

Colorado River Indian Tribes (CRIT)

Multi-Hazard Mitigation Plan Update

December 2018

Prepared for:



**Colorado River Indian Tribes
Colorado River Indian Reservation
26600 Mohave Road
Parker, AZ 85344**

DRAFT

Prepared by:



Wise Oak Consulting, L.L.C. SM
9815 J Sam Furr Road, #223, Huntersville, NC 28078
Tel: 704-572-7333 www.WiseOakConsulting.us



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Executive Summary

“Mitigation Planning is the process used by tribal, state, and local government leaders to understand risks from natural hazards and to develop long-term strategies to reduce the impacts of future events on people, property, and the environment.” (Federal Emergency Management Agency 2017, 1)

A. Introduction

The Colorado River Indian Tribes (CRIT) has developed this plan to protect lives, property, and the environment; as well as support tribal sovereignty. The Colorado River Indian Tribes feels strongly about completing mitigation actions, to include education, to help the tribal community to be more prepared and better able to assist themselves and the surrounding local community during disasters. The Colorado River Indian Tribes looks forward to working with the whole community partners and endeavors to create and sustain a stable, secure and resilient environment and community no matter what the hazards it faces. Of note, in 2017, the National Institute of Building Sciences (NIBS) [released a finding](#) that every \$1 invested in disaster mitigation by three federal agencies saves society \$6. (Fuchs, PEW 2018) Therefore, in addition to protecting lives, property, and the environment, there is a strong business case for taking pre-disaster mitigation measures.

All CRIT members, departments, enterprises, and whole community partners will benefit from this update to the CRIT Multi-Hazard Mitigation Plan (MHMP). Tribal departments, enterprises, and even tribal members also play a vital role in disaster preparedness, response, and recovery. Therefore, it is necessary to have a plan that strategically outlines the steps necessary to reduce the risk from any natural hazard. It is also important for the Tribe to increase its capacity to respond to natural disasters in a way that is well planned and organized.

B. What is Hazard Mitigation?

The first step to understanding the Colorado River Indian Tribes’ Hazard Mitigation Plan is to understand what hazard mitigation is. Hazard mitigation is defined as ‘any action taken to reduce or eliminate the long-term risk to human life and property from human-caused or natural hazards.’ A hazard is any event or condition with the potential to cause fatalities, injuries, property/infrastructure damage, agricultural loss, environmental damage, business interruption, or other structural and financial loss. As communities grow, hazard mitigation

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will play an even more important role in the government's primary objective of protecting its citizens' health, safety and welfare.

Hazard mitigation aims to make human development and the natural environment safer and more resilient. Hazard mitigation generally involves altering the built environment to significantly reduce risks and vulnerability to hazards so that life and property losses can be avoided or reduced. Mitigation can also include removing the built environment from disaster prone areas and maintaining natural mitigating features such as wetlands or floodplains. Hazard mitigation makes it easier and less expensive to respond to and recover from disasters by breaking the damage and repair cycle.

Examples of hazard mitigation measures include, but are not limited to the following:

- Development of mitigation standards, regulations, policies, and programs
- Land use/zoning policies
- Strong statewide building code and floodplain management regulations
- Dam safety program, seawalls, and levee systems
- Acquisition of flood prone and environmentally sensitive lands
- Retrofitting/hardening/elevating structures and critical facilities
- Relocation of structures, infrastructure, and facilities out of vulnerable areas
- Public awareness/education campaigns
- Improvement of warning and evacuation systems

Benefits of hazard mitigation include:

- Saving lives and protecting public health
- Preventing or minimizing property damage
- Minimizing social dislocation and stress
- Reducing economic losses
- Protecting and preserving infrastructure
- Less expenditures on response and recovery efforts

C. Why Develop This Plan?

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The future and sovereignty of CRIT is strengthened when the Tribes adapt to climate change, becomes more resilient to disasters, and mitigates the effects of both. Disasters are increasingly devastating and costlier over time. As damage and the associated costs from disasters continue to increase, CRIT realizes the importance of identifying effective ways to reduce its vulnerability to disasters. This hazard mitigation plan assists CRIT in reducing risks from hazards by focusing on the effects of the most significant hazards and threats, identifying the Tribes' vulnerabilities and resources, sharing information, and developing strategies for risk reduction. The plan also helps to guide and coordinate mitigation activities throughout the CRIT Reservation. This plan provides a set of action items to reduce risk from hazards through education and outreach programs and to foster the development of partnerships and implementation of preventative activities, such as land use programs that control development in areas subject to damage from hazards.

An important aspect of sovereignty is ensuring and preserving the option of autonomous prevention, protection, mitigation, response, and recovery activities. Jurisdictions that desire to be direct applicants/recipients (vice sub-applicants) of mitigation grants are required to have a current hazard mitigation plan. In addition, jurisdictions requesting the full complement of Federal aid during disaster recovery must have a current, FEMA-approved hazard mitigation plan (Table 1).

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| FEMA Assistance Programs and Mitigation Plan Requirement | | | |
|---|--|--------------------------------|------------------------------------|
| FEMA Assistance Program | | Is a Mitigation Plan Required? | |
| | | Tribal Applicant to FEMA | Tribal Sub-applicant through State |
| Individual Assistance (IA) | | No | No |
| Public Assistance (PA) | Categories A and B (e.g., debris removal, emergency protective measures) | No | No |
| | Categories C through G (Permanent work – e.g., repairs to publicly owned buildings) | Yes | No |
| Fire Management Assistance Grants (FMAG) | | Yes | No |
| Hazard Mitigation Grant Program (HMGP) | Planning grant | Yes | No |
| | Project grant | Yes | Yes |
| Pre-Disaster Mitigation (PDM) | Planning grant | No | No |
| | Project grant | Yes | Yes |
| Flood Mitigation Assistance (FMA) | Planning grant | Yes | No |
| | Project grant | Yes | Yes |

Table 1. FEMA Assistance programs and mitigation plan requirements.



D. Federal Emergency Management Agency Guidance

1. Code of Federal Regulations, Title 44

The Colorado River Indian Tribes is updating its multi-hazard mitigation plan in compliance with the Code of Federal Regulations, Title 44, Chapter 1, Subchapter D, Part 201, Section 201.7 (44 CFR §201.7), which defines tribal mitigation plan requirements. Title 44, Chapter 1, Part 201 ([44 CFR Part 201](#)) of the Code of Federal Regulations (CFR) contains requirements and procedures to implement the hazard mitigation planning provisions of the Stafford Act. Title 44 CFR Part 201 directs state, local, and American Indian tribal governments to identify the natural hazards that impact them, to identify actions and activities to reduce any losses from those hazards, and to establish a coordinated process to implement the plan, taking advantage of a wide range of resources. Tribal mitigation planning requirements were specifically created under 44 CFR §201.7 to give Tribes more flexibility and the ability to meet the eligibility requirements of a grantee or subgrantee for Federal Emergency Management Agency (FEMA) Hazard Mitigation Assistance programs. The 44 CFR §201.7 requirements are derived from the Disaster Mitigation Act of 2000 (Public Law 106-390), which amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), which seeks: “...to reduce the loss of life and property, human suffering, economic disruption, and disaster assistance costs resulting from natural disasters.”

2. Disaster Mitigation Act of 2000

The Disaster Mitigation Act of 2000 (DMA2K), commonly known as the 2000 Stafford Act Amendments, was approved by Congress on October 10, 2000. Section 322 is the DMA2K amendment¹ to the Stafford Act that primarily deals with hazard mitigation planning as it relates to the development of local hazard mitigation plans. The DMA2K legislation was signed into law on October 30, 2000. Hazard mitigation planning requirements for tribes wishing to participate as grantees under the public assistance and hazard mitigation programs are implemented in the Interim Final Rule at 44 CFR Part 201.7.

The overall purpose of DMA2K is to establish a national program for pre-disaster mitigation, streamline administration of disaster relief at both the federal and state levels, and control

¹ Section 322 is enacted under Section 104 of DMA2K.

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federal costs of disaster assistance. Congress envisioned that implementation of these new requirements would result in the following key benefits:

- Reduction of loss of life and property, human suffering, economic disruption, and disaster costs.
- Prioritization of hazard mitigation planning at the local level, with an increased emphasis placed on planning and public involvement, assessing risks, implementing loss reduction measures, and ensuring critical services/facilities survive a disaster.
- Establishment of economic incentives, awareness and education via federal support to state, tribal, and local governments, that will result in forming community-based partnerships, implementing effective hazard mitigation measures, leveraging additional non-Federal resources, and establishing commitments to long-term hazard mitigation efforts.

In general, the DMA2K legislation requires all local, county, and tribal governments to develop a hazard mitigation plan for their respective community in order to be eligible to receive certain federal mitigation funds including Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation Program (PDM) funds. Approval and adoption of this plan will also satisfy the requirements of the Flood Mitigation Assistance Program (FMA) as well.

In addition to satisfying the regulatory requirements of DMA2K, the primary purpose of this plan is to identify natural and human-caused hazards that impact CRIT, 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.

E. Organization

This CRIT Multi-Hazard Mitigation Plan update has significant changes from the previous version. This plan is arranged and prepared to satisfy Tribal level planning requirements mandated by the Disaster Mitigation Act of 2000 (DMA2K). DMA2K requirements are provided as appropriate in each section. Notably, the plan is organized in sections around FEMA's five required hazard mitigation planning elements:

Executive Summary

- I. Element A - Planning Process
- II. Element B - Hazard Identification and Risk Assessment

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- III. Element C - Mitigation Strategy
- IV. Element D - Plan Updates
- V. Element E - Assurances and Plan Adoption
- VI. Appendices

While all the elements are essential, the most important element is the mitigation strategy because it contains the actions that CRIT will take to lessen the impacts of disasters.

Section I – The Planning Process

As described in the executive summary above, CRIT has developed this MHMP update to protect people, property, and the environment by lessening the impacts of disasters. In creating this update, CRIT took a whole community approach to maximize the input from its staff, tribal members, non-member residents and workers, surrounding jurisdictions and citizens, the State of Arizona, the Federal government, the private sector, non-profit organizations, and volunteer agencies. The Colorado River Indian Tribes used web-based, electronic (email), and hard-copy surveys (Appendix A). Planners also conducted interviews (Appendix B) of key CRIT staff and held multiple open community workshops to garner input. From that input, the Planning Team and Tribal Council developed a completely new set of goals and objectives. While a full description of the goals and objectives is provided in Section I, the goals are:

- **Goal #1: Promote Sustainable Living** - Promote development in a sustainable manner.
- **Goal #2: Protect Lives and Property** - Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to hazards.
- **Goal #3: Increase Public Awareness of Local Hazards** - Increase public awareness, understanding, support, and demand for hazard mitigation.
- **Goal #4: Partnerships and Implementation** - Build and support local partnerships to continuously become less vulnerable to hazards.
- **Goal #5: Strengthen Emergency Services Capability** - Establish policies and procedures to ensure mitigation projects for critical facilities, services and infrastructure.

It is important to note that the goals are NOT in a priority order. This is deliberate because many are interdependent and have a temporal element that may require a specific order in accomplishing them. For example, Goal #2 is a typical top goal in emergency management,

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but CRIT feels strongly about taking all actions in a sustainable manner. In addition, Goal #5 enables the accomplishment of many mitigation actions. What is important is that the CRIT MHMP Planning Team intends to accomplish mitigation actions in a deliberate and methodical manner.

Section II – Hazard Identification and Risk Assessment

Section II changed significantly from the previous MHMP. First, the impact of climate change on each natural hazard was an overriding consideration. Second, the number and types of disasters addressed in the previous update was quite limited. In consideration of climate change as well as actual events, CRIT has evaluated additional natural hazards. The hazard identification and risk assessment terminology has also changed to reflect FEMA’s three factors for evaluating hazards – location, extent, and probability of occurrence. Finally, “worst most likely” scenario-based hazard descriptions are included that match CRIT’s Threat and Hazard Identification and Risk Assessment (THIRA) – a new Homeland Security requirement and methodology that emerged since the last MHMP as part of the National Preparedness System. The hazard identification and risk assessment resulted in the prioritized natural hazards of most concern shown in Table 2:

| Hazard | Hazard Location | Hazard Extent | Probability of Occurrence | Votes | Score |
|----------------------------------|------------------------|----------------------|----------------------------------|--------------|--------------|
| Extreme Heat | Extensive | Major | Highly Likely | 53 | 38.16 |
| Severe Winds (Dust Storm) | Extensive | Major | Highly Likely | 38 | 27.36 |
| Wildfires | Moderate | Major | Highly Likely | 56 | 26.88 |
| Drought | Extensive | Major | Likely | 47 | 25.38 |
| Flooding – Flash Flood | Moderate | Major | Likely | 45 | 16.2 |
| Flooding – Riverine | Moderate | Catastrophic | Occasional | 32 | 11.52 |
| Disease (Mosquitos) | Extensive | Major | Occasional | 31 | 11.16 |
| Earthquake | Moderate | Light | Unlikely | 16 | 0.96 |
| Winter Storms | Limited | Light | Unlikely | 14 | 0.42 |
| Landslide/ Mudslide | Limited | Light | Unlikely | 8 | 0.24 |
| Fissures | Limited | Light | Unlikely | 7 | 0.21 |

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| | | | | | |
|------------------------------------|---------|-------|----------|---|------|
| Subsidence (Sink Holes) | Limited | Light | Unlikely | 6 | 0.18 |
|------------------------------------|---------|-------|----------|---|------|

Table 2: Colorado River Indian Tribes’ Natural Hazards of Greatest Concern.

Based on the natural break point between disease and earthquake, extreme heat, only severe winds, wildfires, drought, flooding-riverine, flood-flash, and disease are assessed in this plan.

Section III – Mitigation Strategy

The most significant change from the previous MHMP is the expansion of goals and objectives and a corresponding 43 actions to support them (previously three actions). The Planning Team and community members developed the specific actions and conducted analysis to prioritize their accomplishment. These mitigation actions will be assigned to specific CRIT staff during the execution of the strategy in the years to come. While most of the actions are executable in three-to-five-year time frame, actions are included that could take decades to accomplish. For example, a more robust, survivable power supply network is a long-term project involving multiple jurisdictions. In the spirit of taking a wholistic approach, the Planning Team also developed a set of strategic-level concerns that stretch across an entire emergency management program (Table 3).

| | |
|----------------------------------|--|
| Extreme Heat - worst most likely | <ul style="list-style-type: none"> • Exasberated by climate change |
| Severe Storms/Winds | <ul style="list-style-type: none"> • Leads to cascading effects (power failure) |
| Wildfire | <ul style="list-style-type: none"> • Growing intensity in the West |
| Drought | <ul style="list-style-type: none"> • Compettion for water resources |
| Flash Floods | <ul style="list-style-type: none"> • Isloates communities / homes |
| Power Failure | <ul style="list-style-type: none"> • Can be fatal in extreme heat |
| Cyber Attack | <ul style="list-style-type: none"> • Infratsruructure and data |
| Armed Assault | <ul style="list-style-type: none"> • Opportunity for increased security |
| Natural & Cultural Resources | <ul style="list-style-type: none"> • New “Opportunity” for protection |

Table 3: Core strategic concerns.



I. The Planning Process

“The mitigation plan belongs to the local community.” (Federal Emergency Management Agency 2013, I-2)



Figure 1. FEMA’s four-phase hazard mitigation planning process.



A. Plan Development Schedule and Planning Team

44 CFR Section 201.7(c)(1) – “The plan shall include the following...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.”

The Colorado River Indian Tribes used FEMA’s overall four-phase hazard mitigation planning process to develop this plan (Figure 1).

1. **Organize the Planning Process and Resources** – in October 2018, CRIT initiated a Planning Team to ensure a whole community approach was followed. In light of the importance of updating its MHMP, CRIT used internal funding to secured assistance in completing the plan and did not use FEMA grant funding. The Tribe reached out to whole community partners, including the Federal government, the State of Arizona, La Paz County, the City of Parker, other local tribal nations, regional planning groups, enterprises/businesses, non-profits, volunteer organizations, and of course, CRIT staff and members. Through both Tribal government and public outreach, CRIT maximized input from the whole community.
2. **Assess Risks** – As detailed in Section II, CRIT used existing plans and assessments, studies, as well as new surveys (Appendix A) and interviews (Appendix B) to fully capture and articulate the hazards and threats of greatest concern with respect to the location each hazard affects, the extent of the damage due the magnitude and vulnerability of the Tribe, and probability of occurrence.
3. **Develop a Mitigation Strategy** – As detailed in Section III, through a whole community effort, CRIT established goals, objectives, and priorities to guide the Tribe's mitigation efforts over the five-year span of this plan and beyond.
4. **Adopt and Implement the Plan** – As detailed in Sections IV and V, CRIT has adopted this plan and will begin implementing the plan by conducting the mitigation activities in a prioritized manner. The Planning Team will review the plan and status of the mitigation efforts semi-annually and adjust as required.



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1. How the plan was prepared and who was involved

44 CFR Section 201.7(c)(1) – “The plan shall include the following...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.”

44 CFR Section 201.7(c)(1)(iii) - “The plan shall include the following...Review and incorporation, if appropriate, of existing plans, studies, and reports;”

First and foremost, this plan was developed using whole community concepts to be inclusive and to ensure the highest-quality information available. This update was developed based on FEMA’s “Local Hazard Mitigation Planning Handbook,” dated March 2013, and “Tribal Mitigation Plan Review Guide,” effective December 5, 2018. Of note, this update incorporates the option reflected in the handbook and review guide to include technological hazards as well as human-caused threats that are described in the “National Preparedness Goal”, Second Edition (2015). Furthermore, this update was developed in conjunction with the CRIT 2018 Threat and Hazard Identification and Risk Assessment (THIRA) and Stakeholder Preparedness per FEMA’s Comprehensive Preparedness Guide (CPG) 201, 3rd Edition (2018). Information in the Mitigation Plan is based on research from a variety of sources. The intent is to integrate CRIT’s HMP with the six elements of the “National Preparedness System”. Planners conducted data research and analysis, whole community surveys (Appendix A), facilitated Planning Team meetings, CRIT departmental interviews (Appendix B), a tribal member workshop, and a whole community workshop. Workshop and meeting flyers, agendas, and sign in sheets are in Appendix D. In developing the plan, the team followed the following steps:

- Planning Team formation – 2018
 - Planning Team kick-off meeting for the 2018 MHMP update – October 30th, 2018
- Preliminary research on existing CRIT plans and risk assessments – Beginning August 27th, 2018
 - The 2010 CRIT MHMP was set as the baseline for the revision
 - The layout and format were changed to reflect guidance such as FEMA’s Local Mitigation Planning Handbook (2013), FEMA’s Tribal

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Mitigation Plan Review Guide (December 5th, 2017), and FEMA Region IX's Tribal Mitigation Plan Review Tool.

- Ultimately, the elements of FEMA's Tribal Mitigation Plan Review Guide were chosen as the organization structure to increase clarity and simplicity.
- Hazard profiles were greatly expanded from the three used in the 2010 MHMP (flooding, severe winds, wildfires) to seven (extreme heat, severe. winds, drought, flooding-flash, flooding-riverine, disease).
- The Draft 2017 Colorado River Indian Tribes' Hazard Mitigation Plan
 - Prepared by the State of Arizona
- The Draft CRIT Revised HAZMAT Mitigation Plan
- CRIT Emergency Operations Plan, November 2018
 - Provided information about hazards as well as capabilities, roles, and responsibilities during disasters
- La Paz Regional Hospital Threat Assessment (2018-2019)
 - Provided information about the facility's response to threats and hazards
- La Paz Regional Hospital Emergency Preparedness Plan (2011-2012)
 - Provided information about the facility's response to threats and hazards
- Parker Indian Health Center Risk Assessment
 - Provided information about the facility's response to threats and hazards
- Evoqua Water Technologies Contingency Plan
 - Provided information about potential hazards, vulnerabilities, and capabilities
- Headgate Rock Dam Emergency Action Plan
 - Provided information about hazards
- FEMA Approved Mitigation Plans (County, City, Tribal)
 - State of Arizona 2018 Hazard Mitigation Plan
 - Provided information about hazards, climate, geography, geology, goals, and objectives
 - State of Arizona 2013 Hazard Mitigation Plan

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- Provided information about hazards, climate, geography, geology, goals, and objectives
- La Paz County HMP
 - County general descriptions, natural hazard considerations, etc.
- Reviewed other external plans and assessments
 - 2018 National Climate Assessment
 - 2017 Arizona Drought Preparedness Report
 - University of Arizona Droughtview
 - University of Nebraska National Drought Monitoring Center
 - Western Regional Climate Center
 - Arizona Department of Health Services
 - Centers for Disease Control and Prevention
 - National Weather Service Storm Prediction Center
 - Arizona Department of Forestry and Fire Management: Wildfire Risk Assessment Portal
 - U.S. Census
- HAZUS
 - Used to both map vulnerable areas/facilities and identify the magnitude of risks
- FEMA Disaster Data Visualization Tool
 - Provided historical information about the types, number, frequency and times of year for past Federally declared disasters
- State of California My Hazards Tool
- Historical research, current wildfire events
 - Provided information about non-Federally declared disasters
 - Current and recent events provided information about the trend of increasing intensity of disaster in California, especially fire
- Online survey (Appendix A)

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- Provided demographic information for the whole community participation
- Provided whole community input regarding the location, extent, and probability of the hazards of most concern
- Provided information to prioritize the hazards of most concern
- Site visits – October 30th – November 2nd, 2018, and December 5th – 8th, 2018
 - Tribal Council meetings – October 29th, 2018, December 7th – 8th, 2018
 - CRIT Planning Team meetings – October 29th – November 2nd; December 6th – 7th, 2018.
 - Interviews (Appendix B) - August 23rd - 24th, 2018, and October 8th - 10th, 2018
 - Public meetings – November 1st, 2018; December 8th, 2018
 - Workshop and meeting flyers, agendas, and sign in sheets - Appendix D
- Draft MHMP plan reviews
 - First draft plan review – December 14th – 31st, 2018
 - Second draft plan review – January 1st – January 15th, 2019
 - Final Plan Review – January 22nd, - 31st, 2019

2. *The Planning Team*

The Colorado River Indian Tribes' Multi-Hazard Mitigation Plan (MHMP) is the result of a collaborative effort among the CRIT Planning Team, department directors, and the whole community (Table 4). The CRIT Homeland Security Coordinator served as the Tribal Project Manager and played a key role in all aspects of the plan's development.

The CRIT Planning Team guided development of the Multi-Hazard Mitigation Plan. The team played an integral role in developing the mission, goals, and action items for the mitigation plan. The Team consisted of the CRIT Homeland Security Coordinator, Tribal Council members, Departmental Managers/Directors, and employees of CRIT (Table 4).

The CRIT Planning Team has the authority and responsibility to address hazards, develop the mitigation plan, organize resources, find appropriate funding, and oversee the activity for implementation, monitoring, and evaluation. Due to the various members' work with external partners, they have established relationships to form the baseline of a whole community

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approach. For example, Planning Team members participated in La Paz County OES meetings.

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| Name | Role | Contribution |
|----------------------|---|---|
| Tina Evans | Homeland Security Coordinator | Overall coordination |
| Antoinette Flora | Deputy Attorney General | Legal input & review; coordination |
| Gregory Fisher | CRIT Planning Director | Planning & GIS support |
| Wilfred Nabahe | CRIT Environmental Protection Office Director | Environmental SME |
| Vanessa Scott | CRIT Fish & Game | Tribal Operations SME |
| Ambrose Howard | CRIT Building & Safety Director | Environmental SME |
| Kitty Little | CRIT Fire Department Chief | Firefighting SME |
| Oscar Welch | CRIT Acting Police Chief | Law Enforcement SME |
| Alex Covarrubias Jr. | CRIT utilities / Water Department Supervisor | Water Utilities SME |
| Brandon Sharp | Big River Development Enterprises | Water Utilities SME |
| Joseph Stewart | CRIT Power | Power SME |
| Ted Swendra | CRIT Air | Airfield Operations SME |
| Monte McCue | Evoqua Joint Venture | Evoqua Operations SME Wastewater SME |
| Tim Mariscal | CRIT Wildland Fire | Wildland Fire SME |
| Theo Dela Rosa | CRIT TERO | Tribal Employment Rights Office |
| Taquanta Feely | Parker Indian Health Safety Officer | HIS SME |
| Steven Day | La Paz Regional Hospital | Public healthcare SME |
| Paul Miller | CRIT Controller | Financial SME |
| Mixcoatle Reyes | CRIT Utilities Solid Waste Supervisor | Solid Waste SME |
| Marty Pretends Eagle | CRIT Water Resources | GIS Support |
| Jody Scott | CRIT Farm Manager | Farm Enterprise SME |
| Ivy Ledezma | Manataba Messenger | Communications / media SME |
| Ginger Scott | CRIT Acting Museum Director | Historic & Cultural resources SME |
| Rochelle Booth | CRIT Enrollment Director | Tribal enrollment SME |

Table 4. CRIT Planning Team Members.



B. Public Partnership

44 CFR Section 201.7(c)(1)(i) – “The plan shall include the following... An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval, including a description of how the Indian tribal government defined “public””

1. The Public

In addition to tribal employees, the internal public includes tribal members (living both on and off of CRIT lands), non-tribal members living on tribal land, and non-tribal employees who work at the various CRIT enterprises. External partners include citizens and local governments to include the Town of Parker, La Paz County, the States of Arizona and California, the Federal government (FEMA, the Bureau of Indian Affairs, Environmental Protection Agency, etc.), and surrounding tribal nations. In addition, public partners include private sector enterprises (especially CRIT vendors and tribal enterprise customers), non-profit and volunteer agencies, and other organizations. One component of CRIT’s public outreach was a risk assessment survey (Appendix A). The survey was available on line as well as provided directly to the public as a Microsoft Word document via both soft-copy and hard-copy. Those taking the survey were asked to identify themselves according to common occupations in La Paz county, their tribal affiliation, and/or their residency. Table 5 is the list of categories by which those taking the survey could identify themselves. Those taking the survey could select multiple options as well as write in additional identifiers.

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| | | | |
|-----------------------|----------------------------|---|--------------------------------|
| Agriculture | Forestry | Leisure / Entertainment | Retail trade |
| Construction | Government - city | Mining (quarrying, oil, gas) | Science |
| Education - College | Government - county | Natural Resources | Transportation and warehousing |
| Education K-12 | Government - Federal | Non-profit Organization | Tribal Member |
| Emergency Management | Government - state | Non-tribal member residing or working on tribal land/businesses | Utilities |
| Facility Maintenance | Government – tribal nation | Parks and Recreation | Volunteer Organization |
| Faith-based community | Health and social services | Planning | Wholesale trade |
| Finance and Insurance | Hunting | Professional, technical services | Other services |
| Firefighting | Information | Public Works | |
| Fishing | Law Enforcement | Real Estate renting and leasing | |

Table 5. CRIT Public Outreach Partners.

2. Public Involvement

The public was afforded the opportunity to engage in the planning process through multiple means:

- Online Risk assessment survey beginning October 3rd, 2018
- Microsoft Word-based risk assessment survey beginning October 3rd, 2018
 - Soft copy emailed
 - Hard copy directly from the CRIT Project Manager
- Tribal member workshop – November 1st, 2018
- Whole community public workshop – November 1st, 2018
- Interaction through ongoing whole community meetings such as regular La Paz County Office of Emergency Services

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- Publicly available draft plan
 - Electronic beginning December 14th, 2018
 - Print copy available at CRIT Tribal Library beginning January 1st, 2019

The flyers, agendas and sign in sheets for the public meetings are in Appendix D. With a tribal membership of 4,400, CRIT had a statistically significant response with a 95% confidence level at 15% margin of error from its survey. The survey captured a broad array of backgrounds from both internal and external members of the public. Those who completed the survey, identified with:

- 39 Individuals took the pre-workshops survey
 - 34 – Government, tribal nation (20), county (5), state (4), Federal (5)
 - 33 – Education & sciences, college (19), K-12 (13), science (1)
 - 23 – Tribal member (13), Non-tribal member residing/working on tribal land/businesses (10)
 - 20 – Infrastructure, facility maintenance (5), information (9), Parks & Rec. (2), Planning (4)
 - 20 – Financial activities (4), Professional & business (10), Real Estate renting & leasing (6)
 - 17 – Emergency Services, Emergency Management (8), EMS (2), firefighting (3), law enforcement (4)
 - 15 – Non-profit (4), Volunteer organization (6), Faith-based Community (5)
 - 10 – Agriculture (3), forestry / land management (1), fishing (2) natural resources & mining (3), hunting (3)
 - 8 – Other services
 - 5 – Construction (5), Manufacturing (2)
 - 4 – Leisure and Hospitality (3), Retail Trade (1)
- 50% identify as or work with people with disabilities and others with access & functional needs

3. Incorporation of Public Feedback

Public feedback informed the CRIT MHMP update during all phases:



- **Organizing the planning process and resources** – public experience garnered since the last plan update led to such outcomes as emphasizing extreme heat, drought, and disease emerging as significant natural hazards. In addition, technical hazards such as utility failure and human-caused risks such as cyber-attacks also garnered greater concern.
- **Assessing Risks** – multiple versions of the risk assessment survey (Appendix A) were used to collect and incorporate public information in two ways. First, public input was used to establish the final location, extent and probability values. Second, public input was used to vote on the hazards that most concern to CRIT. Figure 2 shows the mathematical values for each factor and Table 6 highlights how public input was used. Where a “Survey Assessment” is bold, the public input was used to derive a different value than the pre-survey assessment. The final, ranked score was based on the following methodology:

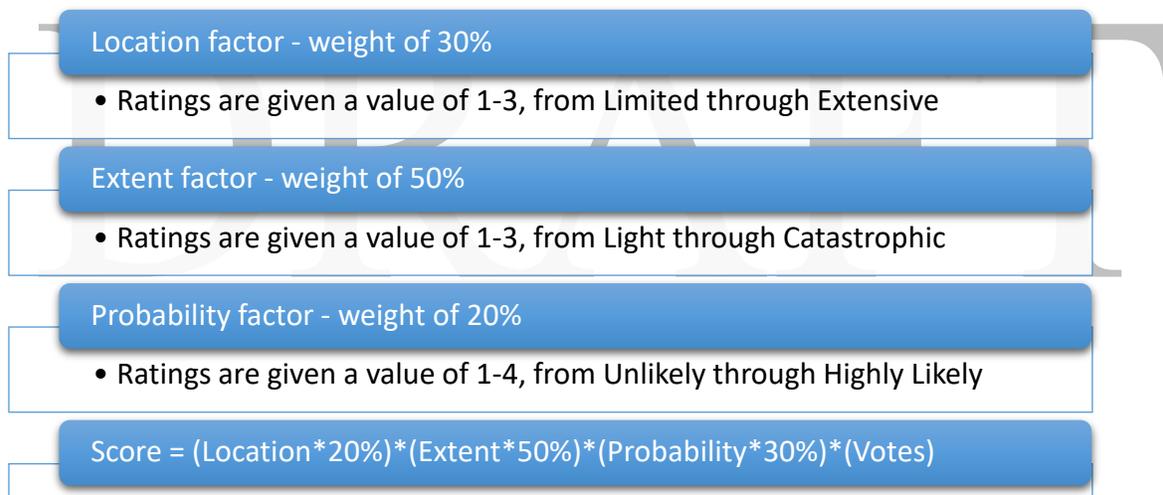


Figure 2. Methodology for Hazard Priority Ranking.

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| Natural Hazards | | | | | | | | |
|----------------------------------|--------------|-------------------|---------------|-------------------|---------------|-------------------|-------|-------|
| Hazard | Location | | Hazard Extent | | Probability | | Votes | Score |
| | Preset Value | Survey Assessment | Preset Value | Survey Assessment | Preset Value | Survey Assessment | | |
| Extreme Heat | Extensive | Extensive | Light | Major | Highly Likely | Highly Likely | 53 | 38.16 |
| Severe Winds (Dust Storm) | Moderate | Extensive | Major | Major | Highly Likely | Highly Likely | 38 | 27.36 |
| Wildfires | Moderate | Moderate | Major | Major | Highly Likely | Highly Likely | 56 | 26.88 |
| Drought | Extensive | Extensive | Major | Major | Occasional | Likely | 47 | 25.38 |
| Flooding – Flash Flood | Limited | Moderate | Major | Major | Likely | Likely | 45 | 16.2 |
| Flooding – Riverine | Extensive | Moderate | Catastrophic | Catastrophic | Occasional | Occasional | 32 | 11.52 |
| Disease (Mosquitos) | Extensive | Extensive | Major | Major | Occasional | Occasional | 31 | 11.16 |
| Earthquake | Moderate | Moderate | Light | Light | Unlikely | Unlikely | 16 | 0.96 |
| Winter Storms | Extensive | Limited | Light | Light | Unlikely | Unlikely | 14 | 0.42 |
| Landslide/ Mudslide | Limited | Limited | Light | Light | Unlikely | Unlikely | 8 | 0.24 |
| Fissures | Limited | Limited | Light | Light | Unlikely | Unlikely | 7 | 0.21 |
| Subsidence (Sink Holes) | Limited | Limited | Light | Light | Unlikely | Unlikely | 6 | 0.18 |

Table 6. Prioritized Natural Hazard List.

- **Developing a Mitigation Strategy** – interviews (Appendix B) during the site visits and workshops during site visit #2 were used to collect public input regarding mitigation strategy elements. The public forums were used to establish the goals, objectives, resources, and prioritized actions.
- **Adopting and Implementing the Plan** – the CRIT public information requirements ensured there was multiple means of notification for meetings with Planning Team members and Tribal Council; public workshops; and review of documents, including the final MHMP, before Tribal Council adoption.



4. Involving Neighboring Communities, Tribal, and Regional Agencies

44 CFR Section 201.7(c)(1)(ii) – “The plan shall include the following...As appropriate, an opportunity for neighboring communities, tribal 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 nonprofit interests to be involved in the planning process”

Internally, CRIT advertised information about each step of the planning process through their normal monthly communication outreach - email and traditional mail to tribal members. In addition, flyers about the workshops were posted online via CRIT websites, as well as with hard-copies posted in several locations. Department Directors/Managers were specifically invited to workshops during site visits. The Planning Team also conducted interviews (Appendix B) of department directors as well as their staff.

Externally, the Planning Team provided notifications and updates to such partners as:

- Bureau of Indian Affairs (BIA)
- State of Arizona
- La Paz County Office of Emergency Services (OES)
- La Paz County Sheriff
- La Paz Regional Hospital
- Parker Indian Health Center
- City of Parker Police Department
- City of Parker
- Joint Ventures
- Evoqua

Flyers for the public workshops, flyers were posted at:

- CRIT Administration
- CRIT Library
- CRIT Homeland Security Office
- CRIT Senior Center
- CRIT website
- CRIT Facebook pages

CRIT Staff attend regular coordination meetings with its partners. The staff invited their external partners to participate through a variety of means - in-person, email correspondence, and physical handouts/flyers.



C. Integration with Other CRIT Planning Efforts

44 CFR Section 201.7(c)(1)(iv) – “The plan shall include the following... Be integrated to the extent possible with other ongoing tribal planning efforts as well as other FEMA programs and initiatives ”

The Colorado River Indian Tribes’ Multi-Hazard Mitigation Plan (MHMP) is just one of a family of disaster preparedness-related plans the tribe is engaging on. The Tribes developed this MHMP update using a holistic approach in consideration of the National Preparedness System (NPS) as shown in Figure 3. As highlighted in Figure 3, CRIT is simultaneously developing its MHMP, Threat and Hazard Identification and Risk Assessment (THIRA), and its Stakeholder Preparedness Review (SPR). By doing so, CRIT is ensuring the hazards, threats, vulnerabilities, and capabilities are consistent across the three assessments. In addition, CRIT is realizing efficiencies by not conducting separate assessments. CRIT intends to closely follow the MHMP, THIRA, and SPR with an update of its Emergency Operations Plan (EOP), and Continuity of Operations Plan (COOP).

The Pre-Disaster Mitigation (PDM) Grant is one example of the NPS element, “Building and Sustaining Resources.” Another action under this element is the Tribal Homeland Security Grant Program, which requires the completion of a THIRA and SPR. Once CRIT has an updated EOP and a COOP plan, it will continue around the National Preparedness System to “Validating Capabilities” through exercises and then “Reviewing and Updating” all these efforts regularly – including updating this hazard mitigation plan as required.

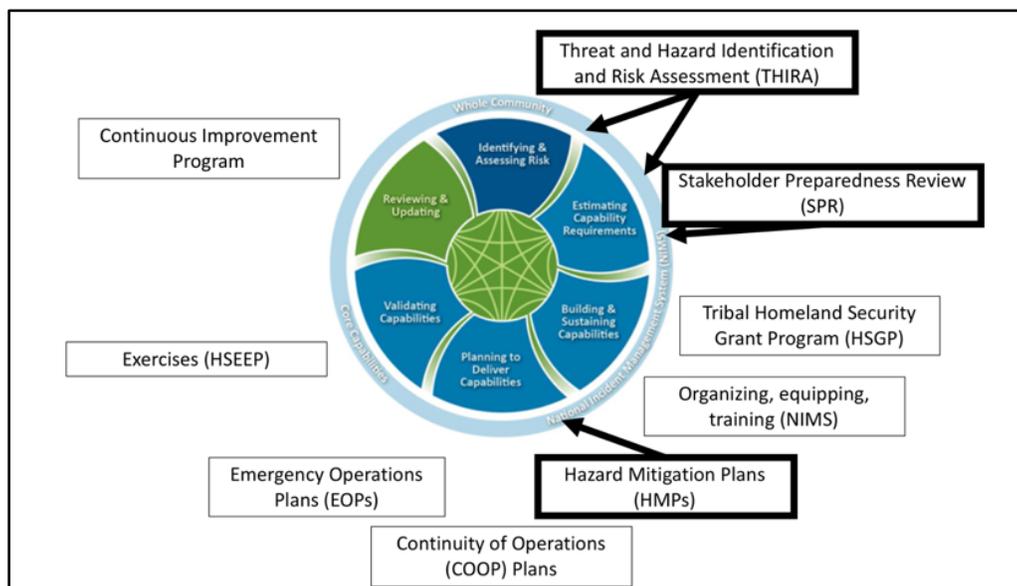




Figure 3. National Preparedness System and Representative Actions.

D. Method and Schedule for Keeping the Plan Current: How, When, and Who will Evaluate the Plan

44 CFR Section 201.7(c)(4)(i) – “The plan shall include the following... A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan.”

1. How, When, and Who will Monitor the Plan

This plan, and the accomplishment of action items defined in it, will be monitored by the Planning Team. Specifically, action item #4.3 states, “Make hazard mitigation concerns standard agenda/document items,” and supports objective #4.3, “Build hazard mitigation concerns into the Tribal planning and budgeting process.” Led by the CRIT Homeland Security Coordinator, the Planning Team will regularly report their progress in accomplishing their assigned actions. The worksheet in Appendix C will be used as a tool to assign action items to specific points of contact (P.O.C) and for those P.O.C.s to monitor and report on their progress. In addition to regularly scheduled Planning Team meetings progress reports will be provided to the Tribal Council at least semi-annually and to the public annually (Table 7).

2. How, When, and Who will Evaluate the Plan

At least semi-annually, the Planning Team, led by the CRIT Homeland Security Coordinator will evaluate the effectiveness of the plan and the achievement of planned actions and objectives. If the achievement of actions and objectives are on target, then no remedial actions are necessary. If the accomplishment of actions and objectives deviates from the plan (either positively or negatively), then the Planning Team will decide one of two causes and remedial changes:

- The plan is sound, but the execution of the action is faulty. In this case, a remedy for the action accomplishment is dictated.
- The remedial action is being accomplished according to plan, but the desired effects are incorrect based on the wrong planning assumptions, conditions, or a change in circumstances. In this case, a modification of the plan may be warranted.



3. *How, When, and Who will Update the Plan*

If correctly executed actions are not achieving the desired effect (for whatever reason), an immediate change in the plan may be warranted. This could occur in circumstances of the risk management strategy of risk transfer. For example, hardening a section of riverbank in one area might cause more rapid erosion in another. In this case, a plan adjustment may be required. Outside of corrective actions, the Planning Team will begin the process of updating this plan 3.5 years after its adoption. This allows approximately six months to contract for support or garner other planning resources required to begin. At the four-year point, the next plan update will begin and follow a nominal one-year planning process to have the next plan revision complete by the five-year point.

| Plan Monitoring | Point of Contact | Timeline |
|---|---|--|
| Planning Team action item accomplishment review | The respective POC responsible for each action item | Monthly Planning Team meetings |
| Tribal Council action item accomplishment report | Planning Team | Semi-annual Tribal Council progress report |
| Public action item accomplishment review | Planning Team | Annual public progress report |
| Ad hoc plan updates | Planning Team | As required to ensure the plan is relevant |
| FEMA-required five-year update | Planning Team | Every five years |

Table 7. Plan Monitoring, Evaluating, and Updating Schedule.



E. Continued Public Participation

44 CFR Section 201.7(c)(4)(iv) – “The plan shall include the following...A plan maintenance process that includes...Discussion on how the Indian tribal government will continue public participation in the plan maintenance process.”

CRIT’s strategic Goal #3 is to, “Increase Public Awareness of Local Hazards.” There are multiple objectives and actions under this goal for the tribe to accomplish (Table 8). CRIT will use its standardized processes for communicating with tribal members about mitigation actions such as its monthly information packets sent out via email and printed materials. Information about significant events is also posted in high traffic areas in Tribal Operations buildings. CRIT also holds monthly Community Council meetings.

| Obj. # | Objective | Action |
|---------------|---|--|
| 3.1 | Increase public awareness and understanding, support, and demand for hazard mitigation. | Hold annual public meetings (and publish the results) to update the community on the status of CRIT’s hazard mitigation actions. |
| 3.2 | Heighten public awareness of the full range of hazards they may face | Engage in FEMA’s semi-annual preparedness month activities (September and April) to move community members from awareness to action. |
| 3.3 | Publicize and encourage the adoption of appropriate hazard mitigation measures | Hold semi-annual community-based hazard mitigation days such as fire defensible space cleanup and winter storm preparation. |

Table 8. Public Participation Objectives and Actions.

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Externally, Planning Team members will continue to participate local, state, and Federal activities that support this plan. “Partnerships and Implementation,” is a strategic goal with such actions as attending/hosting local mitigation-related events (Table 9).

| Obj. # | Objective | Action |
|---------------|--|--|
| 4.1 | Build and support local partnerships with stakeholders in the community | Attend and host La Paz County disaster preparedness events. Invite La Paz County partners to CRIT disaster preparedness events. |
| 4.2 | Build a team of committed volunteers to safeguard the community before, during, and after a disaster | Develop community safety/preparedness teams such as neighborhood “block captains” that lead disaster warning and response – check on neighbors |
| 4.3 | Build hazard mitigation concerns into the Tribal planning and budgeting process | Make hazard mitigation concerns standard agenda/document items. |

Table 9. Partnerships and Implementation Objectives and Actions.

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Figure 4. CRIT Planning Area. (Fisher 2018)

A. The Planning Area

44 CFR Section 201.7(c)(2)(i) – “The risk assessment shall include... A description of the type, location, and extent of all natural hazards that can affect the tribal planning area. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.”

1. Colorado River Indian Tribes General Description

On March 3, 1865, the Reservation was established for Indians adjacent to the Colorado River by a Congressional Appropriations Act and approved by President Lincoln for the Mohave people and Indians of said river and its tributaries. The Colorado River Indian Tribes is a federally recognized Tribe(s), which is organized and established as a sovereign nation pursuant to the provisions of the Indian Reorganization Act of June 18, 1934. The Tribes land is held in trust by the federal government through the Secretary of the Interior and, therefore, requires compliance with federal laws as it pertains to the environment and community land within the Tribes’ boundaries (Figures 4-5).

The Colorado River Indian Tribes adheres to its August 13, 1937 Tribal constitution/bylaws and sovereign government status. In 1937, the first Tribal Council was formed. Today it consists of nine members; Chairman, Vice-Chairman, Treasurer, Secretary and five council member seats. Elections are held every four years (staggered). The tribal council oversees the daily activities of the tribal government and its enterprises, and departments. The Colorado River Indian Tribes is the largest employer in La Paz County. In 2015, the Tribes reached a milestone, which marks the sesquicentennial (150th year) of the establishment of the reservation.

Today, the reservation consists of four tribes, Mohave, Chemehuevi, Hopi and Navajo. The Chemehuevi’s were living on the west bank of the Colorado River at the time of the establishment of the reservation. In 1945, the Hopi and Navajo were relocated from the northern part of Arizona onto the reservation by a Colonization program under the Bureau of Indian Affairs. The four tribes are unique in their own cultures and live harmoniously together. The Mohave’s are known for their beadwork and pottery. The Chemehuevi are a Southern band of Paiute Indians and are known for their fine basketry. The Hopi are known for kachina

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carving, basket weaving, pottery and silversmithing. The Navajo are known for their jewelry and silversmithing. Currently there are approximately 4,100 members enrolled in the tribe.

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B. Geography

The Colorado River Indian Tribes is located in western Arizona and has a land base that is primarily in La Paz County along the Colorado River, and additional land adjacent to the River in San Bernardino and Riverside County, California. The Tribes' reservation covers nearly 300,000 acres of land, with the river serving as the focal point and lifeblood of the area. The Tribes' primary community is Parker, Arizona, which is located on a combination of Tribal land, leased land that is owned by Tribes and land owned by non-Native Americans. Communities surrounding Parker include Poston, located 15 miles south; Earp CA., located one mile northwest; Big River California, located about 7 miles north and west of Parker on CA State Route 62; and other communities of Parker Annex, 11 miles southeast of Parker; Lakeside AZ just north of the reservation line on AZ Route 95; and Blythe California about 11.5 miles south of the reservation boundary on US Route 95.

The tribal lands are low arid desert and river bottom with abrupt mountain ranges. The Colorado River provides 90 miles of shoreline through the reservation. Major transportation routes through the Reservation include Interstate 10, State Route 95, US Route 95, CASR62, and AZ/CA Railroad. Other major roadways interior to the Reservation include Indian Routes Mohave Road (BIA Rt1.) Agnes Wilson Road (BIS Rt. 15) Burns Road (BIA Rt. 10) and the other local Reservation Routes are all tributaries to the main local highway system.

The geographical location of the Reservation lies primarily within the Sonoran Desert region with close proximity to the Mojave Desert terrestrial ecoregion (URS 2004) (Figures 6-7). This area is also known as the Basin and Range Region, which covers a large area of the Southwest. The ecoregions of Arizona are described as follows:

- **Arizona Mountain Forests** – Mountainous landscape, with moderate to steep slopes. Elevations in this zone range from approximately 4,000-13,000 feet, resulting in comparatively cool summers and cold winters. Vegetation in these areas is largely high-altitude grasses, shrubs, brush, and conifer forests.
- **The Colorado Plateau Shrub lands** – Elevations in this zone average around 4,000-5,000 feet. Vegetation is comprised mainly of Plains Grassland and Great Basin Desert scrub. Temperatures can vary widely in this zone, with comparatively warm summers and cool winters.

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- **Sonoran Desert** – An arid environment that covers much of southwestern Arizona. The elevation varies in this zone from approximately sea level to 3,000 feet. Vegetation in this zone is comprised mainly of Sonoran Desert Scrub and is one of the few locations in the world where saguaro cactus can be found. The climate is typically hot, dry during the summer, and mild during the winter.
- **Mojave Desert** – Covers a large area of California and a relatively small portion of northwest Arizona, including portions of Coconino and Mojave Counties. This includes Kingman and Bullhead City, as well as a portion of the lower Grand Canyon. The elevation varies from 1,500-4,000 feet on some mountains. Typically, the climate is very hot and dry during the summer and comparatively warm during the winter.

