



Inyo County | City of Bishop



MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

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1. INTRODUCTION

This Multi-Jurisdictional Hazard Mitigation Plan (MJHMP, or Plan) establishes a strategy for Inyo County and the City of Bishop, California, to reduce hazard impacts. This chapter provides an overview of the Plan’s purpose and authority, and describes how the Plan was adopted and how it is to be used, as well as hazard mitigation plan goals, the planning process, a description of how the public was involved, and the plans, studies, and other resources used for analysis.

1.1 Plan Purpose

Different types of hazards cause different impacts, occur in different locations, and happen with varying degrees of severity. However, all have the potential to severely harm human health and safety, private and public property, ecosystems, and services. Like many other communities, Inyo County and Bishop could face substantial damage, injury or loss of life, interruptions to critical services, and other major challenges due to natural hazard impacts.



Figure 1: Disaster Response Cycle

There are four phases of emergency management, as illustrated in **Figure 1**.

1. **Response:** Taking action to save lives, limit injury, and prevent further damage of infrastructure in a disaster.
2. **Recovery:** Returning actions to normal conditions directly following a disaster.
3. **Mitigation:** Establishing strategies to prevent future disasters and/or to minimize their impacts.
4. **Preparedness:** Preparing to save lives and critical infrastructure and to help response and rescue operations in and directly following a disaster.

This Plan focuses on the mitigation component of the cycle shown in **Figure 1**. Hazard mitigation plays an important role in reducing the impacts of disasters by identifying effective and feasible actions to reduce the risks posed by potential hazards. This Plan develops mitigation actions to strengthen community resilience, which helps ensure coordinated and consistent hazard mitigation activities across Inyo County and Bishop. The benefit of this process (and the Plan) is the development

of a more unified strategy and increased coordination with federal, state, and local land-owning agencies. The County and the City have developed this Plan to be consistent with current standards and regulations, ensuring that the understanding of hazards facing the communities reflects best available science and current conditions. This Plan is also consistent with Federal Emergency Management Agency (FEMA) requirements, and the mitigation actions included in the Plan are grounded in best practices and available resources.

1.2 Authority

1.2.1. Federal

The federal Robert T. Stafford Disaster Relief and Emergency Act (the Stafford Act), as amended by the Disaster Mitigation Act of 2000 (DMA 2000) and supported by various pieces of regulation, directs hazard mitigation planning activities such as this Plan. Through DMA 2000, the Stafford Act requires state, local, and tribal governments that wish to be eligible for federal hazard mitigation grant funds to submit a hazard mitigation plan which outlines the processes for identifying the natural and manmade hazards, risks, and vulnerabilities of the jurisdiction (United States Code Title 42, Section 5165(a)). Title 44, Chapter 1, Part 201 (44 CFR Part 201) of the Code of Federal Regulations (CFR) contains requirements and procedures to implement the hazard mitigation planning provisions of the Stafford Act. These regulations direct the planning process, plan content, and FEMA approval for hazard mitigation plans.

The Inyo County and City of Bishop MJHMP complies with the Stafford Act and DMA 2000, along with the appropriate sections of Title 44 of the CFR, including Parts 201, 206, and 322.

1.2.2. State

The State of California passed Assembly Bill (AB) 2140 in 2006, enacting California Government Code Sections 8685.9 and 65302.6. These sections concern federal requirements mandating that jurisdictions have a valid hazard mitigation plan to be eligible for certain grants. Specifically, Section 8685.9 limits the State of California to paying no more than 75 percent of disaster relief funds not covered by FEMA to a local community, unless the affected community has a valid hazard mitigation plan that is consistent with DMA 2000 and unless the community has adopted the hazard mitigation plan as part of its general plan. If this is the case, the State may pay for more than 75 percent of the disaster relief funds not covered by FEMA. Section 65302.6 authorizes local communities to adopt hazard mitigation plans as part of their safety element or a comparable section of their general plan.

This MJHMP includes information required by relevant sections of the California Government Code.

1.3 Plan Adoption

Both the County and the City will adopt this MJHMP following Plan approval by FEMA. The County of Inyo will adopt the MJHMP through a resolution of the Board of Supervisors, while the City of Bishop will adopt the Plan through a resolution of the City Council. The Plan will go into effect for each individual community upon adoption by the respective organization. **Appendix D** contains the adoption resolutions for this Plan.

1.4 Plan Use and Organization

This MJHMP is made up of the following chapters:

- **Chapter 1** – Introduction: Describes the background and purpose of the Plan, its goals and priorities, and the planning process used to develop it.
- **Chapter 2** – Community Profile: Provides the history, physical setting, land use, and demographics of Inyo County and Bishop.
- **Chapter 3** – Hazards Assessment: Identifies, describes, and prioritizes the hazards that threaten Inyo County and Bishop. This chapter discusses past events, risks of future events, and the effects of climate change for each type of hazard.
- **Chapter 4** – Risk Assessment: Describes the risks posed by each hazard type to county and city residents, particularly those who are more likely to be socially vulnerable, and to critical facilities.
- **Chapter 5** – Mitigation Actions: Lists mitigation actions to reduce the risks from hazards facing Inyo County and Bishop. This chapter also provides an overview of the County's and City's existing capabilities to reduce vulnerability to hazard events.
- **Chapter 6** – Plan Maintenance and Capabilities: Describes the process for implementing, monitoring, and evaluating the MJHMP, and opportunities for continued public involvement.

The Plan allows the County and the City to “show their work” and illustrate compliance with FEMA guidelines. The Plan is supplemented with a Hazard Mitigation Implementation Handbook, which provides clear direction to the agency staff and elected leaders who are responsible for implementing this plan.

1.5 Mitigation Goals

Inyo County and the City of Bishop created goals as part of the Plan development process. There are six general goals for this Plan:

- Establish and foster a basis for coordination and collaboration among County and City agencies, other public organizations, private organizations and companies, and other key stakeholders.
- Work in conjunction with other planning efforts, including the County's and the City's General Plans.
- Increase community awareness and empowerment.
- Meet the requirements of federal assistant grant programs, including FEMA's Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) funding.
- Reduce the risk of loss and damage from hazard events, especially repetitive loss and damage.
- Coordinate hazard mitigation planning activities between Inyo County and the City of Bishop and in concert with resource management, land use planning, and emergency operation activities.

1.6 Hazard Mitigation Planning Process

This Plan is the result of a process involving County departments, City departments, stakeholder agencies, residents, businesses, and the general public. FEMA guidance suggests that the planning process meet the following objectives:

- Determine the planning area or areas, and the resources they contain.
- Establish the planning team.
- Create an outreach time.
- Review the communities' capabilities.
- Prepare a risk assessment.
- Develop a mitigation strategy.
- Keep the plan current.
- Review and adopt the Plan.
- Create a safe and resilient community.

In keeping with FEMA recommendations, Inyo County and the City of Bishop created a Multi-Jurisdictional Hazard Mitigation Planning Team (the Planning Team) composed of representatives from both jurisdictions and other key stakeholders, although not all representatives were able to attend every meeting. The Planning Team included representatives from the following agencies and departments:

Inyo County

- Kevin Carunchio, Rick Benson and Kelley Williams - Inyo County Administrative Office
- Dave Stottlemyre - Inyo County Assessor
- Joey Peterson - Inyo County Auditor's Office
- Ashlee Alex - Inyo County Child Support Services Department
- Marshall Rudolph – Inyo County Counsel
- Thomas Hardy - Inyo County District Attorney
- Marvin Moskowitz - Inyo County Environmental Health Director
- Melissa Best-Baker - Inyo County Health and Human Services Department
- David Miller - Inyo and Mono Counties Agricultural Department
- Jeff Thomson and Mark Olsen - Inyo County Probation Department
- Clint Quilter - Inyo County Public Works and Road Department Director
- Dustin Blakey – Inyo County Farm Advisor - University of California Cooperative Extension
- Bill Lutze and Nick Vaughn - Inyo County Sheriff's Office

City of Bishop

- Ray Seguine – Fire Chief, City of Bishop Fire Department
- David Grah - City of Bishop Public Works Department

Other Organizations

- Jeremy Mitchell - California Department of Forestry and Fire Protection
- George Miller and Andy Richard - California Department of Transportation
- Tim Noyes - California Highway Patrol
- Karla Benedicto and John N. Hudson III - California Office of Emergency Services
- Deanna Campbell and Paul Wheeler - Cerro Coso Community College

- Peter Trevherz - Death Valley National Park
- Jill Batchelder - Eastern Sierra Transit Authority
- Steven Butler and Todd Bunn - Los Angeles Department of Water and Power
- Bernadette Johnson - Manzanar National Historic Site
- Scott Hooker and Andrew Stevens - Northern Inyo Hospital
- John Beischel - Sierra Highlands Community Services District
- Jason Janney - SuddenLink
- Joe Pecsí - Sierra Tactical Training and Active Response Resources
- Ray Napoles and Levi Ray - US Forest Service
- Stuart Wilkinson - US Geological Survey

Invitations to be a part of the Planning Team were sent out to appropriate Inyo County and City of Bishop departments, as well as to other organizations that were thought to have valuable contributions and could serve as important stakeholders. These invites were sent either via email or through personal phone calls to stakeholders. Departments and organizations that were interested in participating identified key staff who were available to participate and could make useful contributions. Inyo County and the City of Bishop convened the local staff and representatives from interested departments and organizations to form the Planning Team. Documentation of these invitations are provided in **Appendix A**.

The Planning Team held five meetings throughout the plan development process. At these meetings, team members talked about the MJHMP objectives, identified appropriate hazards that threaten Inyo County and Bishop, and prepared and reviewed the mitigation actions to improve community resiliency to hazards. The following meetings were held:

- **Kickoff meeting** – January 28, 2016. Planning Team members discussed the goals and objectives of the project, outlined the plan development process and requirements, determined the public outreach approach, and identified relevant hazards.
- **Meeting #2** – March 17, 2016. Planning Team members went over the profiles of hazards present in the planning area, including affected areas and the effects of climate change on the hazards, and verified the prioritization of the profiled hazards.
- **Meeting #3** – April 28, 2016. Planning Team members reviewed the results of the hazard risk assessment, including impacts to critical facilities and social vulnerability.

- **Meeting #4** – May 19, 2016. Planning Team members discussed and revised the draft hazard mitigation actions.
- **Meeting #5** – June 23, 2016. Planning Team members reviewed the administrative draft MJHMP and implementation and maintenance activities required during the five-year plan period.

Appendix A shows copies of meeting materials and additional details from these meetings.

The County and the City prepared a public outreach and engagement process to give community members the opportunity to learn about the plan and contribute to its development. This process included an online survey, in both English and Spanish, for community members to offer input about hazard-related outcomes and actions to improve preparations for hazard events. Approximately 130 people responded to the survey. The key outcomes of the survey are discussed below, and a more detailed summary of the survey and its findings are included in **Appendix B**.

- Approximately a third of respondents had been affected by a disaster in their current residence. Severe weather, fire, drought, and flooding were the most common disaster events.
- Earthquakes, severe weather, and flooding were the hazards of greatest concern to survey respondents.
- A majority of respondents had taken action to make their homes more resilient to hazard events, but a sizeable minority had not and did not plan to.
- Most respondents were not familiar with any special needs their neighbors may have in an emergency situation.

Members of the Planning Team reviewed the results of the survey and developed the MJHMP to respond to the key points. This included ensuring that the plan adequately addressed the most common hazards and those of greatest concern to community members, expanded on existing community efforts, and addressed situations and topics where community members felt there was not enough being done to reduce vulnerabilities.

1.7 Public Review Draft

On July 11, 2016 Inyo County and the City of Bishop completed the public review draft MJHMP and released it for review and comment by the general public for a period of 30 days. Electronic versions were published on the City and County's websites and hard-copy versions of the Plan were provided at City and County buildings.

The County received one official comment letter from the Big Pine Paiute Tribe of the Owens Valley. Many of the comments identified concerns regarding the natural resources of the County and aspects of the hazards analysis that could be clarified to address County needs and concerns. Based on a number of their comments, the County felt it was important to conduct face to face meetings with this Tribe, as well as the other Tribes in the County, to ensure a common understanding of the hazard mitigation planning process and what this Plan intends to accomplish. On September 1, 2016, County staff (Diane Fortney and Kelley Williams) and the County's consultant (Aaron Pfannenstiel) sat down with members of the Inyo County Board of Supervisors (by district) and individual Tribal representatives (within the Board represented district) to discuss the Plan, answer questions about the process, and identify ways to collaborate in the future on hazard mitigation activities within the County. The following tribal personnel attended these meetings:

Big Pine Paiute Tribe of Owens Valley (Inyo County 4th District Supervisor – Mark Tillemans)

- Jill Paydon, Tribal Administrator
- Alan Bacock, Water Program Coordinator
- Sally Manning, Environmental Director

Lone Pine Paiute-Shoshone Tribe (Inyo County 5th District Supervisor – Matt Kingsley)

- Mary Wuester, Tribal Chair
- Janice Aten, Not in attendance
- Mel Joseph, Not in attendance

Bishop Paiute Tribe of Owens Valley (Inyo County 3rd District Supervisor – Rick Pucci)

- Peter A. Bernasconi, Public Works Director

Timbisha-Shoshone Tribe (Inyo County 5th District Supervisor – Matt Kingsley)

- Spike Jackson, Environmental Director

The only Tribe that was unable to attend these meetings was the Fort Independence Tribe. However, the information compiled in this Plan and made available to the other Tribes will also be made available to this Tribe once the Plan is approved. Copies of the sign in sheets from these meetings are provided in **Appendix B**

1.8 Plans, Studies, and Technical Reports Used to Develop the Plan

The Planning Team relied on numerous plans, studies, technical reports, databases, and other resources to develop hazard discussions and mapping. **Table 1** shows the key resources used for different sections of the Plan. The **Sources** section at the end of the main body of the Plan contains a more extensive list.

Table 1. Key Resources Used to Develop the MJHMP

Section	Key Resources	Example Uses
Multiple hazards	Cal-Adapt California Climate Adaptation Planning Guide California Multi-Hazard Mitigation Plan	Current and anticipated future climate conditions in Inyo County. Records of past disaster events in Inyo County. General background information on the science and effects of hazard conditions.
Dam failure	California Department of Water Resources dam database US Army Corps of Engineers National Inventory of Dams	Records of local dams, including size, capacity, age, ownership, and safety ratings.
Disease/pest management	Owens Valley Mosquito Abatement Program	General background information on mosquitos, including risks posed by mosquitos and various abatement strategies.
Drought	US Drought Monitor	Records of current and past drought conditions in Inyo County, including severity of drought conditions by location.
Flood	Federal Emergency Management Agency flood maps	Location and type of flood hazard zones in Inyo County. General background information on flood conditions.
Geologic hazards	US Geological Survey volcano database	Information about volcanoes in and around Inyo County, including location, type, geologic history, and future risk.

Section	Key Resources	Example Uses
Hazardous materials	California Department of Toxic Substances Control EnviroStor database State Water Resources Control Board cleanup sites database State Water Resources Control Board underground storage tanks database	Location and type of hazardous material generators, storage areas, and known or suspected contaminated areas in Inyo County.
Seismic hazards	California Geological Survey Fault Activity Map of California US Geological Survey ShakeMaps	Locations of fault lines in Inyo County. Location, intensity, damage, and other relevant data from past seismic events. Forecasts of the severity of future earthquakes in Inyo County.
Severe weather	California Environmental Protection Agency and California Department of Public Health extreme heat preparation materials California Contingency Plan for Extreme Cold/Freeze National Oceanic and Atmospheric Administration severe weather database files National Weather Service watch/warning/advisory records Western Regional Climate Center	General background information on the science of severe weather. Records of past severe weather events in Inyo County, including time, location, intensity, and damage.
Wildfire	California Department of Forestry and Fire Protection Fire Hazard Severity Zones mapping	Location of wildfire severity zones in Inyo County.

2. COMMUNITY PROFILE

The Community Profile chapter provides an overview of Inyo County and Bishop, including the physical setting, history, land use, and demographics. This information describes the conditions present in the planning area and helps inform the hazard mitigation actions presented in Chapter 5.

2.1 Physical Setting

Inyo County is a county in eastern California, on the eastern side of the southern Sierra Nevada range. It is part of the Basin and Range province of North America, characterized by an alternating parallel series of mountain ranges and flat arid valleys. Inyo County is the second largest county in California and the ninth largest in the United States. Despite its size, the county's population was 18,439 in 2014, according to the US Census Bureau, and it is the second most sparsely populated of California's 58 counties. It is bordered by Mono County on the north, by Esmeralda, Nye, and Clark Counties (all in Nevada) to the east, by San Bernardino and Kern Counties to the south, and by Tulare and Fresno Counties to the west.

Inyo County has one incorporated community—the City of Bishop—located at the northern end of the county. As of 2014, Bishop had a population of 3,851 according to the US Census Bureau. Inyo County's other residents all live in unincorporated communities, including West Bishop, Dixon Lane-Meadow Creek, Big Pine, Independence (the county seat), Lone Pine, Cartago, Olancho, Darwin, Furnace Creek, Tecopa, and Shoshone.

The main transportation route in Inyo County is US Highway 395, which runs north–south through the length of the county, connecting the communities of Lone Pine, Independence, Bishop, and other major communities. Other roadways in Inyo County include US Highway 6, State Route (SR) 127, SR 168, SR 178, SR 136, and SR 190. Due to its location and limited access to major transportation routes, Inyo County is one of the most remote places in California. Only a few roads cross the high peaks of the southern Sierra Nevada, and they are usually closed in the winter. The nearest major cities to Bishop include Ridgecrest (137 miles away by car), Carson City, Nevada (171 miles away), Bakersfield (226 miles away), and Las Vegas, Nevada (266 miles away).

The western end of Inyo County lies along the eastern crest of the Sierra Nevada and partially includes Mt. Whitney, the tallest peak in the contiguous United States. East of the Sierra Nevada is the Owens Valley, where most of Inyo County's residents live. Farther east are the Inyo and White Mountains, followed by the Saline and Panamint Valleys, then the Panamint Range, Death Valley (which includes Badwater Basin, the lowest point in North America), and the Amargosa Range of mountains near the Nevada border.

2.2 History

Inyo County was settled as early as 12,000 years ago, according to archaeological evidence. Early residents are believed to have initially been mobile hunter-gatherers. Starting around 4,000 to 8,000 years ago, the people of Inyo County settled in more permanent sites. As with modern-day county residents, most native peoples lived in the Owens Valley, with at least 30 villages and a population of 1,500 to 2,000 prior to contact with Europeans. The native residents of Inyo County include four tribes: the Owens Valley Paiute (also called the Eastern Mono), the Western Shoshone (also called the Panamint or Koso), the Southern Paiute, and the Kawaiisu (also called the Nuwa) (Inyo County 2014a).

The native peoples of Inyo County first came into contact with Europeans in the early 1800s, when fur trappers began to operate in the area. In 1834, the explorer Joseph Reddeford Walker entered the Owens Valley, opening the area to further exploration and development of the county's abundant mineral resources. After the United States captured California from Mexico in the Mexican-American War and California became a state in 1850, what is now Inyo County was originally part of Mariposa and San Diego Counties. Bishop was first settled by Europeans in 1861, when rancher Samuel A. Bishop established a cattle range on Bishop Creek. In 1862, the town of Bishop Creek was established near the ranch and would eventually incorporate as the City of Bishop in 1903. Inyo County itself was not created until 1866, when it was formed from parts of recently created Mono and Tulare Counties.

Mining was an extensive activity in early Inyo County. Silver mines were established as early as 1859, and by 1868 the Union Mine in the southeastern Owens Valley was the most productive silver mine in the United States. Salt and gold were also mined during this time period. In addition to mining, many early white settlers of Inyo County, like Samuel Bishop, were ranchers. Conflict between Native Americans and ranchers and miners turned into violence in the 1860s. The town of Independence was originally established in 1862 as Camp Independence (later Fort Independence) as a military installation to protect white settlers. Violence decreased in the 1870s and was followed by the discovery of borax in Death Valley in 1881, leading to a second wave of mining expansion (Inyo County 2014a).

Mining continued to be a major driver of activity in Inyo County into the 1900s. Tungsten was discovered near Bishop in 1913, sparking extensive tungsten mining, which remained an important part of the county economy through most of the twentieth century. The early 1900s also saw the exploitation of other natural resources in Inyo County, when the City of Los Angeles controversially purchased the water rights to the Owens River, diverting almost all of the river into the Los Angeles Aqueduct, which was completed in 1913. Frustration and anger among Owens Valley residents led to a period of conflict between residents and Los Angeles called the "California Water Wars." In the 1940s, Inyo County became the site of the first internment camp for Japanese-Americans during World War II

(the Manzanar Relocation Center, established in 1942 between Lone Pine and Independence). In 1943, the US Navy established the Naval Weapons Station China Lake, most of which is in southern Inyo County (Inyo County 2014a). Today, the county’s economy is driven heavily by tourism, government, and land management activities. Renewable energy, agriculture, and resource extraction also continue to play a role.

2.3 Community Profile

Tables 2, 3, and 4 show a summary of the basic demographics, race and ethnicity, and educational attainment in Inyo County and Bishop in 2014.

Table 2. Basic Demographics (2014)

Category	Inyo County	Bishop
Total population	18,439	3,851
Median age	45.3 years	41.0 years
Elderly population (65+ years)	3,659 (19.8%)	687 (17.8%)
Foreign-born population	1,906 (10.3%)	672 (17.5%)
Number of households	7,891	1,710
Average household size	2.27	2.20
Median household income	\$45,625	\$30,395
Rental households	2,884 (36.5%)	998 (58.4%)
Source: US Census Bureau 2014a, 2014b, 2014c		

2.4 Economy

The economies of Inyo County and Bishop are fairly similar. The largest economic sectors are educational/healthcare/social services, arts/entertainment/recreation/accommodations/food services, and retail trade. Collectively, these three economic sectors account for 52.1 percent of jobs held by Inyo County residents and 65.5 percent of jobs held by Bishop residents. Inyo County in particular has a large number of government workers, as 26.6 percent of employed Inyo County civilians hold government jobs (EDD 2016).

According to the California Employment Development Department, the largest employer in Inyo County is the CG Roxane Water Company, a bottled water company in the unincorporated community of Olancho. Other top employers are Northern Inyo Hospital in Bishop, the Furnace Creek Resort in Death Valley, and Death Valley National Park (EDD 2016).

Table 3. Race and Ethnicity (2014)

Race/Ethnicity	Inyo County		Bishop	
	Population	Percentage	Population	Percentage
White	15,267	82.8%	3,584	93.1%
Black or African American	202	1.1%	10	0.3%
American Indian and Alaska Native	2,005	10.9%	83	2.2%
Asian	250	1.4%	69	1.8%
Native Hawaiian and Other Pacific Islander	59	0.3%	0	0.0%
Other race	303	1.6%	39	1.0%
Two or more races	353	1.9%	66	1.7%
Hispanic or Latino (of any race) *	3,730	20.2%	1,122	29.1%
Total	18,439	100%	3,851	100%

* The US Census does not count Hispanic or Latino persons as a separate racial or ethnic category. Therefore, the Hispanic or Latino population reported here is also included in the other racial or ethnic categories.
 Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.
 Source: US Census Bureau 2014a

Table 4. Educational Attainment (2014)

Educational Attainment (25+ years)	Inyo County		Bishop	
	Population	Percentage	Population	Percentage
Less than 9 th grade	619	4.7%	193	7.4%
9 th grade to 12 th grade (no diploma)	951	7.2%	132	5.0%
High school graduate or equivalent	4,354	32.8%	930	35.4%
Some college (no degree)	3,391	25.6%	556	21.2%
Associate’s degree	1,110	8.4%	195	7.4%
Bachelor’s degree	1,800	13.6%	439	16.7%
Graduate or professional degree	1,035	7.8%	180	6.9%
Total population (25+ years)	13,260	100%	2,625	100%

Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.
 Source: US Census Bureau 2014a

2.5 Land Uses

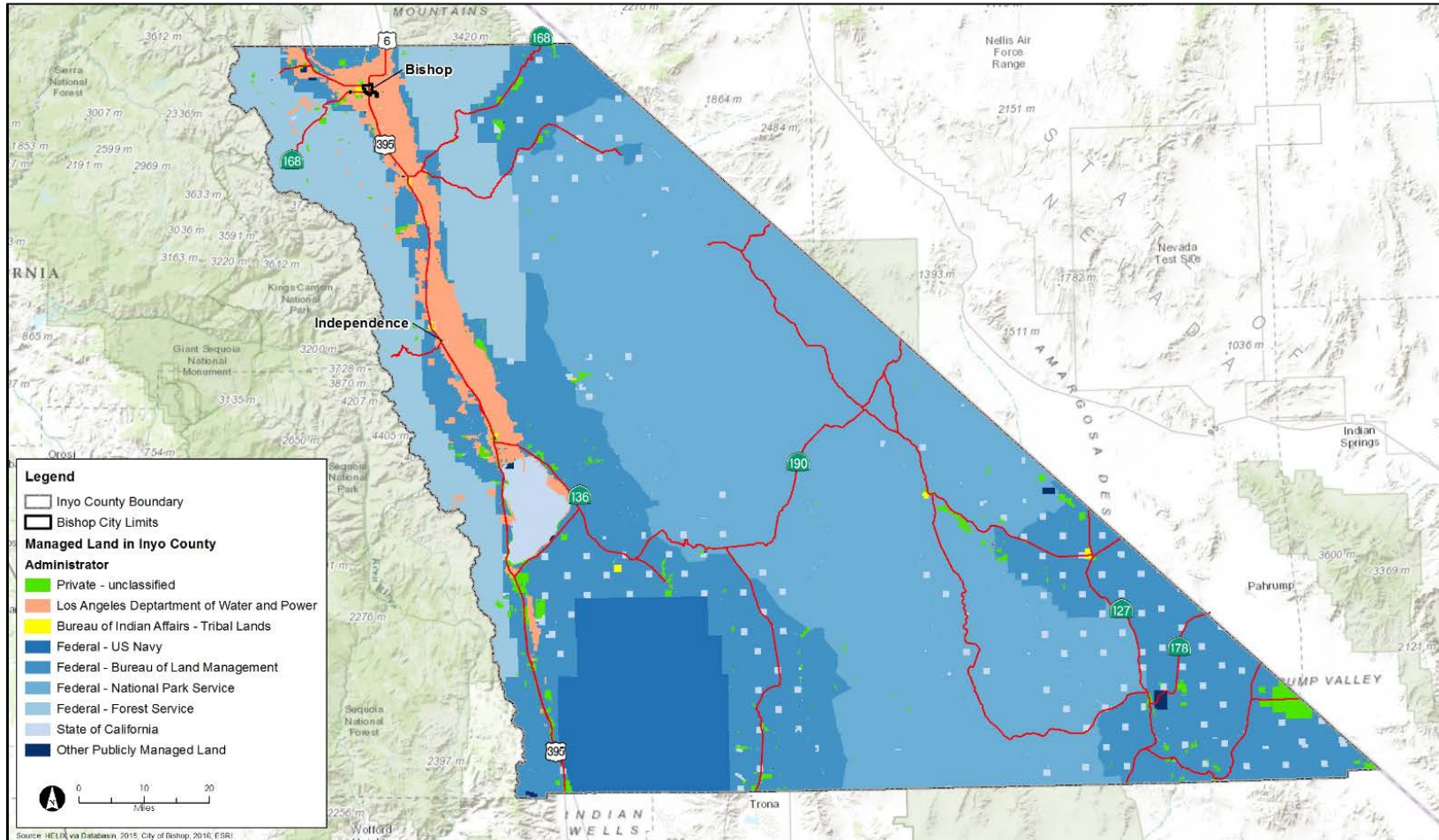
In Inyo County, the vast majority of the land is owned by various federal agencies, including the National Park Service (NPS), the Bureau of Land Management (BLM), and the Department of Defense (DoD). The State of California and the City of Los Angeles (as the Los Angeles Department of Water and Power, or LADWP), own much of the remaining land, and parts of the county are under the jurisdiction of tribal governments. For the purposes of this Plan, understanding land ownership is important for developing mitigation actions and policies that are appropriate for Inyo County's and the City of Bishop's jurisdictional control. These are the areas the Plan will most directly be able to impact, while land owned by the state or federal government has separate governing bodies that are responsible for ensuring appropriate mitigation of natural and man-made hazards. **Table 5** shows land ownership in the unincorporated areas of Inyo County. While the entire county was analyzed regarding hazard and risk, lands listed as local and private (shown in bold in **Table 5**) are the focus of the mitigation actions in this Plan. **Figure 2** illustrates this tapestry of land ownership in the planning area.

The Inyo County General Plan assigns a land use category to all land located in the unincorporated areas of the county, including land that is not under the County's jurisdiction. Outside of state and federal land, most land in Inyo County is dedicated for natural resources and rural protection. **Table 6** shows land uses in the unincorporated areas.

Table 5. Land Ownership in Unincorporated Inyo County

Owner	Acres	Percentage	Example Land Uses
Federal			
Bureau of Indian Affairs	3,843	0.1%	Tribal lands
Bureau of Land Management	1,758,394	26.9%	Wilderness areas, miscellaneous federal land
National Park Service	3,024,953	46.3%	Death Valley National Park
US Department of the Navy	459,504	7.0%	Naval Air Weapons Station China Lake
US Forest Service	794,292	12.2%	Inyo National Forest
State			
California Department of Fish and Wildlife	2,565	<0.1%	State-managed wilderness areas
California Department of Forestry and Fire Protection (Cal Fire)	395	<0.1%	Cal Fire facilities and managed areas
California Department of Transportation (Caltrans)	106	<0.1%	State roadways and maintenance yards
California State Lands Commission	148,312	2.3%	Various public lands under state stewardship
Other state agencies	615	<0.1%	Miscellaneous state land
Local			
Los Angeles Department of Water and Power	249,601	3.8%	Owens Lake, Owens River, and Los Angeles Aqueduct land and infrastructure
Inyo County	485	<0.1%	Inyo County government facilities
Local special districts	129	<0.1%	School, fire, cemetery, and healthcare districts
Other local agencies	807	<0.1%	Land owned by other local jurisdictions
Unknown			
Unknown public agencies	5,669	0.1%	Land owned by unknown public agencies
Private			
Private landowners	81,505	1.2%	Private residences, businesses, and farmland
Total	6,531,174	100.0%	
Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.			

Figure 2. Land Ownership in Inyo County



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Table 6. Land Use Designations in Unincorporated Inyo County

Land Use Category	Acres	Example Land Uses
Residential high density	21	Multifamily residential buildings (15 to 24 units per acre)
Residential medium-high density	228	Single-family homes and multifamily residential buildings (7.6 to 15 units per acre)
Residential medium density	480	Single-family homes (4.6 to 7.5 units per acre)
Residential low density	396	Single-family homes (2 to 4.5 units per acre)
Residential very low density	469	Large-lot single-family homes (up to 2 units per acre)
Residential rural high density	839	Large-lot single-family homes near the fringes of communities (up to 1 unit per acre)
Residential rural medium density	1,240	Large-lot single-family homes near the fringes of communities (up to 1 unit per 2.5 acres)
Residential estate	3,022	Large-lot single-family homes and agricultural estates (up to 1 unit per 5 acres)
Residential ranch	1,282	Large-lot single-family homes and agricultural estates (up to 1 unit per 10 acres)
Rural protection	50,508	Wildlife preserves, grazing land, parkland, and low-intensity recreation
Central business district	55	Retail stores, professional shops and offices, dining and entertainment, and hospitality
Retail commercial	213	Retail and wholesale stores and offices
Heavy commercial and commercial service	25	Commercial services and warehousing
Resort and recreation	5,213	Tourist-focused uses, including lodging, restaurants, and recreational facilities
Light industrial	119	Industrial parks, warehouses, and light manufacturing
General industrial	805	Manufacturing, processing, and storage and shipping
Open space and recreation	18,553	Public parks and recreational facilities
Public service facilities	3,675	Public and quasi-public facilities such as administrative centers, schools, and hospitals
Agriculture	31,844	Cropland and supporting services
Natural resources	213,213	Wilderness land and natural resource extraction operations

Land Use Category	Acres	Example Land Uses
Natural hazards	473	Wilderness land and natural resource extraction operations on land used as a buffer from areas at risk of natural hazards
State and federal lands	6,142,229	National parks, military facilities, and state and federally-owned wilderness areas
Tribal lands	3,844	Tribal areas
MULTI	52,433	Miscellaneous land used for multiple purposes
Total	6,531,179	
Note: Due to rounding, the totals presented in this table may not equal the sum of all rows. Source: Inyo County 2013		

A majority of land in Bishop is used for public purposes, including a large amount of land owned by the Los Angeles Department of Water and Power. Private land in the city is primarily a mixture of residential and commercial land uses, with smaller amounts of land for industrial uses (Bishop 1993, 2015). **Tables 7** and **8** show land ownership and land use designations, respectively, in Bishop.

Table 7. Land Ownership in Bishop

Land Use Category	Acres	Percentage	Example Land Uses
US Forest Service	4	0.4%	Forest Service administration
Los Angeles Department of Water and Power	572	53.6%	Administrative and maintenance facilities for Los Angeles Aqueduct
Unknown public agencies	167	15.6%	Land owned by unknown public agencies
Private landowners	325	30.4%	Private residences, businesses, and farmland
Total	1,068	100%	
Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.			

Table 8. Land Use Designations in Bishop

Land Use Category	Acres	Example Land Uses
Low Density Residential	31	Single-family detached dwellings, one per lot (10,000-square-foot minimum lot)
Single-Family Residential	186	Single-family detached dwellings, one per lot (5,000- to 15,000-square-foot lots)
Low Density Multiple Residential	11	Two-family residential structures, either in the form of duplexes or two detached dwellings (5,000-square-foot lot per two single-family units)
Medium High Density Residential	75	Multi-story apartment houses, apartment units, and other rental units (minimum of 5,000-square-foot lot)
Medium High Density Residential and Offices	11	Multi-story apartment houses, apartment units, and other rental units and/or for professional and administrative offices
Multiple Residential	139	Multi-story apartment houses, apartment courts, and such other rental units
Multiple Residential and Offices	8	Multiple-family residential structures in the form of multistory apartment houses, apartment courts, and other rental units and/or for professional and administrative offices
Residential Mobile Homes	9	Single-family mobile home (no more than one mobile home on each lot)
General Commercial and Retail	169	Retail trading and business area of the city
General Commercial	65	A more complete range of commercial activities, will permit limited light manufacturing and wholesale facilities
Commercial Highway Services	49	Highway-related enterprises adjacent to major routes of travel
General Industrial	65	Manufacturing, warehousing, and processing activities
Business Park	11	Limited range of retail commercial uses having a close association with, providing convenience to, or which are compatible with office, wholesale warehousing, and manufacturing uses
Office and Professional	4	Offices for professional services and those business activities which are related to professional-type services
Public	158	Land that is owned by a governmental agency and is in some form of public use, including open space, parks, schools, and other public buildings and facilities
Open Space	85	Open space and parks
Emergency Shelter	32	Permits a specified area in which emergency shelters, supportive housing, and transitional housing developments will be allowed by right
Total*	1,074	
* Overlay Area		
Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.		
Source: Bishop 2015; Inyo County 2016		

2.6 Development Trends and Future Development

Both Bishop and the unincorporated areas of Inyo County have fairly low, stable populations. Development activity in both locations, while ongoing, is relatively limited. **Table 9** shows recent, ongoing, and planned development activities in the unincorporated areas of Inyo County; **Table 10** shows development activities in Bishop.

Table 9. Development Activities in Inyo County

Project	Location	Description	Status
Development Projects			
Aspendell fire station	Aspendell	Conversion of a fire house apparatus bay into a studio dwelling unit	Approved
Rite-Aid Shopping Center lodging	Rite-Aid Shopping Center, North Sierra Highway (near Bishop)	Use of a vacant building for short-term lodging	Use Determination approved
Aspendell Mutual Water Company	Aspendell	Abandonment of a 5,000-square-foot area of road, and construction of a well and well house on part of the abandonment	Approved
Munro Valley Solar	Olancha	Construction of a 4-megawatt solar photovoltaic system	Approved
Crystal Geysers Roxane Cabin Bar Ranch Water Bottling Plant	Cartago	Construction of a 34-acre spring water bottling facility, including a pump, bottling plant, and warehouse	Approved
21st Century Obsidian Project (Digital 395)	Owens Valley	Construction of a fiber-optic network in the Owens Valley	In process
Lower Owens River Project	Lower Owens River	Restoration of the riparian corridor of the Lower Owens River	In process

Project	Location	Description	Status
Plans and Studies			
Renewable Energy General Plan Amendment	Countywide	General Plan amendment identifying appropriate locations and characteristics for renewable energy projects	Adopted
Regional Transportation Plan	Countywide	Update to the Regional Transportation Plan to guide transportation investments for a 20-year period	Adopted
Inyo County Active Transportation Program Plan	Countywide	Plan to foster active transportation in Inyo County, including separate sections for bicycling, pedestrian activity, recreational trails, and Safe Routes to School	In progress
Inyo-Mono Integrated Regional Water Management Plan	Countywide	Plan to coordinate water-related activities to support local economy and environmental activities	Adopted
Owens Lake Master Project	Owens Lake	Plan to guide dust mitigation, habitat enhancement, and potential solar energy development on Owens Lake	In progress
Charleston View Specific Plan	Charleston View	Blueprint for development activity in Charleston View	In progress
Tecopa Specific Plan	Tecopa	Blueprint for development activity in Tecopa	In progress
Shoshone Specific Plan	Shoshone	Blueprint for development activity in Shoshone	In progress
North Sierra Highway Corridor Specific Plan	North Sierra Highway (near Bishop)	Plan for development activities in North Sierra Highway Corridor area	Future plan

Table 10. Development Activities in Bishop

Project	Address	Description	Status
Development projects			
Inyo County Consolidated Office Building	—	New building to consolidate multiple County facilities in Bishop on a single site.	Under study
CDFW Lab Construction	787 N Main St (Bldg. C)	Tenant improvements for California Department of Fish and Wildlife. First-floor lab, workroom, and storage. Second-floor offices.	Approved
Verizon Infrastructure Improvements	350 Lagoon Street	Remove 6 antennas, replace 6 antennas, add 6 RRUs, 1 hybrid cable, 3 TMAs, 2 hybrid jumpers, 3 surge protectors on tower and 1 protector in shelter.	Approved

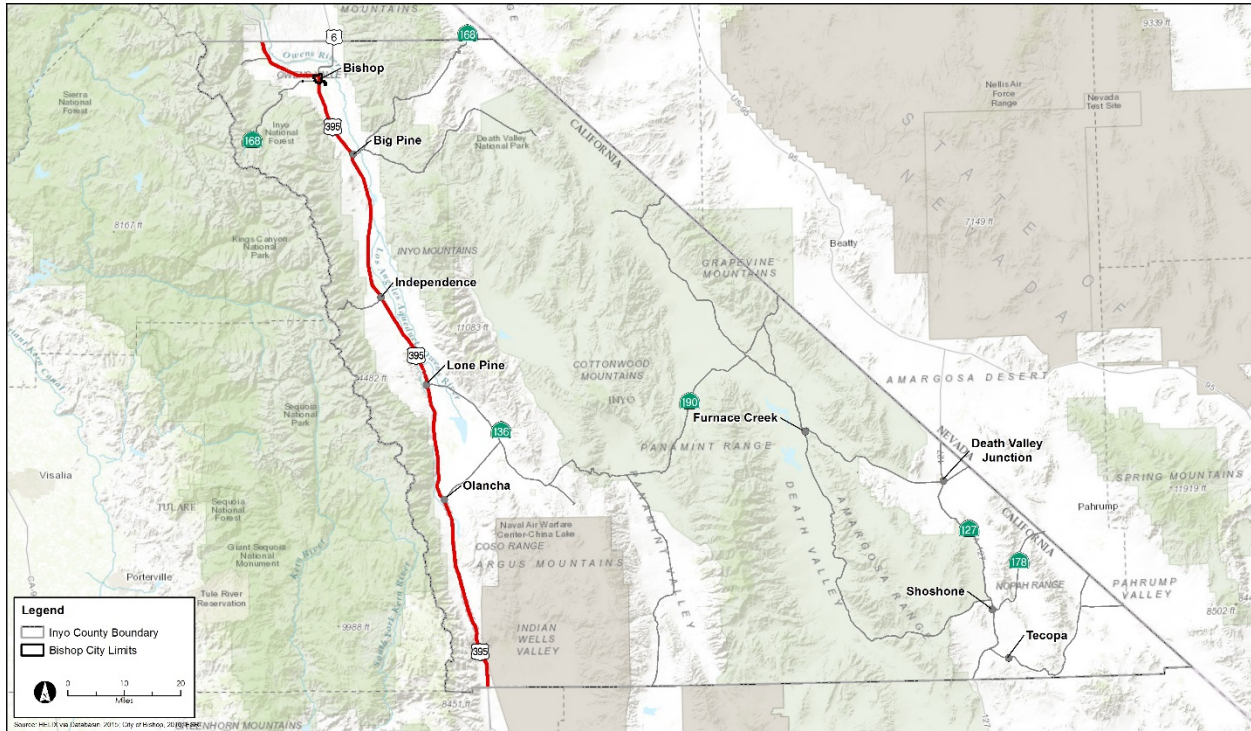
2.7 Evacuation Routes

US Highway 395 runs through the Owens Valley and serves most of Inyo County’s residents, including the populations of Bishop, Big Pine, Independence, and Lone Pine (**Figure 3**). The highway runs north into Mono County and south into San Bernardino County and serves as the main evacuation route for Owens Valley communities. Several other roads, including State Routes 127, 168, 178, 136, and 190, serve as evacuation routes for communities outside of the Owens Valley, including Death Valley National Park and the communities in southeast Inyo County.

US Highway 395 is the primary evacuation route for Bishop. US Highway 6, which runs north from Bishop to Mono County and into Nevada, can serve as a secondary evacuation route. If residents only need to evacuate the city itself and not the wider region, State Route 168 runs west from Bishop into the Sierra Nevada, and Poleta Road runs east from the city and southward near the banks of the Owens River. Highway 14 is frequently used for southbound travel into San Bernardino County from Highway 395.

While evacuation routes are important to the County, there is also concern regarding mass evacuation impacts from populations outside of the County, seeking refuge. This topic has been addressed in the County’s Emergency Operations Plan (EOP) under the convergent refugees.

Figure 3. Inyo County Evacuation Routes



2.8 Energy Infrastructure

Electricity infrastructure is the only energy infrastructure in the planning area; there is no natural gas service in the county. The electricity network is critical for public health and safety, and the availability of electrical service is crucial after a disaster has occurred. This infrastructure may itself pose a hazard, such as the risk of downed power lines sparking a wildfire.

Electricity in Inyo County is provided by three different agencies. Southern California Edison (SCE), a privately-owned utility company, serves most of Inyo County, including parts of Bishop, the southern portion of the Owens Valley, and virtually all of the land east of the Owens Valley. Large sections of the Owens Valley, including the communities of Big Pine, Independence, and Lone Pine, along with parts of the eastern Sierra Nevada, receive electricity from LADWP. Central Bishop, including City Hall, are also within the LADWP service area. The Valley Electric Association, a nonprofit electricity cooperative, provides electricity service to the extreme northeast part of Inyo County (CEC 2015a).

All three electricity providers receive their power from a variety of sources, including renewable energy, fossil fuels, and hydroelectric facilities. Inyo County has 17 power plants, 14 hydroelectric facilities, and three geothermal power plants. Most of the hydroelectric facilities are fairly small, the exception being Control Gorge Power Plant northwest of Bishop. Six of the hydroelectric facilities,

including Control Gorge, are owned by LADWP. SCE owns five of the hydroelectric power plants, and private operators own the other three. Combined, the 14 hydroelectric facilities are capable of generating approximately 81 megawatts (MW). The three geothermal power plants are located on the Naval Air Weapons Station China Lake and are privately owned. They collectively have a capacity of over 302 MW (CEC 2014a).

Power is delivered through a network of power lines and facilities called substations. Inyo County has two major power transmission lines, one owned by SCE and one owned by LADWP. Both lines run the length of the county parallel to US Highway 395. Smaller transmission lines owned by SCE run near the Mono County border and onto the Naval Air Weapons Station (CEC 2014b, 2014c). There are 25 substations in Inyo County, which convert high-voltage electricity carried by transmission lines to lower-voltage electricity that can be used by homes and businesses. SCE owns 15 of the substations in Inyo County, and LADWP owns the remaining two. One substation is located in Bishop, while the other 24 are located in the unincorporated area (CEC 2015b). Because of their remote location, Inyo County and Bishop rely on a limited electricity network. Any disruption to the two major power transmission lines or to some of the substations could cause a large and potentially countywide blackout. There is limited interconnectivity between SCE and LADWP, which could limit flexibility and response in a blackout.

3. HAZARDS ASSESSMENT

This chapter provides an overview of the types of hazard events present in Inyo County and in Bishop, including past hazard events and how these hazards may change in the future. This chapter also discusses the process used by Planning Team members to identify and prioritize hazards.

3.1 Hazard Analysis

Hazard Identification

FEMA's Hazard Summary Worksheet, one of the resources for communities provided in the agency's Local Mitigation Planning Handbook guidance document, identifies 21 different hazards that local governments may wish to consider when conducting hazard mitigation planning efforts. Some of these events effectively cannot occur in Inyo County or Bishop because the community does not have the necessary attributes for these events to occur (sea level rise, for example). The Planning Team discussed a comprehensive list of hazards during the kickoff meeting on January 28, 2016, including the hazards in FEMA's guidance and additional hazards as suggested by Planning Team members. This discussion resulted in identification of the hazards that pose a potential risk to Inyo County and Bishop. **Table 11** summarizes the Planning Team's discussion of each of the hazards and shows which were identified for inclusion in this MJHMP. Hazards that have been excluded from further consideration are shaded gray.

Some of the hazards listed in this Plan combine FEMA-identified hazards for organizational purposes. For example, this Plan discusses severe weather, which includes wind/windstorms, hailstorms, and tornadoes. The Planning Team identified and prioritized 10 hazards that may impact Inyo County and Bishop:

- Avalanche
- Dam or Aqueduct Failure
- Disease/Pest Management
- Drought
- Flood
- Geologic Hazards
- Hazardous Materials
- Seismic Hazards
- Severe Weather
- Wildfire

Table 11. Inyo County and City of Bishop Hazard Identification, 2016

List of Hazards	Include in HMP?		Discussion Summary
	Inyo County	City of Bishop	
Agricultural Pests	No	No	The 2014 Crop and Livestock Report does not mention any specific agricultural pests of note.
Avalanche	Yes	No	Yes, avalanches occur in the mountainous area, primarily in the far west side of the county, outside the city limits of Bishop.
Coastal Erosion/Bluff Failure	No	No	Not applicable. Inyo County and Bishop are not coastal communities.
Coastal Storm	No	No	Not applicable. Inyo County and Bishop are not coastal communities.
Dam and Aqueduct Failure	Yes	Yes	The county and the city are susceptible to inundation caused by dam failure of multiple dams and the County is susceptible to inundation caused by aqueduct failure.
Disease and Pest Management	Yes	Yes	Invasive pests have the potential to damage trees; mosquitoes have the potential to spread disease.
Drought	Yes	Yes	Inyo County and Bishop both depend on groundwater and surface water, both of which are susceptible to drought.
Seismic Hazards (Ground Shaking and Liquefaction)	Yes	Yes	Inyo County and Bishop are susceptible to earthquake ground shaking and liquefaction.
Expansive Soils	No	No	Not applicable. Expansive soil issues are not prevalent in the county.
Extreme Heat	Yes	Yes	Inyo County and Bishop are both subject to extreme summer temperatures. The hazard is combined with similar hazards and identified as severe weather.
Flood	Yes	Yes	The city and the county have 100- and 500-year flood zones, as mapped by FEMA.
Hailstorm	No	No	The Planning Team did not identify any local hailstorms of note.
Hazardous Materials Spills	Yes	Yes	The county and the city contain properties and transportation corridors with the potential for hazardous materials spills.

Table 11. Inyo County and City of Bishop Hazard Identification, 2016

List of Hazards	Include in HMP?		Discussion Summary
	Inyo County	City of Bishop	
Hurricane	No	No	Not applicable. Inyo County and Bishop are not coastal communities.
Land Subsidence	No	No	Not applicable. There are no historical or expected occurrences of subsidence in the county.
Landslide and Mudflow	Yes	No	The conditions for landslides and mudflows are present near the hills and mountains of the unincorporated county, but not near Bishop.
Human-Caused Hazards	No	No	With the exception of hazardous materials, this Plan focuses on natural hazards.
Severe Winter Storm	No	No	Not applicable. Although severe winter storms do happen in Inyo County and Bishop, their impacts are adequately captured in other hazards reviewed in this Plan and do not include those impacts typically associated with winter storms elsewhere in the nation.
Tornado	No	No	There are no recorded tornado hazards in Inyo County or Bishop.
Tsunami	No	No	Not applicable. Inyo County and Bishop are not coastal communities.
Volcano	Yes	Yes	The county and the city are in volcano hazard areas.
Wildfire	Yes	Yes	Wildfire hazards are a significant issue in this part of California.
Wind	Yes	Yes	The planning area is exposed to high wind events. The hazard will be combined with similar hazards and identified as severe weather.
Windstorm	Yes	Yes	The planning area is exposed to high wind events. The hazard will be combined with similar hazards and identified as severe weather.
Sea Level Rise	No	No	Not applicable. Inyo County and Bishop are not coastal communities.
Climate Change	Yes	Yes	Climate change is not profiled as a distinct hazard, but rather a phenomenon that could exacerbate hazards. Climate change will be considered as a factor for relevant identified hazards.

