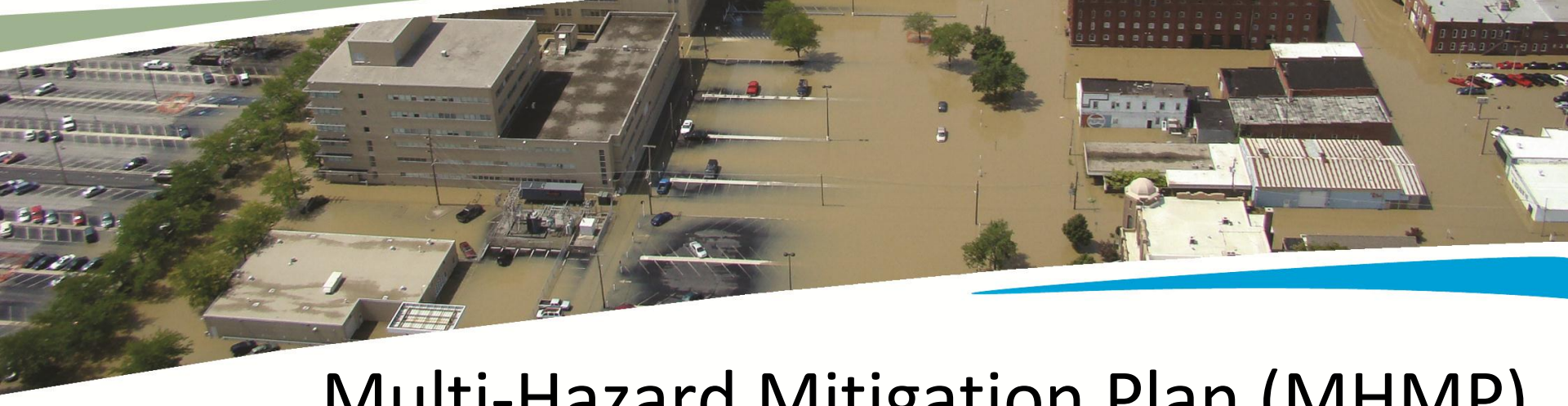


Multi-Hazard Mitigation Plan (MHMP)
2013 Update

Plumas County, CA

MHMP Planning Committee Meeting #2

February 8, 2013

Agenda

10:00 am – 11:00 am

Part I

- **Welcome and Introductions**
- **Brief Project Overview**
- **Overview of Existing Hazards**
- **Question and Answer Session**

5 Min Break

11:00 am – 12:00 pm

Part II

- **Complete a hazard Risk Factor Matrix**
- **Establish priority and focus resources**
- **Establish, refine and edit the Goals and Objectives**
- **Next Steps and Wrap Up**

Part I

- Welcome and Introductions
- Brief Project Overview
- Overview of Existing Hazard
- Question and Answer Session

Welcome and Introductions

Plumas County Department of Health and Office Emergency Services

County Project Manager	Jerry Sipe, OES Director
County Outreach	Lori Pini, Public Health
MHMP Planning Committee	Joint Plumas County Staff

Michael Baker Jr., Inc.

Project Manager	Ethan Mobley, AICP
Hazard Mitigation Senior Planner	Jason Farrell, CFM
Hazard Mitigation Planner	Desirea Hoffman
Hazard Mitigation QA/QC	Wynne Kwan, AICP
Public Outreach Specialist	Jack Eldridge
GIS /Hazus Specialist	Nate Mirin, GISP
Senior Technical Advisor	Carver Struve, CFM

Project Overview

- **What is Hazard Mitigation?**

  Hazard mitigation is any sustained action taken to reduce or eliminate long-term risk to life and property resulting from natural hazards.

- **What is a Mitigation Plan?**

  The plan is an official statement of Plumas County's hazards, vulnerability analysis, and mitigation strategy. The result of a collaborative multi-agency and county citizen planning process. As a living document, it guides implementation activities to achieve the greatest reduction of vulnerability, which results in saved lives, reduced injuries, reduced property damages, and protection for the environment.

- **Why have a Mitigation Plan?**

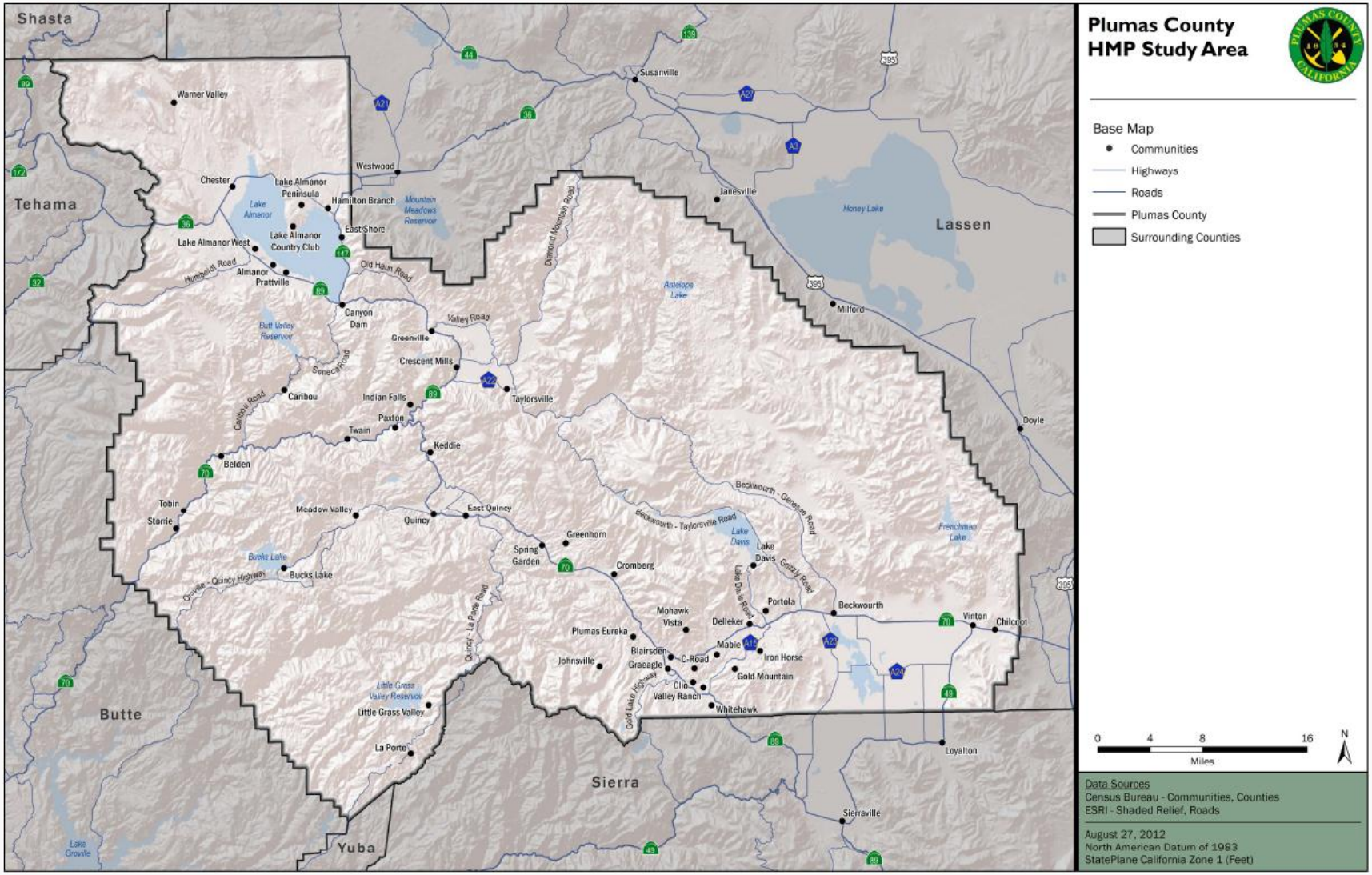
  To ensure public consensus through a planning process on mitigation actions that best suit the community. Allows communities to focus efforts and limited resources on the most highly desirable mitigation projects. Plumas County also must have a State and federally approved plan to apply for and receive mitigation grants. These grants can augment local mitigation activities already done and planned activities too. Ultimately, these actions reduce vulnerability and communities are able to recover more quickly from disasters.

Project Overview
Background

- Disaster Mitigation Act (DMA) 2000 (Public Law 106-390) provides the legal basis for FEMA mitigation planning requirements for State, local and Indian Tribal governments as a condition of mitigation grant assistance.
- Plumas County developed the 2006 Hazard Mitigation Plan (HMP).
- FEMA requires an update every 5 years.
- Plumas County receives Disaster Recovery Initiative (DRI) grant funding, which was made available after Statewide fires in 2008.
- DRI grant funding in Plumas County was awarded / allocated for Public Improvements and Planning.
- Under the DRI planning element, the 2012 MHMP Update is to address hazard mitigation planning in unincorporated areas of Plumas County. The updated plan will address new concerns, and rework goals, objectives and mitigation actions.

Project Overview

Planning Area



MHP Process and Components

Planning Process

Organize Resources

- Build Planning Team
- Develop Public Outreach Strategy
- Review/Incorporate Existing Plans, Studies, Reports, and other technical data/ information

Assess Risks

- Identify/Profile Hazards
- Assess Vulnerabilities

Hazard ID and Profiling Workshop

Develop Mitigation Plan

- Identify Goals
- Develop Capabilities Assesssment
- Review past/current mitigation measures
- Identify new mitigation measures

Mitigation Workshop

Draft Plan

- Background Information
- Plan Maintenance
- Document Authority and References

Public Review

Plan Review/Revision

- Review Final Draft with Plumas County Planning Committee and Public

Plan Adoption/Submittal

- Prepare Crosswalk for Submittal to FEMA Region IX and Cal EMA

Existing HMP Overview

Hazards and Participants

- **Possible Hazards Identified in 2006 PCHMP:**
  1. Flooding
  2. Winter Storms
  3. Wildfire
  4. Drought
  5. ~~Hazardous Materials~~
  6. Dam Failure
  7. Earthquake
  8. ~~Terrorism~~

MHP Process and Components

Step 2: Identify / Profile the Hazard 2013


-Wildfire


-Drought


-Flooding


-Dam Failure


-Geologic Hazards


-Climate Change


-Severe Weather

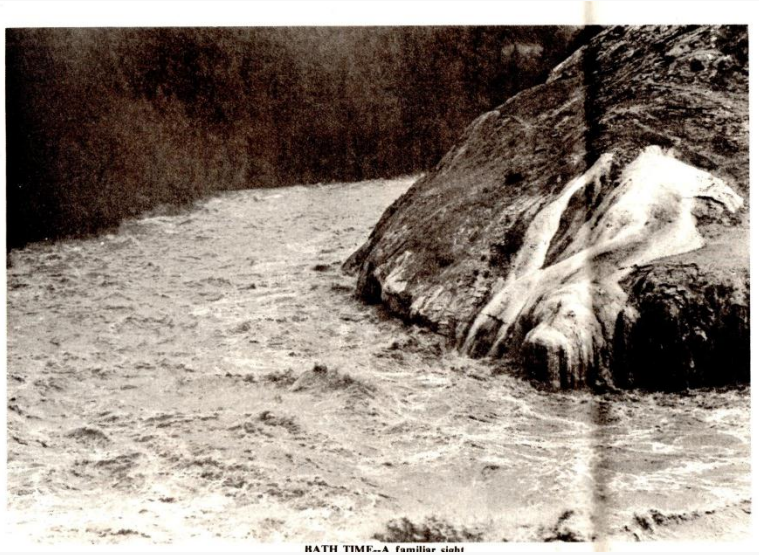
Identify/Profile Hazards:

Description
Regulatory Environment
Previous Occurrences
Location/ Geographic Extent
Magnitude/Severity
Probability of Future Occurrences

MHMP Update

Step 2: Assess Risk

- ✓ **County-specific Hazard Data Development**
- ✓ **Develop Population Profiles / Data**
- ✓ **Develop Critical Infrastructure Inventory / Summarize Vulnerable Assets**
- ❑ **Develop Risk Factor for Profiled Hazards**
- ❑ **Estimate Losses**
  - Possible Hazus Loss Estimation
  - GIS layering technique for other hazards
- ❑ **Assess Vulnerabilities**



BATH TIME--A familiar sight

MHP Process and Components

Identify / Profile the Hazard

- **Declared Events in Plumas County**
- **Covers 1950 to Present**

Data Sources:

FEMA:

Plumas County Disaster History

CAL EMA:

Emergency & Disaster Proclamations and Executive Orders

Federal Declarations and State Proclamations

Disaster Name	Disaster Type	Disaster Cause	Disaster#	Year	Deaths	Injuries	Cost of Damage*
Mid-Year Fires	Fire	Fire	EM-3287	2008			N/A
Winter Storms	Flood	Storms	DR-1628	2005- 06			$ 128,964,501
August Fires	Fire	Fire	EM-3140	1999			$ 1,154,573
January Floods	Flood	Storms	DR-1155	1997	8		$ 194,352,509
Torrential Winds and Rain	Flood	Storms	GP96-01	1996			N/A
Severe Winter Storms	Flood	Storms	DR-1044	1995	11		$ 221,948,347
Late Winter Storms	Flood	Storms	DR-979	1992	20	10	$ 226,018,111
Wildland Fires	Fire	Fire	GP	1987	3	76	$ 18,000,000
Storms	Flood	Storms	DR-758	1986	13	67	$ 407,538,904
April Storms	Flood	Storms	80-01 -80-25	1980			N/A
Northern California Flooding	Flood	Flood	DR-283	1970			$ 27,657,478
Storms	Flood	Storms	DR-253	1969			N/A
Late Winter Storms	Flood	Storms	DR-183	1964			$ 213,149,000
Floods and Rains	Flood	Storms	N/A	1963			N/A
Widespread Fires	Fire	Fire	N/A	1960			$ 3,075,000