The Tribe has guaranteed water supply via the Colorado River through water rights that were more clearly defined by *Arizona v. California*, the case that divided the waters of the Colorado River among competing water users. (Cornell University School of Law 2000) Since western water law recognizes the concept of “first in use, first in right,” the Colorado River Indian Tribes, with a long history of occupancy along the Colorado River, maintains its earliest priority on water allocation. Therefore, the tribe can continue in community development in regard to large-scale housing, casino, commercial businesses and major agriculture production on tribal lands.

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Figure 5. CRIT Location within Arizona and California.

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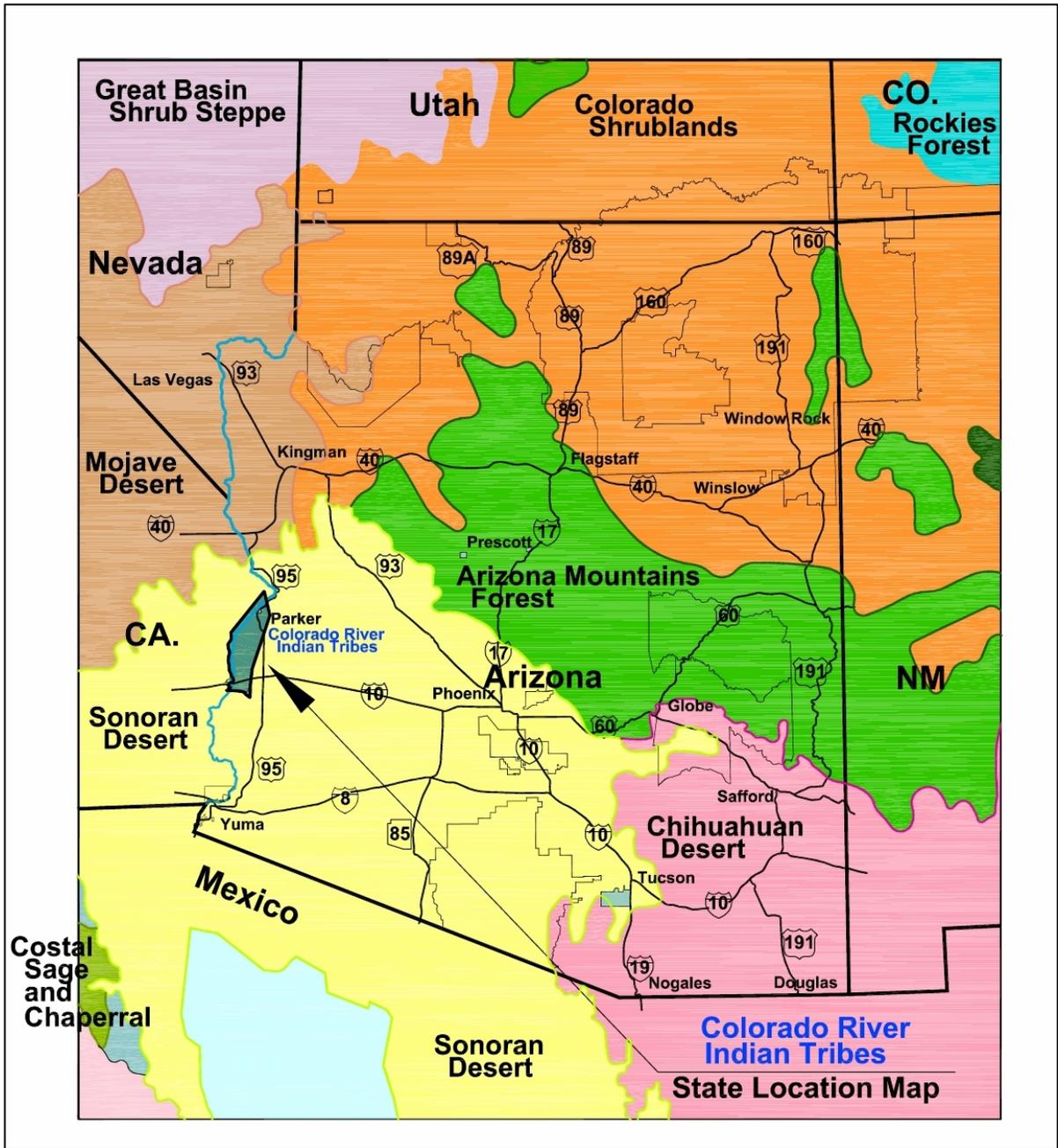


Figure 6. Arizona and Southeast California Ecoregions.

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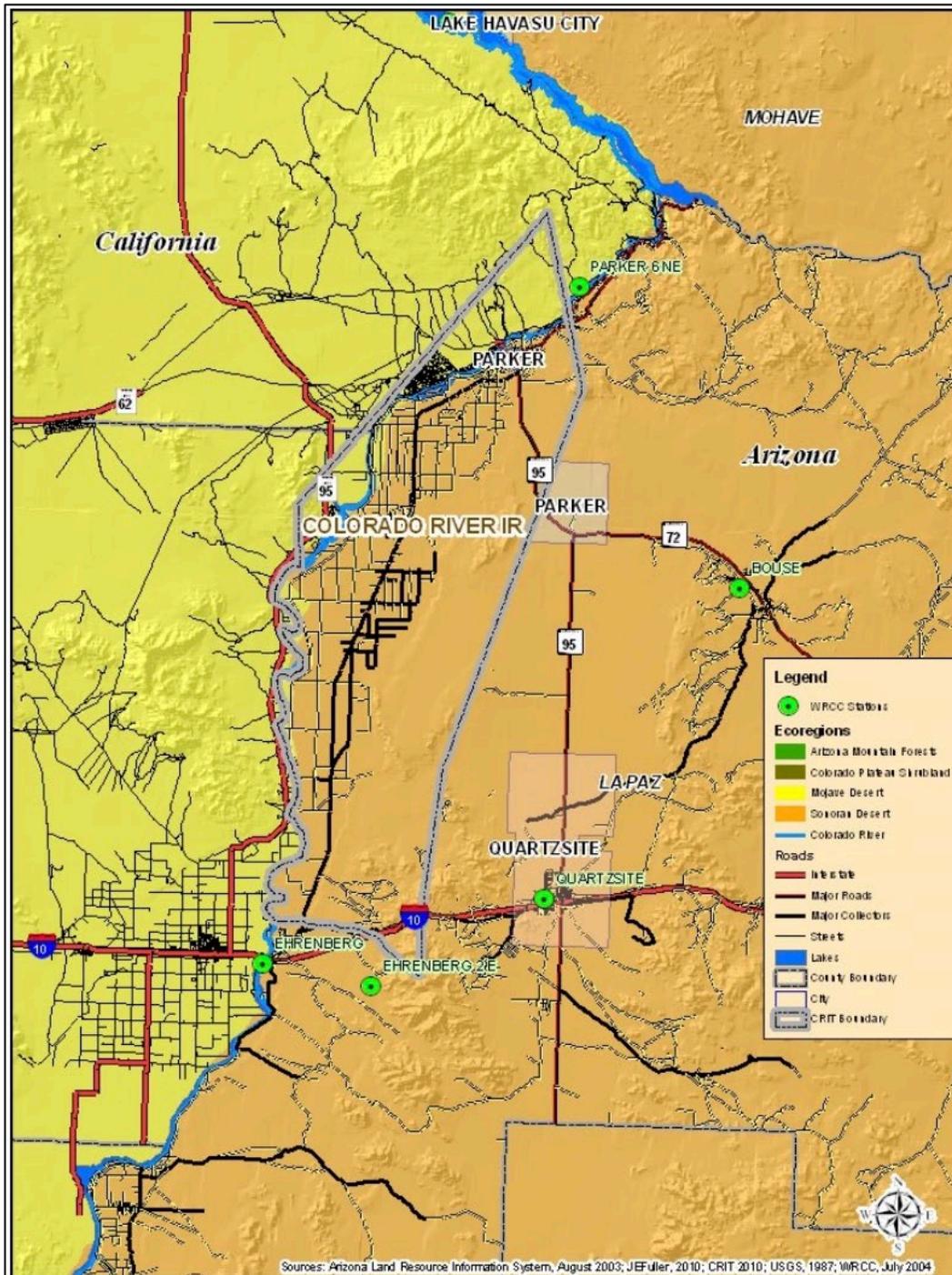


Figure 7. Colorado River Indian Tribes' Ecoregions.



C. Climate

The climate of the Reservation is semi-arid and is characterized by moderate temperatures and low rainfall. Climate statistics for weather stations near the Reservations are produced by the Western Region Climate Center. (Western Regional Climate Center 2018) The location of reporting stations within or near the Reservation are the Parker 6 NE, Arizona Station and is located in Parker at an elevation of 410 feet and is considered to be representative of the Reservation climate conditions.

Weather data at this station has been collected and recorded continuously since 1893. Average temperatures for the Parker, Arizona Station range from near freezing during the winter months to over 108°F during the hot summer months. The extreme temperatures vary between 128° during summer to 10° in the winter.

Precipitation on the Reservation is governed largely by the season of the year. From November through March, storm systems from the Pacific Ocean cross the state as broad storms producing mild precipitation events 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 hailstorms. (Office of the State Climatologist for Arizona 2004)

Figures 8-11 show a 36-month lookback at Arizona's maximum average temperature, minimum average temperature, average precipitation, and deviation from average precipitation respectively. Clearly, CRIT exists in an extreme climate which requires long and short-term mitigation actions to adapt to the austere and changing climate.

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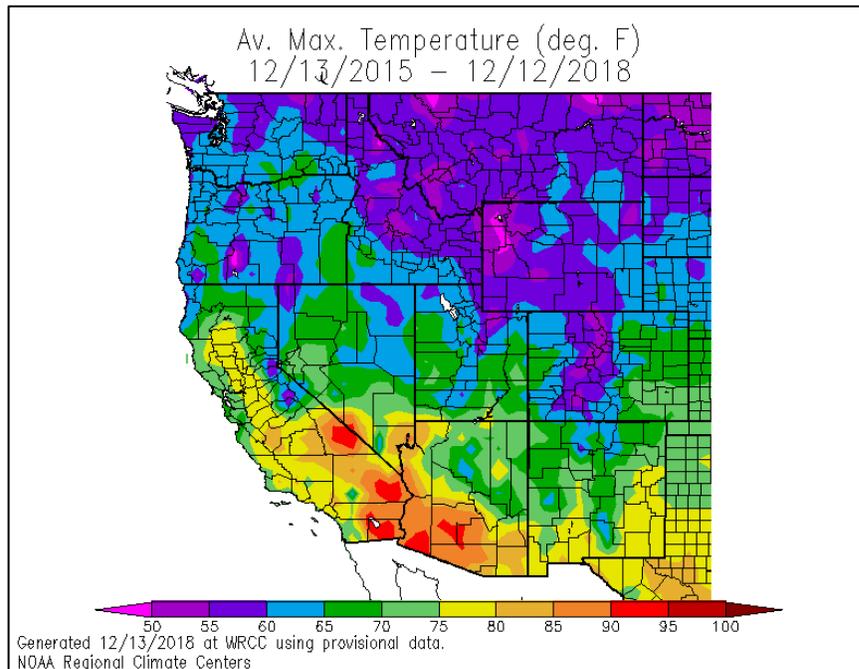


Figure 8. 36-month Lookback at Average Maximum Temperatures. (Western Regional Climate Center 2018)

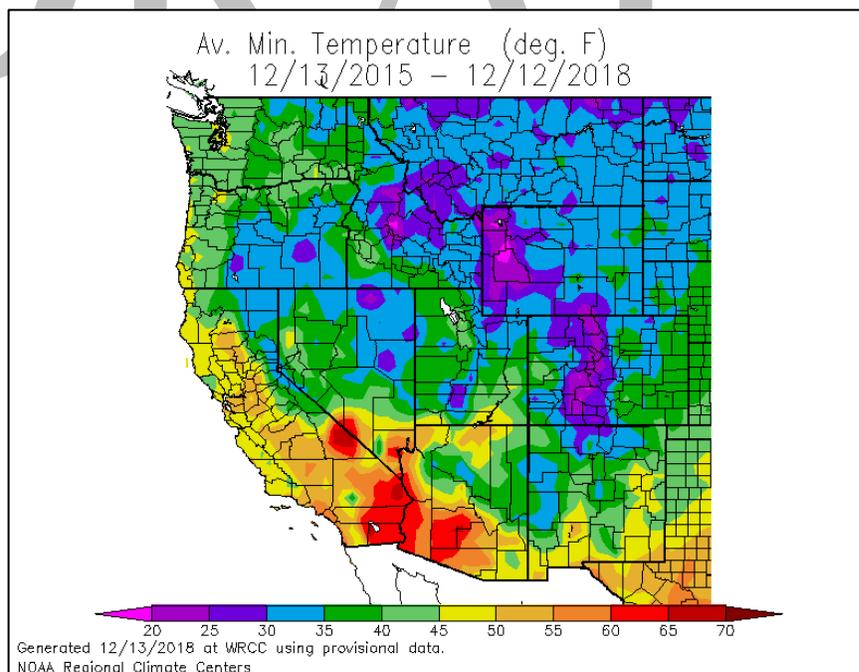




Figure 9. 36-month Lookback at Average Minimum Temperatures. (Western Regional Climate Center 2018)

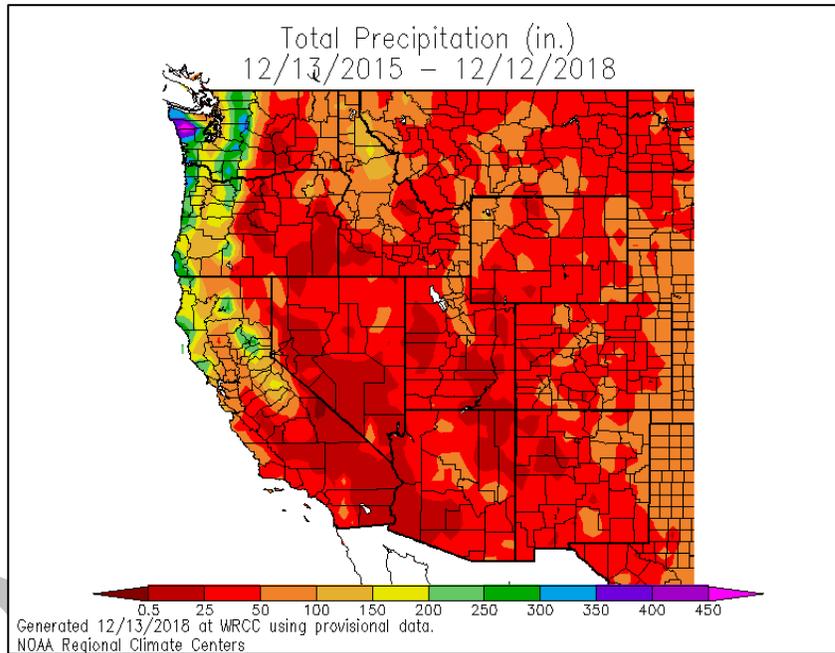


Figure 10. 36-month Lookback at Total Precipitation. (Western Regional Climate Center 2018)

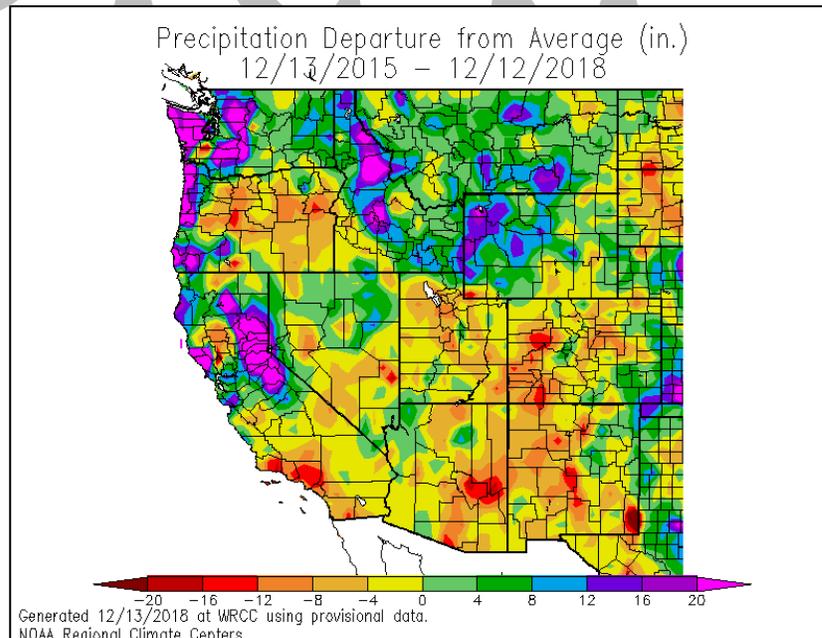




Figure 11. 36-month Lookback at Average Maximum Temperatures. (Western Regional Climate Center 2018)

D. Demographics

The 2010 population for the CRIT Reservation was 7,077 persons (Table 10). (United States Census Bureau 2018, Arizona Rural Policy Institute Center for Business Outreach W.A. Franke College of Business Northern Arizona University 2015) Population growth showed a small decline between 2000 and 2010, at a rate of approximately -0.49% per year. La Paz County showed relatively flat growth, growing approximately 0.39% per year. The state as a whole grew approximately 2.2% per year between 2000-2010.

| U.S. Census Summary of CRIT, La Paz County, and Arizona | | | |
|--|-------------|-------------|-----------------|
| Jurisdiction | 2000 | 2010 | Estimate |
| CRIT (Arizona & California) | 9,201 | 7,077 | 9,485 |
| La Paz County | 19,715 | 20,489 | 20,601 |
| Arizona | 5,130,632 | 6,392,017 | 7,016,270 |

Table 10. CRIT, La Paz County, & State of Arizona Population Estimate. (United States Census Bureau 2018) (United States Census Bureau n.d.)

The Tribes has an enrolled membership of 4,403 members, according to data from August 2017. (Colorado River Indian Tribes 2018) Tribal enrollment population is generally higher than reservation population, indicating that some tribal members live off their tribe’s reservation.

E. Development History

The post office is named in honor of General Eli Parker who was Commissioner of Indian Affairs when the Reservation was established by Congress in 1865, and the Town's name and origin began when the post office was built in January 6, 1871, on the Reservation to serve the Colorado River Indian Reservation Agency.

In 1905, a railroad was laid in its present location for the purpose of a railroad stopover, watering, and shipping station. The town site of Parker lies within the boundaries of the Reservation and was surveyed and laid out in 1909 by a railroad location engineer by the name of Earl H. Parker. The following illustrates the development of the Reservation and the Town of Parker that lies within:

- The Town was laid out as a grid system with regular blocks being 320' x 300' with 20' alleys. All lots in regular blocks are 50' x 150'. The tribal lots are 75' x 150' (Figure 12). In 1910, the Federal Government auctioned off the regular lots.

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- On March 2, 1887, Congress appropriated \$50,000 for the Tribe's irrigation system. This money enabled the building of the Grant-Dent Canal from 1867 to 1871. The early farming in this region was extremely difficult due to canal cave-ins, wells served up by alkali water, river flooding washed out new construction and equipment. In spite of these difficulties, these farmers envisioned a vast agricultural empire.
- By 1914, only 600 acres of Indian-owned land was irrigated and the majority of the rest of potential farmland had inadequate drainage and was water logged. During this period, the Town of Parker had a population of 90, and acted as a service and shipping center for agriculture and mining activities scattered throughout the area.
- In 1928, Parker Dam was completed, thus allowing better water flow control of the river and creating a lake called Lake Moovalya which changed the character of Parker to one providing supplies and services to tourists, fishermen, hunters, and boat enthusiasts.
- In 1936, over 5,000 acres of river bottomland was being irrigated.
- In 1937, a highway bridge was completed across the Colorado River to allow vehicle traffic between Arizona and California, which ended ferry service that had been in operation for over 27 years.
- By 1941, over 10,500 acres of land was under cultivation due to the construction of Headgate Rock Dam, which continued and accelerated the agricultural expansion.
- By 1955, 38,000 acres was cleared for crop production.
- In 1962, due to the inability of the long-term leases, agricultural expansion of Reservation lands had ceased. Congress granted the right to make 99-year non-agricultural leases of Reservation lands.
- In 1963, Congress allowed the right to create 25-year agricultural development leases. In addition, the U.S Supreme Court determined the Reservation should be entitled to enough water to irrigate 107,588 acres of agricultural land.
- In 1972, the Agnes Wilson Bridge was re-constructed, which allowed traffic from the Western Boundary of the California side of the river and directly into the reservation on Mohave Road or BIA Route 1.
- In 1995, the Blue Water Casino and Resort was under construction with 200 rooms and completed in 1999.
- 2014 the opening of the NEW highway bridge across the Colorado River that allows traffic between California and Arizona. This bridge takes the place of the original bridge that was constructed in 1937.

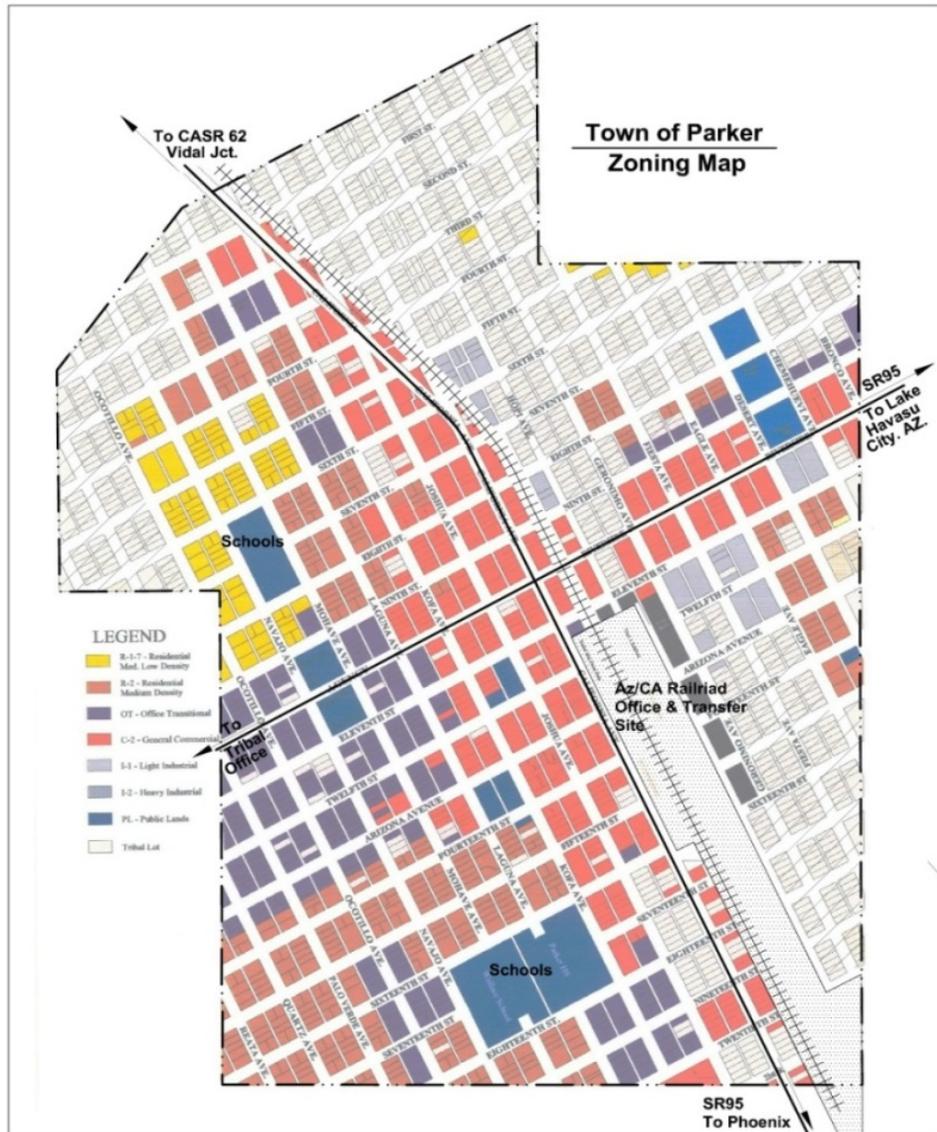


Figure 12: Town Site of Parker.

F. New and Future Development

At this time, the Reservation does have an existing reservation-wide land-use or economic development plan.

The process for economic development is determined by the Tribal Council and since 2005 there have been a several projects completed;

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Current Projects include:

| | |
|--|-----------|
| Water Wheel Mobile Home Park & Resort | 2015-2016 |
| Boat Club RV Park & Resort | 2015-2016 |
| Mohave Road Pavement Rejuvenation & Restriping Project | 2015 |
| Tribal Roads Safety Plan | 2015-2016 |
| Manataba Park Upgrades Phase II | 2015-2016 |
| Tribal Office & Department Upgrades | 2016-2018 |

Completed Projects Include:

- CRIT Fuel Station Mohave Road Site
- CRIT Fuel Station Airport Road Site
- BIA Roads Reconstruction Projects Burns Road and 9th Ave, 2015
- Manataba Park Upgrades Phase 1 2014
- Transit Plan Completed 2014
- New Bridge in the Town of Parker 2014
- The Juvenile Detention Center 2014
- Communications Towers for CRIT Dispatch Center & Black Peak 2014
- Long Range Transportation Plan Completed 2014
- CRIT Dispatch Remodel Project 2013
- CRIT Women’s Detention Facility New Add-on 2013
- CRIT Court Re-Roofing & CRIT Gym Re-Roofing Projects 2013
- Airport New Runway Construction & Master Plan 2013
- CRIT Food Distribution Department Upgrades (Commodity Program) 2012
- Bluewater Casino & Resort Upgrades include Wake Board Island, Beach Upgrades to include Ramada’s, Cantina Restaurant and Lounge Remodel and upgrades projects and Playground Area developed. 2013-2013
- The Children’s Residential Center (Foster Home) 2010



- CRIT Lodge Remodel Project (Elder Living Complex) 2010

1. Economy

The Colorado River Indian Tribes faces economic challenges. While the State of Arizona and La Paz County median incomes are \$51,340 and \$36,321 respectively, the median income for CRIT residents is \$31,872. The percentage of people in poverty for the State of Arizona, La Paz County and CRIT are 14.9%, 20.9%, and 23.7% respectively. (United States Census Bureau n.d.)

While exact economic values are available, they are either proprietary for enterprises or confidential for the CRIT government itself. The total value of fixed assets to be replaced in the event of disaster exceeds \$100 million which includes the Governmental structure, tribal homes and the Tribal enterprises.

2. Industry

a) Government as Employer

An estimated 36.5% of workers over 16 years of age work for the government (primarily the tribal government). (United States Census Bureau 2018) The Colorado River Indian Tribes' government is overseen by a nine-member Tribal Council, led by a Chairman and a Vice-Chairman elected by bi-annual votes of the membership. Each Tribal Council member is elected to a four-year term. Elections are held in early December of even-numbered years.

CRIT Tribal Government includes more than three dozen different departments, providing all of the services needed for the residents of a sovereign nation. From law enforcement to housing to economic development, CRIT's Tribal government endeavors to improve the quality of life on the CRIT reservation and provide as much opportunity as possible for Tribal members.

b) Services

The Colorado River Indian Tribes provides a robust set of services including courts, law enforcement, firefighting, utilities, education, food programs, fish and game, health and fitness, an airfield, a museum, and more.

c) Business Opportunities

The Colorado River Indian Tribes has a relatively wide array of enterprises (Figure 4): (Colorado River Indian Tribes 2018)

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- Gaming, Lodging, and Entertainment - Since it opened in the late 1990s, the \$52 million BlueWater Resort, Casino, and Cinemas has become a focal point of CRIT's economic development efforts.
- CRIT Farms - Established in 1973 as the Tribal farming entity. It manages over 15,000 acres of alfalfa, cotton, durum wheat and many other crops. CRIT Farms' innovative approach to agriculture has made the endeavor very successful, and expanded upon its ability to grow different crops in different seasons
- CRIT Sand and Gravel – CRIT operates a sophisticated sand and gravel operation near the Colorado River that produces materials that meet and exceed all highway and construction standards.
- Real Estate - the last 10 years have brought explosive growth to the Colorado River communities. CRIT has been an important part of that growth with several significant real estate ventures:
 - A 140-acre industrial park with full utility services
 - The Aha Quin Mobile Home Park, just outside of Blythe
 - The Big River residential and commercial development, just across the river from Parker
 - A Wal-Mart retail center along Highway 93 in Parker
- Tourism – a number of tourist attractions from the Poston Monument to the Blythe Intaglios to the CRIT Museum.
 - The Ahakhav Preserve was established in 1995. The Preserve consists of 1,253 acres of wilderness area, 250 acres of aquatic habitat, and a 3.5-acre park.
- Colorado River Building Materials - a tribally owned enterprise in Parker that provides all your hardware and building needs for construction, home improvement or maintenance
- CRIT Utilities - provide the people of CRIT with important utility services, including waste disposal, water and sewer services.

d) Critical Facilities & Infrastructure:



(1) Vulnerability Assessment

Vulnerability is best defined as ‘open to attached, harm and/or damage’. The purpose of the Vulnerability Assessment is to answer the question of “What could my community lose due to the impact from this/these hazard(s)?”

For the Plan, the following tasks were performed as a part of the vulnerability assessment:

- Asset Inventory
- Potential Loss Estimations
- Identifying Future Structures
- Development Trends Analysis

The following sections summarize the Team efforts to assemble and analyze the data needed for the vulnerability assessment, and to present the results of the vulnerability analysis.

Asset Inventory

Assets identified by the Team are classified as either critical or non-critical facilities and infrastructure. Critical facilities and infrastructure are those systems within the Reservation whose incapacity or destruction would have a debilitating impact on the Tribe’s ability to recover following a major disaster, or to defend the people and structures of the Reservation from further hazards.

Using the criteria set forth by the Critical Infrastructure Assurance Office (CIAO), the Tribes has adopted nine general categories² of critical facilities and infrastructure:

1. **Communications Infrastructure:** Telephone, data services, and Internet communications, 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.

² Instituted via Executive Order 13010, which was signed by President Clinton in 1996.

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4. **Banking and Finance Institutions:** Banks, financial service companies, payment systems, investment companies, and securities/commodities exchanges.
5. **Transportation Network:** 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.
9. **Businesses:** Commercial businesses that are critical to the CRIT’s economic security.

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. *They are, however, very important to the Tribes and critical and non-critical should not be interpreted as meaning important and non-important.*

The Team performed a detailed asset inventory for the CRIT. Information that was compiled included the facility’s physical location, description, and replacement cost. Replacement costs were generally estimated using insurance and/or current market value estimates or using imagery and measuring the square footage multiplied by \$150 for an estimate. Each facility was geospatially located by obtaining initial latitude and longitude coordinates and then verifying the location with 2007 aerial photography. Table 11 summarizes the type, number and replacement cost of the facilities identified for the CRIT.

| Facility Type | La Paz County | Riverside County | San Bernardino County | CRIT Totals |
|---|---------------|------------------|-----------------------|-------------|
| <i>Critical Facilities and Infrastructure</i> | | | | |

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| | | | | |
|---|----|---|---|-----------|
| Telecommunications Infrastructure | 0 | 0 | 0 | 0 |
| Electrical Power Systems | 0 | 0 | 0 | 0 |
| Gas and Oil Facilities | 0 | 0 | 0 | 0 |
| Banking and Finance Institutions | 0 | 0 | 0 | 0 |
| Transportation Networks | 5 | 0 | 0 | 5 |
| Water Supply Systems | 5 | 0 | 0 | 5 |
| Governmental Services | 16 | 0 | 0 | 16 |
| Emergency Services | 6 | 0 | 0 | 6 |
| Non-Critical Facilities and Infrastructure | | | | |
| Educational | 2 | 0 | 0 | 2 |
| Cultural | 0 | 0 | 0 | 0 |
| Businesses | 2 | 0 | 0 | 2 |
| Residential | 7 | 0 | 0 | 7 |
| Note: Did not include (16) BIA facilities in these numbers. All BIA facilities came up low hazard for floodplains and wildfire. | | | | |

Table 11: Tribal Assets

Loss Estimations

Economic and human loss estimates for each of the major hazards identified in Section II begins with an estimate of the potential exposure of critical and non-critical assets and human populations to those hazards. Exposure to critical and non-critical assets identified by the Team is accomplished by intersecting the hazard profiles with the assets.

Human or population exposures were attempted by intersecting the same hazards with 2000 Census Data population statistics that have been re-organized into GIS compatible databases and distributed with HAZUS®-MH.³ But, it was duly noted by the Team that the HAZUS Data population statistics did not equate to the population statistics provided in Section II due to GIS positioning anomalies, and the way HAZUS depicts certain census block data. Therefore, the results were not representative of the general magnitude of population exposures to flooding. Additional loss estimations were attempted for general residential, commercial, and industrial building stock inventories compiled in the HAZUS®-MH databases also was intended to further depict the potential exposure. The identification of residential structures is also limited and did not accurately represent the current building counts.

Identifying Future Structures

³ U.S. Department of Homeland Security, Federal Emergency Management Agency, HAZUS®-MH, build 31.



In recent years, the Tribe's has completed several building projects to upgrade and enhance the Tribe's infrastructure. Currently, the only project being considered is Tyson Wash project to prevent shut down and erosion of major roadway that bisects the reservation.

3. *Development Trend Analysis*

In the past, the development within the CRIT boundaries is considered on case-by-case basis by the Tribal Council. A CRIT Master plan has not been developed or adopted for the Reservation; therefore, community development is currently performed on an ad-hoc basis. Figure 13 depicts significant future growth projects and Figure 14 depicts reservation-wide prospective projects.

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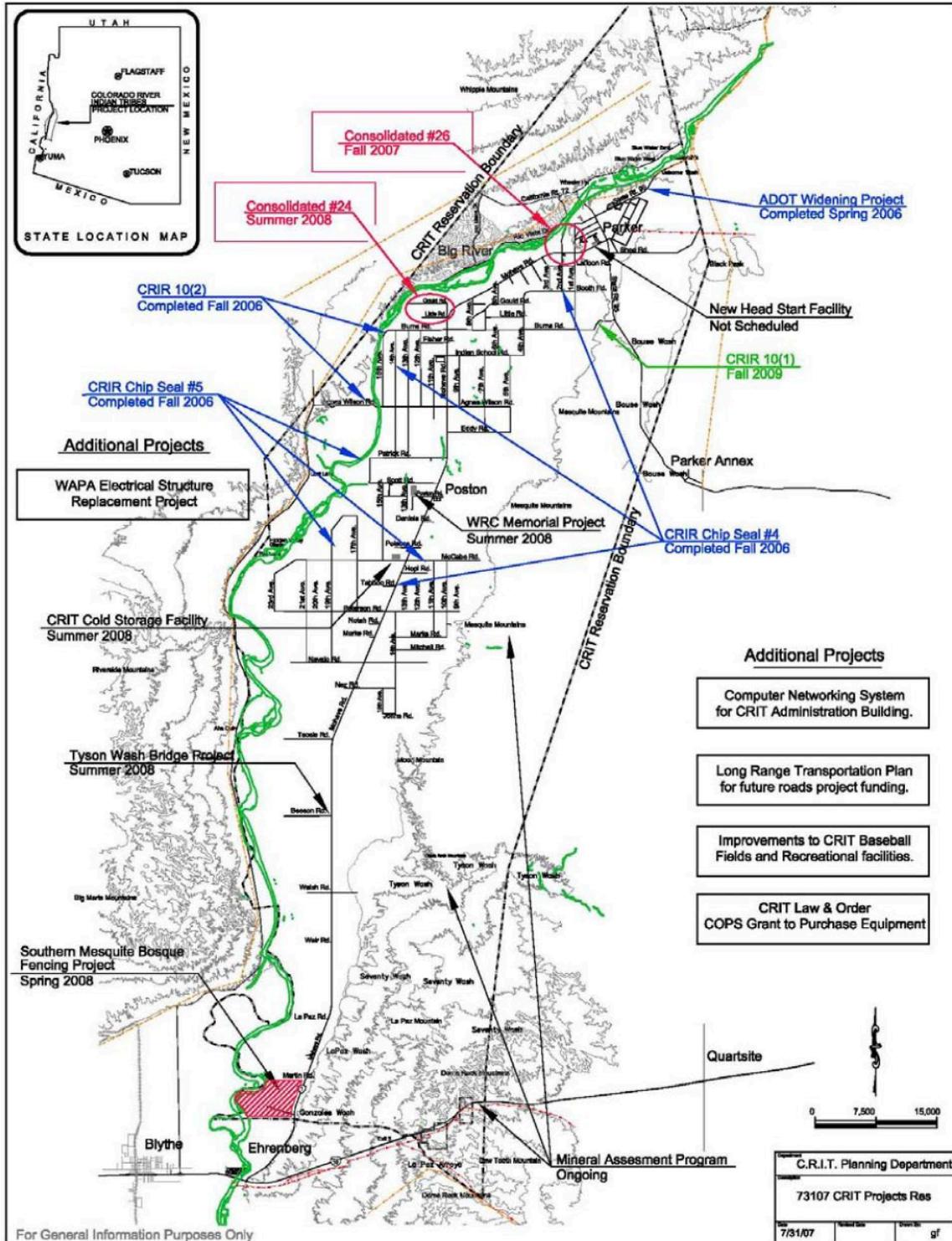


Figure 14. Colorado River Indian Tribes' Reservation-Wide Projects.



4. Cultural/Sacred Sites Analysis

The extent of CRIT cultural resources and sacred sites are considered the Mesquite Bosques along the Colorado River on the western boundary (Figure 4). There is a scattering of pure stands of mature mesquite, most of them too small to map. The mesquite wood is used by Tribal members for handcrafts and certain religious ceremonies but is becoming scarce since most old-growth Mesquite Bosques have been cleared for agriculture. In addition, the Ahakhav Preserve maintains native species that have been used both by CRIT and other tribal nations to repopulate lost populations/ecosystems. These areas are very vulnerable to wildfire and flooding.

a) Economic Development Projects

The existence of cultural/sacred sites limits development in many areas. For example, a solar farm project has been considered, but the extremely disruptive nature of building a solar farm has the potential to disturb sacred sites. The Genesis solar project near Blythe, CA, disturbed Native American human remains. (Sahagan 2014)

b) Development History and Planning

As a community, CRIT desires to foster a sustainable way of life both locally and globally through the safeguarding and enhancing of Tribal resources and by preventing harm to the environment and human health. The Tribe is resolved that their impact on the environment must not jeopardize the prospects of future generations.

c) Tribal Council

In the future, formally established committee(s) or boards could be created with the authority to review proposed projects. Until then, it is likely that the Tribal Council will be the body responsible for reviewing and approving development projects.



G. Identified Hazards of Concern

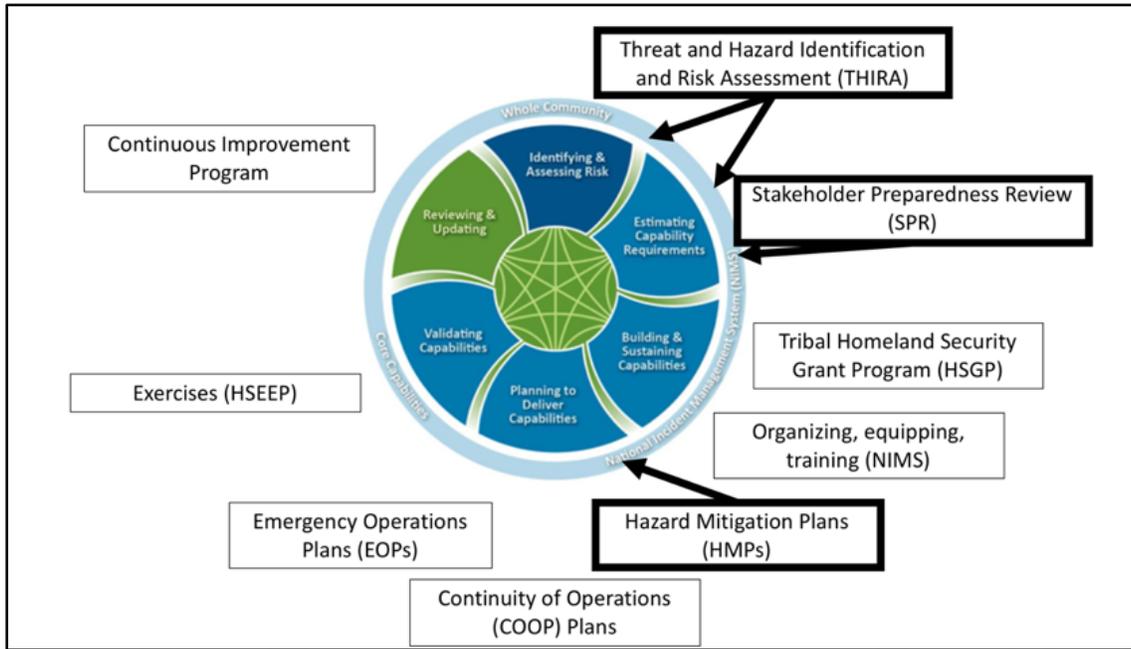
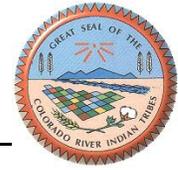


Figure 15. National Preparedness System.

To take a more holistic approach to its risk management, CRIT is including the three categories of hazards and threats defined by the National Preparedness Goal:

- *Natural hazards, which result from acts of nature, such as hurricanes, earthquakes, tornadoes, animal disease outbreak, pandemics, or epidemics.*
- *Technological hazards, which result from accidents or the failures of systems and structures, such as hazardous materials spills or dam failures.*
- *Human-caused incidents, which result from the intentional actions of an adversary, such as a threatened or actual chemical attack, biological attack, active shooter, or cyber incident.*

FEMA’s “Local Mitigation Planning Handbook (March 2013)” describes the option to include technological hazards and human-caused threats in a jurisdiction’s hazard mitigation plan (P. 5-9). While technological and human-caused threats are optional and not evaluated by FEMA as a part of Hazard Mitigation Planning reviews, CRIT is including them in its Hazard Mitigation Plan to better integrate the HMP with all elements of the National Preparedness System such as the Tribes Threat and Hazard Identification and Risk Assessment (THIRA) and Stakeholder Preparedness Review (SPR) as shown in Figure 15.



1. Natural Hazards

44 CFR Section 201.7(c)(2)(i) – “The risk assessment shall include... A description of the type, location, and extent of all natural hazards that can affect the tribal planning area. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.”

La Paz County has had five Presidential, Disaster Declarations:

| Disaster Type | Disaster Declaration | Date(s) | Public Assistance* |
|---|---|---|---------------------------|
| Flooding | Arizona Flooding (DR-686)** | June 16 th -20 st , 1983 | Unknown |
| Severe Storms & Flooding | • Arizona Severe Storms and Flooding (DR-1347)** | • October 21 st - November 08 th , 2000 | • PA - \$5.6M |
| | • Arizona Severe Storms and Flooding (DR-4203)** | • September 7 th - 9 th , 2014 | • PA - \$7.1M |
| Sever Winter Storms & Flooding | Arizona Severe Winter Storms and Flooding (DR-1888)** | January 18 th – 22 nd , 2010 | PA - \$7.1M |
| Hurricane | Arizona Hurricane Katrina Evacuation (EM-3241)*** | August 29 th – October 1 st , 2005 | PA - \$5.7M |

Figure 16. La Paz County Presidential Disaster Declarations.

* Public Assistance - Dollars Obligated: Funds made available to the State via electronic transfer following FEMA's final review and approval of Public Assistance projects.

** DR – Major Disaster Declaration

*** EM – Emergency Declaration

This plan focuses the impact of hazards specifically as they relate to CRIT members, its property, and its assets. The analysis for each hazard follows the following format:

1. General hazard description as it relates to CRIT
2. Historical occurrences on CRIT
3. Impact of climate change
4. Risk to Tribal people, property, and assets



5. Risk assessment factors for comparison

- a. Location
- b. Extent
- c. Probability

6. Scenario-based Impact Statement that is used for the CRIT THIRA/SPR

Based on the 2010 CRIT Multi-Hazard Mitigation Plan and additional hazards of concern that have emerged since that time, the natural hazards that are evaluated in this plan for CRIT are as follows:

- Extreme Heat
- Severe Winds (Dust Storms)
- Wildfires
- Drought
- Flooding – Flash
- Flooding – Riverine
- Disease (Mosquitos)

As can be seen in Table 12, Earthquakes, Winter Storms, Landslide / Mudslide, Fissures, and Subsidence (Sink Holes) were determined to be a very low risk and of little concern for CRIT. Therefore, they are not included in the final analysis. No natural hazards common to the planning area have been intentionally omitted.



2. Risk Assessment Factors

Per FEMA's Local Hazard Mitigation Planning Handbook, the analysis factors of used to compare the hazards and threats are location, extent, and probability of occurrence. (Federal Emergency Management Agency 2013, 5-1)

a) Location

- Extensive: 2/3 or more of tribal land/assets affected
- Moderate: 1/3 - 2/3 of tribal land/assets affected
- Limited: 1/3 or less of tribal land/assets affected

b) Extent

The magnitude of the hazard (Richter Scale, tsunami height, etc.)

- Catastrophic: Overwhelming damage requires Federal assistance and requires months to years to recover
- Major: Significant damage is widespread and/or significant requiring days to months to recover
- Light: Damage is limited and largely a nuisance that it requires hours to several days to recover

c) Probability of Occurrence

- Highly Likely: Nearly a 100% chance of occurrence in next year or happens every year
- Likely: Between 50% and 100% chance of occurrence in next year or has a recurrence interval of 10 years or less
- Occasional: Between 1% and 50% chance of occurrence in the next year or has a recurrence interval of 11 to 100 years
- Unlikely: Less than 1% chance of occurrence in next 100 year or has a recurrence interval of greater than every 100 years

Based on existing plans, assessments, and information, the natural hazards of concern were each evaluated based on the risk assessment factors and given a "preset value." Members of CRIT's whole community used the initial assessment from Table 12 to provide their own assessment of CRIT's natural hazards. In addition to providing individual assessments for location, extent, and probability, whole community members prioritized natural hazards through a voting process. Each person was allocated seven votes in any manner they chose to identify the hazards of most concern for CRIT. Numerical values for each parameter (location, extent, probability, priority) were combined in the following formula to develop a prioritized list of natural hazards of greatest concern.

- Location factor - weight of 30%
 - Ratings are given a value of 1-3, from Limited through Extensive
- Extent factor - weight of 50%

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- Ratings are given a value of 1-3, from Light through Catastrophic
- Probability factor - weight of 20%
 - Ratings are given a value of 1-4, from Unlikely through Highly Likely
- Score = (Location*20%) *(Extent*50%) *(Probability*30%) *(Hazard Votes/Total Votes)

| Natural Hazards | | | | | | | | |
|----------------------------------|--------------|-------------------|---------------|-------------------|---------------|-------------------|-------|-------|
| Hazard | Location | | Hazard Extent | | Probability | | Votes | Score |
| | Preset Value | Survey Assessment | Preset Value | Survey Assessment | Preset Value | Survey Assessment | | |
| Extreme Heat | Extensive | Extensive | Light | Major | Highly Likely | Highly Likely | 53 | 38.16 |
| Severe Winds (Dust Storm) | Moderate | Extensive | Major | Major | Highly Likely | Highly Likely | 38 | 27.36 |
| Wildfires | Moderate | Moderate | Major | Major | Highly Likely | Highly Likely | 56 | 26.88 |
| Drought | Extensive | Extensive | Major | Major | Occasional | Likely | 47 | 25.38 |
| Flooding – Flash Flood | Limited | Moderate | Major | Major | Likely | Likely | 45 | 16.2 |
| Flooding – Riverine | Extensive | Moderate | Catastrophic | Catastrophic | Occasional | Occasional | 32 | 11.52 |
| Disease (Mosquitos) | Extensive | Extensive | Major | Major | Occasional | Occasional | 31 | 11.16 |
| Earthquake | Moderate | Moderate | Light | Light | Unlikely | Unlikely | 16 | 0.96 |
| Winter Storms | Extensive | Limited | Light | Light | Unlikely | Unlikely | 14 | 0.42 |
| Landslide/ Mudslide | Limited | Limited | Light | Light | Unlikely | Unlikely | 8 | 0.24 |
| Fissures | Limited | Limited | Light | Light | Unlikely | Unlikely | 7 | 0.21 |
| Subsidence (Sink Holes) | Limited | Limited | Light | Light | Unlikely | Unlikely | 6 | 0.18 |

Table 12. CRIT Whole Community Natural Hazard Assessment.