Hazard Prioritization

The Planning Team used a Microsoft Excel–based tool to prioritize the identified hazards by assigning each hazard a ranking based on probability of occurrence and potential impact. These rankings were assigned based on group discussion, knowledge of past occurrences, and familiarity with the county’s/city’s infrastructure vulnerabilities. Four criteria were used to establish priority, and a value of 1 to 4 was assigned for each criterion:

- Probability (likelihood of occurrence).
 - 1: Unlikely (less than a 1 percent chance of occurring in a given year).
 - 2: Occasional (1 to 10 percent chance of occurring in a given year).
 - 3: Likely (10 to 90 percent chance of occurring in a given year).
 - 4: Highly likely (90 to 100 percent chance of occurring in a given year).
- Location (size of potentially affected area)
 - 1: Negligible (affects less than 10 percent of the planning area).
 - 2: Limited (affects 10 to 25 percent of the planning area).
 - 3: Significant (affects 25 to 75 percent of the planning area).
 - 4: Extensive (affects 75 percent or more of the planning area).
- Maximum Probable Extent (intensity of damage)
 - 1: Weak (little to no damage).
 - 2: Moderate (some damage and loss of services).
 - 3: Severe (devastating damage, loss of services for weeks or months).
 - 4: Extreme (catastrophic damage and uninhabitable conditions).
- Secondary Impacts (severity of impacts to community)
 - 1: Negligible (no loss of function/downtime, no evacuations)
 - 2: Limited (minimal loss of function/downtime, limited evacuations)
 - 3: Moderate (some loss of function/downtime, some evacuations)
 - 4: High (major loss of function/downtime, widespread evacuations, and may include injuries/deaths)

The four criteria were weighted based on the Planning Team’s opinion of each criterion’s importance, following recommended FEMA guidance. **Table 12** presents the results of this exercise, which includes the “medium” and “high” categories for the 10 identified hazards. The hazards in **Table 12** are consistent with the hazards identified in **Table 11**. Note that for organizational purposes, hailstorm, wind/windstorm, and tornado have been combined into a single category referred to in this Plan as severe weather.

Table 12. Inyo County Hazard Ranking Worksheet Outcomes

Hazard Type	Probability (Weight: 2.0)	Location (Weight: 0.8)	Impact		Total Score	Hazard Planning Consideration
			Primary Impact (Weight :0.7)	Secondary Impacts (Weight: 0.5)		
Avalanche	2.64	1.21	1.47	1.17	13.64	Medium
Dam or Aqueduct Failure	1.27	3.69	1.88	3.82	15.65	Medium
Disease/Pest Management	2.40	2.43	1.88	2.06	20.59	Medium
Drought	4.00	4.00	4.00	4.00	64.00	High
Seismic Hazards	4.00	4.00	4.00	4.00	64.00	High
Severe Weather	3.65	4.00	2.71	2.71	47.03	High
Flood	4.00	4.00	4.00	4.00	64.00	High
Geological Hazards	2.47	2.76	2.24	2.00	23.60	Medium
Hazardous Materials	3.00	3.47	2.82	2.25	35.27	Medium
Wildfire	4.00	4.00	4.00	4.00	64.00	High

Climate Change Considerations

Climate change is expected to exacerbate existing hazards in the planning area. As such, the Planning Team determined that it would be best to discuss climate change considerations throughout all applicable hazard profiles.

3.2 Hazard Profiles

The following hazard profiles provide hazard descriptions, associated impacts, location and extent, hazard history, risk of future hazard, and climate change considerations for each of the hazards considered in this Plan. For hazard description and climate change considerations, no meaningful difference exists between Inyo County and Bishop. For the remaining topics (location and extent, hazard history, and risk of future hazard), specific information is provided for both the county and the city.

Avalanche

Hazard Description

Avalanches consist of falling and sliding snow. There are two main types of avalanches: a surface avalanche and a full-depth avalanche. A full-depth avalanche is more severe than a surface avalanche because there is more snow involved and the snow slides over the ground.

Impact

The falling snow in an avalanche can damage, destroy, or bury structures in its path. The fast-moving snow can cause serious injury or death to people caught in an avalanche, or can suffocate people by burying them in the snow.

Location and Extent






Bishop is not exposed to avalanche hazards. In Inyo County, avalanches occur primarily on national forest lands in the Sierra Nevada backcountry, although some avalanche hazards present a significant risk to the mountain communities of Aspendell and Sage Flat, the south fork of Bishop Creek, and the surrounding terrain and highway access from Bishop and Big Pine. The likelihood, size, and distribution of avalanches are measured in five categories on the North American Public Avalanche Danger Scale, where one means generally safe avalanche conditions and five means avoid terrain (**Figure 4**).

Hazard History

Avalanches have repeatedly impacted certain regions in Inyo County. In 1986, a two-story Forest Service cabin located above the parking area on the south-facing side of a canyon was destroyed by an avalanche that originated on the north-facing side of Onion Valley. There are historic accounts of mining towns located above the Seven Pines area being destroyed by avalanches. Sage Flat has experienced large avalanches for much of recorded history, most notably the historic February 1986

avalanche that gouged the slopes of Kid Mountain. This avalanche hit the Glacier Lodge, and trapped propane gas was ignited, destroying the lodge. In 2010 and 2011, large avalanches (D4 or D5) descended the north-facing slopes of Kid Mountain, approximately 4,000 feet of vertical drop. In March 2011, Pine Creek experienced a Class 5 (most extreme) avalanche. The event originated on the south-facing slope around 12,500 feet on Wheeler Crest and flowed to within 100 yards of Pine Creek Road, about a half mile below Pine Creek Mine Road.

Figure 4. North American Public Avalanche Danger Scale

North American Public Avalanche Danger Scale				
Avalanche danger is determined by the likelihood, size and distribution of avalanches.				
Danger Level		Travel Advice	Likelihood of Avalanches	Avalanche Size and Distribution
5 Extreme		Avoid all avalanche terrain.	Natural and human-triggered avalanches certain.	Large to very large avalanches in many areas.
4 High		Very dangerous avalanche conditions. Travel in avalanche terrain <u>not</u> recommended.	Natural avalanches likely; human-triggered avalanches very likely.	Large avalanches in many areas; or very large avalanches in specific areas.
3 Considerable		Dangerous avalanche conditions. Careful snowpack evaluation, cautious route-finding and conservative decision-making essential.	Natural avalanches possible; human-triggered avalanches likely.	Small avalanches in many areas; or large avalanches in specific areas; or very large avalanches in isolated areas.
2 Moderate		Heightened avalanche conditions on specific terrain features. Evaluate snow and terrain carefully; identify features of concern.	Natural avalanches unlikely; human-triggered avalanches possible.	Small avalanches in specific areas; or large avalanches in isolated areas.
1 Low		Generally safe avalanche conditions. Watch for unstable snow on isolated terrain features.	Natural and human-triggered avalanches unlikely.	Small avalanches in isolated areas or extreme terrain.
Safe backcountry travel requires training and experience. You control your own risk by choosing where, when and how you travel.				

Source: American Avalanche Association 2016

Risk of Future Hazards

Given the past avalanche events in Inyo County and the expected continuation of winter storms, it is very likely that avalanches will continue to occur in the high mountain areas. The factors that contribute to avalanches are unlikely to decrease to any substantial degree.

Climate Change Considerations

According to the National Snow and Ice Data Center (2016), several factors may affect the likelihood of an avalanche, including weather, temperature, slope steepness, slope orientation (whether the slope is facing north or south), wind direction, terrain, vegetation, and general snowpack conditions.

Although research on the topic is sparse, some have suggested that warmer temperatures and

increases in early calendar year rainfall can increase the conditions under which avalanches are likely to occur (Bellaire, Jamieson, and Statham 2013).

Dam and Aqueduct Failure

Hazard Description

Dam and aqueduct failure occurs when a dam or aqueduct structure or its foundation is damaged to such a degree that the dam or aqueduct partially or completely loses its ability to hold back water. When this happens, some or all of the water impounded by the dam or aqueduct is suddenly released, causing a very fast-moving flood downstream of the dam or aqueduct.

Dams and aqueducts can fail for a number of reasons. Seismic or geologic hazards, such as earthquake shaking or a landslide, may damage the dam or aqueduct's foundation, causing it to weaken to the point of failure. During intense rainfalls, the dam or aqueduct itself or the surrounding rock can erode sufficiently to cause a failure. Additionally, the dam or aqueduct itself may be poorly sited, designed, or maintained, and so may collapse independent of any other hazard event. At times, these factors can work together, such as if a design flaw in a dam or aqueduct causes the floodwaters from an intense rainfall to erode parts of the dam or aqueduct and lead to a failure.

Impact

Like other flash floods, dam and aqueduct failures can cause widespread injury or loss of life, extensive property damage, and displacement of a large number of people in the flood's path. The floodwaters can drown people caught in the flood, or cause injury or death by striking people with debris. These floodwaters can cause property damage by the physical force of the water, by debris carried in the flood, or more simply by waterlogging materials that should be kept dry. If the failed dam or aqueduct is part of a water supply network, a dam or aqueduct failure may also cause local and regional disruption to water service if there is no sufficient alternative supply.

Location and Extent

Inyo County

According to the California Department of Water Resource's Division of Safety of Dams (2014), there are eight dams and one aqueduct in Inyo County. **Table 13** lists these dams and aqueduct. Parts of Inyo County are also at risk from inundation from the failure of the Long Valley Dam, also known as Crowley Lake Dam. It is located on the Owens River in Mono County, approximately 8 miles north of the Inyo County border. The dam creates Crowley Lake, a reservoir with a capacity of 183,465 acre-feet (more than all Inyo County dams combined). It was built in 1941 and is owned by LADWP for water

supply, recreation, and hydroelectric generation (DWR 2014; USACE 2016a). **Figure 5** shows the dam inundation hazard area in Inyo County.

Bishop

None of the dams listed above are located in the Bishop city limits. However, the Bishop Creek Intake No. 2, Hillside, and Sabrina dams are located on Bishop Creek; the south fork of Bishop Creek flows through the City of Bishop. **Figure 6** shows the dam inundation hazard area in Bishop.

Table 13. Inyo County Dams

Name	Owner	Purpose(s) *	Capacity (acre-feet)	Year Built
Big Pine Creek	LADWP	Hydroelectric, irrigation, water supply	1,071	Unknown
Bishop Creek Intake No. 2	SCE	Hydroelectric, recreation	78	1908
Haiwee	LADWP	Irrigation, water supply	46,600	1913
Hillside (South Lake)	SCE	Hydroelectric, recreation	12,883	1910
Longley (McGee Lake)	SCE	Hydroelectric, recreation	178	1910
Pleasant Valley	LADWP	Hydroelectric, water supply	3,825	1957
Sabrina	SCE	Hydroelectric, recreation	8,376	1908
Tinemaha	LADWP	Water supply	16,405	1928
LA Aqueduct	LADWP	Water supply	N/A	1913
* The first listed purpose is the primary purpose. Sources: DWR 2014; USACE 2016a				

Figure 5. Dam Inundation Hazard Area in Inyo County

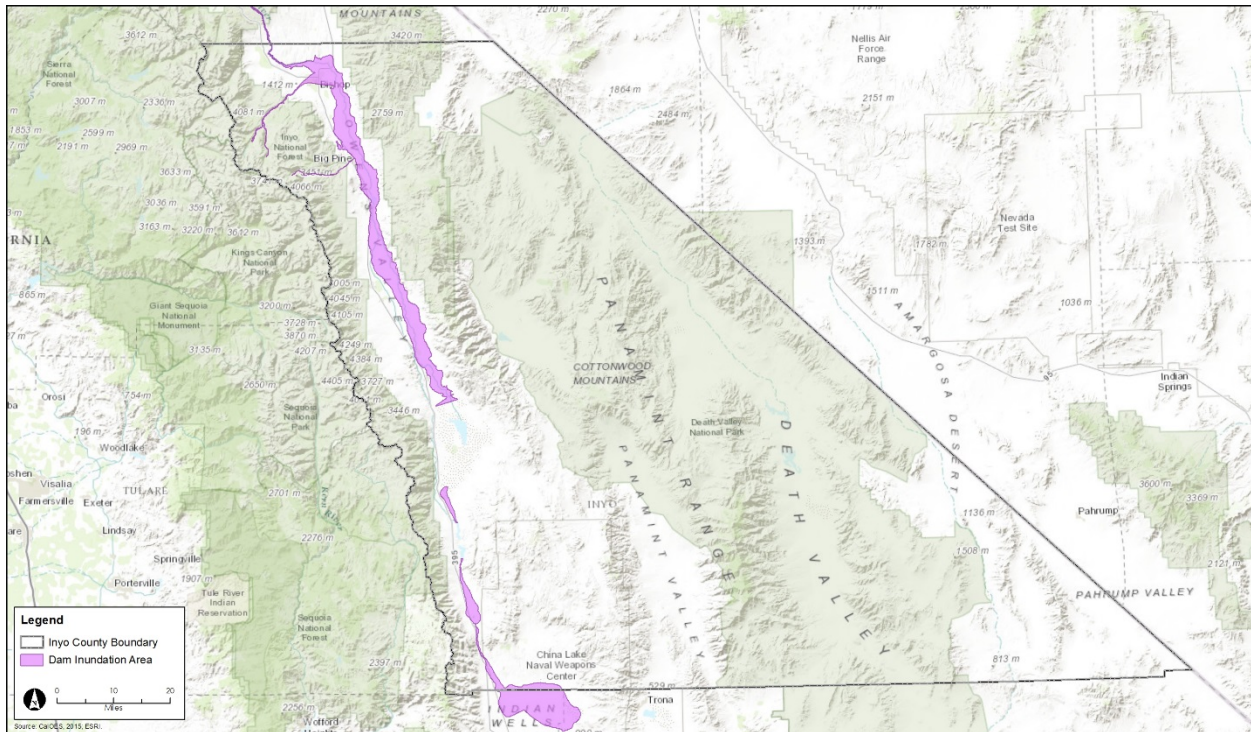
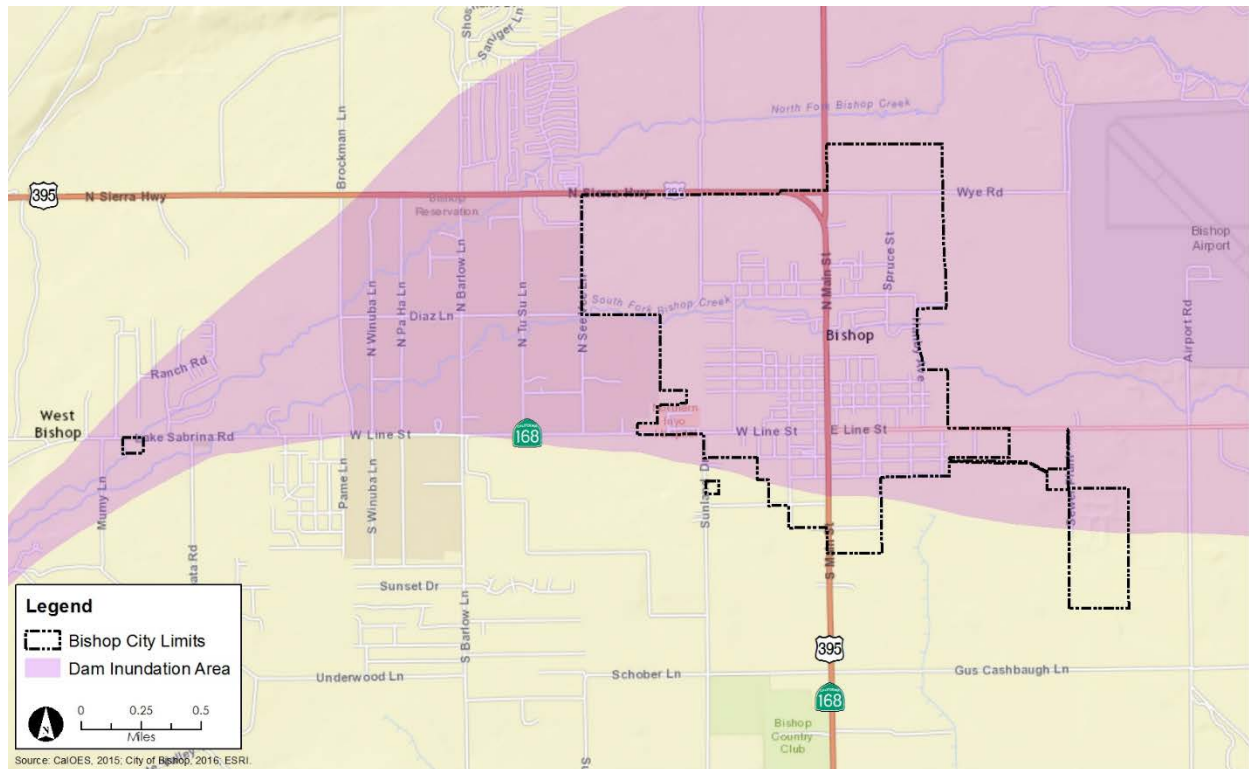


Figure 6. Dam Inundation Hazard Area in Bishop



Hazard History

Dams, much like other critical infrastructure such as bridges and tunnels, can cause widespread loss and destruction if they fail. To avoid this, dams are heavily engineered structures and significant failure events are very rare. California has seen two significant dam failure events, both of which occurred in the Los Angeles region. In 1928, the St. Francis Dam near Santa Clarita in northern Los Angeles County experienced a catastrophic failure, killing more than 600 people. In 1963, the Baldwin Hills Dam in Los Angeles’s Baldwin Hills neighborhood collapsed, killing 5 people and destroying 277 homes. Both dams were owned by the Los Angeles Department of Water and Power. Inyo County itself saw a minor dam failure event on September 26, 1982, due to intense rainfall from the remnants of a hurricane that dissipated off the coast of Baja California. The storm caused failure of the North Lake Dam near Aspendell in northwest Inyo County. There were no resulting injuries or structural damage, although there was some flooding of a nearby federally owned campsite (FEMA 2011).

Inyo County

As mentioned above, one minor dam failure event occurred in Inyo County in 1982. This event did not result in injury or loss of life.

Bishop

No known dam failures have occurred in Bishop.

Risk of Future Hazards

The US Army Corps of Engineers (USACE) has developed a rating system for dam safety called the Dam Safety Action Classification (DSAC). The DSAC is a five-point scale, with DSAC-I assigned to dams with the highest risk and DSAC-V to those with the lowest risk. The DSAC examines both the structural integrity of the dam and the potential loss and damage from a failure event. As a result, dams with a low DSAC rating (and therefore a higher risk) are not necessarily dams that are more likely to experience a failure. Such dams may be extremely stable and structurally sound, but they merit their low rating due to the magnitude of the disaster that could occur if the dam failed. **Table 14** shows the DSAC rating system. At this time, the DSAC scores of the eight dams in Inyo County are not known.

Table 14. DSAC Rating System

DSAC Score	Description
DSAC-I: Urgent and Compelling	Progression toward failure is confirmed to be taking place under normal operations, and the dam is almost certain to fail without intervention within a few years. Alternatively, the combination of life or economic consequences with probability of failure is extremely high.
DSAC-II: Urgent	Failure could occur during normal operations, or happen as a consequence of an event, and the likelihood of failure without remediation is too high to assure public safety. Alternatively, the combination of life or economic consequences with probability of failure is very high.
DSAC-III: High Priority	The dam is significantly inadequate. Alternatively, the combination of life, economic, or environmental consequences with probability of failure is moderate to high
DSAC-IV: Priority	The dam is inadequate and may not meet all essential USACE engineering guidelines, and the combination of life, economic, or environmental consequences with probability of failure is low.
DSAC-V: Normal	The dam is adequately safe and meets all essential guidelines, and the risk is tolerable.

Source: USACE 2016b

The California Office of Emergency Services (Cal OES) maps dam inundation zones to identify the projected areas that would be subject to inundation if a dam were to fail. As shown in **Figure 6**, with the exception of the far southern end, Bishop is entirely located in a dam inundation zone, as identified by best available information. Approximately 966.25 acres of the city are in a dam inundation zone, 319.69 acres (33 percent) of which are private property. **Table 15** shows the dam inundation area in Bishop by land administration or ownership. While these estimates are based on the best available data, local conditions may alter the specific flood path of water from a ruptured dam. It should also be noted that mapping for aqueduct failure is not available at this time, however communities living below these facilities can expect a certain amount of vulnerability to this hazard. In the unincorporated areas of Inyo County, the risk of dam inundation is limited to the area around the Owens River bed and along the beds of Big Pine Creek and Bishop Creek. **Table 16** shows land ownership for the lands in the unincorporated area that are at risk of dam inundation. Lands in the private category are of greatest concern, as the County has final land use authority over these areas.

Climate Change Considerations

Many of the factors that may affect dam or aqueduct inundation risk, such as seismic activity or a dam’s structural soundness, are not affected by climate change. However, as discussed in the Flood section, there is some evidence that climate change may cause an increase in the number and/or severity of intense storms affecting Inyo County. The increase in water flow, combined with the potential for increased erosion or landslides as a result of storm activity, may increase the risk of dam or aqueduct failure. However, more studies are likely needed to determine the vulnerability of Inyo County’s dams and aqueduct from severe storms relative to other risks.

Table 15. Area of Dam Inundation in Bishop by Land Administration or Ownership

Land Administration or Ownership	Acres	Percentage of Total
Private	319.69	33.09%
City of Los Angeles Dept. of Water and Power	540.25	55.91%
Other Publicly Managed Land	101.83	10.54%
US Forest Service	4.48	0.46%
Total	966.25	100%
Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.		

Table 16. Unincorporated County Areas in Dam Inundation Hazard Zone

Land Administration or Ownership	Acres	Percentage of Total
Private	4,846.99	3.63%
Los Angeles Department of Water and Power	108,674.23	81.30%
Bureau of Indian Affairs	695.02	0.52%
State of California	971.63	0.73%
Bureau of Land Management	8,293.19	6.20%
US Department of Navy	9,107.74	6.81%
US Forest Service	1,035.57	0.77%
Other Publicly Managed Land	54.46	0.04%
Total	133,678.82	100.00%

Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.

Disease/Pest Management

Hazard Description

Disease and pest management hazards are caused by an undesirable organism (insects, bacteria, viruses, etc.) that causes serious harm to plants, animals, or humans. These organisms can threaten human health by infecting people, flora, and fauna with a number of diseases, some of which are potentially fatal. Pathogenic or disease-carrying organisms may also cause widespread devastation to forests, creating safety hazards and causing environmental damage in addition to economic impacts.

For rural areas, diseases and pests that impact agricultural resources and trees are a concern, in addition to organisms harboring pathogens that may affect human health. Several insects and other animals can be considered hazardous in Inyo County:

- Because of the hydrologic conditions of the Owens Valley, the area is prone to mosquito infestation. Mosquitoes can carry a number of potentially harmful pathogens, including West Nile virus, Zika virus, western equine encephalomyelitis, and St. Louis encephalitis (the latter two being rare conditions that can lead to brain inflammation and impairment of the central nervous system) (OVMAP 2015).
- Historical occurrences of tree pests have been observed, including Jeffrey pine beetle and bark beetle. Pests inhabit trees, weakening and often killing them. At times, massive outbreaks of beetles can kill vast swaths of forests.

- Recently, Inyo County experienced a boxelder bug infestation. While not a direct threat to health and human safety, the infestation was severe enough to alter normal living and had a potentially significant impact on the tourist economy due to the undesirable conditions the bugs created.
- Some species of mice and rats in Inyo County have been known to carry hantaviruses, which can cause a frequently fatal condition called hantavirus pulmonary syndrome, or HPS (CDC 2016).

Other species of insects are found in Inyo County that do not transmit diseases, but which can bite people or be otherwise irritating. These include *Culicoides* (biting midges, sometimes called no-see-ums), horseflies, and deerflies (OVMAP 2015).

Impact

The specific impacts from disease and pest management hazards depend on the pathogens or pest organisms involved. They may include minor or major illnesses, pest infestations ranging from irritating to debilitating, permanent or chronic health conditions, or death. Diseases or pest infestations that affect agricultural products or natural environments can cause economic harm to the community.

Location and Extent

Disease and pest management hazards vary little throughout Inyo County and Bishop. Mosquitoes occur throughout the county and are typically found near stagnant water. Given the region's hydrologic properties, the Owens Valley is fertile habitat for mosquitoes. Mosquitoes are seasonal pests, typically appearing during warm months and disappearing during the winter. Invasive tree pests typically occur in the forested area, but can also affect street and private trees in the developed areas of the county. The boxelder bug infestation occurred throughout the county.

Hazard History

Records of beetle-related Jeffrey pine mortality date back to the early 1920s in the Inyo National Forest, where beetle populations reached outbreak levels and subsequently caused the death of more than 13 million board feet of standing timber across 32,000 acres (Smith, Borys, and Shea 2009). In 2015, boxelder bugs blanketed communities in Inyo County; however, no physical damages were reported. Mosquitoes are common throughout the county, with acute problems in the Owens Valley. In 1985, the Inyo County Board of Supervisors voted unanimously for the creation of a mosquito abatement program designated as the Owens Valley Mosquito Abatement Program, or the OVMAP.

The program provides continual surveillance of mosquitoes to ascertain the threat of disease transmission and annoyance levels, then uses safe, integrated vector management methods to keep mosquitoes below those levels (IMCACO n.d.). Hantavirus cases are fairly rare in Inyo County, with a single case approximately every two years (Best-Baker 2016).

Risk of Future Hazards

Despite the OVMAP's abatement efforts, mosquitoes are expected to be prevalent in the warm and hot months through the foreseeable future. The county's trees and forests are also expected to be at risk to invasive beetles and other pests, especially as tree defenses are weakened by ongoing drought conditions. Because of the unpredictable nature of boxelder bug infestations, future return periods and risk are unknown.

Climate Change Considerations

Climate change is expected to substantially alter insect and disease vector habitat. Unusual climatic conditions are partly to blame for the boxelder bug infestation in 2015. Similarly, drought-stricken trees are less able to defend themselves against invasive and damaging beetles. With declining snowpack, there may be greater amounts of stagnant surface water. The combination of stagnant water and expected warmer temperatures could cause mosquitoes and other pests to become even more prolific in the county.

Drought

Hazard Description

A drought is a long-term water shortage, caused by an extended period with little to no precipitation, which can lead to a decline in available water supplies. Unlike most other hazards, droughts develop over a long period of time. It often takes multiple dry years to cause drought conditions, and these conditions may persist for years. They are usually a region-wide hazard, and at times may extend statewide or cover multiple states. However, the specific impacts of a drought can depend on a number of local conditions, including water supply systems, soil types, and land uses.

As a result, two communities under similar drought conditions may experience different impacts. Droughts may also have a significant impact on communities not directly in the affected area. For example, if a community relies on imported water that travels a great distance, the community may be substantially impacted if a drought occurs at the source of the imported water, even if precipitation levels in the community itself are normal. Similarly, communities may be facing local drought conditions, but impacts may be minor if the community's water comes from a distant unaffected area.

Impact

Droughts may cause increases in water rates or additional restrictions on water use. In severe cases, communities may not have enough available water to meet basic needs. Drought conditions can significantly harm agricultural operations, particularly in areas that grow water-intensive crops. Planted landscapes may become drought-stressed, causing them to become weak or die from lack of water. If drought conditions are severe enough, the lack of water may pose a human health risk.

Droughts also have a number of indirect impacts. The lack of precipitation can cause soil to harden and become less permeable. When precipitation does eventually occur, the soil cannot absorb water as easily, potentially leading to increased flooding. Drier soil may lose some of its strength, increasing its susceptibility to sliding and eroding. Droughts may dry out wildland vegetation, potentially increasing the risk of fire. Water-stressed plants may also be more vulnerable to disease or pests.

Location and Extent

Droughts are regional in nature, although a large community such as Inyo County with a wide variety of climates may experience significantly different drought conditions in different locations. No one part of Inyo County, including Bishop, is substantially more or less at risk of drought conditions, although some areas may be more impacted by droughts than others.

There are multiple ways to measure the severity of different drought conditions. The US Drought Monitor Classification Scheme, shown in **Table 17**, combines many of these systems into a single index.

Table 17. US Drought Monitor Classification Scheme

Category	Description	Possible Impacts
D0	Abnormally dry	Slower growth of crops and pastures compared to normal activities.
D1	Moderate drought	Some damage to crops and pastures. Streams, reservoirs, or wells low. Some water shortages may be developing or imminent.
D2	Severe drought	Likely crop and pasture losses. Water shortages are common, leading to restrictions.
D3	Extreme drought	Major crop and pasture losses. Widespread water shortages.
D4	Exceptional drought	Exceptional and widespread crop and pasture losses. Emergency shortages develop.

Source: US Drought Monitor 2016a

Hazard History

Droughts are a common feature of the climate in much of California, and many of the state's native plants and animals have evolved strategies to survive during drought conditions. The state also has an extensive water supply network that helps to reduce the impacts of droughts with the assistance of large storage reservoirs and pipes that can move water from regions with available supplies to drought-affected areas, although this system primarily benefits the urban areas of California.

Inyo County has seen drought conditions before, including in 1975–1977 and in 2001 (Cal OES 2013a). As of the middle of 2016, all of California continues to experience drought conditions that have persisted since 2012. The 2012–2016 drought is the worst in California's recorded history and is believed to be the most severe in at least 1,200 years (Griffin and Anchukatis 2014). In 2014, Governor Jerry Brown declared a statewide state of emergency as a result of the drought conditions (Office of the Governor 2014). In 2014, the US Department of Agriculture (USDA) issued a drought disaster designation for Inyo County, which enabled emergency farm loans for actual losses as a direct result of the disaster up to a maximum of \$500,000 (USDA 2014). In April 2016, all of Inyo County was in some state of drought. Drought conditions were most severe in the western part of Inyo County, reaching category D4 (exceptional drought) on the US Drought Monitor Classification Scheme. The southeast corner of Inyo County was the least affected, measuring D1 (moderate drought) on the Classification Scheme (US Drought Monitor 2016b). Some privately owned groundwater wells have gone completely dry as a result of this drought. As of June 2017, these conditions have largely subsided, due to the rains received this past winter. **Figure 7** shows statewide drought conditions as of June 6, 2017, with only portions of the eastern Inyo County in a state of Abnormally Dry (D1) drought conditions. All other areas, including Bishop aren't located in drought conditions.

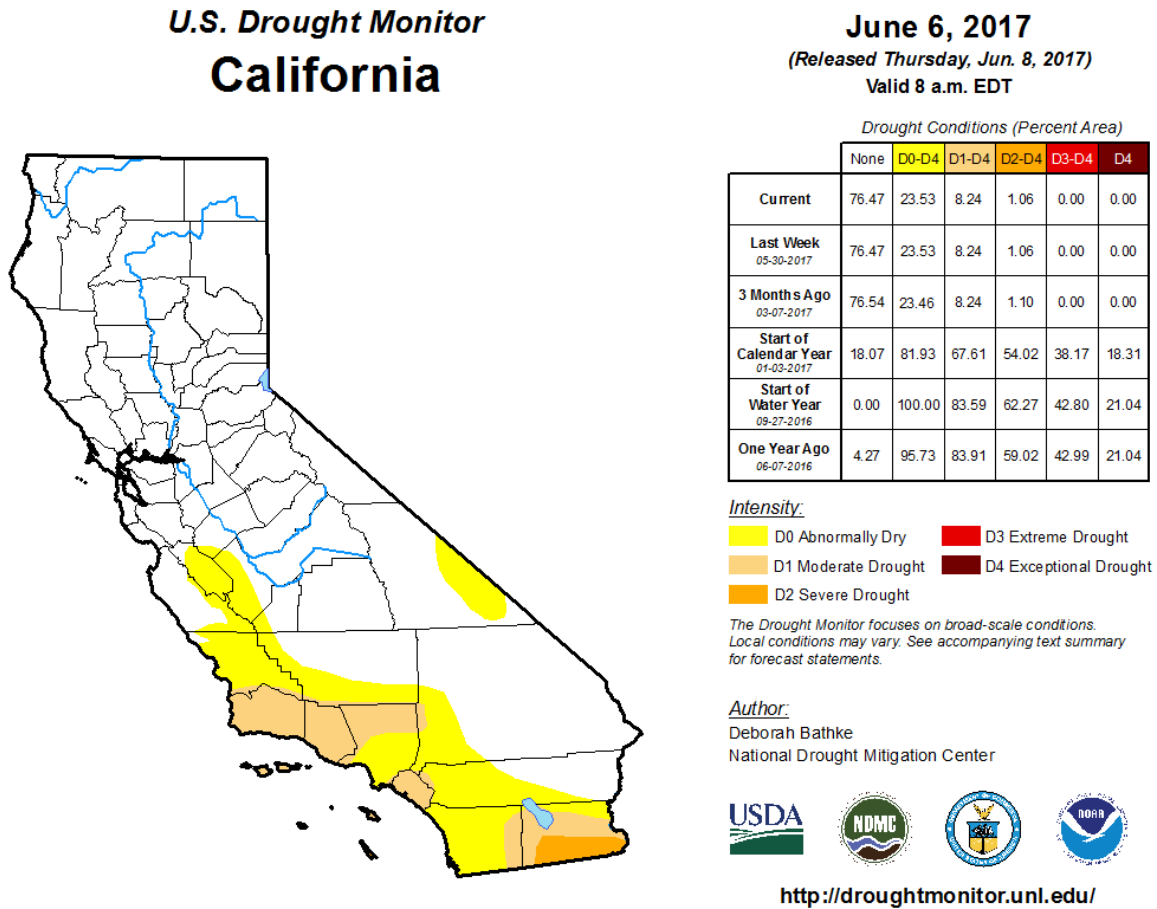
Risk of Future Hazards

As noted above, droughts are a regular feature in California. They are almost certain to continue to occur in the future, with varying severity and duration. Inyo County's numerous water systems, including community water systems and individual wells, rely on a combination of groundwater and local surface water. As a result, any local drought conditions may impact the water supply systems in Inyo County, as there is no infrastructure to import water from elsewhere in California.

The City of Los Angeles exports large amounts of Inyo County water from the Owens River through the LADWP-owned Los Angeles Aqueduct. In 2015, the Los Angeles Aqueduct delivered approximately 53,000 acre-feet of water to LADWP, the lowest amount in recent history due to ongoing drought conditions (City of Los Angeles 2015). The highest value of water exported through

the aqueduct was 541,563 acre-feet in 1983. While deliveries to Los Angeles do decline during drought years, there is also less water available for Inyo County and City of Bishop residents even before water is exported. As such, Inyo County communities may face a higher risk of drought since there is even less water available for Inyo County than precipitation levels would suggest.

Figure 7. California Drought Conditions – June 6, 2017



Climate Change Considerations

Scientific evidence suggests that precipitation levels in California will generally decline as a result of climate change. In Inyo County and the surrounding area, precipitation levels are expected to fall by up to one-third by 2100, although depending on the part of Inyo County this may translate to a decline of 2 to 15 inches. Climate change is expected to impact the accumulated snow (the snowpack) in the mountains, which normally melts slowly and provides a consistent supply of water during the summer and early autumn months before the rainy season returns. Decreases in precipitation are

expected to reduce the size of the snowpack, and it may melt faster as a result of warmer temperatures due to climate change. Overall, studies suggest that the snowpack in Inyo County and surrounding areas may be reduced by more than 50 percent in some locations (CNRA and Cal OES 2012). Some recent studies found that the 2012–2016 drought was made worse by climate change and that climate change is likely to increase the risk of future extreme droughts (Williams et al. 2015).

Seismic Hazards

Hazard Description

The category of seismic hazards includes three different but related hazard types—fault rupture, ground shaking, and liquefaction—all of which are consequences of earthquakes. Earthquakes themselves are caused by the movement of large pieces of the earth’s crust, called tectonic plates. As the tectonic plates move against each other, they can become stuck together, causing stress between the plates to build up until it eventually overcomes the friction holding them together. When this happens, the stress is released and the plates suddenly slip past each other, creating the shaking that we call an earthquake.

Earthquakes occur along boundaries called fault lines. These fault lines may be the actual border between plates, but they may also be borders between two sections of a single plate, created by the repeated process of accumulated and released stress. California sits on the boundary between the Pacific and North American tectonic plates. The main boundary is the San Andreas fault, although tectonic activity has created fault lines throughout large sections of the state, especially in the coastal areas, the western Mojave and Colorado Deserts, northeast California, and along the eastern slope of the Sierra Nevada (CGS 2002).

Fault Rupture

Fault rupture is the actual movement of the ground’s surface along a fault line when an earthquake occurs. This movement may be vertical, horizontal, or both, depending on the type of fault. Damage from fault rupture is limited to the area of the fault boundary itself, although depending on the amount of movement along the fault, the damage may be severe. Some earthquakes, known as “blind thrust earthquakes,” occur without causing visible surface rupture, although they may still cause substantial damage. The 1994 Northridge earthquake, one of the most damaging in California history, was a blind thrust earthquake.

Ground Shaking

Ground shaking is generally the most damaging of seismic hazards and is the specific hazard most commonly associated with earthquakes. The severity of ground shaking is affected by local geology, but in general it will be most severe closest to the site of the earthquake and decrease with distance. Ground shaking may occur in an up and down, side to side, or rolling motion, depending on the type of seismic waves produced by the earthquake.

Ground shaking is measured using either the moment magnitude scale (MMS, denoted as Mw or simply M) or the Modified Mercalli intensity scale. The MMS is a replacement for the Richter scale, which is still often referred to but is no longer actively used, as the Richter scale is not reliable when measuring large earthquakes (USGS 2014a). The weakest earthquakes measured by the MMS start at 1.0, with the numbers increasing with the strength of the earthquake. The strongest recorded earthquake, which struck Chile in 1960, measured 9.5 on the MMS (USGS 2015a). Like the Richter scale, the MMS is what is known as a logarithmic scale, meaning the difference in strength between two earthquakes is much larger than the difference in their measurements. For example, a 6.0 Mw earthquake is 1,000 times stronger than a 4.0 Mw earthquake and about 1.4 times as strong as a 5.9 Mw event.

The Modified Mercalli intensity scale is based on the damage caused by the earthquake and how it is perceived, rather than an actual measurement. When comparing multiple earthquakes, one event may have a higher Mercalli rating than another even if it released less energy and thus was measured lower on the MMS. The Mercalli scale ranges from I (instrumental, rarely felt by people) to XII (catastrophic, total damage and lines of sight are distorted). **Table 18** shows a general comparison between the MMS and the Modified Mercalli intensity scale.

Table 18. Comparison of MMS and Modified Mercalli Intensity Scale

MMS	Modified Mercalli Intensity Scale
1.0 to 3.0	I
3.0 to 3.9	II to III
4.0 to 4.9	IV to V
5.0 to 5.9	VI to VII
6.0 to 6.9	VII to IX
7.0 and greater	VIII and greater
Source: USGS 2014b	

Liquefaction

Liquefaction occurs when loosely packed sand or silt is saturated with water and then shaken hard enough for it to temporarily behave like a fluid. This causes the soil to lose its strength, which may in turn damage structures built on or in it. Liquefaction risk depends primarily on the height of the groundwater table and the composition of the soil.

Impact

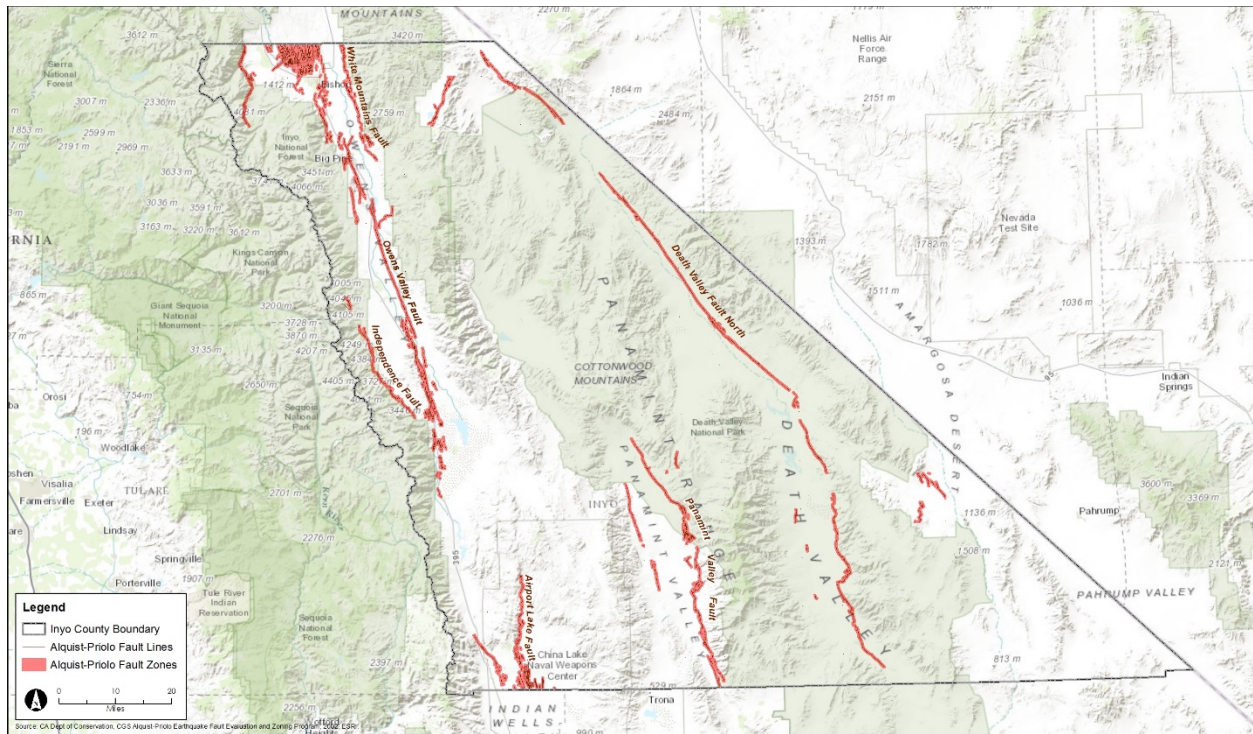
Fault rupture can physically shear any structure that happens to span the fault line. This may include buildings, roads, utility pipes and lines. Ground shaking, which is typically the most harmful seismic impact, may damage or destroy structures that are unable to resist the shaking. Liquefaction can similarly damage structures built on or in liquefied soil, potentially causing them to partially or completely collapse. People may be injured or killed by falling debris or collapsing structures. Broken water lines may cause floods, ruptured natural gas or electrical lines can spark wildfires, and breaks in sewer lines may result in a human and environmental health hazard.

Location and Extent

Inyo County

Twelve major faults in Inyo County are identified as Alquist-Priolo faults, meaning they are active faults that are considered a potential hazard from fault ruptures. Six of these faults run through the Owens Valley: the White Mountains fault, the Owens Valley fault, the Independence fault, the Airport Lake fault, the Little Lake fault, and the Fish Slough fault. East of the Owens Valley is the Deep Springs Valley, through which the Deep Springs fault runs. North of the Owens Valley is the Round Valley fault. Additionally, the Panamint Valley and Ash Hill faults run along the eastern edge of the Panamint Valley, while the Death Valley-Furnace Creek fault runs through Death Valley and the northeastern part of the county. Although not named, there is an extensive set of faults, also designated as Alquist-Priolo faults, northwest of Bishop in an area known as the Volcanic Tablelands. **Figure 8** shows Alquist-Priolo fault lines in Inyo County.

Figure 8. Alquist-Priolo Fault Lines in Inyo County



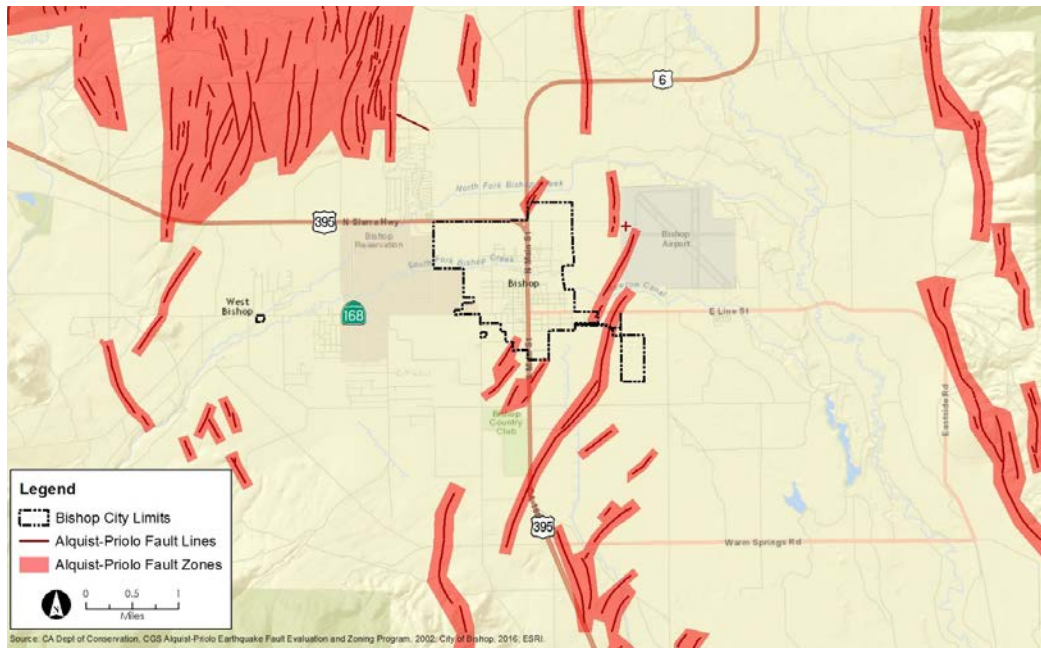
Bishop

The Owens Valley fault runs through the southeastern part of Bishop, and the White Mountains fault runs a few miles east of the community. The Volcanic Tablelands fault area is located northeast of the city. These faults cross the City of Bishop and Eastern Sierra Community Service District sewer trunks, which may cause a disruption in service if interrupted. **Figure 9** shows fault lines in and around Bishop.

Note that there are other faults in Inyo County that are not identified as Alquist-Priolo faults. While state law does not require these faults to be mapped, their exclusion from these maps does not mean they do not pose a risk.

The geology of the Basin and Range province, which includes Inyo County, can create liquefaction risks despite the very low precipitation levels in the region. Precipitation that falls within a valley or on the mountain ranges on either side collects at the lowest part of the valley, forming a temporary lake. Although these lakes may be dry most of the year on the surface, the water can percolate into the ground, creating the high groundwater table that increases liquefaction risks. There may be an elevated risk of liquefaction in most of the valleys of Inyo County, particularly near dry lake beds (Wills 1996).

Figure 9. Alquist-Priolo Fault Lines in Bishop



Hazard History

In 1872, the Lone Pine earthquake occurred along the Owens Valley fault. The US Geological Survey (USGS) (2014c) estimates the earthquake’s intensity at 7.4 Mw although some scientists suggest it may have measured 7.8–7.9 Mw (Hough and Hutton 2009). Regardless of specific intensity, the earthquake was one of the strongest in California’s recorded history. It killed 27 people in Lone Pine and destroyed 52 of the town’s 59 houses. Substantial damage and a small number of fatalities were reported throughout the rest of the Owens Valley, and fault rupture near Lone Pine was as great as 23 feet horizontally and over 3 feet vertically. The earthquake was strong enough to wake people up in Red Bluff (335 miles northwest) and San Diego (275 miles south) and caused \$250,000 in damages, or about \$5 million at present value (USGS 2014c).

Evidence of past liquefaction has been observed in multiple places in Inyo County. Geologists have found evidence of liquefaction in Deep Springs Valley in northeast Inyo County, around Owens Lake, and in Death Valley. While some of these events occurred prior to recorded history, records show liquefaction around the edges of Owens Lake as a result of the Lone Pine earthquake (Wills 1996).

Risk of Future Hazards

The county’s location on and near numerous faults, including several capable of causing significant earthquakes, means that the county will continue to face threats from earthquakes and related

hazards. **Table 19** shows the probability of Alquist-Priolo faults in the region causing earthquakes of a particular magnitude within the next 30 years. Because the faults have multiple segments in Inyo County, with different probabilities for each section, the full range of probabilities is shown. Depending on the magnitude and location of the earthquake, all of Inyo County, including Bishop, may be within the substantially affected area. As noted above, faults not identified as Alquist-Priolo faults are still capable of causing significant earthquakes.

The area at risk of fault rupture is much smaller, as it is limited to areas in the immediate vicinity of Alquist-Priolo faults. Approximately 98,919 acres of unincorporated Inyo County are within the fault rupture hazard zone, or approximately 1.5 percent of the total unincorporated area. **Table 20** shows the ownership and administration of these lands in the unincorporated areas of Inyo County.

In Bishop, approximately 20 acres are in a fault rupture hazard zone, comprising approximately 1.9 percent of the total city area. **Table 21** shows the ownership and administration of these lands.

Table 19. 30-Year Earthquake Probabilities by Fault

Alquist-Priolo Fault	30-Year Earthquake Probability			
	6.7+ Mw	7.0+ Mw	7.5+ Mw	8.0+ Mw
Airport Lake	0.52%–0.81%	0.20%–0.27%	N/A	N/A
Ash Hill	0.45%–0.61%	N/A	N/A	N/A
Furnace Creek-Death Valley	2.07%–2.53%	2.06%–2.43%	1.84%–2.12%	N/A
Deep Springs Valley	0.90%	N/A	N/A	N/A
Fish Slough	0.24%–0.78%	0.14–0.34%	0.03%–0.17%	N/A
Independence	0.22%–0.31%	0.11%–0.21%	0.02%–0.06%	N/A
Little Lake	1.03%–1.96%	0.09%–0.62%	0.02%–0.07%	N/A
Owens Valley	0.56%–0.83%	0.44%–0.71%	0.08%–0.14%	N/A
Panamint Valley	2.41%–2.94%	2.09%–2.53%	1.53%–1.54%	N/A
Round Valley	0.69%–2.14%	0.52%–1.64%	N/A	N/A
White Mountains	0.44%–0.60%	0.18%–0.33%	0.04%	N/A
Note: Fault probabilities are not available for the Volcanic Tablelands fault zone. Source: USGS 2015c				

Table 20. Areas at Risk of Fault Rupture in Unincorporated Inyo County by Ownership

Land Ownership or Administration	Acres	Percentage of Total
Bureau of Indian Affairs	41.21	0.04%
Bureau of Land Management	39,065.94	39.49%
Los Angeles Department of Water and Power	19,760.56	19.98%
National Park Service	21,911.17	22.15%
Other publicly managed land	67.02	0.07%
Private ownership	2,867.87	2.90%
State of California	1,464.71	1.48%
US Department of the Navy	9,060.75	9.16%
US Forest Service	4,679.70	4.73%
Total	98,918.93	100.00%

Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.