***Note:** Emergency & Disaster Proclamations cost of damage is for total event. Event may be spread over multiple jurisdictions.*

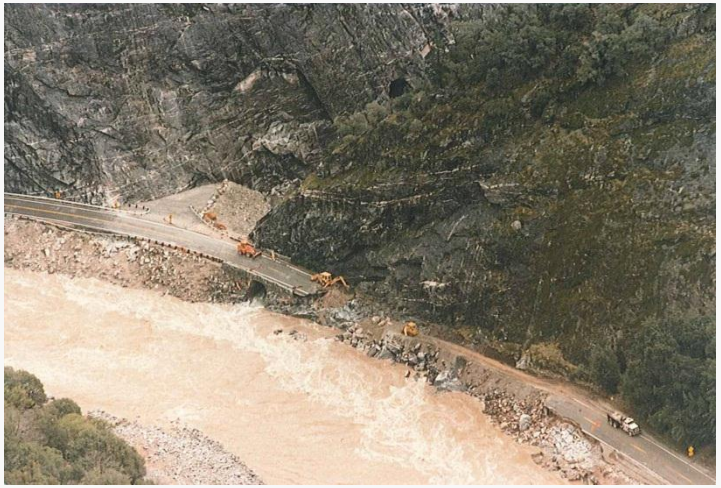
Flood Hazards

- ✓ *Description*
- ✓ *Regulatory Environment*
- ✓ *Previous Occurrences*
- ✓ *Location/Extent*
- ✓ *Magnitude/Severity*
- ✓ *Probability of Future Occurrences*

Flood Hazards

Description

- Riverine and Valley Floor Flooding
- 99% Feather River Watershed
- Starts with very little velocity and slope in upper watershed, flooding issues compound lower elevation valleys.
- Primary Areas Discussed in Flood hazard Profile
  - Sierra Valley
  - Chester
  - Indian Valley
  - American Valley
  - North Fork Feather River



Flood Hazards

Previous Occurrences

- Major Disaster Declarations at the Federal level have occurred 9 times in Plumas County
- State Emergency Disaster Proclamations for flood damage as result of severe storms and heavy rains have been declared 10 times from 1950 to present.
- A total of 11 flood events have received a Federal or State disaster declaration.
- Events of Significant Impact: 1986 and 1997

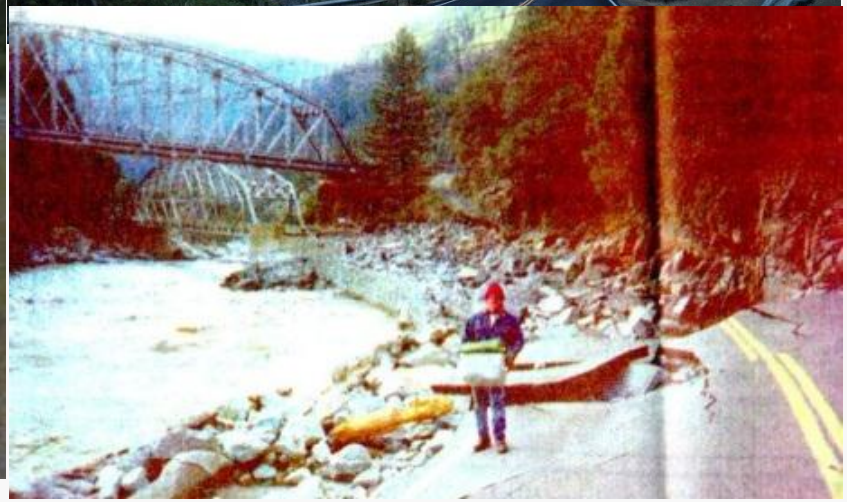
Flood Hazards

Previous Occurrences

Figure 5-6: 1893 flooding in Quincy taken from the old Courthouse roof looking north.

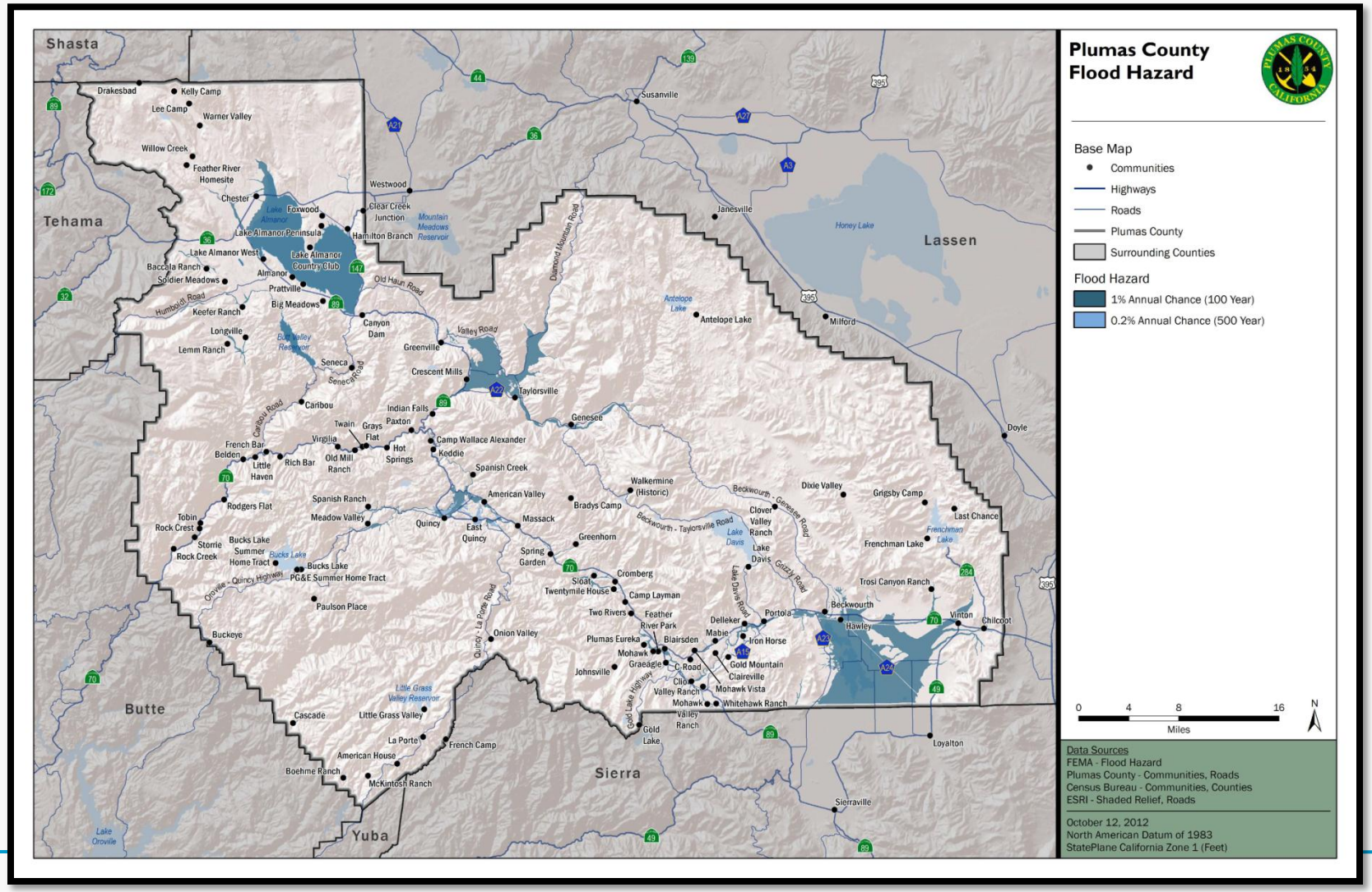
Flood Hazards

Previous Occurrences



Flood Hazards

Location and Geographic Extent



Flood Hazards

The Problem

- Valley Flooding
  - Repetitive Loss Areas in Indian Valley
  - Critical Infrastructure in American Valley (One School, and One Hospital as Risk)
  - Residual Risk beyond Identified FEMA Floodplains.
- Stream channelization and bank erosion
- Drainage Maintenance
- Critical Infrastructure Crossings

Wildfire Hazard

- ☑ *Description*
- ☑ *Regulatory Environment*
- ☑ *Previous Occurrences*
- ☑ *Location/Extent*
- ☑ *Magnitude/Severity*
- ☐ *Probability of Future Occurrences*

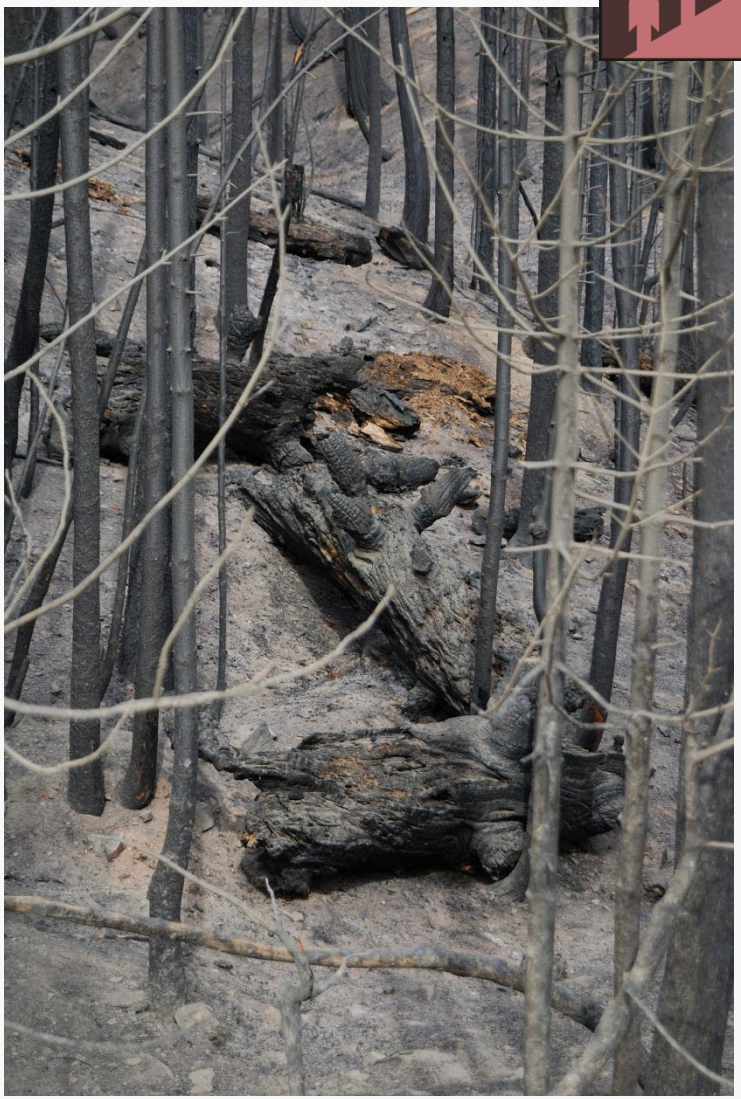
Fire Hazards
Description

- **Wildland fires affect grass, forest, and brushlands, as well as any structures located within them.**
- **Where there is human access to wildland areas, such as large extents of forest land, the risk of fire increases due to a greater chance for human carelessness and historical forest management practices.**
- **With exception to a few low lying meadow valleys such as the Sierra, American, and Indian Valleys, wildfire danger is a predominate feature across the mountainous and fuel rich areas of Plumas County.**