The results in Table 12 set the priorities with respect to the natural hazards of greatest concern. Descriptors that are bold reflect that they were adjusted based on whole community survey input. The prioritized hazard list, in conjunction with the CRIT’s objectives, were used to develop the mitigation strategy in Section III.

H. Climate Change

“Climate change threatens Indigenous peoples’ livelihoods and economies, including agriculture, hunting and gathering, fishing, forestry, energy, recreation, and tourism enterprises. Indigenous peoples’ economies rely on, but face institutional barriers to, their self-determined

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management of water, land, other natural resources, and infrastructure that will be impacted increasingly by changes in climate.” (Reidmiller 2018)

One of the most significant developments since the previous plan was published is the experience and research regarding climate change. Tribes historically developed strategies to adapt to the environment, especially with respect to climate change. However, they face barriers to adapting to climate change due to limited resources (especially funding) and restrictions placed upon them due to their loss of traditional territory. Climate impacts affect the abundance of, and access to traditional lands, water, animals, plants, and even cultural and historical sites. The result is that Tribes connection to their traditional lands is challenged. Tribal nations must make a concerted effort to adapt to climate change in order to retain some traditions.

Specifically, in the Southwest there has been a loss of water due to droughts that are exasperated by the human-caused effects of climate change (Figure 17). While CRIT has senior water rights, the Tribes can expect competition for water with major urban areas and even decrease water quality as a large percentage of it is drawn off upstream. The Colorado River Basin has faced droughts and extreme heat that have dropped Lake Mead’s level by 130 feet and volume by 60% since 2000. (Reidmiller 2018, 150) Heat waves, especially when associated with an increase in ground-level ozone, are fatal hazards, especially for the young and the elderly. The Southwest also has a disproportionate number of vector-borne diseases such as West Nile virus, plague, and hantavirus, and Valley fever. (Reidmiller 2018, 150) Catastrophic wildfires are growing in frequency and intensity (Figure 18). Food production is harmed by water shortages, droughts, heat waves and even winter chills.

Due to the impact of climate change on CRIT, climate change is specifically addressed in each hazard profile.

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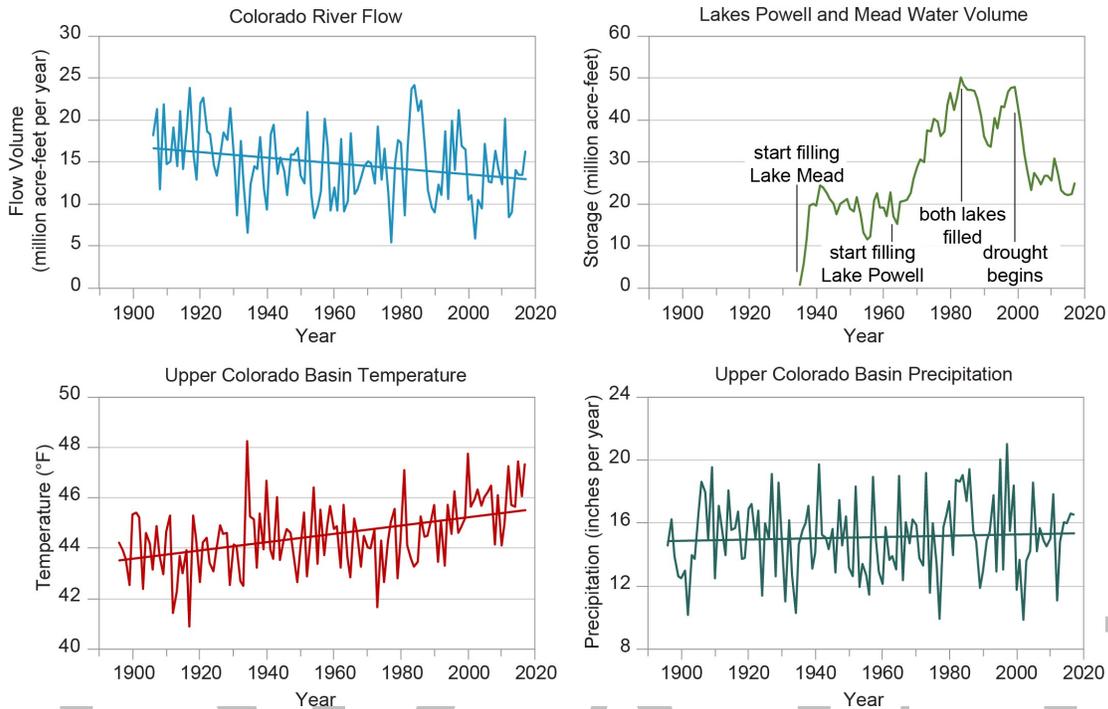


Figure 17. Impact of Climate Change on the Colorado River. (Reidmiller 2018, 152)

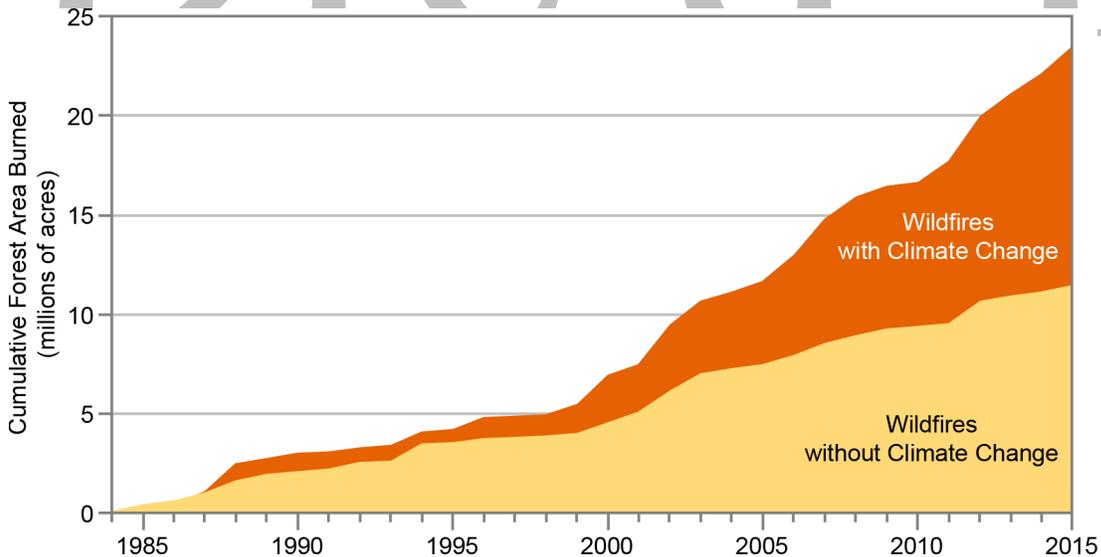


Figure 18. Impact of climate change on wildfires. (Reidmiller 2018, 151)



I. Risk Assessment Tools

44 CFR Section 201.7(c)(2)(i) – “The plan shall include...A description of the type, location, and extent of all natural hazards that can affect the tribal planning area. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.”

The hazard analysis looks backward using studies and resources such as FEMA’s Data Visualization Tool to capture previous occurrences. The analysis looks forward using such resources as the U.S. Global Change Research Program (USGCRP) 2018 “Fourth Annual Climate Assessment.” As described in Section I, multiple sources were used to conduct the risk analysis:

- Planning Team formation – 2018
 - Planning Team kick-off meeting for the 2018 MHMP update – October 30th, 2018
- Preliminary research on existing CRIT plans and risk assessments – Beginning August 27th, 2018
 - The 2010 CRIT MHMP was set as the baseline for the revision
 - The layout and format were changed to reflect guidance such as FEMA’s Local Mitigation Planning Handbook (2013), FEMA’s Tribal Mitigation Plan Review Guide (December 5th, 2017), and FEMA Region IX’s Tribal Mitigation Plan Review Tool.
 - Ultimately, the elements of FEMA’s Tribal Mitigation Plan Review Guide were chosen as the organization structure to increase clarity and simplicity.
 - Hazard profiles were greatly expanded from the three used in the 2010 MHMP (flooding, severe winds, wildfires) to seven (extreme heat, severe. winds, drought, flooding-flash, flooding-riverine, disease).
 - The Draft 2017 Colorado River Indian Tribes’ Hazard Mitigation Plan
 - Prepared by the State of Arizona
 - The Draft CRIT Revised HAZMAT Mitigation Plan
 - CRIT Emergency Operations Plan, November 2018
 - Provided information about hazards as well as capabilities, roles, and responsibilities during disasters
 - La Paz Regional Hospital Threat Assessment (2018-2019)

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- Provided information about the facility's response to threats and hazards
- La Paz Regional Hospital Emergency Preparedness Plan (2011-2012)
 - Provided information about the facility's response to threats and hazards
- Parker Indian Health Center Risk Assessment
 - Provided information about the facility's response to threats and hazards
- Evoqua Water Technologies Contingency Plan
 - Provided information about potential hazards, vulnerabilities, and capabilities
- Headgate Rock Dam Emergency Action Plan
 - Provided information about hazards
- FEMA Approved Mitigation Plans (County, City, Tribal)
 - State of Arizona 2018 Hazard Mitigation Plan
 - Provided information about hazards, climate, geography, geology, goals, and objectives
 - State of Arizona 2013 Hazard Mitigation Plan
 - Provided information about hazards, climate, geography, geology, goals, and objectives
 - La Paz County HMP
 - County general descriptions, natural hazard considerations, etc.
- Reviewed other external plans and assessments
 - 2018 National Climate Assessment
 - 2017 Arizona Drought Preparedness Report
 - University of Arizona Droughtview
 - University of Nebraska National Drought Monitoring Center
 - Western Regional Climate Center
 - Arizona Department of Health Services
 - Centers for Disease Control and Prevention
 - National Weather Service Storm Prediction Center

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- Arizona Department of Forestry and Fire Management: Wildfire Risk Assessment Portal
- U.S. Census
- HAZUS
 - Used to both map vulnerable areas/facilities and identify the magnitude of risks
- FEMA Disaster Data Visualization Tool
 - Provided historical information about the types, number, frequency and times of year for past Federally declared disasters
- State of California My Hazards Tool
- Historical research, current wildfire events
 - Provided information about non-Federally declared disasters
 - Current and recent events provided information about the trend of increasing intensity of disaster in California, especially fire
- Online survey (Appendix A)
 - Provided demographic information for the whole community participation
 - Provided whole community input regarding the location, extent, and probability of the hazards of most concern
 - Provided information to prioritize the hazards of most concern
- Site visits – October 30th – November 2nd, 2018, and December 5th – 8th, 2018
 - Tribal Council meetings – October 29th, 2018, December 7th – 8th, 2018
 - CRIT Planning Team meetings – October 29th – November 2nd; December 6th – 7th, 2018.
 - Interviews (Appendix B) - August 23rd - 24th, 2018, and October 8th - 10th, 2018
 - Public meetings – November 1st, 2018; December 8th, 2018
 - Workshop and meeting flyers, agendas, and sign in sheets - Appendix D
- Draft MHMP plan reviews
 - First draft plan review – December 14th – 31st, 2018
 - Second draft plan review – January 1st – January 15th, 2019
 - Final Plan Review – January 22nd, - 31st, 2019



DRAFT



J. Natural Hazard Analysis

44 CFR § 201.7(c)(2)(i) – “The plan shall include...A description of the type, location, and extent of all natural hazards that can affect the tribal planning area. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.”

44 CFR § 201.7(c)(2)(ii) – “The plan shall include... A description of the Indian tribal government'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 tribe.”

1. Disease

- 1. General hazard description as it relates to CRIT:** The 1918 Spanish Flu had a 50% morbidity 10% mortality rate that infected 500 million people worldwide and killed 50 million – 675,000 in the U.S. (Centers for Disease Control and Prevention n.d.) Despite the advances in healthcare, especially in preventing and treating flu viruses, a novel influenza outbreak remains a serious hazard. The healthcare community still needs to be able to produce more broadly effective vaccines much quicker. In addition, vaccine distribution; cheaper and more effective treatments; and better surveillance of animal viruses are needed.

In 2009, the public health community focused on, and developed vaccines specifically for, an expected avian virus (H5N1) outbreak. Instead, there was an H1N1 outbreak. The World Health Organization declared a pandemic as H1N1 rapidly spread around the world. In the United States, there were approximately 60.8 million cases, 274,304 hospitalizations, and 12,469 deaths. (Shrestha SS1 2011)

While the 2009 mortality and morbidity rates were nowhere those of the 2018 Spanish Flu, it was a wakeup call that easy global travel today can result in a rapid spread of disease.

“An outbreak is defined as an increase in cases of disease in time or place that is greater than expected. If a condition is rare (e.g. measles) or has serious public health implications (e.g. bioterrorism agent), an outbreak may involve only one (1) case. When two (2) or more cases in the same outbreak have a laboratory result involving the same etiologic agent, the outbreak is considered to be laboratory confirmed.

Local and state epidemiologists are responsible for outbreak investigations involving Arizona residents regardless of where they were exposed. Outbreaks involving residents from multiple states are usually coordinated by the Center for Disease Control and Prevention (CDC). Investigations into the source of an outbreak can depend on the etiology involved (viral, bacterial, parasitic or chemical),

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the mode of transmission (foodborne, waterborne, environmental, person-to-person), or the outbreak setting (restaurant, hospital or assisted living facility, school or community) (Arizona Department of Health Services (ADHS)). Most infectious disease outbreaks can be classified into the following categories. These are:

- Foodborne or Waterborne Outbreaks
- Vector borne or Zoonotic Disease Outbreaks
- Respiratory or Influenza-Like Illness Outbreaks
- Vaccine Preventable Disease Outbreaks
- Healthcare-associated Infection Outbreaks” (State of Arizona, Department of Emergency and Military Affairs 2013)

“Historical records indicate that Arizona has had numerous food-borne, waterborne, environmental, and person-to-person outbreaks harming and killing people and animals. A total of 181,787 confirmed or probable cases of infectious diseases (excluding sexually-transmitted diseases, tuberculosis, hepatitis C, and HIV) have been reported from 2008-2013. Of these, 41% (74,916 cases) were influenza or RSV cases, 34% (62,142 cases) were coccidioidomycosis cases and 9% (17,114 cases) were cases of enteric diseases. The remaining 16% of the cases (27,615 cases) are divided among invasive diseases, hepatitides, other diseases, vaccine-preventable diseases and vector-borne and zoonotic diseases.” (State of Arizona, Department of Emergency and Military Affairs 2018, 130)

The following are a generalized list of previous disease out breaks in Arizona:

- August 8, 2016 – ADHS announced the end to a three-month measles outbreak that involved 22 confirmed cases that originated in a private detention facility in Eloy, Arizona.
- July 2015 to February 2016 – An outbreak of 140 confirmed cases of Salmonella serotype Poona infection from garden variety cucumbers imported from Mexico caused 44 hospitalizations and six Arizonan deaths.
- June 19, 2013. After consuming frozen berries, 110 people were confirmed to have become ill from Hepatitis A. Illness reporting are as follows: Arizona (15), California (55), Colorado (21), Hawaii (6), New Mexico (5), Nevada (5), and Utah (3).
- 2009 – Present. The H1N1 virus epidemic begins. ADHS registered over 8,000 confirmed cases, and 149 deaths.
- 2002. Arizona experienced two major outbreaks of the Norwalk-like virus (ADHS, March/April 2003).
- May 18, 2002. Arizona Game and Fish Dept 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 (Arizona Game and Fish).

- 1993 – Present. There have been 22 confirmed Hantavirus cases in Arizona since 2006, 11 of which have resulted in death.
 - Hantavirus killed 11 people on the Navajo Nation (CNN, October 15, 1995).
 - June 7, 2013-Coconino County Public Health Services District officials confirmed that a Flagstaff-area woman died from complications of Hantavirus
- May 1998. A horse near Kingman, Arizona was diagnosed with Vesicular Stomatitis (Arizona Dept of Agriculture, May 21, 1998).

Probability/Extent

“The probability and magnitude of infectious disease is difficult to evaluate due to the wide variation in disease characteristics, such as the reproduction number, virulence, morbidity and mortality, detection and response time, and the availability of vaccines and other forms of prevention. There is growing concern, however, about emerging infectious diseases due to new and more resistant strains of pathogens, also called, “Super Bugs,” and viral reassortments/recombination. The probability of a serious outbreak goes up as new resilient pathogens are identified.

Infectious diseases have the potential to affect any form of life anywhere in the state and some that were thought to have been eradicated have re-emerged. New strains of infectious diseases, such as the flu, present seasonal threats to the populace and require continuous monitoring. Widespread epidemics are almost non-existent in the United States, but if an epidemic event were to occur, deaths could be in the many hundreds of thousands across the nation.

Historically, events have occurred in the farming and agricultural communities that cause great concern amongst responding governmental agencies. Due to these events, and the fact that Arizona shares an international trade border with Mexico, the probability of an infectious disease impacting livestock and crops is high.” (State of Arizona, Department of Emergency and Military Affairs 2018)

“Given the state’s population distribution, endemic disease, geography and climate, and healthcare system infrastructure, an estimation of the diseases that would likely impact Arizona on a scale that would result in a local, county, or statewide declaration of emergency include:

- Bioterrorism vent using one of the select agents. Additionally, with bioterrorism agents – weaponized strains may be more difficult to mitigate if they have enhanced infectivity, virulence, and drug resistance than those found in nature.



- Pandemic influenza.
- High impact animal disease such as:
 - Foot and Mouth Disease (FMD virus)
 - High pathogenic Avian Influenza
 - Tuberculosis
 - Q Fever (coxiella burnetii)
 - Newcastle Disease (Paramyxovirus 1)” (State of Arizona, Department of Emergency and Military Affairs 2018)

“Pandemic is defined as a disease affecting or attacking the population of an extensive region, including several countries, and/or continent(s). It is further described as extensively epidemic. Generally, pandemic diseases cause sudden, pervasive illness in all age groups on a global scale. Infectious diseases are also highly virulent but are not spread person-to-person.

Pandemic and infectious disease events cover a wide geographical area and can affect large populations, potentially including the entire population of the State of Arizona. The exact size and extent of an infected population is dependent upon how easily the illness is spread, the mode of transmission and the amount of contact between infected and uninfected individuals. The transmission rates of pandemic illnesses are often higher in denser areas where there are large concentrations of people. The transmission rate of infectious disease will depend on the mode of transmission of a given illness.

The magnitude of a pandemic or infectious disease threat in Arizona will range significantly depending on the aggressiveness of the virus in question and the ease of transmission. Pandemic influenza is easily transmitted from person-to-person, but advances in medical technologies have greatly reduced the number of deaths caused by influenza over time. In terms of lives lost, the impact various pandemic influenza outbreaks have had globally over the last century has declined (Table 13). The severity of illness from the 2009 H1N1 influenza flu virus has varied, with the gravest cases occurring mainly among those considered at high risk. High risk populations considered more vulnerable include children, the elderly, pregnant women, and chronic disease patients with reduced immune system capacity. Most people infected with H1N1 in 2009 have recovered without needing medical treatment. However, the virus has resulted in many deaths, including 149 in Arizona as of February 2010. According to the CDC, about 70% of those who have been hospitalized with the 2009



H1N1 flu virus in the United States have belonged to a high-risk group (CDC, 2009).” (State of Arizona, Department of Emergency and Military Affairs 2013, 159)

| Date | Pandemic Name/Subtype | Worldwide Deaths (Approximate) |
|------------------|------------------------------|---------------------------------------|
| 1918-1920 | Spanish Flu / H1N1 | 50 million |
| 1957-1958 | Asian Flu / H2N2 | 1.5-2 million |
| 1968-1969 | Hong Kong Flu / H3N2 | 1 million |
| 2009-2010 | Swine Flu / A/H1N1 | 151,700-575,400 (as of April 2010) * |

Table 13. Significant Outbreaks of Influenza over the Past Century.

*The range in fatalities is due to the underreporting of deaths in third-world countries, and the WHO has acknowledged that official, lab-confirmed reports are an underestimate. Source: Global Security, 2009; WHO, 2009

“The magnitude of a pandemic may be exacerbated by the fact that an influenza pandemic will cause outbreaks across the United States, limiting the ability to transfer assistance from one jurisdiction to another. Additionally, effective preventative and therapeutic measures, including vaccines and other medications, will likely be in short supply or will not be available...

...The precise timing of pandemic influenza is uncertain, but occurrences are most likely when the Influenza Type A virus makes a dramatic change, or antigenic shift, that results in a new or “novel” virus to which the population has no immunity. This emergence of a novel virus is the first step toward a pandemic.

Widespread illness may increase the likelihood of shortages of personnel to perform essential community services. In addition, high rates of illness and worker absenteeism occur within the business community, and these contribute to social and economic disruption. On a national scale, the Congressional Budget Office Estimates that a severe pandemic could cost the US economy more than \$600 million, or 5% of the Gross Domestic Product (US DHHS 2005). Social and economic disruptions could be temporary but may be amplified in today’s closely interrelated and interdependent systems of trade and commerce. Social disruption may be greatest when rates of absenteeism impair essential services, such as power, transportation, and communications.” (State of Arizona, Department of Emergency and Military Affairs 2013, 152)



Loss Estimation

“Losses in a pandemic or infectious disease outbreak stem from lost wages and productivity, not losses to buildings or land. Losses are difficult to estimate because the exact rates of absenteeism and cost of treating a widespread disease will depend on the virus or bacterium in question, the availability of vaccination or treatment, and the severity of symptoms. For historical context, though, the Asian and Hong Kong Flu pandemics killed over 1.5 million people worldwide and caused an estimated \$32 billion loss due to lost productivity and medical expenses (Smith, 2004). With Arizona’s economy so integral to the national economy, economic losses from a pandemic or infectious disease threat could be significant.” (State of Arizona, Department of Emergency and Military Affairs 2013, 160-161)

“Diseases affecting animals and plants, particularly livestock and agricultural products, are also of major concern. Here, both the supply and quality of human food supplies, potential economic consequences, and impact on foreign trade. According to the National Animal Health Emergency Management System (NAHEMS), an animal health emergency is defined as the appearance of disease with the potential for a sudden negative impact through direct impact on productivity, real or perceived risk to public health, or real or perceived risk to a foreign country which imports from the U.S. (Lautner, April 18, 2002).” (State of Arizona, Department of Emergency and Military Affairs 2013, 162)

Responders

“Responders, recovery personnel and volunteers would be quickly overwhelmed if a serious outbreak of disease were to occur in Arizona. Due to population density in the major metropolitan areas, the capabilities to quickly respond, identify and control such outbreaks are crucial. Potential dangers include the rapid onset of disease that moves faster than the response can actively follow, number of responders who could become unknowingly infected during initial onset causing loss of essential assets and risk of new introduction or spread of infectious diseases.

The Department of Agriculture and Game and Fish Department are primarily concerned with plant, livestock and wild animal diseases and infections. The agencies are concerned with animal-to-animal diseases, as well as diseases transmitted from animals or arthropod vectors to humans. The scope and severity of an infectious outbreak could easily over task these departments causing requests for additional resources to be called from outside Arizona.” (State of Arizona, Department of Emergency and Military Affairs 2018, 140)



“The Plant Protection and Quarantine (PPQ) program, also located within USDA’s Animal and Plant Health Inspection Service (APHIS), safeguards agriculture and natural resources from the risks associated with the entry, establishment, or spread of animal and plant pests and noxious weeds. Several thousand foreign plant and animal species have become established in the United States over the past 200 years, with approximately one in seven becoming invasive. An invasive species is an alien (i.e., non-native) species whose introduction does, or is likely to, cause economic or environmental harm or harm to human health. Invasive plants, animals, and pathogens have often reduced the economic productivity and ecological integrity of agriculture, forestry, and the other natural resources.” (State of Arizona, Department of Emergency and Military Affairs 2013, 162-163)

2. **Historical occurrences on CRIT:** Due to its location on the Colorado River, mosquito borne diseases are of particular concern. “According to ADHS (2015b), Coconino (n=4), La Paz (n=5), and Navajo (n=3) have some of the highest incident rates of outbreak (“n” persons per 100,000) in the state for reporting year 2015. For the five-year period of 2008-2013, ADHS also notes (ADHS, 2015b) that the North Region counties have some of the highest incident rates for campylobacteriosis, cryptosporidiosis, invasive *Streptococcus pneumoniae*, streptococcal group A, pertussis, hantavirus pulmonary syndrome, and Rocky Mountain spotted fever.” (State of Arizona, Department of Emergency and Military Affairs 2018, 134)

West Nile Virus – “West Nile virus is the most common mosquito borne disease in Arizona. Most individuals (80%) infected with West Nile virus will not have any signs or symptoms of disease. In some individuals, West Nile virus can lead to severe neuroinvasive disease, including meningitis and encephalitis.” (Arizona Department of Health Services 2018) Although West Nile Virus has been present on the CRIT Reservation since 2003, La Paz County has only had four reported cases to date. (Arizona Department of Health Services 2018)

St Louis encephalitis – While St. Louis encephalitis is present in Arizona, it is rare, and no cases have been reported in La Paz County to date. Most individuals (99%) have no symptoms. (Arizona Department of Health Services 2018) When they occur symptoms range from fever, headache, dizziness, nausea, and general discomfort on the mild end to conditions such as encephalitis (inflammation of the brain) and meningitis (inflammation of brain and spinal cord linings).

Dengue – Dengue is rare in Arizona. There have been a few travel-related cases, but none reported in La Paz County. The general symptoms are varied pain and bleeding.

Chikungunya – As with Dengue, only travel-related cases of Chikungunya have been reported in Arizona and none in La Paz County. Symptoms include high fever and joint pain.

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Zika virus – The State of Arizona has had no cases of Zika. Most people (80%) have no to mild symptoms, but Zika can cause severe birth defects.

Rocky Mountain Spotted Fever – Arizona has the most cases of Rocky Mountain Spotted Fever – the most severe tick borne disease in the U.S. (Arizona Department of Health Services 2018)

Novel Influenza epidemic - The 1918 Spanish Flu had a 50% morbidity 10% mortality rate that infected 500 million people worldwide and killed 50 million – 675,000 in the U.S. (Centers for Disease Control and Prevention n.d.) Despite the advances in healthcare, especially in preventing and treating flu viruses, a novel influenza outbreak remains a serious hazard. The healthcare community still needs to be able to produce more broadly effective vaccines much quicker. In addition, vaccine distribution; cheaper and more effective treatments; and better surveillance of animal viruses are needed. Due to being only 10 years-old in 1918, the State of Arizona had not reported on mortality statistics to the Federal government. As a result, the number of cases of Spanish flu were under reported. Rather than the 519 influenza-related deaths reported, there were 6,0000 in Arizona – 4,000 Native Americans. (Arizona State University 2017)

In 2009, the public health community focused on, and developed vaccines specifically for, an expected avian virus (H5N1) outbreak. Instead, there was an H1N1 outbreak. The World Health Organization declared a pandemic as H1N1 rapidly spread around the world. In the United States, there were approximately 60.8 million cases, 274,304 hospitalizations, and 12,469 deaths. (U.S. National Library of Medicine, National Institutes of Health, n.d.)

While the 2009 mortality and morbidity rates were nowhere those of the 2018 Spanish Flu, it was a wakeup call that easy global travel today can result in a rapid spread of disease. The Colorado River Indian Tribes is especially vulnerable due to its close proximity to the Mexican border as well as the large number of people from all across the U.S. that visit CRIT every winter – the height of flu season.

Arizona had 19,906 influenza cases reported during the 2009-2010 H1N1 flu pandemic. (Fish 2018) Of that total, H1N1 led to 8,726 cases, 1,897 hospitalizations, and 152 fatalities. (Arizona Department of Health Services 2010)

In summary, due to its location on the Colorado River near the Mexican border, and large number of visitors from across the nation, CRIT is susceptible to both vector borne and infectious diseases. The large amount open land and farmland provides an opportunity for ticks to be introduced to domestic animals and people.



3. **Impact of Climate Change:** The World Health Organization (WHO) has reported that, “Vectors, pathogens and hosts each survive and reproduce within a range of optimal climatic conditions: temperature and precipitation are the most important, while sea level elevation, wind, and daylight duration are also important. Specifically, the WHO has recorded a five-fold increase in malaria epidemic risk the year after El Nino events. Because moisture and temperature are such significant factors, elevated temperatures and extreme rain events resulting from climate change increase the risk. WHO models have shown that climate change increases the transmission of malaria and dengue fever worldwide, and encephalitis in the U.S.

One measured impact due to climate change is the number of days of the mosquito season is growing. In Tucson, the number of days in Mosquito season has grown from 14 (1980-1989) to 18 since 2016. (States at Risk 2018) Due to its proximity to the Colorado River, CRIT may face even more days in the mosquito season.

4. **Risk to Tribal people, property, and assets:** A Spanish Flu-like event can be expected to result in 50% morbidity (4,382 Reservation residents, 1,722 elders, 741 children, 605 people with disabilities and access and functional needs), 1,100 who are economically disadvantaged, and 860 who speak English as a Second Language, 10% mortality (876 Reservation residents, 344 elders, 150 children, 120 people with disabilities and access and functional needs, 220 economically disadvantaged, and 170 with limited English proficiency). Approximately 30% of the workforce does not show up for work, resulting in works stoppages on some shifts. “Negative impacts on property, facilities and Tribal infrastructure could be catastrophic depending on the type, severity and spread of infectious diseases. This is particularly true of those capable of disrupting the human or animal food chain. During a pandemic, public health professionals may recommend facilities and operating infrastructure limit its use. All non-essential infrastructure components could easily be affected as people would choose to stay home rather than risk possible infection. Additionally, facilities directly involved in the line of infection could be shut down for extended periods of time costing time and large sums of money.

Infectious disease or pandemics that affect the farming operations would have serious negative effects. The loss of human and animal life, the loss of revenue, the loss of business as these facilities and its supporting infrastructure may be shut down until the disease can be identified, controlled and clean up could occur.

In agriculture the same would apply with additional issue of time. Being that crops are seasonal, the turn-around period could be lengthy if the product is a victim of infestation. This scenario could

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possibly cause a ripple effect in the supporting agriculture infrastructure causing a spike in prices and financial strain on those involved in all aspects of production, distribution and supply or agricultural products.

Even the threat of a severe infectious disease or pandemic could have severe economic and bring about financial burdens on jurisdictions involved. In studies conducted by the Harvard School of Public Health, an estimated three-fourths+ of Americans would cooperate with public health officials and follow their recommendations involving curtailment of daily activities such as not using public transportation, not going to the mall and not going to large gatherings or sporting events (Harvard School of Public Health, *In Case of an Outbreak of Pandemic Flu*, Press Release 2006). The financial costs to CRIT could easily shift its financial stability leading to long term debts and budget cuts to recuperate costs associated with incidents.” (State of Arizona, Department of Emergency and Military Affairs 2013)” (State of Arizona, Department of Emergency and Military Affairs 2013, 164)

With CRIT having a large agricultural and farming economic structure, significant animal and agricultural disease outbreaks can have a severe economic impact. In the past, agricultural diseases have had serious financial impacts on citrus and cotton costs as crops were destroyed due to outbreaks of disease.

“The probability and magnitude of disease, infestation and particularly an epidemic, is difficult to evaluate due to the wide variation in disease characteristics, such as rate of spread, morbidity and mortality, detection and response time, and the availability of vaccines and other forms of prevention. The ability of public agencies and medical services to quickly act during an outbreak of disease or a pandemic is in direct correlation to public confidence in jurisdictional governance. Failure of these entities to act in a reasonable manner warranted by the magnitude and severity as seen through the public eye, will drastically reduce the public’s confidence in the government’s ability to accurately control an outbreak. The magnitude of an outbreak can have severe psychological impacts the population. The media, if not monitored, can cause wide spread panic resulting in a severe overload of resources and extreme financial costs to government and the public. Depending on the depth of public perceptions of safety, or lack of, public reaction could span from compliance to lawlessness.

The same goes for farming and agricultural concerns. The magnitude of a serious disease, infestation or pandemic can vary depending on particular factors to include the ability to identify and respond to affected areas, successfully controlling the spread, allocating needed supplies to treat and inoculate if possible and set into motion additional preventive measures.” (State of Arizona, Department of Emergency and Military Affairs 2013, 164)



“Although it would most likely take a very extreme health/agricultural issue to maximize resources to a point of operation and service disruption, timing of prevention and control measures such as isolation and quarantine, promotion of personal hygiene and social distancing are critical. To be better prepared to avoid such a disruption, CRIT should develop and implement Continuity of Operations (COOP) Plans to ensure faster response, reduction in impact, ensure public confidence and provide accurate communication and transmittal of information for prevention, control and notification. The COOP should identify assets that can be called in the event that an outbreak occurs within human populations, animal or agriculture.

“The same applies for Farming and Agricultural assets. Agencies and industry must identify essential services and critical operations that are required to be maintained in order to prevent serious environmental impacts. This process must take into account critical inputs such as, materials, services, suppliers and any logistical concerns. Time is also a factor. How long can operations and delivery of service sustain operations during an event? To mitigate environmental impacts, alternative services, security needs and expediting financial requirements are crucial and could dramatically reduce the overall risk of having an infectious disease or pandemic create environmental hardships that could last for years to come.

According to the Arizona Department of Health Services (ADHS) Emergency Response Plan, ADHS has a comprehensive Business Continuity Plan. This plan is maintained by the Director’s Office Strategic Planner.” (State of Arizona, Department of Emergency and Military Affairs 2013, 163)

5. Risk assessment factors for comparison:

- a. Location:** Extensive – Whether it be a pandemic or vector borne disease, the entire Reservation can expect to be affected.
- b. Hazard Extent:** Catastrophic – Do to the relatively high vulnerability brought by national and international travelers, as well as farming being a major enterprise, a pandemic could be catastrophic.
- c. Probability:** Occasional – Pandemics and vector borne disease outbreaks are somewhat unpredictable, but definitely appear every decade or so.

6. Scenario-based Impact Statement that is used for the CRIT THIRA/SPR: A novel influenza virus is introduced to CRIT by guests at the casino/restaurants. The global impact is similar to the 1918 Spanish Flu with 50% morbidity (4382 on the reservation, 1,722 elders, 740 children, 605 people with disabilities and access and functional needs, 1,087 economically challenged, 859 with limited English proficiency), 10% mortality (876 on the reservation, 344 elders, 148 children, 121 people with



disabilities and access and functional needs, 217 economically challenged, 172 with limited English proficiency). Approximately 30% of the workforce does not show up for work, resulting in work stoppages on some shifts. The CDC recommends social distancing with no mass gatherings. Schools, including the Head Start and Early Learning programs closed. The casino and restaurants are closed for 30 days.

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2. Drought

1. **General hazard description as it relates to CRIT:** Due to its proximity to the Colorado River, correspondingly high water table, senior water rights, CRIT is relatively resistant to the direct impact of drought. CRIT Farms does not rely in rain for its crops. In 2018, La Paz was the only county in Arizona that did NOT experience a drought disaster declaration. (Arizona Department of Water Resources 2018) However, a pervasive drought in the West/Southwest would lead to reduced water flow in the Colorado River and potential battle over water supply with major urban areas. For example, in 2007, the Secretary of the Interior adopted the Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead. The intent was to incentivize the preservation of water levels in Lake Powell and Lake Mead. In 2014, the Lower Basin Drought Memorandum of Understanding was developed to coordinate agencies in conserving water. More than 572,000 acre-feet of water were conserved through the 2014 efforts. (Arizona Department of Water Resources 2017, 18) Under the 2015 Drought Contingency Plan (DCP), Arizona and Nevada agreed to reduce water deliveries sooner than under previous agreements and California (for the first time) agreed to reduce water deliveries in Lake Mead hits certain elevations. (Arizona Department of Water Resources 2017, 18) In 2017, the State of Arizona developed a DCP Plus to further conserve water in order to stave off the likelihood of shortages by 2021. (Arizona Department of Water Resources 2017) California has senior water rights and would not have to limit its draw on Lake Mead even in a shortage. Pima County assessed that the Central Arizona Project would suffer "...catastrophically deep reductions..." if Lake Mead's elevation drops below 1,025 feet. (Arizona Department of Water Resources 2017, 33) In summary, two countries, multiple states, and several major urban areas are all competing for Colorado River water supply. The Colorado River Indian Tribes will have to be diligent in protecting its water resources.

Drought Description

Drought originates from a deficiency of precipitation over an extended period, usually one or more seasons. Drought can result in a water shortage for some activity, group, or environmental sector. Drought is a complex natural hazard, which is reflected in the following four definitions commonly used to describe it:

- Agricultural – drought is defined principally in terms of naturally occurring soil moisture deficiencies relative to water demands of plant life, usually arid crops.
- Hydrological – drought is related to the effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.



- 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.
- 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.

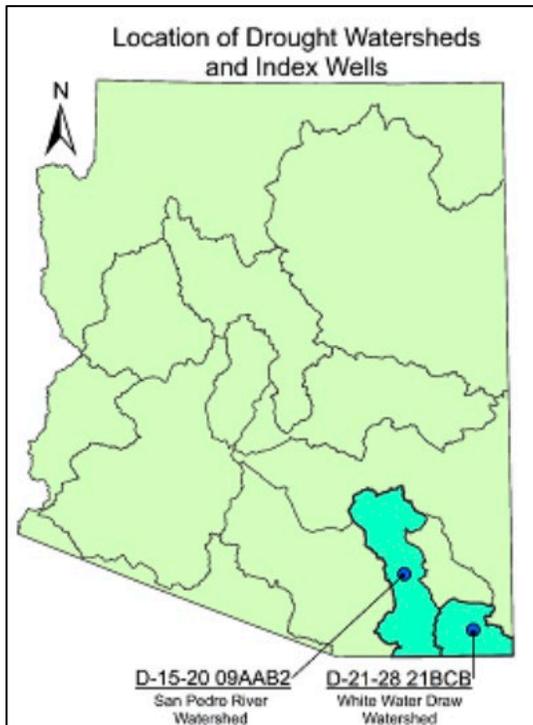
Historical Droughts

“Between 1849 and 1905, the most prolonged period of drought conditions in 300 years occurred in Arizona (NOAA, July 29, 2003). Another prolonged drought occurred during the period 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. That characterization is supported by recent research on Arizona’s historical climate using tree- ring records (Meko et al. 2007). In the arid West, drought is characterized by extended periods of below normal precipitation, punctuated by occasional wet years. primary natural disaster areas due to drought” (State of Arizona, Department of Emergency and Military Affairs 2018, 37-38) (Figure 19).

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Drought Status Change Monitoring



Two (2) of the ADWR groundwater index wells located within the Lower San Pedro and Whitewater Draw watersheds are used to measure the effects of climate for the purpose of providing a qualitative indication of drought status (Figure 20). Groundwater levels for these wells show steady overall decline through the 2012 water year, which correlated with long-term drought conditions.

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Figure 20. Location of drought Watersheds and Index Wells.

Short-term Drought Status

Figure 21 depicts the short-term drought status for Arizona as of July 10th, 2018 and Figure 22 depicts the short-term drought status as of December 4th, 2018.

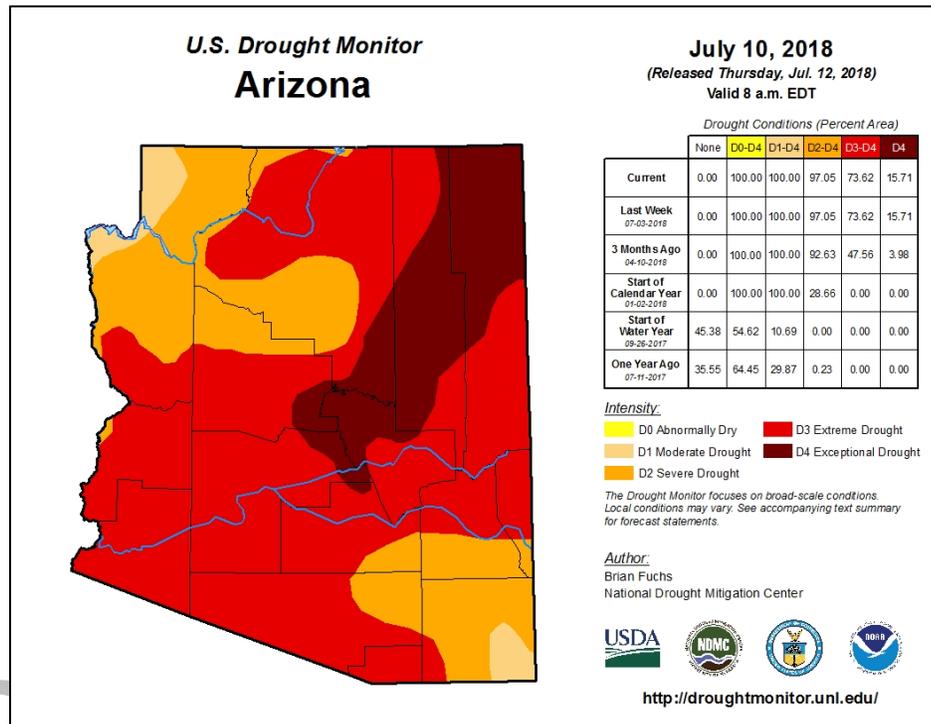


Figure 21. State of Arizona Drought Status as of July 10th, 2018.

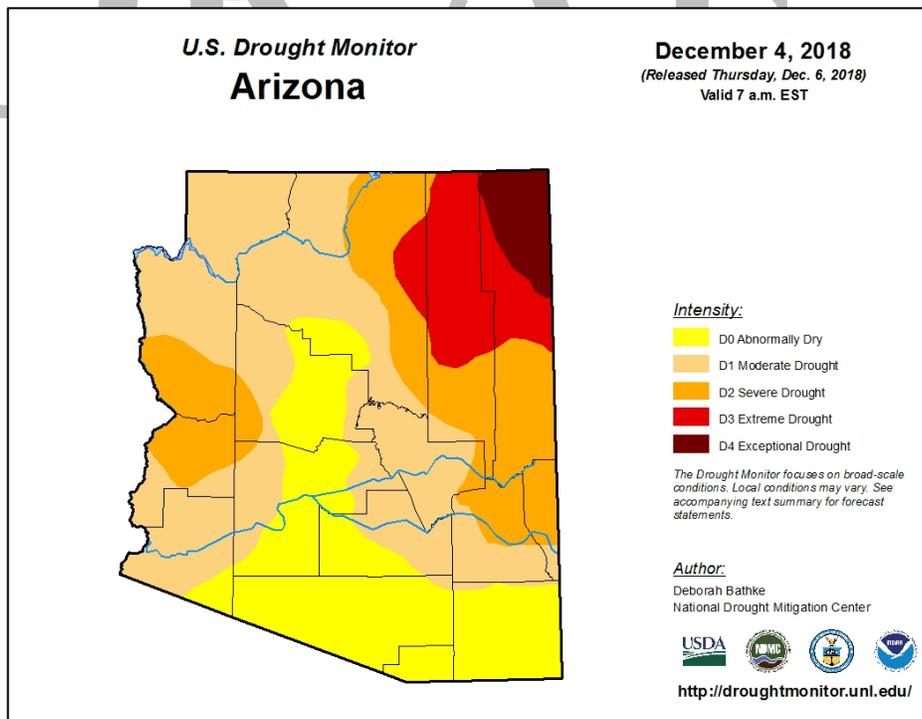


Figure 22. State of Arizona Drought Status as of July 10th, 2018.



In the near term, a weak El Niño is expected to bring drought relief to Arizona in the 2018-2019 winter season (Figure 23).

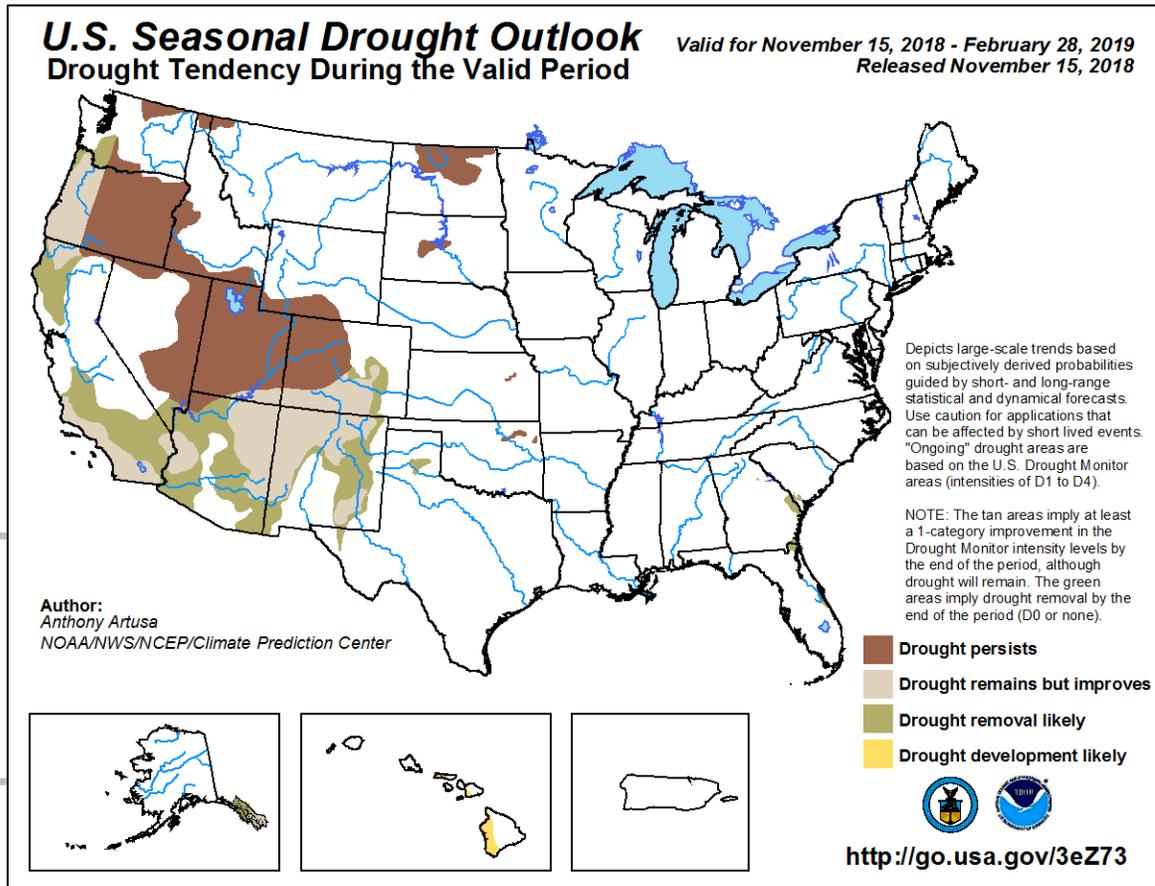


Figure 23. U.S. Seasonal Drought Outlook: November 15, 2018 -February 28, 2019.

Figures 24 and 25 show the predicted temperature and precipitation deviations for January – March 2019. Figures 26 and 27 show the predicted temperature and precipitation deviations for June – August 2019. While winter precipitation is predicted to be above normal January – March, temperatures are also expected to be above normal.

