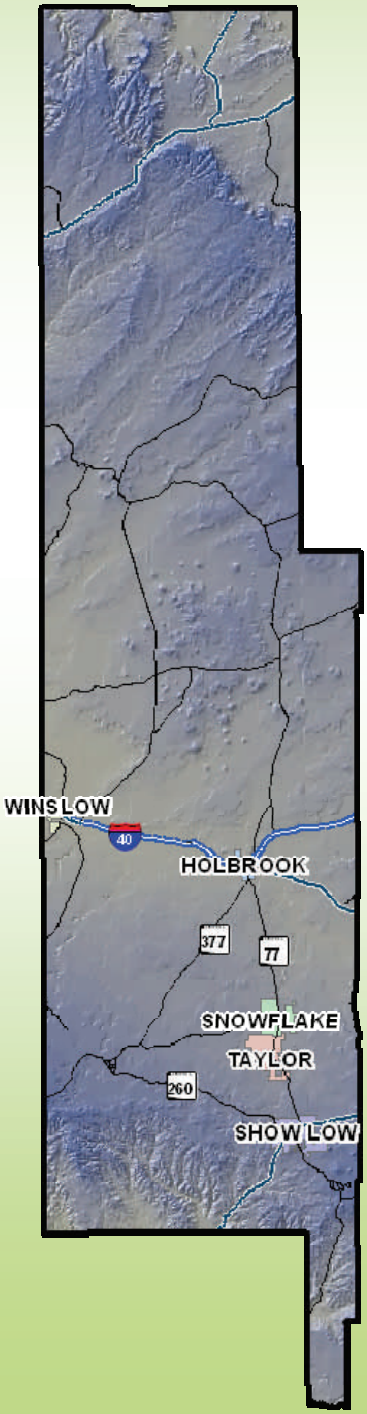
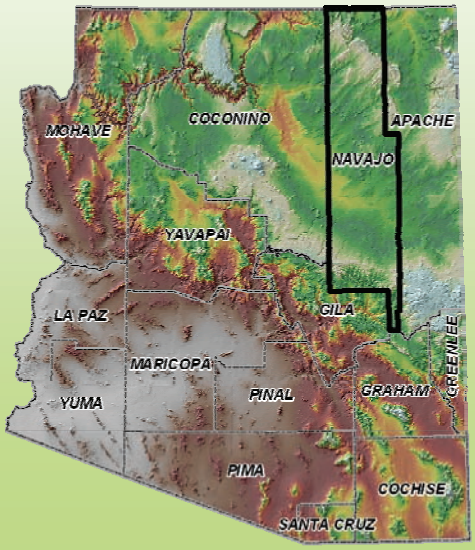
Navajo County Multi-Jurisdictional Hazard Mitigation Plan 2011





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 41 federal or state declarations, 134 other significant events, and a combined total of 175 disaster events recorded, the six jurisdictions within Navajo 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 Navajo County, Holbrook, Pinetop-Lakeside, Show Low, Snowflake, Taylor, and Winslow demonstrated their commitment to hazard mitigation in 2005-2006 by preparing the first set of Single Jurisdiction Multi-Hazard Mitigation Plans (2006 Plans). The 2006 Plans were developed through a planning effort that resulted in an unincorporated county plan and six city/town plans. The 2006 Plans were approved by FEMA in September 2006 and January 2007, and require full, FEMA approved, updates 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. Navajo County reconvened a multi-jurisdictional planning team comprised of veteran and first-time representatives from each participating jurisdiction, various county and local departments and organizations, and ADEM. The Planning Team met four times during the period of November 2010 to March 2011 in a collaborative effort to review, evaluate, and update the 2006 Plans. The resulting Navajo 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 eliminate or reduce the effects of future disasters throughout the county, and was developed in a joint and cooperative venture by members of the Navajo County Planning Team.

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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 Navajo 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 natural hazards through mitigation planning[1]. The local mitigation plan is the representation of the jurisdiction's commitment to reduce risks from natural hazards, serving as a guide for decision makers as they commit resources to reducing the effects of natural hazards. Local plans will also serve as the basis for the State to provide technical assistance and to prioritize project funding.

Under 44 CFR §201.6, local governments must have a Federal Emergency Management Agency (FEMA)-approved local mitigation plan in order to apply for and/or receive project grants under the following hazard mitigation assistance 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 local plans be updated every five years, with each plan cycle requiring a complete review, revision, and approval of the plan at both the state and FEMA levels. Navajo County, and the incorporated communities of Holbrook, Pinetop-Lakeside, Show Low, Snowflake, Taylor, and Winslow all currently have FEMA approved hazard mitigation plans. The result is a single, multi-jurisdictional plan that both updates and consolidates individual community plans developed in 2006 together with information for the added jurisdictions.

[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. The officially participating jurisdictions in the Plan include:

County	Cities	Towns
• Navajo County	• City of Holbrook • City of Show Low • City of Winslow	• Town of Pinetop-Lakeside • Town of Snowflake • Town of Taylor

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 2005 and 2006, Navajo County and the incorporated communities of Holbrook, Show Low, Winslow, Pinetop-Lakeside, Snowflake, and Taylor participated in a mitigation planning process that resulted in the development of separate stand-alone plans for each participating jurisdiction. The following is a list of the plans that were produced for the Pinal County jurisdictions:

- *Navajo County Multi-Hazard Mitigation Plan*
- *City of Holbrook Multi-Hazard Mitigation Plan*
- *City of Show Low Multi-Hazard Mitigation Plan*
- *City of Winslow Multi-Hazard Mitigation Plan*
- *Town of Pinetop-Lakeside Multi-Hazard Mitigation Plan*
- *Town of Snowflake Multi-Hazard Mitigation Plan*
- *Town of Taylor Multi-Hazard Mitigation Plan*

Collectively and individually, these plans will be referred to herein as the 2006 Plan(s). The 2006 Plans received official FEMA approval ranging from September 6, 2006 to January 25, 2007. The 2006 Plans are nearing the end of the 5-year planning cycle, with the first of the single-jurisdictional plans expiring September 12, 2011.

2.2 Plan Purpose and Authority

The purpose of the Plan is to identify natural hazards that impact the various jurisdictions located within Navajo 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 2006 Plans listed in Section 2.1.

Navajo County and both 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). 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 planning process and Plan development.

2.3 General Plan Description

The Plan is generally arranged and formatted to be consistent with the 2010 State of Arizona Multi-Hazard Mitigation Plan (State Plan) and is comprised of the following major sections:

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

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

Risk Assessment – this section summarizes the identification and profiling of natural and human-caused 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 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 2006 Plans by the planning participants. As previously stated, the individual 2006 Plans are being consolidated into a single, multi-jurisdictional plan with this update. Accordingly, the final arrangement of the Plan is different from the 2006 Plans.

At the onset of the planning process, ADEM printed a copy of each of the 2006 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 2006 Plan intact and unmarked. Digital versions of the Navajo County 2006 Plan were made available to planning team members not directly associated with a specific jurisdiction. The Planning Team reviewed each section of the 2006 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 to 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 2006 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 2006 Plan review and 2011 Plan correlation

2006 Plan Section	2011 Plan Section	Review and Changes Description (2006 Plan to the 2011 Plan)
1	1, 2, and 4	• Plan format changes were made to make the Plan more compatible with the 2010 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 2006 Plan contacts were updated as necessary and recompiled into Section 3 of the 2011 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 2006 Plan and 2011 Plan participation

Table 2-1: Summary of 2006 Plan review and 2011 Plan correlation

2006 Plan Section	2011 Plan Section	Review and Changes Description (2006 Plan to the 2011 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 2006 Plan to the 2011 Plan • Each mitigation action/project in the 2006 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.

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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 Navajo County. In addition, the necessary public involvement meetings and actions that were applied to this process are also detailed.

3.1 Planning Process Description

ADEM applied for and received a PDM planning grant to fund a multi-jurisdictional effort to review, update and consolidate the 2006 Plan. Once the grant was received, ADEM then selected JE Fuller to work with the participating jurisdictions and guide the planning process. An initial project kick-off meeting between JE Fuller and ADEM was convened in September 2010 to begin the planning process, outline the plan objectives, outline the anticipating meeting agendas for the planning efforts, and to discuss the new plan format and other administrative tasks. Initial points of contact were also established between ADEM, JE Fuller, and Navajo County. A total of four Planning Team meetings were conducted over the period of November 2010 through March 2011, beginning with the first meeting on November 18, 2010. Throughout that period of time, all the work required to collect, process, and document updated data and make changes to the plan was performed, culminating in a draft of the Plan. Details regarding 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 2006 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 2006 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 2006 Plan approach. With only five returning planning team members from the 2006 Plan effort, there was little 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.

Table 3-1: List of jurisdictional primary points of contact

Jurisdiction	Name	Department / Position	Address	Phone	Email
Navajo County	Catrina Roe	Board of Supervisors / Executive Secretary	Navajo County Governmental Complex 100 E. Code Talkers Dr. South Highway 77 P.O. Box 668 Holbrook, AZ 86025	928-524-4271	catrina.roe@navajocountyaz.gov
City of Holbrook	Ray Alley	City Manager	465 First Avenue P.O. Box 970 Holbrook, AZ 86025	928-241-8488	rayalley@ci.holbrook.az.us
Pinetop-Lakeside	Tom Thomas	Public Works Department / Director	1360 N. Niels Hansen Ln Lakeside, AZ 85929	928-368-8885	tthomas@ci.pinetop-lakeside.az.us
Show Low	Bill Kopp	Public Works Department / Director	180 North 9th Street, Show Low, AZ 85901	928-532-4000	bkopp@showlowaz.gov
Town of Snowflake	Dale Call	Planning and Building Department / Director	81 West 1st South Snowflake, AZ 85937	928-536-7103 x 232	dcall@ci.snowflake.az.us
Town of Taylor	Clint Burden	Fire Department / Fire and EMS Chief	P.O. Box 1515 411 Papermill Road Taylor, AZ 85939	928-536-7945	jeff@tayloraz.org
City of Winslow	Ahmed Abdullah	Community Development / Planning & Zoning / Planner I	21 Williamson Drive Winslow, AZ 86047	928-289-3204	ahmed.abdullah@ci.winslow.az.us

3.4 Planning Teams

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

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 2006 Plans. Attendance by each participating jurisdiction was required for every Planning Team meeting as the meetings were structured to progress through the planning process. Steps and procedures for updating the 2006 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 also had the responsibility of liaison to the Local Planning Team, and were tasked with:

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

The function and role of the Local Planning Team was to:

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

3.4.1 Planning Team Assembly

At the beginning of this planning process, Navajo County organized and identified members for the Planning Team by initiating contact with, and extending invitations to, all incorporated communities and Indian tribes within the county limits, as well as the Arizona Division of Emergency Management and JE Fuller. Other entities that were subsequently invited to participate are discussed in Section 3.4.3. The participating members of the Planning Team are summarized in Table 3-2. Returning planning team members are highlighted.

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

Name	Jurisdiction / Organization	Department / Position	Planning Team Role
Ahmed Abdullah	Winslow	Planning & Zoning / Planner I	Jurisdictional Point of Contact Lead coordinator for LPT Planning Team participant
Paul Albert	Navajo County	Sheriff's Office / Sergeant	Planning Team participant
Ray Alley	Holbrook	Administration / Manager	Jurisdictional Point of Contact Lead coordinator for LPT Planning Team participant
Diana Anderson	Summit Healthcare	Staff Development / RN-Educator	Planning Team participant
Tiffany Ashworth	Navajo County	Emergency Mgmt / Grants Administrator	Planning Team participant
Alex Baker	Holbrook	Fire / Chief	Planning Team participant
Clint Burden	Taylor	Fire / Chief	Jurisdictional Point of Contact Lead coordinator for LPT Planning Team participant
Dale Call	Snowflake	Planning / Zoning / Building Safety / Director / Building Official	Jurisdictional Point of Contact Lead coordinator for LPT Planning Team participant
Rusty Despain	Joseph City Fire	Chief	Planning Team participant
Rick Evans	Taylor	Econ. Development /	Planning Team participant
Dan Hinz	Navajo County	Director	Planning Team participant
Jeff Johnson	Taylor	Building, Zoning, Flood / Zoning Administrator	Planning Team participant
Dennis Koenig	Summit Healthcare	Staff Development / RN-Educator	Planning Team participant
Bill Kopp	Show Low	Public Works / Public Works Director	Jurisdictional Point of Contact Lead coordinator for LPT Planning Team participant
Marshall Larsen	Winslow	Building / City Inspector	Planning Team participant
Emerson Lee	Navajo Nation	Police Department - Patrol / LE / Lieutenant	Planning Team participant
Gus Lundberg	Taylor	Finance, Loss Prevention / Finance Director	Planning Team participant
Jeff McNeil	Show Low	Police Department / Commander	Planning Team participant
Jason Moore	Navajo County	Attorney's Office / Deputy County Attorney	Planning Team participant
Scott Ogden	JE Fuller/ Hydrology & Geomorphology, Inc.	Project Manager / Sr. Engineer	Planning Team Lead Consultant Preparation and presentation of plan update elements
Cris Parisot	Navajo County	Finance Dept. / Finance Analyst	Planning Team participant
Dusty Parsons	Navajo County	Assistant County Manager	Planning Team participant
Dale Patton	Winslow	Attorney	Planning Team participant
Faye Platero	Navajo Nation	Emergency Mgmt / Emergency Services Coordinator	Jurisdictional Point of Contact Lead coordinator for LPT Planning Team participant
Brad Provost	Show Low	Police Department / Commander	Planning Team participant
Cher Reyes	Holbrook	Administration / City Clerk	Planning Team participant
Catrina Roe	Navajo County	Administration / Emergency Management	Primary Point of Contact Jurisdictional Point of Contact Lead coordinator for LPT Planning Team participant
Brian Russell	Show Low	Fire Department - Prevention / Fire Marshal	Planning Team participant

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

Name	Jurisdiction / Organization	Department / Position	Planning Team Role
Bryan Savage	Lakeside Fire	Interim Chief	Jurisdictional Point of Contact Lead coordinator for LPT Planning Team participant
Nancy Selover	State Climate Office	State Climatologist	Planning Team participant Hazard Profile Resource
Edgar Shupla	Hopi Tribe	Facilities/Risk / Director	Planning Team participant
Montana Slack	Navajo County	Deputy Director	Planning Team participant
Mary Ann Smith	Winslow	Fire Department / Lt/Cap/Emergency Services Manager/EMS-E911 Coord.	Planning Team participant
Jeffery Smythe	Show Low	Police Department / Police Chief	Planning Team participant
Mary Springer	Navajo County	Finance Dept. / Dep. Finance Director	Planning Team participant
Randy Sullivan	Holbrook	Finance / Finance Director	Planning Team participant
Ryan Taylor	Navajo County	Public Works: GIS / GIS Coordinator	Planning Team participant
Tom Thomas	Pinetop-Lakeside	Public Works Department	Jurisdictional Point of Contact Lead coordinator for LPT Planning Team participant
Roger Tungovia	Hopi Tribe	Department of Public Safety & Emergency Services / Director	Jurisdictional Point of Contact Lead coordinator for LPT Planning Team participant
Edison J. Tutsi	Hopi Tribe	Project Coordinator	Planning Team participant
Don Walker	Navajo County	Health Department - BioTerrorism / Manager	Planning Team participant
Randy Weems	Navajo County	Sheriff's Office / Chief Deputy	Planning Team participant
Sue Wood	Arizona Division of Emergency Management	Migitation Branch / Program Manager	Planning Team participant Project/Grant Manager State reviewer

Lists of Local Planning Team members and their respective roles, for each jurisdiction, are provided in Appendix B.

3.4.2 Planning Team Activities

The Planning Team met for the first time on November 18, 2010 to begin the planning process. Three more meetings were convened on about a bi-monthly basis (except the last one) to step through the plan review and update process. Planning Team members used copies of the 2006 Plan for their jurisdiction for review and reference. Following each Planning Team meeting, the Point of Contact for each jurisdiction would convene meetings with the Local Planning Team as needed to work through the assignments. Table 3-3 summarizes the Planning Team meetings along with a brief list of the agenda items discussed. Detailed meeting notes for all of the Planning Team meetings are provided in Appendix B. There are no details of the Local Planning Team meetings.

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
 	
November 18, 2010
 	
Navajo County Governmental Complex, Public Works Conference Room
 	
Holbrook, AZ
	• INTRODUCTIONS / GREETING
	• MITIGATION PLANNING OVERVIEW
	• CURRENT MITIGATION PLAN REVIEW
	• PLANNING PROCESS
	  o MJ Planning Team Roles
	  o Public Involvement Strategy
	• RISK ASSESSMENT
	  o Hazard Identification / Profiling
	  o Asset Inventory
	• PREVIOUS MITIGATION PROJECTS
	• OTHER DATA NEEDS
	• NEXT MEETING DATES
	• ACTION ITEM SUMMARY

Planning Team Meeting No. 2
 	
December 15, 2010
 	
Navajo County Governmental Complex, Public Works Conference Room
 	
Holbrook, AZ
	• ACTION ITEM REVIEW/STATUS
	• HAZARD PROFILE MAP/INFORMATION REVIEW
	• CAPABILITY ASSESSMENT
	  o Jurisdictional Capabilities
	  o Prior Mitigation Activities
	  o NFIP Participation and Status
	  o Repetitive Loss Properties
	• MEETING ENDING
	  o Review of action items
	  o Next meeting reminder/verification

Planning Team Meeting No. 3
 	
February 9, 2011
 	
Navajo County Governmental Complex, Public Works Conference Room
 	
Holbrook, AZ
	• STATUS REVIEW
	• PLAN MAINTENANCE STRATEGY
	  o Monitoring and Evaluation
	  o Plan Update
	  o Plan Incorporation
	  o Continued Public Involvement
	• MITIGATION STRATEGY - Goals and Objectives
	• PLAN IMPLEMENTATION
	• NEXT MEETING DATES

Planning Team Meeting No. 4 March 31, 2011 Navajo County Governmental Complex, Public Works Conference Room Holbrook, AZ	• ACTION ITEM REVIEW/STATUS • VULNERABILITY ANALYSIS REVIEW • MITIGATION ACTION/PROJECT FORMULATION AND IMPLEMENTATION STRATEGY • END OF MEETING DISCUSSION

3.4.3 Agency/Organizational Participation

In addition to the adopting jurisdictions listed in Section 1.2, several agencies and organizations that operate within or have jurisdiction over small and large areas of Navajo County were invited to participate in the planning process. As a part of organizing the first Planning Team meeting, invitations were extended to several entities via both email and letter, to provide an opportunity for participation in the planning process. Copies of the various email and letter invitations are provided in Appendix B. The following is a partial list of the various agencies/organizations invited:

- Arizona Public Service
- Arizona Department of Commerce
- Arizona Department of Homeland Security
- Arizona Dept of Public Safety
- Arizona Dept of Water Resources
- Arizona Division of Emergency Management
- Arizona Office of Tourism
- Arizona State Climate Office
- Arizona State Land Department
- Burlington Northern Santa Fe Railroad
- Catalyst Paper
- City of Holbrook
- City of Show Low
- City of Winslow
- Heber-Overgaard Fire Department
- Holbrook Chamber of Commerce
- Holbrook Fire Department
- Holbrook Police Department
- Hopi Rangers
- J.E. Fuller/ Hydrology & Geomorphology, Inc.
- Joseph City Fire Department
- Lakeside Fire Department
- Linden Fire Department
- National Park Service
- Navajo Nation
- Navajo Nation Dept. of Public Safety
- Navajo Nation-Dept of Fire & Rescue Services
- Navajo Police Department
- Navopache Electric Co-op
- Northern Arizona Council of Governments
- Pinedale/Clay Springs Fire Department
- Pinetop Fire Department
- Pinetop-Lakeside Chamber of Commerce
- Pinetop-Lakeside Police Department
- Red Cross
- Show Low Chamber of Commerce
- Show Low Fire Department
- Snowflake Fire Department
- Snowflake Police Department
- Snowflake-Taylor Chamber of Commerce
- Salt River Project (SRP)
- Sumitt Healthcare
- Sun Valley Fire Department
- The Arizona Geological Survey
- The Hopi Tribe
- Town of Pinetop-Lakeside
- Town of Snowflake
- Town of Taylor
- Town of Taylor Fire Department
- Unisource Energy Services
- White Mountain Apache Tribe
- White Mountain Apache Tribe Fire Department
- White Mountain Apache Tribe Fire Department - Cibeque
- White Mountain Apache Tribe Police Department
- White Mountain Lake Fire Department
- Winslow Chamber of Commerce
- Winslow Fire Department
- Winslow Police Department

Table 3-4 summarizes the organizations and agencies that participated in the 2006 Plan and those that participated in the 2010-2011 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
	2006 Plan	2011 Plan	
Arizona Public Service	yes	no	Invitations were extended but none participated
Arizona State Climate Office	no	yes	No invitation was extended to the ASCO for the 2006 planning effort
Arizona Division of Emergency Mgt	no	yes	ADEM did not attend meetings in 2006 but was involved in the management of the planning consultant.
Abitibi Consolidated	yes	no	Company no longer operates paper mill. It is now Catalyst Paper
City of Holbrook	yes	yes	
City of Show Low	yes	yes	
City of Winslow	yes	yes	
Hopi Tribe	no	yes	Hopi Tribe has an approved tribal plan, but participated to encourage coordination with county.
Joseph City Fire	no	yes	
Lakeside Fire Department	no	yes	
Navajo County	yes	yes	
Navajo Nation	no	yes	Navajo Nation has an approved tribal plan, but participated to encourage coordination with county.
Town of Pinetop-Lakeside	yes	yes	
Summit Healthcare	no	yes	
Town of Snowflake	yes	yes	
Town of Taylor	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 Central Arizona Association of Governments. 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 2006 Plan development used press releases that were picked up and run in several local newspapers and radio stations. One comment was received from a homeowner's association representative requesting attention to a public access issue caused by a drainage crossing.

The post-draft strategy included the formal council and board of supervisors meeting processes wherein the 2006 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 2006 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 2006 Plan adoption process.

The Planning Team discussed the prior public involvement actions and concluded that it provided adequate public exposure to the mitigation planning process. The Planning Team also concluded that more web-based technology should be used for the update. Also, since any formal council/board action has a built-in public notification and comment opportunity, the Planning Team chose to continue using this process as one of the post-draft mechanisms for getting the Plan before the public.

3.5.2 Plan Update

Public involvement and input to the planning process was encouraged cooperatively among all of the participating jurisdictions using several venues throughout the course of the pre-draft planning. The planning team discussed various options for pre-draft public involvement including a repeat of using the press releases/public service announcements, newspaper articles, general public announcements, council/board briefings at a working session, and web page postings. The following strategy was formulated and implemented:

- Navajo County developed a webpage on the county website announcing the planning process and providing contact information for further inquiries.
- Each participating jurisdiction was to include a similar notice on their webpage with a link pointing the county's webpage for more information. All jurisdictions except Pinetop-Lakeside developed the webpage notice.
- Holbrook, Show Low, Taylor and Winslow planned to make informational presentations to their respective councils informing them of the planning process and update of the 2006 Plan.

- Winslow included a public notice in the city's utility newsletter.

On the county website, a name, email, and phone number were provided as contact information for prospective comments. Additionally, city and town postings also included contact information for the Planning Team representative for their community. Comments received by towns or cities are to be routed to the Planning Team Primary Point of Contact for addressing. No questions, concerns, or responses were received from the first round of notices from the general public.

The post-draft public involvement included the following actions:

- Update of the County website to include the draft Plan.
- A press release announcing the posting of the draft Plan to the Navajo County website and requesting comment.
- Notices will be posted to each jurisdiction's website (as appropriate) notifying readers that the draft Plan is completed and available for comment via the County website, for which links will be provided.
- The standard open meeting processes used by the County and each jurisdiction for their respective board / council adoption process.

All of the notices, postings, and articles encouraged review and comment of the draft Plan by the public. Interested citizens were also encouraged to participate in the local community adoption process which, depending upon the jurisdiction, may have included a public meeting and a formal public hearing. Copies of the pre- and post-draft public notices, web pages, and newspaper notices are provided in Appendix C.

3.6 Reference Documents and Technical Resources

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

Table 3-5: 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 Emergency Response Commission	Technical Resource	Resource for HAZMAT facility and commodity flow studies.
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. Used in the risk assessment.
Arizona Workforce Informer	Website	Source for employment statistics in Arizona.
Bureau Net (2011)	Website Database	Source for NFIP statistics for Arizona.

Table 3-5: 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
Central Navajo County Community Wildfire Protection Plan (WMFF, 2008)	Community Wildfire Protection Plan	Source of wildfire hazard profile data for hazard mapping and risk assessment
City of Holbrook General Plan (2005)	General Plan	Source for history, demographic and development trend data for the city.
City of Holbrook Multi-Hazard Mitigation Plan (2006)	Hazard Mitigation Plan	FEMA approved hazard mitigation plan that together with the other Navajo County jurisdiction's MHMPs, formed the starting point for the update process. See Section 2.4 for further discussion
City of Show Low General Plan (2007)	General Plan	Source for history, demographic and development trend data for the city.
City of Show Low Multi-Hazard Mitigation Plan (2006)	Hazard Mitigation Plan	FEMA approved hazard mitigation plan that together with the other Navajo County jurisdiction's MHMPs, formed the starting point for the update process. See Section 2.4 for further discussion
City of Winslow General Plan (2002)	General Plan	Source for history, demographic and development trend data for the city.
City of Winslow Multi-Hazard Mitigation Plan (2006)	Hazard Mitigation Plan	FEMA approved hazard mitigation plan that together with the other Navajo County jurisdiction's MHMPs, formed the starting point for the update process. See Section 2.4 for further discussion.
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.
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 Inventory of Dams (2009)	Technical Resource	Database used in the dam failure hazard profiling. Used in the risk assessment.
National Response Center	Technical Resource	Source of traffic related HAZMAT incidents and rail accidents. Used in the risk assessment.
National Weather Service	Technical Resource	Source for hazard information, data sets, and historic event records. Used in the risk assessment.
National Wildfire Coordination Group (2010)	Technical Resource	Source for historic wildfire hazard information. Used in the risk assessment.
Navajo County Flood Control District	Technical Resource	Resource for floodplain, levee, and dam failure data. Used in the risk assessment.
Navajo County MHMP (2006)	Hazard Mitigation Plan	FEMA approved hazard mitigation plan that together with the other Navajo County jurisdiction's MHMPs, formed the starting point for the update process. See Section 2.4 for further discussion
Navajo County Comprehensive Plan (2004)	Comprehensive Plan	Source for history, demographic and development trend data for the county.
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 and 2010)	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.
Town of Pinetop-Lakeside General Plan (2011 Draft)	General Plan	Source for history, demographic and development trend data for the town.
Town of Pinetop-Lakeside Multi-Hazard Mitigation Plan (2006)	Hazard Mitigation Plan	FEMA approved hazard mitigation plan that together with the other Navajo County jurisdiction's MHMPs, formed the starting point for the update process. See Section 2.4 for further discussion
Town of Snowflake General Plan (2008)	General Plan	Source for history, demographic and development trend data for the town.

Table 3-5: 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
Town of Snowflake Multi-Hazard Mitigation Plan (2006)	Hazard Mitigation Plan	FEMA approved hazard mitigation plan that together with the other Navajo County jurisdiction's MHMPs, formed the starting point for the update process. See Section 2.4 for further discussion
Town of Taylor General Plan (2005)	General Plan	Source for history, demographic and development trend data for the town.
Town of Taylor Multi-Hazard Mitigation Plan (2006)	Hazard Mitigation Plan	FEMA approved hazard mitigation plan that together with the other Navajo County jurisdiction's MHMPs, formed the starting point for the update process. See Section 2.4 for further discussion
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
World Wildlife Fund (2010)	GIS Data	Terrestrial ecoregions database used in the general county description.

SECTION 4: COMMUNITY DESCRIPTIONS

4.1 General

The purpose of this section is to provide updated basic background information on Navajo 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

According to the Arizona Department of Commerce[2], Navajo County was formed on March 21, 1895, as the final act of the Territorial Assembly before it adjourned at midnight. What is now Navajo County was first included in Yavapai County, but in 1879, the area was added to the newly formed Apache County. Today, Navajo County covers 9,959 square miles, 55 percent of which is Indian reservation land. The county seat is Holbrook. Navajo County is located in the northeastern portion of the State of Arizona, as depicted in Figure 4-1.

The county limits generally extend from longitude 109.9 to 110.8 degrees west and latitude 33.6 to 37.0 degrees north. Major roadway transportation routes through the county include Interstate 40, U.S. Highways 60, 160, and 163, State Routes 73, 77, 87, 99, 260, 264, 277, 377, and 564, and Indian Routes 6 and 15. Railways include the Burlington Northern Santa Fe Railway, Apache Railway and AMTRAK. Figure 4-2 shows all the major roadway and railway transportation routes and the airports within Navajo County.

Navajo County is divided into two distinct parts by the Mogollon Rim. The high country in the northern part of the county is considered Colorado Plateau Shrublands and is characterized by arid, desert-like conditions with mesas and plateaus. The southern part is considered Arizona Mountain Forests and is characterized by rugged mountain area, heavily wooded with pinon, juniper and ponderosa pine.

The geographical characteristics of Navajo County have been mapped into two terrestrial ecoregions[3], which are depicted in Figure 4-3, mentioned above, and described below:

- **Arizona Mountain Forests** – this ecoregion contains a mountainous landscape, with moderate to steep slopes. Elevations in this zone range from approximately 6,000 to 7,100 feet, resulting in comparatively cool summers and cold winters. Vegetation in these areas is largely heavily wooded with pinon, juniper and ponderosa pine forests, high altitude grasses, shrubs, and brush.
- **Colorado Plateau Shrublands** – this ecoregion covers the northern portion of the county and makes up the majority of the county with elevations that average around 5,000 to 7,500 feet. Vegetation in this ecoregion is comprised mainly of Plains Grassland and Great Basin Desert scrub. Temperatures can vary widely in this zone, with comparatively warm summers and cold winters. The high country in the northern part of the county is arid and desert-like with mesas and plateaus.

[2] Arizona Department of Commerce, 2004, *Community Profile for Navajo County.*

[3] URS, 2004, *State of Arizona All Hazard Mitigation Plan*.

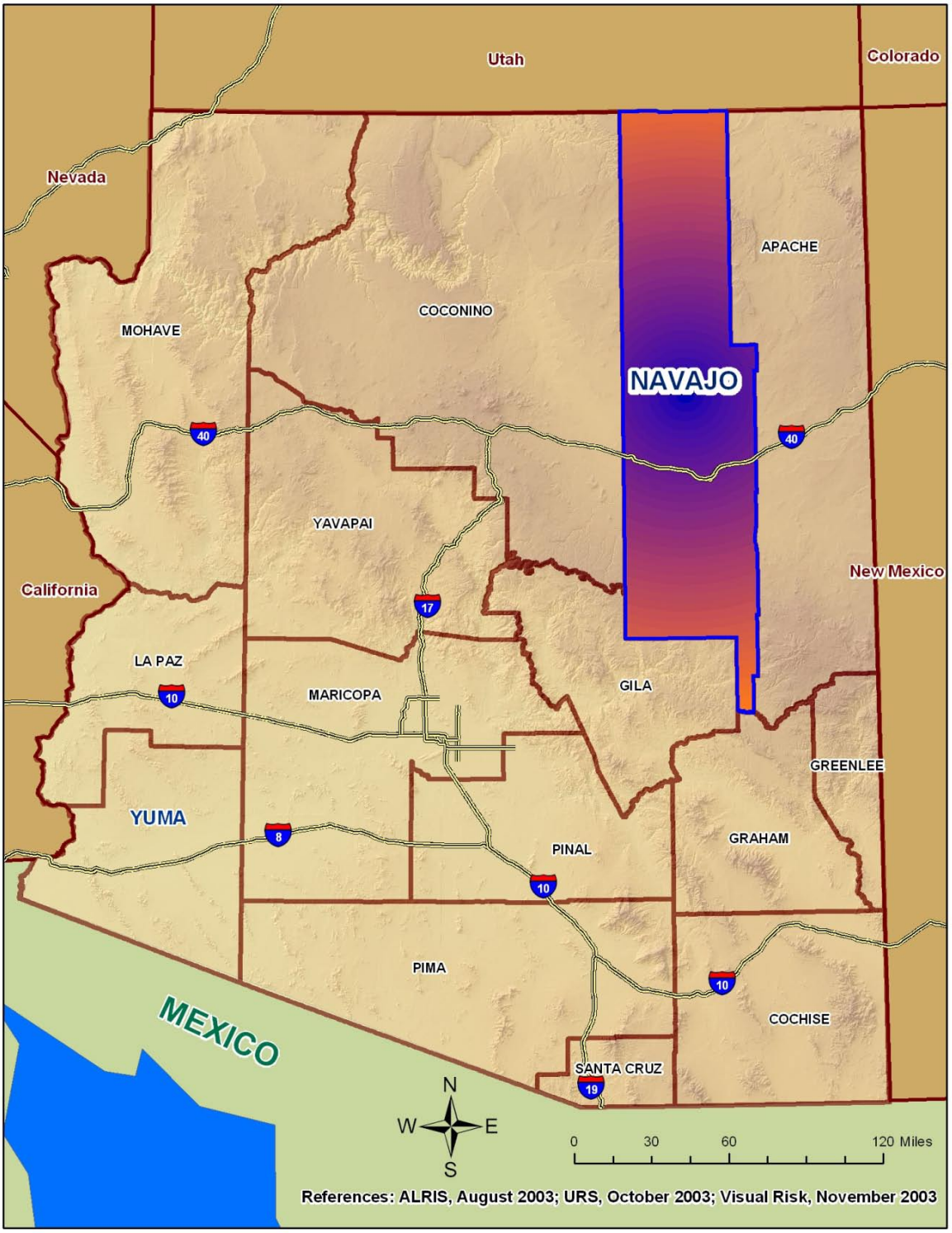

Figure 4-1
Vicinity Map

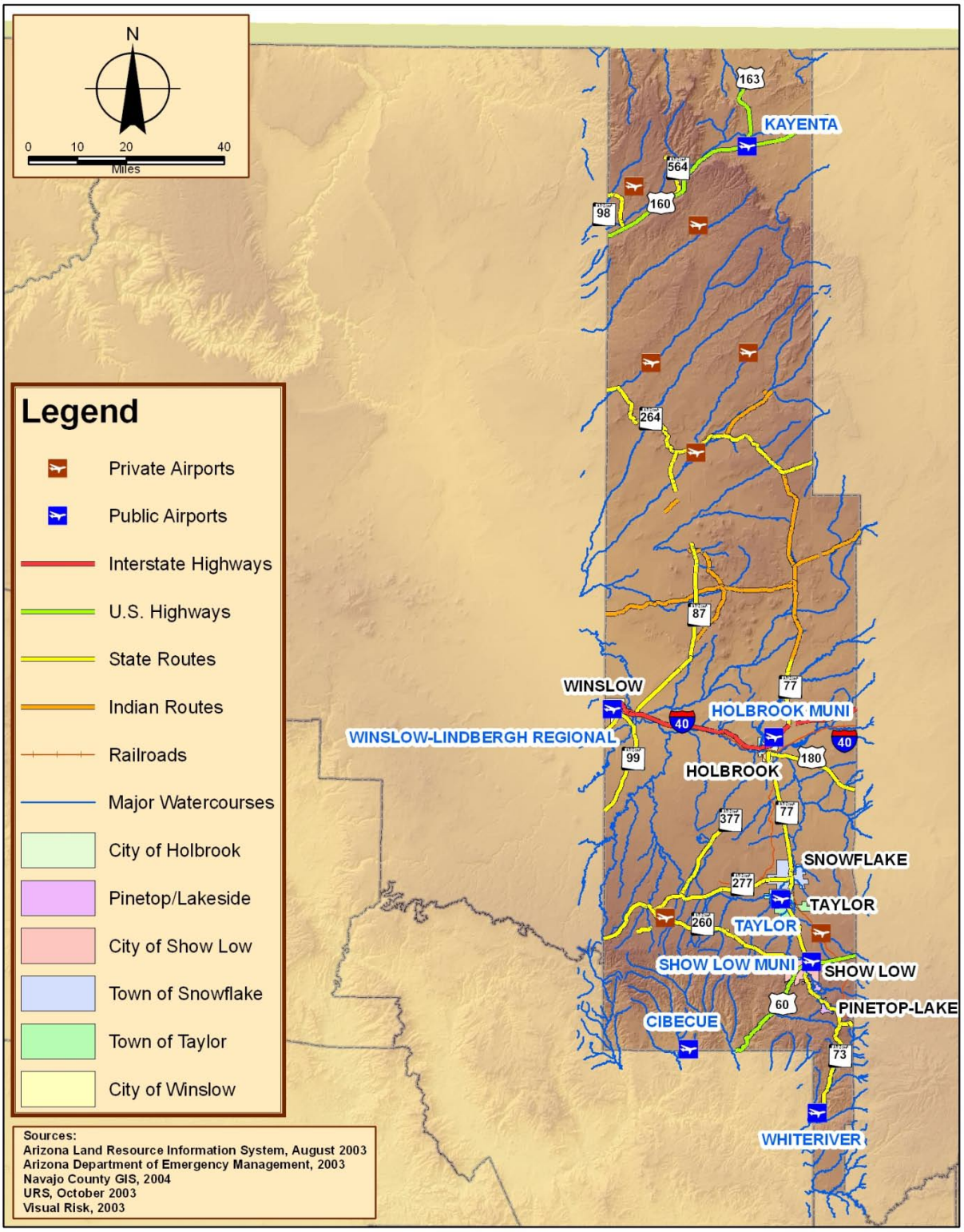

Figure 4-2
Transportation Routes Map

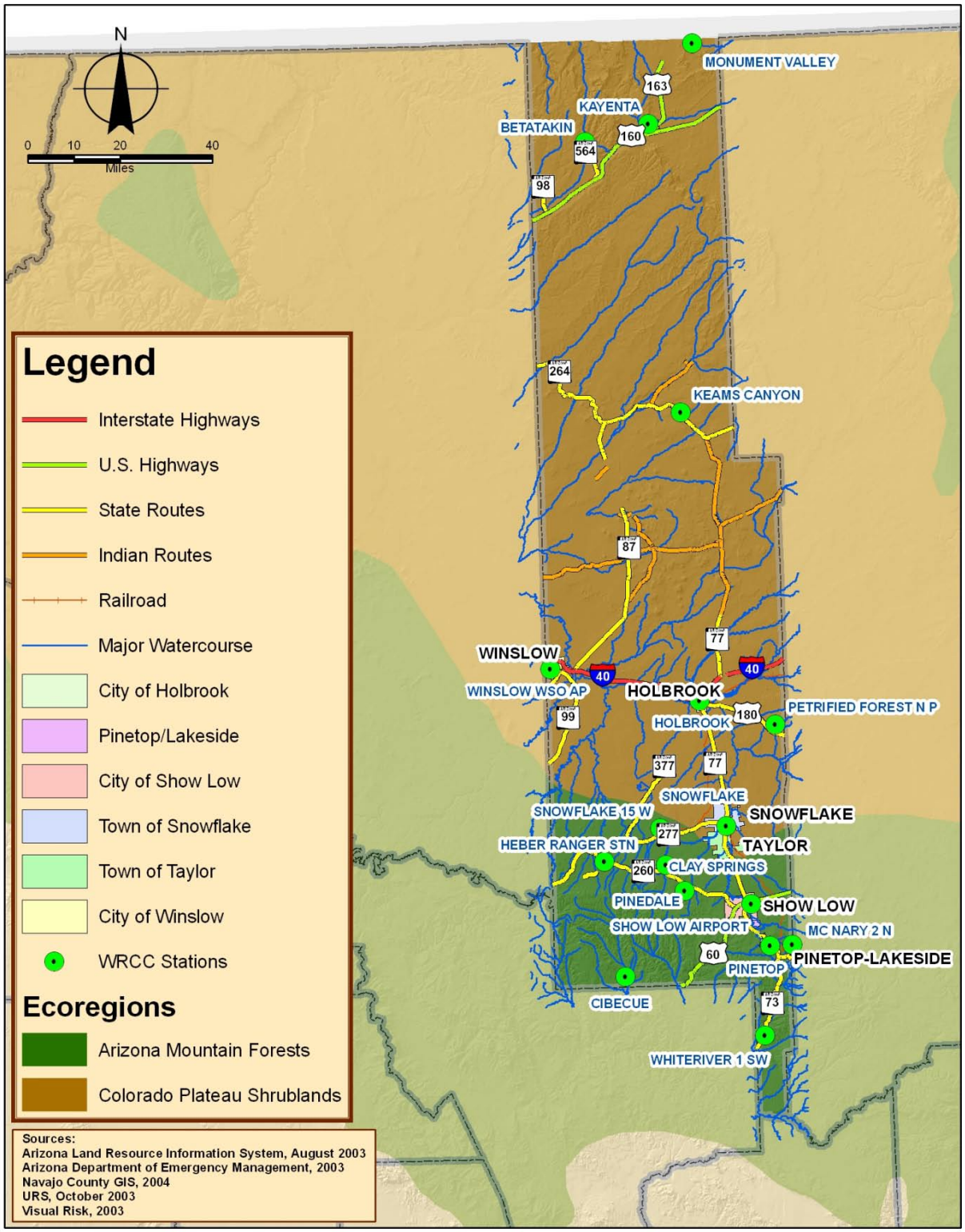

Figure 4-3
Terrestrial Ecoregions Map

4.2.2 Climate

The majority of Navajo County can be classified as Colorado Plateau Shrubland and Arizona Mountain Forest. The elevation range for these two ecoregions in Navajo County is from approximately 5,000 to 7,500 feet. Climatic statistics for weather stations within Navajo County are produced by the Western Region Climate Center[4] and span records dating back to the early 1900's. Locations of reporting stations within or near Navajo County are shown on Figure 4-3.

Average temperatures within Navajo County range from below freezing during the winter months to over 100 degrees Fahrenheit during the hot summer months. The severity of temperatures in either extreme is highly dependent upon the location, and more importantly the altitude, within the county. Below are figures taken from three climate stations found in the two ecoregions (See Section 4.2.1) found in Navajo County. Figure 4-4 presents a graphical depiction of temperature variability and extremes throughout the year for the Show Low Airport station, and it shows values typical to the Arizona Mountain Forest ecoregion. A similar graph is presented in Figure 4-5 for the Holbrook station, which is typical of the Colorado Plateau Shrublands ecoregion. Figure 4-6 shows the temperature variability for the Kayenta station and is also typical of the Colorado Plateau Shrublands ecoregion.

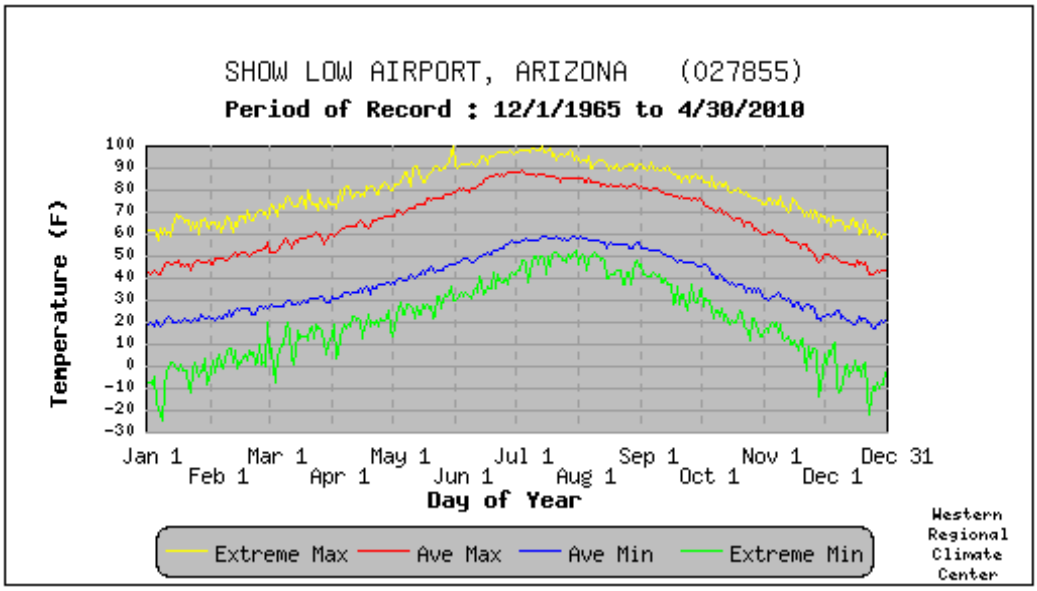

Figure 4-4
Daily Temperatures and Extremes for Show Low Airport, Arizona

[4] 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.

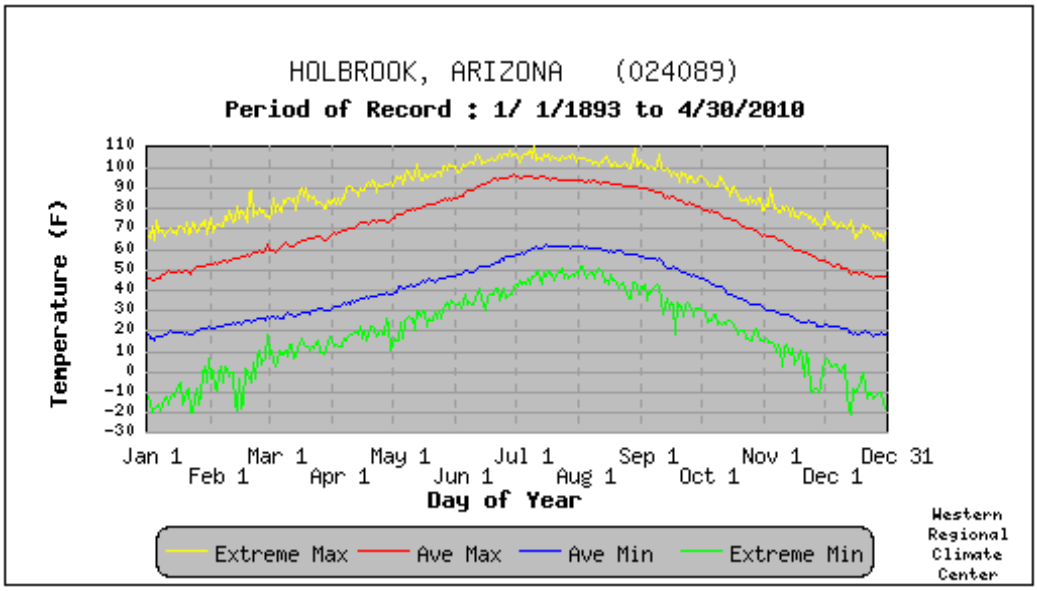

Figure 4-5
Daily Temperatures and Extremes for Holbrook, Arizona

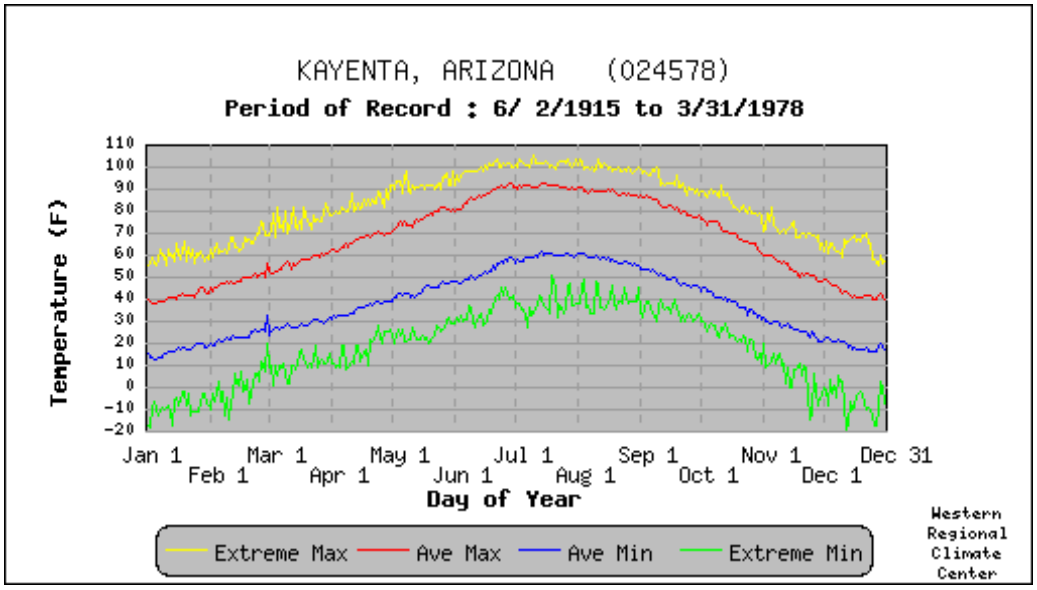

Figure 4-6
Daily Temperatures and Extremes for Kayenta, Arizona

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

portions of Arizona. These thunderstorms are often accompanied by strong winds, blowing dust, and infrequent hail storms[5].

Figures 4-7, 4-8, and 4-9 show tabular temperature and precipitation statistics for the Show Low Airport, Holbrook, and Kayenta stations. Statistics for other stations shown on Figure 4-3 will be somewhat similar to those of the Show Low Airport, Holbrook, and Kayenta stations, and hence are not included herein.

SHOW LOW AIRPORT, ARIZONA (027855)

Period of Record Monthly Climate Summary

Period of Record : 12/1/1965 to 4/30/2010

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	45.7	50.6	56.5	64.4	74.0	83.8	86.1	82.9	78.1	67.7	56.0	46.3	66.0
Average Min. Temperature (F)	20.7	24.3	29.0	34.4	42.3	51.0	57.7	56.0	49.8	38.4	28.4	21.4	37.8
Average Total Precipitation (in.)	1.26	1.21	1.25	0.67	0.64	0.43	2.32	3.08	1.61	1.57	1.27	1.77	17.07
Average Total SnowFall (in.)	4.9	4.2	4.7	1.8	0.0	0.0	0.0	0.0	0.0	0.4	1.9	4.7	22.7
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	1	0

Percent of possible observations for period of record.
Max. Temp.: 98.3% Min. Temp.: 98% Precipitation: 98.9% Snowfall: 97.2% Snow Depth: 91.2%
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 Show Low Airport, Arizona

HOLBROOK, ARIZONA (024089)

Period of Record Monthly Climate Summary

Period of Record : 1/ 1/1893 to 4/30/2010

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	48.1	55.2	62.8	71.4	80.7	90.7	93.9	91.3	85.3	74.0	60.4	48.6	71.9
Average Min. Temperature (F)	18.7	23.7	28.6	35.4	42.6	51.1	59.7	58.7	50.8	37.9	26.2	19.7	37.8
Average Total Precipitation (in.)	0.54	0.52	0.56	0.41	0.29	0.30	1.37	1.49	1.00	0.71	0.57	0.56	8.31
Average Total SnowFall (in.)	2.0	1.8	0.8	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.9	2.1	8.1
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 93.1% Min. Temp.: 92.1% Precipitation: 94.5% Snowfall: 93.7% Snow Depth: 91.4%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

Figure 4-8
Monthly Climate Summary for Holbrook, Arizona

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

KAYENTA, ARIZONA (024578)

Period of Record Monthly Climate Summary

Period of Record : 6/ 2/1915 to 3/31/1978

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	41.7	48.4	57.4	67.1	76.9	87.3	91.5	88.6	82.3	69.5	54.4	43.6	67.4
Average Min. Temperature (F)	17.0	23.4	29.1	36.0	44.7	52.6	60.0	58.3	50.0	38.8	26.7	19.6	38.0
Average Total Precipitation (in.)	0.46	0.47	0.55	0.38	0.39	0.28	1.18	1.40	0.75	0.87	0.44	0.48	7.66
Average Total SnowFall (in.)	4.1	2.6	1.9	0.5	0.0	0.0	0.0	0.0	0.0	0.0	1.3	2.2	12.8
Average Snow Depth (in.)	1	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 83% Min. Temp.: 81.8% Precipitation: 85.9% Snowfall: 85.8% Snow Depth: 84.7%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

Figure 4-9
Monthly Climate Summary for Kayenta, Arizona

4.2.3 Population

Navajo County is home to 123,172 residents, with the majority of the population living on the reservations and incorporated communities of Navajo County. The largest community is the City of Show Low. All of incorporated cities and towns are geographically located in the southern portion of the County. Table 4-1 summarizes jurisdictional population statistics for Navajo County communities and the County as a whole.

There are a total of 46 unincorporated communities scattered across the county, with many being comprised of only one structure or a prominent landmark. The majority of these unincorporated communities are also located on the Indian Reservations and will be addressed in the Reservation mitigation plans. Within Navajo County, the US Forest Service, US Bureau of Land Management, and State Land combined, constitute nearly fifteen percent of land ownership. Fifty-five percent of the County is comprised of Indian Reservation Land. The remaining thirty percent is individually or corporately owned.[6] Figure 4-10 provides a visual depiction of the land ownership and town or community locations within the county.

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

Jurisdiction	1990	2000	2010	2015	2020
Navajo County (total)	77,700	95,300	107,449	135,671	147,045
Cities and Towns					
Holbrook	4,685	5,705	5,053	6,468	6,929
Pinetop-Lakeside	2,425	3,625	4,282	5,362	5,891
Show Low	5,030	8,575	10,660	14,380	16,370
Snowflake	3,680	4,850	5,590	5,910	6,342
Taylor	2,420	2,990	4,112	5,996	6,342
Winslow	8,205	11,395	9,655	10,482	10,768

Note: Figures for 1990 and 2000(1980 - 2008Historical Estimates:
http://www.azcommerce.com/econinfo/demographics/Population+Estimates.html
Figures for 2010 from AZ Dept of Commerce's Arizona Workforce Informer, as accessed at:
http://www.workforce.az.gov/census-data.aspx
Figures for 20150 to 2020: Arizona Department of Economic Security, Research Administration, Population Statistics Unit, 12/01/06. http://www.azcommerce.com/econinfo/demographics/Population+Projections.html

[6] Arizona Department of Commerce, 2009, *Community Profile for Navajo County.*

4.2.4 Economy

Navajo County was formed on March 21, 1895, as the final act of the Territorial Assembly before it adjourned at midnight, with the County Seat established in Holbrook. By the time it became Navajo County, the area was developed. The railroad had crossed the county for more than a decade, and North America's third largest ranch, the Aztec Land and Cattle Company near Holbrook, had been established. Backed by Easterners, Aztec bought 1 million acres of land from the railroad at 50 cents an acre. The company, known as the Hashknife Outfit because of its brand, brought 33,000 longhorn cattle and 2,200 horses into northern Arizona from Texas. Holbrook, the county seat, was founded in 1871.

Economic diversity also characterizes Navajo county. The Indian reservations in the northern half of the county comprise one segment. Kayenta, founded in 1909 as a trading post, is now the gateway to the Navajo Tribal Park at Monument Valley and a thriving Navajo community. Members of the Hopi Indian Reservation, which is completely surrounded by the Navajo Reservation, depend upon cattle and sheep production and tourism. The Hopi pueblo of Oraibi is one of the oldest continuously inhabited settlements in the United States.

The Interstate 40 corridor communities of Holbrook and Winslow in the county's center are areas of growth tied to the cross-country transportation route. The county's southern half is characterized by dynamic growth related to tourism and an increased demand for housing.

Major communities in the south are Pinetop-Lakeside, Show Low, Snowflake, and Taylor. Both central and southern portions of the county enjoy relatively low unemployment.

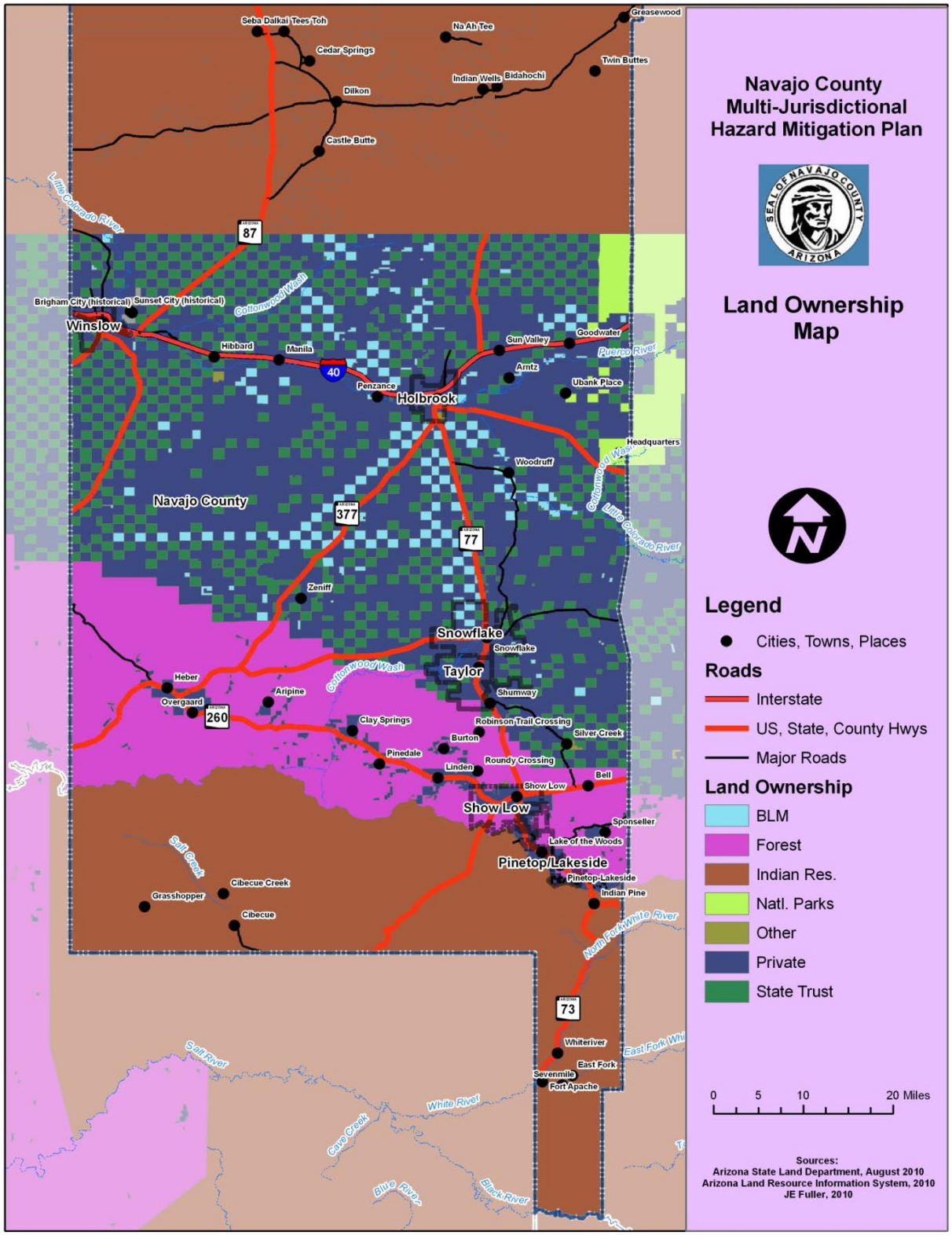

Figure 4-10: 2010 Land Ownership and Locations for Navajo County

4.3 Jurisdictional Overviews

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

4.3.1 Holbrook

The City of Holbrook is located in the central portion of Navajo County in northeastern Arizona. Holbrook is one of seven incorporated communities in Navajo County and serves as the County seat. The City is located on a high desert plateau with low sandstone cliffs. Holbrook is on the banks of the Little Colorado River and along Interstate 40. The present incorporated City limits occupy approximately 16.5 square miles. The location of Holbrook, relative to Navajo County, is depicted in Figure 4-2.

The centroid of the City is generally located at longitude 110.1692 degrees west and latitude 34.906 degrees north and the average elevation is 5,069 feet. The major roadway through the City is Interstate 40. State Routes 77, 377, and U.S. Highway 180 come together in a junction in the southern portion of the City. The Burlington Northern Santa Fe (BNSF) railroad parallels Interstate 40 and passes through the City. The City operates an airport within the City limits. Figure 4-11 shows all the major roadway transportation routes within the vicinity of Holbrook.

The Little Colorado River is the primary watercourse located within the City. Other major watercourses include the Puerco River, Leroux Wash, Porter Tank Draw, and Fivemile Wash. The remaining watercourses are primarily small ephemeral washes.

In 1881-82 railroad tracks were laid and a railroad station was built in the community. The community was then named Holbrook in honor of the first chief engineer of the Atlantic and Pacific Railroad. The railroad is now BNSF and Holbrook has since been a transportation hub and service center for northeast Arizona. Holbrook is also on Historic Route 66 and is the gateway city to the Petrified Forest National Park. A colorful cowboy history also helps to make Holbrook an interesting tourist community. Holbrook is the county seat of Navajo County.

Holbrook is one of seven (7) incorporated communities within Navajo County. There are an additional forty-six (46) unincorporated communities scattered across the County, with Joseph City and Woodruff being the closest to Holbrook. Within Navajo County, the US Forest Service, US Bureau of Land Management, and State Land combined, constitute nearly fifteen percent of land ownership. Fifty-five percent of the County is comprised of Indian Reservation Land. The remaining thirty percent is individually or corporately owned.[7] Figure 4-11 provides a visual depiction of the land ownership around the Holbrook area.

The 2010 Census population for Holbrook was 5,053. The civilian labor force in June 2011 was 2,575 with an unemployment rate of 10.5 percent.. The major industries significant to the economy of Holbrook include: the Cholla Power Plant, Government Services, Retail Trade and Services, and Tourism.

[7] Arizona Department of Commerce, 2009, *Community Profile for Holbrook, Arizona*.

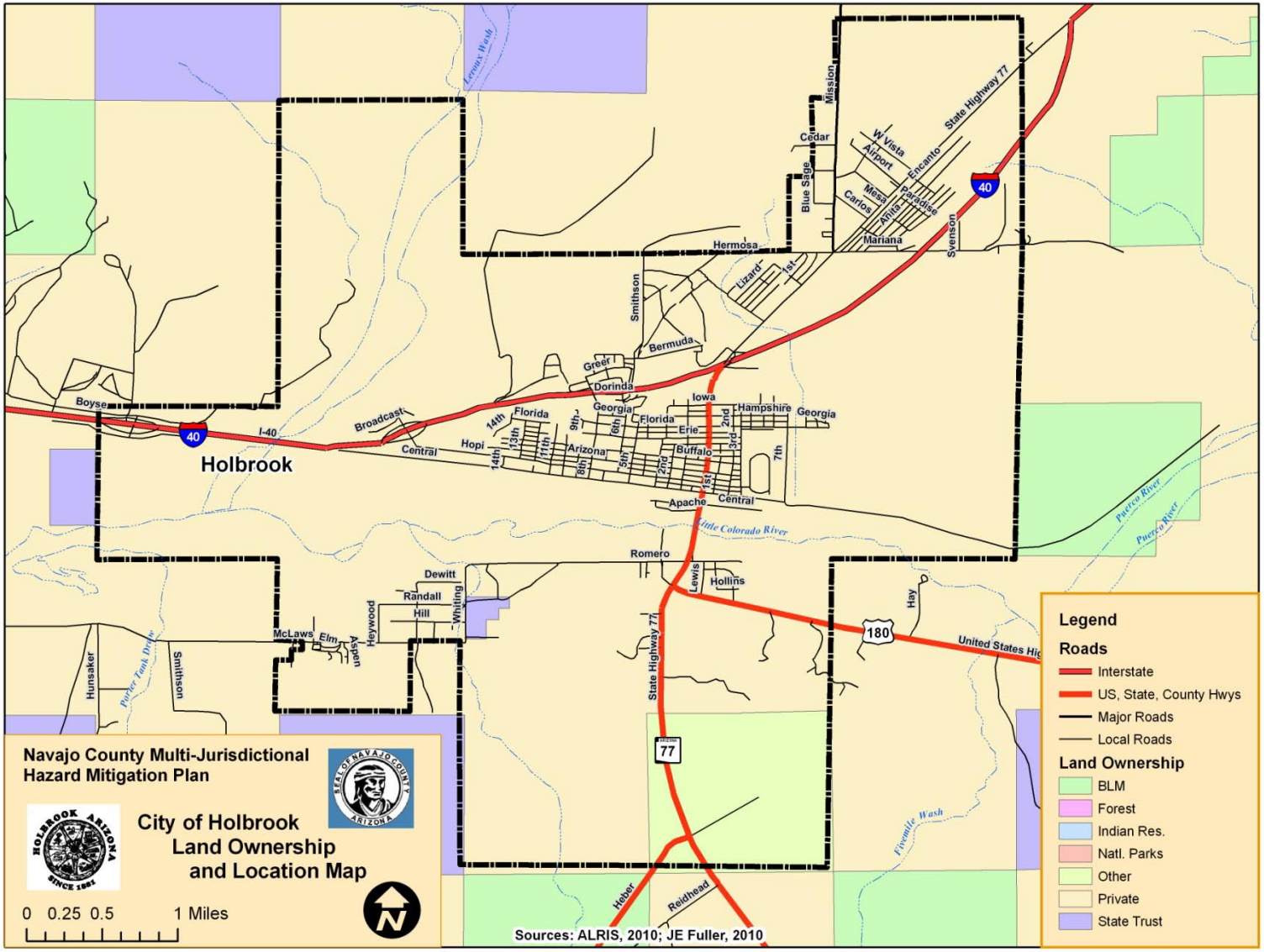

Figure 4-11: City of Holbrook Land Ownership and Location Map

4.3.2 Pinetop-Lakeside

The Town of Pinetop-Lakeside is located in the southern portion of Navajo County in east-central Arizona. Pinetop-Lakeside is one of seven incorporated communities in Navajo County. The Town is located in the White Mountains of Arizona in the tall pines of the Apache Sitgreaves National Forest. State Route 73 traverses directly through the middle of Pinetop-Lakeside. The City of Show Low shares Pinetop-Lakeside's northern boundary. The present incorporated Town limits occupy approximately 10.7 square miles. The location of Pinetop-Lakeside, relative to Navajo County, is depicted in Figure 4-2.

The centroid of the Town is generally located at longitude 109.9653 degrees west and latitude 34.1486 degrees north and the average elevation is 7,200 feet. The major roadway through the Town is State Route 73. State Route 45 intersects with State Route 73 in the central portion of the Town. U.S. Highway 60 and State Route 260 are in close proximity to the Town to both the north and south. Figure 4-12 shows all the major roadways within the vicinity of Pinetop-Lakeside.

Four primary watercourses are located within the Town: Billy Creek, Porter Creek, Show Low Creek, and Walnut Creek. The remaining watercourses are primarily small ephemeral washes.

Pinetop-Lakeside is one of seven (7) incorporated communities within Navajo County. There are an additional forty-six (46) unincorporated communities scattered across the County, with Indian Pine and McNary, both on the White Mountain Apache Indian Reservation, being the closest to Pinetop-Lakeside. Within Navajo County, the US Forest Service, US Bureau of Land Management, and State Land constitute nearly fifteen percent of land ownership. Fifty-five percent of the County is comprised of Indian Reservation Land. The remaining thirty percent is individually or corporately owned.[8] Figure 4-12 provides a visual depiction of the land ownership around the Pinetop-Lakeside area.

The 2010 Census population for Pinetop-Lakeside was 4,282. The civilian labor force in June 2011 was 2,019 with an unemployment rate of 8.7 percent. The major industries significant to the economy of Pinetop-Lakeside include: Trade and Services geared toward the recreation opportunities within the area, Navapache Electric Co., Arizona Water Co., education, medical and light manufacturing, and Government Services.

Founded in the early 1880s by Mormon pioneers, Lakeside derived its name from the area's lakes, and Pinetop derived its name from the nickname of a saloon keeper who served the Fort Apache soldiers. The two communities incorporated as one town in 1984. Pinetop-Lakeside is known for its extensive tourism and recreational activities, proximity to the world's largest stand of ponderosa pine, and for an outstanding quality of life. Hiking, biking, and horseback riding are popular activities on the 180 miles of developed multi-use trails, which are part of the White Mountain Trail system. The American Hiking Association ranked the area third best Trail Town in 1996. Hunting & fishing are popular, and picnic and camping facilities are available. Pinetop-Lakeside is noted for its golf courses and Woodland Lake Park with its excellent recreational facilities. Cross-country skiing, sledding, snowmobiling, and ice fishing can be enjoyed during the winter. Excellent downhill skiing at the Sunrise Park Resort is only 45 minutes away.

[8] Arizona Department of Commerce, 2009, *Community Profile forPinetop-Lakeside, Arizona.*

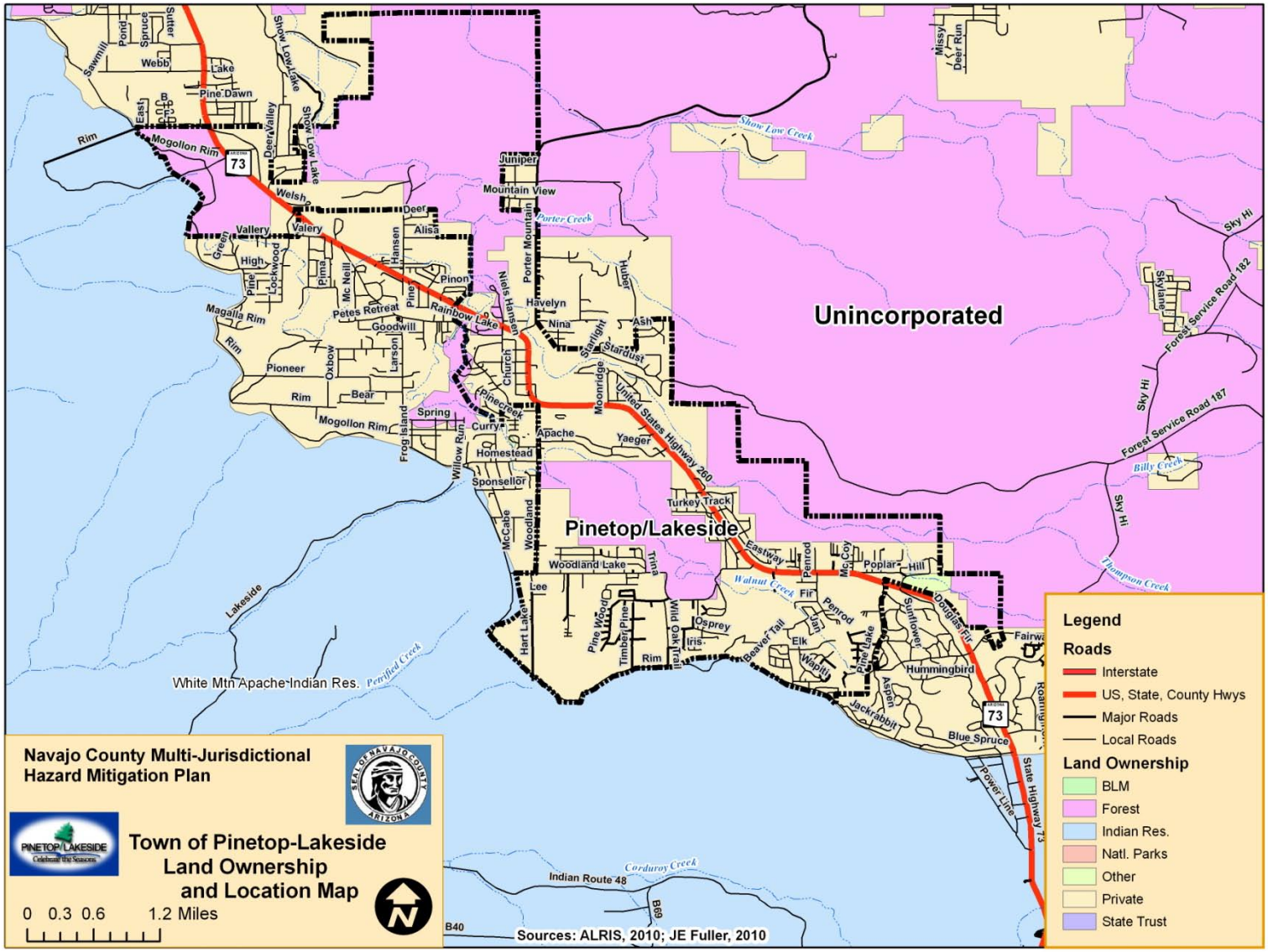

Figure 4-12: Town of Pinetop-Lakeside land use planning map

4.3.3 Show Low

The City of Show Low is located in the southern portion of Navajo County in northeastern Arizona. Show Low is one of seven incorporated communities in Navajo County. The City is located on the edge of the White Mountains. Show Low is on U.S. Route 60. The present incorporated City limits occupy approximately 34 square miles. The location of Show Low, relative to Navajo County, is depicted in Figure 4-2.

The centroid of the City is generally located at longitude 110.3333 degrees west and latitude 34.2333 degrees north and the average elevation is 6,331 feet. The major roadway through the City is U.S. Highway 60. State Routes 77 and 260 also traverse through the City. The City operates an airport within the City limits. Figure 4-13 shows all the major roadway within the vicinity of Show Low.

The City has no primary watercourse that is located within the City boundaries. However, Billy Creek and Show Low Creek are major watercourses within the corporate limits. The remaining watercourses are primarily small ephemeral washes.

Show Low is one of seven (7) incorporated communities within Navajo County. There are an additional forty-six (46) unincorporated communities scattered across the County, with Linden and Pinedale being the closest to Show Low. Within Navajo County, the US Forest Service, US Bureau of Land Management, and State Land combined, constitute nearly fifteen percent of land ownership. Fifty-five percent of the County is comprised of Indian Reservation Land. The remaining thirty percent is individually or corporately owned.[9] Figure 4-13 provides a visual depiction of the land ownership around the Show Low area.

The 2010 Census population for Show Low was 10,660. The civilian labor force in June 2011 was 3,825 with an unemployment rate of 7.9 percent. The major industries significant to the economy of Show Low include: education, medical and light manufacturing, Government Services, and Retail Trade and Services. Tourism and recreation are the foundations of the economy of Show Low. Due to its size and location, the community serves as a regional trade and services center for southern Navajo County and portions of southern Apache County. It is also an entry point for visitors to the White Mountains.

Show Low was established in 1870 and incorporated in 1953. It received its name when C.E. Cooley and Marion Clark decided there was not enough room for both of them in their settlement. The two men agreed to let a game of cards decide who was to move. According to the story, Clark said "If you can show low, you win." Cooley turned up the deuce of clubs and replied, "Show Low it is."

Show Low offers many year around recreational opportunities and points of interest. The Apache Sitgreaves National Forest, with 58 campgrounds, trails, and pristine lakes, surrounds the city. The scenic White Mountain and Mogollon Rim areas are also nearby for campers and fishermen. Arizona's only covered bridge is located in Pinedale, 15 miles west of Show Low. Apache, Navajo, Hopi, and Zuni Indian Reservations are nearby. The City has a new indoor aquatic center, five 18 hole golf courses within 20 miles, and numerous motel and RV accommodations.

[9] Arizona Department of Commerce, 2009, *Community Profile for Show Low, Arizona.*

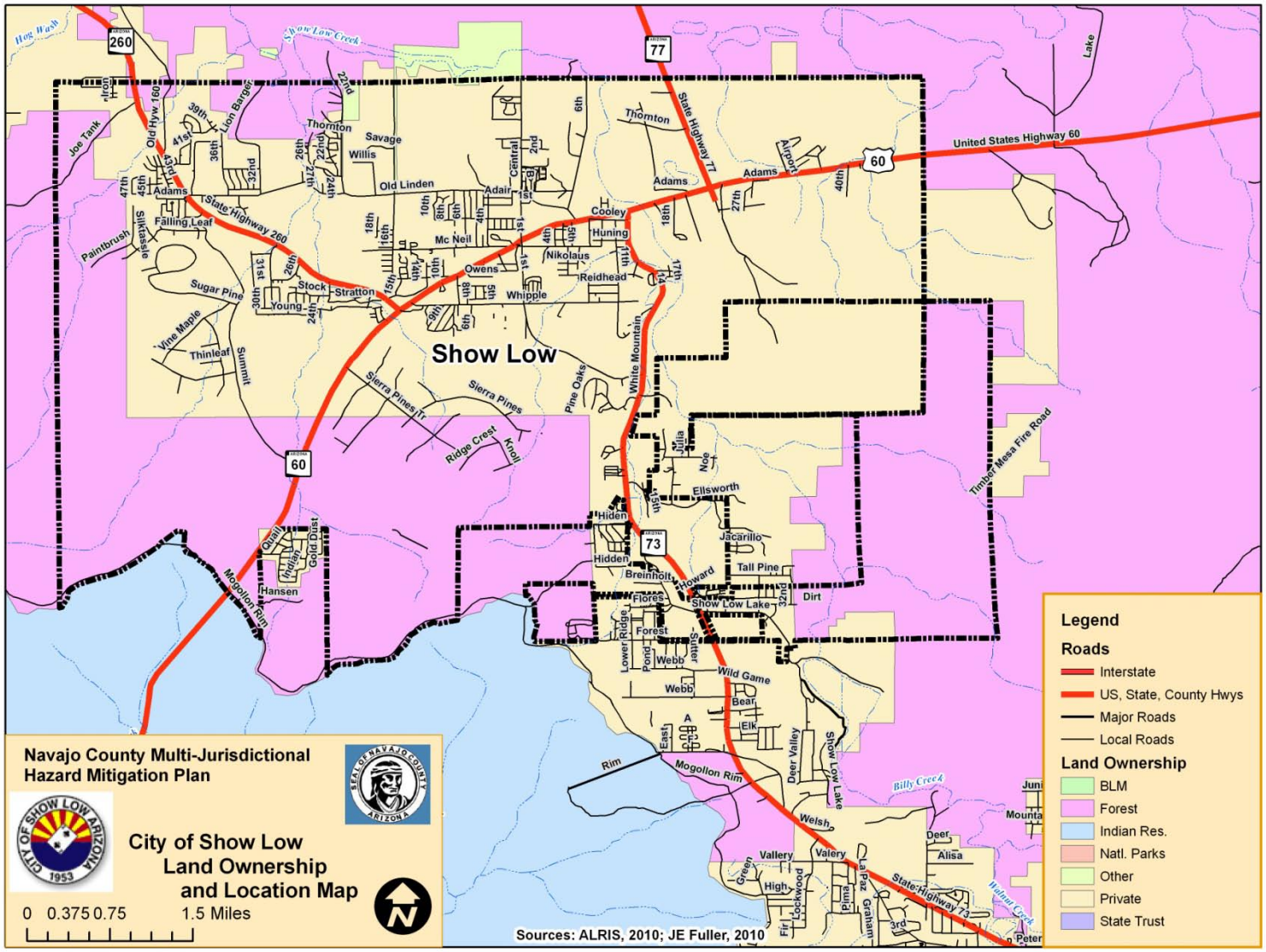

Figure 4-13: City of Show Low Land Ownership and Location Map

4.3.4 Snowflake

The Town of Snowflake is located in the southern portion of Navajo County in east-central Arizona. Snowflake is one of seven incorporated communities in Navajo County. The Town is located in a broad, flat valley on the banks of Silver Creek. Snowflake is located at the intersection of State Route 77 and State Route 277. The Town of Taylor shares Snowflake's southern boundary. The present incorporated Town limits occupy approximately 32.8 square miles. The location of Snowflake, relative to Navajo County, is depicted in Figure 4-2.

The centroid of the Town is generally located at longitude 110.0928 degrees west and latitude 34.5211 degrees north and the average elevation is 5,582 feet. The major roadway through the Town is State Route 77. State Routes 77, 277, and 5020 all intersect within the corporate boundaries of Snowflake. Figure 4-14 shows all the major roadways within the vicinity of Snowflake.

Silver Creek is the primary watercourse located within the Town. Other major watercourses include Cottonwood Wash, The Canal, and Concho Flat Wash. The remaining watercourses are primarily small ephemeral washes.

As shown on Figure 4-3, the Town of Snowflake is located completely within the Colorado Plateau Shrublands zone.

Snowflake, is in east central Arizona 30 miles south of Holbrook on State Route 77. The Mogollon Rim and the White Mountains, south and west of Snowflake, form an almost continuous barrier protecting the community from severe winters and creating a semi-arid climate. Founded in 1878, Snowflake was named after its founders, Erastus Snow, an apostle of the Church of Jesus Christ of Latter Day Saints and Mormon land agent William Flake. Snowflake is at an elevation of 5,600 feet.

Snowflake lies in an area of great contrast - barren desert to the north and mountain ranges to the south. One of the nation's most unique parks lies north of Snowflake, the Petrified Forest National Park, which includes not only the Petrified Forest, but the Painted Desert and Navajo Indian Reservation with attractions such as Monument Valley and Oraibi, the oldest continually occupied village in the U.S.

To the south and west of Snowflake are high mountains and forests, including the White Mountains, Sitgreaves National Forest, and the Mogollon Rim. Many small lakes, perfect for trout fishing and swimming, are scattered throughout these mountains. The Sunrise Park Ski Resort is located 65 miles south of Snowflake on the Fort Apache Indian Reservation.

Snowflake is one of seven (7) incorporated communities within Navajo County. There are an additional forty-six (46) unincorporated communities scattered across the County, with Shumway and Linden being the closest to Snowflake. Within Navajo County, the US Forest Service, US Bureau of Land Management, and State Land constitute nearly fifteen percent of land ownership. Fifty-five percent of the County is comprised of Indian Reservation Land. The remaining thirty percent is individually or corporately owned.[10] Figure 4-14 provides a visual depiction of the land ownership around the Snowflake area.

The 2010 Census population for Snowflake was 5,590. The civilian labor force in June 2011 was 2,130 with an unemployment rate of 9.0 percent. The major industries significant to the economy of Snowflake include: Catalyst Paper (Arizona's only pulp and paper mill), Suntastic, USA, Inc.(a 20 acre hydroponic tomato growing greenhouse), three moulding mills, significant livestock production (32,000 head of cattle have grazed annually in the county, many of them in the Snowflake/Taylor area), significant hog production (250,000 head annually), education, medical and light manufacturing, government services, and retail trade and services.

[10] Arizona Department of Commerce, 2009, *Community Profile for Snowflake, Arizona*.

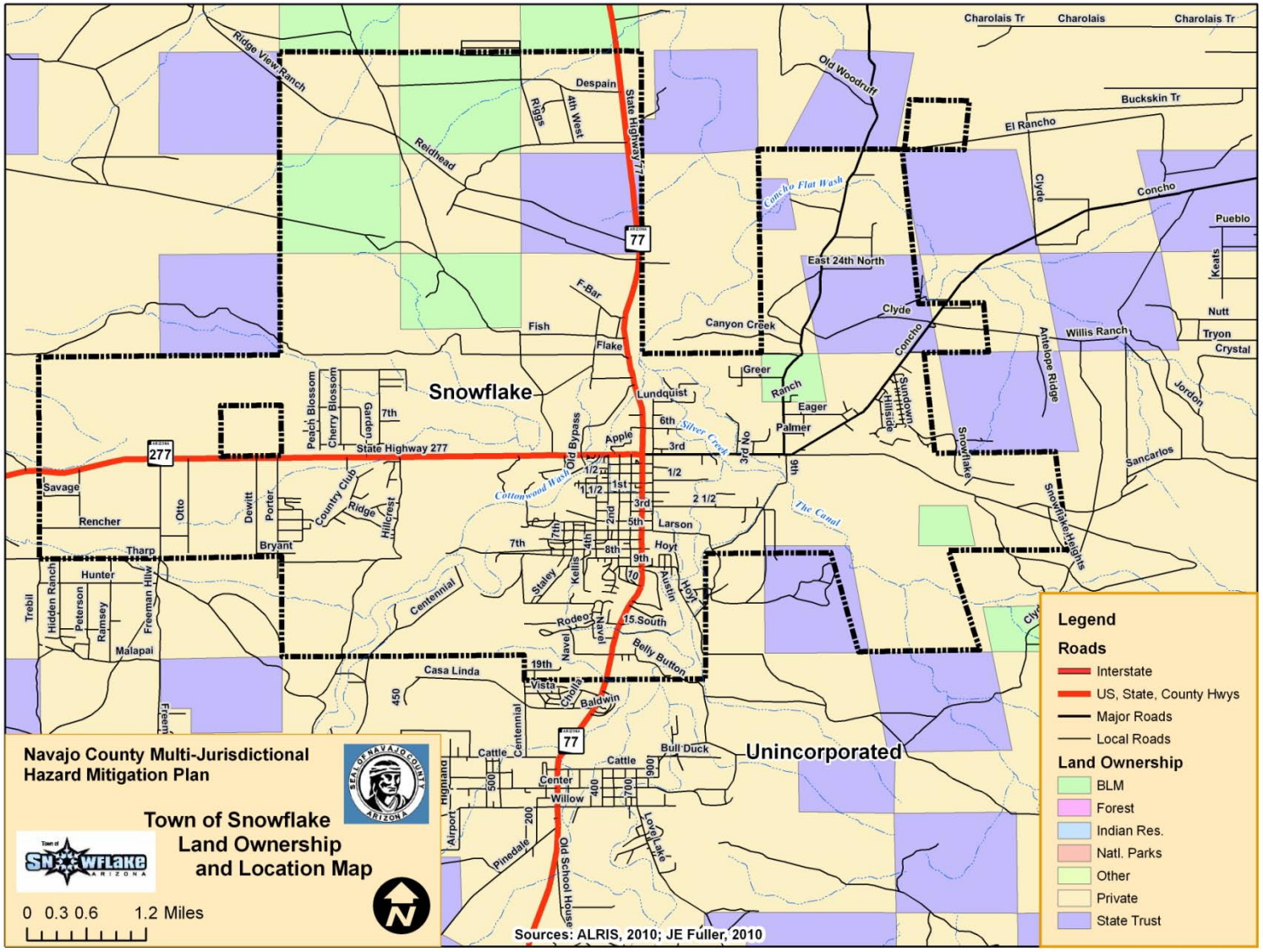

Figure 4-14: Town of Snowflake Land Ownership and Location Map

4.3.5 Taylor

The Town of Taylor is located in the southern portion of Navajo County in east-central Arizona. Taylor is one of seven incorporated communities in Navajo County. The Town is located in a broad, flat valley on the banks of Silver Creek. Taylor is on State Route 77 just south of the intersection with State Route 277. The Town of Snowflake shares Taylor's northern boundary. The present incorporated Town limits occupy approximately 28 square miles. The location of Taylor, relative to Navajo County is depicted in Figure 4-2.

The centroid of the Town is generally located at longitude 110.1000 degrees west and latitude 34.4444 degrees north and the average elevation is 5,640 feet. The major roadway through the Town is State Route 77. State Route 918 intersects with State Route 77 at the southern end of the Town and State Route 277 intersects State Route 77 within the incorporated limits of the Town of Snowflake to the north. The Town operates an airport within the Town limits. Figure 4-15 shows all the major roadways and within the vicinity of Taylor.

Silver Creek is the primary watercourse located within the Town. Other major watercourses include: Cottonwood Wash, Dodson Wash, and Show Low Creek. The remaining watercourses are primarily small ephemeral washes.

As shown on Figure 4-3, the Town of Taylor is located almost completely within the Colorado Plateau Shrublands zone. Only a small portion of the southern boundary is touched by the Arizona Mountain Forests zone.

Taylor is one of seven (7) incorporated communities within Navajo County. There are an additional forty-six (46) unincorporated communities scattered across the County, with Shumway and Linden being the closest to Taylor. Within Navajo County, the US Forest Service, US Bureau of Land Management, and State Land combined, constitute nearly fifteen percent of land ownership. Fifty-five percent of the County is comprised of Indian Reservation Land. The remaining thirty percent is individually or corporately owned.[11] Figure 4-15 provides a visual depiction of the land ownership around the Taylor area.

The 2010 Census population for Taylor was 4,112. The civilian labor force in June 2011 was 1,506 with an unemployment rate of 7.4 percent. The major industries significant to the economy of Taylor include: Catalyst Paper (Arizona's only pulp and paper mill); three moulding mills within the vicinity; livestock production; hog production; education; medical and light manufacturing; Government Services; and Retail Trade and Services.

Taylor, on the banks of Silver Creek, is in a broad, flat valley in east-central Arizona. The Mogollon Rim and White Mountains, to the south and west, form an almost continuous barrier protecting Taylor from severe winters and creating a semi-arid climate. Taylor was settled by James Pearce and named after John Taylor, English-born president of the Church of Jesus Christ of Latter Day Saints. Taylor has seven sites listed on the National Register.

Taylor lies in an area of great contrasts – barren desert to the north and mountain ranges to the south. The Petrified Forest National Park is one of the nation's most unique parks. Within the Petrified Forest are the Painted Desert and Navajo Indian Reservation with such attractions as Monument Valley and Oraibi, the oldest continually occupied village in the U.S. To the south and west of Taylor are high mountains and forests, including the White Mountains, Sitgreaves National Forest, and the Mogollon Rim. Many small lakes, perfect for trout fishing and swimming, are scattered throughout these mountains. The Sunrise Park Ski Resort is located 65 miles south of Taylor on the Fort Apache Indian Reservation.

[11] Arizona Department of Commerce, 2009, *Community Profile for Taylor, Arizona.*

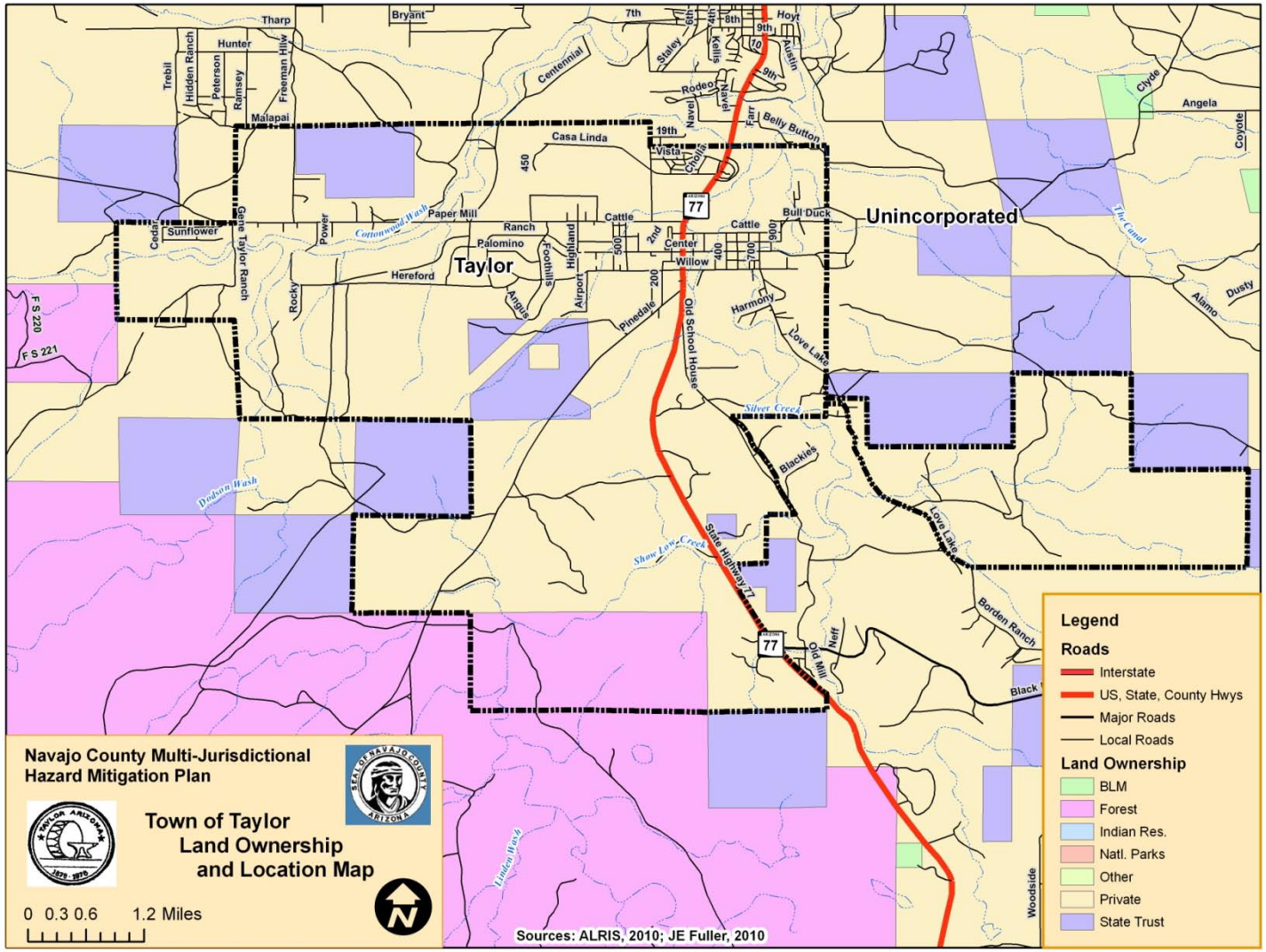

Figure 4-15: Town of Taylor Land Ownership and Location Map

4.3.6 Winslow

The City of Winslow is located in the west-central portion of Navajo County in northeastern Arizona. Winslow is one of seven incorporated communities in Navajo County. The City is located on the western edge of Navajo County. Winslow is on Interstate 40. The present incorporated City limits occupy approximately 12.2 square miles. The location of Winslow, relative to Navajo County is depicted in Figure 4-2.

The centroid of the City is generally located at longitude 110.7056 degrees west and latitude 35.0292 degrees north and the average elevation is 4,880 feet. The major roadway through the City is Interstate 40. State Routes 71, 87, and 99 also traverse through the City. Historic Route 66 also runs through the City. The City operates an airport within the City limits. Figure 4-16 shows all the major roadway routes within the vicinity of Winslow.

The City is located on the banks of the Little Colorado River, which serves as the City's primary watercourse. Other major watercourses within the vicinity of Winslow are Clear Creek, Cottonwood Wash, and Jacks Canyon. The remaining watercourses are primarily small ephemeral washes.

As shown on Figure 4-3, the City of Winslow is located completely within the Colorado Plateau Shrublands zone.

Winslow is one of seven (7) incorporated communities within Navajo County. There are an additional forty-six (46) unincorporated communities scattered across the County, with Joseph City and Castle Butte being the closest, within Navajo County, to Winslow. Within Navajo County, the US Forest Service, US Bureau of Land Management, and State Land constitute nearly fifteen percent of land ownership. Fifty-five percent of the County is comprised of Indian Reservation Land. The remaining thirty percent is individually or corporately owned.[12] Figure 4-16 provides a visual depiction of the land ownership around the Winslow area.

The 2010 Census population for Winslow was 9,655. The civilian labor force in June 2011 was 4,014 with an unemployment rate of 7.5 percent. The major industries significant to the economy of Winslow include: transportation, tourism, manufacturing, trade, retail, education, medical, government services, and lumber.

Winslow, which became a division point for the Santa Fe Railway, is on Interstate 40 on the western border of Navajo County in the high plateau country of northeastern Arizona. The community lies in the Little Colorado River Valley (the river skirts the city's eastern edge) and is 58 miles east of Flagstaff. Famed Route 66 was the major east-west route through Winslow before I-40 replaced it. The first settler, in 1880, was reputed to have been a hotel man who lived in and did business from a tent. Two years later, in January 1882, a U.S. Post Office was established. The City is said to have been named for Edward Winslow, a railroad company president.

