permit. City’s Floodplain Administrator or his/her designee checks FIRM Map to determine if property is within a 100-year Floodplain.</li> <li>2) Property is in a 100-year Floodplain.             <ol style="list-style-type: none"> <li>a) Buckeye staff informs applicant property is in a floodplain and requires a Floodplain Use Permit from the Flood Control District of Maricopa County (FCDMC).</li> <li>b) (Buckeye staff will proceed with normal requirements to obtain a building permit.)</li> <li>c) Buckeye staff instructs Applicant to set up an appointment with the FCDMC. Applicant is instructed to take Buckeye Building Permit to FCDMC and obtain a Floodplain Use Permit.</li> <li>d) Applicant returns to the COB with approved Floodplain Use Permit with stipulations for Building Permit. Floodplain Use Permit shall be attached to the Building Permit and paper work for inspectors.</li> </ol> <p>Place in COB Project File:</p> <ul style="list-style-type: none"> <li>• Application Form</li> <li>• Stipulations – states floodplain requirements, e.g., lowest floor elevation, elevation certificate form completed by the Applicant’s Arizona Registered Professional Engineer (P.E.) or Surveyor (R.L.S.), etc.</li> <li>• Disclaimer Form</li> <li>• Copy of Elevation Certificate with owner’s name, property address, base flood elevation and FIRM map information for Engineer or Surveyor to complete.</li> </ul> </li> <li>3) COB staff issues Building Permit and appoints an inspector to insure NFIP compliance.</li> <li>4) Applicant hires surveyor to place “temporary bench mark” for builder to know where to set lowest floor above grade.</li> <li>5) The applicant applies for a building permit. City’s Floodplain Administrator or his/her designee checks FIRM Map to determine if property is within a 100-year Floodplain.</li> <li>6) Applicant’s Surveyor completes “Under Construction” FEMA Elevation Certification and faxes to the FCDMC. The FCDMC will fax a copy of the Elevation Certificate to COB stating it is okay to pass stem. Applicant calls COB for stem inspection. Before the stem inspection can be given a pass, the FCDMC must have a copy of the Elevation Certificate completed by the Applicant’s P.E. or R.L.S to determine that the elevation requirements are being met. (COB inspector must fail the stem inspection if the certificate has not been completed.)</li> <li>7) Applicant calls COB for final inspection. Before the final inspection can be given a pass, the Applicant’s P.E. or R.L.S. must complete FEMA Elevation Certificate for “Finished Construction”.</li> <li>8) COB Inspector assigned to assure NFIP compliance will:             <ol style="list-style-type: none"> <li>i) Prior to construction activity beginning, notify the FCDMC that construction will begin within the regulatory floodplain.</li> <li>ii) Complete the Floodplain Management Field Inspection Checklist to assure all work has been done in compliance with NFIP and county regulations.</li> </ol> </li> </ol>
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Table 6-5: NFIP program assessment for Maricopa County and participating jurisdictions	
Participating Jurisdiction	Responses to Questions 1-4
	<p>iii) Assure that the FEMA Elevation Certificate is completed and has been approved by the COB Inspector.</p> <p>iv) Assure that the permit file has copies of all appropriate forms required.</p> <p>(1) FEMA Elevation Certificate – fully completed.</p> <p>(2) Final Inspection/Compliance Checklist.</p> <p>(3) Variance information, if any.</p> <p>(4) Flood proofing, if any.</p> <p>(5) Substantial Improvement Calculations, if any.</p> <p>(6) Floodway Encroachment “No Rise” analysis, if any</p> <p>(7) NFIP Compliance Field Inspector’s Checklist.</p> <p>9) COB issues a Certificate of Occupancy to applicant and mails a copy of the Building Permit, finished construction Elevation Certificate and the Certificate of Occupancy to the FCDMC.</p> <p>NOTE: FCDMC Inspectors will visit construction sites at their discretion per Arizona Senate Bill 1598.</p>
	<p>Q2 The countywide update of FEMA mapped floodplains in 2013 encompasses the jurisdictional limits of the City of Buckeye. An additional study has also been completed for the Gila River floodplain that has not yet been submitted to FEMA for consideration.</p>
	<p>Q3 The City of Buckeye is not currently providing additional formal community assistance activities, but rather relies on the FCDMC for these items.</p>
	<p>Q4 With current staffing levels there are not additional items planned for the program. Procedures were developed in 2014 for the following potential floodplain use permit related development scenarios:</p> <ul style="list-style-type: none"> <li>• Substantial Damage and substantial improvements</li> <li>• Commercial, Industrial and School development</li> <li>• Residential Structures</li> <li>• Residential Subdivisions</li> <li>• Other man-made development</li> <li>• Variance requests</li> </ul>

Table 6-5: NFIP program assessment for Maricopa County and participating jurisdictions		
Participating Jurisdiction	Responses to Questions 1-4	
Carefree	Q1	The Town of Carefree is in full compliance and is in good standing with the National Flood Insurance Program (NFIP). In accordance with this program, all new development and substantial improvement to existing structures are reviewed for compliance with federal, state, county, and town drainage and flood control regulations and guidelines. This includes checking for a development's encroachment into any Federal Emergency Management Agency (FEMA) designated Special Flood Hazard Area (SFHA). In order to streamline this assessment, the town requires a Flood Insurance Rate Map (FIRM) Information Block on all plans. This information block identifies critical flood zone information for the property, including the FIRM Panel number, FIRM Panel date, flood zone designation(s) that apply to the property, and base flood elevation (BFE), if applicable. Any new development or substantial improvement to an existing structure that is identified as being fully or partially within a SFHA is routed to the Flood Control District of Maricopa County (FCDMC) for Floodplain Use Permit review. The FCDMC provides floodplain management for the town and the town has adopted the county's Floodplain Regulations by Ordinance. The FCDMC's Floodplain Use Permit review assures compliance with all applicable floodplain regulations within the Town of Carefree.
	Q2	The FIRM's for Maricopa County (county-wide maps) were recently updated and reissued on October 16, 2013. These revised maps have been adopted by the Town of Carefree via the town's Floodplain Management Ordinance (Ordinance No. 2007-03). The revised maps include the best available technical information for all SFHA's and include newly identified SFHA's within the eastern portion of the town.
	Q3	The town responds to all drainage and flood control inquiries at the appropriate level. The Town Administrator, Town Engineer, and Town Planner all provide assistance to citizens in obtaining this input and guidance. Where needed, the Town Engineer and Town Planner perform site visits to assist citizens in flood hazard identification and drainage issue mitigation. Citizens are also directed, as appropriate, to other resources, such as the FCDMC, for flood zone determinations, flood insurance assistance, and Elevation Certificate guidance.
	Q4	All of the Town of Carefree's floodplain management tools and regulations are working well. Because of limited funding sources (the town has no property tax), resources are limited as far as identifying and implementing drainage and flood control projects. The following are some investigations that would be helpful to the Town in identifying needs and unmet funding requirements: <ul style="list-style-type: none"> <li>• Emergency access planning and improvement study.</li> <li>• Detailed local area master drainage plans.</li> </ul>
Cave Creek	Q1	Currently, the Town of Cave Creek defers to the Flood Control District of Maricopa County as part of the review and approval of any permit which may impact an existing / recognized floodplain and or floodway.
	Q2	The Town of Cave Creek receives its mapping data from Maricopa County.
	Q3	The Town of Cave Creek directs questions and concerns related to floodway / floodplain to the appropriate agency. The Town of Cave Creek actively communicates with the Flood Control District of Maricopa County Inspector.
	Q4	None

**Table 6-5: NFIP program assessment for Maricopa County and participating jurisdictions**

Participating Jurisdiction	Responses to Questions 1-4	
Chandler	Q1	<p>Our floodplain management is provided by the Flood Control District of Maricopa County. They are responsible to identify areas susceptible to 100-year flooding, review permit applications for proposed uses within the floodplain, identify floodplain violations, and protect the natural and beneficial function of the floodplain. The District is required by law to take all reasonable action to inform county residents and property owners of the location of flood hazard areas.</p> <p>The city participates in the National Flood Insurance Program (NFIP) and has adopted floodplain management regulations consistent with federal criteria. City Code Section 43-5 states the statutory authority (vested in the Flood Control District) and duties and responsibilities of the Floodplain Administrator (City Engineer). These duties include ensuring all construction permit requests within floodplains are promptly forwarded to the Flood Control District and that no permits are issued by any agent of the city until a valid floodplain use permit is obtained by the applicant</p>
	Q2	<p>Updated Countywide Federal Insurance Rate Map (FIRM) Panels became effective on October 16, 2013. Currently, these maps, in addition to Letters of Map Change (LOMC) may be used to determine if a particular piece of property is located in a 100-year floodplain.</p> <p>A new FIRM update is underway and tentatively planned to be effective August 2016. The purpose of this map revision is to incorporate several large floodplain delineation studies onto the FIRMs that were too large to be incorporated under FEMA's traditional Letter of Map Revision (LOMR) process. In addition to incorporating these larger studies, the FIRM panels included in the revision will be updated for local LOMRs, updated community limits, and in certain locations, the FIRM panels will have new identification numbers and be printed at a closer scale.</p>
	Q3	<p>Guidance is always provided to customer inquiries. The Flood Control District of Maricopa County website is the primary resource for customer assistance including links and instructions pertaining to Elevations Certificates, when and how to obtain flood insurance, map applications to view current and pending 100-Year effective floodplains, general questions and answers and contact information.</p>
	Q4	<p>Currently our floodplain management code is up-to-date. The city promptly adopts updates to FIRM's ensuring compliance with the NFIP.</p>
El Mirage	Q1	<p>The City Engineer/Floodplain Administrator reviews development permits to ensure they are complete, accurate and all other necessary permits are in place. A floodplain use permit is required before construction or development begins within any area of special flood hazard.</p>
	Q2	<p>The Floodplain Administrator ensures that any development that changes the water course within the floodplain is communicated to Flood Control District of Maricopa County, to ensure available information is accurate and current. The Administrator participates in the CLOMR/LOMR process is followed.</p>
	Q3	<p>The Floodplain administrator maintains records of flood proofing and elevation certificates for public review. Flood hazard identification is included in the development review process.</p>

<b>Table 6-5: NFIP program assessment for Maricopa County and participating jurisdictions</b>		
<b>Participating Jurisdiction</b>	<b>Responses to Questions 1-4</b>	
	Q4	The floodplain management program needs to establish public involvement activities.
Fort McDowell Yavapai Nation	Q1	New development and construction as well as substantial improvement of existing structures and facilities within the exterior boundaries of the Fort McDowell Yavapai Nation are required to obtain a permit from the Community Economic Development Division. The permitting process includes a review of the location and proximity to the existing floodplain.
	Q2	The Community Economic Development Division functions of the Land Use and License Manager and Planning Project Manager utilize GIS software applications to map floodplain areas with data acquired through Maricopa County.
	Q3	There is not currently any community assistance activities for flood insurance.
	Q4	The Nation needs to establish written procedures to review and update the floodplain management functions.
Fountain Hills	Q1	The town's floodplain regulations are contained in Town Code Chapter 14 "Flood Damage Prevention", which is from ADWR's Model Ordinance.
		Nearly all of the town's regulatory floodplain areas are contained within town-owned properties, and/or are within a platted (or granted) Drainage Easement on other properties. Town-owned washes are further restricted against development, transfer, or alienation by the "Watercourse Preservation and Habitat Ordinance" (Town Code Article 9-3).
		The town has an extensive vegetation maintenance/control program, and annually allocates funds to remove non-native, invasive, and channel-obstructing vegetation in its "Wash Management Program" from selected watercourses and other town-owned property.
		Regulatory floodplains are mapped on the town's GIS system. Private development reviews verify that no infringement occurs within the floodplain (or that infringement is appropriately mitigated within that project).
	Q2	Floodplain/floodway areas have been mapped, with those areas shown on Maricopa County's FIRM maps. The FIRM was approved by FEMA in 2011.
	Q3	The town provides community assistance on an as-needed basis.
	Q4	Remapping of the Ashbrook Wash floodplain (East Town boundary to Golden Eagle Park Dam) is needed, due to past safety modifications to the Golden Eagle Park Dam, upstream development, and the upcoming enlarged culvert construction at Saguaro Blvd. and at Bayfield Drive. A joint project of the Flood Control District and the Town to remap this segment of the Ashbrook Wash floodplain is scheduled for 2016.

Table 6-5: NFIP program assessment for Maricopa County and participating jurisdictions		
Participating Jurisdiction	Responses to Questions 1-4	
Gila Bend	Q1	In the Town of Gila Bend a development permit shall be obtained before construction or development begins within any area of special flood hazard established in § 153.07 of the Town Code. Certification by a registered professional engineer or architect that the flood proofing methods, elevation of the lowest floor (relations to Mean Sea Level), and description as to what extent any watercourse will be altered or relocated as a result of the development and its impact to the adjacent areas. The town engineer reviews all drainage, earth movement (larger than 1 acre), and construction of utilities and roadways for compliance with all town, state, county, and federal regulations. The Town Manager has authority to approve or deny any permit.
	Q2	The Town and Maricopa County have partnered to review the flood water impacts to the town residents. Flood Control District of Maricopa County has presented the town with alternatives for the current flooding issues. It is believed that the study has been reviewed by staff and the costs associated with the plan have prevented implementation.
	Q3	The town received Assistance from Flood Control District of Maricopa County identifying floodplain limits and areas of significant impact.
	Q4	The Town of Gila Bend needs assistance with the following: <ul style="list-style-type: none"> <li>• Ground control so as to locate the limits of the floodplain in prone areas. Assistance with aerial mapping to correspond with GIS information for each affected parcel within the town.</li> <li>• Revision of the Town’s Code for floodplain management along with revised maps.</li> <li>• Finding sources to assist with financing any proposed projects within the scope provided by Flood Control District of Maricopa County.</li> <li>• Installation of recommended control devices to reduce flooding.</li> </ul>
Gilbert	Q1	The Town of Gilbert participates in the National Flood Insurance Program (NFIP) through the Department of Homeland Security's Federal Emergency Management Agency (FEMA). As a participant of the NFIP, the town adopted Floodplain Management Ordinance 2454 and has established development requirements within the Land Development & Municipal Codes for projects within the Special Flood Hazard Areas (SFHA). These requirements protect and regulate new or substantially improved development within flood prone areas in the town.
	Q2	The current floodplain hazard maps (Flood Insurance Rate Maps) went into effect on October 16, 2013 – and will remain in effect until the latest “preliminary FIRM maps” are approved as the new effective maps by FEMA. These preliminary maps, which were released for public comment in September 2014, are based on the results of the <i>Chandler / Gilbert Floodplain Delineation Study</i> .
	Q3	We are presently working with the Flood Control District of Maricopa County to determine how we can partner to provide Elevation Certificates for properties that will be in the 100-year flood zone as a result of the latest preliminary FIRM mapping. We are also developing a strategy and timeline to notify property owners affected by the latest preliminary FIRM mapping (i.e., properties that are being added to the 100-year floodplain, and properties that will no longer be in the 100-year floodplain).

Table 6-5: NFIP program assessment for Maricopa County and participating jurisdictions		
Participating Jurisdiction	Responses to Questions 1-4	
	Q4	About 18 months ago, the town substantially improved our floodplain management program by developing web tools that can be used to quickly find Elevation Certificates and LOMR's affecting properties within Gilbert. Going forward, we would like to strengthen and improve our scores in the Community Rating System (presently we are rated "8" – and would like to bring this number down to "6" or perhaps "5"). This is an on-going process, and we will continue to annually look at opportunities to improve this score.
Glendale	Q1	We are currently a Class 7 NFIP CRS community. As such all properties in, or some small segment in, the SFHA are "tagged" in the Hansen system in Building Safety. When the parcel / project / remodel comes in, it is tagged for special review. This triggers special consideration / review stipulations that trigger a more exhaustive compliance review by Engineering / Building Safety. If it is new development, it must comply with our ordinances and NFIP regulations for finished floor elevation being 1' above the RFE. If it is substantially improved <50% value, development is allowed to continue. Once the value of improvements exceeds 50% the entire building(s) must be brought into compliance with the NFIP / Ordinances / Regulations.
	Q2	We currently use the October 2013 DFIRM's for determination of a property in / outside of the SFHA's. These DFIRM's were updated with community involvement in October 2013. All new CLOMR's / LOMR's etc. are kept on file in Engineering for community use until the DFIRM's are updated in the future.
	Q3	We require EC's on all affected SFHA properties and provide hazard identifications, provide referrals for citizens inquiring about flood insurance and multiple public involvement activities as part of our membership in the NFIP and CRS programs.
	Q4	Updating current floodplain ordinance, mapping of un-mapped hazard areas, writing SOP's as needed (with FEMA concurrence), NFIP Program oversight / monitoring and training for new / evolving regulations.
Goodyear	Q1	New or substantially improved development within the City of Goodyear is reviewed for conformance to the Engineering Design Standards and the Flood Damage Prevention Ordinance. While the City of Goodyear is responsible for floodplain administration within its jurisdiction, Engineering will obtain general floodplain information and guidance from the Flood Control District of Maricopa County whenever necessary in order to properly regulate construction within the city.
	Q2	Floodplain hazard mapping is current through the most recent FIRMs that have been made available from FEMA. The maps are available on the city's internal website for use by city staff for reviewing new proposed construction and providing floodplain determinations to the public upon request.
	Q3	The city's Engineering Department is responsible for maintaining documentation of elevation certificates, providing floodplain determinations, and providing assistance and answering questions from property owners who are impacted by proposed modifications to the special flood hazard zones. They also provide general information regarding flood insurance acquisition.
	Q4	The city will review and establish updated written review procedures for new construction and update the floodplain management code/regulations based on information that is received from ADEQ.

<b>Table 6-5: NFIP program assessment for Maricopa County and participating jurisdictions</b>		
<b>Participating Jurisdiction</b>	<b>Responses to Questions 1-4</b>	
Guadalupe	Q1	Floodplain management provided by the Flood Control District of Maricopa County. New construction and redevelopment is managed through a building permit and plan review process by contracted engineering firm. All building permits follow currently adopted codes.
	Q2	Floodplain mapping is current and valid.
	Q3	No current community floodplain assistance activities.
	Q4	Continue annual review of floodplain management and mapping in conjunction with Flood Control District of Maricopa County.
Litchfield Park	Q1	We follow the floodplain maps provided by the Flood Control District of Maricopa County. Our floodplain maps were updated in 2013. All construction plans and property improvements, within our jurisdiction, are subjected to the city review and approval process which includes Engineering reviews and Building Plan Department review to ensure compliance with said floodplain and other ordinances as required by City of Litchfield Park municipal code.
	Q2	The Flood Control District of Maricopa County provides updates: as those are provided, City Engineers and other required personnel review updates and make revisions or addendums as necessary to city processes and procedures. New dry wells and drainage plans have continued to alleviate ponding and street flooding issues and new plan reviews take such drainage into consideration.
	Q3	The City Engineer provides input for plans review and existing property owners are referred to the Flood Control District of Maricopa County if assistance with flood insurance is required. If a proposed development falls within a floodplain the city will require the developer to apply for and receive a floodplain use permit from the Flood Control District of Maricopa County.
	Q4	Only a small portion of the city falls into an identified flood hazard zone. Our floodplain administrator is the Maricopa County Floodplain Administrators. We do not believe we need any more assistance than we are already receiving.

**Table 6-5: NFIP program assessment for Maricopa County and participating jurisdictions**

Participating Jurisdiction	Responses to Questions 1-4	
Mesa	Q1	<p>The City of Mesa is a participating community under the National Flood Insurance Program (NFIP) administered through FEMA. In accordance with the Arizona revised statutes 48-3610, the Flood Control District of Maricopa County is responsible for administration of the NFIP in the City of Mesa. A process is put in place for regulation/floodplain management of new construction of substantially improved development as follows:</p> <ol style="list-style-type: none"> <li>1. The building process does not allow accepting a building permit within a Special Flood Hazard Area without an approved floodplain use permit from the FCDMC. Mesa has automated this process to flag any and all properties partially or fully located within an SFHA.</li> <li>2. All new/proposed subdivisions, construction, and improved development are immediately directed to the Flood Control District of Maricopa County for review of the plans and improvements within the SFHA. City Planning Division sends all subdivision review cases to the FCDMC for Flood Zone determinations. Not until a floodplain use permit is allocated by the FCDMC will the building permit process move forward.</li> <li>3. Plan Reviews include the City Floodplain Manager to review all subdivisions, commercial developments, land splits, rezoning and Design Review Board cases.</li> <li>4. Mesa regularly trains staff that handle permits on flood zone requirements.</li> <li>5. The City of Mesa utilizes the FCDMC “Floodplain Regulations for Maricopa County”, amended June 25, 2014, which defines the rules for usage, development restrictions and permitting requirements necessary to protect the environmental and flood control qualities of floodplains.</li> </ol>
	Q2	<p>The City of Mesa holds all development to the Arizona revised statutes for mapping floodplains within new development. We also work regularly with the FCDMC to identify studies of areas within the City of Mesa that may require analysis and delineation of areas that aren’t otherwise mapped in the floodplain.</p>
	Q3	<p>The City of Mesa is a “county dependent” municipality and defers to the FCDMC regarding floodplains, designation, and regulatory floodplain elevations and performance of any inspections relating to the Elevation Certificate or the Floodplain Use Permit.</p>
	Q4	<p>Mesa regularly revisits our floodplain ordinance document with ADWR and works closely with the FCDMC on floodplain regulatory matters/management. If anything, more regular trainings would be beneficial for city staff.</p>
Paradise Valley	Q1	<p>All development of land is subject to the town’s adopted Floodplain Management Ordinance. Review for compliance with this chapter of the Town Code is completed concurrently with grading and drainage review prior to the issuance of a building permit. This process is the same whether the structure is new or substantially altered.</p>
	Q2	<p>The Town of Paradise Valley relies on the FIRM maps for Floodplain Hazard mapping. The most recent FIRM’s were received in October of 2013.</p>
	Q3	<p>Assistance is provided on an as needed basis.</p>
	Q4	<p>Since there are so few properties within the town that are located within a floodplain, floodplain reviews are completed very infrequently. As such, the town would benefit from a written review procedure.</p>

Table 6-5: NFIP program assessment for Maricopa County and participating jurisdictions		
Participating Jurisdiction	Responses to Questions 1-4	
Peoria	Q1	As property proceeds thru the development process an early step to the review is to apply the floodplain ordinance. This activity is performed by a representative to the Floodplain Administrator reporting directly to the Floodplain Administrator. Special Flood Hazard Properties are “tagged” in our GIS system to identify an added review and approval required by the Floodplain Administrator.
	Q2	Acknowledge DFIRM’s effective date October 16, 2013 which covers the whole city limits, and maintains all subsequent LOMC’s in-house. Flood Control District of Maricopa County hosts updated and currently effective flood mapping including our community’s subsequent LOMC’s on their public GIS site.
	Q3	Peoria is presently performing in accordance with a Corrective Action Plan as a result of the latest Community Assistance Visit. The Corrective Action Plan includes adoption of a NFIP compliant Floodplain Ordinance, new Elevation Certificates and documentation and publication of procedures.
	Q4	Added floodplain mapping of undeveloped area within the city.

**Table 6-5: NFIP program assessment for Maricopa County and participating jurisdictions**

Participating Jurisdiction	Responses to Questions 1-4	
Phoenix	Q1	<p>The National Flood Insurance Act of 1968, as amended in 1973, provides for a federally subsidized National Flood Insurance Program (NFIP) conditioned on active management and regulation of floodplain development by state and local governments. FEMA administers the NFIP as a part of its overall responsibilities in preventing and responding to natural events that damage private and public property and any life-threatening natural event including floods. The NFIP provides flood insurance at affordable rates through federal subsidy of the insurance offered by licensed insurance agents. This insurance is designed to provide an insurance alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.</p> <p>Participation in the NFIP is based on an agreement between local communities and the federal government. This agreement states if a community will adopt and enforce a floodplain management ordinance to reduce future flood risks to new construction in Special Flood Hazard Areas, the federal government will make flood insurance available within the community as a financial protection against flood losses.</p> <p>Availability of the subsidized flood insurance is contingent upon the development of a floodplain management system by the local municipality. Prevention of floods and resultant property damage is achieved through the delineation of property subject to flood events and the establishment of specific rules concerning development within these designated areas. FEMA publishes Flood Insurance Rate Maps (FIRM's) for certain flood prone areas that delineate different special flood hazard areas.</p> <p>The City of Phoenix participates in the NFIP and has adopted floodplain regulations and ordinances so that its citizens have access to the subsidized insurance. The role of the community is to enact and implement floodplain regulations required for participation in the NFIP. FEMA has regulations pertaining to floodplain management that must be followed in order for the city to continue as a member of the NFIP. The City of Phoenix has local policies to manage floodplains in a uniform and consistent manner. These policies are categorized as being FEMA related and non-FEMA related in nature. The policies strictly adhere to federal regulations governing floodplains and drainage design.</p> <p>The City of Phoenix Storm Water Policies and Standards Manual, 3rd Edition, December 2013, lists all applicable floodplain management regulations and policies for construction of new and substantially improved development projects within the city jurisdiction,</p>
	Q2	<p>The City of Phoenix Flood Insurance rate Maps and Flood Insurance Studies are dated October 16, 2013</p>

**Table 6-5: NFIP program assessment for Maricopa County and participating jurisdictions**

Participating Jurisdiction	Responses to Questions 1-4	
	Q3	<p>Elevation Certificates – If available with the city, a copy of the Elevation Certificate is provided free of charge to the owner of the property. Staff also helps guide residents to hire an appropriate professional assistance to create and develop an Elevation Certificate when one is not available.</p> <p>Flood Hazard Identification Assistance – Floodplain Management staff help identify hazard zones for an existing and/or proposed structure within the vicinity of a flood hazard area. The city also works very closely with the regional entity, Flood Control District of Maricopa County (FCDMC), for future identification of flood hazard areas within the jurisdiction.</p> <p>Flood Insurance Acquisition – Floodplain Management staff help distribute several brochures and other available information for residents to purchase flood insurance policies.</p> <p>Public Involvement Activities – Throughout the year, several Public Open House Meetings are held within the city, to educate the public on flood hazard areas, and rules and regulations for development activities within the flood hazard areas. These meetings are coordinated with the Flood Control District of Maricopa County (FCDMC) and the Master Planning efforts under their lead role.</p>
	Q4	<p>The City of Phoenix is planning to update the Floodplain Management Plan for the City of Phoenix. Current Floodplain Management plan is dated, December 1992, and is in a great need to be updated. The City of Phoenix has applied for a grant through the Arizona Department of Emergency Management (ADEM) to fund the study.</p> <p>On June 30, 2012, the City of Phoenix code, Chapter 32B, Floodplains, was updated following the Arizona Department of Water Resources (ADWR) guidelines as published in their model ordinances for the communities within the state.</p> <p>As a result of Area Drainage master Studies (ADMS), which are primarily done by the Flood Control District of Maricopa County (FCDMC), areas subject to development activities are identified with current or future flood hazard zones. These proactive steps help reduce the risk of loss of life and livestock within the flood-prone areas in the city.</p>
Queen Creek	Q1	The Flood Control District of Maricopa County provides the floodplain management for the town. The town, as floodplain administrator, requires all applications for proposed new or substantially improved development that falls within FEMA special flood hazard areas to comply with the Maricopa County Floodplain Regulations and National Flood Insurance Program.
	Q2	The floodplain hazard maps for the town’s jurisdiction were updated in October 2013. The current maps reflect the best available information at the time of the update.
	Q3	The town, as floodplain administrator, has assisted customers who need help in obtaining elevation certificates as well as assist customers who have questions about flood hazard areas or how to interpret the FEMA flood insurance rate maps (FIRM). The town has also worked with customers in removing flood hazard areas through the formal FEMA CLOMR/LOMR processes.
	Q4	Establish more local GIS functionality to better assist the town in local floodplain administration and management.

Table 6-5: NFIP program assessment for Maricopa County and participating jurisdictions		
Participating Jurisdiction	Responses to Questions 1-4	
Salt River Pima-Maricopa Indian Community	Q1	<p>The Salt River Pima-Maricopa Indian Community (SRPMIC) is not a participant in the NFIP. SRPMIC has exercised its right as a sovereign nation to not be a participant in NFIP. In addition, SRPMIC is a self-governance tribe which manages its own federal programs and services. SRPMIC has however tried to meet the intent of the NFIP through its management of its Floodplain Program. Some of those efforts are addressed in the answers to the following questions.</p> <p>1) New construction or substantially improved development within the community is reviewed based upon the SRO §Chapter 17.5 – Floodplain and Drainage Ordinance. A few highlights are mentioned below:</p> <ul style="list-style-type: none"> <li>a) Building finished floor elevations must be elevated a minimum of 14-inches above the lot outfall.</li> <li>b) Storm water runoff from post-developed conditions cannot exceed the pre-developed conditions.</li> <li>c) Underground storage must be requested as a Waiver to the Floodplain and Drainage Ordinance.</li> </ul>
	Q2	<p>The SRPMIC does not participate in the NFIP because of community sovereignty so mapping through the NFIP specific for SRPMIC is not available. There are FEMA FIRM maps available for areas near the community’s borders that are utilized. Most of these maps indicate that the community is in Zone D. More detailed FIRM maps are available along the Salt River as these are utilized as needed.</p>
	Q3	<p>The community provides civil engineering services for SHRRP and other home building project. The community assists in answering floodplain related questions for ECS-Compliance, for Public Works, and also for the Salt River Financial Services Institution. Approximately 20 residential driveways were improved to provide access during recent flood events.</p>
	Q4	<p>Needs in this area are as follows:</p> <ul style="list-style-type: none"> <li>• Update the SRPMIC Floodplain and Drainage Ordinance.</li> <li>• A floodplain plan review checklist would be helpful. One is currently being developed but not yet completed.</li> <li>• The community regularly participates in floodplain seminars and webinars to stay aware of current NFIP regulations. Notification and support for tribes to attend these trainings would be helpful.</li> </ul>
Salt River Project	Q1	<p>Salt River Project is a political subdivision of the state, power and water provider to customers, primarily in Maricopa County, AZ and is not required to participate in the National Flood Insurance Program. The municipalities cover the NFIP for citizens in their communities. If SRP owns facilities that are in known floodplains where coverage is necessary SRP procures catastrophic flood coverage through the commercial insurance marketplace that does not specifically exclude locations that may be in a federal flood zone.</p>
	Q2	Not applicable.
	Q3	Not applicable.
	Q4	Not applicable.

<b>Table 6-5: NFIP program assessment for Maricopa County and participating jurisdictions</b>		
<b>Participating Jurisdiction</b>	<b>Responses to Questions 1-4</b>	
Scottsdale	Q1	The City of Scottsdale requires applicants to submit drainage reports, improvement plans, and grading & drainage plans to the city's one-stop shop. These items are reviewed by the city's Stormwater Management Department for compliance with Chapter 37 of Scottsdale Revised Code, Stormwater and Floodplain Management. Our Stormwater and Floodplain Management Ordinance has been reviewed and approved by FEMA and the Arizona Department of Water Resources as compliant with the provisions of the National Flood Insurance Program. All review staff are Certified Floodplain Managers. A permit is not issued for construction until the city has approved the development proposal.
	Q2	The City of Scottsdale and the Flood Control District of Maricopa County engage in new flood insurance studies as funds allow to keep the Flood Insurance Rate Maps updated. Recent studies include the North Scottsdale Floodplain Delineation Study, which delineated new floodplains along six washes in north Scottsdale, effective October 16, 2013, and the Rio Verde Area Drainage Master Plan Physical Map Revision in northeastern Scottsdale, which has been submitted to FEMA and is expected to be adopted in 2015. The city and the district are currently partnering to re-delineate Fans 5 and 6 in northwestern Scottsdale. Quite a few developers have prepared applications for Letters of Map Revision, which were approved by the city and FEMA.
	Q3	The city's Records Department assists customers in obtaining Elevation Certificates on record and completes flood hazard determination forms upon request. The city's Stormwater Management Department recommends the purchase of flood insurance to all residents, and has conducted several general and specific public involvement activities, such as Flood Talk 101 (general outreach conducted by the Flood Control District of Maricopa County and the City of Scottsdale) and the county-wide Digital Flood Insurance Rate Map (DFIRM) update, which was specifically targeted toward property owners in the newly delineated floodplains.
	Q4	The city needs to continue to conduct flood insurance studies to keep the DFIRMS up-to-date. The city needs funding to continue to embark on capital improvement projects to mitigate existing flood hazards.
Surprise	Q1	The City of Surprise participates in the National Flood Insurance Program (NFIP) through the Department of Homeland Security's Federal Emergency Management Agency (FEMA). As a participant of the NFIP, the city has adopted Floodplain Management Ordinances within chapter 122 of the City of Surprise Unified Development Code. These requirements protect and regulate new or substantially improved development within flood prone areas in the city. The city is dependent on FCDMC for floodplain management and permitting for properties located in a SFHA.
	Q2	The current floodplain hazard maps (Flood Insurance Rate Maps) went into effect on October 16, 2013 – and will remain in effect until the latest “preliminary FIRM maps” are approved as the new effective maps by FEMA. These preliminary maps, which were released for public comment in September 2014, are based on the results of the Wittman Surprise Floodplain Delineation Study. The city is also engaged in confirming and finalizing Conditional Letter of Map Revisions that were started in the mid-2000s and not completed.

<b>Table 6-5: NFIP program assessment for Maricopa County and participating jurisdictions</b>	
<b>Participating Jurisdiction</b>	<b>Responses to Questions 1-4</b>
	<p>Q3 The city is actively engaged in flood mitigation efforts on a variety of levels. The city currently has a 10 year Capital Improvement Program (CIP) that identifies numerous flood control improvement projects that seek to relieve property and roadway flooding. On an annual basis the city seeks grant funding from a number of agencies to assist in funding these projects. The city’s survey crew assists in providing elevation certificates. In coordination with the Flood Control District of Maricopa County, the city hosts public outreach events for homeowners and businesses to learn more about existing floodplains/ways, flood insurance, and upcoming flood control improvements.</p> <p>Q4 The City of Surprise would like to strengthen and improve our scores in the Community Rating System.</p>
Tempe	<p>Q1 Private Development – Community Development review.                      Community Development Engineering Site Plan Review identifies if a new structure is to be built or if existing structure is being modified within the Special Flood Hazard Area (SFHA) or 100-year floodplain. The Floodplain Section within Engineering reviews any activity within the city’s floodplain and issues a Floodplain Use Permit when the owner satisfies the city’s requirements. We work with the owners and their representative to assure the work meets City of Tempe/FEMA requirements. We are currently finalizing a new Standard Operating Procedure (SOP), which will incorporate the city’s new plan review software.</p> <p>Non-Private – Engineering review                      If the city has a project within a SFHA, the Floodplain Section within Engineering reviews the activity and issues a Floodplain Use Permit when the project is shown to satisfy the city and FEMA requirements.</p> <p>The City of Tempe City Code concerning floodplain regulations were updated in 2013 to meet current FEMA and state standards.</p> <p>Q2 The current revised Flood Insurance Rate Maps for Tempe were released October 16, 2013. They are valid for the City of Tempe. There has been a few minor map revisions (LOMRs) and (LOMAs) removing areas from SFHA since the printing, thus decreasing the known risk in those few areas.</p> <p>Q3 Tempe provides engineering support to determine Floodplain Designation “over the counter” and via email for property owners and flood insurance agents. We identify where it is shown definitively on the FEMA FIRMs whether a particular structure is within the floodplain /SFHA. If a structure appears to be in a SFHA we provide information to owners on how to obtain Elevation Certificates, Letters of Determination Review (LODR) Letters of Map Amendments (LOMA), and Flood Insurance, if required. We maintain records of Elevation Certificates/LOMAs/LOMRs when received. We provide outreach through the city website, mailings, and public meetings about floods and flooding hazards. We encourage property owners to purchase flood insurance even if they are not within a SFHA. We are currently a stakeholder in Area Drainage Master Studies sponsored by Flood Control District of Maricopa County, which should further identify flooding hazards outside of current floodplain limits. Finally, we participate in the Community Rating System (CRS) for flood agencies under the National Flood Insurance Program. We currently have a rating of 7.</p>

<b>Table 6-5: NFIP program assessment for Maricopa County and participating jurisdictions</b>		
<b>Participating Jurisdiction</b>	<b>Responses to Questions 1-4</b>	
	Q4	We are currently working with a consultant to submit an application for a LOMR to remove a section of property near Elliot and the stretch of the Highline Canal that was relocated underground. As noted above, we are finalizing a new written Standard Operating Procedure (SOP) for Floodplain Permitting, which will incorporate the city's new plan review software.
Tolleson	Q1	All plans are run through the Building Department for Engineering to review and ensure all is in compliance with the Maricopa County Flood Plan. City of Tolleson relies on the County Flood Plan for reviews.
	Q2	The countywide update of FEMA mapped floodplains in 2013 encompasses the jurisdictional limits of the City of Tolleson.
	Q3	The City of Tolleson is not currently providing additional formal community assistance activities, but rather relies on the FCDMC for these items.
	Q4	Tolleson relies on Flood Control District of Maricopa County for floodplain management.
Unincorporated Maricopa County	Q1	<ul style="list-style-type: none"> <li>• The applicant submits a complete and accurate application to the One Stop Shop at Planning and Development (P&amp;D) for a Building Permit and pays the appropriate building permit fee. If the property has floodplain on it they are required to obtain a Floodplain Use Permit. Review comments for the Floodplain Use Permit will be sent as part of the combined packet from P&amp;D.</li> <li>• The applicant will be contacted when the Floodplain Use Permit is ready for issuance.                             <ul style="list-style-type: none"> <li>✓ If an owner wishes to grant an agent, contractor or consultant authority to make decisions on their behalf, and has not already submitted a notarized Property Owner Authorization form, the form must be submitted at this time.</li> <li>✓ Applicant reviews the Floodplain Use Permit, Applicant's Responsibilities, Warning and Disclaimer of Liability and Elevation Certificate, if required, with staff.</li> <li>✓ Submit the required fee.</li> <li>✓ Applicant signs the Floodplain Use Permit, Applicant's Responsibilities and Warning and Disclaimer of Liability.</li> <li>✓ Permit issued.</li> </ul> </li> <li>• If an Elevation Certificate was required, a complete and accurate Elevation Certificate must be submitted at final construction for staff to determine if the building complies with the Floodplain Use Permit requirements prior to a final inspection.</li> <li>• Per state statutes, the District must enforce the requirement of a Floodplain Use Permit for development in a floodplain. Violations are also pursued to assure compliance with the permit requirements and for the lack of obtaining a permit prior to building in a floodplain.</li> </ul>

Table 6-5: NFIP program assessment for Maricopa County and participating jurisdictions		
Participating Jurisdiction	Responses to Questions 1-4	
	Q2	<ul style="list-style-type: none"> <li>• Maricopa County refers to the Flood Insurance Rate Maps (FIRMs) by FEMA to determine if a particular parcel is in the Special Flood Hazard Area (SFHA).</li> <li>• When implementing floodplain development regulations, the District, on behalf of the County, uses FEMA’s SFHA as well as newly identified floodplains based on delineation studies.</li> <li>• The District continues to perform floodplain delineation studies to identify new areas in the 1% chance annual floodplain.</li> </ul>
	Q3	<ul style="list-style-type: none"> <li>• FEMA conducted a Community Assistance Visit with the District in February 2010, but it is not yet closed.</li> <li>• An audit for the Community Rating System was conducted in February 2011. The District was awarded a Class 4 rating which is an improvement from the previous Class 5 rating.</li> <li>• The most recent audit was started in April 2015 and is currently under review.</li> <li>• The District provides assistance to the public in areas such as the identification of flooding hazards and flood zones, elevation certificate and flood insurance guidance, conducts outreach meetings to educate the public on various studies, flood hazard areas and updates and maintains an extensive GIS for the public’s use.</li> <li>• Provide jurisdictions with guidance and support during their Community Assistance Visits.</li> <li>• Elevation certificates are required for all new and substantially improved buildings in the regulatory floodplain.</li> </ul>
	Q4	<ul style="list-style-type: none"> <li>• Development of a Floodplain Management Plan for unincorporated Maricopa County commenced in 2015 and is currently in-progress.</li> <li>• The Comprehensive Report and Program, per ARS, was adopted on June 10, 2015.</li> <li>• The Floodplain Regulations for Maricopa County were most recently amended on June 24, 2014.</li> <li>• The Floodprone Properties Assistance Program (FPAP) has been approved for limited funding and the District is also pursuing grants for additional funding.</li> <li>• Continuation of floodplain delineation studies and updates.</li> </ul>
Wickenburg	Q1	The Town of Wickenburg turned over floodplain management authority to the Flood Control District of Maricopa County and Yavapai County Flood Control District in August 2014. All floodplain related reviews and actions are deferred to those entities as appropriate.
	Q2	The current mapping was last updated and released in October 2013 and is currently adequate. The town will work with FCDMC and YCFCD to identify and update mapping as needed.
	Q3	None at this time. All floodplain related inquiries or requests are deferred to the FCDMC and YCFCD.
	Q4	The lack of current staffing capacity forced the town to relinquish floodplain management duties to the FCDMC and YCFCD. Additional staffing would be required to bring the floodplain management duties back under the town.

Table 6-5: NFIP program assessment for Maricopa County and participating jurisdictions		
Participating Jurisdiction	Responses to Questions 1-4	
Youngtown	Q1	Management responsibility for flood control has been delegated to the Flood Control District of Maricopa County as provided for in A.R.S. 48-2610. The Town Engineer is appointed as the National Flood Insurance Program Floodplain Coordinator for the town and is responsible for coordinating with the Flood Control District of Maricopa County.
	Q2	The town has on file the revised Flood Insurance Study (FIS) for Maricopa County, Arizona and incorporated areas prepared by the Department of Homeland Security's Federal Emergency Management Agency (FEMA). Documents include: <ul style="list-style-type: none"> <li>• Revised Flood Insurance Rate map (FIRM) Panel</li> <li>• Revised Firm Index</li> <li>• Revised FIS report</li> </ul>
	Q3	Town staff is available to review Flood Insurance Maps, Index and provide guidance and requirements for raising designated parcels above the floodplain.
	Q4	Staff was provided with revised material (2013 updates) in 2014 to share with citizens and the community.

**6.3 Mitigation Actions/Projects and Implementation Strategy**

Mitigation actions/projects (A/P) are those activities identified by a jurisdiction that, when implemented, will have the effect of reducing the community’s exposure and risk to the particular hazard or hazards being mitigated. The implementation strategy addresses the “*how, when, and by whom?*” questions related to implementing an identified A/P.

The update process for defining the new list of mitigation A/Ps for the Plan was accomplished in three steps. First, an assessment of the actions and projects specified in Section 6 of the 2009 Plan was performed, wherein each jurisdiction reviewed and evaluated their jurisdiction specific list. Second, a new list of A/Ps for the Plan was developed by combining the carry forward results from the assessment with new A/Ps. Third, an implementation strategy for the combined list of A/Ps was formulated. Details of each step and the results of the process are summarized in the following sections.

*6.3.1 Previous Mitigation Actions/Projects Assessment*

The MJPT and LPT for each jurisdiction reviewed and assessed their jurisdiction’s actions and projects listed in Tables 6-8-1 through 6-8-28 of the 2009 Plan. The assessment included evaluating and classifying each of the previously identified A/Ps based on the following criteria:

<b><i>STATUS</i></b>		<b><i>DISPOSITION</i></b>	
Classification	Explanation Requirement:	Classification	Explanation Requirement:
<b><i>“No Action”</i></b>	Reason for no progress	<b><i>“Keep”</i></b>	None required
<b><i>“In Progress”</i></b>	What progress has been made	<b><i>“Revise”</i></b>	Revised components
<b><i>“Complete”</i></b>	Date of completion and final cost of project (if applicable)	<b><i>“Delete”</i></b>	Reason(s) for exclusion.

Any A/P with a disposition classification of “Keep” or “Revise” was carried forward to become part of the new A/P list for the Plan. All A/Ps identified for deletion were removed and are not included in this updated plan. The results of the assessment for each of the 2009 Plan A/Ps are summarized by jurisdiction in Tables 6-6-1 through 6-6-28.

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Table 6-6-1: Avondale assessment of previous plan cycle mitigation actions/projects					
ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	<ul style="list-style-type: none"> <li>• Planning/City Planner</li> <li>• Staff time</li> <li>• Annual - Ongoing</li> </ul>	In Progress	Keep	Review of NFIP regulations and compliance is an on-going project for the City of Avondale.
2	Partner with Phoenix International Raceway and other stakeholders in matters of site safety of open air seating to mitigate potential damages or failures due to microburst winds.	<ul style="list-style-type: none"> <li>• Planning/Planner-Engineering/City Engineer-Fire Marshal/Inspector</li> <li>• \$100,000</li> <li>• 2013</li> </ul>	Complete	Delete	Phoenix International Raceway (PIR) developed a severe weather plan for sheltering people during wind events up to 40mph.
3	<i>Enhance the City of Avondale's capabilities to alert its citizens in time of emergency via radio, internet and texting (English and Spanish) to mitigate losses to human life during a natural disaster.</i>	<ul style="list-style-type: none"> <li>• Emergency Manager/ I.T. PIO</li> <li>• \$140,000</li> <li>• 2012</li> </ul>	In Progress	Delete	Avondale website, Avondale App, IPAWS, local media & social media. Response oriented.
4	<i>Upgrade the current EOC and recommend the construction of a new and more secure facility.</i>	<ul style="list-style-type: none"> <li>• Emergency Manager/I.T. Fire Marshal, Police/ Field Ops N/A</li> <li>• \$250,000</li> <li>• 2014</li> </ul>	In Progress	Delete	Current location needs updates/upgrades, location changes have been discussed to other locations in or near the city. Response oriented
5	<i>Provide CERT training to all citizens and city groups upon request.</i>	<ul style="list-style-type: none"> <li>• Emergency Manager, Public educator</li> <li>• Staff Time</li> <li>• 2011</li> </ul>	Complete	Delete	Trained 150 community volunteers in CERT and in 80 Teen CERT, no additional training planned at this time.
6	Enhance the Community Center's abilities to serve as cooling station during times of extreme heat.	<ul style="list-style-type: none"> <li>• Emergency Manager / Building Official / Social Services</li> <li>• \$150,000</li> <li>• 2011</li> </ul>	Complete	Delete	Community Center and Resource Center both equipped to be cooling centers for extreme heat events. Provide shelter and water for residents.

**Table 6-6-1: Avondale assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
7	Partner with Maricopa County Flood Control to provide channelization of the Agua Fria and Gila rivers.	<ul style="list-style-type: none"> <li>• Planner/ Emergency Manager. FCDMC</li> <li>• Unknown</li> <li>• 2016</li> </ul>	In Progress	Delete	Re-channeling complete on Gila river, unsure of status on Agua Fria and no immediate plans for this cycle.

**Table 6-6-2: Buckeye assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	<ul style="list-style-type: none"> <li>• Water resource Director/Dave Nigh Floodplain Administrator</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	In Progress	Keep	This is annual, ongoing project
7	Meet with flood control and state land to develop cut Wildfire breaks at key locations in the Gila River	<ul style="list-style-type: none"> <li>• Fire Department/ Fire Chief</li> <li>• Staff time</li> <li>• 5 year Strategic Planning</li> </ul>	In-Progress	Keep	Ongoing/ Implement into Wildfire Department
10	Develop water conservation plan.	<ul style="list-style-type: none"> <li>• Water Resource Department Director/ Dave Nigh</li> <li>• Staff time</li> <li>• Submitted for initial start of 1-1-2010</li> </ul>	In Progress	Keep	Critical resource planning

Table 6-6-2: Buckeye assessment of previous plan cycle mitigation actions/projects					
ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
2	Conduct annual life safety inspections	<ul style="list-style-type: none"> <li>• Wildfire Department/Wildfire Chief</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	In Progress	Revise	Ongoing with formalization approved with town staff and council Initiated by fire inspector with ongoing training to the fire crews.
4	Enhance communication of city needs at the county and state level	<ul style="list-style-type: none"> <li>• City wide with department head approvals/Supported by mayor and city managers</li> <li>• Staff time</li> <li>• Ongoing with staff and council approval, subject to local strategic planning groups</li> </ul>	Complete	Keep	Public safety executive partnership
5	Continue to support the Hazard Mitigation Plan by making sure the city is represented on related committees.	<ul style="list-style-type: none"> <li>• City wide with department head approvals/Supported by mayor and city managers</li> <li>• Staff time</li> <li>• Ongoing with staff and council approval, subject to local strategic planning groups</li> </ul>	In progress	Keep	Currently in revision

<b>Table 6-6-2: Buckeye assessment of previous plan cycle mitigation actions/projects</b>					
<b>ID</b>	<b>Description</b>	<ul style="list-style-type: none"> <li>• <b>Lead Agency</b></li> <li>• <b>Proposed Cost</b></li> <li>• <b>Proposed Comp Date</b></li> </ul>	<b>Status</b>	<b>Disposition</b>	<b>Explanation</b>
6	Implement Severe Wind deployment protection procedures (local)	<ul style="list-style-type: none"> <li>• Police Chief/Fire Chief/Public Works Director/Water Resource Director/Assistant City Manager</li> <li>• Staff time and use of volunteers</li> <li>• Ongoing with PSEP group formalized/CERT implementation by 1-1-2010</li> </ul>	In progress	Keep	Standard operation procedure development. Implementation and execution of CERT and Teen CERT program.
8	Provide/improve water drainage systems	<ul style="list-style-type: none"> <li>• Public works/Scott Lowe</li> <li>• Staff time</li> <li>• Part of 5-year master plan with 2011 goal</li> </ul>	In Progress	Keep	Working in conjunction with the Maricopa County on the CWPP plans.
9	Enforce Fire codes, require compliance	<ul style="list-style-type: none"> <li>• Fire Department/ Fire Chief</li> <li>• Staff time/new position (\$50,000)</li> <li>• Adopt into 5-year Fire Department Strategic Plan along with Fee Code study</li> </ul>	In Progress	Keep	Continue and update versions of code compliance
11	Participate with Maricopa County and other jurisdictions in the development of a Community Wildfire Protection Plan (CWPP)	<ul style="list-style-type: none"> <li>• Fire Department/ Fire Chief</li> <li>• Staff time</li> <li>• 2010</li> </ul>	Complete	Keep	City of Buckeye uses this plan in conjunction with the MCMJHMP 2015

<b>Table 6-6-3: Carefree assessment of previous plan cycle mitigation actions/projects</b>					
<b>ID</b>	<b>Description</b>	<ul style="list-style-type: none"> <li>• <b>Lead Agency</b></li> <li>• <b>Proposed Cost</b></li> <li>• <b>Proposed Comp Date</b></li> </ul>	<b>Status</b>	<b>Disposition</b>	<b>Explanation</b>
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	<ul style="list-style-type: none"> <li>• FCDMC/Floodplain Mgmt &amp; Services Division/ Floodplain Administrator – Town Engineer, Greg Crossman</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	In Progress	Keep	Part of ongoing operations.
2	Develop a Drainage Master Plan that will identify potential drainage hazards, solutions, budgets and prioritization.	<ul style="list-style-type: none"> <li>• Town Engineer</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	Completed	Revised	Completed in 2004.
7	Continue development of water storage, treatment and delivery systems to provide adequate water during times of drought	<ul style="list-style-type: none"> <li>• Manager of Carefree Water Company, Greg Crossman</li> <li>• Specific project dependent</li> <li>• Annual-Ongoing</li> </ul>	In Progress	Keep	Part of ongoing operations.
3	Encourage bridge or culvert construction where roads are in locations susceptible to flooding.	<ul style="list-style-type: none"> <li>• Town Administrator, Gary Neiss</li> <li>• Town Engineer, Greg Crossman</li> <li>• Staff time and studies unless actual project developed and then costs are to be determined per project</li> <li>• Annual-Ongoing</li> </ul>	In Progress	Keep	Looking for grants to provide financial assistance.

Table 6-6-3: Carefree assessment of previous plan cycle mitigation actions/projects					
ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
4	Further develop a Mass Evacuation strategy for the Town of Carefree.	<ul style="list-style-type: none"> <li>• Carefree Emergency Manager/Cave Creek Emergency Manager, Fire Chief, American Red Cross</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	Completed	Revised	Plan is detailed in the Carefree Emergency Operation Plan.
5	Site and install additional signage for wash crossings as well as sand bags to warn and discourage vehicular movements through these areas during flooding events	<ul style="list-style-type: none"> <li>• Town Administrator, Gary Neiss</li> <li>• \$20,000</li> <li>• Less than five years with in funding</li> </ul>	Completed	Revised	Signs used during flooding events.
6	Perform brush cutting and median maintenance with town right-of-way to mitigate fuel sources for wildfire.	<ul style="list-style-type: none"> <li>• Public Works</li> <li>• \$10,000</li> <li>• Annual-Ongoing</li> </ul>	In Progress	Keep	Part of town's daily operations.

Table 6-6-4: Cave Creek assessment of previous plan cycle mitigation actions/projects					
ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	<ul style="list-style-type: none"> <li>• FCDMC/Floodplain Mgmt &amp; Services Division/Floodplain Administrator</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	Ongoing	Keep	All Building Plans have plan reviews for Compliance with Flood Control Regulations.

Table 6-6-4: Cave Creek assessment of previous plan cycle mitigation actions/projects					
ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
3	Investigate the possibility of adding a water facility and infrastructure on the west side of Cave Creek.	<ul style="list-style-type: none"> <li>• Cave Creek Utilities Manager</li> <li>• \$2.7 million</li> <li>• 2011</li> </ul>	Completed	Delete	Facility has been constructed and activated.
6	Develop and Implement A Community Wildfire Protection Plan	<ul style="list-style-type: none"> <li>• Maricopa County Emergency Management, Town Marshal</li> <li>• Staff time, RMFD time, County Emergency Mgmt time</li> <li>• Ongoing, within 24 months goal</li> </ul>	Completed	Delete	Plan is active.
2	Ensure building codes for construction are enforced to prevent roof damage from high winds.	<ul style="list-style-type: none"> <li>• Cave Creek Building Official</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	Ongoing	Keep	Staff continually reviews building permits and conducts site inspections on an ongoing basis.
4	Town Fire Marshal routinely inspects commercial structures	<ul style="list-style-type: none"> <li>• RMFD Building Official</li> <li>• RMFC time</li> <li>• Annual-Ongoing</li> </ul>	Ongoing	Keep	Town of Cave Creek Fire Marshal in conjunction with Rural Metro Fire Department, inspects commercial facilities in town and corrects any outstanding violations.
7	Public Information Campaign to help educate the general public on ways to remain safe during periods of extreme heat	<ul style="list-style-type: none"> <li>• Town Marshal</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	The Town of Cave Creek interfaces with the National Weather Service and provides high heat index advisories on our website. The town also added a Weather Alert feature on our CodeRed Notification System to help keep our residents informed during inclement weather.
5	Review the existing Cave Creek General Plan and zoning ordinance to determine how these documents help limit development in hazard areas. Modify with additional guidelines, regulations, and land use techniques as necessary within the limits of state statutes, while also respecting private property rights.	<ul style="list-style-type: none"> <li>• Town Zoning Administrator, Town Engineer, FCDMC</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	Ongoing	Keep	The Town of Cave Creek reviews our Codes and Ordinances and frequently updates regulations. The ordinances are meant to help ensure public safety.

<b>Table 6-6-5: Chandler assessment of previous plan cycle mitigation actions/projects</b>					
<b>ID</b>	<b>Description</b>	<ul style="list-style-type: none"> <li>• <b>Lead Agency</b></li> <li>• <b>Proposed Cost</b></li> <li>• <b>Proposed Comp Date</b></li> </ul>	<b>Status</b>	<b>Disposition</b>	<b>Explanation</b>
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	<ul style="list-style-type: none"> <li>• Transportation and Development/City Engineer</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	In progress	Keep	The City of Chandler is continuing to review building permits for compliance.
2	Maintain the currency of the safety element of the Chandler General Plan, and monitor its effectiveness at preventing and mitigating hazards.	<ul style="list-style-type: none"> <li>• Transportation and Development Director</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	In progress	Keep	The City of Chandler is in process to revise the General Plan in 2015. Safety elements will be included into the planning process.
3	Promote availability of the City of Chandler Hazard Mitigation Plans (HMGP) in an understandable format to civic and private groups.	<ul style="list-style-type: none"> <li>• Fire, Health and Medical Department</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	Complete	Delete	The City of Chandler completed the posting of the Hazard Mitigation Plan to civic and private groups through the Chandler website.
4	Continue to ensure through proper planning, zoning and building codes that all safety measures are in place for new building construction and placement.	<ul style="list-style-type: none"> <li>• Transportation and Development Director</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	In progress	Keep	The City of Chandler will continue to promote safe planning and building measures through code enforcement.
6	Continue to maintain a diverse water portfolio. Minimize any reductions to existing supplies by protecting and securing existing water rights, completing Indian water rights settlements, and meeting environmental requirements of water resources. Maximize the use of existing assets to ensure adequate water supply is available through groundwater wells, surface water diversions, use of recharged water, and encouraging the use of reclaimed water for appropriate purposes. Seek and utilize alternative water supplies (CAP excess water, reclaimed water, saline/brackish groundwater, support the Arizona Water Bank) to increase resource reliability and mitigate drought severity. Continue to implement the city's Drought Plan.	<ul style="list-style-type: none"> <li>• Municipal Utilities, Transportation and Development Director</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	In progress	Keep	The City of Chandler will continue to maximize the use of finite water resources in all phases of city operations and planning. The Integrated Water, Wastewater and Reclaimed Master Plan project will be updated in 2015.

**Table 6-6-5: Chandler assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
7	Each Lead City Department will rank the vulnerability of existing assets, with assistance from the Emergency Management Workgroup, and implement protection plans with the highest vulnerability being implemented first.	<ul style="list-style-type: none"> <li>• Fire, Health and Medical Department</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	In progress	Keep	Several internal departments have completed a vulnerability assessment; however, there are remaining assessments which have not been completed. The City of Chandler will continue towards completion of this task.
5	Continue to ensure that the City of Chandler Drought Management Plan is updated to meet the needs of the city to mitigate drought severity.	<ul style="list-style-type: none"> <li>• Municipal Utilities/ Municipal Utilities Director</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	In progress	Keep	The City of Chandler will continue to maintain a current Integrated Water, Wastewater and Reclaimed Master Plan, understanding the potential impact of a severe drought.

**Table 6-6-6: El Mirage assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	<ul style="list-style-type: none"> <li>• City Engineer, Maricopa County Flood Control</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	On going	Keep	Plans are reviewed once they are submitted through TAC and engineering review. Work in the floodplain requires FCDMC input.
2	Review zoning ordinances prohibiting new development in 100-year floodplain on an annual basis.	<ul style="list-style-type: none"> <li>• City Engineer, Maricopa County Flood Control</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	On going	Keep	El Mirage City Code chapter 153 addresses floodplain management. Developments in floodplains adhere to FCDMC rules.
5	Take active role in multi-agency plan and actions for flood mitigation (pro-active).	<ul style="list-style-type: none"> <li>• City Engineer, Maricopa County Flood Control</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	On going	Keep	The City of El Mirage works with FCDMC on flood mitigation

MARICOPA COUNTY  
MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

2015

Table 6-6-6: El Mirage assessment of previous plan cycle mitigation actions/projects					
ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
6	Develop plan to install man-made flood protection devices where needed.	<ul style="list-style-type: none"> <li>• City Engineer, Maricopa County Flood Control</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	On going	Keep	City staff reviews project opportunities to install flood mitigation devices whenever available.
6a	Install box culvert at the Cactus Rd & El Mirage Rd Crossing and perform channelization in the Lower El Mirage Wash	<ul style="list-style-type: none"> <li>• City Engineer, Maricopa County Flood Control</li> <li>• \$6 million</li> <li>• July 2013</li> </ul>	Complete	Keep	The Lower El Mirage Wash Basin Park project was completed in 2012. The upcoming El Mirage Road Project will correct additional flood issues.
9b	Recharge of groundwater with CAP water to ensure the community water supply in the event of a drought.	<ul style="list-style-type: none"> <li>• Water Superintendent</li> <li>• \$950,000</li> <li>• Annual</li> </ul>	Complete	Keep	Completed through city council approval 2014
3	Review annually and update existing building codes to manage new and existing assets from flooding.	<ul style="list-style-type: none"> <li>• Building Official, City Engineer, City Planner, Maricopa County Flood Control</li> <li>• \$5,000</li> <li>• Ongoing</li> </ul>	Complete	Keep	Current code adoption by city council 07/2013
4	Participate in multi-agency coordination efforts to ensure cooperative plans.	<ul style="list-style-type: none"> <li>• Fire Chief</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	On going	Keep	Participation with the Life Safety Council and the Regional Operational Consistency Committee
7	<i>Train First Responders and other select city staff in hazard materials mitigation.</i>	<ul style="list-style-type: none"> <li>• Fire Chief</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	On going	Keep	Currently researching what city staff has been trained in NIMS. First responders have been completed. I have been told that each city staff has been trained, waiting for verification.
8	Coordinate efforts with other local agencies to I.D. problem areas and plans for mitigation.	<ul style="list-style-type: none"> <li>• Fire Chief</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	On going	Keep	Multiple meetings have been set and/or are in the coordinating phase. We are participating with JE Fuller and other jurisdictions.

**Table 6-6-6: El Mirage assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>Lead Agency</li> <li>Proposed Cost</li> <li>Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
9c	Interconnect water system with other water purveyors to ensure the community water supply in the event of a drought.	<ul style="list-style-type: none"> <li>Water Superintendent</li> <li>\$2,400</li> <li>July 2013</li> </ul>	Completed	Keep	Agreements with the City of Surprise and EPCOR
9a	Develop a conservation education program to ensure the community water supply in the event of a drought.	<ul style="list-style-type: none"> <li>Water Regulator Coordinator</li> <li>\$2,000</li> <li>Annual</li> </ul>	Complete	Keep	We have developed a program and communicate with the general public via various social media such as the local newsletter and bill statements.
10	<i>Educate the public on actions to take and resources available to address community needs following a severe wind event.</i>	<ul style="list-style-type: none"> <li>Fire Chief</li> <li>\$2,000</li> <li>Annual</li> </ul>	Planning phase	Keep	Planning phase to widely disperse information. Progress had been to establish a PIO group within the department.
11	Educate the public on actions and resources to protect residents that do not have adequate ways to cool their homes in the event of an Extreme Heat Event	<ul style="list-style-type: none"> <li>Fire Chief</li> <li>\$2,000</li> <li>Annual</li> </ul>	Planning phase	Keep	Planning phase to widely disperse information. Identified additional resources to help with planning and organizing such information. Information will come from the PIO group and sent to social media.

**Table 6-6-7: Fort McDowell Yavapai Nation assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>Lead Agency</li> <li>Proposed Cost</li> <li>Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
1	Prohibit building in floodplain and river area to maintain channel and protect riparian area	<ul style="list-style-type: none"> <li>Community and Economic Development Division/Planning Manager</li> <li>Staff time for plan review, \$15,000 annually</li> <li>Annual/Recurring</li> </ul>	Ongoing	Keep	The review and comment on all building in the Nation is continuous to prevent building in the floodplain and riparian areas.

Table 6-6-7: Fort McDowell Yavapai Nation assessment of previous plan cycle mitigation actions/projects					
ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
9	Facilitate abatement, prevention and investigation of public health nuisance conditions, illegal dumping activities and the storage and handling of potentially infectious material and locations.	<ul style="list-style-type: none"> <li>• Community and Economic Development Division/Public Works Manager</li> <li>• \$750,000</li> <li>• 2010</li> </ul>	Complete	Delete	The Nation completed construction of a solid waste transfer station in 2010.
4	Pro-actively pursue pre-disaster and hazard mitigation grants to supplement tribal expenses associated with mitigation activities.	<ul style="list-style-type: none"> <li>• All Department Directors</li> <li>• Determined by required matching funds, \$10,000 annually</li> <li>• Annual/Recurring</li> </ul>	Ongoing	Keep	Department Directors annually pursue grant funding for hazard mitigation projects in the Nation.
5	Publish suggested mitigation actions through print media and community website to reduce potential for wildfire and heat related medical emergencies	<ul style="list-style-type: none"> <li>• Fire Department/ Emergency Manager</li> <li>• Staff time, \$2,000 annually</li> <li>• Annual/Recurring</li> </ul>	Ongoing	Keep	The Fire Department regularly submits articles on mitigation actions regular people can do to reduce their risks.
6	Continue restoration projects along river and limit development along river to protect wetlands, threatened species habitat and protect business from flooding.	<ul style="list-style-type: none"> <li>• Environmental Department/ Environmental Manager</li> <li>• Staff time and enterprise equipment and labor, \$50,000 annually</li> <li>• Annual/Recurring</li> </ul>	Ongoing	Revise	Restoration projects have been completed and ongoing efforts continue to limit development along the river and protected wetlands areas.

Table 6-6-7: Fort McDowell Yavapai Nation assessment of previous plan cycle mitigation actions/projects					
ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
7	Create access, and map the access to high-risk areas. Provide weed abatement services in high risk areas to reduce risk of wildland fire.	<ul style="list-style-type: none"> <li>• MCDOT and FMYN Public Works Department/Public Works Manager</li> <li>• Staff time and \$30,000 annually</li> <li>• Annual/Recurring</li> </ul>	Ongoing	Keep	Weed abatement and fuels reduction projects are recurring annually to mitigate the effects of wildland fires in the Nation.
10	Coordinate training, planning, and communications to provide the community with information to combat the effects of infestations and diseases.	<ul style="list-style-type: none"> <li>• Health Center/ Medical Director</li> <li>• Staff time for medical clinic personnel and newspaper staff, \$12,000 annually</li> <li>• Annual/Recurring</li> </ul>	Ongoing	Keep	The Medical Director and Environmental Health department collaborate annually on vector control such as West Nile virus
11	<i>Train first responders to Operational level. Develop emergency plans for facilities handling hazmat. Provide emergency response guidebooks to fire and law enforcement personnel. Follow MCDOT/ADOT guidelines.</i>	<ul style="list-style-type: none"> <li>• Fire Department/ Fire Chief</li> <li>• Staff time for plan development and first responder training, \$15,000 annually</li> <li>• Annual/Recurring</li> </ul>	Ongoing	Keep	The Nations Emergency Operations Plan is currently in the process of review and update. Emergency Response Guides are updated annually.
12	<i>Encourage Ft. McDowell Public Health to develop and exercise their capabilities to respond to and support a chemical, biological or radiological event.</i>	<ul style="list-style-type: none"> <li>• Health Center/ Medical Director</li> <li>• \$10,000</li> <li>• 2010</li> </ul>	Completed	Delete	A containment and isolation was constructed in 2010, and exercised annually by Public Health personnel

Table 6-6-7: Fort McDowell Yavapai Nation assessment of previous plan cycle mitigation actions/projects					
ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
13	Lead Community Departments will be responsible for creating plans to protect existing assets within their area of responsibility.	<ul style="list-style-type: none"> <li>• Tribal departments/ Department Directors through the Emergency Manager</li> <li>• \$12,000 annually</li> <li>• Annual/Recurring</li> </ul>	Ongoing	Keep	Emergency response plans for existing assets will be reviewed annually
2	Review existing building codes, modify or adopt codes to prevent development in hazard areas.	<ul style="list-style-type: none"> <li>• Community and Economic Development Division/Planning Project Manager</li> <li>• Staff time, \$5,000 annually</li> <li>• Annual/Recurring</li> </ul>	Ongoing	Keep	The Community Economic Development Division and Fire Department collaboratively review and recommend updates to the model codes, which are currently the International Codes 2009 Edition.
3	Identify and mitigate hazards associated with new and existing developments through plan reviews to ensure plan/code compliance.	<ul style="list-style-type: none"> <li>• Community and Economic Development Division/License and Property Use Manager</li> <li>• Staff time, \$20,000 annually</li> <li>• Annual/Recurring</li> </ul>	Ongoing	Keep	New development proposals go through plan review process with Community Economic Development Division, License and Property Use Manager and Fire Department to ensure code compliance. Annual occupancy inspections ensure continuous code compliance.
8	Ensure building codes are enforced to prevent damage from high winds.	<ul style="list-style-type: none"> <li>• Community and Economic Development Division/Chief Building Inspector</li> <li>• Staff time, \$40,000 annually</li> <li>• Annual/Recurring</li> </ul>	Ongoing	Keep	Economic Development Division and the Chief Building Inspector conduct plan review to ensure compliance with wind loading requirements on new construction projects.

<b>Table 6-6-8: Fountain Hills assessment of previous plan cycle mitigation actions/projects</b>					
<b>ID</b>	<b>Description</b>	<ul style="list-style-type: none"> <li>• <b>Lead Agency</b></li> <li>• <b>Proposed Cost</b></li> <li>• <b>Proposed Comp Date</b></li> </ul>	<b>Status</b>	<b>Disposition</b>	<b>Explanation</b>
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	<ul style="list-style-type: none"> <li>• Public Works Dept/ Town Engineer – Floodplain Administrator</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	On-Going	Revise	Performed as a regular part of development permitting and review. Revise lead agency to be Development Services Dept.
2	Maintain washes in town by removing excessive brush and trim trees to reduce the threat of wildfire	<ul style="list-style-type: none"> <li>• Open space and landscape specialist</li> <li>• \$120,000/year</li> <li>• Annual-Ongoing</li> </ul>	On-Going	Revise	Vegetation maintenance in town washes is done on a regular basis. Revise future cost to \$150,000 per year.
6	Ashbrook Wash Improvements to include larger culverts, grading, vegetation reduction	<ul style="list-style-type: none"> <li>• Public Works Director, Town Engineer</li> <li>• \$1.5 million</li> <li>• 2014</li> </ul>	In Progress	Delete	Design is nearly complete and anticipate construction to begin Feb 2015
3	Enforce Building Codes to prevent roof damage from high winds.	<ul style="list-style-type: none"> <li>• Town Building Official</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	On-Going	Keep	Continue to enforce codes related to high wind
4	Review General Plan and Ordinances for mitigating hazards.	<ul style="list-style-type: none"> <li>• EM Director, Public Works Director</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	On-Going	Revise	Revise lead agency to be Development Services Dept.
5	Channel and Storm Drain Development	<ul style="list-style-type: none"> <li>• Public works Director, Town Engineer</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	On-Going	Revise	Revise lead agency to be Development Services Dept.

<b>Table 6-6-9: Gila Bend assessment of previous plan cycle mitigation actions/projects</b>					
<b>ID</b>	<b>Description</b>	<ul style="list-style-type: none"> <li>• <b>Lead Agency</b></li> <li>• <b>Proposed Cost</b></li> <li>• <b>Proposed Comp Date</b></li> </ul>	<b>Status</b>	<b>Disposition</b>	<b>Explanation</b>
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	<ul style="list-style-type: none"> <li>• FCDMC/Floodplain Mgmt and Services Division/Floodplain Administrator</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	No Action	Keep	None to review over last cycle.
2	Pursue a mutual aid compact with county and state agencies to assist the town with hazard mitigation.	<ul style="list-style-type: none"> <li>• Town Administration/ Town Manager</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	On-going	Keep	The town is in the process of finalizing an IGA with MCDEM that will be effective July 2013 to July 2018.
3	Develop a public awareness campaign to educate town residents about natural hazards impacting the community	<ul style="list-style-type: none"> <li>• Town Emergency Manager</li> <li>• \$1,000</li> <li>• FY 2011</li> </ul>	No Action	Keep	Still the town's intent to accomplish this.
4	Develop and construct measures to mitigate flooding along Sand Tank and Scott Avenue Washes	<ul style="list-style-type: none"> <li>• Public Works/ Director FCDMC</li> <li>• \$5 million</li> <li>• FY 2014</li> </ul>	No Action	Keep	Still a problem. Funding is an issue.

<b>Table 6-6-10: Gilbert assessment of previous plan cycle mitigation actions/projects</b>					
<b>ID</b>	<b>Description</b>	<ul style="list-style-type: none"> <li>• <b>Lead Agency</b></li> <li>• <b>Proposed Cost</b></li> <li>• <b>Proposed Comp Date</b></li> </ul>	<b>Status</b>	<b>Disposition</b>	<b>Explanation</b>
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	<ul style="list-style-type: none"> <li>• Floodplain Administrator</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	Ongoing	Keep	This is ongoing.

<b>Table 6-6-10: Gilbert assessment of previous plan cycle mitigation actions/projects</b>					
<b>ID</b>	<b>Description</b>	<ul style="list-style-type: none"> <li>• <b>Lead Agency</b></li> <li>• <b>Proposed Cost</b></li> <li>• <b>Proposed Comp Date</b></li> </ul>	<b>Status</b>	<b>Disposition</b>	<b>Explanation</b>
2	Proactive adoption of applicable master plans, land uses and developmental agreements.	<ul style="list-style-type: none"> <li>• Town Engineer, Assistant Engineer</li> <li>• Plans Review and Inspection Code Manager</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	This is ongoing.
5	Implement the appropriate stage of the water supply reduction Management Plan as adopted (May 2003) to reduce water use.	<ul style="list-style-type: none"> <li>• Water Resource Coordinator and Manager</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	This plan is currently in revision.
6	Gilbert will continue to participate in the Community Rating System (CRS) program and get credit for the various activities that assist property owners in receiving reduced insurance premiums.	<ul style="list-style-type: none"> <li>• Floodplain Administrator</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	This is ongoing.
8	Work closely with FCDMC – Dam Safety to stay abreast of current mitigation efforts and timelines at Powerline FRS (a category 1 rating).	<ul style="list-style-type: none"> <li>• Floodplain Administrator/Town Engineer/ Emergency Management Coordinator</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	The Powerline FRS Interim Dam Safety Measurers construction is complete. This construction effectively addressed the dam’s safety concerns related to earth fissures. Project close out documentation is in progress and ADWR final approval is pending. A request for ADWR to reevaluate safety classification will be made after formally accepting the project.
3	Provide pertinent weather and hazard mitigation information to the public by providing local weather service and Maricopa County Hazard Mitigation links from Town of Gilbert Home page.	<ul style="list-style-type: none"> <li>• Emergency Management Coordinator</li> <li>• Staff time</li> <li>• December 2010</li> </ul>	Ongoing	Keep	Town of Gilbert Communication staff consistently provides social media updates of pertinent weather information to the community.
4	Establish an east valley group of stakeholders to address improvements in mitigation areas specific to the needs of the east valley community.	<ul style="list-style-type: none"> <li>• Emergency Management Coordinator</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	East Valley Emergency Managers, a local group of emergency management stakeholders representing local and county government, hospitals, a university and local utilities meet bimonthly and discuss planning and mitigation topics specific to the east valley.

**Table 6-6-10: Gilbert assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
7	Promote the use of weather radios, especially in schools, hospitals and other locations where people congregate to inform them of the approach of severe weather.	<ul style="list-style-type: none"> <li>• Emergency Management Coordinator</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	Weather radio promotion ongoing. Information on Emergency Management website.

**Table 6-6-11: Glendale assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	<ul style="list-style-type: none"> <li>• Building Safety/Engineering</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	Complete	Delete	The Audit was completed with FEMA in 2013 with min. issues and addresses that fall into the floodplain have been identified.
2	Storm Drain Project-Northern Ave. 47 <sup>th</sup> Ave-63 <sup>rd</sup> Ave. Co-locating water main	<ul style="list-style-type: none"> <li>• Engineering/Utilities, Utilities</li> <li>• \$15 million, \$3.5 million</li> <li>• 12/2010</li> </ul>	Complete	Delete	Project completed
3	Storm Drain Project-67 <sup>th</sup> Ave, Frier Drive to Orangewood Ave. This project addresses localized flooding hazards.	<ul style="list-style-type: none"> <li>• Engineering</li> <li>• \$350,000 for construction and \$30,000 to \$35,000 for construction administration</li> </ul>	Complete	Delete	Project completed
4	In partnership with The Salvation Army, provide respite care and dehydration stations. This effort mitigates loss of life during extreme temperature.	<ul style="list-style-type: none"> <li>• Emergency Management</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	In Progress	Keep	Program is designed to assist in the distribution and supplying of water at key location and high traffic areas. Program is ongoing.

<b>Table 6-6-12: Goodyear assessment of previous plan cycle mitigation actions/projects</b>					
<b>ID</b>	<b>Description</b>	<ul style="list-style-type: none"> <li>• <b>Lead Agency</b></li> <li>• <b>Proposed Cost</b></li> <li>• <b>Proposed Comp Date</b></li> </ul>	<b>Status</b>	<b>Disposition</b>	<b>Explanation</b>
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	<ul style="list-style-type: none"> <li>• City Engineer, Community Development Director</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	Ongoing	Keep	Performance of this action/project is a regular function of the city's review process.
3	Secure and protect the city water supply from outside, outsource contamination: a) Install supervisory control valves and data acquisition system. b) Install valve locks. c) Site specific physical infrastructure security measures.	<ul style="list-style-type: none"> <li>• Fire Chief/ Emergency Manager, Public Works Director</li> <li>• \$415,000</li> <li>• Q4, 2009</li> </ul>	Completed	Delete	Project was completed substantially as proposed.
2	Promote and share mitigation programs with state, county, local jurisdictions, and private, civic, and non-profit organizations.	<ul style="list-style-type: none"> <li>• Fire Chief/ Emergency Manager</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	Ongoing	Keep	
4	Determine the feasibility of hydration station and refuge in the city.	<ul style="list-style-type: none"> <li>• Fire Chief/ Emergency Manager</li> <li>• Staff time/ Volunteers</li> <li>• Q4, 2010</li> </ul>	Completed	Delete	Hydration Station assessment was completed and it was determined that it was not needed in the City of Goodyear. However, it was determined that the City of Goodyear would support organizations that were collecting water.

**Table 6-6-13: Guadalupe assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	<ul style="list-style-type: none"> <li>• FCDMC/ Floodplain Mgmt and Services Division/Town Manager/Town Inspector</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	Annual-ongoing	Keep	Annual review by staff or contractor
2	Implement the education and mitigation actions as outlined in the town's Storm water Management Plan.	<ul style="list-style-type: none"> <li>• Town Manager</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	Annual-ongoing	Keep	Annual review by staff or contractor
3	Establish periodic monitoring and review of the Town of Guadalupe's general plan and zoning ordinance to determine effectiveness at preventing and mitigating hazards. Based on the results, amend as necessary.	<ul style="list-style-type: none"> <li>• Town Inspector</li> <li>• Contract Engineer</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	Annual-ongoing	Keep	Annual review by staff or contractor

**Table 6-6-14: Litchfield Park assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	<ul style="list-style-type: none"> <li>• Planning Dept/ Floodplain Administrator</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	On going	Keep.	Building permits are reviewed by City Staff Engineering and Floodplain Administrator.
2	Review plan for final phase of City Flood control project in preparation to go out for bids.	<ul style="list-style-type: none"> <li>• Planning and Engineering Dept./ Chief Engineer</li> <li>• To be determined</li> <li>• Within five years</li> </ul>	In Progress	Keep	The major Flood Control project was completed in 2008. This initial project has kept our community flood free. A small portion of the plan has yet to be completed and no future plans have been confirmed.

<b>Table 6-6-14: Litchfield Park assessment of previous plan cycle mitigation actions/projects</b>					
<b>ID</b>	<b>Description</b>	<ul style="list-style-type: none"> <li>• <b>Lead Agency</b></li> <li>• <b>Proposed Cost</b></li> <li>• <b>Proposed Comp Date</b></li> </ul>	<b>Status</b>	<b>Disposition</b>	<b>Explanation</b>
3	Review hazard Mitigation Plan for areas that can be updated in accordance with current warning measures that are now available through the national Weather Bureau and the Maricopa County Emergency Services.	<ul style="list-style-type: none"> <li>• Community Services/Emergency Management Coordinator</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	On-going	Keep	Emergency Operation Plan is reviewed with Maricopa Emergency Planning and additions or omissions are made as needed.
5	Encourage city staff to become members of regional organizations to share in regional efforts and solutions to local and regional problems.	<ul style="list-style-type: none"> <li>• Community Services/ Emergency Management Coordinator</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	No Action	Keep	City staff continue to carry the same memberships and certifications as they did when we had our last major review.
6	Develop a policy to replace the use of hazardous materials with other products as soon as a safe, reliable source is available and proven to be as effective.	<ul style="list-style-type: none"> <li>• Public Works/ Operations Coordinator</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	On going	Keep	Director of Operations has taken a strong stance against using hazardous chemicals in the treating of our soils and we have taken steps to remove or isolate all hazardous materials from the work place.
4	Review building permits for compliance with International Building Code for structure compliance to endure severe winds and electrical strikes.	<ul style="list-style-type: none"> <li>• Planning Dept/ Building Code Enforcement Officer</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	On going	Keep	Building Department reviews all building permits for compliance.

<b>Table 6-6-15: Mesa assessment of previous plan cycle mitigation actions/projects</b>					
<b>ID</b>	<b>Description</b>	<ul style="list-style-type: none"> <li>• <b>Lead Agency</b></li> <li>• <b>Proposed Cost</b></li> <li>• <b>Proposed Comp Date</b></li> </ul>	<b>Status</b>	<b>Disposition</b>	<b>Explanation</b>
1	Broadway Rd Storm Drain Project, 76 <sup>th</sup> to 84 <sup>th</sup> St (partnering with FCDMC)	<ul style="list-style-type: none"> <li>• City Engineering/ Floodplain Administrator</li> <li>• \$3.5 million</li> <li>• August 2012</li> </ul>	Complete	Delete	Additional city funded project is under construction to improve the entire corridor.
2	Completion of the City of Mesa Storm Drain Master Planning document	<ul style="list-style-type: none"> <li>• City Engineering</li> <li>• \$600,000</li> <li>• June 2009</li> </ul>	Complete	Delete	Elements of the Master Plan are being implemented in city projects.
3	Construct two potable water wells to supplement the city water supply	<ul style="list-style-type: none"> <li>• City Engineering</li> <li>• \$20 million</li> <li>• July 2014</li> </ul>	Complete	Delete	Approximately \$2.3M is spent annually on new wells.
4	Maintain continuous water supply by continuing to install water distribution systems throughout the City of Mesa	<ul style="list-style-type: none"> <li>• City of Mesa Water Resources Division, Engineering</li> <li>• \$10 million annually</li> <li>• Ongoing</li> </ul>	In Progress	Keep	New projects are implemented annually to insure satisfactory operation.
5	CAP, reservoir, pump and future treatment plant at Elliot and Ellsworth	<ul style="list-style-type: none"> <li>• Engineering</li> <li>• \$100 million</li> <li>• July 2014</li> </ul>	In Progress	Keep	Pump station in operation. Design of the treatment plant to commence in January 2015. Potential Plan completion in 2019.
6	Identify and construct the first phase recommended by the Va Shly' Ay Akimel Salt River Ecosystem Restoration Project in partnership with SRPMIC and Army Corp of Engineers	<ul style="list-style-type: none"> <li>• Engineering</li> <li>• Unknown</li> <li>• July 2014, 1<sup>st</sup> construction phase</li> </ul>	No Action	Delete	Plan put on hold by the federal government. There are no plans to commence this project in the near or far future.
7	Replace power poles between Country Club and Extension along University with 69 KV steel and concrete poles (phase 2)	<ul style="list-style-type: none"> <li>• Engineering</li> <li>• \$4 million</li> <li>• July 2010</li> </ul>	Complete	Delete	The 69KV steel & concrete poles meet current standards and have longer life expectancy.
8	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	<ul style="list-style-type: none"> <li>• Engineering Dept./ Floodplain Administrator</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	In Progress	Keep	This service is ongoing.

<b>Table 6-6-16: Paradise Valley assessment of previous plan cycle mitigation actions/projects</b>					
<b>ID</b>	<b>Description</b>	<ul style="list-style-type: none"> <li>• <b>Lead Agency</b></li> <li>• <b>Proposed Cost</b></li> <li>• <b>Proposed Comp Date</b></li> </ul>	<b>Status – position or state</b>	<b>Disposition – final settlement</b>	<b>Explanation</b>
1	Review building permit applications for compliance with Floodplain Ordinance and NFIP regulations.	<ul style="list-style-type: none"> <li>• Engineering Department</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	Ongoing	Keep	Each building permit application gets review for compliance.
4	Continue the under grounding project for existing utilities on major roads thereby eliminating utility poles.	<ul style="list-style-type: none"> <li>• Engineering Department</li> <li>• \$3,800,000</li> <li>• 2014</li> </ul>	Ongoing	Keep	Completed 3 during plan years. Of 43 original districts, 37 are complete and 2 are underway with 4 left to do.
2	Adopt the 2009 International Codes (Building, Residential, Mechanical, Plumbing & Electrical) for use by the town.	<ul style="list-style-type: none"> <li>• Building Safety Division</li> <li>• Staff time &amp; \$2,000 for books</li> <li>• July 1, 2010</li> </ul>	Complete	Delete	Adopted 2012 I-Codes effective January 1, 2013
3	Conduct regular inspections of washes to ensure that they are maintained in a debris free condition.	<ul style="list-style-type: none"> <li>• Building Safety &amp; Public Works Departments</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	Ongoing	Keep	Each Friday morning is designated as “walking washes” day.
5	Conduct regular inspections of washes and take corrective action by enforcing existing ordinances to prevent a corridor for wildfires.	<ul style="list-style-type: none"> <li>• Building Safety &amp; Public Works Departments</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	Ongoing	Keep	Each Friday morning is designated as “walking washes” day.
6	<i>Update the current Emergency Operations Plan.</i>	<ul style="list-style-type: none"> <li>• <i>Building Safety Division, Emergency Management Unit</i></li> <li>• <i>Staff time</i></li> <li>• <i>Ongoing</i></li> </ul>	Future	Keep	Budget constraints, personnel loss and lack of available time have delayed this mitigation effort.
8	Maintain effective communications with state, county and local government agencies by the various town departments within their respective responsibility.	<ul style="list-style-type: none"> <li>• All Departments</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	Regular communication is conducted between the different agencies and different departments.

**Table 6-6-16: Paradise Valley assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status – position or state	Disposition – final settlement	Explanation
7	Educate and inform residents, businesses and visitors by conducting a media campaign, via local newspaper to publicize ways to mitigate disasters including steps that they can protect themselves.	<ul style="list-style-type: none"> <li>• Building Safety Department</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	Ongoing	Keep	The Town of Paradise Valley web site has links to county, state and federal web sites with mitigation information.

**Table 6-6-17: Peoria assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	<ul style="list-style-type: none"> <li>• Planning and Zoning Administrator</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	In progress	Keep	This project is on-going based on the growth of the City of Peoria.
2	Work with the Flood Control District of Maricopa County to determine potential effects of a flash flood or flood affecting the city. Also provide sandbags and sand as required.	<ul style="list-style-type: none"> <li>• Emergency Manager</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	Complete	Delete	A flood response plan has been developed and implemented.
3	Assist with the revision of a water conservation plan for mitigating the impact of a drought on the public water supply.	<ul style="list-style-type: none"> <li>• Emergency Manager</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	In progress	Keep	
4	Work with the Flood Control District of Maricopa County to determine potential effects of a flash flood or flood affecting the city. Also provide sandbags and sand as required.	<ul style="list-style-type: none"> <li>• EM, GIS, Public Works, Fire &amp; Police Department</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	Complete	Keep	A flood response plan has been developed and implemented.
5	Work with the Flood Control District of Maricopa County to determine potential effects of a levee failure.	<ul style="list-style-type: none"> <li>• EM, GIS, Public Works, Fire &amp; Police Department</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	Complete	Keep	A flood response plan has been developed and implemented.

Table 6-6-17: Peoria assessment of previous plan cycle mitigation actions/projects					
ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
6	Encourage a fire buffer along wild land-urban interface areas.	<ul style="list-style-type: none"> <li>• EM, GIS, Public Works, Fire &amp; Police Department</li> <li>• Staff time</li> <li>• Annual</li> </ul>	Complete	Keep	The city working with Maricopa County has developed and updated a wild fire protection plan.
7	Include all identified hazardous conditions in GIS mapping to include floodways, high wind areas, subsidence areas, hazardous materials, etc.	<ul style="list-style-type: none"> <li>• GIs</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	In progress	Keep	The city will continue to update our GIS data base as necessary.
8	<i>Train key city staff on appropriate actions based on the Emergency Operations Plan.</i>	<ul style="list-style-type: none"> <li>• <i>Emergency Management</i></li> <li>• <i>Staff time</i></li> <li>• <i>Ongoing</i></li> </ul>	In progress	Keep	The city has experienced a change in senior staff in some key positions. The city will work to continue to work with essential staff to ensure they are briefed on the EOP.
9	<i>Participate in regional training opportunities as well as Emergency Operations Command exercises within city to prepare for emergencies.</i>	<ul style="list-style-type: none"> <li>• <i>Emergency Management</i></li> <li>• <i>Staff time</i></li> <li>• <i>Ongoing</i></li> </ul>	In progress	Keep	The city conducts regularly scheduled exercise for employees to practice their skills within the EOC.
10	<i>All Fire Department personnel should be trained at Operations level, currently command staff are trained at Operations – rest of personnel are trained at awareness level.</i>	<ul style="list-style-type: none"> <li>• <i>Fire Chief</i></li> <li>• <i>Staff time</i></li> <li>• <i>Ongoing</i></li> </ul>	In progress	Keep	The Office of Emergency Management will continue to work with all city departments to train employees on the Incident Command System based on their position.
11	<i>Police Department personnel should be trained at Operations level, currently command staff are trained at Operations – rest of personnel are trained at awareness level.</i>	<ul style="list-style-type: none"> <li>• <i>Police Chief</i></li> <li>• <i>Staff time</i></li> <li>• <i>Ongoing</i></li> </ul>	In progress	Keep	The Office of Emergency Management will continue to work with all city departments to train employees on the Incident Command System based on their position.
12	Control development in flood areas	<ul style="list-style-type: none"> <li>• Planning and Zoning</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	In progress	Keep	The city will continue to review all submitted building plans.
13	Encourage flood-proof measures through building design	<ul style="list-style-type: none"> <li>• Community Development</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	In progress	Keep	The city will continue to review all submitted building plans. Appropriate suggestions of building designs will be made.
14	Maintain Public Service Announcements (PSAs) broadcast on Channel 11. Fliers produced and distributed to residents.	<ul style="list-style-type: none"> <li>• Communications and Public Affairs</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	In progress	Keep	The city will continue to use multiple communications methods such as press releases and our Channel 11 cable program to provide the public information where as needed.

**Table 6-6-17: Peoria assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
15	Research identified data limitations affecting the relative vulnerability of assets from drought	<ul style="list-style-type: none"> <li>• Emergency management</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	In progress	Keep	The city working with Maricopa County will continue to identify vulnerabilities regarding hazard mitigation activities.

**Table 6-6-18: Phoenix assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations	<ul style="list-style-type: none"> <li>• Street Transportation/ Floodplain Manager</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	In progress	Keep	The Floodplain ordinance was revised and adopted on June 30, 2012. New federal regulations have been enacted to enhance the NFIP.
2	Continue to include in the General Plan policies that protect the natural flow regimes of washes and designate areas for Open Space and Preserves	<ul style="list-style-type: none"> <li>• Parks and Recreation/ PPPI Administrator</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	In Progress	Keep	Project is designed to be ongoing. Project started in 1998 with goal of acquiring 22K acres. Currently COP has 9.1K acres acquired through donation and direct acquisition. Worked into General Plan via link to Sonoran Preserve Plan.
3	Storm Drain CIP Program. Construct drainage facilities to mitigate flooding hazard to residents of the City.	<ul style="list-style-type: none"> <li>• Street Transportation Department/Deputy Street Transportation Director</li> <li>• Variable</li> <li>• Ongoing</li> </ul>	In progress	Keep	Storm Drain CIP program is updated periodically. New Storm Drain projects are included in the CIP program subject to availability of funds.

**Table 6-6-18: Phoenix assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
4	Coordinate data sharing and development communication within city departments through documentation in GIS	<ul style="list-style-type: none"> <li>• Planning Department/ Planning Researcher</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	In Progress	Keep	The City of Phoenix Planning and Development Department coordinated data sharing and communication development within multiple city departments including Water Services (WSD), Police, Environmental Programs, Aviation, Street Transportation, Public Works, Housing, Community and Economic Development (CED), Library and City Manager's Office. In addition, the City of Phoenix provided capacity development data and mapping for future projections to Maricopa Association of Governments (MAG), Local school districts, Arizona Department of Commerce and Housing and Urban Development (HUD). Data shared included demographic, geographic and some complex analysis information communicated through his mapping software. Both mapping and statistical information were provided to assist these entities in the planning and calculating specific areas most impacted by identified hazards.
5	Summer Respite Program to network with faith-based organizations to provide heat relief with hydration, respite efforts, and wellness checks for the affected population as needed	<ul style="list-style-type: none"> <li>• Human Services/ Deputy Human Services Director</li> <li>• Donations totaling \$70,000 annually</li> <li>• Annual-Ongoing</li> </ul>	In Progress	Keep	Project is designed to be ongoing. Annual Program. The City of Phoenix coordinates with the Maricopa County Department of Public Health and The MAG Continuum of Care Regional Committee on Homelessness. Last year over 300K bottles were donated and distributed.
6	Revise 2002 Drought Response Plan and Ordinance	<ul style="list-style-type: none"> <li>• Water Services/ Principal Water Resources Planner</li> <li>• Staff time</li> <li>• March 2010</li> </ul>	In Progress	Keep	Staff reductions did not allow Water Services to meet initial proposed completion date. Revision of Drought Plan dependent on revision of Master Water Plan and revision of Water Resource Plan. All plans in final draft to be completed by 3 <sup>rd</sup> quarter 2015.
7	Develop and execute a water use curtailment outreach program	<ul style="list-style-type: none"> <li>• Water Services/ Principal Water Resources Planner</li> <li>• Staff time</li> <li>• December 2012</li> </ul>	Complete	Revise	Existing educational and awareness program in place that emphasizes water use strategies if specified drought conditions are experienced.

