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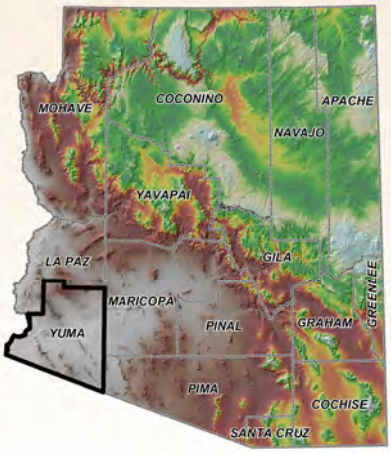
TYPE OF DOCUMENT:

YUMA COUNTY
MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN DATED 2010

DOCUMENT APPROVAL:

Approved by Yuma County Board of Supervisors:
June 20, 2011, Item No. C6.

Yuma County Multi-Jurisdictional Hazard Mitigation Plan 2010



EXECUTIVE SUMMARY

Across the United States, natural and human-caused disasters have led to increasing levels of death, injury, property damage, and interruption of business and government services. The toll on families and individuals can be immense and damaged businesses cannot contribute to the economy. The time, money and effort to respond to and recover from these emergencies or disasters divert public resources and attention from other important programs and problems. With 39 federal or state declarations, 167 other significant events, and a combined total of 206 disaster events recorded, the six jurisdictions within Yuma County, Arizona participating in this planning effort, recognize the consequences of disasters and the need to reduce the impacts of natural and human-caused hazards. The county and jurisdictions also know that with careful selection, mitigation actions in the form of projects and programs can become long-term, cost effective means for reducing the impact of natural and human-caused hazards.

The elected and appointed officials of Yuma County and five other participating jurisdictions demonstrated their commitment to hazard mitigation in 2004-2005 by preparing their individual Hazard Mitigation Plans (2005 Plan). The 2005 Plans was developed through a planning effort that resulted in covering the unincorporated county and three cities and one town. The 2005 Plans were approved by FEMA ranging from October 12, 2005 to June 15, 2006, and requires a full, FEMA approved, update prior to the subsequent five year expiration.

In response, the Arizona Division of Emergency Management (ADEM) secured a federal planning grant and hired JE Fuller/ Hydrology & Geomorphology, Inc. to assist the county and participating jurisdictions with the update process. Yuma County reconvened a multi-jurisdictional Planning Team comprised of veteran and first-time representatives from each participating jurisdiction, various county departments and organizations, ADEM, local fire and flood control districts, and an Indian tribe. The Planning Team met four times during the period of March 2009 to May 2010 in a collaborative effort to review, evaluate, and update the 2005 Plan. The Yuma County Multi-Jurisdictional Hazard Mitigation Plan (Plan) will continue to guide the county and participating jurisdictions toward greater disaster resistance in full harmony with the character and needs of the community and region.

The Plan has been prepared in compliance with Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act or the Act), 42 U.S.C. 5165, enacted under Sec. 104 the Disaster Mitigation Act of 2000, (DMA 2000) Public Law 106-390 of October 30, 2000, as implemented at CFR 201.6 and 201.7 dated October, 2007. The Plan identifies hazard mitigation measures intended to reduce or minimize the effects of future disasters throughout the county, and was developed in a joint and cooperative venture by members of the Yuma County Planning Team.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF MAPS

LIST OF APPENDICES

ANNEX DOCUMENTS (under separate cover)

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SECTION 1: JURISDICTIONAL ADOPTION AND FEMA APPROVAL

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

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

1.1 DMA 2000 Requirements

1.1.1 General Requirements

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

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

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

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

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

1.1.2 Update Requirements

DMA 2000 requires that existing plans be updated every five years, with each plan cycle requiring a complete review, revision, and re-approval of the plan at both the state and FEMA level. Yuma County, the incorporated communities of Somerton, Wellton and Yuma City all currently have FEMA approved hazard mitigation plan. The Plan is the result of an update process performed by the Yuma County jurisdictions to both update and consolidate individual community plans developed in late 2004 and early 2005.

[1] FEMA, 2008, *Local Multi-Hazard Mitigation Planning Guidance*

1.2 Official Record of Adoption

Adoption of the Plan is accomplished by the governing body for each participating jurisdiction in accordance with the authority and powers granted to those jurisdictions by the State of Arizona. Participating jurisdictions in the Plan include:

Counties	Tribes	Cities	Towns
• Yuma	• Cocopah	• San Luis • Somerton • Yuma	• Wellton

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

1.3 FEMA Approval Letter

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

[Insert FEMA Approval Letter Here]

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SECTION 2: INTRODUCTION

2.1 Plan History

In 2004 and 2005, Yuma County and all incorporated cities and towns in Yuma County initially participated in a multi-jurisdictional mitigation planning process that resulted in the necessity of holding separate meetings with the individual jurisdictions. The individual local meetings involved identifying community assets and local hazards, discussing public involvement activities and developing goals and objectives for each community. Individual meetings were also conducted with Yuma County relative to the unincorporated County. Ultimately, the development of a multi-jurisdictional hazard mitigation plan became separate stand-alone plans for each participating jurisdiction. The following is a list of those plans:

- *Yuma County Multi-Hazard Mitigation Plan*
- *City of San Luis Multi-Hazard Mitigation Plan (drafted, not approved by Council)*
- *City of Somerton Multi-Hazard Mitigation Plan*
- *Town of Wellton Multi-Hazard Mitigation Plan*
- *City of Yuma Multi-Hazard Mitigation Plan*

Collectively and individually, these plans will be referred to herein as the 2005 Plan(s). The 2005 Plans received official FEMA approval ranging from October 12, 2005 to June 15, 2006. The 2005 Plans are nearing the end of the 5-year planning cycle, with the first of the single-jurisdictional plans expiring October 12, 2010.

2.2 Plan Purpose and Authority

The purpose of the Plan is to identify hazards that impact the various jurisdictions located within Yuma County, assess the vulnerability and risk posed by those hazards to community-wide human and structural assets, develop strategies for mitigation of those identified hazards, present future maintenance procedures for the plan, and document the planning process. The Plan is prepared in compliance with DMA 2000 requirements and represents a multi-jurisdictional update of the 2005 Plans listed in Section 2.1.

Yuma County and all of the Cities and Towns are political subdivisions of the State of Arizona and are organized under Title 9 (cities/towns) and Title 11 of the Arizona Revised Statutes (ARS). The Cocopah Indian Tribe is a federally recognized sovereign nation that was created by Executive Order in 1917 and is governed by a Tribal Council that is elected by tribal members pursuant to the Tribe's Constitution. As such, each of these entities are empowered to formally plan and adopt the Plan on behalf of their respective jurisdictions.

Funding for the development of the Plan was provided through a PDM planning grant obtained by the State of Arizona from FEMA. JE Fuller/ Hydrology & Geomorphology (JE Fuller) was retained by Arizona Division of Emergency Management (ADEM) to provide consulting services in guiding the update planning process and Plan development.

2.3 General Plan Description

The Plan is generally arranged and formatted to be consistent with the 2007 State of Arizona Multi-Hazard Mitigation Plan (State Plan) and is comprised of the following major sections:

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

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

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

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

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

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

2.4 Overall Plan Update Process

The Plan is the result of a thorough update process that included a section by section review and evaluation of the 2005 Plans by the planning participants. As previously stated, the individual 2005 Plans are being consolidated into a single, multi-jurisdictional plan with this update. Accordingly, the final arrangement of the Plan is different from the 2005 Plans.

At the onset of the planning process, ADEM printed a copy of each of the 2005 Plans and provided them to each respective jurisdiction as a working document for their review and use during the planning process. This way the jurisdictions could keep their original 2005 Plan intact and unmarked. Digital versions of the Yuma County 2005 Plan were made available to planning team members not directly associated with a specific jurisdiction. The Planning Team reviewed each section of the 2005 Plan(s) during the first meeting, wherein the plan purpose was explained, sections were discussed, and the plans' relation to the DMA 2000 requirements were summarized. Using the existing Plan(s), gave way to discussions on how to update and improve the Plan. Planning participants were requested bring their working copy to every meeting as the team stepped through each stage of the update process. Table 2.1 summarizes the review and analysis of each section of the 2005 Plans and generally describes what changes were or were not made and why. Additional details of that process are also discussed in the Plan sections as well.

Table 2-1: Summary of 2005 Plan review and 2010 Plan correlation

2005 Plan Section	2010 Plan Section	Review and Changes Description (2005 Plan to the 2010 Plan)
1	1, 2, and 4	• Plan format changes were made to make the Plan more compatible with the 2007 State Plan format. • General plan descriptions were changed to reflect the update process, the new plan format, and authorizations • Community descriptions were compiled to provide both a county-wide and jurisdiction specific depiction. Much of the original text was kept. Time sensitive data such as demographics, climate statistics, and incorporated community boundaries were updated with the latest information available. • Descriptions of development history were updated to reflect the last five years.
2	3	• The 2005 Plan contacts were updated as necessary and recompiled into Section 3 of the 2010 Plan. The review concluded that the original Section 2 data did not warrant a separate section and it could be added to Section 3.
3	3	• Section 3 was expanded to include evaluation summaries and to better describe the planning team development. • Added a column to the table listing the planning team participants to describe their roles • Decided to keep the table format summarizing the planning team meetings and agendas, but provide supplemental meeting minutes in an Appendix • Provided a new section to address agency/organization participation and changes between the 2005 Plan and 2010 Plan participation

Table 2-1: Summary of 2005 Plan review and 2010 Plan correlation		
2005 Plan Section	**2010 Plan Section**	**Review and Changes Description (2005 Plan to the 2010 Plan)**
4	5	• Risk Assessment changed from Section 4 to Section 5 • The whole structure of the risk assessment was revised to provide a hazard based approach to the subsections. The planning team felt this would make the plan easier to understand and follow. • Each hazard profile and vulnerability analysis was carefully updated to reflect either more current or totally new data. • Asset inventories were updated and refined to make them more complete and current.
5	6	• Mitigation Strategy changed from Section 5 to Section 6 • A review of the goals and objectives subsection resulted in a significant change to much simpler goals and objectives. Reasoning for the changes are summarized in Section 6.1 • Tables 5.1 and 5.4 of the capability assessment were compiled into one table to provide an "at-a-glance" summary of these elements. The details of the old Table 5.4 were relegated to the reference lists provided at the end of each hazard subsection of the new Plan Section 5.3 and at other locations throughout the Plan where the documents are referenced. • Tables summarizing previous mitigation activities for each jurisdiction were provided to document past mitigation activities • Section addressing the NFIP program was added in compliance to requirement changes from the 2005 Plan to the 2010 Plan • Each mitigation action/project in the 2005 Plan were reviewed and assessed by the respective jurisdiction. Tables summarizing the results are provided • Planning team chose to combine the old tables 5.5 and 5.6 into one table to have all the details of the new mitigation actions/projects in one table.
6	7	• Plan Maintenance Procedures changed from Section 6 to Section 7. • In general, the review of this section highlighted the lack of plan maintenance actually performed and forced a better definition of future efforts. It is anticipated that a multi-jurisdictional plan will provide the platform for a more regular review. • Added text to discuss review past plan maintenance activities and reasons for successes/failures. • Identified the need to expand Section 7.3 to provide a better explanation of plan incorporation by each of the jurisdictions. • Identified a need to provide more definition and specificity to the approach in Section 7.4. Revised to be more specific in the types and schedules of future public involvement opportunities.

SECTION 3: PLANNING PROCESS

> ***§201.6 (b):*** *Planning process. An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:*
> *(1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;*
> *(2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and*
> *(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.*
>
> ***§201.6(c)(1)****: [The plan shall include…] (1) Documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.*

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

3.1 Update Process Description

ADEM applied for and received a PDM planning grant to fund a multi-jurisdictional effort to review, update and consolidate the 2005 Plans. Once the grant was received, ADEM then selected JE Fuller Hydrology & Geomorphology, Inc. (JE Fuller) to work with the participating jurisdictions and guide the Plan update process. An initial project kick-off meeting between JE Fuller and Yuma County Planning Team was convened March 11, 2009 to discuss the new plan format and other administrative tasks. Initial data collection efforts and contacts were also established. Three Planning Team meetings, one tribal planning meeting, and several other individual community outreach meetings were conducted over the period of March 2009 to June 2010, and included all the work required to collect, process, and document updated data and make changes to the plan. Details regarding updated key contact information and promulgation authorities, the Planning Team selection, participation, and activities, and public involvement are discussed in the following sections.

3.2 Previous Planning Process Assessment

The first task of preparation for this Plan, was to evaluate the process used to develop the 2005 Plans. This was initially discussed by ADEM and JE Fuller prior to the county planning team kickoff meeting. The previous planning approach included a blended use of multi-jurisdictional planning team meetings and individual local planning team meetings within each jurisdiction, all facilitated by JE Fuller. This was mostly due to the development of individual plans for each participating jurisdiction and the difficulty in acquiring the needed data. The process worked moderately well, but required a tremendous amount of time and budget that is not available for this planning process. A conclusion of the 2005 Plans process assessment was that the new planning process and approach would result in a paradigm shift away from individual plans and planning meetings, and will require a slightly different strategy in gathering and compiling the Plan information. The result will be a true multi-jurisdictional plan (one document for all participating jurisdictions).

The planning process was presented and discussed at the first multi-jurisdictional planning team meeting and was contrasted to the 2005 Plan approach. Most of the planning team members were involved with the development of the 2005 Plan, so there was some institutional knowledge of the prior process.

3.3 Primary Point of Contact

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

3.4 Planning Teams

The Multi-Jurisdictional Planning Team (Planning Team) was comprised of one or more representatives from each participating jurisdiction.

The role of the Planning Team was to work with the planning consultant to perform the coordination, research, and planning element activities required to update the 2005 Plans. Attendance by each participating jurisdiction was required for every Planning Team meeting as the meetings were structured to progress through the plan

update process. Steps and procedures for updating the 2005 Plans were presented and discussed at each Planning Team meeting, and assignments were normally given. Each meeting built on information discussed and assignments given at the previous meeting. The Planning Team representatives also had the responsibility of liaison to their respective communities, and were tasked with:

- Make the planning decisions regarding plan update components
- Ensuring that all requested assignments was completed fully and returned on a timely basis.
- Review the Plan draft documents
- Arranging for review and official adoption of the Plan.

Table 3-1: List of jurisdictional primary points of contact					
Jurisdiction	**Name**	**Department / Position**	**Address**	**Phone**	**Email**
City of San Luis	H. Green	San Luis Fire Dept / Fire Chief	P.O. Box 445, 1165 North McCain Avenue, San Luis, AZ 85349-0445	928-341-8550	hgreen@cityofsanluis.org
City of Somerton	R. Smith	Somerton Fire Dept / Battalion Chief	445 E. Main Street, Somerton, Arizona 85350	928-722-7382	rays@cityofsomerton.com
City of Yuma	M. Erfert	Yuma Fire / Public Information Officer	One City Plaza, Yuma, Arizona 85364	928-373-4855	Mike.Erfert@YumaAZ.gov
Cocopah Indian Tribe	K. Conrad	Cocopah Environmental Protection Office / Director	County 15th and Avenue G, Somerton, Arizona 85350	928-627-2025 x13	cocoepo@cocopah.com
Town of Wellton	K. Titus	Wellton Police Dept / Police Chief	28618 Oakland Avenue, Wellton, Arizona 85356	928-785-4887	kwt1201@town.wellton.az.us
Unincorporated Yuma County	**G. Robinson**	**Yuma County Emergency Management / Emergency Operations Manager**	**198 So. Main Street, Yuma, AZ 85364**	**928-373-1093**	**gretchen.robinson@yumacountyaz.gov**

3.4.1 Planning Team Assembly

At the beginning of the update planning process, Yuma County Emergency Management (YCEM) organized and identified members for the Planning Team by initiating contact with all three incorporated cities and one town that had participated in the 2005 Plan planning effort. Additional communities that were interested in participating included the Cocopah Indian Tribe. In March 2009, YCEM distributed a kick-off letter with an attached calendar of dates to the identified Planning Team members announcing the start of the planning effort. The letter template, sign-in sheets, meeting notes are provided in Appendix B. The participating members of the Planning Team are summarized in Table 3-2. Returning Planning Team members are highlighted.

Table 3-2: Summary of Planning Team participants

Name	Jurisdiction / Organization	Department / Position	Planning Team Role
William Beck	Yuma County	Public Works / Director	Planning Team participant
Eben Bratcher	Yuma County	Sheriffs Office / Captain	Planning Team participant
S. A. Castricone	City of Yuma	Fire Department / Fire Marshall	Planning Team participant
Kevin Conrad	Cocopah Indian Tribe	Environmental Protection Office / Director	Planning Team participant Support in planning elements related to Tribal issues
Mike Erfert	City of Yuma	Fire Department / Public Information Officer	Planning Team participant Community Representative
Curt Foster	Rural Metro Fire Department	Fire Marshall	Planning Team participant
Hank Green	City of San Luis	Fire Department / Fire Chief	Planning Team participant Provided tranportation accident information
Pat Headington	Yuma County	Development Services / Chief Building Official	Planning Team participant Provided wildfire information
Sonny Hixon	Yuma County	Sheriff's Office / Detective / TLO	Planning Team participant
Paul Melcher	Yuma County	Development Services / Planning Director	Planning Team representative Provided GIS data resources and coordination
Karen Nield	JE Fuller Hydrology & Geomorphology, Inc	Planning Assistant	Planning Team Assistant Provided planning support
Dwight Nield	JE Fuller Hydrology & Geomorphology, Inc	Project Leader	Planning Team Lead Consultant Preparation and presentation of plan update elements and materials
Roger Patterson	Yuma County	Development Services / County Engineer	Planning Team participant Provided mitigation project and NFIP participant information
Gretchen Robinson	**Yuma County**	**Emergency Management Director**	**Planning Team representative and jurisdictional Primary Point of Contact Lead coordinator for Planning Team**
Darren Simmons	Yuma County	Sheriff's Office / Lieutenant	Planning Team representative Provided historical information
Ray Smith	Somerton / Cocopah Fire	Fire Department / Battalion Chief	Planning Team participant Provided local community information
Craig Sellers	Yuma County	Flood Control / Senior Civil Engineer	Planning Participant Provided floodplain information and local information
Monty Stansbury	Yuma County	Development Services / Director	Planning Team Participant
Keith Titus	Town of Wellton	Chief of Police	Planning Team Participant Provided local information

Table 3-2: Summary of Planning Team participants			
Name	**Jurisdiction / Organization**	**Department / Position**	**Planning Team Role**
Sue Wood	State of Arizona	ADEM – Mitigation Division – Program Manager	Project/Grant Manager State Reviewer

3.4.2 Planning Team Activities

The Planning Team met for the first time on March 11, 2009 to begin the plan update process. Due to personnel changes at Yuma County, a period of approximately one year lapsed before the Planning Team re-convened with the planning process. Then, meetings resumed on March 25, 2010, with a total of three more meetings convened on a monthly basis to step through the plan review and update process. Planning Team members used copies of their jurisdiction's 2005 Plan for review and reference. Following each Planning Team meeting, the Point of Contact for each jurisdiction researched task assignments and referred to local community resources to complete assignments.

3.4.3 Agency/Organizational Participation

The planning process used to develop the 2005 Plan included participation from several agencies and organizations, including the adopting jurisdictions, that operate within or have jurisdiction over small and large areas of Yuma County. At the start of the Plan update, a list of the agencies and organizations that participated in the development of the 2005 Plan was compiled to provide continuity and institutional knowledge to the planning team and the overall update process. Invitations were sent via an email that was addressed to the original participant or their successor. A copy of the email invitation text is provided in Appendix B. The invitation list included the following entities:

- Arizona Division of Emergency Management
- City of San Luis Fire Department
- City of Somerton Fire Department
- City of Yuma Fire Department
- Cocopah Indian Tribe
- J.E. Fuller/ Hydrology & Geomorphology, Inc.
- Town of Wellton Police
- Yuma International Airport
- Yuma County Development Services
- Yuma County Emergency Services
- Yuma County Flood Control District
- Yuma County Public Works
- Yuma County Sheriffs Office

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

Meeting Type, Date, and Location	Meeting Agenda
Planning Team Meeting No. 1 <u>Initial Meeting:</u> March 11, 2009 Yuma County Department of Development Services Yuma, AZ	• Team introductions / role of JE Fuller and ADEM • Present an overview of mitigation planning, update process, and purpose of preparing plan • Discussed converting from single to a true Multi-Jurisdictional Plan • Presented the Planning Team roles and responsibilities • Determined Point of Contact for each jurisdiction. • Discussed the public involvement requirements • D. Nield presented overview of the risk assessment • Reviewed list of hazards from 2005 Plan and State of Arizona's 2007 Plan. • D. Nield presented the declared and undeclared hazard events. • The team worked through Calculated Priority Risk Index (CPRI) evaluation. • Overview of the asset inventory of vulnerability analysis. • Next meeting TBD • Assignments included: o D. Nield will provide template public notices to L. Miranda for his use and placement on County website. o L. Miranda will prepare template public notice for county website and to Point of Contacts for each individual community. o D. Nield provide historical hazard spreadsheets for review and augmentation. o D. Nield provide CPRI to each jurisdiction to complete. o D. Nield will provide asset inventory template to jurisdiction for update, correction or provision of missing data. o Each community will provide latest General or Comprehensive Plan, city/town boundaries, and future critical facility locations

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

Meeting Type, Date, and Location	Meeting Agenda
Planning Team Meeting No. 2 March 25, 2010 Yuma County Department of Development Services Yuma, AZ	• Team introductions / role of JE Fuller, ADEM and Planning Team • Update Critical and Non-Critical Facilities • General Data Collection - including hazard mapping • Discussed Public Involvement • Presented Historical Hazard Lists • Identify Point of Contacts • Reviewed previously identified Hazard List • D. Nield presented the Calculated Priority Risk Index and potential hazards. • Determined Repetitive Loss Properties don't exist. • D. Nield presented and discussed the need for capability assessment tables • Next meeting set for April 15, 2010 • Assignments included: o Planning Team members will update the asset inventory and CPRI worksheets and provide to JE Fuller by April 5th. o D. Nield will summarize the CPRI results at next meeting. o G. Robinson will provide public involvement bulletin for the County website and for community postings. o D. Nield will obtain an updated municipal boundary GIS shapefile through the County to include large portion of annexed property for City of Yuma. o The Planning Team members will provide updated capability assessment tables by April 5th.

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

Meeting Type, Date, and Location	Meeting Agenda
Planning Team Meeting No. 3 April 15, 2010 Yuma County Department of Development Services Yuma, AZ	• Status Review • D. Nield presented information on Risk Assessment and overview of the vulnerability assessment. • Discussed all documented original hazards and additional hazards, such as extreme heat and infestations that team members want to consider in the plan. The resulting hazard list at this point is: drought, earthquake, flooding, infestation, severe winds, wildfire and transportation accident. • Discussed and identified the hazard ratings for performing the GIS portion of the analysis for earthquake, flooding, wildfire and transportation accident. • Discussed Hazus population and building inventory data for calculating loss estimates. • Next meeting is set for May 20, 2010 • Assignments included: o D. Nield will complete the compilation of critical facility data including the loss estimates based on square footage of facilities. o D. Nield will send out the hazard profiles for Planning Team review and updating, to be returned before the next meeting. o D. Nield will provide the vulnerability assessments results at the next meeting. o G. Robinson will update the Plan Maintenance Procedures by the next meeting.

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

Meeting Type, Date, and Location	Meeting Agenda
Planning Team Meeting No. 4 May 20, 2010 Yuma County Department of Development Services Yuma, AZ	• Discussed additional public involvement from local jurisdictions through bulletins, linking to county website, and using the city cable channel. • Discussed updating plan maintenance procedures. • D. Nield provided highlights of comments from the hazard profiles. • Reviewed the vulnerability assessment results. • Discussed updating goals and objectives. • Discussed the compilation of past mitigation successes. • D. Nield provided an overview of evaluating existing 2005 mitigation projects. • D. Nield provided an NFIP participation table and discussed. • D. Nield provided overview on development of new mitigation actions and implementation strategy for all projects considered, and discussed the format of tables, and provided examples. • Discussed ranking alternatives used by the State of Arizona and provided the factors and rating system. • Discussed the NFIP compliance requirement and action/project and implementation strategy for inclusion in the plan. • Once all items are received, D. Nield will deliver draft to Planning Team for review and comment. • Assignments included: o D. Nield will incorporate transportation hazard data coverage into the transportation hazard profile map and re-run the VA. o D. Nield will send out template files for the Past Mitigation Activity summary; existing projects for evaluation, and the new mitigation A/P and implementation strategy worksheet. o All jurisdictions are to work at completing the outstanding planning elements.

Table 3-4 summarizes the organizations and agencies that participated in the 2005 Plan and those that participated in the 2009-2010 Plan update process. An explanation of the differences between the two lists is also provided where appropriate.

Table 3-4: Comparative summary of agency/organization participation in the plan update process

Agency / Organization	Participation		Explanation
	2005 Plan	2010 Plan	
Arizona Division of Emergency Management	yes	yes	
City of San Luis	yes	yes	
City of Somerton	yes	yes	
City of Yuma	yes	yes	
Cocopah Indian Tribe	no	yes	The Tribe had previously started developing a stand-alone Tribal plan, but chose to become part of the multi-jurisdictional plan.
JE Fuller/ Hydrology & Geom.	yes	yes	
Town of Wellton	yes	yes	
Yuma International Airport	no	no	No response was received.
Yuma County	yes	yes	

An integral part of the planning process included coordination with agencies and organizations outside of the participating jurisdiction's governance to obtain information and data for inclusion into the Plan or to provide more public exposure to the planning process. Much of the information and data that is used in the risk assessment is developed by agencies or organizations other than the participating jurisdictions. In some cases, the jurisdictions may be members of a larger organization that has jointly conducted a study or planning effort like the development of a community wildfire protection plan or participation in an area association of governments. Examples of those data sets include the FEMA floodplain mapping, the county-wide community wildfire protection plan, severe weather statistics and incidents, and the Yuma Area Agricultural Council. A summary of the resources obtained, reviewed and compiled into the risk assessment are summarized at the end of each subsection of Section 5.3 and in Section 3.6. Jurisdictions needing these data sets obtained them by either requesting them directly from the host agency or organization, downloading information posted to website locations, or engaging consultants.

3.5 Public Involvement

3.5.1 Previous Plan Assessment

The pre-draft public involvement strategy for the 2005 Plan development included press releases, public notices and articles in various local newspapers, radio stations, television stations, and the development of a FAQ brochure for posting on the Yuma County website, and distributed flyers with local community water bills and newsletters.

The post-draft strategy included posting the draft plan to the county website and requesting public comment and participation in the formal council and board of supervisors meetings wherein the 2005 Plans were presented and promulgated. The details of the meeting process varied from jurisdiction to jurisdiction, but typically included some form of advertisement of the meeting agenda two to four weeks in advance of the council/board meeting. In most cases, an informal, pre-adoption presentation of the 2005 Plan was made during a working session of the council/board. The final adoption of the resolutions were almost unanimously done as part of a consent agenda at a formal council/board meeting.

There were no records of any public comment on the 2005 Plan development and adoption process, however, several informal comments were made expressing appreciation for the information and effort. The Planning Team discussed the prior public involvement actions and concluded that it provided adequate public exposure to the mitigation planning process.

3.5.2 Plan Update

Public involvement and input to the plan update process was encouraged through several venues throughout the course of the pre-draft planning. Participating jurisdictions posted public notices at government building, to their respective websites that included a link to the full time website maintained on the Yuma County servers. The City of Somerton provided postings at the Public Safety Facility, at the Yuma County Public Library in Somerton, at the City Hall, at the City of Somerton's Recreation Center, at the Court House and at the Senior Center. The Cocopah Indian Tribe also posted at the Tribal Headquarters and the Cocopah Community Center.

A second wave of post-draft public notices were posted to jurisdiction websites and a copy of the draft Plan was posted to the Yuma County website for review and comment. The following process was also used to encourage public involvement:

1. Hard copy binders of the plan were delivered to the Yuma Main Library, the Heritage Library in Yuma, the Somerton Library, San Luis Library, the Wellton Library, and a copy is available in the Office of Emergency Management for public review.
2. In each of the binders, the county's e-mail announcement (enotification@co.yuma.az.us) that was sent or broadcasted previously, and a placed blank yellow pad in the binder for providing comments provided in Appendix C.
3. With the binders, a sign-up sheet for people requesting the Emergency Manager to contact them is provided in Appendix C.

Interested citizens were also encouraged to participate in the local community adoption process which, depending upon the jurisdiction, may have included up to two public meetings and a formal public hearing.

Copies of the public notices, web pages, and newspaper notices are provided in Appendix C. Two responses were received from the general public. Those comments are available in Appendix E.

3.6 Neighboring Communities

It is important for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved, or at least, given the opportunity to participate in the planning process. The opportunity for participation in the planning process was provided to neighboring communities such as the Cocopah Indian Tribe and the University of Arizona - Yuma County Cooperative Extension Office. Other businesses, government agencies, academia and nonprofits through the Yuma Area Agricultural Council in Table 3-5 were given direct invitations to comment on the draft plan to participate in the planning process as shown in Appendix B.

Table 3-5: Listing of Yuma Area Agricultural Council

Last	*First*	*Representing*
Alford	Dwayne	Yuco Gin
Almanza	Abel	Pan American Insurance
Busellato	Anthony	Farm Credit Southwest
Catanzaro	Terry	Skyview Cooling
Cumming	Jim	Farmer
Davis	Tom	Yuma County Water Users
Didier	Louie	Select Seed AZ
Dinnan	Louie	Morris Ag Air
Dunn	Aimee	Dunn Farms
Dunn	Tim	Dunn Grain
Eatherly	Kevin	City of Yuma Heritage Foundation
Fairchild	Donna	AZ Cotton Research and Protection Council
Gatley	George	Western Agri Radio Networks
Hodges	Tom	University of Arizona
Hoffmeyer	Fred	Hoffmeyer Farms
Kidd	Joanne	Doug Mellon Farms
Kinner	Ronald	Farm Credit Services Southwest
Koch	Karl	Bingham Equipment
Lobeck	Joyce	The Sun
Maxwell	Howard	Booth Machinery
McDermott	Bobbi	USDA retired
Mellon	Doug	Doug Mellon Farms
Ming	Dale	Farm Credit Services Southwest
Moneypenny	Dennis	Moneypenny Farms
Morris	Miles	Morris Ag Air
Muldoon	Jerry	Dole Company
Nolte	Kurt	University of Arizona
Ogden	Ralph	Sheriff of Yuma County
Palmer	Dwight	Cros Production Services
Pangerl	Jolynn	Southwest Ag Summit
Pauley	Craig	BASF The Chemical Company
Phillips	Matthew	
Poe	Steve	University of Arizona
Rademacher	Rick	Three Star Lettuce
Rice	Ronald	
Robinson	Gretchen	Yuma County Office of Emergency Management
Rodriguez	Sonny	Growers Company
Rosevear	Ken	Yuma County Chamber of Commerce
S	Scott	McElhaney Cattle Company
Simmons	Darren	Yuma County Sheriff's Office
Spencer	Bill	AZ Citrus Products
Stubbs	Ronna Sue	Yuma Community Food Bank
Ward	Shelly	USDA
Ware	Patty	Pat Ware Farms
Wilmot	Leon	YCSO

3.7 Reference Documents and Technical Resources

Over the course of the update planning process, numerous other plans, studies, reports, and technical information were obtained and reviewed for incorporation or reference purposes. The majority of sources referenced and researched pertain to the risk assessment and the capabilities assessment. To a lesser extent, the community descriptions and mitigation strategy also included some document or technical information research. Table 3-6 provides a reference listing of the primary documents and technical resources reviewed and used in the Plan. Detailed bibliographic references for the risk assessment are provided at the end of each hazard risk profile in Section 5.3. Other bibliographic references are provided as footnotes.

Table 3-6: List of resource documents and references reviewed and incorporated in the plan update process

Referenced Document or Technical Source	Resource Type	Description of Reference and Its Use
Arizona Department of Commerce	Website Data and Community Profiles	Reference for demographic and economic data for the county. Used for community descriptions
Arizona Department of Emergency Management	Data and Planning Resource	Resource for state and federal disaster declaration information for Arizona. Also a resource for hazard mitigation planning guidance and documents.
Arizona Department of Water Resources	Technical Resource	Resource for data on drought conditions and statewide drought management (AzGDTF), and dam safety data. Used in risk assessment.
Arizona Geological Survey	Technical Resource	Resource for earthquakeand other geological hazards. Used in the risk assessment.

Table 3-6: List of resource documents and references reviewed and incorporated in the plan update process

Referenced Document or Technical Source	Resource Type	Description of Reference and Its Use
Arizona Model Local Hazard Mitigation Plan	Hazard Mitigation Plan	Guidance document for preparing and formatting hazard mitigation plans for Arizona.
Arizona State Land Department	Data Source	Source for statewide GIS coverages (ALRIS) and statewide wildfire hazard profile information (Division of Forestry). Used in the risk assessment.
Arizona Wildland Urban Interface Assessment (2004)	Report	Source of wildfire hazard profile data and urban interface at risk communities. Considered, but not used in the risk assessment.
Bureau Net (2010)	Website Database	Source for NFIP statistics for Arizona.
City of Yuma GIS Dictionary	GIS and Demographic Data	Source for GIS data and countywide infrastructure, development and planning data.
City of San Luis General Plan	General Plan	Source for history, demographic and development trend data for the city.
City of San Luis MHMP (2005)	Hazard Mitigation Plan	FEMA approved hazard mitigation plan that together with the other Yuma County jurisdiction's MHMPs, formed the starting point for the update process. See Section 2.4 for further discussion
City of Somerton General Plan 2020	General Plan	Source for history, demographic and development trend data for the city.
City of Somerton MHMP (2005)	Hazard Mitigation Plan	FEMA approved hazard mitigation plan that together with the other Yuma County jurisdiction's MHMPs, formed the starting point for the update process. See Section 2.4 for further discussion
City of Yuma General Plan	General Plan	Source for history, demographic and development trend data for the city.
City of Yuma MHMP (2005)	Hazard Mitigation Plan	FEMA approved hazard mitigation plan that together with the other Yuma County jurisdiction's MHMPs, formed the starting point for the update process. See Section 2.4 for further discussion
Town of Wellton MHMP (2005)	Hazard Mitigation Plan	FEMA approved hazard mitigation plan that together with the other Yuma County jurisdiction's MHMPs, formed the starting point for the update process. See Section 2.4 for further discussion
Town of Wellton Master Street Plan (June 2008)	Technical Resource	Provided current town limit boundaries for maps and risk assessment.
Yuma County Comprehensive Plan (Updated March 2009)	Comprehensive Plan	Source for history, demographic and development trend data for the unincorporated county.
Yuma County Flood Control District	Technical Resource	Resource for floodplain, levee, and dam failure data. Used in the risk assessment.
Yuma County GIS	GIS Data	Source for county-wide GIS data and supplemental hazard data sets. Used for maps and risk assessment.
Yuma County MHMP (2005)	Hazard Mitigation Plan	FEMA approved hazard mitigation plan that together with the other Yuma County jurisdiction's MHMPs, formed the starting point for the update process. See Section 2.4 for further discussion
Yuma County Community Wildfire Protection Plan (APMG, DRAFT)	Community Wildfire Protection Plan	Source of wildfire historical hazard profile data and risk assessment. Full working draft was not available for writing this plan.
Environmental Working Group's Farm Subsidy Database (2009)	Website Database	Source of disaster related agricultural subsidies. Used in the risk assessment.
Federal Emergency Management Agency	Technical and Planning Resource	Resource for HMP guidance (How-To series), floodplain and flooding related NFIP data (mapping, repetitive loss, NFIP statistics), and historic hazard incidents. Used in the risk assessment and mitigation strategy. Also, utilized for delineation of wildfire hazard areas.
HAZUS-MH	Technical Resource	Based data sets within the program were used in the vulnerability analysis.
National Climatic Data Center	Technical Resource	Online resource for weather related data and historic hazard event data. Used in the risk assessment.
National Integrated Drought Information System (2007)	Technical Resource	Source for drought related projections and conditions. Used in the risk assessment.
National Response Center	Technical Resource	Source of traffic related HAZMAT incidents and rail accidents. Used in the risk assessment.
National Weather Service	Technical Resource	Source for hazard information, data sets, and historic event records. Used in the risk assessment.

Table 3-6: List of resource documents and references reviewed and incorporated in the plan update process

Referenced Document or Technical Source	Resource Type	Description of Reference and Its Use
National Wildfire Coordination Group (2010)	Technical Resource	Source for historic wildfire hazard information. Used in the risk assessment.
Office of the State Climatologist for Arizona	Website Reference	Reference for weather characteristics for the county. Used for community description.
Standard on Disaster/Emergency Management and Business Continuity Programs (2000)	Standards Document	Used to establish the classification and definitions for the asset inventory. Used in the risk assessment.
State of Arizona MHMP (2007)	Hazard Mitigation Plan	The state plan was used a source of hazard information and the state identified hazards were used as a starting point in the development of the risk assessment.
USACE Flood Damage Report (1978)	Technical Data	Source of historic flood damages for 1978 flood. Used in the risk assessment.
USACE Flood Damage Report (1994)	Technical Data	Source of historic flood damages for 1993 flood. Used in the risk assessment.
U.S. Forest Service	Technical Data	Source for local wildfire data. Used in the risk assessment.
U.S. Geological Survey	Technical Data	Source for geological hazard data and incident data. Used in the risk assessment.
Western Regional Climate Center	Website Data	Online resource for climate data used in climate discussion of Section 4
Biotic Communities (1999)	Technical Data	Vegetative description for the Southwestern United States and Northwest Mexico. Used in Section 4 discussion for county overview.

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SECTION 4: COMMUNITY DESCRIPTIONS

4.1 General

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

4.2 County Overview

4.2.1 Geography

The history of Yuma County is quite colorful and continues to live on today in a fast-growing and vibrant community. In 1540, just 48 years after Columbus discovered the New World, 18 years after the conquest of Mexico by Cortez, and 67 years before the settlement of Jamestown, Hernando de Alarcon visited the site of what is now the current City of Yuma. He was the first European to visit the area and to recognize the best natural crossing of the Colorado River. Much of Yuma County's later development occurred because of this strategic location. From the 1850's through the 1870's, steamboats on the Colorado River transported passengers and goods to various mines, military outposts in the area, and served the ports of Yuma, Laguna, Castle Dome, Norton's Landing, Ehrenberg, Aubry, Fort Mohave and Hardyville. During this time, stagecoaches also carried the mail and passengers on bone-jarring rides through the area.

Yuma County is located in the extreme southwestern corner of Arizona, as depicted in Figure 4-1. The County is larger than the state of Connecticut, and much of Yuma County's 5,519 square miles is desert land accented by rugged mountains. Yuma County limits generally lie between longitudes 114.82 to 113.33° west and latitudes 32.03 to 33.46° north. According to the Arizona Department of Commerce,[2] Yuma County is one of four original counties designated by the first Territorial Legislature. In 1864, Yuma was selected as the county seat and has remained so to this day. The County maintained its original boundaries until 1983, when voters decided to split Yuma County, forming La Paz County in the north and the new, present day Yuma County in the south.

Yuma County is characterized by two prominent river valley regions formed by the Gila and Colorado Rivers. Within these regions exist an abundance of arable land which is irrigated with water from the Colorado River and groundwater supplies. There are also over 200 miles of irrigation canals that extend at regular intervals through the County's agricultural belt. The Colorado and Gila River Valley areas have some of the most fertile soils in the world, having received silt and mineral deposits from flooding of the watercourses until the rivers were "tamed" by an intricate series of dams and canals.

For many years, Yuma served as the gateway to the new western territory of California, which brought thousands of people from around the world in search of gold, or provide services to those who had it. In 1870, the Southern Pacific Railroad bridged the Colorado River and Yuma became a hub for the railroad. The Ocean-to-Ocean Bridge (or Old Highway 80 Bridge) was the first vehicle bridge across the Colorado River. Prior to the construction of the bridge, cars were ferried across. Present day major highways through the County include Interstate 8 and U.S. Highways 95 and 80, and State Highway 195, the high speed truck route from Mexico to Yuma. Yuma County is bordered by California on the West and Mexico on the South. The Marine Corps Air Station (MCAS) shares one of the longest runways in the country with the Yuma International Airport. Additionally, the U.S. Air Force operates Laguna Air Force Base in the central-western portion of the County. Figure 4-2 depicts the general geographic features and transportation routes within Yuma County.

[2] Arizona Department of Commerce, 2008, *Community Profile for Yuma County*

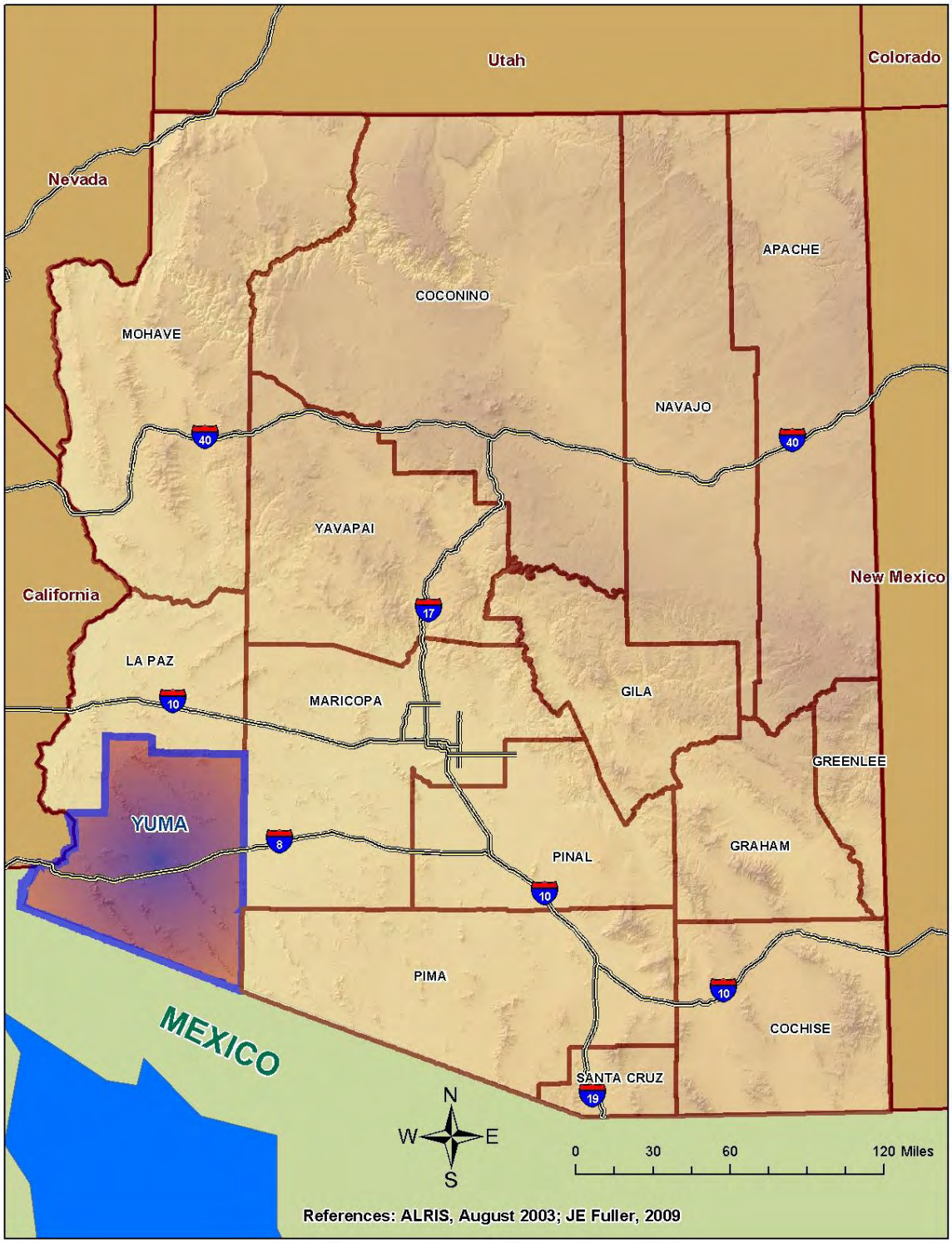

Figure 4-1
Vicinity Map

The U.S. Forest Service and Bureau of Land Management own 42% of Yuma County land; Indian Reservations, 0.5%; and the State of Arizona 5%; individual and corporations 13%; and other public lands 40%. Figure 4-8 represents the Designated Planning Areas for Yuma County, and Figure 4-9 illustrates the land ownership in Yuma County.

4.2.2 Climate

The climate in Yuma County is typically hot and dry during the summer and mild during the winter. Climatic statistics for weather stations within Yuma County are produced by the Western Region Climate Center[3] and span records dating back to the early 1900's. Locations of reporting stations within or near Yuma County are shown on Figure 4-2. Statistics for the Dateland Whitewing Ranch and Yuma Proving Grounds Stations are provided in the following discussions.

Average temperatures within Yuma County are fairly uniform and range from near freezing during the winter months to over 110° Fahrenheit during the hot summer months. Average extreme temperatures have exceeded either end of the spectrum by 10 to 15°. Figure 4-4 presents a graphical depiction of temperature variability and extremes throughout the year for the Yuma Proving Ground Station, which is situated at an elevation of 320 feet. The Yuma Proving Ground data are fairly representative of the lower valley regions of the County. A similar graph is presented in Figure 4-5 for the Dateland Whitewing Ranch Station, which is located at an elevation of 550 feet.

Annual precipitation across Yuma County varies significantly with elevation. For example, the urbanized Yuma Valley area receives less than three (3) inches of rainfall annually while the eastern portion of the County receives nearly five (5) inches annually and the northern areas approach seven (7) inches annually.[4] From a rainfall perspective, the Yuma Valley area is one of the driest areas of the State, however, as residents will testify, "you have to be here on the day it all comes!"

From November through March, storm systems from the Pacific Ocean cross the state as broad winter 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 usually do not form in Yuma County area, but are found in the mountainous regions of the central southeastern portions of Arizona. Thunderstorms that do materialize are often accompanied by strong winds, blowing dust, and infrequent hail storms.[5] During the period of October through February, temperature inversions occur nightly and last about one hour after sunrise. Air pollution levels can rise significantly during this period, as does the potential for fog. Prevailing winds are basically northwesterly, except during the months of June, July, August and September when they become south to southwesterly. Average wind speed through the year is about 7.8 miles per hour.

All of Yuma County is situated within the Sonoran Desert and is characterized by an arid environment typical to much of southwestern Arizona. The elevations vary across the County with mountain peaks that are less than 3,000 feet in elevation to a low elevation of 175 feet. Vegetation in this zone is comprised mainly of a mixture of palo verde, cacti, creosotebush, and bursage communities.[6] The

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

[4] Per WRCC statistics for the Kofa Mine Station, which is at an elevation of 1,780 feet (see Figure 1-2).

[5] Office of the State Climatologist for Arizona, 2004. Partially taken from the following weblink: http://geography.asu.edu/azclimate/narrative.htm

[6] Brown, D.E., University of Utah, 1999, *Biotic Communities; Southwestern United States and Northwest Mexico.*

river bottoms are primarily comprised of saltbrush and arroweed scrub, with a few sparse stands of mesquite and riparian deciduous woodland. Figure 4-3 depicts the various Sonoran Desert biotic regions for the County.

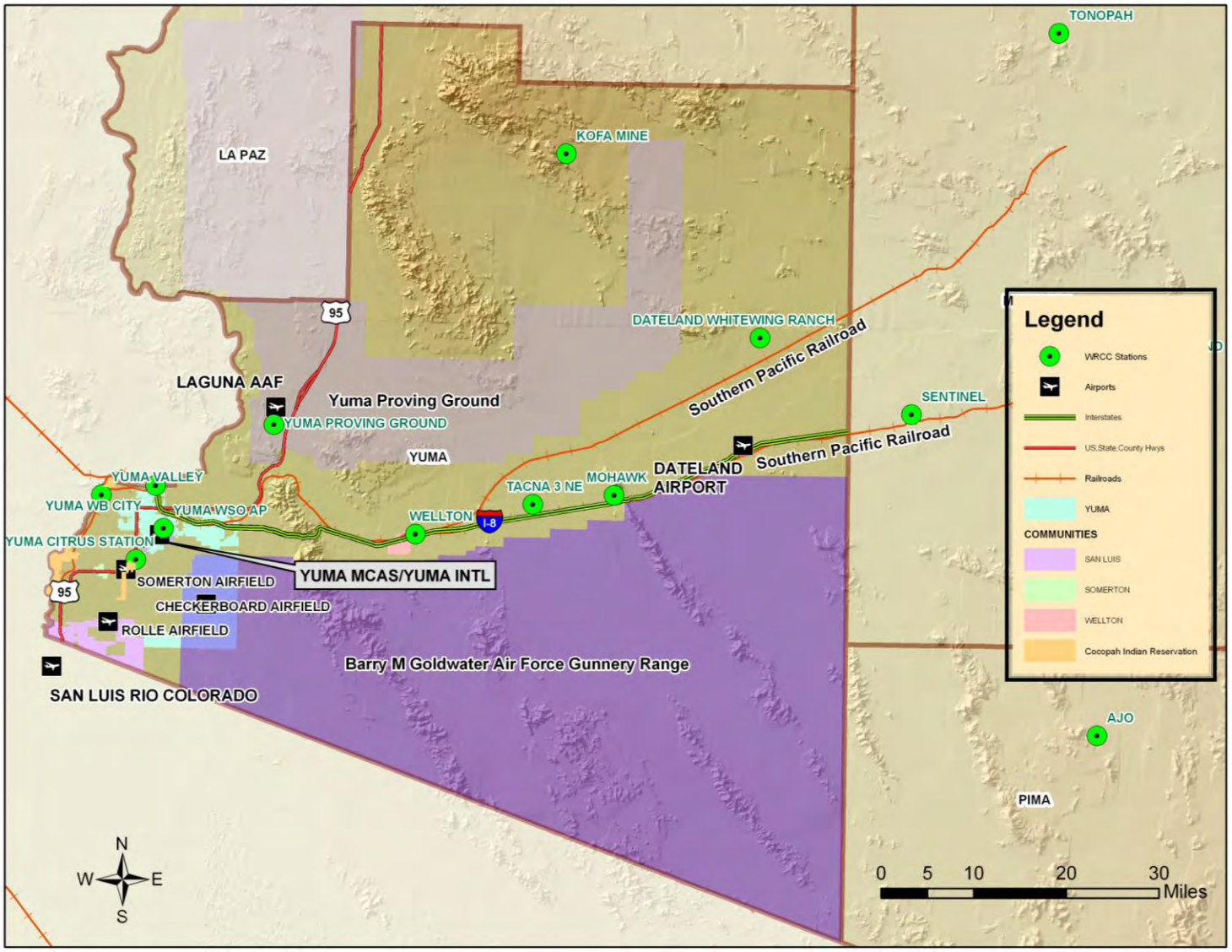

Figure 4-2: General Location and Transportation Map

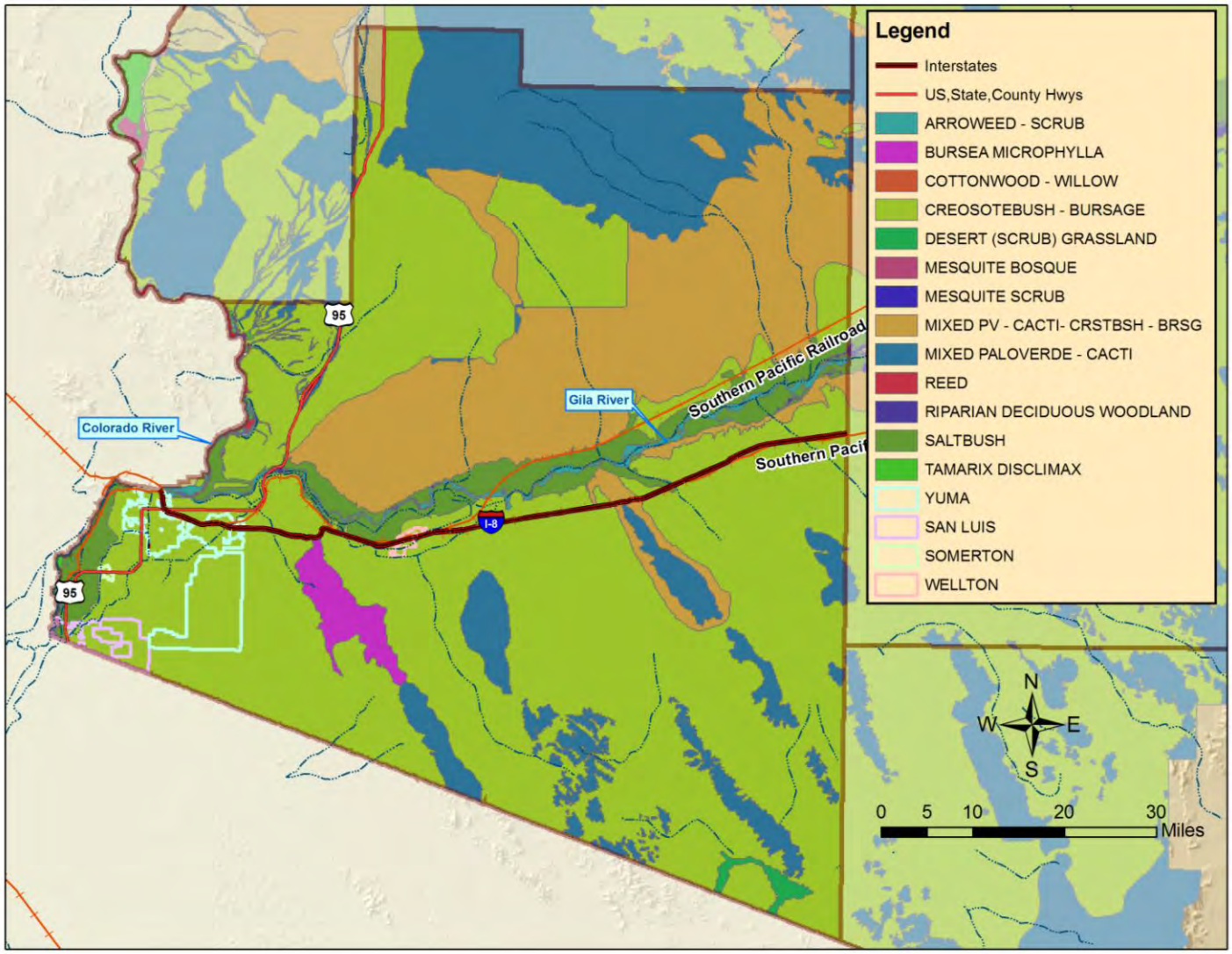

Figure 4-3: Vegetative Communities Within Yuma County

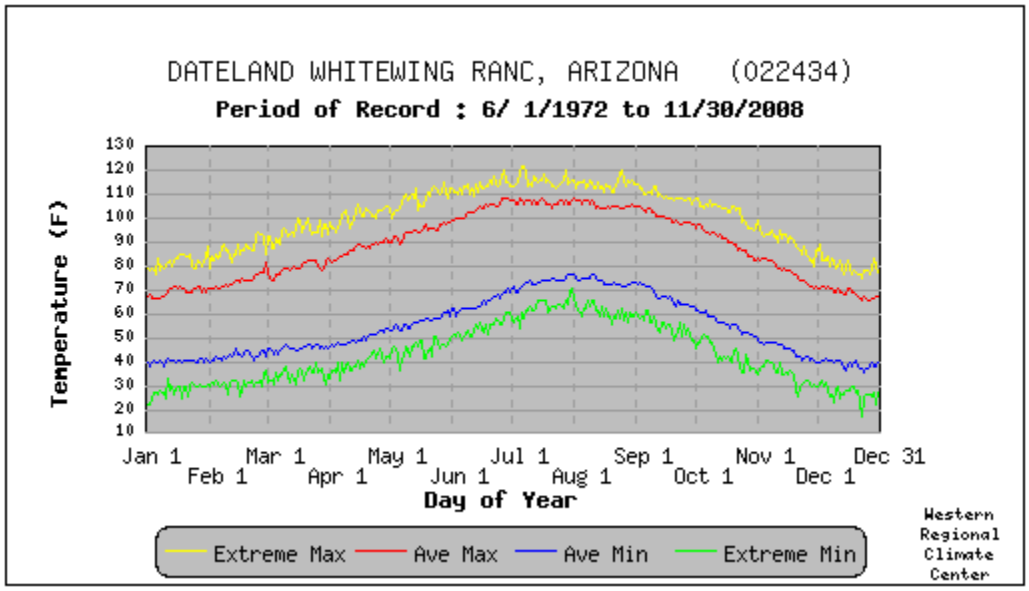

Figure 4-4
Daily Temperatures and Extremes for Dateland, Arizona

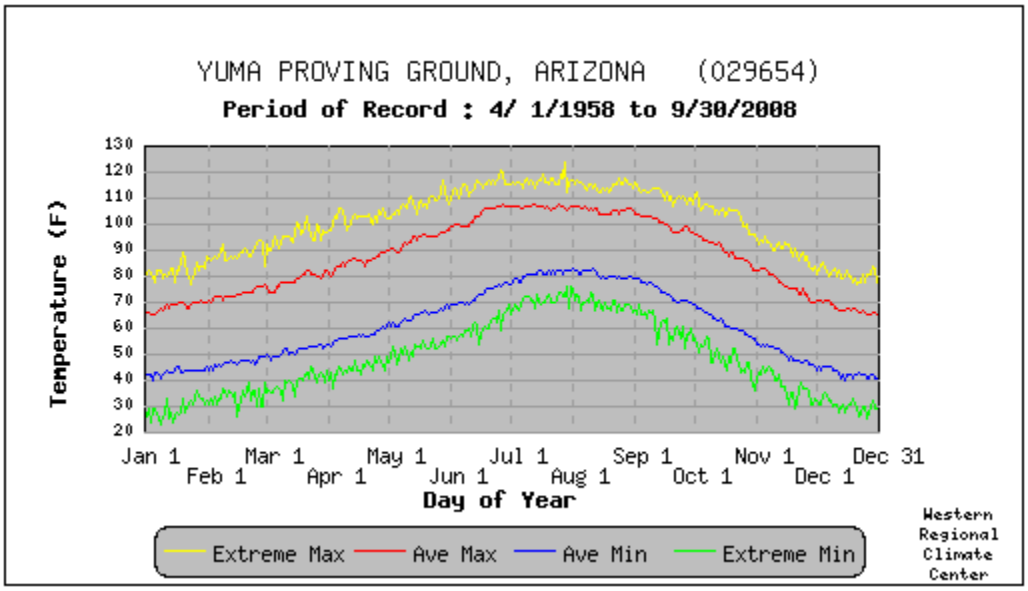

Figure 4-5
Daily Temperatures and Extremes for Yuma Proving Grounds, Arizona

DATELAND WHITEWING RANC, ARIZONA (022434)

Period of Record Monthly Climate Summary

Period of Record : 6/ 1/1972 to 11/30/2008

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	68.8	73.2	78.7	86.7	94.3	103.6	106.5	105.1	100.4	89.8	77.6	68.3	87.8
Average Min. Temperature (F)	39.6	42.1	45.1	49.5	56.3	64.4	73.0	73.5	67.1	55.4	44.5	38.6	54.1
Average Total Precipitation (in.)	0.60	0.58	0.51	0.14	0.04	0.01	0.39	0.77	0.50	0.42	0.42	0.62	5.01
Average Total SnowFall (in.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 95% Min. Temp.: 94.9% Precipitation: 94.7% Snowfall: 97.3% Snow Depth: 97.3%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

Figure 4-6
Monthly Climate Summary for Dateland Whitewing Ranch, Arizona

YUMA PROVING GROUND, ARIZONA (029654)

Period of Record Monthly Climate Summary

Period of Record : 4/ 1/1958 to 9/30/2008

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	68.5	73.1	78.6	85.6	94.1	103.2	106.7	105.3	100.5	89.9	76.9	67.8	87.5
Average Min. Temperature (F)	43.3	46.9	51.4	57.1	64.8	72.8	80.7	80.5	74.0	62.1	50.0	42.7	60.5
Average Total Precipitation (in.)	0.47	0.41	0.33	0.14	0.03	0.04	0.22	0.56	0.43	0.31	0.25	0.45	3.65
Average Total SnowFall (in.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 98.4% Min. Temp.: 98.4% Precipitation: 98.2% Snowfall: 98.4% Snow Depth: 98.4%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

Figure 4-7
Monthly Climate Summary for Yuma Proving Ground, Arizona

4.2.3 Population

Yuma County is home to 203,779 residents, with the majority of the citizens living in the incorporated communities or Indian Reservation portions of Yuma County. The largest community is the City of Yuma. All three incorporated cities and one town are geographically located in the southwest portion of the County. The other 13 towns and communities located throughout the county, with most situated along major highways are mostly comprised of only a few structures or landmark. Table 4-1 summarizes jurisdictional population statistics for Yuma County communities and the County as a whole.

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

Jurisdiction	1990	2000	2008	2010	2020
Yuma County (total)	106,895	160,026	203,779	218,810	271,361
Cities, Towns and Tribes					
Cocopah Indian Tribe	N/A	1,025	N/A	1,589	2,094
Fort Yuma Indian Tribe	N/A	36	N/A	60	81
City of San Luis	4,212	15,322	26,705	30,506	44,080
City of Somerton	5,282	7,266	11,377	12,224	16,655
Town of Wellton	1,066	1,829	2,318	2,108	2,355
City of Yuma	56,966	77,515	93,719	99,757	119,464
Unincorporated	39,369	57,033	69,660	72,566	86,632

Note: Figures for 1990 and 2000 from US Census Bureau
:http://www.azcommerce.com/econinfo/demographics/Census+2000.html
Figures for 2008 population: http://www.azcommerce.com/doclib/econinfo/FILES/2008AZestimates.pdf
Figures for 2010 to 2020: Arizona Department of Economic Security, Research Administration, Population Statistics Unit, 12/01/06.

4.2.4 Economy

The Yuma valley regions contain an abundant of arable land, which utilizes the close proximity of the Colorado River water through a network of canals. Agriculture, tourism, military and government and retail trade are the county's main industries.

The Yuma County labor force in 2008 numbered 82,500 with an unemployment rate of 15.9%. Farming, cattle raising, tourism, retail trade, and the US Marine Corp Air Station Yuma and US Army Yuma Proving Ground military bases are Yuma County's principal industries. Some of the major tourist attractions in Yuma County include the historical Territorial Prison, Yuma Crossing Historic Park, Kofa Mountain Range and Wildlife Refuge, Martinez and Mittry Lakes, and hunting for a variety of game.

Arizona Western College (AWC) is located in Yuma County, and offers a two-year community college education to full-time and part-time on-campus and off-campus students. AWC shares its campus with a satellite campus of Northern Arizona University, which offers a variety of two year, four year and postgraduate programs.

Yuma County is currently experiencing rapid growth, with the most significant growth having occurred in the last ten years. Growth factors of economic opportunity, beneficial climate, and an active lifestyle are beginning to transform the region's prime agricultural lands into residential, commercial and industrial development. This rapid growth presents a significant challenge to the County in the effort of maintaining a sustained economic prosperity, enhancing the quality of life, and maintaining the safety of County residents.

In order to plan more efficiently, the County has been divided into six Designated Study Areas (DSA). A map showing the boundaries of each DSA is provided in Figure 4-8. The development histories for each DSA are provided in the following text and are excerpts from the Yuma County 2010

Comprehensive Plan. Figure 4-9 represents the community locations and land ownership throughout Yuma County.

Martinez Lake - The portion of the county bordered by La Paz County on the north and west, East County 15th Street North on the south and Kofa National Wildlife Refuge and Wilderness Area on the east.

- Martinez Lake is one of a series of man-made lakes along the Colorado River, and was formed with the construction of Imperial Dam in 1935.
- In 1955, the Martinez Lake Resort began as a fishing camp and eventually expanded into a year-round community that caters to winter visitors, sightseers, fishermen, rock hounds, boaters, hunters, and water skiers.
- Currently, retirees, winter visitors, military personnel, and recreation are fueling the growth and adding another facet to the ever-evolving character of this area.

Dateland/East County - That portion of the county bordered by La Paz County on the north, Kofa National Wildlife Refuge and Wilderness Area, Yuma Proving Grounds(YPG) and approximately Avenue 52E on the west, Barry M. Goldwater Range (BMGR) on the south and Maricopa County on the east.

- The economic base is primarily farming, agricultural production and associated railroad activities.
- Planning area covers 554,156 acres or about 861 square miles.
- Less than 1% is residentially developed.
- Low population density (approximately one person per square mile).
- The Dateland Elementary School serves as the focal point for the community.

Dome Valley/Wellton - The portion of the county bordered by YPG on the north, the Gila Mountains on the west, BMGR on the south and approximately Avenue 52E on the east.

- This area covers 404 square miles or approximately 258,793 acres.
- Permanent population estimate is 3,556 residents.
- Permanent residential units is 2,200.
- Interstate 8 traverses the county from east to west.
- Plentiful desert and scenic vistas.

Yuma, Foothills & South County - That portion of the county bordered by East County 3rd Street North on the north, California and Mexico on the west, Mexico and BMGR on the south and the Gila Mountains and YPG on the east.

- Rapid residential growth on the South Mesa.
- Increase in permanent site built dwelling units.
- Conversion of agricultural land to residential uses.
- Diminishing water quality.
- 1999 Winter Visitors Population - 90,000.
- 1990 - 2000 Foothills Growth of 165% (U.S. Census Data).

Kofa National Wildlife Refuge and Wilderness Area & U.S. Army Yuma Proving Ground - That portion of the county that includes the Kofa National Wildlife Refuge and Wilderness Area and YPG jurisdictions.

Barry M. Goldwater Range and Cabeza Prieta National Wildlife Refuge - That portion of the county that includes the BMGR and Cabeza Prieta National Wildlife Refuge jurisdictions.

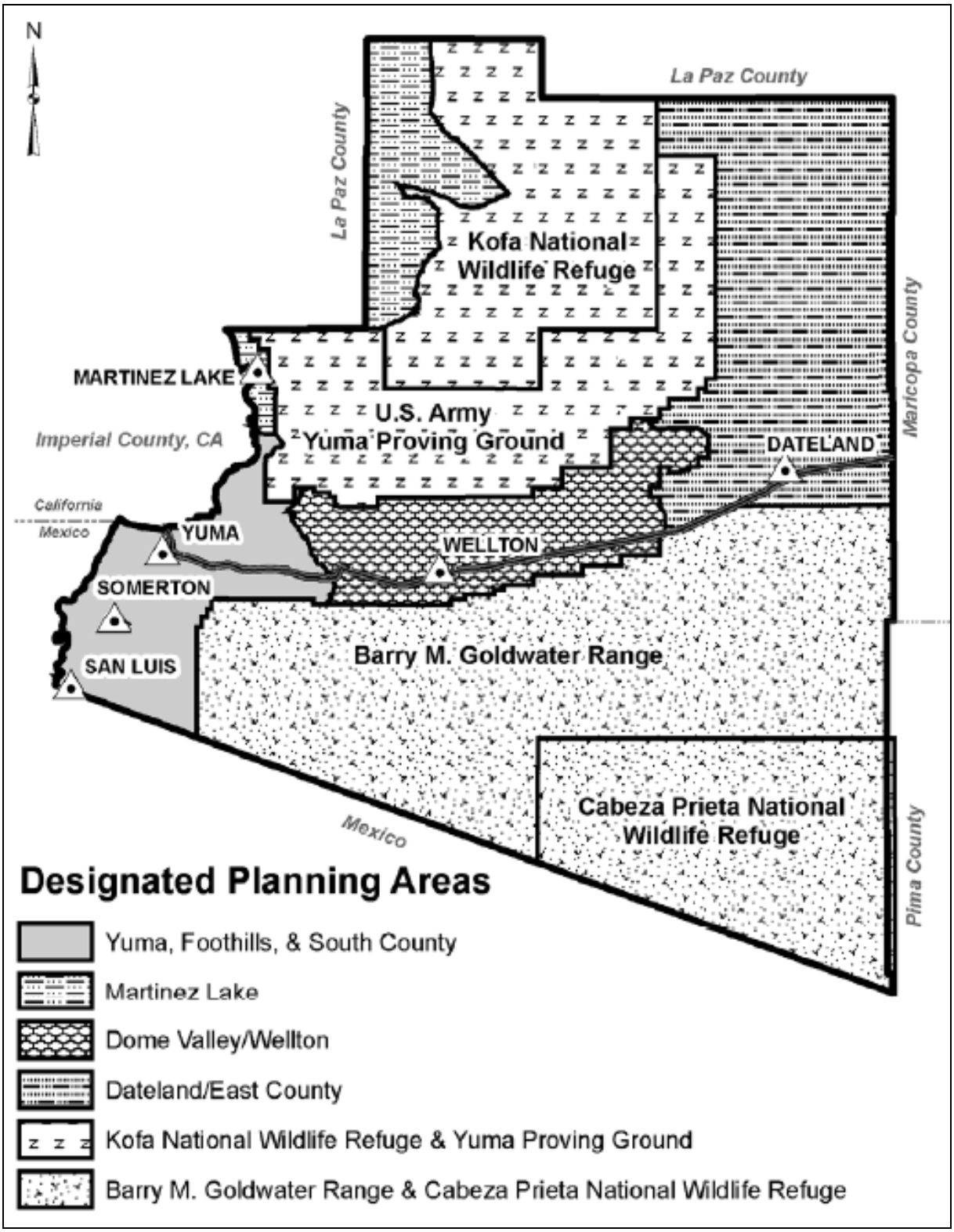

Figure 4-8
Development Study Areas within Yuma County

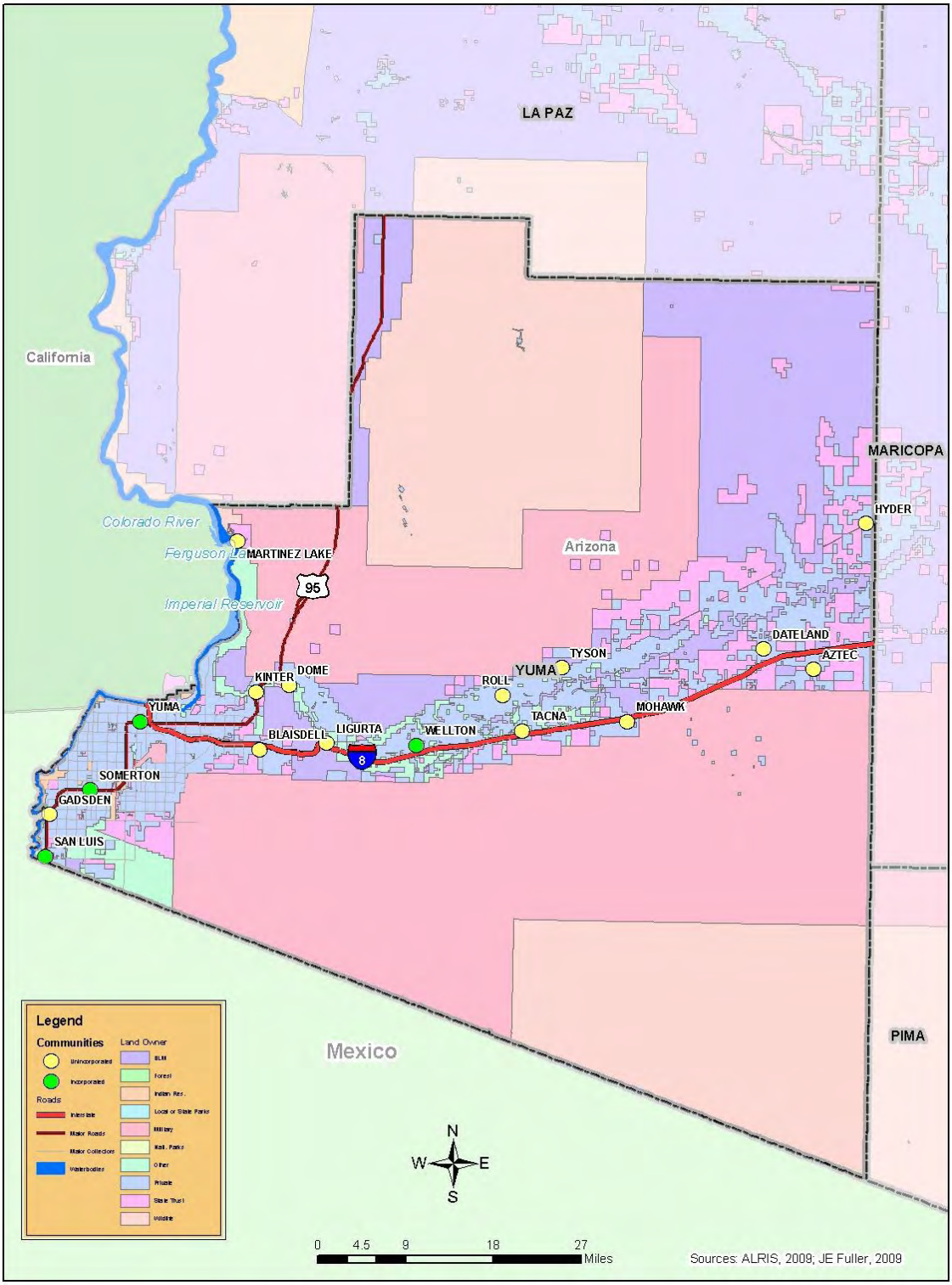

Figure 4-9: Community Location and Land Ownership Map

4.3 Jurisdictional Overviews

The following are brief overviews for each of the participating jurisdictions in the Plan.