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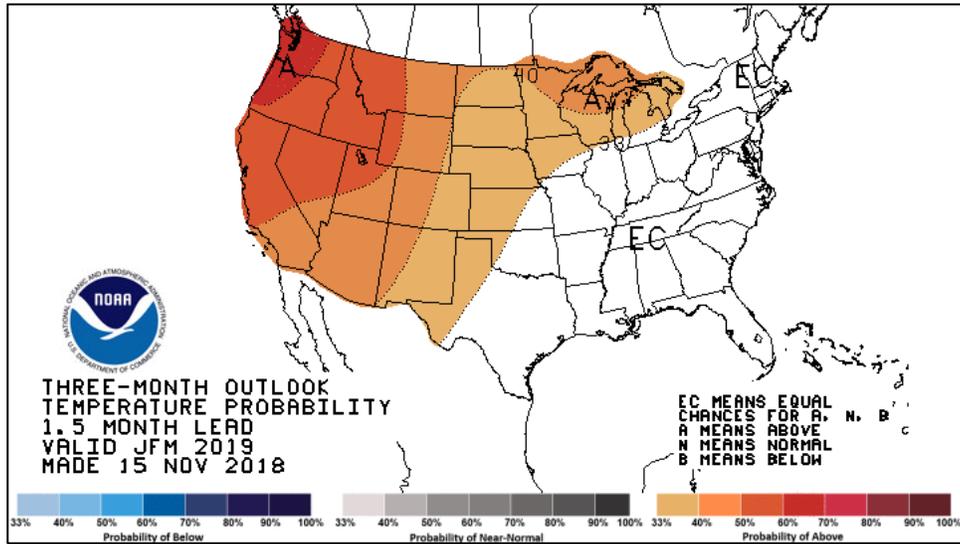


Figure 24. Three-Month Outlook: Temperature Probability; January-March 2019.

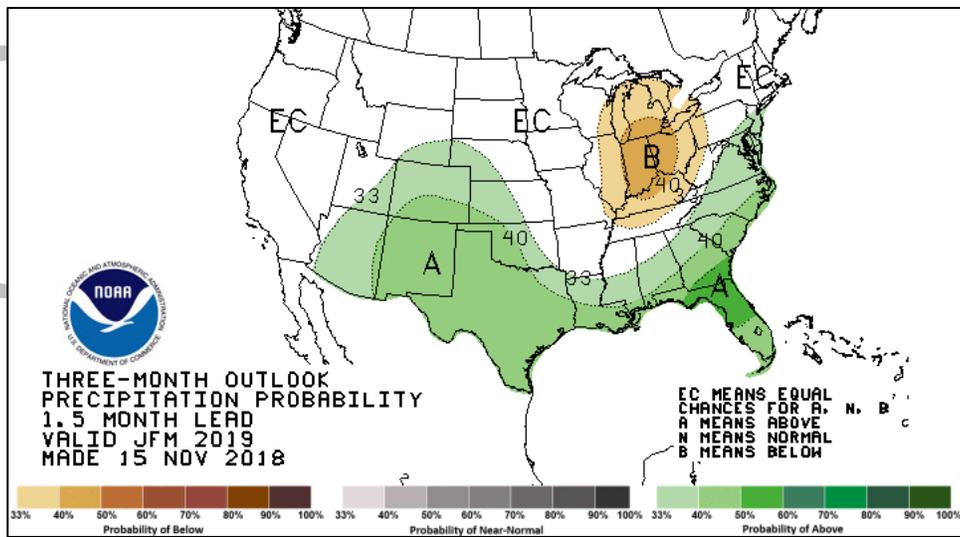


Figure 25. Three-Month Outlook: Precipitation Probability; January-March 2019.

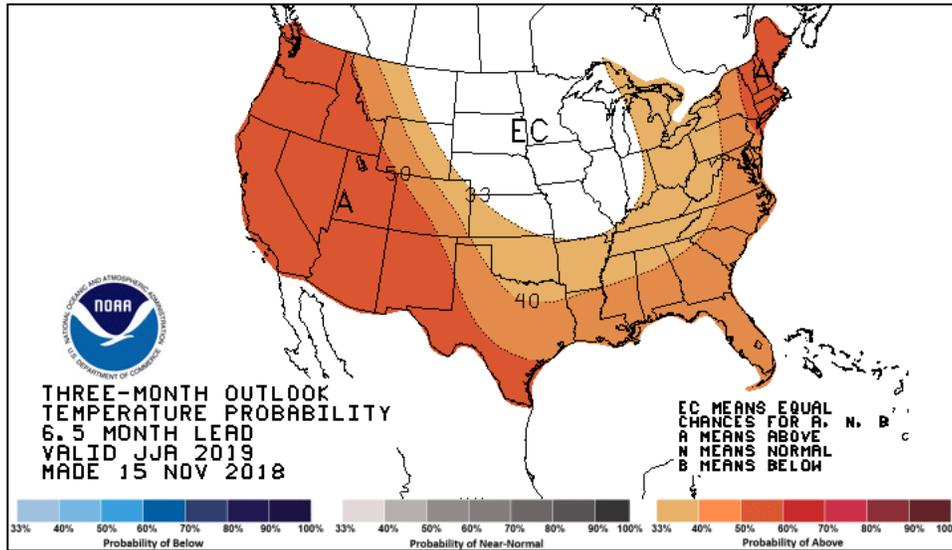


Figure 26. Three-Month Outlook: Temperature Probability; June-August 2019.

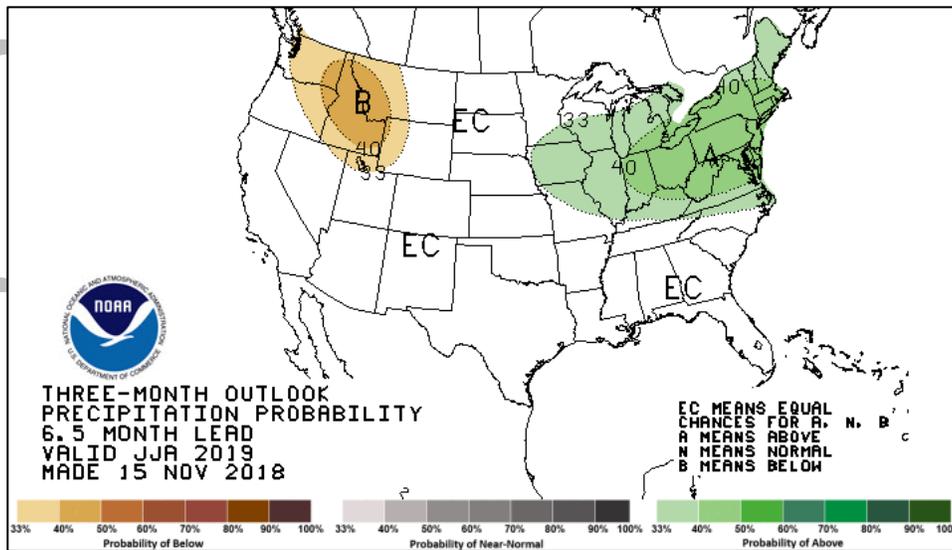


Figure 27. Three-Month Outlook: Precipitation Probability; June-August 2019.

Long-term Drought Status

Although the drought is not over (reservoirs are only 65% full), the 2017 Arizona Drought Preparedness Annual Report assessed that the drought appears to be easing for State of Arizona (Figures 28-29, and Table 14). (Arizona Department of Water Resources 2017, 10) The Colorado River is in one of the driest periods in history. Tree ring samples, the Colorado River is in the fifth

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driest 16-year period in the last 1,200 years. (Arizona Department of Water Resources 2017, 18) Regardless of the seasonal forecasts, the State of Arizona, and CRIT faces long-term drought conditions.

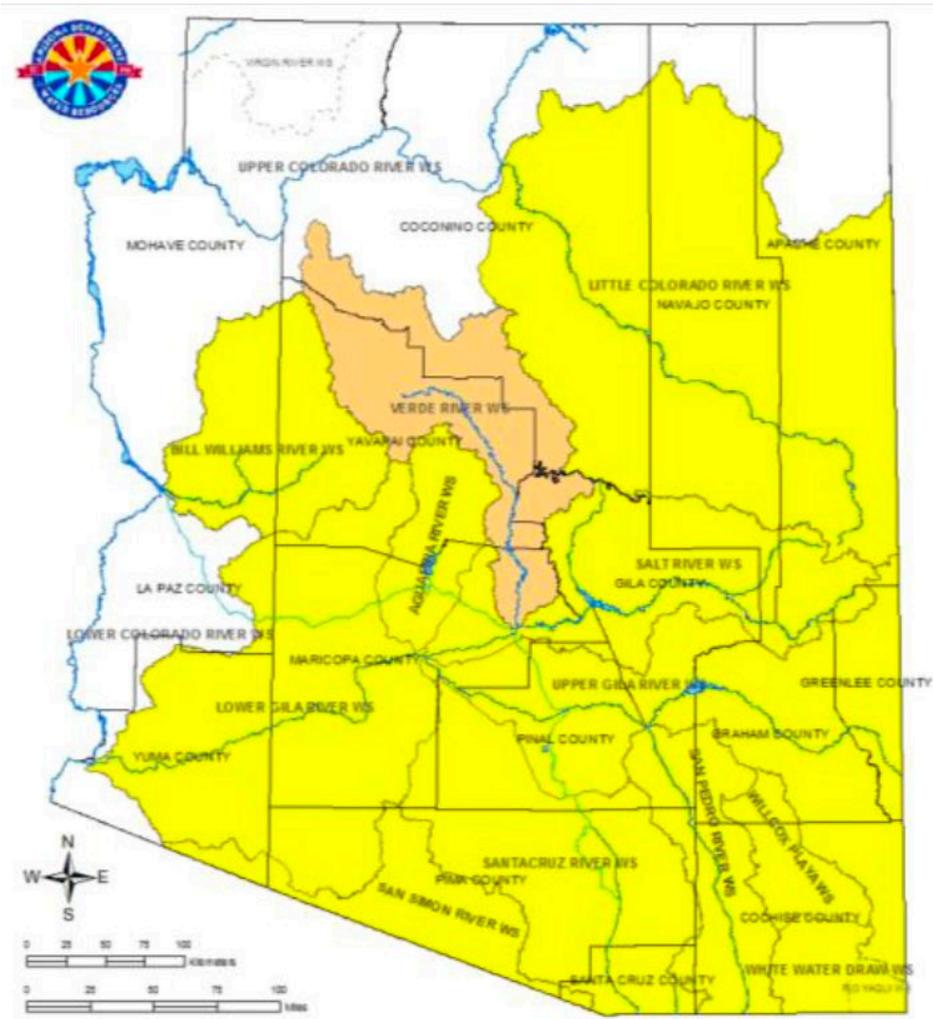


Figure 28. October 2016 Long-term Drought Status.

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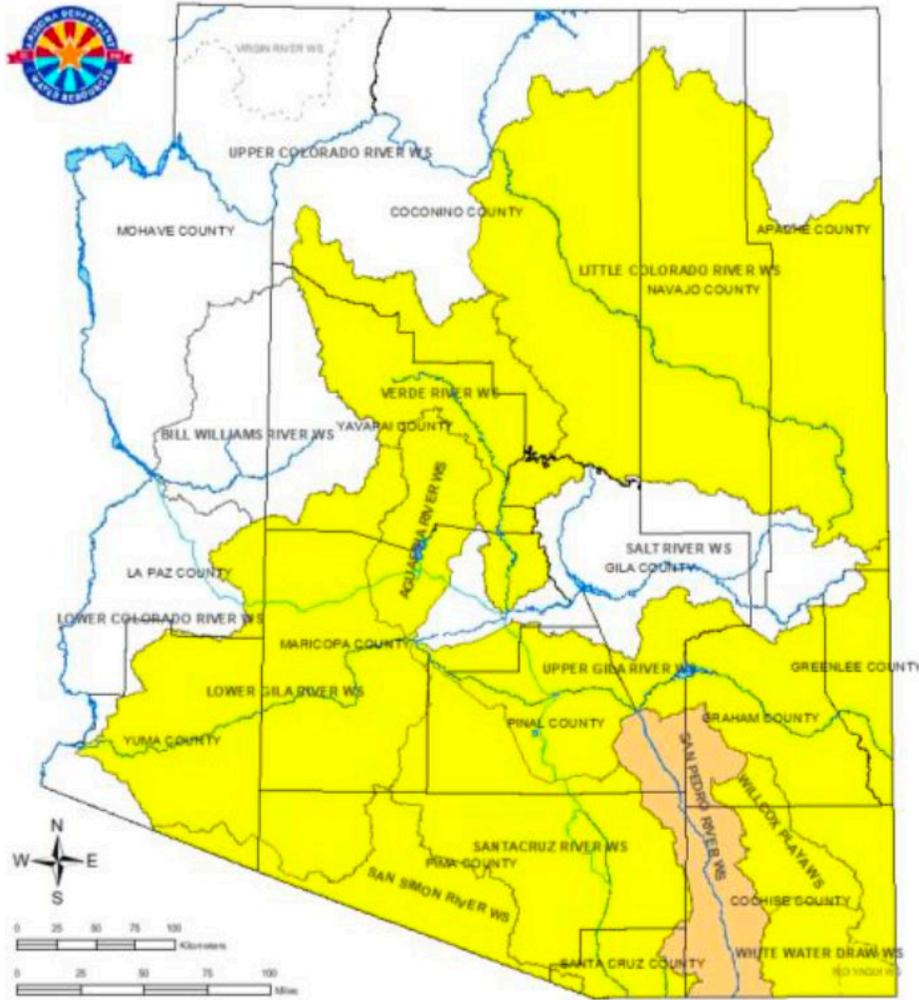


Figure 29. October 2017 Long-term Drought Status.

| Category | 2015 | 2016 | 2017 |
|--------------------------|------|------|------|
| No Drought | 6 | 3 | 5 |
| D0 - Abnormally Dry | 8 | 11 | 9 |
| D1 - Moderate Drought | 1 | 1 | 1 |
| D2 - Severe Drought | 0 | 0 | 0 |
| D3 - Extreme Drought | 0 | 0 | 0 |
| D4 - Exceptional Drought | 0 | 0 | 0 |

Table 14. Number of Arizona Watersheds in Each Category.

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“In the west, drought is a cumulative hazard, in that a single week, month, or year of below average precipitation does not define a drought. Since impacts of drought are also slow to develop, secondary and cascading effects may be felt several years after the drought begins. The primary impacts of drought include reduction of surface and ground water resources; increased wildfire activity; loss of livestock and wildlife (biodiversity) due to lack of grazing vegetation and watering holes. The secondary effects include erosion of slopes and river channels due to loss of vegetation; loss of forests due to insect infestation in weakened trees, such as the bark beetle; dust storms and flooding to due loss of vegetation; soil degradation and air pollution; and ground subsidence due to over-pumping of groundwater. Socio-economic secondary effects include increased public health risk, increased food prices, and increased conflict between water users.” (State of Arizona, Department of Emergency and Military Affairs 2018, 46)

2. **Historical occurrences on CRIT:** The State Arizona has been in some stage of a drought since 1994 and a State of Arizona Declaration has been in effect since 1999. (Arizona Department of Water Resources 2018) As of the “2017 Arizona Drought Preparedness Annual Report,” Arizona saw drier than normal years 16 of the previous 23 years. (Arizona Department of Water Resources 2017) While CRIT’s direct access to the Colorado River and relatively high water table have provided adequate water supply, La Paz County has been a part of multiple US Department of Agriculture (USDA) drought disaster designations during the 2016-2017 water year:

- “November 9, 2016: One county (Graham) was named as a primary disaster county, which resulted in the designation of seven contiguous counties in Arizona, due to an excessive hail storm.
- February 24, 2017: Two counties (**La Paz** and Mohave) were named as contiguous disaster counties, resulting from the designation of 24 counties in California as primary disaster counties.
- March 6, 2017: Two counties (**La Paz** and Yuma) were both designated as primary disaster counties; the four contiguous disaster counties (Maricopa, Mohave, Pima and Yavapai) also received disaster designations.
- March 6, 2017: Two counties (**La Paz** and Yuma) were named as contiguous disaster counties, which was the result of the designation of one county in California as a primary disaster county.
- March 16, 2017: One county (**La Paz**) was named as a contiguous disaster county, which was the result of the designation of 16 counties in California as primary disaster counties, due to severe winter storms.” (Arizona Department of Water Resources 2017)



A USDA Secretarial disaster designation is required for farm operators to seek assistance from the Farm Service Agency. Figure 19 depicts the jurisdictions across the U.S. with USDA Secretarial drought disaster designation in 2018.

3. **Impact of climate change:** While climate change will likely result in more rain than snow in Arizona, there is no trend regarding the rain-snow ratio in upstream states of the Colorado River. With its surface a currently at 1,085 feet above sea level, future trends point to it dropping below 1,000 feet by 2020. Under the 2015 Drought Contingency Plan (Section II, J, 2, 1), this level would even trigger supply reductions to California, cutoff most of Las Vegas’s water supply and leave the Central Arizona Project in a “catastrophic” condition. (States at Risk 2018)
4. **Risk to Tribal people, property, and assets:** “The most direct impacts are to the agricultural community, the development of domestic water supplies, and hydroelectric generation...The impacts of drought to critical and non-critical facilities and building stock is generally indirect, in that drought is often a contributing factor to other hazards such as flooding, subsidence and wildfire. Extended drought may weaken and dry the grasses, shrubs, and trees of wildfire areas, making them more susceptible to wildfire. Drought also tends to reduce the vegetative cover in watersheds, and hence decreases the interception of rainfall and increases the flooding hazard. Subsidence conditions are aggravated when lean surface water supplies force the pumping of more groundwater to supply the demand without the benefit of recharging from normal rainfall. The sectors most directly impacted by drought are agriculture, ranching, potable water supplies, and recreation/tourism. The vulnerability and potential impact for this risk assessment will focus primarily on the potential economic impacts to Arizona’s agriculture and domestic water supplies.” (State of Arizona, Department of Emergency and Military Affairs 2013, 172) “Extended drought may weaken and dry the grasses, shrubs, and trees of wildfire areas, making them more susceptible to wildfire. Drought also tends to reduce the vegetative cover in watersheds, and hence decreases the interception of rainfall and increases the flooding hazard. Subsidence conditions are aggravated when lean surface water supplies force the pumping of more groundwater to supply the demand without the benefit of recharging from normal rainfall.” (State of Arizona, Department of Emergency and Military Affairs 2013, 172)
5. **Risk assessment factors for comparison:**
 - a. Location: Extensive – The entire CRIT Reservation would be affected.
 - b. Hazard Extent: Major – Agriculture, erosion, native plants, and wildlife, and drinking water supply could be affected.
 - c. Probability: Likely – The State Arizona has been in some stage of a drought since 1994 (Arizona Department of Water Resources 2018) and a State of Arizona Declaration has been in effect since



1999. (Arizona Department of Water Resources 2018) The question of drought could be more a matter of “how bad” rather than “if” a drought would occur.

6. Scenario-based Impact Statement that is used for the CRIT THIRA/SPR: Climate change has resulted in multiple years of elevated temperatures and lower precipitation. An extreme drought, greater than that of 1941-1965 hits the Southwest. During July, during an extended drought, temperatures above 120 degrees persist for two weeks. Repeated power outages occur resulting in evacuation of the Parker Indian Health Facility, shutdown of Tribal Administration operations that lack backup generators, and a loss of all crops in the summer growing season. Despite previous agreements, upstream jurisdictions continue to draw water off of the Colorado River past trigger points for drastically reducing usage. Based on its senior water rights, the State of California continues to draw water at an unsustainable rate. Private wells have dried up and extreme water rationing is in place. The dying plant life has resulted in accelerated erosion. Native plants, including the mesquite trees and others on the CRIT Ahakhav Tribal Preserve are dying at an alarming rate. CRIT Farms were forced to let the fields go fallow for six months with a loss of seasonal revenue. Twenty-five percent (25%) of the residents on CRIT Reservation land require Mass Care services to include cooling stations water delivery – 2,200 residents including 370 children, 861 elders, 300 with disabilities and access / functional needs, 550 economically challenged, and 430 with limited English Proficiency.

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3. *Extreme Heat*

1. **General Description:** The Colorado River Indian Tribes live in one of the hottest regions of the U.S. in general and the State of Arizona specifically (Figure 20).

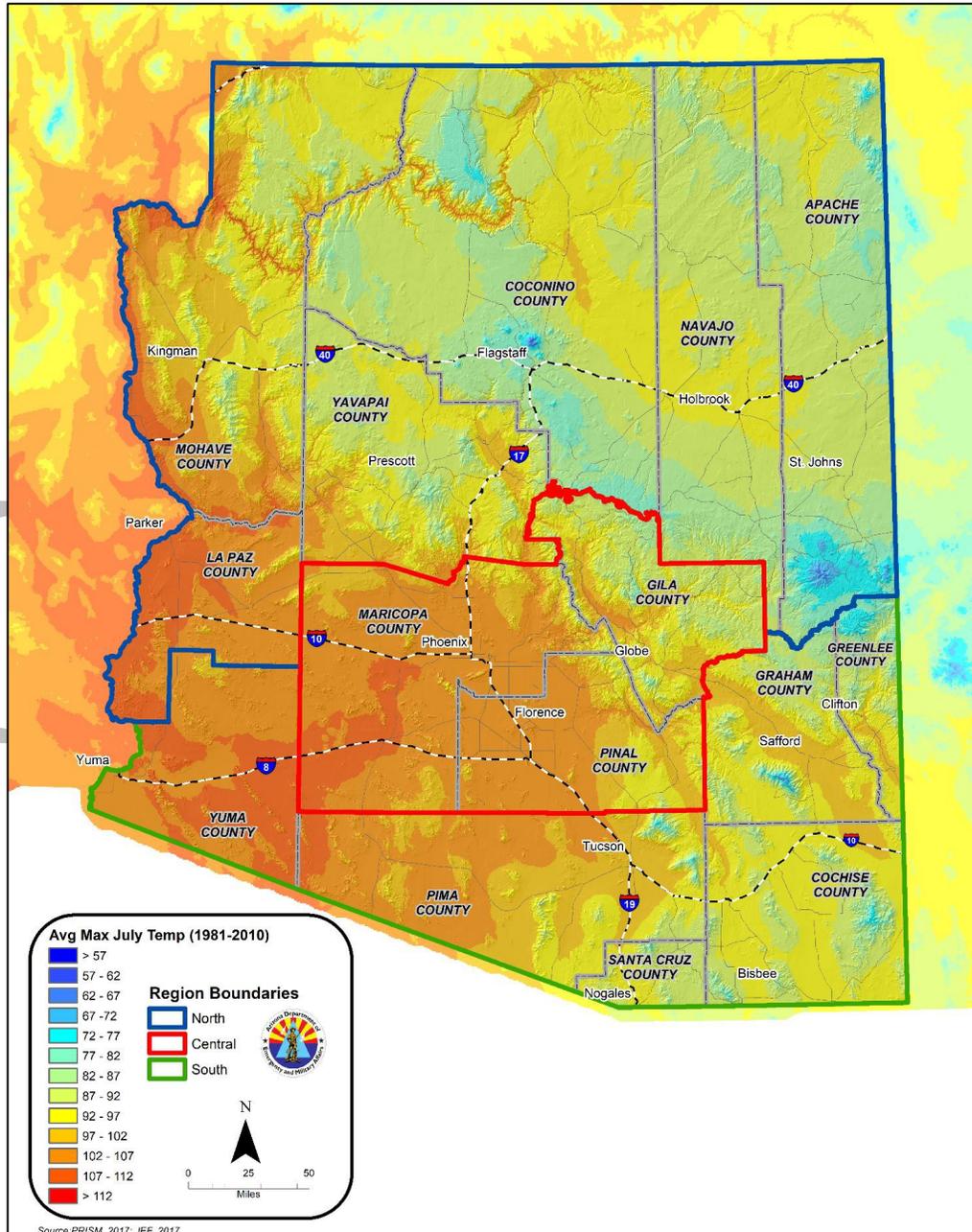


Figure 20. Extreme Heat July Maximum Temperatures. (State of Arizona, Department of Emergency and Military Affairs 2018, 70)

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“Extreme high temperatures occur in Arizona on a regular basis, but the highest threat typically occurs during the summer months of June to August when monsoon moisture raises the heat index. There are no state or federal declarations for extreme heat events. Below are some notable events that were either record breaking or have occurred over the last five-years:

- June 2016 - High temperatures over a four-day period (3rd-6th) in eastern Pima County contributed to 14 serious heat-related illnesses. Heat broke records ranging from 107°F to 111°F (NCEI, 2017). A second heat wave hit between June 18th -20th causing four heat-related deaths ranging in age from 19 to 57 years. A temperature in Tucson was recorded at 115°F marking the third highest temperature ever recorded.
- August 14-16, 2015 - Extreme heat caused 36 heat-related illnesses, including 12 in metropolitan Tucson, 12 in western Pima County and 12 on the Tohono O’odham Nation. Temperatures reached 115°F between August 14 and 16 in south-central and southwestern Arizona. Record high temperatures were set at Tucson, Ajo, Organ Pipe National Monument, and Picacho Peak State Park. High electricity demand caused power outages in the Tucson area for 1,700 customers (NCEI, 2017).
- From 2006 to 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.
- June 29, 1994 - Arizona’s highest recorded temperature of 128° F was set in Lake Havasu City.

According to the Center for Disease Control, extreme heat is responsible for most weather-related deaths in the United States. Arizona has the largest number of heat related deaths in the nation (Brown et al., 2013). During 2005-2015, 1,272 deaths related to exposure to excessive natural heat occurred in Arizona. Extreme heat-related deaths and illnesses are so prevalent in Arizona because of the consistent and increasing number of days with both high minimum and maximum temperatures. Arizona residents accounted for 536 deaths (42.1% of the total), or 49 deaths on average per year in 2005-2015. Migrants from Mexico, Central America, or South America accounted for 40.0% of the total deaths with the remaining 7.9% being attributed to other visitors.” (State of Arizona, Department of Emergency and Military Affairs 2018, 71) The summer months are obviously the most extreme danger time for heat-related fatalities (Figure 21).

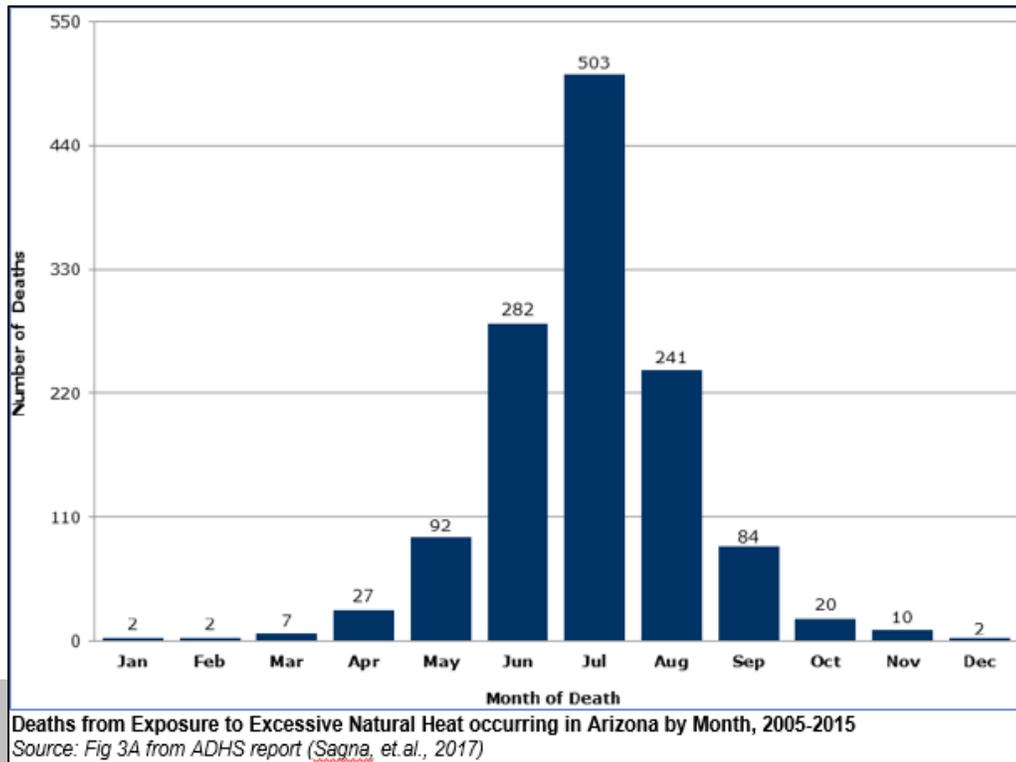


Figure 21. Deaths from Exposure to Excessive Natural heat occurring in Arizona by month, 2005-2015. (State of Arizona, Department of Emergency and Military Affairs 2018, 71)

Elders and children are especially vulnerable to extreme heat due to their reduced tolerance to the heat. People who are economically disadvantaged and do not have access to air conditioning are also at a higher risk of heat injury and death. In addition, animals and plants are affected by extreme heat.

2. **Historical occurrences on CRIT:** Just north of the CRIT Reservation, Lake Havasu City recorded the hottest day in Arizona History with 128 degrees on June 29th, 1994. (McKinnon 2015) More recently between 2007 and 2018, the city of Parker saw temperatures climb as high as 120.9 degrees (Figure 22).

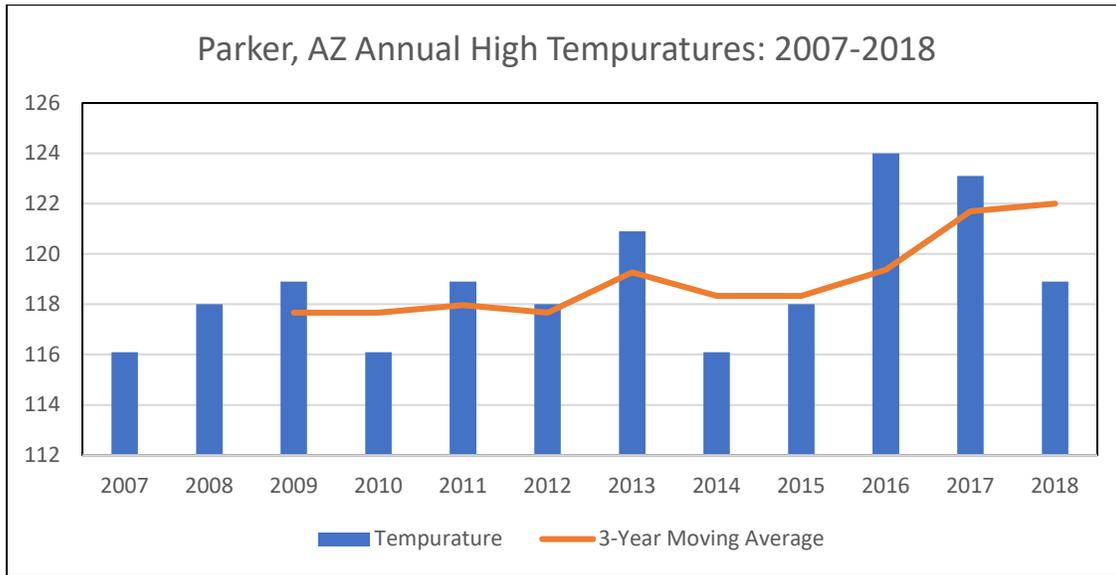


Figure 22. Annual High Temperatures for Parker, AZ, 2007-2018. (U.S. Climate Data 2018)

Although the maximum temperatures are cyclical, as can be seen in Figure 22, the 3-year moving average (orange line) has an upward trend between 2007 and 2018. The extreme heat is progressively getting worse on the CRIT Reservation.

- Impact of climate change:** The effects of climate change on extreme heat are unambiguous – Arizona is facing a dramatic rise in extreme heat and humidity. Arizona is the fourth-fastest warming state in the U.S. Since 1970. The average summer temperature in Arizona has climbed 1.8 degrees between 1970 and 2015 (Figures 23-24) and summer temperatures are increasing by 3.6 degrees per decade. As can be seen in Figure 25, it is the combination of heat and humidity that drives the heat index. Figure 26 shows the trend toward more humid summers as the dew point rises. Both the number of days above 110 degrees and heat index days above 105 are increasing (Figures 27 and 28). The number of heat wave days is projected to increase. (States at Risk 2018) In short, climate change is making extreme heat on the CRIT Reservation even more extreme. (States at Risk 2018)

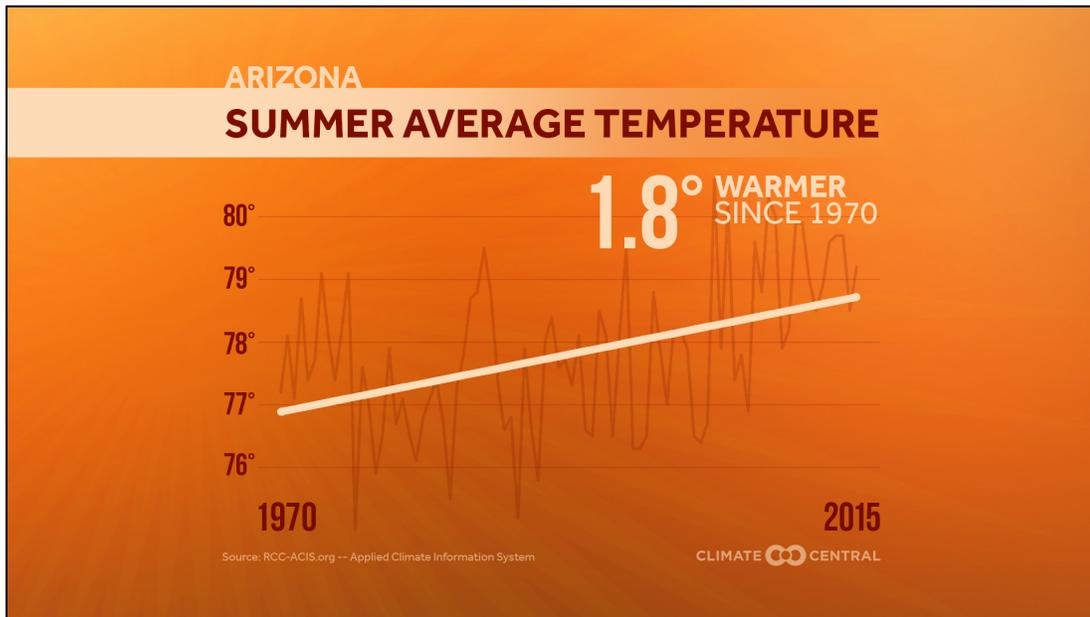


Figure 23. Arizona Summer Average Temperature: 1970-2015. (States at Risk 2018)

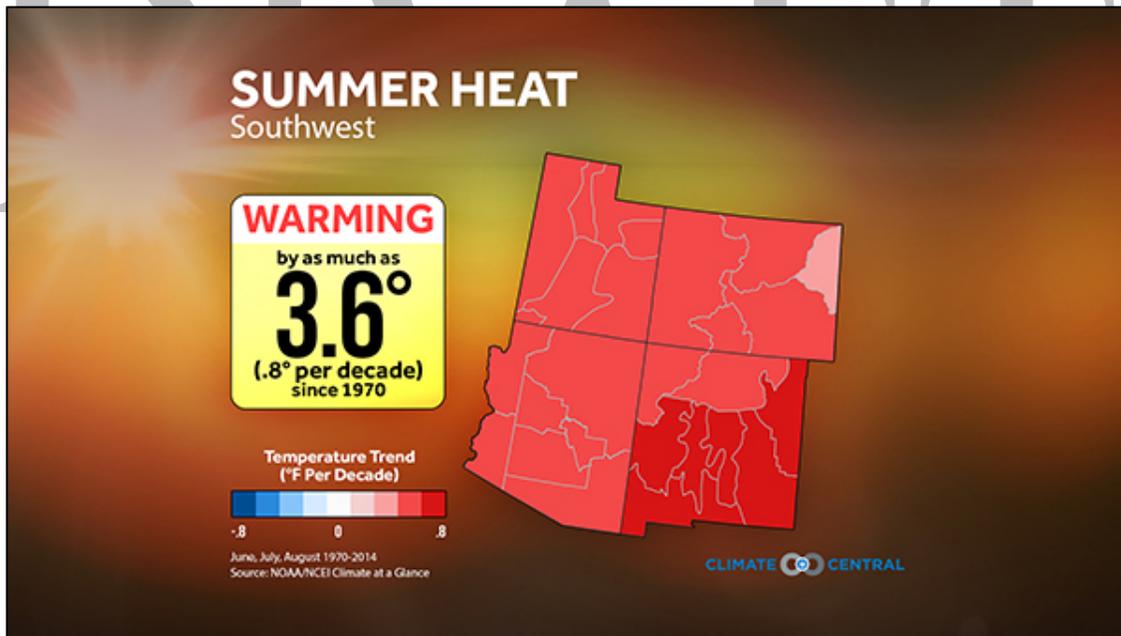


Figure 24. Increase in Arizona Summer Temperatures. (States at Risk 2018)

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| | | Relative Humidity (%) | | | | | | | | | | | | | | | | | | | |
|------------------|-----|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |
| Temperature (°F) | 80 | 77 | 78 | 78 | 79 | 79 | 79 | 80 | 80 | 80 | 81 | 81 | 82 | 82 | 83 | 84 | 84 | 85 | 86 | 86 | 87 |
| | 81 | 78 | 79 | 79 | 79 | 80 | 80 | 81 | 81 | 82 | 82 | 83 | 84 | 84 | 85 | 86 | 86 | 87 | 88 | 90 | 91 |
| | 82 | 79 | 79 | 80 | 80 | 80 | 81 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 93 | 95 | 99 |
| | 83 | 79 | 80 | 80 | 81 | 81 | 81 | 82 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 90 | 91 | 93 | 95 | 97 | 99 |
| | 84 | 80 | 81 | 81 | 81 | 82 | 82 | 83 | 83 | 84 | 85 | 86 | 88 | 89 | 90 | 92 | 94 | 96 | 98 | 100 | 103 |
| | 85 | 81 | 81 | 82 | 82 | 82 | 83 | 84 | 84 | 85 | 86 | 88 | 89 | 91 | 93 | 95 | 97 | 99 | 102 | 104 | 107 |
| | 86 | 81 | 82 | 83 | 83 | 83 | 84 | 85 | 85 | 87 | 88 | 89 | 91 | 93 | 95 | 97 | 100 | 102 | 105 | 108 | 112 |
| | 87 | 82 | 83 | 83 | 84 | 84 | 85 | 86 | 87 | 88 | 89 | 91 | 93 | 95 | 98 | 100 | 103 | 106 | 109 | 113 | 116 |
| | 88 | 83 | 84 | 84 | 85 | 85 | 86 | 87 | 88 | 89 | 91 | 93 | 95 | 98 | 100 | 103 | 106 | 110 | 113 | 117 | 121 |
| | 89 | 84 | 84 | 85 | 85 | 86 | 87 | 88 | 89 | 91 | 93 | 95 | 97 | 100 | 103 | 106 | 110 | 113 | 117 | 122 | |
| | 90 | 84 | 85 | 86 | 86 | 87 | 88 | 89 | 91 | 92 | 95 | 97 | 100 | 103 | 106 | 109 | 113 | 117 | 122 | 127 | |
| | 91 | 85 | 86 | 87 | 87 | 88 | 89 | 90 | 92 | 94 | 97 | 99 | 102 | 105 | 109 | 113 | 117 | 122 | 126 | 132 | |
| | 92 | 86 | 87 | 88 | 88 | 89 | 90 | 92 | 94 | 96 | 99 | 101 | 105 | 108 | 112 | 116 | 121 | 126 | 131 | | |
| | 93 | 87 | 88 | 89 | 89 | 90 | 92 | 93 | 95 | 98 | 101 | 104 | 107 | 111 | 116 | 120 | 125 | 130 | 136 | | |
| | 94 | 87 | 89 | 90 | 90 | 91 | 93 | 95 | 97 | 100 | 103 | 106 | 110 | 114 | 119 | 124 | 129 | 135 | 141 | | |
| | 95 | 88 | 89 | 91 | 91 | 93 | 94 | 96 | 99 | 102 | 105 | 109 | 113 | 118 | 123 | 128 | 134 | 140 | | | |
| | 96 | 89 | 90 | 92 | 93 | 94 | 96 | 98 | 101 | 104 | 108 | 112 | 116 | 121 | 126 | 132 | 138 | 145 | | | |
| | 97 | 90 | 91 | 93 | 94 | 95 | 97 | 100 | 103 | 106 | 110 | 114 | 119 | 125 | 130 | 136 | 143 | 150 | | | |
| | 98 | 91 | 92 | 94 | 95 | 97 | 99 | 102 | 105 | 109 | 113 | 117 | 123 | 128 | 134 | 141 | 148 | | | | |
| | 99 | 92 | 93 | 95 | 96 | 98 | 101 | 104 | 107 | 111 | 115 | 120 | 126 | 132 | 138 | 145 | 153 | | | | |
| | 100 | 93 | 94 | 96 | 97 | 100 | 102 | 106 | 109 | 114 | 118 | 124 | 129 | 136 | 143 | 150 | 158 | | | | |
| | 101 | 93 | 95 | 97 | 99 | 101 | 104 | 108 | 112 | 116 | 121 | 127 | 133 | 140 | 147 | 155 | | | | | |
| | 102 | 94 | 96 | 98 | 100 | 103 | 106 | 110 | 114 | 119 | 124 | 130 | 137 | 144 | 152 | 160 | | | | | |
| | 103 | 95 | 97 | 99 | 101 | 104 | 108 | 112 | 116 | 122 | 127 | 134 | 141 | 148 | 157 | 165 | | | | | |
| | 104 | 96 | 98 | 100 | 103 | 106 | 110 | 114 | 119 | 124 | 131 | 137 | 145 | 153 | 161 | | | | | | |
| 105 | 97 | 99 | 102 | 104 | 108 | 112 | 116 | 121 | 127 | 134 | 141 | 149 | 157 | 166 | | | | | | | |
| 106 | 98 | 100 | 103 | 106 | 109 | 114 | 119 | 124 | 130 | 137 | 145 | 153 | 162 | 172 | | | | | | | |
| 107 | 99 | 101 | 104 | 107 | 111 | 116 | 121 | 127 | 134 | 141 | 149 | 157 | 167 | | | | | | | | |
| 108 | 100 | 102 | 105 | 109 | 113 | 118 | 123 | 130 | 137 | 144 | 153 | 162 | 172 | | | | | | | | |
| 109 | 100 | 103 | 107 | 110 | 115 | 120 | 126 | 133 | 140 | 148 | 157 | 167 | 177 | | | | | | | | |
| 110 | 101 | 104 | 108 | 112 | 117 | 122 | 129 | 136 | 143 | 152 | 161 | 171 | | | | | | | | | |
| 111 | 102 | 106 | 109 | 114 | 119 | 125 | 131 | 139 | 147 | 156 | 166 | 176 | | | | | | | | | |
| 112 | 104 | 107 | 111 | 115 | 121 | 127 | 134 | 142 | 150 | 160 | 170 | 181 | | | | | | | | | |
| 113 | 104 | 108 | 112 | 117 | 123 | 129 | 137 | 145 | 154 | 164 | 175 | | | | | | | | | | |
| 114 | 105 | 109 | 113 | 119 | 125 | 132 | 140 | 148 | 158 | 168 | 179 | | | | | | | | | | |
| 115 | 106 | 110 | 115 | 121 | 127 | 134 | 143 | 152 | 162 | 173 | 184 | | | | | | | | | | |
| 116 | 107 | 111 | 116 | 122 | 129 | 137 | 146 | 155 | 166 | 177 | | | | | | | | | | | |
| 117 | 108 | 112 | 118 | 124 | 132 | 140 | 149 | 159 | 170 | 181 | | | | | | | | | | | |
| 118 | 108 | 113 | 119 | 126 | 134 | 142 | 152 | 162 | 174 | 186 | | | | | | | | | | | |
| 119 | 109 | 114 | 121 | 128 | 136 | 145 | 155 | 166 | 178 | | | | | | | | | | | | |
| 120 | 110 | 116 | 122 | 130 | 138 | 148 | 158 | 170 | 182 | | | | | | | | | | | | |
| 121 | 111 | 117 | 124 | 132 | 141 | 151 | 162 | 174 | 187 | | | | | | | | | | | | |
| 122 | 111 | 118 | 125 | 134 | 143 | 154 | 165 | 178 | | | | | | | | | | | | | |
| 123 | 112 | 119 | 127 | 136 | 146 | 157 | 169 | 182 | | | | | | | | | | | | | |
| 124 | 113 | 120 | 129 | 138 | 148 | 160 | 172 | | | | | | | | | | | | | | |
| 125 | 114 | 121 | 130 | 140 | 151 | 163 | 176 | | | | | | | | | | | | | | |

Heat Index



| | |
|-----------------|--|
| Extreme Danger | Heat stroke likely. |
| Danger | Sunstroke, muscle cramps, and/or heat exhaustion likely. Heatstroke possible with prolonged exposure and/or physical activity. |
| Extreme Caution | Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity. |
| Caution | Fatigue possible with prolonged exposure and/or physical activity. |



Figure 25. Heat Index Chart. (State of Arizona, Department of Emergency and Military Affairs 2018, 66)

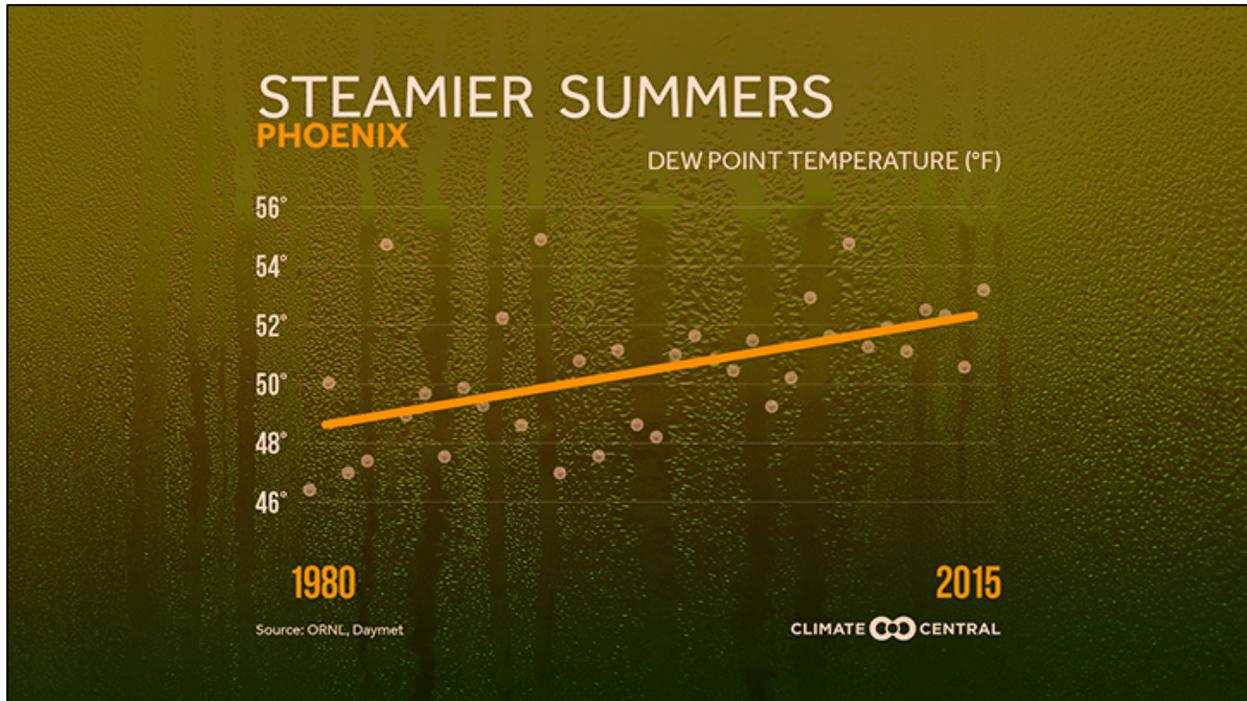


Figure 26. Phoenix Dewpoint Temperature in Phoenix, 1980-2015. (States at Risk 2018)