Table 21. Areas at Risk of Fault Rupture in Bishop by Ownership

Land Ownership or Administration	Acres	Percentage of Total
Los Angeles Department of Water and Power	14.91	73.73%
Other publicly managed land	1.70	8.42%
Private ownership	3.61	17.85%
Total	20.22	100.00%

Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.

Scientists have analyzed a number of earthquake scenarios for the Long Valley Caldera-Mono Lake area, which includes northern Inyo County and Bishop. A significant earthquake in this area would likely be widely felt throughout Inyo County, with potentially serious impacts. This area also includes the Death Valley and White Mountains faults, which as previously noted are among the Alquist-Priolo faults in Inyo County. A joint study by CGS and the USGS (USGS and CGS 2014) suggests that the following earthquake scenarios for this region may affect Inyo County and Bishop:

- A 6.7 Mw event on the Fish Slough fault, which would cause shaking in excess of VIII on the MMI scale in Bishop and north along the US Highway 6 corridor. This event would also create liquefaction risks throughout the northern Owens Valley and landslide risks on the surrounding slopes. Parts of Inyo County on the fault line could see fault rupture in excess of 2

feet (USGS and CGS 2014). The risk of a 6.7 Mw or greater event on the Fish Creek fault is estimated at around 0.25 percent in the next 30 years (USGS 2015c).

- A 6.7 Mw earthquake on the Hartley Springs fault south of Mono Lake, which would limit most of the severe shaking to Mono County. However, northwestern Inyo County and Bishop could see shaking intensity of over V on the MMI scale, with some landslide risks on the surrounding slopes (USGS and CGS 2014). The risk of a 6.7 Mw or greater event on the Hartley Springs fault is around 0.5 to 0.7 percent in the next 30 years (USGS 2015c).
- A 6.8 Mw event on Mono County's Hilton Creek fault, which could cause ground shaking measuring up to VI on the MMI scale in northwest Inyo County and Bishop, and potentially cause landslides along the area's slopes (USGS and CGS 2014). Scientists estimate the risk of a similar or greater earthquake to be approximately 1 to 1.2 percent in the next 30 years (USGS 2015c).
- A 7.0 Mw earthquake on the Round Valley fault, which would create shaking with an intensity of over VIII on the MMI scale near the community of Round Valley and upwards of VII on the MMI scale in Bishop. Moderate shaking would also be likely throughout the Owens Valley, along with an increased risk of liquefaction and potentially severe landslide risks, especially around Round Valley. Land on the fault could see fault rupture of about 3.5 feet (USGS and CGS 2014). Scientists estimate approximately a 0.4 to 0.6 percent chance of a 7.0 Mw or stronger earthquake occurring on the Round Valley fault in the next 30 years (USGS 2015c).
- A 7.35 Mw earthquake on the White Mountains fault, which would cause very strong shaking (upwards of IX on the MMI scale) throughout the northeastern Owens Valley and shaking as high as VIII on the MMI scale in Bishop. Landslide risk would be high throughout the area, particularly on the western slopes of the White Mountains, with a risk of liquefaction in the Owens and Saline Valleys. Fault rupture in the northeastern Owens Valley could exceed 6 feet (USGS and CGS 2014). This scenario is the least likely of the ones studied, with less than a 0.2 to 0.3 percent chance of occurring in the next 30 years (USGS 2015c).

In addition to the potential earthquake scenarios related to the Long Valley Caldera-Mono Lake area, scientists have analyzed the following scenarios for the faults in southeast Inyo County:

- A 7.3 Mw event on the Death Valley fault, centered 3 miles northwest of Furnace Creek, could cause shaking measuring IX on the MMI scale throughout Death Valley. Shaking may still be as high as VII in the community of Shoshone, more than 50 miles away. Such an event is

expected to cause moderate shaking in the southern and central Owens Valley, but may not be widely felt in Big Pine and Bishop (USGS 2013a).

- A 6.9 Mw event on the Death Valley fault, centered approximately 11 miles south of the Inyo County border with San Bernardino County and 8 miles west of State Route 127, could cause shaking measuring VIII–IX on the MMI scale in southern Death Valley. Shaking measuring VI or higher would be felt throughout southeastern Inyo County, including in Baker, Shoshone, and Furnace Creek (USGS 2013b).
- A 7.4 Mw event on the Panamint Valley fault, centered approximately 12 miles south of the Inyo/San Bernardino County border and 42 miles east of Ridgecrest, would cause shaking measuring VIII–IX on the MMI scale in the Panamint Valley and shaking measuring VII in Death Valley. The southern and central Owens Valley, including Independence and Big Pine, would be expected to see shaking of VI on the MMI scale as a result of such an event (USGS 2013c).

While liquefaction risks cannot be specifically predicted, liquefaction risks are likely to continue because of the loose soil and occasional presence of a high water table in parts of Inyo County. Some evidence suggests that pumping water out of the Owens River and into the Los Angeles Aqueduct may decrease liquefaction risks around Owens Lake, as the pumping means that less water can accumulate at Owens Lake and percolate into the ground (Wills 1996). It is unknown what impact efforts to decrease pumping of the Owens River will have on liquefaction risks in the area.

Climate Change Considerations

The likelihood, size, and severity of seismic events are not expected to be directly impacted by climate change. It is possible that anticipated changes to precipitation levels and storm intensity may affect groundwater aquifer levels, which could expand or contract the areas of potential liquefaction in the planning area. Since the field of climate change science is dynamic, the Planning Team will review and summarize new research that occurs on this topic during the next update cycle.

Flood

Hazard Description

Flooding is a temporary condition in which dry land is partially or completely inundated. There are a number of ways in which flooding can happen. The water levels in bodies such as streams, rivers, lakes, and reservoirs can exceed the water body's banks, causing water to overflow into nearby areas. The City of Los Angeles' land tenure patterns, and control of surface water dating back 100 years, pose special challenges in managing flooding and high runoff conditions since LADWP, and not the County,

is responsible for the control and export of the surface water it owns. Heavy precipitation can overwhelm the ability of soil to absorb water or of local storm drains to carry it away, causing water to build up on the surface. Flooding may also occur from infrastructure failure, such as a burst water tank or pipe. Dam or aqueduct inundation, a specific type of infrastructure failure flooding that occurs when a dam or aqueduct partially or completely collapses, is discussed separately under the Dam and Aqueduct Failure hazard profile.

According to California's Multi-Hazard Mitigation Plan, floods are the second most common disaster type in California, second only to fires (CNRA and Cal OES 2012). Flood severity is generally described in years, such as a 100-year event. This does not mean that such an event necessarily only occurs once every 100 years, but that the risk of such an event is 1 percent in any given year. Similarly, a 500-year flood event is one where the risk of such an event is 0.2 percent in any given year.

Impact

Regardless of the type of flood, a flood event can damage buildings and infrastructure both by debris carried along in the water or by the pressure of the water itself. People may be drowned in floodwaters, or injured or killed by the debris. Debris flows, which are a hazard of substantial concern in Inyo County, are discussed under the Geologic Hazards profile. Floods can weaken foundations and wash away soils, increasing the risk of damage or destruction.

Location and Extent

In the unincorporated areas of Inyo County, the flood risks are concentrated along the Owens River and Owens Lake and in parts of valleys elsewhere in the county, including the Panamint Valley and Death Valley. **Figure 10** shows the flood hazard areas for Inyo County.

Table 22 lists the distribution of land administration and ownership in the unincorporated areas for both the 100-year and 500-year floodplains. In total, approximately 367,598 acres of unincorporated Inyo County, or approximately 5.6 percent of the county's area, is in a flood hazard zone.

The flood risk in Bishop is mostly near the two forks of Bishop Creek. However, in the southeastern part of the community, the flood hazard zone expands beyond the immediate vicinity of the creek to a much wider area. **Figure 11** shows a map of the flood risk areas in Bishop. **Table 23** lists the ownership and administration of land in Bishop's floodplains.

The Los Angeles Aqueduct and other LADWP controlled conveyance apparatus (canals, ditches, diversions, etc.) may also be a potential source of flooding in Inyo County. The aqueduct diverts water out of the Owens River near the community of Aberdeen, approximately 13 miles south of Big Pine,

and runs parallel to Highway 395 past Inyo County's southern border. Any failure or overtopping of the aqueduct's walls, or activation of by-passes that divert water into natural drainages when the aqueduct is too full, may cause flooding in communities near the aqueduct or by-passes, including Bishop, Big Pine, Independence, Lone Pine, Cartago, and Olancho.

Figure 10. Inyo County Flood Hazard Areas

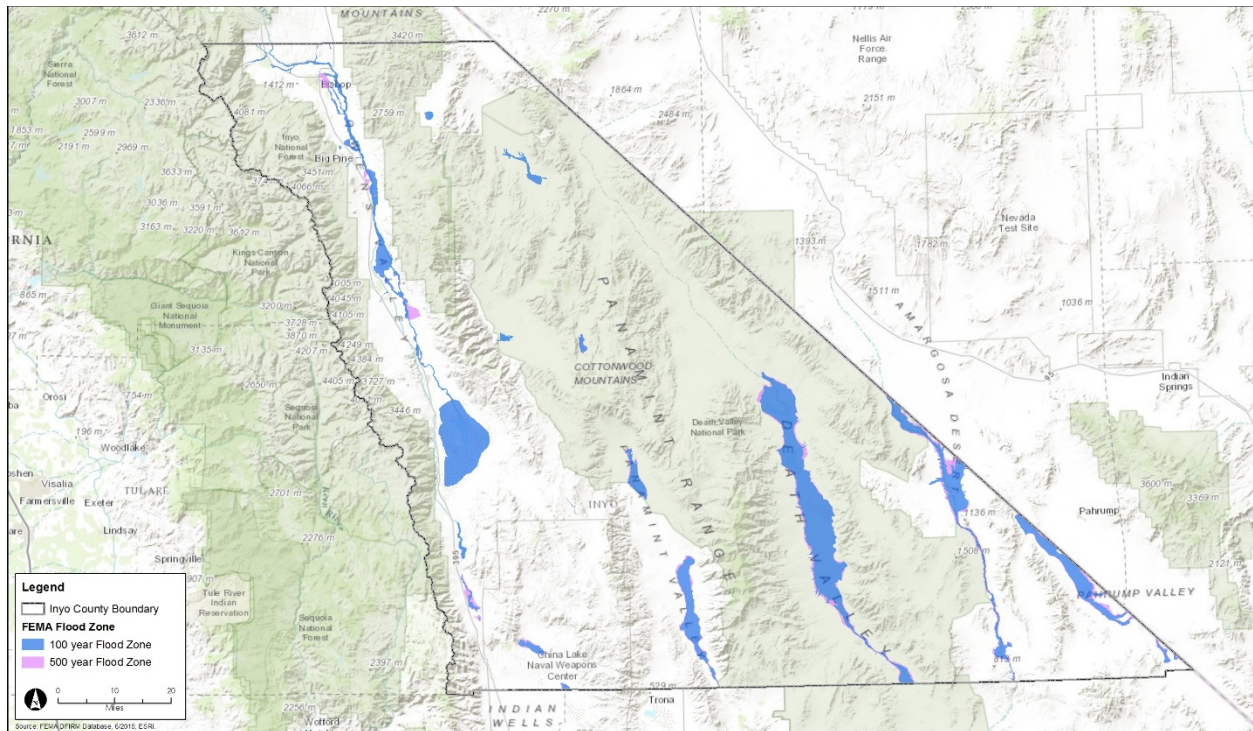


Table 22. Areas at Risk of Flooding in Unincorporated Inyo County by Ownership

Land Ownership or Administration	100-Year		500-Year	
	Acres	Percentage of Total	Acres	Percentage of Total
Bureau of Indian Affairs	412.32	0.13%	215.68	0.44%
Bureau of Land Management	74,688.18	23.45%	17,379.56	35.43%
Los Angeles Department of Water and Power	37,710.53	11.84%	7,010.63	14.29%
National Park Service	130,938.23	41.11%	18,505.69	37.72%
Other publicly managed land	1,518.20	0.48%	128.55	0.26%
Private ownership	7,521.12	2.36%	3,848.72	7.85%
State of California	61,894.21	19.43%	853.76	1.74%
US Department of the Navy	3,858.66	1.21%	1,113.80	2.27%
US Forest Service	—	—	0.3	<0.01%
Total	318,541.45	100%	49,056.69	100%

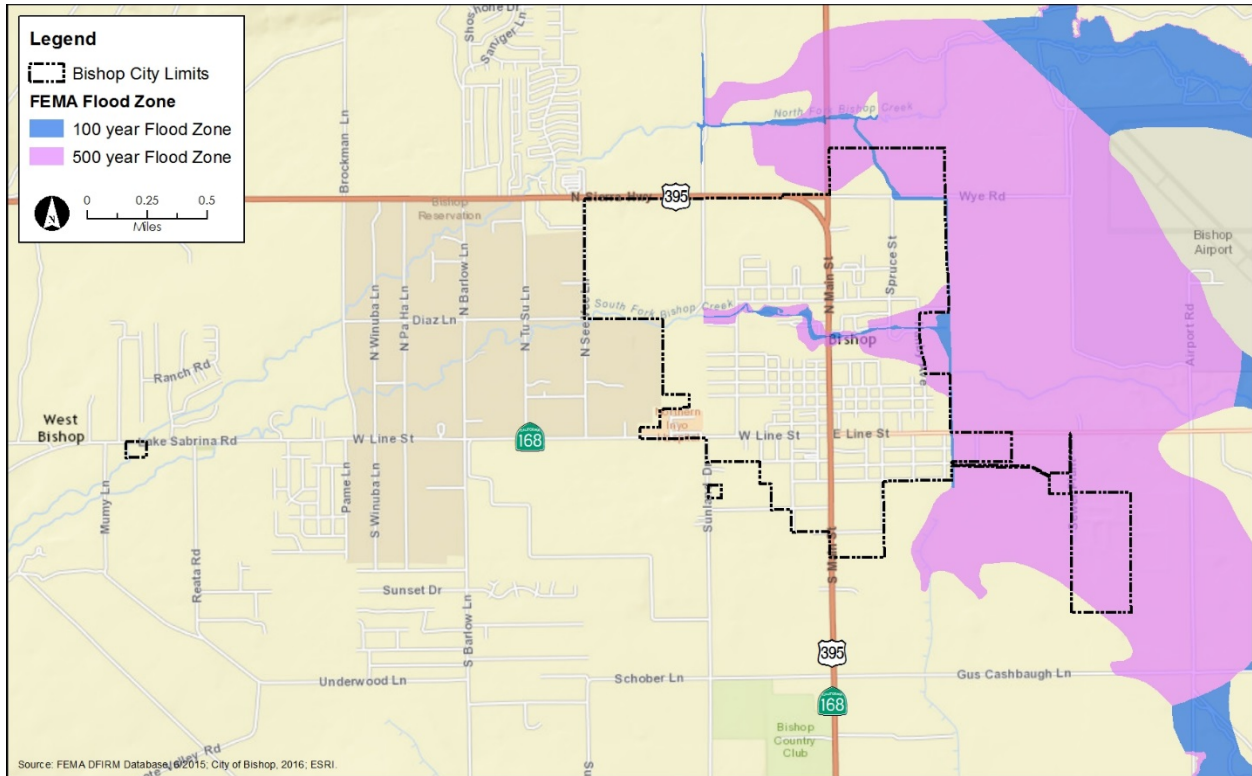
Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.

Table 23. Areas at Risk of Flooding in Bishop by Land Ownership or Administration

Land Ownership or Administration	100-Year		500-Year	
	Acres	Percentage of Total	Acres	Percentage of Total
Los Angeles Department of Water and Power	11.50	84.19%	88.60	44.54%
Other publicly managed land	0.20	1.46%	83.33	41.90%
Private ownership	1.97	14.42%	26.97	13.56%
Total	13.67	100%	198.90	100%

Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.

Figure 11. Areas at Risk of Flooding in Bishop by Ownership



Hazard History

Inyo County

Since 2003, eight flood disaster proclamations have been made in Inyo County, a rate of over one every two years. Of those floods, five were declared state disasters and two were recognized by FEMA. **Table 24** identifies flooding in recent history. The 2015 Death Valley flood was the result of back-to-back storms followed by an event that included nearly 3 inches of rain in 5 hours. The event was described as a “1,000-year flood” and caused significant damage to buildings, roadways, and the landscape (Sahagun 2015). The 2013 Gully Washer event also caused extensive damage, with one assessment estimating \$1.4 million in damages to Inyo County roads (Vane 2013). No flood disaster events have occurred within the Bishop city limits.

Certain roads in Inyo County are frequently affected by flood events and often suffer damage when a flood occurs. These include the roads around Rawson Creek in Wilkerson, some roads near Big Pine Creek in Big Pine, Sunland Lane and Gerkin Road between Bishop and Wilkerson, roads along Big Pine Creek and Little Pine Creek west of Big Pine, roads near Tinemaha Creek, and parts of Death Valley

Road and Eureka Valley Road (Anderson 2016). Bishop City staff also note that Highways 190, 127, and 168 (east of Big Pine) are commonly subject to flood damage.

Table 24. Inyo County Flood History (2003–2015)

Incident	Date	Location	Designation		
			Local	State	FEMA
Death Valley Down But Not Out	2015 (Oct.)	South County	Y	Y	N
Gully Washer	2013 (July)	Countywide	Y	Y	N
Canyon Crusher	2013 (Aug.)	Countywide	Y	N	N
Road eater	2012 (Aug.)	South County	Y	N	N
December Deluge	2010 (Dec.)	Countywide	Y	Y	Y
Oak Creek Mud Flow	2008 (July)	Independence	Y	Y	N
Flooding (no name)	2004 (Aug)	South County	Y	Y	N
Flooding (no name)	2003 (Aug.)	So. County	Y	Y	N

Risk of Future Hazards

Inyo County

Continental climatic conditions combined with the high elevation ridges of the eastern Sierras that intercept moisture-bearing air masses create an environment of repeated floods. Flooding is most likely to occur in late spring to early summer under conditions of rapid snowmelt and in late summer to early fall when tropical storms are most common.

Bishop

Risk of future flooding is especially high for the city during late summer to early fall when reservoirs along Bishop Creek are typically full (during non-drought years). As noted in the Safety Element of the City of Bishop’s General Plan, Bishop Creek poses the greatest flood risk to the city and surrounding areas. The city’s most significant flood risks are associated with localized ponding, most likely to occur in low-lying areas adjacent to the forks of Bishop Creek and major canals in the area.

Climate Change Considerations

There is some evidence that climate change may also result in more frequent intense storms, known as atmospheric river events. Statewide, some studies suggest that more years will have an increased number of atmospheric river events and that the largest of these atmospheric river events will be more intense than they have been historically (Dettinger 2011). In general, Northern California is expected to see more frequent atmospheric river events, potentially up to twice as many by 2100 as

the region currently does, while Southern California is expected to see the same number of atmospheric river events but with each individual storm an average of 10 to 20 percent more intense. However, the specific impacts on Inyo County and the Eastern Sierra/Basin and Range region is not yet known (Oskin 2014).

As noted in the Drought section, dry conditions cause soil to harden, making it less absorbent to precipitation and increasing the risk of flooding, particularly at the beginning of the rainy season. Since drought conditions are expected to increase as a result of climate change, there is also a greater risk of flooding from these drought-induced changes in soil characteristics. These impacts may already be felt; in July 2015, Lieutenant Governor Gavin Newsom, acting temporarily as governor, issued a disaster proclamation for large parts of Southern California due to flooding and related hazards as a result of severe storms. In the proclamation, Lieutenant Governor Newsom noted the drought's impact of drying out soil and increasing the risk of flash floods (Office of the Governor 2015).

Geologic Hazards

Hazard Description

For the purposes of this Plan, geologic hazards are risks posed by geologic activity that are not necessarily related to seismic events, although earthquakes may be associated with these hazards. The two geologic hazards discussed in this Plan are landslides and volcanism.

Landslides

Landslides happen when the soils of a slope, such as a hillside or mountain, become unstable. When this happens, the soils slide down toward the base of the slope, damaging or destroying structures built on the moving soil or in its path. While landslides are often thought of as fast-moving events, some landslides may happen slowly over a long period of time. The risk of a landslide is often exacerbated in areas recently burned by wildfire, as the fire burns vegetation that can absorb water and hold back soil. Without the vegetation to stabilize a slope and prevent runoff, sediment and debris are more susceptible to sliding.

Landslides can be triggered by many different types of events, but earthquakes and moisture are the most common. The shaking of an earthquake or the loss of soil stability as a result of earthquake-induced liquefaction can cause the soil to slide. Alternatively, soils can soak up water from a source such as precipitation or irrigation, also resulting in a loss of stability that causes the soil to slide. Water may also erode the base of a slope, which may trigger a landslide even if the sliding material is fairly dry. The types of materials that compose a slope and the steepness of the slope help determine the overall risk that a landslide may occur. Soil stability and time also contribute to the risk of rock fall,

which is of particular risk along roadways and trails where a path or highway has been cut into a hillside, exaggerating the angle of repose and increasing the likelihood of rock falls.

The Basin and Range province is susceptible to a specific type of moisture-induced debris flow that forms alluvial fans. These usually occur as a result of flash floods, which create torrents of water flowing down a steep mountain canyon. Flash floods often carry sediments and other debris, including boulders and trees. When the water is free of the confined canyon, it spreads out across a wide area, depositing debris in a broad, shallow slope called an alluvial fan. Areas near the bottom of confined canyons are at risk of these debris flows, which can cover multiple square miles and contain millions of cubic yards of debris. The alluvial fans themselves may be susceptible to further landslides due to their loose composition (CGS 2015a). A type of landslide called lateral spreading can occur on alluvial fans and other liquefaction-prone soils when liquefied soils become sufficiently fluid to spread across fairly shallow slopes.

Volcanism

A volcano is an opening (or vent) in the earth's surface that erupts lava, ash, and gas stored deep within the planet. Volcanoes come in many sizes and shapes, from large mountains built up by layers of lava, to conical mounds of loose cinder, or low, crack-like fissures in the ground. Depending on the type of volcano and the nature of the materials it ejects, a number of potential hazards may occur. These are described in detail in the USGS California Volcano Observatory website (<http://volcanoes.usgs.gov/observatories/calvo/>) and are summarized in the California State Multi-Hazard Mitigation Plan. The information in Table 25 describes the hazards that have typified past eruptions of California volcanoes. **Table 25** does not include an exhaustive list of all possible hazards resulting from volcanoes; it is possible that an event not shown here may occur during an eruption of a California volcano.

Impact

Landslides can damage or destroy buildings or structures that are built on or in the sliding material. Buildings and structures in the path of the landslide may also be damaged or destroyed by the force of the moving ground and debris carried by the flow. People may be injured or killed by debris or collapsing buildings caused by the landslide, or may be buried by the sliding material. Volcanoes have numerous impacts, depending on the type of eruption. These impacts are discussed in detail in **Table 25**.

Table 25. Hazards Associated with California Volcanoes

Name	Description
Pyroclastic flow	A sudden, fast-moving eruption of lava, ash, and gases. Pyroclastic flows can move down the sides of the volcano at speeds greater than 50 mph, faster than people can run. Damage occurs from the high temperatures of the material (400–1,300°F) and the fast-moving debris itself. Poisonous gases may also suffocate people or animals.
Slow-speed lava flow	A slow-moving lava eruption, usually less than 30 mph. The lava itself may be fluid or thick. People are usually able to move out of the way, but the lava may bury structures and the high temperatures often ignite fires.
Lahar	A volcanic debris flow, usually a slurry-like mixture of ash, rock, and water, traveling at speeds of 20 to 40 mph. They can be hot, though not as hot as a lava eruption, and may carry large debris such as boulders for great distances. The speed and temperature of a lahar may cause injury or death, and the debris itself may bury people or structures.
Volcanic flood	A type of flash flood when snow or ice on the surface of the volcano is melted by intense heat from the volcano, or when debris deposited from a volcano causes a river or stream to overtop its banks. The effects are generally similar to other types of flash floods.
Fine ash fall	A “rain” of small ash particles ejected from a volcano during an eruption, sometimes hundreds of miles from the volcano itself. The ash can cause short-term respiratory problems, although it is generally nonlethal. Buildings may be damaged by the weight of the ash, and accidents can occur if ash sufficiently reduces visibility. Ash particles may also clog wastewater systems, damage electronics, and harm crops and livestock. Air traffic can be disrupted by ash fall.
Coarse air fall	An ejection of large, hot pieces of lava or rock. The force of the ejecta may cause damage or injury, and the high temperatures may ignite fires. They are generally the size of a softball or smaller, although some volcanoes may eject boulder-size pieces.
Phreatic eruption	An eruption of steam, caused when volcanic heat causes water underground or on the surface to flash-boil. The steam may erupt violently, carrying ash and pieces of rock. Damage may be caused by the intense heat, the materials ejected by the steam, or poisonous gases that can accompany the eruption
Sources: Cal OES 2013a, USGS 2016	

Location and Extent

Landslides

Landslide risks are widespread throughout the mountains of Inyo County, although severity ranges substantially across the area. According to the California Geological Survey, the slopes in Inyo County where the landslide risks are greatest are the Amargosa Range east of Death Valley, the southern and northwestern parts of the Panamint Range, the Funeral Mountains in northeastern Inyo County along

the Nevada border, and parts of the Sierra Nevada and White Mountains along the northern Owens Valley. Additional patches of elevated landslide risk zones are scattered in mountain ranges throughout the county. Depending on the specific location, the increased landslide risk may be a result of weak rocks, steep slopes, or both (CGS 2011). **Figure 12** and **Figure 13** identify the steep topographical areas of Inyo County and the City of Bishop. Areas depicted with steep topography are most prone to landslide hazards. In addition, alluvial fans and other debris flows pose a risk around the edges of all valleys in Inyo County.

Volcanism

There are two volcanic areas in Inyo County: the Coso volcanic field and the Ubehebe Craters, as depicted in **Figure 14**. The Coso volcano field covers an area of approximately 150 square miles, mostly on Naval Air Weapons Station China Lake in southern Inyo County (USGS 2012a). The Ubehebe Craters, which are made up of at least a dozen craters, are located in Death Valley National Park. The largest crater is approximately 800 feet deep and half a mile wide (USGS 2012b). Northern Inyo County, including Bishop, may also be affected by various volcanic features in Mono County (Cal OES 2013a). These features include the Long Valley caldera, a 10-mile by 20-mile volcanic valley formed by a massive eruption 760,000 years ago (USGS 2012c); Mammoth Mountain, an 11,000 foot-tall volcanic dome that continues to experience minor eruptions and other volcanic activity (USGS 2012d); the Mono Lake volcanic field, a set of volcanic vents within Mono Lake and along its north shore (USGS 2012e); and the Mono-Inyo Craters, an 18-mile-long chain of volcanic features stretching from Mono Lake south to the Long Valley caldera (USGS 2012f). There are many ways to measure volcanic events, which often vary depending on the type of event. These include amount of material ejected by the volcano, the distance that ash or debris travels, the size of the ejecta, and other parameters.

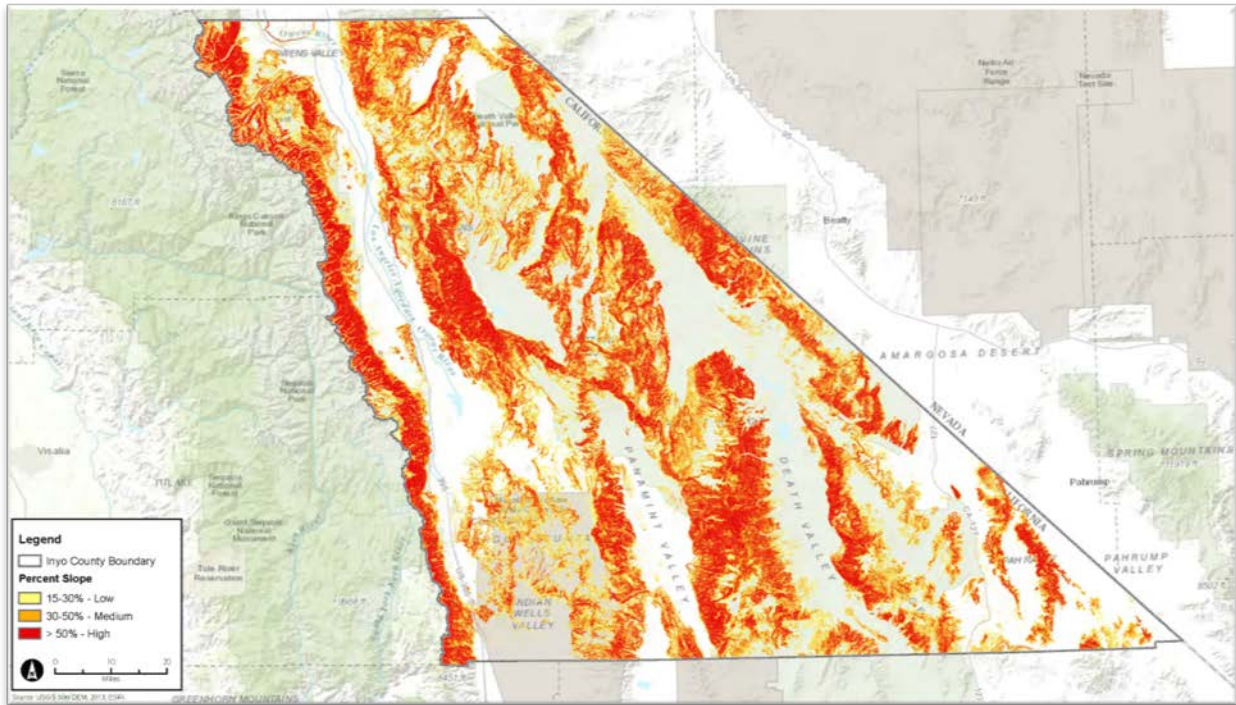
Hazard History

Landslides

Scientific studies have found widespread deposits from historic landslides throughout much of Inyo County. While landslides are a common event in the county given its susceptibility, the sparsely populated nature of the region and the relatively limited affected area from a landslide means that landslide events may go unnoticed. As a result, recorded significant landslides in Inyo County are fairly rare. There have been a few events of note, particularly an alluvial fan-related debris flow that occurred on July 12, 2008. Intense precipitation from the remnants of Hurricane Bertha created a debris flow down Oak Creek, a few miles north of Independence. The area had recently been burned by a wildfire, making it more susceptible to landslides. The debris flow extended approximately 4 miles from the base of the mountains and disrupted traffic on US Highway 395 for a week. It damaged

or destroyed 50 homes and severely damaged the historic Mount Whitney Fish Hatchery (CGS 2015a). There is also evidence of historic lateral spreading in liquefaction-prone areas of Inyo County, including near Deep Springs Lake, Death Valley, and the shores of the Owens Valley (Wills 1996).

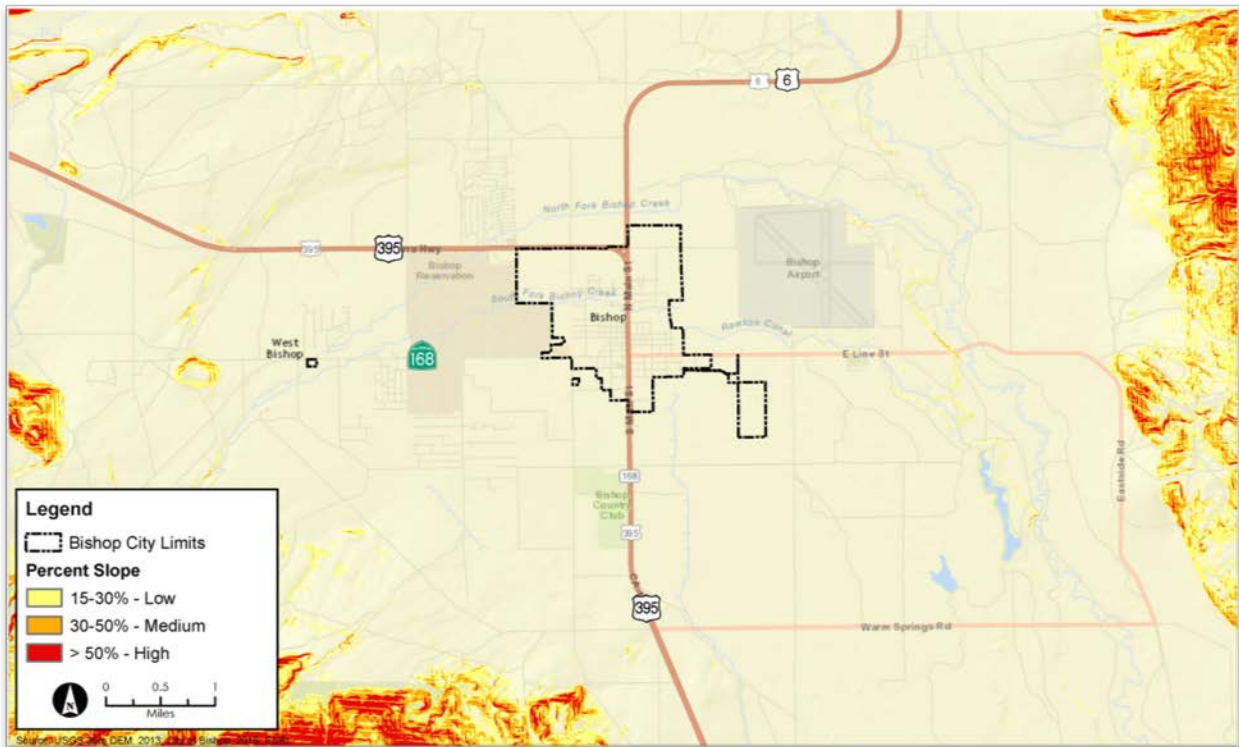
Figure 12. Inyo County Steep Topography Area



Volcanism

The last known eruption at the Coso volcanic field occurred approximately 40,000 years ago, which included a non-explosive lava flow and ejected enough small particles to form a volcanic feature called a cinder cone (USGS 2012a). The Ubehebe Craters last erupted more recently, approximately 800 years ago, in a phreatic eruption (USGS 2012b). The last known eruption in the Long Valley caldera occurred approximately 50,000 years ago, although hot springs and various other forms of geologic unrest continue to the present day (USGS 2012c). Mammoth Mountain's last major eruption occurred approximately 57,000 years ago, but phreatic eruptions have occurred as recently as 700 years ago and volcanic unrest has continued to the present day (USGS 2012d). The Mono Lake volcanic field had the most recent eruption of any volcano in the region, with an event 300 years ago which lifted sediment on the lake bottom to form Paoha Island in the middle of the lake (USGS 2012e). A series of explosive eruptions and lava flows last occurred along the Mono-Inyo craters approximately 600 years ago (USGS 2012f).

Figure 13. City of Bishop Steep Topography Areas



Risk of Future Hazards

Landslides

Landslide and debris flow risks in Inyo County are expected to continue into the future, as the geologic conditions in the county that have been responsible for past landslide events are not expected to change. Landslide risks are likely to remain highest in the areas previously identified as having a high susceptibility to landslides, and the risk of alluvial fans should persist along the base of the mountain ranges in the county.

Volcanism

As part of the National Volcano Early Warning System (NVEWS), the USGS has conducted a systematic assessment of volcanic threat that ranks all US volcanoes. Volcanoes are evaluated using 25 threat factors: 15 for hazard type (explosivity index, pyroclastic flows, lahars, etc.) and 10 for societal exposure to hazards (e.g., nearby populations, infrastructure, transportation corridors). The composite NVEWS score (sum of the hazard factors multiplied by the sum of the exposure factors) translates into a specific threat level grouping that ranges from Very High Threat (324-123 points), High Threat (113 to 64 points), Moderate Threat (63 to 30 points), Low Threat (30 to 6 points), or Very Low Threat (6 to 0).

points) (USGS 2005). It is important to note that threat rankings do not express the probability of an eruption occurring, only the level of threat posed should an eruption occur. Table 26 shows the threat levels of Inyo and Mono County volcanoes as determined by the USGS NVEWS analysis. Based on the threat level identified, recommendations for monitoring have been identified by the USGS to better determine potential activity occurring at the volcano location.

Note that the NVEWS threat rankings shown in **Table 26** are periodically reevaluated by the USGS as new scientific data becomes available and/or nearby infrastructure and populations change. An update to the 2005 ranking is currently under way.

Table 26. Inyo County Region Volcano NVEWS Scores

Volcano	NVEWS Score
Inyo County	
Coso volcanic field	Moderate Threat
Ubehebe Craters	Moderate Threat
Mono County	
Long Valley caldera	Very High Threat
Mammoth Mountain	In Progress
Mono Lake volcanic field	Moderate Threat
Mono-Inyo craters	High Threat
Source: USGS 2005	

Eruption from the Coso volcanic field is not expected to be life threatening to populations in Inyo County (Cal OES 2013a), although adverse impact to local infrastructure and transportation corridors, including air traffic, is likely (USGS 2005). Another eruption in the Ubehebe Craters area could produce fast-moving pyroclastic flows and coarse ash fall. Although such an event is not expected to substantially affect Inyo County residents, the volcano is located in Death Valley National Park and so may pose a threat to visitors, park roads, and the local ecosystem (USGS 2005; Cal OES 2013a).

Eruptions from the Very High Threat and High Threat features in the Long Valley volcanic region of Mono County may significantly impact Inyo County. An explosive eruption could cause fine ash fall greater than 2 inches thick as far south as Fish Springs, including the City of Bishop. Ash fall of this thickness can severely disrupt daily life for weeks to months, but is generally not life threatening. All of Inyo County is outside of the footprint for more severe volcanic threats (e.g., pyroclastic flows, lava flows, lahars) from the Mono County volcanoes (Cal OES 2013a). The USGS estimates the risk of an

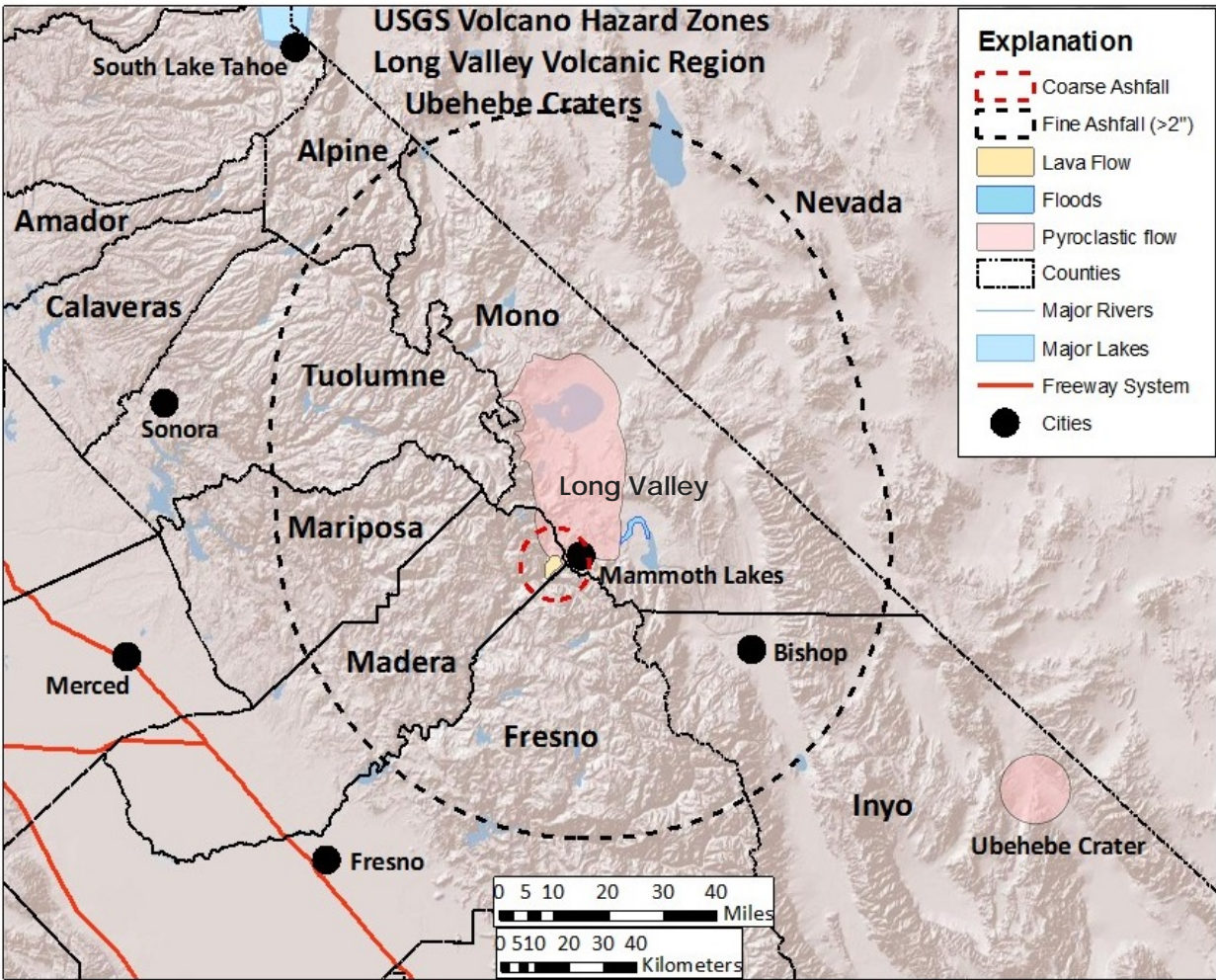
eruption in the Long Valley region to be on the order of 1 in a few hundred annually, or less than 1 percent in any given year (USGS 1998).

The USGS has developed a volcano alert system, taking into account both ground-based and aviation hazards. This alert system, shown in **Table 27**, is not intended to be a long-term estimate of hazard potential but a shorter-term summary of a volcano’s behavior.

Table 27. Volcano Alert Levels

Ground Alert Levels		Aviation Alert Levels	
Normal	Volcano is in a typical, background, non-eruptive state	Green	Volcano is in a typical, background, non-eruptive state
Advisory	Volcano is exhibiting signs of unrest, above known background level	Yellow	Volcano is exhibiting signs of unrest, above known background level
Watch	Volcano is exhibiting heightened or escalating unrest with an increased potential of eruption; or an eruption is under way but poses limited hazards	Orange	Volcano is exhibiting heightened or escalating unrest with an increased potential of eruption; or an eruption is under way with little or no ash emissions
Warning	A hazardous eruption is under way, imminent, or suspected	Red	An eruption is under way, imminent, or suspected with significant ash emissions likely
Source: USGS 2016			

Figure 14. Volcano Hazard Zones



Climate Change Considerations

Climate change may cause an increase in the frequency and/or intensity of storms that affect California, which in turn could make moisture-related landslides more common, including alluvial fan-related events. Warmer temperatures and less frequent rainfall as a result of climate change may cause soil to become less cohesive as it loses moisture, making the material more unstable and potentially increasing landslide risk. There is no known or suspected connection between climate change and earthquake-related landslides or volcanic activity.

Hazardous Materials

Hazard Description

Under California law, a hazardous material is a substance that either causes “an increase in mortality or an increase in serious, irreversible, or incapacitating illness” or poses “a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed of, or otherwise managed” (DTSC 2010). Hazardous materials are a wide-ranging category of substances and include flammable or explosive materials, corrosive substances such as acids, poisons, and infectious materials such as dangerous germs. Some materials are always hazardous, while others may only pose a danger under certain conditions (for example, flammable materials can be inert and harmless until exposed to a spark or heat source). Hazardous materials are often thought of as human-made compounds, but they may also include naturally occurring substances that may pose a hazard, such as radon gas found naturally in some rock formations.

A hazardous material emergency usually occurs when the material leaks or escapes from its containment vessel, exposing people and objects in the vicinity to the material’s harmful effects. This may occur as a result of another emergency, such as an earthquake or flood that breaks a hazardous material storage container. It may also happen as a result of human error or an equipment malfunction, or more rarely as a deliberate act. Hazardous materials may be released from a building such as a factory or storage facility, or from a vehicle such as a truck or train. Highway 395 is a major thoroughfare and carries potentially hazardous materials through the communities throughout the Owens Valley. Hazardous materials in soils, either naturally occurring or accidental, may be washed into water bodies or groundwater basins during flood events, creating a potential risk of exposure. Soils containing hazardous materials may also dry out and be blown by the wind, spreading the material over a potentially large area.

Impact

The impacts associated with hazardous materials depend on the materials involved. Some materials may be toxic or corrosive, and so may cause injuries, death, or acute or chronic health effects. Radioactive materials can also create potentially serious or fatal short-term and long-term health effects. Flammable or explosive materials may spark fires or explosions that can be harmful to people and structures. Some corrosive materials may also damage buildings or structures that they come into contact with

Location and Extent

According to the California Department of Toxic Substances Control (DTSC), there is one location in Inyo County designated as a hazardous materials release site. This site, the Saline Valley Air to Air Gunnery Range, covers an area of 591,000 acres approximately 10 miles east of Independence and Lone Pine. Most of the site is within the boundaries of Death Valley National Park, with small portions of the site in other recreational and protected environmental areas. The site was used primarily for aerial gunnery training for bomber crews, and it operated from 1944 to 1947. The potential materials of concern at the Saline Valley range include explosives, perchlorate (a compound used in weapons that may pose a health risk to the thyroid gland), lead, and munitions (DoD, n.d.; DTSC 2015).

There are 133 other sites in Inyo County that may contain hazardous materials and may be subject to cleanup activities. These sites may include active or abandoned mines, airports, military facilities, and waste dumps, among other facilities. The DTSC classifies these sites by their current status, as shown in **Table 28**.

The California State Water Resources Control Board (SWRCB) maintains a separate list of sites with hazardous materials that may contaminate groundwater supplies. There are 141 of these facilities in Inyo County. Some may also be listed as hazardous material cleanup sites by the DTSC (above); the vast majority have completed cleanup operations. **Table 29** shows the number of these facilities in Inyo County and their status.

There are 26 facilities in Inyo County (9 in Bishop, 17 in the unincorporated county areas) with permitted underground storage tanks used to store hazardous or potentially hazardous materials. These facilities are primarily fuel stations, although they may also include public and private vehicle maintenance yards as well as other facilities (SWRCB 2016b).

Multiple locations in Inyo County contain naturally occurring asbestos, a mineral that was widely exploited for various uses but which can cause lung cancer or other respiratory conditions when inhaled. The California Geologic Survey reports four sites in Inyo County, shown in **Table 30**, with substantial natural asbestos deposits, and they were subject to asbestos mining. There are also 17 reported sites in or near Death Valley National Park in which talc (a mineral widely used in manufacturing, baby powder, and athletic chalk) is mixed with small amounts of naturally occurring asbestos (CGS 2015b).

Table 28. Hazardous Material Cleanup Sites by DTSC Status in Inyo County

Status	Description	Number of Facilities	
		Bishop	Inyo County
Backlog	The site is not currently active. Evaluation or cleanup activities are not ongoing, but will begin or resume when staff and/or financial resources are available.	0	1
Inactive – Needs Evaluation	The site is not currently active. An evaluation of the site is needed.	5	29
Refer: Other Agency	Evaluation or cleanup activities are best handled by a local agency or a state agency other than the DTSC.	12	64
Refer: RWQCB	Evaluation or cleanup activities are best handled by the Regional Water Quality Control Board.	2	20
Total		19	114
Note: Due to rounding, the totals presented in this table may not equal the sum of all rows. Sources: DTSC 2014, n.d.			

Table 29. State Water Resources Control Board Cleanup Sites by Status in Inyo County

Status	Description	Number of Facilities	
		Bishop	Inyo County
Completed – Case Closed	Cleanup activities have finished and formal case closure decision has been issued.	67	43
Open	Unspecified evaluation and/or cleanup activities are ongoing.	2	11
Open – Eligible for Closure	Cleanup activities have finished, although the case closure decision has not yet been issued.	1	2
Open – Inactive	There are no regulatory activities at the site.	1	4
Open – Proposed	Unspecified evaluation and/or cleanup activities are ongoing.	1	0
Open – Site Assessment	Evaluation activities are ongoing at the site.	1	7
Open – Verification Monitoring	Cleanup has finished, and monitoring activities are ongoing to ensure cleanup has been successful.	1	0
Total		74	67
Note: Due to rounding, the totals presented in this table may not equal the sum of all rows. Sources: SWRCB 2016a, n.d.			

The dry bed of Owens Lake can produce extensive dust clouds, particularly during periods of high winds. In addition to the respiratory ailments caused by small dust particles, this dust may also contain elevated concentrations of hazardous or potentially hazardous materials, including arsenic (USGS 2014d). This hazard is discussed more extensively in the Severe Weather hazard profile.

Although Inyo County is remote, hazardous materials are still transported through the area, creating a potential hazard in the event of a vehicle accident. State Route 127, which traverses the southeast corner of the county, is used to transport hazardous materials to a waste disposal facility south of Beatty, Nevada. This facility is permitted to accept 562 different types of hazardous wastes, and it is unknown what specific hazardous material types are being transported on SR 127 to this facility (NDEP 2011).

Table 30. Natural Asbestos Deposits in Inyo County

Site Name	Site Location
Darwin mines	North of Darwin
McIlroy property	Between Swansea and Dolomite
Indian Camp prospect	North of Hunter Mountain (in Death Valley National Park)
Huntley Industrial Minerals Inc. mine and Whitetop Mountain deposits	North of Whitetop Mountain (in Death Valley National Park)
Source: CGS 2015b	

Hazard History

Individuals in Inyo County and Bishop are occasionally exposed to hazardous materials, sometimes as a result of winds carrying hazardous material particulates from the dry Owens Lake bed. There is no history of substantive hazardous material release events within the county or city limits.

Risk of Future Hazards

The risk of hazardous material releases in the future is difficult to quantify. There is always some chance that another natural disaster, such as an earthquake or flood, may damage buildings or storage tanks and cause a release of hazardous materials. However, the occurrence of a natural disaster does not automatically result in a hazardous material release, and a hazardous material release may occur independently of any other natural disaster. Given the size and sparsely populated nature of Inyo County, a hazardous material release may not necessarily pose a significant risk to human health if it occurs in an unpopulated area, although such events may still result in environmental damage. Bishop has a comparatively higher population density than the rest of Inyo

County, and any hazardous material release in or near Bishop would likely pose a greater threat to human health and safety than elsewhere in the county.