4.3.1 Cocopah Indian Tribe

Cocopah Indian Reservation is located in the western portion of Yuma County, Arizona, as depicted in Figure 4-2. The Reservation is comprised of three non-contiguous bodies of land known as the North, West and East Reservations. The Reservation is situated at an elevation of 103 feet, and is geographically positioned at longitude 114.72 degrees west and latitude 32.6 degrees north. Cocopah Indian Reservation is located adjacent to the Colorado River; 13 miles south of Yuma; 15 miles north of San Luis, a national border city with Mexico; 197 miles west of Phoenix; and Tucson is approximately 250 miles to the southeast. U.S. Highway 95 and I-8 are nearby roadways for travel to the Reservation. The major transportation routes and land features around the Reservation are shown on Figure 4-2. Established by Executive Order in 1917, the Reservation currently encompasses approximately 6,500 acres.

Cocopah Indian Reservation location is primarily surrounded by Bureau of Land Management and State Trust lands as represented in Figure 4-9.

The total 2000 Census population for Cocopah Indian Tribe and Yuma County is 1,025 and 160,026. Table 4-1 summarizes population estimates for Cocopah Indian Tribe and Yuma County in 10-year cycles beginning in 1990 and projecting through 2020.[7]

Agriculture has always been an important part of the economy, as well as today. Continually adjusting to the river's seasonal changes, they relied on the lush riparian habitats to obtain food. Tribal members grew grains, corn, beans and melons in the floodplains of the Colorado River. In traveling the waterways on log rafts, they collected wild wheat and shellfish. They netted fish and collected shellfish in the delta and hunted deer and small game in the mesquite forests. As time progressed and farms and towns populated the West, the flow of water eventually stopped due to the construction of dams along the Colorado River. This altered the Cocopah's way of life along the river.[8]

The Cocopah Indian Tribe is one of seven descendant Tribes stemming from the Yuman language-speaking people who occupied the lands along the Colorado River. The Cocopah people had no written language, but the records were passed on orally or interpreted in documents and written by outsiders.

During the westward expansion in the 1840s and discovery of gold in California in 1849, this brought many migrants through the area. The U.S. government recognized the importance of the river crossing and therefore established Camp Independence in 1850 to protect the entry route through the tribes's territories. Soon after the camp was moved to an old Spanish Mission later call Fort Yuma, which still exists today. The Cocopahs effectively resisted assimilation to an established reservation and continued its social, religious and cultural identities. During the last half of the nineteenth century, the Cocopah men known for their skillful river navigability abilities, were valuable as pilots for the steamboat business.

As recent as the 1960s, a number of tribal families continued to live in traditional arrow weed-thatched homes. In the late 1970s and 80s, the tribe began acquiring lands for building homes, installing utilities, developing an infrastructure system and initiating economic development.

The agricultural industry provides annual income through leasing land to non-Indians. In 1985, the tribe started new business ventures including a Bingo hall and Casino, in order for the Tribe to become more self sufficient. The civilian labor force in 2007 was 246 with an unemployment rate of 18.3%.

[7] http://www.azcommerce.com/econinfo/demographics/Population+Projections.html

[8] http://www.cocopah.com/about.html

4.3.2 San Luis

The City of San Luis lies in Yuma County at the southwest corner of the State of Arizona. San Luis is a growing U.S. Port of Entry city and shares a border with Mexico on the south and the Colorado River and State of Baja California del Norte, Mexico on the west, as depicted in Figure 4-1. Many visitors come to San Luis as a stopover for shopping in Mexico or for a fishing trip in the Gulf of Mexico.

The total 2008 population for San Luis and Yuma County is 26,075 and 203,779. Table 4-1 summarizes population estimates in 10-year cycles beginning in 1990 and projecting through 2020.[9]

San Luis was established in 1930 as a U.S. Port of Entry into Mexico. In 1979, the city was incorporated. Since then, it has experience a rapid growth, both in population and commercial sectors, and is one of the fasted growing communities in Yuma County. San Luis Rio Colorado, Sonora, Mexico is the sister city across the border with an estimated population of 200,000.

The City of San Luis is geographically positioned at longitude 114.70 degrees west and latitude 32.49 degrees north, and currently encompasses nearly 30 square miles. San Luis is located 206 miles west of Phoenix and 259 miles west of Tucson. The Gulf of Mexico is located 75 miles to the south.

The population center of the City is located on both sides of U.S. Highway 95. Major airports in the vicinity include the Marine Corps Air Station/Yuma International Airport in Yuma, and the new MCAS auxiliary field located east of the city. San Luis is also served by Rolle Airfield which currently operates as a day-use airfield located in the north central portion of the city. Figure 4-2 depicts the general geographic features and transportation routes within the region surrounding the City of San Luis.

All of the City of San Luis is geographically situated within the Sonoran Desert ecoregion and is characterized by an arid environment typical to much of southwestern Arizona. Across Yuma County, the elevations vary with mountain peaks that are less than 3,000 feet in elevation to a low elevation of 140 feet near San Luis. Typical Sonoran Desert vegetation is comprised mainly of a mixture of palo verde, cacti, creosotebush, and bursage communities;[10] however, most of the City is surrounded by agriculture with little of the original desert flora remaining. Figure 4-3 depicts the various Sonoran Desert biotic regions for the City and County.

Development within San Luis has been primarily tied to agriculture and border activities and economies. Established in 1930 with the U.S. Port of Entry, the city grew slowly over the first 50 years. Since its incorporation in 1978, the city population has grown over 700% and is expected to outpace the rest of Yuma County. Past challenges to growth have included water supply, wastewater treatment, and other infrastructure needs.

The city has identified a future growth area for planning purposes. Figure 4-10 is an excerpt from the City of San Luis General Plan depicting this future growth area and the planned land uses. Much of the future growth is centered around the construction of a new commercial Port of Entry (POE) east of the current location, and the corresponding Robert A. Vaughan Expressway (formerly Area Service Highway) and upon completion known as State Highway 195.

The civilian labor force in 2008 was 6,834 with an unemployment rate of 36.3%. The San Luis economy is driven by retail trade, agriculture and manufacturing. Several light industries are located on both sides of the international border.

[9] http://www.azcommerce.com/econinfo/demographics/Population+Projections.html

[10] Brown, D.E., University of Utah, 1999, *Biotic Communities; Southwestern United States and Northwest Mexico.*

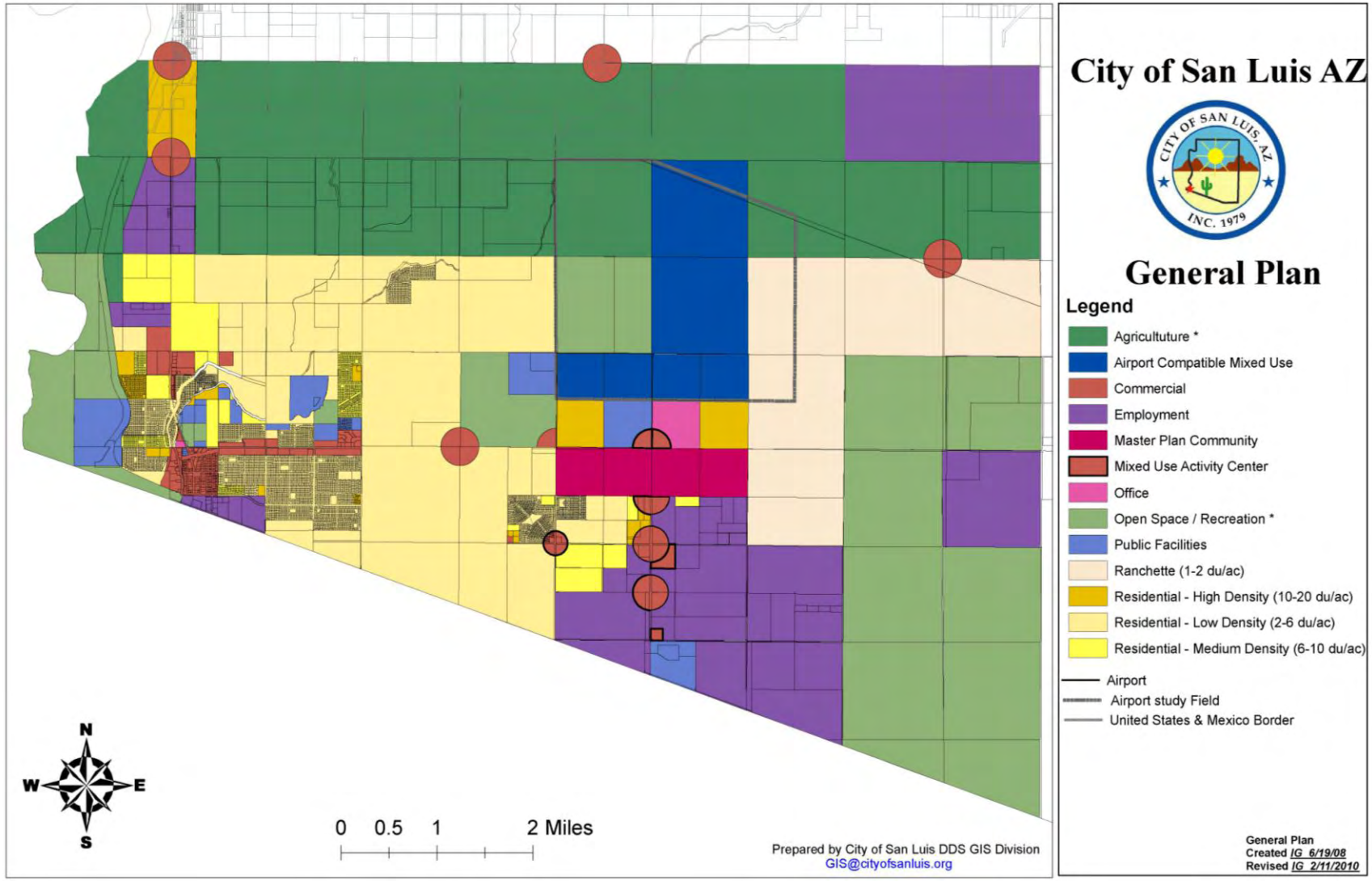

Figure 4-10
Land Use Map from the City of San Luis General Plan

4.3.3 Somerton

According to the Somerton General Plan, the City lies in South Yuma County approximately 10 miles southwest of the City of Yuma and 12 miles from the U.S./Mexican border, as depicted in Figure 4-2.[11] The area is bounded by the Cocopah Indian Reservation at locations that limit the City's ability to expand east onto the mesa or west to the Colorado River.

The total 2008 population for Somerton and Yuma County is 11,377 and 203,779. Table 4-1 summarizes population estimates in 10-year cycles beginning in 1990 and projecting through 2020.[12]

Also, the mild winter weather brings about 90,000 additional, part-time residents to the Yuma Valley that are not reflected by these numbers.

Somerton was established in 1898 and incorporated in 1918. The city is located on land once claimed for the fraudulent Rancho El Paso de los Algodones (land) Grant. Land along the Colorado River was attractive to speculators. One of them, a citizen of the Mexican city of Hermosillo, petitioned authorities in Sonora, Mexico, for 21,692 acres between the Gila River on the north and Algodones Pass on the south and was granted the land in 1838. Arizona historian Jay J. Wagoner said rights to the alleged grant passed to the Colorado Commercial and Land Company in 1873, and the U.S. government withdrew the land from public entry in 1875. An investigation revealed that the grant's original title papers had been forged. Despite this, the U.S. Court of Private Land Claims confirmed the Algodones grant in 1893. Immediately, Wagoner said, "the alleged owners...began selling deeds...for tracts of 40 acres or less." The government appealed, and the U.S. Supreme Court reversed the land court in 1898. After the reversal, the U.S. Congress passed a law allowing settlers who were on the land before May 25, 1898, to buy up to 40 acres for $1.25 per acre.[13]

The City of Somerton is geographically positioned at longitude 114.71 degrees west and latitude 32.60 degrees north, and currently encompasses nearly 900 acres. Somerton is located 192 miles west of Phoenix and 248 miles west of Tucson.

The City is located on both sides of U.S. Highway 95 (Main Street) and Somerton Avenue runs north and south. Major airports in the vicinity include the Marine Corps Air Station/Yuma International Airport in Yuma, and the new MCAS auxiliary field located southeast of the city. Somerton is also served by a small day-use airfield located northwest of the city on the mesa. Figure 1-2 depicts the general geographic features and transportation routes within the region surrounding the City of Somerton.

According to the Somerton General Plan, the city has a long history of overcoming physical and economic adversity. Early settlers had to prevail over annual flooding of the Colorado River in order to benefit from the tremendous potential offered in the rich floodplain soils. In 1902, the Somerton school district was formed and in 1917, Main Street was paved. The downtown business district survived a huge fire in 1926 and was able to continue to be a major economic influence in Yuma County until the early 1960's. The reduced need for manual labor caused by technological improvements in agriculture mirrored the decline of the local economy even as the surrounding communities of Yuma and San Luis began to grow. Census counts for Somerton never tallied the hundreds of temporary farm workers who lived outside the community during the Bracero Program from 1942 to 1964.

Over the last 10 years, growth has been small but steady in Somerton. Somerton is expected to continue growing, especially with the Cities of Yuma and San Luis growing at such rapid paces. In order to address this growth potential, the city has identified a future growth area for planning

[11] City of Somerton, 2005, *Somerton General Plan*, prepared by Partners for Strategic Action, Inc.

[12] http://www.azcommerce.com/econinfo/demographics/Population+Projections.html

[13] Description obtained from the following web site: http://arizonan.com/Somerton/

purposes. Figure 4-11 is an excerpt from the Somerton General Plan depicts this future growth area and the planned land uses. [14]

The City of Somerton labor force in 2008 was 4,039 with an unemployment rate of 26.4%. Economic activity within the city is predominantly agricultural but also includes light industrial and commercial service. Major employers include Del Sol Market, King Market, Sunset Community Health, Housing America Corporation, Puentes De Amistad, Arizona Department of Economic Security, Somerton School District and the City of Somerton.

[14] Figure 5.1 of the Somerton General Plan found at the end of Section 5.0 after page 37

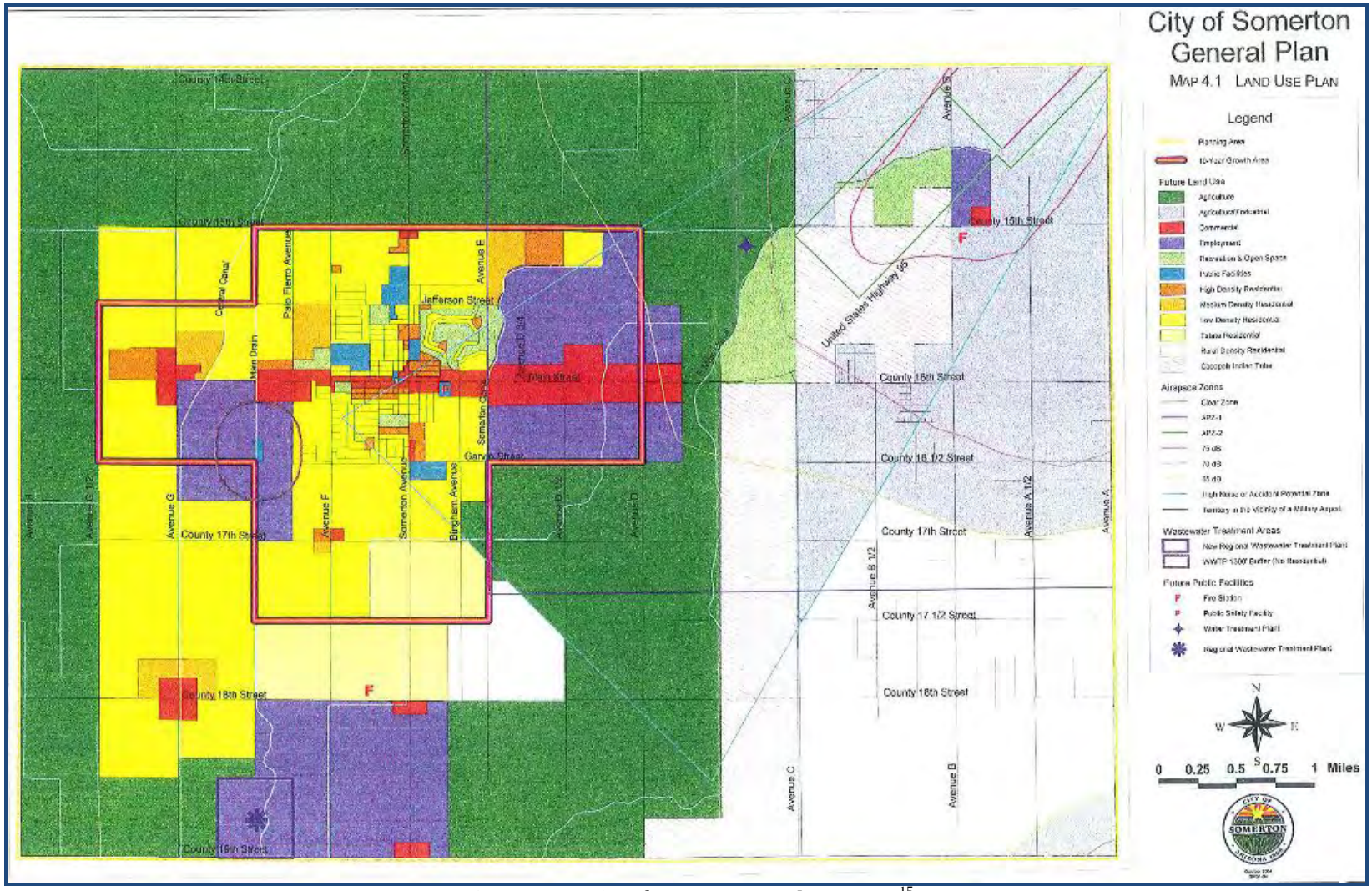

Figure 4-11: City of Somerton Land Use Map [15]

[15] City of Somerton, General Plan 2005, Part 4a, p.49

4.3.4 Wellton

According to the Town of Wellton General Plan[16], Wellton was officially founded in 1878 and was named for a time when water wells were drilled to service the new Southern Pacific Railroad. The town was incorporated in 1970. Wellton is situated approximately 30 miles east of the City of Yuma and the California border in the extreme southwestern corner of Arizona, as depicted in Figure 4-2.

The Town of Wellton is geographically positioned at longitude 114.15 degrees west and latitude 32.66 degrees north, and currently encompasses nearly 4.5 square miles. Wellton is located 155 miles west of Phoenix and 208 miles west of Tucson. The Gila River is the primary watercourse in the area and is located approximately 1.5 miles north of the town. A smaller, ephemeral watercourse named Coyote Wash runs south to north through the eastern portion of the town. Interstate 8 and the Southern Pacific Railroad pass through the central portion of the town limits along an east-west alignment. The portion of Wellton north of Interstate 8 comprises the original townsite and downtown area. Areas south of Interstate 8 are primarily residential and agricultural areas. Figure 4-2 depicts the general geographic features and transportation routes within the region surrounding the Town of Wellton.

All of the Town of Wellton is situated within the Sonoran Desert and is characterized by an arid environment typical to much of southwestern Arizona. Across Yuma County, the elevations vary with mountain peaks that are less than 3,000 feet in elevation to a low elevation of 175 feet. Sonoran Desert vegetation is comprised mainly of a mixture of palo verde, cacti, creosotebush, and bursage communities.[17] The river bottoms are primarily comprised of saltbrush and arroweed scrub, with a few sparse stands of mesquite and riparian deciduous woodland.

Figure 4-12 is an excerpt from the Town of Wellton General Plan depicts this future growth area and the planned land uses.

[16] HDR Engineering, Inc., 2003, *Town of Wellton General Plan 2003-2013*

[17] Brown, D.E., University of Utah, 1999, *Biotic Communities; Southwestern United States and Northwest Mexico.*

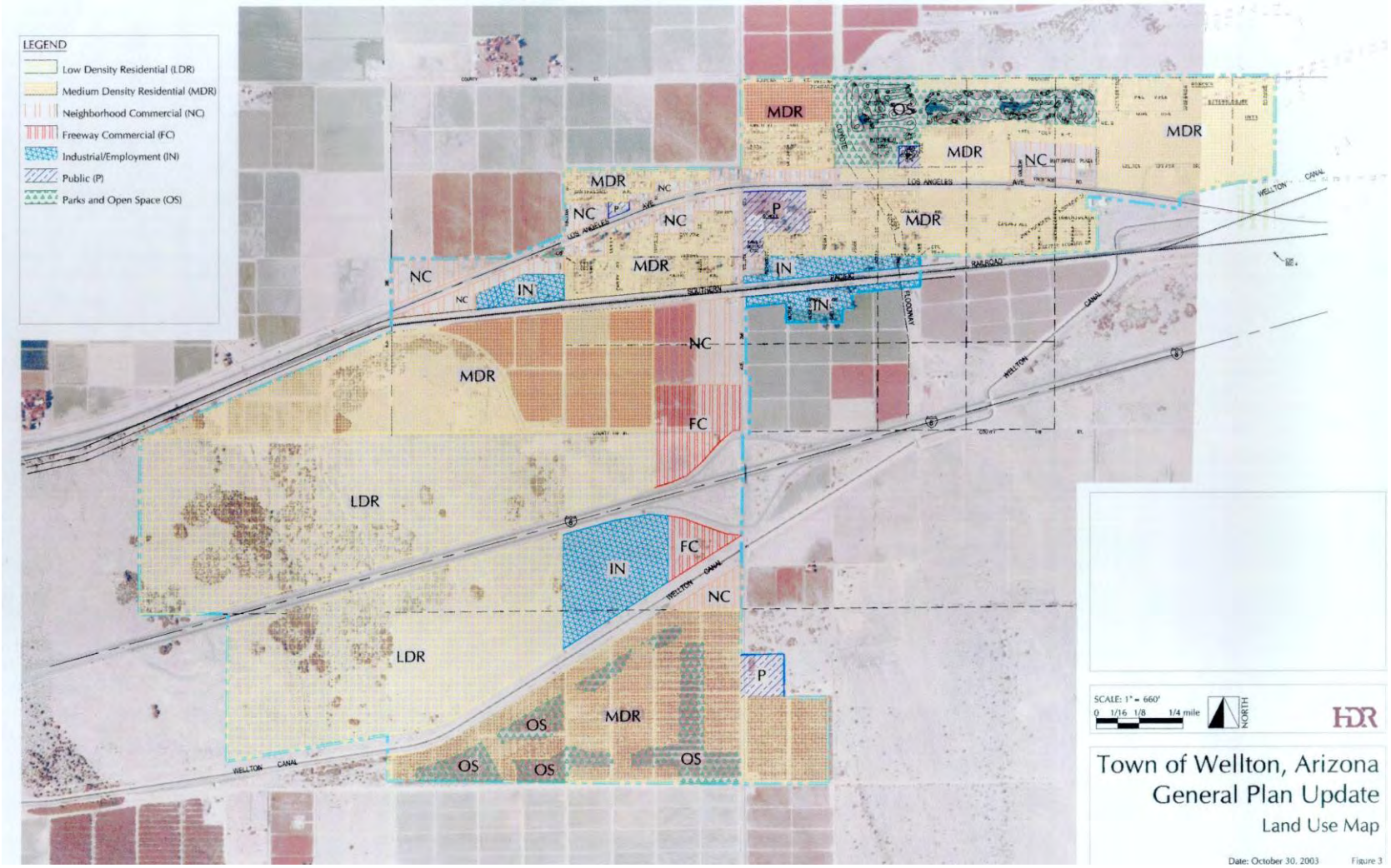

Figure 4-12: Land Use Plan from the Wellton General Plan

4.3.5 Yuma

The City of Yuma is the county seat for Yuma County and is situated at the extreme southwestern corner of Arizona, as depicted in Figure 1-1. The City of Yuma is geographically positioned at longitude 114.53 degrees west and latitude 32.59 degrees north, and currently encompasses nearly 110 square miles. Yuma is located 185 miles west of Phoenix and 237 miles west of Tucson. The Colorado and Gila River confluence is located along the northern limit of the city and several large irrigation canals cross through the city to provide irrigation water to farm fields located to the south and west of Yuma.

The total 2008 population for City of Yuma and Yuma County is 93,719 and 203,779. Table 4-1 summarizes population estimates for City of Yuma and Yuma County in 10-year cycles beginning in 1990 and projecting through 2020.

For many years, Yuma served as the gateway to the new western territory of California, which brought thousands of people from around the world in search of gold, or provide services to those who had it. In 1870, the Southern Pacific Railroad bridged the Colorado River and Yuma became a hub for the railroad. The Ocean-to-Ocean Bridge (or Old Highway 80 Bridge) was the first vehicle bridge across the Colorado River. Prior to the construction of the bridge, cars were ferried across. Present day major highways through the City include Interstate 8, U.S. Highways 95 and 80, and State Highway 95. The Marine Corps Air Station (MCAS) shares one of the longest runways in the country with the Yuma International Airport, and a new MCAS auxiliary field is located in the extreme southern portion of the city boundaries. Figure 4-2 depicts the general geographic features and transportation routes within the region surrounding the City of Yuma.

The largest landholder in the city is the federal government with approximately 65% in military and Bureau of Land Management holdings. Private landholdings are next at about 30%, with the rest being the State of Arizona. Figure 4-9 provides a visual depiction of the land ownership within and around the City of Yuma.

The history of Yuma is quite colorful and continues to live on today in a fast-growing and vibrant community. In 1540, just 48 years after Columbus discovered the New World, 18 years after the conquest of Mexico by Cortez, and 67 years before the settlement of Jamestown, Hernando de Alarcon visited the site of what is now the current City of Yuma. He was the first European to visit the area and to recognize the best natural crossing of the Colorado River. Much of Yuma County's later development occurred because of this strategic location. From the 1850's through the 1870's, steamboats on the Colorado River transported passengers and goods to various mines, military outposts in the area, and served the ports of Yuma, Laguna, Castle Dome, Norton's Landing, Ehrenberg, Aubry, Fort Mohave and Hardyville. During this time stagecoaches also carried the mail and passengers on bone-jarring rides through the area. In its early years, Yuma was identified by several names. From 1854 until 1858, Yuma was known as Colorado City, from 1858 until 1873, it was named Arizona City. Yuma received its present name by the Territorial Legislature in 1873 and was incorporated in 1914.

The City limits of Yuma include approximately 108 square miles of developed and undeveloped land. Yuma’s location is primarily surrounded by agriculture lands as represented in Figure 4-13 and Figure 4-14.

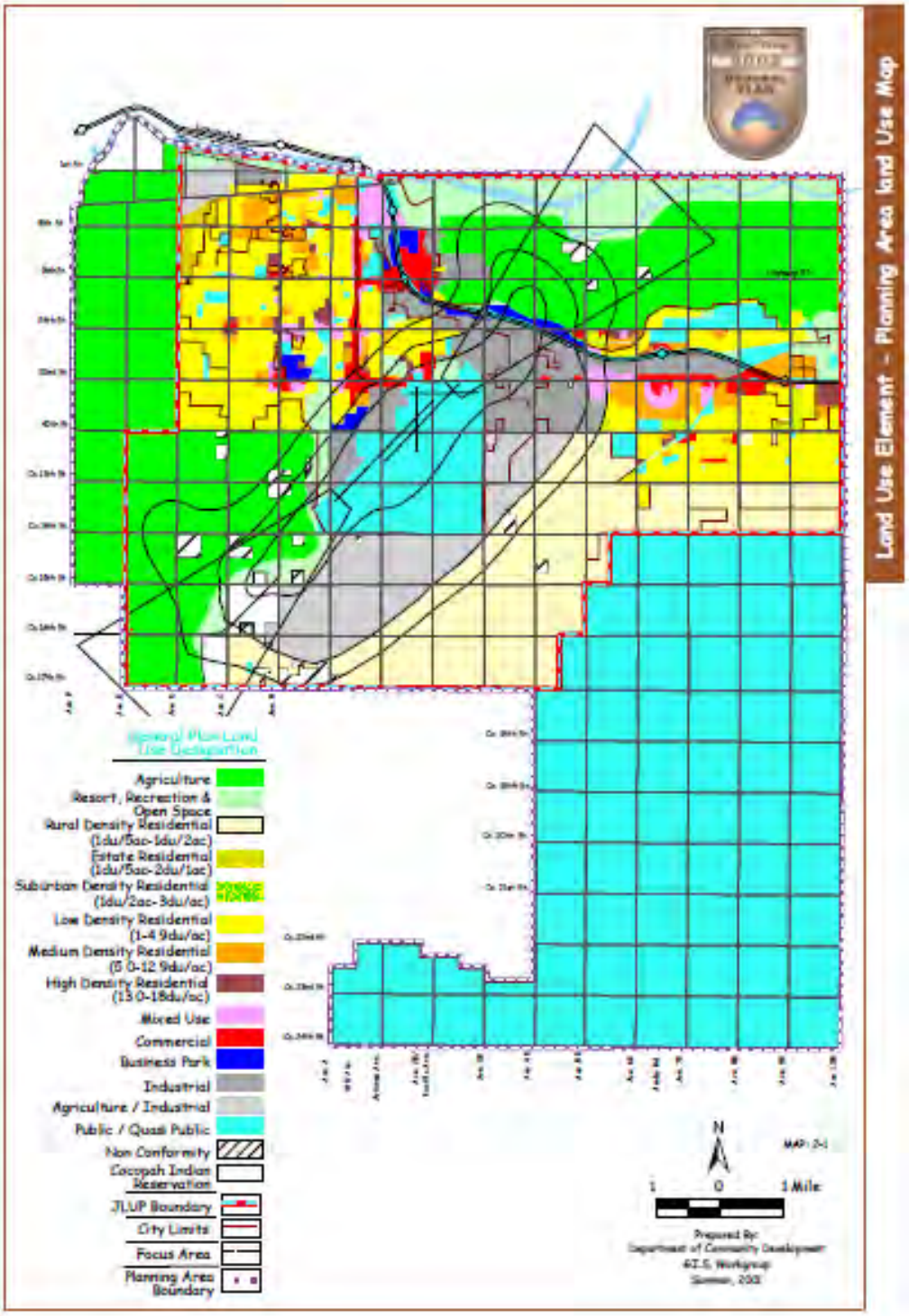

Figure 4-13: City of Yuma Land Use Map

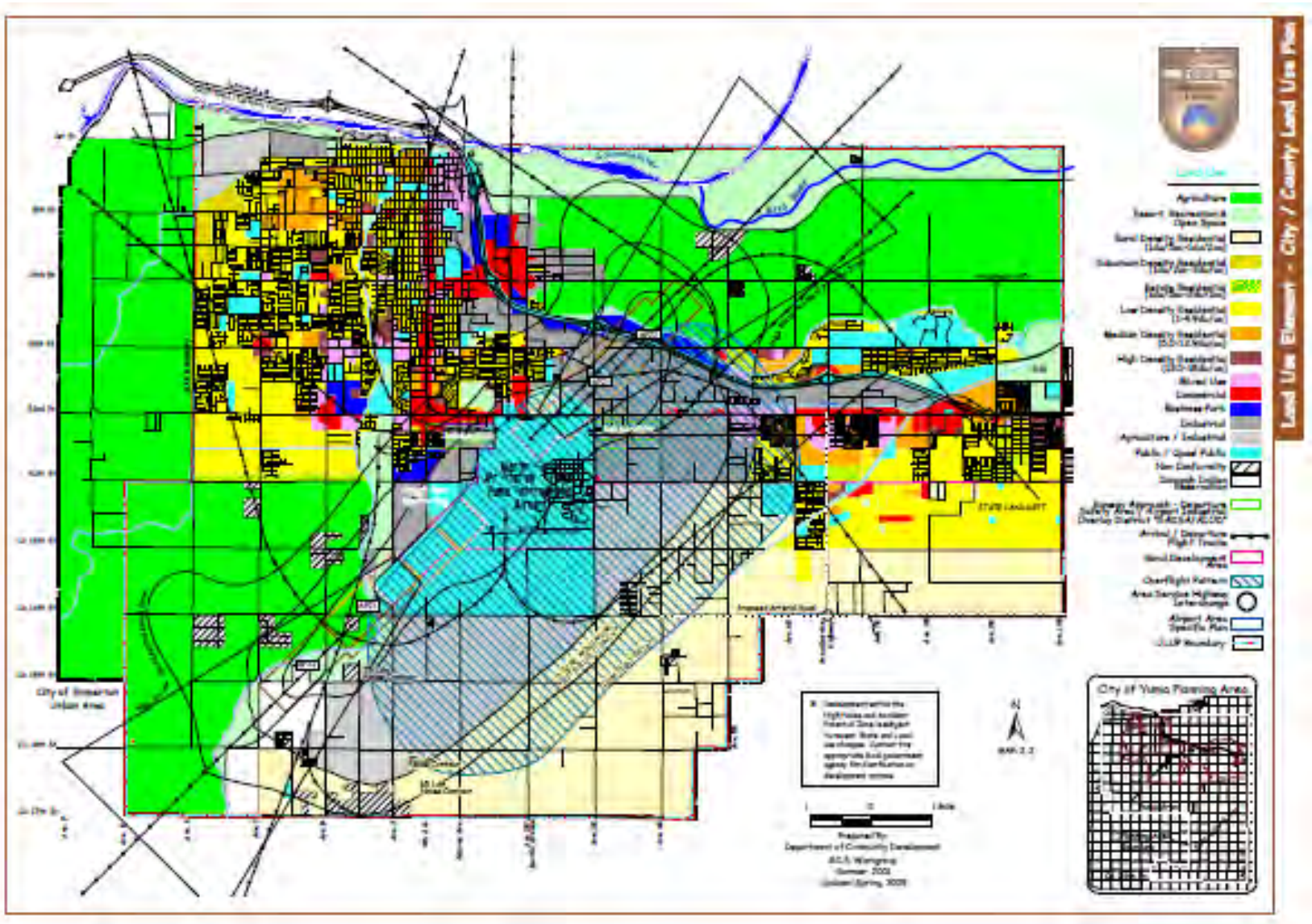

Figure 4-14: City of Yuma Land Use Map

SECTION 5: RISK ASSESSMENT

> ***§201.6(c)(2):*** *[The plan shall include…] (2) A **risk assessment** that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards. The risk assessment shall include:*
> *(i) A description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.*
> *(ii) A description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. The plan should describe vulnerability in terms of:*
> *(A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;*
> *(B) An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate;*
> *(C) Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.*
> *(iii) For multi-jurisdictional plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.*

One of the key elements to the hazard mitigation planning process is the risk assessment. In performing a risk assessment, a community determines "what" can occur, "when" (how often) it is likely to occur, and "how bad" the effects could be[18]. According to DMA 2000, the primary components of a risk assessment that answer these questions are generally categorized into the following measures:

Hazard Identification and Screening

Hazard Profiling

Assessing Vulnerability to Hazards

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

5.1 Hazard Identification and Screening

Hazard identification is the process of answering the question; *"What hazards can and do occur in my community or jurisdiction?"* For this Plan, the list of hazards identified in the 2005 Plan were reviewed by the Planning Team with the goal of refining the list to reflect the natural hazards and one human-caused hazard that pose the greatest risk to the jurisdictions represented by this Plan. The Planning Team also primarily focus on natural hazards, with the exception of transportation accident. The Planning Team also compared and contrasted the 2005 Plan list to the comprehensive hazard list summarized in the 2007 State Plan[19] to ensure compatibility with the State Plan. Table 5-1 summarizes the 2005 Plan and 2007 State Plan hazard lists.

[18] National Fire Protection Association, 2000, *Standard on Disaster/Emergency Management and Business Continuity Programs*, NFPA 1600.

[19] ADEM, 2007, *State of Arizona Multi-Hazard Mitigation Plan*

Table 5-1: Summary of Initial Hazard Identification Lists

2005 Yuma County Plan Hazard List	2007 State Plan Hazard List
• Drought • Earthquake • Flooding/Flash Flooding • Hazardous Materials Incidents • Transportation Accidents • Tropical Storms/Hurricane • Wildfire	• Dam Failure • Drought • Earthquake • Fissure • Flooding/Flash Flooding • Hazardous Materials Incidents • Landslides/Mudslides • Monsoon • Subsidence • Thunderstorms/High Winds • Tornadoes/Dust Devils • Tropical Storms/Hurricane • Wildfires • Winter Storms

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

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

One tool used in the initial screening process was the historic hazard database referenced in 2005 Plan. With this update, the 2005 Plan database was reviewed and revised to separately summarize declared disaster events versus non-declared events. Declared event sources included Yuma County Department of Emergency Management (YCDEM), Arizona Division of Emergency Management (ADEM), Federal Emergency Management Agency (FEMA), and United States Department of Agriculture (USDA). Non-declared sources included Arizona State Land Department (ASLD), National Weather Service (NWS), National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center (NCDC), United States Geological Survey (USGS), and United States Forest Service (USFS). Both data sets were updated with additional hazard events that have occurred over the last plan cycle and were also modified to primarily represent the period of June 1955 to February 2009. Two tables are used in this update to summarize the historic hazard events. Table 5-2 summarizes the federal and state disaster declarations that included Yuma County. Table 5-3 summarizes all non-declared hazard events that meet the following selection criteria:

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

	State and Federally Declared Natural Hazard Events That Included Yuma County - April 1973 to September 2010			
	No. of	Recorded Losses		
Hazard	Declarations	Fatalities	Injuries	Damage Costs ($)
Drought	9	0	0	$303,000,000
Earthquake	1	0	0	$0
Flooding	8	22	112	$505,750,000
Winter Storm	1	0	0	$300,000
Tropical Storm / Hurricane	1	0	0	$375,000,000
Wildfire	19	0	0	$0

Notes: Damage Costs include property and crop/livestock losses and are reported as is with no attempt to adjust costs to current dollar values. Furthermore, wildfire damage costs do not include the cost of suppression which can be quite substantial(approximately $2.3 million for eleven wildfire events). City of Yuma received the $300,000 for "Severe Winter Storm', which resulted in flooding.
Sources: ADEM, FEMA, USDA

Yuma County Historic Hazard Events August 1959 to September 2010				
	No. of	Recorded Losses		
Hazard	Records	Fatalities	Injuries	Damage Costs ($)
Earthquake	16	0	0	$25,000
Flooding	7	1	0	$5,580,000
Severe Wind	48	0	14	$7,988,930
Transportation Accident	42	17	36	$1,058,000
Wildfire	54	0	0	$0

Notes: Damage Costs include property and crop/livestock losses and are reported as is with no attempt to adjust costs to current dollar values. Furthermore, wildfire damage costs do not include the cost of suppression which can be quite substantial.
Sources: ADEM, NCDC, NWCG, NWS, ASLD, USGS, USFS, NRC, AEIC, Ninyo & Moore, San Luis

Detailed historic hazard records are provided in Appendix D.

The culmination of the review and screening process by the Planning Team resulted in a revised list of hazards that will be carried forward with this updated mitigation plan. The 2005 Plan hazards selected for removal are listed below and include a brief explanation of the reason for removal:

Hazardous Material (HAZMAT) Event – HAZMAT events are usually addressed by Local Emergency Planning Committees (LEPC) and Community Emergency Response Teams (CERT). This hazard is also a human caused event and will not be addressed in this plan.

Tropical Storms/Hurricane – Tropical Storm and hurricanes are considered to be part of severe wind and flooding hazard as the end result of damage it causes.

Several of the hazards in the 2005 Plan list may be better described as storm events wherein the effects of the storm may pose exposure to multiple hazards. For instance, hazards associated with a ***Thunderstorms*** may include flooding, microburst winds, tornados, and/or hail in a single event. ***Tropical Cyclone*** is another storm event that may include damaging winds and heavy precipitation resulting in flooding. In both of these examples, the true resulting hazards are generally flooding and damaging or severe winds.

The Planning Team which includes representatives from each of the communities has selected jointly the following list of hazards (in bold) for profiling and updating based on the above explanations and screening process. With an exception, the City of Yuma and Cocopah Indian Reservation will not identify Transportation Accident in this Plan due to their desire to focus strictly on natural hazards. Revised and updated definitions for each hazard are provided in Section 5.3 and in Section 8.2:

- **Drought**
- **Earthquake**
- **Flooding**
- **Severe Wind**
- **Transportation Accident**
- **Wildfire**
- *Infestation**

Note: *Infestation will not be profiled for this Plan due to time constraints. The Planning Team may consider including this hazard in the 2015 plan update. In the interim, during annual reviews, the team may want to coordinate with University of Arizona - Agriculture Extension Office and focus on a particular sector of infestation, define its parameters, its potential impacts, and potential mitigation strategies.

5.2 Vulnerability Analysis Methodology

5.2.1 General

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

For the purposes of this vulnerability analysis, hazard profile maps were developed for Earthquake, Flood, Transportation Accident, Wildfire, to map the geographic variability of the probability and magnitude risk of the hazards as estimated by the Planning Team. Hazard profile categories of HIGH, and MEDIUM were used and were subjectively assigned based on the factors discussed in Probability and Magnitude sections below. For Earthquake, peak acceleration scale of %g was used to reflect hazard level. Within the context of the county limits, the other hazards do not exhibit significant geographic variability and will not be categorized as such.

Unless otherwise specified in this Plan, the general cutoff date for new historic or hazard profile data is the end of May 2010.

5.2.2 Calculated Priority Risk Index (CPRI) Evaluation

The first step in the vulnerability analysis (VA) is to assess the perceived overall risk for each of the plan hazards using a tool developed by the State of Arizona called the Calculated Priority Risk Index[20] (CPRI). The CPRI value is obtained by assigning varying degrees of risk to four (4) categories for each hazard, and then calculating an index value based on a weighting scheme. Table 5-4 summarizes the CPRI risk categories and provides guidance regarding the assignment of values and weighting factors for each category. As an example, assume that the project team is assessing the hazard of flooding, and has decided that the following assignments best describe the flooding hazard for their community:

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

The CPRI for the flooding hazard would then be:

[20] ADEM, 2003, *Arizona Model Local Hazard Mitigation Plan*, prepared by JE Fuller/ Hydrology & Geomorphology, Inc.

CPRI = [(3*0.45) + (3*0.30) + (2*0.15) + (1*0.10)]

CPRI = 2.65

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

CPRI Category	Degree of Risk			Assigned Weighting Factor
	Level ID	Description	Index Value	
Probability	Unlikely	▪ Extremely rare with no documented history of occurrences or events. ▪ Annual probability of less than 0.001.	1	45%
	Possibly	▪ Rare occurrences with at least one documented or anecdotal historic event. ▪ Annual probability that is between 0.01 and 0.001.	2	
	Likely	▪ Occasional occurrences with at least two or more documented historic events. ▪ Annual probability that is between 0.1 and 0.01.	3	
	Highly Likely	▪ Frequent events with a well documented history of occurrence. ▪ Annual probability that is greater than 0.1.	4	
Magnitude/ Severity	Negligible	▪ Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). ▪ Injuries or illnesses are treatable with first aid and there are no deaths. ▪ Negligible quality of life lost. ▪ Shut down of critical facilities for less than 24 hours.	1	30%
	Limited	▪ Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). ▪ Injuries or illnesses do not result in permanent disability and there are no deaths. ▪ Moderate quality of life lost. ▪ Shut down of critical facilities for more than 1 day and less than 1 week.	2	
	Critical	▪ Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). ▪ Injuries or illnesses result in permanent disability and at least one death. ▪ Shut down of critical facilities for more than 1 week and less than 1 month.	3	
	Catastrophic	▪ Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). ▪ Injuries or illnesses result in permanent disability and multiple deaths. ▪ Shut down of critical facilities for more than 1 month.	4	
Warning Time	Less than 6 hours	Self explanatory.	4	15%
	6 to 12 hours	Self explanatory.	3	
	12 to 24 hours	Self explanatory.	2	
	More than 24 hours	Self explanatory.	1	
Duration	Less than 6 hours	Self explanatory.	1	10%
	Less than 24 hours	Self explanatory.	2	
	Less than one week	Self explanatory.	3	
	More than one week	Self explanatory.	4	

5.2.3 Asset Inventory

With this update, a detailed asset inventory was performed to establish a more accurate baseline data-set for assessing the vulnerability of each jurisdiction's assets to the hazards identified in Section 5.1. This effort constitutes a significant change to the base asset data used in the 2005 Plan, and consequently to the entire vulnerability analysis. Details of this change are discussed later in this section.

The 2007 State Plan defines assets as:

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

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

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

Following the criteria set forth by the Critical Infrastructure Assurance Office (CIAO), the State of Arizona has adopted eight general categories[21] that define critical facilities and infrastructure:

1. **Telecommunications 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.
4. **Banking and Finance Institutions:** Banks, financial service companies, payment systems, investment companies, and securities/commodities exchanges.
5. **Transportation Networks:** Highways, railroads, ports and inland waterways, pipelines, and airports and airways that facilitate the efficient movement of goods and people.
6. **Water Supply Systems:** Sources of water; reservoirs and holding facilities; aqueducts and other transport systems; filtration, cleaning, and treatment systems; pipelines; cooling systems; and other delivery mechanisms that provide for domestic and industrial applications, including systems for dealing with water runoff, wastewater, and firefighting.
7. **Government Services:** Capabilities at the federal, state, and local levels of government required to meet the needs for essential services to the public.
8. **Emergency Services:** Medical, police, fire, and rescue systems.

Other assets such as public libraries, schools, museums, parks, recreational facilities, historic buildings or sites, churches, residential and/or commercial subdivisions, apartment complexes, and so forth, are classified as non-critical facilities and infrastructure, as they would not necessarily have a debilitating impact on the defense or economic security of that community and/or significantly hinder a

[21] Instituted via Executive Order 13010, which was signed by President Clinton in 1996.

community's ability to recover following a disaster. They are, however, still considered by the Planning Team to be important facilities and critical and non-critical should not be construed to equate to important and non-important. For each asset, attributes such name, description, physical address, geospatial position, and estimated replacement cost were identified to the greatest extent possible and entered into a GIS geodatabase.

The 2005 Plan critical and non-critical facilities were updated by each of the jurisdictions. Since Cocopah Indian Tribe did not participate in 2005 plan, they started with developing a new list of facilities, and for purpose of privacy and respecting their sovereignty, did not wish to provide additional details to these facilities. Otherwise, critical facility inventory data was updated for each community using existing GIS data sets, on-line mapping utilities, and manual data acquisition by members of the local Planning Team. Table 5-5 summarizes the facility counts by category for each of the participating jurisdictions in this plan.

5.2.4 Loss Estimations

In the original 2005 Plan, losses were estimated by either quantitative or qualitative methods. Quantitative methods included use of the HAZUS®-MH program for earthquakes, or a statistical approach that was based on historic data. Accordingly, all loss estimates for this Plan update are new and were accomplished using the procedures discussed below.

Economic loss and human exposure estimates for each of the final hazards identified in Section 5.1 begins with an assessment of the potential exposure of critical and non-critical assets and human populations to those hazards. Estimates of exposure to critical and non-critical assets identified by each jurisdiction is accomplished by intersecting the asset inventory with the hazard profiles in Section 5.3 Human or population exposures are estimated 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.[22]

Additional exposure estimates for general residential, commercial, and industrial building stock not specifically identified with the asset inventory, are also accomplished using the HAZUS®-MH database, wherein the developers of the HAZUS®-MH database have made attempts to correlate building/structure counts to census block data.

It is duly noted that the HAZUS®-MH data population statistics may not exactly equate to the current population statistics provided in Section 4.2 due to changes in population, GIS positioning anomalies and the way HAZUS®-MH depicts certain census block data. Also, the population estimates for losses would be higher (or even doubled) during the winter time due to the winter visitor population. It is also noted that the residential, commercial and industrial building stock estimates for each census block may severely under-predict the actual buildings present, due to the substantial growth in the last decade and the general lack of data for some of the more rural communities within the county, and the disparity of the HAZUS®-MH estimates for these categories. However, without a detailed, site specific structure inventory of these types of buildings, the HAZUS®-MH database is still the best available and the results are representative of a general magnitude of population and residential, commercial and industrial facility exposures to the various hazards discussed.

Combining the exposure results from the asset inventory and the HAZUS®-MH database provides a fairly comprehensive depiction of the overall exposure of building stock and the two datasets are considered complimentary and not redundant.

[22] U.S. Department of Homeland Security, Federal Emergency Management Agency, HAZUS®-MH.

Table 5-5: Summary of Critical and Non-Critical Facility counts by category and jurisdiction as of April 27, 2010

Participating Jurisdiction	Critical Facilities and Infrastructure								Non-Critical Facilities and Infrastructure				
	Telecommunications Infrastructure	Electrical Power Systems	Gas and Oil Facilities	Banking and Finance Institutions	Transportation Networks	Water Supply Systems	Government Services	Emergency Services	Education	Cultural	Business	Residential	Recreational
Cocopah Indian Tribe [a]													
San Luis	2	2		2		8	25	4	11	4	10	3	
Somerton	3			1		15	4	2	5	6	12		
Wellton	3	2		1		2	3	2	1	3	7		
Yuma	19		2	21	13	2	9	16	29		2		
Yuma County	1	1		4		4	56	6	14			78	

a – The community decided not to provide specific information about their facilities, but did provide coordinates and estimated replacements costs for the vulnerability assessment.

Economic losses to structures and facilities are estimated by multiplying the exposed facility replacement cost estimates by an assumed exposure to loss ratio for the hazard. The exposure to loss ratios used in this plan update are summarized by hazard in Section 5.3. It is important to note that the exposure to loss ratios are subjective and the estimates are solely intended to provide an understanding of relative risk from the hazards and potential losses. It should be noted that some of the facilities' replacement costs were estimated based on square footage and multiplied by $150. Other facilities could not be estimated, such as the Yuma Palms Regional Center, which is a major commercial/business center in Yuma. The reality is that uncertainties are inherent in any loss estimation methodology due to:

- Incomplete scientific knowledge concerning hazards and the ability to predict their effects on the built environment;
- Approximations and simplifications that are necessary for a comprehensive analysis; and,
- Lack of detailed data necessary to implement a viable statistical approach to loss estimations.

Several of the hazards profiled in this Plan update will not include quantitative exposure and loss estimates. The vulnerability of people and assets associated with some hazards are nearly impossible to evaluate given the uncertainty associated with where these hazards will occur as well as the relatively limited focus and extent of damage. Instead, a qualitative review of vulnerability will be discussed to provide insight to the nature of losses that are associated with the hazard. For subsequent updates of this Plan, the data needed to evaluate these unpredictable hazards may become refined such that comprehensive vulnerability statements and thorough loss estimates can be made.

5.2.5 Development Trend Analysis

The 2005 Plan development trend analysis will require updating to reflect growth and changes in Yuma County over the last planning cycle. The updated analysis will focus on the potential risk associated with projected growth patterns and their intersection with the Plan identified hazards.

5.3 Hazard Risk Profiles

The following sections summarize the risk profiles for each of the Plan hazards identified in Section 5.1. For each hazard, the following elements are addressed to present the overall risk profile:

- **Description**
- **History**
- **Probability and Magnitude**
- **Vulnerability**
- **Sources**
- **Profile Maps (if applicable)**

Much of the 2005 Plan data has been updated, incorporated and/or revised to reflect current data and Planning Team changes, as well as an overall plan format change. County-wide and regional/community profile maps are provided at the end of the section (if applicable). Also, the maps are not included in the pagination count.

5.3.1 Drought

Description

Drought is a normal part of virtually every climate on the planet, including areas of high and low rainfall. It is different from normal aridity, which is a permanent characteristic of the climate in areas of low rainfall. Drought is the result of a natural decline in the expected precipitation over an extended period of time, typically one or more seasons in length. The severity of drought can be aggravated by other climatic factors, such as prolonged high winds and low relative humidity (FEMA, 1997).

Drought is a complex natural hazard which is reflected in the following four definitions commonly used to describe it:

- Meteorological – drought is defined solely on the degree of dryness, expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
- Hydrological – drought is related to the effects of precipitation shortfalls on streamflows and reservoir, lake, and groundwater levels.
- Agricultural – drought is defined principally in terms of naturally occurring soil moisture deficiencies relative to water demands of plant life, usually arid crops.
- Socioeconomic – drought associates the supply and demand of economic goods or services with elements of meteorological, hydrologic, and agricultural drought. Socioeconomic drought occurs when the demand for water exceeds the supply as a result of weather-related supply shortfall. It may also be called a water management drought.

A drought's severity depends on numerous factors, including duration, intensity, and geographic extent as well as regional water supply demands by humans and vegetation. Due to its multi-dimensional nature, drought is difficult to define in exact terms and also poses difficulties in terms of comprehensive risk assessments.

Drought differs from other natural hazards in three ways. First, the onset and end of a drought are difficult to determine due to the slow accumulation and lingering effects of an event after its apparent end. Second, the lack of an exact and universally accepted definition adds to the confusion of its existence and severity. Third, in contrast with other natural hazards, the impact of drought is less obvious and may be spread over a larger geographic area. These characteristics have hindered the preparation of drought contingency or mitigation plans by many governments.

Droughts may cause a shortage of water for human and industrial consumption, hydroelectric power, recreation, and navigation. Water quality may also decline and the number and severity of wildfires may increase. Severe droughts may result in the loss of agricultural crops and forest products, undernourished wildlife and livestock, lower land values, and higher unemployment.

History

Arizona has experienced 16 droughts declared as drought disasters/emergencies from 1987 to 2003, and 93 drought events (droughts affecting multiple years are recorded as a distinct event for each year affected). Figures 5-1 and 5-2 depict the most recent precipitation data from NCDC regarding average statewide precipitation variances from normal. Between 1849 and 1905, the most prolonged period of drought conditions in 300 years occurred in Arizona (NOAA, 2003). Another prolonged drought occurred during the period of 1941 to 1965. The period from 1979-1983 appears to have been anomalously wet, while the rest of the historical records shows that dry conditions are most likely the normal condition for Arizona. Between 1998 and 2007, there have been more months with below normal precipitation than months with above normal precipitation.

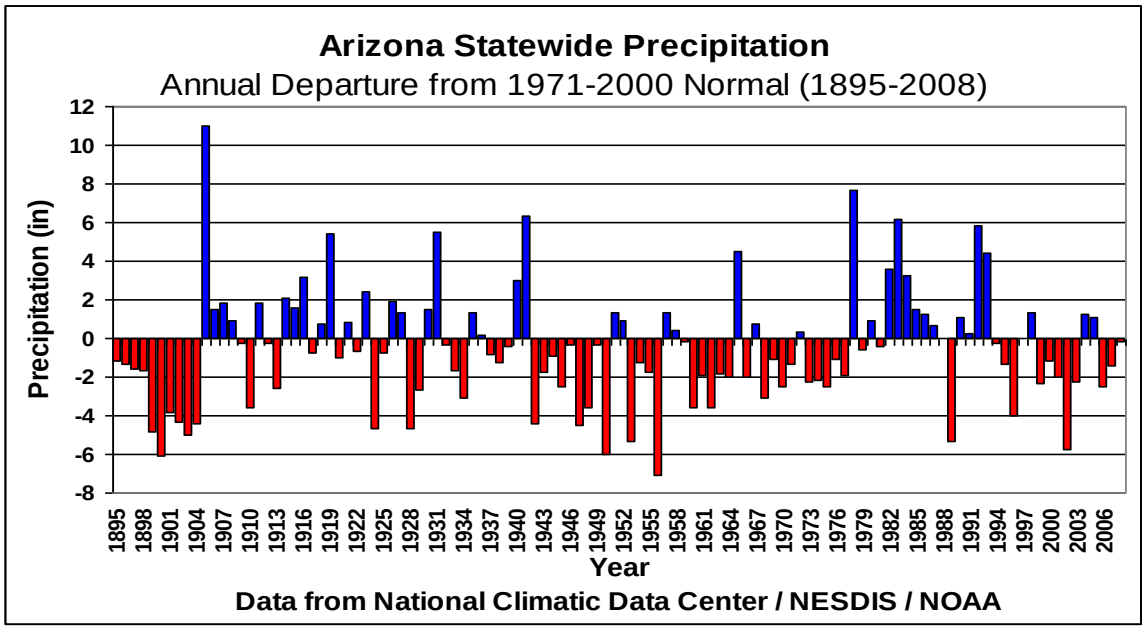

Figure 5-1: Average statewide precipitation variances from a normal based on 1971-2000 period.

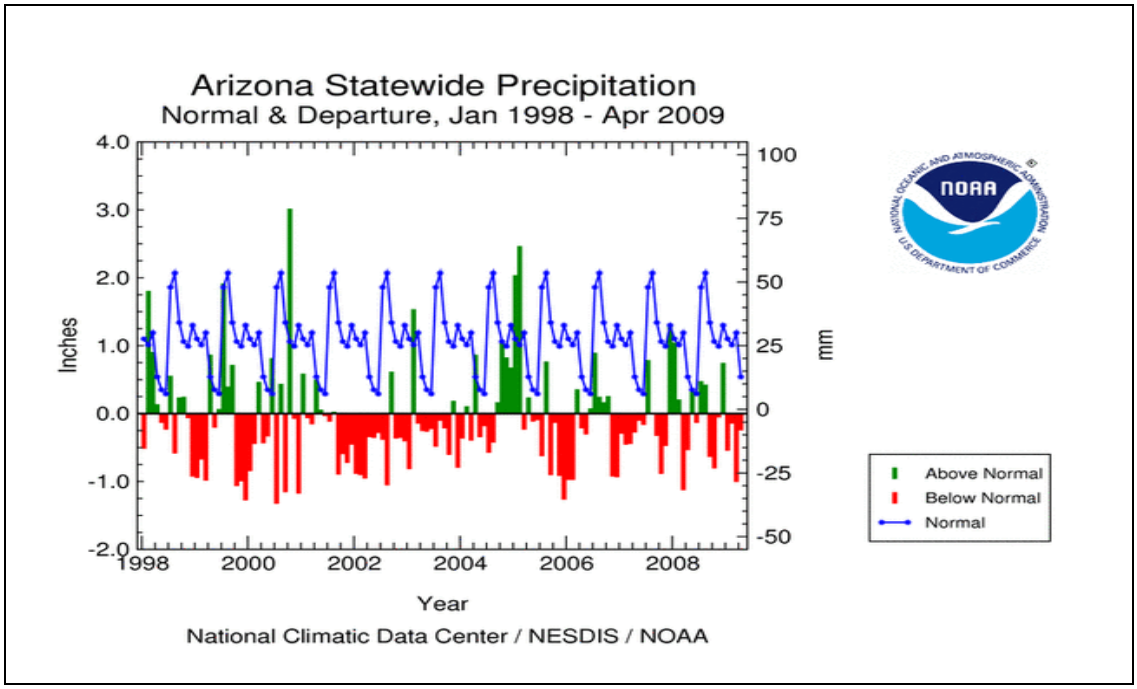

Figure 5-2: Average statewide precipitation variances from a normal based on 1998-2009 period

Currently, the entire State of Arizona is locked in the middle of a drought and has been declared eligible for drought emergency assistance through the U.S. Department of Agriculture. Drought declarations for the entire State have occurred consecutively for the last 6 years, with numerous prior declarations dating back to the time of statehood.

The impacts of a sustained drought affects many aspects of the industry, economy, and natural resources of Yuma County. The most direct impacts are to the agricultural community, the development of domestic water supplies, and hydroelectric generation.

The primary source of irrigation water for the agricultural community within Yuma County is the Colorado River. Secondary water supplies are provided by groundwater pumping. The Colorado River is also a significant source of hydroelectric power generation with distribution administered and operated by the Western Area Power Authority (WAPA) through two local electric utility companies, Arizona Public Service and Wellton Mohawk Irrigation and Drainage District. During extended periods of drought, impoundment levels behind the various dams along the Colorado River can decline to levels such that both agricultural and electric utility resources are affected. In extreme cases of storage reduction, electricity generating turbines could cease to function and the energy needed to pump the Colorado River water into the agricultural distribution systems would not be available. This event would have devastating impacts on not only Yuma County, but also much of Arizona and California.

With regard to agriculture, when drought conditions persist such as what is currently being experienced statewide, more demand is placed on groundwater supplies. Other agricultural areas impacted include cattle ranching and rangeland grazing. With ongoing drought, rangeland grasses and other fodder, along with stock tank water supplies, are significantly reduced. This reduction forces ranchers to feed more hay and to truck in water, both of which significantly increase expenses.

From 1995 to 2002, Yuma County farmers and ranchers have received approximately $8.7 million[23] in disaster related assistance funds. According to the USDA, 35 to 55% of the disaster assistance money[24] in the last 10 years can be attributed to drought related losses. Accordingly, it is realistic to estimate that $3.1 million to $4.8 million of the assistance money is related to drought conditions in the county. These impacts are translated into the general economy in the form of higher food and agricultural goods prices.

Probability and Magnitude

There are no commonly accepted return period or non-exceedance probability for defining the risk from drought (such as the 100-year or 1% annual chance of flood). The magnitude of drought is usually measured in time and the severity of the hydrologic deficit. There are several resources available to evaluate drought status and even project very near future expected conditions.

The National Integrated Drought Information System (NIDIS) Act of 2006 (Public Law 109-430) prescribes an interagency approach for drought monitoring, forecasting, and early warning (NIDIS, 2007). The NIDIS maintains the U.S. Drought Portal[25] which is a centralized, web-based access point to several drought related resources including the U.S. Drought Monitor (USDM) and the U.S. Seasonal Drought Outlook (USSDO). The USDM, shown in Figure 5-3, is a weekly map depicting the current status of drought and is developed and maintained by the National Drought Mitigation Center. The USSDO, shown in Figure 5-4, is a six month projection of potential drought conditions developed by the National Weather Service's Climate Prediction Center. The primary indicators for these maps

[23] Environmental Working Group, 2004, web link at: http://www.ewg.org:16080/farm/progdetail.php?fips=04027&progcode=total_dis

[24] U.S. Department of Agriculture, 2004, *News Release No. fs0199.04*, web link at: http://www.usda.gov/Newsroom/fs0199.04.html

[25] NIDIS U.S. Drought Portal website is located at: http://www.drought.gov/portal/server.pt/community/drought.gov/202

for the Western U.S. are the Palmer Hydrologic Drought Index and the 60-month Palmer Z-index. The Palmer Drought Severity Index (PSDI) is a commonly used index that measures the severity of drought

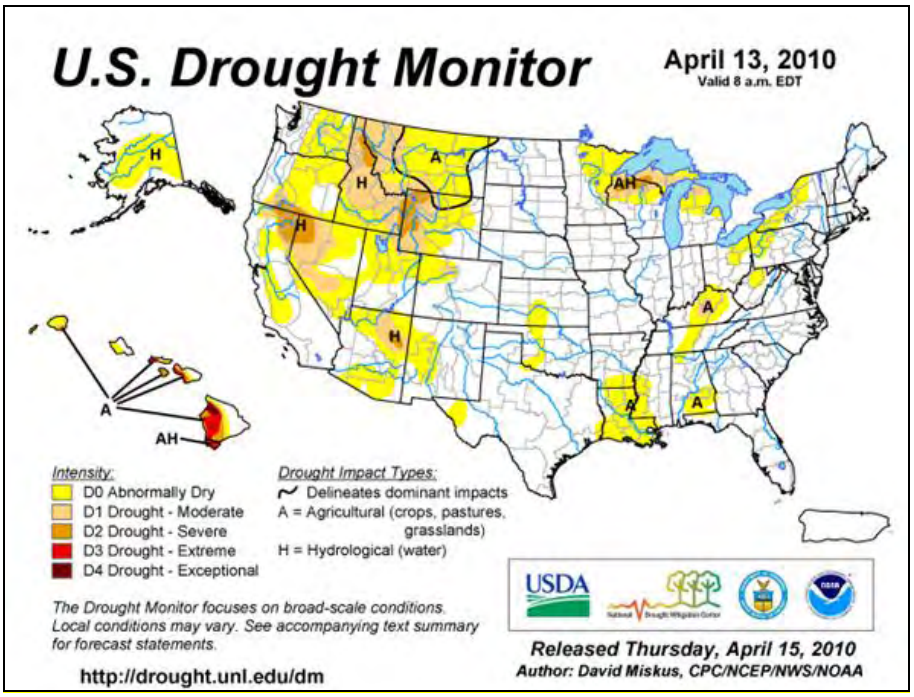

Figure 5-3: U.S. Drought Monitor Map for April 13, 2010

Figure 5-4: U.S. Seasonal Drought Outlook, April to July 2010

for agriculture and water resource management. It is calculated from observed temperature and precipitation values and estimates soil moisture. However, the Palmer Index is not considered to be consistent enough to characterize the risk of drought on a nationwide basis (FEMA, 1997) and neither of the Palmer indices are well suited to the dry, mountainous western United States.

In 2003, Governor Janet Napolitano created the Arizona Drought Task Force (ADTF), led by ADWR, which developed a statewide drought plan. The plan includes criteria for determining both short and long-term drought status for each of the 15 major watersheds in the state using assessments that are based on precipitation and stream flow. The plan also provides the framework for an interagency group which reports to the governor on drought status, in addition to local drought impact groups in each county and the State Drought Monitoring Technical Committee. Twice a year this interagency group reports to the governor on the drought status and the potential need for drought declarations. The counties use the monthly drought status reports to implement drought actions within their drought plans. The State Drought Monitoring Technical Committee uses the Standardized Precipitation Index (SPI) for the short-term drought status and a combination of the SPI and streamflow for the long-term drought status. Figures 5-5 and 5-6, present the most current short and long term maps available as of the writing of this plan.

The National maps through NIDIS do not recognize drought conditions in Yuma County area, eventhough the State Drought Monitoring Technical Committee recognizes moderate and severe drought conditions in the short-term; and abnormally dry to moderate conditions in the long-term and no expected improvement or worsening over the next six months.

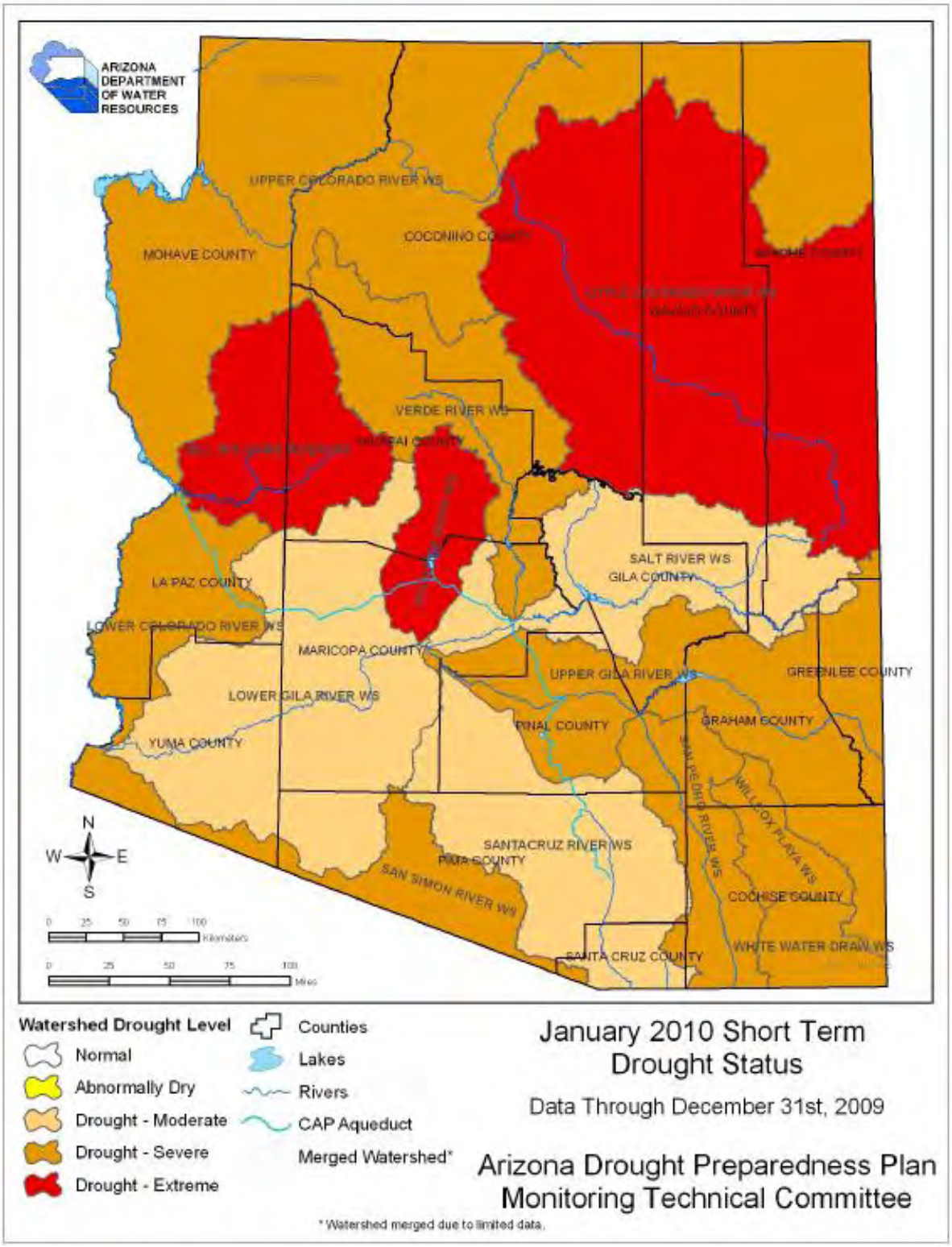

Figure 5-5: Arizona short term drought status map for January 2010

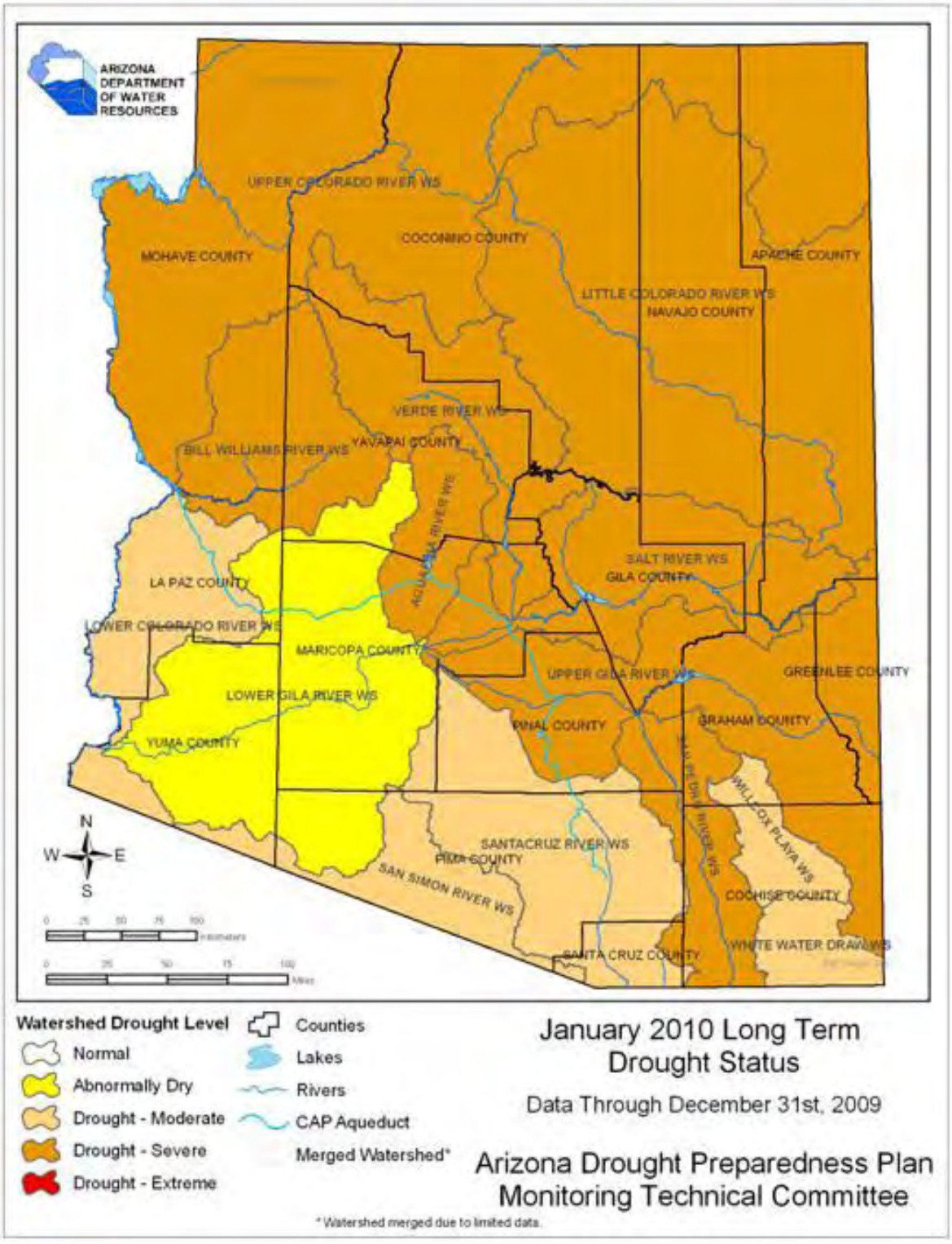

Figure 5-6: Arizona Long Term Drought Status map for January 2010

Vulnerability – CPRI Results

Drought CPRI results for each community are summarized in Table 5-6 below.