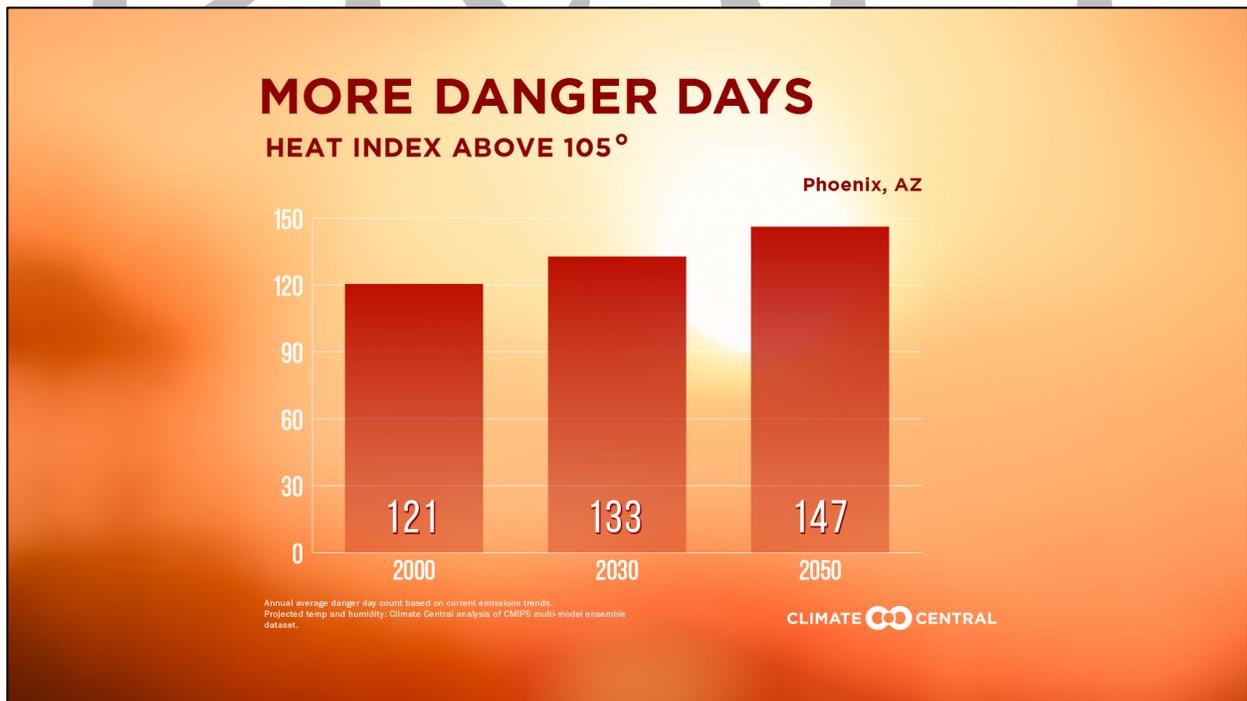




Figure 27. Days with a Heat Index Above 105 Degrees in Phoenix, 2000-2050. (States at Risk 2018)

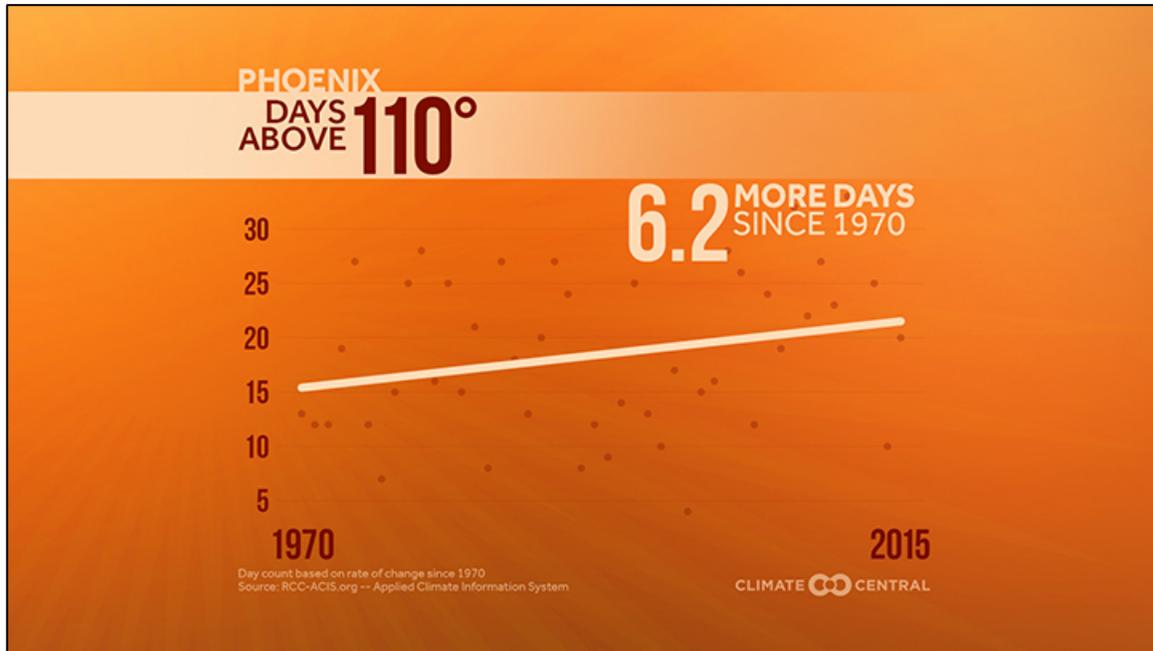


Figure 28. Number of Days Above 110 Degrees in Phoenix, 1970-2015. (States at Risk 2018)

- Risk to Tribal people, property, and assets:** Well-maintained Tribal facilities should not be significantly affected by extreme heat. However, long-term maintenance costs and efforts will increase due to repairs due to heat-related damage to heating, ventilation and cooling systems, roofs, and other exposed materials such as roofs. Although extreme heat events are at their worst in urban areas, La Paz County and Mohave Counties are expected to be the most hard-hit areas of the State of Arizona for extreme heat events. As noted previously the state’s record temperature was set in Lake Havasu City. The State of Arizona groups La Paz County in the North Region in its 2018 State Hazard Mitigation Plan. While the North Region is the least susceptible in the state for extreme heat events, the “Arizona strip communities along the Colorado River are an exception. While 7% of heat related fatalities in the State of Arizona occurred in the North Region, 45% of those were in La Paz and Mohave Counties.” (State of Arizona, Department of Emergency and Military Affairs 2018, 72) In addition to direct fatalities, Parker, Arizona has been particularly susceptible to power failures during extreme heat events. The increased exposure to people who are economically disadvantaged, as well as youth and elders, makes power loss in an extreme heat event a particularly dangerous situation. During an extreme heat-induced power outage, CRIT needs to consider opening cooling shelters very quickly. The CRIT administration also needs to ensure it can provide continuity of



services during a power failure. Specifically, the Parker Indian Health facility does not have sufficient backup power to remain fully open during a power outage during an extreme heat event and must evacuate patients.

Those who work outside, such as farmers, people participating in outdoor recreation, and first responders, are also highly susceptible to heat injuries. Extreme heat can be expected to have an economic impact as both plants and livestock are affected by extreme heat, especially when coupled with drought. Extreme heat can increase the risk of wildfire as well

5. Risk assessment factors for comparison:

- a. Location: Extensive – The entire CRIT Reservation is affected.
- b. Hazard Extent: Major – While extreme heat is an historic condition on the CRIT Reservation, as extreme heat events increase, the vulnerable populations as well as almost every aspect of life will be affected, especially when couple with drought and power failure.
- c. Probability: Highly Likely – Extreme heat events on the CRIT Reservation already occur and their increase is a certainty.

Scenario-based Impact Statement that is used for the CRIT THIRA/SPR: Climate change has resulted in multiple years of elevated temperatures and lower precipitation. An extreme drought, greater than that of 1941-1965 hits the Southwest. During July, during an extended drought, temperatures above 120 degrees persist for two weeks. Repeated power outages occur resulting in evacuation of the Parker Indian Health Facility, shutdown of Tribal Administration operations that lack backup generators, and a loss of all crops in the summer growing season. Despite previous agreements, upstream jurisdictions continue to draw water off of the Colorado River past trigger points for drastically reducing usage. Based on its senior water rights, the State of California continues to draw water at an unsustainable rate. Private wells have dried up and extreme water rationing is in place. The dying plant life has resulted in accelerated erosion. Native plants, including the mesquite bosque and others on the CRIT Ahakhav Tribal Preserve are dying at an alarming rate. CRIT Farms were forced to let the fields go fallow for six months with a loss of seasonal revenue. Twenty-five percent (25%) of the residents on CRIT Reservation land require Mass Care services to include cooling stations water delivery – 2,200 residents including 370 children, 861 elders, 300 with disabilities and access / functional needs, 550 economically challenged, and 430 with limited English Proficiency.



4. *Flood (Localized Flash Flood)*

5. **General hazard description as it relates to CRIT:** While Riverine flooding encompasses well defined watercourses such as rivers or desert washes, localized “Flash Flood” that occurs throughout the CRIT Reservation and most often impacts the residents will be treated separately from flooding associated with the Colorado River itself. Many of the watercourses susceptible to localized flooding on the CRIT Reservation typically remain dry until significant rain causes flooding.

- **“Riverine:** The most common type of flooding occurs along well-defined watercourses such as rivers or desert washes. Many of the watercourses within the state are ephemeral and typically remain dry until significant rain causes flooding.
- **Shallow Sheet Flow:** Flooding that occurs in areas that are fairly flat with no definable washes or low-flow areas of significance. The flooding occurs as a shallow sheet of water that can be several feet deep. Depending on the slope of the land, there can also be ponding, and the sheet flow can be slow or move fast enough to cause erosion.
- **Distributary Flow:** Flooding in relatively flat areas where the watercourse divides and braids into smaller channels or branches that are subject to either further erosion and expansion or plugging with debris and sediment.
- **Alluvial Fans:** In the arid southwest, active alluvial fans can develop at locations where steep mountain washes abruptly transition to flatter alluvial piedmonts located at the base of the mountain. During flood events, the steep washes carry heavy sediment loads that deposit in a fan-shape, with one or more primary flow paths of concentrated flooding that can change location across the fan face with any given flood event. The point of slope change at the upper-most portion of the fan is known as the fan apex. It is noted that alluvial fans and distributary flow areas are similar; however, alluvial fans are significantly more active and volatile in moving the primary channel(s) and creating new flow paths.
- **Post-Fire Flooding:** Normally, vegetation absorbs and attenuates the impact of rainfall, which reduces runoff. Wildfires leave the watershed charred, barren, and can physically alter the ground’s ability to absorb water, creating conditions ripe for flash flooding and mudflow. Flood risk remains significantly higher until vegetation is restored—up to five years after a wildfire. Flooding after a wildfire is often significantly more severe, as debris and ash left from the fire can combine with eroded soil and sediment to form mudflows. The combined increase of floodwaters

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and mudflows can cause significant damage to areas downstream of the burned watershed.” (State of Arizona, Department of Emergency and Military Affairs 2018, 95)

6. Historical occurrences on CRIT: Since 1953, La Paz County has received four Federal Major Disaster Declarations associate with flooding (Table 15).

| Disaster Type | Disaster Declaration | Date(s) | Public Assistance* |
|--|--|---|--------------------------------|
| Flooding | Arizona Flooding (DR-686)** | June 16 th -20 st , 1983 | Unknown |
| Severe Storms & Flooding | <ul style="list-style-type: none"> • Arizona Severe Storms and Flooding (DR-1347)** • Arizona Severe Storms and Flooding (DR-4203)** | <ul style="list-style-type: none"> • October 21st-November 08th, 2000 • September 7th-9th, 2014 | PA - \$5.6M PA - \$7.1M |
| Severe Winter Storms & Flooding | Arizona Severe Winter Storms and Flooding (DR-1888)** | January 18 th – 22 nd , 2010 | PA - \$7.1M |
| Hurricane | Arizona Hurricane Katrina Evacuation (EM-3241)*** | August 29 th – October 1 st , 2005 | PA - \$5.7M |

Table 15. La Paz County Presidential Disaster Declarations.

* Public Assistance - Dollars Obligated: Funds made available to the State via electronic transfer following FEMA's final review and approval of Public Assistance projects.

** DR – Major Disaster Declaration

*** EM – Emergency Declaration

Virtually the entire CRIT Reservation is in the Colorado River Flood Plain (Figure 29).

**COLORADO RIVER INDIAN TRIBES
MULTI-HAZARD MITIGATION PLAN**

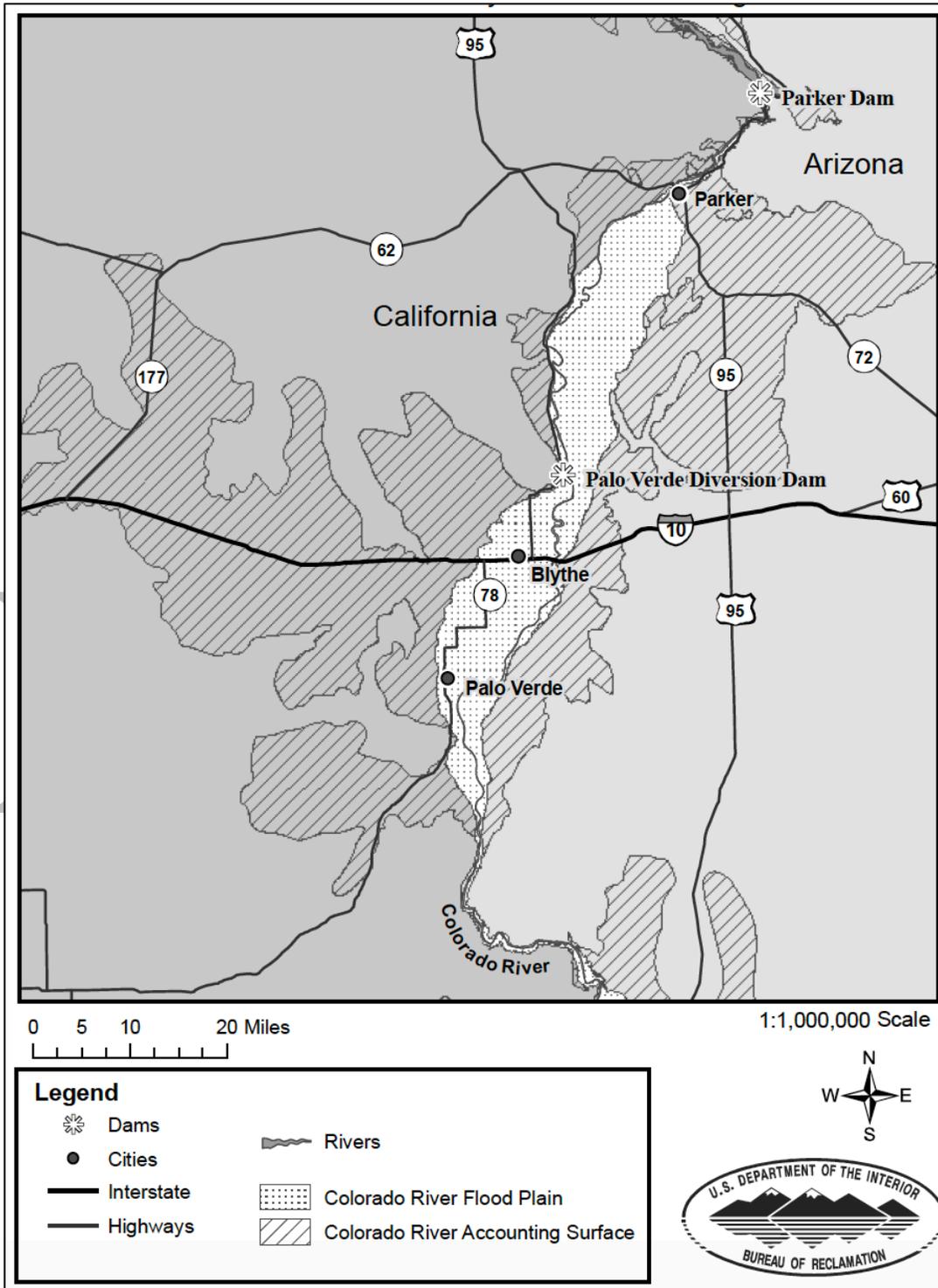
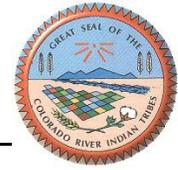


Figure 29. Colorado River Flood Plain Along the CRIT Reservation. (United States Bureau of Reclamation n.d.)



Flash Flood events include:

- On September 30th, 2018, the National Weather Service issued a Flash Flood Warning in La Paz County as remnants of Hurricane Rosa resulted in heavy rain, high winds, dust storms, and power outages. (Gutekunst 2018)
- On August 9th, 2018, severe thunderstorms struck La Paz County with heavy rain, strong winds, and blowing dust (Figure 30). (Preliminary Storm report for 9 August 2018 2018)
- On August 10th, 2017, a monsoon storm brought heavy rain and high winds high winds to La Paz County that resulted in damage to buildings including roofs being torn off and trailers overturning. (John Gutekunst 2017)
- On August 3rd, 2017, the National Weather Service issued a Severe Thunderstorm Warning for La Paz County as windstorms knocked down several poles. (Caturay 2017)

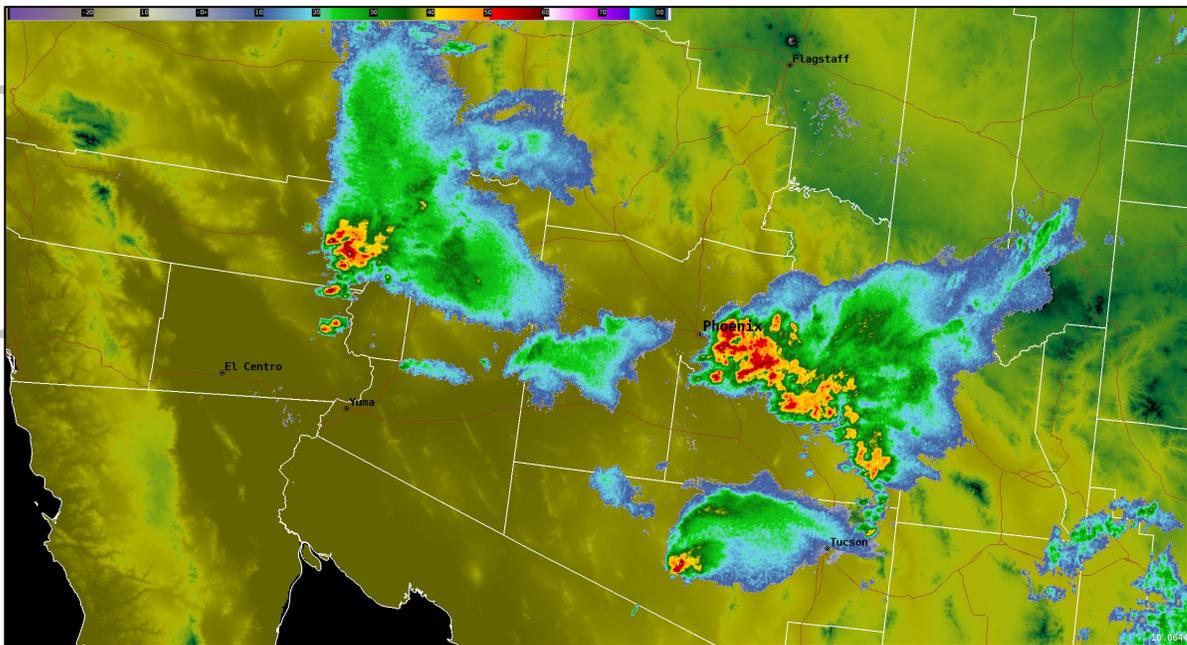


Figure 30. Severe Thunderstorm Over CRIT, August 9th, 2018. (NOAA's National Weather Service 2018)

7. **Impact of climate change:** Climate change causes more extreme weather events. Since CRIT's main flooding hazard is due to extreme weather events, the Tribes can expect to face more frequent and more extreme flooding. In particular, there is a shift toward rain rather than snow in Arizona (Figure 31).

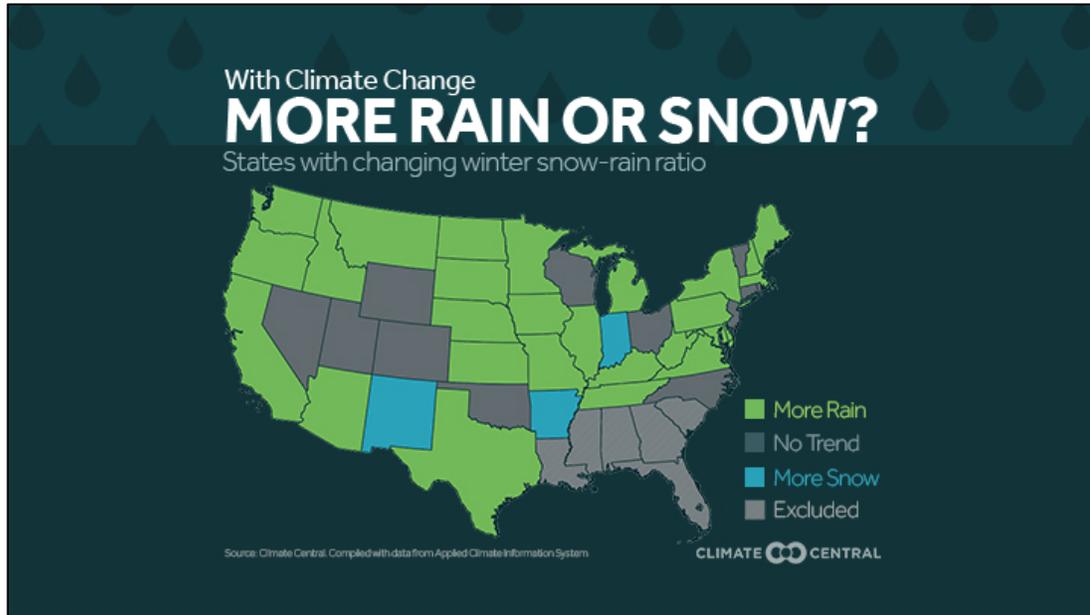


Figure 31. *Climate Change Shifts Precipitation from Snow to Rain in Arizona. (States at Risk 2018)*

Unfortunately, most of the hydrology models are historically-based. Since climate change can render historical data obsolete, new models are needed to fully predict the impact of climate change.

“The National Climate Assessment (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. The NCA report also notes that winter precipitation will be less in the form of snow and more frequently rain. For Northern Region communities, the impacts could result in more severe winter season flooding.

A second study by Luong (Luong, et. al., 2015), notes that monsoon thunderstorms in the Central and Southern Regions of the state have become more intense over a recent 20-year period (1991- 2010) when compared to events recorded in the past (1950-1970). The study concludes that the trend will likely continue as the temperatures rise and provide more moisture storage capacity in the lower atmosphere. The increased intensities may result in increased flood levels.

Statewide, the overall flooding conditions could also be exacerbated by watersheds with reduced vegetation due to increases in drought or wildfire conditions.” (State of Arizona, Department of Emergency and Military Affairs 2018, 104)



8. **Risk to Tribal people, property, and assets:** Virtually every portion of the Reservation is susceptible to shallow sheet and distributary flow flooding from storm runoff. For example, CRIT Air and the CRIT Fisk and Wildlife Office suffers this type of flooding regularly. In addition, riverine flooding in washes (shown in grey) is a hazard during most storms (Figure 32).

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COLORADO RIVER INDIAN TRIBES MULTI-HAZARD MITIGATION PLAN

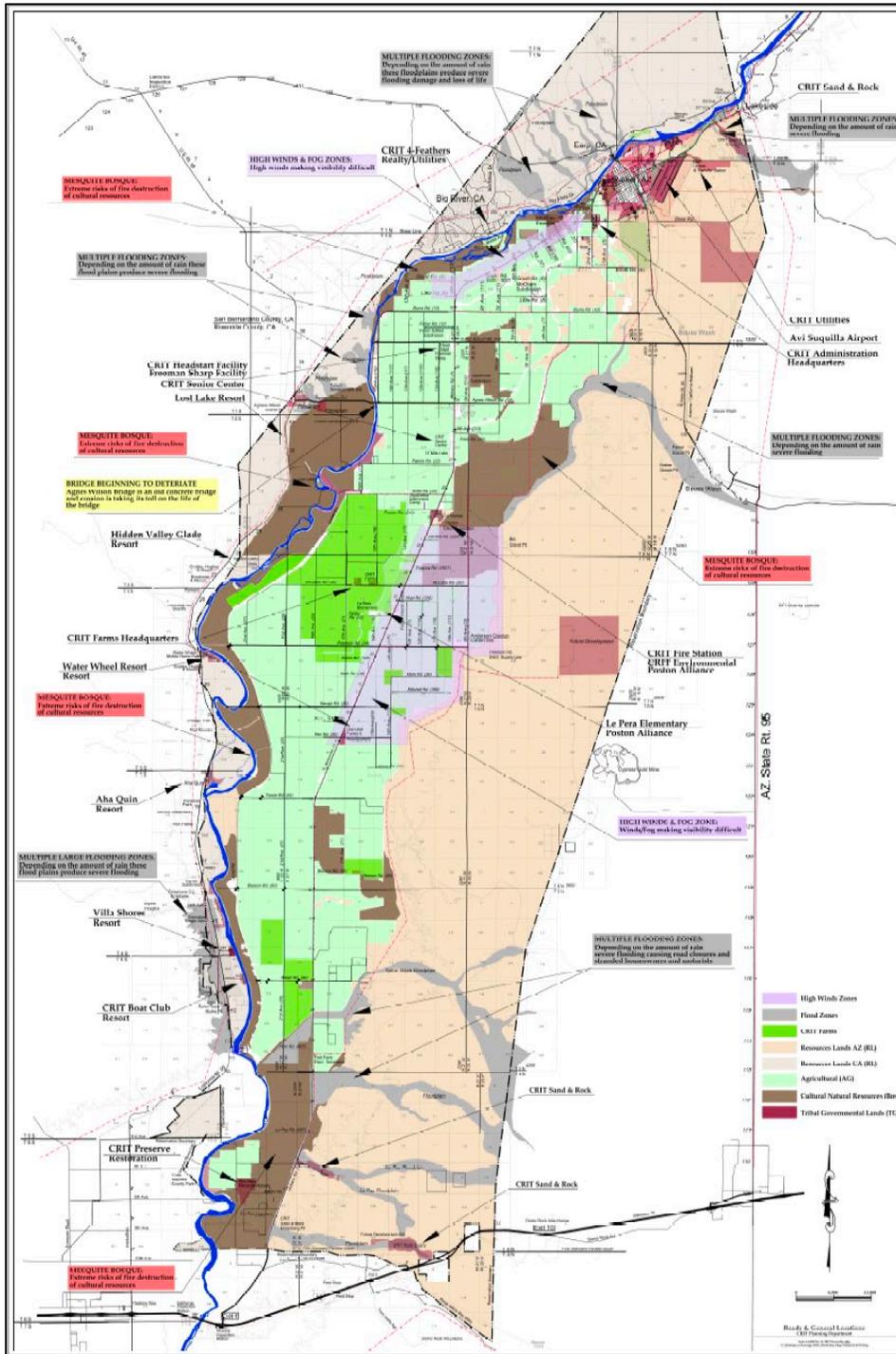


Figure 32. CRIT Planning Area – Major Washes in Grey. (Fisher 2018)



Roads are often unpassable, especially Mohave Road at Tyson Wash (Figure 33). The hazards posed by the localized flooding at washes and low-lying areas range from inconvenience, to disruption of emergency service to fatalities from cars being washed away.



Figure 33. Flooding on Mohave Road at Tyson Wash.

9. Risk assessment factors for comparison:

- a. Location: Moderate – While the immediate effects of sheet and flash floods in washes and low-lying areas are localized, they are prevalent throughout the Reservation.
- b. Hazard Extent: Major – The damage is widespread and can result in a great amount of localized damage, road washouts, and blocked culverts and drainages.
- c. Probability: Likely – Monsoons move into Arizona almost every summer. The only question is how severe the weather will be.

7. **Scenario-based Impact Statement that is used for the CRIT THIRA/SPR:** During August of an extreme El Nino year, a June storm brings severe storms that include extremely intense thunderstorms, heavy rain, hail, wind gust over 80 miles per hour, downbursts, and even tornadoes. Multiple squall lines move through the area leaving washes and low-lying areas across the

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Reservation flooded. Mohave Road is cut at Tyson Wash. There are reports of a car with four passengers being carried down Tyson Wash. Three pontoon boats from the Bluewater Resort with approximately 20 passengers have capsized on the Colorado River. Crops that were ready for harvesting are destroyed in the field, resulting in a total loss. Multiple roofs on Tribal buildings and more than two dozen (24) tribally owned homes are severely damaged. High winds knock down power poles for a half mile, resulting in power loss for BIA Power customers. The Parker Indian Health Center must close and evacuate its patients. Due to the extreme heat, cooling stations are needed. One hundred (100) people require immediate mass care and shelter including 17 children, 39 elders, 14 people with disabilities and access and functional needs, 25 economically disadvantaged, and 20 have limited English proficiency.

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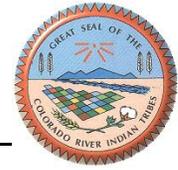


5. *Flood (Riverine)*

1. **General hazard description as it relates to CRIT:** While Riverine flooding encompasses well defined watercourses such as rivers or desert washes, flooding associated with the “Riverine” flooding in this Plan will refer to flooding directly from the Colorado River itself and will be treated separately than the more localized flash flooding that occurs throughout the CRIT Reservation which most often impacts the residents. Many of the watercourses susceptible to localized flooding on the CRIT Reservation typically remain dry until significant rain causes flooding.

- **“Riverine:** The most common type of flooding occurs along well-defined watercourses such as rivers or desert washes. Many of the watercourses within the state are ephemeral and typically remain dry until significant rain causes flooding.
- **Shallow Sheet Flow:** Flooding that occurs in areas that are fairly flat with no definable washes or low-flow areas of significance. The flooding occurs as a shallow sheet of water that can be several feet deep. Depending on the slope of the land, there can also be ponding, and the sheet flow can be slow or move fast enough to cause erosion.
- **Distributary Flow:** Flooding in relatively flat areas where the watercourse divides and braids into smaller channels or branches that are subject to either further erosion and expansion or plugging with debris and sediment.
- **Alluvial Fans:** In the arid southwest, active alluvial fans can develop at locations where steep mountain washes abruptly transition to flatter alluvial piedmonts located at the base of the mountain. During flood events, the steep washes carry heavy sediment loads that deposit in a fan-shape, with one or more primary flow paths of concentrated flooding that can change location across the fan face with any given flood event. The point of slope change at the uppermost portion of the fan is known as the fan apex. It is noted that alluvial fans and distributary flow areas are similar; however, alluvial fans are significantly more active and volatile in moving the primary channel(s) and creating new flow paths.
- **Post-Fire Flooding:** Normally, vegetation absorbs and attenuates the impact of rainfall, which reduces runoff. Wildfires leave the watershed charred, barren, and can physically alter the ground’s ability to absorb water, creating conditions ripe for flash flooding and mudflow. Flood risk remains significantly higher until vegetation is restored—up to five years after a wildfire. Flooding after a wildfire is often significantly more severe, as debris and ash left from the fire can combine with eroded soil and sediment to form mudflows. The combined increase

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of floodwaters and mudflows can cause significant damage to areas downstream of the burned watershed.” (State of Arizona, Department of Emergency and Military Affairs 2018, 95)

2. Historical occurrences on CRIT: Since 1953, La Paz County has received four Federal Major Disaster Declarations associate with flooding (Table 16).

| Disaster Type | Disaster Declaration | Date(s) | Public Assistance* |
|--|--|---|--------------------------------|
| Flooding | Arizona Flooding (DR-686)** | June 16 th -20 st , 1983 | Unknown |
| Severe Storms & Flooding | <ul style="list-style-type: none"> • Arizona Severe Storms and Flooding (DR-1347)** • Arizona Severe Storms and Flooding (DR-4203)** | <ul style="list-style-type: none"> • October 21st-November 08th, 2000 • September 7th-9th, 2014 | PA - \$5.6M PA - \$7.1M |
| Severe Winter Storms & Flooding | Arizona Severe Winter Storms and Flooding (DR-1888)** | January 18 th – 22 nd , 2010 | PA - \$7.1M |
| Hurricane | Arizona Hurricane Katrina Evacuation (EM-3241)*** | August 29 th – October 1 st , 2005 | PA - \$5.7M |

Table 16. La Paz County Presidential Disaster Declarations.

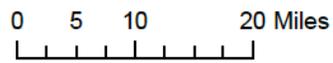
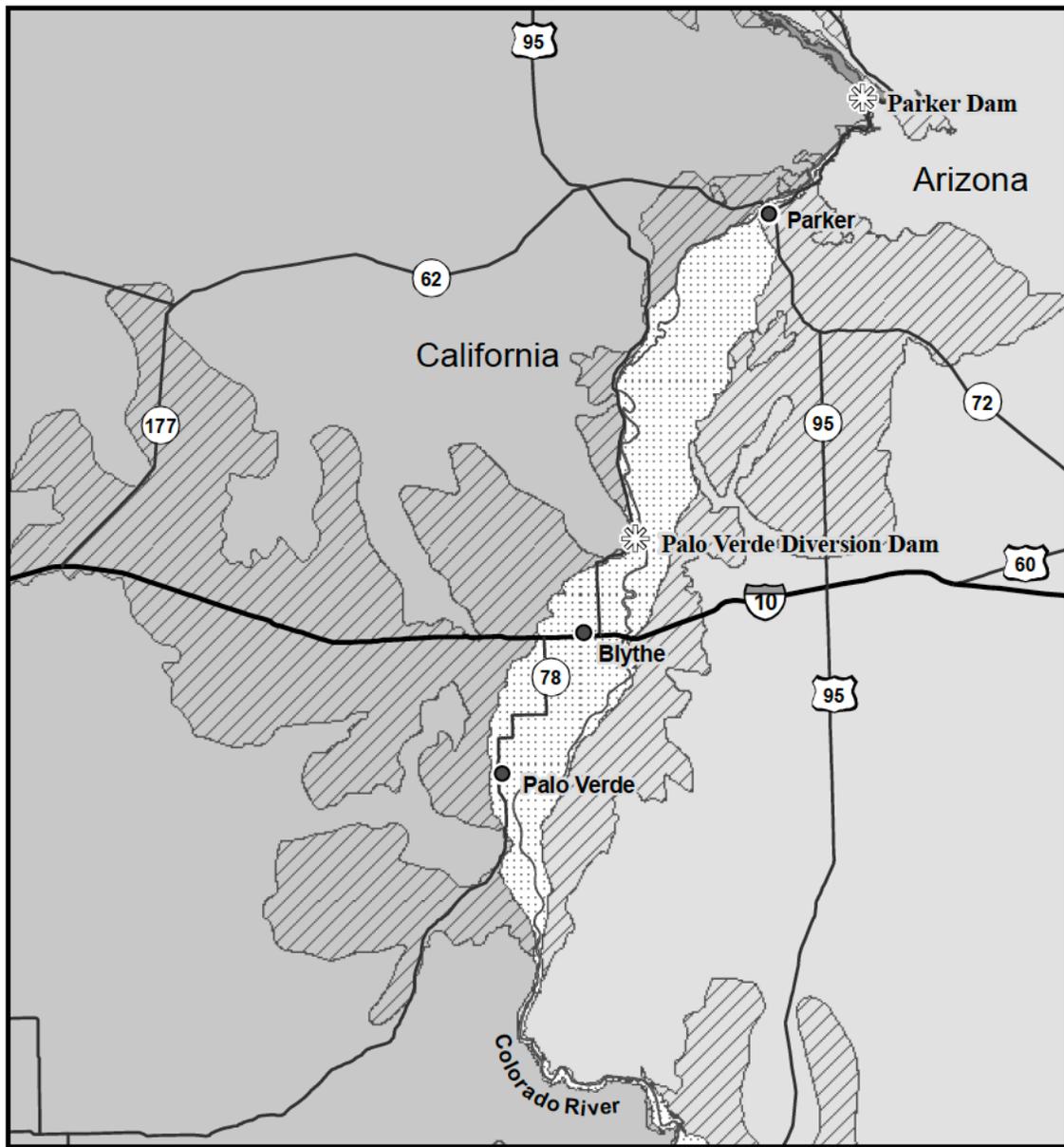
* Public Assistance - Dollars Obligated: Funds made available to the State via electronic transfer following FEMA's final review and approval of Public Assistance projects.

** DR – Major Disaster Declaration

*** EM – Emergency Declaration

Much of the CRIT Reservation is in the Colorado River Flood Plain (Figure 34).

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1:1,000,000 Scale

Legend

| | |
|------------|-----------------------------------|
| Dams | Rivers |
| Cities | Colorado River Flood Plain |
| Interstate | Colorado River Accounting Surface |
| Highways | |





Figure 34. Colorado River Flood Plain Along the CRIT Reservation.

3. Impact of climate change: Climate change causes more extreme weather events. Since CRIT’s main flooding hazard is due to extreme weather events, the Tribe can expect to face more frequent and more extreme flooding. In particular, there is a shift toward rain rather than snow in Arizona (Figure 35).

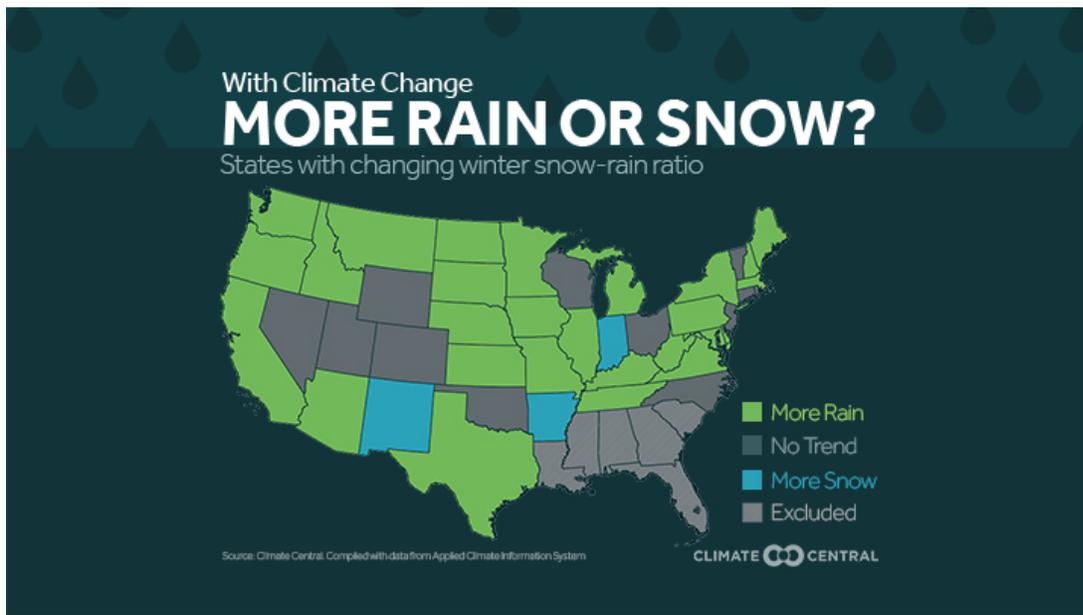


Figure 35. Climate Change Shifts Precipitation from Snow to Rain in Arizona. (States at Risk 2018)

Unfortunately, most of the hydrology models are historically-based. Since climate change can render historical data obsolete, new models are needed to fully predict the impact of climate change.

“The National Climate Assessment (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. The NCA report also notes that winter precipitation will be less in the form of snow and more frequently rain. For Northern Region communities, the impacts could result in more severe winter season flooding.

A second study by Luong (Luong, et. al., 2015), notes that monsoon thunderstorms in the Central and Southern Regions of the state have become more intense over a recent 20-year period (1991- 2010) when compared to events recorded in the past (1950-1970). The study concludes that the trend will likely continue as the temperatures rise and provide more moisture storage capacity in the lower atmosphere. The increased intensities may result in increased flood levels.

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Statewide, the overall flooding conditions could also be exacerbated by watersheds with reduced vegetation due to increases in drought or wildfire conditions.” (State of Arizona, Department of Emergency and Military Affairs 2018, 104)

- Risk to Tribal people, property, and assets:** While the portions of the Reservation on the Plateau and even Bluewater Resort (Figure 36) are outside of FEMA’s flood zones, those in the “Valley” portion of the Reservation are susceptible to Colorado River flooding (Figure 37). The “Lower Valley” lies in a FEMA-designated high-risk zone. The “Upper Valley” is likely in a high-risk flood zone as well but is designated as Zone D by FEMA which simply means the flooding hazard analysis has not yet been accomplished. The dividing line between the high-risk Zone A and undetermined-risk Zone D is midway between Navajo Road and Tsosie Road (Figure 38). For planning purposes, CRIT will treat these Zone D areas as high risk.



Figure 36. “The Plateau” and Bluewater Resort Floodplain. (Federal Emergency Management Agency 2008)

Note that the Bluewater resort lies immediately adjacent to a high-risk flood zone.

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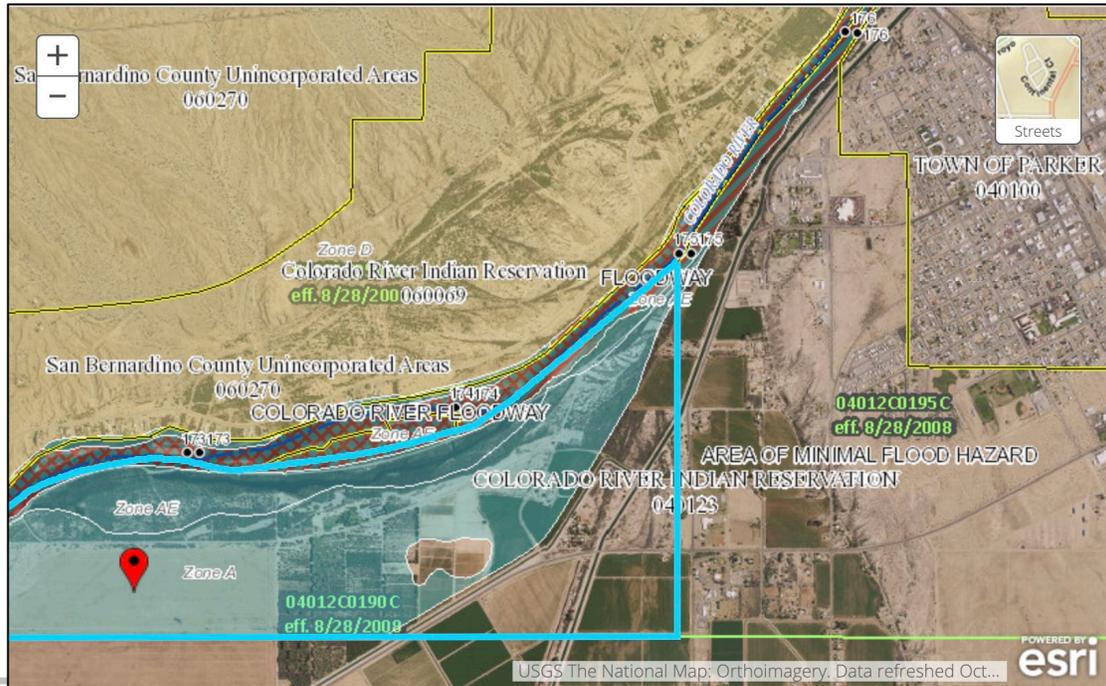


Figure 37. "Upper Valley" Floodplain. (Federal Emergency Management Agency 2008)



Figure 38. Border Between FEMA's Zone A and Zone D. (Federal Emergency Management Agency 2008)



“Populations that experience flooding are often faced with difficult physical, mental, and economic concerns. As demonstrated by Arizona’s past flood events, the impact to the general public is typically property damage and loss, injury, and in some cases, death. Flood events can often force populations to relocate until the floodwaters recede as their homes are impacted by the flood waters. Even after the water recedes, homes can be unlivable until they are repaired and cleaned of mud, debris and potential mold. Often these floods result in the loss of personal possessions that cannot be salvaged after they are damaged by flood waters.

Several of the deaths, injuries, and rescues associated with flooding often took place when citizens attempted to drive across high or moving waters. Potential dangers include electrical hazards, carbon monoxide exposure, musculoskeletal hazards, heat or cold stress, motor vehicle- related dangers, fire, drowning, and exposure to hazardous materials. Other factors in flood- related injuries, illness, and death include disease as a result of unhygienic conditions and water- borne diseases. A review of flood-related fatalities from 13 flood events in the United States and Europe, found that 68% of the deaths from flooding were due to drowning, 12% trauma, and 6% heart attack among other causes’

In addition to physical injuries, flooding victims suffer the psychological impacts of flooding. A recent study of flood victims in the United Kingdom found that 27% of flood victims met the criteria for symptoms associated with Post Traumatic Stress Disorder and over 35% had symptoms of depression.” (Mason 2010)

In addition to flooding directly impacting homes, CRIT Farms could face more than \$110 million in losses to crops and equipment depending on the time of year the flood strikes. The Mesquite Bosque as well as the Ahakhav Preserve are just two the of the natural and cultural resources that would be lost.

5. Risk assessment factors for comparison:

- a. Location: Moderate – The “Valley” portion of the Reservation lies in the Colorado River floodplain.
- b. Hazard Extent: Catastrophic – The damage is both widespread and could result in more than \$110 million in losses to CRIT Farms alone.
- c. Probability: Occasional – Much of CRIT is in the high-risk, Zone A – “An area inundated by 1% annual chance flooding, for which no Base Flood Elevations (BFEs) have been determined. (Zone Classifications n.d.)



6. **Scenario-based Impact Statement that is used for the CRIT THIRA/SPR:** During June of an extreme El Nino year, remnants of a hurricane hits Southern Arizona, resulting in several days of torrential rains. All tributaries and washes flowing into the Colorado River are experiencing unprecedented flooding. Lake Havasu is filled to capacity and Parker Dam and Headgate RockDam flood gates are fully opened to prevent overtopping of the dams. More than 4,000 residents and all enterprises in flood-prone areas are ordered to evacuate – 676 children, 1,600 elders, 550 with disabilities and access and functional needs, 1,000 economically disadvantaged, and 800 with limited English proficiency. CRIT Farms loses an entire season of crops, facilities and equipment – more than \$110 million.

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6. *Severe Wind / Severe Storms*

1. **General hazard description as it relates to CRIT:** “For Arizona, severe winds typically 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 state, with greater threat to the southern portions of the state. 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 may accompany a typical Arizona thunderstorm; 1) downbursts, 2) straight-line winds, and infrequently, 3) tornadoes.” (State of Arizona, Department of Emergency and Military Affairs 2018, 173)

Downbursts

“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. There 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 airspeed. In a microburst, the wind speeds are highest near the location where the downdraft reaches 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. Aircraft caught in the downdraft can be forced to the ground.” (State of Arizona, Department of Emergency and Military Affairs 2018, 173)

Straight Line Winds

“Straight line winds are developed similar to downbursts but are usually sustained for greater periods as a thunderstorm reaches the mature stage. Straight line winds travel (or are pushed), parallel to the ground surface on the leading edge of a thunderhead, reaching speeds of 75 mph or higher. These winds are frequently responsible for generating the large dust and sand storms seen moving across the desert regions of Central and Southern Arizona. The blowing dust can reduce visibility to near zero, creating hazardous driving conditions.