Climate Change Considerations

Climate change is not directly linked to the frequency or severity of hazardous material releases. However, climate change may increase the frequency or severity of other hazards, such as severe storms or wildfires, which in turn may result in hazardous material releases.

Severe Weather

Hazard Description

Severe weather is a broad category that, for the purposes of this Plan, encompasses extreme heat and cold, severe winds, tornadoes, hailstorms, and thunderstorms. Intense rainfall is discussed in the Flood hazard profile.

While there is no universally agreed upon definition for extreme heat, it generally refers to a period of time in which the high temperature significantly exceeds normal conditions. A commonly used definition in California declares that an extreme heat day is any day in which the maximum temperature is higher than all but 2 percent of historical high temperatures (Cal EPA and CDPH 2013).¹ Multiple consecutive extreme heat days are known as heat waves. Extreme heat is a factor not just of temperature but also of humidity, as high humidity can make already hot conditions feel even hotter. For example, an air temperature of 90°F [degrees Fahrenheit] may feel like 105°F in 70 percent humidity and over 130°F in 100 percent humidity (NOAA, n.d.). This combination of air temperature and humidity is known as the heat index. **Table 31** shows the National Weather Service's rating scale for the heat index.

Extreme cold events occur when the temperature drops well below historical averages. In many parts of California, this corresponds to temperatures below freezing, although in some locations freezing temperatures are a relatively normal event. These events may occur as part of another severe weather event, such as a blizzard or ice storm, but can also happen during sunny days. Just as extreme heat is a factor of air temperature and humidity, extreme cold can be measured as a factor of air temperature and wind, known as wind chill. A temperature of 10°F may have a wind chill of 1°F in 5 mph [mile per hour] winds, but may feel close to -20°F in wind speeds of 50 mph or more (Cal OES 2013b).

¹ More specifically, an extreme heat day is one where the maximum temperature exceeds all but 2 percent of the historic high temperatures between May and October from 1961 to 1990 (Cal EPA and CDPH 2013).

Table 31. Heat Index Rating Scale

Heat Index	Category	Description
80°F to 90°F	Caution	Fatigue is possible with prolonged exposure or physical activity.
90°F to 105°F	Extreme caution	Sunstroke, heat cramps, and heat exhaustion are possible with prolonged exposure or physical activity.
105°F to 129°F	Danger	Sunstroke, heat cramps, and heat exhaustion are likely. Heatstroke is possible with prolonged exposure or physical activity.
130°F or higher	Extreme danger	Heatstroke risk is extremely high with continued exposure.
Source: Cal OES 2013a		

Severe winds can occur as a consequence of an intense storm system or may happen independently of storms, as with the Santa Ana winds that affect the coastal areas of Southern California. Severe winds are generally winds above 47 mph, as this wind speed is usually the threshold for structural damage, although some property damage or minor injuries may occur at lower wind speeds.

A tornado is a rapidly rotating column of air extending from a thunderstorm cloud to the ground, usually visible as a funnel cloud. A tornado usually forms when winds in the thundercloud pull a rotating section (known as a mesocyclone) of the storm down below the base of the cloud. This triggers changes in temperature, humidity, and air pressure in the area around the rotating mesocyclone, causing it to be focused over a small area and be pulled to the ground, at which point it becomes a tornado. The strength of a tornado is measured using the Enhanced Fujita scale, shown in **Table 32**, which estimates wind speeds by the observed damage.

Hail is a form of precipitation of rough spheres or lumps of ice. It occurs when water droplets are forced upward in a thundercloud by strong winds called updrafts. The water droplets are blown into areas where the air temperature drops below freezing, causing the drops to freeze and stick together, forming hailstones. Eventually the hailstones become too heavy for the updraft and they fall to the surface. Hail is distinct from sleet, which is much smaller balls of ice that form when snow melts and then refreezes, or from freezing rain, which is raindrops that have been cooled to temperatures below the freezing point but have not turned into ice.

Table 32. Enhanced Fujita Scale

Rating	Wind Speeds *	Description
F0	65 to 85 mph	Light damage: Some damage to chimneys. Branches broken off trees. Shallow-rooted trees pushed over. Sign boards damaged.
F1	86 to 110 mph	Moderate damage: Surfaces peeled off roads. Mobile homes pushed off foundations or overturned. Moving vehicles blown off roads.
F2	111 to 135 mph	Considerable damage: Roofs torn off of frame houses. Mobile homes demolished. Box cars overturned. Large trees snapped or uprooted. Light objects become missiles. Cars lifted off ground.
F3	136 to 165 mph	Severe damage: Roofs and some walls torn off well-constructed buildings. Trains overturned. Most trees uprooted. Heavy cars lifted off the ground and thrown.
F4	166 to 200 mph	Devastating damage: Well-constructed buildings leveled. Structures with weak foundations blown away. Large objects become missiles.
F5	More than 200 mph	Incredible damage: Strong frame buildings leveled and swept away. Automobile-sized missiles fly through the air in excess of 100 meters. Incredible phenomena will occur.
<p>* The wind speeds shown here are estimates of the 3-second gust speeds, based on the type of damage observed. The wind speeds on this scale are not observed measurements. Source: NOAA 2014</p>		

A thunderstorm is any storm accompanied by thunder and lighting. Thunderstorms usually cause heavy rainfall and strong winds, and may also result in other forms of severe weather such as tornadoes and hail, but they may also lack any of these features. They occur when warm moist air is forced rapidly upward, creating large clouds known as cumulonimbus clouds (thunderclouds). The movement of air and water droplets in the thundercloud creates many of the other weather features associated with thunderstorms.

Impact

Extreme heat poses substantial health risks, including heat cramps, heat exhaustion, and heat stroke. Elderly persons and individuals who work outside are often most vulnerable to extreme heat. While extreme heat events generally do not damage property, they can damage or destroy agricultural crops and landscapes. Very high temperatures may also reduce the effectiveness of power infrastructure, leading to an increased risk of blackouts. The primary health risks of extreme cold are

frostbite (a freezing of body tissue) and hypothermia (an abnormally low body temperature) (Cal OES 2013b). Extreme cold may also damage or destroy crops.

High winds may directly damage structures, can blow down trees or branches, and can create airborne debris which may cause further damage. Severe winds may increase the risk of other hazards, especially wildfires. The risk from a tornado comes from its high winds, which can exceed speeds of 200 miles an hour. The winds can cause direct damage to structures or can create large pieces of airborne debris that pose further hazards.

Hail can damage roofs, windows, and plants, including crops. In rare instances, large hail can cause more severe damage, and particularly massive hailstones can cause serious injury. Although most lightning occurs in the thunderclouds and is generally not dangerous, lightning that strikes the ground may spark fires and damage structures. In rare cases, lightning can cause injury or death if it strikes people.

Location and Extent

Most severe weather events may affect all of Inyo County, including Bishop. Hail and thunderstorms may occur anywhere in the county, and no specific area is more or less at risk. Although different topographic features such as mountains or valleys are sometimes thought to prevent tornadoes from forming or act as barriers from moving tornadoes, there is no evidence to support this supposition. Extreme heat also affects all of Inyo County, although the thresholds for extreme heat vary widely. In northwestern Inyo County, near Mount Emerson, an extreme heat day is one where the high temperature is as low as 72°F. In parts of Death Valley, extreme heat days are those with a high temperature above 114°F. In general, extreme heat thresholds are lower in the mountains and higher in the valleys. The extreme heat threshold in Bishop is approximately 98°F (CEC 2016).

Severe wind events may also occur virtually anywhere in Inyo County, but they can be of particular concern in the Owens Valley near the (mostly) dry bed of Owens Lake. While wind speeds are not necessarily more intense in this area and high winds do not necessarily occur with greater frequency, the winds stir up dust from the lakebed, creating large dust storms throughout the area. The dust can cause or exacerbate respiratory illnesses and may damage electronic or mechanical devices. The dust can also carry elevated levels of hazardous elements, including arsenic, chromium, copper, molybdenum, nickel, lead, antimony, thorium, and uranium. These materials may pose both acute and chronic health conditions when inhaled and may also cause environmental problems (USGS 2014d, 2015b). The export of water from the Owens Valley via the Los Angeles Aqueduct can make dust storms more prevalent by exacerbating already dry conditions in the Owens Valley. In addition, the dust generated from dried up

lake beds can also pose health risks due to any contaminants and minerals exposed that could increase health risks.

Freezing is the one severe weather condition that may occur at different frequencies throughout Inyo County. These extreme cold events are most common in northern Inyo County. Over the past three years, the area north of Fish Springs saw at least 200 days with temperatures below freezing, with the highest number of below freezing days (over 400 days over the past three years) occurring near the border with Mono County. Bishop saw over 300 days with temperatures below freezing. Parts of the southern Owens Valley, approximately from Coso Junction north to Olancho, also saw elevated levels of freezing conditions, along with southeastern Inyo County. Extreme cold is least frequent in Death Valley National Park, most of which saw less than 100 days below freezing in the last three years (WRCC 2016a). The impacts of freezing are further exacerbated by temperatures below 0 degrees F, which is possible in some parts of the Owens Valley.

Hazard History

Extreme heat and cold events are frequent events throughout the county. Extreme heat events occur an average of four times a year in all locations (CEC 2016), although the threshold for what qualifies as an extreme heat event varies widely, as previously discussed. The highest recorded temperature on the earth's surface, 134°F, was recorded in Death Valley at Greenland Ranch in July 1913 (El Fadli et al. 2013), and large sections of Inyo County have seen more than 400 days in the past three years where temperatures exceeded 90°F (WRCC 2016a). Extreme cold events are most common in northern and western Inyo County but have historically occurred throughout the county. Greenland Ranch occasionally sees temperatures drop below freezing between October and February (WRCC 2016b). There has been one tornado in Inyo County since 1950, which occurred on November 30, 2012. The tornado measured F0 on the Enhanced Fujita scale, caused no injuries or fatalities, or did not result in any recorded property or crop loss. It traveled from north of the community of Blackrock eastward for 1.64 miles, stopping before the banks of the Owens River (NOAA 2015a). Since 1955, there have been three measured hail events, in June 1997, October 2010, and October 2012. None caused any reported injuries or damage. The 1997 event occurred in Independence, the 2010 hail event affected Bishop, and the 2012 event happened at Calvada Springs in extreme southeastern Inyo County (NOAA 2015b). Since 1986, Inyo County has seen 30 days where severe thunderstorm warnings were issued (IEM 2016). A severe thunderstorm warning means that a thunderstorm in the area is currently producing hail or high winds, or is expected to shortly.

Inyo County has seen 12 significant wind events since 1955, as shown in **Table 33**. None of these events caused any substantial reported damage or injuries (NOAA 2015c).

Risk of Future Hazards

Extreme heat and cold events are all but certain to occur in the future, based on the past frequency of these events. All indications are that extreme heat and cold events are likely to continue. Although extreme cold events are more likely to occur near Bishop and in other parts of northern Inyo County, significant hail events are likely to continue to occur on rare occasions, given that the county has seen these events from time to time. Significant wind, hail, and thunderstorm events are also anticipated to continue to occur on occasion in Inyo County. There is no reason to suspect that tornado events will no longer occur in the county, but they are expected to remain very infrequent.

Table 33. Significant Wind Events in Inyo County, 1955–2014

Date	Top Wind Speed (mph)	Affected Area(s)
July 25, 1982	Unknown	Panamint Butte (northeast of Panamint Springs)
February 18, 1983	Unknown	Panamint Butte (northeast of Panamint Springs)
February 18, 1983	Unknown	Bishop
March 1, 1983	Unknown	Panamint Butte (northeast of Panamint Springs)
March 1, 1983	68	Bishop
September 6, 1986	64	Panamint Butte (northeast of Panamint Springs)
August 14, 1990	Unknown	Furnace Creek (in Death Valley National Park)
June 26, 2006	62	Manzanar
July 8, 2006	72	Park Village (in Death Valley National Park)
September 20, 2011	59	Bishop
May 14, 2013	58	Southeast of Independence
June 4, 2013	59	Bishop
Source: NOAA 2015c		

Climate Change Considerations

As the temperature increases as a result of climate change, extreme heat events are expected to become substantially more frequent, although the forecasts vary significantly depending on how severe climate change is in the future. For example, in Bishop, the number of extreme heat events (above 98°F) may increase from 4 per year to as many as 15–50 by 2050. In general, the increase in extreme heat days is expected to be greatest in places such as Death Valley, where the threshold for extreme heat is the highest (CEC 2016). Similarly, the frequency of extreme cold events is likely to decline.

Climate change is expected to cause an increase in the number and/or severity of intense storms that affect California, which may in turn cause an increase in the frequency and/or intensity of thunderstorms, hail, and storm-related severe wind events that affect Inyo County. While tornadoes are also linked to intense storms and so may become more frequent as these storms occur more often or become stronger, tornadoes are already so rare in Inyo County that it is unclear if climate change will have any discernable impact on these events. The effects of climate change on winds not related to storms are as of yet unknown.

Wildfire

Hazard Description

Wildfires are a relatively common event in large parts of California and are a natural feature of many ecosystems in the state. However, changes to California's landscape due to farming and urban development, past suppression of naturally occurring fires (allowing dry fuel to accumulate), and increased development into forested and other natural areas have all made wildfires a hazard of concern. Wildfires accounted for 43 percent of all emergencies in California between 1950 and 2012, significantly more than any other disaster type (Cal OES 2013). Wildfire risk is the result of multiple factors, including the amount and type of vegetation in an area, the local topography, the health of the vegetation (due to extended drought conditions, or pestilence), and weather and climactic conditions such as temperature, humidity, and wind. Wildfires may be started by weather (lightning), accidents (sparks from machinery, for example), or deliberately.

There are two primary types of wildfires: wildland fires and wildland-urban interface (WUI) fires. Wildland fires burn entirely in natural environments and generally pose little direct threat to life or property, although they may threaten sensitive environmental areas. These fires may be left to burn out on their own or may even be deliberately set, in an attempt to return California's wildfire regime to a natural pattern. WUI fires, which burn in areas where development has intruded into natural settings, pose a substantially greater risk. Depending on the population density of the WUI and the topography of the area, even small WUI fires can be extremely damaging. There are three categories of fire hazard severity zones (FHSZs): Very High, High, and Moderate. These categories do not necessarily correspond to a specific numeric risk of fire frequency or severity, but instead are a combination of numerous factors. Land not at substantial risk of wildfires is known as unzoned land.

Impact

The flames of a wildfire can damage or destroy buildings or structures in the wildfire's path, as well as grazing land, crops, or natural landscapes. The intense heat of the fire can cause serious injury or

death to any people who happen to be caught too close to it. Smoke and ash from a fire can affect people in a wider area and cause respiratory illnesses, particularly among young persons, senior citizens, or other individuals who are prone to such ailments. In some cases, the smoke and ash may damage electrical or mechanical systems.

Location and Extent

Fire-prone areas in California are divided into three categories: Federal Responsibility Areas (FRAs), State Responsibility Areas (SRAs), and Local Responsibility Areas (LRAs). FRAs are lands where federal agencies are responsible for preventing and fighting fires, and include lands protected by the US Forest Service, the US Department of Agriculture, and the Department of the Interior (including the National Park Service, the Bureau of Land Management, and the Bureau of Indian Affairs). SRAs are areas where the California Department of Forestry and Fire Protection (Cal Fire) is responsible for fire prevention and firefighting, while local agencies have responsibilities in the LRAs.

In Inyo County, the vast majority of the land is federally owned and falls within an FRA. The only Very High FHSZs in Inyo County occur within the Federal Responsibility Areas. These Very High FHSZs are mostly located on the eastern slopes of the Sierra Nevada west of Olancha, with a smaller patch west of Fish Springs. The remaining federally owned slopes of the eastern Sierra Nevada north to approximately Bartlett are mostly within the High FHSZ, while the eastern Sierra Nevada north of Bartlett to the Mono County border are predominantly in the Moderate FHSZ or are unzoned. Outside of the slopes of the Sierra Nevada, the FRAs are almost entirely within the Moderate FHSZ or are unzoned, although smaller High FHSZs exist near the southern, eastern, and northern dry bed of Owens Lake (Cal Fire 2007a, 2007b).

The SRAs in Inyo County are limited to the Owens Valley, north of Olancha along the US Highway 395 corridor. The Owens Lake bed is considered a Moderate FHSZ, while much of the rest of the State Responsibility Area is classified as a High FHSZ. There are also a few Moderate FHSZ patches in the SRA to the north and west of Bishop (Cal Fire 2007b).

The LRAs in Inyo County consist of Bishop, Independence, and Olancha, around the Haiwee Reservoir, and small isolated patches of land scattered throughout the county. Bishop, Independence, and Olancha are in the High FHSZ for the Local Responsibility Areas, while all other land is classified as a Moderate FHSZ (Cal Fire 2007a).

Hazard History

Previous fires in Inyo County have mostly occurred on federal lands along the slopes of the eastern Sierra Nevada north of Lone Pine, although occasional fires have occurred near the county's southern

border. No known fires have occurred in Bishop itself, but some past fires have burned areas to the city’s north and east (Cal Fire 2012). The State proclaimed two fires in Inyo County as disasters: the 1987 fires, which affected Inyo County and 22 other counties throughout California, and the 2007 Inyo Complex fire (Cal OES 2013). The Inyo Complex fire consisted of 10 individual fires ignited by lightning on July 6, 2007, near the communities of Lone Pine, Independence, Aberdeen, and Big Pine. It burned over 35,000 acres, 6 homes, and 27 outbuildings before being contained. During the fire, approximately 200 people were evacuated from the western part of Independence. The fire also burned the cover of a reservoir that supplied water to Independence, causing it to collapse and contaminate the water (Cal OES 2007; USFS 2007).

Risk of Future Hazards

Given the presence of wildfire hazard severity zones throughout Inyo County, the past occurrences of wildfires, and the role of wildfires as a regular feature of many of California’s ecosystems, it is all but certain that wildfires will occur in the future. The Owens Valley and parts of the eastern Sierra Nevada are expected to remain the areas at elevated fire risk.

Figure 15 shows the areas in a wildfire hazard severity zone for the unincorporated areas of Inyo County.

Figure 15. Inyo County Wildfire Hazard Severity Zones

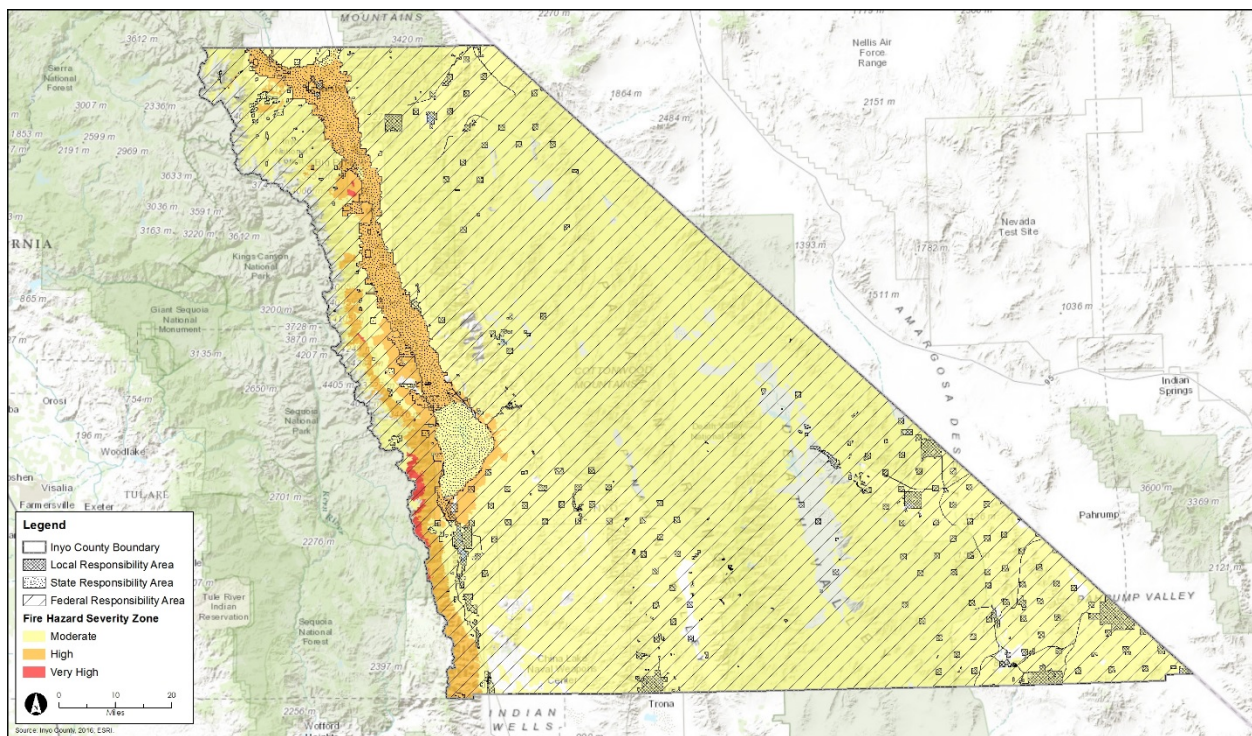


Table 34 lists the distribution of land ownership/administration for various hazard zones in unincorporated Inyo County. **Figure 16** shows the wildfire hazard severity zones in Bishop. **Table 35** lists the distribution of land ownership and administration within the hazard zones for the incorporated community.

Climate Change Considerations

Climate change is expected to bring about warmer temperatures and more frequent heat waves, decreases in precipitation, and an increase in the frequency and severity of drought conditions. Along with an increased risk of severe storms (leading to a potentially greater frequency of lightning strikes), climate change is expected to result in more dry vegetation for fuel and generally increase the risk of wildfire throughout the state. These impacts have already been observed, as climate change has been cited as a cause for multiple wildfire-related states of emergency in recent years. In Inyo County, large sections of the county are expected to see only mild increases in the amount of land burned by wildfires (approximately 10 to 15 percent more) as a result of climate change. The effects of climate change are greatest along the eastern slopes of the Sierra Nevada, where the amount of burned areas may double by 2100. Some locations, such as the land near Mount Thompson, may see as many as 3.6 times as much land burned by wildfires. Parts of the White Mountains, Death Valley, and the Panamint Range may see up to a 20 percent increase in wildfire burn areas by 2100 (CEC 2016).

Figure 16. City of Bishop Wildfire Hazard Severity Zones

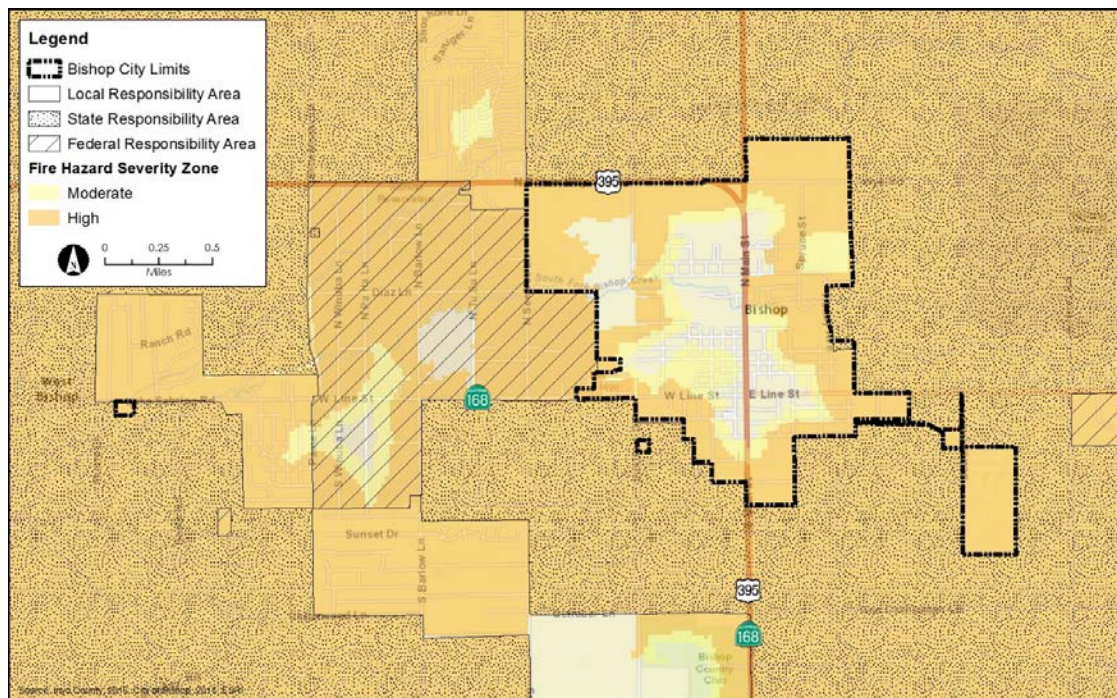


Table 34. Areas in Wildfire Hazard Zones in Unincorporated Inyo County by Ownership

Ownership or Administration	Very High FHSZ (acres)			High FHSZ (acres)			Moderate FHSZ (acres)		
	FRA	SRA	LRA	FRA	SRA	LRA	FRA	SRA	LRA
Bureau of Indian Affairs	—	—	—	1,128.08	37.30	15.70	2,568.95	—	22.51
Bureau of Land Management	1,343.10	5.06	—	151,722.33	1,352.71	69.32	1,536,721.03	401.63	9,511.61
Los Angeles Department of Water and Power	—	—	—	1,085.43	221,754.72	1,493.77	738.69	18,331.90	3,922.56
National Park Service	—	—	—	777.33	8.74	—	2,806,488.80	—	17,943.90
Other publicly managed land	—	—	—	184.74	1,917.14	0.01	3,895.07	694.40	175.50
Private ownership	0.65	32.58	—	1,153.42	10,616.27	2,561.80	9,746.16	7,294.03	43,786.45
State of California	—	—	—	70.52	1,247.01	633.43	6,165.44	65,297.72	71,792.39
US Department of the Navy	—	—	—	—	—	—	404,210.34	—	87.27
US Forest Service	15,740.65	—	—	92,411.12	170.08	2.59	573,619.34	921.68	363.16
Total	17,084.40	37.63	0.00	248,532.97	237,103.98	4,776.62	5,344,153.83	92,941.36	147,605.34

Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.

Table 35. Areas in Wildfire Hazard Zones in Bishop by Ownership

Ownership or Administration	Very High FHSZ (acres)			High FHSZ (acres)			Moderate FHSZ (acres)		
	FRA	SRA	LRA	FRA	SRA	LRA	FRA	SRA	LRA
Los Angeles Department of Water and Power	—	—	—	1.21	15.02	376.93	—	—	56.83
Other publicly managed land	—	—	—	6.41	90.93	29.11	3.53	—	27.58
Private ownership	—	—	—	9.55	3.06	114.07	2.05	—	71.53
US Forest Service	—	—	—	—	—	3.94	—	—	—
Total	0.00	0.00	0.00	17.17	109.01	524.05	5.58	0.00	155.94
Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.									

4. RISK ASSESSMENT

The hazards described in **Chapter 3** vary in terms of past severity and in the likelihood and intensity of future events. However, the frequency and severity of future hazard events is by itself insufficient to describe Inyo County and Bishop’s vulnerability to these hazards. A risk assessment is necessary to prepare a more accurate view of the threat that the county and the city face as a result of the hazard events which may occur in the area. Risk was evaluated for all hazards, although more extensive risk assessments were prepared for four hazards in the planning area: seismic-related hazard, dam failure, flood, and wildfire.

4.1. Risk Assessment Method

Critical Facilities

Critical facilities are properties that are of particular value to the community. They often provide important services, such as police or fire protection, education, or water and wastewater service. Government administrative offices frequently are considered critical facilities, as they are necessary to maintain the basic functions of government. Facilities such as parks, museums, and senior centers may seem less vital, but these facilities can serve as assembly spaces, staging areas, and temporary shelters during emergency conditions, so they are also often designated as critical facilities.

Most critical facilities are located in Bishop and the unincorporated communities of Big Pine, Independence, and Lone Pine, although a small number of properties are located outside of the Owens Valley. **Table 36** shows the number and values of different types of critical facilities for Inyo County and Bishop. A full list of critical facilities is provided in **Appendix C**.

While not deemed a critical facility, the infrastructure associated with the Digital 395 project runs through Inyo County and is considered highly important for both safety and economic growth in Inyo County and the City of Bishop. The Digital 395 project, which was completed in 2013, is a fiber optic cable that runs the length of Inyo County and to the north and south, roughly alongside US Highway 395. The fiber-optic cable allows for high speed telecommunications such as broadband internet, which was not widely available in Inyo County prior to the completion of the project. Individual landowners within the project area can choose to connect to the cable and receive the services it allows. The project area includes all of the City of Bishop and the rest of the Owens Valley, along with some surrounding infrastructure (Inyo County 2014b). **Figure 17** shows the project area and the approximate location of the cable.

Table 36. Critical Facilities by Type and Ownership

Facility Type	Inyo County		Bishop	
	Number	Total Value	Number	Total Value
Administration (government offices)	6	\$7,525,000	1	\$300,000
Communication (radio and telephone infrastructure)	4	\$197,000	0	—
Housing	3	\$712,000	0	—
Public safety (fire stations, police stations, courthouses, etc.)	14	\$28,768,000	4	\$2,600,000
Recreation (parks, museums, etc.)	37	\$10,541,000	0	—
Social services (public health buildings, libraries, senior centers, etc.)	25	\$33,540,000	0	—
Transportation (airports, road maintenance, etc.)	32	\$37,138,000	0	—
Utilities (water and wastewater infrastructure)	12	\$6,775,000	7	\$11,150,000
Total	133	\$125,196,000	12	\$14,050,000

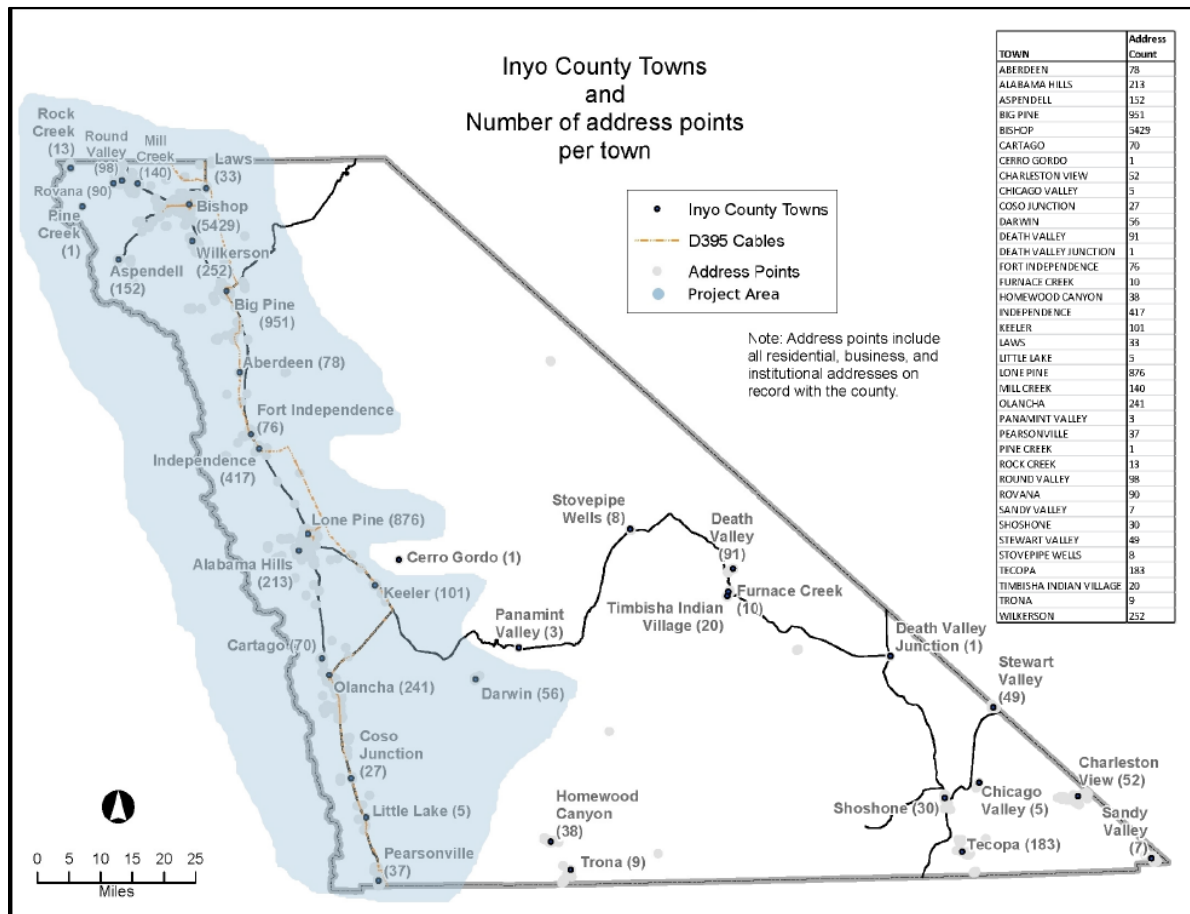
Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.

Social Vulnerability

A single hazard event can cause substantially different impacts for different individuals, even if the intensity of the hazard was the same for the entire community. Certain groups of people may be more vulnerable to natural hazards due to physical condition, socioeconomic status, or other factors. For example, elderly residents may have less physical capacity to maintain a safe internal body temperature in very hot weather, which may make them more vulnerable to heat waves. In other instances, individuals with lower incomes may be less able to renovate their homes to be more resilient to hazards, meaning that they can face a higher likelihood of their home being damaged or destroyed if a hazard event occurs. The social vulnerability assessment looks at the following metrics for different hazard zones:

- Population
- Number of households
- Median household income
- Number of households under the poverty limit
- Number of elderly households (where the head of household is 65 years of age or older)

Figure 17. Digital 395 Project Map



- Percentage of adults with a high school degree or higher
- Percentage of adults with English competency
- Percentage of households with a disabled member

The risk assessment includes a social vulnerability analysis for flooding, fault rupture, dam inundation, and fire. Other hazards, such as ground shaking, drought, and extreme weather, are not analyzed because these hazards can affect the entire community, and hazard zones are generally not limited to specific locations.

The social vulnerability assessment compares the areas in the hazard risk zones to the entire community to determine if social vulnerability is higher within the hazard risk zone. However, even if residents within the hazard risk zone are no more vulnerable (or even less vulnerable) than the entire community, this does not mean that there are no social vulnerability concerns for the hazard. The

absence of a difference in social vulnerability between the hazard risk zone and the entire community does not mean social vulnerabilities are completely absent. It is possible that the entire community faces a high degree of social vulnerability from the hazard (for example, if there is a high proportion of households under the poverty limit in the community). Additionally, even if a small number of residents are considered socially vulnerable, it does not mean that local governments do not need to work on reducing social vulnerability, nor can they ignore any special needs or considerations that are applicable to these residents.

4.2. Hazard Risk Assessments

Avalanche

The avalanche risk area is generally limited to the Sierra Nevada, particularly on land that is part of the Inyo National Forest. No critical facilities are located in areas with an elevated risk of avalanches, and there is insufficient data to accurately assess social vulnerability from this type of hazard. People and facilities in avalanche-prone areas, including the communities of Aspendell and Sage Flat, may be affected by avalanches. Bishop is not at direct risk from avalanches.

Dam and Aqueduct Failure

For both the unincorporated areas of Inyo County and Bishop, residents in the dam failure hazard zone are not substantially more vulnerable to dam failures than the entire community. **Table 37** shows the results of the social vulnerability analysis for dam failure.

Of the 133 Inyo County critical facilities, 40 (30 percent) are at risk of damage in the event of dam failure. All but four of these facilities face an inundation risk from failure of either the Hillside Dam or the Sabrina Dam. Of the remaining four, two are at risk from failure of the Sabrina Dam only, one is at risk from failure of either the Long Valley Dam or the Pleasant Valley Dam, and the final facility is at risk of failure from the Long Valley Dam only.

Of the 12 City of Bishop critical facilities, all are risk from dam inundation. As with the county facilities, most city facilities (10, or 83 percent) are within the dam inundation zones for both the Hillside and Sabrina dams. The remaining two critical facilities are within the dam inundation zone for the Sabrina Dam only. **Table 38** lists facilities in the dam failure hazard zones by type.

Table 37. Dam Failure Social Vulnerability, Unincorporated County Area and Bishop

Social Vulnerability Metric	Dam Failure Hazard Zone		Entire Community	
	Inyo County	Bishop	Inyo County	Bishop
Population	4,476	3,711	14,588	3,851
Number of households	1,863	1,649	6,181	1,710
Median household income	\$45,100	\$35,400	\$45,630	\$30,395
Number of households under poverty limit	11.2%	18.1%	12.1%	19.9%
Number of elderly households	14.0%	24.6%	32.1%	26.0%
Percentage of adults with high school degree or higher	84.2%	86.1%	88.3%	87.6%
Percentage of adults with English competency	96.6%	93.7%	94.2%	92.3%
Percentage of households with a disabled member	22.5%	25.7%	23.1%	33.5%

Table 38. Types and Values of Facilities in Dam Failure Hazard Zones

Facility Type	Number of Facilities Not at Risk	Inyo County Facilities		City of Bishop Facilities	
		Number	Total Value	Number	Total Value
Administration	2	4	\$1,814,000	1	\$300,000
Communication	3	1	\$62,000	—	—
Housing	2	1	\$330,000	—	—
Public Safety	9	5	\$1,448,000	4	\$2,600,000
Recreation	35	2	\$372,000	—	—
Social Services	13	12	\$4,255,000	—	—
Transportation	18	14	\$32,616,000	—	—
Utilities	11	1	\$236,000	7	\$11,150,000
Total	93	40	\$41,134,000	12	\$14,050,000

Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.

In total, approximately \$55.2 million in critical facility assets are located in the dam failure hazard zone. Parts of the Digital 395 infrastructure are also located within the dam inundation zone, and may be at risk in the event of a dam failure.

Regarding aqueduct failure, detailed mapping and a vulnerability assessment regarding this hazard has not been completed to date. As a result, a detailed discussion of social vulnerability is not available at this time. However, as part of the future mitigation actions proposed, the County will work with LADWP to perform this assessment to the greatest extent feasible.

Disease/Pest Management

Disease and pest management hazards are present throughout Inyo County and in Bishop. People anywhere in the county may be affected, although the risk of mosquitoes, a pest of particular concern, is higher in the Owens Valley compared to the rest of the county. Critical facilities are not impacted by diseases and are generally unaffected by pests, although wooden buildings may be damaged by wood-eating insects.

Drought

The regional nature of drought hazards means that all of Inyo County and Bishop face an equal risk of drought, although the characteristics of a drought can vary widely across the region. While droughts typically do not pose a health or safety impact, in extreme cases normal water supplies may dry up and individuals may have to procure water from other sources, which may be difficult for lower-income residents. Critical facilities are not physically affected by drought conditions, although droughts may have impacts for facility operations, such as water recreation facilities.

Seismic Hazards

The parts of the unincorporated county at risk of fault rupture generally do not face a higher social vulnerability to this hazard than the rest of the unincorporated area. **Table 39** shows the social vulnerability of Inyo County to fault rupture. Because of the very small area of Bishop in a fault rupture hazard zone, there is no social vulnerability for fault rupture for city residents.

Ground shaking from earthquakes has the potential to affect all areas of Inyo County and Bishop and no critical facility is considered completely safe from this hazard. The Digital 395 cables may also be vulnerable to ground shaking. While no complete mapping is available for liquefaction risk, past events suggest that the valley areas face an elevated risk of liquefaction, particularly areas around dry lake beds.

Table 39. Social Vulnerability to Fault Rupture in Unincorporated County

Social Vulnerability Metric	Fault Rupture Hazard Zone	Entire Community
Population	1,235	14,588
Number of households	538	6,181
Median household income	\$44,550	\$45,630
Percentage of households under poverty limit	11.5%	12.1%
Percentage of elderly households	13.7%	32.1%
Percentage of adults with high school degree or higher	92.1%	88.3%
Percentage of adults with English competency	99.2%	94.2%
Percentage of households with a disabled member	21.7%	23.1%

There are 20 Inyo County (15 percent) critical facilities within the Alquist-Priolo zone, mostly recreational facilities, and therefore they are at risk of fault rupture. Most of the risk to critical facilities from fault rupture is the result of the Owens Valley fault, which caused significant fault rupture during its last major earthquake in 1872. There are no City of Bishop critical facilities within a mapped Alquist-Priolo fault zone. The types and values of Inyo County critical facilities within the fault rupture hazard zones are shown in **Table 40**. Although it is not included in this total, the Digital 395 cables cross through fault rupture hazard zones, and so may be damaged in the event of a fault rupture event.

Table 40. Types and Values of Inyo County Facilities in Fault Rupture Hazard Zones

Facility Type	Number of Facilities Not at Risk	Number of Facilities at Risk	Value of At-Risk Facilities
Administration	7	0	—
Communication	4	0	—
Housing	3	0	—
Public Safety	15	3	\$1,234,000
Recreation	23	14	\$4,699,000
Social Services	23	2	\$1,035,000
Transportation	32	0	—
Utilities	18	1	\$130,000
Total	125	20	\$7,097,000

Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.

Flood

For residents of the unincorporated area of Inyo County, there is generally no significant difference in social vulnerability between the 100-year flood hazard zone and the entire unincorporated area, although the median household income in the hazard zone is approximately 7 percent lower than that of the entire unincorporated area. **Table 41** shows the social vulnerability for the unincorporated area of Inyo County. Note that because of the low number of people in the 100-year flood hazard zone, the margin of error on these social vulnerability indicators may be high. Very few Bishop residents are within the 100-year flood hazard zone, so social vulnerability data for Bishop is not available.

Inyo County has 18 critical facilities (14 percent) located in the designated flood zones, mostly within the 500-year floodplain. The primary risk to critical facilities is to transportation-related properties, particularly Eastern Sierra Regional Airport. **Table 42** gives the flood risk to Inyo County critical facilities.

Bishop has two critical facilities within a flood hazard zone, both of which are in the 500-year floodplain. **Table 43** shows the type and value of facilities in the city within the flood hazard zone.

Table 41. Social Vulnerability for 100-Year Flood Hazard Zones

Social Vulnerability Metric	100-Year Flood Hazard Zone	Entire Community
Population	77	14,588
Number of households	31	6,181
Median household income	\$42,340	\$45,630
Percentage of households under poverty limit	9.7%	12.1%
Percentage of elderly households	29.0%	32.1%
Percentage of adults with high school degree or higher	87.5%	88.3%
Percentage of adults with English competency	98.6%	94.2%
Percentage of households with a disabled member	22.6%	23.1%

Table 42. Types and Values of Inyo County Facilities in Flood Hazard Zones

Facility Type	Number of Facilities Not at Risk	100-Year Flood Zone		500-Year Flood Zone	
		Number	Total Value	Number	Total Value
Administration	6	—	—	—	—
Communication	4	—	—	—	—
Housing	3	—	—	—	—
Public Safety	12	—	—	2	\$431,000
Recreation	35	2	\$516,000	—	—
Social Services	24	—	—	1	\$709,000
Transportation	19	2	\$203,000	11	\$2,971,000
Utilities	12	—	—	—	—
Total	115	4	\$719,000	14	\$4,111,000

Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.

Table 43. Types and Values of Bishop Facilities in Flood Hazard Zones

Facility Type	Number of Facilities Not at Risk	100-Year Flood Zone		500-Year Flood Zone	
		Number	Total Value	Number	Total Value
Administration	1	—	—	—	—
Public Safety	4	—	—	—	—
Utilities	5	—	—	2	\$6,650,000
Total	10	0	\$0	2	\$6,650,000

Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.

FEMA’s National Flood Insurance Program

In 1968, the US Congress created the National Flood Insurance Program (NFIP). Participation in the NFIP by a community is voluntary; however, in order to receive flood hazard funding from FEMA, a community is required to participate in the program. The City of Bishop has participated in the NFIP since 1974, and Inyo County has participated since 1978.

The Community Rating System (CRS) is a voluntary part of the NFIP that seeks to coordinate all flood-related activities, reduce flood losses, facilitate accurate insurance rating, and promote public awareness of flood insurance by creating incentives for a community to go beyond minimum discounts. CRS ratings are on a 10-point scale (from 10 to 1, with 1 being the best rating), with residents of a community who live in FEMA’s Special Flood Hazard Areas receiving a 5 percent

reduction in flood insurance rates for every class improvement in the community's CRS rating. Neither Inyo County nor the City of Bishop participate in the CRS. Both Inyo County and the City of Bishop will continue to comply with NFIP through continued enforcement of their flood damage prevention ordinances (Chapter 14.29 of the Inyo County Code and Chapter 15.20 of the City of Bishop Code of Ordinances) and updates to these ordinances as needed by changes to flood conditions, demographics, land use patterns, and other factors. Inyo County and the City of Bishop will incorporate any revisions to floodplain mapping into future planning documents, including updates to this MJHMP. Both communities will also continue to monitor the need for flood mitigation activities, and will develop new strategies to respond to changing conditions, as necessary.

In addition to the social vulnerability and critical facilities assessment, statistics on participation in NFIP can also indicate the flood risk in Inyo County and the City of Bishop. There are 53 properties insured under NFIP in the unincorporated areas of Inyo County, with a total value of approximately \$14.8 million. In Bishop, there are 12 properties insured under NFIP with a total value of approximately \$3.2 million. Since the start of the program, NFIP has paid out one claim of approximately \$3,000 in the unincorporated areas of Inyo County and two claims with a combined value of approximately \$9,000 in Bishop. There are not repetitive loss properties located within the County or City.

Geologic Hazards

There are no clearly defined landslide hazard zones in Inyo County, and precise figures on social vulnerability and impacts to critical facilities are not available. Zones of elevated landslide risk in the county typically include the areas below canyons and along the edges of existing alluvial fans. Any critical facilities located in these areas may be damaged by landslides, and individuals living in these areas face a higher social vulnerability to landslides than residents elsewhere in Inyo County.

As indicated in the hazards assessment, the two volcano-related hazards that may affect Inyo County for which there are clearly defined areas of elevated threats are fine ash fall and pyroclastic flows. The only area in Inyo County at risk of pyroclastic flow is located around the Ubehebe Craters in Death Valley National Park. No critical facilities are located in this area, and the US Census Bureau does not identify anyone living near the Ubehebe Craters. Bishop and unincorporated areas north or west of Tinemaha Reservoir, including the community of Big Pine, are within the fine ash fall hazard zone for the Long Valley caldera and the Mono-Inyo craters. Critical facilities in these areas may be damaged if ash is not cleared off of roofs (particularly during wet weather), and the ash may harm facilities' mechanical or electrical systems. Similarly, residents in the hazard zone may face respiratory health risks or have their homes damaged by volcanic ash.

Hazardous Materials

Hazardous material facilities are fairly widespread throughout Inyo County and in Bishop. Many residents and critical facilities are in the vicinity of at least one of these facilities, although the majority of identified hazardous material facilities have been cleaned up or are undergoing remediation activities. There are no clearly defined hazard zones for hazardous material facilities. These facilities have no clearly defined hazard zones and therefore no identified critical facilities. In addition, no social vulnerability analyses can be performed.

Severe Weather

Most types of severe weather have a roughly equal chance of occurring anywhere in Inyo County, so all critical facilities and residents are considered potentially vulnerable to severe weather hazards. As a result, there are no critical facilities with a greater chance of being affected and no social vulnerability analyses for severe weather. However, residents who typically have a greater social vulnerability to other natural hazards (elderly residents and persons with disabilities, lower-income individuals, persons with limited English competency, etc.) are also likely to face higher social vulnerability to severe weather.

Wildfire

There is no significant difference in social vulnerability between residents in the high wildfire hazard zones of Inyo County and Bishop compared to residents in the entirety of the communities. In particular for the unincorporated area of the county, the wildfire hazard zone covers the area where most of the population (approximately 79 percent) lives. It is expected that the social vulnerability for the hazard zone is fairly close to the vulnerability of the entire community. **Table 44** summarizes the social vulnerability for the residents in the High wildfire hazard zones for both Inyo County and Bishop. While Inyo County does have a Very High wildfire hazard zone, there are very few residents in the Very High zone; social vulnerability data for this zone is not available.

Among the 133 Inyo County critical facilities, 24 are located in developed areas and are therefore considered to be at low risk of wildfires. The remaining 109 facilities face some risk of wildfire and are located in either Moderate or High wildfire hazard zones. Most of the recreation, transportation, and utility-related critical facilities face a risk of wildfires, although the public safety and social services facilities face the greatest cost risks. **Table 45** lists the number and cost of facilities located in wildfire hazard zones. The Digital 395 cables run through areas of Moderate and High fire risk.

Table 44. Social Vulnerability for High Wildfire Hazard Zones

Social Vulnerability Metric	Wildfire Hazard Zone		Entire Community	
	Inyo County	Bishop	Inyo County	Bishop
Population	11,573	1,437	14,588	3,851
Number of households	4,734	776	6,181	1,710
Median household income	\$49,370	\$35,880	\$45,630	\$30,395
Number of households under poverty limit	10.4%	17.7%	12.1%	19.9%
Number of elderly households	32.2%	23.8%	32.1%	26.0%
Percentage of adults with high school degree or higher	88.2%	85.8%	88.3%	87.6%
Percentage of adults with English competency	97.5%	93.1%	94.2%	92.3%
Percentage of households with a disabled member	23.1%	24.9%	23.1%	33.5%

Table 45. Types and Values of Inyo County Facilities in Wildfire Hazard Zones

Facility Type	Number of Facilities Not at Risk	High Wildfire Hazard Zone		Moderate Wildfire Hazard Zone	
		Number	Total Value	Number	Total Value
Administration	3	3	\$6,523,000	0	—
Communication	1	0	—	3	\$135,000
Housing	0	2	\$481,000	1	\$231,000
Public Safety	3	11	\$27,751,000	0	—
Recreation	3	30	\$6,773,000	4	\$3,442,000
Social Services	10	12	\$29,403,000	3	\$2,980,000
Transportation	3	29	\$7,515,000	0	—
Utilities	1	10	\$4,299,000	1	\$1,275,000
Total	24	97	\$82,745,000	12	\$8,064,000

Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.