Table 5-6: Summary of CPRI results by jurisdiction for drought

Participating Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Cocopah	Highly Likely	Limited	>24 hours	>1 week	2.95
San Luis	Possibly	Negligible	>24 hours	>1 week	1.75
Somerton	Likely	Limited	>24 hours	>1 week	2.50
Unincorporated Yuma County	Highly Likely	Limited	>24 hours	>1 week	2.95
Wellton	Possibly	Limited	>24 hours	>1 week	2.05
Yuma	Likely	Critical	>24 hours	>1 week	2.80
				County-wide average CPRI =	**2.50**
				CPRI Min/Max Score = 1.00/4.00	

Vulnerability – Loss Estimations

No standardized methodology exists for estimating losses due to drought and drought does not generally have a direct impact on critical and non-critical facilities and building stock. A direct correlation to loss of human life due to drought is improbable for Yuma County. Instead, drought vulnerability is primarily measured by its potential impact to certain sectors of the County economy and natural resources include the following:

- Crop and livestock agriculture
- Municipal and industrial water supply
- Recreation/tourism
- Wildlife and wildlife habitat

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 and wildfire. Extended drought may weaken and dry the grasses, shrubs, and trees of wildfire areas, making them more susceptible to ignition. Drought also tends to reduce the vegetative cover in watersheds, and hence decreases the interception of rainfall and increases the flooding hazard. 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 agriculture and ranching. According to the Arizona Agricultural Statistics, which is a branch of the National Agricultural Statistic Service (NASS) and the U.S. Department of Agriculture (USDA), the estimated 2008 cash receipts for crops and livestock in Yuma County was $827.3 million and $173.2 million.[26] It is plausible to assume that all of the Yuma County agriculture is vulnerable to drought. Yuma County farmers and ranchers received approximately $9.4 million in USDA disaster assistance, with an average of $1 million paid out annually during the past years. Other economic losses associated with drought could include increased domestic water supply costs, increased wildfire risk and firefight costs, and impacts to tourism. There are no readily available references, however, for estimating these costs in relation to drought.

Vulnerability – Development Trends

Population growth in Yuma County will also require additional surface and ground water to meet the demands of potable, landscape, and industrial uses. It is unlikely that significant growth will occur in the ranching and farming sectors given the current constraints on water rights, grazing rights, and available range land. Drought planning should be a critical component of any domestic water system

[26] http://www.nass.usda.gov/

expansions or land development planning. The ADTF is also working cooperatively with water providers within the State to develop System Water Plans that are comprised of three components:

- *Water Supply Plan* – describes the service area, transmission facilities, monthly system production data, historic demand for the past five years, and projected demands for the next five, 10 and 20 years.
- *Drought Preparedness Plan* – includes drought and emergency response strategies, a plan of action to respond to water shortage conditions, and provisions to educate and inform the public.
- *Water Conservation Plan* – addresses measures to control lost and unaccounted for water, considers water rate structures that encourage efficient use of water, and plans for public information and education programs on water conservation.

The combination of these requirements will work to ensure that future development in Yuma County will recognize drought as a potential constraint.

Sources

Arizona Division of Emergency Management, 2001, A*rizona's Plan to Mitigate Hazards – Draft.*

Arizona Division of Emergency Management, 2009, *State of Arizona Multi-Hazard Mitigation Plan, 2010 Update, DRAFT*.

Environmental Working Group, 2010, *Farm Subsidy Database*, http://farm.ewg.org/progdetail.php?fips=04027&progcode=total_dis&regionname=YumaCounty, Arizona

Federal Emergency Management Agency,1997, *Multi-Hazard Identification and Risk Assessment – A Cornerstone of the National Mitigation Strategy.*

Jacobs, Katharine and Morehouse, Barbara. June 11-13, 2003. "Improved Drought Planning for Arizona," from Conference on Water, Climate, and Uncertainty: Implications for Western Water Law, Policy and Management http://www.water.az.gov/gdtf/content/files/06262003/Improved_Drought_Planning_for_AZ_6-17.pdf

National Integrated Drought Information System, 2007, *National Integrated Drought Information System Implementation Plan*, NOAA.

Yuma County, 2005, *Yuma County Hazard Mitigation Plan*

U.S Department of Agriculture, 2008 Arizona Agricultural Statistics, Published September *2009 Annual Statistics Bulletin*

U.S. Department of Agriculture, 2004, *News Release No. fs0199.04*, http://www.usda.gov/Newsroom/fs0199.04.html

Profile Maps

No profile maps are provided.

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5.3.2 Earthquake

Description

An earthquake is a sudden, rapid shaking of the earth caused by the movement of tectonic plates. This shaking can cause buildings and bridges to collapse; disrupt gas, electric, and phone service; and sometimes trigger landslides, flash floods and fires. Buildings with foundations resting on unconsolidated landfill, old waterways, sandy soils with high water tables, or other unstable soil types are most at risk. Buildings or trailers and manufactured homes not tied to a reinforced foundation anchored to the ground are also at risk since they can be shaken off their mountings during an earthquake. Earthquakes can occur at any time of the year and usually result in either a ground surface rupture, strong ground motion, slope failure, and/or liquefaction.

Liquefaction caused by seismic activity is a significant hazard for the Yuma area. Liquefaction is the process wherein soils transform into a liquid state due to ground shaking from an earthquake. Structural failures due to liquefaction are due to lateral spread, flow failure, ground oscillation, and/or loss of bearing strength. The three primary criteria that must be satisfied for liquefaction to occur are; ground shaking during an earthquake, the presence of sandy soils, and shallow ground water. The Yuma and Gila valley regions of Yuma County meet these criteria and have been identified as potential liquefaction zones. Figure 5-7 is a map [27] of Yuma County depicting liquefaction hazard areas that were determined using these critical factors.

The Yuma area is located in relatively close proximity to several major geologic fault zones with historic seismic activity. All of the faults are related to tectonic movement between the North American Plate and the Pacific Plate. The seismic hazard for the Yuma region is considered the highest in Arizona because of its proximity to these faults. The major faults having the most potential for generating ground motion in the Yuma area are the San Jacinto, San Andreas, Elsinore, Cerro Prieto, Imperial, Sand Hills, and Algondones Faults and the Brawley Seismic Zone.

History

These faults have produced several damaging earthquakes during the last 150 years and there is reasonable probability that damaging levels of seismic shaking will occur in the next 50 years. The relative locations of these regional faults with respect to Yuma are indicated on Figure 5-8.

Earthquakes have been documented for the Yuma Region since 1776 when the explorers on the Anza expedition landed at Fort Yuma. Figure 5-9 indicates the locations of several historic earthquakes and their approximate magnitudes. Table 5-6 is an excerpt from the Ninyo & Moore (N&M) report summarizing various additional historic earthquake events that have impacted the Yuma area in the last 150 years. The following are some of the more recent or notable events:

- In April 2010, the Easter Sunday 7.2 earthquake swayed high-rises in downtown Los Angeles and San Diego and was felt across Southern California and Arizona. According to the U.S Geological Survey, the earthquake struck at 3:40 p.m. in Baja California, Mexico, about 19 miles southeast of Mexicali. The quake was felt as far north as Santa Barbara. A police dispatcher in Yuma, Arizona, said the quake was very strong here, but no damage was reported (U.S & World News). Additionally, severe loss of property occurred in San Luis Rio Colorado and neighboring Imperial County, causing millions and possibly billions of dollars in damage - less than 50 miles away. (Yuma County)
- On July 29, 2008, Chino Hills, California Earthquake, a M5.4 earthquake shook Southern California. The earthquake was the strongest in the region since the Northridge earthquake in 1994. Shaking was felt as far as Las Vegas, Nevada and Yuma, Arizona.

[27] Bausch, D.B., Brumbaugh, D.S., 1996, *Yuma Community Earthquake Hazard Evaluation*, Arizona Earthquake Information Center, Northern Arizona University.

Buildings swayed in downtown Los Angeles and area amusement parks were evacuated. A minor landslide near Route 91 in the Anaheim Hills caused some traffic congestion, but no injuries or structural damage was reported.

- In May 1940, a 7.0 M_I earthquake ruptured the Imperial Fault and caused significant liquefaction in the Yuma area.
- In 1872, a 5.8 M_I quake was felt, causing minor damage to a store and saloon located on Main Street in the City of Yuma.
- In 1852, a 7.0 M_I earthquake shifted the course of the Colorado River away from the Fort, diminishing its domination of the ferry crossing.

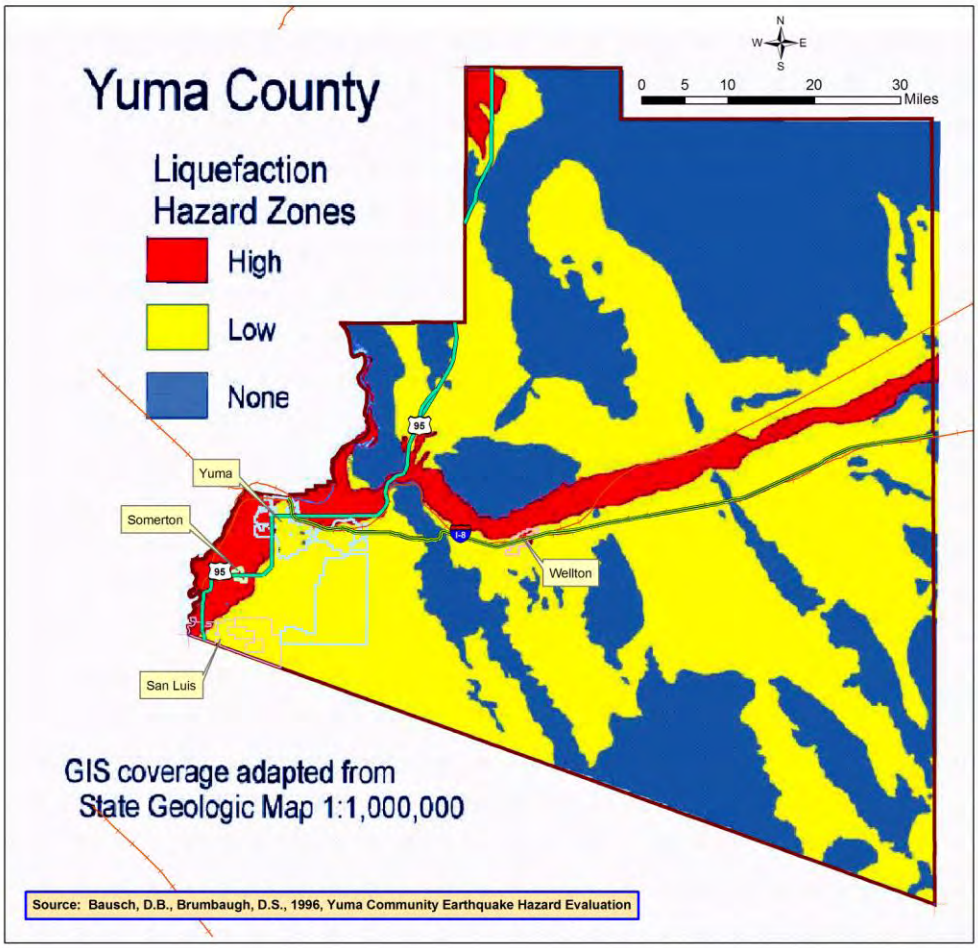


Figure 5-7
Liquefaction hazard map for Yuma County

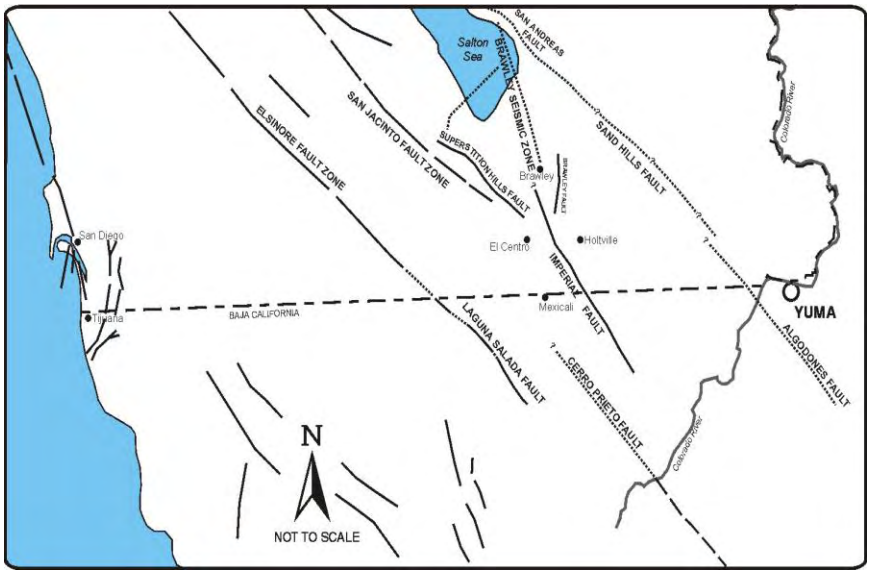


Figure 5-8
Approximate fault locations within the vicinity of Yuma, Arizona

Figure 5-9
Approximate locations of historic earthquakes in or near Arizona

Table 1 – Historic Earthquakes in the Yuma Region, M>5.5

Event Name	Day	Year	Epicenter Latitude (Degrees)	Epicenter Longitude (Degrees)	Distance from Yuma (miles)	Reported Magnitudes M_W	M_S	M_L	M_I
	11/29	***1852***	*32.5?*	*115.0?*	***25 to 50***	*(7+)*			*7.0*
Fort Yuma	*05/03*	*1872*	*33.0?*	*115.0?*	*??*				*5.8*
	11/15	*1875*	*32.5*	*115.5*	*51*				*6.2*
	07/30	*1891*	*32.0*	*115.0*	*52*				*6.0*
Laguna Salada	*02/24*	*1892*	*32.6*	*115.6*	*58*	*(7)*			*7.0*
	04/19	*1906*	*32.9*	*115.5*	*51*		*6.2*		*5.8*
Imperial Valley	*06/23*	*1915*	*32.8*	*115.5*	*50*		*6.0*		*5.6*
Imperial Valley	*06/23*	*1915*	*32.8*	*115.5*	*50*		*5.9*		*5.6*
	11/21	*1915*	*32.0*	*115.0*	***52***	*(7)*			*7.1*
Volcano Lake	*11/07*	*1923*	*32.5*	*115.5*	*51*			*5.5*	
	01/01	*1927*	*32.5*	*115.5*	*51*			*5.8*	
	01/01	*1927*	*32.5*	*115.5*	*51*			*5.5*	
Laguna Salada	*12/30*	*1934*	*32.25*	*115.50*	*58*	***6.4***		*6.5*	
Cerro Prieto	***12/31***	***1934***	*32.00*	*114.75*	***49***	***7.1***		*7.1*	
	02/24	*1935*	*31.98*	*115.20*	*59*			*6.0*	*5.3*
El Centro	***05/19***	***1940***	*32.73*	*115.50*	*33**	***7.0***	*7.2*	*6.2*	*7.0*
Fish Creek Mountain	*10/21*	*1942*	*32.97*	*116.00*	*81*	***6.6***		*6.5*	*6.3*
	10/22	*1942*	*33.23*	*115.72*	*72*			*5.5*	
	07/29	*1950*	*33.12*	*115.57*	*60*			*5.5*	
	01/24	*1951*	*32.98*	*115.73*	*66*			*5.6*	
Brawley Seismic Zone	*06/14*	*1953*	*32.95*	*115.72*	*64*			*5.5*	
	02101	*1954*	*32.30*	*115.30*	*47*			*5.6*	
	12/01	*1958*	*32.25*	*115.75*	*71*			*5.8*	
	08/07	*1966*	*31.80*	*114.50*	*63*			*6.3*	
Imperial Valley	***10/15***	***1979***	*32.61*	*115.32*	***39***	***6.5***	*6.9*	*6.6*	
Brawley Aftershock	*10/15*	*1979*	*32.98*	*115.55*	*56*			*5.8*	
Victoria	***06/09***	***1980***	*32.20*	*115.08*	***43***	***6.4***	*6.4*	*6.1*	
Westmorland	*04/26*	*1981*	*33.10*	*115.63*	*63*	*5.9*	*6.0*	*5.6*	
	02/06	*1987*	*32.37*	*115.30*	*44*			*5.4*	
Elmore Ranch	*11/23*	*1987*	*33.08*	*115.78*	*70*	*5.9*	*6.2*	*5.8*	
Superstition Hills	*11/24*	*1987*	*33.01*	*115.84*	*72*	***6.5***	*6.6*	*6.0*	

Notes:
1.) Earthquake information primarily from Ellsworth (1990) and USBR (1976)
2.) Magnitude Scales: M_W - moment magnitude, M_L - Local (Richter) magnitude, M_S – surface-wave magnitude
M_I - estimated from felt area intensity. Moment magnitudes are considered a better measure of the seismic energy released during an earthquake.
4.) Before 1930, Epicenters of earthquakes are approximate, indicated to nearest 0.5 to 0.1 degree.
* Closest rupture distance

Table 5-6

Summary of historic earthquake events impacting the Yuma area over the past 150 years

Probability/Magnitude

Liquefaction occurs when seismic waves pass through saturated granular soil, distorting its granular structure, and causing some of the empty spaces between granules to collapse. Pore-water pressure may also increase sufficiently to cause the soil to behave like a fluid (rather than a soil) for a brief period and cause deformations. Liquefaction causes lateral spreads (horizontal movement commonly 10-15 feet, but up to 100 feet), flow failures (massive flows of soil, typically hundreds of feet, but up to 12 miles), and loss of bearing strength (soil deformations causing structures to settle or tip).

Earthquake energy, also referred to as seismic activity is commonly described in terms of magnitude and intensity. Magnitude (M) describes the total energy released and intensity (I) subjectively describes the effects at a particular location. Although an earthquake has only one magnitude, its intensity varies by distance from the epicenter, surface materials (e.g., soil, bedrock), and building types. Magnitude is the measure of the amplitude (height) of the seismic wave and is expressed by the Richter scale. The Richter scale is a logarithmic measurement, where an increase in the scale by one whole number represents a tenfold increase in measured amplitude of the seismic waves (and 32 times more energy). Intensity is a measure of how strong the shock was felt at a particular location, and is expressed by the Modified Mercalli Intensity (MMI) scale. Peak ground acceleration (PGA) measures the rate of change of ground motion relative to the rate of acceleration due to gravity. The acceleration due to gravity is often called "g" and is equal to 9.8 meters per second squared (9.80 m/sec^2). This means that every second something falls towards earth, its velocity increases by 9.8 meters per second. Accordingly, a PGA of 25%, for example, is equal to a peak ground surface acceleration of 2.44 m/sec^2.

It is possible to approximate the relationship between PGA, the magnitude and the intensity, as shown in the following table. The relationships are approximate and depend upon such specifics as the distance from the epicenter, depth of the epicenter, and type of surficial material. For example, an earthquake with 10% PGA would roughly correspond to an intensity of V or VI, a magnitude of 5.0-5.9, and could be described as being felt by everyone, overturning unstable objects, and/or moving heavy furniture. The Modified Mercalli Intensity and PGA are indicated on Maps 1 and 2, respectively.

Table 5-7: Earthquake PGA, Magnitude and Intensity Comparison			
PGA (%g)	**Magnitude (Richter)**	**Intensity (MMI)**	**Description (MMI)**
<0.17	1.0 - 3.0	I	**I.** Not felt except by a very few under especially favorable conditions.
0.17 - 1.4	3.0 - 3.9	II - III	**II.** Felt only by a few persons at rest, especially on upper floors of buildings. **III.** Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motorcars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
1.4 - 9.2	4.0 - 4.9	IV - V	**IV.** Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motorcars rock noticeably. **V.** Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
9.2 - 34	5.0 - 5.9	VI - VII	**VI.** Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight. **VII.** Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
34 - 124	6.0 - 6.9	VII - IX	**VIII.** Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. **IX.** Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
>124	7.0 and higher	X or higher	**X.** Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent. **XI.** Few, if any (masonry) structures remain standing. Bridges destroyed, rails bent greatly. **XII.** Damage total. Lines of sight and level are distorted. Objects thrown into the air.
Source: Wald, Quitoriano, Heaton, and Kanamori, 1999.			

Vulnerability – CPRI Results

Earthquake CPRI results for each community are summarized in Table 5-8 below.

Table 5-8: Summary of CPRI results by jurisdiction for earthquake hazard					
Participating Jurisdiction	**Probability**	**Magnitude/ Severity**	**Warning Time**	**Duration**	**CPRI Score**
Cocopah	Possibly	Critical	<6 hours	<6 hours	2.50
San Luis	Highly Likely	Critical	<6 hours	<6 hours	3.40
Somerton	Highly Likely	Limited	<6 hours	<6 hours	3.10
Unincorporated Yuma County	Likely	Catastrophic	<6 hours	<6 hours	3.25
Wellton	Likely	Critical	<6 hours	<6 hours	2.95
Yuma	Possibly	Critical	<6 hours	<6 hours	2.50
				County-wide average CPRI =	**3.08**
				CPRI Min/Max Score = 1.00/4.00	

Vulnerability – Loss Estimations

The estimation of potential losses due to groundshaking from an earthquake was accomplished by intersecting the human and facility assets with the peak acceleration %g as depicted on Maps 2.

Table 5-9 summarizes estimations of losses to Planning Team identified assets for the earthquake hazard. Table 5-10 summarizes the estimated population exposed to the earthquake hazard. Tables 5-11 through 5-17 summarize exposure and loss estimates to the HAZUS residential, commercial, and industrial building stock for the earthquake hazard. Table 5-11 summarizes the HAZUS based exposure and losses for the entirety of Yuma County. Tables 5-12 through 5-17 summarize jurisdiction specific HAZUS data exposure and loss estimates.

Table 5-9: Summary of County asset inventory loss estimates due to Earthquake (x$1,000)				
Community	**Impacted Facilities**	**Impacted Facility Percentages**	**Estimated Replacement Cost**	**Estimated Structure Loss**
High Hazard: 15.01 - 20%g				
County-Wide Totals	**88**	**100.00%**	**$288,640**	**$0**
Cocopah	1	1.14%	$300	$0
San Luis	68	77.27%	$275,736	$0
Somerton	0	0.00%	$0	$0
Unincorporated	19	21.59%	$12,604	$0
Wellton	0	0.00%	$0	$0
Yuma	0	0.00%	$0	$0
Medium Hazard: 10 - 15%g				
County-Wide Totals	**405**	**100.00%**	**$1,877,526**	**$0**
Cocopah	75	18.52%	$102,490	$0
San Luis	3	0.74%	$13,956	$0
Somerton	49	12.10%	$77,950	$0
Unincorporated	141	34.81%	$248,284	$0
Wellton	24	5.93%	$32,384	$0
Yuma	113	27.90%	$1,402,461	$0

Table 5-10: Summary of Yuma County population sectors exposed to Earthquake						
Community	**Total Population**	**Population Exposed**	**Percent of Population Exposed**	**Total Population Over 65**	**Population Over 65 Exposed**	**Percent of Population Over 65 Exposed**
High Hazard: 15.01 - 20%g						
County-Wide Totals	**160,072**	**14,117**	**8.82%**	**26,423**	**711**	**2.69%**
CITY OF SAN LUIS	15,176	12,857	84.72%	633	633	99.98%
CITY OF SOMERTON	7,732	0	0.00%	568	0	0.00%
CITY OF YUMA	79,689	0	0.00%	10,648	0	0.00%
COCOPAH INDIAN TRIBE	1,025	0	0.00%	205	0	0.00%
TOWN OF WELLTON	1,864	0	0.00%	454	0	0.00%
UNINCORPORATED	54,586	1,260	2.31%	13,915	78	0.56%
Medium Hazard: 10 - 15%g						
County-Wide Totals	**160,072**	**144,739**	**90.42%**	**26,423**	**25,622**	**96.97%**
CITY OF SAN LUIS	15,176	2,316	15.26%	633	0	0.00%
CITY OF SOMERTON	7,732	7,732	100.00%	568	568	100.00%
CITY OF YUMA	79,689	79,689	100.00%	10,648	10,648	100.00%
COCOPAH INDIAN TRIBE	1,025	1,025	100.00%	205	205	100.00%
TOWN OF WELLTON	1,864	1,864	100.00%	454	454	100.00%
UNINCORPORATED	54,586	52,113	95.47%	13,915	13,747	98.79%

Table 5-11: Summary of Yuma County HAZUS Building Exposure to Earthquake									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Yuma County HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
County-Wide Totals	**65902**	**$9,942,001**	**2001**	**$2,268,033**	**481**	**$374,615**	**$12,584,649**		
High: 15.01 - 20%g	3772	$448,812	71	$77,204	28	$11,484	$537,501	%	$0
Medium:10 - 15%g	61397	$9,432,057	1922	$2,185,840	451	$362,619	$11,980,516	%	$0
Yuma County HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
Total %	**98.89%**	**99.39%**	**99.60%**	**99.78%**	**99.56%**	**99.86%**			
High: 15.01 - 20%g	05.72%	04.51%	03.55%	03.40%	05.82%	03.07%			
Medium:10 - 15%g	93.16%	94.87%	96.05%	96.38%	93.74%	96.80%			

Table 5-12: Summary of City of San Luis Building Exposure by Earthquake									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
City of San Luis HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community Wide Total	**3343**	**$455,990**	**61**	**$70,672**	**21**	**$9,039**	**$535,702**		
High: 15.01 - 20%g	3331	$405,601	61	$70,591	21	$8,956	$485,148	%	$0
Medium:10 - 15%g	11	$50,289	0	$2	0	$43	$50,333	%	$0
City of San Luis HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
Total %	**99.98%**	**99.98%**	**99.40%**	**99.89%**	**98.43%**	**99.55%**			
High: 15.01 - 20%g	99.65%	88.95%	99.40%	99.88%	98.39%	99.08%			
Medium:10 - 15%g	0.33%	11.03%	0.01%	0.0%	0.05%	0.48%			

Table 5-13: Summary of City of Somerton HAZUS Building Exposure to Earthquake									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
City of Somerton HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**2189**	**$309,656**	**35**	**$22,815**	**6**	**$1,641**	**$334,112**		
High: 15.01 - 20%g	0	$0	0	$0	0	$0	$0	%	$0
Medium:10 - 15%g	2189	$309,656	35	$22,815	6	$1,641	$334,112	%	$0
City of Somerton HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
Total %	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**			
High: 15.01 - 20%g	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Medium:10 - 15%g	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			

Table 5-14: Summary of City of Yuma HAZUS Building Exposure Earthquake									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
City of Yuma HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**29826**	**$5,869,830**	**1317**	**$1,683,485**	**253**	**$226,860**	**$7,780,175**		
High: 15.01 - 20%g	0	$0	0	$0	0	$0	$0	%	$0
Medium:10 - 15%g	29826	$5,869,830	1317	$1,683,485	253	$226,860	$7,780,175	%	$0
City of Yuma HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
Total %	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**			
High: 15.01 - 20%g	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Medium:10 - 15%g	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			

Table 5-15: Summary of Cocopah Indian Tribe HAZUS Building Exposure by Earthquake									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Cocopah Indian Tribe HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**849**	**$86,602**	**6**	**$5,374**	**0**	**$0**	**$91,976**		
High: 15.01 - 20%g	0	$0	0	$0	0	$0	$0	%	$0
Medium:10 - 15%g	849	$86,602	6	$5,374	0	$0	$91,976	%	$0
Cocopah Indian Tribe HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
Total %	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**0.0%**	**0.0%**			
High: 15.01 - 20%g	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Medium:10 - 15%g	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%			

Table 5-16: Summary of Town of Wellton HAZUS Building Exposure by Earthquake									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
TOWN OF WELLTON HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**1141**	**$97,433**	**11**	**$7,699**	**1**	**$254**	**$105,386**		
High: 15.01 - 20%g	0	$0	0	$0	0	$0	$0	%	$0
Medium:10 - 15%g	1141	$97,433	11	$7,699	1	$254	$105,386	%	$0
Town of Wellton HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
Total %	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**			
High: 15.01 - 20%g	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Medium:10 - 15%g	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			

Table 5-17: Summary of Unincorporated HAZUS Building Exposure by Earthquake									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Unincorporated HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**28554**	**$3,122,490**	**571**	**$477,988**	**200**	**$136,821**	**$3,737,299**		
High: 15.01 - 20%g	442	$43,211	10	$6,614	7	$2,528	$52,353	%	$0
Medium:10 - 15%g	27380	$3,018,248	553	$466,465	191	$133,821	$3,618,534	%	$0
UNINCORPORATED HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
Total %	**97.44%**	**98.05%**	**98.65%**	**98.97%**	**99.10%**	**99.66%**			
High: 15.01 - 20%g	01.55%	01.38%	01.78%	01.38%	03.59%	01.85%			
Medium:10 - 15%g	95.89%	96.66%	96.86%	97.59%	95.51%	97.81%			

In the 2005 Plan, a Hazus Earthquake Assessment was completed in 1996 that was used, but the information was based on 1990 census data. Based on that study, loss estimates could reach $75 million for a maximum probable event or $1 billion for a maximum credible event. However, the estimates could be much higher due to higher increase in population since the study was completed. Therefore, the Team decided to use exposure estimates below which provide more recent assessment without actual loss estimates.

In summary, $288.6 million in assets are exposed for potential losses for earthquake for all the participating jurisdictions in Yuma County as represented Table 5-9. An additional $12.5 billion are exposed for potential losses to HAZUS defined residential, commercial, and industrial facilities is estimated for all participating Yuma County jurisdictions in Table 5-11. Regarding human vulnerability, a total population of 158,856 people, or 99% of the total Yuma County population, is potentially exposed to an earthquake event as represented in Table 5-10. The potential for deaths and injuries are directly related to the magnitude and severity of the event. Depending on magnitude of such an event(s), it is realistic to anticipate at least one fatality and several injuries.

Vulnerability – Development Trends

It is recommended that the analysis be re-visited with newer, more up-to-date data sets, especially after the 2010 Census data becomes available. With regard to land-use planning, there are several small elements of commercial/industrial land-uses planned for areas that have been identified as potential liquefaction zones. It is recommended that any development of these properties require a geotechnical investigation to address the liquefaction potential and provide for mitigation. In addition, all new structures should be compliant with the latest seismic building code criteria.

Sources

Arizona Division of Emergency Management, 2009, State of Arizona Multi-Hazard Mitigation Plan, 2010 Update, DRAFT.

Bausch, D.B., Brumbaugh, D.S., 1996, *Yuma Community Earthquake Hazard Evaluation*, Arizona Earthquake Information Center, Northern Arizona University.

FEMA, September 2007, HAZUS/Census Data for Estimating Potential Losses for Disasters

FEMA, 2004, web-based information at the following URL: http://www.fema.gov/hazards/earthquakes/quake.shtm

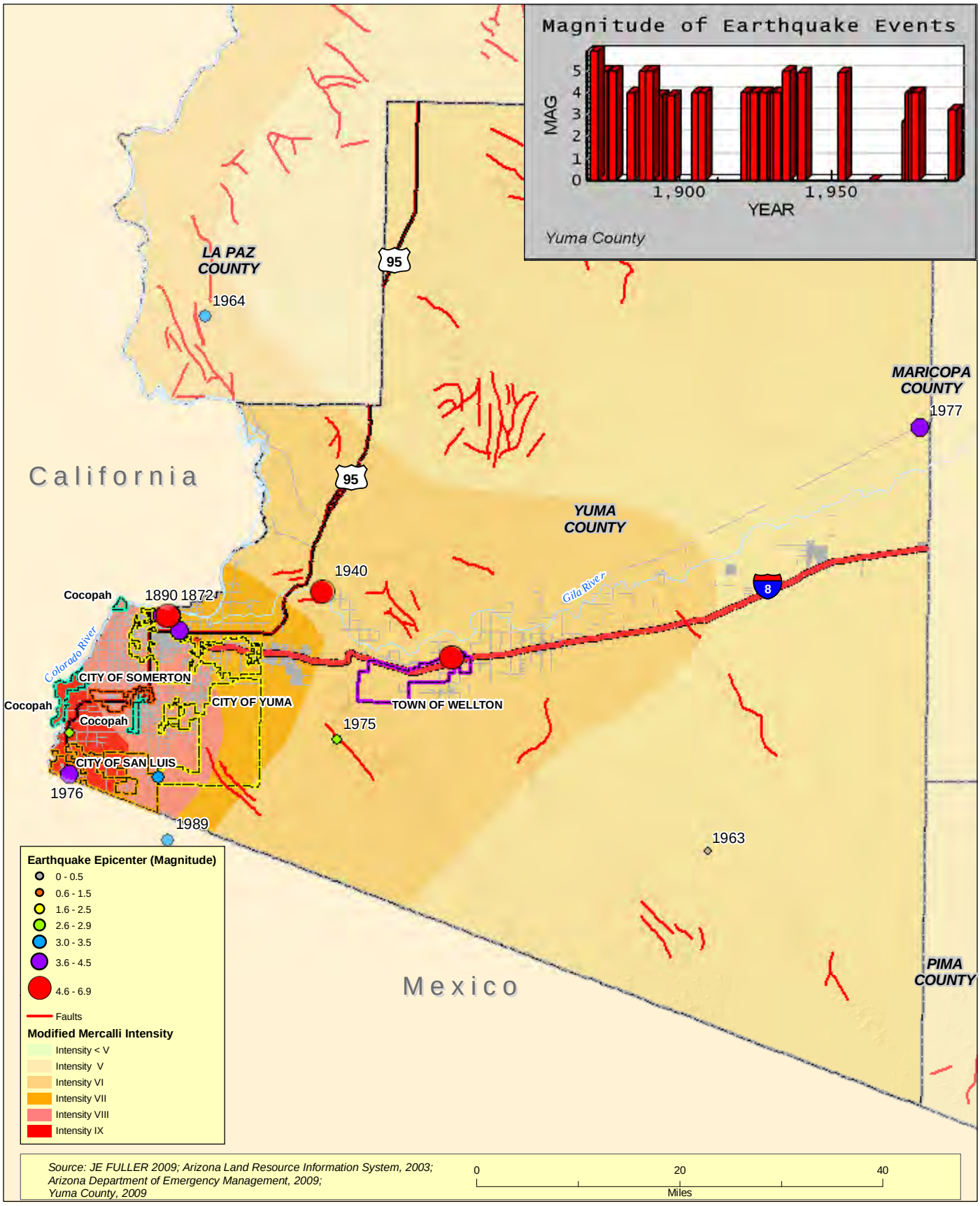
Ninyo & Moore, Earthquake and Flooding Hazard Review Project Impact, City of Yuma, Arizona

Yuma County, 2005, Yuma County Multi-Hazard Mitigation Plan

Profile Maps

Map# 1(County), 1A, 1B, 1C– Earthquake Hazard: Regional Historic Magnitude and Intensity Map(s)

Map# 2(County) – Earthquake Hazard: Peak Acceleration Map



Legend

Communities
- CITY OF SAN LUIS
- CITY OF SOMERTON
- CITY OF YUMA
- TOWN OF WELLTON
- Cocopah Indian Reservation

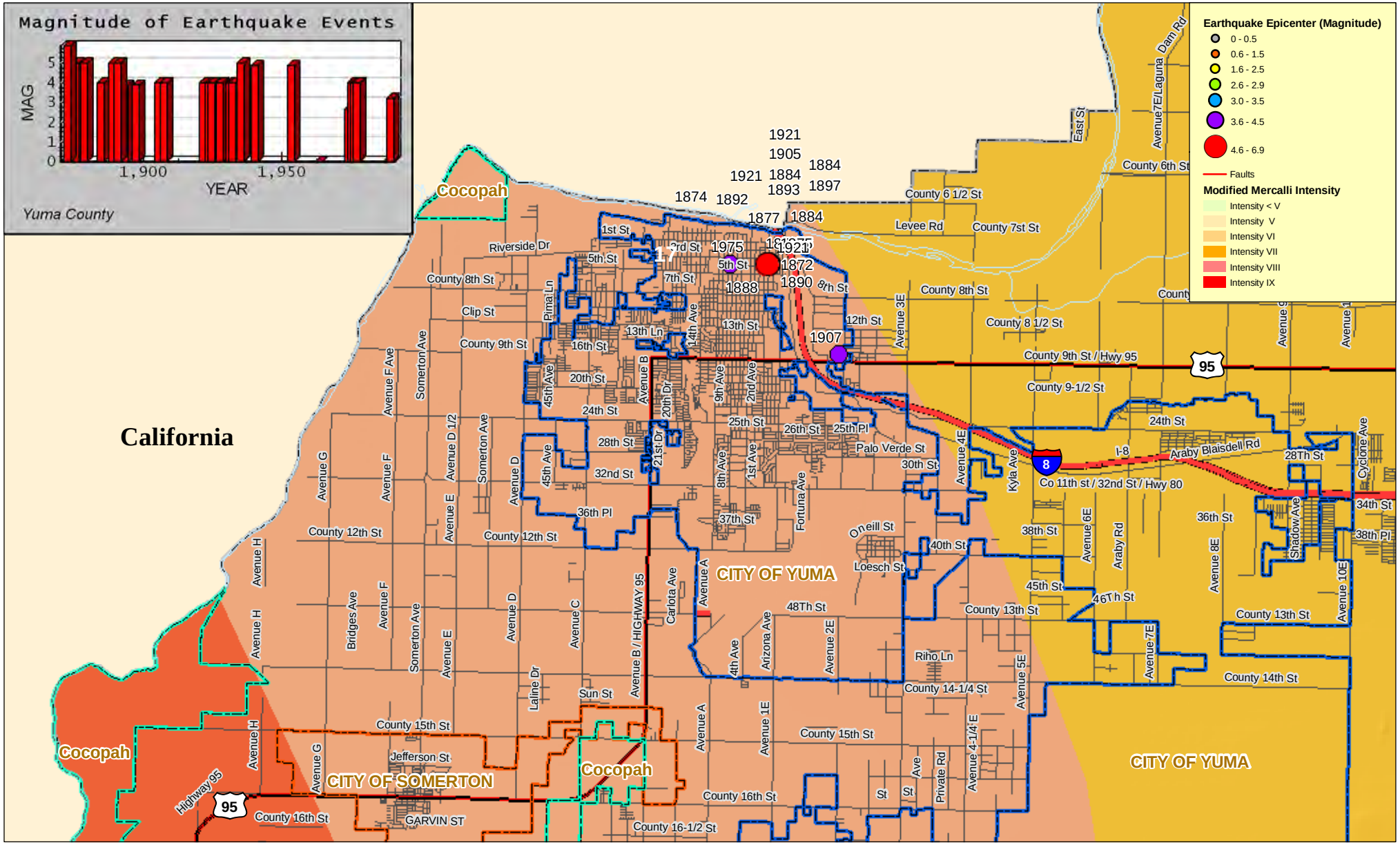
Roads
- Interstate
- Major Roads
- Other Roads

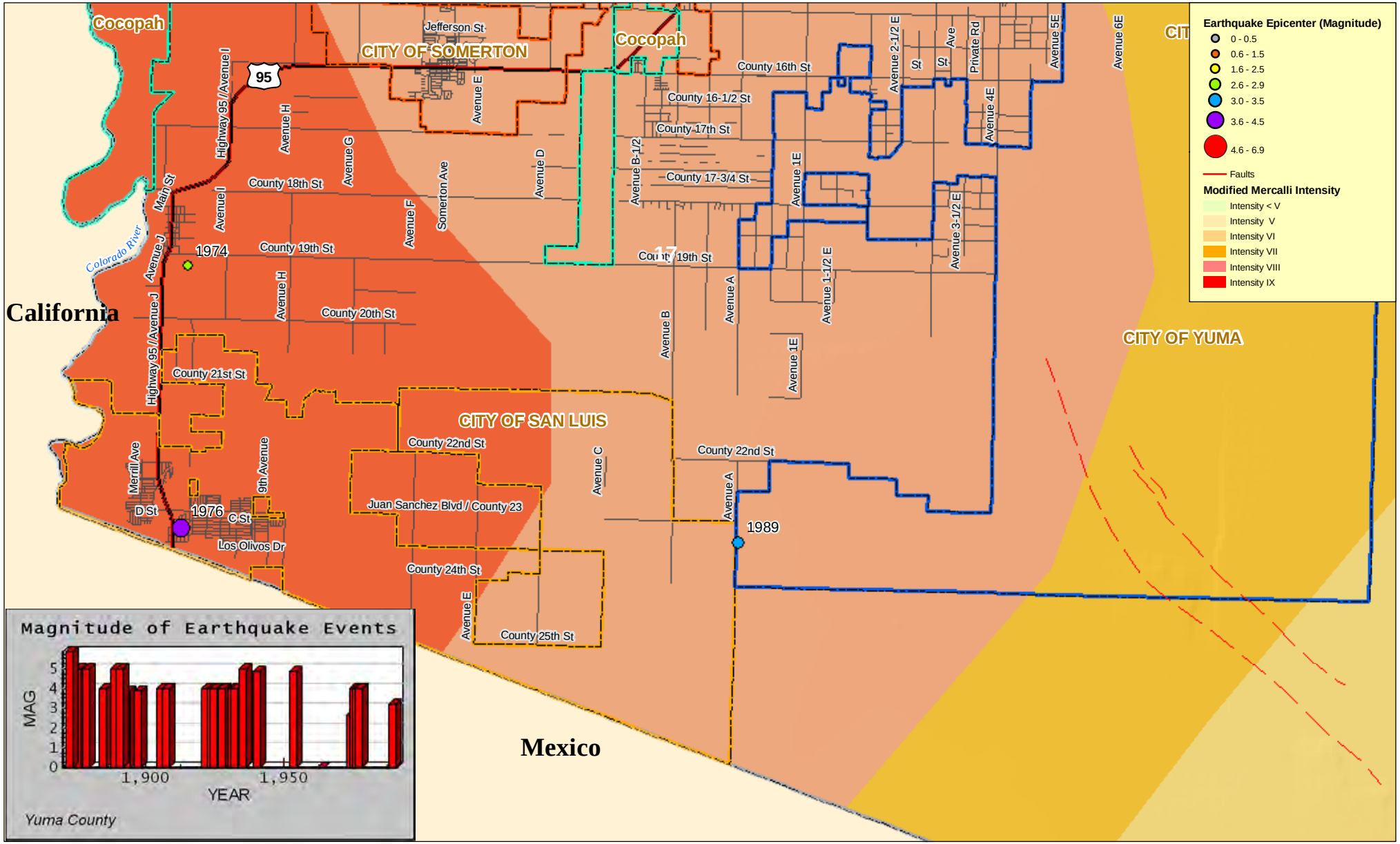
Stream
County

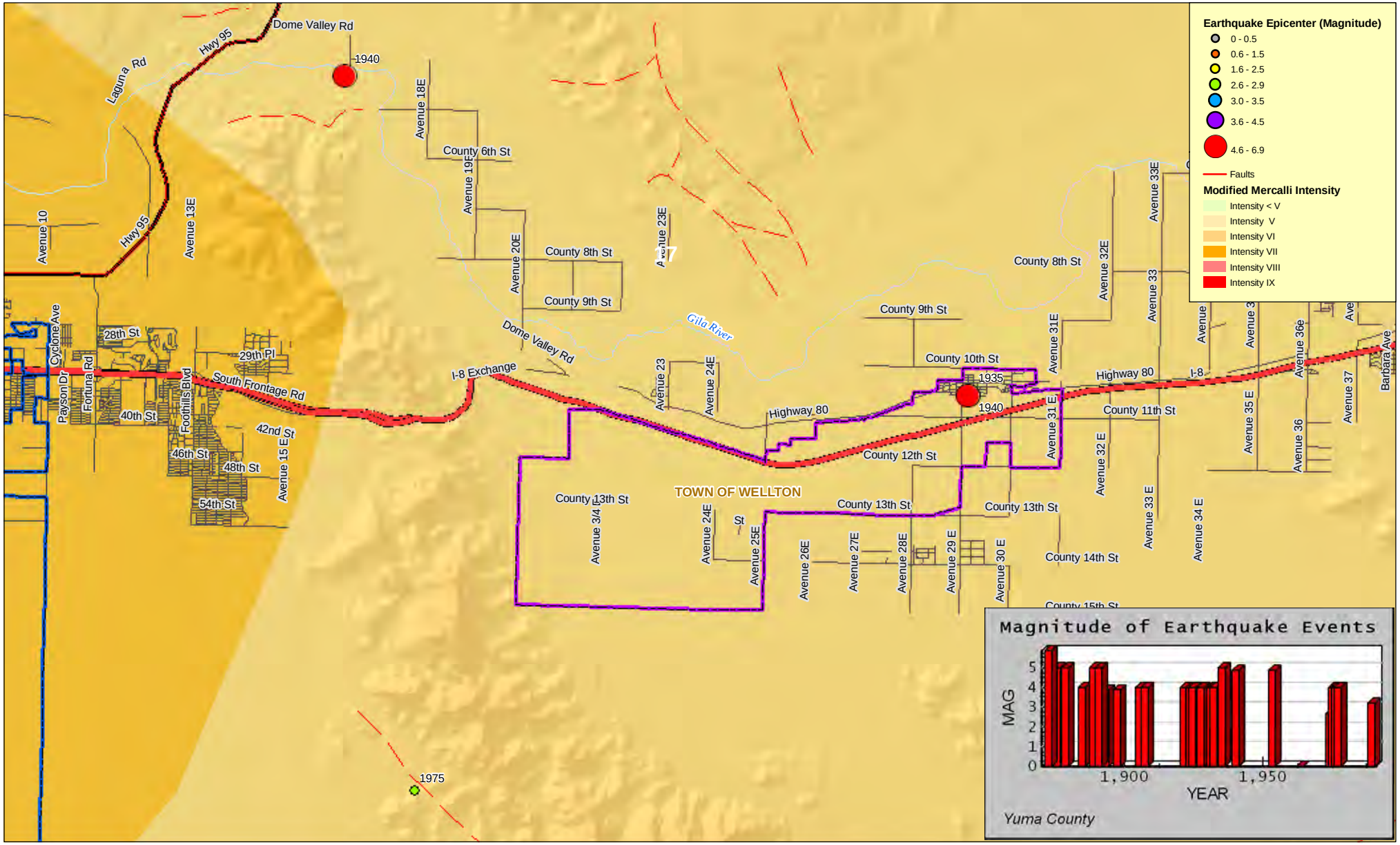
N

Yuma County Multi-Jurisdictional Multi-Hazard Mitigation Plan

Map# 1 Yuma County Regional Historic Earthquake Magnitude and Intensities as of March 2010


Magnitude of Earthquake Events
MAG
YEAR
1,900
1,950
Yuma County
Earthquake Epicenter (Magnitude)
0 - 0.5
0.6 - 1.5
1.6 - 2.5
2.6 - 2.9
3.0 - 3.5
3.6 - 4.5
4.6 - 6.9
Faults
Modified Mercalli Intensity
Intensity < V
Intensity V
Intensity VI
Intensity VII
Intensity VIII
Intensity IX
California
Cocopah
CITY OF YUMA
CITY OF SOMERTON
Cocopah
Cocopah
CITY OF YUMA
1921
1905
1884
1921
1884
1893
1897
1874
1892
1877
1884
1975
1921
1872
1888
1890
1907
Riverside Dr
1st St
3rd St
5th St
7th St
8th St
County 8th St
Clip St
County 9th St
16th St
20th St
24th St
28th St
32nd St
36th PI
County 12th St
County 6 1/2 St
Levee Rd
County 7st St
County 8th St
County 8 1/2 St
12th St
13th St
13th Ln
14th Ave
County 9th St / Hwy 95
County 9-1/2 St
24th St
25th St
26th St
25th Pl
Palo Verde St
30th St
Co 11th st / 32nd St / Hwy 80
I-8
Araby Blaisdell Rd
28Th St
34th St
36th St
38th St
38th Pl
40th St
45th St
46Th St
48Th St
County 13th St
County 14-1/4 St
County 14th St
County 15th St
County 16th St
County 16-1/2 St
GARVIN ST
Jefferson St
Sun St
Riho Ln
Loesch St
Oneill St
Fortuna Ave
Carlota Ave
Laline Dr
Bridges Ave
Pima Ln
Somerton Ave
Avenue A
Avenue B
Avenue C
Avenue D
Avenue E
Avenue F
Avenue F Ave
Avenue G
Avenue H
Avenue D 1/2
Avenue 1E
Avenue 2E
Avenue 3E
Avenue 4E
Avenue 4-1/4 E
Avenue 5E
Avenue 6E
Avenue 7E
Avenue 8E
Avenue 10E
Araby Rd
Kyla Ave
Shadow Ave
Cyclone Ave
Private Rd
East St
Avenue 7E/Laguna Dam Rd
HIGHWAY 95
Highway 95
95
8
1A
1B
1C
Legend
Communities
CITY OF SAN LUIS
CITY OF SOMERTON
CITY OF YUMA
TOWN OF WELLTON
Cocopah Indian Reservation
Roads
Interstate
Major Roads
Other Roads
Stream
County
N
0
1
2
Miles
Source: JE FULLER 2009;
Arizona Land Resource Information System, 2003;
Arizona Dept. of Emergency Management, 2009;
Yuma County, 2009
Yuma County Multi-Jurisdictional
Multi-Hazard Mitigation Plan
YUMA COUNTY ARIZONA
Map# 1A
Yuma County
Regional Historic
Earthquake Magnitude
and Intensities
as of March 2010

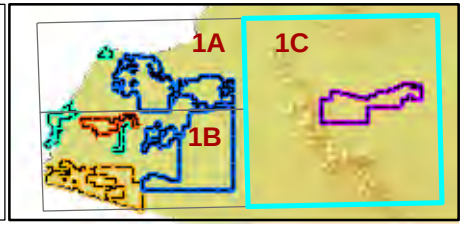

Cocopah
CITY OF SOMERTON
Jefferson St
95
Highway 95 /Avenue I
Avenue H
Avenue E
Avenue G
Avenue D
Avenue F
Somerton Ave
Avenue B-1/2
Main St
Avenue I
Avenue J
Colorado River
County 18th St
County 19th St
County 20th St
County 21st St
County 22nd St
County 24th St
County 25th St
County 16th St
County 16-1/2 St
County 17th St
County 17-3/4 St
Avenue 1E
Avenue 2-1/2 E
Avenue 3-1/2 E
Avenue 4E
Avenue 5E
Avenue 6E
Private Rd
Avenue 1-1/2 E
Avenue A
Avenue B
Avenue C
1974
1976
1989
California
Mexico
CITY OF YUMA
CITY OF SAN LUIS
Merrill Ave
9th Avenue
D St
C St
Los Olivos Dr
Juan Sanchez Blvd / County 23
Earthquake Epicenter (Magnitude)
0 - 0.5
0.6 - 1.5
1.6 - 2.5
2.6 - 2.9
3.0 - 3.5
3.6 - 4.5
4.6 - 6.9
Faults
Modified Mercalli Intensity
Intensity < V
Intensity V
Intensity VI
Intensity VII
Intensity VIII
Intensity IX
Magnitude of Earthquake Events
MAG
YEAR
1,900
1,950
Yuma County
Legend
Communities
CITY OF SAN LUIS
CITY OF SOMERTON
CITY OF YUMA
TOWN OF WELLTON
Cocopah Indian Reservation
Roads
Interstate
Major Roads
Other Roads
Stream
County
1A
1B
1C
N
0
1
2
Miles
Source: JE FULLER 2009;
Arizona Land Resource Information System, 2003;
Arizona Dept. of Emergency Management, 2009;
Yuma County, 2009; AEIC, 2008
Yuma County Multi-Jurisdictional
Multi-Hazard Mitigation Plan
YUMA COUNTY ARIZONA
Map# 1B
Yuma County
Regional Historic
Earthquake Magnitude
and Intensities
as of March 2010



Legend

Communities
- CITY OF SAN LUIS
- CITY OF SOMERTON
- CITY OF YUMA
- TOWN OF WELLTON
- Cocopah Indian Reservation

Roads
- Interstate
- Major Roads
- Other Roads
- Stream
- County



N

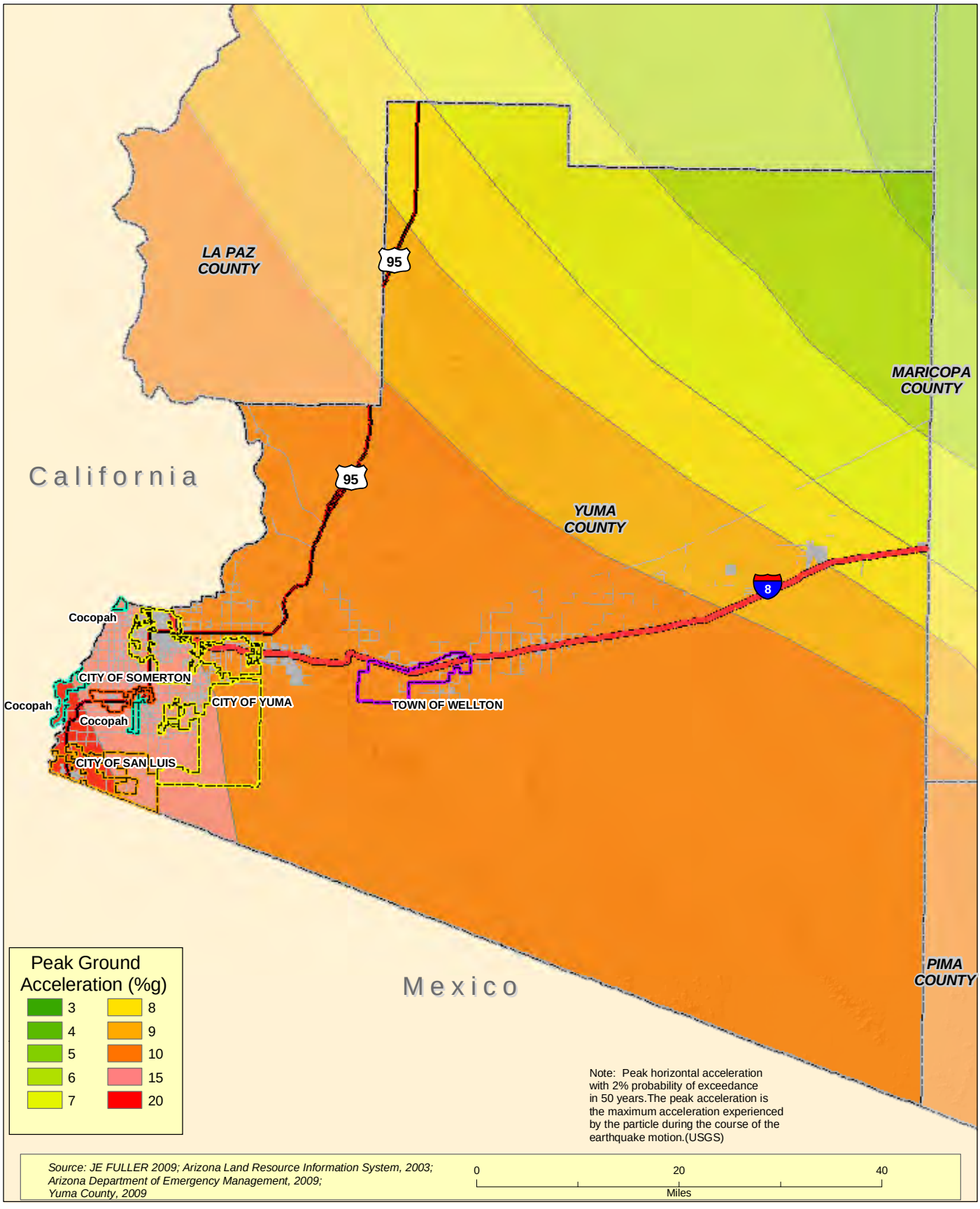
0 1 2

Miles

Source: JE FULLER 2009; Arizona Land Resource Information System, 2003; Arizona Dept. of Emergency Management, 2009; Yuma County, 2009; AEIC, 2008

Yuma County Multi-Jurisdictional Multi-Hazard Mitigation Plan

Map# 1C
Yuma County Regional Historic Earthquake Magnitude and Intensities
as of March 2010



Legend

Communities
- CITY OF SAN LUIS
- CITY OF SOMERTON
- CITY OF YUMA
- TOWN OF WELLTON
- Cocopah Indian Reservation

Roads
- Interstate
- Major Roads
- Other Roads
- Stream
- County

N

Yuma County Multi-Jurisdictional Multi-Hazard Mitigation Plan

Map# 2
Yuma County Peak Ground Acceleration Hazard Map
as of May 2009

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5.3.3 Flooding

Description

For the purpose of this Plan, the hazard of flooding addressed in this section will pertain to floods that result from precipitation/runoff, dam failure, and levee failure related events. The two seasonal atmospheric events that tend to trigger floods in Yuma County are:

- *Tropical Storm Remnants*: Some of the worst flooding tends to occur when the remnants of a hurricane that has been downgraded to a tropical storm or tropical depression enter the State. These events occur infrequently and mostly in the early autumn, and usually bring heavy and intense precipitation over large regions causing severe flooding
- *Summer Monsoons*: A third atmospheric condition that brings flooding to Arizona is the annual summer monsoon. In mid to late summer the monsoon winds bring humid subtropical air into the State. Solar heating triggers afternoon and evening thunderstorms that can produce extremely intense, short duration bursts of rainfall. The thunderstorm rains are mostly translated into runoff and in some instances, the accumulation of runoff occurs very quickly resulting in a rapidly moving flood wave referred to as a flash flood. Flash floods tend to be very localized and cause significant flooding of local watercourses.

Damaging floods in the County can be primarily categorized as either riverine, sheet flow, or local area flows. Riverine flooding occurs along established watercourses when the bankfull capacity of a wash is exceeded by storm runoff and the overbank areas become inundated. The major riverine watercourses are the Colorado River and the Gila River, which converges with the Colorado River in Yuma. The Colorado River drains watersheds from Wyoming, Utah, Colorado, Nevada, New Mexico and Arizona. The Gila River has a large drainage with the source beginning in western New Mexico on the western slopes of the Continental Divide. There are also areas within the County where the watercourse is broad and generally shallow with ill-defined low flow paths and broad sheet flooding. Local area flooding is often the result of poorly designed or planned development wherein natural flowpaths are altered, blocked or obliterated, and localized ponding and conveyance problems result. Erosion is also often associated with damages due to flooding.

Another source or potential cause of flooding in Yuma County is through dam and levee failure events. Due to the unlikely occurrence of this type of flooding in Yuma County, the Team wanted to recognize these event types and are designated under flooding and not addressed separately. The following is a description and situation of dam and levee failure potential:

- *Dam Failure*: FEMA Dam Safety defines dam failure as a catastrophic type of failure characterized by the sudden, rapid, and uncontrolled release of impounded water or the likelihood of such an uncontrolled release It is recognized that there are lesser degrees of failure and that any malfunction or abnormality outside the design assumptions and parameters that adversely affect a dam's primary function of impounding water is properly considered a failure. These lesser degrees of failure can progressively lead to, or heighten, the risk of catastrophic failure. There are 6 major dams on the Colorado River that can impact the Colorado River Flood Conditions at Yuma County. All 6 are owned by the Bureau of Reclamation. They are; Glenn Canyon Dam, Hoover Dam, Davis Dam, Parker Dam, Senator Wash Dam, and Imperial Dam. In some cases the dams are operated and maintained by a contracted entity. One such case is the Imperial Dam, which is contracted to Imperial Irrigation District to operate and maintain for the Bureau of Reclamation. In all cases the personnel at each dam follow the Dam Safety Guidelines and Policy set forth by the Bureau of Reclamation. Each of these dams has a written Emergency Action Plan for handling such emergencies as dam failures and/or Colorado River Floods.
- Other River systems affecting the Yuma County area include the Verde, Salt, and Gila Rivers. Flood waters released through these river systems converge on the Gila River and

are captured by Painted Rock Dam, southwest of Phoenix. Painted Rock Dam is owned and operated by the Corps of Engineers, Los Angeles District. The Corps of Engineers maintain a separate flood operating plan for the Painted Rock Dam on the Gila River.

- *Levee Failure:* FEMA defines levees as man-made structures, usually earthen embankments, that are designed and constructed in accordance with sound engineering practices to contain, control or divert the flow of water so as to provide protection from temporary flooding (FEMA, 2009). National flood policy now recognizes the term "levee" to mean only those structures which were designed and constructed according to sound engineering practices, have up to date inspection records and current maintenance plans, and have been certified as to their technical soundness by a professional engineer. FEMA has classified all other structures that impound, divert, and/or otherwise impede the flow of runoff as "non-levee embankments". In Yuma County, these might be comprised of features such as roadway and railway embankments, canals, irrigation ditches and drains, and agricultural dikes.

FEMA urges communities to recognize that all areas downstream of levees and embankments are at some risk of flooding. There are no guarantees that a levee or embankment will not fail or breach if a large quantity of water collects upstream.

Mechanisms for levee failure are similar to those for dam failure. Failure by overtopping could occur due to an inadequate design capacity, sediment deposition and vegetation growth in the channel, subsidence, and/or a runoff that exceeds the design recurrence interval of the levee. Failure by piping could be due to embankment cracking, fissures, animal boroughs, embankment settling, or vegetal root penetrations.

History

Flooding is clearly a major hazard in Yuma County as shown in Tables 5-2 and 5-3. Yuma County has been part of 9 presidential disaster declarations; and there have been at least 7 other reported flooding incidents that met the thresholds outlined in Section 5.1. The following incidents represent examples of major flooding that has impacted the County:

- In March 2010, the City of Yuma had winter storm runoff which caused damage to roads, retention basins, parks, and other public facilities. Damages are listed at $300,000.
- In September 1997, Yuma County prepared for the arrival of Hurricane Nora, which was expected to be the worst rainstorm to ever hit the State of Arizona. By the time Hurricane Nora made its way into Yuma County it had weakened and was downgraded to a tropical storm. The remnants of the hurricane delivered over three inches of rain in a 48-hour period and caused significant problems including downed trees, loss of electrical power, restricted access for emergency crews, and severe flooding problems and wind damage. It is estimated that over $200 million in damages were sustained, with most of the damages occurring to agricultural crops.
- In September 1994, a series of thunderstorms moved through the Yuma area during the early morning hours. Rainfall amounts up to 2.5 inches led to the flooding of four homes about eight miles south of Yuma. Several roads in Somerton and U.S. 95 about eight miles northeast of Yuma were closed due to flooding. Two cars were pushed off U.S. 95 at Fortuna Wash, but the motorists were rescued unharmed. Also, localized strong winds knocked over at least five power poles on County Road 14 in Somerton. The Yuma County Extension Agent estimated crop damages from the flood approaching $1 million, mainly cotton.
- In 1993, heavy rain fell over most of north, central and southeastern Arizona resulting in significant flooding along most major watercourses. In Yuma County, raging flood waters, sediment deposition and extensive bank erosion caused severe damage to public infrastructure and structural damage to private property, agricultural crops and land, economic loss and environmental damage. Water released from dams along the Salt and Verde Rivers converged at Painted Rock Dam, which is a flood control reservoir located in Maricopa County just north of Yuma County. To alleviate upstream flooding, the US Army Corps of Engineers (USACE) began

gradually increasing discharges at Painted Rock, with a peak release rate of 27,500-cfs on February 28, 1993. The Gila River system below Painted Rock Dam was unable to handle these discharge amounts and went over its banks in some areas in spite of concentrated flood fighting efforts by several agencies. According to the USACE Flood Damages Report [28], Yuma County had in excess of $130 million in public infrastructure, agricultural, private property, economic and environmental damages. The flooding prompted a federal disaster declaration for almost the entire state

- In 1983, exceedingly large amounts of runoff caused by rapidly melting snow from record snowfalls and late rains resulted in unusually high volumes of water entering the Colorado River basin. These extraordinary amounts of water required the upper reservoirs to release unprecedented volumes of water into the lower Colorado River system. The releases caused the Colorado River to flood low-lying areas, erode riverbanks, and raise adjacent ground water levels. Flood damage to urban and agricultural lands extended 250 miles beginning at Davis Dam to the Mexican border. Groundwater seepage caused surface ponding. Damage to recreational facilities was widespread, affecting beaches, campsites, boat docks, launch sites, and businesses servicing these activities. Septic tank systems and water treatment systems were also damaged. This Presidential declared disaster resulted in $13 million to the city and county of Yuma.
- In 1976, Hurricane Kathleen, which had just been downgraded to a tropical storm status, lashed Yuma with up to 76 mph wind gusts and dropped half of the annual rainfall in one hour. This tropical storm inflicted over $2 million in damages in Yuma.

Numerous other flood related incidents are summarized in the historic hazard database provided in Appendix D.

Probability and Magnitude

For the purposes of this Plan, the probability and magnitude of flood hazard for Yuma County jurisdictions are based on the 1% probability floodplains delineated on FEMA Flood Insurance Rate Maps (FIRMs). FEMA and participating agencies and departments of Yuma County jurisdictions have completed a map modification program to update the FIRMs for the County into a digital FIRM (DFIRM) format. Floodplain limits and GIS base files were provided by the FEMA Map Service Center in fall of 2008.

Two designations of flood hazard are used, with HIGH hazard areas being any "A" zone and MEDIUM flood hazard being either all "Shaded X" zones. All "A" zones (e.g. – A, A1-99, AE, AH, AO, etc.) represent areas with a 1% probability of being flooded at a depth of one-foot or greater in any given year. All "Shaded X" zones represent areas with a 0.2% probability of being flooded at a depth of one-foot or greater in any given year. These two storms are often referred to as the 100-year and 500-year storm, respectively.

Maps #3 presents the high and medium flood hazard areas for Yuma County. When viewing the maps, the following should be noted:

- Neither the City of San Luis or the Cocopah Indian Tribe participate in the National Flood Insurance Program (NFIP). Although, both City and Tribe has FEMA mapped floodplains for their city and reservation.

Vulnerability – CPRI Results

Flooding CPRI results for each community are summarized in Table 5-18 below.

[28] US Army Corps of Engineers, Los Angeles District, 1994, *Flood Damage Report – State of Arizona – Floods of 1993*

Table 5-18: Summary of CPRI results by jurisdiction for flooding hazard					
Participating Jurisdiction	**Probability**	**Magnitude/ Severity**	**Warning Time**	**Duration**	**CPRI Score**
Cocopah	Possibly	Catastrophic	>24 hours	>1 week	2.55
San Luis	Unlikely	Critical	>24 hours	<6 hours	1.60
Somerton	Possibly	Limited	12-24 hours	<1 week	2.10
Unincorporated Yuma County	Likely	Catastrophic	>24 hours	>1 week	3.10
Wellton	Likely	Critical	12-24 hours	<1 week	2.85
Yuma	Likely	Critical	12-24 hours	>1 week	3.15
				County-wide average CPRI =	**2.56**
				CPRI Min/Max Score = 1.00/4.00	

Vulnerability – Loss Estimations

The estimation of potential exposure to high and medium flood hazards was accomplished by intersecting the human and facility assets with the flood hazard limits depicted on Map# 2. Loss estimates to all facilities located within the high and medium flood hazard areas were made based on the loss estimation tables published by FEMA (FEMA, 2001). Most of the assets located within high hazard flood areas will be subject to three feet or less of flooding. Using the FEMA tables, it is assumed that all structural assets located within the high hazard areas will have a loss-to-exposure ratio of 0.20 (or 20%). A loss to exposure ratio of 0.05 (5%) is assumed for assets located in the medium hazard areas. Table 5-19 summarizes the Planning Team identified critical and non-critical facilities potentially exposed to high and medium flood hazards, and the corresponding estimates of losses. Table 5-20 summarizes population sectors exposed to the high and medium flood hazards. HAZUS residential, commercial and industrial exposures and loss estimates to high and medium flood hazards are summarized in Tables 5-21 through 5-27.

Table 5-19: Summary of County asset inventory loss estimates due to Flooding (x$1,000)				
Community	**Impacted Facilities**	**Impacted Facility Percentages**	**Estimated Replacement Cost**	**Estimated Structure Loss**
High				
County-Wide Totals	**18**	**100.00%**	**$33,719**	**$6,744**
Cocopah	3	16.67%	$530	$106
San Luis	1	5.56%	$18,000	$3,600
Somerton	0	0.00%	$0	$0
Unincorporated	2	11.11%	$402	$80
Wellton	4	22.22%	$3,534	$707
Yuma	8	44.44%	$11,253	$2,251
Medium				
County-Wide Totals	**476**	**100.00%**	**$2,132,587**	**$106,629**
Cocopah	73	15.34%	$102,260	$5,113
San Luis	70	14.71%	$271,692	$13,585
Somerton	49	10.29%	$77,950	$3,898
Unincorporated	159	33.40%	$260,627	$13,031
Wellton	20	4.20%	$28,850	$1,443
Yuma	105	22.06%	$1,391,208	$69,560

Table 5-20: Summary of Yuma County population sectors exposed to Flooding						
Community	**Total Population**	**Population Exposed**	**Percent of Population Exposed**	**Total Population Over 65**	**Population Over 65 Exposed**	**Percent of Population Over 65 Exposed**
High						
County-Wide Totals	**160,072**	**7,213**	**4.51%**	**26,423**	**1,088**	**4.12%**
CITY OF SAN LUIS	15,176	0	0.00%	633	0	0.00%
CITY OF SOMERTON	7,732	0	0.00%	568	0	0.00%
CITY OF YUMA	79,689	4,401	5.52%	10,648	548	5.15%
COCOPAH INDIAN TRIBE	1,025	26	2.52%	205	9	4.17%
TOWN OF WELLTON	1,864	245	13.12%	454	59	12.99%
UNINCORPORATED	54,586	2,541	4.65%	13,915	472	3.40%
Medium						
County-Wide Totals	**160,072**	**150,575**	**94.07%**	**26,423**	**24,672**	**93.37%**
CITY OF SAN LUIS	15,176	15,176	100.00%	633	633	100.00%
CITY OF SOMERTON	7,732	7,732	100.00%	568	568	100.00%
CITY OF YUMA	79,689	75,287	94.48%	10,648	10,099	94.85%
COCOPAH INDIAN TRIBE	1,025	999	97.47%	205	196	95.83%
TOWN OF WELLTON	1,864	1,620	86.88%	454	395	87.01%
UNINCORPORATED	54,586	49,761	91.16%	13,915	12,781	91.85%

Table 5-21: Summary of Yuma County HAZUS Building Exposure by Flooding Hazard									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Yuma County HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
County-Wide Totals	**65902**	**$9,942,001**	**2001**	**$2,268,033**	**481**	**$374,615**	**$12,584,649**		
High Hazard Exposure	3500	$431,435	64	$42,655	19	$11,221	$485,310	20%	$97,062
Medium	61163	$9,354,259	1924	$2,220,301	458	$361,820	$11,936,381	5%	$596,819
Yuma County HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
Total %	**98.12%**	**98.43%**	**99.32%**	**99.78%**	**99.08%**	**99.58%**			
High Hazard Exposure	05.31%	04.34%	03.18%	01.88%	03.85%	03.0%			
Medium	92.81%	94.09%	96.14%	97.90%	95.23%	96.58%			

Table 5-22: Summary of City of San Luis HAZUS Building Exposure by Flooding Hazard									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
City of San Luis HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**3343**	**$455,990**	**61**	**$70,672**	**21**	**$9,039**	**$535,702**		
High Hazard Exposure	3	$199	1	$346	1	$67	$612	20%	$122
Medium	3340	$455,791	60	$70,269	20	$8,935	$534,995	5%	$26,750
City of San Luis HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
Total %	**100.0%**	**100.0%**	**99.48%**	**99.92%**	**98.50%**	**99.58%**			
High Hazard Exposure	0.09%	0.04%	01.16%	0.49%	03.76%	0.74%			
Medium	99.91%	99.96%	98.32%	99.43%	94.73%	98.85%			

Table 5-23: Summary of City of Somerton HAZUS Building Exposure by Flooding Hazard									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
City of Somerton HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**2189**	**$309,656**	**35**	**$22,815**	**6**	**$1,641**	**$334,112**		
High Hazard Exposure	0	$0	0	$0	0	$0	$0	20%	$0
Medium	2189	$309,656	35	$22,815	6	$1,641	$334,112	5%	$16,706
City of Somerton HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
Total %	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**			
High Hazard Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Medium	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			

Table 5-24: Summary of City of Yuma HAZUS Building Exposure by Flooding Hazard									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
City of Yuma HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**29826**	**$5,869,830**	**1317**	**$1,683,485**	**253**	**$226,860**	**$7,780,175**		
High Hazard Exposure	1456	$246,170	34	$20,869	7	$2,369	$269,407	20%	$53,881
City of Yuma HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
Total %	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**			
High Hazard Exposure	04.88%	04.19%	02.59%	01.24%	02.86%	01.04%			
Medium	95.12%	95.81%	97.41%	98.76%	97.14%	98.96%			

Table 5-25: Summary of Cocopah Indian Tribe HAZUS Building Exposure by Flooding Hazard									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Cocopah Indian Tribe HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**849**	**$86,602**	**6**	**$5,374**	**0**	**$0**	**$91,976**		
High Hazard Exposure	59	$5,547	0	$6	0	$0	$5,553	20%	$1,111
Medium	790	$81,055	6	$5,368	0	$0	$86,423	5%	$4,321
Cocopah Indian Tribe HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
Total %	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**0.0%**	**0.0%**			
High Hazard Exposure	06.90%	06.40%	0.72%	0.12%	0.0%	0.0%			
Medium	93.10%	93.59%	99.27%	99.88%	0.0%	0.0%			

Table 5-26: Summary of Town of Wellton HAZUS Building Exposure by Flooding Hazard									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Town of Wellton HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**1141**	**$97,433**	**11**	**$7,699**	**1**	**$254**	**$105,386**		
High Hazard Exposure	169	$14,319	1	$855	0	$0	$15,174	20%	$3,035
Medium	972	$83,114	10	$6,844	1	$254	$90,211	5%	$4,511
Town of Wellton HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
Total %	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**			
High Hazard Exposure	14.80%	14.70%	11.38%	11.11%	0.0%	0.0%			
Medium	85.20%	85.30%	88.62%	88.89%	100.0%	100.0%			

Table 5-27: Summary of Unincorporated Area HAZUS Building Exposure by Flooding Hazard									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Unincorporated HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**28554**	**$3,122,490**	**571**	**$477,988**	**200**	**$136,821**	**$3,737,299**		
High Hazard Exposure	1814	$165,200	28	$20,579	10	$8,785	$194,564	20%	$38,913
Medium	25502	$2,800,984	530	$452,389	186	$126,500	$3,379,872	5%	$168,994
Unincorporated HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
Total %	**95.66%**	**94.99%**	**97.68%**	**98.95%**	**97.94%**	**98.88%**			
High Hazard Exposure	06.35%	05.29%	04.83%	04.31%	05.22%	06.42%			
Medium	89.31%	89.70%	92.85%	94.64%	92.72%	92.46%			

In summary, $6.7 million and $106.6 million in asset related losses are estimated for high and medium flood hazards, for all the participating jurisdictions in Yuma County. An additional $97 and $596 million in high and medium flood losses to HAZUS defined residential, commercial, and industrial facilities is estimated for all participating Yuma County jurisdictions. Regarding human vulnerability, a total population of 7,213 people, or 4.51% of the total 2000 Census Yuma County population, is potentially exposed to a high hazard flood event. A total population of 150,575 people, or 94.07% of the total 2000 Census Yuma County population, is potentially exposed to a medium hazard flood event. Based on the historic record, multiple deaths and injuries are plausible and a substantial portion of the exposed population is subject to displacement depending on the event magnitude.