<b>Table 6-6-18: Phoenix assessment of previous plan cycle mitigation actions/projects</b>					
<b>ID</b>	<b>Description</b>	<ul style="list-style-type: none"> <li>• <b>Lead Agency</b></li> <li>• <b>Proposed Cost</b></li> <li>• <b>Proposed Comp Date</b></li> </ul>	<b>Status</b>	<b>Disposition</b>	<b>Explanation</b>
8	Revise and ratify the General Plan every ten years	<ul style="list-style-type: none"> <li>• Planning/ Planning Manager</li> <li>• Staff time</li> <li>• 2010</li> </ul>	In Progress	Keep	The Phoenix General Plan is the long-range guide for the city, and addresses issues such as energy, housing, neighborhoods, public facilities, natural resources, transportation and land use. Arizona State Statutes require that this plan be updated and/or readopted every ten years by a public vote. The current General Plan was last presented to the voters in 2002, making 2012 the deadline for the current update. The deadline was extended to 2015 to allow data collected from the 2010 census to be included.
9	Update and adopt a revised building code	<ul style="list-style-type: none"> <li>• Development Services/ Assistant Director</li> <li>• Staff time/ Materials</li> <li>• Annual-Ongoing</li> </ul>	In Progress	Keep	2012 Phoenix Building Construction Code, Building Code, Residential Code, Existing Building Code, Energy Conservation Code, Mechanical Code, Uniform Plumbing Code and 2008 National Electrical Code were all adopted.
10	Continue to insure zoning stipulations are met before construction permits are issued, and zoning is compatible with the zoning ordinance	<ul style="list-style-type: none"> <li>• Development Services/ Deputy Director</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	In progress	Keep	The City of Phoenix merged the Planning Department and Development Services Department in 2009. As a result there has been several areas of improved communication and coordination between Planning and Development. Before any plans are submitted to our Development Center they must have planning and zoning approval. As questions come up about zoning stipulations the Development team has experienced increased communication between Planning and Zoning further ensuring that new construction is compatible with the zoning ordinance.

Table 6-6-19: Queen Creek assessment of previous plan cycle mitigation actions/projects

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	<ul style="list-style-type: none"> <li>• Town/ Community Development Dept/ Floodplain Administrator</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	Ongoing	Keep	Completed 439 site plan permit reviews from 1/1/14 – 12/15/14.
2	Sonoqui Wash East Branch Floodplain Delineation Study – Determine the extent of the floodplain and submit to FEMA for review.	<ul style="list-style-type: none"> <li>• FCDMC/ Floodplain Mgmt and Services Division/ Floodplain Administrator</li> <li>• Staff time</li> <li>• 2011</li> </ul>	Complete	Delete	Construction elements completed Summer 2012 (ID #8 and #11). FCDMC has completed study post construction elements.
6	Construct Box Culvert at Sonoqui Wash East Branch: Ellsworth and Riggs Roads	<ul style="list-style-type: none"> <li>• Town/ Public Works CIP Division/ CIP Project Manager</li> <li>• \$750,000</li> <li>• Fall 2010</li> </ul>	Complete	Delete	Culvert constructed June 2011
7	Construct Box Culvert at Sonoqui Wash: Ellsworth and Empire Roads	<ul style="list-style-type: none"> <li>• Town/ Public Works CIP Division/ CIP Project Manager</li> <li>• \$3,500,000</li> <li>• Fall 2010</li> </ul>	Complete	Delete	Culvert constructed June 2011
8	Sonoqui Wash Channelization Project: Phase IIA Chandler Heights Road to Ellsworth Road	<ul style="list-style-type: none"> <li>• FCDMC</li> <li>• \$17,700,000</li> <li>• Fall 2010</li> </ul>	Complete	Delete	Phase IIA of the project was completed by August 2012
9	Sonoqui Wash Channelization Project: Phase III Riggs Road to Empire Road	<ul style="list-style-type: none"> <li>• FCDMC</li> <li>• \$15 million</li> <li>• 2012</li> </ul>	Complete	Delete	Project was divided in two: Phase IIIA and Phase IIIB. Ph IIIA was completed in late 2013. FCDMC has taken the lead on Phase IIIB. Anticipated completion is Fall 2015.
11	New Riggs Road Bridge over Sonoqui Wash	<ul style="list-style-type: none"> <li>• MCDOT</li> <li>• \$4,000,000</li> <li>• Mid-2011</li> </ul>	Complete	Delete	Bridge constructed August 2012

<b>Table 6-6-19: Queen Creek assessment of previous plan cycle mitigation actions/projects</b>					
<b>ID</b>	<b>Description</b>	<ul style="list-style-type: none"> <li>• <b>Lead Agency</b></li> <li>• <b>Proposed Cost</b></li> <li>• <b>Proposed Comp Date</b></li> </ul>	<b>Status</b>	<b>Disposition</b>	<b>Explanation</b>
3	Review Queen Creek Drainage Master Plan from Ellsworth Road to Rittenhouse Road	<ul style="list-style-type: none"> <li>• Town/ Community Development Dept/ Floodplain Administrator</li> <li>• Staff time</li> <li>• 2013</li> </ul>	No Action	Delete	Project was eliminated in 2013. Utilizing original FCDMC study
5	Design and construction of the Cloud Road & Sossaman Road Drainage Basin	<ul style="list-style-type: none"> <li>• Town/ Public Works CIP Division/ CIP Manager</li> <li>• \$6,500,000</li> <li>• Design: Fall 2010</li> <li>• Construction: TBD</li> </ul>	Complete	Delete	Basins were constructed in Fall 2011
12	New Ocotillo Road Bridge over Queen Creek between Power and Recker Roads	<ul style="list-style-type: none"> <li>• Town/ Public Works CIP Division/ CIP Project Manager</li> <li>• \$2,500,000</li> <li>• 2012</li> </ul>	In Progress	Delete	Currently in design. Project scope reduced from a bridge to a box culvert. Estimated cost: \$400,000 for box culvert. Anticipated construction completion 2015.
13	Conduct small area drainage master plan for the San Tan Foothills Area	<ul style="list-style-type: none"> <li>• Town/ Community Development Dept/ Floodplain Administrator</li> <li>• \$75,000</li> <li>• 2013</li> </ul>	Complete	Delete	Project scope expanded and renamed San Tan Area West Drainage Master Study. Completed in 2013
14	Install water level sensors at dip crossings of the Sonoqui Wash at Sossaman and Power Roads	<ul style="list-style-type: none"> <li>• Town/ Public Works CIP Division/ CIP Project Manager</li> <li>• \$100,000</li> </ul>	No Action	Delete	Determined to be unnecessary after upstream improvements completed.
15	Underground 12Kv lines on all four legs of the Ocotillo and Hawes Roads intersection	<ul style="list-style-type: none"> <li>• Town/ Public Works CIP Division/ CIP Project Manager</li> <li>• \$400,000</li> <li>• 2013</li> </ul>	No Action	Keep	Project is on hold. Town is reassessing priority needs and funding availability.

**Table 6-6-19: Queen Creek assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
4	Extend the Sonoqui Wash Hydraulic Master Plan into Pinal County to the headwaters of the drainage basin.	<ul style="list-style-type: none"> <li>• Pinal County/ Floodplain Administrator</li> <li>• Staff time</li> <li>• 2014</li> </ul>	No Action	Keep	Project is on hold. Evaluating if this should be a FCDMC led project.
10	Sonoqui Wash Channelization Project: Phase IIB Ellsworth Road to Crismon Road	<ul style="list-style-type: none"> <li>• Town/ Public Works CIP Division/ CIP Project Manager</li> <li>• \$14.5 million</li> <li>• 2014</li> </ul>	No Action	Keep	Project is on hold. Town is reassessing priority needs and funding availability.
16	Construct fire breaks around the north face of the San Tan Mountains to prevent entry into the Box Canyon Area	<ul style="list-style-type: none"> <li>• Town/Fire Dept/ Public Safety Manager</li> <li>• \$700,000</li> <li>• 2014</li> </ul>	No Action	Keep	Project is on hold. Town is reassessing priority needs and funding availability.

**Table 6-6-20: Salt River Pima – Maricopa Indian Community assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
3	Fire Department to develop a hazardous materials survey to identify hazardous chemicals being stored in the flood zones. This would allow us to ensure that they are properly stored and secured for floods that may impact the facility where they are stored.	<ul style="list-style-type: none"> <li>• Fire Department</li> <li>• N/A</li> <li>• April 2010</li> </ul>	Completed	Delete	EPCRA Tier II reporting is in place to manage this item.

**Table 6-6-20: Salt River Pima – Maricopa Indian Community assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
1	<i>Community Relations in coordination with Emergency Management to conduct public outreach/education on all hazards emergency preparedness for Community members. Community members that are educated on what to do in a disaster will reduce the loss of life and property in a disaster.</i>	<ul style="list-style-type: none"> <li>• Emergency Management</li> <li>• \$10,000</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	Education of community is a high priority and through presentations, newspaper articles and various other means, this outreach has taken place and will continue.
2	Conduct study to determine how to environmentally and efficiently reduce the fire load in the river/preserve area to minimize the impact of a wildfire in this area. Current area is overgrown and has high potential for fire that would expand to populated areas.	<ul style="list-style-type: none"> <li>• Fire Department</li> <li>• \$100,000</li> <li>• January 2012</li> </ul>	Completed	Delete	Fire Management Plan and Fuel reduction Plans has been completed.

**Table 6-6-21: Salt River Project assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
1	Continue electric system design as a looped system with multiple ties which is done to allow flexibility to re-arrange circuits prior in summer to balance loads commonly seen during extreme heat conditions. DLG Distribution Load Growth capacitor bank additions. TLG Transmission Load Growth capacitor bank additions.	<ul style="list-style-type: none"> <li>• Power Systems, Electric System Operations, Transmission &amp; Distribution Services</li> <li>• Staff Time (O&amp;M), Capital Improvements over 6 years</li> <li>• Ongoing</li> </ul>	In Progress (ongoing)	Keep	Capital improvement/mitigation projects on ongoing basis and appropriated as per SRP Six Year Electric System Plan.
3	DOR-826 Cable replacement program, feeder getaway upgrades, pad-mounted transformer replacement program, #2 and 4/0 loop splits; to mitigate outages during peak load times during extreme heat conditions. DOR-831 Underground secondary wire replacement. DOR-1575 Underground cable rehabilitation & commissioning.	<ul style="list-style-type: none"> <li>• Transmission &amp; Distribution Services</li> <li>• Staff Time (O&amp;M), Capital Improvements over 6 years</li> <li>• Ongoing</li> </ul>	In Progress (ongoing)	Keep	Capital improvement/mitigation projects on ongoing basis and appropriated as per SRP Six Year Electric System Plan.

Table 6-6-21: Salt River Project assessment of previous plan cycle mitigation actions/projects					
ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
4	SRP continuously monitors weather, runoff and reservoir conditions on the Salt and Verde watersheds as they affect reservoir operations and maintains a high level of preparedness of its reservoir emergency operations staff. In addition, SRP is actively involved with the Multi-Agency Taskforce on Flood Warning and operates the Arizona Statewide Flood Warning System under contract with the ADWR. The purpose of the flood warning system is to reduce the loss of life and property and manage water resources efficiently by providing appropriate information via a high-speed data collection and dissemination network to local entities and Federal Agencies, and further enhance the system to complement our mission to save lives and protect property.	<ul style="list-style-type: none"> <li>• Water Resource Operations, Water Transmission &amp; Communications</li> <li>• Staff Time (O&amp;M)</li> <li>• Ongoing</li> </ul>	In Progress (ongoing)	Keep	Ongoing program that is staffed and appropriated through table of organization and normal O&M.
5	DOR-829 Distribution Pole Asset Management (DPAM). TOR-825 Transmission Pole Asset Management (TPAM). SRP maintains a variety of mitigation programs on the Transmission and Distribution system to mitigate the effects and susceptibility to severe wind events such as DPAM/TPAM which incorporate; pole inspection program, pole replacement program, pole reinforcement program and stopper-pole program. (The SRP distribution system is 80%+ underground and, by design, mitigates a multitude of possible hazards).	<ul style="list-style-type: none"> <li>• Transmission &amp; Distribution Services</li> <li>• Staff Time (O&amp;M), Capital Improvements over 6 years</li> <li>• Ongoing</li> </ul>	In Progress (ongoing)	Keep	Capital improvement/mitigation projects on ongoing basis and appropriated as per SRP Six Year Electric System Plan.
6	DOR-1296 Line Maintenance repairs and preventative maintenance for distribution equipment. SRP Line Clearing maintains an ongoing preventative maintenance program that clears vegetation from transmission and distribution lines which are regularly patrolled and cleared of vegetation to prevent encroachment upon lines, thus mitigating a variety of hazards associated with vegetation interfering with electrical lines. This program also clears lower growing dense vegetation (smaller trees and brush) called "fuel clearing" to reduce fire/smoke in the event of a wildfire.	<ul style="list-style-type: none"> <li>• Transmission &amp; Distribution Services, Vegetation Management, Line Asset Management</li> <li>• Staff Time (O&amp;M), Capital Improvements over 6 years</li> <li>• Ongoing</li> </ul>	In Progress (ongoing)	Keep	Capital improvement/mitigation projects on ongoing basis and appropriated as per SRP Six Year Electric System Plan.

**Table 6-6-21: Salt River Project assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
2	Maintain fleet of mobile substations to deploy in advance to cover and mitigate any anticipated capacity deficiencies, thus mitigating chances of escalating outages.	<ul style="list-style-type: none"> <li>• Transportation Svcs, Electric System Operations</li> <li>• Staff Time (O&amp;M)</li> <li>• Ongoing</li> </ul>	Complete	Keep	Current assets. No changes.

**Table 6-6-22: Scottsdale assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	<ul style="list-style-type: none"> <li>• Public Workers &amp; Water Resources</li> <li>• Staff Time</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	Regular part of city's floodplain management
2	Maintain a Drought Management Plan in conjunction with SRP & APS to lessen the impact of drought.	<ul style="list-style-type: none"> <li>• Public Works</li> <li>• \$6,442,200</li> <li>• June 30, 2010</li> </ul>	Ongoing	Revise	Currently under council review with an anticipated approval before end of year
3	UPPER CAMELBACK WASH WATERSHED Construct open channel and culverts to safely convey stormwater in the vicinity of 92 <sup>nd</sup> St from Shea to Sweetwater Rds.	<ul style="list-style-type: none"> <li>• Public Works</li> <li>• \$4,580,600</li> <li>• February 28, 2011</li> </ul>	Complete	Delete	Project was completed April 2015 at a final cost of over \$19.2 million.
4	GRANITE REEF WATERSHED Construct a large storm drain down south Pima Road to the Salt River to collect stormwater and remove the flood zone from approximately 1000 structures.	<ul style="list-style-type: none"> <li>• Public Works</li> <li>• \$4,962,925</li> <li>• June 30, 2010</li> </ul>	Ongoing	Revise	Under design. Anticipated completion in June 2021. Revised cost is estimated at \$51,055,600
5	PIMA ROAD DRAINAGE SYSTEM Collect neighborhood and roadway flows as part of north Pima Road roadway improvements and channelize it around existing development	<ul style="list-style-type: none"> <li>• Public Works</li> <li>• \$194,400</li> <li>• June 30, 2011</li> </ul>	Partially Complete	Delete	The project as written is partially complete with the remainder of the project now known as Crossroads East – Phase 2.

Table 6-6-22: Scottsdale assessment of previous plan cycle mitigation actions/projects					
ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
6	AUTOMATED FLOOD WARNING SYSTEM - NORTH AREA Collects real time rainfall and runoff data to notify emergency services and for road closures.	<ul style="list-style-type: none"> <li>• Fire Department</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	None
7	Encourage fire buffer zones along wild land urban interface areas to mitigate damages due to wildfire	<ul style="list-style-type: none"> <li>• Fire Department</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	None
8	<i>Perform Hazardous Material Response Team &amp; Fire Code Inspection on Occupancies with Hazardous Materials to ensure safe storage and use of those HAZMATS</i>	<ul style="list-style-type: none"> <li>• Fire Department</li> <li>• Staff time/ Equipment</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	None
9	Develop partnerships to locate and operate hydration stations during extreme heat events to reduce the risk to Scottsdale citizens	<ul style="list-style-type: none"> <li>• Human Services</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	None
10	<i>Continue expanding our ESS software system to track resources in the event of an incident/ event.</i>	<ul style="list-style-type: none"> <li>• Fire Department</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	Ongoing	Keep	None
11	<i>Maintain and continue expanding our community emergency response team training.</i>	<ul style="list-style-type: none"> <li>• Fire Department</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	None

<b>Table 6-6-23: Surprise assessment of previous plan cycle mitigation actions/projects</b>					
<b>ID</b>	<b>Description</b>	<ul style="list-style-type: none"> <li>• <b>Lead Agency</b></li> <li>• <b>Proposed Cost</b></li> <li>• <b>Proposed Comp Date</b></li> </ul>	<b>Status</b>	<b>Disposition</b>	<b>Explanation</b>
1	Reduce the impact of flooding in Section 10 (Martin Acres) area of City of Surprise. Construct a new conveyance channel from south of US 60 to provide drainage away from Martin Acres.	<ul style="list-style-type: none"> <li>• FCDMC/ Floodplain mgmt. and Services Division/City of Surprise Floodplain Administrator</li> <li>• \$4,571,000</li> <li>• Annual-Ongoing</li> </ul>	In Progress	Keep	Project is currently under design. City of Surprise received grant funding for partial construction of the 100 year solution. Construction will commence in February of 2015. Design will be complete in February 2015 then the city will work to procure a construction contractor. Construction should be complete by July 2015.
2	Reduce the risk of fires to communities within wildland-interface zones by participating in the development of a community wildfire protection plan.	<ul style="list-style-type: none"> <li>• MCDem, Surprise Fire Department</li> <li>• Staff time</li> <li>• November 2010</li> </ul>	In Progress	Keep	City of Surprise staff is moving forward with the implementation of the 2012 IAFC Code. This code set has multiple areas that reference Wildland maintenance initiatives
4	Develop program and coordinate actions with FCDMC to access, mitigate, upgrade and redesign flood facilities.	<ul style="list-style-type: none"> <li>• FCDMC/ Surprise Floodplain Administrator, Engineers</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	No Action	Revise	Program is currently fulfilled as part of other ongoing maintenance and flood control programs. Need to better define the scope of program.
5	Develop program that identifies bridge and culvert construction in flood susceptible areas	<ul style="list-style-type: none"> <li>• Surprise Floodplain Administrator, Engineers</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	In Progress	Keep	City recently received grant funding for the development of a study to evaluate the rural flood susceptible areas.
3	Seek availability of funding sources for pre-disaster mitigation and hazard mitigation	<ul style="list-style-type: none"> <li>• City grant writers</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	In progress	Keep	Ongoing efforts associated with the identification and mitigation of eligible hazards.

Table 6-6-24: Tempe assessment of previous plan cycle mitigation actions/projects					
ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	<ul style="list-style-type: none"> <li>• Public Works/ City Engineer</li> <li>• \$10,000 Staff time/ Annual Expense</li> <li>• Annual-Ongoing</li> </ul>	Ongoing	Keep	Ongoing. All permits reviewed for compliance
4	Complete Tempe Royal Palms Sub-division 12 storm drainage system modifications	<ul style="list-style-type: none"> <li>• Public Works/ City Engineer</li> <li>• \$500,000</li> <li>• July 1, 2010</li> </ul>	Complete	Delete	Completed on 6-15-10
5	The City of Tempe Water Utilities Department has a comprehensive set of planning documents that outline future water systems operations, including specific drought contingency plans and water system operations during drought cycles. Planning documents include the 1997 Tempe Water Resources Plan (updated in 2002), the 1999 Tempe Integrated Water System Master Plan, and the 2002 Drought Management Strategy Plan. Tempe has implemented a number of measures from these plans to diversify the city's water resources and to lessen the impact of drought on our community. Tempe will continue to develop additional groundwater storage and recovery programs to significantly reduce potential drought impacts. These efforts include storing, CAP water and reclaimed water in aquifers for future recovery (over 85,000 acre-feet stored since the mid-1990s), and capital improvement projects to add new municipal wells and increase recovery well pumping capacity.	<ul style="list-style-type: none"> <li>• Water Utilities/ Water Utilities Manager</li> <li>• \$25,000 Staff time/ Annual Expense</li> <li>• Annual-Ongoing</li> </ul>	In Progress	Keep	ONGOING- Work continues on siting, drilling and equipping new municipal wells in the Tempe Water Service Area to provide increased drought supply and improve system redundancy. Similar projects are underway to connect existing Salt River Project (SRP) wells to the Tempe municipal water system. New Tempe Well #16 project is underway near Warner and McClintock Roads ( <i>anticipated completion date late 2015</i> ). Three SRP wells along the SRP Western Canal are being equipped and connected to the Tempe municipal water system through an existing pipeline to the South Tempe Water Treatment Plant ( <i>mid-2014 through late 2015</i> ).
6	Maintain Emergency Management Plan	<ul style="list-style-type: none"> <li>• Fire Department/ Special Operations Deputy Chief</li> <li>• \$2,500 Staff time</li> <li>• Annual-Ongoing</li> </ul>	Ongoing	Keep	Recent review completed and updated EMP has received council action

Table 6-6-24: Tempe assessment of previous plan cycle mitigation actions/projects					
ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
7	Maintain Hazardous Materials Response Team and First Responder Training and conduct Fire Code Inspections on Occupancies with hazardous materials	<ul style="list-style-type: none"> <li>• Fire Department/ Special Operations Deputy Chief and Fire Marshal</li> <li>• \$87,000 Staff time/ Equipment</li> <li>• Annual-Ongoing</li> </ul>	Ongoing	Keep	Ongoing. Haz Mat team is operating, Fire Code inspections are conducted.. First Responder Training completed
9	Maintain levee protection with Flood Control District of Maricopa County in Salt River	<ul style="list-style-type: none"> <li>• Public Works/ City Engineer</li> <li>• \$20,000 Staff time</li> <li>• Annual-Ongoing</li> </ul>	Ongoing	Keep	Ongoing. The FCDMC maintains the levee; the city works with the FCD on all work on/around levee.
10	Miscellaneous Flood Control and Storm Drainage Projects	<ul style="list-style-type: none"> <li>• Public Works/ City Engineer</li> <li>• \$400,000 Staff time and Project Costs</li> <li>• Annual-Ongoing</li> </ul>	Ongoing	Keep	Ongoing. Storm drain system is upgraded and modernized, as issues are determined. FCDMC is conducting Area Drainage Master Studies across Tempe to identify drainage issues/possible solutions.
2	Maintain CERT Program	<ul style="list-style-type: none"> <li>• Fire Department/ Special Operations Deputy Chief</li> <li>• \$5,000 Staff time/ Annual Expense</li> <li>• Annual-Ongoing</li> </ul>	Ongoing	Keep	Ongoing. CERT program is operating very well
8	Maintain Cameo and ESS	<ul style="list-style-type: none"> <li>• Fire Department/ Special Operations Deputy Chief</li> <li>• \$3,000 Staff time</li> <li>• Annual-Ongoing</li> </ul>	Complete	Delete	ESS eliminated. Using WebEOC. Also using Cameo in WebEOC
11	Participate with outside agencies to distribute bottled water and provide education about hazards associated with extreme heat	<ul style="list-style-type: none"> <li>• Water Utilities Dept and Fire Dept/ WUD Mgr and Fire Chief</li> <li>• \$1,000 Staff time</li> <li>• Annual-Ongoing</li> </ul>	Ongoing	Keep	Ongoing. CERT program is operating very well

**Table 6-6-24: Tempe assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
3	Seek funds for workshops and conferences, including National Incident Management System and Arizona Emergency Management Association Conferences	<ul style="list-style-type: none"> <li>• Fire Department/ Fire Chief</li> <li>• \$2,500 Staff time/ Annual Expense</li> <li>• Annual-Ongoing</li> </ul>	Ongoing	Keep	Ongoing. Continue to apply for funding

**Table 6-6-25: Tolleson assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	<ul style="list-style-type: none"> <li>• FCDMC/ Floodplain Mgmt and Services Division/ Floodplain Administrator</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	On-going	Keep	The building permit review is regular function of the development review process.
5	Installing more storm drains and retention areas to reduce impact of flooding on the community. Goes along with new and better codes.	<ul style="list-style-type: none"> <li>• Engineer, Building Director</li> <li>• Unknown, depends on site</li> <li>• Ongoing</li> </ul>	On-going	Keep	Storm drain and retention areas are included as a part of new development and will continue to be required. The city just completed a new downtown redevelopment that included the construction of storm drains and retention areas in 2014.
2	Provide sand and bags at different locations around the city for citizens to pick up.	<ul style="list-style-type: none"> <li>• Public Works Director</li> <li>• Staff time, sand at app \$100 per ton</li> <li>• Periodical, Ongoing</li> </ul>	On-going	Keep	The city has designated the field ops building, along with several other key locations for residents to pick up sandbags.
4	Educate public officials on the need of the mitigation plan.	<ul style="list-style-type: none"> <li>• Fire Chief, Division Fire Chief</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	On-going	Keep	Past education has been tied to storm events.

**Table 6-6-25: Tolleson assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
3	Continue to review plans and update codes and ordinances within the city limits.	<ul style="list-style-type: none"> <li>• Building Dept, City Senior Staff</li> <li>• Staff time</li> <li>• Periodical, Ongoing</li> </ul>	On-going	Keep	A regular part of the city operations. Currently updating the fire and building codes as well as few ordinances.

**Table 6-6-26: Unincorporated Maricopa County assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
4	Inspect and monitor all structures (bridges and box culverts) under their control on a semi-annual basis.	<ul style="list-style-type: none"> <li>• MCDOT/Engineers</li> <li>• \$150,000</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	This is an ongoing process
5	Encourage bridge or culvert construction where roads are in locations susceptible to flooding.	<ul style="list-style-type: none"> <li>• MCDOT/Senior Planner</li> <li>• \$7 million</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	This is an ongoing process and continues to be incorporated into current projects.
6	Review building permits to ensure that unincorporated Maricopa County residents and the 12 communities for which the District performs floodplain management duties are safe from flooding by meeting the NFIP requirements for development within a Special Flood Hazard Area through enforcement of Floodplain Regulations.	<ul style="list-style-type: none"> <li>• FCDMC/ Floodplain Administrator</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	This is an ongoing process. We reviewed 388 floodplain use permit applications in 2013
7	Develop a Community Wildfire Protection Plan to identify actions that will reduce the risk of wildfires to communities within wildland-urban interface zones.	<ul style="list-style-type: none"> <li>• Emergency Management/ Director</li> <li>• \$150,000</li> <li>• November 2010</li> </ul>	Ongoing	Keep	This plan is updated every 5 years in coordination with Maricopa County Emergency Management

Table 6-6-26: Unincorporated Maricopa County assessment of previous plan cycle mitigation actions/projects					
ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
8	Complete and start Area Drainage Master Studies/Plans to identify flooding hazards and mitigation solutions.	<ul style="list-style-type: none"> <li>• FCDMC/ Chief Engineer &amp; GM</li> <li>• Project-dependent</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	No recent studies/plans have been completed in unincorporated Maricopa County.
9	Complete and start delineations/re-delineations to identify flooding hazards.	<ul style="list-style-type: none"> <li>• FCDMC/ Chief Engineer &amp; GM</li> <li>• Project-dependent</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	This is an ongoing process. FCD structures are operated and maintained regularly.
10	Operate and maintain flood control structures operated and maintained by FCDMC in order to prevent structural failure and to maintain their primary function.	<ul style="list-style-type: none"> <li>• FCDMC/ Chief Engineer &amp; GM</li> <li>• Project-dependent</li> <li>• Ongoing</li> </ul>	On-going	Keep	This is an ongoing process. FCD dams are operated and maintained regularly.
12	Update the Flood Control District of Maricopa County 2009 Comprehensive Floodplain Management Plan and Program to set the framework in mitigating flood hazards.	<ul style="list-style-type: none"> <li>• FCDMC/ Chief Engineer &amp; GM</li> <li>• Staff time</li> <li>• FY 2013</li> </ul>	On-going	Keep	The district's Comprehensive Plan is updated every five years per statute. The next update is scheduled for late 2014.
13	Cloud Rd. & Sossaman Rd. Basin and Outlet. Construct a flood control basin and outlet to mitigate flooding hazard to existing homes.	<ul style="list-style-type: none"> <li>• FCDMC/ CE &amp; GM in partnership with the Town of Queen Creek</li> <li>• \$4,000,000 (concept-level est.)</li> <li>• Funding-dependent (Target: 2012)</li> </ul>	Completed	Delete	Project was completed in 2011
14	Sonoqui Wash Channelization (Main Branch). Channelize an existing wash to contain flood flows, protecting existing homes.	<ul style="list-style-type: none"> <li>• FCDMC/ Chief Engineer &amp; GM</li> <li>• \$18,000,000 (concept-level est.)</li> <li>• Funding-dependent (Target: 2015)</li> </ul>	In-progress	Keep	Project construction is broken up into two phases in which the first is complete. Phase 2 is scheduled to start July 2014.

Table 6-6-26: Unincorporated Maricopa County assessment of previous plan cycle mitigation actions/projects

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
15	Oak Street Basin and Storm Drain. Construct a basin and storm drain to mitigate flooding hazards to existing and future homes.	<ul style="list-style-type: none"> <li>• FCDMC/ CE &amp; GM in partnership with City of Mesa</li> <li>• \$4,000,000 (concept-level est.)</li> <li>• Funding-dependent (Target: N/A)</li> </ul>	In-progress	Keep	Project design is complete; construction schedule is dependent upon district and city funding availability.
16	Ellsworth Rd. & McKellips Rd. Basin and Storm Drain. Construct a basin and storm drain to mitigate flooding hazards to existing and future homes.	<ul style="list-style-type: none"> <li>• FCDMC/ CE &amp; GM in partnership with City of Mesa</li> <li>• \$4,000,000 (concept-level est.)</li> <li>• Funding-dependent (Target: N/A)</li> </ul>	Incomplete	Delete	Project design and construction schedules are dependent upon district and city funding availability.
17	Arcadia Area Drainage Improvements (Phase I). Construct flood control infrastructure to mitigate flooding hazards to existing homes.	<ul style="list-style-type: none"> <li>• FCDMC/ CE &amp; GM in partnership with City of Phoenix</li> <li>• \$9,000,000 (concept-level est.)</li> <li>• Funding-dependent (Target: 2013)</li> </ul>	Completed	Delete	Arcadia Phase I: Old Cross Cut Canal (Arizona Canal to Indian School), was completed by the City of Phoenix in 2012.  Arcadia Phase II: Lafayette Interceptor was completed in July 2013.
19	Flood Control Capital Improvement Program. Construct facilities to mitigate flooding hazards to residents of Maricopa County.	<ul style="list-style-type: none"> <li>• FCDMC/ Chief Engineer &amp; GM</li> <li>• \$40 million/year</li> <li>• Ongoing</li> </ul>	On-going	Keep	This is an on-going process
20	Design and construct new bridge and scour protection at Gilbert Road over the Salt River.	<ul style="list-style-type: none"> <li>• MCDOT/ Engineer</li> <li>• \$15 million</li> <li>• June 2012</li> </ul>	On-going	Keep	This currently hasn't been completed; currently seeking funding.
21	Design and construct scour protection for existing bridge over the Gila River on Old US Highway 80.	<ul style="list-style-type: none"> <li>• MCDOT/ Engineer</li> <li>• \$1 million</li> <li>• January 2011</li> </ul>	Complete	Delete	Project completed.

Table 6-6-26: Unincorporated Maricopa County assessment of previous plan cycle mitigation actions/projects

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
1	Floodprone Properties Assistance Program. Acquire property and relocate residents from flood hazard areas, or protect homes from flooding hazards through floodproofing.	<ul style="list-style-type: none"> <li>• FCDMC/ Chief Engineer &amp; GM</li> <li>• Project-dependent</li> <li>• Ongoing</li> </ul>	Incomplete	Keep	Funding for this program is currently unavailable.
2	Continue working with County Planning and Development on a cooperative effort to notify developers of Area Drainage Master Plans (ADMP's) and floodplain regulations early on in the development process.	<ul style="list-style-type: none"> <li>• FCDMC/ Chief Engineer &amp; GM</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	On-going	Keep	This is a continuous, ongoing effort. We make an effort to notify potential developers early in the process, and are thinking of improvements.
3	Review existing building codes to determine if they adequately protect new development in hazard areas. Where feasible and necessary, modify codes to help mitigate hazards imposed on such development within the limits of state statutes, while also respecting private property rights.	<ul style="list-style-type: none"> <li>• Planning and Development, Development Services/ Senior Planner</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	Building codes are continually reviewed and updated via the Local Additions and Addenda where changes are needed.
11	Continue public education program to assist residents in recognizing potential flooding and erosion hazards and inform them on how to reduce risk to life and property.	<ul style="list-style-type: none"> <li>• FCDMC/ Chief Engineer &amp; GM</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	The district publishes and sends an annual newsletter to residents in the SFHA of unincorporated Maricopa County. We schedule presentations at schools every year. We only made 2 presentations in 2014. We hold public meetings for all completed Area Drainage Master Plans. Prior to monsoon season, TV stations air our public service announcements about flood awareness and safety during monsoon season.
18	Gila River Bank Stabilization (Citrus Rd. to Perryville Rd.). Construct bank protection along the north bank of the Gila River to contain flooding hazards and limit river migration to protect existing infrastructure and homes.	<ul style="list-style-type: none"> <li>• FCDMC/ Chief Engineer &amp; GM</li> <li>• \$4,000,000 (concept-level est.)</li> <li>• Funding-dependent (Target: 2013)</li> </ul>	Incomplete	Delete	Project components were completed under the general O&M maintenance program. Did not turn into a CIP project.
22	Work with federal and state agencies, and local coalitions to elevate awareness of fissure risk zones and the problems fissures may cause.	<ul style="list-style-type: none"> <li>• Planning and Development Services/ Senior Planner</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	Ongoing	Keep	This is an ongoing effort to notify developers at the earliest stage possible of potential fissure and/or subsidence problems in certain areas. In certain instances geotechnical reports are required to demonstrate safe development practices.

**Table 6-6-27: Wickenburg assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	<ul style="list-style-type: none"> <li>• FCDMC/ Floodplain Mgmt and Services Division/ Floodplain Administrator</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	In Progress	Revise	Responsibility for floodplain review and NFIP compliance has been transferred to the Flood Control District of Maricopa County. Revise A/P to read: "Coordinate review of building permits for compliance with the Floodplain Ordinance and NFIP regulations with FCDMC."
2	Remove vegetation in washes that bisect streets within town limits to reduce wildfire hazard and improve storm water conveyance capacities.	<ul style="list-style-type: none"> <li>• Public Works/ Director</li> <li>• \$50,000</li> <li>• Annual-Ongoing</li> </ul>	In Progress	Keep	Funding issues with staffing

**Table 6-6-28: Youngtown assessment of previous plan cycle mitigation actions/projects**

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	<ul style="list-style-type: none"> <li>• Public Works Department/ Building Inspector/ Plans Review</li> <li>• Staff time</li> <li>• Annual-Ongoing</li> </ul>	Ongoing	Keep	Ongoing coordination with mcflood and compliance with current floodplain ordinance.
2	<i>Train all Public Works and Law Enforcement in First Responder Awareness: Weapons of Mass Destruction (WMD).</i>	<ul style="list-style-type: none"> <li>• <i>Public Works Department/ Emergency Services Manager, Public Safety Manager</i></li> <li>• <i>Staff time</i></li> <li>• <i>Annual-Ongoing</i></li> </ul>	Ongoing	Keep	Annual training review

Table 6-6-28: Youngtown assessment of previous plan cycle mitigation actions/projects					
ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
3	Provide town leadership role in support of efforts to limit development in the departure and approach corridors for Luke Air Force base.	<ul style="list-style-type: none"> <li>• Town management/ mayor, town manager and Public Works Manager</li> <li>• Staff time</li> <li>• Ongoing</li> </ul>	Complete	Keep	Flight/noise patterns are reviewed with each new development
6	Promote the availability of information from county webpage.	<ul style="list-style-type: none"> <li>• Emergency Services Manager/ Town Webmaster</li> <li>• Staff time</li> <li>• Initially NLT December 31, 2009; thereafter ongoing</li> </ul>	Complete	Keep	Notice of Maricopa County hazard mitigation plan posted on town's website with link back to Maricopa County Emergency Management for additional information.
4	Adopt the new Master Plan. Modify with additional guidelines, regulations, and land use techniques as necessary within the limits of state statutes, while also respecting private property rights.	<ul style="list-style-type: none"> <li>• Public Works Department/ Building Inspector/ Plans Reviewer &amp; Code Compliance Officer &amp; Public Works Manager</li> <li>• \$2,500 Plus Staff time</li> <li>• June 30, 2011</li> </ul>	In Progress	Revise	2025 general plan on the November ballot for approval by voters.
5	Develop a Shelter-in-Place Educational program.	<ul style="list-style-type: none"> <li>• Youngtown Public Safety Manager</li> <li>• Less than \$1,000, plus Staff time</li> <li>• Initially NLT March 31, 2010; thereafter ongoing as needed</li> </ul>	Complete	Keep	Public works facility designated as emergency shelter with backup generation for electricity, etc.

Table 6-6-28: Youngtown assessment of previous plan cycle mitigation actions/projects

ID	Description	<ul style="list-style-type: none"> <li>• Lead Agency</li> <li>• Proposed Cost</li> <li>• Proposed Comp Date</li> </ul>	Status	Disposition	Explanation
7	Encourage use of weather radios, especially in schools, rest homes, convalescent homes, retirement centers and other locations where people congregate to inform them of the approach of severe weather.	<ul style="list-style-type: none"> <li>• Emergency Services Manager/ Town Webmaster</li> <li>• Staff time</li> <li>• Initially NLT December 31, 2009; thereafter ongoing</li> </ul>	On-Going	Keep	Program is reviewed yearly and is on-going

6.3.2 *New Mitigation Actions / Projects and Implementation Strategy*

The first step in developing new mitigation actions/projects for each participating jurisdiction was to conduct a brainstorming session at the Planning Team Meeting No. 4. Using the goals, results of the vulnerability analysis and capability assessment, and the Planning Team’s institutional knowledge of hazard mitigation needs in the county and jurisdictions, the MJPT brainstormed to develop a comprehensive list of potential mitigation A/Ps that address the various hazards identified. The results of that brainstorming effort are summarized as follows:

<b>GENERAL MULTI-HAZARD:</b>
Install early warning sirens in select strategic locations as a part of a comprehensive emergency notification system to inform citizens of impending hazards such as dam failure, severe weather conditions, and severe wind events (particularly tornados). ***Addresses: <i>Dam Failure, Flood, Severe Wind, Wildfire</i> ***
Use newsletters, flyers, utility bill inserts, website notices, radio and television announcements, social media and newspaper articles to educate the public about hazards impacting the county and how to be prepared in the case of a disaster event. ***Addresses: <i>Dam Failure, Drought, Flood, Severe Wind, Wildfire</i> ***
Provide links on the community’s website to sources of hazard mitigation educational materials (e.g. – <a href="http://www.fema.gov">www.fema.gov</a> ) encouraging private citizens to be prepared for hazard emergencies. ***Addresses: <i>Dam Failure, Drought, Flood, Severe Wind, Wildfire</i> ***
Review and assess building and residential codes currently in use to determine if newer, more up-to-date codes are available or required ***Addresses: <i>Dam Failure, Drought, Flood, Severe Wind, Wildfire</i> ***
Promote the use of weather radios, especially in schools, hospitals and other locations where people congregate to inform them of the approach of severe weather events. ***Addresses: <i>Extreme Heat, Flood, Severe Wind, Wildfire</i> ***
<b>DAM FAILURE:</b>
Analyze and identify dam failure inundation limits to identify evacuation routes.
Participate/Conduct occasional table top exercises to identify potential mitigation measures for increasing response effectiveness, such as evacuation route marking and permanent protection measures for intended shelters.
Conduct annual dam safety inspections and reporting per Arizona Department of Water Resources guidelines and required schedule.
Annually coordinate with federal, state, and local dam owners to get updates on any changes in dam safety conditions and emergency action plan information.
Work with state and federal agencies to provide a disclosure to all potential buyers of real estate that are located within dam failure or emergency spillway inundation limits of an upstream dam or dams.
Develop or update the inundation mapping for the emergency action plan for [name dam] in order to identify population and critical facilities and infrastructure at risk, and to determine the need for potential mitigation.
<b>DROUGHT:</b>
Public education of water conservation best practices through newsletter, flyers, social media and website notices.
Develop and/or update an ordinance requiring strategic watering times and volumes during times of drought.
Mandate/Encourage/Incentivize the use of drought resistant landscaping through ordinance development and/or enforcement.
Coordinate with State Drought Task Force to perform drought management at the local/tribal level.
Develop/Update a local Drought Management Plan to define various levels of conservation requirements that are based on drought severity triggers and enforced through utility billing structures and ordinance.
Implement a water harvesting program through the location, design and construction of dual functioning stormwater retention facilities with enhanced recharge elements designed into the basin. ***Addresses both <i>Drought and Flood</i> ***
<b>EXTREME HEAT:</b>
Identify, stock and communicate locations within the community that can serve as cooling stations during times of extreme heat.

Perform a public information campaign at the onset of the extreme heat season to help educate the general public on ways to remain safe during periods of extreme heat.
Partner with NGO's (e.g. – The Salvation Army, church organizations, homeless shelters, etc.) to provide respite care and hydration stations to mitigate loss of life during extreme temperature events.
Investigate and develop an implementation strategy for using “cool roofs” on any new or major roof rehabilitation projects of tribal/county/city/town owned buildings to lower the urban heat island effects.
<b>FLOOD:</b>
Implement a water harvesting program through the location, design and construction of dual functioning stormwater retention facilities with enhanced recharge elements designed into the basin. <i>***Addresses both Drought and Flood***</i>
Develop a community-wide, stormwater management plan that will analyze and identify problem flooding areas and propose long-term mitigation alternatives designed to reduce or eliminate the flood problems.
Review, update and/or augment flood control ordinances to provide a greater level of protection than the minimum required by the NFIP.
Identify and map flood hazards in areas expected to grow or develop in the foreseeable future.
Develop/augment a county/city/town wide GIS program that is integrated into Public Works, Development Services, Police, Fire/Rescue and Emergency Management to help prevent development in flood prone regions.
Install automated flood barriers at low water crossings to discourage motorists from entering flooded road crossings.
Install stream depth indicators at low water crossings to communicate the risk of entering flooded roadway crossings and provide a visual warning to motorists of flood conditions at the crossing location.
<b>FISSURE:</b>
Include addressing fissure risk as a regular part of the land development and public works projects review and permitting.
Provide links to the Arizona Geologic Service website as a part of a public campaign to raise awareness to the hazards and locations of fissures.
Coordinate with state and federal agencies (USGS, AZGS, ADWR, etc.) to study and map fissure activity in critical or key areas of the community so that effective mitigation or avoidance strategies can be implemented.
Include geologic hazards in the next General or Comprehensive Plan update to inform land use decision making and zoning efforts. <i>***Addresses: Earthquake, Fissure, Landslide/Mudslide, Subsidence***</i>
Develop/Increase/Enhance groundwater recharge to mitigate expansion of fissures and subsidence areas. <i>***Addresses: Drought, Fissure, Subsidence***</i>
<b>LEVEE FAILURE: (look for nexus with Dam Failure)</b>
Perform regular inspection and maintenance of existing levees to mitigate potential failure.
Perform public outreach to citizens located within levee failure flood risk areas to provide awareness of potential increase in flood elevations with a levee failure.
<b>SEVERE WIND:</b>
Encourage homeowners to use tie-down straps and/or anchors to secure ancillary buildings and metal awnings or porches to mitigate the potential for flying debris during severe wind events.
Retrofit sub-standard roofs of key critical facilities and infrastructure to meet modern building code standards and mitigate damages and impacts of severe wind events.
Maintain/Install backup generators at key critical facilities such as fire and police stations, water pumping stations, sewer lift stations, etc., to provide emergency power for critical operations during power failures caused by severe wind events.
<b>SUBSIDENCE:</b>
Include addressing subsidence risk as a regular part of the land development and public works projects review and permitting.
Provide links to the Arizona Department of Water Resources website as a part of a public campaign to raise awareness to the hazards and locations of active subsidence.
Establish survey monuments and monitor elevations in critical or key areas of the community to measure impacts and trends of subsidence, with the goal of determining long term mitigation strategies to reduce the damage and losses that may yet be experienced.

WILDFIRE:
Develop and/or enforce a weed abatement ordinance.
Educate public on proper fuels thinning, setbacks, and water storage for wildfire mitigation using Firewise type of programs and guidance documents.
Conduct Fire Safety education programs in local public schools.
Enact and enforce burn and fireworks bans as needed during extraordinarily dry and extreme wildfire conditions / seasons to mitigate possible, unintended wildfire starts.
Perform, or encourage the performance of, routine roadside vegetation control to mitigate wildfire starts within the right-of-way areas along roadways and highways.
Clear vegetation and wildfire fuels to create a defensible space around critical or key structures within the community and along perimeter areas of the wildland urban interface.

Upon completion of the assessment summarized in Section 6.3.1, each jurisdiction’s LPT met and developed a new list of A/Ps using the goals and objectives, results of the vulnerability analysis and capability assessment, the above list of seed ideas, and the planning team’s institutional knowledge of hazard mitigation needs in their community. The A/Ps can be generally classified as either structural or non-structural. Structural A/Ps typify a traditional “bricks and mortar” approach where physical improvements are provided to affect the mitigation goals. Examples may include channels, culverts, bridges, detention basins, dams, emergency structures, and structural augmentations of existing facilities. Non-structural A/Ps deal more with policy, ordinance, regulation and administrative actions or changes, buy-out programs, and legislative actions. For each A/P, the following elements were identified:

- **ID No.** – a unique alpha-numeric identification number for the A/P.
- **Description** – a brief description of the A/P including a supporting statement that tells the “what” and “why” reason for the A/P.
- **Hazard(s) Mitigated** – a list of the hazard or hazards mitigated by action.
- **Community Assets Mitigated** – a brief descriptor to qualify the type of assets (existing, new, or both) that the proposed mitigation A/P addresses.
- **Estimated Costs** – concept level cost estimates that may be a dollar amount or estimated staff time.

Once the full list of A/Ps was completed to the satisfaction of the LPT, the team then set to work developing the implementation strategy for those A/Ps. The implementation strategy addresses the “*priority, how, when, and by whom?*” questions related to the execution and completion of an identified A/P. Specific elements identified as part of the implementation strategy included:

- **Priority Ranking** – each A/P was assigned a priority ranking of either “High”, “Medium”, or “Low”. The assignments were subjectively made using a simple process that assessed how well the A/P satisfied the following considerations:
  - A favorable benefit versus cost evaluation, wherein the perceived direct and indirect benefits outweighed the project cost.
  - A direct beneficial impact on the ability to protect life and/or property from natural hazards.
  - A mitigation solution with a long-term effectiveness.
- **Planning Mechanism(s) for Implementation** – where applicable, a list of current planning mechanisms or processes under which the A/P will be implemented. Examples could include CIPs, General Plans, Area Drainage Master Plans, etc.
- **Anticipated Completion Date** – a realistic and general timeframe for completing the A/P. Examples may include a specific target date, a timeframe contingent upon other processes, or recurring timeframes.

- **Primary Agency and Job Title Responsible for Implementation** – this would be the agency, department, office, or other entity and corresponding job title that will have responsibility for the A/P and its implementation.
- **Funding Source** – the source or sources of anticipated funding for the A/P.

Tables 6-7-1 through 6-7-28 summarize the updated mitigation A/P and implementation strategy for each participating Plan jurisdiction. Projects listed in *italics font* are recognized as being more response and recovery oriented, but are considered to be a significant part of the overall hazard management goals of the community.

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**Table 6-7-1: Mitigation actions and projects and implementation strategy for Avondale**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	Flood	Both	Staff Time	High	Building and Zoning Permitting	Ongoing	Building Safety, Development and Eng. services / Emergency Management	General Fund
2	Conduct and/or participate in occasional table top exercises to identify potential mitigation measures for increasing response effectiveness, such as evacuation route marking and permanent protection measures for intended shelters.	Dam Inundation	New	Staff Time	Medium	N/A	December-15	Emergency Management/ Public Works Dept.	General Fund
3	Annually coordinate with federal, state and local dam owners to get updates on any changes in dam safety conditions and emergency action plan information.	Dam Inundation	Both	Staff Time	Medium	N/A	December-15	Emergency Management/ Public Works Dept.	General Fund
4	Mandate, encourage and incentivize the use of drought resistant landscaping through Ordinance development and/or enforcement.	Drought	New	Staff Time	High	N/A	July-15	Emergency Management / Water Resources City Clerk	General Fund
5	Provide the public with educational information that lists water conservation best practices through newsletters, flyers, and website notices.	Drought	Existing	\$3,000 + Staff Time	Medium	Annual Community Outreach Publication	March-16	Emergency Management / Community Relations Dept.	General Fund
6	Partner with local NGO's (local shelters, church organizations, salvation army, etc.) to provide respite care and hydration stations to mitigate loss of like during extreme temperature events.	Extreme Heat	New	Staff Time	High	N/A	September-15	Emergency Management / Fire Department	General Fund
7	Identify, stock and communicate locations within the community that can serve as cooling stations during times or extreme heat. Ensure that on-hand drinking water supplies are sufficient enough to provide to the whole community.	Extreme Heat	New	Minimal + Staff Time	High	N/A	June-15	Emergency Management / Public Works Dept.	Grants / Fire / General Fund

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
8	Develop a community-wide, storm water management plan that will analyze and identify problem flooding areas and propose long-term mitigation alternatives designed to reduce or eliminate the flood problems. Utilize city interns to complete routine inspections of storm water drains to ensure no blockage in the case of a flood.	Flood	Both		High	Water Master Plan	September-15	Public Works Dept. / Emergency Management	Grants / General Fund
9	Identify and map flood hazards in areas expected to grow or develop in the foreseeable future.	Flood	Both	Staff Time	Medium	Water Master Plan	July-15	Public Works Dept.	General Fund
10	Identify and create an organizational chart or roster with lists or maps of important project features to prevent a levee failure. Complete an annual review of evacuation routes and emergency shelter locations in order to determine if they fulfill the evacuation and sheltering needs of the community.	Levee Failure	New	Staff Time	Medium	N/A	September-15	Public Works Dept. / Emergency Management	General Fund
11	Identify and maintain a list or annotated map that describes each project feature and areas of concern during a flood event. Develop and maintain a detailed table of project features that may need to be closed, such as floodgates, flap gates, etc.	Levee Failure	Both	Staff Time	High	N/A	September-15	Public Works Dept. / Emergency Management	General Fund
12	Encourage homeowners to use tie-down straps and/or anchors to secure ancillary buildings and metal awnings or porches to mitigate the potentials for flying debris during severe wind events.	Severe Wind	New	Staff Time	Medium	N/A	October-15	Building Safety, Community Relations / Emergency Management	General Fund
13	Promote the use of weather radios, especially in schools, hospitals and other locations where people congregate to inform them of the approach of severe weather events.	Severe Wind	New	Staff Time	High	Annual Community Outreach Publication	October-15	Community Relations / Emergency Management	General Fund
14	Include addressing subsidence risk as a regular part of the land development and public works projects review and permitting processes.	Subsidence	New	Staff Time	High	Building and Zoning Permitting	December-15	Development and Eng. services / Emergency Management	General Fund

**Table 6-7-1: Mitigation actions and projects and implementation strategy for Avondale**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
15	Provide links to the Arizona Department of Water Resources website as a part of a public campaign to raise awareness to the hazards and locations of active subsidence.	Subsidence	Both	Staff Time	Medium	N/A	June-15	Water Resources / Community Relations	General Fund
16	Use newsletters, flyers, utility bill inserts, website notices, radio and television announcements, and newspaper articles to educate the public about hazards impacting the county and how to be prepared in the case of a disaster event.	Wildfire	New	No incremental costs	High	Annual Community Outreach Publication	March-16	Community Relations / Emergency Management	Grants / General Fund
17	Conduct Fire Safety education programs in local public schools and community organizations within the city.	Wildfire	Both	Staff Time	Medium	Annual Community Outreach Publication	October-15	Fire Department / Emergency Management	Fire Management Grant

**Table 6-7-2: Mitigation actions and projects and implementation strategy for Buckeye**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	Flood	Both	Staff Time	Medium	NFIP and Floodplain Ordinance	Ongoing	Emergency Management / Emergency Manager	General Fund
2	Meet with flood control and state land to develop cut Wildfire breaks at key locations in the Gila River	Wildfire, Flood	Both	Staff Time	Medium	CWPP	Ongoing	Fire; Emergency Management; Public Works / Directors	General Fund
3	Develop water conservation plan.	Flood, Drought	Both	Staff Time	Medium		Ongoing	Engineering / City Engineer	General Fund / Grants

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
4	Conduct annual life safety inspections regarding the management wildland fire fuels and wildfire risk along the WUI boundary	Wildfire	New	Staff Time	High	CWPP	Ongoing	Fire; Emergency Management / Fire Chief; Emergency Manager	General Fund / Grants
5	Enhance communication of City mitigation needs at the County and State level by establishing liaison positions from city to State legislature, State Fusion Centers, MCDEM, Water fusion group, MAG and other multi-jurisdictional task force work groups	Flood, Wildfire, Severe Wind	New	Staff Time	High		Ongoing	Fire; Emergency Management, Mayor's Office / Fire Chief; Emergency Manager, Mayor	General Fund / Grants
6	Continue to support the Hazard Mitigation Plan by making sure the City is represented on related committees.	All Hazards	Both	Staff Time	Medium		Ongoing	Emergency Management / Emergency Manager	General Fund
7	<i>Implement Severe Wind deployment protection procedures (local)</i>	<i>Severe Wind, Flood</i>	<i>Both</i>	<i>Staff Time</i>	<i>Medium</i>		Ongoing	Fire; Emergency Management; Public Works / Directors	<i>General Fund</i>
8	Provide/improve water drainage systems	Flood	Both	Staff Time	Medium		Ongoing	Engineering, City Engineer	General Fund / Grants
9	Enforce Fire codes, require compliance	Wildfire	Both	Staff Time	High		Ongoing	Fire Code Enforcement / Code Enforcement Officer	General Fund
10	Participate with Maricopa County and other jurisdictions in the update of the Community Wildfire Protection Plan (CWPP)	Wildfire	Both	Staff Time	High	CWPP	Ongoing	Fire; Emergency Management / Fire Chief; Emergency Manager	General Fund

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	Flood	Both	Staff time	High	Staff training, Floodplain regulations	Annual-Ongoing	FCDMC / Floodplain Mgmt and Services Division / Floodplain Administrator / Building Official	General Fund
2	Review and update the town's Drainage Master Plan that will identify potential drainage hazards, solutions, budgets and prioritization.	Flood	Both	Staff time	High	Staff conferences. Study Drainage issues. Make recommendation for projects. Implement projects as funded.	Annual - Ongoing	Town Engineer / Building Official	General Fund, Permit fees, Grants if available
3	Continue development of water storage, treatment and delivery systems to provide adequate water during times of drought	Drought	Both	Specific project dependent	High	Carefree Water Company and Governing Board	Annual – Ongoing	Manager of Carefree Water Company	Water Company budget and available grants
4	Encourage bridge or culvert construction where roads are in locations susceptible to flooding.	Flood	Both	Staff time and studies unless actual project developed and then costs are to be determined per project	Medium	Staff conferences. Study drainage issues. Make recommendation for projects. Implement projects as funded.	Annual – Ongoing	Town Engineer	General Fund, Permit Fess, Grants if available.
5	<i>Review and update the town's Mass Evacuation strategy for the Town of Carefree.</i>	<i>All Hazards</i>	<i>Both</i>	<i>Staff time</i>	<i>Medium</i>	<i>Staff / Agency conferences</i>	<i>Annual - Ongoing</i>	<i>Carefree Emergency Manager / American Red Cross Town Fire Chief</i>	<i>General Fund</i>
6	Site and install additional signage for wash crossings as well as sand bags to warn and discourage vehicular movements through these areas during flooding events	Flood	Both	\$20,000.00	Medium	Public Works	Less than five years with funding	Public Works	General Fund

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
7	Perform regular brush cutting and median maintenance with town right-of-way to mitigate fuel sources for wildfire.	Wildfire	Both	\$10,000.00	Medium	Public Works	Annual – Ongoing	Public Works	General Fund
8	Maintain backup generators located at critical facilities (ex. Fire station, well sites, etc.) to provide emergency power for critical operations during power failures caused by severe wind events.	Severe wind	Existing	\$5,000.00	High	Public Works	Annual - Ongoing	Public Works	General Fund
9	Require all new construction to follow recognized and adopted building codes to mitigate damages and impacts of severe wind events.	Severe wind	New	Staff time	Medium	Staff conferences	Annual - Ongoing	Town Engineer / Building Official	General Fund
10	Create a public education program describing water conservation best practices to be delivered to residents in their monthly water bill. In addition, provide water conservation related material through the town's COINS system.	Drought	Existing	Staff time	Medium	Staff conferences	Annual – Ongoing	Manager of Carefree Water Company / Staff	General Fund
11	Clear vegetation and wildfire fuels to create a defensible space around critical or key structures within the Town of Carefree.	Wildfire	Both	Staff time	High	Building and site surveys, Staff conferences	Annual – Ongoing	Public Works / Fire Chief	General Fund
12	Identify, stock and communicate locations within the Town of Carefree that can serve as cooling stations during times of extreme heat.	Extreme Heat	Both	Staff time / \$500.00	Medium	Staff conferences	Annual during extreme heat season	Fire Chief, Town staff	General Fund
13	Perform a public information campaign at the onset of the extreme heat season to help educate the general public on ways to remain safe during periods of extreme heat.	Extreme Heat	Both	Staff time	Medium	Staff conferences	Annual	Town staff	General Fund

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	Flood	Both	Staff Time	High	Staff Continuing Education	Ongoing	Town Engineer	General Fund
2	Ensure building codes for construction are enforced to prevent roof damage from high winds.	Severe Wind	Both	Staff Time	High	Staff review and field inspections.	Ongoing	Chief Building Official	General Fund
3	Town Fire Marshal shall perform routine commercial structures inspections to identify and communicate code violations. Routinely inspect commercial structures.	Flood, Severe Wind, Wildfire	Both	Staff Time	High	Fire Safety Inspections.	Ongoing	Chief Building Official. Fire Marshal	General Fund
4	Perform a Public Information Campaign to help educate the general public on ways to remain safe during periods of extreme heat.	Extreme Heat	Both	Staff Time	Medium	Post Notices on Town Website.	Ongoing	Town Marshal	General Fund
5	Review the existing Cave Creek general plan and zoning ordinance to determine how these documents help limit development in hazard areas. Modify with additional guidelines, regulations, and land use techniques as necessary within the limits of state statutes, while also respecting private property rights.	Flooding	Both	Staff Time	Medium	Staff review.	Ongoing	Planning and Zoning	General Fund
6	Public Information Campaign to get more residents to subscribe to the CodeRed Extreme Weather Alert System.	Flood, Severe Wind, Extreme Heat	Both	Staff time	Medium	Post notice on Town's website	10/2015	Town Marshal	General Fund
7	Continuous Public Information Campaign to advise residents and visitors alike of risks from Wildfire.	Wildfire	Both	Staff Time, Printed Materials	Medium	Fixed Signage advising of risks on main roadways in town. Handouts available at public facilities, identifying risks and ways to avoid Wildfires.	Ongoing	Town Marshal	General Fund

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	Flood	Both	Staff time	High	Staff Training/ Floodplain Regulations	Annual-Ongoing	Transportation and Development/ City Engineer	General Fund
2	Maintain the currency of the safety element of the Chandler General Plan.	Drought, Extreme Heat, Flood, Severe Wind	Both	Staff time -consultant cost for update of GP	High	Review and Update General Plan	Annual-Ongoing	Planning Manager	General Fund
3	Continue to ensure through proper planning, zoning and building codes that all safety measures are in place for new building construction and placement. The city will coordinate with the county flood control district.	Flood, Severe Wind	New	Staff time	High	Continue to update codes to newest versions and add amendments were appropriate	Annual-Ongoing	Transportation and Development/ Building Official	General Fund
4	Continue to maintain a diverse water portfolio which includes surface water from Salt, Verde and Colorado River watersheds and groundwater. Minimize any reductions to existing supplies by protecting and securing existing water rights, and meeting environmental requirements of water supplies. Maximize the use of existing assets to ensure adequate water supply is available from over 30 groundwater wells, two surface water treatment plants, use of recharged water, and encourage the use of reclaimed water for appropriate purposes. Continue to implement the city's Drought Plan.	Drought	Both	Staff time	High	Continue to maintain a diverse city water portfolio by reviewing and updating current and future needs on a regular basis	Annual-Ongoing	Municipal Utilities Director	Enterprise Fund
5	Each city department will be encouraged to rank the vulnerability of existing assets, with assistance from the Emergency Management Workgroup, and implement protection plans as needed, with the highest vulnerability being implemented first.	Drought, Extreme Heat, Flood, Severe Wind	Both	Staff time	Medium	Emergency Management Group Meetings	Annual-Ongoing	Fire, Health and Medical Department	General Fund

**Table 6-7-5: Mitigation actions and projects and implementation strategy for Chandler**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
6	Continue to ensure that the City of Chandler Drought Management Plan is updated to meet the needs of the city to mitigate drought severity.	Drought	Both	Staff time	Medium	Continue to review and update the plan as appropriate	Ongoing	Municipal Utilities/ Municipal Utilities Director	Enterprise Fund
7	Annually coordinate with federal, state, and local dam owners to get updates on any changes in dam safety conditions and emergency action plan information.	Dam Failure	Both	Staff time	Medium	Attend informational meetings	Annual	Fire, Health and Medical Department	General Fund
8	Analyze and identify dam failure inundation limits to identify and/or update evacuation routes.	Dam Failure	Both	Staff time	Medium	Update EOP as needed including evacuation routes	Ongoing	Fire, Health and Medical Department/ Municipal Utilities Department	General Fund
9	Provide links to the Arizona Department of Water Resources website as a part of a public campaign to raise awareness to the hazards and locations of active subsidence.	Subsidence	Both	Staff time	Medium	Maintain current webpage links	Ongoing	Communications and Public Affairs Department	General Fund
10	Include addressing subsidence risk as a regular part of the land development and public works projects review and permitting.	Subsidence	Both	Staff time	Medium	Maintain a robust zoning and planning evaluation process	Ongoing	Transportation and Development Department	General Fund

**Table 6-7-6: Mitigation actions and projects and implementation strategy for El Mirage**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	Flood	Both	Staff Time	High	Permit Review	Ongoing	City of El Mirage FBLS, Building Official	General Fund

**Table 6-7-6: Mitigation actions and projects and implementation strategy for El Mirage**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
2	Review zoning ordinances prohibiting new development in 100-year floodplain on an annual basis.	Flood	Both	Staff Time	High	None	Ongoing	Planning & Zoning / Director	General Fund
3	Take active role in multi-agency plan and actions for flood mitigation (pro-active).	Flood	Both	Staff Time	High	MCMJHMP	Ongoing	Engineering/Fire/ Public Works / Depth heads	General Fund
4	Develop plan to design and install man-made flood protection devices where needed.	Flood	Both	Staff Time/UNK	High	None	Ongoing	City of El Mirage City Engineering/Fire/ Public Works / Dept heads	General Fund/UNK
5	Construct flood control measures as a part of the El Mirage Road project to mitigate flooding by the El Mirage Wash. El Mirage Road project will elevate the roadway section by the Lower EL Mirage Wash area to mitigate flooding.	Flood	Both	Staff Time	Medium	El Mirage Road project	Undetermined at this point	Engineering / City Engineer	HURF, general fund
6	Recharge groundwater with CAP water to ensure the community water supply in the event of a drought.	Drought	Both	\$100,000	Medium	City of El Mirage has a CAP subcontract and recharges CAP water.	On-going	Public Works / Director	General fund
7	Review annually and update as needed, existing building codes to manage new and existing construction practices and provide mitigation for Drought, Flood, and Severe Wind.	Drought, Flood, Severe Wind	New	Staff Time	High	Permitting and Plan Review	Annually	FBLS / City Building Official	General Fund
8	<i>Participate in multi-agency coordination efforts to ensure cooperative plans.</i>	<i>Multi-Hazard</i>	<i>Both</i>	<i>Staff Time</i>	<i>Medium</i>	<i>Through continuing auto and mutual aids agreements.</i>	<i>Ongoing</i>	<i>Fire Department / Fire Chief</i>	<i>General fund</i>

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
9	Train First Responders and other select city staff in hazard materials mitigation.	HAZMAT	Existing	Staff Time plus Training Cost	Medium	NIMS certification	Ongoing	Fire department/department heads	General fund
10	Coordinate efforts with other local agencies that include but are not limited to: Luke AFB, Dysart School District, FCDMC and others, to I.D. problem areas and plans for mitigation	Multi hazard	Both	Staff Time	LOW	None	Ongoing	Fire Department / Fire Chief	General fund
11	Maintain collaboration efforts and interconnected water system with other water purveyors to ensure the community water supply in the event of a drought.	Drought	Both	Staff Time	HIGH	The City of El Mirage has interconnects with the City of Surprise as well as working with EPCOR to add an additional one.	Ongoing	Public Works / Director	General fund
12	Continue to implement a conservation education program to ensure the community water supply in the event of a drought.	Drought	Both	Staff Time	Medium	Automated Water Meter Program	Ongoing	Public Works / Director	General fund, utility payments
13	Educate the public on suspected and imminent wind shear dangers from micro burst and other natural wind threats through website notices and social media alerts.	Severe Wind	Both	Staff Time	Low	None	Annually During Monsoon Season	Homeland Security / Safety and Emergency Management Officer	General Fund
14	Educate the public on actions and resources to protect residents that do not have adequate ways to cool their homes in the event of an Extreme Heat Event through website notices and other social media alerts	Extreme Heat	Existing	Staff Time	High	Anticipate the event and advise community through social media and other , means	Seasonally and as needed.	City of El Mirage/Fire/PD	General Fund

**Table 6-7-6: Mitigation actions and projects and implementation strategy for El Mirage**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
15	Provide cool potable water to citizens during extreme heat waves. Dissemination of public information regarding hydration station and resource locations will be provided via website notices and social media	Extreme heat	Existing	\$2,000	Medium	None	Seasonally and as needed.	City of El Mirage Fire / Fire Chief	Fire Dept Budget
16	Provide citizens with warnings and escape routes from severe flooding or expected flooding.	Dam Failure	Existing	Staff time	Low	McMicken Dam EAP, Waddell Dam EAP	When necessary	City of El Mirage Fire/ PD and Public Works.	General fund
17	Participate/Conduct occasional table top exercises to identify potential mitigation measures for increasing response effectiveness, such as evacuation route marking and permanent protection measures for intended shelters.	Dam Failure	Both	Staff time	Low	McMicken Dam EAP, Waddell Dam EAP	At least once over the next five years	City of El Mirage Fire/ PD and Public Works / Dept heads	General Fund
18	Coordinate with state and federal agencies (USGS, AZGS, ADWR, etc.) to study and map fissure and subsidence activity in critical or key areas of the city so that effective mitigation or avoidance strategies can be implemented.	Fissure, Subsidence	Both	Staff Time	Low	ADWR INSAR Program, AZGS Fissure Mapping Program	At least once over the next five years	City of El Mirage Fire/ PD and Public Works / Dept heads	General Fund
19	Provide links to the Arizona Department of Water Resources subsidence website and the Arizona Geologic Survey website as a part of a public campaign to raise awareness to the hazards and locations of active fissure and subsidence locations within the city.	Fissure, Subsidence	Both	Staff Time	Low	None	FY2016	City of El Mirage Fire / Fire Chief	General Fund

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Prohibit building in floodplain and river area to maintain channel and protect riparian area.	Flood	Both	Staff time for plan review-\$15,000 annually	High	Staff training and cooperation with Army Corp of Engineers and County Flood Control District.	Annual/Recurring	Community and Economic Development Division/Planning Manager	Tribal General Revenue Funds
2	Pro-actively pursue pre-disaster and hazard mitigation grants to supplement tribal expenses associated with mitigation activities.	All Hazards	Both	Determined by required matching funds. \$10,000 annually	Medium	Contract and Grants Administrator oversight.	Annual/Recurring	All Department Directors	Matching funds from Tribal General Revenue Funds
3	Publish suggested mitigation actions through print media and community website to reduce potential for wildfire and heat related medical emergencies.	Drought, Extreme Heat, Wildfire	Both	Staff time, \$2,500 annually	Medium	Timely information distribution through social media, newsletter, website	Annual/Recurring	Fire Department/Emergency Manager	Tribal General Revenue Funds
4	Limit development along river to protect wetlands, threatened species habitat and protect businesses from flooding.	Flood	Both	Staff time for plan review and Enterprise equipment and labor, \$50,000 annually	Medium	Cooperative effort with Tribal Environmental Department, Enterprise employees, and others.	Annual/Recurring	Environmental Department/Environmental Manager	Tribal General Revenue Funds
5	Create and map access to high-risk wildfire areas. Provide weed abatement services in high risk areas to reduce risk of wildland fire.	Wildfire	Existing	Staff time and \$30,000 annually	Medium	Cooperative effort by MCDOT, Tribal Public Works Department, Fire Department and BIA FMO	Annual/Recurring	MCDOT and FMYN Public Works Department/ Public Works Manager, Fire Chief, BIA Fire Management Officer (FMO)	MCDOT and Tribal General Revenue Funds, PDMG and AFG grants
6	Coordinate training, planning, and communications to provide the community with information to combat the effects of infestations and diseases.	Disease, Infestation, Pandemic.	Both	Staff time for Medical Clinic personnel	Low	Public Health surveillance and timely information distribution through newsletter, social media, and website.	Annual/Recurring	Medical Director, Clinic staff	Tribal General Revenue Funds, IHS funds

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
7	Install diesel powered emergency generator in critical facilities identified as sheltering locations	Dam Inundation, Extreme Heat, Severe Wind	Existing	Staff time - \$5,000, equipment cost - \$112,00	High	Cooperative effort with Community Economic Development, Fire Department, Public Works	November 2016	Fire Department/Emergency Manager	Tribal General Revenue, Tribal Homeland Security Grant Program
8	Implement and exercise an area-wide telephone Emergency Notification System. (Reverse 9-1-1)	All Hazards	Both	Staff time - \$15,000, Reverse 9-1-1 system use costs - \$2,500	Medium	Cooperative efforts with Fire Department, Police Department, IT Department, Emergency Manager, MAG PSAP group	Annual/Recurring	Fire Department/Emergency Manager	Tribal General Revenue Funds
9	Review existing building codes, modify or adopt codes to prevent development in hazard areas.	Drought, Flood, Severe Wind, Wildfire	New	Staff time, \$5,000 annually	Medium	Collaborative effort with Community Economic Development Division, Fire Department, Legal Office	Annual/Recurring	Community and Economic Development Division/Planning Project Manager / Fire Chief	Tribal General Revenue Funds
10	Identify and mitigate hazards associated with new and existing developments through plan reviews to ensure plan/code compliance, including incorporation of drought tolerant or xeriscape landscapes on new developments.	Drought, Flood, Severe Wind, Wildfire	Both	Staff time, \$5,000	Medium	Cooperative efforts with Fire Department, IT Department, Emergency Manager, MAG PSAP group	Annual/Recurring	Community and Economic Development Division/License and Property Use Manager / Fire Chief	Tribal General Revenue Funds
11	Ensure building codes addressing wind loading are enforced to prevent damage from high winds.	Severe Wind	Both	Staff costs - \$3,500	Medium	Collaborative effort with Community Economic Development Division, Fire Department, Legal Office	Annual/Recurring	Community and Economic Development Division/Chief Building Inspector	Tribal General Revenue Funds

**Table 6-7-7: Mitigation actions and projects and implementation strategy for Fort McDowell Yavapai Nation**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
12	Develop a drought emergency plan with criteria and triggers for drought-related actions.	Drought	Both	Staff time, \$15,000	Medium	Cooperative efforts with Public Works, Water System Manager, Emergency Manager, Planning Projects Manager	August 2018	Community Economic Development Division/ Emergency Manager	Tribal General Revenue Funds
13	Conduct fuels reduction and establish fuel breaks in dense vegetation areas.	Wildfire	Both	Staff costs - \$,5000,	High	Cooperative efforts between BIA Fire Management Officer, Fire Department, Emergency Manager, Public Works Director	Annual/ Recurring	Fire Department/ Emergency Manager	Tribal General Revenue Funds, PDMG and AFG grants

**Table 6-7-8: Mitigation actions and projects and implementation strategy for Fountain Hills**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	Flood	Both	Staff Time	Medium	Ongoing	Annually	Town Engineer	General Fund
2	Maintain washes in Town by removing excessive brush and trim trees to reduce the threat of wildfire and flooding due to blockages	Flood, Wildfire	Both	\$150K/yr	High	Ongoing	Annually	Environmental Supervisor	General Fund
3	Enforce Building Codes to prevent roof damage from high winds.	Severe Winds	Both	Staff Time	Medium	Ongoing	Ongoing	Building Official	General Fund

**Table 6-7-8: Mitigation actions and projects and implementation strategy for Fountain Hills**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
4	Review General Plan and Ordinances for mitigating hazards.	Flood, Severe Wind, Drought, Extreme Heat	Both	Staff Time	Medium	Ongoing	Ongoing	Development Director	General Fund
5	Channel and Storm Drain Development	Flood	Both	\$1.5M	High	Ongoing	Ongoing	Town Engineer	CIP
6	Analyze and identify dam failure inundation limits to identify evacuation routes.	Dam Failure	Ex	Staff Time	Medium	Ongoing	Ongoing	Town Engineer	General Fund
7	Conduct bi-annual dam safety inspections and reporting per Arizona Department of Water Resources guidelines and required schedule.	Dam Failure	Both	Staff Time	Medium	Bi-annual	Ongoing	Town Engineer	General Fund
8	Perform a public information campaign at the onset of the extreme heat season to help educate the general public on ways to remain safe during periods of extreme heat.	Extreme Heat	Both	Staff Time	High	Ongoing	Ongoing	Fire Department	General Fund

**Table 6-7-9: Mitigation actions and projects and implementation strategy for Gila Bend**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	Flood	Both	N/A	5	Town Code	ongoing	Town Planner/Engineer	Town
2	Pursue a mutual aid compact with county and state agencies to assist the town with hazard mitigation.	Flood, Severe Winds, Wildfire	Both	N/A	4	Town, State, County, FEMA	Ongoing	Town Manager, Finance Director, Public Works Director	Town, State, County

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
3	Develop a public awareness campaign to educate town residents about natural hazards impacting the community.	Flood, Severe Winds, Wildfire	Both	\$5,000	6	Town/Maricopa County Flood Control	Ongoing	Town, Maricopa County Flood Control	Town, FEMA, County
4	Develop and construct measures to mitigate flooding along Sand Tank and Scott Avenue Washes.	Flood	Both	\$12 million	11	FEMA, Army Corps of Engineers, Maricopa County Flood Control, Town	2022	FEMA, Army Corps of Engineers, Maricopa County Flood Control, Town	FEMA, Army Corps of Engineers, Maricopa County Flood Control, Town, USDA, WIFA
5	Develop a plan to implement aquifer recharge per the recommendations of the recently completed aquifer study performed by The Global Institute of Sustainability (GIOS) at Arizona State University (ASU).	Drought	Both	\$90,000	7	The Global Institute of Sustainability (GIOS) at Arizona State University (ASU)	2016	Town Manager	FEMA, County, State, Town, USDA, WIFA
6	Restrict water usage for irrigation during times of drought.	Drought	Both	N/A	3	Town Code	Ongoing	Town Manager, Public Works Director	Town
7	Establish and staff a "cooling" station at the local community center	Extreme Heat	Both	N/A	1	Social Services	Ongoing	Social Services Director, Town Manager	Town
8	Maintain and provide access to the public swimming pool during times of extreme heat to provide a means for cooling off.	Extreme Heat	Both	\$5,000	2	Town Parks and Recreation	Ongoing	Town Manager, Parks & Recreation Director	Town
9	Design and evaluate the concept of constructing a flood control reservoir, or series of reservoirs to intercept and store storm runoff. The concept would provide both flood control benefits but also could be a source for groundwater recharge.	Drought, Flood	Both	\$2 million	9	FEMA, Army Corps of Engineers, Maricopa County Flood Control, Town, USDA, WIFA	2018	FEMA, Army Corps of Engineers, Maricopa County Flood Control, Town, USDA, WIFA	FEMA, Army Corps of Engineers, Maricopa County Flood Control, Town, USDA, WIFA

**Table 6-7-9: Mitigation actions and projects and implementation strategy for Gila Bend**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
10	Perform investigational analyses to determine if removal of a substandard levee will provide more benefit through restoring local flood control currently blocked by levee, and remove the threat of a levee failure.	Levee Failure	Both	\$700,000	8	FEMA, Army Corps of Engineers, Maricopa County Flood Control, Town	2018	FEMA, Army Corps of Engineers, Maricopa County Flood Control, Town	FEMA, Army Corps of Engineers, Maricopa County Flood Control, Town
11	Work with MCDEM and town forces (Fire, EMS, Streets, Parks, and Sheriff) to identify and plan for evacuation routes should the local levee fail	Levee Failure	Both	N/A	10	Town and County	2016	Town	Town

**Table 6-7-10: Mitigation actions and projects and implementation strategy for Gilbert**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations to reduce risks.	Flood	Both	Staff time	High	Staff Training Floodplain Regulations	Annual-Ongoing	Floodplain Administrator/ Plans Review and Inspection Manager	General Fund Permit Fees
2	Proactive adoption of applicable master plans, land uses and developmental agreements to reduce risks.	Flood	New	Staff Time	High	Coordination with County Flood Control & Chapter 34 of Town Code	Ongoing	Engineering// Planning Service Manager	General Fund
3	Implement the appropriate stage of the Water Supply Reduction Management Plan as adopted (May 2003) to reduce water use.	Extreme Heat/Drought	Both	Staff Time	High	Coordination with Salt River Project, the Arizona Project, & AZ Department of Water Resources.	Ongoing	Water Resource Manager & Town Manager	General Fund
4	Gilbert will continue to participate in the Community Rating System (CRS) program and get credit for the various activities that assist property owners in receiving reduced insurance premiums.	Flood	Both	Staff Time	High	Coordination with Flood Control District of Maricopa County	Ongoing	Floodplain Administrator	General Fund

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
5	Work closely with FCDMC – Dam Safety to stay abreast of current mitigation efforts and timelines at Powerline FRS (two safety deficiencies)	Flood/Fissure	Both	Staff Time	High	Coordination with Flood Control District -Dam Safety	Ongoing	Floodplain Administrator/ Emergency Management Coordinator	General Fund
6	Provide pertinent weather and hazard mitigation information to the public to raise awareness of local hazards by providing local weather service and Maricopa County Hazard Mitigation links from Town of Gilbert Home page.	Extreme Heat/Flood/ Severe Wind	Both	Staff Time	Medium	Work with webmaster identify links	Ongoing	Emergency Management Coordinator/ Webmaster	General Fund
7	Participate in occasional table top exercises to identify potential mitigation measures for increasing response effectiveness such as evacuation and shelter functions.	Dam Inundation/ Levee Failure/Flood	Both	Staff Time	High	Coordination with Maricopa County Emergency Management and Flood Control	December 2015	Emergency Management Coordinator	General Fund
8	Promote the use of weather radios, especially in schools, hospitals and other locations where people congregate to inform them of the approach of severe weather.	Extreme Heat/Flood/ Severe Wind	Both	Staff Time	Medium	Coordinate with stakeholders and use of website and social media.	Ongoing	Emergency Management Coordinator/ Communication Office	General Fund
9.	Use website and social media to encourage citizens to be prepared in case of a disaster event to raise awareness and participation.	Dam Inundation/ Levee Failure/Flood/ Drought	Both	Staff Time	High	Coordinate messaging with Communication Office for delivery	Ongoing	Emergency Manager/ Communications Office	General Fund
10	Review building permits in high risk fissure areas and require engineering evaluation prior to development to reduce impacts.	Fissure	New	Staff Time	High	Development Services coordination with Town Engineers utilizing AZ Geographical Survey Maps	Ongoing	Town Engineer Permit & Plans Review and Inspection Manager	General Fund
11	Monitor ADWR Subsidence Monitoring Program’s satellite imagery for local trends and impacts with the goal of determining strategies to reduce damage and losses.	Subsidence	Both	Staff Time	High	Coordinate with ADWR	Ongoing	Water Resource Manager	General Fund

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
12	Provide link to the Arizona Department of Water Resource website as part of a public campaign to raise awareness to the hazards and locations of active subsidence.	Subsidence	Both	Staff Time	High	Coordinate with ADWR and webmaster	Ongoing	Water Resource Manager and Webmaster	General Fund
13	Improvement to Vaughn Avenue Basin to reduce potential of overtopping.	Flooding	Both	\$30,000	High	Coordinate with stakeholders	Within 2 years of receiving grant funding	Engineering/ Streets Manager/Public Works Director	General Funds/ Grants
14	Improvement to Gilbert Road and Williams Field Road Intersection Drainage to reduce local flooding.	Flooding	Both	\$750,000	High	Coordinate with stakeholders	Within 2 years of receiving grant funding	Engineering/ Streets Manager/Public Works Director	General Funds/ Grants
15	Improvement to 170 <sup>th</sup> Street and San Tan Drainage to reduce local flooding.	Flooding	Both	\$40,000	High	Coordinate with stakeholders	Within 2 years of receiving grant funding	Engineering/ Streets Manager/Public Works Director	General Funds/ Grants
16	Improvement to Coldwater Boulevard Drainage to reduce local flooding.	Flooding	Both	\$60,000	High	Coordinate with stakeholders	Within 2 years of receiving grant funding	Engineering/ Streets Manager/Public Works Director	General Funds/CIP/ Grants
17	Improvement to Powerline Trail Drainage at Holliday Farms to reduce local flooding.	Flooding	Both	\$213,000	High	Coordinate with stakeholders	Within 2 years of receiving grant funding	Engineering/ Streets Manager/Public Works Director	General Funds/CIP/ Grants
18	Improvement to Commerce Area Drainage to reduce local flooding.	Flooding	Both	\$1,156,000	High	Coordinate with stakeholders	Within 2 years of receiving grant funding	Engineering/ Streets Manager/Public Works Director	General Funds/CIP/ Grants
19	Improvement to 172nd Street south of Flintlock, implement design to protect roadway and underground utilities from future collapse and ensure rain water is diverted away from fissure area.	Flooding/ Fissure	Both	\$100,000	High	Coordinate with stakeholders	Ongoing	Engineering/ Streets Manager/Public Works Director	General Funds/ Grants

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	In partnership with The Salvation Army, provide respite care and dehydration stations. This effort mitigates loss of life during extreme temperature.	Extreme Heat	Existing	Staff time	High	Facilities Staff	On-going	Emergency Management	Donations
2	Perform a public information campaign in coordination with the City of Glendale Marketing Department and Fire Department to educate and inform citizens of safety during periods of extreme heat.	Extreme Heat	Existing	Staff time	High	Fire Department/ Marketing Staff	On-going	Fire Department Emergency Management Marketing	GDEM/FD Budget
3	Ordinance compliance and maintenance of property (weed/brush abatement)	Wildfire	Existing	Staff time	High	Code Compliance Staff	On-going	Code Compliance	General Fund Budget
4	Conduct regular inspections of washes and take corrective action by enforcing existing ordinances to prevent a corridor for wildfires.	Wildfire	Existing	Staff time	High	Staff and Coordinated inspections	On-going	Building Safety and Public Safety	General Fund Budget
5	Maintenance of Emergency Action Plan of Covered municipal water storage reservoir with a capacity of 12 million gallons. (Thunderbird Reservoir).	Dam Failure	Existing	Staff time	High	Water Services Staff	On-going	Water Services	Water Services Budget
6	Participation in the Annual ADWR inspection and survey of the Thunderbird Reservoir.	Dam Failure	Existing	Staff time	High	Water Services Staff	On-going	Water Services	Water Services Budget
7	Participation in the bi-monthly EAP drills and table top exercises.	Dam Failure	Existing	Staff time	High	Water Services Staff	On-going	Water Service	Water Services Budget
8	Water Conservation Office conducting educational outreach to the public on best practices, via classes, flyers, website, social media	Drought	Existing	Staff time	High	Water Services Staff	On-Going	Water Services	Water Services Budget
9	Encourage permanent reduction in amount of water used for landscaping purposes through Landscape Rebate up to \$750.00 for residential and \$3000 for non-residential.	Drought	New	Staff time	High	Water Services Staff	On-going	Water Services	Grant

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
10	Update Drought Management Plan (2004) to assist in management of operations when a drought is declared.	Drought	Existing	Staff time	High	Water Services Staff	On-going	Water Services	Utilities Budget
11	Conduct landscape classes (promote xeriscape) to encourage use of drought-resistant landscaping	Drought	Existing	Staff time	High	Water Services Staff	On-going	Water Services	Utilities Budget
12	Manage storm-water at its source to reduce water used for landscaping and prevent flooding. Funded in part by a grant from Water Infrastructure Finance Authority of Arizona, to develop a toolkit of low impact development options.	Drought Flood Extreme Heat	New	Staff time	High	Water Services/ Engineering	On-going	Water Services/ Engineering	Grant with City of Mesa
13	City-wide plan to control stormwater pollution, including identification of problem areas (drainage issues, illicit discharges, etc.).	Flood	Existing	Staff time	High	Engineering Staff	On-going Submitted to ADEQ for review/ approval in 2014	Engineering	Engineering Budget
14	Maintain emergency generators at water and wastewater plants, water pumping station and wastewater lift stations	Severe Wind	Existing	Staff time	High	Facilities/Water Services Staff	On-going	Various Departments	City Budget
15	Maintain emergency generators at fire stations and Glendale Regional Public Safety Training Center.	Severe Wind	Existing	Staff time	High	Facilities/FD	On-going	Various Departments	Fire Budget
16	Work with federal and state agencies, and local coalition to evaluate awareness of fissure risk zones and the problems caused by fissures.	Fissures	Existing	Staff time	High	Development Services/Planning	On-going	Development Services	City Budget
17	Geological hazards addressed in General Plan and will be incorporated in the planning process for the next General Plan.	Fissures	Existing	Staff time	High	Development Services/Planning	On-going	Development Services	City Budget

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
18	Utilization of Development Services plans and procedures to survey and monitor elevations in the City of Glendale to determine and establish long term mitigation strategies.	Subsidence	Existing	Staff time	High	Development Services/ Engineering	On-going	Development Services	City Budget
19	Development Services has utilized the risk as a regular risk of development and public work projects. The lands used for such projects are inspected for subsidence issues prior to projects starting.	Subsidence	Existing	Staff time	High	Development Services/Public Works	On-going	Development Services	City Budget
20	Educate the public through publication partnering with the Community Services Department and Parks and Recreation to inform citizens of risks associated to flood risks areas (parks multi-use pathways).	Levee Failure	Existing	Staff time	High	Community Services Department/Water Services Department	On-going	Community Services Department	City Budget
21	Work with Flood Control District of Maricopa County to determine potential effects of levee failure	Levee Failure	Existing	Staff time	High	Emergency Management, Public Works, Engineering (GIS)	On-gong	Emergency Management	City Budget
22	Participate in annual Flood Control District of Maricopa County Drill/Exercises	Levee Failure	Existing	Staff time	High	Emergency Management	On-going	Emergency Management	City Budget

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	Flood	Both	Staff time	High	Staff training floodplain regulations	Annual – Ongoing	City Engineer, Development Services Director	General Fund Fees

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
2	Promote and share mitigation programs with state, county, local jurisdictions, and private, civic, and non-profit organizations.	Multi-Hazards	Both	Staff Time	Medium	Inter-agency coordination, Staff training	Annual-Ongoing	Fire Chief/ Emergency Manager	General Fund/Grants
3	Use newsletters, flyers, utility bill inserts, website notices, radio and television announcements, social media and newspaper articles to educate the public about hazards impacting Goodyear and how to be prepared in case of an emergency or disaster event.	All Hazards	Both	Staff Time	High	Staff training Department/ Division coordination	Annual-Ongoing	Communications Division/PIOs/ Emergency Manager	General Fund
4	Provide links on the community's website to sources of hazard mitigation educational materials encouraging residents of Goodyear to be prepared for hazard emergencies.	All Hazards	Both	Staff Time	Medium	EM division/ Communications division coordination	Annual-Ongoing	Emergency Manager	General Fund
5	Participate in occasional dam failure tabletop exercises to identify mitigation measures for increasing response effectiveness, such as evacuation route marking and permanent protection measures for intended shelters.	Dam Inundation	Both	Staff time	Medium	Maricopa County EM/	Annual-Ongoing	Emergency Manager	General Fund
6	Mandate, encourage or incentivize the use of drought resistant landscaping through ordinance development and/or enforcement.	Drought	Both	Staff time	Medium	Staff training Department/ Division coordination	Annual-Ongoing	City Engineer, Development Services Director	General Fund
7	Develop, update and maintain a local Drought Management Plan to define various levels of conservation or curtailment requirements that are based on drought severity triggers, system impacts, and enforced through utility billing structures and ordinance.	Drought	Both	Staff time	Medium	Inter-Departmentally updated & vetted	Annual-Ongoing	Water Resources Division	General Fund
8	Partner with NGO's to provide respite care and hydration stations to mitigate loss of life during extreme temperature events.	Extreme Heat	Both	Staff time	High	MCDEM/EM coordination	Annual-Ongoing	Emergency Manager	General Fund
9	Perform an information campaign at the onset of the extreme heat season to help educate the general public on ways to remain safe during periods of extreme heat.	Extreme Heat	Both	Staff time/ Volunteers	High	EM Division/ Community Risk Reduction Division coordination	Annual-Ongoing	Emergency Manager	General Fund

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
10	Identify and communicate locations within the community that can serve as cooling stations during times of extreme heat.	Extreme Heat	Both	Staff time/ Volunteers	High	EM Division/ Community Risk Reduction Division coordination	Annual- Ongoing	Emergency Manager	General Fund
11	Provide links to the Arizona Geologic Service website as a part of a public campaign to raise awareness to the hazards and locations of fissures.	Fissure	Both	Staff time	Medium	EM Division/ Communications Division	Q3, 2015	Emergency Manager	General Fund
12	Include addressing fissure and subsidence risk as a regular part of the land development and public works projects review and permitting processes.	Fissure, Subsidence	Both	Staff time	Medium	Staff training department/ Division coordination	Annual- Ongoing	City Engineer, Development Services Director	General Fund
13	Participate in the Flood Control District of Maricopa County annual county-wide flood exercises to identify areas of mitigation interest regarding vulnerable critical infrastructure, emergency access and routes issues.	Flood	Both	Staff time	High	Flood Control District/ MCDEM/EM coordination	Annual- Ongoing	Emergency Manager	General Fund
14	Provide severe weather information to the City of Goodyear first responders and other employees that work outdoors for them to be aware to wear the proper personal protection equipment.	Extreme Heat, Flood, Severe Wind	Both	Staff time	High	NWS/ EM Division coordination	Annual- Ongoing	Emergency Manager	General Fund
15	Work with the Flood Control District of Maricopa County to develop and update flood response plans as they pertain to the City of Goodyear and surrounding areas.	Flood	Both	Staff time	High	Flood Control/ EM Division	Annual- Ongoing	Emergency Manager	General Fund
16	Encourage/incentivize homeowners to use tie-down straps and/or anchors to secure metal awnings or porches to mitigate the potential for flying debris during severe wind events.	Severe Wind	Both	Staff time/ Volunteers	Medium	Community Risk Reduction	Annual- Ongoing	Emergency Manager	General Fund
17	Install backup generators at key critical facilities such as fire and police stations, water pumping stations, sewer lift stations, etc., to provide emergency power for critical operations during power failures caused by severe wind events.	Severe Wind	Both	\$60k- \$100k	High	Public Works	EOY 2015	Public Works	Enterprise Funds and General Fund

**Table 6-7-12: Mitigation actions and projects and implementation strategy for Goodyear**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
18	Provide links to Arizona Department of Water Resources website as part of a public campaign to raise awareness to the hazards and locations of active subsidence.	Subsidence	Both	Staff time	Medium	EM Division/ Communications Division coordination	Q3,2015	Emergency Manager	General Fund
19	Enforce the City of Goodyear's weed abatement ordinance.	Wildfire	Both	Staff time/ Volunteers	High	Code Compliance	Annual-Ongoing	Building Official	General Fund
20	Educate the public on proper fuels thinning, setbacks, and water storage for wildfire mitigation using Firewise type of programs and guidance documents.	Wildfire	Both	Staff time	High	Fire Department/EM coordination	Annual-Ongoing	Fire Chief/Emergency Manager	Grant Funding
21	Conduct wildfire safety education programs in the local schools through the Community Risk reduction program.	Wildfire	Both	Staff time/ Volunteers	High	Community Risk Reduction Division/EM coordination	Annual-Ongoing	Emergency Manager	General Fund