Wildfire Hazards

Previous Occurrences

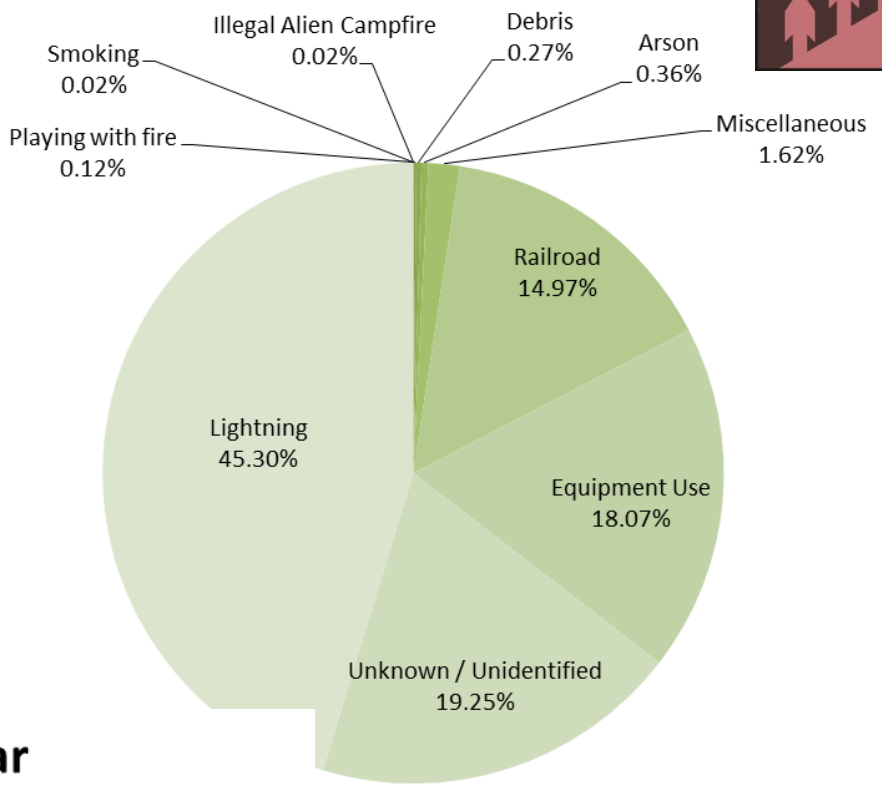
- **In Plumas County there are approximately 170 ignitions per year, with over half being caused by lightning.**
- **Since 1900, 340 significant wildland fire events, 11 had a perimeter greater than 10,000 acres**
- **The majority of fires, 87%, occur from May through September.**
- **Major Disaster Declarations at the Federal level have occurred 4 times in Plumas County.**
- **Events of Significant Impact: Chips, Moonlite, Storrie…..and many more.**

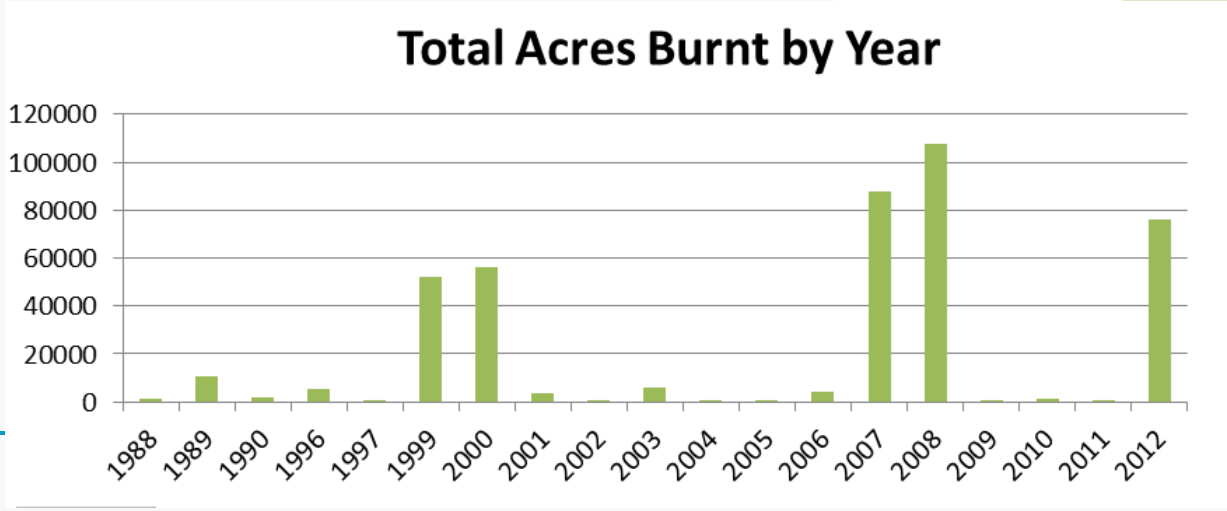


Wildfire

Previous Occurrences

- **2008 worst year on record over a 25 year period. 14 fires totaling more than 100,000 acres**
- **Largest causes of acres burned is Lighting, Unidentified Cause, Equipment Use, and Railroad Related.**





Wildfire Hazards

The Problem

- Regulatory Environment for LRAs
- Local Enforcement / Mitigation Activities
- Access / Egress to Communities
- LE 100 Certified Enforcement Officers
- Funding
  - Mostly all Volunteer Fire Departments
  - Code Enforcement Staff
- Coordinating Hazard Mitigation Activities with other efforts, PCFSC, USF, Cal Fire and PG&E.
- Railroad and Equipment Use in high hazard areas?

Geological Hazard

- ☑ *Description*
- ☑ *Regulatory Environment*
- ☑ *Previous Occurrences*
- ☑ *Location/Extent*
- ☑ *Magnitude/Severity*
- ☐ *Probability of Future Occurrences*

Geologic Hazards
Description

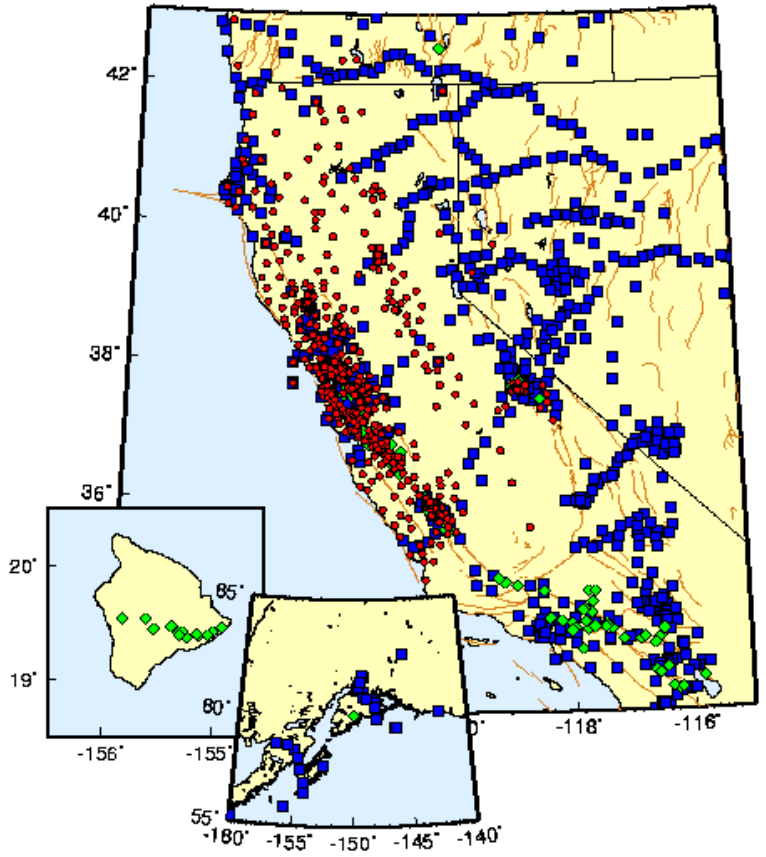
- **Earthquake- refers to the vibration of the Earth's surface caused by movement along a fault, by a volcanic eruption, or even by manmade explosions. The vibration can be violent and cause widespread damage and injury, or may be barely felt.**
- **Most destructive earthquakes are caused by movements along faults.**
- **Slope Failure - A landslide is the movement of soil, rock, or other earth materials, downhill in response to gravity. Landslides include rock falls and topples, debris flows and avalanches, earthflows, mudflows, creep, and lateral spread of rock or soil.**
- **Slope failure can be activated by seismic activity and or precipitation**

Geological Hazards

Previous Occurrences

- **10 Earthquakes > Magnitude 5 in last 140 Years.**
- **2 Active Faults within or near Plumas County**
  - **Fort Sage Fault (Near Honey Lake)**
  - **Indian Valley Fault**

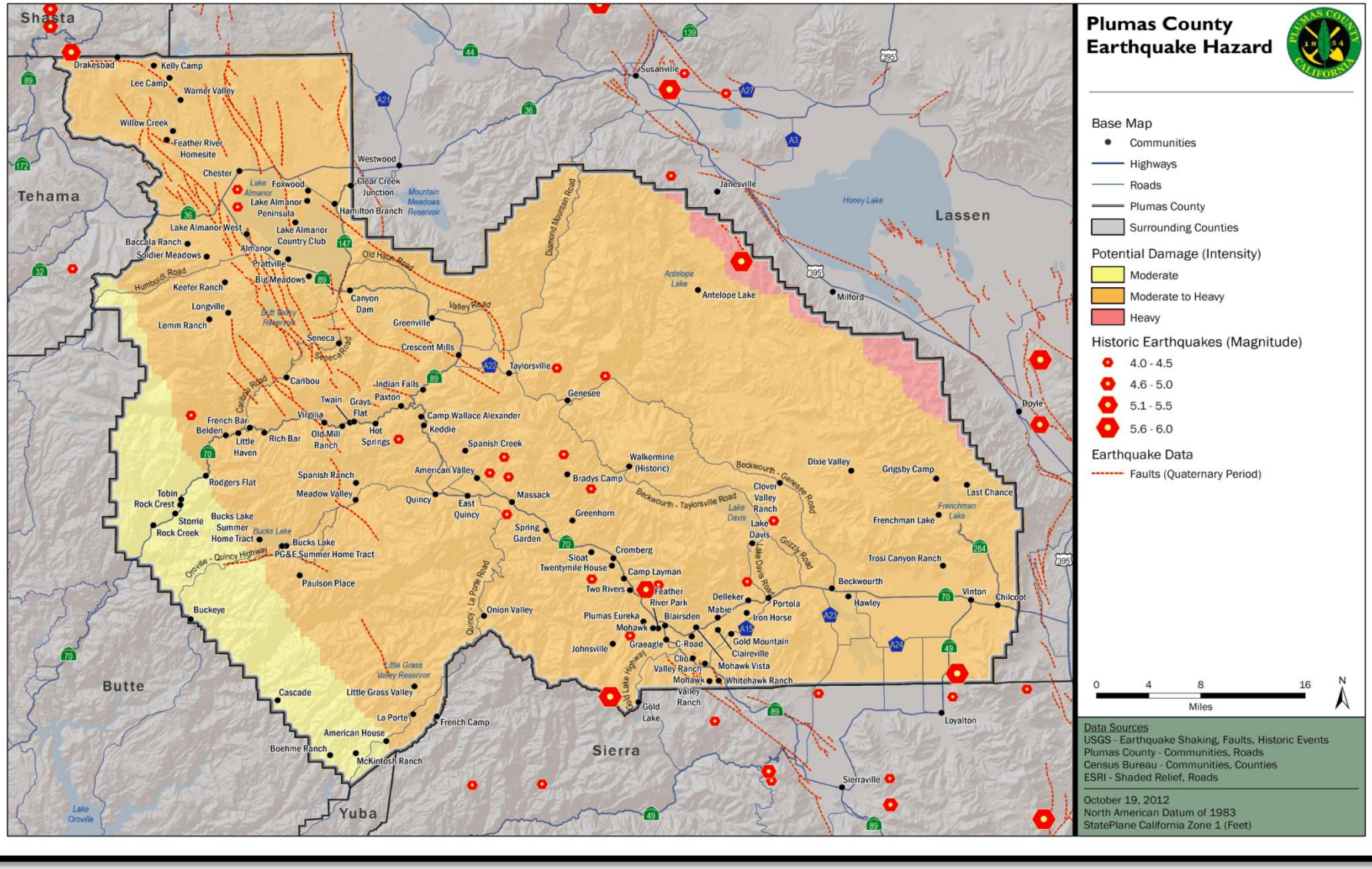
Year	Magnitude	Closest Community	Distance from Community (Miles)
1875	5.8	Antelope Lake	4.0
1885	5.7	Antelope Lake	16.1
1888	5.9	Gold Lake	2.2
1889	5.9	Clear Creek Junction	24.0
1948	6	Chilcoot	17.4
1950	5.5	Drakesbad	3.5
1950	5.6	Last Chance	11.4
1959	5.6	Vinton	5.9
1979	5.2	Last Chance	7.4
2001	5.2	Two Rivers	1.2



Red circles are seismic sites; blue squares are GPS sites (both continuous and campaign)