It is duly noted that the loss and exposure numbers presented above represent a comprehensive evaluation of the County as a whole. It is unlikely that a storm event would occur that would flood all of the delineated high and medium flood hazard areas at the same time. Accordingly, actual event based losses and exposure are likely to be only a fraction of those summarized above

A summary comparison of the 2005 Plan flooding vulnerability analysis results to the current plan is shown in Table 5-28. Changes shown in Table 5-28 are a result of revisions to the Team asset inventory, a different flood hazard layer (Final DFIRM), and the 2009 population projection described previously.

Table 5-28: 2005 Plan flooding vulnerability analysis compared to current Plan

Exposure	2005 Plan	Current Plan
Assets: High Hazard	$4.1 Million	$6.7 Million
Assets: Medium Hazard	$23.1 Million	$106.6 Million
HAZUS Facilities: High Hazard	$12.3 Million	$97 Million
HAZUS Facilities: Medium Hazard	$86 Million	$596 Million
Human: High Hazard	4,338	7,213
Human: Medium Hazard	121,612	150,575
Human: High Hazard	2.7%	4.51%
Human: Medium Hazard	75.9%	94.07%
Source: 2005 Yuma County Multi-Hazard Mitigation Plan		

Vulnerability – Repetitive Loss Properties

Repetitive Loss (RL) properties are those NFIP-insured properties that since 1978, have experience multiple flood losses. FEMA tracks RL properties and in particular to identify Severe RL (SRL) properties. RL properties demonstrate a track record of flooding repeated flooding for a certain location and are one element of the vulnerability analysis. RL properties are also important to the NFIP, since structures that flood frequently put a strain on the National Flood Insurance Fund. FEMA records dated January 31, 2010 (provided by ADWR) indicate that there are no identified RL properties in Yuma County.

Vulnerability – Development Trends

For most Yuma County jurisdictions, adequate planning and regulatory tools are in place to regulate future development. The YCFCD is very proactive in delineating floodplains ahead of development in the less populated areas of the County, and works cooperatively with all incorporated jurisdictions to update and refine existing floodplain mapping as needed.

Sources

Arizona Division of Emergency Management, 2009, State of Arizona Multi-Hazard Mitigation Plan, 2010 Update, DRAFT.

FEMA, 2001, Understanding Your Risks; Identifying Hazards and Estimating Losses, FEMA Document No. 386-2.

FEMA, September 2007, HAZUS/Census Data for Estimating Potential Losses for Disasters

Yuma County, 2005, Yuma County Multi-Hazard Mitigation Plan.

U.S. Army Corps of Engineers, Los Angeles District, 1994, Flood Damage Report, State of Arizona, Floods of 1993.

Profile Maps

Map# 3(County), 3A, 3B, 3C– Flood Hazard Map

Legend

Communities
- CITY OF SAN LUIS
- CITY OF SOMERTON
- CITY OF YUMA
- TOWN OF WELLTON
- Cocopah Indian Reservation

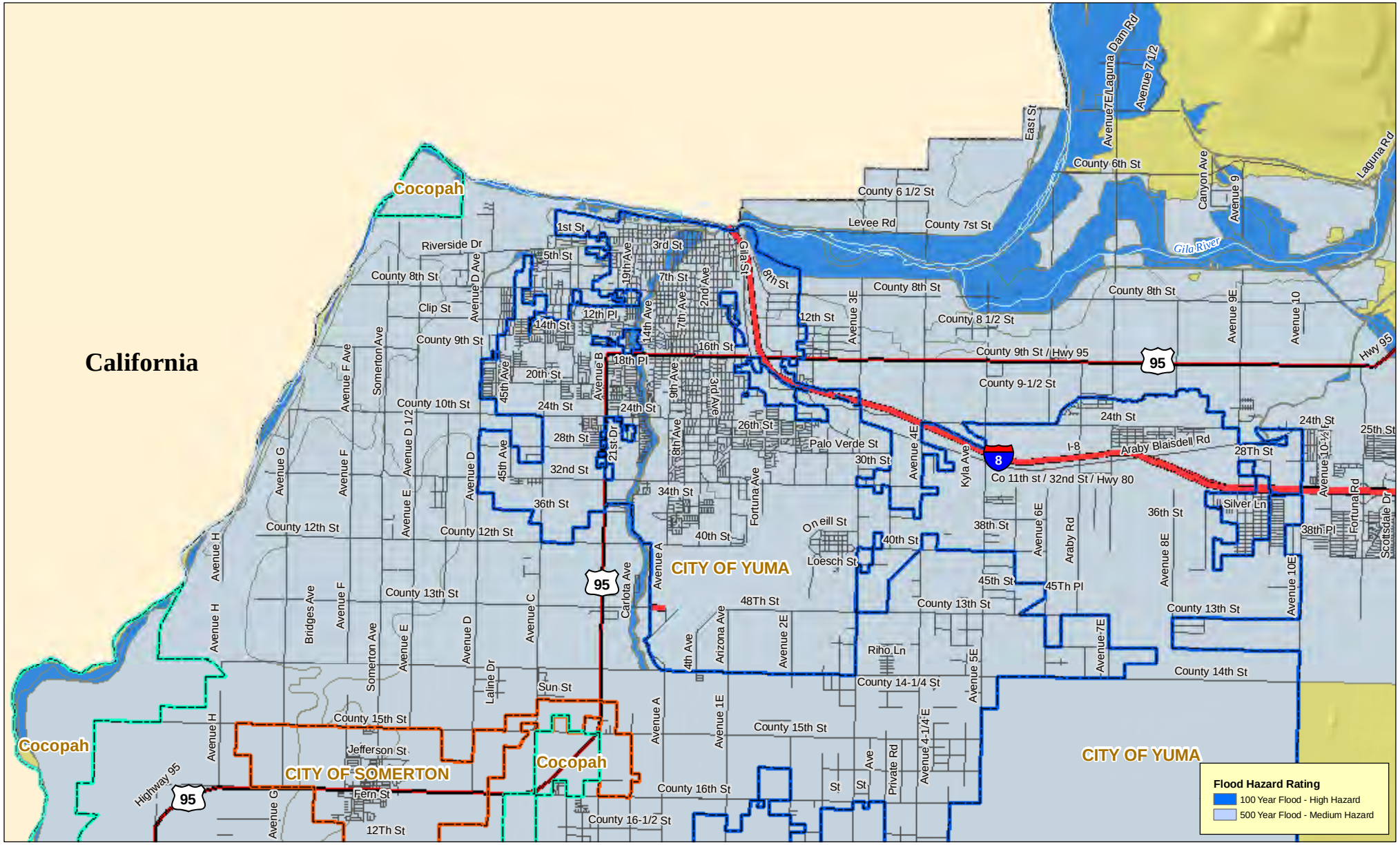
Roads
- Interstate
- Major Roads
- Other Roads
- Stream
- County

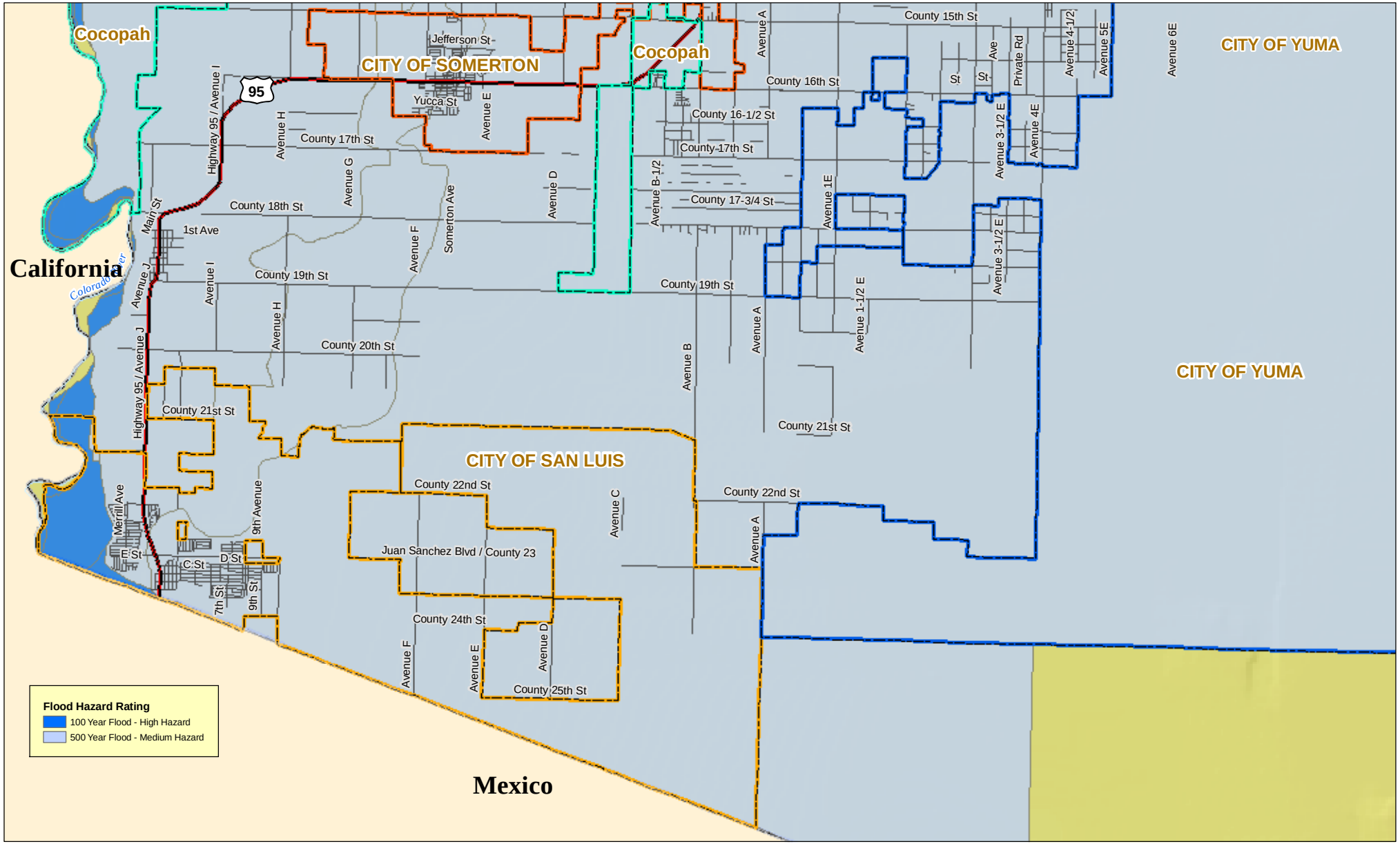
N

Yuma County Multi-Jurisdictional Multi-Hazard Mitigation Plan

Map# 3 Yuma County Floodplain Hazard Map

as of May 2009

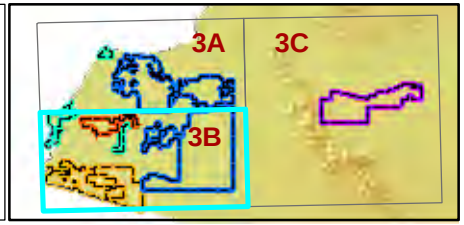

California
Cocopah
CITY OF YUMA
CITY OF SOMERTON
Cocopah
Cocopah
CITY OF YUMA
Gila River
Laguna Rd
Avenue 7E/Laguna Dam Rd
Avenue 7 1/2
East St
County 6th St
County 6 1/2 St
Levee Rd
County 7st St
Canyon Ave
Avenue 9
Riverside Dr
1st St
5th St
3rd St
19th Ave
7th St
2nd Ave
Gila St
8th St
County 8th St
Avenue D Ave
Clip St
12th Pl
14th St
14th Ave
7th Ave
12th St
Avenue 3E
County 8 1/2 St
Avenue 9E
Avenue 10
County 9th St
16th St
18th Pl
County 9th St / Hwy 95
Hwy 95
95
Somerton Ave
Avenue F Ave
45th Ave
20th St
Avenue B
9th Ave
3rd Ave
County 9-1/2 St
County 10th St
24th St
24th St
24th St
25th St
Avenue G
Avenue F
Avenue D 1/2
28th St
21st Dr
8th Ave
26th St
Palo Verde St
Avenue 4E
Kyla Ave
8
I-8
Araby Blaisdell Rd
28Th St
Avenue 10 1/2
Fortuna Rd
Scottsdale Dr
30th St
Co 11th st / 32nd St / Hwy 80
32nd St
34th St
36th St
Silver Ln
Avenue E
Avenue D
45th Ave
Fortuna Ave
Oneill St
38th St
38th Pl
Avenue 6E
Araby Rd
Avenue 8E
County 12th St
County 12th St
40th St
40th St
Loesch St
Avenue H
Avenue A
Carlota Ave
95
45th St
45Th Pl
Avenue 10E
Bridges Ave
Avenue F
County 13th St
48Th St
County 13th St
County 13th St
Avenue H
Avenue C
Avenue D
Avenue E
Somerton Ave
4th Ave
Arizona Ave
Avenue 2E
Riho Ln
Avenue 5E
Avenue 7E
County 14th St
County 14-1/4 St
Laline Dr
Sun St
Avenue H
Avenue A
Avenue 1E
County 15th St
County 15th St
Avenue 4-1/4E
Jefferson St
Private Rd
Highway 95
95
Fern St
County 16th St
Avenue G
12Th St
County 16-1/2 St
Flood Hazard Rating
100 Year Flood - High Hazard
500 Year Flood - Medium Hazard
Legend
Communities
CITY OF SAN LUIS
CITY OF SOMERTON
CITY OF YUMA
TOWN OF WELLTON
Cocopah Indian Reservation
Roads
Interstate
Major Roads
Other Roads
Stream
County
3A
3C
3B
N
0
1
2
Miles
Source: JE FULLER 2009;
FEMA 2008; ALRIS, 2003
Yuma County Multi-Jurisdictional
Multi-Hazard Mitigation Plan
Map# 3A
Yuma County
Floodplain
Hazard Map
as of March 2010



Legend

Communities
- CITY OF SAN LUIS
- CITY OF SOMERTON
- CITY OF YUMA
- TOWN OF WELLTON
- Cocopah Indian Reservation

Roads
- Interstate
- Major Roads
- Other Roads
- Stream
- County



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0 1 2

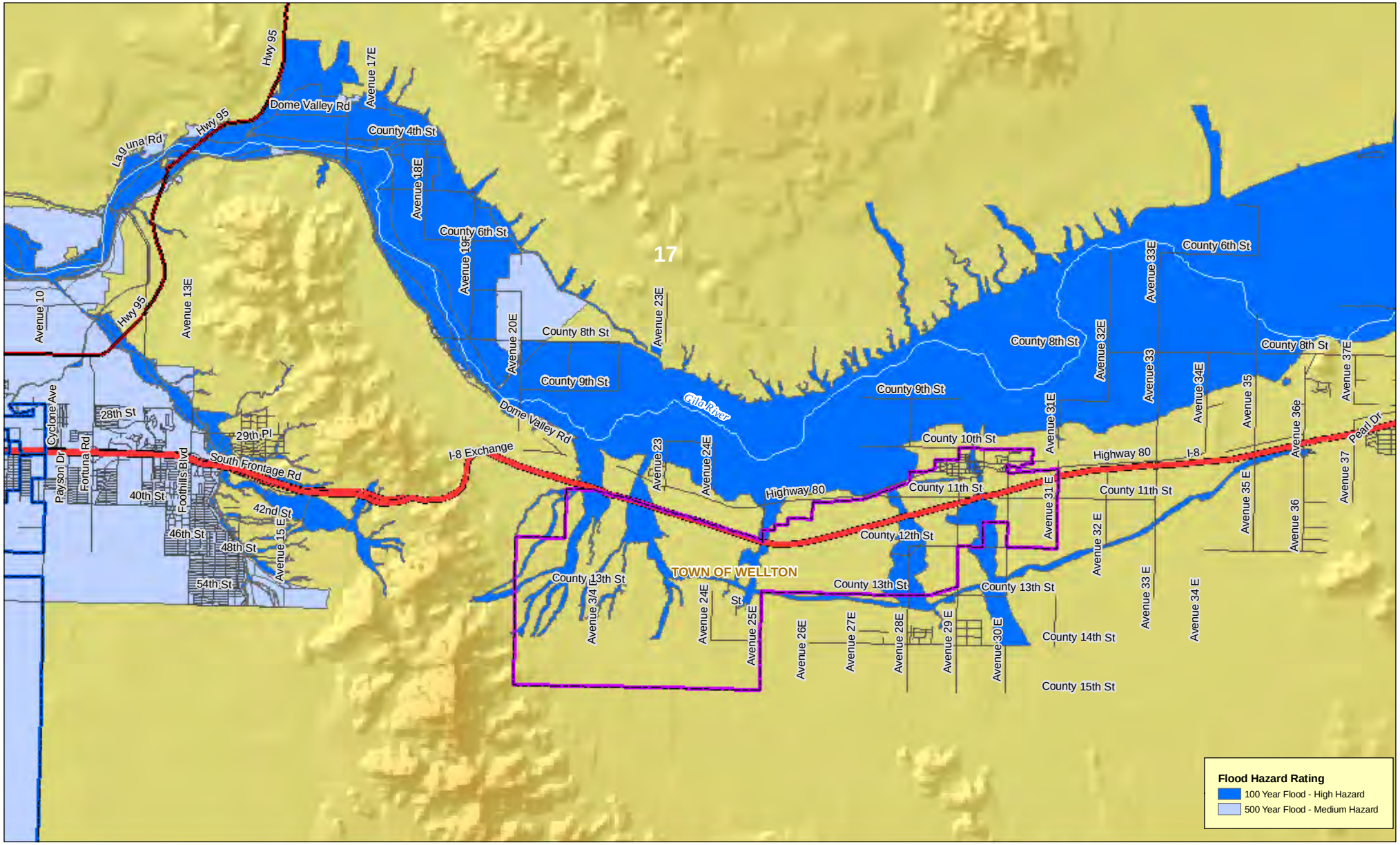
Miles

Source: JE FULLER 2009; FEMA 2008; ALRIS, 2003

Yuma County Multi-Jurisdictional Multi-Hazard Mitigation Plan

Map# 3B

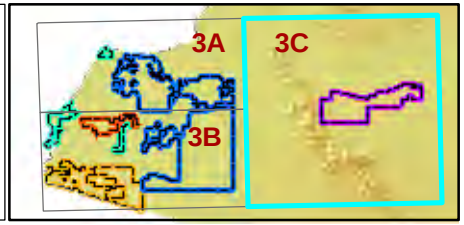
Yuma County Floodplain Hazard Map
as of March 2010



Legend

Communities
- CITY OF SAN LUIS
- CITY OF SOMERTON
- CITY OF YUMA
- TOWN OF WELLTON
- Cocopah Indian Reservation

Roads
- Interstate
- Major Roads
- Other Roads
- Stream
- County



N

0 1 2

Miles

Source: JE FULLER 2009; FEMA 2008; ALRIS, 2003

Yuma County Multi-Jurisdictional Multi-Hazard Mitigation Plan

Map# 3C

Yuma County Floodplain Hazard Map

as of March 2010

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5.3.4 Severe Wind

Description

The hazard of Severe Wind encompasses all climatic events that produce damaging winds. For Yuma County, Severe Winds usually result from either extreme pressure gradients that usually occur in the spring and early summer months, or from thunderstorms. Thunderstorms can occur year-round and are usually associated with cold fronts in the winter, monsoon activity in the summer, and tropical storms in the late summer or early fall.

Three types of damaging wind related features typically accompany a thunderstorm; 1) downbursts, 2) straight line winds, and infrequently, 3) tornadoes.

Downbursts are columns of air moving rapidly downward through a thunderstorm. When the air reaches the ground, it spreads out in all directions, creating horizontal wind gusts of 80 mph or higher. Downburst winds have been measured as high as 140 mph. Some of the air curls back upward with the potential to generate a new thunderstorm cell. Downbursts are called macrobursts when the diameter is greater than 2.5 miles, and microbursts when the diameter is 2.5 miles or less. They can be either dry or wet downbursts, where the wet downburst contains precipitation that continues all the way down to the ground, while the precipitation in a dry downburst evaporates on the way to the ground, decreasing the air temperature and increasing the air speed. In a microburst the wind speeds are highest near the location where the downdraft reached the surface, and are reduced as they move outward due to the friction of objects at the surface. Typical damage from downbursts includes uprooted trees, downed power lines, mobile homes knocked off their foundations, block walls and fences blown down, and porches and awnings blown off homes.

Straight line winds are developed similar to downbursts, but are usually sustained for greater periods as a thunderstorms reaches the mature stage, traveling parallel to the ground surface at speeds of 75 mph or higher. These winds are frequently responsible for generating dust storms and sand storms, reducing visibility and creating hazardous driving conditions.

A tornado is a rapidly rotating funnel (or vortex) of air that extends toward the ground from a cumulonimbus cloud. Most funnel clouds do not touch the ground, but when the lower tip of the funnel cloud touches the earth, it becomes a tornado and can cause extensive damage. For Yuma County, tornadoes are the least common severe wind to accompany a thunderstorm.

History

According to Tables 5-2 and 5-3, Yuma County has not been included in state and/or federal disaster declaration specifically involving severe wind events, but have been connected with flooding events. There are also an additional 49 events with a combined loss of approximately $8 million to structures and agriculture, and over 14 injuries and one death. The following are examples of documented past events:

- In October 2009, winds increased during the late afternoon hours and caused a power outage to the area of San Luis and Somerton. The outage initially affected 16,000 customers in southern Yuma County. Winds associated with the passage of a sharp cold front gusted to over 30 mph and resulted in a power outage in the Yuma area. The property damage was estimated at $10,000 (NCDC, 2009).

- In August 2009, several downed power poles. Eight people sustained minor injuries after the strong winds damaged numerous mobile homes in Dateland. Sun Country Acres mobile home park, located two miles north of Interstate 8 on Avenue64E, reported that every mobile home in the park was damaged in some way, many having broken windows. Most of the injuries were to the head and back and cuts from broken glass (NCDC, 2008).

- In July 2009, thunderstorm winds created a huge dust storm that affected much of the Yuma area with near zero visibility. Wind speeds were estimated to be over 60 mph, with considerable damage to property. At least one home was damaged, with trees and power lines downed by

strong winds. During the peak of the storm, 5,200 customers were without power. The Yuma airport recorded a peak gust of 48 mph just before 5 p.m. A large complex or area of storms moved to the west and into Yuma late on Saturday afternoon. The property damage was estimated at $100,000 (NCDC, 2008).

- In September 2008, Somerton police reported power lines down due to very strong winds from thunderstorms. At the peak of the storm, between 2,500 and 3,000 APS customers were without power. A large tree in the 3300 block of 15th Avenue in The Dunes subdivision was knocked down. Power outages were also reported on the Cocopah Reservation at County 18th Street and Avenue D and in the north end of the city of Yuma. Showers and thunderstorms developed across much of southwest and south-central Arizona. A few storms became severe, with strong winds, hail and very heavy downpours. This event caused $150,000 in property damages (NCDC, 2008).

- In August 2008, trees were uprooted and a semi trailer was turned over. A peak gust of 57 mph was measured at the Yuma airport. About 1,000 APS customers were left without power due to these thunderstorm winds. Power poles were blown down in the Mohawk area. Strong winds associated with severe thunderstorms affected parts of Yuma late Thursday night and early Friday morning. These storms were part of a huge system that moved through the Phoenix area earlier that night. Damage estimates were at $150,000. (NCDC, 2008)

- In September 2007, numerous trees and as many as 11 power poles reported down due to strong winds. Peak gusts to 84 mph were recorded at the Yuma airport. Arizona Public Service reported about 9,600 people were left without power Sunday morning. Yuma Police responded to more than 120 emergency calls for service, most of which were storm related. Numerous eyewitnesses described the area around the 100 block of West 27th Place as the worst-hit section of town. Condos in that area had considerable roof damage with ceilings collapsing onto living rooms and dining rooms. Large hail and localized flooding was also reported in Yuma.Thunderstorms resulted in considerable damage in portions of Yuma after winds gusted to 84 mph at the Yuma Airport. This event caused $1,500,000 in property damage (NCDC, 2008)

- On August 13, 2001 at approximately 2:25 p.m., the Yuma County Sheriff's Office received a 9-1-1 call stating there had been an accident involving a Sheriff's Office patrol vehicle at milepost 54 on U.S. Highway 95, north of Yuma. Emergency units responded to the scene where they discovered that a single vehicle had traveled off the roadway and rolled over. At that time, the preliminary investigation indicated the vehicle left the roadway and turned over one and one-quarter times. The driver and sole occupant, Senior Deputy Michael Meyer was still seat-belted in his patrol vehicle when found by motorists who immediately called for assistance. Senior Deputy Meyer was pronounced dead at the accident scene.

  Senior Deputy Meyer had been employed by the Sheriff's Office for 4 years and was in charge of the Water Safety Division. Northern Yuma County was a regular patrol assignment for Deputy Meyer who was ever aware of the changing desert conditions. A heavy storm was blowing through the area and it was Senior Deputy Meyer's habit to check the washes and the roads for flooding and damage on such occasions. (http://www.yumacountysheriff.org/LineofDuty.htm)

- In September 1993, the second severe thunderstorm to hit the Yuma area over the Labor Day weekend affected the southeast and east sections. The strong microburst winds destroyed at least three metal warehouses and blew down power lines. As many as 10 recreational vehicles were damaged at an RV resort. Damage to the warehouses was estimated to be at least $1 million. Overall damage estimates are at $5 million (NCDC, 2008)

Probability and Magnitude

Most severe wind events are associated with thunderstorms as previously mentioned. The probability of a severe thunderstorm occurring with high velocity winds increases as the average duration and number of thunderstorm events increases. According to NCDC, 104 separate thunderstorm event damage reports have been filed for Yuma County over the past 40 years (NCDC, 2009), yielding an average of 2 or 3 damaging or potentially damaging thunderstorm events per year. Reported damages for the past 40 years were approximately $7.9 million, or $197,000 average per year.

The NWS issues a severe thunderstorm watch when conditions are favorable for the development of severe thunderstorms. The local NWS office considers a thunderstorm severe if it produces hail at least 3/4-inch in diameter, wind of 58 mph or higher, or tornadoes. When a watch is issued for a region, residents are encouraged to continue normal activities but should remain alert for signs of approaching storms, and continue to listen for weather forecasts and statements from the local NWS office. When a severe thunderstorm has been detected by weather radar or one has been reported by trained storm spotters, the local NWS office will issue a severe thunderstorm warning. A severe thunderstorm warning is an urgent message to the affected counties that a severe thunderstorm is imminent. The warning time provided by a severe thunderstorm watch may be on the order of hours, while a severe thunderstorm warning typically provides an hour or less warning time. All of the 104 storms that are documented over the last 30 years would qualify as a severe thunderstorm.

The probability of tornadoes occurring is much less frequent than thunderstorms. For the same 40-year period, the NCDC reports only 9 tornadoes, which averages to less than one tornado for every four years. Reported damages associated with those tornadoes add up to $30,000.

Tornado damage severity is measured by the Fujita Tornado Scale, which assigns a numerical value of 0 to 5 based on wind speeds, as shown in Table 5-29, with the letter F preceding the number (e.g., FO, F1, F2). Most tornadoes last less than 30 minutes, but some last for over an hour. The path of a tornado can range from a few hundred feet to miles. The width of a tornado may range from tens of yards to more than a quarter of a mile.

Table 5-29: Fujita Tornado Scale

Category	Wind Speed	Description of Damage
F0	40-72 mph	Light damage. Some damage to chimneys; break branches off trees; push over shallow-rooted trees; damage to sign boards.
F1	73-112 mph	Moderate damage. The lower limit is the beginning of hurricane speed. Roof surfaces peeled off; mobile homes pushed off foundations or overturned; moving autos pushed off roads.
F2	113-157 mph	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.
F3	158-206 mph	Severe damage. Roofs and some walls torn off well constructed houses; trains overturned; most trees in forest uprooted; cars lifted off ground and thrown.
F4	207-260 mph	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	261-318 mph	Incredible damage. Strong frame houses lifted off foundations and carried considerable distance to disintegrate; automobile-sized missiles fly through the air in excess of 100-yards; trees debarked.

Source: FEMA, 1997.

Of the 9 recorded tornadoes, 6 were category F0, and 3 were category F1. According to the NCDC, there has been only one F2 tornado recorded in the history of Yuma County, and that was August 17, 1959 which caused $250,000 in damages.

Vulnerability – CPRI Results

Severe Wind CPRI results for each community are summarized in Table 5-30 below.

Table 5-30: Summary of CPRI results by jurisdiction for severe wind					
Participating Jurisdiction	**Probability**	**Magnitude/ Severity**	**Warning Time**	**Duration**	**CPRI Score**
Cocopah	Highly Likely	Critical	6-12 hours	<24 hours	3.35
San Luis	Possibly	Critical	<6 hours	<1 week	2.70
Somerton	Likely	Limited	6-12 hours	<24 hours	2.60
Unincorporated Yuma County	Likely	Limited	12-24 hours	<6 hours	2.35
Wellton	Highly Likely	Critical	<6 hours	<24 hours	3.50
Yuma	Likely	Limited	<6 hours	<6 hours	2.65
				County-wide average CPRI =	**2.86**
				CPRI Min/Max Score = 1.00/4.00	

Vulnerability – Loss Estimations

Exposure to severe wind events is generally the same across the County. Based on the historic record over the last 40 years, it is feasible to expect average annual losses of $197,000 (county-wide) It is difficult to estimate losses for individual jurisdictions within the County due to the lack of discrete data.

Vulnerability – Development Trend Analysis

Future development will expand the exposure of life and property to the damaging effects of severe wind events. Enforcement and/or implementation of modern building codes to regulate new developments is probably the best way to mitigate against losses.

Sources

Arizona Division of Emergency Management, 2009, State of Arizona Multi-Hazard Mitigation Plan, 2010 Update, DRAFT.

Federal Emergency Management Agency,1997, Multi-Hazard Identification and Risk Assessment – A Cornerstone of the National Mitigation Strategy.

FEMA, 2001, Understanding Your Risks; Identifying Hazards and Estimating Losses, FEMA Document No. 386-2.

Yuma County, 2005, Yuma County Multi-Hazard Mitigation Plan.

U.S. Dept of Commerce, National Climatic Data Center, 2009, Storm Events Database, accessed via the following URL: http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms

Profile Maps

Map# 4 - Severe Winds

Legend

Communities
- CITY OF SAN LUIS
- CITY OF SOMERTON
- CITY OF YUMA
- TOWN OF WELLTON
- Cocopah Indian Reservation

Roads
- Interstate
- Major Roads
- Other Roads

Stream

County

N

Yuma County Multi-Jurisdictional Multi-Hazard Mitigation Plan

Map# 4 Yuma County Severe Wind Hazard Map

as of March 2010

5.3.5 Transportation Accident

Description

Yuma County, and more specifically the Yuma valley area, is home to several major transportation elements. Interstate 8, U.S. Highway 95 and State Highway 195 are major transportation routes with significant vehicular traffic. Interstate 8 is a major trucking route that connects Interstate 10 to San Diego and other southern California areas. U.S. Highway 95 is also an international truck route that services the U.S. - Mexico Port of Entry in San Luis. The historic Southern Pacific Railroad, now owned and operated by the Union Pacific, has tracks that parallel Interstate 8 and the Gila River, with both converging once they reach Yuma and continuing westerly into California. For air traffic, Yuma County has Yuma International Airport, which shares runways with the Marine Corps Air Station Yuma (MCAS Yuma). There is also military air traffic to and from Laguna Army Airfield (AAF) on the U.S. Army Yuma Proving Grounds. There are also several day-use airfields that service private single-engine planes and crop-dusters.

History

In the past, Yuma County residents have been exposed to several train derailments, multiple car accidents due to dense fog and blowing dust, and numerous airplane crashes. Most of the airplane crashes have been military planes associated with either MCAS Yuma or Laguna AAF. In either case, as the County grows, so too will its exposure to traffic hazards. Map# 4 is a map of the Yuma valley area and depicts the primary transportation elements just discussed, as well as runway accident potential zones for MCAS Yuma/YIA and the MCAS Auxiliary II. Map# 4 also depicts the documented flight paths for MCAS Yuma/YIA. Major transportation routes for other parts of the County are shown on Figure 4-2. The following are some of the more notable transportation accidents that occurred in Yuma County:

General Transportation Accidents:

- In January 2009, a caller reported that a vehicle fell off a bridge in or near Imperial and landed on its roof on a railroad ballast. There was no train involved. All occupants of the vehicle were transported to local hospital (NRC, 2009).
- In May 2006, an eastbound train struck a vehicle at a grade crossing resulting in the fatality of the driver near Dateland (NRC, 2006).
- In February 2005, a semi-truck tanker loaded with aviation fuel (JP4) overturned while exiting Interstate 8 at AZ 280 (Avenue 3E). The driver received minor injuries but a slow, sustained leak prompted the response of the City of Yuma Fire Department to contain the fuel.

  Fire suppression and hazardous materials personnel from the Yuma, Marine Corps Air Station Structural and Marine Corps Aircraft Rescue Firefighting Departments responded to secure the product and stand-by while the product was transferred to another semi tanker. Site security and traffic control of the Interstate Highway, the intersecting State Highway and local streets and roadways was achieved through the efforts of the Yuma Police Department, Arizona Department of Public Safety and the Yuma County Sheriff's Office. (San Luis, 2010)
- In June 2002, a caller reported a release of material from a tractor trailer truck at the location in or near San Luis, due to an unknown person opening a valve on an ammonia truck that was traveling from Mexico to the U.S. The incident caused three injuries (NRC, 2002).
- In September 1997, a leak from a railcar transporting an estimated 16,000 gallons (20,000 pounds) of 98% concentrated nitric acid prompted a hazardous materials response from the City of Yuma Fire Department.

  This event required the personnel and equipment response of the Yuma, Marine Corps Air Station Structural, Aircraft Rescue and Imperial County Fire Departments. Additionally numerous other agencies responded in support of the technical response; Yuma Police

Department, Southern Pacific Railroad Police Department, Arizona Department of Public Safety, Yuma County Sheriff's Office and countless other technical and professional agencies.

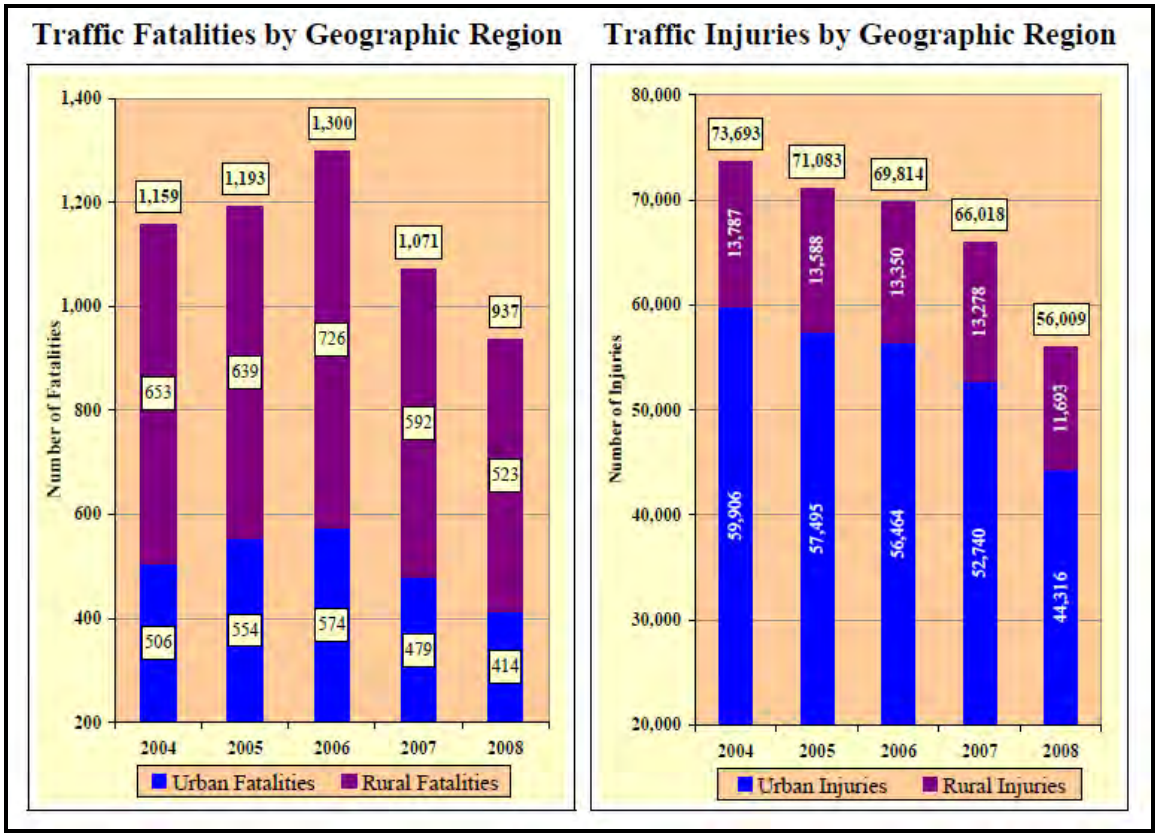
This event required 8 days to safely contain and transfer the product into a removal vehicle/vessel and prompted a short term evacuation of 43 homes, 2 schools and 6 businesses within a ½ mile area immediately adjacent to the site. (San Luis, 2010)

- In July 1995, eleven train cars derailed near Wellton causing $1,000,000 in damages and/or response costs (NRC, 1995).
- In December 1994, dense fog formed in Yuma and vicinity, lowering visibility to near zero at times. Several traffic accidents totaling 20 vehicles caused Interstate 8 to be closed between 16th Street and Avenue 3E in Yuma. The accidents resulted in 10 injuries. In addition, flights were grounded at the airport for at least 4 hours.

Military Events:

- In January 2008, a caller stated that an AH1 Cobra helicopter crashed in or near Yuma discharging the fuel to the ground. There were 2 minor injuries in the accident and they were transported to the hospital (NRC, 2008).
- In June 2005, a military aircraft crashed in or near Yuma into the back yard of a private residence resulting in a fire and release of jet fuel. One injury reported (NRC, 2005).
- In September 2000, two military aircraft collided in or near Yuma causing one of the aircraft to crash and release material on to the land, and causing two fatalities (NRC, 2000).
- In October 2000, material released from a British military aircraft in or near Yuma when the aircraft's electrical systems failed and released two drop tanks and two bombs on the runway. One tank burned completely, other tank released material to soil. Both bombs recovered (NRC, 2000).

According to Arizona Motor Vehicle Crash Facts 2008 in Figure 5-10, fatalities are greater in the rural areas of the state. These are documented fatalities and injuries that are directly attributable to motor vehicle accidents in urban and rural areas. Figure 5-11 represents number of crashes, fatalities, injuries by jurisdiction.



Arizona Department of Transportation Motor Vehicle Division, Publication Date: June 25, 2009, 2008 Motor Vehicle Crash Facts for the State of Arizona

Figure 5-10
Traffic Crash Fatalities and Injuries: Urban vs. Rural

Analysis by Jurisdiction

COUNTIES Cities	Number of Crashes				No. of Persons		Alcohol Related		
	Total	Fatal	Injury	PDO	Killed	Injured	Crashes	Killed	Injured
Yuma County	491	7	150	334	9	233	33	5	23
Yuma County State Rural Roads	301	5	104	192	5	167	17	0	12
Somerton	15	0	4	11	0	4	1	0	0
Yuma	1,954	10	698	1,246	10	1,039	141	6	103
Wellton	5	0	0	5	0	0	0	0	0
San Luis	113	2	17	94	2	20	5	0	3
TOTAL	2,879	24	973	1,882	26	1,463	197	11	141

Some individual city data may be incomplete due to lack of timely reporting.
Totals within city and town jurisdictions include all state highways.

Arizona Department of Transportation Motor Vehicle Division, Publication Date: June 25, 2009, 2008 Motor Vehicle Crash Facts for the State of Arizona

Figure 5-11
Traffic Crash Fatalities and Injuries by Jurisdiction

Probability and Magnitude

The combined impact of all the air and roadway traffic presents an appreciable hazard potential to the urbanized areas of the Yuma valley, especially if hazardous materials is involved. Within Yuma County, the City of Yuma experiences a great number of crashes due to the higher population center, in proportion with the smaller communities. Based on historical events for the past 40 years, it is a

high probability that a serious transportation accident will occur almost every year. Without detailed history of air and rail transportation accidents, the probability of such accidents can only be expressed qualitatively. The probability is increased during inclement weather, periods of poor visibility from fog, smoke, or dust, and during holiday festivities with more instances of drinking and driving, and during times of increased traffic volume. The statistical probability estimates are limited for transportation accident. The Planning Team reviewed and chose to use the Accident Potential Zones currently in the Plan. The Accident Potential Zones will be indentified as HIGH hazard and are presented on Map# 4.

Vulnerability – CPRI Results

Transportation Accident CPRI results for communities interested in identifying/evaluating the human-caused hazard are summarized in Table 5-31 below.

Table 5-31: Summary of CPRI results by jurisdiction for transportation accident

Participating Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Cocopah	-	-	-	-	-
San Luis	Likely	Critical	<6 hours	<24 hours	3.05
Somerton	Likely	Limited	<6 hours	<24 hours	2.75
Unincorporated Yuma County	-	-	-	-	-
Wellton	Highly Likely	Catastrophic	<6 hrs	<24 hours	3.80
Yuma	-	-	-	-	-
				County-wide average CPRI =	**3.20**
				CPRI Min/Max Score = 1.00/4.00	

Vulnerability – Loss Estimations

Potential losses and damages due to major transportation accidents are difficult to estimate and will not be attempted within this plan. Instead, exposure of human and facility assets is estimated. In Yuma County, the two primary categories of accident potential are either ground based or air based. Ground based incidents include vehicular and railway accidents. Air based incidents involve the failure of aircraft during take-off, flight, and/or landing sequences. For both types of incidents, it is reasonable to project that the entire County and community assets and population are potentially exposed to an accident in one form or another.

High risk ground based areas include Interstate 8, U.S. Highway 95, and all of the Union Pacific railway corridors. The higher speeds and greater numbers of vehicles along these corridors combine to create an increased risk for major accidents.

The City and County of Yuma have worked with the Yuma MCAS/Yuma International Airport to identify runway related accident potential and clear zones, and also to map aircraft approach and departure flight paths. The hazard zone for the flight paths was assumed to be a swath one-half mile wide and centered on the path. The accident potential and flight path zones were considered by the Team to be high hazard areas in connection with aircraft accidents. The vulnerability analysis uses those zones to identify population and assets that are potentially exposed to aircraft accidents. GIS shapefile data for MCAS AuxII and Raleigh Field Aux IV was not available at the time of writing this update. Significant loss estimates are anticipated for the City of San Luis due to its relative location to these two air traffic facilities. It is recommended for the next update to develop or acquire this data. Table 5-32 summarizes the Team identified assets that are potentially exposed to an aircraft related accident zone. Table 5-33 summarizes the population exposed to the aircraft accident zones. HAZUS residential, commercial, and industrial building inventories with a potential exposure to aircraft related incidents are summarized in Table 5-34 through Table 40 for each of the individual communities.

Table 5-32: Summary of County asset inventory loss estimates due to Transportation (x$1,000)				
Community	**Impacted Facilities**	**Impacted Facility Percentages**	**Estimated Replacement Cost**	**Estimated Structure Loss**
APZ1				
County-Wide Totals	**0**	**0.00%**	**$0**	**$0**
Cocopah	0	0.00%	$0	$0
San Luis	0	0.00%	$0	$0
Somerton	0	0.00%	$0	$0
Unincorporated	0	0.00%	$0	$0
Wellton	0	0.00%	$0	$0
Yuma	0	0.00%	$0	$0
APZ2				
County-Wide Totals	**3**	**100.00%**	**$5,800**	**$0**
Cocopah	1	33.33%	$5,000	$0
San Luis	0	0.00%	$0	$0
Somerton	2	66.67%	$800	$0
Unincorporated	0	0.00%	$0	$0
Wellton	0	0.00%	$0	$0
Yuma	0	0.00%	$0	$0
Clear				
County-Wide Totals	**0**	**0.00%**	**$0**	**$0**
Cocopah	0	0.00%	$0	$0
San Luis	0	0.00%	$0	$0
Somerton	0	0.00%	$0	$0
Unincorporated	0	0.00%	$0	$0
Wellton	0	0.00%	$0	$0
Yuma	0	0.00%	$0	$0
Flight Paths				
County-Wide Totals	**72**	**100.00%**	**$403,451**	**$0**
Cocopah	25	34.72%	$58,665	$0
San Luis	0	0.00%	$0	$0
Somerton	0	0.00%	$0	$0
Unincorporated	13	18.06%	$154,314	$0
Wellton	0	0.00%	$0	$0
Yuma	34	47.22%	$190,471	$0

Table 5-33: Summary of Yuma County population sectors exposed to Transportation Accident						
Community	**Total Population**	**Population Exposed**	**Percent of Population Exposed**	**Total Population Over 65**	**Population Over 65 Exposed**	**Percent of Population Over 65 Exposed**
APZ1						
County-Wide Totals	**160,072**	**391**	**0.24%**	**26,423**	**3**	**0.01%**
CITY OF SAN LUIS	15,176	0	0.00%	633	0	0.00%
CITY OF SOMERTON	7,732	0	0.00%	568	0	0.00%
CITY OF YUMA	79,689	349	0.44%	10,648	0	0.00%
COCOPAH INDIAN TRIBE	1,025	0	0.00%	205	0	0.00%
TOWN OF WELLTON	1,864	0	0.00%	454	0	0.00%
UNINCORPORATED	54,586	43	0.08%	13,915	3	0.02%
APZ2						
County-Wide Totals	**160,072**	**125**	**0.08%**	**26,423**	**9**	**0.04%**
CITY OF SAN LUIS	15,176	0	0.00%	633	0	0.00%
CITY OF SOMERTON	7,732	42	0.54%	568	3	0.53%
CITY OF YUMA	79,689	4	0.01%	10,648	0	0.00%
COCOPAH INDIAN TRIBE	1,025	12	1.16%	205	0	0.00%
TOWN OF WELLTON	1,864	0	0.00%	454	0	0.00%
UNINCORPORATED	54,586	68	0.12%	13,915	6	0.04%
Clear						
County-Wide Totals	**160,072**	**3,172**	**1.98%**	**26,423**	**229**	**0.87%**
CITY OF SAN LUIS	15,176	0	0.00%	633	0	0.00%
CITY OF SOMERTON	7,732	0	0.00%	568	0	0.00%
CITY OF YUMA	79,689	3,126	3.92%	10,648	222	2.09%
COCOPAH INDIAN TRIBE	1,025	0	0.00%	205	0	0.00%
TOWN OF WELLTON	1,864	0	0.00%	454	0	0.00%
UNINCORPORATED	54,586	46	0.08%	13,915	6	0.05%
Flight Path						
County-Wide Totals	**160,072**	**29,563**	**18.47%**	**26,423**	**4,765**	**18.03%**
CITY OF SAN LUIS	15,176	0	0.00%	633	0	0.00%
CITY OF SOMERTON	7,732	58	0.75%	568	4	0.71%
CITY OF YUMA	79,689	24,243	30.42%	10,648	3,851	36.17%
COCOPAH INDIAN TRIBE	1,025	500	48.80%	205	138	67.36%
TOWN OF WELLTON	1,864	0	0.00%	454	0	0.00%
UNINCORPORATED	54,586	4,762	8.72%	13,915	771	5.54%

Table 5-34: Summary of Yuma County HAZUS Building Exposure by Transportation Accident									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Yuma County HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
County-Wide Totals	**65902**	**$9,942,001**	**2001**	**$2,268,033**	**481**	**$374,615**	**$12,584,649**		
APZ1	63	$36,979	9	$9,546	6	$12,226	$58,751	%	$0
APZ2	36	$8,618	10	$15,889	5	$4,226	$28,733	%	$0
Clear	775	$328,296	40	$110,817	5	$3,495	$442,607	%	$0
Flight Path	12215	$2,163,850	445	$692,010	121	$106,161	$2,962,021	%	$0
Yuma County HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
Total %	**19.86%**	**25.53%**	**25.15%**	**36.52%**	**28.33%**	**33.66%**			
APZ1	0.10%	0.37%	0.46%	0.42%	01.19%	03.26%			
APZ2	0.05%	0.09%	0.48%	0.70%	01.02%	01.13%			
Clear	01.18%	03.30%	01.99%	04.89%	0.98%	0.93%			
Flight Path	18.54%	21.76%	22.21%	30.51%	25.14%	28.34%			

Table 5-35: Summary of San Luis HAZUS Building Exposure by Transportation Accident									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
City of San Luis HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**3343**	**$455,990**	**61**	**$70,672**	**21**	**$9,039**	**$535,702**		
APZ1	0	$0	0	$0	0	$0	$0	%	$0
APZ2	0	$0	0	$0	0	$0	$0	%	$0
Clear	0	$0	0	$0	0	$0	$0	%	$0
Flight Path	0	$0	0	$0	0	$0	$0	%	$0

City of San Luis HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact
Total %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**
APZ1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
APZ2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Clear	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Flight Path	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 5-36: Summary of Somerton HAZUS Building Exposure by Transportation Accident									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
City of Somerton HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**2189**	**$309,656**	**35**	**$22,815**	**6**	**$1,641**	**$334,112**		
APZ1	0	$0	0	$0	0	$0	$0	%	$0
APZ2	12	$2,644	1	$262	1	$534	$3,440	%	$0
Clear	0	$0	0	$0	0	$0	$0	%	$0
Flight Path	17	$2,409	1	$297	2	$622	$3,328	%	$0
City of Somerton HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
Total %	**01.31%**	**01.63%**	**03.88%**	**02.45%**	**48.55%**	**70.45%**			
APZ1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
APZ2	0.55%	0.85%	01.60%	01.15%	21.76%	32.56%			
Clear	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Flight Path	0.76%	0.78%	02.28%	01.30%	26.80%	37.89%			

Table 5-37: Summary of City of Yuma HAZUS Building Exposure by Transportation Accident									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
City of Yuma HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**29826**	**$5,869,830**	**1317**	**$1,683,485**	**253**	**$226,860**	**$7,780,175**		
APZ1	49	$35,564	6	$6,217	4	$11,447	$53,228	%	$0
APZ2	1	$407	0	$349	0	$1,218	$1,973	%	$0
Clear	764	$326,518	38	$109,540	5	$3,495	$439,553	%	$0
Flight Path	10055	$1,923,976	371	$630,131	88	$76,852	$2,630,959	%	$0
City of Yuma HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
Total %	**36.44%**	**38.95%**	**31.52%**	**44.33%**	**38.28%**	**41.0%**			
APZ1	0.16%	0.61%	0.46%	0.37%	01.48%	05.05%			
APZ2	0.0%	0.01%	0.01%	0.02%	0.15%	0.54%			
Clear	02.56%	05.56%	02.86%	06.51%	01.86%	01.54%			
Flight Path	33.71%	32.78%	28.18%	37.43%	34.79%	33.88%			

Table 5-38: Summary of Cocopah Indian Tribe HAZUS Building Exposure by Transportation Accident									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Cocopah Indian Tribe HAZUS Summary	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Total of All Economic Impact (x$1000)**	**Loss-to-Exposure Ratio**	**Total Estimated Loss (x$1000)**
Community-Wide Totals	**849**	**$86,602**	**6**	**$5,374**	**0**	**$0**	**$91,976**		
APZ1	0	$0	0	$0	0	$0	$0	%	$0
APZ2	1	$1,812	1	$593	0	$0	$2,405	%	$0
Clear	0	$0	0	$0	0	$0	$0	%	$0
Flight Path	499	$49,605	4	$4,231	0	$0	$53,837	%	$0

Cocopah Indian Tribe HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**
Total %	**58.83%**	**59.37%**	**88.77%**	**89.78%**	**0.0%**	**0.0%**
APZ1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
APZ2	0.11%	02.09%	15.30%	11.04%	0.0%	0.0%
Clear	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Flight Path	58.72%	57.28%	73.47%	78.74%	0.0%	0.0%

Table 5-39: Summary of Town of Wellton HAZUS Building Exposure by Transportation Accident									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Town of Wellton HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**1141**	**$97,433**	**11**	**$7,699**	**1**	**$254**	**$105,386**		
APZ1	0	$0	0	$0	0	$0	$0	%	$0
APZ2	0	$0	0	$0	0	$0	$0	%	$0
Clear	0	$0	0	$0	0	$0	$0	%	$0
Flight Path	0	$0	0	$0	0	$0	$0	%	$0
Town of Wellton HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
Total %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**			
APZ1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
APZ2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Clear	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Flight Path	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

Table 5-40: Summary of Unincorporated Area HAZUS Building Exposure by Transportation Accident									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Unincorporated HAZUS Summary	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Total of All Economic Impact (x$1000)**	**Loss-to-Exposure Ratio**	**Total Estimated Loss (x$1000)**
Community-Wide Totals	**28554**	**$3,122,490**	**571**	**$477,988**	**200**	**$136,821**	**$3,737,299**		
Transportation									
APZ1	14	$1,416	3	$3,329	2	$778	$5,523	%	$0
APZ2	22	$3,756	8	$14,685	3	$2,474	$20,915	%	$0
Clear	11	$1,778	2	$1,276	0	$0	$3,054	%	$0
Flight Path	1645	$187,860	68	$57,351	31	$28,687	$273,898	%	$0

Unincorporated HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**
Transportation	**05.93%**	**06.24%**	**14.27%**	**16.03%**	**18.31%**	**23.34%**
APZ1	0.05%	0.05%	0.55%	0.70%	0.99%	0.57%
APZ2	0.08%	0.12%	01.38%	03.07%	01.64%	01.81%
Clear	0.04%	0.06%	0.40%	0.27%	0.0%	0.0%
Flight Path	05.76%	06.02%	11.94%	12.0%	15.68%	20.97%

In summary, a total of $409.2 million in Team identified assets, $3.5 billion in HAZUS residential, commercial, and industrial buildings, and approximately 33,251 people are exposed to potential aircraft accidents within the high hazard zones.

A summary comparison of the 2005 Plan Transportation Accident vulnerability analysis results to the current plan is shown in Table 5-41. Changes shown in Table 5-41 are a result of revisions to the Team asset inventory and a modified transportation hazard layer, then used previously. As stated previously, the Team decided for the next update to develop/acquire the MCAS Aux II and Raleigh Field Aux IV hazard layer datasets.

Table 5-41: 2005 Plan Transportation Accident vulnerability analysis compared to current Plan

Exposure	2005 Plan	Current Plan
Assets: APZ1, APZ2, Clear, Flight Path	$625.1 million	$409.2 million
HAZUS Facilities: APZ1, APZ2, Clear, Flight Path	$4.6 billion	$3.4 billion
Human: APZ1, APZ2, Clear, Flight Path	31,510	33,251
Source: 2005 Yuma County Multi-Hazard Mitigation Plan		

Vulnerability – Development Trend Analysis

As can be seen on Map# 5, the MCAS Yuma has developed the Auxilliary II Airfield for the southern portion of the County, east of San Luis, along the Barry M. Goldwater Range. Land planning within this area should consider the associated hazards and continue to limit the development of areas defined as accident potential zones. Continued planning with the Arizona Department of Transportation (ADOT) should also be conducted regarding the new Highway 195 as the alignment may change due to the operations related to the Joint Strike Fighter.

Other hazards identified will obviously have some impact on any future development or growth; however, none warrant any special considerations beyond those generally discussed in the vulnerability assessment sections of this plan.

Sources

Arizona Department of Transportation Motor Vehicle Division, Publication Date: June 25, 2009, 2008 Motor Vehicle Crash Facts for the State of Arizona

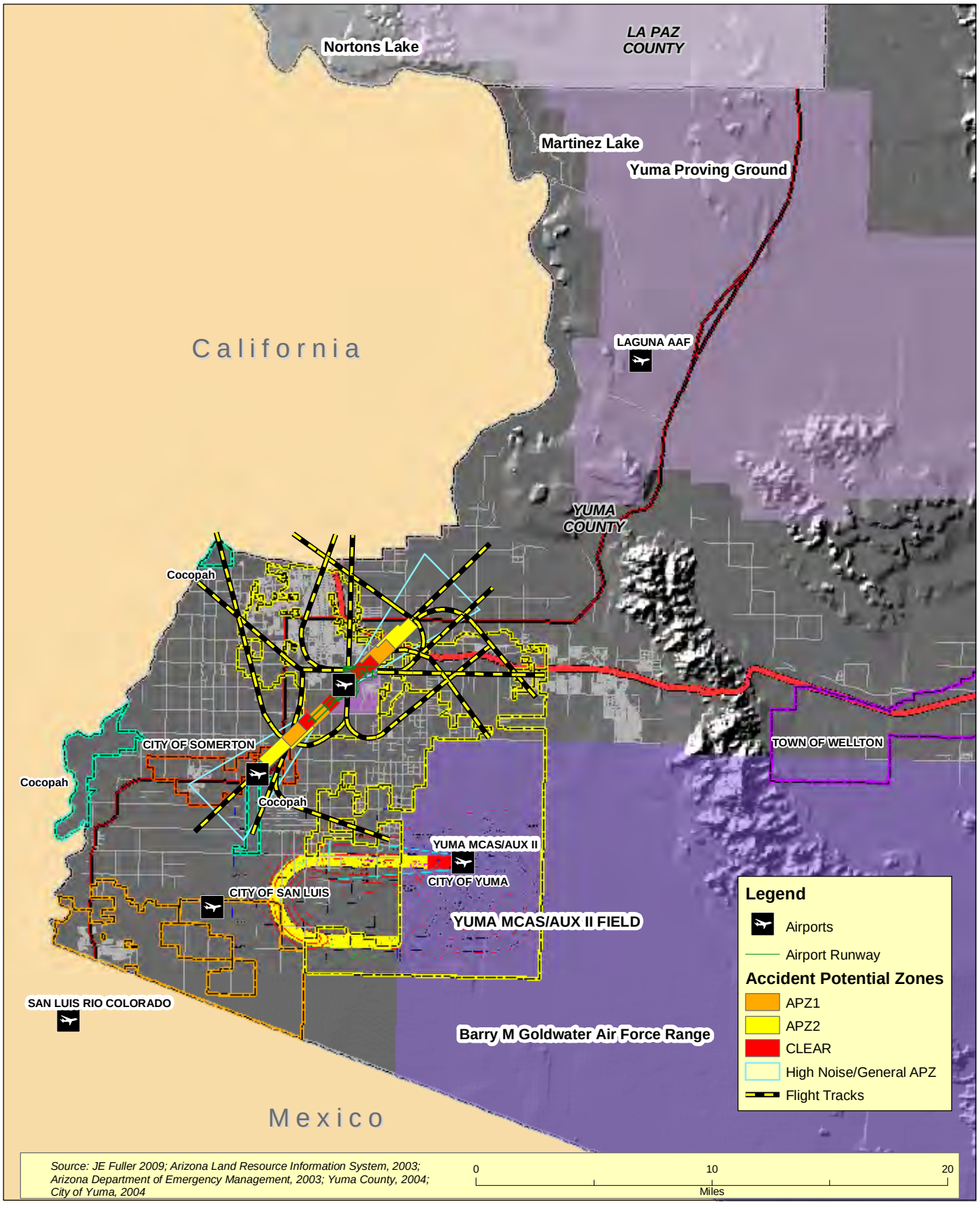
FEMA, 2001, Understanding Your Risks; Identifying Hazards and Estimating Losses, FEMA Document No. 386-2.

FEMA, September 2007, HAZUS/Census Data for Estimating Potential Losses for Disasters

Yuma County, 2005, Yuma County Multi-Hazard Mitigation Plan.

Profile Maps

Map# 5 - Transportation Accident



Legend

Communities
- CITY OF SAN LUIS
- CITY OF SOMERTON
- CITY OF YUMA
- TOWN OF WELLTON
- Cocopah Indian Reservation

Roads
- Interstate
- Major Roads
- Other Roads
- County

N

Yuma County Multi-Jurisdictional Multi-Hazard Mitigation Plan

Map# 5
Yuma County Transportation Accident Hazard Map
as of May 2009

5.3.6 Wildfire

Description

A wildfire is an uncontrolled fire spreading through wildland vegetative fuels and/or urban interface areas where fuels may include structures. They often begin unnoticed, spread quickly, and are often generating 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 develop into an emergency. Even small fires can threaten lives, resources, and destroy improved properties.

The indirect effects of wildfires can also be catastrophic. In addition to stripping the land of vegetation and destroying forest resources and personal property, large, intense fires can harm the soil and waterways . Soil exposed to intense heat may temporarily lose its capability to absorb moisture and support life. Exposed soils in denuded watersheds erode quickly and are easily transported to rivers and streams thereby enhancing flood potential, harming aquatic life and degrading water quality. Lands stripped of vegetation are also subject to increased landslide hazards.

Wildfire hazards within Yuma County are typically limited to the Colorado and Gila River floodplains and the more densely vegetated areas adjacent to some of the larger ephemeral watercourses. Fires burning through the heavily vegetated floodplain areas can be very difficult to fight, especially in areas where water is not readily available. Increases in development pressure along popular Colorado River locations like Martinez Lake, are expanding the wildland-urban fire interface areas in those locations.

History

The Sonoran desert vegetation typically found in Yuma County is less dense than other areas of the state. That fact, combined with relative density of urban area, makes wildfire risk within the County relatively low when compared to the more densely forested areas of the state. There is still wildfire risk to Yuma County as demonstrated by the following past historic events:

- In July 2009, a fire in the Martinez Lake area threatened multiple structures on Swede Hill. Because of the high number of people present during the July 4th festivities, no structures were lost. (Draft CWPP, 2010)
- In September 2009, lightning struck a home near highway 95 and 5E, resulting in a structure fire.
- In May 2007, a 426 acre fire burned along the Gila River. It was started by natural causes (BLM, 641403).
- In October 2005, a human-caused fire called the King Valley Fire burned 26,000 acres (FWS, 52471).
- In July 2001, a 61 acre fire occurred in vicinity of canal at the end of 12th Street to 4th Ave Bridge on the east and 22nd Ave on the west. It also spread to Yuma West Wetlands along Colorado River (URS, 2003).
- In April 1992, The Whiterock fire burned 2,400 acres and was human-caused (FWS, 27270).

Interesting to note, $5.8 million have been expended through the Recovery Section of Arizona Division of Emergency Management for response activities of (19) declared wildfire events that included Yuma County as identified in Table 5-2, however, no damage costs were associated with these events.

Probability and Magnitude

The probability and magnitude of wildfire incidents for Yuma County are influenced by numerous factors including vegetation densities, previous burn history, hydrologic conditions, climatic conditions such as temperature, humidity, and wind, ignition source (human or natural), topographic aspect and slope, and remoteness of area.

Wildfire hazard areas have been identified by the State of Arizona as a part of the 2003/04 Arizona Wildland Urban Interface Assessment (AWUIA) project (Fisher, 2004). The increasing growth of Arizona's rural populations, urban sprawl, and increasing wildland fuel loads ads to create a mix of situations that is known as the wildland urban interface (WUI). The purpose of the AWUIA was to attempt to conduct an analysis on a statewide basis using a common spatial model, for validation of those communities listed in the federal register as WUI and further identify possible other communities at risk. For Yuma County the results determined that all of the County was in a low hazard area. The Team did not think this accurately portrayed the wildfire conditions in Yuma County.

The Team jointly decided to depict the wildfire hazards by mapping all 100-year floodplain areas along the Colorado and Gila Rivers as high hazard areas, all major ephemeral watercourses as medium hazard areas, and the rest as low hazard. Map# 5 depicts the wildfire hazard zones developed by the Team as well as the urban wildland fire interface communities.

All the communities are geographically located adjacent to these hazard areas, except for Town of Wellton with medium hazard areas and the City of San Luis and Cocopah Indian Reservation with high to medium hazard areas within their jurisdiction.

Vulnerability – CPRI Results

Wildfire CPRI results for each community are summarized in Table 5-42 below.

Table 5-42: Summary of CPRI results by jurisdiction for wildfire

Participating Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Cocopah	Likely	Limited	<6 hours	<24 hours	2.45
San Luis	Unlikely	Negligible	<6 hours	<6 hours	1.45
Somerton	Unlikely	Negligible	<6 hours	<6 hours	1.45
Unincorporated Yuma County	Likely	Limited	<6 hours	<1 week	2.85
Wellton	Likely	Limited	<6 hours	>1 week	2.85
Yuma	Possibly	Limited	6-12 hours	<6 hours	2.05
				County-wide average CPRI =	**2.43**
				CPRI Min/Max Score = 1.00/4.00	

Vulnerability – Loss Estimations

The estimation of potential exposure to high and medium wildfire hazards was accomplished by intersecting the human and facility assets with the wildfire hazard limits depicted on Map 6. Loss to exposure ratios of 0.20 (20%) and 0.05 (5%) were assumed to estimate losses for all facilities located within the high and medium wildfire hazard areas, respectively. Table 5-43 summarizes the Planning Team identified critical and non-critical facilities potentially exposed to high and medium wildfire hazards, and the corresponding estimates of losses. Table 5-44 summarizes population sectors exposed to the high and medium wildfire hazards. HAZUS residential, commercial and industrial exposures and loss estimates to high and medium flood hazards are summarized in Tables 5-45 through 5-51.

Table 5-43: Summary of County asset inventory loss estimates due to Wildfire (x$1,000)				
Community	**Impacted Facilities**	**Impacted Facility Percentages**	**Estimated Replacement Cost**	**Estimated Structure Loss**
High				
County-Wide Totals	**33**	**100.00%**	**$91,689**	**$18,338**
Cocopah	22	66.67%	$9,920	$1,984
San Luis	2	6.06%	$19,000	$3,800
Somerton	0	0.00%	$0	$0
Unincorporated	4	12.12%	$910	$182
Wellton	0	0.00%	$0	$0
Yuma	5	15.15%	$61,859	$12,372
Medium				
County-Wide Totals	**15**	**100.00%**	**$20,077**	**$1,004**
Cocopah	0	0.00%	$0	$0
San Luis	0	0.00%	$0	$0
Somerton	0	0.00%	$0	$0
Unincorporated	6	40.00%	$8,798	$440
Wellton	0	0.00%	$0	$0
Yuma	9	60.00%	$11,279	$564

Table 5-44: Summary of Yuma County population sectors exposed to Wildfire						
Community	**Total Population**	**Population Exposed**	**Percent of Population Exposed**	**Total Population Over 65**	**Population Over 65 Exposed**	**Percent of Population Over 65 Exposed**
High						
County-Wide Totals	**160,072**	**9,405**	**5.88%**	**26,423**	**1,031**	**3.90%**
CITY OF SAN LUIS	15,176	2,330	15.35%	633	101	15.96%
CITY OF SOMERTON	7,732	0	0.00%	568	0	0.00%
CITY OF YUMA	79,689	2,945	3.70%	10,648	231	2.17%
COCOPAH INDIAN TRIBE	1,025	549	53.55%	205	179	87.38%
TOWN OF WELLTON	1,864	0	0.00%	454	0	0.00%
UNINCORPORATED	54,586	3,582	6.56%	13,915	520	3.74%
Medium						
County-Wide Totals	**160,072**	**13,423**	**8.39%**	**26,423**	**2,920**	**11.05%**
CITY OF SAN LUIS	15,176	0	0.00%	633	0	0.00%
CITY OF SOMERTON	7,732	0	0.00%	568	0	0.00%
CITY OF YUMA	79,689	7,508	9.42%	10,648	1,070	10.05%
COCOPAH INDIAN TRIBE	1,025	0	0.00%	205	0	0.00%
TOWN OF WELLTON	1,864	17	0.91%	454	4	0.92%
UNINCORPORATED	54,586	5,897	10.80%	13,915	1,846	13.26%

Table 5-45: Summary of Yuma County HAZUS Building Exposure to Wildfire									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Yuma County HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
County-Wide Totals	**65902**	**$9,942,001**	**2001**	**$2,268,033**	**481**	**$374,615**	**$12,584,649**		
High Hazard Exposure	4505	$450,010	59	$43,385	19	$31,398	$524,793	20%	$104,959
Medium	6752	$871,371	167	$208,115	37	$26,704	$1,106,190	5%	$55,310
Yuma County HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
Total %	**17.08%**	**13.29%**	**11.30%**	**11.09%**	**11.48%**	**15.51%**			
High Hazard Exposure	06.84%	04.53%	02.97%	01.91%	03.86%	08.38%			
Medium	10.24%	08.76%	08.33%	09.18%	07.63%	07.13%			

Table 5-46: Summary of San Luis HAZUS Building Exposure to Wildfire									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
City of San Luis HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**3343**	**$455,990**	**61**	**$70,672**	**21**	**$9,039**	**$535,702**		
High Hazard Exposure	599	$63,461	3	$1,973	1	$110	$65,543	20%	$13,109
Medium	0	$0	0	$0	0	$0	$0	5%	$0
City of San Luis HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
Total %	**17.92%**	**13.92%**	**04.46%**	**02.79%**	**06.18%**	**01.21%**			
High Hazard Exposure	17.92%	13.92%	04.46%	02.79%	06.18%	01.21%			
Medium	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

Table 5-47: Summary of Somerton HAZUS Building Exposure to Wildfire									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
City of Somerton HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**2189**	**$309,656**	**35**	**$22,815**	**6**	**$1,641**	**$334,112**		
High Hazard Exposure	0	$0	0	$0	0	$0	$0	20%	$0
Medium	0	$0	0	$0	0	$0	$0	5%	$0
City of Somerton HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
Total %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**			
High Hazard Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Medium	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

Table 5-48: Summary of City of Yuma HAZUS Building Exposure to Wildfire									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
City of Yuma HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**29826**	**$5,869,830**	**1317**	**$1,683,485**	**253**	**$226,860**	**$7,780,175**		
High Hazard Exposure	914	$136,288	17	$18,373	5	$19,572	$174,233	20%	$34,847
Medium	3075	$467,523	91	$123,592	17	$9,810	$600,924	5%	$30,046
City of Yuma HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
Total %	**13.38%**	**10.29%**	**08.21%**	**08.43%**	**08.53%**	**12.95%**			
High Hazard Exposure	03.07%	02.32%	01.30%	01.09%	01.95%	08.63%			
Medium	10.31%	07.96%	06.90%	07.34%	06.58%	04.32%			

Table 5-49: Summary of Cocopah Indian Tribe HAZUS Building Exposure to Wildfire									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Cocopah Indian Tribe HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**849**	**$86,602**	**6**	**$5,374**	**0**	**$0**	**$91,976**		
High Hazard Exposure	716	$68,508	1	$144	0	$0	$68,652	20%	$13,730
Medium	0	$0	0	$0	0	$0	$0	5%	$0
Cocopah Indian Tribe HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
Wildfire	**84.28%**	**79.11%**	**16.67%**	**02.68%**	**0.0%**	**0.0%**			
High Hazard Exposure	84.28%	79.11%	16.67%	02.68%	0.0%	0.0%			
Medium	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

Table 5-50: Summary of Town of Wellton HAZUS Building Exposure to Wildfire									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Town of Wellton HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**1141**	**$97,433**	**11**	**$7,699**	**1**	**$254**	**$105,386**		
High Hazard Exposure	0	$0	0	$0	0	$0	$0	20%	$0
Medium	9	$733	0	$0	0	$0	$733	5%	$37
Town of Wellton HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
Total %	**0.76%**	**0.75%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**			
High Hazard Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Medium	0.76%	0.75%	0.0%	0.0%	0.0%	0.0%			

Table 5-51: Summary of Unincorporated Area HAZUS Building Exposure to Wildfire									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Unincorporated HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**28554**	**$3,122,490**	**571**	**$477,988**	**200**	**$136,821**	**$3,737,299**		
High Hazard Exposure	2275	$181,753	38	$22,896	12	$11,716	$216,365	20%	$43,273
Medium	3668	$403,115	76	$84,523	20	$16,894	$504,533	5%	$25,227
Unincorporated HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
Total %	**20.81%**	**18.73%**	**20.03%**	**22.47%**	**16.16%**	**20.91%**			
High Hazard Exposure	07.97%	05.82%	06.75%	04.79%	06.15%	08.56%			
Medium	12.84%	12.91%	13.28%	17.68%	10.0%	12.35%			

In summary, $18 million and $1 million in asset related losses are estimated for high and medium wildfire hazards, for all the participating jurisdictions in Yuma County. An additional $9.6 and $1.2 million in high and medium hazard wildfire losses to HAZUS defined residential, commercial, and industrial facilities, is estimated for all participating Yuma County jurisdictions. Regarding human vulnerability, a total population of 9,405 and 13,423 people, or 5.88% and 8.39% of the total 2000 Census Yuma County population, is potentially exposed to a high and medium hazard wildfire event, respectively. Typically, deaths and injuries related to firefighting activities are rare. However, it is feasible to assume that at least one death and/or injury may be plausible. There is also a high probability of population displacement during a wildfire event, and especially in the urban wildland interface areas.