**Table 6-7-13: Mitigation actions and projects and implementation strategy for Guadalupe**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	Flood	Both	Staff time	Low	Town General Plan/Code Review	Ongoing	Building Inspector/ Contractor	General fund
2	Implement the education and mitigation actions as outlined in the town's Stormwater Management Plan.	Flood	Both	Staff time	Low	Stormwater Management Plan	Ongoing	Building Inspector/ Contractor	General fund
3	Establish periodic monitoring and review of the Town of Guadalupe's general plan and zoning ordinance to determine effectiveness at preventing and mitigating hazards. Based on the results, amend as necessary.	Multi-Hazard	Both	Staff time	Low	Town General Plan	Ongoing	Town Manager or designee	General fund

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
4	Participate in occasional table top exercises to identify potential mitigation measures for increasing response effectiveness, such as evacuation route marking and permanent protection measures for intended shelters.	Dam Inundation	Existing	Staff time	Low	Flood Control Plan/ Emergency Operations Plan	2018	Emergency Manager	General fund
5	Develop or update the inundation mapping for the emergency action plan for Guadalupe Retention Dam in order to identify population and critical facilities and infrastructure at risk, and to determine the need for potential mitigation.	Dam Inundation	Existing	Staff time	Low	Flood control Plan	Ongoing	Flood Control District	General fund
6	Public education of water conservation best practices through newsletter, flyers, social media and website notices.	Drought	Both	Staff time	Low	Drought Management Plan	Ongoing	Community Development	General fund
7	Develop a local Drought Management Plan to define various levels of conservation requirement that are based on drought severity triggers.	Drought	Both	Staff time	Low	Drought Management Plan	Ongoing	Community Development	General fund
8	Perform a public campaign at the onset of the extreme heat season to help educate the general public on ways to remain safe during periods of extreme heat.	Extreme Heat	Both	Staff time	Med	Extreme Heat Plan	Ongoing	Fire Dept – Public Information Officer (PIO)	General fund
9	Identify, stock, and communicate locations within the community that can serve as cooling stations during times of extreme heat.	Extreme Heat	Both	Staff time	Med	Extreme Heat Plan	Ongoing	Fire Dept Emergency manager	General fund
10	Review and update stormwater management plan that will analyze and identify problem flooding areas and propose long-term mitigation alternatives designed to reduce or eliminate the flood problems.	Flood	Both	Staff time	Low	Storm water management plan	Ongoing	Building Inspector/ Contractor	General fund
11	Work with Flood Control District of Maricopa County to review, update, and/or augment flood control ordinances to provide a greater level of protection than the minimum required by the NFIP.	Flood	Both	Staff time	Low	Storm water management plan	Ongoing	Building Inspector/ Contractor	General fund

**Table 6-7-13: Mitigation actions and projects and implementation strategy for Guadalupe**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
12	Review existing buildings, evaluate any substandard construction issues and implement repair and upgrade plan for future wind damage.	Severe Wind	Existing	Staff time	Low	Hazard mitigation Plan	Ongoing	Building Inspector/ Contractor	General fund
13	Encourage homeowners to use tie-down straps and/or anchors to secure ancillary buildings and metal awnings or porches to mitigate the potential for flying debris during severe wind events.	Severe Wind	Both	Staff time	Low	Hazard Mitigation Plan	Ongoing	Emergency manager	General fund

**Table 6-7-14: Mitigation actions and projects and implementation strategy for Litchfield Park**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	Flood	Both	Staff Time	High	NFIP/Staff Training/Floodplain Regulations	Annual-Ongoing	City Engineer	General Fund/Permit Fees
2	Annually coordinate with federal, state, and local dam owners to get updates on any changes in dam safety conditions and emergency action plan information.	Dam Inundation	Both	Staff Time	High	Coordination with Flood Control District -Dam Safety	Annually	Flood Control District of Maricopa County	General Fund
3	<i>Review Emergency Operations Plan for areas that can be updated in accordance with current warning measures that are now available through the national Weather Bureau and the Maricopa County Emergency Services.</i>	<i>All Hazards</i>	<i>Both</i>	<i>Staff Time</i>	<i>High</i>	<i>Emergency Management Coordinator tasks</i>	<i>Annual-Ongoing</i>	<i>Goodyear Fire / Maricopa County Sheriff, EM Coordinator, Public Works</i>	<i>General Fund</i>
4	Encourage city staff to become members of regional organizations that have hazard mitigation as a mission, to share in regional efforts and solutions to local and regional problems.	All Hazards	Both	Staff Time	High	Staff Training	Annual-Ongoing	Emergency Management Coordinator	General Fund

**Table 6-7-14: Mitigation actions and projects and implementation strategy for Litchfield Park**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
5	Develop a policy to replace the use of hazardous materials with other products as soon as a safe, reliable source is available and proven to be as effective.	HAZMAT	Both	Staff Time	High	Staff Training	Ongoing	Public Works/Director	General Fund
6	Provide links on the community's website to sources of hazard mitigation educational materials (e.g. – <a href="http://www.ready.gov/">http://www.ready.gov/</a> and <a href="http://do1thing.com/">http://do1thing.com/</a> ) encouraging private citizens to be prepared for hazard emergencies.	All Hazards	N/A	Staff Time	Medium	Emergency Management Coordinator tasks and coordination with Fire and LE partners	Ongoing - Monthly	Emergency Management Coordinator	General Fund
7	Perform a public information campaign at the onset of the extreme heat season to help educate the general public on ways to remain safe during periods of extreme heat.	Extreme Heat	N/A	Staff Time	Medium	Staff	Ongoing-Seasonal	Emergency Management Coordinator/PIO	General Fund
8	Include addressing subsidence risk as a regular part of the land development and public works projects review and permitting.	Subsidence	Both	Staff Time	Low	Engineering Review	Ongoing	City Engineer	General Fund
9	Review building permits for compliance with International Building Code for structure compliance to endure severe winds and electrical strikes, use drought resistant plumbing fixtures, and flood proofing.	Drought, Flood, Severe Wind, Lightning Strike	Both	Staff Time	Medium	IBC/Staff Training	Annual-Ongoing	Public Works / City Engineer	General Fund

**Table 6-7-15: Mitigation actions and projects and implementation strategy for Mesa**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Maintain continuous water supply by continuing to install/replace water distribution system throughout the City of Mesa	Drought	Both	\$120 M	High	5yr-CIP	2018	Water Resources & Engineering Dept.	Voters Approved 2014 Bond

**Table 6-7-15: Mitigation actions and projects and implementation strategy for Mesa**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
2	CAP (Signal Buttes WTP), future treatment plant at Elliot and Ellsworth	Drought	Both	\$130 M	High	5yr-CIP	2019	Water Resources & Engineering Dept.	Voters Approved 2014 Bond
3	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	Flood	Both	Staff time	High	City of Mesa Storm Drain Master Plans	On-going	Development Services, Engineering Dept.	General Fund, Permit Fees
4	Construct remaining elements of the Storm Drain Master Plan	Flood	Both	\$108M	High	City of Mesa Storm Drain Master Plan.	On-going	Engineering Dept.	General Fund, Grants & future CIP budget.
5	Perform public information campaign at the start of the extreme heat season to educate the public.	Extreme Heat	Both	Staff time & cost of supplies	High	On-going operations	At the extreme event	Fire Dept. & Public Information office.	General Fund
6	Partner with NGO's (e.g. – The Salvation Army, church organizations, shelters, etc.) to provide respite care and hydration stations to mitigate loss of life during extreme temperature events.	Extreme Heat	Both	Staff time & cost of supplies	High	City of Mesa Emergency Operations Plan	At the extreme event	Fire Dept. & Public Information Office.	General Fund
7	Provide links on the City of Mesa Website to sources of hazard mitigation educational materials encouraging private citizens to be prepared for hazard emergencies.	Dam Failure, Levee Failure	Both	Staff time	Low	City of Mesa Emergency Operations Plan	On-going	Fire Dept. & Public Information Office.	General Fund
8	Participate/Conduct table top exercises to identify potential mitigation measures for increasing response effectiveness in the event of a dam failure.	Dam Failure, Levee Failure	Both	Staff time	Low	City of Mesa Emergency Operations Plan	On-going	Development Services & Engineering Dept.	General Fund
9	Address fissure risk as a regular part of development & public works projects review.	Fissure	Both	Staff time	Low	Building Code (Geo Tech report)	On-going	Development Services & Engineering Dept.	General Fund
10	Clear vegetation & wildfire fuels to create a clear space around critical structures.	Wild Fire	Both	Staff time	Medium	Code enforcement & Fire Dept.	On-going prior & during the dry season	Fire Dept. & Development Services	General Fund

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
11	Enforce burn & fireworks bans as needed during dry season. Enforce weed abatement ordinance.	Wild Fire	Both	Staff time	Medium	Code enforcement & Fire Dept.	On-going prior & during the dry season	Fire Dept. & Development Services	General Fund
12	Maintain/install back-up generators at critical facilities such as Fire & Police Stations, water pumping stations, sewer lift stations, etc., to provide emergency power for critical operations during power failures caused by severe wind events.	Severe Wind	Both	\$2 M + staff time.	High	Fire Department Emergency Management Division	2019	Water Resources, Engineering, Development Services, Facilities Maintenance	General Fund and CIP budget
13	Provide links on the City of Mesa website to sources of hazard mitigation educational materials encouraging private citizens to be prepared for hazard emergencies.	Severe Wind	Both	Staff time	High	City of Mesa Emergency Operations Plan	On-going	Fire Dept. & Public Information Office.	General Fund
14	Include the subsidence risk as a regular part of development & public works projects review.	Subsidence	Both	Staff time	Medium	Building Code	On-going	Development Services & Engineering Dept.	General Fund
15	Provide links to ADWA website to raise awareness to locations of active subsidence.	Subsidence	Both	Staff time	Medium	Building Code	On-going	Development Services & Engineering Dept.	General Fund
16	Provide links to Arizona Geologic Service website to raise awareness to the hazard & locations of fissures.	Fissure	Both	Staff time	Low	Building Code (Geo Tech report)	On-going	Development Services & Engineering Dept.	General Fund
17	The City of Mesa provides information to the public using the Community Emergency Notification System (CENS), also called Reverse 9-1-1. If an event occurs the 9-1-1 dispatch center in Mesa will call and provide information and/or instruction to subscribers.	Levee Failure, Dam Failure	Both	Staff time	Low	City of Mesa Communications (9-1-1 Emergency System)	On-going	City of Mesa Communications	General Fund

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Review building permit applications for compliance with Floodplain Ordinance and NFIP regulations.	Flood	Both	Staff time	High	Staff Training Floodplain Regulations	Annual-Ongoing	Engineering Department	General Fund Permit Fees
2	Continue the under grounding project for existing utilities on major roads thereby eliminating utility poles.	Severe Wind	Both	\$3,800,000	High	Capital Improvement Project	2020	Engineering Department	Capital Improvement Fund
3	Conduct regular inspections of washes to ensure that they are maintained in a debris free condition.	Flood	Both	Staff time	Med	Not Applicable	Annual-Ongoing	Community Development Department	General Fund
4	Conduct regular inspections of washes and take corrective action by enforcing existing ordinances to prevent a corridor for wildfires.	Wildfire	Both	Staff time	Med	Not Applicable	Annual-Ongoing	Community Development Department	General Fund
5	<i>Update the current Emergency Operations Plan.</i>	<i>All Hazards</i>	<i>Both</i>	<i>Staff time</i>	<i>Med</i>	<i>Not Applicable</i>	<i>Ongoing</i>	<i>Community Development Department Emergency Management Unit</i>	<i>General Fund</i>
6	Maintain effective communications with state, county and local government agencies by the various town departments within their respective responsibility.	Drought, Extreme Heat, Flood, Severe Wind, Subsidence, Wildfire	Both	Staff time	Med	Not Applicable	Ongoing	All Departments	General Fund
7	Educate and inform residents, businesses and visitors by conducting a media campaign, via local newspaper to publicize ways to mitigate disasters including steps that they can protect themselves.	Drought, Extreme Heat, Flood, Severe Wind, Subsidence, Wildfire	Both	Staff time \$5,000 for brochures	High	Not Applicable	Annual-Ongoing	Community Development & Engineering Departments	General Fund
8	Adopt 2012 International Codes (IBC, IRC, IPC, IMC) and 2011 National Electric Code for use by the town	Flood Severe Wind Subsidence	New	Staff time \$3,000 for books	Med	Staff & Contractor Training	January 1, 2016	Community Development Department Building Safety Division	General Fund Permit Fees

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	Flood	Both	Staff Time	High	Staff training Floodplain regulations	Annual -On going	Planning and Zoning	General Funds Permit Fees
2	Assist with the revision of a water conservation plan for mitigating the impact of a drought on the public water supply.	Drought	Both	Staff Time	High	Plan development	Annual	Public Works	General funds
3	Work with the Flood Control District of Maricopa County to determine potential effects of a flash flood or flood affecting the city. Also provide sandbags and sand as required.	Flooding	Both	Staff Time	High	Plan development	Annual	Public Works, City Engineering and Emergency Management	Enterprise funds
4	Work with the Flood Control District of Maricopa County to determine potential effects of a levee failure.	Levee Failure	Both	Staff Time	High	Plan development	Annual	Public Works, City Engineering and Emergency Management	General funds
5	Encourage a fire buffer along wild land-urban interface areas.	Wildfire	New	Staff Time	Medium	Building regulations and public awareness	Annual	Public Works, City Engineering and Fire Department	General funds
6	Incorporate hazard profile data into city's GIS for mapping of floodways, high wind areas, subsidence areas, hazardous materials, etc.	All Hazards	Both	Staff Time	High	Plan development	On going	Public Works, City Engineering and Emergency Management	General funds
7	<i>Train key city staff on appropriate actions based on the Emergency Operations Plan.</i>	<i>All</i>	<i>New</i>	<i>Staff Time</i>	<i>High</i>	<i>Staff training</i>	<i>On going</i>	<i>Emergency Management</i>	<i>General funds</i>
8	<i>Participate in regional training opportunities as well as Emergency Operations Command exercises within city to prepare for emergencies.</i>	<i>All</i>	<i>Both</i>	<i>Staff Time</i>	<i>Medium</i>	<i>Staff training</i>	<i>On going</i>	<i>Emergency Management and most city departments</i>	<i>General funds</i>
9	<i>All Fire Department personnel should be trained at Operations level, currently command staff are trained at Operations – rest of personnel are trained at awareness level.</i>	<i>All</i>	<i>Existing</i>	<i>Staff Time</i>	<i>Medium</i>	<i>Staff training</i>	<i>On going</i>	<i>Fire Department</i>	<i>General funds</i>

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
10	<i>Police Department personnel should be trained at Operations level, currently command staff are trained at Operations – rest of personnel are trained at awareness level.</i>	All Hazards	Existing	Staff Time	Medium	Staff training	On going	Police Department	General funds
11	Control development in flood areas	Flood	Existing	Staff Time	High	Floodplain regulations	Annual	Planning and Zoning	General funds
12	Encourage flood-proof measures through building design	Flood	Existing	Staff Time	High	Floodplain regulations and public awareness	Annual	Building safety and Economic Development	General funds
13	Utilize Public Service Announcements (PSAs) broadcast on Channel 11 to communicate hazard risk and emergency information. Produce corresponding flyers to be distributed to residents via utility bill mailings	All Hazards	Existing	Staff Time	Medium	Staff training	On going	Office of Communications, Public Works and Emergency Management	General funds
14	Research identified data limitations affecting the relative vulnerability of assets to drought	Drought	Existing	Staff Time	High	Plan development	Annual	Public Works and GIS	General funds
15	The City of Peoria will use newsletters, website notices, social media and newspaper articles to educate the public about hazards impacting the city and how to be prepared in the case of a disaster.	All Hazards	New	Staff time	Medium	Public awareness	On going	Office of Emergency Management and the Office of Communications	General Funds
16	The City of Peoria will provide links on the emergency management webpage for sources of hazard mitigation educational materials such as <a href="http://www.fema.gov">www.fema.gov</a> encouraging private citizens to be prepared for hazard emergencies.	All Hazards	New	Staff time	Medium	Public awareness	On going	Office of Emergency Management and the Office of Communications	General Funds
17	The City of Peoria will review and assess building and residential codes currently in use to determine if newer, more up-to-date codes are available or required related to hazard mitigation.	All Hazards	New	Staff time	Medium	Plan development	On going	Building safety and Economic Development	General Funds

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
18	The city will continue to promote the Storm Ready program and the use of weather radios, especially in schools, hospitals and other locations where people congregate to inform them of the approach of severe weather events.	Flood, Extreme	New	Staff time	Medium	Public awareness	On going	Office of Emergency Management and the Office of Communications	General Funds
19	The City of Peoria working with Flood Control District of Maricopa County will continue to analyze and identify dam failure inundation limits to identify evacuation routes.	Dam Failure	Both	Staff Time	High	Plan development	Annual	Public Works, City Engineering and Emergency Management	General funds
20	The City of Peoria will participate/conduct occasional table top exercises to identify potential mitigation measures for increasing response effectiveness, such as evacuation route marking and permanent protection measures for intended shelters.	Dam Failure	New	Staff time	Medium	Public awareness	On going	Office of Emergency Management	General Funds
21	The City of Peoria working with the Flood Control District of Maricopa County will update the inundation mapping for the emergency action plan for Lake Pleasant in order to identify population and critical facilities and infrastructure at risk, and to determine the need for potential mitigation.	Dam Failure	existing	Staff time	High	Floodplain regulations and public awareness	Annual	The Office of Emergency management and various City Departments	General funds
22	The City of Peoria will conduct public education of water conservation best practices through a variety of media such as newsletter, flyers, social media and website notices.	Drought	Existing	Staff Time	High	Plan development	Annual	Public Works and Office of Communications	Enterprise funds
23	The City of Peoria encourages the use of drought resistant landscaping through ordinance development and/or enforcement.	Drought	Existing	Staff Time	High	Plan development	Annual	Public Works and GIS	Enterprise funds
24	The City of Peoria will continue to develop/update our local Drought Management Plan to define various levels of conservation requirements that are based on drought severity triggers.	Drought	Existing	Staff Time	High	Plan development	Annual	Public Works and GIS	Enterprise funds

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
25	The City of Peoria as practical will continue to use reclaimed water to irrigate city owned landscape or other operations such as our truck washing station.	Drought	Existing	Staff Time	High	Plan development	Annual	Public Works, Community Services & Economic Development	General funds
26	City of Peoria will continue to identify and communicate locations within the community that can serve as cooling stations during times of extreme heat.	Extreme Heat	New	Staff time	High	Public awareness	Ongoing	Office of Emergency Management and the Office of Communications	General Funds
27	Perform a public information campaign at the onset of the extreme heat season to help educate the general public on ways to remain safe during periods of extreme heat.	Extreme Heat	New	Staff time	Medium	Floodplain regulations and public awareness	Ongoing	Office of Emergency Management and the Office of Communications	General Funds
28	The City of Peoria will review, update and/or augment flood control ordinances to provide a greater level of protection than the minimum required by the NFIP.	Flood	Existing	Staff time	Medium	Floodplain regulations and public awareness	Ongoing	The Office of Emergency management and various City Departments	General funds
29	Identify and map flood hazards in areas expected to grow or develop in the foreseeable future.	Flood	New	Staff time	Medium	Floodplain regulations and public awareness	Ongoing	GIS	General funds
30	The City of Peoria will continue to develop/augment a citywide GIS program that is integrated into Public Works, Development Services, Police, Fire/Rescue and Emergency Management to help prevent development in flood prone regions.	Flood	New	Staff time	Medium	Public awareness	Ongoing	Office of Emergency Management and various City Departments	General Funds
31	Perform public outreach to citizens located within levee failure flood risk areas to provide awareness of potential increase in flood elevations with a levee failure.	Levee Failure	New	Staff time	Medium	Public awareness	Ongoing	The Office of Emergency management and various City Departments	General funds
32	Encourage homeowners to use tie-down straps and/or anchors to secure ancillary buildings and metal awnings or porches to mitigate the potential for flying debris during severe wind events.	Severe Wind	New	Staff time	Medium	Public awareness	Ongoing	The Office of Emergency management and various City Departments	General funds

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
33	Retrofit sub-standard roofs of key critical facilities and infrastructure to meet modern building code standards and mitigate damages and impacts of severe wind events.	Severe Wind	New	Staff time	Medium	Plan development	Ongoing	Building safety and Economic Development	General funds
34	Include addressing subsidence risk as a regular part of the land development and public works projects review and permitting.	Subsidence	New	Staff time	Medium	Public awareness	Ongoing	Public Works, City Engineering, Building Safety	General funds
35	Provide links to the Arizona Department of Water Resources website as a part of a public campaign to raise awareness to the hazards and locations of active subsidence.	Subsidence	New	Staff time	Medium	Public awareness	Ongoing	Public Works, City Engineering & Building Safety	General funds
36	Establish survey monuments and monitor elevations in critical or key areas of the community to measure impacts and trends of subsidence, with the goal of determining long term mitigation strategies to reduce the damage and losses that may yet be experienced.	Subsidence	New	Staff time	Medium	Public awareness	Ongoing	Public Works, City Engineering & Building Safety	Grant funding
37	Develop and/or enforce a weed abatement ordinance.	Wildfire	New	Staff time	Medium	Plan development and Public awareness	Ongoing	Code Enforcement	General funds
38	Educate public on proper fuels thinning, setbacks, and water storage for wildfire mitigation using Firewise type of programs and guidance documents.	Wildfire	New	Staff time	Medium	Public awareness	Ongoing	Fire Department	General Funds/grants
39	The Peoria Fire Department will conduct Fire safety education programs where appropriate such as Peoria and Deer Valley Schools as well as other educational facility and public events such as G.A.I.N. night.	Wildfire	New	Staff time	Medium	Public awareness	Ongoing	Fire Department	General Funds/grants
40	Enact and enforce burn and fireworks bans as needed during extraordinarily dry and extreme wildfire conditions / seasons to mitigate possible, unintended wildfire starts.	Wildfire	New	Staff time	Medium	Public awareness	Ongoing	Fire Department	General Funds/grants

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	Flood, Dam Inundation,	Both	Staff Time	High	Staff Training, Plan Review	Annual-Ongoing	Street Transportation / Floodplain Manager	General Funds
2	Continue to include in the General Plan policies that protect the natural flow regimes of washes and designate areas for Open Space and Preserves.	Flood, Dam Inundation	Both	Staff time	High	Land acquisition and natural resource protection	Annual - ongoing	Parks and Recreation / PPPI Administrator	Phoenix Parks Preserves Initiative; General Fund; Bonds
3	Storm Drain CIP Program. Construct drainage facilities to mitigate flooding hazard to residents of the city.	Flood, Levee Failure	Both	Variable	High	Staff Training, Plan Review, Design and Construction	Ongoing	Street Transportation Department/ Deputy Street Transportation Director	Bonds/Impact Fees
4	Coordinate data sharing and development communication within city departments through documentation in GIS	Flood, Extreme Heat	Both	Staff time	High	GIS	Annual - ongoing	Planning and Development Department / Planning Researcher	General Fund
5	Summer Respite regional program to network with faith-based organizations to provide heat relief, hydration and respite with wellness checks. Program services are provided for the affected populations.	Extreme Heat	N/A - people	Donations totaling \$70,000 annually	High	Heat Relief Network	Annual - ongoing	Human Services/Family Advocacy Director	Corporate, Community, and faith-based contributions
6	Maintain and execute the Drought Response Plan (Revision in Draft - No Ordinance Change)	Drought	Both	Staff Time	Medium	Master Plan Update and Water Resource Plan Update	Ongoing	Water	WSD Operating Budget
7	Maintain and execute a water use awareness outreach program.	Drought	Both	Staff Time	Medium	Master Plan Update, Water Resource Plan Update, Drought Response Plan	Ongoing	Water	WSD Operating Budget
8	Revise and ratify the General Plan every ten years.	Flood	Both	Staff time	Medium	State statute; Smart Growth Requirement	Ongoing	Planning and Development Department/ Planning Manager	General Fund

**Table 6-7-18: Mitigation actions and projects and implementation strategy for Phoenix**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
9	Update and adopt a revised building code.	Flood, Severe Wind, Excessive Heat	Both	Staff time; Materials	Medium	Staff training; Community Outreach; Plan review	Annual - ongoing	Planning and Development Department / Assistant Director	Permit fees
10	Continue to insure zoning stipulations are met before construction permits are issued, and zoning is compatible with the zoning ordinance.	Flood, Excessive Heat	Both	Staff time	Medium	Zoning Ordinance; Staff training; Plan review	Annual - ongoing	Planning and Development Department / Deputy Director	Permit fees
11	Dam/Levee Safety Program – Operate and Maintain Dams/Levees to mitigate flooding hazard to the residents of the city.	Flood, Dam Inundation, Levee Failure	Both	Staff Time, Materials	Medium	Staff Training, Plan Review	Annual - Ongoing	Street Transportation Department / Deputy Street Transportation Director	General Funds
12	Continue to provide links on the Phoenix.gov/Office of Emergency Management website to sources of hazard mitigation educational materials such as FEMA.gov and Ready.gov	Dam Inundation, Drought, Flood, Severe Wind, Wildfire	Both	Staff Time	Medium	N/A	Annual - ongoing	Office of Homeland Security and Emergency Management, City of Phoenix IT	General Funds
13	Continue to adhere to the City of Phoenix Building Standards and Review Process, which are regularly updated. The Building and Review Process requires site assessment for presence of, among other conditions, subsidence and fissures.	Subsidence, Fissure	Both	Staff Time	Medium	Staff Training, Plan Review, Design and Construction	Annual - ongoing	Street Transportation Department: Design and Construction Management	General Funds
14	Enforce City Ordinance 39-7D, which addresses overgrown vegetation, dead trees, brush and weeds or other conditions that present a health, fire or safety hazard.	Wildfire	Both	Staff Time	Low	Staff Training, Zoning Ordinance Review	Annual – Ongoing	Neighborhood Services Department	General Funds
15	Coordinate with private companies and public agencies to study and map subsidence and fissure activity in critical or key areas of the community so that effective mitigation or avoidance strategies can be implemented.	Subsidence, Fissure	Both	Staff Time	Low	Staff Training, Plan Review, Design and Construction	Annual - ongoing	Street Transportation Department: Design and Construction Management	General Funds

**Table 6-7-19: Mitigation actions and projects and implementation strategy for Queen Creek**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	Flood	Both	Staff time	High	Staff Training Floodplain Regulations	Ongoing	Development Services/ Floodplain Administrator	General Fund Permit Fees
2	Construct Box Culvert at Ocotillo Road and Queen Creek between Power and Recker Roads.	Flood	New	\$400,000	High	CIP	2015	Public Works CIP Division/CIP Project Manager	General Fund LTAF Gilbert IGA
3	Annually coordinate with county to obtain updates on any changes in dam safety conditions and emergency action plans.	Dam Inundation	Both	Staff time	Low	Emergency Action Plan for Powerline, Vineyard Road & Rittenhouse FRS	Ongoing	Fire & Medical Dept./Emergency Mgmt Coord	Emergency Services Fund
4	Educate and inform residents about dam safety through the town's website and links to the Flood Control District of Maricopa County.	Dam Inundation	Both	Staff time	Low	N/A	Ongoing	Fire & Medical Dept./Emergency Mgmt Coord	Emergency Services Fund
5	Educate and inform residents about water conservation through newsletters, social media, inserts, new customer packets, water wise workshops, high use notifications, regularly scheduled meter change outs and the town's website.	Drought	Both	Staff time	Medium	ADEQ Required Best Management Practices (BMPs)	Ongoing	Utilities Services Dept./Water Conservation Spec.	Utilities Services Fund
6	Maintain the town's Integrated Emergency and Drought Response Plan (ERDP).	Drought	Both	Staff time	High	Integrated Emergency and Drought Response Plan (ERDP)	Ongoing	Utilities Services Dept./Water Division	Utilities Services Fund
7	Educate and inform residents about extreme heat through newsletters, social media, inserts and/or the Town's website.	Extreme Heat	Both	Staff time	Low	N/A	Ongoing	Fire & Medical Dept./Emergency Mgmt Coord	Emergency Services Fund
8	Incorporate respite care and hydration stations into the CERT Shelter Management Continuing Education (CE) Program	Extreme Heat	Both	Staff time	Low	CERT Continuing Education (CE) Program	Ongoing	Fire & Medical Dept./Emergency Mgmt Coord	Emergency Services Fund
9	Educate and inform residents about fissures through the town's website and links to the Arizona Geologic Service website.	Fissure	Both	Staff time	Low	N/A	Ongoing	Development Services Dept.	General Fund

**Table 6-7-19: Mitigation actions and projects and implementation strategy for Queen Creek**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
10	Review permit submittals for proximity to Earth Fissure Map that may require additional geological report.	Fissure Subsidence	New	Staff time	Medium	Staff Training Earth Fissure Map of the Chandler Heights Study Area	Ongoing	Development Services Dept./Engineering	General Fund Permit Fees
11	Complete an agreement with the Roosevelt Water Conservation District (RWCD) for the exchange of the town's reclaimed effluent for CAP credits.	Subsidence Fissure	Both	Staff time \$300,000	High	CIP Greenfield Wastewater Treatment Plant Agreement	Winter 2015	Utilities Services Department	Utilities Services Fund
12	Install backup generators with the construction of Fire Station 411 and the Public Safety Administration Building.	Severe Wind	New	TBD	High	CIP/Design-Build project	Fall 2016 and Spring 2017	Fire & Medical Department	TBD for FY16
13	Identify opportunities to underground 12Kv power lines to mitigate power failures caused by severe wind events.	Severe Wind	Existing	\$945,000	Medium	CIP	Ongoing	Public Works CIP Division/CIP Project Manager	SRP Aesthetic Funds General Fund
14	Encourage fire buffer zones around the north face of the San Tan Mountains to prevent entry into the Box Canyon Area.	Wildfire	Both	Staff time	Medium	Maricopa County Community Wildfire Protection Plan	Ongoing	Fire & Medical Department	Emergency Services Fund
15	Conduct a Community Hazard Risk Assessment and include the evaluation of wildfire hazard.	Wildfire	Both	Staff time	High	ICMA Center for Public Safety Management Fire Master Plan	Winter 2015	Fire & Medical Department	Emergency Services Fund

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Community Relations in coordination with Emergency Management to conduct public outreach/education on all hazards mitigation and emergency preparedness for community members. Community members that are educated on what to do before and during a disaster will reduce the loss of life and property in a disaster.	All Hazards	Both	0	high	TERC	ongoing	Emergency Management/Community Relations Office	N/A
2	Conduct fuel mitigation project of heavy fuels/large trees in the Preserve to mitigate wildland fire damages and spread.	Wildfire	Existing	\$3,000/ac	high	Community Wildfire Protection Plan	2018	Fire/Fire Chief	BIA Grant
3	Replace existing Health and Human Services building with one designed to not flood due to having basement and older type construction	Flood	both	\$30 million	high	CIP	2020	ECS/ Construction Division	CIP
4	Conduct Master Drainage Study north of Arizona Canal to reduce flooding and develop water retention restore methods.	Flood Drought Subsidence	both	\$330,000	High	CIP	2015	ECS/Design Division	CIP
5	Conduct Fuel reduction project of light fuels in Preserve area to minimize the rapid spread of fire in this area.	Wildfire	Existing	\$40,000	High	Fire Management Plan	2016	ECS/ Construction Division	General Fund
6	Implement a water harvesting program through the location, design and construction of dual functioning stormwater retention facilities with enhanced recharge elements designed into the basin.	Drought Flood Subsidence	both	\$50,000	medium	General Plan	2018	ECS/ Design Division	CIP
7	Complete process of Maintain/Install backup generators at key critical facilities such as fire and police stations, water pumping stations, sewer lift stations, etc., to provide emergency power for critical operations during power failures caused by severe wind events	Severe Wind	both	\$100,000	medium	CIP	2017	Public Works/ Facility Maintenance Division	CIP

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
8	Encourage homeowners to use tie-down straps and/or anchors to secure ancillary buildings and metal awnings or porches to mitigate the potential for flying debris during severe wind events.	Severe Wind	both	Staff Time	medium	Code of Ordinance	2016	Public Works/ ECS	N/A
9	Participate/conduct occasional table top exercises to identify potential mitigation measures for increasing response effectiveness, such as evacuation route marking and permanent protection measures for intended shelters.	Dam Failure	both	Staff Time	high	EMPG Work Plan	2015	Emergency Management/ Emergency Manager	EMPG Grant
10	Annually coordinate with federal, state, and local dam owners to get updates on any changes in dam safety conditions and emergency action plan information so that they can be integrated into SRPMIC response plans.	Dam Failure	both	Staff Time	high	Federal Dam Safety Inspection Program	2015	Public Works/ Assistant Director	N/A
11	Identify, stock and communicate locations within the community that can serve as cooling stations and shelters during times of extreme heat.	Extreme heat	existing	Staff Time	medium	EMPG Work Plan	2015	Emergency Management/ Emergency Manager	N/A
12	Perform a public information campaign at the onset of the extreme heat season to help educate the general public on ways to remain safe during periods of extreme heat.	Extreme heat	existing	Staff Time	medium	TERC	2015	Emergency Management/ Community Relations Office	None

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Continue electric system design as a looped system with multiple ties which is done to allow flexibility to re-arrange circuits prior to summer to balance loads commonly seen during extreme heat conditions. Distribution and transmission load growth capacitor bank additions added to prevent outages due to fluctuations in power supply/flow.	Extreme Heat, Severe Wind	Both	Staff time (O&M)	High	6-yr CIP (2014 Electric System Plan FY2014/15 – 2019/20)	In Progress (ongoing)	Power System, Electric System Operations, Transmission & Distribution Services	Annual Operating Budget per 6-yr CIP
2	Cable replacement program, feeder getaway upgrades, pad-mounted transformer replacement program, #2 and 4/0 loop splits; to mitigate outages during peak load times during extreme heat conditions. Underground secondary wire replacement and cable and cable rehabilitation & commissioning serves to mitigate the potential outages associated with aging & worn out equipment.	Extreme Heat, Severe Wind	Both	Staff time (O&M)	High	6-yr CIP (2014 Electric System Plan FY2014/15 – 2019/20)	In Progress (ongoing)	Transmission & Distribution Services	Annual Operating Budget per 6-yr CIP
3	SRP continuously monitors weather, runoff and reservoir conditions on the Salt and Verde watersheds as they affect reservoir operations and maintains a high level of preparedness of its reservoir emergency operations staff. In addition, SRP is actively involved with the Multi-Agency Taskforce on Flood Warning and operates the Arizona Statewide Flood Warning System under contract with the ADWR. The purpose of the flood warning system is to reduce the loss of life and property and manage water resources efficiently by providing appropriate information via a high-speed data collection and dissemination network to local entities and Federal Agencies, and further enhance the system to complement our mission to save lives and protect property. Reservoir management also serves to manage the water supply to the greater Phoenix metropolitan area.	Flood, Drought, Dam Inundation, Subsidence	Both	Staff time (O&M)	High	General Plan	In Progress (ongoing)	Water Information Technology Services, Water Resource Operations, Water Transmission & Communications, (AZ Statewide Flood Warning System)	Annual Operating Budget

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
4	SRP maintains a variety of mitigation programs on the Transmission and Distribution system to mitigate the effects and susceptibility to severe wind events such as: pole inspection program, pole replacement program, pole reinforcement program and stopper-pole program. (The SRP distribution system is 80% underground and, by design, thus mitigates a multitude of possible hazards).	Severe Wind, Subsidence, Wildfire, Dam Inundation	Both	Staff time (O&M)	High	6-yr CIP (2014 Electric System Plan FY2014/15 – 2019/20)	In Progress (ongoing)	Transmission & Distribution Services	Annual Operating Budget per 6-yr CIP
5	SRP Line Clearing/Vegetation Management maintains an ongoing preventative maintenance program that clears vegetation from transmission and distribution lines which are regularly patrolled and cleared of vegetation to prevent encroachment upon lines, thus mitigating a variety of hazards associated with vegetation interfering with electrical lines. This program also clears lower growing dense vegetation (smaller trees and brush) called “fuel clearing” to reduce fire/smoke in the event of a wildfire.	Wildfire, Severe Wind	Both	Staff time plus (O&M)	High	6-yr CIP (2014 Electric System Plan FY2014/15 – 2019/20)	In Progress (ongoing)	Transmission & Distribution Services Vegetation Management/Line Clearing, Line Asset Management	Annual Operating Budget per 6-yr CIP
6	Maintain fleet of mobile substations to deploy in advance to cover and mitigate any anticipated capacity deficiencies, thus mitigating chances of escalating outages due to high demand or hazard related damages.	Extreme Heat, Flood, Severe Wind	Both	Staff time (O&M)	Medium	General Plan	Ongoing	Transportation Services, Electric System Operations	Annual Operating Budget

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Review, update and/or augment flood control ordinances to provide a greater level of protection than the minimum required by the NFIP.	Flood	Existing	Staff Time	Medium	Stormwater and Floodplain Management Ordinance and NFIP regulations	Ongoing	Planning and Development Services	City Budget
2	Identify and map flood hazards in areas expected to grow or develop in the foreseeable future.	Flood	Existing	Staff Time	Medium	Stormwater and Floodplain Management Ordinance and NFIP regulations	Ongoing	Planning and Development Services	City Budget
3	Implement a water harvesting program through the location, design and construction of dual functioning stormwater retention facilities with enhanced recharge elements designed into the basin, as a part of maintaining a Drought Management Plan in conjunction with SRP & APS to lessen the impact of drought.	Drought	Both	\$6,442,200	High	Drought Management Plan	Ongoing	Water Resources	City Budget
4	UPPER CAMELBACK WASH WATERSHED Construct channel improvements, storm drains, stormwater storage basins, and culverts to provide 100-year structural flood protection to nearly 500 structures in the vicinity of 92nd St to 96th St from Shea Blvd. to Sweetwater Ave.	Flood	Both	\$19,189,269	Medium	Drainage and Flood Control Capital Improvement Plan	April 2015	Planning and Development Services and Public Works	Bond 2000 and FCDMC
5	GRANITE REEF WATERSHED Construct channel improvements, storm drain improvements, and stormwater storage basins to provide 100-year flood protection to hundreds of structures in the vicinity of Granite Reef Road between the Arizona Canal and the Salt River.	Flood	Existing	\$51,055,600	High	Drainage and Flood Control Capital Improvement Plan	June 30, 2021	Planning and Development Services and Public Works	Bond 2000 + General Fund + FCDMC + SRPMIC
6	CROSSROADS EAST PHASE 1: Drainage projects and transportation repair projects.	Flood	New	\$15,094,034	Medium	Crossroads East Master Plan	June 30, 2020	Planning and Development Services and Public Works	None Identified

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
7	As a part of the Automated Flood Warning System, install automated flood barriers at low water crossings to discourage motorists from entering flooded road crossings.	Flood	Existing	Staff Time	High	Automated Flood Warning System	Ongoing	Planning and Development Services, Emergency Services, and Public Works	General Fund
8	As a part of the Automated Flood Warning System, install stream depth indicators at low water crossings to communicate the risk of entering flooded roadway crossings and provide a visual warning to motorists of flood conditions at the crossing location.	Flood	Existing	Staff Time	High	Automated Flood Warning System	Ongoing	Planning and Development Services, Emergency Services, and Public Works	General Fund
9	Review and evaluate current weed control ordinance to ensure adequate provisions are in place to protect properties along the wild land urban interface.	Wildfire	Existing	Staff Time	High	Weed Control Ordinance	Ongoing	Fire Department	General Fund
10	Encourage fire buffer zones along wild land urban interface areas to mitigate damages due to wildfire.	Wildfire	Existing	Staff Time	High	None	Ongoing	Fire Department	General Fund
11	Perform Hazardous Material Response Team & Fire Code Inspection on occupancies with Hazardous Materials to ensure safe storage and use of those HAZMATS.	Hazardous Materials	Existing	Ongoing	High	None	Ongoing	Fire Department	General Fund
12	Develop partnerships to locate and operate hydration stations during extreme heat events to reduce the risk to Scottsdale citizens.	Drought	Existing	Ongoing	High	Drought Management Plan	Ongoing	Fire Department	General Fund
13	Review/Update the city's Drought Management Plan's conservation requirements to evaluate drought severity triggers and their enforcement.	Drought	Existing	Ongoing	High	Drought Management Plan	Ongoing	Fire Department	General Fund
14	Use newsletters, flyers, utility bill inserts, website notices, radio and television announcements, social media and newspaper articles to educate the public about hazards impacting the county and city, and how to be prepared in the case of a disaster event.	All Hazards	Existing	Ongoing	High	None	Ongoing	Fire Department	General Fund

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
15	Continue expanding our WebEOC software system to track incidents and resources in the event of an emergency.	All Hazards	Existing	Ongoing	High	None	Ongoing	Fire Department	General Fund
16	Promote the use of weather radios, especially in schools, hospitals and other locations where people congregate to inform them of the approach of severe weather events.	Dam Inundation, Extreme Heat, Flood, Levee Failure, Severe Wind	Existing	Ongoing	High	None	Ongoing	Fire Department	General Fund
17	Perform a public information campaign at the onset of the extreme heat season to help educate the general public on ways to remain safe during periods of extreme heat. Maintain and continue expanding our community emergency response team (CERT) training.	Extreme Heat	Existing	Ongoing	High	Community Emergency Response Team (CERT) program.	Ongoing	Fire Department	General Fund
18	Identify, stock and communicate locations within the community that can serve as cooling stations during times of extreme heat.	Extreme Heat	Existing	Ongoing	High	Community Emergency Response Team (CERT) program.	Ongoing	Fire Department	General Fund
19	Include addressing subsidence and fissure risk as a regular part of the land development and public works projects review and permitting.	Fissure, Subsidence	Both	Staff	Low	Development Review	Ongoing	Planning and Development Services and Public Works	General Fund
20	Coordinate with state and federal agencies (USGS, AZGS, ADWR, etc.) to study and map fissure activity in critical or key areas of the community so that effective mitigation or avoidance strategies can be implemented.	Fissure, Subsidence	Both	Staff	Low	None	Ongoing	Planning and Development Services and Public Works	General Fund

**Table 6-7-22: Mitigation actions and projects and implementation strategy for Scottsdale**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
21	As a part of the Neighborhood Stormwater Management Improvements program, develop a community-wide, stormwater management plan that will analyze and identify problem flooding areas and propose long-term mitigation alternatives designed to reduce or eliminate the flood problems. The program will also identify and map flood hazards in areas expected to grow or develop in the foreseeable future.	Flood	Existing	\$200,000	Low	Neighborhood Stormwater Management Improvements Program	Ongoing 5-year CIP	Planning and Development Services and Public Works	In-Lieu Fees

**Table 6-7-23: Mitigation actions and projects and implementation strategy for Surprise**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Reduce the impact of flooding in Section 10 (Martin Acres) area of City of Surprise. Construct a new conveyance channel from south of U.S. 60 to provide drainage away from Martin Acres.	Flood	Both	\$850,000	High	5-yr CIP	September 2015	Public Works/ City Engineer	General Capital
2	Reduce the risk of fires to communities within wildland-interface zones by participating in the development of a community wildfire protection plan.	Wildfire	Both	\$150,000	Medium	Fire Master Plan & 5-yr CIP	July 2016	Fire Department/ Administrative Chief	General Capital
3	Develop program and coordinate actions with FCDMC to access, mitigate, upgrade and redesign flood facilities.	Flood	Both	Staff Time plus \$100,000	High	N/A	Annually	Public Works/ City Engineer	General Capital
4	Develop program that identifies bridge and culvert construction in flood susceptible areas	Flood	Both	\$250,000	Medium	5-yr CIP	July 2017	Public Works/ City Engineer	General Capital

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
5	Research and identify available funding sources for pre-disaster hazard mitigation actions and projects.	All Hazards	Both	Staff Time	Medium	Council Strategic Plan	Ongoing	Public Works/ City Engineer Fire Department	General Capital
6	Original Town Site Overall Drainage Master Plan	Flood	Both	\$250,000	High	5-yr CIP	TBD	Public Works/ City Engineer	General Capital
7	Participate in occasional table top exercises to identify potential mitigation measures for increasing response effectiveness, such as evacuation route marking and permanent protection measures for intended shelters.	Dam Inundation	Both	Staff Time	Low	Fire Master Plan	Annually/ Ongoing	Fire Department/ Administrative Chief	General Capital
8	Ensure that City Staff, residences, businesses and visitors have access to the McMicken Dam Emergency Action Plan. This plan was prepared in December 2013 by the Flood Control District of Maricopa County. This plan is available on the City's website.	Dam Inundation	Both	Staff Time	Medium	Fire Master Plan	Annually/ Ongoing	Fire Department/ Administrative Chief & City Engineer	General Capital
9	Participate in the McMicken Dam Rehabilitation study and construction.	Dam Inundation	Both	Staff Time	Medium	General Plan	2020	Public Works/City Engineer	Flood Control
10	Public education of water conservation best practices through newsletter, flyers, social media and website notices.	Drought	Both	\$25,000	High	Integrated Water Master Plan; Drought Plan	Ongoing	Water Resource Management/Dir ector	Water Enterprise
11	Develop a local Drought Management Plan to define various levels of conservation requirement that are based on drought severity triggers and integrate with the City of Surprise Integrated Water Master Plan identifies numerous action plans in the event that we have drought conditions.	Drought	Both	\$50,000	High	COS Integrated Water Master Plan; Drought Plan	Ongoing	Water Resource Management/Dir ector	Water Enterprise
12	Perform a public campaign at the onset of the extreme heat season to help educate the general public on ways to remain safe during periods of extreme heat.	Extreme Heat	Both	Staff Time	Low	Fire Master Plan	Ongoing/ Annually	Fire Department/ Administrative Chief	General Capital

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
13	Identify, stock, and communicate locations within the community that can serve as cooling stations during times of extreme heat.	Extreme Heat	Both	\$15,000	Med.	5-year CIP	Ongoing/Annually	Fire Department/ Administrative Chief	General Capital
14	Review and update stormwater management plan that will analyze and identify problem flooding areas and propose long-term mitigation alternatives designed to reduce or eliminate the flood problems.	Flood	Both	\$50,000	Med.	Stormwater Management Plan	Ongoing/Annually	Water Resource Management/ Director	Water Enterprise
15	Work with Flood Control District of Maricopa County to review, update, and/or augment flood control ordinances to provide a greater level of protection than the minimum required by the NFIP.	Flood	Both	Staff Time	Low	Engineering Development Standards	Ongoing/Annually	Public Works/City Engineer	General Capital
16	Enforce City ordinances governing the improvements within a floodplain.	Flood	New	Staff Time	High	Engineering Development Standards & Muni. Code	Ongoing	Public Works/City Engineer & Building Official	General Capital
17	Review existing City owned buildings, evaluate any substandard construction issues and implement repair and upgrade plan to mitigate future wind damage.	Severe Wind	Existing	Staff Time	Low	City Facility Standards and Guidelines	Ongoing	Public Works/City Engineer	General Capital
18	Encourage homeowners to use tie-down straps and/or anchors to secure ancillary buildings and metal awnings or porches to mitigate the potential for flying debris during severe wind events.	Severe Wind	Both	Staff Time	Low	International Building Codes	Ongoing	Community Development/	General Capital
19	The City of Surprise will continue to inventory and monitor all of the known fissures within the current and future city boundary. These fissures will be surveyed on a regular basis to monitor for change. Areas with active fissures have been identified in the General Plan as regional, natural, open space areas for passive recreation.	Fissure	Both	Staff Time	Low	COS General Plan; Benchmark Study	Ongoing	Public Works/City Engineer & Land Surveyor	General Capital

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
20	Cooperate with the Flood Control District of Maricopa County in the monitoring of fissures and subsidence impacting McMicken Dam and coordinate in any required updates to the McMicken Dam Emergency Action plan, wherein the earth fissures and subsidence concerns are discussed in great detail.	Dam Inundation; Fissure; Subsidence	Both	Staff Time	Low	McMicken Dam Emergency Action Plan	Ongoing	Public Works/City Engineer & Land Surveyor	General Capital
21	The City of Surprise will continue to monitor subsistence with the placement of benchmarks at all of the City owned well sites. Subsidence due to groundwater pumping will continue to be monitored on an annual basis.	Subsidence	Both	Staff Time	Low	Geodetic Survey Control Map/ Database	Ongoing	Public Works/City Engineer & Land Surveyor	General Capital
22	Facilitate appropriate wildfire fuel reduction through prioritization of hazardous fuel management areas (FMA) to assist land managers and fire departments in focusing future efforts towards the areas of highest concern from both an ecological and fuel management perspective.	Wildfire	Both	\$25,000	Med.	Fire Master Plan	Annually	Fire Department/ Administrative Chief	General Capital
23	Promote wildfire awareness and education in the community through the use of website, social media, and printed materials. Awareness combined with education helps to reduce the risk of accidental human ignitions.	Wildfire	Both	Staff Time	Med.	Fire Master Plan	Annually	Fire Department/ Administrative Chief	General Capital
24	Enhance the capabilities of the fire departments by providing a foundation for pre-attack planning. Rapidly and easily accessing individual home pre-plans and district infrastructure adds efficiency and safety to fire department response and prescribed fire planning.	Wildfire	New	Staff Time	Med.	Fire Master Plan	Annually	Fire Department/ Administrative Chief	General Capital

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	Flood	Both	Staff Time	High	Building Code	Ongoing	Community Development and Public Works Engineering/ Deputy Director and Principal Civil Engineer	General Fund
2	The City of Tempe Water Utilities Division has a comprehensive set of planning documents that outline future water systems operations, including specific drought contingency plans and water system operations during drought cycles. Planning documents include the 1997 Tempe Water Resources Plan (updated in 2002), the 1999 Tempe Integrated Water System Master Plan, and the 2002 Drought Management Strategy Plan. Tempe has implemented a number of measures from these plans to diversify the city's water resources and to lessen the impact of drought on our community. Tempe will continue to develop additional groundwater storage and recovery programs to significantly reduce potential drought impacts. These efforts include storing, CAP water and reclaimed water in aquifers for future recovery (over 85,000 acre-feet stored since the mid-1990s), and capital improvement projects to add new municipal wells and increase recovery well pumping capacity.	Drought	Both	Staff Time	Medium	Water Utilities Business Plan / Water Resources Master Plan	Ongoing	Water Utilities Division / Water Resources Manager	Water Enterprise
3	Maintain Emergency Management Plan	All Hazards	Both	Staff Time	High	City Wide Emergency Operations Plan	Annual	Tempe Fire / Assistant Chief	General Fund

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
4	Maintain Hazardous Materials Response Team and First Responder Training and conduct Fire Code Inspections on Occupancies with hazardous materials.	All Hazards	Both	Staff Time City Resources	High	N/A	Ongoing	Tempe Fire / Assistant Chief & Public Works / Hazardous Waste Compliance Supervisor	General Fund
5	Work with the Flood Control District of Maricopa to maintain and monitor the levee protection along the Salt River.	Flood, Levee Failure	Both	Staff Time	Medium	N/A	Ongoing	FCDMC with Tempe Public Works - Engineering / Principal Civil Engineer	Outside agencies / General fund
6	Miscellaneous Flood Control and Storm Drainage Projects to improve drainage and reduce flooding potential in various locations.	Flood	Both	Staff Time	Medium	N/A	Ongoing	Public Works - Engineering / Principal. Civil Engineer	General Fund
7	Maintain CERT Program	All Hazards	Both	4000	Medium	N/A	Ongoing	Fire Department	Grants
8	Participate with outside agencies to distribute bottled water and provide education about hazards associated with extreme heat.	Extreme Heat	Both	1000	Low	N/A	Ongoing	Fire Department	Grants
9	Seek funds for workshops and conferences, including National Incident Management System and Arizona Emergency Management Association Conferences.	All Hazards	Both	3000	Low	N/A	Ongoing	Fire Department	Grants
10	Indian Bend Wash Levee Repairs – perform repairs identified during the last annual inspection on the levees bounding Indian Bend Wash to mitigate failure with the owner the FCDMC.	Flooding, Levee Failure	Existing	Staff Time	Medium	N/A	Ongoing	Public Works - Engineering and Field Operations/ Principal. Civil Engineer and Parks Manager	General Fund

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
11	Stormwater Outfall Inspection –activities for both condition and capacity of outfall locations to regional waterways.	Flooding	Both	\$150,000 / Staff Time	High	N/A	Ongoing	Public Works – Engineering and Water / Principal. Civil Engineer/ Env. Compliance Supv.	Water Enterprise
12	Ongoing project work in cooperation with ADOT to identify and mitigate flooding related to freeway systems.	Flooding	Existing	Unknown	Medium	N/A	Ongoing	Public Works - Engineering / Principal. Civil Engineer	General Fund
13	Develop a water infrastructure master plan which discusses water resources and identifies vulnerabilities to long-term water supply. This plan will determine what additional water resources may be available (CAP / Reclaimed / Adjudication) to offset long-term shortage.	Drought	Both	\$1,5000,000	High	Water Infrastructure Master Plan	Q1 2016	Public Works – Water Utilities / Principal Engineer	Water Enterprise
14	Replacement of Western Tempe Town Lake Dam. This allows for the city to reliably mitigate high flow events on the Salt River, including upstream dam failure, while maintaining long-term operational functionality of the Town Lake.	Dam Inundation	Both	\$40,000,000	High	N/A	1Q 2016	PW/ Engineering	General Fund/Bonds
15	Develop dam inundation response plan for new Town Lake operations. Tempe is taking over operational responsibility for the Tempe Town Lake Dam and flow control structures from Salt River Project in CY 2016.	Dam Inundation	Both	Staff Time	Medium	O&M Plan	1Q2016	Public Works - Engineering / Sr. Civil Engineer	General Fund/Bonds
16	Continued maintenance of Tempe Town Lake dam and flow control structures per ADWR and other agency guidelines / best practices.	Dam Inundation	Both	Unknown	Medium	O&M Plan	1Q2016	Public Works - Engineering sr. Civil Engineer	General Fund
17	Utilization of Tempe Social Media platforms to educate the general public about the hazards of extreme heat, including Facebook and Twitter releases, and updates to the city website.	Extreme Heat	Both	Staff time	High	N/A	Ongoing / Seasonal	City manager’s office / public Information Officer	General fund

**Table 6-7-24: Mitigation actions and projects and implementation strategy for Tempe**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
18	Maintain/Install backup generators at key critical facilities such as fire and police stations, water pumping stations, sewer lift stations, etc., to provide emergency power for critical operations during power failures caused by severe wind events.	Severe Wind	Both	\$1,500,000	High	Further evaluation being conducted under Water Infrastructure Master Plan	Ongoing	Public Works – Water Utilities / Plant Electrician	Water Enterprise
19	Provide continued maintenance and exercise of early warning sirens in select strategic locations as a part of a comprehensive emergency notification system to inform citizens of impending hazards such as dam failure, severe weather conditions, and severe wind events.	Dam Failure, Flood, Severe Wind	Both	\$5K/yr	High	N/A	Yearly	PW/WU	General Fund
20	Provide links to the Arizona Department of Water Resources website as a part of a public campaign to raise awareness to the hazards and locations of active subsidence.	Subsidence	Both	Staff Time	Medium	Water Resources Master Plan	Q3 2015	City Manager’s office / Public Information Officer	General fund
21	Water Utilities Division will continue to operate municipal water wells to maintain compliance with ADWR Active Management Area requirements to mitigate drawdown related issues caused by over pumping of groundwater, including subsidence.	Subsidence	Both	Staff time	High	Water Resources Master Plan	Ongoing	Public Works – Water Utilities / Water Resources Manager	Water Enterprise

**Table 6-7-25: Mitigation actions and projects and implementation strategy for Tolleson**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations.	Flood	Both	Staff Time	High	Regular Plan Reviews	On-going	City Engineer and Building Department	General Fund

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
2	Install more storm drains and retention areas to reduce impact of flooding on the community. Goes along with new and better codes.	Flood	Both	Unknown without estimates at the time	Medium	As needed and as new plans and permits are requested	On-going	City Engineer and Building Department	General Fund and Permit Fees
3	Provide sand and bags at different locations around the city for citizens to pick up and use to mitigate flooding damages.	Flood	Both	App. \$100 per ton for sand and unknown for price of bags	High	As needed	On-going	Field Operations	General Fund
4	Educate public officials on the need of the mitigation plan.	All Hazards	Both	Staff Time	High	Annually	Annually	Senior City Staff	N/A
5	Continue to review plans and update codes and ordinances within the city limits.	Flood, Severe Wind	Both	Staff Time	High	As Needed	On-going	City Engineer and Building Department, Fire Department, Police Department	N/A
6	Conduct table top exercises that would involve a dam failure to measure the emergency response procedures.	Dam Failure	Both	Staff Time	High	During periodic emergency planning exercises	Annually	Emergency Manager	General Fund
7	Work with all agencies to provide disclosures to all buyers of real estate that would be affected by a dam failure.	Dam Failure	Both	N/A	Medium	As Needed	On-going	City Engineer and Building Department	N/A
8	By using the local websites, mailers, social media and other forms of local communication, try to educate the public about water conservation.	Drought	Both	Staff Time and minimal costs	High	Periodic through the year	Spring and Summer Periods	City Public Information Officer	General Fund and possible Grants
9	Continue to work with the waste water department to use reclaimed water for multiple uses.	Drought	Both	Staff Time	High	Education all individuals and other City departments involved	Continuous	Water/Wastewater Departments	N/A
10	Provide water stations when needed for individuals during the extreme heat periods.	Extreme Heat	New	Cost of bottled water and Staff Time	High	Active areas of refuge as needed	As Needed	All City Staff	General Funds, Donations, and possible Grants

**Table 6-7-25: Mitigation actions and projects and implementation strategy for Tolleson**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
11	Continue working with local school systems for relief areas if individuals were displaced due to the extreme heat.	Extreme Heat	Both	Staff Time	High	General Plan, Emergency Operations Plan	Annually	Senior City Staff, Emergency Manager	If needed General Funds, possible Grants
12	Educate homeowners and businesses to tie down or not leave loose items around during severe wind periods.	Severe Wind	New	Staff Time and possible publication costs	High	By using current social media that is available within the city	Periodic	City Public Information Officer	General Funds, possible Grants
13	Maintain the installed backup generators at the police and fire departments. Make sure new backup generators are in the plans for any new critical facilities.	Severe Wind	Both	\$10,000 per year plus Staff Time	High	Continual review of maintenance programs and quarterly checks	Quarterly	Field Operations Department	General Funds
14	Include addressing subsidence risk as a regular part of the land development and public works projects review and permitting.	Subsidence	Both	Staff Time	High	Continual review of Plans and Permits	On-going	City Engineer and Building Department	N/A
15	Provide links to the AZ Department of Water Resources website as a part of a public campaign to raise the awareness to the hazards and locations of active subsidence. This will be done through all the local social media.	Subsidence	New	Staff Time	High	As needed and available time	On-going	City Public Information Officer	N/A

**Table 6-7-26: Mitigation actions and projects and implementation strategy for Unincorporated Maricopa County**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Inspect and monitor all structures (bridges and box culverts) under their control on a semi-annual basis.	Flood	Both	\$150,000	High	Transportation Plan	Annual Ongoing	MCDOT	HURF

**Table 6-7-26: Mitigation actions and projects and implementation strategy for Unincorporated Maricopa County**

2	Encourage bridge or culvert construction where roads are in locations susceptible to flooding.	Flood	New	\$7,000,000	High	Transportation Plan	Annual Ongoing	MCDOT	HURF
3	Review building permits to ensure that unincorporated Maricopa County residents are safe from flooding by meeting the NFIP requirements for development within a Special Flood Hazard Area through enforcement of Floodplain Regulations.	Flood	Both	On-going	High	Floodplain Regulations for Maricopa County	Ongoing	FCDMC / Floodplain Administrator	Flood Control Secondary Property Tax
4	Develop a Community Wildfire Protection Plan to identify actions that will reduce the risk of wildfires to communities within wildland-urban interface zones.	Wildfire	Both	\$150,000	High	CWPP 5-Year Update	Ongoing/ 5 year updates	MCDEM	BLM/CWPP Grant
5	Complete and start Area Drainage Master Studies/Plans to identify flooding hazards, mitigation solutions and provide notice to interested parties.	Flood	Both	Project-Dependent	High	Comprehensive Plan	Ongoing	FCDMC / Chief Engineer & GM	Flood Control Secondary Property Tax
6	Complete and start delineations/re-delineations to identify flooding hazards and the means to share information.	Flood	Both	Project-Dependent	High	Comprehensive Plan	Ongoing	FCDMC / Chief Engineer & GM	Flood Control Secondary Property Tax
7	Operate and maintain flood control structures operated and maintained by FCDMC in order to prevent structural failure and to maintain their primary function.	Dam Inundation, Levee Failure, Flood	Both	Project-Dependent	High	Comprehensive Plan	Ongoing	FCDMC / Chief Engineer & GM	Flood Control Secondary Property Tax
8	Update the Flood Control District of Maricopa County 2009 Comprehensive Floodplain Management Plan and Program to set the framework in mitigating flood hazards.	Flood	Both	Staff Time	High	Comprehensive Plan	2015	FCDMC / Chief Engineer & GM	Flood Control Secondary Property Tax
9	Sonoqui Wash Channelization (Main Branch). Channelize an existing wash to contain flood flows and protect existing homes.	Flood	Existing	\$14-Million	High	5-year CIP	Ongoing/ Funding-Dependent	FCDMC / Chief Engineer & GM	Flood Control Secondary Property Tax
10	Oak Street Basin and Storm Drain. Construct a basin and storm drain to mitigate flooding hazards to existing and future homes.	Flood	Both	\$4.5-Million	High	5-year CIP	Ongoing/ Funding-Dependent	FCDMC / Chief Engineer & GM in partnership with City of Mesa	Flood Control Secondary Property Tax
11	Flood Control Capital Improvement Program. Construct facilities to mitigate flooding hazards to residents of Maricopa County.	Flood	Both	\$40M-year	High	5-year CIP	Ongoing	FCDMC / Chief Engineer & GM	Flood Control Secondary Property Tax

**Table 6-7-26: Mitigation actions and projects and implementation strategy for Unincorporated Maricopa County**

12	Design and construct new bridge and scour protection at Gilbert Road over the Salt River.	Flood	Existing	\$43.95 million	High	5 Year CIP	June 2018	MCDOT	Federal Funds, STP, HURF
13	Floodprone Properties Assistance Program. Acquire property and relocate residents from flood hazard areas or protect homes from flooding hazards through floodproofing.	Flood	Both	Project-Dependent	Medium	Floodprone Properties Assistance Program	Ongoing	FCDMC / Chief Engineer & GM	Flood Control Secondary Property Tax
14	Review existing building codes to determine if they adequately protect new development in hazard areas. Where feasible and necessary, modify codes to help mitigate hazards imposed on such development within the limits of state statutes, while also respecting private property rights.	Flood, Severe Wind	New	Staff Time	High	Standard P&D procedure	Ongoing	Planning and Development Department	General fund
15	Continue public education program to assist residents in recognizing potential flooding and erosion hazards and inform them on how to reduce risk to life and property.	Flood	Both	Staff Time	Medium	Comprehensive Plan / Floodplain Management Plan	Ongoing	FCDMC / Chief Engineer & GM	Flood Control Secondary Property Tax
16	Work with federal and state agencies, and local coalitions to elevate awareness of fissure risk zones and the problems fissures may cause.	Fissure	Both	Staff Time	High	Standard P&D procedure	Ongoing	Planning and Development Department	General fund
17	Continue to operate and maintain a flood warning system to alert communities and the public to flooding events.	Dam Inundation, Levee Failure, Flood	Both	\$1.5M-year	High	Comprehensive Plan	Ongoing	FCDMC / Chief Engineer & GM	Flood Control Secondary Property Tax
18	Develop and maintain Flood Response Plans and Emergency Action Plans to identify actions to be taken at specific locations for certain conditions during flooding events.	Dam Inundation, Levee Failure, Flood	Both	\$400K-year	High	Comprehensive Plan	Ongoing	FCDMC / Chief Engineer & GM	Flood Control Secondary Property Tax
19	Maintain participation in NFIP's Community Rating System to further inform and enhance public safety, protect the environment and reduce losses and damages to public and private property through continued outreach and various programs.	Dam Inundation, Levee Failure, Flood	Both	Staff Time	High	Comprehensive Plan / Floodplain Management Plan	Ongoing	FCDMC / Chief Engineer & GM	Flood Control Secondary Property Tax

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Coordinate review of building permits for compliance with the Floodplain Ordinance and NFIP regulations with FCDMC.	Flood	Both	NA	High	Council approval/ordinance of FCDMC administrating regulations	Ongoing	Planning department	General Fund
2	Remove vegetation in washes that bisect streets within town limits to reduce wildfire hazard and improve stormwater conveyance capacities.	Flood, Wildfire	Existing	NA	High	CWPP	Ongoing	Fire/ Public Works	General Fund/Grants when applicable
3	Scheduling local drainage clean out and inventory	Flood	Existing	NA	Medium	Allocate personnel	Ongoing	Public Works	General Fund
4	Review Flood Hazard mitigation plan, identify areas prone to flood in the heavy rain events	Flood	Existing	NA	Medium	Personnel/Training	ongoing	Public Works/Fire/PD	General Fund
5	Fuel Reduction program COOP with BLM. Identify Hazard areas, set up work group days with BLM crews and WFD crews for fuels work in and around the Hassayampa River areas Highest prone to fire.	Wildfire	Existing	NA	High	Work Agreement with BLM	ongoing	Fire/BLM	Fuel Reduction Grant/
6	Wickenburg Ranch/Martinez Creek Flood Hazards. Work on new amendment to Flood Plan from Yavapai County regarding the new developed area around Martinez creek	Flood	New	UNK	Medium	Plan amendments	Depends on growth rate. NA	Planning/Buildin g department. Emergency Mgt.	General Fund/ Private partnership?
7	Public education on the dangers of living in the southwest Arizona desert where extreme temperatures are common in the summer months	Extreme Heat	New	N/A	Medium	Media outlets	annual	Fire/EMS	General
8	Provide water via the station or duty engine to individuals that present symptoms of heat related illness	Extreme Heat	Existing	NA	High	Regular duties as engine company	daily	Fire/EMS	General
9	Review temporary structure permits for proper tie down and anchor methods.	Severe Wind	New	NA	Medium	Review IBC/IFC	ongoing	Planning department	General

**Table 6-7-27: Mitigation actions and projects and implementation strategy for Wickenburg**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
10	Perform training and education for PW and PD crews regarding public safety actions that can be taken to mitigate the risk of damage and injury to the public on a pre-event, during, and post-event basis for severe wind storms.	Severe Wind	Both	Staff Time	Medium	Training for first responders for severe weather incidents.	ongoing	Fire and PW	General
11	Review FHRP, in reference to Sunnycove and Cassandra Dam areas, on an annual basis to determine if adjustments are necessary due to changes in areas downstream of dams	Dam Inundation	Existing neighborhood	Staff Time	High	Review plan with PW and Planning	ongoing	Fire/Emergency operations	General
12	Sols Wash survey and schedule work maintenance projects for brush clearing and inspection of existing bank protection measures.	Levee Failure	Existing neighborhood and roadway	UNK. Staff time	Medium	Scheduling with PW crew, and FCD	ongoing	Public Works/Fire	General
13	Public outreach to areas impacted in heavy flood events thru community meetings to communicate the residual risk of areas protected by these structures	Dam Inundation, Levee Failure	Residential areas	Staff time	Medium	Media	Annual or as needed	Public Works/Emergency Mgt.	General/community grant
14	Work with ADOT on Hwy 93 bank protection maintenance to ensure maintenance clearing of primary vegetation is being done on a regular basis	Levee Failure	Highway/ some residential	Staff time	High	Current IGA with ADOT	As needed	Public Works	Streets

**Table 6-7-28: Mitigation actions and projects and implementation strategy for Youngtown**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Review building permits for compliance with Floodplain Ordinance and NFIP regulations through ongoing coordination with MCFlood and compliance with current floodplain ordinance.	Flood	Both	Staff Time	High	None	Ongoing	Public Works Dept./Building Inspector	General Government Budget

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
2	Encourage the use of weather radios, especially in schools, rest homes, convalescent homes, retirement centers and other locations where people congregate to inform them of the approach of severe weather.	Extreme Heat, Flood, Severe Wind, Wildfire	Both	Staff Time	Medium	Program is reviewed yearly and is ongoing	Ongoing	Emergency Services Manager/Town Webmaster	General Government Budget
3	Provide town leadership role in support of efforts to limit development in the departure and approach corridors for Luke Air Force base.	Transportation Accident	Both	Staff Time	Medium	Flight/noise patterns are reviewed with each new development	Ongoing	Mayor/Town Manager/Public Works Manager/Town Management	General Government Budget
4	Promote the availability of hazard mitigation information from county webpage by providing a notice of the Maricopa County Hazard Mitigation Plan posted on town's website with link back to Maricopa County Emergency Management for additional information.	All Hazards	Both	Staff Time	Low	None	Ongoing	Emergency Services Manager/Town Webmaster	General Government Budget
5	Participate/ conduct occasional table top exercises to identify potential mitigation measures for increasing response effectiveness, such as evacuation route marking and permanent protection measures for indented shelters.	Dam Inundation, Flood	Both	Staff Time	Low	None	Ongoing	Public Works Department/ Maricopa County	General Government Budget
6	Provide public education of water conservation best practices through newsletter, flyers, social media and website notices.	Drought	Both	Staff Time	High	None	Ongoing	Public Works Department in collaboration with EPCOR Water	General Government Budget
7	Perform a public information campaign at the onset of the extreme heat season to help educate the general public on ways to remain safe during periods of extreme heat.	Extreme Heat	Both	Staff Time	High	None	Ongoing	Public Safety Department in collaboration with the Salvation Army	General Government Budget
8	Develop a community-wide, storm water management plan that will analyze and identify problem flooding areas and propose long-term mitigation alternatives designed to reduce or eliminate the flood problems.	Flood	Both	Staff Time	Medium	EOP	Ongoing	Public Works Department, ADEQ & MCFLOOD	General Government Budget

**Table 6-7-28: Mitigation actions and projects and implementation strategy for Youngtown**

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
9	Maintain/install backup generators at key critical facilities such as fire and police stations, water pumping stations, sewer lift stations, etc., to provide emergency power for critical operations during power failures caused by severe wind events.	Severe Wind	Both	Staff Time	High	EOP	Ongoing	Public Works Department/APS	General Government Budget
10	Provide links to the Arizona Department of Water Resources website as part of a public campaign to raise awareness to the hazards and locations of active subsidence.	Subsidence	Both	Staff Time	Medium	None	Ongoing	Public Works Department and Arizona Department of Water Resources	General Government Budget
11	Develop and/or enforce a weed abatement ordinance. Conduct fire safety education programs in local public schools. Enact and enforce burn and fireworks bans as needed during extraordinarily dry and extreme wildfire conditions & seasons to mitigate possible, unintended wildfire starts. Perform, or encourage the performance of routine, roadside vegetation control to mitigate wildfire starts within the right of way areas along roadways and highways.	Wildfire	Both	Staff Time	Medium	None	Ongoing	Public Works Department, Code Enforcement, Sun City Fire District	General Government Budget

## SECTION 7: PLAN MAINTENANCE PROCEDURES

**§201.6(c)(4):** [The plan shall include...] (4) A **plan maintenance process** that includes:  
(i) A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.  
(ii) A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.  
(iii) Discussion on how the community will continue public participation in the plan maintenance process.

**§201.6(d)(3):** Plans must be reviewed, revised if appropriate, and resubmitted for approval within five years in order to continue to be eligible for HMGP project grant funding.

According to the DMA 2000 requirements, each plan must define and document processes or mechanisms for maintaining and updating the hazard mitigation plan within the established five-year planning cycle. Elements of this plan maintenance section include:

- Monitoring and Evaluating the Plan**
- Updating the Plan**
- Continued Public Participation**

The following sections provide a description of the past plan maintenance procedures and activities, and documents the proposed procedures and schedule for the next planning cycle.

### 7.1 Monitoring and Evaluation

#### 7.1.1 Past Plan Cycle

Maricopa County and the participating jurisdictions recognize that this hazard mitigation plan is intended to be a “living” document with regularly scheduled monitoring, evaluation, and updating. Section 7.1 of the 2009 Plan outlined a schedule of specific activities for annual evaluations of the 2009 Plan. A poll of the MJPT regarding the past execution of the plan maintenance strategy was taken and the following tasks were accomplished:

- MCDEM sent out an annual email to all jurisdictions requesting a review of the 2009 Plan per the Section 7.1. The emails were generally sent around the November/December timeframe.
- MCDEM organized an MJPT plan review and evaluation meeting on April 21, 2011. Members of the MJPT were invited.
- Salt River Project performed and documented a review of the 2009 Plan in 2011, 2012, and 2013.
- At the end of 2013, Goodyear staff reviewed the vulnerability analysis results for incorporation into an Economic Development plan.

Reasons for the lack of review included:

- Staff turnover and lack of continuity to original planning team.
- Lack of communicating plan maintenance responsibilities to successors during staff changes.
- Lack of major disasters that prompted a review of the 2009 Plan.

MJPT discussed ways to improve on the Plan review and maintenance process over the next five years. The results of those discussions are outlined in the following sections.

7.1.2 *Proposed Schedule and Scope*

Having a multi-jurisdictional plan can aid in the plan monitoring and evaluation through the consolidation of information for all participating jurisdictions into one document. The MJPT reviewed the current DMA 2000 rules and October 2011 FEMA guidance document and discussed a strategy for performing the required monitoring and evaluation of the Plan over the next 5-year cycle. The MJPT has established the following monitoring and evaluation procedures:

- **Schedule** – The Plan shall be reviewed on at least an annual basis. MCDEM will take the lead to send out an email request to each jurisdiction via the MJPT on or around the month of May.
- **Review Content** – Within the email request distributed by MCDEM, each of the jurisdictions will be requested to provide responses to the following questions:
  - **Hazard Identification:** *Have the risks and hazards changed?*
  - **Goals and Objectives:** *Are the goals and objectives still able to address current and expected conditions?*
  - **Mitigation Projects and Actions:** *For each mitigation action/project summarized in Section 6.3.2:*
    - *Has there been activity on the project – Yes or No?*
    - *If Yes, briefly describe what has been done and the current status of the action/project.*
- **Documentation** – Each jurisdiction will review and evaluate the Plan as it relates to their community and document responses to the above questions in the form of an email. MCDEM will archive email responses in a digital format and store with the Plan for incorporation during the next Plan update. Any hard copies will be included in Appendix E.

A formal presentation of the review material will be presented to a jurisdiction’s council or board only if a major update to the Plan is proposed prior to the next five year update.

**7.2 Plan Update**

According to DMA 2000, the Plan requires updating and re-approval from FEMA every five years. The plan update will adhere to that set schedule using the following procedure:

- ✓ One year prior to the plan expiration date, the MJPT will re-convene to review and assess the materials accumulated in Appendix E.
- ✓ The MJPT will update and/or revise the appropriate or affected portions of the plan and produce a revised plan document.
- ✓ The revised plan document will be presented before the respective councils and boards for an official concurrence/adoption of the changes.
- ✓ The revised plan will be submitted to ADEM and FEMA for review, comment and approval.

**7.3 Continued Public Involvement**

Maricopa County and participating jurisdictions are committed to keeping the public informed about hazard mitigation planning efforts, actions and projects. Continued public involvement activities pursued by the Plan jurisdictions over the 2009 Plan cycle are summarized in Table 7-1.

<b>Jurisdiction</b>	<b>Public Involvement Activity or Opportunity</b>
ALL Participating Jurisdictions	<ul style="list-style-type: none"> <li>Centralized posting of Plan was maintained on the MCDEM website with most of the participating jurisdictions maintaining web-link to the MCDEM website on their local website.</li> </ul>
Avondale	<ul style="list-style-type: none"> <li>Use of social media and the City web site to provide information.</li> <li>Periodic updates to city council at public meetings</li> </ul>
Buckeye	<ul style="list-style-type: none"> <li>The Buckeye Fire Department posted the Hazard Mitigation Plan on our website as well as our Facebook Page where it remains an active link for the public to view.</li> <li>In addition to our website the Buckeye Fire Department posted a public notice about the plan in our local paper.</li> </ul>
Carefree	<ul style="list-style-type: none"> <li>The update of the plan was detailed in the town’s notification system (COINS) with a request for citizen input and involvement.</li> </ul>
Cave Creek	<ul style="list-style-type: none"> <li>Posting of a link on the town’s website that directs viewers to the county’s website where the Plan is posted.</li> </ul>
Chandler	<ul style="list-style-type: none"> <li>Maintained the Emergency Preparedness section of the Department's website; including pages for various emergency situations, CENS, and Chandler CERT. The page includes helpful links to a variety of county, state and federal agencies, including MCDEM.</li> <li>Used social media to post emergency preparedness tips, holiday safety tips, and responses to events or incidents reported in the news.</li> <li>Conducted quarterly open house events for the public that are held at a different fire station each time. This includes an annual Public Safety Open House conducted in partnership with the Chandler Police Department.</li> <li>Conducted an annual Drowning Prevention Campaign that includes volunteers walking door-to-door delivering water safety information to residents in selected neighborhoods. The campaign is promoted through media releases, social media sites, the City's cable TV channel, citywide newsletters, and public appearances.</li> <li>Produced and broadcast the Sprinkler's Clubhouse show for kids on the City's Chandler Channel 11 and streaming on the City's website. Sprinkler the Clown and his clubhouse friends teach children how to be safe in a variety of situations kids might face.</li> </ul>
El Mirage	<ul style="list-style-type: none"> <li>The city has posted the MJHMP and seasonal information that pertains to emergency preparation information on the city’s web site as well as the department’s Facebook page.</li> <li>In addition, the information is sent to local newspapers.</li> <li>The city council was notified annually about the progress, changes, and intentions of Emergency Management.</li> </ul>
Fountain Hills	<ul style="list-style-type: none"> <li>Maintained an interactive town webpage providing a brief description of the Plan with a link to the county’s website where the Plan is posted and a local contact for anyone with questions.</li> </ul>
Fort McDowell Yavapai Nation	<ul style="list-style-type: none"> <li>The Fort McDowell Yavapai Nation maintained a link through the Nation’s website to the Maricopa County Multi-Jurisdictional Hazard Mitigation Plan to provide public access to the plan.</li> </ul>
Gila Bend	<ul style="list-style-type: none"> <li>The town has reached out to several groups and entities over the past few years and many of those groups participated at first, then stopped attending meetings.</li> <li>In the past couple of years with the turnover at the town management level we have done little to reach out other than presenting information to the public during council meetings.</li> </ul>

<b>Table 7-1: Continued public involvement activities performed by jurisdictions during the 2009 Plan cycle</b>	
<b>Jurisdiction</b>	<b>Public Involvement Activity or Opportunity</b>
Gilbert	<ul style="list-style-type: none"> <li>• Sought public input on Hazard Mitigation Plan utilizing website and social media</li> <li>• Provided local hazard information on Gilbert Fire/Emergency Management website</li> <li>• Used social media to inform public of seasonal weather hazards and forecasts</li> <li>• Educate public from website regarding the meaning of Watches, Warnings and Advisories</li> <li>• Presentations to small groups and clubs concerning local hazards, handouts at community fairs and events</li> <li>• Hosted Gilbert Weather Watchers courses</li> <li>• Provided Community Emergency Response Team (CERT) Training</li> </ul>
Glendale	<ul style="list-style-type: none"> <li>• Over the past five years the Glendale Division of Emergency Management and the City of Glendale has made a conscious effort to continue public involvement pertaining to the Mitigation Plan. The Glendale Division of Emergency Management has coordinated with the Division Education/Training Coordinator to educate the public and city staff through training classes, (CERT, Citizen Core, general public).</li> <li>• Utilized social media (Facebook/Twitter) and the Glendale Division of Emergency Management webpage to distribute education statements pertaining to the Mitigation Plan.</li> </ul>
Goodyear	<ul style="list-style-type: none"> <li>• Presented the plan before the mayor and council in a public forum.</li> <li>• As a member of the LEPC having hazard mitigation as a standing topic.</li> <li>• Seasonal messages/post were pushed out to the public through social media.</li> <li>• Our EM and Community Risk Reduction (CRR) Division hands out information to the public during safety events, at HOA meetings, and placed in government buildings in high public traffic areas.</li> </ul>
Guadalupe	<ul style="list-style-type: none"> <li>• Guadalupe has posted the Plan link and requested public involvement through the Link on the town web site and Fire Dept. Social media sites (Facebook and Twitter).</li> <li>• Annual presentations were made to the town leaders and community members at posted council meetings of the plan status.</li> </ul>
Litchfield Park	<ul style="list-style-type: none"> <li>• Block Watch – Education and Outreach, advise of plan and location</li> <li>• CERT- Held certification class in 2014, 20 class members successfully completed the program.</li> <li>• Website: Plan housed on the city website for citizen review</li> </ul>
Mesa	<ul style="list-style-type: none"> <li>• The City of Mesa through the Mesa Fire/Medical Department Public Information Office has provided season specific postings on social media reminding the public of the potential risks for hazards that may be prevalent at the time. This has allowed the public to provide feedback and ask questions.</li> <li>• The City of Mesa through the Mesa Fire/Medical Department Emergency Management Division has provided links to FEMA, and ADEM, as well as a downloadable Emergency Preparation Guide and information on how to prepare for an emergency.</li> </ul>

<b>Jurisdiction</b>	<b>Public Involvement Activity or Opportunity</b>
Paradise Valley	<ul style="list-style-type: none"> <li>• Prepared and distributed to every home in the town a Wash Maintenance brochure.</li> <li>• Prepared and distributed to every resort, church and school in the town an Illicit Discharge brochure.</li> <li>• Conducted two public meetings on storm water. These presentations addressed the history of the storm water management systems in the town and plans for the future.</li> </ul>
Peoria	<ul style="list-style-type: none"> <li>• The City of Peoria in the past five years as hosted public events such as G.A.I.N. (Public Safety) night where information is provided to attendees on disaster preparedness. The city has also attended several local preparedness fairs to promote emergency preparedness. Lastly the city through the Office of Communications provides information on disaster preparedness several times a year.</li> </ul>
Phoenix	<ul style="list-style-type: none"> <li>• The city of Phoenix Communications Office keeps residents informed by providing useful information of the plan’s elements through the following activities: organized news conferences with elected officials and city staff to share important announcements, updated phoenix.gov with resources and timely information as needed, informed city employees via our internal city newsletter (City Connection), created and maintained Facebook and Twitter accounts, created programming on our city channel (PHXTV), distributed news releases/pitches to local media, shared information at community events and neighborhood activities.</li> </ul>
Queen Creek	<ul style="list-style-type: none"> <li>• Seek public input on Hazard Mitigation Plan utilizing website.</li> <li>• Used social media to inform public of seasonal weather hazards and forecasts.</li> <li>• Used the town’s water bill insert to discuss monsoon hazards and preparedness tips.</li> <li>• Presentations to small groups and clubs concerning local hazards.</li> <li>• Partnered with the National Weather Service (NWS) to host the SkyWarn Storm Spotter course.</li> <li>• Provide Community Emergency Response Team (CERT) training.</li> </ul>
Salt River Pima-Maricopa Indian Community	<ul style="list-style-type: none"> <li>• Quarterly Tribal Emergency Response Commission Meetings that are open to the public and have “call to public” on the agenda. This meeting enables tribal members to hear updates on community hazards and mitigation efforts, as well as give them the opportunity to provide input into these efforts.</li> <li>• Tribal website that has general hazard information as well as seasonal hazard information.</li> </ul>

<b>Table 7-1: Continued public involvement activities performed by jurisdictions during the 2009 Plan cycle</b>	
<b>Jurisdiction</b>	<b>Public Involvement Activity or Opportunity</b>
Salt River Project	<ul style="list-style-type: none"> <li>• Annual site familiarization/training with local fire departments at key substations, switchyards and receiving stations throughout Maricopa County and Pinal County.</li> <li>• Participation in the annual wildland fire tabletop exercise with the AZ Dept. of Emergency Mgmt.</li> <li>• Active participation in the AZ Statewide Flood Warning System</li> <li>• Annual full-scale exercise and activation of the Emergency Reservoir Operating Procedure plan with involvement and coordination with Federal, State and local partners.</li> <li>• Presentations on SRP mitigation projects to industry groups as well as east/west valley emergency manager’s groups. (Maricopa County, AZ)</li> <li>• Completed the 2013 Theodore Roosevelt Lake Sedimentation Survey, in coordination with the U.S. Department of the Interior and U.S. Bureau of Reclamation</li> </ul>
Scottsdale	<ul style="list-style-type: none"> <li>• The City of Scottsdale is dedicated to the continued coordination and collaboration with internal (city) and external partners relating to the implementation or actions towards hazard mitigation.</li> <li>• Public education events such as community forums, mass mailing and local cable television about flooding hazards and wildfire hazards have been done in the previous five years.</li> <li>• Internal coordination which has included stormwater management, public works and emergency management agencies highlighting and coordinating mitigation efforts with emphasis on National Flood Insurance program impact has also been done in the last five years.</li> </ul>
Surprise	<ul style="list-style-type: none"> <li>• Sought public input in the development of the Capital Improvement Budget that incorporates projects that seek to fulfil the intent of the Hazard Mitigation Plan.</li> <li>• Public Presentations in partnership with the Flood Control District of Maricopa County to educate residents and businesses on flood related hazards</li> <li>• Social media campaigns to raise awareness of the local hazards impacting Surprise.</li> <li>• Annual council presentations from various departments requesting the authority to apply for grants that seek to gain funding for projects that will lessen the identified hazards.</li> </ul>
Tempe	<ul style="list-style-type: none"> <li>• Fire prevention booths at public events, including Tempe Festival for the Arts.</li> <li>• Social Media posts during relevant events, including historic flooding.</li> <li>• Website updates to alert public to on-going emergencies including flooding.</li> </ul>
Tolleson	<ul style="list-style-type: none"> <li>• Periodic emergency response updates to city council via the City Manager’s update to council</li> <li>• Maintenance of a city webpage whereby any prepared plans may be posted along with local contact(s) for more information</li> </ul>

**Table 7-1: Continued public involvement activities performed by jurisdictions during the 2009 Plan cycle**

Jurisdiction	Public Involvement Activity or Opportunity
Unincorporated Maricopa County	<ul style="list-style-type: none"> <li>Maintained a permanent website with digital copies of the plan available for download and mechanisms for comments to be generated and submitted</li> <li>The FCDMC hosts regular Flood Control Advisory Board meetings that are open to the public, wherein current and future flood mitigation related topics are discussed.</li> <li>Coordinated various Transportation related projects/improvements, Planning and Development projects, Emergency Preparedness, and fuel reduction projects – all of which had some element of public outreach.</li> <li>Maricopa County conducted town halls on various topics and shared hazard related information and announcements via social media on a daily basis.</li> <li>County leadership has been briefed and has approved county projects and plans</li> </ul>
Wickenburg	<ul style="list-style-type: none"> <li>Wickenburg Fire department has completed various fuel reduction projects involving the removal of vegetation in critical fire areas, which improves the landscape, along with fire hazard reduction and flood hazard mitigation in the lower lying areas.</li> <li>The Town of Wickenburg Community Services Department has engaged the public in “Make a Difference Day” in which they choose certain areas that need fuel reduction work or general cleanup of washes and drainages to improve the neighborhoods and reduce hazards.</li> </ul>
Youngtown	<ul style="list-style-type: none"> <li>Annual presentation/updates to town council.</li> <li>Maintain emergency management plan with current updates.</li> </ul>

Table 7-2 summarizes activities for public involvement and dissemination of information that shall be pursued whenever possible and appropriate by the Plan jurisdictions.