Geological Hazards

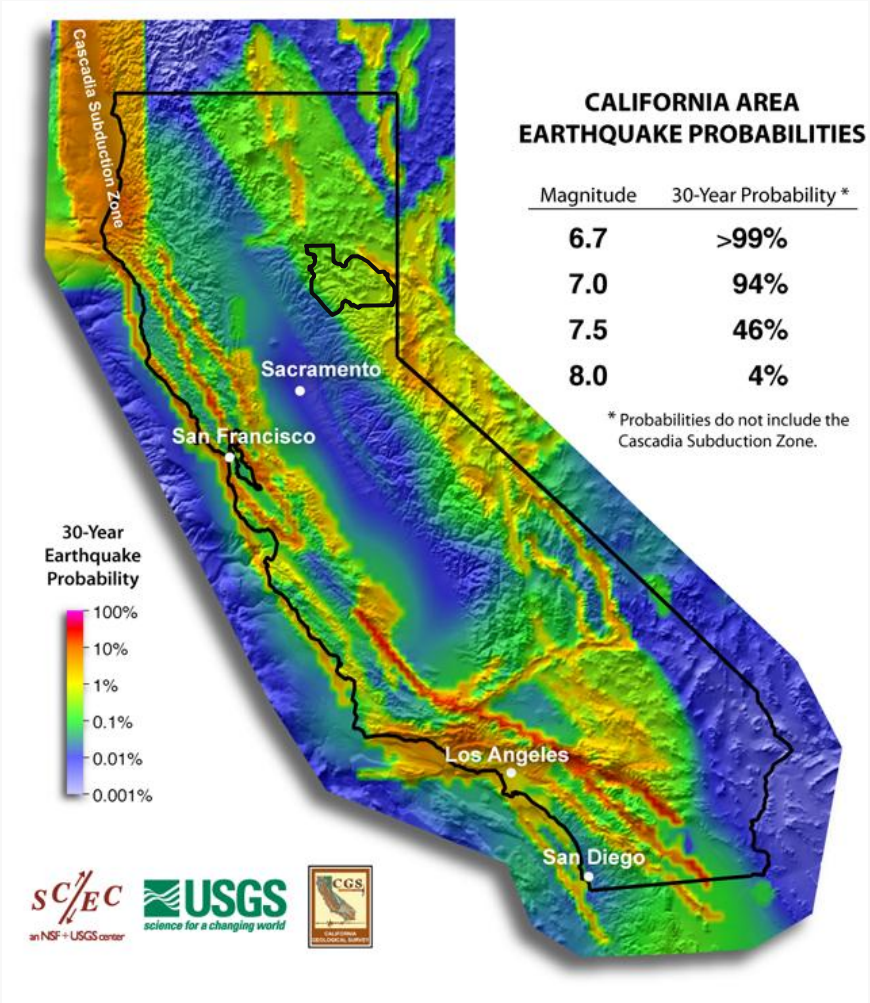
Location and Geographic Extent



Geological Hazards

Probability of Future Occurrences

- **According to the new forecast, California has a 99.7% chance of having a magnitude 6.7 or larger earthquake during the next 30 years. The likelihood of an even more powerful quake of magnitude 7.5 or greater in the next 30 years is 46%. Such a quake is more likely to occur in the southern half of the state (37% chance in 30 years) than in the northern half (15% chance in 30 years).**
- **Most of Plumas county has a .1 % -1% chance of having a earthquake greater than 6.7 Magnitude over the next 30 Years.**



Geological Hazards

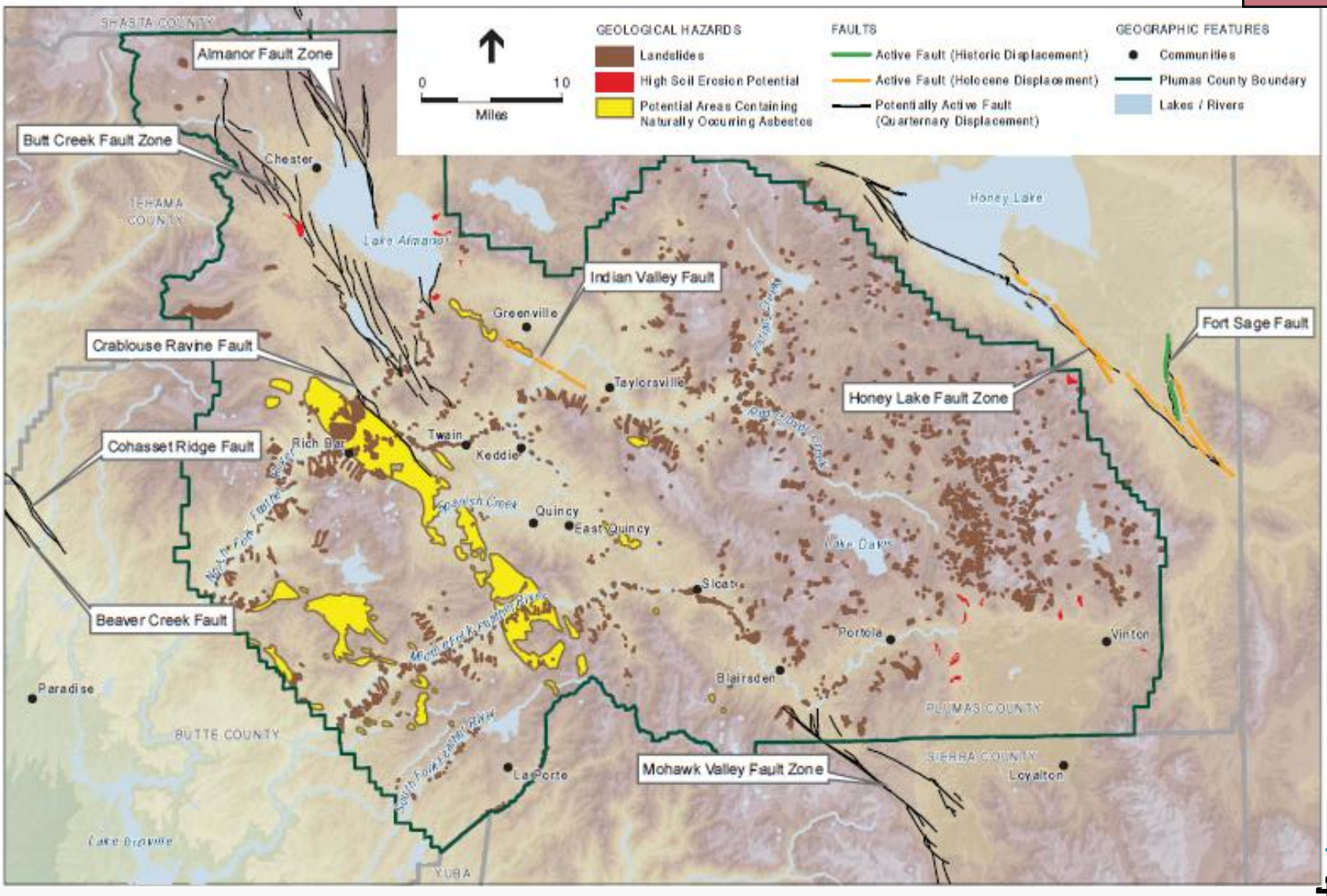
Previous Occurrences

Landslide and Rock Falls

Year	Type	Damage	Injury or Death	Area
2006	Rockslide	State Route 70	No	1.5 miles west of Pulga
2007	Rock Fall	Rail Cars and Environment	No	MP 251 on State Highway 70, between Tobin and Rock Creek
2007	Rock Fall	Rail Cars and Environment	No	Storrie Resort on the Feather River
2009	Rock Slide	State Route 70	Yes	Rich Bar
2010	Landslide	USFS Road (Scales Road)	No	Scales Road
2010	Rockslide	State Route 70	No	Between Greenville Way and Elephant Butte Tunnel
2012	Avalanche	N/A	No	Sloat
2013	Rock Fall	BNSF Locomotive damage	No	Between Rich Bar and Twain on the Feather River
Present	Slope Erosion	To Co Hwy A14	No	Johnsville

Geological Hazards

Location and Geographic Extent



Geological Hazards

The Problem

- Unknown location of hazard
- Hazard is spread across entire county
- Compounded Hazard Risk
  - Lanslides can be activated by seismic activity
  - Wildfire can cause higher risk of landslides, mudslides and or debris flows.
- Transportation Infrastructure at Risk
  - Highway 70
  - Rail Road
- Human development can exacerbate speed of erosion

Severe Weather

- ***Description***
- ***Regulatory Environment***
- ***Previous Occurrences***
- ***Location/Extent***
- ***Magnitude/Severity***
- ***Probability of Future Occurrences***

Severe Weather Hazard
Description

- **Severe weather can be defined as any destructive weather event that has the potential to damage property or cause loss of life.**
- **Severe summer weather usually occurs as localized storms that bring heavy rain, lightning, strong winds, and microbursts.**
- **A severe winter storm in Plumas County would typically result in heavy snowfall or hail.**
- **Divided into two subsections:**
  - **Summer**
  - **Winter**


2002 Special News Supplement Bulletin, Progressive, Record, Reporter

Photo by Victoria Metcalf

Photo by Kevin Mallory

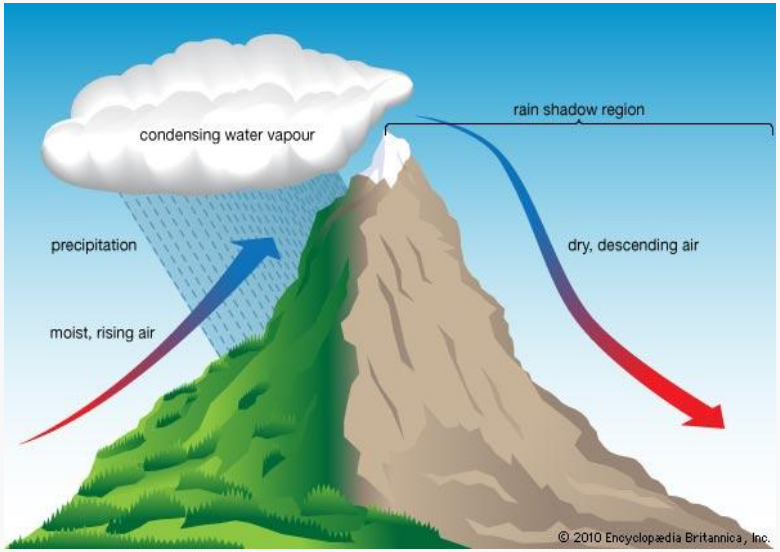
The utility room of the Lariat Lodge was knocked out when this tree hit. Losing the "brains" of the motel forced its closure.

Photo by Kevin Mallory

Severe Weather Hazard

Previous Occurrences

- **Since 1964, nine federally or state declared severe weather events have occurred in Plumas County**
- **According to FEMA Declarations and Cal EMA Emergency and Disaster Proclamations (November 1964 to present), these events include: severe winter and summer storms causing.. flooding, landslides, and heavy rain.**
- **Important to understand perception and orographic lift to understand severe storms and weather patterns in Sierras and Plumas County.**
- **According to National Climatic Data Center (NCDC) i.e. Weather Watchers in Plumas County has six documented extreme individual events recorded since 2006. Extreme Hail, wind etc…**



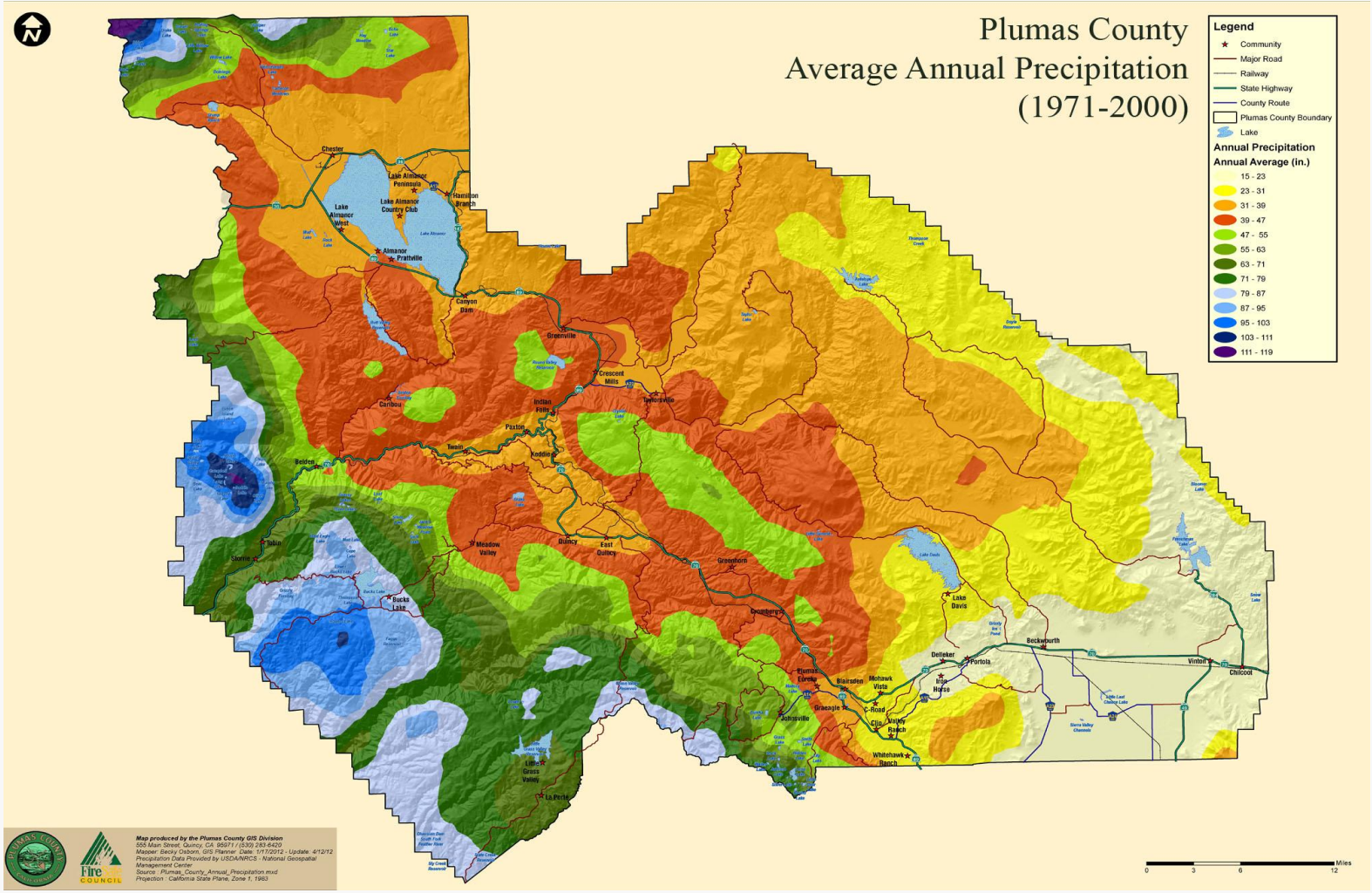
Severe Storms

Documented Occurrences

Past Disasters in Plumas County							
Disaster Number	Declaration Date	Disaster Type	Incident Type	Explanation	Deaths	Injuries	Cost*
Federal and State Declarations							
183	12/24/1964	DR	Severe Storm(s)	HEAVY RAINS & FLOODING			$213,149,000
253	1/26/1969	DR	Severe Storm(s)	SEVERE STORMS & FLOODING			Unknown
283	2/16/1970	DR	Severe Storm(s)	SEVERE STORMS & FLOODING			
758	2/21/1986	DR	Severe Storm(s)	SEVERE STORMS & FLOODING	13	67	$407,538,904
979	2/3/1993	DR	Severe Storm(s)	SEVERE WINTER STORM, MUD & LAND SLIDES, & FLOODING	20	10	$226,018,111
1044	1/10/1995	DR	Severe Storm(s)	SEVERE WINTER STORMS, FLOODING, LANDSLIDES, MUD FLOWS	11		$221,948,347
1046	3/12/1995	DR	Severe Storm(s)	SEVERE WINTER STORMS, FLOODING LANDSLIDES, MUD FLOW			Unknown
1155	1/4/1997	DR	Severe Storm(s)	SEVERE STORMS, FLOODING, MUD AND LANDSLIDES	8		$194,352,509
1628	2/3/2006	DR	Severe Storm(s)	SEVERE STORMS, FLOODING, MUDSLIDES, AND LANDSLIDES			$128,964,501