Strong wind events not associated with thunderstorms can occur throughout the year but are frequently strongest in the late winter to late spring months and can generate high-speed winds that last for hours and often include exceptionally strong gusts. The Flagstaff NWS office notes this type of wind events as strong pressure gradients, mesoscale events, channeled winds; Foehn/Chinook/downslope winds, and winds associated with tropical storm remnants.

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 Arizona, tornadoes are the least common severe wind to accompany a thunderstorm.” (State of Arizona, Department of Emergency and Military Affairs 2018, 173)

“Based on history, the probability for a severe thunderstorm or high wind event to occur somewhere in the state, in any given year, is essentially one or 100%. In the last 10-years (2008- 2017), there have been 476 days with reported severe thunderstorm events, or approximately 47.6 event-days per year on a statewide basis. For the same period, the number of event days associated with thunderstorms is 358, or 75% of the total. The remaining 118 event days are associated with non-thunderstorm events.

Again, based on history, the probability for tornado events in Arizona is low, and especially when compared to national standards. In the last 10-years (2008-2017), there have only been nine damaging tornados (category EF1 or higher – see below) recorded for the whole state and six of those were generated by a single storm event in October 2010. On average, that is less than one damaging tornado a year. The National Centers for Environmental Information reports an average of five tornados per year for Arizona¹, which compares to 60-90+ tornados for central US states.

The strength and magnitude of severe wind events is primarily based on wind speed. Thresholds and categories are detailed below.

Thunderstorm or Other Non-Tornado High Winds

The NWS considers a thunderstorm as severe if it produces hail at least one-inch in diameter, wind gusts of 58 mph or higher, or any tornadoes. 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. According to NCDC data, at least 2,647 severe thunderstorm or other non-tornado high wind event locations that recorded or estimated three- second wind gusts of over 58 mph were identified in Arizona between 1955 and 2017. During that period, three deaths, 146 injuries, and \$382.4 million in damages were reported.



The Beaufort Wind Scale provides a measure of overland wind magnitude versus expected damages. According to the Beaufort Scale, wind gusts of 55-63 mph can result in uprooted trees and considerable structural damage to poorly constructed buildings. Wind gusts between 64-73 mph can result in more widespread structural damage to moderately constructed buildings. Wind gusts over 74 mph are able to do widespread damage to moderately constructed buildings and even well-constructed buildings.

Tornadoes

Tornado severity is measured using the Enhanced Fujita Scale. Table 17 provides a summary of the Fujita scale values with a general description of damage associations.

To date, Arizona has not experienced anything higher than an EF3 category tornado but has experienced many EF0, EF1, and to a lesser extent, EF2 tornadoes. According to the NCDC database, there were 247 tornadoes ranging from EF0 to EF3 on the Fujita scale(s) recorded across Arizona between 1952-2017. The total property damage was approximately \$48.5 million with three fatalities and 147 injuries. Total crop damage was approximately \$30,000.” (State of Arizona, Department of Emergency and Military Affairs 2018, 176-177)

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| Fujita Scale | | Enhanced Fujita Scale | | Damage Description |
|--------------|------------------|-----------------------|------------------|---|
| ID | Wind Speed (MPH) | ID | Wind Speed (MPH) | |
| F0 | 45-78 | EF0 | 65-85 | Minor or no damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. Confirmed tornadoes with no reported damage are always rated F0 or EF0. |
| F1 | 79-117 | EF1 | 86-110 | Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken. |
| F2 | 118-161 | EF2 | 111-135 | Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off the ground. |
| F3 | 162-209 | EF3 | 136-165 | Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations are badly damaged. |
| F4 | 210-261 | EF4 | 166-200 | Extreme damage. Well-constructed and whole framed houses completely leveled; cars and other large objects thrown and small missiles generated. |
| F5 | 262-317 | EF5 | >200 | Total Destruction of Buildings. Strong-framed, well-built houses leveled off foundations are swept away; steel-reinforced concrete structures are critically damaged; tall buildings collapse or have severe structural deformations; some cars, trucks, and train cars can be thrown approximately one mile. |

Table 17. Tornado Scale Levels and Damage Description. (State of Arizona, Department of Emergency and Military Affairs 2018, 178)

2. **Historical occurrences on CRIT:** As with Arizona as a whole, CRIT faces annual severe wind storms associated with monsoon season. The CRIT Reservation falls into the State of Arizona’s North Region. Wind and Tornado events between 1952-2017 are depicted in Figure 39.

**COLORADO RIVER INDIAN TRIBES
MULTI-HAZARD MITIGATION PLAN**

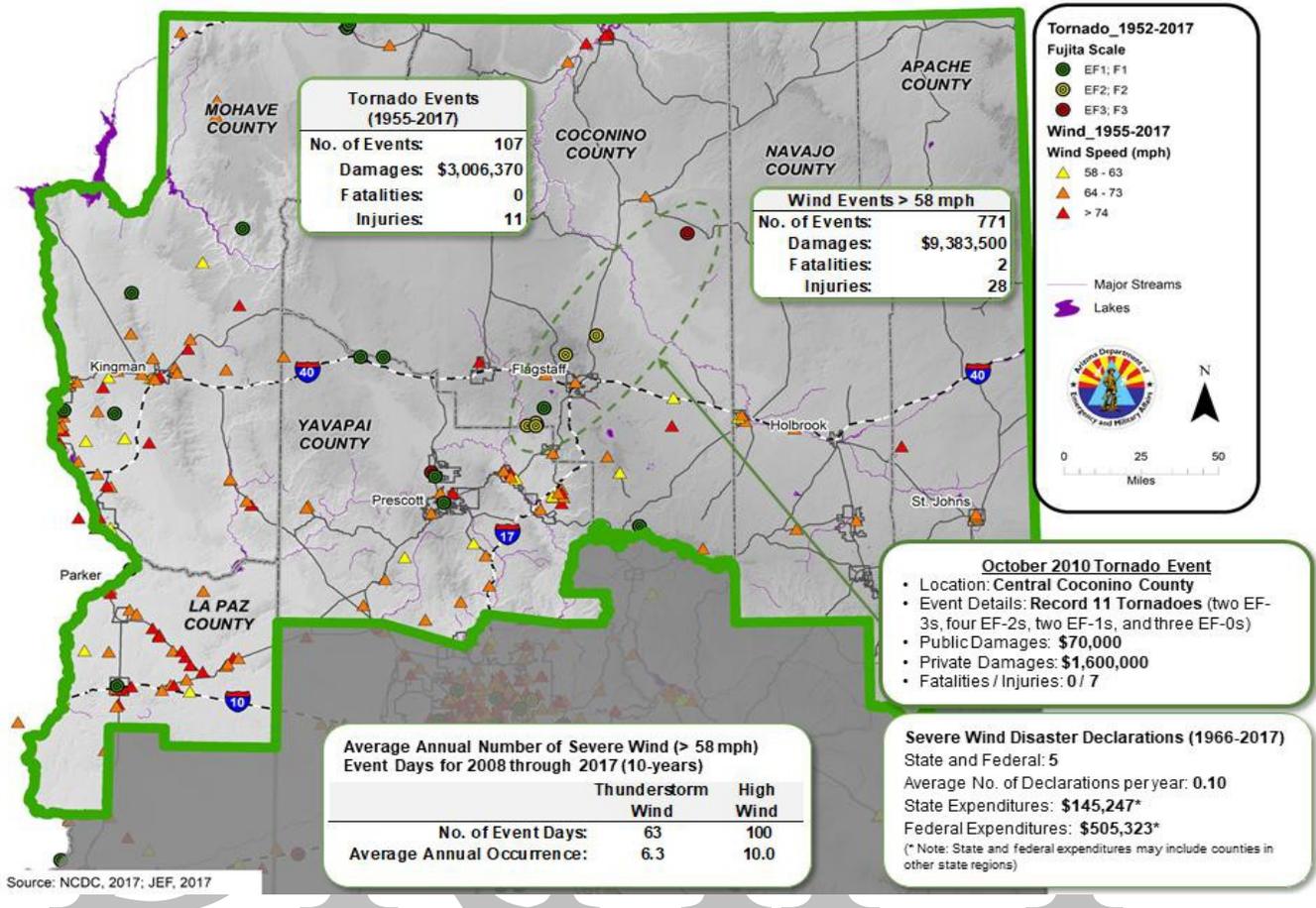


Figure 39. Historical Severe Wind Events in the State of Arizona’s North Region. (State of Arizona, Department of Emergency and Military Affairs 2018, 179)

Recent Severe Wind events include:

- On September 30th, 2018, the National Weather Service issued a Flash Flood Warning in La Paz County as remnants of Hurricane Rosa resulted in heavy rain, high winds, dust storms, and power outages. (Gutekunst 2018)
- On August 9th, 2018, severe thunderstorms struck La Paz County with heavy rain, strong winds, and blowing dust (Figure 40). (Preliminary Storm report for 9 August 2018 2018)
- On August 10th, 2017, a monsoon storm brought heavy rain and high winds high winds to La Paz County that resulted in damage to buildings including roofs being torn off and trailers overturning. (John Gutekunst 2017)
- On August 3rd, 2017, the National Weather Service issued a Severe Thunderstorm Warning for La Paz County as windstorms knocked down several poles. (Caturay 2017)



- August 16, 2000 - Strong thunderstorm wind gusts of 80-100 mph moved through the community of Golden Shores in Mohave County causing \$1 million in damage. Two mobile homes were destroyed, and 17 other mobile homes and frame houses were unlivable. Another 117 homes received minor damage. One injury occurred when the homeowner sought shelter in a tub in the mobile home's bathroom. As the mobile home rolled the toilet was ripped from its foundation and struck the homeowner in the head causing cuts and bruises. In addition, numerous pontoon boats were either flipped over or destroyed, and several windows were broken on homes and cars. The storm snapped several power lines which cut power, in turn cutting the community's water supply (NCDC Storm Events Database). (State of California; Office of Emergency Services n.d., 176)

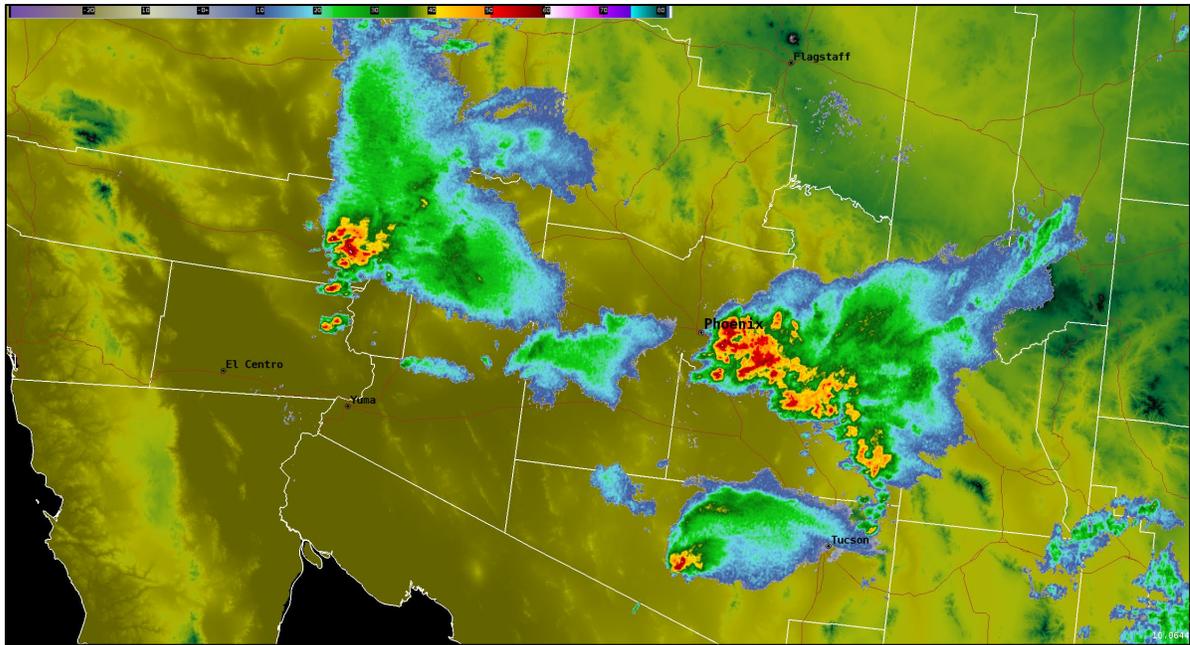


Figure 40. Severe Thunderstorm Over CRIT, August 9th, 2018. (NOAA's National Weather Service 2018)

3. **Impact of climate change:** Climate change is already leading to more frequent and stronger storms. The Summers in Arizona are getting hotter (Figure 41) and more humid (Figure 42) – the two key ingredients that make unstable air that is prone to severe thunderstorms and severe winds.

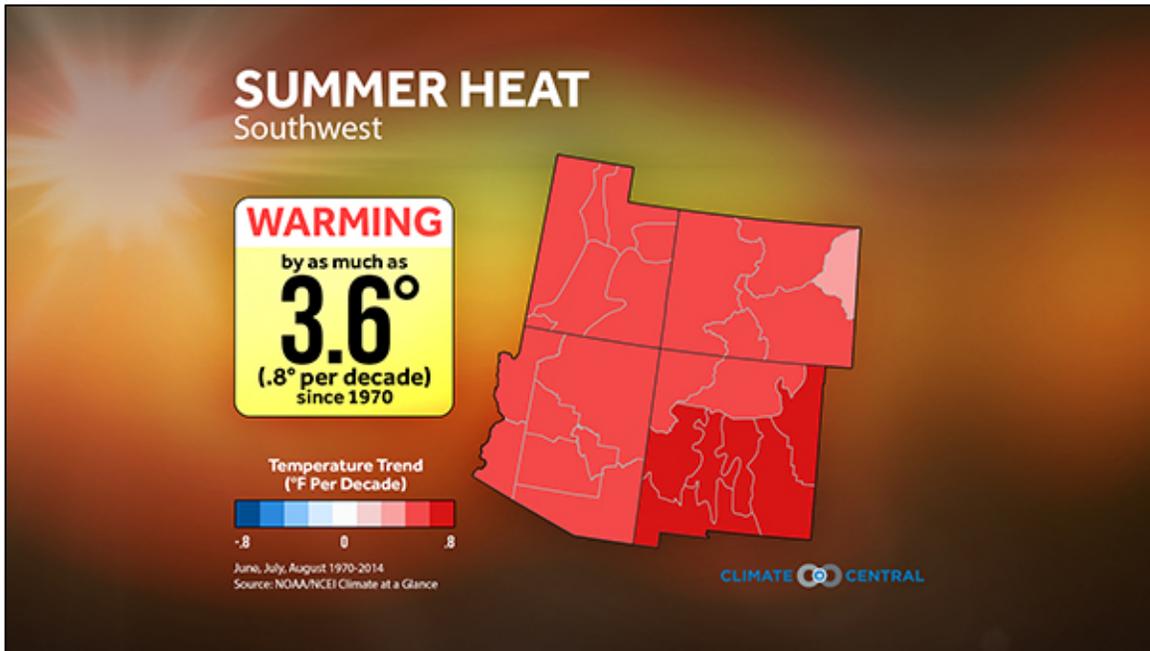


Figure 41. Summers in the Southwest are Getting Hotter. (States at Risk 2018)

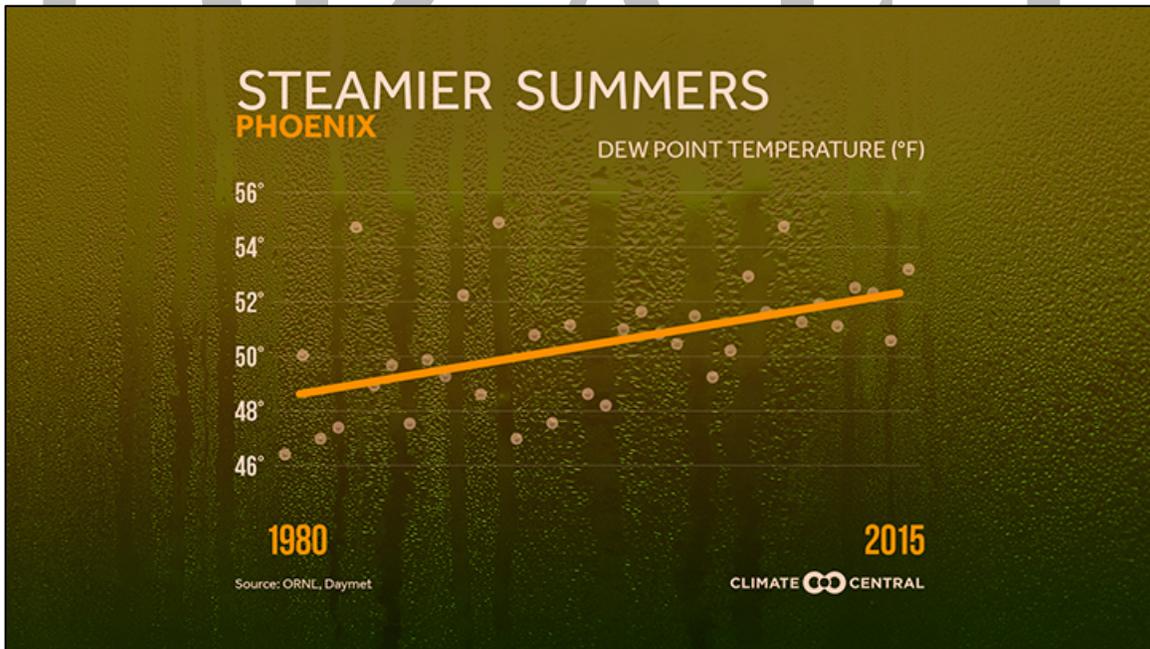


Figure 42. The Summers in Arizona Are Getting More Humid. (States at Risk 2018)

“The study by Luong (Luong, et al., 2015), notes that monsoon thunderstorms in the Central and Southern Regions of the state have become more intense over a recent 20-year period (1991- 2010) when compared to events recorded in the past (1950-1970). The study concludes that the trend will likely continue as the temperatures rise and provide more moisture storage capacity in the lower atmosphere. The increased thunderstorm intensities may correlate to increased wind intensities, and especially if the thunderstorm cells are stronger and larger.” (State of Arizona, Department of Emergency and Military Affairs 2018, 182)

4. Risk to Tribal people, property, and assets: Severe Winds / Severe Storms present several hazards for CRIT. Severe Winds:

- Repeatedly knock down power poles – especially dangerous in the extreme summer heat
- Cause physical damage to CRIT facilities and homes – especially older construction and mobile homes that are prevalent on the Reservation
- Cause severe dust storms
- Are associated with storms that ruin crops that are hit at an inopportune time
- Are associated with storms that also bring flash floods to the Reservation
- Are associated with storms that can result in tornadoes

5. Risk assessment factors for comparison:

- a. Location: Extensive – Severe Winds / Severe Storms affect all CRIT property and assets.
- b. Hazard Extent: Major – CRIT can expect to incur damage to both facilities and homes. In addition, power poles repeatedly break during Sever Winds, leading to a loss of power for BIA power customers.
- c. Probability: Highly Likely – “Based on history, the probability for a severe thunderstorm or high wind event to occur somewhere in the state, in any given year, is essentially one or 100%.” (State of Arizona, Department of Emergency and Military Affairs 2018, 177)

6. Scenario-based Impact Statement that is used for the CRIT THIRA/SPR: During August of an extreme El Nino year, a June storm brings severe storms that include extremely intense thunderstorms, heavy rain, hail, wind gust over 80 miles per hour, downbursts, and even tornadoes. Multiple squall lines move through the area leaving washes and low-lying areas across the Reservation flooded. Mohave Road is cut at Tyson Wash. There are reports of a car with four passengers being carried down Tyson

Wash. Three pontoon boats from the Bluewater Resort with approximately 20 passengers have capsized on the Colorado River. Crops that were ready for harvesting are destroyed in the field, resulting in a total loss. Multiple roofs on Tribal buildings and more than two dozen (24) tribally owned homes are severely damaged. High winds knock down power poles for a half mile, resulting in power loss for BIA Power customers. The Parker Indian Health Center must close and evacuate its patients. Due to the extreme heat, cooling stations are needed. One hundred (100) people require immediate mass care and shelter including 17 children, 39 elders, 14 people with disabilities and access and functional needs, 25 economically disadvantaged, and 20 have limited English proficiency.

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7. *Wildfires*

- 1. General hazard description as it relates to CRIT:** “A wildfire is an uncontrolled fire spreading through wildland vegetative fuels and/or urban interface areas where fuels may include structures. Wildfires 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, especially when burning in areas where people and infrastructure are located. Even small fires can threaten lives, resources, and properties.

Wildfires burn thousands of acres in Arizona every year. According to the Southwest Coordination Center Historical Fire Data, during the 15-year period 2000-2015, Arizona had an annual average of 2,428 wildfires affecting an average of 264,035 acres each year. On average, 55% of the wildfires were human-caused, while 45% were lightning caused. The 2015 wildfire season overview found that 79% of fires in the Southwest burned in Arizona.” (State of Arizona, Department of Emergency and Military Affairs 2018, 214)

“Based on history, the probability of wildfire occurring in the state is very high. The magnitude and severity of wildfire incidents can be very high and 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. The primary dataset used to depict the threat of wildfire in Arizona was recently developed as a part of the West Wide Wildfire Risk Assessment¹ (WWWRA) for the western US and hosted by the Arizona Department of Forestry and Fire Management on its website².” (State of Arizona, Department of Emergency and Military Affairs 2018, 216)

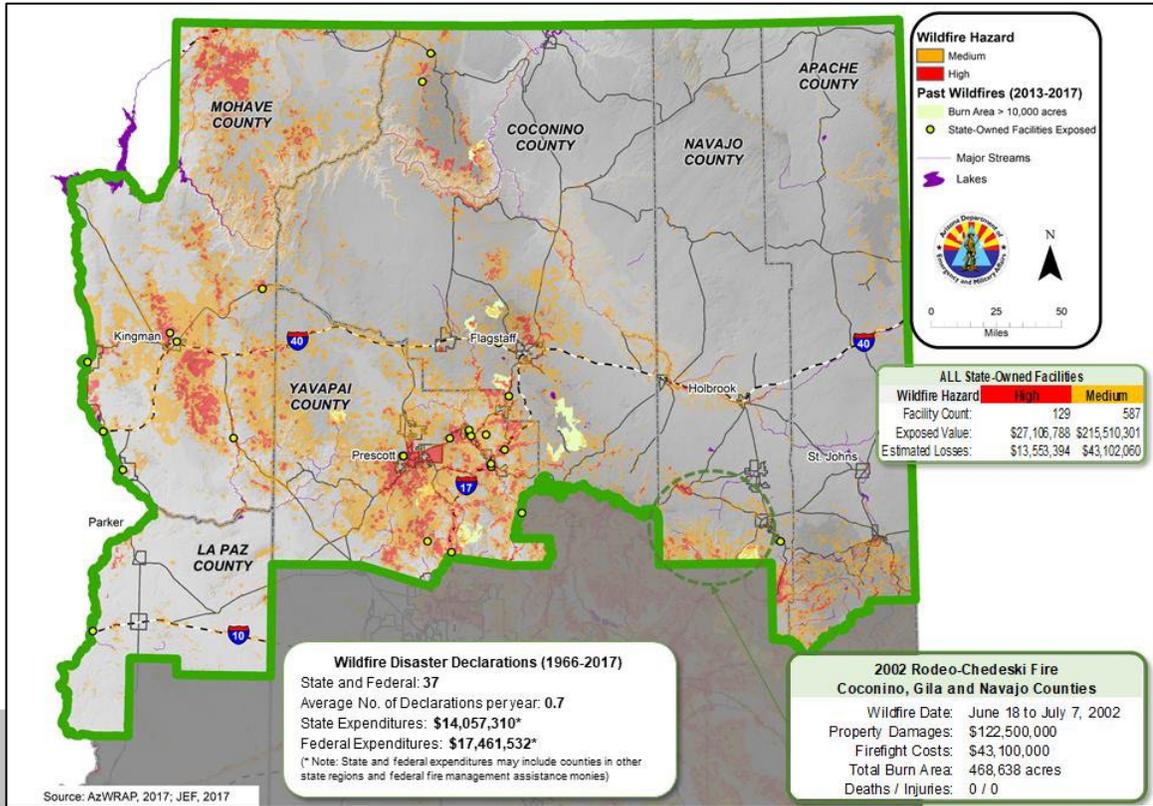


Figure 43. Wildfire Hazard for The State of Arizona North Region. (State of Arizona, Department of Emergency and Military Affairs 2018, 217)

2. Historical occurrences on CRIT: Notable recent Wildfires on CRIT Include:

Figure 44 depicts Wildfire Ignition locations for Wildfires on and in the vicinity of the CRIT Reservation between 1999-2008.

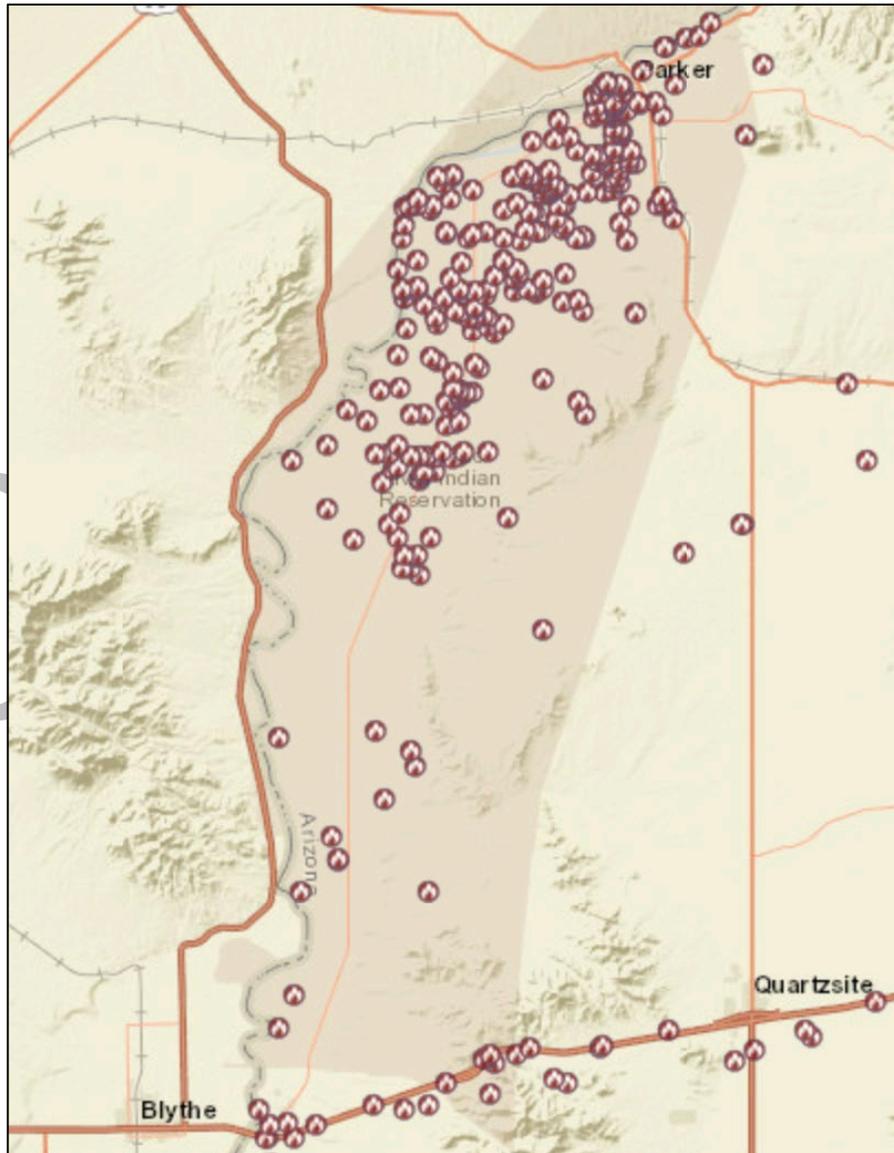


Figure 44. Wildfire Ignition Locations on the CRIT Reservation. (Arizona Department of Forestry and Fire Management 2018)

Figure 45 depicts the Fire Occurrence Density for the ignition locations from Figure 44. The Fire Occurrence Density is the likelihood of a Wildfire igniting based on historical ignition patterns.

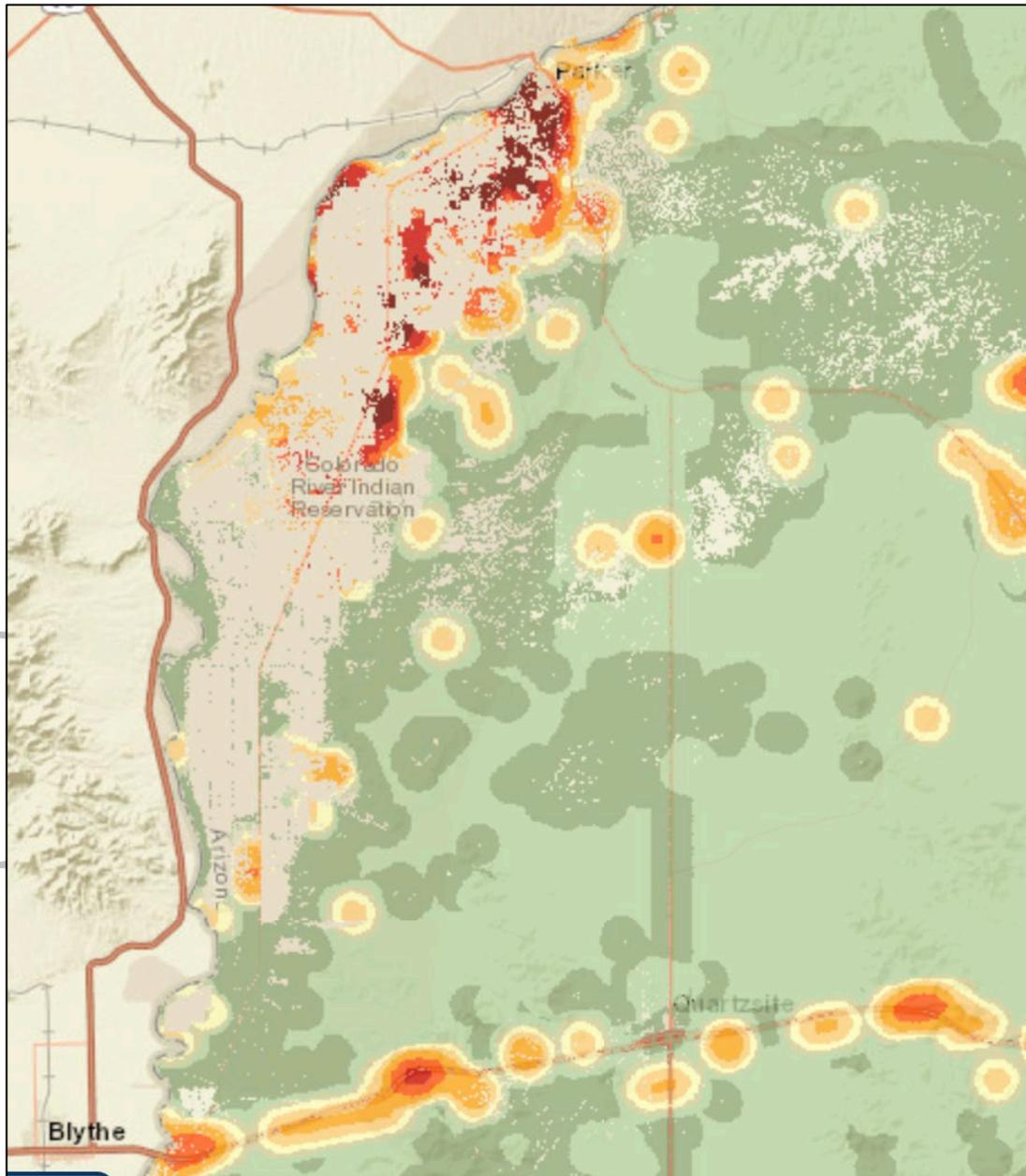


Figure 45. *Fire Occurrence Density on the CRIT Reservation. (Arizona Department of Forestry and Fire Management 2018)*

- 3. Impact of climate change:** Climate change is already causing both more fires (Figure 46) and more acres burned (Figure 47) in Arizona.

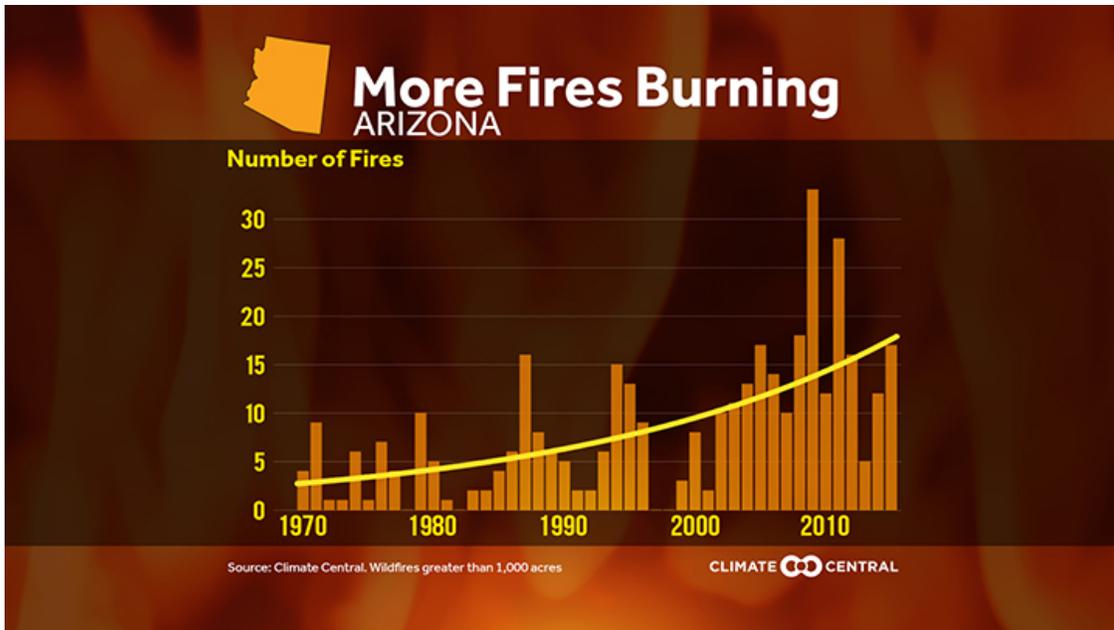


Figure 46. More Acres are Burning in Arizona. (States at Risk 2018)

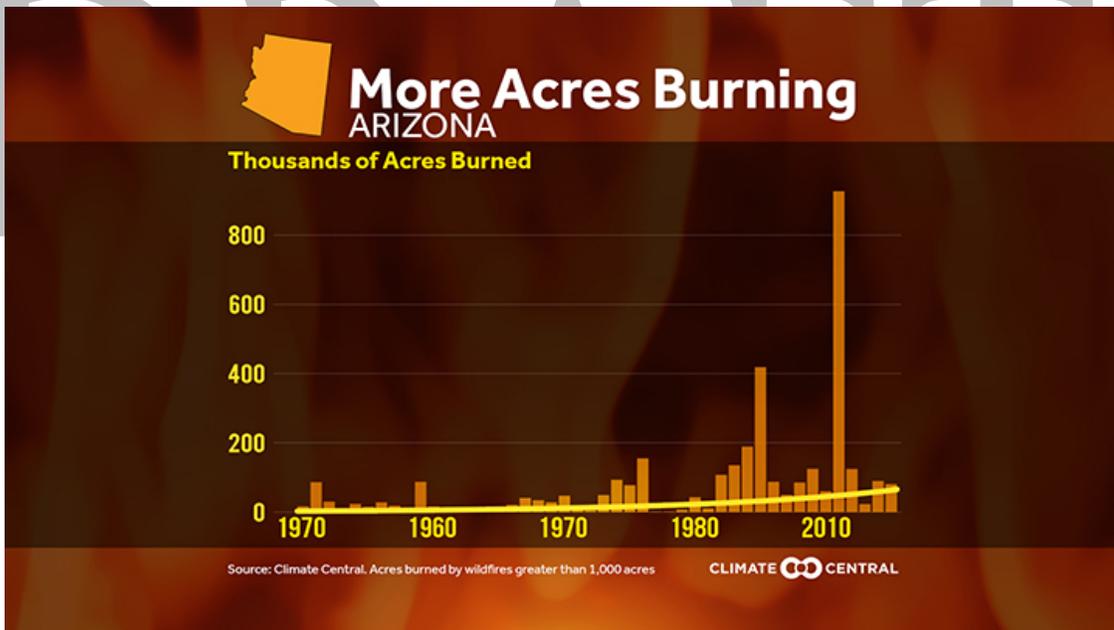


Figure 47. More Acres are Burning in Arizona. (States at Risk 2018)

Looking forward, Climate change is expected increase the number of days in which Arizona has a high fire potential to 115 per year – second only to California (Figure 46). (States at Risk 2018)

- Risk to Tribal people, property, and assets:** Wildfire poses a direct threat through destruction of property and assets, as well as injuries and fatalities to both people and

animals. However, also it has a number of indirect and cascading effects such as reduced air quality due to smoke, displaced people from evacuations and increased risk of flash floods and mudslides following the destruction of plants. and Figure 48 depicts an estimate of Wildfire Risk on the CRIT Reservation. In its methodology, the Arizona Wildfire Risk Assessment combines the likelihood of a fire occurring with the estimated impact to derive a Wildfire Risk Index. (Arizona Department of Forestry and Fire Management 2018)

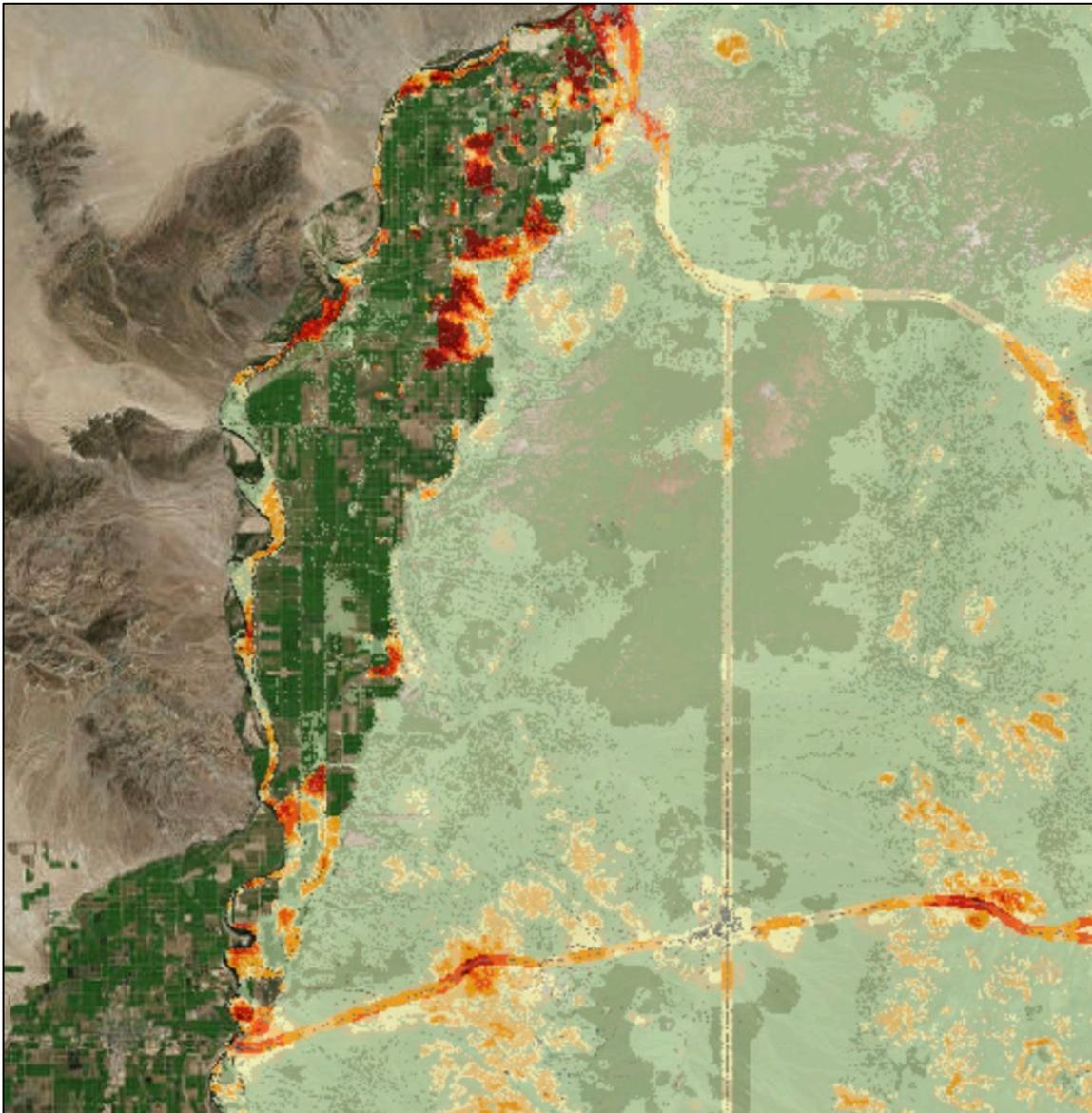


Figure 48. CRIT Wildfire Risk. (Arizona Department of Forestry and Fire Management 2018)

5. Risk assessment factors for comparison:

- a. Location: Moderate – As seen in Figure 48, the Wildfire risk is largely in isolated, but can occur throughout the Reservation.
- b. Hazard Extent: Major – As seen in Figures 44 and 48, Wildfire present significant damage potential in some areas.
- c. Probability: Highly Likely – As can be seen in Figures 44 and 48, there are a large number of fires on the CRIT Reservation and the likelihood is high in many locations.

6. Scenario-based Impact Statement that is used for the CRIT THIRA/SPR: A wet winter that led to fuels growth, followed by drought conditions in the summer, have resulted in extreme fire conditions on the CRIT Reservation. Due to lightning, several fires in excess of 100 acres are burning, the largest is over 5,000 acres. High winds are causing the fires to both rapidly increase in size and intensity. Multiple Tribal buildings and more than two dozen (24) tribally owned homes are on fire. Power lines are down resulting in power loss for BIA Power customers. One hundred (100) people require immediate mass care and shelter including 17 children, 39 elders, 14 people with disabilities and access and functional needs, 25 economically disadvantaged, and 20 have limited English proficiency.

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III. Mitigation Strategy

44CFR Sections 201.7(c)(3) - “The plan shall include...A mitigation strategy that provides the Indian tribal government'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.”

44CFR Sections 201.7(c)(4) - “The plan shall include...A plan maintenance process.”



Figure 49. “The FEMA Mitigation Strategy: Goals, Actions, Action Plan” (Federal Emergency Management Agency 2013)

A formal capability assessment provides information that is helpful to assessing the CRIT's ability to mitigate against hazards. The Planning Team reviewed and evaluated the CRIT's resources, capabilities, and "gaps" and mitigation opportunities in the following areas:

- **Planning and Regulatory Capabilities**
 - Planning – Table 18
 - Regulatory – Table 19
 - Land use – Table 20
- **Legal/Regulatory, Codes, and Ordinances, and Plans**
 - Administrative – Table 21
 - Staff – Table 22
 - Technical – Table 23
- **Financial Capabilities**
 - Table 24

A. Hazard Management Policies, Programs, and Capabilities

44CFR Sections 201.7(c)(3) - "The plan shall include...A mitigation strategy that provides the Indian tribal government'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."

44CFR Sections 201.7(c)(3)(iv) – (iv) "The plan shall include...A discussion of the Indian tribal government's pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including: An evaluation of tribal laws, regulations, policies, and programs related to hazard mitigation as well as to development in hazard-prone areas; and a discussion of tribal funding capabilities for hazard mitigation projects."

44CFR Sections 201.7(c)(4)(iii) - "The plan shall include...A plan maintenance process...by which the Indian tribal government incorporates the requirements of the mitigation plan into other planning mechanisms such as reservation master plans or capital improvement plans, when appropriate."

In general, CRIT complies with local, state, and Federal standards rather than create unique, hazard mitigation-related guidance such as building codes. This has been effective in mitigation-related actions such as building and environmental projects. However, the Tribes does recognize the need to incorporate hazard mitigation considerations into its family of plans and funding considerations. For example, during this plan update Action #1.1, “Align updates to CRIT’s family of plans to the CRIT MHMP,” supports Objective #1.1, “Incorporate hazard mitigation into long-range planning and development activities.” Similarly, Action #1.3.1, “Review and update of policies regarding building codes, sustainable landscaping, etc.,” and Action #1.3.2, “Incorporate mitigation actions when building in hazard areas,” support the Objective #1.3, “Utilize regulatory approaches to prevent creation of future hazards to life and property.”

CRIT’s existing pre and post disaster hazard mitigation-related plan capabilities are summarized in Table 18.