**Table 7-2: Continued public involvement activities or opportunities identified by each participating jurisdiction**

Jurisdiction	Public Involvement Activity or Opportunity
ALL Participating Jurisdictions	<ul style="list-style-type: none"> <li>Centralize posting of Plan to the MCDEM website with each participating jurisdiction providing a brief note and link to the county’s website on their local website, as appropriate.</li> <li>LEPC meetings – regular announcement of hazard mitigation information and availability of the Plan for review and reference.</li> <li>Presentation of mitigation actions/projects as they are implemented, to boards, councils, and/or trustees, as appropriate.</li> </ul>
Avondale	<ul style="list-style-type: none"> <li>The City of Avondale believes social media (twitter, face book, other applications) will be the most efficient and effective method to communicate with residents and continue to get public involvement when it relates to emergency management and hazard mitigation.</li> <li>The city will also provide periodic update to the city council on EM/hazard mitigation and provide information via the web site.</li> </ul>
Buckeye	<ul style="list-style-type: none"> <li>As the use of social media grows, the Buckeye Fire Department intends to continue to use this resource to reach out to the community. We have found it to be a successful way to engage the community and distribute information to the public, receiving much feedback from our citizens.</li> <li>We will explain this program in our next Leadership and Citizens’ Academies as they come up on an annual basis.</li> </ul>

<b>Table 7-2: Continued public involvement activities or opportunities identified by each participating jurisdiction</b>	
<b>Jurisdiction</b>	<b>Public Involvement Activity or Opportunity</b>
Carefree	<ul style="list-style-type: none"> <li>• The Town of Carefree will use the town’s email system (COINS) to disseminate appropriate updates to the community while at the same time asking the public for any input regarding the plan.</li> <li>• The Town’s Emergency Manager will provide an update on an annual basis to the town council either through the required annual report, or at normal council sessions on or near the annual date of the plans adoption.</li> </ul>
Cave Creek	<ul style="list-style-type: none"> <li>• Continue to maintain a link on the town’s website that directs viewers to the county’s website where the Plan is posted.</li> </ul>
Chandler	<ul style="list-style-type: none"> <li>• A redesign of the city's website will include updates to the Emergency Preparedness section and related pages, making them compatible with mobile devices, and integrating them into the city's customized mobile app.</li> <li>• Continue to use the prevailing social media tools to communicate with the public. This will include producing more video for YouTube and other sites.</li> <li>• Continue to host the quarterly open house events for the public.</li> <li>• Continue to conduct the annual Drowning Prevention Campaign.</li> </ul>
El Mirage	<ul style="list-style-type: none"> <li>• Social media such as web postings will be utilized.</li> <li>• Additional methods will and can include mailings, local newspaper, and other means of social media. The public may give feedback by emailing the department, the city, social media such as Facebook and a link to the county website has been provided on the city web page.</li> <li>• The MJHMP has been posted with a link for citizen feedback.</li> </ul>
Fountain Hills	<ul style="list-style-type: none"> <li>• Provide materials that elevate the public awareness of the hazards that may pose a risk to the community at our Public Safety Day</li> <li>• Use season specific postings on social media reminding the public of the potential risks for hazards that may be prevalent at the time.</li> </ul>
Fort McDowell Yavapai Nation	<ul style="list-style-type: none"> <li>• It is anticipated that the final plan will continue to be available electronically through the website and social media, with annual newsletter articles identifying the plan as well as how the public can make contact with a local person regarding the plan.</li> </ul>
Gila Bend	<ul style="list-style-type: none"> <li>• Making at a minimum, annual presentations to the council regarding the status of the Plan and in particular, successful implementation of actions/projects.</li> <li>• Provide materials that elevate the public awareness of the hazards that may pose a risk to the community via website, handouts at events, parades, etc.</li> </ul>
Gilbert	<ul style="list-style-type: none"> <li>• Continue to use town social media and website to educate and remind citizens of local hazards and risks associated to weather prevalent at the time, answer and address questions and feedback.</li> <li>• Continue to make presentations to local groups and clubs concerning local hazards</li> <li>• Continue to raise public awareness of hazards by providing material and information at local fairs, and special family and community events.</li> </ul>

<b>Table 7-2: Continued public involvement activities or opportunities identified by each participating jurisdiction</b>	
<b>Jurisdiction</b>	<b>Public Involvement Activity or Opportunity</b>
Glendale	<ul style="list-style-type: none"> <li>• The Glendale Division of Emergency Management will continue to maintain an active role and participation in Social Media, city webpage, and utilities insert mailings to explain and educate the public on the 2015 Mitigation Plan</li> <li>• The Glendale Division of Emergency Management will provide education classes to those staffers and elected officials on a yearly basis educating them on Emergency Management and the various plans in place (Mitigation, EOP, etc.)</li> <li>• The training section of the Glendale Division of Emergency Management will send out seasonal educational tips and pointers specific to the Mitigation Plan.</li> <li>• Make an annual presentation meeting to the public for any questions and concerns pertaining to the Mitigation Plan</li> </ul>
Goodyear	<ul style="list-style-type: none"> <li>• The City of Goodyear will continue to seek public involvement during our annual 9/11 breakfast. Our CRR Division and Volunteers will lead the effort.</li> </ul>
Guadalupe	<ul style="list-style-type: none"> <li>• Make annual presentation to the council and public regarding the status of the Plan.</li> <li>• Continue posting the Plan Link on town web site with contact information for anyone with questions and input.</li> </ul>
Litchfield Park	<ul style="list-style-type: none"> <li>• Engage CERT graduates in future tabletops, enlarge pool of CERT volunteers, hold cooperative continuing education training with Goodyear Fire.</li> <li>• Plan Standardized Awareness Training course for citizen participation, one SAT Instructor on staff. Goal is to educate 100 residents.</li> <li>• Website: Establish email link for citizens to provide feedback electronically and update contact information when Emergency Management functions move in the new fiscal year.</li> </ul>
Mesa	<ul style="list-style-type: none"> <li>• The City of Mesa provides information to the public using the Community Emergency Notification System (CENS), also called Reverse 9-1-1. If an event, incident, disaster or emergency meeting the CENS activation criteria occurs, the 9-1-1 dispatch center in Mesa will call and provide information and/or instruction to subscribers. A website is provided for potential subscribers that provide information, frequently asked questions, and registration information.</li> <li>• The City of Mesa through the Mesa Fire/Medical Department Emergency Management Division will continue to maintain an inter-active city webpage providing a brief description of the Maricopa County Hazard Mitigation Plan with a link to the county's website where the Plan is posted and a local contact for anyone with questions and feedback. Links to FEMA, and ADEM are provided, as well as a downloadable Emergency Preparation Guide and information on how to prepare for an emergency.</li> <li>• The City of Mesa through the Mesa Fire/Medical Department Public Information Office will continue to provide season specific postings on social media reminding the public of the potential risks for hazards that may be prevalent at the time. This has allowed the public to provide feedback and ask questions.</li> </ul>

<b>Table 7-2: Continued public involvement activities or opportunities identified by each participating jurisdiction</b>	
<b>Jurisdiction</b>	<b>Public Involvement Activity or Opportunity</b>
Paradise Valley	<ul style="list-style-type: none"> <li>• The Town of Paradise Valley has budgeted for water shed studies for the two areas of town that were most significantly impacted during the rains and floods of last year.</li> <li>• The Town of Paradise Valley will completely rewrite our Stormwater Management Manual in the next fiscal year.</li> <li>• Both of these activities will include significant public involvement.</li> </ul>
Peoria	<ul style="list-style-type: none"> <li>• The City of Peoria will continue to seek opportunities to promote emergency preparedness via public events and local media sources such as our web pages and social media accounts.</li> </ul>
Phoenix	<ul style="list-style-type: none"> <li>• The City of Phoenix is committed to increased social media efforts (including the expansion of different social media platforms (Instagram and YouTube) as well as up-to-date information on phoenix.gov.</li> <li>• Specifically, the City of Phoenix’s interactive website (phoenix.gov) has links to each city department, including the Office of Homeland Security and Emergency Management. This department webpage provides a link to the Maricopa County Multi-Jurisdictional Hazard Mitigation plan.</li> </ul>
Queen Creek	<ul style="list-style-type: none"> <li>• Continue to make presentations to local groups concerning local hazards.</li> <li>• Continue to raise public awareness of monsoon hazards, preparedness tips and other weather related events utilizing town social media, website and other tools as available and appropriate.</li> <li>• Continue to offer training through town resources and partnerships including the CERT and Skywarn programs.</li> </ul>
Salt River Pima-Maricopa Indian Community	<ul style="list-style-type: none"> <li>• Quarterly Tribal Emergency Response Commission Meetings that are open to the public meetings and have “call to public” on the agenda. This meeting enables tribal members to hear updates on community hazards and mitigation efforts, as well as give them the opportunity to provide input into these efforts.</li> </ul>
Salt River Project	<ul style="list-style-type: none"> <li>• SRP will continue to remain active on Twitter and Facebook to continually engage the public in ways to mitigate emergencies and accidents related to hazards that are associated with the delivery of water and electricity.</li> <li>• SRP continues to conduct annual site familiarization/training with local fire departments at key substations, switchyards and receiving stations throughout Maricopa County and Pinal County.</li> <li>• Design and facilitate a course of instruction to grid operators from the Western Electricity Coordination Council (WECC) on the importance of mitigation factors in regards to wildland fires around power corridors</li> <li>• Facilitate a workshop at the Utility Emergency Response Conference in Washington DC on emergency response, with an emphasis on wildland fire mitigation and emergency response.</li> <li>• Continued partnership with Maricopa County Department of Emergency Management in posting their Emergency Preparedness survey for county residents on the SRP website. Encourage employees that reside in Maricopa County to participate in the survey.</li> </ul>

<b>Jurisdiction</b>	<b>Public Involvement Activity or Opportunity</b>
Scottsdale	<ul style="list-style-type: none"> <li>• The plan and proposed changes will be posted on the city’s Emergency Management website and will contain an email address and phone number to which people can direct comments and concerns.</li> <li>• A public meeting will be held after each annual evaluation or when deemed necessary by the Office of Emergency Management. The meetings will offer a forum for concerns, opinions, or ideas about the plan. The Office of Emergency Management will be responsible for using city resources to publicize the annual public meeting and for maintaining public involvement through Scottsdale City Cable (Channel 11), the City’s Emergency Management webpage, appropriate City of Scottsdale social media accounts and local newspapers.</li> </ul>
Surprise	<ul style="list-style-type: none"> <li>• The City of Surprise intends to continue the Public Involvement identified above. It is our intent to incorporate many of the items within the Hazard Mitigation Plan within the General Plan 2035. This will require extensive public outreach, numerous council and board meetings, and ultimately consideration from the voting public.</li> <li>• The city also intends to publish a summary of the Hazard Mitigation plan within the monthly citywide publication and publish the plan on the city’s webpage.</li> </ul>
Tempe	<ul style="list-style-type: none"> <li>• Provide Friday Packet updates to council regarding on-going or completed efforts outlined in the Plan.</li> <li>• Including updated links on relevant city websites.</li> <li>• Appropriate Social Media outreach via city and Tempe Fire accounts for seasonal / on-going events.</li> <li>• Brief discussion at interagency events including: AZWARN, LEPC, etc.</li> </ul>
Tolleson	<ul style="list-style-type: none"> <li>• Continue to provide periodic emergency response updates to city council via the City Manager’s update to council</li> <li>• Provide maintenance of a city webpage whereby any prepared plans may be posted along with local contact(s) for more information</li> </ul>
Unincorporated Maricopa County	<ul style="list-style-type: none"> <li>• MCDEM will continue to maintain a dedicated webpage hosting a copy of the Plan and providing a mechanism for submitting comments or questions regarding the Plan and hazard mitigation in general</li> <li>• Maricopa County will continue to keep the residents informed and educated on project and improvement with in their county. We will strive to increase our public involvement and outreach via current and future communication tools.</li> <li>• Maricopa County will post all county approved plans on the respective department’s websites, as appropriate. Informed residents are prepared residents</li> </ul>
Wickenburg	<ul style="list-style-type: none"> <li>• Every fire season the fire department will hand out and give public presentation on fuel reduction projects and will assist in surveying property to provide information and consultation on hazard reduction for homeowners.</li> </ul>

<b>Table 7-2: Continued public involvement activities or opportunities identified by each participating jurisdiction</b>	
<b>Jurisdiction</b>	<b>Public Involvement Activity or Opportunity</b>
Youngtown	<ul style="list-style-type: none"> <li>• Provide materials that elevate the public awareness of the hazards that may pose a risk to the community via safety fairs, county fairs, special celebrations, etc.</li> <li>• Maintain an interactive tribal/county/city/town webpage providing a brief description of the Plan with a link to the county’s website where the Plan is posted and a local contact for anyone with questions.</li> <li>• Through our liability insurance carrier, safe personnel on-line training with pertinent topics is set up for employees to learn and heighten safety and emergency awareness through on-line videos, etc.</li> </ul>

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**SECTION 8: PLAN TOOLS**

**8.1 Acronyms**

A/P	Mitigation Action/Project
ADEM	Arizona Division of Emergency Management
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
AGFD	Arizona Game and Fish Department
ARS	Arizona Revised Statutes
ASCE	American Society of Civil Engineers
ASERC	Arizona State Emergency Response Commission
ASLD	Arizona State Land Department
ASU	Arizona State University
AZDEQ	Arizona Department of Environmental Quality
AZGS	Arizona Geological Survey
BLM	Bureau of Land Management
CAP	Central Arizona Project
CAP	Community Assistance Program
CFR	Code of Federal Regulations
CRS	Community Rating System
CWPP	Community Wildfire Protection Plan
DEMA	Arizona Department of Emergency and Military Affairs
DFIRM	Digital Flood Insurance Rate
DMA 2000	Disaster Mitigation Act of 2000
DOT	Department of Transportation
EHS	Extremely Hazardous Substance
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right to Know Act
FCDMC	Flood Control District of Maricopa County
FEMA	Federal Emergency Management Agency
FMA	Flood Mitigation Assistance Grant Program
GIS	Geographic Information System
HAZMAT	Hazardous Material
HAZUS-MH	Hazards United States Multi-Hazard
HMA	Hazard Mitigation Assistance
IFCI	International Fire Code Institute
LEPC	Local Emergency Planning Committee
MCDEM	Maricopa County Department of Emergency Management
MCDOT	Maricopa County Department of Transportation
MJHMP	Multi-Jurisdictional Hazard Mitigation Plan
MMI	Modified Mercalli Intensity
NCA	National Climate Assessment
NCDC	National Climate Data Center
NDMC	National Drought Mitigation Center
NESDIS	National Environmental Satellite, Data and Information Service
NFHL	National Flood Hazard Layer
NFIP	National Flood Insurance Program
NFPA	National Fire Protection Association
NHC	National Hurricane Center
NIBS	National Institute of Building Services
NID	National Inventory of Dams
NIST	National Institute of Standards and Technology
NSF	National Science Foundation
NOAA	National Oceanic and Atmospheric Administration

NRC	National Response Center
NWS	National Weather Service
PDSI	Palmer Drought Severity Index
RL	Repetitive Loss
SARA	Superfund Amendments and Reauthorization Act
SRLP	Severe Repetitive Loss Properties
SRL	Severe Repetitive Loss
SRP	Salt River Project
UBC	Uniform Building Code
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFS	United States Forest Service
USGCRP	U.S. Global Change Research Program
USGS	United States Geological Survey
VA	Vulnerability Analysis
WUI	Wildland Urban Interface

## 8.2 Definitions

The following terms and definitions are provided for reference and are taken from the 2007 State Plan with a few minor modifications.

## ARIZONA HAZARDS

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### Dam Failure

A dam failure is a catastrophic type of failure characterized by the sudden, rapid and uncontrolled release of impounded water. Dam failures are typically due to either overtopping or piping and can result from a variety of causes including natural events such as floods, landslides or earthquakes, deterioration of foundation or compositional materials, penetration by vegetative roots or animal burrows, fissures or improper design and construction. Such a failure presents a significant potential for a disaster as significant loss of life and property would be expected in addition to the possible loss of power and water resources.

### Drought

A drought is a deficiency of precipitation over an extended period of time, resulting in water shortage for some activity, group or environmental sector. "Severe" to "extreme" drought conditions endanger livestock and crops, significantly reduce surface and ground water supplies, increase the potential risk for wildland fires, increase the potential for dust storms, and cause significant economic loss. Humid areas are more vulnerable than arid areas. Drought may not be constant or predictable and does not begin or end on any schedule. Short term droughts are less impacting due to the reliance on irrigation and groundwater in arid environments.

### Earthquake

An earthquake is a naturally-induced shaking of the ground, caused by the fracture and sliding of rock within the Earth's crust. The magnitude is determined by the dimensions of the rupturing fracture (fault) and the amount of displacement that takes place. The larger the fault surface and displacement, the greater the energy. In addition to deforming the rock near the fault, this energy produces the shaking and a variety of seismic waves that radiate throughout the Earth. Earthquake magnitude is measured using the Richter Scale and earthquake intensity is measured using the Modified Mercalli Intensity Scale.

### Fissure

Earth fissures are tension cracks that open as the result of subsidence due to severe overdrafts (i.e., pumping) of groundwater, and occur about the margins of alluvial basins, near exposed or shallow buried bedrock, or over zones of differential land subsidence. As the ground slowly settles, cracks form at depth and propagate towards the surface, hundreds of feet above. Individual fissures range in length from hundreds of feet to several miles, and from less than an inch to several feet wide. Rainstorms can erode fissure walls rapidly causing them to widen and lengthen suddenly and dangerously, forming gullies five to 15- feet wide and tens of feet deep.

**Flooding**

Flooding is an overflowing of water onto normally dry land and is one of the most significant and costly of natural disasters. Flooding tends to occur in Arizona during anomalous years of prolonged, regional rainfall (typical of an El Nino year), and is typified by increased humidity and high summer temperatures.

Flash flooding is caused by excessive rain falling in a small area in a short time and is a critical hazard in Arizona. Flash floods are usually associated with summer monsoon thunderstorms or the remnants of a tropical storm. Several factors contribute to flash flooding: rainfall intensity and duration, topography, soil conditions, and ground cover. Most flash flooding is caused by slow-moving thunderstorms or thunderstorms repeatedly moving over the same area and can occur within a few minutes or hours of excessive rainfall, or a quick release from a dam or levee failure. Thunderstorms produce flash flooding, often far from the actual storm and at night when natural warnings may not be noticed.

**Landslide / Mudslide**

Landslides like avalanches are massive downward and outward movements of slope-forming materials. The term landslide is restricted to movement of rock and soil and includes a broad range of velocities. Slow movements, although rarely a threat to life, can destroy buildings or break buried utility lines. A landslide occurs when a portion of a hill slope becomes too weak to support its own weight. The weakness is generally initiated when rainfall or some other source of water increases the water content of the slope, reducing the shear strength of the materials. A mud slide is a type of landslide referred to as a flow. Flows are landslides that behave like fluids: mud flows involve wet mud and debris.

**Levee Failure / Breach**

Levee failures are typically due to either overtopping or erosive piping and can result from a variety of causes including natural events such as floods, hurricane/tropical storms, or earthquakes, deterioration of foundation or compositional materials, penetration by vegetative roots or animal burrows, fissures, or improper design, construction and maintenance. A levee breach is the opening formed by the erosion of levee material and can form suddenly or gradually depending on the hydraulic conditions at the time of failure and the type of material comprising the levee.

**Severe Wind**

Thunderstorms are characterized as violent storms that typically are associated with high winds, dust storms, heavy rainfall, hail, lightning strikes, and/or tornadoes. The unpredictability of thunderstorms, particularly their formation and rapid movement to new locations heightens the possibility of floods. Thunderstorms, dust/sand storms and the like are most prevalent in Arizona during the monsoon season, which is a seasonal shift in the winds that causes an increase in humidity capable of fueling thunderstorms. The monsoon season in Arizona typically is from late-June or early-July through mid-September.

Tornadoes are violently rotating columns of air extending from a thunderstorm to the ground. The most violent tornadoes are capable of tremendous destruction with wind speeds in excess of 250 mph. Damage paths can exceed a mile wide and 50 miles long. The damage from tornadoes is due to high winds. The Fujita Scale of Tornado Intensity measures tornado / high wind intensity and damage.

Tropical Storms are storms in which the maximum sustained surface wind ranges from 39-73 mph. Tropical storms are associated with heavy rain and high winds. High intensity rainfall in short periods is typical. A tropical storm is classified as a hurricane when its sustained winds reach or exceed 74 mph. These storms are medium to large in size and are capable of producing dangerous winds, torrential rains, and flooding, all of which may result in tremendous property damage and loss of life, primarily in coastal populated areas. The effects are typically most dangerous before a hurricane makes landfall, when most damage occurs. However, Arizona has experienced a number of tropical storms that caused extensive flooding and wind damage.

**Subsidence**

Land subsidence in Arizona is primarily attributed to substantial groundwater withdrawal from aquifers in sedimentary basins. As the water is removed, the sedimentary layers consolidate resulting in a general lowering of the corresponding ground surface. Subsidence frequently results in regional bowl-shaped depressions, with loss of elevation greatest in the center and decreasing towards the perimeter. Subsidence can measurably change or reverse basin gradients causing expensive localized flooding and adverse impacts or even rupture to long-baseline infrastructure such as canals, sewer systems, gas lines and roads. Earth fissures are the most spectacular and destructive manifestation of subsidence-related phenomena.

**Wildfire**

Wildfire is a rapid, persistent chemical reaction that releases heat and light, especially the exothermic combination of a combustible substance with oxygen. Wildfires present a significant potential for disaster in the southwest, a region of relatively high temperatures, low humidity, low precipitation, and during the spring moderately strong daytime winds. Combine these severe burning conditions with people or lightning and the stage is set for the occurrence of large, destructive wildfires.

**Winter Storm**

Winter storms bring heavy snowfall and frequently have freezing rain and sleet. Sleet is defined as pellets of ice composed of frozen or mostly frozen raindrops or refrozen partially melted snowflakes. These pellets of ice usually bounce after hitting the ground or other hard surfaces. Freezing rain begins as snow at higher altitudes and melts completely on its way down while passing through a layer of air above freezing temperature, then encounters a layer below freezing at lower level to become super cooled, freezing upon impact of any object it then encounters. Because freezing rain hits the ground as a rain droplet, it conforms to the shape of the ground, making one thick layer of ice. Snow is generally formed directly from the freezing of airborne water vapor into ice crystals that often agglomerates into snowflakes. Average annual snowfall in Arizona varies with geographic location and elevation, and can range from trace amounts to hundreds of inches. Severe snow storms can affect transportation, emergency services, utilities, agriculture and basic necessities supply to isolated communities. In extreme cases, snow loads can cause significant structural damage to under-designed buildings.

**GENERAL PLAN TERMS**

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**Actions/Projects**

Specific actions or projects that help achieve goals and objectives.

**Asset**

Any natural or human-caused feature that has value, including, but not limited to people; buildings; infrastructure like bridges, roads, and sewer and water systems; lifelines like electricity and communication resources; or environmental, cultural, or recreational features like parks, dunes, wetlands, or landmarks.

**Building**

A structure that is walled and roofed, principally above ground and permanently affixed to a site. The term includes a manufactured home on a permanent foundation on which the wheels and axles carry no weight.

**Critical Facilities and Infrastructure**

Systems or facilities whose incapacity or destruction would have a debilitating impact on the defense or economic security of the nation. The Critical Infrastructure Assurance Office (CIAO) defines eight categories of critical infrastructure, as follows:

**Telecommunications infrastructure:** Telephone, data services, and Internet communications, which have become essential to continuity of business, industry, government, and military operations.

**Electrical power systems:** Generation stations and transmission and distribution networks that create and supply electricity to end-users.

**Gas and oil facilities:** Production and holding facilities for natural gas, crude and refined petroleum, and petroleum-derived fuels, as well as the refining and processing facilities for these fuels.

**Banking and finance institutions:** Banks, financial service companies, payment systems, investment companies, and securities/commodities exchanges.

**Transportation networks:** Highways, railroads, ports and inland waterways, pipelines, and airports and airways that facilitate the efficient movement of goods and people.

**Water supply systems:** Sources of water; reservoirs and holding facilities; aqueducts and other transport systems; filtration, cleaning, and treatment systems; pipelines; cooling systems; and other delivery mechanisms that provide for domestic and industrial applications, including systems for dealing with water runoff, wastewater, and firefighting.

**Government services:** Capabilities at the federal, state, and local levels of government required to meet the needs for essential services to the public.

**Emergency services:** Medical, police, fire, and rescue systems.

**Disaster Mitigation Act of 2000 (DMA2K)**

A law signed by the President on October 30, 2000 that encourages and rewards local and state pre-disaster planning, promotes sustainability as a strategy for disaster resistance, and is intended to integrate state and local planning with the aim of strengthening statewide mitigation planning.

**Emergency Preparedness and Response (EPR) Directorate**

One of five major Department of Homeland Security Directorates which builds upon the formerly independent Federal Emergency Management Agency (FEMA). EPR is responsible for preparing for natural and human-caused disasters through a comprehensive, risk-based emergency management program of preparedness, prevention, response, and recovery. This work incorporates the concept of disaster-resistant communities, including providing federal support for local governments that promote structures and communities that reduce the chances of being hit by disasters.

**Emergency Response Plan**

A document that contains information on the actions that may be taken by a governmental jurisdiction to protect people and property before, during, and after a disaster.

**Federal Emergency Management Agency (FEMA)**

Formerly independent agency created in 1978 to provide a single point of accountability for all Federal activities related to disaster mitigation and emergency preparedness, response and recovery. As of March 2003, FEMA is a part of the Department of Homeland Security's Emergency Preparedness and Response (EPR) Directorate.

**Flood Insurance Rate Map (FIRM)**

Map of a community, prepared by FEMA that shows the special flood hazard areas and the risk premium zones applicable to the community.

**Frequency**

A measure of how often events of a particular magnitude are expected to occur. Frequency describes how often a hazard of a specific magnitude, duration, and/or extent typically occurs, on average. Statistically, a hazard with a 100-year recurrence interval is expected to occur once every 100 years on average, and would have a 1% chance – its probability – of happening in any given year. The reliability of this information varies depending on the kind of hazard being considered.

**Geographic Information Systems (GIS)**

A computer software application that relates physical features on the earth to a database to be used for mapping and analysis.

**Goals**

General guidelines that explain what you want to achieve. Goals are usually broad statements with long-term perspective.

**Hazard**

A source of potential danger or adverse condition. Hazards include both natural and human-caused events. A natural event is a hazard when it has the potential to harm people or property and may include events such as floods, earthquakes, tornadoes, tsunamis, coastal storms, landslides, and wildfires that strike populated areas. Human-caused hazard events originate from human activity and may include technological hazards and terrorism. Technological hazards arise from human activities and are assumed to be accidental and/or have unintended consequences (e.g., manufacture, storage and use of hazardous materials). While no single definition of terrorism exists, the Code of Federal Regulations defines terrorism as "...unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives."

**Hazard Event**

A specific occurrence of a particular type of hazard.

**Hazard Identification**

The process of identifying hazards that threaten an area.

**Hazard Mitigation**

Cost effective measures taken to reduce or eliminate long-term risk associated with hazards and their effects.

**Hazard Profile**

A description of the physical characteristics of hazards and a determination of various descriptors including magnitude, duration, frequency, probability, and extent.

**HAZUS**

A GIS-based nationally standardized earthquake, flood and high wind event loss estimation tool developed by FEMA.

**Implementation Strategy**

A comprehensive strategy that describes how the mitigation actions will be implemented.

**Mitigate**

To cause to become less harsh or hostile; to make less severe or painful. Mitigation activities are actions taken to eliminate or reduce the probability of the event, or reduce its severity of consequences, either prior to or following a disaster/emergency.

**Mitigation Plan**

A systematic evaluation of the nature and extent of vulnerability to the effects of natural hazards typically present in a defined geographic area, including a description of actions to minimize future vulnerability to hazards.

**Objectives**

Defined strategies or implementation steps intended to attain the identified goals. Objectives are specific, measurable, and have a defined time horizon.

**100-Hundred Year Floodplain**

Also referred to as the Base Flood Elevation (BFE) and Special Flood Hazard Area (SFHA). An area within a floodplain having a 1% or greater chance of flood occurrence in any given year.

**Planning**

The act or process of making or carrying out plans; the establishment of goals, policies, and procedures for a social or economic unit.

**Probability**

A statistical measure of the likelihood that a hazard event will occur.

**Promulgation**

To make public and put into action the Hazard Mitigation Plan via formal adoption and/or approval by the governing body of the respective community or jurisdiction (i.e. – town or city council, county board of directors, etc.).

**Q3 Data**

The Q3 Flood Data product is a digital representation of certain features of FEMA's Flood Insurance Rate Map (FIRM) product, intended for use with desktop mapping and Geographic Information Systems technology. The digital Q3 Flood Data are created by scanning the effective FIRM paper maps and digitizing selected features and lines. The digital Q3 Flood Data are designed to serve FEMA's needs for disaster response activities, National Flood Insurance Program activities, risk assessment, and floodplain management.

**Repetitive Loss Property**

A property that is currently insured for which two or more National Flood Insurance Program losses (occurring more than ten days apart) of at least \$1,000 each have been paid within any 10 year period since 1978.

**Risk**

The estimated impact that a hazard would have on people, services, facilities, and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate, or low likelihood of sustaining damage beyond a particular threshold due to a specific type of hazard event. It also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.

**Substantial Damage**

Damage of any origin sustained by a structure in a Special Flood Hazard Area whereby the cost of restoring the structure to its before-damaged condition would equal or exceeds 50% of the market value of the structure before the damage.

**Vulnerability**

Describes how exposed or susceptible to damage an asset is. Vulnerability depends on an asset's construction, contents, and the economic value of its functions. Like indirect damages, the vulnerability of one element of the community is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power—if an electric substation is flooded, it will affect not only the substation itself, but a number of businesses as well. Often, indirect effects can be much more widespread and damaging than direct effects.

**Vulnerability Analysis**

The extent of injury and damage that may result from a hazard event of a given intensity in a given area. The vulnerability analysis should address impacts of hazard events on the existing and future built environment.

**Vulnerable Populations**

Any segment of the population that is more vulnerable to the effects of hazards because of things such as lack of mobility, sensitivity to environmental factors, or physical abilities. These populations can include, but are not limited to, senior citizens and school children.

**GENERAL HAZARD TERMS**

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**Fujita Scale of Tornado Intensity**

Rates tornadoes with numeric values from F0 to F5 based on tornado winds speed and damage sustained. An F0 indicates minimal damage such as broken tree limbs or signs, while an F5 indicates severe damage sustained.

**Liquefaction**

The phenomenon that occurs when ground shaking (earthquake) causes loose soils to lose strength and act like viscous fluid. Liquefaction causes two types of ground failure: lateral spread and loss of bearing strength.

**Modified Mercalli Intensity Scale**

The Modified Mercalli Intensity Scale is commonly used in the United States by seismologists seeking information on the severity of earthquake effects. Intensity ratings are expressed as Roman numerals between I at the low end and XII at the high end. The Intensity Scale differs from the Richter Magnitude Scale in that the effects of any one earthquake vary greatly from place to place, so there may be many Intensity values (e.g.: IV, VII) measured from one earthquake. Each earthquake, on the other hand, should have just one Magnitude, although the several methods of estimating it will yield slightly different values (e.g.: 6.1, 6.3).

**Monsoon**

A monsoon is any wind that reverses its direction seasonally. In the Southwestern U.S., for most of the year the winds blow from the west/northwest. Arizona is located on the fringe of the Mexican Monsoon which during the summer months turns the winds to a more south/southeast direction and brings moisture from the Pacific Ocean, Gulf of California, and Gulf of Mexico. This moisture often leads to thunderstorms in the higher mountains and Mogollon Rim, with air cooled from these storms often moving from the high country to the deserts, leading to further thunderstorm activity in the desert. A common misuse of the term monsoon is to refer to individual thunderstorms as monsoons.

**Richter Magnitude Scale**

A logarithmic scale devised by seismologist C.F. Richter in 1935 to express the total amount of energy released by an earthquake. While the scale has no upper limit, values are typically between 1 and 9, and each increase of 1 represents a 32-fold increase in released energy.

## Appendix A

### Official Resolution of Adoption

## Appendix B

### Planning Process Documentation



# Maricopa County

Department of Emergency Management

August 27, 2014

5630 E. McDowell Road  
Phoenix, Arizona 85008  
Phone: (602) 273-1411  
Fax: (602) 275-1638  
TT: (602) 244-1638

Dear Mr. John Padilla:

The Maricopa County Department of Emergency Management has secured grant funding to begin the process of updating the 2010 Maricopa County Multi-jurisdictional Hazard Mitigation Plan (2010 Plan) with assistance from JE Fuller/Hydrology & Geomorphology, Inc. (JEF). This 5-year plan update is required to maintain compliance with federal regulations set forth by the Disaster Mitigation Act of 2000 (DMA 2000), including continued eligibility for certain non-emergency hazard mitigation grant funds, and in the case of tribes, hazard mitigation grant funds and Category C-G public assistance disaster funds.

In 2009 and 2010, Maricopa County and 27 other jurisdictions comprised of tribes, cities, towns, and other governmental organizations substantially located within the county boundaries participated in a multi-jurisdictional mitigation planning effort that resulted in the update of a 2004 version of the multi-jurisdictional hazard mitigation plan. The 2010 Plan and Tribal Annexes received official FEMA approval on April 30, 2010, and are nearing the end of the 5-year planning cycle with an expiration date of April 30, 2015.

As with past efforts, attendance at **ALL** regular planning team meetings by each participating jurisdiction (county, tribe, city, and town) is **mandatory** to maintain eligibility and inclusion in the multi-jurisdictional plan. Our planning team also has a relatively short window of time to complete the necessary tasks and perform the plan update. To that end, a goal of submitting a final draft 2015 Plan to FEMA by the forepart of April 2015 has been set by MCDEM and JEF and a pre-arranged calendar for mitigation planning team meetings has been set to keep the project on task. The following summarizes the date, time and location for those meetings.

Meeting No.	Date	Time	Location
1	September 11, 2014	9 am to Noon	Room 103, Maricopa County Animal Care and Control, 2500 South 27th Avenue, Phoenix
2	October 14, 2014	9 am to Noon	Operations Building, Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix. (Across the parking lot from the main building)
3	November 12, 2014	9 am to Noon	Adobe, Harquahala, and New River Conference Rooms, Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix. (Main Building – first floor)
4	December 9, 2014	9 am to Noon	Adobe, Harquahala, and New River Conference Rooms, Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix. (Main Building – first floor)
5	January 6, 2015	9 am to Noon	Adobe, Harquahala, and New River Conference Rooms, Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix. (Main Building – first floor)

Maricopa County  
Department of Emergency  
Management  
2035 N. 52nd Street  
Phoenix, Arizona 85008  
Phone: (602) 273-1411  
Fax: (602) 275-1638

2

Meeting No.	Date	Time	Location
6	January 20, 2015	9 am to Noon	Adobe, Harquahala, and New River Conference Rooms, Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix. (Main Building – first floor)

It is important that each jurisdiction designate one or two individuals who can consistently attend every planning team meeting and function as the primary point of contact for the plan update effort. Further involvement by others from each jurisdiction will be discussed and outlined at the first meeting.

PLEASE NOTE: The first meeting will include some introductory discussions for those not familiar with the hazard mitigation planning process and will provide an opportunity to educate officials on the requirements, process and effort involved with the update. The first meeting will also be a working meeting in which several task assignments will be made, so attendance by the community appointed primary point of contact is essential.

MCDEM and JEF look forward to working through this hazard mitigation plan update process with you and/or your planning team representative(s). If you have questions before the meeting, please contact the MCDEM primary point of contact, Ms. Meredith Bond at 602-273-1411 or JE Fuller Project Manager, Mr. W. Scott Ogden, P.E., CFM at 480-222-5717.

Sincerely,



Pete Weaver  
Director

Local Planning Team

Name	Department/Division/Branch	Title	Contributions
<b>AVONDALE</b>			
Iampaglia, Allen	Risk Management	Risk Manager	Team Member
Llyod, Rob	Information Technology	Chief Information Officer	Team Member
Lopez, Sandy	Mayor and Council	Executive Management Asst.	Team Member
Nannenga, Dale	Police Department	Police Chief	Team Member
Neerings, Mark	Information Technology	Assistant Director	Team Member
Parker, Roger	Fire - Rescue	Fire Marshal	Team Member
Reams, Chris	Park, Recreation & Library	Director	Team Member
Sexton, Kristen	Community Relations/Public Affairs	Management Assistant	Team Member
Simeri, Pier	Community Relations/Public Affairs	Director	Team Member
Simpson, Janice	Community Relations/Public Affairs	Grants Administrator	Team Member
Small, Stephanie	Neighborhood and Family Services	Director	Team Member
Stevens, Tracy	Development Services & Engineering	Director	Team Member
<b>BUCKEYE</b>			
Bill Stockley	Fire Department	Resources Captain	Assists Chief Rand.
Nate Ryan	Fire Department	Fire Marshall	Legal and regulatory capabilities worksheet. Fire codes.
Scott Zipprich	Engineering	City Engineer	Assists by reviewing utility, building, code and review, and infrastructure plans.
Jason Mahkovtz	Engineering	Deputy City Engineer	Assists by reviewing utility, building, code and review, and infrastructure plans.
George Flores	Development Services	Director	Oversight
Jean Poe	Human Resources	Risk and Safety Manager	Reviews flood insurance data
Brandyn Stewart	Fire Department	Project Management Asst.	Assists Chief Rand.
Tony Renaud	IT	GIS Administrator	Provides GIS information on the Mitigation Plan
<b>CAREFREE</b>			
John Kraetz	Fire Department	Fire Chief	Lead, edits, information inputing, LPOC
Gary Neiss	Administration	Town Administrator	General oversight
Jim Keen	Finance	Town Accountant	Public information dissemination
Kandace French	Administration	Town Clerk	Plan and document retention, prep for council action
<b>CAVE CREEK</b>			
Adam Stein	Marhal's Office	Marshal	Updated plan. Identified Hazards. Project coordinator.
David Prinzhorn	Engineering and Public Works	Town Engineer	Identified Hazards, provided plan data. Critical Infrastructure mapping.
Luke Kautzman	Planning and Development	Senior Planner	Provided all planning components. Helped identify hazards.
Michael Baxley	Building Safety	Chief Building Official	Updated Codes and provided Building data.
Brian Poore	IT	IT Coordinator	Published Documents to Website
<b>CHANDLER</b>			
Keith Hargis	Fire, Health & Medical	Battalion Chief	POC for the process. Lead LPC to ensure completion of project.
Dan Cook	Transportation and Development	Transportation Manager	Gather data and assist with and T & D requests
Warren White	Transportation and Development	Principal Engineer	Gather data and provide water specific expertise
Christina Pryor	Purchasing	Purchasing & Materials Manager	Gather data and assist with editing of documentation. Also provide purchasing insite and resource knowledge.
Rudy Hansen	Municipal Utilities	Security Coordinator	Gather data and assist in with municipal utility revisions
Gregg Capps	Municipal Utilities	Water Resource Manager	Gather data and assist in with municipal utility revisions
Blake Terhune	IT/GIS	IT Programmer/Analyst	Gather data and assist with any GIS needs
<b>EL MIRAGE</b>			
Juan Rodriguez	Fire	Battalion Chief	EOC Operations
Rod Wettlin	Courts	Director/Supervisor	Copurts Director
Sandy King	Human Resources	HR Director	Policies
Larry Dombrowsky	Public Works Director	Deputy City Manager	Policies, public works, heavy equipment, and logistics
Tom Bancome	Information Technologies	IT Director	IT infrastructure
Robert Nilles	Finance	Finance Dorector	Finances

Local Planning Team

Name	Department/Division/Branch	Title	Contributions
<b>FORT MCDOWELL YAVAPAI NATION</b>			
Mark Openshaw	Fire Department	Fire Chief	Multi-Jurisdictional Planning Team representative and jurisdictional Primary Point Of Contact, Lead coordinator for Local planning Team
Alfonso Rodriguez	Community Economic Development Division	Director	Local Planning Team participant
Jesse Delmar	Police Department	Police Chief	Multi-Jurisdictional Planning Team participant and proxy attendee for Primary Point of Contact
<b>FOUNTAIN HILLS</b>			
Randy Roberts	Fire	Fire Chief	Coordinator and Team Leader
Paul Mood	Development Services	Director	Assisted with identification and assessment of mitigation strategy. Addressed Plan Integration
Randy Harrel	Development Services	Town Engineer	Assisted with identification and assessment of mitigation strategy.
Bob Rogers	Development Services	Senior Planner	Assisted with identification and assessment of mitigation strategy.
Jason Field	Development Services	Building Official	Assisted with identification and assessment of mitigation strategy.
Dave Ott	Fire	Fire Marshal	Assisted with identification and assessment of mitigation strategy.
Craig Rudolphy	Administrative Services	Finance Director	Addressed Plan Integration
Ken Valverde	Development Services	GIS Tech	Provided NFIP Compliance Input
Mike Ciccarone	Tech Services	IT Coordinator	Provided Public Involvement support
<b>GILA BEND</b>			
TerryWeter	Public Works/Water/Wastewater/Airport	Public Works Director	CODES, ORDINANCES, PLANS, MANUALS, and/or GUIDELINES, STUDIES; PUBLIC WORKS, UTILITIES
Ernest Rubi	Administration	Town Manager	CODES, ORDINANCES, PLANS, MANUALS, and/or GUIDELINES, STUDIES; COMMUNITY DEVELOPMENT SERVICE.
Beverly Turner	Administration/Clerk	Town Clerk	CODES, ORDINANCES, PLANS, MANUALS, and/or GUIDELINES, STUDIES.
Stacey Young	Financial	Finance Officer	CODES, ORDINANCES, PLANS, MANUALS, and/or GUIDELINES, STUDIES.
<b>GILBERT</b>			
Hakon Johanson	Water Resource	Water Resource Manager	water supply and conservation
Jennifer Alvarez	Communication Office	Digital Media and Marketing Officer	Public Information Officer, messaging, digital media, website, etc.
Kenneth Morgan	Public Works Department	Public Works Director	Director of Streets, Water, Wastewater, Engineering, Environmental Services
Jessica Marlow	Public Works Department	Water Manager	Water treatment and distribution
Mark Horn	Public Works Department	Wastewater Manager	Wastewater treatment and reclaimed water
Steve Pietrzykowsky	Public Works Department	Environmental Services Manager	Solid waste and household hazardous waste
Gregory Smith	Public Works Department	Town Engineer	Engineering
Josh Friedman	Gilbert Fire and Rescue Department	Fire Investigator	Fire Code and Terrorism Liasion Officer
Tom Condit	Public Works Department	Flood Management Administrator	Flood Management/Engineer
Kyle Mieras	Development Services	Development Services Director	Director of Planning, Plans Review and Inspection Code
Larry Taylor	Development Services	Manager Plans Review and Inspection Code	Plans Review and Inspection Code
James Nelson	Gilbert Fire and Rescue Department	Deputy Chief	Fire Operations
Jon Powell	Information Technology	GIS Manager	GIS
Sheri Gibbons	Gilbert Fire and Rescue Department	Emergency Management Coordinator	Emergency Management, Plan Primary Point of Contact

Local Planning Team

Name	Department/Division/Branch	Title	Contributions
<b>GLENDALE</b>			
Jon Froke	Planning	Planning Director	Planning Director
Jessica Eastman	Planning	Planning Tech	Planning Department Representative
Chris DeChant	Fire	Executive Assistant Fire Chief	Fire Department Representative
Tim Wayne	Fire/ Emergency Management	Deputy Chief/Emergency Manager	Emergency Management Director
Tom Gill	Water Services	Operation Superintendent	Water Services Representative
Megan Sheldon	Water Services	Environmental Program Manager	Water Services Representative/Storm water Representative
James Delaittre	GIS Analyst	Information Technology	IT Representative
Devlin Fung	Sr. GIS Analyst	Information Technology	IT Representative/ GIS Representative
Kevin Link	Transportation	Transportation Manager	Transportation Representative
Michael Collin	Engineering	GIS Coordinator	GIS Representative
Justine Cornelius	Building Safety	Building Safety Manager	Building Safety Representative
Mike Lively	Police	Commander	Police Department Representative
Kim Larson	Marketing	Marketing and Community Program Manager	Marketing & Communication Representative
Paul King	Community Partnership	Recreation Manager	Community Partnership Representative
Anthony Butch	Fire/ Emergency Management	Captain/ Emergency Planner	Point of Contact/Facilitator and Local Planning Team Coordinator
<b>GOODYEAR</b>			
Mark Flynn	Public Works/Municipal Services	Manager	Public Works representative-asset inventory
David Rameriz	Engineering	City Engineer	Engineering representative-mitigation strategy and capability assessment
Captain Ron Lilley	Fire Department	Fire Marshal	Fire representative
Chris Nadeau	Police Department	Telecommunications Manager	Police representative
Othell Newbill	Fire Department	Emergencny Manager	Primary POC
<b>GUADALUPE</b>			
Wayne Clement	Town of Guadalupe Fire Department	Fire Chief/Emergency Manager	Town of Guadalupe Coordinator for Mitigation meetings, updating all homework
Rosemary Arellano	Town of Guadalupe	Town Manager	Assisting in the update and data collection of the mitigation homework, setting priorities.
<b>LITCHFIELD PARK</b>			
Sonny Culbreth	City Manager; Community Services	Asst. City M, Community & Recreation Services Directoranager	Emergency Management Coordinator
Chuck Ransom	Building/Public Works	Building Official/Director of Field Operations	Support, road closures, resourse provider
John Rae	Building/Safety	Building and Safety inspector	Support,safety inspections
Ben Ronquillo	Finance	Director of Finance	Budget management, grant requests, Emergency expenditure tracking
Carla Reece	City Clerk Office	Assistant City Clerk	/New to Staff; will assume Emergency Management Coordinator function effective 7/1/2015

Local Planning Team

Name	Department/Division/Branch	Title	Contributions
<b>MESA</b>			
Gabe Sezate	Mesa Fire/Medical Department Emergency Management	EM Tech/TLO	MCMJHMP team member
Carlos Padilla	Water Resources	Assistant Director	Provide Information and Resources directly related to Water Resources
Jake West	Water Resources	Deputy Director of Water Dist.	Provide Information and Resources directly related to Water Resources
Michael Kennedy	Water Resources	Water Treatment Superintendent	Provide Information related to Water Treatment facilities and procedures
Ray Aguallo	Water Resources	Water Reclamation Superintendent	Provide Information related to Water Reclamation facilities and procedures
Fred Rustam	Engineering	Deputy Engineer	Provide Information related to analysis, design, and CIPs
Rob Kidder	Engineering	Assistant City Engineer	Provide Information related to analysis, design, and CIPs
Bill Norton	Energy Resources (Gas)	Deputy Director of Gas Resources	Provide Information related to Natural Gas resources
Marty Hunter	Energy Resources (Electric)	Deputy Director of Electrical Res.	Provide Information related to Electrical resources
Harry Jones	Energy Resources	CIP Director	Provide Information related to current and future CIPs
Jeff Rush	Information Technology Division	GIS Director	Provide Geographic Information
<b>PARADISE VALLEY</b>			
Jim Bacon	Administration	Town Manager	Overall responsibility
Alan Laitsch	Police Department	Commander	Responsible for response to emergency situations and securing of public buildings. Police Department will notify town government and staff of a hazard.
Jim Shano	Public Works and Engineering	Town Engineer	Responsible for identifying and repairing public buildings and infrastructure after an identified hazard. Also responsible for restricting constricting construction in washes. Maintains the Flood Plain maps and the town fleet.
Scott McCarty	Finance Department	Finance Director	Responsible for maintaining communications and GIS systems.
Robert Lee	Planning and Building	Building Safety Manager & Emergency Manager	Responsible for emergency preparations and identifying damage to public buildings after an identified hazard. Also responsible for restricting construction on hillsides. Performs routine inspections and mapping of washes.
<b>PEORIA</b>			
Andy Granger	Engineering	Director	Contributor
Bill Mattingly	Public Works	Director	Contributor
Bo Larsen	Office of Communications	Director	Contributor
Bobby Ruiz	Fire Department	Chief	Contributor
Burton Charron	Engineering	Civil Engineer	Contributor
Chris Jacques	Planning and Community Development	Director	Contributor
Clark Collier	Police Department	Commander	Contributor
Dan Nissen	Engineering	Deputy Director	Contributor
Glenn Jones	Emergency Management/Safety	Emergency Preparedness & safety Coordinator	Contributor
John Imig	Information Technology	Director	Contributor
John Sefton	Community Services	Director	Contributor
Mike Weber	Public Works-Utilities	Deputy Director	Contributor
Roy Minter	Police Department	Chief	Contributor
Scott Whyte	Economic Development	Director	Contributor
Stacy Irvine	Fire Department	Deputy Chief	Coordinator
Stuart Kent	Public Works	Deputy Director	Contributor
Timothy Smothers	Information Technology/GIS	Manager	Contributor
Walt Begley	Public Works	Manager	Contributor

Local Planning Team

Name	Department/Division/Branch	Title	Contributions
<b>PHOENIX</b>			
Shane Hurd	Water Services	Infrastructure Record Services Coordinator	Hazard: Drought
Francisco Badilla	Phoenix Street Transportation Department/Vertical Project Management	Civil Engineer III	Hazard: Fissure, Subsidence
Stephen Bunyard	Phoenix Street Transportation Department/Design and Construction Management	Architect	Hazard: Fissure, Subsidence
Paul Miluski	Phoenix Street Transportation Department/Design and Construction Management	Survey Engineer	Hazard: Fissure, Subsidence
Beth Benning	Phoenix Street Transportation Department/Planning, Design & Programming Division:Central Records Section	Admin Asst II	Hazard: Fissure, Subsidence
Gary New	Neighborhood Services Department	NP Area Supervisor	Hazard: Wildfire
Patrick Raventstein	Neighborhood Services Department	Code Compliance Manager	Hazard: Wildfire
Stephanie Romero	Public Information	Public Information Officer	Continued Public Involvement
Sharyn Zlotnik	Phoenix Office of Homeland Security and Emergency Management	Management Asst II	Hazard: Dam Inundation, Drought, Flood, Severe Wind, Wildfire
Betsy Dragan	Phoenix Office of Homeland Security and Emergency Management	Emergency Planner	Hazard: Dam Inundation, Drought, Flood, Severe Wind, Wildfire
<b>QUEEN CREEK</b>			
Joe LaFortune	Fire and Medical Department	Emergency Management Coord.	Primary Coordinator; Provide information for fire and law enforcement related facilities and infrastructure.
Troy White	Development Services Department	Public Works Manager	Provide information for Public Works related facilities and infrastructure.
Chris Doval	Development Services Department	Principal Engineer	Provide information for engineering related infrastructure, flood control plans, and geological conditions.
Brett Burningham	Development Services Department	Principal Planner	Provide information for planning related activities and documents.
Greg Homol	Utilities Department	Field Operations Superintendent	Provide information for water and wastewater related facilities and infrastructure.
Shawny Ekadis	Workforce and Technology Department	GIS Team Coordinator	GIS mapping of critical and non-critical facilities and infrastructure
<b>SALT RIVER PIMA-MARICOPA INDIAN COMMUNITY</b>			
Cliff Puckett	Emergency Management	Emergency Manager	Project Manager
David Bunce	Fire Department	Fire Chief	Planning Team Member
Juan Nieto	Community Development Department	Program specialist	Planning Team Member
Benny Bowlin	Engineering and Construction Services	Planning Coordinator	Planning Team Member
Kirk Beaty	Public Works	Director	Planning Team Member
Mike Byrd	Public Works	Assistant Director	Planning Team Member
<b>SALT RIVER PROJECT</b>			
Patrick O'Toole	Business Continuity & Emergency Management	Principal Analyst	CPOC
Karen Powell	Vegetation Management	Manager	Resource
Tim Skarupa	Water Resource Operations	Senior Hydrologist	Resource
Yvonne Reinink	Water Resource Operations	Senior Engineer	Resource
Shawn Grant	Distribution Design, Maintenance Engineering	Manager	Resource
Brian Carey	Forecasting Research & Economic Development	Manager	Resource
Wayne Wisdom	Electric System Operations	Director	Resource
<b>SCOTTSDALE</b>			
Brent Stockwell	City Manager's Office	Executive Advisor	Oversite
John Moede	Emergency Management	Team Leader	Emergency Management Issues
Kelly Corsette	Communications	Team Member	Public Information Issues
Chris Mitchell	Water Resources	Team Member	Drought Issues
Jim Ford	Fire Division Chief	Team Member	Fire Hazards
Ashley Couch	Storm Water Manager	Team Member	Flood Plain Management
Erin Perreault	Planning Manager	Team Member	Future Trends

Local Planning Team

Name	Department/Division/Branch	Title	Contributions
<b>SURPRISE</b>			
Brenden Espie	Fire / Emergency Management	Battalion Chief	Local Team Facilitator
Chris Boyd	Community Development	Building Official	Community Development Representative
Michael Boule	Public Works	Project Manager	Plan Projects
Lloyd Abrams	IT / GIS	GIS Manager	GIS Support
<b>TEMPE</b>			
Paul Nies	Fire Department	Assistant Fire Chief	Provided organizational guidance. Reviewed documents and identified work groups for participation
Rob Downing	Fire Department	Assistant Fire Chief	Participated in the mitigation process and provided information from Tempe Fire Medical Rescue Department
Jeanne Jensen	Public Works Department / Water Utilities Division	Management Assistant II	Assisted in coordination efforts for Public Works Department, and developed draft proposals for mitigation efforts.
Gregg Kent	Public Works Department / Engineering	Principal Civil Engineer	Floodplain Administrator for Tempe, coordinates FEMA Flood Insurance, CRS and other Flood related issues.
Donna Sullivan-Hancock	Public Works Department / Engineering	CIP Design & Construction Manager	Directs design and construction of Storm Drain/Drainage Capital Improvement Projects
Mark Weber	Public Works Department / Water Utilities Division	Principal Civil Engineer	Review of water enterprise fund related project work
Eric Staedicke	Public Works Department / Water Utilities Division	Environmental Quality Specialist	Review of stormwater outfall inspection related projects
Andy Goh	Public Works Department / Engineering	Deputy Director for Engineering/ City Engineer	The City Engineer is designated by City Code as the Flood Plain Manager.
Oliver Ncube	Public Works Department / Field Operations	Parks Manager	Maintenance of parks including Indian Bend Wash
Richard Dalton	Public Works Department / Water Utilities Division	Environmental Compliance Supervisor	Storm drain pipe maintenance, inspections and programs
Chris Kabala	Public Works Department / Engineering	Sr. Civil Engineer	Responsible for Tempe Town Lake dam and maintenance sections
<b>TOLLESON</b>			
Adriana Morado	Community Services	Director	Helping Citizens in the Community
Jason Earp	Public Works/Field Operations	Director	Providing needs of the other departments. i.e. barricades, etc.
George Good	Fire	Chief/Emergency Manager	Providing Public Safety
Chris Hagen	City Hall	City Clerk	Assist all Directors
Bob Hansen	Fire	Battalion Chief	MJPT attendee and overall coordination of planning elements
<b>UNINCORPORATED MARICOPA COUNTY</b>			
Andrew Brady	MCDEM	Emergency Service Planner	Provide support for Maricopa County, information on emergency management
Sara Latin	MCDEM	Administrative Service Manager	Coordinate meetings with the planning team and with Maricopa County team, provide information on emergency management
Pete Weaver	MCDEM	Director	Provide support for Maricopa County, information on emergency management
Kevin Kottmer	MCDOT	Road Maintenance Superintendent	provide support and information about roads, structures, etc. as related to MCDOT, attend meetings
Tim Murphy	MC Flood Control	FMS Plan & Tech Program Manager	CPOC
Mark Frago	MC Flood Control	Associate Project Manager	Associate - Provide information as needed, attend meeting, other support as needed
Matt Holm	MC Planning and Development	Principle Planner	Provide information on planning and development, attend meetings, provide support as needed
<b>WICKENBURG</b>			
Ed Temerowski	Wickenburg Fire/Town of Wickenburg Emergency Operations	Fire Chief/ Emergency Manager	Emergency Management/ Operations implementation and planning
Pete Wingert	Wickenburg Police/Town Of Wickenburg	Police Chief	Law Enforcement/ Communications for Emergency Operation Center
Josh Wright	Town of Wickenburg Administration	Town Manager	Adminstrator of Town resources and financials
Steve Boyle	Town of Wickenburg Administration	Town Planner	Flood plain adminsitration/ code enforcement/ GIS
Vince Loerfice	Town of Wickenburg Administration	Public Works	Infrastructure water/ wastewater/electric grid
Scott Stephens	Arizona Public Service	Manager	Power Grid/ Mapping
Kent Taylor	Southwest Gas	Construction Manager	Gas system/ Mapping
Jeanie Hankins Wright	Wickenburg Sun	Editor	Publicaton/Public Notices

Local Planning Team

Name	Department/Division/Branch	Title	Contributions
<b>YOUNGTOWN</b>			
Michael Kessler	Town of Youngtown/Public Safety	Youngtown Public Safety Manager	Lead and update team; assign responsibilities and tasks; Conduct monthly team meetings as needed
Jeanne Blackman	Town of Youngtown	Town Manager	Alternate Team Leader
Marty Mosbrucker	Town of Youngtown/Public Works	Public Works Manager	TBD
Gregory Arrington	Town of Youngtown/Building and Code Inspector	Community Development Manager	TBD

**MARICOPA COUNTY  
MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN  
2015 PLAN UPDATE**

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**MEETING DATE:** August 26, 2014

**MEETING TIME:** 10:30AM – 11:30AM

**MEETING LOCATION:** Maricopa County Department of Emergency Management  
5630 E. McDowell Rd, Phoenix, AZ  
Ready Room

**DISTRIBUTION:** Meeting Attendees

**FROM:** W. Scott Ogden, P.E. - JEF

**RE: Maricopa County Multi-Jurisdictional Hazard Mitigation Plan  
2015 Update**

**ATTENDEES:** Meredith Bond – MCDEM  
Sara Latin - MCDEM  
Pete Weaver – MCDEM

Consultants:

W. Scott Ogden – JEF

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**AGENDA**

1. INTRODUCTION
  2. PLANNING UPDATE PROCESS
    - a. FEMA Guidelines
    - b. Initial Actions
  3. PROJECT SCHEDULE
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**DISCUSSION**

**Agenda Item 1:**

- Introductions were made by all.
- M. Bond has been identified by MCDEM to take the lead on managing the update project for MCDEM, with assistance as needed from S. Latin and P. Weaver.

**Agenda Item 2a:**

- S. Ogden presented an overview / review of the mitigation process and provided copies of the pertinent portions of the recently published FEMA guidelines. S. Ogden noted that there are several elements in the new guidelines that will require attention

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and are not currently addressed in the 2009 Plan. He also noted that the guidelines and review tool will be used by FEMA to comment on the new plan.

**Agenda Item 2b:**

- S. Ogden discussed several items that need to be started prior to the first planning team meeting as follows:
  - Need to update the MCDEM hazard mitigation web page to provide a notice about the current update effort. S. Ogden will provide some template documents that can be used by MCDEM as a starting place.
  - Need to get a general introductory letter out to all the jurisdictions explaining the process and reminding of the mandatory participation requirement.
- S. Ogden confirmed with group that JEF will start with the current critical facilities list and solicit revisions / deletions / additions from the jurisdictions.
- S. Ogden noted that FEMA is paying more attention to the invitation of organizations and neighboring jurisdictions to participate in the planning process. JEF will develop a template letter for MCDEM to send out targeted mailings or emails inviting specific entities to participate. JEF will work with the Planning Team and MCDEM to develop a list.
- S. Ogden will generate an initial data request list with sufficient detail for MCDEM to pass along to the various entities (MAG, FCDMC, etc.)
- The group discussed the public involvement process. MCDEM concurred that they would take the lead on getting notices published in the more widely distributed newspapers and will continue to host the website. The remaining public involvement activities will need to be discussed and settled upon by the Planning Team.
- JEF will set up a ShareFile folder for use on this project.
- JEF will coordinate with Sue Wood at ADEM to check on any State requirements and Juliette Hayes at FEMA to check on any unknown FEMA issues.

**Agenda Item 3:**

- M. Bond provided a list of dates, times, and reserved venues for each of the six planning team meetings anticipated for the project.
  - JEF will accommodate make-up meetings to be scheduled at JEF's convenience and held at JEF's office as needed to accommodate jurisdictions that get behind.
  - S. Ogden noted that it is very likely that the current plan will expire before the new plan is completed and approved by FEMA. JEF will work with the team as efficiently as possible to get the Plan completed and approved in a timely manner.
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**ACTION ITEMS:**

1. MCDEM to update the hazard mitigation website to include a notice stating that the current plan is currently being updated.
2. JEF to provide template website, newspaper notice, organizational invite letter, and general planning team kickoff letter and provide to MCDEM
3. MCDEM to formalized the general planning team kickoff letter and send out to participating jurisdictions.
4. JEF to prepare and submit a data request list to MCDEM.\
5. JEF will set up a ShareFile folder for the project and provide login credentials to MCDEM.
6. JEF will coordinate with ADEM and FEMA.

**MARICOPA COUNTY  
MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN  
2015 PLAN UPDATE**

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**MEETING DATE:** September 11, 2014

**MEETING TIME:** 9:00AM – NOON

**MEETING LOCATION:** Maricopa County Animal Care and Control  
2500 S. 27<sup>th</sup> Avenue, Phoenix, AZ  
Room 103

**DISTRIBUTION:** Meeting Attendees

**FROM:** W. Scott Ogden, P.E. - JEF

**RE: Maricopa County Multi-Jurisdictional Hazard Mitigation Plan  
2015 Update**

**ATTENDEES:**

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Hector Andrade	Maricopa County
Meredith Bond	Maricopa County
Michael Boule	City of Surprise
Anthony Butch	City of Glendale
Kendra Cea	APS
Wayne Clement	Town of Guadalupe
Sonny Culbreth	City of Litchfield Park
Brian Darling	City of Mesa
Jesse Delman	Fort McDowell Yavapai Nation
Gary Ells	City of Tempe
Brenden Espre	City of Surprise
Mark Frago	Flood Control District of Maricopa County
Sheri Gibbons	Town of Gilbert
Bob Hansen	City of Tolleson
Keith Hargis	City of Chandler
Rob Harter	City of Glendale
Erin Hausauer	City of Avondale
Stacy Irvine	City of Peoria
Glenn Jones	City of Peoria
John Koetz	Town of Carefree
Kevin Kottmer	Maricopa County
Joe LaFortune	Town of Queen Creek
Sara Latin	Maricopa County
Bob Lee	Town of Paradise Valley
Ken Lewis	Salt River Project

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John Moede	City of Scottsdale
Othell Newbill	City of Goodyear
Scott Ogden	JE Fuller/ Hydrology and Geomorphology, Inc.
Mark Openshaw	Fort McDowell Yavapai Nation
John Padilla	APS
Cliff Puckett	Salt River-Pima Maricopa Indian Community
Randy Roberts	Town of Fountain Hills
Adam Steine	Town of Cave Creek
Farhad Tavassoli	Flood Control District of Maricopa County
Ed Termerowski	Town of Wickenburg
Pete Weaver	Maricopa County

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## AGENDA

1. INITIAL INTRODUCTIONS
2. DISCUSSION OF SCOPE AND SCHEDULE
3. DMA2K OVERVIEW AND UPDATE REQUIREMENTS
  - a. General DMA2K Overview
  - b. Update Requirements (New Crosswalk)
  - c. Proposed Outline for New Plan
4. PLANNING PROCESS
  - a. Discussion of Last Planning Process
  - b. Planning Team Roles and Responsibilities
5. PUBLIC INVOLVEMENT
  - a. Discuss Past Strategy
  - b. Formulate New Strategy
  - c. Additional Invitations
6. RISK ASSESSMENT
  - a. Initial Hazard List Identification
  - b. Critical Facilities and Infrastructure Review and Update
  - c. Initial Data Collection
7. NEXT STEPS

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## DISCUSSION

### Agenda Item 1:

- Pete Weaver opened the meeting and made a few introductory remarks regarding the plan update process. He then introduced the MCDEM staff and noted that Meredith Bond will be the primary point of contact for the planning team. He then introduced Scott Ogden and turned the rest of the meeting over to him.

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- Introductions were made by all, with each person noting whether or not they were a returning multi-jurisdictional planning team (MJPT) member from the last planning cycle.
  - It is noted that the following jurisdictions were not represented at the meeting: Buckeye, El Mirage, Gila Bend, Phoenix, and Youngtown.

**Agenda Item 2:**

- S. Ogden presented an overview of the scope and schedule for the project. Six meeting dates, times and locations have been preset so that everyone can get the dates on their calendars. JEF will also plan for separate tribal meetings to update the tribal planning elements.
- It was noted that the current Plan expires in April 2015, and that the update process will need to be prioritized to complete the process prior to the plan expiring.

**Agenda Item 3:**

- S. Ogden outlined a brief summary of the DMA 2000 process and FEMA grant programs that are eligibility impacted.
- S. Ogden briefly discussed the FEMA 2011 plan review guidance document and noted the major areas in the plan that will require extra attention or detail to meet some of the requirements outlined in the guidance document. The differences will be discussed in greater detail in later meetings as each topic is covered.
- S. Ogden presented a draft outline for the updated Plan to indicate the areas that are either proposed to be added or will require significant revisions.

**Agenda Item 4a:**

- Those returning members of the previous cycle MJPT were asked to provide feedback on the previous planning effort and process used to update the plan. Approximately half of the meeting attendees were involved in the prior plan update. In general, the returning members expressed satisfaction with the process used during the last cycle and felt that the effort was effective and efficient.

**Agenda Item 4b:**

- S. Ogden presented a discussion on the various levels of communication and planning team roles and responsibilities. The overall planning process will be accomplished using three levels of contact.
  - Meredith Bond of MCDEM will function as the primary point of contact for the plan update effort and will have the responsibility of overall administration for the planning effort. Primary duties will include scheduling meeting facilities, general contact with the planning team, consultant contract management, and liaison between the planning team and ADEM/FEMA.
  - Each jurisdiction will appoint at least one jurisdictional point of contact. The JPOC will be responsible for attendance at the MJPT meetings,

ensuring task assignments are completed, and coordination with the local planning team in their own jurisdiction.

- The local planning team is comprised staff and others that meet at the jurisdictional level to discuss and complete assignments given at the MJPT meetings. This is where the primary work of updating the various Plan elements will occur.

**Agenda Item 5:**

- S. Ogden presented an overview of the past plan cycle public involvement strategy and led the MJPT in a discussion evaluating the effectiveness of the effort. There were only a few comments and feedback received from the public at large during the last plan cycle. The MJPT was satisfied with the effort and felt the process would work well again. Accordingly, the public involvement strategy for the 2015 Plan update will employ websites, newspaper notices, bulletins and flyers in community newsletters and utility bills. The planning team will also develop a short message suitable for Tweeting or Texting, and may look into other media options for getting word out.
- S. Ogden will provide some template documents and language suitable for use by each jurisdiction in their individual efforts. MCDEM will take responsibility for updating the county website that hosts the current plan and for placing the public notices in the regional newspapers. Each jurisdiction will provide website notices that direct the public to the county website, as well as develop notices to post in municipal buildings, in local newspapers, bulletins and utility bill inserts.
- S. Ogden noted that additional effort was needed regarding extending invitations to other agencies and/or organizations that may have an interest in the mitigation planning for the county. The MJPT spend some time brainstorming a list of agencies/organizations to send a personal invitation to. JEF will work with MCDEM to get the invitation sent out before the next meeting.

**Agenda Item 6:**

- The MJPT discussed the current list of hazards assessed in the Plan and compared/contrasted that list with the list of hazards discussed in the 2013 State of Arizona Hazard Mitigation Plan. There was some discussion of recent landslides/rockfalls occurring on State Route 89 in the northern part of the county, but in general, the hazard was perceived to not pose much of a risk. The MJPT chose to continue with the hazards of the current plan.
- The current critical facility database was discussed and S. Ogden reviewed the data needed for any updates or revisions that the MJPT may want to make. JEF will provide each jurisdiction's database for review and update, along with a KML file for loading into Google Earth to show where the currently identified facilities are located.
- S. Ogden discussed collection of some initial GIS data for the hazard profiles. JEF will coordinate MCDEM, FCDMC, and other agencies as needed to obtain updated data sets for this planning effort.

**Agenda Item 7:**

- S. Ogden reviewed the action items and assignments for the MJPT.
- Next Meeting:

**Date: October 14, 2014**

**Time: 9am to Noon**

**Place: Operations Building, Flood Control District of Maricopa County  
(2801 West Durango Street, Phoenix - across the parking lot from the main building)**

**ACTION ITEM SUMMARY:**

<b>ITEM NO.</b>	<b>DESCRIPTION</b>	<b>RESPONSIBILITY [DUE DATE]</b>
1-1	Review and become familiar with the 2010 MCMJHMP	All Jurisdictions [10/14/14]
1-2	JEF to provide template website text, newspaper notice, and agency/organization invite letter for use by the MJPT.	JEF [9/18/14]
1-3	Coordinate the publication of newspaper notices in the major newspapers covering the Phoenix Valley (Arizona Republic and East Valley Tribune).	MCDEM [9/30/14]
1-4	Use the public involvement template documents provided by JEF to develop and post website notices and develop newsletters, fliers, utility inserts, and public notices for publishing in local newspapers.	All Jurisdictions [10/14/14]
1-5	Develop a 120 character or less message for use by the MJPT as a Tweet and look into the possibility of a Facebook page.	MCDEM (M. Bond) [9/30/14]
1-6	Coordinate with FCDMC on obtaining updated Dam Inundation data and possibly levee failure data if available.	JEF [9/30/14]
1-7	Coordinate with Logan Simpson Design (Richard Remington) to obtain CWPP data sets.	JEF [9/30/14]
1-8	Provide each jurisdiction's critical facility database for review and update, along with a KML file for loading into Google Earth to show where the currently identified facilities are located.	JEF [9/18/14]
1-9	Review and update critical facility list and provide updated spreadsheet to JEF.	All Jurisdictions [10/14/14]
1-10	Each jurisdiction to review Logos used in the 2010 Plan and send updated logos if needed	All Jurisdictions [10/14/14]
1-11	JEF to provide template Local Planning Team worksheet for use by the MJPT.	JEF [9/18/14]
1-12	Complete Local Planning Team worksheet	All Jurisdictions [10/14/14]



Name	Jurisdiction/Agency/Organization	Department/Division/Branch	Title	Office Phone	Cell Phone	E-Mail Address
John Padilla	APS	Transmission & Distribution	EMERG. MGT. COORDINATOR	602-271-6589	480-268-4900	john.padilla@aps.com
Cliff Puckett	Salt River Indian Community	Emergency Management	Emergency Manager	480-358-3502	480-268-4900	cliff.puckett@srpic-nsn.gov
Joe LaFortune	Town of Queen Creek	Fire + Medical	Emerg. Mgt. Coordinator	480-358-3502	480-268-4900	jla@townofqueen.creek.az.gov
Rob Hester	Glendale Fire LEM	FIRE / EMERGENCY MGMT	EM COORD	423-980-3400	602-909-2575	rob.hest@glendaleaz.gov
Ed Temerowski	Wichambury Fire	Fire / Emergency MGT	Fire Chief	602-399-1419	5-A	etemerowski@wichamburyaz.gov
Sara Lahn	MCDON	MCDON	Finance	602-373-1411		
Stacy Irwin	DeRia Fire/EM	FIRE/EM	Deputy Chief/EM	602-778-7905	602-809-4096	stacy.irwin@deariamaz.gov
Glenn Jov	Peoria ER	EM / Safety		602-333-5252		
Mark Frago	FCOMC	Floodplain Mgmt	Mitigation Planning Analyst	602-506-0750		mark.frago@mail.maricopa.gov
Ken Lewis	Salt River Project	Emergency Mgmt	Principal Analyst	602-336-8194	602-703-3822	ken.lewis@srpnet.com
Rob Hansen	City of Tolleson	Fire Department	Battalion Chief	602-474-4981	602-739-3027	rob.hansen@tollesonaz.gov
Brian Dantine	Mesa Fire / MCDON	FIRE DEPT	CAPTAIN	480-644-3092	480-682-7769	brian.dantine@mesafire.org
Bo Lee	Paradise Valley	Emergency Mgmt	Building Officer	480-348-3631	602-405-4048	bo.lee@paradisevalleyaz.gov
Erin Klausauer	Avondale	Emergency Management	Emergency Mgmt Officer	623-333-1027	320-260-7389	eriklausauer@avondale.org
Michael Baker	Surprise	Engineering	Project Manager	623-222-1010	623-670-0281	michael.baker@surprise.gov
Anthony Butch	Glendale Fire	FIRE/EM	Assistant Fire Chief	623-872-5090	480-296-1732	anthonybutch@glendaleaz.gov
Adam Steid	Cant Creek	Marsh's office	Marsh's	480-488-6636	480-519060	adam.steid@cantcreek.org
Marye Clewett	GoodValley	Fire	Fire Chief/EM	480-839-1112	480-683-3447	marye.clewett@goodvalleyaz.gov
Fahad Tavassoli	Flood Control Dist.	Floodplain Mgmt.	Assoc. Project Mgr.	602-506-8713		fahad.tavassoli@mail.maricopa.gov
Kendra Cear	AFS	Health & Safety	Rel Mgr	602-371-7872	602-839-1147	kendra.cear@afs.com
GARY ELLS	Tempe Fire	Special Ops	Deputy Chief	480-858-7213	480-839-239	garry.ells@tempeaz.gov
John Moore	SCOTTSDALE	OPERATIONS	ROAD SUPERINTENDENT	480-812-1832	"	john.moore@scottsdale.gov
Kevin Kofner	MCDON	OPERATIONS	ROAD SUPERINTENDENT	602-506-8664	"	kevin.kofner@mail.maricopa.gov
CHILL NEWBILL	GoodYear	EM	EM	623-882-7112	623-666-0374	chillnewbill@goodyearaz.gov
Randy Roberts	FOUNTAIN HILLS FIRE	FIRE/EM	Fire Chief	480-837-2820	602-5414742	rroberts@fh.hillz.gov
Aster Anderson	MCDON	EMERGENCY MANAGEMENT	PLANNING	602-373-1411		aster.anderson@mail.maricopa.gov
Sunny Culbreth	CITY OF LITCHFIELD PARK	EM	ASST CITY MGR	623-935-9040	623-764-1524	sunny.culbreth@litchfieldpark.org







**MARICOPA COUNTY  
MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN  
2015 PLAN UPDATE**

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**MEETING DATE:** October 14, 2014

**MEETING TIME:** 9:00AM – 11:00AM

**MEETING LOCATION:** Flood Control District of Maricopa County  
2801 W. Durango Street, Phoenix, AZ  
Operations Building – Main Classroom

**DISTRIBUTION:** Multi-Jurisdictional Planning Team (MJPT)

**FROM:** W. Scott Ogden, P.E. - JEF

**RE:** Maricopa County Multi-Jurisdictional Hazard Mitigation Plan  
2015 Update – MJPT Meeting No. 2

**ATTENDEES:**

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Hector Andrade	Maricopa County
Meredith Bond	Maricopa County
Anthony Butch	City of Glendale
Sonny Culbreth	City of Litchfield Park
Jesse Delmar	Fort McDowell Yavapi Nation
Brenden Espie	City of Surprise
William Finn	City of Phoenix
Mark Frago	Flood Control District of Maricopa County
Sheri Gibbons	Town of Gilbert
Keith Hargis	City of Chandler
Stacy Irvine	City of Peoria
Mike Kessler	Town of Youngtown
Kevin Kottmer	Maricopa County
Joe LaFortune	Town of Queen Creek
Sara Latin	Maricopa County
Bob Lee	Town of Paradise Valley
John Moede	City of Scottsdale
Othell Newbill	City of Goodyear
Scott Ogden	JE Fuller/ Hydrology and Geomorphology, Inc.
Mark Openshaw	Fort McDowell Yavapai Nation
Patrick O'Toole	Salt River Project
John Padilla	APS
Cliff Puckett	Salt River-Pima Maricopa Indian Community
Travis Rand	City of Buckeye
Randy Roberts	Town of Fountain Hills

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Gabe Sezate	City of Mesa
Adam Stein	Town of Cave Creek
Farhad Tavassoli	Flood Control District of Maricopa County
Ed Termerowski	Town of Wickenburg

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## AGENDA

1. TASK ASSIGNMENT STATUS REVIEW
2. MITIGATION STRATEGY
  - a. Capability Assessment
    - i. Legal and Regulatory (Codes / Ordinances)
    - ii. Administrative and Technical Staff Resources
    - iii. Fiscal Capabilities
    - iv. Plans / Manuals / Guidelines / Studies
  - b. Plan Integration and Incorporation
    - i. Past Plan Cycle
    - ii. Future Strategy
  - c. Existing Mitigation Action/Project Assessment
  - d. NFIP Statistics and Compliance
3. ACTION ITEM REVIEW AND NEXT STEPS

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## DISCUSSION

### Agenda Item 1:

- S. Ogden summarized the status of the key action items from Meeting No. 1 as of October 13, 2014. Some jurisdictions were on target and others had not started yet.
- S. Ogden reminded the MJPT of the need to stay on track with the assignments to keep from getting too far behind.

### Agenda Item 2a:

- S. Ogden presented an overview of the Capability Assessment (CA) and the reviewed with the MJPT the assessments currently summarized in the 2010 Plan. He reviewed the general requirements and discussed the procedure for review and editing of the CA material. Each jurisdiction will receive a worksheet with their specific CA data currently documented in the 2010 Plan. Each jurisdiction will review and update the data as appropriate.

### Agenda Item 2b:

- S. Ogden led the MJPT in a review of the 2010 Plan's Plan Integration and Incorporation section and then summarized the new requirements spelled out in FEMA's 2011 plan review guidance document.

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- The MJPT discussed past effectiveness at incorporating the 2010 Plan into other jurisdictional planning mechanisms, as well as some of the reasons why plan integration did not happen. Examples offered of effective integration included update of the county CWPP, the FCDMC's Comprehensive Floodplain Management Plan, several CIPs and HMA grant applications.
  - Most jurisdictions did not do much in the way of plan integration. Reasons given included staff turnover, lack of awareness of the Plan by other departments, and others.
  - S. Ogden presented a worksheet for completion by each jurisdiction to use in addressing the required plan integration elements. Each jurisdiction shall complete the worksheet and deliver back to JEF.

**Agenda Item 2c:**

- S. Ogden led the MJPT in a review of the 2010 Plan's Existing Mitigation Action/Project Assessment section. The planning team will use the same process to assess the 2010 Plan's A/Ps for this update.
- JEF will prepare worksheets for each jurisdiction to edit and provide their assessments in. The completed worksheets will be entered into the updated Plan.

**Agenda Item 2d:**

- S. Ogden led the MJPT in a review of the NFIP Compliance section of the 2010 Plan and then summarized the new requirements spelled out in FEMA's 2011 plan review guidance document.
- The MJPT discussed some details of the NFIP and where some of the data came from in the last plan.
- S. Ogden presented a worksheet for completion by each jurisdiction to address the requirements for this section. Each jurisdiction will return the completed worksheets and the data will be summarized in an expanded section in the plan update.

**Agenda Item:**

- S. Ogden reviewed the action items and assignments for the MJPT.
- Next Meeting:

**Date: November 12, 2014**

**Time: 9am to Noon**

**Place: Adobe, Harquahala, and New River Conference Rooms, Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix.  
(Main Building – first floor)**

**ACTION ITEM SUMMARY:**

<b>ITEM NO.</b>	<b>DESCRIPTION</b>	<b>RESPONSIBILITY [DUE DATE]</b>
2-1	JEF to develop jurisdiction specific Capability Assessment and Existing Mitigation A/P Assessment worksheets and provide to MJPT for review, edit and update. JEF will also provide Plan Integration and NFIP Compliance worksheets for use by all jurisdictions.	JEF [10/22/14]
2-2	Review, edit and update Capability Assessment worksheets and provide to JEF.	All Jurisdictions [11/12/14]
2-3	Review, edit and update Existing Mitigation Action/Project Assessment worksheets and provide to JEF.	All Jurisdictions [11/12/14]
2-4	Complete Plan Integration worksheet and provide to JEF	All Jurisdictions [11/12/14]
2-5	Complete NFIP Compliance worksheet and provide to JEF	All Jurisdictions [11/12/14]

Name	Jurisdiction/Agency/Organization	Department/Division/Branch	Title	Office Phone	Cell Phone	E-Mail Address
Hector Andrade	Maricopa County	Department of Emergency Management	Planner	602-273-1411		hectorandrade@mail.maricopa.gov
Meredith Bond	Maricopa County	Department of Emergency Management	CEPC/Social Media Coordinator	602-273-1411	602-689-3225	bonom@mail.maricopa.gov
Michael Boule	City of Surprise	Engineering	CIP Project Manager	623-222-7040	623-670-0281	michael.boule@surpriseaz.gov
Anthony Butch	City of Glendale	Fire / Emergency Management	Captain / Emergency Planner	623-872-5090	480-296-1732	abutch@glendaleaz.com
Kendra Cea	APS	Technical Services	Manager	602-371-7872	602-809-1147	kendra.cea@aps.com
Wayne Clement	Town of Guadalupe	Fire Department	Fire Chief / EM	480-839-1112	480-688-3447	wclment@guadalupeaz.org
Sonny Culbreth	City of Litchfield Park	Emergency Management	Assistant City Manager	623-935-9040	623-764-1524	sculbreth@litchfield-park.org
Brian Darling	City of Mesa	Fire Department	Captain/ TLO	480-644-3092	480-682-7769	brian.darling@mesaaz.gov
Jesse Delmar	Fort McDowell Yavapai Nation	Police Department	Police Chief	480-789-7501	480-248-0655	delmar@ftrmcowell.org
Gary Ellis	City of Tempe	Fire Department / Special Ops	Deputy Chief	480-858-7213	480-239-1110	gary_ellis@tempe.gov
Brenden Espie	City of Surprise	Fire Department	Battalion Chief	623-222-5027	602-292-0256	brenden.espie@surpriseaz.gov
William Finn	City of Phoenix	Fire Department	Captain	602-616-8716		william.finn@phoenix.gov
Mark Frago	Flood Control District of Maricopa County	Floodplain Management	Mitigation Planning Analyst	602-506-0750		markfrago@mail.maricopa.gov
Sheri Gibbons	Town of Gilbert	Emergency Management	Emergency Manager	480-503-6333		sheri.gibbons@gilbertaz.gov
Bob Hansen	City of Tolleson	Fire Department	Battalion chief	623-474-4981	602-739-3007	bhansen@tollesonaz.org
Keith Hargis	City of Chandler	Fire, health, Medical	Battalion chief	480-782-2161	480-216-7570	keith.hargis@chandleraz.gov
Rob Harter	City of Glendale	Fire / Emergency Management	Emergency Mgt. Coordinator	623-930-3400	602-909-2575	rharter@glendaleaz.com
Erin Hausauer	City of Avondale	Emergency Management	Emergency Management Officer	623-333-1027	330-260-7389	ehausauer@avondale.org
Stacy Irvine	City of Peoria	Fire / Emergency Management	Deputy Fire Chief	623-773-7905	602-809-4096	stacy.irvine@peoriaaz.gov
Glenn Jones	City of Peoria	Emergency Management / Safety	Emergency Manager	623-773-5207		glenn.jones@peoriaaz.gov
Mike Kessler	Town of Youngtown	Public Safety Department	Public Safety Manager	623-933-8286	623-293-3197	mkessler@youngtownaz.org
Kevin Kottmer	Maricopa County	Department of Transportation / Traffic Operations	Road Maintenance Superintendent	602-506-8664	602-506-8664	KevinKottmer@mail.maricopa.gov
John Kraetz	Town of Carefree	Fire Department	Fire Chief	602-616-6363	602-616-6363	john_kraetz@metro.com
Joe LaFortune	Town of Queen Creek	Fire & Medical	Emergency Mgt. Coordinator	480-358-3502	480-797-4854	joe.lafortune@queencreek.org
Sara Lattin	Maricopa County	Department of Emergency Management	Office / Finance Manager	602-273-1411	602-725-7189	saralattin@mail.maricopa.gov
Bob Lee	Town of Paradise Valley	Emergency Management	Emergency Manager	480-348-3631	602-405-4048	rlee@paradisvalleyaz.gov
Ken Lewis	Salt River Project	Emergency Management	Principal Planning Analyst	602-236-8194	602-703-3822	ken.lewis@srpnet.com





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Sara Latin	Maricopa County	Department of Emergency Management	Office / Finance Manager	602-273-1411	602-725-7189	saralatin@mail.maricopa.gov
Bob Lee	Town of Paradise Valley	Emergency Management	<b>EMERGENCY MGR</b> Building Safety Manager	480-348-3631	602-405-4048	rlee@paradisvalleyaz.gov
Ken Lewis	Salt River Project	Emergency Management	Principal Planning Analyst	602-236-8194	602-703-3822	ken.lewis@srpnet.com



**MARICOPA COUNTY  
MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN  
2015 PLAN UPDATE**

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**MEETING DATE:** December 9, 2014

**MEETING TIME:** 9:00AM – NOON

**MEETING LOCATION:** Flood Control District of Maricopa County  
2801 W. Durango Street, Phoenix, AZ  
Adobe, Harquahala and New River Conf Rooms

**DISTRIBUTION:** Multi-Jurisdictional Planning Team (MJPT)

**FROM:** W. Scott Ogden, P.E. - JEF

**RE: Maricopa County Multi-Jurisdictional Hazard Mitigation Plan  
2015 Update – MJPT Meeting No. 3**

**ATTENDEES:**

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Meredith Bond	Maricopa County
Anthony Butch	City of Glendale
Wayne Clement	Town of Guadalupe
Sonny Culbreth	City of Litchfield Park
William Finn	City of Phoenix
Mark Frago	Flood Control District of Maricopa County
Ken Galluppi	Arizona State University
Sheri Gibbons	Town of Gilbert
Bob Hansen	City of Tolleson
Keith Hargis	City of Chandler
Erin Hausauer	City of Avondale
Glenn Jones	City of Peoria
Mike Kessler	Town of Youngtown
Kevin Kottmer	Maricopa County
John Kraetz	Town of Carefree
Joe LaFortune	Town of Queen Creek
Sara Latin	Maricopa County
Bob Lee	Town of Paradise Valley
John Moede	City of Scottsdale
Tim Murphy	Flood Control District of Maricopa County
Scott Ogden	JE Fuller/ Hydrology and Geomorphology, Inc.
Mark Openshaw	Fort McDowell Yavapai Nation
Patrick O'Toole	Salt River Project
Cliff Puckett	Salt River-Pima Maricopa Indian Community
Randy Roberts	Town of Fountain Hills

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Gabe Sezate	City of Mesa
Adam Stein	Town of Cave Creek
Farhad Tavassoli	Flood Control District of Maricopa County
Ed Termerowski	Town of Wickenburg

NOTE: Missing jurisdictions include: Buckeye, El Mirage, Gila Bend, Goodyear, Surprise, and Tempe

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## AGENDA

1. TASK ASSIGNMENT STATUS REVIEW
  2. RISK ASSESSMENT
    - a. Review Hazard Profile Data and Mapping
    - b. Historic Hazard Database Review
    - c. CPRI Analysis
    - d. Repetitive Loss Properties
    - e. Development Trends
      - i. Past Plan Cycle
      - ii. Future Development
  3. ACTION ITEM REVIEW AND NEXT STEPS
- 

## DISCUSSION

### Agenda Item 1:

- S. Ogden summarized the status of the key action items from Meeting Nos. 1 and 2 as of December 8, 2014.
- S. Ogden reminded the MJPT of the need to stay on track with the assignments to keep from getting too far behind.
- S. Ogden set COB on December 15, 2014 as the last chance to provide updated to Critical Facility lists. Otherwise, JEF will use the data from the prior plan cycle without change.
- S. Ogden reiterated that the Existing Mitigation Action/Project (A/P) Evaluation worksheet must be completed and provided to JEF before the next step in the Mitigation A/P process can take place.

### Agenda Item 2a:

- S. Ogden presented an overview of the updated data and/or mapping prepared for each of the plan hazards. Key elements of the discussion included:
  - Dam Failure – T. Murphy suggested that it may be more helpful if all of the dam failure limits were shown, so that all of the risks may be communicated. JEF will add the “Low” hazard inundation limits to the map.

- Flood/Flash Flood – The FCDMC may have additional flood hazard layers that are not currently included in FEMA’s national flood hazard layer database and will provide those.
- Severe Wind/Tornado – B. Lee suggested changing the plotting order of the historic markers so the higher hazard events plot on top. JEF will make the necessary adjustments.
- General – the team noted that the base map may need to be checked regarding some stream names that seem out of place.

**Agenda Item 2b:**

- S. Ogden presented two tables summarizing historic hazard event data. The tables were updated versions of Tables 5-2 and 5-3 in the current plan, and incorporate additional data that has been documented since the last plan development. The detailed accounts of a few example events were reviewed to give the reader a context for the summarized data.

**Agenda Item 2c:**

- S. Ogden directed the MJPT to Section 5.2.2 of the plan to review the Calculated Priority Risk Index (CPRI) and the various components involved in performing the CPRI.
- Each jurisdiction was instructed to review the CPRI responses documented for each hazard in the current plan and respond with any adjustments for revisions by the next meeting. If no responses are provided, JEF will compile the updated report with the prior plan’s responses.

**Agenda Item 2d:**

- S. Ogden directed the MJPT to the Repetitive Loss subsection of Section 5.3.5 of the plan for a discussion of repetitive loss properties within the county.
- F. Tavassoli will review the countywide RL statistics and update the information in the plan. The text for the updated section will be forwarded to JEF for inclusion in the updated plan.

**Agenda Item 2e:**

- S. Ogden led a discussion of the purpose of performing a Development Trends analysis and updated requirements per the 2011 FEMA guidance.
- S. Ogden presented a simple worksheet for each jurisdiction to complete. The worksheet provides each jurisdiction an opportunity to summarize the development that has occurred within the last 5 years and describe development that is anticipated for the next 5-year plan cycle.
- All worksheets will be due by the next MJPT meeting.

**Agenda Item 3:**

- S. Ogden reviewed the action items and assignments for the MJPT.

- Next Meeting:

**Date: January 6, 2015**

**Time: 9am to Noon**

**Place: Adobe, Harquahala, and New River Conference Rooms, Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix (Main Building – first floor)**

**ACTION ITEM SUMMARY:**

<b>ITEM NO.</b>	<b>DESCRIPTION</b>	<b>RESPONSIBILITY [DUE DATE]</b>
3-1	Each jurisdiction is to review the CPRI parameters documented in the current plan for each plan hazard, and respond with any revisions or adjustments to JEF.	All Jurisdictions [01/06/15]
3-2	Each jurisdiction shall complete the Development Trends worksheet and provide to JEF.	All Jurisdictions [01/06/15]
3-3	F. Tavassoli shall provide updated text for the Repetitive Loss section of the plan.	F. Tavassoli [01/06/15]

Planning Team Meeting No. 3

DATE: December 9, 2014

Name	Jurisdiction/Agency/Organization	Department/Division/Branch	Title	Office Phone	Cell Phone	E-Mail Address
Hector Andrade	Maricopa County	Department of Emergency Management	Planner	602-273-1411		hectorandrade@mail.maricopa.gov
Meredith Bond <i>Meredith Bond</i>	Maricopa County	Department of Emergency Management	CEPC/Social Media Coordinator	602-273-1411	602-689-3225	bondm@mail.maricopa.gov
Michael Boule	City of Surprise	Engineering	CIP Project Manager	623-222-7040	623-670-0281	michael.boule@surpriseaz.gov
Anthony Butch <i>Anthony Butch</i>	City of Glendale	Fire / Emergency Management	Captain / Emergency Planner	623-872-5090	480-296-1732	abutch@glendaleaz.com
Kendra Cea	APS	Technical Services	Manager	602-371-7872	602-809-1147	kendra.cea@aps.com
Wayne Clement	Town of Guadalupe	Fire Department	Fire Chief / EM	480-839-1112	480-688-3447	wclement@guadalupeaz.org <i>Wayne Clement</i>
Sonny Culbreth <i>Sonny C.</i>	City of Litchfield Park	Emergency Management	Assistant City Manager	623-935-9040	623-764-1524	sculbreth@litchfield-park.org
Brian Darling	City of Mesa	Fire Department	Captain/ TLO	480-644-3092	480-682-7769	brian.darling@mesaaz.gov
Jesse Delmar	Fort McDowell Yavapi Nation	Police Department	Police Chief	480-789-7501	480-248-0655	jdelmar@ftmcdowell.org
Gary Ells	City of Tempe	Fire Department / Special Ops	Deputy Chief	480-858-7213	480-239-1110	gary_ells@tempe.gov
Brenden Espie	City of Surprise	Fire Department	Battalion Chief	623-222-5027	602-292-0256	brenden.espie@surpriseaz.gov
William Finn <i>Will Finn</i>	City of Phoenix	Fire Department	Captain	602-616-8716		william.finn@phoenix.gov
Mark Frago <i>Mark Frago</i>	Flood Control District of Maricopa County	Floodplain Management	Mitigation Planning Analyst	602-506-0750		markfrago@mail.maricopa.gov
Joe Fusco	City of El Mirage	Fire Department	Battalion Chief			jfusco@cityofelmirage.org
Sheri Gibbons <i>Sheri Gibbons</i>	Town of Gilbert	Emergency Management	Emergency Manager	480-503-6333		sheri.gibbons@gilbertaz.gov
Bob Hansen <i>Bob Hansen</i>	City of Tolleson	Fire Department	Battalion chief	623-474-4981	602-739-3007	bhansen@tollesonaz.org
Keith Hargis <i>Keith Hargis</i>	City of Chandler	Fire, heealth, Medical	Battalion chief	480-782-2161	480-216-7570	keith.hargis@chandleraz.gov
Rob Harter	City of Glendale	Fire / Emergency Management	Emergency Mgt. Coordinator	623-930-3400	602-909-2575	rharter@glendaleaz.com
Erin Hausauer <i>Erin Hausauer</i>	City of Avondale	Emergency Management	Emergency Management Officer	623-333-1027	320-260-7389	ehausauer@avondale.org
Stacy Irvine	City of Peoria	Fire / Emergency Management	Deputy Fire Chief	623-773-7905	602-809-4096	stacy.irvine@peoriaaz.gov
Glenn Jones	City of Peoria	Emergency Management / Safty	Emergency Manager	623-773-5207		glenn.jones@peoriaaz.gov <i>Glenn Jones</i>
Mike Kessler <i>Mike Kessler</i>	Town of Youngtown	Public Safety Department	Public Safety Manager	623-933-8286	623-293-3197	mkessler@youngtownaz.org <i>MK</i>
Kevin Kottmer <i>Kevin Kottmer</i>	Maricopa County	Department of Transportation / Traffic Operations	Road Maintenance Superintendent	602-506-8664	602-506-8664	KevinKottmer@mail.maricopa.gov
John Kraetz <i>John Kraetz</i>	Town of Carefree	Fire Department	Fire Chief	602-616-6363	602-616-6363	john_kraetz@metro.com <i>John Kraetz</i>
Joe LaFortune <i>Joe LaFortune</i>	Town of Queen Creek	Fire & Medical	Emergency Mgt. Coordinator	480-358-3502	480-797-4854	joe.lafortune@queencreek.org
Sara Latin	Maricopa County	Department of Emergency Management	Office / Finance Manager	602-273-1411	602-725-7189	saralatin@mail.maricopa.gov
Bob Lee <i>Bob Lee</i>	Town of Paradise Valley	Emergency Management	Emergency Manager	480-348-3631	602-405-4048	flee@paradisvalleyaz.gov

Name	Jurisdiction/Agency/Organization	Department/Division/Branch	Title	Office Phone	Cell Phone	E-Mail Address
Ken Lewis	Salt River Project	Emergency Management	Principal Planning Analyst	602-236-8194	602-703-3822	ken.lewis@srpnet.com
John Moede <i>John Moede</i>	City of Scottsdale	Emergency Management	Emergency Management Coordinator	480-312-1832	480-294-4579	jmoede@ScottsdaleAZ.gov
Othell Newbill	City of Goodyear	Emergency Management / Fire Department	Emergency Manager	623-882-7112	623-606-0374	othell.newbill@goodyearaz.gov
Scott Ogden	JE Fuller/ Hydrology and Geomorphology, Inc.	Contract Consultant	Project Manager	480-222-5717	480-299-3394	scott@jefuller.com
Mark Openshaw <i>MO</i>	Fort McDowell Yavapai Nation	Fire Department	Fire Chief	480-789-7520	480-266-0497	mopenshaw@ftmcdowell.org <i>MO</i>
Patrick O'Toole <i>MO</i>	Salt River Project	Business Continuity and Emergency Management	Principal Analyst	602-236-5294	602-388-9877	patrick.otoole@srpnet.com
John Padilla	APS	Transmission & Distribution	Emergency Mgt. Coordinator	602-371-6589	480-268-4900	john.padilla@aps.com
Cliff Puckett <i>CP</i>	Salt River-Pima Maricopa Indian Community	Emergency Management	Emergency Manager	480-362-7927	480-248-5462	cliff.puckett@srpmic-nsn.gov <i>CP</i>
Travis Rand	City of Buckeye	Fire Department	Battalion Chief		623-695-4441	trand@buckeyeaz.gov
Randy Roberts <i>RJR</i>	Town of Fountain Hills	Fire Department	Fire Chief	480-837-2820	602-541-4742	rroberts@fh.az.gov <i>RJR</i>
Gabe Sezate	City of Mesa	Fire Department	Emergency Manager	480-644-3366	480-682-8692	gabe.sezate@mesaaz.gov <i>AS</i>
Pete Shiple	City of Buckeye	Fire Department	Fire Captain		602-803-9114	pshiple@buckeyeaz.gov
Adam Stein <i>AS</i>	Town of Cave Creek	Marshal's Office	Town Marshal	480-488-6636	480-251-9060	marshal@cavecreek.org
Farhad Tavassoli	Flood Control District of Maricopa County	Floodplain Management	Assoc. Project Manager	602-506-8733		farhadtavassoli@mail.maricopa.gov <i>Farhad</i>
Ed Termerowski	Town of Wickenburg	Fire / Emergency Management	Fire Chief	602-399-1419	602-399-1419	etermerowski@wickenburgaz.org <i>Ed</i>
Pete Weaver	Maricopa County	Department of Emergency Management	Director	602-273-1411	602-725-7181	peteweaver@mail.maricopa.gov
Jim Wise	City of El Mirage	Fire Department	Fire Chief	623-251-3509	602-818-6657	wise@cityofelmirage.org
Ken Galluppi	ARIZONA STATE UNIVERSITY		Observer	480-727-2545	919-931-3641	galluppi@asu.edu
Tim Murphy	FCDMC		Mitigation Planning	602-506-4605		tmurphy@mail.maricopa.gov

**MARICOPA COUNTY  
MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN  
2015 PLAN UPDATE**

---

**MEETING DATE:** January 6, 2015

**MEETING TIME:** 9:00AM – NOON

**MEETING LOCATION:** Flood Control District of Maricopa County  
2801 W. Durango Street, Phoenix, AZ  
Adobe, Harquahala and New River Conf Rooms

**DISTRIBUTION:** Multi-Jurisdictional Planning Team (MJPT)

**FROM:** W. Scott Ogden, P.E. - JEF

**RE: Maricopa County Multi-Jurisdictional Hazard Mitigation Plan  
2015 Update – MJPT Meeting No. 4**

**ATTENDEES:**

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Meredith Bond	Maricopa County
Michael Boule	City of Surprise
Anthony Butch	City of Glendale
Sonny Culbreth	City of Litchfield Park
Mark Frago	Flood Control District of Maricopa County
Sheri Gibbons	Town of Gilbert
Anne Guest	Department of Emergency and Military Affairs
Bob Hansen	City of Tolleson
Keith Hargis	City of Chandler
Glenn Jones	City of Peoria
Tom Jones	Department of Emergency and Military Affairs
Mike Kessler	Town of Youngtown
Kevin Kottmer	Maricopa County
John Kraetz	Town of Carefree
Joe LaFortune	Town of Queen Creek
Sara Latin	Maricopa County
Bob Lee	Town of Paradise Valley
John Moede	City of Scottsdale
Tim Murphy	Flood Control District of Maricopa County
Othell Newbill	City of Goodyear
Scott Ogden	JE Fuller/ Hydrology and Geomorphology, Inc.
Mark Openshaw	Fort McDowell Yavapai Nation
Patrick O'Toole	Salt River Project
Cliff Puckett	Salt River-Pima Maricopa Indian Community
Travis Rand	City of Buckeye
Tiffany Rivas	City of Avondale
Randy Roberts	Town of Fountain Hills
Adam Stein	Town of Cave Creek

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Ed Termerowski	Town of Wickenburg
Jake Van Hook	City of Phoenix

NOTE: Missing jurisdictions include: El Mirage, Gila Bend, Guadalupe, Mesa, and Tempe

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## AGENDA

1. ADEM Update on AZ-DR-4203 HMGP
  2. TASK ASSIGNMENT STATUS REVIEW (30 min)
  3. MITIGATION STRATEGY – GOALS AND OBJECTIVES
    - a. Review State and Current Plan G&Os
    - b. Formulate G&Os for 2015 Plan
  4. MITIGATION STRATEGY – ACTIONS/PROJECTS
    - a. Action/Project Identification
    - b. Implementation Strategy
  5. NEXT STEPS
- 

## DISCUSSION

### Agenda Item 1:

- S. Ogden introduced T. Jones and A. Guest of ADEM and asked them to give a quick presentation of the details regarding the current disaster declaration for AZ and the availability of HMGP funds.
- T. Jones and A. Guest provided a summary of HMGP dollar amounts and application schedules, as well as answered questions regarding the HMGP.
- T. Jones committed to providing an email with answers to outstanding questions to S. Ogden, for his distribution to all the MJPT members.