Attractions include: Apache Sitgreaves National Forest with camping, hunting, fishing, and water sports; Meteor Crater, Sunset Crater, and Canyon de Chelly National Monuments; Petrified Forest National Park, and the Painted Desert; and on the Navajo Reservation, ancient pueblo villages. Homolovi Ruins State Park is a prehistoric archaeological site with ruins left by the Anasazi, believed to be Hopi ancestors. Clear Creek Reservoir offers picnicking and water sports. Downtown Winslow features La Posada, the last Fred Harvey Hotel surviving in the West, which has been restored to its former elegance. The Old Trails Museum features historical memorabilia about Winslow and northern Arizona. Standing on the Corner Park was dedicated to the Eagles' song "Take It Easy".

[12] Arizona Department of Commerce, 2009, *Community Profile for Winslow, Arizona*.

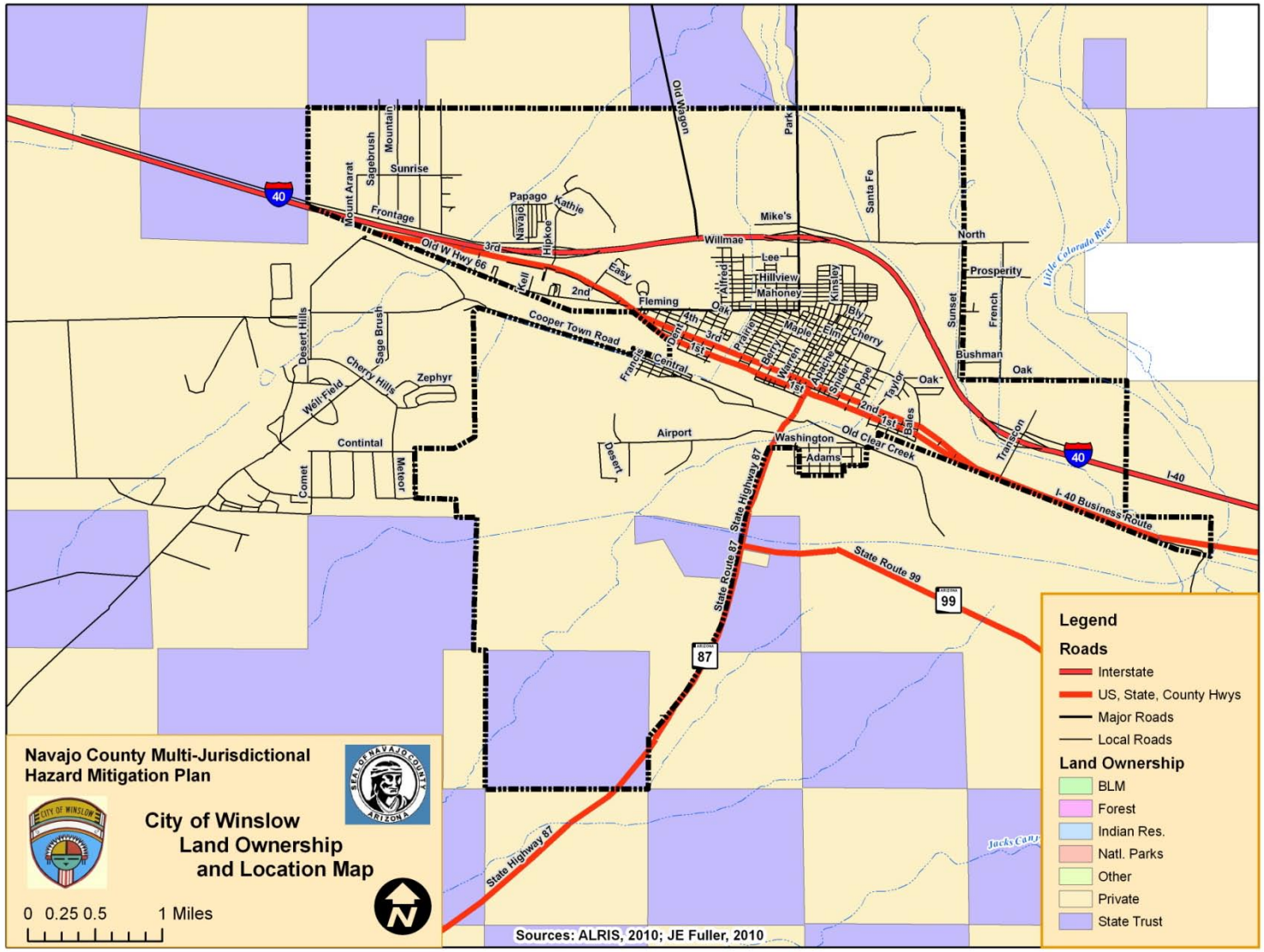

Figure 4-16: City of Winslow Land Ownership and Location Map

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[13]. 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 Navajo 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 numerous jurisdictions within the County, and are not often 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 2006 Plan were reviewed by the Planning Team with the goal of refining the list to reflect the hazards that pose the greatest risk to the jurisdictions represented by this Plan. The Planning Team also compared and contrasted the 2006 Plan list to the comprehensive hazard list summarized in the 2010 State Plan[14] to ensure compatibility with the State Plan. Table 5-1 summarizes the 2006 Plan and 2010 State Plan hazard lists.

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

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

Table 5-1: Summary of initial hazard identification lists	
2006 Navajo County Plan Hazard List	**2010 State Plan Hazard List**
• Drought • Dam /Levee Failure • Flooding/Flash Flooding • Hazardous Materials Incidents • Wildfires	• Dam Failure • Drought • Earthquake • Extreme Heat • Fissure • Flooding/Flash Flooding • Landslides/Mudslides • Levee Failure • Severe Wind • Subsidence • 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 2006 Plan. With this update, the 2006 Plan database was reviewed and revised to separately summarize declared disaster events versus non-declared events. Declared event sources included Navajo County Department of Emergency Management (NCDEM), 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. The declared events represent the period of February 1966 to August 2010. The undeclared events go back to 1921, with the majority of the records reflecting the past 25 years. Three tables are used in this update to summarize the historic hazard events. Table 5-2 summarizes the federal and state disaster declarations that included Navajo County with data provided solely from ADEM, Recovery Section. Table 5-3 summarizes federal and state declarations with data provided by many sources that included fatalities, injuries, and property damages. Table 5-4 summarizes all non-declared hazard events that were considered to be a significant event to the jurisdiction(s). These events may have included:

- 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

Table 5-2: State and Federally Declared Natural Hazard Events That Included Navajo County – February 1966 to August 2010

2010 State Plan Hazard Categories	Arizona Declared Events That Included Navajo County January 1966 to August 2010		
	No. of Events	Total Expenditures	
		State	Federal
Drought	4	$ 254,344	$ -
Dam Failure	1	$ 397	$ -
Flooding / Flash Flooding	11	$ 40,233,075	$ 322,023,270
Severe Wind	1	$ 5,551	$ -
Wildfire	19	$ 7,381,208	$ 4,500,000
Winter Storm	5	$ 4,284,874	$ 5,109,724

Notes:
- Damage Costs are reported as is and no attempt has been made to adjust costs to current dollar values.
- Only a portion of the reported expenditures were spent in the subject county.
- Nothing to report for Earthquake, Extreme Heat, Fissure, Landslide/Mudslide, Levee Failure and Subsidence hazards.

Source: ADEM - Recovery Section, October 2010

Table 5-3: State and Federally Declared Events That Included Navajo County January 1966 to August 2010

Hazard	No. of Declarations	Recorded Losses		
		Fatalities	Injuries	Damage Costs ($)
Drought	8	0	0	$300,000,000
Dam Failure	1	0	0	$0
Flooding / Flash Flooding	11	22	112	$882,750,000
Severe Wind	1	0	0	$0
Wildfire	20	0	0	$34,000,000
Winter Storm	5	12	0	$750,000

Notes:
- Damage Costs are reported as is and no attempt has been made to adjust costs to current dollar values. Sources: ADEM, FEMA, USDA
- Nothing to report for Earthquake, Extreme Heat , Fissure, Landslide/Mudslide, Levee Failure and Subsidence.

Table 5-4: Navajo County Historic Hazard Events – April 1921 through April 2011

Hazard	No. of Records	Recorded Losses		
		Fatalities	Injuries	Damage Costs ($)
Dam Failure	1	0	0	$0
Earthquake	1	0	0	$0
Flooding / Flash Flooding	50	0	0	$111,000
Hazardous Materials Incident	13	0	140	$103,000
Levee Failure	2	0	0	$425,050
Severe Wind	55	0	0	$30,000
Wildfire	12	0	28	$0
Winter Storm	1	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 cost do not include the cost of suppression which can be quite substantial.
- Nothing to report for Dam Failure, Drought, Fissure, Landslide/Mudslide and Subsidence
- Sources: ADEM, NCDC, NWCG, NWS, USFS

Detailed historic hazard records are provided as digital files on CD.

Several of the hazards in the 2006 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 Storms/Hurricane*** 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 severe winds. Accordingly, the Planning Team chose to consolidate or eliminate the following 2006 Plan hazards:

Dam/Levee Failure - the Planning Team determined that this hazard should be placed into separate categories since each is handled differently regarding regulation and mitigation.

The culmination of the review and screening process by the Planning Team resulted in a revised list of hazards for profiling and updating based on the above explanations and screening process. Revised and updated definitions for each hazard are provided in Section 5.3 and in Section 8.2:

- **Dam Failure**
- **Drought**
- **Flooding/Flash Flooding**
- **Hazardous Materials Incidents**
- **Levee Failure**
- **Severe Wind**
- **Wildfire**
- **Winter Storm**

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. A comparison was made between the new vulnerability analysis and the 2006 Plan for Flooding/Flash Flooding and Wildfire and is noted in Section 5.3.

For the purposes of this vulnerability analysis, hazard profile maps were developed for Dam Failure, Flooding/Flash Flooding, HAZMAT, Levee Failure, and Wildfire to map the geographic variability of the probability and magnitude risk of the hazards as estimated by the Planning Team. Hazard profile

categories of HIGH, MEDIUM, and/or LOW were used and were subjectively assigned based on the factors discussed in the Probability and Magnitude sections below. Within the context of the county limits, the other hazards do not exhibit significant geographic variability and will not be categorized as such.

Unless otherwise specified in this Plan, the general cutoff date for new hazard profile data and jurisdictional corporate limits is the end of March 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[15] (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 5-5 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:

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

CPRI = 2.65

5.2.3 Asset Inventory

A detailed asset inventory was performed for the 2006 Plan to establish a fairly accurate baseline data-set for assessing the vulnerability of each jurisdiction's assets to the hazards previously identified. The asset inventory from the 2006 Plan was reviewed and updated by the Planning Team to reflect the facilities and infrastructure most important to the participating jurisdictions.

The 2010 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.*

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

Table 5-5: 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%
	Possible	▪ 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	

The 2006 Plan asset inventory database was generally categorized into critical and non-critical categories. The working definition for ***Critical facilities and infrastructure,*** adopted for the 2006 Plan and continuing with this Plan is as follows:

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[16] that define critical facilities and infrastructure:

1. **Communications Infrastructure:** Telephone, cell phone, data services, radio towers, 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, businesses, museums, parks, recreational facilities, historic buildings or sites, churches, residential and/or commercial subdivisions, apartment complexes, and so forth, are typically not classified as critical facilities and infrastructure unless they serve a secondary function to the community during a disaster emergency (e.g. - emergency housing or evacuation centers). As a part of the update process, each community was tasked with determining which of the previously identified "non-critical" assets, if any, were deemed critical by the community. The remaining "non-critical" assets were deleted from the database. New facilities were also added as appropriate and available. Each community was also tasked with making any needed changes to the geographic position, revision of asset names, updating replacement costs, etc. to bring the dataset into a current condition. The updated asset inventory is attributed with a descriptive name, physical address, geospatial position, and an estimated building/structure and contents replacement cost for each entry to the greatest extent possible and entered into a GIS geodatabase.

The 2006 Plan used a combination of the Asset Inventory and HAZUS®-MH[17] data to represent the critical facilities and general building stock and population for Navajo County jurisdictions. Tools used by the Local Planning Team for the update included GIS data sets, on-line mapping utilities, insurance pool information, county assessors data, and manual data acquisition. Table 5-6 summarizes the facility counts provided by each of the participating jurisdictions in this Plan.

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

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

It should be noted that the facility counts summarized in Table 5-6 do not represent a comprehensive inventory of all the category facilities that exist within the county. They do represent the facilities inventoried to-date by each jurisdiction and are considered to be a work-in-progress that is to be expanded and augmented with each Plan cycle.

Table 5-6: Asset inventory structure counts by category and jurisdiction as of March 2011

	Communications Infrastructure	Electrical Power Systems	Gas and Oil Facilities	Banking and Finance Institutions	Transportation Networks	Water Supply Systems	Government Services	Emergency Services	Educational [a]	Cultural [a]	Business [a]	Flood Control [a]	Residential [a]	Recreational [a]
County-Wide Totals	**30**	**8**	**23**	**19**	**79**	**97**	**35**	**45**	**20**	**20**	**27**	**15**	**4**	**0**
Holbrook	1	1	2	2	1	6	2	6	2	0	0	0	0	0
Pinetop-Lakeside	8	3	2	4	8	7	8	4	0	0	0	0	0	0
Show Low	1	1	4	4	2	44	5	7	8	11	18	3	3	0
Snowflake	3	1	2	3	3	14	2	4	2	6	2	0	0	0
Taylor	3	0	3	1	6	8	1	3	2	0	2	0	0	0
Winslow	7	1	2	3	8	13	4	5	6	3	5	1	1	0
Unincorporated Navajo County	7	1	8	2	51	5	13	16	0	0	0	11	0	0

NOTES: a – Assets listed under these categories have been determined to be critical per the definition of this Plan by the corresponding jurisdiction .

5.2.4 Loss Estimations

In the original 2006 Plan, losses were estimated by either quantitative or qualitative methods. Quantitative methods consisted of intersecting hazard map layers with the asset inventory map layer and the HAZUS®-MH map layer. Other quantitative methods included statistical methods based on historic data. The loss estimates for this Plan represent the current hazard map layers and asset databases 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 asset inventory structures and human populations to those hazards. Exposure estimates of asset inventory structures 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 the 2000 Census Data population statistics that have been re-organized into GIS compatible databases and distributed with HAZUS®-MH (HAZUS).

Additional exposure estimates for general residential, commercial, and industrial building stock not specifically identified with the asset inventory, are also accomplished using the HAZUS database, wherein the developers of the HAZUS database have made attempts to correlate building/structure counts to census block data. *It is duly noted that the HAZUS data population statistics may not exactly equate to the current population statistics provided in Section 4.2 due to actual changes in population counts associated with a particular census block, GIS positioning anomalies and the way HAZUS depicts certain census block data. 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, the general lack of commercial and industrial data for some of the more rural communities and counties, and the disparity of the HAZUS replacement cost estimates for these categories when compared to current market rates. However, without a detailed, site specific structure inventory of these types of buildings, the HAZUS 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 database provides a fairly comprehensive depiction of the overall exposure of building stock and the two datasets are considered complimentary and not redundant.

Economic losses to structures and facilities are estimated by multiplying the exposed facility replacement cost estimates by an assumed loss to exposure ratio for the hazard. The loss to exposure ratios used in this plan update are summarized by hazard in Section 5.3. It is important to note that the loss to exposure ratios are subjective and the estimates are solely intended to provide an understanding of relative risk from the hazards and potential losses. Real uncertainties are inherent in any loss estimation methodology due to:

- Incomplete scientific knowledge concerning hazards and our ability to predict their effects on the built environment;
- Approximations and simplifications that are necessary 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 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 2006 Plan development trend analysis will require updating to reflect growth and changes in Navajo County and jurisdiction boundaries 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.

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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 2006 Plan data has been updated, incorporated and/or revised to reflect current conditions and Planning Team changes, as well as an overall plan format change. County-wide and jurisdiction specific profile maps are provided at the end of the section (if applicable). Also, the maps are not included in the page count.

5.3.1 Dam Failure

Description

The primary risk associated with dam failure in Navajo County is the inundation of downstream facilities and population by the resulting flood wave. Dams within or impacting Navajo County can generally be divided into two groups: (1) storage reservoirs designed to permanently impound water, provide flood protection, and possibly generate power, and (2) single purpose flood retarding structures (FRS) designed to attenuate or reduce flooding by impounding stormwater for relatively short durations of time during flood events. The majority of dams within Navajo County are earthen FRS equipped with emergency spillways. The purpose of an emergency spillway is to provide a designed and protected outlet to convey runoff volumes exceeding the dam's storage capacity during extreme or back-to-back storm events. Dam failures may be caused by a variety of reasons including: seismic events, extreme wave action, leakage and piping, overtopping, material fatigue and spillway erosion.

History

On the night of June 10, 1982, Clear Creek Dam No. 2, located south of Winslow, failed by piping caused by spring seepage under the earthen dam. No injuries or property damages were reported and the dam was reconstructed in the same and following years.

There are no other reports of dam failure for the County.

Probability and Magnitude

The probability and magnitude of dam failure discharges vary greatly with each dam and are directly influenced by the type and age of the dam, its operational purpose, storage capacity and height, downstream conditions, and many other factors. There are two sources of data that publish hazard ratings for dams impacting Navajo County. The first is the Arizona Department of Water Resources (ADWR) and the second is the National Inventory of Dams (NID). Hazard ratings from each source are based on either an assessment of the consequence of failure and/or dam safety considerations, and they are not tied to probability of occurrence.

ADWR has regulatory jurisdiction over the non-federal dams impacting the County and is responsible for regulating the safety of these dams, conducting field investigations, and participating in flood mitigation programs with the goal of minimizing the risk for loss of life and property to the citizens of Arizona. ADWR jurisdictional dams are inspected regularly according to downstream hazard potential classification, which follows the NID classification system. High hazard dams are inspected annually, significant hazard dams every three years, and low hazard dams every five years. Via these inspections, ADWR identifies safety deficiencies requiring correction and assigns each dam one of six safety ratings. Examples of safety deficiencies include: lack of an adequate emergency action plan, inability to safely pass the required Inflow Design Flood (IDF), embankment erosion, dam stability, etc. Further descriptions of each safety classification are summarized in Table 5-7.

Table 5-7: Summary of ADWR safety categories

ADWR Safety Rating	Definition
No Deficiency	Not Applicable
Safety Deficiency	One or more conditions at the dam that impair or adversely affects the safe operation of the dam.
Unsafe Categories	
Category 1: Unsafe Dams with Elevated Risk of Failure	These dams have confirmed safety deficiencies for which there is concern they could fail during a 100-year or smaller flood event. There is an urgent need to repair or remove these dams.
Category 2: Unsafe Dams Requiring Rehabilitation or Removal	These dams have confirmed safety deficiencies and require either repair or removal. These dams are prioritized for repair or removal behind the Category 1 dams.
Category 3: Unsafe Dams with Uncertain Stability during Extreme Events (Requiring Study)	Concrete or masonry dams that have been reclassified to high hazard potential because of downstream development (i.e. hazard creep"). The necessary documentation demonstrating that the dams meet or exceed standard stability criteria for high hazard dams during extreme overtopping and seismic events is lacking. The dams are classified as unsafe pending the results of required studies. Upon completion of these studies, the dams are either removed from the list of unsafe dams or moved to Category 2 and prioritized for repair or removal.
Category 4: Unsafe Dams Pending Evaluation of Flood-Passing Capacity (Requiring Study)	In 1979, the U.S. Army Corps of Engineers established Federal Guidelines for assessing the safe-flood passing capacity of high hazard potential dams (CFR Vol. 44 No. 188). These guidelines established one-half of the "probable maximum flood" (PMF) as the minimum storm which must be safely passed without overtopping and subsequent failure of the dam. Dams unable to safely pass a storm of this size were classified as being in an "unsafe, non-emergency" condition. Prior studies for these earthen dams (mostly performed in the 1980's) predicted they could not safely pass one-half of the PMF. They were predicted to overtop and fail for flood events ranging from 30 to 46 percent of the PMF. Recent studies both statewide and nationwide have indicated that the science of PMF hydrology as practiced in the 1990's commonly overestimates the PMF for a given watershed. The ADWR is leading efforts on a statewide update of probably maximum precipitation (PMP) study scheduled for completion in 2011. These dams should be re-evaluated using updated methods to confirm their safety status. Upon completion of these evaluations, they are either removed from the list of unsafe dams or moved to Category 2 and prioritized for repair or removal.

Source: ADWR, 2009.

The NID database contains information on approximately 77,000 dams in the 50 states and Puerto Rico, with approximately 30 characteristics reported for each dam, such as: name, owner, river, nearest community, length, height, average storage, max storage, hazard rating, Emergency Action Plan (EAP), latitude, and longitude.

The NID and ADWR databases provide useful information on the potential hazard posed by dams. Each dam in the NID is assigned one of the following three hazard potential classes based on the potential for loss of life and damage to property should the dam fail (listed in increasing severity): low, significant, or high. The hazard potential classification is based on an evaluation of the probable present and future incremental adverse consequences that would result from the release of water or

stored contents due to failure or improper operation of the dam or appurtenances, regardless of the condition of the dam. The ADWR evaluation includes land-use zoning and development projected for the affected area over the 10-year period following the classification of the dam. It is important to note that the hazard potential classification is an assessment of the consequences of failure, but not an evaluation of the probability of failure or improper operation. Table 5-8 summarizes the hazard potential classifications and criteria for dams regulated by the State of Arizona.

Table 5-8: Downstream hazard potential classes for state regulated dams

Hazard Potential Classification	Loss of Human Life	Economic, Environmental, Lifeline Losses
Low	None expected	Low and generally limited to owner
Significant	None expected	Yes
High	Probable. One or more expected	Yes (but not necessary for this classification)

Note: The hazard potential classification is an assessment of the consequences of failure, but not an evaluation of the probability of failure.

Source: ADWR and NID 2009

The NID database includes dams that are either:

- High or Significant hazard potential class dams, or,
- Low hazard potential class dams that exceed 25 feet in height and 15 acre-feet storage, or,
- Low hazard potential class dams that exceed 50 acre-feet storage and 6 feet height.

There are 53 dams in Navajo County based on the two databases. Thirty-six (36) of the dams are low hazard dams with 30 of those existing on the Navajo and Hopi Indian Reservations. Of the 53 dams, 21 are under ADWR jurisdiction. Table 5-9 provides a summary of the high and significant hazard dams in both the ADWR and NID databases, located in Navajo County.

The magnitude of impacts due to dam failure are usually depicted by mapping the estimated downstream inundation limits based on an assessment of a combination of flow depth and velocity. These limits are typically a critical part of the emergency action plan. Of the dams considered, only seven (7) emergency action plans showing downstream dam failure inundation limits were readily available. For inundation resulting from dam failure, the following two classes of hazard risk are depicted:

HIGH Hazard = Inundation limits due to dam failure

LOW Hazard = All other areas outside the inundation limits

Maps 1A through 1D are county-wide maps showing the location and hazard classifications for each dam and the corresponding dam failure inundation limits (if available).

Table 5-9: NID and ADWR dams by hazard classification

Hazard Class	SID	NID	Dam Name	ADWR Safety Types	EAP	Inundation Mapping	Nearest Downstream Development	Distance in Miles
High (cont'd)	09.07	AZ00059	Millett Swale	Unsafe Dams Requiring Rehabilitation or Removal	Outdated (1997)	Yes	Taylor & Shumway	4
	09.09	AZ00012	Lone Pine	Unsafe Dams Requiring Rehabilitation or Removal	Outdated (1994)	No	Schoens Dam	6.5
	09.11	AZ00013	Daggs	Safety Deficiency	Outdated (1997)	No	Taylor	8
	09.13	AZ00023	Jaques	Unsafe Dams Pending Evaluation of Flood-Passing Capacity (Requiring Study)	Yes	Yes	Show Low	4
	09.18	AZ00044	Woodland	Safety Deficiency	Draft	Draft	Pinetop & Lakeside	3
	09.19	AZ00051	Fool Hollow	Unsafe Dams Pending Evaluation of Flood-Passing Capacity (Requiring Study)	Yes	Yes	Taylor	14
	09.20	AZ00042	Black Canyon	Unsafe Dams Requiring Rehabilitation or Removal	Yes	Yes	Heber & Overgaard	9.9
	09.27	AZ00178	Cholla Bottom Ash Pond	No Deficiency	Yes	Yes	Joseph City	5
	09.28	AZ00179	Cholla Fly Ash Pond	No Deficiency	Yes	Yes	Joseph City	5
	09.33	AZ00207	Schoens	No Deficiency	Yes	Yes	Taylor	6
	N/A	AZ10415	Bootleg	N/A	Yes	Yes	Amos Ranch	4
	N/A	AZ10416	Cooley	N/A	Yes	Yes	Amos Ranch	4
Significant	09.14	AZ00056	Scott	Safety Deficiency	No	No	Jaques Dam & Show Low	5
	09.16	AZ00024	Lakeside	Safety Deficiency	No	No	Show Low	7
	09.29	AZ00180	Cholla Cooling Pond	No Deficiency	Yes	Yes	Joseph City	5
	09.30	AZ00181	Trophy Lake	No Deficiency	Yes	Yes	Taylor	9
	09.34	AZ00208	Jacques Marsh	No Deficiency	Yes	Yes	Show Low	4

Sources: NID, ADWR Dam Safety Database (October 2009)

Vulnerability – CPRI Results

Dam failure CPRI results for each jurisdiction are summarized in Table 5-10.

Table 5-10: CPRI results by jurisdiction for dam failure

Participating Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Holbrook	Unlikely	Negligible	> 24 hours	< 6 hours	1.00
Show Low	Unlikely	Catastrophic	< 6 hours	< 24 hours	2.45
Snowflake	Possibly	Catastrophic	< 6 hours	> 1 week	3.10
Taylor	Possibly	Critical	6 - 12 hours	> 1 week	2.65
Winslow	Possibly	Limited	6 - 12 hours	< 24 hours	2.15
Unincorporated Navajo County	Possibly	Limited	12 - 24 hours	> 1 week	2.20
				County-wide average CPRI =	**2.26**

NOTE: No data provided by Pinetop-Lakeside

Vulnerability – Loss Estimations

The estimation of potential losses due to inundation from a dam failure was accomplished by intersecting the human and facility assets with the inundation limits depicted on Maps 1A – 1D. As stated previously, delineated dam failure inundation limits were readily available for only seven dams. Therefore, the results of this analysis are expected to underestimate the exposure of people and infrastructure within Navajo County.

Since no common methodology is available for obtaining losses from the exposure values, estimates of the loss-to-exposure ratios were assumed based on the perceived potential for damage. Any storm event, or series of storm events of sufficient magnitude to cause an overtopping dam failure scenario, would have potentially catastrophic consequences in the inundation area. Most "sunny day" failures will also be equally devastating due to the sudden release of very large volumes of water. Floodwaves from these types of events travel very fast and possess tremendous destructive energy. Accordingly, an average event based loss-to-exposure ratio for the inundation areas with a high hazard rating are estimated to be 0.25. Low rated areas are zero.

It should be noted that the Planning Team recognizes that the probability of a dam failure occurring at multiple (or all) locations at the same time is essentially null. Accordingly, the loss estimates presented below are intended to serve as a collective evaluation of the potential exposure to dam failure inundation events.

Table 5-11 summarizes estimations of losses to Planning Team identified assets for the dam failure inundation hazard. Table 5-12 summarizes the estimated population exposed to the dam failure inundation hazard. Tables 5-13 through 5-20 summarize exposure and loss estimates to the HAZUS residential, commercial, and industrial building stock for the dam failure inundation hazard. Table 5-13 summarizes the HAZUS based exposure and losses for the entirety of Navajo County. Tables 5-14 through 5-20 summarize jurisdiction specific HAZUS data exposure and loss estimates. It should be noted that county-wide exposure totals for HAZUS building stock and the population within Navajo County includes statistics from the incorporated areas of Pinetop-Lakeside, and several Indian Tribes not participating in this Plan.

In summary, $217 million in asset related losses are estimated for dam failure inundation for all the participating jurisdictions in Navajo County. An additional $60 million in losses to HAZUS defined residential, commercial, and industrial facilities is estimated for all participating Navajo County jurisdictions. Regarding human vulnerability, a total population of 3,020 people, or 3.10% of the total Navajo County population, is potentially exposed to a dam failure inundation event. The potential for deaths and injuries are directly related to the warning time and type of event. Given the magnitude of such an event(s), it is realistic to anticipate at least one death and several injuries. There is also a high probability of population displacement for most of the inhabitants within the inundation limits downstream of the dam(s).

Table 5-11: Asset inventory losses due to dam failure flooding

Community	Total Facilities Reported by Community	Impacted Facilities	Percentage of Total Community Facilities Impacted	Estimated Replacement Cost (x$1000)	Estimated Structure Loss (x$1000)
HIGH					
County-Wide Totals	**422**	**47**	**11.14%**	**$1,089,647**	**$217,929**
Holbrook	23	0	0.00%	$0	$0
Pinetop-Lakeside	44	0	0.00%	$0	$0
Show Low	111	12	10.81%	$31,995	$6,399
Snowflake	42	14	33.33%	$42,050	$8,410
Taylor	29	10	34.48%	$4,838	$968
Unincorporated	114	11	9.65%	$1,010,764	$202,153
Winslow	59	0	0.00%	$0	$0

Table 5-12: Population sectors exposed to dam failure flooding

Community	Total Population	Population Exposed	Percent of Population Exposed	Total Population Over 65	Population Over 65 Exposed	Percent of Population Over 65 Exposed	Total Incomes Under $20K	Incomes Under $20K Exposed	Percent of Incomes Under $20K Exposed
HIGH									
County-Wide Totals	**97,467**	**3,020**	**3.10%**	**9,173**	**410**	**4.47%**	**10,477**	**253**	**2.41%**
Holbrook	4,891	0	0.00%	441	0	0.00%	509	0	0.00%
Hopi Indian Res.	5,859	0	0.00%	476	0	0.00%	808	0	0.00%
Navajo Indian Res.	16,587	0	0.00%	1,010	0	0.00%	2,042	0	0.00%
Navajo-Hopi Joint Use Area	10,233	0	0.00%	667	0	0.00%	1,431	0	0.00%
Pinetop-Lakeside	3,563	0	0.00%	547	0	0.00%	292	0	0.00%
Show Low	8,011	205	2.56%	1,134	30	2.61%	774	27	3.43%
Snowflake	4,433	1,475	33.28%	498	204	40.96%	286	103	36.01%
Taylor	3,200	907	28.35%	283	93	32.73%	253	69	27.42%
Unincorporated	20,589	432	2.10%	2,837	84	2.94%	1,885	54	2.84%
White Mtn. Apache Indian Res.	10,598	0	0.00%	346	0	0.00%	1,338	0	0.00%
Winslow	9,503	0	0.00%	935	0	0.00%	860	0	0.00%

Table 5-13: Navajo County HAZUS building exposure to dam failure

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Navajo 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)**
Community-Wide Totals	**51,850**	**$6,202,174**	**1,275**	**$1,252,229**	**347**	**$213,620**	**$7,668,023**		
High Hazard Exposure	1,276	$163,602	110	$95,120	33	$44,388	$303,110	20%	$60,622
Navajo County HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	02.46%	02.64%	08.60%	07.60%	09.38%	20.78%			

Table 5-14: Holbrook HAZUS building exposure to dam failure

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Holbrook 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	**2,413**	**$273,514**	**122**	**$80,723**	**8**	**$3,123**	**$357,360**		
High Hazard Exposure	0	$0	0	$0	0	$0	$0	20%	$0
Holbrook HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

Table 5-15: Pinetop-Lakeside HAZUS building exposure to dam failure

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Pinetop-Lakeside 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	**2,844**	**$417,321**	**118**	**$103,019**	**37**	**$19,955**	**$540,295**		
High Hazard Exposure	1,276	$0	0	$0	0	$0	$0	20%	$0
Pinetop-Lakeside HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	1,276	0.0%	0.0%	0.0%	0.0%	0.0%			

Table 5-16: Show Low HAZUS building exposure to dam failure

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Show Low 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	**4,527**	**$552,295**	**222**	**$254,372**	**61**	**$35,469**	**$842,136**		
High Hazard Exposure	1,276	$10,400	38	$42,198	6	$4,118	$56,716	20%	$11,343
Show Low HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	1,276	01.88%	17.07%	16.59%	10.02%	11.61%			

Table 5-17: Snowflake HAZUS building exposure to dam failure

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Snowflake 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	**1,783**	**$246,406**	**91**	**$58,891**	**44**	**$51,897**	**$357,193**		
High Hazard Exposure	1,276	$86,857	47	$37,610	17	$35,432	$159,900	20%	$31,980
Snowflake HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	1,276	35.25%	51.42%	63.86%	38.82%	68.27%			

Table 5-18: Taylor HAZUS building exposure to dam failure

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Taylor 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	**1,241**	**$132,621**	**43**	**$38,131**	**18**	**$11,106**	**$181,858**		
High Hazard Exposure	1,276	$45,143	17	$11,843	8	$4,488	$61,474	20%	$12,295
Taylor HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	1,276	34.04%	39.27%	31.06%	41.66%	40.41%			

Table 5-19: Unincorporated Navajo County HAZUS building exposure to dam failure

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Unincorporated Navajo 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)**
Community-Wide Totals	**17,894**	**$2,349,535**	**366**	**$221,145**	**139**	**$58,452**	**$2,629,133**		
High Hazard Exposure	1,276	$21,202	8	$3,468	2	$351	$25,020	20%	$5,004
Unincorporated Navajo County HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	1,276	0.90%	02.30%	01.57%	01.33%	0.60%			

Table 5-20: Winslow HAZUS building exposure to dam failure

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Winslow 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	**4,135**	**$550,665**	**187**	**$151,016**	**18**	**$6,823**	**$708,504**		
High Hazard Exposure	1,276	$0	0	$0	0	$0	$0	20%	$0
Winslow HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	1,276	0.0%	0.0%	0.0%	0.0%	0.0%			

Vulnerability – Development Trend Analysis

The flood protection afforded by dams in Navajo County has encouraged development of downstream lands, and it reasonable to expect additional development within these areas. Public awareness measures such as notices on final plats and public education on dam safety are ways that the county and local city and town officials can mitigate the potential impact of a dam failure.

Sources

Arizona Department of Water Resources, 2009, http://www.azwater.gov/AzDWR/SurfaceWater/DamSafety/default.htm

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

US Army Corps of Engineers, National Inventory of Dams, 2009, https://nid.usace.army.mil/

Profile Maps

Maps 1A, 1B, 1C and 1D – Potential Dam Failure Inundation Hazard Maps-Countywide

Maps 1F, 1G, 1H, and 1I – Community Specific Dam Failure Inundation Hazard Maps

(Due to lack of inundation areas, Holbrook [Map 1E] and Winslow [Map 1J] are not represented in Community Specific Maps)

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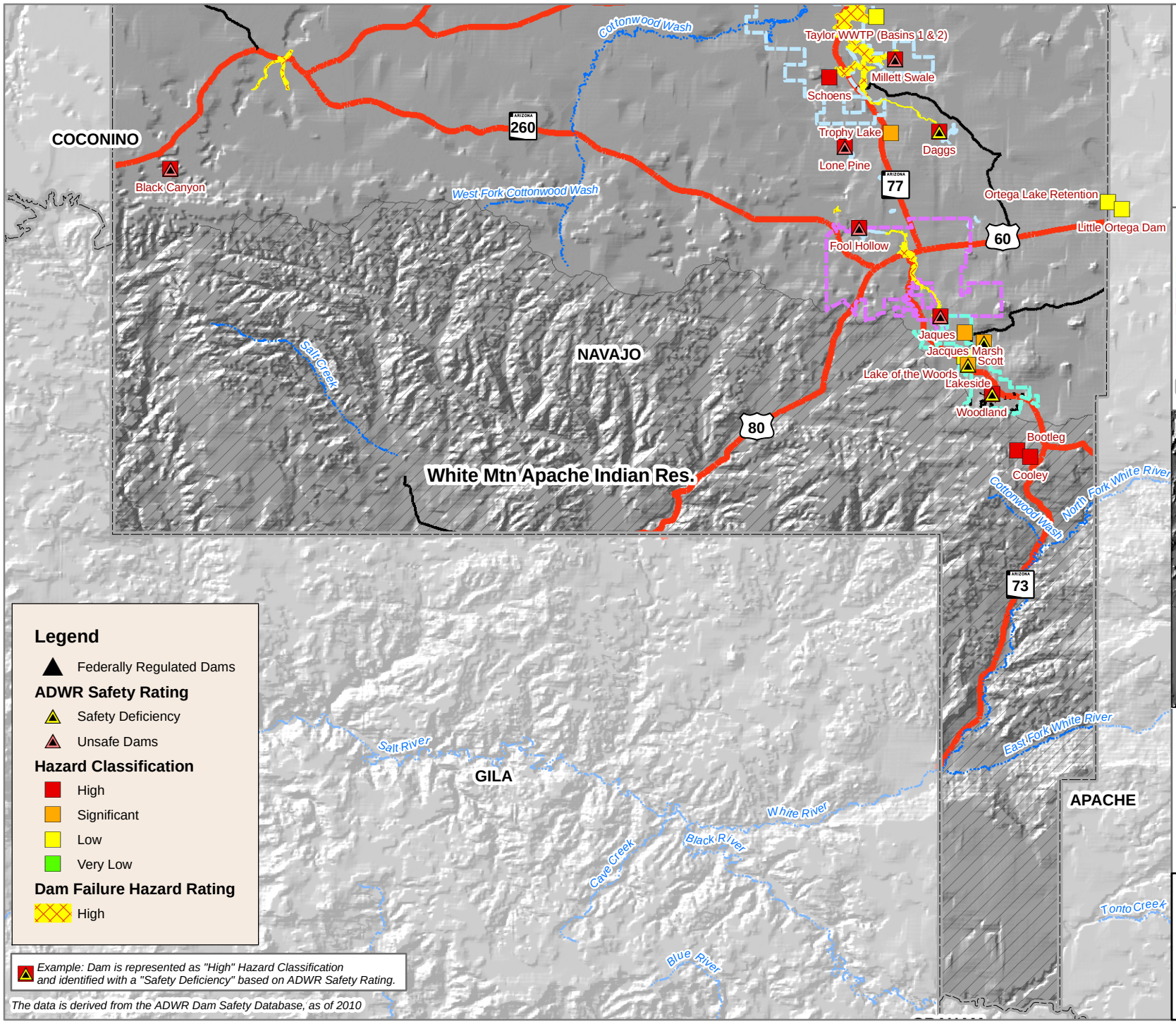
Navajo County Multi-Jurisdictional Hazard Mitigation Plan

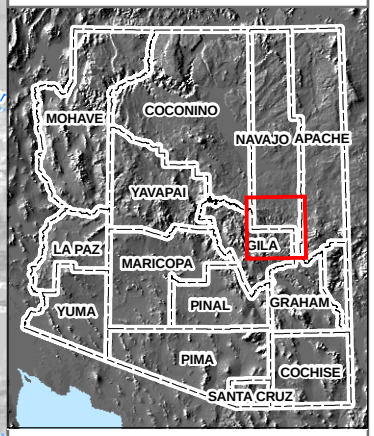


Legend

Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW
- Watercourses
- Lakes
- County Boundary

Roads
- Interstates
- Highways
- Arterials
- Other Reservations

Indian Reservations
- Hopi Indian Res.
- Indian Allotments
- Navajo Indian Res.
- Navajo-Hopi Joint Use Area



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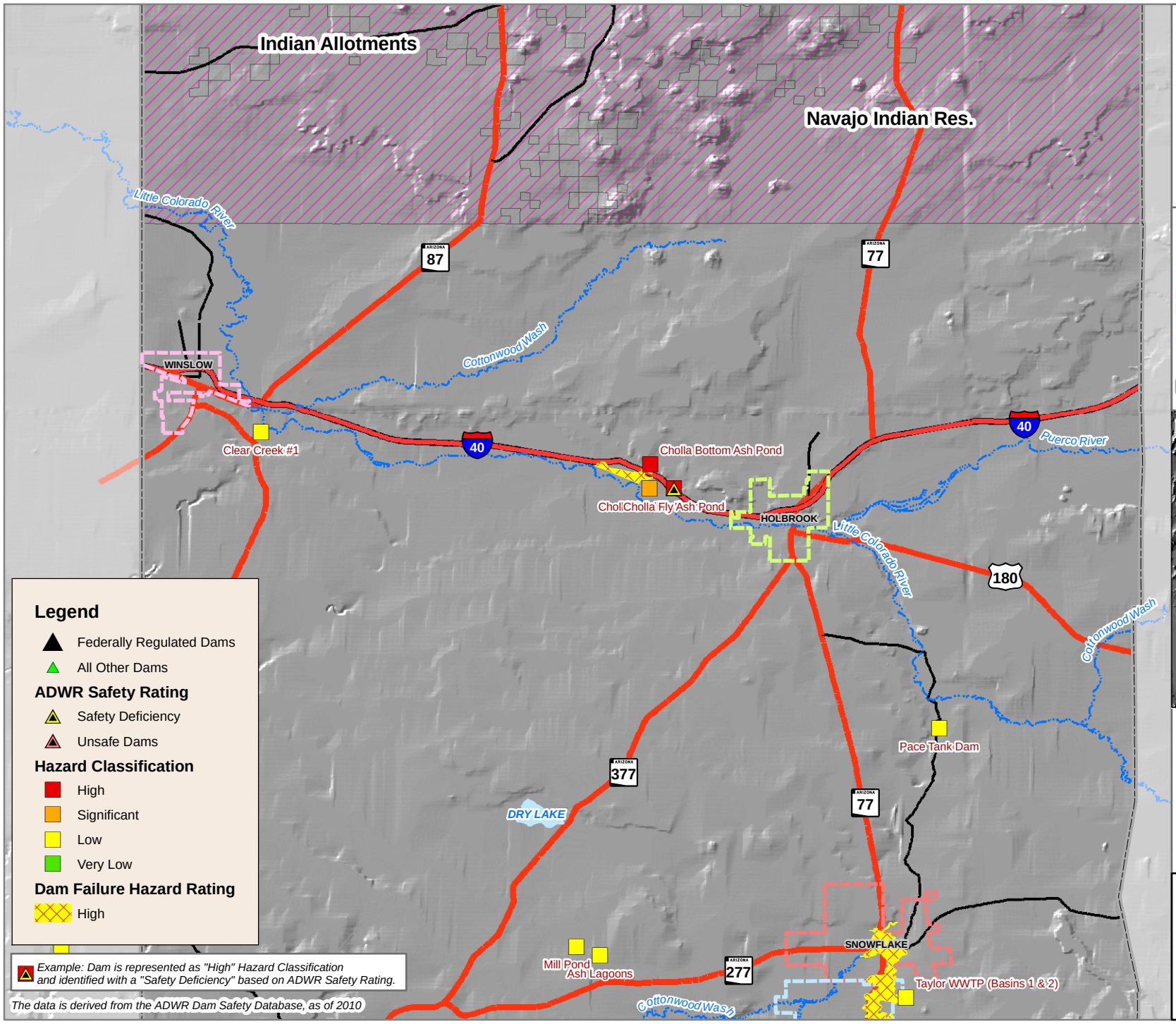
Map 1A
Navajo County
Dam Failure Hazard Map
as of December 2010

Source: ADWR, December 2009; NID, 2009
JE FULLER 2010; ALRIS, 2010

Navajo County Multi-Jurisdictional Hazard Mitigation Plan

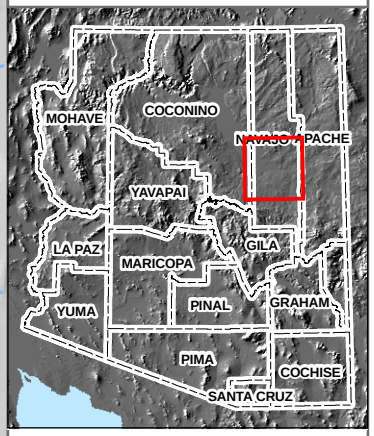


Legend

Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW
- Watercourses
- Lakes
- County Boundary

Roads
- Interstates
- Highways
- Arterials
- Other Reservations

Indian Reservations
- Hopi Indian Res.
- Indian Allotments
- Navajo Indian Res.
- Navajo-Hopi Joint Use Area

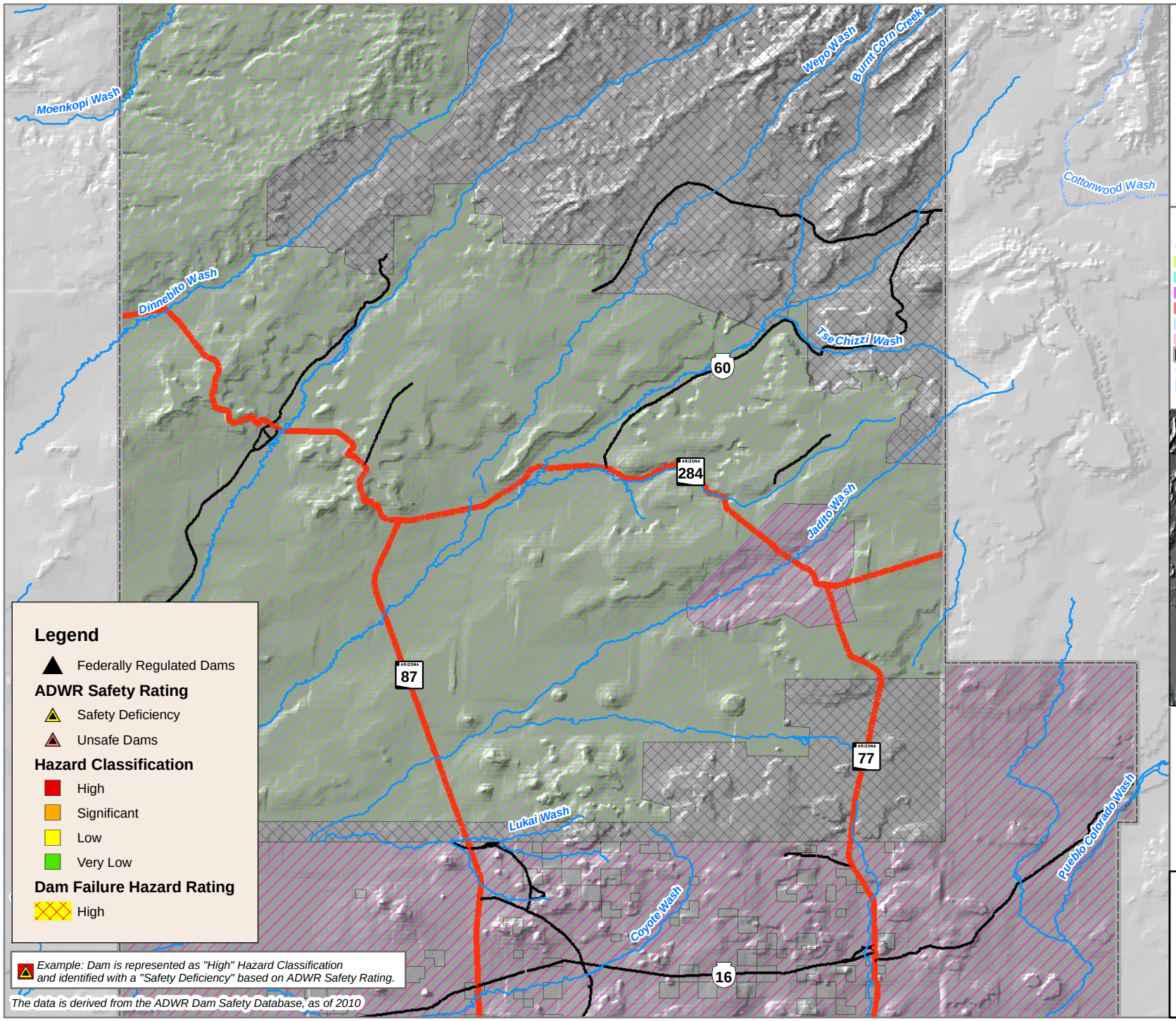


0 2 4 8 Miles

Map 1B
Navajo County
Dam Failure Hazard Map
as of December 2010

Source: ADWR, December 2010; NID, 2010
JE FULLER 2010; ALRIS, 2010

Navajo County Multi-Jurisdictional Hazard Mitigation Plan

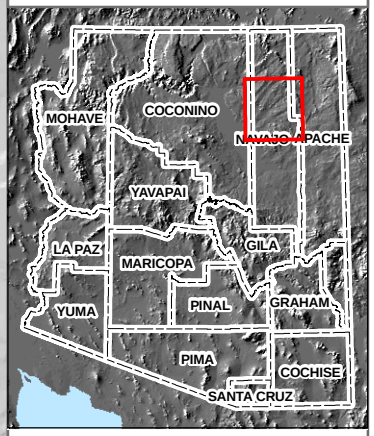


Legend

Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW
- County Boundary
- Watercourses
- Lakes

Roads
- Interstates
- Highways
- Arterials
- Other Reservations

Indian Reservations
- Hopi Indian Res.
- Indian Allotments
- Navajo Indian Res.
- Navajo-Hopi Joint Use Area

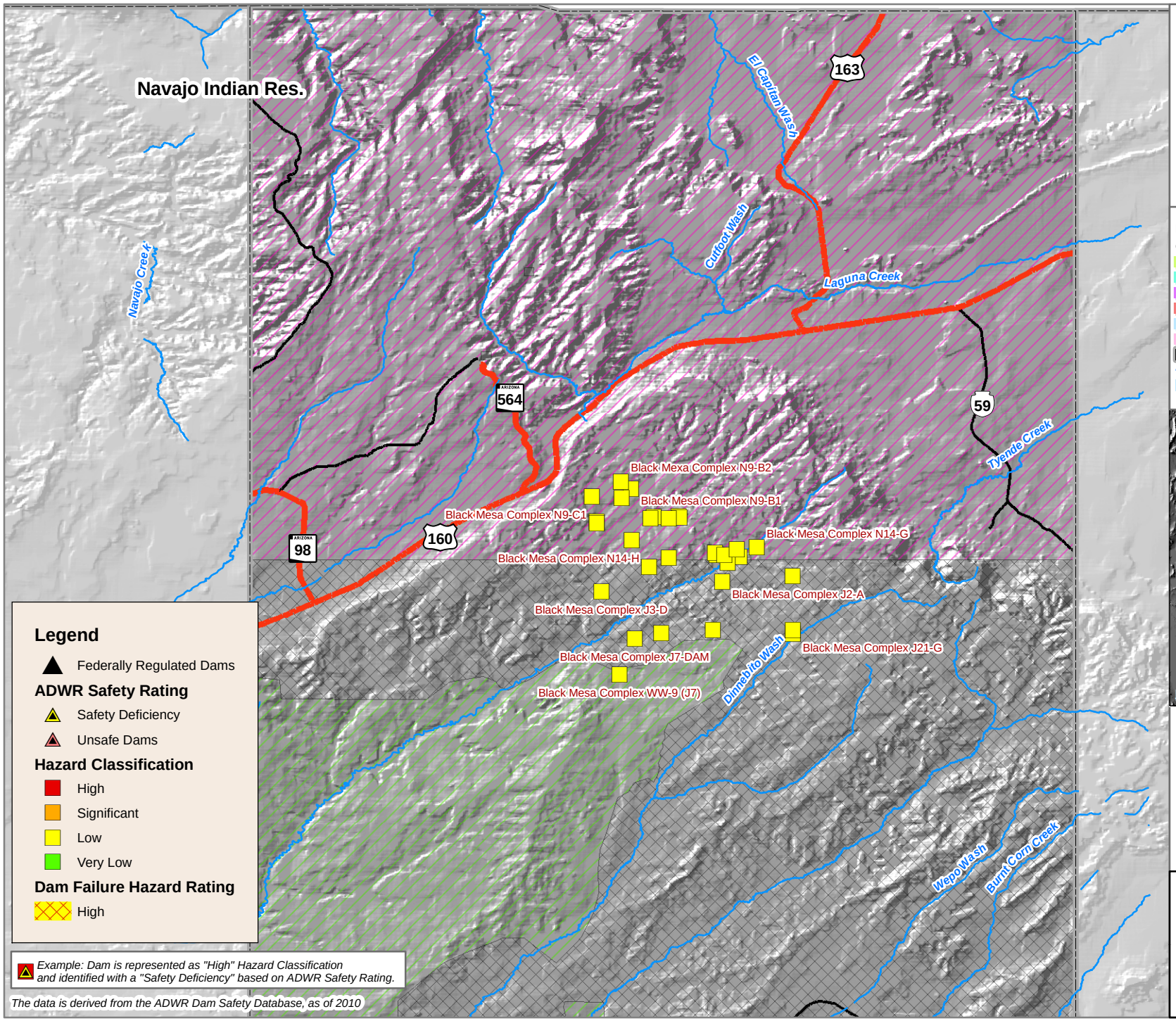


0 2 4 8 Miles

Map 1C
Navajo County
Dam Failure Hazard Map
as of December 2010

Source: ADWR, December 2010; NID, 2010
JE FULLER 2010; ALRIS, 2010

Navajo County Multi-Jurisdictional Hazard Mitigation Plan

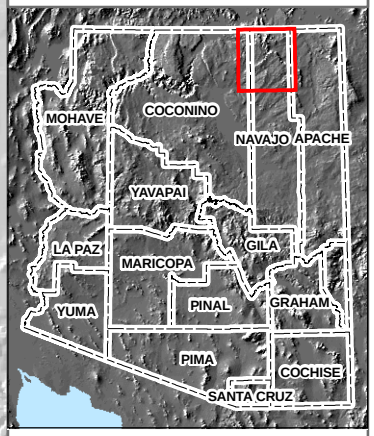


Legend

Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW
- County Boundary
- Watercourses
- Lakes

Roads
- Interstates
- Highways
- Arterials
- Other Reservations

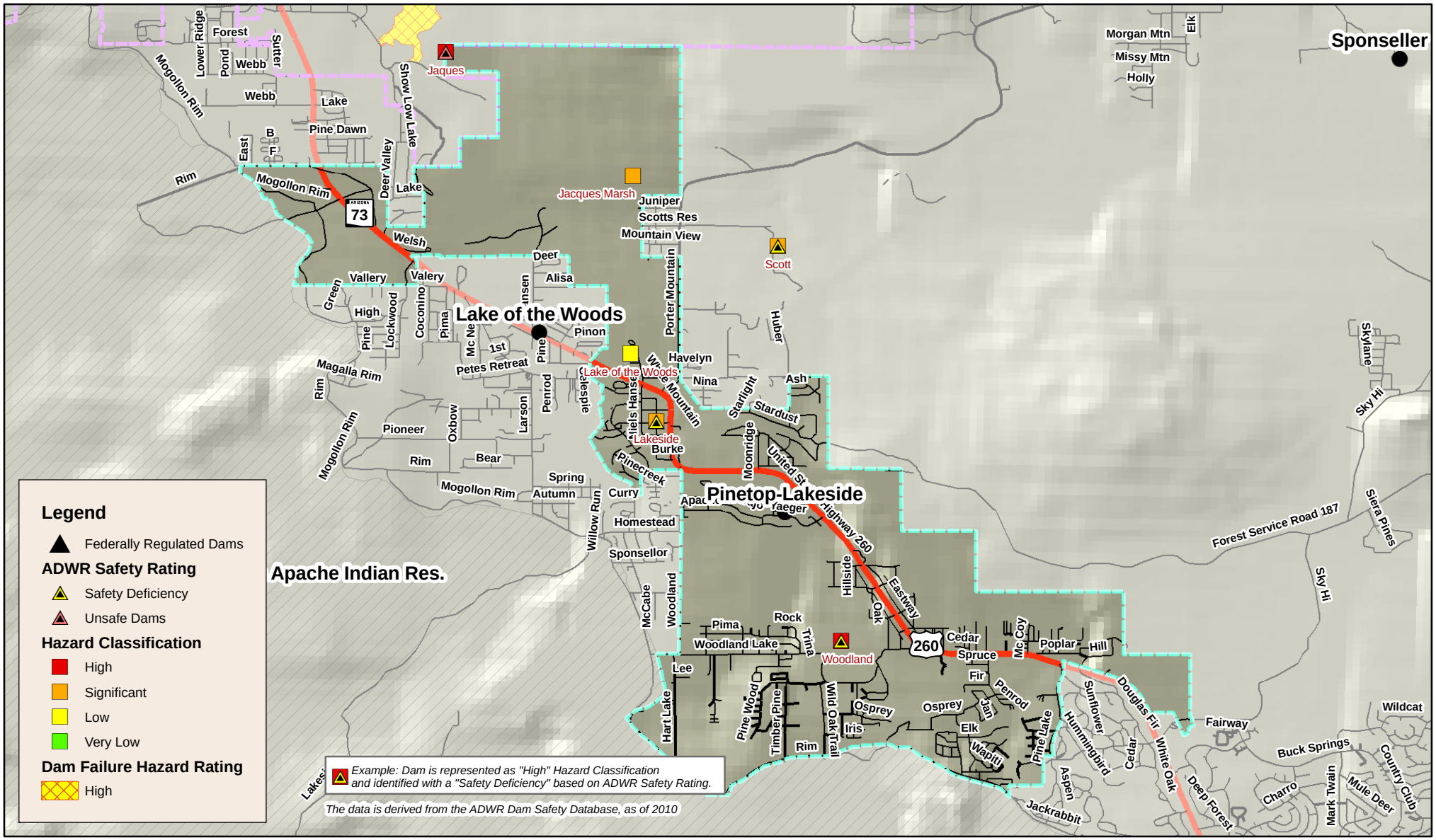
Indian Reservations
- Hopi Indian Res.
- Indian Allotments
- Navajo Indian Res.
- Navajo-Hopi Joint Use Area

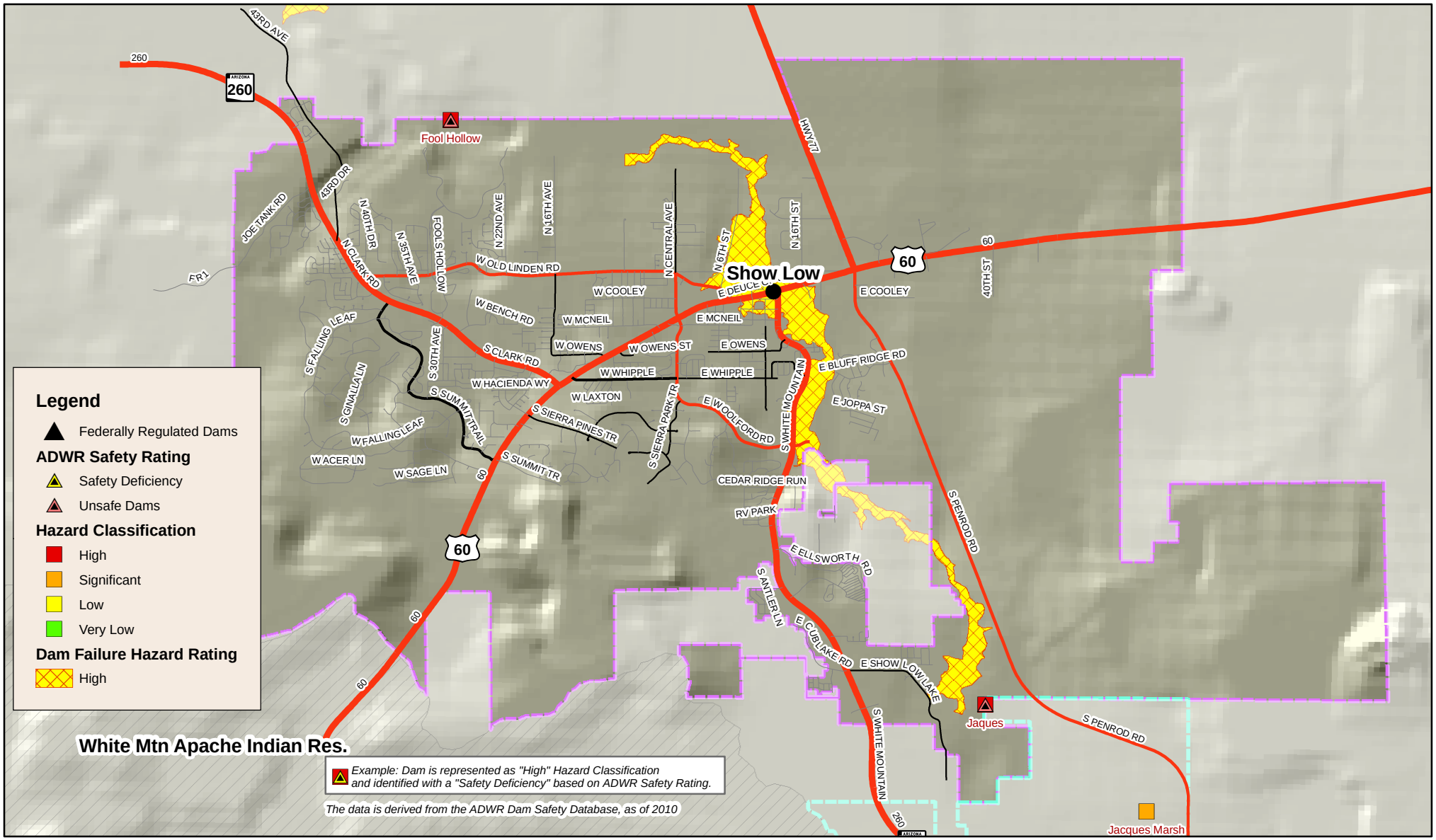


0 2 4 8 Miles

Map 1D
Navajo County
Dam Failure Hazard Map
as of December 2010

Source: ADWR, December 2010; NID, 2010
JE FULLER 2010; ALRIS, 2010


Legend
Federally Regulated Dams
ADWR Safety Rating
Safety Deficiency
Unsafe Dams
Hazard Classification
High
Significant
Low
Very Low
Dam Failure Hazard Rating
High
Example: Dam is represented as "High" Hazard Classification and identified with a "Safety Deficiency" based on ADWR Safety Rating.
The data is derived from the ADWR Dam Safety Database, as of 2010
Lake of the Woods
Pinetop-Lakeside
Sponseller
Apache Indian Res.
Jaques
Jacques Marsh
Scott
Lake of the Woods
Lakeside
Woodland
Highway 260
Forest Service Road 187
Mogollon Rim
Show Low Lake
Deer Valley
Welsh
Juniper
Scotts Res
Mountain View
Porter Mountain
Havelyn
Nina
Starlight
Stardust
Moonridge
United St
Eastway
Hillside
Oak
Cedar
Spruce
Fir
Poplar
Hill
Mc Coy
Douglas Fir
White Oak
Deep Forest
Fairway
Buck Springs
Wildcat
Country Club
Mule Deer
Mark Twain
Charro
Jackrabbit
Aspen
Hummingbird
Sunflower
Cedar
Pine Lake
Penrod
Jan
Elk
Wapiti
Osprey
Iris
Wild Oak Trail
Rim
Timber Pine
Pine Wood
Hart Lake
Lee
Woodland Lake
Pima
Rock
Trina
McCabe
Woodland
Willow Run
Sponsellor
Homestead
Curry
Autumn
Spring
Mogollon Rim
Bear
Rim
Pioneer
Oxbow
Larson
Penrod
Pine
Petes Retreat
1st
Mc Ne
Pima
Coconino
Lockwood
Pine
High
Green
Valery
Vallery
Welsh
Deer
Alisa
Pinon
Magalla Rim
Rim
Mogollon Rim
Pinecreek
Burke
Raeger
Huber
Ash
Skylane
Sky Hi
Sky Hi
Siera Pines
Morgan Mtn
Missy Mtn
Holly
Elk
Jaques
Pine Dawn
Lake
Webb
Webb
Pond
Forest
Lower Ridge
Sutter
East
B
F
73
Mogollon Rim
Rim
Mogollon Rim
Utah
Colorado
Nevada
California
Arizona
New Mexico
MOHAVE
COCONINO
APACHE
NAVAJO
Snowflake
YAVAPAI
LA PAZ
MARICOPA
GILA
GREENLEE
0
0.45
0.9
1.8 Miles
Source: ADWR, November 2010; NID, 2009
JE FULLER 2010; ALRIS, 2010
Legend
Communities
HOLBROOK
PINETOP-LAKESIDE
SHOW LOW
SNOWFLAKE
TAYLOR
WINSLOW
Roads
Interstate
US, State, County Hwys
Major Roads
Local Street
Cities, Towns, Places
Watercourses
Indian Reservation
County Boundary
Navajo County Multi-Jurisdictional Hazard Mitigation Plan
Map 1H
Town of Pinetop-Lakeside
Dam Failure
Hazard Map
as of November 2010



Legend

Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW

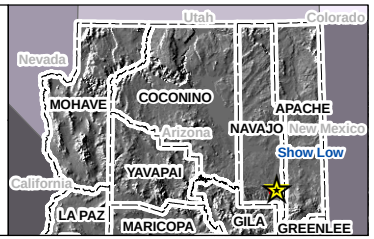
Cities, Towns, Places

ROAD CLASS
- MAJOR ARTERIAL
- MINOR ARTERIAL
- MAJOR COLLECTOR
- MINOR COLLECTOR
- LOCAL;

Indian Reservation
County Boundary
Watercourses

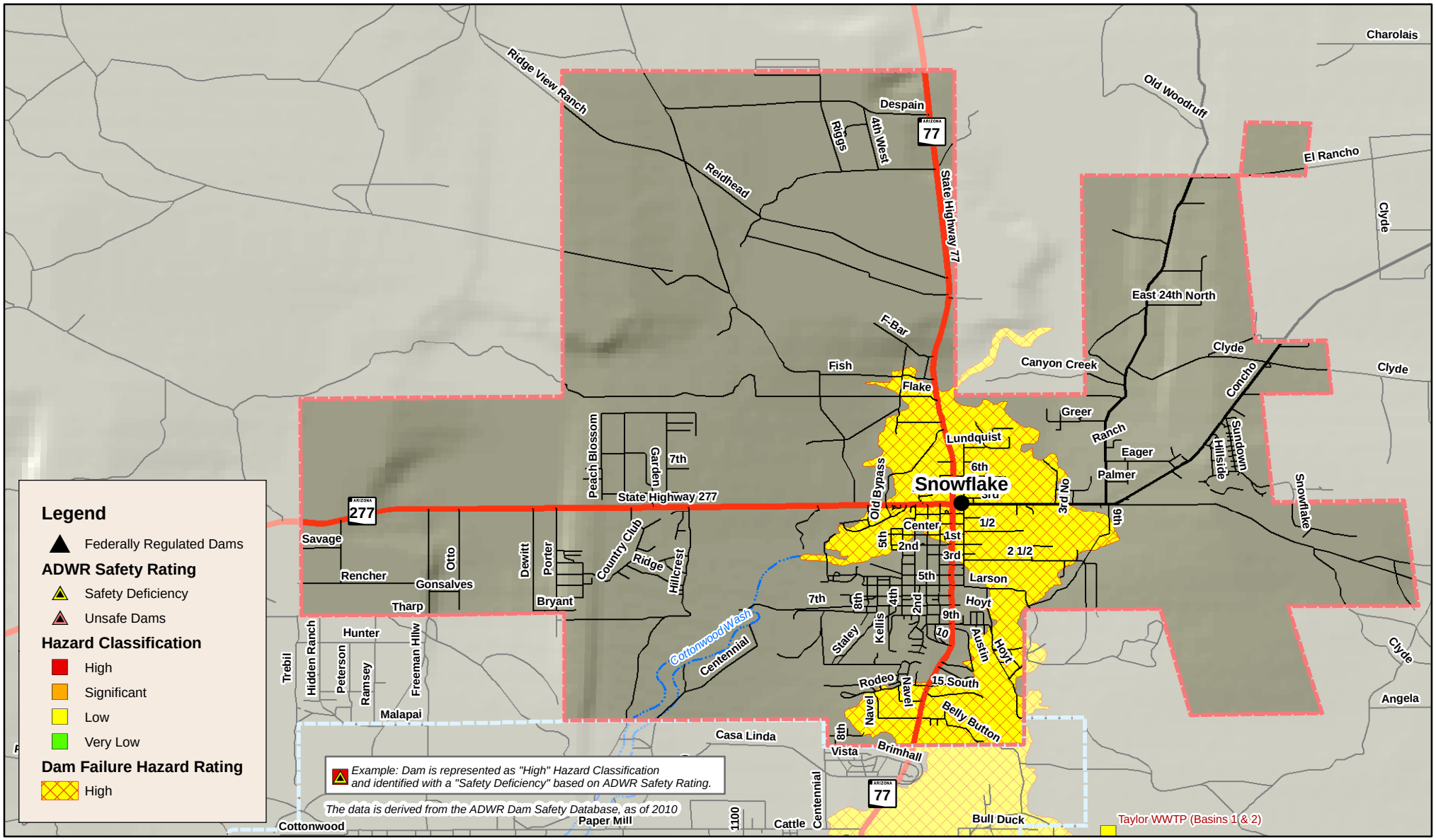
0 0.5 1 2 Miles

Source: ADWR, November 2010; NID, 2009
JE FULLER 2010; ALRIS, 2010



Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Map 1G
City of Show Low
Dam Failure
Hazard Map
as of November 2010



Legend

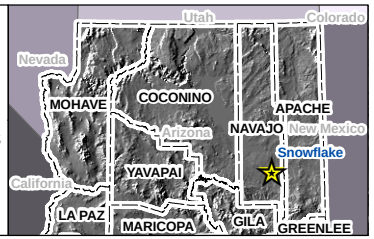
Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW

Roads
- Interstate
- US, State, County Hwys
- Major Roads
- Local Street

- Cities, Towns, Places
- Watercourses
- Indian Reservation
- County Boundary

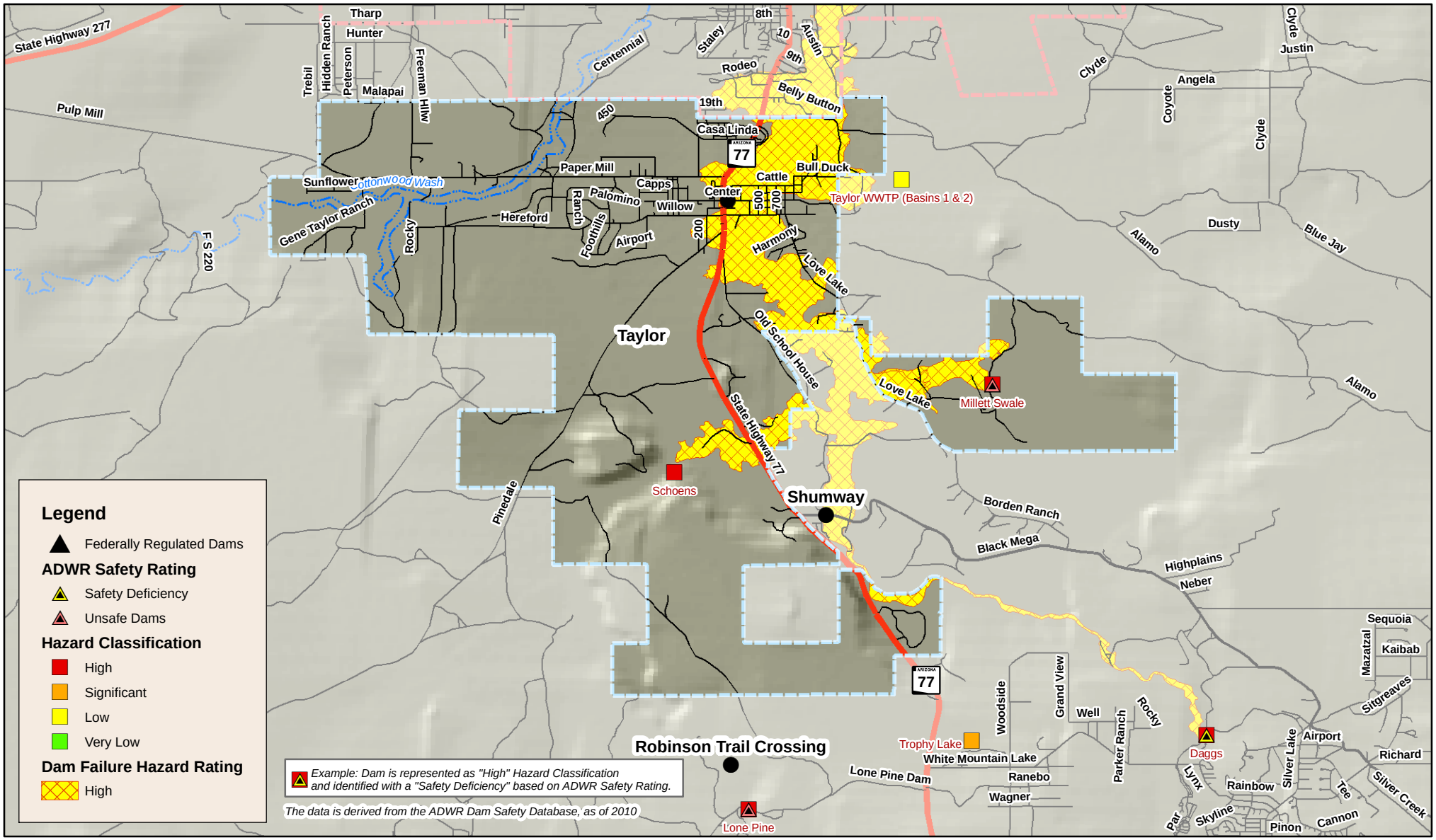
0 0.5 1 2 Miles

Source: ADWR, November 2010; NID, 2009
JE FULLER 2010; ALRIS, 2010



Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Map 1H
Town of Snowflake
Dam Failure
Hazard Map
as of November 2010



Legend

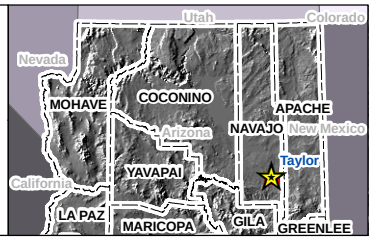
Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW

Roads
- Interstate
- US, State, County Hwys
- Major Roads
- Local Street

- Cities, Towns, Places
- Watercourses
- County Boundary
- Indian Reservation

0 0.5 1 2 Miles

Source: ADWR, November 2010; NID, 2009
JE FULLER 2010; ALRIS, 2010



Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Map 1I
Town of Taylor
Dam Failure
Hazard Map
as of November 2010

5.3.2 Drought

Description

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

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

- Meteorological – drought is defined solely on the degree of dryness, expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
- Hydrological – drought is related to the effects of precipitation shortfalls on 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 17 droughts declared as drought disasters/emergencies and 93 drought events (droughts affecting multiple years are recorded as a distinct event for each year affected) since records have been kept. Figures 5-1 and 5-2 depict 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 (Jacobs, 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.

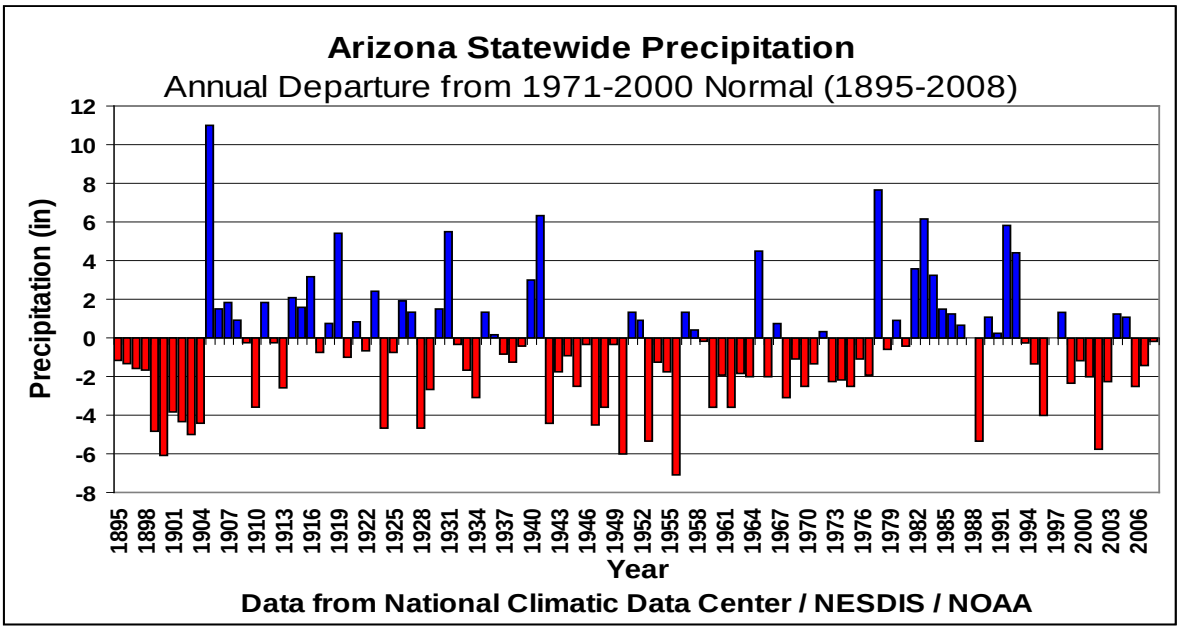


Figure 5-1: Average statewide precipitation variances from a normal based on 1971-2000 period.

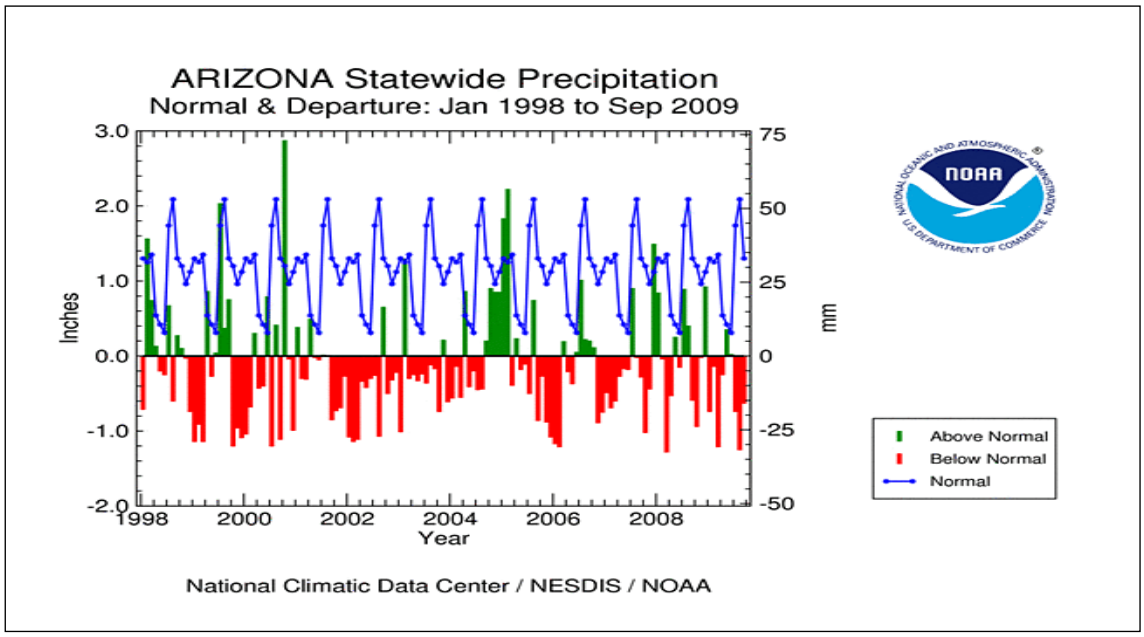
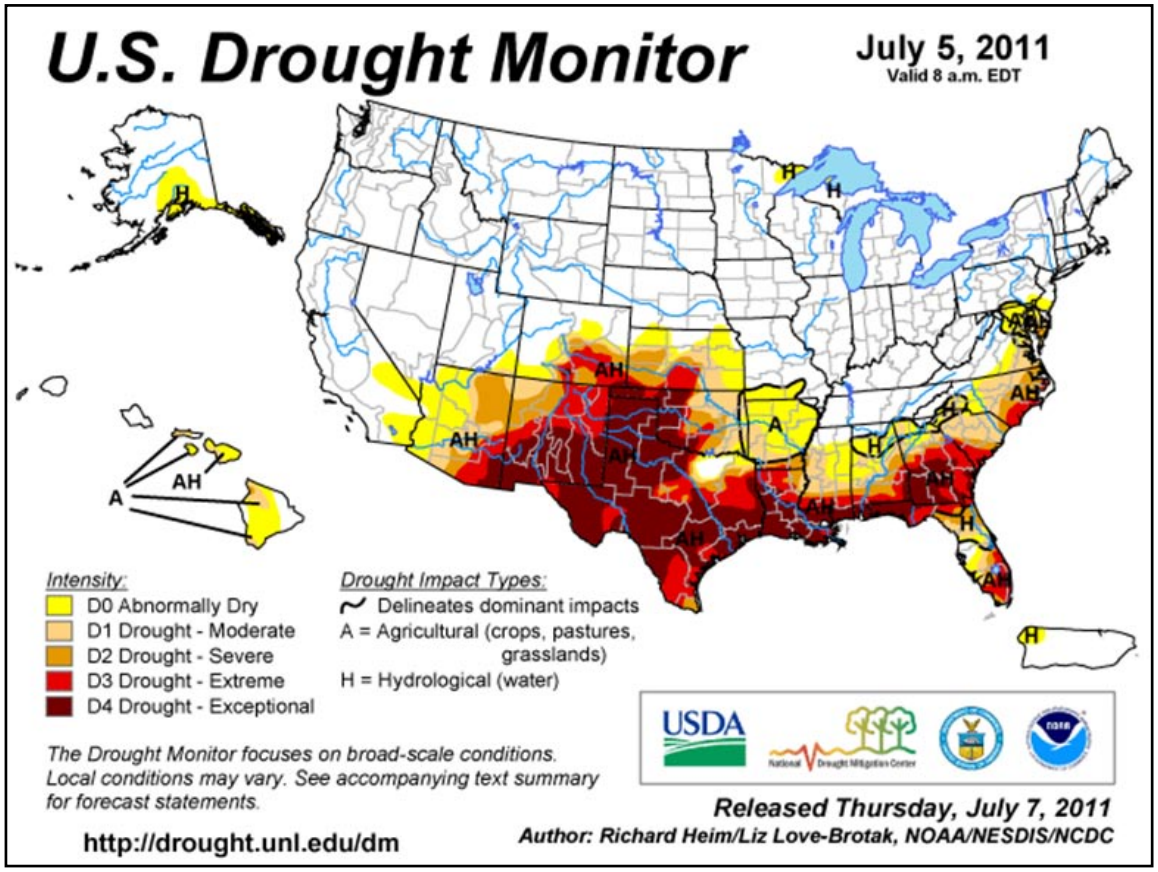


Figure 5-2: Average statewide precipitation variances from a normal based on 1998-2009 period

Probability and Magnitude

There is 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 expected conditions for the very near future.

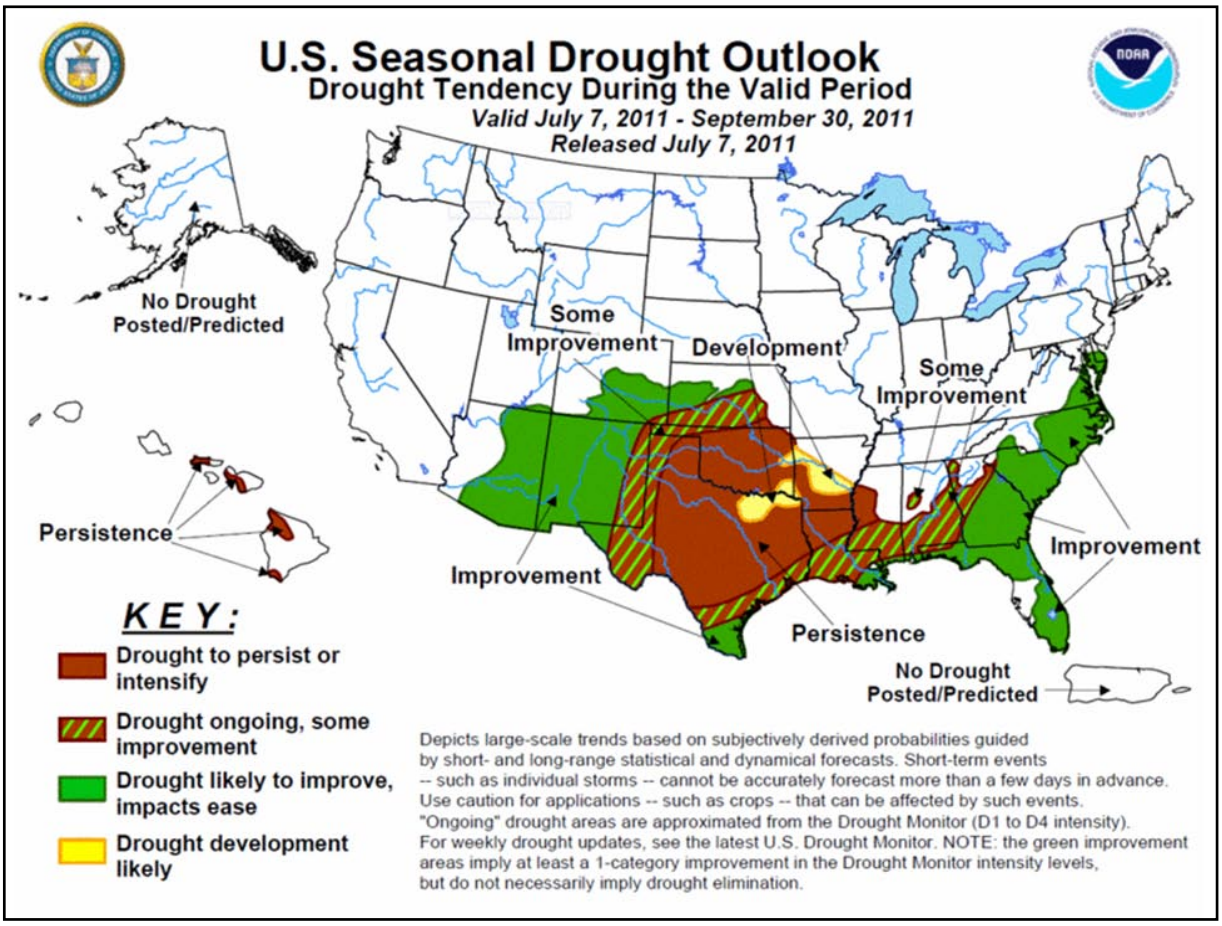
The National Integrated Drought Information System (NIDIS) Act of 2006 (Public Law 109-430) prescribes an interagency approach for drought monitoring, forecasting, and early warning (NIDIS, 2007). The NIDIS maintains the U.S. Drought Portal[18] which is a centralized, web-based access point to several drought related resources including the U.S. Drought Monitor (USDM) and the U.S. Seasonal Drought Outlook (USSDO). The USDM, shown in Figure 5-3, is a weekly map depicting the current status of drought and is developed and maintained by the National Drought Mitigation Center. The USSDO, shown in Figure 5-4, is a six month projection of potential drought conditions developed by the National Weather Service's Climate Prediction Center. The primary indicators for these maps for the Western U.S. are the Palmer Hydrologic Drought Index and the 60-month Palmer Z-index. The Palmer Drought Severity Index (PSDI) is a commonly used index that measures the severity of drought for agriculture and water resource management. It is calculated from observed temperature and precipitation values and estimates soil moisture. However, the Palmer Index is not considered to be consistent enough to characterize the risk of drought on a nationwide basis (FEMA, 1997) and neither of the Palmer indices are well suited to the dry, mountainous western United States.



Source: http://www.drought.unl.edu/dm/monitor.html

Figure 5-3: U.S. Drought Monitor Map for July 5, 2011

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

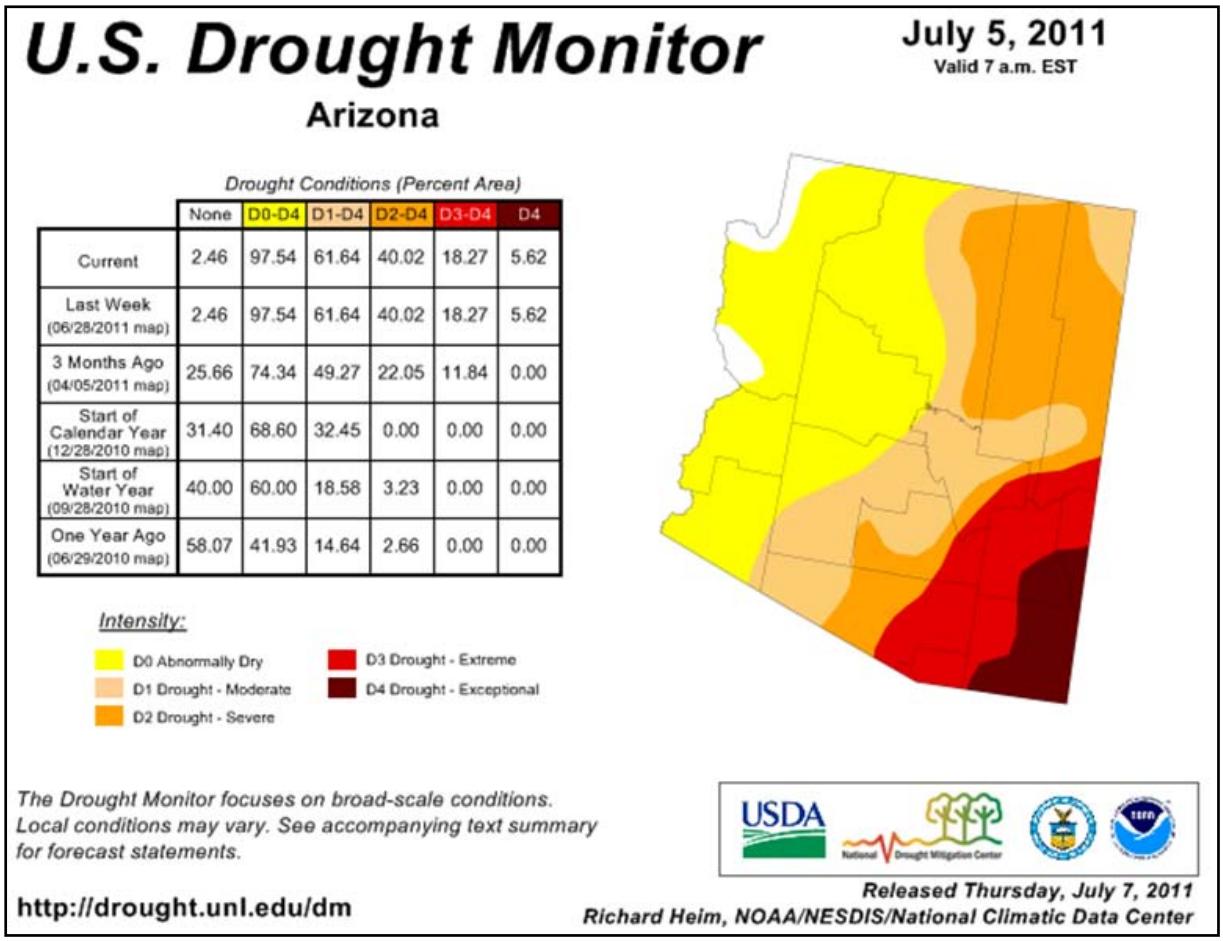


Source: http://www.cpc.ncep.noaa.gov/products/expert_assessment/seasonal_drought.html

Figure 5-4: U.S. Seasonal Drought Outlook, July to September, 2011

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 defers to the USDM for the short-term drought status and uses a combination of the Standardized Precipitation Index (SPI), evaporation and streamflow for the long-term drought status. Figures 5-5 and 5-6, present the most current short and long term maps available for Arizona as of the writing of this plan.

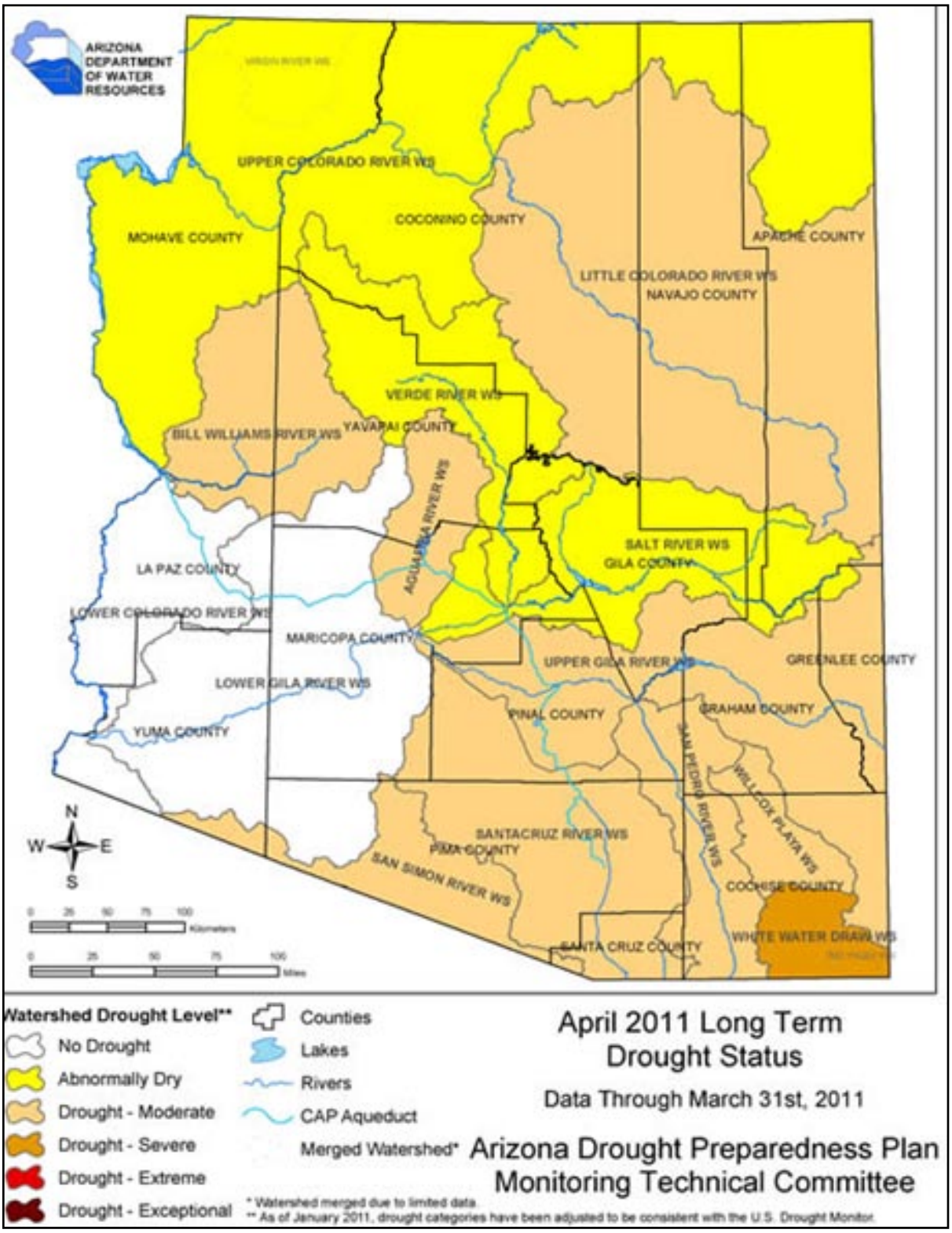
The current drought maps are in general agreement that Navajo County is currently experiencing a moderate to severe drought condition for the short term and in a moderate drought condition for the long term. Figure 5-4 indicates that the drought conditions are likely to improve or ease for Navajo County over the next few months.