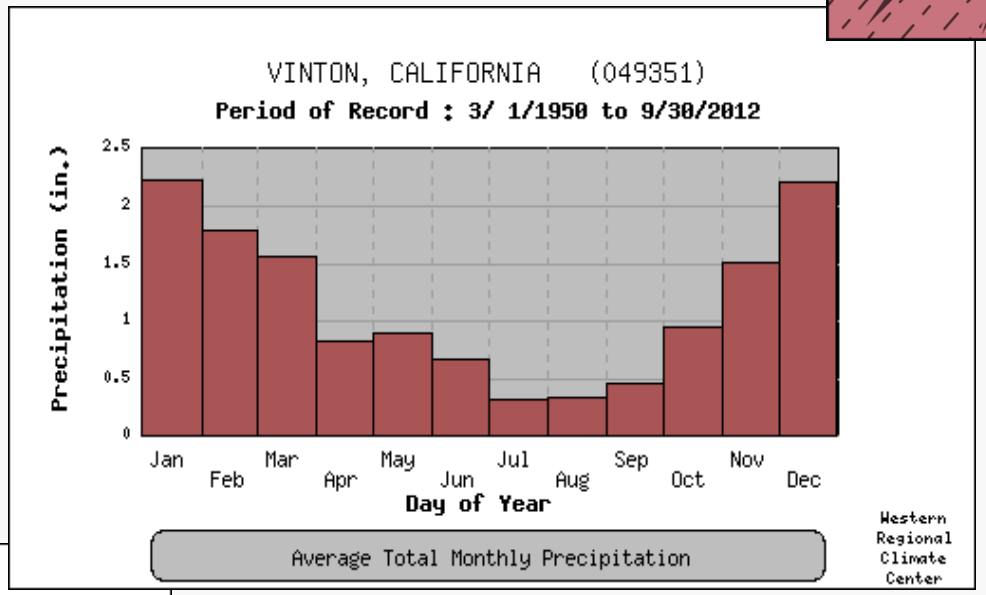
Severe Weather Hazard

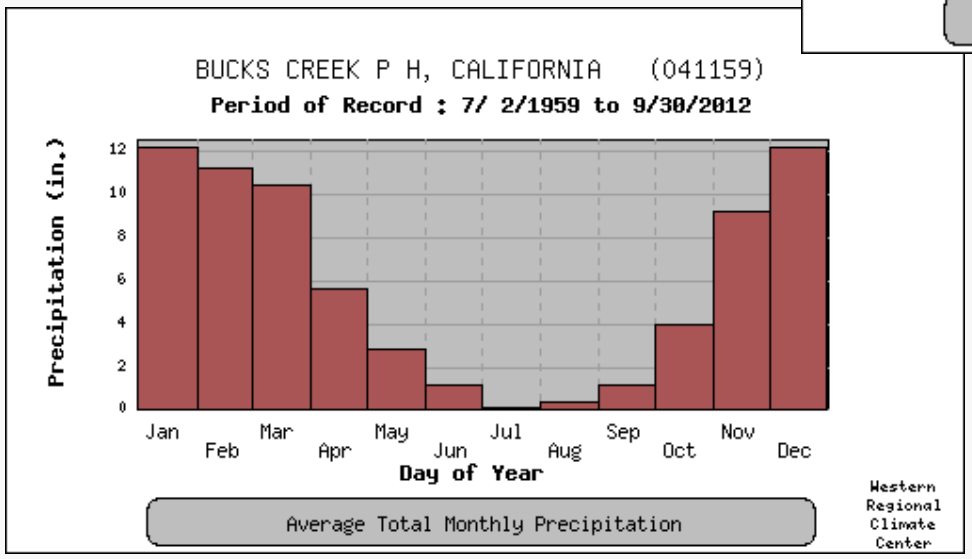
Location and Extent



Severe Weather Hazard

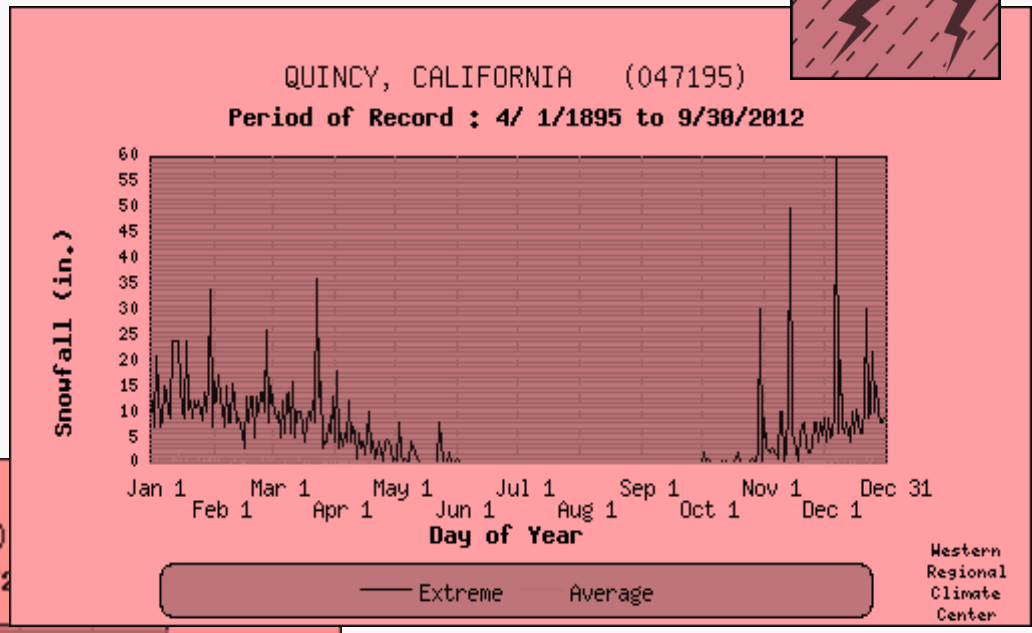
Location and Extent

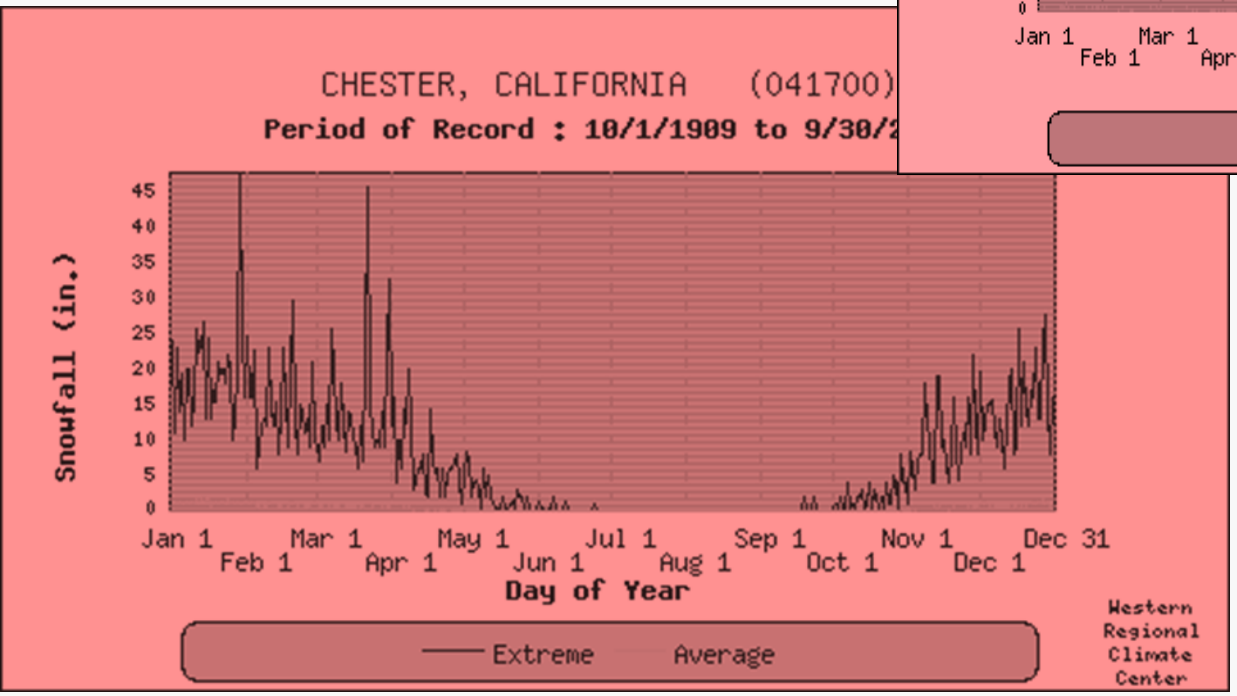




Severe Weather Hazard

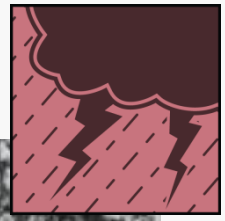
Location and Extent





Severe Weather Hazards

The Problem



- Very little mitigation against large weather patterns that will overwhelm resources and infrastructure within hours.
- Short periods of extreme events.
- Long Periods of Winter Rains / Snow
- Secondary Hazards:
  - Landslides
  - Debris
  - Flash Flood
  - Lighting Strikes
  - Snow Load
- Power Outages

Dam Failure

- ✓ *Description*
- ✓ *Regulatory Environment*
- ✓ *Previous Occurrences*
- ✓ *Location/Extent*
- ✓ *Magnitude/Severity*
- ✓ *Probability of Future Occurrences*

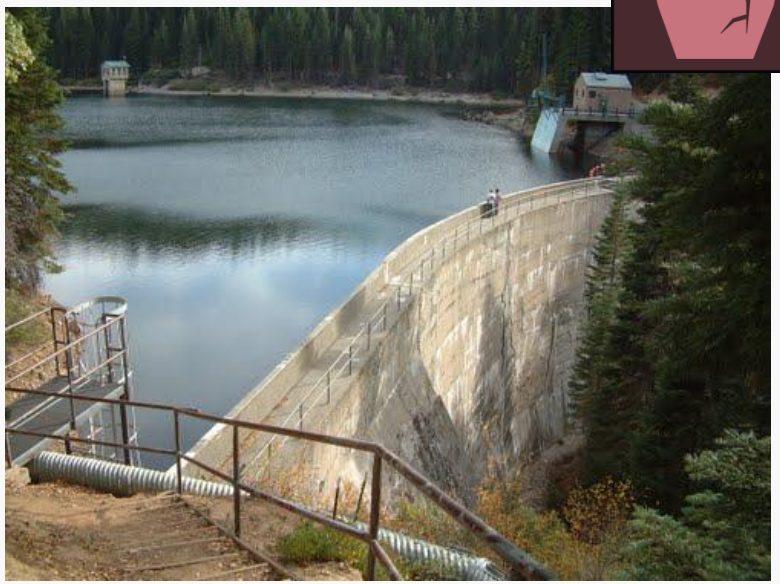
Dam Failure Hazards

Description

- **A dam failure is usually the result of neglect, poor design, and/or structural damage caused by a major event such as an earthquake. When a dam failure occurs, an enormous quantity of water is suddenly released, destroying infrastructure and flooding the area downstream of the dam.**
- **State of California (Cal EMA) passed a law requiring dam owners to develop maps depicting areas that might be inundated due to dam failure.**
- **Cal EMA approves the dam inundation maps and distributes them to local governmental agencies, who in turn adopt emergency procedures for the evacuation and control of areas in the event of a dam failure.**
- **This law requires that each map be produced only once, without any requirements for updating.**

Dam Failure Hazards

Hazard Definition

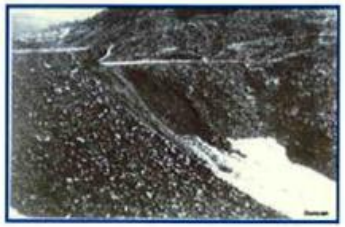


- **The USACE maintains the National Inventory of Dams (NID), Dams included in the NID are either greater than 25 feet high, hold more than 50 acre-feet of water, or are considered a significant hazard if they were to fail. Dams are classified based on the severity or magnitude of the potential devastation and losses of human life, economic, and environmental resources. Dam hazard classifications are defined as follows:**
- **High Hazard - loss of one human life is likely if a dam failure should occur.**
- **Significant Hazard - possible loss of human life and likely significant property or environmental destruction if a dam failure should occur.**
- **Low Hazard - no probable loss of human life and low economic, and/or environmental losses if a dam failure should occur.**

Dam Failure Hazard
Previous Occurrences

- **Dam failure has never occurred in Plumas County.**
- **There have been 4 dam failures in surrounding counties, and 11 dam failures in California.**
- **Dam failure occurred in Placer County on the Lower Hell Hole Dam on December 22, 1964**
- **The 30,000 acre foot flood from the dam failure destroyed two suspension bridges and one steel girder State Highway bridge.**
- **Lava Cap Mine tailings dam failed near Nevada City, California in the winter of 1997. The failure was caused by a rotted log in the dam which released 10,000 cubic yards of arsenic-tainted tailings into Little Clipper Creek and Lost Lake.**

This photo shows the water emerging from the toe of the downstream rockfill shell at 3 PM on December 22, 1964. Some rock has been eroded.