It is duly noted that the loss and exposure numbers presented above represent a comprehensive evaluation of the County as a whole. It is unlikely that a wildfire event would occur that would impact all of the delineated high and medium wildfire hazard areas at the same time. Accordingly, actual event based losses and exposure are likely to be only a fraction of those summarized above.

A summary comparison of the 2005 Plan Wildfire vulnerability analysis results to the current plan is shown in Table 5-52. Changes shown in Table 5-52 are a result of revisions to the Team asset inventory and a change in geoprocessing, then used previously.

Table 5-52: 2005 Plan wildfire vulnerability analysis compared to current Plan

Exposure	2005 Plan	Current Plan
Assets: High Hazard	$17.4 million	$18.3 million
Assets: Medium Hazard	$0	$1 million
HAZUS Facilities: High Hazard	$100.5 million	$104.9 million
HAZUS Facilities: Medium Hazard	$41.6 million	$55.3 million
Human: High Hazard	9,572	9,405
Human: Medium Hazard	10,297	13,423
Source: 2005 Yuma County Multi-Hazard Mitigation Plan		

Vulnerability – Development Trend Analysis

By its very definition, the WUI represents the fringe of urban development at it intersects with the natural environment. As communities push further out, more WUI is created. The County is currently working on developing a Community Wildfire Protection Plan in cooperation with other jurisdictions throughout the County. This document will ultimately establish a baseline for effective mitigation against wildfire damages in the WUI of Yuma County.

Sources

Arizona Division of Emergency Management, 2009, State of Arizona Multi-Hazard Mitigation Plan, 2010 Update, DRAFT.

FEMA, 2001, Understanding Your Risks; Identifying Hazards and Estimating Losses, FEMA Document No. 386-2.

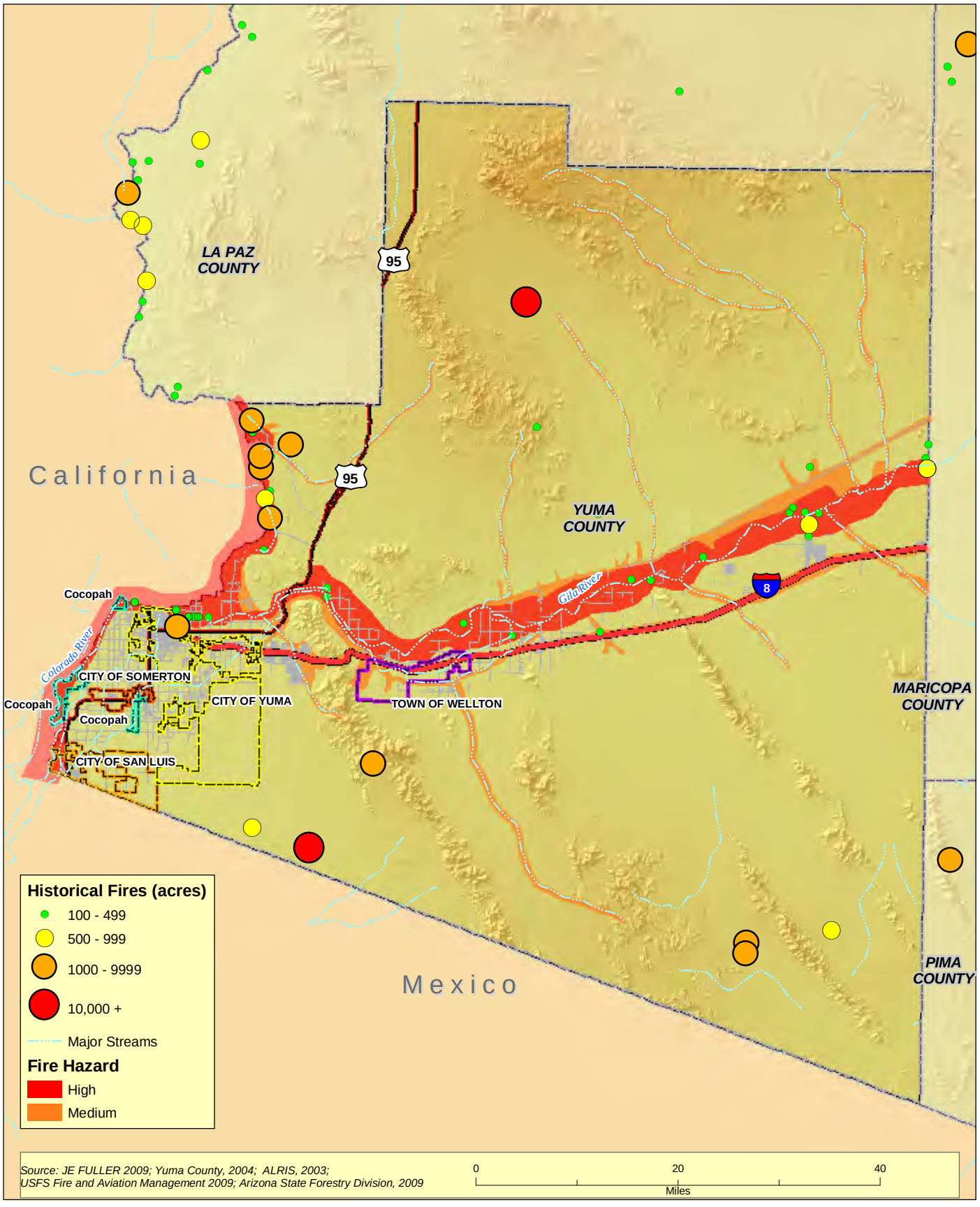
FEMA, September 2007, HAZUS/Census Data for Estimating Potential Losses for Disasters

Fisher, M., 2004, Arizona Wildland Urban Interface Assessment, 2003, prepared for the Arizona Interagency Coordination Group. http://www.azsf.az.gov/UserFiles/PDF/Arizona%20Wildland%20Urban%20Interface%20Assessment%2005MAR04.pdf

Yuma County, 2005, Yuma County Multi-Hazard Mitigation Plan

Profile Maps

Map# 6 – Wildfire Hazard Map



Legend

Communities
- CITY OF SAN LUIS
- CITY OF SOMERTON
- CITY OF YUMA
- TOWN OF WELLTON
- Cocopah Indian Reservation

Roads
- Interstate
- Major Roads
- Other Roads
- County

N

Yuma County Multi-Jurisdictional Multi-Hazard Mitigation Plan

Map# 6 Yuma County Wildfire Hazard Map

as of May 2009

5.4 Risk Assessment Summary

The jurisdictional variability of risk associated with each hazard assessed in Section 5.3 is demonstrated by the various CPRI and loss estimation results. Accordingly, each jurisdiction has varying levels of need regarding the hazards to be mitigated, and may not consider all of the hazards as posing a great risk to their individual communities. Table 5-53 summarizes the hazards selected for mitigation by each jurisdiction and will be the basis for each jurisdictions mitigation strategy.

Table 5-53: Summary of hazards to be mitigated by each participating jurisdiction

Jurisdiction	Drought	Earthquake	Flooding	Severe Wind	Transportation Accident	Wildfire
Cocopah	x	x	x	x		x
San Luis	x	x	x	x	x	x
Somerton	x	x	x	x	x	x
Unincorporated Yuma County	x	x	x	x	x	x
Wellton	x	x	x	x	x	x
Yuma	x	x	x	x		x

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SECTION 6: MITIGATION STRATEGY

> ***§201.6(c)(3):*** *[The plan shall include…] (3) A **mitigation strategy** that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools. This section shall include:*
> *(i) A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.*
> *(ii) A section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.*
> *(iii) An action plan describing how the actions identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.*
> *(iv) For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.*

The mitigation strategy provides the "what, when, and how" of actions that will reduce or possibly remove the community's exposure to hazard risks. According to DMA 2000, the primary components of the mitigation strategy are generally categorized into the following:

Goals and Objectives

Capability Assessment

Mitigation Actions/Projects and Implementation Strategy

The entire 2005 Plan mitigation strategy was reviewed and updated by the Planning Team, including a major re-organization of the mitigation strategy elements into this multi-jurisdictional plan format. Specifics of the changes and updates are discussed in the subsections below.

6.1 Hazard Mitigation Goals and Objectives

The 2005 Plan goals and objectives were developed using the 2007 State Plan[29] goals and objectives as a starting point. Each jurisdiction then edited and modified those goals and objectives to fit the mitigation planning vision for their community. An assessment of those goals and objectives by the Planning Team was made with consideration of the following[30]:

- Do the goals and objectives identified in the 2005 Plan reflect the updated risk assessment?
- Did the goals and objectives identified in the 2005 Plan lead to mitigation projects and/or changes and policy that helped the jurisdiction(s) to reduce vulnerability?
- Do the goals and objectives identified in the 2005 Plan support any changes in mitigation priorities?
- Are the goals and objectives identified in the 2005 Plan reflective of current State goals?

After much discussion and comparison of the 2005 Plan goals and objectives to the 2007 State Plan, the Planning Team chose to completely drop the current list of goals and objectives in favor of preparing a multi-jurisdictional template of goals and objectives that are closely based on the 2007 State Plan. Reasons for the change included:

- The 2005 Plan goals and objectives were overly complicated and even confusing in some instances.
- Many of the 2005 Plan goals and objectives dealt with human-caused hazards which are no longer part of this plan, except for transportation accident.
- The 2007 State Plan goals and objectives were much simpler and better captured the overall planning vision of the Planning Team.

[29] State of Arizona, 2004, *State of Arizona All Hazard Mitigation Plan*, prepared by URS.

[30] FEMA, 2008, *Local Multi-Hazard Mitigation Planning Guidance*

- Having a simpler, common set of goals and objectives for the multi-jurisdictional plan will make future assessment of the progress and achievements easier.

The result of the discussions resulted in establishing one goal and four clear objectives that will be used by all participating jurisdictions, as follows:

➢ **GOAL:** Reduce or eliminate the risk to people and property from natural and human caused hazards.

- ♦ **Objective 1:** Reduce or minimize risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
- ♦ **Objective 2:** Reduce risk to critical facilities and infrastructure from natural hazards.
- ♦ **Objective 3:** Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
- ♦ **Objective 4:** Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.

6.2 Capability Assessment

While not required by DMA 2000, an important component of the Mitigation Strategy is a review of each participating jurisdiction's resources in order to identify, evaluate, and enhance the capacity of local resources to mitigate the effects of hazards. The capability assessment is comprised of several components:

- ✓ Legal and Regulatory Review – a review of the legal and regulatory capabilities, including ordinances, codes, plans, manuals, guidelines, and technical reports that address hazard mitigation activities.
- ✓ Technical Staff and Personnel – this assessment evaluated and describes the administrative and technical capacity of the jurisdiction's staff and personnel resources.
- ✓ Fiscal Capability – this element summarizes each jurisdiction's fiscal capability to provide the financial resources to implement the mitigation strategy.
- ✓ National Flood Insurance Program (NFIP) Participation – the NFIP contains specific regulatory measures that enable government officials to determine where and how growth occurs relative to flood hazards. Participation in the NFIP is voluntary for local governments, but the program is promoted by FEMA as a basic first step for implementing and sustaining an effective flood hazard mitigation program, and is a key indicator for measuring local capability as part of this assessment.
- ✓ Prior Mitigation Actions – the final part of the capability assessment is a summary review of prior mitigation actions and/or projects that have been completed over the last five or so years.

For this Plan, the Planning Team reviewed the information provided in Section 5 of the 2005 Plans, and specifically Tables 5.1 – 5.4. The Planning Team chose to keep the format of Tables 5.2 and 5.3 for reporting the staff/personnel and fiscal resources. Table 5.1 was modified to not only report on the regulatory capabilities, but also to summarize the codes, plans, and studies/reports used by a jurisdiction. Table 5.4 was considered to be confusing and not beneficial, and was dropped from the plan. In this Plan, Tables 6-1-x represent the legal and regulatory capabilities each community; Tables 6-2-x represent technical staff and personnel capabilities of each community; and Tables 6-3-x represents the fiscal capabilities for each community.

6.2.1 Jurisdictional Capabilities

Tables 6-1-1 through 6-1-6 summarize the legal and regulatory mitigation capability for each jurisdiction. Information provided includes a brief listing of current codes, mitigation relevant ordinances, plans, and studies/reports. Tables 6-2-1 through 6-2-5 summarize the staff and personnel resources employed by each jurisdiction that serve as a resource for hazard mitigation. Tables 6-3-1 through 6-3-5 summarize the fiscal capability and budgetary tools available to each participating jurisdiction. Each of these three tables are listed below by jurisdiction.

Table 6-1-1: Summary of legal and regulatory capabilities for San Luis

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
CODES	• Uniform Fire Code - NFPA 1: 2003 • National Electrical Code: 2008 • International Property Maintenance Code: 2003 • International Plumbing Code: 2006 • International Mechanical Code: 2006 • International Existing Building Code: 2003 • International Building Code: 2003 • International Residential Code for One and Two-Family Dwellings: 2003	City of San Luis, Development Services
ORDINANCES	• Zoning Ordinance • Subdivision Ordinance • Site Plan Review Requirements	City of San Luis, Development Services
PLANS, MANUALS, and/or GUIDELINES	1. City of San Luis General Plan 2. Water System Master Plan 3. Waste Water Master Plan 4. Wellhead Protection Plan 5. YMPO 2003-2026 Regional Transportation Plan	1. City of San Luis DDS, revisit in 2020 2. City of San Luis Public Works 3. City of San Luis Public Works 4. City of San Luis Public Works 5. YMPO
STUDIES	[Please refer to Yuma County Capability Assessment Table 6-1-5 for available studies that affect this community.]	

Table 6-2-1: Summary of technical staff and personnel capabilities for San Luis		
Staff/Personnel Resources	☑	**Department/Agency - Position**
Planner(s) or engineer(s) with knowledge of land development and land management practices	☑	• Planning & Zoning Department personnel • Public Works Department personnel
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	☑	• Planning & Zoning Department personnel • Public Works Department personnel
Planner(s) or engineer(s) with and understanding of natural and/or human-caused hazards	☑	• Planning & Zoning Department personnel • Public Works Department personnel • Fire Department personnel • Police Department personnel
Floodplain Manager	☑	• Yuma County Flood Control District – YCFCD Manager
Surveyors		• Nicklaus Engineering, Inc. – City Engineer
Staff with education or expertise to assess the community's vulnerability to hazards	☑	• Planning & Zoning Department personnel • Public Works Department personnel • Fire Department personnel • Police Department personnel
Personnel skilled in GIS and/or HAZUS	☑	• Nicklaus Engineering, Inc. – City Engineer
Scientists familiar with the hazards of the community		
Emergency manager	☑	
Grant writer(s)	☑	• Economic Development and Grants Coordinator
Others		

Table 6-3-1: Summary of fiscal capabilities for San Luis		
Financial Resources	**Accessible or Eligible to Use (Yes, No, Don't Know)**	**Comments**
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	
Impact fees for homebuyers or new developments/homes	Yes	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Incur debt through private activity bonds	Yes	

Table 6-1-2: Summary of legal and regulatory capabilities for Somerton		
Regulatory Tools for Hazard Mitigation	**Description**	**Responsible Department/Agency**
CODES	• 2003 International Building Code (IBC Commercial) • 2003 International Residential Code (IRC Residential) • 2003 International Property Maintenance Code (IPMC, Code Enforcement) • 2003 Uniform Fire Code (UFC, Fire Protection; NFPA Life Safety Code)1996 National Electric Code (NEC) • 1994 Uniform Plumbing Code (UPC)	• Fire Department • Community Development Department
ORDINANCES	• Zoning Ordinance Adopted 2002 • Subdivision Ordinance Adopted 2002	• Community Development Department
PLANS, MANUALS, and/or GUIDELINES	• Emergency Response Plan 2006 • City of Somerton General Plan 2001 • Sewer Line Collection System Cleaning and Inspection 2009/2010	• Fire Department • Community Development Department • Public Works Department
STUDIES	[Please refer to Yuma County Capability Assessment Table 6-1-5 for available studies that affect this community.]	

Table 6-2-2: Summary of technical staff and personnel capabilities for Somerton		
Staff/Personnel Resources	☑	**Department/Agency - Position**
Planner(s) or engineer(s) with knowledge of land development and land management practices	☑	• Community Development Department – Vacant No funding at this time, Director • Public Works Department – Sam Palacios , City Engineer
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	☑	• Public Works Department – Sam Palacios, City Engineer • Nicklaus Engineering, Inc.
Planner(s) or engineer(s) with and understanding of natural and/or human-caused hazards	☑	• Public Works Department – Vacant no funding at this time, City Engineer • Nicklaus Engineering, Inc.
Floodplain Manager	☑	• Sam Palacios, Public Works, City Engineer
Surveyors		• Nicklaus Engineering, Inc.
Staff with education or expertise to assess the community's vulnerability to hazards	☑	• Public Works Department • Fire Department • Police Department
Personnel skilled in GIS and/or HAZUS	☑	• Community Development Department
Scientists familiar with the hazards of the community		
Emergency manager	☑	• Paul De Anda, Fire Chief
Grant writer(s)	☑	• Community Development Department – Vacant no funding at this time, Director • Planning and Zoning Department – Vacant no funding at this time, City Planner
Others		

Table 6-3-2: Summary of fiscal capabilities for Somerton		
Financial Resources	**Accessible or Eligible to Use (Yes, No, Don't Know)**	**Comments**
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes (When grants are available)	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	
Impact fees for homebuyers or new developments/homes	Yes	
Incur debt through general obligation bonds	No	
Incur debt through special tax bonds	No	
Incur debt through private activity bonds	No	

Table 6-1-3: Summary of legal and regulatory capabilities for City of Yuma		
Regulatory Tools for Hazard Mitigation	**Description**	**Responsible Department/Agency**
CODES	1. Adopted IBC 2003 in October 2003 2. Adopted NFPA 1 Fire Code, NFPA 1, in October, 2003	1. Community Development/Building Safety 2. Yuma Fire Department /Community Risk Reduction
ORDINANCES	1. Floodplain, Stormwater, Industrial Waste, Water Emergencies 2. Zoning Ordinance 3. Subdivision and Site Plan Review Requirements 4. Disaster Declaration Ordinance	1. Public Works/Utilities & Street Depts. 2. Community Development 3. Community Development 4. City Administration
PLANS, MANUALS, and/or GUIDELINES	• City of Yuma 2002 General Plan • City of Yuma Roadways Plan 2003 • YMPO 2003-2026 Regional Transportation Plan • Joint Land Use Plan Land Use Element/Amendment of the Yuma County General Plan	• Community Development (All)
STUDIES	[Please refer to Yuma County Capability Assessment Table 6-1-5 for available studies that affect this community.]	

Table 6-2-3: Summary of technical staff and personnel capabilities for City of Yuma		
Staff/Personnel Resources	☑	**Department/Agency - Position**
Planner(s) or engineer(s) with knowledge of land development and land management practices	☑	Community Development Department – Laurie Lineberry City Engineering – Paul Brooberg
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	☑	Community Development Department – Laurie Lineberry Building Official – Randy Crist
Planner(s) or engineer(s) with and understanding of natural and/or human-caused hazards	☑	Community Development Department – J. Albers, M. Sanders
Floodplain Manager	☑	City Engineering – Paul Brooberg
Surveyors		City Engineering – Harry Hitchcock
Staff with education or expertise to assess the community's vulnerability to hazards	☑	City and County Emergency Management Public Works/Engineering Department Community Development Department
Personnel skilled in GIS and/or HAZUS	☑	Community Development Department
Scientists familiar with the hazards of the community		Lab WPCF Figueroa
Emergency manager	☑	City and County Emergency Management personnel
Grant writer(s)	☑	Parks and Recreation Department Public Works Department Community Development Department Fire Department
Others		

Table 6-3-3: Summary of fiscal capabilities for City of Yuma		
Financial Resources	**Accessible or Eligible to Use (Yes, No, Don't Know)**	**Comments**
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	
Impact fees for homebuyers or new developments/homes	Yes	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Other		

Table 6-1-4: Summary of legal and regulatory capabilities for Wellton		
Regulatory Tools for Hazard Mitigation	**Description**	**Responsible Department/Agency**
CODES	• 1997 Uniform Building Code and Related Codes adopted 9/2/03, Ordinance #79 (supercedes previous codes.)	• Town Manager
ORDINANCES	• Town of Wellton Zoning Ordinance adopted 11/20/84, Ordinance #39 (with subsequent amendments). • Uses Yuma County Standards for Subdivisions	• Town Manager
PLANS, MANUALS, and/or GUIDELINES	1. Town of Wellton General Plan 2003-2013 2. Emergency Operations Plans 3. Storm Response Plan 4. Water Emergency Operations Plan 2004 5. Adopted the Arizona Emergency Response Plan on March 19, 1985 and the Water Department Emergency Standard Operating Procedures in May 1994.	1. Town Manager 2. Town Manager/Police Chief 3. Town Manager 4. Town Manager 5. Town Manager
STUDIES	[Please refer to Yuma County Capability Assessment Table 6-1-5 for available studies that affect this community.]	

Table 6-2-4: Summary of technical staff and personnel capabilities for Wellton		
Staff/Personnel Resources	☑	**Department/Agency - Position**
Planner(s) or engineer(s) with knowledge of land development and land management practices	☑	• Contract with Consultants as needed.
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	☑	• Town Engineer is appointed by the Town Council on 7/22/70,, Ordinance #2 and ARS 9-238.
Planner(s) or engineer(s) with and understanding of natural and/or human-caused hazards	☑	• As directed/appointed by Town of Wellton • Police Chief - received training as a Terrorism Laison Office which includes training on vulnerability assessments for natural and human-caused hazards.
Floodplain Manager	☑	• The Town of Wellton is under the jurisdiction of the Yuma County Flood Plain District.
Surveyors		• Town Manager
Staff with education or expertise to assess the community's vulnerability to hazards	☑	• Town Manager • Police Chief
Personnel skilled in GIS and/or HAZUS	☑	• Mutual Aid
Scientists familiar with the hazards of the community		• As needed by contract.
Emergency manager	☑	• Town of Wellton Chief of Police
Grant writer(s)	☑	• As directed by Town Manager/Council
Others		

Table 6-3-4: Summary of fiscal capabilities for Wellton		
Financial Resources	**Accessible or Eligible to Use (Yes, No, Don't Know)**	**Comments**
Community Development Block Grants	Yes	We are eligible for CDBG funds every other year as outlined in our Method of Distribution developed by WACOG and approved by the Arizona Department of Housing.
Capital Improvements Project funding	Yes	Subject to voter approval.
Authority to levy taxes for specific purposes	Yes	Subject to voter approval.
Fees for water, sewer, gas, or electric service	Yes	
Impact fees for homebuyers or new developments/homes	Yes	
Incur debt through general obligation bonds	Yes	Subject to voter approval
Incur debt through special tax bonds	Yes	
Incur debt through private activity bonds	No	

Table 6-1-5: Summary of legal and regulatory capabilities for Unincorporated Yuma County		
Regulatory Tools for Hazard Mitigation	**Description**	**Responsible Department/Agency**
CODES	• 2003 International Building Code adopted 1-20-04 • 2003 International Existing Building Code adopted 1-20-04 • 2003 International Fire Code adopted 5-16-05 • 2003 International Residential Code adopted 10-17-05 • 2006 International Mechanical Code adopted 4-2-07 • 2006 International Fuel Gas Code adopted 4-2-07 • 2006 International Plumbing Code adopted 2-20-08 • 2006 International Code Council Electric Code Administrative Provisions adopted 7-20-09 • 2008 National Electric Code adopted 7-20-09	• Yuma County Building Safety
ORDINANCES	• *Yuma County Zoning Ordinance* adopted August 20, 2006. • *Yuma County Subdivision Zoning Ordinance* approved September 15, 2008	• Yuma County Planning and Zoning
	• *Yuma County Arizona Floodplain Regulations*, Yuma County Flood Control District adopted February 1984, revised March 3, 1997; revised August 2005, August 2006. • *Public Works Standards for Yuma County Volume III Guide for Preparation of Drainage Reports and Grading Plan, revised August 2005*	• Yuma County Flood Control District

Table 6-1-5: Summary of legal and regulatory capabilities for Unincorporated Yuma County		
Regulatory Tools for Hazard Mitigation	**Description**	**Responsible Department/Agency**
PLANS, MANUALS and/or GUIDELINES	• *Yuma County 2010 Comprehensive Plan* adopted December 2001 • *Joint Land Use Plan Land Use Element/Amendment of the Yuma County General Plan* adopted September 1996 • *Master Plan for Yuma County Roads* adopted August 1, 1998 • *Public Works Standards for Yuma County Volume I, Construction Standards* adopted July 18, 1988 • *Public Works Standards Volume II, Specifications* adopted September 7, 1993 • *Public Works Standards Volume III Guide for Preparation of Drainage Reports and Grading Plan* adopted April 1, 1996, updated 2005	• Yuma County Planning and Zoning

Table 6-2-5: Summary of technical staff and personnel capabilities for Unincorporated Yuma County		
Staff/Personnel Resources	☑	**Department/Agency - Position**
Planner(s) or engineer(s) with knowledge of land development and land management practices	☑	Yuma County Department of Development Services, Engineering Division (County Engineer) and Yuma County Planning and Zoning Division (Planning Director), 2351 W. 26th Street, Yuma AZ 85364, 928-817-5000
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	☑	Yuma County Department of Development Services, Engineering Division and Building Safety (County Engineer) and Yuma County Planning and Zoning Division (Planning Director), 2351 W. 26th Street, Yuma AZ 85364, 928-817-5000
Planner(s) or engineer(s) with and understanding of natural and/or human-caused hazards	☑	Yuma County Department of Development Services, Engineering Division, Building Safety and Flood Control (County Engineer) and Yuma County Planning and Zoning Division (Planning Director), 2351 W. 26th Street, Yuma AZ 85364, 928-817-5000
Floodplain Manager	☑	Yuma County Department of Development Services, Engineering Division, Flood Control Manager, 2351 W. 26th Street, Yuma AZ 85364, 928-817-5000
Surveyors		Removed text here
Staff with education or expertise to assess the community's vulnerability to hazards	☑	Yuma County Department of Development Services, Engineering Division (County Engineer) and Yuma County Planning and Zoning Division (Planning Director), 2351 W. 26th Street, Yuma AZ 85364, 928-817-5000
Personnel skilled in GIS and/or HAZUS	☑	Yuma County Department of Development Services, GIS Division, GIS Supervisor, 2351 W. 26th Street, Yuma AZ 85364, 928-817-5000
Scientists familiar with the hazards of the community		US Department of Agriculture, Yuma County Natural Resources Conservation District, 2450 S. Fourth Avenue, Yuma, AZ 85364 520-726-4707.
Emergency manager	☑	Yuma County Office of Emergency Management 198 So. Main Street, Yuma AZ 85364 928-373-1093
Grant writer(s)	☑	Yuma County Department of Development Services, Grants Section, Community Planning Coordinator and Grants Administrator, 2351 W. 26th Street, Yuma AZ 85364, 928-817-5000
Others		

Table 6-3-5: Summary of fiscal capabilities for Unincorporated Yuma County		
Financial Resources	**Accessible or Eligible to Use (Yes, No, Don't Know)**	**Comments**
Community Development Block Grants	Yes	Only in qualified low income to medium income communities and emergency declaration designated areas.
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	For declared emergencies.
Fees for water, sewer, gas, or electric service	No	
Impact fees for homebuyers or new developments/homes	No	
Incur debt through general obligation bonds	Yes	Only through a bond election.
Incur debt through special tax bonds	Yes	
Incur debt through private activity bonds	No	
Withhold spending in hazard-prone areas	Yes	
Other	Yes	Creation of improvement districts and special districts.

Table 6-1-6: Summary of legal and regulatory capabilities for Cocopah Indian Tribe		
Regulatory Tools for Hazard Mitigation	**Description**	**Responsible Department/Agency**
TRIBAL CODES	1. Subject to federal oversight through HUD when using HUD monies 2. Privately owned buildings are largely unregulated. 3. State Historic Preservation Office under Cultural Resource.	• Housing Department • Housing Department • Cultural Resources Manager
TRIBAL ORDINANCES	1. Review and administration through Cocopah Planning Department and Tribal Council 2. Federal EPA enforcement of pesticides 3. BIA Fire Ordinance 4. Site Plan Review – Cocopah Indian Housing & Development Corp	1. Planning 2. Pesticide Director 3. Environmental Protection Office 4. Housing Department
TRIBAL REGULATIONS	NONE	
PLANS, MANUALS and/or GUIDELINES	(SEE TRIBAL ANNEX) [Also, please refer to Yuma County Capability Assessment Table 6-1-5 for available studies that affect this community.]	

Table 6-2-6: Summary of technical staff and personnel capabilities for Cocopah Indian Tribe		
Staff/Personnel Resources	☑	**Department/Agency - Position**
Planner(s) or engineer(s) with knowledge of land development and land management practices	☑	• Cocopah Planning Department – Director and Assistant Planner • Cocopah Planning and Business Development – Manager
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	☑	• Outside consultants
Planner(s) or engineer(s) with and understanding of natural and/or human-caused hazards	☑	• Cocopah Environmental Protection Office – Director
Floodplain Manager	☑	• Cocopah Environmental Protection Office – Director
Surveyors	☑	• Outside consultant
Staff with education or expertise to assess the community's vulnerability to hazards	☑	• Cocopah Environmental Protection Office – Director • Cocopah Public Works Department – Director • Cocopah Police Department – Chief • Cocopah/Somerton Fire Department – Chief
Personnel skilled in GIS and/or HAZUS	☑	• Cocopah Planning Department – Assistant Planner • Cocopah Environmental Protection Office – Director • Cocopah Cultural Resources Office - Manager

Table 6-2-6: Summary of technical staff and personnel capabilities for Cocopah Indian Tribe		
Staff/Personnel Resources	☑	**Department/Agency - Position**
Scientists familiar with the hazards of the community	☑	• Cocopah Environmental Protection Office – Director • Cultural Resources Office - Manager
Emergency manager	☑	• Cocopah Police Department – Police Chief
Grant writer(s)	☑	• Each department has responsibilities for grants and reliance on outside consultants.
Others	☑	• Casino Security – Chief of Cocopah Casino Security

Table 6-3-6: Summary of fiscal capabilities for Cocopah Indian Tribe		
Financial Resources	**Accessible or Eligible to Use (Yes, No, Don't Know)**	**Comments**
Community Development Block Grants	Yes	Via Cocopah Indian Housing and Development Corporation
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	None Currently levied
Fees for water, sewer, gas, or electric service	Yes	Can charge water and sewer. No gas. APS provides electric power.
Impact fees for homebuyers or new developments/homes	No	
Incur debt through general obligation bonds	No	
Incur debt through special tax bonds	No	
Other	No	
Community Development Block Grants	Yes	Via Cocopah Indian Housing and Development Corporation
Capital Improvements Project funding	Yes	

6.2.2 Previous Mitigation Activities

During the last planning cycle and beyond many mitigation activities have been accomplished within Yuma County. Table 6-4 provides an updated summary, of past mitigation activities performed.

Table 6-4: Summary of previous mitigation activities for Yuma County

Jurisdiction	Project Name	Project Description	Project Cost	Funding Source	Responsible Department	Completion Date
Yuma County	Avenue 64E bridge over Gila River	Construct a new bridge to cross the Gila River	$850,000	State of Arizona/YC Flood Control District	Yuma County	1982
Yuma County	Avenue 45E and 20E bridge over the Gila River	Construct two new bridges to cross the Gila River	$1,600,000	State of Arizona/Yuma County	Yuma County	1982
Yuma County	Avenue 2E Railroad Overpass	Construct a new railroad overpass to replace an at grade crossing	$2,600,000	SPRR/FHWA/ EDA/Yuma County	Yuma County	1982
Yuma County	Yuma Mesa Conduit Agreement	Contract signed with the Bureau of Reclamation to utilize the Yuma Mesa Conduit to transport storm water to the Colorado River		Bureau of Reclamation/ FCD	Yuma County Flood Control District	1983
Yuma County	Groundwater wells	Install four groundwater wells, and conduit connections, within the urban area of the City of Yuma to address elevated groundwater from the 1983 Colorado River flood	$616,000	FEMA/ADWR/ Bur. Of Reclamation	Yuma County Flood Control District	1985
Yuma County	26th Street Pipeline and connection to the Mesa conduit	Construct a drainage and stormwater pipeline to connect groundwater and stormwater pumps within the Yuma Valley to Conduit	$600,000	Bureau of Reclamation/ FCD	Yuma County Flood Control District	1990
Yuma County	Avenue C Groundwater and Stormsewer line	Construct a drainage and stormwater pipeline to connect groundwater and stormwater pumps within the Yuma Valley to Colorado River	$1,700,000	Bureau of Reclamation/ FCD	Yuma County Flood Control District	1990
Yuma County	West Main Canal Groundwater and Stormwater conduit	Construct a drainage and stormwater pipeline to connect groundwater and stormwater pumps within the Yuma Valley to Conduit	$450,000	Bureau of Reclamation/ FCD	Yuma County Flood Control District	1991
Yuma County	Ave 40E bridge over Gila River	Construct new bridge to provide emergency access and accommodate the 100 yr flood	$2,200,000	FHWA ER	Yuma County Department of Development Services/ Engineering Division	1993

Table 6-4: Summary of previous mitigation activities for Yuma County

Jurisdiction	Project Name	Project Description	Project Cost	Funding Source	Responsible Department	Completion Date
Yuma County	Ave 64E bridge over Gila River	Extend existing bridge to provide emergency access and accommodate the 100 yr flood	$2,000,000	FHWA ER	Yuma County Department of Development Services/ Engineering Division	1993
Yuma County	Yuma Valley Drainage System	Signed agreement with Yuma County Water Users and Bureau of Reclamation for the use of the Valley drain system for disposal of stormwater to the Colorado River	$1,040,000	Yuma County Flood Control District	Yuma County Flood Control District	1993
Yuma County	Yuma Mesa Hazard Elimination Project	Reconstruct and widen over 35 narrow irrigation crossings	$800,000	FHWA HES/Yuma County	Yuma County Department of Development Services/ Engineering Division	1990-1994
Yuma County	Railroad crossing safety improvments	Installed automatic gates with flashers at 21 at grade roadway/train crossings	$1,140,000	ADOT/Yuma County	Yuma County Department of Development Services/ Engineering Division	1976-1997
Yuma County	B-8 Storm Drainage System	Construct a storm sewer system for State Business Route 8	$125,000	YCFD/ADOT/ City of Yuma	Yuma County Flood Control District	1998
Yuma County	Martinez Lake Sheriff substation	Construct a new Sheriff Colorado River administrative and emergency first aid substation	$954,000	State Lake Improvement Fund/Yuma County	Yuma County Department of Development Services/ Engineering Division	1998
Yuma County	Groundwater drainage well power lines	Install and extend WAPA electrical power to service all groundwater/storm water pumping facilities (replaced APS service)	$720,000	Bureau of Reclamation/ FCD	Yuma County Flood Control District	1999

Table 6-4: Summary of previous mitigation activities for Yuma County

Jurisdiction	Project Name	Project Description	Project Cost	Funding Source	Responsible Department	Completion Date
Yuma County	Project Impact	Project Impact	$100,000	FEMA	City of Yuma	
Yuma County	Foothills Blvd, I-8 to 48th Street	Reconstruct Foothills Blvd to 5 lanes, new traffic signals (3), curb & gutter, sidewalk, and storm water outfall to Fortuna Wash	$4,200,000	Yuma County/FCD	Yuma County Department of Development Services/ Engineering Division	2001
Yuma County	New County Public Works Facitlity	Relocate County Public Works facility from the valley to the mesa due to it's location and responsibility as a first responder	$1,125,600	FEMA/YC	Yuma County Department of Pubic Works	2002
Yuma County	Old Highway 80 safety project	Install over 50,000 lin. ft of roadside guardrail at slope embankments and culvert crossings, Liguerta to Wellton Pass	$1,025,000	FHWA HES/ Yuma County	Yuma County Department of Development Services/ Engineering Division	2002
Yuma County	East Mesa Storm Sewer System	Construct 4 new detention basins, collection system with storm sewer trunk lines/pump stations to discharge to the Colorado River	$3,700,000	Yuma County Flood Control District	Yuma County Flood Control District	1995-2000
Yuma County	Co. 8th Str, Ave B to Ave C Ave C, 12 - 8th Street	Reconstruct Co. 8th Street and Avenue C to 5 lanes, new traffic signal, curb & gutter, sidewalk, storm water system and construct Reibe Avenue basin.	$5,850,000	Yuma County/ Yuma County FCD	Yuma County Department of Development Services/ Engineering Division	2005
Yuma County	Somerton Avenue and Co. 8th Street realignment	Reconstructed roadway curve to current design criteria	$700,000	FHWA HES/ Yuma County	Yuma County Department of Development Services/ Engineering Division	2007

Table 6-4: Summary of previous mitigation activities for Yuma County

Jurisdiction	Project Name	Project Description	Project Cost	Funding Source	Responsible Department	Completion Date
Yuma County	Yuma County Bridge Replacement Program	Reconstruct approximately 70 bridges, majority were timber, with concrete or steel structures	$20,000,000	FHWA BR/ Yuma County	Yuma County Department of Development Services/ Engineering Division	1976-2010

6.2.3 National Flood Insurance Program Participation

Participation in the NFIP is a key element of any community's local floodplain management and flood mitigation strategy. Yuma County and 3 of the 4 incorporated jurisdictions participate in the NFIP at varying levels. The Cocopah Indian Tribe does not currently participate in the NFIP.

Joining the NFIP requires the adoption of a floodplain management ordinance that requires jurisdictions to follow established minimum standards set forth by FEMA and the State of Arizona, when developing in the floodplain. These standards require that all new buildings and substantial improvements to existing buildings will be protected from damage by the 100-year flood, and that new floodplain development will not aggravate existing flood problems or increase damage to other properties. Yuma County and some other communities, have adopted standards that are more stringent than the federal minimum to ensure better flood mitigation practices. As a participant in the NFIP, communities also benefit from having Flood Insurance Rate Maps (FIRM) that map identified flood hazard areas and can be used to assess flood hazard risk, regulate construction practices and set flood insurance rates. FIRMs are also an important source of information to educate residents, government officials and the private sector about the likelihood of flooding in their community. Table 6-6 summarizes the NFIP status and statistics for each of the jurisdictions participating in this Plan.

Table 6-5: Summary of NFIP status and statistics for Yuma County and participating jurisdictions

Jurisdiction	Community ID	NFIP Entry Date	Current Effective Map Date	Number of Policies	Amount of Coverage (x $1,000)	Floodplain Management Role
Yuma County	040099	12/15/1983	8/28/2008	210	$41,921	Provides floodplain management for the Unincorporated County, Somerton, and Wellton.
City of Yuma	040102	7/5/1983	8/28/2008	592	$85,586	Provides in-house floodplain management.
City of Somerton	040114	8/28/2008	8/28/2008	3	$910	Defers floodplain management responsibilities to Yuma County.
Town of Wellton	040112	7/1/2008	8/28/2008	9	$1,576	Defers floodplain management responsibilities to Yuma County.
City of San Luis	Not a participant in the NFIP					
Cocopah Indian Tribe	Not a participant in the NFIP					

BureauNet, National Flood Insurance Program, December 2009, http://bsa.nfipstat.com/

6.3 Mitigation Actions/Projects and Implementation Strategy

Mitigation actions/projects (A/P) are those activities identified by a jurisdiction, that when implemented, will have the effect of reducing the community's exposure and risk to the particular hazard or hazards being mitigated. The implementation strategy addresses the "*how, when, and by whom?*" questions related to implementing an identified A/P.

The update process for defining the new list of mitigation A/Ps for the Plan was accomplished in three steps. First, an assessment of the actions and projects specified in Section 5 of the 2005 Plan was performed, wherein each jurisdiction reviewed and evaluated their jurisdiction specific list. Since Cocopah Indian Tribe did not have a previous plan, they will not have projects to evaluate. Second, a new list of A/Ps for the Plan was developed by combining the carry forward results from the assessment with new A/Ps. Third, an implementation strategy for the combined list of A/Ps was formulated. Details of each step and the results of the process are summarized in the following sections.

6.4.1 Previous Mitigation Actions/Projects Assessment

The Planning Team and Local Planning Team for each jurisdiction reviewed and assessed the actions and projects listed in Table 5-5 of their 2005 Plan. The assessment included evaluating and classifying each of the previously identified A/Ps based on the following criteria:

STATUS		***DISPOSITION***	
Classification	Explanation Requirement:	Classification	Explanation Requirement:
"***No Action***"	Reason for no progress	***"Keep"***	None required
"***In Progress***"	What progress has been made	***"Revise"***	Revised components
"***Complete***"	Date of completion and final cost of project (if applicable)	***"Delete"***	Reason(s) for exclusion.

Any A/P with a disposition classification of "Keep" or "Revise" was carried forward to become part of the new A/P list for the Plan. All A/Ps identified for deletion were removed and are not included in this updated plan. The results of the assessment for each of the 2005 Plan A/Ps is summarized by jurisdiction in Tables 6-6-1 through 6-6-5.

Table 6-6-1: Summary of San Luis assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	Status	Disposition	Explanation
12.A.2	Water Conservation Public Education	Develop and distribute brochures outlining the advantages of water conservation to City water-users	• City of San Luis, Public Works Department • $5,500 • Ongoing	Completed. Ongoing	Revise	Initial program for public education brochures was done. Will continue to utilize brochures and municipal utility billing inserts, electronic billboard, website and media to encourage water conservation.
12.A.1	Water Rights Acquisition	Assurance of water supply through acquisition of senior Colorado River Water Rights with retirement of agricultural lands	• City of San Luis, Public Works and Utilities Departments • $50,000 • Annual - Ongoing	Completed. Ongoing	Revise	After the inaugural push to obtain water rights of retired/developed agricultural lands, City of San Luis Public Works, Utility and Development Services Departments continue to pursue water rights to supplement municipal water allocation.
9.C.1	Transportation Planning Agency Coordination	Continue to coordinate and participate with inter-agency transportation planning groups such as the Yuma Metropolitan Planning Organization, Greater Yuma Port Authority, Yuma Marine Corps Air Station, and Arizona Department of Transportation	• City of San Luis, Public Works Department • $50,000 • Annual - Ongoing	Ongoing	Revise	The City of San Luis continues to participate in transportation planning groups to insure awareness and input regarding transportation issues within corporate boundaries; AZ highway 195, LPOE 2, Rolle Airfield (Aux 4), etc.
7.C.1	Seismic Building Code Enforcement	Continue to enforce seismic requirements in current building codes	• City of San Luis, Planning and Zoning Department • $11,000 • Ongoing	Ongoing	Revise	Building Officials continue to enforce family of codes associated with new construction and appropriate remodeling or change of use.

Table 6-6-1: Summary of San Luis assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
1.A.1	Enforcement of Zoning and Building Code Ordinances	Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of flood, thunderstorm/high wind, earthquake, transportation and other hazards on new buildings and infrastructure	• City of San Luis, Planning and Zoning Department • $125,000 • Ongoing	Ongoing	Revise	The City of San Luis Fire and Development Services Departments have adopted a new family of codes (NFPA 1, UBC, UMC, UPC, etc) to insure new construction projects continue to be built to the latest standards to reduce effects of floods, thunderstorms/high wind, earthquake and other hazards.
6.C.1	Wildfire Mitigation Cooperation	Coordinate/cooperate with BLM/BOR wildfire mitigation activities along the Colorado River	• City of San Luis, Fire Department • $20,000 • Ongoing	Ongoing	Revise	The City of San Luis Fire Department continues to work with BLM/BOR regarding the potential of wildfire events along the Colorado River. SLFD has budgeted for and is in the process of purchasing a slip-in unit for mounting to allow active firefighting efforts in previously un-accessible locations. Projected costs of this unit is $ 15, 000.
13.A.2	Well Site Video	Provide wireless video cameras and transmitters for seven (7) Well Sites to mitigate vandalism	• City of San Luis, Public Works Department • $40,000 • July 2007	Completed	Delete	Cameras have been installed at identified locations.
13.A.1	Wastewater Treatment Plant Video	Provide wireless video cameras and transmitters for two (2) Wastewater Treatment Plant Sites for mitigation of vandalism	• City of San Luis, Public Works Department • $20,000 • July 2007	Completed	Delete	Cameras have been installed.

Table 6-6-1: Summary of San Luis assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	Status	Disposition	Explanation
8.A.2	Well Site Lighting	Provide additional lighting at all Well Sites for added security	• City of San Luis, Public Works Department • $18,000 • July 2006	Completed	Delete	Lighting has been installed.
8.B.1	Upgrade Well Site chlorine buildings	Provide more secure entrance to all chlorine buildings to mitigate potential HAZMAT incidents due to illegal entry	• City of San Luis, Public Works Department • $12,000 • July 2006	Completed	Delete	Security measures have been improved to provide enhanced security in identified locations.
5.B.1	Portable Pumps	Provide two (2) additional 6" portable pumps for mitigation of flooding due to heavy rainfall and wastewater emergencies.	• • $30,000 •	Completed	Delete	1 6” portable and two smaller pumps have been purchased to allow for the timely removal of accumulated rainfall and run-off during thunderstorms and other identified removal applications of wastewater events.

Table 6-6-2: Summary of Somerton assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
7.A.1	Relocation to New Public Safety Facility	Relocate police and fire departments to a new joint-use facility that is seismic Zone 4 compliant. New facility will also include an emergency operations center.	• City of Somerton, Police Department • $3,500,000 • October 2006	Completed	Delete	This project was completed in 2006 and we have operated the EOC during this year for storm flooding conditions.
9.A.1	Transportation Study	Finalize current Small Area Transportation Study currently underway, to identify areas concern. Study is funded by ADOT	• City of Somerton, Community Development Department • $99,000 • February 2006	Completed	Delete	This study was completed in 2006
8.A.1	Enforcement of the NFPA101 and UFC	Enforcement of the NFPA101 and UFC that requires HAZMAT placarding on fixed site facilities	• City of Somerton, Fire Department • $2,000 • Ongoing	In Progress	Delete	The team decided not to identify hazardous materials as a hazard for the 2010 plan..
8.A.2	Commodity Flow Study	Hire a consultant to perform a commodity flow study to determine volume and frequency of HAZMAT's being transported through the City of Somerton	• City of Somerton, Fire Department • $30,000 • January 2007	No Action	Delete	No funding for this project at this or in the future
1.A.1	Enforcement of Zoning and Building Code Ordinances	Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of flood, thunderstorm/high wind, earthquake, transportation and other hazards on new buildings and infrastructure	• City of Somerton, Community Development Department • $150,000 • Ongoing	In progress	Keep	This is a on going project.

Table 6-6-2: Summary of Somerton assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
7.C.1	Seismic Building Code Enforcement	Continue to enforce current seismic building codes to reduce the effects earthquake hazards on new buildings and infrastructure	• City of Somerton, Community Development Department • $3,000 • Ongoing	In progress	Keep	With all of the seismic activity in our area, there will be new studies and new data that when it comes available we will revise our codes to meet the new changes.
5.B.3	Somerton Avenue Storm Drain	Proposed flood control drain pipe to be installed in Somerton Avenue between Fern Street and Highway 95. Drain pipe will be tied to existing drain in Highway 95 that outfalls to a retention basin	• City of Somerton, Public Works Department • $7,000 • July 2007	No Action	Delete	No funding for this project.
11.A.1	Water Conservation Plan Adoption	Formally adopt the Water Conservation Plan for the City of Somerton	• City of Somerton, Public Works Department • $5,000 • FY 2006-2007	Complete	Keep	Adopted by resolution in 2008.
11.A.2	Enforcement of Low Water-Use Fixture Requirements	Enforce low water use fixture requirements for new residential/commercial buildings in current plumbing codes	• City of Somerton, Community Development Department • $2,000 • Ongoing	In progress	Keep	All new construction have low water use fixtures installed, verified by building code inspector.
5.B.2	State Avenue Storm Drain	Proposed flood control drain pipe to be installed in State Avenue between Spring Street and Highway 95. Drain pipe will be tied to existing drain in Highway 95 that outfalls to a retention basin	• City of Somerton, Public Works Department • $4,000 • July 2007	No Action	Keep	Future project as funding comes available.

Table 6-6-2: Summary of Somerton assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
5.B.1	Congress Avenue Storm Drain	Proposed flood control drain pipe to be installed in Congress Avenue between Cano Street and Highway 95. Drain pipe will be tied to existing drain in Highway 95 that outfalls to a retention basin	• • $4,000 •	No Action	Keep	As funding becomes available.

Table 6-6-3: Summary of Wellton assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
1.A.1	Enforcement of Zoning and Building Code Ordinances	Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of flood, thunderstorm/high wind, earthquake, transportation and other hazards on new buildings and infrastructure	• Town of Wellton • $75,000 • Ongoing	Ongoing	Keep	The Town has since updated it's building code and also has appointed a Code Enforcement Officer. This is a continual project in nature.
7.A.1	Seismic Building Code Compliance	Continue to require compliance with Zone 3 Seismic building codes for new residential and commercial developments.	• Town of Wellton • $3,500 • Ongoing	Ongoing	Keep	The Town ensures that contracted Engineers build and design structures that are designed to meet current earthquake regulations.
12.A.2	Enforce Low Water-Use Fixture	Continue to enforce low water-use fixture requirements in current plumbing codes	• Town of Wellton • $3,500 • Ongoing	Ongoing	Keep	The Town is in process of drafting an ordinance to enforce low water use fixtures in commercial buildings.
9.C.1	Inter-Agency Coordination	Continue to coordinate and participate with inter-agency transportation planning groups such as the Yuma County Highway Department and Arizona Department of Transportation.	• Town of Wellton • $2,500 • Ongoing	Ongoing	Keep	Town of Wellton participates in the YMPO (Yuma Metro Planning Org.) for transportation planning. One project is subsidizing the YCAT transport system. Also participates in the Yuma Co Fllod District and works with other local and state agencies as needed.
5.B.1	Local Area Drainage Study	Perform a local area drainage study to determine the vulnerability of Oakland and San Jose Avenues from Dome Street to Jessie Street to determine the need for drainage improvements in the area.	• Town of Wellton • $40,000 • January 2008	Pending	Delete (upon approval)	The Town is pending funds from the Yuma County Flood District for this project. Once completed, delete.
5.B.2	Update Current FEMA Delineated Floodplain Mapping	Submit a formal request to the Yuma County Flood Control District to perform the necessary studies and analysis to update/revise the currently delineated floodplains so that they reflect actual conditions	• Town of Wellton • $3,000 • July 2009	Pending approval from FEMA. Completed	Delete (once FEMA approves)	The Town worked with the Yuma County Flood District to complete a flood plan study and altered the flood plain layout. Pending FEMA approval. Once approved, delete program.

Table 6-6-3: Summary of Wellton assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	Status	Disposition	Explanation
6.A.1	Enforcement of Nuisance Abatement Ordinance	Continue to enforce current nuisance abatement ordinance for the control of weeds, debris and other flammable materials within the Town limits	• Wellton Police Department • $2,500 • Ongoing	Ongoing	Keep	The Town PD identifies and evaluates hazard and nuisance abatement every 6 months. Violations are addressed as identified. This is a continuous program.
8.C.1	Zoning Mapping Analysis and Update	Analyze and update current zoning maps to regulate land-use elements involving HAZMAT usage, dispensing and storage.	• Town of Wellton • $4,000 • January 2007	Ongoing	Delete (Once completed)	The Town received $150,000.00 grant from Az Dept Transportation to evaluate transportation and land use. The Town will also update/add this to it's General Plan when updated.
5.A.1	Adopt Formal Floodplain Regulations	Coordinate with, formally adopt, and regulate to new Yuma County Floodplain Regulations	• Town of Wellton • $5,000 • July 2007	Ongoing	Keep	The Yuma County Flood District administers this and updates as needed..
8.A.1	HAZMAT Public Education	Promote awareness to hazardous materials transport and handling within the Town of Wellton	• Town of Wellton, Fire and Police Departments • $5,000 • October 2007	Ongoing	Delete	The Planning Team decided not to identify hazardous materials as hazard for this 2010 plan. The focus is directed to natural hazards.
9.D.1	Traffic Law Enforcement	Continue to enforce traffic laws within the Town limits	• • $65,000 •	Ongoing	Keep	The Town Police dept has increased the size of the agency and vehicle fleet to address traffic problems as they are discovered/observed. The vehicles have more equipment and are equipped with both moving and stationary radar for enforcement. This is also a continuous prject.
12.A.1	Prepare a Water Conservation Plan	Develop and formally adopt a Water Conservation Plan per recommendations from the Arizona Department of Water Resources	• • $40,000 •	Complete	Keep	The Town adopted a water rate with a conservation plan built into it back in 2005. This has proven to be effective

Table 6-6-3: Summary of Wellton assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
8.A.2	HAZMAT Route Signage	Post signs along the Town designated HAZMAT routes to safely guide transport of materials through the Town	• • $2,400 •	No action	Revise	The Town is attempting to designate routes within Town limits for truck routes, hazard material routes and will post signs one any routes are identified and approved by ordinance. Once funding and ordinance approved, signs can be posted and project deleted.

Table 6-6-4: Summary of City of Yuma assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	Status	Disposition	Explanation
5.B.1	28th Street Storm Drainage	Storm sewer installation in 28th St. from 8th Ave. to Smucker Park Retention Basin. Three phase project. YCFCD Master Plan	• City of Yuma, City Engineering Department • $7,500,000 • Phase 1 to complete in 2011	In progress	Keep	All 3 phases are design complete. Phase 1 (basin) is being reviewed by the Arizona Department of Water Quality, because it will cause the construction of a jurisdictional dam within a Seismic Zone 4 area, which has never been accomplished previously in the State of Arizona. Construction anticipated to commence Fall 2010. Upstream Phases 2 & 3 construction to follow completion of Phase 1.
12.A.2	Low Water-Use Fixture Requirements	Enforce low water use fixture requirements for new residential/commercial buildings.	• City of Yuma, Community Development Department • $50,000 • Ongoing	Currently enforcing	Keep	The city has adopted the IRC and the IPC both of which have provisions for low flow fixtures in both commercial and residential structures. The codes limit the amount of water that can flow from fixtures such as toilets sinks and showers heads.
9.C.1	Transportation Accident Mitigation	Continue to coordinate and participate with inter-agency transportation planning groups such as the Yuma Metropolitan Planning Organization, Greater Yuma Port Authority, Yuma Marine Corps Air Station, and Arizona Department of Transportation.	• City of Yuma, Community Development Department • $50,000 • Ongoing	No Action	Delete	The City of Yuma has chosen not to mitigate against Transportation related accidents, due to the desire of focusing on the natural hazards.

Table 6-6-4: Summary of City of Yuma assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	Status	Disposition	Explanation
6.B.1	Riverfront Park Development	Clear and remove dense stands of salt-cedar and re-establish native riparian vegetation along the Colorado River to produce a natural park area and mitigate the effects of wildland fire. Costs reflect vegetation removal and replacement only.	• City of Yuma, Yuma Crossing National Heritage Area • $4,357,601 to date • 2015	In progress	Keep	Ongoing project
7.A.1	Earthquake Safety Education	Continue to provide earthquake safety awareness to the community on an annual basis through booths at fairs, brochures, Channel 73 public service announcements, and utility bill inserts.	• City of Yuma, Emergency Management • $10,000 • Ongoing	In progress	Keep	On-going project
12.A.1	Water Conservation Planning	Encourage the use of xeriscape landscaping in new and existing developments through impact fee incentives and public education through the "Use Water Wisely" Program	• City of Yuma, Utilities and Community Development Departments • $10,000 • Ongoing	In progress	Keep	Ongoing & active activity
8.A.1	LEPC Participation	Continue to serve an active role in community planning and facility management where EHS materials are concerned.	• City of Yuma, Emergency Management • $20,000 • Ongoing	No Action	Delete	City of Yuma has chosen not to mitigate against HAZMAT incidents, due to the desire of focusing on natural hazards.
5.B.4	Hacienda Retention Basins	4 phase project to excavate existing materials and replace with landscaping	• City of Yuma, Public Works Department • $552,727 • 2004-2005	Complete	Delete	Project completed

Table 6-6-4: Summary of City of Yuma assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
5.B.5	Hacienda Estates Storm Force Main	4 underground pipes and pump stations from retention basins to west line of subdivision	• City of Yuma, Public Works Department • $1,103,521 • 2004-2005	Complete	Delete	Project completed
5.B.14	4th Street Storm Sewer	Construct collection system from 9th Avenue to basin site at the southeast corner of the Avenue A intersection with 4th Street. Conjunction with YCFCD Storm Drainage Plan	• City of Yuma, Public Works Department • $400,727 • 2004-2005	Complete	Delete	Project completed
5.B.2	8th Avenue Storm Sewer Extension	Install 3000 L.F.- 48" storm sewer and appurtenances/planning context YCFCD West Yuma Mesa Master Plan. Design phase	• • $40,000 •	No action	Keep	Upstream project tied to full completion of ID 5.B.1
8.A.3	HAZMAT Commodity Flow Study	Hire a consultant to perform a commodity flow study for the major transportation corridors within the City of Yuma to include rail, air, roadways, and waterways.	• • $60,000 •	No Action	Delete	COY has chosen not to mitigate against HAZMAT incidents since they are human caused and do not meet the criteria of this plan.
5.B.9	Ext. Storm Sewer/Arena Dr/9th to 10th	Extend existing storm sewer	• • $79,000 •	In progress	Keep	Project in design phase
5.B.6	Storm Water NPDES permit	2 phase project. Phase 1 completed. Phase II implement action plan and provide documentation to Arizona Department of Environmental Quality	• City Engineering Department • $750,000+ • Ongoing & never-ending	In progress	Keep	Mandated activity by the USEPA
5.B.7	6th Place Storm Sewer	In accordance with YCFCD Master Plan Construct 1750 linear feet of 24"to 36" storm drain and appurtenances.	• City Engineering Department • $370,338 •	Complete	Delete	Project completed

Table 6-6-4: Summary of City of Yuma assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
7.C.1	Seismic Building Code Enforcement	Continue to enforce current Zone D1 seismic requirements in residential and commercial building codes.	• • $75,000 •	Currently enforcing	Keep	Currently the city has the 2003 IRC and IBC codes adopted and we inspect all requirements for seismic. This includes liquefaction mitigation, seismic construction requirements and seismic bracing for all equipment and piping in buildings.
5.B.10	Area Detention Basin-Victoria Meadows	Construction completed by YCFCD 02/03. City to construct storm drain lines and provide basin landscaping/dust suppression features	• City Engineering Department • $235,071 •	Complete	Delete	Project completed
5.B.16	The Manors Storm Sewer System	Design, construct and inspect storm sewer to drain La Mesa Manors 1 and 2, Desert View and La Mesa Park subdivisions/Conform to YCFCD East Mesa Storm sewer Outfall Plan/Multi phase project	• City Engineering Department • $1,800,000 •	No action	Keep	Lack of funding to design & construct upper reach drainage to existing YCFCD main drainline.
1.A.3	Enforcement of Zoning and Building Code Ordinances	Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of flood, thunderstorm/high wind, earthquake, transportation and other hazards on new buildings and infrastructure	• • $750,000 •	Currently enforcing	Keep	The city has adopted the ICC family of codes to include the IBC, IRC,IEBC,IMPC,NEC,IPC,IMC,IFGC. We perform plan review, issue permits and perform all required inspections. We also enforce property maintenance codes for existing buildings to be sure they are in safe conditions.
5.B.8	Fix alley drainage 4th Ave. and Ave A	2 phase project; design and construction	• City Engineering Department • $380,000 •	In progress	Keep	Phase 1 completed at a cost of $188,992. Phase 2 design to commence when funding is available

Table 6-6-4: Summary of City of Yuma assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
5.B.11	Storm Pump Station Telemetry	Monitor and control condition of storm water pump stations (11)	• Not assigned • $50,000 •	No action	Keep	No progress due to lack of funding
5.B.12	4th Avenue drainage upgrade	Replacement of East-West drain lines beneath 4th Avenue	• City Engineering Department • $30,000 •	Complete	Delete	Project complete
5.B.13	Araby Road Drainage improvements	Replace drainage spillways with curb inlets and piping to storm water basins	• City Engineering Department • $130,000 •	Complete	Delete	Project completed
5.B.15	Storm Water Lift Station Improvements	Install ductile iron piping in four lift station locations, Reagan School, 20th Street, McKinly Street and 16th Street	• • $40,000 •	No action	Delete	Project cancelled. If necessary, will be undertaken as an O&M activity.
8.A.2	Area Service Highway Project Participation	Coordinate/cooperate with the implementation of the proposed GYPA Area Service Highway and Commercial Port of Entry project	• • $60,000 •	Completed	Delete	Area Service Highway has been completed and is in use. Commercial Port of Entry is complete in the United States And awaiting computers and office furnishings for the facility in Mexico. Opening anticipated Summer 2010.

Table 6-6-5: Summary of Unincorporated Yuma County assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
5.B.33	Yuma-Smucker Park	Design and construct a new storm water a basin, Smucker Park Detention Basin. New construction - This planned detention basin for the Yuma Mesa area will store the 100-year discharge. This basin is needed to mitigate the damage and reduce uncontrolled runoff that currently flows down the West Mesa Area to the Yuma Valley resulting in flooding of surrounding areas. Design is complete and is in state permitting process.	• City of Yuma, YCFCD • $4,600,000 • 2011	In progress	Revise as noted	Project has been delayed due to extended design requirements
5.B.14	Yuma-28th Street Outfall	28th Street Outfall Lines New Construction - The 28th Street Outfall Lines will be the drainage outfalls that convey stormwater to Smucker Park. These outfalls are needed to mitigate the damage and reduce uncontrolled runoff that currently flows down the West Mesa Area to the Yuma Valley resulting in flooding of surrounding areas. Design is complete. Construction is waiting Smucker Park Construction.	• City of Yuma • $18,000,000 • 2012	In progress	Delete	Delete this entry as this project is the second phase of 5.B.33

Table 6-6-5: Summary of Unincorporated Yuma County assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
5.B.24	FCD-Riebe	Riebe Avenue Storm Drain and Basin New Construction – Riebe Avenue Storm Drain and Basin collects and stores stormwater from the 8th Street and Avenue C area. This regional basin can also be used for in-line storage for the Avenue C system. Construction was complete in 2004.	• YCFCD • $350,000 • 2004	Complete	Delete	Project has been constructed
5.B.27	YC-Mapping	Perform topographic mapping of Flood Control District to complete drainage studies that will mitigate effects of storms and run off and for Floodplain studies	• YCFCD • $125,000 • 2014	In progress, previous years phases complete	Delete	Ongoing effort to upgrade mapping as necessary for drainage studies
5.B.3	FCD-Fortuna Wash Banks	Bank stabilization of the Fortuna Wash area is proposed to prevent bank subsidence from riverine erosion. This mitigates damage to homes in the area. Phase I is scheduled to be constructed this year and will improve conditions for 9 homes, two bridges, and the Foothills Blvd storm drain system.	• YCFCD • $ • 700000 • 2010	In progress	Revise as noted	Project design complete, phase I is scheduled to be constructed
5.B.4	FCD-Gila River	Gila River Obstruction Removal and Channel Restoration is a watershed improvement project. The Gila River has been overgrown with invasive Salt Cedars which plug the overbank area of the Gila River resulting in reduced capacity and damage to the natural habitat.	• YCFCD • $1,882,000 • Funding Avail.	No action	Delete	Project has been on hold pending Bureau of Reclamation securing funding

Table 6-6-5: Summary of Unincorporated Yuma County assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	Status	Disposition	Explanation
5.B.2	YC-Avenue 64 Crossing	Perform erosion control mitigation efforts such as planting, rip rap, bank stabilization, etc. at the Avenue 64E/Gila River Bridge to mitigate and protect a vital Gila River Crossing from erosion due to meander migration.	• YCFCD • $1,270,000 • 2015	In progress	Keep	Project funding tabled to future FY
4.A.2	Yuma-West Yuma Mesa O&M	West Yuma Mesa Operation and Maintenance Plan	• City of Yuma • $40,000 • 2007	No Action	Delete	This project became the responsibility of City of Yuma
5.B.12	Yuma-28th Street System	This project is located in the La Jolla Subdivision. Project will provide drainage improvements, catch basin and storm water pipeline to drain this neighborhood. Storm water presently ponds in the street and requires removal by water trucks.	• YCFCD /YC$175,000 • 2011	In progress	Keep	Project is being developed
5.B.25	Yuma-Giss Parkway	Giss Parkway Drainage Improvements	• City of Yuma, ADOT • $1,100,000 • 2010	In-progress	Delete	FCD has been tracking Giss Parkway underpass flooding in the Flood Control Assessment Report so we put it in our Mitigation Plan. FCD dropped it out of the Mitigation Plan because it is a City/ADOT project and we are limited to ten projects.
5.B.28	FCD-East Mesa ADS	East Mesa Area Drainage Study – Area Drainage Study. This study looked at the drainage needs for the area between Avenue 3E and Avenue 11E. H&H was performed and needs identified.	• YCFCD • $250,000 •	Complete	Delete	Project complete

Table 6-6-5: Summary of Unincorporated Yuma County assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	Status	Disposition	Explanation
2.A.1	FCD-Public Outreach	Develop and implement a Flood/Waterway Education and Public Outreach campaign to encourage citizen awareness to mitigate the damages of floods via the use of internet, public meetings, brochures, etc.	• YCFCD • $1,000 •	In Progress	Keep	On-going annual effort; Sent letters to 100 property owners advising grandfather status of Flood Insurance
2.B.1 4.A.1	FCD-IGA Administration	Implement Master IGA's with Yuma City	• YCFCD • $10,000 •	Complete	Delete	Amendments to refect connections are complete
5.B.6	Yuma-Floodplain Mapping	East Main Canal Floodplain Delineation to reduce the effects of flood hazards on new buildings and infrastructure along the East Main Canal	• YCFCD • $55,000 • 2012	In Progress	Delete	This Project is associated with 4.A.2; combine projects
3.C.1	FCD-Staff Education	Attend related technical conferences and relay new information to stakeholders	• YCFCD • $1,000/yr •	In Progress	Keep	Ongoing annual appropriation
5.B.7	FCD-Colorado River Mapping	Colorado River Floodplain Delineation to accurately report flood hazard for buildings and infrastructure in the Gila and Yuma Valleys	• B. of Rec • $50,000 •	Complete	Delete	Colorado River flood improvements certified by Bureau of Reclamation
1.A.2	FCD-State Regulations	Fund annual State Floodplain regulations and develop technical and review standards for floodplain related topics	• YCFCD • $5,000	In Progress	Keep	Ongoing annual appropriation
1.A.1 5.A.1 5.B.1 5.D.1	FCD-District Regulations	Maintain Compliance with National Flood Insurance Program to reduce the effects of flood hazards on new buildings and infrastructure	• YCFCD • $5,000/yr •	In Progress but currently compliant	Delete	Wrap and combine into existing project 1.A.2

Table 6-6-5: Summary of Unincorporated Yuma County assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
2.D.1	FCD-Flood Documentation	Document Flood Damage after flood events to further mitigate ongoing efforts by identification of potential and actual hazard areas; will also be used in public outreach and education campaign as well as provide historical reference for future mitigation efforts	• YCFCD • $50,000 •	In Progress	Keep	Ongoing annual appropriation
5.B.11	FCD-Drainage Ditch Bypass	Yuma Valley Drainage Ditch Discharge Bypass – Design and construct new bypass that increased the capacity of the Yuma Valley Drainage System allowing more stormwater to be discharges into the system.	• YCFCD • $2,500,000 •	Complete	Delete	Improvements constructed
5.B.15	Yuma-Kofa High Basin	Design and construct Kofa High School Detention Basin Improvements to provide overflow storage for 32nd Street and overflow from Smucker Park Basin.	• City of Yuma • $340,000 • 2015	In Progress	Delete	Wrapped into Smucker Basin and City improvements
5.B.26	FCD-East Main Canal Extention ADS	Design and construct East Main Canal Extension Area Drainage Plan which is a portion of the Yuma Valley drainage study. With the overall Yuma Valley drainage study being updated this year, this work will be completed.	• • $75,000 •	No action	Delete	Incorporated into the Yuma Valley drainage study
5.B.5	FCD-Groundwater Wells	Design and construct additional Groundwater Wells to mitigate and lower the groundwater levels during sustained flooding of the Colorado River and along the west Yuma Mesa.	• YCFCD • $505,000 •	No action	Keep	Additional wells dependent on need and capacity of Conduit

Table 6-6-5: Summary of Unincorporated Yuma County assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	Status	Disposition	Explanation
5.B.9	YC-Foothills Drainage Channel Improvements	Construct two box culverts at the Foothills Drainage on 48th Street and perform Channel & Bank Erosion Mitigation to ncrease capacity of channel thus reducing the effects of flooding in surrounding areas	• YCFCD/YC • $450,000 • 2010	Complete	Delete	Project completed
5.C.1	FCD-CRS	Participate in Community Assistance Program, , and other state and federal programs when they benefit Yuma County.	• YCFCD • $25,000/yr	No action	Keep	Future priority
1.B.1	FCD-FIRM	Review, Support, and Adopt FEMA approved FIRM to reduce the effects of flood hazards on new buildings and infrastructure throughout unmapped portions of the county	• YCFCD • $5,000/yr	Complete	Keep	On going to adopt future revisions
5.B.36	Yuma-B8 Drainage Improvements	Business 8 Drainage Improvements are needed to drain ponding along roadway.	• ADOT/City of Yuma/ YCFCD • $175,000	Ave 2 ½ E Phase programmed in 2010	Keep	Future priority
5.B.10	Yuma-Tierra Kino & Del Oro Drainage Improvements	Construct new stormdrain and do drainage improvements at Tierra Kino & Del Oro to provide stormdrain to subdivisions and mobile home parks with limited drainage, mitigating flooding in this area.	• City/ YCFCD • $1,700,000 • 2015	Phase II complete in 2010	Keep	Future priority
5.B.13	YC-Mesa Del Sol Retention Basin Channel	Mesa Del Sol Retention Basin Channel – Evaluation of basin shows adequate storage for subdivision.	• • $115,000 •	No action	delete	No programmed funding

Table 6-6-5: Summary of Unincorporated Yuma County assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	Status	Disposition	Explanation
5.B.16	Yuma-Castle Dome Drainage Improvements	Castle Dome Drainage Improvement Plan providing drainage and runoff storage for Castle Dome Drive has been constructed as part of regional development.	• City of Yuma • $120,000 •	Complete	Delete	Project completed
5.B.17	Yuma-Virginia Ave/24th St Drainage Improvements	Virginia Ave/24th Street Storm Drain Improvements is an extension of the 28th Street Stormdrain System.	• • $325,000 •	In progress	Keep	Combine and wrap into 5.B.33 Project as future phase
5.B.18	Yuma-La Mesa Manor Drainage Improvements	La Mesa Manor Storm Drain is part of the East Mesa Stormdrain system and drains the La Mesa Manor area. - Complete	• YCFCD • $590,000 • 2002	Complete	Delete	Project completed
5.B.19	Yuma-Engler Avenue Basin Pump Station	Design and re-construct of Engler Avenue Basin Pump Station to drain this basin to the East Mesa Outfall System mitigating damage to surrounding area and thus reducing detention times below 5 days.	• YCFCD • $280,000 • 2012	In progress	Keep	Design completed, construction programmed
5.B.20	YC-Quartz & Amber St. Erosion Control Plan	Quartz & Amber St. Erosion Control Plan has been evaluated and sufficient storm storage is available.	• • $285,000 •	In progress	delete	Sufficient storm storage is available.
5.B.21	YC- Phoenix & Mesa St. Drainage Improvements	Phoenix and Mesa St. within the Yuma East area. On site drainage has been filled in by the owners. Design will provide alternatives to address the storm water ponding.	• • $210,000 • 2011	In progress	Keep	Alternatives identified
5.B.22	Gadsden-Drainage Improvements	Design and then renovate the Gadsden Area Drainage to provide storm water facilities, to mitigate the effects of existing storm water ponds occurring within roadway or adjacent properties	• YCFCD • $210,000 • 2013	In progress	Keep	Master Drainage Plan complete, improvements to be prioritized

Table 6-6-5: Summary of Unincorporated Yuma County assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
5.B.23	Somerton-Cano St. Drainage Improvements	Design and then renovate the Somerton Area Drainage improvements to mitigate storm damage and provide storm water facilities which will mitigate the effects of existing storm water ponds occurring on the roadway or on adjacent properties	• YCFCD • $145,000	In progress	Keep	Drainage Plan approved, improvements to be prioritized
5.B.29	Yuma-12th Ave/Arena Drive Drainage Improvements	12th Avenue/Arena Drive Storm Drain	• City of Yuma • $125,000 •	No Action	Delete	Currently, this project is not Yuma County's priority. The city is under design.
5.B.31	Somerton-Capital St. Drainage Improvements	Design and construct new drainage improvements at Capital Street in Somerton to drain two residential streets where the houses are built below street level, thus mitigating flooding.	• YCFCD • $185,000 •	In progress	Delete	Combine and wrap into Somerton area drainage Master Drainage Plan approved, improvements to be prioritized
5.B.32	Yuma-18th St. Drainage Improvements	18th Street Drainage Improvements was road improvements to drain ponding into an existing retention basin.	• City of Yuma • $40,000 •	Complete	Delete	Construction improvements complete
5.B.34	Yuma-3rd Place Drainage Improvements	3rd Place Drainage Improvements New construction is needed to drain a residential area with homes at or below street grade.	• Yuma County • $185,000 •	In progress	Keep	Incorporated into the Avenue C project
5.B.35	San Luis-Merrill Street Drainage Improvements	Design and reconstruction of San Luis area Merrill Street Basin Drainage Improvements to mitigate effects of runoff on surrounding properties and provide a stormwater outfall to drain retention basins	• YCFCD • $324,000 • 2010	In progress	Keep	Construction contract has been awarded

Table 6-6-5: Summary of Unincorporated Yuma County assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	Status	Disposition	Explanation
5.B.37	Yuma-Crane/Poppy Drainage Improvements	New construction of stormdrain improvements at Crane/Poppy Storm Drain to drain a residential area with homes at or below street level, thus mitigating flooding.	• YCFCD /YC • $350,000 • 2004	Complete	Delete	Construction improvements complete
5.B.8	Yuma-East Drain Extension Canal Improvements	East Drain Extension Canal Enlargement was construction of new culverts along the east drain extension canal to increase capacity for drainage.	• YCFCD • $135,000 •	Complete	Delete	Project complete
2.B.1 2.C.1	Communication Network Needs	Communication Network Needs Analysis	• Yuma County Emergency Management • $50,000 • July 2006	Complete	Delete	Project complete
8.A.2	HAZMAT Evacuation and Detour Routes	Use County GIS resources to develop evacuation and detour routing plans.	• Yuma County • $75,000 • January 2010	No action	Delete	This is a response plan and not a mitigation effort. Haz Mat incidents are manmade and not included in this mitigation plan
3.B.1	Develop Evacuation Plans	Prepare an Updated Emergency Disaster Preparedness Plan	• Yuma County Emergency Management • $100,000 • July 2006	No action	Delete	This is a response plan and not a mitigation effort and are not included in this mitigation plan
12.A.2	Drought Conservation Public Education	Public education campaign to encourage citizens to conserve water	• Yuma County Emergency Management • $2,500 • January 2009	No action	Keep	No action taken these past years, will re-evaluate and possibly proceed in 2011

Table 6-6-5: Summary of Unincorporated Yuma County assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	Status	Disposition	Explanation
9.C.1	Inter-Agency Transportation Planning	Continue to coordinate and participate with inter-agency transportation planning groups such as the Yuma Metropolitan Planning Organization, Greater Yuma Port Authority, Yuma Marine Corps Air Station, and Arizona Department of Transportation	• Yuma County • $10,000/yr • Ongoing	In progress	Keep	Ongoing annual occurrence
8.A.1	HAZMAT Corridor Mitigation Planning	Continue to coordinate and cooperate with inter-agency transportation planning groups such as YMPO and GYPA.	• Yuma County • $10,000/yr • Ongoing	No action	Delete	This is a response plan and not a mitigation effort. Haz Mat incidents are manmade and not included in this mitigation plan
7.A.1 2.C.2	Earthquake Mitigation Plan	Develop Earthquake Mitigation Plan	• Yuma County Emergency Managaement • $100,000 • September 2011	No action	Keep	Will be part of countywide all hazards community awareness and public outreach campaign.
1.A.3	Enforcement of Zoning and Building Code Ordinances	Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of flood, thunderstorm/high wind, earthquake, transportation and other hazards on new buildings and infrastructure	• Yuma County • $50,000/yr • Ongoing	In Progress	Keep	Ongoing annual appropriation
6.B.1	Burn Permit Enforcement	Continue to require county residents to acquire burn permits to mitigate against the potential for wildland fires.	• Rural Metro Fire/Yuma County • $20,000 • Ongoing	In Progress	Keep	Ongoing annual appropriation
12.A.1	Low Water Use Fixtures	Continue to enforce building code low water use fixture requirements for new residential and commercial buildings.	• Yuma County • $50,000/yr • Ongoing	In Progress	Keep	Ongoing annual appropriation

Table 6-6-5: Summary of Unincorporated Yuma County assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	Status	Disposition	Explanation
9.D.1	Runway Protection Zone Enforcement	Continued enforcement of development restricted areas relative to the MCAS and the MCAS Auxiliary Field II as identified in the Joint Land Use Plan.	• • $50,000/yr •	In Progress	Keep	Ongoing annual appropriation
2.A.1 2.B.2 2.C.3 2.D.2	Public Education Campaign	Conduct Employee Training on the Emergency Response Plan	• • $25,000 •	No action	Delete	This is a response plan and not a mitigation effort.
1.A.2 1.B.2	Regulation Review and Update	Update Emergency Operations Plan	• • $50,000 •	In progress	Delete	This is a response plan and not a mitigation effort.