1. *Planning and Regulatory Capabilities*

| Plans | Yes/No | Year | <ul style="list-style-type: none"> • Does the plan address hazards? • Does the plan identify projects to include in the mitigation strategy? • Can the plan be used to implement mitigation actions? |
|--|--------|------|---|
| CRIT Comprehensive Community-Based Plan | No | | <ul style="list-style-type: none"> • A master plan would address hazards, include the mitigation strategy, and help implement mitigation actions |
| CRIT Integrated Development Standards | No | | <ul style="list-style-type: none"> • Development is conducted on a case-by-case basis with Tribal Council • Developments such as the new firehouse & detention center can be used to implement mitigation actions |
| Energy and Mineral Development Plan | No | | <ul style="list-style-type: none"> • CRIT Sand & Gravel does produce material that meets or exceeds highway construction standards that • Operations could be used in mitigation actions |
| CRIT Water System Emergency Response Plan | Yes | 2017 | <ul style="list-style-type: none"> • Yes, it is an all-hazards plan • Yes, it has a chapter on hazard mitigation • Yes, especially through the mitigation chapter |
| Chemical Response Plan | No | | <ul style="list-style-type: none"> • The CRIT Environmental Department personnel have HAZWOPER training and provide limited HAZMAT response |

| Plans | Yes/No Year | <ul style="list-style-type: none"> Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions? |
|--|--------------------|---|
| | | <ul style="list-style-type: none"> capability CRIT has a MOU with Buckskin Fire Department for HAZMAT response Both of these capabilities can be used to implement mitigation actions |
| Transportation Plan | No | <ul style="list-style-type: none"> BIA Roads manages transportation on a case-by-case basis based on Tribal Council priorities CRIT sets priorities and BIA executes through PL-638 contracts The BIA Roads Department plans can be used to implement mitigation actions |
| Local Emergency Operations Plan | Yes 2018 | <ul style="list-style-type: none"> Yes, it is a multi-hazard plan Yes, Operational Communications and Public Information and Warning are high priorities Yes, the EOP will be updated in 2019 to integrate with this MHMP |
| Departmental Emergency Action Plans/Standard Operating Procedures | Yes 2018 | <ul style="list-style-type: none"> Yes, they are multi-hazard Yes, communications, power, etc. Yes, they will be integrated in updates |
| Continuity of Operations Plan | No 2019 | <ul style="list-style-type: none"> The plan will be developed in 2019 and address multiple hazards Projects in the impending COOP Plan will include projects aligned with this MHMP strategy The COOP Plan will be fundamental to mitigation actions |
| Agricultural Response Plan (in-progress) | Yes In Progress | <ul style="list-style-type: none"> Yes, CRIT Farms manages the Agriculture Response Plan and addresses hazards Yes, backup power, etc. Yes, CRIT Farms is central to mitigation actions |
| Emergency Action Plan for Headgate Rock Dam | Yes 2009 | <ul style="list-style-type: none"> Yes, multiple hazards are addressed Yes, it controls water and provides power Yes, BIA Power is fundamental to some actions |
| Stormwater Management Plan | No | <ul style="list-style-type: none"> Joint Venture and Big River each have wastewater and responsibilities Joint Venture and Big River provided input for this MHMP project strategy Joint Venture and Big River will be a part of mitigation action implementation |

| Plans | Yes/No | Year | <ul style="list-style-type: none"> • Does the plan address hazards? • Does the plan identify projects to include in the mitigation strategy? • Can the plan be used to implement mitigation actions? |
|--|---------------|-----------------------------|--|
| Wildfire Management Plan | Yes | 2016 | <ul style="list-style-type: none"> • Yes, multiple hazards related to wild lands • Yes, both ongoing and long-term projects • Yes, the plan is integral to MHMP actions |
| CRIT Renewable Energy Resource Assessment and Feasibility Study | Yes | 2012 | <ul style="list-style-type: none"> • Yes, multiple hazards were addressed in the study • Due to damage to natural and cultural resources, solar power is not being pursued • The BIA does produce renewable energy at the Headgate Rock Dam • Yes, redundant power distribution lines have been identified as a project • Yes, multiple power-related projects are in the this MHMP |
| CRIT Tribal Environmental Plan | Yes | | <ul style="list-style-type: none"> • The CRIT Environmental Department, CRIT Farms, Fish & Wildlife, and the preserve work on various efforts • Yes • Yes |
| Parker Indian Health Center Emergency Response Plan | Yes | | <ul style="list-style-type: none"> • Yes, it is a multi-hazard plan • Yes, especially backup power • Yes, especially power |
| La Paz Regional Hospital Emergency Preparedness Plan | Yes | 2012 (2018 risk assessment) | <ul style="list-style-type: none"> • Yes, it is an all-hazards plan • Yes, from outreach to backup power • Yes, especially due to its relationship with the Parker Indian Health Center |
| Evoqua Contingency Plan | Yes | 2018 | <ul style="list-style-type: none"> • Yes, it is a multi-hazard plan • No, it is an internally-focused plan • No, it is an internally-focused plan |

Table 18. Planning Capabilities.

CRIT’s existing pre and post disaster hazard mitigation-related regulatory capabilities are summarized in Table 19 and Table 20. The greatest challenge that CRIT faces in developing and monitoring regulations as it does not have the resources to engage in constant enforcement activities.

| Building Code, Permitting, and Inspections | Yes/No | Are codes adequately enforced? |
|---|---------------|---|
| Building Code | Yes | <ul style="list-style-type: none"> • International Building Code • No, more resources are needed to enforce |
| Building Code Effectiveness Grading Schedule (BCEGS) Score | No | Score: N/A |
| Fire department ISO rating | No | Rating: 6-7 |
| Site plan review requirements | Yes | Location/project dependent – CRIT complies with the requirements from the specific funding source; BIA, EPA, etc. |

Table 19. CRIT Building Code Capabilities.

The CRIT does not have land use or planning ordinances. As potential projects arise, the responsible Tribal Department leads studies, analysis, and planning efforts (contracted as necessary). Prospective projects are then brought before Tribal Council on a case-by-case basis for approval. As summary of land use regulation capabilities is in Table 20.

| Land Use Planning and Ordinances | Yes/No | <ul style="list-style-type: none"> • Is the ordinance an effective measure for reducing hazard impacts? • Is the ordinance adequately administered |
|--|---------------|---|
| Zoning ordinance | Yes | <ul style="list-style-type: none"> • Planning & Zoning Ordinance |
| Subdivision ordinance | No | <ul style="list-style-type: none"> • Local ordinance applies • On a case-by-case basis, Tribal Council determines allotments, size, etc. |
| Floodplain ordinance | No | <ul style="list-style-type: none"> • There are no standing ordinances – decisions are made on a case-by-case basis |
| Natural hazard specific ordinance (stormwater, steep slope, wildfire) | No | <ul style="list-style-type: none"> • There are no standing ordinances – decisions are made on a case-by-case basis • Enterprises such as Joint Venture (wastewater) and Big River (water, wastewater, solid waste) comply with Federal, state, and local ordinances |
| Flood insurance rate maps | No | <ul style="list-style-type: none"> • There are no standing ordinances – decisions are made on a case-by-case basis |
| Acquisition of land for open space and public recreation uses | No | <ul style="list-style-type: none"> • There are no standing ordinances – decisions are made on a case-by-case basis • No standing ordinances for how to assign future land purchases |
| Peripheral Planning | Yes | <ul style="list-style-type: none"> • Western boundary -1988 • Baddnochs Bluewater - 1990 |
| Wildfire Management Plan | Yes | <ul style="list-style-type: none"> • Yes |

| Land Use Planning and Ordinances | Yes/No | <ul style="list-style-type: none"> • Is the ordinance an effective measure for reducing hazard impacts? • Is the ordinance adequately administered |
|--|--------|--|
| | | <ul style="list-style-type: none"> • Yes, enforced by CRIT Wildland Fire Department |
| Water line Installation | No | <ul style="list-style-type: none"> • Project-by-project through the Indian Health Service water office of engineering |
| How can these capabilities be expanded and improved to reduce risk? | | |
| <ul style="list-style-type: none"> • CRIT Realty has a checklist that ensure utility tie-in, etc. – through water resources – prevent new wells and septic tanks near river. • By accomplishing this plan’s Action #1.3.1, “Review and update of policies regarding building codes, sustainable landscaping, etc.,” and Action #1.3.2, “Incorporate mitigation actions when building in hazard areas,” that support the Objective #1.3, “Utilize regulatory approaches to prevent creation of future hazards to life and property,” CRIT can develop its future regulations and ordinances with hazard mitigation in mind. | | |

Table 20. CRIT Land Use Regulation Capabilities.

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2. *Administrative and Technical Capabilities*

As with planning and regulatory capabilities, CRIT is challenged with a lack of resources regarding administrative and technical capabilities (Tables 21 and 22). Existing staff work outside of their specific area of expertise to accomplish actions. For example, the Tribe has resources for only a single full-time Homeland Security Coordinator. The various department accept responsibility for these requirements. The Tribe seeks external expert assistance as required.

| Administration | Yes/No | <ul style="list-style-type: none"> • Describe capability • Is coordination effective? |
|--|--------|---|
| Planning Commission | Yes | <ul style="list-style-type: none"> • Greg Fisher leads the Planning Department • Coordination could be improved through such actions as a comprehensive plan, standing committees, or even a Tribal Administrator |
| Mitigation Planning Committee | Yes | <ul style="list-style-type: none"> • The Planning Team – A cross spectrum of disciplines from law enforcement and fire to farms to utilities • Partially - coordination difficult without a standing committee and true empowerment of the Homeland Security Coordinator |
| Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems) | Yes | <ul style="list-style-type: none"> • The Wildfire Management Plan (WFMP) and PL-638 contracts for the Wildland Fire Department are leaders in this effort • CRIT Fire has its own Wildland Fire fuels control /defensible space. <ul style="list-style-type: none"> ○ Goal is to accomplish annually. • CRIT Environmental Department also conducts risk reduction maintenance programs • Cross-departmental capabilities <ul style="list-style-type: none"> ○ Wildland Fire Department ○ CRIT Fire Dept. ○ CRIT Farms ○ Fish & Game Department ○ Environmental Dept. ○ Maintenance Dept. • Partially – the departments need a standing, coordinated effort |
| Mutual aid agreements | Yes | <ul style="list-style-type: none"> • Law Enforcement – La Paz County, Parker Police Dept., and Arizona State Dept. of Public Safety • Wildland Fire Dept. - No written agreements – contract with BIA for wildland fire support (Full services) • CRIT Fire - La Paz County (Fire Chief's Association), Riverside CO., and San Bernardino Co., Parker, Buckskin, Ehrenberg, |

| Administration | Yes/No | <ul style="list-style-type: none"> • Describe capability • Is coordination effective? |
|----------------|--------|---|
| | | Quartzite, Bouse, McMullen Valley Fire Depts. <ul style="list-style-type: none"> ○ A lot of work with Buskin, Parker, and San Bernardino ○ Buskin or Lake Havasu City has HAZMAT capability <ul style="list-style-type: none"> • La Paz Regional Hospital – very effective • Close relationship with La Paz County OEM • EMAC -intends to renew <ul style="list-style-type: none"> ○ State of Arizona • Yes – the Tribe has a good relationship with its MOU partners |

Table 21. CRIT Administration Capabilities.

As previously described, one of the greatest challenges for CRIT is a lack of resources for dedicated, full-time employees for specific responsibilities (Table 22). The Tribe accomplishes its responsibilities through a cross-matrixed approach in which staff members have both primary and additional responsibilities.

| Staff | Yes/No FT/PT ⁴ | <ul style="list-style-type: none"> • Is staffing adequate to enforce regulations? • Is staff trained on hazards and mitigation? • Is coordination between agencies and staff effective? |
|---------------------------------|---------------------------|--|
| Chief Building Official | Yes | <ul style="list-style-type: none"> • Partially – Building and Safety Department needs more resources to fully enforce regulations • Partially – staff are trained, but there are not enough; no specific mitigation staff • Partially – good cross-departmental business practices are needed |
| Floodplain Administrator | No | <ul style="list-style-type: none"> • No, this represents a new opportunity • No • No |
| Emergency Manager | Yes | <ul style="list-style-type: none"> • Partially – the Homeland Security Coordinator requires empowerment through written directives • Partially – case-by-case depending on the department • Partially – good cross-departmental business practices are needed |
| Community Planner | Yes | <ul style="list-style-type: none"> • No – the tribe contracts for planners as required for various efforts • Partially – the Planning Department requires external support • Partially – Good cross-departmental business practices are needed |

⁴ FT – full-time; PT – part-time position

| Staff | Yes/No FT/PT ⁴ | <ul style="list-style-type: none"> • Is staffing adequate to enforce regulations? • Is staff trained on hazards and mitigation? • Is coordination between agencies and staff effective? |
|-----------------------|---------------------------|--|
| Civil Engineer | No | <ul style="list-style-type: none"> • No – the tribe contracts for this capability • No • Partially – Good cross-departmental business practices are needed |
| Fire Code Enforcement | Yes | <ul style="list-style-type: none"> • No - gap in currently trained staff for code enforcement |
| Surveyors | No | <ul style="list-style-type: none"> • No - BIA or outside consultant • No • Partially – Good cross-departmental business practices are needed |
| GIS Coordinator | Yes | <ul style="list-style-type: none"> • No – While multiple staff members are trained (Planning, CRIT Realty, BIA, EHP), there is no regulation enforcement • No • No – need to develop a “one-stop” coordinator for all GIS needs |

Table 22. CRIT Staff Capabilities.

Closely related to staffing capabilities are technical capabilities. While staff are well-versed in their day-to-day responsibilities, they lack specific expertise in areas such as grant writing and HAZUS analysis. Table 23 has a summary of the Tribe’s technical capabilities.

| Technical | Yes/No | <ul style="list-style-type: none"> • Describe capability • Has capability been used to assess/mitigate risk in the past? |
|---|--------|---|
| Warning systems/services (Reverse 911, outdoor warning signals) | Yes | <ul style="list-style-type: none"> • CRIT has contracted with Nixle, but has not made it operational yet • CRIT dispatch is the first line for most warnings • Prescott Dispatch for Wildland Fire • Desire a CRIT 911 service (currently through La Paz County – address problems lead to errors and delays) • CRIT Fire – attempting to operationalize E-dispatches (Dispatcher can do it) • Opportunity – using the CRIT site and various (7) Facebook, TV, Radio, etc. • Opportunity - CRIT Fire & Fish and Game are not on same frequency as CRIT PD • Opportunity - would like Giant Voice, smart signage, etc. – flood and storm warning • No – there is opportunity to use these capabilities toward mitigation activities |

| Technical | Yes/No | <ul style="list-style-type: none"> • Describe capability • Has capability been used to assess/mitigate risk in the past? |
|--|--------|---|
| Hazard data and information | Yes | <ul style="list-style-type: none"> • Partially – Contract as required for THIRA and SPR, HMP, etc. • The Wildland Fire Management Plan is updated every three years • The Parker Indian Health Center updates hazards annually • Yes – on a contracted/departmental-level, project by project basis |
| Grant writing | No | <ul style="list-style-type: none"> • Contracted per project with Dept POC <ul style="list-style-type: none"> ○ The CRIT Controller has a contract administrator, but is seeking a grant writer • Contracted HMPs have guided past efforts |
| HAZUS analysis | No | <ul style="list-style-type: none"> • No - Contract as required |
| Communications Towers | Yes | <ul style="list-style-type: none"> • Riverside County, CA, has placed communications towers on CRIT land to interdict drug/terrorist traffic • Yes, human-caused threats |
| <ul style="list-style-type: none"> • CRIT explore such capabilities as non-subscriber-based alert systems, IPAWS, FirstNet, etc. for future growth in warning. Rural populations, especially elders and economically challenged people can be left out of subscriber-based services. • The Parker Unified School District had verbally offered facility (mass care and shelter), Vehicle (bus), and other support in times of emergency. | | |

Table 23. CRIT Technical Capabilities.

B. Financial Capabilities

44CFR Section 201.7(c)(3)(iv) - “This section shall include...A discussion of the Indian tribal government's pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including: An evaluation of tribal laws, regulations, policies, and programs related to hazard mitigation as well as to development in hazard-prone areas; and a discussion of tribal funding capabilities for hazard mitigation projects.”

44CFR Section 201.7(c)(3)(v) - “The plan shall include...Identification of current and potential sources of Federal, tribal, or private funding to implement mitigation activities.”

The Colorado River Indian Tribes’ greatest restraint is its financial resources. In general, the CRIT has used non-FEMA funds for mitigation-related actions. Current financial sources available to the CRIT for hazard mitigation planning and projects include potential disaster and mitigation funds through FEMA (Public Assistance, HMGP, and PDM funds), programs established through the Self Determination Act (Public Law 93-638), casino revenues, and various departmental operation budgets. Other potential sources of funds may include the U.S. Department of Interior (Bureau of Reclamation, Bureau of Indian Affairs, U.S. Geological Survey, Bureau of Land Management), U.S. Army Corps of Engineers, U.S. Housing and Urban Development, U.S. Department of Health and Human Services (Indian Health Service), and the U.S. Department of Agriculture (U.S. Forest Service, Natural Resources Conservation Service). Once approved and adopted, this plan will form the foundation for requesting these funds. In addition, CRIT intends to seek Tribal Homeland Security Grant Program funds to accomplish other disaster preparedness actions. A summary of financial capabilities is in Table 24.

| Funding Resource | Access / Eligibility Yes/No | <ul style="list-style-type: none"> • Has the funding resource been used in past and for what type of activities? • Could the resource be used to fund future mitigation actions? |
|--|--------------------------------|---|
| Capital improvements project funding | Yes/Yes | <ul style="list-style-type: none"> • Yes – Enterprises fund their own capital improvement and expansion on a project-by-project basis <ul style="list-style-type: none"> ○ New gas stations ○ CRIT Realty for commercial real estate ○ CRIT Farms ○ CRIT Utilities ○ Bluewater Resort/Casino ○ BIA funds own infrastructure projects • Joint Venture has a capital improvement plan to stay abreast of the latest technologies • Yes – funds could be used for mitigation actions |
| Authority to levy taxes for specific purposes | Yes | <ul style="list-style-type: none"> • Yes - taxes support the general fund which is used for CRIT departments • Yes – funds could be used for mitigation actions |
| Fees for water, sewer, gas, or electric services | Yes | <ul style="list-style-type: none"> • Yes - fees support utility maintenance and upgrades <ul style="list-style-type: none"> ○ Utility providers bill customers directly – water, wastewater, solid waste, power • Yes – in accordance with each department’s authority and responsibility |
| Impact fees for new development | No | N/A |
| Storm water utility fee | No | N/A |
| Incur debt through general obligation bonds and/or special tax bonds | No | <ul style="list-style-type: none"> • Considered but not implemented • The BIA does issue binds on some leased farm lands • Yes – funds could be used for mitigation actions |
| Incur debt through private activities | No | N/A |
| Community Development Block Grant | No | N/A |
| Other federal funding programs | Yes | <ul style="list-style-type: none"> • Yes <ul style="list-style-type: none"> ○ DOI <ul style="list-style-type: none"> ▪ BIA – Wildlife and Parks Grant ▪ Bureau of Reclamation ▪ Bureau of Land Management ▪ National Parks Service – funds THPO program |

| Funding Resource | Access / Eligibility Yes/No | <ul style="list-style-type: none"> • Has the funding resource been used in past and for what type of activities? • Could the resource be used to fund future mitigation actions? |
|------------------------|-----------------------------|---|
| | | <ul style="list-style-type: none"> ○ US Housing & Urban Development ○ Indian Health Services ○ US Dept. of Agriculture <ul style="list-style-type: none"> ▪ US Forest Service ▪ Natural Resources Conservation Service ○ Department of Justice – COPs grant • Yes – in accordance with each department’s authority and responsibility |
| State funding programs | Yes | <ul style="list-style-type: none"> • Law Enforcement – occasional grants • Environmental grants in the past • Yes – in accordance with each department’s authority and responsibility |
| Other | Yes | <ul style="list-style-type: none"> • Yes – Gaming Revenue sharing • Yes – can be used per Tribal Council approval |

Table 24. CRIT Financial Capabilities.

C. Capability Summary

The Colorado River Indian Tribes currently has in place several regulatory mechanisms that could be used to mitigate of hazard, with most being directed at new construction and development through adopting and maintaining building codes. Staff resources and/or consultants are available for the identification, development and implementation of mitigation measures with some overlap of expertise in the various categories. Financially, the Tribe applies for Community Development Block Grants, and has the authority to levy taxes for specific purposes and apply for general obligation bonds. However, all of these mechanisms require Tribal Council approval and can be difficult to implement.

Staff resources in several CRIT departments and programs, working under the auspices of the Tribal Council; collectively provide hazard mitigation for the CRIT. The CRIT does hire consultants to conduct the necessary technical studies and analyses to determine both risk and mitigation alternatives.

An evaluation of the capabilities listed in Tables 18 through 24 was performed by the CRIT, and the following mitigation related gaps and opportunities were identified:

- Lack of a CRIT Comprehensive Plan
 - Gap – good, regular coordination between departments is lacking
 - Opportunity - a tribal comprehensive plan could provide foundation for a coordinated development effort
 - Opportunity – development of reservation-wide or Area Land Use plans
- Development of a single, one-stop repository for digital (GIS and CAD) base mapping and hazard profile mapping
 - Gap – there is sufficient GIS capability, but it is uncoordinated (inefficient)
 - Opportunity - a designated GIS coordinator could better support departments in an efficient manner
- Use of multiple funding sources to enhance capabilities
 - Gap – many departments rely solely on CRIT general fund distribution
 - Opportunity – capitalize on FEMA grant opportunities
 - Annual Tribal Homeland Security Grants
 - Annual Pre-Disaster Hazard Mitigation Grants
 - Situational disaster-related Hazard Mitigation Grants
 - Assistance to Firefighter Grants
 - Opportunity – aggressively seek and apply for other grant programs
- Cross-departmental coordination
 - Gap – coordination between departments is ad-hoc and often difficult
 - Opportunity – a standing planning/emergency services committee could facilitate improved coordination between departments on an ongoing basis
 - Opportunity – a Tribal Manager could provide daily oversight and ensure coordination between disparate efforts

Upon receipt of a presidential disaster declaration, CRIT will work with FEMA to develop two post-disaster hazard management tools:

- Public Assistance Administration Plan
- Hazard Mitigation Grant Program Administration Plan

Both plans will be used by CRIT to identify the roles and responsibilities of the Tribes in administering the FEMA Public Assistance (PA) and Hazard Mitigation Grant Programs (HMGP). In addition, the administrative plan(s) outline staffing requirements and the policies and procedures to be used. A result of developing these plans, as well as preparing this Multi-Hazard Mitigation Plan, will be to further focus Tribal resources on the importance of hazard management and mitigation planning.

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D. Goals and Objectives

44CFR Section 201.7(c)(3)(i) - “This section shall include... A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.”

44CFR Section 201.7(c)(3)(ii) - “This section shall include... 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.”

The CRIT community identified the following five goals to reduce or avoid long-term vulnerabilities to the identified hazards. These goals are interdependent and not listed in order of priority:

- **Goal #1:** Promote Sustainable Living
- **Goal #2:** Protect Lives and Property
- **Goal #3:** Increase Public Awareness of Local Hazards
- **Goal #4:** Partnerships and Implementation
- **Goal #5:** Strengthen Emergency Services Capability

Each of the five goals has one or more objectives that support it. Furthermore, each objective has one or more specific actions items to achieve the objective. While some actions may be accomplished immediately, others involve long-term projects that address such slowly developing hazards as the effects due to climate change. The timelines are broadly categorized as short-term, mid-term, and long term:

- Short-term action items are activities which Tribal agencies can implement with existing resources and authorities within one to two years.
- Mid-term action items may require additional resources, such as FEMA grants, to be completed within three to five years.
- Long-term action items may require new or additional resources and/or authorities and may take longer than the required five years to implement.

The following goals, objectives, and actions represent a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with emphasis on new and existing buildings and infrastructure.

1. Goal #1: Promote Sustainable Living

- **Goal Description:** Promote development in a sustainable manner.
- **Objective #1.1:** Incorporate hazard mitigation into long-range planning and development activities
 - **Action 1.1:** Align new CRIT plans to the MHMP - Emergency Operations Plan, Continuity of Operations Plan, etc.
 - **Benefit-Cost:** High benefit / Low cost (focus area of each plan development/update)
- **Objective #1.2:** Promote beneficial use of hazardous areas while expanding open space and recreational opportunities
 - **Action 1.2.1:** Use natural reclamation solutions to recover/stabilize areas.
 - **Benefit-Cost:** High benefit / Moderate Cost
 - **Action 1.2.2:** Control vectors such as mosquitos and ticks in a sustainable manner
 - **Benefit-Cost:** Moderate benefit / Moderate cost
- **Objective #1.3:** Use regulatory approaches to prevent creation of future hazards to life and property
 - **Action 1.3.1:** Develop policies regarding development, sustainable landscaping, etc.
 - **Benefit-Cost:** High benefit / Moderate cost
 - **Action 1.3.2:** Incorporate mitigation actions when building in hazard areas
 - **Benefit-Cost:** High benefit / Moderate cost
 - **Action 1.3.3:** Control land use to minimize human impact as well as livestock impact
 - **Benefit-Cost:** Moderate benefit / moderate cost
 - **Action 1.3.4** Require electrical upgrade during rebuilding/expansion – keep up with best available technology
 - **Benefit-Cost:** High benefit / Moderate cost
 - **Action 1.3.5** Require certified contractors for housing
 - **Benefit-Cost:** High benefit / Moderate cost

2. Goal #2: Protection of Lives and Property

- **Description:** Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to hazards.
- **Objective #2.1:** Advise public about health and safety precautions to protect from injury and loss
 - **Action 2.1.1:** Develop and practice multiple methods of public information and warning:

- Incorporate FEMA or subscription-based warning system using multiple means of communication – landline, cell, email, internet pages, etc.
 - **Benefit-Cost:** High benefit / Low cost
- **Objective #2.2:** Reduce damage to enhance protection of dangerous areas during hazardous events
- **Action:** Harden known vulnerable areas:
- Short Term
 - **Action 2.2.1** Annual monsoon preparation such as clearing out culverts and other drainage
 - **Action 2.2.2** Maintain culverts/drainage along Mojave Road
 - **Action 2.2.3** Annual fire season defensible space debris clearing, including River banks/mesquite thickets/drainage.
 - **Benefit-Cost:** High benefit / Low cost
- Mid-term actions
 - **Action 2.2.4** Improve drainage around such facilities as CRIT Air and Fish and Game
 - **Benefit-Cost:** Moderate benefit / Moderate cost
 - **Action 2.2.5** Install larger culverts in such places as Mojave Road at Tyson Wash
 - **Benefit-Cost:** High benefit / Moderate cost
 - **Action 2.2.6** Develop offsite, survivable storage for critical electronic records as well as physical records and artifacts
 - **Benefit-Cost:** High benefit / Moderate cost
 - **Action 2.2.7** Establish automated electronic backups procedures/external drives
 - **Benefit-Cost:** High benefit / Low cost
 - **Action 2.2.8** Install security systems for physical attack
 - **Benefit-Cost:** High benefit / Moderate cost
- Long-term actions
 - **Action 2.2.9** Build new structures at risk of flood/wind damage considering mitigation measures
 - **Benefit-Cost:** High Benefit / High cost
 - **Action 2.2.10** Build a redundant power distribution node(s) to increase survivability
 - **Benefit-Cost:** High Benefit / High cost
 - **Action 2.2.11** Build microgrids (solar, etc.)
 - **Benefit-Cost:** High Benefit / High cost
 - **Action 2.2.12** Upgrade the power SCADA system
 - **Benefit-Cost:** High Benefit / High cost
- **Objective #2.3:** Protect critical facilities and services
- Short Term

- **Action 2.3.1** Develop / update emergency plans (Emergency Operations Plans, Continuity of Operations Plan, etc.)
 - **Benefit-Cost:** High Benefit / Moderate cost
- **Action 2.3.2** Purchase emergency generators
 - **Benefit-Cost:** High Benefit / Moderate cost
- **Action 2.3.3** Certify as a Red Cross shelter
 - **Benefit-Cost:** High Benefit / Low cost
- **Action 2.3.4** Install smoke detectors throughout tribal buildings.
 - **Benefit-Cost:** High Benefit / Low cost
- **Action 2.3.5** Acquire an airborne surveillance/mapping capability for L.E., Firefighting, Fish & Game
 - **Benefit-Cost:** Moderate Benefit / Moderate cost
- Mid-term actions
 - **Action 2.3.6** New access to critical facilities such as to CRIT Air
 - **Benefit-Cost:** Moderate Benefit / High cost
 - **Action 2.3.7** Establish survivable, redundant communications systems throughout Tribal operations (including the library)
 - **Benefit-Cost:** High Benefit / Moderate cost
 - **Action 2.3.8** Establish a river patrolling and response capability
 - **Benefit-Cost:** Moderate Benefit / Moderate cost
- Long-term actions
 - **Action 2.3.9** Acquire earth moving equipment to prepare and respond – front loaders, backhoes, dozers, truck and trailers
 - **Benefit-Cost:** Moderate Benefit / High cost
 - **Action 2.3.10** Build a 50' x 300' bridge on Mojave Road at Tyson Wash
 - **Benefit-Cost:** Moderate Benefit / High cost
 - **Action 2.3.11** Relocate people/structures in areas of repeat hazard events (Fish and Game, etc.)
 - **Benefit-Cost:** High Benefit / high cost
 - **Action 2.3.12** Build a survivable “archive” facility for protecting network servers, physical records, and artifacts
 - **Benefit-Cost:** High Benefit / high cost

3. **Goal #3: Increase Public Awareness of Local Hazards**

- **Description:** Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to hazards.
- **Objective #3.1:** Increase public awareness and understanding, support, and demand for hazard mitigation.
 - **Action 3.1:** Hold annual public meetings (and publish the results) to update the community on the status of CRIT’s hazard mitigation actions.

- **Benefit-Cost:** Moderate Benefit / Low cost
- **Objective #3.2:** Heighten public awareness of the full range of hazards they may face
 - **Action 3.2:** Engage in FEMA’s semi-annual preparedness month activities (September and April) to move community members from awareness to action.
 - **Benefit-Cost:** Moderate Benefit / Low cost
- **Objective #3.3:** Publicize and encourage the adoption of appropriate hazard mitigation measures.
 - **Action 3.3:** Hold semi-annual community-based hazard mitigation days such as fire safety/defensible space cleanup and monsoon preparation.
 - **Benefit-Cost:** High Benefit / Low cost

4. **Goal #4: Partnerships and Implementation**

- **Description:** Build and support local partnerships to continuously become less vulnerable to hazards. Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, business, and industry
- **Objective #4.1:** Build and support local partnerships with stakeholders in the community
 - **Action 4.1:** Attend and host La Paz County, and City of Parker disaster preparedness events. Invite local partners to CRIT preparedness activities.
 - **Benefit-Cost:** High Benefit / Low Cost
- **Objective #4.2:** Build a team of committed volunteers to safeguard the community before, during, and after a disaster
 - **Action 4.2:** Develop community safety/preparedness teams such as neighborhood “block captains” that lead disaster warning and response – check on neighbors
 - **Benefit-Cost:** Moderate Benefit / Moderate Cost
- **Objective #4.3:** Build hazard mitigation concerns into the Tribal planning and budgeting process
 - **Action 4.3:** Make hazard mitigation concerns standard agenda/document items.
 - **Benefit-Cost:** High Benefit / Medium Cost

5. **Goal #5: Strengthen Emergency Services Capability**

Description: Establish policies and procedures to ensure mitigation projects for critical facilities, services and infrastructure.

a) **Objective #5.1:**

- **Description:** Establish policies and procedures to ensure mitigation projects for critical facilities, services and infrastructure.

- **Objective #5.1:** Provide training to Tribal departments and non-Tribal entities on mitigation programs and techniques that could be incorporated into a variety of projects
 - **Action 5.1.1** Provide and/or schedule FEMA emergency management training (L-583, etc.) for tribal council members
 - **Benefit-Cost:** High Benefit / Low Cost
 - **Action 5.1.2** Provide and/or schedule FEMA emergency management training for tribal employees
 - **Benefit-Cost:** High Benefit / Low Cost
 - **Action 5.1.3** Develop a standing OES Team, including Emergency Operations Center positions
 - **Benefit-Cost:** High Benefit / Low Cost
 - **Action 5.1.4** Acquire airborne, responsive assessment capability (“Reduce escaped properties” & Farm yields, etc.)
 - **Benefit-Cost:** High Benefit / Medium Cost

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E. Action Plan:

44CFR Section 201.7(c)(3)(iii) - “This section shall include... An action plan describing how the actions identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the Indian Tribal government.”

Mitigation actions/projects are those activities identified by a community, that when implemented, will have the effect of reducing the community’s exposure and risk to the particular hazard or hazards being mitigated. As described in Section III D, actions support a wide array goals, from public awareness to the physical strengthening of buildings, drainage, roads, and other infrastructure. Using the results of the vulnerability analysis, the capability assessment, and the goals and objectives, the Planning Team formulated a list of A/Ps for mitigation of the prioritized hazards within CRIT.

Once the full list of A/Ps was completed to the satisfaction of the Planning Team, the team then developed the prioritization as described in “Action Plan Assessment” (E1 below). The action plan first summarizes the CRIT Planning Team’s assessment of each action according to the methodology presented in FEMA’s Local Hazard Mitigation Planning Handbook according to 10 criteria across four action types:

- Local Plans and Regulations
- Structures and Infrastructure Projects
- Natural Systems Protection
- Education and Awareness

In the execution phase, each action will be assigned to a point of contact (POC) who will be responsible for the completion of the action. The action accomplishment will be reviewed at regular Planning Team meetings and reported semi-annually to Tribal leadership. Adjustment to the action plan will be made as required at the major milestones. The status of the actions will be publicly reviewed annually.

1. Action Plan Assessment

Identified Mitigation Actions were prioritized by the CRIT Planning Team and discussed by the Tribal Council during the workshops held on October 8th & 9th, 2018 (Tables 25-28). The Planning Team and Tribal Council deliberately chose not to prioritize the goals because of their interdependencies. However, actions are prioritized in a two-step process. First, they are assessed based on the four action types and 10 criteria listed below. The

total score is then used to place actions in priority groups based on equivalent scores (Table 31 in Section III, E, 2).

The Mitigation Action Evaluation Worksheets below were finalized during these workshops using a ranking system (per FEMA Local Hazard Mitigation Planning Handbook) for each criterion as follows:

1 = Highly effective or feasible

0 = Neutral

-1 = Ineffective or not feasible

Evaluation Criteria were established as:

Life Safety – How effective will the action be at protecting lives and preventing injuries?

Property Protection – How significant will the action be at eliminating or reducing damage to structures and infrastructure?

Technical – Is the mitigation action technically feasible? Is it a long-term solution? Eliminate actions that, from a technical standpoint, will not meet the goals.

Political – Is there overall public support for the mitigation action? Is there the political will to support it?

Legal – Does the community have the authority to implement the action?

Environmental – What are the potential environmental impacts of the action? Will it comply with environmental regulations?

Social – Will the proposed action adversely affect one segment of the population? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower income people?

Administrative – Does the community have the personnel and administrative capabilities to implement the action and maintain it or will outside help be necessary?

Local Champion – Is there a strong advocate for the action or project among local departments and agencies that will support the action's implementation?

Other Community Objectives – Does the action advance other community objectives, such as capital improvements, economic development, environmental quality, or open space preservation? Does it support the policies of the comprehensive plan?

Four categories were established including Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, and Education and Awareness Programs.

a) Local Plans and Regulations

| Mitigation Action | Life Safety | Property Protection | Technical | Political | Legal | Environmental | Social | Administrative | Local Champion | Other Community Objectives | Total Score |
|---|-------------|---------------------|-----------|-----------|-------|---------------|--------|----------------|----------------|----------------------------|-------------|
| Action 1.1: Align updates to CRIT's family of plans to the CRIT MHMP | 1 | 1 | 1 | 0 | 1 | 1 | 1 | -1 | 1 | 0 | 6 |
| Action 1.3.1: Develop policies regarding development, sustainable landscaping, etc. | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 7 |
| Action 1.3.2: Incorporate mitigation actions when building in hazard areas | 1 | 1 | 1 | 0 | 1 | 1 | -1 | -1 | 0 | 1 | 4 |
| Action 1.3.3: Control land use to minimize human impact as well as livestock impact | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 5 |
| Action 1.3.4: Require electrical upgrade during rebuilding/expansion – keep up with best | 1 | 1 | 1 | 0 | 0 | 0 | -1 | 1 | 1 | 0 | 4 |
| Action 1.3.5: Require certified contractors for housing | 1 | 1 | 1 | 0 | 0 | 0 | -1 | 1 | 1 | 0 | 4 |
| Action 2.2.7: Establish automated electronic backup | 0 | 1 | 1 | 0 | 1 | 0 | 1 | -1 | 0 | 1 | 4 |

| Mitigation Action | Life Safety | Property Protection | Technical | Political | Legal | Environmental | Social | Administrative | Local Champion | Other Community Objectives | Total Score |
|---|-------------|---------------------|-----------|-----------|-------|---------------|--------|----------------|----------------|----------------------------|-------------|
| procedures/external drives | | | | | | | | | | | |
| Action 2.3.1: Develop / update emergency plans (Emergency Operations Plans, Continuity of Operations Plan, etc.) | 1 | 1 | 1 | 1 | 1 | 0 | 0 | -1 | 1 | 1 | 6 |
| Action 1.1: Align updates to CRIT's family of plans to the CRIT MHMP | 1 | 1 | 1 | 0 | 1 | 1 | 1 | -1 | 1 | 0 | 6 |

Table 25. Local Plans and Regulations Assessment.

b) Structure and Infrastructure Projects

| Mitigation Action | Life Safety | Property Protection | Technical | Political | Legal | Environmental | Social | Administrative | Local Champion | Other Community Objectives | Total Score |
|--|-------------|---------------------|-----------|-----------|-------|---------------|--------|----------------|----------------|----------------------------|-------------|
| Action 2.2.1: Annual monsoon preparation such as clearing out culverts and other drainage | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 9 |
| Action 2.2.2: Maintain culverts/drainage along Mohave Road | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 9 |
| Action 2.2.4: Improve drainage around such facilities as CRIT Air and Fish and Game | 0 | 1 | 1 | 0 | 0 | 0 | 0 | -1 | 1 | 0 | 2 |
| Action 2.2.5: Install larger culverts in such | 1 | 1 | 0 | 0 | 0 | 1 | 1 | -1 | 1 | 1 | 5 |

| Mitigation Action | Life Safety | Property Protection | Technical | Political | Legal | Environmental | Social | Administrative | Local Champion | Other Community Objectives | Total Score |
|--|-------------|---------------------|-----------|-----------|-------|---------------|--------|----------------|----------------|----------------------------|-------------|
| places as Mohave Road at Tyson Wash | | | | | | | | | | | |
| Action 2.2.6: Develop offsite, survivable storage for critical electronic records as well as physical records and artifacts | 0 | 1 | 1 | 0 | 1 | 0 | 1 | -1 | 1 | 1 | 5 |
| Action 2.2.8: Install security systems for physical attack | 1 | 1 | 0 | 0 | 1 | 0 | 1 | -1 | 1 | 1 | 5 |
| Action 2.2.9: Build new structures at risk of flood/wind damage considering mitigation measures | 1 | 1 | -1 | 0 | 1 | 0 | 0 | -1 | 1 | 0 | 2 |
| Action 2.2.10: Build a redundant power distribution node(s) to increase survivability | 1 | 1 | -1 | 0 | -1 | 0 | 1 | -1 | 1 | 1 | 2 |
| Action 2.2.11: Build microgrids (solar, etc.) | 1 | 1 | -1 | 0 | -1 | -1 | 1 | -1 | 1 | 1 | 1 |
| Action 2.2.12: Upgrade the power SCADA system | 1 | 1 | 0 | 0 | -1 | 0 | 1 | -1 | 1 | 1 | 3 |
| Action 2.3.2: Purchase emergency generators | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 8 |
| Action 2.3.3: Re-certify as a Red Cross shelter | 1 | 0 | 0 | 0 | 0 | 0 | 1 | -1 | 0 | 1 | 2 |
| Action 2.3.4: Install smoke detectors | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 7 |

| Mitigation Action | Life Safety | Property Protection | Technical | Political | Legal | Environmental | Social | Administrative | Local Champion | Other Community Objectives | Total Score |
|--|-------------|---------------------|-----------|-----------|-------|---------------|--------|----------------|----------------|----------------------------|-------------|
| throughout tribal buildings. | | | | | | | | | | | |
| Action 2.3.5: Acquire a drone capability for L.E., Firefighting, Fish & Game | 1 | 1 | -1 | 0 | 0 | 1 | 1 | -1 | 1 | 1 | 4 |
| Action 2.3.6: New access to critical facilities such as to CRIT Air | 1 | 1 | -1 | 0 | -1 | 0 | 0 | -1 | 1 | 0 | 0 |
| Action 2.3.7: Establish survivable, redundant communications systems throughout Tribal operations (including the library) | 1 | 1 | -1 | 0 | 1 | 0 | 1 | -1 | 1 | 1 | 4 |
| Action 2.3.8: Establish a river patrolling and response capability | 1 | 1 | -1 | 0 | 0 | 1 | 0 | -1 | 1 | 1 | 3 |
| Action 2.3.9: Acquire earth moving equipment to prepare and respond – front loaders, backhoes, dozers, truck and trailers | 1 | 1 | -1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 5 |
| Action 2.3.10: Build a 50' x 300' bridge on Mohave Road at Tyson Wash | 1 | 1 | -1 | 0 | -1 | 1 | 1 | -1 | 1 | 1 | 3 |
| Action 2.3.11: Relocate people/structures in areas of repeat hazard events (Fish and Game, etc.) | 1 | 1 | -1 | 0 | -1 | 0 | -1 | 1 | 0 | 0 | 0 |

| Mitigation Action | Life Safety | Property Protection | Technical | Political | Legal | Environmental | Social | Administrative | Local Champion | Other Community Objectives | Total Score |
|---|-------------|---------------------|-----------|-----------|-------|---------------|--------|----------------|----------------|----------------------------|-------------|
| Action 2.3.12: Build a survivable “archive” facility for protecting network servers, physical records, and artifacts | 0 | 1 | -1 | 0 | 1 | 0 | 1 | -1 | 1 | 1 | 3 |
| Action 5.1.4: Acquire airborne, responsive assessment capability (“Reduce escaped properties” & Farm yields, etc.) | 0 | 1 | -1 | 1 | 1 | 1 | 0 | -1 | 0 | 1 | 3 |

Table 26. Structure and Infrastructure Projects Assessment.

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c) Natural Systems Protection

| Mitigation Action | Life Safety | Property Protection | Technical | Political | Legal | Environmental | Social | Administrative | Local Champion | Other Community Objectives | Total Score |
|---|-------------|---------------------|-----------|-----------|-------|---------------|--------|----------------|----------------|----------------------------|-------------|
| Action 1.2.1: Use natural reclamation solutions to recover/stabilize areas | 0 | 1 | -1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 3 |
| Action 1.2.2: Control vectors such as mosquitos and ticks in a sustainable manner | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 8 |
| Action 2.2.3: Annual fire season defensible space debris clearing, including River banks/mesquite thickets/drainage. | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 8 |

Table 27. Natural Systems Protection Assessment.

d) *Education and Awareness Programs*

| Mitigation Action | Life Safety | Property Protection | Technical | Political | Legal | Environmental | Social | Administrative | Local Champion | Other Community Objectives | Total Score |
|--|-------------|---------------------|-----------|-----------|-------|---------------|--------|----------------|----------------|----------------------------|-------------|
| Action 2.1.1: Incorporate FEMA or subscription-based warning system using multiple means of communication – landline, cell, email, internet pages, etc. | 1 | 1 | 0 | 0 | 1 | 0 | 1 | -1 | 1 | 1 | 5 |
| Action 3.1: Hold annual public meetings (and publish the results) to update the community on the status of CRIT’s hazard mitigation actions. | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 8 |
| Action 3.2: Engage in FEMA’s semi-annual preparedness month activities (September and April) to move community members from awareness to action. | 1 | 1 | 1 | 0 | 1 | 0 | 1 | -1 | 1 | 1 | 6 |
| Action 3.3: Hold semi-annual community-based hazard mitigation days such as fire defensible space cleanup and winter storm preparation. | 1 | 1 | 1 | 0 | 1 | 0 | 1 | -1 | 1 | 1 | 6 |
| Action 4.1: Attend and host La Paz County, City of Parker, La Paz | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 7 |

| Mitigation Action | Life Safety | Property Protection | Technical | Political | Legal | Environmental | Social | Administrative | Local Champion | Other Community Objectives | Total Score |
|---|-------------|---------------------|-----------|-----------|-------|---------------|--------|----------------|----------------|----------------------------|-------------|
| regional Hospital, disaster preparedness events. Invite local partners to CRIT preparedness activities. | | | | | | | | | | | |
| Action 4.3: Develop community safety/preparedness teams such as neighborhood “block captains” that lead disaster warning and response – check on neighbors | 1 | 1 | 0 | 0 | 1 | 0 | 1 | -1 | 0 | 1 | 4 |
| Action 5.1.1: Provide and/or schedule FEMA emergency management training (L-583, etc.) for tribal council members. | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 6 |
| Action 5.1.2: Provide and/or schedule FEMA emergency management training for tribal employees | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 6 |
| Action 5.1.3: Develop a standing OES Team, including Emergency Operations Center positions | 1 | 1 | -1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 4 |

Table 28. Education and Awareness Programs Assessment.

2. Action Plan Implementation

44CFR Section 201.7(c)(3)(iii) - “This section shall include... An action plan describing how the actions identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the Indian Tribal government.”

44CFR Section 201.7(c)(4)(ii) - “The plan shall include...A plan maintenance process that includes...A process by which the Indian tribal government incorporates the requirements of the mitigation plan into other planning mechanisms such as reservation master plans or capital improvement plans, when appropriate.”

44CFR Section 201.7(c)(4)(v) - “The plan shall include...A plan maintenance process that includes...A system for reviewing progress on achieving goals as well as activities and projects identified in the mitigation strategy.”

Current pre- and post-disaster hazard management is accomplished through several CRIT departments with assistance from some federal agencies. Table 29 summarizes some of the CRIT departments and programs involved in either pre- or post-disaster hazard management.

| Department or Agency | Hazard Management Activities |
|---|---|
| Tribal Council | <ul style="list-style-type: none"> • Ultimate authority for all CRIT hazard management and mitigation activities and funding |
| CRIT Wildland Fire | <ul style="list-style-type: none"> • Fire suppression, mitigation and management of wildland areas. |
| CRIT Homeland Security Coordinator | <ul style="list-style-type: none"> • Incident Management and resource coordination • Emergency response • Hazard mitigation planning • Management and update responsibility for the Tribal Emergency Response Plan |
| CRIT Fire Department | <ul style="list-style-type: none"> • Provides protection for the life and property of the tribal members and visitors of the CRIT from the adverse effects of fire, medical emergencies, hazardous materials, or exposure to dangerous conditions created either by nature or man • Emergency response to structural fire. • Fire Prevention |
| CRIT Police Department | <ul style="list-style-type: none"> • Provides protection for the life and property of the inhabitants and visitors of the through law enforcement of tribal, state and federal laws/ordinances • Emergency response • Community policing/prevention |

| | |
|---|---|
| CRIT Environmental Protection Office | <ul style="list-style-type: none"> • Manages and regulates the storage, collection, and disposal of solid waste and certain hazardous waste on the CRIT • Actively investigates and sites (when applicable) after environment incidents such as releases or spills occur • Subject matter resource for emergency response • Environmental awareness and prevention programs |
| CRIT Office of Building and Safety | <ul style="list-style-type: none"> • Establishes and implements codes pertaining to land use, building and site development • Development Review and Design Technical Assistance • Mapping & Geographic Information Systems support and development • Responsible for identifying emergency housing repairs |
| CRIT Department of Health and Human Services | <ul style="list-style-type: none"> • Case management • Assisting in shelter and mass care • Public information and warning • Behavioral health services |
| Indian Health Services | <ul style="list-style-type: none"> • Hospital and emergency medical services |
| CRIT Water and Power | <ul style="list-style-type: none"> • Maintains all water, electric, facilities for the CRIT |
| Realty Office | <ul style="list-style-type: none"> • Assistance with right-of-way and land leases |

Table 30. Departmental Hazard Mitigation Responsibilities.

Based on the assessment in Section III, E, 1, the actions were sorted by total score to place them in priority groups. Since the Planning Team and Tribal Council deliberately chose not to prioritize goals, the second level of sort is in simple, ascending numerical order. The Departments of Responsibility identified in Table 30 will work with the Planning Team (and Tribal Council as needed) to make the final schedule for action implementation.