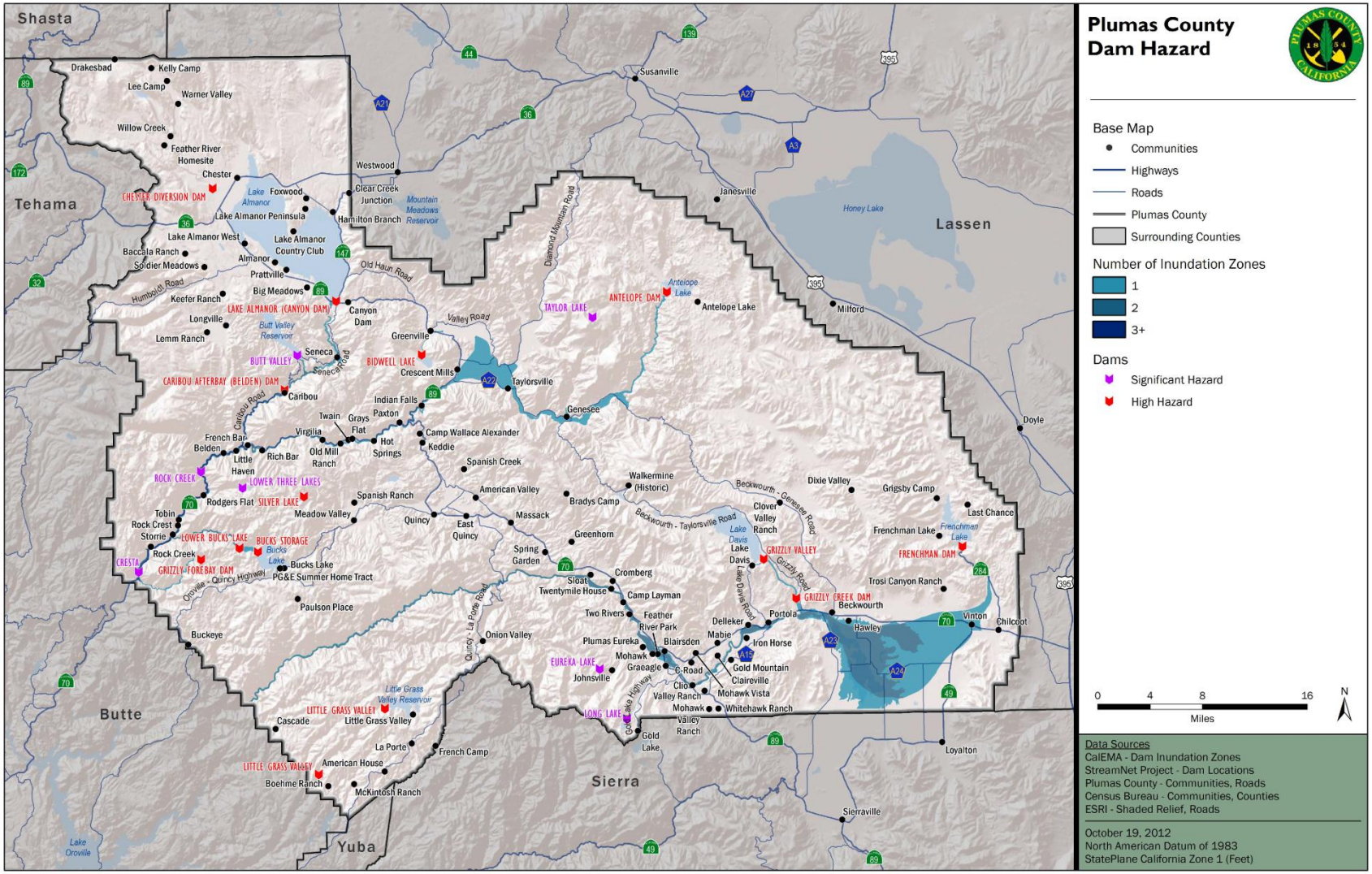
By 7 AM on December 23rd, the flow had increased as the reservoir rose behind the dam, and a considerable portion of the downstream slope had been eroded away.

At 9:30 AM on December 23rd, a gully had been eroded across the crest of the dam, and the reservoir began to spill over the top of the fill. When this happened the velocity of flow and the rate of erosion increased rapidly, and soon a major portion of the embankment was washed away and the reservoir was emptied.

At 3:30 PM on December 23rd, there was a gaping hole in the dam, and very little water in the reservoir.

Dam Failure Hazard

Location and Geographic Extent



Dam Failure Hazard

Location and Extent

- **50 Dams in Plumas County**
- **13 High Hazard Dams**
- **10 Significant Hazard**

Owner	Count of High Hazard Dams
Reclamation Board Sacramento – San Joaquin	1
(blank)	1
Soper Wheeler Co	1
Oroville-Wyandotte Irrigation District	1
State Department of Water Resources	1
Private landowner(s)	2
California Department of Water Resources	2
PG&E	4
Grand Total	**13**

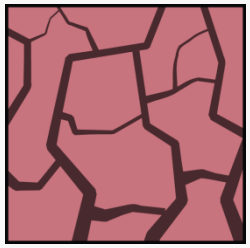
High Hazard Dam Ownership
California Department of Water Resources
Antelope
Frenchman
Oroville-Wyandotte Irrigation District
Little Grass Valley
PG&E
Bucks Storage
Canyon
Grizzly Forebay
Lower Bucks Lake
Private landowner(s)
Bidwell Lake
Grizzly Creek
Reclamation Board Sacramento – San Joaquin
Chester Diversion
Soper Wheeler Co
Silver Lake
State Department of Water Resources
Grizzly Valley
Unknown Owner
Caribou Afterbay (Belden)

Dam Failure Hazard

The Problem

- Multiple Owners of Dams
- Dam Inundation Zones Information Distribution and Quality
- Emergency Action Plans responsibility of Cal EMA and DsoD
- County does not have jurisdictional authority for Dam Safety
- Communication of Hazard
- Warning Times for Sunny Day Event
- Maintenance on older dams

Bucks Storage

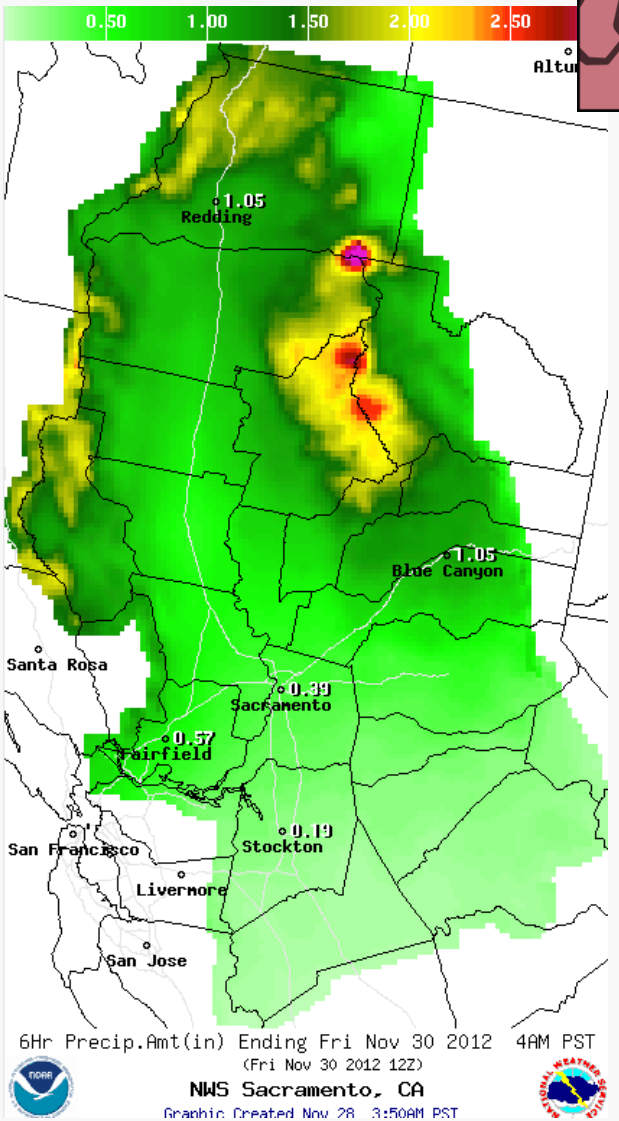


Drought

- ✓ *Description*
- ✓ *Regulatory Environment*
- ✓ *Previous Occurrences*
- ✓ *Location/Extent*
- ✓ *Magnitude/Severity*
- ✓ *Probability of Future Occurrences*

Drought Hazard
Description

- **Drought is a complex natural hazard, which is reflected in the following four definitions commonly used to describe it:**
- **Agricultural – drought is defined principally in terms of naturally occurring soil moisture deficiencies relative to water demands of plant life, usually arid crops.**
- **Hydrological – drought is related to the effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.**
- **Meteorological –expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.**
- **Socioeconomic – occurs when the demand for water exceeds the supply as a result of weather-related supply shortfall.**



Drought Hazard
Previous Occurrences

- **The 2010 State Hazard Mitigation Plan (SHMP) states that from 1950 to 2009, there have been 8 drought State Emergency Proclamations in California.**
- **Through 2007, Cal EMA's administered costs due to drought total $2,686,858,480.**
- **Specifically for Plumas County, there have been five drought incidences since 1972, however none of the incidences were considered a state or federally declared drought disaster.**
- **County rarely experiences long periods of extremely low precipitation due to its geographic location in the Sierra Nevada region.**

Photo by: Shannon Morrow

Drought Hazard
Previous Occurrences

- **Several resources available to evaluate drought status and estimate future expected conditions**
  - **National Integrated Drought Information System (NIDIS)**
  - **NIDIS maintains the U.S. Drought Portal (www.drought.gov)**
  - **Resources include the U.S. Drought Monitor (USDM)**
  - **U.S. Seasonal Drought Outlook (USSDO)**

Photo By: Tim Gavin

Drought Hazard

Location and Geographic Extent

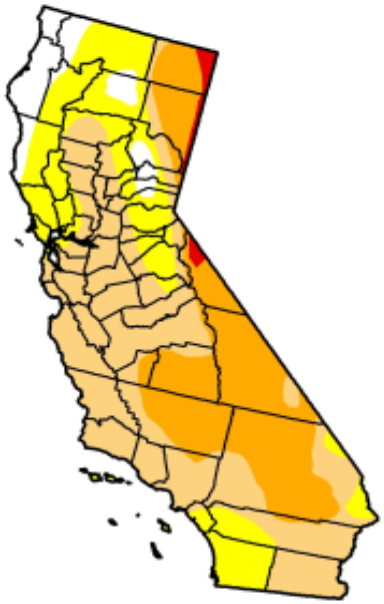
U.S. Drought Monitor

November 27, 2012
Valid 7 a.m. EST

California

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	6.77	93.23	70.47	28.16	1.14	0.00
Last Week (11/20/2012 map)	4.82	95.18	67.67	21.61	1.14	0.00
3 Months Ago (08/28/2012 map)	11.74	88.26	69.44	23.05	1.14	0.00
Start of Calendar Year (12/27/2011 map)	33.91	66.09	5.41	0.00	0.00	0.00
Start of Water Year (09/25/2012 map)	11.95	88.05	69.41	22.27	1.14	0.00
One Year Ago (11/22/2011 map)	88.42	11.58	0.00	0.00	0.00	0.00