	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	2.46	97.54	61.64	40.02	18.27	5.62
Last Week (06/28/2011 map)	2.46	97.54	61.64	40.02	18.27	5.62
3 Months Ago (04/05/2011 map)	25.66	74.34	49.27	22.05	11.84	0.00
Start of Calendar Year (12/28/2010 map)	31.40	68.60	32.45	0.00	0.00	0.00
Start of Water Year (09/28/2010 map)	40.00	60.00	18.58	3.23	0.00	0.00
One Year Ago (06/29/2010 map)	58.07	41.93	14.64	2.66	0.00	0.00

Source: http://www.azwater.gov/azdwr/StatewidePlanning/Drought/DroughtStatus2.htm

Figure 5-5: Arizona short term drought status map as of July 5, 2011



Source: ADWR, 2011 as accessed at: http://www.azwater.gov/AzDWR/StatewidePlanning/Drought/DroughtStatus2.htm

Figure 5-6: Arizona long term drought status map for January 2011

Vulnerability – CPRI Results

Drought CPRI results for each community are summarized in Table 5-21 below.

Table 5-21: CPRI results by jurisdiction for drought

Participating Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Holbrook	Likely	Limited	> 24 hours	> 1 week	2.50
Show Low	Likely	Limited	> 24 hours	> 1 week	2.50
Snowflake	Highly Likely	Critical	> 24 hours	> 1 week	3.25
Taylor	Likely	Negligible	> 24 hours	> 1 week	2.20
Winslow	Highly Likely	Critical	12 - 24 hours	> 1 week	3.40
Unincorporated Navajo County	Likely	Limited	> 24 hours	> 1 week	2.50
				County-wide average CPRI =	**2.73**

NOTE: No data provided by Pinetop-Lakeside

Vulnerability – Loss Estimations

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

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

The Navajo County farming and ranching industries are directly affected by extended drought conditions. The primary source of water for irrigated farming is groundwater and some surface water tributaries to the Little Colorado River such as Silver Creek. Rangeland ranching is dependent upon groundwater and captured rainfall runoff via stock tanks and rain catchments. Extended drought conditions reduce rangeland grasses and other fodder. Stock tank water levels and replenishment are also significantly reduced. This forces ranchers to feed more hay and to truck in water to sustain their rangeland herds. The expense of these activities forces ranchers to drastically reduce herd sizes, flooding the markets with excess animals and tumbling livestock prices. Then supplies in following years are drastically reduced due to lack of rangeland and water and prices soar. These expenses are translated into the Navajo County economy as a two-fold hardship. First, as an economic hardship for merchants and retailers that provide goods and services to the ranching community. Second, as increased costs due to a reduced supply in ranching commodities.

From 1995 to 2010, Navajo County farmers and ranchers received $3,075,363 in disaster related assistance funding from the U.S Department of Agriculture (USDA) (EWG, 2011). The majority of those funds were received during the time period of 2000 to 2005 and are associated with livestock assistance and aid. The 2000-2005 time period also corresponds to the most severe period of the recent drought cycle for Navajo County. Other direct impacts associated with increased pumping costs due to lowering of groundwater levels and costs to expand water infrastructure to compensate for reduced yields or to develop alternative water sources, are significant but very difficult to estimate due to a lack of documentation. There are also the intangible costs associated with lost tourism revenues, and impacts to wildlife habitat and animals. Typically, these impacts are translated into the general economy in the form of higher food and agricultural goods prices and increased utility costs.

Sustained drought conditions will also have secondary impacts by increasing risks associated with hazards such as fissures, flooding, subsidence and wildfire. Extended drought may weaken and dry the grasses, shrubs, and trees of wildfire areas, making them more susceptible to ignition. Drought also tends to reduce the vegetative cover in watersheds, and hence decrease the interception of rainfall and increase the flooding hazard. Subsidence and fissure conditions are aggravated when lean surface water supplies force the pumping of more groundwater to supply the demand without the benefit of recharge from normal rainfall.

Vulnerability – Development Trends

Growth in Navajo County over the past five years has been moderate and is anticipated to steadily increase at near the same rate over the next five years. Requirements for additional surface and ground water supplies is expected to grow proportionately. It is also 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. However, drought planning will continue to be a critical component of any domestic water system 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 Navajo County will recognize drought as a potential constraint.

Sources

Arizona Department of Water Resources, 2011, Drought Program website http://www.azwater.gov/azdwr/StatewidePlanning/Drought/default.htm

Arizona Division of Emergency Management, 2010, *State of Arizona Multi-Hazard Mitigation Plan*

Environmental Working Group's Farm Subsidy Database, 2010, http://farm.ewg.org/progdetail.php?fips=04011&progcode=total_dis

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.

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

NOAA, NWS, Climate Prediction Center, 2010, website located at: http://www.cpc.ncep.noaa.gov/products/expert_assessment/seasonal_drought.html

Profile Maps - No profile maps are provided.

5.3.3 Flood / Flash Flood

Description

For the purpose of this Plan, the hazard of flooding addressed in this section will pertain to floods that result from precipitation/runoff related events. Other flooding due to dam or levee failures are addressed separately. The three seasonal atmospheric events that tend to trigger floods in Navajo County are:

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

Damaging floods in the County include riverine, sheet, alluvial fan, and local area flooding. Riverine flooding occurs along established watercourses when the bankfull capacity of a watercourse is exceeded by storm runoff or snowmelt and the overbank areas become inundated. Sheet flooding occurs in regionally low areas with little topographic relief that generate floodplains over a mile wide, Alluvial fan flooding is generally located on piedmont areas near the base of the local mountains and are characterized by multiple, highly unstable flowpaths that can rapidly change during flooding events. 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 major flood hazard comes as a secondary impact of wildfires in the form of dramatically increased runoff from ordinary rainfall events that occur on newly burned watersheds. Denuding of the vegetative canopy and forest floor vegetation, and development of hydrophobic soils are the primary factors that contribute to the increased runoff. Canopy and floor level brushes and grasses intercept and store a significant volume of rainfall during a storm event. They also add to the overall watershed roughness which generally attenuates the ultimate peak discharges. Soils in a wildfire burn area can be rendered hydrophobic, which according the NRCS is the development of a thin layer of nearly impervious soil at or below the mineral soil surface that is the result of a waxy substance derived from plant material burned during a hot fire. The waxy substance penetrates into the soil as a gas and solidifies after it cools, forming a waxy coating around soil particles. Hydrophobic soils, in combination with a denuded watershed, will significantly increase the runoff potential, turning a routine annual rainfall event into a raging flood with drastically increased potential for soil erosion and mud and debris flows.

History

Flooding is clearly a major hazard in Navajo County as shown in Tables 5-2 and 5-3. Navajo County has been part of 16 disaster declarations for flooding, with one of those declarations occurring in the past five years. There have been at least five other non-declared events of reported flooding incidents that met the thresholds outlined in Section 5.1, all of which occurred in the last five years. The following incidents represent examples of major flooding that has impacted the County:

- In December 1978, following on the heels of major 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. Statewide - damages were estimated at $39,850,000 with severe damage to roads and bridges, 10 fatalities, and thousands left homeless. For Navajo County, public and private damages were estimated to exceed $4.1 million. ["Flood Damage Report, Phoenix Metropolitan Area, December 1978 Flood", November 1979, U.S. Army Corps of Engineers, FCDMC Library #802.027]
- 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, resulting in runoff being diverted to emergency spillways or breaching of the reservoir. 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 with eight deaths and 112 injuries reported to the Red Cross(FEMA, April 1, 1993; ADEM, March, 1998). The following are excerpts from the *Flood Damage Report, State of Arizona, Floods of 1993*, prepared by the USACE (USACE, 1994):

> Navajo County experienced flood damages and problems as a result of flow in the Little Colorado River and tributary streams. A large portion of the county is comprised of land within the Navajo Nation. FEMA, FHWA, and SBA damages and assistance totaled $4,005,748 for the 1993 flood events. Private damages in Navajo County are estimated to exceed $1,180,000, primarily residential and commercial damages and losses. 78 homes were destroyed or damaged, one business suffered major damage, and two businesses received lesser damage. Tourism dropped rapidly in the county, resulting in lost revenue to area hotels and other businesses. Public and private damages from the 1993 floods are estimated to exceed $4,100,000.
>
> In Winslow, a 345 foot long section of levee breached and flooded Ames Acres, Bushman Acres, and Winslow Plaza subdivisions. 284 homes and 900 people were evacuated 'for up to 3 days. 50 homes were flooded up to 4 feet deep. One business and one farm received damages. At McHood Park the recreational lake silted up. The Corps of Engineers repaired the breach during the flood at a cost of $350,050. The County continued reinforcing the breach, and working on 24 hour shifts.
>
> Clear Creek Reservoir south of Winslow experienced a large amount of sedimentation, losing about 70% of the reservoir capacity. Recreational use is expected to diminish, and fish and wildlife habitat was destroyed. The cost to remove the sediment was estimated at $750,000.
>
> In the Bird Springs/Leupp area, on the Navajo Reservation, the National Guard evacuated 11people by air. The road to Leupp was closed, greatly limiting access to the area. About 20 homes were flooded, livestock was lost, and water and power service interrupted. Navajo County provided emergency response and supplied 1500 sandbags. Navajo County assessed conditions on the Navajo and Hopi Reservations and responded to extremely muddy road conditions and stranded homeowners by providing coal and wood.

In the Snowflake/Taylor area, Silver Creek overflowed its banks by a width of 65 to 100 feet. The elementary school received damage, 4 families were evacuated, 3 homes were flooded, numerous road crossings were underwater, and Shumway bridge was overtopped. Many homes were sandbagged. At Snowflake, repairs to a flood control dike were made, and a parking lot sustained $20,000 damage. These extreme February flows were not experienced during the January flood.

At Pinetop/Lakeside, there were over a dozen road closures and washouts. Flows up to two feet deep in Sky High Retreat subdivision cut off access to 45 homes. Two homes received minor damage.

In Show Low, heavy flows on Show Low Lake Creek threatened closure of State Route 60 bridge, the only access from Show Low to Globe. Flood waters came within 6 inches of the top of the bridge. The City of Show Low reported significant damage to sewer lines and a septic pump station. One home received major damage, and one home received minor damage. The high amount of runoff from Show Low and Pinetop necessitated water releases from Schoens Dam, a new flood control structure, to ensure a safe level of capacity to prevent catastrophic flooding in the event that Lone Pine Dam failed. Lone Pine Dam was damaged, the estimated cost of repairs was $30,000. At Lone Pine Dam, spillway flow was estimated at 6000 cfs.

In Holbrook, flooding on Leroux Wash nearly inundated a wastewater lift station for the City of Holbrook. A radio station was off the air for two weeks.

A landslide on State Route 260 resulted in closure for two days, causing major detours to get to Phoenix and Payson. Routes 277 and 377 were closed due to washouts for 3 days. The Atchison, Topeka & Santa Fe Railroad was impacted by the flood and experienced economic damages. Numerous roads were washed out in Sitgreaves National Forest.

The Joseph City Powerplant, on the Little Colorado River, incurred expenses for protecting power lines as a result of the river changing course.

Navajo County officials stressed that flows in the Little Colorado had been attenuated by Lyman Lake Dam, upstream in Apache County . The normally full reservoir had been drained and repairs to the dam had just been completed prior to the flood events. The reservoir rapidly filled to capacity, and reduced peak flows through Holbrook, Winslow, and the Navajo Nation. If the lake had been full, floodflows in the Little Colorado would have been greater and caused more damage than was experienced.

- Northern Arizona Winter Storm: Arizona was impacted by a series of strong winter storms December 28, 2004 – January 12, 2005. Large amounts of rain and record levels of snow received during the initial storm were followed by January storms that tapped into warm, moist Pacific air. Rapid snow melt occurred as warm rains fell on snow at mid-level elevations, which, along with the rain falling on already saturated ground resulted in widespread flooding throughout the northern and central parts of the state. Arizona residents suffered both loss of life and property damage.
  - On December 29, 2005 the Governor declared a state of emergency for the Northern Arizona Winter Storm Emergency for Coconino County followed by 3 amendments on December 30, 2004 to include Yavapai County, on January 4, 2005 to include Gila and Navajo Counties and on January 11, 2005 to include Apache, Maricopa and Mohave Counties.
  - On February 17, 2005, the President declared a Major Disaster Declaration (FEMA-1581-DR-AZ) for Public Assistance and Mitigation Programs for Coconino, Gila, Mohave, Navajo and Yavapai Counties and the Hopi and Navajo Nations. The Tribal Governments work directly with DHS/FEMA and provide their own non-federal cost share. The Small Business Administration (SBA) declared an emergency for Mohave,

Coconino, La Paz and Yavapai Counties, making low interest loans available to homeowners, renters, businesses of all sizes and private, non-profit organizations whose property was damaged or destroyed by the storms.

- On August 8, 2006, the Governor declared a state of emergency for a series of monsoon thunderstorms, spawning hail, damaging winds and flash floods throughout southeastern Arizona, specifically Pinal and Pima Counties from July 25 - August 4, 2006. Areas of the Santa Cruz, San Pedro and Gila watersheds exceeded their 1993 flood stages in portions of Pinal, Pima, Cochise, Graham and Gila Counties. On September 13, 2006, the Governor amended the declaration to include Gila, Graham, Greenlee and Navajo Counties. Five Tribal Governments were also heavily impacted by the emergency: the Gila River Indian Community, the Hopi Tribe, the Navajo Nation, the San Carlos Apache Tribe and the Tohono O'Odham Nation.
    - On September 7, 2006, the President declared a Major Disaster Declaration (FEMA-1660-DR-AZ) by approving Public Assistance for those counties and tribal nations that met FEMA's per capita impact criteria, which were: Pinal and Pima Counties, the Gila River Indian Community within Pinal County and the Tohono O'Odham Nation within Pima and Pinal Counties. His declaration was amended on September 29, 2006 to include Gila, Graham, Greenlee and Navajo Counties, the tribal areas of the Hopi Tribe within Navajo County, the Navajo Nation within Navajo County and the San Carlos Apache Tribe within Gila, Graham and Pinal Counties. On November 9, 2006, the declaration was amended once more to include the Navajo Nation within Apache and Coconino Counties. The President also approved Arizona's request for the Hazard Mitigation Grant Program. The portion of this program that is made available to all counties and political subdivisions statewide is administered by ADEM. This program is also made available to the Tribal Nations designated under this emergency and they will each administer their program with direct Federal assistance from FEMA.

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

Probability and Magnitude

For the purposes of this Plan, the probability and magnitude of flood hazards in Navajo County jurisdictions are primarily based on the 1% (100-year) and 0.2% (500-year) probability floodplains delineated on FEMA Flood Insurance Rate Maps (FIRMs), plus any provisional floodplain delineations used for in-house purposes by participating jurisdictions or Planning Team delineated areas. FEMA has recently completed a map modification program to update the FIRMs for the County into a digital FIRM (DFIRM) format. The effective date for the new DFIRM maps is September 26, 2008. DFIRM floodplain GIS base files were obtained from FEMA and are the basis for the flood hazard depictions in this Plan. Therefore, the vulnerability analysis results in this plan are likely conservative.

Two designations of flood hazard are used. Any "A" zone is designated as a high hazard area. Medium flood hazard areas are 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. High and medium hazard designations were also assigned to the non-FEMA areas by the Planning Team based on the anticipated level of flood hazard posed.

Maps 2A through 2D show the flood hazard areas for the entire county. Maps 2E through 2J show the flood hazard areas for Holbrook, Pinetop-Lakeside, Show Low, Snowflake, Taylor, and Winslow, respectively.

Vulnerability – CPRI Results

Flooding CPRI results for each community are summarized in Table 5-21 below.

Table 5-22: CPRI results by jurisdiction for flooding

Participating Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Holbrook	Likely	Limited	6 - 12 hours	< 24 hours	2.60
Show Low	Highly Likely	Catastrophic	< 6 hours	< 24 hours	3.80
Snowflake	Highly Likely	Critical	< 6 hours	< 1 week	3.60
Taylor	Highly Likely	Critical	< 6 hours	< 24 hours	3.50
Winslow	Possibly	Limited	6 - 12 hours	< 24 hours	2.15
Unincorporated Navajo County	Highly Likely	Critical	12 - 24 hours	< 1 week	3.30
				County-wide average CPRI =	**3.16**

NOTE: Pinetop-Lakeside did not provide data

Vulnerability – Loss Estimations

The estimation of potential exposure to high and medium flood hazards was accomplished by intersecting the human and critical facility assets with the flood hazard limits depicted on Maps 2A, 2B, 2C and 2D. Loss estimates to all facilities located within the high and medium flood hazard areas were made based on 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 5-23 summarizes the Planning Team identified critical facilities potentially exposed to high and medium flood hazards, and the corresponding estimates of losses. Table 5-24 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 5-25 through 5-32.

In summary, $56 million and $6 million in asset related losses are estimated for high and medium flood hazards, for all the participating jurisdictions in Navajo County. An additional $138.6 and $11.3 million in high and medium flood losses to HAZUS defined residential, commercial, and industrial facilities is estimated for all participating Navajo County jurisdictions. Regarding human vulnerability, a total population of 8,275 people, or 8.49% of the total population, is potentially exposed to a high hazard flood event. A total population of 2,928 people, or 3.0% of the total 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. Furthermore, it should be noted that any flood event that exposes assets or population to a medium hazard will also expose assets and populations to the high hazard flood zone. That is, the 100-year floodplain would be entirely inundated during a 500-year flood.

Table 5-23: Asset inventory exposure to high and medium hazard flooding and corresponding loss estimates

Community	Total Facilities Reported by Community	Impacted Facilities	Percentage of Total Community Facilities Impacted	Estimated Replacement Cost (x$1000)	Estimated Structure Loss ($1000)
High					
County-Wide Totals	**422**	**110**	**26.07%**	**$280,718**	**$56,144**
Holbrook	23	2	8.70%	$6,500	$1,300
Pinetop-Lakeside	44	4	9.09%	$5,185	$1,037
Show Low	111	6	5.41%	$6,270	$1,254
Snowflake	42	5	11.90%	$30,200	$6,040
Taylor	29	9	31.03%	$4,188	$838
Unincorporated	114	43	37.72%	$60,622	$12,124
Winslow	59	41	69.49%	$167,753	$33,551
Medium					
County-Wide Totals	**422**	**28**	**6.64%**	**$120,228**	**$6,011**
Holbrook	23	11	47.83%	$48,606	$2,430
Pinetop-Lakeside	44	0	0.00%	$0	$0
Show Low	111	2	1.80%	$4,500	$225
Snowflake	42	0	0.00%	$0	$0
Taylor	29	1	3.45%	$350	$18
Unincorporated	114	11	9.65%	$59,272	$2,964
Winslow	59	3	5.08%	$7,500	$375

Table 5-24: Population sectors exposed to high and medium hazard flooding

Community	Total Population	Population Exposed	Percent of Population Exposed	Total Population Over 65	Population Over 65 Exposed	Percent of Population Over 65 Exposed	Total Incomes Under $20K	Incomes Under $20K Exposed	Percent of Incomes Under $20K Exposed
HIGH									
County-Wide Totals	**97,467**	**8,275**	**8.49%**	**9,173**	**917**	**9.99%**	**10,477**	**840**	**8.01%**
Holbrook	4,891	210	4.29%	441	19	4.29%	509	28	5.48%
Hopi Indian Res.	5,859	0	0.00%	476	0	0.00%	808	0	0.00%
Navajo Indian Res.	16,587	1	0.00%	1,010	0	0.00%	2,042	0	0.01%
Navajo-Hopi Joint Use Area	10,233	0	0.00%	667	0	0.00%	1,431	0	0.00%
Pinetop-Lakeside	3,563	88	2.47%	547	14	2.57%	292	8	2.88%
Show Low	8,011	364	4.54%	1,134	56	4.97%	774	38	4.86%
Snowflake	4,433	404	9.11%	498	52	10.50%	286	28	9.87%
Taylor	3,200	421	13.14%	283	39	13.78%	253	32	12.75%
Unincorporated	20,589	1,166	5.66%	2,837	106	3.74%	1,885	101	5.35%
White Mtn. Apache Indian Res.	10,598	0	0.00%	346	0	0.00%	1,338	0	0.00%
Winslow	9,503	5,622	59.16%	935	630	67.38%	860	604	70.26%
MEDIUM									
County-Wide Totals	**97,467**	**2,928**	**3.00%**	**9,173**	**317**	**3.46%**	**10,477**	**340**	**3.24%**
Holbrook	4,891	1,839	37.60%	441	195	44.15%	509	214	42.00%
Hopi Indian Res.	5,859	0	0.00%	476	0	0.00%	808	0	0.00%
Navajo Indian Res.	16,587	0	0.00%	1,010	0	0.00%	2,042	0	0.00%
Navajo-Hopi Joint Use Area	10,233	0	0.00%	667	0	0.00%	1,431	0	0.00%
Pinetop-Lakeside	3,563	12	0.33%	547	2	0.39%	292	1	0.42%
Show Low	8,011	122	1.53%	1,134	16	1.37%	774	12	1.61%
Snowflake	4,433	119	2.67%	498	17	3.43%	286	9	3.10%
Taylor	3,200	78	2.44%	283	6	2.09%	253	6	2.54%
Unincorporated	20,589	188	0.91%	2,837	31	1.09%	1,885	24	1.30%
White Mtn. Apache Indian Res.	10,598	0	0.00%	346	0	0.00%	1,338	0	0.00%
Winslow	9,503	571	6.00%	935	51	5.45%	860	72	8.41%

Table 5-25: Navajo County HAZUS building exposure to flooding

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Navajo 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	**51,850**	**$6,202,174**	**1,275**	**$1,252,229**	**347**	**$213,620**	**$7,668,023**		
High Hazard Exposure	4,336	$512,717	205	$166,683	31	$13,828	$693,227	20%	$138,645
Medium Hazard Exposure	1,585	$160,023	99	$62,111	7	$3,870	$226,004	5%	$11,300
Navajo County HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	08.36%	08.27%	16.04%	13.31%	09.08%	06.47%			
Medium Hazard Exposure	03.06%	02.58%	07.74%	04.96%	01.94%	01.81%			

Table 5-26: Holbrook HAZUS building exposure to flooding

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Holbrook 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	**2,413**	**$273,514**	**122**	**$80,723**	**8**	**$3,123**	**$357,360**		
High Hazard Exposure	82	$9,620	4	$1,293	0	$0	$10,913	20%	$2,183
Medium Hazard Exposure	1,116	$106,007	77	$48,056	3	$2,549	$156,612	5%	$7,831
Holbrook HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	03.39%	03.52%	03.17%	01.60%	0.0%	0.0%			
Medium Hazard Exposure	46.25%	38.76%	62.71%	59.53%	36.40%	81.62%			

Table 5-27: Pinetop-Lakeside HAZUS building exposure to flooding

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Pinetop-Lakeside 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	**2,844**	**$417,321**	**118**	**$103,019**	**37**	**$19,955**	**$540,295**		
High Hazard Exposure	60	$8,281	3	$1,956	1	$221	$10,458	20%	$2,092
Medium Hazard Exposure	9	$1,094	0	$144	0	$58	$1,297	5%	$65
Pinetop-Lakeside HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	02.13%	01.98%	02.37%	01.90%	01.96%	01.11%			
Medium Hazard Exposure	0.32%	0.26%	0.28%	0.14%	0.41%	0.29%			

Table 5-28: Show Low HAZUS building exposure to flooding

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Show Low 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	**4,527**	**$552,295**	**222**	**$254,372**	**61**	**$35,469**	**$842,136**		
High Hazard Exposure	183	$19,681	23	$23,313	5	$2,861	$45,854	20%	$9,171
Medium Hazard Exposure	57	$6,825	7	$6,961	1	$571	$14,356	5%	$718
Show Low HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	04.04%	03.56%	10.25%	09.16%	08.52%	08.07%			
Medium Hazard Exposure	01.27%	01.24%	03.04%	02.74%	01.23%	01.61%			

Table 5-29: Snowflake HAZUS building exposure to flooding

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Snowflake 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	**1,783**	**$246,406**	**91**	**$58,891**	**44**	**$51,897**	**$357,193**		
High Hazard Exposure	143	$21,033	12	$9,066	4	$2,444	$32,543	20%	$6,509
Medium Hazard Exposure	53	$7,171	0	$206	2	$493	$7,870	5%	$393
Snowflake HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	08.03%	08.54%	13.23%	15.39%	09.18%	04.71%			
Medium Hazard Exposure	02.99%	02.91%	0.49%	0.35%	04.47%	0.95%			

Table 5-30: Taylor HAZUS building exposure to flooding

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Taylor 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	**1,241**	**$132,621**	**43**	**$38,131**	**18**	**$11,106**	**$181,858**		
High Hazard Exposure	170	$19,839	2	$1,611	2	$372	$21,822	20%	$4,364
Medium Hazard Exposure	28	$2,657	1	$585	1	$128	$3,371	5%	$169
Taylor HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	13.68%	14.96%	05.03%	04.23%	10.14%	03.35%			
Medium Hazard Exposure	02.28%	02.0%	01.43%	01.54%	03.27%	01.16%			

Table 5-31: Unincorporated Navajo County HAZUS building exposure to flooding

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Unincorporated (Navajo 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)
Community-Wide Totals	**17,894**	**$2,349,535**	**366**	**$221,145**	**139**	**$58,452**	**$2,629,133**		
High Hazard Exposure	626	$73,719	17	$6,350	7	$2,919	$82,989	20%	$16,598
Medium Hazard Exposure	88	$8,769	6	$2,959	0	$70	$11,798	5%	$590
Unincorporated (Navajo County) HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
High Hazard Exposure	03.50%	03.14%	04.52%	02.87%	04.70%	04.99%			
Medium Hazard Exposure	0.49%	0.37%	01.73%	01.34%	0.26%	0.12%			

Table 5-32: Winslow HAZUS building exposure to flooding

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Winslow 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	**4,135**	**$550,665**	**187**	**$151,016**	**18**	**$6,823**	**$708,504**		
High Hazard Exposure	3,072	$360,486	144	$123,093	13	$5,011	$488,590	20%	$97,718
Medium Hazard Exposure	233	$27,500	8	$3,200	0	$0	$30,700	5%	$1,535
Winslow HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
High Hazard Exposure	74.29%	65.46%	77.45%	81.51%	73.02%	73.44%			
Medium Hazard Exposure	05.65%	04.99%	04.09%	02.12%	0.0%	0.0%			

A summary comparison of the 2006 Plan county-wide flooding vulnerability analysis results to the current plan is shown in Table 5-33. Changes shown in Table 5-33 are a result of revisions to the Planning Team asset inventory (several replacement cost adjustments or additions were made to the 2006 Plan asset list as well as removal of all "non-critical" facilities), a different flood hazard layer (DFIRM versus previous hand digitized floodplains), a refinement of the GIS algorithms used to determine the HAZUS exposure, and a different loss to exposure ratio applied to the HAZUS exposure numbers.

Table 5-33: 2006 Plan county-wide flooding vulnerability analysis comparison to the 2011 Plan estimates

Exposure	2006 Plan	2011 Plan
Assets: High Hazard	$407.0 Million	$56.1 Million
Assets: Medium Hazard	$1.3 Million	$6.0 Million
HAZUS Facilities: High Hazard	$26.0 Million	$138.6 Million
HAZUS Facilities: Medium Hazard	$0.5 Million	$11.3 Million
Human: High Hazard	6,754	8,275
Human: Medium Hazard	743	2,928

Vulnerability – Repetitive Loss Properties

Repetitive Loss (RL) properties are those NFIP-insured properties that since 1978, have experienced multiple flood losses. FEMA tracks RL property statistics, and in particular to identify Severe RL (SRL) properties. RL properties demonstrate a track record of repeated flooding for a certain location and are one element of the vulnerability analysis. RL properties are also important to the NFIP, since structures that flood frequently put a strain on the National Flood Insurance Fund. FEMA records dated January 2010 (provided by ADEM) indicate that there are 4 identified RL properties in Navajo County, with a total of over $145,000 in associated building and contents value payments. Three of the payments have occurred within the last five years. Table 5-34 summarizes the RL property characteristics by jurisdiction.

Table 5-34: Repetitive Loss property statistics for Navajo County jurisdictions

Jurisdiction	No. of Properties	No. of Properties Mitigated	Total Payments
Snowflake	1	0	$36,518
Taylor	1	0	$52,505
Unincorporated Navajo County	1	0	$7,658
Winslow	1	0	$48,602

Source: FEMA Region IX, 2010 (data as of January 31, 2010)

Vulnerability – Development Trends

Most floodprone properties in Navajo County pre-date the planning jurisdictions' entry into the NFIP and were constructed prior to current floodplain management practices. The development of new properties or substantial re-development of existing structures is now subject to regulatory review procedures implemented by each jurisdiction. New development, adequate planning and regulatory tools are in place to regulate future development. For many areas within the county, challenges for the management of new growth include the need for master drainage planning and additional floodplain delineations to identify and map the flood hazards within the growth areas where no mapping currently exists.

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NOAA, National Weather Service Forecast Office – Tucson, 2011, website data accessed via the following URL: http://www.wrh.noaa.gov/twc/hydro/floodhis.php

U.S. Dept of Commerce, National Climatic Data Center, 2010, Storm Events Database, accessed via the following URL: http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms

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

Profile Maps

Maps 2A and 2D – County-Wide Flood Hazard Maps

Maps 2E and 2J – Community Wide Flood Hazard Maps

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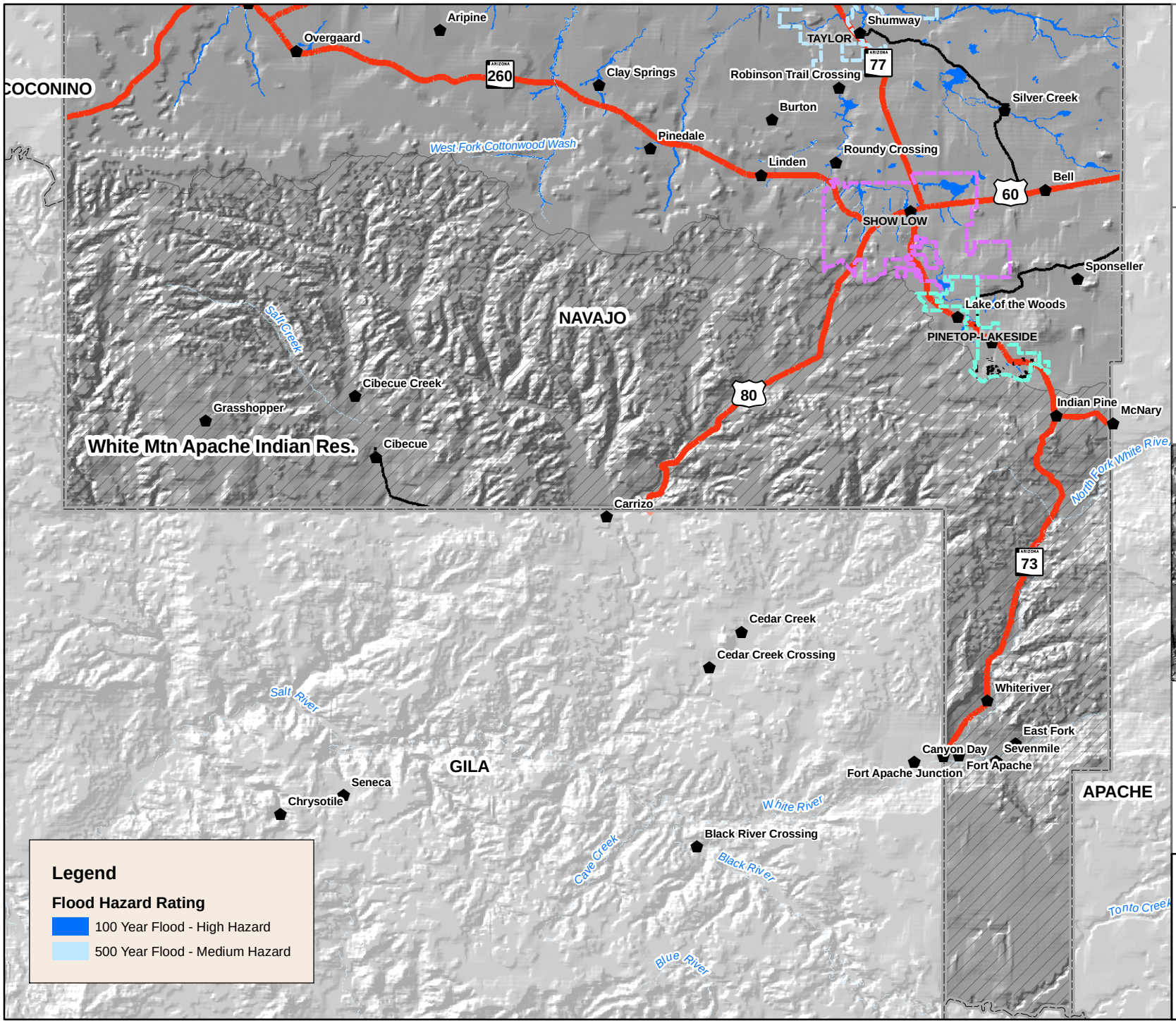
Navajo County Multi-Jurisdictional Hazard Mitigation Plan



Legend

- Cities and Places
- Watercourses

Communities

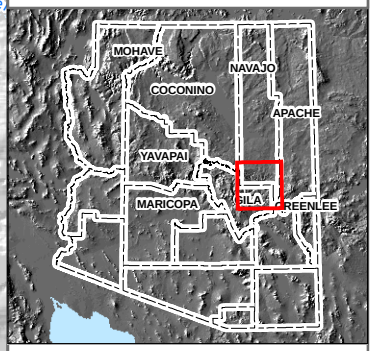
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW
- County Boundary

Roads

- Interstates
- Highways
- Arterials
- Other Reservations

Indian Reservations

- Hopi Indian Res.
- Indian Allotments
- Navajo Indian Res.
- Navajo-Hopi Joint Use Area

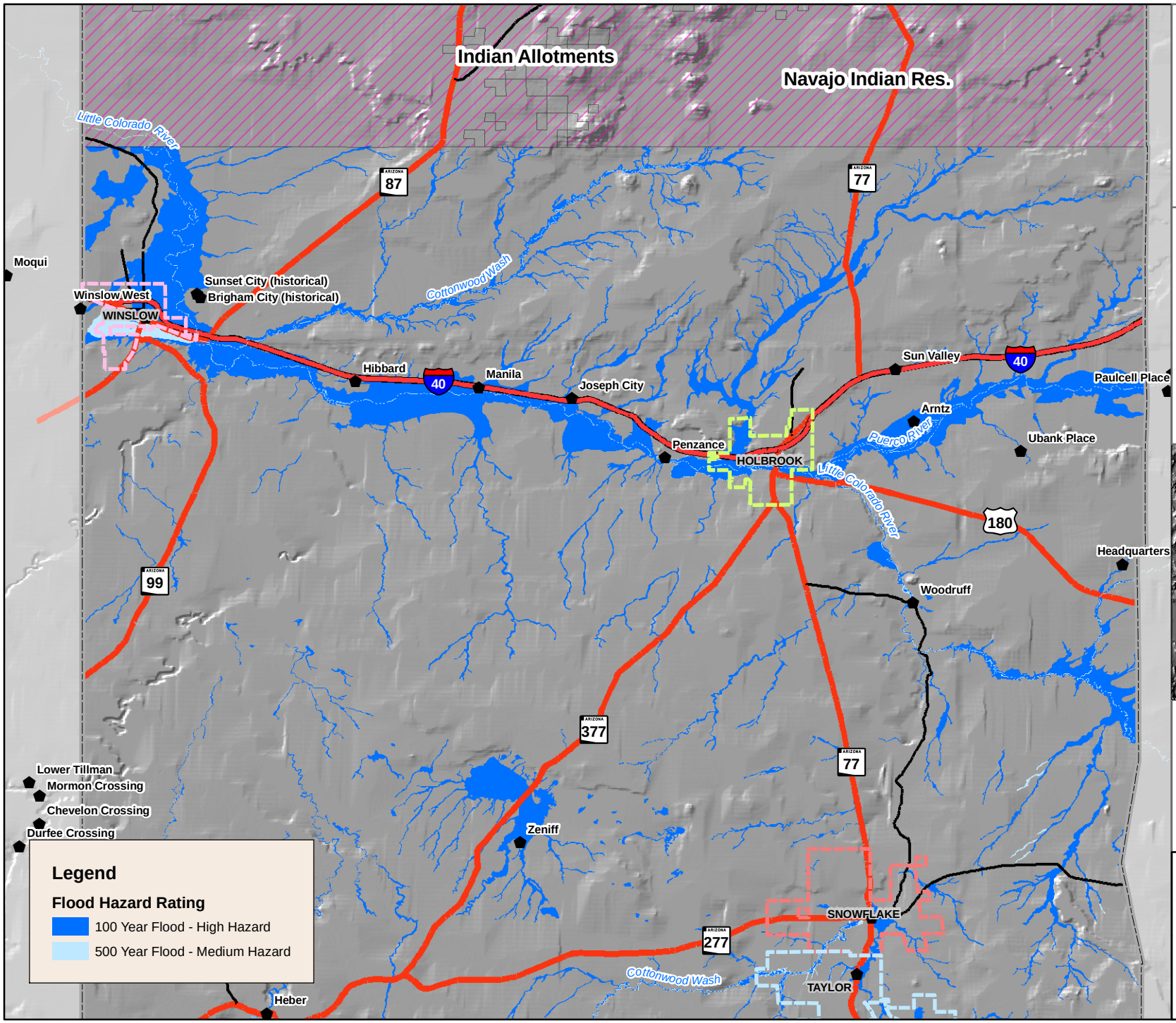


0 2 4 8 Miles

Map 2A
Navajo County
Flood Hazard Map
as of November 2010

Source: FEMA, 2009; JE FULLER 2010; ALRIS, 2010;

Navajo County Multi-Jurisdictional Hazard Mitigation Plan



Legend

- Cities and Places
- Watercourses

Communities

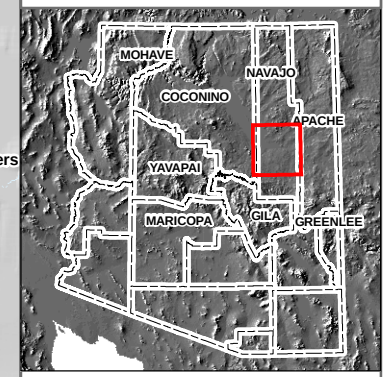
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW
- County Boundary

Roads

- Interstates
- Highways
- Arterials
- Other Reservations

Indian Reservations

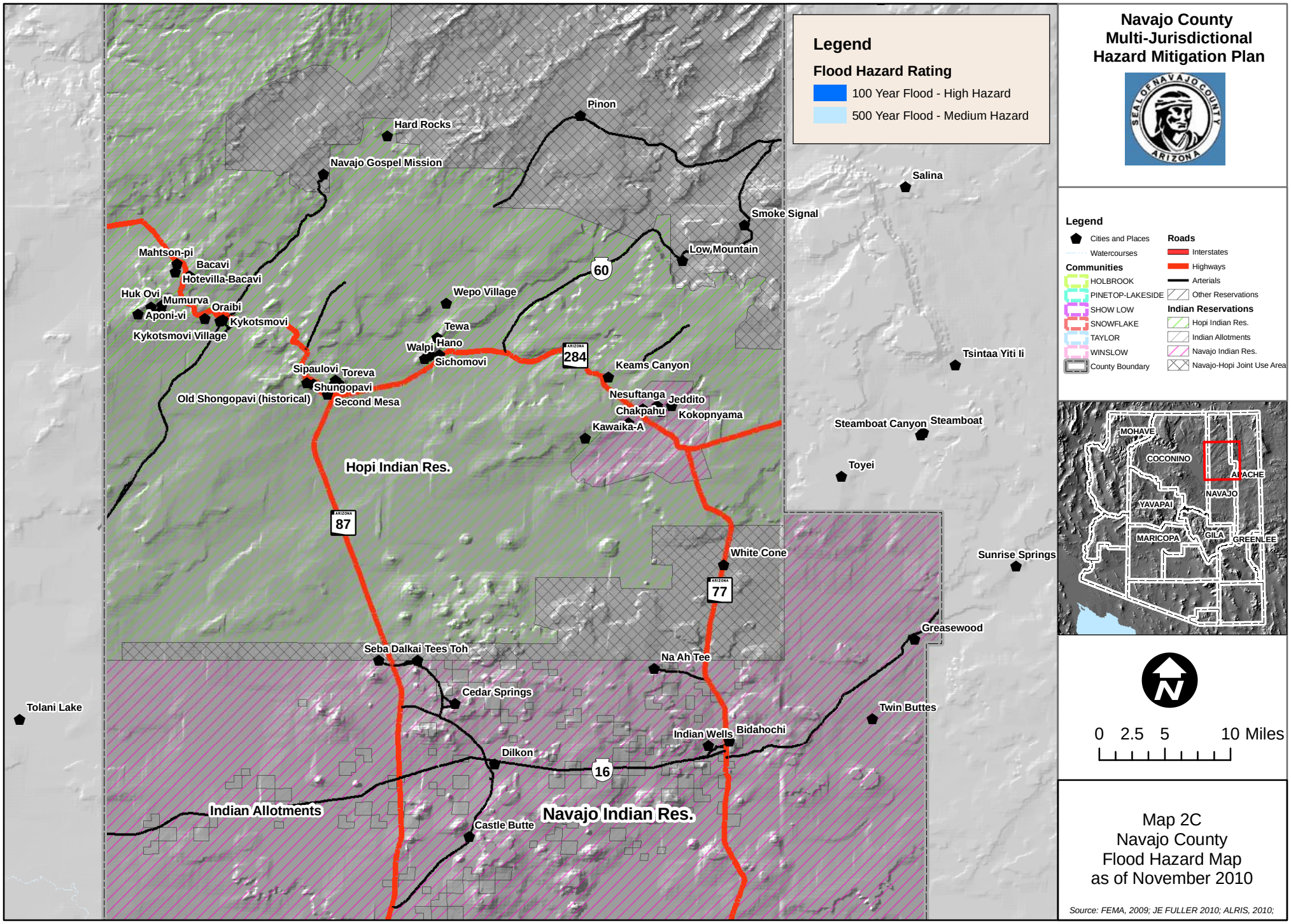
- Hopi Indian Res.
- Indian Allotments
- Navajo Indian Res.
- Navajo-Hopi Joint Use Area



0 2 4 8 Miles

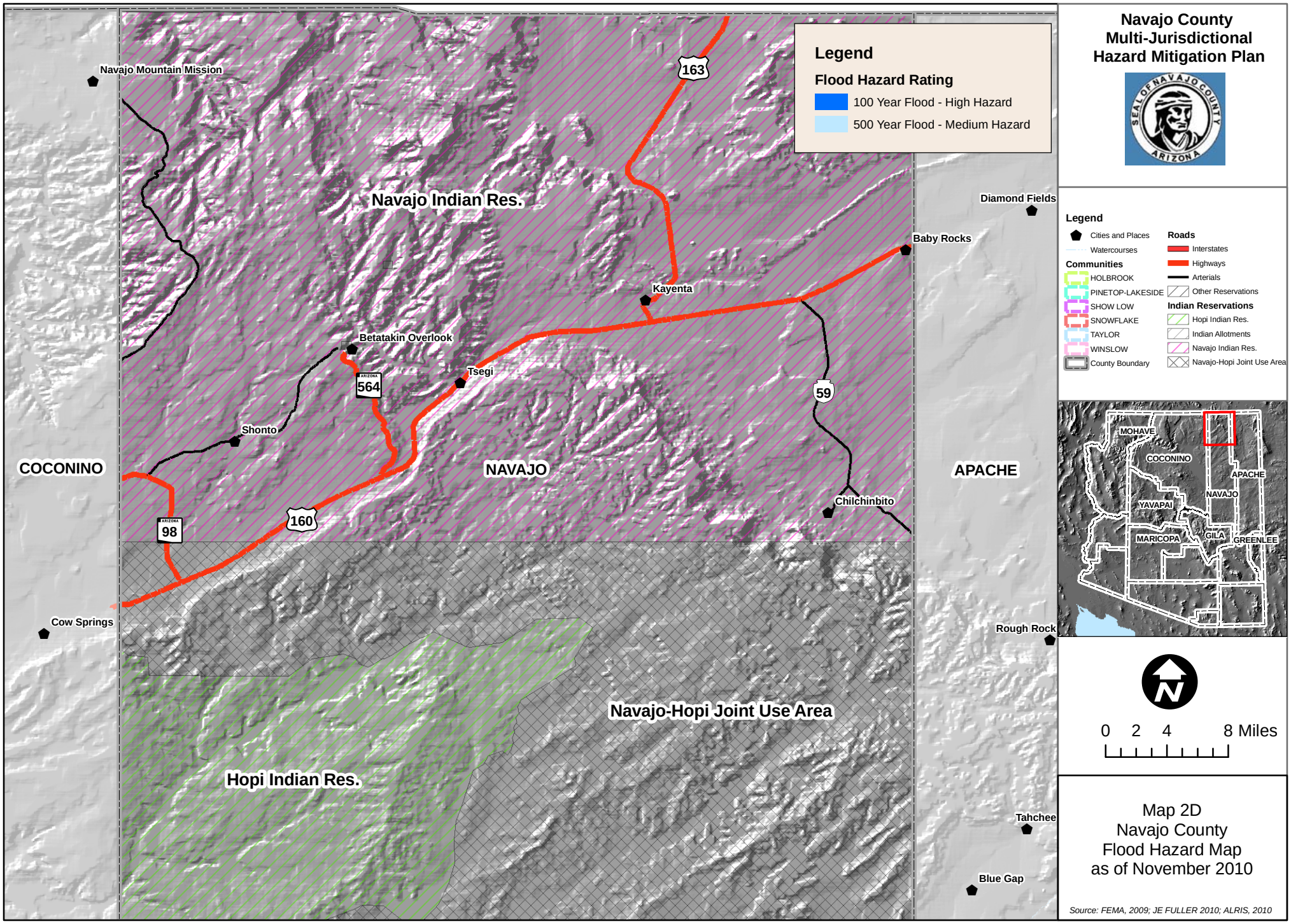
Map 2B
Navajo County
Flood Hazard Map
as of November 2010

Source: FEMA, 2009; JE FULLER 2010; ALRIS, 2010;



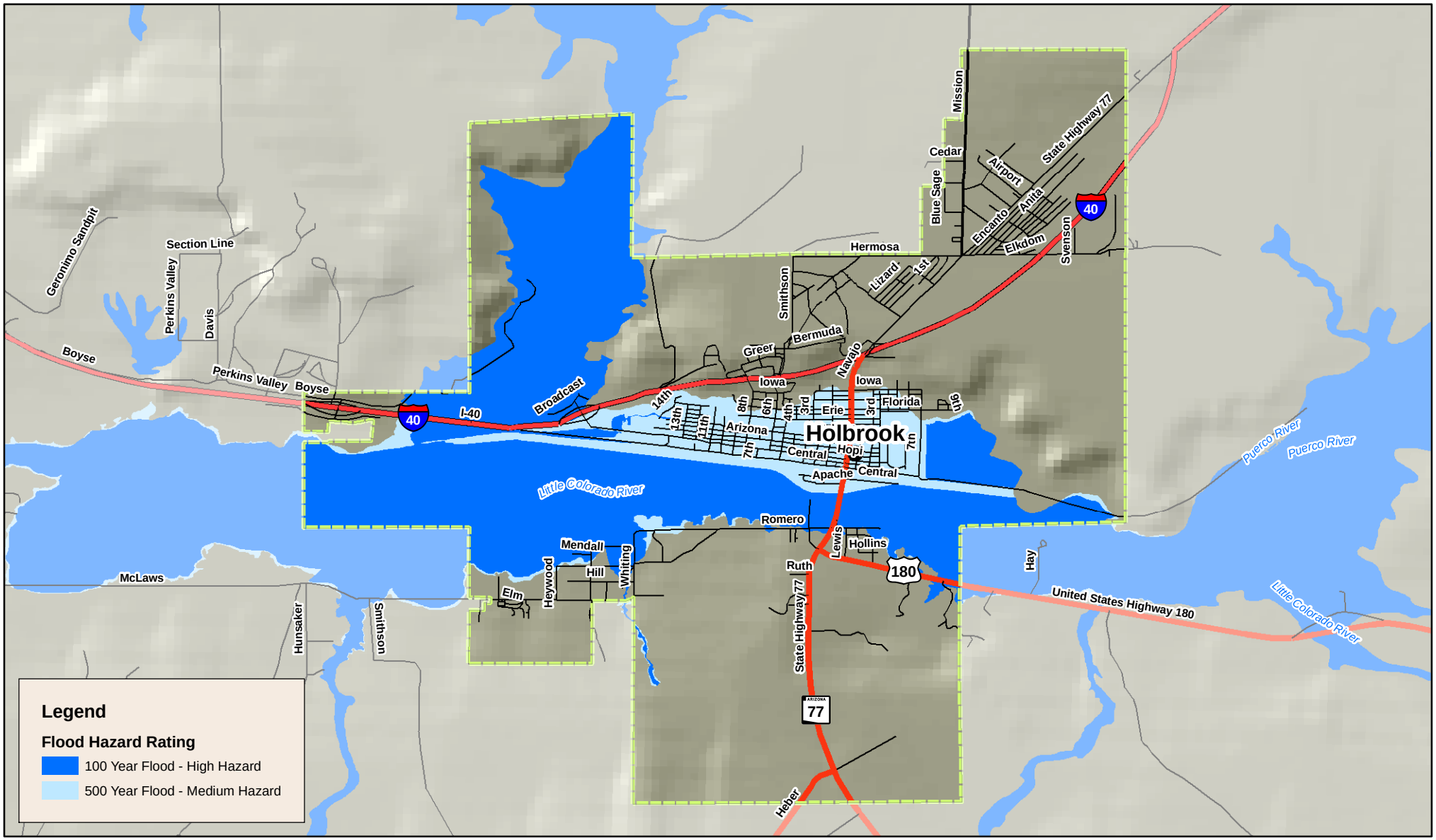
Map 2C
Navajo County
Flood Hazard Map
as of November 2010

Navajo County Multi-Jurisdictional Hazard Mitigation Plan



Map 2D
Navajo County
Flood Hazard Map
as of November 2010

Source: FEMA, 2009; JE FULLER 2010; ALRIS, 2010



Legend

Flood Hazard Rating

- 100 Year Flood - High Hazard
- 500 Year Flood - Medium Hazard

Legend

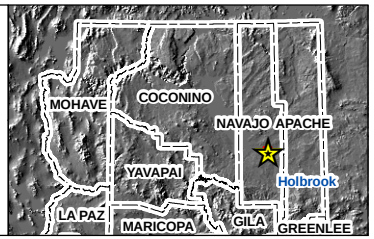
Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW

Roads
- Interstate
- US, State, County Hwys
- Major Roads
- Local Street

- Cities, Towns, Places
- Watercourses
- Indian Reservation
- County Boundary

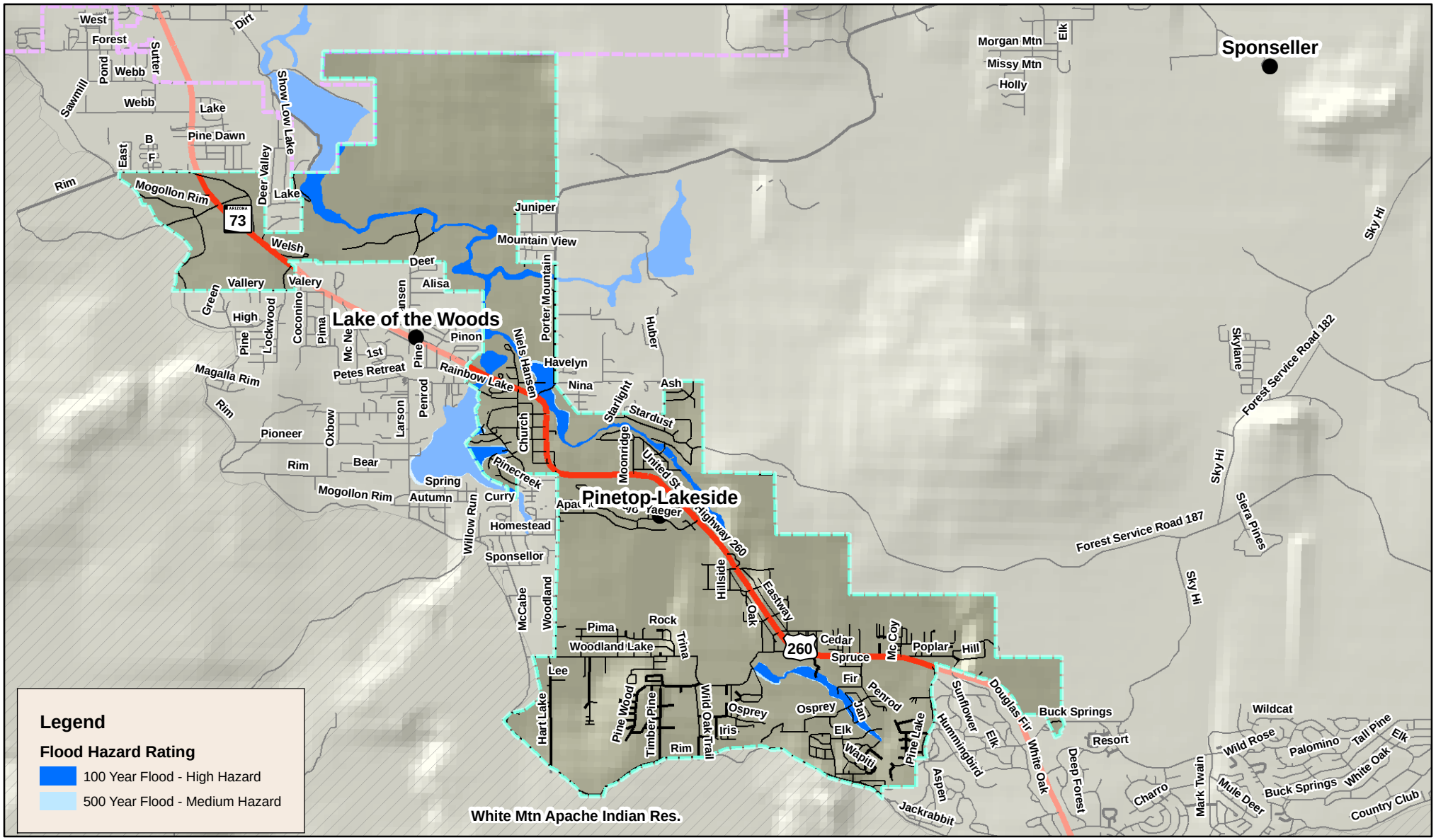
0 0.25 0.5 1 Miles

Source: FEMA, 2009; JE FULLER 2010; ALRIS, 2010



Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Map 2E
City of Holbrook
Flood
Hazard Map
as of November 2010



Legend

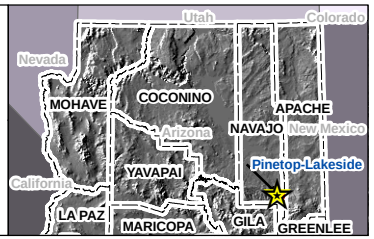
Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW

Roads
- Interstate
- US, State, County Hwys
- Major Roads
- Local Street

- Cities, Towns, Places
- Watercourses
- Indian Reservation
- County Boundary

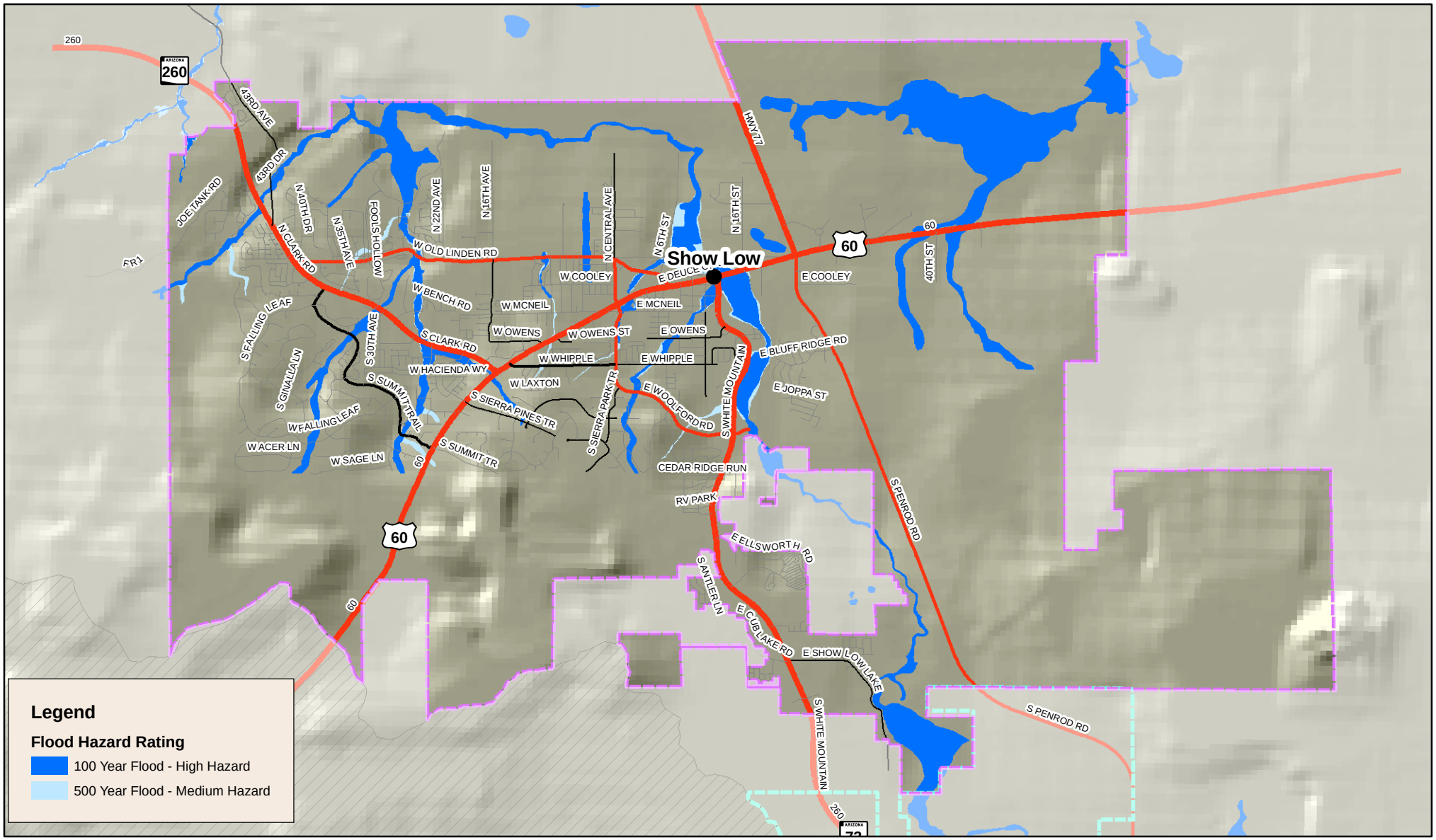
0 0.375 0.75 1.5 Miles

Source: FEMA, 2009; JE FULLER 2010; ALRIS, 2010;



Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Map 2F
Town of Pinetop-Lakeside Flood Hazard Map
as of November 2010



Legend

Communities

- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW

Cities, Towns, Places

ROAD CLASS

- MAJOR ARTERIAL
- MINOR ARTERIAL
- MAJOR COLLECTOR
- MINOR COLLECTOR
- LOCAL;

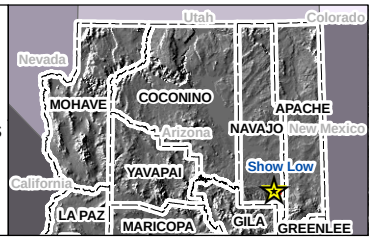
Watercourses

County Boundary

Indian Reservation

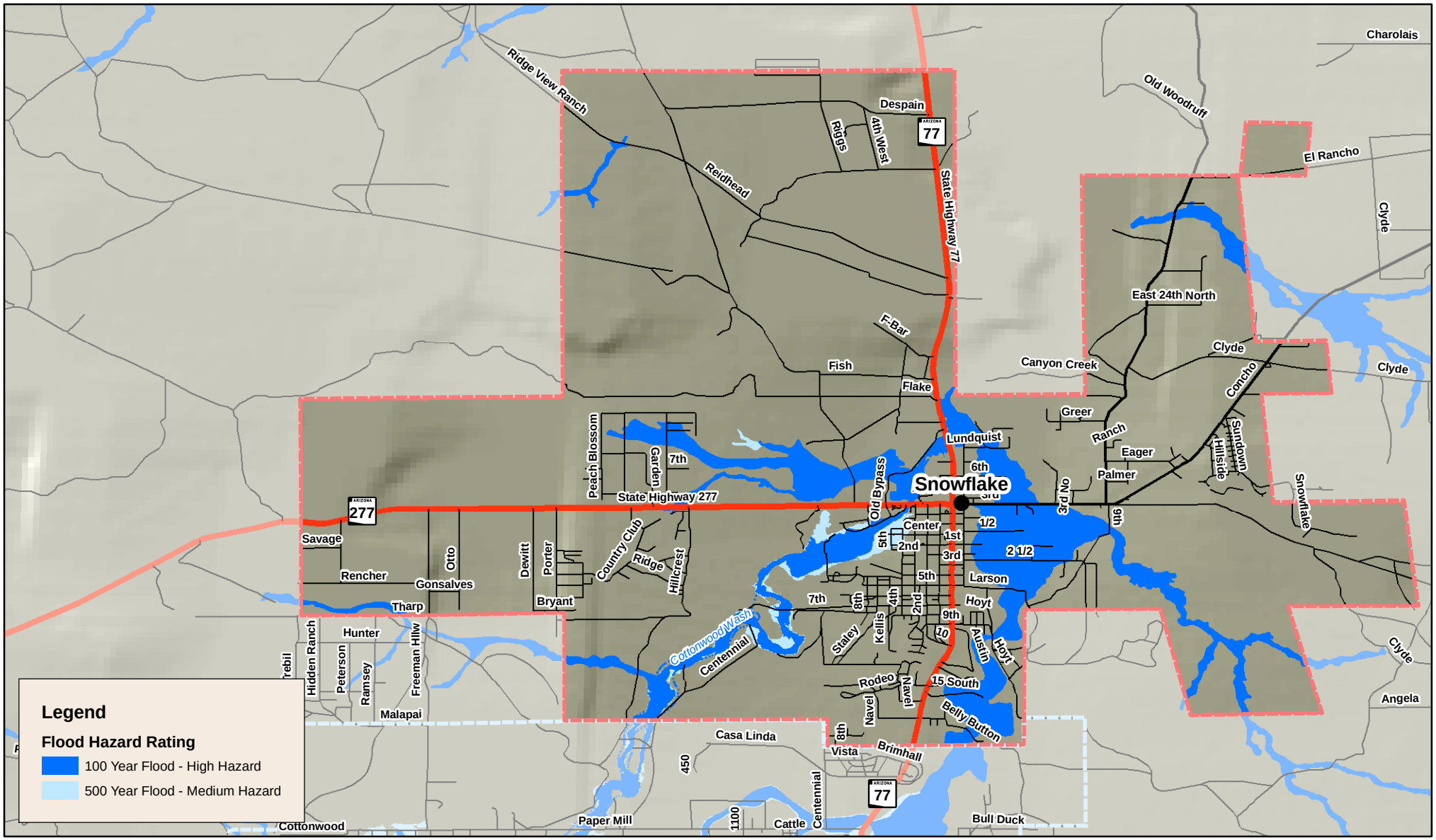
0 0.45 0.9 1.8 Miles

Source: FEMA, 2009; JE FULLER 2010; ALRIS, 2010;



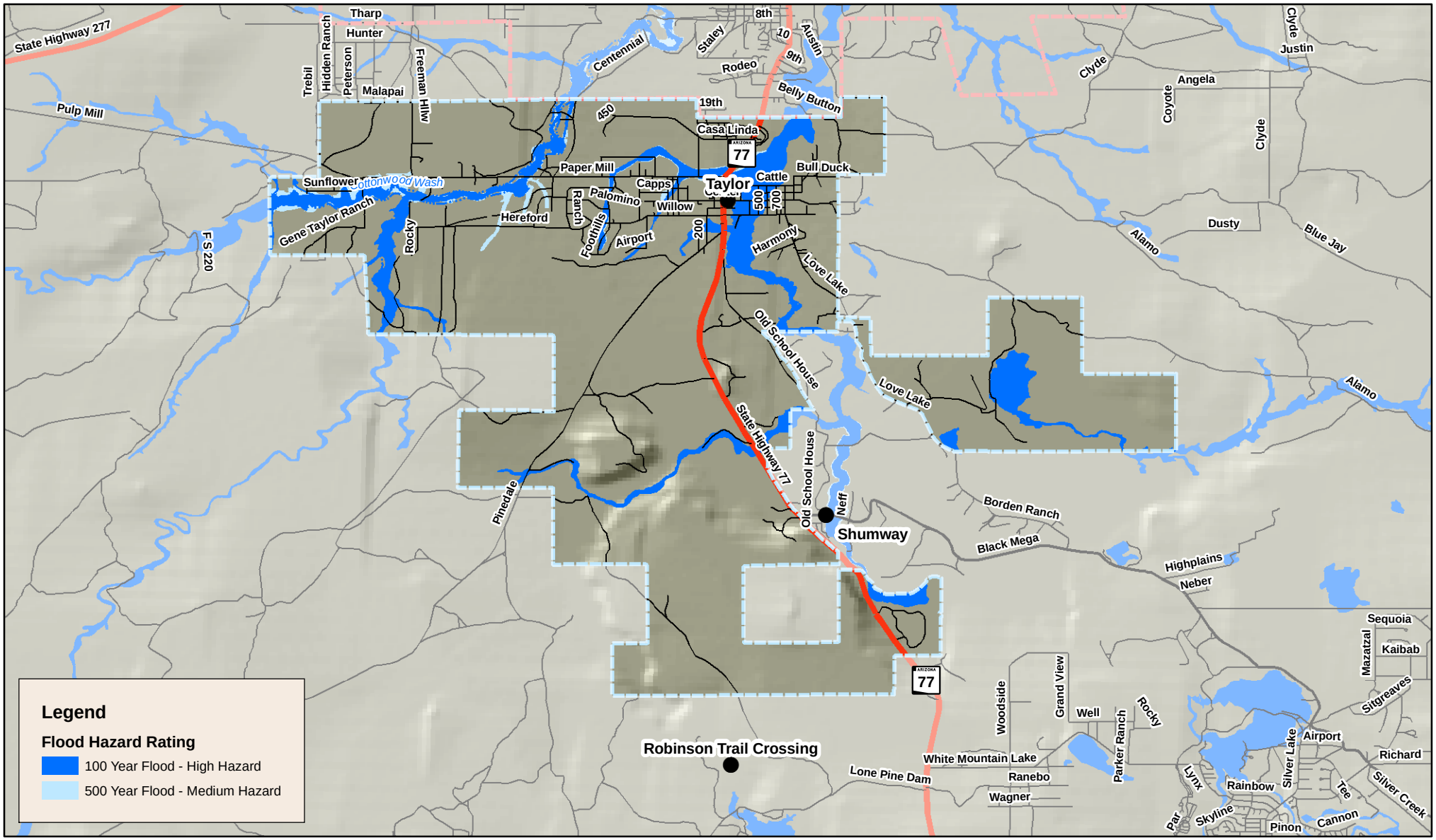
Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Map 2G
City of Show Low
Flood
Hazard Map
as of November 2010



Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Map 2H
Town of Snowflake
Flood
Hazard Map
as of November 2010



Legend

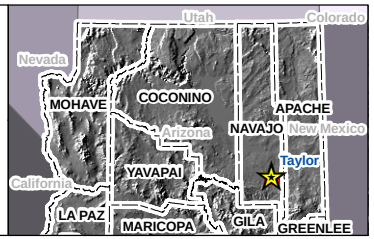
Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW

Roads
- Interstate
- US, State, County Hwys
- Major Roads
- Local Street

- Cities, Towns, Places
- Watercourses
- County Boundary
- Indian Reservation

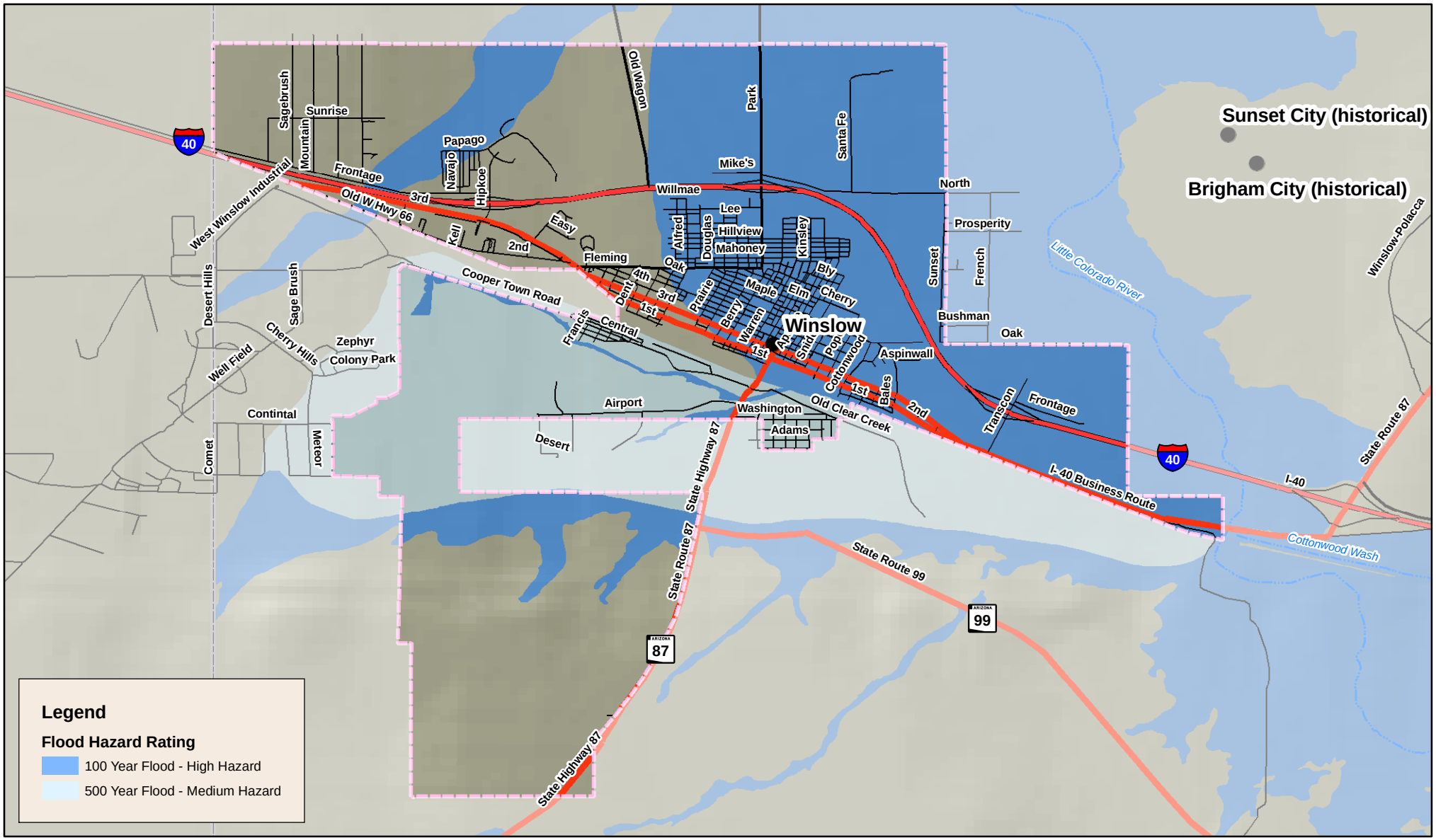
0 0.5 1 2 Miles

Source: FEMA, 2009; JE FULLER 2010; ALRIS, 2010



Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Map 2I
Town of Taylor
Flood
Hazard Map
as of November 2010



Legend

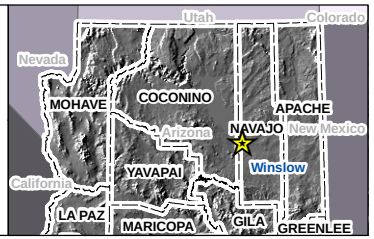
Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW

Roads
- Interstate
- US, State, County Hwys
- Major Roads
- Local Street

- Cities, Towns, Places
- Watercourses
- Indian Reservation
- County Boundary

0 0.25 0.5 1 Miles

Source: FEMA, 2009; JE FULLER 2010; ALRIS, 2010



Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Map 2J
City of Winslow
Flood
Hazard Map
as of November 2010

5.3.4 Hazardous Materials Incidents

Description

The threat of exposure to Hazardous Materials (HAZMAT) in our modern society is prevalent nationwide and throughout Navajo County. HAZMAT incidents can occur from either point source spills or from transportation related accidents. In Navajo County, the primary areas of risk associated with HAZMAT incidents are located near or along Tier II facilities, major roads and rail lines, and pipelines that transport hazardous substances. These substances may be highly toxic, reactive, corrosive, flammable, explosive, radioactive or infectious, with potential to contaminate air, soil, and water resources and pose a serious risk to life, health, environment and property. HAZMAT incidents can result in the evacuation of a few people, a specific facility, or an entire neighborhood(s) depending on the size and magnitude of the release and environmental conditions.

The Arizona State Emergency Response Commission (AZSERC), established by Arizona Law (Arizona Revised Statutes-Title 26, Chapter 2, Article 3) is tasked with the implementation of the Emergency Planning and Community Right to Know Act (EPCRA) in Arizona. Local Emergency Planning Committees (LEPC) are appointed by AZSERC, as required by EPCRA, first to design, then to regularly review and update a comprehensive emergency plan for an emergency planning district. There are 15 LEPC's in Arizona - one in each county.

State statutes and Sections 311 and 312 of EPCRA set forth hazardous chemical storage reporting requirements and thresholds for facilities possessing hazardous materials. The legislation requires that facilities storing or producing hazardous materials in quantities that exceed a defined Threshold Planning Quantity (TPQ), submit an annual chemical inventory report (Tier II Hazardous Chemical Inventory Form) to AZSERC, the appropriate LEPC, and local fire department, by March 1 of each year. Facilities holding an Extremely Hazardous Substance (EHS) at quantities exceeding the Threshold Planning Quantities (TPQ) must provide the notifications as well as a representative to participate in the county emergency planning process.

For the purposes of this Plan, the Planning Team chose to focus only on those HAZMAT facilities and chemicals that are classified by the Environmental Protection Agency (EPA) as extremely hazardous substances (EHS) Typical EHS materials transported and stored routinely in the county include chlorine gas, sulphuric acid, and hydrogen flouride.

History

Navajo County has a history of HAZMAT incidents as shown in Table 5-4. There have been at least 13 non-declared HAZMAT incidents reported that met the thresholds outlined in Section 5.1 with a total of 140 injuries and $70,000 in damages. The National Response Center (NRC) received several dozens of calls regarding HAZMAT spills in Navajo County for fixed sites, mobile, rail lines, pipelines and aircraft. The following represent examples of HAZMAT incidents that has impacted the County:

- On September 18, 2000, in Fort Apache, it was discovered that students at the school secretly broke the tips off of many thermometers at the school over several weeks. Approximately 130 students and faculty have been exposed to mercury. Remedial action was taken to close the school and dorm areas. Testing was done and all contaminated clothing had been removed. (NRC, 2004).
- On April 12, 2006, a caller in Joseph City reported an increase "SSI Increase" to a continuous release report. The cause of this "SSI Increase" or Shield Source Incorporated increase is due to an increase of fluorine in the coal. The material is releasing from four boilers stacks. The increase actually occurred sometime in June 2005, but the caller discovered the increase today at 1650. The new range for this release is 1,493 pounds per day which use to be 707 pounds per day. The name of the material is hydrofluoric acid. (NRC, 2006)

- On September 22, 2010, a caller reported that the county put oil down on Pinedale Road and 129 Road in a way that did not settle onto the roadway. As a result of heavy rain, the oil is releasing into the watershed. The caller stated that when he spoke to officials they stated that the oil formula was not right and that they are in the process of placing sand on the spill. (NRC, 2010)

Probability and Magnitude

There are no known probability statistics regarding HAZMAT incidents for Navajo County. The I-40 Commodity Flow Study (AMEC, 2004) identifies types and amounts of HAZMAT materials that are transported along the I-40 corridor by road and rail. No statistics were developed with this study, however.

Typically, the magnitude of impact from a HAZMAT incident can be projected by using models such as ALOHA and CAMEO with assumed incident characteristics such as chemical type and source amount, spill location and amount, release time and rate, surface type, temperature, humidity, wind direction and speed, chemical stability factors. Those modeling efforts, however, are beyond the scope of this Plan.

For the purpose of this Plan, the Planning Team chose to establish two (2) hazard classifications, high and medium, for profiling EHS hazards. High hazard exposure areas are assumed to be located within a one-mile radius or offset of any Tier II EHS facility, roadway and railway transportation corridor where EHS materials are known to be stored or transported on a somewhat regular basis. Similarly, the medium hazard exposure areas are assumed to be located within a second one-mile wide band that is offset from the High hazard area. All other areas are considered to be Low hazard.

Maps 3A through 3D show the HAZMAT hazard areas for the entire county. Maps 3E through 3J show the HAZMAT hazard areas for Holbrook, Pinetop-Lakeside, Show Low, Snowflake, Taylor, and Winslow, respectively.

Vulnerability – CPRI Results

Flooding CPRI results for each community are summarized in Table 5-34 below.

Table 5-35: CPRI results by jurisdiction for flooding

Participating Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Holbrook	Likely	Limited	< 6 hours	< 24 hours	2.75
Show Low	Possibly	Critical	< 6 hours	< 24 hours	2.60
Snowflake	Possibly	Critical	< 6 hours	< 1 week	2.70
Taylor	Possibly	Limited	< 6 hours	< 24 hours	2.30
Winslow	Likely	Catastrophic	6 - 12 hours	> 1 week	3.40
Unincorporated Navajo County	Likely	Critical	< 6 hours	< 24 hours	3.05
				County-wide average CPRI =	**2.80**

NOTE: Pinetop-Lakeside did not provide data

Vulnerability – Loss Estimations

The estimation of potential exposure to High and Medium HAZMAT hazards was accomplished by intersecting the human and critical facility assets with the HAZMAT hazard limits depicted on Maps 3A, 3B, 3C and 3D. Table 5-36 summarizes the Planning Team identified critical facilities potentially exposed to High and Medium HAZMAT hazards, and the corresponding estimates of losses. Table 5-37 summarizes population sectors exposed to the High and Medium HAZMAT hazards. HAZUS residential, commercial and industrial exposures and loss estimates to high and medium HAZMAT hazards are summarized in Tables 5-38 through 5-45.

In summary, $2.2 billion and $38 million in county-wide assets are exposed for High and Medium HAZMAT hazards, for all the participating jurisdictions in Navajo County. An additional $5.3 billion and $888 million in High and Medium exposure to HAZUS defined residential, commercial, and

industrial facilities is estimated for all participating Navajo County jurisdictions. Regarding human vulnerability, a total population of 62,460 people, or 64% of the total population, is potentially exposed to a High hazard HAZMAT event. A total population of 10,228 people, or 10.5% of the total population, is potentially exposed to a Medium hazard HAZMAT event. It is recognized that EHS incidents typically occur in a single localized area and do not impact an entire county or community at one time. These numbers are intended to represent the collective community or county-wide exposure. Actual losses for an individual incident are likely to be only a fraction of the numbers presented here. Because of the nature of this hazard, structural damage is highly unlikely and decontamination costs related to replacements cost would only be a small fraction. Accordingly, no structural losses due to damages are made in this Plan.

Table 5-36: Asset inventory exposure to high and medium hazard HAZMAT and corresponding loss estimates

Community	Total Facilities Reported by Community	Impacted Facilities	Percentage of Total Community Facilities Impacted	Estimated Replacement Cost (x$1000)	Estimated Structure Loss (x$1000)
HIGH					
County-Wide Totals	**422**	**389**	**92.18%**	**$2,243,977**	**None Estimated**
Holbrook	23	22	95.65%	$60,173	None Estimated
Pinetop-Lakeside	44	41	93.18%	$41,315	None Estimated
Show Low	111	109	98.20%	$328,680	None Estimated
Snowflake	42	39	92.86%	$135,760	None Estimated
Taylor	29	23	79.31%	$16,353	None Estimated
Unincorporated	114	100	87.72%	$1,427,194	None Estimated
Winslow	59	55	93.22%	$234,503	None Estimated
MEDIUM					
County-Wide Totals	**422**	**18**	**4.27%**	**$38,122**	**None Estimated**
Holbrook	23	1	4.35%	$250	None Estimated
Pinetop-Lakeside	44	3	6.82%	$0	None Estimated
Show Low	111	2	1.80%	$5,075	None Estimated
Snowflake	42	1	2.38%	$100	None Estimated
Taylor	29	3	10.34%	$2,000	None Estimated
Unincorporated	114	5	4.39%	$29,497	None Estimated
Winslow	59	3	5.08%	$1,200	None Estimated

Table 5-37: Population sectors exposed to high and medium hazard HAZMAT

Community	Total Population	Population Exposed	Percent of Population Exposed	Total Population Over 65	Population Over 65 Exposed	Percent of Population Over 65 Exposed	Total Incomes Under $20K	Incomes Under $20K Exposed	Percent of Incomes Under $20K Exposed
HIGH									
County-Wide Totals	**97,467**	**62,460**	**64.08%**	**9,173**	**6,276**	**68.42%**	**10,477**	**6,165**	**58.84%**
Holbrook	4,891	4,889	99.96%	441	441	99.96%	509	509	99.95%
Hopi Indian Res.	5,859	4,537	77.43%	476	355	74.49%	808	602	74.48%
Navajo Indian Res.	16,587	6,455	38.92%	1,010	240	23.74%	2,042	628	30.75%
Navajo-Hopi Joint Use Area	10,233	630	6.16%	667	52	7.73%	1,431	83	5.77%
Pinetop-Lakeside	3,563	3,081	86.47%	547	456	83.29%	292	258	88.54%
Show Low	8,011	7,502	93.64%	1,134	1,053	92.85%	774	735	94.97%
Snowflake	4,433	4,077	91.98%	498	464	93.21%	286	244	85.09%
Taylor	3,200	2,301	71.92%	283	211	74.47%	253	183	72.29%
Unincorporated	20,589	12,687	61.62%	2,837	1,875	66.09%	1,885	1,206	63.97%
White Mtn. Apache Indian Res.	10,598	7,080	66.81%	346	198	57.39%	1,338	862	64.39%
Winslow	9,503	9,221	97.03%	935	933	99.79%	860	857	99.66%
MEDIUM									
County-Wide Totals	**97,467**	**10,228**	**10.49%**	**9,173**	**1,029**	**11.22%**	**10,477**	**1,037**	**9.90%**
Holbrook	4,891	2	0.04%	441	0	0.03%	509	0	0.05%
Hopi Indian Res.	5,859	691	11.79%	476	57	12.04%	808	88	10.86%
Navajo Indian Res.	16,587	2,523	15.21%	1,010	172	17.01%	2,042	330	16.14%
Navajo-Hopi Joint Use Area	10,233	298	2.92%	667	25	3.75%	1,431	31	2.19%
Pinetop-Lakeside	3,563	482	13.52%	547	91	16.70%	292	33	11.46%
Show Low	8,011	509	6.36%	1,134	81	7.15%	774	39	5.03%
Snowflake	4,433	202	4.57%	498	19	3.79%	286	23	7.86%
Taylor	3,200	487	15.22%	283	38	13.39%	253	38	15.01%
Unincorporated	20,589	3,180	15.45%	2,837	484	17.05%	1,885	248	13.13%
White Mtn. Apache Indian Res.	10,598	1,570	14.81%	346	60	17.23%	1,338	205	15.29%
Winslow	9,503	282	2.97%	935	2	0.21%	860	3	0.34%

Table 5-38: Navajo County HAZUS building exposure to HAZMAT

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Navajo 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	**51,850**	**$6,202,174**	**1,275**	**$1,252,229**	**347**	**$213,620**	**$7,668,023**		
High Hazard Exposure	33,242	$4,121,722	1,050	$1,043,778	273	$172,275	$5,337,776	%	$0
Medium Hazard Exposure	5,831	$797,500	74	$81,528	30	$9,364	$888,392	%	$0
Navajo County HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	64.11%	66.46%	82.37%	83.35%	78.61%	80.65%			
Medium Hazard Exposure	11.25%	12.86%	05.82%	06.51%	08.51%	04.38%			

Table 5-39: Holbrook HAZUS building exposure to HAZMAT

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Holbrook 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	**2,413**	**$273,514**	**122**	**$80,723**	**8**	**$3,123**	**$357,360**		
High Hazard Exposure	2,412	$273,412	122	$80,722	8	$3,123	$357,256	%	$0
Medium Hazard Exposure	1	$102	0	$1	0	$0	$104	%	$0
Holbrook HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	99.96%	99.96%	99.99%	100.0%	100.0%	100.0%			
Medium Hazard Exposure	0.04%	0.04%	0.01%	0.0%	0.0%	0.0%			

Table 5-40: Pinetop-Lakeside HAZUS building exposure to HAZMAT

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Pinetop-Lakeside 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	**2,844**	**$417,321**	**118**	**$103,019**	**37**	**$19,955**	**$540,295**		
High Hazard Exposure	2,460	$367,698	116	$102,264	33	$18,338	$488,300	%	$0
Medium Hazard Exposure	384	$49,613	2	$755	4	$1,617	$51,985	%	$0
Pinetop-Lakeside HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	86.51%	88.11%	98.25%	99.27%	90.31%	91.90%			
Medium Hazard Exposure	13.49%	11.89%	01.75%	0.73%	09.69%	08.10%			

Table 5-41: Show Low HAZUS building exposure to HAZMAT

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Show Low 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	**4,527**	**$552,295**	**222**	**$254,372**	**61**	**$35,469**	**$842,136**		
High Hazard Exposure	4,237	$513,019	213	$250,039	58	$34,362	$797,421	%	$0
Medium Hazard Exposure	289	$39,276	8	$4,332	3	$1,107	$44,715	%	$0
Show Low HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	93.61%	92.89%	96.26%	98.30%	95.24%	96.88%			
Medium Hazard Exposure	06.39%	07.11%	03.74%	01.70%	04.76%	03.12%			

Table 5-42: Snowflake HAZUS building exposure to HAZMAT

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Snowflake 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	**1,783**	**$246,406**	**91**	**$58,891**	**44**	**$51,897**	**$357,193**		
High Hazard Exposure	1,652	$233,933	88	$58,238	42	$51,192	$343,364	%	$0
Medium Hazard Exposure	71	$7,077	2	$506	2	$704	$8,287	%	$0
Snowflake HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	92.65%	94.94%	96.55%	98.89%	95.0%	98.64%			
Medium Hazard Exposure	03.99%	02.87%	02.52%	0.86%	05.0%	01.36%			

Table 5-43: Taylor HAZUS building exposure to HAZMAT

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Taylor 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	**1,241**	**$132,621**	**43**	**$38,131**	**18**	**$11,106**	**$181,858**		
High Hazard Exposure	876	$95,143	40	$35,668	15	$10,587	$141,398	%	$0
Medium Hazard Exposure	209	$21,443	2	$1,852	2	$410	$23,705	%	$0
Taylor HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	70.64%	71.74%	93.67%	93.54%	85.39%	95.33%			
Medium Hazard Exposure	16.84%	16.17%	05.07%	04.86%	08.93%	03.69%			

Table 5-44: Unincorporated Navajo County HAZUS building exposure to HAZMAT

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Unincorporated (Navajo 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)**
Community-Wide Totals	**17,894**	**$2,349,535**	**366**	**$221,145**	**139**	**$58,452**	**$2,629,133**		
High Hazard Exposure	11,406	$1,451,110	237	$153,302	94	$44,181	$1,648,594	%	$0
Medium Hazard Exposure	3,008	$472,702	44	$25,495	17	$5,003	$503,200	%	$0
Unincorporated (Navajo County) HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	63.74%	61.76%	64.87%	69.32%	67.10%	75.59%			
Medium Hazard Exposure	16.81%	20.12%	12.13%	11.53%	12.44%	08.56%			

Table 5-45: Winslow HAZUS building exposure to HAZMAT

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Winslow 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	**4,135**	**$550,665**	**187**	**$151,016**	**18**	**$6,823**	**$708,504**		
High Hazard Exposure	4,125	$544,526	186	$150,755	18	$6,821	$702,102	%	$0
Medium Hazard Exposure	10	$6,139	1	$261	0	$2	$6,403	%	$0
Winslow HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	99.77%	98.89%	99.68%	99.83%	99.91%	99.96%			
Medium Hazard Exposure	0.23%	01.11%	0.32%	0.17%	0.09%	0.04%			

A summary comparison of the 2006 Plan county-wide HAZMAT vulnerability analysis results to the current plan is shown in Table 5-46. For this plan update, the planning team decided not to use exposure-to-loss ratio to determine the estimated losses as was done in the 2006 plan. Therefore, for the sake of comparison, the exposed asset replacement cost from the 2006 plans were used for the values in Table 5-46. Changes shown in Table 5-46 are a result of revisions to the Planning Team asset inventory (several replacement cost adjustments or additions were made to the 2006 Plan asset list as well as removal of all "non-critical" facilities), a different HAZMAT hazard layer, and a refinement of the GIS algorithms used to determine the HAZUS exposure..

Table 5-46: 2006 Plan county-wide HAZMAT vulnerability analysis comparison to the 2011 Plan estimates

Exposure	2006 Plan	2011 Plan
Assets: High Hazard	$3.8 Billion	$2.2 Billion
Assets: Medium Hazard	$54 Million	$38 Million
HAZUS Facilities: High Hazard	$5.7 Billion	$5.3 Billion
HAZUS Facilities: Medium Hazard	$808 Million	$888 Million
Human: High Hazard	63,135	62,460
Human: Medium Hazard	9,307	10,228

Vulnerability – Development Trends

As the vulnerability analysis indicates, much of Navajo County is exposed to some level of EHS threat and this is primarily due to the fact that populations are generally located along the same major road and rail corridors that transport HAZMAT. That exposure will only worsen as development increases. It may be advantageous to pursue designating certain roadways as EHS corridors to limit the exposure, and establishing buffer zones along corridors known to be frequent EHS transport routes. Development of high-density population land uses such as schools, nursing homes, apartment complexes, etc., should be discouraged within these zones.

EHS facilities that have potential for critical or catastrophic HAZMAT releases should be located on flat topography and take advantage of positive and protect against negative climate and microclimate conditions; utilize shading from excessive sun in warm climate and/or other best management practices.

Sources

AMEC Earth & Environmental, Inc., 2004, *Hazardous Material Commodity Flow Study, I-40 Corridor, Arterial Highways and Railway, Mohave, Coconino, Navajo and Apache Counties, Arizona.*

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

JE Fuller/ Hydrology & Geomorphology, 2006, *City of Holbrook Multi-Hazard Mitigation Plan*.

JE Fuller/ Hydrology & Geomorphology, 2006, *City of Show Low Multi-Hazard Mitigation Plan*.

JE Fuller/ Hydrology & Geomorphology, 2006, *City of Winslow Multi-Hazard Mitigation Plan*.

JE Fuller/ Hydrology & Geomorphology, 2006, *Navajo County Multi-Hazard Mitigation Plan*.

JE Fuller/ Hydrology & Geomorphology, 2006, *Town of Pinetop-Lakeside Multi-Hazard Mitigation Plan*.

JE Fuller/ Hydrology & Geomorphology, 2006, *Town of Snowflake Multi-Hazard Mitigation Plan*.

JE Fuller/ Hydrology & Geomorphology, 2006, *Town of Taylor Multi-Hazard Mitigation Plan*.

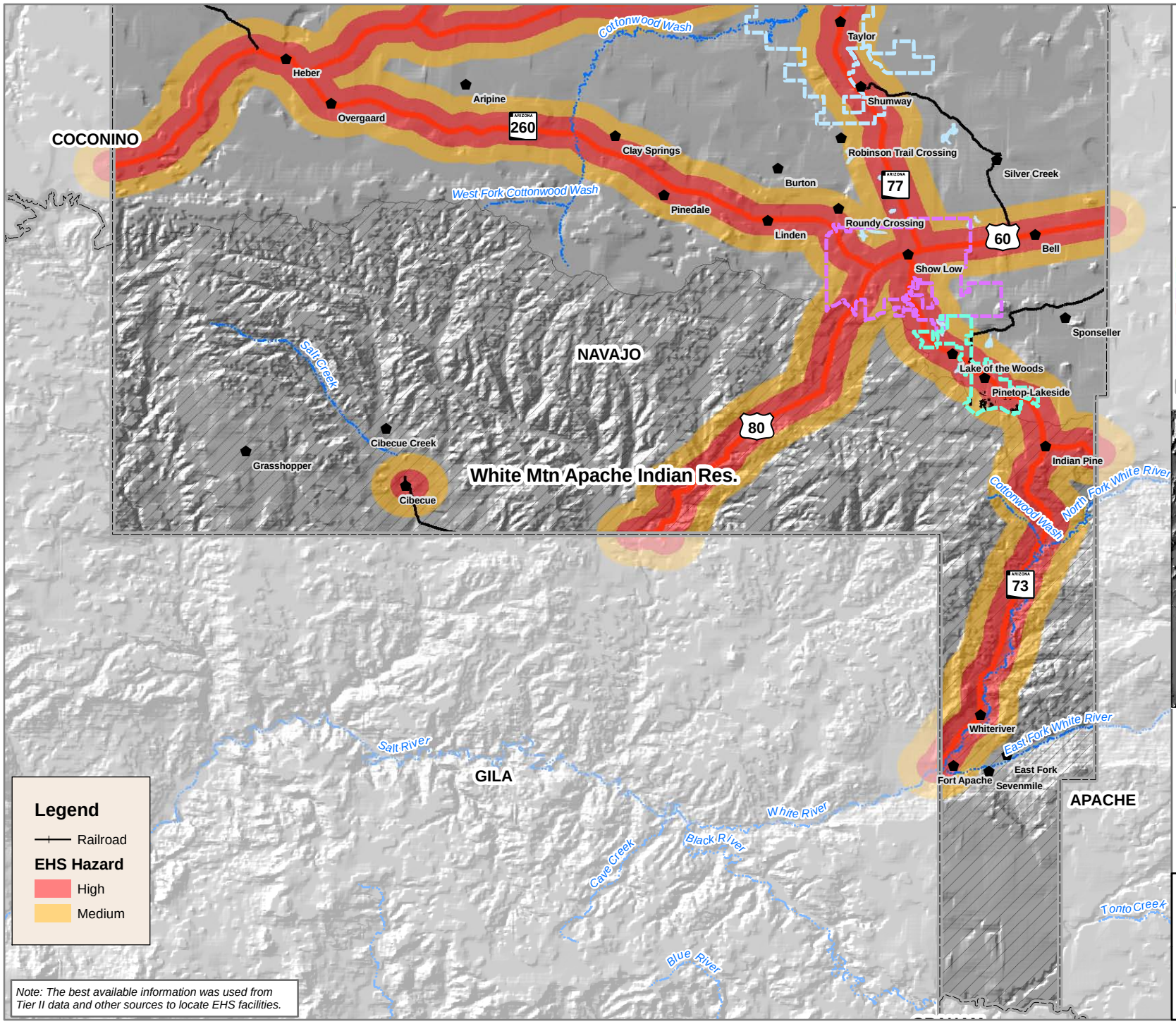
U.S. Department of Transportation, 1996, *North American Emergency Response Guidebook*.