The Planning Team will oversee the implementation of actions and report progress to the Tribal Council semi-annually, and the Tribal members annually as a minimum. Actual implementation of the actions will be the responsibility of assigned departments. The respective Departments of Responsibility / Points of Contact (POC) will use the Mitigation Action Implementation Worksheets in Appendix C to manage the actions, report the progress, and close out the actions. Table 31 is an estimated implementation plan (depending on circumstances and Tribal resources) based on the following factors:

- Priority Group – actions with the same assessment score are grouped together
- Department of Responsibility – the department/group responsible for the action
 - Note: many action items would have an emergency manager as the POC should one be hired

- Action type – based on the FEMA-defined groupings for the action assessment
- Time frame – short, mid, or long term based on the objectives
- Estimated start – the earliest estimated start time depending on Tribal resources
- Estimated completion – the earliest estimated completion time, or time interval

| Pri. Grp. | Mitigation Action | Department of Responsibility | Action Type | Time Frame | Estimated Start | Estimated Completion |
|------------------|---|--|----------------------------|-------------------|------------------------|-----------------------------|
| 1 | Action 2.2.1: Annual monsoon preparation such as clearing out culverts and other drainage | Maintenance, EPO, BIA Roads | Structure & Infrastructure | Short-term | 2019 Q3 | Annual |
| 1 | Action 2.2.2: Maintain culverts/drainage along Mohave Road | Maintenance, EPO, BIA Roads | Structure & Infrastructure | Short-term | 2019 Q3 | Annual |
| 2 | Action 1.2.2: Control vectors such as mosquitos and ticks in a sustainable manner | Environmental | Natural Systems Protection | Short-term | 2021 Q1 | Ongoing |
| 2 | Action 2.2.3: Annual fire season defensible space debris clearing, including River banks/mesquite thickets/drainage. | Wildland Fire, CRIT Fire, EPO, Maintenance | Natural Systems Protection | Short-term | 2019 Q2 | Annual |
| 2 | Action 2.3.2: Purchase emergency generators | Maintenance, Homeland Security Coordinator | Structure & Infrastructure | Short-term | 2020 Q1 | 2020 Q2 |
| 2 | Action 3.1: Hold annual public meetings (and publish the results) to update the community on the status of CRIT's hazard mitigation actions. | Planning Team | Education & Awareness | Short-term | 2019 Q2 | Annual |
| 3 | Action 1.3.1: Develop policies regarding development, sustainable landscaping, etc. | Environmental Protection Office, Wildland Fire, CRIT Fire CRIT Farms | Plans & Regulations | Mid-term | 2019 Q2 | 2020 Q2 |
| 3 | Action 2.3.4: Install smoke detectors throughout tribal buildings. | Maintenance Planning Team | Structure & Infrastructure | Short-term | 2020 Q1 | 2020 Q2 |
| 3 | Action 4.1: Attend and host La Paz County, and City of Parker disaster preparedness events. Invite local partners to CRIT preparedness activities. | Maintenance, Homeland Security Coordinator | Education & Awareness | Short-term | 2019 Q1 | Ongoing |
| 4 | Action 1.1: Align updates to CRIT's family of plans to the CRIT MHMP | Panning Team, Homeland Security Coordinator | Plans & Regulations | Short-term | 2019 Q4 | Ongoing |

| Pri. Grp. | Mitigation Action | Department of Responsibility | Action Type | Time Frame | Estimated Start | Estimated Completion |
|------------------|--|--|----------------------------|-------------------|------------------------|-----------------------------|
| 4 | Action 2.3.1: Develop / update emergency plans (Emergency Operations Plans, Continuity of Operations Plan, etc.) | Planning Team, Homeland Security Coordinator | Plans & Regulations | Short-term | As required | Ongoing |
| 4 | Action 3.2: Engage in FEMA's semi-annual preparedness month activities (September and April) to move community members from awareness to action. | Planning Team, Homeland Security Coordinator | Education & Awareness | Short-term | 2019 Q2 | Semi-annually |
| 4 | Action 3.3: Hold semi-annual community-based hazard mitigation days such as fire defensible space cleanup and winter storm preparation. | Planning Team, Homeland Security Coordinator | Education & Awareness | Short-term | 2019 Q2 | Semi-annually |
| 4 | Action 5.1.1: Provide and/or schedule FEMA emergency management training (L-583, etc.) for tribal council members. | Planning Team, Homeland Security Coordinator | Education & Awareness | Short-term | 2019 Q2 | Ongoing |
| 4 | Action 5.1.2: Provide and/or schedule FEMA emergency management training for tribal employees | Planning Team, Homeland Security Coordinator | Education & Awareness | Short-term | 2019 Q3 | Ongoing |
| 5 | Action 1.3.3: Control land use to minimize human impact as well as livestock impact | CRIT Farms, CRIT Realty | Plans & Regulations | Short-term | 2019 Q4 | Ongoing |
| 5 | Action 2.1.1: Incorporate FEMA or subscription-based warning system using multiple means of communication – landline, cell, email, internet pages, etc. | CRIT PD | Education & Awareness | Short-term | 2019 Q1 | 2019 Q4 |
| 5 | Action 2.2.5: Install larger culverts in such places as Mohave Road at Tyson Wash | BIA Roads | Structure & Infrastructure | Mid-term | 2020 Q1 | 2022 Q4 |
| 5 | Action 2.2.6: Develop offsite, survivable storage for critical electronic records as well as physical records and artifacts | Homeland Security Coordinator, Historic Preservation Officer | Structure & Infrastructure | Mid-term | 2020 Q2 | 2022 Q4 |
| 5 | Action 2.2.8: Install security systems for physical attack | CRIT PD, Homeland Security Coordinator | Structure & Infrastructure | Mid-term | 2020 Q1 | 2023 Q4 |

| Pri. Grp. | Mitigation Action | Department of Responsibility | Action Type | Time Frame | Estimated Start | Estimated Completion |
|------------------|---|--|----------------------------|-------------------|------------------------|-----------------------------|
| 5 | Action 2.3.9: Acquire earth moving equipment to prepare and respond – front loaders, backhoes, dozers, truck and trailers | Wildland Fire | Structure & Infrastructure | Long-term | 2021 Q1 | 2024 Q4 |
| 5 | Action 4.3: Build hazard mitigation concerns into the Tribal planning and budgeting process | Planning Team Controller | Plans & Regulations | Short-term | 2019 Q4 | Ongoing |
| 6 | Action 1.3.2: Incorporate mitigation actions when building in hazard areas | CRIT Realty | Plans & Regulations | Mid-term | 2020 Q2 | Ongoing |
| 6 | Action 1.3.5: Require certified contractors for housing | Maintenance | Plans & Regulations | Mid-term | 2020 Q1 | Ongoing |
| 6 | Action 2.2.7: Establish automated electronic backups procedures/external drives | Planning Team, Homeland Security Coordinator | Plans & Regulations | Mid-term | 2020 Q1 | Ongoing |
| 6 | Action 2.3.5: Acquire a drone capability for L.E., Firefighting, Fish & Game | CRIT Police Dept., CRIT Fish & Game | Structure & Infrastructure | Short-term | 2020 Q2 | 2022 Q4 |
| 6 | Action 2.3.7: Establish survivable, redundant communications systems throughout Tribal operations (including the library) | Planning Team, Homeland Security Officer | Structure & Infrastructure | Long-term | 2023 Q1 | 2024 Q4 |
| 6 | Action 4.3: Develop community safety/preparedness teams such as neighborhood “block captains” that lead disaster warning and response – check on neighbors | Homeland Security Coordinator | Education & Awareness | Mid-term | 2020 Q3 | Ongoing |
| 6 | Action 5.1.3: Develop a standing OES Team, including Emergency Operations Center positions | Planning Team | Education & Awareness | Short-term | 2019 Q4 | Ongoing |
| 7 | Action 1.2.1: Use natural reclamation solutions to recover/stabilize areas | Environmental Protection Office | Natural Systems Protection | Mid-term | 2020 Q1 | Ongoing |
| 7 | Action 1.3.4: Require electrical upgrade during rebuilding/expansion – keep up with best | Maintenance | Plans & Regulations | Mid-term | 2020 Q2 | Ongoing |
| 7 | Action 2.2.12: Upgrade the power SCADA system | BIA Power | Structure & Infrastructure | Long-term | 2021 Q1 | 2024 Q4 |
| 7 | Action 2.3.8: Establish a river patrolling and response capability | CRIT Fish & Game | Structure & Infrastructure | Mid-term | 2020 Q1 | 2020 Q4 |

| Pri. Grp. | Mitigation Action | Department of Responsibility | Action Type | Time Frame | Estimated Start | Estimated Completion |
|------------------|---|--|----------------------------|-------------------|------------------------|-----------------------------|
| 7 | Action 2.3.10: Build a 50' x 300' bridge on Mohave Road at Tyson Wash | BIA Roads | Structure & Infrastructure | Long-term | 2021 Q1 | 2024 Q4 |
| 7 | Action 2.3.12: Build a survivable “archive” facility for protecting network servers, physical records, and artifacts | Planning Team, CRIT Realty, Maintenance | Structure & Infrastructure | Long-term | 2022 Q1 | 2025 Q4 |
| 7 | Action 5.1.4: Acquire airborne, responsive assessment capability (“Reduce escaped properties”) | CRIT PD, CRIT Fish & Game, Wildland Fire | Structure & Infrastructure | Mid-term | 2020 Q1 | 2020 Q4 |
| 8 | Action 2.2.4: Improve drainage around such facilities as CRIT Air and Fish and Game | Maintenance | Structure & Infrastructure | Mid-term | 2020 Q2 | 2020 Q3 |
| 8 | Action 2.2.9: Build new structures at risk of flood/wind damage considering mitigation measures | CRIT Realty Maintenance | Structure & Infrastructure | Long-term | 2021 Q1 | Ongoing |
| 8 | Action 2.2.10: Build a redundant power distribution node(s) to increase survivability | BIA Power | Structure & Infrastructure | Long-term | 2024 Q1 | 2027 Q4 |
| 8 | Action 2.3.3: Re-certify as a Red Cross shelter | Homeland Security Coordinator, Maintenance | Structure & Infrastructure | Short-term | 2019 Q2 | 2020 Q2 |
| 9 | Action 2.2.11: Build microgrids (solar, etc.) | BIA Power | Structure & Infrastructure | Long-term | 2024 Q1 | 2027 Q4 |
| 10 | Action 2.3.6: New access to critical facilities such as to CRIT Air | BIA Roads | Structure & Infrastructure | Mid-term | 2022 Q1 | 2022 Q4 |
| 10 | Action 2.3.11: Relocate people/structures in areas of repeat hazard events (Fish and Game, etc.) | CRIT Realty | Structure & Infrastructure | Long-term | 2024 Q1 | Ongoing |

Table 31. CRIT Action Implementation Plan.

3. Incorporation of the Hazard Mitigation Plan into other Planning Mechanisms

44CFR Section 201.7(c)(4)(iii) - “The plan shall include the following...A plan maintenance process that includes...A process by which the Indian tribal government incorporates the requirements of the mitigation plan into other planning mechanisms such as reservation master plans or capital improvement plans, when appropriate.”

CRIT takes a holistic approach to integrating hazard mitigation into other planning mechanisms as is evident in Goal #1 (repeated here):

Goal #1: Promote Sustainable Living

- **Objective #1.1:** Incorporate hazard mitigation into long-range planning and development activities
 - **Action 1.1:** Align new CRIT plans to the MHMP - Emergency Operations Plan, Continuity of Operations Plan, etc.
 - **Benefit-Cost:** High benefit / Low cost (focus area of each plan development/update)

The execution of Action 1.1 per the implementation plan in Table 31, Section III, E, 2 outlines the Planning Team as having responsibility for this action and estimates a time frame for when this action might be addressed. This is the overall concept for how CRIT will incorporate hazard mitigation into other planning mechanisms.

The effort to achieve the objective to, “Incorporate hazard mitigation into long-range planning and development activities” has begun with this TRMHMP update with capability assessments:

- Tables 18-20 in Section III, A, 1 contains a Planning and Regulatory Assessment that identifies plans that can be used to implement mitigation actions
- Table 23 in Section III, A, 2 contains a Technical Capability Assessment that identifies when the technical capabilities have been used in the past to assess/mitigate risks
- Table 24 in Section III, B contains a Financial Capability Assessment that identifies funding sources that could be used to fund future mitigation actions
- Table 27 (below) contains an Education and Outreach Capability Assessment that identifies programs that could be used to implement mitigation activities.

As part of the MHMP maintenance strategy, the Planning Team will meet regularly to ensure hazard mitigation is integrated into its future planning activities. The tribes will

work to incorporate, where applicable, this MHMP into the planning and regulatory mechanisms identified previously identified as well as others as appropriate.

Throughout the MHMP maintenance cycle, the hazard mitigation goals and actions will, as appropriate, be referenced or included in the general operations of the Tribes. The Tribes will work with other agencies to identify opportunities as outlined below:

- Update work plans, policies, or procedures to include hazard mitigation concepts;
- Establish mitigation funding into operational and other types of Tribal budgets;
- Issue plans, policies, regulations, or other directives to carry out mitigation actions;
- Add hazard mitigation elements to redevelopment plans.

The MHMP will function as a stand-alone document subject to its own review and update schedule and will serve as a reference for other mitigation planning needs of the Tribes. Whenever possible, the Tribes will endeavor to incorporate mitigation actions and projects identified in the MHMP into existing Tribes' planning mechanisms, as they become available, including but not limited to:

- Development of future land-use plans;
- Future programming of capital improvement projects.

4. *Continued Member and Stakeholder Outreach/Involvement*

The Tribes is committed to keeping the public and stakeholders informed about hazards and mitigation planning efforts, actions and projects. For the Tribes, one of the most effective ways to engage the public and stakeholders and disseminate information is through the Tribal Council.

The Homeland Security Coordinator shall ensure the Tribal Council leaders, public and stakeholders are kept current MHMP updates and are provided the opportunity to participate in the update process to the appropriate degree. The Plan's annual review and evaluation will be announced to the local media through a variety of outlets.

In order to continually engage the public and stakeholders, the Tribes shall pursue the following opportunities whenever possible and appropriate, but not limited to:

- Present an annual report summarizing the MHMP evaluation and mitigation action progress to the Tribal Council

- Participate in the La Paz County Fair, Community Awareness Nights and/or health fairs to provide awareness of hazards and the mitigation planning effort
- Provide a copy of the MHMP to the community library for public review
- Post the MHMP on the community website

a) Education and Outreach Capabilities

This plan has several specific education and awareness actions going forward to support outreach. The CRIT will incorporate the requirements of the mitigation plan into other planning mechanisms, when appropriate, including the following capabilities:

| Program/Organization | Yes/No | <ul style="list-style-type: none"> • Describe program/organization and how relates to disaster resilience and mitigation. • Could the program/organization help implement future mitigation activities? |
|--|---------------|--|
| Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. | No | <ul style="list-style-type: none"> • No current programs • Yes - Action 4.3 is, “Develop community safety/preparedness teams such as neighborhood “block captains” that lead disaster warning and response – check on neighbors.” Actions such as this could be used as a basis for outreach. |
| Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education) | Yes | <ul style="list-style-type: none"> • Monthly correspondence with Tribal Members <ul style="list-style-type: none"> ○ Manataba Messenger in print version ○ Manataba Messenger electronic version ○ CRIT.gov website ○ CRIT Facebook pages (7) ○ Community Council • Annual/semi-annual/special event outreach <ul style="list-style-type: none"> ○ Special books/assignments ○ Flyers ○ Local Radio broadcast ○ Local Cable TV ○ Earth Day activities ○ Bike Rodeo ○ Parker Indian Health Center ongoing programs ○ Movie with a Cop ○ Pizza with a Cop ○ Fire prevention – Smokey the Bear, etc. ○ CRIT Fair Expo • Yes – these could be used for mitigation actions |
| Natural disaster or safety related school programs | Yes | <ul style="list-style-type: none"> • School Resource Officers • Senior drunk driving exercise |

| Program/Organization | Yes/No | <ul style="list-style-type: none"> • Describe program/organization and how relates to disaster resilience and mitigation. • Could the program/organization help implement future mitigation activities? |
|--|---------------|---|
| | | <ul style="list-style-type: none"> • Water/wastewater/solid waste demonstrations • Yes – these could be used for mitigation action |
| StormReady certification | No | <ul style="list-style-type: none"> • No current program • Yes – this could be used to complete mitigation actions |
| Firewise Communities certification | No | <ul style="list-style-type: none"> • No current program • Yes – this could be used to complete mitigation actions |
| Public-private partnership initiatives addressing disaster-related issues | No | <ul style="list-style-type: none"> • Local Radio broadcast • Local Cable TV |

Table 32. CRIT Education and Outreach Capabilities.

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Progress Review

44CFR Section 201.7(c)(4)(ii) - “The plan shall include...A plan maintenance process that includes...A process by which the Indian tribal government incorporates the requirements of the mitigation plan into other planning mechanisms such as reservation master plans or capital improvement plans, when appropriate.”

44CFR Section 201.7(c)(4)(v) - “The plan shall include...A plan maintenance process that includes...A system for reviewing progress on achieving goals as well as activities and projects identified in the mitigation strategy.”

The Colorado River Indian Tribes intends to proactively manage implementation of the actions as it strives to reach its goals and objectives. At the macro level, Action 3.1 involves annual, public meetings to update the community on the status of the MHMP actions. In addition, Action 5.1.3 is, “Develop a standing OES Team, including Emergency Operations Center positions.” The Planning Team and Homeland Security Coordinator would eventually be responsible for tracking the implementation of mitigation activities, including monitoring implementation of mitigation measures and project closeouts. The tracking system will include a schedule, identify the tribal department/office responsible for coordination, describe the role of the agencies/offices identified in the mitigation strategy and include project closeout procedures.

While Table 31 in Section III, E, 2 has the detailed schedule for implementing the actions, the most significant recurring milestones for reviewing the implementation of the MHMP is in Table 33.

| Plan Monitoring | Point of Contact | Timeline |
|---|---|--|
| Planning Team action item accomplishment review | The respective POC responsible for each action item | Monthly Planning Team meetings |
| Tribal Council action item accomplishment report | Planning Team | Semi-annual Tribal Council progress report |
| Public action item accomplishment review | Planning Team | Annual public progress report |
| Ad hoc plan updates | Planning Team | As required to ensure the plan is relevant |
| FEMA-required five-year update | Planning Team | Every five years |

Table 33. Plan Monitoring, Evaluating, and Updating Schedule.

The roles of the various departments and a macro-level monitoring schedule are in Table 34. The worksheet in Appendix C will be used by the respective POCs to manage and report on the completion and closeout of their actions.

| Department/ Office | Mitigation Responsibility | Activity |
|--------------------------------------|---|--|
| Tribal Council | Overall Tribal authority | Approve activities as required by Tribal laws and policies |
| Community Council | Monitor actions | <ul style="list-style-type: none"> • Provide a vehicle for the Planning Team to deliver its semi-annual progress updates • Provide a forum for direct community feedback |
| Homeland Security Coordinator | Planning Team coordination | <ul style="list-style-type: none"> • Provide guidance to the Planning Team • Chair Planning Team meetings |
| Planning Team | Mitigation action coordination | <ul style="list-style-type: none"> • Monitor, track, coordinate, and make recommendations on TRMHMP / action updates • Hold monthly coordination |
| Assigned Departments | Support action Points of Contact in complement assigned actions | <ul style="list-style-type: none"> • Implement assigned actions and report on their progress through closeout • Report on the action implementation progress to the Planning Team • Support actions according to day-to-day responsibilities – finance, facilities, operations, housing, etc. |
| Action Points of Contact | Implement assigned actions | <ul style="list-style-type: none"> • Implement assigned actions • Track the progress of the action implementation via the worksheet in Appendix C • Report on the action implementation progress through their respective departments to the Planning Team |

Table 34. Roles and Responsibilities for Hazard Mitigation Action Implementation.

IV. PLAN UPDATES



A. Development in Hazard Prone Areas

44CFR Section 201.7(d)(3) - Indian tribal governments must review and revise their plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within 5 years in order to continue to be eligible for non-emergency Stafford Act assistance and FEMA mitigation grant funding, with the exception of the Repetitive Flood Claims program.”

CRIT has had little new development in hazard prone areas since the last update.

Extreme Heat – The Planning Team and community rated extreme heat as the worst most likely natural hazard. Not only is extreme heat a historical hazard, climate change is making it worse every year. In particular, power outages are not uncommon during the extreme heat events, leading to potentially fatal conditions especially for the young, elderly, and people with disabilities and others with access and functional needs. While there is some redundant power capability, even facilities such as the Parker Indian Health Center are forced to close during a power failure in extreme heat due to insufficient capacity. Since the Tribes cannot relocate from this “hazard zone,” other mitigation actions must be taken such as minimizing power interruption and reinstating the gymnasium as a mass care shelter.

Severe Winds – Similar to extreme heat, severe winds are a seasonal hazard that is increasing over time with the increasing severity of storms. Again, while the Tribes cannot relocate outside of the “hazard zone,” enhanced building codes and techniques can mitigate the effects of the high winds.

Wildfires – Due to climate change and other factors catastrophic Wildfires in the West are increasing in intensity and frequency. The Colorado River Indian Tribes can mitigate the effects of wildfire through preventative measures such as maintaining defensible space and good management of wildlands.

Flash Flood Zones – especially Mohave Road at Tyson Wash. Seasonal severe storms create a number of hazards – severe winds, flash floods, lightning, etc. Flash floods cutoff travel along many roads, one of the worst places is Mohave Road at Tyson Wash. Building a bridge over Tyson Wash was an action in the previous CRIT MHMP and is again an action in this plan - Action 2.3.10: Build a 50' x 300' bridge on Mohave Road at Tyson

Wash. While the BIA has responsibility for the road and has conducted plans for it, they have not yet acquired the funding for the project.

Riverine (Colorado River) Flooding. Developments along both sides of the Colorado River lie within flood zones for both natural flooding and dam failure (technical hazard). The Bureau of Reclamation has worked to mitigate the flooding hazard with such efforts as removing sand bars from past flooding events, the flood hazard remains. Future development will be in consideration of hazard mitigation actions.

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B. Progress in Tribal Mitigation Efforts

44CFR Section 201.7(d)(3) – “Indian tribal governments must review and revise their plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within 5 years in order to continue to be eligible for non-emergency Stafford Act assistance and FEMA mitigation grant funding, with the exception of the Repetitive Flood Claims program.”

The Colorado River Indian Tribes is endeavoring in this mitigation plan update to create more precise action items than were contained in the last MHMP. The following section describes the status of previous action items.

1. Action #1. Design and construct culvert improvements to improve capacity and prevent flooding and washouts of road surface of Mohave Road at Tyson Wash.

a) Regular culvert/drainage preventive maintenance

Status – This is an ongoing action that both the BIA and CRIT support to minimize the impact of flash floods. However, many roads continue to flood during storms, especially Mohave Road at Tyson Wash.

b) Build a 50' X 300' bridge

Status – The BIA has the lead on this project and has designs and cost estimates. However, a lack of funding has prevented completion of the project.

2. Action #2. River banks/mesquite thickets/drainage

Status – This is an ongoing program that involves fire breaks, controlled burns, and brush thinning to limit the spread of wildfire and to minimize damage and protect the supply of mesquite wood for ceremonial purposes and protect structures. NOTE: Mesquite wood is used for the Mohave Tribal Cremation Ceremony.

3. Action #3. Building code enforcement

Status - this action is ongoing. The greatest challenge is enforcing new codes to legacy tenants. The focus is on enforcement with major repairs / additions.

C. Integration of the Hazard Mitigation Plan with other Planning Mechanisms

44 CFR Section 201.7(c)(4)(iii) – “The plan shall include the following...A plan maintenance process that includes... A process by which the Indian tribal government incorporates the requirements of the mitigation plan into other planning mechanisms such as reservation master plans or capital improvement plans, when appropriate.”

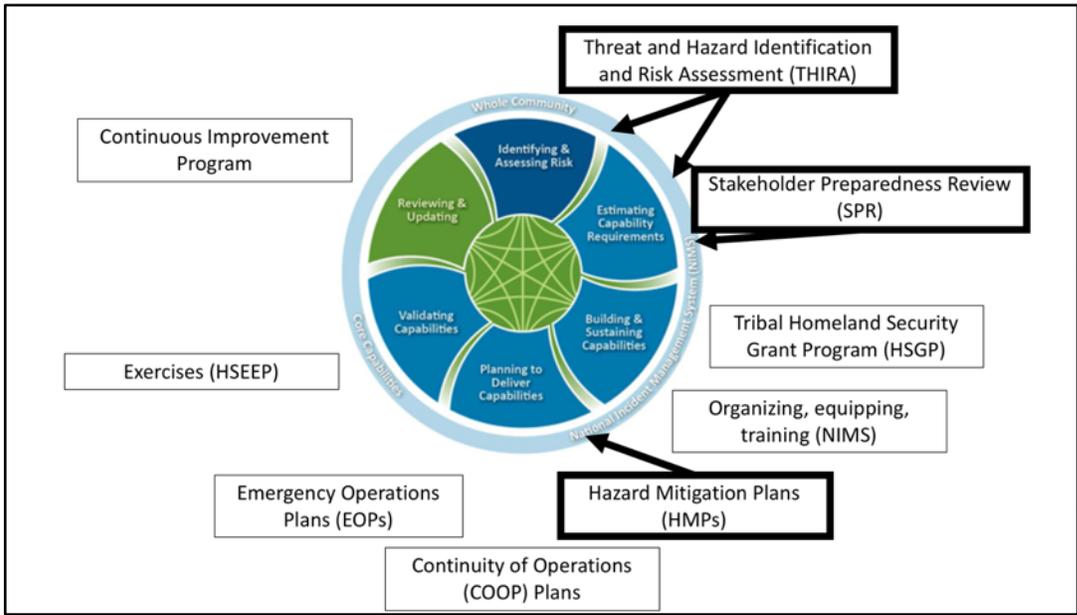


Figure 50. National Preparedness System.

1. National Preparedness System Framework

The development of this MHMP, in conjunction with CRIT’s 2018 Threat and Hazard Identification and Risk Assessment (THIRA) and Stakeholder Preparedness Review (SPR), represent a new effort in integrating the MHMP with other planning mechanisms. The Colorado River Indian Tribes has adopted FEMA’s National Preparedness System (NPS) as a framework for expanding its emergency management program (Figure 50). After linking MHMP risks and capabilities with its THIRA and SPR respectively, CRIT will follow up with developing an Emergency Operations Plan (EOP) as well as a Continuity of Operations (COOP) Plan using those same risks and capabilities. Future NPS elements such as “Building and Sustaining Capabilities” grant applications are

enabled through the THIRA/SPR and MHMP work. Exercise will follow in “Validating Capabilities,” and the NPS cycle will begin again after “Reviewing and Updating.”

2. *Environmental Protection Office*

Some EPA funds can also be dual-use and support mitigation activities. For example, the Environmental Department sustains a GIS capability and drone operations. In addition, the Environmental Protection Office has used natural means to control storm runoff, lessening the amount of erosion. The Office also uses its capabilities with many mitigation-related efforts such as wildfire fuels control, HAZMAT cleanup, etc.

3. *CRIT Fish & Game Department*

In carrying out its duties in wildlife management, the CRIT Fish & Game Department is a valuable resource in identifying hazards and assisting with the preservation of natural resources such as lakes, Colorado River shoreline, and the Mesquite Bosque grove.

4. *CRIT Wildland Fire Department*

The CRIT Wildland Fire Department controls wildfire fuels with regular clearing as well as its wildfire response responsibility.

5. *CRIT Fire Department*

The CRIT Fire Department conducts fire outreach and education programs both through the schools and at CRIT community events such as Earth Day. The fire department also has responsibility for fire code enforcement, even with such commercial entities as Walmart.

6. *CRIT Utilities*

CRIT water, wastewater, solid waste, staff routinely assist with actions to prevent flooding, debris removal, and other mitigation-related activities.

7. *CRIT Farms*

In its management of farming operations, CRIT Farms conducts flood control, fire prevention, chemical protection, and other mitigation-related activities.

8. *Bureau of Indian Affairs*

The BIA maintains an office on the CRIT Reservation and is involved with a number of mitigation-related activities such as irrigation and flood control, road maintenance, power production and distribution.

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D. Plan Revision Reflecting Changing Priorities

44CFR Section 201.7(d)(3) – “Indian tribal governments must review and revise their plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within 5 years in order to continue to be eligible for non-emergency Stafford Act assistance and FEMA mitigation grant funding, with the exception of the Repetitive Flood Claims program.”

This MHMP represents a completely new shift in CRIT emergency management priorities. First, the focus on developing an emergency management program around FEMA’s National Preparedness System strengthens the integration of the MHMP with other NPS elements. For example, technical hazards and human-caused risks were evaluated in the MHMP development process and a THIRA/SPR is being developed concurrently. This integrated approach ensures this MHMP effort is more than “simply updating a plan.” The NPS framework helps ensure there is follow-up with the action items. In addition, the previous MHMP had only one goal, four objectives and three actions as follows:

1. 2010 CRIT MHMP Goals, Objectives and Actions

GOAL: Reduce or eliminate the risk to people and property from hazards.

Objective 1: Reduce or eliminate risks that threaten the public of the Tribes.

Objective 2: Reduce risk to critical facilities and infrastructure from hazards.

Objective 3: Promote hazard mitigation throughout the Tribes’ reservation.

Objective 4: Increase public awareness of hazards and risks that threaten the Tribes’ reservation.

| Description | Hazard(s) Mitigated | Estimated Cost | Priority Ranking | Anticipated Completion Date | Project Lead | Potential Funding Source(s) |
|---|------------------------|-------------------|---------------------|-----------------------------------|--|--------------------------------|
| Mohave Rd. Drainage Improvement for Tyson Wash. Design and construct culvert improvements to improve capacity and prevent flooding and washouts of road surface. 50' x 300' bridge | Flooding | \$1,500,000 | High | Fall 2015 | Emergency Management/ Director | BIA Road Maintenance |
| River banks/mesquite thickets/drainage. Fire breaks, controlled burns, brush thinning to limit spread of wildfire and to minimize damage or supply of mesquite wood for ceremonial purposes and protect structures. NOTE: Mesquite wood is used for Mohave Tribal Cremation Ceremony, use caution in these areas. | Wildfire | \$60,000 | High | On-going | CRIT Wildland Fire/Wildland Fire Manager | Federal/ Grants- BIA |
| Continue to enforce building codes. Update building codes as needed to ensure structural soundness for residential and commercial facilities throughout the reservation | Severe Winds | \$3,000 | Medium | On Going | Building Inspectors Office /Inspector | Tribal /Existing Staff |

Table 35. CRIT 2010 MHMP Actions.

2. 2018 CRIT MHPM Goals, Objectives, and Actions

In contrast to the limited scope of the 2010 MHMP, this plan has the following five Goals:

- **Goal #1:** Promote Sustainable Living
- **Goal #2:** Protect Lives and Property
- **Goal #3:** Increase Public Awareness of Local Hazards
- **Goal #4:** Partnerships and Implementation
- **Goal #5:** Strengthen Emergency Services Capability

The numerous objectives are listed, in Section III, D, and are not repeated here. In addition, there are 43 actions as prioritized in Table 31. The new set of actions are much broader in scope and include everything from public outreach and education to planning, training, and capital improvements. The Colorado River Indian Tribes is dedicated to improving its entire emergency management program in a holistic approach.

V. ASSURANCES AND PLAN ADOPTION

A. Assurance of Federal Guidance Compliance and Required Amendments

44CFR Section 201.7(c)(6) – “The plan must include assurances that the Indian Tribal government will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, including 2 CFR parts 200 and 3002. The Indian Tribal government will amend its plan whenever necessary to reflect changes in Tribal or Federal laws and statutes.”

The Tribal Council of the Colorado River Indian Tribes assures that CRIT will comply with all applicable Federal statutes and regulations in the monitoring, evaluation, and updating of this plan (Table 36). Furthermore, CRIT will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, including DMA2K requirements (CFR 201.7(c)(6)), and 2 CFR Parts 200 and 3002, and will amend its plan whenever necessary to reflect changes in tribal or Federal laws and statutes.

B. Adoption by CRIT

| Internal Approval and Tribal Adoption of the Multi-Hazard Mitigation Plan | | |
|---|--|---------------------|
| CRIT Planning Team | The amended CRIT MHMP was approved by the CRIT Planning Team on _____. The resources and information cited in the mitigation plan provide a strong local perspective and help identify strategies and activities to make the Tribe and Tribal members of CRIT more disaster resilient. | |
| CRIT Tribal Council | The amended MHMP was adopted by the Colorado River Indian Tribes Tribal Council on _____. | Resolution XX __-18 |

Table 36. CRIT MHMP Adoption.

VI. Appendices

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A. Appendix A: CRIT Risk and Capability Survey

**Colorado River Indian Tribes Risk
and Capability Survey**

Overview

Thank you for helping the Colorado River Indian Tribes to update its Multi-Hazard Mitigation Plan. Because they provide a strategy to reduce the loss of life and property by lessening the impact of future disasters, hazard mitigation plans are an important element of tribal sovereignty.

Through this survey, we will develop a risk assessment of the most significant threats and hazards to the Colorado River Indian Tribes.

At this point you may be thinking, “I can’t help; don’t know anything about this.” Fear not, that puts you in with a big club of 99+% of the population. The very fact that you are a member or partner of the Colorado River Indian Tribes makes you important in the risk management process. Chances are, your unique experience and suggestion may provide insight that nobody else has thought of. The Colorado River Indian Tribes has contracted with Wise Oak Consulting, L.L.C., to help us with this process.

Don’t worry about answering all of the questions – just answer those you feel comfortable with. You may have some highly-specialized experience that is specific to just one area of the assessment – excellent; just work on that.

Privacy Notice

This survey collects no personally identifiable information and individual answers will not be shared outside of the Colorado River Indian Tribes. The results of the surveys are used for the sole purpose of developing the Colorado River Indian Tribes’ Hazard Mitigation Plan and its Threat and Hazard Identification and Risk Assessment and the Stakeholder Preparedness Review. The demographic questions are designed to simply make sure we are involving the whole community and determining how you got so smart.

| | |
|-----------------------|--|
| Name | |
| Email Address | |
| Organization | |
| Title/Position | |

Where do you live?

Either place a check next to where you live or write in an answer.

| | |
|---|--|
| Parker, AZ | |
| Poston, AZ | |
| Other location on the Colorado River Indian Tribes' Reservation in Arizona | |
| Other location on the Colorado River Indian Tribes' Reservation in California | |
| Elsewhere in La Paz County | |
| A neighboring tribal nation | |

Other:

What is your background that made you so smart? Circle all that apply.

| | | | |
|----------------------------|----------------------------|---------------------------------------|---------------------------------|
| Agriculture | Firefighting | Information | Public Works |
| Construction | Fishing | Law Enforcement | Real Estate renting and leasing |
| Education - College | Forestry / Land Management | Leisure and Hospitality | Retail trade |
| Education K-12 | Government - city | Manufacturing | Science |
| Construction | Government - county | Natural Resources and Mining | Transportation and warehousing |
| Emergency Management | Government - Federal | Non-profit Organization | Tribal Member |
| Emergency Medical Services | Government - state | Non-tribal member residing or working | Utilities |

| | | | |
|-----------------------|--------------------------------|------------------------------------|------------------------|
| | | on tribal land/businesses | |
| Facility Maintenance | Government – tribal nation | Parks and Recreation | Volunteer Organization |
| Faith-based community | Healthcare and social services | Planning | Other services |
| Financial Activities | Hunting | Professional and Business Services | |

Other:

Do you work with or identify as a person in the community of people with disabilities and others with access and functional needs? (Circle one answer) **Yes / No**

Describe Hazards

We want to identify the hazards of concern for the Colorado River Indian Tribes. We will begin by describing the threats and hazards in terms of location, extent, and probability of future occurrence. The areas of concern for the tribe vary in both geographic location, elevation, and topography. Therefore, consider all of the tribe’s lands, properties, and businesses in your assessment, not just where you might live, work, or visit.

You will be asked to evaluate a number of hazards based on their location (how much of tribal lands are affected), extent (how big the hazard is), and probability of occurrence per the guidelines below. You will see preset answers directly next to the listed threats and hazards. Where you think we have it right, simply circle/highlight the preset value. If you think we have it wrong, place an “X” or check mark in the column that corresponds to your estimate.

Natural Hazards

Location

- Extensive: 2/3 or more of tribal land/assets affected
- Moderate: 1/3 - 2/3 of tribal land/assets affected
- Limited: 1/3 or less of tribal land/assets affected

| Natural Hazards Location | | | | |
|---------------------------------|---------------------|----------------------|-----------------|----------------|
| Hazard | Preset Value | Your Estimate | | |
| | | Extensive | Moderate | Limited |
| Disease | Extensive | | | |

| | | | | |
|-------------------------------|-----------|--|--|--|
| Drought | Extensive | | | |
| Earthquake | Moderate | | | |
| Extreme Heat | Extensive | | | |
| Fissures | Limited | | | |
| Flooding - Riverine | Extensive | | | |
| Flooding – Flash Flood | Limited | | | |
| Landslide/Mudslide | Limited | | | |
| Severe Winds | Moderate | | | |
| Subsidence | Limited | | | |
| Wildfires | Moderate | | | |
| Winter Storms | Extensive | | | |

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Extent

Hazard Extent – the magnitude of the hazard (Richter Scale, tsunami height, etc.)

- Catastrophic: Overwhelming damage requires Federal assistance and requires months to years to recover
- Major: Significant damage is widespread and/or significant requiring days to months to recover
- Light: Damage is limited and largely a nuisance such that it requires hours to several days to recover

| Natural Hazards Extent | | | | |
|-------------------------------|---------------------|----------------------|--------------|--------------|
| Hazard | Preset Value | Your Estimate | | |
| | | Catastrophic | Major | Light |
| Disease | Major | | | |
| Drought | Major | | | |
| Earthquake | Light | | | |
| Extreme Heat | Light | | | |
| Fissures | Light | | | |
| Flooding - Riverine | Light | | | |
| Flooding – Flash Flood | Catastrophic | | | |
| Landslide/Mudslide | Major | | | |
| Severe Winds | Light | | | |
| Subsidence | Major | | | |
| Wildfires | Light | | | |
| Winter Storms | Major | | | |

Probability of Occurrence

- Highly Likely: Nearly a 100% chance of occurrence in next year or happens every year
- Likely: Between 50% and 100% chance of occurrence in next year or has a recurrence interval of 10 years or less
- Occasional: Between 1% and 50% chance of occurrence in the next year or has a recurrence interval of 11 to 100 years
- Unlikely: Less than 1% chance of occurrence in next 100 year or has a recurrence interval of greater than every 100 years

| Natural Hazards Probability of Occurrence | | | | | |
|--|---------------------|----------------------|---------------|-------------------|-----------------|
| Hazard | Preset Value | Your Estimate | | | |
| | | Highly Likely | Likely | Occasional | Unlikely |
| Disease | Occasional | | | | |
| Drought | Occasional | | | | |
| Earthquake | Unlikely | | | | |
| Extreme Heat | Highly Likely | | | | |
| Fissures | Unlikely | | | | |
| Flooding - Riverine | Occasional | | | | |
| Flooding – Flash Flood | Likely | | | | |
| Landslide/Mudslide | Unlikely | | | | |
| Severe Winds | Highly Likely | | | | |
| Subsidence | Unlikely | | | | |
| Wildfires | Highly Likely | | | | |
| Winter Storms | Unlikely | | | | |

Natural Hazards of Most Concern

Vote for what you believe is the Colorado River Indian Tribes’ Worst Most Likely Hazard(s). You get 7 votes to spread anywhere you want. You may put all 7 votes on one hazard such as wildfire. Or, you could spread your votes among several hazards such as 4 for wildfire, 2 for flood, and 1 one for earthquake. The only requirement is the votes must add to 7.

| Natural Hazards Votes | |
|-------------------------------|----------------|
| Hazard | Vote(s) |
| Disease | |
| Drought | |
| Earthquake | |
| Extreme Heat | |
| Fissures | |
| Flooding - Riverine | |
| Flooding – Flash Flood | |
| Landslide/Mudslide | |
| Severe Winds | |
| Subsidence | |
| Wildfires | |
| Winter Storms | |

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Technological Hazards

This step is the same as for natural hazards, only you will accomplish it for technological hazards. Technological hazards are accidents such as oil spills or other hazardous materials (HAZMAT) spills; utility failures, dam failures, etc.

You will be asked to evaluate a number of hazards based on their location (how much of tribal lands are affected), extent (how big the hazard is), and probability of occurrence. You will see preset answers directly next to the listed threats and hazards. Where you think we have it right, simply circle/highlight the preset value. If you think we have it wrong, place an “X” or check mark in the column that corresponds to your estimate. Finally, you will be asked to vote for the hazard(s) you think is/are the worst most likely per the instructions below. Whew, that was a lot.

Location

- Extensive: 2/3 or more of tribal land/assets affected
- Moderate: 1/3 - 2/3 of tribal land/assets affected
- Limited: 1/3 or less of tribal land/assets affected

| Technical Hazards Location | | | | |
|------------------------------------|---------------------|----------------------|-----------------|----------------|
| Hazard | Preset Value | Your Estimate | | |
| | | Extensive | Moderate | Limited |
| Dam Failure | Extensive | | | |
| Hazardous Materials Release | Limited | | | |
| Structure Fire | Limited | | | |
| Transportation Accident | Limited | | | |
| Utility Disruption | Extensive | | | |

Extent

Hazard Extent – the magnitude of the hazard (Richter Scale, tsunami height, etc.)

- Catastrophic: Overwhelming damage requires Federal assistance and requires months to years to recover
- Major: Significant damage is widespread and/or significant requiring days to months to recover
- Light: Damage is limited and largely a nuisance that it requires hours to several days to recover

| Technical Hazards Extent | | | | |
|------------------------------------|---------------------|----------------------|--------------|--------------|
| Hazard | Preset Value | Your Estimate | | |
| | | Catastrophic | Major | Light |
| Dam Failure | Catastrophic | | | |
| Hazardous Materials Release | Light | | | |
| Structure Fire | Light | | | |
| Transportation Accident | Light | | | |
| Utility Disruption | Major | | | |

Probability of Occurrence

- Highly Likely: Nearly a 100% chance of occurrence in next year or happens every year
- Likely: Between 50% and 100% chance of occurrence in next year or has a recurrence interval of 10 years or less
- Occasional: Between 1% and 50% chance of occurrence in the next year or has a recurrence interval of 11 to 100 years
- Unlikely: Less than 1% chance of occurrence in next 100 year or has a recurrence interval of greater than every 100 years

| Technical Hazards Probability of Occurrence | | | | | |
|--|---------------------|----------------------|---------------|-------------------|-----------------|
| Hazard | Preset Value | Your Estimate | | | |
| | | Highly Likely | Likely | Occasional | Unlikely |
| Dam Failure | Unlikely | | | | |
| Hazardous Materials Release | Occasional | | | | |
| Structure Fire | Highly Likely | | | | |

| | | | | | |
|------------------------------------|------------------|--|--|--|--|
| Transportation Accident | Highly Likely | | | | |
| Utility Disruption | Occasional | | | | |

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Technical Hazards of Most Concern

Vote for what you believe is the Colorado River Indian Tribes' Worst Most Likely Hazard(s). You get 7 votes to spread anywhere you want. You may put all 7 votes on one hazard such as wildfire. Or, you could spread your votes among several hazards such as 4 for wildfire, 2 for flood, and 1 one for earthquake. The only requirement is the votes must add to 7.

| Technical Hazards Votes | |
|--|----------------|
| Hazard | Vote(s) |
| Dam Failure | |
| Hazardous Materials Release | |
| Structure Fire | |
| Transportation Accident | |
| Utility Disruption | |

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Human-caused Threats

This step is the same as for natural and technological hazards, only you will accomplish it for human-caused threats that will cause the Colorado River Indian Tribes to be overwhelmed and need to build capabilities to fully respond to – the “worst most likely.” Human-caused threats can be thought of as deliberate attacks such as cyberattacks or mass shootings.

Location

- Extensive: 2/3 or more of tribal land/assets affected
- Moderate: 1/3 - 2/3 of tribal land/assets affected
- Limited: 1/3 or less of tribal land/assets affected

| Human-caused Hazards Location | | | | |
|---|---------------------|----------------------|-----------------|----------------|
| Hazard | Preset Value | Your Estimate | | |
| | | Extensive | Moderate | Limited |
| Armed Assault | Limited | | | |
| Biological Attack | Moderate | | | |
| Cyber-attack against data | Moderate | | | |
| Cyber-attack against infrastructure (ex. power grid) | Extensive | | | |
| Sabotage | Limited | | | |

Extent

Hazard Extent – the magnitude of the hazard (Richter Scale, tsunami height, etc.)

- Catastrophic: Overwhelming damage requires Federal assistance and requires months to years to recover
- Major: Significant damage is widespread and/or significant requiring days to months to recover
- Light: Damage is limited and largely a nuisance that it requires hours to several days to recover

| Human-caused Threats Extent | | | | |
|------------------------------------|---------------------|----------------------|--------------|--------------|
| Hazard | Preset Value | Your Estimate | | |
| | | Catastrophic | Major | Light |
| | | | | |

| | | | | |
|---|-------|--|--|--|
| Armed Assault | Major | | | |
| Biological Attack | Major | | | |
| Cyber-attack against data | Major | | | |
| Cyber-attack against infrastructure (ex. power grid) | Major | | | |
| Sabotage | Light | | | |

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Probability of Occurrence

- Highly Likely: Nearly a 100% chance of occurrence in next year or happens every year
- Likely: Between 50% and 100% chance of occurrence in next year or has a recurrence interval of 10 years or less
- Occasional: Between 1% and 50% chance of occurrence in the next year or has a recurrence interval of 11 to 100 years
- Unlikely: Less than 1% chance of occurrence in next 100 year or has a recurrence interval of greater than every 100 years

| Human-caused Probability of Occurrence | | | | | |
|---|---------------------|----------------------|---------------|-------------------|-----------------|
| Hazard | Preset Value | Your Estimate | | | |
| | | Highly Likely | Likely | Occasional | Unlikely |
| Armed Assault | Highly Likely | | | | |
| Biological Attack | Occasional | | | | |
| Cyber-attack against data | Highly Likely | | | | |
| Cyber-attack against infrastructure (ex. power grid) | Highly Likely | | | | |
| Sabotage | Occasional | | | | |

Human-caused Threats of Most Concern

Vote for what you believe is the Colorado River Indian Tribes’ Worst Most Likely Hazard(s). You get 7 votes to spread anywhere you want. You may put all 7 votes on one hazard such as wildfire. Or, you could spread your votes among several hazards such as 4 for wildfire, 2 for flood, and 1 one for earthquake. The only requirement is the votes must add to 7.

| Human-caused Threats Votes | |
|-----------------------------------|----------------|
| Armed Assault | Vote(s) |
| Biological Attack | |
| Cyber-attack against data | |

| | |
|---|--|
| Cyber-attack against infrastructure (ex. power grid) | |
| Sabotage | |
| Armed Assault | |
| Biological Attack | |

Thank You

Your assistance in identifying the Colorado River Indian Tribes' most significant threats and hazards is greatly appreciated.

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B. Appendix B: Interview Worksheets

| Checklist Item | Notes |
|--|--------------|
| <p>What are your threats and hazards of concern that specifically affect your department?</p> | |
| <p>What size (extent) of a threat or hazard concerns you?</p> <p>For example, is it a 100-year flood, a power failure, wind storm</p> | |
| <p>What specific areas/facilities concern you? What are the impacts that concern you?</p> <p>For example, does your threat or hazard of concern damage your facility, cut it off from access, etc.</p> | |

| Checklist Item | Notes |
|--|-------|
| <p>What mitigation-related tribal policies and programs affect you?</p> <p>For example, are there rules that allow you to expedite your work for a disaster?</p> | |
| <p>What mitigation-related tribal policies and programs would you like to see?</p> <p>For example, do you want to be able to expedite contracts to move disaster debris?</p> | |
| <p>What mitigation-related capabilities do you have to address threats and hazards?</p> <p>For example, do you have people or equipment that could be used to protect the tribe from a disaster?</p> | |
| <p>What mitigation-related capabilities are put at risk due to threats and hazards?</p> <p>For example, do you have equipment or facilities in a flood zone?</p> | |

| Checklist Item | Notes |
|--|-------|
| <p>What mitigation-related goals do you have for long-term vulnerability reduction?</p> <p>For example, do you want to see more survivable road access or even seasonal training?</p> | |
| <p>What mitigation-related projects do you have, or would you like for long-term vulnerability reduction?</p> <p>Examples: Plans and regulations, infrastructure projects (culverts, flood walls, etc.), natural systems (erosion control), education and awareness (StormReady, Firewise, etc.)</p> | |
| <p>What funding sources do you have for mitigation-related actions? What would you like?</p> | |

*C. Appendix C: Public Outreach Invitations, Flyers, and
Agendas*

To be added.

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