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://droughtmonitor.unl.edu

USDA National Drought Mitigation Center

Released Thursday, November 29, 2012
National Drought Mitigation Center,

Drought Hazard

Location and Geographic Extent

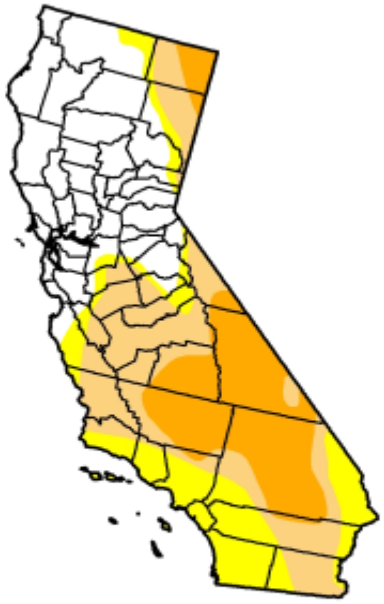
U.S. Drought Monitor

February 5, 2013
Valid 7 a.m. EST

California

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	34.20	65.80	47.18	21.57	0.00	0.00
Last Week (01/29/2013 map)	34.20	65.80	47.18	21.57	0.00	0.00
3 Months Ago (11/06/2012 map)	7.19	92.81	67.75	19.10	1.14	0.00
Start of Calendar Year (01/01/2013 map)	31.75	68.25	55.32	22.50	0.00	0.00
Start of Water Year (09/25/2012 map)	11.95	88.05	69.41	22.27	1.14	0.00
One Year Ago (01/31/2012 map)	11.09	88.91	57.33	0.00	0.00	0.00



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

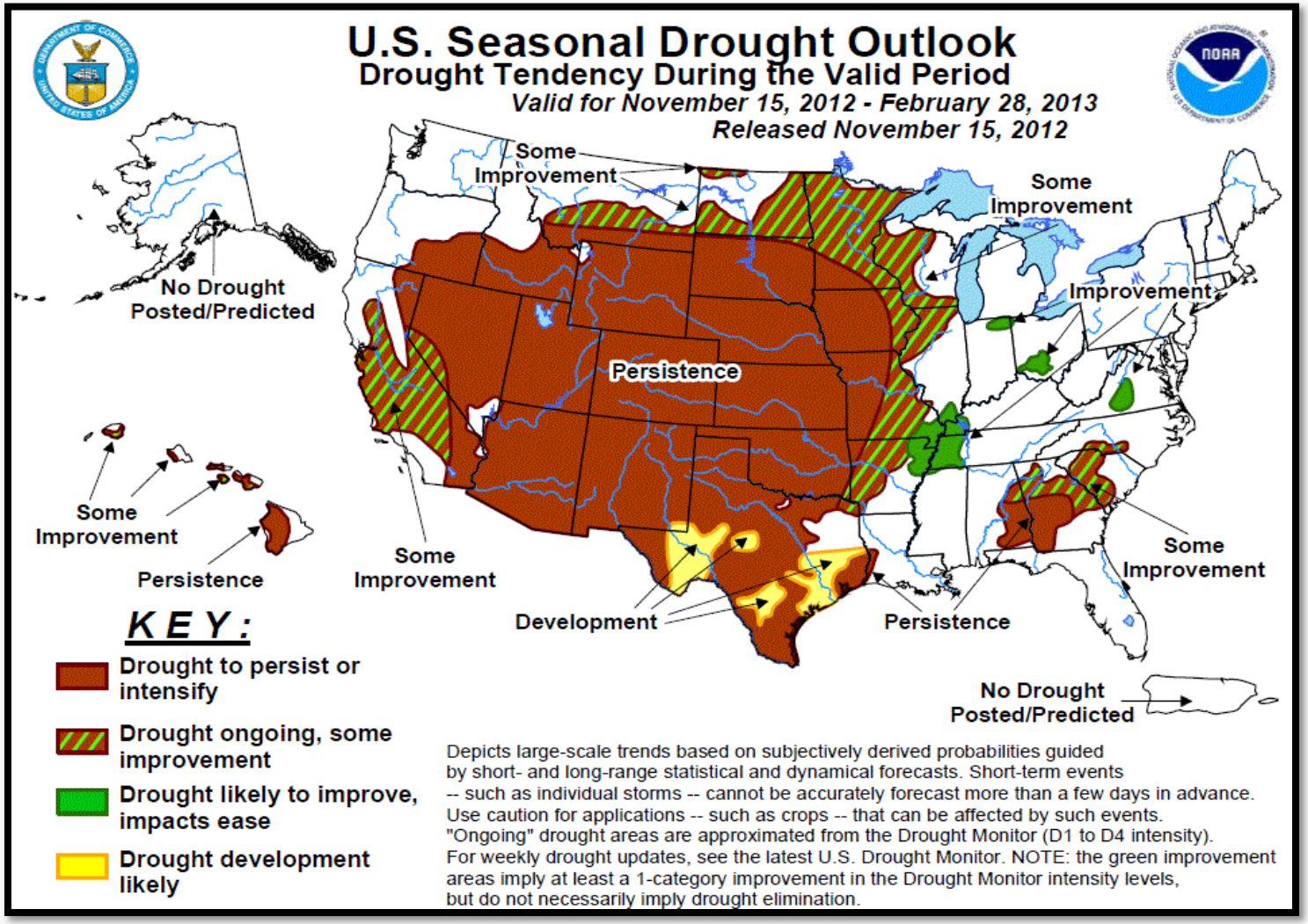
http://droughtmonitor.unl.edu

USDA National Drought Mitigation Center

Released Thursday, February 7, 2013
Michael Brewer, National Climatic Data Center, NOAA