Most of the critical facilities at risk of wildfire (93 in total, or 85 percent of the at-risk facilities) are located in a State Responsibility Area. The Local and State Responsibility Areas each have eight critical County facilities. **Table 46** cites the responsibility areas for critical facilities in Inyo County by facility type.

Table 46. Responsibility Areas for Critical Facilities in Inyo County by Facility Type

Facility Type	High Wildfire Hazard Zone			Moderate Wildfire Hazard Zone			Urban Unzoned (not at risk)		
	FRA	SRA	LRA	FRA	SRA	LRA	FRA	SRA	LRA
Administration	0	2	1	0	0	0	0	0	3
Communication	0	0	0	3	0	0	0	0	1
Housing	0	1	1	0	0	1	0	0	0
Public Safety	0	11	0	0	0	0	0	0	3
Recreation	0	30	0	3	1	0	0	0	3
Social Services	0	10	2	1	0	2	0	0	10
Transportation	0	28	1	0	0	0	0	0	3
Utilities	1	9	0	0	1	0	0	0	1
Total	1	91	5	7	2	3	0	0	24

Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.

In Bishop, eight critical facilities (67 percent) are in areas with wildfire hazards, while the remaining four are located in urbanized areas. Most of the at-risk critical facilities are located in a High wildfire hazard zone. **Table 47** shows the number and value of City facilities within the wildfire hazard zones.

Table 47. Types and Values of Critical Facilities in Bishop in Wildfire Hazard Zones

Facility Type	Number of Facilities Not at Risk	High Wildfire Hazard Zone		Moderate Wildfire Hazard Zone	
		Number	Total Value	Number	Total Value
Administration	0	0	—	1	\$300,000
Public Safety	2	2	\$1,100,000	0	—
Utilities	2	5	\$9,150,000	0	—
Total	4	7	\$10,250,000	1	\$300,000

Most critical facilities are located in a Local Responsibility Area, although there are a few in the State Responsibility Area. No critical facilities in Bishop are sited in a Federal Responsibility Area. **Table 48** cites the responsibility areas for critical facilities in Bishop by facility type.

Table 48. Responsibility Areas Critical Facilities in Bishop by Facility Type

Facility Type	High Wildfire Hazard Zone		Moderate Wildfire Hazard Zone		Urban Unzoned (not at risk)	
	SRA	LRA	SRA	LRA	SRA	LRA
Administration	0	0	0	1	0	0
Public Safety	1	1	0	0	0	2
Utilities	1	4	0	0	0	2
Total	2	5	0	1	0	4

5. MITIGATION ACTIONS

Outlining clear strategies to reduce the impacts of the identified hazards on community members and critical infrastructure provides a clear path forward for Inyo County and the City of Bishop to achieve the goals set forth in this Multi-Jurisdictional Hazard Mitigation Plan. This section of the Plan provides recommendations for action, including responsible agencies and departments, potential funding sources, and related policy documents. The findings from the vulnerability and risk assessments in Chapters 3 and 4 of this Plan were used to develop actions that reduce or eliminate potential losses of life or property from the region's most pressing hazards.

5.1. Hazard Mitigation Overview

Hazard Mitigation Goals

As presented in Chapter 1, Section 1.5, the six goals for the MJHMP, as created by Inyo County and the City of Bishop, include:

- Establish and foster a basis for coordination and collaboration among County and City agencies, other public organizations, private organizations and companies, and other key stakeholders.
- Work in conjunction with other planning efforts, including the County's and the City's General Plans.
- Increase community awareness and empowerment.
- Meets the requirements of federal assistant grant programs, including FEMA's Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) funding.
- Reduce the risk of loss and damage from hazard events, especially repetitive loss and damage.
- Coordinate hazard mitigation planning activities between Inyo County and the City of Bishop and in concert with resource management, land use planning, and emergency operation activities.

These goals outline and guide the development of policy choices that protect community members, critical facilities, infrastructure, property, and regional natural resources from hazards. These goals shape future actions to be taken by Inyo County and the City of Bishop to reduce risk and minimize losses from disaster. These goals will continue to ensure implementation of the MJHMP is aligned with

the original intent and can serve as checkpoints for responsible departments to monitor the progress of mitigation action items.

Hazard Mitigation Prioritization

At the May 19, 2016, meeting of the Planning Team, draft hazard mitigation actions were revised and prioritized using data analysis of risk from each hazard as well as local knowledge about community members' priorities. Planning Team members were asked to identify their top priority measures by voting, considering the potential social, environmental, and economic impacts. Actions with zero votes were given low priority, actions with one to two votes were given medium priority, and actions with three or more votes were given high priority. In addition, actions were removed when the perceived costs outweighed the potential benefits. Records of voting from this meeting can be found in **Appendix A**.

5.2. Hazard Mitigation Actions

The Planning Team used data from the hazard vulnerability assessment in Chapter 3, the risk assessment in Chapter 4, and the capabilities assessment in Section 5.3 of this chapter to inform the development of the following mitigation actions. **Table 49** identifies the hazards, proposed mitigation actions, applicable jurisdiction, responsible party for implementation, priority ranking, relative cost, and timing for Inyo County, as determined by the Planning Team. **Table 50** provides the same information for the City of Bishop.

To meet the cost estimation requirements of the hazard mitigation planning process, the Planning Team did identify relative cost estimates based on their understanding of the mitigation action intent and experience developing programs/implementing projects as identified or similar in nature. The cost estimates were categorized into three categories based on the County's and City's typical cost criteria used for budgeting purposes. These categories are as follows:

- Low (\$) – Cost below \$100,000
- Medium (\$\$) – Costs between \$100,001 – \$300,000
- High (\$\$\$) – Costs above \$300,001

Table 49. Hazard Mitigation Actions for Inyo County

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
Multiple Hazards						
1.1	Explore the feasibility of establishing a communication system for community members and government officials that can supplement or replace conventional telecommunication networks if standard infrastructure is damaged or destroyed. <i>Hazards addressed: avalanche, dam and aqueduct failure, flood, geologic hazards, seismic hazards, severe weather, wildfire</i>	Information Services/ Sheriff's Office	High	\$\$	1, 2, 3, 4	2021
1.2	Evaluate existing critical facilities for specific vulnerabilities to hazard situations, and conduct retrofits to reduce vulnerabilities. Share information about any known specific vulnerabilities of existing key facilities with other agencies and service providers, and encourage them to relocate or retrofit vulnerable existing facilities as feasible. <i>Hazards addressed: avalanche, dam and aqueduct failure, flood, geologic hazards, hazardous materials, seismic hazards, severe weather, wildfire</i>	Public Works	High	\$\$\$	1, 2, 3, 4, 5	2020
1.3	Continue to use emergency alert systems to notify community members of an imminent hazard event or a need to evacuate, in coordination with notification systems used by state and federal agencies. <i>Hazards addressed: avalanche, dam and aqueduct failure, flood, geologic hazards, hazardous materials, seismic hazards, severe weather, wildfire</i>	Sheriff's Office	High	\$	2	Ongoing
1.4	Distribute information about reducing the impacts of potential hazards through mailings, printed notices, television, digital devices and social media, and in-person meetings and events. Ensure all information is widely distributed and made available in all commonly spoken languages. <i>Hazards addressed: avalanche, dam and aqueduct failure, disease/pest management, drought, flood, geologic hazards, hazardous materials, seismic hazards, severe weather, wildfire</i>	Public Works/ Sheriff's Office	Medium	\$	1, 2, 4	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
1.5	<p>To the extent possible, avoid locating critical county and city facilities in known areas of increased hazard potential. If no reasonable alternative is available, ensure new facilities contain comprehensive features to mitigate risk. Conduct hazard vulnerability studies when constructing new facilities, and build facilities to be more resilient to any identified hazards. Share information about vulnerable areas with other agencies and service providers. Support any efforts by these organizations to locate new key facilities outside of known hazard areas or to integrate resilient features into facility design.</p> <p><i>Hazards addressed: avalanche, dam and aqueduct failure, flood, geologic hazards, hazardous materials, seismic hazards, severe weather, wildfire</i></p>	Planning/ Public Works	Medium	\$	1, 2, 3, 4	Ongoing
1.6	<p>Incorporate applicable hazards and risk information from the MJHMP into other local emergency planning and public safety efforts.</p> <p><i>Hazards addressed: avalanche, dam and aqueduct failure, disease/pest management, drought, flood, geologic hazards, hazardous materials, seismic hazards, severe weather, wildfire</i></p>	Planning/ Public Works	Medium	\$	1, 2	Ongoing
1.7	<p>In coordination with other agencies and experts, improve estimates of injury, death, property damage, health impacts, service disruptions, and other consequences of hazard events.</p> <p><i>Hazards addressed: avalanche, dam and aqueduct failure, disease/pest management, drought, flood, geologic hazards, hazardous materials, seismic hazards, severe weather, wildfire</i></p>	Public Works/ Emergency Services/ Sheriff's Office	Medium	\$\$	1, 4	Ongoing
1.8	<p>Pursue funding for implementation of hazard mitigation actions.</p> <p><i>Hazards addressed: avalanche, dam and aqueduct failure, disease/pest management, drought, flood, geologic hazards, hazardous materials, seismic hazards, severe weather, wildfire</i></p>	Public Works/ Planning	Medium	\$	1, 3, 4	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
1.9	<p>Coordinate with federal and state agencies and LADWP to support a unified hazard mitigation strategy throughout Inyo County.</p> <p><i>Hazards addressed: avalanche, dam and aqueduct failure, disease/pest management, drought, flood, geologic hazards, hazardous materials, seismic hazards, severe weather, wildfire</i></p>	Public Works/ Planning	Low	\$	1, 2, 4	Ongoing
1.10	<p>Support efforts by SCE and LADWP to identify vulnerabilities in the local power grid, and coordinate on efforts to make the power grid more resilient to hazard events. Evaluate the feasibility of distributed electricity generation and backup storage at critical facilities, and install generation and storage systems as feasible. Promote increased energy independence for residents and businesses, and revise zoning codes and permitting processes to remove barriers to these systems as appropriate. Emphasize the use of renewable energy technologies.</p> <p><i>Hazards addressed: dam and aqueduct failure, flood, geologic hazards, hazardous materials, seismic hazards, severe weather, wildfire</i></p>	Public Works	Low	\$\$	1, 5, 6	Ongoing
1.11	<p>Work with local community organizations to identify populations who face increased vulnerabilities, and develop actions to reduce risks to these populations. Provide information to tribal governments on vulnerable individuals, and work with tribal governments as requested to reduce risks to vulnerable individuals on tribal land.</p> <p><i>Hazards addressed: avalanche, dam and aqueduct failure, disease/pest management, drought, flood, geologic hazards, hazardous materials, seismic hazards, severe weather, wildfire</i></p>	Health and Human Services/ Public Health	Low	\$	1, 2, 4	Ongoing
1.12	<p>In coordination with other landowners, protect existing natural habitats and restore degraded ones to help ensure the continued hazard mitigation benefits of the environment.</p> <p><i>Hazards addressed: avalanche, dam and aqueduct failure, drought, flood, geologic hazards, severe weather, wildfire</i></p>	Public Works	Low	\$	1, 4, 5, 6	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
1.13	Require applicants for major development projects to conduct hazard assessment studies and to design new or significantly retrofitted structures to be resilient to any identified hazards. <i>Hazards addressed: dam and aqueduct failure, flood, geologic hazards, seismic hazards, severe weather, wildfire</i>	Public Works	Low	\$	6	Ongoing
1.14	Monitor potential changes to the location, severity, and frequency of hazard events as a result of climate change or other factors, in coordination with state and regional agencies and continue to identify improved risk analysis opportunities. <i>Hazards addressed: avalanche, dam and aqueduct failure, disease/pest management, drought, flood, geologic hazards, hazardous materials, seismic hazards, severe weather, wildfire</i>	Public Works	Low	\$	1, 6	Ongoing
Avalanche						
2.1	In coordination with the US Forest Service, monitor the probability of avalanches on slopes with accumulated snow, and restrict access to specific areas deemed unsafe due to avalanche risk.	Public Works/Sheriff's Office	Low	\$	1, 4, 6	Ongoing
2.2	Post information about avalanche risks and current conditions at trailheads throughout avalanche-prone areas, in visitor centers, and online.	Public Works/Sheriff's Office	Low	\$	1, 2, 6	Ongoing
2.3	Support efforts by the US Forest Service and CalTrans to set off controlled avalanches on unstable slopes as necessary.	Public Works/Sheriff's Office	Low	\$	4	Ongoing
Dam and Aqueduct Failure						
3.1	Encourage and support efforts by SCE and LADWP to assess the current safety of dams and the LA Aqueduct in Inyo County and the Long Valley Dam.	Public Works	High	\$	1, 4, 6	2020
3.2	Establish and maintain an effective public alert system for areas in a dam and aqueduct inundation zones.	Sheriff's Office	Low	\$\$	1, 2, 4, 6	2022

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
3.3	Share information about dam and aqueduct inundation risks with Tribal governments, and provide support as needed to assist with any Tribal efforts to locate new development outside of dam and aqueduct inundation zones. Use existing studies and new quantitative analysis to highlight best practices and regional risks.	Public Works	Low	\$	1, 2, 4	Ongoing
3.4	Evaluate the vulnerability of water and wastewater infrastructure to dam and aqueduct inundation in greater detail, and carry out actions to improve resiliency as feasible. Identify opportunities to improve analysis of risk from dam or aqueduct failure, especially in regard to flood routing and related water infrastructure.	Public Works	Low	\$\$\$	1, 2, 3, 4, 5, 6	2022
Disease/Pest Management						
4.1	Through the Owens Valley Mosquito Abatement Program, continue to monitor the status of mosquitos in the Owens Valley and take appropriate action to protect public health.	Owens Valley Mosquito Abatement Program (OVMAP)	Medium	\$	1, 2, 4, 5	Ongoing
4.2	Continue to monitor the status of vector-borne diseases in Inyo County, and issue public health alerts for diseases that are new to the area or are becoming more widespread.	OVMAP/ Health and Human Services/ Public Health	Medium	\$	1, 2, 4, 5	Ongoing
4.3	Encourage farmers to plant disease-resistant crop varieties and to minimize use of pesticides in favor of effective biological or physical pest controls, to the extent possible.	Agricultural Commissioner	Medium	\$	1, 4, 5, 6	Ongoing
4.4	When installing new or renovated public landscapes, plant vegetation that is resistant to diseases or pest infestation. Encourage private property owners to use resistant plants in landscaping projects.	Agricultural Commissioner	Low	\$\$	1, 2, 4, 5, 6	Ongoing
4.5	Practice Integrated Pest Management (IPM) strategies on public landscapes, emphasizing a preventive approach and minimizing the use of chemicals.	Agricultural Commissioner	Low	\$	1, 4, 6	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
4.6	Conduct periodic educational campaigns through in-person events and various types of media to encourage community members to remove standing water and practice other mosquito prevention strategies.	OVMAP	Low	\$	1, 2, 4, 5	Ongoing
4.7	Through the Inyo and Mono Counties Agricultural Commissioner's Office, continue to monitor for agricultural diseases and pests, and take appropriate steps to contain or eradicate these diseases and pests.	Agricultural Commissioner	Low	\$	1, 2, 4, 5	Ongoing
4.8	Continue activities to prevent the spread of noxious weeds through the Eastern Sierra Weed Management Area program.	Agricultural Commissioner	Low	\$\$	1, 4, 5, 6	Ongoing
4.9	Support efforts by the US Forest Service, the Bureau of Land Management, and other landowners to control or eradicate invasive and/or abnormally active forest pests.	Agricultural Commissioner	Low	\$	1, 4	Ongoing
Drought						
5.1	Encourage retrofits of private homes and businesses for increased water conservation. Explore financing mechanisms such as Property Assessed Clean Energy (PACE) programs to support water conservation retrofits.	Public Works	High	\$\$	1, 2, 4, 6	Ongoing
5.2	Explore opportunities to diversify water sources for community water systems.	Public Works	Medium	\$\$	1, 2, 3, 4, 5, 6	2022
5.3	Integrate changes in precipitation and snowpack levels as a result of climate change into long-term water availability forecasts.	Water Department	Low	\$\$	1, 2	Ongoing
5.4	Encourage private landowners to use plants that require no irrigation in new or retrofitted landscapes.	Agricultural Commissioner	Low	\$	1, 4, 6	2020
5.5	Provide resources to local farmers about crop varieties that require little or no irrigation.	Agricultural Commissioner	Low	\$	1, 2, 4, 6	2020

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
5.6	Provide farmers with low-cost or free water audits to identify opportunities to improve water conservation in irrigation systems, and support financing mechanisms to make water-efficient irrigation systems more affordable.	Agricultural Commissioner /Public Works	Low	\$\$	1, 2, 4, 6	2021
Seismic hazards						
6.1	Assess liquefaction potential of soils, particularly near permanent and dry water bodies, and integrate the results into future hazard planning efforts.	Public Works	Medium	\$\$	1, 4	2021
6.2	Identify and maintain records of seismically vulnerable structures, and encourage owners of these structures to complete seismic retrofits.	Public Works	Low	\$\$	1, 2, 4, 6	2023
6.3	Continue to require new and retrofitted structures to meet minimum state seismic safety standards, and encourage property owners to exceed these standards.	Public Works	Low	\$	1, 2, 4, 6	Ongoing
6.4	Require property owners to locate new developments outside of known fault rupture hazard zones.	Planning	Low	\$	1, 2, 4, 6	Ongoing
6.5	Design County-owned infrastructure in fault rupture zones to resist damage from fault rupture, and encourage LADWP and other agencies to use similar strategies. Use similar strategies outside of fault rupture zones to the extent feasible.	Public Works	Low	\$\$	1, 2, 3, 4, 5, 6	Ongoing
Severe Weather						
7.1	Designate at least one cooling/heating center in all larger communities to the extent that facilities are available, and establish a temperature at which cooling/heating centers will open. Ensure that community members are notified through multiple means when cooling/heating centers are operational.	Health and Human Services/ Emergency Services/ Sheriff's Office	High	\$\$	1, 2, 4	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
7.2	Work with tribal governments and community organizations to provide check-ins to vulnerable persons, including elderly residents, socially isolated persons, and immunocompromised individuals, during extreme temperature events.	Health and Human Services/ Sheriff's Office	Medium	\$	1, 2, 4	Ongoing
7.3	As part of the countywide emergency notification system, ensure residents are informed when severe winds are imminent around Owens Lake, and provide information about reducing exposure to toxic dust.	Health and Human Services/ Public Health/ Sheriff's Office	Medium	\$	1, 2	Ongoing
7.4	Expand weather prediction and monitoring capabilities in the county through increased coordination with the National Weather Service and other state and federal agencies responsible for weather-related services.	Sheriff's Office	Medium	\$\$\$	1, 2, 4	2021
7.5	Identify ways to provide free or low-cost weatherization and energy-efficient heating and cooling appliances to lower-income residents without access to these devices.	Public Works/ Health and Human Services	Low	\$\$	1, 2, 4, 6	2023
7.6	Ensure that County employees receive training on reducing risks from extreme temperatures and providing emergency first aid for temperature-related illnesses. Encourage federal and state agencies, LADWP, and private businesses to provide similar training to their employees.	Risk/ Emergency Services	Low	\$	1, 4	Ongoing
7.7	Post signs with information about extreme temperatures and current conditions at trailheads and other outdoor recreation facilities.	Public Works	Low	\$\$	1, 4	2022
7.8	Work with landowners and utility companies to monitor tree health near developed areas or key infrastructure (e.g., roads or power lines). Promptly remove weakened branches and trees. When planting new trees in these areas, use species that can resist high winds and other severe weather, and encourage other landowners to do the same.	Public Works/ Agricultural Commissioner	Low	\$	1, 4, 6	Ongoing
7.9	Encourage project applicants to incorporate wind-resistant design features into new or significantly renovated buildings.	Public Works	Low	\$	1, 2, 4, 6	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
Flood						
8.1	Identify areas in larger communities where ponding frequently occurs during heavy rainfall, and install LID features or other measures to reduce ponding.	Public Works	Low	\$	1, 4, 6	2021
8.2	Maintain an adequate supply of sandbags in advance of potential flood events.	Emergency Services/ Sheriff's Office/ Public Works	Low	\$\$	1, 2	Ongoing
8.3	Encourage farmers to use grading systems and vegetation to minimize topsoil loss during heavy rains.	Agricultural Commissioner/ Public Works	Low	\$	1, 2, 4, 6	Ongoing
8.4	As a pilot project, install acoustic flow monitors along portions of the Amargosa River to establish an early warning system for flash floods that have affected County facilities and communities in this area.	Public Works	Low	\$\$	1, 4, 6	2021
8.5	Identify opportunities to improve analysis of risk from flood, especially in regard to flood routing.	Public Works	Low	\$	1, 4	Ongoing
Geologic Hazards						
9.1	In coordination with other landowners, support efforts to plant and maintain native vegetation on exposed slopes and recently burned areas to control erosion and landslides.	Public Works	Medium	\$	1, 4, 6	Ongoing
9.2	Support efforts to improve volcanic forecasting strategies.	Public Works	Medium	\$	1, 4, 6	Ongoing
9.3	During an ongoing volcanic eruption or threat of eruption, widely distribute information about removing and disposing of ash from private property.	Public Works/ Integrated Waste/ Environmental Health	Low	\$	1, 4	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
9.4	Encourage property owners to avoid construction activities at canyon mouths or on existing alluvial fans.	Planning/ Public Works	Low	\$	1, 2	Ongoing
Hazardous Materials						
10.1	In coordination with appropriate state and federal agencies, establish a system to distribute information about hazardous material releases quickly and accurately to community members.	Environmental Health/ Sheriff's Office	Medium	\$\$	1, 2, 4, 6	Ongoing
10.2	Support ongoing mitigation and testing activities at sites known or suspected to contain hazardous materials.	Environmental Health	Medium	\$	1, 4, 6	Ongoing
10.3	Establish multiple sites for free or low-cost disposal of hazardous household wastes, including electronic wastes.	Environmental Health/ Integrated Waste	Medium	\$\$	1, 2, 4, 5	2022
10.4	In coordination with Caltrans, the CHP, and members of the public, develop an emergency response plan for hazardous material releases occurring along State Route 127.	Environmental Health/ Sheriff's Office	Medium	\$\$	1, 2, 4, 6	2023
Wildfire						
11.1	Work with property owners to ensure a buffer of defensible space around all buildings and key structures.	Public Works/ Sheriff's Office/ Local Fire Departments	High	\$	1, 4, 5, 6	Ongoing
11.2	Promote the establishment of fire safe councils within Inyo County communities.	Public Works/ Sheriff's Office/ Local Fire Departments	High	\$	1, 4, 5, 6	Ongoing
11.3	Support efforts to reduce the risk of wildfire through preventive measures on federal, state, and LADWP land, with an emphasis on the Inyo National Forest and surrounding land.	Public Works/ Local Fire Departments	High	\$	1, 4, 6	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
11.4	Identify areas near residences or key facilities with potential access difficulties for fire equipment, and work with landowners to reduce or remove access barriers.	Public Works/ Sheriff's Office/ Local Fire Departments	Medium	\$	1, 4, 6	Ongoing
11.5	Require new and significantly renovated buildings in very high and high fire hazard zones to contain wildfire-resistant building, landscaping, and site design features, and encourage the use of similar features in moderate fire hazard zones.	Public Works	Low	\$	1, 2, 4, 6	Ongoing
11.6	In coordination with the Great Basin Unified Air Pollution Control District, provide air quality alerts and information about reducing exposure to smoke and fire-related particulates during regional wildfire events.	Environmental Health/ Health and Human Services/ Public Health/ Sheriff's Office	Low	\$	1, 4, 6	Ongoing
11.7	Share information about fire risks to electricity and water infrastructure with LADWP. Encourage and support any efforts to harden existing vulnerable backup infrastructure or to establish backup electricity and water infrastructure outside of high fire hazard zones.	Public Works	Low	\$	1, 4, 6	Ongoing
Relative Cost Categories: Low (\$) – Costs below \$100,000 Medium (\$\$) – Costs between \$100,001 and \$300,000 High (\$\$\$) – Costs above \$300,001		Potential Funding Sources: 1: Grant Funding 2: County funding sources (eligible categorical monies, general fund, or combination thereof) 3: Financing (e.g. COPs, bonds, and loans). Requires voter approval 4: State/federal appropriations 5: Assessment districts. Requires voter approval 6: Private/other public sector/NGO funding				

Table 50. Hazard Mitigation Actions for the City of Bishop

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
Multiple Hazards						
1.1	Explore the feasibility of establishing a communication system for community members and government officials that can supplement or replace conventional telecommunication networks if standard infrastructure is damaged or destroyed. <i>Hazards addressed: dam and aqueduct failure, flood, geologic hazards, seismic hazards, severe weather, wildfire</i>	Administration/ Police Department	High	\$\$	1, 2, 3, 4	2021
1.2	Evaluate existing critical facilities for specific vulnerabilities to hazard situations, and conduct retrofits to reduce vulnerabilities. Share information about any known specific vulnerabilities of existing key facilities with other agencies and service providers, and encourage them to relocate or retrofit vulnerable existing facilities as feasible. <i>Hazards addressed: dam and aqueduct failure, flood, geologic hazards, hazardous materials, seismic hazards, severe weather, wildfire</i>	Public Works	High	\$\$\$	1, 2, 3, 4, 5	2020
1.3	Continue to use emergency alert systems to notify community members of an imminent hazard event or a need to evacuate, in coordination with notification systems used by state and federal agencies. <i>Hazards addressed: dam and aqueduct failure, flood, geologic hazards, hazardous materials, seismic hazards, severe weather, wildfire</i>	Police Department	High	\$	2	Ongoing
1.4	Distribute information about reducing the impacts of potential hazards through mailings, printed notices, television, digital devices and social media, and in-person meetings and events. Ensure all information is widely distributed and made available in all commonly spoken languages. <i>Hazards addressed: dam and aqueduct failure, disease/pest management, drought, flood, geologic hazards, hazardous materials, seismic hazards, severe weather, wildfire</i>	Public Works/ Police Department	Medium	\$	1, 2, 4	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
1.5	<p>To the extent possible, avoid locating critical county and city facilities in known areas of increased hazard potential. If no reasonable alternative is available, ensure new facilities contain comprehensive features to mitigate risk. Conduct hazard vulnerability studies when constructing new facilities, and build facilities to be more resilient to any identified hazards. Share information about vulnerable areas with other agencies and service providers. Support any efforts by these organizations to locate new key facilities outside of known hazard areas or to integrate resilient features into facility design.</p> <p><i>Hazards addressed: dam and aqueduct failure, flood, geologic hazards, hazardous materials, seismic hazards, severe weather, wildfire</i></p>	Planning/ Public Works	Medium	\$	1, 2, 3, 4	Ongoing
1.6	<p>Incorporate applicable hazards and risk information from the MJHMP into other local emergency planning and public safety efforts.</p> <p><i>Hazards addressed: dam and aqueduct failure, disease/pest management, drought, flood, geologic hazards, hazardous materials, seismic hazards, severe weather, wildfire</i></p>	Planning/ Public Works	Medium	\$	1, 2	Ongoing
1.7	<p>In coordination with other agencies and experts, improve estimates of injury, death, property damage, health impacts, service disruptions, and other consequences of hazard events.</p> <p><i>Hazards addressed: dam and aqueduct failure, disease/pest management, drought, flood, geologic hazards, hazardous materials, seismic hazards, severe weather, wildfire</i></p>	Police Department/ Public Works	Medium	\$\$	1, 4	Ongoing
1.8	<p>Pursue funding for implementation of hazard mitigation actions.</p> <p><i>Hazards addressed: dam and aqueduct failure, disease/pest management, drought, flood, geologic hazards, hazardous materials, seismic hazards, severe weather, wildfire</i></p>	Public Works/ Planning	Medium	\$	1, 3, 4	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
1.9	<p>Coordinate with federal and state agencies and LADWP to support a unified hazard mitigation strategy throughout Inyo County.</p> <p><i>Hazards addressed: dam and aqueduct failure, disease/pest management, drought, flood, geologic hazards, hazardous materials, seismic hazards, severe weather, wildfire</i></p>	Public Works/ Planning	Low	\$	1, 2, 4	Ongoing
1.10	<p>Support efforts by SCE and LADWP to identify vulnerabilities in the local power grid, and coordinate on efforts to make the power grid more resilient to hazard events. Evaluate the feasibility of distributed electricity generation and backup storage at critical facilities, and install generation and storage systems as feasible. Promote increased energy independence for residents and businesses, and revise zoning codes and permitting processes to remove barriers to these systems as appropriate. Emphasize the use of renewable energy technologies.</p> <p><i>Hazards addressed: dam and aqueduct failure, flood, geologic hazards, hazardous materials, seismic hazards, severe weather, wildfire</i></p>	Public Works	Low	\$\$	1, 4, 5	Ongoing
1.11	<p>Work with local community organizations to identify populations who face increased vulnerabilities, and develop actions to reduce risks to these populations. Provide information to tribal governments on vulnerable individuals, and work with tribal governments as requested to reduce risks to vulnerable individuals on tribal land.</p> <p><i>Hazards addressed: dam and aqueduct failure, disease/pest management, drought, flood, geologic hazards, hazardous materials, seismic hazards, severe weather, wildfire</i></p>	Community Services	Low	\$	1, 2, 4	Ongoing
1.12	<p>In coordination with other landowners, protect existing natural habitats and restore degraded ones to help ensure the continued hazard mitigation benefits of the environment.</p> <p><i>Hazards addressed: dam and aqueduct failure, flood, geologic hazards, severe weather, wildfire</i></p>	Public Works	Low	\$	1, 4, 5, 6	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
1.13	Require applicants for major development projects to conduct hazard assessment studies and to design new or significantly retrofitted structures to be resilient to any identified hazards. <i>Hazards addressed: dam and aqueduct failure, flood, geologic hazards, severe weather, wildfire</i>	Public Works	Low	\$	6	Ongoing
1.14	Monitor potential changes to the location, severity, and frequency of hazard events as a result of climate change or other factors, in coordination with state and regional agencies and continue to identify improved risk analysis opportunities. <i>Hazards addressed: dam and aqueduct failure, disease/pest management, drought, flood, geologic hazards, hazardous materials, seismic hazards, severe weather, wildfire</i>	Public Works	Low	\$	1, 6	Ongoing
Dam and Aqueduct Failure						
2.1	Encourage and support efforts by SCE and LADWP to assess the current safety of dams along Bishop Creek in Inyo County and the Long Valley Dam.	Public Works	High	\$	1, 4, 6	2020
2.2	Establish and maintain an effective public alert system for areas in a dam and aqueduct inundation zones.	Police Department	Low	\$\$	1, 2, 4, 6	2022
2.3	Evaluate the vulnerability of water and wastewater infrastructure to dam and aqueduct inundation in greater detail, and carry out actions to improve resiliency as feasible. Identify opportunities to improve analysis of risk from dam or aqueduct failure, especially in regard to flood routing and related water infrastructure.	Public Works	Low	\$\$\$	1, 2, 4, 6	2022
Disease/Pest Management						
3.1	Through the Owens Valley Mosquito Abatement Program, continue to monitor the status of mosquitos in the Owens Valley and take appropriate action to protect public health.	Owens Valley Mosquito Abatement Program (OVMAP)	Medium	\$	1, 2, 4, 5	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
3.2	Continue to monitor the status of vector-borne diseases in Inyo County, and issue public health alerts for diseases that are new to the area or are becoming more widespread.	OVMAP/ Community Services	Medium	\$	1, 2, 4, 5	Ongoing
3.4	When installing new or renovated public landscapes, plant vegetation that is resistant to diseases or pest infestation. Encourage private property owners to use resistant plants in landscaping projects.	Public Works	Low	\$\$	1, 2, 4, 5, 6	Ongoing
3.5	Practice Integrated Pest Management (IPM) strategies on public landscapes, emphasizing a preventive approach and minimizing the use of chemicals.	Public Works	Low	\$	1, 4, 6	Ongoing
3.6	Conduct periodic educational campaigns through in-person events and various types of media to encourage community members to remove standing water and practice other mosquito prevention strategies.	OVMAP	Low	\$	1, 2, 4, 5	Ongoing
Drought						
4.1	Encourage retrofits of private homes and businesses for increased water conservation. Explore financing mechanisms such as Property Assessed Clean Energy (PACE) programs to support water conservation retrofits.	Public Works	High	\$\$	1, 2, 4, 6	Ongoing
4.2	Explore opportunities to diversify water sources for community water systems.	Public Works	Medium	\$\$	1, 2, 3, 4, 5, 6	2022
4.3	Integrate changes in precipitation and snowpack levels as a result of climate change into long-term water availability forecasts.	Public Works	Low	\$\$	1, 2	Ongoing
4.4	Encourage private landowners to use plants that require no irrigation in new or retrofitted landscapes.	Planning	Low	\$	1, 4, 6	2020
Seismic hazards						
5.1	Identify and maintain records of seismically vulnerable structures, and encourage owners of these structures to complete seismic retrofits.	Public Works	Low	\$\$	1, 2, 4, 6	2023

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
5.2	Continue to require new and retrofitted structures to meet minimum state seismic safety standards, and encourage property owners to exceed these standards.	Public Works	Low	\$	1, 2, 4, 6	Ongoing
5.3	Require property owners to locate new developments outside of known fault rupture hazard zones.	Planning	Low	\$	1, 2, 4, 6	Ongoing
5.4	Design City-owned infrastructure in fault rupture zones to resist damage from fault rupture, and encourage LADWP and other agencies to use similar strategies. Use similar strategies outside of fault rupture zones to the extent feasible.	Public Works	Low	\$\$	1, 2, 3, 4, 5, 6	Ongoing
Severe Weather						
6.1	Designate at least one cooling/heating center in all larger communities to the extent that facilities are available, and establish a temperature at which cooling/heating centers will open. Ensure that community members are notified through multiple means when cooling/heating centers are operational.	Community Services/ Police Department	High	\$\$	1, 2, 4	Ongoing
6.2	Work with tribal governments and community organizations to provide check-ins to vulnerable persons, including elderly residents, socially isolated persons, and immunocompromised individuals, during extreme temperature events.	Community Services/ Police Department	Medium	\$	1, 2, 4	Ongoing
6.3	As part of the countywide emergency notification system, ensure residents are informed when severe winds are imminent around Owens Lake, and provide information about reducing exposure to toxic dust.	Community Services/ Police Department	Medium	\$	1, 2	Ongoing
6.4	Expand weather prediction and monitoring capabilities in the county through increased coordination with the National Weather Service and other state and federal agencies responsible for weather-related services.	Police Department	Medium	\$\$\$	1, 2, 4	2021
6.5	Identify ways to provide free or low-cost weatherization and energy-efficient heating and cooling appliances to lower-income residents without access to these devices.	Community Services/ Public Works	Low	\$\$	1, 2, 4, 6	2023

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
6.6	Ensure that City employees receive training on reducing risks from extreme temperatures and providing emergency first aid for temperature-related illnesses. Encourage federal and state agencies, LADWP, and private businesses to provide similar training to their employees.	Administration	Low	\$	1, 4	Ongoing
6.7	Work with landowners and utility companies to monitor tree health near developed areas or key infrastructure (e.g., roads or power lines). Promptly remove weakened branches and trees. When planting new trees in these areas, use species that can resist high winds and other severe weather, and encourage other landowners to do the same.	Public Works	Low	\$	1, 4, 6	Ongoing
6.8	Encourage project applicants to incorporate wind-resistant design features into new or significantly renovated buildings.	Public Works	Low	\$	1, 2, 4, 6	Ongoing
Flood						
7.1	Identify areas in larger communities where ponding frequently occurs during heavy rainfall, and install LID features or other measures to reduce ponding.	Public Works	Low	\$	1, 4, 6	2021
7.2	Work with the County to maintain an adequate supply of sandbags in advance of potential flood events.	Public Works	Low	\$\$	1, 2	Ongoing
7.3	Harden sewage treatment plant and lift station infrastructure against flood events.	Public Works	Low	\$\$\$	1, 2, 3, 4, 5, 6	2023
7.4	Identify opportunities to improve analysis of risk from flood, especially in regard to flood routing.	Public Works	Low	\$	1, 4	Ongoing
Geologic Hazards						
8.1	In coordination with other landowners within landslide prone areas, support efforts to plant and maintain native vegetation on exposed slopes and recently burned areas to control erosion and landslides.	Public Works	Medium	\$	1, 4, 6	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
8.2	Support efforts to improve volcanic forecasting strategies.	Public Works	Medium	\$	1, 4, 6	Ongoing
8.3	During an ongoing volcanic eruption or threat of eruption, widely distribute information about removing and disposing of ash from private property.	Police Department/ Public Works	Low	\$	1, 4	Ongoing
Hazardous Materials						
9.1	In coordination with appropriate state and federal agencies, establish a system to distribute information about hazardous material releases quickly and accurately to community members.	Police Department	Medium	\$\$	1, 2, 4, 6	Ongoing
9.2	Support ongoing mitigation and testing activities at sites known or suspected to contain hazardous materials.	Police Department	Medium	\$	1, 4, 6	Ongoing
9.3	Establish multiple sites for free or low-cost disposal of hazardous household wastes, including electronic wastes.	Police Department	Medium	\$\$	1, 2, 4, 5	2022
Wildfire						
10.1	Work with property owners to ensure a buffer of defensible space around all buildings and key structures.	Fire Department	High	\$	1, 4, 5, 6	Ongoing
10.2	Support efforts to reduce the risk of wildfire through preventive measures on federal, state, and LADWP land, with an emphasis on the Inyo National Forest and surrounding land.	Fire Department	High	\$	1, 4, 6	Ongoing
10.3	Identify areas near residences or key facilities with potential access difficulties for fire equipment, and work with landowners to reduce or remove access barriers.	Fire Department	Medium	\$	1, 4, 6	Ongoing
10.4	Require new and significantly renovated buildings in very high and high fire hazard zones to contain wildfire-resistant building, landscaping, and site design features, and encourage the use of similar features in moderate fire hazard zones.	Fire Department/ Planning	Low	\$	1, 2, 4, 6	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
10.5	In coordination with the Great Basin Unified Air Pollution Control District, provide air quality alerts and information about reducing exposure to smoke and fire-related particulates during regional wildfire events.	Police Department/ Fire Department	Low	\$	1, 4, 6	Ongoing
10.6	Share information about fire risks to electricity and water infrastructure with LADWP. Encourage and support any efforts to harden existing vulnerable backup infrastructure or to establish backup electricity and water infrastructure outside of high fire hazard zones.	Public Works	Low	\$	1, 4, 6	Ongoing
Relative Cost Categories: Low (\$) – Costs below \$100,000 Medium (\$\$) – Costs between \$100,001 and \$300,000 High (\$\$\$) – Costs above \$300,001		Potential Funding Sources: 1: Grant Funding 2: City funding sources (eligible categorical monies, general fund, or combination thereof) 3: Financing (e.g. COPs, bonds, and loans). Requires voter approval 4: State/federal appropriations 5: Assessment districts. Requires voter approval 6: Private/other public sector/NGO funding				

5.3. Capabilities Assessment

Inyo County and the City of Bishop will incorporate the MJHMP into the Safety Element of their respective General Plans, as permissible by California Government Code Section 65302.6. Making the MJHMP part of their General Plans will allow Inyo County and the City of Bishop to more effectively implement the hazard mitigation actions in **Table 49** and **Table 50**. Both communities will also have the potential to implement the MJHMP through numerous other ongoing activities as identified in their capabilities assessment. The capabilities assessment identifies existing local and regional agencies, personnel, plans, public policy, and programs that can support the hazard mitigation actions in this Plan. This assessment (**Table 51** and **Table 52**) helps determine Inyo County’s and the City of Bishop’s ability to reduce damage from hazard events, providing a foundation to develop, consider, and prioritize future hazard mitigation actions. The City and County will expand and modify their capabilities through future improvements, following internal processes or implementation of mitigation activities.

Table 51. Inyo County MJHMP Capabilities Assessment

Supporting Resource Type	Supporting Resource Name	Ability to Support Hazard Mitigation Activities
Personnel	Interagency Fire Protection Agencies (IFPA)	This consortium manages wildfires in Inyo County and consists of the following fire protection service providers: Bishop Fire District, Big Pine Fire District, Lone Pine Fire District, Independence Fire District, Cal Fire, US Forest Service, BLM, and Los Angeles Department of Water and Power (LADWP). Together, these service providers work to ensure that fire protection and response is coordinated and sufficient. In future years, they can carry out fire mitigation activities.
Personnel	Inyo County Sheriff’s Office	The Inyo County Sheriff’s Office provides law enforcement services across Inyo County, with a focus on improving quality of life, educating the public, and providing response to disasters. These individuals can help implement hazard mitigation activities related to education, alert, and evacuations.

Supporting Resource Type	Supporting Resource Name	Ability to Support Hazard Mitigation Activities
Personnel	Inyo County Environmental Health Services Department Staff	Tasked with protecting the public health from environmental hazards, Inyo County Environmental Health Services Department staff enforce federal, state, and local regulations to ensure the safe supply of food and water, monitor the proper management of wastes and hazardous materials, investigate environmental health-related causes of illness, and diminish hazardous environmental conditions. Inspections of permitted facilities and investigations of complaints are conducted by trained and licensed environmental health specialists, creating an opportunity to ensure compliance with mitigation actions related to hazardous materials. These capabilities will allow members of the Inyo County Environmental Health Services to implement hazardous material-related mitigation measures in future years.
Personnel	Southern California Edison Company Staff	Southern California Edison provides safe and reliable electricity to community members in Bishop and Inyo County. Staff is responsible for restoring electrical service if it has been interrupted by an emergency situation and for repairing and maintaining electrical infrastructure to reduce the risk of hazard events. These staff will be able to help harden electrical infrastructure against hazard events in future years, strengthening network resiliency.
Personnel	Los Angeles Department of Water and Power	Los Angeles Department of Water and Power provides surface water management, aqueduct management, and electrical generation supply services throughout Inyo County in association with operation of the Los Angeles Aqueduct. These individuals can help to increase the resiliency of Department infrastructure, protecting it from damage or destruction, while also helping to prevent damage to the wider community from any failures of Department infrastructure.
Personnel	Inyo County Water Department	The Inyo County Water Department (ICWD) monitors the vegetation, soil water, and hydrology of the Owens Valley following groundwater exportation by the City of Los Angeles. Inyo County and the Los Angeles Department of Water and Power jointly manage the valley's water resources under the Inyo/Los Angeles Water Agreement. ICWD also advises the County on other water resource issues in Inyo County and can help study and implement regional hazard mitigation actions. Department staff can help implement mitigation activities that relate to drought following adoption of the MJHMP, and help ensure continued water reliability in Inyo County.
Policy	Inyo County Annual Budget	Inyo County adopts a budget every fiscal year, which identifies sources of revenue for the County and how this money will be spent. In future years, the budget can be altered and used to direct funding toward hazard mitigation activities, including increased staffing, planning efforts, and capital improvements.

Supporting Resource Type	Supporting Resource Name	Ability to Support Hazard Mitigation Activities
Policy	Inyo County Office of Emergency Services Emergency Planning Guidelines	The Inyo County Office of Emergency Services (OES) provides emergency planning guidelines for community members to learn about how to prepare for any kind of disaster, including specific information about emergency water and food, and a recommended disaster supply kit. These guidelines can be updated in future years to incorporate mitigation actions from this Plan, helping to reduce the vulnerability of Inyo County residents.
Policy	Inyo County Vector Management Program	The Inyo County Environmental Health Services Department has a small program to manage vector-borne diseases in the county. This program, including all of the associated policies addressing different vectors, can be used to include hazard mitigation strategies for disease outbreak. This will be an important program to monitor as changing temperatures introduce new vectors to the region.
Plan	Inyo County General Plan	The General Plan is the main policy document guiding development in Inyo County. It identifies the overarching policies and programs that affect land use, public services, housing, natural resources, and safety, among other items. The General Plan can be updated to include information and mitigation actions identified in this Plan.
Plan	Inyo-Mono Integrated Regional Water Management Plan	The Integrated Regional Water Management Plan (IRWMP) covers all of Inyo County, as well as neighboring Mono County. The IRWMP includes current and forecast water sources and demands, and discusses supply reliability, contingency planning, and demand management. The plan can be used to address drought hazard mitigation on a regional scale, and integration of the actions in this MJHMP will allow the plan to continue to foster drought resiliency in future years.
Policy	Flood Damage Prevention (Ord. 1076 Section 2)	This section, laid out in Inyo County Zoning Code Chapter 14.29, seeks to minimize public and private losses from flood conditions, which can be used to support the flood-related mitigation actions in this Plan.
Policy	Snow Avalanche Hazard Overlay (Ord. 943 Section 4)	This zone, established in Inyo County Zoning Code Chapter 18.64, provides an overlay to advise current and future property owners in designated snow-avalanche-hazard areas of the potential for snow avalanches, which can be updated as understanding of the hazard is clarified and mitigation actions are established.
Policy	Uniform Fire Code	The fire code contains specific fire safety requirements for all structures. These requirements can be modified to require increased fire safety measures in areas that are uniquely vulnerable to fire.

Table 52. City of Bishop MJHMP Capabilities Assessment

Supporting Resource Type	Supporting Resource Name	Ability to Support Hazard Mitigation Activities
Personnel	Interagency Fire Protection Agencies (IFPA)	This consortium manages wildfires in Inyo County and consists of the following fire protection service providers: Bishop Fire District, Big Pine Fire District, Lone Pine Fire District, Independence Fire District, Cal Fire, US Forest Service, BLM, and Los Angeles Department of Water and Power (LADWP). Together, these service providers work to ensure that fire protection and response is coordinated and sufficient.
Personnel	City of Bishop Fire Department Staff	The Bishop Fire Department is a volunteer fire department with 39 volunteers and one full-time paid employee (the fire chief). The assistant chief is a part-time paid position. The Fire Department works in cooperation with the Bishop Rural Fire Protection District and the City of Bishop to improve emergency preparedness, conduct community education and outreach, and contribute to disaster recovery. These staff are able to implement wildfire-related mitigation actions, and to enact new wildfire mitigation activities as appropriate.
Personnel	City of Bishop Police Department Staff	The Bishop Police Department employs 14 sworn officers, 5 dispatchers, 5 crossing guards, 5 reserve officers, and a support staff of 4. The department helps to work with and educate the public to build a safe community. In future years, these individuals can help implement hazard mitigation activities related to education, alert, and evacuations.
Personnel	City of Bishop Public Works	The City's Department of Public Works performs all public works and most planning functions for the city including water, sewer, streets, building permitting and inspection, management, and planning staff functions. Within these responsibilities, staff can ensure that new development in future years is compliant with hazard-related requirements.
Personnel	Southern California Edison Company Staff	Southern California Edison provides safe and reliable electricity to community members in Bishop and Inyo County. Staff is responsible for restoring electrical service if it has been interrupted by an emergency situation, and repairing and maintaining electrical infrastructure to reduce the risk of hazard events. These staff will be able to help harden electrical infrastructure against hazard events in future years, strengthening network resiliency.

Supporting Resource Type	Supporting Resource Name	Ability to Support Hazard Mitigation Activities
Personnel	Los Angeles Department of Water and Power	Los Angeles Department of Water and Power provides surface water management, aqueduct management, and electrical generation supply services in the City of Bishop and vicinity, in association with operation of the Los Angeles Aqueduct. These individuals can help to increase the resiliency of Department infrastructure. This will help to protect it from damage or destruction, and to help prevent damage to the wider community from any failures of Department infrastructure.
Policy	City of Bishop Annual Budget	Like Inyo County, the City of Bishop adopts a budget each fiscal year that can be used for hazard mitigation activities. In future years, the City's budget can be used to direct funding toward hazard mitigation activities, including increased staffing, planning efforts, and capital improvements.
Plan	City of Bishop General Plan	Similar to the General Plan authored by the County, the City of Bishop has its own general plan guiding development within the city limits. This too can be updated to include information and mitigation actions identified in this Plan.
Policy	Uniform Fire Code	The fire code contains specific fire safety requirements for all structures. These requirements can be modified to require increased fire safety measures in areas that are vulnerable to fire.

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6. PLAN MAINTENANCE AND CAPABILITIES

In order to support lasting mitigation and safety efforts, it is imperative that this MJHMP remain up to date. Doing so ensures that Inyo County and the City of Bishop are continually protected against changing hazards and that the communities remain eligible for federal and state funding. To support the need to keep the MJHMP living and active, this chapter describes the processes for updating this Plan to ensure it is usable, relevant, locally appropriate, and compliant with applicable state and federal requirements. The Plan's structure allows the County and the City to update individual sections as information becomes available and needs arise, making it easier to keep the Plan current.

To support maintenance and implementation, this Plan is supported with the Inyo County and City of Bishop Mitigation Implementation Handbook (handbook). The handbook, which is provided here as **Appendix E** for reference, is intended to function as a stand-alone document that gives concise and accessible guidance to jurisdiction staff for implementing and maintaining the Plan.

Coordinating Body

Maintaining and updating this Plan is the responsibility of the Planning Team, unless otherwise designated by the Director of Emergency Services. The primary department overseeing this process is the Inyo County Planning Department, under the direction of their appointed MJHMP project manager. This individual will coordinate maintenance of this Plan, conduct the formal review process, and prepare updates to the Plan. The key Inyo County and City of Bishop departments on the team are listed below.

Inyo County

- Inyo County Administrative Office
- Inyo County Health and Human Services Department
- Inyo County Planning Department
- Inyo County Public Works Department
- Inyo County Road Department
- Inyo County Sheriff's Office
- Inyo County Water Department

City of Bishop

- City of Bishop Fire Department
- City of Bishop Planning Department
- City of Bishop Police Department
- City of Bishop Public Works Department

Other Organizations

- California Department of Forestry and Fire Protection
- California Department of Transportation
- California Highway Patrol
- California Office of Emergency Services
- Cerro Coso Community College
- Eastern Sierra Transit Authority
- Los Angeles Department of Water and Power
- Sierra Tactical Training and Active Response Resources
- Southern California Edison
- US Forest Service
- US Geological Survey

The MJHMP project manager will facilitate the team meetings. This staff member will assign tasks, which may include collecting data, developing new mitigation actions, updating sections of the Plan, and presenting the Plan to other departments, stakeholders, and elected officials. Responsibility for implementation and evaluation of the Plan will be shared among all team members as appropriate.