Profile Maps

Maps 3A and 3D – County-Wide Hazardous Materials Hazard Maps

Maps 3E and 3J – Community Wide Hazardous Materials Hazard Maps

Navajo County Multi-Jurisdictional Hazard Mitigation Plan



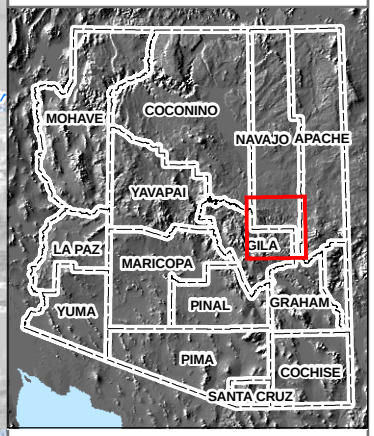
Note: The best available information was used from Tier II data and other sources to locate EHS facilities.

Legend

Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW
- Watercourses
- Lakes
- County Boundary

Roads
- Interstates
- Highways
- Arterials
- Other Reservations

Indian Reservations
- Hopi Indian Res.
- Indian Allotments
- Navajo Indian Res.
- Navajo-Hopi Joint Use Area

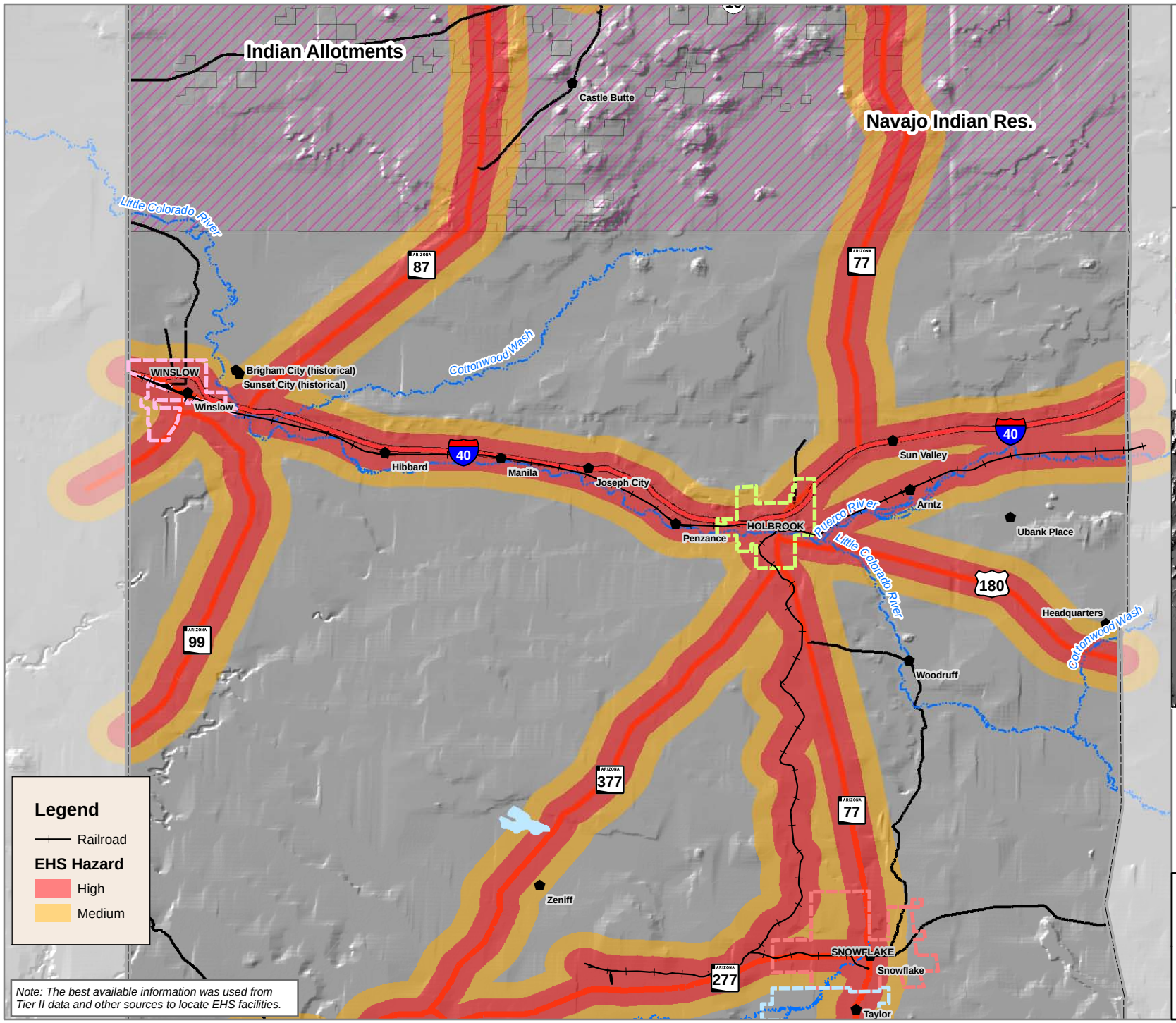


0 2 4 8 Miles

Map 3A
Navajo County
EHS HAZMAT
Hazard Map
as of December 2010

Source: Navajo County, 2010: ESRI, 2010
JE FULLER 2010; ALRIS, 2010

Navajo County Multi-Jurisdictional Hazard Mitigation Plan



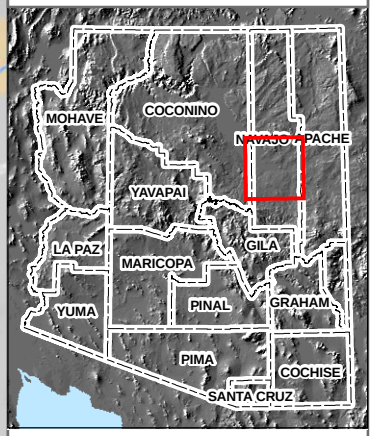
Note: The best available information was used from Tier II data and other sources to locate EHS facilities.

Legend

Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW
- Watercourses
- Lakes
- County Boundary

Roads
- Interstates
- Highways
- Arterials
- Other Reservations

Indian Reservations
- Hopi Indian Res.
- Indian Allotments
- Navajo Indian Res.
- Navajo-Hopi Joint Use Area

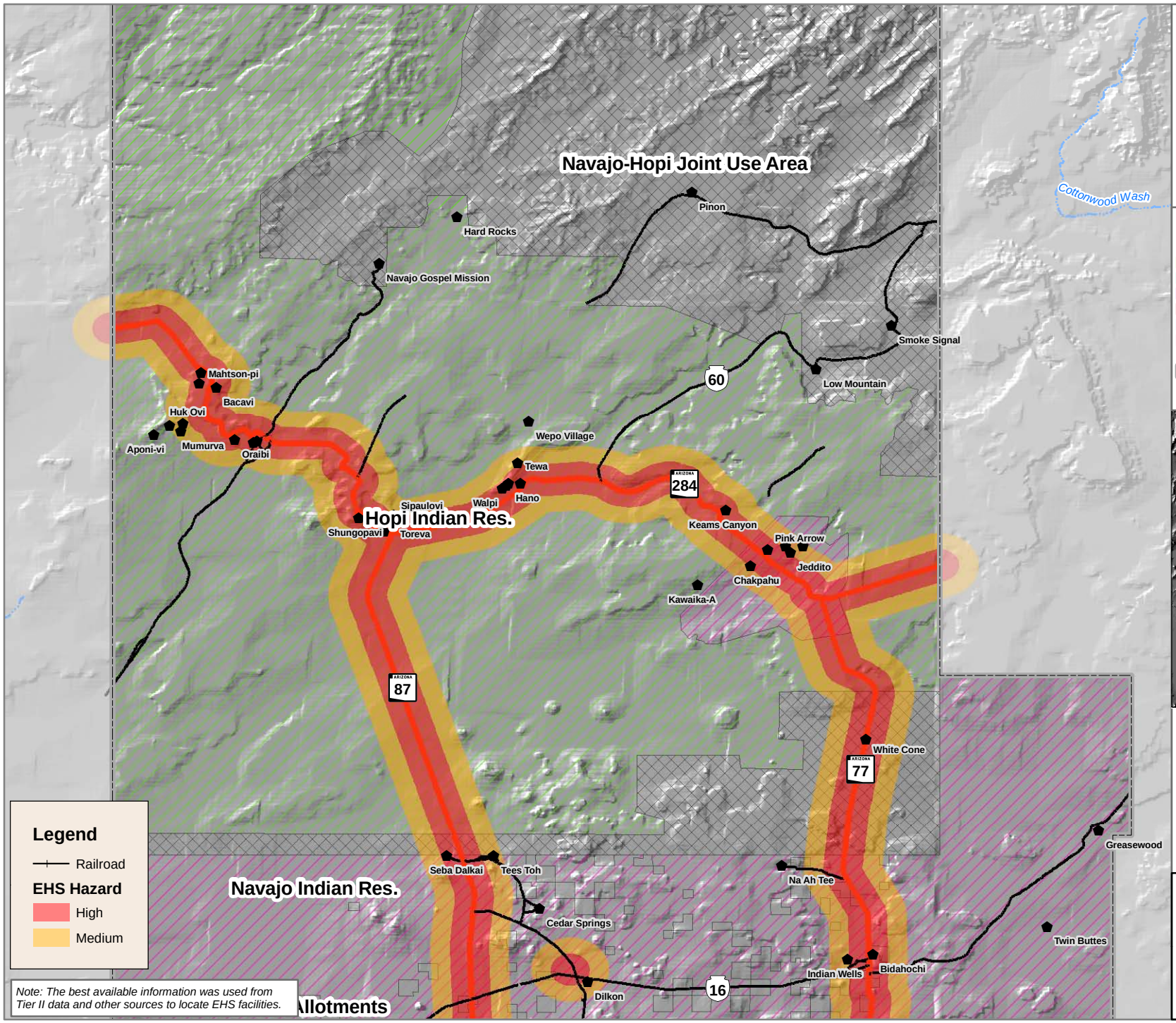


0 2 4 8 Miles

Map 3A
Navajo County
Hazardous Materials
Hazard Map
as of December 2010

Source: Navajo County, 2010: ESRI, 2010 JE FULLER 2010; ALRIS, 2010

Navajo County Multi-Jurisdictional Hazard Mitigation Plan



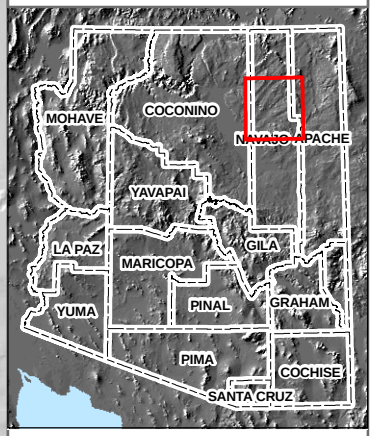
Note: The best available information was used from Tier II data and other sources to locate EHS facilities.

Legend

Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW
- Watercourses
- County Boundary

Roads
- Interstates
- Highways
- Arterials
- Other Reservations

Indian Reservations
- Hopi Indian Res.
- Indian Allotments
- Navajo Indian Res.
- Navajo-Hopi Joint Use Area

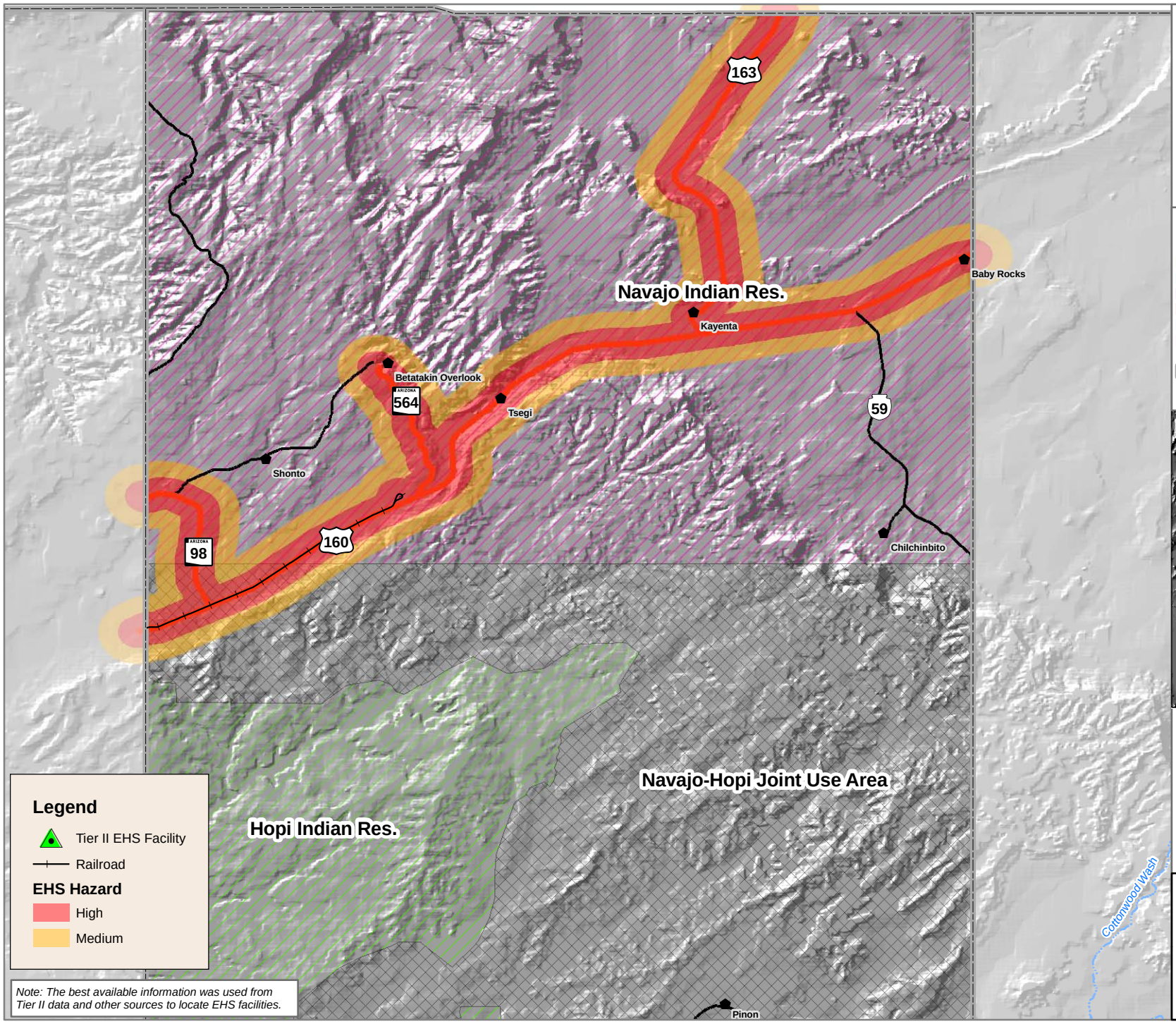


0 2 4 8 Miles

Map 3C
Navajo County
EHS HAZMAT
Hazard Map
as of December 2010

Source: Navajo County, 2010: ESRI, 2010
JE FULLER 2010; ALRIS, 2010

Navajo County Multi-Jurisdictional Hazard Mitigation Plan



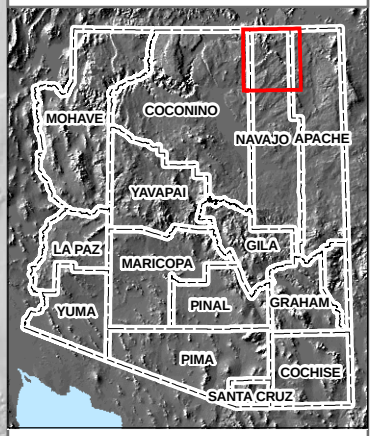
Note: The best available information was used from Tier II data and other sources to locate EHS facilities.

Legend

Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW
- Watercourses
- County Boundary

Roads
- Interstates
- Highways
- Arterials
- Other Reservations

Indian Reservations
- Hopi Indian Res.
- Indian Allotments
- Navajo Indian Res.
- Navajo-Hopi Joint Use Area



0 2 4 8 Miles

Map 3D
Navajo County
EHS HAZMAT
Hazard Map
as of December 2010

Source: Navajo County, 2010: ESRI, 2010
JE FULLER 2010; ALRIS, 2010

Legend

Railroad

EHS Hazard

High

Medium

Note: The best available information was used from Tier II data and other sources to locate EHS facilities.

Legend

Communities

HOLBROOK

PINETOP-LAKESIDE

SHOW LOW

SNOWFLAKE

TAYLOR

WINSLOW

Roads

Interstate

US, State, County Hwys

Major Roads

Local Street

Cities, Towns, Places

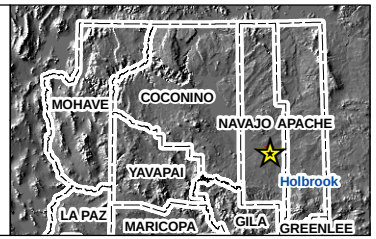
Watercourses

Indian Reservation

County Boundary

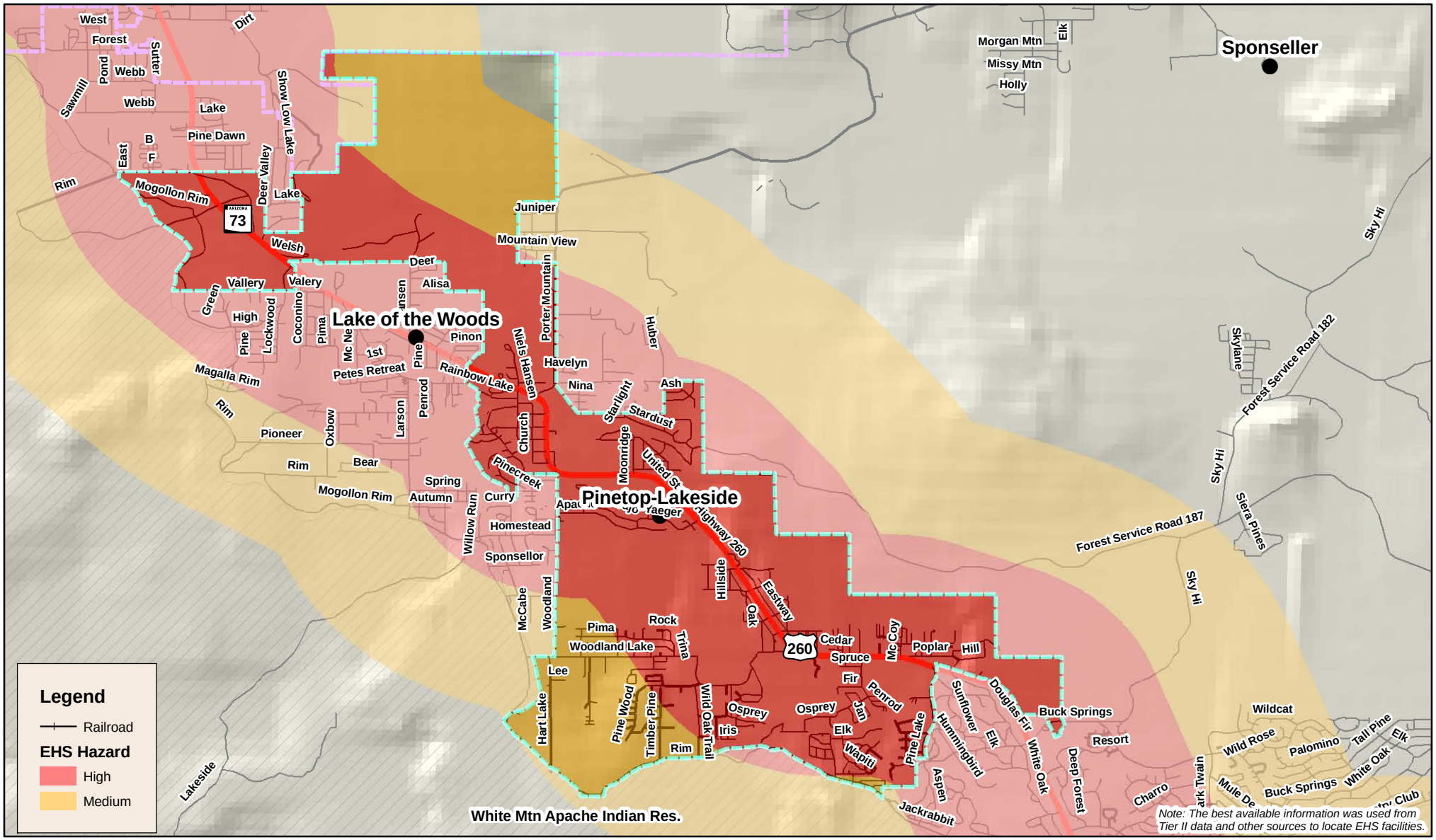
0 0.25 0.5 1 Miles

Source: Navajo County, 2010: ESRI, 2010
JE FULLER 2010; ALRIS, 2010



Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Map 3E
City of Holbrook
EHS HAZMAT
Hazard Map
as of December 2010



Legend

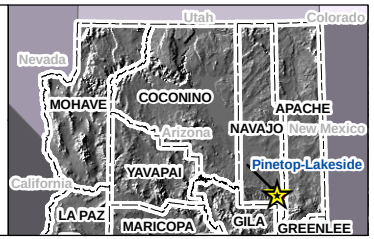
Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW

Roads
- Interstate
- US, State, County Hwys
- Major Roads
- Local Street

- Cities, Towns, Places
- Watercourses
- Indian Reservation
- County Boundary

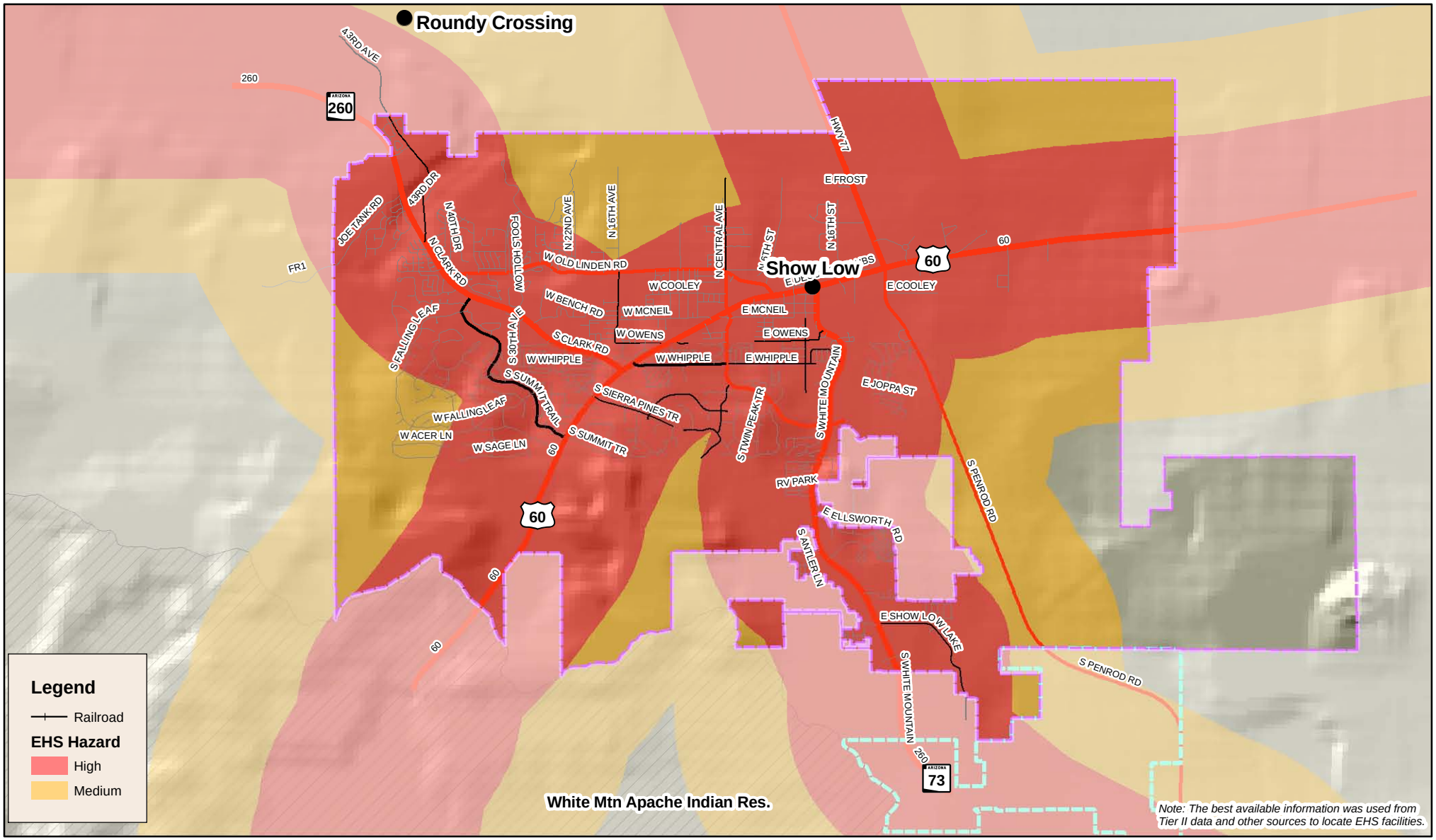
0 0.375 0.75 1.5 Miles

Source: Navajo County, 2010: ESRI, 2010
JE FULLER 2010; ALRIS, 2010



Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Map 3F
Town of Pinetop-Lakeside
EHS HAZMAT
Hazard Map
as of December 2010



Legend

Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW

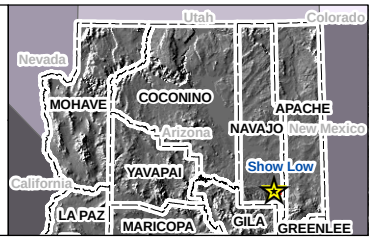
Cities, Towns, Places

ROAD CLASS
- MAJOR ARTERIAL
- MINOR ARTERIAL
- MAJOR COLLECTOR
- MINOR COLLECTOR
- LOCAL;

Watercourses
County Boundary
Indian Reservation

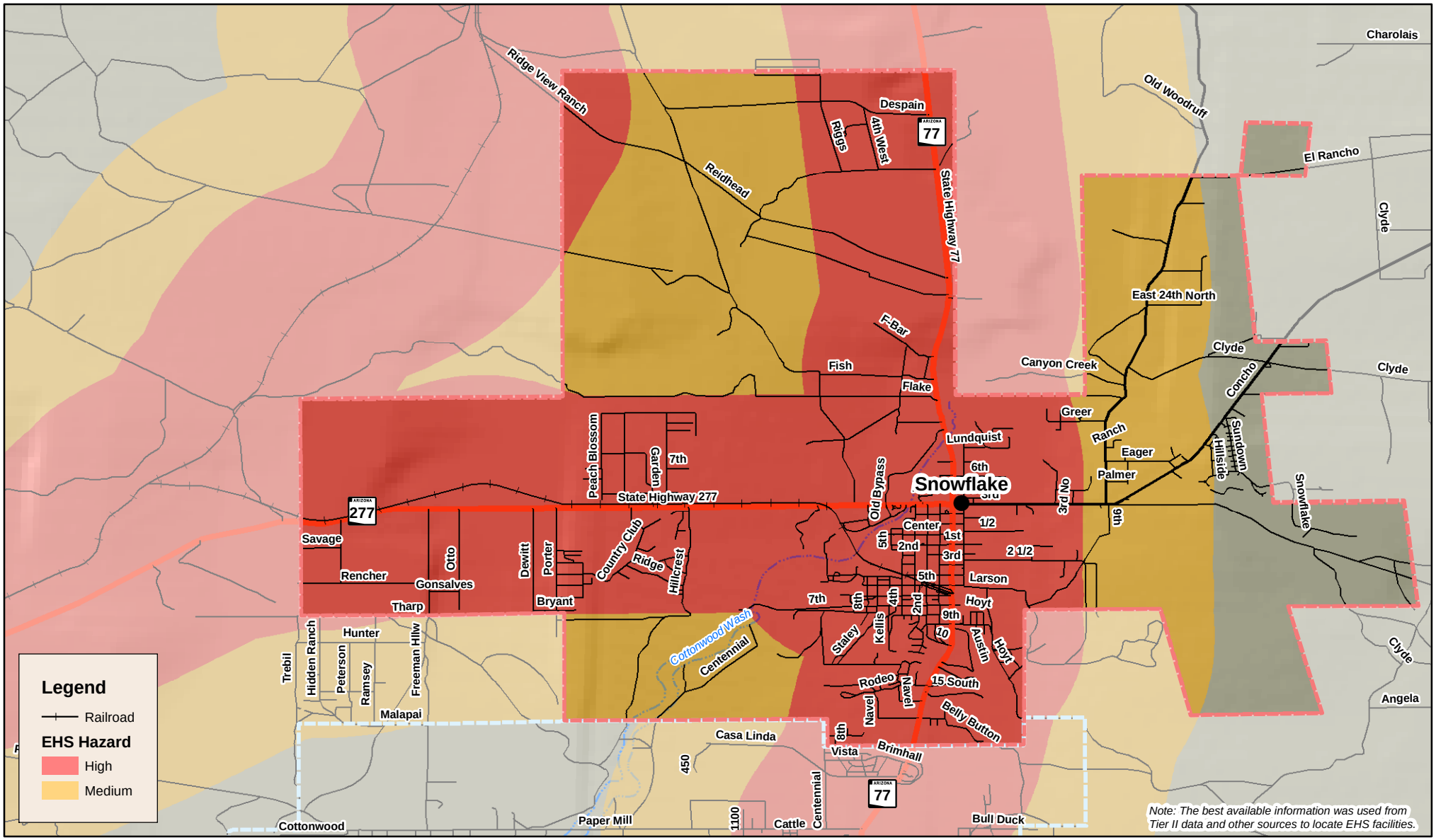
0 0.5 1 2 Miles

Source: Navajo County, 2010: ESRI, 2010
JE FULLER 2010; ALRIS, 2010



Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Map 3G
City of Show Low
EHS HAZMAT
Hazard Map
as of December 2010



Legend

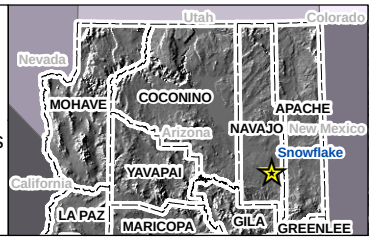
Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW

Roads
- Interstate
- US, State, County Hwys
- Major Roads
- Local Street

- Cities, Towns, Places
- Watercourses
- Indian Reservation
- County Boundary

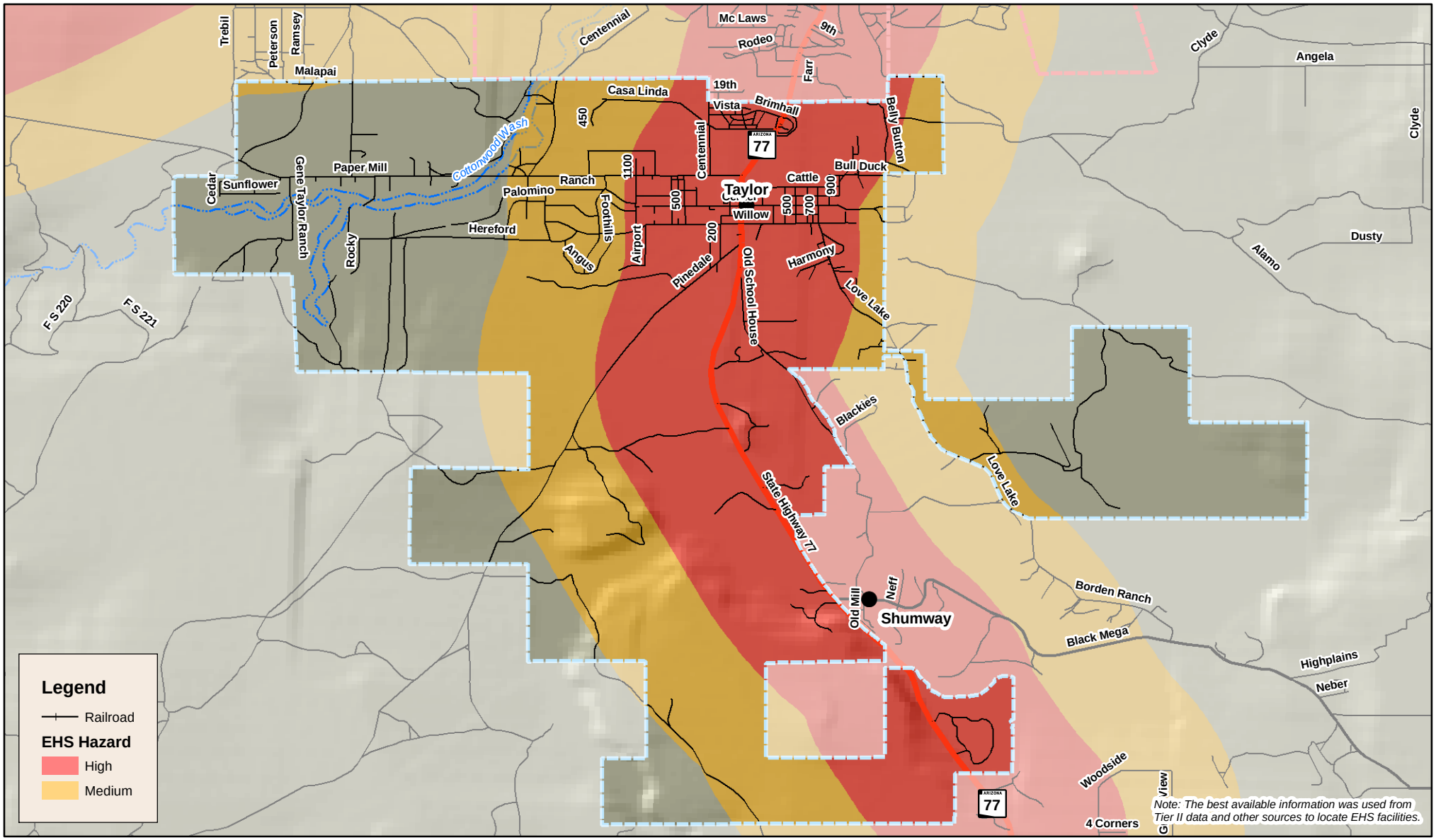
0 0.5 1 2 Miles

Source: Navajo County, 2010: ESRI, 2010
JE FULLER 2010; ALRIS, 2010



Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Map 3H
Town of Snowflake
EHS HAZMAT
Hazard Map
as of December 2010



Legend

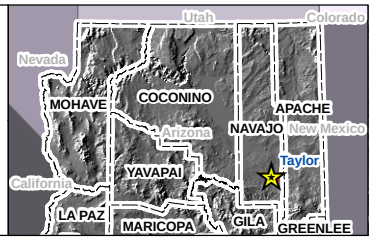
Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW

Roads
- Interstate
- US, State, County Hwys
- Major Roads
- Local Street

- Cities, Towns, Places
- Watercourses
- County Boundary
- Indian Reservation

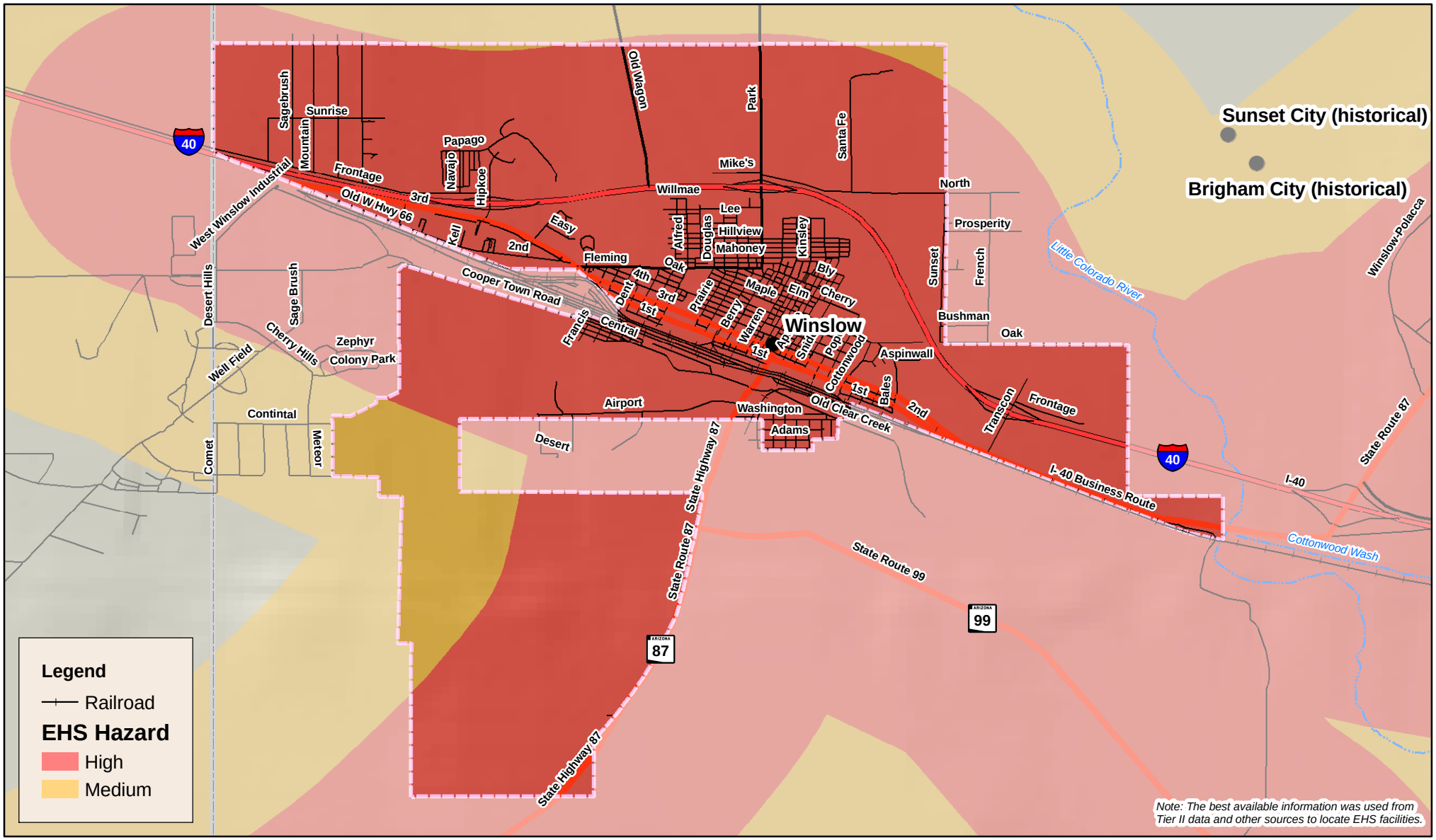
0 0.5 1 2 Miles

Source: Navajo County, 2010: ESRI, 2010
JE FULLER 2010; ALRIS, 2010



Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Map 3I
Town of Taylor
EHS HAZMAT
Hazard Map
as of December 2010



Legend

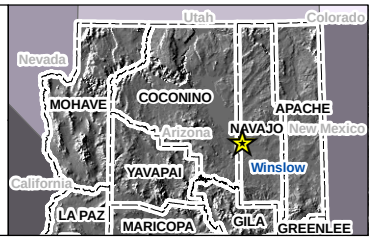
Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW

Roads
- Interstate
- US, State, County Hwys
- Major Roads
- Local Street

- Cities, Towns, Places
- Watercourses
- Indian Reservation
- County Boundary

0 0.25 0.5 1 Miles

Source: Navajo County, 2010: ESRI, 2010
JE FULLER 2010; ALRIS, 2010



Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Map 3J
City of Winslow
EHS HAZMAT
Hazard Map
as of December 2010

5.3.5 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 or certain federal agencies. FEMA has classified all other structures that impound, divert, and/or otherwise impede the flow of runoff as "non-levee embankments". In Navajo County, these "non-levee embankments" might be comprised of features such as non-certified levees, roadway and railway embankments, canals, irrigation ditches and drains, and agricultural dikes. Currently there is no State or Federal Levee Safety Program and no official state or federal levee inventory. It is anticipated that FEMA will institute a National Levee Safety Program in the near future.

By design, a levee and many non-levee embankments increase the conveyance capacity of a watercourse by artificially creating a deeper channel through embankments that extend above the natural overbank elevation. Upon failure, floodwaters will return to the natural overbank areas. FEMA urges communities to recognize that all areas downstream of levees and embankments are at some risk of flooding and that 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

Levees (certified or not) have been used in Navajo County for many years to protect communities and agricultural assets from flooding, as well as to facilitate the delivery and removal of irrigation water. These levees range from simple earthen embankments pushed up by small equipment to large engineered embankments lining one or both sides of a watercourse. The structural integrity of levees with regard to flood protection and policy has been discussed at a national level since the early 1980s but was elevated to a high priority after the collapse and breach of New Orleans' levees after Hurricane Katrina in 2005. In 2009, a draft report was issued to Congress by the National Committee on Levee Safety (NCLS, 2009) summarized recommendations and a strategic plan for implementation of a National Levee Safety Program.

The following are a few of the documented flooding events in which a breached dike or levee was involved:

- In 1993, a 345 foot long section of Winslow levee breached by overtopping and flooded Ames Acres, Bushman Acres, and Winslow Plaza subdivisions. The resulting flooding inundated 204 parcels and 140 structures, and required the evacuation of 900 people for as long as 3 days. Fifty homes were flooded up to 4 feet deep. One business and one farm received damages. At McHood Park the recreational lake silted up. The Corps of Engineers repaired the breach during the flood at a cost of $350,050. Navajo County worked in 24-hour shifts to continue reinforcing the breach. (USACE, 1994 and NCDC, 2009).
- In late 2004, a piping failure developed through Winslow Levee and was believed to have been caused by desiccation cracks, root channels, rodent burrows, a structural flaw, and other factors. Emergency repairs to the levee were estimated at $75,000. (Navajo County BOS, 2005).

Probability and Magnitude

There are varied probability or magnitude criteria regarding levee failure due to variability in levee design, ownership and maintenance. For flood protection credit under the NFIP, FEMA has established certain deterministic design criteria that are based on the 1 percent (100-year) storm event and corresponding minimum freeboard requirements. Federally constructed levees are usually designed for larger, more infrequent events such as the 0.04% and 0.02% probability (250 to 500 year) events plus freeboard. Recent recertification procedures proposed by U.S. Army Corps of Engineers, require that a certifiable levee have at least a 90% assurance of providing protection from overtopping by the 1% chance exceedance flood for all reaches of a levee system with a design freeboard height of at least three feet. For levees with more than three feet of design freeboard, the assurance is increased to 95%, and no certification will be made for levees with less than two feet of freeboard unless approved via a waver process. This assurance is only for containment (overtopping failure) and does not include probability of failure by other modes such as piping (USACE, 2007).

As of the writing of this Plan, the only FEMA certified levees within Navajo County are the Holbrook Levee along the Little Colorado River in Holbrook and the Ruby Wash Diversion Levee in Winslow. The landside of the levee is delineated as a Shaded Zone X (500-year) and was chosen by the Planning Team to represent the High hazard levee failure limits. Risk associated with other non-certified dikes and levees are represented in Flooding profile of Section 5.3.2 and will not be duplicated here. The currently identified High hazard levee failure zones in Holbrook and Winslow are shown on Map 4.

Vulnerability – CPRI Results

Levee Failure CPRI results for each community are summarized in Table 5-47 below.

Table 5-47: CPRI results by jurisdiction for levee failure

Participating Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Holbrook	Possibly	Catastrophic	6 - 12 hours	> 1 week	2.95
Show Low	Unlikely	Negligible	< 6 hours	< 6 hours	1.45
Snowflake	Unlikely	Critical	6 - 12 hours	< 1 week	2.10
Taylor	Possibly	Limited	< 6 hours	< 1 week	2.40
Winslow	Highly Likely	Critical	6 - 12 hours	> 1 week	3.55
Unincorporated Navajo County	Likely	Critical	12 - 24 hours	> 1 week	2.95
				County-wide average CPRI =	**2.57**

NOTE: Pinetop-Lakeside did not provide data

Vulnerability – Loss Estimations

There are no commonly accepted methods for estimating potential levee related losses. Many variables including storm size and duration, as well as size, speed, and timing at which a levee breach forms, all contribute to the potential for human and economic losses. Accordingly, no estimates of loss are made in this Plan. Potential exposure of human and facility assets to the High hazard levee failure areas will be estimated instead. Table 5-48 summarizes the Planning Team defined critical facilities potentially exposed to a high hazard levee failure zone. Table 5-49 summarizes population sectors exposed to the high hazard levee failure zones. HAZUS residential, commercial and industrial exposures to high hazard levee failure zones are summarized in Tables 5-50 through 5-57.

In summary, $118.2 million in county-wide assets are exposed to a High hazard levee failure. An additional $190 million in county-wide High hazard levee failure exposure of HAZUS defined residential, commercial, and industrial facilities is estimated. Regarding human vulnerability, a total population of 2,444 people, or 2.51% of the total county-wide population, is potentially exposed to a High hazard levee failure event. Should a significant levee structure fail suddenly, it is plausible that death and injury might occur. It can also be expected that a substantial portion of the exposed population is subject to displacement depending on the event magnitude.

Table 5-48: Asset inventory exposure to levee failure					
Community	**Total Facilities Reported by Community**	**Impacted Facilities**	**Percentage of Total Community Facilities Impacted**	**Estimated Replacement Cost (x$1000)**	**Estimated Structure Loss ($1000)**
HIGH					
County-Wide Totals	**422**	**24**	**5.69%**	**$118,285**	**None Estimated**
Holbrook	23	11	47.83%	$48,606	None Estimated
Pinetop-Lakeside	44	0	0.00%	$0	None Estimated
Show Low	111	0	0.00%	$0	None Estimated
Snowflake	42	0	0.00%	$0	None Estimated
Taylor	29	0	0.00%	$0	None Estimated
Unincorporated	114	9	7.89%	$57,180	None Estimated
Winslow	59	4	6.78%	$12,500	None Estimated

Table 5-49: Population sectors exposed to levee failure									
Community	**Total Population**	**Population Exposed**	**Percent of Population Exposed**	**Total Population Over 65**	**Population Over 65 Exposed**	**Percent of Population Over 65 Exposed**	**Total Incomes Under $20K**	**Incomes Under $20K Exposed**	**Percent of Incomes Under $20K Exposed**
HIGH									
County-Wide Totals	**97,467**	**2,444**	**2.51%**	**9,173**	**249**	**2.71%**	**10,477**	**291**	**2.78%**
Holbrook	4,891	1,834	37.49%	441	194	44.04%	509	213	41.86%
Hopi Indian Res.	5,859	0	0.00%	476	0	0.00%	808	0	0.00%
Navajo Indian Res.	16,587	0	0.00%	1,010	0	0.00%	2,042	0	0.00%
Navajo-Hopi Joint Use Area	10,233	0	0.00%	667	0	0.00%	1,431	0	0.00%
Pinetop-Lakeside	3,563	0	0.00%	547	0	0.00%	292	0	0.00%
Show Low	8,011	0	0.00%	1,134	0	0.00%	774	0	0.00%
Snowflake	4,433	0	0.00%	498	0	0.00%	286	0	0.00%
Taylor	3,200	0	0.00%	283	0	0.00%	253	0	0.00%
Unincorporated	20,589	34	0.17%	2,837	3	0.12%	1,885	5	0.28%
White Mtn. Apache Indian Res.	10,598	0	0.00%	346	0	0.00%	1,338	0	0.00%
Winslow	9,503	576	6.06%	935	51	5.51%	860	73	8.50%

Table 5-50: Navajo County HAZUS building exposure to levee failure

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Navajo 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	**51,850**	**$6,202,174**	**1,275**	**$1,252,229**	**347**	**$213,620**	**$7,668,023**		
High Hazard Exposure	1,368	$135,537	86	$52,131	3	$2,548	$190,216	0%	$0
Navajo County HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
High Hazard Exposure	02.64%	02.19%	06.74%	04.16%	0.84%	01.19%			

Table 5-51: Holbrook HAZUS building exposure to levee failure

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Holbrook 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	**2,413**	**$273,514**	**122**	**$80,723**	**8**	**$3,123**	**$357,360**		
High Hazard Exposure	1,114	$105,766	77	$48,044	3	$2,548	$156,359	0%	$0
Holbrook HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
High Hazard Exposure	46.17%	38.67%	62.68%	59.52%	36.28%	81.58%			

Table 5-52: Pinetop-Lakeside HAZUS building exposure to levee failure

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Pinetop-Lakeside 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	**2,844**	**$417,321**	**118**	**$103,019**	**37**	**$19,955**	**$540,295**		
High Hazard Exposure	0	$0	0	$0	0	$0	$0	0%	$0
Pinetop-Lakeside HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

Table 5-53: Show Low HAZUS building exposure to levee failure

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Show Low 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	**4,527**	**$552,295**	**222**	**$254,372**	**61**	**$35,469**	**$842,136**		
High Hazard Exposure	0	$0	0	$0	0	$0	$0	0%	$0
Show Low HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

Table 5-54: Snowflake HAZUS building exposure to levee failure

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Snowflake (Navajo 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)**
Community-Wide Totals	**1,783**	**$246,406**	**91**	**$58,891**	**44**	**$51,897**	**$357,193**		
High Hazard Exposure	0	$0	0	$0	0	$0	$0	0%	$0
Snowflake (Navajo County) HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

Table 5-55: Taylor HAZUS building exposure to levee failure

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Taylor 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	**1,241**	**$132,621**	**43**	**$38,131**	**18**	**$11,106**	**$181,858**		
High Hazard Exposure	0	$0	0	$0	0	$0	$0	0%	$0
Taylor HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

Table 5-56: Unincorporated Navajo County HAZUS building exposure to levee failure

	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	**17,894**	**$2,349,535**	**366**	**$221,145**	**139**	**$58,452**	**$2,629,133**		
High Hazard Exposure	18	$1,898	1	$506	0	$0	$2,404	0%	$0
Unincorporated HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	0.10%	0.08%	0.28%	0.23%	0.0%	0.0%			

Table 5-57: Winslow HAZUS building exposure to levee failure

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Winslow 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	**4,135**	**$550,665**	**187**	**$151,016**	**18**	**$6,823**	**$708,504**		
High Hazard Exposure	236	$27,873	8	$3,581	0	$0	$31,453	0%	$0
Winslow HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	05.72%	05.06%	04.48%	02.37%	0.0%	0.0%			

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

Vulnerability – Development Trend Analysis

With the new focus on residual downstream risk for the land-side of levees and a general refocusing of national levee regulation and policy, it is likely that new and old developments in these areas will need to be revisited to determine if additional measures are necessary for adequate flood protection. Many structures located downstream of non-certified levee embankments are being re-mapped into Special Flood Hazard Zones. New developments should be evaluated to determine if sufficient protection is proposed to mitigate damages should the upstream structure fail.

New development in the areas protected by the Holbrook and Winslow levees will be limited, however, redevelopment of the area is possible. The best mitigation for this area is for structure owners to carry flood insurance and for the Holbrook and Winslow to perform routine maintenance and inspection of the existing levee facilities.

Sources

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

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

FEMA, 2009, Web page at URL: http://www.fema.gov/plan/prevent/fhm/lv_intro.shtm#3

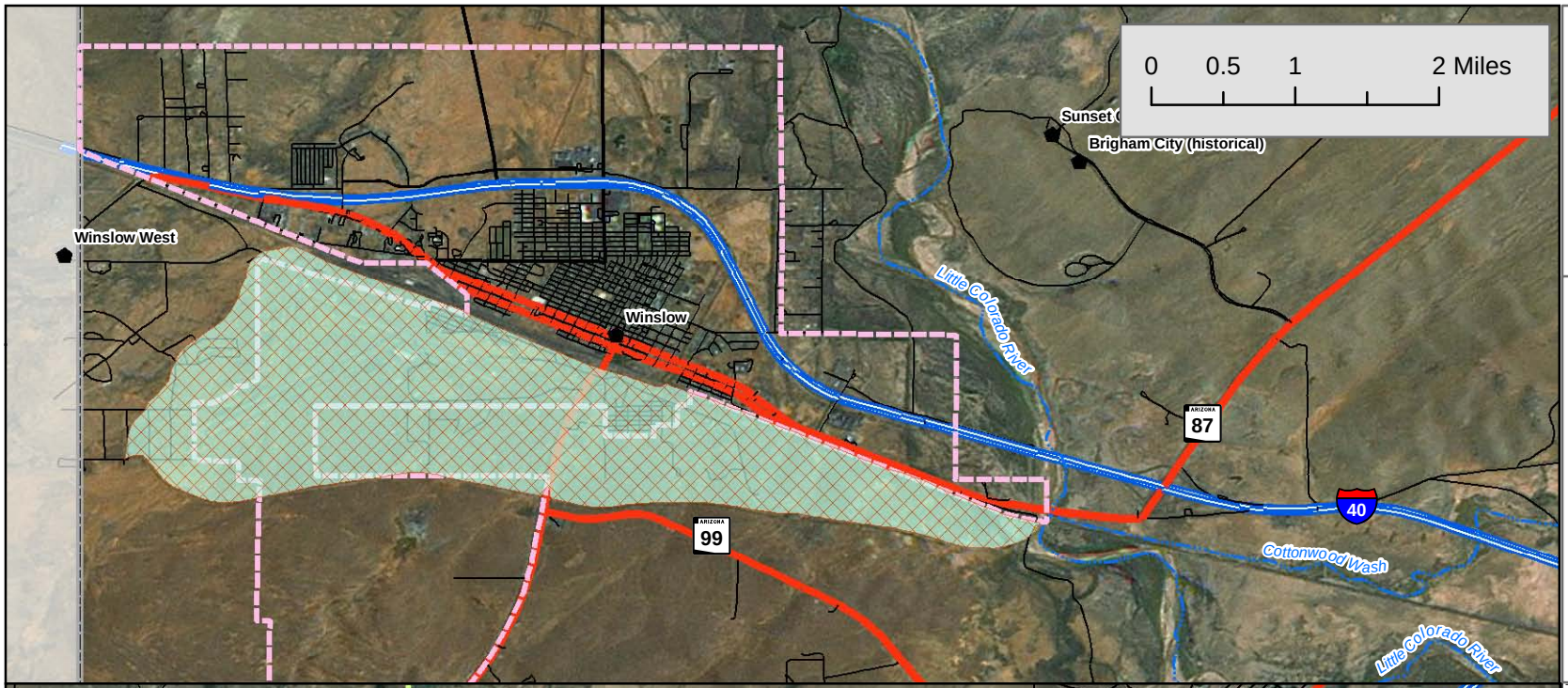
National Committee on Levee Safety, 2009, *Draft Recommendation For A National Levee Safety Program.*

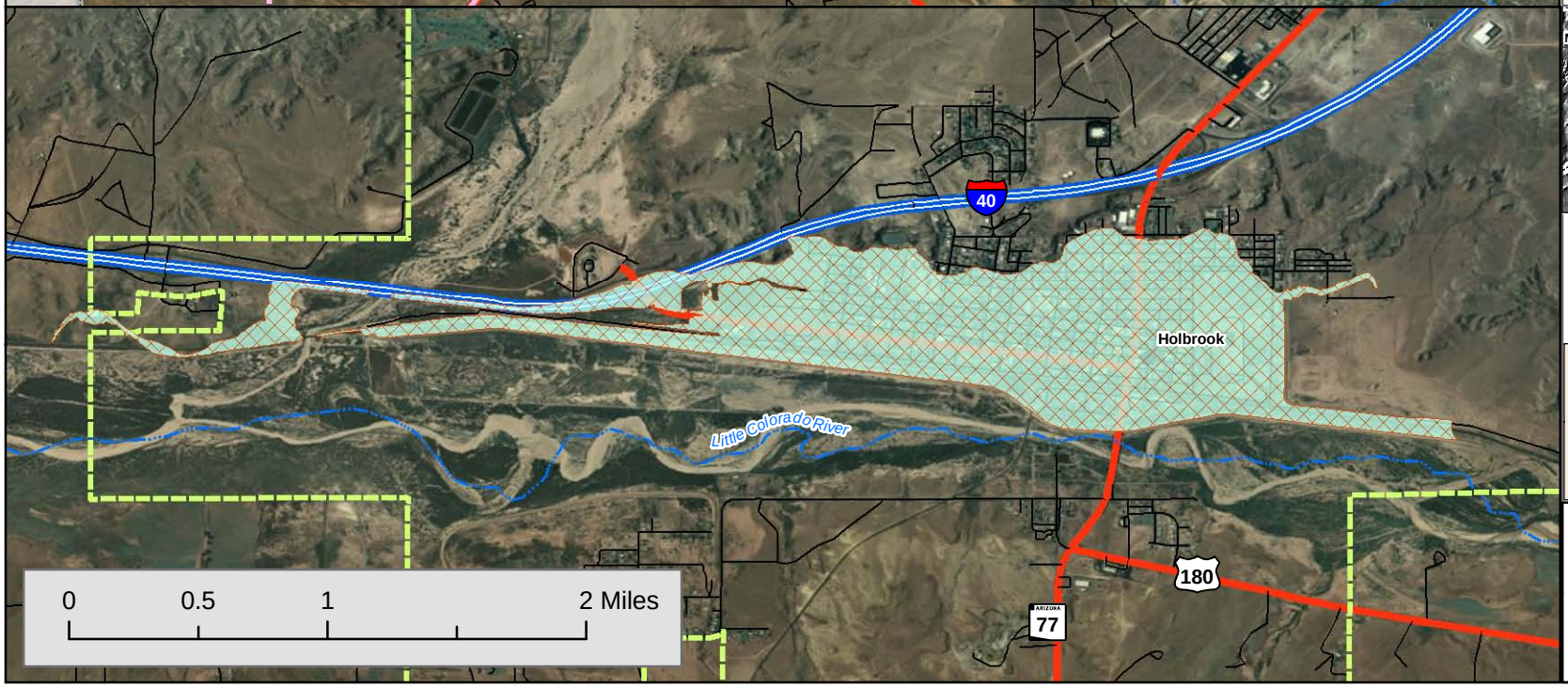
National Weather Service – Tucson FO, web page at URL: http://www.wrh.noaa.gov/twc/hydro/floodhis.php

USACE, 2007, *Certification of Levee Systems for the National Flood Insurance Program (NFIP) – DRAFT*, ETL 1110-2-570.

Profile Maps

Map 4 –Levee Failure Hazard Map





Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Legend

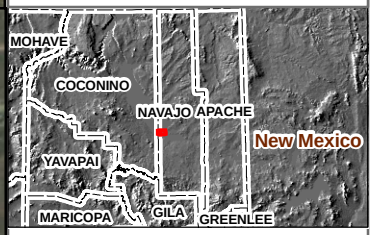
- Cities and Places

Communities

- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW
- County Boundary
- Indian Reservation
- Lakes
- Watercourses

Roads

- Interstates
- Highways
- Arterials
- Streets



Legend

Levee Failure Hazard Zone

- High

Map 4
Navajo County
Levee Failure Hazard Map
as of November 2010

Source: FEMA, 2008; JE FULLER 2010; ALRIS, 2010

5.3.6 Severe Wind

Description

The hazard of severe wind encompasses all climatic events that produce damaging winds. For Navajo 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 Navajo County, tornadoes are the least common severe wind to accompany a thunderstorm.

History

According to Table 5-3, Navajo County has been subject to over 55 severe wind events meeting the criteria listed in Section 5.1, with a combined economic loss of over $30,000 to structures and agriculture in the last 50 years. In that same period, no deaths or injuries were reported throughout the County. In reality, severe wind events occur on a significantly more frequent basis throughout the county, but do not always have reported damages associated with every event. For example, a total of 34 severe wind events were noted in the NCDC database for period of January 1950 through April 2011, but not all of those events had reports of damages associated with them. The following are examples of documented past events. One has occurred in the last five years:

- On April 23, 1997, wind damage in Dilkon believed to be caused by strong thunderstorm gusts, blew over a trailer home. Several other trailers received minor damage. Broken windows were reported at the Dilkon Boarding School. No measured wind speed available. (NCDC, 2010)
- On September 16, 2001, a tornado touched down about 5 miles north of Snowflake. The tornado was first seen at 935 AM MST then a Sheriff Deputy watched the tornado until it lifted at 1003 AM MST. The tornado remained in a rural area and no damage was reported. Fujita Tornado Scale: F0 (40-72 mph / 35-62 kts.). Length=3mi. Width=1yd. (NCDC, 2010)
- On June 17, 2003, a weak tornado formed along a convergence zone about one mile west of Winslow. The tornado was nearly stationary and remained in rural areas for about 30 minutes. Fujita Tornado Scale: F0 (40-72 mph / 35-62 kt.) Length=1mi. Width=10yds. (NCDC, 2010

- On October 3, 2003, the public and Law Enforcement observed a tornado on the ground near White Cone. A spotter reported damage to a fence, windmill, and trees. Fujita Tornado Scale: F0 (40-72 mph / 35-62 kt.) (NCDC, 2010)
- On October 18, 2005, a tornado was sighted in a sparsely populated area about 40 miles east-northeast of Cameron near the intersection of Dinnebito Wash, Highway 264, and the Coconino/Navajo County lines. One ranch did sustain minor damage to the house, the hogan, and the sweat lodge. Several outbuildings were totally destroyed and/or carried around 100 meters from their original locations. A 55-gallon drum filled with grain was found empty a few hundred meters from its original location. There was considerable damage to the tree only a few feet from the house, while little damage to the house occurred. Some farm animals were lost (9 chickens and 2 cats). The storm continued to travel north-northeast into Navajo County through a sparsely populated area. A semi trailer was blown over on Highway 160 near the intersection of Route 564 and Navajo National Monument. Damages were reported to be $10,000. There were several reports of funnel clouds and tornados in the area. .(NCDC, 2010)
- On June 6, 2007, a roof blew off home on Colt Road, outside of Snowflake and landed on power lines. Fire department responded. (NCDC, 2010)

Figure 5-7 presents a depiction of historic severe wind incident locations as reported by the NCDC for the period of record up to January 2010. It is noted that this map is only intended to provide a visual view of areas impacted most and is not intended to represent a predictive tool.

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. The average annual duration of thunderstorms in Navajo County ranges from 60 to 90 minutes and is among the longest in the nation (ADEM, 2004). Despite the long duration time, the actual number of thunderstorms on average varies from 50 to 70 per year across the county.

Lightning strikes are another indicator of thunderstorm hazard. Strike densities across Navajo County vary from 4 to 8 lightning strikes per square kilometer annually.

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.

The American Society of Civil Engineers (ASCE) has identified a 3-second wind gust speed as the most accurate measure for identifying the potential for damage to structures, and is recommended as a design standard for wind loading. Most of Arizona and all of Navajo County is designated with a design 3-second gust wind speed of 90 mph, indicating relatively low levels of risk from severe winds (ASCE, 1999).

Likewise, FEMA identifies most of the county to be in design wind speed Zone I, as illustrated in Figure 5-8. In this zone, a design wind speed of 130 mph is recommended for the design and construction of community shelters. A small portion of the Navajo Nation is identified as a “Special Wind Region” and should be evaluated independently for design wind speeds.

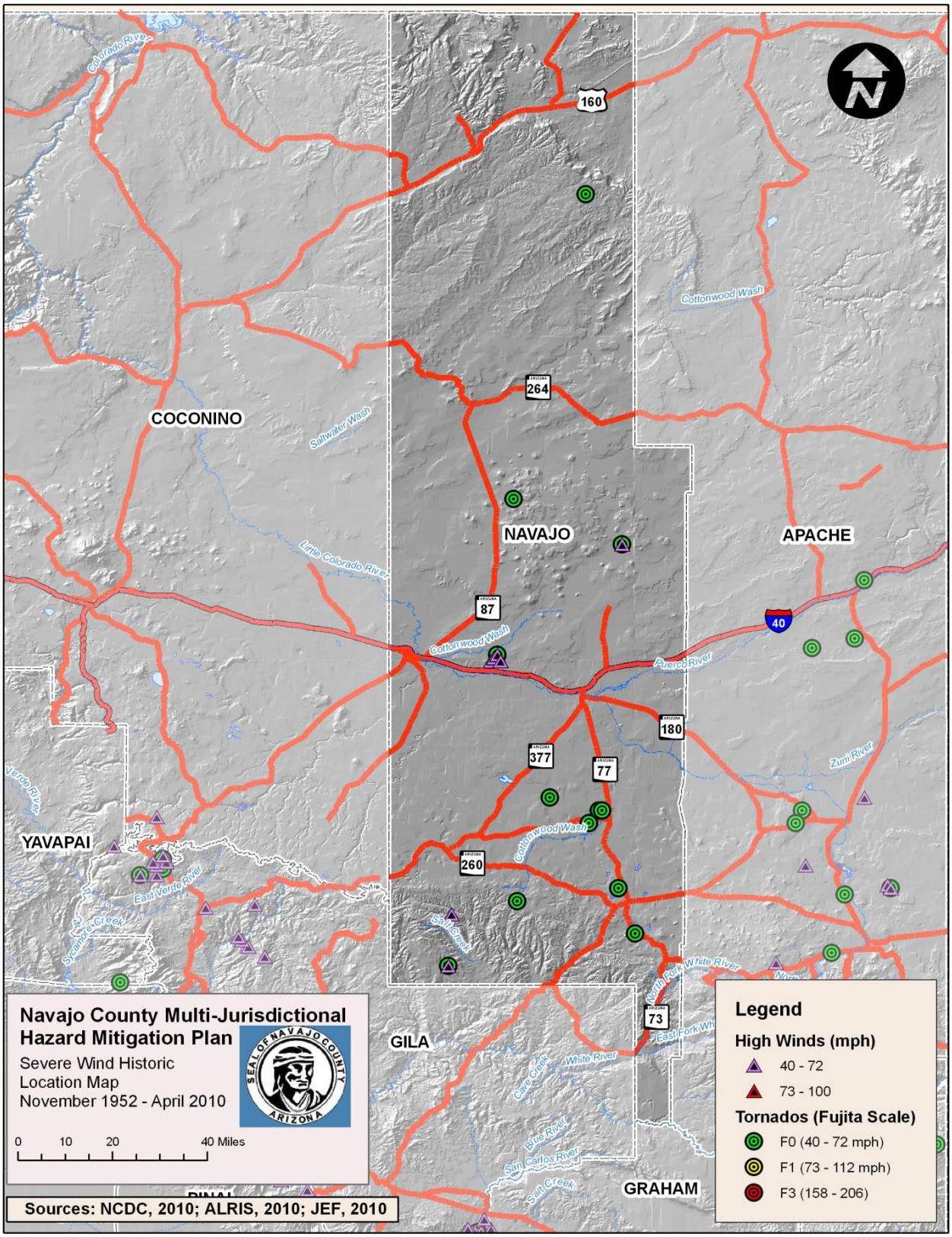
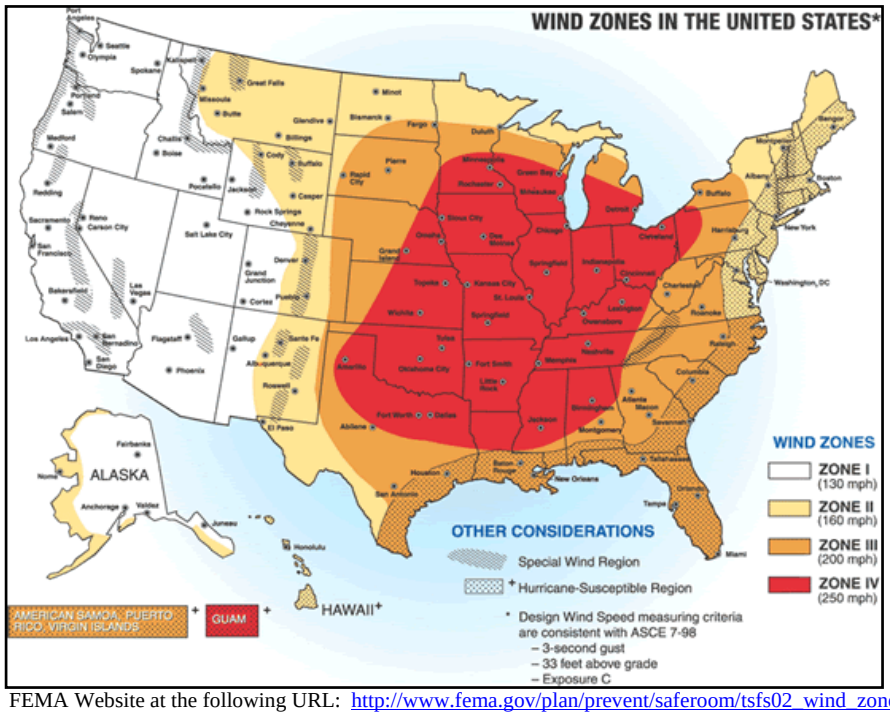


Figure 5-7
Historic Severe Wind Event Locations for Navajo County



Source: FEMA Website at the following URL: http://www.fema.gov/plan/prevent/saferoom/tsfs02_wind_zones.shtm

Figure 5-8
Illustration of FEMA Wind Zones

Based on the historic record, the probability of tornados occurring in Navajo County is likely. 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 5-57, 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 5-57: 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.

Vulnerability – CPRI Results

Severe Wind CPRI results for each community are summarized in Table 5-58 below.

Table 5-58: Summary of CPRI results by jurisdiction for severe wind

Participating Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Holbrook	Likely	Negligible	6 - 12 hours	< 6 hours	2.20
Show Low	Highly Likely	Critical	6 - 12 hours	, 24 hours	3.35
Snowflake	Highly Likely	Limited	6 - 12 hours	< 1 week	3.15
Taylor	Highly Likely	Limited	6 - 12 hours	< 24 hours	3.05
Winslow	Highly Likely	Critical	> 24 hours	< 1 week	3.15
Unincorporated Navajo County	Likely	Limited	6 - 12 hours	< 1 week	2.70
				County-wide average CPRI =	**2.93**

NOTE: Pinetop-Lakeside did not provide data

Vulnerability – Loss Estimations

The entire County is assumed to be equally exposed to the damage risks associated with severe winds. Typically, incidents are fairly localized and damages associated with individual events are relatively small. Based on the historic record over the last five years, it is feasible to expect average annual losses of $100,000 or more (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 in conjunction with public education on how to respond to severe wind conditions are arguably the best way to mitigate against losses.

Sources

Arizona Division of Emergency Management, 2004, State of Arizona All Hazard Mitigation Plan.

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

Changnon, Jr. S.,1988, *Climatology of Thunder Events in the Conterminous U.S., Part I: Temporal Aspects* and *Part II: Spatial Aspects*, Journal of Climate, Vol. 1, No. 4, pp. 389-405.

U.S. Dept of Commerce, National Climatic Data Center, 2010, Storm Events Database, accessed via the following URL: http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms

Profile Maps

No profile maps provided.

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5.3.7 Wildfire

Description

A wildfire is an uncontrolled fire spreading through wildland vegetative fuels and/or urban interface areas where fuels may include structures. They often begin unnoticed, spread quickly, and are usually signaled by dense smoke that may fill the area for miles around. Wildfires can be human-caused through acts such as arson or campfires, or can be caused by natural events such as lightning. If not promptly controlled, wildfires may grow into an emergency or disaster. Even small fires can threaten lives, resources, and destroy improved properties.

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

History

The Arizona Division of Emergency Management has 19 declared wildfire events with total expenditures close to $34 million during the period of 1966 to 2010.. For the period of 2002 to 2009, data compiled by the National Interagency Coordination Center (NICC) indicates that at least 9 wildfires greater than 100 acres in size, have occurred in all of Navajo County (this includes the San Carlos Apache Tribe). Two of those fires were larger than 10,000 acres, and are described :

- In June 1999, the Rainbow Fire burned in Navajo and Gila counties. As of Saturday, June 12, the fire had consumed up to 5,000 acres on the White River Indian Reservation. The fire was threatening the towns of White River, Pine Top, Lakeside and Show Lo. Local officials report 15 homes have been destroyed on the reservation along with 13 other outlying structures. Approximately 100 people were evacuated along with a community hospital. In Pine Top, the fire threatened 2,000 homes and 30 businesses. No injuries associated with the fire have been reported. The American Red Cross (ARC) opened a shelter on the White River Reservation to house 150 people. Two ARC Emergency Response Vehicles were deployed to provide meals. (ADEM, 2010)
- On June 19, 2002 the Governor proclaimed an emergency for Navajo and Apache Counties for damages due to the Rodeo Fire. The Rodeo Fire ignited in Navajo County near the Town of Cibecue on the Fort Apache Indian Reservation June 18, 2002. Federal and State fire suppression resources responded, numerous homes and public infrastructure were threatened. On July 1, 2002 the Governor amended her proclamation to include Gila and Coconino Counties due to the Chediski Fire. The Chediski Fire ignited in Navajo County near the Chediski Mountain on the Fort Apache Indian Reservation June 20, 2002, endangering up to 4,500 homes and causing the evacuation of more than 2,000 people. The Presidential disaster declaration was received on June 25, 2002 (FEMA-1422-DR-AZ). Apache and Navajo Counties were declared for Public Assistance, as well as the Fort Apache Indian Reservation. Apache, Coconino, Gila and Navajo Counties were given Individual Assistance. Mitigation Assistance was granted statewide. The Rodeo-Chediski fire burned 468,640 acres and destroyed more than 450 houses in Navajo, Apache, Coconino and Gila counties and the Fort Apache Indian Reservation. Disaster aid to Arizona in the wake of the massive Rodeo-Chediski fire has topped $26 million. To date, 8,204 Arizonans have registered for assistance through FEMA's toll-free registration line. Help Centers have seen 5,720 people seeking information about disaster aid, including answers to questions about their applications for assistance. (NICC, 2010)
- In August 2003, the Red Knoll Fire, a lightning caused fire that burned an area 5 miles east of Carrizo, Arizona. The fire started August 9, 2003 and burned 186 acres with over $116,400 in fire suppression costs. (NICC, 2010)
- In June 2006, the Potato Complex Fire, lightning caused fire that burned an area 10 miles northwest of Heber-Overgaard. The fire started June 6, 2006 and burned 6,262 acres with over $3,706,000 in fire suppression costs.(NICC, 2010)

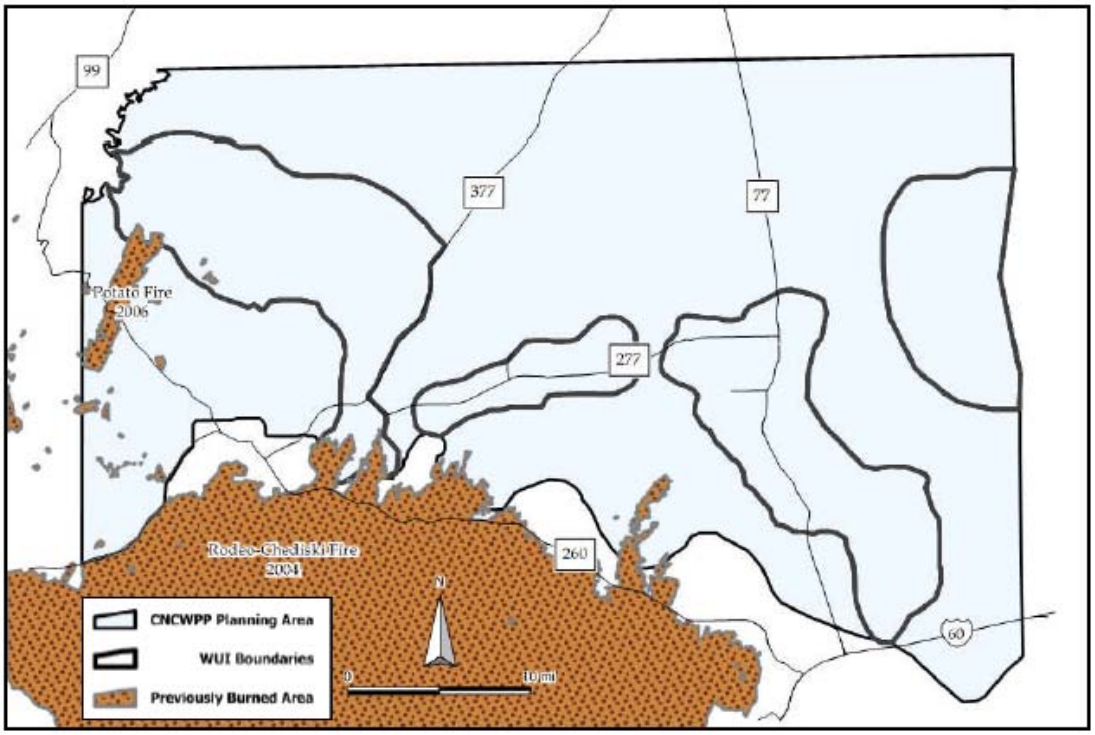
The Planning Team recognized that the disaster and historic hazard data collected and summarized in Section 5.1 does not adequately reflect the true cost of a wildfire. Particularly, the cost of wildfire suppression efforts to prevent structure and human loss. For example, the June 2006 Potato Complex Fire did not result in any structure losses, however, the suppression costs exceeded $3.7 million. Furthermore, the County, State, Forest Service, and other agencies spend millions of dollars every year in wildfire mitigation in fuel treatment projects.

Map 5A through 5D provides a graphical depiction of the 100 acre plus wildfires.

Probability and Magnitude

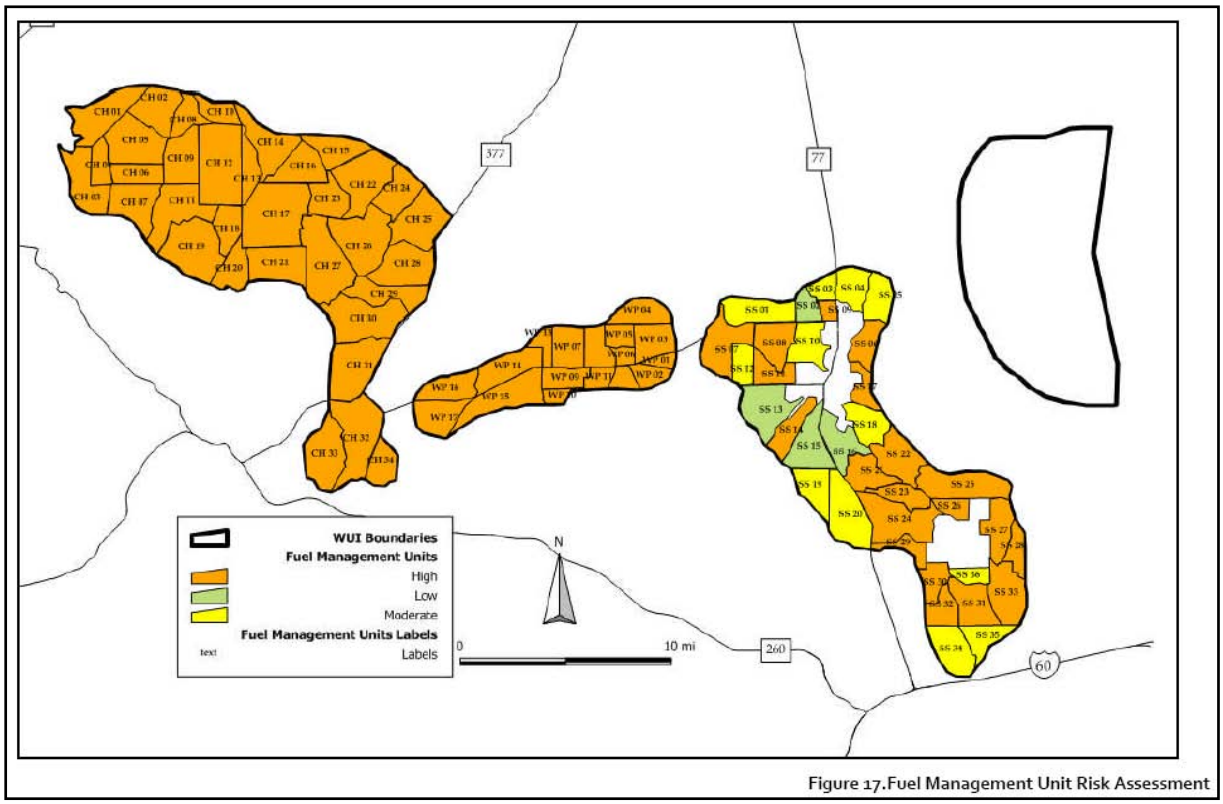
The probability and magnitude of wildfire incidents for Navajo County are influenced by numerous factors including vegetation densities, previous burn history, hydrologic conditions, climatic conditions such as temperature, humidity, and wind, ignition source (human or natural), topographic aspect and slope, and remoteness of area. Three sources were used to develop the wildfire hazard profile map for Navajo County. The first is the *Central Navajo County Community Wildfire Protection Plan* (CNCCWPP) (WMFF, 2008). The second is the *Community Wildfire Protection Plan for At-Risk Communities of the Sitgreaves National Forest in Apache, Coconino, and Navajo Counties* (SNFCWPP) (LSD, 2004). The third is a statewide coverage developed by the State of Arizona as a part of the 2003/2004 Arizona Wildland Urban Interface Assessment (AWUIA) project (Fisher, 2004).

Navajo County and various cooperating stakeholders collaborated to prepare the CNCCWPP, which established Wildland Urban Interface (WUI) areas for the central Navajo County study area and mapped various wildfire risk elements such as vegetative fuels and densities, topographical slope and aspect, previous burn areas and ignition points, and prior treatment areas. Figure 5-9 shows the CNCCWPP limits and previous burn areas. Using these elements, a risk assessment was performed for each fuels management unit within the WUIs and a risk map, which is shown in Figure 5-10, was produced.



Source: Central Navajo County CWPP, September 2008

Figure 5-9: CNCCWPP Limits and Previously Burned Area for 30 Year Period 1977-2007



Source: Central Navajo County CWPP, September 2008

Figure 5-10: CNCCWPP Fuel Management Risk Map

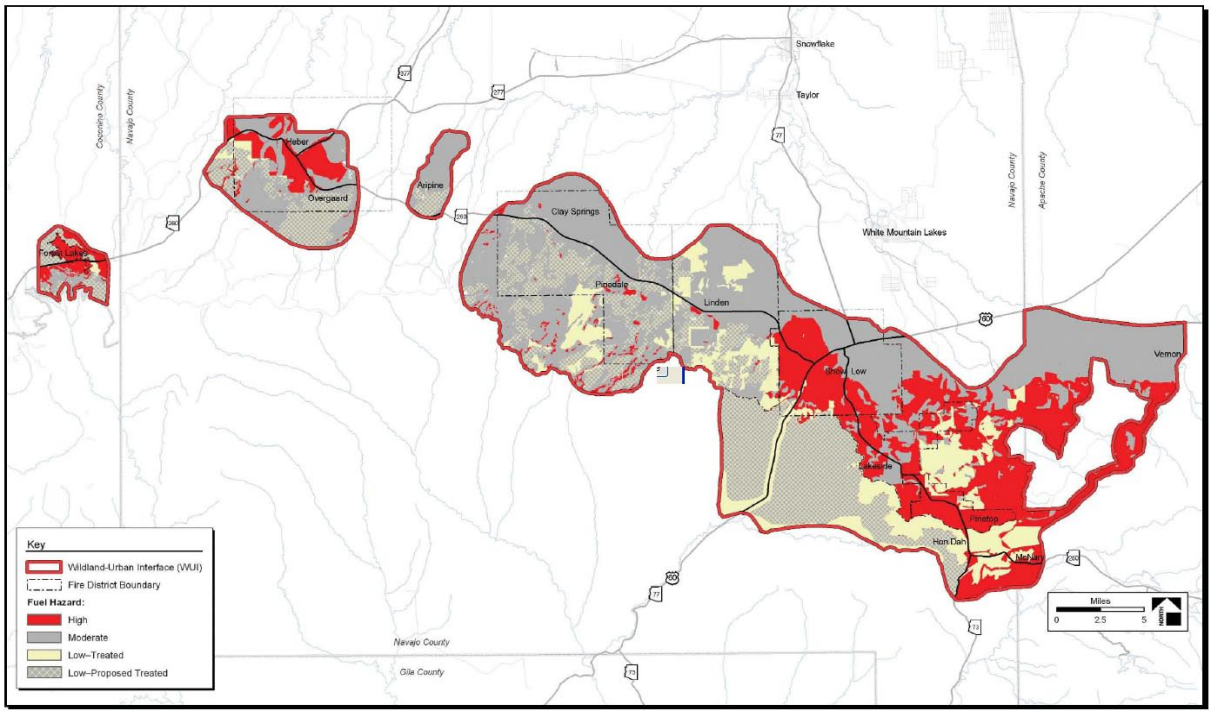
A similar effort was performed by the at-risk communities located within or immediately adjacent to the Sitgreaves National Forest to prepare the SNFCWPP, which covers the southernmost portion of the county. The SNFCWPP established the WUI areas for the communities within its study boundary and mapped various wildfire risk elements such as vegetative fuels and densities, topographical slope and aspect, previous burn areas and ignition points, and prior treatment areas. Using these elements, a comprehensive fuels hazard risk map[19] was developed for the WUI and is shown in Figure 5-11. The High, Medium and Low hazard classifications are used for the Wildfire profile of this Plan in the WUI.

In 2004, the State of Arizona prepared the AWUIA to analyze wildfire risk at a statewide basis, using a common spatial model. The model results were used for validation of those communities listed in the federal register as WUI, and for further identification other communities possibly at risk. The AWUIA approach used four main data layers:

- TOPO – aspect and slope derived from 30 meter Digital Elevation Model data from USGS.
- RISK – historical fire density using point data from fire record years 1986–1996 from all wildland agencies.
- HAZARD – fuels, natural fire regimes and condition class.
- HOUSE – houses and/or structures

A value rating in the range of 1-15 was assigned for all layers to represent the level of risk.

[19] Figures 3.2 in the ACWPP



Source: Figure 3.2 of SNF_CWPP, LSD, 2004

Figure 5-11: SNF_CWPP Fuel Hazard Risk Map

Two separate results were developed. The first coverage used an applied weighting scheme that combined each of the four data layers to develop a ranking model for identifying WUI communities at greatest risk. The second coverage, referred to as the "Land Hazard", also applied a weighting scheme that combined only the TOPO, RISK, and HAZARD layers, as follows:

LAND HAZARD = (HAZARD*70%)+(RISK*20%)+(TOPO*10%)

Weighing percentages were determined through discussion with the Arizona Interagency Coordinating Group. The "Land Hazard" layer produced from this model is based on a 250-meter raster grid (some data originated at 1,000-meter). The resultant raster values range from 1-15 and were classified into three groups to depict wildfire hazard without the influence of structures: HIGH (values of 10-15), MEDIUM (values of 7-9), and LOW (values of 1-6).

The final wildfire hazard profile map for this Plan depicts a mosaic of the High, Medium and Low risk areas identified in the SNFCWPP and the AWUIA. A comparison of the CNCCWPP risk assessment was made to the AWUIA coverage and the two were found to have similar risk assignments, so the AWUIA data was used for the CNCCWPP area. The SNFCWPP risk areas were assigned to the WUI and the wildfire risk for the rest of the county, outside of the WUI, is assigned based on the statewide AWUIA "Land Hazard" layer. Maps 5A through 5D indicate the various wildfire hazard areas for Navajo County and Maps 5E through 5J represent the incorporated communities.

Vulnerability – CPRI Results

Wildfire CPRI results for each community are summarized in Table 5-59 below.

Table 5-59: CPRI results by jurisdiction for wildfire

Participating Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Holbrook	Unlikely	Negligible	> 24 hours	< 6 hours	1.45
Show Low	Highly Likely	Catastrophic	12 - 24 hours	> 1 week	3.70
Snowflake	Unlikely	Limited	< 6 hours	< 1 week	1.95
Taylor	Possibly	Negligible	12 - 24 hours	> 1 week	1.90
Winslow	Possibly	Limited	< 6 hours	< 24 hours	2.30
Unincorporated Navajo County	Highly Likely	Castastrophic	6 - 12 hours	> 1 week	3.85
				County-wide average CPRI =	**2.53**

NOTE: Pinetop-Lakeside did not provide data

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 Maps 3A – 3D. 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 5-60 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 5-61 summarizes population sectors exposed to the high and medium wildfire hazards. HAZUS residential, commercial and industrial exposures and loss estimates to high and medium wildfire hazards are summarized in Tables 5-62 through 5-69.

In summary, $126.2 and $13 million in asset related losses are estimated for high and medium wildfire hazards, for all the participating jurisdictions in Navajo County. An additional $783 and $106.9 million in high and medium hazard wildfire losses to HAZUS defined residential, commercial, and industrial facilities, is estimated for all participating Navajo County jurisdictions. It should be noted that these exposure dollar amounts do not include the cost of wildfire suppression which can be substantial. For example, a Type 1 wildfire fighter crew costs about $1 million per day.

Regarding human vulnerability, a county-wide population of 34,614 and 36,256 people, or 35.51% and 37.20% of the total, is potentially exposed to a high and medium hazard wildfire event, respectively. Typically, deaths and injuries not related to firefighting activities are rare. However, it is feasible to assume that at least one death and/or injury may be plausible. There is also a high probability of population displacement during a wildfire event, and especially in the urban wildland interface areas.

Table 5-60: Asset inventory exposure to high and medium hazard wildfire and corresponding loss estimates

Community	Total Facilities Reported by Community	Impacted Facilities	Percentage of Total Community Facilities Impacted	Estimated Replacement Cost (x$1000)	Estimated Structure Loss (x$1000)
HIGH					
County-Wide Totals	**422**	**199**	**47.16%**	**$631,124**	**$126,225**
Holbrook	23	0	0.00%	$0	$0
Pinetop-Lakeside	44	43	97.73%	$40,015	$8,003
Show Low	111	106	95.50%	$330,105	$66,021
Snowflake	42	1	2.38%	$400	$80
Taylor	29	0	0.00%	$0	$0
Unincorporated	114	48	42.11%	$260,454	$52,091
Winslow	59	1	1.69%	$150	$30
MEDIUM					
County-Wide Totals	**422**	**90**	**21.33%**	**$269,514**	**$13,476**
Holbrook	23	5	21.74%	$9,739	$487
Pinetop-Lakeside	44	0	0.00%	$0	$0
Show Low	111	2	1.80%	$1,075	$54
Snowflake	42	13	30.95%	$19,610	$981
Taylor	29	12	41.38%	$7,238	$362
Unincorporated	114	33	28.95%	$142,699	$7,135
Winslow	59	25	42.37%	$89,153	$4,458

Table 5-61: Population sectors exposed to high and medium hazard wildfire

Community	Total Population	Population Exposed	Percent of Population Exposed	Total Population Over 65	Population Over 65 Exposed	Percent of Population Over 65 Exposed	Total Incomes Under $20K	Incomes Under $20K Exposed	Percent of Incomes Under $20K Exposed
HIGH									
County-Wide Totals	**97,467**	**34,614**	**35.51%**	**9,173**	**4,321**	**47.11%**	**10,477**	**3,477**	**33.19%**
Holbrook	4,891	0	0.00%	441	0	0.00%	509	0	0.00%
Pinetop-Lakeside	3,563	3,276	91.95%	547	511	93.47%	292	264	90.69%
Show Low	8,011	7,843	97.90%	1,134	1,103	97.26%	774	758	97.92%
Snowflake	4,433	84	1.89%	498	10	2.06%	286	4	1.42%
Taylor	3,200	13	0.41%	283	1	0.33%	253	1	0.28%
Unincorporated	20,589	13,992	67.96%	2,837	2,247	79.20%	1,885	1,297	68.82%
Winslow	9,503	0	0.00%	935	0	0.00%	860	0	0.00%
MEDIUM									
County-Wide Totals	**97,467**	**36,256**	**37.20%**	**9,173**	**2,705**	**29.49%**	**10,477**	**4,152**	**39.63%**
Holbrook	4,891	1,393	28.48%	441	124	28.04%	509	139	27.28%
Pinetop-Lakeside	3,563	260	7.29%	547	31	5.65%	292	25	8.45%
Show Low	8,011	112	1.40%	1,134	24	2.10%	774	9	1.18%
Snowflake	4,433	2,030	45.79%	498	191	38.36%	286	137	47.71%
Taylor	3,200	959	29.97%	283	91	32.01%	253	73	29.04%
Unincorporated	20,589	4,577	22.23%	2,837	427	15.05%	1,885	444	23.56%
Winslow	9,503	3,581	37.68%	935	247	26.40%	860	219	25.50%

Table 5-62: Navajo County HAZUS building exposure to wildfire

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Navajo 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	**51,850**	**$6,202,174**	**1,275**	**$1,252,229**	**347**	**$213,620**	**$7,668,023**		
High Hazard Exposure	24,459	$3,229,871	627	$578,483	211	$108,619	$3,916,973	20%	$783,395
Medium Hazard Exposure	15,811	$1,690,996	265	$405,333	67	$43,586	$2,139,914	%	$106,996
Navajo County HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	47.17%	52.08%	49.19%	46.20%	60.80%	50.85%			
Medium Hazard Exposure	30.49%	27.26%	20.77%	32.37%	19.21%	20.40%			

Table 5-63: Holbrook HAZUS building exposure to wildfire

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Holbrook 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	**2,413**	**$273,514**	**122**	**$80,723**	**8**	**$3,123**	**$357,360**		
High Hazard Exposure	0	$0	0	$0	0	$0	$0	20%	$0
Medium Hazard Exposure	589	$71,126	23	$14,249	2	$206	$85,581	%	$4,279
Holbrook HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Medium Hazard Exposure	24.43%	26.0%	18.81%	17.65%	23.72%	06.59%			

Table 5-64: Pinetop-Lakeside HAZUS building exposure to wildfire

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Pinetop-Lakeside 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	**2,844**	**$417,321**	**118**	**$103,019**	**37**	**$19,955**	**$540,295**		
High Hazard Exposure	2,609	$376,109	108	$89,505	34	$18,171	$483,785	20%	$96,757
Medium Hazard Exposure	186	$33,266	7	$11,431	2	$1,365	$46,062	%	$2,303
Pinetop-Lakeside HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	91.72%	90.12%	91.53%	86.88%	92.06%	91.06%			
Medium Hazard Exposure	06.53%	07.97%	06.15%	11.10%	05.61%	06.84%			

Table 5-65: Show Low HAZUS building exposure to wildfire

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Show Low 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	**4,527**	**$552,295**	**222**	**$254,372**	**61**	**$35,469**	**$842,136**		
High Hazard Exposure	4,409	$539,644	217	$250,287	60	$34,838	$824,769	20%	$164,954
Medium Hazard Exposure	86	$9,168	2	$1,463	1	$531	$11,161	%	$558
Show Low HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	97.40%	97.71%	97.97%	98.39%	97.99%	98.22%			
Medium Hazard Exposure	01.91%	01.66%	0.82%	0.57%	01.32%	01.50%			

Table 5-66: Snowflake HAZUS building exposure to wildfire

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Snowflake 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	**1,783**	**$246,406**	**91**	**$58,891**	**44**	**$51,897**	**$357,193**		
High Hazard Exposure	56	$8,950	3	$1,426	2	$2,288	$12,664	20%	$2,533
Medium Hazard Exposure	777	$106,327	27	$14,214	14	$9,061	$129,602	%	$6,480
Snowflake HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	03.16%	03.63%	02.89%	02.42%	03.87%	04.41%			
Medium Hazard Exposure	43.60%	43.15%	30.10%	24.14%	32.80%	17.46%			

Table 5-67: Taylor HAZUS building exposure to wildfire

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Taylor 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	**1,241**	**$132,621**	**43**	**$38,131**	**18**	**$11,106**	**$181,858**		
High Hazard Exposure	6	$747	0	$0	0	$0	$747	20%	$149
Medium Hazard Exposure	371	$41,973	13	$14,579	8	$2,174	$58,725	%	$2,936
Taylor HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	0.47%	0.56%	0.0%	0.0%	0.0%	0.0%			
Medium Hazard Exposure	29.88%	31.65%	30.29%	38.23%	41.67%	19.57%			

Table 5-68: Unincorporated Navajo County HAZUS building exposure to wildfire

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Unincorporated (Navajo 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)**
Community-Wide Totals	**17,894**	**$2,349,535**	**366**	**$221,145**	**139**	**$58,452**	**$2,629,133**		
High Hazard Exposure	13,925	$1,948,369	261	$165,520	111	$50,075	$2,163,963	20%	$432,793
Medium Hazard Exposure	3,012	$294,508	77	$42,562	20	$5,271	$342,342	%	$17,117
Unincorporated (Navajo County) HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	77.82%	82.93%	71.31%	74.85%	79.74%	85.67%			
Medium Hazard Exposure	16.83%	12.53%	21.17%	19.25%	14.46%	09.02%			

Table 5-69: Winslow HAZUS building exposure to wildfire

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Winslow 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	**4,135**	**$550,665**	**187**	**$151,016**	**18**	**$6,823**	**$708,504**		
High Hazard Exposure	0	$0	0	$0	0	$0	$0	20%	$0
Medium Hazard Exposure	943	$172,076	37	$42,614	3	$1,622	$216,311	%	$10,816
Winslow HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Medium Hazard Exposure	22.81%	31.25%	19.87%	28.22%	18.91%	23.77%			

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 would occur that would impact all of the 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.