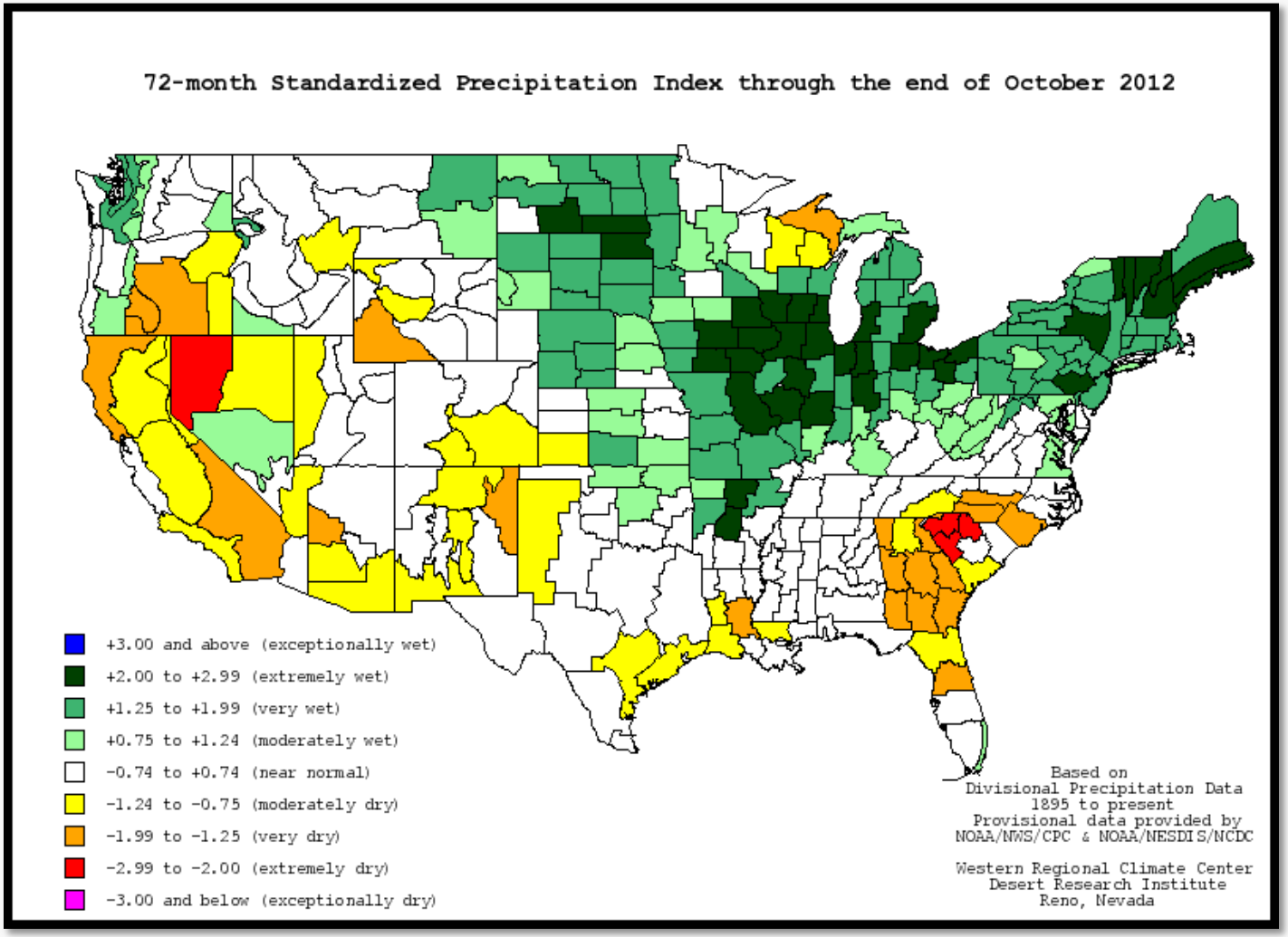
Drought Hazard

Location and Geographic Extent



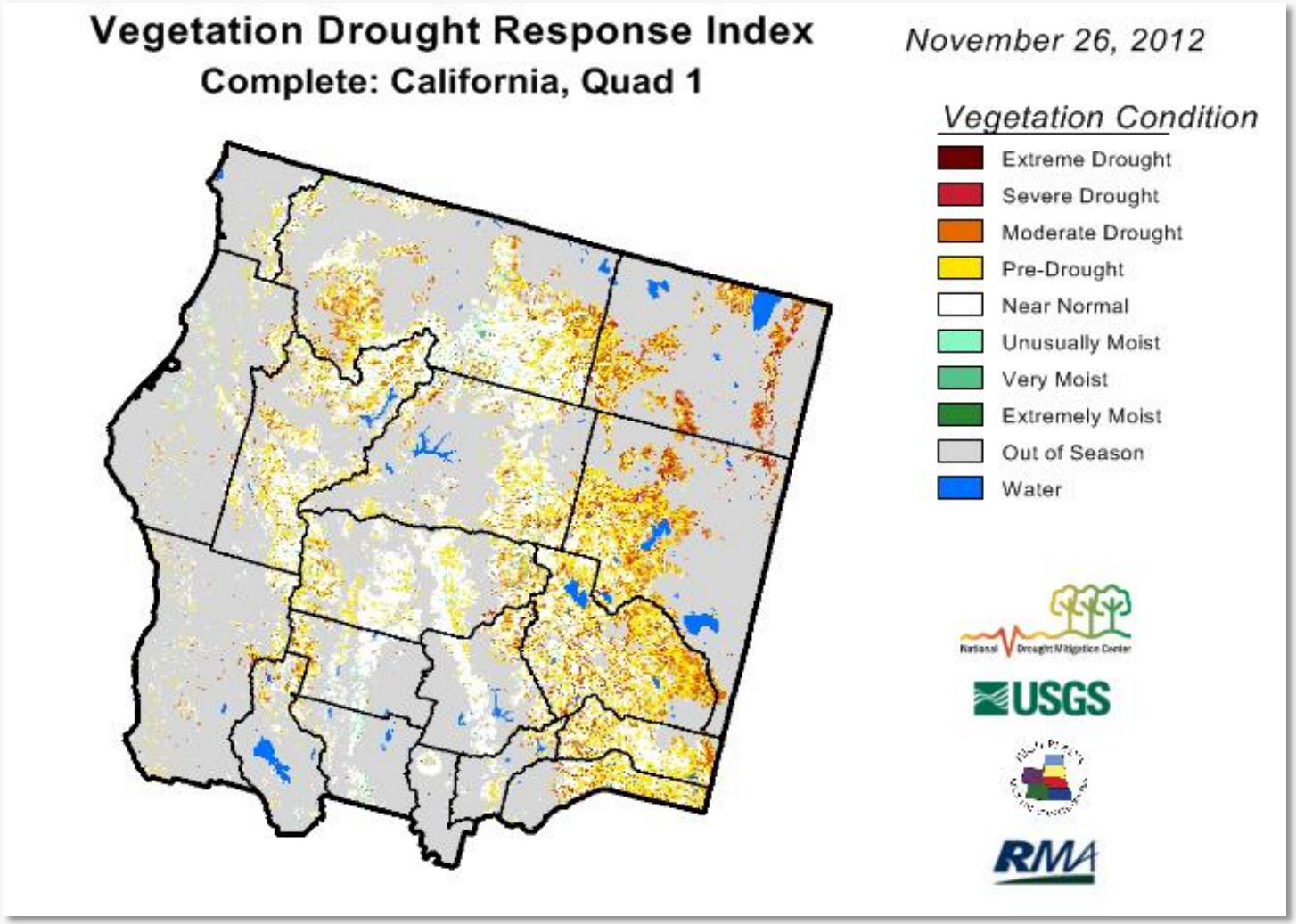
Drought Hazard

Location and Geographic Extent



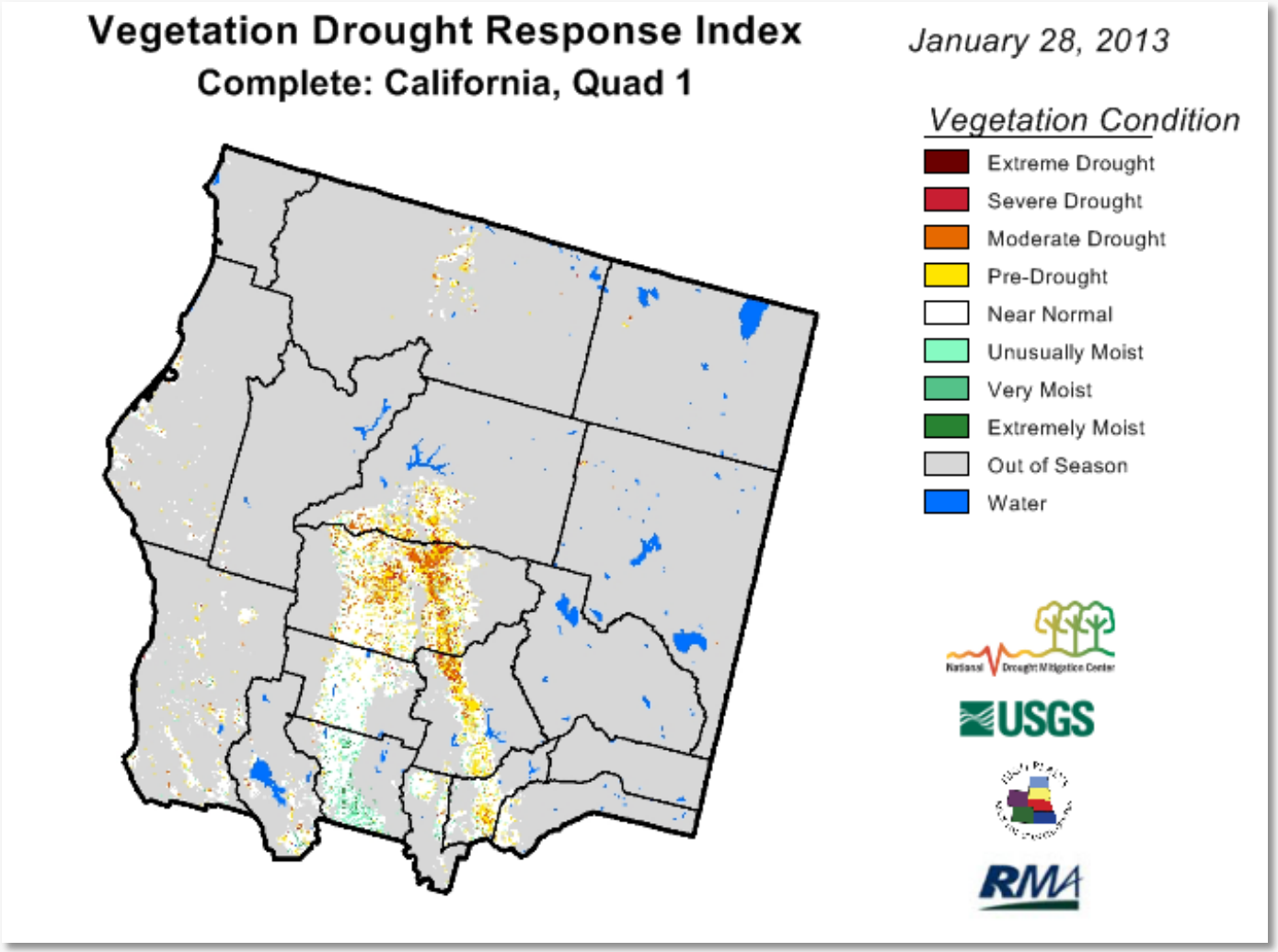
Drought Hazard

Location and Geographic Extent



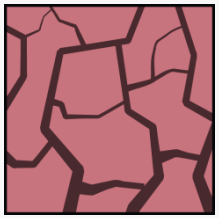
Drought Hazard

Location and Geographic Extent



Drought Hazard

The Problem



- **Poor retention of precipitation and depletion of deep groundwater systems as a result of continued extraction and reduced recharge during dry periods.**
- **Loss of water tables and depletion of shallow aquifers is a typical consequence of head cutting (not all drought related) throughout the watershed.**
- **Groundwater depletion high valley deserts such as Sierra Valley indicator of local drought.**
- **Agricultural Loss?**

Photo By: Marcel Holyoak

Climate Change

- ✓ *Description*
- ✓ *Regulatory Environment*
- ✓ *Previous Occurrences*
- ✓ *Location/Extent*
- ✓ *Magnitude/Severity*
- ✓ *Probability of Future Occurrences*

Climate Change Hazard
Description

- **Climate change refers to any distinct change in measures of climate lasting for a long period of time, more specifically major changes in temperature, rainfall, snow, or wind patterns. Climate change may be limited to a specific region or may occur across the whole Earth. Climate change may result from:**
  - **Natural factors (e.g., changes in the Sun's energy or slow changes in the Earth's orbit around the Sun);**
  - **Natural processes within the climate system (e.g., changes in ocean circulation); and**
  - **Human activities that change the atmosphere's make-up (e.g., burning fossil fuels) and the land surface (e.g., cutting down forests, planting trees, building developments in cities and suburbs).**

Climate Change Hazard

Previous Occurrences

- **Climate change has never been directly responsible for any declared disasters.**
- **Past flooding, wildfire, and drought disasters may have been exacerbated by climate change, but it is impossible to make direct connections to individual events.**
- **Unlike earthquakes and floods that occur over a finite time period climate change is an on-going hazard, the effects of which are already being experienced.**
- **Other effects may not be apparent for decades or may be avoided altogether by mitigation actions taken today.**

Climate Change Hazard

Location and Geographic Extent

- **It is expected that California coastal areas will be vulnerable to different hazards (e.g. sea level rise or more severe tropical storms) than inland areas, which will experience increased wildfire, drought, flooding from precipitation events, or other.**
- **The Feather River watershed can be at risk due to winter temperature lows which are typically at or near freezing. Small warming trends (1-2 degrees F) can cause precipitation to shift from snow to rain which will decrease snow pack and exacerbate drought conditions in summer, creating the conditions for increased wildfires.**
- **These observed trends could also increase flooding as more rainfall will contribute to larger runoff rates.**

Climate Change Hazard

The Problem

- **Increased Precipitation in during winter rainy season.**
- **Increased wildfire risk due to decreased snowpack**
- **Changes in variability and the frequency/severity of hazard events.**
- **Other natural disaster such as drought, severe weather, flood, and wildfire occurrence intervals can change.**
- **Probability of occurrence is influenced by human action?**
- **Intergovernmental Panel on Climate Change (IPCC) predicts a warming of about 0.2 degree Celsius per decade**

The Problem

Hazard	Weaknesses Identified/Needing to be Addressed
Multi-Hazard	▪ Agency Coordination for mitigation planning ▪ Incorporation of mitigation planning into other County planning activities (general plan, natural resource management/preservation) ▪ Maintenance of technical skills, databases, and systems related to hazard mitigation planning
Flood	▪ Repetitive Loss Areas in Indian Valley ▪ Critical Infrastructure in American Valley (One School, and One Hospital as Risk) ▪ Residual Risk beyond Identified FEMA Floodplains ▪ Feather River Canyon wash-outs. (Cal Trans Problem)
Wildfire	▪ Code Enforcement ▪ Maintenance of and access to High Hazard Areas ▪ Property maintenance ▪ Funding
Geo Hazards	▪ Unknown location of hazard ▪ Hazard is spread across entire county ▪ Compounded Hazard Risk ▪ Landslides can be activated by seismic activity ▪ Wildfire can cause higher risk of landslides or mudslides ▪ Transportation Infrastructure at Risk ▪ Highway 70 ▪ Rail Road ▪ Human development can exacerbate speed of erosion

The Problem

Hazard	Weaknesses Identified/Needing to be Addressed
Severe Weather	▪ Short periods of extreme events. ▪ Long Periods of Winter Rains ▪ Secondary Hazards: Landslides, Storm Debris, Flash Flood, Lighting Strike, Snow Load ▪ Power Outages
Drought	▪ Poor retention of precipitation and depletion of deep groundwater systems as a result of continued extraction and reduced recharge during dry periods. ▪ Loss of water tables and depletion of shallow aquifers is a typical consequence of head cutting (not all drought related) throughout the watershed. ▪ Groundwater depletion high valley deserts such as Sierra Valley indicator of local drought.
Dam Failure	▪ Multiple Owners of Dams ▪ Dam Inundation Zones Information Distribution and Quality ▪ Emergency Action Plans responsibility of Cal EMA and DsoD ▪ County does not have jurisdictional authority for Dam Safety ▪ Communication of Hazard ▪ Warning Times for Sunny Day Event ▪ Maintenance on older dams
Climate Change	▪ Increased Precipitation in during winter rainy season. ▪ Increased wildfire risk due to decreased snowpack ▪ Changes in variability and the frequency/severity of hazard events. ▪ Other natural disaster such as drought, severe weather, flood, and wildfire occurrence intervals can change. ▪ Probability of occurrence is influenced by human action. ▪ Intergovernmental Panel on Climate Change (IPCC) predicts a warming of about 0.2 degree Celsius per decade

Questions?

Session Break

Part II

- Hazard Risk Factor Matrix
- Establish priority and focus resources
- Establish, refine and edit the Goals and Objectives
- Next Steps and Wrap Up

Existing HMP Overview

Section Two: Goals and Objectives

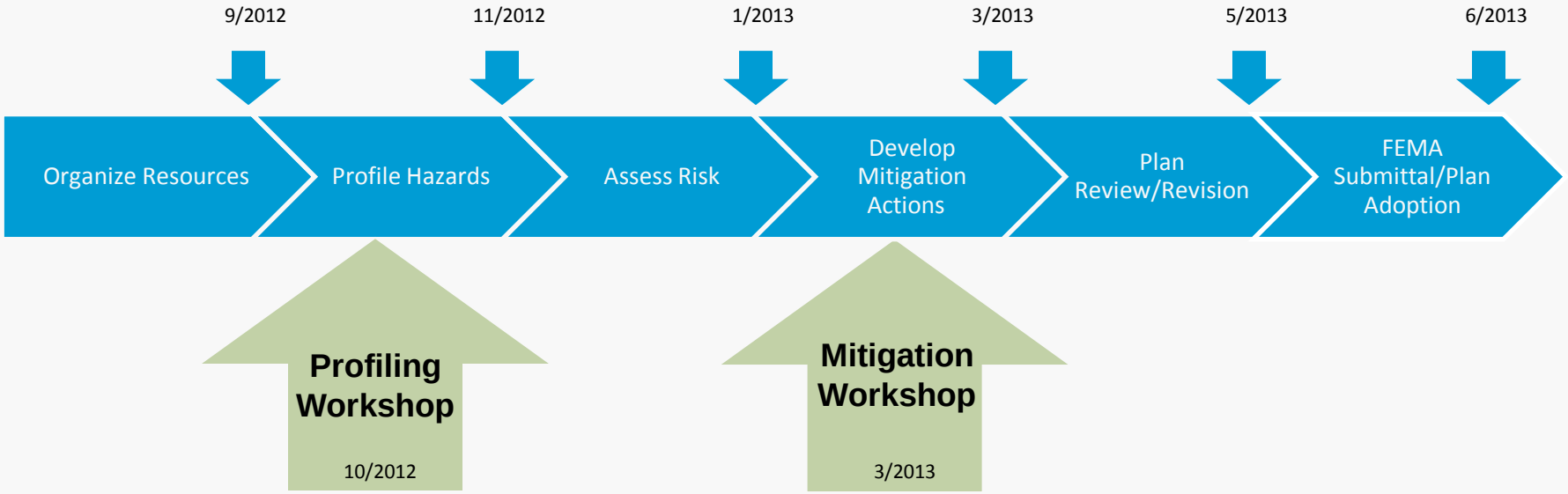
- **Goal 1. The County will strive to minimize the threat from a hazard event in order to protect the health, safety and welfare of the county's residents and visitors.**
- **Goal 2. The County Government will strive to have the capability to initiate and sustain emergency response operations during and after a hazard event.**
- **Goal 3. The availability and functioning of the community's infrastructure will not be significantly disrupted by a hazard event.**
- **Goal 4. The County will strive to educate the members of the communities to understand the hazards threatening local areas and the techniques to minimize vulnerability to those hazards.**
- **Goal 5. The continuity of local government administration and services will not be significantly disrupted by a hazard event.**

MHMP Update

Section Two: Goals and Objectives

- **Goal 6. Local government will have the capability to develop, implement and maintain effective hazard loss reduction programs.**
- **Goal 7. The County will strive to minimize the vulnerability of homes, institutions and places of business and employment to hazard events.**
- **Goal 8. The policies and regulations of local government will support effective hazard mitigation programming throughout the County.**
- **Goal 9. The County will strive to reduce the impact of a hazard event on the economic stability of the County.**
- **Goal 10. All sectors of the communities will work together to create a disaster resistant region.**
- **Goal 11. The County will strive to reduce the impact of a hazard event on the natural and cultural resources of the County in order to protect the quality of life.**

Project Timeline



Thank You for Your Participation

Check out the Project website:
http://www.countyofplumas.com/index.aspx?NID=2214

Contact: JerrySipe@countyofplumas.com