6.4.2 New Mitigation Actions / Projects and Implementation Strategy

Upon completion of the assessment summarized in Section 6.4.1, each jurisdiction developed new A/Ps using the goals and objectives, results of the vulnerability analysis and capability assessment, and the Planning Team's institutional knowledge of hazard mitigation needs in the community. The A/Ps can be generally classified as either structural or non-structural. Structural A/Ps typify a traditional "bricks and mortar" approach where physical improvements are provided to effect the mitigation goals. Examples may include channels, culverts, bridges, detention basins, dams, emergency structures, and structural augmentations of existing facilities. Non-structural A/Ps deal more with policy, ordinance, regulation and administrative actions or changes, buy-out programs, and legislative actions. For each A/P, the following elements were identified:

- **ID No.** – a unique alpha-numeric identification number for the A/P.
- **Description** – a brief description of the A/P including a supporting statement that tells the "what" and "why" reason for the A/P.
- **Hazard(s) Mitigated** – a list of the hazard or hazards mitigated by action.
- **Community Assets Mitigated** – a brief descriptor to qualify the type of assets (existing, new, or both) that the proposed mitigation A/P addresses.
- **Estimated Costs** – concept level cost estimates that may be a dollar amount or estimated as staff time.

Once the full list of A/Ps was completed, the jurisdictions then set to work developing the implementation strategy for those A/Ps. The implementation strategy addresses the *"priority, how, when, and by whom?"* questions related to the execution and completion of an identified A/P. Specific elements identified as a part of the implementation strategy included:

- **Priority Ranking** – each A/P was assigned a priority ranking of either "High", "Medium", or "Low". The assignments were subjectively made using a simple process that assessed how well the A/P satisfied the following considerations:
  - A favorable benefit versus cost evaluation, wherein the perceived direct and indirect benefits outweighed the project cost.
  - A direct beneficial impact on the ability to protect life and/or property from hazards.
  - A mitigation solution with a long-term effectiveness
- **Planning Mechanism(s) for Implementation** – where applicable, a list of current planning mechanisms or processes under which the A/P will be implemented. Examples could include CIPs, General Plans, Area Drainage Master Plans, etc.
- **Anticipated Completion Date** – a realistic and general timeframe for completing the A/P. Examples may include a specific target date, a timeframe contingent upon other processes, or recurring timeframes.
- **Primary Agency and Job Title Responsible for Implementation** – this would be the agency, department, office, or other entity and corresponding job title that will have responsibility for the A/P and its implementation.
- **Funding Source** – the source or sources of anticipated funding for the A/P.

Tables 6-7-1 through 6-7-6 summarize the updated mitigation A/P and implementation strategy for each participating Plan jurisdiction.

Table 6-7-1: Summary of mitigation actions and projects and implementation strategy for San Luis

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

Objective 1: Reduce or minimize risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 2: Reduce risk to critical facilities and infrastructure from hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.

Mitigation Action/Project					Implementation Strategy				
ID No.	**Description**	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
1	Complete current updating and continue to up-date family of construction codes (NFPA1, UBC, UMC, UPC,UEC, etc) within appropriate cycles to ensure adequate design of new or remodeled facilities	Flood Severe Wind Earthquake	Both	$5,000 plus Staff Time	Medium	Code development and review cycles	FY 2010, FY 2013, FY 2016	Development Services- Building Official, Fire Department – Fire Chief	General Fund
2	Evaluate, review, design and construct infrastructure to minimize effects of run-off damage to right-of-ways, roadways, streets, curb and gutters, sidewalks, retention basins and structures.	Severe Winds Flooding	Both	Staff time plus $250,000	High	Historical review of events and new construction review	On-going review and application dependent upon development , construction and events.	City of San Luis Public Works Department	General Fund
3	Continue to review effects of participation in the National Flood Insurance Program (NFIP), specifically; the costs of insurance and the ability to market/sell property real property within identified area. The anticipated area is among the oldest developed area of the city and may result in the inability of homeowners to sell, refinance or simply occupy residences, based on the costs and availability of flood insurance.	Flooding	Both	Staff time	Medium	Research of NFIP. Possible development of participation documents, education of citizens and property owners regarding NFIP.	FY 2012	Development Services and City Administration	N/A
4	Continue involvement with AZ Department of Transportation and US Customs to maintain awareness of product and goods transported through both ports of entry (POE 1 and 2). Continue training and education of personnel and the purchase of appropriate equipment to support emergency response to any incidents or events within	Transportation (Accident) Event	Both	Staff time, $ 2,000 training, $5,000 equipment	High	Review of commodities that pass through both ports, evaluation of equipment and ability to respond, purchase of appropriate equipment and training of personnel to provide	FY 2012	City of San Luis Fire Department	General Fund and the potential of State and Federal grants.

Table 6-7-1: Summary of mitigation actions and projects and implementation strategy for San Luis

GOAL: Reduce or eliminate the risk to people and property from natural and human caused hazards.
Objective 1: Reduce or minimize risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 2: Reduce risk to critical facilities and infrastructure from hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
	the US POEs or the AZ-DOT Inspection Station.					technician level response			
5	Water Conservation and Public Education: Develop and distribute brochures outlining the advantages of water conservation to City water-users	Drought	Both	$ 2,000 plus staff time	Medium	Annual media campaigns, develop and print informational pamphlets	FY 2011, 2012, 2014, 2015	Public Works – Department Head	General Fund
6	Water Rights Acquisition: Assurance of water supply through acquisition of senior Colorado River Water Rights with retirement of agricultural lands	Drought	Both	Staff time plus water rights fees	High	On-going and continuous. Implementation upon identification of qualified annexation or developments	Continuous and ongoing	Public Works - Department Head	General Fund
7	Transportation Planning Agency Coordination: Continue to coordinate and participate with inter-agency transportation planning groups such as the Yuma Metropolitan Planning Organization, Greater Yuma Port Authority, Yuma Marine Corps Air Station, and Arizona Department of Transportation	Transportation Event	Both	Staff Time	High	Participation in listed planning groups and organizations to insure awareness of future projects, participation opportunities and event potentials.	Continuous and ongoing	Development Services, Public Works, Fire Department	General Fund
8	Seismic Building Code Enforcement: Continue to enforce seismic requirements in current building codes	Earthquake	Both	$ 2,000 plus staff time	High	Code development and review cycles	Continuous and ongoing	Development Services, Public Works, Fire Department	General Fund
9	Enforcement of Zoning and Building Code Ordinance: Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of flood, thunderstorm/high wind, earthquake,	Earthquake Flooding Transportation Accident Severe Wind	Both	Staff time	High	Plans review, code enforcement, training and public education	Continuous and ongoing	Development Services, Public Works, Fire Department	General Fund

Table 6-7-1: Summary of mitigation actions and projects and implementation strategy for San Luis

GOAL: Reduce or eliminate the risk to people and property from natural and human caused hazards.
Objective 1: Reduce or minimize risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 2: Reduce risk to critical facilities and infrastructure from hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.

Mitigation Action/Project					Implementation Strategy				
ID No.	**Description**	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
	transportation and other hazards on new buildings and infrastructure								
10	Wildfire Mitigation Cooperation: Coordinate/cooperate with BLM/BOR wildfire mitigation activities along the Colorado River	Wildfire	Both	$ 25,000 and staff time	Medium	Training of personnel and purchase of brush firefighting equipment to access and suppress fires in dense brush areas (Colorado River bottomlands)	Continuous and ongoing	Development Services, Public Works, Fire Department	General Fund

Table 6-7-2: Summary of mitigation actions and projects and implementation strategy for Somerton

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

Objective 1: Reduce or minimize risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 2: Reduce risk to critical facilities and infrastructure from hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Enforcement of Zoning and Building codes to reduce the effects of flood, thunderstorm/high wind and earthquake.	Flooding Severe Wind Earthquake	Both	$150,000	High	Code Enforcement	Ongoing	Community Development Department/ Building Inspector	General Funds
2	Seismic Building Code enforcement to enforce current seismic codes to reduce the effects of earthquake hazards on new and remodeled buildings	Earthquake	Both	$3,000	High	Code Enforcement	Ongoing	Community Development Department / Building Inspector	General Funds
3	Water Conservation Plan Adoption to conserve water as a community to maintain water supply availability.	Drought	Both	$5,000	Med	Public Involvement	Ongoing	City of Somerton Public Works Department / Director	Enterprise Funds
4	Enforcement of low water use fixture requirements for new residential/commercial buildings in current plumbing codes to reduce the demand on acquiring additional water resources.	Drought	Both	$2,000	Med	Code Enforcement	Ongoing	Community Development Department / Building Inspector	General Funds
5	Proposed State Ave storm drain pipe to be installed in State Ave between Spring Street and Hwy. 95. Drain pipe will be tied to existing drain in Hwy. 95 that outfalls to a retention basin to prevent flooding.	Flooding	Both	$4,000 plus staff time	Med	Capital Improvement Plan	Ongoing as funding becomes available.	City of Somerton Public Works Department / City Engineer	General funds
6	Proposed flood control drain pipe to be installed in Congress Avenue between Cano Street and Highway 95. Drain pipe will be tied to existing drain in Highway 95 that outfalls to a retention basin to distribute flow and prevent flooding.	Flooding	Both	$4,000 plus staff time	Med	Capital Improvement Plan	Ongoing as funding becomes available	City of Somerton Public Works Department / City Engineer	General funds

Table 6-7-3: Summary of mitigation actions and projects and implementation strategy for Wellton

GOAL: Reduce or eliminate the risk to people and property from natural and human caused hazards.
Objective 1: Reduce or minimize risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 2: Reduce risk to critical facilities and infrastructure from hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Design and construct overpass over the Union Pacific railroad tracks allowing vehicles, emergency vehicles, and 1st responders to cross at all times. The plan has identified a location and cost estimate. Would assist in evacuation from any type of disaster or hazard.	Flood Wildlfire Transportation Accident.	New	$10,000,000 plus staff time	High	Town of Wellton, Contracted Engineers	Jan 2016	Public Works Department / City Engineer	General Fund; Grant
2	Continual enforcement of zone and building codes through current site plans, subdivision, and building permit review process to reduce the effects of disasters (natural or manmade) as well as other hazards on new buildings and infrastructure.	Flood Severe Wind Earthquakes	Both	$75,000	Medium	Town Enforcement Officer,Town Building Code	FY 2010	Town code Enforcement Officer	General Fund
3	Post signage in community on roadways within Town limits once designated as truck routes, hazard material routes, or weight limited roadways.	Transportation Accident	Existing	$5,000 plus staff time	Medium	Town Public works/Highway Dept	Jan 2013	Town Manager, Public Works Director,	General Fund
4	Adopt Seismic Building Code Enforcement for new and existing residential and commercial developments to minimize structural damages.	Earthquakes	Existing	$4,000 plus staff time	High	Town Code Enforcement Officer, contracted Engineering Firms.	Ongoing	Town Manager, Code Enforcement Officer, Planning & Zoning.	General Fund, fees.
5	Local Area Drainage Study- perform a local area drainage study to determine vulnerability of identified streets to understand and implement drainage needs and improvements.	Flooding	Existing	$40,000 plus staff time	Medium	Yuma County Flood District, Town of Wellton	Pending completion, Jan 2011.	Yuma County Flood District, Town Public Works/Highway Dept	Yuma County Flood District
6	Enforcement of Nuisance Abatement Ordinance-continual enforcement of current nuisance abatement ordinance for control of weeds, debris and flammable materials within Town limits.	Wildfire	Existing	$2,500	Low/Medium	Wellton Police Department	Ongoing	Wellton Police Dept.	Fees & fines.

Table 6-7-3: Summary of mitigation actions and projects and implementation strategy for Wellton

GOAL: Reduce or eliminate the risk to people and property from natural and human caused hazards.
Objective 1: Reduce or minimize risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 2: Reduce risk to critical facilities and infrastructure from hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
7	Traffic Law Enforcement-continue to enforce traffic laws and minimize accidents within Town limits.	Transportation Accident	Existing	$80,000	Medium	Wellton Police Department	Ongoing	Wellton Police Department	Grants, fees, fines, general Fund.
8	Continued enforcement of low water use fixtures in zoning regulations to minimize loss of water resource.	Drought	Existing	$3,500	Medium	Town of Wellton, Public Works	Ongoing	Town of Wellton Public Works Dept.	Grants, fees, fund.
9	Continued interaction between local, state, county, and federal agencies to ensure cooperation and planning for transportation networks.	Transportation	Existing	$2,500 plus staff time	Medium	Az Dept of Transportation. Yuma metro Plan Organization	Ongoing	Town of Wellton, County of Yuma	Grants, fees, revenue,
10	Adopt formal Floodplain regulations to reduce flooding issues within the community.	Flooding	Existing	$5,000 plus staff time	High	Yuma County Flood Control District, Town of Wellton	Ongoing	Yuma County Flood Control District, Town of Wellton, Arizona Division of Emergency Management	Grants, fees, general Fund.
11	Continued development, design, and compliance of a water conservation plan to reduce the ensure availability of water supply.	Drought	Existing	Unknown	Medium	Az Dept of Water Resources, Town of Wellton	Ongoing	Az Dept of Water Resources, Town of Wellton Public Works.	Grants, fees, revenues.

Table 6-7-4: Summary of mitigation actions and projects and implementation strategy for City of Yuma

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

Objective 1: Reduce or minimize risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 2: Reduce risk to critical facilities and infrastructure from hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.

Mitigation Action/Project					Implementation Strategy				
ID No.	**Description**	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
1	Design and construct stormwater basins, USBR East Main Canal siphon and overshoot and stormwater lift station with discharge forcemain(s) to detain and evacuate 116.8 acre-feet of storm water. Needed to improve storm water drainage collection and disposal in the area from Avenue A to Barbara Avenue and 26th Place	Flooding	Both	$7,780,000 plus staff time	High	10-Yr CIP	FY 2014	City Engineering Department Director of City Engineering	Road Tax & Grant
2	28th Street Storm Drainage – Phase I, II, and III: Storm sewer installation in 28th Street from 8th Avenue to Smucker Park retention Basin. Construction will consist of 72" diameter pipe to 96" diameter pipe and construction of a storm water collection basin. This project will improve storm water drainage collection and disposal in area from Avenue A to Barbara Avenue and 26th Place.	Flooding	Existing	$9,900,000 plus staff time	High	10-Yr CIP	FY 2014	City Engineering Department Director of City Engineering	Flood Control District & City Road Taxes
3	Stormwater NPDES Permit Activities: Two phase project …Phase I completed…Phase II implement action plan and provide documentation to Arizona Department of Environmental Quality	Flooding w/Sedimentation & Erosion Control	Both	$100,000/ year plus staff time	High	10-Yr CIP & EPA/ADEQ Mandate	FY2015	City Engineering Department Director of City Engineering	Multiple, depending upon project sponsorship
4	Del Oro Estates: Construct underground drainage collection system with surface inlets for Del Oro Estates. Construct outfall drain from Del Oro to Victoria Meadows Detention Basin. Del Oro Estates has no provisions for storm water removal and is virtually flat having been designed for on-site storm water disposal. This project will afford flooding protection for residents and remove storm water from City streets.	Flooding	Existing	$1,715,000 plus staff time	High	10-Year CIP	2015	City Engineering Department Director of City Engineering	Improvement District Funds

Table 6-7-4: Summary of mitigation actions and projects and implementation strategy for City of Yuma

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

Objective 1: Reduce or minimize risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 2: Reduce risk to critical facilities and infrastructure from hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
5	Storm water Basin Evacuation: 15th Street Basin at 45th Avenue and Storm water Basin Evacuation: 16th Street at 46th Avenue. Design, construct and inspect improvements to Cibola Heights Subdivision basin drainage and landscaping. The Developer of this subdivision did not complete basin improvements, to properly provide the City with a fully operational and aesthetically acceptable site	Flooding	Existing	$300,000 plus staff time	Medium	10-Yr CIP	FY 2012	City Engineering Department Director of City Engineering	Developer Deposit and General Fund
6	Extend Storm Sewer/Arena Drive, 9th Street, 10th Street. And 10th Street from Arena Drive to 13th Avenue. Include inlet structures. Storm water from 13th Avenue is supposed to be channeled in 10th Street, 9th Place, and Arena Drive then conveyed by surface to the existing inlets at 9th Street and Arena Drive. Such is not the case. Even moderately small storms create overland flow that quickly jumps curbs and creates erosion problems across private property.	Flooding	Existing	$230,000 plus staff time	Medium	10-Yr CIP	FY 2012	City Engineering Department Director of City Engineering	Bond
7	Stormwater Pumping Structure Conversions to Automated Lift Station: Tierra Kino & Suncrest Estates subdivisions. Telemetry for all storm water pump station locations. There is a need to monitor and control the condition of storm water pump stations.	Flooding	Existing	$260,000 plus staff time	Medium/ Low	10-Yr CIP	FY 2014	City Engineering Department Director of City Engineering	Road Tax and Grants

Table 6-7-4: Summary of mitigation actions and projects and implementation strategy for City of Yuma

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

Objective 1: Reduce or minimize risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 2: Reduce risk to critical facilities and infrastructure from hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
8	Enforce low water use fixture requirements for new residential/commercial buildings. The city has adopted the IRC and the IPC both of which have provisions for low flow fixtures in both commercial and residential structures. The codes limit the amount of the water that can flow from fixtures such as toilets, sinks, and shower heads.	Drought	Both	$50,000	Medium	City Codes and Building Regulations	On-going	City of Yuma Community Development Building Official	General Fund
9	Continue to enforce current Zone D1 seismic requirements in residential and commercial building codes. Continue to inspect all requirements for seismic to include liquefaction mitigation, seismic construction requirements, and seismic bracing for all equipment and piping in buildings.	Earthquake	New	$75,000	High	2003 IRC and IBC; City Codes and Building Regulations	Currently Enforcing	City of Yuma Community Development Building Official	General Fund
10	Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of flood, thunderstorm/high wind, earthquake, and other hazards on new buildings and infrastructure	Flooding Earthquake Severe Wind	Both	$750,000	High	ICC Codes to include IRC, IBC, IMPC, NEC, IPC, IMC, IFGC	On-Going	City of Yuma Community Development Building Official	General Fund
11	Clear and remove dense stands of salt-cedar and re-establish native riparian vegetation along the Colorado River to produce a natural park area and mitigate the effects of wildland fires. Costs reflect vegetation removal and replacement only.	Wildfire	Both	$4,357,601.	Medium	West Wetlands Park master Plan and the US Army Corps of Engineers	2015	City of Yuma, Yuma Crossing National Heritage Area Project Manager	Two Percent Tax and Grants
12	Continue to provide earthquake safety awareness to the community on an annual basis through booths at fairs, brochures, Channel 73 public service announcements, and utility bill inserts.	Earthquake	Both	$10,000 plus staff time	Low	Emergency Operations Plan	2015	City of Yuma Emergency Management Coordinator	General Fund

Table 6-7-4: Summary of mitigation actions and projects and implementation strategy for City of Yuma

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

Objective 1: Reduce or minimize risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 2: Reduce risk to critical facilities and infrastructure from hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.

Mitigation Action/Project					Implementation Strategy				
ID No.	**Description**	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
13	Encourage the use of xeriscape landscaping in new and existing developments through impact fee incentives and public education through the "Use Water Wisely" Program.	Drought	Both	$10,000 plus staff time	Medium	Current City Codes	2015	City of Yuma Community Development Department Director	General Fund

Table 6-7-5: Summary of mitigation actions and projects and implementation strategy for Unincorporated Yuma County

GOAL: Reduce or eliminate the risk to people and property from natural and human caused hazards.
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1	Design and construct a new storm water a basin, Smucker Park Detention Basin. New construction of this planned detention basin for the Yuma Mesa area will store the 100-year discharge. This basin is needed to mitigate the damage and reduce uncontrolled runoff that currently flows down the West Mesa Area to the Yuma Valley resulting in flooding of surrounding areas. Design is complete and is in state permitting process.	Flooding	Existing	$4,600,000 plus staff time	High	*5-yr CIP*	2011	Yuma County Department of Development Services, County Engineer	Flood Control
2	Bank stabilization of the Fortuna Wash area is proposed to prevent bank subsidence from riverine erosion. This mitigates damage to homes in the area. Phase I is scheduled to be constructed this year and will improve conditions for 9 homes, two bridges, and the Foothills Blvd storm drain system.	Flooding	Existing	$700,000 plus staff time	Medium	*5-yr CIP*	2010	Yuma County Department of Development Services, County Engineer	Flood Control
3	Perform erosion control mitigation efforts such as planting, rip rap, bank stabilization, etc. at the Avenue 64E/Gila River Bridge to mitigate and protect a vital Gila River Crossing from erosion due to meander migration.	Flooding	Existing	$1,270,000 plus staff time	Medium	*5-yr CIP*	2015	Yuma County Department of Development Services, County Engineer	Flood Control
4	This project is located in the La Jolla Subdivision. Project will provide drainage improvements, catch basin and storm water pipeline to drain this neighborhood. Storm water presently ponds in the street and requires removal by water trucks.	Flooding	Existing	$175,000 plus staff time	Medium	*5-yr CIP*	2011	Yuma County Department of Development Services, County Engineer	Flood Control

Table 6-7-5: Summary of mitigation actions and projects and implementation strategy for Unincorporated Yuma County

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ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(S)
5	Develop and implement a Flood/Waterway Education and Public Outreach campaign to encourage citizen awareness to mitigate the damages of floods via the use of internet, public meetings, brochures, etc.	Flooding	Existing	$1,000 plus staff time	Medium	N/A	2011	Yuma County Department of Development Services, County Engineer	Flood Control
6	Attend related technical conferences and relay new information to stakeholders	Flooding	Existing	$1,000	Medium	N/A	2011	Yuma County Department of Development Services, County Engineer	Flood Control
7	Fund annual State Floodplain regulations and develop technical and review standards for floodplain related topics	Flooding	Existing	$5,000	Medium	N/A	2011	Yuma County Department of Development Services, County Engineer	General Fund
8	Document Flood Damage after flood events to further mitigate ongoing efforts by identification of potential and actual hazard areas; will also be used in public outreach and education campaign as well as provide historical reference for future mitigation efforts	Flooding	Existing	$50,000	Medium	N/A	2011	Yuma County Department of Development Services, County Engineer	Flood Control
9	Design and construct additional Groundwater Wells to mitigate and lower the groundwater levels during sustained flooding of the Colorado River and along the west Yuma Mesa.	Flooding	Existing	$505,000	Medium	5-Yr CIP	2015	Yuma County Department of Development Services, County Engineer	Flood Control
10	Participate in Community Assistance Program and other state and federal programs when they benefit Yuma County.	Flooding	Existing	$25,000 year	Medium	N/A	2011	Yuma County Department of Development Services, County Engineer	Flood Control

Table 6-7-5: Summary of mitigation actions and projects and implementation strategy for Unincorporated Yuma County

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

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Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(S)
11	Review, Support, and Adopt FEMA approved FIRM to reduce the effects of flood hazards on new buildings and infrastructure throughout unmapped portions of the county	Flooding	Existing	$5,000 year	Medium	N/A	2011	Yuma County Department of Development Services, County Engineer	Flood Control
12	Design and construct Business 8 Drainage Improvements are needed to drain ponding along roadway.	Flooding	Existing	$175,000 plus staff time	Medium	5-Yr CIP	2015	Yuma County Department of Development Services, County Engineer	Flood Control
13	Construct new storm drain and do drainage improvements at Tierra Kino & Del Oro to provide storm drain to subdivisions and mobile home parks with limited drainage, mitigating flooding in this area.	Flooding	Existing	$1,700,000 plus staff time	Medium	5-Yr CIP	2015	Yuma County Department of Development Services, County Engineer	FLOOD CONTROL And City Of Yuma
14	Virginia Ave/24th Street Storm Drain Improvements is an extension of the 28th Street Storm drain System.	Flooding	Existing	$325,000 plus staff time	Medium	5-Yr CIP	2015	Yuma County Department of Development Services, County Engineer	Flood Control
15	Design and re-construct Engler Avenue Basin Pump Station to drain this basin to the East Mesa Outfall System mitigating damage to surrounding area and thus reducing detention times below 5 days.	Flooding	Existing	$280,000 plus staff time	Medium	5-Yr CIP	2015	Yuma County Department of Development Services, County Engineer	Flood Control
16	Phoenix and Mesa St. within the Yuma East area. On site drainage has been filled in by the owners. Design will provide alternatives to address the storm water ponding.	Flooding	Existing	$210,000 plus staff time	Medium	5-Yr CIP	2015	Yuma County Department of Development Services, County Engineer	Flood Control

Table 6-7-5: Summary of mitigation actions and projects and implementation strategy for Unincorporated Yuma County

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

Objective 1: Reduce or minimize risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
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Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(S)
17	Design and then renovate the Gadsden Area Drainage to provide storm water facilities, to mitigate the effects of existing storm water ponds occurring within roadway or adjacent properties	Flooding	Existing	$210,000 plus staff time	High	5-Yr CIP	2015	Yuma County Department of Development Services, County Engineer	Flood Control
18	Design and then renovate the Somerton Area Drainage improvements to mitigate storm damage and provide storm water facilities which will mitigate the effects of existing storm water ponds occurring on the roadway or on adjacent properties	Flooding	Existing	$145,000 plus staff time	Medium	5-Yr CIP	2015	Yuma County Department of Development Services, County Engineer	Flood Control
19	3rd Place Drainage Improvements New construction is needed to drain a residential area with homes at or below street grade.	Flooding	Existing	$185,000 plus staff time	Medium	5-Yr CIP	2015	Yuma County Department of Development Services, County Engineer	Flood Control
20	Design and reconstruction of San Luis area Merrill Street Basin Drainage Improvements to mitigate effects of runoff on surrounding properties and provide a stormwater outfall to drain retention basins	Flooding	Existing	$324,000 plus staff time	Medium	5-Yr CIP	2015	Yuma County Department of Development Services, County Engineer	Flood Control
21	Public education campaign to encourage citizens to conserve water	Drought	Existing	$2,500	Medium	N/A	On-Going	Yuma County Emergency Management, Emergency Manager	General Fund
22	Continue to ensure that Yuma County residents are safe from flooding by meeting the NFIP requirements for development within a Special Flood Hazard Area through enforcement of the Floodplain Ordinance.	Flood	Both	Staff Time	High	Code Enforcement	On-Going	Yuma County Department of Development Services, County Engineer	Flood Control

Table 6-7-5: Summary of mitigation actions and projects and implementation strategy for Unincorporated Yuma County

GOAL: Reduce or eliminate the risk to people and property from natural and human caused hazards.
Objective 1: Reduce or minimize risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
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Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(S)
23	Continue to coordinate and participate with inter-agency transportation planning groups such as the Yuma Metropolitan Planning Organization, Greater Yuma Port Authority, Yuma Marine Corps Air Station, and Arizona Department of Transportation	Transportation Accident	Existing	$10,000 year	Medium	5-Yr CIP	2015	Yuma County Department of Development Services, County Engineer	General Fund
24	Develop and implement a public education and awareness campaign for county residents to mitigate damages caused by these specified incidents via the use of internet, brochures, website, community presentations and forums and other media	Earthquake	Existing	$100,000	Medium	N/A	2014	Yuma County Emergency Management, Emergency Manager	General Fund
25	Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of flood, thunderstorm/high wind, earthquake, transportation and other hazards on new buildings and infrastructure	Earthquake	Existing	$50,000 year	Medium	N/A	2011	Yuma County Department of Development Services., County Engineer, Chief Building Official	General Fund
26	Continue to require county residents to acquire burn permits to mitigate against the potential for wildland fires.	Wildfire	Existing	$20,000 year	Medium	N/A	2011	Yuma County Department of Development Services., Chief Building Official, Rural Metro	General Fund
27	Continue to enforce building code low water use fixture requirements for new residential and commercial buildings.	Drought	Existing	$50,000 year	Medium	N/A	2011	Yuma County Department of Development Services., Chief Building Official	General Fund

Table 6-7-5: Summary of mitigation actions and projects and implementation strategy for Unincorporated Yuma County

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

Objective 1: Reduce or minimize risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 2: Reduce risk to critical facilities and infrastructure from hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.

Mitigation Action/Project					Implementation Strategy				
ID No.	**Description**	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(S)**
28	Continued enforcement of development restricted areas relative to the MCAS and the MCAS Auxiliary Field II as identified in the Joint Land Use Plan.	Transportation Accident	Existing	$50,000 year	Medium	N/A	2011	Yuma County Department of Development Services., Planning Director, Chief Building Official	General Fund
29	Develop and implement a public education and awareness campaign for county residents to mitigate damages caused by these specified incidents via the use of internet, brochures, website, community presentations and forums and other media	Drought Earthquake Wildfire Transportation Flooding Severe Wind	New	$10,000	Medium	N/A	2013	Yuma County Department of Development Services, Yuma County Emergency Management, County Engineer and Emergency Manager	General Fund

Table 6-7-6: Summary of mitigation actions and projects and implementation strategy for Cocopah Indian Tribe

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

Objective 1: Reduce or minimize risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 2: Reduce risk to critical facilities and infrastructure from hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Yuma County.

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Develop Water Management Plan and create Drought Ordinances.	Drought	Both	$5,000 plus staff time	Medium	As directed by Council	FY 2012	Environmental Protection Office/ Director	General Fund
2	Provide Emergency back-up power to critical facilities(Police Station and Cocopah Community Center): Emergency generators, secondary feeds, portable generators with standard camlock connections so power can be maintained in emergency shelters and public safety offices.	Flood, Severe Wind, Earthquake	Both	$50,000	High	As directed by Council	FY 2012	Planning Department/Director	General Fund
3	Provide Fire Breaks in riparian area of West Reservation/Maintain Fire Breaks on North Reservation to minimize damage from wildfires.	Wildfire	Both	$10,000	Medium	Natural Resources Management Plan	FY 2011	Environmental Protection Office/Director	Bureau of Indian Affairs
4	Analyze strength of water towers on North and West Reservation to determine the amount of sheer force they can withstand sheer forces during a large earthquake.	Earthquake	Existing	$10,000	Low	As directed by Council	FY 2014	Public Works/Director	Indian Health Service
5	Provide Emergency Shut-off Valves in main Water Lines so adequate pressure can be maintained in undamaged system for fire fighting.	Earthquakes	Both	$10,000	Medium	As directed by Council	FY 2014	Public Works/Director	Indian Health Service/ United States Department of Agriculture
6	Elevate Ground Level Transformers for sewer transfer stations so they will continue operating in event of flood.	Flood	Existing	$30,000	Medium	As directed by Council	FY 2013	Public Works/Director	Indian Health Service/ United Sates Department of Agriculture

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SECTION 7: PLAN MAINTENANCE PROCEDURES

> ***§201.6(c)(4):*** *[The plan shall include…] (4) A* ***plan maintenance process*** *that includes:*
> *(i) A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.*
> *(ii) A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.*
> *(iii) Discussion on how the community will continue public participation in the plan maintenance process.*
>
> ***§201.6(d)(3):*** *Plans must be reviewed, revised if appropriate, and resubmitted for approval within five years in order to continue to be eligible for HMGP project grant funding.*

According to the DMA 2000 requirements, each plan must define and document processes or mechanisms for maintaining and updating the hazard mitigation plan within the established five-year planning cycle. Elements of this plan maintenance section include:

Monitoring and Evaluating the Plan

Updating the Plan

Implementing the Plan by Incorporation into Other Agency or Jurisdictional Planning Mechanisms

Continued Public Participation

Yuma County recognizes that this hazard mitigation plan is intended to be a "living" document with regularly scheduled monitoring, evaluation, and updating.

Section 6 of the 2005 Plan outlined specific steps for plan maintenance. A poll of the Planning Team indicated that very little, if any, formal review or maintenance occurred over the past five years. The County did on occasion provide updates/overview to the Yuma County Board of Supervisors, but as a whole, the plan has not been utilized to any great degree. Reasons for the lack of review included:

- The plan maintenance requirements were not effectively communicated when changes in personnel occurred.
- A general lack of understanding regarding the importance and requirements of the maintenance element.
- A five year period of extremely rapid growth and the lack of resources, new personnel, or time to perform the plan maintenance tasks.

Recognizing the need for improvement, the Planning Team discussed ways to make sure that the Plan review and maintenance process will occur over the next five years. The results of those discussions are outlined in the following sections and the plan maintenance strategy.

7.1 Monitoring and Evaluation

The Planning Team has established the following monitoring and evaluation procedures:

- **Schedule** – The Plan shall be reviewed on at least an annual basis or following a major disaster resulting in observable and definable flaws, or as new lands are obtained by the local municipalities, through annexations and land development, the local planning committee will identify or reassess all hazards and associated risks and evaluate them for possible revisions to the plan in the next cycle If a natural event occurs, with quantifiable, measurable results, a review of the plan will take place to see if any revisions are needed and to document successes or failures. All updated information from the local government will be sent to YCEM for revision of the Plan, as necessary. YCEM will take the lead to reconvene the Planning Team on or around the anniversary of the Plan (November) and will work out a suitable reporting format with ADEM. ADEM has also committed to help with reminders to YCEM as a double accountability. Copies of the annual review report will also be included in Appendix E.

- **Review Content** – One month prior to the Planning Team review meeting, a reminder questionnaire will be distributed to each jurisdictions' Point of Contact, with the following questions:
    - ***Hazard Identification:*** *Have the risks and hazards changed?*
    - ***Goals and objectives:*** *Are the goals and objectives still able to address current and expected conditions?*
    - ***Mitigation Projects and Actions:*** *Has the project been completed? If not complete but started, what has been completed? How much money has been expended on incomplete projects? Did the project require additional funds over the expected amount or were the costs less than expected?*

During the annual meeting, each Point of Contact will have the opportunity to provide a report to the group of his/her review of the Plan. The report will include their responses to the above questions and any other items specific to their community. Documentation of the annual meeting will include notes on the results of the meeting as well as more specific information on the reasoning behind proposed changes to the Plan.

A formal presentation of the review material will be presented to a jurisdiction's council or board only if a major update to the Plan is proposed prior to the next five year update, or if changes to the mitigation A/Ps are desired to be acknowledged by the State and FEMA.

7.2 Plan Update

According to DMA 2000, the Plan requires updating and approval from FEMA every five years. The plan update will adhere to that set schedule using the following procedure:

- ✓ One year prior to the plan expiration date, the Planning Team will re-convene to review and assess the materials accumulated in Appendix E.
- ✓ The Planning Team will update and/or revise the appropriate or affected portions of the plan and produce a revised plan document.
- ✓ The revised plan document will be presented before the respective councils and boards for an official concurrence/adoption of the changes.
- ✓ The revised plan will be submitted to ADEM and FEMA for review, comment and approval.

7.3 Incorporation Into Existing Planning Mechanisms

Incorporation of the Plan into other planning mechanisms, either by content or reference, enhances a community's ability to perform natural hazard mitigation by expanding the scope of the Plan's influence. A poll of the participating jurisdictions revealed that success of incorporating the 2005 Plan elements over the past planning cycle into other planning programs has varied. Ways in which the 2005 Plan has been successfully incorporated or referenced into other planning mechanisms for each jurisdiction are summarized below:

- The 2005 plan has been available through Development Services for use in revisions of the Yuma County Comprehensive Plan regarding natural and human-caused hazards.
- The Yuma County Flood Control District utilizes the 2005 Plan as a secondary resource to the Annual Needs Assessment and Capital Improvement Plan to prioritize projects. The 2005 Plan is used to ensure projects are not overlooked and to identify possible cost share opportunities.
- Since participants of the Yuma County Community Wildfire Protection Planning Team participated in the planning process, the mitigation plan has been available to them for incorporating into the CWPP.
- The hazard analysis and identification of the top countywide hazards in the 2005 Plan has been used as the basis for evaluating risk in updates of the County/City Emergency Operations Plan, local fire district planning, county government facility emergency plans, and emergency planning for new facilities, such as hospitals.
- As referenced as goals and objectives, the Yuma County Comprehensive Plan and Yuma Metropolitan Planning Organization (YMPO), 2001-2023 Regional Transportation Plan, Yuma County will map

environmental constraints such as: floodplains, geological and soil risk areas by restricting or prohibiting structural development within natural hazard zones as also recognized by the 2005 Plan.

- The 2005 Plan has been available for use in revisions and updates of the COY General Plan and has generally been made available to all city departments and elected officials.
- The Planning and Development Department has incorporated overall hazard mitigation concepts into the COY General Plan.
- The City of Somerton General Plan discusses the transportation accidents and mapped accident potential zones as referenced in the 2005 Plan.
- The City of San Luis has utilized the 2005 Plan when regarding the development of the General Plan (under development at this time; 2011) and included elements of it during development and construction of new roadways within our jurisdiction as follows:
    - Because of the potential of liquefaction within the Yuma Valley area, the City of San Luis has developed alternate looping routes for traffic movement; evacuation of citizens and arrival and delivery of support equipment and supplies after an earthquake. County 22 extends up from the valley to 4th Avenue, 8th Avenue and 10th Avenue.
    - Recognizing the potential for a hazardous materials event during movement of commercial products through Port of Entry I, the City of San Luis, a partner in the Greater Yuma Port Authority, developed San Luis Port of Entry II, almost six miles east of the developed community of San Luis. All commercial carriers now utilize POE II.
    - POE II was located in an area designated to be zoned industrial and commercial, limiting the potential of exposure of chemicals and commercial carrier events to residential subdivisions. POE II is also located at the southern terminus of Arizona Highway 195 (AZ 195) which is a limited access expressway to connect POE II to Interstate 8 and US Highway 95. AZ 195 is located on the mesa area (no threat of liquefaction after an earthquake) and remote from developed areas of the City of San Luis.

In all of the above instances, the 2005 Plan was found to be very beneficial, and especially with regard to the critical facility inventories and the vulnerability analysis results. Obstacles to further incorporation of the 2005 Plan for some of the communities were generally tied to a lack of awareness of the Plan by departments outside of the emergency management community, and the relative "newness" of the Plan with regard to other, more commonplace planning mechanisms such as comprehensive or general plans. It is anticipated that with each passing year, the usage and knowledge of the Plan will grow within the jurisdictions, and so will its use.

Typical ways the current Plan will be incorporated over the next five-year planning cycle will include:

- Use of, or reference to, Plan elements in updates to general and comprehensive planning documents, as appropriate.
- Addition of defined mitigation A/Ps to capital improvement programming.
- Inclusion of Plan elements into development planning and practices.
- Function as a resource for developing and/or updating emergency operations plans.

Many of these incorporation and implementation examples are included in 6-7-1 through 6-7-5.

The Plan will continue to function as a standalone document subject to its own review and revision schedule presented in Sections 7.1 and 7.2. The Plan will also serve as a reference for other mitigation and land planning needs of the participating jurisdictions. On a county-wide basis, the Plan will be referenced in the development of a community wildfire protection plan for Yuma County, and will be referred to in Chapter 7 (Flooding, Earthquake in Yuma County) of the 2010 Comprehensive Plan.[1] Whenever possible, each jurisdiction will endeavor to incorporate the risk assessment results and mitigation actions and projects identified in the Plan into existing and future planning mechanisms. At a minimum, each of the responsible agencies/departments noted

in Tables 6-1-1 through 6-1-6 will review and reference the Plan and revise and/or update the legal and regulatory planning documents, manuals, codes, and ordinances summarized in Tables 6-1-1 through 6-1-6, as appropriate. Specific incorporation of the Plan risk assessment elements into the natural resources and safety elements of the jurisdictions' general plans and development review processes, adding or revising building codes, adding or changing zoning and subdivision ordinances, and incorporating mitigation goals and strategies into general and/or comprehensive plans, will help to ensure hazard mitigated future development. In addition, an implementation strategy outlining assignments of responsibility and completion schedules for specific actions/projects proposed in this plan are summarized in Tables 6-7-1 through 6-7-6.

7.4 Continued Public Involvement

Yuma County is committed to keeping the public informed of the hazard mitigation planning efforts, actions and projects. In order to accomplish this, the Planning Team shall pursue the following opportunities for public involvement and dissemination of information whenever possible and appropriate: At the present time it is anticipated that each quarter the Emergency Manager will send an update to each Planning Team member, requesting updates of projects, events, etc. This information will be compiled and assessed during the annual review and such information will be made available to the Board of Supervisors during the annual presentation by the County Emergency Manager of the hazard mitigation plan. The Planning Team will pursue the following:

- ✓ Provide periodic summary updates of hazard mitigation A/P measures being implemented using local media including the City Channel, known as City 73, and the County Channel known as Yuma 77. Contact with both stations will result in assistance for placing this information on the network.
- ✓ Conduct an annual presentation of hazard mitigation planning discoveries, progress, or proposed A/P measures at the Yuma County Board of Supervisors' Meetings. Barring any unforeseen event, the Yuma County Board of Supervisors meet twice monthly, the first and third Monday of each month.
- ✓ Provide a permanent webpage on the County's website, that will house a digital copy of the Plan and document future planning activities. Contact information for the County Point of Contact will be posted as well.
- ✓ Participate in community events such as the County fair during the month of April and other public preparedness and community events.
- ✓ Perform public outreach and mitigation training meetings for targeted populations known to be in higher risk hazard areas (i.e. – floodplain residents).
- ✓ All projects that are outlined in the plan for each local government that have completed or are on-going for remediation purposes will have updated information made available to the public on a semi-annual or annual basis by way of media, newspaper articles or at meetings in order to keep the public informed.
- ✓ Possibly during the next planning period, an update on the plan progress will be made available to the public for their review and input. The local government will post in all locally government owned buildings and county buildings in the community, that the planning process was underway and make available brochures explaining what the process is and that their input is welcomed.
- ✓ Keep the local government informed by conducting annual or semi-annual presentations of hazard mitigation planning findings, process or any proposed A/P measures.
- ✓ Provide Public outreach and mitigation training for those population known to be at a higher risk hazard areas (i.e. floodplains and earthquake zones).

SECTION 8: PLAN TOOLS

8.1 Acronyms

A/P.....Mitigation Action/Project
ADEM .....Arizona Division of Emergency Management
ADEQ .....Arizona Department of Environmental Quality
ADWR .....Arizona Department of Water Resources
AGFD .....Arizona Game and Fish Department
ARS .....Arizona Revised Statutes
ASCE .....American Society of Civil Engineers
ASERC .....Arizona State Emergency Response Commission
ASLD .....Arizona State Land Department
ASU .....Arizona State University
AZDEQ .....Arizona Department of Environmental Quality
AZGS .....Arizona Geological Survey
BLM .....Bureau of Land Management
CAP .....Central Arizona Project
CAP .....Community Assistance Program
CFR .....Code of Federal Regulations
CRS .....Community Rating System
CWPP .....Community Wildfire Protection Plan
DEMA .....Arizona Department of Emergency and Military Affairs
DFIRM .....Digital Flood Insurance Rate
DMA 2000 .....Disaster Mitigation Act of 2000
DOT .....Department of Transportation
EHS .....Extremely Hazardous Substance
EPA .....Environmental Protection Agency
EPCRA .....Emergency Planning and Community Right to Know Act
FEMA .....Federal Emergency Management Agency
FMA .....Flood Mitigation Assistance Grant Program
GIS .....Geographic Information System
HAZMAT .....Hazardous Material
HAZUS-99 .....Hazards United States1999
HAZUS-MH .....Hazards United States Multi-Hazard
IFCI .....International Fire Code Institute
LEPC .....Local Emergency Planning Committee
MJHMP .....Multi-Jurisdictional Hazard Mitigation Plan
MMI .....Modified Mercalli Intensity
NCDC .....National Climate Data Center
NDMC .....National Drought Mitigation Center
NESDIS .....National Environmental Satellite, Data and Information Service
NFIP .....National Flood Insurance Program
NFPA .....National Fire Protection Association
NHC .....National Hurricane Center
NIBS .....National Institute of Building Services
NID .....National Inventory of Dams
NIST .....National Institute of Standards and Technology
NSF .....National Science Foundation
NOAA .....National Oceanic and Atmospheric Administration
NRC .....National Response Center
NWS .....National Weather Service
PSDI .....Palmer Drought Severity Index
RL .....Repetitive Loss
SARA .....Superfund Amendments and Reauthorization Act

SRLP .....Severe Repetitive Loss Properties
SRL .....Severe Repetitive Loss
UBC .....Uniform Building Code
USACE .....United States Army Corps of Engineers
USDA .....United States Department of Agriculture
USFS .....United States Forest Service
USGS .....United States Geological Survey
VA .....Vulnerability Analysis
WUI .....Wildland Urban Interface
YCFCD.....Yuma County Flood Control District

8.2 Definitions

The following terms and definitions are provided for reference and are taken from the 2007 State Plan with a few minor modifications.

ARIZONA HAZARDS

Dam Failure
A dam failure is a catastrophic type of failure characterized by the sudden, rapid and uncontrolled release of impounded water. Dam failures are typically due to either overtopping or piping and can result from a variety of causes including natural events such as floods, landslides or earthquakes, deterioration of foundation or compositional materials, penetration by vegetative roots or animal burrows, fissures or improper design and construction. Such a failure presents a significant potential for a disaster as significant loss of life and property would be expected in addition to the possible loss of power and water resources.

Drought
A drought is a deficiency of precipitation over on extended period of time, resulting in water shortage for some activity, group or environmental sector. "Severe" to "extreme" drought conditions endanger livestock and crops, significantly reduce surface and ground water supplies, increase the potential risk for wildland fires, increase the potential for dust storms, and cause significant economic loss. Humid areas are more vulnerable than arid areas. Drought may not be constant or predictable and does not begin or end on any schedule. Short term droughts are less impacting due to the reliance on irrigation and groundwater in arid environments.

Earthquake
An earthquake is a naturally-induced shaking of the ground, caused by the fracture and sliding of rock within the Earth's crust. The magnitude is determined by the dimensions of the rupturing fracture (fault) and the amount of displacement that takes place. The larger the fault surface and displacement, the greater the energy. In addition to deforming the rock near the fault, this energy produces the shaking and a variety of seismic waves that radiate throughout the Earth. Earthquake magnitude is measured using the Richter Scale and earthquake intensity is measured using the Modified Mercalli Intensity Scale.

Fissure
Earth fissures are tension cracks that open as the result of subsidence due to severe overdrafts (i.e., pumping) of groundwater, and occur about the margins of alluvial basins, near exposed or shallow buried bedrock, or over zones of differential land subsidence. As the ground slowly settles, cracks form at depth and propagate towards the surface, hundreds of feet above. Individual fissures range in length from hundreds of feet to several miles, and from less than an inch to several feet wide. Rainstorms can erode fissure walls rapidly causing them to widen and lengthen suddenly and dangerously, forming gullies five to 15- feet wide and tens of feet deep.

Flooding
Flooding is an overflowing of water onto normally dry land and is one of the most significant and costly of natural disasters. Flooding tends to occur in Arizona during anomalous years of prolonged, regional rainfall (typical of an El Nino year), and is typified by increased humidity and high summer temperatures.

Flash flooding is caused excessive rain falling in a small area in a short time and is a critical hazard in Arizona. Flash floods are usually associated with summer monsoon thunderstorms or the remnants of a tropical storm. Several factors contribute to flash flooding: rainfall intensity and duration, topography, soil conditions, and ground cover. Most flash flooding is caused by slow-moving thunderstorms or thunderstorms repeatedly moving over the same area and can occur within a few minutes or hours of excessive rainfall, or a quick release from a dam or levee failure. Thunderstorms produce flash flooding, often far from the actual storm and at night when natural warnings may not be noticed.

Landslide / Mudslide
Landslides like avalanches are massive downward and outward movements of slope-forming materials. The term landslide is restricted to movement of rock and soil and includes a broad range of velocities. Slow movements, although rarely a threat to life, can destroy buildings or break buried utility lines. A landslide occurs when a portion of a hill slope becomes too weak to support its own weight. The weakness is generally initiated when rainfall or some other source of water increases the water content of the slope, reducing the shear strength of the materials. A mud slide is a type of landslide referred to as a flow. Flows are landslides that behave like fluids: mud flows involve wet mud and debris.

Levee Failure / Breach
Levee failures are typically due to either overtopping or erosive piping and can result from a variety of causes including natural events such as floods, hurricane/tropical storms, or earthquakes, deterioration of foundation or compositional materials, penetration by vegetative roots or animal burrows, fissures, or improper design, construction and maintenance. A levee breach is the opening formed by the erosion of levee material and can form suddenly or gradually depending on the hydraulic conditions at the time of failure and the type of material comprising the levee.

Severe Wind
Thunderstorms are characterized as violent storms that typically are associated with high winds, dust storms, heavy rainfall, hail, lightning strikes, and/or tornadoes. The unpredictability of thunderstorms, particularly their formation and rapid movement to new locations heightens the possibility of floods. Thunderstorms, dust/sand storms and the like are most prevalent in Arizona during the monsoon season, which is a seasonal shift in the winds that causes an increase in humidity capable of fueling thunderstorms. The monsoon season in Arizona typically is from late-June or early-July through mid-September.

Tornadoes are violently rotating columns of air extending from a thunderstorm to the ground. The most violent tornadoes are capable of tremendous destruction with wind speeds in excess of 250 mph. Damage paths can exceed a mile wide and 50 miles long. The damage from tornadoes is due to high winds. The Fujita Scale of Tornado Intensity measures tornado / high wind intensity and damage.

Tropical Storms are storms in which the maximum sustained surface wind ranges from 39-73 mph. Tropical storms are associated with heavy rain and high winds. High intensity rainfall in short periods is typical. A tropical storm is classified as a hurricane when its sustained winds reach or exceed 74 mph. These storms are medium to large in size and are capable of producing dangerous winds, torrential rains, and flooding, all of which may result in tremendous property damage and loss of life, primarily in coastal populated areas. The effects are typically most dangerous before a hurricane makes landfall, when most damage occurs. However, Arizona has experienced a number of tropical storms that caused extensive flooding and wind damage.

Subsidence
Land subsidence in Arizona is primarily attributed to substantial groundwater withdrawal from aquifers in sedimentary basins. As the water is removed, the sedimentary layers consolidate resulting in a general lowering of the corresponding ground surface. Subsidence frequently results in regional bowl-shaped depressions, with loss of elevation greatest in the center and decreasing towards the perimeter. Subsidence can measurably change or reverse basin gradients causing expensive localized flooding and adverse impacts or even rupture to long-baseline infrastructure such as canals, sewer systems, gas lines and roads. Earth fissures are the most spectacular and destructive manifestation of subsidence-related phenomena.

Wildfire
Wildfire is a rapid, persistent chemical reaction that releases heat and light, especially the exothermic combination of a combustible substance with oxygen. Wildfires present a significant potential for disaster in the southwest, a region of relatively high temperatures, low humidity, low precipitation, and during the spring moderately strong daytime winds. Combine these severe burning conditions with people or lightning and the stage is set for the occurrence of large, destructive wildfires.

Winter Storm
Winter storms bring heavy snowfall and frequently have freezing rain and sleet. Sleet is defined as pellets of ice composed of frozen or mostly frozen raindrops or refrozen partially melted snowflakes. These pellets of ice usually bounce after hitting the ground or other hard surfaces. Freezing rain begins as snow at higher altitudes and melts completely on its way down while passing through a layer of air above freezing temperature, then encounters a layer below freezing at lower level to become supercooled, freezing upon impact of any object it then encounters. Because freeing rain hits the ground as a rain droplet, it conforms to the shape of the ground, making one thick layer of ice. Snow is generally formed directly from the freezing of airborne water vapor into ice crystals that often agglomerates into snowflakes. Average annual snowfall in Arizona varies with geographic location and elevation, and can range from trace amounts to hundreds of inches. Severe snow storms can affect transportation, emergency services, utilities, agriculture and basic subsistence supply to isolated communities. In extreme cases, snowloads can cause significant structural damage to under-designed buildings.

GENERAL PLAN TERMS

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

Building
A structure that is walled and roofed, principally above ground and permanently affixed to a site. The term includes a manufactured home on a permanent foundation on which the wheels and axles carry no weight.

Critical Facilities and Infrastructure
Systems or facilities whose incapacity or destruction would have a debilitating impact on the defense or economic security of the nation. The Critical Infrastructure Assurance Office (CIAO) defines eight categories of critical infrastructure, as follows:

Telecommunications infrastructure: Telephone, data services, and Internet communications, which have become essential to continuity of business, industry, government, and military operations.

Electrical power systems: Generation stations and transmission and distribution networks that create and supply electricity to end-users.

Gas and oil facilities: Production and holding facilities for natural gas, crude and refined petroleum, and petroleum-derived fuels, as well as the refining and processing facilities for these fuels.

Banking and finance institutions: Banks, financial service companies, payment systems, investment companies, and securities/commodities exchanges.

Transportation networks: Highways, railroads, ports and inland waterways, pipelines, and airports and airways that facilitate the efficient movement of goods and people.

Water supply systems: Sources of water; reservoirs and holding facilities; aqueducts and other transport systems; filtration, cleaning, and treatment systems; pipelines; cooling systems; and other delivery mechanisms that provide for domestic and industrial applications, including systems for dealing with water runoff, wastewater, and firefighting.

Government services: Capabilities at the federal, state, and local levels of government required to meet the needs for essential services to the public.

Emergency services: Medical, police, fire, and rescue systems.

Disaster Mitigation Act of 2000 (DMA2K)
A law signed by the President on October 30, 2000 that encourages and rewards local and state pre-disaster planning, promotes sustainability as a strategy for disaster resistance, and is intended to integrate state and local planning with the aim of strengthening statewide mitigation planning.

Emergency Preparedness and Response (EPR) Directorate
One of five major Department of Homeland Security Directorates which builds upon the formerly independent Federal Emergency Management Agency (FEMA). EPR is responsible for preparing for natural and human-caused disasters through a comprehensive, risk-based emergency management program of preparedness, prevention, response, and recovery. This work incorporates the concept of disaster-resistant communities, including providing federal support for local governments that promote structures and communities that reduce the chances of being hit by disasters.

Emergency Response Plan
A document that contains information on the actions that may be taken by a governmental jurisdiction to protect people and property before, during, and after a disaster.

Federal Emergency Management Agency (FEMA)
Formerly independent agency created in 1978 to provide a single point of accountability for all Federal activities related to disaster mitigation and emergency preparedness, response and recovery. As of March 2003, FEMA is a part of the Department of Homeland Security's Emergency Preparedness and Response (EPR) Directorate.

Flood Insurance Rate Map (FIRM)
Map of a community, prepared by FEMA that shows the special flood hazard areas and the risk premium zones applicable to the community.

Frequency
A measure of how often events of a particular magnitude are expected to occur. Frequency describes how often a hazard of a specific magnitude, duration, and/or extent typically occurs, on average. Statistically, a hazard with a 100-year recurrence interval is expected to occur once every 100 years on average, and would have a 1% chance – its probability – of happening in any given year. The reliability of this information varies depending on the kind of hazard being considered.

Geographic Information Systems (GIS)
A computer software application that relates physical features on the earth to a database to be used for mapping and analysis.

Hazard
A source of potential danger or adverse condition. Hazards include both natural and human-caused events. A natural event is a hazard when it has the potential to harm people or property and may include events such as floods, earthquakes, tornadoes, tsunami, coastal storms, landslides, and wildfires that strike populated areas. Human-caused hazard events originate from human activity and may include technological hazards and terrorism. Technological hazards arise from human activities and are assumed to be accidental and/or have unintended consequences (e.g., manufacture, storage and use of hazardous materials). While no single definition of terrorism exists, the Code of Federal Regulations defines terrorism as "…unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives."

Hazard Event
A specific occurrence of a particular type of hazard.

Hazard Identification
The process of identifying hazards that threaten an area.

Hazard Mitigation
Cost effective measures taken to reduce or eliminate long-term risk associated with hazards and their effects.

Hazard Profile
A description of the physical characteristics of hazards and a determination of various descriptors including magnitude, duration, frequency, probability, and extent.

HAZUS
A GIS-based nationally standardized earthquake, flood and high wind event loss estimation tool developed by FEMA.

Lateral Spreading
The lateral displacement of large, surficial blocks of soil as a result of liquefaction in a subsurface layer.

Mitigate
To cause to become less harsh or hostile; to make less severe or painful. Mitigation activities are actions taken to eliminate or reduce the probability of the event, or reduce its severity of consequences, either prior to or following a disaster/emergency.

Mitigation Plan
A systematic evaluation of the nature and extent of vulnerability to the effects of natural hazards typically present in a defined geographic area, including a description of actions to minimize future vulnerability to hazards.

100-Hundred Year Floodplain
Also referred to as the Base Flood Elevation (BFE) and Special Flood Hazard Area (SFHA). An area within a floodplain having a 1% or greater chance of flood occurrence in any given year.

Planning
The act or process of making or carrying out plans; the establishment of goals, policies, and procedures for a social or economic unit.

Probability
A statistical measure of the likelihood that a hazard event will occur.

Promulgation
To make public and put into action the Hazard Mitigation Plan via formal adoption and/or approval by the governing body of the respective community or jurisdiction (i.e. – Town or City Council, County Board of Directors, etc.).

Q3 Data
The Q3 Flood Data product is a digital representation of certain features of FEMA's Flood Insurance Rate Map (FIRM) product, intended for use with desktop mapping and Geographic Information Systems technology. The digital Q3 Flood Data are created by scanning the effective FIRM paper maps and digitizing selected features and lines. The digital Q3 Flood Data are designed to serve FEMA's needs for disaster response activities, National Flood Insurance Program activities, risk assessment, and floodplain management.

Repetitive Loss Property
A property that is currently insured for which two or more National Flood Insurance Program losses (occurring more than ten days apart) of at least $1,000 each have been paid within any 10 year period since 1978.

Risk
The estimated impact that a hazard would have on people, services, facilities, and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate, or low likelihood of sustaining damage beyond a particular threshold due to a specific type of hazard event. It also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.

Substantial Damage
Damage of any origin sustained by a structure in a Special Flood Hazard Area whereby the cost of restoring the structure to its before-damaged condition would equal or exceeds 50% of the market value of the structure before the damage.

Vulnerability
Describes how exposed or susceptible to damage an asset is. Vulnerability depends on an asset's construction, contents, and the economic value of its functions. Like indirect damages, the vulnerability of one element of the community is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power–if an electric substation is flooded, it will affect not only the substation itself, but

a number of businesses as well. Often, indirect effects can be much more widespread and damaging than direct effects.

Vulnerability Analysis
The extent of injury and damage that may result from a hazard event of a given intensity in a given area. The vulnerability analysis should address impacts of hazard events on the existing and future built environment.

Vulnerable Populations
Any segment of the population that is more vulnerable to the effects of hazards because of things such as lack of mobility, sensitivity to environmental factors, or physical abilities. These populations can include, but are not limited to, senior citizens and school children.

Goals
General guidelines that explain what you want to achieve. Goals are usually broad statements with long-term perspective.

Objectives
Defined strategies or implementation steps intended to attain the identified goals. Objectives are specific, measurable, and have a defined time horizon.

Actions/Projects
Specific actions or projects that help achieve goals and objectives.

Implementation Strategy
A comprehensive strategy that describes how the mitigation actions will be implemented.

GENERAL HAZARD TERMS

Fujita Scale of Tornado Intensity
Rates tornadoes with numeric values from F0 to F5 based on tornado winds peed and damage sustained. An F0 indicates minimal damage such as broken tree limbs or signs, while an F5 indicates severe damage sustained.

Liquefaction
The phenomenon that occurs when ground shaking (earthquake) causes loose soils to lose strength and act like viscous fluid. Liquefaction causes two types of ground failure: lateral spread and loss of bearing strength.

Modified Mercalli Intensity Scale
The Modified Mercalli Intensity Scale is commonly used in the United States by seismologists seeking information on the severity of earthquake effects. Intensity ratings are expressed as Roman numerals between I at the low end and XII at the high end. The Intensity Scale differs from the Richter Magnitude Scale in that the effects of any one earthquake vary greatly from place to place, so there may be many Intensity values (e.g.: IV, VII) measured from one earthquake. Each earthquake, on the other hand, should have just one Magnitude, although the several methods of estimating it will yield slightly different values (e.g.: 6.1, 6.3).

Monsoon
A monsoon is any wind that reverses its direction seasonally. In the Southwestern U.S., for most of the year the winds blow from the west/northwest. Arizona is located on the fringe of the Mexican Monsoon which during the summer months turns the winds to a more south/southeast direction and brings moisture from the Pacific Ocean, Gulf of California, and Gulf of Mexico. This moisture often leads to thunderstorms in the higher mountains and Mogollon Rim, with air cooled from these storms often moving from the high country to the deserts, leading to further thunderstorm activity in the desert. A common misuse of the term monsoon is to refer to individual thunderstorms as monsoons.

Richter Magnitude Scale
A logarithmic scale devised by seismologist C.F. Richter in 1935 to express the total amount of energy released by an earthquake. While the scale has no upper limit, values are typically between 1 and 9, and each increase of 1 represents a 32-fold increase in released energy.

Appendix A

Official Resolution of Adoption

Appendix B

Planning Process Documentation

Memorandum JE Fuller/ Hydrology & Geomorphology, Inc.

DATE: September 15, 2008

TO: All County Primary Points of Contact

FROM: W. Scott Ogden, P.E.

RE: County Multi-Jurisdictional, Multi-Hazard Mitigation Plan Updates
Planning Team Roles and Responsibilities

CC: Sue Wood (ADEM)
Dwight Nield (JEF)
file

JE Fuller/Hydrology & Geomorphology, Inc. (JEF) has been contracted by the Arizona Division of Emergency Management (ADEM) to assist your county and included incorporated communities in developing and/or updating your existing multi-hazard mitigation plan (MHMP) to a multi-jurisdictional multi-hazard mitigation plan (MJMHMP). The purpose of this memorandum is to explain the anticipated multi-jurisdictional planning process expectations and to clarify the county/community responsibilities and potential consequences of non-participation. This memo will also outline a list of items that need to be done by each county primary point of contact (PPOC) prior to the first meeting.

For all MHMP updates, ADEM is requiring that MJMHMPs (Plan or The Plan) be prepared for each Arizona county with the intention of streamlining and standardizing the planning across the state. This should also facilitate future updates and ease the burden of individual communities.

RESPONSIBILITIES

There will be two primary levels of responsibility regarding the planning process. The first is the PPOC and the second is the community representative(s). It is imperative that each understand their role and what is expected of them in the planning process. The following outlines the roles and responsibilities of each:

PPOC – the PPOC for The Plan and the planning team will be the County Emergency Manager or their official delegate. Throughout the planning process, the responsibilities of the PPOC will be:

- Contact, coordinate and organize the planning team
- Coordinate and follow-up with county representatives and incorporated communities regarding attendance and participation
- Organize and arrange for planning team meeting locations and facilities

Community Representatives – we understand that it will likely not be possible for all interested parties from each community to attend the planning team meetings, and that one or more may attend as a representative. The responsibilities of these individuals will be:

- Attend EVERY planning team meeting or make sure their community is represented otherwise. Each meeting will build on information discussed at the last meeting. Complete attendance is crucial.

- Convey information received at planning team meetings to the appropriate individuals within their community and vice-versa.
- Ensure that all requested homework is completed fully and returned to JEF on a timely basis.
- Arrange for official adoption of plan document, when appropriate.

PLEASE NOTE THE FOLLOWING:

******Failure to meet these responsibilities will result in removal from the planning process, exclusion from The Plan and federal disaster mitigation fund ineligibility. ******

This planning effort WILL NOT include individual meetings with local communities, as have been conducted in the past. Therefore, the planning team must function as the conduit for disseminating information and homework, and receiving completed plan components. ADEM and JEF have prepared the planning process to simplify and minimize the effort required, however, there are minimum requirements of the Disaster Mitigation Act of 2000 that must be satisfied to ensure the plan meets FEMA approval. Should issues or concerns arise, I strongly urge you to bring it to the attention of ADEM or JEF as early as possible as full participation is required of all jurisdictions wishing to be included in The Plan.

TENTATIVE PLANNING MEETING NEEDS

The following is a list of planning team meeting details we have at this point:

- Each meeting will be scheduled for a 4-hour time slot (8am-Noon, 1-5pm, or similar). Less time may be actually required depending on the efficiency of the planning team.
- At this point, we anticipate the need for at least 4 and probably 5 planning team meetings.
- At each meeting, homework will be assigned and received, with a detailed status check. JEF and ADEM will provide all planning handouts and materials.
- JEF will provide a laptop and projector and will only require a screen or white wall to project on.
- The county or communities are responsible for any refreshments (if desired).

INITIAL PLANNING TEAM FORMULATION

The following is a list of actions for the PPOC to accomplish prior to scheduling the first planning meeting:

1. Formulate the planning team (county and local level).
    a. Contact all jurisdictions/tribes within your county boundaries to inform them of the planning effort and determine the point of contact(s) for each.
    b. Contact county staff to participate
    c. Contact others as desired (Flood Control Districts, Fire Districts, experts, etc.)
2. Provide an initial planning team list to JEF and ADEM
3. Choose a location for the planning team meetings
4. Provide at least three (3) meeting date/time options for the first meeting to JEF and ADEM.

Because our focus is on mitigation planning, it is important that the planning team be comprised of individuals that serve a planning and project management role as well as those involved in public safety and emergency management. The following is a recommended list of potential/typical departments and divisions that could be encouraged to attend:

- Public Works (county and local)
- Planning and Zoning (county and local)
- Flood Control Districts
- Fire Departments/Districts (county and local)
- Building Safety
- County and City Engineers
- Floodplain/Stormwater Management

Please review these responsibility and requirement guidelines and reply to JEF with any questions or concerns. We are looking forward to doing this next round of mitigation planning with you and look forward to you reply.

Dwight Nield

From: Luis Miranda [Luis.Miranda@co.yuma.az.us]
Sent: Tuesday, March 10, 2009 3:50 PM
To: mriverawltnfire@aol.com; Dan Rhodes; david.hartman@ci.yuma.az.us; HGreen@cityofsanluis.org; JPhilpot@cityofsanluis.org; billlee@cityofsomerton.com; michelleM@cityofsomerton.com; PaulD@cityofsomerton.com; RayS@cityofsomerton.com; Craig Sellers; Curtis Cansler; Gretchen Thomas; Hugh Hendren; Jason Phipps; Leon Wilmot; Monty Stansbury; Pat Headington; Paul Melcher; Ralph Ogden; Robert Pickels; Roger Patterson; Vanessa Valenzuela; William Beck; kwt1201@mindspring.com; rastockton@mindspring.com; wellton@mindspring.com; curt_Foster@rmetro.com; Gary August; matt@yumaairport.com; Art - Fire Marshal Castricone; Chris - Fire Captain Flores; Jack - Fire Chief McArthur; laurie.lineberry@yumaaz.gov; Mark - Emergency Management Coord Stroh; mark.watson@yumaaz.gov; Mike - Fire Dept Public Information Officer Erfert; Stephen D Jr - Police Lieutenant Suho; William - Fire Captain Unterseh
Cc: Susan Wood; Betty Finnila; Sue Reynolds; Teresa Diaz; dwight@jefuller.com
Subject: Fwd: Yuma County Multi-Hazard Multi-Jurisdictional PlanningConference
Attachments: Memo_2009 County Plan Update Preparations.pdf

All:

Just a gentle reminder for those participating in tomorrow's meeting at Development Services. Hope to see you there, and if unable to attend, please send a representative from your organization.

Thank you,

r/
Luis Miranda

>>> Luis Miranda 2/19/2009 11:40 AM >>>
Ladies and Gentlemen,

The state of Arizona has contracted with JE Fuller, Inc. to prepare the Yuma County Multi-Jurisdictional Multi-Hazard Plan (MJMHP). The plan will take several months to complete, and your participation is critical toward the success of this program. The former MJMHP was completed and approved in 2005, and must be revised every five years, thus the need for a new update.

To that end, I am requesting your participation in the first community planning meeting on March 11, 2009. The intent of this meeting will be to discuss with planners the hazards associated with your community. The attached document highlights the requirements for the plan, as well as the implications for failure to comply as a signatory.