Evaluation

When the Plan is not being updated, the Planning Team should meet at least once annually. During this period, the team should focus on timing of Plan implementation, evaluating the actions identified in this Plan being implemented, determining whether they are successful, revising priorities, if necessary, and helping to incorporate the Plan's mitigation actions into other planning documents. These annual meetings will commence in 2017 and should be timed with overall departmental planning and budgeting (fourth quarter of the fiscal year) that occurs leading up to the City and County's annual budget development. **Appendix E** can assist with identifying appropriate periods for

convening the team. As part of this evaluation and integration process, members of the team should look at the following:

- Identification of successful implementation of mitigation activities and achievement of goals.
- Any hazard events that occurred during the previous year and the impact of these hazards on the community.
- Mitigation actions in the Plan that have been successfully implemented.
- Mitigation actions in the Plan that were scheduled for implementation but have not begun.
- The schedule of future mitigation actions, and whether it is feasible or appropriate to adjust the timeline.
- Issues not covered by existing mitigation actions that could be addressed by new mitigation actions.
- Potential or actual changes in new funding opportunities, including grants, which may be used on mitigation-related activities.
- New scientific or mapping data that could inform updates to the Plan.
- Any other planning programs or initiatives in the community that involve hazard mitigation.

The team will summarize the information from this review into an annual progress report, which will be distributed to County and City department heads for review as well as to the City of Bishop City Council and the Inyo County Board of Supervisors. The progress report will also be posted on the County and City's websites, with the ability for members of the public to provide comments, and will be distributed to local media, as appropriate.

6.1. Method and Schedule for Updating the Plan within Five Years

Under the Code of Federal Regulations, Title 24 Section 201.6(d)(3), local hazard mitigation plans must be reviewed, revised as needed, and resubmitted for approval in order to remain eligible for benefits under the Disaster Mitigation Act. Inyo County and the City of Bishop intend to update this MJHMP on a five-year cycle from the date of adoption to maintain eligibility for these benefits. This update process should begin one year prior to expiration of the existing Plan. The update cycle may be accelerated under specific conditions:

- A Presidential Disaster Declaration that impacts Inyo County and/or the City of Bishop
- A hazard event that causes loss of life in Inyo County and/or Bishop

The update process for this Plan will add new planning methods, community demographics and data, hazard data and events, vulnerability analyses, mitigation actions, and goals. This process will help keep the Plan current. While the specific needs for the update will be determined by the team's annual review and recommendations, the update should meet the following criteria:

- The update process should be convened through a committee comprising at least one staff member from each County and City department. The County and the City should also contact local and regional agencies at the onset of the update process to involve any interested and relevant external agencies. This update process will begin in 2020, one year prior to the expiration of this Plan.
- The hazard risk assessment will be reviewed and updated using the best available information, technologies, and practices.
- Mapping and critical structure evaluation will be updated and should be improved upon as funding for these activities becomes available.
- The mitigation actions will be reviewed and revised to account for any actions that have been completed, deferred, or changed as a result of an updated risk assessment or new policies identified in other planning documents.
- The draft update will be sent to appropriate external agencies for comment.
- The draft update will be made available for public comment prior to adoption.
- The draft update will be transmitted to Cal OES and FEMA for review and approval.
- The City of Bishop City Council and the Inyo County Board of Supervisors will adopt the final updated Multi-Jurisdictional Hazard Mitigation Plan within one year of the commencement of the update process.

6.2. Adoption

Both the Inyo County Board of Supervisors and the City of Bishop City Council are responsible for adopting this Plan. Adoption should occur every five years and after the City and County have received notification that the Plan is Approved Pending Adoption (APA). After the Board of Supervisors and the City Council have adopted the Plan, the lead County and City departments will be responsible for transmitting the adopted version to FEMA for its records.

6.3. Implementation through Existing Programs

The effectiveness of this Plan depends on how the mitigation actions it contains are implemented, including incorporation of the mitigation actions into existing plans, policies, and programs. The mitigation actions in this Plan are intended to reduce loss and damage caused by hazard events and to provide a framework for hazard mitigation activities the County and City can carry out over the Plan's five-year period. The County and the City have prioritized the Plan's goals and identified actions that will be implemented through existing plans, programs, and policies as the resources to do so become available.

The MJHMP project manager has responsibility for overseeing this Plan's implementation, coordination, promotion, and maintenance through existing plans, programs, and policies, and is responsible for facilitating implementation of the Plan and meetings related to Plan maintenance. Implementation and evaluation of this MJHMP and the mitigation actions it contains are the shared responsibility of all departments identified as lead departments in the Plan.

6.4. Continued Public Involvement

Members of the public will continue to be updated of the actions of the Planning Team and the MJHMP review and update processes through the County and City's websites and through distribution of annual progress reports to the media. Copies of this Plan will also be distributed to appropriate offices and facilities (libraries, community centers, etc.). When the MJHMP update process begins in 2021, the Planning Team will guide the development of a new public involvement strategy, which will reflect the region's needs and capabilities at the time.

6.5. Point of Contact

Preparation of future updates of the Inyo County and City of Bishop MJHMP is the responsibility of the Inyo County Planning Department and City of Bishop Public Works Department, unless otherwise designated by the Director of Emergency Services. Representatives from this department can be reached using the contact information below.

- Inyo County, County Administrative Office Kelley Williams | (760) 878-0292 |
- City of Bishop, David Grah | (760) 873-5863 |

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INYO COUNTY |
CITY OF BISHOP

MULTI-JURISDICTIONAL
HAZARD MITIGATION
PLAN

TECHNICAL
APPENDICES

Final Draft (FEMA Approved) | December 2017

Inyo County | City of Bishop
Multi-Jurisdictional Hazard Mitigation Plan
Technical Appendices

APPENDIX A: PLANNING
TEAM MEETING
MATERIALS

Documentation of the methods of
communication with LHMP
Planning Team and Stakeholders

CHMP



DEPARTMENT OF PUBLIC WORKS

P.O. DRAWER Q
INDEPENDENCE, CA 93526
PHONE: (760) 878-0201
FAX: (760) 878-2001

COUNTY
OF
INYO

Clint Quilter, Director

Date

Happy Participant
123 Road to "Get There"
FEMA \$\$\$, CA.

Subject: Multi-Jurisdiction Hazard Mitigation Plan Kick-Off Meeting

Dear Happy:

Inyo County has been awarded California Governor's Office of Emergency Services (Cal OES) Grant Number 2014-0005 to prepare a Multi Jurisdictional Hazard Mitigation Plan (MJHMP). The plan will assess the risk from all hazards, natural and manmade, within the County and neighboring Counties, evaluate the vulnerability of structures and infrastructures to these hazards, and assist participating jurisdictions to identify and plan mitigation initiatives to address the vulnerabilities. The plan will provide a set of action items that, if implemented, can help reduce the risk from natural hazards.

Inyo County has entered into a contract with Michael Baker International to assist Inyo County to complete a FEMA approved MJHMP. A Kick-Off meeting is tentatively scheduled for January 28th, 2015 at ????? This meeting is to discuss the following:

- The roles and responsibilities of the Michael Baker Team, County Project Coordinator, and the participating jurisdictions.
- The identification of entities to be considered "participating jurisdictions" that intend to fully participate in the planning process and adopt the plan as their own upon completion.
- The identification of other critical stakeholder to be involved in the planning process.
- The development and implementation of a Community Engagement Strategy to ensure public involvement during the MJHMP development and prior to final approval of the MJHMP. This would include identification of methods to generate public interest and solicit citizen input, including identification of potential stakeholder partnerships.
- The identification of existing data, plans policies, programs, studies, reports, and other technical information for review and incorporation into the planning process.
- The identification of any potential barriers to timely task completion and the means to overcome those barriers.
- Draft outline for the MJHMP, as proposed by Michael Baker Team.

You have been identified as a possible participant in this process. Your participation is encouraged. Please provide this meeting information to the appropriate member of your organization. The Disaster Mitigation Act of 2000 requires local governments to develop and submit plans for FEMA approval as a condition of receiving Hazard Mitigation Grant Program project grants.

Sincerely,

Inyo County Public Works Department

Name1	Name2	Title1	Title2	Address1	Address2	City	St	Zip	Organization	Email
Ingrid	Braun	Sheriff-Coroner	Director of Emergency Services	P.O. Box 616		Bridgeport	CA	93517	Mono County	ibr@mono-sheriff.org
Seth	Clark	OES Coordinator		P.O. Box 616		Bridgeport	CA	93517	Mono County	oes@monosheriff.org
Rob	DeForest	EMS Manager	Mono County Paramedic Program	437 Old Mammoth Rd		Mammoth	CA	93546	Mono County	rdeforest@mono.ca.gov
Debbie	Diaz	Emergency Prep	Mono County Health Dept.	P.O. Box 3329		Mammoth	CA	93546	Mono County	ddiaz@mono.ca.gov
Frank	Frievart	Fire Chief		P.O. Box 5		Mammoth	CA	93546	Mammoth	lfrank@nifd.ca.gov
Al	Davis	Chief of Police		P.O. Box 2799		Mammoth	CA	93546	Mammoth	adavis@townofmammothlakes.ca.gov
Sgt. Marc	Moscowitz	CERT Manager		P.O. Box 2 568 Old M		Mammoth	CA	93546	Mammoth	mmoscowitz@mammothlakes.ca.gov
Clifford	Mann	Director Mountain Operations		P.O. Box 24		Mammoth	CA	93546	Mammoth	cmann@mammoth-mtn.com
Bill	Erb	Manager Health & Safety		P.O. Box 24		Mammoth	CA	93546	Mammoth	erb@mammoth-mtn.com
Eric	Johnson	Construction/Me Power		370 W. South Street		Bishop	CA	93514	LADWP	eric.johnson@ladwp.com
James	Yannotta	Manager of Aqueduct		300 Manditch Street		Bishop	CA	93514	LADWP	james.yannotta@ladwp.com
Steve	Butler	Construction/Ma Water		300 Manditch Street		Bishop	CA	93514	LADWP	steven.butler@water.ladwp.com
Robert	Turner	Construction/Ma Water		240 W. South Street		Bishop	CA	93514	LADWP	robert.turner@water.ladwp.com
Steve	Nelson	Area Manager		351 Pacu Lane, Ste 10		Bishop	CA	93514	BLM	snelson@blm.gov
Debra	Hein	Interagency Dispatch Center Manager		351 Pacu Lane, Ste 10		Bishop	CA	93514	BLM	dhein@blm.gov
Lt. Michae	O'Sullivan	Bridgeport Area Commander		P.O. Box 158		Bridgeport	CA	93517	CHP	mosullivan@chp.ca.gov
Capt. Tim	Noyes	Calif. Hwy. Patrol		469 S. Main St.		Bishop	CA	93514	CHP	tnoyes@chp.ca.gov
Karla	Benedicto	Emergency Servi. South Region		4671 Liberty Ave.		Los Alamit	CA	90702-500	CAL EMA	karla.benedicto@calema.ca.gov
Yolande	Loves	Emergency Servi. South Region		4671 Liberty Ave.		Los Alamit	CA	90702-500	CAL EMA	yolande.loves@calema.ca.gov
Joanne	Phillips	CAL EMA - South Region		4671 Liberty Ave.		Los Alamit	CA	90702-500	CAL EMA	joanne.phillips@calema.ca.gov
John	Hudson III	Asst. Chief	Technology/Operations Division	4050 Tpk. Mail Stop		San Diego	CA	92110	CAL EMA	john.hudson@calema.ca.gov
Art	Torres	Asst. Chief Fire & Rescue		2524 Wilberry Street		Riverside	CA	92501	CAL EMA	art.torres@calema.ca.gov
Jim	Acosta	Emergency Servi. South Region		4671 Liberty Ave.		Los Alamit	CA	90702-500	CAL EMA	jim.acosta@calema.ca.gov
Dennis	Beene	Deputy Chief, Lan Region VI Coordinator		655 East 3rd Street		San Bernar	CA	92415	CAL EMA	dennis.beene@calema.ca.gov
Margaret	Mangan	Scientist. In Charge Long Valley Observatory		345 Middlefield Road		Menlo Park	CA	94025	USGS	mangan@usgs.gov
Paul	Melendez	Battalion Chief	Cal-Fire	2781 So. Round Valley		Bishop	CA	93514	Cal-FIRE	pmelendez@usfs.gov
Rich	Wart		Inyo National Forest	798 N. Main Street		Bishop	CA	93514	USFS	rwart@fs.fed.us
Doug	Toskin	Antiterrorism Officer/Emergency Mngtr		HC 83 Box 1		Bridgeport	CA	93517	US Marine Co	doug.toskin@usmc.mil
Lori	Baix	Emergency Dept. Manager		P.O. Box 660		Mammoth	CA	93546	Mammoth	lbaix@mammothhospital.com
Benjamin	Romo	Ward Clerk/Disaster Committee		P.O. Box 660		Mammoth	CA	93546	Mammoth	lbaix@mammothhospital.com
Gary	Myers	Administrator/CEO		P.O. Box 660		Mammoth	CA	93546	Mammoth	gary.myers@mammothhospital.com
Scott	Underwood	Region Director - Red Cross of Greater Los Angeles		11355 Ohl. Ave		Los Argele	CA	90025	Red Cross	scott.underwood@redcross.org
Jon	Brown	Disaster Program Manager, Territory 1								jon.brown2@redcross.org
Brandy	Welch	Disaster Partnership Manager								brandy.welch@redcross.org
Cathie	McCulley	Inyo/Mono - Con Senior Pastor								cathie.mcculley@usw.salvationarmy.org
Deanna	Campbell	Director - Eastern Sierra College Center		P.O. Box 1 621 W. Lin		Bishop	CA	93515	Salvation Arm	
Daniel	Brady	Regional Manage So. Calif. Edison		P.O. Box 130		Mammoth	CA	93546	Mono Co. Schools	
Jeff	Pahlow	District Manager Amerigas		4090 W. Line Street		Bishop	CA	93514	Cerro Coso Cc	dcampbell@cerrocoso.edu
		Suddenlink		P.O. Box 7329		Mammoth	CA	93546	SCE	daniel.brady@sce.com
		Schatnet		1230 N. Main Street		Bishop	CA	93514	Amerigas	pahlowj@amerigas.com
John	Helm	Executive Direct Eastern Sierra Transit Authority		201 E. Line Street		Bishop	CA	93514	Suddenlink	support@schat.net
Jill	Batchelder	Eastern Sierra Transit Authority		174 N. Main Street		Bishop	CA	93515	ESTA	ihelm@estransit.com
Andy	Richard	Hazmat Superint CAL TRANS		P.O. Box 1 703 Airpor		Bishop	CA	93515	ESTA	jbatchelder@estransit.com
Greg	Miller	Regional Manager		P.O. Box 1 703 Airpor		Bishop	CA	93515	ESTA	andy.richard@dot.ca.gov
Chris	Carter	Police Chief		500 S. Main Street		Bishop	CA	93514	CalTrans	eric.miller@dot.ca.gov
Ray	Seguine	Fire Chief		500 S. Main Street		Bishop	CA	93514	CalTrans	ccarter@biishopod.org
Big Pine Comm. Service Dist.				201 W. Line Street		Bishop	CA	93515	Bishop	seguine@ca-bishop.us
Big Pine Comm. Service Dist.				P.O. Box 1 209 W. Lin		Bishop	CA	93515	Bishop	bigpinescd@schat.com
Damon Carrington	Fire Chief	Big Pine Fire Dept.		P.O. Box 639		Big Pine	CA	93513	BRPCD	bigpinescd@gmail.com
Jim	Tatum	City Administrator		P.O. Box 294		Big Pine	CA	93513	BRPD	brfire301@suddenlink.net
Darwin Comm. Service Dist.				P.O. Box 382		Big Pine	CA	93513	BRPD	tatum@ca.bishop.us
Dave	Wagner	Eastern Independence Sanitary Dist		P.O. Box 126		Darwin	CA	93522	Darwin	dave.wagner@suddenlink.net
Eastern Sierra Comm. Service Dist.				P.O. Box 5		Darwin	CA	93526	Darwin	dcsd@hukbes.net
Terry	Tye	Indian Creek-Westridge Comm Service Dist.		P.O. Box 453		Independen	CA	93526	Darwin	dave.wagner@suddenlink.net
Chuck	Bryoles	Independence Cemetery Dist.		301 W. Line Street, St		Bishop	CA	93514		estcd@usamedia.tc
Joe	Capello	Fire Chief	Independence Fire Dept	P.O. Box 91 747 Rome		Bishop	CA	93515		tye47@hotmail.com
				P.O. Box 2 402 So. Gf		Independen	CA	93526	Indy CD	independencemeter@suddenlink.com
				P.O. Drawer 8		Independen	CA	93526	Indy FD	

Inyo Schools

Rob	Yrbarren	Inyo/Mono Resource Conservation Dist.	270 See Vee Lane	Bishop	CA	93514	
Karen	Riggs	Keeler Comm. Services Dist.	P.O. Box 107	Keeler	CA	93530	keelerwater@schat.net
Vic	Jackson	Lone Pine Comm. Services Dist.	P.O. Box 31601 E. Locl Lone Pine	CA	CA	93345	
Laroy	Kritz	Fire Chief	P.O. Box 11130 N. Locl Lone Pine	CA	CA	93345	lkritz2401@yahoo.com
		Mesa Comm. Services Dist.	P.O. Box 221	Bishop	CA	93515	
Unda	Hann	Mt. Whitney Cemetery Dist.	P.O. Box 1: 120 So. Mt. Lone Pine	CA	CA	93345	
Andrew	Stevens	Director of Emergency Services	150 Pioneer Ln.	Bishop	CA	93514	andrew.stevens.nrh.org
Steven	Davis	Olancho Comm. Service Dist.	P.O. Box 6: 689 Shop ; Olancho	CA	CA	93349	sdavis@olanchoaid.org
Terri	Dean	Pioneer Cemetery Dist.	P.O. Box 1: 2000 Polet Bishop	CA	CA	93515	pioneer.cemetery@gmail.com
Fred	Finkbeiner	Sierra Highlands Comm. Services Dist.	P.O. Box 7: 2709 Unde Bishop	CA	CA	93515	sterrafred@aol.com
Ken	Wilder	Sierra North Comm. Services Dist.	185 N. Main	Bishop	CA	93514	sierranorthcd@yahoo.com
Larry	Levy	Fire Chief	P.O. Box 5: 410 Tecop	Tecopa	CA	92389	SIFPD@yahoo.com
		Southern Inyo Health Care Dist.	P.O. Box 1: 501 E. Locl Lone Pine	CA	CA	93545	
		Starlite Comm. Service Dist.	P.O. Box 1434	Bishop	CA	93515	SIHCD
Karen	Lutz	Tecopa Cemetery Dist.	P.O. Box 295	Tecopa	CA	92389	
Ken	Kluencer	Aspendell MWC	140 Iris Dr.	Bishop	CA	93514	
Janet	Donaille	Brookside Estates MWC	P.O. Box 2727	Mammoth	CA	93547	Bemwec2013@gmail.com
Aarne	Coats	Cartago MWC	P.O. Box 209	Olancho	CA	93549	
		North Lone Pine MWC	P.O. Box 692	Lone Pine	CA	93545	nlpnmwco@gmail.com
Ken	Wilder	Park West MWC	186 Sierra Grande	Bishop	CA	93514	
Dave	Patterson	Ranch Road Estates MWC	3575 Luring Lane	Bishop	CA	93514	
Janet	Phalow	Rawson Creek MWC	P.O. Box 416	Bishop	CA	93514	dave@theepatersons.info
Jamie	Heatherty	Rocking K Ranch Estates MWC	147 Running Iron Rd.	Bishop	CA	93514	
Greg	Richards	Sierra Grande Estates MWC	P.O. Box 1313	Bishop	CA	93514	richthumper@verizon.net
Sareyna	Cagle	Valley Vista MWC	P.O. Box 148	Bishop	CA	93515	
Steve	Ball	Wilson Circle MWC	P.O. Box 1005	Bishop	CA	93515	rodicks@schat.com
Shannon	Remero	Big Pine Paiute Tribe of the Owens Valley	P.O. Box 700	Big Pine	CA	93513	shann_remero@hotmail.com
Gerald	Howard	Bishop Paiute Tribe, Chairperson	50 Tu Su Lane	Bishop	CA	93514	
Norman	Wilder	Fort Independence Chairman	P.O. Box 67	Independence	CA	93526	chairman@fortindependence.com
Mary	Wuolster	Lone Pine Paiute Shoshone Reservation	P.O. Box 747	Lone Pine	CA	93545	
George	Gholoson	Timbisha Shoshone Tribe, Chairperson	121 W. Line St.	Bishop	CA	93514	george@timbisha.com
Mike	Reynolds	Death Valley Nat Park Superintendent	P.O. Box 579	Death Valli	CA	93514	mike_reynolds@nps.gov
		Bernadette Lovato	P.O. Box 4: 5001 Hwy	Independence	CA	93526	92328-057 National Park

Kelley Williams

Subject: FW: Hazard Mitigation Plan Meeting

From: Kevin Carunchio

Sent: Tuesday, January 12, 2016 4:32 PM

To: Alisha McMurtrie; Amy Shepherd; Bill Lutze; Bob Harrington; Clint Quilter; David Stottlemire; Dustin Blakey (dwblakey@gmail.com); Jean Turner; Jeff Thomson; Joshua Hart; Kammi Foote; Kevin Carunchio; Marshall Rudolph; Marvin Moskowitz; Nathan Reade; Patricia Barton; Rick Benson; Alert Susanne Rizo; Susanne Rizo; Thomas Hardy

Cc: Kelley Williams; Diane Fortney

Subject: Hazard Mitigation Plan Meeting

Importance: High

Colleagues,

I am asking all County Department Heads to ensure their departments are represented at the kick-off meeting for the Hazard Mitigation Plan development process. **The meeting Thursday, January 28 at 1:00 PM at the Inyo County Board of Supervisors Chamber in Independence.** Ideally, you will have time to attend the meeting personally, but at the very least please send a staff person authorized to act in your stead. After the initial meeting on the 28th, you can determine if the Plan is not relevant to your department, or your department's participation in developing the plan can be delegated to other staff for future meetings.

By way of background, Inyo County is in the initial phase of its Multi-Jurisdictional Hazard Mitigation Plan development process. In support of this project, the County will be convening a Hazard Mitigation Planning Team and we need your support. As a Planning Team member, you will have an opportunity to work closely with other County staff and staff from jurisdictions in the county to discuss the natural hazards that impact your daily work and life in Inyo County. This project will help reduce the County's exposure to natural disasters and will allow the County to pursue additional FEMA grants that become available once the plan is approved.

We have hired a consultant to assist the County with this process. During this update, participants should plan on:

- Attending up to 5 meetings with other Hazard Mitigation Planning Team members over a 4-6 month period. Meetings will last a maximum of 2 hours.
- Providing input on critical County and other jurisdiction facilities that could be vulnerable to hazards, such as severe weather, flooding, and earthquakes.
- Reviewing materials drafted by the County's consultant.
- Providing recommendations and priorities for hazard mitigation projects, programs, and policies to reduce the County's vulnerability.

Your departments participation at the first meeting vitally important to determine future participation in the Planning Team. Again, the first meeting is Thursday, January 28 at 1:00 PM at the Inyo County Board of Supervisors Chamber in Independence. Please contact Diane Fortney to RSVP or for more information or questions.

Thank you,

Kevin

Kevin D. Carunchio
County Administrator

P.O. Drawer N
224 North Edwards Street
Independence, California 93526

Vox: (760) 878-0292

Fax: (760) 878-0465

kcarunchio@inyocounty.us

Diane Fortney

From: Diane Fortney
Sent: Wednesday, February 03, 2016 11:24 AM
To: 'tmcatree@icsos.us'; (adavis@townofmammothlakes.ca.gov); (andrew.stevens@nih.org); (andy.richard@dot.ca.gov); (art.torres@calema.ca.gov); (baitx@mammothhospital.com); (Bemwc2013@gmail.com); (benjamin.romo@mammothhospital.com); (berb@mammoth-mtn.com); (bernadett_johnson@nps.com); (bigpinecemetery@gmail.com); (bigpinecsd@schat.com); (bpfire301@suddenlink.net); (brandy.welch@redcross.org); (cathie.mcculley@usw.salvationarmy.org); (ccarter@bishoppd.org); (chairman@fortindependence.com); (cmann@mammoth-mtn.com); (daniel.brady@sce.com); (dave.wagner@suddenlink.net); (dave@thepatterns.info); (dcampbel@cerrocoso.edu); (dcsd@hughes.net); (ddiaz@mono.ca.gov); (dennis.beene@calema.ca.gov); (dnein@blm.gov); (dougals.toskin@usmc.mil); (dublakey@ucanr.edu); (escsd@usamedia.tc); (frank@mlfd.ca.gov); (gary.myers@mammothhospital.com); (george@timbisha.com); (goducks@schat.com); (greg.miller@dot.ca.gov); (ibraun@monosheriff.org); (independencecemetery@suddenlinkmail.com); (james.yannotta@ladwp.com); (jason.janney@suddenlink.com); (jbatchelder@estransit.com); (jhelm@estransit.com); (jim.acosta@calema.ca.gov); (joanne.phillips@caleman.ca.gov); (john.hudson@calema.ca.gov); (jon.brown2@redcross.org); (karla.benedicto@calema.ca.gov); (keelerwater@schat.net); (lchief2401@yahoo.com); (lori.ciccarelli@mammothhospital.com); (michaelt.bunn@ladwp.com); (mmangan@usgs.gov); (mmoscowitz@mammothlakes.ca.gov); (mr05rubi@gmail.com); (nlpmwco@gmail.com); (oes@monosheriff.org); (pahlowj@amerigas.com); (peter_treuheozz@nps.gov); (pioneer cemetery@gmail.com); (rdeforrest@mono.ca.gov); (richthumper@verison.net); (robert.turner@water.ladwp.com); (rwatt@fs.fed.us); (scott.hooker@nih.org); (scott.underwood@redcross.org); (sdavis@olanchafd.org); (seguine@ca-bishop.us); (shann_romero@hotmail.com); (sierrafred@aol.com); (sierranorthcsd@yahoo.com); (SIFPD@yahoo.com); (snelson@blm.gov); (steven.butler@ladwp.com); (support@schat.net); (Tatum@ca.bishop.us); (tnoyes@chp.ca.gov); (tyet47@hotmail.com); (yolande.loves@calema.ca.gov); Cal-Fire; Cal-Fire; LP Com Service Dist; Paul Melendrez; Starlite Com Service Dist; Tecopa Cemetery Dist; Brandon Shults; Denelle Carrington; Jon Klusmire; Marlena Baker; Nancy Masters; Rick Benson; Scott Eagan; Sue Dishion; Alisha McMurtrie; Amy Shepherd; Bob Harrington; David Stottlemire; Kammi Foote; Melissa Best-Baker
Cc: Clint Quilter; Kelley Williams
Subject: Inyo County Multi-Jurisdiction Hazard Mitigation Plan (ICMJHMP) UPDATE
Attachments: Inyo County MJHMP - Data Collection Packet.docx; Inyo County MJHMP - Kickoff Presentation.ppsx; Inyo County MJHMP - Online Survey Draft.docx; Kick-Off Invite.doc

Hello All,

My name is Diane Fortney and I have been assigned as Project Coordinator for the ICMJHMP project. On behalf of the County, I would like to thank all those that were able to attend the January 28th "Kick Off" meeting. The County appreciates the effort to attend and provide input. Short notice and scheduling conflicts made this difficult.

For those that were unable to attend I would like to share the information provided and request your participation in the process. If you have received this email and **are not** the correct contact within your organization to assist in this process, please provide the correct information.

Now, let's bring everyone up to speed:

Inyo County has been awarded California Governor's Office of Emergency Services (Cal OES) Grant Number 2014-0005 to prepare a Multi Jurisdictional Hazard Mitigation Plan (MJHMP). The plan will assess the risk from all hazards, natural and manmade, within the County and neighboring Counties, evaluate the vulnerability of structures and infrastructures to these hazards, and assist participating jurisdictions to identify and plan mitigation initiatives to address the vulnerabilities. The plan will provide a set of action items that, if implemented, can help reduce the risk from natural hazards.

The Disaster Mitigation Act Of 2000 requires local governments to develop and submit plans for FEMA approval as a condition of receiving Hazard Mitigation Grant Program project grants.

Inyo County is reaching out to those contacts that were identified as possible stockholders to be include in the planning process. The kick off meeting provided an overview of the main goals for the plan and are as follows:

- Reduce risk of loss and damage from hazards
- Reduce repetitive loss and damage
- Coordinate with resource management, land use planning, and emergency operations
- Work with local jurisdictions and key stakeholders
- Improve the hazard assessment process
- Increase community awareness and empowerment

To begin the process of creating a mitigation plan, collection of hazard profiles for risk and vulnerability assessment is needed. The Data Collection Packet is designed to collect information for inclusion in the plan for your organization and/or area of expertise. Please return the completed packet to the below listed contact point. Special arrangements for large file transfer can be coordinated if needed.

Next on list is to request your assistance in reviewing the Online Survey Draft to provide input. This survey will be used to engage the public in the process as required by FEMA in the planning process.

What's the Plan Requirements and time frame?

Michael Baker INTERNATIONAL

Plan Requirements - MJHMP Planning Team

- Agency and stakeholder representatives to advise and contribute to plan preparation
- Five MJHMP Planning Team meetings:
 - **Meeting 1/kick-off: Discuss plan process, hazard overview, and data collection**
 - **Meeting 2: Discuss risk assessment**
 - **Meeting 3: Identify goals and develop mitigation strategies**
 - **Meeting 4: Prioritize mitigation actions, create implementation and MJHMP maintenance strategy**
 - **Meeting 5: Review draft plan**

We Make a Difference

Michael Baker INTERNATIONAL

Task	Timeframe
Conduct Meeting #1 (kick-off meeting)	January 28, 2016
Preparation of Draft Outreach Strategy	January 28, 2016
Review of Draft Outreach Strategy	February 11, 2016
Conduct Meeting #2	March 2016
Conduct Meeting #3	April 2016
Conduct Meeting #4	May 2016
Preparation of Administrative Draft MJHMP	May 2016
Review of Administrative Draft MJHMP	May 2016
Conduct Meeting #5	June 2016
Preparation of Draft MJHMP	June 2016
Review/Approval of Draft MJHMP	July 2016
Public Review Period for Draft MJHMP	August 2016
Cal OES/FEMA Review of Draft MJHMP	September 2016
Preparation of Final MJHMP	TBD
Public Hearings	TBD

We Make a Difference

Please feel free to contact me with any questions or concerns.

Thank you again for your time and efforts to assist in creation of this hazard mitigation plan.

Regards,
Diane

Diane Fortney
Project Coordinator

County of Inyo
Planning-Public Works Department
168 N. Edwards Street
P.O. Box L
Independence, Ca. 93526

Phone: (760) 878-0263
FAX: (760) 878-0382
E-mail: dfortney@inyocounty.us

Kickoff Meeting: January 28, 2016

Included Materials:

Sign-in sheet

Meeting overview and agenda

Data collection packet

Hazards worksheet

Meeting presentation

Engagement strategy

Survey draft

Stakeholder contact list

Kick-off Attendee Sign-In Sheet (January 28, 2016)

Name	Department/Agency/Jurisdiction	Telephone	Email
Bernadette Johnson	Manzanar National Historic Site	[REDACTED]	bernadette-johnson@nps.gov
Ray DeCaine	Resnap Fire	[REDACTED]	rdecaine@cityof-resnap.com
Peter Truherz	DEPTA Valley NP	[REDACTED]	Peter-Truherz@NPS.gov
Jeff Thomson	Inyo Prob. Dept	[REDACTED]	jthomsm@inyocounty.us
Melissa BestBaker	Inyo HHS	[REDACTED]	mbestbaker@inyocounty.us
MARK O'SER	Inyo Prob Dept	[REDACTED]	moser@inyocounty.us
Nick Vaughan	Inyo Co. Sheriff	[REDACTED]	Nvaughan@inyocounty.us
DENNAE Lee CAMPBELL	Canelago Community Center	[REDACTED]	dcampbel@cencoco.org
Todd Bunn	LADWP Construction	[REDACTED]	michael.t.bunn@ladwp.com
STEVEN BUTLER	LADWP	[REDACTED]	steven.butler@ladwp.com
TONY HANDY	DA	[REDACTED]	thandy@inrcount.us
JOEY JOHNSON	Auditor/TTE	[REDACTED]	johanson@inpcounty.us
RICK HENGD!	Admin	[REDACTED]	rhengd@inpcounty.us

Kick-off Attendee Sign-In Sheet (January 28, 2016)

Name	Department/Agency/Jurisdiction	Telephone	Email
Bill Lutze	Inyo Sheriff	[REDACTED]	blutze@inyocounty.us
Dustin Blakey	FARM ADVISOR	[REDACTED]	dublakey@ucanr.edu
David Miller	Agriculture	[REDACTED]	dmiller@inyocounty.us
Ashlee Alex	Child Support	[REDACTED]	alex.ashlee@inyo.ca.cse.gov
JOHN BEISCHL	SIERRA HIGHLANDS CSD	[REDACTED]	mr@5rubi@gmail.com
Jill Batschelder	ESTA	[REDACTED]	jbatshelder@estarnsif.com
Grant Quinter	Inyo Co PD	[REDACTED]	quinter@inyocounty.us
Scott Hooker	NIH	[REDACTED]	Scott.Hooker@nih.gov
Andrew Stearns	NIH	[REDACTED]	andrew.stearns@nih.gov
Dave Spothemeyer	Assessor	[REDACTED]	dspothemeyer@inyocounty.us
Marvin Moskowitz	EH	[REDACTED]	mmoskowitz@inyocounty.us
Dyson Denny	SodanLink - Utility	[REDACTED]	Dyson.Denny@SodanLink.com
Kelli Davis	Inyo Co - GAO	[REDACTED]	Kellidavis@inyocounty.us

Inyo County

Local Hazard Mitigation Plan

Kick-off Meeting

January 28, 2016 | 1:00 pm | Independence, CA (BOS Chambers)

Agenda

1. Introductions (5 minutes)
 2. Project Goals & Expectations (10 minutes)
 3. Staffing & Communication Protocols (5 minutes)
 4. Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) Overview (15 minutes)
 5. Engagement & Outreach (30 minutes)
 - a. MJHMP Planning Team
 - b. Public survey
 6. Data Collection & Critical Facilities
 - a. Hazards of concern and past disasters (20 minutes)
 - b. Critical facilities (15 minutes)
 - c. Mitigation strategies (15 minutes)
 7. Work Plan & Schedule Review (10 minutes)
 - a. Overview of work program, key tasks, and schedule
 - b. Wrap-up and next steps
-

Project Overview

Inyo County and the City of Bishop, working with special districts, local tribes, and state and federal agencies, are initiating a planning effort to prepare a Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). This plan serves as the five-year strategic plan for Inyo County and its jurisdictions to analyze and mitigate natural hazards in the community. Preparation of the MJHMP increases the eligibility for County and its individual jurisdictions to be eligible for future disaster mitigation and post-disaster grant funding from FEMA.

Local Hazard Mitigation Plan

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. DMA 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act by repealing the previous mitigation planning provisions and replacing them with a new set of requirements that emphasize the need for State, local, and Indian Tribal entities to closely coordinate mitigation planning and implementation efforts. The requirement for a State mitigation plan is continued as a condition of disaster assistance, adding incentives for increased coordination and integration of mitigation activities at the State level through the establishment of requirements for two different levels of state plans. DMA 2000 also established a new requirement for local mitigation plans and authorized up to 7 percent of Hazard Mitigation Grant Program (HMGP) funds available to a State for development of State, local, and Indian Tribal mitigation plans.

Completion and acceptance of the MJHMP by FEMA opens up access to the following competitive FEMA grant programs for the next 5 years:

- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation (PDM)

Under these programs up to 75% of the cost of an implementation project could be covered by a FEMA grant.

Preliminary Goals of the Project

At the kick-off meeting, the project team will have the opportunity to discuss and confirm project goals. General goals for a hazard mitigation plan may include:

- Minimize the risk of loss and damage to people and property by making homes, businesses, infrastructure, and critical facilities more resilient to potential hazards.
- Identify and reduce repetitive losses and damage from recurring or chronic hazards.
- Coordinate hazard mitigation activities with natural resource management, land use planning, and emergency operations plans and procedures.

Inyo County: Multi-Jurisdictional Hazard Mitigation Plan

- Promote increased cooperation on hazard mitigation activities between local jurisdictions, including representatives of state and federal agencies, and with non-profits and private businesses.
- Improve the hazard assessment process.
- Foster increased community awareness of potential hazard risks and ways to reduce vulnerability through tools, partnerships, funding, and community education.

Project Objectives

Based on the project goals, there will be specific objectives that will inform the plan approach and appropriate hazard mitigation strategies. Sample objectives based on the general goals provide above, along with corresponding questions to help focus data collection, may include:

- A. Continued coordination with key stakeholders, including Inyo County jurisdictions, tribal governments, state and federal agencies, and non-profits and private-sector businesses.
 - a. Who are key stakeholders to contact?
- B. A flexible and engaging public outreach and educational campaign.
 - a. What are the lessons learned from previous outreach events?
- C. A more effective and up-to-date approach to reducing the risk from hazards.
 - a. What hazard mitigation efforts have been successful or unsuccessful in the past?
- D. Address issues related to infrastructure and critical facilities, including aging facilities and vulnerable sites, to reduce/minimize future hazards and disasters.
 - a. What facilities and infrastructure are at risk in your opinion?

Multi-Jurisdictional Mitigation Planning Team

This core team of staff members from Inyo County and the City of Bishop will participate in actively reviewing and commenting on the Multi-Jurisdictional Hazard Mitigation Plan. The following is a listing of City and County departments that should be involved. At least one staff member from each department should be in attendance for any meetings scheduled for the project. Representatives from other jurisdictions, including special districts, state and federal agencies, and tribal governments, should also be part of the Planning Team.

- Inyo and Mono Counties Agricultural Commissioner's Office
- Inyo County Environmental Health Services
- Inyo County Health and Human Services
- Inyo County Parks and Recreation
- Inyo County Planning Department
- Inyo County Public Works Department
- Inyo County Risk Manager
- Inyo County Road Department
- Inyo County Sheriff's Office
- Inyo County Waste Management Department
- Inyo County Water Department
- City of Bishop Administrator
- City of Bishop Police Department
- City of Bishop Fire Department

Critical Facilities

See attached Data Collection Packet

Engagement Strategy

See attached Engagement Strategy

Hazards of Concern Prioritization

See Hazards Ranking Worksheet

Schedule

Task	Anticipated Deadline
Conduct Meeting #1 (kick-off meeting)	January 28, 2016
Preparation of Draft Outreach Strategy	January 28, 2016
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Public Hearings	TBD

Inyo County

Multi-Jurisdictional Hazard Mitigation Plan Data Collection

1) GIS Data

GIS layers for the following data will be needed for analyses and mapping:

- Locations of critical facilities and assets
- City limits
- Streets and highways
- Land use designations
- Earthquake shaking zones
- Liquefaction zones (if any)
- Landslide risk zones (if any)
- Flood zones (including 100-year and 500-year floodplains)
- Location of hazardous materials facilities and hazardous mineral deposits (e.g. asbestos)
- Dam inundation zones
- Other hazard risk zones

Please provide GIS layers to apfannenstiel@mbakerintl.com. If the files are too large to email, contact Aaron Pfannenstiel at 909.918.2998 for access to our FTP site. Please feel free to provide any other data layers you would like us to include in the analysis or feel would be useful.

2) Hazards

Based on a preliminary evaluation of the conditions in Inyo County, the following hazards may be present:

- Dam failure
- Disease and pest management
- Drought
- Earthquakes, fault rupture, and liquefaction
- Flooding
- Geologic hazards (landslides and volcanism)
- Hazardous materials and minerals
- Severe weather (heat, cold, wind, tornadoes, hailstorms, etc.)
- Wildfires

Climate change (to be addressed as a condition of other hazards)

If some items on this list should be removed, or if the MJHMP should address additional hazards not on this list, please list them or explain below.

Inyo County: MJHMP Data Collection Packet

Facility Name	Address	Building Replacement Value	Contents Replacement Value
Special district facilities			
State and federal agency facilities			
Tribal government facilities			

Inyo County: MJHMP Data Collection Packet

Facility Name	Address	Building Replacement Value	Contents Replacement Value
Other facilities			

4) Past Disasters

Preliminary research found the following past hazard events and declared emergencies in Inyo County:

- 1872 Owens Valley earthquakes
- 2007 Inyo Complex fire
- July 2008 severe thunderstorms
- 2012 to present drought
- Multiple flood events in 1966, 1969, 1978, 1980, 1982, 1983, 1984, 1987, 2003, 2004, and 2010

Are there additional past disasters that should be mentioned in the MJHMP? Please provide details about damage and loss if available

In any of the past disasters, were critical facilities damaged or destroyed? If so, please provide information below.

Facility	Type of Disaster	Description of Damage

5) Jurisdictional Boundaries and Current Projects

Are there any plans to change the boundaries of any government jurisdiction within Inyo County, including annexations? Are there any large development projects in Inyo County that are under construction, approved, or otherwise planned?

6) Emergency Responders

Please describe any mutual aid agreements that Inyo County or the City of Bishop are committed to.

Importance

The importance of each category is a weight assigned to each category. In the default setting of this tool, probability is weighted more highly than other categories. The user can define these weights based on the relative importance of these categories to the community for its decision making process.

Probability

The probability of a hazard occurring should be based on estimated likelihood of occurrence from historical data. These definitions are from FEMA in the Local Mitigation Planning Workbook, March 2013.

This tool assigns numeric values to each level of probability.

Definitions:

Unlikely: Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.

Occasional: 1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.

Likely: 10 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.

Highly Likely: 90 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.

Location

Based on size of geographical area of community affected by hazard. Definitions are from the FEMA Local Mitigation Planning Handbook, March 2013.

Definitions:

Negligible: less than 10 percent of planning area or isolated single point occurrences

Limited: 10 to 25 percent of the planning area or limited single point occurrences

Significant: 25-75 percent of planning area or frequent single-point occurrences

Extensive: 75 to 100 percent of planning area or consistent single-point occurrences

Maximum Probable Extent (Impact)

Based on percentage of damage to typical facility in community. Definitions are from the FEMA Local Mitigation Planning Handbook, March 2013.

Definitions:

Weak: Limited classification on scientific scale, slow speed of onset or short duration of event, result in little to no damage.

Moderate: Moderate classification of scientific scale, moderate speed of onset or moderate duration of event, resulting in some damage and loss of services for days

Severe: Severe classification on scientific scale, fast speed of onset or long duration of event, resulting in devastating damage and loss of services for weeks or months.

Extreme: Extreme classification on scientific scale, immediate onset or extended duration of event, resulting in catastrophic damage and uninhabitable conditions.

Secondary Impacts

Based on estimated secondary impacts to community at large. These impacts are not from FEMA but constitute important impacts that ripple through communities.

Definitions:

Negligible: no loss of function, downtime, and/or evacuations

Limited: minimal loss of function, downtime, and/or evacuations

Moderate: some loss of function, downtime, and/or evacuations

High: major loss of function, downtime, and/or evacuations

Hazard Planning Consideration

Hazard planning consideration is a numerical score calculated for each hazard. This score enables users to rank the potential impacts of hazards and get a sense for their relative dangers. These values are not derived from FEMA guidance but have been widely used in hazard planning.

Each hazard is scored along four categories on a scale of 1-4. These values are then multiplied by the importance assigned to each category.

Overall Importance

The overall importance of a hazard is a summary descriptor use defined by the FEMA Local Mitigation Handbook. There are no numeric ratings assigned to the overall importance of a hazard though these designations are roughly equivalent to the numeric scoring used in this tool.

Definitions:

Low: Two or more criteria fall in the lower classifications or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with minimal or unknown record of occurrences or for hazards with minimal mitigation potential.

Medium: The criteria fall mostly in the middle ranges of classifications and the event's impacts on the planning area are noticeable but not devastating. This rating is sometimes used for hazards with a high extent rating but very low probability rating.

High: The criteria consistently fall in the high classifications and the event is likely/highly likely to occur with severe strength over a significant to extensive portion of the planning area.

Potential Hazards*
Avalanche
Climate Change
Coastal Erosion
Coastal Storm (Storm Surge)
Dam Failure
Disease/Pest Management
Drought
Earthquake Fault Rupture
Expansive Soils
Extreme Cold
Extreme Heat
Flood
Geological Hazards
Hail
Hazardous Materials
Human-Caused Hazards
Hurricane
Land Subsidence
Landslide and Mudflow
Liquefaction
Lightning
Sea Level Rise
Seismic Hazards
Severe Wind
Severe Winter Weather
Tornado
Tsunami
Volcano
Wildfire

*Adapted from FEMA Local Mitigation Planni

HAZARD RANKING WORKSHEET - Inyo County

DATE: 6/13/2016

Hazard Type	Probability	Impact			Total Score	Hazard Planning Consideration
		Location	Primary Impact	Secondary Impacts		
Avalanche	2.64	1.21	1.47	1.17	13.64	Medium
Dam Failure	1.27	3.69	1.88	3.82	15.65	Medium
Disease/Pest Management	2.40	2.43	1.88	2.06	20.59	Medium
Drought	4.00	4.00	4.00	4.00	64.00	High
Seismic Hazards	4.00	4.00	4.00	4.00	64.00	High
Flood	4.00	4.00	4.00	4.00	64.00	High
Severe Winter Weather	3.65	4.00	2.71	2.71	47.03	High
Geological Hazards	2.47	2.76	2.24	2.00	23.60	Medium
Hazardous Materials	3.00	3.47	2.82	2.25	35.27	Medium
Wildfire	4.00	4.00	4.00	4.00	64.00	High
Volcano					0.00	Low

Probability	Importance
<i>Based on estimated likelihood of occurrence from historical data</i>	2.0
<u>Probability</u>	<u>Score</u>
Unlikely	1
Occasional	2
Likely	3
Highly Likely	4

Location	Importance
<i>Based on size of geographical area of community affected by hazard</i>	0.8
<u>Affected Area</u>	<u>Score</u>
Negligible	1
Limited	2
Significant	3
Extensive	4

Maximum Probable Extent (Primary Impact)	Importance
<i>Based on percentage of damage to typical facility in community</i>	0.7
<u>Impact</u>	<u>Score</u>
Weak - little to no damage	1
Moderate - some damage, loss of service for days	2
Severe - devastating damage, loss of service for months	3
Extreme- catastrophic damage, uninhabitable conditions	4

Secondary Impacts	Importance
<i>Based on estimated secondary impacts to community at large</i>	0.5
<u>Impact</u>	<u>Score</u>
Negligible - no loss of function, downtime, and/or evacuations	1
Limited - minimal loss of function, downtime, and/or evacuations	2
Moderate - some loss of function, downtime, and/or evacuations	3
High - major loss of function, downtime, and/or evacuations	4

Total Score = Probability x Impact, where:

Probability = (Probability Score x Importance)
 Impact = (Affected Area + Primary Impact + Secondary Impacts), where:
 Affected Area = Affected Area Score x Importance
 Primary Impact = Primary Impact Score x Importance
 Secondary Impacts = Secondary Impacts Score x Importance

Hazard Planning Consideration				
<u>Total Score</u>	<u>Range</u>	<u>Distribution</u>	<u>Hazard Level</u>	
0.0	12.0	4	Low	
12.1	42.0	5	Medium	
42.1	64.0	5	High	

The probability of each hazard is determined by assigning a level, from unlikely to highly likely, based on the likelihood of occurrence from historical data. The total impact value includes the affected area, primary impact and secondary impact levels of each hazard. Each level's score is reflected in the matrix. The total score for each hazard is the probability score multiplied by its importance factor times the sum of the impact level scores multiplied by their importance factors. Based on this total score, the hazards are separated into three categories based on the hazard level they pose to the communities: High, Medium, Low.

		1	2	3	4	Total	Avg
Avalanche	Probability	1	6	4	3	14	2.642857
	Location	15	4	0	0	19	1.210526
	Primary Impact	10	6	1	0	17	1.470588
	Secondary Impact	15	3	0	0	18	1.166667
Dam Failure	Probability	11	4	0	0	15	1.266667
	Location	0	1	3	12	16	3.6875
	Primary Impact	0	0	3	14	17	3.823529
	Secondary Impact	0	0	3	14	17	3.823529
Disease/Pest Mgmt	Probability	1	7	7	0	15	2.4
	Location	1	7	5	1	14	2.428571
	Primary Impact	6	7	4	0	17	1.882353
	Secondary Impact	5	6	6	0	17	2.058824
Drought	Probability				17	17	4
	Location				17	17	4
	Primary Impact				17	17	4
	Secondary Impact				17	17	4
Seismic Shaking	Probability				17	17	4
<i>Liquefaction</i>	Location				17	17	4
<i>EQ Fault Rupture</i>	Primary Impact				17	17	4
<i>Liquefaction</i>	Secondary Impact				17	17	4
Geologic Hazards	Probability	2	6	8	1	17	2.470588
Landslides	Location	1	2	14	0	17	2.764706
Expansive Soils	Primary Impact	3	7	7	0	17	2.235294
	Secondary Impact	2	13	2	0	17	2
Severe Weather	Probability	0	0	6	11	17	3.647059
Heat/Cold	Location	0	0	0	17	17	4
Wind (microburst, dust storm)	Primary Impact	0	5	12	0	17	2.705882
Snow	Secondary Impact	0	5	12	0	17	2.705882
Flood	Probability				17	17	4
	Location				17	17	4
	Primary Impact				17	17	4
	Secondary Impact				17	17	4
Hazardous Materials	Probability			17		17	3
	Location			9	8	17	3.470588
	Primary Impact		5	10	2	17	2.823529
	Secondary Impact	1	10	5	0	16	2.25
Wildfire	Probability				17	17	4
	Location				17	17	4
	Primary Impact				17	17	4
	Secondary Impact				17	17	4

Hazard Type	Probability	Impact			Hazard Planning Consideration
		Location	Primary Impact	Secondary Impacts	
Avalanche	Occasional	Negligible	Weak	Negligible	
Dam Failure	Unlikely	Significant	Weak	Moderate	
Disease/Pest Management	Occasional	Limited	Weak	Limited	
Drought	Highly Likely	Extensive	Extreme	High	
Seismic Hazards	Highly Likely	Extensive	Extreme	High	
Flood	Highly Likely	Extensive	Extreme	High	
Geological Hazards	Occasional	Limited	Moderate	Limited	
Hazardous Materials	Likely	Significant	Moderate	Limited	
Wildfire	Highly Likely	Extensive	Extreme	High	
Volcano					

Probability
Based on estimated likelihood of occurrence from historical data
Score
 1
 2
 3
 4

Importance
 2.0
Probability
 Unlikely
 Occasional
 Likely
 Highly Likely

Maximum Probable Extent (Primary Impact)
Based on percentage of damage to typical facility in community
Score
 1
 2
 3
 4

Importance
 0.7
Impact
 Weak
 Moderate
 Severe
 Extreme

Location
Based on size of geographical area of community affected by hazard
Score
 1
 2
 3
 4

Importance
 0.8
Affected Area
 Negligible
 Limited
 Significant
 Extensive

Secondary Impacts
Based on estimated secondary impacts to community at large
Score
 1
 2
 3
 4

Importance
 0.5
Impact
 Negligible
 Limited
 Moderate
 High

Overall Importance (Based on overall hazard to community)

- Low Minimal impact on the planning area. Hazards have minimal or unknown record of occurrences or minimal mitigation potential.
- Medium Event's impacts on the planning area are noticeable but not devastating. Hazards with a high extent rating but very low probability rating.
- High Event is likely/highly likely to occur with sever strength over a significant to extensive portion of the planning area.