Vulnerability – Development Trend Analysis

By its very definition, the WUI represents the fringe of urban development as it intersects with the natural environment. As previously discussed, wildfire risks are significant for a sizeable portion of the county. Any future development will only increase the WUI areas and expand the potential exposure of structures to wildfire hazards. The CNCWPP addresses mitigation opportunities for expanding WUI areas and provides recommended guidelines for safe building and land-use practices in wildfire hazard areas.

Sources

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National Wildfire Coordination Group, 2010, Historical ICS 209 reports at: http://fam.nwcg.gov/fam-web/hist_209/report_list_209

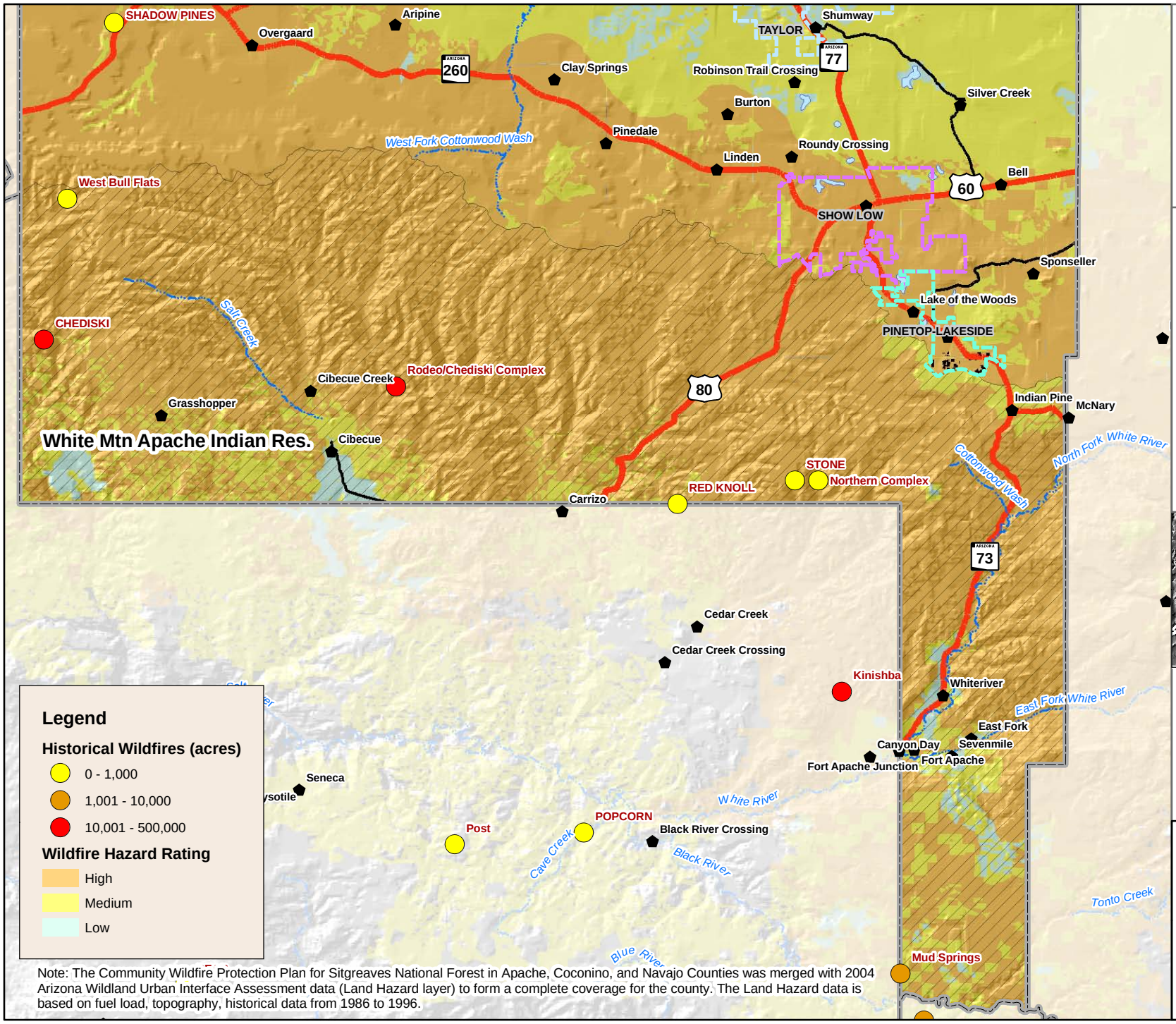
White, Seth, 2004, *Bridging the Worlds of Fire Managers and Researchers: Lessons and Opportunities From the Wildland Fire Workshops*, USDA Forest Service, General Technical Report PNW-GTR-599, March 2004

Profile Maps

Maps 5A, 5B, 5C and 5D – Wildfire Hazard Map(s)

Maps 5E through 5J – Community Specific Wildfire Hazard Maps

Navajo County Multi-Jurisdictional Hazard Mitigation Plan



Note: The Community Wildfire Protection Plan for Sitgreaves National Forest in Apache, Coconino, and Navajo Counties was merged with 2004 Arizona Wildland Urban Interface Assessment data (Land Hazard layer) to form a complete coverage for the county. The Land Hazard data is based on fuel load, topography, historical data from 1986 to 1996.

Legend

- Cities and Places
- Watercourses
- Lakes

Communities

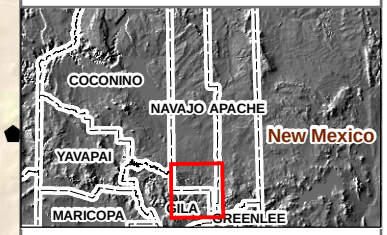
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW
- County Boundary

Roads

- Interstates
- Highways
- Arterials
- Other Reservations

Indian Reservations

- Hopi Indian Res.
- Indian Allotments
- Navajo Indian Res.
- Navajo-Hopi Joint Use Area

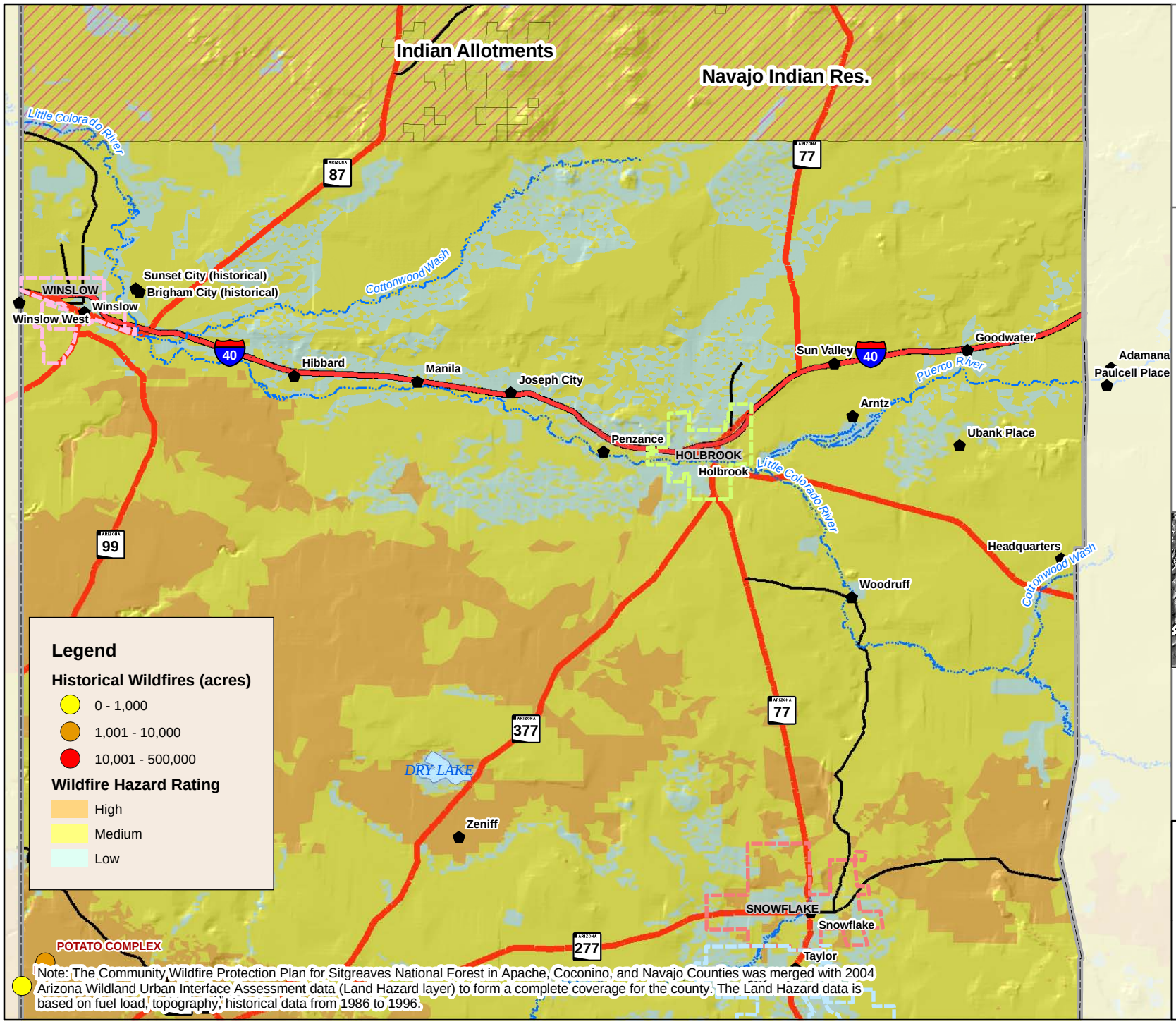


0 2 4 8 Miles

Map 5A
Navajo County
Wildfire Hazard Map
as of November 2010

Sources:ALRIS, 2010; JEF, 2010; GACC, 2010; CWPP, 2004; Arizona Interagency Working Group, 2004

Navajo County Multi-Jurisdictional Hazard Mitigation Plan

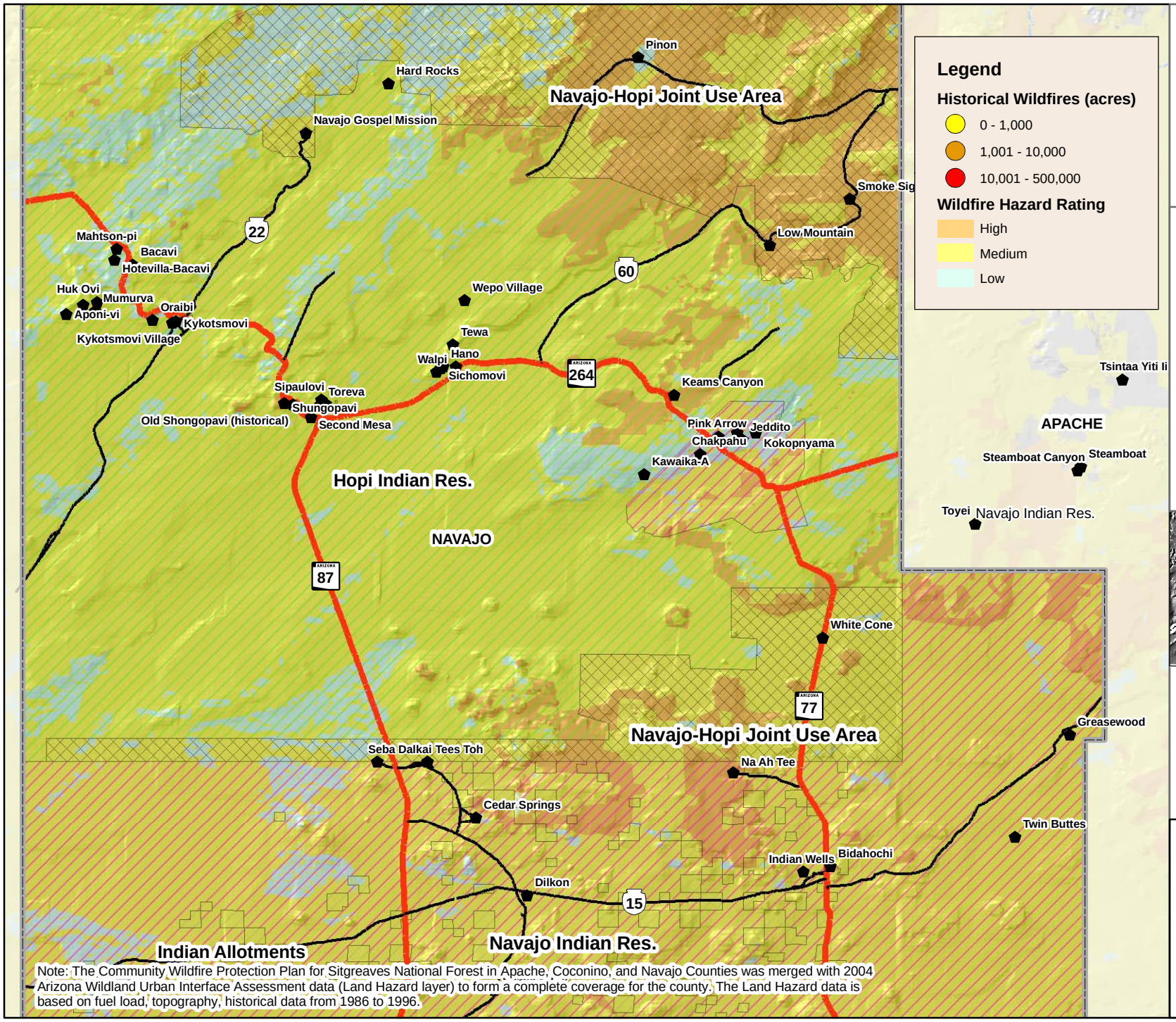


Note: The Community Wildfire Protection Plan for Sitgreaves National Forest in Apache, Coconino, and Navajo Counties was merged with 2004 Arizona Wildland Urban Interface Assessment data (Land Hazard layer) to form a complete coverage for the county. The Land Hazard data is based on fuel load, topography, historical data from 1986 to 1996.

Map 5B
Navajo County
Wildfire Hazard Map
as of November 2010

Sources:ALRIS, 2010; JEF, 2010; GACC, 2010; CWPP, 2004; Arizona Interagency Working Group, 2004

Navajo County Multi-Jurisdictional Hazard Mitigation Plan



Legend

- Cities and Places
- Watercourses
- Lakes

Communities

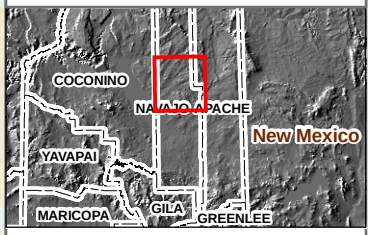
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW
- County Boundary

Roads

- Interstates
- Highways
- Arterials
- Other Reservations

Indian Reservations

- Hopi Indian Res.
- Indian Allotments
- Navajo Indian Res.
- Navajo-Hopi Joint Use Area

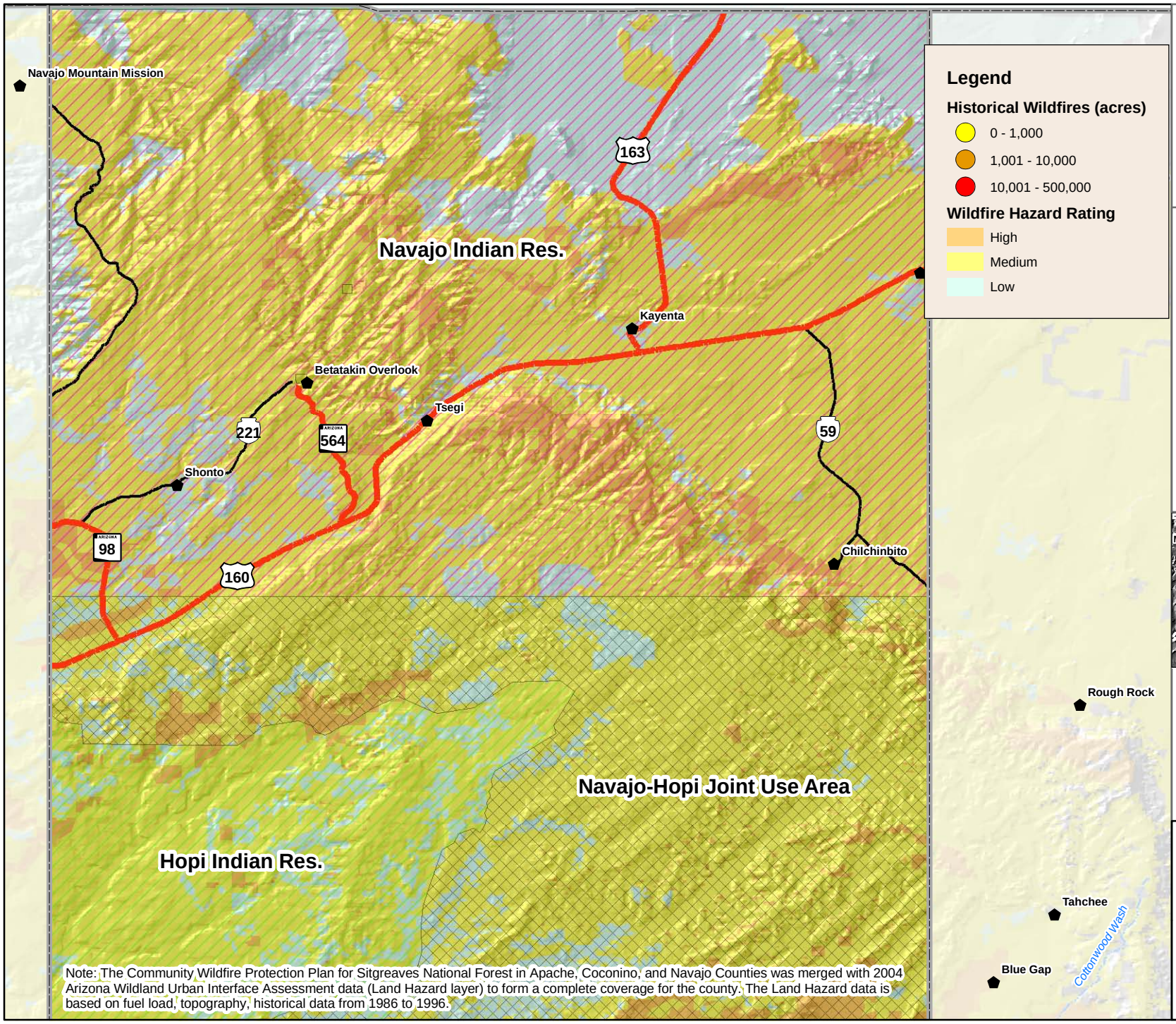


Map 5C
Navajo County
Wildfire Hazard Map
as of November 2010

Note: The Community Wildfire Protection Plan for Sitgreaves National Forest in Apache, Coconino, and Navajo Counties was merged with 2004 Arizona Wildland Urban Interface Assessment data (Land Hazard layer) to form a complete coverage for the county. The Land Hazard data is based on fuel load, topography, historical data from 1986 to 1996.

Sources:ALRIS, 2010; JEF, 2010; GACC, 2010; CWPP, 2004; Arizona Interagency Working Group, 2004

Navajo County Multi-Jurisdictional Hazard Mitigation Plan



Note: The Community Wildfire Protection Plan for Sitgreaves National Forest in Apache, Coconino, and Navajo Counties was merged with 2004 Arizona Wildland Urban Interface Assessment data (Land Hazard layer) to form a complete coverage for the county. The Land Hazard data is based on fuel load, topography, historical data from 1986 to 1996.

Legend

- Cities and Places
- Watercourses
- Lakes

Communities

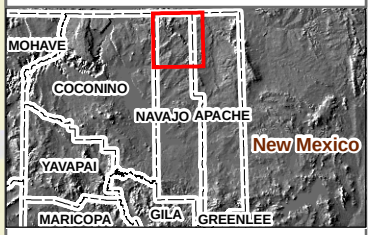
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW
- County Boundary

Roads

- Interstates
- Highways
- Arterials
- Other Reservations

Indian Reservations

- Hopi Indian Res.
- Indian Allotments
- Navajo Indian Res.
- Navajo-Hopi Joint Use Area

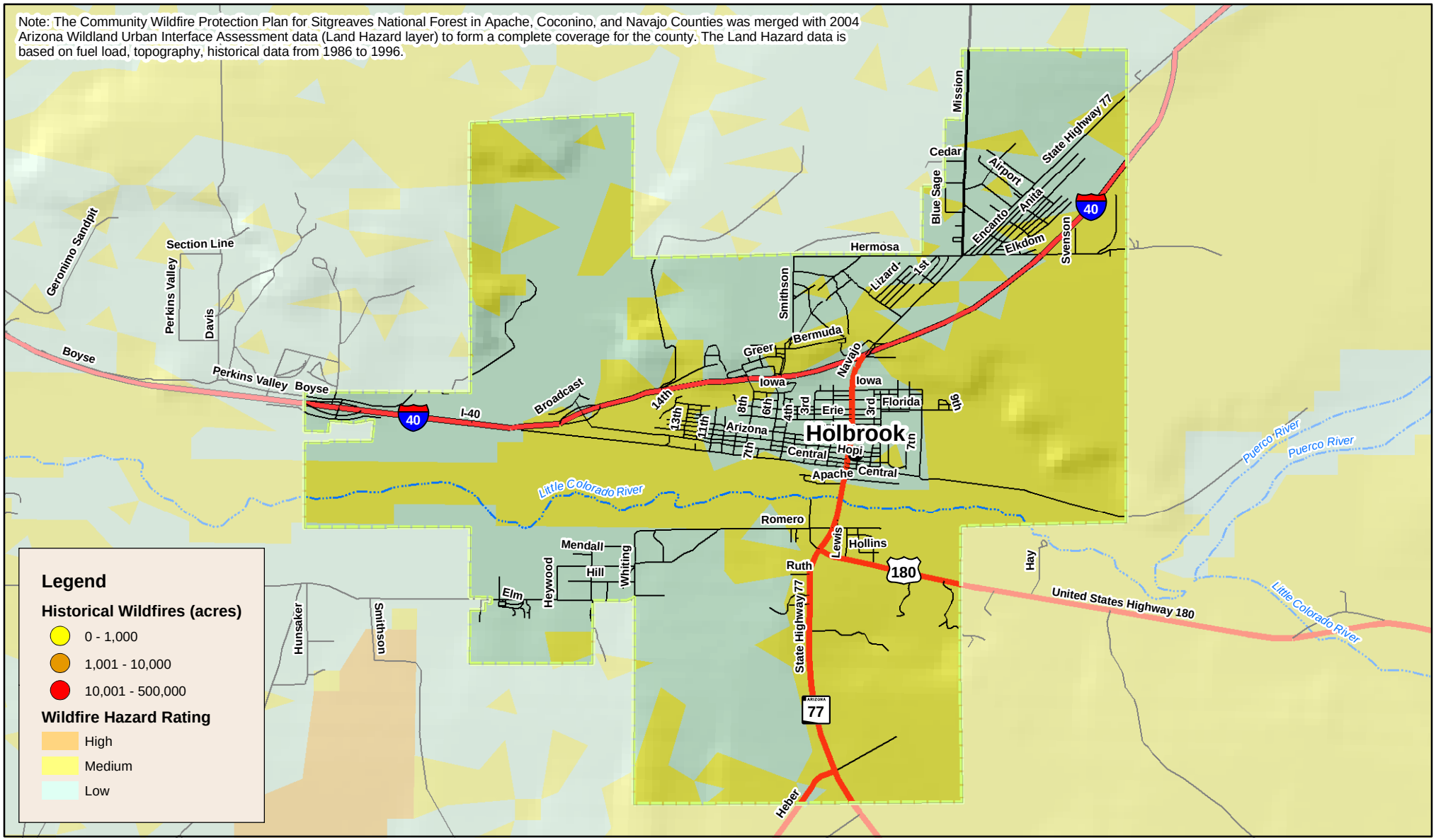


0 2 4 8 Miles

Map 5D
Navajo County
Wildfire Hazard Map
as of November 2010

Sources:ALRIS, 2010; JEF, 2010; GACC, 2010; CWPP, 2004; Arizona Interagency Working Group, 2004

Note: The Community Wildfire Protection Plan for Sitgreaves National Forest in Apache, Coconino, and Navajo Counties was merged with 2004 Arizona Wildland Urban Interface Assessment data (Land Hazard layer) to form a complete coverage for the county. The Land Hazard data is based on fuel load, topography, historical data from 1986 to 1996.



Legend

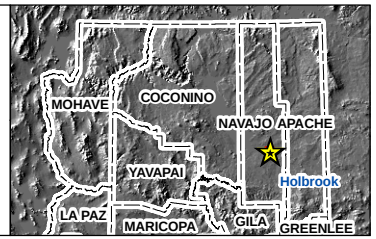
Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW

Roads
- Interstate
- US, State, County Hwys
- Major Roads
- Local Street

- Cities, Towns, Places
- Watercourses
- Lakes
- Indian Reservation
- County Boundary

0 0.25 0.5 1 Miles

Sources:ALRIS, 2010; JEF, 2010; GACC, 2010; CWPP, 2004; Arizona Interagency Working Group, 2004



Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Map 5E
City of Holbrook
Wildfire
Hazard Map
as of November 2010

Note: The Community Wildfire Protection Plan for Sitgreaves National Forest in Apache, Coconino, and Navajo Counties was merged with 2004 Arizona Wildland Urban Interface Assessment data (Land Hazard layer) to form a complete coverage for the county. The Land Hazard data is based on fuel load, topography, historical data from 1986 to 1996.

Legend

Historical Wildfires (acres)

- 0 - 1,000
- 1,001 - 10,000
- 10,001 - 500,000

Wildfire Hazard Rating

- High
- Medium
- Low

Legend

Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW

Roads
- Interstate
- US, State, County Hwys
- Major Roads
- Local Street

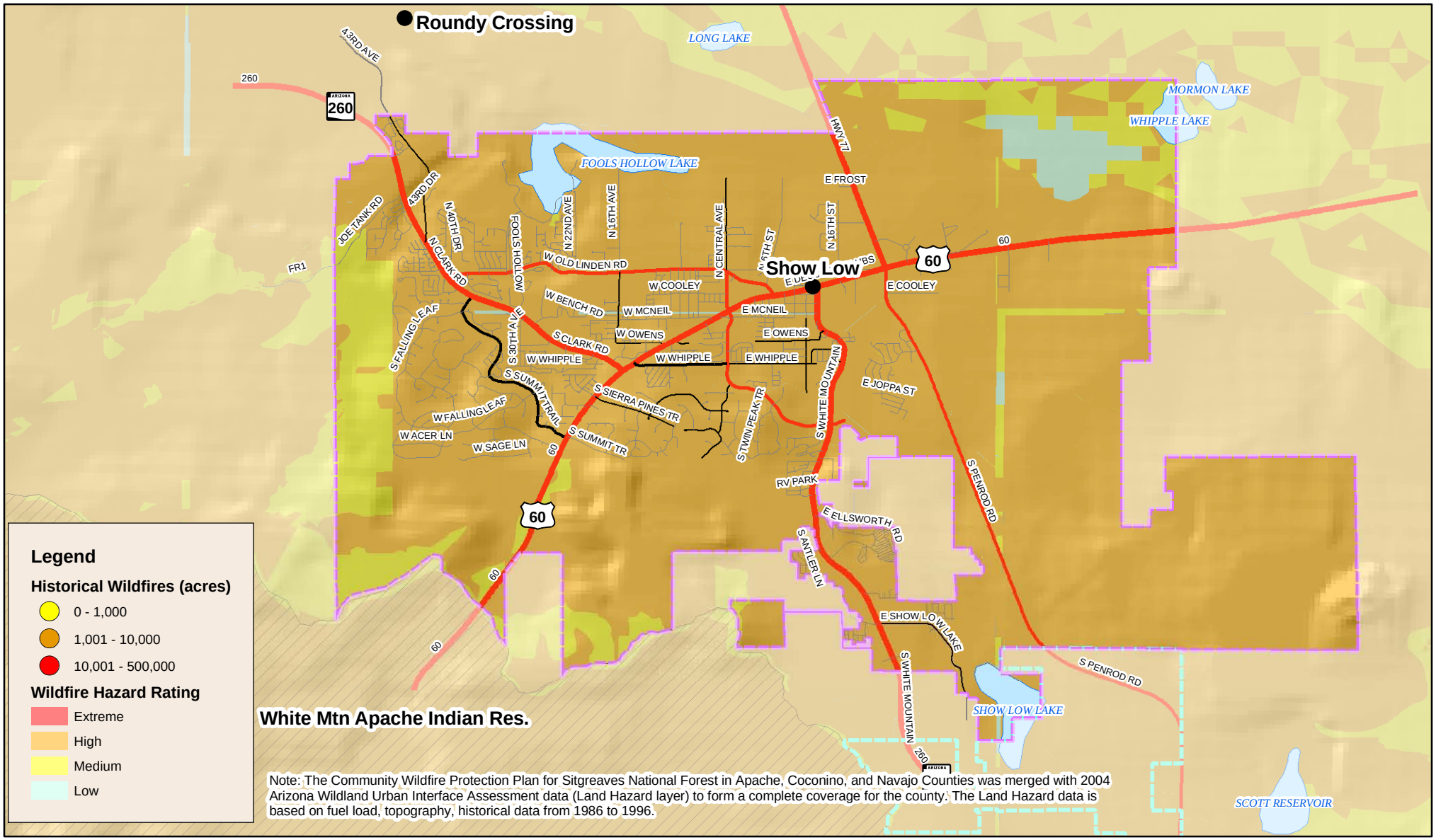
- Cities, Towns, Places
- Watercourses
- Lakes
- Indian Reservation
- County Boundary

0 0.375 0.75 1.5 Miles

Sources:ALRIS, 2010; JEF, 2010; GACC, 2010; CWPP, 2004; Arizona Interagency Working Group, 2004

Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Map 5F
Town of Pinetop-Lakeside Wildfire Hazard Map as of November 2010



Note: The Community Wildfire Protection Plan for Sitgreaves National Forest in Apache, Coconino, and Navajo Counties was merged with 2004 Arizona Wildland Urban Interface Assessment data (Land Hazard layer) to form a complete coverage for the county. The Land Hazard data is based on fuel load, topography, historical data from 1986 to 1996.

Legend

Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW

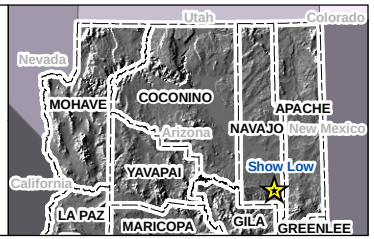
Cities, Towns, Places

ROAD CLASS
- MAJOR ARTERIAL
- MINOR ARTERIAL
- MAJOR COLLECTOR
- MINOR COLLECTOR
- LOCAL;

Watercourses
Lakes
County Boundary
Indian Reservation

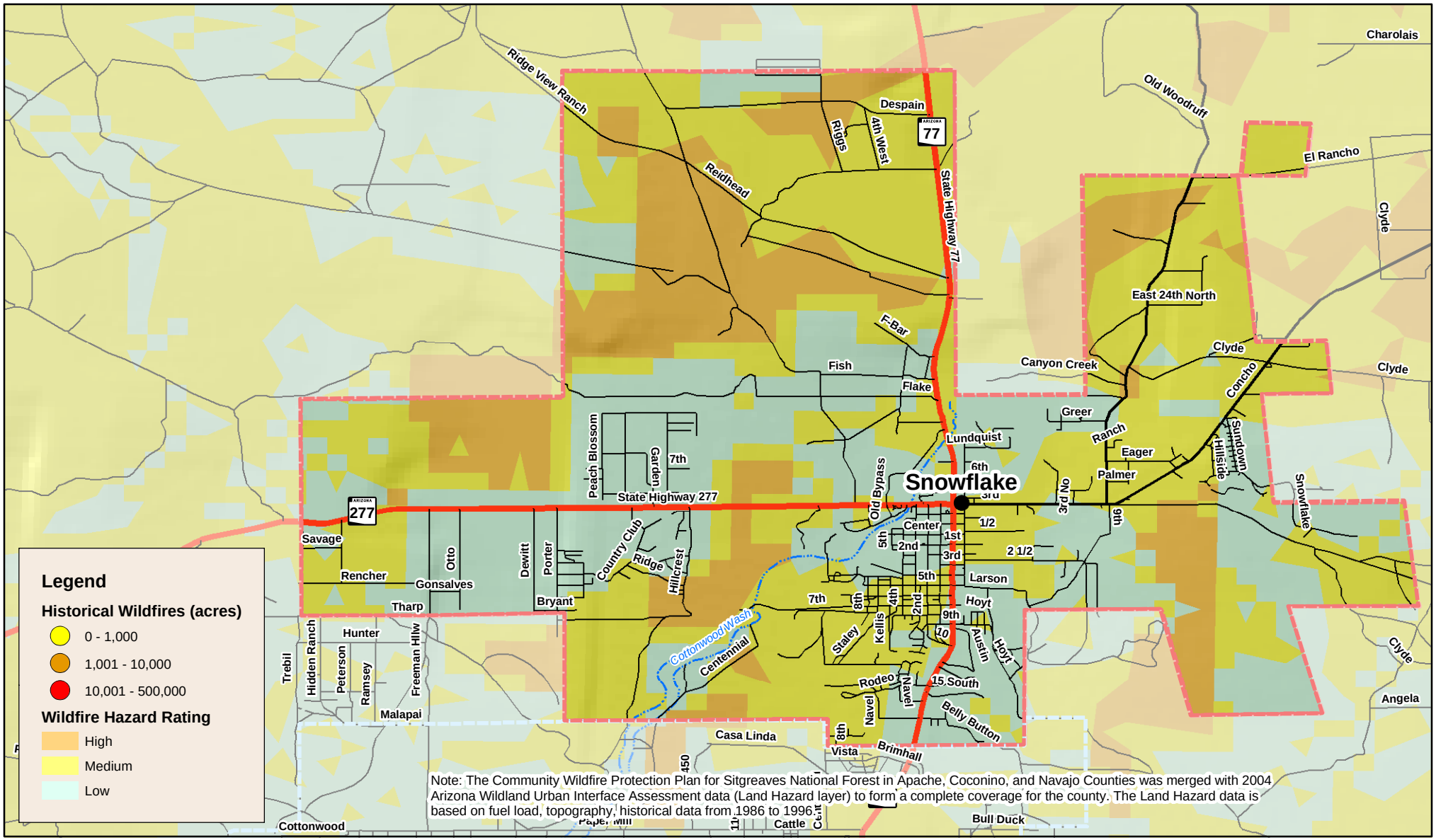
0 0.5 1 2 Miles

Sources:ALRIS, 2010; JEF, 2010; GACC, 2010; CWPP, 2004; Arizona Interagency Working Group, 2004



Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Map 5G
City of Show Low
Wildfire
Hazard Map
as of November 2010



Legend

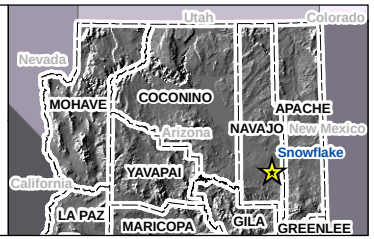
Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW

Roads
- Interstate
- US, State, County Hwys
- Major Roads
- Local Street

- Cities, Towns, Places
- Watercourses
- Indian Reservation
- Lakes
- County Boundary

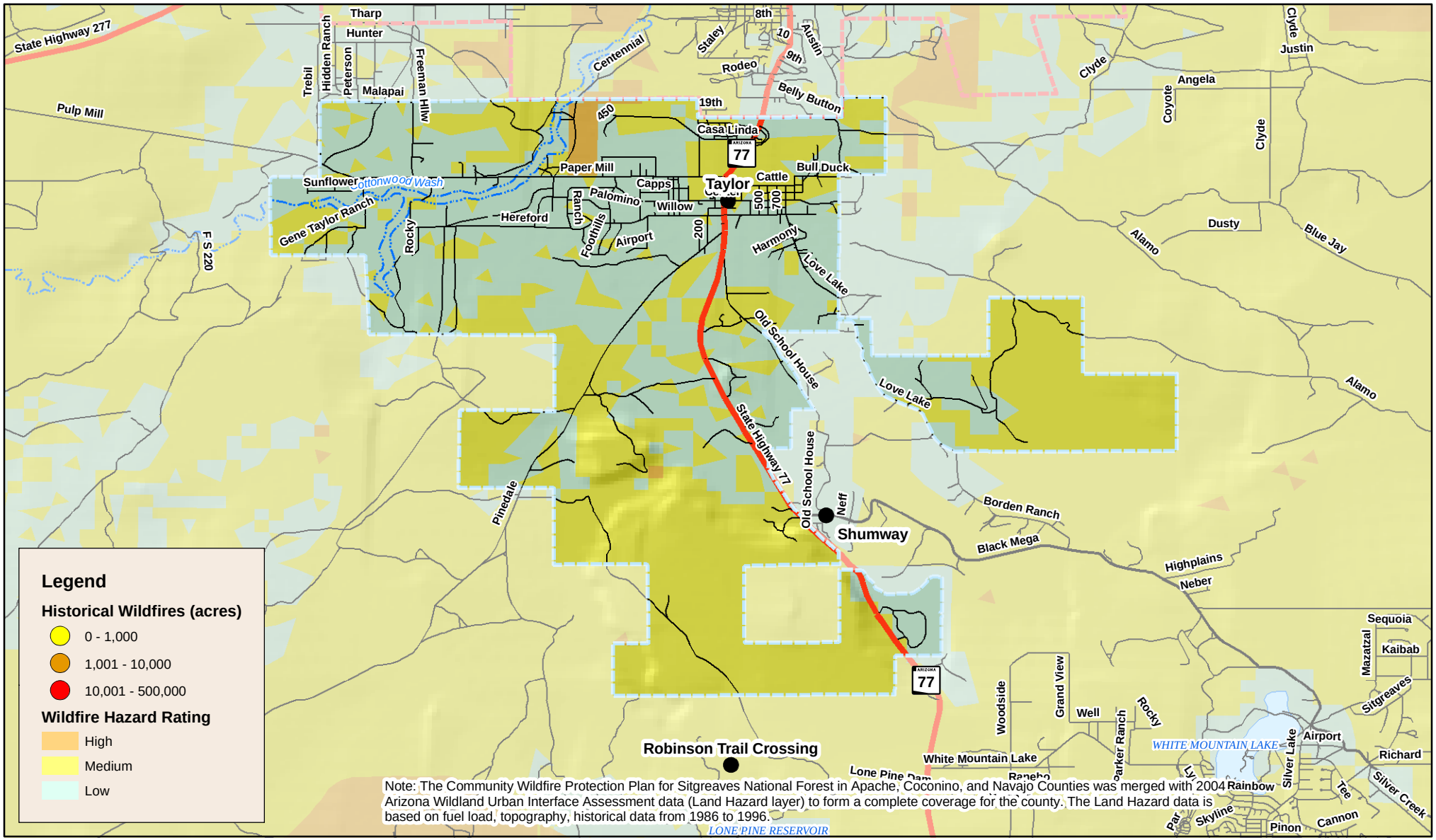
0 0.5 1 2 Miles

Sources:ALRIS, 2010; JEF, 2010; GACC, 2010; CWPP, 2004; Arizona Interagency Working Group, 2004



Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Map 5H
Town of Snowflake
Wildfire
Hazard Map
as of November 2010



Note: The Community Wildfire Protection Plan for Sitgreaves National Forest in Apache, Coconino, and Navajo Counties was merged with 2004 Arizona Wildland Urban Interface Assessment data (Land Hazard layer) to form a complete coverage for the county. The Land Hazard data is based on fuel load, topography, historical data from 1986 to 1996.

Legend

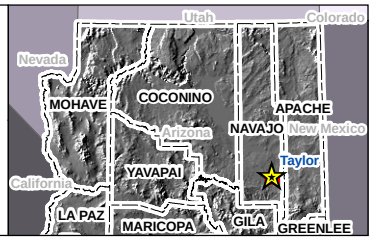
Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW

Roads
- Interstate
- US, State, County Hwys
- Major Roads
- Local Street

- Cities, Towns, Places
- Watercourses
- Lakes
- County Boundary
- Indian Reservation

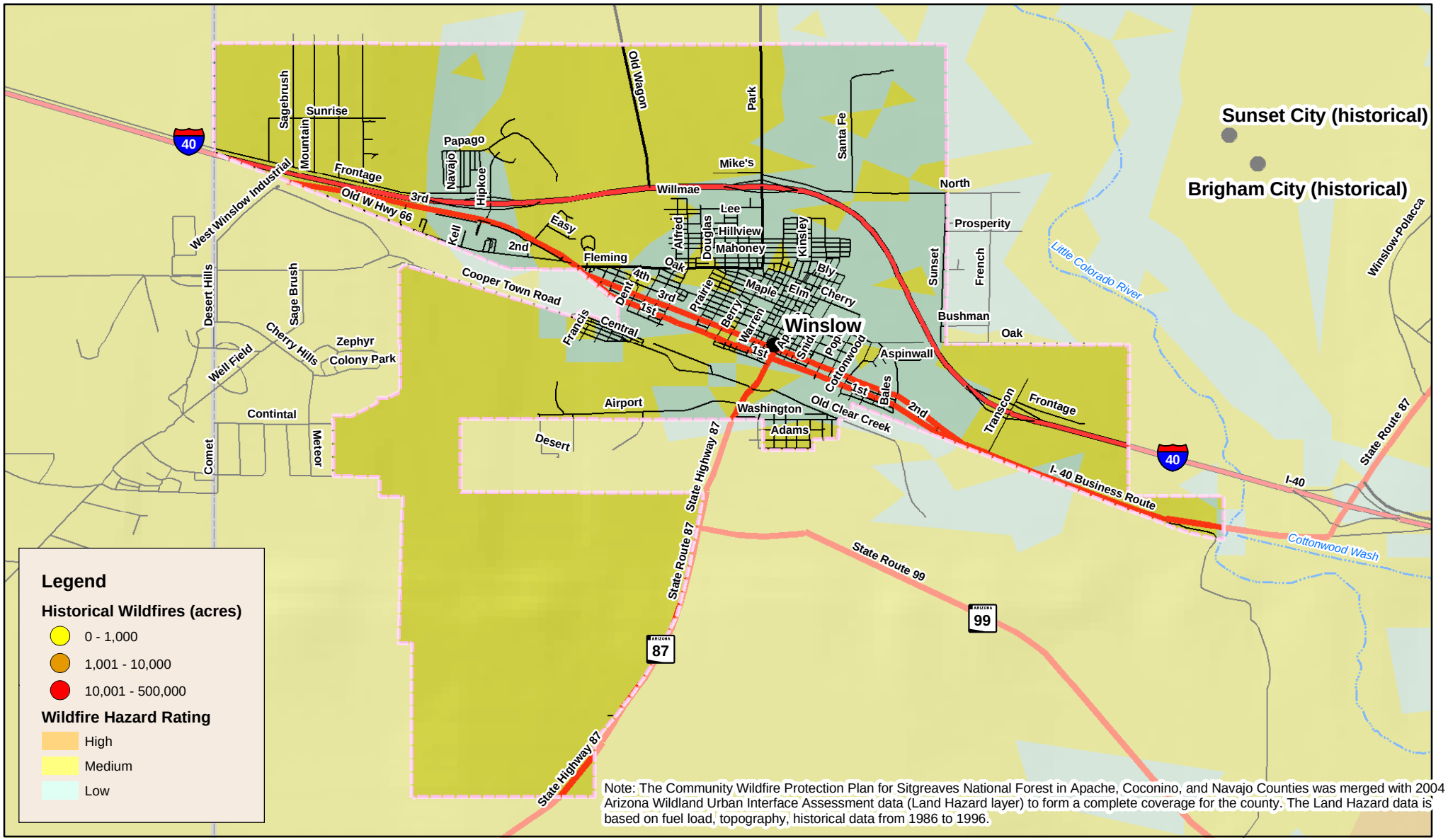
0 0.5 1 2 Miles

Sources:ALRIS, 2010; JEF, 2010; GACC, 2010; CWPP, 2004; Arizona Interagency Working Group, 2004



Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Map 5I
Town of Taylor
Wildfire
Hazard Map
as of November 2010



Note: The Community Wildfire Protection Plan for Sitgreaves National Forest in Apache, Coconino, and Navajo Counties was merged with 2004 Arizona Wildland Urban Interface Assessment data (Land Hazard layer) to form a complete coverage for the county. The Land Hazard data is based on fuel load, topography, historical data from 1986 to 1996.

Legend

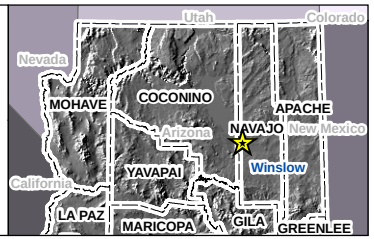
Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW

Roads
- Interstate
- US, State, County Hwys
- Major Roads
- Local Street

- Cities, Towns, Places
- Watercourses
- Indian Reservation
- Lakes
- County Boundary

0 0.25 0.5 1 Miles

Sources:ALRIS, 2010; JEF, 2010; GACC, 2010; CWPP, 2004; Arizona Interagency Working Group, 2004



Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Map 5J
City of Winslow
Wildfire
Hazard Map
as of November 2010

5.3.8 Winter Storm

Description

Severe winter storms affect many aspects of life in the County including; transportation, emergency services, utilities, agriculture and the supply of basic subsistence to isolated communities. Interstates 40 and State Roads have produced numerous fatal multi-car accidents due to heavy winter snowfall and icy road conditions. Heavy snowfalls can also leave motorists stranded in their vehicles with potentially disastrous results like hypothermia and carbon-monoxide poisoning. Significant winter storms can also hinder both ground and air emergency services vehicles from responding to accidents or other emergencies. Remote areas and communities can be easily cut-off from basic resources such as food, water, electricity, and fuel for extended periods during a heavy storm. Extremely heavy snow storms can produce excessive snow loads that can cause structural damage to under-designed buildings. Agricultural livestock can also be vulnerable to exposure and starvation during heavy winter storms.

Freezing Rain is formed as snow falls through a warm zone in the atmosphere completely melting the snow. The melted snow then passes through another zone of cool air "super cooling" the rain below freezing temperature while still in a liquid state. The rain then instantly freezes when it comes in contact with the ground or other solid object. Because freezing rain hits the ground as a rain droplet, it conforms to the shape of the ground, making one thick layer of ice. Sleet is similar to hail in appearance but is formed through atmospheric conditions more like Freezing Rain. The difference is the snowflakes don't completely thaw through the warm zone and then freeze through the cool air zone closer to the ground. Sleet typically bounces as it hits a surface similar to hail. Sleet is also informally used to describe a mixture of rain and snow and is sometimes used to describe the icy coating on trees and powerlines.

Sleet and freezing rain can cause slippery roadway surfaces and poor visibility leading to traffic accidents, and can leave motorists stranded in their vehicles with potentially disastrous results like hypothermia and carbon monoxide poisoning. Heavy sleet or freezing rain can produce excessive ice-loads on powerlines, telecommunication lines and other communication towers, tree limbs, and buildings causing power outages, communication disruptions, and other structural damage to under-designed facilities.

History

Winter snows are the lifeblood of water supplies for most of Navajo County. They can also, however, be a deadly hazard according to the database summarized in Tables 5-2. The following are highlights of the more prominent snow storm events impacting Navajo County:

- In December 1967 to January of 1968, the worst winter storm to impact Navajo County occurred paralyzing northern Arizona and brought snow to much of the state. It was actually two storms, with the second following closely on the heels of the first. However, at that time, most perceived it as one storm. On December 14, a state record of 38.0 inches fell at the Heber Ranger Station. Snowfall totals of the Rim Country included 102.7 inches at Hawley Lake, 99 inches at Greer, and 91.5 inches at the Heber Ranger Station, The Navajo Nation was extremely hard hit as two to three feet of snow fell across the community. Window Rock measured 33.5 inches. People on the reservation were instructed to use ashes from their stoves to write distress signals in the snow that could be spotted from the air. Eight people died of exposure. The total disaster cost to the State of Arizona was $466,470. (ADEM, 2010)

- In January 1997, one the largest snow storms of the decade brought heavy snow to most of northern Arizona. Heavy snow fell from early Sunday morning, the 12th and through the 14th. Four deaths from exposure occurred during, or immediately after the storm, on the Navajo Nation Reservation and were directly related to this catastrophic winter storm. Following the storm, National Guard trucks and helicopters were needed to evacuate people on the Navajo Nation who required medical attention due to chronic medical problems and who were unable to obtain needed medication. National Guard helicopters also dropped food to people and livestock who were stranded for several days following the storm. Unofficial snow accumulations up to 6 feet were

reported along the Mogollon Rim in extreme southeastern Coconino County and western Navajo County. Very strong winds created drifts as high as 10 feet at many wind-prone areas across northern Arizona. Numerous trees fell on cars, houses and roads causing power outages and property damage. Hundreds of miles of major highways were closed mainly along the Mogollon Rim and the White Mountains area. Interstate 40 from Winslow to Ashfork were closed from noon Monday, Jan. 13 through 6 AM MST, Wednesday, Jan. 15. Over 200 vehicles were stranded on these two highways. The heavy snow in Flagstaff caused Northern Arizona University to close for the first time in 20 years. Flagstaff public schools were closed for five days. This was the 12th biggest snow storm in Flagstaff's 100 years of weather records. (ADEM, 2009; NCDC, 2010)

- In February 2005 a severe winter storm and flood occurred which on February 16, 2005 the Governor declared a state of emergency due to the February 2005 Winter Storms and Flooding throughout central and eastern Arizona. Gila, Graham, Greenlee, Pinal and Yavapai Counties and the Town of Wickenburg (Maricopa County) all declared and were included in the Governor's declaration. On March 8, 2005, the declaration was amended to include all of Maricopa County and Mohave County.
    - On April 14, 2005 the President declared a Major Disaster Declaration (FEMA-1586-DR-AZ) for Public Assistance and Hazard Mitigation Grant Programs for the counties of Gila, Graham, Greenlee, Mohave, Pinal and Yavapai; the Havasupai Tribe, the Hopi Tribe, the San Carlos Apache Tribe; and the portion of the Navajo Tribal Nation within the State of Arizona. The Tribal Governments work directly with DHS/FEMA and provide their own non-federal cost share. Maricopa County was not included in the Federal declaration. (ADEM, 2010)
- In January 2010 a Winter Storm Emergency was declared: About 10 inches of snow occurred in Northern Greenlee County around Rose Peak and Hannagan Meadow. A strong Pacific winter storm produced moderate valley rain and mountain snow to much of southeast Arizona. Heavy snow combined with strong winds to produce significant blowing and drifting at the higher elevations. Strong gusty winds also affected many valley locations during the evening hours of the 19th and the early morning hours of the 20th. Heavy snow fell along the Eastern Mogollon Rim. Snowfall totals for this one storm include: Clints Well 16 inches, Heber 13 inches, Clay Springs 14 to 15 inches, and Forest Lakes 16 inches. The second in a series of strong Pacific storms moved across northern Arizona with widespread heavy precipitation. The snow level dropped down to between 5000 and 5500 feet elevation by the storm moved east. The Governor Jan Brewer signed a Declaration of Emergency and released $200,000 to pay for emergency responses and and recovery expenses from the weather events. Declared that a State of Emergency in Apache, Coconino, Gila, Greenlee, La Paz, Maricopa, Mohave, Navajo, and Yavapai Counties due to the 2010 Winter Storm beginning January 21, 2010. President Obama approved the Governor's request for Emergency Declaration in support of life and property-saving operations on Hopi Tribe and Navajo Nation lands within Apache, Coconino and Navajo counties. Isolation of some communities and rough terrain, compounded with snow accumulations, has complicated delivery of assistance like fuel, food and medical provisions. An additional $1 million was approved by Governor Brewer to cover state-share costs. Response efforts for the Hopi Tribe and Navajo Nation were named Operation Winter Storm and pooled the resources of federal, state and local agencies. Over nine days, 42,500 meals, 21,780 gallons of water, 279 cots, 5,475 blankets and over 800 wood bundles were delivered by air and ground transport. (ADEM, 2010, FEMA, 2010)

Probability and Magnitude

Snow level measurements are recorded daily across the United States and can be used to estimate the probability and frequency of severe winter storms. In Arizona, there is a 5% annual chance that snow depths between zero and 25 centimeters will be exceeded, a snowfall probability that is among the lowest in the nation (ADEM, 2009). For Navajo County and other higher altitude areas of the state, this statistic is misleading, as snowfall extremes can occur. Especially for those areas located at elevations above 6,000 feet.

The NCDC maintains a snow climatology data set that contains maximum 1-day, 2-day, and 3-day duration snow depths at various weather stations across the nation (except Hawaii). The data reflects the maximum depth of snowfall recorded as of 2006. Maps 3A and 3B represent a graphical depiction of zones of historically maximum snow depths for the 1- and 3-day durations for the county. Bordering gage stations in California, Nevada, Utah, Colorado, and New Mexico were also used to ensure that no boundary effects were created.

Maps 6A and 6B depict the geographically varying levels of exposure to the maximum 1-day and 3-day snow depths, respectively.

Vulnerability – CPRI Results

Snow storm CPRI results for each community are summarized in Table 5-70 below.

Table 5-70: CPRI results by jurisdiction for winter storms

Participating Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Holbrook	Possibly	Negligible	6 - 12 hours	< 1week	1.95
Show Low	Highly Likely	Critical	6 - 12 hours	< 1 weeks	3.45
Snowflake	Possibly	Limited	6 - 12 hours	< 1 week	2.25
Taylor	Possibly	Negligible	> 24 hours	< 1 week	1.65
Winslow	Likely	Critical	12 - 24 hours	< 1 week	2.85
Unincorporated Navajo County	Highly Likely	Castastrophic	12 - 24 hours	< 1 week	3.85
				County-wide average CPRI =	**2.67**

NOTE: Pinetop-Lakeside did not provide data

The National Weather Service in Flagstaff[20], uses the following criteria for issuing warnings about winter storm weather:

1. **Blizzard Warning:** Sustained winds or frequent gusts of 35 mph or more, AND visibility frequently below 1/4 mile in considerable snow and/or blowing snow, AND above conditions are expected to prevail for 3 hours or longer.

2. **Winter Storm Warning:** Issued when more than one winter hazard is involved producing life threatening conditions, such as a combination of heavy snow, strong winds producing widespread blowing and drifting snow, freezing rain, or wind chill.

3. **Heavy Snow Warning Criteria:**

Above 8500 ft	12 inches/12 hrs	18 inches/24 hrs
7000 to 8500 ft	8 inches/12 hrs	12 inches/24 hrs
5000 to 7000 ft	6 inches/12 hrs	10 inches/24 hrs
Below 5000 ft	2 inches/12 hrs	4 inches/24 hrs

4. **Snow Advisory Criteria:**

Above 8500 ft	6 to 12 inches/12hrs	12 to 18 inches/24 hrs
7000 to 8500 ft	4 to 8 inches/12 hrs	8 to 12 inches/24 hrs
5000-7000 ft	3 to 6 inches/12 hrs	6 to 10 inches/24 hrs
Below 5000 ft	1 to 2 inches/12 hrs	2 inches/24 hrs*

*or snow accumulation in any location where it is a rare event.

[20] Based on information posted at the following NWS URL: http://www.wrh.noaa.gov/fgz/safety/criteria.php?wfo=fgz

5. **Blowing Snow Advisory Criteria:** Visibility frequently at or below 1/4 mile.

6. **High Wind Warning Criteria:** Issued for strong winds not associated with severe local storms. These include: gradient, mesoscale, and channeled winds; Foehn/Chinook/downslope winds; and winds associated with tropical cyclones. The criteria:

Sustained winds	40 mph or greater	last 1 hr or longer
Wind gusts	58 mph or greater	for any duration

7. **Wind Advisory:** Issued for the same types of wind events as a High Wind Warning, but at lower speed thresholds. The criteria:

Sustained winds	30-39 mph	last 1 hr or longer
Wind gusts	40-57 mph	for any duration

8. **Visibility Hazards:** Visibility reduced to 1/4 mile or less by fog, blowing dust/sand, and smoke.

9. **Wind Chill:** Issued for a wind chill factor of minus 20 ° Fahrenheit or colder.

10. **Freezing Rain/Drizzle, or Sleet:** widespread, dangerous, and damaging accumulations of ice or sleet.

11. **Frost or Freeze Warning:** Issued when temperatures are critical for crops and sensitive plants. Criteria is season dependent, but usually a freeze warning is appropriate when temperatures are expected to fall below freezing for at least 2 hours.

Vulnerability – Loss Estimations

There are no standardized methods for estimating losses associated with winter storm events and none are made for this Plan. From a historical perspective, both human and infrastructure losses could be expected with any major winter storm event, and especially regarding traffic accidents and human exposure.

Vulnerability – Development Trend Analysis

Future development will expand the exposure of life and property to the hazard of winter storm events. Enforcement and/or implementation of modern building codes to regulate new developments in conjunction with public education on how to respond to hazardous winter conditions is probably the best way to mitigate against such losses.

Sources

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

National Weather Service, Flagstaff Forecast Office, 2011, web information accessed at the following URL: http://www.wrh.noaa.gov/fgz/safety/criteria.php?wfo=fgz

U.S. Dept of Commerce, National Climatic Data Center, 2010, Storm Events Database, accessed via the following URL: http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms

U.S. Dept of Commerce, National Climatic Data Center, 2010, U.S. Snow Climatology Project, accessed via the following URL: http://www.ncdc.noaa.gov/ussc/USSCAppController?action=map

Profile Maps

Map 6A – County-wide Maximum 1-Day Snow Depths

Map 6B – County-wide Maximum 3-Day Snow Depths

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 5-71 summarizes the hazards selected for mitigation by each jurisdiction and will be the basis for each jurisdictions mitigation strategy.

Table 5-71: Summary of hazards to be mitigated by each participating jurisdiction

Jurisdiction	Dam Failure	Drought	Flooding	HAZMAT	Levee Failure	Severe Wind	Wildfire	Winter Storm
Unincorporated Navajo County		x	x	x	x	x	x	x
Holbrook		x	x		x	x		x
Pinetop-Lakeside	x	x	x			x	x	x
Show Low	x	x	x	x		x	x	
Snowflake		x	x			x	x	x
Taylor	x	x	x			x		x
Winslow		x	x		x	x	x	

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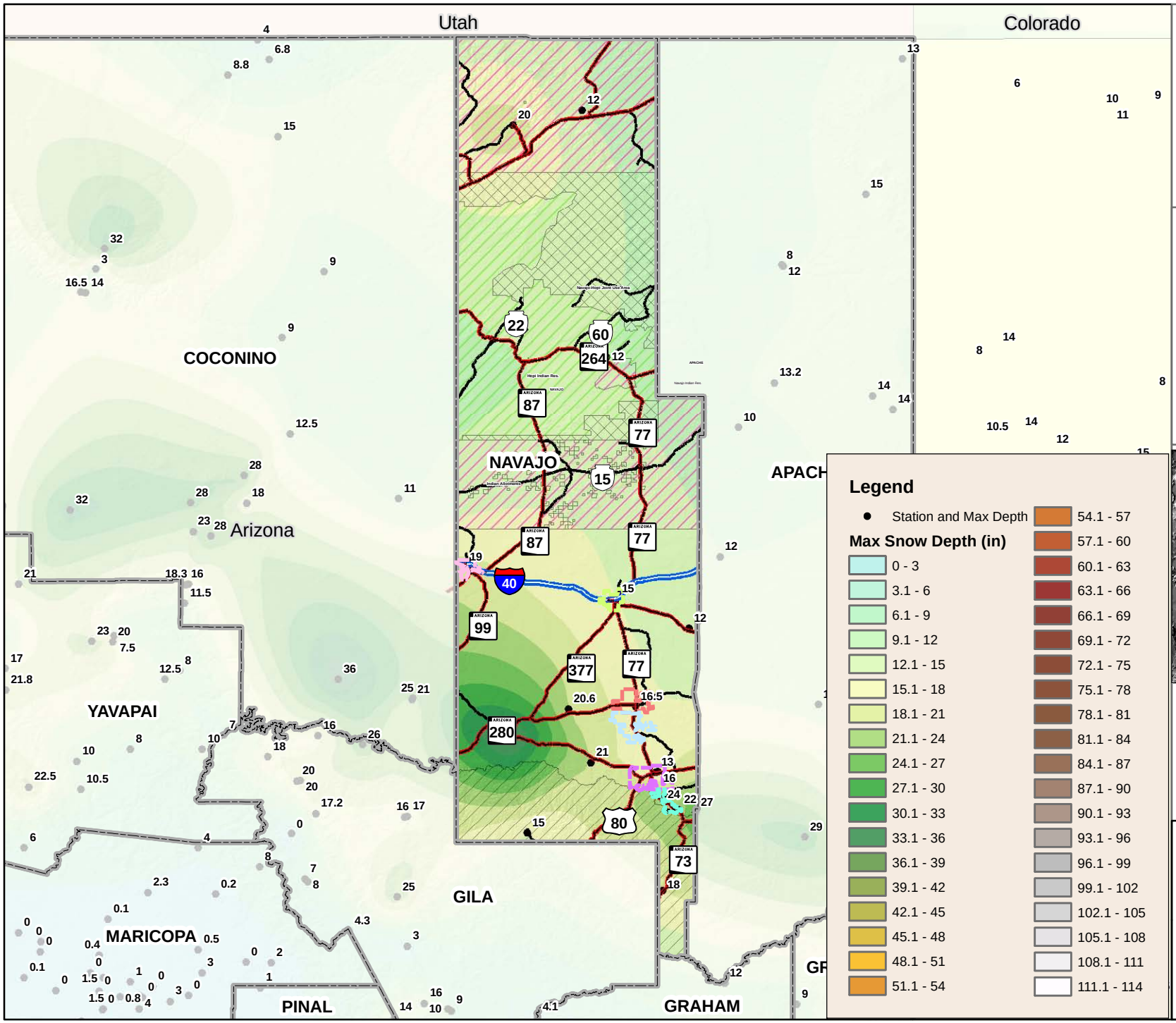
Navajo County Multi-Jurisdictional Hazard Mitigation Plan

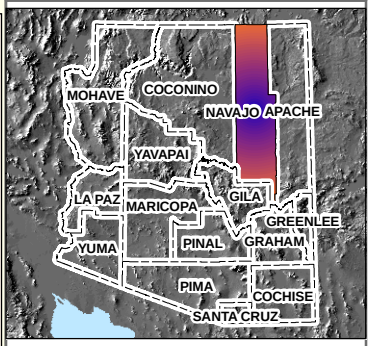


Legend

Communities
- HOLBROOK
- PINETOP-LAKESIDE
- SHOW LOW
- SNOWFLAKE
- TAYLOR
- WINSLOW
- County Boundary

Roads
- Interstates
- Highways
- Arterials
- Other Reservations

Indian Reservations
- Hopi Indian Res.
- Indian Allotments
- Navajo Indian Res.
- Navajo-Hopi Joint Use Area

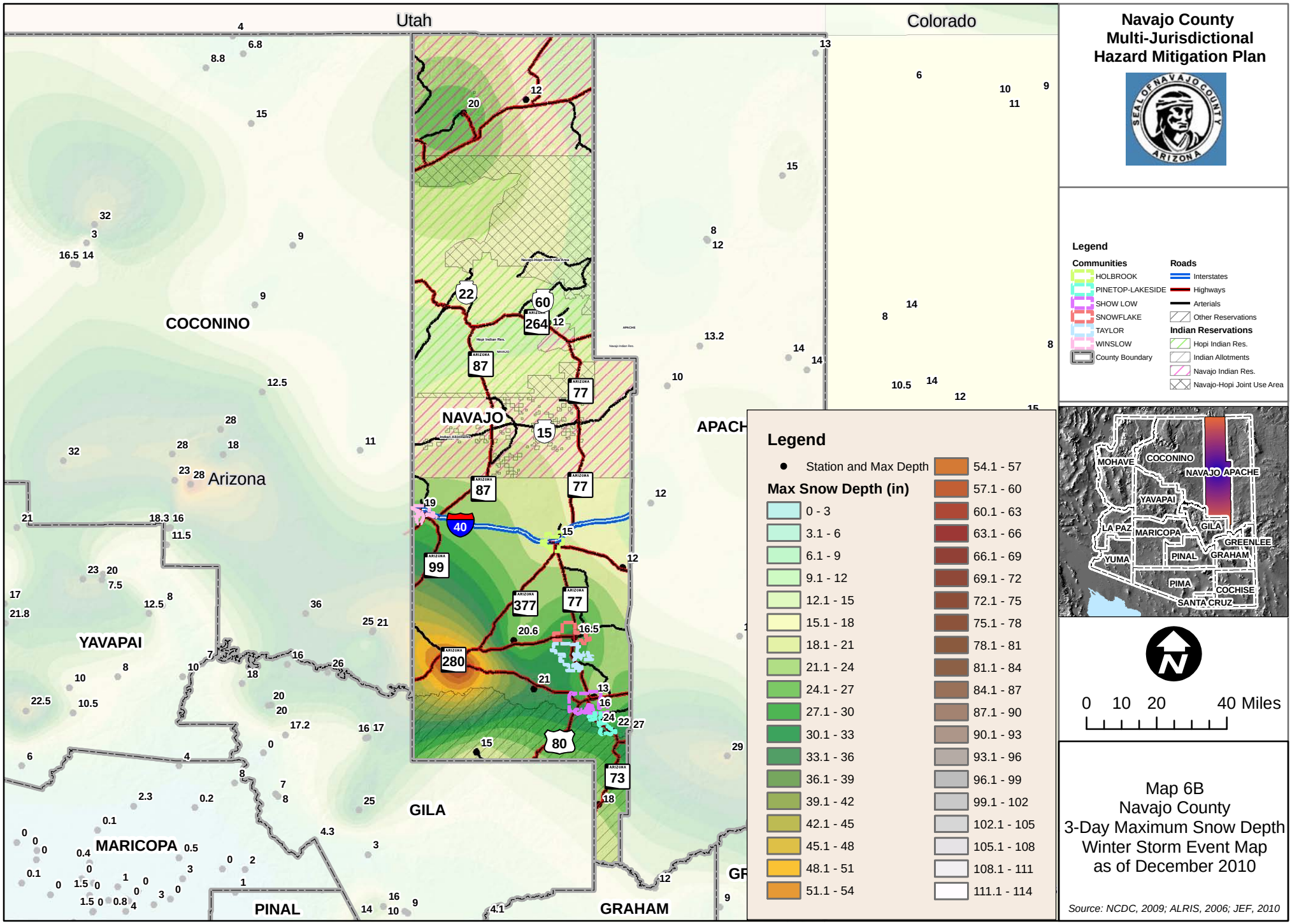


0 10 20 40 Miles

Map 6A
Navajo County
1-Day Maximum Snow Depth
Winter Storm Event Map
as of December 2010

Source: NCDC, 2009; ALRIS, 2006; JEF, 2010

Navajo County Multi-Jurisdictional Hazard Mitigation Plan



Map 6B
Navajo County
3-Day Maximum Snow Depth
Winter Storm Event Map
as of December 2010

Source: NCDC, 2009; ALRIS, 2006; JEF, 2010

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 2006 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 2006 Plan goals and objectives were developed using the 2004 State Plan[21] 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 and the Local Planning Team for each jurisdiction was made with consideration of the following[22]:

- Do the goals and objectives identified in the 2006 Plan reflect the updated risk assessment?
- Did the goals and objectives identified in the 2006 Plan lead to mitigation projects and/or changes to policy that helped the jurisdiction(s) to reduce vulnerability?
- Do the goals and objectives identified in the 2006 Plan support any changes in mitigation priorities?
- Are the goals and objectives identified in the 2006 Plan reflective of current State goals?

After much discussion and comparison of the 2006 Plan goals and objectives to the 2010 State Plan, the planning team felt the 2006 Plan goals and objectives adequately reflected the continuing mitigation goals of the Planning Team and chose to retain the goals and objectives list with a few modifications:

- Add Objective 2.E – Promote and educate citizen preparedness for all hazards.
- Insert a new Goal 10 to read *Extreme/Severe Weather* and use the same objectives as the current Goal 10 only changing 10.B to use Extreme/Severe Weather.
- Renumber Goals/Objectives 10 and 11 to 11 and 12.

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

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

Accordingly, the following list of goals and objectives will be used by all participating jurisdictions, as follows:

Goal 1. Promote disaster-resistant future development.

Objective 1.A Update, develop, and support general plans, ordinances, and codes in accordance with state and federal regulations, to limit development in hazard areas or build to standards that will prevent or reduce damage.

Objective 1.B Adopt and support local, state and federal codes that protect assets and new development in hazard areas.

Goal 2. Promote public understanding, support, and demand for hazard mitigation.

Objective 2.A Educate the public to increase awareness of hazards and opportunities for mitigation actions.

Objective 2.B Promote partnerships among the federal, state, counties, local and tribal governments to identify, prioritize, and implement mitigation actions.

Objective 2.C Promote hazard mitigation in the business, residential, and agricultural community.

Objective 2.D Monitor and publicize the effectiveness of mitigation actions implemented community wide.

Objective 2.E Promote and educate citizen preparedness for all hazards.

Goal 3. Build and support local capacity and commitment to become less vulnerable to hazards.

Objective 3.A Improve existing capabilities to warn the public of emergency situations.

Objective 3.B Develop mitigation programs to enhance the safety of the residents of each community during an emergency.

Goal 4. Improve hazard mitigation coordination and communication with federal, state, local, and tribal governments.

Objective 4.A Establish and maintain a close working relationship with federal, state agencies and local and tribal governments.

Goal 5. Reduce the potential level of damage and losses to people, existing and future critical facilities/infrastructure, and other community assets due to floods.

Objective 5.A Implement policies, procedures and regulations which reduce the potential exposure to flood hazards.

Objective 5.B Decrease vulnerability of community assets, especially critical facilities located in the 100-year floodplain.

Objective 5.C Improve coordination with state and federal flood-related agencies.

Objective 5.D Maintain compliance with the National Flood Insurance Program (NFIP) requirements.

Objective 5.E Promote changes in current regulations to facilitate hazard mitigation.

Goal 6. Reduce the level of human loss and damage and losses to existing and future critical facilities/infrastructure, and other community assets due to wildland fires.

Objective 6.A Develop a comprehensive approach to reducing the level of damage and losses due to wildland fires.

Objective 6.B Protect life, improved property, and natural resources with vulnerability to the effects of wildland fires.

Objective 6.C Improve coordination and support existing efforts to mitigate wildland fire hazards.

Objective 6.D Educate the public about wildland fire dangers and mitigation measures.

Objective 6.E Promote changes in current regulations to facilitate hazard mitigation.

Goal 7. Reduce the potential level of damage and losses to people, existing and future critical facilities/infrastructure, and other community assets due to dam/levee failure.

Objective 7.A Develop a comprehensive approach to reducing the level of damage and losses due to dam/levee failure.

Objective 7.B Protect life, improved property, and natural resources with vulnerability to the effects of dam/levee failure.

Objective 7.C Educate the public about dam/levee failure dangers and mitigation measures.

Goal 8. Reduce the potential level of damage and losses to people, existing and future critical facilities/infrastructure, and other community assets due to drought.

Objective 8.A Develop a comprehensive approach to reducing the level of damage and losses due to drought.

Objective 8.B Protect existing assets with vulnerability to the effects of drought.

Objective 8.C Coordinate with and support existing efforts to mitigate drought (e.g., Arizona Governor's Arizona Drought Task Force).

Objective 8.D Promote water conservation and education.

Goal 9. Reduce the potential level of damage and losses to people, existing and future critical facilities/infrastructure, and other community assets due to hazardous materials incidents.

Objective 9.A Develop a comprehensive approach to reducing the level of damage and losses due to hazardous materials incidents.

Objective 9.B Protect existing assets with vulnerability to the effects of hazardous materials incidents.

Objective 9.C Educate the public about hazardous materials dangers and mitigation measures.

Goal 10. Reduce the potential level of damage and losses to people, existing and future critical facilities/infrastructure, and other community assets due to extreme/severe weather.

Objective 10.A Develop a comprehensive approach to reducing the level of damage and losses due to extreme/severe weather.

Objective 10.B Protect life, improved property, and natural resources with vulnerability to the effects of extreme/severe weather.

Goal 11. Reduce the potential level of damage and losses to people, existing and future critical facilities/infrastructure, and other community assets due to other natural hazards.

Objective 11.A Develop a comprehensive approach to reducing the level of damage and losses due to other natural hazards.

Objective 11.B Protect life, improved property, and natural resources with vulnerability to the effects of other natural hazards.

Goal 12. Reduce the potential level of damage and losses to people, existing and future critical facilities/infrastructure, and other community assets due to other human caused hazards.

Objective 12.A Develop a comprehensive approach to reducing the level of damage and losses due to other human caused hazards.

Objective 12.B Protect life, improved property, and natural resources with vulnerability to the effects of other human caused hazards.

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.

The Planning Team reviewed the information provided in Section 5 of the 2005 Plan, and specifically Tables 5-1 through 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 and 5-4 were combined into a new table to not only report on the regulatory capabilities, but also to summarize the codes, plans, and studies/reports used by a jurisdiction. Therefore, Table 5-4 was dropped from the Plan.

6.2.1 Jurisdictional Capabilities

Tables 6-1-1 through 6-1-7 summarize the legal and regulatory mitigation capability for each participating jurisdiction. Information provided includes a brief listing of current codes, mitigation relevant ordinances, plans, and studies/reports. Tables 6-2-1 through 6-2-7 summarize the staff and personnel resources employed by each jurisdiction that serve as a resource for hazard mitigation. Tables 6-3-1 through 6-3-7 summarize the fiscal capability and budgetary tools available to each participating jurisdiction. Each of these three tables are listed below by jurisdiction.

Table 6-1-1: Legal and regulatory capabilities for Navajo County

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
CODES	•	•
ORDINANCES	• Navajo County Ordinance 01- 06 – Outdoor Fire Ordinance • Navajo County Ordinance FCD 01-08 – Flood Damage Prevention Ordinance • Navajo County Ordinance 07-10 – Fireworks Ordinance	• Navajo County Emergency Management • Navajo County Flood Control • Navajo County Emergency Management
PLANS, MANUALS, and/or GUIDELINES	• Comprehensive Plan - Includes sections related to Land use, Transportation, Water Resources, Open Space • Navajo County Multi-Hazard Mitigation Plan (2006)	• Navajo County Public Works
STUDIES	• I-40 Commodity Flow Study	• Navajo County Emergency Management/Arizona State Emergency Response Commission

Table 6-2-1: Technical staff and personnel capabilities for Navajo County		
Staff/Personnel Resources	☑	**Department/Agency - Position**
Planner(s) or engineer(s) with knowledge of land development and land management practices	☑	Public Works / Planning & Zoning
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	☑	Public Works (3)
Planner(s) or engineer(s) with and understanding of natural and/or human-caused hazards	☑	Public Works
Floodplain Manager	☑	Flood Control Districts
Surveyors	☑	Public Works (2)
Staff with education or expertise to assess the community's vulnerability to hazards	☑	Public Works (2)
Personnel skilled in GIS and/or HAZUS	☑	Public Works (3)
Scientists familiar with the hazards of the community		No
Emergency Manager	☑	Emergency Management (2)
Grant writer(s)	☑	Yes

Table 6-3-1: Fiscal capabilities for Navajo County		
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 levee taxes for specific purposes	Yes	
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	
Incur debt through special tax bonds	Yes	
Other		

Table 6-1-2: Legal and regulatory capabilities for Holbrook		
Regulatory Tools for Hazard Mitigation	**Description**	**Responsible Department/Agency**
CODES	• 1994 UPC • 1997 UBC • 1997 UMC • 1999 UEC • Holbrook City Code	• City Clerk
ORDINANCES	• Flood Damage Prevention Ordinance (Chapter 8 of City Code)	• City Clerk
PLANS, MANUALS, and/or GUIDELINES	• Emergency Operations Plan (1/2004) - Used to respond to emergencies/disasters. • General Plan (Revised 10/1997) - Used to present a series of polices that establish a basic direction & approach to guide the future growth & development of Holbrook. • Water System Master Plan (4/2001) - A detailed plan, including: system inventory, mapping, sampling, computer modeling and improvement priority list. • Sewer System Master Plan (4/2001) - A detailed plan, including: system inventory, mapping, sampling, computer modeling and improvement priority list. • Street Master Plan (12/2003) - A long term plan for preventive maintenance & pavement preservation, including an inventory, traffic count, treatment options & projected costs. • City of Holbrook Multi-Hazard Mitigation Plan (2006)	• City Manager • City Clerk
STUDIES	•	•

Table 6-2-2: Technical staff and personnel capabilities for Holbrook		
Staff/Personnel Resources	☑	**Department/Agency - Position**
Planner(s) or engineer(s) with knowledge of land development and land management practices	☑	Ray Alley, City Manager
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure		(Contract Engineer - Caleb Lanting, GHD Engineering)
Planner(s) or engineer(s) with and understanding of natural and/or human-caused hazards		None
Floodplain Manager	☑	Interim-Cher Millage, City Clerk / City Of Holbrook
Surveyors	☑	Public Works Dept. / City Of Holbrook
Staff with education or expertise to assess the community's vulnerability to hazards	☑	Public Works Dept. / City Of Holbrook
Personnel skilled in GIS and/or HAZUS	☑	Navajo County
Scientists familiar with the hazards of the community		None
Emergency Manager	☑	Chief Mark Jackson, Police Dept. / City Of Holbrook
Grant writer(s)	☑	Admin. Dept. / City Of Holbrook
Others		

Table 6-3-2: Fiscal capabilities for Holbrook		
Financial Resources	**Accessible or Eligible to Use (Yes, No, Don't Know)**	**Comments**
Community Development Block Grants	Yes	
Capital Improvements Project funding	No	
Authority to levee taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	
Impact fees for homebuyers or new developments/homes	No	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Other/Improvement Districts	Yes	

Table 6-1-3: Legal and regulatory capabilities for Pinetop-Lakeside		
Regulatory Tools for Hazard Mitigation	**Description**	**Responsible Department/Agency**
CODES	• Pinetop-Lakeside Town code	• Pinetop- Lakeside Community Development Department. • Pinetop-Lakeside Public Works Department • Pinetop-Lakeside Police Department
ORDINANCES	• Forest Health and Fire Protection	• Pinetop-Lakeside Community Development Department
PLANS, MANUALS, and/or GUIDELINES	• General Plan (updated 2011) - Planning Tool for Town • Town of Pinetop-Lakeside Multi-Hazard Mitigation Plan (2006)	• Pinetop- Lakeside Community Development Department. • Pinetop-Lakeside Public Works Department
STUDIES	• Navajo County Sub Regional Transportation Study	• Pinetop-Lakeside Public Works Department

Table 6-2-3: Technical staff and personnel capabilities for Pinetop-Lakeside		
Staff/Personnel Resources	☑	**Department/Agency - Position**
Planner(s) or engineer(s) with knowledge of land development and land management practices	☑	1FTE Town Planner Community Development
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure		Andy Romance, contracted Engineer Mountain Standard Inc
Planner(s) or engineer(s) with and understanding of natural and/or human-caused hazards		
Floodplain Manager	☑	1 FTE Floodplain Administrator Community Development
Surveyors		
Staff with education or expertise to assess the community's vulnerability to hazards		
Personnel skilled in GIS and/or HAZUS	☑	Brian McCabe (GIS)
Scientists familiar with the hazards of the community		
Emergency manager	☑	Included in duties of Police Chief
Grant writer(s)	☑	1FTE Town Managers Office
Others		

Table 6-3-3: Fiscal capabilities for Pinetop-Lakeside		
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 levee taxes for specific purposes	YES	
Fees for water, sewer, gas, or electric service	NO	
Impact fees for homebuyers or new developments/homes	YES	
Incur debt through general obligation bonds	YES	
Incur debt through special tax bonds	NO	
Other		

Table 6-1-4: Legal and regulatory capabilities for Show Low		
Regulatory Tools for Hazard Mitigation	**Description**	**Responsible Department/Agency**
CODES	• IBC 2006 Building Code	• Community Development
ORDINANCES	• City of Show Low Zoning Ordinance • Subdivision Ordinance or Regulations • City of Show Low Building Ordinance	• Planning & Zoning Commission
PLANS, MANUALS, and/or GUIDELINES	• General Plan (03/2008) - A plan used to present a series of polices that establish a basic direction & approach to guide the future growth & development of Show Low. • City of Show Low Multi-Hazard Mitigation Plan (2006)	• Planning and Zoning Department of the City of Show Low • Public Works
STUDIES	•	•

Table 6-2-4: Technical staff and personnel capabilities for Show Low		
Staff/Personnel Resources	☑	**Department/Agency - Position**
Planner(s) or engineer(s) with knowledge of land development and land management practices	☑	City Engineer, Public Works Director, Community Development Director, Senior Planner, Planner and Real Estate Administrator (6)
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	☑	City Engineer, Public Works Director, Public Works Operations Manager, Construction Inspector, Community Development Director, Chief Building Official, Building Inspector (Total 7)
Planner(s) or engineer(s) with and understanding of natural and/or human-caused hazards	☑	Engineer, Public Works Director, Community Development Director, Chief Building Official (5)
Floodplain Manager	☑	Engineer (2)
Surveyors		
Staff with education or expertise to assess the community's vulnerability to hazards	☑	Community Foresters (3), Engineer, Fire Chief and Police Chief (5)
Personnel skilled in GIS and/or HAZUS	☑	Geographic Information Systems Manager and GIS Analyst (2)
Scientists familiar with the hazards of the community		
Emergency manager	☑	Police Chief, Fire Chief, City Manager and Public Works Director (4)
Grant writer(s)	☑	Grants/Housing Coordinator (1)

Table 6-3-4: Fiscal capabilities for Show Low		
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 levee 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	

Table 6-1-5: Legal and regulatory capabilities for Snowflake		
Regulatory Tools for Hazard Mitigation	**Description**	**Responsible Department/Agency**
CODES	• 2006 International o Building Code o Residential Code o Fire Code o Mechanical Code o Plumbing Code o Existing Building Code • 2005 National Electrical Code • State Standard 8-99 for Flood prone Residential Lots	• Planning/Zoning/Building Safety
ORDINANCES	• Zoning Ordinance • Public Health and Safety Ordinance • Subdivision Ordinance • Flood Control Ordinance • Material Extraction Ordinance (Sand and Gravel)	• Planning/Zoning/Building Safety • Floodplain Administrator/Engineer
PLANS, MANUALS, and/or GUIDELINES	• General Plan (2008) - A Planning Tool for Town • Capital Improvement Plan • Town of Snowflakes Emergency Operations Plan • Town of Snowflake Drought Plan • National Incident Management System	• Planning/Zoning/Building Safety • P.W. Director / Town Engineer • Fire Department/Police Department • P.W. / Water Department • Fire Department/Police Department
STUDIES	• 100 Year Assured Water Supply • FEMA DFIRM Maps (FEMA, Effective date of September 2008) • Navajo County Transportation Plan	• Public Works / Water Department • ADWR • FEMA • Navajo County • Town Engineer

Table 6-2-5: Technical staff and personnel capabilities for Snowflake		
Staff/Personnel Resources	☑	**Department/Agency - Position**
Planner(s) or engineer(s) with knowledge of land development and land management practices	☑	Public Works / Town Engineer
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	☑	Building Safety- Building Inspector Public Works - P.W. Director Town Engineer
Planner(s) or engineer(s) with and understanding of natural and/or human-caused hazards		
Floodplain Manager	☑	Town Manager / P.W. Engineer
Surveyors		(On Contract As Needed)
Staff with education or expertise to assess the community's vulnerability to hazards	☑	Public Works- Staff Town Engineer Fire/Police Departments
Personnel skilled in GIS and/or HAZUS		
Scientists familiar with the hazards of the community		
Emergency manager	☑	Fire Chief / Police Chief
Grant writer(s)	☑	Librarian Asst. Fire Chief
Planner(s) or engineer(s) with knowledge of land development and land management practices	☑	Town Engineer

Table 6-3-5: Fiscal capabilities for Snowflake		
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 levee taxes for specific purposes	YES	
Fees for water, sewer, gas, or electric service	YES	
Impact fees for homebuyers or new developments/homes	YES	Not currently charging impact fees
Incur debt through general obligation bonds	YES	
Incur debt through special tax bonds	YES	

Table 6-1-6: Legal and regulatory capabilities for Taylor		
Regulatory Tools for Hazard Mitigation	**Description**	**Responsible Department/Agency**
CODES	• 2003 International Residential Code • 2003 International Building Code • 2003 International Existing Building Code • 2003 International Electrical Code with 97 NEC as reference • 2003 International Plumbing Code • 2003 International Mechanical Code • 2003 International Fire Code • 2003 International Fuel Gas Code • 2003 International Urban-Wildland Interface Code • 2003 International Performance Code • 1986 Floodplain Ord.	• Building Dept. • Zoning Dept • Fire Dept • Flood Administrator
ORDINANCES	• Zoning Ordinance (1998) • Building Code Ord. (2006) • Subdivision Regulations (2007) • Flood Ord. (2003) Being revised presently	• Zoning Dept. • Building Dept • Public Works Dept • Flood Administrator • Fire Dept • Engineering
PLANS, MANUALS, and/or GUIDELINES	• General Plan (12/2004) - Planning Tool for Town • Drainage • Town of Taylor Multi-Hazard Mitigation Plan (2006)	• Building Dept. • Zoning Dept • Fire Dept • Flood Administrator
STUDIES	• Cottonwood wash study	• Flood administrator • Navajo County Flood Dept,

Table 6-2-6: Technical staff and personnel capabilities for Taylor		
Staff/Personnel Resources	☑	**Department/Agency - Position**
Planner(s) or engineer(s) with knowledge of land development and land management practices	☑	Jeff Johnson –Zoning Administrator Stuart Spaulding – Town Engineer
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	☑	Jeff Johnson – Building Official
Planner(s) or engineer(s) with and understanding of natural and/or human-caused hazards	☑	Stuart Spaulding
Floodplain Manager	☑	Ron Solomon
Surveyors		
Staff with education or expertise to assess the community's vulnerability to hazards		
Personnel skilled in GIS and/or HAZUS		
Scientists familiar with the hazards of the community		
Emergency Manager	☑	Clint Burden – Fire Chief Ron Solomon – Public Works

Table 6-3-6: Fiscal capabilities for Taylor		
Financial Resources	**Accessible or Eligible to Use (Yes, No, Don't Know)**	**Comments**
Community Development Block Grants	Yes	Apply for CDBG on an by-annual basis.
Capital Improvements Project funding	Yes	
Authority to levee taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	
Impact fees for homebuyers or new developments/homes	Yes	Sewer
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	

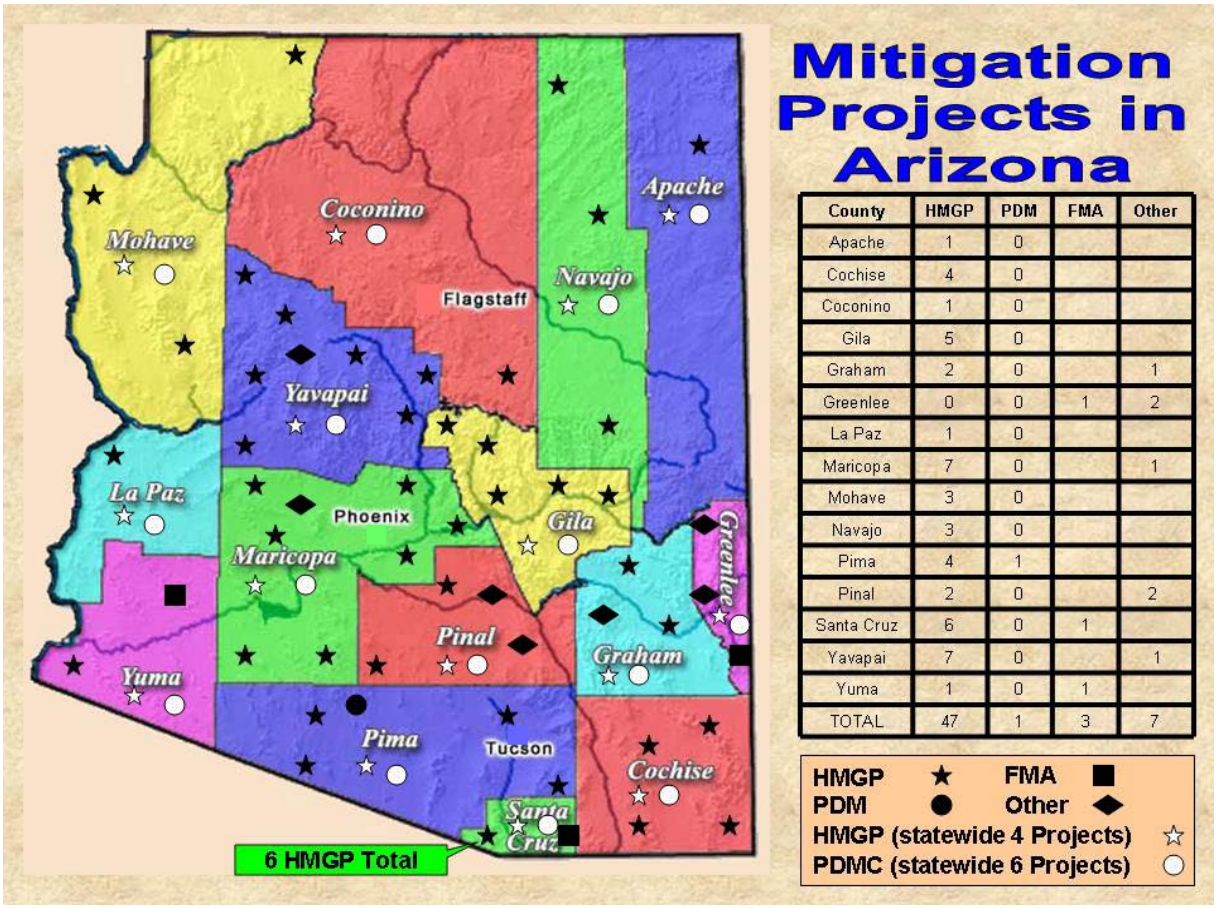
Table 6-1-7: Legal and regulatory capabilities for Winslow		
Regulatory Tools for Hazard Mitigation	**Description**	**Responsible Department/Agency**
CODES	• 2033 IBC • 2003 IFC • 2003 IPC • 2003 IMC • 2005 National Electrical Code	• Community Development I • Building Department • Fire Department
ORDINANCES	• Zoning Ordinance of the City of Winslow, Arizona, Title 17, Winslow Municipal Code, Ordinance 736, 1997 (with subsequent amendments). • Subdivision Ordinance of the City of Winslow, Arizona, Title 16, Winslow Municipal Code, Ordinance 920, 2003 (and Prior Code). • Subdivision Ordinance of the City of Winslow, Arizona, Title 16, Winslow Municipal Code, Ordinance 920, 2003 (and Prior Code). • Buildings and Construction, Title 15, Chapter 15.16, Flood Damage Prevention, Ordinance 734, 1997 (and Section 10.5, Prior Code). • Post Disaster Recovery Plan - City of Winslow Resolution No. 189, adopted September 21, 1989	• Community Development I • Planning and Zoning • Fire Department • Police Department
PLANS, MANUALS, and/or GUIDELINES	• City of Winslow General Plan (6/2002) - General Plan includes all elements mandated in Title 9, Arizona Revised Statutes. Includes Environmental Planning Element. • City of Winslow Emergency Operations, Plans, and Procedures (Revised 1995) - Summarizes adopted emergency response plans, legal authority, and mitigation and recovery plans. • City of Winslow Multi-Hazard Mitigation Plan (2006)	• Community Development I • Planning and Zoning • Fire Department • Police Department
STUDIES	• Flood Insurance Study; September 26, 2006. Panel number 04017CV001A, 04017CV002A, & 04017CV003A	• Community Development I

Table 6-2-7: Technical staff and personnel capabilities for Winslow		
Staff/Personnel Resources	☑	**Department/Agency - Position**
Planner(s) with knowledge of land development and land management practices: Paul Ferris	☑	City Planner
Professional(s) trained in construction practices related to buildings and/or infrastructure: Marshall Larson, Mark Woodson, and Allan Rosenbaum	☑	City Inspector (Building Official), City Engineer, Utility and Environment Director
Engineer(s) and other staff with and understanding of natural and/or human-caused hazards: Mark Woodson & Boney Candelaria	☑	City Engineer and Fire Chief
Floodplain Manager: Paul Ferris	☑	City Planner
Surveyors: Mark Woodson	☑	City Engineer
Staff with education or expertise to assess the community's vulnerability to hazards: Mark Woodson, Boney Candelaria, Steve Garnett, & Allan Rosenbaum	☑	City Engineer, Fire Chief/Department, Police Chief/Department, Utility and Environment Director
Personnel skilled in GIS and/or HAZUS: Ahmed Abdullah	☑	Planner
Scientists familiar with the hazards of the community	☑	None on City staff. Other sources of expertise include NAU, USFS, USGS, NRCS, and NWS
Emergency Manager: Boney Candelaria	☑	Fire Chief
Grant writer(s): Individual department heads	☑	Individual department heads. This position has been eliminated. No funding available for this position

Table 6-3-7: Fiscal capabilities for Winslow		
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 levee taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes, City Council can increase water/sewer fees.	City does not provide gas or electric service (private enterprise).
Impact fees for homebuyers or new developments/homes	No adopted impact fees.	Staff is developing an off-site improvements ordinance that will include provisions for developer-financed off-site public improvements.
Incur debt through general obligation bonds	Yes, if voters approve.	
Incur debt through special tax bonds	Yes	

6.2.2 Previous Mitigation Activities

During the last planning cycle many mitigation activities have been accomplished by the jurisdictions within Navajo County. Table 6-4 provides an updated summary, by jurisdiction, of recent mitigation activities performed over the last planning cycle or generally within the last five to ten years. Table 6-5 identifies projects within Navajo County that used federal mitigation grant funding for past projects. Figure 6-1 is a graphical depiction of past federally funded mitigation projects in the State tracked by ADEM.