For TLO's: This is a great opportunity to highlight CI/KR components throughout all of Yuma County. The information can then be used for TVA's and subsequently transferred into ACAMS.

Subject: Yuma County Multi-Jurisdiction Multi-Hazard Plan
Date: 11 March, 2009
Time: 1:00-5:00 PM
Location: Yuma County Department of Development Services
Address: 2351 West 26th Street (across from Wal-Mart/Ave B)

If you have any questions, or would like to invite other participants, please feel free to extend an invitation.

Thank you,

r/

Luis Miranda
Yuma County Emergency Management
(928) 782-2355

Yuma County MJMHMP Meeting No. 1
March 11, 2009

Sign-In Initials	Last Name	First Name	Organization / Department	Title	Phone #	Cell #	Fax #	E-Mail Address
	Stroh	MARK	City of Yuma F.D.	Suppression Captain	928-246-4887			Strohm@YUMAAZ.GOV
	Simmons	Darren	Yuma County S.O.	Lieutenant	928-783-4427			Darren.Simmons@co.yuma.az.us
	Huxon	SONNY	YUMA COUNTY S.O.	DET. / TLO	928-783-4427	928-210-2639		SONNY.HUXON@co.YUMA.AZ.US
	BECK	WILLIAM	YUMA CO. PUBLIC WORKS	DIRECTOR	928-341-2500	928-941-0355		william.beck@co.yuma.az.us
	FOSTER	CURT	RMFD	FIRE MARSHAL	782-4757	—		
	BRATCHER	EBEN	YCSO	CAPTAIN	783-4427			EBEN.BRATCHER@CO.YUMA.AZ.US
	Smith	RAY	Somerton/Cocopah Fire	BATTALION Chief	928-722-7382			RAYS@cityofsomerton.com
	Conrad	Kevin	Cocopah / EPO	Director	928-627-2025x3			Cocoppo@cocopah.com
	GREEN	HANK	City of San Luis	FIRE Chief	928-341-8550			HGREEN@cityofsanLuis.org
	ERFERT	MIKE	YUMA FIRE Dept.	Public Info. Officer	928-373-4855	928-446-6211		MIKE.ERFERT@YUMAAZ.GOV
	Melcher	Paul	Yuma County DDS	Planning Director	928-817-5180			paul.melcher@co.yuma.az.us
	MIRANDA	LOU	YUMA County	Emergency Management Director	928-782-2355			LUIS.MIRANDA@CO.YUMA.AZ.US
	WOOD	S	ADEM	Planning MGR	602-392-7518			
	STANSBURY	M	County DDS	DDS - DIRECTOR	928817 5000			MONTY.STANSBURY@CO.YUMA.AZ.US
	Sellers	Craig	" " / Flood Control	Sr. Civil Eng.	928-817-5122	941 1654	817-5109	Craig.Sellers@co.yuma.az.us
	PATTERSON	ROGER	County Development Svcs	County ENGINEER	928 817-5110	941-0664	817-5709	ROGER.PATTERSON@CO.YUMA.AZ.US
	Heading ton	Pat	County DDS.	Plans Examiner II	928-817-5073			PatHeading ton@co.yuma.az.us
	NIELD	KAREN	JE FULLER	PLANNING ASST	480-222-5702	480-612-4153		
	Castricone	S. A.	city of Yuma	Fire MARSHAL	928-246-5091		373 4864	art.Castricone@YUMAAZ.com
	DWIGHT	NIELD	JE FULLER	HAZARD MITIGATION PLANNER	480 222-5702			dwight@jefuller.com

MJMHMP **Planning Meeting** 3/25/2010

Present at the Meeting ***Alphabetical - Please initial***

Name	Gary August
Title	
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Cell phone	928-210-
e-mail	william.beck@yumacountyaz.gov

Name	Michael Biever
Title	Environmental Protection Specialist
Agency	Bureau of Reclamation
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Cell phone	928-580-2879
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Name	Captain Eben Bratcher
Title	Patrol Commander
Agency	Yuma County Sheriff's Office
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Cell phone	928-503-2502
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Name	Kevin Conrad
Title	Director
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City Zip	Somerton AZ 85350
Telephone	928-627-6217 x13
Cell phone	928-503-0086
e-mail	cocoepo@cocopah.com

Name	Mike Erfert
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City Zip	Yuma AZ 85364
Telephone	928-373-4855
Cell phone	928-446-6211
e-mail	mike.erfert@yumaaz.gov

Present at the Meeting ***Alphabetical - Please initial***

Name	Curt Foster
Title	Fire Marshal
Agency	Rural Metro Corporation
Address	2029.So. Arizona Avenue
City Zip	Yuma AZ 85365
Telephone	928-782-4757
Cell phone	928-580-0491
e-mail	curt_foster@ruralmetro.com

Name	Chief Hank Green
Title	Fire Chief
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Telephone	928-341-8550
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e-mail	hgreen@cityofsanluis.org

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Address	2351 W. 26th Street
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e-mail	pat.headington@yumacountyaz.gov

Name	Marc Holyfield
Title	Director of Emergency Management Srvcs.
Agency	AZ Western College
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City Zip	Yuma AZ 85365
Telephone	928-317-6068
Cell phone	928-210-9442
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e-mail	john.lekan@yumaaz.gov

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e-mail	dennis.light@yumaaz.gov

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Name	Sam Palacios
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Cell phone	928-503-3289
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City Zip	Somerton AZ 85350
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Cell phone	928-345-8005
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Name	Monty Stansbury
Title	Director of Yuma County DDS
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Name	
Title	
Agency	
Address	
City Zip	
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e-mail	

Name	
Title	
Agency	
Address	
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e-mail	

Present at the Meeting *Alphabetical - Please initial*

Name	Dwight Nield
Title	Hazard Mitigation Planner
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Cell phone	
e-mail	susan.wood@azdema.gov

MJMHMP **Planning Meeting - 4/15/2010**
Present at the Meeting

Alphabetical - Please initial

Name	Gary August
Title	Fire Chief
Agency	Rural Metro Corporation
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e-mail	william.beck@yumacountyaz.gov

Name	Michael Biever
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Name	Kevin Conrad
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Name	Mike Erfert
Title	Fire Administrative Officer
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Telephone	928-373-4855
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e-mail	mike.erfert@yumaaz.gov

MJMHMP **Planning Meeting - 4/15/2010**
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Present

add

Name	
Title	
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Planning Meeting - 4/15/2010
Present at the Meeting

Alphabetical - Please initial

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Name	Susan Wood
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Agency	AZ Division of Emergency Management
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City Zip	Phoenix AZ Present
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e-mail	susan.wood@azdema.gov

MJMHMP **Planning Meeting - 5/20/10**
Present at the Meeting

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Name	
Title	
Agency	ROGER PATTERSON COUNTY ENGINEER
Address	
City Zip	
Telephone	
Cell phone	
e-mail	

Name	
Title	
Agency	
Address	
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e-mail	

MJMHMP **Planning Meeting - 5/20/10**
Present at the Meeting

Alphabetical - Please initial

Name	Dwight Nield
Title	Hazard Mitigation Planner
Agency	JE Fuller Hydrology & Geomorphology
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Name	Susan Wood
Title	State/Local Mitigation Program Manager
Agency	AZ Division of Emergency Management
Address	
City Zip	Phoenix AZ
Telephone	602-464-6518
Cell phone	
e-mail	susan.wood@azdema.gov

Memorandum JE Fuller/ Hydrology & Geomorphology, Inc.

MEETING DATE: March 11, 2009

MEETING TIME: 1:00 PM – 5:00 PM

MEETING LOCATION: Yuma County Department of Development Services
2351 West 26th Street, Yuma, AZ

DISTRIBUTION: Meeting Attendees

FROM: Dwight Nield - JEF

RE: Yuma County Multi-Jurisdictional Multi-Hazard Mitigation Plan
Multi-Jurisdictional Planning Team Meeting No. 1

ATTENDEES: Mark Strohm – City of Yuma Fire Department
Darren Simmons – Yuma County Sheriff's Office
Sonny Hixon – Yuma County Sheriff's Office
William Beck – Yuma County Public Works
Curt Foster – Fire Marshall
Eben Bratcher – Yuma County Sheriffs Office
Ray Smith – Somerton/Cocopah Fire Department
Kevin Conrad – Cocopah/EPO
Hank Green – City of San Luis Fire Department
Mike Erfert – City of Yuma Fire Department
Paul Melcher – Yuma County Development Services
Lou Miranda – Yuma County Emergency Management
Susan Wood – Arizona Division of Emergency Management
Monte Stansbury – Yuma County Development Services
Dwight Nield – JE Fuller
Craig Sellers – Yuma County Flood Control
Roger Patterson – Yuma County Development Services
Pat Headington – Yuma County Development Services
Karen Nield – JE Fuller
S. A. Castricone – City of Yuma Fire Marshall

AGENDA

1. **GREETING**
2. **MITIGATION PLANNING OVERVIEW**
3. **INTRODUCTIONS**
4. **PLANNING PROCESS**
    a. **MJ Planning Team Roles**
    b. **Public Involvement Strategy**
5. **RISK ASSESSMENT**
    a. **Hazard Identification / Profiling**

   b. Asset Inventory
6. **OTHER DATA NEEDS**
7. **MEETING ENDING**
   a. Review of action items
   b. Set next meeting date

DISCUSSION

Agenda Item 1:
- D. Nield presented an overview / review of the mitigation process and purpose for preparing a Multi-Jurisdictional Multi-Hazard Mitigation plan.
- Lou Miranda and Sue Wood will provide a write-up on past hazard mitigation projects completed within Yuma County (i.e. similar to the State Plan).

Agenda Item 2:
- D. Nield and S. Wood provided meeting folders and handouts to each participant and discussed the contents of those items.

Agenda Item 3:
- Introductions were made for each member of the multi-jurisdictional planning team (MJPT), wherein each team member shared their name, title, and their perceived role.

Agenda Item 4a:
- D. Nield led a discussion / presentation of the MJPT roles and responsibilities.
- Lou Miranda was identified as the primary point of contact (PPOC) for Yuma County and the MJPT as a whole.
- The community point of contacts (CPOC) were identified as follows:
  - Unincorporated Yuma County – Lou Miranda
  - City of San Luis – Hank Green
  - City of Somerton – Ray Smith
  - Town of Wellton – N/A
  - City of Yuma – Mike Erfert
  - Cocopah Indian Tribe – Kevin Conrad

Agenda Item 4b:
- D. Nield and S. Wood led a discussion / presentation of the public involvement requirements of DMA2K.
- The MJPT discussed various options including newspaper notices, general public announcements, and web page postings.
- A decision was made to publish an announcement in the local newspaper and also to create a web page on the Yuma County website that will contain the same announcement. Yuma County will take the lead in generating an announcement template and then distribute to the incorporated communities. Once the draft plan is ready, it will be posted to the website and a second newspaper announcement will be used.

- ADEM and JEF have developed template language for the county to use in the newspaper announcements. JEF will provide those to the MJPT via email.
- Lou Miranda will take responsibility for coordinating with the communities regarding template notice development, distribution, and publishing. It should be posted for 1-2 weeks.

Agenda Item 5a:

- D. Nield presented an overview of the elements of risk assessment.
- The MJPT reviewed the list of hazards previously evaluated in 2005 Yuma County Hazard Mitigation Plan (2005 Plan) as well as a comprehensive list of hazards identified by the State of Arizona MHMP.
- D. Nield presented the results of a historic hazard event search and database compilation performed by JEF that depicts declared and undeclared hazard events.
- The MJPT reviewed the hazard lists and historic records and discussed which hazards should be evaluated further. The following is a brief summary of that discussion:
    - The 2005 Plan included several human-caused hazards. The MJPT discussed whether or not the human-caused hazards should remain in the plan. The purpose of the plan was discussed and the MJPT removed all the human-caused hazards.
    - The MJPT discussed drought at length and wrestled with keeping or dropping the hazard from further consideration. More information was needed from outside sources, such as farming community to determine if drought remains an issue for Yuma County.
- The resulting list of hazards to be addressed is as follows:
    - Dam Failure
    - Drought
    - Earthquake
    - Flooding / Flash Flooding
    - Levee Failure
    - Thunderstorms / High Winds
    - Tropical Storms
    - Wildfire
    - Infestation
- D. Nield presented information regarding application and development of the Calculated Priority Risk Index (CPRI). The MJPT worked through an example using a pre-formatted spreadsheet and a handout with guidance on selecting CPRI parameters. D. Nield will send the CPRI spreadsheet to the POC for each jurisdiction for completion and return to JEF.

Agenda Item 5b:

- D. Nield presented an overview of the asset inventory portion of the vulnerability analysis and provided a handout detailing the types of data that potentially could be collected. Each community is requested to update the list of the most critical data sets and provide to JEF for use in the vulnerability analysis.

- D. Nield will send the existing 2005 critical facilities spreadsheet and template files for use by the communities in updating the asset list.

Agenda Item 6:

- D. Nield requested the following additional data from each community:
    - Latest General Plan or Comprehensive Plan
    - Latest Town/City boundaries – D. Nield will obtain from Yuma County GIS Department.
    - Known Future critical facility locations (include within asset inventory)

Agenda Item 7:

- Next meeting set for Wednesday, April 15, 2009 from 1:00 pm to 5:00 pm with location still to be determined by Lou Miranda.

ACTION ITEMS:

1. L. Miranda will take responsibility for coordinating with the communities regarding the template notice development, distribution, and publishing.
2. JEF to provide Historic Hazard spreadsheets to MJPT members for review and augmentation, if needed.
3. JEF to provide CPRI worksheet to each jurisdiction for completion prior to the next meeting.
4. JEF will provide template worksheets for updating the asset inventory lists.
5. Each jurisdiction shall provide:
    a. Updates/revisions/additions to the Historic Hazard spreadsheets
    b. Completed CPRI worksheet
    c. Compilation of asset inventory data
    d. Latest General Plan or Comprehensive Plan
    e. Latest Town/City boundaries (D. Nield will obtain from Yuma County GIS Department)
    f. Known Future critical facility locations (Include within asset inventory)

Memorandum JE Fuller/ Hydrology & Geomorphology, Inc.

MEETING DATE: March 25, 2010

MEETING TIME: 1:00 PM – 4:00 PM

MEETING LOCATION: Yuma County Department of Development Services
2351 West 26th Street, Yuma, AZ

DISTRIBUTION: Meeting Attendees

FROM: Dwight Nield - JEF

RE: Yuma County Multi-Jurisdictional Multi-Hazard Mitigation Plan
Multi-Jurisdictional Planning Team Meeting No. 2

ATTENDEES: Kevin Conrad – Cocopah/EPO
Ray Smith – Somerton/Cocopah Fire Department
Hank Green – City of San Luis Fire Department
Mike Erfert – City of Yuma Fire Department
Marc Holyfield - AZ Western College
Curt Foster - Rural Metro Corporation
Paul Melcher - Yuma County Planning
Susan Otero - Yuma Police Department
Gretchen Robinson - Yuma County Emergency Management
Sue Wood - Arizona Division of Emergency Management
Dwight Nield – JE Fuller
Craig Sellers – Yuma County Flood Control
Darren Simmons - Yuma County Sheriff's Office
Keith Titus - Wellton Police Department
Mirna Rodriguez - City of Somerton

AGENDA

1. **GREETING**
2. **MITIGATION PLANNING OVERVIEW**
3. **INTRODUCTIONS**
4. **RISK ASSESSMENT**
    a. **Update Critical Facilities**
    b. **Hazard Identification**
5. **PLANNING PROCESS**
    a. **MJ Planning Team Roles**
    b. **Public Involvement Strategy**
6. **OTHER DATA NEEDS**
7. **CAPABILITY ASSESSMENTS**
8. **MEETING ENDING**
    a. **Next meeting date**
    b. **Review of action items**

DISCUSSION

Agenda Item 1:

- S. Wood provided a review of previous planning in Yuma County. Discussed the need for the planning effort, but it is up to individual communities to provide the needed information for updating the plan into a true multi-jurisdictional hazard mitigation plan.
- Each of the communities agreed to commit their time in updating the plan.

Agenda Item 2:

- The planning overview was deemed not necessary, since it was done at the previous meeting. It was decided to proceed directly into the tasks that needed to be completed.

Agenda Item 3:

- Introductions were made for each member of the multi-jurisdictional planning team (MJPT), wherein each team member shared their name and title.

Agenda Item 4a:

- D. Nield passed out maps and spreadsheets of critical facilities from the 2005 plan to discuss updating the list(s) for each of the communities. The needed information was scaled back to ease the burden of the update. The necessary information was limited to facility name, lat/longs and estimated replacement costs.
- Utilization of Google Earth is a good option for acquiring lat/longs for new facilities.
- To obtain estimated replacement costs, if communities need assistance, JEF can obtain those by using GIS, imagery, square footage and a dollar multiplier.

Agenda Item 4b:

- D. Nield provided a worksheet for evaluating the hazards that were identified by the team from the previous meeting. Each community determined the probability, magnitude/severity, amount of warning time, and duration of the event for each hazard. These were collected and the calculations will be provided in the next meeting.
- D. Nield provided a summary sheet of declared historical hazards from Arizona Division of Emergency Management that was statewide or events that included Yuma County. Also, provided spreadsheets of undeclared events provided for each community to augment and return to JEF.

Agenda Item 5a:

- D. Nield confirmed/updated the MJPT roles/updated the PPOC and CPOC.
- Gretchen Robinson was identified as the primary point of contact (PPOC) for Yuma County and the MJPT as a whole.
- The community point of contacts (CPOC) were identified/updated as follows:

  - Unincorporated Yuma County – Gretchen Robinson
  - City of San Luis – Hank Green
  - City of Somerton – Ray Smith
  - Town of Wellton – Keith Titus
  - City of Yuma – Susan Otero
  - Cocopah Indian Tribe – Kevin Conrad
- S. Wood provided an overview of the public involvement strategy and an approach to accomplishing this element of the plan. S. Wood will provide an updated template to be edited or customized and used for the County website and community bulletins to be posted in conspicuous locations.

Agenda Item 6:

- D. Nield discussed the need for City of Yuma's updated boundary shapefile that includes a large annexed portion of the city. It was suggested at this time, that the County GIS department should have updated version ready for download.

Agenda Item 7:

- D. Nield provided Capability Assessment table worksheets based the 2005 plans with additional column information to meet FEMA's required plan integration and implementation. The community representative will review and update these tables prior to our next meeting.

Agenda Item 8:

- The meetings will be scheduled three weeks apart to enable enough time for assignments to be completed. G. Robinson will coordinate with State and JE Fuller to establish a date and time for next meeting.
- The task assignments to be completed by communities due April 5, 2010 are as follows:
  - Update Critical Facilities
  - Update Historical Hazard List
  - Public Involvement: County Website and Post Community Bulletins
  - Update Capability Assessments

Memorandum JE Fuller/ Hydrology & Geomorphology, Inc.

MEETING DATE: April 15, 2010

MEETING TIME: 1:00 PM – 4:00 PM

MEETING LOCATION: Yuma County Department of Development Services
2351 West 26th Street, Yuma, AZ

DISTRIBUTION: Meeting Attendees

FROM: Dwight Nield - JEF

RE: Yuma County Multi-Jurisdictional Multi-Hazard Mitigation Plan
Multi-Jurisdictional Planning Team Meeting No. 3

ATTENDEES: Kevin Conrad – Cocopah/EPO
Mike Erfert – City of Yuma Fire Department
Hank Green – City of San Luis Fire Department
Pat Headington – Yuma County DDS
Paul Melcher - Yuma County Planning
Gretchen Robinson - Yuma County Emergency Management
Susan Otero - Yuma Police Department
Craig Sellers – Yuma County Flood Control
Darren Simmons - Yuma County Sheriff's Office
Ray Smith – Somerton/Cocopah Fire Department
Keith Titus - Wellton Police Department
Sue Wood - Arizona Division of Emergency Management
Dwight Nield – JE Fuller

AGENDA

1. **INTRODUCTIONS**
2. **Status Review**
    a. **Critical Facilities**
    b. **Boundary Map**
    c. **Capability Assessment**
    d. **Public Involvement**
    e. **CPRI**
3. **RISK ASSESSMENT**
    a. **Hazard Profiles Update**
4. **REPETITIVE LOSS**
5. **PLAN MAINTENANCE PROCEDURES**
6. **MEETING ENDING**
    a. **Next meeting date**

DISCUSSION

Agenda Item 2a:

- The updated critical facility list was provided to each jurisdiction for comments to be returned to JE Fuller for finalizing. H. Green mentioned the inaccuracy of the major road mapping in relation to the imagery. A county road coverage will be used for the local mapping according to D. Nield. JE Fuller will complete the estimated replacement costs for San Luis by using imagery and square footage estimates.

Agenda Item 2b:

- The jurisdictional boundary map was circulated for each jurisdictions review to determine its accuracy and use for the vulnerability assessment.

Agenda Item 2c:

- The capability assessments were provided with comments and ADEM suggested for "Studies" should only be listed under the Counties list and referenced by the other communities. They are finalized with a few additional minor comments.

Agenda Item 2d:

- Gretchen Robinson provided a discussion on public involvement to include placing information on the County website regarding the hazard mitigation planning in progress.

Agenda Item 2e:

- D. Nield provided a summary sheet of the CPRI and the calculated averages from all the CPRI provided from all the jurisdictions. There was a concern about why some communities provided a higher rating than others. This was discussed heavily and the end result is because based on a communities past experience and perception of a hazard would cause the ratings to vary. The representatives from all the communities came to a unified approach that all the hazards identified effect all the jurisdictions.

Agenda Item 3:

- Reviewed the hazard profiles descriptions, maps and ratings for the vulnerability analysis. The profiles will be reformatted, updated and reviewed by the planning team members prior to the next meeting.
- Dam Failure, Levee Failure, and Extreme Heat will not be included in the plan. Because the final result of Dam Failure is flooding, and dams are not owned or operated by the County and are therefore difficult to mitigate, Dam Failure will be mentioned under the flooding profile.
- Infestation profile will be developed and included as new hazard for the plan.
- D. Nield will prepare the vulnerability analysis based on the hazard ratings and Hazus data available through GIS, and the results will be ready for the next meeting.

Agenda Item 4:

- Based on NFIP findings, no repetitive losses have occurred in Yuma County.

Agenda Item 5:

- Yuma County has monitored the progress of hazard mitigation in Yuma County with annual meetings and updates. G. Robinson will update Section 6 "Plan Maintenance Procedures" of the plan.

Agenda Item 6a:

- The next meeting date will be coordinated and scheduled through Gretchen Robinson at a later date.

Memorandum JE Fuller/ Hydrology & Geomorphology, Inc.

MEETING DATE: May 20, 2010

MEETING TIME: 1:00 PM – 5:00 PM

MEETING LOCATION: Yuma County Department of Development Services
2351 West 26th Street, Yuma, AZ

DISTRIBUTION: Meeting Attendees

FROM: Dwight Nield - JEF

RE: Yuma County Multi-Jurisdictional Multi-Hazard Mitigation Plan
Multi-Jurisdictional Planning Team Meeting No. 4

ATTENDEES: Kevin Conrad – Cocopah/EPO
Curt Foster - Rural Metro Corporation
Hank Green – City of San Luis Fire Department
Pat Headington – Yuma County DDS
Paul Melcher - Yuma County Planning
Gretchen Robinson - Yuma County Emergency Management
Susan Otero - Yuma Police Department
Roger Patterson – Yuma County Flood Control
Darren Simmons - Yuma County Sheriff's Office
Ray Smith – Somerton/Cocopah Fire Department
Keith Titus - Wellton Police Department
Dwight Nield – JE Fuller
Karen Nield - JE Fuller

AGENDA

1. **INTRODUCTIONS**
2. **Status Review**
    a. **Public Involvement**
    b. **Plan Maintenance Procedures**
    c. **Hazard Profiles**
3. **RISK ASSESSMENT**
    a. **Vulnerability Assessment**
4. **MITIGATION STRATEGY**
    a. **Goals and Objectives**
    b. **Past Mitigation Activity Successes**
    c. **Existing Mitigation Projects Status**
    d. **NFIP Participation**
    e. **New Mitigation Actions/Projects and Implementation Strategy**
5. **MEETING ENDING**
    a. **Task Assignments**
    b. **Draft Plan**

DISCUSSION

Agenda Item 2a:

- Discussed local communities providing more public involvement by posting notices at government facilities and local websites. Yuma County will use the city channel for public service announcement. The communities will also provide Council Meeting notes regarding hazard mitigation.

Agenda Item 2b:

- G. Robinson and D. Nield will finish update the plan maintenance procedures.

Agenda Item 2c:

- Reviewed the hazard profiles and discussed changes to the following:
    - Earthquake profile will not include the 1996, Yuma Community Earthquake Hazard Evaluation due to the out dated information such as the census information.
    - Flooding profile should include the Presidential Emergency Declaration for City of Yuma, not the County, for severe winter storm in March 2010.
    - Transportation Accident profile should remove the "proposed" MCAS Aux II since it is now constructed. The type of accidents were broken down into two categories: General Transportation Accidents and Military Events. Team members will provide some information or more details on some additional events regarding the Harrier and nitric acid spill, etc.
    - Wildfire profile can include information from a recent draft of the Community Wildfire Protection Program. Remove the haystack fire and Azdaves fire from the profile due to inaccuracy of data (fire unknown to planning team).
    - Infestation profile will be drafted for team review.

Agenda Item 3a:

- Reviewed the results for the vulnerability assessments. All of the county populations will double during the winter time due to the "snowbirds" including the Cocopah Indian Tribe's north area. Transportation Accident population should be higher in the San Luis area due to new Aux IV facility. Need to acquire additional GIS flight path information to identify exposures. For earthquake, the newer 2000 Census/Hazus data results will be used to determine the loss estimates.

Agenda Item 4a:

- D. Nield provided copies of the current plan goals and the current State plan goals. Each list was reviewed and the following are noted:

- When comparing the current list of goals to the those developed by the state, the Team unanimously concluded that the state goals were cleaner and more adequately encompassed the goals of the Team regarding hazard mitigation.

Agenda Item 4b:

- The team discussed past mitigation activities successes that have funded from various sources in the past. The State would like to see a list of these projects to be inserted into the plan. G. Robinson will be tasked with this assignment.

Agenda Item 4c:

- Discussed the projects from the 2005 plans and D. Nield provided forms for these projects to be evaluated for the update.

Agenda Item 4d:

- D. Nield presented the new regulations requiring a discussion of NFIP participation and compliance for each community.
- D. Nield presented a table summarizing the following NFIP statistics for each community:
  - NFIP identification number, date of entry into NFIP, current effective map date, number of FIS policies, and the gross insured amount.

  The MJPT was encouraged to begin thinking about a mitigation action/project that would address NFIP compliance.

Agenda Item 4e:

- D. Nield discussed the implementation strategy requirements and reviewed a template worksheet with example mitigation A/Ps.
- The Team reviewed the current plan tool for evaluating and ranking the mitigation A/Ps (STAPLEE Method). D. Nield presented the methodology used by the State of Arizona in the 2007 plan, wherein:
  - Each mitigation A/P was evaluated based on the following factors:
    - Cost versus benefit
    - Direct impact on life and/or property
    - Long-term effectiveness as a solution
  - Each A/P was assigned an importance rating of either "High", "Medium", or "Low" as it pertained to satisfying each of the three evaluation criteria.
- After some discussion, the Team chose to use the simpler methodology noted in the State Plan. Discretion was given to the Team to decide on how to assign the rankings (i.e. – either by simple vote or some point system). Each individual community will rank their own projects and report back to JEF on what methodology they used.

The remainder of the implementation strategy elements will also be completed for each A/P on the worksheet provided, and sent back to JEF.

Agenda Item 5a:

- Task Assignments included:
  - Gretchen will coordinate the collection of Past Mitigation Activity summaries for the county.
  - Community Representatives will provide the following:
    - Action Status Forms - evaluation of 2005 mitigation projects
    - Mitigation A-P and Implementation Strategy form - for carry-over and new projects through 2015.
    - All jurisdictions are to work at completing the outstanding planning elements due by May 31, 2010.
  - D. Nield will provide:
    - Email mitigation tables above to communities
    - Email NFIP Participation for team review and approval.
    - Once all items are received, JEF will deliver a draft of the plan to the Team for review and comment.

Memorandum JE Fuller/ Hydrology & Geomorphology, Inc.

MEETING DATE: August 19, 2009

MEETING TIME: 1:30 PM – 3:00 PM

MEETING LOCATION: Cocopah Cultural Resource Office
Cocopah Indian Tribe, County 15th and Avenue G,
Somerton, Arizona

DISTRIBUTION: Meeting Attendees

FROM: Dwight Nield - JEF

RE: Cocopah's Supplemental Meeting to Yuma County Multi-Jurisdictional Multi-Hazard Mitigation Plan

ATTENDEES: Jill McCormick – Cocopah's Cultural Resources Office
Kevin Conrad – Cocopah's Environmental Protection Office
Pedro M. Olague – Cocopah's Environmental Protection Office
Karen Nield – JE Fuller Hydrology & Geomorphology, Inc.
Dwight Nield – JE Fuller Hydrology & Geomorphology, Inc.

AGENDA

1. **MITIGATION PLANNING OVERVIEW**
2. **INTRODUCTIONS**
3. **TRIBAL ASSURANCES**
4. **PUBLIC INVOLVEMENT**
5. **AGENCY COORDINATION**
6. **PLAN INTEGRATION**
7. **CAPABILITY ASSESSMENT**
    a. **Summary of legal and regulatory capabilities**
    b. **Summary of technical staff and personnel capabilities**
    c. **Summary of fiscal capabilities**
    d. **Summary of departments/entities with pre- and/or post-disaster hazard management responsibilities**
8. **Cultural / Sacred Site Vulnerability Assessment**
9. **MITIGATION STRATEGY PROGRESS ASSESSMENT**
10. **MEETING ENDING**
    a. **Received Prior Homework Assignments**
    b. **Complete Prior Homework Assignments**
    c. **Action Item Review**
    d. **No future meetings needed**

DISCUSSION

Agenda Item 1:

- D. Nield presented an overview / review of mitigation process and purpose of safeguarding communities from natural hazards; obtaining FEMA funding through several eligibility impacted programs; and preparing Cocopah Indian Tribe's supplemental Annex to Yuma County's Multi-Jurisdictional Multi-Hazard Mitigation plan.

Agenda Item 2:

- Team members introduced themselves and provided department, position and what role they can provide in this hazard mitigation planning process.

Agenda Item 3:

- Discussed Tribal Assurances requirement and proposed text and it was determined to be satisfactory.

Agenda Item 4:

- D. Nield reviewed the public involvement requirements. The definition to "public" was determined to include tribal members and employees, but not include neighboring jurisdictions.
- The "Council Voice" Newsletter will be used to provide public notice prior to and after the draft plan has been completed. Copies of those notices will be provided to JE Fuller.

Agenda Item 5:

- D. Nield led a discussion about agency coordination to determine if external agencies may be able to contribute to the planning process. The Bureau of Indian Affairs and Indian Health Services will be invited to the next Yuma County Multi-Jurisdictional Planning Meeting. K. Conrad will send corresponding copies of the invitations to JE Fuller.

Agenda Item 6:

- The team discussed existing plans, studies, reports, and technical information that is available from Cocopah Indian Tribe.
- Several plans were listed and others will be researched with other departments to obtain more details, as needed (i.e. Capital Improvement Plan; Economic Plan; Administrative Plan). K. Conrad will research this assignment further.

Agenda Item 7:

- D. Nield presented the capability assessment tables that are used to identify the legal and regulatory capabilities; administrative and technical resources; fiscal capabilities; and the departments with hazard management responsibilities.

Agenda Item 7a:

- Building codes do not exist on the reservation. Their might be some HUD oversight. K. Conrad will check on these.

- Ordinances will be researched by K. Conrad. EPA regulations on pesticides may be in effect.

Agenda Item 7b:
- The technical staff and personnel capabilities will be reviewed by K. Conrad to determine if additional capabilities are available to the Tribe.

Agenda Item 7c:
- The fiscal capabilities seem to be very limited, but further research will be done by K. Conrad.

Agenda Item 7d:
- Discussed the departments or entities with pre- and/or post-disaster hazard management responsibilities. K. Conrad will review and determine if additional departments may have capabilities.

Agenda Item 8:
- The cultural and sacred sites and their vulnerability to the hazards will be part of the plan. Some of the sites are located off of the reservation, which will be discussed in the write-up. Specific locations will probably not be provided in order to maintain some security of those sites. J. McCormick will provide this information.

Agenda Item 9:
- Team will review and discuss proposed section write-up handout to understand what the Tribe is required to do for the "Mitigation Strategy Progress Assessment".

ACTION ITEMS

Agenda Item 10a:
- JE Fuller received CPRI and Asset Inventory

Agenda Item 10b:
- JE Fuller should receive public notices or copies of the "Council Voice" newsletter
- JE Fuller should receive historical hazard list
- JE Fuller should receive copies of General Plan/Comprehensive Plan or miniumum overview of community.
- JE Fuller should receive updated boundary GIS shapefile.

Agenda Item 10c:
- Complete Agency Coordination Table – K. Conrad
- Complete Plan Integration Table – K. Conrad
- Complete Capability Assessment Tables – K. Conrad
- Complete Cultural/Sacred Site Analysis – J. McCormick
- Review Mitigation Strategy Progress Assessment and provide comments – K. Conrad/Team

Dwight Nield

From: Gretchen Robinson [Gretchen.Robinson@yumacountyaz.gov]
Sent: Tuesday, April 20, 2010 3:45 PM
To: rrademacher@3starlettuce.com; spoe@ag.arizona.edu; dolphingirlsjm@aol.com; helicopterlou@aol.com; lowlevelflight@aol.com; sonnyGCI@aol.com; cheryl.lambert@az.usda.gov; shelly.ward@az.usda.gov; DFairchild@azcotton.org; craig.pauly@basf.com; karl.koch@binghamequipment.com; hmaxwell@boothmachineryinc.com; knolte@cals.arizona.edu; thodges@cals.arizona.edu; kevin.eatherly@ci.yuma.AZ.us; jerry.muldoon@dole.com; timd@dunngrain.com; anthony.busellato@fcssw.com; triplej22@juno.com; scotts@mcelhaneycattle.com; dougmellon@mellonfarms.com; Joanne Kidd; rjsm09@msn.com; kar228@nau.edu; AbelAlmanza@Paula.com; locofred@q.com; ldidier@selectseedaz.com; tcatanzaro@skyviewcooling.com; ggatley@sprynet.com; dunnaimee@yahoo.com; patwarefarms@yahoo.com; tdavis@ycwua.org; dwayne@yucogin.com; billacp@yuma.twcbc.com; ken@yumachamber.org; Darren Simmons; Leon Wilmot; Ralph Ogden; rstubbs@yumafoodbank.org; jlobeck@yumasun.com
Subject: OEM - Multi-jurisdictional multi-hazard plan re agricultural community
Attachments: MJMHMP agriculture section .tif; Gila River flows.xls

Good afternoon all:

If you attended today's Yuma Area Ag Council, you know that I have asked for your input on the revision of the county's multi-jurisdictional multi-hazard mitigation plan. I provided a handout that I am now forwarding to all of you.

Could you please take a look at the section marked with arrows and respond. I have a transmittal memo on the front of the packet. If you could respond by the end of next week, this information will be in the new draft that will be posted for public review.

I have also attached the Gila River flows as well as the county roads and low water crossings that are closed.

FYI - next Yuma Area Ag Council will be May 18th, Tuesday.

Gretchen Robinson
Emergency Operations Manager
Yuma County
198 So. Main Street
Yuma AZ 85364
County Emergency Management office - 928-373-1093
Emergency Management Cell - 928-580-6537

928-539-7882 - YCSO direct
928-783-4427 - YCSO dispatch 24/7
gretchen.robinson@yumacountyaz.gov

Last	*First*	*Representing*
Alford	Dwayne	Yuco Gin
Almanza	Abel	Pan American Insurance
Busellato	Anthony	Farm Credit Southwest
Catanzaro	Terry	Skyview Cooling
Cumming	Jim	Farmer
Davis	Tom	Yuma County Water Users
Didier	Louie	Select Seed AZ
Dinnan	Louie	Morris Ag Air
Dunn	Aimee	Dunn Farms
Dunn	Tim	Dunn Grain
Eatherly	Kevin	City of Yuma Heritage Foundation
Fairchild	Donna	AZ Cotton Research and Protection Council
Gatley	George	Western Agri Radio Networks
Hodges	Tom	University of Arizona
Hoffmeyer	Fred	Hoffmeyer Farms
Kidd	Joanne	Doug Mellon Farms
Kinner	Ronald	Farm Credit Services Southwest
Koch	Karl	Bingham Equipment
Lobeck	Joyce	The Sun
Maxwell	Howard	Booth Machinery
McDermott	Bobbi	USDA retired
Mellon	Doug	Doug Mellon Farms
Ming	Dale	Farm Credit Services Southwest
Moneypenny	Dennis	Moneypenny Farms
Morris	Miles	Morris Ag Air
Muldoon	Jerry	Dole Company
Nolte	Kurt	University of Arizona
Ogden	Ralph	Sheriff of Yuma County
Palmer	Dwight	Cros Production Services
Pangerl	Jolynn	Southwest Ag Summit
Pauley	Craig	BASF The Chemical Company
Phillips	Matthew	
Poe	Steve	University of Arizona
Rademacher	Rick	Three Star Lettuce
Rice	Ronald	
Robinson	Gretchen	Yuma County Office of Emergency Management
Rodriguez	Sonny	Growers Company
Rosevear	Ken	Yuma County Chamber of Commerce
S	Scott	McElhaney Cattle Company
Simmons	Darren	Yuma County Sheriff's Office
Spencer	Bill	AZ Citrus Products
Stubbs	Ronna Sue	Yuma Community Food Bank
Ward	Shelly	USDA
Ware	Patty	Pat Ware Farms
Wilmot	Leon	YCSO

Appendix C

Public Involvement Records

Comments from public for emergency plan sought

June 16, 2010 9:37 PM

BY STEPHANIE A. WILKEN - SUN STAFF WRITER

Yuma County officials already have a plan for what to do in case of a natural disaster - but what they want is input from the public.

The Yuma County Office of Emergency Management is seeking public input regarding proposed updates to the county's multihazard mitigation plan and the Cocopah Nation multihazard mitigation plan, according to a news release from the county.

The plan, according to the release, identifies a community's risks and vulnerability associated with natural disasters and helps develop long-term strategies for reducing or eliminating the risk while protecting people and property in future hazard events. The plans also identify the steps the community must take to prevent or minimize the impact of such emergencies in the first place.

Yuma County spokesman Kevin Tunell said the public involvement component of any mitigation plan is important.

“The ideas and suggestions that are gathered are looked at very closely and analyzed. And it's through that process that we come up with the best mitigation plan possible.

“All the good ideas, all the things that we haven't thought about, bubble up like a crucible, if you will, and those thoughts are submitted to FEMA.”

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Yuma native honored by Queen Elizabeth
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Raul Grijalva has forgotten heritage
Only in America could it happen
Take away aid, fine employers

For the past several months, county officials have worked with the Office of Emergency Management and other area jurisdictions to review and update all the existing multihazard mitigation plans for local communities and have consolidated them into a single multijurisdictional, multihazard mitigation plan. The plan involves representatives from Yuma County, the cities of Yuma, Somerton and San Luis, the town of Wellton as well as representatives from the Cocopah Nation, according to the release.

According to the release, the multijurisdictional planning document will include updates to the following elements:

• Natural hazards that may impact or have impacted the community

• Profiles of the most relevant hazards

• Vulnerability assessment to the identified hazards

• Goals and objectives for hazard risk reduction/elimination

• Mitigation actions/projects to achieve the stated goals and objectives

• Plan maintenance strategy to keep this a “living document” with annual updates

“County residents are encouraged to participate in this important mitigation planning process by reviewing the proposed plans and offer comment and suggestions,” according to the release.

The plans are online at www.yumacountyaz.gov as well as available in hard copy form at the Yuma County Library.

Feedback can be provided no later than 5 p.m. June 28 to County Emergency Manager Gretchen Robinson at gretchen.robinson@yumacountyaz.gov or by mail at 198 S. Main St., Yuma, AZ 85364.

Stephanie A. Wilken can be reached at swilken@yumasun.com or 539-6857.

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Reader Comments

From the editor: Many of you have expressed concerns about some of the harsh anonymous comments from readers. To remedy that, we are introducing new features. You can create your own blog, publish your news and share your photos with the community. Once you fill out a simple form and leave a verifiable e-mail address, you can set up your profile page. It will display all of your contributions and allow you to track issues and easily connect with others.
We want our site to be a place where people discuss and debate ideas that foster stronger communities. We built this for you. Please take care of it. Tolerate broad thinking, but take action against obscene or hateful material. Make it a credible and safe place worth preserving and sharing.

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To leave a comment, you need to sign up.

Sign up Log in

Forgot password?

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Dwight Nield

From: enotification@co.yuma.az.us
Sent: Wednesday, June 16, 2010 4:22 PM
To: gretchen.robinson@yumacountyaz.gov
Subject: Yuma County, Arizona: Emergency Management seeks public input

Emergency Management seeks public input
Multi-hazard mitigation plan up for review period
Posted Date: 6/16/2010 10:30 AM

The Yuma County Office of Emergency Management is seeking public input regarding proposed updates to the County's multi-hazard mitigation plan. A mitigation plan identifies a community's risks and vulnerability associated with natural disasters and helps develop long-term strategies for reducing or eliminating the risk while protecting people and property in future hazard events. The plan also identifies the steps the community must take to prevent or minimize the impact of such emergencies in the first place.

Under the Disaster Mitigation Act of 2000 (Public Law 106-390), state, county, local and tribal governments are required to develop and maintain a FEMA-approved hazard mitigation plan as a condition for receiving certain types of non-emergency disaster assistance funds and mitigation grants. For the past several months, County officials have worked with the Office of Emergency Management and other area jurisdictions to review and update all the existing multi-hazard mitigation plans in these individual communities, and consolidate them into a single multi-jurisdictional, multi-hazard mitigation plan. This aspect has involved a planning team consisting of representatives from Yuma County, the Cities of Yuma, Somerton and San Luis, the Town of Wellton as well as representatives from the Cocopah Nation.

This process has enabled team members to develop a mitigation plan that offers a strategy for assessing the vulnerability to disaster damage, and establishes feasible goals and cost-effective projects that mitigate the associated risks. The multi-jurisdictional planning document will include updates to the following elements:

- Natural hazards that may impact or have impacted the community
- Profiles of the most relevant hazards
- Vulnerability assessment to the identified hazards
- Goals and objectives for hazard risk reduction/elimination
- Mitigation actions/projects to achieve the stated goals and objectives
- Plan maintenance strategy to keep this a "living document" with annual updates.

County residents are encouraged to participate in this important mitigation planning process by reviewing the proposed plan and offer comments and suggestions. The Yuma County plan can be found here: YUMA COUNTY and can also be viewed at the Yuma County Library. Feedback can be provided no later than 5:00 P.M., Monday, June 28, 2010, to the County's Emergency Manager at gretchen.robinson@yumacountyaz.gov or regular mail at: Gretchen Robinson, EMERGENCY OPERATIONS MANAGER, 198 S. Main Street • Yuma, Arizona 85364.

Related Topics:
Disaster & Emergency Agencies | Natural Disasters | County Government | Counties | Management Theory & Practice | Risk Management | Company Activities & Management | Libraries

Comments from public for emergency plan sought

Powered by LexisNexis®

By Stephanie A. Wilken The Sun, Yuma, Ariz.

Publication: The Sun (Yuma, Arizona)

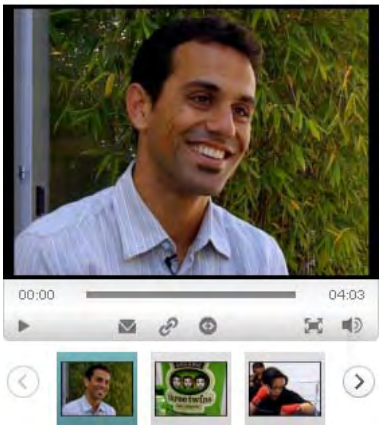
Date: Thursday, June 17 2010

Jun. 17--Yuma County officials already have a plan for what to do in case of a natural disaster -- but what they want is input from the public.

The Yuma County Office of Emergency Management is seeking public input regarding proposed updates to the county's multihazard mitigation plan and the Cocopah Nation multihazard mitigation plan, according to a news release from the county.

The plan, according to the release, identifies a community's risks and vulnerability associated with natural disasters and helps develop long-term strategies for reducing or eliminating the risk while protecting people and property in future hazard events. The plans also identify the steps the community must take to prevent or minimize the impact of such emergencies in the first place.

Yuma County spokesman Kevin Tunell said the public involvement component of any mitigation plan is important.



"The ideas and suggestions that are gathered are looked at very closely and analyzed. And it's through that process that we come up with the best mitigation plan possible.

"All the good ideas, all the things that we haven't thought about, bubble up like a crucible, if you will, and those thoughts are submitted to FEMA."

For the past several months, county officials have worked with the Office of Emergency Management and other area jurisdictions to review and update all the existing multihazard mitigation plans for local communities and have consolidated them into a single multijurisdictional, multihazard mitigation plan. The plan involves representatives from Yuma County, the cities of Yuma, Somerton and San Luis, the town of Wellton as well as representatives from the Cocopah Nation, according to the release.

According to the release, the multijurisdictional planning document will include updates to the following elements:

--Natural hazards that may impact or have impacted the community

--Profiles of the most relevant hazards

--Vulnerability assessment to the identified hazards

--Goals and objectives for hazard risk reduction/elimination

--Mitigation actions/projects to achieve the stated goals and objectives

--Plan maintenance strategy to keep this a "living document" with annual updates

"County residents are encouraged to participate in this important mitigation planning process by reviewing the proposed plans and offer comment and suggestions," according to the release.

The plans are online at www.yumacountyaz.gov as well as available in hard copy form at the Yuma County Library.

Feedback can be provided no later than 5 p.m. June 28 to County Emergency Manager Gretchen Robinson at gretchen.robinson@yumacountyaz.gov or by mail at 198 S. Main St., Yuma, AZ 85364.

Stephanie A. Wilken can be reached at swilken@yumasun.com or 539-6857.

In addition, make sure to read these articles:

- Governor's rep touts sales tax hike
- Prop 100 passes
- Early ballot request mailings start Monday
- APS to present power line plan
- Refinery officials look to land rezoning; Quechans want open communication
- Taxpayer watchdog releases local government scorecard
- City, county expect to weather state crisis

More Related Topics:

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Press Releases

Tyler Technologies Wins Two Appraisal & Property Tax Contracts in Arizona.
DALLAS -- Tyler Technologies, Inc. (NYSE: TYL) has reached an agreement with Yuma and Coconino counties in Arizona for the purchase of its property tax...

EarthRenew Reports up to 40% Increase in Crop Yields.
FRESNO, Calif. -- Early stage research field trials conducted by the University of Arizona's Maricopa County and Yuma County Cooperative Extension, have demonstrated that organic...

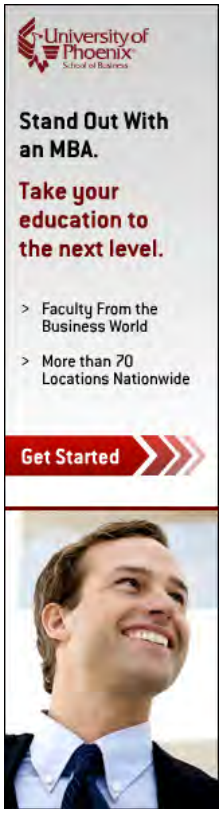
Fitch Rates Yuma County Free Library District, AZ $43.7MM GO Bonds 'A+'.
AUSTIN, Texas -- Fitch Ratings has assigned the following rating to Yuma County Free Library District (the district), Arizona's general obligation bonds, series 2007: --$43.7...

Premium Articles

Cities, counties in Montgomery, Ala., area prepare disaster aid plans.
Byline: Donna Pierce Sep. 25--After dealing with Hurricane Ivan, cities and counties in the tri-county area are taking steps to ensure the protection of their

Yuma county public works Automates its: Asset management system.(Yuma County Dep...
The Yuma County Department of Public Works (DPW) maintains 1,500 miles of gravel and dirt roads, 500 miles of paved highways, 12,000 signs, and 3,000

San Bernardino County, Calif., Official Takes Customer Service Approach.
By Christina L. Esparza, Daily Press, Victorville, Calif. Knight Ridder/Tribune Business News Jul. 15--SAN BERNARDINO, Calif.--Customer surveys, managed competition and offering a money-back guarantee are



Business Resources

- Businesses for Sale
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NEWS

Emergency Management seeks public input
Multi-hazard mitigation plan up for review period

Posted Date: 6/16/2010 10:30 AM

The Yuma County Office of Emergency Management is seeking public input regarding proposed updates to the County's multi-hazard mitigation plan. A mitigation plan identifies a community's risks and vulnerability associated with natural disasters and helps develop long-term strategies for reducing or eliminating the risk while protecting people and property in future hazard events. The plan also identifies the steps the community must take to prevent or minimize the impact of such emergencies in the first place.

Under the Disaster Mitigation Act of 2000 (Public Law 106-390), state, county, local and tribal governments are required to develop and maintain a FEMA-approved hazard mitigation plan as a condition for receiving certain types of non-emergency disaster assistance funds and mitigation grants. For the past several months, County officials have worked with the Office of Emergency Management and other area jurisdictions to review and update all the existing multi-hazard mitigation plans in these individual communities, and consolidate them into a single multi-jurisdictional, multi-hazard mitigation plan. This aspect has involved a planning team consisting of representatives from Yuma County, the Cities of Yuma, Somerton and San Luis, the Town of Wellton as well as representatives from the Cocopah Nation.

This process has enabled team members to develop a mitigation plan that offers a strategy for assessing the vulnerability to disaster damage, and establishes feasible goals and cost-effective projects that mitigate the associated risks. The multi-jurisdictional planning document will include updates to the following elements:

- Natural hazards that may impact or have impacted the community
- Profiles of the most relevant hazards
- Vulnerability assessment to the identified hazards
- Goals and objectives for hazard risk reduction/elimination
- Mitigation actions/projects to achieve the stated goals and objectives
- Plan maintenance strategy to keep this a "living document" with annual updates.

County residents are encouraged to participate in this important mitigation planning process by reviewing the proposed plan and offer comments and suggestions. The Yuma County plan can be found here: YUMA COUNTY and can also be viewed at the Yuma County Library. Feedback can be provided no later than 5:00 P.M., Monday, June 28, 2010, to the County's Emergency Manager at gretchen.robinson@yumacountyaz.gov or regular mail at: Gretchen Robinson, EMERGENCY OPERATIONS MANAGER, 198 S. Main Street • Yuma, Arizona 85364.

Dwight Nield

From: Gretchen Robinson [Gretchen.Robinson@yumacountyaz.gov]
Sent: Thursday, June 17, 2010 10:50 AM
To: dwight@jefuller.com
Subject: Fwd: Michele.Valdez@yumacountyaz.gov has shared: Comments from public for emergency plan sought, county, plan, mitigation - News - YumaSun
Attachments: Michele.Valdez@yumacountyaz.gov has shared: Comments from public for eme... (2.99 KB); MJMHMP Sign in for public review.doc

check this out, printed this morning in Yuma paper

Since then I have delivered a binder to the Yuma Main Library, the Heritage Library in Yuma, the Somerton Library, the San Luis Library, the Wellton Library and I have a copy here in the Office of Emergency Management in case anyone comes here.

In each of the binders I printed the county's e-mail announcement (sent to you earlier) and also placed a blank yellow pad in case someone wrote something. I made up a sign in sheet with a place for people to ask me to contact them. It is attached so you know what I am talking about.

Gretchen Robinson
Emergency Operations Manager
Yuma County Office of Emergency Management
198 So. Main Street
Yuma AZ 85364
County Emergency Management office - 928-373-1093
Emergency Management Cell - 928-580-6537

928-539-7882 - YCSO direct
928-783-4427 - YCSO dispatch 24/7
gretchen.robinson@yumacountyaz.gov

Yuma County and Communities
Multi Hazard Mitigation Plan Draft
is open for public comment
18 June, 2010

Hazard mitigation planning is the process used to identify risks and vulnerabilities associated with natural disasters and to develop long-term strategies for protecting people and property in future hazard events. The process results in a mitigation plan that offers a strategy for breaking the cycle of disaster damage, reconstruction, and repeated damage and a framework for developing feasible and cost-effective mitigation projects. Under the Disaster Mitigation Act of 2000 (Public Law 106-390), state, county, local and tribal governments are required to develop a FEMA approved hazard mitigation plan as a condition for receiving certain types of Federal mitigation and/or disaster funding.

In order to meet the requirements to ensure assistance eligibility, a planning team comprised of representatives from:

- Yuma County
- San Luis
- Cocopah Indian Tribe
- Somerton
- City of Yuma
- Wellton

The team has produced a draft Yuma County Multi-Hazard Mitigation Plan that includes an Annex for the Cocopah Indian Tribe. If you would like to view the full Yuma County Plan you can either access it online at www.co.yuma.az.us/ or at the Yuma County Main Library. The Cocopah Annex can be viewed at the Cocopah EPO office. Any comments on the plan must be received by 28 June, 2010.

Additional Information & Questions
Please contact:

Kevin Conrad
Director
Cocopah Environmental Protection Office
County 15th & Ave. G
Somerton, Arizona 85350

Would you please sign in for the public input on the Multi-jurisdictional multi-hazard mitigation plan – Emergency Management Office

Date	Name	Address	Phone or e-mail	Contact me please
6/16/10	*Mary Jones*	*123 State Street, My City, AZ 85364*	*mjones@e-mail.com*	*X*

Date	Name	Address	Phone or e-mail	Contact me please
6/16/10	*Mary Jones*	*123 State Street, My City, AZ 85364*	*mjones@e-mail.com*	*X*

MISCELLANEOUS

Public Notice Postings and Updates

- Yuma County Community Wildfire Protection Plan Survey for Residents

- County of Yuma Multi-jurisdictional Multi-hazard Mitigation Plan

LEPC Meeting Minutes

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DI
2010												
2009	11 [PDF]			8 [PDF]		10 [PDF]		12 [PDF]		14 [PDF]		9 [PD
2008								13 [PDF]		8 [PDF]		
2007			20 [PDF]		10 [PDF]	13 [PDF]						

Organization Charts

EOC Policy [PDF] Finance Adminstration [PDF] Logistics [PDF]

Operations [PDF] Planning [PDF]

Request Forms

Special Need Forms

- Disaster Evacuation [PDF]
- Evacuacion de Desastre [PDF]

Training

On-Line Training Opportunities- Emergency Management Institute

G402/ICS402 Incident Command System (ICS) - To sign up for this on-line course, contact EMI course manager Tom Marlowe at (301) 447-1060

Who should take this course?: Executives and Senior Officials, including elected officials, city/county managers, agency administrators, etc.

This course is approximately 2 hours and provides executives and senior officials an orientation to the ICS. The Emergency Management Institute (EMI) developed this course collaboratively with the National Wildfire Coordinating Group and the United States Fire Administration.

This course replaces G194 Incident Command System for Public Officials.

Yuma County Begins Work on County Hazard Mitigation Plan update

A planning team comprised of representatives from the Cities of Yuma, Somerton, San Luis and Wellton, as well as representatives from the Cocopah Nation and several Yuma County departments will be meeting regularly to participate in the process of updating the County of Yuma Multi-jurisdictional Multi-hazard Mitigation Plan.

The original plan, approved in 2005, must be updated and resubmitted to FEMA for approval every five years. The plan identifies the jurisdiction's risks to natural hazards, which may include loss of life and property, economic losses, long recovery periods and social disruption and to provide a strategy to reduce or eliminate these risks, resulting in a more resilient and sustainable community. The plan will also meet the requirements of the Disaster Mitigation Act of 2000 (DMA2K) which requires all local, county, tribal and state governments to have a FEMA approved hazard mitigation plan in place to be eligible for federal mitigation assistance funds. The planning team anticipates having a draft of the plan update before the end of the year, at which time the public will be provided access to the plan and the opportunity to comment.

For more information or should you have questions regarding the hazard mitigation planning process or the plan for Yuma County, please contact Gretchen Robinson, Yuma County Emergency Operations Manager at 928-373-1093 or via e-mail at gretchen.robinson@yumacountyaz.gov

CALENDAR

BOS-040510R

Board of Supervisors Regular Meeting

Date: 4/5/2010 9:00 AM

Location: BOS Aud
198 S. Main Street
yuma, Arizona 85364

Add to my Outlook
Calendar

MEETING NOTICE AND AGENDA

Pursuant to Arizona Revised Statutes §38-431, et. seq.
and amendments thereto,
A REGULAR SESSION of the
YUMA COUNTY BOARD OF SUPERVISORS
Also sitting as all SPECIAL TAXING DISTRICTS
Will be held on
APRIL 5, 2010 -- 9:00 A.M.
198 South Main Street, Yuma, Arizona

Board members will attend either in person or by telephone.

CALL TO ORDER

PLEDGE OF ALLEGIANCE

CALL TO THE PUBLIC: Call to the Public is held for public benefit to allow individuals to address issue(s) within the Board's jurisdiction. Board members may not discuss items that are not specifically identified on the agenda. Therefore, pursuant to Arizona Revised Statute §38-431.01(G), action taken as a result of public comment will be limited to directing staff to study the matter, responding to criticism, or scheduling the matter for further discussion and decision at a future date.

REGULAR SESSION AGENDA

PRESENTATIONS, PROCLAMATIONS, & APPOINTMENTS: Note: During this segment of the agenda, board members may discuss the presentations and proclamations, and may announce appointments to the Yuma County Planning and

Zoning Commission. No legal actions will be taken.

1. Presentation of "The County Line" by Yuma 77, the Yuma County Government Channel. **No Action**

2. Chairman proclaims the month of April 2010 as "National Parkinson's Awareness Month" in Yuma County. **No Action**

3. Chairman proclaims the week of April 11, 2010 through April 17, 2010 as "National Library Week". **No Action**

4. Chairman proclaims the month of April 2010 as "Yuma County Employee Appreciation Month". **No Action**

5. Chairman proclaims the month of April, 2010 as "Fair Housing Month" in Yuma County. **No Action**

6. Presentation by Julie Engel, Greater Yuma Economic Development Corporation (GYEDC), President/CEO, an update on GYEDC activities. **No Action**

7. Presentation by Gretchen Robinson, Emergency Operations Manager, on the annual report for the Yuma County Multi-jurisdictional Multi-Hazard Mitigation Plan. **No Action**

CONSENT CALENDAR: The following items listed under the Consent Agenda will be considered as a group and acted upon by one motion with no separate discussion, unless a Board Member so requests. In that event, the item will be removed for separate discussion and action.

1. Assessor: Approve tax roll corrections as listed in batch dated April 5, 2010, pursuant to ARS Title 42, Chapter 16, Article VI. (A full listing of all corrections is available from the Clerk of the Board of Supervisors.) **Approved as presented**

2. Financial Services: Approve the Accounts Payable Demands disbursed in the amount of $9,671,029.82 and Payroll in the amount of $1,547,349.15 during the period of February 23, 2010 through March 10, 2010. (A full listing is available for review from the Clerk of the Board.) **Approved as presented**

3. Clerk of the Board: Approve the minutes for: a) February 24, 2010 Retreat; b) March 15, 2010 Regular Session; and c) March 22, 2010 Special Session. **Approved as presented**

4. Clerk of the Board: Action to recommend State approval of a Special Event Liquor License application submitted by Michael Brick dba Yuma Valley Rod and Gun Club, for a fundraiser to be held Saturday, May 1, 2010 at 4331 Riverside Drive, Yuma, AZ. **Approved as presented**

5. Clerk of the Board: Action to consider a recommendation to the State to approve a Bingo License application submitted by Linda Gower for the Los Amigos Social Club for Bingo to be held at 10330 N. Frontage Road, Yuma, AZ, on Tuesdays at 7:00 p.m. **Approved as presented**

6. County Administrator's Office: Adopt Budget Amendment Resolution No. 10-105, establishing budget authority of $85,157 for Fill The Gap interest earned for the County Attorney, Public Defender and Superior Court departments. **Approved as presented**

7. Elections: Accept the recommendation of the Yuma County Republican Central Committee Chairman and appoint the following individuals as Republican Precinct Committeemen: Precinct No. 3: Adelaida C. Maloy; Precinct No. 4: James Broy and Phillip Pearson. **Approved as presented**

8. Public Works/Board of Directors Avenue B & C Colonia Improvement District No. 07 -09: Establish a new, additional fund number for the American Recovery & Reinvestment Act (ARRA) funds to be received from USDA-Rural Development for the Avenue B & C Sewer Collection Project. **Approved as presented**

9. Development Services/Engineering: Accept the 2009 Assessment Report for the Yuma County Flood Control District. **Approved as presented**

10. Development Services: Approve Requisition No. 90153 in the amount of $76,021.53 for the purchase of two (2) electric forklifts, one (1) pallet jack, and additional items (extra forklift & pallet jack batteries, fork lift scale, battery charger, and watering kit) from Arnold Machinery, State Contract No. DES090016-1, for the Yuma Community Food Bank (fully funded with Community Development Block Grant). **Approved as presented**

11. Development Services: Adopt Resolution No. 10-15, to undertake actions to affirmatively further fair housing in recognition of the Federal Fair Housing Act. **Approved as presented**

12. Public Health Services District: a) Adopt Budget Amendment Resolution No. 10-106, decreasing budget authority by $12,000.00, from $136,500 to $124,500, for the Comprehensive Outpatient Health & Support Services contract; and, b) Authorize the Health District Director to sign Amendment No. 3 to the Comprehensive Outpatient Health & Support Services Contract No. HG552273 between the Yuma County Public Health Services District and the Arizona Department of Health Services. **Approved as presented**

13. Public Health Services District: a) Adopt Budget Amendment Resolution No. 10-112, increasing budget authority by $91,000.00, from $261,318 to $352,318, for Arizona Early Childhood Development and Health Board Grant; b) Adopt Budget Amendment Resolution No. 10-113, authorizing one (1) full-time Administrative Assistant and one (1) part-time Promotora (Health Advisor); and c) Authorize the Public Health District Director to sign Amendment No. 1 for GRA-RC023-10-0026-01 between The Arizona Early Childhood Development and Health Board and Yuma County Health Services District. **Approved as presented**

14. Public Health Services District: Authorize Health District Director to sign Intergovernmental Agreement for Arizona Nutrition Network Program (AZNN) Partnership participation with City of Yuma for the period October 1, 2009 through September 30, 2010. **Approved as presented**

15. Treasurer: Pursuant to A.R.S. § 35-325, receive written bids for the Servicing Bank Contract for the period July 1, 2010 through June 30, 2013. **Approved as presented**

HOUSING BOARD:

Chairman recesses the Yuma County Board of Supervisors and convenes the Yuma County Housing Board.

1. Housing: Public Hearing, followed by possible action to adopt Resolution No. 10-16, approving the Yuma County Housing Department Public Housing Agency Annual Plan for Fiscal Year 2010 and the 5-Year Plan for 2010-2014, and include any comments

received at the Public Hearing. **Approved as presented**

Chairman adjourns the Yuma County Housing Board and reconvenes the Yuma County Board of Supervisors in Regular Session.

PLANNING & ZONING AGENDA: Full legal descriptions of property sites for all Rezoning Cases are available for public review at the Yuma County Board of Supervisors' Office.

REZONING -- REGULAR PUBLIC HEARING ITEMS: Staff will make a full presentation on each of the following items, followed by separate discussion, public hearing, and action by the Board of Supervisors.

1. Development Services: Minor Amendment Case No. 2009-MA-10: Craig Colvin of Colvin Engineering, Inc., agent for Henry and Alice Steinly, requests a change of land use designation for an 8.0 acre portion of a parcel 44.52 gross acres in size from Mixed Use Residential (R-MU) to Commercial (C), part of Assessor's Parcel No. 205-43-013, located in the vicinity of Avenue 40E and County 9½ Street, Tacna, Arizona. (The Planning Commission (8 to 0 vote) and staff recommend approval.) **Approved PZ Com Recommendation**

2. Development Services: Rezoning Case No. 09-17: Hilda Guerrero and Melly De Leon request the rezoning of a parcel 7,500 square feet in size from Low Density Residential - 12,000 square foot minimum (R-1-12) to Manufactured Home Subdivision – 6,000 square foot minimum (MHS-6), Assessor's Parcel No. 632-33-017, located at 3220 West Columbia Avenue, Yuma, Arizona. The Planning Commission (8 to 0 vote) and staff recommend approval. **Approved PZ Com Recommendation**

3. Development Services: Rezoning Case No. 08-23. In accordance with A.R.S. §11-832, request by Fowler Malone, Agent for the Ruth Malone Living Trust, to grant an extension, determine compliance with the Schedule for Development, or cause the property to revert to its former Residential Low Density-6,000 square feet minimum (R -1-6) zoning classification, Assessor's Parcel Nos. 759-29-005 (23,800 square feet) and 759-29-018 (24,000 square feet), located at the southeast corner of US Highway 95 (Main Street) and Fifth Avenue, Gadsden, Arizona. Staff recommends granting an extension of one (1) year to comply with the Schedule for Development. **Approved as Amended**

EVENTS CALENDAR:

1. Events Calendar: Board members and County Administrator will report and may discuss events attended or to be attended on behalf of the County, and may update the schedule for future Board of Supervisor's meetings, as appropriate. No legal action will be taken.

CURRENT EVENTS:

1. County Administrator: The County Administrator may give notice to the Board of Supervisors on current events of impact to Yuma County. The report is intended to be informational only, and no discussion, deliberation, or legal action will be taken, pursuant to A.R.S. §38-431.02(K). **No Action**

I hereby certify that this Meeting Notice and Agenda were posted within the 24-hour advance notice, in compliance with the Arizona Open Meeting Law.

Action to adjourn.

Note: The Board may vote to hold an Executive Session for the purpose of obtaining legal advice from the Board's attorney on any matter listed on the agenda, pursuant to Arizona Revised Statute §38-431.03(A)(3).

ATTEST:
/s/CHRISTY ISBELL
Deputy Clerk of the Board

AGENDA PACKET

- Board of Supervisors Regular Session, April 5, 2010

Add to my Outlook
Calendar

Town of Wellton

Contact Us Home Site Map

- About Wellton
- Town Hall
- Departments
- Around Town
- Employment
- Events
- Community Links

Town of Wellton
28634 Oakland Ave.
PO Box 67, Wellton, AZ 85356
tel: (928) 785-3348
e-mail: wellton@town.wellton.az.us

Last Updated: June 1, 2010

Located 29 miles east of Yuma, Arizona, the Town of Wellton, is a center for business, services, recreation, and a leisurely lifestyle. We are home to over 1,800 people and countless winter and retired residents.

Surrounded by the Gila Mountains and local farms, the gorgeous sunrises each morning, the warmth, and sun-filled days, it is no wonder that folks have been coming to Wellton to rest and enjoy the town's quiet setting. You'll discover our friendly town is a safe haven for you and your family.

We have a rich western history stemming from our roots as a water stop for the railroad (hence Well Town - Wellton) and the Butterfield Stage Coach. You can learn more about our history.

We host several annual events like the Tractor Rodeo, Pioneer Days, an old fashioned 4th of July, Fishing Derby, and Tri-Valley Celebrations. With the growth of Wellton comes the growth of our town facilities. We've built a new Family Services Center

Notices

Town Council Agendas
You can view Wellton Town Council Agendas online to see how your elected officials are working hard for you.

Yuma County and Communities Begins Work on Hazard Mitigation Plan (pdf)

18-Hole Golf Course

and Spectacular Sunsets

that also hosts the medical clinic. The Butterfield Golf Course provides a leisurely game with the Gila Mountains and brilliant orange sunsets as a backdrop. The community pool with its large slide adds a respite for the hot, dry days during the summer. RV parks are abundant. You can plan your next winter visit here and find your RV rest stop.

In addition to our town, we are close to Yuma (the third fastest growing metropolitan area in the country), it offers the Scorpions' baseball games, shopping, and history. We are approximately 2 ½ hours from Phoenix for the major league ballgame and 3 hours from San Diego for an ocean visit. See a map of the Wellton area.

We invite you to learn more out about our little well town. Take your time and we look forward to your visit.

CITY

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Chamber of Commerce

News & Announcements -

TRADUCIR A ESPAÑOL

City of Somerton Begins Work on Updating the Hazard Mitigation Plan

City of Somerton Begins Work on Updating the Hazard Mitigation Plan
Posting March 24, 2009

Hazard mitigation planning is the process used to identify risks and vulnerabilities associated with natural disasters and to develop long-term strategies for protecting people and property in future hazard events. The process results in a mitigation plan that offers a strategy for breaking the cycle of disaster damage, reconstruction, and repeated damage and a framework for developing feasible and cost-effective mitigation projects. Under the Disaster Mitigation Act of 2000 (Public Law 106-390), state, county, local and tribal governments are required to develop a FEMA approved hazard mitigation plan as a condition for receiving certain types of non-emergency disaster assistance.

In order to meet the requirements to ensure assistance eligibility, a planning team comprised of representatives from the (Yuma County, City of Yuma, City of Somerton, City of San Luis and the Cocopah Tribe) will be meeting regularly to develop a Multi-Hazard Mitigation Plan for Yuma County. The planning team anticipates having a plan draft in the middle of 2009, at which time the public will be provided access to the plan and the opportunity to comment prior to submittal to FEMA.

The primary areas of work/focus in the plan development are:

☐ Identify hazards that may impact or have impacted the community
☐ Develop a profile of the most relevant hazards
☐ Assess vulnerability to hazards

☐ Establish goals and objectives for hazard risk reduction/elimination
☐ Develop actions/projects to achieve goals and objectives

Additional Information & Questions
Please contact:

English
Ray Smith
445 E. Main Street
P.O. Box 638
Somerton, AZ. 85350
rays@cityofsomerton.com

Espanol
Sam Palacios
110 N. State Ave.
Somerton, AZ. 85350
samp@cityofsomerton.com

Yuma County and Communities
Begins Work on Hazard Mitigation Plan
June 1, 2010

Hazard mitigation planning is the process used to identify risks and vulnerabilities associated with natural disasters and to develop long-term strategies for protecting people and property in future hazard events. The process results in a mitigation plan that offers a strategy for breaking the cycle of disaster damage, reconstruction, and repeated damage and a framework for developing feasible and cost-effective mitigation projects. Under the Disaster Mitigation Act of 2000 (Public Law 106-390), state, county, local and tribal governments are required to develop a FEMA approved hazard mitigation plan as a condition for receiving certain types of Federal mitigation and/or disaster funding.

In order to meet the requirements to ensure assistance eligibility, a planning team comprised of representatives from:

- Yuma County
- San Luis
- Cocopah Indian Tribe
- Somerton
- City of Yuma
- Wellton

will be meeting regularly to develop a multi-jurisdictional Multi-Hazard Mitigation Plan. The planning team anticipates having a plan draft in early mid-2010, at which time the public will be provided access to the plan and the opportunity to comment prior to submittal to FEMA.

The primary areas of work/focus in the plan development are:

- ❖ Identify hazards that may impact or have impacted the community
- ❖ Develop a profile of the most relevant hazards
- ❖ Assess vulnerability to hazards
- ❖ Establish goals and objectives for hazard risk reduction/elimination
- ❖ Develop actions/projects to achieve goals and objectives

Additional Information & Questions
Please contact:

Gretchen Robinson
Emergency Operations Manager
Yuma County Office of Emergency Management
198 S. Main St.
Yuma, Arizona 85364

Yuma County and Communities
Begins Work on Hazard Mitigation Plan
24 May, 2010

Hazard mitigation planning is the process used to identify risks and vulnerabilities associated with natural disasters and to develop long-term strategies for protecting people and property in future hazard events. The process results in a mitigation plan that offers a strategy for breaking the cycle of disaster damage, reconstruction, and repeated damage and a framework for developing feasible and cost-effective mitigation projects. Under the Disaster Mitigation Act of 2000 (Public Law 106-390), state, county, local and tribal governments are required to develop a FEMA approved hazard mitigation plan as a condition for receiving certain types of Federal mitigation and/or disaster funding.

In order to meet the requirements to ensure assistance eligibility, a planning team comprised of representatives from:

- Yuma County
- San Luis
- Cocopah Indian Tribe
- Somerton
- City of Yuma
- Wellton

will be meeting regularly to develop a multi-jurisdictional Multi-Hazard Mitigation Plan. The planning team anticipates having a plan draft in early mid-2010, at which time the public will be provided access to the plan and the opportunity to comment prior to submittal to FEMA.

The primary areas of work/focus in the plan development are:

- ❖ Identify hazards that may impact or have impacted the community
- ❖ Develop a profile of the most relevant hazards
- ❖ Assess vulnerability to hazards
- ❖ Establish goals and objectives for hazard risk reduction/elimination
- ❖ Develop actions/projects to achieve goals and objectives

Additional Information & Questions
Please contact:

Kevin Conrad
Director
Cocopah Environmental Protection Office
County 15th & Ave. G
Somerton, Arizona 85350

Posted at the Tribal Headquarters and the Cocopah Community Center…

Dwight Nield

From: elgine@roadrunner.com
Sent: Monday, June 21, 2010 3:27 PM
To: Gretchen.Robinson@yumacountyaz.gov
Subject: Mit Plan

Hi! I went to the library and spent some time reviewing the plan.
I have been out of the loop since 1993 when I retired so if I sound like an ol fuddyduddy (i am). Anyway, I noticed the Proving Ground and MCAS did not have participating members. Realizing all local emergency services have "mutual aid" with one another, those two should be a player in the plan. They not only respond as needed, they are made up of emergency responders who live in the Yuma area and have the latest equipment and training. Also, with the desalting plant starting up, that operation should have input. The Jurisdictional population needs corrected. Especially City of Yuma. Pg. 38 4.3.5 par.2 and, of course, Yuma proper incorp. areas has changed with annexations.