Inyo County

Multi-Jurisdictional Hazard Mitigation Plan

Project Kickoff

Meeting Objectives

**Goals,
expectations,
and schedules**

**Staffing and
communication
protocols**

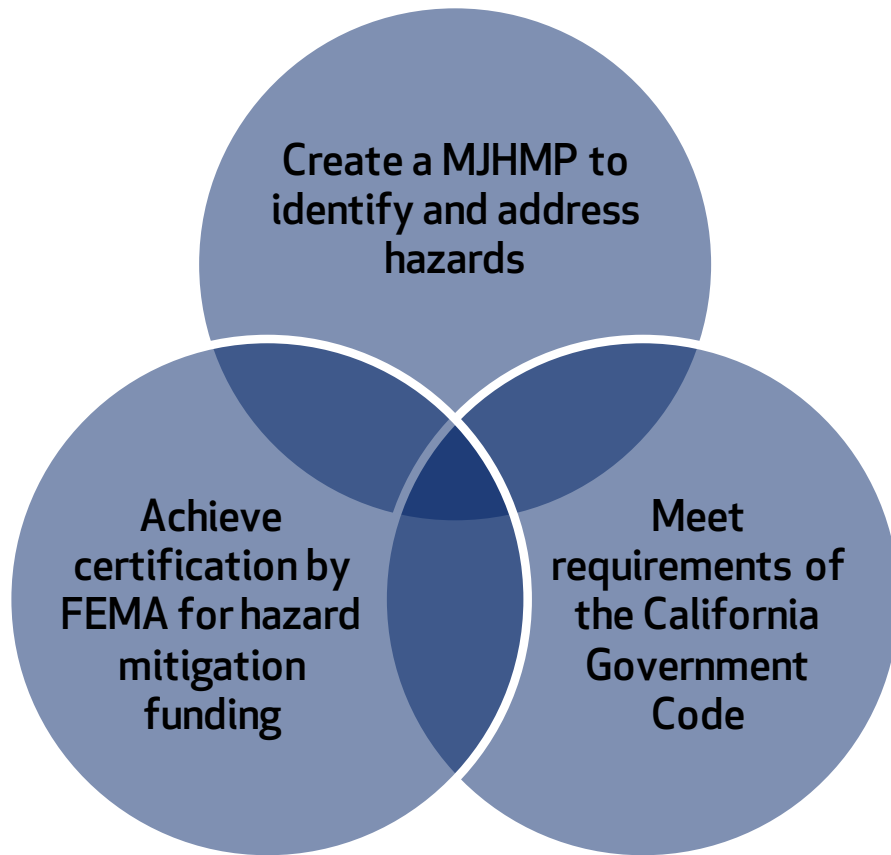
**Plan overview
and development
process**

**Public outreach
and engagement**

Critical facilities

**Hazard
prioritization and
data collection**

Project Goal and Objectives



What is Hazard Mitigation?

What is Hazard Mitigation?

- Sustained actions taken to reduce or eliminate long-term risk to life and property from hazards.

What is a Hazard Mitigation Plan?

- A plan based on a community's values and needs
- Results from a process oriented approach (important)
- Focuses on mitigation strategies (making the future safer)

Objective:

FEMA Grant Funding Eligibility

Responsibilities

Our job

- Facilitate the process
- Provide technical expertise
- Do the heavy work

Your job

- Participate
- Make final decisions
- Ensure plan is feasible and meets needs
- Provide local insight

Data Needs

- Every person can provide vital data
 - GIS data (key facilities and hazards)
 - Information and experience about past events
 - Past hazard mitigation efforts
 - Institutional knowledge
- If you have useful data, please contact *Aaron Pfannenstiel*
(909) 919-2998
apfannenstiel@mbakerintl.com



Goals for Hazard Mitigation Planning

MJHMP Goals

- Team will develop specific MJHMP goals
- General goals may include:

Reduce risk of loss and damage from hazards

Reduce repetitive loss and damage

Coordinate with resource management, land use planning, and emergency operations

Work with local jurisdictions and key stakeholders

Improve the hazard assessment process

Increase community awareness and empowerment



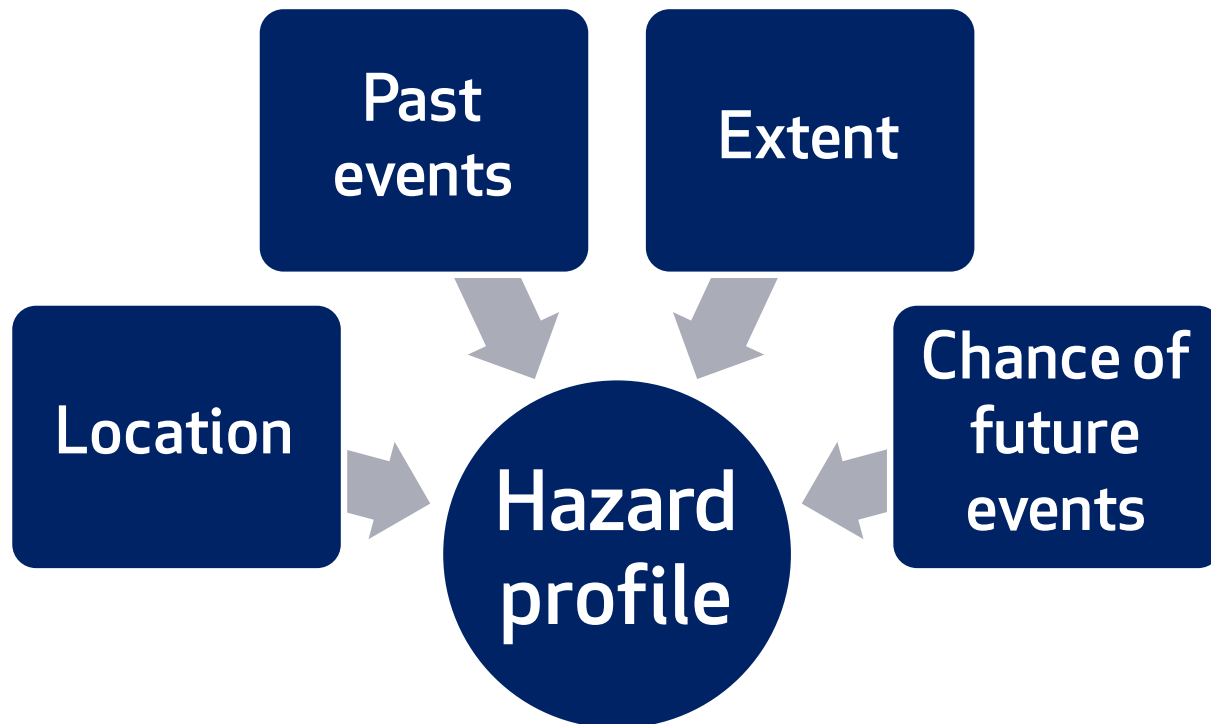
Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) Development

Plan Development Process



Plan Process – Hazard Identification and Risk Assessment

- Describe all hazards that affect the community.
- Provide rationale for excluding recognized hazards.



Plan Process – Vulnerability Assessment

Vulnerability Assessment

Impacts of each hazard

Vulnerability to each hazard

Repetitive loss properties

Potential dollar losses

Plan Process – Mitigation Strategies

Goals

- Overarching objectives

Strategies

- Comprehensive, specific actions

Action plan

- Prioritizes actions
- Includes responsibilities and cost-benefit review



MJHMP Requirements

Plan Requirements – Mitigation Strategies

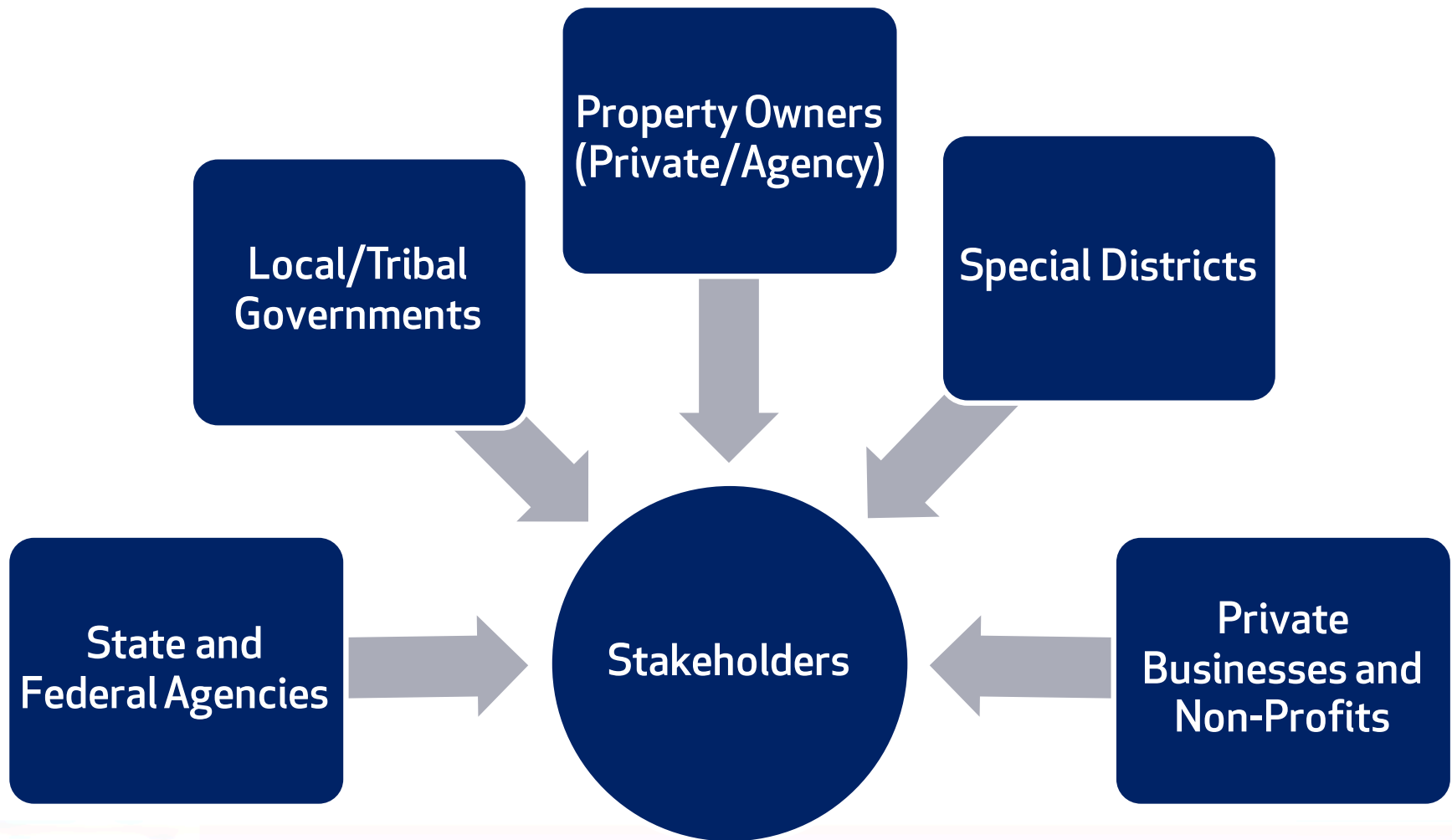
- Strategy identifies existing authorities, policies, programs, and resources to mitigate hazards
- Includes description of participation in National Flood Insurance Program

Plan Requirements

Must describe:

- How the plan was prepared
- Who was involved
- Opportunities for public and stakeholder involvement
- Review and inclusion of existing plans, reports, studies, etc.
- Continual public participation
- Monitoring and updating of the plan

Plan Requirements - Stakeholders



Plan Requirements - MJHMP Planning Team

- Agency and stakeholder representatives to advise and contribute to plan preparation
- Five MJHMP Planning Team meetings:
 - Meeting 1/kick-off: Discuss plan process, hazard overview, and data collection
 - Meeting 2: Discuss risk assessment
 - Meeting 3: Identify goals and develop mitigation strategies
 - Meeting 4: Prioritize mitigation actions, create implementation and MJHMP maintenance strategy
 - Meeting 5: Review draft plan

Plan Requirements – Planning Process

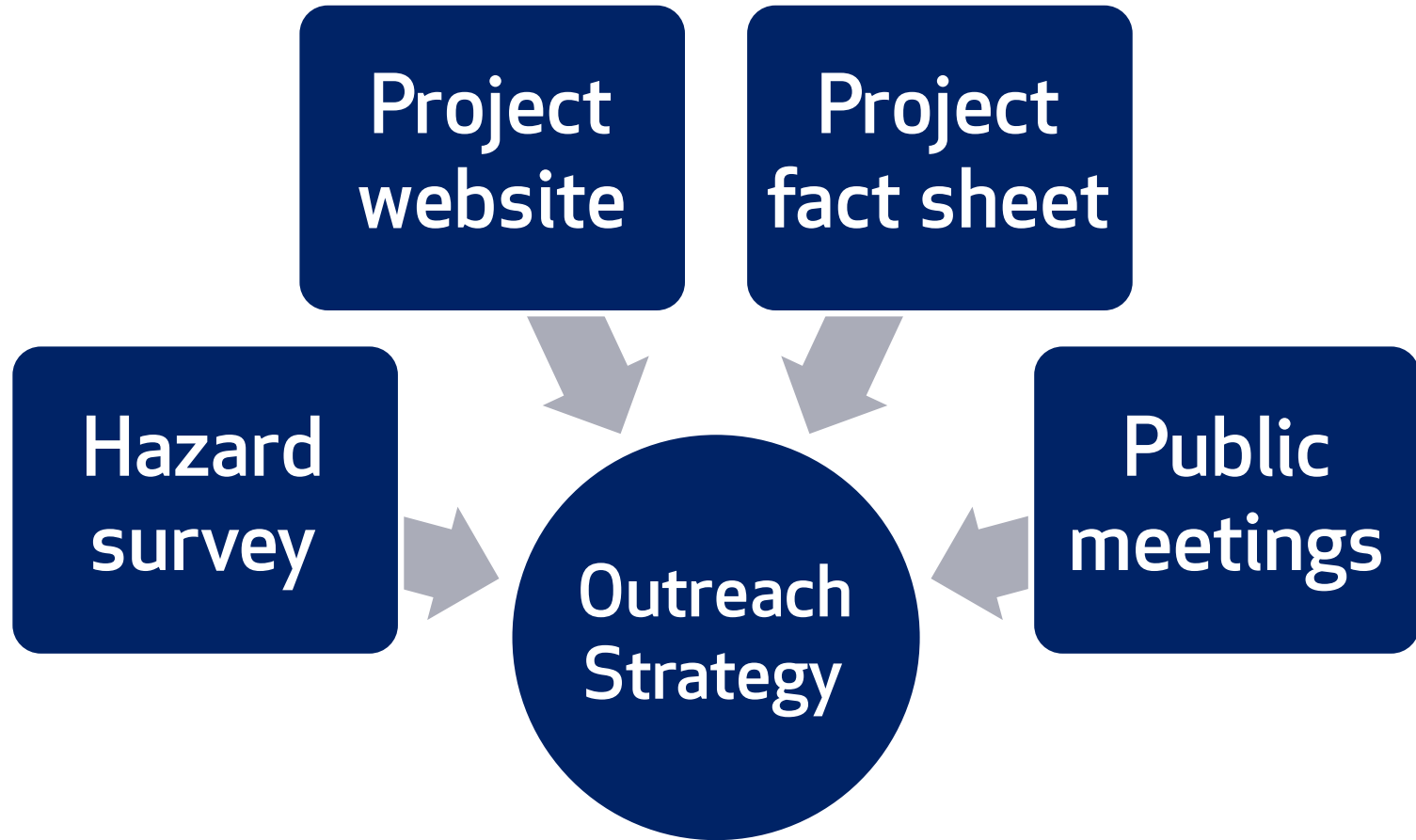
MJHMP Planning Team

- Inyo and Mono Counties Agricultural Commissioner's Office
- Inyo County Environmental Health Services
- Inyo County Health and Human Services
- Inyo County Parks and Recreation
- Inyo County Planning Department
- Inyo County Public Works Department
- Inyo County Risk Manager
- Inyo County Road Department
- Inyo County Sheriff's Office
- Inyo County Waste Management Department
- Inyo County Water Department
- City of Bishop Administrator
- City of Bishop Police Department
- City of Bishop Fire Department



Engagement and Outreach

Public Outreach Strategy



Public Outreach Strategy – Hazard Survey

- Awareness of potential hazards
- Preventative/resiliency actions
- Insurance status
- Current state of readiness
- Special needs
- Hazard education and training
- Impacts of past hazards

Public Outreach Strategy – Website and Fact Sheet

■ Website

- Provides an overview of the MJHMP
- Displays project updates and upcoming events

■ Fact sheet

- Summarizes plan objectives and ways to get involved
- Distributed virtually and in person
- Will highlight project website and survey

Public Outreach Strategy - Giveaways

- Provides incentives for community members to participate.
- Can be branded with City/County logos and/or project name.
- Giveaways can be related to hazard mitigation and preparation (flashlights, whistles, etc.)
- Giveaway options:
 - Small items
 - Low-denomination gift cards
 - Larger items or gift cards for raffle prizes

Public Outreach Strategy – Public Meetings

- Michael Baker to prepare summary presentation of MJHMP
 - MJHMP intent and plan development process
 - Data collection process
 - Ways to get involved and key contact information
- County and City staff can present to stakeholders and members of the public
- Michael Baker staff can attend up to one meeting in person and up to two meetings virtually



Hazard Identification and Prioritization

FEMA-Suggested Hazards

Avalanche	Flood	Sea level rise
Climate change	Geological hazards	Seismic hazards
Coastal erosion	Hail	Severe wind
Coastal storm (Storm Surge)	Hazardous materials	Severe Winter Weather
Dam failure	Human-caused hazards	Tornado
Disease/pest management	Hurricane	Tsunami
Drought	Land subsidence	Volcano
Earthquake fault rupture	Landslide and mudflow	Wildfire
Expansive soils	Liquefaction	
Extreme heat/cold	Lightning	

Relevant Hazards

Avalanche	Flood	Sea level rise
Climate change	Geological hazards	Seismic hazards
Coastal erosion	Hail	Severe wind
Coastal storm (Storm Surge)	Hazardous materials	Severe Winter Weather
Dam failure	Human-caused hazards	Tornado
Disease/pest management	Hurricane	Tsunami
Drought	Land subsidence	Volcano
Earthquake fault rupture	Landslide and mudflow	Wildfire
Expansive soils	Liquefaction	
Extreme heat/cold	Lightning	

Proposed Hazards List

- Dam failure
- Disease and pest management
- Drought
- Earthquakes, fault rupture, and liquefaction
- Flooding
- Geologic hazards (landslides and volcanism)
- Hazardous materials and minerals
- Severe weather (heat, cold, wind, tornadoes, hailstorms, etc.)
- Wildfires

Climate change (to be addressed as a condition of other hazards)

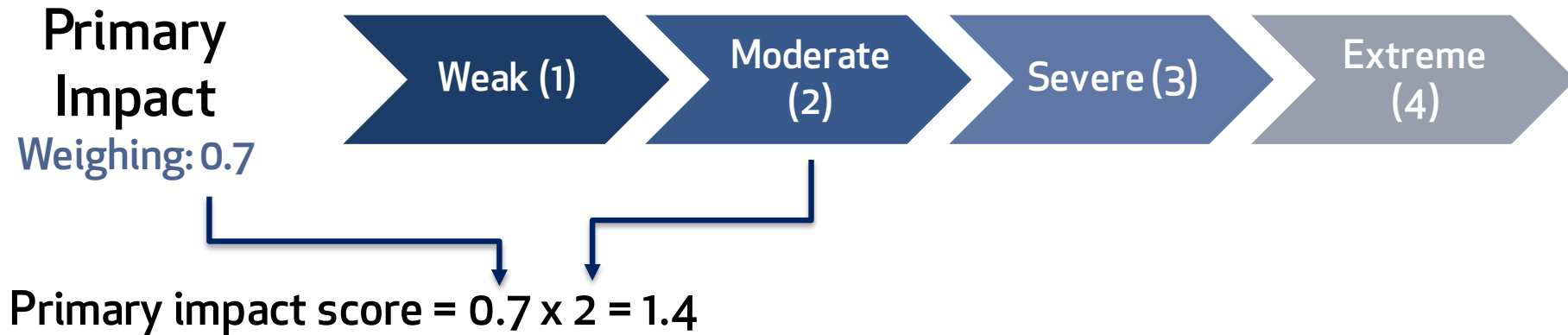
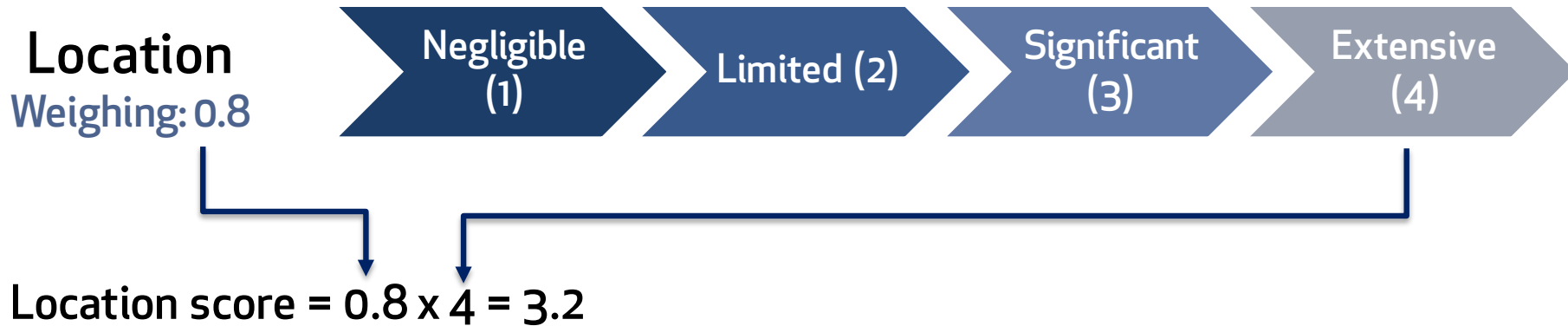
Past Hazard Events and Declared Emergencies

- 1872 Owens Valley earthquakes
- 2007 Inyo Complex fire
- July 2008 severe thunderstorms
- Multiple flood events (1966, 1969, 1978, 1980, 1982, 1983, 1984, 1987, 2003, 2004, and 2010)
- 2012-2016 drought

Hazard Prioritization

- **Four criteria [Weightings]**
 - Probability (likelihood of occurrence) [2.0]
 - Location (size of potentially affected area) [0.8]
 - Maximum Probable Extent (intensity of damage) [0.7]
 - Secondary Impacts (severity of impacts to community) [0.5]
- **Each criteria is judged on a scale of 1-4**
- **Every criteria has an Importance Score (weighing)**
 - Affects the influence of an individual criterion
 - Criteria and Importance values are combined to calculate a Total Score

Score Example: Drought



Score Example: Drought

Probability
Weighing: 2.0



Location score = $2.0 \times 4 = 8$

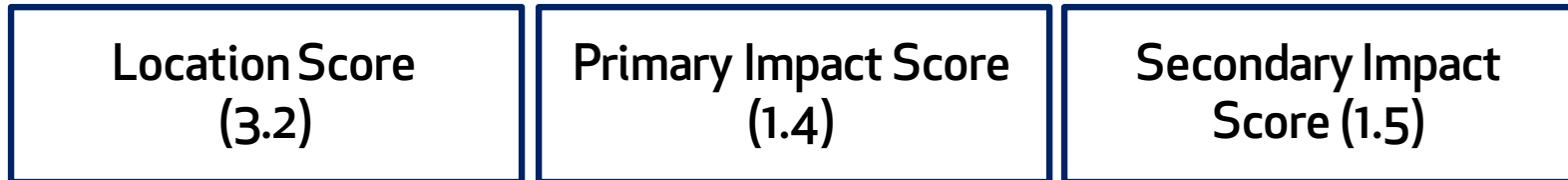
Secondary Impact
Weighing: 0.5



Primary impact score = $0.5 \times 3 = 1.5$

Score Example: Drought

Impact

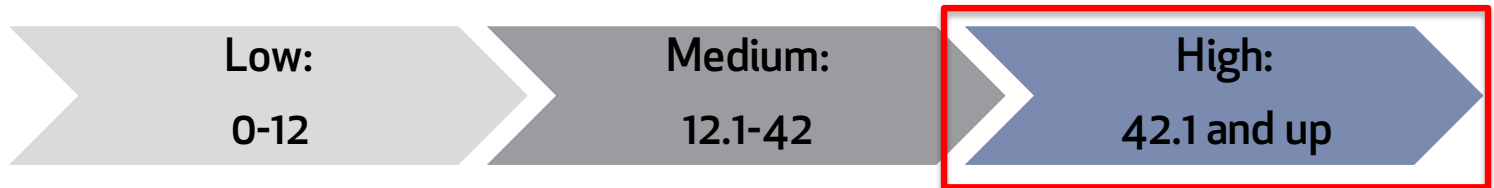


$$\text{Impact score: } 3.2 + 1.4 + 1.5 = 6.1$$

Total Score



$$\text{Total Score: } 6.1 \times 8 = 48.8$$





Critical Facilities

Critical Facilities

- **Facilities that provide key services to Inyo County residents and businesses**
 - Inyo County or City of Bishop facilities
 - Special district properties
 - State/federal agency facilities
 - LADWP properties
 - Tribal facilities
 - Private sector properties
- **Possible examples**
 - City and County government centers
 - Fire and police/sheriff stations
 - Schools
 - Hospitals
 - Airport control tower
 - Community centers
 - Water wells, pumps, and pipelines
 - Major power lines

Critical Facilities

- Risk assessment looks at what facilities are in hazard zones.
 - Considers their replacement cost and value to the community.
- Mitigation strategies reflect vulnerabilities of critical facilities.
 - Strengthen existing vulnerable facilities.
 - Avoid building new ones in at risk-areas.



Next Steps

Task	Timeframe
Conduct Meeting #1 (kick-off meeting)	January 28, 2016
Preparation of Draft Outreach Strategy	January 28, 2016
Review of Draft Outreach Strategy	February 11, 2016
Conduct Meeting #2	March 2016
Conduct Meeting #3	April 2016
Conduct Meeting #4	May 2016
Preparation of Administrative Draft MJHMP	May 2016
Review of Administrative Draft MJHMP	May 2016
Conduct Meeting #5	June 2016
Preparation of Draft MJHMP	June 2016
Review/Approval of Draft MJHMP	July 2016
Public Review Period for Draft MJHMP	August 2016
Cal OES/FEMA Review of Draft MJHMP	September 2016
Preparation of Final MJHMP	TBD
Public Hearings	TBD

Questions/Comments?

Diane Fortney

dfortney@inyocounty.us

760-878-0263

Aaron Pfannenstiel

apfannenstiel@mbakerintl.com

909-918-2998

Inyo County

Multi-Jurisdictional Hazard Mitigation Plan - Public Engagement Strategy

FEMA requires an open public involvement process during the development of local hazard mitigation plans. Jurisdictions such as Inyo County and the City of Bishop must document the opportunities for public engagement both during the initial drafting stage of the plan and prior to plan approval. The following outreach approach will meet FEMA requirements while providing a meaningful opportunity for public input. This recommended approach provides an opportunity to engage local residents along with those from state and federal agencies, tribal communities, local businesses, and other organizations.

Outreach Materials

Online Hazard Survey

Survey Period: February/March 2016

The Michael Baker International team proposes the development of an online survey that can be distributed online to respondents of the County's and City's choice enlisting input on the hazard mitigation planning process. This survey will be developed online using SurveyMonkey, allowing respondents to answer questions regarding hazards and hazard-related issues in the County and City. Michael Baker recommends posting the survey during the months of February and March to allow for public comment. This provides residents an ongoing opportunity to provide input on hazards during plan development. Following the close of the survey, Michael Baker will download survey results and provide a tabulated summary of responses for inclusion as an appendix in the MJHMP. A PDF version of the survey can also be provided, which can be used at local distribution locations for those that do not have internet access.

MJHMP Project Website

Launch Date: February 2016

The Michael Baker team will create content for a webpage about the MJHMP for the existing Inyo County website. The County will host, launch, and update the content of the website with deliverables and other relevant information throughout the plan development and implementation process. The City of Bishop and other relevant jurisdictions should be able to post a link to this webpage from their respective websites. Michael Baker suggests that the website includes the following content, along with any further information and content that the County and City deem appropriate:

- Background information on the MJHMP, to be provided by Michael Baker
- Regular project updates and information on upcoming events, to be provided by the County and City with support and coordination from Michael Baker

Project Fact Sheet

Release Date: February 2016

Michael Baker will design a one-page fact sheet on the MJHMP to provide a brief and easy to understand summary of the plan. This fact sheet will address why the County and City are preparing this plan, the key objectives of the MJHMP, and how community members can be involved. The County and City can distribute this fact sheet on the project website, at project workshops and other community events, and at County and City facilities. Michael Baker will work with County and City staff to identify the best locations for the fact sheet. The MJHMP project website will be displayed prominently on the fact sheet, and will include information about the online hazard survey.

Public Meetings

Jurisdictional Presentation

[February – June 2016]

Michael Baker staff will prepare a PowerPoint presentation that County and City staff can present at public meetings and events. This presentation will summarize the intent of the MJHMP, the plan development process, the information gathered to date, ways that audience members can participate in the plan development process, and key points of contact. County and City staff can use this presentation to engage key stakeholders (special districts, state and federal agencies, tribal governments, etc.) and members of the public.

Virtual/In Person Events

[February – June 2016]

The Jurisdictional Presentation will be prepared so as to allow County and City staff to present without any external support. However, if desired, Michael Baker staff are able to attend up to one presentation in person with up to two staff members, pending direction from the County project manager, to give the presentation or to support County or City staff. Additionally, pending direction from the County project manager, Michael Baker staff will be available to attend up to two additional meetings “virtually” through a video teleconference system.

2016 Inyo County Multi-Jurisdictional Hazard Mitigation Plan Survey

I. Introduction

Dear Community Member,

Inyo County and the City of Bishop, in partnership with other key agencies, are preparing a Multi-Jurisdictional Hazard Mitigation Plan in an effort to reduce the risk of natural disasters for residents, businesses, and visitors. This plan identifies natural hazards throughout Inyo County and assesses the vulnerability of critical infrastructure and facilities to these hazards. Using this understanding, the plan lists potential actions to reduce risk and future damage.

Is your home or office building susceptible to damage from earthquakes, floods, or fire? Do you want to recover more quickly from disasters and prevent future damage from these and other natural hazards? Your participation in this survey can make Inyo County more resilient to disasters. Your responses to this survey will inform the plan preparation. Thank you for your time and cooperation to respond to the brief survey below.

II. Hazard Awareness

1. Please indicate your place of residence
 - a. City of Bishop
 - b. Unincorporated areas of Inyo County
 - c. Tribal lands in Inyo County
 - d. Outside of Inyo County
2. Please indicate your place of employment
 - a. City of Bishop
 - b. Unincorporated areas Inyo County
 - c. Tribal lands in Inyo County
 - d. Outside of Inyo County
3. What is the ZIP Code of your home?

4. Have you been impacted by a disaster in your current residence?
 - a. Yes
 - b. No
5. If you answered yes to the previous question, please select the type of disaster that you have been impacted by (select all that apply).

a. Earthquakes	d. Extreme heat
b. Flooding	e. Fire
c. Landslides	f. Drought

Inyo County – Hazards Survey

- g. Severe weather (winds, thunderstorms, hail etc.)
- h. Exposure to hazardous materials
- i. Severe winter weather

Please list any additional hazards that have previously impacted your neighborhood or home.

6. The following hazards are among those which could potentially impact Inyo County. Please mark the THREE (3) hazards that are of most concern to your neighborhood or home.
- a. Dam failure
 - b. Flooding
 - c. Severe weather (winds, thunderstorms, hail, etc.)
 - d. Earthquakes
 - e. Severe winter weather
 - f. Geologic threats (landslides, volcanoes, etc.)

Please list any additional hazards that present a threat to your neighborhood or home.

7. The planning team is using various data sources to identify hazards in your community; however, some of these data sources do not provide local data at a general County-wide level. Are there any small-scale issues, such as ponding at a certain intersection during rain, that you would like the planning team to consider?
- a. I am not aware of any local hazards
 - b. I am aware of local hazards

If you are aware of such hazards, please provide as much detail as possible, including location and type of hazard.

8. If you are a homeowner, do you have adequate homeowners insurance to cover the hazards that could impact your home?
- a. Yes, my insurance coverage should be adequate.
 - b. No, I don't believe my insurance coverage would be adequate for a major disaster.
 - c. Unsure.
 - d. I do not have an insurance policy.
 - e. Not applicable; I rent my current residence.
9. If you rent your residence, do you have renters insurance?
- a. Yes

Inyo County – Hazards Survey

- b. No
 - c. Not applicable; I own my residence.
10. Do you have flood insurance for your home?
- a. Yes, I own my home and have flood insurance.
 - b. Yes, I rent my home and have flood insurance.
 - c. No, but I am interested in reviewing flood insurance options (<http://www.floodsmart.gov/floodsmart/>).
11. Please note any additional insurance you have for your home or property.

12. Have you done anything to your home to make it less vulnerable to hazards such as earthquakes, floods, and fires? Do you plan to?
- a. Yes, I have taken action to make my home less vulnerable to hazards.
 - b. I have not taken action to make my home less vulnerable to hazards, but do plan to.
 - c. No, I have not and do not place to take action to make my home less vulnerable to hazards.
13. If a severe hazard event occurred today such that all services were cut off from your home (power, gas, water, sewer) and you were unable to leave or access a store for 72 hours, which of these items do you have readily available?
- | | |
|---|--|
| a. Potable water (3 gallons per person) | j. Important family photos / documentation in a water- and fireproof container |
| b. Cooking and eating utensils | k. Extra clothes and shoes |
| c. Can opener | l. Blanket(s) / sleeping bag(s) |
| d. Canned / nonperishable foods (ready to eat) | m. Cash |
| e. Gas grill / camping stove | n. Flashlight (with batteries) |
| f. Extra medications | o. Gasoline |
| g. First aid kit / supplies | p. Telephone (with batteries) |
| h. Portable AM/FM radio (solar powered, hand crank, or batteries) | q. Pet supplies |
| i. Handheld "walkie-talkie" radios (with batteries) | r. Secondary source of heat |

What else do you have in your emergency kit?

For more information on preparing an emergency kit, please visit: <http://m.fema.gov/build-a-kit>

Inyo County – Hazards Survey

- 14. Are you familiar with the special needs of your neighbors in the event of a disaster situation (special needs may include limited mobility, severe medical conditions, memory impairments)?
 - a. Yes
 - b. No
- 15. Are you a trained member of your Community Emergency Response Team (CERT)?
 - a. Yes
 - b. No, but I would like to learn more about CERT.
 - c. No, I am not interested in being a trained CERT member.

For more information about CERT, please visit: www.citizencorps.gov/cert.

Please share with us why you are a trained CERT member, or why you are not yet part of CERT if there is a specific reason.

- 16. How can Inyo County and the City of Bishop help you become more prepared for a disaster? (choose all that apply)
 - a. Provide effective emergency notifications and communication.
 - b. Provide training and education to residents and business owners on how to reduce future damage.
 - c. Provide community outreach regarding emergency preparedness.
 - d. Create awareness of special needs and vulnerable populations.
 - e. Other (please specify)

If you work outside of Inyo County or are not currently employed, please skip to question 20.

- 17. What is the ZIP code of your workplace?
- 18. Does your employer have a plan for disaster recovery in place?
 - a. Yes
 - b. No
 - c. I don't know
- 19. Does your employer have a workforce communications plan to implement following a disaster so they are able to contact you?
 - a. Yes
 - b. No

Inyo County – Hazards Survey

III. Recommendations and Future Participation

20. Please list any studies you are aware of conducted in Inyo County or the region regarding the risk of future hazard events (e.g., mining impact studies, dam inundation analyses).

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21. Would you like to review and comment on the draft of the 2016 Inyo County Multi-Jurisdictional Hazard Mitigation Plan?

- a. Yes; please notify me using my contact information in the next question.
- b. No

22. If you would like to be notified of future opportunities to participate in hazard mitigation and resiliency planning, please provide your name and e-mail address. If you do not have an e-mail address, please provide your mailing address.

Full Name:	
E-Mail Address:	
Street Address:	
City, State, Zip:	

23. Please provide us with any additional comments/suggestions/questions that you have regarding your risk of future hazard events.

--

Thank you for taking the time to complete this survey. If you have any questions, or if you know of other people/organizations that should be involved, please contact Aaron Pfannenstiel at apfannenstiel@mbakerintl.com.

Name1	Name2	Title1	Title2	Address1	Address2	City	St	Zip	Organization	Email
Ingrid	Braun	Sheriff-Coroner	Director of Emergency Services	P.O. Box		Bridgeport	CA	93517	Mono County	ibraun@monosheriff.org
Seth	Clark	OES Coordinator		P.O. Box 616		Bridgeport	CA	93517	Mono County	oes@monosheriff.org
Rob	DeForrest	EMS Manager	Mono County Paramedic Program	437 Old Mammoth Rd		Mammoth	CA	93546	Mono County	rdeforrest@mono.ca.gov
Debbie	Diaz	Emergency Prep	Mono County Health Dept.	P.O. Box 3329		Mammoth	CA	93546	Mono County	ddiaz@mono.ca.gov
Frank	Frievault	Fire Chief		P.O. Box 5		Mammoth	CA	93546	Mammoth Lal	frank@mlfd.ca.gov
Al	Davis	Chief of Police		P.O. Box 2799		Mammoth	CA	93546	Mammoth Lal	adavis@townofmammothlakes.ca.gov
Srgt. Marc	Moscowitz	CERT Manager		P.O. Box 27568 Old Mi		Mammoth	CA	93546	Mammoth Mt	mmoscowitz@mammothlakes.ca.gov
Clifford	Mann	Director Mountain Operations		P.O. Box 24		Mammoth	CA	93546	Mammoth Mt	cmann@mammoth-mtn.com
Bill	Erb	Manager Health & Safety		P.O. Box 24		Mammoth	CA	93546	Mammoth Mt	berb@mammoth-mtn.com
Eric	Johnson	Construction/Ma Power		370 W. South Street		Bishop	CA	93514	LADWP	eric.johnson@ladwp.com
James	Yannotta	Manager of Aquaduct		300 Mandich Street		Bishop	CA	93514	LADWP	james.yannotta@ladwp.com
Steve	Butler	Construction/Ma Water		300 Mandich Street		Bishop	CA	93514	LADWP	steven.butler@water.ladwp.com
Robert	Turner	Construction/Ma Water		240 W. South Street		Bishop	CA	93514	LADWP	robert.turner@water.ladwp.com
Steve	Nelson	Area Manager		351 Pacu Lane, Ste 10C		Bishop	CA	93514	BLM	snelson@blm.gov
Debra	Hein	Interagency Dispatch Center Manager		351 Pacu Lane, Ste 10C		Bishop	CA	93514	BLM	dnein@blm.gov
Lt. Michael	O'Sullivan	Bridgeport Area Commander		P.O. Box 158		Bridgeport	CA	93517	CHP	mosullivan@chp.ca.gov
Capt. Tim	Noyes	Calif. Hwy. Patrol		469 S. Main St.		Bishop	CA	93514	CHP	tnoyes@chp.ca.gov
Karla	Benedicto	Emergency Servii South Region		4671 Liberty Ave.		Los Alamit	CA	90702-500	CAL EMA	karla.benedicto@calema.ca.gov
Yolande	Loves	Emergency Servii South Region		4671 Liberty Ave.		Los Alamit	CA	90702-500	CAL EMA	yolande.loves@calema.ca.gov
Joanne	Phillips	CAL EMA - South Region		4671 Liberty Ave.		Los Alamit	CA	90702-500	CAL EMA	joanne.phillips@caleman.ca.gov
John	Hudson III	Asst. Chief	Technology Operations Division	4050 Taylo Mail Stop 2		San Diego	CA	92110	CAL EMA	john.hudson@calema.ca.gov
Art	Torres	Asst. Chief Fire & Rescue		2524 Mulberry Street		Riverside	CA	92501	CAL EMA	art.torres@calema.ca.gov
Jim	Acosta	Emergency Servii South Region		4671 Liberty Ave.		Los Alamit	CA	90702-500	CAL EMA	jim.acosta@calema.ca.gov
Dennis	Beene	Deputy Chief, La Region VI Coordinator		655 East 3rd Street		San Bernar	CA	92415	CAL EMA	dennis.beene@calema.ca.gov
Margaret	Mangan	Scientist in Charg	Long Valley Observatory	345 Middlefield Road		Menlo Park	CA	94025	USGS	mmangan@usgs.gov
Paul	Melendrez	Battalion Chief	Cal-Fire	2781 So. Round Valley		Bishop	CA	93514	Cal-FIRE	
Rich	Watt		Inyo National Forest	798 N. Main Street		Bishop	CA	93514	USFS	rwatt@fs.fed.us
Doug	Toskin	Antiterrorism Officer/Emergency Mngr		HC 83 Box 1		Bridgeport	CA	93517	US Marine Co	dougals.toskin@usmc.mil
Lori	Baitx	Emergency Dept. Manager		P.O. Box 660		Mammoth	CA	93546	Mammoth Ho	baitx@mammothhospital.com
Lori	Ciccarelli	Community Relations Director/P.I.O		P.O. Box 660		Mammoth	CA	93546	Mammoth Ho	lori.ciccarelli@mammothhospital.com
Benjamin	Romo	Ward Clerk/Disaster Committe		P.O. Box 660		Mammoth	CA	93546	Mammoth Ho	benjamin.romo@mammothhospital.com
Gary	Myers	Administrator/CEO		P.O. Box 660		Mammoth	CA	93546	Mammoth Ho	gary.myers@mammothhospital.com
Scott	Underwood	Region Director-	Red Cross of Greater Los Angeles	11355 Ohic Ave		Los Angele:	CA	90025	Red Cross	scott.underwood@redcross.org
Jon	Brown	Disaster Program Manager,	Territory 1							jon.brown2@redcross.org
Brandy	Welch	Disaster Partnership Manager								brandy.welch@redcross.org
Cathie	McCulley	Inyo/Mono - Cor	Senior Pastor	P.O. Box 11621 W. Lin		Bishop	CA	93515	Salvation Arm	cathie.mcculley@usw.salvationarmy.org
		Mono County Scl	Mammoth Lakes Office	P.O. Box 130		Mammoth	CA	93546	Mono Co. Schools	
Deanna	Campbell	Director - Eastern Sierra College Center		4090 W. Line Street		Bishop	CA	93514	Cerro Coso Cc	dcampbel@cerrocoso.edu
Daniel	Brady	Regional Manage	So. Calif. Edison	P.O. Box 7329		Mammoth	CA	93546	SCE	daniel.brady@sce.com
Jeff	Pahlow	District Manager	Amerigas	1230 N. Main Street		Bishop	CA	93514	Amerigas	pahlowj@amerigas.com
		Suddenlink		201 E. Line Street		Bishop	CA	93514	Suddenlink	
		Schatnet		174 N. Main Street		Bishop	CA	93514	Schat Net	support@schat.net
John	Helm	Executive Direct	Eastern Sierra Transit Authority	P.O. Box 13703 Airpor		Bishop	CA	93515	ESTA	jhelm@estransit.com
Jill	Batchelder	Eastern Sierra Transit Authority		P.O. Box 13703 Airpor		Bishop	CA	93515	ESTA	jbatchelder@estransit.com
Andy	Richard	Hazmat Superint	CAL TRANS	500 S. Main Street		Bishop	CA	93514	CalTrans	andy.richard@dot.ca.gov
Greg	Miller	Regional Manager		500 S. Main Street		Bishop	CA	93514	CalTrans	greg.miller@dot.ca.gov
Chris	Carter	Police Chief		201 W. Line Street		Bishop	CA	93514	Bishop	ccarter@bishoppd.org
Ray	Seguine	Fire Chief		P.O. Box 12209 W. Lin		Bishop	CA	93515	Bishop	seguine@ca-bishop.us
		Big Pine Cemetery Dist.		P.O. Box 294		Big Pine	CA	93513	BPCD	bigpinecemetery@gmail.com
		Big Pine Comm. Service Dist.		P.O. Box 639		Big Pine	CA	93513	BPCSD	bigpinescd@schat.com
Damon	Carrington	Fire Chief	Big Pine Fire Dept.	P.O. Box 382		Big Pine	CA	93513	BPF	bpfire301@suddenlink.net
Jim	Tatum	City Administrator		P.O. Box 1236		Bishop	CA	93515	Bishop	Tatum@ca.bishop.us
		Darwin Comm. Service Dist.		P.O. Box 5		Darwin	CA	93522	Darwin CSD	dcsd@hughes.net
Dave	Wagner	Eastern Independence Sanitary Dist		P.O. Box 453		Independ	CA	93526		dave.wagner@suddenlink.net
		Eastern Sierra Comm. Service Dist.		301 W. Line Street, Ste		Bishop	CA	93514		escsd@usamedia.tc
Terry	Tye	Indian Creek-Westridge Comm Service Dist.		P.O. Box 95747 Rome		Bishop	CA	93515		tyet47@hotmail.com
Chuck	Broyles	Independence Cemetery Dist.		P.O. Box 21402 So. Cla		Independ	CA	93526	Indy CD	independencecemetery@suddenlink.com
Joe	Capello	Fire Chief	Independence Fire Dept.	P.O. Drawer B		Independ	CA	93526	Indy FD	

Rob	Yribarren	Inyo/Mono Resource Conservation Dist.	270 See Vee Lane	Bishop	CA	93514	
Karen	Riggs	Keeler Comm. Services Dist.	P.O. Box 107	Keeler	CA	93530	keelerwater@schat.net
Vic	Jackson	Lone Pine Comm. Services Dist.	P.O. Box 36 601 E. Locu	Lone Pine	CA	93545	
LeRoy	Kritz	Fire Chief Lone Pine Fire Dept.	P.O. Box 1C 130 N. Jack	Lone Pine	CA	93545	lchief2401@yahoo.com
		Mesa Comm. Services Dist.	P.O. Box 221	Bishop	CA	93515	
Linda	Haun	Mt. Whitney Cemetery Dist.	P.O. Box 12 120 So. Ma	Lone Pine	CA	93545	
Andrew	Stevens	Director of Emergency Services	150 Pioneer Ln.	Bishop	CA	93514	andrew.stevens.nih.org
Steven	Davis	Olancha Comm. Service Dist.	P.O. Box 64 689 Shop S	Olancha	CA	93549	sdavis@olanchafd.org
Terri	Dean	Pioneer Cemetery Dist.	P.O. Box 13 2000 Polet	Bishop	CA	93515	pioneer cemetery@gmail.com
Fred	Finkbeiner	Sierra Highlands Comm. Services Dist.	P.O. Box 78 2709 Unde	Bishop	CA	93515	sierrafred@aol.com
Ken	Wilder	Sierra North Comm. Services Dist.	185 N. Main	Bishop	CA	93514	sierranorthcsd.yahoo.com
Larry	Levy	Fire Chief So. Inyo Fire Dept.	P.O. Box 51 410 Tecopi	Tecopa	CA	92389	SIFPD@yahoo.com
		Southern Inyo Health Care Dist.	P.O. Box 1C 501 E. Locu	Lone Pine	CA	93545	
		Starlite Comm. Service Dist	P.O. Box 1434	Bishop	CA	93515	SIHCD
Karen	Lutz	Tecopa Cemetery Dist.	P.O. Box 295	Tecopa	CA	92389	
Ken	Kuencer	Aspendell MWC	140 Iris Dr.	Bishop	CA	93514	MWC
Janet	Domaille	Brookside Estates MWC	P.O. Box 2727	Mammoth	CA	93547	MWC
Aarne	Coats	Cartago MWC	P.O. Box 209	Olancha	CA	93549	MWC
		North Lone Pine MWC	P.O. Box 692	Lone Pine	CA	93545	MWC
Ken	Wilder	Park West MWC	186 Sierra Grande	Bishop	CA	93514	MWC
Dave	Patterson	Ranch Road Estates MWC	3575 Luring Lane	Bishop	CA	93514	MWC
Janet	Phalow	Rawson Creek MWC	P.O. Box 416	Bishop	CA	93514	MWC
Jamie	Heatherly	Rocking K Ranch Estates MWC	147 Running Iron Rd.	Bishop	CA	93514	MWC
Greg	Richards	Sierra Grande Estates MWC	P.O. Box 1313	Bishop	CA	93515	MWC
Sereyna	Cagle	Valley Vista MWC	P.O. Box 148	Bishop	CA	93515	MWC
Steve	Ball	Wilson Circle MWC	P.O. Box 1005	Bishop	CA	93515	MWC
Shannon	Remero	Big Pine Paiute Tribe of the Owens Valley, Chairper	P.O. Box 700	Big Pine	CA	93513	Tribal
Gerald	Howard	Bishop Paiute Tribe, Chairperson	50 Tu Su Lane	Bishop	CA	93514	Tribal
Norman	Wilder	Fort Independen Chairman	P.O. Box 67	Independe	CA	93526	Tribal
Mary	Wuester	Lone Pine Paiute Shoshone Reservation, Chairwom	P.O. Box 747	Lone Pine	CA	93545	Tribal
George	Gholoson	Timbisha Shoshone Tribe, Chairperson	121 W. Line St.	Bishop	CA	93514	Tribal
Mike	Reynolds	Death Valley Nat Park Superintendent	P.O. Box 579	Death Valle	CA	92328-057	National Park
Bernadette Lovato		Manzanar State Historic Site	P.O. Box 42 5001 Hwy	: Independe	CA	93526	

Project Meeting 2: March 17, 2016

Included Materials:

Sign-in sheet

Meeting presentation

MJHMP Meeting #2 Attendee Sign-In Sheet (March 17, 2016)

Name	Department/Company	Telephone	Email
Karla Benedick	Cal DES	[REDACTED]	Karla.Benedick@caldes.ca.gov
JOE FESI	STARR	[REDACTED]	JOE@STLFEsi.com
Stuart Wilkison	USGS	[REDACTED]	swilk@usgs.gov
Andy Richard	CAHFS	[REDACTED]	andy.richard@dot.ca.gov
Levi Ray	US Forest Service	[REDACTED]	pray@fs.fed.us
Greg Milliel	CALTRANS	[REDACTED]	greg.milliel@dot.ca.gov
TRM NOLES	CHP	[REDACTED]	TRM@CHP.CA.GOV
Raj Desai	Rechnop f--	[REDACTED]	
Melissa Bestbaker	Inyo HHS	[REDACTED]	mbestbaker@inyocounty.us
Keller Williams	Inyo CAO	[REDACTED]	kwilliams@inyocounty.us

Inyo County and City of Bishop: Multi-Jurisdictional Hazard Mitigation Plan

Name	Department/Company	Telephone	Email
PAUL WHEELER	CERRO COSO COMM. COLLEGE	[REDACTED]	paul.wheeler@cerrococo.edu
Nick Vaughn	Inyo Co. Sheriff	[REDACTED]	Nvaughn@inyocounty.us
Jill Batchelder	ESTA	[REDACTED]	jbatchelder@estara.com



Inyo County Hazard Mitigation Plan Meeting #2

Meeting Objectives

- Confirm hazard prioritization
- Present draft hazard profiles
- Confirm additional data needs



Hazard Prioritization

FEMA-Suggested Hazards

Avalanche	Flood	Seismic hazards
Climate change	Geological hazards	Severe winter storm
Coastal erosion	Hailstorm	Tornado
Coastal storm	Hazardous materials	Tsunami
Dam failure	Human-caused hazards	Volcano
Disease/pest management	Hurricane	Wildfire
Drought	Land subsidence	Wind
Earthquake fault rupture	Landslide and mudflow	Windstorm
Expansive soils	Liquefaction	
Extreme heat	Sea level rise	

MJHMP Hazards

- **Avalanche**
- **Dam Failure**
- **Disease/Pest Management**
- **Drought**
- **Flood**
- **Geologic Hazards**
- **Hazardous Materials**
- **Seismic Hazards**
- **Severe weather**
- **Wildfire**

Hazard Prioritization

Hazard Type	Probability	Location	Impact		Total Score	Priority
			Primary Impact	Secondary Impact		
Avalanche	2.64	1.21	1.47	1.17	13.64	Medium
Dam Failure	1.27	3.69	1.88	3.82	15.65	Medium
Disease/Pest Management	2.40	2.43	1.88	2.06	20.59	Medium
Drought	4.00	4.00	4.00	4.00	64.00	High
Flood	4.00	4.00	4.00	4.00	64.00	High
Geological Hazards	2.47	2.76	2.24	2.00	23.60	Medium
Hazardous Materials	3.00	3.47	2.82	2.25	35.27	Medium
Seismic Hazards	4.00	4.00	4.00	4.00	64.00	High
Severe Weather	3.65	4.00	2.71	2.71	47.03	High
Wildfire	4.00	4.00	4.00	4.00	64.00	High

Plan Development Process

**Hazard
profiles**



Hazard Profile Components

- Hazard identification
- Hazard profile
 - Location
 - Extent
- Past occurrences
- Probability of Future Occurrences
- Climate Change Considerations
- Vulnerability/Risk Assessment



Avalanche

Inyo County

- Risk mostly in federal lands along western mountains.
- Past events, frequency unknown.
- Risk expected to continue.
- Climate change may increase risk, but with uncertainty.