County	HMGP	PDM	FMA	Other
Apache	1	0		
Cochise	4	0		
Coconino	1	0		
Gila	5	0		
Graham	2	0		1
Greenlee	0	0	1	2
La Paz	1	0		
Maricopa	7	0		1
Mohave	3	0		
Navajo	3	0		
Pima	4	1		
Pinal	2	0		2
Santa Cruz	6	0	1	
Yavapai	7	0		1
Yuma	1	0	1	
TOTAL	47	1	3	7

Source: ADEM, 2010

Figure 6-1: Past Mitigation Projects in Arizona

Table 6-4: Previous mitigation activities for Navajo County jurisdictions

Jurisdiction	Project Name	Project Description	Project Cost	Funding Source	Responsible Department	Completion Date
Navajo County	Emergency Watershed Protection Program, Buckskin & Black Canyon Wash	Provide erosion protection by strategically placing bank stabilizing rock gabion baskets at 10 individual sites along Buckskin and Black Canyon Wash in the Heber/Overgaard area.	$653,265.00	• $487,098.75 Federal Funds • $166,166.25 NCFCD Funds	Navajo County Flood Control District	8/21/2006
Navajo County	Blue Spruce Drainage	Improved local drainage in the Blue Spruce subdivision by increasing the culverts under Lockwood Dr., widening and armoring the drainage channel with cinder block walls and a concrete bottom and installing a weir that releases the excess water into the forest via a series of culverts and a drainage easement.	$66,504.92	NCFCD	Navajo County Flood Control District	9/17/2008
Navajo County	Low Water Crossing at Hutch Road and Black Canyon Wash	The scope of this project was to construct a crossing through Black Canyon Wash for the local residents that live on the west side of the canyon and use Hutch Road exclusively to access their property. This project provides ingress and egress for these residents as well as emergency responders for before and after major floods in Black Canyon Wash.	$58,925.17	• $51,925.17 NCFCD • $7,000.00 Chevelon Canyon Ranch Property Owners Assoc.	Navajo County Flood Control District	11/24/2009
Navajo County	Winslow Levee Rip Rap	Placement of rock rip rap along 1,300 feet of the Winslow Levee that was vulnerable to being attacked by the Little Colorado River due to its meandering character. The rip rap stabilizes the bank of the levee by providing erosion protection from the river bend immediately upstream that has already began to migrate downstream.	$137,239.79	NCFCD	Navajo County Flood Control District	1/15/2010
Navajo County	Scotts Pine Wash	Improved local drainage in the Scotts Pine Meadow subdivision by replacing the 24" CMP culverts with 2-3'x4' concrete box culverts. The channel of Scotts Pine Wash was then realigned to its more natural path. Property acquisition was necessary to accomplish the realignment.	$86,624.95	NCFCD	Navajo County Flood Control District	In-Progress (Near complete)
Navajo County	Lone Pine Dam Bridge	The realignment of Lone Pine Dam Road is required to divert all traffic from the existing road across the Lone Pine Dam, which has been listed as an unsafe dam, but is considered a significant contributor to groundwater recharge in this area. The length of the bridge is approximately 420 feet with approximately 1 ½ miles of roadway realignment.	$6,912,104.70	• $5,434,906.00 Federal Funds • $1,074,501.70 NC HURF Funds • $402,697.00 NCFCD Funds	Navajo County Flood Control District	In Progress
City of Holbrook	Holbrook Levee Recertification	Completed levee recertification for FEMA compliance for the Holbrook Levee and installed rip rap erosion control material.	$800,000	City Funds, USACE	Public Works	2010
City of Holbrook	Rural Fire Protection Services	Established IGAs and MAAs with McLaws Road Fire Department.	Staff Time	City Funds	City Manager	June 2010
City of Holbrook	NIXEL Implementation	Public notification via e-mail and text messaging for any hazard (e.g. - flooding, HAZMAT, levy failure, road closure, etc.)	$1,000	City's O & M budget	Holbrook Police Dept.	August 2010
City of Holbrook	Wastewater Treatment Plant Security Gate	Installed new security gate at wastewater treatment plant.	$2,000	City Funds	Public Works	Mid 2010

Table 6-4: Previous mitigation activities for Navajo County jurisdictions

Jurisdiction	Project Name	Project Description	Project Cost	Funding Source	Responsible Department	Completion Date
City of Winslow	Drought Mitigation Plan	The City of Winslow developed a drought mitigation plan			Utility Department	December, 2007
Town of Pinetop-Lakeside	Billy Creek Restoration Project	Restoration of a section of Billy Creek to mitigate erosion including bank stabilization, vegetation modification and channelization.	$238,000	Arizona Water Protection Fund	Parks Department	August 2010
Town of Snowflake	7th South low water crossing	Create a low water crossing sufficient to allow vehicle traffic during most low flow flooding conditions	$175,000	Town CIP	Public Works Department	August 2005
Town of Snowflake	Adoption of State Standard for Development within Flood prone Areas	Review and adopt State Standard 6-96 and 8-99 as town standard for development in flood prone areas	$1,500	Town General Fund	Town Engineer	June 2006
Town of Snowflake	Brush clearing in Canyon	Clearing of overgrowth within flood channel at the mouth of Canyon	$5,000	Town General Fund	Public Works/Fire Department	July 2007
Town of Snowflake	Repair Drainage Channel Behind Fire Station	Re-align, reshape, repair, drainage channel behind fire station, assist down flow property owner with installation of properly sized culverts	$10,000	Town General Fund	Public Works	Sept. 2008
Town of Snowflake	Dredging and Repair of Turley Subdivision Detention Basin	Remove sedimentation, increase volume, improve/repair sides of basin, improve method of effluent discharge	$15,000	Town CIP	Public Works	June 2010

Table 6-5: Previous projects in Navajo County jurisdictions receiving federal mitigation grant funding

Applicant	Project Title	Project Type	Year Begun	Year Ended	Total Cost (x $1,000)	Federal Cost Share (x $1,000)	Non-Federal Cost Share (x $1,000)	Program
Navajo County	1422-4-3P, Mitigation Plan	Mitigation Plan	2002	2003	$50,000.00	$37,500.00	$12,500.00	HMGP
Navajo County	1422-5, Emergency Alert	Warning system	2002	2005	$80,000.00	$60,000.00	$20,000.00	HMGP
Navajo County	1422-9, Public Awareness	Public education- wildland fire	2002	2004	$34,900.00	$26,175.00	$8,725.00	HMGP
Snowflake		A flood-control project that includes two detention basins that would mitigate flood hazards to homes and businesses in the Snowflake area. The project consists of two upstream detention basins northeast of the Town, some channelization, and a crossing under State Route 277. The system is designed to reduce peak flows and direct the water in a controlled manner to protect vital infrastructure.	March, 2011	Expected January, 2012	$1,795,987	$839,799	$956,188	HMGP

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. Navajo County and the 6 other incorporated jurisdictions 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. 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 6-6: NFIP status and statistics for Navajo County and participating jurisdictions as of May 31, 2011

Jurisdiction	Community ID	NFIP Entry Date	Current Effective Map Date	Number of Policies	Amount of Coverage (x $1,000)	Floodplain Management Role
Navajo County	040066	6/1/1982	9/26/2008	147	$26,727	Provides floodplain management for the Unincorporated County and assistance to other jurisdictions as needed
Holbrook	040067	9/30/1983	9/26/2008	13	$2,565	Provides floodplain management for the city
Pinetop-Lakeside	040127	9/22/1988	9/26/2008	17	$4,391	Provides floodplain management for the town
Show Low	040069	2/3/1982	9/26/2008	43	$8,679	Provides floodplain management for the city
Snowflake	040070	3/1/1982	9/26/2008	35	$8,723	Provides floodplain management for the town
Taylor	040071	2/3/1982	9/26/2008	51	$9,392	Provides floodplain management for the town
Winslow	040072	9/16/1981	9/26/2008	815	$136,937	Provides floodplain management for the city

Source: http://bsa.nfipstat.com/reports/1011.htm (5/31/2011); FEMA Community Status Report in NFIP (2/3/2009)

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 process for defining the 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 2006 Plan was performed, wherein each jurisdiction reviewed and evaluated their jurisdiction specific list. Second, a new list of A/Ps for the Plan was developed by combining the carry forward results from the assessment with new A/Ps. Third, an implementation strategy for the combined list of A/Ps was formulated. Details of each step and the results of the process are summarized in the following sections.

6.3.1 Previous Mitigation Actions/Projects Assessment

The Planning Team and Local Planning Team for each jurisdiction reviewed and assessed the actions and projects listed in Tables 5-5 and 5-6 of their corresponding 2006 Plans. 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 A/P list for the Plan. All A/Ps identified for deletion were removed and are not included in this Plan. The results of the assessment for each of the 2006 Plan A/Ps is summarized by jurisdiction in Tables 6-7-1 through 6-7-7.

Table 6-7-1
Navajo County 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 drought, flood, thunderstorm/high wind, and other hazards on new buildings and infrastructure	• County, Development Services, Planning and Zoning and Building Safety • $500,000 • Ongoing - As Needed	In Progress	Keep	This is a continuous effort and will remain on the plan indefinitely.
6.B.1	Wildfire Public Education Activities	Expand education activities to include public service announcements, public access TV, website	• County Emergency Management • $20,000 • Ongoing - As Needed	In Progress	Keep	Navajo County along with the U of A Cooperative Extension has been providing educational and preventative activities to citizens to reduce the potential of wildfire events.
8.A.3	Adopt Governor's Drought Mitigation Plan	Facilitate the adoption of the Governor's Drought Mitigation Plan	• County Board of Supervisors • $5,000 • Unknown	No Action	Keep	Research prior Board of Supervisor actions to determine if the Plan was adopted.
9.B.1	Non-reporting HAZMAT locations	Continue to locate non-reporting HAZMAT locations	• County Emergency Management / LEPC • $10,000 • Ongoing - As Needed	No Action	Keep	NCEM will continue to monitor Tier II reports and contact those facilities that may need to file a report due to threshold levels of hazardous materials stored at the facility.

Table 6-7-1
Navajo County assessment of previous plan cycle mitigation actions/projects

2.A.1	Hazard Recognition Education	Develop resource materials describing diseases associated with rural environments and life-style—how to recognize potential hazards and symptoms, and how to prevent infection	• County Emergency Management • $25,000 • Ongoing - As Needed	In Progress	Keep	Navajo County Health Department is working on producing an Epidemiology Plan. The Navajo County nurses are taking a series of courses related to disaster surge for public health nurses, including Introduction, Preparedness, Response and Recovery. The Navajo County Health Department has several brochures including: Pan flu brochure; H1N1 brochure; Bio-Terrorism Animal Brochure; Water Security booklet; Emergency Shelters booklet: plus several others
2.A.2	Evacuation Procedures Education	Continue to develop resource materials and educate the public regarding evacuation procedures and individual responsibilities in the event of an emergency	• County and Local Law Enforcement / Emergency Management • $50,000 • Ongoing - As Needed	In Progress	Keep	NCEM has recently upgraded the Communicator/GeoCast system with a self-registration portal that will be available for the public to register their cell phones and/or email in order to receive instructions on current incidents to include evacuation instructions if needed. NCEM will also continue to utilize public media such as radio and television but has also added facebook and 593 to the public information.
8.A.1	Water Summit	Sponsor interagency and public seminars to coordinate efforts to mitigate damage and losses due to drought and develop a drought mitigation plan	• County Board of Supervisors • $10,000 • Unknown	No Action	Keep	The Local Drought Impact Group has not been meeting and therefore no recommendations were made to the Board of Supervisors.

Table 6-7-1
Navajo County assessment of previous plan cycle mitigation actions/projects

5.A.1	Floodplain Database & Mapping	Identify, develop a database, and map all floodplains, riparian areas, and wetlands to use for site reviews in conjunction with the zoning ordinance and, potentially, with an environmentally sensitive lands ordinance	• County Public Works • $500,000 • Unknown	Complete	Delete	A digital floodplain database was completed in 2008 that mapped all FEMA floodplains in Navajo County. This database is currently being used for site reviews in conjunction with the zoning ordinance. Navajo County does not have an environmentally sensitive lands ordinance.
7.B.1	Improve Winslow Levee System	Decertify levee and improve to reduce levee break in future flooding events	• County Public Works • $20,000,000 • Unknown	In Progress	Keep	Navajo County has entered into a Feasibility Study Cost Share Agreement with the US Army Corps of Engineers. The study is scheduled to be completed by 2014 and will provide an array of alternatives to reduce the flood risk in Winslow.
8.A.2	Water Conservation Standards	Develop and adopt countywide water conservation standards, citing USGS precipitation records	• County Board of Supervisors • $25,000 • Unknown	No Action	Keep	The Local Drought Impact Group has not been meeting and therefore no recommendations were made to the Board of Supervisors.
6.D.1	Neighborhood Wildfire Assessment	Develop neighborhood wildfire assessment and rank at-risk neighborhoods with the goal to provide accurate wildfire information to residents and motivate them to implement personal and neighborhood mitigation measures	• Natural Resource and U of A extension service • $100,000 • Ongoing - As Needed	In Progress	Keep	The program this item was based upon was completed. However new grant funding has become available and the program will resume during the upcoming plan period.
4.A.1	Adoption of Mutual Aid Agreements for all hazards	Promote adoption of Mutual Aid Agreements with all incorporated communities and adjoining counties	• County Board of Supervisors • $10,000 • Unknown	In Progress	Keep	NCEM will work with the cities and towns to adopt the Mutual Aid Agreements for all hazards.

Table 6-7-1
Navajo County assessment of previous plan cycle mitigation actions/projects

6.C.1	Rural Fire Protection Services	Research opportunities for establishing fire protection services in areas outside fire districts	• County Board of Supervisors • $25,000 • Unknown	No Action	Delete	At this time there are no areas able to support fire protection services that are not already covered.
11.C.1	Criminal Justice Information Network	Expand criminal justice vertical and horizontal data integration and provide for data integrity throughout the County with capability to link with regions and state systems to enhance information sharing regarding foreign and domestic threats	• County Sheriff's Office • $200,000 • Unknown	In Progress	Keep	Navajo County has initiated discussions and overview of agreements for obtaining information. Funding is still a limitation for the inclusion of Navajo County in the network.
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 drought, flood, thunderstorm/high wind, and other hazards on new buildings and infrastructure	• County, Development Services, Planning and Zoning and Building Safety • $500,000 • Ongoing - As Needed	In Progress	Keep	This is a continuous effort and will remain on the plan indefinitely.
6.B.1	Wildfire Public Education Activities	Expand education activities to include public service announcements, public access TV, website	• County Emergency Management • $20,000 • Ongoing - As Needed	In Progress	Keep	Navajo County along with the U of A Cooperative Extension has been providing educational and preventative activities to citizens to reduce the potential of wildfire events.
8.A.3	Adopt Governor's Drought Mitigation Plan	Facilitate the adoption of the Governor's Drought Mitigation Plan	• County Board of Supervisors • $5,000 • Unknown	No Action	Keep	Research prior Board of Supervisor actions to determine if the Plan was adopted.

Table 6-7-1
Navajo County assessment of previous plan cycle mitigation actions/projects

9.B.1	Non-reporting HAZMAT locations	Continue to locate non-reporting HAZMAT locations	• County Emergency Management / LEPC • $10,000 • Ongoing - As Needed	No Action	Keep	NCEM will continue to monitor Tier II reports and contact those facilities that may need to file a report due to threshold levels of hazardous materials stored at the facility.
2.A.1	Hazard Recognition Education	Develop resource materials describing diseases associated with rural environments and life-style—how to recognize potential hazards and symptoms, and how to prevent infection	• County Emergency Management • $25,000 • Ongoing - As Needed	In Progress	Keep	Navajo County Health Department is working on producing an Epidemiology Plan. The Navajo County nurses are taking a series of courses related to disaster surge for public health nurses, including Introduction, Preparedness, Response and Recovery. The Navajo County Health Department has several brochures including: Pan flu brochure; H1N1 brochure; Bio-Terrorism Animal Brochure; Water Security booklet; Emergency Shelters booklet: plus several others
2.A.2	Evacuation Procedures Education	Continue to develop resource materials and educate the public regarding evacuation procedures and individual responsibilities in the event of an emergency	• County and Local Law Enforcement / Emergency Management • $50,000 • Ongoing - As Needed	In Progress	Keep	NCEM has recently upgraded the Communicator/GeoCast system with a self-registration portal that will be available for the public to register their cell phones and/or email in order to receive instructions on current incidents to include evacuation instructions if needed. NCEM will also continue to utilize public media such as radio and television but has also added facebook and 593 to the public information.

Table 6-7-1
Navajo County assessment of previous plan cycle mitigation actions/projects

8.A.1	Water Summit	Sponsor interagency and public seminars to coordinate efforts to mitigate damage and losses due to drought and develop a drought mitigation plan	• County Board of Supervisors • $10,000 • Unknown	No Action	Keep	The Local Drought Impact Group has not been meeting and therefore no recommendations were made to the Board of Supervisors.
5.A.1	Floodplain Database & Mapping	Identify, develop a database, and map all floodplains, riparian areas, and wetlands to use for site reviews in conjunction with the zoning ordinance and, potentially, with an environmentally sensitive lands ordinance	• County Public Works • $500,000 • Unknown	Complete	Delete	A digital floodplain database was completed in 2008 that mapped all FEMA floodplains in Navajo County. This database is currently being used for site reviews in conjunction with the zoning ordinance. Navajo County does not have an environmentally sensitive lands ordinance.
7.B.1	Improve Winslow Levee System	Decertify levee and improve to reduce levee break in future flooding events	• County Public Works • $20,000,000 • Unknown	In Progress	Keep	Navajo County has entered into a Feasibility Study Cost Share Agreement with the US Army Corps of Engineers. The study is scheduled to be completed by 2014 and will provide an array of alternatives to reduce the flood risk in Winslow.
8.A.2	Water Conservation Standards	Develop and adopt countywide water conservation standards, citing USGS precipitation records	• County Board of Supervisors • $25,000 • Unknown	No Action	Keep	The Local Drought Impact Group has not been meeting and therefore no recommendations were made to the Board of Supervisors.
6.D.1	Neighborhood Wildfire Assessment	Develop neighborhood wildfire assessment and rank at-risk neighborhoods with the goal to provide accurate wildfire information to residents and motivate them to implement personal and neighborhood mitigation measures	• Natural Resource and U of A extension service • $100,000 • Ongoing - As Needed	In Progress	Keep	The program this item was based upon was completed. However new grant funding has become available and the program will resume during the upcoming plan period.

Table 6-7-1
Navajo County assessment of previous plan cycle mitigation actions/projects

4.A.1	Adoption of Mutual Aid Agreements for all hazards	Promote adoption of Mutual Aid Agreements with all incorporated communities and adjoining counties	• County Board of Supervisors • $10,000 • Unknown	In Progress	Keep	NCEM will work with the cities and towns to adopt the Mutual Aid Agreements for all hazards.
6.C.1	Rural Fire Protection Services	Research opportunities for establishing fire protection services in areas outside fire districts	• County Board of Supervisors • $25,000 • Unknown	No Action	Delete	At this time there are no areas able to support fire protection services that are not already covered.
11.C.1	Criminal Justice Information Network	Expand criminal justice vertical and horizontal data integration and provide for data integrity throughout the County with capability to link with regions and state systems to enhance information sharing regarding foreign and domestic threats	• County Sheriff's Office • $200,000 • Unknown	In Progress	Keep	Navajo County has initiated discussions and overview of agreements for obtaining information. Funding is still a limitation for the inclusion of Navajo County in the network.

Table 6-7-2
Holbrook 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 drought, flood, thunderstorm/high wind, and other hazards on new buildings and infrastructure	• City, Planning and Zoning and Code Enforment • $500,000 • Ongoing - As Needed	In Progress (Ongoing)	Keep	Ongoing code enforcement
5.B.1	7th Street Wash Box Culverts at Florida Street	Widen by installing 2 box culverts at 7th Street Wash and Florida Street	• City Public Works Department • $200,000 • June 2008	No Action	Delete	Unsure of original project intent.
9.A.2	Improved emergency warning systems	Establish City small wattage radio station to be used in conjunction with County reverse 911 system	• City • $30,000 • July 2006	No Action	Keep	As budget allows
5.B.2	Treatment Plant Levee	Install riprap on entire Leroux Wash side and basic remediation	• City Public Works • $100,000 • June 2008	No Action	Keep	As budget allows
6.A.1	State Land Department Firefighting Contract	Train firefighters on wildfires	• Holbrook Volunteer Fire Department • $30,000 • Annual	In Progress	Keep	Ongoing training of fire personnel
8.B.2	Establish new water supply points	Drill three new wells	• City Public Works Department • $500,000 • June 2009	In Progress	Keep	Land has been acquired for one new well

Table 6-7-2
Holbrook assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
11.B.1	Infrastructure Security	Secure all water/wastewater and sanitation facilities	• City Public Works Department • $50,000 • June 2008	In Progress	Keep	Installed new security gate at wastewater treatment plant in mid 2010 at approximate cost of $2,000. Wells 4 & 5 still need fencing.
6.B.1	Establish regional wildfire fighting team	Put Firefighting team together to assist neighboring communities with wildfires	• Navajo County • $500,000 • Ongoing - As Needed	No Action	Keep	As time and assets permit
7.B.1	Erosion Control on Little Colorado River	Maintain erosion protection along the levees of the Little Colorado River	• City Public Works Department • $25,000 • Ongoing - As Needed	In Progress	Keep	City maintained levy maintenance worker until FY 10-11 where budget cuts eliminated the position and the P/W Dept assumed responsibilities. Completed levy recertification through JE Fuller and misc sub contractors as well as installed approximately $180,000 of rip rap erosion control material. Total certification ran approximately $800,000 over last 4 fiscal years.
5.B.4	McLaws Road Flooding/Whiting Wash	Complete Whiting Wash Levee	• City Public Works Department • $400,000 • June 2010	No Action	Keep	As budget permits
6.C.2	Rural Fire Protection Services	Establish IGA's & MAA's with surrounding communities and a fire district	• Holbrook Volunteer Fire Department • $no cost • January 2007	Complete	Delete	Intergovernmental agreements in place with McLaws Road Fire. IGA completed on 6-25-10 at no cost.

Table 6-7-2
Holbrook assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
6.C.1	Non-native species invasion within drainageways	Eradicate non-native species from riverbed	• Little Colorado RC&D • $500,000 • Ongoing - As Needed	No Action	Keep	As budget permits
7.A.1	Full Time Levee Maintenance Person	Replace part time levee maintenance person with full time employee	• City of Holbrook • $50,000 • June 2007	No Action	Keep	As budget permits
5.B.7	Retention Basin Dam and Drainage Channel	Renovate and improve both	• City Public Works Department • $250,000 • June 2008	No Action	Delete	Certification complete
10.B.1	Backup Generators	Buy backup generators for all critical facilities in regards to power and emergency response facilities	• City • $50,000 • Ongoing - As Needed	In Progress	Keep	All lift stations police and fire have back up generators city hall and other public works bldg in process as budget permits
10.B.1	Weather Related Traffic Issues	Coordination with ADOT for weather related traffic hazards (Wind, Sand, Snow, and Ice)	• To be determined • $100,000 • Ongoing - As Needed	In Progress	Delete	Az 511is the mechanism for this to happen.
10.A.1	Weather Related Damage Issues	Improve Codes and Code enforcement	• City Planning and Zoning • $25,000 • Ongoing - As Needed	In Progress	Keep	Continued strict code enforcement and adoption of new zoning codes 2006 IBC NEC IPC on Sept 28 2010
5.B.3	Buffalo Street Drainage	Maintain drainage flow channelfrom 13th Ave to west approximately 1000 feet	• City Public Works Department • $2000 • June 2012	No Action	Keep	Routine cleaning of existing drainage of weeds and trash Dredge with blade and remove debri with loader and dump truck approximately 2 day per year

Table 6-7-2
Holbrook assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
2.A.1	Evacuation Procedures Education	Continue to develop resource materials and educate the public regarding evacuation procedures and individual responsibilities in the event of an emergency	• Navajo County Emergency Management • $100,000 • Ongoing - As Needed	In Progress	Revise	New NIMMS reporting to registered participants City mgr, Clerk, P/W have completed all course requirements as of 02-11 the entire city staff is working on certification to be completed by 03-11
8.A.1	Water Conservation Standards	Develop and adopt citywide water conservation standards, citing USGS precipitation records	• City/ADWR • $100,000 • Ongoing - As Needed	No Action	Keep	As budget and personnel permit
8.B.1	Drought Mitigation Plan	Develop a drought mitigation plan	• City/ADWR • $100,000 • Ongoing - As Needed	No Action	Keep	As budget and personnel permit
5.B.5	Navajo Blvd. Drainage Culvert	Upgrade culverts to 100 year with discharge channel	• ADOT • $500,000 • June 2012	No Action	Delete	Project will not be pursued at this time.
5.B.6	8th Ave. Drainage (School District)	Manage Drainage impacting area approximately 200’	• City/Navajo County Flood Control Districts, BIA, ADOT • $500,000 • June 2015	In Progress	Keep	Ongoing cleaning and maintenance of drainage remove dirt and debris every spring
9.A.1	Establish alternate routes	Implement small area transportation study	• ADOT • $5,000,000 • June 2011	Complete	Delete	Adopted study in 10-10

Table 6-7-3
Pinetop-Lakeside 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 drought, flood, thunderstorm/high wind, and other hazards on new buildings and infrastructure	• Town, Development Services, Planning and Zoning and Building Safety • $500,000 • Ongoing - As Needed	In Progress	Revise	The Town continues to enforce zoning codes, review subdivision plan for compliance with the subdivision code, and inspect new construction for compliance to the UBC.
1.A.3	Wildland/Urban Interface Ordinance	Research/consider adopting a fire mitigation and wildland/urban interface ordinance	• Community Development • $10,000 • June 2008	Complete	Revise	The Town had adopted the Forest Health and Fire Protection Ordinances and has began enforcement. Revise A/P to reflect enforcement.
5.B.1	Seneca Pines Subdivision	Channelization of existing flooding to mitigate flooding hazard	• Public Works • $75,000 • June 2009	Complete	Delete	Redirected existing drainage channels, installed multiple drainage pipes.
5.B.2	Woods Subdivision	Soil stabilization and erosion protection	• Public Works • $75,000 • June 2009	In Progress	Revise	Establishing vegetation to reduce sediment flow.
9.A.1	Improved Emergency Warning Systems	Establish Town small wattage radio station to be used in conjunction with County reverse 911 system	• Public Safety • $75,000 • June 2008	No Action	Delete	Utilizing existing local radio stations for emergency information.
6.B.1	Wildfire Public Education Activities	Expand education activities to include public service announcements, public access TV, website	• Community Development • $10,000 • June 2008	In Progress	Keep	A number of public hearings were held and the Forest Health and fire Protection ordinance was posted on the Towns web page.
6.C.1	Wood Disposal Site	Modify and upgrade existing green waste disposal site	• Public Works • $100,000 • Ongoing - As Needed	Complete	Delete	Green waste site has been turned over to the private sector.

Table 6-7-3
Pinetop-Lakeside assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
1.A.2	Adopt Fire Resistant Building Code	Adopt through council the Fire Resistant Building Code	• Community Development • $5,000 • June 2009	No Action	Delete	Deemed too restrictive for economic development
6.D.1	Neighborhood Wildfire Assessment	Develop neighborhood wildfire assessment and rank at-risk neighborhoods with the goal to provide accurate wildfire information to residents and motivate them to implement personal and neighborhood mitigation measures	• Community Development • $20,000 • Ongoing - As Needed	In Progress	Keep	The Town conducted an assessment to determine area of greatest risk. The owners were offered matching grants to assist in mitigating forested areas.
5.A.1	Drainage Master Plan	Develop a drainage master plan for the entire community	• Public Works • $200,000 • June 2010	No Action	Keep	N/A
11.B.1	LEAF Security Fence	Complete security fencing around LEAF (Communications, Sheriff, Police, Jail facility)	• Public Safety • $75,000 • June 2009	No Action	Delete	Internal building security deemed adequate
7.A.1	Dam Inundation Seminar	Partner with ADWR to provide public education for dam inundation area/warning systems	• Public Works / Community Development • $50,000 • June 2008	No Action	Keep	Currently cost prohibitive
4.A.1	Adoption of Mutual Aid Agreements for all hazards	Promote adoption of Mutual Aid Agreements with all incorporated communities and adjoining counties.	• Public Safety • $5,000 • Ongoing - As Needed	In Progress	Keep	The Town has established mutual aid agreements with Navajo County, City of Show Low. Local fire department also have mutual aid agreement across the region.
8.A.1	Water Conservation Standards	Develop and adopt townwide water conservation standards, citing USGS precipitation records	• Community Development • $100,000 • June 2008	No Action	Delete	The Town has no control over local water companies and has no water department of its own.

Table 6-7-3
Pinetop-Lakeside assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
8.B.1	Drought Mitigation Plan	Develop a drought mitigation plan	• Community Development • $100,000 • June 2008	No Action	Keep	To date have not be able to establish a funding source
9.A.1	Establish alternate routes	Implement small area transportation study	• Public Works • $4,000,000 • June 2010	In Progress	Keep	Completed the Navajo County Sub Regional Transportation Study September, 2007

Table 6-7-4
Show Low 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 drought, flood, thunderstorm/high wind, and other hazards on new buildings and infrastructure	• City, Development Services, Planning and Zoning and Building Safety • $500,000 • Ongoing - As Needed	In Progress	Keep	Keeping up to date on building codes. Permits and inspections are required by City Code.
5.B.2	Replacement of Culvert Crossing on Whipple Road	Enlargement of existing crossing with larger box culvert at Whipple Road and Whipple Wash	• City Public Works • $150,000 • June 2012	In Progress	Keep	Secured funding. Have a trax number issued by ADOT. Working on hiring a consultant for NEPA
5.B.3	Replacement of Culvert Crossing on Old Linden Road	Enlargement of existing crossing with larger box culvert at Old Linden Road and Fools Hollow Wash	• City Public Works • $250,000 • June 2012	Complete	Delete	Project completed 2009

Table 6-7-4
Show Low assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
6.B.1	Wildfire Public Education Activities	Expand education activities to include public service announcements, public access TV, website	• City Community Development, Fire Department • $5,000 • Ongoing - As Needed	In Progress	Keep	Ongoing activity includes community outreach from Show Low Fire District at public events, PSAs, website, continue to pursue funding.
4.A.1	Adoption of Mutual Aid Agreements for all Hazards	Promote adoption of Mutual Aid Agreements with all incorporated communities and adjoining counties	• County Emergency Management • $5,000 • Ongoing - As Needed	In Progress	Keep	Continue to update existing agreements. Pursue new partnerships as opportunities are presented.
6.D.1	Neighborhood Wildfire Assessment	Develop neighborhood wildfire assessment and rank at-risk neighborhoods with the goal to provide accurate wildfire information to residents and motivate them to implement personal and neighborhood mitigation measures	• City Community Development, Fire Department • $20,000 • Ongoing - As Needed	In Progress	Keep	Ongoing activity includes community outreach from Show Low Fire District at public events, PSAs, website, continue to pursue funding.
5.B.1	Reconstruction of Show Low Creek Bridge	Joint project with City, County, & ADOT to reconstruct the Show Low Creek Bridge and Stream Restoration	• ADOT • $4,200,000 • June 2009	Complete	Delete	Project completed.
6.C.1	Wood Disposal Site	Partner with the Sitgreaves Forests Partnership to establish a disposal site for lot cleanup for Wildfires	• City of Show Low • $100,000 • June 2009	In progress	Keep	Private green waste facility established
5.A.1	Drainage Master Plan	Develop a drainage master plan for the entire community	• City Public Works • $200,000 • June 2009	In Progress	Keep	Some funding in public works budget. Prioritizing smaller drainage projects as budget allows.

Table 6-7-4
Show Low assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
6.B.2	Small Diameter Wood Business Recruitment	Partner with the Sitgreaves Forests Partnership to conduct outreach and attract sustainable, small-diameter wood-based businesses into the area	• City Community Development • $150,000 • Ongoing - As Needed	In Progress	Keep	Fuel Pellet operation has expanded production capacity.
1.A.2	Adopt Fire Resistant Building Code	Adopt through council the Fire Resistant Building Code	• City Building Department • $5,000 • June 2010	In Progress	Keep	City has adopted International Fire Code. Partner with SLFD to review / advise on new construction / remodels for commercial construction.
9.A.1	HAZMAT Enforcement	Coordinate among law enforcement and transportation departments to increase enforcement of HAZMAT transportation codes and regulations	• City Police Department • $50,000 • Ongoing - As Needed	In progress	Keep	Continue securing funding.
8.B.1	Drought Mitigation Plan	Develop a drought mitigation plan	• City Public Works • $100,000 • June 2010	In progress	Keep	Continue to seek funding.
7.A.1	Improvements to Show Low Lake Dam	Improve Show Low Lake Spillway so that it is not classified as an unsafe dam	• City Public Works • $2,500,000 • June 2015	In progress	Keep	Seeking funding for PMF study. Communication with ADWR to pursue funding sources. Have done significant work on an emergency evacuation plan for downstream properties.
6.A.1	State Land Department Firefighting Contract/Facilities	Partnership with BIA, Forest Service, and local fire districts to train firefighters on wildfires and build a multi-jurisdictional firefighting base at Show Low airport	• City Public Works • $1,000,000 • June 2010	In progress	Keep	Seeking funding and partners for fire base at SL airport. Have constructed training mock-up facility for AARF training at SL airport.

Table 6-7-4
Show Low assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
9.A.1	HAZMAT Enforcement	Coordinate among law enforcement and transportation departments to increase enforcement of HAZMAT transportation codes and regulations	• City Police Department • $50,000 • Ongoing - As Needed	In progress	Keep	Continue securing funding.
8.B.1	Drought Mitigation Plan	Develop a drought mitigation plan	• City Public Works • $100,000 • June 2010	In progress	Keep	Continue to seek funding.
7.A.1	Improvements to Show Low Lake Dam	Improve Show Low Lake Spillway so that it is not classified as an unsafe dam	• City Public Works • $2,500,000 • June 2015	In progress	Keep	Seeking funding for PMF study. Communication with ADWR to pursue funding sources. Have done significant work on an emergency evacuation plan for downstream properties.
6.A.1	State Land Department Firefighting Contract/Facilities	Partnership with BIA, Forest Service, and local fire districts to train firefighters on wildfires and build a multi-jurisdictional firefighting base at Show Low airport	• City Public Works • $1,000,000 • June 2010	In progress	Keep	Seeking funding and partners for fire base at SL airport. Have constructed training mock-up facility for AARF training at SL airport.
7.A.1	Improvements to Show Low Lake Dam	Improve Show Low Lake Spillway so that it is not classified as an unsafe dam	• City Public Works • $2,500,000 • June 2015	In progress	Keep	Seeking funding for PMF study. Communication with ADWR to pursue funding sources. Have done significant work on an emergency evacuation plan for downstream properties.

Table 6-7-5
Snowflake 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 drought, flood, thunderstorm/high wind, and other hazards on new buildings and infrastructure	• Town, Development Services, Planning and Zoning and Building Safety • $500,000 • Ongoing - As Needed	In Progress	Keep	Town Council adopted the 2006 International Residential, Building, Mechanical, Plumbing, and Fire codes.
4.A.1	Adoption of Mutual Aid Agreements for all hazards	Promote adoption of Mutual Aid Agreements with all incorporated communities and adjoining counties	• Navajo County Emergency Management • $10,000 • Ongoing - As Needed	In Progress	Revise	Contacted Nav. County regarding cost of providing fire services out of Snowflake limits, we were told they would not participate in any cost share.
5.A.1	Pass Drainage Ordinance	Promulgate drainage ordinance through the town council	• Public Works • $5,000 • June 2007	In Progress	Revise	Adopted State Standard 8-99 for individual residential lots. Revised and Adopted Floodplain Management Ordinance
6.A.1	State Land Department Firefighting Contract	Train firefighters on wildfires	• Fire Department • $10,000 • Ongoing - As Needed	Complete	Delete	Trained 10 Firefighters to Basic Wild Fire Standards.
7.C.1	Dam/Levee Break Education	Educate the public on Dam/Levee Failure procedures in the case that the levee system fails	• Public Safety/ Public Works • $20,000 • Ongoing - As Needed	No Action	Delete	Very little Levee in Snowflake, low priority.

Table 6-7-5
Snowflake assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
9.B.1	First Response Equipment/Incident Command Vehicle	Acquire First Response equipment to protect in the event of HAZMAT incident	• Public Safety • $100,000 • June 2008	In Progress	Revise	Purchased a command vehicle and trailer. Now need to equip trailer with communication equipment and computers
11.B.1	Infrastructure Security	Secure all water/wastewater and sanitation facilities	• Public Works • $200,000 • June 2008	Complete	Delete	Installed a minimum of 6' chain link fence w/gates and locks around sites.
1.B.1	International Fire Code	Adopt the International Fire Code and enforce it	• Planning and Zoning • $5,000 • June 2007	Complete	Delete	Town Council. adopted 2006 IRC, IBC, IPC, IMC, and IFC to on 3/15/2011. Ordinance 11-334.
1.B.2	International Building Code	Adopt the International Building Code and enforce it	• Planning and Zoning • $5,000 • June 2007	Complete	Delete	Town Council. adopted 2006 IRC, IBC, IPC, IMC, and IFC to on 3/15/2011. Ordinance 11-334.
1.B.3	International Residential Code	Adopt the International Residential Code and enforce it	• Planning and Zoning • $5,000 • June 2007	Complete	Delete	Town Council. adopted 2006 IRC, IBC, IPC, IMC, and IFC to on 3/15/2011. Ordinance 11-334.
6.B.1	Wildfire Public Education Activities	Expand education activities to include public service announcements, public access TV, website	• Fire Department • $60,000 • Ongoing - As Needed	No Action	Delete	No funds for this project
6.D.1	Fire Education Equipment	Acquire trailers, resources, and material for the purposes of education to the public for Wildland Fire	• Fire Department • $100,000 • June 2008	In Progress	Revise	Purchased a Fire Sprinkler/Safety House educational trailer. Continue ongoing general education.

Table 6-7-5
Snowflake assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
6.C.1	Rural Fire Protection Services	Establish IGA's & MAA's with surrounding communities and establish full time personnel	• Fire Department • $1,000,000 • Ongoing - As Needed	In progress	Revise	Town Council is considering the creation of a fire district to include full time personnel.
1.A.2	Wildland/Urban Interface Ordinance (Firewise Community)	Research/consider adopting a fire mitigation and wildland/urban interface ordinance	• Fire Department • $10,000 • June 2007	Complete	Revise	Participated with Central Navajo County Wildfire Protection Plan. Have not received final copy from Nav. County Emergency Manager. Council won't adopt WUI ordinance.
8.B.1	Drought Mitigation Plan	Develop a drought mitigation plan	• Public Works • $100,000 • June 2008	In Progress	Keep	The Water Department has a drought plan. Needs to be improved and expanded
8.A.1	Water Conservation Standards	Develop and adopt citywide water conservation standards, citing USGS precipitation records	• Public Works • $100,000 • June 2008	No Action	Revise	Project priority reassigned
4.A.2	Training of Staff on National Incident Management Training	Keep staff up to date on training for National Incident Management Training	• Public Safety • $100,000 • Ongoing - As Needed	In Progress	Keep	Some staff received NIMS training, need to complete remaining staff
5.B.3	Southern Solution Industrial Park Drainage	Provide drainage solution for the Industrial Park drainage problem	• Public Works • $2,000,000 • June 2010	In Progress	Keep	Applied for and received $950,000 grant. Project to begin early 2011.
5.A.2	Drainage Master Plan	Develop a drainage master plan for the entire community	• Public Works • $750,000	In progress	Keep	Snowflake hired an engineer in 2010. Will continue to push this project.
9.A.1	Improved emergency warning systems	Establish City small wattage radio station to be used in conjunction with County reverse 911 system	• Public Safety • $100,000 • June 2008	No Action	Delete	No funding for project.

Table 6-7-5
Snowflake assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
10.B.1	Backup Generators and Fuel Supply	Buy backup generators for all critical facilities in regards to power and emergency response facilities	• Public Works • $400,000 • June 2009	In progress	Revise	Well sites, lift stations, police dept, now connected to backup generators. Fire Station-not completed yet.
6.B.2	Improve Community Fire Suppression System	Improve Community Fire Suppression System to include more fire hydrants, fire flow modeling, and software	• Public Works • $1,000,000 • June 2015	In progress	Revise	Regular hydrant testing ongoing. Repair/Replacement plan in place.
8.B.2	Establish new water supply points	Drill two new wells, build three storage tanks, and tie other existing wells into Town System	• Public Works • $10,000,000 • June 2011	In progress	Revise	The Town has concentrated on maintenance of existing wells and tanks.
5.B.4	Hoyt Road Crossing	Construct Bridge over the Silver Creek	• Public Works • $1,200,000 • June 2012	In Progress	Revise	Considering other alternatives through regional transportation plan.
5.B.2	Turley Subdivision Detention	Engineer and construct a detention facility to mitigate peak discharges	• Public Works • $500,000 • June 2008	Complete	Revise	Create ongoing maintenance plan.
11.C.1	Criminal Justice Information Network	Expand criminal justice vertical and horizontal data integration and provide for data integrity throughout the County with capability to link with regions and state systems to enhance information sharing regarding foreign and domestic threats	• Public Safety • $350,000 • June 2012	No Action	Delete	No funding for project.
9.A.2	Establish alternate routes	Do a small area transportation study for the purposes of establishing alternate routes in the case of a hazard	• Public Works / Planning • $10,000,000 • June 2015	In Progress	Keep	Administration hired/directed engineer to contact property owners and formulate plan

Table 6-7-5
Snowflake assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
5.B.1	Non-native species removal and existing channel cleanup	Removal of non-native species and existing channel cleanup	• Navajo County Flood Control District • $10,000,000 • June 2025	In Progress	Revise	Funding drastically reduced, revisiting project to determine extent of project using available funds.

Table 6-7-6
Taylor 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 drought, flood, thunderstorm/high wind, and other hazards on new buildings and infrastructure	• Town, Development Services, Planning and Zoning and Building Safety • $500,000 • Ongoing - As Needed	In Progress	Keep	Adopted 2003 I-codes
1.B.1	International Fire Code	Adopt the International Fire Code and enforce it	• Fire Department • $5,000 • June 2006	In Progress	Delete	Adopted 2003 I-codes. No further action.
6.A.1	State Land Department Firefighting Contract	Train firefighters on wildfires	• Fire Department • $2,000 • June 2006	In Progress	Delete	Must Refresh every Year. More response oriented and will be dropped.

Table 6-7-6
Taylor assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
6.B.1	Wildfire Public Education Activities	Expand education activities to include public service announcements, public access TV, website	• Fire Department • $60,000 • Ongoing - As Needed	In Progress	Delete	No TV. Website updated w/ burn info News paper articles regularly. Will delete since wildfire is not a significant hazard to Town.
6.B.2	Improve Community Fire Suppression System	Improve Community Fire Suppression System to include more fire hydrants, fire flow modeling, and software	• Public Works / Fire Department • $150,000 • June 2010	Complete	Delete	6 new hydrants added. Others to follow with growth. Water system improved & updated.
10.B.1	Backup Generators and Fuel Supply	Buy backup generators for all critical facilities in regards to power and emergency response facilities	• Public Works / Fire Department • $200,000 • June 2008	In Progress	Keep	Working on Funding
11.B.1	Infrastructure Security	Secure all water/wastewater and sanitation facilities	• Public Works • $200,000 • June 2007	Complete	Delete	Fencing installed at all locals
1.A.2	Wildland/Urban Interface Ordinance (Firewise Community)	Research/consider adopting a fire mitigation and wildland/urban interface ordinance	• Fire Department / City Council • $10,000 • June 2007	Complete	Delete	Ordinance in Place Not forest region
5.B.2	Airport Wash	Detention, Channelization, install crossings, and general flood control	• Public Works • $4,000,000 • June 2010	In Progress	Keep	Met w/ Stateland Dept., lands identified & waiting results from them.
7.B.1	Millett Swale	Improve Millett Swale to ADWR standards	• Silver Creek Flood Prevention District • $2,500,000 • June 2008	In Progress	Revise	Approved plan by ADWR. Working on financing. Revise to reflect

Table 6-7-6
Taylor assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
8.B.1	Drought Mitigation Plan	Develop a drought mitigation plan	• Town of Taylor • $1000 • June 2008	No Action	Delete	Plan Approved via ADWR & adopted in 2008
8.A.1	Water Conservation Standards	Develop and adopt citywide water conservation standards, citing USGS precipitation records	• Town of Taylor • $1000 • June 2008	No Action	Delete	Plan approved via ADWR & adopted in 2008
9.A.1	Improved emergency warning systems	Establish City small wattage radio station to be used in conjunction with County reverse 911 system	• Town of Taylor / Navajo County and partners • $75,000 • June 2010	No Action	Delete	No Funds, not priority
5.A.1	Drainage Master Plan	Develop a drainage master plan for the entire community	• Public Works • $200,000 • June 2015	Complete	Delete	The master planning was accomplished with the FEMA Risk Map program.
6.C.1	Rural Fire Protection Services	Establish IGA's & MAA's with surrounding communities and establish full time personnel	• Fire Department / Town • $1,000,000 • June 2008	In Progress	Delete	Economic Slowed Funds dried up Continue Volunteer Dept.
5.B.1	Silver Creek Channelization	Channelize Silver Creek from Taylor Dam to Rock Wall	• Navajo County Flood Control District • $30,000,000 • June 2020	In Progress	Revise	Volunteer groups clearing out undergrowth so far. No Town expenditures used yet. Revise to reflect that private land owners will fund the work

Table 6-7-7
Winslow 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 drought, flood, thunderstorm/high wind, and other hazards on new buildings and infrastructure	• City, Development Services, Planning and Zoning and Building Safety • $500,000 • Ongoing - As Needed	In progress	Keep	Periodic revision as needed
7.C.1	Dam/Levee Break Education	Educate the public on Dam/Levee Failure procedures in the case that the levee system fails	• Navajo County Flood Control District • $20,000 • Ongoing - As Needed	In progress	Keep	Letters were sent to all Winslow Residents in designated 100-year floodplain; and two public informational meetings were conducted with FEMA, Navajo County & ADWR in 2007 & 2008
6.B.1	Wildfire Public Education Activities	Expand education activities to include public service announcements, public access TV, website	• Navajo County, Coconino County, and USFS • $20,000 • Ongoing - As Needed	No Action	Delete	Winslow is not in a wildfire area
4.A.1	Adoption of Mutual Aid Agreements for all hazards	Promote adoption of Mutual Aid Agreements with all incorporated communities and adjoining counties	• Navajo County Emergency Management • $10,000 • Ongoing - As Needed	In progress	Keep	We anticipate to adopt the County's Mutual Aid Agreement
9.A.2	Improved emergency warning systems	Improve local radio station to be used in conjunction with County reverse 911 system	• Public Safety • $10,000 • June 2008	Complete	Delete	Fire Department has completed the process

Table 6-7-7
Winslow assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
5.A.1	Update Drainage Master Plan	Bring Drainage Master Plan up to date with current standards	• Navajo County and Public Works • $50,000 • June 2007	In progress	Keep	City Engineer working on phases as needed which include the current levee recertification studies. Studies are tentatively scheduled to be completed in 3 to 10 years
6.A.1	State Land Department Firefighting Contract	Train firefighters on wildfires	• Public Safety • $30,000 • Ongoing - As Needed	In progress	Keep	City has signed a contract with the State
8.B.1	Drought Mitigation Plan	Develop a drought mitigation plan	• Utility Department • $50,000 • March 2006	Complete	Delete	Acceptance date is 12/20/07. Completed on 10/12/07
11.B.1	Infrastructure Security	Secure all water/wastewater and sanitation facilities	• Utility Department • $500,000 • June 2010	In progress	Keep	Fence Completed at transfer station work in 2010
10.B.1	Maintain and Upgrade Backup Generators and Fuel Supply System	Maintain and Upgrade Backup Generators and Fuel Supply System for all critical facilities in regards to power and emergency response facilities	• City • $2,000,000 • Ongoing - As Needed	In progress	Keep	New Generator installed at Police Department in 2006 and at Waste Water in 1997. Also, boosters installed in 2001
6.C.1	Nonnative species invasion within drainage ways	Eradicate nonnative species from riverbed	• Navajo County Flood Control District • $10,000 • Ongoing - As Needed	In progress	Keep	Vegetation along Ruby Wash Diversion Levee was removed through the use of prison labor

Table 6-7-7
Winslow assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
9.A.1	Establish alternate routes	Look into alternative routes so that evacuation procedures flow without HAZMAT interference	• Development Services and ADOT • $5,000,000 • June 2008	Complete	Delete	Propane Evacuation Process has completed for the south side residents. Residents were educated on the evacuation process by brochures and Public Meeting. Semstream Evacuation completed on August 2010 at a cost of $1000
2.A.1	Evacuation Procedures Education	Continue to develop resource materials and educate the public regarding evacuation procedures and individual responsibilities in the event of an emergency	• Public Safety • $100,000 • Ongoing - As Needed	In progress	Keep	Public outreach through Newsletter, Word of Mouth, Local Radio Station, and Pamphlets at a cost of $500
8.B.2	Establish new water supply points	Drill new wells or use surface water and develop a treatment plant	• Development Services • $8,000,000 • June 2007	In progress	Keep	Water Department is ongoing effort to establish new water supply points. So far, the Department has completed a feasibility study
11.C.1	Criminal Justice Information Network	Expand criminal justice vertical and horizontal data integration and provide for data integrity throughout the County with capability to link with regions and state systems to enhance information sharing regarding foreign and domestic threats	• Public Safety • $200,000 • June 2008	In progress	Keep	Air System will be completed by 2011 by Arizona State. No budget from City of Winslow. Total cost to date is $15,000 on Software Reporting Sharing Data System

6.3.2 New Mitigation Actions / Projects and Implementation Strategy

Upon completion of the assessment summarized in Section 6.3.1, each jurisdiction's Local Planning Team 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 forest thinning, 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 the A/P.
- **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 to the satisfaction of the Local Planning Team, the team then developed 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 natural hazards.
  - A mitigation solution with a long-term effectiveness
- **Planning Mechanism(s) for Implementation** – where applicable, a list of current planning mechanisms or processes under which the A/P will be implemented. Examples could include CIPs, General Plans, Area Drainage Master Plans, etc.
- **Anticipated Completion Date** – a realistic and general timeframe for completing the A/P. Examples may include a specific target date, a timeframe contingent upon other processes, or recurring timeframes.
- **Primary Agency and Job Title Responsible for Implementation** –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 6-8-1 through 6-8-7 summarize the current mitigation A/P and implementation strategy for each participating Plan jurisdiction. Projects listed in *italics font* are recognized as being more response and recovery oriented, but are considered to be a significant part of the overall hazard management goals of the community.

Table 6-8-1: Mitigation actions and projects and implementation strategy for Navajo 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	Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, severe wind, and other hazards on new buildings and infrastructure	Drought, Flood, Severe Wind, Winter Storm	New	$242,000 (Building) $20,000 (Flood Control)	Medium	Review update ordinances, codes. Review and approval of permits.	On-going	Building/ Planning & Zoning	General Fund/ Flood Control
2	Expand wildfire public education activities to include public service announcements, public access TV, website	Wildfire	Both	$2,000	High	Work with fire districts for fire training and development of press releases.	On-going	Fire Districts/ Emergency Management/ PIO	Fire District/ Emergency Management Planning Grant/ State Homeland Security/ General Fund
3	Facilitate the adoption of the Governor's Drought Mitigation Plan	Drought	Both	$1,000	Medium	Review plan for updates and present to Board of Supervisors for approval.	On-going	Emergency Management/ Board of Supervisors	General Fund
4	Continue to locate non-reporting HAZMAT locations	HAZMAT	Both	$1,000	Medium	Extract data from CAMEO and compare with fire department reports.	On-going	Fire Districts/ Emergency Management/ Local Emergency Planning Committee (LEPC)	Hazardous Materials Emergency Preparedness/ Emergency Management Planning Grant/ General Fund
5	Develop resource materials describing diseases associated with rural environments and life-style—how to recognize potential hazards and symptoms, and how to prevent infection	Disease	Both	$1,500	Medium	Distribution of resource materials. Community Education.	On-going	Public Health	Public Health
6	*Continue to develop resource materials and educate the public regarding evacuation procedures and individual responsibilities in the event of an emergency*	*All (Response)*	*N/A*	*$3,000*	*High*	*Update existing evacuation brochure. Disseminate information to citizens.*	*On-going*	*Emergency Management/ Sheriff's Office*	*Emergency Management Planning Grant/ General Fund*

Table 6-8-1: Mitigation actions and projects and implementation strategy for Navajo 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	Sponsor interagency and public seminars to coordinate efforts to mitigate damage and losses due to drought and develop a drought mitigation plan	Drought	Both	$2,000	Medium	Partner with the Arizona Division of Emergency Management	As Needed	Emergency Management	Emergency Management Planning Grant/ (Pre-) Hazard Mitigation Grant
8	Decertify levee and improve the Winslow Levee System to reduce levee break in future flooding events	Flood, Levee Failure	Both	$30,000,000	High	Cost Share with Army Corps.	2020	Flood Control	Army Corp/ Flood Control
9	Develop neighborhood wildfire assessment and rank at-risk neighborhoods with the goal to provide accurate wildfire information to residents and motivate them to implement personal and neighborhood mitigation measures	Wildfire	Both	$5,000	High	Partner with fire districts and U of A Cooperative Extension.	On-going	Fire districts/ U of A Cooperative Extension	Wildland Urban Interface
10	Promote adoption of Mutual Aid Agreements with all incorporated communities and adjoining counties	All	Both	$3,500	High	Renew existing Intergovernmental Agreements with local jurisdictions.	On-going	Emergency Management/ Board of Supervisors	Emergency Management Planning Grant/ General Fund
11	*Expand criminal justice vertical and horizontal data integration and provide for data integrity throughout the County with capability to link with regions and state systems to enhance information sharing regarding foreign and domestic threats*	*Human Caused*	*N/A*	$33,500	High	Establish AZLink for interagency data sharing. ($3,500 annual maintenance.)	On-going	Emergency Management/ Sheriff's Office	State Homeland Security Grant/ Unknown
12	Maintain compliance with NFIP regulations by enforcement of the Navajo County Flood Damage Prevention Ordinance through review of new or substantially improved development located in the floodplain and issuance of floodplain use permits.	Flood	Both	Staff Time	High	NFIP Program	On-going	Flood Control	Flood Control

Table 6-8-2: Mitigation actions and projects and implementation strategy for Holbrook

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, severe wind, and other hazards on new and/or remodeled buildings and infrastructure	All	Both	Staff time	1	Existing city policies and municipal codes	On going	City Clerk, City Manager	General Fund Revenues
2	Establish City small wattage radio station to be used in conjunction with County reverse 911 system to improve warning capacity of impending disasters	All	Both	$20,000	12	During update of 911 frequencies and radios	7/2015	Police chief	Grant Funding
3	Drill two new wells to establish new supply points and provide drought mitigation.	Drought	Both	$100,000	3	Council directive budget approval	7/2013	Water Superintendent, City Manager	Utility fund revenues
4	Secure all water/wastewater and sanitation facilities.	Terrorism, Vandalism	Existing	$25,000	6	Council directive budget approval	7/2013	Water Superintendent, City Manager	Utility Fund Revenues
5	Conduct regular maintenance of erosion protection along the levees of the Little Colorado River	Flood, Levee Failure	Both	$10,000	5	Allocation of 1 FTE per levy o/m manual	Ongoing	Levy Facilities Superintendent	General Fund
6	Eradicate non-native species from riverbed of major watercourses throughout the City	Flood, Infestation	Both	$10,000	10	Allocation of 1 FTE per levy o/m manual	Ongoing	Levy Facilities Superintendent	General Fund
7	Replace part time levee maintenance person with full time employee	Flood, Levee Failure	Both	$25,000	7	Continued budget control	7/2014	City Manager, Finance Director	General Fund Revenues
8	Buy and install backup generators for City Hall and other Public Works buildings to mitigate against power failures during hazard events	Flood, Severe Wind, Winter Storm	Existing	$15,000	11	Capital improvement plan/ budget	7/2015	City Manager, Finance Director	Various utility, General Fund, HURF
9	Maintain Buffalo Street drainage channel from 13th Ave west approximately 1000 feet	Flood	Both	$1,000	4	Operational budget	Ongoing	Street Superintendent	HURF

Table 6-8-2: Mitigation actions and projects and implementation strategy for Holbrook

Mitigation Action/Project					Implementation Strategy				
ID No.	**Description**	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
10	*Continue to develop resource materials and educate the public regarding NIMMS compliant evacuation procedures and individual responsibilities in the event of an emergency*	*All*	*Both*	*$200*	*9*	*Nimms training 95%complete*	*7/2013*	*Safety Officer*	*General fund*
11	Develop and adopt citywide water conservation standards, citing USGS precipitation records	Drought	Both	$2,000	13	Hire consultant	7/2015	City Manager	Utility fund
12	Develop a drought mitigation plan	Drought	Both	$2,000	14	Hire consultant	7/2015	City Manager	General fund
13	Maintain drainage facilities and manage drainage impacting 8th Avenue in the area of the School District	Flood	Existing	$1,000	8	Operational budget	Ongoing	Street Superintendent	HURF
14	Screen all building permits for intersection with delineated floodplains and enforce current floodplain management ordinance provisions per the requirements of the NFIP	Flood	Both	Staff Time	2	Building Permit Review	Ongoing	Building Director, City Manager	General Fund

Table 6-8-3: Mitigation actions and projects and implementation strategy for Pinetop-Lakeside

Mitigation Action/Project					Implementation Strategy				
ID No.	**Description**	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
1	Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, severe wind, winter storm, and other hazards on new buildings and infrastructure.	Drought, Flood, Severe Wind, Winter Storm	New	$15,000	Medium	Town Code	On going	Community Development	General Fund

Table 6-8-3: Mitigation actions and projects and implementation strategy for Pinetop-Lakeside

Mitigation Action/Project					Implementation Strategy				
ID No.	**Description**	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
2	Enforce the currently adopted fire mitigation and wildland/urban interface ordinance.	Wildfire	Both	$12,000	High	Town Code	On Going	Community Development	General Fund
3	Continue process of establishing vegetation to reduce sediment flow and mitigate flood related erosion in the Woods Subdivision.	Flood	Existing	$5,000	Medium	N/A	Aug 2012	Public Works	HURF
4	Expand wildfire related public education activities to increase awareness of the Town's Forest Health and Fire Protection Ordinance using public service announcements, public access TV, website.	Wildfire	Both	$8,000	Medium	N/A	On going	Community Development	General Fund
5	Develop neighborhood wildfire assessments and rank at-risk neighborhoods with the goal to provide accurate wildfire information to residents and motivate them to implement personal and neighborhood mitigation measures.	Wildfire	Both	$10,000	High	Town Code	On going	Community Development	General Fund
6	Develop a drainage master plan for the entire community.	Flood	Both	$120,000	Low	N/A	2015	Community Development	ADWR Grants
7	Partner with ADWR to provide public education for dam inundation area/warning systems.	Dam Failure	Both	$50,000	Medium	N/A	On going	Community Development	ADWR/ General Fund
8	*Promote adoption of All Hazard Mutual Aid Agreements with all incorporated communities and adjoining counties.*	*All Hazards*	*Both*	*$10,000*	*Medium*	*N/A*	*2012*	*Police Department*	*General Fund*
9	Develop a drought mitigation plan	Drought	Both	$5,000	Low	N/A	2014	Community Development	ADWA General Fund

Table 6-8-3: Mitigation actions and projects and implementation strategy for Pinetop-Lakeside

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
10	Establish alternate routes through Town through the implementation of recommendations in the 2007 Navajo County Sub- Regional Transportation Study.	Transportation Accident	Both	$2.2 million	High	Navajo County Sub-Regional Transportation Study	2015	Public Works/ ADOT	ADOT/ FHWA
11	Develop additional stream flow and channelization project for Billy Creek and prepare a corresponding Letter of Map Revision per the NFIP requirements, to reflect the constructed improvements	Flood	Both	$200,000	Medium	Floodplain Management, NFIP	2014	Parks and Recreation	ADWR

Table 6-8-4: Mitigation actions and projects and implementation strategy for Show Low

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
1	Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, severe wind, and other hazards on new buildings and infrastructure	All	Both	Staff Time	High	City Code	Ongoing	Community Development / Public Works Depts	General Fund and Permit Fees
2	Enlargement of existing crossing with larger box culvert at Whipple Road and Whipple Wash	Flooding	Existing	$700,000.	Med	City code, ADOT and federal regs.	May 2013	Public Works Dept.	STP funding
3	Expand wildfire public education activities to include public service announcements, public access TV, website	Wildfire	Both	$5000 / year	Med.	N/A	Ongoing	Show Low Fire District	Grants, Fire Dept. Budget, City General Fund
4	*Promote adoption of Mutual Aid Agreements with all incorporated communities and adjoining counties*	*All*	*Both*	*Staff Time*	*High*	*N/A*	*Ongoing*	*City attorney / Manager*	*City General Fund*

Table 6-8-4: Mitigation actions and projects and implementation strategy for Show Low

Mitigation Action/Project					Implementation Strategy				
ID No.	**Description**	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
5	Develop neighborhood wildfire assessment and rank at-risk neighborhoods with the goal to provide accurate wildfire information to residents and motivate them to implement personal and neighborhood mitigation measures	Wildfire	Both	Staff time	Medium	Fire Code/ IGAs	Ongoing	Community Development / Public Works Show Low Fire District	Grant funds, Fire district
6	Partner with the Sitgreaves Forests Partnership to establish a disposal site for lot cleanup for Wildfires	Wildfire	Both	Staff time	Medium	IGAs	Ongoing	Community Development / Public Works Show Low Fire District Sitgreaves Forests Partnership	City General Fund
7	Develop a drainage master plan for the entire community	Flooding	Both	Staff time $150,000	High	City Code, FEMA requirements	2014	Public Works	City general Fund, Possible future storm water utility
8	Partner with the Sitgreaves Forests Partnership to conduct outreach and attract sustainable, small-diameter wood-based businesses into the area	Wildfire	Both	Staff time	Medium	IGAs	Ongoing	Sitgreaves Forests Partnership City Business development staff Chamber of commerce	General Fund, Possible grants
9	Adopt through council the Fire Resistant Building Code	Wildfire	Both	Staff time	Medium	City Code	Future	Community development department	General Fund
10	*Coordinate among law enforcement and transportation departments to increase enforcement of HAZMAT transportation codes and regulations*	*HAZMAT*	*Both*	*Staff time*	*Medium*	*Rules and Procedures*	*2014*	*Show Low Police Dept. Show Low Fire Dept, Show Low public works dept.*	*General fund, Fire dist budget, grants*
11	Develop a drought mitigation plan	Drought	Both	Staff time / $50,000 consultant	Medium	*Rules and Procedures* City Code	Future	Show Low Planning and Zoning, Public Works	Grants
12	Improve Show Low Lake Spillway so that it is not classified as an unsafe dam	Dam Failure	Both	$10M +	High	ADWR Rules	2021	Show Low Public works, ADWR	Grants

Table 6-8-4: Mitigation actions and projects and implementation strategy for Show Low

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	*Partnership with BIA, Forest Service, and local fire districts to train firefighters on wildfires and build a multi-jurisdictional firefighting base at Show Low airport*	*Wildfire*	*Both*	*$4M*	*High*	*Coordination between USFS, BIA,, City, Public Safety bureaus*	*2014*	*Show Low Public Work, BIA, USFS, Show Low airports*	*Grants , Bonds, Public/Private Partnering*
14	Complete early warning / reverse 911 project for Show Low lake Dam evacuation – Activity 630 CRS Program Credit for Dam Safety under the NFIP.	NFIP Flooding, Dam Failure	Both	$25k	High	Coord. With City, County, State , local law enforcement, Fire District	2012	Show Low Police Department	Grants, General Fund

Table 6-8-5: Mitigation actions and projects and implementation strategy for Snowflake

Mitigation Action/Project					Implementation Strategy				
ID No.	**Description**	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
1	Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, severe wind, and other hazards on new buildings and infrastructure	All	Both	$350,000	High	Staff meetings p&z comm. Town council	On going	Planning department	General fund
2	*Promote adoption of Mutual Aid Agreements with all incorporated communities and adjoining counties*	*(Response)*	*(Response)*	*$10,000*	*Low*	*Semi annual reports to manager*	*Aug. 2015*	*Police chief*	*General fund*
3	*Provision First Response trailer with communication equipment and computers to protect in the event of HAZMAT incident.*	*HAZMAT*	*Both*	*$200,000*	*Low*	*Annual reports to manager*	*None*	*Fire chief*	*None*
4	Provide wildland fire education to the public using the Fire Sprinkler/Safety House educational trailer.	Wildfire	Both	$100,000	Low	Annual reports to manager	On going	Fire chief	General fund

Table 6-8-5: Mitigation actions and projects and implementation strategy for Snowflake

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	*Investigate the creation of a fire district to include full time personnel to provide protection for wildfire and other fire related needs.*	*(Response)*	*(Response)*	*$50,000*	*High*	*Semi annual reports to manager*	*June 2014*	*Fire chief*	*General fund*
6	Research/consider adopting a fire mitigation and wildland/urban interface ordinance	Wildfire	Both	$25,000	Low	Annual reports to manager	June 2014	Fire chief	General fund
7	Improve and expand current drought mitigation plan	Drought	EX	$100,000	Med	Semi annual reports to manager	Dec 2013	Water department	Utility fund
8	Develop and adopt citywide water conservation standards, citing USGS precipitation records	Drought	Both	$100,000	Med	Semi annual reports to manager	Dec 2014	Water department	Utility fund
9	*Keep staff up to date on training for National Incident Management Training*	*(Response)*	*(Response)*	*$10,000*	*High*	*Semi annual reports to manager*	*June 2012*	*Public works*	*General fund*
10	Provide drainage solution for the Industrial Park drainage problem	Flooding	Both	$1,750,000	High	Semi annual reports to manager	June 2014	Public works	Local, state, federal
11	Develop a drainage master plan for the entire community	Flooding	Both	$750,000	Med	Semi annual reports to manager	July 2015	Town engineer	General fund
12	Buy backup generators for fire station in regards to power and emergency response facilities	Severe Wind Winter Storm	Existing	$50,000	High	Semi annual reports to manager	July 2013	Fire chief	General fund
13	Improve Community Fire Suppression System to include more fire hydrants, fire flow modeling, and software	Wildfire	Both	$1,000,000	Med	Semi annual reports to manager	July 2015	Town engineer	General fund
14	Drill two new wells, build three storage tanks, and tie other existing wells into Town System	Wildfire Drought	Both	$10,000,000	High	Annual reports to manager	July 2016	Public works	Water fund

Table 6-8-5: Mitigation actions and projects and implementation strategy for Snowflake

Mitigation Action/Project					Implementation Strategy				
ID No.	Description	Hazard(s) Mitigated	Community Assets Mitigated (Ex/New)	Estimated Cost	Priority Ranking	Planning Mechanism(s) for Implementation	Anticipated Completion Date	Primary Agency / Job Title Responsible for Implementation	Funding Source(s)
15	Evaluate alternatives to mitigate Hoyt Road crossing of Silver Creek	Flooding	Existing	$1,200,000	Low	Incorporate into local transportation plan	July 2010	Public works	None
16	Create an ongoing maintenance plan for the Turley Subdivision Detention facility	Flooding	Existing	$20,000	Med	Quarterly review by public works	July 2012	Public works	General fund
17	Conduct a small area transportation study for the purposes of establishing alternate routes in the case of a hazard	All	Both	$350,000	Med	Semi annual reports to manager	July 2014	Public works	General fund
18	Removal of non-native invasive plant species and existing channel cleanup	Flood	Both	$10,000,000	Low	Annual reports to manager	June 2017	Public works	None
19	The Town will institute a maintenance program to regularly clear and clean storm drains, grates, culverts, and detention basins, and review adequacy of drainage systems.	Flood	Both	$50,000	High	Quarterly public works director/engineer review	June 2012	Public works	General fund
20	The Town will adopt ordinances to manage flood plain to standards identified by the National Flood Insurance Program.	Flood	Both	$15,000	High	Contract engineer to develop and implement	June 2012	Town engineer	General fund
21	The Town will develop a Standard Operating Procedure for review of all construction and development permits in or near an area of special flood hazard.	Flood	Both	$15,000	High	Town engineer	June 2012	Town engineer	General fund
22	The Town will review seasonal effects of localized flooding, identify areas of localized flood hazard and implement strategies to mitigate.	Flood	Both	$50,000	High	Annual public works review	June 2013	Public works	General fund

Table 6-8-6: Mitigation actions and projects and implementation strategy for Taylor

Mitigation Action/Project					Implementation Strategy				
ID No.	**Description**	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
1	Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, severe wind, and other hazards on new and/or remodeled buildings and infrastructure	All	Both	Staff Time	Medium	General Plan, Zoning and Subdivision Regulations, State Standards, NFIP Requirements	Ongoing	Building Department / Building Inspector Public Works / Director	General Fund
2	Buy backup generators for city owned critical facilities in to mitigate against power failures during hazard events.	Flood, Severe Wind, Winter Storm	Existing	$150,000	High	(none)	Fire Station – 12/2011 2015 for the rest.	Fire Department / Chief Public Works Department / Director	General Funds, Grant Funds
3	Design and construct detention basins, channelization, install crossings, and general flood control features for Airport Wash	Flooding	Both	$200,000	High	Navajo County FCD	Within 2-years of acquiring funding	Administration / Town Manager Public Works Department / Director	PDM Grant
4	Cooperate and encourage the construction of Millet Swale improvements to ADWR standards with the Silver Creek Flood Protection District, to mitigate the potential for dam failure.	Dam Failure	Both	Staff Time	High	Silver Creek Flood Protection District	Within 2-years of acquiring funding	Public Works Department / Director	General Fund
5	Channelize Silver Creek from Taylor Dam to Rock Wall. Project involves staff working with private land owners to construct channelization measures.	Flood	Both	Staff Time	Medium	Coordination with Private Land Owners	Dependent on Private Development	Public Works Department / Director	General Fund
6	The Town will update the floodplain ordinance and permitting process to ensure compliance with the NFIP requirements.	Flood	Both	Staff Time	High	NFIP Compliance	2011	Building Department / Building Inspector	General Fund

Table 6-8-7: Mitigation actions and projects and implementation strategy for Winslow

Mitigation Action/Project					Implementation Strategy				
ID No.	**Description**	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
1	Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, severe wind, and other hazards on new and/or remodeled buildings and infrastructure. Includes enforcement of the City of Winslow floodplain ordinance in accordance with the NFIP, including regulating all and substantially improved construction in floodplains to reduce the losses to property and people.	All	Both	$110,000 / Year	High	City Ordinance, Floodplain Ordinance, IBCs.	On going	Community Development Dept. / Bldg Inspector & Planner	General Funds
2	Educate the public on Levee Failure evacuation procedures in the case that the levee system fails.	Levee Failure	Both	$1000 / Annually for publication	Medium	Public outreach through local news paper and newsletter	On going	Fire Department / Chief	General Funds
3	*Promote adoption of Mutual Aid Agreements with all incorporated communities and adjoining counties for all hazards.*	*All*	*Both*	*$ 0*	*High*	*City of Winslow Emergency Operations, Plans, & Procedures*	*On going*	*Community Development / Dale Patton*	*Operational Budget – Self Funded*
4	Bring Drainage Master Plan up to date with current standards	Flood, Levee Failure	Both	$200,000 (For current floodplain study only)	High	Floodplain delineation study is underway to establish new flood zones.	Submission to FEMA December, 2011, map revisions unknown at this time.	City Floodplain Administrator	General Funds
5	*Train firefighters on wildfires through the State Land Department firefighting contract*	*Wildfire*	*Both*	*$1500 / Person (20 people / At least two years*	*Low*	*Based on availability of training classes and location*	*On Going*	*Fire Department / Training Officer*	*Grants / State Land Funds*
6	Secure all water/wastewater and sanitation facilities	Terrorism, Vandalism	Existing	VSAT Money from HLS (not to be disclosed)	High	Designated City Employees	Completed	Utility / Director	Home Land Security / Self Funded

Table 6-8-7: Mitigation actions and projects and implementation strategy for Winslow

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	Maintain and upgrade backup generators and fuel supply system for all critical facilities in regards to power and emergency response facilities to mitigate power outages due to hazard events	Severe Wind, Winter Storm	Existing	$0 No Upgrade Needed	High	Repair and Maintenance as needed	On going	Fleet / Director	Self Funded
8	Eradicate nonnative species from riverbed of major watercourses within the city	Flood, Levee Failure, Infestation	Both	$0 Not Applicable	Low	N/A	N/A	Park & Recreation / Director	Self Funded
9	Continue to develop resource materials and educate the public regarding evacuation procedures and individual responsibilities in the event of an emergency	All	Both	$1000 / Annual publication cost	Medium	Public outreach through e-mail, Nixle (Phone notification)	On going	Police & Fire Departments / Chiefs	General Funds

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

Navajo County and the participating jurisdictions recognize that this hazard mitigation plan is intended to be a "living" document with regularly scheduled monitoring, evaluation, and updating.

Section 6 of the 2006 Plan outlined specific steps for plan maintenance. A poll of the Planning Team indicated that very few formal reviews or maintenance actions occurred over the past five years. The mitigation actions/projects in the 2006 Plan were referred to by several jurisdictions on a periodic basis when considering grant opportunities. Reasons for the lack of review included:

- A lack of institutional understanding that the review was needed.
- Changes in staffing/personnel that created a lack of continuity to the 2006 planning team and no communication of the Plan maintenance responsibilities.
- No economic incentive to invest the time.
- No expectation of responsibility or communication of responsibility from the previous planning team.
- Simply did not do it.

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

Switching to a true multi-jurisdictional plan will aide in the Plan monitoring and evaluation by the consolidation of information for all county jurisdictions into one document. 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. ADEM will take the lead for initiating/prompting the need for review on or around the anniversary of the Plan approval date and will contact the County Emergency Manager to initiate the review process. The County EM will contact each City/Town Manager/Clerk to set a date for a review meeting within 30 days of receiving the reminder from ADEM.
- **Review Content** – The content and scope of the Plan review and evaluation will address 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 percent of the project 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?*

Each jurisdiction will review the Plan as it relates to their community prior to the actual review meeting and document responses to the above questions in the form of an informal memorandum. During the annual meeting, each jurisdiction will have the opportunity to summarize their review findings to the group and discuss concerns or successes. Documentation of the annual meeting will include a compilation of the memorandums generated by each jurisdiction plus any notes on the meeting discussions and conclusions. Copies of the annual review report will be included in Appendix E.

7.2 Plan Update

According to DMA 2000, the Plan requires updating and approval from FEMA every five years. The plan updates 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 Plans have been successfully incorporated or referenced into other planning mechanisms for each jurisdiction are summarized below:

- During the update of the County's EOP, portions of the 2006 Plan were referenced and incorporated into the risk assessment (Navajo County).
- The 2006 Plan mitigation actions/projects in Tables 5-5 and 5-6 were tracked parallel with the City's CIP to ensure mitigation goals were being met (City of Show Low).
- Used the 2006 Plan as a reference for developing an emergency evacuation plan for Show Low Lake (City of Show Low).
- Reviewed the mitigation action/projects in the 2006 Plan when considering grant opportunities (All Jurisdictions).

In all of the above instances, the 2006 Plan was found to be beneficial, and especially with regard to the critical facility inventories, vulnerability analysis results, and the mitigation strategy. Obstacles to further incorporation of the 2006 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 was also noted, that due to the small size of some participating jurisdictions, there is really not all that much "other" planning being done.

Typical ways to use and incorporate the Plan over the next five-year planning cycle, discussed by the Planning Team, included:

- Use of, or reference to, Plan elements in updates to general and comprehensive planning documents.

- Addition of defined mitigation A/Ps to capital improvement programming.
- Inclusion of Plan elements into development planning and practices.
- Resource for developing and/or updating emergency operations plans.

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. 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 6-1-7 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 6-1-7, as appropriate. Specific incorporation of the Plan risk assessment elements into the natural resources and safety elements of each jurisdictions' general plans (county comprehensive plan) 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 6-7-7.

7.4 Continued Public Involvement

The Planning Team reviewed Section 6.4 of the 2006 Plan and discussed the challenges and successes regarding the identified continued public involvement strategy. The 2006 Plan identified the following elements for continued public involvement:

- Provide periodic summary updates of hazard mitigation A/P measures being implemented using local media.
- Conduct an annual presentation of hazard mitigation planning discoveries, progress, or proposed A/P measures at the local board and council meetings.
- Participate in annual events such as the County fair and other public events.
- Perform public outreach and mitigation training meetings for targeted populations known to be in higher risk hazard areas (i.e. – floodplain residents).

All of the participating jurisdictions were successful to varying degrees, in their efforts to elevate hazard mitigation awareness in the general public and community on an ongoing basis. Navajo County and the other participating jurisdictions remain committed to keeping the public informed about the hazard mitigation planning efforts, actions and projects. Table 7-1 summarizes successful public involvement efforts previously conducted by the participating jurisdictions, and proposed activities for public involvement and dissemination of information that shall be pursued whenever possible and appropriate.

Table 7-1: Past and proposed continued public involvement activities or opportunities identified by Navajo County jurisdictions

Jurisdiction	Public Involvement Activity or Opportunity	
	PAST	**PROPOSED**
Navajo County	• Conducted several public meetings explaining the new floodplain mapping for the County.	• Continue to maintain a permanent website that will include a copy of the current Plan, allow for comment, respond to inquiries and comment on development plans as well as other mitigation efforts • Make available the mitigation brochures and other information produced and provided by the Arizona Division of Emergency Management at the Navajo County Complex and other related offices throughout Navajo County • Participation in, and distribution of, hazard mitigation planning materials at: volunteer meetings, city/town council meetings, and at the annual Navajo County Fair • Annual presentation to the Board of Supervisors summarizing annual review findings on the hazard mitigation plan and summarizing noteworthy mitigation activities
Holbrook	(None Reported)	• Make available the mitigation brochures and other information produced and provided by the Arizona Division of Emergency Management at City Hall • Public notification of impending hazard mitigation project or activities through regular city council processes

Table 7-1: Past and proposed continued public involvement activities or opportunities identified by Navajo County jurisdictions

Jurisdiction	Public Involvement Activity or Opportunity	
	PAST	**PROPOSED**
Pinetop-Lakeside	(None Reported)	• Maintain a permanent website that will include a link to a copy of the current Plan, allow stakeholders to comment on mitigation planning efforts, respond to citizen inquiries, and comment on development plans as well as other mitigation efforts. • Attend planning fairs that include the dissemination of public information regarding the dangers of the Plan hazards. • Conduct Emergency Management Community Information Exchange (EMCIE) meetings with all local emergency management professionals on a regular basis, and discuss hazard mitigation events. • Conduct public outreach in schools to educate students on the various natural and manmade hazards through local fire districts. • Conduct public outreach meetings when re-mapping of floodplain areas is conducted and distribute Floodplain Management brochures at public information distribution locations throughout Town offices and departments, and at neighborhood meetings sponsored by the Town. • Make available the mitigation brochures and other information produced and provided by the Arizona Division of Emergency Management, at the Town Hall and Town Library.

Table 7-1: Past and proposed continued public involvement activities or opportunities identified by Navajo County jurisdictions

Jurisdiction	Public Involvement Activity or Opportunity	
	PAST	**PROPOSED**
Show Low	• Wildland fire officials distributed fire risk and mitigation information during the Show Low Days event in June.	• Develop and provide brochures regarding threats on our Hazard Mitigation website. • Continue to improve the CRS program by upgrading the City's rating. • Attend planning fairs that include the dissemination of public information regarding the dangers of the Plan hazards • Provide a GIS database of elevation certifications properties. • Finalize the reverse 911 system for the Show Low lake evacuation plan. • Conduct public outreach in schools to educate students on the various natural and man made hazards. • Conduct public outreach meetings when re-mapping of areas is conducted. • Maintain a page on the City website including a copy of the current Plan, allowing the submittal of citizen comments, and staff response to citizen inquiries. This page will be monitored and updated by the City's Planning Team Representative. • Continue to distribute Floodplain Management brochures at public information distribution locations throughout City offices and departments, and at neighborhood meetings sponsored by the City. • Develop and distribute Hazard Mitigation brochures at public information distribution locations throughout City offices and departments, the City website, and at neighborhood meetings sponsored by the City. • Provide floodplain related hazard and mitigation information to the general public upon request. Post request forms on the City website. • Annually provide a news release to local news media related to mitigation activities and floodplain management. • Participation in, and distribution of, hazard mitigation planning materials at: Show Low Days, County Fair, Annual Business Expos, etc. • Annual presentations to boards and councils summarizing annual review findings on the hazard mitigation plan and summarizing noteworthy mitigation activities. • Provide informational training to the public related to Police Operations annually in the "Citizen's Academy" Program.

Table 7-1: Past and proposed continued public involvement activities or opportunities identified by Navajo County jurisdictions

Jurisdiction	Public Involvement Activity or Opportunity	
	PAST	**PROPOSED**
Snowflake	• Jointly participated in an Emergency Preparedness Fair held in August with the Town of Taylor	• The Town will facilitate regular meetings between the Floodplain Board and the general public to inform and report and on the progress of ongoing floodplain activities, most notably the Southern and Northern Solution. • The Town will facilitate meeting to inform the public of existing floodplains, areas of special flood hazard, and issues pertaining to localized drainage. • The Town will develop an informational flyer and make available for public distribution, flood plain requirements and information as to floodplain enforcement.
Taylor	• Jointly participated in an Emergency Preparedness Fair held in September with the Town of Snowflake	• Jointly participated in an Emergency Preparedness Fair held in August with the Town of Snowflake. • Continue to make mitigation materials, the Plan, and other hazard related public awareness information available on the Town's website.
Winslow	• Winslow conducted public meetings with the release of the new DFIRMs and the de-certification of the Winslow Levee.	• Annually provide a news release to local news media related to mitigation activities and floodplain management. • Make available the mitigation brochures and other information produced and provided by the Arizona Division of Emergency Management, at the Town Hall and Town Library.

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SECTION 8: PLAN TOOLS

8.1 Acronyms

A/P.....Mitigation Action/Project
ADEM .....Arizona Division of Emergency Management
ADEQ .....Arizona Department of Environmental Quality
ADWR .....Arizona Department of Water Resources
AGFD .....Arizona Game and Fish Department
ARS .....Arizona Revised Statutes
ASCE .....American Society of Civil Engineers
AZSERC .....Arizona State Emergency Response Commission
ASLD .....Arizona State Land Department
ASU .....Arizona State University
AZGS .....Arizona Geological Survey
BLM .....Bureau of Land Management
CAP .....Central Arizona Project
CAP .....Community Assistance Program
CFR .....Code of Federal Regulations
CRS .....Community Rating System
CWPP .....Community Wildfire Protection Plan
DEMA .....Arizona Department of Emergency and Military Affairs
DFIRM .....Digital Flood Insurance Rate
DMA 2000 .....Disaster Mitigation Act of 2000
DOT .....Department of Transportation
EHS .....Extremely Hazardous Substance
EPA .....Environmental Protection Agency
EPCRA .....Emergency Planning and Community Right to Know Act
FCDMC.....Flood Control District of Pinal County
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
NWCG.....National Wildfire Coordination Group
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
SRP .....Salt River Project
UBC .....Uniform Building Code
USACE .....United States Army Corps of Engineers
USDA .....United States Department of Agriculture
USFS .....United States Forest Service
USGS .....United States Geological Survey
VA .....Vulnerability Analysis
WUI .....Wildland Urban Interface

8.2 Definitions

The following terms and definitions are provided for reference and are taken from the 2010 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 winter 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.

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

Navajo County Multi-Hazard Mitigation Plan Update
Initial Planning Team Invitation List

Name	Title	E-mail	Agency/Jurisdiction/Organization	Department/Branch
Ed Muder	City Manager	emuder@ci.show-low.az.us	City of Show Low	Administration
Eric Duthie	Town Manager	eduthie@tayloraz.org	Town of Taylor	Administration
Jim Ferguson	City Manager	jim.ferguson@ci.winslow.az.us	City of Winslow	Administration
Kelly Udall	Town Manager	kudall@ci.pinetop-lakeside.az.us	Town of Pinetop-Lakeside	Administration
Paul Watson	Town Manager	paulw@ci.snowflake.az.us	Town of Snowflake	Administration
Ray Alley	City Manager	rayalley@ci.holbrook.az.us	City of Holbrook	Administration
Jeff Smythe	Chief of Police	jsmythe@showlowaz.gov	Show Low Police Department	Law Enforcement
Mark Jackson	Chief of Police	jacksonhpd@cableone.net	Holbrook Police Department	Law Enforcement
Greg Caffey	Chief Ranger	greg_caffey@nps.gov	National Park Service	Law Enforcement
Samson Cowboy	Director	scowboy@cnetco.com	Navajo Nation Dept. of Public Safety	Law Enforcement
Kee Thinn		kee_thinn@yahoo.com	Navajo Nation Dept. of Public Safety	Law Enforcement
Sherwood Eldredge	Chief of Police	seldredge@ci.pinetop-lakeside.az.us	Pinetop-Lakeside Police Department	Law Enforcement
Raymond Burnette	Chief of Police	raymondburnette@wmat.us	White Mountain Apache Tribe Police Departme	Law Enforcement
Rodrick Holmes	Interim Chief Ranger	rholmes@hopi.nsn.us	Hopi Rangers	Law Enforcement
Jerry Van Winkle	Chief of Police	jvanwinkle@stpd.org	Snowflake Police Department	Law Enforcement
Steve Garnett	Chief of Police	steve.garnett@ci.winslow.az.us	Winslow Police Department	Law Enforcement
Steve Nelson	Chief of Police	snwrd@yahoo.com	Navajo Police Department	Law Enforcement
Alex Baker	Fire Chief	holbrookfire@cableone.net	Holbrook Fire Department	Fire Services
Ben Owens	Fire Chief	chiefowens@showlowfire.org	Show Low Fire Department	Fire Services
Clint Burden	Fire Chief	clint@tayloraz.org	Town of Taylor Fire Department	Fire Services
Eddie Lindquist	Fire Chief	lindenfd@frontiernet.net	Linden Fire Department	Fire Services
Rich Upham	Fire Chief	chief@hofdaz.com	Heber-Overgaard Fire Department	Fire Services
Jerry McGraw	Fire Chief	wmlfiredept@cableone.net	White Mountain Lake Fire Department	Fire Services
Bryan Savage	Fire Chief	bsavage@lakesidefire.com	Lakeside Fire Department	Fire Services
Mary Ann Smith	Lieutenant/Emergency Services Manager	maryann.smith@ci.winslow.az.us	Winslow Fire Department	Fire Services
Larry Chee		larrychee@navajo.org	Navajo Nation-Dpt of Fire & Rescue Services;	Fire Services
Pat Hancock	Fire Chief	snowflakefirechief@yahoo.com	Snowflake Fire Department	Fire Services
Paul Kuehl	Fire Chief	pkuehl@wmat.us	White Mountain Apache Tribe Fire Department	Fire Services
Paul Rehman	Deputy Fire Chief	p.rehman@hofdaz.com	Heber-Overgaard Fire Department	Fire Services
Bob Garvin	Fire Chief	pindaleman@frontiernet.net	Pinedale/Clay Springs Fire Department	Fire Services
Blue Penrod	Fire Chief	bpenrod@pinetopfire.com	Pinetop Fire Department	Fire Services
RL Walker		rlwalker01@cableone.net	Joseph City Fire Department	Fire Services
Rusty Despain	Fire Chief	jcfdrusty@cableone.net	Joseph City Fire Department	Fire Services
Jeff Lineberry	Fire Chief	jeff.lineberry@navajocountyaz.gov	Sun Valley Fire Department	Fire Services
Wayne Cole	Fire Chief	cbgfire@wmat.nsn.us	White Mountain Apache Tribe Fire Department	Fire Services
Boney Candelaria	Fire Chief	boney.candelaria@ci.winslow.az.us	Winslow Fire Department	Fire Services
Mark Blackwell		mark.blackwell@bnsf.com	Burlington Northern Santa Fe	Rail
Jim Hofstra		jim.hofstra@aps.com	APS	Utility
Northern Arizona Council of Governments		nacog@nacog.org	Northern Arizona Council of Governments	
Nancy Selover	State Climatologist	selover@asu.edu	Arizona State Climate Office	
Arizona Department of Commerce		commerce@azcommerce.com	Arizona Department of Commerce	
Paul Hellenberg	Emergency Response	Hellenberg.paul@azdeq.gov	Arizona Department of Environmental Quality	
Lee Allison	AZGS Director and State Geologist	Lee.allison@azgs.az.gov	The Arizona Geological Survey	
Linda Singhurse	Executive Assistant to the Director	lsinghurse@azdohs.gov	Arizona Department of Hoemland Security	
Brian Cosson	State NFIP Manager	btcosson@azwater.gov	Arizona Department of Water Resource	
Maria Baier	Land Commissioner	mbaier@land.az.gov	Arizona State Land Department	
Wimberly Duran	Assistant Commissoner	wduran@land.az.gov	Arizona State Land Department	
Robert Halliday	Director	rhalliday@azdps.gov	Arizona Department of Public Safety	
Sherry Henry	Executive Director	shenry@azot.gov	Arizona Office of Tourism	
Holbrook Chamber of Commerce		Holbrook@GoTourAZ.com	Holbrook Chamber of Commerce	

Name	Title	E-mail	Agency/Jurisdiction/Organization	Department/Branch
Show Low Chamber of Commerce		info@showlowchamberofcommerce.com	Show Low Chamber of Commerce	
Snowflake-Taylor Chamber of Commerce		info@snowflaketaylorchamber.org	Snowflake-Taylor Chamber of Commerce	
		alanbegay@navajo.org		
Winslow Chamber of Commerce		winslowchamber@cableone.net	Winslow Chamber of Commerce	
Pinetop-Lakeside Chamber of Commerce		info@pinetoplakesidechamber.com	Pinetop-Lakeside Chamber of Commerce	
Kelli Young		kyoung@arizonaredcross.org	Red Cross	
Gracie Kelley		gkelley@navopache.org	Navopache Electric Co-op	Utility
		mail@azwater.com	Arizona Department of Water Resource	
Molly K Greene		mkgreene@srpnet.com	SRP	Utility
Rick Harvey	Serivce Supervisor	rharvey@uesaz.com	Unisource Energy Services	Utility
John McKee	General Manager	john.mckee@catalystpaper.com	Catalyst Paper	Major Employer
Mark Muder	Store Manager	markmuder@hotmail.com		Major Employer
Ron MCArthur	CEO	rmcarthur@summithealthcare.net	Sumitt Healthcare	Major Employer
Vaneysa Johnson	Emergency Manager	neysajohnson@wmat.us	White Mountain Apache Tribe	Emergency Management
Faye Platero	Emergency Management Assistant	fayeplatero@yahoo.com	Navajo Nation	Emergency Management
Roger Tungovia	Emergency Manager	rtungovia@hopi.nsn.us	The Hopi Tribe	Emergency Management

W. Scott Ogden

From: Tiffany Ashworth [Grants.Administrator@navajocountyaz.gov]
Sent: Monday, November 29, 2010 10:51 AM
To: 'W. Scott Ogden'; 'susan.wood@azdema.gov'
Subject: FW: Navajo County Mitigation Plan Update
Attachments: Mitigation Plan Update Invitation Ltr - 11052010 docx.pdf; Build the Planning Team.DOC

Importance: High

The following e-mail was sent to:

'Ed Muder - Show Low City Manager';
'Eric Duthie - Taylor Town Manager';
'Jim Ferguson - Winslow City Manager';
'Kelly Udall - Pinetop-Lakeside Manager';
'Paul Watson - Snf Town Manager';
rayalley@ci.holbrook.az.us

tsa

Tiffany S. Ashworth
Grants Administrator
(928) 524-4271 - Office
(928) 241-2185 - Cell
(928) 524-4239 - Fax

From: Tiffany Ashworth
Sent: Friday, November 05, 2010 1:18 PM
Subject: Navajo County Mitigation Plan Update
Importance: High

The attached letter is an invitation to a mandatory meeting to update the Mitigation Plan for Navajo County.

Also attached is the ideal representation that is needed to have a productive and informative work session.

For each agency, I would like to have the following representation:

- City/Town Manager
- Budget/Finance
- Building Code Enforcement
- City/Town Attorney
- Economic Development
- Emergency Preparedness
- GIS-Mapping
- Planning and Zoning
- Public Works
- Risk Management
- Transportation Department

Please provide me with a list of who will be attending from your agency.