Assets at risk should be much larger and the list of participants updated with the caretaker of the existing plan having constant input of those that are replaced during the cycle. Example of why: The recent Gulf Oil Disaster had some early problems with "list". Some of the phone numbers were no longer in service and some of the people listed were either dead or no longer on the job. An active list should update anytime a member drops off with the name of the replacement.

Mitigation Actions and Projects;

Some I can think of have to do with flooding. All areas that have become flood prone because of new development or lack of, should be addressed. ie: Magnolia village, LaHola Delval, Del Oro Mobile Estates, etc: all need to be included in the rain water recovery systems as all are subject to heavy flooding. Recently, Casa Manana on 24th was provided drainage. This needs designed and available on the shelf if any "shovel ready" funds become available. I may have missed those on the list but Those and any others (east valley) should be looked at by the drainage district.
Again, I am sorry I have been out of the loop so long. I should have gotten involved sooner. I really want to be part of the LEPC. At least long enough to see how far they are from 1981 when I left Yuma for a short time.

If I can be of any help, please let me know. I would be happy to assist if I can. Elg

From: Michelle Smith [Michelle.Smith@yumacountyaz.gov]
Sent: Thursday, June 17, 2010 11:00 AM
To: Gretchen Robinson
Subject: haz mit plan

After reading the plan......I had a few suggestions. First, what an incredible wealth of information, wish I had it 2 years ago when I started PPHR!

On page #86 (of document not PDF version) it would be helpful if dates were in chronological order.
Pg #90 paragraph 2, "8 days to....
pg # 143 5.B.10 Should that be Retention basin, not Detention Basin Are you sure everyone is OK with their cell phone numbers posted on the internet as part of the document(last attachment)?
Are we meeting tomorrow? I have it on my calendar.

Michelle Smith-Wade RN
Public Health Preparedness Coordinator
928 317-4624 ex 1725
michelle.smith@yumacountyaz.gov -Don't be Scared, Be Prepared! -

From: Gretchen Robinson
To: Michelle Smith
Subject: Re: mjhm plan
Date: Wednesday, June 23, 2010 9:52:06 AM

Thanks Michelle - have sent to the consultant.

Gretchen Robinson
Emergency Operations Manager
Yuma County Office of Emergency Management
198 So. Main Street
Yuma AZ 85364
County Emergency Management office - 928-373-1093
Emergency Management Cell - 928-580-6537

928-539-7882 - YCSO direct
928-783-4427 - YCSO dispatch 24/7
gretchen.robinson@yumacountyaz.gov

>>> Michelle Smith 6/23/2010 9:16 AM >>>
As a member of the public I would also like to say that Hazmat spills, heat, and terrorism(soft targets such as food and water) also need to be addressed in the plan.

They were identified in 2004 in the State plan and are now more rather than less of a threat.

Michelle Smith-Wade RN
Public Health Preparedness Coordinator
928 317-4624 ex 1725
michelle.smith@yumacountyaz.gov -Don't be Scared,
Be Prepared! -

Last	*First*	*Representing*
Alford	Dwayne	Yuco Gin
Almanza	Abel	Pan American Insurance
Busellato	Anthony	Farm Credit Southwest
Catanzaro	Terry	Skyview Cooling
Cumming	Jim	Farmer
Davis	Tom	Yuma County Water Users
Didier	Louie	Select Seed AZ
Dinnan	Louie	Morris Ag Air
Dunn	Aimee	Dunn Farms
Dunn	Tim	Dunn Grain
Eatherly	Kevin	City of Yuma Heritage Foundation
Fairchild	Donna	AZ Cotton Research and Protection Council
Gatley	George	Western Agri Radio Networks
Hodges	Tom	University of Arizona
Hoffmeyer	Fred	Hoffmeyer Farms
Kidd	Joanne	Doug Mellon Farms
Kinner	Ronald	Farm Credit Services Southwest
Koch	Karl	Bingham Equipment
Lobeck	Joyce	The Sun
Maxwell	Howard	Booth Machinery
McDermott	Bobbi	USDA retired
Mellon	Doug	Doug Mellon Farms
Ming	Dale	Farm Credit Services Southwest
Moneypenny	Dennis	Moneypenny Farms
Morris	Miles	Morris Ag Air
Muldoon	Jerry	Dole Company
Nolte	Kurt	University of Arizona
Ogden	Ralph	Sheriff of Yuma County
Palmer	Dwight	Cros Production Services
Pangerl	Jolynn	Southwest Ag Summit
Pauley	Craig	BASF The Chemical Company
Phillips	Matthew	
Poe	Steve	University of Arizona
Rademacher	Rick	Three Star Lettuce
Rice	Ronald	
Robinson	Gretchen	Yuma County Office of Emergency Management
Rodriguez	Sonny	Growers Company
Rosevear	Ken	Yuma County Chamber of Commerce
S	Scott	McElhaney Cattle Company
Simmons	Darren	Yuma County Sheriff's Office
Spencer	Bill	AZ Citrus Products
Stubbs	Ronna Sue	Yuma Community Food Bank
Ward	Shelly	USDA
Ware	Patty	Pat Ware Farms
Wilmot	Leon	YCSO

Dwight Nield

From: Gretchen Robinson [Gretchen.Robinson@yumacountyaz.gov]
Sent: Tuesday, April 20, 2010 3:45 PM
To: rrademacher@3starlettuce.com; spoe@ag.arizona.edu; dolphingirlsjm@aol.com; helicopterlou@aol.com; lowlevelflight@aol.com; sonnyGCI@aol.com; cheryl.lambert@az.usda.gov; shelly.ward@az.usda.gov; DFairchild@azcotton.org; craig.pauly@basf.com; karl.koch@binghamequipment.com; hmaxwell@boothmachineryinc.com; knolte@cals.arizona.edu; thodges@cals.arizona.edu; kevin.eatherly@ci.yuma.AZ.us; jerry.muldoon@dole.com; timd@dunngrain.com; anthony.busellato@fcssw.com; triplej22@juno.com; scotts@mcelhaneycattle.com; dougmellon@mellonfarms.com; Joanne Kidd; rjsm09@msn.com; kar228@nau.edu; AbelAlmanza@Paula.com; locofred@q.com; ldidier@selectseedaz.com; tcatanzaro@skyviewcooling.com; ggatley@sprynet.com; dunnaimee@yahoo.com; patwarefarms@yahoo.com; tdavis@ycwua.org; dwayne@yucogin.com; billacp@yuma.twcbc.com; ken@yumachamber.org; Darren Simmons; Leon Wilmot; Ralph Ogden; rstubbs@yumafoodbank.org; jlobeck@yumasun.com
Subject: OEM - Multi-jurisdictional multi-hazard plan re agricultural community
Attachments: MJMHMP agriculture section .tif; Gila River flows.xls

Good afternoon all:

If you attended today's Yuma Area Ag Council, you know that I have asked for your input on the revision of the county's multi-jurisdictional multi-hazard mitigation plan. I provided a handout that I am now forwarding to all of you.

Could you please take a look at the section marked with arrows and respond. I have a transmittal memo on the front of the packet. If you could respond by the end of next week, this information will be in the new draft that will be posted for public review.

I have also attached the Gila River flows as well as the county roads and low water crossings that are closed.

FYI - next Yuma Area Ag Council will be May 18th, Tuesday.

Gretchen Robinson
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198 So. Main Street
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Emergency Management Cell - 928-580-6537

928-539-7882 - YCSO direct
928-783-4427 - YCSO dispatch 24/7
gretchen.robinson@yumacountyaz.gov

Appendix D

Detailed Historic Hazard Records

	State and Federally Declared Natural Hazard Events That Included Yuma County - April 1973 to September 2010			
	No. of	Recorded Losses		
Hazard	**Declarations**	**Fatalities**	**Injuries**	**Damage Costs ($)**
Drought	9	0	0	$303,000,000
Earthquake	1	0	0	$0
Flooding / Flash Flooding	8	22	112	$505,750,000
Severe Winter Storm	1	0	0	$300,000
Tropical Storm / Hurricane	1	0	0	$375,000,000
Wildfire	19	0	0	$0

Notes: Damage Costs include property and crop/livestock losses and are reported as is with no attempt to adjust costs to current dollar values. Furthermore, wildfire damage costs do not include the cost of suppression which can be quite substantial. City of Yuma received $300,000 for Severe Winter Storm.
Sources: ADEM, FEMA, USDA

State of Arizona Declaration				Federal Presidential Declaration				
Date	Hazard	State PCA No.	Expenditures	Date	ID	Expenditures	Counties Affected	Description
4/28/1973	Wildfire		$36,718				Statewide	
1/7/1974	Service Interruption		$199,028				Statewide	Energy Shortage
4/22/1975	Wildfire		$8,923				Statewide	
9/2/1977	Infestation						Statewide	Cotton Crop Pesticide Application
3/2/1978	Flooding / Flash Flooding		$485,718	03/04/78	550-DR	$67,122,627	Statewide	Warm temeratures accompanied by heavy rain filled reservoirs behind all of the dams on the Salt and Verde Rivers and forced large volumes of runoff to be released. This was the largest flow of water down the Salt since 1891. The released water overflowed the channel and flooded residential areas and farmlands. During the same period storm fronts passing over the state caused flash flooding and destruction. 9.53 inches of rainfall occurred on Mt Lemmon. Overflows of the Gila River flooded Duncan and 1000-2000 acres of farmland in Safford Valley. The Rillito Creek, Pantano and Tanque Verde Creeks in Tucson were near bankfull. Total damage was approximately $65.9 million, of which $37 million was attributed to Maricopa County alone. Thousands of homes were damaged and 116 homes were destroyed. More than 7,000 people had to be sheltered and four people lost their lives. For Maricopa County - the storm centered over the mountains north and east of Phoenix, 35 miles north at Rock Springs. Extrapolation of intensity-probability data: 5.73 in./ 24 hr. equates to a 400 yr. storm. Main source of flooding due to Verde River with runoff volume exceeding reservoir storage capacity above Bartlett Dam. Flooding also occurred along irrigation canals on north side of metro area, and along tributaries of the Gila River and Queen Creek. 1 death-countywide. Total damage costs: $37 million: $3.1 million-residential, $16 million-public, $4 million-agriculture, $7.8 million-industrial, $0.75 million-commercial. "Flood Damage Report, 28 February-6 March 1978 on the storm and floods in Maricopa County, Arizona", U.S. Army Corps of Engineers, Los Angles District, FCDMC Library #802.024.
4/21/1978	Wildfire		$11,528				Statewide	
8/6/1978	Hazardous Materials Incident		$165				Statewide	
11/30/1978	Prison Problem		$425				Statewide	Prison Break
12/16/1978	Flooding / Flash Flooding		$1,909,498	12/21/78	570-DR	$113,561,122	Statewide	Following the spring flooding, Arizona was hit hard again in December 16th-20th. Total precipitation ranged from less than 1 inch in the northeastern and far southwestern portions of Arizona to nearly 10 inches in the Mazatzal Mountains northeast of Phoenix. A large area of the central mountains received over 5 inches. The main stems of the Gila, Salt, Verde, Agua Fria, Bill Williams, and Little Colorado Rivers, as well as a number of major tributaries, experienced especially large discharges. The flooding areas with the most significant damages included the Little Hollywood District near Safford and major portions of Duncan, Clifton, Winslow, and Williams. Damages were estimated at $39,850,000. 10 people die and thousands are left homeless. Severe damage to roads and bridges. For Maricopa County, 4 deaths, $16.3 million-public and $5 million-agriculture losses estimated. ["Flood Damage Report, Phoenix Metropolitan Area, December 1978 Flood", November 1979, U.S. Army Corps of Engineers, FCDMC Library #802.027]
4/16/1979	Wildfire		$204,207				Statewide	
12/19/1979	Earthquake		$25,000				Yuma	Imperial Valley, Baja California 6.4 mag / Extensive damage in Imperial Valley and Mexicali area; felt throughout much of Arizona; minor structural damage in Yuma
6/2/1980	Wildfire		$298,845				Statewide	
6/16/1980	Wildfire						Statewide	AZ Executive Order 81-5: [Terminating the Declaration of a State of Emergency of June 16, 1980 (caused by a severe forest and grassland fire contingency) and returning all unexpended funds authorized by A.R.S. º 35-192 to the General Fund.
7/25/1980	Wildfire							Fire suppression assistance for Bureau of Land Mnagement
3/31/1981	Hazardous Materials Incident		$492,635				Statewide	
6/26/1981	Wildfire						Statewide	Fire suppression assitance
6/30/1981	Wildfire		$256,904				Statewide	
6/30/1982	Wildfire		$492,635				Statewide	
6/25/1992	Miscellaneous	92004					Statewide	Emergency government state budget

State of Arizona Declaration				Federal Presidential Declaration				
Date	Hazard	State PCA No.	Expenditures	Date	ID	Expenditures	Counties Affected	Description
6/30/1994	Wildfire						Statewide	AZ Executive Order 94-9: In Accordance with Established Emergency Procedures declare a state of emergency in Apache, Cochise, Coconino, Gila, Graham, Greenlee, LaPaz, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai and Yuma counties due to wildfire conditions pursuant to A.R.S. º 37-623.02 effective June 30, 1994.
6/23/1999	Drought	99006					Statewide	PCA 99006; Statewide Drought Emergency, Declared June 23, 1999: Lack of precipitation had significantly reduced surface and ground water supplies and stream flows. The drought continues to endanger crops, property and livestock of the citizens of Arizona. This proclamation has been extended to June 23, 2003, as this is still a threatening situation. USDA Programs offer Arizona Ranchers Drought Relief, (Phoenix) - Federal officials this week announced three programs designed to ease the impact of Arizona's drought on the state's ranching industry and the state's natural resources. Gov. Jane Dee Hull in June issued a drought declaration for the state, initiating a federal review process that culminated in the U.S. Department of Agriculture's determination that Arizona agriculture could qualify for drought assistance. The following are brief descriptions of the three assistance packages for which Arizona ranchers may qualify: Those ranching operations that earlier this year reduced herd sizes in response to poor pasture conditions and lack of water due to the drought can receive capital gains tax deferment if those herds are replaced within two years, according to the Internal Revenue Service. It is recommended that businesses consult their tax specialist or the IRS for further details. For more information, contact Joe Lane, Associate Director of Animal Services Division, at (602) 542-3629. The USDA Natural Resource Conservation Service has received an initial $6 million through its Emergency Watershed Program (EWP) to treat short- and long-term damage to rangeland and cropland due to drought. Ranchers and farmers can receive financial assistance to implement recovery measures that will retard runoff and reduce the threat of future flooding and erosion hazards. For more information, contact Mike Sommerville, State Conservationist, at (602) 280-8810. The USDA Farm Services Agency has emergency drought assistance loans available. For more information, contact George Arredondo, USDA/FSA State Executive Director, at (602) 640-5200. Arizona's dry winter and low snowpack mostly impacted the state's ranching industry due to poor pasture conditions. Summer rains have improved rangelands throughout Arizona. According to the USDA Arizona Agricultural Statistics Service, as of Aug. 15, range and pasture condition was reported as 6 percent poor, 21 percent fair, 39 percent good, and 34 percent excellent. As much as 99 percent of Arizona's crops are irrigated, generally mitigating short-term drought impacts.
6/23/2000	Drought						Statewide	Annual extension of PCA 99006; Statewide Drought Emergency, Declared June 23, 1999: Lack of precipitation had significantly reduced surface and ground water supplies and stream flows. The drought continues to endanger crops, property and livestock of the citizens of Arizona. This proclamation has been extended until further notice, as this is still a threatening situation.
6/23/2001	Drought						Statewide	Annual extension of PCA 99006; Statewide Drought Emergency, Declared June 23, 1999: Lack of precipitation had significantly reduced surface and ground water supplies and stream flows. The drought continues to endanger crops, property and livestock of the citizens of Arizona. This proclamation has been extended until further notice, as this is still a threatening situation.
5/18/2002	Disease						Statewide	the Arizona Game and Fish Department placed an emergency ban on the importation of live hoofed animals (e.g., deer and elk) into Arizona due to a fear of Chronic Wasting Disease (CWD). CWD is a disease closely related to “mad cow disease” in cattle and scrapie in domestic sheep and goats but affects dear and elk.
6/23/2002	Drought						Statewide	Annual extension of PCA 99006; Statewide Drought Emergency, Declared June 23, 1999: Lack of precipitation had significantly reduced surface and ground water supplies and stream flows. The drought continues to endanger crops, property and livestock of the citizens of Arizona. This proclamation has been extended until further notice, as this is still a threatening situation.
5/2/2003	Wildfire	23003	$2,378,020				Statewide	Forest Health Emergency - As a result of the on-going drought conditions the forests within our state have been infested with the Pine Bark Beetle. This proclamation will expedite the clearing of dead, dying and diseased trees and other vegetation that interfere with emergency response and evacuation needs.
6/23/2003	Drought						Statewide	Annual extension of PCA 99006; Statewide Drought Emergency, Declared June 23, 1999: Lack of precipitation had significantly reduced surface and ground water supplies and stream flows. The drought continues to endanger crops, property and livestock of the citizens of Arizona. This proclamation has been extended until further notice, as this is still a threatening situation

State of Arizona Declaration				Federal Presidential Declaration				
Date	Hazard	State PCA No.	Expenditures	Date	ID	Expenditures	Counties Affected	Description
8/15/2005	Border Security	26001	$1,500,000				Cochise, Pima, Santa Cruz, Yuma	The daily threat to public health and safety from the gangs, coyotes and others engaged in dangerous criminal activities is worsening and Arizona can no longer wait for the federal government to do their job. This declaration allows the state agencies and local governments within the counties of Cochise, Pima, Santa Cruz and Yuma to perform projects that will lessen the criminal activities and enhance public health and safety along the international border.
9/3/2005	Miscellaneous	26003		9/12/2005	241-EM	$5,421,732	Statewide	Emergnecy declaration to provide shelter and assistance to victims of Hurricane Katrina
2/22/2006	Wildfire	26006	$192,390				Statewide	On February 22, 2006, the Governor declared an emergency due to the driest winter in recorded history coupled with above average temperatures and the earliest recorded start to a wildfire season. The entire state was threatened by extreme wildfire hazards. The 2006 state wildfire presuppression resources strategy required additional financial support. The declaration provided $200,000 for pre-suppression resources to the Arizona State Land Department, Office of State Forester and the Arizona Division of Emergency Management.
6/23/2006	Infestation	26008	$743,000				Cochise, Maricopa, Pima, Pinal, Santa Cruz, Yuma	Glassy-winged sharpshooter infestation - The Glassy-Winged Sharpshooter is a known vector of Xyella fastidiosa, a bacteria that causes plant diseases such asPierce's disease of grapes, almond leaf scorch, alfalfa dwarf, oleander leaf scorch, and citrus verigated chlorosis, that threaten the viability of wine, citrus and other agricultural and horticultural industries as well as public landscapes. The Glassy-Winged has been detected in Arizona in a small isolated location in the city of Sierra Vista, Cochise County. The Arizona Department of Agriculture has been placing detection traps, monitoring and eradicating the Sharpshooter.
01/05/2000	Service Interruption	20005	$23,073				Statewide	Y2K
01/08/1993	Flooding / Flash Floodi	93003	$30,072,157	01/19/93	977-DR	$104,069,362	Statewide	During January and February 1993, winter rain flooding damage occurred from winter storms associated with the El Nino phenomenon. These storms flooded watersheds throughout Arizona by dumping excessive rainfall amounts that saturated soils and increased runoff. Warm temperature snowmelt exacerbated the situation over large areas. Erosion caused tremendous damage and some communities along normally dry washes were devastated. Stream flow velocities and runoff volumes exceeded historic highs. Many flood prevention channels and retention reservoirs were filled to capacity and so water was diverted to the emergency spillways or the reservoirs were breached, causing extensive damage in some cases (e.g., Painted Rock Reservoir spillway). Ultimately, the President declared a major federal disaster that freed federal funds for both public and private property losses for all of Arizona's fifteen counties. Damages were widespread and significant, impacting over 100 communities. Total public and private damages exceeded $400 million and eight deaths and 112 injuries were reported to the Red Cross (FEMA, April 1, 1993; ADEM, March, 1998).
01/20/1999	Infestation	99001	$177,702				Statewide	Red Imported Fire Ant Emergency
02/15/1995	Flooding / Flash Floodi	95007	$1,525,663				Graham, Geenlee, La Paz, Maricopa, Navajo, Pinal, Yavapai, Yuma	On February 15, 1995, the Governor proclaimed an emergency due to flooding in Coconino, Gila, Maricopa, Yavapai, and Yuma Counties. The proclamation included an allocation of $100,000 for emergency measures and recovery costs. The proclamation was amended to include Graham, Greenlee, LaPaz, navajo, and Pinal Counties.
03/13/1996	Infestation	96003	$796,456				Statewide	Wheat (karnal bunt)
03/17/1987	Wildfire	EUZSLD					Statewide	Wildland fires statewide
03/17/1990	Wildfire	EUFIR					Statewide	Wildland fire contingency
03/31/1987	Hazardous Materials Incident						Statewide	
05/06/1999	Wildfire	99004	$4,894				Statewide	Statewide wildland fire emergency
05/16/1996	Wildfire	96004	$1,000,729				Statewide	Statewide wildfire suppression - State Land Department
05/17/2002	Drought			05/17/02	USDA		Statewide	VENEMAN DESIGNATES ARIZONA AS DROUGHT DISASTER AREA, Governor Hull and Veneman Tour Fire Areas and Assess Damage in Prescott National Forest Areas: PHOENIX, Ariz., May 17, 2002-- Agriculture Secretary Ann M. Veneman today designated the entire state of Arizona as a drought disaster area. This designation makes Arizona farmers and ranchers immediately eligible for USDA emergency farm loans due to losses caused by drought this year.
06/07/1996	Drought	96005	$211,499				Statewide	

State of Arizona Declaration				Federal Presidential Declaration				
Date	Hazard	State PCA No.	Expenditures	Date	ID	Expenditures	Counties Affected	Description
07/11/2002	Drought			07/11/02	USDA		Statewide	VENEMAN ANNOUNCES EXPANSION OF CRP EMERGENCY HAYING AND GRAZING PROGRAM FOR WEATHER-STRICKEN STATES, WASHINGTON, July 11, 2002 - Agriculture Secretary Ann M. Veneman today approved 18 states for Conservation Reserve Program emergency haying and grazing statewide, making all CRP participants in these states basically eligible for this emergency measure. Veneman also said USDA will waive rental reduction fees to encourage donation of hay to farmers and ranchers in immediate need. "Drought and severe weather conditions have depleted hay stocks and grazing lands across the country," said Veneman. "This approval provides immediate relief to livestock producers and encourages donations of hay to producers who need immediate assistance." The 18 approved states are: Arizona, Colorado, Georgia, Idaho, Kansas, Minnesota, Montana, Nebraska, New Mexico, North Carolina, North Dakota, Oklahoma, South Carolina, South Dakota, Texas, Utah, Virginia and Wyoming.ARIZONA FARMERS FACING CATASTROPHE ... Arizona officials are saying that the losses from the livestock industry alone last year will be upward of $300 million. …
07/21/2000	Drought			07/21/00	USDA		Apache, Cochise, Graham, Greenlee, Pima, Pinal, Santa Cruz, Gila, Maricopa, Navajo, Yuma	GLICKMAN DECLARES 7 ARIZONA COUNTIES AGRICULTURAL DISASTER AREAS: Washington, July 17, 2000 - Agriculture Secretary Dan Glickman today declared seven of Arizona's 15 counties as agricultural disaster areas due to drought, making farmers in those areas and 12 neighboring counties, including counties in Utah, New Mexico and Colorado, eligible for emergency low-interest loans. "Farmers and ranchers in Arizona are experiencing real difficulties this year due to drought," said Glickman. "USDA emergency low-interest loans are available to help producers to cover some of their losses." Glickman's disaster declaration covers 7 of Arizona's 15 counties: Apache, Cochise, Graham, Greenlee, Pima, Pinal and Santa Cruz. Four other contiguous Arizona counties also are covered by the declaration (Gila, Maricopa, Navajo and Yuma) and therefore are eligible for the same benefits. Other contiguous counties in New Mexico are Catron, Cibola, Grant, Hidalgo, McKinley, and San Juan counties. San Juan county in Utah and Montezuma county in Colorado are included in the declaration as contiguous counties. This designation makes qualified family-sized farm operators in both primary and contiguous counties eligible for emergency low-interest loans from USDA. Farmers in eligible counties have eight months to apply for the loans. Each loan application is considered on its own merits, taking into account the extent of losses, security available, repayment ability, and other eligibility requirements. USDA previously approved emergency haying and grazing on Conservation Reserve Program acreage, providing assistance to approved producers whose pastures have been decimated by drought. For further information, farmers may contact their local Farm Service Agency offices or visit website: http://www.fsa.usda.gov/pas/disaster/assistance1.htm.
07/27/1989	Flooding / Flash Floodi	EUZ9AU	$182,119				Yuma	Wind driven rains bend stop signs to the ground; houses are flooded by wind driven water. Yuma Historical Prison damaged, especially adobe buildings.
08/08/1989	Flooding / Flash Floodi	EUZ9AG	$416,274				Yuma	Heavy flooding in Yuma County
09/09/1993	Wildfire	94002	$200,000				Statewide	Statewide wildfire suppression - State Land Department
09/24/1997	Tropical Storm / Hurric	98002	$2,318,259				Statewide	Hurricane Nora - $200 million property damage. An estimated $150 to $200 million in damage was sustained by crops throughout Yuma County due mainly to flooded crops. About $30 to $40 million was to lemon trees. The heavy rain was attributed to Tropical Storm Nora. Flooding from Hurricane Nora results in the breaching of Narrows Dam. The calculated 24-hour, 100-year rainfall amount in NW Maricopa County was exceeded at six ALERT measuring sites. 3 to 5 inches of rain which fell from Nora led to some flash flooding inportinons of northwest Maricopa County. Two earthen dams gave way in Aguila and caused widespread flooding. One dike was located seven miles east of Aguila and the second in the center of the Martori Farms complex. Half of the cotton crop was lost at Martori Farms, as well as 300 to 500 acres of melons. Up to five feet of water filled Aqguila. About 40 people were evacuated from the hardest hit area of the town. Water flowing down the Sols Wash was so high that the Sols Wash Bridge in Wickenburg was closed for more than two hours. There was some flooding below Sols Wash in the streets around coffinger Park. Several houses in the area were flooded. Highway 71 west of Wickenburg and Highway 95 north were closed due to high water form the storm.
10/14/1994	Wildfire	95003	$600,000				Statewide	Statewide wildfire suppression - State Land Department
10/16/2001	Terrorism	22003	$7,324				Statewide	Military Airport Security
12/21/1988	Miscellaneous	EUZHTS	$129,624				Statewide	EUZHTS Homeless Sheltor
9/12/2001	Terrorism	22002	$3,070,329	09/12/01			Statewide	September Terrorism Incident, Declared September 12, 2001: Terrorist attacks inflicted in various locations across the United States posed significant threat to the citizens of this country causing us to heighten the level of security throughout the State of Arizona. This proclamation has been extended to November 12, 2002.

State of Arizona Declaration				Federal Presidential Declaration				
Date	**Hazard**	**State PCA No.**	**Expenditures**	**Date**	**ID**	**Expenditures**	**Counties Affected**	**Description**
6/16/1983	Flooding / Flash Floodi	30483	$825,096	7/1/1983	DR-686	$2,501,740	La Paz, Mohave, Yuma	Colorado River Flooding - Overflow of dams, Colorado River, state of Emergency in La Paz, Mohave, Yuma Counties
7/23/1984	Flooding / Flash Floodi	30886	$55,372	6/12/1985	DR-730	$505,323	Mohave, Yuma, Maricopa	
1/24/2010	Severe Winter Storm			1/24/2010		$300,000	City of Yuma	Emergency Declaration: Damage to roads, retention basins, parks, and other public facilities within City of Yuma.

State of Arizona Declaration				Damage Estimates			
Date	Hazard	Fatalities	Injuries	Property	Crop/Livestock	Total	Sources
4/28/1973	Wildfire					$0	ADEM, 2008
1/7/1974	Service Interruption					$0	ADEM, 2008
4/22/1975	Wildfire					$0	ADEM, 2008
9/2/1977	Infestation					$0	ADEM, 2008
3/2/1978	Flooding / Flash Floodi	4		$65,900,000		$65,900,000	ADEM, 2008; Tucson NWS, 2008 at http://www.wrh.noaa.gov/twc/hydro/floodhis.php; AFMA Flood Happens, Fall 2003
4/21/1978	Wildfire					$0	ADEM, 2008
8/6/1978	Hazardous Materials In					$0	ADEM, 2008
11/30/1978	Prison Problem					$0	ADEM, 2008
12/16/1978	Flooding / Flash Floodi	10		$39,850,000		$39,850,000	ADEM, 2008; Tucson NWS, 2008 at http://www.wrh.noaa.gov/twc/hydro/floodhis.php; AFMA Flood Happens, Fall 2003
4/16/1979	Wildfire					$0	ADEM, 2008
12/19/1979	Earthquake					$0	ADEM, 2008
6/2/1980	Wildfire					$0	ADEM, 2008
6/16/1980	Wildfire					$0	ADEM, 2008
7/25/1980	Wildfire					$0	ADEM, 2008
3/31/1981	Hazardous Materials In					$0	ADEM, 2008
6/26/1981	Wildfire					$0	ADEM, 2008
6/30/1981	Wildfire					$0	ADEM, 2008
6/30/1982	Wildfire					$0	ADEM, 2008
6/25/1992	Miscellaneous					$0	ADEM, 2008

State of Arizona Declaration				Damage Estimates			
Date	Hazard	Fatalities	Injuries	Property	Crop/Livestock	Total	Sources
6/30/1994	Wildfire					$0	ADEM, 2008
6/23/1999	Drought					$0	ADEM, 2008
6/23/2000	Drought			$2,000,000	$1,000,000	$3,000,000	ADEM, 2008
6/23/2001	Drought					$0	ADEM, 2008
5/18/2002	Disease					$0	ADEM, 2008
6/23/2002	Drought					$0	ADEM, 2008
5/2/2003	Wildfire					$0	ADEM, 2008
6/23/2003	Drought					$0	ADEM, 2008

State of Arizona Declaration				Damage Estimates			
Date	Hazard	Fatalities	Injuries	Property	Crop/Livestock	Total	Sources
8/15/2005	Border Security					$0	ADEM, 2008
9/3/2005	Miscellaneous					$0	ADEM, 2008
2/22/2006	Wildfire					$0	ADEM, 2008
6/23/2006	Infestation					$0	ADEM, 2008
01/05/2000	Service Interruption					$0	ADEM, 2008
01/08/1993	Flooding / Flash Floodi	8	112	$330,000,000	$70,000,000	$400,000,000	ADEM, 2008
01/20/1999	Infestation					$0	ADEM, 2008
02/15/1995	Flooding / Flash Floodi					$0	ADEM, 2008
03/13/1996	Infestation					$0	ADEM, 2008
03/17/1987	Wildfire					$0	ADEM, 2008
03/17/1990	Wildfire					$0	ADEM, 2008
03/31/1987	Hazardous Materials In					$0	ADEM, 2008
05/06/1999	Wildfire					$0	ADEM, 2008
05/16/1996	Wildfire					$0	ADEM, 2008
05/17/2002	Drought					$0	ADEM, 2008
06/07/1996	Drought					$0	ADEM, 2008

State of Arizona Declaration				Damage Estimates			
Date	Hazard	Fatalities	Injuries	Property	Crop/Livestock	Total	Sources
07/11/2002	Drought				$300,000,000	$300,000,000	ADEM, 2008
07/21/2000	Drought					$0	ADEM, 2008
07/27/1989	Flooding / Flash Floodi					$0	ADEM, 2008
08/08/1989	Flooding / Flash Floodi					$0	ADEM, 2008
09/09/1993	Wildfire					$0	ADEM, 2008
09/24/1997	Tropical Storm / Hurric			$200,000,000	$175,000,000	$375,000,000	ADEM, 2008
10/14/1994	Wildfire					$0	ADEM, 2008
10/16/2001	Terrorism					$0	ADEM, 2008
12/21/1988	Miscellaneous					$0	ADEM, 2008
9/12/2001	Terrorism					$0	ADEM, 2008

State of Arizona Declaration				Damage Estimates			
Date	Hazard	Fatalities	Injuries	Property	Crop/Livestock	Total	Sources
6/16/1983	Flooding / Flash Floodi					$0	ADEM, 2008
7/23/1984	Flooding / Flash Floodi					$0	ADEM, 2008
1/24/2010	Severe Winter Storm					$300,000	FEMA, 1010

Yuma County Historic Hazard Events August 1959 to September 2010				
Hazard	No. of Records	Recorded Losses		
		Fatalities	Injuries	Damage Costs ($)
Earthquake	16	0	0	$25,000
Flooding	7	1	0	$5,580,000
Infestation	1	0	0	$14,000,000
Severe Wind	48	0	14	$7,988,930
Transportation Accident	42	17	36	$1,058,000
Winter Storm	0	0	0	$0
Wildfire	54	0	0	$0

Notes: Damage Costs include property and crop/livestock losses and are reported as is with no attempt to adjust costs to current dollar values. Furthermore, wildfire damage costs do not include the cost of suppression which can be quite substantial.

Sources: ADEM, NCDC, NWCG, NWS, ASLD, USGS, USFS, NRC, AEIC, Ninyo & Moore, San Luis

Date	Hazard	Description
12/6/1994	Dense Fog	Dense fog formed in Yuma and vicinity, lowering visibility to near zero at times. Several traffic accidents totalling 20 vehicles caused Interstate 8 to be closed between 16th Street and Avenue 3E in Yuma. The accidents resulted in 10 injuries. In addition, flights were grounded at the airport for at least 4 hours.
7/30/1891	Earthquake	Mi = 6.0 estimated from felt area intensity. Epicenter Distance from Yuma 52 miles. Taken from Earthquake and Flooding Hazard Review Project Impact City of Yuma, Arizona, Ninyo & Moore, 9-07-2001
2/24/1892	Earthquake	Moment Magnitude (7), Mi = 7.0 estimated from felt area intensity. Epicenter Distance from Yuma 58 miles. Taken from Earthquake and Flooding Hazard Review Project Impact City of Yuma, Arizona, Ninyo & Moore, 9-07-2001
2/24/1892	Earthquake	Surface Wave Magnitude (6.2), Mi = 5.8 estimated from felt area intensity. Epicenter Distance from Yuma 51 miles. Taken from Earthquake and Flooding Hazard Review Project Impact City of Yuma, Arizona, Ninyo & Moore, 9-07-2001
11/29/1852	Earthquake	Moment Magnitude (7+), Mi = 7.0 estimated from felt area intensity. Epicenter Distance from Yuma approximately 25 to 50 miles. Taken from Earthquake and Flooding Hazard Review Project Impact City of Yuma, Arizona, Ninyo & Moore, 9-07-2001
4/4/2010	Earthquake	In April 2010, 7.2 earthquake swayed high-rises in downtown Los Angeles and San Diego and was felt across Southern California and Arizona. According to the U.S Geological Survey, the earthquake struck at 3:40 p.m. in Baja California, Mexico, about 19 miles southeast of Mexicali. The quake was felt as far north as Santa Barbara. A police dispatcher in Yuma, Arizona, said the quake was very strong here, but no damage was reported. Additionally, severe loss of property occurred in San Luis Rio Colorado and neighboring Imperial County, causing millions and possibly billions of dollars in damage - less than 50 miles away.
7/29/2008	Earthquake	Chino Hills, California EarthquakeOn July 29, 2008 a M5.4 earthquake shook Southern California. The earthquake was the strongest in the region since the Northridge earthquake in 1994. Shaking was felt as far as Las Vegas, Nevada and Yuma, Arizona. Buildings swayed in downtown Los Angeles and area amusement parks were evacuated. A minor landslide near Route 91 in the Anaheim Hills caused some traffic congestion, but no injuries or structural damage was reported.
6/28/1992	Earthquake	Magnitude: 7.4, 6.5, Seismic Evaluation of Essential Facilities in the City and County of Yuma, Arizona, Wiss, Janney, Elstner Associates, Inc. Under FEMA, 10/21/1994
11/24/1987	Earthquake	Moment Magnitude (6.5), Surface wave magnitude (6.6), 6.0 Local (Richter) magnitude. Epicenter Distance from Yuma 72 miles. Taken from Earthquake and Flooding Hazard Review Project Impact City of Yuma, Arizona, Ninyo & Moore, 9-07-2001
11/23/1987	Earthquake	Moment Magnitude (5.9), Surface wave magnitude (6.2), 5.8 Local (Richter) magnitude. Epicenter Distance from Yuma 70 miles. Taken from Earthquake and Flooding Hazard Review Project Impact City of Yuma, Arizona, Ninyo & Moore, 9-07-2001

Date	**Hazard**	**Description**
2/6/1987	Earthquake	5.4 Local (Richter) magnitude. Epicenter Distance from Yuma 44 miles. Taken from Earthquake and Flooding Hazard Review Project Impact City of Yuma, Arizona, Ninyo & Moore, 9-07-2001
4/26/1981	Earthquake	Moment Magnitude (5.9), Surface wave magnitude (6.0), 6.0 Local (Richter) magnitude. Epicenter Distance from Yuma 63 miles. Taken from Earthquake and Flooding Hazard Review Project Impact City of Yuma, Arizona, Ninyo & Moore, 9-07-2001
12/19/1979	Earthquake	Earthquake Flooding Imperial Valley, Baja California 6.4 mag / Extensive damage in Imperial Valley and Mexicali area; felt throughout much of Arizona; minor structural damage in Yuma
12/7/1976	Earthquake	Intensity in Yuma: VI, Measured Magnitude 5.7, Yuma Community Earthquake Hazard Evaluation, Douglas B. Bausch and David S. Brumbaugh, Arizona Earthquake Information Center, 5/23/1996
2/9/1971	Earthquake	Magnitude: 6.4, Max. MMI in Yuma V, Seismic Evaluation of Essential Facilities in the City and County of Yuma, Arizona, Wiss, Janney, Elstner Associates, Inc. Under FEMA, 10/21/1994
4/23/1905	Earthquake	Imperial Valley, California. 6.9 Mag / Major structural damage in Imperial Valley; 8 people killed; felt throughtout much of Arizona; extensive damage to roads, buildings, and irrigation structures in Yuma area; much damage due to liquefaction in low-lyi
4/17/1905	Earthquake	Magnitude: 7.0 / Felt throughout western and central Arizona; minor damage in the Yuma area
9/5/2009	Flooding	Heavy rain hit Tacna with one inch in 30 minutes. Minor street flooding was reported in town, while roads Avenue 16E in the Dome Valley was washed out. At least one business in Wellton was damaged by flooding. The official amount at the Yuma airport was 1.62 inches. EPISODE NARRATIVE: Thunderstorms and locally heavy rain resulted in damage to roads and buildings in Tacna and Wellton. Very heavy rain also affected parts of the city of Yuma and Quartzsite in the afternoon.
9/5/2009	Flooding	Power outage reported by Wellton Irrigation District lasted about 4 hours. Dome had a power outage beginning at 2:30 pm, lasting about 3 hours. Trees were uprooted and power poles were damaged. EPISODE NARRATIVE: Thunderstorms and locally heavy rain resulted in damage to roads and buildings in Tacna and Wellton. Very heavy rain also affected parts of the city of Yuma and Quartzsite in the afternoon.
9/5/2009	Flooding	Lightning struck a home near highway 95 and 5E, resulting in a fire. A haystack caught fire at Avenue 30E and County 8th Street after it was struck by lightning. EPISODE NARRATIVE: Thunderstorms and locally heavy rain resulted in damage to roads and buildings in Tacna and Wellton. Very heavy rain also affected parts of the city of Yuma and Quartzsite in the afternoon.
7/28/1999	Flooding	Streets and roads flooded with rains of an inch per hour.

Date	**Hazard**	**Description**
9/21/1994	Flooding	A series of thunderstorms moved through the Yuma area during the early morning hours. Rainfall amounts up to 2.5 inches led to the flooding of four homes about eight miles south of Yuma. Several roads in Somerton and U.S. 95 about eight miles northeast of Yuma were closed due to flooding. Two cars were pushed off U.S. 95 at Fortuna Wash, but the motorists were rescued unharmed. Also, localized strong winds knocked over at least five power poles on County Road 14 in Somerton. The Yuma County Extension Agent estimated crop damages from the flood approaching $1 million, mainly cotton.
2/20/1993	Flooding	Water began spilling over the Painted Rock dam after it reached its capacity of about 2.5 million acre-feet. Downstream flows damaged crops and property on both sides of the Gila River. About 20,000 acres of farmland were flooded. Huge losses were sustained in the lettuce crop. Water flooded roads and closed bridges. Some 3,500 residents were evacuated from this area. Releases from the dam remained at about 25,000 cfs through the end of the month with all river crossings closed at one time or other during the flood. Flooding was the worst since 1927, according to some officials. National Guard troops responded with various relief efforts including helicopter support operations.
9/24/1976	Flooding	On September 10 and 11 the remains of Hurricane Kathleen move across Baja and into southern California near El Centro. With its circulation still intact...tropical storm force winds produce considerable damage in Yuma. Sustained winds exceed 50 mph, and gust as high as 76 mph in Yuma. One man is killed as a 75 foot palm tree crashes onto his mobile home. Severe flooding occurs in Mohave County. Residual moisture brings more severe thunderstorms to the state on September 24 and 25. The Tucson area is particularly hard hit with flash flooding and hail as large as golf balls. Hail covers the ground to a depth of 5 inches on Mount Lemmon.
9/21/1994	Flooding/Severe Winds	Two events within about 12 days sometime in about 1994 (I think) where high winds and heavy thunderstorms resulted in urban flooding, damage to power lines, structural damage, washout of roads and canals. [Could do more research to provide exact dates] Hank
Annually	Severe Wind	Between August and September the town incurrs approximately $1,000 of damages each year. A major part of this expense if for debris removal.
10/27/2009	Severe Wind	Winds increased during the late afternoon hours and caused a power outage to the area of San Luis and Somerton. The outage initially affectd 16,000 customers in southern Yuma County. EPISODE NARRATIVE: Winds associated with the passage of a sharp cold front gusted to over 30 mph and resulted in a power outage in the Yuma area.
10/1/2009	Severe Wind	Gusty winds caused power lines to contact each other and left about 1,469 APS customers without electricity on Thursday morning. EPISODE NARRATIVE: Gusty winds from the north resulted in a short power outage in Somerton.
7/24/2009	Severe Wind	Several power poles were downed due to strong thunderstorm winds. EPISODE NARRATIVE: Gusty winds from thunderstorms caused some damage and local flooding to parts of Yuma County.
7/18/2009	Severe Wind	Thunderstorm winds created a huge dust storm that affected much of the Yuma area with near zero visibility. Wind speeds were estimated to be over 60 mph, with consderable damage to property. At least one home was damaged, with trees and power lines downed by strong winds. During the peak of the storm, 5,200 customers were without power. The Yuma airport recorded a peak gust of 48 mph just before 5 PM. EPISODE NARRATIVE: A large complex or area of storms moved to the west and into Yuma late on Saturday afternoon.

Date	**Hazard**	**Description**
9/11/2008	Severe Wind	Two power poles downed by strong winds at Avenue A and 3rd street in Yuma. Also, an awning was damaged on a home in southwest Yuma.Thunderstorms moved steadily toward the northeast during the afternoon hours. As a result, locally heavy rain, strong winds, and very low visibility due to dust and sand moved across the deserts.
9/10/2008	Severe Wind	Somerton police reported power lines down due to very strong winds from thunderstorms. At the peak of the storm, between 2,500 and 3,000 APS customers were without power. A large tree in the 3300 block of 15th Avenue in The Dunes subdivision was knocked down. Power outages were also reported on the Cocopah Reservation at County 18th Street and Avenue D and in the north end of the city of Yuma.Showers and thunderstorms developed across much of southwest and south-central Arizona. A few storms became severe, with strong winds, hail and very heavy downpours.
8/29/2008	Severe Wind	Trees were uprooted and a semi trailer was turned over. A peak gust of 57 mph was measured at the Yuma airport. About 1,000 APS customers were left without power due to these thunderstorm winds. Power poles were blown down in the Mohawk area.Strong winds associated with severe thunderstorms affected parts of Yuma late Thursday night and early Friday morning. These storms were part of a huge system that moved through the Phoenix area earlier that night.
7/20/2008	Severe Wind	Heavy rain caused some damage to the Hospice Thrift Store in Yuma. Several businesses at Southgate Mall reported damage due to standing water. A new daily rainfall record, 0.74 inches, was set at the Yuma Marine Corps Air Station.Locally heavy rain produced a record rainfall at the Yuma airport on Sunday.
3/2/2008	Severe Wind	Peak wind gust measured at 46 mph at the airport in Yuma. Winds also damaged a roof of a bank building at 16th Street and 4th Avenue in downtown Yuma.A cold front pushed across the area, resulting in winds in excess of 40 mph and areas of blowing dust.
11/30/2007	Severe Wind	About 1000 APS customers were left without power after heavy rains triggered fires to equipment on 15 power poles.Heavy rainfall throughout Yuma was related to outages affecting about 1000 customers.
9/2/2007	Severe Wind	Large hail was reported by the public in Yuma.Thunderstorms resulted in considerable damage in portions of Yuma after winds gusted to 84 mph at the Yuma Airport.
9/2/2007	Severe Wind	Numerous trees and as many as 11 power poles reported down due to strong winds. Peak gusts to 84 mph were recorded at the Yuma airport. Arizona Public Service reported about 9,600 people were left without power Sunday morning. Yuma Police responded to more than 120 emergency calls for service, most of which were storm related. Numerous eyewitnesses described the area around the 100 block of West 27th Place as the worst-hit section of town. Condos in that area had considerable roof damage with ceilings collapsing onto living rooms and dining rooms. Large hail and localized flooding was also reported in Yuma.Thunderstorms resulted in considerable damage in portions of Yuma after winds gusted to 84 mph at the Yuma Airport.
9/6/2006	Severe Wind	A roof was damaged by very strong winds, and heavy rain washed out some dirt roads. Small hail was also reported.
8/23/2006	Severe Wind	Strong winds damaged about 10 bales of hay...with some bales reportedly blown 150 yards.
8/9/2006	Severe Wind	Power lines down and some equipment damaged by strong winds.
8/9/2006	Severe Wind	Car windows broken by hail.
7/15/2006	Severe Wind	Power poles down and sheds blown over.

Date	**Hazard**	**Description**
7/15/2006	Severe Wind	Strong and gusty winds, estimated at 45 to 50 mph caused near zero visibility in a number of locations around the metro Phoenix area. Some power outages were reported, mainly in the West Valley area near Buckeye.
8/7/2005	Severe Wind	Utility power lines downed by strong winds.
8/4/2005	Severe Wind	Trees and utility power poles were blown down by storm winds. Arizona Public Service Company reported 30 power poles were blown down.
8/1/2005	Severe Wind	Power poles down.
7/31/2005	Severe Wind	About 34 power poles down near County Road 13 leaving 1,000 customers without power.
7/29/2005	Severe Wind	Power poles down at Ave 45E and County 5th.
7/29/2005	Severe Wind	Near zero visibility due to dense blowing dust possibly related to an accident on I-8 near Dateland.
4/23/2005	Severe Wind	Winds associated with thunderstorms damaged roofs and carports. Power was knocked out in parts of the Yuma Foothills area. Small hail was also reported with these thunderstorms.
9/10/2002	Severe Wind	Winds damaged a trailer in Yuma, and blew down a transmitter tower at radio station KAWC. Dense blowing dust also accompanied the storm with visibilities less than a quarter mile.
8/13/2001	Severe Wind	On August 13, 2001at approximately 2:25 p.m., the Yuma County Sheriff's Office received a 9-1-1 call stating there had been an accident involving a Sheriff's Office patrol vehicle at milepost 54 on U.S. Highway 95, north of Yuma. Emergency units responded to the scene where they discovered that a single vehicle had traveled off the roadway and rolled over. At that time, the preliminary investigation indicated the vehicle left the roadway and turned over one and one-quarter times. The driver and sole occupant, Senior Deputy Michael Meyer was still seat-belted in his patrol vehicle when found by motorists who immediately called for assistance. Senior Deputy Meyer was pronounced dead at the accident scene. Senior Deputy Meyer had been employed by the Sheriff's Office for 4 years and was in charge of the Water Safety Division. Northern Yuma County was a regular patrol assignment for Deputy Meyer who was ever aware of the changing desert conditions. A heavy storm was blowing through the area and it was Senior Deputy Meyer's habit to check the washes and the roads for flooding and damage on such occasions.
10/21/2000	Severe Wind	A Yuma firefighter was struck by lightning as he was fighting a lightning-caused fire in a palm tree. The tree was struck by a bolt and the current ran down the water stream and shocked him. He was thrown back about 10 feet into a wall by the bolt.
8/29/2000	Severe Wind	An isolated thunderstorm developed near the airport, and the official peak wind speed was measured at 57 mph.
12/3/1999	Severe Wind	A dry cold front moving across southern Arizona brought gusty winds and areas of blowing dust. A peak wind of 58 mph occured at Douglas. In northern Greenlee county a tree was blowin across Highway 191 blocking traffic just south of Hanagan Meadow.
8/18/1999	Severe Wind	Thunderstorm winds took down about ten power poles and blew the roof off a mobile home.
7/28/1999	Severe Wind	Unknown number of power poles and lines down.

Date	Hazard	Description
4/28/1999	Severe Wind	Blowing dust and blowing sand caused widespread visibility problems around the county. It was often less than a quarter mile visibility, and occasionally zero visibility along with winds over 40 mph. The wind and dust storm took down some small signs, and some small trees were uprooted in several areas. All three TV stations were knocked off the air several times due to power outages on a nearby mountain site. A Yuma spotter lost his chicken coop due to the winds, however the chickens survived the ordeal.
10/24/1997	Severe Wind	Hurricane Nora caused approximately $3,400 in damages to property within the town.
8/27/1997	Severe Wind	Strong thunderstorm winds damaged a school, a storage building, and several porches and awnings. AC units and awnings at the school sustained $7,000 damage and residential areas sustained $20,000 total damage.
8/14/1996	Severe Wind	Several downed power poles. Eight people sustained minor injuries after the strong winds damaged numerous mobile homes in Dateland. Sun Country Acres mobile home park, located two miles north of Interstate 8 on Avenue64E, reported that every mobile home in the park was damaged in some way, many having broken windows. Most of the injuries were to the head and back and cuts from broken glass.
1/17/1996	Severe Wind	A dry cold front moving through the area brought widespread strong winds to southeast Arizona. Low visibilities in blowing dust were common with some areas near zero visibility. A roof was blown off a 200 foot long agriculuture shed near Bowie.
5/24/1994	Severe Wind	A thunderstorm-induced microburst destroyed two trailers, blew down eight power poles and a large tree, and flattened an alfalfa field. Power to the Wellton-Mohawk Valley was out for about six hours.
9/6/1993	Severe Wind	The second severe thunderstorm to hit the Yuma area over the Labor Day weekend affected the southeast and east sections. The strong microburst winds destroyed at least three metal warehouses and blew down power lines. As many as 10 recreational vehicles were damaged at an RV resort. Damage to the warehouses was estimated to be at least $1 million.
9/5/1993	Severe Wind	Thunderstorm winds ripped a roof off of a mobile home, downed power poles, and blew down a few trees. Power was out to some customers for up to 29 hours.
9/4/1991	Severe Wind	Thunderstorm / High Wind
7/27/1989	Severe Wind	Thunderstorm / High Wind
9/22/1987	Severe Wind	Tornado / Dust Devil
7/31/1983	Severe Wind	Tornado / Dust Devil
10/4/1972	Severe Wind	Tornado / Dust Devil
9/18/1972	Severe Wind	Tornado / Dust Devil
9/13/1966	Severe Wind	Tornado / Dust Devil
8/17/1959	Severe Wind	Tornado / Dust Devil
4/3/2009	Transportation Accident	CALLER IS REPORTING A TRESPASSER FATALITY INVOLVING A FREIGHT TRAIN. THIS INCIDENT IS UNDER FURTHER INVESTIGATION.
1/24/2009	Transportation Accident	CALLER IS REPORTING THAT A VEHICLE FELL OFF THE A BRIDGE AND LANDED ON ITS'S ROOF ON A RAILROAD BALLAST. THERE WAS NO TRAIN INVOLVED. ALL OCCUPANTS OF THE VEHICLE WERE TRANSPORTED TO LOCAL HOSPITAL.

Date	Hazard	Description
1/19/2008	Transportation Accident	THE CALLER STATED THAT AN AH1 COBRA HELICOPTER CRASHED DISCHARGING THE FUEL TO THE GROUND. THERE WERE 2 MINOR INJURIES IN THE ACCIDENT AND THEY WERE TRANSPORTED TO THE HOSPITAL. THE CAUSE OF THE CRASH IS UNKNOWN AT THIS TIME.
7/24/2006	Transportation Accident	CALLER IS REPORTING A RELEASE OF DIESEL FUEL FROM A TRACTOR TRAILER TRUCK DUE TO A VEHICLE ACCIDENT FROM UNKNOWN CAUSES.
5/26/2006	Transportation Accident	EASTBOUND FREIGHT TRAIN STRUCK A VEHICLE AT A GRADE CROSSING RESULTING IN THE FATALITY OF THE DRIVER. NO RELEASE REPORTED.
11/1/2005	Transportation Accident	CALLER REPORTING A TRESSPASSER FATALITY. CAUSE OF INCIDENT REPORTED AS SUICIDE.
6/15/2005	Transportation Accident	A MILITARY AIRCRAFT HAS CRASHED INTO THE BACK YARD OF A PRIVATE RESIDENCE RESULTING IN A FIRE AND A RELEASE OF JET FUEL.
12/3/2003	Transportation Accident	Harrier Crashed in a farmers's alfalfa field six miles southwest of the city near County 19th Street and Avenue B. No Houses were in the vicinity, no one was injured except the pilot.
6/20/2002	Transportation Accident	THE CALLER IS REPORTING A RELEASE OF MATERIAL FROM A TRACTOR TRAILER TRUCK AT THE LOCATION, DUE TO AN UNKNOWN PERSON OPENING A VALVE ON AN AMMONIA TANK. TRUCK WAS TRAVELING FROM MEXICO TO THE US.
7/23/2001	Transportation Accident	Plane Crash-- F-16D, 88-0167, assigned to 308 FS; crashed near Eagletail Mountains at 11:45 a.m
6/11/2001	Transportation Accident	TRAIN STRUCK A TRESPASSER ALONG THE RIGHT OF WAY.
10/21/2000	Transportation Accident	1 injury. A Yuma firefighter was struck by lightning as he was fighting a lightning-caused fire in a palm tree. The tree was struck by a bolt and the current ran down the water stream and shocked him. He was thrown back about 10 feet into a wall by the bolt. National Climate Data Center, January 2003, Storm Event Database.
10/6/2000	Transportation Accident	THE MATERIAL RELEASED FROM A BRITISH MILITARY AIRCRAFT WHEN THE AIRCRAFT'S ELECTRICAL SYSTEMS FAILED AND RELEASED 2 DROP TANKS AND 2 BOMBS ON THE RUNWAY. ONE TANK BURNED COMPLETELY, OTHER TANK RELEASED MATERIAL TO SOIL. BOTH BOMBS RECOVERED
9/11/2000	Transportation Accident	TWO MILITARY AIRCRAFT COLLIDED CAUSING ONE OF THE AIRCRAFT TO CRASH AND RELEASE MATERIAL ONTO THE LAND.

Date	Hazard	Description
4/15/2000	Transportation Accident	Harrier crashed over the Chocolate Mountains northwest of Yuma.
2/22/2000	Transportation Accident	A PICKUP PULLED IN FRONT OF A MILITARY VEHICLE CARRYING A FUEL POD. THE MILITARY VEHICLE TURNED OVER SPILLING THE CONTENTS OF THE FUEL POD.
1/10/2000	Transportation Accident	F18 AIRCRAFT / PLANE CRASHED DUE TO UNKNOWN CAUSES
9/9/1999	Transportation Accident	TRESPASSER FELL OFF OF FREIGHT TRAIN TRAVELING EAST AT AN UNKNOWN SPEEDUNKNOWN NUMBER OF CARS AND ENGINES
6/16/1999	Transportation Accident	AIRCRAFT MISHAP / F-18 CRASHED
12/15/1998	Transportation Accident	Plane Crash-- F-16C, 84-1314, assigned to the 61 FS; crashed at 1530 hours
11/10/1997	Transportation Accident	TRAIN (NO.IDALB-07) / MAY HAVE STRUCK A TRESPASSER
8/26/1997	Transportation Accident	TRAIN TRAVELING EAST AT UNKNOWN SPEED STRUCK TRESPASSER ON TRACKS
6/1/1997	Transportation Accident	TRAIN STRUCK AN AUTOMOBILE / EASTBOUND / SPEED: UNKNOWN / 11TH AVE E./GATES & LIGHTS / FATALITY OF TWO CIVILIANS / INTERMODAL - FREIGHT
1/29/1997	Transportation Accident	Plane Crash-- F-16C, 83-1134, assigned to the 61 FS; crashed on BMGR

Date	Hazard	Description
3/11/1996	Transportation Accident	TRACTOR TRAILER/ DRIVER LOST CONTROL OF TRUCK/ ROLLED TRUCK OVER
10/15/1995	Transportation Accident	TRAIN # 1MBSMF2-12 DERAILED WHEN STRUCK BY TRAIN # 1CXCIT-12TRAIN DIRECTION WESTBOUND / SPEED UNKNOWN
7/13/1995	Transportation Accident	11 CARS DERAILED/UNKNOWN
2/22/1995	Transportation Accident	TANKER TRUCK ROLLED OVER DUE TO DRIVER FALLING ASLEEP AT WHEEL
12/6/1994	Transportation Accident	10 injuries. Dense fog formed in Yuma and vicinity, lowering visibility to near zero at times. Several traffic accidents totalling 20 vehicles caused Interstate 8 to be closed between 16th Street and Avenue 3E in Yuma. The accidents resulted in 10 injuries. In addition, flights were grounded at the airport for at least 4 hours.
11/14/1992	Transportation Accident	LOADED FLAT CAR AT SIGHTING ROLLED 5 MILES DOWN THE TRACKS AND WAS HITBY A FREIGHT TRAIN
11/12/1992	Transportation Accident	A PERSON WAS STRUCK THE TRACK
10/24/1992	Transportation Accident	FREIGHT TRAIN STRUCK CAR AT CROSSING
4/12/1992	Transportation Accident	TWO HARRIER JETS COLLIDED
9/16/1991	Transportation Accident	Plane Crash-- F-15E, 87-0172, assigned to the 461 FS; crashed on BMGR
12/1/1990	Transportation Accident	Plane Crash-- F-16C, 88-0461, assigned to the 310 TFTS; crashed near Palmdale, California

Date	**Hazard**	**Description**
9/20/1990	Transportation Accident	Plane Crash-- F-16D, 85-1510, assigned to the 314 TFTS; crashed on BMGR
3/15/1990	Transportation Accident	Plane Crash-- F-15A, 76-0069, assigned to the 426 TFTS; crashed near Wendon, AZ
6/21/1905	Transportation Accident	3 plane crashes occurred in Yuma in 1999.
6/20/1905	Transportation Accident	Three plane crashes including a fatality
6/18/1905	Transportation Accident	4 plane crashes including 1 fatality
7/7/2008	Wildfire	DOME Fire, Human-Caused, 220 acres
5/1/2007	Wildfire	GILA RIVER Fire, Natural-Caused, 426 acres
6/8/2006	Wildfire	LEVY Fire, Miscellaneous-Caused, 150 acres
6/8/2006	Wildfire	TACNA MOHWK ASST Fire, Human-Caused, 143 acres
6/8/2006	Wildfire	LEVY ASST Fire, Human-Caused, 130 acres
4/14/2006	Wildfire	WINDY Fire, Human-Caused, 128 acres
10/1/2005	Wildfire	KING VALLY Fire, Human-Caused, 26000 acres
4/29/2005	Wildfire	CLAYTON WA Fire, Human-Caused, 217 acres
4/19/2005	Wildfire	CAMINO Fire, Miscellaneous-Caused, 1300 acres
4/18/2005	Wildfire	CAMINO Fire, Human-Caused, 1025 acres

					Damage Estimates			
Date	**Hazard**	**Location**	**Fatalities**	**Injuries**	**Property**	**Crop/Livestock**	**Total**	**Sources**
12/6/1994	Dense Fog	Yuma	0	10	$0	$0	$0	NCDC, 2008
7/30/1891	Earthquake							Ninyo & Moore, 2001
2/24/1892	Earthquake							Ninyo & Moore, 2001
2/24/1892	Earthquake							Ninyo & Moore, 2001
11/29/1852	Earthquake							Ninyo & Moore, 2001
4/4/2010	Earthquake	Yuma County						U.S & World News, Yuma County, 2010
7/29/2008	Earthquake	Chino Hills, CA						WSSPC Newsletter, 2008
6/28/1992	Earthquake	Joshua Tree, CA						Wiss, Janney, Elstner Associates, Inc., 1994
11/24/1987	Earthquake							Ninyo & Moore, 2001
11/23/1987	Earthquake							Ninyo & Moore, 2001

					Damage Estimates			
Date	**Hazard**	**Location**	**Fatalities**	**Injuries**	**Property**	**Crop/Livestock**	**Total**	**Sources**
2/6/1987	Earthquake							Ninyo & Moore, 2001
4/26/1981	Earthquake							Ninyo & Moore, 2001
12/19/1979	Earthquake				$25,000		$25,000	URS, October 2003
12/7/1976	Earthquake							Arizona Earthquake Information Center, 1996
2/9/1971	Earthquake	San Fernando, CA						Wiss, Janney, Elstner Associates, Inc., 1994
4/23/1905	Earthquake							URS, October 2003
4/17/1905	Earthquake							URS, October 2003
9/5/2009	Flooding	1 Mile West South West of Colfred					$30,000	NCDC, 2009
9/5/2009	Flooding	1 Mile South West of Colfred					$20,000	NCDC, 2009
9/5/2009	Flooding	1 Mile East North East of Yuma					$20,000	NCDC, 2009
7/28/1999	Flooding	YUMA	0	0	$10,000	$0	$10,000	NCDC, 2008

					Damage Estimates			
Date	**Hazard**	**Location**	**Fatalities**	**Injuries**	**Property**	**Crop/Livestock**	**Total**	**Sources**
9/21/1994	Flooding	Yuma	0	0	$0	$5,000,000	$5,000,000	NCDC, 2008
2/20/1993	Flooding	Roll	0	0	$0	$500,000	$500,000	NCDC, 2008
9/24/1976	Flooding		1					San Luis, 2010
9/21/1994	Flooding/Severe Winds	San Luis, Somerton, Yuma, and Western Yuma, if not all Yuma County						San Luis, 2010
Annually	Severe Wind	Wellton			$1,000		$1,000	Wellton, 2010
10/27/2009	Severe Wind						$10,000	NCDC, 2009
10/1/2009	Severe Wind						$5,000	NCDC, 2009
7/24/2009	Severe Wind	3 Miles South West of Wellton					$20,000	NCDC, 2009
7/18/2009	Severe Wind	1 Mile South West of El Pueblecito					$100,000	NCDC, 2009

					Damage Estimates			
Date	**Hazard**	**Location**	**Fatalities**	**Injuries**	**Property**	**Crop/Livestock**	**Total**	**Sources**
9/11/2008	Severe Wind	YUMA INTL ARPT	0	0	$10,000	$0	$10,000	NCDC, 2008
9/10/2008	Severe Wind	SOMERTON	0	0	$150,000	$0	$150,000	NCDC, 2008
8/29/2008	Severe Wind	YUMA INTL ARPT	0	0	$150,000	$0	$150,000	NCDC, 2008
7/20/2008	Severe Wind	YUMA INTL ARPT	0	0	$100,000	$0	$100,000	NCDC, 2008
3/2/2008	Severe Wind	0	0	0	$20,000	$0	$20,000	NCDC, 2008
11/30/2007	Severe Wind	(YUM)YUMA INTL ARPT	0	0	$15,000	$0	$15,000	NCDC, 2008
9/2/2007	Severe Wind	YUMA	0	0	$50,000	$0	$50,000	NCDC, 2008
9/2/2007	Severe Wind	(YUM)YUMA INTL ARPT	0	0	$1,500,000	$0	$1,500,000	NCDC, 2008
9/6/2006	Severe Wind	YUMA PROVING GROUND	0	0	$20,000	$0	$20,000	NCDC, 2008
8/23/2006	Severe Wind	LIGURTA	0	0	$0	$50,000	$50,000	NCDC, 2008
8/9/2006	Severe Wind	YUMA PROVING GROUND	0	0	$20,000	$0	$20,000	NCDC, 2008
8/9/2006	Severe Wind	MARTINEZ LAKE	0	0	$10,000	$0	$10,000	NCDC, 2008
7/15/2006	Severe Wind	TACNA	0	0	$25,000	$0	$25,000	NCDC, 2008

					Damage Estimates			
Date	**Hazard**	**Location**	**Fatalities**	**Injuries**	**Property**	**Crop/Livestock**	**Total**	**Sources**
7/15/2006	Severe Wind		0	0	$20,000	$0	$20,000	NCDC, 2008
8/7/2005	Severe Wind	YUMA	0	0	$5,000	$0	$5,000	NCDC, 2008
8/4/2005	Severe Wind	YUMA	0	0	$50,000	$0	$50,000	NCDC, 2008
8/1/2005	Severe Wind	DOME	0	0	$10,000	$0	$10,000	NCDC, 2008
7/31/2005	Severe Wind	YUMA	0	0	$50,000	$0	$50,000	NCDC, 2008
7/29/2005	Severe Wind	YUMA	0	0	$5,000	$0	$5,000	NCDC, 2008
7/29/2005	Severe Wind		0	0	$20,000	$0	$20,000	NCDC, 2008
4/23/2005	Severe Wind	YUMA	0	0	$20,000	$0	$20,000	NCDC, 2008
9/10/2002	Severe Wind	YUMA	0	0	$15,000	$0	$15,000	NCDC, 2008
8/13/2001	Severe Wind	YUMA	1					Yuma County, 2010
10/21/2000	Severe Wind	YUMA	0	1	$0	$0	$0	NCDC, 2008
8/29/2000	Severe Wind	YUMA	0	0	$5,000	$0	$5,000	NCDC, 2008
12/3/1999	Severe Wind		0	0	$10,000	$0	$10,000	NCDC, 2008
8/18/1999	Severe Wind	WELLTON	0	0	$20,000	$0	$20,000	NCDC, 2008
7/28/1999	Severe Wind	YUMA	0	0	$30,000	$0	$30,000	NCDC, 2008

					Damage Estimates			
Date	**Hazard**	**Location**	**Fatalities**	**Injuries**	**Property**	**Crop/Livestock**	**Total**	**Sources**
4/28/1999	Severe Wind		0	0	$5,000	$0	$5,000	NCDC, 2008
10/24/1997	Severe Wind	Wellton			$3,400		$3,400	Wellton, 2010
8/27/1997	Severe Wind	DATELAND	0	0	$27,000	$0	$27,000	NCDC, 2008
8/14/1996	Severe Wind	DATELAND	0	8	$0	$0	$0	NCDC, 2008
1/17/1996	Severe Wind		0	0	$50,000	$0	$50,000	NCDC, 2008
5/24/1994	Severe Wind	Wellton	0	0	$50,000	$5,000	$55,000	NCDC, 2008
9/6/1993	Severe Wind	Yuma	0	0	$5,000,000	$0	$5,000,000	NCDC, 2008
9/5/1993	Severe Wind	Yuma	0	0	$50,000	$0	$50,000	NCDC, 2008
9/4/1991	Severe Wind		0	2	$0	$0	$0	NCDC, 2008
7/27/1989	Severe Wind		0	2	$0	$0	$0	NCDC, 2008
9/22/1987	Severe Wind		0	0	$2,500	$0	$2,500	NCDC, 2008
7/31/1983	Severe Wind		0	0	$2,500	$0	$2,500	NCDC, 2008
10/4/1972	Severe Wind		0	0	$30	$0	$30	NCDC, 2008
9/18/1972	Severe Wind		0	0	$25,000	$0	$25,000	NCDC, 2008
9/13/1966	Severe Wind		0	0	$2,500	$0	$2,500	NCDC, 2008
8/17/1959	Severe Wind		0	1	$250,000	$0	$250,000	NCDC, 2008
4/3/2009	Transportation Accident	WELLTON	1					National Response Center, 2009
1/24/2009	Transportation Accident	IMPERIAL		5				National Response Center, 2009

					Damage Estimates			
Date	**Hazard**	**Location**	**Fatalities**	**Injuries**	**Property**	**Crop/Livestock**	**Total**	**Sources**
1/19/2008	Transportation Accident	YUMA		2				National Response Center, 2008
7/24/2006	Transportation Accident	YUMA		1				National Response Center, 2006
5/26/2006	Transportation Accident	DATELAND	1					National Response Center, 2006
11/1/2005	Transportation Accident	WELLTON	1					National Response Center, 2005
6/15/2005	Transportation Accident	YUMA		1				National Response Center, 2005
12/3/2003	Transportation Accident			1				Yuma County Planning Department,
6/20/2002	Transportation Accident	SAN LUIS		3			$0	National Response Center, 2004
7/23/2001	Transportation Accident	Eagletail Mountains						Yuma County Planning Department, 2004
6/11/2001	Transportation Accident	YUMA	1				$0	National Response Center, 2004
10/21/2000	Transportation Accident	Yuma		1			$0	URS, October 2003
10/6/2000	Transportation Accident	YUMA		2			$0	National Response Center, 2004
9/11/2000	Transportation Accident	YUMA	2				$0	National Response Center, 2004

					Damage Estimates			
Date	**Hazard**	**Location**	**Fatalities**	**Injuries**	**Property**	**Crop/Livestock**	**Total**	**Sources**
4/15/2000	Transportation Accident			1				Yuma County Planning Department, 2004
2/22/2000	Transportation Accident	YUMA	2	3			$0	National Response Center, 2004
1/10/2000	Transportation Accident	PACNA		2				National Response Center, 2004
9/9/1999	Transportation Accident	LIGURTA		1				National Response Center, 2004
6/16/1999	Transportation Accident	YUMA	1	1			$0	National Response Center, 2004
12/15/1998	Transportation Accident	Aztec						Yuma County Planning Department, 2004
11/10/1997	Transportation Accident	YUMA	1				$0	National Response Center, 2004
8/26/1997	Transportation Accident	YUMA	1				$0	National Response Center, 2004
6/1/1997	Transportation Accident	FORTUNA	2					National Response Center, 2004
1/29/1997	Transportation Accident	Goldwater Range						Yuma County Planning Department, 2004

					Damage Estimates			
Date	**Hazard**	**Location**	**Fatalities**	**Injuries**	**Property**	**Crop/Livestock**	**Total**	**Sources**
3/11/1996	Transportation Accident	TACNA		2				National Response Center, 2004
10/15/1995	Transportation Accident	DOME		1				National Response Center, 2004
7/13/1995	Transportation Accident	WELTON					$1,000,000	National Response Center, 2004
2/22/1995	Transportation Accident	YUMA		1			$0	National Response Center, 2004
12/6/1994	Transportation Accident	Yuma		10			$0	URS, October 2003
11/14/1992	Transportation Accident	YUMA					$58,000	National Response Center, 2004
11/12/1992	Transportation Accident	COLFORD	1					National Response Center, 2004
10/24/1992	Transportation Accident	YUMA	1				$0	National Response Center, 2004
4/12/1992	Transportation Accident	YUMA		2			$0	National Response Center, 2004
9/16/1991	Transportation Accident	Goldwater Range						Yuma County Planning Department, 2004
12/1/1990	Transportation Accident							Yuma County Planning Department, 2004

					Damage Estimates			
Date	**Hazard**	**Location**	**Fatalities**	**Injuries**	**Property**	**Crop/Livestock**	**Total**	**Sources**
9/20/1990	Transportation Accident	Goldwater Range						Yuma County Planning Department, 2004
3/15/1990	Transportation Accident							Yuma County Planning Department, 2004
6/21/1905	Transportation Accident							URS, October 2003
6/20/1905	Transportation Accident		1					URS, October 2003
6/18/1905	Transportation Accident		1					URS, October 2003
7/7/2008	Wildfire	Yuma County						BLM ,573633
5/1/2007	Wildfire	Yuma County						BLM ,541403
6/8/2006	Wildfire	Yuma County						Arizona State Forestry
6/8/2006	Wildfire	Yuma County						BLM ,526809
6/8/2006	Wildfire	Yuma County						BLM ,526802
4/14/2006	Wildfire	Yuma County						BLM ,518889
10/1/2005	Wildfire	Yuma County						FWS ,52471
4/29/2005	Wildfire	Yuma County						BLM ,510640
4/19/2005	Wildfire	Yuma County						Arizona State Forestry
4/18/2005	Wildfire	Yuma County						FWS ,50628

Appendix E

Plan Maintenance Review Memorandums