### Agenda Item 2:

- S. Ogden summarized the status of the key action items from Meeting Nos. 1 through 3 as of January 5, 2015.
- S. Ogden reiterated the need to stay on track with the assignments and the short time frame left in the planning process. Jurisdictions not providing information will be dropped from the plan.

### Agenda Item 3:

- S. Ogden lead the MJPT in a review of both the current plan goals and objectives and the latest 2013 State Plan goals and objectives. The current goals and objectives were briefly discussed and the MJPT unanimously chose to keep the goals and objectives as is.
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**Agenda Item 4:**

- S. Ogden presented an overview of the types and variations of mitigation actions and projects (A/P), and their purpose in the Plan. He discussed the requirements for A/Ps outlined in the 2011 FEMA guidance and how they relate to the current plan versus the 2015 plan. The following were noted as key things to remember:
  - Each jurisdiction must address every Plan hazard for which the jurisdiction has a vulnerability.
  - Each jurisdiction must provide at least 2 A/Ps for each of the vulnerability identified hazards.
  - Be as specific as possible with descriptions...tell the “what” and “why” in project descriptions.:
  - A/Ps should be measurable with regard to performance and success, and have some kind of a projected schedule for completion. For example:
    - “Reduce flooding in the community of Floodville” versus “Reduce flooding of structures at 1st and Main by installing a new culvert at the Highwater Creek crossing.”
  - Should be clear enough to be implemented by anyone tasked with completing it.
  - Generally should consider a 5-year timeframe.
- S. Ogden led the MJPT in a brainstorming session to identify general and hazard specific mitigation actions and projects that may be pursued by the various jurisdictions. Over 45 mitigation actions/projects were developed.
- S. Ogden discussed the various elements that comprise the implementation strategy and reviewed the A/P worksheets that will be provided to each jurisdiction for completion.
- S. Ogden also distributed an updated and revised Table 5-62 which summarizes the hazards that must be mitigated for each jurisdiction based on the results of the risk assessment.

**Agenda Item 5:**

- S. Ogden reviewed the action items from the meeting.
- Next and Last Meeting:

**Date: January 20, 2015**

**Time: 9am to Noon**

**Place: Adobe, Harquahala, and New River Conference Rooms, Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix (Main Building – first floor)**

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**ACTION ITEM SUMMARY:**

<b>ITEM NO.</b>	<b>DESCRIPTION</b>	<b>RESPONSIBILITY [DUE DATE]</b>
4-1	S. Ogden to forward responses from T. Jones of ADEM to the MJPT as soon as they are received.	S. Ogden [Upon receipt of responses from ADEM]
4-2	Each jurisdiction shall complete the 2015 Mitigation A-Ps and Implementation worksheet and provide to JEF.	All Jurisdictions [02/15/15]

**MARICOPA COUNTY  
MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN  
2015 PLAN UPDATE**

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**MEETING DATE:** January 20, 2015

**MEETING TIME:** 9:00AM – NOON

**MEETING LOCATION:** Flood Control District of Maricopa County  
2801 W. Durango Street, Phoenix, AZ  
Adobe, Harquahala and New River Conf Rooms

**DISTRIBUTION:** Multi-Jurisdictional Planning Team (MJPT)

**FROM:** W. Scott Ogden, P.E. - JEF

**RE: Maricopa County Multi-Jurisdictional Hazard Mitigation Plan  
2015 Update – MJPT Meeting No. 5**

**ATTENDEES:**

---

Meredith Bond	Maricopa County
Anthony Butch	City of Glendale
Wayne Clement	Town of Guadalupe
Sonny Culbreth	City of Litchfield Park
Mark Frago	Flood Control District of Maricopa County
Sheri Gibbons	Town of Gilbert
Bob Hansen	City of Tolleson
Glenn Jones	City of Peoria
Mike Kessler	Town of Youngtown
Kevin Kottmer	Maricopa County
John Kraetz	Town of Carefree
Joe LaFortune	Town of Queen Creek
Sara Latin	Maricopa County
Bob Lee	Town of Paradise Valley
John Moede	City of Scottsdale
Tim Murphy	Flood Control District of Maricopa County
Othell Newbill	City of Goodyear
Scott Ogden	JE Fuller/ Hydrology and Geomorphology, Inc.
Mark Openshaw	Fort McDowell Yavapai Nation
Patrick O'Toole	Salt River Project
Rudolfo Perez	Maricopa County
Travis Rand	City of Buckeye
Adam Stein	Town of Cave Creek
Jake Van Hook	City of Phoenix

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NOTE: Missing jurisdictions include: Avondale, Chandler, El Mirage, Fountain Hills, Gila Bend, Mesa, Salt River Pima-Maricopa Indian Community, Tempe and Wickenburg

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## AGENDA

1. TASK ASSIGNMENT STATUS REVIEW
2. PLAN MAINTENANCE STRATEGY
  - a. Monitoring and Evaluation
  - b. Plan Update Schedule
  - c. Continued Public Involvement
3. PROMULGATION PROCESS
4. PUBLIC INVOLVEMENT – POST DRAFT
5. NEXT STEPS

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## DISCUSSION

### Agenda Item 1:

- S. Ogden summarized the status of the key action items from Meeting Nos. 1 through 3 as of January 19, 2015.
- S. Ogden reiterated the need to stay on track with the assignments and the short time frame left in the planning process. Jurisdictions not providing information will be dropped from the plan.

### Agenda Item 2a:

- S. Ogden lead the MJPT in a review of Section 7 of the 2009 Plan. The first element discussed was the section dealing with monitoring and evaluation of the plan.
- The planning team was polled regarding past monitoring and evaluation efforts performed. The following were noted by attending MJPT members:
  - MCDEM sent out an annual email to all jurisdictions requesting a review of the 2009 Plan per the Section 7.1. The emails were generally sent around the November/December timeframe.
  - MCDEM organized an MJPT plan review and evaluation meeting on April 21, 2011. All members of the MJPT listed in the 2009 Plan were invited. No notes were taken.
  - Salt River Project performed and documented a review of the 2009 Plan in 2011, 2012, and 2013.
  - In the end 2013, Goodyear staff reviewed the vulnerability analysis results for incorporation into an Economic Development plan.

- 
- Challenges identified by the MJPT that make regular or annual monitoring and evaluation activities difficult were:
    - Staff turnover and lack continuity to original planning team.
    - Lack of communicating plan maintenance responsibilities to successors during staff changes.
    - Lack of major disasters that prompted a review of the 2009 Plan
  - The MJPT discussed the scheduling and monitoring for the next plan cycle and developed the following:
    - **Schedule** – The Plan shall be reviewed on at least an annual basis. MCDEM will take the lead to send out an email request to each jurisdiction via the MJPT on or around the month of May.
    - **Review Content** – Within the email request distributed by MCDEM, each of the jurisdictions will be requested to provide responses to the following questions:
      - *Hazard Identification*: Have the risks and hazards changed?
      - *Goals and Objectives*: Are the goals and objectives still able to address current and expected conditions?
      - *Mitigation Projects and Actions*: For each mitigation action/project summarized in Section 6.3.2:
        - Has there been activity on the project – Yes or No?
        - If Yes, Briefly describe what has been done and the current status of the action/project.
    - **Documentation** – Each jurisdiction will review and evaluate the Plan as it relates to their community and document responses to the above questions in the form of an email. MCDEM will archive email responses in a digital format and store with the Plan for incorporation during the next Plan update. Any hard copies will be included in Appendix E.

**Agenda Item 2b:**

- The MJPT reviewed the Plan Update Schedule and had no changes.

**Agenda Item 2c:**

- S. Ogden lead the MJPT in a review of the 2009 Plan Continued Public Involvement section. The MJPT attendees were asked to share what kinds of continued public involvement efforts had been accomplished within the last plan cycle. Examples included:
  - Use of webpages to communicate hazard information on a seasonal basis
  - Use of social media to remind followers of the potential for natural hazards.

- 
- Participation in safety fairs and other public events to raise awareness of the potential risks associated with natural hazards.
  - Each jurisdiction will produce a list of continued public involvement opportunities that have either been done or will be pursued over the next plan cycle. JEF will provide a simple worksheet for use in documenting the events.

**Agenda Item 3:**

- The MJPT reviewed the overall promulgation process and anticipated schedule for completing the Draft Plan and getting ADEM and FEMA review and approval. The following summarizes the schedule:
  - Prepare Draft and Submit to MJPT for review (Target = 3/2/15)
  - MJPT comments will be due by COB 3/13/15 (2 weeks)
  - Final Draft Plan to ADEM by COB 3/20/15
  - ADEM review 2 to 3 weeks. Hopefully we can interactively address comments.
  - Anticipated FEMA ready Final Draft to ADEM for submittal to FEMA by COB 4/13/15.
  - FEMA Review (assume 60 days). Hopefully we can interactively address comments during that period.
  - Address FEMA comments and resubmit (if needed)
  - FEMA will issue an “Approvable Pending Adoption” letter (Mid June 2015?).
  - JEF will provide final hard copies of Plan with digital copies on enclosed CD.
  - Each jurisdiction works to get resolution approved by Board/Council to obtain final approval. Official approval requires submitting fully executed resolution or similar board/council action to ADEM and FEMA. All resolutions should be submitted to MCDEM (Meredith Bond) and they will get them to ADEM and FEMA.

**Agenda Item 4:**

- S. Ogden reviewed the requirement for providing the public an opportunity to comment on the Plan after the draft has been developed and prior to formal adoption. This will be satisfied by:
  - Providing a second press release announcing the availability of the draft for review and comment
  - Updating each of the jurisdictional website postings to reflect the post draft announcement.
  - MCDEM will make sure the announcement is published in the Arizona Republic and East Valley Tribune, as well as making sure the website postings are updated and the new draft plan is uploaded.

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**ACTION ITEM SUMMARY:**

<b>ITEM NO.</b>	<b>DESCRIPTION</b>	<b>RESPONSIBILITY [DUE DATE]</b>
5-1	S. Ogden to develop a simple continued public involvement worksheet and distribute to MJPT members	S. Ogden [01/27/15]
5-2	Each jurisdiction shall complete the Continued Public Involvement worksheet and provide to JEF.	All Jurisdictions [02/22/15]

Name	Jurisdiction/Agency/Organization	Department/Division/Branch	Title	Office Phone	Cell Phone	E-Mail Address
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Travis Rand	City of Buckeye	Fire Department	Battalion Chief		623-695-4441	trand@buckeyeaz.gov
Wayne Clement	Town of Guadalupe	Fire Department	Fire Chief / EM	480-839-1112	480-688-3447	wclement@guadalupeaz.org
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Pete Shiple	City of Buckeye	Fire Department	Fire Captain		602-803-9114	pshiple@buckeyeaz.gov
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Jim Wise	City of El Mirage	Fire Department	Fire Chief	623-251-3509	602-818-6657	wise@cityofelmirage.org
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William Finn	City of Phoenix	Fire Department	Captain	602-616-8716		william.finn@phoenix.gov
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O'hell Newhill	City of Goodyear	Emergency Management / Fire Department	Emergency Manager	623-882-7112	623-606-0374	ohell.newhill@goodyearaz.gov
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Glenn Jones	City of Peoria	Emergency Management / Safety	Emergency Manager	623-773-5207		glenn.jones@peoriaaz.gov
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Joe LaFortune	Town of Queen Creek	Fire & Medical	Emergency Mgt. Coordinator	480-358-3502	480-797-4854	jlafortune@queencreek.org
Sara Latin	Maricopa County	Department of Emergency Management	Office / Finance Manager	602-273-1411	602-725-7189	saratatin@mail.maricopa.gov

*trivas@avondale.org*





Name	Jurisdiction/Agency/Organization	Department/Division/Branch	Title	Office Phone	Cell Phone	E-Mail Address
Hector Andrade	MariCopa County	Department of Emergency Management	Planner	602-273-1411		hectorandrade@mail.maricopa.gov
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Stacy Irvine	City of Peoria	Fire / Emergency Management	Deputy Fire Chief	623-773-7905	602-809-4096	stacy.irvine@peoriaaz.gov
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MariCopa County Multi-Jurisdictional Hazard Mitigation Plan 2015 Update



Name	Jurisdiction/Agency/Organization	Department/Division/Branch	Title	Office Phone	Cell Phone	E-Mail Address
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Maricopa County Multi-Jurisdictional Hazard Mitigation Plan 2015 Update



## Appendix C

### Public Involvement Records

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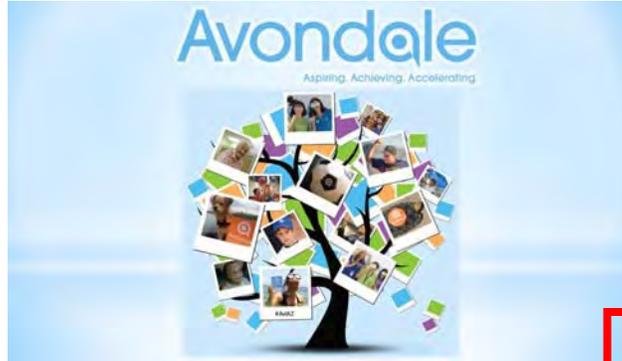
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## CALENDAR [VIEW ALL](#)

- Wed, Nov. 12**  
Kids at Hope Day
- Wed, Nov. 12**  
Parks, Recreation, and Libraries Advisory Board Meeting
- Sat, Nov. 15**  
Southwest Valley Writers Conference

### AVONDALE NOW [VIEW ALL](#)

**Public Input for County Hazard Mitigation Plan**  
Public input on the mitigation planning process is important and residents are encouraged to educate themselves about the existing hazard mitigation plan and offer comments on the update. [Read on...](#)

**Bike Survey**  
We want to hear from you about how we can improve our bike infrastructure in Avondale. [Read on...](#)

**Observance of Veterans Day**  
Offices will be closed Nov. 11, an event will be hosted at the Avondale Civic Center amphitheater, to honor all Veterans in the community. [Read on...](#)



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**Avondale NOW Homepage**

Posted on: November 10, 2014

**Public Input for County Hazard Mitigation Plan**

The City of Avondale has joined forces with Maricopa County and other jurisdictions within the Valley to review and update the existing Maricopa County Multi-Jurisdictional Hazard Mitigation Plan. The goal of mitigation planning is to reduce or eliminate long-term risk to life and property from all natural hazard events. Mitigation is not how we respond to emergencies like floods and wildfires, but rather how we as a community prevent the impact of such things in the first place.

The mitigation planning process involves identifying and profiling the natural hazards most likely to occur in a community, assessing the vulnerability to these hazards, and establishing goals, actions, and projects that mitigate the associated risks. The update of this mitigation plan will also ensure continued eligibility for non-emergency, federal and state hazard mitigation grants.

Public input on the mitigation planning process is important and residents are encouraged to educate themselves about the existing hazard mitigation plan and offer comments on the update. For more information, please visit the Maricopa County website at: [http://www.maricopa.gov/Emerg\\_Mgt/links.aspx](http://www.maricopa.gov/Emerg_Mgt/links.aspx) or contact: Meredith Bond, Maricopa County Emergency Management at 602-273-1411; email [bondm@mail.maricopa.gov](mailto:bondm@mail.maricopa.gov)

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[Bike Survey](#)

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**Bike Survey**

Posted on: November 3, 2014

**Observance of Veterans Day**

Posted on: November 3, 2014

**Dispose of Hazardous Waste Responsibly**

Posted on: October 20, 2014

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**Public Input Invited**

**Maricopa County  
Multi-Jurisdictional  
Hazard Mitigation Plan  
Update Begins**

Hazard mitigation planning is the process used to identify risks and vulnerabilities associated with natural disasters and to develop long-term strategies for protecting people and property in future hazard events. The process results in a mitigation plan that offers a strategy for breaking the cycle of disaster damage, reconstruction, and repeated damage and a framework for developing feasible and cost-effective mitigation projects. Under the Disaster Mitigation Act of 2000 (Public Law 106-390), local and tribal governments are required to develop and maintain a FEMA approved hazard mitigation plan as a condition of eligibility for receiving certain non-emergency federal hazard mitigation grants.

A multi-jurisdictional planning team comprised of representatives from Maricopa County and the 27 participating jurisdictions comprised of tribes, cities, towns and other local governmental entities substantially located within Maricopa County, will be meeting regularly to review, revise and update the current hazard mitigation plan, with specific attention to:

- Natural hazards that may impact or have impacted the community
- Profiles of the most relevant hazards
- Vulnerability assessment to the identified hazards
- Goals and objectives for hazard risk reduction/elimination
- Mitigation actions/projects to achieve the stated goals and objectives
- Plan maintenance strategy for the next 5-year cycle

An updated draft of the plan is expected in February 2015. For additional information, please visit [http://www.maricopa.gov/Emerg\\_Mgt/links.aspx](http://www.maricopa.gov/Emerg_Mgt/links.aspx) or contact your community's representative as listed below:

Buckeye Fire Department  
623-349-6700  
*Published in the Buckeye  
Valley News  
October 16, 2014*

**AFFIDAVIT OF PUBLICATION**

**BUCKEYE VALLEY NEWS, LLC.**

STATE OF ARIZONA }  
COUNTY OF MARICOPA } SS.

Marlene M. Turner, being first duly sworn, upon oath deposes and says: That she is a legal advertising representative of the Buckeye Valley News, LLC., a newspaper of general circulation in the county of Maricopa, State of Arizona, published in Buckeye, Arizona, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

**Buckeye Valley News, LLC.**

**Public Input Invited**

**Maricopa County Multi-Jurisdictional  
Hazard Mitigation Plan Update Begins  
Publication Dates:**

October 16, 2014

*Marlene M. Turner*

Authorized Representative of  
Buckeye Valley News, LLC.

Subscribed and sworn to before me this  
16th day of  
October, 2014

*Karen Williams*  
Notary Public



**COINS Info - Hazard Mitigation Plan Update.**

coins@carefree.govoffice.com  
Sent: Thursday, October 16, 2014 9:49 AM  
To: John Kraetz

COINS is an email subscription service used by Carefree to notify residents and staff of important public information.

9:50am Arizona Local Time

## Public Input Invited

### Maricopa County Multi-Jurisdictional Hazard Mitigation Plan Update Begins

Hazard mitigation planning is the process used to identify risks and vulnerabilities associated with natural disasters and to develop long-term strategies for protecting people and property in future hazard events. The process results in a mitigation plan that offers a strategy for breaking the cycle of disaster damage, reconstruction, and repeated damage and a framework for developing feasible and cost-effective mitigation projects. Under the Disaster Mitigation Act of 2000 (Public Law 106-390), local and tribal governments are required to develop and maintain a FEMA approved hazard mitigation plan as a condition of eligibility for receiving certain non-emergency federal hazard mitigation grants.

A multi-jurisdictional planning team comprised of representatives from Maricopa County and the 27 participating jurisdictions comprised of tribes, cities, towns and other local governmental entities substantially located within Maricopa County, will be meeting regularly to review, revise and update the current hazard mitigation plan, with specific attention to:

- Natural hazards that may impact or have impacted the community
- Profiles of the most relevant hazards
- Vulnerability assessment to the identified hazards
- Goals and objectives for hazard risk reduction/elimination
- Mitigation actions/projects to achieve the stated goals and objectives
- Plan maintenance strategy for the next 5-year cycle

An updated draft of the plan is expected in February 2015. For additional information, please visit [http://www.maricopa.gov/Emerg\\_Mgt/links.aspx](http://www.maricopa.gov/Emerg_Mgt/links.aspx) or contact your community's representative as listed below:

John Kraetz, Fire Chief  
Carefree Fire Department  
[john.kraetz@rmetro.com](mailto:john.kraetz@rmetro.com)  
(602)616-6363

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# TOWN OF CAVE CREEK MARSHAL'S OFFICE



The Town of Cave Creek has joined forces with Maricopa County and other jurisdictions within the Valley to review and update the existing Maricopa County Multi-Jurisdictional Hazard Mitigation Plan. The goal of mitigation planning is to reduce or eliminate long-term risk to life and property from all natural hazard events. Mitigation is not how we respond to emergencies like floods and wildfires, but rather how we as a community prevent the impact of such things in the first place.

The mitigation planning process involves identifying and profiling the natural hazards most likely to occur in a community, assessing the vulnerability to these hazards, and establishing goals, actions, and projects that mitigate the associated risks. The update of this mitigation plan will also ensure continued eligibility for non-emergency, federal and state hazard mitigation grants.

Public input on the mitigation planning process is important and residents are encouraged to educate themselves about the existing hazard mitigation plan and offer comments on the update. For more information, please visit the Maricopa County website at:

[http://www.maricopa.gov/Emerg\\_Mgt/links.aspx](http://www.maricopa.gov/Emerg_Mgt/links.aspx)

or contact:

Adam Stein, Marshal  
Town of Cave Creek Marshal's Office  
[Marshal@Cavecreek.org](mailto:Marshal@Cavecreek.org)

Direct: 480-488-6636

or

Meredith Bond, LEPC/Social Media Coordinator  
Maricopa County Emergency Management  
602-273-1411  
[bondm@mail.maricopa.gov](mailto:bondm@mail.maricopa.gov)



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PO Box 4008  
Chandler, Arizona 85244-4008

*Location*  
Suite 301  
55 North Arizona Place  
Chandler, Arizona 85225

**FOR IMMEDIATE RELEASE**

Oct. 9, 2014

Media contacts:

Battalion Chief **Keith Welch**  
Chandler Fire, Health & Medical  
Dept. PIO  
480-782-2170 Office  
480-221-5498 Cell  
anthony.welch@chandleraz.gov

Battalion Chief **Keith Hargis**  
Chandler Fire, Health & Medical  
Dept.  
480-782-2161  
keith.hargis@chandleraz.gov

**Public invited to provide input on county Multi-jurisdictional Hazard Mitigation Plan**

CHANDLER, Ariz. – The City of Chandler has joined forces with Maricopa County and other jurisdictions within the Valley to review and update the existing Maricopa County Multi-jurisdictional Hazard Mitigation Plan. Chandler residents are encouraged to participate in this important mitigation planning process by educating themselves about the existing plan and then offering comments and suggestions for the update.

The mitigation planning process involves identifying and profiling the natural hazards most likely to occur in a community, assessing the vulnerability to these hazards, and establishing goals, strategies, actions, and projects that mitigate the associated risks. The plan does not address how the City responds to emergencies like wildfires and floods, but rather the steps necessary for the community to take in order to prevent or minimize the impact of such emergencies in the first place.

The county plan is online at [www.maricopa.gov/Emerg\\_Mgt/links.aspx](http://www.maricopa.gov/Emerg_Mgt/links.aspx) and feedback on Chandler's portion of the plan can be shared with Battalion Chief Keith Hargis of the Chandler Fire, Health & Medical Department at 480-782-2161 or via email at [keith.hargis@chandleraz.gov](mailto:keith.hargis@chandleraz.gov).

Maricopa County and twenty four incorporated cities and towns, two tribes and one other governmental organization are participating in this cooperative effort to update the Multi-jurisdictional Hazard Mitigation Plan, which is a living document that requires adjustments to maintain its relevance and remain a useful tool and resource.

The update of this mitigation plan will also ensure continued eligibility for non-emergency, federal and state hazard mitigation grants. The Maricopa County Board of Supervisors officially adopted the Multi-jurisdictional Hazard Mitigation Plan on April 14, 2010 and the Federal Emergency Management Agency (FEMA)

found the Plan to be in conformance with Title 44 Code of Federal Regulations Part 201.6 Local Mitigation Plans. FEMA's approval of the Plan is for a period of five years, effective starting date of April 30, 2010.

For more information, please visit the Maricopa County Department of Emergency Management website at [www.maricopa.gov/Emerg\\_Mgt/](http://www.maricopa.gov/Emerg_Mgt/).

###

# CITY OF EL MIRAGE ARIZONA

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## Fire Department

### Welcome to the El Mirage Fire Department



#### Our Mission

To protect the life, property, and environment of our community, neighbors, and guests by delivering professional life safety and hazard mitigation services.

The El Mirage Fire Department (EMFD) began in the early 1960s when the citizens recognized the need for fire protection in the community and formed the El Mirage Volunteer Fire Department. As the community continued to grow, so did the fire safety and emergency medical calls for service.

In 1981, the City hired its first full time fire chief, Eddie Rios. As call volume and responsibilities continued to increase, in order to continue to meet the needs of the community, the City transitioned from a volunteer department to a full-time, paid department in 1987.

In 1992, EMFD became a member of the [Phoenix Regional Automatic Aid Consortium](#) where all members units and crews are accepted across all City boundaries as equal service levels. The Automatic Aid system is a unique and efficient system that essentially eliminates all jurisdictional boundaries when it comes to emergency response.

All emergency units in the system are tracked by satellite. As a result when a person calls 9-1-1, the "system" identifies the closest appropriate unit to the emergency and dispatches that unit regardless of what city it belongs to. By being a part of this consortium we are not only saving lives and property but also significant tax dollars for the City by not having to duplicate resources. Without such a system the El Mirage Fire Department would need additional personnel and equipment resulting in increased costs to the community.

Today the EMFD responds to nearly 3,000 calls for service annually. We respond to and mitigate a variety of emergency situations including fires, auto accidents, medical emergencies, swift water rescues, and hazardous materials incidents.

#### Contact Info

**Fire Department**  
13601 N El Mirage Rd  
El Mirage, Arizona 85335

**Fire Chief**  
Jim Wise  
623-251-3509

**Administration:**  
Phone: 623-583-7968  
Fax: 623-583-8257  
TDD: 623-933-3258

**Administration Hours:**  
Monday - Friday  
8:00am - 5:00pm  
Excluding [Holidays](#)

The City of El Mirage has joined with Maricopa County and other jurisdictions within the Valley to review and update the existing Maricopa County Multi-Jurisdictional Hazard Mitigation Plan (MCMJHMP). The goal of mitigation is the planning to reduce or eliminate long-term risk to life and property from all natural hazard events. Mitigation is not how we respond to emergencies, but rather how we as a community prevent the impact of such natural hazard events in the first place.

The mitigation planning process involves identifying and profiling the natural hazards most likely to occur in any specific community, assessing the vulnerability to these hazards, and establishing goals, actions, and projects that will mitigate the associated risks. The update of this mitigation plan will also ensure continued eligibility for non-emergency, federal and state hazard mitigation grants.

Public input on the mitigation planning process is important and residents are encouraged to educate themselves about the existing hazard mitigation plan and offer comments on the update. For more information, please visit the Maricopa County website at:

[http://www.maricopa.gov/Emerg\\_Mgt/links.aspx](http://www.maricopa.gov/Emerg_Mgt/links.aspx)

The El Mirage Fire Department  
623-583-7968

Meredith Bond, LEPC/Social Media Coordinator  
Maricopa County Emergency Management  
602-273-1411  
bondm@mail.maricopa.gov

# Public Input Invited

## Maricopa County Multi-Jurisdictional Hazard Mitigation Plan Update Begins

Hazard mitigation planning is the process used to identify risks and vulnerabilities associated with natural disasters and to develop long-term strategies for protecting people and property in future hazard events. The process results in a mitigation plan that offers a strategy for breaking the cycle of disaster damage, reconstruction, and repeated damage and a framework for developing feasible and cost-effective mitigation projects. Under the Disaster Mitigation Act of 2000 (Public Law 106-390), local and tribal governments are required to develop and maintain a FEMA approved hazard mitigation plan as a condition of eligibility for receiving certain non-emergency federal hazard mitigation grants.

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Mark Openshaw  
Fort McDowell Yavapai Nation  
Fire Chief  
(480) 789-7520  
[mopenshaw@ftmcdowell.org](mailto:mopenshaw@ftmcdowell.org)



### Fort McDowell Yavapai Nation Fire Department

Posted by Mark C. Openshaw (?)  
October 16 · 🌐

Fort McDowell Yavapai Nation participates in the Maricopa County Multi-Jurisdictional Hazard Mitigation Plan Update  
**PUBLIC INPUT INVITED!!**

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# Don't Be Afraid Of Firefighters In Full Equipment

Submitted by Mark Openshaw  
 FMYN Fire Chief

Firefighter Howard teaching the kids at the Walk To School Day event not to be afraid of a fire-

er when they have all of their equipment on and in place.



## Fort McDowell Fire Department Wishes Everybody A Happy And Safe Thanksgiving



**Thanksgiving Safety**

The kitchen is the heart of the home, especially at Thanksgiving. Kids love to be involved in holiday preparations. Safety in the kitchen is important, especially on Thanksgiving Day when there is a lot of activity and people at home.

- » Stay in the kitchen when you are cooking on the stovetop so you can keep an eye on the food.
- » Stay in the home when cooking your turkey and check on it frequently.
- » Keep children away from the stove. The stove will be hot and kids should stay 3 feet away.
- » Make sure kids stay away from hot food and liquids. The steam or splash from vegetables, gravy or coffee could cause serious burns.
- » Keep the floor clear so you don't trip over kids, toys, pocketbooks or bags.
- » Keep knives out of the reach of children.
- » Be sure electric cords from an electric knife, coffee maker, plate warmer or mixer are not dangling off the counter within easy reach of a child.
- » Keep matches and utility lighters out of the reach of children — up high in a locked cabinet.
- » Never leave children alone in room with a lit candle.
- » Make sure your smoke alarms are working. Test them by pushing the test button.

**Did you know?**



Thanksgiving is the leading day of the year for home fires involving cooking equipment.

Have activities that keep kids out of the kitchen during this busy time. Games, puzzles or books can keep them busy. Kids can get involved in Thanksgiving preparations with recipes that can be done outside the kitchen.

Your Source for SAFETY Information  
 NFPA NFPA Public Education Division • 1 Batterymarch Park, Quincy, MA 02169

www.nfpa.org/education

## Public Input Invited

### Maricopa County Multi-Jurisdictional Hazard Mitigation Plan Update Begins

Hazard mitigation planning is the process used to identify risks and vulnerabilities associated with natural disasters and to develop long-term strategies for protecting people and property in future hazard events. The process results in a mitigation plan that offers a strategy for breaking the cycle of disaster damage, reconstruction, and repeated damage and a framework for developing feasible and cost-effective mitigation projects. Under the Disaster Mitigation Act of 2000 (Public Law 106-390), local and tribal governments are required to develop and maintain a FEMA approved hazard mitigation plan as a condition of eligibility for receiving certain non-emergency federal hazard mitigation grants.

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Mark Openshaw  
 Fort McDowell Yavapai Nation  
 Fire Chief  
 (480) 789-7520  
[mopenshaw@ftmcdowell.org](mailto:mopenshaw@ftmcdowell.org)

## Fort McDowell Fire Department

### Monthly Calls for Service Summary



September 16, 2014 through October 20, 2014

	Current Month	Year to Date
Total Calls for Service	85	735
Total EMS Calls	58	625
Tribal Members Transported	11	147
Tribal members Non-Transported	4	61
Tribal Employees Transported	2	5
Tribal Employee Non-Transported	0	12
Other Transported	20	186
Other Non-Transported	18	154
Special Service	23	133
Fire	3	22
Canceled	5	31
Mutual Aid Given	1	37
Mutual Aid Received	1	21
Number of Billable Transports	20	186

## Crime by the Numbers

The following is the Ft. McDowell Police Department monthly recap of criminal activities for the month of September 2014

Crime:	Current Month:	Yearly Total:
Aggravated Assault	0	10
Assault	1	15
Burglary	0	2
Criminal Damage	1	20
Counterfeit	1	24
Disorderly Conduct	0	7
Drug Offenses	3	25
DUI	6	36
Liquor Laws	1	9
Motor Vehicle Thefts	0	7
Sex Offenses	0	2
Runaways	0	4
Theft	4	25
Traffic Incidents	160	467
Other Service Incidents	7	30
Prisoner Transports	17	272.5
Transport Times(Hours)	31	496.55
Transport Miles	1066	14350.6

Information submitted by the Ft. McDowell Police Department.  
 \*Pending



# Town of Fountain Hills, Arizona

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- Channel 11 - Online
- eFountain - Citizen Portal
- Employee Directory
- Events Calendar
- Fountain Park Webcam
- MC Hazard Mitigation Plan Update Meeting Agendas**
- Permit Inspection Requests
- Public Meeting Posting Sites
- Public Meeting Schedule
- Public Notices
- Saguaro Blvd Reconstruction
- Town Code
- Town News

## Upcoming Events & Public Meetings

- [McDowell Mountain Preservation Commission Meeting](#)  
December 02, 2014
  - [Fountain Hills' Pearl Harbor Remembrance Day Ceremony](#)  
December 07, 2014
  - [STRATEGIC PLANNING ADVISORY COMMISSION MEETING](#)  
December 10, 2014
  - [Disc Golf Tournament](#)  
January 31, 2015
  - [Concours in the Hills](#)  
February 07, 2015
- Page 4 of 4 << < 1 2 3 4

## Recent Town News

- [Sandbags Available for Storm Preparation](#)  
More rain is expected in the coming days and the Town of Fountain Hills encourages residents to ensure they are prepared for storm related incidents. The Town is making sandbags and sand available to Town residents behind Fire Station #1 located at...[\(read more\)](#)
- [Updated - Official Election Results - August 26th Primary Election](#)  
Updated - September 3, 2014 at 5:19PM The official election results for the August 26, 2014 Primary Election are now available. MAYOR - TOWN OF FOUNTAIN HILLS KAVANAGH, LINDA - 4,246 COUNCILMEMBER - TOWN OF FOUNTAIN HILLS BELLENIR, LINA - ...[\(read more\)](#)
- [Fall Edition of "In the Loop" Activity Guide Now Available](#)  
The Fall 2014 edition of the Town of Fountain Hills In the Loop is now

Click below to learn more about 'Pet Friendly' Fountain Hills



## Make a Difference Day

Click the logo below to sign up to volunteer for Make a Difference Day



## Elections



## Sign-up for...

The Town of Fountain Hills has joined forces with Maricopa County and other jurisdictions within the Valley to review and update the existing Maricopa County Multi-Jurisdictional Hazard Mitigation Plan. The goal of mitigation planning is to reduce or eliminate long-term risk to life and property from all natural hazard events. Mitigation is not how we respond to emergencies like floods and wildfires, but rather how we as a community prevent the impact of such things in the first place.

The mitigation planning process involves identifying and profiling the natural hazards most likely to occur in a community, assessing the vulnerability to these hazards, and establishing goals, actions, and projects that mitigate the associated risks. The update of this mitigation plan will also ensure continued eligibility for non-emergency, federal and state hazard mitigation grants.

Public input on the mitigation planning process is important and residents are encouraged to educate themselves about the existing hazard mitigation plan and offer comments on the update. For more information, please visit the Maricopa County website at:

[http://www.maricopa.gov/Emerg\\_Mgt/links.aspx](http://www.maricopa.gov/Emerg_Mgt/links.aspx)

or contact:

Randy Roberts

Fire Chief/ Emergency Manager

480-837-9820

[rroberts@fh.az.gov](mailto:rroberts@fh.az.gov)

or

Meredith Bond, LEPC/Social Media Coordinator

Maricopa County Emergency Management

602-273-1411

[bondm@mail.maricopa.gov](mailto:bondm@mail.maricopa.gov)

The Town of Gila Bend has joined forces with Maricopa County and other jurisdictions within the Valley to review and update the existing Maricopa County Multi-Jurisdictional Hazard Mitigation Plan. The goal of mitigation planning is to reduce or eliminate long-term risk to life and property from all natural hazard events. Mitigation is not how we respond to emergencies like floods and wildfires, but rather how we as a community prevent the impact of such things in the first place.

The mitigation planning process involves identifying and profiling the natural hazards most likely to occur in a community, assessing the vulnerability to these hazards, and establishing goals, actions, and projects that mitigate the associated risks. The update of this mitigation plan will also ensure continued eligibility for non-emergency, federal and state hazard mitigation grants.

Public input on the mitigation planning process is important and residents are encouraged to educate themselves about the existing hazard mitigation plan and offer comments on the update. For more information, please visit the Maricopa County website at:

[http://www.maricopa.gov/Emerg\\_Mgt/links.aspx](http://www.maricopa.gov/Emerg_Mgt/links.aspx)

or contact:

Terry Weter

Town of Gila Bend Public Works Director

928-683-2255

[tweter@gilabendaz.org](mailto:tweter@gilabendaz.org)

or

Meredith Bond, LEPC/Social Media Coordinator

Maricopa County Emergency Management

602-273-1411

[bondm@mail.maricopa.gov](mailto:bondm@mail.maricopa.gov)



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### Maricopa County Multi-Jurisdictional Hazard Mitigation Plan

The Town of Gilbert has joined forces with Maricopa County and other jurisdictions within the Valley to review and update the existing Maricopa County Multi-Jurisdictional Hazard Mitigation Plan. The goal of mitigation planning is to reduce or eliminate long-term risk to life and property from all natural hazard events. Mitigation is not how we respond to emergencies like floods and wildfires, but rather how we as a community prevent the impact of such things in the first place.

The mitigation planning process involves identifying and profiling the natural hazards most likely to occur in a community, assessing the vulnerability to these hazards, and establishing goals, actions, and projects that mitigate the associated risks. The update of this mitigation plan will also ensure continued eligibility for non-emergency, federal and state hazard mitigation grants.

Public input on the mitigation planning process is important and residents are encouraged to educate themselves about the existing hazard mitigation plan and offer comments on the update. For more information, please visit the [Maricopa County website](#) or contact:

Sheri Gibbons CEM  
Emergency Management Coordinator  
Gilbert Fire and Rescue Department  
480-503-6333  
[sheri.gibbons@gilbertaz.gov](mailto:sheri.gibbons@gilbertaz.gov)

Meredith Bond, LEPC/Social Media Coordinator  
Maricopa County Emergency Management  
602-273-1411  
[bondm@mail.maricopa.gov](mailto:bondm@mail.maricopa.gov)

# Comments



## Glendale Fire Department

Yesterday at 3:05pm · 🌐

The City of Glendale has joined forces with Maricopa County and other jurisdictions within the Valley to review and update the existing Maricopa County Multi-Jurisdictional Hazard Mitigation Plan. The goal of mitigation planning is to reduce or eliminate long-term risk to life and property from all natural hazard events. Mitigation is not how we respond to emergencies like floods and wildfires, but rather how we as a community prevent the impact of such things in the first place.

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Public input on the mitigation planning process is important and residents are encouraged to educate themselves about the existing hazard mitigation plan and offer comments on the update. For more information, please visit the Maricopa County website at:

[http://www.maricopa.gov/Emerg\\_Mgt/links.aspx](http://www.maricopa.gov/Emerg_Mgt/links.aspx)  
or contact:

Anthony Butch Fire Captain/ Emergency Planner  
Glendale Fire Department  
623-872-5090  
abutch@glendaleaz.com  
or

Meredith Bond, LEPC/Social Media Coordinator  
Maricopa County Emergency Management  
602-273-1411  
bondm@mail.maricopa.gov

**Emergency Management Department of Maricopa County**  
2014/2015 Update: Maricopa County has joined forces with jurisdictions from around the Valley to review and update the exi...  
[maricopa.gov](http://maricopa.gov)

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### FAVORITES



Christopher Sleigher



Ziggy Zides



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Michael Young



Alisha Forbes



Jared Fiori



Helen Beckner



Brent Healy



Joe Hester

**Public input invited for hazard mitigation plan**  
**Maricopa County Multi-Jurisdictional Hazard Mitigation Plan Update Begins**  
**Post Date:** 01/09/2015 10:10 AM

**FOR IMMEDIATE RELEASE**

January 9, 2015

**Contact:** Mike Sakal, Public Information Officer

**Office:** 623-882-7053; [michael.sakal@goodyearaz.gov](mailto:michael.sakal@goodyearaz.gov)

## **Public Input Invited:**

### **Maricopa County Multi-Jurisdictional Hazard Mitigation Plan Update Begins**

Hazard mitigation planning is the process used to identify risks and vulnerabilities associated with natural disasters and to develop long-term strategies for protecting people and property in future hazard events. The process results in a mitigation plan that offers a strategy for breaking the cycle of disaster damage, reconstruction, and repeated damage and a framework for developing feasible and cost-effective mitigation projects.

Under the Disaster Mitigation Act of 2000 (Public Law 106-390), local and tribal governments are required to develop and maintain a FEMA approved hazard mitigation plan as a condition of eligibility for receiving certain non-emergency federal hazard mitigation grants.

A multi-jurisdictional planning team comprised of representatives from Maricopa County and the 27 participating jurisdictions comprised of tribes, cities, towns and other local governmental entities substantially located within Maricopa County, will be meeting regularly to review, revise and update the current hazard mitigation plan, with specific attention to:

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Michael Sakal

Public Information Officer

623-882-7053 desk phone

623-693-1712 cell phone

[Michael.sakal@goodyearaz.gov](mailto:Michael.sakal@goodyearaz.gov)

Sherine Zaya

Communications Manager

623-882-7061 desk phone

623-258-1044 cell phone

[Sherine.zaya@goodyearaz.gov](mailto:Sherine.zaya@goodyearaz.gov)

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# Town of Guadalupe

Where Three Cultures Flourish



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[Ordinances](#)

[Finance](#)

[Newsletter/Press Release](#)

[History & Traditions](#)

[Our Community](#)

[El Mercado De Guadalupe](#)

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[Applications & Forms](#)

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## Multi-Jurisdictional Hazard Mitigation Plan

Tuesday, November 25, 2014 at 11:35 AM

[MCMJHMP\\_2015\\_Guadalupe.docx](#)

This is the official site of the Town of Guadalupe, Arizona, U.S.A.

The Town of Guadalupe has joined forces with Maricopa County and other jurisdictions within the Valley to review and update the existing Maricopa County Multi-Jurisdictional Hazard Mitigation Plan. The goal of mitigation planning is to reduce or eliminate long-term risk to life and property from all natural hazard events. Mitigation is not how we respond to emergencies like floods and wildfires, but rather how we as a community prevent the impact of such things in the first place.

The mitigation planning process involves identifying and profiling the natural hazards most likely to occur in a community, assessing the vulnerability to these hazards, and establishing goals, actions, and projects that mitigate the associated risks. The update of this mitigation plan will also ensure continued eligibility for non-emergency, federal and state hazard mitigation grants.

Public input on the mitigation planning process is important and residents are encouraged to educate themselves about the existing hazard mitigation plan and offer comments on the update. For more information, please visit the Maricopa County website at:

[http://www.maricopa.gov/Emerg\\_Mgt/links.aspx](http://www.maricopa.gov/Emerg_Mgt/links.aspx)

or contact:

Wayne Clement  
Guadalupe Fire Department  
480-839-1112  
wclement@guadalupeaz.org  
or

Meredith Bond, LEPC/Social Media Coordinator  
Maricopa County Emergency Management  
602-273-1411  
[bondm@mail.maricopa.gov](mailto:bondm@mail.maricopa.gov)

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You are here: Home > Government > Departments > Community & Recreation Services > Community Services > Emergency Management

Block Watch

City Parks

Emergency Management

GAIN

Media Communications

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Special Events

Valley Metro Bus



## Emergency Management

### Overview

The City of Litchfield Park has joined forces with Maricopa County and other jurisdictions around the Valley to review and update the existing individual multi-hazard mitigation plans and consolidate them into a single multi-jurisdictional, multi-hazard mitigation plan. The goal of this mitigation planning effort is to reduce or eliminate long-term risk to life and property from natural hazard events. Mitigation is not how we respond to emergencies like floods and wildfires, but rather, how we, as a community, prevent the impact of such things in the first place.

The mitigation planning process involves identifying and profiling the natural hazards most likely to occur in a community, assessing the vulnerability to these hazards, and establishing goals, actions and projects that mitigate the associated risks. The development of this mitigation plan will also ensure eligibility for certain hazard mitigation grants and public assistance funds.

Public input on the mitigation planning process is important and residents are encouraged to educate themselves about the existing plan and offer comments on the update.

For more information, please visit the multi-jurisdictional planning website at [www.maricopa.gov/emerg\\_mgt/](http://www.maricopa.gov/emerg_mgt/)

### 2014-15 Maricopa County Multi-Jurisdictional Hazard Mitigation Review

The City of Litchfield Park has joined forces with Maricopa County and other jurisdictions within the Valley to review and update the existing Maricopa County Multi-Jurisdictional Hazard Mitigation Plan. The goal of mitigation planning is to reduce or eliminate long-term risk to life and property from all natural hazard events. Mitigation is not how we respond to emergencies like floods and wildfires, but rather how we as a community prevent the impact of such things in the first place.

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Public input on the mitigation planning process is important and residents are encouraged to educate themselves about the existing hazard mitigation plan and offer comments on the update. For more information, please visit the [Maricopa County website](#) or contact [Sonny Culbreth](#), Emergency Management Coordinator, City of Litchfield Park, Arizona.

### Contact Information

City of Litchfield Park Emergency Management  
[email](#)

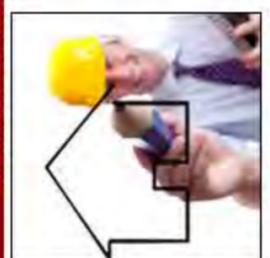
Maricopa County Department of Emergency Management  
[email](#)

City Hall, 214 W. Wigwam Blvd., Litchfield Park, AZ 85340 | Ph: 623.935.5033 | Fx: 623.935.5427

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### In the Headlines



## Maricopa County Announces SBA Disaster Assistance

Maricopa County Announces SBA Disaster Assistance Low Interest Loans Made Available to County Residents for Storm Damage. [more details...](#)

### County Spotlight



#### Recorded Documents

A recording system that makes available on the internet over 93,000,000 document images such as warranty deeds, deeds of trust, etc. dating back to June 5, 1871.

[Click here to search for recorded documents.](#)

### Other County News

**Maricopa County Multi-Jurisdictional Hazard Mitigation Plan** 10/8/2014  
Public input invited for the Maricopa County Multi-Jurisdictional Hazard Mitigation Plan which began the five year update. [More Details](#)



**Spend an evening under the stars** 10/8/2014  
(Peoria) - Join local astronomy experts, Tony and Carole La Conte, from Stargazing for Everyone, on Saturday, October 25 from 8:30 to 9 p.m. at the De [More Details](#)



**When Overseeding and Scalping, Consider Air Pollution** 10/1/2014  
Now is the time to replace winter grass. When overseeding and scalping, do what you can to reduce dust and keep our air clean. [More Details](#)



**Earthquake Preparedness - Drop, Cover and Hold On!** 9/30/2014  
Do you know what to do during an earthquake? Each year dozens of earthquakes occur in Arizona. most go unfelt, but rare, moderate to large magnitude e [More Details](#)



**Supervisor Rogers honored as West Valley Woman of Year** 9/30/2014  
Maricopa County Supervisor Marie Lopez Rogers will be honored as the West Valley's Woman of the Year for her longtime service and commitment to the We [More Details](#)



**Come Hike with Shelter Dogs!** 9/25/2014  
Join us on October 4th as we kick-off our Wag & Walk Adoption Hike program at Usery Mountain Regional Park in Mesa. [More Details](#)



**Keep Maricopa County Beautiful Month** 9/24/2014  
The Maricopa County Department of Transportation Adopt A Highway Program and the Sun City West PRIDES are joining together to kick-off October 2014 as [More Details](#)



**Celebrating National Public Lands Day** 9/22/2014  
Maricopa County's National Public Lands Day is a day that brings awareness to open space and thanks the man [More Details](#)

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Name Arizona's largest employer.

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# NEWS

*for immediate release*



MARICOPA COUNTY  
[Emergency Management](#)  
5630 East McDowell Road  
Phoenix, AZ 85008

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

## Maricopa County Multi-Jurisdictional Hazard Mitigation Plan

# Public Input Invited

## Maricopa County Multi-Jurisdictional Hazard Mitigation Plan Update Begins

Hazard mitigation planning is the process used to identify risks and vulnerabilities associated with natural disasters and to develop long-term strategies for protecting people and property in future hazard events. The process results in a mitigation plan that offers a strategy for breaking the cycle of disaster damage, reconstruction, and repeated damage and a framework for developing feasible and cost-effective mitigation projects. Under the Disaster Mitigation Act of 2000 (Public Law 106-390), local and tribal governments are required to develop and maintain a FEMA approved hazard mitigation plan as a condition of eligibility for receiving certain non-emergency federal hazard mitigation grants.

A multi-jurisdictional planning team comprised of representatives from Maricopa County and the 27 participating jurisdictions comprised of tribes, cities, towns and other local governmental entities substantially located within Maricopa County, will be meeting regularly to review, revise and update the current hazard mitigation plan, with specific attention to:

- Natural hazards that may impact or have impacted the community
- Profiles of the most relevant hazards
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- Goals and objectives for hazard risk reduction/elimination
- Mitigation actions/projects to achieve the stated goals and objectives
- Plan maintenance strategy for the next 5-year cycle

An updated draft of the plan is expected in February 2015. For additional information, please visit [http://www.maricopa.gov/Emerg\\_Mgt/links.aspx](http://www.maricopa.gov/Emerg_Mgt/links.aspx) or contact:

Meredith Bond  
Maricopa County Emergency Management  
602-273-1411  
[bondm@mail.maricopa.gov](mailto:bondm@mail.maricopa.gov)

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## HAZARD MITIGATION PLANNING

### ***Maricopa County Multi-Jurisdictional Hazard Mitigation Plan***

2014/2015 Update: Maricopa County has joined forces with jurisdictions from around the Valley to review and update the existing Maricopa County Multi-Jurisdictional Hazard Mitigation Plan. The goal of mitigation planning is to reduce or eliminate long-term risk to life and property from all natural hazard events. Mitigation is not how we respond to emergencies like floods and wildfires, but rather how we as a community minimize or prevent the impact of such things in the first place. The mitigation planning process involves identifying and profiling the natural hazards most likely to occur in a community, assessing the vulnerability to these hazards, and establishing goals, actions, and projects that mitigate the associated risks. The update of this mitigation plan will also ensure continued eligibility for non-emergency, federal and state hazard mitigation grants. Public input on the mitigation planning process is important and residents are encouraged to educate themselves about the existing hazard mitigation plan and offer comments on the update. For more information please contact:

Meredith Bond  
 Maricopa County Emergency Management  
 602-273-1411  
[bondm@mail.maricopa.gov](mailto:bondm@mail.maricopa.gov)

The Maricopa County Board of Supervisors officially adopted the Multi-jurisdictional Hazard Mitigation Plan on April 14, 2010 and the Federal Emergency Management Agency (FEMA) found the Plan to be in conformance with Title 44 Code of Federal Regulations Part 201.6 Local Mitigation Plans. FEMA's approval of the Plan is for a period of five years, effective starting date of April 30, 2010.

Hazard mitigation planning reduces the risk to people and property, and reduces the cost of recovering from a disaster. A hazard mitigation plan can help communities become more sustainable and disaster-resistant by focusing efforts on the hazards, disaster-prone areas and identifying appropriate mitigation actions. Effective mitigation planning and efforts can break the cycle of disaster damage, reconstruction, and repeated damage.

Maricopa County and twenty four incorporated cities and towns, two tribes and one other governmental organization participated in a cooperative effort to update the Maricopa County Multi-jurisdictional Hazard Mitigation Plan. The County and each participating community have an approved hazard mitigation plan resulting from this planning team effort to reduce the potential loss from natural hazards. This plan is a living document that requires adjustments to maintain its relevance and remain a useful tool and resource.

The planning team members are committed to continuously monitor and document any changes to the recommended actions in the Maricopa County Multi-jurisdictional Hazard Mitigation Plan. This effort is essential for determining the progress made on each hazard mitigation initiative and in performing the annual evaluations of the plan.

HAZARD MITIGATION PLAN ([Full Document](#)) ~24MB

#### INDIVIDUAL SECTIONS

- [Executive Summary and Table of Contents](#) (<1MB)
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- [Section 2](#) (<1MB)
- [Section 3](#) (<1MB)
- [Section 4](#) (~8MB)

- [Section 5](#) (~5MB)
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- [Appendix A](#) (<1MB)
- [Appendix B](#) (~10MB)
- [Appendix C](#) (~6MB)
- [Appendix D](#) (<1MB)
- [Appendix E](#) (<1MB)



### ***Community Wildfire Protection Plan***

The Maricopa County Board of Supervisor officially adopted the Maricopa County Community Wildfire Protection Plan (MCCWPP) on May 12, 2010. The goals of the MCCWPP are:

- Improve fire prevention and suppression
- Reduce hazardous vegetative fuels
- Restore watershed health
- Promote community involvement
- Encourage economic development

The MCCWPP was developed in response to the Health Forest Restoration Act of 2003 (HFRA) for at-risks communities and unincorporated areas in Maricopa County. Maricopa County and 44 partner agencies and communities participated in this planning endeavor. The MCCWPP establishes a framework to help local governments, fire departments, districts and residents identify at-risk public and private lands to better protect those lands from severe wildfire threat. Additional functions of the MCCWPP are to improve fire prevention and suppression activities as well as to identify funding needs and opportunities to reduce the risk of wildland fire and enhance public and firefighter safety.

The MCCWPP Core Team Members are committed to continuous monitoring the progress of the recommended actions, priorities and goal. A Working Group made up of the Core Team Members will meet every six months to assess the progress of the Maricopa County CWPP.

Community Wildfire Protection Plan ([Full Document](#)) ~16MB



### ***FOR MORE INFORMATION:***

For more information or to submit comments and questions, call the Maricopa County Department of Emergency Management at 602-273-1411.

>> Partner Agencies

-  [Maricopa Region 911 Info](#)
-  [AZ Emergency Management](#)
-  [AZ Dept. of Homeland Security](#)
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-  [Community Emergency Response Team \(CERT\)](#)
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# Arizona Business Gazette

The business resource

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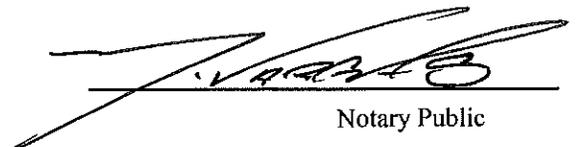
} SS.

Brian Billings, being first duly sworn, upon oath deposes and says: That he is the Legal Ad Rep of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published weekly at Phoenix, Arizona, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates indicated.

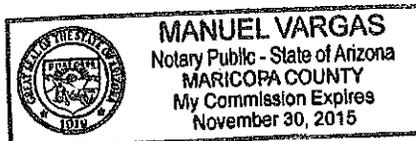
1/8/2015  
1/15/2015



Sworn to before me this  
15TH day of  
JANUARY 2015



Notary Public



Public Input Invited  
Maricopa County Multi-Jurisdictional Hazard Mitigation Plan Update Begins  
Hazard mitigation planning is the process used to identify risks and vulnerabilities associated with natural disasters and to develop long-term strategies for protecting people and property in future hazard events. The process results in a mitigation plan that offers a strategy for breaking the cycle of disaster damage, reconstruction, and repeated damage and a framework for developing feasible and cost-effective mitigation projects. Under the Disaster Mitigation Act of 2000 (Public Law 106-390), local and tribal governments are required to develop and maintain a FEMA approved hazard mitigation plan as a condition of eligibility for receiving certain non-emergency federal hazard mitigation grants.  
A multi-jurisdictional planning team comprised of representatives from Maricopa County and the 27 participating jurisdictions comprised of tribes, cities, towns and other local governmental entities substantially located within Maricopa County, will be meeting regularly to review, revise and update the current hazard mitigation plan, with specific attention to:  
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oProfiles of the most relevant hazards  
oVulnerability assessment to the identified hazards  
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oMitigation actions/projects to achieve the stated goals and objectives  
oPlan maintenance strategy for the next 5-year cycle  
An updated draft of the plan is expected in February 2015. For additional information, please visit [http://www.maricopa.gov/Emerg\\_Mgt/links.aspx](http://www.maricopa.gov/Emerg_Mgt/links.aspx) or contact your community's representative as listed below:  
Interfaith Bond  
LEPC/Social Media Coordinator  
boodn@mail.maricopa.gov  
602-273-1411  
Published: January 8, 15, 2015

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The business resource

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Meredith Bond  
LEPC/Social Media Coordinator  
bondm@mail.maricopa.gov  
602-273-1411  
Published: January 8, 15, 2015

STATE OF ARIZONA  
COUNTY OF MARICOPA

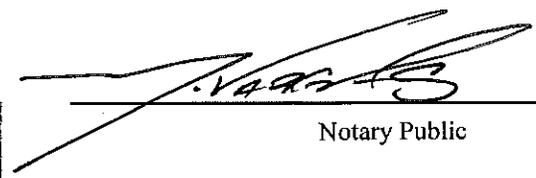
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1/8/2015  
1/15/2015



Sworn to before me this  
15TH day of  
JANUARY 2015



Notary Public

 **MANUEL VARGAS**  
Notary Public - State of Arizona  
MARICOPA COUNTY  
My Commission Expires  
November 30, 2015

# City of Mesa, Arizona



## Emergency Preparedness

### Maricopa County Multi-Jurisdictional Hazard Mitigation Plan Update Begins: Public Input Invited

Emergency response during a natural or man-made disaster is coordinated through the City of Mesa Fire and Medical Department's Emergency Management center. During a disaster, residents and visitors in the Mesa area are advised to visit [www.Mesaaz.gov](http://www.Mesaaz.gov) or tune to Mesa Channel 11 or local radio and television stations for information.

If your family does not already have one, please consider developing a family emergency plan now, as a precaution. This should include storing a supply of extra food, medicines, facemasks and other essential supplies.

## Sandbags and Storm Preparation

The City of Mesa has sand available. Please bring your own shovel. Sand is located the following City of Mesa locations:

Fire Station 204	<a href="#">1426 S. Extension, Mesa</a>
Fire Station 205	<a href="#">730 S. Greenfield, Mesa</a>
Fire Station 209	<a href="#">7035 E. Southern, Mesa</a>
Fire Station 212	<a href="#">2430 S. Ellsworth, Mesa</a>
City Transportation	<a href="#">300 E. 6th Street</a> (west side)
East Mesa Service Center	<a href="#">6935 E. Decatur</a> (front parking lot)

For more information about sandbag availability in Mesa please call **480-644-2160**

Fill the bags one-half to two-thirds full. The bag, when filled, should lie fairly flat. Over-filled bags are firm and do not nestle into one another; tight bags make for a leaky sandbag wall. Tying is not necessary

### Phoenix - Sandbag locations

### Scottsdale - Sandbag locations



### Flu Season

- [Flu Awareness: Stay Home](#)
- [Flu Awareness: See The Flu](#)
- [Flu Awareness: Boiling Point](#)
- [Flu.gov](http://Flu.gov)

## Countering Terrorism: RUN. HIDE. FIGHT. Surviving an Active Shooter Event

Unfortunately, active shooter incidents in the workplace or other large public venues have become a reality in today's society. Although infrequent, the impact of these events has far reaching effects, not only on the victims and their loved ones, but on their communities and our nation as a whole. Law enforcement nationwide has responded decisively with a variety of dynamic training approaches designed to direct first responders during incidents of this nature. Many citizens have probably imagined themselves in similar situations and wondered what they would or should do. Law enforcement is now reaching beyond the ranks of our first responders and offering citizens some guidance. This video was created by the City of Houston and is designed to assist citizens with some scenario-based training regarding active shooter events. Available in Spanish, Vietnamese & Chinese [here](#). ***This video contains dramatized scenes of violence that may be disturbing to***

City of Mesa Emergency Management Division  
Fire Administration  
13 West First Street  
Mesa, AZ. 85201

Fire Non-Emergency  
480-644-2101

Fire Emergency  
911

### Sandbags and Storm Preparation

### Family Emergency Preparedness Guide

### How to prepare for an emergency

### Arizona Emergency Alert System

# Public Input Invited

## Maricopa County Multi-Jurisdictional Hazard Mitigation Plan Update Begins

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City of Mesa Emergency Management  
Gabe Sezate  
480-644-3366

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## Emergency Management

### Hazard Mitigation Planning

The Town of Paradise Valley has joined forces with Maricopa County and other jurisdictions within the Valley to review and update the existing Maricopa County Multi-Jurisdictional Hazard Mitigation Plan. The goal of mitigation planning is to reduce or eliminate long-term risk to life and property from all natural hazard events. Mitigation is not how we respond to emergencies like floods and wildfires, but rather how we as a community prevent the impact of such things in the first place. The mitigation planning process involves identifying and profiling the natural hazards most likely to occur in a community, assessing the vulnerability to these hazards, and establishing goals, actions, and projects that mitigate the associated risks. The update of this mitigation plan will also ensure continued eligibility for non-emergency, federal and state hazard mitigation grants.

Public input on the mitigation planning process is important and residents are encouraged to educate themselves about the existing hazard mitigation plan and offer comments on the update.

For more information, please visit the [Maricopa County website](#) or contact:

Bob Lee, Emergency Manager

Town of Paradise Valley

480 348-3631

rlee@paradisevalleyaz.gov

or

Meredith Bond, LEPC/Social Media Coordinator

Maricopa County Emergency Management

602-273-1411

bondm@mail.maricopa.gov

### Public Safety and Emergency Management Links

[The Arizona Emergency Information Network](#) is the state's online source for real-time emergency updates, preparedness and hazard information, and multimedia resources.

### Other State Government Links

- [Arizona Department of Homeland Security](#)

[Have your PMP? - You could save over \\$12K and 15 months on your Master's](#)



## City of Peoria, Arizona

[Home](#)



Peoria, Arizona is a dynamic desert community northwest of Phoenix with more than 157,000 residents. Officially incorporated in 1954, the city has grown from the original one square mile in Old Town... [see more](#)

### Recent Updates

**City of Peoria, Arizona** PUBLIC INPUT SOUGHT - Maricopa County Multi-Jurisdictional Hazard Mitigation Plan Update Begins The City of Peoria has joined forces with Maricopa County and other jurisdictions within the Valley to review and update the existing Maricopa County... [more](#)



#### Maricopa County Multi-Jurisdictional Hazard Mitigation Plan Update Begins

Document • News Release FOR RELEASE: Immediately CONTACT: Bo Larsen Director of Communications p 623.773.7934 c 602.349.6749 e bo.larsen@peoriaaz.gov Public Input Invited Maricopa County Multi-Jurisdictional Hazard Mitigation Plan Update Begins...

Like (4) • Comment • Share • 3 days ago

You, Scott Clark +2

Add a comment...



City of Peoria

OFFICE OF COMMUNICATIONS

8401 West Flower Street  
Peoria, Arizona 85345  
T 623.773.7934  
F 623.773.7944

## News Release

FOR RELEASE: Immediately  
CONTACT: Bo Larsen  
Director of Communications  
p 623.773.7934  
c 602.349.6748  
e bo.larsen@peoriaaz.gov

### Public Input Invited

#### *Maricopa County Multi-Jurisdictional Hazard Mitigation Plan Update Begins*

PEORIA, Ariz. (October 24, 2014) – The City of Peoria has joined forces with Maricopa County and other jurisdictions within the Valley to review and update the existing Maricopa County Multi-Jurisdictional Hazard Mitigation Plan. The goal of mitigation planning is to reduce or eliminate long-term risk to life and property from all natural hazard events. Mitigation is not how we respond to emergencies like floods and wildfires, but rather how we as a community prevent the impact of such things in the first place.

The mitigation planning process involves identifying and profiling the natural hazards most likely to occur in a community, assessing the vulnerability to these hazards, and establishing goals, actions, and projects that mitigate the associated risks. The update of this mitigation plan will also ensure continued eligibility for non-emergency, federal and state hazard mitigation grants.

Public input on the mitigation planning process is important and residents are encouraged to educate themselves about the existing hazard mitigation plan and offer comments on the update. An updated draft of the plan is expected in February 2015.

For more information, please visit the Maricopa County website at

[http://www.maricopa.gov/Emerg\\_Mgt/links.aspx](http://www.maricopa.gov/Emerg_Mgt/links.aspx) or contact the city of Peoria's representative listed below:



Glenn Jones, CEM, MSL-DP

Emergency Preparedness and Safety Coordinator

8401 West Monroe Street, Peoria, Arizona, 85345

EM Office 623 773-5207

Safety Office 623 773-7278



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## Hazard Mitigation Plan

The City of Phoenix has joined forces with Maricopa County and other jurisdictions within the Valley to review and update the existing Maricopa County Multi-Jurisdictional Hazard Mitigation Plan. The goal of mitigation planning is to reduce or eliminate long-term risk to life and property from all natural hazard events. Mitigation is not how we respond to emergencies like floods and wildfires, but rather how we as a community prevent the impact of such things in the first place.

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Public input on the mitigation planning process is important and residents are encouraged to educate themselves about the existing hazard mitigation plan and offer comments on the update.

### [For More Information](#)

Visit the [Maricopa County website](#)

#### Or Contact

Sharyn Zlotnick

Office of Homeland Security and Emergency Management

602-534-9223

[sharyn.zlotnick@phoenix.gov](mailto:sharyn.zlotnick@phoenix.gov)

or

Meredith Bond, LEPC/Social Media Coordinator

Maricopa County Emergency Management

602-273-1411

[bondm@mail.maricopa.gov](mailto:bondm@mail.maricopa.gov)



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City of Phoenix > Office of Emergency Management > Hazard Mitigation Plan

## Hazard Mitigation Plan

The City of Phoenix has joined forces with Maricopa County and other jurisdictions within the Valley to review and update the existing Maricopa County Multi-Jurisdictional Hazard Mitigation Plan. The goal of mitigation planning is to reduce or eliminate long-term risk to life and property from all natural hazard events. Mitigation is not how we respond to emergencies like floods and wildfires, but rather how we as a community prevent the impact of such things in the first place.

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### [For More Information](#)

Visit the [Maricopa County website](#)

### Or Contact

Sharyn Zlotnick  
Office of Homeland Security and Emergency Management  
602-534-9223  
[sharyn.zlotnick@phoenix.gov](mailto:sharyn.zlotnick@phoenix.gov)

or  
Meredith Bond, LEPC/Social Media Coordinator  
Maricopa County Emergency Management  
602-273-1411  
[bondm@mail.maricopa.gov](mailto:bondm@mail.maricopa.gov)

**Fire & Medical**

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## Child Seat Safety

## Community Emergency Response Team (CERT)

## Emergency Preparedness

## Fire Prevention &amp; Education

## Fire Permits, Fees &amp; Inspections

## Fire Staff

## Fireworks

## Home Escape Plan

## Hospitals/ Urgent Care

## In Memorium

## Safety Tips

## Staying Healthy

## Fire &amp; Medical Feedback

[Departments](#) > [Fire & Medical](#)

## EMERGENCY PREPAREDNESS

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Queen Creek Fire & Medical encourages residents to be prepared to care for your family for at least 72 hours after a disaster. With just a few simple steps you may be able to save yourself and your family when a disaster strikes.

**Be Informed**

Find out what potential disasters may affect you. In Queen Creek, it could be [flooding](#) or [tornadoes](#). During a disaster, information is important for survival. Keep a battery powered radio in case the power goes out to stay connected with emergency broadcasts.

**Make a Plan**

Plan in advance what you will do for the most likely emergencies. Your plan should include a [family communication plan](#), a [shelter in place plan](#), as well as the action steps you will take when disasters are imminent.

**Get a Kit**

Think of everything you might need if you take shelter at home for 72 hours to create a [disaster supplies kit](#). The list of items doesn't need to be extensive, but plan to have those items handy. Consider a smaller kit that you can leave in your office or car or take with you in case of an evacuation.

Taking these steps and you will make your family safer, maybe even save your lives, during the next disaster. For more information, please contact Queen Creek Fire & Medical at 480-358-3360

**Maricopa County Multi-Jurisdictional Hazard Mitigation Plan**

The Town of Queen Creek has joined forces with Maricopa County and other jurisdictions within the Valley to review and update the existing Maricopa County Multi-Jurisdictional Hazard Mitigation Plan. The goal of mitigation planning is to reduce or eliminate long-term risk to life and property from all natural hazard events. Mitigation is not how we respond to emergencies like floods and wildfires, but rather how we as a community prevent the impact of such things in the first place.

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Public input on the mitigation planning process is important and residents are encouraged to educate themselves about the existing hazard mitigation plan and offer comments on the update. For more information, please visit the Maricopa County website at or contact:

**For additional information, please contact:**

Joe LaFortune

Emergency Management Coordinator

Queen Creek Fire and Medical Department

480-358-3502

[joe.lafortune@queencreek.org](mailto:joe.lafortune@queencreek.org)

Meredith Bond, LEPC/Social Media Coordinator

Maricopa County Emergency Management

602-273-1411

[bondm@mail.maricopa.gov](mailto:bondm@mail.maricopa.gov)

## PUBLIC INPUT INVITED

### Maricopa County Multi-Jurisdictional Hazard Mitigation Plan Update Begins

Hazard mitigation planning is the process used to identify risks and vulnerabilities associated with natural disasters and to develop long-term strategies for protecting people and property in future hazard events. The process results in a mitigation plan that offers a strategy for breaking the cycle of disaster damage, reconstruction, and repeated damage and a framework for developing feasible and cost-effective mitigation projects. Under the Disaster Mitigation Act of 2000 (Public Law 106-390), local and tribal governments are required to develop and maintain a FEMA approved hazard mitigation plan as a condition of eligibility for receiving certain non-emergency federal hazard mitigation grants.

A multi-jurisdictional planning team comprised of representatives from Salt River Pima-Maricopa Indian Community, Maricopa County and the 27 participating jurisdictions comprised of tribes, cities, towns and other local governmental entities substantially located within Maricopa County, will be meeting regularly to review, revise and update the current hazard mitigation plan, with specific attention to:

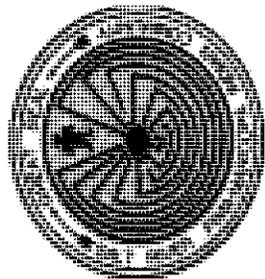
- Natural hazards that may impact or have impacted the community
- Profiles of the most relevant hazards
- Vulnerability assessment to the identified hazards
- Goals and objectives for hazard risk reduction/elimination
- Mitigation actions/projects to achieve the stated goals and objectives
- Plan maintenance strategy for the next 5-year cycle

An updated draft of the plan is expected in February 2015. For additional information, please visit [http://www.maricopa.gov/Emerg\\_Mgt/links.aspx](http://www.maricopa.gov/Emerg_Mgt/links.aspx) or contact your community's representative as listed below.

**SRPMIC Emergency Manager Cliff Puckett at (480) 362-7927 or [cliff.puckett@srpmic-nsn.gov](mailto:cliff.puckett@srpmic-nsn.gov)**

# AU-AUTHM ACTION NEWS

[www.srpmic-nsn.gov/community/auauthm/](http://www.srpmic-nsn.gov/community/auauthm/)



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4 p.m., Dinner

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- AZ Counter Terrorism Information Center
- U.S. Department of Homeland Security
- Federal Emergency Management Administration
- Red Cross
- Maricopa County Multi-Jurisdictional Multi-Hazard Mitigation Plan**

# Public Input Invited

## Maricopa County Multi-Jurisdictional Multi-Hazard Mitigation Plan

Hazard mitigation planning is the process used to identify risks and vulnerabilities associated with natural disasters and to develop long-term strategies for protecting people and property in future hazard events. The process results in a mitigation plan that offers a strategy for breaking the cycle of disaster damage, reconstruction, and repeated damage and a framework for developing feasible and cost-effective mitigation projects. Under the Disaster Mitigation Act of 2000 (Public Law 106-390), local and tribal governments are required to develop and maintain a FEMA approved hazard mitigation plan as a condition of eligibility for receiving certain non-emergency federal hazard mitigation grants.

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[http://www.maricopa.gov/emerg\\_mgt/links.aspx](http://www.maricopa.gov/emerg_mgt/links.aspx)

or contact:

**Meredith Bond, Maricopa County Department of Emergency Management**

602-273-1411 

[meridithbond@mail.maricopa.gov](mailto:meridithbond@mail.maricopa.gov)

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## Emergency Preparedness

**Do you know what steps you should take to protect your family, loved ones and neighbors in the event of an emergency?**

The City of Scottsdale's Emergency Management/Homeland Security (EMHS) Bureau offers a variety of tools and training to help enhance your level of preparedness and ability to keep your family and loved ones safe in the event of an emergency.

### PREPARE FOR AN EMERGENCY

Get tips on how to make a plan, assemble a kit, practice with your family and stay informed in the event of an emergency at a FREE training provided by the Emergency Management/Homeland Security Bureau.

- **Ready Scottsdale Presentations** get you prepared. [Sign up today!](#)
- [Family Communication Plan](#) (pdf/168kb/1pp)- fold up card that includes important family information
- [Family-Child Communication Plan](#) (pdf/988kb/1pp) - fold up card that includes adult and child family information
- [Scottsdale Be Prepared Checklist](#) (pdf/317kb/4pp) - What to take if you have to leave NOW and what to have at home if you are stranded for 72 hours.

### MARICOPA MULTI-JURISDICTIONAL HAZARD MITIGATION UPDATE

The City of Scottsdale has joined forces with Maricopa County and other jurisdictions within the Valley to review and update the existing Maricopa County Multi-Jurisdictional Hazard Mitigation Plan.

Learn how you can [get involved!](#)

### SIGN UP FOR 2015 CERT CLASSES

The CERT program trains the community in basic disaster prevention and response skills such as disaster preparedness, fire suppression, disaster medical operations, search and rescue, organization and disaster psychology.

[Learn more](#) and [sign up for a class](#) today!

### ADDITIONAL INFORMATION

Please follow the below links to find further information on how to prepare you and your family for a natural, man made, and environmental disasters.

- [Scottsdale emergency preparedness tips](#) (pdf/316k/2pp)
- [Ready Scottsdale presentation slides](#) (pdf/857k/27pp)
- [FEMA Food & Water in a Disaster tips](#) (pdf/580k/16pp)

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## Multi-Jurisdictional Hazard Mitigation Update

The City of Scottsdale has joined forces with Maricopa County and other jurisdictions within the Valley to review and update the existing Maricopa County Multi-Jurisdictional Hazard Mitigation Plan. The goal of mitigation planning is to reduce or eliminate long-term risk to life and property from all natural hazard events. Mitigation is not how we respond to emergencies like floods and wildfires, but rather how we as a community prevent the impact of such things in the first place.

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Public input on the mitigation planning process is important and residents are encouraged to educate themselves about the existing hazard mitigation plan and offer comments on the update. For more information, please visit the Maricopa County website at:

[http://www.maricopa.gov/Emerq\\_Mqt/links.aspx](http://www.maricopa.gov/Emerq_Mqt/links.aspx)

or contact:

John D. Moede  
 City of Scottsdale  
 Emergency Management Coordinator  
 8401 E. Indian School Road  
 Scottsdale, AZ 85251  
 480-312-1832  
[jmoede@scottsdaleaz.gov](mailto:jmoede@scottsdaleaz.gov)

or  
 Meredith Bond, LEPC/Social Media Coordinator  
 Maricopa County Emergency Management  
 602-273-1411  
[bondm@mail.maricopa.gov](mailto:bondm@mail.maricopa.gov)

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2015 Hazard Mitigation Plan Update

## 2015 Hazard Mitigation Plan Update

### Maricopa County Multi-Jurisdictional Hazard Mitigation Plan – 2015 Update

The City of Surprise has joined forces with Maricopa County and other jurisdictions within the Valley to review and update the existing Maricopa County Multi-Jurisdictional Hazard Mitigation Plan. The goal of mitigation planning is to reduce or eliminate long-term risk to life and property from all natural hazard events. Mitigation is not how we respond to emergencies like floods and wildfires, but rather how we as a community prevent the impact of such things in the first place.

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[http://www.maricopa.gov/Emerg\\_Mgt/links.aspx](http://www.maricopa.gov/Emerg_Mgt/links.aspx)

or contact:

Division Chief Brenden Espie  
City of Surprise Fire Department  
623-222-5027  
[brenden.espie@surpriseaz.gov](mailto:brenden.espie@surpriseaz.gov)

or

Meredith Bond, LEPC/Social Media Coordinator  
Maricopa County Emergency Management  
602-273-1411  
[bondm@mail.maricopa.gov](mailto:bondm@mail.maricopa.gov)



16000 N. Civic Center Plaza Surprise, AZ 85374 City Hall Hours: Monday - Friday; 8am - 5pm  
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# Public Input Invited

## Maricopa County Multi-Jurisdictional Hazard Mitigation Plan Update Begins

Hazard mitigation planning is the process used to identify risks and vulnerabilities associated with natural disasters and to develop long-term strategies for protecting people and property in future hazard events. The process results in a mitigation plan that offers a strategy for breaking the cycle of disaster damage, reconstruction, and repeated damage and a framework for developing feasible and cost-effective mitigation projects. Under the Disaster Mitigation Act of 2000 (Public Law 106-390), local and tribal governments are required to develop and maintain a FEMA approved hazard mitigation plan as a condition of eligibility for receiving certain non-emergency federal hazard mitigation grants.

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An updated draft of the plan is expected in February 2015. For additional information, please visit [http://www.maricopa.gov/Emerg\\_Mgt/links.aspx](http://www.maricopa.gov/Emerg_Mgt/links.aspx) or contact your **community's** representative as listed below:

Bob Hansen, Battalion Chief  
City of Tolleson Fire Department  
[bhansen@tollesonaz.org](mailto:bhansen@tollesonaz.org)  
(623) 474-4981

Notice Given by Crystal Zamora  
Tolleson Deputy City Clerk  
Thursday, January 29, 2015

Published in the Arizona Republic  
Tuesday, February 3, 2015

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- [February 10, 2015 Use Permit & Site Plan - Verizon Wireless](#)
- [February 10, 2015 P & Z and City Council - Public Hearing \(Rados Properties Final Plat\)](#)
- [January 29, 2015 Maricopa County Multi-Jurisdictional Hazard Mitigation Plan Update Begins](#)
- [January 29, 2015 Invitation to Bid - Sodium Hydroxide 50% for WWTP](#)
- [January 29, 2015 Invitation to Bid - Sodium Hydroxide 25% for WWTP](#)
- [January 27, 2015 Use Permit & Site Plan - Corner Store 99th Ave. & Van Buren](#)
- [January 15, 2015 RFP - Inflatables for Special Events](#)
- [January 13, 2015 P & Z and City Council - Code Ch. 12 Land Use, Building Regulations](#)
- [January 13, 2015 Site Plan - Love's Travel Stop](#)
- [January 5, 2015 Quorum Notice](#)
- [December 9, 2014 CDBG Public Hearing](#)
- [December 9, 2014 Use Permit - 9205 West Van Buren Street](#)
- [December 9, 2014 Site Plan - Love's Travel Stop](#)
- [December 1, 2014 Use Permit - Fuego and Luces de Navidad](#)
- [November 17, 2014 P & Z and City Council - Public Hearing \(COR Brands Final Plat\)](#)
- [November 17, 2014 Public Hearing - Redevelopment Plan](#)
- [November 17, 2014 P & Z and City Council - Public Hearing \(Tolleson Corporate Park Final Plat\)](#)
- [November 17, 2014 Use Permit - Honey Baked Ham](#)
- [November 13, 2014 Quorum Notice](#)
- [November 13, 2014 RFP - Fireworks for Special Events](#)
- [November 13, 2014 RFP - Inflatables for Special Events](#)
- [November 13, 2014 RFP - Portable Restrooms for Special Events](#)

# EDUCATION

## Nixon earns Elks student of quarter

Tanner Nixon, 14, has been named Elks Lodge No. 2160 Wickenburg Christian Academy Junior Student of the Quarter. He is the son of Tadd and Kelley Nixon of Wickenburg. He is an eighth grade student at Wickenburg Christian Academy.

Nixon has been active on the WCA Archery team. Last Spring he took fourth in the state competition and was one of four WCA students who qualified for and went to the NASP National Archery Tournament in Kentucky. He also participates in WCA basketball and attends First Southern Baptist Church and youth group.

Scholastically he has an average of 98 percent and is consistently on the honor roll. Nixon is an advanced



Tanner Nixon

math student, having already taken and passed Algebra I and is currently taking a 10th grade geometry class. He also excels at history. Tanner plans to attend Legacy High School at WCA. His future plans include a desire to attend the Air Force Academy in Colorado Springs.



Makenzie Lemons

## Lemons August Soroptimist Student of Month

Makenzie Lemons is a senior at Wickenburg High School. She is a native to Arizona and has lived in Wickenburg since 2007. She is the daughter of Mike and Janet Lemons, and sister to Chance, a freshman at WHS. Lemons has always strived for academic excellence, maintaining a 4.2 weighted GPA. She has been active in National Honor Society, and is currently holding the office of representative. Lemons is a member of Students Against Destructive Decisions, and is former vice president of the WHS Rodeo Club. She is also working an internship at Wickenburg Community Hospital where she volunteers six hours a week.

Lemons team ropes competitively. She also enjoys being on the WHS golf team and has held a position in the top five players and earned a varsity letter every year. As a freshman, she received the Outstanding Freshman Award. Her sophomore year she received the Bob Friece Award, and the David Nelson Memorial Award her junior year.

Lemons plans to attend college, meet veterinary medicine pre-requisites and continue on to graduate school in pursuit of a career as a veterinarian. Makenzie would like to express her profound gratitude for receiving the high honor of Soroptimist's August Student of the Month.

### Car wash to support music, theatre programs



Saydi Roberts (from left), Courtney Jones and Caleb Demeter, student volunteers from the Wickenburg Performing Arts Boosters will wash vehicles at the car wash and bake sale from 8:30 to noon Oct. 25 at Quik Lane Auto Center. The volunteers raise money to help support the band, choir and theatre programs in the Wickenburg School District.

## Soroptimists honor Pearce



Hannah Pearce

Soroptimist Student of the Month for September, Hannah Pearce is a senior at Wickenburg High School and 17-year-old daughter of Cindy Carter and Jason Pearce. She is the student body president, the co-captain of the varsity volleyball team, a member of National Honor Society, DECA, and on the board of directors for Humane Society of Wickenburg. She is involved with club volleyball as well. Pearce plans to attend college and major in international business.

## Dalley earns recognition

Kylie Dalley, the eighth-grade daughter of Brandon and Jenny Dalley is the Elks Lodge No. 2160 student of the month at Vulture Peak Middle School.

Dalley has been active in volleyball, art club and soccer as well as taking piano lessons. She has a 4.0 GPA and is in the social studies and English honors classes as well as algebra. In high school, Dalley plans to continue to improve at sports and art and continue to excel in academics.



Kylie Dalley

## Public input invited in hazard mitigation plan update

Public input is invited as the local hazard mitigation plan undergoes an update. Hazard mitigation planning is the process used to identify risks and vulnerabilities associated with natural disasters and to develop long-term strategies for protecting people and property in future hazard events. The process results in a mitigation plan that offers a strategy for breaking the cycle of disaster damage, reconstruction, and repeated damage and a framework for developing feasible and cost-effective mitigation projects. Under the Disaster Mitigation Act of 2000 (Public Law 106-390), local and tribal governments are required to develop and maintain a FEMA approved hazard mitigation plan as a condition of eligibility for receiving certain non-emergency federal hazard mitigation grants.

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An updated draft of the plan is expected in February 2015. For additional information, visit [http://www.maricopa.gov/Emerg\\_Mgt/links.aspx](http://www.maricopa.gov/Emerg_Mgt/links.aspx) or contact Wickenburg Fire Chief Ed Temerowski, 155 N. Tegner Suite A, Wickenburg, AZ 85390, (928) 684-7702.



### Desert Rose plays at temple opening

The Desert Rose String Quartet from Wickenburg plays for Arizona dignitaries at the opening of the new Church of Jesus Christ of Latter Day Saints Temple in Phoenix on Oct. 9. The invitation-only event included tours of the temple. Players are Marina Rauh - first violin (from left), Carol Bennett - second violin, Caroline Markham - viola, Penny Pietre - cello and pianist Kay Anderson. The group has played together for close to two decades at charitable events as well as weddings, funerals and other occasions.

## I-11

From the Front Page

Halikowski said. "I-11 is part of our plan for Arizona's Key Commerce Corridors, which requires investment in our transportation infrastructure to ensure the necessary connectivity to other major markets. Arizona's global competitiveness depends directly on our ability to move people, products and services

quickly and efficiently. We need our highway corridors to get us there."

The recommended corridor would follow US 93 from Hoover Dam Bypass Bridge southeast to approximately Wickenburg, then new road would be constructed to connect US 93 to I-10. The interstate may come with I-10

in places, eventually ending at the Mexican border at Nogales, a total of approximately 450 miles in Arizona.

The exact route from US 93 south toward Mexico is still undetermined, although a rough corridor, five miles to 50 miles wide, was established in the feasibility study. The next step in the plan-

ning process would be to narrow down the corridor with environmental and economic impact studies, according to ADOT Director of Planning and Programming Michael Kies.

In the Wickenburg area, one proposed route is a section of new road going south from US 93 in the area of SR

71 about 18 miles northwest of town. Another possible route would go from US 60 at Morristown south to I-10, thus bringing I-11 through Wickenburg.

Wickenburg Mayor John Cook spoke at the Transportation Board meeting, and among other remarks, told the governing body that although he doesn't see I-11 becoming a reality for another 30 years, the people of Wickenburg prefer the corridor be established north and west of town, rather than through town.

At present, there is no funding allocated on the state or federal level for further planning of the interstate. Cost projections for a Tier I study - to officially establish the route from Wickenburg to Nogales - would cost an estimated \$15-20 million, Kies said. A Tier II study, which

would get the project ready for design and construction, would be about \$60 million, he said.

ADOT Deputy Director for Policy Floyd Roehrich reported to the Transportation Board that Nevada and Arizona lawmakers have written a letter to Congressional transportation committee chairs informing them of the significance of the I-11 trade route asking that it be formally recognized as such by Congress.

Several audience members from various organizations involved in the feasibility study addressed the transportation board at the same meeting, encouraging the state to not let the report sit on the shelf, but rather take the next steps to move the project forward. The entire report is available at <http://i11study.com>

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### Meeting on your schedule, not ours.

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### Community Wide Event

## 30th Annual Circle City Yard Sale

Saturday & Sunday  
October 25 - 8:00 a.m. to 4:00 p.m.  
October 26 - 8:00 a.m. to 2:00 p.m.

Bake Sale at Community Center  
Circle City - Hwy 60 and London Rd.

You are here: [Departments](#) > [Fire Department](#) > Hazard Mitigation Plan

## HAZARD MITIGATION PLAN

The Town of Wickenburg has joined forces with Maricopa County and other jurisdictions within the Valley to review and update the existing Maricopa County Multi-Jurisdictional Hazard Mitigation Plan. The goal of mitigation planning is to reduce or eliminate long-term risk to life and property from all natural hazard events. Mitigation is not how we respond to emergencies like floods and wildfires, but rather how we as a community prevent the impact of such things in the first place.

The mitigation planning process involves identifying and profiling the natural hazards most likely to occur in a community, assessing the vulnerability to these hazards, and establishing goals, actions, and projects that mitigate the associated risks. The update of this mitigation plan will also ensure continued eligibility for non-emergency, federal and state hazard mitigation grants.

Public input on the mitigation planning process is important and residents are encouraged to educate themselves about the existing hazard mitigation plan and offer comments on the update. For more information, please visit the Maricopa County website at:

[http://www.maricopa.gov/Emerg\\_Mgt/links.aspx](http://www.maricopa.gov/Emerg_Mgt/links.aspx)

or contact:

Ed Temerowski / Fire Chief / Emergency Operations  
[etemerowski@wickenburgaz.org](mailto:etemerowski@wickenburgaz.org)

or

Meredith Bond, LEPC/Social Media Coordinator  
Maricopa County Emergency Management  
602-273-1411

[bondm@mail.maricopa.gov](mailto:bondm@mail.maricopa.gov)

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# Public Input Invited

## State and Federal Health Services Plans Request Information From Public

The State and Federal Health Services Plans are currently in the process of developing a comprehensive health care program. The program will provide a wide range of health services to the public, including medical care, hospital care, and preventive care. The program is designed to be a cost-effective and efficient way to provide health care to the public. The State and Federal Health Services Plans are currently in the process of developing a comprehensive health care program. The program will provide a wide range of health services to the public, including medical care, hospital care, and preventive care. The program is designed to be a cost-effective and efficient way to provide health care to the public.

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November 2014

Volume 8 Number 11  
Youngtown, AZ

# Youngtown

*Magazine*

Village Reporter

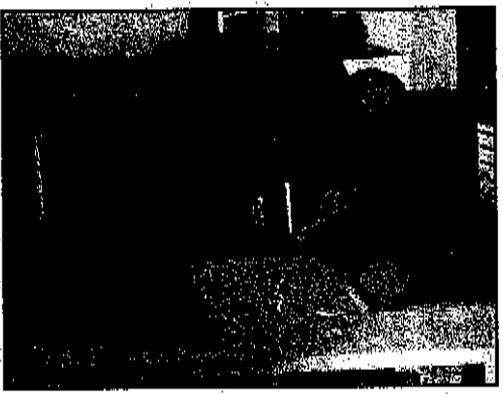


## Business Spotlight

By GAYLE COOPER  
ECONOMIC  
DEVELOPMENT MANAGER

We celebrated two Grand Openings in October. The first was Guitars & Moore owned by Gene Moore, the second, Fozzie's Pet Spa, owned by Kristi Trujillo.

Gene Moore has been teaching guitar for several years, and loves having his own



Mayor Michael Levault cuts

shop on October 24th. She and her husband Fernando have many pets, including four dogs, a cat and a large wild bird. The shop is a tribute to Youngtown's colors - but that was not planned. Grooming is available for both cats and dogs. Kristi is extremely creative and has been planning the store for five years. Come and see some of her creations at the

## General Election 2014 Tuesday, November 4, 2014

The Town of Youngtown will have a measure on the ballot, "Proposition 482" providing for the ratification of "Youngtown General Plan 2025". The plan reflects the Town's vision regarding community land use, changes in the community since the last General Plan adoption, and strategies to ensure a prosperous and sustainable future for Youngtown. The Youngtown General Plan 2025 can be viewed on the



town's website at [www.youngtownaz.org](http://www.youngtownaz.org). Copies are also available at Town Hall, 12030 Clubhouse Square, and also at the Town's library.

Polling location:  
12033 N. Clubhouse Square, Youngtown, AZ 85363

Times: 6:00 a.m. - 7:00 p.m.

Any questions on elections, please contact the Maricopa County Recorder, Office at [www.recorder.maricopa.gov](http://www.recorder.maricopa.gov).

Youngtown Village Reporter  
12030 Clubhouse Square  
Youngtown, Arizona 85363

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# Youngtown Public Library News.....

## Public Input Invited

**Maricopa County Multi-Jurisdictional Hazard Mitigation Plan Update Begins**

Hazard mitigation planning is the process used to identify risks and vulnerabilities associated with natural disasters and to develop long-term strategies for protecting people and property in future hazard events. The process results in a mitigation plan that offers a strategy for breaking the cycle of disaster damage, reconstruction, and repeated damage and a framework for developing feasible and cost-effective mitigation projects. Under the Disaster Mitigation Act of 2000 (Public Law 106-390), local and tribal govern-

ments are required to develop and maintain a FEMA approved hazard mitigation plan as a condition of eligibility for receiving certain non-emergency federal hazard mitigation grants.