Thank you,

Tiffany

Tiffany S. Ashworth
Grants Administrator

Navajo County
P.O. Box 668
100 East Carter Drive
Holbrook, Arizona 86025
(928) 524-4271 - Office
(928) 241-2185 - Cell
(928) 524-4239 - Fax
E-mail: tiffany.ashworth@navajocountyaz.gov
Website: www.navajocountyaz.gov

New Hours at County Offices – Starting August 3, 2009
Monday – Thursday 7 AM to 6 PM
Closed Fridays beginning August 7th
For details visit : www.NavajoCountyAZ.gov/NewHours

Build the Planning Team

A planning team should include a broad range of backgrounds, experiences and expertise. Below are some suggestions you may want to consider for your planning team. There are many organizations, both governmental and community-based, that should be included when creating a team for local planning. Local planning teams many also wish to include state organizations, when appropriate, as a source of information and to provide guidance and coordination.

Local/Tribal

- Administrator/Manager's Office
- Budget/Finance Office
- Building Code Enforcement Office
- City/County Attorney's Office
- Economic Development Office
- Emergency Preparedness Office
- Fire and Rescue Department
- Local Emergency Planning Committee
- Planning and Zoning Office
- Police/Sheriff's Department
- Public Works Department
- Transportation Department
- Tribal Leaders

State

- Climatologist
- Economic Development Office
- State Hazard Mitigation Officer
- Environmental Protection Office
- Fire Marshal's Office
- Geologist
- Homeland Security Coordinator's Office
- National Flood Insurance Program Coordinator
- Natural Resources Office
- Planning Agencies
- Public Safety
- Public Information Office
- Tourism Department

Special Districts & Authorities

- Airport and Seaport Authorities
- Fire Control Districts
- Flood Control Districts
- Redevelopment Agencies
- Regional/Metropolitan Planning Organizations
- School Districts
- Transit/Transportation Agencies

Non-Government Organizations

- Chamber of Commerce
- Environmental Organizations
- Neighborhood Organizations
- Private Development Agencies
- Utility Companies
- Academic Institutions

Others

- Architectural/Engineering/Planning Firms
- Land Developers
- Major Employers/Businesses

State/Tribal/County/Local
- Local, technical and/or hazard expertise
- Guidance on statutes and grant programs

Federal
- Technical expertise
- Knowledge about government processes
- Guidance on federal programs and grants

Business/Development Organizations
- Resource base for project implementation

Neighborhood/Community Groups
- Advocates for citizens
- Garner support and local buy-in

Academic
- State, local or regional research information
- State/Community data

Elected Officials
- Visibility and political influence
- Expedite legislative/budget considerations and proclamations/resolutions

NAVAJO COUNTY
ADMINISTRATION DEPARTMENT
"Proudly Serving, Continuously Improving"

November 5, 2010

RE: Mitigation Plan Update Invitation

You are in receipt of this invitation to participate with Navajo County in updating the Mitigation Plan for the County as a whole. Although this letter is an invitation it is mandatory your agency is represented as future mitigation funding eligibility will be jeopardized due to limited or lack of participation. Navajo County will provide verification of participation within the Mitigation Plan for approval by FEMA.

The update will be completed with the assistance of the Arizona Division of Emergency Management (ADEM) and a consultant over the course of four work sessions. This meeting is the first of the four work sessions and at the end of the process each jurisdiction's individual Mitigation Plan will be incorporated in to one document for the County. It is imperative that sufficient participation is received as the individual jurisdictions plans will expire next year and future eligibility is dependent upon this updated plan. Adequate participation will be reviewed and decided upon by ADEM and/or FEMA.

The work session is set for the following:

Date:	**November 18, 2010**
Time:	**8:00 a.m. to 12:00 p.m.**
Location:	**Navajo County Public Health Services District** **Frontier Conference** **600 N. 9th Place** **Show Low, Arizona**

Please verify your attendance and/or qualified designee by Monday, November 15, 2010 to me by e-mail to navajo.eoc@navajocountyaz.gov.

I am available for questions; please feel free to call me at: 928-524-4271 (office) or 928-241-2185 (cell).

Thank you,

Tiffany S. Ashworth
Navajo County Emergency Management
Planning Section Chief

• 928.524.4000 • Fax: 928.524.4239 • P.O. Box 668 • Holbrook, AZ 86025 •
• www.navajocountyaz.gov •

W. Scott Ogden

From: Tiffany Ashworth [Grants.Administrator@navajocountyaz.gov]
Sent: Monday, November 29, 2010 10:53 AM
To: 'W. Scott Ogden'; 'susan.wood@azdema.gov'
Subject: FW: Navajo County Mitigation Plan Update
Attachments: Mitigation Plan Update Invitation Ltr - 11052010 docx.pdf; Build the Planning Team.DOC

Importance: High

The following e-mail was sent to Law Enforcement and Fire Departments/Districts:

Alfonso Sakeva - BIA Hopi;
Jeff Smyth - SLPD Chief;
Mark Jackson ;
National Park Service;
Navajo Nation - DPS;
Navajo Nation- Kayenta;
Pinetop-Lakeside Chief;
Raymond Burnette ;
Rodrick Holmes - Hopi Rangers;
Snowflake Police Chief;
Steve Garnett - Winslow PD Chief;
Steve Nelson - Navajo PD;
Alex Baker ;
Ben Owens;
Clint Burden -NIMSCAST Administrator;
Eddie Lindquist (lindenfd@frontiernet.net);
Heber-Overgaard FD Chief;
Jerry McGraw ;
Lakeside Fire Chief;
Mary Ann Smith ;
Navajo Nation-Dpt of Fire & Rescue Services;
Pat Hancock;
Paul Kuehl;
Paul Rehman - Heber-Overgaard Fire;
Pinedale-Claysprings Fire Chief;
Pinetop Fire Chief;
rl walker;
Rusty Despain;
Sun Valley Fire Chief;
Wayne Cole ;
Winslow Fire Chief

Tiffany S. Ashworth
Grants Administrator
(928) 524-4271 - Office
(928) 241-2185 - Cell
(928) 524-4239 - Fax

From: Tiffany Ashworth
Sent: Friday, November 05, 2010 1:20 PM

Subject: FW: Navajo County Mitigation Plan Update
Importance: High

The attached letter is an invitation to a mandatory meeting to update the Mitigation Plan for Navajo County.

Also attached is the ideal representation that is needed to have a productive and informative work session.

Please provide me with a list of who will be attending from your agency.

Thank you,

Tiffany

Tiffany S. Ashworth
Grants Administrator

Navajo County
P.O. Box 668
100 East Carter Drive
Holbrook, Arizona 86025
(928) 524-4271 - Office
(928) 241-2185 - Cell
(928) 524-4239 - Fax
E-mail: tiffany.ashworth@navajocountyaz.gov
Website: www.navajocountyaz.gov

New Hours at County Offices – Starting August 3, 2009
Monday – Thursday 7 AM to 6 PM
Closed Fridays beginning August 7th
For details visit : www.NavajoCountyAZ.gov/NewHours

W. Scott Ogden

From: Tiffany Ashworth [Grants.Administrator@navajocountyaz.gov]
Sent: Monday, November 29, 2010 10:55 AM
To: 'W. Scott Ogden'; 'susan.wood@azdema.gov'
Subject: FW: Navajo County Mitigation Plan Update
Attachments: Mitigation Plan Update Invitation Ltr - 11052010 docx.pdf; Build the Planning Team.DOC

Importance: High

The following e-mail was sent to Navajo County representatives.

Tiffany S. Ashworth
Grants Administrator
(928) 524-4271 - Office
(928) 241-2185 - Cell
(928) 524-4239 - Fax

From: Tiffany Ashworth
Sent: Friday, November 05, 2010 1:24 PM
To: James Jayne; Dusty Parsons; James Menlove; Mary Jane Springer; 'Teresa Cameron'; 'Brad Carlyon'; 'Dan Hinz'; Ryan Taylor; Montana Slack; Brian Russell; 'Greg Loper'; 'KC Clark'; 'Randy Weems'; Homero Vela; Tim Norton; 'Trent Larson'; Wade Kartchner; Don Walker; Linda Morrow
Subject: FW: Navajo County Mitigation Plan Update
Importance: High

The attached letter is an invitation to a mandatory meeting to update the Mitigation Plan for Navajo County.

Also attached is the ideal representation that is needed to have a productive and informative work session.

Please provide me with a list of who will be attending from your department.

Thank you,

Tiffany

Tiffany S. Ashworth
Grants Administrator

Navajo County
P.O. Box 668
100 East Carter Drive
Holbrook, Arizona 86025
(928) 524-4271 - Office
(928) 241-2185 - Cell
(928) 524-4239 - Fax
E-mail: tiffany.ashworth@navajocountyaz.gov
Website: www.navajocountyaz.gov

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Closed Fridays beginning August 7th
For details visit : www.NavajoCountyAZ.gov/NewHours

W. Scott Ogden

From: Tiffany Ashworth [Grants.Administrator@navajocountyaz.gov]
Sent: Monday, November 29, 2010 10:57 AM
To: 'W. Scott Ogden'; 'susan.wood@azdema.gov'
Subject: FW: Navajo County Mitigation Plan Update
Attachments: Mitigation Plan Update Invitation Ltr - 11052010 docx.pdf; Build the Planning Team.DOC

Importance: High

The following e-mail was sent to the following:

'Blackwell, Mark E';
'jim.hofstra@aps.com';
'nacog@nacog.org';
'selover@asu.edu';
'commerce@azcommerce.com';
'Hellenberg.paul@azdeq.gov';
'Lee.allison@azgs.az.gov';
'lsinghurse@azdohs.gov';
'btcosson@azwater.gov';
'mbaier@land.az.gov';
'wduran@land.az.gov';
'rhalliday@azdps.gov';
'shenry@azot.gov';
'Holbrook@GoTourAZ.com';
'info@showlowchamberofcommerce.com';
'info@snowflaketaylorchamber.org';
'alanbegay@navajo.org';
'winslowchamber@cableone.net';
'info@pinetoplakesidechamber.com';
kyoung@arizonaredcross.org;
'gkelley@navopache.org';
'mail@azwater.com';
'mkgreene@srpnet.com';
'rharvey@uesaz.com';
'john.mckee@catalystpaper.com';
'markmuder@hotmail.com';
'rmcarthur@summithealthcare.net'

Tiffany S. Ashworth
Grants Administrator
(928) 524-4271 - Office
(928) 241-2185 - Cell
(928) 524-4239 - Fax

From: Tiffany Ashworth
Sent: Tuesday, November 09, 2010 3:35 PM
Subject: Navajo County Mitigation Plan Update
Importance: High

The attached letter is an invitation to a mandatory meeting to update the Mitigation Plan for Navajo County.

Also attached is the ideal representation that is needed to have a productive and informative work session.

Please provide me with a list of who will be attending from your agency.

Thank you,

Tiffany

Tiffany S. Ashworth
Grants Administrator

Navajo County
P.O. Box 668
100 East Carter Drive
Holbrook, Arizona 86025
(928) 524-4271 - Office
(928) 241-2185 - Cell
(928) 524-4239 - Fax
E-mail: tiffany.ashworth@navajocountyaz.gov
Website: www.navajocountyaz.gov

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For details visit : www.NavajoCountyAZ.gov/NewHours

W. Scott Ogden

From: Tiffany Ashworth [Grants.Administrator@navajocountyaz.gov]
Sent: Monday, November 29, 2010 11:00 AM
To: 'W. Scott Ogden'; 'susan.wood@azdema.gov'
Subject: FW: Navajo County Mitigation Plan Update

The following e-mail was sent to all three tribal emergency management contacts:
'Vaneysa Johnson';
'Faye Platero';
Roger Tungovia

Tiffany S. Ashworth
Grants Administrator
(928) 524-4271 - Office
(928) 241-2185 - Cell
(928) 524-4239 - Fax

From: Catrina Roe
Sent: Monday, November 08, 2010 10:36 AM
To: Tiffany Ashworth
Subject: FW: Navajo County Mitigation Plan Update

First response!

Catrina Roe
Navajo County Board of Supervisor's
Executive Secretary
(928)524-4070

New hours at Holbrook County Complex - Starting January 4, 2010
Monday - Friday 8 a.m. to 5 p.m.
For details visit : www.NavajoCountyAz.gov

From: Roger Tungovia [mailto:RTungovia@hopi.nsn.us]
Sent: Monday, November 08, 2010 10:32 AM
To: Catrina Roe; Vaneysa Johnson; Faye Platero
Subject: RE: Navajo County Mitigation Plan Update

I plan to be in attendance.

From: Catrina Roe [mailto:Catrina.Roe@navajocountyaz.gov]
Sent: Friday, November 05, 2010 1:42 PM
To: 'Vaneysa Johnson'; 'Faye Platero'; Roger Tungovia
Subject: FW: Navajo County Mitigation Plan Update
Importance: High

The attached letter is an invitation to a mandatory meeting to update the Mitigation Plan for Navajo County.

Also attached is the ideal representation that is needed to have a productive and informative work session.

Please provide me with a list of who will be attending from your department.

Thank you,

Tiffany

Tiffany S. Ashworth
Grants Administrator

Navajo County
P.O. Box 668
100 East Carter Drive
Holbrook, Arizona 86025
(928) 524-4271 - Office
(928) 241-2185 - Cell
(928) 524-4239 - Fax
E-mail: tiffany.ashworth@navajocountyaz.gov
Website: www.navajocountyaz.gov

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Monday – Thursday 7 AM to 6 PM
Closed Fridays beginning August 7th
For details visit : www.NavajoCountyAZ.gov/NewHours

Memorandum JE Fuller/ Hydrology & Geomorphology, Inc.

MEETING DATE: November 18, 2010

MEETING TIME: 8:00AM - NOON

MEETING LOCATION: Navajo County Governmental Complex
Public Works Conference Room
Holbrook, AZ

DISTRIBUTION: Meeting Attendees

FROM: W. Scott Ogden - JEF

RE: **Navajo County Multi-Jurisdictional Hazard Mitigation Plan**
Planning Team Meeting No. 1

ATTENDEES: Ahmed Abdullah – Winslow, Planner
Ray Alley – Holbrook, City Manager
Diana Anderson – Summit Health Care, RN-Educator
Tiffany Ashworth – Navajo County, Grants Administrator
Alex Baker – Holbrook, Fire Chief
Clint Burden – Taylor, Fire Chief
Rusty Despain – Joseph City, Fire Chief
Rick Evans – Taylor, Economic Development Coordinator
Dan Hinz – Navajo County, Director
Jeff Johnson – Taylor, Zoning Administrator
Bill Kopp – Show Low, Public Works Director
Marshall Larsen – Winslow, City Inspector
Emerson Lee – Navajo Nation, Police Lieutenant
Gus Lundberg – Taylor, Finance Director
Jeff McNeil – Show Low, Police Commander
Jason Moore – Navajo County, Deputy County Attorney
Scott Ogden – JE Fuller, Project Manager
Chris Parisot – Navajo County, Finance Analyst
Dusty Parsons – Navajo County, Assistant County Manager
Dale Patton – Winslow, City Attorney
Faye Platero – Navajo Nation, Emergency Services Coordinator
Brad Provost – Show Low, Police Commander
Cher Reyes – Holbrook, City Clerk
Brian Russell – Show Low, Fire Marshal
Bryan Savage – Pinetop-Lakeside, Interim Fire Chief
Nancy Selover – Arizona State Climatologist
Edgar Shupla – Hopi Tribe, Facilities/Risk Director
Montana Slack – Navajo County, Deputy Director
Mary Ann Smith – Winslow, Emergency Services Manager

(continued on next page)

Mary Springer – Navajo County, Deputy Finance Director
Randy Sullivan – Holbrook, Finance Director
Edison J. Tutsi – Hopi Tribe, Project Coordinator
Don Walker – Navajo County, Health Department Manager
Randy Weems – Navajo County, Chief Deputy Sheriff
Susan Wood – ADEM

NOTE: No Representative from the Town of Snowflake

AGENDA

1. **INTRODUCTIONS / GREETING**
2. **MITIGATION PLANNING OVERVIEW**
3. **CURRENT MITIGATION PLAN REVIEW**
4. **PLANNING PROCESS**
    a. **MJ Planning Team Roles**
    b. **Public Involvement Strategy**
5. **RISK ASSESSMENT**
    a. **Hazard Identification / Profiling**
    b. **Asset Inventory**
6. **PREVIOUS MITIGATION PROJECTS**
7. **OTHER DATA NEEDS**
8. **NEXT MEETING DATES**

ACTION ITEM SUMMARY

DISCUSSION

Agenda Item 1:

- Introductions were made for each member of the planning team. S. Wood explained the role of JEF and ADEM.
- A poll was taken of attendees as to whom had been a part of the original planning team. Only one person was identified.
- It was noted that nobody representing the Town of Snowflake was in attendance. T. Ashworth confirmed that an invitation had been sent and the consequences of not participating was communicated to each jurisdiction. T. Ashworth will follow up with Snowflake to ensure they either attend future meetings or confirm their desire not to participate.

Agenda Item 2:

- S. Wood distributed a mitigation planning folder with miscellaneous mitigation related materials, brochures, fact sheets and meeting handouts to each team member. She then presented an overview/review of the DMA2K mitigation process and purpose for preparing a mitigation plan. The discussion included a review of impacted grant eligibility including HMGP and PDM.

Agenda Item 3:

- S. Wood led a summary review of the 2006 Navajo County Multi-Hazard Mitigation Plan (2006 Plan). Highlights of the discussion and comments included:
    - All of the individual jurisdictional plans will be discontinued and a single, multi-jurisdictional plan will be prepared.
    - Plan format will change slightly to reflect a version that is more compatible to the format of the current State of Arizona Mitigation Plan and to accommodate the new multi-jurisdictional format.
    - All in attendance were new to the hazard mitigation planning and were not part of the 2006 Plan development.
    - Details of Sections 3, 4, 5, and 6 and their updates will be discussed later in the meeting today and in subsequent meetings.
    - Tribal representatives from the Hopi Tribe and Navajo Nation both indicated that they had current Tribal Plans, but would like to participate with the county as much as possible.

Agenda Item 4a:

- S. Ogden led a discussion / presentation of the planning team roles and responsibilities including:
    - The primary point of contact (PPOC)
    - The community representative
    - The local planning resources (other staff, outside agencies, business, school, non-profit reps, etc. contacted or referred to).
- T. Ashworth of Navajo County was identified as the PPOC. The community representatives were identified as follows:
    - Holbrook – Ray Alley, City Manager
    - Hopi Tribe – Roger Tungovia
    - Navajo County – Tiffany Ashworth, Grants Administrator
    - Navajo Nation – Faye Platero, Emergency Services Coordinator
    - Pinetop-Lakeside – Bryan Savage, Interim Fire Chief
    - Show Low – Bill Kopp, Public Works Director
    - Snowflake – NO REPRESENTATION AT MEETING
    - Taylor – Jeff Johnson, Zoning Administrator
    - Winslow – TBD (Mary Ann Smith to follow up)
- S. Ogden presented the planning team with a list of possible local resources that could be invited to participate in the planning process at either the local level or on the multi-jurisdictional planning team. T. Ashworth indicated that over 60 invitations were extended to state, county, and local government officials, as well as many local

businesses, schools, non-profits, and others. T. Ashworth will provide a list of organizations to which invitations were extended, to JEF.

- S. Ogden presented a template for each jurisdiction to use during the planning process for documenting the local resources involved in the plan update outside of the main planning team. He will email the digital version of the template to the team.

Agenda Item 4b:

- S. Ogden led a discussion/presentation of the public involvement requirements of DMA2K.
- The planning team reviewed the previous public involvement efforts that included press releases that were picked up by 7 local newspapers and the local radio stations. None of the team had any experience to know if the 2006 Plan effort was effective or not.
- The planning team discussed various options for pre-draft public involvement including a repeat of using the press releases/public service announcements, newspaper articles, general public announcements, council/board briefings at a working session, and web page postings. A decision was made to do the following:
    - T. Ashworth will work with county personnel to develop a webpage on the Navajo County website announcing the planning process and providing contact information for further inquiries.
    - Each participating jurisdiction will include a notice on their webpage with a link pointing the county's webpage for more information.
    - T. Ashworth will prepare a press release / public service announcement for distribution to media outlets.
    - Holbrook, Show Low, Taylor and Winslow will make informational presentations to their respective councils informing them of the planning process and update of the 2006 Plan.
    - Winslow will include a public notice in the city's utility newsletter.
- Documentation of all public involvement activities is to be provided to JEF as appropriate, and as they occur. Examples include links to websites, copies of news release, copies of newspapers running the news release, dates of PSA broadcasts, copies of newsletters or papers, etc.
- Once the draft plan is ready, a second round of press releases will be used and the website notice will be updated with specific instructions for obtaining a draft of the plan.
- ADEM has developed template language for the county to use in the web and newspaper announcements. JEF will provide the template to the planning team via email.

Agenda Item 5a:

- S. Ogden presented an overview of what a risk assessment is and its purpose in the overall scheme of mitigation planning. He discussed the approach that the planning team will ultimately step through.
- The planning team reviewed the list of hazards previously evaluated in 2006 Plan as well as a comprehensive list of hazards identified in the 2010 State Plan.

- S. Ogden presented the results of a historic hazard event search and database compilation performed by ADEM and JEF that looks at declared and undeclared hazard events. JEF will provide digital copies of the Excel spreadsheets to the planning team for updating and closer review.
- The planning team reviewed the hazard lists and historic records and discussed which hazards could be eliminated off-hand and which should be evaluated further. The following is a brief summary of that discussion:
    - All of the 2006 Plan hazards were retained.
    - Severe Wind and Winter Storm will be added as a new hazards.
    - Earthquake was briefly discussed and was determined to not be a significant threat.
    - Power outages due to freezing rain accumulation on powerlines were discussed and determined to fall under Winter Storm.
    - The resulting list of hazards to be carried forward to profiling and a vulnerability analysis are:
        - Dam Failure
        - Drought
        - Flooding / Flash Flooding
        - Hazardous Materials Incidents
        - Levee Failure
        - Severe Wind
        - Wildfire
        - Winter Storm
- S. Ogden presented information regarding application and development of the Calculated Priority Risk Index (CPRI). The planning team worked through an example calculation for Flooding/Flash Flooding. S. Ogden will provide CPRI worksheets to each participating jurisdiction for completion and return to JEF.

Agenda Item 5b:

- S. Ogden presented an overview of the asset inventory data that was developed for the 2006 plan and how it was used in the 2006 Plan vulnerability analysis.
- Classification of some items in the list regarding "critical" versus "non-critical" status (e.g. – schools that are also identified as evacuation shelters) was discussed and the planning team was encouraged to decide what was critical and non-critical for their communities using the definitions of critical facilities spelled out in Section 4.3.1 of the 2006 Plans.
- S. Ogden will provide the 2006 Plan list of identified assets to each respective jurisdiction for review, editing, completing and updating.

Agenda Item 6:

- The planning team briefly reviewed the current list of mitigation actions/projects (A/Ps) listed in the 2006 Plans.
- S. Ogden explained that a part of the plan update process will include an evaluation of the 2006 Plan's mitigation actions/projects.

- S. Ogden provided evaluation worksheets to each participating jurisdiction listing all of the 2006 Plan A/Ps for that community, and explained to the planning team the evaluation parameters and appropriate responses. Each jurisdiction will complete the worksheet and provide to JEF at the next meeting.

Agenda Item 7:

- S. Ogden distributed city/town boundary plots to each jurisdiction for verification. Each jurisdiction shall review the plot and either validate the limits shown or provide edited limits by either a redlined map, or CAD/GIS files.
- No other data collection has been identified at this time.

Agenda Item 8:

- The next planning team meeting (Planning Meeting No. 2) is scheduled for :
  - December 15th, 8AM to Noon, Navajo County Governmental Complex, Public Works Conference Room.
  - Meetings No. 3 will be planned at Meeting No. 2.

ACTION ITEM SUMMARY:

ITEM NO.	DESCRIPTION	RESPONSIBILITY [DUE DATE]
1	T. Ashworth to follow-up with Snowflake officials to confirm participation status	T. Ashworth [11/29/10]
2	T. Ashworth to provide a list of all organizations invited to Planning Team Meeting No. 1 and a copy of the correspondence used, to JEF	T. Ashworth [12/9/10]
3	JEF will email electronic version of Local Resources List template to each jurisdiction to track contributors to the plan update.	JEF [11/25/10]
4	Each jurisdiction shall record and document all people contacted or involved as a planning resource at the local level, using the template provided by JEF	All Jurisdictions [prior to draft]
5	JEF will provide a sample public notice prepared by ADEM to the planning team for use in the website and newspaper announcements.	JEF [11/25/10]
6	T. Ashworth will work with county personnel to develop a webpage on the Navajo County website announcing the planning process and providing contact information for further inquiries. Each participating jurisdiction will include a notice on their webpage with a link pointing the county's webpage for more information.	T. Ashworth and Each Jurisdiction [12/9/10]
7	Holbrook, Show Low, Taylor and Winslow will make informational presentations to their respective councils informing them of the planning process and update of the 2006 Plan.	R. Alley, B. Kopp, J. Johnson, M. Smith [Next available Council Mtg]
8	Winslow to include a public notice in the city's utility newsletter.	M. Smith [Next utility newsletter]

ITEM NO.	DESCRIPTION	RESPONSIBILITY [DUE DATE]
9	JEF will provide digital copies of the historic hazard database files to the planning team for review and update as needed.	JE Fuller [11/25/10]
10	All team members are to review and update the historic hazard database as appropriate and desired by the community.	All Jurisdictions [12/9/10]
11	JEF to provide CPRI calculation sheets (digitally) to each participating jurisdiction	JEF [11/25/10]
12	Each jurisdiction to perform a CPRI evaluation on each of the selected hazards and return the worksheet to JEF	All Jurisdictions [12/9/10]
13	JEF to provide asset inventory data sets to each community for update, correction, or provision of missing data.	JEF [11/25/10]
14	All jurisdictions shall review the 2006 asset inventory and make updates, corrections, and/or provide missing data such as replacement costs.	All Jurisdictions [12/9/10]
15	JEF will provide the Existing Mitigation Action/Project Evaluation worksheet to each respective jurisdiction for completion.	JEF [11/25/10]
16	All jurisdictions shall complete the Existing Mitigation A/P Evaluation worksheet and return to JEF.	All Jurisdictions [12/9/10]
17	Each jurisdiction to review city/town boundary verification plots and provide either validation of accuracy or a revised corporate limit via either redlined map, CAD, or GIS	All Jurisdictions [12/9/10]

Memorandum JE Fuller/ Hydrology & Geomorphology, Inc.

MEETING DATE: December 15, 2010

MEETING TIME: 8:00AM - NOON

MEETING LOCATION: Navajo County Governmental Complex
Public Works Conference Room
Holbrook, AZ

DISTRIBUTION: Meeting Attendees

FROM: W. Scott Ogden - JEF

RE: Navajo County Multi-Jurisdictional Hazard Mitigation Plan
Planning Team Meeting No. 2

ATTENDEES: Ahmed Abdullah – Winslow, Planner
Paul Albert – Navajo County Sheriff's Office Sergeant
Ray Alley – Holbrook, City Manager
Clint Burden – Taylor, Fire Chief
Dale Call – Snowflake P&Z Director / Building Official
Dan Hinz – Navajo County, Director
Dennis Koenig – Summit Healthcare RN-Educator
Scott Ogden – JE Fuller, Project Manager
Chris Parisot – Navajo County, Finance Analyst
Dusty Parsons – Navajo County, Assistant County Manager
Faye Platero – Navajo Nation, Emergency Services Coordinator
Cher Reyes – Holbrook, City Clerk
Catrina Roe – Navajo County
Montana Slack – Navajo County, Deputy Director
Jeffery Smythe – Show Low Police Chief (via phone conference)
Roger Tungovia – Hopi Tribe Public Safety and Emgcy Serv. Director
Susan Wood – ADEM

NOTE: No Representative from Pintetop-Lakeside

AGENDA

1. **ACTION ITEM REVIEW/STATUS**
2. **HAZARD PROFILE MAP/INFORMATION REVIEW**
3. **CAPABILITY ASSESSMENT**
    a. **Jurisdictional Capabilities**
    b. **Prior Mitigation Activities**
    c. **NFIP Participation and Status**
    d. **Repetitive Loss Properties**
4. **MEETING ENDING**
    a. **Review of action items**
    b. **Next meeting reminder/verification**

DISCUSSION

Agenda Item 1:

- Action Items from Meeting No. 1 were reviewed and discussed. A summary of the disposition of those items as of December 10, 2010 was provided to the planning team via an email. The modified status as of the December 15, 2010 meeting is provided below.

Agenda Item 2:

- S. Ogden presented draft hazard profile maps/data for dam failure, drought, flood, HAZMAT, levee failure, severe wind, wildfire, and winter storm to the planning team for feedback. The coverages presented will be used for the vulnerability analysis.
    - Dam Failure – a map was presented showing the dams and dam failure inundation limits for the county. No GIS presentation was available for the meeting. D. Parsons noted that the paper map did not appear to have Schoens Dam on it. JEF will check and verify. C. Roe will provide the latest EAP information to JEF.
    - Drought –maps depicting estimated drought conditions for various time periods and scenarios were presented. The latest version of the maps will be included in the Plan.
    - Flood – hazard areas were determined using DFIRM data. No additional data will be added.
    - HAZMAT – maps showing the 2006 Plan HAZMAT risk zones (High hazard is a one-mile buffer and Medium is a ring from one-mile to two-miles) was presented. S. Ogden noted that this will be updated to reflect the current Tier II facility locations. The planning team noted that the railroad south of Snowflake no longer exists and that corridor needs to be removed. It was also recommended to check for a possible corridor between Pinon and Ysegi on the Navajo Nation.
    - Levee Failure – maps depicting levee failure limits were provided. Failure inundation limits were determined using the DFIRM data and were focused in Holbrook and Winslow. Other levees exist in the county, but are not certified and flooding hazards associated with their failure is already addressed in the floodplain profiles.
    - Severe Wind – a map showing severe wind events as documented by NCDC was provided. The planning team discussed other sources to enhance the map and profile including recent wind studies done by APS and NAU, or possibly wind related closure and accident data from ADOT. S. Ogden will do additional research for the profile. C. Roe will see if the county has any of the APS wind studies.
    - Wildfire – the profile map will use the 2004 Statewide coverage. Team also chose to add a second map to profile that shows locations for pre 2002 wildfire locations. Limits of the two CWPP's in the county will be

shown for reference. C. Roe will provide a copy of the Central Navajo County WPP.
    - Winterstorm – provide two profile maps showing maximum 1-day and 3-day snow depths.
- JEF will use the approved profiles to perform the vulnerability analysis and will present the results at the next meeting.

Agenda Item 3a:

- S. Ogden led the planning team in a review of the 2006 Plan's capability assessment and distributed worksheet examples for discussing. He explained that the new Plan will include the same material, but will be reformatted somewhat to combine the information in current Tables 5-1 and 5-4 into a single table. The format of current Tables 5-2 and 5-3 will remain unchanged except for new table numbers. S. Ogden will distribute pre-populated tables to each jurisdiction using the 2006 Plan information as a starting point. Each jurisdiction was directed to review and revise/update each table as necessary.

Agenda Item 3b:

- S. Ogden led the planning team in a discussion of prior mitigation activities.
- The Capability Assessment portion of the updated Plan will be expanded to include 2 new sets of data will be added to.
    - The first will be a paragraph summarizing prior mitigation activities involving HMGP or PDM funds that are currently tracked by ADEM.
    - The second will be a table summarizing past mitigation activities that have been completed by each jurisdiction over the past 5-10 years.
    - JEF will provide a worksheet for each jurisdiction to document past mitigation activities. May include past projects, outreach, studies, etc., funded by any source (not just grants).

Agenda Item 3c:

S. Ogden presented a table showing NFIP participation statistics and actuarial data that was current as of August 2010. The Navajo Nation and Hopi Tribe are the only jurisdictions not participating in the NFIP program. S. Ogden polled each jurisdiction to determine management roles. C. Roe will touch base with Trent Larson, the county's floodplain manager, to get a report on the community roles

Agenda Item 3d:

S. Ogden presented a summary of NFIP repetitive loss property information that was provided by FEMA through ADEM and was current as of January 2010.

Agenda Item 4:

- The next planning team meeting (Planning Meeting No. 3) is scheduled for :
    - February 10th, 2011, 8AM to Noon, Navajo County Governmental Complex, Public Works Conference Room.

ACTION ITEM SUMMARY:

ITEM NO.	DESCRIPTION	RESPONSIBILITY [DUE DATE]
2-1	JEF to verify Schoens Dam is included in dam failure profile.	JEF [12/31/10]
2-2	C. Roe will provide latest EAP data for Schoens Dam to JEF.	C. Roe [12/31/10]
2-3	JEF to modify HAZMAT profile maps to exclude railroad south of Snowflake and updated Tier II data	JEF [12/31/10]
2-4	JEF to research addition Severe Wind data with NAU and ADOT.	JEF [12/31/10]
2.5	C. Roe to check on NAU and APS wind study documents for Navajo County	C. Roe [12/31/10]
2-6	C. Roe to provide CWPP for central county area.	C. Roe [12/31/10]
2-7	JEF to incorporate CNCWPP data as appropriate into the wildfire profile	JEF [12/31/10]
2-8	JEF to distribute Capability Assessment worksheets to each jurisdiction	JEF [12/22/10]
2-9	Each jurisdiction to complete / update Capability Assessment worksheets and provide to JEF	All Jurisdictions [2/3/11]
2-10	JEF to distribute Past Mitigation Activity worksheets to each jurisdiction	JEF [12/22/10]
2-11	Each jurisdiction to complete the Past Mitigation Activity worksheet and provide to JEF	All Jurisdictions [2/3/11]
2-12	C. Roe to check with Trent Larson on floodplain management role of county and jurisdictions	C. Roe [2/3/11]

ITEM NO.	DESCRIPTION	RESPONSIBILITY [DUE DATE]	NAVAJO COUNTY	HOLBROOK	PINETOP-LAKESIDE	SHOW LOW	SNOWFLAKE	TAYLOR	WINSLOW	HOPE TRIBE	NAVAJO NATION	EXPLANATION
1-1	T. Ashworth to follow-up with Snowflake officials to confirm participation status	T. Ashworth [11/29/10]	C	NA	NA	NA	NA	NA	NA	NA	NA	• 12/1/10 - Received contact from Dale Call of Snowflake requesting task assignments and details.
1-2	T. Ashworth to provide a list of all organizations invited to Planning Team Meeting No. 1 and a copy of the correspondence used, to JEF	T. Ashworth [12/9/10]	C	NA	NA	NA	NA	NA	NA	NA	NA	• 11/29/10 – Tiffany provided documentation of invitations initially sent out. JEF requested a summary of the agencies/entities as it is difficult to determine all from the email addresses. • 12/14/10 – Tiffany provided list
1-3	JEF will email electronic version of Local Resources List template to each jurisdiction to track contributors to the plan update.	JEF [11/25/10]	NA	NA	NA	NA	NA	NA	NA	NA	NA	• 11/23/10 – file provided to team via email
1-4	Each jurisdiction shall record and document all people contacted or involved as a planning resource at the local level, using the template provided by JEF	All Jurisdictions [prior to draft]	C	IP	IP	IP	IP	IP	C	IP	IP	• 12/8/10 – Winslow provided local resource list • 12/13/10 – Navajo County provided local resource list
1-5	JEF will provide a sample public notice prepared by ADEM to the planning team for use in the website and newspaper announcements.	JEF [11/25/10]	NA	NA	NA	NA	NA	NA	NA	NA	NA	• 11/23/10 – file provided to team via email
1-6	T. Ashworth will work with county personnel to develop a webpage on the Navajo County website announcing the planning process and providing contact information for further inquiries. Each participating jurisdiction will include a notice on their webpage with a link pointing the county's webpage for more information.	T. Ashworth and Each Jurisdiction [12/9/10]	C	NC	NC	NC	NC	NC	C	NC	NC	• 12/9/10 – Winslow webpage notice went active
1-7	Holbrook, Show Low, Taylor and Winslow will make informational presentations to their respective councils informing them of the planning process and update of the 2006 Plan.	R. Alley, B. Kopp, J. Johnson, M. Smith [Next available Council Mtg]	NA	NC	NA	NC	NA	NC	IP	NA	NA	• 12/9/10 – Winslow notified that an informal presentation will be made at the January 11, 2011 council meeting.

STATUS KEY	(NC) Not Complete	(IP) In Progress	(C) Complete	(NA) Not Assigned

ITEM NO.	DESCRIPTION	RESPONSIBILITY [DUE DATE]	NAVAJO COUNTY	HOLBROOK	PINETOP-LAKESIDE	SHOW LOW	SNOWFLAKE	TAYLOR	WINSLOW	HOPE TRIBE	NAVAJO NATION	EXPLANATION
1-8	Winslow to include a public notice in the city's utility newsletter.	M. Smith [Next utility newsletter]	NA	NA	NA	NA	NA	NA	IP	NA	NA	• 12/9/10 – notice will go out with January 1, 2011 newsletter.
1-9	JEF will provide digital copies of the historic hazard database files to the planning team for review and update as needed.	JE Fuller [11/25/10]	NA	NA	NA	NA	NA	NA	NA	NA	NA	• 11/23/10 – file provided to team via email
1-10	All team members are to review and update the historic hazard database as appropriate and desired by the community.	All Jurisdictions [12/9/10]	C	NC	NC	NC	NC	NC	C	NC	NC	• 12/8/10 – Winslow provided additional events for database • 12/13/10 – Navajo County has nothing to add
1-11	JEF to provide CPRI calculation sheets (digitally) to each participating jurisdiction	JEF [11/25/10]	NA	NA	NA	NA	NA	NA	NA	NA	NA	• 11/23/10 – file provided to team via email
1-12	Each jurisdiction to perform a CPRI evaluation on each of the selected hazards and return the worksheet to JEF	All Jurisdictions [12/9/10]	IP	NC	NC	NC	NC	C	C	NC	NC	• 12/8/10 – Winslow provided CPRI evaluation • 12/9/10 – Taylor provided CPRI evaluation • 12/13/10 – Navajo County directed JEF to use EOP CPRI values. Replied with need for them to take a closer look.
1-13	JEF to provide asset inventory data sets to each community for update, correction, or provision of missing data.	JEF [11/25/10]	NA	NA	NA	NA	NA	NA	NA	NA	NA	• 11/23/10 – file provided to team via email
1-14	All jurisdictions shall review the 2006 asset inventory and make updates, corrections, and/or provide missing data such as replacement costs.	All Jurisdictions [12/9/10]	NC	IP	NC	NC	NC	C	C	NA	NA	• 11/29/10 – Holbrook provided edited asset inventory. JEF reviewed and returned for further edit. • 12/8/10 – Winslow provided edited asset inventory. JEF reviewed and returned for further edit. • 12/9/10 – Taylor provided edited asset inventory. JEF reviewed and returned for further edit. • 12/10/10 – Winslow provided final asset inventory. • 12/14/10 – Taylor sent final asset inventory.
1-15	JEF will provide the Existing Mitigation Action/Project Evaluation worksheet to each respective jurisdiction for completion.	JEF [11/25/10]	NA	NA	NA	NA	NA	NA	NA	NA	NA	• 11/23/10 – file provided to team via email

STATUS KEY	(NC) Not Complete	(IP) In Progress	(C) Complete	(NA) Not Assigned

ITEM NO.	DESCRIPTION	RESPONSIBILITY [DUE DATE]	NAVAJO COUNTY	HOLBROOK	PINETOP-LAKESIDE	SHOW LOW	SNOWFLAKE	TAYLOR	WINSLOW	HOPE TRIBE	NAVAJO NATION	EXPLANATION
1-16	All jurisdictions shall complete the Existing Mitigation A/P Evaluation worksheet and return to JEF.	All Jurisdictions [12/9/10]	IP	IP	NC	NC	NC	IP	IP	NA	NA	• 11/29/10 – Holbrook provided the first cut at the worksheet. JEF reviewed and responded with comments to be addressed. • 12/8/10 – Winslow provided the first cut at the worksheet. JEF reviewed and responded with comments to be addressed. • 12/9/10 – Taylor provided the first cut at the worksheet. JEF reviewed and responded with comments to be addressed. • 12/13/10 – Navajo County sent first cut. JEF commented and returned for editing.
1-17	Each jurisdiction to review city/town boundary verification plots and provide either validation of accuracy or a revised corporate limit via either redlined map, CAD, or GIS	All Jurisdictions [12/9/10]	NA	C	NC	NC	C	C	C	NA	NA	• 11/23/10 – file provided to team via email from JEF • 11/29/10 – Holbrook confirmed the boundary sent was OK. • 12/8/10 – Winslow provided an map with a corrected city boundary. • 12/15/10 – Snowflake and Taylor provided redlined copies of the map for correction.

STATUS KEY	(NC) Not Complete	(IP) In Progress	(C) Complete	(NA) Not Assigned

Memorandum JE Fuller/ Hydrology & Geomorphology, Inc.

MEETING DATE: February 9, 2011

MEETING TIME: 8:00AM – 10:30AM

MEETING LOCATION: Navajo County Governmental Complex
Public Works Conference Room
Holbrook, AZ

DISTRIBUTION: Meeting Attendees

FROM: W. Scott Ogden - JEF

RE: **Navajo County Multi-Jurisdictional Hazard Mitigation Plan**
Planning Team Meeting No. 3

ATTENDEES: Ahmed Abdullah – Winslow, Planner
Ray Alley – Holbrook, City Manager
Clint Burden – Taylor, Fire Chief
Dale Call – Snowflake P&Z Director / Building Official
Dan Hinz – Navajo County, Director
Bill Kopp – Show Low Public Works Director
Scott Ogden – JE Fuller, Project Manager
Catrina Roe – Navajo County
Montana Slack – Navajo County, Deputy Director
Tom Thomas – Pinetop-Lakeside Public Works Director
Roger Tungovia – Hopi Tribe Public Safety and Emgcy Serv. Director

AGENDA

1. **STATUS REVIEW**
2. **PLAN MAINTENANCE STRATEGY**
   a. **Monitoring and Evaluation**
   b. **Plan Update**
   c. **Plan Incorporation**
   d. **Continued Public Involvement**
3. **MITIGATION STRATEGY - Goals and Objectives**
4. **PLAN IMPLEMENTATION**
5. **NEXT MEETING DATES**

DISCUSSION

Agenda Item 1:

- JEF reviewed the status for each Action Item. A copy of the Action Item status report as of February 8, 2011 is attached for reference. Noteworthy items include:
  - 1-6 – County web-page will be up by the end of the month or sooner.
  - 1-12 – Snowflake already provided and will resend

- 1-14 – While doing some QA/QC of asset data, JEF discovered a problem with the database and may need to work with each jurisdiction to make the necessary corrections. B. Kopp of Show Low informed JEF that their GIS department is working on files and will deliver an updated database. JEF will contact other jurisdictions as needed to get the data sets corrected.
- 1-16 – Snowflake already provided and will resend. JEF to resend worksheet to B. Kopp.
- 2-9 – C. Roe will work on it for Navajo County.

Agenda Item 2a:

- S. Ogden led the planning team in a review of Section 6.1 in the 2006 Plans. He explained that this information will be in Section 7.1 of the new Plan.
- A poll of each jurisdiction was conducted regarding past plan monitoring and evaluation. D. Call noted that the Town of Snowflake did briefly review the 2006 Plan once in 2008, but did not memorialize the review. No other jurisdictions reported any activity. Reasons or hurdles to accomplishing the task were mostly due to:
    - A lack of institutional understanding that the review was needed.
    - Changes in staffing/personnel that created a lack of continuity to the 2006 planning team and no communication of the Plan maintenance responsibilities.
    - No economic incentive to invest the time.o expectation of responsibility or communication of responsibility from the previous planning team, and simply did not do it.
- A new monitoring and evaluation schedule was discussed with an acute awareness of the lack of action over the past 4 years. The following was the result:
    - ADEM will take the lead for initiating/prompting the need for review by contacting the County Emergency Manager on or around the anniversary of the Plan approval date to initiate the review process.
    - The County EM will contact each City/Town Clerk to set a date for a review meeting within 30 days of receiving the reminder from ADEM.
    - A brief memorandum will be used to document the reviews conducted over the next planning cycle and will be included in Appendix E.
    - The scope of the review will remain the same from the 2006 Plan.

Agenda Item 2b:

- The planning team reviewed the plan update strategy of Section 6 in the 2006 Plans and found it acceptable with one minor change. The time to initiate the update process will be changed from 6 months to 1-year in advance of the Plan expiration date. The County Emergency Manager will take the lead in coordinating the effort by contacting each of the City/Town Clerks to identify initial team members and setting up the first meeting. This information will be documented in Section 7 of the new Plan.

Agenda Item 2c:

- A poll of the jurisdictions was conducted to identify ways in which the 2006 Plans were incorporated into other planning mechanisms within each jurisdiction. The following were the responses:
    - Apache County
        - Referenced and incorporated portions of the 2006 Plan risk assessment into the update of the County's EOP
    - Show Low
        - Tracked the mitigation actions/projects in Tables 5-5 and 5-6 on a parallel track with the City's CIP.
        - Used the 2006 Plan as reference for developing an emergency evacuation plan for Show Low Lake.
- Reasons for the lack of reference and incorporation were discussed and were found to be similar to the reasons for the lack of plan maintenance. The planning team concluded that a greater awareness of the plan was needed and that hopefully a more regular review of the plan would help in the awareness and implementation of the plan in other planning mechanisms. It was also noted, that due to the small size of the participating jurisdictions, there is really not all that much other planning being done.
- New opportunities identified by the planning team for incorporation/reference of the Plan may include general and comprehensive plan updates and future updates of EOPs.
- This information will be documented in Section 7 of the new Plan.

Agenda Item 2d:

- A poll of the jurisdictions was conducted to identify ways in which past public involvement opportunities were provided relative to the 2006 Plans. The following are opportunities that were offered on a one-time or regular basis over the last 4 years:
    - Navajo County conducted several public meetings explaining the new floodplain mapping for the County.
    - Winslow sent out notifications of changes to floodplain limits due to decertification of the Winslow Levee.
    - Show Low Wildland Fire officials distributed fire risk and mitigation information during the Show Low Days event in June.
    - Snowflake and Taylor jointly participated in an annual Emergency Preparedness Fair held in September.
    - The Hopi Tribe and Navajo County provided emergency preparedness and mitigation information during the Hopi Earth Day celebrations held annually in the late spring.
- Each jurisdiction will provide a list of anticipated future public involvement opportunities. JEF will send examples proposed by other communities.

Agenda Item 3:

- S. Ogden led the planning team in a review of the 2006 Plan's goals and objectives and also presented the 2010 State of Arizona MHMP's list of goals and objectives for reference and comparison.
  - The planning team felt the G&Os in the 2006 Plan adequately reflected the continuing mitigation goals and chose to retain the G&O list with a few modifications:
    - Add Objective 2.E – Promote and educate citizen preparedness for all hazards.
    - Insert a new Goal 10 to read Extreme/Severe Weather and use the same objectives as the current Goal 10 only changing 10.B to use Extreme/Severe Weather.
    - Change G&O 10 and 11 to 11 and 12.

Agenda Item 4:

- S. Ogden discussed the process for the formal implementation of the Plan so that the planning team will know what to expect once the Plan draft is completed.

Agenda Item 5:

- Next meetings are scheduled as follows:
  - Planning Team Meeting No. 4, March 31st, 9AM to NOON, Navajo County Governmental Complex, Public Works Conference Room.

ACTION ITEM SUMMARY:

ITEM NO.	DESCRIPTION	RESPONSIBILITY [DUE DATE]
3-1	JEF to send examples of continued public involvement activities anticipated by other jurisdictions	JEF [2/18/11]
3-2	Each jurisdiction to develop a list of future public involvement activities and email that list in text form to JEF	All Jurisdictions [3/18/11]

Memorandum JE Fuller/ Hydrology & Geomorphology, Inc.

MEETING DATE: March 31, 2011

MEETING TIME: 9:00AM – 11:30AM

MEETING LOCATION: Navajo County Governmental Complex
Public Works Conference Room
Holbrook, AZ

DISTRIBUTION: Meeting Attendees

FROM: W. Scott Ogden - JEF

RE: **Navajo County Multi-Jurisdictional Hazard Mitigation Plan**
Planning Team Meeting No. 4

ATTENDEES: Ahmed Abdullah – Winslow, Planner
Clint Burden – Taylor, Fire Chief
Dale Call – Snowflake P&Z Director / Building Official
Bill Kopp – Show Low Public Works Director
Scott Ogden – JE Fuller, Project Manager
Catrina Roe – Navajo County
Montana Slack – Navajo County, Deputy Director
Tom Thomas – Pinetop-Lakeside Public Works Director
(No Representation from Holbrook)

AGENDA

1. **ACTION ITEM REVIEW/STATUS**
2. **VULNERABILITY ANALYSIS REVIEW**
3. **MITIGATION ACTION/PROJECT FORMULATION AND IMPLEMENTATION STRATEGY**
4. **END OF MEETING DISCUSSION**

DISCUSSION

Agenda Item 1:

- JEF reviewed the status for each Action Item. A copy of the Action Item status report as of March 29, 2011 is attached for reference. Noteworthy items include:
    - T. Thomas requested that all Pinetop-Lakeside worksheets and assignments still due be resent to him for completion.
    - 1-4 – C. Burden requested that worksheet be resent.

Agenda Item 2:

- S. Ogden presented maps depicting the dam failure, flood, HAZMAT, levee failure and wildfire hazard areas and the assets provided by the planning team. County-wide and community specific maps were provided for review and reference when

reviewing the results of the vulnerability analysis. C. Roe requested copies of the community maps for the county as well. S. Ogden will provide the digital versions of the maps to the planning team via the JEF ftp site.

- Several tables showing exposure/loss estimates to critical facilities, general HAZUS based residential, commercial, and industrial structures, and HAZUS based population estimates, were presented to the planning team for review. Tables detailing hazard exposure data for each critical asset were also provided and S. Ogden explained how the table data correlated to the workmaps.
- S. Ogden explained how HAZUS based population and residential, commercial and industrial building exposure counts were derived and summarized in the tables.
- The planning team agreed that they wanted exposure estimates for the "Under $20K" demographic left in the Plan.
- Each planning team member was assigned the task of reviewing the data and maps and to provide comments/corrections.
    - B. Kopp noted that the inundation limits for Jacques Dam (Show Low Lake) were truncated and needed to extend further south. He will have the city's GIS department send the shapefiles with full delineation limits. JEF will make sure these get incorporated into the dam failure profile and update the VA.
    - T. Thomas noted that an inundation area for Woodland Lake was not included. S. Ogden replied that nothing was available in ADWR's Fortis database. T. Thomas thought that the EAP might be very new and just recently completed, and will check to see if a copy is available.

Agenda Item 3:

- S. Ogden reviewed the process of updating the overall mitigation strategy and specifically the mitigation action/project formulation and implementation strategy.
- S. Ogden led a review/explanation of the various categories of possible mitigation actions/projects and presented information from the 2010 State Plan summarizing various sources of grant funding that may be used for hazard mitigation.
- S. Ogden presented the table/worksheet that will be used to document the actions/projects and implementation strategy. JEF will provide a copy of the table with the actions/projects from the 2006 Plan that were designated as "Keep" or "Revise" already entered.
- Each jurisdiction was instructed to complete the worksheet per the guidelines discussed during the meeting and provide to S. Ogden.
- S. Ogden also explained the new requirement that each jurisdiction participating in the NFIP program, must include at least one mitigation action/project that addresses continued compliance with NFIP requirements. S. Ogden provided a sheet of example of NFIP compliance mitigation action/projects for reference and/or ideas.

Agenda Item 4:

- Action Items for this meeting are summarized below.
- This was the last meeting. The next steps will be to finish all outstanding assignments, and get the draft of the Plan completed and in review with the State and Planning Team.

ACTION ITEM SUMMARY:

ITEM NO.	DESCRIPTION	RESPONSIBILITY [DUE DATE]
4-1	Planning Team to review VA results and respond with any comments/corrections to S. Ogden	All Jurisdictions [5/6/11]
4-2	B. Kopp to provide GIS files for Jacques Dam inundation limits.	B. Kopp [4/15/11]
4-3	T. Thomas to inquire with irrigation district about inundation limits for Woodland Dam.	T. Thomas [4/15/11]
4-4	S. Ogden to upload the VA workmaps to the JEF ftp and send note to planning team informing of their availability.	S. Ogden [4/8/11]
4-5	JEF to pre-enter the "Keep" and "Revise" designated projects from the Existing Mitigation A/P Evaluation into the Mitigation Action/Project and Implementation Strategy worksheet and send the worksheet to each respective jurisdiction.	JEF [4/8/11]
4-6	Each jurisdiction shall complete the Mitigation Action/Project and Implementation Strategy worksheet, including the addition of any new Mitigation A/Ps and at least one A/P addressing NFIP compliance, and return it JEF	ALL Jurisdictions [5/6/11]

Navajo County MJHMP Update – Action Item Status Report
as of March 29, 2011

ITEM NO.	DESCRIPTION	RESPONSIBILITY [DUE DATE]	NAVAJO COUNTY	HOLBROOK	PINETOP-LAKESIDE	SHOW LOW	SNOWFLAKE	TAYLOR	WINSLOW	HOPE TRIBE	NAVAJO NATION	EXPLANATION
1-1	T. Ashworth to follow-up with Snowflake officials to confirm participation status	T. Ashworth [11/29/10]	C	NA	NA	NA	NA	NA	NA	NA	NA	• 12/1/10 - Received contact from Dale Call of Snowflake requesting task assignments and details.
1-2	T. Ashworth to provide a list of all organizations invited to Planning Team Meeting No. 1 and a copy of the correspondence used, to JEF	T. Ashworth [12/9/10]	C	NA	NA	NA	NA	NA	NA	NA	NA	• 11/29/10 – Tiffany provided documentation of invitations initially sent out. JEF requested a summary of the agencies/entities as it is difficult to determine all from the email addresses. • 12/14/10 – Tiffany sent final list.
1-3	JEF will email electronic version of Local Resources List template to each jurisdiction to track contributors to the plan update.	JEF [11/25/10]	NA	NA	NA	NA	NA	NA	NA	NA	NA	• 11/23/10 – file provided to team via email
1-4	Each jurisdiction shall record and document all people contacted or involved as a planning resource at the local level, using the template provided by JEF	All Jurisdictions [prior to draft]	C	C	IP	C	C	IP	C	NA	NA	• 12/8/10 – Winslow provided local resource list • 12/13/10 – County provided their local resource list • 2/9/11 – Show Low provided their local resource list • 2/24/11 – Snowflake provided list • 3/1/11 – Holbrook provided the list.
1-5	JEF will provide a sample public notice prepared by ADEM to the planning team for use in the website and newspaper announcements.	JEF [11/25/10]	NA	NA	NA	NA	NA	NA	NA	NA	NA	• 11/23/10 – file provided to team via email
1-6	T. Ashworth will work with county personnel to develop a webpage on the Navajo County website announcing the planning process and providing contact information for further inquiries. Each participating jurisdiction will include a notice on their webpage with a link pointing to the county's webpage for more information.	T. Ashworth and Each Jurisdiction [12/9/10]	C	C	NC	C	C	C	C	NA	NA	• 12/9/10 – Winslow webpage notice went active • 12/23/10 – Snowflake webpage notice completed • 2/7/11 – Taylor webpage notice is completed. • 2/9/11 – Show Low webpage notice is completed. • 3/5/11 – Navajo County webpage notice is completed. • 3/8/11 – Holbrook webpage notice is completed.
1-7	Holbrook, Show Low, Taylor and Winslow will make informational presentations to their respective councils informing them of the planning process and update of the 2006 Plan.	R. Alley, B. Kopp, J. Johnson, A. Abdullah [Next available Council Mtg]	NA	C	NA	C	NA	C	C	NA	NA	• 12/9/10 – Winslow notified that an informal presentation will be made at the January 11, 2011 council meeting. • 1/11/11 – Winslow announcement was made at 1/11/11 council mtg. • 1/11/11 – Holbrook made announcement at 1/11/11 council meeting. • 2/7/11 – Taylor provided agenda for 12/8/10 council announcement. • 2/11/11 – Show Low provided a line item in Manager's memo to council.
1-8	Winslow to include a public notice in the city's utility newsletter.	A. Abdullah [Next utility newsletter]	NA	NA	NA	NA	NA	NA	C	NA	NA	• 12/9/10 – notice will go out with January 1, 2011 newsletter. • 1/3/11 – Winslow provided digital copy of newsletter

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1-9	JEF will provide digital copies of the historic hazard database files to the planning team for review and update as needed.	JE Fuller [11/25/10]	NA	NA	NA	NA	NA	NA	NA	NA	NA	• 11/23/10 – file provided to team via email
1-10	All team members are to review and update the historic hazard database as appropriate and desired by the community.	All Jurisdictions [12/9/10]	C	C	NC	C	C	C	C	NA	NA	• 12/8/10 – Winslow provided additional events for database • 12/13/10 – County responded with no additional data. • 2/2/11 – Holbrook • 2/7/11 – Taylor has nothing to add. • 2/9/11 – Show Low has nothing to add. • 2/24/11 – Snowflake provided additional events for database.
1-11	JEF to provide CPRI calculation sheets (digitally) to each participating jurisdiction	JEF [11/25/10]	NA	NA	NA	NA	NA	NA	NA	NA	NA	• 11/23/10 – file provided to team via email
1-12	Each jurisdiction to perform a CPRI evaluation on each of the selected hazards and return the worksheet to JEF	All Jurisdictions [12/9/10]	C	C	NC	C	C	C	C	NA	NA	• 12/8/10 – Winslow provided CPRI evaluation • 12/9/10 – Taylor provided CPRI evaluation • 12/29/10 – Navajo County provided CPRI evaluation • 2/2/11 – Holbrook provided final CPRI evaluation • 2/9/11 – Show Low provided final CPRI evaluation • 2/24/11 – Snowflake provided final CPRI evaluation
1-13	JEF to provide asset inventory data sets to each community for update, correction, or provision of missing data.	JEF [11/25/10]	NA	NA	NA	NA	NA	NA	NA	NA	NA	• 11/23/10 – file provided to team via email

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1-14	All jurisdictions shall review the 2006 asset inventory and make updates, corrections, and/or provide missing data such as replacement costs.	All Jurisdictions [12/9/10]	C	C	NC	C	C	C	C	NA	NA	• 11/29/10 – Holbrook provided edited asset inventory. JEF reviewed and returned for further edit. • 12/8/10 – Winslow provided edited asset inventory. JEF reviewed and returned for further edit. • 12/9/10 – Taylor provided edited asset inventory. JEF reviewed and returned for further edit. • 12/10/10 – Winslow provided final asset inventory. • 12/14/10 – Taylor provided final asset inventory • 2/2/11 – Holbrook confirmed final asset inventory • 2/10/11 – Snowflake confirmed final asset inventory at meeting. • 2/23/11 – Show Low provided asset inventory • 3/24/11 – Navajo County provided some of the missing asset locations – the rest were deleted. • 3/25/11 – No response from Pinetop-Lakeside. Moving forward with VA
1-15	JEF will provide the Existing Mitigation Action/Project Evaluation worksheet to each respective jurisdiction for completion.	JEF [11/25/10]	NA	NA	NA	NA	NA	NA	NA	NA	NA	• 11/23/10 – file provided to team via email
1-16	All jurisdictions shall complete the Existing Mitigation A/P Evaluation worksheet and return to JEF.	All Jurisdictions [12/9/10]	IP	C	NC	NC	NC	C	C	NA	NA	• 11/29/10 – Holbrook provided the first cut at the worksheet. JEF reviewed and responded with comments to be addressed. • 12/8/10 – Winslow provided the first cut at the worksheet. JEF reviewed and responded with comments to be addressed. • 12/9/10 – Taylor provided the first cut at the worksheet. JEF reviewed and responded with comments to be addressed. • 12/13/10 – County provided the first cut. JEF returned the file with some comments for the county to address • 1/21/11 – Winslow provided final copy. • 2/2/11 – Holbrook sent final copy. • 2/7/11 – Taylor sent final copy.

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1-17	Each jurisdiction to review city/town boundary verification plots and provide either validation of accuracy or a revised corporate limit via either redlined map, CAD, or GIS	All Jurisdictions [12/9/10]	NA	C	C	C	C	C	C	NA	NA	• 11/23/10 – file provided to team via email from JEF • 11/29/10 – Holbrook confirmed the boundary sent was OK. • 12/8/10 – Winslow provided an map with a corrected city boundary. • 12/15/10 – Snowflake and Taylor provided boundary edits at Mtg No. 2 • 2/9/11 – Show Low provided boundary verification map. • 3/25/11 – No response from Pinetop-Lakeside. Moving forward with what we have for VA.
2-1	JEF to verify Schoens Dam is included in dam failure profile.	JEF [12/31/10]	NA	NA	NA	NA	NA	NA	NA	NA	NA	• 12/22/10 – JEF verified that Scheons dam and inundation are included in coverage.
2-2	C. Roe will provide latest EAP data for Schoens Dam to JEF.	C. Roe [12/31/10]	C	NA	NA	NA	NA	NA	NA	NA	NA	• 12/15/10 – County provided EAP data for Scheons Dam.
2-3	JEF to modify HAZMAT profile maps to exclude railroad south of Snowflake and updated Tier II data	JEF [12/31/10]	NA	NA	NA	NA	NA	NA	NA	NA	NA	• 12/24/10 – HAZMAT coverages have been updated
2-4	JEF to research addition Severe Wind data with NAU and ADOT.	JEF [12/31/10]	NA	NA	NA	NA	NA	NA	NA	NA	NA	• 12/27/10 – research completed. Found additional wind data from the NWS Storm Prediction Center and also obtained safety and accident reports from ADOT that include statistics of roadway accidents directly associated with Severe Winds. JEF will incorporate both data sets to the greatest extent possible.
2.5	C. Roe to check on NAU and APS wind study documents for Navajo County	C. Roe [12/31/10]	C	NA	NA	NA	NA	NA	NA	NA	NA	• 12/15/10 – County provide link to website with information on the NAU and APS studies.
2-6	C. Roe to provide CWPP for central county area.	C. Roe [12/31/10]	C	NA	NA	NA	NA	NA	NA	NA	NA	• 12/20/10 – CWPP provided by county
2-7	JEF to incorporate CNCWPP data as appropriate into the wildfire profile	JEF [12/31/10]	NA	NA	NA	NA	NA	NA	NA	NA	NA	• 12/22/10 – CWPP data for the central county area will be incorporated by reference. No GIS data sets available.
2-8	JEF to distribute Capability Assessment worksheets to each jurisdiction	JEF [12/22/10]	NA	NA	NA	NA	NA	NA	NA	NA	NA	• 12/28/10 – Data files sent via email.
2-9	Each jurisdiction to complete / update Capability Assessment worksheets and provide to JEF	All Jurisdictions [2/3/11]	NC	C	NC	NC	C	C	C	NA	NA	• 12/29/10 – Winslow provided completed tables • 2/2/11 – Holbrook faxed in updates • 2/8/11 – Taylor provided updated tables. • 2/24/11 – Snowflake provided updated tables.
2-10	JEF to distribute Past Mitigation Activity worksheets to each jurisdiction	JEF [12/22/10]	NA	NA	NA	NA	NA	NA	NA	NA	NA	• 12/28/10 – Data files sent via email.

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2-11	Each jurisdiction to complete the Past Mitigation Activity worksheet and provide to JEF	All Jurisdictions [2/3/11]	C	C	NC	NC	NC	NC	C	NA	NA	• 1/19/11 – Navajo County FCD provided data. • 1/20/11 – NCFCD amended the data provided. • 2/2/11 – Holbrook provided data. • 2/7/11 – Winslow confirmed to use completed projects from Action Item No. 1-16 worksheet.
2-12	C. Roe to check with Trent Larson on floodplain management role of county and jurisdictions	C. Roe [2/3/11]	C	NA	NA	NA	NA	NA	NA	NA	NA	• 12/21/10 – County provided list of floodplain management responsibilities
3-1	JEF to send examples of continued public involvement activities anticipated by other jurisdictions	JEF [2/18/11]	NA	NA	NA	NA	NA	NA	NA	NA	NA	• 2/24/11 – Sent via email
3-2	Each jurisdiction to develop a list of future public involvement activities and email that list in text form to JEF	All Jurisdictions [3/18/11]	NC	NC	NC	NC	NC	NC	C	NA	NA	• 2/28/11 – Winslow provided list.

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NAVAJO COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

Name	Jurisdiction/Agency/Organization	Department/Division/Branch	Title	Contributions
NAVAJO COUNTY				
Tiffany Ashworth	Navajo County	Administration	Grants Administrator / Planning Section Chief	Point of Contact
Dan Hinz	Navajo County	Facilities Management	Facilities Management Director / Emergency Manager	Review and input of required information.
Dusty Parsons	Navajo County	Administration	Assistance County Manager / Emergency Management Director	Review and input of required information.
Homer Vela	Navajo County	Public Works	Public Works Director / Emergency Management Deputy Manager	Review and input of required information.
Phil Wills	Navajo County	Information Technology	IT Support	Developed webpage.
Ryan Taylor	Navajo County	Public Works	GIS	Provided mapping.
HOLBROOK				
Ray Alley	City of Holbrook	Administration	City Manager	Coordination / review of all data submitted to JE Fuller as well as attendance of all meetings
Cher Reyes	City of Holbrook	Clerk/Zoning	Clerk/Zoning Admin.	Review of current zoning and old haz.mitigation plan
Brent Holmes	City of Holbrook	Streets	Street Supt.	Reviewed and updated potential storm water drainage projects past and proposed
Deve Stewart	City of Holbrook	Safety	Safety Officer	Updated all affected employees on NIMMs training / emergency ops training
Alex Baker	City of Holbrook	Fire	Fire Chief	Review and ongoing training / cert. of all fire personnel in fire response and Haz Mat training
Mark Jackson	City of Holbrook	Police	Police Chief	Minimal, overall review of mitigation plan and officer training
Tim Kelley	City of Holbrook	Public Works / Levy	P/W Levy	Review of FEMA levee recert. Process and perform O & M of levee to fulfill FEMA requirements
Mayor / Council	City of Holbrook	Mayor / Council	Mayor / Council	Reviewed proposed plan and informed public of said plans purpose through council comments & agendas

Name	Jurisdiction/Agency/Organization	Department/Division/Branch	Title	Contributions
SHOW LOW				
Jeffry Smythe	City of Show Low	Show Low Police	Police Chief	Meeting attendance, coordination, information, reviews
William Kopp, PE	City of Show Low	Public Works	Public Works Director	Meeting Attendance, main contact, coordination, information, reviews
Shane Hemsath	City of Show Low	Public Works/Engineering	Civil Engineer	Information
Justin Tregaskes	City of Show Low	Community Development	Community Development Director	Information, reviews
Teryl Murray	City of Show Low	Public Works/ Operations	Public Operations Manager	Information
Rob Jones	City of Show Low	Public Works/ Engineering/GIS	GIS Manager	Information, mapping
SNOWFLAKE				
PAUL WATSON	TOWN OF SNOWFLAKE	ADMINISTRATION	TOWN MANAGER	MUNICIPAL ADMINISTRATION
ROB EMMETT	TOWN OF SNOWFLAKE	PUBLIC WORKS	TOWN ENGINEER	STREETS & UTILITIES, ENGINEERING SERVICES
GARY LEECH	TOWN OF SNOWFLAKE	PUBLIC WORKS	TREATMENT PLANT OPERATOR	WASTEWATER MANAGEMENT
CURTIS WINDER	TOWN OF SNOWFLAKE	WATER DEPARTMENT	WATER DEPARTMENT ADMINISTRATOR	MUNICIPAL WATER SYSTEM
PATRICK HANCOCK	TOWN OF SNOWFLAKE	FIRE DEPARTMENT	FIRE CHIEF	FIRE / EMERGENCY SERVICES
WILL WILSON	TOWN OF SNOWFLAKE	PUBLIC WORKS	ELECTRICAL & COMMUNICATIONS	ELECTRICAL, RADIO EQUIPMENT, REPEATERS, BACKUP POWER, WELL SITES, PHONE SYSTEMS, LIFT STATIONS
DALE CALL	TOWN OF SNOWFLAKE	PLANNING/BUILDING SAFETY	BUILDING OFFICIAL	PLANNING AND BUILDING SAFETY
BRIAN RICHARDS	TOWN OF SNOWFLAKE	FINANCE	FINANCE MANAGER	FINANCE
JERRY VANWINKLE	TOWN OF SNOWFLAKE	POLICE DEPARTMENT	POLICE CHIEF	LAW ENFORCEMENT / EMERGENCY SERVICES

Name	Jurisdiction/Agency/Organization	Department/Division/Branch	Title	Contributions
TAYLOR				
Clint Burden	Town of Taylor	Taylor Fire Department/Ambulance	Chief	Primary POC and Planning Team participant. Involved at all levels of the Plan update
Ron Solomon	Town of Taylor	Town of Taylor, Water/Sewer Roads/ Airport	Maintenance Director	Resource for asset data and mitigation strategy development
Jeff Johnson	Town of Taylor	Town of Taylor Planning/Zoning Code Enforcement	Zoning Administrator, Building Official	Resource for asset data, capabilities assessment, and mitigation strategy development
WINSLOW				
Ahmed Abdullah	City of Winslow	Community Development/P&Z/Winslow	Planner I	Data Processing and a point of contact
Allan Rosenbaum	City of Winslow	Utilities/Water & Solid Waste/ Winslow	Dept. Director	Water and Solid Waste related issues
Dale Patton	City of Winslow	Community Development/City Attorney's Office/ Winslow	City Attorney	Legal Adviser
MaryAnn Smith	City of Winslow	Fire	Assistant Fire Chief	Fire and emergency related issues
Marshall Larsen	City of Winslow	Community Development/Building/Winslow	Building Inspector	Building Safety
Paul Ferris	City of Winslow	Community Development/P&Z/Winslow	Principal Planner	City Planning and Flood Management issues
Steve Garnett	City of Winslow	Police	Police Chief	Historic data related to declared and undeclared events

Name	Jurisdiction/Agency/Organization	Department/Division/Branch	Title	Office Phone	Cell Phone	E-Mail Address
Jeff McNeil	Show Low PD	—	CMDR	537-5091	—	jmcneil@showlowaz.gov
Randy Weems	Navajo Co. Sheriff's Ofc.		Chief Deputy	928-699-5669		Randy.weems@navajocountyaz.gov
Brad Provost	Show Low PD		CMDR	537-5091		bprovost@showlowaz.gov
Dan Hinz	Navajo County		Director	524 4125		dan.hinz@navajocountyaz.gov
Dusty Parsons	Navajo County		Ass. City Mgr	524-4102		dusty.parsons@NavajoCountyAZ.Gov
Montana Slack	Navajo County		Deputy Director	524-4103		Montana.Slack@NavajoCountyAZ.Gov
Rusty DeSpain	Joseph City Fire		Chief	587-5641		JCFDRusty@cablone.net
* Bryan Savage	Lakeside Fire		Interim Chief	368-6112		bsavage@lakeside-azfire.com
Clint Burden	Taylor Fire		Chief	536-7900		clint@taylorAZ.org
Cris Parisot	Navajo County	Finance Dept	Finance Analyst	524-4039		cris.parisot@navajocountyaz.gov
Mary Springer	Navajo County	"	Dep. Finance Director	524-4046		mary.springer@ " " "
Nancy Selover	State Climate Office		State Climatologist	480-965-0580		selover@asu.edu
Cher Reyes	City of Holbrook	Adm.	City Clerk	524-6225	241-0709	cher@ci.holbrook.az.us
Alex Baker	" "	Fire	Chief	928 241-0291		holbrook fire@cablone.net
* RAY ALLEY	" " "	ADMIN	MGR	928-524-6225	241-8488	rayalley@~~citiholbrook~~ ci.holbrook.az.us
EDISON J TUTSI	HOPI TRIBE		PROJECT COORDINATOR	928-734-3647		ETutsi@hopi.nsn.us
Edgar Shupla	Hopi Tribe Facilities/Risk →		Director	928 734-3261		eshuplac@hopi.nsn.us
Ryan Taylor	Navajo County	Public Works : GIS	GIS Coordinator	524-4116	241-8760	Ryan.Taylor@navajocounty=z.gov
Randy Sullivan	Holbrook	Finance	Finance Director	524-6225	241-0346	RSULLIVAN@ci.HOLBROOK,AZ.US
Ahmed Abdullah	Winslow	planning & Zoning	Planner I	928-289-3204		ahmed.abdullah@ci.winslow.az.us
Emerson Lee	Navajo Police Dept.	patrol / LE	LT.	9286578077		emersonlee_cop@yahoo.com
Faye Platero	NN Emerg. Mgmt.	Emergency Mgmt.	E.S.C.	928-871-6892	928.587.0984	fayeplatero@yahoo.com
Tiffany Ashworth	Navajo County	Emergency Mgmt	Grants Admin	928-524-4271	928-241-2185	tiffany.ashworth@navajocountyaz.gov

Navajo County Multi-Jurisdictional Hazard Mitigation Planning Meeting

Date: November 18, 2010

Name	Jurisdiction/Agency/Organization	Department/Division/Branch	Title	Office Phone	Cell Phone	E-Mail Address
Rick Evans	Town of Taylor	Econ. Development			928/205-0246	rick@taylor az.gov
* Jeff Johnson	Taylor	Building, Zoning, Flood,	Zoning Administrator	536-7945	243-6303	jeff@ tayloraz.org
Gus Lundberg	Taylor	Finance, Loss Prevention	Finance Director	536-7366	243-4844	gus@tayloraz.org
* Bill Kopp	CITY OF SHOW LOW	PUBLIC WORKS	PUBLIC WORKS DIRECTOR	928-532-4000	928-242-8738	bkopp@ showlow az.gov
Jason Moore	Navajo County Attorney's Office	County Attorney	Deputy County Attorney	928-521-3460	928-524-4307	jason.moore@ navajocounty.az.gov
Don Walker	Navajo Co. Health	Bio Terrorism	Manager	524-4750		don.walker@ navajo county.az.gov
Marshall Larsen	City of Winslow	Building	City Inspector	928-289-1362	928-289-7510	marshall.larsen@ ci.winslow.az.us
Dale Patton	"	ATTORNEY		928-289-1412	928-537-1412	dale.patton@ ci.winslow.az.us
Diana Anderson	Summit Healthcare	Staff Development	RN-Educator	928-537-6574	928-242-4342	danderson@ summithealthcare.net
Mary Ann Smith	Winslow Fire Dept		LT/CPR/EMERGENCY SERVICES MANAGER/EMS-EPI COORD	928-289-2091	928-587-0152	maryann.smith@ ci.winslow.az.us
Brian Russell	Show Low Fire Dept	PREVENTION	FIRE MARSHAL	928 537-5120	928 240-0864	brussell@ showlowfire.org

Arizona Division of Emergency Management

JE FULLER HYDROLOGY & GEOMORPHOLOGY, INC.

Name	Jurisdiction/Agency/Organization	Department/Division/Branch	Title	Office Phone	Cell Phone	E-Mail Address
Ahmed Abdullah	Winslow	Planning & Zoning	Planner I	928-289-3204		ahmed.abdullah@ci.winslow.az.us
Ray Alley	Holbrook	Administration	Manager	928-524-6225	928-241-8488	rayalley@ci.holbrook.az.us
~~Diana Anderson~~ DENNIS KOENIG	Summit Healthcare	Staff Development	RN-Educator	928-537-~~6574~~ 6583	928-242-~~4342~~ 0179	danderson@summithealthcare.net DAN KOENIG @ SUMMIT HEALTH CARE . NET
Tiffany Ashworth	Navajo County	Emergency Mgmt	Grants Administator	928-524-4271	928-241-2185	tiffany.ashworth@navajocountyaz.gov
Alex Baker	Holbrook	Fire	Chief	928-241-0291		holbrookfire@cableone.net
Clint Burden	Taylor	Fire	Chief	928-536-7900	928-521-0775	clint@tayloraz.org
Dale Call	Snowflake	Planning / Zoning / Building Safety	Director / Building Official	928-536-7103 x 232		dcall@ci.snowflake.az.us
Rusty Despain	Joseph City Fire		Chief	928-587-5641		jcfdrusty@cableone.net
Rick Evans	Taylor	Econ. Development			928-205-0246	rick@tayloraz.org
Dan Hinz	Navajo County		Director	928-524-4125		dan.hinz@navajocountyaz.gov
Jeff Johnson	Taylor	Building, Zoning, Flood	Zoning Administrator	928-536-7945	928-243-6303	jeff@tayloraz.org
Bill Kopp	Show Low	Public Works	Public Works Director	928-532-4000	928-242-8738	bkopp@showlowaz.gov
Marshall Larsen	Winslow	Building	City Inspector	928-289-1302	928-289-7510	marshall.larsen@ci.winslow.az.us
Emerson Lee	Navajo Nation	Police Department - Patrol / LE	Lieutenant	928-657-8077		emersonlee_cop@yahoo.com
Gus Lundberg	Taylor	Finance, Loss Prevention	Finance Director	928-536-7366	928-243-4844	gus@tayloraz.org
Jeff McNeil	Show Low	Police Department	Commander	928-537-5091		jmcneil@showlowaz.gov
Jason Moore	Navajo County	Attorney's Office	Deputy County Attorney	928-524-4307	928-521-3460	jason.moore@navajocountyaz.gov
Scott Ogden	JE Fuller/ Hydrology & Geomorphology, Inc.		Project Manager / Sr. Engineer	480-222-5717	480-299-3394	scott@jefuller.com
Cris Parisot	Navajo County	Finance Dept.	Finance Analyst	928-524-4039		cris.parisot@navajocountyaz.gov
Dusty Parsons	Navajo County		Assistant County Manager	928-524-4102		dusty.parsons@navajocountyaz.gov
Dale Patton	Winslow	Attorney		928-289-1412	928-587-1412	dale.patton@ci.winslow.az.us
Faye Platero	Navajo Nation	Emergency Mgmt	Emergency Services Coordinator	928-871-6892	928-587-0984	fayeplatero@yahoo.com

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Nancy Selover	State Climate Office		State Climatologist	480-965-0580		selover@asu.edu
Edgar Shupla	Hopi Tribe	Facilities/Risk	Director	928-734-3261		eshupla@hopi.nsn.us
Montana Slack MS	Navajo County		Deputy Director	928-~~524-4~~103 532-6080		montana.slack@navajocountyaz.gov
Mary Ann Smith	Winslow	Fire Department	Lt/Cap/Emergency Services Manager/EMS-E911 Coord.	928-289-2091	928-587-0152	maryann.smith@ci.winslow.az.us
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Roger Tungovia	Hopi Tribe	Dept. Public Safety & Energy Svcs	Director	928-734-3661		rtungovia@hopi.nsn.us
Edison J. Tutsi	Hopi Tribe		Project Coordinator	928-734-3647		etutsi@hopi.nsn.us
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Randy Weems	Navajo County	Sheriff's Office	Chief Deputy	928-699-5669		randy.weems@navajocountyaz.gov
Sue Wood	Arizona Division of Emergency Management	Migitation Branch	Program Manager	602-464-6518		susan.wood@azdema.gov
PAUL ALBERT	NAVAJO COUNTY	SHERIFF'S OFFICE	SGT. - FILL IN FOR JOHN JAMES	928 524-~~4~~761		JOHN.JAMES@NAVAJOCOUNTYAZ.GOV
Catrina Roe	Navajo County	Admin / Emer. Mgmt		524-~~4000~~ 4163		Catrina.roe@navajocountyaz.gov
Jeffery Smythe (via phone conference)	Show Low	Police	Chief			jsmythe@showlowaz.gov

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Roger Tungovia RT	Hopi Tribe	Department of Public Safety & Emergency Services	Director	928-734-3661	928-205-7295	rtungovia@hopi.nsn.us
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Appendix C

Public Involvement Records

MINUTES OF THE REGULAR MEETING OF THE HOLBROOK CITY COUNCIL HELD ON JANUARY 11, 2011

CALL TO ORDER:

Mayor Hill called the meeting to order at 7:00 p.m.

ROLL CALL:

Mayor Jeff Hill, Vice-Mayor Matthew Searles, Councilmembers Wade Carlisle, Richard Peterson, Myron Maxwell, Phillip Cobb and Charles Haussman

PLEDGE OF ALLEGIANCE/INVOCATION:

Vice-Mayor Searles led the pledge of allegiance and Councilmember Maxwell gave the invocation.

CITY STAFF:

City Manager Ray Alley, Finance Director Randall Sullivan, Police Chief Mark Jackson and City Clerk Cher Reyes.

CEREMONIALS/ANNOUNCMENTS/PRESENTATION:

Mayor Hill presented a proclamation for "Hashknife Pony Express Week". Councilmember Cobb made a motion to accept the proclamation. Councilmember Carlisle seconded and the Proclamation was approved unanimously.

PETITIONS FROM THE PUBLIC:

CONSENT AGENDA

Vice-Mayor Searles made a motion to approve the items on the consent agenda.

A. Claims/payment approval for December 13, 2010 thru January 5, 2011.

B. Minutes of the Regular meeting held on December 14, 2010.

Councilmember Carlisle seconded and the motion carried unanimously.

CLAIMS/PAYMENT APPROVAL FOR: Walt's Hardware: None.

SUMMARY OF CURRENT EVENTS:

Mayor:

1. Mayor Hill reported that he had attended the Governor's Inauguration.
2. Mayor Hill reported that he had attended the inauguration of the Navajo Nation in Window Rock today.
3. Mayor Hill reported that he had spent time with the Navajo County dispatchers and encouraged the other Councilmembers to take advantage of Sheriff Clark's offer to do the same.

Councilmembers:

1. Councilmember Cobb thanked everyone who donated time, gifts, food and other items over this Holiday Season.

Manager's Report:

1. Manager Alley reported that Navajo County and the Cities within the County are updating the Multi-jurisdictional Hazard Plan as part of FEMA requirements.
2. Manager Alley gave the 3rd and 4th quarter Code Enforcement report: 157 written notices, 86 verbal notices, 21 door tags and 9 demolitions.
3. Manager Alley reported that he has received official notice from FEMA that we have satisfied all the requirements for re-certification of the Levee.
4. Manager Alley reported that he would like the Council to consider holding the meetings at 6:00 p.m. instead of 7:00 p.m. Council asked that this be placed on the next agenda.
5. Manager Alley reported that Staff should have a tentative IGA for Dispatch

services by the next meeting.

OLD BUSINESS:

A. Mayor Hill presented Ordinance 10-15 for its second reading captioned as follows:

AN ORDINANCE OF THE CITY OF HOLBROOK, ARIZONA, AMENDING THE HOLBROOK CITY CODE BY THE ADDITION OF A NEW SECTION 6-5 ENTITLED "MEDICAL MARIJUANA DISPENSARIES AND CULTIVATION LOCATIONS " THERETO; REPEALING ANY AND ALL OTHER ORDINANCES AND PARTS OF ORDINANCES IN CONFLICT THEREWITH AND PROVIDING FOR PENALTIES FOR THE VIOLATION THEREOF

Manager Alley stated that Chief Jackson has attended training on the Medical Marijuana legislation and that this will probably only be a temporary Ordinance as he believes it will be challenged once everything is in place. Chief Jackson stated that when the law was passed the Citizens did not know what was going to happen with the law. Chief Jackson stated that he believes it would be better for Holbrook to have a dispensary to help keep it under control and protect the Citizens of Holbrook. Councilmember Peterson made a motion to adopt Ordinance 10-15. Councilmember Cobb seconded. A roll call vote was held with the following results: Councilmember Carlisle, "aye", Councilmember Cobb, "aye", Councilmember Haussman, "aye", Councilmember Maxwell, "aye", Councilmember Peterson, "aye", Vice-Mayor Searles, "aye" and Mayor Hill, "aye".

B. Mayor Hill presented Ordinance 10-16 for its second reading captioned as follows:

AN ORDINANCE OF THE MAYOR AND COUNCIL OF THE CITY OF HOLBROOK, ARIZONA, AMENDING THE CITY CODE, CHAPTER 6, PLANNING AND ZONING, BY AMENDING ARTICLE 6-2-4, SIGN CODE,

ESTABLISHING AN EFFECTIVE DATE; AND PROVIDING FOR REPEAL AND SEVERABILITY.

Councilmember Carlisle made a motion to adopt Ordinance 10-16. Councilmember Haussman seconded. A roll call vote was held with the following results: Councilmember Carlisle, "aye", Councilmember Cobb, "aye", Councilmember Haussman, "aye", Councilmember Maxwell, "aye", Councilmember Peterson, "aye", Vice-Mayor Searles, "aye" and Mayor Hill, "aye".

C. Mayor Hill presented Ordinance 10-17 for its second reading captioned as follows:

AN ORDINANCE OF THE MAYOR AND COUNCIL OF THE CITY OF HOLBROOK, ARIZONA, AMENDING THE CITY CODE, CHAPTER 4, SECTION 4-11, SANITATION, BY AMENDING SECTION 4-11-2 COLLECTION AGENCY, SECTION 4-11-5, RATES, RULES AND REGULATIONS, ESTABLISHING AN EFFECTIVE DATE; AND PROVIDING FOR REPEAL AND SEVERABILITY.

Vice-Mayor Searles made a motion to adopt Ordinance 10-17. Councilmember Carlisle seconded. A roll call vote was held with the following results: Councilmember Carlisle, "aye", Councilmember Cobb, "aye", Councilmember Haussman, "aye", Councilmember Maxwell, "aye", Councilmember Peterson, "aye", Vice-Mayor Searles, "aye" and Mayor Hill, "aye".

NEW BUSINESS:

A. Manager Alley presented contracts for Martial Arts and Zumba at the Fitness Center. Manager Alley explained that the two individuals who will be teaching must obtain their own insurance and pay the City $1.00 per month per participant. Councilmember Carlisle asked that the agreement include the amount of insurance coverage as required by the City. Councilmember Maxwell made a motion to enter into the

agreement with Mark Hawley with the changes noted. Councilmember Cobb seconded and the motion carried unanimously. Vice-Mayor Searles stated that the Zumba class is not to start until insurance information is received from Ms. Smith. Councilmember Cobb made a motion to enter into the agreement with Amber Smith with the changes noted. Councilmember Haussman seconded.

B. Mayor Hill presented Resolution 11-01 captioned as follows:

A RESOLUTION OF THE MAYOR AND COUNCIL OF THE CITY OF HOLBROOK, ARIZONA, AMENDING THE FEES FOR USERS OF THE HOLBROOK MUNICIPAL CEMETERY

Manager Alley stated that the fees are being increased for non-residents of Holbrook. City Clerk Reyes added that the cost of grave sites for residents is increasing also by $75.00 which is to be set aside for perpetual care to maintain the cemetery. Manager Alley stated that a lot of people are burying individuals in our cemetery as we are one of the cheaper ones and it is filling up the Cemetery. Manager Alley stated that this resolution will help protect our Citizens by not encouraging outside burials. Councilmember Carlisle made a motion to adopt Resolution 11-01. Councilmember Cobb seconded and the Resolution was adopted.

C. Manager Alley presented a contract from APS in the amount of $13,324.22 to install electric for the new water well on McLaws Road. Councilmember Carlisle asked if this was a final cost. Manager Alley stated that it was conceptual and an estimate. Manager Alley stated that

as APS is the sole source provider for electric other bids were not obtained. Councilmember Haussman made a motion to approve the agreement with APS to provide electric service for the new water well as a sole source provider. Councilmember Cobb seconded and the motion carried unanimously.

D. Mayor Hill presented Resolution 11-02 captioned as follows:

A RESOLUTION OF THE MAYOR AND COUNCIL OF THE CITY OF HOLBROOK, ARIZONA, AMENDING THE FEES FOR USERS OF THE CITY TRANSFER SITE.

Manager Alley stated that the Council had received a revised Resolution on the dais this evening which is the one that should be considered. Manager Alley stated that what is being proposed is that if a citizen pays cash at the site the fee is more than if they charge to an existing utility account. Manager Alley stated that this will alleviate the handling of money at the transfer site and also provide for an increased rate for those persons who are not citizens of Holbrook who are using our dump at a lower rate. Vice-Mayor Searles made a motion to adopt Resolution 11-02. Councilmember Carlisle seconded. Manager Alley asked that Staff be allowed to post the corrected Resolution and have the vote on the adoption take place at the next council meeting. Vice-Mayor Searles and Councilmember Carlisle rescinded their motions.

E. Manager Alley asked that the Council declare Sioux Valley Environmental a sole source provider for polymer for the wastewater treatment plant. Manager Alley stated that the polymer is used to

solidify the sludge and that Sioux Valley's product is preferred over what was previously used as well as being less expensive. Councilmember Haussman made a motion to declare Sioux Valley Environmental a sole source provider for polymer. Councilmember Cobb seconded and the motion carried unanimously.

EXECUTIVE SESSION:

None.

POST EXECUTIVE SESSION:

CALL TO THE AUDIENCE:

ADJOURNMENT:

There being no further business to come before the Council at this time, Mayor Hill adjourned the meeting by unanimous consent at 8:29 p.m.

Jeff Hill, Mayor

CERTIFICATION:

I hereby certify that the foregoing minutes are a true and correct copy of the minutes of the regular meeting of the Holbrook City Council held on the December 14, 2010. I further certify that the meeting was duly called and held and that a quorum was present.

Cher Reyes, CMC, CPM, City Clerk

City of Holbrook

Gateway to the Petrified Forest National Park

Home
Mayor and Council (Agendas/Minutes)
City Departments
Administration
Utility Billing
Parks & Recreation
Finance
Police Department
City Clerk's Office
HUMAN RESOURCES
BUILDING DEPARTMENT
City Staff
VETERINARY SERVICES
PUBLIC LIBRARY
EMERGENCY SERVICES
NAVAJO COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLANNING PROJECT
FLOOD PLAIN INFORMATION
FLOOD PLAIN ADMINISTRATION
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Navajo County Hazard Mitgation Plan

Update of Multijurisdicitonal Hazard Mitigation Plan 2011

City of Holbrook Begins Work on Hazard Mitigation Plan

A planning team comprised of representatives from the City of Holbrook will be meeting regularly to participate in a hazard mitigation planning process. The team will develop a Multi-Jurisdictional Hazard Mitigation Plan for Navajo County, according to The Disaster Mitigation Act of 2000 (DMA2K).

The DMA2K requires all local, county, tribal and state governments to have a FEMA approved hazard mitigation plan in order to be eligible for federal hazard mitigation funds. The plan will focus on the area's most threatening hazards to citizens and property and will provide a strategy to reduce or eliminate the risk from those hazards

The planning team anticipates having a plan draft in early 2011, at which time the public will be provided the opportunity to review the plan and comment.

For more information regarding the hazard mitigation planning process/plan, please contact Ray Alley, City Manager 465 1st Avenue, 928-424-6225 or rayalley@ci.holbrook.az.us.

Navajo County Emergency Management

Navajo County Begins Work on Hazard Mitigation Plan

A planning team comprised of representatives from the Cities and Towns of Navajo County have been meeting regularly to participate in a hazard mitigation planning process. The team will develop a Multi-Jurisdictional Hazard Mitigation Plan for Navajo County, according to The Disaster Mitigation Act of 2000 (DMA2K).

The DMA2K requires all local, county, tribal and state governments to have a FEMA approved hazard mitigation plan in order to be eligible for federal hazard mitigation funds. The plan will focus on the area's most threatening hazards to citizens and property and will provide a strategy to reduce or eliminate the risk from those hazards.

The planning team anticipates having a plan draft in early 2011, at which time the public will be provided the opportunity to review the plan and comment.

For more information regarding the hazard mitigation planning process/plan, please contact Catrina Roe at (928)524-4070 or catrina.roe@navajocountyaz.gov.

MEMORANDUM

TO: Mayor and City Council

FROM: Ed Muder
City Manager

DATE: February 11, 2011

SUBJECT: **Weekly Manager/Council Communication**

NEXT TUESDAY'S MEETINGS – We've scheduled three Council meetings next Tuesday, February 15. The first one, a special meeting and executive session, begins at 5:30 p.m. for an update on water adjudication issues. The regular meeting follows at 7:00 p.m., then a study session when we adjourn to discuss decorative street lighting options for the Deuce of Clubs streetscape project.

MUSEUM EXHIBIT – Reminder about the Show Low Historical Society Museum's newest exhibit to celebrate Arizona's 99th birthday next Monday, February 14, from 10:00 a.m. to 3:00 p.m. The exhibit showcases Show Low's past, present, and future from 1912 through 2012. Admission is free and refreshments will be served.

WASTE MANAGEMENT'S NEW ECOCENTER – The Council is invited to attend the grand opening of the Waste Management Arizona Community Ecocenter on Tuesday, February 22, at 11:00 a.m. in Surprise. We've attached the invitation for your information. Please note that we must RSVP by February 17 so if you decide to attend, please let Ann know. She'll respond for you and also get you a map to the site.

CONGRESS OF CITIES CONFERENCE – The National League of Cities' annual Congress of Cities conference will be held in Phoenix this year from Tuesday, November 8, through Saturday, November 12. Please look at your calendars and see if this accommodates your schedule. This is the first Congress of Cities held in Arizona in a long time, so it's a golden opportunity for our Council to participate in a national conference.

HAZARD MITIGATION PLAN – Bill attended the county's hazard mitigation plan update meeting this week. As required, we are providing the Council with information about the city's hazard mitigation plan update process. In October 2000, Congress recognized the need for a pre-disaster planning system and enacted the Disaster Mitigation Act of 2000 (DMA2K). DMA2K's overall purpose was to establish a national program for pre-disaster mitigation, streamline administration of disaster relief at the federal and state levels, and control federal costs of disaster assistance. The DMA2K requires all local, county, and tribal governments to develop a hazard mitigation plan for their respective communities in order to be eligible to receive federal pre- and post-disaster mitigation assistance funds, a requirement which went into effect in 2004. The City of Show Low complied with the requirement and developed a plan to address five types of hazard mitigation: drought, flooding/flash floods, wildfires, dam/levee failure, and hazardous materials Incidents. Now, in 2011, the plan is due for renewal. Navajo County has taken the lead in this renewal effort. The hazard mitigation plan will be

submitted to the Arizona Department of Emergency Management as a county-wide document that represents the local jurisdictions that choose to participate. The city's public works and police departments are helping prepare portions of the plan specific to Show Low's interests. One significant change to the plan will be the inclusion of severe weather as a hazard. The plan will be completed in the coming months. Information about the plan update and a copy of the current plan are posted on the city's website under Government-Public Works-Public Information. A Web link is also provided to access the county's hazard mitigation pages. The final plan will be presented to the Council with a resolution approving the document prior to its final submittal to FEMA.