A multi-jurisdictional planning team comprised of representatives from Maricopa County and the 27 participating jurisdictions comprised of tribes, cities, towns and other local governmental entities substantially located within Maricopa County, will be meeting regularly to review, revise and update the current hazard mitigation plan, with specific attention to:

- Natural hazards that may impact or have impacted the community
- Profiles of the most relevant hazards

- Vulnerability assessment to the identified hazards
- Goals and objectives for hazard risk reduction/elimination and risk reduction/projects
- Mitigation actions/projects to achieve the stated goals and objectives
- Plan maintenance strategy for the next 5-year cycle

An updated draft of the plan is expected in February 2015. For additional information, please visit [http://www.maricopa.gov/Emerg\\_Mgt/links.aspx](http://www.maricopa.gov/Emerg_Mgt/links.aspx) or contact your community's representative as listed below:

Youngtown Public Safety Manager  
 Michael Kessler  
 mkessler@youngtownaz.org



Library Story Time -  
 October 2014

The Youngtown Library will be closed in observance of the following holidays: November 11th for Veterans Day, and November 27th - 30th for Thanksgiving. This month, as we celebrate Veterans Day, remember it is a day to honor

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**CONTACT US**



**Mike Kessler**  
Public Safety Manager  
[Email](#)

12030 Clubhouse Square  
Youngtown, AZ 85363

Ph: 623-933-8286  
TDD: 623-974-3665  
Fx: 623-933-5951

**Hours**  
Monday - Friday  
8 a.m. - 4 p.m.

**To Report a Code Violation**  
[Click Here](#)

You are here: [Home](#) > [Our Services](#) > Public Safety

**Public Safety**

The safety and protection of the Town's residents is the primary goal of the Public Safety Office. Mike Kessler, a former Youngtown Police Sergeant, is the Public Safety Manager.

**Remember to always call 911 in cases of emergency.**

In order to capitalize on the extensive resources and training available to the [Maricopa County Sheriff's Office](#) (MCSO), and to minimize cost to the Town, Youngtown contracts with MCSO to perform police functions. Manager Mike Kessler is an Arizona Post Peace Officer who issues the citations on behalf of the Code Enforcement staff. Mike Kessler also liaises with the Sheriff's Office as the Town's representative. View some great advice from the Sheriff's Office on [Safety Tips](#).

Fire Protection and Suppression Services, along with Emergency Medical Services, are provided for Youngtown residents through the [Sun City Fire District](#).

The [Office of Homeland Security](#) has established an integrated multi-jurisdictional system for use in the event of a devastating incident. [National Incident Management Services](#) (NIMS) prescribes specific procedures for the operation of the Town's Emergency Operations Center (EOC) in the event of a disaster. Mike Kessler also serves the Manager of the EOC.

Identity Theft Protection Reviews The Reviews.com research team compiled a list of 26 services and identified the top 10 products to review based on the 33 most important features. <http://www.reviews.com/identity-theft-protection-services/>

To call for Fry's Shopping Cart removal, please call 602-258-4942.

**Public Input Invited**

The Maricopa County Multi-Jurisdictional Hazard Mitigation Plan Update is the process used to identify risks and vulnerabilities associated with natural disasters and to develop long-term strategies for protecting people and property in future hazard events. The process results in a mitigation plan that offers a strategy for breaking the cycle of disaster damage, reconstruction, and repeated damage and a framework for developing feasible and cost-effective mitigation projects. Under the Disaster Mitigation Act of 2000 (Public Law 106-390), local and tribal governments are required to develop and maintain a FEMA approved hazard mitigation plan as a condition of eligibility for receiving certain non-emergency federal hazard mitigation grants. [To read more...](#)

To learn more contact the Town's Public Safety Manager, [Mike Kessler](#) or 623-933-8286.

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## Appendix D

### Detailed Historic Hazard Records

**State and Federally Declared Natural Hazard Events That Included Maricopa County  
January 1966 to December 2014**

Hazard	No. of Declarations	Recorded Losses		
		Fatalities	Injuries	Damage Costs (\$)
Drought	13	0	0	\$303,000,000
Dam Failure	0	0	0	\$0
Earthquake	0	0	0	\$0
Extreme Heat/Cold	0	0	0	\$0
Fissure	0	0	0	\$0
Flooding / Flash Flooding	18	54	115	\$623,550,000
Hail	0	0	0	\$0
Lightning	0	0	0	\$0
Levee Failure	0	0	0	\$0
Subsidence	0	0	0	\$0
Thunderstorm / High Wind	4	0	0	\$0
Tornado / Dust Devil	0	0	0	\$0
Tropical Storm / Hurricane	1	0	0	\$375,000,000
Wildfire	18	0	0	\$0

Notes:

- Damage Costs are reported as is and no attempt has been made to adjust costs to current dollar values

State of Arizona Declaration				Federal Presidential Declaration				Damage Estimates							
Date	Hazard	State PCA No.	Expenditures	Date	ID	Expenditures	Counties Affected	Description	Fatalities	Injuries	Property	Crop/Livestock	Total	Sources	
2/24/1966	Flooding / Flash Flooding		\$43,673	04/30/66	217-DR	\$3,256,224	Graham, Greenlee, Maricopa, Pima, Pinal	Floods; state/federal disaster declared. A cold winter storm put up to 1.26 inches of rain in many areas of Tucson. Eleven accidents from slick roads and flooding produced most of the damage in the Tucson area.					\$0	ADEM, 2008; Tucson NWS, 2008 at <a href="http://www.wrh.noaa.gov/twc/hydro/floodhis.php">http://www.wrh.noaa.gov/twc/hydro/floodhis.php</a> ;	
9/15/1970	Flooding / Flash Flooding		\$12,977	09/22/70	294-DR	\$9,613,107	Apache, Coconino, Gila, Maricopa, Navajo, Yavapai	The unprecedented flash floods in the central mountains of Arizona Saturday afternoon and evening September 5th, transformed a weekend camping holiday into a nightmarish tragedy for many persons. Never before in the State's recorded weather history had it rained so hard or so much in one day and never before had so many mountain streams and normally dry washes risen so rapidly or filled so fast with raging torrents. All-time previous record crests were exceeded. The 23 lives lost make this the greatest natural disaster in the history of the State. All who lost their lives were away from home and all but four were in automobiles. Fourteen died attempting to flee campgrounds in the headwaters area of Tonto Creek just below the Mogollon Rim and about 30 miles northeast of Payson. Tropical storm Norma produced heavy precipitation along and east of the Baboquivari Mountains and northward to Tucson and Avra Valley. Rapid runoff washed out roads and several bridges near Tucson and flooded homes.	23				\$0	ADEM, 2008; AFMA Floods Happen, Spring 2003.	
6/15/1972	Flooding / Flash Flooding		\$16,158	07/03/72	343-DR	\$10,879,002	Maricopa, Pima, Pinal	Flood damages in Maricopa County were over \$8,000,000. Scottsdale and Phoenix were hit the hardest.			\$8,000,000		\$8,000,000	ADEM, 2008	
4/28/1973	Wildfire		\$36,718				Statewide						\$0	ADEM, 2008	
4/22/1975	Wildfire		\$8,923				Statewide						\$0	ADEM, 2008	
11/7/1976	Flooding / Flash Flooding		\$186,950				Maricopa	Flooding						\$0	ADEM, 2008
9/2/1977	Infestation						Statewide	Cotton Crop Pesticide Applicator						\$0	ADEM, 2008
3/2/1978	Flooding / Flash Flooding		\$485,718	03/04/78	550-DR	\$67,122,627	Statewide	Warm temperatures accompanied by heavy rain filled reservoirs behind all of the dams on the Salt and Verde Rivers and forced large volumes of runoff to be released. This was the largest flow of water down the Salt since 1891. The released water overflowed the channel and flooded residential areas and farmlands. During the same period storm fronts passing over the state caused flash flooding and destruction. 9.53 inches of rainfall occurred on Mt Lemmon. Overflows of the Gila River flooded Duncan and 1000-2000 acres of farmland in Safford Valley. The Rillito Creek, Pantano and Tanque Verde Creeks in Tucson were near bankfull. Total damage was approximately \$65.9 million, of which \$37 million was attributed to Maricopa County alone. Thousands of homes were damaged and 116 homes were destroyed. More than 7,000 people had to be sheltered and four people lost their lives.  For Maricopa County - the storm centered over the mountains north and east of Phoenix, 35 miles north at Rock Springs. Extrapolation of intensity-probability data: 5.73 in./24 hr. equates to a 400 yr. storm. Main source of flooding due to Verde River with runoff volume exceeding reservoir storage capacity above Bartlett Dam. Flooding also occurred along irrigation canals on north side of metro area, and along tributaries of the Gila River and Queen Creek. 1 death-countywide. Total damage costs: \$37 million: \$3.1 million-residential, \$16 million-public, \$4 million-agriculture, \$7.8 million-industrial, \$0.75 million-commercial. "Flood Damage Report 28 February-6 March 1978 on the storm and floods in Maricopa County, Arizona", U.S. Army Corps of Engineers, Los Angeles District, FCDMC Library #802.024.	4		\$65,900,000	\$65,900,000	ADEM, 2008; Tucson NWS, 2008 at <a href="http://www.wrh.noaa.gov/twc/hydro/floodhis.php">http://www.wrh.noaa.gov/twc/hydro/floodhis.php</a> ; AFMA Flood Happens, Fall 2003		
4/21/1978	Wildfire		\$11,528				Statewide						\$0	ADEM, 2008	
12/16/1978	Flooding / Flash Flooding		\$1,909,498	12/21/78	570-DR	\$113,561,122	Statewide	Following the spring flooding, Arizona was hit hard again in December 16th-20th. Total precipitation ranged from less than 1 inch in the northeastern and far southwestern portions of Arizona to nearly 10 inches in the Mazatzal Mountains northeast of Phoenix. A large area of the central mountains received over 5 inches. The main stems of the Gila, Salt, Verde, Agua Fria, Bill Williams, and Little Colorado Rivers, as well as a number of major tributaries, experienced especially large discharges. The flooding areas with the most significant damages included the Little Hollywood District near Safford and major portions of Duncan, Clifton, Winslow, and Williams. Damages were estimated at \$39,850,000. 10 people die and thousands are left homeless. Severe damage to roads and bridges. For Maricopa County, 4 deaths, \$16.3 million-public and \$5 million-agriculture losses estimated. ["Flood Damage Report, Phoenix Metropolitan Area, December 1978 Flood", November 1979, U.S. Army Corps of Engineers, FCDMC Library #802.027]	10		\$39,850,000	\$39,850,000	ADEM, 2008; Tucson NWS, 2008 at <a href="http://www.wrh.noaa.gov/twc/hydro/floodhis.php">http://www.wrh.noaa.gov/twc/hydro/floodhis.php</a> ; AFMA Flood Happens, Fall 2003		
3/29/1979	Thunderstorm / High Wind		\$39,284				Maricopa	High winds and flooding						\$0	ADEM, 2008
4/16/1979	Wildfire		\$204,207				Statewide							\$0	ADEM, 2008

State of Arizona Declaration				Federal Presidential Declaration				Damage Estimates						
Date	Hazard	State PCA No.	Expenditures	Date	ID	Expenditures	Counties Affected	Description	Fatalities	Injuries	Property	Crop/Livestock	Total	Sources
2/13/1980	Flooding / Flash Flooding		\$1,958,611	02/19/80	614-DR	\$42,744,642	Maricopa, Gila, Yavapai, Mohave, White Mt. Apache Tribe, San Carlos Apache Tribe, Fort Gila River Indian Community, Fort McDowell Indian Community, Salt River Indian Community	Severe flooding in central Arizona. Record discharges (later broken in 1993) were recorded in the Phoenix metro area on the Salt, Verde, Agua Fria and Gila Rivers, as well as on Oak Creek in north central Arizona. The Phoenix metro area is almost cut in half as only two bridges remain open over the Salt River. It takes hours for people to move between Phoenix and the East Valley using either the Mill Avenue or Central Avenue bridges. Even the Interstate 10 bridge is closed for fear that it has been damaged. Precipitation during this period at Crown King in the Bradshaw Mountains was 16.63 inches. Three people die. Salt River has a peak flow of 170,000 cubic feet per second. Damages estimated at \$63,700,000 for Phoenix Metro Area. [Phoenix Flood Damage Survey, February 1980, U.S. Army Corps of Engineers, Los Angeles District, FCDMC Library #802.029]	3	3	\$63,700,000	\$3,000,000	\$66,700,000	ADEM, 2008
6/2/1980	Wildfire		\$298,845				Statewide						\$0	ADEM, 2008
6/16/1980	Wildfire						Statewide	AZ Executive Order 81-5: [Terminating the Declaration of a State of Emergency of June 16, 1980 (caused by a severe forest and grassland fire contingency) and returning all unexpended funds authorized by A.R.S. § 35-192 to the General Fund.					\$0	ADEM, 2008
6/26/1981	Wildfire						Statewide	Fire suppression assistance					\$0	ADEM, 2008
6/30/1981	Wildfire		\$256,904				Statewide						\$0	ADEM, 2008
6/30/1982	Wildfire		\$492,635				Statewide						\$0	ADEM, 2008
7/23/1984	Flooding / Flash Flooding		\$55,373	1/15/1985	730-DR	\$505,323	Mohave, Yuma, Maricopa	Flooding and Wind Damage					\$0	ADEM, 2008
10/14/1986	Infestation	EUZ60C	\$48,897				Maricopa	Imported Red Fire Ants					\$0	ADEM, 2008
03/17/1987	Wildfire	EUZSLD					Statewide	Wildland fires statewide					\$0	ADEM, 2008
08/12/1987	Drought	EUZ7AU	\$14,941				Maricopa, Pima, Pinal	Southern Arizona drought					\$0	ADEM, 2008
03/17/1990	Wildfire	EUFIR					Statewide	Wildland fire contingency					\$0	ADEM, 2008
09/07/1990	Flooding / Flash Flooding	EUZ901	\$1,175,040	12/06/90	884-DR	\$5,875,202	Mohave, Gila, Pima, Pinal, Yavapai, Graham, Coconino, Maricopa	Severe storms caused monsoon rains from July 8 through September 14, 1990. Heavy rains and high winds caused flash flooding and wind damage. Havasupai reservation received heavy flood losses. Three lives were lost.	3				\$0	ADEM, 2008
2/14/1992	Flooding / Flash Flooding	EUZ922	\$35,000				Maricopa	Flooding on Salt River Pima Maricopa Indian Community					\$0	ADEM, 2008
01/08/1993	Flooding / Flash Flooding	93003	\$30,072,157	01/19/93	977-DR	\$104,069,362	Statewide	During January and February 1993, winter rain flooding damage occurred from winter storms associated with the El Nino phenomenon. These storms flooded watersheds throughout Arizona by dumping excessive rainfall amounts that saturated soils and increased runoff. Warm temperature snowmelt exacerbated the situation over large areas. Erosion caused tremendous damage and some communities along normally dry washes were devastated. Stream flow velocities and runoff volumes exceeded historic highs. Many flood prevention channels and retention reservoirs were filled to capacity and so water was diverted to the emergency spillways or the reservoirs were breached, causing extensive damage in some cases (e.g., Painted Rock Reservoir spillway). Ultimately, the President declared a major federal disaster that freed federal funds for both public and private property losses for all of Arizona's fifteen counties. Damages were widespread and significant, impacting over 100 communities. Total public and private damages exceeded \$400 million and eight deaths and 112 injuries were reported to the Red Cross (FEMA, April 1, 1993; ADEM, March, 1998).	8	112	\$330,000,000	\$70,000,000	\$400,000,000	ADEM, 2008
09/09/1993	Wildfire	94002	\$200,000				Statewide	Statewide wildfire suppression - State Land Department					\$0	ADEM, 2008
6/30/1994	Wildfire						Statewide	AZ Executive Order 94-9: In Accordance with Established Emergency Procedures declare a state of emergency in Apache, Cochise, Coconino, Gila, Graham, Greenlee, LaPaz, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai and Yuma counties due to wildfire conditions pursuant to A.R.S. § 37-623.02 effective June 30, 1994.					\$0	ADEM, 2008
10/14/1994	Wildfire	95003	\$600,000				Statewide	Statewide wildfire suppression - State Land Department					\$0	ADEM, 2008
02/15/1995	Flooding / Flash Flooding	95007	\$1,525,663				Coconino, Gila, Graham, Greenlee, La Paz, Maricopa, Navajo, Pinal, Yavapai, Yuma	On February 15, 1995, the Governor proclaimed an emergency due to flooding in Coconino, Gila, Maricopa, Yavapai, and Yuma Counties. The proclamation included an allocation of \$100,000 for emergency measures and recovery costs. The proclamation was amended to include Graham, Greenlee, LaPaz, Navajo, and Pinal Counties.					\$0	ADEM, 2008
03/13/1996	Infestation	96003	\$796,456				Statewide	Wheat (karnal bunt)					\$0	ADEM, 2008
05/16/1996	Wildfire	96004	\$1,000,729				Statewide	Statewide wildfire suppression - State Land Department					\$0	ADEM, 2008
06/07/1996	Drought	96005	\$211,499				Statewide						\$0	ADEM, 2008
08/15/1996	Thunderstorm / High Wind	97001	\$2,642,140				Maricopa						\$0	ADEM, 2008

State of Arizona Declaration				Federal Presidential Declaration				Damage Estimates							
Date	Hazard	State PCA No.	Expenditures	Date	ID	Expenditures	Counties Affected	Description	Fatalities	Injuries	Property	Crop/Livestock	Total	Sources	
09/24/1997	Tropical Storm / Hurricane	98002	\$2,318,259				Statewide	Hurricane Nora - \$200 million property damage. An estimated \$150 to \$200 million in damage was sustained by crops throughout Yuma County due mainly to flooded crops. About \$30 to \$40 million was to lemon trees. The heavy rain was attributed to Tropical Storm Nora. Flooding from Hurricane Nora results in the breaching of Narrows Dam. The calculated 24-hour, 100-year rainfall amount in NW Maricopa County was exceeded at six ALERT measuring sites. 3 to 5 inches of rain which fell from Nora led to some flash flooding in portions of northwest Maricopa County. Two earthen dams gave way in Aguila and caused widespread flooding. One dike was located seven miles east of Aguila and the second in the center of the Martori Farms complex. Half of the cotton crop was lost at Martori Farms, as well as 300 to 500 acres of melons. Up to five feet of water filled Aguila. About 40 people were evacuated from the hardest hit area of the town. Water flowing down the Sols Wash was so high that the Sols Wash Bridge in Wickenburg was closed for more than two hours. There was some flooding below Sols Wash in the streets around Coffinger Park. Several houses in the area were flooded. Highway 71 west of Wickenburg and Highway 95 north were closed due to high water from the storm.			\$200,000,000	\$175,000,000	\$375,000,000	ADEM, 2008	
01/20/1999	Infestation	99001	\$177,702				Statewide	Red Imported Fire Ant Emergence						\$0	ADEM, 2008
05/06/1999	Wildfire	99004	\$4,894				Statewide	Statewide wildland fire emergence						\$0	ADEM, 2008
6/23/1999	Drought	99006					Statewide	PCA 99006; Statewide Drought Emergency, Declared June 23, 1999: Lack of precipitation had significantly reduced surface and ground water supplies and stream flows. The drought continues to endanger crops, property and livestock of the citizens of Arizona. This proclamation has been extended to June 23, 2003, as this is still a threatening situation. USDA Programs offer Arizona Ranchers Drought Relief, (Phoenix) - Federal officials this week announced three programs designed to ease the impact of Arizona's drought on the state's ranching industry and the state's natural resources. Gov. Jane Dee Hull in June issued a drought declaration for the state, initiating a federal review process that culminated in the U.S. Department of Agriculture's determination that Arizona agriculture could qualify for drought assistance. The following are brief descriptions of the three assistance packages for which Arizona ranchers may qualify: Those ranching operations that earlier this year reduced herd sizes in response to poor pasture conditions and lack of water due to the drought can receive capital gains tax deferral if those herds are replaced within two years, according to the Internal Revenue Service. It is recommended that businesses consult their tax specialist or the IRS for further details. For more information, contact Joe Lane, Associate Director of Animal Services Division, at (602) 542-3629. The USDA Natural Resource Conservation Service has received an initial \$6 million through its Emergency Watershed Program (EWP) to treat short- and long-term damage to rangeland and cropland due to drought. Ranchers and farmers can receive financial assistance to implement recovery measures that will retard runoff and reduce the threat of future flooding and erosion hazards. For more information, contact Mike Sommerville, State Conservationist, at (602) 280-8810. The USDA Farm Services Agency has emergency drought assistance loans available. For more information, contact George Arredondo, USDA/FSA State Executive Director, at (602) 640-5200. Arizona's dry winter and low snowpack mostly impacted the state's ranching industry due to poor pasture conditions. Summer rains have improved rangelands throughout Arizona. According to the USDA Arizona Agricultural Statistics Service, as of Aug. 15, range and pasture condition was reported as 6 percent poor, 21 percent fair, 39 percent good, and 34 percent excellent. As much as 99 percent of Arizona's crops are irrigated, generally mitigating short-term drought impacts.						\$0	ADEM, 2008
8/13/1999	Drought			08/13/99	USDA		Apache, Cochise, Coconino, Gila, Graham, Greenlee, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai	GLICKMAN DECLARES PENNSYLVANIA, 13 ARIZONA COUNTIES AS DISASTER AREAS AND ANNOUNCES ADDITIONAL DROUGHT ASSISTANCE Release No. 0334.99, WASHINGTON, August 13, 1999 Agriculture Secretary Dan Glickman today declared all of Pennsylvania and 13 counties in Arizona as agricultural disaster areas due to drought. The declaration makes farmers in those areas and all contiguous counties eligible for emergency low-interest loans and other assistance to help cover losses from the drought. In Arizona, today's disaster declaration applies to Apache, Cochise, Coconino, Gila, Graham, Greenlee, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, and Yuvapai Counties. Also eligible, because they are contiguous, are La Paz and Yuma Counties. Glickman has already declared all or part of Arizona, Connecticut, Maryland, New Jersey, New Mexico, New York, Ohio, Pennsylvania, Virginia, and West Virginia as disaster areas. Due to the close proximity to these states, certain counties in California, Delaware, Indiana, Kentucky, Massachusetts, Michigan, Nevada, Rhode Island, Vermont, and Utah also qualify for emergency loan assistance.						\$0	ADEM, 2008

State of Arizona Declaration				Federal Presidential Declaration				Damage Estimates						
Date	Hazard	State PCA No.	Expenditures	Date	ID	Expenditures	Counties Affected	Description	Fatalities	Injuries	Property	Crop/Livestock	Total	Sources
9/21/1999	Thunderstorm / High Wind	20004	\$2,961,207	10/15/99	1304-DR	\$89,017	Maricopa, Cochise	Disaster Summary for FEMA-1304-DR, Arizona. Declaration Date: Oct. 15, 1999. Incident Type: severe storms, high winds and flooding. Incident Period: Sept. 14 through Sept. 23, 1999. Counties Declared and Types of Assistance as of Oct. 15, 1998: Maricopa county for the Individual Assistance program. (1) All counties in the state are eligible to apply for assistance under the Hazard Mitigation Grant Program.					\$0	ADEM, 2008
6/23/2000	Drought						Statewide	Annual extension of PCA 99006; Statewide Drought Emergency. Declared June 23, 1999: Lack of precipitation had significantly reduced surface and ground water supplies and stream flows. The drought continues to endanger crops, property and livestock of the citizens of Arizona. This proclamation has been extended until further notice, as this is still a threatening situation.			\$2,000,000	\$1,000,000	\$3,000,000	ADEM, 2008
07/21/2000	Drought			07/21/00	USDA		Apache, Cochise, Graham, Greenlee, Pima, Pinal, Santa Cruz, Gila, Maricopa, Navajo, Yuma	GLICKMAN DECLARES 7 ARIZONA COUNTIES AGRICULTURAL DISASTER AREAS: Washington, July 17, 2000 - Agriculture Secretary Dan Glickman today declared seven of Arizona's 15 counties as agricultural disaster areas due to drought, making farmers in those areas and 12 neighboring counties, including counties in Utah, New Mexico and Colorado, eligible for emergency low-interest loans. "Farmers and ranchers in Arizona are experiencing real difficulties this year due to drought," said Glickman. "USDA emergency low-interest loans are available to help producers to cover some of their losses." Glickman's disaster declaration covers 7 of Arizona's 15 counties: Apache, Cochise, Graham, Greenlee, Pima, Pinal and Santa Cruz. Four other contiguous Arizona counties also are covered by the declaration (Gila, Maricopa, Navajo and Yuma) and therefore are eligible for the same benefits. Other contiguous counties in New Mexico are Catron, Cibola, Grant, Hidalgo, McKinley, and San Juan counties. San Juan county in Utah and Montezuma county in Colorado are included in the declaration as contiguous counties. This designation makes qualified family-sized farm operators in both primary and contiguous counties eligible for emergency low-interest loans from USDA. Farmers in eligible counties have eight months to apply for the loans. Each loan application is considered on its own merits, taking into account the extent of losses, security available, repayment ability, and other eligibility requirements. USDA previously approved emergency haying and grazing on Conservation Reserve Program acreage, providing assistance to approved producers whose pastures have been decimated by drought. For further information, farmers may contact their local Farm Service Agency offices or visit website: <a href="http://www.fsa.usda.gov/pas/disaster/assistance1.htm">http://www.fsa.usda.gov/pas/disaster/assistance1.htm</a> .					\$0	ADEM, 2008
10/23/2000	Flooding / Flash Flooding	21104	\$1,054,182	10/27/00	1347-DR	\$5,251,582	Cochise, La Paz, Maricopa, Pinal, Santa Cruz	In the early morning hours of Sunday October 22, a large low pressure area dumped four to six inches of rain over parts of eastern LaPaz and western Maricopa County. This caused flash flooding in the upper part of the Centennial Wash between the Harcuvar and Harquahala mountain ranges. The heavy runoff flowed into the town of Wenden where water ran over the highway 60 bridge. At its peak the wash was about 3/8ths of a mile wide and 12 feet deep. The resulting high water surged through the town of Wenden with at least 400 residents evacuated. There was extensive damage to the town and for many miles downstream. The reported flow was in excess of 20,000 cfs. When the flood hit Wenden, it inundated some mobile homes, causing them to lift off their foundations and float down the wash. An estimated 125 mobile homes were affected. One migrant worker was killed when flood waters swept through the town during the early morning hours. Additional heavy rainfall hit this area several days later and complicated relief efforts for many of the homeless. A spotter in Wickenburg reported that route 93 was closed north of Wickenburg due to high water. Sols wash was out of its banks and flooded Coffinger Park as well as nearby homes. The Vulture Mine road was closed and motorists had to be rescued. Flood water produced considerable damage to melon and cotton crops in this rural area of northwest Maricopa County. The roads around Aguila were closed for several hours.	1		\$8,200,000	\$2,000,000	\$10,200,000	ADEM, 2008 NCDC, 2008

State of Arizona Declaration				Federal Presidential Declaration				Damage Estimates						
Date	Hazard	State PCA No.	Expenditures	Date	ID	Expenditures	Counties Affected	Description	Fatalities	Injuries	Property	Crop/Livestock	Total	Sources
6/23/2001	Drought						Statewide	Annual extension of PCA 99006; Statewide Drought Emergency, Declared June 23, 1999: Lack of precipitation had significantly reduced surface and ground water supplies and stream flows. The drought continues to endanger crops, property and livestock of the citizens of Arizona. This proclamation has been extended until further notice, as this is still a threatening situation.					\$0	ADEM, 2008
08/17/2001	Thunderstorm / High Wind	22001	\$11,805				Maricopa, Pima	A large thunderstorm complex developed over northwest Maricopa County and moved to the south and southwest. The thunderstorm induced gust front, at times over 60 miles long, west to east, caused widespread electric power outages in the Gila Bend area south to Ajo in west Pima County. In the immediate Gila Bend area, thirty-eight 230kv poles downed, and thirty-nine 69kv poles downed. A substation was damaged as well as telephone lines. The reported wind gust of 66 knots was recorded at the Gila Bend municipal airport at 0245. As the gust front moved further to the south and southwest, a total of 140 power poles were blown over as reported by the Arizona Public Service. Electric power services were disrupted up to 5 days.					\$0	ADEM, 2008 NCD, 2008
05/17/2002	Drought			05/17/02	USDA		Statewide	VENEMAN DESIGNATES ARIZONA AS DROUGHT DISASTER AREA, Governor Hull and Veneman Tour Fire Areas and Assess Damage in Prescott National Forest Areas: PHOENIX, Ariz., May 17, 2002-- Agriculture Secretary Ann M. Veneman today designated the entire state of Arizona as a drought disaster area. This designation makes Arizona farmers and ranchers immediately eligible for USDA emergency farm loans due to losses caused by drought this year.					\$0	ADEM, 2008
5/18/2002	Infestation						Statewide	the Arizona Game and Fish Department placed an emergency ban on the importation of live hoofed animals (e.g., deer and elk) into Arizona due to a fear of Chronic Wasting Disease (CWD). CWD is a disease closely related to "mad cow disease" in cattle and scrapie in domestic sheep and goats but affects deer and elk.					\$0	ADEM, 2008
6/23/2002	Drought						Statewide	Annual extension of PCA 99006; Statewide Drought Emergency, Declared June 23, 1999: Lack of precipitation had significantly reduced surface and ground water supplies and stream flows. The drought continues to endanger crops, property and livestock of the citizens of Arizona. This proclamation has been extended until further notice, as this is still a threatening situation.					\$0	ADEM, 2008
07/11/2002	Drought			07/11/02	USDA		Statewide	VENEMAN ANNOUNCES EXPANSION OF CRP EMERGENCY HAYING AND GRAZING PROGRAM FOR WEATHER-STRICKEN STATES, WASHINGTON, July 11, 2002 - Agriculture Secretary Ann M. Veneman today approved 18 states for Conservation Reserve Program emergency haying and grazing statewide, making all CRP participants in these states basically eligible for this emergency measure. Veneman also said USDA will waive rental reduction fees to encourage donation of hay to farmers and ranchers in immediate need. "Drought and severe weather conditions have depleted hay stocks and grazing lands across the country," said Veneman. "This approval provides immediate relief to livestock producers and encourages donations of hay to producers who need immediate assistance." The 18 approved states are: Arizona, Colorado, Georgia, Idaho, Kansas, Minnesota, Montana, Nebraska, New Mexico, North Carolina, North Dakota, Oklahoma, South Carolina, South Dakota, Texas, Utah, Virginia and Wyoming. ARIZONA FARMERS FACING CATASTROPHE ... Arizona officials are saying that the losses from the livestock industry alone last year will be upward of \$300 million. ...				\$300,000,000	\$300,000,000	ADEM, 2008

State of Arizona Declaration				Federal Presidential Declaration				Damage Estimates							
Date	Hazard	State PCA No.	Expenditures	Date	ID	Expenditures	Counties Affected	Description	Fatalities	Injuries	Property	Crop/Livestock	Total	Sources	
07/18/2002	Drought			07/18/02	USDA		Maricopa, Pima, Pinal in the Tohono O'odham Nation	VENEMAN DESIGNATES COUNTIES IN ARIZONA, CALIFORNIA, TEXAS AND VIRGINIA AS DISASTER AREAS. Decision Allows Farmers and Ranchers to Receive Emergency Farm Loans: WASHINGTON, July 18, 2002 -- In continuing efforts to expedite emergency disaster declarations in areas hit hard by adverse weather conditions, Agriculture Secretary Ann M. Veneman today designated counties in Arizona, California, Texas and Virginia as agricultural disaster areas. This designation makes farmers and ranchers with losses immediately eligible for USDA emergency (EM) farm loans. "These emergency declarations will provide farmers and ranchers with much needed assistance to recover from these natural disasters," said Veneman. "We continue to utilize all existing authorities to provide relief for weather-stricken areas." In Arizona, Maricopa, Pima and Pinal counties in the Tohono O'odham Nation were named primary disaster areas due to drought.					\$0	ADEM, 2008	
5/2/2003	Wildfire	23003	\$2,378,020				Statewide	Forest Health Emergency - As a result of the on-going drought conditions the forests within our state have been infested with the Pine Bark Beetle. This proclamation will expedite the clearing of dead, dying and diseased trees and other vegetation that interfere with emergency response and evacuation needs.					\$0	ADEM, 2008	
6/23/2003	Drought						Statewide	Annual extension of PCA 99006; Statewide Drought Emergency, Declared June 23, 1999: Lack of precipitation had significantly reduced surface and ground water supplies and stream flows. The drought continues to endanger crops, property and livestock of the citizens of Arizona. This proclamation has been extended until further notice, as this is still a threatening situation.					\$0	ADEM, 2008	
12/29/2004	Flooding / Flash Flooding	25004	\$2,131,217	2/17/2005	1581-DR	\$5,986,604	Gila, Graham, Greenlee, Pinal, Yavapai, Maricopa, Mohave	A strong Pacific storm system moved across Arizona December 28th and 29th with heavy rainfall. The heavy rain and melting snow resulted in excessive runoff in many areas from Williams to Flagstaff to Winslow and south to Prescott and Black Canyon City. High water, mudslides, and rock slides resulted in numerous road closures and evacuations in the area. Many creeks experienced significant rises. Seventy people were evacuated in southwest Flagstaff when water over-topped an earthen flood control dam. A dozen neighborhoods (about 300 people) along Oak Creek were evacuated in the Sedona area and two neighborhoods down stream. A 14 mile section of Highway 89 between Flagstaff and Sedona was closed because of rock slides. High water on the Verde River forced evacuations in Cornville and Bridgeport. Four RVs were lost in Oak Creek at the Page Springs RV park while 23 vehicles were removed before the water rose too high. About 100 people were evacuated in Black Canyon City in two different mobile-home parks. Portions of Navajo Route 71 and Old Navajo Route 2 were closed northeast of Winslow when the Little Colorado River overflowed the banks. Six families were evacuated near Bird Springs on the Navajo Reservation. All thirty-one low water crossings and seven other streets were closed in Prescott due to flooding. Two passengers were rescued from a stranded vehicle in Prescott. Preliminary counts indicate that as many as 150 homes may have sustained damages up to approximately one million dollars. Roads and bridges sustained an additional one million dollars damage.			\$2,000,000	\$2,000,000	ADEM, 2008 NCDC, 2008		

State of Arizona Declaration				Federal Presidential Declaration				Damage Estimates							
Date	Hazard	State PCA No.	Expenditures	Date	ID	Expenditures	Counties Affected	Description	Fatalities	Injuries	Property	Crop/Livestock	Total	Sources	
2/16/2005	Flooding / Flash Flooding	25005	\$4,669,352	3/14/2005	1586-DR	\$9,536,276	Gila, Graham, Greenlee, Pinal, Yavapai, Maricopa, Mohave	A strong storm system drew moist subtropical air from the Pacific to give northern Arizona widespread moderate to heavy rains. This precipitation event began Thursday night (02/10) and lasted through the early hours on Sunday (02/13). Rainfall totals of 2 to 3 inches were common in many locations...with locally heavier amounts found in portions of Yavapai and Northern Gila counties. Flooding caused road closures in Black Canyon City, Walker, Pinedale, and Globe. Paper Mill Road in Snowflake was washed out by the flood waters. Highway 377 was closed due to flooding between Heber and Holbrook. A trailer park in Black Canyon City was evacuated before the water rose into the parking lot. No trailers were damaged. Minor pasture flooding was reported in Cornville. A trailer park in the community of Tonto Creek was evacuated. Flood waters entered homes in Porter Creek Estates (near Show Low). The Gila River at the Town of Duncan had moderate flooding and the smaller dikes broke allowing water to backup into the town. Damage occurred to a residence near Duncan High School, and a trailer downstream of the high school. Also, U.S. Highway 70 near the high school was covered with four feet of water and the approach ramps to the highway were overtopped with flowing water. East Avenue and low lying areas in the west end of the Town of Duncan were evacuated on the evening of Saturday February 12, 2005. The railroad tracks also on the west end of Duncan were covered with water and power went out in the west side of the town. The San Francisco River at the Town of Clifton had minor flooding reported. There was no damage reported in the Town of Clifton. However, there was water to the bottom of the Railroad Bridge which stopped railroad traffic from the Morenci Mine and minor overflow of the river in the northern end of Clifton. Also, the town gates, designed to divert water away from the Town of Clifton were closed, isolating the town from road and railroad access from the north. The Town of Solomon at the Gila River reported minor flooding. The Solomon Road, Pima Road, and Thatcher Road bridge approaches were all flooded and closed. U.S. Highway 70 Bridge near Bylas was also flooded and closed.			\$1,500,000		\$1,500,000	ADEM, 2008 NCDC, 2008	
2/22/2006	Wildfire	26006	\$192,390				Statewide	On February 22, 2006, the Governor declared an emergency due to the driest winter in recorded history coupled with above average temperatures and the earliest recorded start to a wildfire season. The entire state was threatened by extreme wildfire hazards. The 2006 state wildfire suppression resources strategy required additional financial support. The declaration provided \$200,000 for pre-suppression resources to the Arizona State Land Department, Office of State Forester and the Arizona Division of Emergency Management.					\$0	ADEM, 2008	
5/16/2006	Drought			5/16/2006	USDA		Statewide	The U.S. Department of Agriculture designated all counties in Arizona, except La Paz County, as primary natural disaster areas due to drought that occurred from Jan. 1, 2006, and continuing, making all qualified farm operators in the designated areas eligible for low-interest emergency (EM) loans from USDA's Farm Service Agency (FSA).						\$0	USDA, 2014
6/23/2006	Infestation	26008	\$743,000				Cochise, Maricopa, Pima, Pinal, Santa Cruz, Yuma	Glassy-winged sharpshooter infestation - The Glassy-Winged Sharpshooter is a known vector of Xyella fastidiosa, a bacteria that causes plant diseases such as Pierce's disease of grapes, almond leaf scorch, alfalfa dwarf, oleander leaf scorch, and citrus variegated chlorosis, that threaten the viability of wine, citrus and other agricultural and horticultural industries as well as public landscapes. The Glassy-Winged has been detected in Arizona in a small isolated location in the city of Sierra Vista, Cochise County. The Arizona Department of Agriculture has been placing detection traps, monitoring and eradicating the Sharpshooter.					\$0	ADEM, 2008	
9/14/2007	Flooding / Flash Flooding	28002	\$683,584				Maricopa, Mohave	On September 14, 2007, the Governor declared a state of emergency for a series of potent monsoon storms and flash floods throughout several communities in Arizona, specifically Mohave County, the Town of Cave Creek and the Town of Mammoth from July 21 - August 6, 2007 and initially allocated \$200,000 to this emergency.					\$0	ADEM, 2008	

State of Arizona Declaration				Federal Presidential Declaration				Counties Affected	Description	Fatalities	Injuries	Damage Estimates			
Date	Hazard	State PCA No.	Expenditures	Date	ID	Expenditures	Property					Crop/Livestock	Total	Sources	
1/18/2010	Flooding / Flash Flooding		\$4,497,895	3/18/2010	EM-3307 DR-1888	\$14,210,904	Apache, Coconino, Gila, Greenlee La Paz, Maricopa, Mohave, Navajo, Pima, Pinal, Yavapai, City of Yuma	January 18-22, 2010. Severe winter weather hit the northern part of the state and heavy rains fell in the lower elevations causing significant flooding. In February, the Governor declared a State of Emergency and in March, the President declared a major disaster for Arizona. Preliminary damage assessment reports indicated that 51 residences were destroyed, 64 sustained major damage and 474 more were affected or received minor damage. The total individual assistance cost was estimated at \$3.6 million. Public assistance damages were primarily related to roads and bridges throughout the impacted areas with over \$11.4 million in damages			\$11,400,000		\$11,400,000	ADEM, 2013	
9/7/2014	Flooding / Flash Flooding			11/5/2014	DR-4203	\$18,026,090	La Paz, Maricopa	September 7-9, 2014. Heavy rainfall caused by the remnants of Hurricane Norbert resulted in extensive flooding throughout the State. The Phoenix area experienced its wettest day in history, surpassing a record set in 1939. A preliminary damages assessments for Maricopa, La Paz, and Pinal Counties exceeded \$18 million. Among other impacts, major sections of freeways were closed, canals and flood control systems were overwhelmed, and two individuals perished in separate flash flood incidents. State search and rescue teams spent considerable resources performing numerous rescues of stranded drivers and residents for this incident, in addition to services provided during flooding from two other hurricane remnants (Hurricane Lowell and Hurricane Odile) – all of which impacted Arizona within a two-month period	2		\$18,000,000		\$18,000,000	AZBEX, 2014 Phoenix Business Journal, 2014 ADEM, 2014	

**Maricopa County Historic Hazard Events  
June 1955 to December 2014**

Hazard	No. of Records	Recorded Losses		
		Fatalities	Injuries	Damage Costs (\$)
Drought	0	0	0	\$0
Dam Failure	1	0	0	\$0
Earthquake	0	0	0	\$0
Extreme Heat/Cold	13	35	6	\$121,200,000
Fissure	2	0	0	\$2,500
Flooding / Flash Flooding	80	18	8	\$127,530,500
Hail	6	1	0	\$2,810,026,500
Lightning	10	1	0	\$819,000
Levee Failure	0	0	0	\$0
Subsidence	2	0	0	\$4,170,000
Thunderstorm / High Wind	352	10	191	\$428,543,500
Tornado / Dust Devil	48	0	58	\$37,277,900
Wildfire	10	0	6	\$0

Notes:

- No attempt has been made to adjust Damage Costs to current dollar values

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
6/13/1955	Tornado / Dust Devil			0	0	\$25,000	\$0	\$25,000	NCDC, 2008
7/25/1956	Tornado / Dust Devil			0	0	\$250	\$0	\$250	NCDC, 2008
8/4/1957	Tornado / Dust Devil			0	0	\$2,500	\$0	\$2,500	NCDC, 2008
8/29/1957	Tornado / Dust Devil			0	0	\$25,000	\$0	\$25,000	NCDC, 2008
3/11/1958	Tornado / Dust Devil			0	0	\$2,500	\$0	\$2,500	NCDC, 2008
5/11/1958	Tornado / Dust Devil			0	0	\$30	\$0	\$30	NCDC, 2008
9/24/1958	Tornado / Dust Devil			0	0	\$30	\$0	\$30	NCDC, 2008
7/22/1961	Tornado / Dust Devil			0	0	\$25,000	\$0	\$25,000	NCDC, 2008
9/8/1961	Tornado / Dust Devil			0	2	\$250,000	\$0	\$250,000	NCDC, 2008
7/29/1967	Tornado / Dust Devil			0	0	\$25,000	\$0	\$25,000	NCDC, 2008
12/19/1967	Tornado / Dust Devil			0	0	\$25,000	\$0	\$25,000	NCDC, 2008
7/4/1968	Tornado / Dust Devil			0	2	\$25,000	\$0	\$25,000	NCDC, 2008
7/20/1968	Tornado / Dust Devil			0	3	\$25,000	\$0	\$25,000	NCDC, 2008
10/3/1968	Tornado / Dust Devil			0	3	\$250,000	\$0	\$250,000	NCDC, 2008
8/1/1969	Tornado / Dust Devil			0	2	\$25,000	\$0	\$25,000	NCDC, 2008
9/5/1970	Tornado / Dust Devil			0	0	\$25,000	\$0	\$25,000	NCDC, 2008
8/30/1971	Tornado / Dust Devil			0	41	\$2,500,000	\$0	\$2,500,000	NCDC, 2008
9/14/1971	Tornado / Dust Devil			0	0	\$25,000	\$0	\$25,000	NCDC, 2008
10/18/1971	Tornado / Dust Devil			0	0	\$25,000	\$0	\$25,000	NCDC, 2008
6/13/1972	Tornado / Dust Devil			0	0	\$25,000	\$0	\$25,000	NCDC, 2008
6/15/1972	Flooding / Flash Flooding	Flood damages in Maricopa County were over \$8,000,000. Scottsdale and Phoenix were hit the hardest.		0	0	\$8,000,000	\$0	\$8,000,000	ADEM, 2008
6/21/1972	Tornado / Dust Devil			0	3	\$25,000,000	\$0	\$25,000,000	NCDC, 2008
7/23/1972	Tornado / Dust Devil			0	0	\$30	\$0	\$30	NCDC, 2008
8/12/1972	Tornado / Dust Devil			0	0	\$30	\$0	\$30	NCDC, 2008
9/10/1972	Tornado / Dust Devil			0	1	\$2,500,000	\$0	\$2,500,000	NCDC, 2008
8/24/1974	Tornado / Dust Devil			0	0	\$2,500	\$0	\$2,500	NCDC, 2008
3/2/1978	Flooding / Flash Flooding	For Maricopa County, the storm centered over the mountains north and east of Phoenix, 35 miles north at Rock Springs. Extrapolation of intensity-probability data: 5.73 in./24 hr. equates to a 400 yr. storm. Main source of flooding due to Verde River with runoff volume exceeding reservoir storage capacity above Bartlett Dam. Flooding also occurred along irrigation canals on north side of metro area, and along tributaries of the Gila River and Queen Creek. 1 death-countywide. Total damage costs: \$37 million: \$3.1 million-residential, \$16 million-public, \$4 million-agriculture, \$7.8 million-industrial, \$0.75 million-commercial. "Flood Damage Report, 28 February-6 March 1978 on the storm and floods in Maricopa County, Arizona", U.S. Army Corps of Engineers, Los Angeles District, FCDMC Library #802.024.		1	0	\$33,000,000	\$4,000,000	\$37,000,000	Flood Damage Report, 28 February-6 March 1978 on the storm and floods in Maricopa County, Arizona, U.S. Army Corps of Engineers, Los Angeles District, FCDMC Library #802.024.
9/5/1981	Tornado / Dust Devil			0	0	\$250,000	\$0	\$250,000	NCDC, 2008
9/5/1981	Tornado / Dust Devil			0	0	\$250,000	\$0	\$250,000	NCDC, 2008
8/12/1982	Tornado / Dust Devil			0	0	\$30	\$0	\$30	NCDC, 2008
8/8/1983	Tornado / Dust Devil			0	0	\$25,000	\$0	\$25,000	NCDC, 2008
8/16/1983	Tornado / Dust Devil			0	0	\$250,000	\$0	\$250,000	NCDC, 2008
8/9/1984	Tornado / Dust Devil			0	0	\$250,000	\$0	\$250,000	NCDC, 2008
7/29/1985	Thunderstorm / High Wind			0	6	\$0	\$0	\$0	NCDC, 2008
7/29/1985	Thunderstorm / High Wind			0	6	\$0	\$0	\$0	NCDC, 2008
7/29/1985	Thunderstorm / High Wind			0	12	\$0	\$0	\$0	NCDC, 2008
6/25/1986	Thunderstorm / High Wind			0	1	\$0	\$0	\$0	NCDC, 2008
8/29/1987	Tornado / Dust Devil			0	0	\$250	\$0	\$250	NCDC, 2008
10/29/1987	Thunderstorm / High Wind			0	4	\$0	\$0	\$0	NCDC, 2008
7/10/1988	Thunderstorm / High Wind			1	6	\$0	\$0	\$0	NCDC, 2008
7/28/1988	Thunderstorm / High Wind			0	1	\$0	\$0	\$0	NCDC, 2008
7/29/1988	Thunderstorm / High Wind			0	1	\$0	\$0	\$0	NCDC, 2008
10/14/1988	Thunderstorm / High Wind			0	3	\$0	\$0	\$0	NCDC, 2008
1/4/1989	Tornado / Dust Devil			0	0	\$25,000	\$0	\$25,000	NCDC, 2008
8/17/1989	Thunderstorm / High Wind			0	1	\$0	\$0	\$0	NCDC, 2008
1/1/1992	Subsidence	Sections of the CAP canal in Scottsdale traverse an area that has subsided up to 1.5 feet over a 20-year period, threatening the canal's maximum flow capacity. In response, CAP raised the canal lining 3 feet over a one-mile segment of affected area at a cost of \$350,000. A second and much larger subsidence area was later identified near the Scottsdale Airpark. Plans for raising the canal lining will cost an estimated \$820,000. Recently, a third subsidence area has been identified east of the Scottsdale Airpark in the Scottsdale WestWorld area. This happened in spite of the fact that during the original design phase, CAP Engineers showed considerable foresight in mapping a route to minimize the likelihood of encountering zones of subsidence	Scottsdale	0	0	\$1,170,000	\$0	\$1,170,000	Gelt, J. (1992, Summer). Arroyo, 6(2). University of Arizona Water Resources Research Center (Ed.). Retrieved from <a href="http://www.ag.arizona.edu/AZWA TER/arroyo/062land.html">http://www.ag.arizona.edu/AZWA TER/arroyo/062land.html</a>
1/6/1992	Tornado / Dust Devil			0	0	\$25,000	\$0	\$25,000	NCDC, 2008
1/6/1992	Tornado / Dust Devil			0	0	\$25,000	\$0	\$25,000	NCDC, 2008
2/13/1992	Tornado / Dust Devil			0	0	\$2,500	\$0	\$2,500	NCDC, 2008
2/13/1992	Tornado / Dust Devil			0	0	\$25,000	\$0	\$25,000	NCDC, 2008
5/23/1992	Tornado / Dust Devil			0	0	\$250	\$0	\$250	NCDC, 2008
5/23/1992	Tornado / Dust Devil			0	0	\$25,000	\$0	\$25,000	NCDC, 2008

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
9/20/1992	Subsidence	Subsidence near the base led to flow reversal in a portion of the Dysart Drain, an engineered flood conveyance. On September 20, 1992, surface runoff from four inches of precipitation caused the sluggish Dysart Drain to spill over flooding the base runways, damaging more than 100 homes, and forcing the base to close for 3 days. Total damage was on the order of \$3 million	Litchfield Park	0	0	\$3,000,000	\$0	\$3,000,000	Schumann, H. H. (1995). Land Subsidence and Earth fissure hazards near Luke Air Force Base, Arizona. In K. R. Prince, D. L. Galloway, & S. A. Leake (Eds.), U.S. Geological Survey subsidence interest group conference, Edwards Air Force Base, Antelope Valley, California, November 18-19, 1992—abstracts and summary (pp. 18-21). Sacramento, CA: U.S. Geological Survey. (Open-File Report No. 94-532)
1/8/1993	Flooding / Flash Flooding	The new Mill Avenue Bridge was washed away by the raging Salt River. A large landfill in Mesa was washed away. The Gillespie Dam west of Phoenix was damaged as high water spread throughout low-lying areas. Many roads closed and motorists stranded by flooded dips and washes. Phoenix alone sustained at least \$4.2 million in damages from this prolonged period of heavy rains. This January was the wettest January on record with 5.22 inches at the airport. It was also the 4th all-time wettest month. Total rainfall for both December and January was 8.30 inches; this was the greatest ever for any two consecutive months. Arizona experienced its worst flooding in a decade as record rainfall and associated flooding forced many from homes and disrupted business. The Red Cross reported 678 dwellings destroyed or damaged. Early estimates of damage were at least \$56 million statewide. A Presidential Federal Disaster Declaration was requested and signed by the President on January 19th. Several storm systems affected the state before the major storm arrived during the night of January 7-8. Significant precipitation of two to three inches were reported in a few sites between Phoenix and the Mogollon Rim. Moist low-level flow was forced upward and resulted in heavy rain and snow in the highest elevations. Periods of heavy rainfall resulted from the interaction of dynamic forcing and convective instability. The most significant flash flood events occurred when convective rains fell on watersheds already saturated from earlier rainfall. Another factor contributing to the unusually high runoffs and associated flooding was snow melt. The snow level during the 6th to the 8th rose to about 8,500 feet, several thousand feet above typical snow levels. In summary, the combination of a northward-displaced subtropical jet, with its abundant moisture supply and associated disturbances, and a southward-displaced polar jet, with its storm track, led to the abnormally wet period from just after Christmas to mid-January.	Countywide	0	1	\$34,500,000	\$3,500,000	\$38,000,000	Flood Damage Report, State of Arizon. Floods of 1993, U.S. Army Corps of Engineers, Los Angeles District, August 1994.  NCDC, 2008
1/17/1993	Tornado / Dust Devil	Eighteen homes sustained damage, 4 with major damage, many trees and signs blown over by tornado. Most damage occurred when the tornado moved east from 59th and Clinton to 72nd and Cholla. Controllers from the nearby Scottsdale Airport watched this tornado move through this north Scottsdale residential area.	Phoenix To	0	0	\$5,000,000	\$0	\$5,000,000	NCDC, 2008
1/20/1993	Flooding / Flash Flooding	While attempting to cross the swollen Agua Fria River, a man fell off his horse and drowned. His body was found 3 miles downstream.(M21O)	New River	1	0	\$0	\$0	\$0	NCDC, 2008
2/8/1993	Thunderstorm / High Wind	Large trees were blown down and a plate glass window was destroyed.	Phoenix	0	0	\$500	\$0	\$500	NCDC, 2008
2/8/1993	Tornado / Dust Devil	A sheriff's deputy was the first to spot this weak tornado in this area. The New River residents described the sound as similar to a freight train. The tornado created a suction that made it impossible to open a door for a brief period. A palo verde tree was uprooted and the tornado lifted the roof off a house.	New River	0	0	\$5,000	\$0	\$5,000	NCDC, 2008
2/12/1993	Flooding / Flash Flooding	The National Guard was called out to repair and reinforce the dike around San Lucy cemetery, near Gila Bend. Three houses north of Gila Bend were inundated from the rising water from Painted Rock Reservoir. Crops and fields were also inundated by floodwaters.	Gila Bend	0	0	\$50,000	\$5,000,000	\$5,050,000	NCDC, 2008
5/12/1993	Thunderstorm / High Wind	Straight line winds snapped off about 20 power poles, blew shingles off the roof of the Super 8 motel, and damaged a storage shed. Power was off for much of this area for most of the day.	Gila Bend	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
8/5/1993	Thunderstorm / High Wind	Strong winds from nearby thunderstorms exceeded 50 mph in many areas of the Valley. Homes and businesses sustained damage, trees were uprooted and power lines were downed. Arizona Public Service reported 10,000 customers without power. An 8-year-old boy in Avondale was severely injured just after 1800 MST when a window burst and glass cut his jugular vein. The roof of a convenience store was blown off, as well as some damage to a church and an elementary school. A 1-mile section of a 69,000-volt power line near Perryville was knocked down. High winds blew tree limbs onto power poles and took shingles off several homes.	Mesa	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
8/5/1993	Thunderstorm / High Wind	Strong winds from nearby thunderstorms exceeded 50 mph in many areas of the Valley. Homes and businesses sustained damage, trees were uprooted and power lines were downed. Arizona Public Service reported 10,000 customers without power. An 8-year-old boy in Avondale was severely injured just after 1800 MST when a window burst and glass cut his jugular vein. The roof of a convenience store was blown off, as well as some damage to a church and an elementary school. A 1-mile section of a 69,000-volt power line near Perryville was knocked down. High winds blew tree limbs onto power poles and took shingles off several homes.	Avondale	0	1	\$5,000,000	\$0	\$5,000,000	NCDC, 2008
8/6/1993	Thunderstorm / High Wind	One mobile home overturned due to high winds. Several power poles blown down near Palo Verde Nuclear Generating Station. About 5,000 homes near Sun City were left without electricity.	Phoenix	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
8/8/1993	Thunderstorm / High Wind	Thunderstorms downed power lines and caused minor damage to a home.	Buckeye	0	0	\$5,000	\$0	\$5,000	NCDC, 2008
8/9/1993	Thunderstorm / High Wind	The Mountain Gate Mobile Home Park was hit by strong winds from thunderstorms that moved north through the city. Seventy-six units were damaged, with six being destroyed and four having major damage. About 10,000 customers lost power for varying amounts of time.	Phoenix	0	0	\$500,000	\$0	\$500,000	NCDC, 2008
8/20/1993	Thunderstorm / High Wind	Many roofs were damaged as this storm moved rapidly north through Mesa. Most of the damage was near Brown and Power roads. In nearby Fountain Hills, more homes sustained roof damage, trees uprooted as winds reached an estimated 70 mph. In the area, up to 36 power poles were downed by the high winds.	Fountain Hills	0	0	\$500,000	\$0	\$500,000	NCDC, 2008

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8/20/1993	Thunderstorm / High Wind	Many roofs were damaged as this storm moved rapidly north through Mesa. Most of the damage was near Brown and Power roads. In nearby Fountain Hills, more homes sustained roof damage, trees uprooted as winds reached an estimated 70 mph. In the area, up to 36 power poles were downed by the high winds.	Mesa	0	0	\$500,000	\$0	\$500,000	NCDC, 2008
2/8/1994	Tornado / Dust Devil	A strong winter storm moved across the state and spawned a tornado in the small town of El Mirage. Damage was mainly limited to roofs, although the tornado was strong enough to move a parked pickup truck about six feet and damaged a metal storage shed.	Phoenix	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
3/7/1994	Tornado / Dust Devil	A pilot reported a weak tornado briefly touching down just south of the Foothills Golf Course. Some roof damage occurred to a large maintenance building.	Phoenix	0	0	\$5,000	\$0	\$5,000	NCDC, 2008
3/11/1994	Thunderstorm / High Wind	A seven car accident was blamed on low visibility due to dense blowing dust at Interstate 10 and Maricopa Road. Two minor injuries were reported.	Tempe	0	2	\$0	\$0	\$0	NCDC, 2008
5/25/1994	Thunderstorm / High Wind	About ten trees, one of which was a 60-foot-tall Eucalyptus tree, were uprooted or snapped in half by a thunderstorm microburst which roared through a condominium complex in far north Scottsdale. Some tiles were ripped off roofs, and a few car windows were also broken. One car was severely damaged when the Eucalyptus tree toppled onto it.	Phoenix	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
7/28/1994	Thunderstorm / High Wind	A cluster of severe thunderstorms moved west across the Phoenix metropolitan area between 7 and 8 pm. The thunderstorms toppled and uprooted large trees, blew shingles off roofs, and downed power lines. Lightning also struck a manufacturing plant, and the resulting fire destroyed the building and its contents.	Phoenix	0	0	\$5,000,000	\$0	\$5,000,000	NCDC, 2008
9/2/1994	Thunderstorm / High Wind	Severe thunderstorms ripped through the greater Phoenix area with winds in Chandler estimated between 60-65 mph. A weather spotter at 7th St. and Glendale Ave. measured 1.75 inch rain in 50 minutes. Phoenix Sky Harbor Airport, received 1.36 inch. Extensive street flooding was reported around the valley with water three to five feet deep in some underpasses. Numerous trees, both medium and large were blown down. A house caught fire from lightning. A roof and air conditioning unit were blown off a house on 15th Ave., south of Indian School Road. Over 129,000 customers lost power. Seventy power poles were blown down in the Queen Creek area, and another 50 poles near 7th Avenue and Baseline Road. Thunderstorm winds blew out a store front window causing an estimated \$6000 damage. A 22-year-old man was killed by lightning while trying to retrieve his vehicle in a parking lot. (O22M)	Chandler	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
9/2/1994	Thunderstorm / High Wind	Severe thunderstorms ripped through the greater Phoenix area with winds in Chandler estimated between 60-65 mph. A weather spotter at 7th St. and Glendale Ave. measured 1.75 inch rain in 50 minutes. Phoenix Sky Harbor Airport, received 1.36 inch. Extensive street flooding was reported around the valley with water three to five feet deep in some underpasses. Numerous trees, both medium and large were blown down. A house caught fire from lightning. A roof and air conditioning unit were blown off a house on 15th Ave., south of Indian School Road. Over 129,000 customers lost power. Seventy power poles were blown down in the Queen Creek area, and another 50 poles near 7th Avenue and Baseline Road. Thunderstorm winds blew out a store front window causing an estimated \$6000 damage. A 22-year-old man was killed by lightning while trying to retrieve his vehicle in a parking lot. (O22M)	Tempe	1	0	\$0	\$0	\$0	NCDC, 2008
9/4/1994	Thunderstorm / High Wind	About 100 trees were uprooted by thunderstorm winds at a Scottsdale country club. Damage was estimated at \$50,000.	Scottsdale	0	0	\$500,000	\$0	\$500,000	NCDC, 2008
9/13/1994	Thunderstorm / High Wind	A micro burst struck a school building at the Littleton Elementary School in the community of Cashion, two miles SW of Tolleson. The roof was torn off about eight classrooms with one teacher and eight children being injured. A National Weather Service Storm Survey Team estimated winds of 100 mph. A teacher reported the ground covered with hail, some golf ball-size. A weather spotter at 75th Avenue and Camelback Road reported 1.25 hail. A mile long stretch of power poles were downed near 107th Avenue and Interstate 10. Damage to the school was estimated in excess of \$500,000.	Cashion	0	9	\$5,000,000	\$0	\$5,000,000	NCDC, 2008
2/13/1995	Tornado / Dust Devil	A National Weather Service Survey Team concluded a weak (F1) tornado occurred at the General Motors Desert Proving Grounds facility. Moderate damage was observed. A roof was damaged and about 20 vehicles were damaged and moved around. One vehicle was lifted, moved several feet, and set down inside a roped off area containing solar exposure equipment. The tornado moved northeast and lasted about five minutes. Damage was initially estimated around \$200,000.	Phoenix	0	0	\$200,000	\$0	\$200,000	NCDC, 2008
2/14/1995	Flooding / Flash Flooding	A man died and three others were injured in a vehicle accident during a heavy down pour of rain. (M47V)	Phoenix	1	3	\$0	\$0	\$0	NCDC, 2008
2/15/1995	Flooding / Flash Flooding	Heavy rains fell on the Salt and Verde water sheds during February the 13th through the 15th. This combined with rain falling on snow pack in the higher mountains of central and northern Arizona lead to flooding and flash flooding. The Verde and Salt water sheds averaged 2.16 and 1.27 inches of rain, respectively, between the morning of February the 13th and the morning of February the 15th. During the night of February the 14th, remote rain gages at Camp Wood, Highland Pine, and Groom Creek, located in the Bradshaw Mountains, reported 5.12 inches of rain, 4.5 inches, and 4.3 inches, respectively. Record flows were observed on the Verde River, at Camp Verde, when the flow peaked at 70,000 cubic feet per second. Flooding was observed downstream at Cornville, where about 60 families were evacuated, another 20 families were evacuated from Camp Verde. Rest areas on Interstate 17, 12 northeast Camp Verde were under water. Automobile size boulders blocked Highway 87, north of Payson. Several people were rescued from Turtle Island, in Oak Creek Canyon. Low land flooding occurred along the Hassayampa and Agua Fria Rivers, also along Tonto Creek. Flood waters from the Hassayampa River, near Wickenburg, washed out 300 to 400 feet of fence, some granite fill, and a blimp hangar. Damage was estimated at \$5,500. Five bridges in Coconino County, around the Sedona area sustained minor damage, estimated at \$80,000. The park area of Los Abrigados Resort, near Sedona, was completely under water, and a gazebo was destroyed. Damage was estimated at \$20,000. Numerous roads were under water and damaged in Oak Creek Canyon, Kachina Village, and behind Lake Mary. These damages were estimated at \$500,000.	Wickenburg	0	0	\$5,500	\$0	\$5,500	NCDC, 2008
2/21/1995	Thunderstorm / High Wind	Three ground crew personnel were injured by a lightning strike, at Phoenix Sky Harbor Airport. An aircraft was being moved when lightning struck the tail of the plane.	Phoenix	0	3	\$0	\$0	\$0	NCDC, 2008

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
7/28/1995	Thunderstorm / High Wind	Strong microburst winds from a high-based thunderstorm moved through the Litchfield Park area around 2050 MST. A spotter in Litchfield Park reported roof and tree damage. At the Wigwam Resort, a palm tree and tennis court lights were blown over. At 2305 MST, a store window in Mesa was blown out by microburst winds. Thunderstorm winds up to 70 mph were reported in northwest Phoenix which blew off roofing material, and downed trees and power lines. A high school gymnasium in Scottsdale sustained roof damage from microburst winds which will cost around \$98,000 to repair.	Scottsdale	0	0	\$98,000	\$0	\$98,000	NCDC, 2008
9/27/1995	Thunderstorm / High Wind	A wet microburst hit the town of Queen Creek. A tree was blown over onto a house. A large potato storage shed was destroyed. Wood and metal from the shed along with hail were blown into 12 nearby school buses damaging them all. An office roof was torn off at Queen Creek High School. The high school also had four other roofs and numerous air conditioning units damaged as well as broken windows. An estimated 4,000 to 6,000 acres of cotton in nearby fields were destroyed by wind and hail.	Queen Creek	0	0	\$100,000	\$0	\$100,000	NCDC, 2008
9/28/1995	Thunderstorm / High Wind	An 80-foot tree crashed into a mobile home bedroom. Numerous reports of downed trees in the area.	Chandler	0	0	\$1,500	\$0	\$1,500	NCDC, 2008
11/1/1995	Thunderstorm / High Wind	In Glendale, a Salt River Project utility worker received a minor shock when lightning struck about 150 feet away from his pickup. He was treated at the scene and released.	Phoenix	0	1	\$0	\$0	\$0	NCDC, 2008
2/1/1996	Thunderstorm / High Wind		Apache Junction	0	1	\$0	\$0	\$0	NCDC, 2008
2/25/1996	Thunderstorm / High Wind	Thunderstorm winds caused damage to 10 mobile homes at the Silveridge RV Resort in East Mesa.	Mesa	0	0	\$5,000	\$0	\$5,000	NCDC, 2008
7/25/1996	Thunderstorm / High Wind	Strong thunderstorm winds with visibilities reduced by dust toppled a double wide mobile home in transit on I-10 near Picacho.		0	0	\$30,000	\$0	\$30,000	NCDC, 2008
7/25/1996	Thunderstorm / High Wind	An Aircope aircraft was damaged beyond repair when strong winds flipped the plane over. Minimal damage was sustained by two other planes when one blew into the other. Out of a total of 116 hangars at the Chandler Airport, 24 were damaged. Two hangars had door sections torn loose. One hangar door was blown 200 feet.	Chandler Arpt	0	0	\$30,000	\$0	\$30,000	NCDC, 2008
8/14/1996	Thunderstorm / High Wind	Every town in the western half of the Phoenix Metropolitan Area reported some damage. The hardest hit areas were in northwest Phoenix, Glendale, and Peoria. Other towns that sustained damage were Sun City, Surprise, El Mirage, Tolleson, Avondale, Goodyear, and Buckeye. Approximately 400 power poles were knocked down throughout these towns, 100 owned by SRP and 300 owned by APS. There were from 70,000 to 75,000 homeowner claims for about \$100 million in damage.	Phoenix	0	0	\$100,000,000	\$0	\$100,000,000	NCDC, 2008
8/14/1996	Thunderstorm / High Wind	Two juvenile detention centers, the Adobe Mountain Secure Facility and the Black Canyon Secure Facility, both in north Phoenix, sustained an estimated \$250,000 combined damage when strong winds damaged a perimeter fence, blew out a plastic glass window and damaged severely roofs at the complex. Two support pillars under construction at the Interstate 17 and Loop 101 interchange in north Phoenix buckled from the high winds, with an estimated \$250,000 damage.	Phoenix	0	0	\$500,000	\$0	\$500,000	NCDC, 2008
8/14/1996	Thunderstorm / High Wind	Several large trees were blown over, power poles were blown down, mobile homes were overturned, and buildings were ripped apart. A window was blown out of a mobile home injuring a young woman.	Buckeye	0	1	\$0	\$0	\$0	NCDC, 2008
8/14/1996	Thunderstorm / High Wind	Glendale was one of the hardest hit areas after very powerful thunderstorms ripped through the area. The storm collapsed a the roof of an apartment complex and blew metal dumpsters weighing up to two tons into roadways. Sahuaro Ranch School, 10401 N. 63rd Ave., lost part of its roof. An Albertsons grocery store at 59th Avenue and Beardsley Road was battered by the storm, leaving three people hurt. The storm did extensive damage to the roof of Arrowhead Community Hospital, 18701 N. 67th Avenue. At the Northwest Garden Apartments, 9350 N. 67th Avenue, residents were evacuated after the storm collapsed the roof over eight units. Shingles and twisted sheets of park awnings were scattered across the complex. At the Adobe Mountain Juvenile Correctional Facility, one staff member was slightly injured when windows blew out in one of the units. Fences around the perimeters of the facility were damaged by falling trees. About 40 vehicles were damaged, two of them hit by a dumpster blown through the parking lot.	Glendale	0	4	\$0	\$0	\$0	NCDC, 2008
8/22/1996	Thunderstorm / High Wind	Gusty thunderstorm winds caused damage and a few injuries at a Fry's Food Store at the intersection of Power Road and Baseline Road in East Mesa. The winds lifted a 2000 pound tent and slammed it against a truck. The glass-covered artwork beneath the tent shattered and caused minor cuts to two people. A teenage boy was thrown into a grocery cart corral and treated at a local hospital for back injuries. Several cars in the parking lot sustained dents from flying debris.	Mesa	0	3	\$0	\$0	\$0	NCDC, 2008
9/2/1996	Thunderstorm / High Wind	Lightning-induced fire caused extensive damage to a home in the 6100 block of East Inglewood Street.	Mesa	0	0	\$63,000	\$0	\$63,000	NCDC, 2008
9/2/1996	Thunderstorm / High Wind	Lightning struck a home in the 1300 block of South Nassau which started a blaze in the attic and caused extensive structural damage and damage to the home's contents.	Mesa	0	0	\$90,000	\$0	\$90,000	NCDC, 2008
1/6/1997	Snow Storm	A cold winter storm created snowfall at unusually low elevations. A trace of snow was recorded at Tucson, and 4 to 10 inches at elevations between 4000 and 6000 feet. This storm closed schools, stranded many motorists, caused broken water pipes, and caused the death of many ostriches at commercial farms.C103		0	0	\$100,000	\$0	\$100,000	NCDC, 2008
7/10/1997	Thunderstorm / High Wind	Downburst winds from nearby thunderstorms kicked up a thick cloud of dust as it moved across plowed fields. This cloud of dust then moved across interstate 10 between Red Rock and Picacho reducing visibilities to zero at times. This resulted in 12 collisions involving about 30 vehicles. Twenty-five people were injured, but 19 were only minor.		0	25	\$200,000	\$0	\$200,000	NCDC, 2008
8/26/1997	Thunderstorm / High Wind	Lightning struck a house in Chandler slightly injuring a woman. It struck phone lines, power lines, and plumbing in the house igniting a blaze which caused an estimated \$50,000 damage to the upstairs bathroom, bedrooms, and attic. The woman was injured while talking on the phone when the lightning travelled along the phone cord and grazed her face and neck.	Chandler	0	1	\$50,000	\$0	\$50,000	NCDC, 2008
9/26/1997	Dam Failure	Tropical Storm Nora moved through the western portion of Maricopa County dumping record breaking precipitation along the way. The Narrows Dam located just north of Maricopa County on Centennial Wash, began filling in the early part of the storm with flows reaching a depth of over two feet in the emergency spillway before the dam itself failed by breach in two locations. The peak discharge estimated from the dam spillway was 2,610 cfs. No downstream damages were reported.		0	0	\$0	\$0	\$0	FCDMC, 2009

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3/28/1998	Flooding / Flash Flooding	Three members of a Boy Scout troop perished after their sport utility vehicle was swept out from under them. The scouts tried to cross a running wash near Sunflower. Occasionally heavy rain showers persisted in the area throughout the afternoon and early evening.	Sunflower	3	0	\$0	\$0	\$0	NCDC, 2008
7/31/1998	Thunderstorm / High Wind	About 60 power poles damaged or destroyed by winds gusting to at least 60 mph. Along Power Road some lines fell onto several cars.	Mesa	0	0	\$500,000	\$0	\$500,000	NCDC, 2008
8/11/1998	Thunderstorm / High Wind	Winds took down 6 power poles, and forced the closure of I-10 for 1 1/2 hours. A squad car from the Buckeye Police Department received minor damage when crushed by a falling power pole. Two private planes from Pierce Aviation were destroyed and several other planes were damaged by high winds. The roof of the administration building was damaged by the storm.	Buckeye	0	0	\$150,000	\$0	\$150,000	NCDC, 2008
8/12/1998	Thunderstorm / High Wind	A strong to severe complex of storms formed northeast of Wickenburg and moved to the southwest and intensified. The storms produced severe damage to at least 2 aircraft at the Wickenburg airport. About 6 power poles were blown down, and evaporative coolers were blown off roofs. Large tree limbs were broken off in Wickenburg. Sheriff's deputies rescued a boater and eight passengers on Lake Pleasant.	Wickenburg	0	0	\$300,000	\$0	\$300,000	NCDC, 2008
10/25/1998	Thunderstorm / High Wind	For the third time on this day, Fountain Hills was hit by high winds that blew sand and debris into streets along with hail and heavy rain.	Fountain Hills	0	0	\$10,000	\$0	\$10,000	NCDC, 2008
10/25/1998	Thunderstorm / High Wind	Winds collapsed a mobile home, and blew the roof off another home on the Salt River Pima-Maricopa Indian Community.	Phoenix	0	0	\$10,000	\$0	\$10,000	NCDC, 2008
12/15/1998	Thunderstorm / High Wind	Lightning struck the plywood roof of a home under construction. A worker was killed when the lightning bolt traveled down a wooden rafter and hit him in the head. Three other workers received minor injuries from this lightning.	Paradise Vly	1	3	\$0	\$0	\$0	NCDC, 2008
4/1/1999	Snow Storm	Rain, wind, and snow in the mountains spread across a large part of Arizona. Snow was reported at the 3600 foot elevation in Carefree, north of Phoenix. Several inches of snow fell in parts of Gila County where roofs were damaged and trees taken down by snow at Top of the World, near Globe. Three inches of snow canceled play Friday at the Tradition golf tournament in north Scottsdale, and the final round on Sunday was canceled. A rock slide disrupted traffic at Gonzalez Pass west of Miami, Arizona.		0	0	\$10,000	\$0	\$10,000	NCDC, 2008
7/5/1999	Thunderstorm / High Wind	Three U.S. Forest Service firefighters were stunned or paralyzed for a few minutes as lightning hit the ground near them. They also suffered some burns on the feet and shoulders.C114	Carefree	0	3	\$0	\$0	\$0	NCDC, 2008
7/6/1999	Thunderstorm / High Wind	The widespread dust storm sharply reduced visibility along Interstate 10, about 7 miles northeast of Casa Grande. One motorist was killed as a series of wrecks were reported in a 25-mile section of the freeway.		1	14	\$0	\$0	\$0	NCDC, 2008
7/6/1999	Thunderstorm / High Wind	Lightning triggered a house fire in the 8300 block of N. Via Mia.	Scottsdale	0	0	\$5,000	\$0	\$5,000	NCDC, 2008
7/6/1999	Thunderstorm / High Wind	Winds blew down trees, power lines and traffic lights in parts of the East Valley. Blowing dust cut the visibility at Sky Harbor airport, delaying up to 50 flights. Many streets flooded and 3 motorists in Sun City were rescued. SRP reported 20 power poles down.	Mesa	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
7/6/1999	Thunderstorm / High Wind	Very strong winds downed trees and power poles. Although no injuries were reported, 20 wooden power poles supporting 69,000 volt power lines snapped in Fountain Hills, according to SRP crews.	Fountain Hills	0	0	\$100,000	\$0	\$100,000	NCDC, 2008
7/7/1999	Thunderstorm / High Wind	An entire line of power poles down along McDowell Road between Longmore and Dobson roads.	Scottsdale	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
7/7/1999	Thunderstorm / High Wind	Widespread area of very strong winds, damaged homes and cut power to at least 11,500 customers around the metropolitan area. Trees and limbs were downed. Official winds to 57 mph were clocked at 43rd Ave and lower Buckeye Road. President Clinton, arrived in Phoenix just before the blinding dust storm moved in. There were delays of up to 90 minutes at the airport. Numerous streets were flooded including streets in Scottsdale, Laveen, Ahwatukee, and Tatum Blvd. No serious injuries reported.	Phoenix	0	0	\$70,000	\$0	\$70,000	NCDC, 2008
7/10/1999	Thunderstorm / High Wind	High winds tore off a portion of a roof and pushed over a camper on Van Buren Street east of Palo Verde Road. In addition, power poles were blown down just outside of Buckeye.	Buckeye	0	0	\$30,000	\$0	\$30,000	NCDC, 2008
7/14/1999	Flooding / Flash Flooding	Major storm hit most of the Phoenix metropolitan area with numerous reports of street flooding. At least a half-dozen swift-water rescues, including a dramatic rescue by MCSO helicopter covered by local TV. No major injuries. Freeways and other major roads flooded. Three elderly south Phoenix women momentarily were trapped when their mobile home collapsed in driving rain. The roof of a major business collapsed in Phoenix.	Mesa	0	0	\$80,000	\$0	\$80,000	NCDC, 2008
7/14/1999	Thunderstorm / High Wind	A home in the 3800 block of East San Remo in east Gilbert was struck by lightning causing a 2 foot hole in the concrete shingles on the roof. No fire was involved but most electrical appliances were damaged.C124	Gilbert	0	0	\$10,000	\$0	\$10,000	NCDC, 2008
7/14/1999	Thunderstorm / High Wind	Power poles down.	Mesa	0	0	\$15,000	\$0	\$15,000	NCDC, 2008
7/23/1999	Thunderstorm / High Wind	Power poles damaged at 7th Ave and Fillmore. Numerous water rescues due to flooded streets and washes running. Flights at Sky Harbor airport were delayed about a half hour.	Phoenix	0	0	\$30,000	\$0	\$30,000	NCDC, 2008
7/25/1999	Thunderstorm / High Wind	Buildings damaged or destroyed. One mobile home was tossed about 30 feet down an embankment.	Palo Verde	0	2	\$0	\$0	\$0	NCDC, 2008
7/27/1999	Thunderstorm / High Wind	Lightning struck and killed a motorcyclist and injured another near Bartlett Dam.	Fountain Hills	1	1	\$0	\$0	\$0	NCDC, 2008
8/10/1999	Thunderstorm / High Wind	Microburst winds and heavy rain developed over much of north Phoenix around 430 pm. As many as 20 power poles were downed by the high winds, and torrential rain near Rose Garden Lane between 19th and 25th avenues. This left a half-dozen people trapped in their vehicles, but no injuries. At least 17,000 customers were left without power. One motorist escaped injury when steel construction beams were blown onto his vehicle at a freeway construction site at Beardsley and 23rd Avenue. A large moving truck was toppled onto its side by high winds at 19th Avenue and Deer Valley Road..	Phoenix	0	0	\$500,000	\$0	\$500,000	NCDC, 2008
8/14/1999	Thunderstorm / High Wind	Thunderstorms moved through east Mesa with high winds and rain. At least 20 power poles were reported down with most damage near 80th Street and Southern. Occupants of seven vehicles were trapped in their cars and had to be rescued. Two individuals suffered minor injuries.	Mesa	0	2	\$30,000	\$0	\$30,000	NCDC, 2008
8/19/1999	Thunderstorm / High Wind	Dense blowing dust and blowing sand accompanied strong winds and heavy rain in much of the metropolitan area. At least one air conditioner was blown from a roof in Phoenix. Flights in and out of Sky Harbor airport were delayed by as much as 90 minutes during the height of the storm. Near zero visibility was reported with winds of 45 mph.	Phoenix	0	0	\$5,000	\$0	\$5,000	NCDC, 2008
8/22/1999	Thunderstorm / High Wind	Strong winds blew three large concrete walls down at a construction site near 30th Street and Broadway. Winds kicked up dust and sand which lowered visibility to less than 1/4 mile in many areas.	Phoenix	0	0	\$15,000	\$0	\$15,000	NCDC, 2008

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
8/27/1999	Thunderstorm / High Wind	Torrential rain, hail and high wind swept through mainly the west Phoenix area. The remnants of hurricane Bret left as much as 2.35 inches of rain in half an hour at 43rd Avenue and Thomas Road. Several sections of a roof at the Desert Sky Mall collapsed due to the microburst wind and rain. No injuries were reported, although several thousand people had to be evacuated. Sections of the roof collapsed just 10 minutes after the evacuations. Numerous power poles were downed between 33rd Ave and 83rd Ave. Department of Public Safety shut down I-10 for about 3 hours after power lines fell. Major street flooding was also reported, and Phoenix firefighters rescued two motorists from flooded washes in the 9000 block of N. 11th Street and 1200 block of E. Cheryl Drive. About 50 flights from Sky Harbor airport were delayed up to 2 hours due to rain and wind..	Phoenix	0	0	\$300,000	\$0	\$300,000	NCDC, 2008
8/31/1999	Thunderstorm / High Wind	A 21 year-old woman near Williams Gateway airport received a shock from lightning as she spoke on the telephone.	Mesa	0	1	\$0	\$0	\$0	NCDC, 2008
8/31/1999	Thunderstorm / High Wind	A worker was struck by lightning while installing an air conditioner in a new home in Sun Lakes.C133	Sun Lakes	0	1	\$0	\$0	\$0	NCDC, 2008
8/31/1999	Thunderstorm / High Wind	A Gilbert backhoe driver in the 100 block of E. Guadalupe Road was injured and treated for minor injuries when his machinery was struck by lightning.	Gilbert	0	1	\$0	\$0	\$0	NCDC, 2008
8/31/1999	Thunderstorm / High Wind	A large area of the East Valley experienced high winds and heavy rain. Williams Gateway airport traffic controllers evacuated the tower during very strong winds that peaked at 83 mph at 1:49 pm MST. A nearby fire station roof was damaged by the wind. Roof damage was reported at the VF Factory Outlet stores in Mesa with subsequent water damage. At least one residence in the 1800 block of S. 74th Street was damaged. A number of trailer homes had roof damage. Four people were injured on US 60 east of Greenfield Road involving at least 4 vehicles Department of Public Safety closed the road for about two hours. Rain totals included 1.89 inches in east Mesa and .98 inch in Fountain Hills.	Mesa	0	4	\$200,000	\$0	\$200,000	NCDC, 2008
9/14/1999	Thunderstorm / High Wind	Considerable damage in NW Phoenix and Peoria due primarily to strong wind.	Phoenix	0	0	\$2,000,000	\$0	\$2,000,000	NCDC, 2008
9/14/1999	Thunderstorm / High Wind	A 32-year old woman was knocked unconscious as lightning struck a nearby tree.	Mesa	0	1	\$0	\$0	\$0	NCDC, 2008
9/14/1999	Thunderstorm / High Wind	Winds blew down power poles, trees, and caused considerable damage to homes and businesses in the East Valley. A family in Mesa was trapped inside their vehicle for about an hour after power poles crashed down around them. Power outages affected at least 8,500 customers in the East Valley. The Mesa Regal RV Resort suffered major damage as three trailers were totally destroyed. An airplane was flipped over at Falcon Field with damage to hangar doors. Sky Harbor airport reported numerous flight delays.	Chandler	0	2	\$5,000,000	\$0	\$5,000,000	NCDC, 2008
9/19/1999	Thunderstorm / High Wind	Major roof damage at a strip mall on East Indian School Road.	Scottsdale	0	0	\$100,000	\$0	\$100,000	NCDC, 2008
9/19/1999	Thunderstorm / High Wind	Four homes were reported damaged, with ceiling leaks, damaged windows, minor and major roof damage, and one home partially habitable. C141	Laveen	0	0	\$165,000	\$0	\$165,000	NCDC, 2008
9/19/1999	Thunderstorm / High Wind	Microburst winds struck the Desert Sands Trailer Park where at least 14 homes were totally destroyed and about 340 homes were damaged. Over 200,000 customers lost power after more than 40 power poles were snapped by the winds and rain. Talley Industries, on Greenfield Road received about \$500,000 in damage as a large portion of the roof was removed by wind. A large truck was overturned near 80th Street and Baseline Road. Trees were uprooted in nearby Gilbert.	Mesa	0	2	\$30,000,000	\$0	\$30,000,000	NCDC, 2008
12/3/1999	Thunderstorm / High Wind	A dry cold front moving across southern Arizona brought gusty winds and areas of blowing dust. A peak wind of 58 mph occured at Douglas. In northern Greenlee county a tree was blowin across Highway 191 blocking traffic just south of Hanagan Meadow.		0	0	\$10,000	\$0	\$10,000	NCDC, 2008
2/21/2000	Thunderstorm / High Wind	Thunderstorms moved through much of the metro Phoenix area. Strong and gusty winds with blowing dust and small hail accompanied the rain. A light pole was reported blown down at 75th Ave and Mulberry.	Phoenix	0	0	\$3,000	\$0	\$3,000	NCDC, 2008
3/5/2000	Snow Storm	Snow accumulated to between 2 and 4 inches in the higher elevations of southern Gila county and northern Maricopa county. A hiker died along the Seven Springs trail, northwest of Bartlett Lake, due to hypothermia.		1	0	\$0	\$0	\$0	NCDC, 2008
6/29/2000	Thunderstorm / High Wind	Two men riding their motorcycles westbound on I-10 were caught in a thunderstorm. They pulled off the road and got off their bikes. While standing around the bikes, lightning struck very close, and knocked the two men unconcious. They were treated and released at a nearby hospital.	Tonopah	0	2	\$0	\$0	\$0	NCDC, 2008
8/5/2000	Thunderstorm / High Wind	A line of thunderstorms formed rapidly over northern Maricopa County and affected many communities from Wickenburg to Carefree. The town of Wittman was especially hard hit as 38 power poles were downed by very high winds. Arizona Public Service also reported 1600 customers lost power.	Phoenix	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
8/7/2000	Thunderstorm / High Wind	Winds blew down power poles and lines. Heavy rain resulted in a large roof collapse at a business near 35th Ave and Bell. Some homes sustained damage. Urban street flooding was also widespread across the northern sections of the city.	Phoenix	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
8/11/2000	Thunderstorm / High Wind	Severe thunderstorm winds tore part of the roof off a boat house on Apache Lake.	Mesa	0	0	\$5,000	\$0	\$5,000	NCDC, 2008
8/17/2000	Thunderstorm / High Wind	Microburst winds struck a large area of East Mesa during the evening. The hardest hit area was between Lindsay and Gilbert Roads and between Baseline and Southern Ave. Strong winds flipped trailers, blew out windows, and knocked down about 20 power poles. Some motorists were injured and stranded as the power poles fell onto the roadway. Fifteen people had to be rescued from their cars, and four people from one car were taken to a hospital for treatment. Storms also hit parts of east Phoenix, and high winds cut visibility along I-10 near Casa Grande.	Mesa	0	4	\$500,000	\$0	\$500,000	NCDC, 2008
10/4/2000	Thunderstorm / High Wind	Thunderstorms developed over a large area of the metropolitan area. Lightning struck the towers on Mummy Mountain and knocked out the Paradise Valley Police Department communication system. Lightning was also blamed on causing a house fire on 35th Avenue and starting tree fires in Scottsdale. High winds were reported at 16th and Roosevelt and at 23rd Avenue and Dobbins where power poles were knocked down. Small hail accompanied these storms.C150	Phoenix	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
10/19/2000	Thunderstorm / High Wind	Man struck by lightning at Williams Gateway Airport.	Mesa	0	1	\$0	\$0	\$0	NCDC, 2008
10/21/2000	Flooding / Flash Flooding	A spotter in Wickenburg reported that route 93 was closed north of Wickenburg due to high water. Sols wash was out of its banks and flooded Coffinger Park as well as nearby homes. The Vulture Mine road was closed and motorists had to be rescued. Flood waters produced considerable damage to melon and cotton crops in this rural area of northwest Maricopa County. The roads around Aguila were closed for several hours.	Aguila	0	0	\$2,000,000	\$1,000,000	\$3,000,000	NCDC, 2008

Date	Hazard	Description	Location	Fatal	Injs	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
10/27/2000	Flooding / Flash Flooding	The second major storm in a week left considerable flooding in both rural and urban areas. A trailer park in Aguila and another in Buckeye had to be evacuated. Homes in Peoria, Youngtown, Surprise and surrounding areas reported flooding. The hardest hit was the Ventana Lakes subdivision of Peoria. This area experienced record or near record monthly rainfall totals; one unofficial gauge 15 miles east of Aguila registered 8.79 inches for the month! A gauge in Aguila had 5.05 inches for the month. Department of Transportation estimate of damage to roads and bridges alone was \$1,000,000. Dikes and ditches in the agricultural areas sustained major damage in addition to crop losses.	Aguila	0	0	\$2,000,000	\$1,000,000	\$3,000,000	NCDC, 2008
3/1/2001	Dense Fog	Dense fog was reported over much of south central Arizona around sunrise. Three fog-related accidents left 8 people hurt near the intersection of Arizona 347 and Arizona 238 just north of the town of Maricopa. The accidents forced the closure of route 347 from Maricopa to I-10 until about 10:30 am.		0	8	\$0	\$0	\$0	NCDC, 2008
5/18/2001	Thunderstorm / High Wind	Winds damaged shingles, flipped a heavy table, and reduced visibility to near zero.	Wickenburg	0	0	\$5,000	\$0	\$5,000	NCDC, 2008
5/18/2001	Thunderstorm / High Wind	Winds took down 3 power poles about 5 miles east of Tonopah. Power was out for about 2 days in a 30 mile radius.	Wintersburg	0	0	\$10,000	\$0	\$10,000	NCDC, 2008
7/4/2001	Thunderstorm / High Wind	Mesa firefighters responded to 14 fires caused by lightning during a 90 minute period. One house in the 7100 block of East Dewan sustained about \$30,000 in damage. Other lightning strikes caused fires in palm trees.	Mesa	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
7/14/2001	Thunderstorm / High Wind	Winds blew sheds and trees down while damaging several homes in the area. C160	Wittmann	0	0	\$20,000	\$0	\$20,000	NCDC, 2008
7/14/2001	Thunderstorm / High Wind	A microburst hit parts of Scottsdale and Tempe with very strong winds and heavy rain. Many homes and businesses sustained damage, with at least 19 power poles blown down. One pole landed on a vehicle near Scottsdale and Indian Bend roads, killing the driver. About 6,000 residents were left without power, including the nearby Radisson Resort. Winds ripped the roofs off four homes in the McCormick Ranch area, and dumped them up to two blocks away. Numerous trees were uprooted.	Scottsdale	1	0	\$5,000,000	\$0	\$5,000,000	NCDC, 2008
7/17/2001	Thunderstorm / High Wind	As many as 8 power lines downed by high winds near 113th Avenue and Southern. High winds also blew down a large electronic information display billboard at Phoenix International Raceway.	Tolleson	0	0	\$250,000	\$0	\$250,000	NCDC, 2008
7/25/2001	Thunderstorm / High Wind	Thunderstorm winds took down numerous power lines and as many as 12 power poles in and near Glendale. The hardest hit area was 91st Avenue and Glendale Road. A 42 year old man was struck by lightning as he stood in the doorway of his west Phoenix home. With his hand on the doorknob, lightning passed through his body and exited through his right foot.	Glendale	0	1	\$30,000	\$0	\$30,000	NCDC, 2008
8/14/2001	Thunderstorm / High Wind	Severe thunderstorm wind, possible microburst, destroys mobile home trapping 2 occupants inside the mobile home near 27th Ave and Deer Valley Rd.	Phoenix	0	1	\$30,000	\$0	\$30,000	NCDC, 2008
7/9/2002	Thunderstorm / High Wind	Several trees uprooted and blown across roads and streets in Ahwatukee. Patio roof damaged by winds.	Phoenix	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
7/9/2002	Thunderstorm / High Wind	Dense blowing dust accompanied winds that gusted to about 60 mph. A small airplane was damaged while trying to land at Falcon Field. Thunderstorms developed over the East Valley, and microburst winds struck in Mesa, along University Drive between Extension and Country Club. About 20 power poles were blown down leaving 7,500 homes without power in this area.	Mesa	0	0	\$80,000	\$0	\$80,000	NCDC, 2008
7/13/2002	Thunderstorm / High Wind	Lightning struck a home in the 5600 block of N. Saguaro Road.	Paradise Vly	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
7/14/2002	Thunderstorm / High Wind	The first of two microburst events occurred on the airport at 1300 Airline Blvd. C165	(Phx)Sky Harbor Arpt	0	0	\$20,000,000	\$0	\$20,000,000	NCDC, 2008
7/14/2002	Thunderstorm / High Wind	Microburst winds heavily damaged the Arizona Public Service power sub-station at 7th Ave and Thomas. Widespread damage was reported across the greater Phoenix metropolitan area caused by the storm's high winds and heavy rainfall with up to 2 inches in 90 minutes. Utility companies reported that 22 power poles were downed, leaving at least 47,000 homes and businesses without power electricity for many hours. Homes in Scottsdale and Ahwatukee were struck by lightning and set on fire.	Phoenix	0	0	\$20,000,000	\$0	\$20,000,000	NCDC, 2008
7/14/2002	Thunderstorm / High Wind	The second of two microburst events struck on the airport at the Postal facility and the West economy parking lot. A large thunderstorm complex, with strong microburst winds estimated at 100 mph struck Sky Harbor International Airport. Southerly winds and dense blowing dust initially spread across the East valley and converged with a fast-moving thunderstorm in North Phoenix. These merging systems developed into a severe thunderstorm with winds that uprooted trees, took down power poles and damaged homes and businesses near the airport. Several hangars sustained major damage. Flying debris damaged five commercial aircraft, several private planes and hundreds of cars in the nearby parking lots. Numerous flights were diverted during the overnight hours due to the debris that was scattered on the runway.	(Phx)Sky Harbor Arpt	0	0	\$30,000,000	\$0	\$30,000,000	NCDC, 2008
7/23/2002	Thunderstorm / High Wind	At least 2 trees blown down in north Scottsdale. Heavy rain and lightning were blamed for the collapse of a section of a roof of the Goodwill store in south Scottsdale. One man inside the store suffered minor injuries. Trees and cactus blown down in Glendale.	Scottsdale	0	1	\$200,000	\$0	\$200,000	NCDC, 2008
9/6/2002	Thunderstorm / High Wind	Microburst winds damaged or destroyed over 100 homes at the Blue Sky Mobile Estates Park in Glendale. Winds also damaged over 100 vehicles at car dealerships near 51st Avenue. Nearby roofs were damaged and power poles were blown down. C168	Glendale	0	0	\$1,000,000	\$0	\$1,000,000	NCDC, 2008
9/7/2002	Thunderstorm / High Wind	Numerous reports of large hail throughout the West Valley, including Sun City, Peoria, and Phoenix. Winds to over 60 mph damaged homes, blew down power poles and uprooted trees. Streets were flooded in the West Valley as rain totals were as much as 1.85 inches. Arizona Public Service and Salt River Project estimated over 11,000 customers were without power.	Goodyear	0	0	\$200,000	\$0	\$200,000	NCDC, 2008
7/20/2003	Thunderstorm / High Wind	Lightning struck the chimney of a house in the 8900 block of East Pershing Avenue. The bolt knocked out the fireplace and the drywall of the living room, but caused no fire as the current discharged somewhere in the bottom of the fireplace.	Scottsdale	0	0	\$20,000	\$0	\$20,000	NCDC, 2008
7/29/2003	Thunderstorm / High Wind	Thunderstorms were widespread across Maricopa County, from Queen Creek to Wittmann from 1925 MST to 2130 MST. Microburst winds hit the north part of Tempe and took out stoplights at most of the city's major intersections. Winds tore down tree limbs and caused power outages, with about 30,000 customers losing power. Lightning struck trees and homes, and some street flooding was reported. Chandler airport had a peak wind speed of 64 mph at 8 pm. Sky Harbor airport closed its runways for about 40 minutes, until 9 pm, as winds peaked at 56 mph. Phoenix Fire Department responded to six house fires, 20 tree fires, 75 downed power lines, and numerous fender benders.	Chandler Arpt	0	0	\$200,000	\$0	\$200,000	NCDC, 2008



Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
7/26/2005	Thunderstorm / High Wind	Power lines down, trees uprooted, and shingles blown off roofs across a large portion of northwest Phoenix. At least 30 trees were downed by winds at the Palm Ridge Recreation Center in Sun City West. One automatic weather station at the White Tank mountains measured the 60 mph gust.	Sun City	0	0	\$100,000	\$0	\$100,000	NCDC, 2008
7/30/2005	Flooding / Flash Flooding	Very heavy rainfall, about 2 inches per hour, caused flooding of low spots and washes. The peak flow in Hartman Wash, was reported as 1200 cfs. Major damage occurred at Bear Cat Manufacturing where a large robotic welding building was destroyed by the flood.	Wickenburg Muni Arpt	0	0	\$3,000,000	\$0	\$3,000,000	NCDC, 2008
7/31/2005	Thunderstorm / High Wind	Power lines and trees down near I-17 and Glendale. Winds reached 53 mph in Fountain Hills and caused areas of blowing dust across Mesa and Tempe. As many as 8 boats were capsized on Tempe Town Lake.	Fountain Hills	0	0	\$10,000	\$0	\$10,000	NCDC, 2008
7/31/2005	Thunderstorm / High Wind	Lightning caused a fire at a North Peoria home, completely destroying it.	Peoria	0	0	\$500,000	\$0	\$500,000	NCDC, 2008
8/2/2005	Flooding / Flash Flooding	One of the heaviest rainfall events of the 2005 season struck the greater Phoenix metropolitan. Almost 3 inches of rain fell at many locations in the metro, causing roofs to collapse and streets to flood quickly. Up to 120 residents at the Crystal Creek Apartments in Phoenix were evacuated after 83 apartment units were damaged by flood waters. Additional roof damage was reported at the Scottsdale Community College, and Osco Drug store in Mesa, and a Fry's grocery store in Tempe.	Phoenix	0	0	\$1,000,000	\$0	\$1,000,000	NCDC, 2008
8/7/2005	Thunderstorm / High Wind	Trees and utility power poles blown down.C79	New River	0	0	\$5,000	\$0	\$5,000	NCDC, 2008
8/9/2005	Flooding / Flash Flooding	Heavy rains during the afternoon flooded highways and roads. A few business buildings and residential homes were damaged by flash flood waters. An off-duty National Weather Service employee reported that a two hour rainfall of 3.18 inches occurred prior to 17:30 MST.	Mesa	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
8/9/2005	Flooding / Flash Flooding	Heavy rains from widespread thunderstorms caused flash flood waters to over-flow washes from New River east to the Seven Springs area and Camp Creek. Rainfall runoff was higher than normal in the Cave Creek Complex area and contributed significantly to the rapid flooding. The first fatality involved a pickup truck with a horse trailer; the driver attempted to drive on a flooded road and the vehicle was swept away drowning the driver. The second fatality involved a seven year old girl who was being evacuated from a home along Camp Creek. The rescuer and the young girl attempted to cross the flooded creek on foot where the girl slipped from the grasp of the adult and was swept away and drowned.	New River	2	0	\$300,000	\$0	\$300,000	NCDC, 2008
8/9/2005	Thunderstorm / High Wind	Strong thunderstorms over east Phoenix metropolitan valley caused lightning which struck up to 13 homes in a Mesa neighborhood. Dramatic damage occurred as a result of the lightning; windows were blown out of the houses, drywall was damaged, electric power service meters and circuit breakers were destroyed, electric transformers were blown out of the ground.	Mesa	0	0	\$350,000	\$0	\$350,000	NCDC, 2008
8/14/2005	Thunderstorm / High Wind	As many as 12 electric utility power poles were blown down by severe thunderstorm winds. The storm winds also damaged the roof of the Paloma school building, and toppled a large tree onto a house.	Gila Bend	0	0	\$100,000	\$0	\$100,000	NCDC, 2008
8/25/2005	Fissure	A fissure in Queen Creek was reopened due to runoff from a thunderstorm causing damages to utilities, fences and driveway access. The event led to the enactment of HB2639, which called for a statewide identification and public disclosure of fissure hazards.	Queen Creek	0	0	\$0	\$0	\$0	Arizona Land Subsidence Group, 2007. Land subsidence and earth fissures in Arizona: Research and informational needs for effective risk management, white paper, Tempe, AZ, <a href="http://www.azgs.az.gov/Earth%20Fissures/CR-07-C.pdf">http://www.azgs.az.gov/Earth%20Fissures/CR-07-C.pdf</a>
9/9/2005	Thunderstorm / High Wind	Several power poles snapped as microburst winds struck near Extension Road and west Eighth Avenue. The downed power lines created temporary chaos as children were not allowed to leave three schools, and vehicles were not allowed into the area due to the live wires. About 4,000 people were left without power because of the storm.C207	Mesa	0	0	\$30,000	\$0	\$30,000	NCDC, 2008
3/11/2006	Snow Storm	Power to a number of communities was knocked out as heavy snow broke tree limbs and took out power lines. At one point, 20,000 APS customers were without power, mainly affecting Globe, Miami, and Superior. Numerous trees and branches were down at the Boyce Thompson Arboretum near Superior. Unusually heavy snow was reported from observers in areas to the north and east of the Phoenix metro area, with 10 inches on the ground at Punkin Center. Heavy rainfall also occurred at Queen Creek, where one gauge recorded 3.39 inches up to 9 pm Saturday. This event also ended the 143-day record long streak of days without any measurable rain in Phoenix.		0	0	\$5,000	\$0	\$5,000	NCDC, 2008
6/7/2006	Thunderstorm / High Wind	Winds associated with thunderstorms uprooted trees and brought down power lines to parts of the Phoenix metropolitan area. About 6,000 SRP customers were without power in the Gilbert area. Dense blowing dust also resulted in very low visibility, delaying flights at Sky Harbor airport.	Tempe	0	0	\$300,000	\$0	\$300,000	NCDC, 2008
6/25/2006	Thunderstorm / High Wind	Strong winds from nearby thunderstorms damaged traffic signals in Scottsdale.	Scottsdale	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
6/30/2006	Thunderstorm / High Wind	Power poles downed by high winds which reached as high as 59 mph at Falcon Field. About 16,000 homes were without power at the height of the storm. Dense blowing dust, with zero visibility was reported on the Superstition Freeway.	Mesa	0	0	\$100,000	\$0	\$100,000	NCDC, 2008
7/6/2006	Thunderstorm / High Wind	Microburst winds damaged windows and doors. Camper damaged at a truck stop along Interstate 10.	Tonopah	0	0	\$10,000	\$0	\$10,000	NCDC, 2008
7/15/2006	Thunderstorm / High Wind	Strong and gusty winds, estimated at 45 to 50 mph caused near zero visibility in a number of locations around the metro Phoenix area. Some power outages were reported, mainly in the West Valley area near Buckeye.		0	0	\$20,000	\$0	\$20,000	NCDC, 2008
7/18/2006	Thunderstorm / High Wind	Power poles down and roofs damaged due to strong thunderstorm winds.	Mobile	0	0	\$30,000	\$0	\$30,000	NCDC, 2008
7/18/2006	Thunderstorm / High Wind	Considerable damage to two aircraft at Williams Gateway Airport. A twin engine plane was flipped onto a single engine plane when microburst winds struck the airport.	Chandler Williams Af	0	1	\$1,000,000	\$0	\$1,000,000	NCDC, 2008
7/21/2006	Thunderstorm / High Wind	Strong winds affected parts of Scottsdale, Cave Creek and Carefree. Power lines were knocked down leaving about 16,800 customers without power. The strongest wind recorded at Scottsdale airport was 61 mph.C219	Cave Creek	0	0	\$20,000	\$0	\$20,000	NCDC, 2008

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
7/25/2006	Thunderstorm / High Wind	Several cities throughout the central portion of Maricopa County had major wind damage as a series of thunderstorms and microbursts moved across the area. According to the Salt River Project, an estimated 65 power poles were blown down, in parts of Scottsdale, Tempe and Mesa. At one point, about 20,000 customers were without power. Arizona Public Service reported about 8,000 customers were without power. At Phoenix Sky Harbor Airport, the official peak wind gust was 59 mph. However, winds at Williams Gateway Airport gusted to 86 mph and flipped a small twin-engine plane atop another aircraft. In Mesa, 35 schools reported damages due to the storm. In addition to numerous trees and homes damaged by winds, locally heavy rainfall caused some flooding of streets throughout the Valley. One of the heaviest amounts was 2.70 inches at Crossroads Park.	Central Portion	0	1	\$150,000,000	\$0	\$150,000,000	NCDC, 2008
8/10/2006	Thunderstorm / High Wind	Power lines down across an area estimated to be about a mile long.	Goodyear	0	0	\$40,000	\$0	\$40,000	NCDC, 2008
8/14/2006	Thunderstorm / High Wind	Numerous trees reported down throughout Estrella Mountain Park.	Goodyear	0	0	\$100,000	\$0	\$100,000	NCDC, 2008
8/21/2006	Thunderstorm / High Wind	Lightning caused a fire to 500 tons of hay on the Salt River Indian Reservation.	Phoenix	0	0	\$100,000	\$0	\$100,000	NCDC, 2008
8/21/2006	Thunderstorm / High Wind	Severe thunderstorms and very heavy rain spread across most of the East Valley. Power lines and power poles were down, street signs and vehicles were damaged. Chandler airport recorded peak winds of 57 mph along with dense blowing dust at 6:40 pm. One spotter estimated the strongest winds at 70 mph near University and Brown, in Mesa. Streets and low spots were flooded.	Mesa	0	0	\$200,000	\$0	\$200,000	NCDC, 2008
8/22/2006	Thunderstorm / High Wind	Strong winds tore shingles from roofs, snapped a flag pole and caused other damage as storms moved toward the northwest. SRP reported a total of about 50 power poles knocked down during the storms of August 21 and August 22. Combined figures show an estimated 18,000 customers were without power at the height of the storms.	Glendale	0	0	\$200,000	\$0	\$200,000	NCDC, 2008
8/24/2006	Thunderstorm / High Wind	Lightning caused a house fire near Country Club and Brown Road.	Mesa	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
8/31/2006	Flooding / Flash Flooding	Very heavy rainfall...up to 1.61 inches...left many washes and streets flooded in the Wittmann area. Up to 6 inches of water was flowing across U.S. 60 at one point. One half inch of rain fell in Wickenburg in less than an hour. Small hail accompanied some of the heavy showers and thunderstorms.C227	Wittmann	0	0	\$5,000	\$0	\$5,000	NCDC, 2008
9/3/2006	Thunderstorm / High Wind	Thunderstorm winds brought down trees and branches near 16th Street and Greenway.	Phoenix	0	0	\$5,000	\$0	\$5,000	NCDC, 2008
9/9/2006	Flooding / Flash Flooding	Several roads reported flooded in town after torrential rainfall hit in a short period. One gauge indicated nearly 2 inches in 30 minutes. A wash overflowed its banks, flooding a nearby home with water up to 18 inches deep.	Wickenburg	0	0	\$100,000	\$0	\$100,000	NCDC, 2008
9/9/2006	Thunderstorm / High Wind	Eight large trees, more than a foot in diameter, blown down near downtown Wickenburg.C242	Wickenburg	0	0	\$5,000	\$0	\$5,000	NCDC, 2008
4/12/2007	Thunderstorm / High Wind	Wind gusts over 40 mph were widespread across the Phoenix area, with a peak gust of 54 mph reported in Fountain Hills.A sharp cold front whipped through Arizona resulting in winds well over 40 mph and dense blowing dust with visibility less than a quarter mile. Some roof damage was also reported in Parker.		0	0	\$1,000	\$0	\$1,000	NCDC, 2008
4/28/2007	Thunderstorm / High Wind	A major dust storm with visibility less than 1/4 mile in spots, along with winds of 40 to 50 mph, moved quickly across the Phoenix metropolitan area during the afternoon. Trees were knocked over, power outages were reported, and flight delays affected Sky Harbor airport.Unusual heat for so early in the season, together with increased moisture, resulted in widespread light showers, very strong winds and areas of dense blowing dust and sand.		0	0	\$10,000	\$0	\$10,000	NCDC, 2008
7/19/2007	Thunderstorm / High Wind	Power line downed by high winds. Winds gusted to 55 mph at Sky Harbor airport. While walking in his yard, a man touched the live wire and was electrocuted.Power line downed by high winds in North Phoenix.	Phoenix	0	0	\$20,000	\$0	\$20,000	NCDC, 2008
7/21/2007	Fissure	The "Y-Crack" fissure was reopened due to runoff from a thunderstorm causing damages to utilities, fences, and vehicles. In one location, the fissure opened up to about 10 feet wide and 12-15 deep under a horse in it's corral, engulfing and killing the horse.	Chandler Heights	0	0	\$0	\$2,500	\$2,500	AZGS, 2007
7/21/2007	Flooding / Flash Flooding	Heavy rains fell at Queen Creek, with 1.61 inches at the Queen Creek landfill and 1.54 inches at East Maricopa Floodway and Queen Creek Road. High water forced road closures at Hunt and Ellsworth and the Magic Ranch subdivision. At least one car stalled in high water at Hunt Highway and Haves. Portions of three counties experience flash flooding.	Queen Creek	0	0	\$20,000	\$0	\$20,000	NCDC, 2008
7/23/2007	Flooding / Flash Flooding	Thunderstorms and very heavy rainfall spread across much of the area. A spotter in Carefree reported 1.5 inches of rain in less than one hour...and many roads and low spots were flooded. A wastewater treatment plant and a park was damaged in Carefree. Flooding was reported in Queen Creek, where a water line was damaged from the flash flood and resulted in the closure of Higley Road. A large ground fissure resulted from flooding at Queen Creek and 195th Street, and near Happy Road south of San Tan Blvd. One horse was reported killed in this fissure. Very moist and unstable air resulted in widespread showers and thunderstorms across much of South-Central Arizona. Many roads and low spots became flooded by late afternoon.	Cave Creek	0	0	\$200,000	\$0	\$200,000	NCDC, 2008
7/25/2007	Flooding / Flash Flooding	About 1.5 inches of rain in less than an hour resulted in flooding in Wickenburg. Torrential rainfall rates, about 2 inches per hour, fell in Phoenix. A roof of a central Phoenix Safeway store caved in due to the rainfall. Phoenix Fire Department rescued a 12 year-old from a flooded area near 35th Avenue and Loop 101.Scattered thunderstorms and moderate to heavy rainfall spread across many desert areas.	Wickenburg	0	0	\$100,000	\$0	\$100,000	NCDC, 2008
7/26/2007	Flooding / Flash Flooding	A vehicle attempted to cross a flooded roadway and became stranded and quickly flipped over. Bystanders at nearby Phoenix International Raceway pulled four young people from the pickup. TV images showed the bystanders breaking out the windows, reaching inside the overturned pickup, and tossing the two young children to other rescuers.Afternoon thunderstorms and very heavy rainfall resulted in flooding.	Avondale	0	1	\$5,000	\$0	\$5,000	NCDC, 2008
7/30/2007	Flooding / Flash Flooding	Locally heavy rains resulted in flooded streets and considerable water in washes and other low-lying areas. A car stalled at Country Club Drive underneath the Broadway Road bridge where about 2 feet of water had accumulated. Several water rescues were made when vehicles became stuck in flooded areas on Carefree highway.Heavy rains first hit the northwest part of Maricopa County, then spread into the Metro Phoenix area. Many streets were flooded, trees downed and considerable property damage.	Aguila	0	0	\$150,000	\$0	\$150,000	NCDC, 2008
7/30/2007	Thunderstorm / High Wind	Trees and power lines were downed through parts of Gilbert. Streetlights were also reported to be down due to the winds. Utility poles and at least one large billboard in the East Valley were damaged by winds.Heavy rains first hit the northwest part of Maricopa County, then spread into the Metro Phoenix area. Many streets were flooded, trees downed and considerable property damage.	Phoenix	0	0	\$100,000	\$0	\$100,000	NCDC, 2008

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
7/31/2007	Flooding / Flash Flooding	Roads closed in north Scottsdale. At least 6 water rescues. Several automatic gauges reported between 1.5 and 2.0 inch per hour rainfall rates. Floodwaters caused \$2 million of damage at Desert Sun Elementary School in North Scottsdale. Very heavy rainfall accompanied thunderstorms over much of Maricopa County. Strong and gusty winds were also reported with some of the more intense storms.	Scottsdale Muni	0	0	\$2,000,000	\$0	\$2,000,000	NCDC, 2008
8/14/2007	Thunderstorm / High Wind	Lightning struck a home near 51st Ave and Indian School Road. No major damage was reported, but a small attic fire was quickly put out. Scattered thunderstorms formed over parts of Phoenix with locally strong winds at the airport.	Phoenix	0	0	\$20,000	\$0	\$20,000	NCDC, 2008
8/16/2007	Thunderstorm / High Wind	Authorities in the Gila River Indian Community estimated winds as high as 80 mph. Scattered thunderstorms pushed through parts of the East Valley, knocking down power lines.	Avondale	0	0	\$20,000	\$0	\$20,000	NCDC, 2008
9/1/2007	Thunderstorm / High Wind	A microburst struck a Chandler RV and trailer park, damaging at least one trailer and taking down power lines and uprooting trees. Dense blowing dust with low visibility spread throughout many East Valley communities. In addition, thunderstorms brought gusty winds to near 60 mph in Apache Junction.	Chandler	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
9/15/2007	Thunderstorm / High Wind	Between Buckeye and Gila Bend trees were uprooted... signs blown down and one roof blown off a shop. Two miles south of Cotton Center a power pole snapped because of the winds. Strong winds from nearby thunderstorms affected some communities near Gila Bend.	Cotton Center	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
9/16/2007	Thunderstorm / High Wind	Large trees down... including a 50 foot pine tree near Southern avenue and Greenfield road. Four homes damaged near Sossaman road and Main street. Power lines were down near Main street and Southern avenue. Thunderstorms developed over the far East Valley resulting in damage to homes, power lines and trees.	Mesa Falcon Arpt	0	0	\$200,000	\$0	\$200,000	NCDC, 2008
12/1/2007	Flooding / Flash Flooding	Several spotters reported flooding of roads in the Cave Creek area. Washes and low spots draining into the Cave Creek were also flooded. Additional reports of flooding were received. One of the heaviest 24 hour amounts was 3.94 inches at Fraesfield Mountain in Carefree. Locally heavy rains and the resulting runoff contributed to flooded roads in North Central Maricopa County.	Cave Creek	0	0	\$20,000	\$0	\$20,000	NCDC, 2008
1/7/2008	Flooding / Flash Flooding	Emergency crews rescued a 61 year old man who attempted to drive his pickup truck across Cave Creek Wash at Desert Hills Road. The last in a series of storm systems resulted in heavy rainfall in a few areas. Carefree Ranch reported a 24 hour total of 1.30 inches on Monday. The runoff from these recent rains left some low spots and highway dips flooded. Motorists who tried to cross low spots and washes in northern Maricopa County had to be rescued.	Cave Creek	0	0	\$5,000	\$0	\$5,000	NCDC, 2008
2/4/2008	Thunderstorm / High Wind	Lightning started an attic fire in Sun City and a house fire in Glendale. Thunderstorms brought rain, hail and lightning to portions of the Phoenix area on Monday afternoon.	Sun City	0	0	\$20,000	\$0	\$20,000	NCDC, 2008
2/20/2008	Thunderstorm / High Wind	Lightning resulted in considerable damage to various electrical and electronic systems at the Pioneer Elementary School in Glendale. A nearby eucalyptus tree was also struck, which resulted in pieces of wood or bark exploding outward in all directions. Minor damage occurred to one side of a home near the school. A strong low pressure system and associated cold front moved across the region. Thunderstorms developed late in the evening and moved eastward across the northern sections of Maricopa County. Small hail and frequent lightning was observed with the strongest storms.	Glendale Muni Arpt	0	0	\$30,000	\$0	\$30,000	NCDC, 2008
6/25/2008	Thunderstorm / High Wind	The Ethan Fire was sparked by lightning on the 25th, and grew to over 5,000 acres several days later. Estimated cost to fight the fire was about \$700,000. Late afternoon thunderstorms moved across portions of the Phoenix metropolitan area. One cloud to ground lightning strike apparently started a brush fire near the Gila River southwest of Phoenix.	Avondale			\$5,000	\$0	\$5,000	NCDC, 2008
6/25/2008	Wildfire	In June 2008, lightning touched off the Ethan Brush Fire in the heavily vegetated Gila River bed south of Laveen. Approximately 50 residents of 18 homes were evacuated overnight and allowed to return to their undamaged homes the next day. The fire ultimately consumed about 7,000 acres.	Laveen	0	0	\$0	\$0	\$0	Az Republic, 2008
7/3/2008	Thunderstorm / High Wind	Lightning was blamed in starting a fire in the attic of a Tempe home. Tempe Fire responded to two other weather related fires. Thunderstorms moved through parts of the East Valley, and cloud to ground lightning started a fire in the attic of a home.	Tempe	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
7/4/2008	Thunderstorm / High Wind	Scottsdale airport recorded peak winds of 53 mph during thunderstorms. Winds at Sky Harbor airport reached as high as 39 mph and some tents at the Tempe Town Lake fireworks display were blown down. Sufficient moisture and instability together with an outflow boundary from the east was sufficient to trigger thunderstorms in Phoenix.	Scottsdale Muni Arpt	0	0	\$2,000	\$0	\$2,000	NCDC, 2008
7/10/2008	Thunderstorm / High Wind	Streets and highways became flooded and some road closures were reported after rainfall rates exceeded 2 inches per hour in the heaviest storms. One spotter in East Mesa had a total of 2.50 inches. Strong and locally damaging winds affected portions of South-central Arizona during the evening hours.	Sunnyslope	0	0	\$200,000	\$0	\$200,000	NCDC, 2008
7/10/2008	Thunderstorm / High Wind	Winds caused power outages and property damage due to microburst winds as high as 65 mph. Winds blew down a tree near 78th Street and McDonald which damaged a covered parking structure. Strong and locally damaging winds affected portions of South-central Arizona during the evening hours.	Buckhorn	0	0	\$400,000	\$0	\$400,000	NCDC, 2008
7/13/2008	Flooding / Flash Flooding	A record daily maximum rainfall of 1.30 inches was set at Sky Harbor Airport. Other reports of heavy rain included .90 inch in 20 minutes in Tempe, and 1.00 inch in 20 minutes near Wickenburg. Showers and thunderstorms produced very heavy rainfall totals across parts of South-Central Arizona.	Sky Harbor Int Arpt	0	0	\$20,000	\$0	\$20,000	NCDC, 2008
7/13/2008	Flooding / Flash Flooding	Numerous streets and highways reported flooded in Phoenix and Tempe. One spotter near Guadalupe and McClintock picked up 2 1/2 inches in just 45 minutes. One unofficial report near Baseline and I-10 included 3.75 inches from this storm. A roof of a charter school in Ahwatukee was reported to have collapsed from the accumulated rain water. Showers and thunderstorms produced very heavy rainfall totals across parts of South-Central Arizona.	Buckhorn	0	0	\$400,000	\$0	\$400,000	NCDC, 2008
7/13/2008	Thunderstorm / High Wind	Winds from a microburst blew down about 25 trees and damaged light poles at Mesa Community College. A security officer was slightly injured when the strong winds blew him from his golf cart. Showers and thunderstorms produced very heavy rainfall totals across parts of South-Central Arizona.	Mcqueen	0	0	\$100,000	\$0	\$100,000	NCDC, 2008
7/21/2008	Thunderstorm / High Wind	Microburst winds took down a total of 55 power poles in Mesa, leaving as many as 12,000 SRP customers without power. About 31 homes were damaged at a trailer park on North Recker, 4 of those had roofs blown off. On Southern Ave near Power Road, 15 poles were knocked down with lines impacting 7 vehicles, including a bus. The peak wind speed at Falcon Field was 44 mph at 7:47 pm. In Mesa, power poles were knocked down, trapping 6 vehicles, including a bus. One of the injuries was from cuts from broken glass. Numerous power poles were blown down and homes were damaged in East Mesa when severe thunderstorms hit the area.	Twin Knolls	0	2	\$1,000,000	\$0	\$1,000,000	NCDC, 2008
7/26/2008	Thunderstorm / High Wind	Power poles and trees were reported down at Chandler Heights and Greenfield roads, as well as Ocotillo and Higley and at Ocotillo and Power roads. Brief strong winds caused isolated damage to parts of the Southeast Valley.	Chandler Heights	0	0	\$15,000	\$0	\$15,000	NCDC, 2008

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
8/1/2008	Wildfire	In August 2008, the Robins Butte fire burned about 500 acres of the Gila River bottom located four miles west of State Route 85, south of Palo Verde Road, and near Buckeye.	Buckeye	0	0	\$0	\$0	\$0	Az Republic, 2008
8/5/2008	Thunderstorm / High Wind	Power lines down near 7th Street and Northern.Winds gusted to 51 mph at Sky Harbor airport.	Sunnyslope	0	0	\$2,000	\$0	\$2,000	NCDC, 2008
8/7/2008	Thunderstorm / High Wind	Power poles down in central Phoenix.Very strong winds from thunderstorms took down trees, power lines and left thousands of customers without power. Very heavy rain resulted in flooded roads.	Phoenix	0	0	\$10,000	\$0	\$10,000	NCDC, 2008
8/7/2008	Thunderstorm / High Wind	Brush fire was started by lightning and grew to about 425 acres. No structures were involved in the fire.Very strong winds from thunderstorms took down trees, power lines and left thousands of customers without power. Very heavy rain resulted in flooded roads.	Buckeye	0	0	\$10,000	\$0	\$10,000	NCDC, 2008
8/7/2008	Thunderstorm / High Wind	Large branches blown from trees.Very strong winds from thunderstorms took down trees, power lines and left thousands of customers without power. Very heavy rain resulted in flooded roads.	Sunnyslope	0	0	\$10,000	\$0	\$10,000	NCDC, 2008
8/7/2008	Thunderstorm / High Wind	Power poles and lines reported blown down. As many as 70 poles were down in the Buckeye area alone.Very strong winds from thunderstorms took down trees, power lines and left thousands of customers without power. Very heavy rain resulted in flooded roads.	Valencia	0	0	\$70,000	\$0	\$70,000	NCDC, 2008
8/14/2008	Thunderstorm / High Wind	Winds at Chandler Airport reached 50 knots as severe thunderstorms moved toward the west.The southern and central portions of Arizona were very moist and unstable. Storms developed and moved toward the southwest and strong winds kicked up widespread areas of blowing dust. A Severe Thunderstorm Watch was in effect for much of the evening.	Chandler Arpt	0	0	\$10,000	\$0	\$10,000	NCDC, 2008
8/14/2008	Thunderstorm / High Wind	Several crashes on the Loop 202 were blamed on strong winds and rain. Power outages were reported after winds and rain moved through the East Valley. SRP reported about 3,000 customers were left without electricity...and APS reported 2,000 customers without power.The southern and central portions of Arizona were very moist and unstable. Storms developed and moved toward the southwest and strong winds kicked up widespread areas of blowing dust. A Severe Thunderstorm Watch was in effect for much of the evening.	Papago Arpt	0	0	\$25,000	\$0	\$25,000	NCDC, 2008
8/14/2008	Thunderstorm / High Wind	Strong winds reported at Brown and Mesa. Trees were damaged.The southern and central portions of Arizona were very moist and unstable. Storms developed and moved toward the southwest and strong winds kicked up widespread areas of blowing dust. A Severe Thunderstorm Watch was in effect for much of the evening.	Mesa	0	0	\$5,000	\$0	\$5,000	NCDC, 2008
8/25/2008	Thunderstorm / High Wind	Microburst winds hit Chandler airport and flipped at least two planes. Winds also damaged a fence and other property. Northeast winds peaked at 67 mph at 3:25 pm.Thunderstorm winds over 70 mph damaged planes at Chandler Municipal Airport. Strong winds also blew down trees and damaged some homes in the Chandler area. Dense blowing dust was also reported.	Sun Lakes	0	0	\$1,000,000	\$0	\$1,000,000	NCDC, 2008
8/28/2008	Flooding / Flash Flooding	Many reports of large hail that accompanied several waves of thunderstorms across the city of Phoenix.Several waves of severe thunderstorms moved westward across the central and eastern portions of Maricopa County. Upper level winds were stronger than usual, and copious moisture combined with warm temperatures allowed storms to redevelop well into the night. Winds over 80 mph were noted in parts of Phoenix and Tempe. Nearly continuous lightning was also observed during the peak of the activity. Fortunately, no fatalities were associated with these severe storms.	West Chandler	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
8/28/2008	Thunderstorm / High Wind	Trees and power lines down.Several waves of severe thunderstorms moved westward across the central and eastern portions of Maricopa County. Upper level winds were stronger than usual, and copious moisture combined with warm temperatures allowed storms to redevelop well into the night. Winds over 80 mph were noted in parts of Phoenix and Tempe. Nearly continuous lightning was also observed during the peak of the activity. Fortunately, no fatalities were associated with these severe storms.	Sunnyslope	0	0	\$100,000	\$0	\$100,000	NCDC, 2008
8/28/2008	Thunderstorm / High Wind	Easterly winds gusted up to 65 knots at Sky Harbor airport. Several aircraft and at least one terminal building was damaged, with debris blown onto the runways and adjacent areas. About 500 people were stranded in the terminals overnight due to flight delays and power outages.Several waves of severe thunderstorms moved westward across the central and eastern portions of Maricopa County. Upper level winds were stronger than usual, and copious moisture combined with warm temperatures allowed storms to redevelop well into the night. Winds over 80 mph were noted in parts of Phoenix and Tempe. Nearly continuous lightning was also observed during the peak of the activity. Fortunately, no fatalities were associated with these severe storms.	Sky Harbor Int Arpt	0	0	\$2,000,000	\$0	\$2,000,000	NCDC, 2008
8/28/2008	Thunderstorm / High Wind	A trained spotter reported a wind gust of 85 mph at 16th St and Thomas. Widespread damage occurred to homes, businesses and windows knocked out in at least one high-rise. Numerous power poles were taken down, and many trees uprooted. Some damage also occurred at the Arizona State Capitol in Phoenix.Several waves of severe thunderstorms moved westward across the central and eastern portions of Maricopa County. Upper level winds were stronger than usual, and copious moisture combined with warm temperatures allowed storms to redevelop well into the night. Winds over 80 mph were noted in parts of Phoenix and Tempe. Nearly continuous lightning was also observed during the peak of the activity. Fortunately, no fatalities were associated with these severe storms.	Phoenix	0	0	\$20,000,000	\$0	\$20,000,000	NCDC, 2008
8/28/2008	Thunderstorm / High Wind	Numerous trees blown down by strong winds.Several waves of severe thunderstorms moved westward across the central and eastern portions of Maricopa County. Upper level winds were stronger than usual, and copious moisture combined with warm temperatures allowed storms to redevelop well into the night. Winds over 80 mph were noted in parts of Phoenix and Tempe. Nearly continuous lightning was also observed during the peak of the activity. Fortunately, no fatalities were associated with these severe storms.	Litchfield	0	0	\$25,000	\$0	\$25,000	NCDC, 2008
8/28/2008	Thunderstorm / High Wind	Microburst winds observed in Mesa near Recker and Brown.Several waves of severe thunderstorms moved westward across the central and eastern portions of Maricopa County. Upper level winds were stronger than usual, and copious moisture combined with warm temperatures allowed storms to redevelop well into the night. Winds over 80 mph were noted in parts of Phoenix and Tempe. Nearly continuous lightning was also observed during the peak of the activity. Fortunately, no fatalities were associated with these severe storms.	Mesa Falcon Arpt	0	0	\$30,000	\$0	\$30,000	NCDC, 2008
8/28/2008	Thunderstorm / High Wind	In Tempe, an 18 year-old man was injured by a falling tree. Winds on the ASU campus were measured at 69 mph and severely damaged the indoor football practice facility.Several waves of severe thunderstorms moved westward across the central and eastern portions of Maricopa County. Upper level winds were stronger than usual, and copious moisture combined with warm temperatures allowed storms to redevelop well into the night. Winds over 80 mph were noted in parts of Phoenix and Tempe. Nearly continuous lightning was also observed during the peak of the activity. Fortunately, no fatalities were associated with these severe storms.	Tempe	0	1	\$4,000,000	\$0	\$4,000,000	NCDC, 2008

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
8/28/2008	Thunderstorm / High Wind	Trees uprooted at 48th street and Mcdowell. Nearby homes damaged. Several waves of severe thunderstorms moved westward across the central and eastern portions of Maricopa County. Upper level winds were stronger than usual, and copious moisture combined with warm temperatures allowed storms to redevelop well into the night. Winds over 80 mph were noted in parts of Phoenix and Tempe. Nearly continuous lightning was also observed during the peak of the activity. Fortunately, no fatalities were associated with these severe storms.	Kendall	0	0	\$500,000	\$0	\$500,000	NCDC, 2008
8/28/2008	Thunderstorm / High Wind	Very strong wind gusts reported at Estrella Parkway and Elliott. Several waves of severe thunderstorms moved westward across the central and eastern portions of Maricopa County. Upper level winds were stronger than usual, and copious moisture combined with warm temperatures allowed storms to redevelop well into the night. Winds over 80 mph were noted in parts of Phoenix and Tempe. Nearly continuous lightning was also observed during the peak of the activity. Fortunately, no fatalities were associated with these severe storms.	Estrella	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
8/29/2008	Thunderstorm / High Wind	Top wind speeds of 55 to 65 mph were common across many areas. One report was a measured speed of 60 mph at 91st avenue and Jomax. A 58 mph gust was measured at the White Tank mesonet location. A wood fence was damaged and a trailer was overturned in Waddell. Winds near 60 mph were associated with some thunderstorms in the Phoenix area.	Ennis	0	0	\$100,000	\$0	\$100,000	NCDC, 2008
8/29/2008	Thunderstorm / High Wind	Spotter reported a very heavy rainfall rate of 3.19 inches per hour during a 10 minute period. Strong winds from nearby thunderstorms caused significant damage to homes in this area.	Cave Creek	0	0	\$2,000	\$0	\$2,000	NCDC, 2008
9/10/2008	Thunderstorm / High Wind	About 6 power poles were downed, resulting in power outages for as many as 4500 customers in Queen Creek. Showers and thunderstorms developed across much of southwest and south-central Arizona. A few storms became severe, with strong winds, hail and very heavy downpours.	Queen Creek	0	0	\$12,000	\$0	\$12,000	NCDC, 2008
9/10/2008	Thunderstorm / High Wind	Numerous power poles down near 424th and Indian School, or about 2 miles west of Tonopah. Showers and thunderstorms developed across much of southwest and south-central Arizona. A few storms became severe, with strong winds, hail and very heavy downpours.	Tonopah	0	0	\$50,000	\$0	\$50,000	NCDC, 2008
9/10/2008	Thunderstorm / High Wind	A trained spotter reported a wind gust of 60 mph along with pea sized hail at McClintock and Guadalupe. Showers and thunderstorms developed across much of southwest and south-central Arizona. A few storms became severe, with strong winds, hail and very heavy downpours.	Tempe	0	0	\$5,000	\$0	\$5,000	NCDC, 2008
9/11/2008	Thunderstorm / High Wind	According to Arizona Public Service, 48 power poles across a distance of 3 miles were blown down along Old Highway 80 between Buckeye and Gila Bend. Winds were measured up to 56 mph on the Palo Verde Nuclear Generating Station tower. Thunderstorms moved steadily toward the northeast during the afternoon hours. As a result, locally heavy rain, strong winds, and very low visibility due to dust and sand moved across the deserts.	Arlington	0	0	\$100,000	\$0	\$100,000	NCDC, 2008
9/11/2008	Thunderstorm / High Wind	Winds were estimated to reach as high as 60 mph along with visibility to less than 1/4 mile in blowing dust. Thunderstorms moved steadily toward the northeast during the afternoon hours. As a result, locally heavy rain, strong winds, and very low visibility due to dust and sand moved across the deserts.	Tonopah	0	0	\$20,000	\$0	\$20,000	NCDC, 2008
3/26/2009	Thunderstorm / High Wind	Numerous power poles were reported blown down in the Phoenix area, leaving about 1200 people without power for several hours. Customers with both APS and SRP experienced power outages. The strong northerly winds, gusting to over 45 mph, also caused poor visibilities in some areas. Cross winds also resulted in air traffic delays, and even a full stoppage of arrivals at Sky Harbor airport for nearly one hour. Based on hourly weather observations from 1931 to present, the peak wind of 53 mph was the highest wind observed during the spring months of March, April and May in Phoenix. It was also the 7th highest wind gust on record in Phoenix.		0	0	\$50,000	\$0	\$50,000	NCDC, 2014 - ASOS
4/3/2009	Thunderstorm / High Wind	Winds reached up to 46 mph at Deer Valley airport. At least one large tree was toppled by the strong winds.		0	0	\$30,000	\$0	\$30,000	NCDC, 2014 - Official NWS Observations
5/18/2009	Thunderstorm / High Wind	Eight power poles were downed in Mesa by strong microburst winds. About 10,000 East Valley SRP customers lost power Monday night. Microburst winds were reported by a spotter in the area of Interstate 17 and Greenway Road in Phoenix. At least one tree in the East Valley was reported to be uprooted due to these storms.	MESA	0	0	\$100,000	\$0	\$100,000	NCDC, 2014 - Utility Company
5/18/2009	Lightning	Lightning was blamed on starting a house fire in Surprise.	SURPRISE	0	0	\$200,000	\$0	\$200,000	NCDC, 2014 - Fire Department/Rescue
5/19/2009	Thunderstorm / High Wind	Winds damaged a small structure at a Tempe car dealership.	WEST CHANDLER	0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Broadcast Media
7/3/2009	Thunderstorm / High Wind	A utility trailer was flipped due to strong winds.	MORRISTOWN	0	0	\$1,000	\$0	\$1,000	NCDC, 2014 - Trained Spotter
7/5/2009	Extreme Heat/Cold	Prolonged heat throughout much of the month of July contributed to 10 heat-caused deaths, according to the Maricopa County medical examiner. July 2009 was not only the hottest July on record but the hottest month of all-time in Phoenix. Records for Phoenix began in 1896. There were 15 days in July where highs reached 110 or hotter at Phoenix Sky Harbor airport.		0	2	\$0	\$0	\$0	NCDC, 2014 - County Official
7/17/2009	Thunderstorm / High Wind	Numerous spotter reports of dense blowing dust with visibility at or below 1/4 mile. Winds of 51 mph were reported at the Casa Grande airport, with a visibility of only 1/2 mile. Strong winds in Arizona City pulled tiles from some roof tops and knocked trees over.		0	0	\$40,000	\$0	\$40,000	NCDC, 2014 - Trained Spotter
7/18/2009	Lightning	Mobile home fire likely due to power lines downed by nearby thunderstorms.	MESA	0	0	\$100,000	\$0	\$100,000	NCDC, 2014 - Fire Department/Rescue
7/19/2009	Thunderstorm / High Wind	About 65 power poles were blown down in the Gila Bend area due to very strong microburst winds. About 2300 APS customers were left without power. The NWS storm survey indicated the straight line winds were generally from the southwest. One wind speed indicator near Gila Bend went off the chart at 100 mph. There was considerable damage to buildings and homes in the area. The airbase was also affected with several buildings destroyed.	SIL MURK	0	0	\$250,000	\$0	\$250,000	NCDC, 2014 - NWS Storm Survey
7/19/2009	Thunderstorm / High Wind	Near zero visibility was reported in many areas. In parts of Tempe and Mesa winds took down tree limbs and at least one large tree was uprooted.		0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Trained Spotter
7/19/2009	Thunderstorm / High Wind	Strong winds damaged roof tiles near McClintock Drive, and a spotter at Warner and Kyrene reported 1/2 inch of rain in 15 minutes.	TEMPE	0	0	\$20,000	\$0	\$20,000	NCDC, 2014 - Trained Spotter
7/19/2009	Thunderstorm / High Wind	Four inch tree limbs were blown down near Elliot and Rural.	TEMPE	0	0	\$2,000	\$0	\$2,000	NCDC, 2014 - Trained Spotter
7/20/2009	Thunderstorm / High Wind	Trees were blown down in Queen Creek and winds were estimated at 60 mph at Southern and Dobson in Mesa. Other areas of the East Valley experienced strong and gusty winds. In addition, winds reached 55 mph at Sky Harbor airport at 6:40 PM.	MC QUEEN	0	0	\$20,000	\$0	\$20,000	NCDC, 2014 - Trained Spotter

Date	Hazard	Description	Location	FATALS	INJS	Damage Estimates			
						Property	Crop/Livestock	Total	Source
7/20/2009	Lightning	Transformer fire possibly started by lightning strike.	(PHX)SKY HARBOR	0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Fire Department/Rescue
7/21/2009	Thunderstorm / High Wind	Peak winds reached 56 mph at Luke AFB.	LUKE AFB	0	0	\$2,000	\$0	\$2,000	NCDC, 2014 - Official NWS Observations
7/25/2009	Thunderstorm / High Wind	Winds reached 55 to 65 mph in this area. One spotter reported tiles blown off his roof.	WICKENBURG	0	0	\$20,000	\$0	\$20,000	NCDC, 2014 - Trained Spotter
8/12/2009	Thunderstorm / High Wind	Two trees were uprooted at Glendale and Litchfield avenues. The larger tree was about 10 to 12 inches in diameter.	(LUF)LUKE AFB	0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Trained Spotter
8/21/2009	Thunderstorm / High Wind	Trees were uprooted near 56th street and Indian School Road. Power lines were downed by winds and left about 15,000 customers without electricity.	PARADISE VLY	0	0	\$50,000	\$0	\$50,000	NCDC, 2014 - Broadcast Media
8/21/2009	Lightning	Lightning struck a home in north Phoenix, knocking out many electrical appliances. However, no fire started from this lightning strike.	PHX SKY HARBOR	0	0	\$25,000	\$0	\$25,000	NCDC, 2014 - Amateur Radio
8/21/2009	Thunderstorm / High Wind	Strong winds reported at 107th Avenue and Camelback. Numerous trees uprooted by winds. Luke AFB recorded winds that gusted to 52 mph.	GLENDALE FRAM	0	0	\$20,000	\$0	\$20,000	NCDC, 2014 - Amateur Radio
12/7/2009	Thunderstorm / High Wind	Four rollover accidents were reported by DPS on the westbound Interstate 8 near Mohawk. The trucks rolled over into the center median before the travel lanes were closed at 10:30 pm.		0	0	\$20,000	\$0	\$20,000	NCDC, 2014 - Newspaper
12/7/2009	Thunderstorm / High Wind	Several power poles damaged near Van Buren and Central.	PHOENIX	0	0	\$50,000	\$0	\$50,000	NCDC, 2014 - Trained Spotter
12/7/2009	Thunderstorm / High Wind	Awings were torn from cement anchors at a mobile home park at 67th Avenue and Northern.	GLENDALE MUNI	0	0	\$25,000	\$0	\$25,000	NCDC, 2014 - Trained Spotter
12/7/2009	Thunderstorm / High Wind	Three large trees snapped and blown down onto a road near 32nd Street and Greenway.	SUNNYSLOPE	0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - NWS Employee
12/7/2009	Thunderstorm / High Wind	Nine power poles and 4 trees knocked down at Scottsdale Road and Mayo Blvd.	SCOTTSDALE MUN	0	0	\$100,000	\$0	\$100,000	NCDC, 2014 - Newspaper
12/7/2009	Thunderstorm / High Wind	Nine power poles and 4 trees knocked down at Scottsdale Road and Mayo Blvd.	SCOTTSDALE MUN	0	0	\$100,000	\$0	\$100,000	NCDC, 2014 - Newspaper
12/22/2009	Thunderstorm / High Wind	A sudden drop in visibility due to local blowing dust contributed to a massive pileup in the eastbound lanes of Interstate 10 on Tuesday morning. Winds at the time of the accident were estimated to be about 40 mph. About 9 trucks and 13 automobiles were involved in the accidents. Some vehicles caught on fire. Three fatalities and 14 injuries were reported.		3	14	\$0	\$0	\$0	NCDC, 2014 - Department of Highways
1/21/2010	Flooding / Flash Flooding	Five people were rescued from flood waters at 389th and Orangewood.	TONOPAH	0	0	\$20,000	\$0	\$20,000	NCDC, 2014 - Law Enforcement
1/21/2010	Flooding / Flash Flooding	Sheriff reported a road closure due to flooding at Cotton road and Camelback. Numerous other streets in the West Valley had some flooding later in the day.	WHITE TANKS	0	0	\$100,000	\$0	\$100,000	NCDC, 2014 - Law Enforcement
1/21/2010	Thunderstorm / High Wind	Ten utility poles along US 60 near Gladden were blown down by high winds. Power was cut off to Salome, Wenden and other communities until 2:15 pm.		0	0	\$30,000	\$0	\$30,000	NCDC, 2014 - Newspaper
1/21/2010	Flooding / Flash Flooding	APS power lines were down from flood waters in the Salt River.	GOMEZ ARPT	0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Trained Spotter
1/21/2010	Flooding / Flash Flooding	Streets were closed near the Salt River as well as many creeks and washes after the third major storm system moved through the area. Rainfall prior to and during the day on Friday amounted to between 5 and 7 inches. The swollen creeks and washes left many low-lying areas flooded for days, with damaged homes and businesses.	LAVEEN	0	0	\$2,000,000	\$0	\$2,000,000	NCDC, 2014 - County Official
1/21/2010	Thunderstorm / High Wind	Three large trees blown over at Bell Road and 16th Street. A large tent at the Russo Steele Auction in Scottsdale near Mayo Blvd and Scottsdale Rd was destroyed and blown into nearby State Highway Loop 101 when winds collapsed the tent onto many classic cars. Small damage at a nearby Barrett Jackson Auction. Three minor injuries reported.	SCOTTSDALE MUN	0	3	\$1,500,000	\$0	\$1,500,000	NCDC, 2014 - Emergency Manager
3/9/2010	Hail	Small hail and wind gusts to 40 mph.	CHANDLER ARPT	0	0	\$1,000	\$0	\$1,000	NCDC, 2014 - Trained Spotter
5/2/2010	Thunderstorm / High Wind	Winds damaged power poles and lines near the top of South Mountain, near 39th Avenue and Dunlop, and near Central and Dobbins. Power outages affected about 1000 customers at the peak of the strongest winds.		0	0	\$30,000	\$0	\$30,000	NCDC, 2014 - Utility Company
5/2/2010	Thunderstorm / High Wind	Large palo verde tree blown over in Ahwatukee.		0	0	\$1,000	\$0	\$1,000	NCDC, 2014 - NWS Employee
5/2/2010	Thunderstorm / High Wind	Several homes in Chandler, near Kyrene and Ray, had roof tiles blown off. Tree limbs were also blown down. One woman described the wind sounding like a roaring train.		0	0	\$50,000	\$0	\$50,000	NCDC, 2014 - Newspaper
6/23/2010	Extreme Heat/Cold	Maricopa County officials reported one heat caused death late in June. A 21 month old girl died after being left in a car in Phoenix. Temperatures in Phoenix were several degrees above average, and the highs reached 113 degrees on the 24th and the 30th.		0	1	\$0	\$0	\$0	NCDC, 2014 - County Official
6/24/2010	Wildfire	Sycamore Fire - located in northern Maricopa County near MP209 on Hwy 87. The human caused fire burned 187 acres and forced the temporary shut down of the highway. No reported injuries or deaths and no reported property damage. Fire suppression costs were estimated to exceed \$146K.	Northern Maricopa Co	0	0	\$0	\$0	\$0	NWCG, 2014
7/29/2010	Thunderstorm / High Wind	Winds uprooted trees, tore limbs off, and ripped some roof tiles from homes near Hunt Highway and Gilbert Road. Dense blowing dust was also reported in this area.	OCOTILLO	0	0	\$30,000	\$0	\$30,000	NCDC, 2014 - NWS Employee
7/29/2010	Thunderstorm / High Wind	About 7 power poles were downed by thunderstorm winds.	WINTERSBURG	0	0	\$30,000	\$0	\$30,000	NCDC, 2014 - Trained Spotter
7/29/2010	Tornado / Dust Devil	A weak tornado touched down in the Wintersburg area just south of Interstate 10. Considerable damage was reported in the area between Salome highway and I-10..mostly near 355th Avenue. The NWS survey found damage to be EF-1. One man was injured when his home was destroyed. Several homes had roofs lifted off and automobiles were picked up and moved.	WINTERSBURG	0	1	\$0	\$0	\$0	NCDC, 2014 - NWS Storm Survey
8/17/2010	Thunderstorm / High Wind	An amateur radio operator in northeast Mesa reported an eight inch diameter tree blown down near Power and McDowell roads.	HARMONY VILLA	0	0	\$2,000	\$0	\$2,000	NCDC, 2014 - Amateur Radio
8/17/2010	Thunderstorm / High Wind	A large tree split and fell near a car at the Bashas parking lot near IndianSchool and Hayden in South Scottsdale.	SCOTTSDALE	0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Broadcast Media
8/17/2010	Thunderstorm / High Wind	Considerable damage across a part of East Mesa. Several homes were damaged and numerous trees were uprooted. The primary area of damage was near MCKellips and Sossaman. One east Mesa resident had his 23 foot saguaro blown over by winds estimated to be 60 mph. The strong winds also ripped off a replacement roof covering a detached garage; the roof came to rest between the home and their swimming pool.	APACHE WELLS	0	0	\$300,000	\$0	\$300,000	NCDC, 2014 - Broadcast Media
8/17/2010	Thunderstorm / High Wind	An amateur radio operator reported power poles blown down near University Avenue and Signal Butte road in western Apache Junction. Microburst wind gusts were estimated to be approximately 60mph.	TWIN KNOLLS	0	0	\$25,000	\$0	\$25,000	NCDC, 2014 - Amateur Radio
8/24/2010	Thunderstorm / High Wind	Damaging thunderstorm microburst winds, estimated to be in excess of 70kt, caused damage to portions of the Mayo Clinic Hospital.	PHOENIX DEER VL	0	0	\$50,000	\$0	\$50,000	NCDC, 2014 - Trained Spotter
8/24/2010	Thunderstorm / High Wind	Strong thunderstorm winds caused steel gates to be blown down; in addition there were reports of tree limbs 6 inches in diameter broken off and lying in the streets.	SCOTTSDALE MUN	0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Trained Spotter
8/24/2010	Thunderstorm / High Wind	Strong thunderstorms over Scottsdale generated microburst winds which toppled several power poles. Winds were estimated in excess of 50kt.	SCOTTSDALE MUN	0	0	\$20,000	\$0	\$20,000	NCDC, 2014 - Broadcast Media

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/Livestock	Total	Source
8/24/2010	Thunderstorm / High Wind	APS, reported that power poles, and power lines, were downed near highway 60, approximately one mile east of highway 74 in the town of Morristown. Downburst winds were estimated to be in excess of 50kt.	MORRISTOWN	0	0	\$40,000	\$0	\$40,000	NCDC, 2014 - Utility Company
8/24/2010	Thunderstorm / High Wind	Strong microburst winds blew the roof off of a mobile home in Mesa, near the intersection of University and Lindsey roads.	BUCKHORN	0	0	\$20,000	\$0	\$20,000	NCDC, 2014 - Broadcast Media
8/28/2010	Thunderstorm / High Wind	A trained spotter reported that power poles were blown down at 19th Avenue and Dunlap. The poles were downed by thunderstorm microburst winds estimated to be in excess of 50 kt.	SUNNYSLOPE	0	0	\$25,000	\$0	\$25,000	NCDC, 2014 - Trained Spotter
8/28/2010	Thunderstorm / High Wind	Power poles were blown down at 19th Ave and Dunlap.	SUNNYSLOPE	0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Trained Spotter
8/28/2010	Flooding / Flash Flooding	Strong thunderstorms with extremely heavy rain led to mutple collisions on Interstate 10 in downtown Phoenix during the afternoon hours on August 28. A total of 69 vehicles were involved in a series of crashes; one collision alone involved 35 vehicles and spanned over 2 miles from 16th street to 7th street. Trained spotters reported visibilities below one quarter mile in heavy rain in downtown Phoenix, and it was low visibility in heavy rain that led to the collisions. Seven people were taken to area hospitals and two were in serious condition. Fire officials medically evaluated at least 40 people.	PHOENIX	7	0	\$200,000	\$0	\$200,000	NCDC, 2014 - Newspaper
9/21/2010	Thunderstorm / High Wind	Sheriff's Office and DPS reported that 20 power poles were blown down near the intersection of Watermelon Road and old U.S. Highway 80, just outside of Gila Bend.	GILA BEND	0	0	\$100,000	\$0	\$100,000	NCDC, 2014 - Law Enforcement
9/22/2010	Lightning	Rural Metro responded to a call of a house fire that was caused by lightning. The house was near Meridian and Apache Trail in East Mesa.	TWIN KNOLLS	0	0	\$100,000	\$0	\$100,000	NCDC, 2014 - Fire Department/Rescue
10/4/2010	Thunderstorm / High Wind	A trained weather spotter at 7th Avenue and Camelback Road reported that strong gusty thunderstorm winds damaged a plastic patio roof and blew down a 2 inch diameter tree branch. The spotter estimated winds to be in excess of 40 mph.	SUNNYSLOPE	0	0	\$2,000	\$0	\$2,000	NCDC, 2014 - Trained Spotter
10/4/2010	Lightning	Thunderstorms on the afternoon of October 4th produced lightning which damaged the roof of a home near Dobson and Guadalupe in Mesa. The roof's insulation was charred, and there was minor damage to the attic. No injuries were reported.	MESA	0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Newspaper
10/5/2010	Thunderstorm / High Wind	High winds with nickel sized hail caused damage to cars, trees downed and power poles damaged.	TREMAINE	0	0	\$100,000	\$0	\$100,000	NCDC, 2014 - Trained Spotter
10/5/2010	Hail	Hailstorm moved from southwest to northeast across the central Phoenix area. Hail up to 1.5 diameter fell in this swath. The hail broke hundreds of skylights and damaged roofs and cars from southwest Phoenix, to north central Phoenix, to Carefree.	CASHION	0	0	\$900,000,000	\$0	\$900,000,000	NCDC, 2014 - Trained Spotter
10/5/2010	Flooding / Flash Flooding	Fire department and rescue personnel reported that heavy thunderstorm rainfall caused flooding under an overpass along Interstate 17 near Greenway Road. Six feet of water filled up the underpass, preventing travel. In addition, flooding was reported under the overpass at Interstate 17 and Thunderbird road, several cars were stranded at that location.	PHOENIX TURF AR	0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Fire Department/Rescue
10/5/2010	Thunderstorm / High Wind	A series of powerful storms caused major damage to SRP facilities and power poles. Thirteen power poles for a 69/12-kilovolt distribution line along the Western Canal near Dobson road in Mesa were knocked down. Twelve of the poles landed on homes causing considerable damage. As many as 20,000 customers were temporarily without power. All told, there were at least 40 utility poles downed in southwest Mesa, which damaged 20 to 30 homes.	TREMAINE	0	1	\$500,000	\$0	\$500,000	NCDC, 2014 - Utility Company
10/5/2010	Thunderstorm / High Wind	Fence blown over.	FALFA	0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Trained Spotter
10/5/2010	Thunderstorm / High Wind	A trained spotter in Sun Lakes reported that a large eucalyptus tree was blown down by thunderstorm winds estimated to be in excess of 65 knots.	OCOTILLO	0	0	\$1,000	\$0	\$1,000	NCDC, 2014 - Trained Spotter
10/5/2010	Hail	This storm moved from south of Chandler to far north Scottsdale. As the storm moved through Scottsdale, the storm dropped up to tennis ball sized hail. The hail damaged hundreds of roofs and vehicles. Dozens of aircraft at Scottsdale airport were damaged by the hail.	SCOTTSDALE	0	0	\$110,000,000	\$0	\$110,000,000	NCDC, 2014 - Trained Spotter
10/5/2010	Hail	This storm moved from Firebird Lake, south of Chandler to the north Glendale/south Peoria area. This storm produced widespread golf ball to baseball sized hail along its path. Thousands of roofs and vehicles were damaged by the hail. Locations in northwest Phoenix and Glendale were impacted by this storm as well as the storm shortly after noon, compounding the damage. The football coach at Alhambra High School reported at least one injury when large hail struck the practice field. This palm-size hail is likely the largest hail ever reported in the Phoenix area. Large hail, estimated to be upwards of 2 inches in diameter, punctured 34 skylights at the main warehouse of St. Mary's Food bank in Phoenix. As a result, water ruined approximately 20 percent of the food inventory, the equivalent of 1.4 million meals. Rain soaked the food, which was stored in cardboard boxes. This information was reported by St. Mary's spokesman Jerry Brown. The damages of 200 thousand dollars covered both the roof damage as well as money to replace the ruined food.	WEST CHANDLER	1	0	\$1,800,000,000	\$0	\$1,800,000,000	NCDC, 2014 - Trained Spotter
10/5/2010	Flooding / Flash Flooding	Heavy thunderstorm rains caused the roof to collapse at Enriquez Materials & Quilting, located in southwestern Phoenix.	PHOENIX FARM AE	0	0	\$50,000	\$0	\$50,000	NCDC, 2014 - Newspaper
10/5/2010	Lightning	Lightning caused a working residential structure fire in Tolleson, on the afternoon of October 5th. The fire caused the family to be displaced. No injuries were reported.	TOLLESON	0	0	\$30,000	\$0	\$30,000	NCDC, 2014 - Emergency Manager
12/22/2010	Thunderstorm / High Wind	Gusty thunderstorm winds, estimated to be 50 knots, blew down a 12 inch diameter tree in north central Phoenix. Other small tree limbs were blown down, and some shingles were blown off of a roof.	GLENDALE	0	0	\$3,000	\$0	\$3,000	NCDC, 2014 - Broadcast Media
12/30/2010	Thunderstorm / High Wind	Strong and gusty straight-line winds, estimated to be around 45 mph, caused several tree branches to be blown down 5 miles southwest of Paradise Valley.		0	0	\$1,000	\$0	\$1,000	NCDC, 2014 - Trained Spotter
2/2/2011	Extreme Heat/Cold	A hard freeze occurred during the mornings of February 3rd and 4th; many locations across the greater Phoenix area experienced several hours at or below 28 degrees. Phoenix Sky Harbor reported low temperatures of 30 degrees on both mornings, and these lows were near record values for the dates. Low temperatures had not fallen to these levels since the last hard freeze in January 2007. Freezing temperatures also occurred the morning of February 2nd. Frozen greens caused cancellation of the Phoenix Waste Management Pro-Am on February 2nd, in addition the cold temperatures and frozen greens severely disrupted Open play all week and forced the tournament to finish on Monday. All of this led to significant decreases in attendance and loss of revenue for the Open. The hard freeze led to widespread damage to frost-sensitive plants, caused numerous water pipes to burst in the colder outlying areas, and caused damage to local crops such as peach and citrus. George Brazil reported dozens of calls from around the valley due to broken pipes and failed furnaces.		0	0	\$2,500,000	\$200,000	\$2,700,000	NCDC, 2014 - Official NWS Observations

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
2/26/2011	Thunderstorm / High Wind	A strong cold front, associated with a cold and wet Pacific storm, pushed east across south central Arizona on Saturday night. The strongest winds, with gusts estimated to be near 50 mph, occurred from near midnight Saturday into the early morning hours on Sunday. The winds caused significant damage to the Great Fair, located on Avenue of the Fountains and Saguaro Boulevard. 35 vendor tents were either destroyed or significantly damaged. The damage to the fair was among the worst seen in the past 15 years; some vendors described the aftermaths as if a wind burst or mini-tornado had swept through the area.		0	0	\$40,000	\$0	\$40,000	NCDC, 2014 - Newspaper
5/13/2011	Tornado / Dust Devil	At 2 pm on May 13, a huge dust devil passed over a home in Desert Hills, located between Anthem and Cave Creek in north Phoenix. The dust devil tore a number of shingles off of the roof, and flipped a swingset into their barn. According to the homeowner, the dust devil sounded like a freight train running through the house.	CAVE CREEK	0	0	\$2,000	\$0	\$2,000	NCDC, 2014 - Public
7/2/2011	Wildfire	Fish Fire - located near Apache Junction in the Fish Creek drainage. The lightning caused fire burned 404 acres. No reported injuries or deaths and no reported property damage. Fire suppression costs were estimated to exceed \$100K.	Apache Junction	0	0	\$0	\$0	\$0	NWCG, 2014
7/2/2011	Thunderstorm / High Wind	Isolated high based thunderstorms developed over the northern portions of the greater Phoenix area during the afternoon hours on the 2nd of July. The storms generated gusty damaging microburst winds which toppled 17 power poles near 32nd street and Greenway road. The wind gusts were estimated to be near 50 knots.	PHOENIX TURF AR	0	0	\$128,000	\$0	\$128,000	NCDC, 2014 - NWS Employee
7/3/2011	Thunderstorm / High Wind	High based thunderstorms across central Maricopa county generated strong gusty outflow winds during the late afternoon on July 3rd. A dust storm was generated, affecting the area from Tohopah westward to the La Paz county line. A woman living in Surprise reported 2 semi-truck accidents that occurred on Interstate 10 near Salome Road at approximately 6 pm. The accidents were a result of near zero visibility due to dense blowing dust.		0	0	\$2,000	\$0	\$2,000	NCDC, 2014 - Public
7/3/2011	Thunderstorm / High Wind	Isolated thunderstorms developed over the eastern portions of the greater Phoenix area during the evening hours on July 3rd. The storms produced damaging downburst winds estimated to be at least 50 knots. A trained weather spotter reported numerous large tree branches were downed near Val Vista Drive and University Drive in Mesa.	VELDA ROSE ESTA	0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Trained Spotter
7/5/2011	Thunderstorm / High Wind	Strong thunderstorms developed to the southeast of the greater Phoenix area during the afternoon hours on July 5. As the storms dissipated and moved towards the northwest, rain-cooled outflows picked up copious amounts of dust and dirt and generated a massive haboob which raced northwestward and across the greater Phoenix area during the evening hours. The haboob was considered to be of historic proportions; it measured at least 100 miles in length, was over one mile high and moved across the deserts at more than 50 mph. Peak wind speeds within the haboob reached 70 mph or more. Numerous trained weather spotters from across the greater Phoenix area reported visibilities down to near zero miles, in many cases visibilities were less than 50 yards. During the storm, the Buckeye fire department responded to a weather related multi-vehicle accident at Interstate 10 and Watson road in Buckeye. Thirteen people suffered minor injuries and were treated at the scene. Due to the massive amount of topsoil that was stirred up by the haboob, area Physicians and medical personnel warned that there could be a sharp rise in new Valley Fever cases among those exposed to the dust. Valley Fever is a fungal infection caused by inhalation of spores that reside in the stirred up topsoil.		0	13	\$30,000	\$0	\$30,000	NCDC, 2014 - Trained Spotter
7/5/2011	Thunderstorm / High Wind	Strong thunderstorms to the southeast of the greater Phoenix area generated microburst winds that moved to the northwest and into the Phoenix metropolitan area. A trained weather spotter at Gilbert and Riggs Road measured a peak wind gust of 69 mph. Other spotter reports in the area reported winds estimated between 50 and 65 mph. The official weather station at Chandler measured a 50 knot gust at 8 pm, and another 50 knot gust was recorded by the Goodyear sensor a 847 pm. The winds generated dense blowing dust, and damaged a number of trees. 10 trees were uprooted or damaged at the intersection of Arizona Avenue and Chandler Boulevard. Downed trees were also reported long Ivanhoe road in west Chandler, Chandler Heights road, and Pleasant Drive and Alma School roads. Additionally, the strong winds at Chandler airport blew a plane loose from its moorings and caused it to flip over. The flipped plane then blew into a nearby chain link fence and damaged 100 feet of the barrier.	OCOTILLO	0	0	\$80,000	\$0	\$80,000	NCDC, 2014 - Trained Spotter
7/5/2011	Thunderstorm / High Wind	A massive haboob moved across the greater Phoenix area during the evening hours on July 5, and winds were reported to be in excess of 50 knots. A trained weather spotter reported that the strong winds associated with the dust storm caused a carport to collapse near the intersection of McClintock and Ray roads.	FALFA	0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Trained Spotter
7/5/2011	Thunderstorm / High Wind	Thunderstorms with damaging microburst winds moved across the town of Buckeye during the evening hours on July 5th. Wind gusts estimated to be at least 60 knots ripped away a 5 foot wide section of the roof of Youngker high school in Buckeye. According to Jeff Simmons, Buckeye Union High School District business manager, falling debris shattered at least 2 windows on the adjacent administrative building. After the roof was damaged, rain damaged 10 classrooms at the school. Further to the south, the microburst winds toppled the Buckeye Police Department's 60 foot communications tower, crushing a shaded parking structure near the police offices. Finally, 30 trees near the Youngker campus were damaged by the thunderstorms. The school district's insurance company estimate roof repairs could reach 500 thousand dollars. A new communications tower will cost approximately 100 thousand dollars.	VALENCIA	0	0	\$600,000	\$0	\$600,000	NCDC, 2014 - Newspaper
7/9/2011	Thunderstorm / High Wind	Thunderstorms over the south central deserts produced strong downburst winds during the evening hours on July 9th. The strong winds produced a dust storm that affected the eastern portions of the greater Phoenix area, including Mesa and Apache Junction. Shortly after 8 pm, a trained weather spotter reported winds gusting to 60 mph with visibility down to one quarter mile in blowing dust at the intersection of Loop 202 and Ellsworth Roads. Additionally, the strong winds blew the awning off of a mobile home.	TWIN KNOLLS	0	0	\$2,000	\$0	\$2,000	NCDC, 2014 - Trained Spotter
7/18/2011	Thunderstorm / High Wind	Strong thunderstorms developed over southeast Arizona during the afternoon hours on the 18th, and gusty outflow winds from the storms produced a series of dust storms which affected much of western Pinal county. Trained weather spotters in the Coolidge, Casa Grande and Stanfield areas reported visibilities lowered down to near 100 feet in dense blowing dust. In addition, the dense blowing dust led to a 7 vehicle accident on Interstate 8 near mile marker 172. The accident occurred near 440 pm, and only minor injuries were reported.		0	4	\$10,000	\$0	\$10,000	NCDC, 2014 - Trained Spotter
7/18/2011	Hail	A strong thunderstorm moved across Youngtown during the early evening hours on July 18 and generated gusty winds in excess of 50 mph. A trained weather spotter reported marble sized hail ranging from one half to one inch in diameter. Visibility was lowered to around one mile in blowing dust and some tree branches were damaged.	SUN CITY	0	0	\$500	\$0	\$500	NCDC, 2014 - Trained Spotter

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
7/18/2011	Thunderstorm / High Wind	Thunderstorms with damaging microburst winds moved through the Sun City area during the early evening hours on July 18th. The strong winds damaged a number of trees at several area golf courses. According to Brian Duthu, Director of golf, five trees, including palms and pines, were lost at Sun City North course. A peak wind gust of 56 mph was measured at the North course. Four trees were lost at the Lakes West golf course. In addition to the wind, locally heavy rain occurred with the storms. 1.65 inches of rain was recorded at the North course, however no significant flooding was reported with the heavy rainfall.	SUN CITY	0	0	\$14,000	\$0	\$14,000	NCDC, 2014 - Newspaper
7/25/2011	Lightning	Early morning thunderstorms produced a damaging lightning strike over Central Phoenix on July 25th. At approximately 330 am, the lightning strike caused a large branch to fall from a tree, severely damaging the carport directly underneath. No damage was reported to the 2 cars within the carport. The damage was reported by a trained NWS weather spotter located at 48th street and Mcdowell road.	KENDALL	0	0	\$4,000	\$0	\$4,000	NCDC, 2014 - Trained Spotter
7/30/2011	Lightning	A 39 year old east Mesa man was knocked off of a ladder after a lightning bolt struck nearby. The lightning bolt did not strike the man directly. The impact was near the intersection of Warner and Meridian roads. The man was awake and responding to crews arriving from the Mesa fire department and he was taken to a local hospital as a precaution.	(CHD)WILLIAMS A	1	0	\$0	\$0	\$0	NCDC, 2014 - Newspaper
7/31/2011	Thunderstorm / High Wind	A trained weather spotter in the Gilbert area reported that a large tree was downed near Higley and Baseline roads. The tree was downed by strong thunderstorm winds estimated to be around 50 knots. A former National Weather Service employee sent in a photo of another large tree that was downed at the intersection of Hunt and Gilbert roads.	BUCKHORN	0	0	\$3,000	\$0	\$3,000	NCDC, 2014 - Trained Spotter
7/31/2011	Thunderstorm / High Wind	Thunderstorms produced strong damaging microburst winds over portions of Gilbert during the early evening hours on July 31st. A former National Weather Service employee reported that extensive damage was done to the Solera subdivision. Microburst wind gusts estimated to be in excess of 60 knots, damaged at least 110 trees, with 67 of the trees blown down. Additional damage was done to various structures in the community, including a block wall that was blown down.	OCOTILLO	0	0	\$100,000	\$0	\$100,000	NCDC, 2014 - NWS Employee
7/31/2011	Thunderstorm / High Wind	Strong thunderstorms over central Phoenix produced damaging microburst wind gusts estimated by weather service radar to be approximately 60 mph. As reported by several local media sources, the winds downed several power poles and damaged residential structures in the vicinity of 27th Avenue and Van Buren. The damage included backyard sheds as well as roof shingles. Damage occurred near 930 pm on the evening of July 31st.	PHOENIX FARM A	0	0	\$50,000	\$0	\$50,000	NCDC, 2014 - Broadcast Media
8/3/2011	Thunderstorm / High Wind	Thunderstorms in the greater Phoenix area produced strong and damaging wind gusts during the evening hours on August 3rd. A trained weather spotter reported that a large mesquite tree was downed near the 303 and Greenway road. Wind gusts were estimated to be in excess of 50 knots.	WADDELL	0	0	\$2,000	\$0	\$2,000	NCDC, 2014 - Trained Spotter
8/3/2011	Thunderstorm / High Wind	Thunderstorms produced damaging microburst winds across portions of the northwestern greater Phoenix area during the evening hours on August 3rd. According to reports from local broadcast media, 8 power poles were blown down on 59th Avenue between Union Hills and Bell road in Glendale. Also, there was a residential roof collapse and fire due to the downed power lines along that same stretch of 59th Avenue and Michigan.	GLENDALE MUNI A	0	0	\$80,000	\$0	\$80,000	NCDC, 2014 - Broadcast Media
8/18/2011	Wildfire	Tortilla Fire - located in eastern Maricopa County approximately 15 miles NE of Apache Junction. The lightning caused fire burned 1,602 acres. No reported injuries or deaths and no reported property damage. Fire suppression costs were estimated to exceed \$7,500.	Eastern Maricopa Cou	0	0	\$0	\$0	\$0	NWCG, 2014
8/22/2011	Extreme Heat/Cold	Strong high pressure and a dry airmass led to excessive heat over the lower deserts of Arizona, starting Monday August 22nd and continuing through the end of the month. The hottest days during the heat wave were the first five, Monday through Friday, when the highs at Phoenix ranged from 113 to 117 degrees. The five consecutive days at or above 113 ties for the third longest streak of days with a high of 113 or greater. The 117 degree maximum on Friday August 26 not only broke the record for the date, but was the latest 117 degree maximum ever recorded, and the highest temperature ever recorded for the month of August. The extreme heat led to the deaths of two people in the Phoenix area. A 70 year old woman was found dead Wednesday morning in her Surprise home after her air conditioner failed and the temperature rose to 107 degrees. Surprise Fire Captain Renee Hambin indicated that the cause of death was obviously related to the excessive heat inside her home. Additionally, a 75 year old Glendale man was found dead in his home on Thursday August 25th. Police went to his home as part of a welfare check and found him dead with the air conditioner blowing hot air and the temperature in excess of 100 degrees. Police Sgt. Brent Coombs said that the heat was definitely a factor in the man's death.		0	2	\$0	\$0	\$0	NCDC, 2014 - Fire Department/Rescue
8/26/2011	Thunderstorm / High Wind	Isolated high based thunderstorms developed in the Wickenburg area during the late afternoon hours on August 26th. The storms generated strong gusty winds, estimated by local law enforcement to be upwards of 70 mph. The strong winds downed several power poles which caused the area near North Vulture Mine Road and Easy Street to be closed to traffic.	MATTHIE	0	0	\$25,000	\$0	\$25,000	NCDC, 2014 - Law Enforcement
9/10/2011	Thunderstorm / High Wind	Scattered thunderstorms with strong and damaging winds moved across the eastern portions of the greater Phoenix area during the evening hours on September 10th. According to a National Weather Service storm survey in Mesa, winds estimated to be at least 60 knots downed multiple trees with diameters up to 14 inches. In addition, the winds caused shingle damage to area homes.	BUCKHORN	0	0	\$25,000	\$0	\$25,000	NCDC, 2014 - NWS Storm Survey
9/10/2011	Thunderstorm / High Wind	Scattered thunderstorms with strong damaging winds moved across eastern portions of the greater Phoenix area during the evening hours on September 10th. According to reports from local broadcast media, 7 power poles were downed in the city of Mesa at the intersection of University Drive and 70th Street. Winds were estimated to be near 60 knots.	GOLDEN HILLS	0	0	\$50,000	\$0	\$50,000	NCDC, 2014 - Broadcast Media
9/10/2011	Thunderstorm / High Wind	Strong thunderstorms with damaging microburst winds affected part of the eastern Phoenix metropolitan area during the evening hours on September 10th. A trained weather spotter, near Brown and Ellsworth roads in east Mesa, reported that trees were downed due to winds estimated at 70 mph.	TWIN KNOLLS	0	0	\$20,000	\$0	\$20,000	NCDC, 2014 - Trained Spotter
9/10/2011	Thunderstorm / High Wind	Strong thunderstorms with damaging winds moved across the northeastern portions of the greater Phoenix area during the evening hours on September 10th. A trained weather spotter reported that numerous large tree branches were blown down near the intersection of Scottsdale road and Westland Road, a few miles south of Carefree. Winds were estimated to be in excess of 50 knots.	CAVE CREEK	0	0	\$12,000	\$0	\$12,000	NCDC, 2014 - Trained Spotter

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
9/10/2011	Thunderstorm / High Wind	Scattered thunderstorms with strong damaging wind moved across the eastern greater Phoenix area during the evening hours on September 10th. At 830 pm a trained weather spotter in Chandler reported that several tree branches as large as 9 inches in diameter were broken off by strong wind. At approximately 8 pm, local media reported a number of trees down in northeast Gilbert, between Elliot and Baseline roads on Val Vista.	SUN LAKES	0	0	\$15,000	\$0	\$15,000	NCDC, 2014 - Trained Spotter
9/11/2011	Extreme Heat/Cold	On the morning of September 11th, a 31 year old Missouri man and his friend decided to hike up South Mountain. The Missouri man was in town to watch the ASU/Missouri football game on Saturday the 10th. The two men went hiking in South Mountain Preserve Sunday morning and left with both water and a map. According to Scott Walker of the Phoenix Fire Department, they got lost and ran out of water at approximately 11 am and became disoriented. The hikers were deep in the mountains when a 12:40 pm emergency call was made. The Missouri man was found dead at 2 pm and rescuers indicated he died from heat stroke and dehydration. The second man survived and did not need hospitalization. The high temperature at Phoenix on Sunday was 99 degrees and some of the hotter deserts reached triple digits.		0	1	\$0	\$0	\$0	NCDC, 2014 - Newspaper
9/24/2011	Thunderstorm / High Wind	Isolated to scattered showers developed across the central Arizona deserts during the evening hours on September 24th. No lightning was reported in the greater Phoenix area, however the very dry lower atmosphere allowed strong gusty winds to develop near the showers and associated virga. A local utility company reported that power lines were down on Sherman Street between 19th Avenue and 23rd Avenue, and resulted in the loss of power to 1100 customers. The damaging winds were sub severe and according to radar estimates and surrounding observations ranged from 40 to 45 mph.	PHOENIX	0	0	\$30,000	\$0	\$30,000	NCDC, 2014 - Utility Company
10/4/2011	Thunderstorm / High Wind	Thunderstorms developed over the south central deserts during the early afternoon hours on October 4th. The storms produced gusty outflow winds; due to very dry conditions the winds generated dust storm conditions in the Casa Grande area. According to the Department of Highways, a major accident occurred near 240 pm, which involved eight vehicles. The accident was located at milepost 190, about 4 miles north of Casa Grande on Interstate 10. No fatalities were reported, but there were two serious, yet non life-threatening injuries. East bound lanes of Interstate 10 were closed for an hour due to the accident. Additionally, there were two other crashes later in the day which likely were the result of dust. A crash involving two tractor-trailers and a small car on Interstate 10 near the Gila River Indian Community south of Phoenix seriously injured two people. Another crash occurred on Interstate 10 near Tonopah, but it did not involve serious injuries.		0	4	\$100,000	\$0	\$100,000	NCDC, 2014 - Department of Highways
11/4/2011	Thunderstorm / High Wind	A cold front moved east across the greater Phoenix area during the late evening hours on November 4th. Isolated weak thunderstorms developed in the vicinity of the cold front. The combination of the front and the thunderstorm downdrafts produced gusty and damaging winds. A trained weather spotter reported that strong winds blew down a tree 1/8th of a mile west of the intersection of Germann and Power roads in Gilbert. The spotter estimated the tree height at 20 feet, and the diameter at 1 foot. Peak wind gusts were estimated to be around 60 knots.	GERMANN	0	0	\$1,500	\$0	\$1,500	NCDC, 2014 - Trained Spotter
5/9/2012	Thunderstorm / High Wind	Southeast flow ahead of a vigorous upper level low pressure system spread moisture into south central Arizona on May 9th. This led to the development of scattered thunderstorms over the central deserts during the afternoon and early evening hours. A few storms in the greater Phoenix area produced damaging microburst winds, estimated to be 50 knots or higher. According to SRP, a local utility company, the winds downed 9 12-kilovolt poles, most of them in north-central Phoenix. Over 4800 people were without power at the peak of the storms.	PHOENIX	0	0	\$70,000	\$0	\$70,000	NCDC, 2014 - Utility Company
5/9/2012	Thunderstorm / High Wind	An upper level low pressure system moving east across southern Arizona spread moisture into eastern Arizona and led to scattered thunderstorms across the central deserts during the afternoon hours on May 9th. A few storms generated gusty and damaging winds estimated to be in excess of 60 knots. At 439 PM, a trained weather spotter reported that small trees and large limbs were down over the road at Ray and Cooper in Gilbert. Another weather spotter in Chandler reported that three large trees, all of them 36 inches wide, were blown over near south Dobson road and East Market Place at approximately 5 PM. Pictures of the downed trees were taken and sent to the Phoenix WCM.	GILBERT	0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Trained Spotter
5/9/2012	Thunderstorm / High Wind	An upper level low moving east across southern Arizona spread moisture into south central Arizona and led to scattered thunderstorms during the afternoon and evening hours on May 9th. Some of the storms in the Gila Bend area produced damaging microburst winds with peak gusts estimated to be at least 60 knots. As reported by the local utility company, at approximately 615 PM the gusty winds downed a tree which blocked traffic on Pima Road and Highway 85. Construction debris from Interstate 8 and Bypass 85 was strewn about by the strong winds. In addition, power lines were downed by sustained winds reported to be in excess of 45 mph and this left most of the town of Gila Bend without power.	GILA BEND	0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Utility Company
5/12/2012	Wildfire	Sunflower Fire - located in northern Maricopa County approximately 30 miles north of Mesa. The unknown caused fire burned 17,446 acres. There were 6 reported firefight related injuries and no reported deaths. The fire threatened 2 residences, 2 out-buildings, the Cross F Ranch, and an APS 345 KV power line. No reported property damage. Fire suppression costs were estimated to exceed \$600K.	Northern Maricopa Co	0	6	\$0	\$0	\$0	NWCG, 2014
5/26/2012	Thunderstorm / High Wind	A Pacific low pressure system and associated cold front moved to the northeast and across the central Arizona deserts during the day on May 26th. The frontal passage produced occasional strong and gusty winds, with peak gusts estimated to be in excess of 35 mph. According to the Arizona Republic, at 1045 in the morning, a wind gust estimated to be around 40 mph caused a 500 pound fence to topple over. The fence, which moved back and forth on a wheel, apparently gave way in a strong wind gust and fell on a 2 year boy, causing his death. The fence struck the young boy in the head.		1	0	\$0	\$0	\$0	NCDC, 2014 - Newspaper
7/10/2012	Thunderstorm / High Wind	Isolated thunderstorms developed during the evening hours across the central Arizona deserts. Some of the storms produced gusty and damaging outflow winds. At 945 pm, a trained weather spotter 5 miles northeast of Glendale reported a tree blown down at 52nd Avenue and Thunderbird road. The wind gusts were estimated to be around 50 knots.	PHOENIX TURF AR	0	0	\$2,000	\$0	\$2,000	NCDC, 2014 - Trained Spotter
7/12/2012	Thunderstorm / High Wind	Thunderstorms, which developed over the south central Arizona deserts during the evening hours on July 11th, persisted into the early morning hours on July 12th. Although most of the storms produced locally heavy rainfall, a few managed to generate gusty and damaging outflow winds. According to local broadcast media, shortly after midnight wind gusts estimated at 60 knots blew down a billboard at 24th Street and University. A few large trees were also uprooted. The damage occurred about 2 miles west of Phoenix Sky Harbor airport.	(PHX)SKY HARBOR	0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Broadcast Media

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
7/14/2012	Flooding / Flash Flooding	Numerous thunderstorms developed across the greater Phoenix area during the afternoon hours on July 14th, especially across the southeast valley. Due to the very moist and unstable airmass in place, most of the storms generated locally heavy rain, with the highest rain rates observed to be in excess of 2 inches per hour. According to a trained weather spotter in Gilbert, 2.25 inches of rain fell between 330 pm and 430 pm at a home located at Val Vista and Elliot roads. The heavy rain led to some street flooding at the San Tan Village Mall. Marble sized hail also occurred, along with some gusty winds that damaged a few trees in the area.	GILBERT	0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Trained Spotter
7/14/2012	Thunderstorm / High Wind	Numerous thunderstorms developed across the greater Phoenix metropolitan area during the afternoon hours on July 14th. Due to the very wet and unstable nature of the airmass, most of the thunderstorms produced very heavy rain. A few generated wet microbursts with damaging winds. At 345 pm, a Weather Service employee reported that numerous trees had been blown down at the San Tan Village Mall in Gilbert Ranch. One of the trees was about 40 feet tall and it fell over and landed on an automobile, causing significant damage. Peak wind gusts were estimated to be about 65 knots. No injuries were reported.	HIGLEY	0	0	\$20,000	\$0	\$20,000	NCDC, 2014 - NWS Employee
7/14/2012	Flooding / Flash Flooding	Numerous thunderstorms developed across the greater Phoenix metropolitan area, especially the southeastern valley communities, during the afternoon hours on July 14th. Due to the very moist and unstable nature of the atmosphere, the storms generated intense rainfall which led to episodes of flash flooding. Heavy rain in excess of 2 inches fell in the Gilbert area between 330 pm and 430 pm. During the peak of the heavy rainfall, approximately 1.5 inches of rain fell within 10 minutes, causing the collapse of the roof at Tees and More located at 313 North Gilbert Road. According to the store owners, Pete and Barb Addiego, the roof collapse caused at least 110 thousand dollars in damaged equipment and inventory. Fortunately, no injuries were reported.	GILBERT	0	0	\$110,000	\$0	\$110,000	NCDC, 2014 - Newspaper
7/14/2012	Thunderstorm / High Wind	Widespread thunderstorms developed over the greater Phoenix metropolitan area during the afternoon hours on July 14th. Due to the very moist and unstable nature of the airmass, most of the storms generated very heavy rain. However, isolated storms produced wet microbursts with damaging winds across southeastern portions of the Phoenix area. At 404 pm, a trained weather spotter located in Gilbert reported several trees down along Greenfield road between Ray and Warner roads. The largest trees were around 12 inches in diameter. Peak wind gusts were estimated to be about 65 knots. No injuries were reported due to the fallen trees.	HIGLEY	0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Trained Spotter
7/14/2012	Flooding / Flash Flooding	Scattered thunderstorms developed across south central Arizona during the afternoon hours on Saturday July 14th, and they produced locally heavy rainfall which led to episodes of flash flooding in the Wickenburg area. A Flash Flood Warning was issued for Wickenburg at about 5 pm in the afternoon. According to the Maricopa County Sheriff's Department, a 65 year old man died as he attempted to drive across the Hassayampa wash/river near Wickenburg. As he attempted to drive through the wash, the swiftly flowing water carried his vehicle about one quarter of a mile downstream and into some brush, causing him to drown. No other details were made available. In addition to the fatality, crews were dispatched to four water rescues during the evening hours on Saturday according to Kevin Pool of the Wickenburg Fire Department. One such rescue occurred north of town along US highway 93 in a neighborhood near a wash. In that incident the person was rescued from the top of his vehicle by sheriff's helicopter and taken to a hospital for observation.	WICKENBURG	1	0	\$0	\$0	\$0	NCDC, 2014 - Law Enforcement
7/21/2012	Thunderstorm / High Wind	Scattered thunderstorms developed across southeast Arizona during the afternoon hours on July 21st. The storms generated strong outflow winds in excess of 40 mph which spread to the northwest and picked up massive quantities of dust. A dust storm was created which moved into the the southeast portion of the greater Phoenix metropolitan area after 430 pm...and continued to overspread the area through 630 pm. Numerous trained weather spotters reported dust storm conditions with winds gusting in excess of 40 mph, and visibilities below one quarter mile in dense blowing dust. A trained spotter 4 miles west of Apache Junction reported a dust storm at 447 pm, with 40 mph winds and visibility below one eighth of a mile. At 527 pm a storm chaser near Firebird Lake reported a dust storm with periods of visibility down to 100 feet. Another trained spotter near Firebird Lake reported that emergency vehicles had responded to an accident caused by the blowing dust. Finally, at about 5 pm a trained spotter near Seville reported a wind gust to 52 mph along with zero visibility in dense blowing dust.		0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Trained Spotter
7/21/2012	Thunderstorm / High Wind	Scattered strong thunderstorms developed across southeast Arizona during the afternoon hours on July 21st. They generated strong gusty outflow winds in excess of 40 mph which moved into the greater Phoenix area during the late afternoon and produced dense blowing dust. Some of the storms then moved into the southeast portions of the greater Phoenix area and produced strong, damaging microburst winds which enhanced the earlier outflow winds. A trained weather spotter in far East Mesa reported a variety of wind damage at approximately 545 pm. He reported damage to an awning, a carport taken off by wind, windows blown out and cactus trees blown over.	BUCKHORN	0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Trained Spotter
7/21/2012	Thunderstorm / High Wind	Scattered thunderstorms moved into the greater Phoenix metropolitan area during the evening hours on July 21st. The storms were accompanied by strong gusty outflow winds, and dense blowing dust. Some of the storms generated damaging microburst winds as well. At 710 pm, there was a public report of 2 trees downed by wind about 6 miles east of Peoria. The wind gusts were estimated to be about 60 knots, and the trees were rather large with diameters of 12 inches.	PHOENIX DEER VL	0	0	\$2,000	\$0	\$2,000	NCDC, 2014 - Public
7/28/2012	Flooding / Flash Flooding	Scattered thunderstorms developed across northeast Maricopa county during the afternoon hours on July 28th, and some of them produced locally heavy rainfall. At about 4 pm, the upper Sycamore Creek Canyon precipitation gage on the upper portion of the burn reported 0.87 inches of rain within a 15 minute period. This amount of rain, coupled with additional rainfall, led to flash flooding along Sycamore Creek as well as the burn area and the community of Sunflower. At 551 pm, DPS reported that Sycamore wash was flooding with water reaching homes in Sunflower. At 556 pm, a report from ArizonaNewsnet indicated a flood approaching the Sycamore Creek Beeline Highway bridge at milepost 212. Additional reports near 6 pm indicated water was out of the banks of the Sycamore creek and covering area roads in and around Sunflower.	SUNFLOWER	0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - County Official
7/29/2012	Thunderstorm / High Wind	Thunderstorms developed during the afternoon hours on July 29th and they affected portions of the greater Phoenix area, including the community of Fountain Hills. Some of the thunderstorms produced damaging microburst wind gusts estimated to be at least 65 knots. According to local broadcast media reports, at approximately 230 pm, the strong winds uprooted trees in Fountain Hills and also damaged roof tiles on some homes.	FOUNTAIN HILLS	0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Broadcast Media

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
7/31/2012	Flooding / Flash Flooding	Isolated strong thunderstorms developed across the northern portions of the greater Phoenix area during the afternoon hours on July 31st. During the late afternoon the storms congealed and intensified in the Anthem area, and they produced excessive rainfall which led to episodes of flash flooding. Radar indicated that peak rainfall rates were in excess of 3 inches per hour, and one weather observer measured more than 5 inches of rain within 90 minutes. According to the Anthem Fire Department and Rescue, the heavy rain filled up the Deadman Wash drainages in town and overflowed, leading to severe flooding in a number of homes. Much of the flooding occurred between 6 pm and 7 pm. At about 610 pm flood waters backing up in the wash overtopped a brick wall behind a home causing the wall to collapse. Flood waters then poured into the home, located at 40715 North Erickson Lane, causing severe flood damage. As the wall collapsed, the flood waters slammed into the homeowner, carrying her across the yard and causing injuries to her.	NEW RIVER	0	1	\$10,000,000	\$0	\$10,000,000	NCDC, 2014 - Fire Department/Rescue
7/31/2012	Thunderstorm / High Wind	Isolated strong thunderstorms developed across portions of the greater Phoenix metropolitan area during the afternoon hours on July 31st. During the latter portion of the afternoon, a few storms in the Anthem area congealed and intensified. As the storms grew stronger, they produced damaging microburst winds, small hail and very heavy rain. At 630 pm, a trained weather spotter 2 miles north of Anthem reported that gusty microburst winds had torn up a number of trees throughout his neighborhood. The peak wind gusts were estimated to be in excess of 60 knots. In addition, the storms produced half inch hail and very heavy rain.	NEW RIVER	0	0	\$15,000	\$0	\$15,000	NCDC, 2014 - Trained Spotter
7/31/2012	Flooding / Flash Flooding	Isolated strong thunderstorms developed across the northern portions of the greater Phoenix area, including the community of Anthem, during the afternoon hours on July 31st. As the afternoon progressed, the storms congealed and intensified, and they produced extremely heavy rain with peak rainfall rates in excess of 3 inches per hour. One weather observer in Anthem measured over 5 inches of rain within 90 minutes ending about 630 pm. The heavy rain caused the Deadman Wash in Anthem to run heavily, and then flood within the town itself. The floodwaters then moved downstream to the southwest of Anthem, and to the west of Interstate 17. Eventually the floodwaters reached the Carefree Highway and the swiftly flowing water trapped a number of unsuspecting motorists. Reports received from local broadcast media indicated that a number of swift water rescues were needed where Deadman Wash crossed the Carefree Highway. At about 830 pm, 9 persons were rescued including one infant. Helicopters were used in the rescue process. Footage of the rescues was shown on local television channels during the evening news.	NEW RIVER	0	0	\$50,000	\$0	\$50,000	NCDC, 2014 - Broadcast Media
8/12/2012	Wildfire	Charley Fire - located in northern Maricopa County approximately 3 miles west of Sunflower. The lightning caused fire burned 2,300 acres. There was 1 reported firefight related injury and no reported deaths. The fire threatened an APS 345 KV power line. No reported property damage. Fire suppression costs were estimated to exceed \$1.1M.	Northern Maricopa Co	0	0	\$0	\$0	\$0	NWCG, 2014
8/14/2012	Thunderstorm / High Wind	Isolated to scattered thunderstorms developed across portions of the greater Phoenix metropolitan area during the late evening hours on August 14th. Partly due to the excessive heat that occurred during the day, the thunderstorms were able to generate strong, gusty and damaging microburst winds well into the evening hours. According to Brad Greer, Park Ranger with the town of Queen Creek, a large metal football light pole was blown down during the evening thunderstorms. Time of the storms was estimated to be near 1030 pm, and the wind gusts were estimated to be at least 65 knots. The light pole was located at the Queen Creek Middle School in Queen Creek, at the intersection of Queen Creek and Ellsworth Roads. Fortunately, no injuries occurred due to the falling light pole.	QUEEN CREEK	0	0	\$25,000	\$0	\$25,000	NCDC, 2014 - Public
8/16/2012	Flooding / Flash Flooding	Scattered thunderstorms developed across northern portions of Maricopa county during the evening hours on August 16th, and they produced locally heavy rain with rain rates in excess of one inch per hour. Radar and rain gage data indicated some locations picked up between one half and one and a half inches of rain, especially areas to the north of Surprise. The heavy rain led to excessive urban flooding, which transitioned into flash flooding. A Flash Flood Warning was not issued, however an Urban and Small Stream Flood Advisory was in effect as of 9 pm for portions of north central Maricopa county. As seen on a channel 15 television interview, significant street flooding occurred in portions of Surprise with water at least one foot deep in places. Pondered water approached several homes and actually flowed into the first floor of at least one home, causing significant damage. According to local law enforcement, multiple cars were washed off the road near Dale Lane and 170th Avenue. Rain falling north of the area caused washes to flow rapidly, and water from a flooding wash flowed over the road, trapping a number of drivers. Surprise fire Captain Kevin Spirlong indicated that there were multiple swift water rescues; rescue units had to pluck people from 8 vehicles. It took about 30 firefighters from 6 local agencies to get the residents from the wash which was located near 173rd Avenue and Dixieleta Road. The swift water rescues took place from around 10 pm to midnight. Surprise police spokesman Mark Ortega indicated that there was damage to some of the roads as a result of the flooding and the roads were going to be tested for safety. Fortunately, no injuries were reported as a result of the flash flooding.	WITTMANN	0	0	\$500,000	\$0	\$500,000	NCDC, 2014 - Law Enforcement
8/20/2012	Thunderstorm / High Wind	Scattered thunderstorms developed across the greater Phoenix metropolitan area during the late afternoon hours on August 20th and they affected the community of Chandler. The storms generated strong and gusty microburst winds, with peak gusts estimated to be at least 70 knots. Local broadcast media reported that numerous trees were downed across the Chandler Fashion Center north parking lot and along the Loop 101 near Chandler Boulevard. This occurred at approximately 7 pm. Tree trunk diameters were estimated to almost 12 inches at the largest, with additional downed limbs approaching 6 inches in diameter. In addition, at 720 pm a trained weather spotter in Chandler reported trees downed near the intersection of Chandler Boulevard and the 101.	HIGHTOWN	0	0	\$40,000	\$0	\$40,000	NCDC, 2014 - Broadcast Media
8/20/2012	Thunderstorm / High Wind	Scattered thunderstorms developed over the greater Phoenix area during the afternoon and early evening hours on August 20th. Some of the thunderstorms generated both very heavy rain and strong, gusty and damaging microburst winds. According to a trained weather spotter in East Mesa, at 715 pm thunderstorm wind gusts estimated to be at least 65 knots blew down a carport and caused damage to the roof of the home to which the carport was attached. In addition, a number of tree branches with diameters up to 3 inches were downed in the area.	BUCKHORN	0	0	\$20,000	\$0	\$20,000	NCDC, 2014 - Trained Spotter
8/20/2012	Thunderstorm / High Wind	Scattered thunderstorms developed across the greater Phoenix area during the afternoon and early evening hours on August 20th and they affected east valley communities which included Mesa and Superstition Springs. Due to the very moist and unstable nature of the atmosphere, the storms generated strong, gusty and damaging microburst winds. According to a report from the public, at 730 pm gusty winds estimated to be at least 65 knots completely blew down a section block wall at the intersection of Kiowa and Roslyn Street in Mesa. The block wall was at least 20 feet in length.	DESERT SANDS	0	0	\$2,000	\$0	\$2,000	NCDC, 2014 - Public

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
8/23/2012	Flooding / Flash Flooding	A large convective complex developed across the greater Phoenix metropolitan area during the early morning hours on August 23rd. The combination of a weather disturbance and a very humid and unstable airmass allowed the thunderstorms to produce copious amounts of rainfall, with peak rain rates well in excess of 2 inches per hour. Heavy rain began around 130 AM and persisted into the early morning. At 255 AM, a trained weather spotter about 2 miles northeast of Phoenix Sky Harbor Airport reported that he had measured 2 inches of rain since 2 AM. The excessive rain led to significant urban flooding as well as flash flooding; water was reported to be flowing into at least one home in the area. Although no Flash Flood Warnings were in effect at the time, a Flash Flood Watch was in effect through 5 AM, and Urban and Small Stream Flood Advisories were also in effect for central Phoenix. No injuries were reported as a result of the flooding.	KENDALL	0	0	\$40,000	\$0	\$40,000	NCDC, 2014 - Trained Spotter
8/23/2012	Flooding / Flash Flooding	A convective complex developed across the greater Phoenix metropolitan area during the early morning hours on August 23rd. The combination of a passing weather disturbance and a very humid and unstable airmass allowed the thunderstorms to produce copious rainfall with peak rain rates well in excess of 2 inches per hour. Heavy rain began in central Phoenix around 130 AM and continued into the early morning hours. According to broadcast media reports, a van became stuck in a flooded wash at 7700 East Roosevelt Street at about 452 AM. The wash was located about 3 miles east of Papago Park. As a result, the Scottsdale Fire and Rescue Unit performed a water rescue to save the occupants of the van from the flood waters. No Flash Flood Warnings were in effect at the time, however a Flash Flood Watch was in effect through 5 AM, and Urban and Small Stream Flood Advisories had been issued earlier for the area. Fortunately, no injuries were reported as a result of the flash flooding.	SCOTTSDALE	0	0	\$30,000	\$0	\$30,000	NCDC, 2014 - Broadcast Media
8/23/2012	Flooding / Flash Flooding	A large convective complex developed across the greater Phoenix metropolitan area during the early morning hours on August 23rd. The combination of a passing weather disturbance and a very humid airmass allowed thunderstorms to produce excessive rainfall with peak rain rates in excess of 2 inches per hour. Heavy rains began in the central Phoenix area by 130 AM, and persisted into the early morning hours. According to the local Department of Highways, mud and debris were blocking the right 3 lanes of eastbound Interstate 10 at about 515 AM. The debris flow was a result of flash flooding. The blockage was located 2 miles east of Tolleson. Although Flash Flood Warnings were not issued, a Flash Flood Watch was in effect through 5 AM. Earlier, Urban and Small Stream Flood Advisories were issued for the central Phoenix area.	WEST END	0	0	\$25,000	\$0	\$25,000	NCDC, 2014 - Department of Highways
8/23/2012	Flooding / Flash Flooding	A large convective complex developed across the greater Phoenix metropolitan area, including the community of Wittman, during the very early morning hours on August 23rd. The combination of a weather disturbance and a very humid and unstable airmass allowed the thunderstorms to produce locally heavy rainfall, with peak rain rates in excess of 2 inches per hour. The first rains began shortly after midnight, and continued into the early morning hours. At approximately 350 AM, local Fire Department and Rescue units reported a water rescue at 211th Avenue and West Montgomery Road, one mile southeast of the town of Wittman. A vehicle was stuck in rapidly rising water, and the occupants needed to be rescued. Although no Flash Flood Warning were in effect at the time, an Urban and Small Stream Flood Advisory was in effect and continued through 4 AM. No injuries were reported due to the flash flooding.	WITTMANN	0	0	\$40,000	\$0	\$40,000	NCDC, 2014 - Fire Department/Rescue
8/23/2012	Flooding / Flash Flooding	A large convective complex developed across south central Arizona, including the greater Phoenix area, during the early morning hours on August 23rd. The combination of a passing weather disturbance and a very humid airmass allowed thunderstorms to produce excessive rain, with peak rain rates in excess of 2 inches per hour. The heavy rains initially developed in the Wittmann area after 130 AM, but they persisted off and on through sunrise. According to a trained weather spotter 2 miles southwest of Wittmann, at about 6 AM flooding was reported along Patton Road. Water up to 6 inches deep was reported to be flowing across the road for at least a one mile stretch of the roadway. Flash Flood Warnings were not in effect at the time, but an Urban and Small Stream Flood Advisory had been issued and was in effect through 9 AM. No injuries were reported in association with the flash flooding.	WITTMANN	0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Trained Spotter
8/24/2012	Thunderstorm / High Wind	Scattered thunderstorms developed across the northern portions of the greater Phoenix area, including the community of Scottsdale, during the afternoon hours on August 24th. The stronger storms generated both locally heavy rain and gusty, damaging microburst winds. According to a trained weather spotter located 4 miles northwest of Scottsdale, gusty winds estimated to be at least 60 knots blew down a number of trees with diameters of at least 8 inches. Heavy rain that accompanied the storms lowered visibility to near zero and led to some urban street flooding.	CAVE CREEK	0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Trained Spotter
9/7/2012	Flooding / Flash Flooding	Scattered to numerous showers and thunderstorms developed across the greater Phoenix metropolitan area, including the community of Mesa, during the morning hours on September 7th. Peak rainfall rates during the height of the storms, based on radar estimates and rain gage reports, exceeded 2 inches per hour. Heavy rain began by 830 am, and later prompted the issuance of a Flash Flood Warning at 953 am. The warning, which included Mesa, ran through 1130 am. According to an article and video posted on ABC15.com, significant flash flooding occurred near the intersection of Recker and Main in Mesa. Several homes in a gated community suffered significant water damage as the street turned into a river, and water flowed into the homes. C.J. Zollner was moving into her home when the rising water flowed into the garage and first floor; most of her belongings were stored in the garage and were damaged or destroyed. Drywall on the first floor needed replacing. The water also damaged her car to the point that it would not start. Several feet from her home, a large block wall toppled over as deepening water ponded behind the wall, increasing pressure on it and causing its collapse.	BUCKHORN	0	0	\$300,000	\$0	\$300,000	NCDC, 2014 - Broadcast Media
9/7/2012	Flooding / Flash Flooding	Scattered to numerous showers and thunderstorms, some with locally heavy rain, developed across the greater Phoenix area during the morning hours on September 7th. Peak rainfall rates at the height of the storms exceeded 2 inches per hour, and the heavy rain led to widespread urban flooding of streets and washes, which affected the community of Scottsdale. According to an on-line article and a taped interview on ABC15.com, heavy morning rains caused flooding of the Indian Bend Wash Greenway near the intersection of Miller and Osborn roads. As the wash flooded the surrounding streets, some drivers were turned back by the deepening waters. One woman, Alex Luga, turned into a parking lot on an adjacent golf course and left for a short period of time. After she returned to her SUV, she found that it was stuck in water that was knee deep. Three drivers stopped to help pull her stranded SUV from the flooded parking lot. The flood waters receded quickly by early afternoon after the thunderstorms had ended.	SCOTTSDALE	0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Broadcast Media

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
9/7/2012	Flooding / Flash Flooding	Scattered to numerous showers and thunderstorms developed across the greater Phoenix metropolitan area, including the community of Mesa, during the morning hours on September 7th. Peak rainfall rates during the height of the storms, based on radar estimates and rain gage reports, exceeded 2 inches per hour. Heavy rain began by 830 am, and later prompted the issuance of a Flash Flood Warning at 953 am. The warning, which included Mesa, ran through 1130 am. According to an on-line article seen on ABC15.com, heavy rains sent a river of water washing across University Drive at Power road in Mesa. The river of flowing water was at least 2 feet deep in some places, and it stopped 4 drivers dead in their tracks. The water was up past the door on several vehicles, and caused some of them to float. Mesa and Rural Metro firefighters came to the rescue of the stranded drivers and pulled them all to safety. In a taped ABC 15 interview, neighbors who lived near Power Road and University for decades said that they were scared by the strength of the storms. Wendy Kruse said that it was the worst that she had ever seen.	GOLDEN HILLS	0	0	\$80,000	\$0	\$80,000	NCDC, 2014 - Broadcast Media
9/7/2012	Flooding / Flash Flooding	Scattered to numerous showers and thunderstorms developed across the greater Phoenix metropolitan area, including the community of Mesa, during the morning hours on September 7th. Peak rainfall rates at the height of the storm were in excess of 2 inches per hour, based on radar estimates and rain gage reports. The excessive rain led to an Urban and Small Stream Advisory at 934 am, followed shortly afterward by a Flash Flood Warning which included the community of Mesa. The warning was in effect until 1130 am. According to a on-line article on ABC15.com, the Mi Casa Rehabilitation Center - a retirement community - was filled with water. The center was built around a canal, so the excessive rain caused the area to flood, with flowing water several feet deep reported in some parts of the community. Fortunately, the buildings and surrounding homes were built on elevated platforms, so they were not threatened by the flash flooding. In addition, a canal near Broadway and Power roads overflowed, trapping a motorist in the flood waters. The car, as seen on a taped ABC 15 interview, was nearly submerged in the middle of the flooded canal.	GOLDEN HILLS	0	0	\$30,000	\$0	\$30,000	NCDC, 2014 - Broadcast Media
9/7/2012	Flooding / Flash Flooding	Scattered to numerous showers and thunderstorms developed across the greater Phoenix area during the morning hours on September 7th, and they continued into the afternoon hours over portions of the west valley. Peak rainfall rates at the height of the morning thunderstorms exceeded 2 inches per hour. The heavy rain caused some of the washes in the west valley to fill quickly and to run heavily during the afternoon hours. According to an on-line article and taped interview on ABC15.com, a Century Link employee became stuck on top of his vehicle in the Waterman wash near the intersection of 155th Avenue and Riggs Road in Goodyear. The man drove his truck into the muddy wash in the early afternoon and became stuck in the mud. Shortly afterwards, flash flooding occurred in the wash and the vehicle became submerged nearly to its roof. He was trapped on the roof for 2 to 3 hours before being rescued. Goodyear firefighters used an inflatable raft to reach the man, and the rescue was considered to be very dangerous due to the swiftly flowing water. The man was not injured and he told paramedics that he did not need to go to a hospital.	LIBERTY	0	0	\$30,000	\$0	\$30,000	NCDC, 2014 - Broadcast Media
9/12/2012	Thunderstorm / High Wind	Isolated thunderstorms developed across the northern portion of the greater Phoenix metropolitan area, including North Mountain Park, during the evening hours on September 12th. The storms generated strong, damaging outflow winds with peak gusts estimated to be near 65 knots. According to a National Weather Service employee, at 645 pm strong thunderstorm wind gusts downed a number of trees along Bell Road near 7th Street and 7th Avenue. Snapped tree trunks and branches were noted as well, and the diameter of the largest trees downed was estimated to be 12 inches. Additionally, the employee reported street lights not in operation along Bell Road. A reporter from Channel 3 submitted a few storm damage photos which depicted trees that had fallen on top of automobiles, causing moderate damage. One large tree, with a diameter at least 12 inches, fell on top of a block wall, crushing the wall on impact.	PHOENIX TURF AR	0	0	\$25,000	\$0	\$25,000	NCDC, 2014 - NWS Employee
11/3/2012	Wildfire	Maggie Fire - located in northern Maricopa County approximately 13 miles north of Carefree. The human caused fire burned 300 acres. There were no reported injuries or deaths. No reported property damage. Fire suppression costs were estimated to exceed \$75K.	Northern Maricopa Co	0	0	\$0	\$0	\$0	NWCG, 2014
1/12/2013	Extreme Heat/Cold	A very cold airmass settled in across the desert southwest from Saturday January 12th through Wednesday January 16th. The cold and relatively dry conditions led to widespread freezing and sub-freezing temperatures across the greater Phoenix metropolitan area. The low temperature at Phoenix Sky Harbor fell below freezing on 4 consecutive days, with the coldest morning low of 29 degrees recorded on January 15th. The colder outlying areas of the Phoenix area fell into the low to mid 20s each morning, and the extreme cold caused many pipes to burst, and led to citrus crop losses as well as the death of many frost sensitive plants and trees such as ficus and lantana. The freeze event led to the issuance of a continuous freeze warning for the Phoenix area beginning Friday night January 11th and running through Wednesday morning on January 16th.		0	0	\$100,000,000	\$5,000,000	\$105,000,000	NCDC, 2014 - ASOS
1/12/2013	Extreme Heat/Cold	A very cold airmass settled in across the desert southwest from Saturday January 12th through Wednesday January 16th. The cold and relatively dry conditions led to widespread freezing and sub-freezing temperatures across much of northwestern Maricopa county, including the communities of Wickenburg, Buckeye and New River. A Hard Freeze Warning was issued for the area beginning Saturday night and running through Monday morning. It was downgraded to a regular Freeze Warning which continued through Wednesday morning on January 16th. The colder desert area of northwest Maricopa county fell into the upper teens to mid 20s each morning; on Tuesday morning Wickenburg airport fell to 17 degrees. The extreme cold caused many pipes to burst and led to losses of landscaping plants and trees, garden plants and vegetables, and citrus crops.		0	0	\$10,000,000	\$250,000	\$10,250,000	NCDC, 2014 - Official NWS Observations
1/12/2013	Extreme Heat/Cold	A very cold airmass settled in across the desert southwest from Saturday January 12th through Wednesday January 16th. The cold and relatively dry conditions led to widespread freezing and sub-freezing temperatures across much of southwestern Maricopa county, including the community of Gila Bend. A Freeze Warning was issued for the area beginning Friday night and running through Wednesday morning on January 16th. On Tuesday January 15th, the warning was upgraded to a Hard Freeze Warning, but the warning returned to a regular Freeze Warning for Wednesday. The colder desert area of southwest Maricopa county fell into the upper teens to mid 20s each morning during the freeze event; on Tuesday morning the Gila Bend airport fell to 19 degrees which represented the coldest of the 5 mornings. The extreme cold caused pipes to burst and led to losses of landscaping plants and trees, garden plants and vegetables, and citrus crops.		0	0	\$2,000,000	\$100,000	\$2,100,000	NCDC, 2014 - Official NWS Observations

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
1/15/2013	Extreme Heat/Cold	A very cold weather pattern over the western United States led to widespread freezing temperatures over the greater Phoenix area on Tuesday, January 15. There was water on the roadway in central Phoenix, and the freezing temperatures caused dangerous black ice to form. At 8 am, an SUV hit a patch of black ice and skidded off the road and into a Courtesy Chevrolet dealership located at 12th Street and Camelback road. The SUV slammed into a brand new Corvette and a Camaro, causing significant damage to both. The SUV then slammed into the dealership's showroom, causing major damage as well as an injury to someone in the showroom. All told, the damage estimates came to approximately 150,000 dollars. Damage to the Corvette alone was estimated to be 75,000 dollars.		0	0	\$150,000	\$0	\$150,000	NCDC, 2014 - Broadcast Media
3/8/2013	Flooding / Flash Flooding	Scattered thunderstorms associated with a powerful winter storm dropped locally heavy rainfall across portions of the greater Phoenix metropolitan area, including the community of Scottsdale, during the afternoon hours on March 8th. An Urban and Small Stream Flood Advisory was issued at 120 pm for south central Arizona, including Fountain Hills and Scottsdale, and it continued through 315 pm. Radar indicated that rain in excess of 1 inch fell during this period, with additional rain occurring late into the day. The rain led to the flooding of washes in Scottsdale. According to a Fox 10 article, Scottsdale police identified the body of a woman found in a rain swollen wash in Scottsdale on Saturday afternoon on March 9th. The woman, 38 years old, was found in the wash just north of Chaparral Road, off Hayden Road. She lived in a group home about 1 mile away from the wash and she was reported missing Friday as the weather worsened. A man who was in the area Saturday afternoon spotted the woman floating in the water, and called 911. Police then arrived at the wash at about 430 pm Saturday.	SCOTTSDALE	1	0	\$0	\$0	\$0	NCDC, 2014 - Broadcast Media
3/8/2013	Thunderstorm / High Wind	Scattered thunderstorms associated with a passing cold front moved east and across the greater Phoenix metropolitan area during the afternoon hours on March 8th. Some of the storms produced damaging outflow winds in excess of 60 mph. Some of the storms affected east valley communities such as Mesa. At 239 pm, a large tree was blown down at the Mesa Riverview shopping center, according to a public report. No damage or injuries were reported due to the downed tree.	MESA	0	0	\$2,000	\$0	\$2,000	NCDC, 2014 - Public
3/8/2013	Thunderstorm / High Wind	Scattered thunderstorms, associated with a passing cold front, moved east across the greater Phoenix metropolitan area during the afternoon hours on March 8th. Some of the storms generated gusty and damaging outflow winds. According to a public report, at 243 pm a number of tree limbs were blown down at 60th street between Indian School and Thomas roads in downtown Scottsdale. No injuries were reported. Wind gusts were estimated to be at least 50 mph, and the time of damage was estimated based on radar information.	PAPAGO AAF ARPT	0	0	\$1,000	\$0	\$1,000	NCDC, 2014 - Public
3/8/2013	Thunderstorm / High Wind	Scattered thunderstorms, associated with a passing cold front, moved across the greater Phoenix metropolitan area during the afternoon hours on March 8th. Some of the storms affected southeast valley communities such as Chandler, and they produced locally strong and gusty outflow winds. According to a trained weather spotter about 1 mile northwest of Tumbleweed Park in Chandler, at 245 pm wind gusts estimated to be at least 60 mph caused a 10 inch diameter Palo Verde tree to be uprooted and knocked down. Another trained spotter 1 mile east of Chandler also reported a 6 inch diameter tree blown down at 245 pm.	CHANDLER	0	0	\$1,000	\$0	\$1,000	NCDC, 2014 - Trained Spotter
4/8/2013	Thunderstorm / High Wind	A powerful spring storm moved slowly across the desert southwest on April 8th, bringing strong and gusty southwest to west winds to the central Arizona deserts. A wind advisory was issued for the greater Phoenix area starting at 10 am, and continuing through 8 pm. Peak wind gusts in excess of 40 mph were common during the day. At 130 pm, a trained spotter 4 miles southeast of Tumbleweed Park reported that strong winds, estimated to be near 50 mph, blew down a large tree near the intersection of Riggs and Gilbert Roads. The large tree knocked down a brick wall as it fell. No injuries were reported. Tumbleweed park is located to the south of Chandler, and to the northeast of Sun Lakes.		0	0	\$3,000	\$0	\$3,000	NCDC, 2014 - Trained Spotter
6/2/2013	Extreme Heat/Cold	Strong high pressure aloft developed during the first weekend of June, and on June 2nd, high temperatures reached to 110 degrees across the south central Arizona deserts, including the greater Phoenix area. The high temperature at Sky Harbor Airport was 109 degrees. As a result of the heat, an Excessive Heat Warning was issued for the Phoenix area, running from 10 am until 8 pm. A 21 year old Arizona man went hiking in the White Tank Mountains during the morning hours on Sunday; he left at 630 am with 2 friends to go on a 10 mile hike along Ford Canyon. At about 11:30 am, his friends called for help, stating that he was cramping and had passed out. They tried to perform CPR on him; meanwhile MCSO rescue teams arrived by helicopter and they pronounced him dead - a result of the heat. The man was wearing black jeans and a tee shirt, and the temperature was over 100 degrees when the call came in. Despite having enough water to drink, the man succumbed to the heat and died. The excessive heat also caused problems a day earlier; on Saturday the first, crews were dispatched multiple times to Priestewa Peak for medical calls. According to Scottsdale Fire Captain Tim Cooper, for one such call, a man had a fainting episode due to dehydration and the heat.		1	0	\$0	\$0	\$0	NCDC, 2014 - Broadcast Media
6/16/2013	Extreme Heat/Cold	Strong high pressure through the middle part of June led to above normal temperatures, but a few degrees shy of excessive heat criteria. High temperatures from June 16-18th were in the 105-109 range across the southern Arizona Deserts. Maricopa County Sheriff's deputies reported finding 4 male bodies on June 20th in the desert near mile post 133 along Interstate 8 outside of Gila Bend. They indicated the men had died at least three days before the bodies were found, so likely in the June 16-17 time frame. Officials believed the men were immigrants who had recently crossed the Mexico/U.S. border. Cause of death is currently not known, but heat was presumed to be at least partially to blame as there were no signs of foul play.		4	0	\$0	\$0	\$0	NCDC, 2014 - Broadcast Media
7/12/2013	Thunderstorm / High Wind	Scattered strong thunderstorms developed over portions of south central Arizona during the early afternoon hours on July 12th. They affected the eastern portions of the greater Phoenix metropolitan area, including the community of Queen Creek. The storms generated strong and damaging winds. According to local broadcast media, at about 1 pm, thunderstorm winds estimated to be in excess of 60 mph blew over a 7 foot high steel wall. The wall fell on top of an person, causing injuries. A Severe Thunderstorm Warning was issued for the area beginning at 1243 pm and continuing until 145 pm.		0	1	\$5,000	\$0	\$5,000	NCDC, 2014 - Broadcast Media
7/15/2013	Thunderstorm / High Wind	Scattered strong thunderstorms developed during the late afternoon and evening hours and they affected portions of the greater Phoenix area, including the community of Ahwatukee. At 457 pm, a trained weather spotter 1 mile southwest of Ahwatukee reported numerous trees blown down near the intersection of 30th Street and Chandler Boulevard. Winds were estimated to be from 55 to near 60 mph. Pea to marble sized hail accompanied the strong winds. A Severe Thunderstorm Warning was in effect for the area, beginning at 454 pm and continuing until 545 pm.		0	0	\$30,000	\$0	\$30,000	NCDC, 2014 - Trained Spotter

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
7/15/2013	Thunderstorm / High Wind	Scattered strong thunderstorms developed during the late afternoon hours across portions of the greater Phoenix metropolitan area, and they affected communities such as Ahwatukee and Firebird Lake. The storms produced gusty winds estimated to be in excess of 60 mph. According to local broadcast media reports, at 505 pm a semi truck was blown off of Interstate 10 and overturned near I-10 and Wild Horse Pass Road, approximately 1 mile north of Firebird Lake. No injuries were reported. A Severe Thunderstorm Warning had been issued for the area beginning at 454 pm and continuing until 545 pm.		0	0	\$50,000	\$0	\$50,000	NCDC, 2014 - Broadcast Media
7/15/2013	Thunderstorm / High Wind	Scattered thunderstorms developed in the greater Phoenix area during the late afternoon hours on July 15th, and they affected the community of Ahwatukee. The storms produced gusty and damaging winds estimated to be in excess of 70 mph. According to broadcast media reports and supported by aerial video, 4 homes under construction in a subdivision directly west of Desert View High School between E. Frye Rd. and E. Glenhaven Rd. were destroyed and an additional 6 homes (further along in the construction process had minor damage. A Severe Thunderstorm Warning had been issued for the area starting at 454 pm and continuing until 545 pm.		0	0	\$250,000	\$0	\$250,000	NCDC, 2014 - Broadcast Media
7/15/2013	Thunderstorm / High Wind	Scattered strong thunderstorms developed in the greater Phoenix area during the late afternoon hours on July 15th, and they affected communities such as Mesa and Chandler. The storms produced gusty and damaging winds estimated to be as high as 60 mph. According to a public report, at 545 pm a tree with a diameter of 14 inches was blown over and numerous branches 2 to 4 inches in diameter were blown off of trees in the community of Mesa. Additionally, a trained weather spotter 3 miles northeast of Chandler Fashion Square Mall reported 1 to 2 inch diameter branches blown off of trees at 530 pm. Visibility was reported to be down to 200 yards in heavy rain.		0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Public
7/15/2013	Thunderstorm / High Wind	Scattered thunderstorms developed in the greater Phoenix area during the late afternoon hours on July 15th, and they affected the community of Ahwatukee. The storms produced gusty and damaging winds estimated to be in excess of 60 mph. According to a trained weather spotter, at 535 pm over 50 trees were blown down in the Lakewood subdivision. Some fallen trees caused other damage to cars and property. The tree diameters were all 12 inches or larger. In addition, there was roof damage noted on a concrete tile roof. A Severe Thunderstorm Warning had been issued for the area starting at 454 pm and continuing until 545 pm.		0	0	\$150,000	\$0	\$150,000	NCDC, 2014 - Trained Spotter
7/19/2013	Thunderstorm / High Wind	Strong thunderstorms developed across the northern portion of the greater Phoenix area during the evening hours on July 19th, and they produced gusty and damaging winds estimated to be in excess of 60 mph. According to a trained weather spotter several miles northwest of Deer Valley Airport, at 1012 pm gusty winds blew down several Palo Verde and Mesquite trees. A chain-link fence was also blown over. A Severe Thunderstorm Warning was in effect for the area at the time; it started at 1001 pm and continued through 1030 pm.		0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Trained Spotter
7/19/2013	Thunderstorm / High Wind	Strong thunderstorms developed across the northern portion of the greater Phoenix metropolitan area during the evening hours on July 19th. The storms generated gusty winds estimated to reach or exceed 65 mph. According to a trained weather spotter, at 1020 pm near 25th Avenue and West Happy Valley Road, 25 foot long tree branches were blown down. Winds estimated to be at least 50 mph were strong enough to shake vehicles in the area. In addition, another trained spotter 5 miles north of central Phoenix reported a large tree uprooted at 1020 pm by winds estimated to be at least 65 mph. The diameter of the trunk was estimated at 15 inches. The uprooted tree was located at the intersection of 16th Street and Greenway Parkway. A Severe Thunderstorm Warning was in effect for the area; it was issued at 1001 pm and continued until 1030 pm.		0	0	\$6,000	\$0	\$6,000	NCDC, 2014 - Trained Spotter
7/19/2013	Thunderstorm / High Wind	Strong thunderstorms developed across the northern portion of the greater Phoenix metropolitan area during the evening hours on July 19th. The storms generated gusty winds estimated to reach or exceed 65 mph. According to a broadcast media report, at around 1030 pm in the Arrowhead Lakes neighborhood near Loop 101 and 59th Ave., multiple trees were uprooted along with other significant tree limb damage throughout the neighborhood. Some trees fell on homes causing minor home damage. There was also some minor roof damage to a tile roof. A Severe Thunderstorm Warning was in effect for the area; it was issued at 1001 pm and continued until 1030 pm.		0	0	\$40,000	\$0	\$40,000	NCDC, 2014 - Broadcast Media
7/21/2013	Flooding / Flash Flooding	Scattered to numerous showers and thunderstorms developed across the south central deserts during the morning hours on July 21st and they became more intense and numerous as the morning progressed. By late morning, thunderstorms were widespread across the northeast parts of the greater Phoenix area, including Scottsdale, and rain rates between one and two inches per hour were indicated by rain gage reports and radar estimates. An Urban and Small Stream Flood Advisory was initially issued for the Scottsdale area beginning around 11 am and it continued until 130 pm. The heavy rains led to significant flooding and flash flooding across Scottsdale, numerous roads were inundated and closed and area washes, including the Indian Bend Wash, ran heavily. According to an article posted on-line at azcentral.com, multiple swift water rescues were needed in north Scottsdale. In one rescue, crews extricated two people whose vehicle became stuck near Scottsdale Road and Sutton Drive. In a much more significant rescue, Scottsdale crews utilized rescue swimmers to save a stranded motorist near 83rd Street and Desert Cove Avenue. More than 25 firefighters from Tempe, Phoenix and Scottsdale responded to the scene according to Scottsdale battalion chief David Folio. Additionally, a Paradise Valley woman was rescued after her vehicle was stuck near Tatum Boulevard and Desert Park Place according to Phoenix Fire Captain Larry Nunez. Times for the rescues were unspecified in the articles, but likely occurred sometime from late morning into early afternoon. Although Flash Flood Warnings were not issued for Scottsdale during this event, another Urban and Small Stream Flood Advisory was later issued at 312 pm and it continued until 5 pm.		0	0	\$100,000	\$0	\$100,000	NCDC, 2014 - Newspaper

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
7/21/2013	Flooding / Flash Flooding	Scattered to numerous showers and thunderstorms developed across the south central deserts during the morning hours on July 21st and they became more intense and numerous as the morning progressed. By late morning, thunderstorms were widespread across the northeast parts of the greater Phoenix area, including Scottsdale, and rain rates between one and two inches per hour were indicated by rain gage reports and radar estimates. An Urban and Small Stream Flood Advisory was initially issued for the Scottsdale area beginning around 11 am and it continued until 130 pm. The heavy rains led to significant flooding and flash flooding across Scottsdale, numerous roads were inundated and closed and area washes, including the Indian Bend Wash, ran heavily. According to an on-line article posted at acentral.com, Eldorado Park was hit hard according to Sandy Hlebaen of the Scottsdale Parks and Recreation Department. Eldorado park runs along the Indian Bend Wash east of Scottsdale Road. Bike paths, sidewalks and picnic benches were filled with debris from the wash. Video clips showed the wash running angrily and heavily with churning water. No injuries were reported due to the flooding. An additional Flood Advisory was issued for Scottsdale, beginning at 312 pm and continuing until 5 pm, so the wash was most likely flowing heavily into the afternoon or even the early evening hours.		0	0	\$25,000	\$0	\$25,000	NCDC, 2014 - Newspaper
8/17/2013	Thunderstorm / High Wind	Isolated thunderstorms developed across portions of south central Arizona during the evening hours on September 17th. Due to the excessive heat and relatively dry conditions, the storms generated strong and gusty outflow winds, estimated to be in excess of 40 mph. The winds caused areas of blowing dust which affected the community of Buckeye. In addition to the blowing dust, the gusty winds were sufficient in strength to blow down a number of small trees. According to a trained weather spotter in Buckeye, evening thunderstorm winds blew down a number of small trees and large cactus, leaving the roots completely exposed. The damage was near the Sundance Towne Center and in the surrounding neighborhoods.	VALENCIA	0	0	\$25,000	\$0	\$25,000	NCDC, 2014 - Trained Spotter
8/24/2013	Flooding / Flash Flooding	On August 24th, copious amounts of tropical moisture continued to spread into Arizona ahead of dissipating former tropical storm Ivo. This led to a very moist and unstable airmass, and scattered showers and thunderstorms developed during the early morning hours across portions of northwest Maricopa county, affecting the area around Wickenburg. Heavy rain began to fall from Aguila to Wickenburg beginning around 0400MST, and it continued to fall into the middle of the morning as a large convective complex developed. A flood advisory was issued for the area at 0524MST, and it was upgraded to a Flash Flood Warning at 0553MST. The warning remained in effect until shortly after 1000MST. According to the Wickenburg Fire Department and Rescue units, at 0730MST the Vulture Mine Road was closed around the Sols Wash due to high water. This was about 1 mile to the northwest of Wickenburg. At the same time, they reported that Rincon Road near Martinez Wash was also closed due to high water; this was about 2 miles north of Wickenburg.	WICKENBURG MU	0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Fire Department/Rescue
8/26/2013	Thunderstorm / High Wind	Scattered afternoon thunderstorms developed on August 26th and they affected the Salt River Recreational Lakes, including the community of Tortilla Flats. The atmosphere was moist and very unstable, and this allowed the thunderstorms to produce strong and damaging wind gusts. According to a report received from the public, a dock and 2 boats were damaged at the Canyon Lake Marina. They estimated peak wind gusts to be around 60 mph. A Severe Thunderstorm Warning had been issued for the area around Tortilla Flats, beginning at 1553MST and continuing until 1615MST.	TORTILLA FLAT	0	0	\$40,000	\$0	\$40,000	NCDC, 2014 - Public
8/26/2013	Thunderstorm / High Wind	Scattered afternoon thunderstorms moved across the southeast portions of the greater Phoenix area on August 26th, and they impacted the community of Tempe. Thunderstorm outflow winds estimated to be at least 60 mph downed a large tree at an apartment complex located at the intersection of Kyrene and Elliot roads in Tempe. The tree landed on top of 3 adjacent parked cars and caved in the roofs of each car. The report was received via local broadcast media.	TEMPE	0	0	\$50,000	\$0	\$50,000	NCDC, 2014 - Broadcast Media
8/26/2013	Flooding / Flash Flooding	Strong thunderstorms developed across portions of southwest Maricopa county during the evening hours, and they affected the area around Gila Bend. Due in part to lingering tropical moisture, the storms were able to generate locally heavy rains which led to flash flooding. At 1845MST the Department of Highways reported that Highway 238 east of Gila Bend was closed due to flash flooding. A Flash Flood Warning was issued for the area at 1836MST and it continued until 2030MST. No accidents or injuries were reported due to the flash flooding.	GILA BEND	0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Department of Highways
8/26/2013	Thunderstorm / High Wind	Intense thunderstorms developed during the afternoon hours to the south of the greater Phoenix metropolitan area, and they produced gusty outflow winds in excess of 50 mph. The winds spread to the north and into the greater Phoenix area by about 1800MST, and as they moved in they generated dust storm conditions. At 1803MST a trained weather spotter 4 miles southeast of Tumbleweed Park in Chandler reported visibility down below 100 feet in dense blowing dust. Shortly thereafter he measured a wind gust to 62 mph. Another trained spotter 1 mile southeast of Ahwatukee reported a dust storm with visibility down to one quarter mile. Several other spotters in the Phoenix area reported dust storm conditions, and the winds were strong enough to uproot trees in Goodyear. A Dust Storm Warning was issued for the greater Phoenix area at 1741MST and it was cancelled at 1941MST.		0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Trained Spotter
8/26/2013	Thunderstorm / High Wind	Scattered strong thunderstorms developed during the evening hours across the greater Phoenix area on August 26th, and some of them affected the community of Chandler. A trained weather spotter located about 4 miles southeast of Tumbleweed Park, or near the Chandler airport, measured a thunderstorm wind gust to 62 mph. A second trained weather spotter located 1 mile east of Chandler estimated a peak wind gust to 65 mph and the wind was strong enough to blow a 6 inch branch off of a tree. At the time, a Dust Storm Warning was in effect. Also, a Severe Thunderstorm Warning was issued for the Chandler area at 1821MST and it continued until 1845MST.	OCOTILLO	0	0	\$1,000	\$0	\$1,000	NCDC, 2014 - Trained Spotter
8/26/2013	Thunderstorm / High Wind	Scattered late afternoon thunderstorms moved across the southeast portion of the greater Phoenix metropolitan area on August 26th, and they affected the community of Gilbert. The atmosphere was moist and quite unstable and this allowed the thunderstorms to produce strong and gusty winds, estimated to be at least 60 mph. A trained weather spotter 2 miles southeast of Gilbert reported that a large tree was downed in far southern Gilbert, near the Chandler Heights and Higley area. He also indicated that large tree branches were broken in the same area. A Severe Thunderstorm Warning was issued for the Gilbert area at 1821MST and it continued until 1845MST.	GILBERT	0	0	\$3,000	\$0	\$3,000	NCDC, 2014 - Trained Spotter

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
8/26/2013	Thunderstorm / High Wind	Scattered strong thunderstorms affected the greater Phoenix area during the evening hours on August 26th, and they affected the towns of Buckeye, Goodyear and Litchfield Park. The Buckeye airport mesonet sensor measured a sustained wind at 43 mph as well as a peak gust of 68 mph. In addition, a trained weather spotter located 2 miles northeast of Goodyear reported trees uprooted by the strong winds. According to a report from local broadcast media, several trees were uprooted near Litchfield park. Finally, another broadcast media report indicated that a large tree was blown down. When the tree fell it heavily damaged a home in Litchfield Park. A Severe Thunderstorm Warning was in effect for the affected communities; it was issued at 1908MST and it ran through 1945MST.	VALENCIA	0	0	\$60,000	\$0	\$60,000	NCDC, 2014 - Mesonet
8/28/2013	Flooding / Flash Flooding	Scattered thunderstorms developed across the western portions of the greater Phoenix area during the evening hours on August 28th. Due to the very moist nature of the atmosphere, the storms produced locally heavy rains with rainfall rates reaching 2 inches per hour. At about 1930MST a trained spotter 4 miles west of Luke Air Force Base measured 2 inches of rain within one hour. Locally heavy rain continued in communities such as Litchfield Park, Goodyear and Buckeye. Due to the heavy rains, a Flash Flood Warning was issued at 2020MST for the west valley communities and it was in effect until 2215MST. It was later re-issued at 2248MST due to continued rainfall and remained in effect through 0145MST on August 29th. According to the department of highways, flash flooding occurred at 10 pm 4 miles west of Litchfield Park; the Loop 303 was closed between Interstate 10 and Glendale due to high flowing water. The closure lasted until approximately midnight.	LITCHFIELD JCT	0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Department of Highways
8/28/2013	Thunderstorm / High Wind	On August 28th, thunderstorms developed during the evening hours across the western portions of the greater Phoenix area, affecting communities such as Waddell, El Mirage and Luke Air Force Base. Due to the very unstable nature of the atmosphere, the stronger storms produced damaging wind gusts estimated to be at least 75 mph. At 1945MST, a trained weather spotter about 2 miles northwest of Waddell reported that dozens of trees were blown down with diameters as high as 3 feet. Shortly thereafter, a trained spotter 2 miles southwest of Luke AFB reported power poles blown down near Loop 303 and Bethany Home Road. Another trained spotter 2 miles northwest of Waddell reported that 7 to 8 eucalyptus trees were blown down. These trees were approximately 60 feet tall with diameters of 2 feet. Finally, at 2037MST a report was received via amateur radio regarding large and mature Mesquite trees that were blown down 2 miles northwest of El Mirage. A Severe Thunderstorm Warning was issued for the Luke and Waddell area, starting at 1923MST and continuing in effect through 2015MST.	WADDELL	0	0	\$75,000	\$0	\$75,000	NCDC, 2014 - Trained Spotter
8/30/2013	Thunderstorm / High Wind	Scattered thunderstorms moved across the eastern portions of the greater Phoenix metropolitan area during Friday afternoon on August 30th, and they affected communities such as Tempe and Chandler. Due to the very moist and unstable character of the atmosphere, the storms were able to generate damaging wet microbursts, with wind gusts estimated to reach to near 70 mph. At 1710MST, a trained spotter reported trees downed in the vicinity of Priest and Ray Road. Heavy rain was also occurring leading to curb to curb flooding. The following day, a National Weather Service employee reported a number of large trees downed along Interstate 10 near Warner Road, in addition to large trees downed near the intersection of Ray and North Beck. Finally, the employee reported a tree 6 inches in diameter blown over on his property, at Priest Drive and West Maria Lane. The downed trees were a result of the wet microburst during the afternoon on August 30th.	NORTONS CORNER	0	0	\$100,000	\$0	\$100,000	NCDC, 2014 - Trained Spotter
9/6/2013	Thunderstorm / High Wind	Isolated afternoon thunderstorms developed across portions of the greater Phoenix metropolitan area on September 6th. High temperatures reached to around 110 degrees and due to the very hot and somewhat dry nature of the atmosphere, the storms were able to generate strong and gusty outflow winds. The peak wind gusts were estimated at 60 mph or more, strong wind gusts blew down a 1 foot diameter tree on top of a carport approximately 2 miles northwest of Phoenix Sky Harbor Airport, as shown by local broadcast media footage. In addition, a member of the public reported that an 8 inch diameter Palo Verde tree was uprooted. The tree was located 2 miles northeast of the Arizona State Fairgrounds. Finally, a tweet received from the public showed a picture of a tree downed at the intersection of 24th Street and the 202. The tweet also mentioned that a number of trees were downed in the area. A Severe Thunderstorm Warning had been issued for the affected areas beginning at 1716MST and continuing until 1815MST.		0	0	\$20,000	\$0	\$20,000	NCDC, 2014 - Broadcast Media
9/9/2013	Flooding / Flash Flooding	Southerly flow imported copious amounts of tropical moisture into south central Arizona during the morning hours on September 9th, and as a result widespread showers developed across the eastern portions of the greater Phoenix metropolitan area. Areas of moderate to heavy rain developed; isolated embedded thunderstorms further enhanced the rainfall totals. Flood Control District gages and radar data indicated that rainfall rates up to 2 inches per hour had occurred during the late morning and this led to flash flooding across portions of Mesa and Chandler. According to the Arizona Department of Highways, at about 1200MST there was flash flooding near the interchange of the Superstition Freeway, or US 60, and the Loop 101. This intersection was about 2 miles southwest of the Fiesta Mall. A Flash Flood Warning was in effect for the area at the time and it ran through 1300MST. Although the heavy rains had tapered by early afternoon, additional rains occurred into the afternoon hours and another Urban and Small Stream Flood Advisory was issued which ran from 1300MST to 1500MST.		0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Department of Highways
9/9/2013	Flooding / Flash Flooding	Southerly flow imported copious amounts of tropical moisture into south central Arizona during the morning hours on September 9th, and as a result widespread showers developed across the central portions of the greater Phoenix metropolitan area. Areas of moderate to heavy rain developed; isolated embedded thunderstorms further enhanced the rainfall totals. Flood Control District gages and radar data indicated that rainfall rates up to 2 inches per hour had occurred during the late morning and this led to flash flooding between North Mountain Village and Deer Valley Village. According to the Arizona Department of Highways, at about 1200MST there was flooding near the intersection of Interstate 17 and Greenway Roads, about 3 miles north of Metro Center. A Flash Flood Warning was issued for the area at 1133MST and it continued until 1300MST. Although the heavy rains did taper off by early afternoon, additional rain occurred into the afternoon hours, necessitating the issuance of another Urban and Small Stream Advisory at 1300MST. This new advisory continued through 1500MST. As an example of the amount of rain that fell with this flash flooding event, a trained weather spotter in the area measured a storm total of 2.42 inches of rain ending at 1615MST. His location was approximately 4 miles north of North Mountain Park.		0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Department of Highways

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
9/9/2013	Flooding / Flash Flooding	Showers and embedded thunderstorms developed and moved into northwestern Maricopa county during the afternoon hours on September 9th, and they produced moderate to heavy rainfall with rainfall rates in excess of 2 inches per hour at times. Flash flooding resulted and affected the Interstate 10 corridor from Tonopah westward into La Paz county. According to local law enforcement, at 1500MST Salome Road was closed from Tonopah westward into La Paz county due to numerous areas under water. Three Flash Flood Warnings were issued due to the flooding, the first began at 1223MST and the final warning expired at 1745MST. Despite the fact that the heavy rains had ended by late afternoon, Salome Road remained closed through at least 1900MST.		0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Law Enforcement
9/10/2013	Flooding / Flash Flooding	During the late morning of September 10th thunderstorms developed from north of Wickenburg southward towards the northwestern fringes of the greater Phoenix area. They produced locally heavy rainfall; a flood control gage just east of Wickenburg measured 1.25 inches of rain within 15 minutes ending at 1134MST and another gage in Circle City measured 1.26 inches in less than one hour. Flash flooding resulted across portions of north central Maricopa county and by 1125MST a Flash Flood Warning was in effect. Radar and gage data indicated that rainfall rates approached 2 inches per hour in the area from Circle City northwestward towards Wickenburg; at 1233MST a Maricopa County Sheriff's deputy reported flash flooding in the Community of Circle City. Heavy rains continued into the early afternoon and then gradually tapered off. Due to the persistent runoff impacting area roads as well as heavily running washes, an Areal Flood Warning was then issued at 1330MST for the Grand Avenue Corridor extending from Wittmann to Wickenburg and it continued until 2130MST.		0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Law Enforcement
11/4/2013	Thunderstorm / High Wind	Isolated thunderstorms developed across western Maricopa county during the early evening hours on November 4th, and the moved into the greater Phoenix area by 1900 MST. The storms affected communities such as Peoria and Surprise. A few storms generated gusty winds estimated to be in excess of 40 mph. According to local broadcast media, wind gusts blew down several trees which damaged cars at the Arrowhead Honda dealership located near the intersection of the Loop 101 and Bell Road. No injuries were reported.	SUN CITY	0	0	\$50,000	\$0	\$50,000	NCDC, 2014 - Broadcast Media
3/1/2014	Tornado / Dust Devil	A strong upper level low pressure system moved slowly east across Arizona on Saturday March 1st, and it led to the formation of isolated severe thunderstorms across the greater Phoenix area. Due to strong wind shear and modest instability, a small EF0 tornado developed in east Mesa. The tornado had a very short track, less than one mile, and touched down near Extension road and Main Street in the Palm Cove apartment complex. The tornado knocked down a number of large trees, ripped spanish roofing tiles off of a number of apartment units, and sent an empty hot tub flying 1300 feet across the apartment complex. Several eyewitnesses saw the tornado and the flying hot tub. Fortunately, no injuries were reported as a result of the tornado.	MC QUEEN	0	0	\$50,000	\$0	\$50,000	NCDC, 2014 - Public
3/1/2014	Thunderstorm / High Wind	A slow moving, vigorous Pacific low pressure system moving into Arizona led to the development of isolated strong thunderstorms across the greater Phoenix area during the afternoon hours on March 1st. According to a trained weather spotter in East Mesa, a strong thunderstorm blew down a number of trees on McKellips road between Greenfield and Higley roads. Thunderstorm outflow winds were estimated to be nearly 50 knots. The downed trees were approximately one quarter mile southwest of Falcon Field. Another spotter in the 6000 block of East Viewmont Drive and North Recker Road reported large Palo Verde and Mesquite trees blown over.	VELDA ROSE ESTA	0	0	\$20,000	\$0	\$20,000	NCDC, 2014 - Trained Spotter
3/1/2014	Thunderstorm / High Wind	Isolated strong thunderstorms developed across the northern portions of the greater Phoenix metropolitan area during the afternoon hours on March 1st, and they affected the communities of Pinnacle Peak and far north Scottsdale. The storms developed ahead of a strong Pacific upper level low pressure system moving eastward across the state. The storms generated gusty and damaging outflow winds estimated to be at least 65kt. There were numerous reports from the public about downed trees in and around the Echo Ridge at Troon North neighborhood. The trees ranged in height from 18 to 35 feet, with diameters ranging from 4 inches to 2 feet. In addition, the strong gusts blew chimneys off of two houses and also caused a number of the homes to lose their roof tiles.	CAVE CREEK	0	0	\$40,000	\$0	\$40,000	NCDC, 2014 - Public
3/1/2014	Thunderstorm / High Wind	Isolated strong thunderstorms developed during the afternoon hours on March 1st and they affected the northern portions of the greater Phoenix area, including the communities of Scottsdale and Pinnacle Peak. The storms developed ahead of a vigorous Pacific low pressure system moving east and into the state. The storms produced gusty and damaging outflow winds, with peak gusts estimated to be at least 65kt. According to reports from the public, thunderstorm winds produced damage at the Rocks Club Condominium Development at 27440 North Alma School Parkway in Scottsdale. Gusty winds downed 13 large Palo Verde and Ironwood trees and blew many tile shingles off of the condominium roofs. In addition, a patio table was lifted and blown a distance of 100 yards. No injuries were reported due to the damaging winds.	CAVE CREEK	0	0	\$30,000	\$0	\$30,000	NCDC, 2014 - Public
3/1/2014	Hail	Isolated strong afternoon thunderstorms developed across the northern portions of the greater Phoenix area on March 1st, and they affected communities such as Pinnacle Peak and north Scottsdale. In addition to gusty and damaging outflow winds, the stronger thunderstorms produced many nickel sized hailstones. According to a public report, the nickel sized hailstones damaged a number of windows at the Rocks Club Condominium Development at 27440 North Alma School Parkway in north Scottsdale. The hailstones broke the first pane of double-paned windows in many of the homes.	CAVE CREEK	0	0	\$25,000	\$0	\$25,000	NCDC, 2014 - Public
4/26/2014	Thunderstorm / High Wind	A vigorous upper level low pressure system moving through the desert southwest generated gusty west winds across the central Arizona deserts during the afternoon and evening hours on April 26th. Some of the wind gusts were in excess of 40 mph, and were sufficient to cause isolated instances of tree damage across the greater Phoenix area. At 1400 MST, a trained spotter in Gilbert reported 5 to 6 inch diameter tree branches were blown down near the intersection of Riggs and Higley road. Another trained spotter in Papago Park reported a couple of tree branches blown down near Thomas Road and 60th street. The diameter of the branches was estimated to be greater than 2 inches. This occurred at 1430 MST. A wind advisory was issued for the central Arizona deserts, including the greater Phoenix area, from 800 MST through 1700 MST, and it was in effect when the tree damage occurred.		0	0	\$2,000	\$0	\$2,000	NCDC, 2014 - Trained Spotter

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
4/26/2014	Thunderstorm / High Wind	A vigorous upper level low pressure system moving through the desert southwest generated gusty west winds across the central Arizona deserts during the afternoon and evening hours on April 26th. Some of the wind gusts were in excess of 45 mph, and were sufficient to cause isolated instances of tree damage across the greater Phoenix area. According to a trained weather spotter in central Phoenix, at 1630 MST, wind gusts estimated to be nearly 50 mph caused a 40 foot tall pine tree to be blown down onto the eastbound lanes of West Dunlap Avenue between 34th and 35th Avenue. No injuries were reported as a result of the fallen tree. A wind advisory had been issued for the greater Phoenix area at 800 MST running through 1700 MST.		0	0	\$4,000	\$0	\$4,000	NCDC, 2014 - Trained Spotter
4/30/2014	Tornado / Dust Devil	During the early afternoon hours on April 30th, a strong dust devil developed approximately 3 miles south of Cave Creek. As reported by local broadcast media, KTVK Channel 3 TV, gusty winds estimated to be in excess of 45 mph damaged the roof of the Desert Foothills Gardens Nursery. An aluminum roof panel on the top of the roof was lifted and tossed nearly 30 feet by the dust devil. The weight of the panel was estimated to be 600 pounds, and the dimensions were approximately 55 by 35 feet. No injuries were reported.	CAVE CREEK	0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Broadcast Media
7/3/2014	Thunderstorm / High Wind	Thunderstorms with gusty and damaging outflow winds developed across portions of the greater Phoenix area during the evening hours on July 3rd. According to a trained weather spotter, wind gusts estimated to be nearly 60 mph produced roof and shingle damage to a residence near McDowell Avenue and State Route 51.	PHOENIX	0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Trained Spotter
7/6/2014	Thunderstorm / High Wind	Strong thunderstorms developed during the afternoon hours on July 6th, and they affected the community of Wickenburg. The storms produced damaging outflow winds with peak gusts estimated to be over 60 mph. According to a local Emergency Manager, the gusty winds blew down several large trees in Wickenburg. In addition, a trained weather spotter in the same area reported that two six inch diameter trees were blown over.	WICKENBURG	0	0	\$8,000	\$0	\$8,000	NCDC, 2014 - Emergency Manager
7/13/2014	Thunderstorm / High Wind	Scattered thunderstorms affected much of the greater Phoenix area, including southeastern valley communities such as Gilbert, during the late afternoon hours on July 13th. The stronger storms produced damaging microburst winds in excess of 50 mph. A trained weather spotter 1 mile southeast of Gilbert reported that gusty outflow winds broke off a large branch which fell onto a car, damaging the vehicle. This occurred near the intersection of Loop 202 and Higley Road.	HIGLEY	0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Trained Spotter
7/13/2014	Thunderstorm / High Wind	Scattered thunderstorms affected much of the greater Phoenix area, including the community of Gilbert, during the late afternoon hours on July 13th. The stronger storms produced gusty and damaging microburst winds estimated to be in excess of 60 mph. A trained weather spotter in Gilbert reported trees downed near the intersection of Ray Road and Cooper. Another trained spotter nearby in Gilbert reported trees downed near the intersection of Warner Road and McQueen.	CHANDLER	0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Trained Spotter
7/13/2014	Thunderstorm / High Wind	Scattered to numerous thunderstorms affected the greater Phoenix area, including southeast valley communities such as Gilbert, during the late afternoon hours on July 13th. The stronger storms produced damaging microburst outflow winds estimated to be in excess of 60 mph. A trained weather spotter in Gilbert reported that several trees were uprooted and in addition, a light pole and some street signs were blown down near the intersection of Val Vista and Elliot Roads.	GILBERT	0	0	\$12,000	\$0	\$12,000	NCDC, 2014 - Trained Spotter
7/13/2014	Thunderstorm / High Wind	Scattered strong thunderstorms affected the southeast portions of the greater Phoenix area, including Chandler, during the late afternoon hours on July 13th. Some of the storms produced gusty and damaging microburst winds estimated to be in excess of 60 mph. At 1705MST, a trained weather spotter located 3 miles to the northwest of the Chandler Fashion Center mall reported downed tree branches and a roof blown off of a house. The damage was close to the intersection of Ray and Kyrene roads. Shortly thereafter, another trained spotter about 1 mile east at the intersection of Ray and McClintock Roads reported that an apartment carport was blown down. Additionally, 3 inch diameter branches were blown off of trees in the area.	WEST CHANDLER	0	0	\$30,000	\$0	\$30,000	NCDC, 2014 - Trained Spotter
7/13/2014	Thunderstorm / High Wind	Scattered thunderstorms affected much of the greater Phoenix area, including southeast valley communities such as Tempe and Chandler, during the late afternoon hours on July 13th. The stronger thunderstorms generated gusty and damaging microburst winds, estimated to be in excess of 60 mph. At about 1710MST, a report was received from an amateur radio operator in south Tempe who reported that multiple trees were blown down near the intersection of Warner and McClintock roads. At nearly the same time, a trained weather spotter about 1 mile north of the Chandler Fashion Center mall reported a number of trees blown down with diameters of up to 13 inches.	HELENA	0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Amateur Radio
7/13/2014	Thunderstorm / High Wind	Strong thunderstorms developed across the southeast portions of the greater Phoenix area during the late afternoon hours on July 13th, and some of them produced gusty and damaging microburst winds. According to an amateur radio report, a large highway sign was blown down in Chandler at the intersection of Interstate 10 and Chandler Boulevard. Peak wind gusts were estimated to be in excess of 60 mph.	HIGHTOWN	0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Amateur Radio
7/13/2014	Thunderstorm / High Wind	Strong thunderstorms developed to the southeast of the greater Phoenix area during the late evening hours on July 13th, and they generated strong gusty outflow winds which quickly spread to the north and moved into Deer Valley and north Scottsdale. According to a public report, at 2215MST, gusty winds estimated to be at least 80 mph lifted and spun around a full sized backyard trampoline. The trampoline, which was being held down by 50 pound sandbags, ended up wedged under the roof between the house and a yard wall. The home was located at the intersection of Cave Creek Road and Pinnacle Peak Road.	PHOENIX DEER VL	0	0	\$2,000	\$0	\$2,000	NCDC, 2014 - Public
7/14/2014	Thunderstorm / High Wind	Scattered thunderstorms developed across the greater Phoenix area during the evening hours on July 14th, and some of them produced damaging outflow winds estimated to be at least 60 mph. A broadcast media report indicated that both power lines and trees of unknown size were blown down about 2 miles to the southwest of Camelback Mountain. A Severe Thunderstorm Warning was issued for these storms, beginning at 1833MST and continuing until 1930MST.	PAPAGO AAF ARPT	0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Broadcast Media
7/26/2014	Thunderstorm / High Wind	Thunderstorms with strong damaging microburst winds developed across the northern portion of the greater Phoenix metropolitan area during the late evening hours on July 26th, affecting communities such as Deer Valley and Scottsdale. The powerful outflow winds, estimated to be at least 70 mph at times, created significant damage to trees and power poles in the area near Desert Ridge Marketplace. A meteorologist reported that huge trees were blown down at an apartment complex located at Greenway Road and 40th Street. The trees crushed several cars at the complex. Power poles and lines were also downed by the strong winds. At about the same time, a trained spotter reported numerous large trees downed near Greenway and 44th street. Finally, according to local Fire and Rescue, more trees and power lines were blown down on Greenway Road between Tatum and 41st street.	CLEARWATER HIL	0	0	\$100,000	\$0	\$100,000	NCDC, 2014 - Trained Spotter

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
7/26/2014	Thunderstorm / High Wind	Thunderstorms with damaging microburst winds developed across the northern portions of the greater Phoenix metropolitan area during the late evening hours on July 26th. The storms affected communities such as Deer Valley, Paradise Valley and Scottsdale. A trained weather spotter in Deer Valley, about 4 miles west of Desert Ridge Marketplace, reported trees uprooted near the intersection of 16th Street and Utopia. Peak wind gusts were estimated to be near 65 mph.	PHOENIX DEER VL	0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Trained Spotter
7/26/2014	Thunderstorm / High Wind	Thunderstorms with damaging microburst winds developed across the northern portions of the greater Phoenix metropolitan area during the late evening hours on July 26th. Some of the storms affected communities such as Deer Valley and North Mountain Park. A trained weather spotter just to the southwest of Deer Valley Municipal Airport reported that numerous power poles were blown down near the intersection of 7th Avenue and Deer Valley Road. Wind gusts were estimated to be close to 70 mph. Additionally, another trained spotter a bit further south, about 3 miles north of North Mountain Park reported a number of trees blown down. Street flooding was also occurring in the same location.	PHOENIX DEER VL	0	0	\$50,000	\$0	\$50,000	NCDC, 2014 - Trained Spotter
7/26/2014	Thunderstorm / High Wind	Strong thunderstorms developed across the northern portions of the greater Phoenix metropolitan area during the late evening hours on July 26th, and they affected communities such as Peoria. According to a trained weather spotter 2 miles northeast of Peoria, thunderstorm winds estimated to be near 65 mph blew down a large tree near the intersection of 67th Avenue and Pinnacle Peak Road. The downed tree was blocking traffic. No injuries were reported due to the downed tree.	PHOENIX DEER VL	0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Trained Spotter
7/31/2014	Thunderstorm / High Wind	Strong thunderstorms developed across portions of the greater Phoenix area, including the town of Buckeye, during the evening hours on July 31st. Due to hot and dry atmospheric conditions, the storms were able to generate strong and damaging microburst winds estimated to be in excess of 70 mph. According to the Buckeye Police and Fire Department, damaging microburst winds overturned 10 RV trailers at 1500 South Apache Road in Buckeye. Local media reported that there were some injuries involved.	VALENCIA	0	5	\$250,000	\$0	\$250,000	NCDC, 2014 - Fire Department/Rescue
8/3/2014	Thunderstorm / High Wind	Strong thunderstorms developed in the Wickenburg area during the late afternoon hours on August 3rd, and they produced damaging microburst outflow winds estimated to be nearly 70 mph in strength. According to a trained weather spotter located in northwest Wickenburg, the microburst winds produced roof damage in downtown Wickenburg. A Severe Thunderstorm Warning was issued for Wickenburg at 1720MST and it continued until 1745MST.		0	0	\$25,000	\$0	\$25,000	NCDC, 2014 - Trained Spotter
8/3/2014	Thunderstorm / High Wind	Thunderstorms developed across portions of the greater Phoenix area during the evening hours on August 3rd, and some of the storms produced strong and gusty outflow winds. According to a National Weather Service employee, gusty winds estimated to be nearly 60 mph blew down a tree at an intersection about 2 miles west of Fiesta Mall. Debris from the fallen tree was blown onto a car causing damage. The location of the damage was near the intersection of the Superstition Freeway and the Loop 101.		0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - NWS Employee
8/3/2014	Thunderstorm / High Wind	Thunderstorms developed across portions of the greater Phoenix metropolitan area during the late afternoon and early evening hours on August 3rd, and some of them affected the community of Tempe. The stronger storms produced gusty and damaging winds, with peak gusts estimated to be at least 60 mph. According to a local broadcast media report, thunderstorm winds blew down several trees at the Apache Station apartments, located about 2 miles southeast of the Tempe Marketplace. The falling trees resulted in two injuries; one man's finger was broken as a tree fell, and another woman was injured when a tree was blown into the pool at the apartment complex. Additionally, the media reported that strong thunderstorm winds blew off half of the roof at an animal hospital near the Apache Station apartment complex.		0	2	\$25,000	\$0	\$25,000	NCDC, 2014 - Broadcast Media
8/3/2014	Thunderstorm / High Wind	Thunderstorms developed across portions of the greater Phoenix area during the evening hours on August 3rd, and some of the stronger storms affected the community of Tempe. The storms produced damaging microburst winds that were estimated to reach 70 mph at times. Several reports of damage were received from the public, mostly in the area about 2 miles to the east of Tempe. The damage reports all occurred at approximately 1815MST. According to public reports, a two foot in diameter tree was uprooted, and when it fell it damaged a stone wall. Additionally, two large trees were blown down, causing damage to a cinder block wall and a swimming pool. Many other large trees in the area were also blown down. Finally, another public report indicated that a power pole was snapped in east central Tempe at the intersection of South River Drive and Southern Avenue. This location was on Southern Avenue between McClintock Drive and the Loop 101.		0	0	\$40,000	\$0	\$40,000	NCDC, 2014 - Public
8/11/2014	Thunderstorm / High Wind	Thunderstorms developed during the afternoon hours on August 11th and they affected portions of the greater Phoenix area including communities such as Chandler. Some of the storms produced strong and damaging microburst winds; a trained weather spotter near the intersection of Gilbert and Riggs Road measured a peak wind gust to 72 mph. In addition, he indicated that the gusty winds produced some tree damage. The tree damage was approximately 4 miles southeast of Tumbleweed Park. A Severe Thunderstorm Warning had been issued for the area beginning at 1613MST and continuing through 1715MST.		0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Trained Spotter
8/12/2014	Thunderstorm / High Wind	Scattered thunderstorms developed across the greater Phoenix area during the evening hours on August 12th and some of them affected the community of Mesa. In addition to heavy rain, the storms produced gusty and damaging outflow winds. According to a public report, a large tree with an estimated diameter of 2 feet was uprooted by thunderstorm winds estimated to be nearly 70 mph. The tree was blown down near the Holmes school, located between Broadway Road and Southern Avenue.		0	0	\$2,000	\$0	\$2,000	NCDC, 2014 - Public
8/12/2014	Thunderstorm / High Wind	Scattered evening thunderstorms developed across the greater Phoenix metropolitan area on August 12th, and some of them affected the community of Mesa. In addition to heavy rain, the stronger storms produced gusty and damaging outflow winds. According to a report from the Mesa police department, a thunderstorm wind gust estimated to be 65 mph blew over a two foot diameter tree at the intersection of Stapley road and Main street in central Mesa. The tree fell over a stone fence and was blocking the road. No injuries were reported due to the fallen tree.		0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Law Enforcement

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
8/12/2014	Flooding / Flash Flooding	Scattered to numerous showers and thunderstorms produced locally heavy rainfall across the south central portion of the greater Phoenix metropolitan area during the afternoon and evening hours on August 12th. Rainfall rates were measured to be in excess of 1 inch per hour, and isolated locations received storm total rainfall greater than 3 inches. Some of the hardest hit communities included Laveen, Ahwatukee and south Phoenix. At 1830MST, a trained spotter located 1 mile northeast of Ahwatukee measured 1.05 inches of rain within one hour, and indicated that in addition to street flooding, the local drainage washes were running. Later, at 1930MST, another trained spotter 3 miles west of South Mountain Park measured an afternoon storm total rainfall of 3.2 inches. At the same time, he reported that 27th Avenue was flooded with water 18 inches deep between Dobbins and Baseline Roads. There were numerous stalled cars due to the flash flooding. According to an on-line article posted at the AZFamily.Com website, a flooded wash trapped 11 motorists near South 19th Avenue and Dobbins Road. At 1830MST, at the height of the storm, the raging waters came out of nowhere according to Phoenix Fire Captain Ruben Saavedra, and trapped the motorists. Rescue crews had a difficult time getting to the victims due to an overflowing nearby canal. The rescue crews indicated that the victims were shaken but not injured. Additionally, the storms damaged South Mountain Park and caused a major rock slide on the park's Summit Road at the 2 mile mark, according to David Urbinato with the Phoenix Parks and Recreation Department. Many boulders moved in the slide were 2 feet long by 1 foot wide, and the debris field exceeded 6 feet at its deepest point. Six vehicles were trapped on the Summit Road by the slide, and the Phoenix Fire Department transported these people off the mountain by 2100MST. The slide forced the closure of the Central Avenue entrance to the park due to debris removal. No injuries were reported due to the flash flooding.		0	0	\$100,000	\$0	\$100,000	NCDC, 2014 - Trained Spotter
8/12/2014	Flooding / Flash Flooding	Thunderstorms with locally heavy rain developed across the central portion of the greater Phoenix area during the afternoon and evening hours on August 12th; peak rain rates with the heavier showers approached 2 inches per hour at times. The heavy rain led to flood damage at some of the buildings in downtown Phoenix including the Boys & Girls Club of Metro Phoenix Administration Building located at 24th Street and Thomas Road. According to an on-line article posted at the AZFamily.Com website, heavy rain caused the roof of the building to cave in. A number of ceiling panels collapsed, leaving exposed ductwork and wiring. Standing water was left about six inches deep on the floor. Collapsed air-conditioning ductwork was hanging from the ceiling and appeared ready to fall to the ground at any second. Referring to the water damage, a Boys & Girls Club spokeswoman Lariana Forsythe said it's a disaster. Although damage to the building was considerable, nobody was hurt. Another on-line article reported that the Children's Museum of Phoenix was damaged after thousands of gallons of water poured into its atrium during the monsoon storms. The museum, located near Seventh and Van Buren Streets in downtown Phoenix, closed its first floor and three-story climbing structure due to the water damage. The flooding resulted in four inches of water on the main exhibit floor which ruined the carpet. Approximately 1000 carpet squares are needed to replace the damaged flooring, at 50 dollars each.		0	0	\$200,000	\$0	\$200,000	NCDC, 2014 - Newspaper
8/12/2014	Thunderstorm / High Wind	Scattered thunderstorms affected the greater Phoenix metropolitan area during the late afternoon and evening hours on August 12th, and some of them affected the communities of Gilbert and Chandler. In addition to heavy rain, the stronger storms produced gusty and damaging microburst winds. According to a trained weather spotter 2 miles southeast of Gilbert, thunderstorm wind gusts estimated to be at least 60 mph downed a number of trees at the intersection of Warner Road and Greenfield. No injuries were reported due to the fallen trees.		0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Trained Spotter
8/12/2014	Thunderstorm / High Wind	Scattered thunderstorms affected the greater Phoenix metropolitan area during the late afternoon and evening hours on August 12th, and some of them affected the community of Tempe. In addition to heavy rain, the stronger storms produced gusty and damaging microburst winds. A National Weather Service employee reported that thunderstorms winds, estimated to be at least 60 mph, downed a 25 foot tall tree at the intersection of Rural Road and Broadway Road in north Tempe. The tree had a diameter of approximately one and a half feet. No injuries were reported due to the fallen tree.		0	0	\$3,000	\$0	\$3,000	NCDC, 2014 - NWS Employee
8/12/2014	Flooding / Flash Flooding	Scattered to numerous thunderstorms produced locally heavy rain across the south central portions of the greater Phoenix metropolitan area during the afternoon and evening hours on August 12th. Peak rainfall rates were well in excess of one inch per hour at times, and storm total rainfall amounts exceeded 3 inches. Some of the hardest hit communities included Laveen, Ahwatukee and South Phoenix. At 1930MST, a trained weather spotter 3 miles northwest of South Mountain Park measured an afternoon storm total rainfall of 3.2 inches. According to the Maricopa County Sheriff's office, heavy rain led to flash flooding and subsequently areal flooding. Numerous roads were flooded and closed, including the intersections of 27th Avenue and Cheyenne Drive, and 45th Avenue and Ivanhoe Street. Many homes in the area, especially those along Dobbins Road between 19th Avenue and 51st Avenue, suffered significant flood damage, as water 1-3 feet filled up their residences. The flooding also produced significant damage to the SRP water system according to SRP spokesman Jeff Lane. The flooding prompted the issuance of an Areal Flood Warning which remained in effect through the early morning hours on August 13th. No injuries were reported due to the flooding.		0	0	\$2,000,000	\$0	\$2,000,000	NCDC, 2014 - Law Enforcement

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
8/19/2014	Flooding / Flash Flooding	Thunderstorms developed across the northern portion of the greater Phoenix area during the early morning on August 19th, and continued to intensify and move northeastward in waves through the late morning and into the afternoon hours. The stronger storms produced locally heavy rain with rain rates in excess of two inches per hour at times. The heavy rain led to episodes of flash flooding which especially impacted the Interstate 17 corridor from Anthem northward through New River and up to Black Canyon City. Multiple water rescues were needed along the I-17 corridor starting shortly after 0700MST. At 0714MST, Phoenix Fire and Rescue reported a water rescue in New River near I-17. At 1000MST, a trained weather spotter 8 miles north of New River reported a rockslide on I-17 due to flash flooding. At the same time, another weather spotter 4 miles north of New River reported that Interstate 17 was completely inundated with water across the entire width of the highway; multiple cars were stranded and water rescues were underway. At 1150MST, Phoenix Fire and Rescue reported yet another water rescue underway 2 miles northwest of New River. Additionally, at 1213MST Phoenix Fire and Rescue indicated that another water rescue was needed 2 miles northwest of the town of Anthem along the I-17 corridor. One of the more dramatic water rescues was detailed in a story posted on the Channel 5 KPHO website; the rescue occurred at a home in New River. The home, located at 46100 North 43rd Avenue, became surrounded by raging floodwaters and soon was swept off of its foundation. It drifted 20 feet or so with the waters and became lodged between 2 trees. A woman and another occupant were trapped and a helicopter lowered 2 rescuers to the roof of the house. However, they were unable to rescue the trapped people until an hour or so later after the floodwaters receded. The home was a total loss, and the owner also lost 2 cars and a motorcycle to the raging water. Other homes and businesses in the New River area suffered damage due to flash flooding. A story posted on the AP website indicated that a horse property was destroyed by the flood waters. A muddy pit filled with rocks, pieces of asphalt and mangled trees were all that remained of a circular horse pen. Fortunately, no injuries were reported due to the significant and widespread flash flooding episodes.		0	0	\$1,000,000	\$0	\$1,000,000	NCDC, 2014 - Trained Spotter
8/19/2014	Flooding / Flash Flooding	Thunderstorms developed across the northern and northeast portions of the greater Phoenix area during the early morning hours on August 19th, and they intensified and moved northeastward through the morning hours and into the afternoon. The stronger storms produced locally heavy rain with rain rates in excess of 2 inches per hour at times; the intense rain was partly due to lifting in the lower atmosphere as storms moved from the lower deserts northeast into higher terrain. The heavy rain led to episodes of flash flooding which necessitated multiple water rescues from Phoenix Fire and Rescue. Some of the areas that experienced the most significant flooding included Carefree and Cave Creek. Between 0731MST and 0740MST, multiple swift water rescues were performed by Phoenix Fire in the areas around Cave Creek. Also, at 0813MST, Phoenix Fire and Rescue reported another water rescue about 4 miles northwest of Desert Ridge Marketplace. Fortunately, no injuries were reported due to the flash flooding.		0	0	\$25,000	\$0	\$25,000	NCDC, 2014 - Fire Department/Rescue
8/19/2014	Flooding / Flash Flooding	Widespread showers and thunderstorms developed across the northern portion of the greater Phoenix metropolitan area during the morning hours on August 19th, and they continued to intensify and move to the northeast into the early afternoon hours. The storms produced periods of heavy rain with peak rainfall rates in excess of 2 inches per hour. The heavy rain led to flash flooding which especially impacted the communities of Anthem and New River. According to a story posted on the AP website, flood waters raging down Skunk Creek inundated the Cox Cactus farm located at 1537 West Desert Hills Drive in Phoenix. The cactus nursery, on the east side of Anthem, lost nearly two million dollars in inventory and the owners estimated that it would take nearly two years to recover from the storm.		0	0	\$2,000,000	\$0	\$2,000,000	NCDC, 2014 - Newspaper
8/19/2014	Flooding / Flash Flooding	Scattered thunderstorms continued to develop across the north and west portions of the greater Phoenix metropolitan area during the late morning hours on August 19th, affecting communities such as Surprise, Beardsley and Wittmann. The stronger storms produced locally heavy rainfall, with peak rain rates in excess of one inch per hour. The heavy rain led to urban flooding as well as flash flooding. At 1119MST, Phoenix Fire and Rescue reported flash flooding about 2 miles southeast of Wittmann; the Phoenix fire department was dispatched to assist with a water rescue. Also, at 1131MST, Phoenix Fire and Rescue reported another water rescue in progress about 4 miles north of the community of Beardsley. No injuries were reported due to the flooding. At the time, a Flash Flood Warning was not in effect, rather an Urban and Small Stream Flood Advisory had been issued for the area.		0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Fire Department/Rescue
8/21/2014	Thunderstorm / High Wind	A line of thunderstorms developed across the central portion of the greater Phoenix area during the evening hours on August 21st, and some of the storms affected the community of Scottsdale. The thunderstorms were not forecast to be severe, and as a result, a Severe Thunderstorm Warning was not issued. However, a Significant Weather Advisory was issued instead, which called for gusty winds to 40 mph with the stronger storms. A trained weather spotter in Scottsdale reported that a strong wind gust blew down a light pole next to a tennis court located at the Sun King Apartments. The address of the apartment complex was 5900 East Thomas Road in Scottsdale. An inspection of the light pole revealed that the base of the pole was heavily rusted out and as such, less wind than otherwise expected would be needed to topple the metal pole.		0	0	\$3,000	\$0	\$3,000	NCDC, 2014 - Trained Spotter
8/25/2014	Flooding / Flash Flooding	Thunderstorms developed across the northern portion of Maricopa county during the evening hours on August 25th, and some of the stronger storms affected the community of Wickenburg. The storms produced locally heavy rainfall with peak rain rates in excess of one inch per hour. The heavy rain led to both urban street flooding as well as flash flooding in the town of Wickenburg. According to a report from local broadcast media, flash flooding occurred at the Desert Cypress Mobile Home and RV park located along Constellation Road and El Recreo Drive. Flash flooding produced mild to severe damage to between 12 and 15 of the homes at the park. The Wickenburg Fire Department evacuated 11 people from the homes that experienced the most significant flooding. Fortunately, no injuries were reported due to the flooding.		0	0	\$300,000	\$0	\$300,000	NCDC, 2014 - Broadcast Media
8/25/2014	Thunderstorm / High Wind	Thunderstorms developed across far northern Maricopa county during the evening hours on August 25th, and some of them affected the community of Wickenburg. The stronger storms generated gusty and damaging outflow winds; according to a broadcast media report, wind gusts estimated to be nearly 60 mph downed power lines approximately 2 miles east of Wickenburg.		0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Broadcast Media

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
8/25/2014	Thunderstorm / High Wind	Thunderstorms developed across the far northern portion of the greater Phoenix area during the evening hours on August 25th, and some of the stronger storms affected the community of Wickenburg. The storms produced gusty and damaging outflow winds, with peak gusts estimated to be at least 60 mph. A trained weather spotter 1 mile northeast of Wickenburg reported that strong outflow winds snapped off a large tree branch with a diameter of 18 inches. The branch fell, causing damage to both a roof and an automobile next to the house. The home was located at the intersection of Tegner Street and Genuing Avenue.		0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Trained Spotter
8/25/2014	Thunderstorm / High Wind	Scattered thunderstorms developed across portions of the greater Phoenix metropolitan area during the evening hours on August 25th, and some of the storms affected the town of Buckeye. The stronger storms produced gusty and damaging outflow winds with peak gusts estimated to be nearly 60 mph at times. According to a report from the Buckeye Police Department, strong thunderstorm winds knocked down multiple power poles about one mile east of town. The downed power poles caused local traffic to be shut down or diverted. No injuries were reported due to the fallen power poles.		0	0	\$25,000	\$0	\$25,000	NCDC, 2014 - Law Enforcement
9/6/2014	Thunderstorm / High Wind	Thunderstorms developed across the far southeast portion of the greater Phoenix metropolitan area during the afternoon hours on September 6th and they affected communities such as Chandler, San Tan Valley and Queen Creek. The stronger storms produced gusty and damaging outflow winds, estimated to be in excess of 60 mph at times. A trained weather spotter located about 2 miles northwest of the Seville Country Club reported thunderstorm wind damage. Wind gusts, estimated to be nearly 65 mph, blew off a section of the roof of a trailer in an RV park. Fortunately, no injuries were reported.	HIGLEY	0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Trained Spotter
9/8/2014	Lightning	Widespread showers and embedded thunderstorms developed across the greater Phoenix metropolitan area during the early morning hours on September 8th. Although the thunderstorms were rather isolated, at 0200MST lightning from one of the storms struck a house in south Phoenix. The house was located near 27th Avenue and Baseline Road, at 9624 S 26th Lane in Phoenix. Neighbors reported hearing a large boom at 0200MST when the lightning bolt struck; by the time firefighters arrived the flames were too intense and they were forced to go into a defensive mode. Four children and two adults made it out of the house safely, however the house was a total loss.	LAWEEN	0	0	\$350,000	\$0	\$350,000	NCDC, 2014 - Newspaper
9/8/2014	Flooding / Flash Flooding	Widespread and intense showers and thunderstorms developed across the central portions of the greater Phoenix metropolitan area during the early morning hours on September 8th; peak rainfall rates were well in excess of 2 inches per hour. The heavy rain led to significant urban flooding as well as flash flooding which affected the area around South Mountain, including the community of Laveen. Between 2 and 4 inches of rain fell during the morning, resulting flash flooding which damaged a number of homes; one of the zones hit hardest included residents along Dobbins Road between 19th Avenue and 51st Avenue. Many of the homes in the flooded area experienced similar flooding back on August 12th when 3 inches of rain quickly fell in the area. According to an article posted on-line at the Arizona Republic website, flood waters seriously damaged the home of Daniel Magos, located at 23rd Avenue and Dobbins Road. Flood waters also inundated the home of Augustin Ramirez in Laveen, located next to a cotton farm at the corner of Sunrise Drive and 51st Avenue. He had spent 20 thousand dollars repairing flood damage from back in August; the current flooding destroyed everything, including his recent renovations. Flood waters also inundated the home of Nick Kriaris, located at 19th Avenue and Dobbins Road. Water filled up the living room knee-high, causing him to lose everything. The washes coming down from South Mountain have been directed into the area, partly due to the construction of new subdivisions such as Woodside Homes. Poor drainage in the area also contributed to the significant flooding.	LAWEEN	0	0	\$500,000	\$0	\$500,000	NCDC, 2014 - Newspaper
9/8/2014	Flooding / Flash Flooding	Widespread showers and embedded thunderstorms quickly developed across the entire greater Phoenix metropolitan area during the early morning hours on September 8th, and they produced very heavy rainfall with peak rain rates from two to nearly 6 inches at times. The heavy rain led to widespread urban flooding as well as episodes of flash flooding across the greater Phoenix area, resulting in numerous road closures. The road closures started shortly after 0230MST and became numerous by 0400MST. According to reports received via Twitter, State Route 51 flooded where the freeway dips below the Cactus Road underpass. Traffic in both directions was forced off the freeway, but allowed to re-enter both north and south of Cactus Road. The Superstition Freeway was flooded at Val Vista Drive with water up to the hoods of some vehicles, according to Public Information Officer Raul Garcia with the Arizona Department of Public Safety. The Loop 202 Santan Freeway was closed in both directions at the Loop 101 interchange. Interstate 17 southbound was closed from Grant to 19th Avenue due to flooding. Flooding also occurred on I-17 at Indian School Road, and at Greenway where the road below the freeway was flooded and closed. Interstate 10 was closed at the Riggs Road exits in both directions due to flooding. Finally, Interstate 10 was closed at 43rd Avenue due to flooding; at least 12 cars were stranded after water several feet deep covered the road and turned the interstate into a lake.	CAVE CREEK	0	0	\$250,000	\$0	\$250,000	NCDC, 2014 - Social Media
9/8/2014	Flooding / Flash Flooding	Widespread showers and embedded thunderstorms developed across the central and southeast portion of the greater Phoenix metropolitan area during the early morning hours on September 8th, and they persisted into the middle of the morning. The showers produced intense rainfall; gages indicated rain rates from 2 to nearly 6 inches per hour at times. Many locations across Tempe and Chandler received 2.5 to 5 inches of rain during the morning. According to an on-line article posted by the East Valley Tribune, at about 0800MST heavy rain caused the collapse of a roof at the Fry's grocery store located at the intersection of Baseline Road and McClintock Road. The Tempe Fire Department indicated that there were no injuries, and that the store would be closed until further notice.	HELENA	0	0	\$50,000	\$0	\$50,000	NCDC, 2014 - Newspaper
9/8/2014	Flooding / Flash Flooding	Widespread and intense showers and embedded thunderstorms developed across the central portion of the greater Phoenix area during the early morning hours on September 8th, and they affected the community of Ahwatukee. Rainfall rates with the heavier storms exceeded 2 inches per hour at times and led to significant flooding of streams, washes and roads in the area, and the flooding seriously impacted the Mountain Park Community Church located at 24th Street and Pecos Road. A wash that runs behind the church crested during the morning's heavy rainfall and sent water cascading into the church. The water rose above the chairs in the auditorium, actually filling up the entire auditorium. The flooding made for a massive cleanup, and close to 75 volunteers rallied during the afternoon to clean up the mud and debris.	WEST CHANDLER	0	0	\$100,000	\$0	\$100,000	NCDC, 2014 - Newspaper

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
9/8/2014	Flooding / Flash Flooding	Widespread showers and embedded thunderstorms produced very heavy rainfall across the central portions of the greater Phoenix area during the early morning hours on September 8th. Rainfall rates were well in excess of 2 inches per hour at times, and the heavy rain caused major flash flooding on Interstate 10. At 0400MST the Arizona Department of Transportation reported that Interstate 10 was closed at 43rd Avenue, as the intense rain caused a lake to form several feet deep across the freeway. Since it was pitch black at the time, motorists unwittingly drove into the lake and became stalled; at least 2 dozen motorists became stranded in water which came up to the top of their hoods. The freeway was soon closed between 35th and 67th Avenues; after the water began receding at 0930MST, ADOT crews worked feverishly to clean up the road. Westbound Interstate 10 partially opened by 1400MST, the eastbound lanes were closed through the early evening hours.	FOWLER	0	0	\$500,000	\$0	\$500,000	NCDC, 2014 - Department of Highways
9/8/2014	Flooding / Flash Flooding	Widespread showers and embedded thunderstorms produced very heavy rainfall in Mesa during the morning hours on September 8th; peak rain rates were well in excess of 2 inches per hour and many locations received between 3 and 5 inches of rain with this event. The heavy rain led to significant urban flooding across Mesa, and one area that was especially hit hard was the Emerald Acres neighborhood located just north of US 60, and bounded by Stapley Drive and Harris. Water flowing towards the south ran up against a large berm protecting the Superstition freeway and had nowhere to go. A flood control canal bordering the freeway as well as several water retention basins were in place to protect against flooding; due to the excessive volume of runoff they were overwhelmed and as a result the neighborhood became flooded with one to three feet of water. Approximately 200 homes suffered significant flood damage and many residents had to be evacuated. Many of the homes suffered ruined flooring as well as damaged drywall that needed to be replaced. Crews started pumping water out of the area with large machines on Tuesday, September 9th and by early morning Wednesday, most of the water was removed from the streets in the Harris/Stapley neighborhood. It was estimated that water would not be completely removed for a week.	MC QUEEN	0	0	\$5,000,000	\$0	\$5,000,000	NCDC, 2014 - Newspaper
9/27/2014	Thunderstorm / High Wind	A severe squall line moved east across the western portion of the greater Phoenix metropolitan area during the middle of the afternoon on September 27th, and the associated thunderstorms generated gusty and damaging microburst winds in portions of the community of Glendale. According to a trained weather spotter located just to the southwest of the Arizona State University West Campus, gusty winds estimated to be at least 50 mph caused roof damage and also blew down an awning in a local trailer park. In addition, the strong winds caused a power outage in the area. Locally heavy rainfall accompanied the passage of the squall line; 1.5 inches of rain was measured within 30 minutes and street flooding occurred as a result.	GLENDAL MUNI A	0	0	\$10,000	\$0	\$10,000	NCDC, 2014 - Trained Spotter
9/27/2014	Thunderstorm / High Wind	A severe squall line moved east across the western portion of the greater Phoenix metropolitan area during the middle of the afternoon on September 27th, and the associated thunderstorms brought gusty and damaging winds to communities such as Glendale. According to a report from local broadcast media, damaging microburst winds estimated to be as high as 65 mph blew down a power pole near the intersection of West Thunderbird Road and North 59th Avenue, about 3 miles north of Glendale Municipal Airport. The power pole fell on a car and blocked the road.	GLENDAL MUNI A	0	0	\$30,000	\$0	\$30,000	NCDC, 2014 - Broadcast Media
9/27/2014	Thunderstorm / High Wind	A severe squall line moved east across Phoenix Sky Harbor Airport during the middle of the afternoon on September 27th, and the associated thunderstorms generated strong, damaging microburst winds which significantly impacted the airport. At 1431MST, the official ASOS wind sensor on the runway complex measured a peak gust to 58 knots. According to city officials, gusty microburst winds estimated to reach as high as 70 mph damaged the roof of terminal 2; the roof damage led to water leakage at three of the gates. Terminals 3 and 4 also suffered roof leaks. Five aircraft at the airport sustained minor damage due to flying debris. Additionally, there was some flooding of local airport roads. The strong gusty winds caused the evacuation of the control tower for approximately one hour, and led to the diversion of 44 inbound flights.	(PHX)SKY HARBOR	0	0	\$100,000	\$0	\$100,000	NCDC, 2014 - County Official
9/27/2014	Thunderstorm / High Wind	A severe squall line moved east across central Phoenix during the middle of the afternoon on September 27th, and the stronger thunderstorms produced strong and damaging winds estimated to be at least 65 mph. According to a trained weather spotter in central Phoenix, gusty winds blew down a 12 inch diameter tree near the intersection of East McDowell Road and 17th Street. The tree was downed in the parking lot of a local hospital; fortunately no injuries or damage to cars was reported.	PHOENIX	0	0	\$2,000	\$0	\$2,000	NCDC, 2014 - Trained Spotter
9/27/2014	Thunderstorm / High Wind	A severe squall line moved east across the greater Phoenix metropolitan area during the middle of the afternoon on September 27th, and the stronger thunderstorms brought strong and damaging winds to communities such as Scottsdale and Deer Valley. According to an amateur radio operator in south Scottsdale, thunderstorm microburst winds estimated to be at least 60 mph blew down several trees located at the intersection of east Thomas Road and the Pima Freeway (Loop 101). Additionally, a trained weather spotter reported an 8 inch diameter tree downed to the southeast of the Deer Valley airport.	SCOTTSDALE	0	0	\$8,000	\$0	\$8,000	NCDC, 2014 - Amateur Radio
9/27/2014	Thunderstorm / High Wind	A severe squall line moved east and across the central portion of the greater Phoenix metropolitan area during the middle of the afternoon on September 27th; as the line moved through it generated gusty and damaging winds estimated to be in excess of 60 mph. According to a trained weather spotter, straight-line microburst winds knocked down freeway signs on the highway 143 Salt River bridge, located just to the east of Phoenix Sky Harbor International Airport.	KENDALL	0	0	\$20,000	\$0	\$20,000	NCDC, 2014 - Trained Spotter
9/27/2014	Flooding / Flash Flooding	A line of very strong thunderstorms moved across the western portion of the greater Phoenix Metropolitan area during the early afternoon hours, affecting communities such as Litchfield Park, Avondale and Goodyear. The storms produced very heavy rainfall with rain rates in excess of 2 inches per hour and this led to significant, widespread urban flooding. According to a report from local broadcast media, the heavy rains flooded neighborhoods in Litchfield Park and Goodyear, especially in the areas near 156th Avenue and West Indian School Road. The flooding was reported at about 1600MST, and soon afterward an Areal Flood Warning was issued for the area. The warning remained in effect through 2030MST.	GOODYEAR ARPT	0	0	\$50,000	\$0	\$50,000	NCDC, 2014 - Broadcast Media
9/27/2014	Thunderstorm / High Wind	A severe squall line moved east across the eastern portion of the greater Phoenix area during the middle of the afternoon on September 27th, and the stronger thunderstorms produced damaging winds that affected communities such as Mesa. According to a National Weather Service Employee in east Mesa, gusty microburst winds estimated to be nearly 70 mph blew down a large tree with a diameter of two feet. The tree, located near the intersection of North Power Road and East McKellips Road, fell down and blocked a roadway.	HARMONY VILLA	0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - NWS Employee

Date	Hazard	Description	Location	Fatal	Inj	Damage Estimates			
						Property	Crop/ Livestock	Total	Source
9/27/2014	Thunderstorm / High Wind	A severe squall line moved east across the western portion of the greater Phoenix metropolitan area during the middle of the afternoon on September 27th. The squall line brought strong, gusty and damaging winds to the town of Glendale. According to the official wind sensor at the Glendale airport, a peak wind gust of 65 knots was recorded. The wind was sufficient to peel off roofing tiles from a nearby building.	GLENDAL MUNI A	0	0	\$5,000	\$0	\$5,000	NCDC, 2014 - Trained Spotter
12/27/2014	Extreme Heat/Cold	A very cold upper level low pressure system moved into the lower deserts of central Arizona during late December, and ushered in freezing conditions during the morning hours on December 27th. Freezing or subfreezing temperatures occurred over much of the greater Phoenix metropolitan area; the official ASOS stations at both Scottsdale and Deer Valley reported low temperatures of 32 degrees or lower. Colder outlying areas, including communities such as Queen Valley and Chandler, experienced low temperatures in the low to middle 20s Saturday morning. The cold temperatures were sufficient to cause widespread damage to sensitive vegetation such as decorative or ornamental plants. A Freeze Warning was issued from midnight through 0800MST for the greater Phoenix area; despite similarly cold low temperatures occurring on the morning of Sunday December 28th, a freeze warning was not issued for that day. Instead, a Special Weather Statement was issued highlighting near-freezing morning temperatures on December 28th.	County-wide	0	0	\$1,000,000	\$0	\$1,000,000	NCDC, 2014 - ASOS

## Appendix E

### Plan Maintenance Review Reports