FOREST SERVICE-RELATED ITEMS – The U.S. Forest Service unveiled its proposed Forest Planning Rule that includes new provisions to guide forest and watershed restoration, habitat protection, recreation, and management. We've attached a press release for your information. There is a 90-day public comment period pertaining to the proposed rule, which is available online at fs.usda.gov/planningrule. In addition, the Forest Service will hold public forums in Phoenix and Alburquerque in early April 2011. Also, we've attached an article that appeared in the (Holbrook) Tribune-News about the Four-Forest Restoration Initiative to thin the Coconino and Kaibab national forests. A public comment period about this planned project will be held through March 14. For more information about the draft proposal and public meeting schedule, go online to fs.usda.gov/goto/Kaibab/fri.

MEDICAL MARIJUANA – The Navajo County Drug Project has forwarded us a copy of a medical marijuana fact sheet prepared by MATForce, the Yavapai County Substance Abuse Coalition, regarding the January 31 draft regulations released by the Arizona Department of Health Services (ADHS). The draft rules are posted on the ADHS website along with a "Call for Public Comment" (go to azdhs.gov/prop203 to read the rules and post a comment). The Navajo County Drug Project joins MATForce in working to reduce the potential abuse and misuse of marijuana while honoring the law and the ability for people with legitimate medical conditions to receive medical marijuana. Take a look at the fact sheet which we've attached for your information.

MEETINGS ATTENDED – Key meetings and major items discussed this week:

► <u>Operational Plan for Wetlands</u>

Met with city staff and representatives from the U.S. Forest Service and Arizona Game and Fish regarding an operational plan for the wetlands. This is something that's required by the Forest Service as part of our use permit.

► <u>Video Tours on City Website</u>

Mayor Fernau, Joel, Ann, and I met with Erica Simpson, an account executive with CGI Communications. CGI is the company that produces the six videos that appear on our website, which are in the process of being updated. The topics comprise a welcome message from Mayor Fernau, quality of life, education, real estate and education, tourism, and economic development.

► County Prosecution Fees
Participated in more follow-up meetings regarding new prosecution fees that Navajo County will be assessing beginning July 1.

► City Hall Project
Participated in the weekly meeting with city staff and contractor CORE Construction regarding the city hall remodeling project.

► Safety Committee Meeting
Participated in a meeting of the safety committee, where we discussed the accident review board, an internal subcommittee of the safety committee.

► Main Street Board
Attended Main Street's board meeting, where we discussed the decorative street lighting options for the streetscape project and heard an update on the CDBG (Community Development Block Grant) façade improvement projects.

► Energy Savings
Participated in a meeting with city staff and a representative from APS Energy Services to discuss our energy needs and ways we can save money.

► Cemetery Wall
Met with Grant and Carolyn Brewer and city staff regarding the wall between their property and the cemetery.

DEPARTMENT NOTES – Shown below are department highlights from this week's staff meeting followed by the check register.

Magistrate Court
During the last two weeks, the magistrate court has collected over $70,000 and the justice court over $50,000 in fines. Staff believes the increase is because people are using their tax refunds to pay their court fines.

Police
Staff visited the Payson Police Department to learn about a military surplus program Payson participates in to acquire equipment that can be used for emergency response. The surplus equipment was previously used on military bases and is usually in good to excellent condition. Staff provided paperwork about the program to our city attorney for his review.

Community Development
Staff reported that six homes in Fawn Brook have not connected to the City's sewer system. Of those six, one picked up a permit but has not been finalized. Three of the six have been mailed multiple letters to every available address, but they have all come back undeliverable. The remaining two have not been heard from. The latest letter sent to the homeowners stated that if they didn't connect to the sewer, they would be referred to the court for further action. The letter also addressed the change approved

by the Council regarding deed of trust financing. Of the six homes, one is owner-occupied, another has a Lakeside PO box address, and the other four are in Mesa.

Construction on CVS/pharmacy continues.

Staff met with Mountain Villas representatives to review retaining wall issues.

Staff is working on an ordinance to present to the Council regarding transportation development fees. Staff has reviewed documents received from Prescott Valley and it appears that there is not a lot of justification why they don't charge transportation fees to commercial businesses. The main reason is because they recognize the positive benefits provided by commercial businesses and want to use no fee as a business attraction tool.

Staff met with an individual with an interest in opening a medical marijuana facility. Staff plans to attend a meeting in the Valley on Thursday regarding medical marijuana and attend a public comments meeting with the Arizona Department of Health Services next week in Flagstaff.

Finance

Department budgets are due next Monday at 8:00 a.m.

Staff will attend a WIFA (Water Infrastructure Finance Authority) meeting next week regarding financing to acquire Pineview Water Company.

Our accounts receivable system in Caselle (financial software) was recently upgraded. Training was held this week to learn how to use it effectively.

This month's utility bills included a message about city hall being closed for the move to the new city hall on March 11.

Community Services

The country group Restless Heart will perform at the Show Low School District Auditorium on March 26 at 7:00 p.m. Tickets are $18 with a portion of the proceeds going to benefit the Show Low Grad Night 2011 and the Show Low SITE Council.

Public Works

The roads crew is working on cracks, patches, and street sweeping. The water crew has been repairing a lot of leaks resulting from the recent cold weather. Utility billing staff was asked to keep a close watch on water usage in case some second homeowners have broken pipes but are unaware of them. The sewer crew worked on a sewer plug this weekend and is also working on the sewer connection at CVS/pharmacy.

Staff has been working with Great Lakes Airlines regarding leasing hangar space. Great Lakes has committed to keeping a plane overnight in Show Low.

The construction crew started work on the water line at the cemetery this week. Next week bids will go out for subgrade preparation and roadway construction, including ribbon curbs at the cemetery. A separate bid will include the first phase of irrigation, topsoil, and grass seed.

Staff is working on bid documents for light poles for the Deuce of Clubs streetscape project. We found new specifications for a product that is less expensive but looks quite similar.

Public Works Department

Public Works Administration provides leadership for the City of the following divisions: Show Low Municipal Airport; Engineering Services, including Geographic Information Systems (GIS); Water, Wastewater, Streets & Drainage and Maintenance divisions which are overseen by the Operations Manager.

Divisions

- Administration
- Airport
- Contact Information
- Engineering
- Environmental Services
- Fleet Management
- GIS
- Operations
- Streets & Drainage
- Wastewater
- Water

Public Information

- Digging? Call Blue Stake
- Easement Quick Facts
- Hazard Mitigation Planning Project
- Hours of Operation
- Road Closures
- Surplus/Vehicle Auction
- Water Quality Report - Summer 2010
- Snow Removal Plan

Forms

- Action Request Form
- Floodplain Status Request Form (fillable form)
- Right-Of-Way Permit (Fillable Form)
- Snow Berm Removal Application (fillable form)
- Snow Berm Removal Form Instructions

Committee Information

- CIP Committee Meeting Minutes
- CIP Committee Meetings Agenda
- Development Fee Committee Agenda
- Development Fee Committee Minutes

Some of the forms require Acrobat Reader Version 6.0 - Click on the link below to update or install Adobe Acrobat.

Get Acrobat Reader

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NAVAJO COUNTY MULTI-JURISDICTIONAL

HAZARD MITIGATION PLANNING PROJECT

The following cities, towns, and Indian tribes are currently participating with Gila County to develop a multi-jurisdictional all-hazard mitigation plan for each community:

- Holbrook
- Pinetop-Lakeside
- Snowflake
- Show Low
- Taylor
- Winslow

What is hazard mitigation planning?

Some Definitions…

HAZARD – A source of potential danger or adverse condition. Hazards include both natural (floods, earthquakes, winter storms, landslides, wildfires, drought, etc.) and human-caused events (hazardous materials, dam/levee failure, terrorism, transportation accidents, biological, etc.).

HAZARD MITIGATION – Any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards.

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

Why are the communities doing this hazard mitigation planning?

The process of hazard mitigation planning is a very important part of any community's planning program for sustainability. For most communities, mitigation programs for hazards that occur infrequently are usually funded and initiated on a post-disaster basis with solutions that are generally reactionary to the most recent event. This form of hazard mitigation programming is typically more costly, both in property and human losses, on a long-term basis. Congress recognized the deficiency of the current system and in October 2000, passed the Disaster Mitigation Act of 2000 (DMA2K). The overall purpose of DMA2K was to establish a national program for pre-disaster mitigation, streamline administration of disaster relief at both the federal and state levels, and control federal costs of disaster assistance. In general, the DMA2K legislation requires all local, county, and tribal governments to develop a hazard mitigation plan for their respective community in order to be eligible to receive federal pre- and post-disaster mitigation assistance funds. Each community's hazard mitigation plan must be submitted to and approved by the State of Arizona and FEMA. The deadline for obtaining that approval is November 1, 2004.

How will the plan be developed?

A planning team comprised of planning and engineering representatives from the cities, tribes, and county, as well as public utilities, hospitals, police, fire and sheriff's departments, and other public and private entities, will be meeting regularly to work through a hazard mitigation planning process that involves the following tasks:

- **Identify hazards that may impact or have impacted the community**
- **Develop a profile of the most relevant hazard events**
- **Assess Vulnerability to Hazards**
- **Assess the communities capability to mitigate hazards**
- **Establish hazard mitigation activity goals and objectives for the community**
- **Develop hazard mitigation actions and/or projects**
- **Develop an implementation strategy for the plan**
- **Write and officially adopt plan**

To view the Multi-Hazard Mitigation Plan for the Navajo County area click here.

Please Note: You must have Acrobat Reader Version 6.0 to view the City of Show Low Multi Hazard Mitigation Plan. Click the link below to update or install Adobe Acrobat.

Get Acrobat® Reader

How can I get involved or obtain more information?

For more information on this hazard mitigation planning process, please contact:

Bill Kopp, Public Works Director
550 N. 9th Place
Show Low, AZ 85901
(928) 532-4081

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ARIZONA DEPARTMENT OF EMERGENCY AND MILITARY AFFAIRS

Arizona Division of Emergency Management

5636 East McDowell Road, Building M5101, Phoenix, Arizona 85008-3495
(602) 244-0504 1-800-411-2336

Janice K. Brewer
GOVERNOR

MG Hugo E. Salazar
THE ADJUTANT GENERAL

For Immediate Release
March 24, 2010

ADEM Contact:
Gregory E. Roybal, (602) 464-6258
Town of Snowflake Contact:
Robert C. Toy, (602) 485-1862

State, Town of Snowflake Celebrate Groundbreaking of Flood Control Project

Project culmination of years of coordination, cooperation

A celebratory groundbreaking to mark the beginning of construction on a long-awaited flood-control project in Snowflake, Ariz. will be held, with local and state speakers.

The groundbreaking will be held Monday, March 28, 2011 at 11 a.m. at Temple View Chapel, 2885 West Snowflake Blvd. (State Route 277) in Snowflake.

The flood-control project being constructed includes two detention basins that would mitigate flood hazards to homes and businesses in the Snowflake area. The project consists of two upstream detention basins northeast of the Town, some channelization, and a crossing under State Route 277. The system is designed to reduce peak flows and direct the water in a controlled manner to protect vital infrastructure.

“This project is an accomplishment that speaks to the remarkable amount of cooperation that spanned city, state and federal agencies,” said Lou Trammell, director of the Arizona Division of Emergency Management, whose agency administers the Hazard Mitigation Grant Program.

The channelization and construction of the detention basins is estimated to cost $1,795,987. About $839,799 will be the responsibility of the Town of Snowflake and its partners, and the remaining portion – about $956,188 – will be reimbursed under the Hazard Mitigation Grant Program provided by the Federal Emergency Management Agency (FEMA.)

Construction is expected to last till the end of 2011.

-30-

Mayor
Kelly Willis

Town Manager
Paul Watson

Town Council Meeting Agendas

Action Minutes Town Council Meetings

Special Committee Meetings

Call of Election March 8, 2011

Open Meeting Law

Snowflake Town Code Online

Snowflake General Plan - DRAFT

Employment Opportunities Town of Snowflake, AZ

Academy Bathroom Bid

Southern Navajo County Residents Offered Christmas Tree Recycling Dec. 27-Jan. 7 in Show Low, Lakeside, Snowflake
The Arizona Department of Environmental Quality and its partners in southern Navajo County are offering an environment-friendly way of recycling your Christmas tree.
Read the full article
Free Christmas Tree-cycle Time and Place Information

Public Notice:

Main Street Adopt-A-Pot
click here for full notice
(click here for more information)

The Town of Snowflake is updating their

Hazard Mitigation Plan

Welcome to the Town of Snowflake, Arizona!

"An oasis in the High Desert"--written by a visitor to Snowflake, 1926.

Founded: 1878	Getting to Snowflake	Incorporated: 1948
Elevation: 5,582		Population: 5,221

Located in north central Arizona, the Town of Snowflake is a growing hub of activities for businesses and visitors. Central to many of the regions attractions, between prehistoric and native cultures to the north, to the four-season forested White Mountains to the south, you'll find that the pioneer spirit still lives on. Come for a day; stay for a lifetime... Snowflake is the heart of America where neighbors care and there is always a friendly greeting!

A pleasant 3-hour drive from Phoenix or Tucson, or 2 hour drive from Flagstaff, you'll find that the relaxed lifestyle of Snowflake, the friendly community, and the diverse recreational opportunities make Snowflake an ideal location to visit.

Town of Snowflake
81 West 1st South
Snowflake, Arizona 85937
(928) 536-7103

SNOWFLAKE ARIZONA
81 W. 1st South
Snowflake, Arizona 85937
VOICE (928) 536-7103
FAX (928) 536-2539
www.ci.snowflake.az.us

Multi-Hazard Mitigation Plan

RE: Town of Snowflake updates Hazard Mitigation Plan

A planning team comprised of representatives from the Town of Snowflake along with other jurisdictions within Navajo County are meeting regularly to update and amend the existing Multi-Jurisdictional Hazard Mitigation Plan. The development of this plan is required by the Disaster Mitigation Act of 2000 (DMA2K).

The DMA2K requires all local, county, tribal and state governments to have a FEMA approved hazard mitigation plan in order to be eligible for federal hazard mitigation funds. The plan will focus on the most threatening hazards to citizens and property and will provide a strategy to reduce or eliminate the risk from those hazards.

The planning team anticipates having a draft plan in early 2011, at which time the public will be provided with the opportunity to review the plan and submit comments.

For more information regarding the hazard mitigation plan of planning process, please contact:

Dale R. Call
Town of Snowflake
Planning Zoning Director
81 West 1st Street South
Snowflake, AZ. 85937

Phone (928) 536-7103 ext. 232
dcall@ci.snowflake.az.us

Additional information on this plan will soon be available on the Navajo County Website at:

http://www.navajocountyaz.gov
Clicking on this link will redirect you to another website

Town of Snowflake
81 West 1st South
Snowflake, Arizona 85937
(928) 536-7103
(928) 536-2539 FAX
info@ci.snowflake.az.us

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TOWN COUNCIL MEETING AGENDA

December 8, 2010 7 pm

Taylor Town Hall
425 Paper Mill Rd. Taylor, AZ 85939

Mayor: Debbie Tuckfield Vice-Mayor: Jordy Fuentes

Council Members: Jared Hatch, Jane Lee, Robin Palmer, Mark Reed, Jay Whipple

Issued 12/3/10

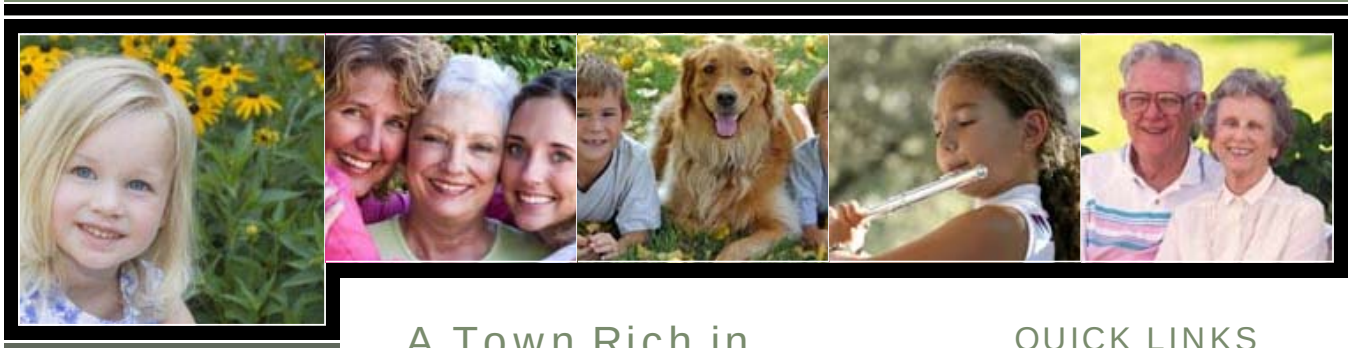
- Pursuant to A.R.S. 38-431-02, notice to hereby given to Taylor Town Council and to the general public that a Public meeting will be held on the above date in the Taylor Town Hall at 425 Papermill Rd., Taylor, Arizona. The Town Council may adjourn into executive session, which will not be open to the public, to discuss certain matters in accordance with A.R.S. 38-431-03, A.1 in discussion or consideration of employment related issues; A.2 to discuss or consider records exempt by law from public inspection; A.3 consultation for legal advice with the Town Attorney; A.4 consultation with the Town Attorney regarding possible litigation; A.5 for consultation regarding salaries and other benefits of Town employee; or A.6 for consultation regarding international interstate negotiations; A.7 for negotiations for the purchase, sale or lease of real property.
- Town meetings notices and agendas are posted in the Taylor Post Office, 25 S. Main Street; the Taylor Town Hall, 425 Paper Mill Road; and on the Town of Taylor website www.tayloraz.org;
- Pursuant to the American's with Disabilities Act (ADA), the Town of Taylor endeavors to make its meetings accessible to persons with disabilities. Please advise the Town Clerk's office at (928) 536-7366 at least 48 hours prior to the meeting for accommodation.

REGULAR TOWN COUNCIL MEETING CALL TO ORDER / ROLL CALL PLEDGE OF ALLEGIANCE / INVOCATION	
CONSENT AGENDA	
All items listed below are determined routine and uncontroversial. Consent agenda is considered a single item and may be approved by a single motion to approve the consent agenda. Any single item removed from the consent agenda at the request of Council, may be considered as a separate item. A. Approve minutes of the November 10, 2010 Town Council meeting ***TAB A***	APPROVE DISAPPROVE INFORMATION TABLE
ACTION ITEMS	
1. Discussion/Action: Approve/Deny submission of grant application to the Arizona Department of Transportation for funds in the amount of $ 3,634 to support the Silver Creek Senior Center under the Local Transportation Assistance Funds II (LTAFII) program. Town Manager Duthie Finance Director Lundberg ***TAB B***	APPROVE DISAPPROVE INFORMATION TABLE
2. Discussion/Action: Approve/Deny Resolution R2010-13 requesting the Arizona Department of Transportation to authorize Local Transportation Assistance Funds II (LTAFII) in the amount of $ 3,634 to support the Silver Creek Senior Center with transit services. Town Manager Duthie Finance Director Lundberg ***TAB B***	APPROVE DISAPPROVE INFORMATION TABLE
3. Discussion/Action: Approve/Deny continuation of Town of Taylor Hazardous Mitigation Planning process in coordination with Navajo County. Town Manager Duthie Finance Director Lundberg ***TAB C***	APPROVE DISAPPROVE INFORMATION TABLE

Town of Taylor, Arizona

Patriotic Traditions

Search Go



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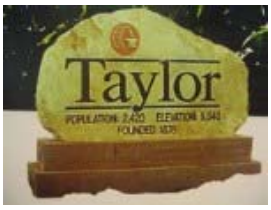
A Town Rich in Tradition & Pioneer Heritage



Taylor lies in a broad valley in east-central Arizona. The Mogollon Rim is to it's west and the White Mountains to the south. The Town's elevation is 5,640 feet. The mountains form an almost continuous barrier protecting Taylor from severe winters and creating a semi-arid climate. Taylor was settled by James Pearce and named after John Taylor, 3rd President of the Church of Jesus Christ of Latter-Day Saints. The town was established in 1881 and incorporated in 1966.

Taylor Town Logo: Drum & Anvil- The logo represents two family town traditions. The Standiford family tradition *"Firing of the Anvil"* every 4th of July at 4:00 a.m. with a loud bang! Followed by a serenade of patriotic music from the Jennings Band. Awakening call goes on throughout the town. This unique tradition began with the Taylor Pioneers and was revived in 1953, and draws people home throughout the U.S.A.

Jennings Drum- The historical drum constructed by Major Edward Duzette was made of cowhide, birch & hickory. The Drum was used in the Nauvoo Legion Band in the 1830's. It was hauled across the plains on the back of Brigham Young's carriage with the first company of Mormon Pioneers in 1847. It was later given to Cyrus Jennings, hence it is known as the Jennings drum.

The Anvil- The heavy duty anvil was used by the Mormon Battalion 1847. Then it was brought to Taylor by Joseph

QUICK LINKS

Pulblic Notice: The Town is updating it's Multi-Hazard Mitigation Plan for 2011 **Click here for full details....**

Area Transportation Meeting
Feb 15, 2011
Click Here for flyer

Click here to
Make it Real in Taylor

Freeman Park Ramada Reservation Form

Burn permits are now more convient to obtain. Please check out the new features. **BURN PERMITS** <--click here.

S. Hancock in the late 1800's to be used in his blacksmith shop. Taylor's forefathers in the late 19th century came up with this substitution for the cannon & fireworks.

Patriotic Traditions

Welcome Home | **Taylor Events** | **Public Information** | **Town Hall** | **Town Council Meetings** | **Special Committees** | **Planning & Zoning** | **Emergency Medical Services** | **Fire Department** | **Police Department** | **Airport** | **General Plan** | **Employment / Bids for Services** | **Cemetery** | **Helpful Links** | **Location Map** | **Town Code**

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Town of Taylor, Arizona

Patriotic Traditions

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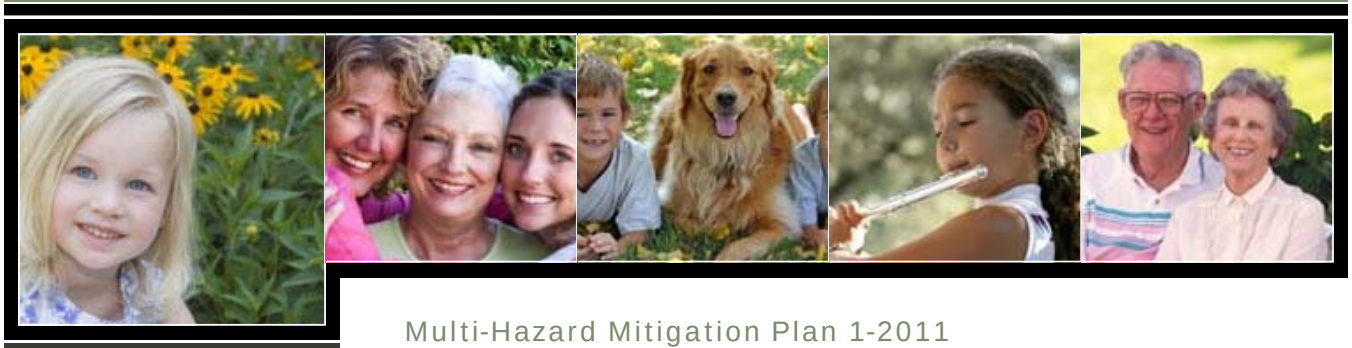

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Multi-Hazard Mitigation Plan 1-2011

Multi-Hazard Mitigation Plan

A planning team comprised of representatives from the Town of Taylor along with other jurisdictions within Navajo County are meeting regularly (starting In November 2010) to update and amend the existing Multi-Jurisdictional Hazard Mitigation Plan. The development of this plan is required by the Disaster Mitigation Act of 2000 (DMA2K).

The DMA2K requires all local, county, tribal and state governments to have a FEMA approved hazard mitigation plan in order to be eligible for federal hazard mitigation funds. The plan will focus on the most threatening hazards to citizens and property and will provide a strategy to reduce or eliminate the risk from those hazards.

The planning team anticipates having a draft plan in early 2011, at which time the public will be provided with the opportunity to review the plan and submit comments.

For more information regarding the hazard mitigation plan of planning process, please contact:

Jeff Johnson
Town of Taylor
Planning & Zoning Director
928-536-7945

Additional information on this plan will soon be available on the Navajo County Website at: ***http://www.navajocountyaz.gov/***

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Minutes of the regular meeting of the Winslow City Council held on January 11, 2011 at 7:00 P.M. in the Council Chambers of the Police Court Complex, 115 East Second Street, Winslow, Arizona.

MEMBERS PRESENT:

Mayor Boyd, Councilmember Cake, Councilmember Chacon, Councilmember Hardy, Councilmember Juergens, Councilmember Losey, Councilmember Soehner

MEMBERS ABSENT

None.

STAFF:

Jim Ferguson City Manager, Dale Patton City Attorney, Suzy Wetzel City Clerk, Docia Blalock Librarian, Steve Garnett Police Chief, Gina Reffner Finance Director, Boney Candelaria Fire Chief, Ahmed Abdullah Planner I, Allen Rosenbaum Utility & Environmental Services Director

Mayor Boyd called the meeting to order. The Pledge was given and the Invocation was offered by Peggy Adams. Mayor Boyd briefly commented on the shooting of Congresswoman Giffords over the weekend in Tucson. Roll call was taken and all members were present.

COUNCILMEMBERS' BUSINESS

Councilmember Chacon stated that there are six months left in the fiscal year and there are still many issues to address that impact the community. Councilmember Chacon stated that as we begin a new year we have an opportunity to behave differently. Councilmember Chacon also thanked staff for repairs made to the pavement on Virginina and Adams and stated that he would like to schedule a meeting with the City Manager and City Attorney.

Councilmember Losey expressed concerns regarding the recycling trailers. Councilmember Losey also requested an update on the Buxton Report and the status of moving the downtown benches. The City Manager commented on the recycling trailers and stated that there was a meeting today regarding the Renaissance 5 Project and moving the benches will be included in the design work for that project. The City Manager also reported that the Buxton Report is expected within the next two weeks.

Councilmember Losey stated that he has been contacted by citizens regarding the city's solid waste service being attached to the water service wherein citizens aren't able to temporarily discontinue garbage service if they are out of town for an extended period of time. Councilmember Losey requested that staff look into making the process more user friendly. Councilmember Chacon also expressed concerns regarding this issue.

STATUS REPORTS & POSSIBLE ACTION

A. Verbal Status Report on Current City Activities by City Manager Including, But Not Limited To FYI Report, Boards & Commission Minutes (Informational Only) - Planning and Zoning Commission Special Meeting - December 7, 2010, Historic Preservation Commission Special Meeting - December 9, 2010, Arts Council Regular Meeting and Work Session - December 16, 2010, Hazard Mitigation Plan

The following reports were provided under the City Manager's Status Report:

The City Manager announced that the Fire Chief will be retiring effective July 1st. The Fire Chief spoke briefly regarding his retirement and the City Manager explained the recruitment process for this position. Mayor Boyd expressed his appreciation to the Fire Chief for his years of service to the city.

The Librarian announced that the hours at the library will change to 10:00 a.m. to 5:00 p.m. on Thursdays and 10:00 a.m. to 2:00 p.m. on Saturdays.

The City Manager referred to the start of the Legislative Session and stated that staff is tracking the bills that will impact the city and local government. The governor will be addressing the budget on Friday and the City Manager plans on attending so that he can get a sense as to what is being proposed for local government. The City Manager will also be attending the Greater Arizona Mayor's Association Meeting on Tuesday and plans to meet with the governor's staff following that meeting.

The City Manager then provided updates on the following projects: Concession Stand Construction, Multi-Purpose Field Parking & Hardspace, Renaissance 3, Renaissance 5 and the La Posada Train Station.

The Planner provided a report regarding the Hazard Mitigation Plan. Mayor Boyd commented on the plan and Councilmember Chacon provided the Planner with a list of recommendations pertaining to the plan.

B. Report from Navajo County Assessor Cammy Darris Regarding Property Tax System

The Navajo County Assessor introduced Manny Hernandez (County Treasurer), who was also in attendance, and provided a power point presentation regarding the 2011 valuation process. A copy of the presentation was provided to the Council. Councilmember Soehner expressed his appreciation for the map search that was incorporated by the County.

C. Monthly Financial Report by Finance Director

The Finance Director gave the Monthly Financial Report.

CALL TO THE PUBLIC

Judy Howell spoke regarding the increased rates for customers using the bag service. Mrs. Howell also requested that the Council consider putting a stop to double dipping.

Tommy Dukes asked that a moment of silence be observed for the Tucson shooting victims. Mr. Dukes then spoke regarding an incident involving himself and the Police Department and complained about the way that a police department vehicle was being driven while passing him in December.

Peggy Adams announced that the Flagstaff Light Opera Company will be performing at the La Posada Ballroom on January 15th and tickets are available at the door.

Marie Lamar commented on the County Assessor's presentation and referred to taxes that middle class residents are paying.

Glen Mattox requested information regarding why the fire hydrant at Fourth and Pope was removed.

CONSENT CALENDAR

Councilmember Chacon declared a conflict with check number 71509. Motion: Moved by Councilmember Cake, seconded by Councilmember Chacon, to approve the Consent Calendar. Motion passed unanimously by roll call vote.

A. Check Register

B. Minutes - City Council Special Meeting and Work Session - December 14, 2010; City Council Regular Meeting - December 14, 2010

COUNCIL CONSIDERATION AND POSSIBLE ACTION

A. Reappointment of Member to Planning and Zoning Commission

The City Manager stated that staff is asking for reappointment of Nadine Deck to the Planning and Zoning Commission with a term ending December 31, 2013. Nadine has served one term, which expired in December 2010, and is eligible for reappointment.

Motion: Moved by Councilmember Losey, seconded by Councilmember Cake, to approve the reappointment of Nadine Deck to the Planning and Zoning Commission until December 31, 2013. Motion passed unanimously. Mayor Boyd expressed his appreciation to those who volunteer to serve on the city's commissions.

B. Updated Scope of Work for Consulting Services for Wellfield Infrastructure Project and Authorize Payment

The Utility & Environmental Services Director explained that the city's consultant has determined that the city can stay within the current wellfield and add an additional well using infrastructure that is already there and that staff is asking to proceed in this direction. The City Manager stated that we are also looking at ways to enhance the draw on some of the wells. Staff also responded to questions from the Council.

Councilmember Chacon stated that he would like to go on record that we are investing more in wells, which are costly and not sustainable, and that we could reduce ground water use through river water harvesting and reservoir management. Councilmember Soehner stated his concerns regarding wording in the updated scope of work provided by Montgomery and Associates. The City Manager responded to Councilmember Soehner's concerns.

Motion: Moved by Councilmember Soehner, seconded by Councilmember Cake, to approve the updated scope for professional water resources consulting and engineering

services from Montgomery and Associates for the Wellfield Infrastructure Project, authorize staff to proceed with Task I, authorize payment and authorize City Manager to sign update. Motion passed unanimously.

C. Approve and Adopt Resolution No. 1550 Ordering and Calling a Special Election on May 17, 2011 to Submit to the Qualified Electors the Question of Extending a Special One Percent (1%) Sales Tax for an Additional Period of Five Years from July 15, 2011 and the Use of the Proceeds Thereof

The City Clerk stated that this resolution calls for a special election for May 17th which will be a mail ballot election. The City Clerk stated that since a portion of this tax goes to the hospital that Jeff Hamblen is here to speak regarding the election. Mr. Hamblen stated that the portion of the sales tax that goes to the hospital is an important component of the hospital's mission. Mr. Hamblen responded to a comment from Marie Lamar requesting that the hospital interact with the community by creating an advisory committee. The City Manager spoke regarding the need for public education with regard to this election.

There was also discussion regarding the resolution and ballot language wherein Councilmember Soehner stated that he felt there should be language showing that a percentage of this tax goes to the hospital. The City Attorney stated that the resolution can be amended to read that "25% of which shall be used for the purpose and use of paying the operational expenses of the non-profit corporation." Councilmember Soehner stated that he would also like to see language stating that the remaining 75% goes to the city.

Motion: Moved by Councilmember Soehner, seconded by Councilmember Chacon, to approve and adopt Resolution No. 1550, as amended, ordering and calling a Special Election on May 17, 2011, to submit to the qualified electors, the question of extending the 1% sales tax for an additional period of five years from July 15, 2011. Motion passed unanimously.

D. Approve and Adopt Ordinance No. 1141 Adding to the Duties and Authority of the City Manager as Set Out in Chapter 2.040.070 of the Winslow Municipal Code by Adding Subparagraph F

The City Attorney explained that this ordinance gives ability and discretion to the City Manager to grant minor changes to

the fee schedule or an ordinance when he feels there is justification to do so. Modifications would have no greater financial impact on the city than $500. Mayor Boyd commented on the need for the City Manager to have this discretion, particularly relating to water bills. The City Attorney responded to questions from the Council.

Motion: Moved by Councilmember Hardy, seconded by Councilmember Losey, to approve Ordinance No. 1141. Motion passed unanimously.

E. Ratification of Fee Schedule Adopted in Ordinance No. 1137

The City Attorney explained that ratification of this ordinance is needed to make sure that the 60 day posting period was met.

Motion: Moved by Councilmember Soehner, seconded by Councilmember Hardy, to ratify the Fee Schedule that was incorporated in Ordinance No. 1137 and direct that the Fee Schedule shall be effective 60 days after it was posted. Motion passed unanimously.

F. Future Agenda Items From Council and Administration (Regular Council Agenda and/or Work Session Agenda)

Marie Lamar requested that the Council come forward at the next meeting with a suggestion of an advisory board of no less than 25 people to work with the hospital to keep the community informed of the hospital's progress. Mayor Boyd stated that staff will meet with Mr. Hamblen regarding creation of an advisory board.

ADJOURNMENT

Motion: Moved by Councilmember Cake, seconded by Councilmember Juergens, to adjourn at 8:40 p.m. Motion passed unanimously.

_____

Mayor

Attest:

_____

City Clerk

I hereby certify that the foregoing minutes are a true and correct copy of the minutes of the regular meeting of the Winslow City Council held on January 11, 2011 at 7:00 P.M. I further certify that the meeting was duly called and that a quorum was present.

Dated this_____ day of_____2011.

_____

City Clerk

CITY OF WINSLOW

January 2011

Due to a change in state law, the City will no longer be providing trash service to businesses in Winslow. We will, however, continue to provide service to the residential customers. Staff originally predicted this change would mean a 30% rate increase to the monthly fee charged to residential customers. For the past several months, we have looked hard at the Sanitation budget and have cut out numerous expenses, including neighborhood clean-up projects, and not filling vacant positions. The City will continue to provide the recycling program and to operate the Transfer Station seven days a week.

On January 1, 2011, the City will begin new contracts with Waste Management for the residential service. While the hauling fees will decrease 24%, the disposal fees will increase 73%. This will result in higher costs to the City, resulting in a 20% residential rate increase. The same monthly fee will also be charged to all residential customers on the "bag" service. The current charge to residential customers is $19.56/mo. The new charge, beginning January 1, 2011, will be $23.47/mo.

CALENDAR OF EVENTS
JANUARY 2011

6th
Arts Council Meeting
4:30 p.m. @ City Hall Conference Room
11th
City Council Meeting
7 p.m. @ Council Chambers
17th
Martin Luther King Day Holiday
City Offices Closed
18th
Planning & Zoning Commission Meeting
7 p.m. @ Council Chambers
20th
Arts Council Meeting
4:30 p.m. @ City Hall Conference Room
25th
City Council Meeting
7 p.m. @ Council Chambers
27th
Historic Preservation Commission Meeting
4 p.m. @ City Hall Conference Room

Winslow Arts Council Presents

Art Sweet Art 3

A CALL TO ALL ARTISTS!

Display your talent and/or
donate a piece to be auctioned
February 11, 2011 7:00 P.M.
At the Historic Hubbell Trading Post

Money raised helps SUPPORT THE ARTS
In our community
All donations appreciated/tax deductible
4 more info call Peggy Wilson 928 289-1411 or
e-mail at peggy.wilson@ci.winslow.az.us

City of Winslow Begins Work on Multi-Jurisdictional Hazard Mitigation Plan

A planning team comprised of representatives from the City of Winslow will be meeting regularly to participate in a hazard mitigation planning process. The team will develop a Multi-Jurisdictional Hazard Mitigation Plan for the city, according to The Disaster Mitigation Act of 2000 (DMA2K).

The DMA2K requires all local, county, tribal and state governments to have a FEMA approved hazard mitigation plan in order to be eligible for federal hazard mitigation funds. The plan will focus on the area's most threatening hazards to citizens and property and will provide a strategy to reduce or eliminate the risk from those hazards.

The planning team anticipates having a draft plan in early 2011, at which time the public will be provided the opportunity to review the plan and comment.

For more information regarding the hazard mitigation plan or planning process, please contact:

Ahmed Abdullah
City of Winslow
21 North Williamson Avenue
Winslow, AZ 86047
928-289-3204
ahmed.abdullah@ci.winslow.az.us

Additional information on this plan will be available on the Navajo County Website.
http://www.navajocountyaz.gov

City of Winslow, Arizona

Government | Welcome | Services | Community | Economic Dev. | Employment

- City Council
- City Contacts
- Agenda/Minutes
- City Code
- Online Payments
- eCitizen Services

Quick Links

Public Meeting Notice Locations:

City Hall, 119 E. First St.

Click here to view Open Meeting Law Information

Helpful Links

Proposed New Solid Waste Collection Fees

All residential users solid waste users shall be billed monthly: $25.42. Bag service will still be available and will be billed the same rate of $25.42 per month.

The City will no longer provide or charge for Commercial Garbage Pickup.

Click here to view Current Fee Schedule
Click here to view Other Proposed Fee Changes Excluding the Above

PUBLIC NOTICE:
Multi-Hazard Mitigation Plan

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Mayor
Robin R. Boyd

(928) 289-2422
FX (928) 289-3742
TDD (928) 289-4784

Discover Winslow-A City in Motion

Council Members
Peter Cake
Thomas R. Chacon, Sr.
Curtis Hardy
Marsha Juergens
Marshall Losey
Harold Soehner

Multi-Hazard Mitigation Plan

RE: City of Winslow Begins Work on Hazard Mitigation Plan

A planning team comprised of representatives from the City of Winslow and other jurisdictions within the Navajo County will be meeting regularly to participate in a hazard mitigation planning process. The team will develop a Multi-Jurisdictional Hazard Mitigation Plan for the City, according to The Disaster Mitigation Act of 2000 (DMA2K).

The DMA2K requires all local, county, tribal and state governments to have a FEMA approved hazard mitigation plan in order to be eligible for federal hazard mitigation funds. The plan will focus on the area's most threatening hazards to citizens and property and will provide a strategy to reduce or eliminate the risk from those hazards.

The planning team anticipates having a draft plan in early 2011, at which time the public will be provided the opportunity to review the plan and comment.

For more information regarding the hazard mitigation plan of planning process, please contact:

Ahmed Abdullah
21 North Williamson Avenue
Winslow, AZ 86047

ahmed.abdullah@ci.winslow.az.us

Additional information on this plan will be available on the Navajo County Website at:

http://www.navajocountyaz.gov/

Cc: Dale Patton, City Attorney

CITY OF WINSLOW

September 2011

CALENDAR OF EVENTS

September, 2011

1st
Arts Council Meeting
4:30 p.m. @ City Hall Conference Room

5th
Labor Day Holiday
City Offices Closed

7th
Citizen's Academy
6 p.m. @ Wastewater Treatment Plan

13th
City Council Meeting
7 p.m. @ Council Chambers

15th
Arts Council Meeting
4:30 p.m. @ City Hall Conference Room

20th
Planning and Zoning Commission Meeting
7 p.m. @ Council Chambers

21st
Citizen's Academy
6 p.m. @ Council Chambers

27th
City Council Meeting
7 p.m. @ Council Chambers

29th
Historic Preservation Commission Meeting
4 p.m. @ City Hall Conference Room

Renovation of Intersection at 2nd Street and Williamson Avenue

It is anticipated all traffic lanes should be open by the end of the day September 1st. It will be another week to ten days before the new traffic signals are operational.

Thank you for your cooperation and patience during this construction.

Library Book Drop is Now Locked

Recent hooliganism has prompted library staff to lock the overnight book drop. Over the past few weeks, several cats have been found in the building. Following security checks, the only explanation was that someone was putting different cats in through the book drop.

The cats didn't like it, likewise their owners.

We apologize for any inconvenience to our customers and ask them to call the library at 289-4982 if materials need renewing.

IMPORTANT INFORMATION FROM THE ARIZONA DEPARTMENT OF REVENUE

Evading state taxes is not only a serious crime, it hurts everyone in Arizona. Taxes are used to fund government programs such as education and public safety. When people evade taxes, these programs do not get the support they need.

If you owe back taxes to the State of Arizona, now is your chance to come clean. From September 1 to October 1, the Department of Revenue is offering a tax recovery program.

Through this program, qualified taxpayers can file or correct underreported state taxes. There is a reduced rate of interest and no civil penalties will be imposed for those who file during the tax

REQUEST FOR PUBLIC COMMENTS ON MULTI-HAZARD MITIGATION PLAN

The City is working to develop a Hazard Mitigation Plan in order to be eligible for certain federal disaster mitigation funds. This plan will focus on the area's most threatening hazards to reduce or eliminate the risk from those hazards.

The first draft of the plan has been completed. Citizens of Winslow are asked to review and comment on the Hazard Mitigation Plan between 9/2 and 9/9/2011. A copy is available on the City of Winslow website (www.ci.winslow.az.us), or by contacting Ahmed Abdullah, 289-3204, ahmed.abdullah@ci.winslow.az.us, or for review at City Hall, 21 Williamson Ave.

Please address all comments regarding the plan

Appendix D

Detailed Historic Hazard Records

2010 State Plan Hazard Categories	Arizona Declared Events That Included Navajo County January 1966 to August 2010		
	No. of Events	Total Expenditures	
		State	Federal
Drought	4	$ 254,344	$ -
Dam Failure	1	$ 397	$ -
Earthquake	0	$ -	$ -
Extreme Heat	0	$ -	$ -
Fissure	0	$ -	$ -
Flooding / Flash Flooding	11	$ 40,233,075	$ 322,023,270
Flood / Severe Wind	0	$ -	$ -
Landslide / Mudslide	0	$ -	$ -
Levee Failure	0	$ -	$ -
Severe Wind	1	$ 5,551	$ -
Subsidence	0	$ -	$ -
Wildfire	19	$ 7,381,208	$ 4,500,000
Winter Storm	5	$ 4,284,874	$ 5,109,724

NOTES:
- Damage Costs are reported as is and no attempt has been made to adjust costs to current dollar values.
- Only a portion of the reported expenditures were spent in the subject county.
- Flood / Severe Wind - this category included for declarations that have both elements

Source: ADEM - Recovery Section, October 2010

State and Federally Declared Events That Included Navajo County
January 1966 to August 2010

Hazard	No. of Declarations	Recorded Losses		
		Fatalities	Injuries	Damage Costs ($)
Drought	8	0	0	$300,000,000
Dam Failure	1	0	0	$0
Earthquake	0	0	0	$0
Extreme Heat	0	0	0	$0
Fissure	0	0	0	$0
Flooding / Flash Flooding	11	22	112	$882,750,000
Landslide / Mudslide	0	0	0	$0
Levee Failure	0	0	0	$0
Severe Wind	1	0	0	$0
Subsidence	0	0	0	$0
Wildfire	20	0	0	$34,000,000
Winter Storm	5	12	0	$750,000

Notes:
- Damage Costs are reported as is and no attempt has been made to adjust costs to current dollar values. Sources: ADEM, FEMA, USDA

State of Arizona Declaration				Federal Presidential Declaration				
Date	**Hazard**	**State PCA No.**	**Expenditures**	**Date**	**ID**	**Expenditures**	**Counties Affected**	**Description**
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.
7/21/1989	Drought	32710					Reservation within the Counties	USDA drought declaration for the listed counties
06/07/1996	Drought	96005	$211,499				Statewide	
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 USD 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.
8/13/1999	Drought			08/13/99	USDA		Apache, Cochise, Coconino, Gila, Graham, Greenlee, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai	GLICKMAN DECLARES PENNSYLVANIA, 13 ARIZONA COUNTIES AS DISASTER AREAS AND ANNOUNCES ADDITIONAL DROUGHT ASSISTANCE Release No. 0334.99, WASHINGTON, August 13, 1999 Agriculture Secretary Dan Glickman today declared all of Pennsylvania and 13 counties in Arizona as agricultural disaster areas due to drought. The declaration makes farmers in those areas and all contiguous counties eligible for emergency low-interest loans and other assistance to help cover losses from the drought. In Arizona, today's disaster declaration applies to Apache,
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."
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.
7/3/2002	Drought	23001	$42,844				Coconino, Gila, Navajo	Potable Water Emergency - Due to the lack of potable water resources, Northern Arizona Counties began hauling water as wells were not meeting the current and projected potable water needs.
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. …
10/12/1971	Flooding		$254,514				Navajo, Pinal	
3/2/1978	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 t 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.
12/16/1978	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]
01/08/1993	Flooding	93003	$30,072,157	01/19/93	977-DR	$104,069,362	Statewide	During January and February 1993, winter rain flooding damage occurred from winter storms associated with the El Nino phenomenon. These storms flooded watersheds throughout Arizona by dumping excessive rainfall amounts that saturated soils and increased runoff. Warm temperature snowmelt exacerbated the situation over large areas. Erosion caused tremendous damage and some communities along normally dry washes were devastated. Stream flow velocities and runoff volumes exceeded historic highs. Many flood prevention channels and retention reservoirs were filled to capacity and so water was diverted to the emergency spillways or the reservoirs were breached, causing extensive damage in some cases (e.g., Painted Rock Reservoir spillway). Ultimately, the President declared a major federal disaster that freed federal funds for both public and private property losses for all of Arizona's fifteen counties. Damages were widespread and significant, impacting over 100 communities. Total public and private damages exceeded $400 million and eight deaths and 112 injuries were reported to the Red Cross (FEMA, April 1, 1993; ADEM, March, 1998).
1/10/1995	Flooding	95006	$510,789				Apache, Gila, Graham, Greenlee, and Navajo	Heavy rains fell over much of central and southeastern Arizona. Some reports included Magma, 3.50 inches; Payson, 2.23 inches; Pinetop, 2.08 inches; Globe, 2.01 inches; and Sedona, 1.83 inches. Some unbridged road crossings in the Safford area were damaged. Total damages were estimated at $2,000,000.
02/15/1995	Flooding	95007	$1,525,663				Coconino, Gila, 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.
12/29/2004	Flooding	25004		2/17/2005	1581-DR		Coconino, Gila, Mohave, Navajo and Yavapai	**Northern Arizona Winter Storm:** Arizona was impacted by a series of strong winter storms December 28, 2004 – January 12, 2005. Large amounts of rain and record levels of snow received during the initial storm were followed by January storms that tapped into warm, moist Pacific air. Rapid snow melt occurred as warm rains fell on snow at mid-level elevations, which, along with the rain falling on already saturated ground resulted in widespread flooding throughout the northern and central parts of the state. Arizona residents suffered both loss of life and property damage. On December 29, 2005 the Governor declared a state of emergency for the Northern Arizona Winter Storm Emergency for Coconino County followed by 3 amendments on December 30, 2004 to include Yavapai County, on January 4, 2005 to include Gila and Navajo Counties and on January 11, 2005 to include Apache, Maricopa and Mohave Counties. On February 17, 2005, the President declared a Major Disaster Declaration (FEMA-1581-DR-AZ) for Public Assistance and Mitigation Programs for Coconino, Gila, Mohave, Navajo and Yavapai Counties a the Hopi and Navajo Nations. The Tribal Governments work directly with DHS/FEMA and provide their own non-federal cost share. The Small Business Administration (SBA) declared an emergency for Mohave, Coconino, La Paz and Yavapai Counties, making low interest loans available to homeowners, renters, businesses of all sizes and private, non-profit organizations whose property was damaged or destroyed by the storms.
8/8/2006	Flooding	27001		9/7/2006	1660-DR		Gila, Graham, Greenlee, Navajo, Pima, Pinal	On August 8, 2006, the Governor declared a state of emergency for a series of monsoon thunderstorms, spawning hail, damaging winds and flash floods throughout southeastern Arizona, specifically Pinal and Pima Counties from July 25 - August 4, 2006. Areas of the Santa Cruz, San Pedro and Gila watersheds exceeded their 1993 flood stages in portions of Pinal, Pima, Cochise, Graham and Gila Counties. On September 13, 2006, the Governor amended the declaration to include Gila, Graham, Greenlee and Navajo Counties. Five Tribal Governments were also heavily impacted by the emergency: the Gila River Indian Community, the Hopi Tribe, the Navajo Nation, the San Carlos Apache Tribe and the Tohono O'Odham Nation. On September 7, 2006, the President declared a Major Disaster Declaration (FEMA-1660-DR-AZ) by approving Public Assistance for those counties and tribal nations that met FEMA's per capita impact criteria, which were: Pinal and Pima Counties, the Gila River Indian Community within Pinal County and the Tohono O'Odham Nation within Pima and Pinal Counties. His declaration was amended on September 29, 2006 to include Gila, Graham, Greenlee and Navajo Counties, the tribal areas of the Hopi Tribe within Navajo County, the Navajo Nation within Navajo County and the San Carlos Apache Tribe within Gila, Graham and Pinal Counties. On November 9, 2006, the declaration was amended once more to include the Navajo Nation within Apache and Coconino Counties. The President also approved
9/2/1977	Infestation						Statewide	Cotton Crop Pesticide Application
6/16/1980	Infestation	29388	$67,773				Coconino, Gila, Yavapai, Mohave, Apache, Graham, Navajo, Cochise	AZ Executive Order 81-4: [Terminating the Declaration of a State of Emergency of June 16, 1980 (caused by the abundance of grasshoppers).
03/13/1996	Infestation	96003	$796,456				Statewide	Wheat (karnal bunt)
01/20/1999	Infestation	99001	$177,702				Statewide	Red Imported Fire Ant Emergency

State of Arizona Declaration				Damage Estimates			
Date	**Hazard**	**Fatalities**	**Injuries**	**Property**	**Crop/Livestock**	**Total**	**Sources**
5/18/2002	Disease					$0	ADEM, 2008
7/21/1989	Drought					$0	ADEM, 2008
06/07/1996	Drought					$0	ADEM, 2008
6/23/1999	Drought					$0	ADEM, 2008
8/13/1999	Drought					$0	ADEM, 2008
07/21/2000	Drought					$0	ADEM, 2008
05/17/2002	Drought					$0	ADEM, 2008
7/3/2002	Drought					$0	ADEM, 2008
07/11/2002	Drought				$300,000,000	$300,000,000	ADEM, 2008
10/12/1971	Flooding					$0	ADEM, 2008
3/2/1978	Flooding	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
12/16/1978	Flooding	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
01/08/1993	Flooding	8	112	$330,000,000	$70,000,000	$400,000,000	ADEM, 2008; NCDC, 2010
1/10/1995	Flooding			$2,000,000		$2,000,000	ADEM, 2008; NCDC, 2010
02/15/1995	Flooding					$0	ADEM, 2008
12/29/2004	Flooding						ADEM, 2010
8/8/2006	Flooding						ADEM, 2010
9/2/1977	Infestation					$0	ADEM, 2008
6/16/1980	Infestation					$0	ADEM, 2008
03/13/1996	Infestation					$0	ADEM, 2008
01/20/1999	Infestation					$0	ADEM, 2008

State of Arizona Declaration				Federal Presidential Declaration				
Date	**Hazard**	**State PCA No.**	**Expenditures**	**Date**	**ID**	**Expenditures**	**Counties Affected**	**Description**
11/30/1978	Prison Problem		$425				Statewide	Prison Break
6/10/1992	Prisoner Escape	92003	$100,000				Coconino, Yavapai, Navajo, Gila, Maricopa	May 12-19, 1992
1/7/1974	Service Interruption		$199,028				Statewide	Energy Shortage
4/7/2005	Severe Wind	25006	$5,550				Navajo	Severe Weather Emergency - A strong Pacific cold front brought high winds to the Kaibab Plateau overnight April 6 to 7. Remote Automated Weather Stations (RAWS) recorded peak wind gusts of 73 MPH at Four Springs and 60 MPH at Paria Point.
9/12/2001	Terrorism	22002	$3,070,329	9/12/2001			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.
10/16/2001	Terrorism	22003	$7,324				Statewide	Military Airport Security
09/24/1997	Tropical Storm / Hurricane	98002	$2,318,259				Statewide	Hurricane Nora - $200 million property damage. An estimated $150 to $200 million in damage was sustained by crops throughout Yuma County due mainly to flooded crops. About $30 to $40 million was to lemon trees. The heavy rain was attributed to Tropical Storm Nora. Flooding from Hurricane Nora results in the breaching of Narrows Dam. The calculated 24-hour, 100-year rainfall amount in NW Maricopa County was exceeded at six ALERT measuring sites. 3 to 5 inches of rain which fell from Nora led to some flash flooding 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 5 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 a Highway 95 north were closed due to high water form the storm.
4/28/1973	Wildfire		$36,718				Statewide	
4/22/1975	Wildfire		$8,923				Statewide	
4/21/1978	Wildfire		$11,528				Statewide	
4/16/1979	Wildfire		$204,207				Statewide	
6/2/1980	Wildfire		$298,845				Statewide	
6/26/1981	Wildfire						Statewide	Fire suppression assitance
6/30/1981	Wildfire		$256,904				Statewide	
6/30/1982	Wildfire		$492,635				Statewide	
03/17/1987	Wildfire	EUZSLD					Statewide	Wildland fires statewide
03/17/1990	Wildfire	EUFIR					Statewide	Wildland fire contingency
09/09/1993	Wildfire	94002	$200,000				Statewide	Statewide wildfire suppression - State Land Department
10/14/1994	Wildfire	95003	$600,000				Statewide	Statewide wildfire suppression - State Land Department
05/16/1996	Wildfire	96004	$1,000,729				Statewide	Statewide wildfire suppression - State Land Department
05/06/1999	Wildfire	99004	$4,894				Statewide	Statewide wildland fire emergency
6/17/1999	Wildfire	99005	$185,774				Navajo	Rainbow Fire Emergency -The fire is burning in Navajo and Gila counties. As of Saturday, June 12, the fire had consumed up to 5,000 acres on the White River Indian Reservation. The fire was threatening the towns of White River, Pine Top, Lakeside and Show Lo. Local officials report 15 homes have been destroyed on the reservation along with 13 other outlying structures. Approximately 100 people were evacuated along with a community hospital. In Pine Top, the fire threatened 2,000 homes and 30 businesses. No injuries associated with the fire have been reported. The American Red Cross (ARC) opened a shelter on the White River Reservation to house 150 people. Two ARC Emergency Response Vehicles were deployed to provide meals.
6/19/2002	Wildfire	22006		6/25/2002	1422-DR		Apache, Coconino, Gila, Navajo	**Rodeo/Chediski Fire:** On June 19, 2002 the Governor proclaimed an emergency for Navajo and Apache Counties for damages due to the Rodeo Fire. The Rodeo Fire ignited in Navajo County near the Town of Cibecue on the Fort Apache Indian Reservation June 18, 2002. Federal and State fire suppression resources responded, numerous homes and public infrastructure were threatened. On July 1, 2002 the Governor amended her proclamation to include Gila and Coconino Counties due to the Chediski Fire. The Chediski Fire ignited in Navajo County near the Chediski Mountain on the Fort Apache Indian Reservation June 20, 2002. The Presidential disaster declaration was received on June 25, 2002 (FEMA-1422-DR-AZ). Apache and Navajo Counties were declared for Public Assistance, as well as the Fort Apache Indian Reservation. Apache, Coconinco, Gila and Navajo Counties were given Individual Assistance. Mitigation Assistance was granted statewide. Rodeo-Chediski fire disaster. The fire burned 468,640 acres and destroyed more than 450 houses in Navajo, Apache, Coconino and Gila counties and the Fort Apache Indian Reservation. Disaster aid to Arizona in the wake of the massive Rodeo-Chediski fire has topped $26 million. To date, 8,204 Arizonans have registered for assistance through FEMA's toll-free registration line. Help Centers have seen 5,720 people seeking information about disaster aid, including answers to questions about their applications for assistance.
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.
7/15/2003	Wildfire	24101	$33,358				Gila, Navajo, Apache	Kinishba Fire - On July 13, 2003, lightning ignited a fire on the Fort Apache Reservation in eastern Arizona about two miles west of the town of Whiteriver.
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.
12/19/1967	Winter Storm	24825	$466,470				Coconino, Gila, Yavapai, Navajo	The December 1967 Snow Storm. A huge snow storm paralyzed northern Arizona and brought snow to much of the state. It was actually two storms, with the second following closely on the heels of the first. However, at that time, most perceived it as one storm. During the nine day period, 86.0 inches of show fell at Flagstaff. At Winslow, where average annual snowfall is 11.2 inches, 39.6 inches of snow was reported. On December 14, a state record of 38.0 inches fell at the Heber Ranger Station. Snowfall totals of the Rim Country included 102.7 inches at Hawley Lake, 99 inches at Greer, 91.5 inches at the Heber Ranger Station, 87.3 inches at Crown King, 77.0 inches at Payson, 46.0 inches at Prescott, 32.5 inches at Sedona, and 31.0 inches at the South Rim of the Grand Canyon. The Navajo Nation was extremely hard hit as two to three feet of snow fell across the community. Window Rock measured 33.5 inches. People on the reservation were instructed to use ashes from their stoves to write distress signals in the snow that could be spotted from the air. Eight people died of exposure. Southern Arizona did not escape, with measurable snow fall on the lowest deserts. Amounts included 84.0 inches on Mt. Lemmon, 27.5 inches at Miami, 17.7 inches at Wilcox, 11.0 inches at Safford, 5.0 inches at Wickenburg, 3.8 inches at Douglas, 3.0 inches at Ajo, 2.5 inches at Gila Bend, and 1.6 inches at Tucson. Flood related damages in Pima and Santa Cruz Counties totaled $750,000.
5/8/1978	Dam Failure		$397				Apache, Navajo	Provided dam safety inspection help
4/25/1983	Winter Storm	30349	$43,140				Navajo Nation, Coconino, Apache, Navajo	Navajo Reservation Emergency - Severe winter conditions on portions of Navajo Nation, Coconino, Apache, and Navajo Counties.
1/22/1987	Winter Storm	EUZ7FB 31799	$148,897				Navajo, Apache	Severe Winter Storm.

State of Arizona Declaration				Damage Estimates			
Date	**Hazard**	**Fatalities**	**Injuries**	**Property**	**Crop/Livestock**	**Total**	**Sources**
11/30/1978	Prison Problem					$0	ADEM, 2008
6/10/1992	Prisoner Escape					$0	ADEM, 2008
1/7/1974	Service Interruption					$0	ADEM, 2008
4/7/2005	Severe Wind					$0	ADEM, 2008
9/12/2001	Terrorism					$0	ADEM, 2008
10/16/2001	Terrorism					$0	ADEM, 2008
09/24/1997	Tropical Storm / Hurricane			$200,000,000	$175,000,000	$375,000,000	ADEM, 2008; NCDC, 2010
4/28/1973	Wildfire					$0	ADEM, 2008
4/22/1975	Wildfire					$0	ADEM, 2008
4/21/1978	Wildfire					$0	ADEM, 2008
4/16/1979	Wildfire					$0	ADEM, 2008
6/2/1980	Wildfire					$0	ADEM, 2008
6/26/1981	Wildfire					$0	ADEM, 2008
6/30/1981	Wildfire					$0	ADEM, 2008
6/30/1982	Wildfire					$0	ADEM, 2008
03/17/1987	Wildfire					$0	ADEM, 2008
03/17/1990	Wildfire					$0	ADEM, 2008
09/09/1993	Wildfire					$0	ADEM, 2008
10/14/1994	Wildfire					$0	ADEM, 2008
05/16/1996	Wildfire					$0	ADEM, 2008
05/06/1999	Wildfire					$0	ADEM, 2008
6/17/1999	Wildfire					$0	ADEM, 2008; http://www.fema.gov/news/newsrelease.fema?id=10005
6/19/2002	Wildfire			$34,000,000		$34,000,000	ADEM, 2010
5/2/2003	Wildfire					$0	ADEM, 2008
7/15/2003	Wildfire					$0	ADEM, 2008; http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=11777
2/22/2006	Wildfire					$0	ADEM, 2008
12/19/1967	Winter Storm	8		$750,000		$750,000	ADEM, 2009; Tucson NWS, 2008 at http://www.wrh.noaa.gov/twc/hydro/floodhis.php
5/8/1978	Dam Failure						ADEM, 2008
4/25/1983	Winter Storm					$0	ADEM, 2008
1/22/1987	Winter Storm					$0	ADEM, 2008

State of Arizona Declaration				Federal Presidential Declaration				
Date	**Hazard**	**State PCA No.**	**Expenditures**	**Date**	**ID**	**Expenditures**	**Counties Affected**	**Description**
2/25/1987	Winter Storm	EUZJN 31810	$3,347				Apache, Navajo, Gila, Coconino, Yavapai	Severe snowstorm.
1/14/1997	Winter Storm	97002	$1,590,468				Coconino, Navajo, Mohave	Perhaps the largest snow storm of the decade brought heavy snow to most of northern Arizona. Heavy snow fell from early Sunday morning, the 12th, through last Tuesday night, the 14th. Four deaths from exposure occurred during, or immediately after the storm, on the Navajo Nation Reservation and were directly related to this catastropic winter storm. Following the storm, National Guard trucks and helicopters were needed to evacuate people on the Navajo Nation who required medical attention due to chronic medical problems and who were unable to obtain needed medication. National Guard helicopters also dropped food to people and livestock who were stranded for several days following the storm. Unofficial snow accumulations up to 6 feet were reported along the Mogollon Rim in extreme southeastern Coconino county. Very strong winds created drifts as high as 10 feet at many wind-prone areas across northern Arizona. Numerous trees fell on cars, houses and roads causing power outages and property damage. Hundreds of miles of major highways were closed mainly along the Mogollon Rim and the White Mountains area. Highways surrounding Flagstaff were the most affected. Interstate 40 from Winslow Ashfork and Interstate 17 from Cordes Junction to Flagstaff were closed from noon Monday, Jan. 13 through 6 AM MST, Wednesday, Jan. 15. Over 200 vehicles were stranded on these two highways. The heavy snow in Flagstaff caused Northern Arizona University to close for the first time in 20 years. Flagstaff public schools were closed for five days. This was the 12th biggest snow storm in Flagstaff's 100 years of weather records.
2/16/2005	Winter Storm	25005		4/14/2005	1586-DR		Gila, Graham, Greenlee, Maricopa, Mohave, Pinal, Yavapai	February 2005 Winter Storm and Flood: On February 16, 2005 the Governor declared a state of emergency due to the February 2005 Winter Storms and Flooding throughout central and eastern Arizona. Gila, Graham, Greenlee, Pinal and Yavapai Counties and the Town of Wickenburg (Maricopa County) all declared and were included in the Governor's declaration. On March 8, 2005, the declaration was amended to include all of Maricopa County and Mohave County. On April 14, 2005 the President declared a Major Disaster Declaration (FEMA-1586-DR-AZ) for Public Assistance and Hazard Mitigation Grant Programs for the counties of Gila, Graham, Greenlee, Mohave, Pinal and Yavapai; the Havasupai Tribe, the Hopi Tribe, the San Carlos Apache Tribe; and the portion of the Navajo Tribal Nation within the State of Arizona. The Tribal Governments work directly with DHS/FEMA and provide their own non-federal cost share. Maricopa County was not included in the Federal declaration.
1/21/2010	Winter Storm	20102		3/18/2010	1888-DR		Apache, Coconino, Gila, Greenlee, La Paz, Maricopa, Mohave, Navajo, Yavapai, Hopi Tibe, Navajo Nation	January 2010 Winter Storm Emergency: About 10 inches of snow occurred in Northern Greenlee County around Rose Peak and Hannagan Meadow. A strong Pacific winter storm produced moderate valley rain and mountain snow to much of southeast Arizona. Heavy snow combined with strong winds to produce significant blowing and drifting at the higher elevations. Strong gusty winds also affected many valley locations during the evening hours of the 19th and the early morning hours of the 20th. Six inches of snow fell at 6700 feet 6 miles south of Prescott. A strong winter storm hit northern Arizona with widespread snow and rain. Heavy snow fell along the Eastern Mogollon Rim. Snowfall totals for this one storm include: Clints Well 16 inches, Heber 13 inches, Clay Springs 14 to 15 inches, and Forest Lakes 16 inches. The second in a series of strong Pacific storms moved across northern Arizona with widespread heavy precipitation. The snow level dropped down to between 5000 and 5500 feet elevation by the storm moved east. The Governor Jan Brewer signed a Declaration of Emergency and released $200,000 to pay for emergency responses and and recovery expenses from the weather events. Declared that a State of Emergency in Apache, Coconino, Gila, Greenlee, La Paz, Maricopa, Mohave, Navajo, and Yavapai Counties due to the 2010 Winter Storm beginning January 21, 2010. President Obama approved the Governor's request for Emergency Declaration in support of life and property-saving operations on Hopi Tribe and Navajo Nation lands within Apache, Coconino and Navajo counties. Isolation of some communities and rough terrain, compounded with snow accumulations, has complicated delivery of assistance like fuel, food and medical provisions. An additional $1 million was approved by Governor Brewer to cover state-share costs. Response efforts for the Hopi Tribe and Navajo Nation were named Operation Winter Storm and pooled the resources of federal, state and local agencies. Over nine days, 42,500 meals, 21,780 gallons of water, 279 cots, 5,475 blankets and over 800 wood bundles were delivered by air and ground transport.
1/29/1985		31076	$50,917				Navajo and Hopi Indian Reservations	Mudlift Emergency Airlift of supplies to Navajo and Hopi Indian Reser4vation; Apache, Coconino, Navajo, and Mohave Counties.
2/12/1988		EUZ7AU 32184	$44,933				Apache, Navajo	Isolated Citizens Airlift
6/29/1998		98003	$311,394				Apache, Navajo	Rainbow Family Gathering

State of Arizona Declaration				Damage Estimates			
Date	**Hazard**	**Fatalities**	**Injuries**	**Property**	**Crop/Livestock**	**Total**	**Sources**
2/25/1987	Winter Storm					$0	ADEM, 2008
1/14/1997	Winter Storm	4				$0	ADEM, 2009; NCDC, 2010
2/16/2005	Winter Storm						ADEM, 2010
1/21/2010	Winter Storm					$0	ADEM, 2010 FEMA, 2010
1/29/1985						$0	ADEM, 2008
2/12/1988						$0	ADEM, 2008
6/29/1998						$0	ADEM, 2008

Navajo County Undeclared Events September 1960 to April 2010				
Hazard	No. of Records	Recorded Losses		
		Fatalities	Injuries	Damage Costs ($)
Dam Failure	1	0	0	$0
Drought	0	0	0	$0
Earthquake	1	0	0	$0
Fissure	0	0	0	$0
Flooding / Flash Flooding	44	0	0	$76,000
Landslide/Mudslide	0	0	0	$0
Levee Failure	0	0	0	$0
Severe Wind	55	0	0	$30,000
Subsidence	0	0	0	$0
Wildfire	12	0	28	$0
Winter Storm	1	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 cost do not include the cost of suppression which can be quite substantial. Sources: ADEM, NCDC, NWCG, NWS, USFS

						Damage Estimates			
Date	**Hazard**	**Description**	**Location**	**Fatalities**	**Injuries**	**Property**	**Crop/Livestock**	**Total**	**Data Source**
1993	Infestation	Health workers focused on Hanta after the virus was identified as the culprit in the mystery deaths of 11 people on a Navajo reservation in New Mexico and Arizona in 1993		11					URS, October 2003
1/1/1915	Dam Failure	Seepage and piping (earth with clay core). Volume of water above breach bottom at failure: 35,800,000 m3.	Lyman						URS, October 2003
04/06/1921	Earthquake	Modified Mercalli Intensity Scale: VI	Holbrook					$0	URS, October 2003
7/31/1955	Severe Wind	2 in. diameter hail.							NCDC, August 2004
8/1/1959	Flooding / Flash Flooding	$25,000 damage from floods.	Winslow			$25,000		$25,000	URS, October 2003
7/17/1962	Severe Wind	Winds measured at 51 knots.							NCDC, August 2004
10/17/1962	Severe Wind	2 in. diameter hail.							NCDC, August 2004
10/17/1962	Severe Wind	Length=2 miles Width=200yds.							NCDC, August 2004
7/24/1966	Severe Wind	Winds measured at 62 knots.							NCDC, August 2004
8/12/1971	Severe Wind	1.25 in. diameter hail.							NCDC, August 2004
12/1/1971	Flooding / Flash Flooding	Rains caused damage in Show Low.	Show Low					$0	
4/20/1973	Severe Wind	Fujita Tornado Scale: F0 (40-72 mph / 35-62 kts.)							NCDC, August 2004
6/4/1977	Severe Wind	Winds measured at 52 knots.							NCDC, August 2004
6/24/1977	Severe Wind	Winds measured at 52 knots.							NCDC, August 2004
8/23/1977	Severe Wind	Winds measured at 57 knots.							NCDC, August 2004
5/23/1979	Severe Wind	Winds measured at 50 knots.							NCDC, August 2004
3/6/1980	Severe Wind	Winds measured at 50 knots.							NCDC, August 2004
8/25/1982	Severe Wind	1 in. diameter hail.							NCDC, August 2004
12/8/1983	Hazardous Materials Incident	CAR HIT METER ON SIDE OF MOTEL AT 705 NAVAJO. FIRE ENSUED. Hazardous Material Involved: NATURAL GAS	HOLBROOK					$10,000	NRC, August 2004
12/5/1984	Hazardous Materials Incident	VEHICLE ACCIDENT Hazardous Material Involved: SULFURIC ACID, HYDROCHLORIC ACID. Amount: UNKNOWN AMOUNT Remedial Action: CHEMICAL WASTE MANAGEMENT TEAM RESPONDED.	4 MI E of HOLBROOK		3				NRC, August 2004
7/14/1986	Severe Wind	Winds measured at 55 knots.							NCDC, August 2004
7/19/1986	Severe Wind	Winds measured at 51 knots.							NCDC, August 2004
9/26/1988	Hazardous Materials Incident	EXPANDER PLUG LEAKED OUT & GAS IGNITED Hazardous Material Involved: NATURAL GAS	WINSLOW		1				NRC, August 2004
06/05/1989	Wildfire	400 acres burned.						$0	URS, October 2003
07/07/1989	Wildfire	200 acres burned.						$0	URS, October 2003
8/18/1989	Severe Wind	Winds measured at 58 knots.							NCDC, August 2004
10/9/1989	Hazardous Materials Incident	TANK TRUCK INVOLVED IN ACCIDENT Hazardous Material Involved: DIESEL FUEL Amount: 4700 GALLON(S) Remedial Action: USED SAND AND LOOKED FOR CONTRACTOR FOR CLEANUP	PINON		1				NRC, August 2004
06/22/1990	Wildfire	100 acres burned.	HOLBROOK					$0	URS, October 2003
1/26/1992	Hazardous Materials Incident	NATURAL GAS EXPLOSION FROM A DISTRIBUTION LINE/UNKNOWN Hazardous Material Involved: NATURAL GAS. Amount: UNKNOWN AMOUNT Remedial Action: CONDUCTED UNDERGROUND PROBE AND INVESTIGATION	WINSLOW						NRC, August 2004
1/8/1993	Flooding / Flash Flooding	Between 300 and 400 residents near Winslow evacuated as the Little Colorado River breached flood control dikes in the area.	Winslow						NCDC, August 2004
2/19/1993	Flooding / Flash Flooding	Creeks and adjacent low spots near Peterson Dam became flooded.	Show Low						
8/19/1993	Severe Wind	1 in. diameter hail.							NCDC, August 2004
9/12/1993	Flooding / Flash Flooding	Heavy showers from thunderstorms caused water to accumulate to a depth of 1 foot on a 0.25-mile stretch U.S. Highway 180. Storm reportedly ended at Holbrook.							NCDC, August 2004
11/21/1993	Transportation Accident	TRESPASSER WAS STRUCK AND KILLED BY TRAIN	WINSLOW	1					NRC, August 2004
05/01/1994	Wildfire	200 acres burned.						$0	URS, October 2003
1/13/1995	Hazardous Materials Incident	DRIVER WENT OFF SR 77 INTO DITCH/RUPTURED TANK - LNG SPILLED ONTO GROUND Hazardous Material Involved: LIQUEFIED NATURAL GAS. Amount: 100 GALLON(S) Remedial Action: PUMPING OFF TRUCK ONTO ANOTHER TRUCK / COUNTY HAZMAT & HOLBROOK FDON SCENE/SPILL IS CONTAINED - HAZMAT TEAMS ASSISTING WITH CLEANU	HOLBROOK					$60,000	NRC, August 2004
9/2/1995	Transportation Accident	TRAIN # HBAKC131 STRUCK A PEDESTRIAN / TRAIN SPEED UNKNOWN / TRAIN DIRECTION EASTBOUND	HOLBROOK	1					NRC, August 2004
4/12/1996	Severe Wind	Thunderstorm related winds, estimated by law enforcement officers to be between 50 to 60 mph, reduced visibility to near zero in Kayenta and Tuba City. No damage was reported. Beginning Lat, Long (36.73, 110.25) Ending Lat, Long (36.13, 111.23)	KAYENTA						NCDC, August 2004
5/5/1996	Transportation Accident	FREIGHT TRAIN STRUCK A PEDESTRIAN AT A GRADE CROSSING	HOLBROOK	1					NRC, August 2004
5/25/1996	Severe Wind	Hail covered the ground to 5 inches deep. 0.75 in. diameter hail.	KAYENTA						NCDC, August 2004
5/25/1996	Severe Wind	Tornado touched down on the outskirts of Kayenta. A few small shed were blown down and there was minor roof damage to out-buildings. No damage estimate available. Fujita Tornado Scale: F0 (40-72 mph / 35-62 kts.). Length=0mi. Width=50yds.	KAYENTA						NCDC, August 2004
5/25/1996	Severe Wind	Funnel cloud reported by public and law enforcement.	ORAIBI						NCDC, August 2004
5/25/1996	Severe Wind	Tornado briefly touched down. Reported by the public and law enforcement officers. No damage reported. 17 mi. SSE of ORAIBI. Fujita Tornado Scale: F0 (40 72 mph / 35-62 kts.). Length=0mi. Width=50yds.							NCDC, August 2004
5/25/1996	Severe Wind	Funnel cloud reported by the public and law enforcement. 2 mi. NNW of SHUNGOPOVI.							NCDC, August 2004
6/13/1996	Transportation Accident	TRAIN/PEDESTRIAN COLLISION / TRAIN DIRECTION EAST / TRACK SPEED 60 MPH UNK TRAIN SPEED	HOLBROOK	1					NRC, August 2004
8/1/1996	Flooding / Flash Flooding	Heavy thunderstorm rain produced street flooding in White River, southeast of Show Low. Also, near White River several small streams and washes flooded. 30 mi. SE of SHOW LOW.							NCDC, August 2004
9/13/1996	Severe Wind	Thunderstorm gust recorded at the Winslow Airport. Winds measured at 51 knots.	WINSLOW						NCDC, August 2004
12/8/1996	Transportation Accident	CALLER STATES THAT THERE HAS BEEN A TRESPASSER FATALITY	HOLBROOK	1					NRC, August 2004
4/23/1997	Severe Wind	Wind damage in Dilkon believed to be caused by strong thunderstorm gusts. Blew over a trailer home. Several other trailers received minor damage. Broken windows were reported at the Dilkon Boarding School. No measured wind speed available.	DILKON						NCDC, August 2004
5/15/1997	Hazardous Materials Incident	350 GALLON HYDRAZINE BIN / BIN FELL OFF FORKLIFT	JOSEPH CITY					$0	URS, October 2003

						Damage Estimates			
Date	**Hazard**	**Description**	**Location**	**Fatalities**	**Injuries**	**Property**	**Crop/Livestock**	**Total**	**Data Source**
8/3/1997	Flooding / Flash Flooding	Flash flooding was reported along Indian Reservation Route 60 just northwest of Dilkon. Strong thunderstorms with heavy rain 5 miles northeast of Dilkon, produced heavy runoff in Dilkon. Several washes and drainage ditches flooded sending up to 5 foot deep water through the Navajo Tribal Utilities Administration office and maintenance yard and flooding route 60. About 100 feet of chain link fence was destroyed and several vehicles suffered water damage. Twelve 30 foot long telephone poles that were stored in the maintenance yard were carried across the yard and into the fence.	DILKON						NCDC, August 2004
8/5/1997	Flooding / Flash Flooding	Steamboat Wash flooded over Indian Reservation Route 15 just west of Greasewood. 3 mi. W of GREASEWOOD.							NCDC, August 2004
8/11/1997	Flooding / Flash Flooding	Minor rural road flooding in the Snowflake area.	SNOWFLAKE						
8/25/1997	Flooding / Flash Flooding	Minor road flooding over state route 277 near Heber.	HEBER						NCDC, August 2004
8/29/1997	Flooding / Flash Flooding	Minor flooding in the Heber area.	HEBER						NCDC, August 2004
8/29/1997	Flooding / Flash Flooding	Minor flooding in the Show Low area.	SHOW LOW						
10/7/1997	Severe Wind	0.75 in. diameter hail.	HEBER						NCDC, August 2004
10/22/1997	Severe Wind	The public reported that two funnel clouds occurred simultaneously, about 3 miles apart, over White Mountain Lake.	WHITE MTN LAKE						NCDC, August 2004
10/22/1997	Severe Wind	Off-duty NWS employee reported the touchdown of a weak tornado. 1 mi. W of HOLBROOK. Fujita Tornado Scale: F0 (40-72 mph / 35-62 kts.). Length=1mi. Width=50yds.							NCDC, August 2004
5/19/1998	Hazardous Materials Incident		SNOWFLAKE					$0	
7/21/1998	Flooding / Flash Flooding	The Dilkon Police Department reported water one foot deep across the intersection of highway 87 and Navajo Route 15 as Coyote Wash flooded. Minor road damage was also reported.	DILKON						NCDC, August 2004
7/31/1998	Flooding / Flash Flooding	Afternoon thunderstorms dropped heavy rain in the Joseph City area. A rain gage in the area measured 3.23 inches of rain from 3:00 pm to 4:23 pm. Forty four homes in Joseph City were damaged by flood waters, with fourteen homes deemed receiving major damage. Interstate 40 at mile post 277 was closed for one hour as two feet of water rested on the roadway.	JOSEPH CITY						NCDC, August 2004
8/6/1998	Flooding / Flash	A weather spotter reported flooded washes and streets as well as one inch diameter hail in downtown Heber.	HEBER						NCDC, August 2004
8/6/1998	Severe Wind	0.75 in. diameter hail.	HEBER						NCDC, August 2004
9/5/1998	Severe Wind	An Arizona Department of Public Safety officer reported a funnel cloud in Winslow.	WINSLOW						NCDC, August 2004
12/2/1998	Severe Wind	Snowflake police officers and members of the general public reported a funnel cloud. 5 mi. W of SNOWFLAKE.							NCDC, August 2004
5/1/1999	Severe Wind	93 mph wind tipped over trucks from the I-40, blew over mobile homes on the west side of Winslow, and ripped off many roofs.	Winslow						Allan Rosenbaum; City Utility Director; City of Winslow, 2010
5/26/1999	Transportation Accident	FREIGHT TRAIN TRAVELING EAST STRUCK AN AUTOMOBILE/ TRAIN MAKE UP: 70 LOADS / 5 ENGINES	HOLBROOK	1	1				NRC, August 2004
7/25/1999	Flooding / Flash Flooding	An estimated three inches of rainfall produced local flooding in east Pinetop with water entering two homes. Erosion ditches two feet wide and seven feet deep were produced by the runoff.	PINETOP						
7/27/1999	Flooding / Flash Flooding	Thunderstorms producing heavy rainfall forced the Porter Tank Draw to leave its banks and flood McClaws Road to a depth of three feet.	HOLBROOK						NCDC, August 2004
8/19/1999	Severe Wind	A weather spotter reported 0.75 inch diameter hail in Snowflake.	SNOWFLAKE						
8/19/1999	Severe Wind	A weather spotter measured 0.75 inch diameter hail in Pinetop.	PINETOP						
3/8/2000	Hazardous Materials Incident	A CRANE OVERTURNED WHILE IT WAS WORKING ALONGSIDE OF THE TRACKS CAUSING DIESEL TO SPILL FROM ITS TANK. Hazardous Material Involved: OIL, FUEL: NO. 2-D. Amount: 100 GALLON(S) Remedial Action: A CLEAN UP CREW WILL BE DEPLOYED	PENZANCE		1				NRC, August 2004
3/23/2000	Hazardous Materials Incident	TANK TRUCK WAS INVOLVED IN AN ACCIDENT CAUSING A RELEASE FROM THE CARGO TANK Hazardous Material Involved: GASOLINE: AUTOMOTIVE (UNLEADED). Amount: 2900 GALLON(S) Remedial Action: HOLES WERE DRILLED IN THE SIDE OF THE TRAILER PUMPED THE MATERIAL OUT / A CONTRACTOR WAS HIRED TO CLEAN UP THE SPILLED MATERIAl			4				NRC, August 2004
6/27/2000	Flooding / Flash Flooding	A weather spotter in Pinetop-Lakeside reported 1.8 inches of rain in 75 minutes. Street flooding was observed.	PINETOP						
7/31/2000	Hail	Spotter in Forest Lakes (12 miles southwest of Heber in Coconino county) reported quarter sized hail that lasted 3-4 minutes and covered the ground. 1 in. diameter hail.	HEBER						NCDC, August 2004
8/25/2000	Flooding / Flash Flooding	A weather spotter in Overgaard reported two and a quarter inches of rain in 30 minutes.	OVERGAARD						NCDC, August 2004
9/18/2000	Hazardous Materials Incident	STUDENTS AT THE SCHOOL SECRETLY BROKE THE TIPS OFF OF MANY THERMOMETERS AT THE SCHOOL OVER SEVERAL WEEKS. APPROXIMATELY 130 STUDENTS AND FACULTY HAVE BEEN EXPOSED TO MERCURY. Hazardous Material Involved: MERCURY. Amount: UNKNOWN AMOUNT Remedial Action: THE SCHOOL AND DORM AREAS HAVE BEEN CLOSED. TESTING IS UNDERWAY. ALL OF THE CONTAMINATED CLOTHING HAS BEEN REMOVED	FORT APACHE		130				NRC, August 2004
7/10/2001	Flooding / Flash Flooding	Strong, slow moving thunderstorms over northern Navajo and northern Apache counties caused several normally dry washes to run with water. The Dilkon Police Department reported that Highway 15 at milepost 95 was flooding with debris across the road. They also reported that the Chinle Wash was running high. A NWS storm survey the next day revealed: 7 feet of water resulted in a breach of a small earthen dam near the confluence of Laguna Creek and Chinle Wash near the town of Dinnehusto, 2 feet of water over Highway 2 with road damage near Orabi Wash between Tolani Lakes and Kykotsomvi, and high water flow (no flooding) in Canyon de Chelly.	NORTH CENTRAL PORTION						NCDC, August 2004
7/29/2001	Flooding / Flash Flooding	A weather spotter in Overgaard reported 3.95 inches of rain between 4:00 PM and 5:15 PM and extensive street flooding.	OVERGAARD						NCDC, August 2004
7/29/2001	Severe Wind	A thunderstorm produced three-quarter inch hail and street flooding as it passed through Overgaard. 0.75 in. diameter hail.	OVERGAARD						NCDC, August 2004
8/11/2001	Flooding / Flash Flooding	Dilkon Police Department reported water across the intersection of Road 15 and Highway 87 at 255 PM. Water was across Indian Route 6 about 35 miles north of I-40 at 410 PM.	DILKON						NCDC, August 2004
8/19/2001	Severe Wind	Golf ball sized hail (1.75 inch diameter) was reported in Pine Top.	PINETOP						
8/29/2001	Flooding / Flash Flooding	Heavy rain, 1.88 inches in 30 minutes, caused several homes to flood, and roads to be closed, and 2-3 inches of water covered lawns in the Linden area.	LINDEN						NCDC, August 2004
8/29/2001	Severe Wind	A tornado was seen by an off duty NWS employee three miles south of Holbrook near the intersection of Routes 377 and 77. The tornado was on the ground for 5 minutes. Fujita Tornado Scale: F0 (40-72 mph / 35-62 kts.). Length=1mi. Width=1yd.	HOLBROOK						NCDC, August 2004
8/29/2001	Severe Wind	A funnel cloud was reported by an employee at a Show Low radio station. The funnel cloud extended half way to the ground near Porter Mountain.	SHOW LOW						
9/13/2001	Severe Wind	Nickel (0.88 inch diameter) sized hail fell in Winslow for five minutes. Heavy rain and wind gusts to 53 MPH were reported at the Winslow airport with this thunderstorm. Traffic on I-40 slowed to a crawl because of the storm.	WINSLOW						NCDC, August 2004
9/16/2001	Flooding / Flash Flooding	Heavy rain caused water to flow over road about one mile east of Snowflake.							NCDC, August 2004

						Damage Estimates			
Date	**Hazard**	**Description**	**Location**	**Fatalities**	**Injuries**	**Property**	**Crop/Livestock**	**Total**	**Data Source**
9/16/2001	Flooding / Flash Flooding	Water was reported over Highway 377 about 15 miles north of Heber.							NCDC, August 2004
9/16/2001	Severe Wind	A tornado was seen 15 miles west of Snowflake. No damage was reported. Fujita Tornado Scale: F0 (40-72 mph / 35-62 kts.). Length=1mi. Width=1yd.							NCDC, August 2004
9/16/2001	Severe Wind	A tornado touched down about 5 miles north of Snowflake. The tornado was first seen at 935 AM MST then a Sheriff Deputy watched the tornado until it lifted at 1003 AM MST. The tornado remained in a rural area and no damage was reported. Fujita Tornado Scale: F0 (40-72 mph / 35-62 kts.). Length=3mi. Width=1yd.	SNOWFLAKE						
6/18/2002	Wildfire	Rodeo Fire The Federal Emergency Management Agency (FEMA) has authorized the use of federal funds to help Arizona fight the uncontrolled Rodeo fire burning in Navajo County. The action marks the third time this year that FEMA firefighting assistance has been made available to the state. FEMA Director Joe M. Allbaugh approved the state's latest request for federal fire management assistance last night immediately after confirming that the blaze was endangering 500 homes in the communities of Clay Springs, Linden, Pinedale and Show Low. The fire, which started last Tuesday, had consumed more than 20,000 acres and forced the evacuation of several thousand people at the time of the request. [Rodeo/Chediski Complex - a human caused fire that burned an area 3 miles west of Show Low, Arizona; 3 miles north of Cibecue. The fire started June 18, 2002 and burned 468,638 acres with over $48,737,663 in fire suppression costs.]			24			$0	URS, October 2003; GACC, 2010
06/21/2002	Wildfire	Chediski Farms Fire: Federal funds were made available by the Federal Emergency Management Agency (FEMA) today to help Arizona fight the outbreak of another uncontrolled wildfire located in Navajo County. The state's latest request for federal fire management assistance was approved by FEMA Director Joe M. Allbaugh early this morning after it became clear that the 1,500-acre Chediski Farms fire was endangering up to 4,500 homes and had caused the evacuation of more than 2,000 people. [Chediski Fire: a human caused fire that burned an area 12 miles northwest of Cibecue, Arizona; 12 miles southwest of Heber-Overagaard, Arizona. The fire started June 20, 2002 and burned 121,340 acres with over $2,095,442 in fire suppression costs. This fire destroyed 75 homes and 25 commercial properties and 40 other outbuildings.]						$0	URS, October 2003; GACC, 2010
7/9/2002	Flooding / Flash Flooding	A Forest Service employee reported that Salt Creek Road about 7 miles northwest of Cibecue washed out between 5:00 PM and midnight. Logs and boulders covered the road and heavy equipment was needed to clear the road. This location is downstream from where the Chediski-Rodeo Fire burned over 450,000 acres in late June and early July.							NCDC, August 2004
7/16/2002	Flooding / Flash Flooding	The water level in Cibecue Creek rose to 5 feet above normal level in the town of Cibecue. This flooded a low water crossing in town.							NCDC, August 2004
7/22/2002	Flooding / Flash Flooding	Law enforcement officials and fire fighters reported that flowing water in washes made several roads impassable in the Polacca and Keams area. The water receded within an hour.							NCDC, August 2004
7/25/2002	Flooding / Flash Flooding	The Cottonwood Wash rose 20 feet where it passed under Highway 260 near Clay Springs. No structures were threatened.	CLAY SPGS						NCDC, August 2004
9/6/2002	Flooding / Flash Flooding	Department of Public Safety reported mud and debris flowing across Highway 160 near Cow Springs.	COW SPGS						NCDC, August 2004
9/10/2002	Flooding / Flash Flooding	Cibecue Creek was up 7 feet in town. Side washes were also flooding in town. Water entered two homes. Indian Route 12 was flooded at milepost 10. By 5:45 PM, the water began receding. By 6:10 PM, the water was down to 2-3 feet in the Cibecue Creek and the road re-opened.	CIBECUE						NCDC, August 2004
9/10/2002	Flooding / Flash Flooding	Heavy rain caused flash flooding in the Leroux Wash that covered I-40 three miles west of Holbrook.	HOLBROOK						NCDC, August 2004
9/18/2002	Flooding / Flash Flooding	Heavy rain caused street flooding and road closures in St Johns and Snowflake. Route 77 to Snowflake was closed due to flooding. Flooding was also reported on Route 191 near St Johns.	SNOWFLAKE						
9/18/2002	Severe Wind	Quarter sized (one inch) hail was reported on Highway 160 between Cow Springs and Kayenta.	COW SPGS						NCDC, August 2004
6/17/2003	Severe Wind	A weak tornado formed along a convergence zone about one mile west of Winslow. The tornado was nearly stationary and remained in rural areas for about 30 minutes. Fujita Tornado Scale: F0 (40-72 mph / 35-62 kt.) Length=1mi. Width=10yds.	Winslow						NCDC, August 2004
7/20/2003	Flooding / Flash Flooding	A strong thunderstorm caused flooding in Snowflake.	SNOWFLAKE						
7/31/2003	Flooding / Flash Flooding	Water was flowing over Highway 77 between Shumway and Taylor. Minor street flooding was also reported between Holbrook and Snowflake.	Holbrook to Snowflake						NCDC, August 2004
8/9/2003	Wildfire	Red Knoll Fire - a lightning caused fire that burned an area 5 miles east of Carrizo, Arizona. The fire started August 9, 2003 and burned 186 acres with over $116,400 in fire suppression costs.							GACC, 2010
8/14/2003	Severe Wind	Dime to nickel sized (3/4 to 7/8 inch diameter) hail fell in Keams Canyon.	Keams Canyon						NCDC, August 2004
8/14/2003	Severe Wind	Sheriff deputy reported seeing multiple descending/ascending funnel clouds west of Snowflake.							NCDC, August 2004
8/15/2003	Flooding / Flash Flooding	Flooding was reported in the southern part of Overgaard. Water was also flowing over Highway 260 between Overgaard and Clay Springs.	Overgaard to Clay Springs						NCDC, August 2004
8/15/2003	Severe Wind	Tornado reported 50 miles northeast of Heber. Fujita Tornado Scale: F0 (40-72 mph / 35-62 kt.)							NCDC, August 2004
8/23/2003	Flooding / Flash Flooding	One inch of rain fell in 15 minutes.	PINETOP						
9/1/2003	Severe Wind	Nickel sized (7/8 inch diameter) hail fell in western Snowflake.	SNOWFLAKE						
9/6/2003	Flooding / Flash Flooding	Flash flooding caused Cibeque creek rise 8 to 10 feet in the town of Cibeque.	Cibecue						NCDC, August 2004
9/9/2003	Flooding / Flash Flooding	Heavy rain cause flash flooding near the community of Polacca. Buses were trapped by the flood waters.	Polacca						NCDC, August 2004
9/9/2003	Flooding / Flash Flooding	Several thunderstorms produced heavy rain and flooding between Shonto and Kayenta late in the afternoon. Significant flooding was reported with these storms as they moved through the area. Portions of State Route 98 were washed out near Kayenta. Vehicles were stranded and the people were evacuated.	Shonto to Kayenta						NCDC, August 2004
9/9/2003	Flooding / Flash Flooding	Heavy rain and flooding washed out several roads in the White Cone area.	White Cone						NCDC, August 2004
9/9/2003	Severe Wind	A roof was blown off a building in White Cone. Winds reported at 50 knots.	White Cone						NCDC, August 2004
10/2/2003	Flooding / Flash Flooding	Heavy rain caused flash flooding from Tuba City to Shonto. Some dirt roads washed out along State Route 98 about 50 miles west of Kayenta. Navajo Routes 16 and 21 were among the dirt roads that were washed out.							NCDC, August 2004
10/3/2003	Severe Wind	3/4 inch diameter hail was reported in the town of White Cone.	White Cone						NCDC, August 2004
10/3/2003	Severe Wind	The public and Law Enforcement observed a tornado on the ground near White Cone. A spotter reported damage to a fence, windmill, and trees. Fujita Tornado Scale: F0 (40-72 mph / 35-62 kt.)							NCDC, August 2004
4/10/2004	Severe Wind	A Law Enforcement officer reported a funnel cloud from Cibecue.	Cibecue						NCDC, August 2004
10/18/2005	Severe Wind	A tornado was sighted in a sparsely populated area about 40 miles east-northeast of Cameron near the intersection of Dinnebito Wash, Highway 264, and the Coconino/Navajo County lines. One ranch did sustain minor damage to the house, the hogan, and the sweat lodge. Several outbuildings were totally destroyed	Kykotsmovi			$10,000		$10,000	NCDC, April 2010

						Damage Estimates			
Date	**Hazard**	**Description**	**Location**	**Fatalities**	**Injuries**	**Property**	**Crop/Livestock**	**Total**	**Data Source**
6/6/2006	Wildfire	Potato Complex Fire - a lightning caused fire that burned an area 10 miles northwest of Heber-Overgaard. The fire started June 6, 2006 and burned 6,262 acres with over $3,706,000 in fire suppression costs.			4				GACC, 2010
7/31/2007	Severe Wind	Lightning knocked down power lines and caused power outages in Holbrook. Thunderstorms caused power outages and flash flooding in the Holbrook area.	Holbrook			$10,000		$10,000	NCDC, April 2010
9/2/2007	Flooding / Flash Flooding	A thunderstorm in Winslow produced lightning that blew out a transformer and knocked out power. The storm also produced high winds, local street flooding, and small hail. A thunderstorm produced heavy rain with street flooding, high winds, and damaging lightning.	Winslow			$50,000		$50,000	NCDC, April 2010
4/3/2009	Severe Wind	Two trucks collided and caused fire due to a dust storm hindering visibility near MP 242	Winslow						Boney Candelaria; Fire Chief; City of Winslow, 2010
9/13/2009	Flooding / Flash Flooding	A trained spotter one mile north of Winslow reported heavy rain, flooded fields, and water entering the first floor of her house. A thunderstorm produced heavy rain just north of Winslow.	Winslow Arpt			$1,000		$1,000	NCDC, April 2010

Appendix E

Plan Maintenance Review Memorandums