City of Bishop

- No risk of avalanches.
- Avalanche risk not expected to exist in the future.

Dam Failure

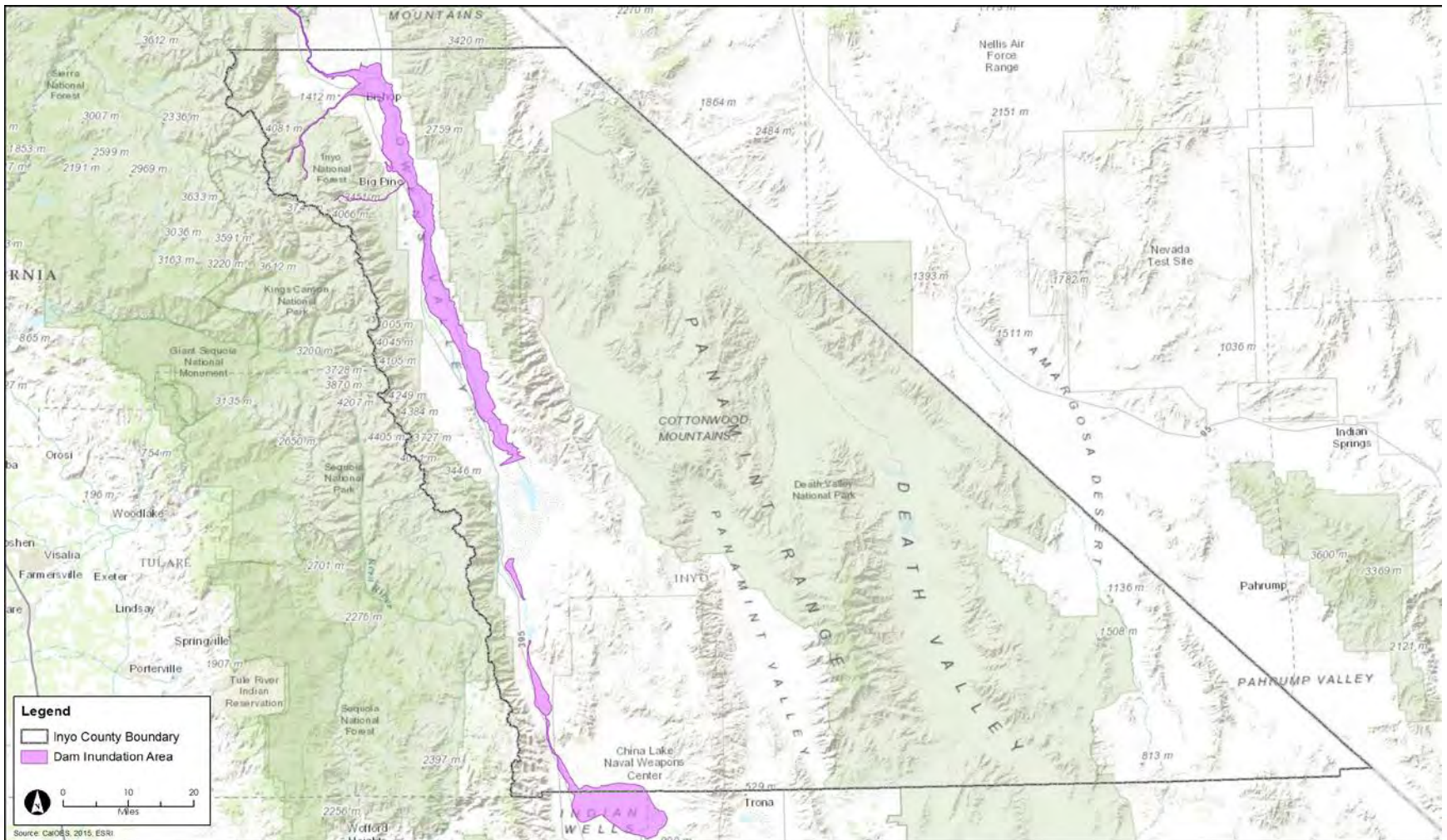
Inyo County

- Eight recognized dams.
- Risk of dam failure along Owens River and creek beds.
- No past events, future risks low but present.
- Climate change may increase flooding intensity adding stress to the system.

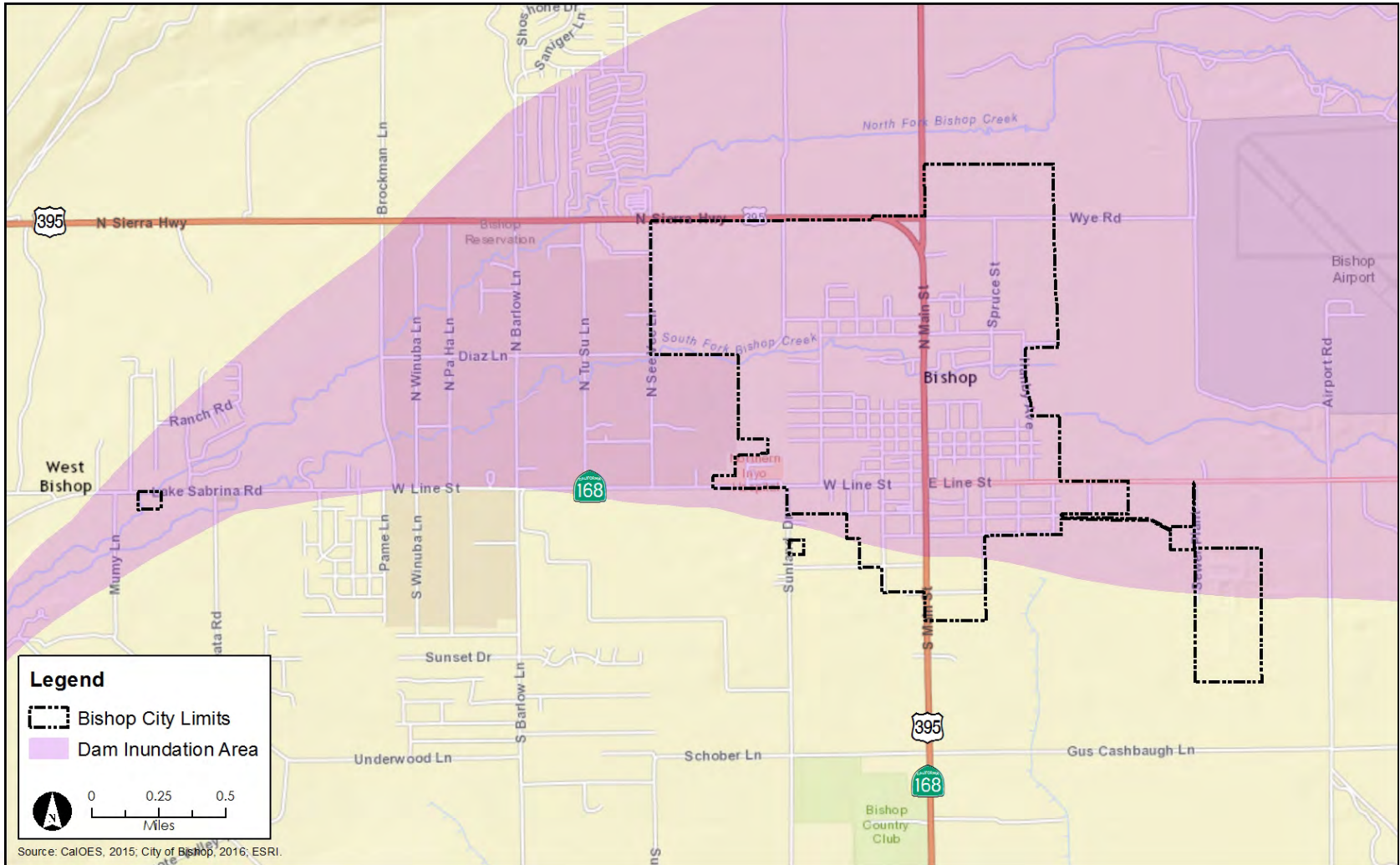
City of Bishop

- No dams in Bishop, but most of the community in the risk area
- No past events, potential increased risk from climate change.

Dam Inundation (County)



Dam Inundation (Bishop)



Disease/Pest Management

Inyo County

- Mosquitos a risk in Owens Valley.
- Forested areas at risk of tree pests (pine beetles, boxelder bugs).
- Climate change may increase mosquito and tree pest activities and risks.

City of Bishop

- Risk of mosquitos, even with abatement activities.
- Tree pests may indirectly affect Bishop by reducing tourism activities.
- Potential increase in pest activities from climate change.

Drought

Inyo County

- Multiple past drought events.
- All of County currently in drought conditions, most severe in western forests.
- Expected increase in future drought frequency and intensity from climate change.

City of Bishop

- Bishop currently in “Exceptional Drought” conditions, the most severe.
- Reliance on locally sourced water makes city more vulnerable to local drought conditions.

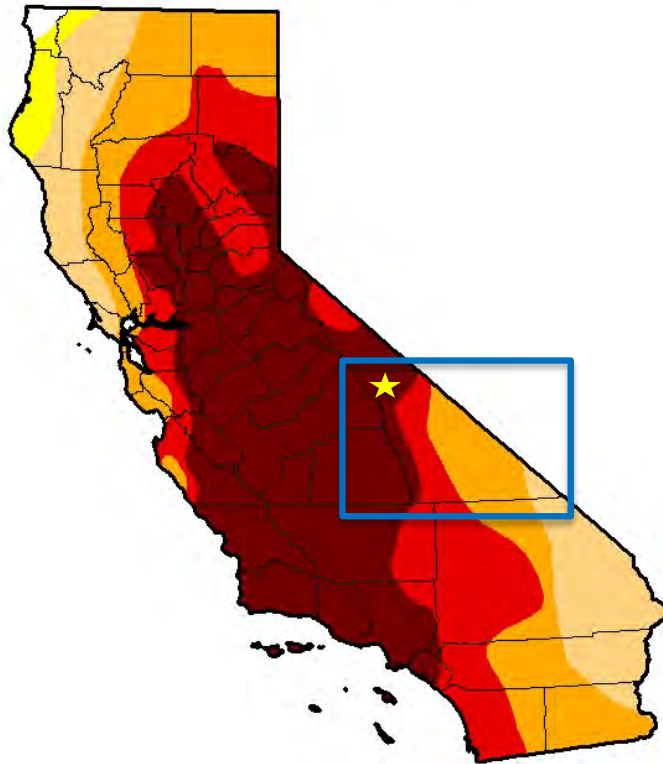
Drought

U.S. Drought Monitor California

March 8, 2016

(Released Thursday, Mar. 10, 2016)

Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.43	99.57	97.49	83.16	60.86	38.48
Last Week <i>3/1/2016</i>	0.43	99.57	95.13	82.66	60.86	38.48
3 Months Ago <i>12/8/2015</i>	0.14	99.86	97.33	92.26	69.09	44.84
Start of Calendar Year <i>12/29/2015</i>	0.00	100.00	97.33	87.55	69.07	44.84
Start of Water Year <i>9/29/2015</i>	0.14	99.86	97.33	92.36	71.08	46.00
One Year Ago <i>3/10/2015</i>	0.16	99.84	98.11	93.44	67.46	39.92

Intensity:

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

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

Author:

David Miskus
NOAA/NWS/NCEP/CPC



<http://droughtmonitor.unl.edu/>

Flood

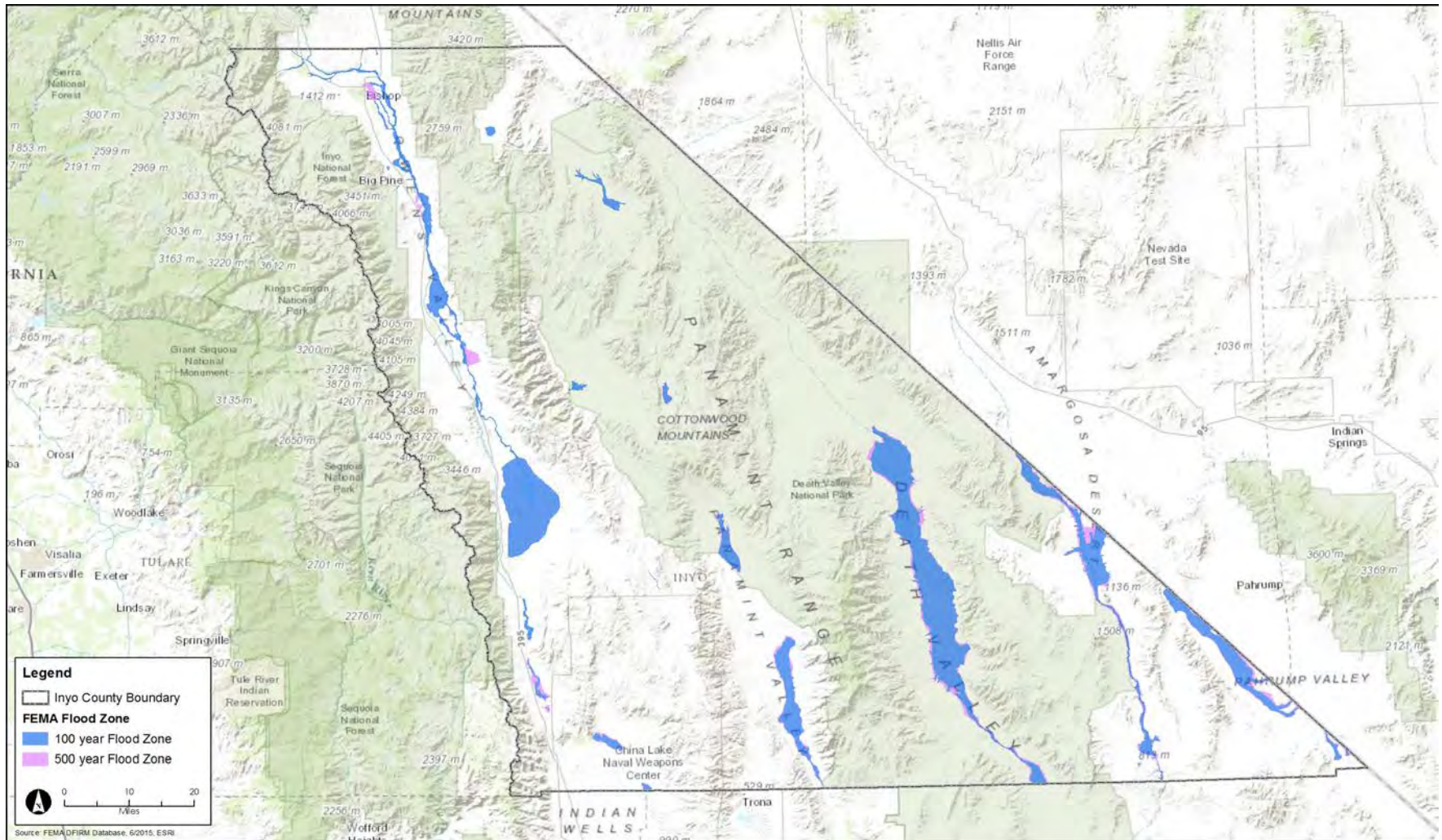
Inyo County

- Several past flood events, including five state and two federal disasters since 2003.
- Flood-prone areas concentrated in the valleys.
- Greatest risk late spring/early summer and late summer/early fall.
- Risk may increase with climate change.

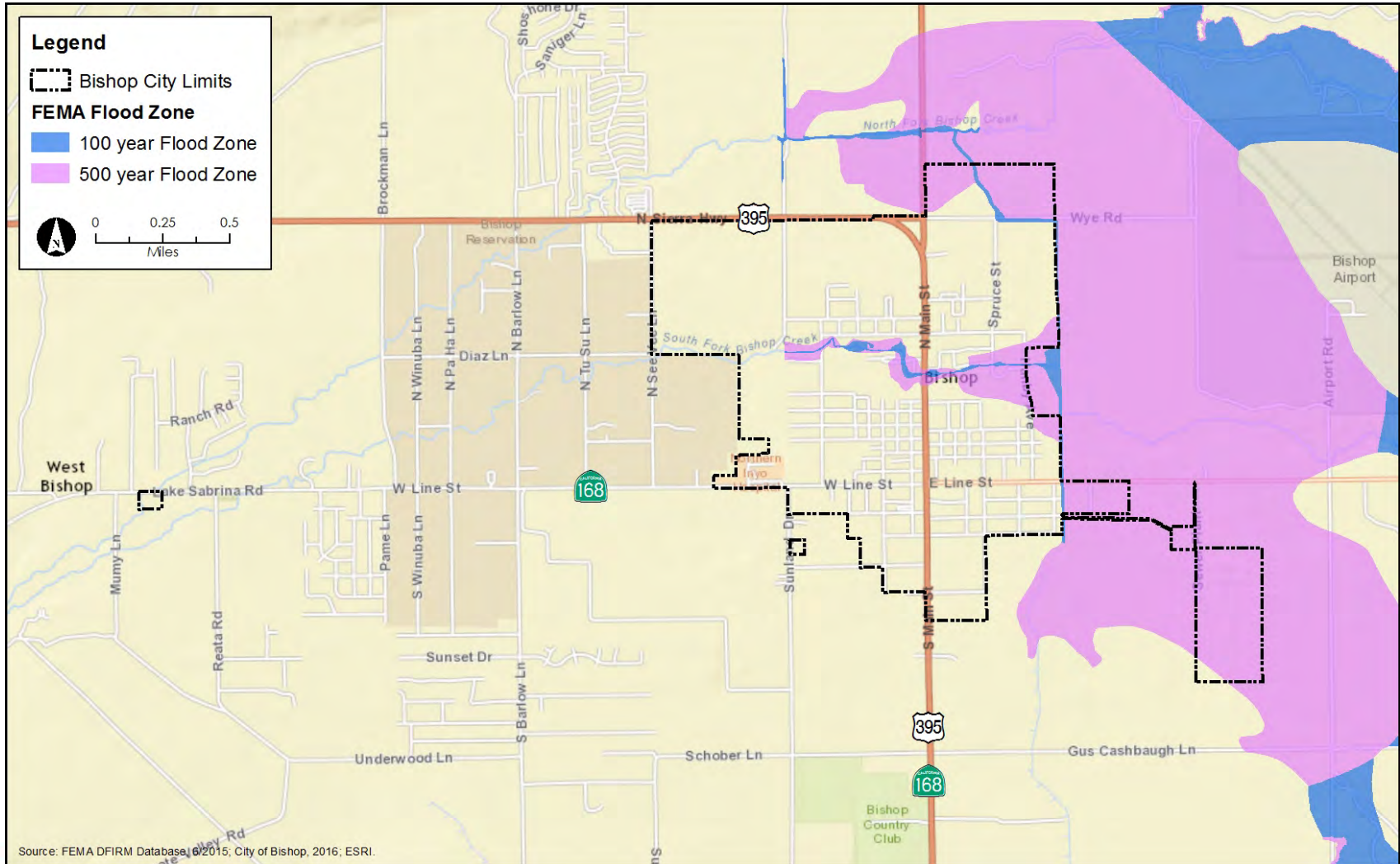
City of Bishop

- Flood-prone areas near Bishop Creek and in southeastern Bishop.
- Three major events since 2003.
- Greatest risk in summer and early fall.
- Climate change expected to increase flood risk statewide, but impacts on Eastern Sierra not yet known.

Flood (County)



Flood (Bishop)



Geologic Hazards (Landslide/Volcanoes)

Inyo County

- Landslide risk along mountain sides.
- Volcanoes in Naval Air Weapons Station and Death Valley.
- Potential for continued landslide events.
- Volcanoes in county deemed Moderate Threat, greater risk from Mono County volcanoes.

City of Bishop

- No landslide risk, but within ash fall zone for Mono County volcanoes.
- Mono County volcanoes are High or Very High Threat, but risk is less than 1% per year.

Volcanoes

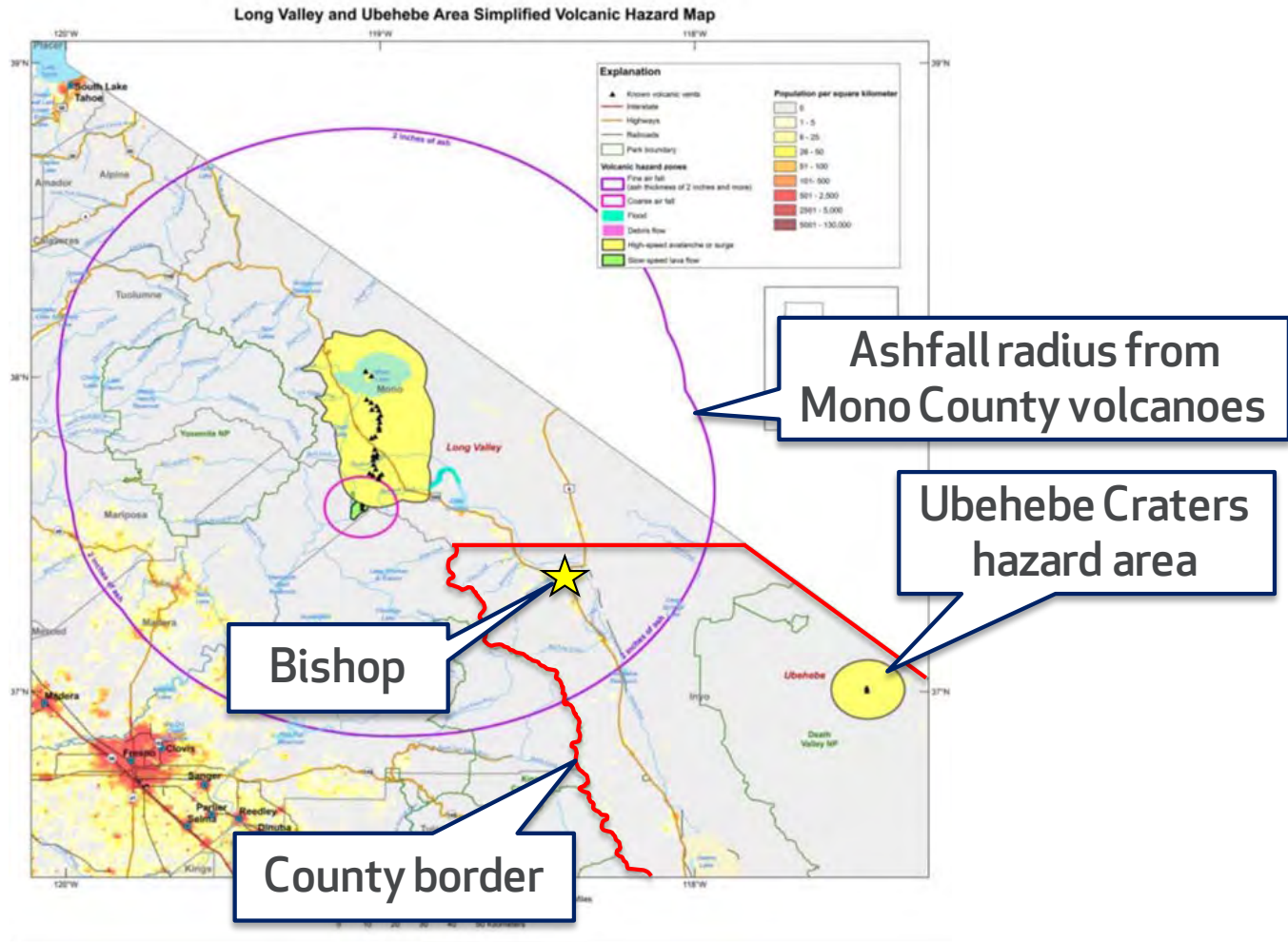


Image: California Multi-Hazard Mitigation Plan

Hazardous Materials

Inyo County

- Saline Valley gunnery range is a source of hazardous materials, along with numerous small sites.
- Natural asbestos is present in some locations.
- Future risk is unknown.
- Climate change may indirectly affect risk of materials release.

City of Bishop

- 102 small hazardous material sites, although most have been cleaned up.
- Hazardous material releases more risky in Bishop than in unincorporated county due to higher population density.

Seismic Hazards

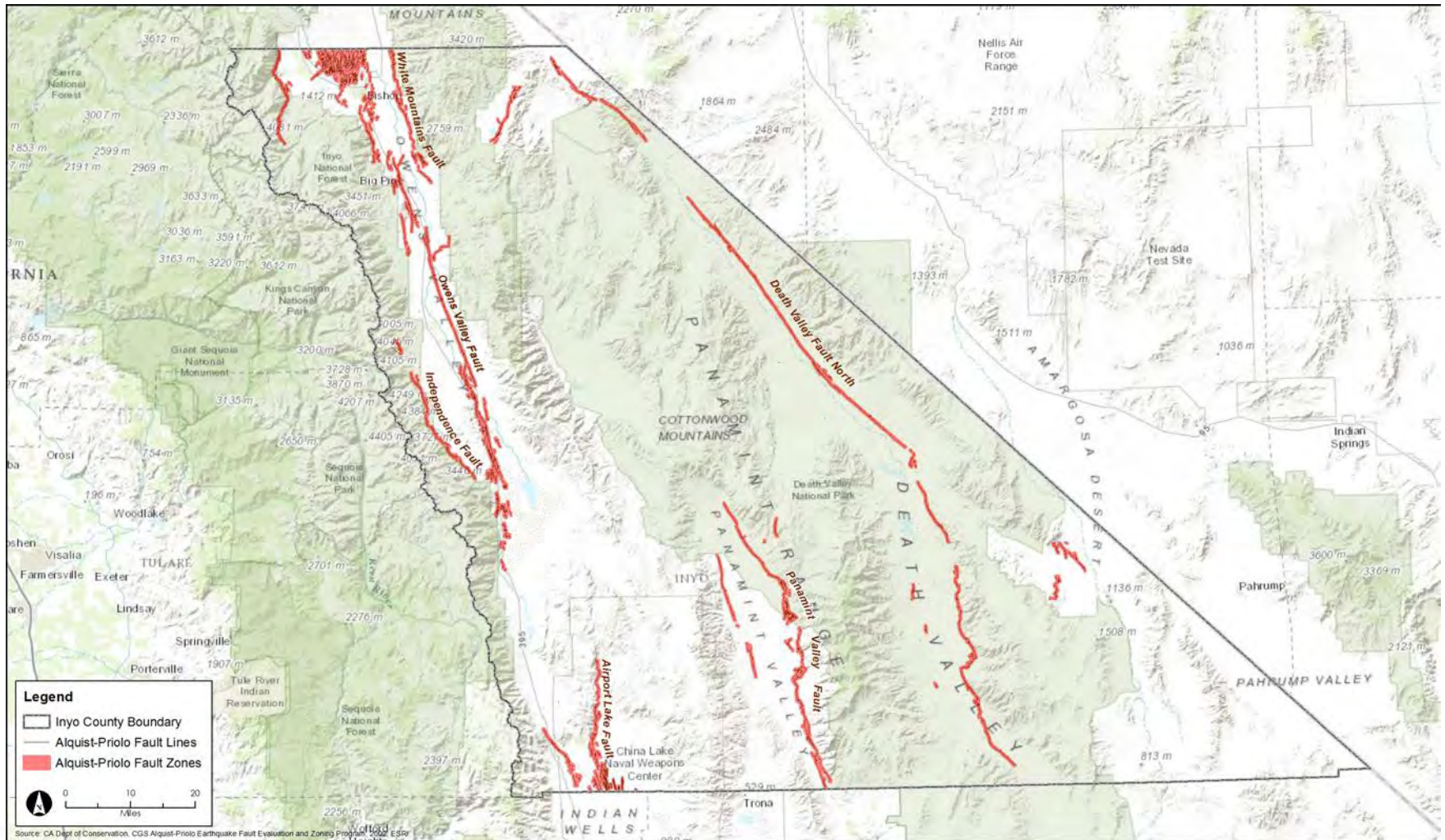
Inyo County

- Six key faults in the County, mostly in Owens Valley.
- Multiple past earthquakes, including 1857 Lone Pine earthquake.
- Some faults have up to a 3% chance of a major earthquake in the next 30 years.

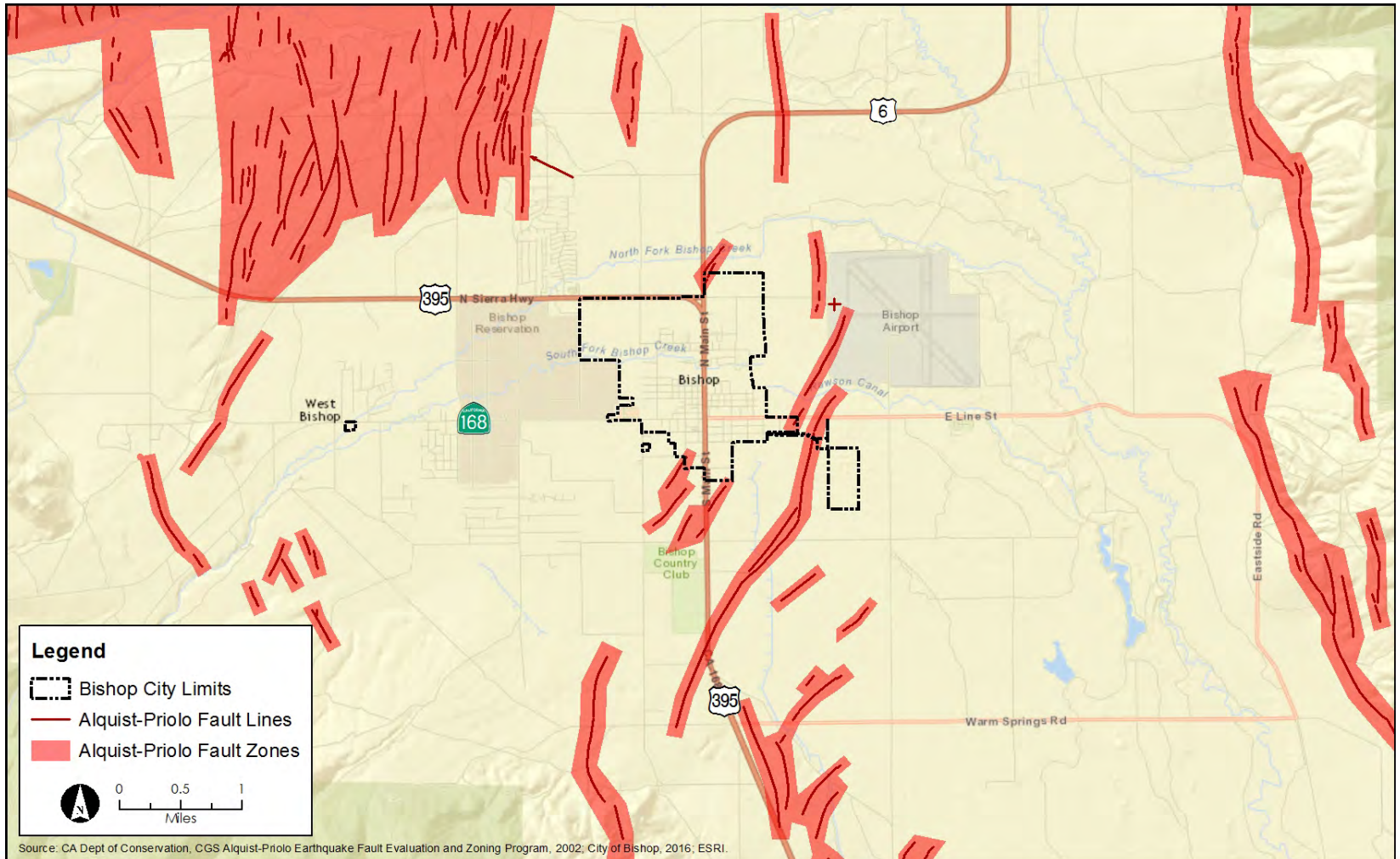
City of Bishop

- City faces greatest risk from Owens Valley and White Mountains fault, and Volcanic Tablelands faults.
- These faults have up to a 0.83% chance of a major earthquake in 30 years.
- City also faces risk from regional seismic events.

Faults (County)



Faults (Bishop)



Severe Weather

Inyo County

- Risk from extreme heat and cold, tornadoes, and severe winds.
- Winds can cause dust problems from Owens Lake bed.
- Threat to health, safety, and property.
- Various effects of climate change.

City of Bishop

- Greatest risk from extreme heat and cold, but other severe weather possible.
- Climate change likely to increase risk of extreme heat, decreased risk of extreme cold, impacts to tornadoes and severe winds unknown.

Wildfires

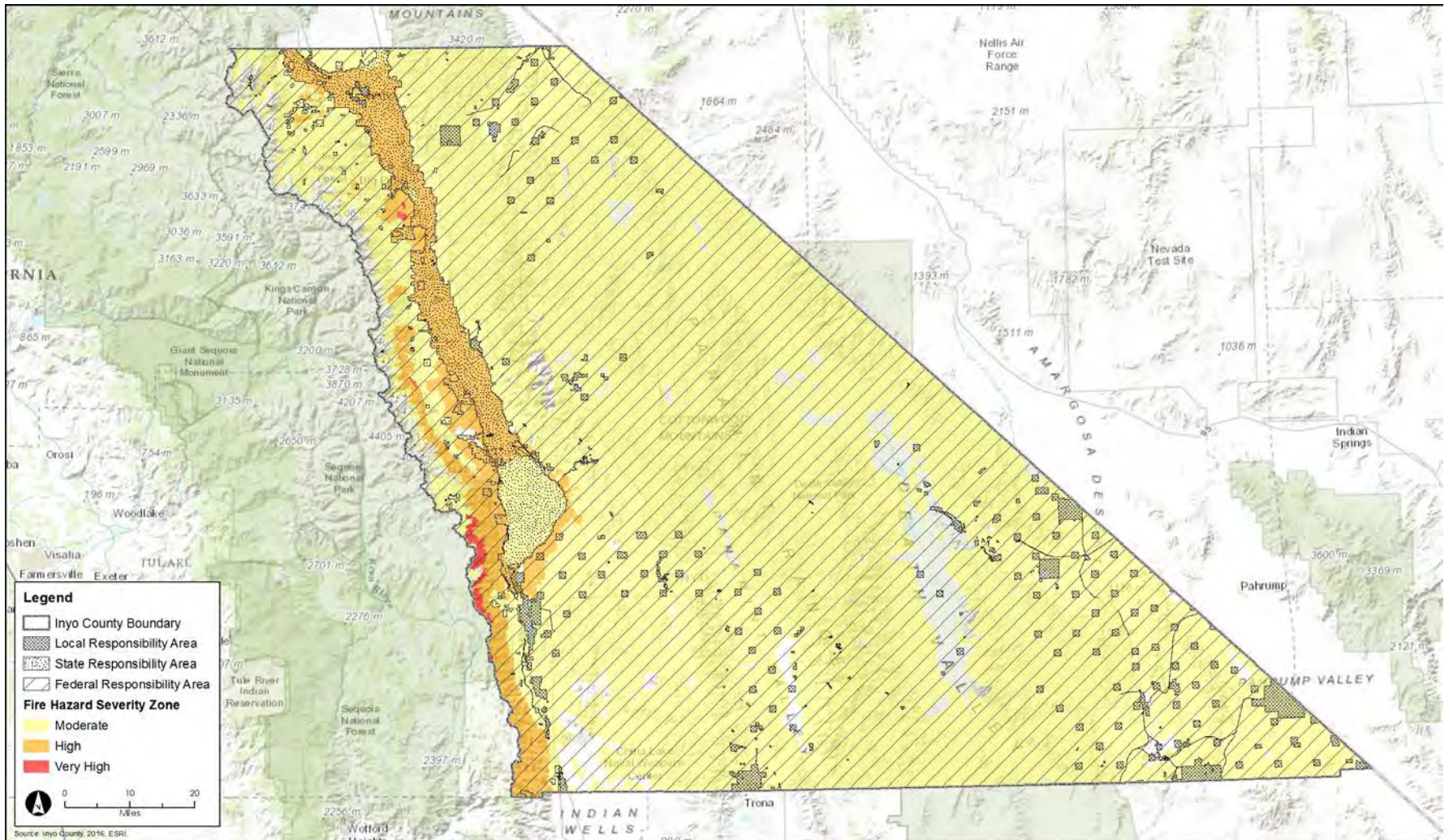
Inyo County

- Very High fire risk along eastern Sierra Nevada slopes.
- Major fires include 2007 Inyo Complex fire, which burned over 35,000 acres.
- Significant increase in wildfire risk from climate change along Sierra Nevada slopes, smaller increases elsewhere.

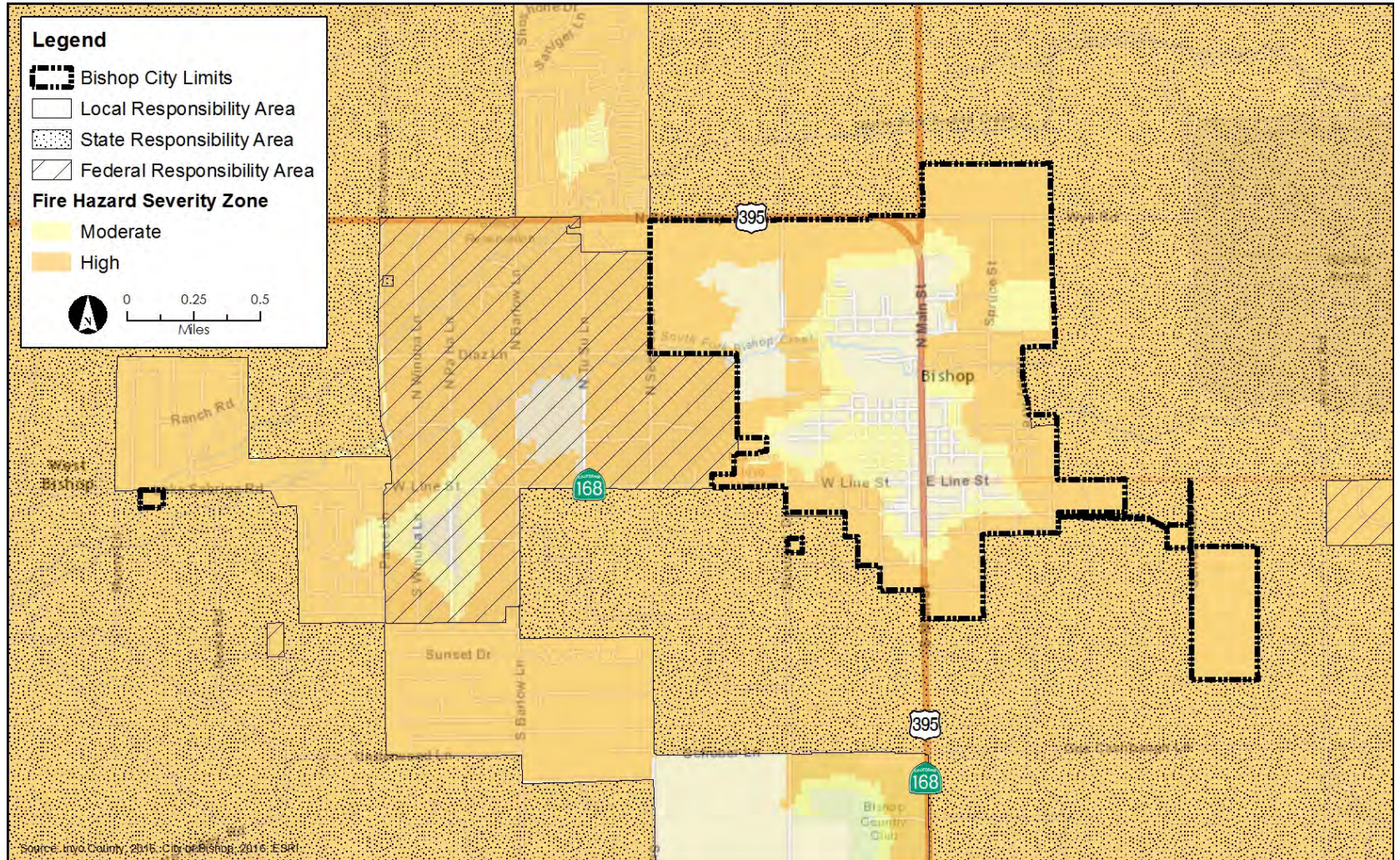
City of Bishop

- Most of Bishop in High fire risk zone.
- No past fires in city limits, but some nearby.
- Expected 10 to 15% increase in fire risk near Bishop from climate change.

Wildfire (County)



Wildfire (Bishop)



Hazard Prioritization (Final Confirmation)

Hazard Type	Probability	Location	Impact		Total Score	Priority
			Primary Impact	Secondary Impact		
Avalanche	2.64	1.21	1.47	1.17	13.64	Medium
Dam Failure	1.27	3.69	1.88	3.82	15.65	Medium
Disease/Pest Management	2.40	2.43	1.88	2.06	20.59	Medium
Drought	4.00	4.00	4.00	4.00	64.00	High
Flood	4.00	4.00	4.00	4.00	64.00	High
Geological Hazards	2.47	2.76	2.24	2.00	23.60	Medium
Hazardous Materials	3.00	3.47	2.82	2.25	35.27	Medium
Seismic Hazards	4.00	4.00	4.00	4.00	64.00	High
Severe Weather	3.65	4.00	2.71	2.71	47.03	High
Wildfire	4.00	4.00	4.00	4.00	64.00	High

Timeline/Next Steps

- Finalize Data Collection (particularly Critical Facilities) [NOW]
- Outreach/Engagement (Online Survey) [NOW]
- Perform Risk Assessment [March/April]
- Conduct LHMP Team Meeting # 3 [April]
- Prepare Draft Mitigation Actions for Review [April/May]
- Conduct LHMP Team Meeting # 4 [May]

Timeline/Next Steps

- Finalize Data Collection (particularly Critical Facilities)
- Perform Risk Assessment
- Conduct LHMP Team Meeting # 3
- Prepare Draft Mitigation Actions for Review
- Conduct LHMP Team Meeting # 4
- Compile Administrative Draft LHMP Document
- Conduct LHMP Team Meeting # 5
- Public Review Draft LHMP Document Distribution

Questions/Comments?

Diane Fortney
dfortney@inyocounty.us
760-878-0263

Project Meeting 3: April 28, 2016

Included Materials:

Sign-in sheet

Meeting presentation

MJHMP Meeting #3 Attendee Sign-In Sheet (April 28, 2016)

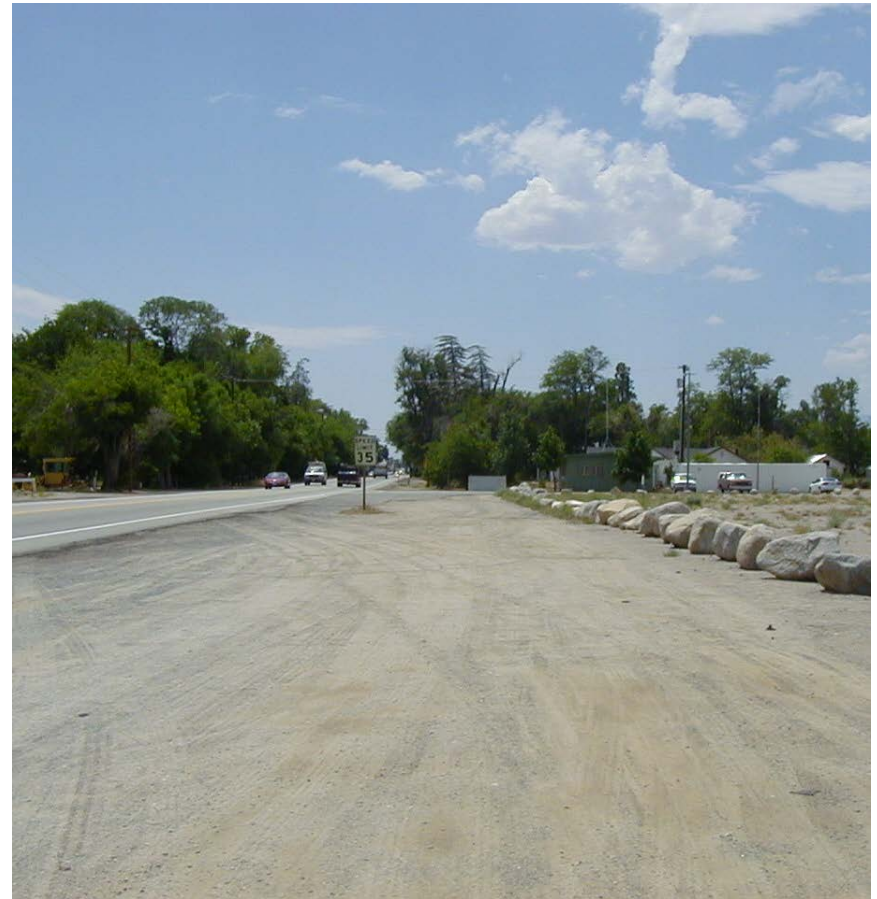
Name	Department	Telephone	Email
Karla Benedicto	Cal OES	[REDACTED]	Karla.Benedicto@caloes.ca.gov ✓
Jeremy Mitchell	CAL FIRE	[REDACTED]	Jeremy.Mitchell@fire.ca.gov
John N. Hudson III	Cal OES, TCOM	[REDACTED]	John.hudson@caloes.ca.gov
Bill Lutze	S.O.	[REDACTED]	
Melissa BBar	HHS	[REDACTED]	
Stuart Wilkinan	USGS	[REDACTED]	swilk@usgs.gov



Inyo County Hazard Mitigation Plan Meeting #3

Meeting Objectives

- Present risk assessment
- Confirm vulnerabilities for mitigation measures



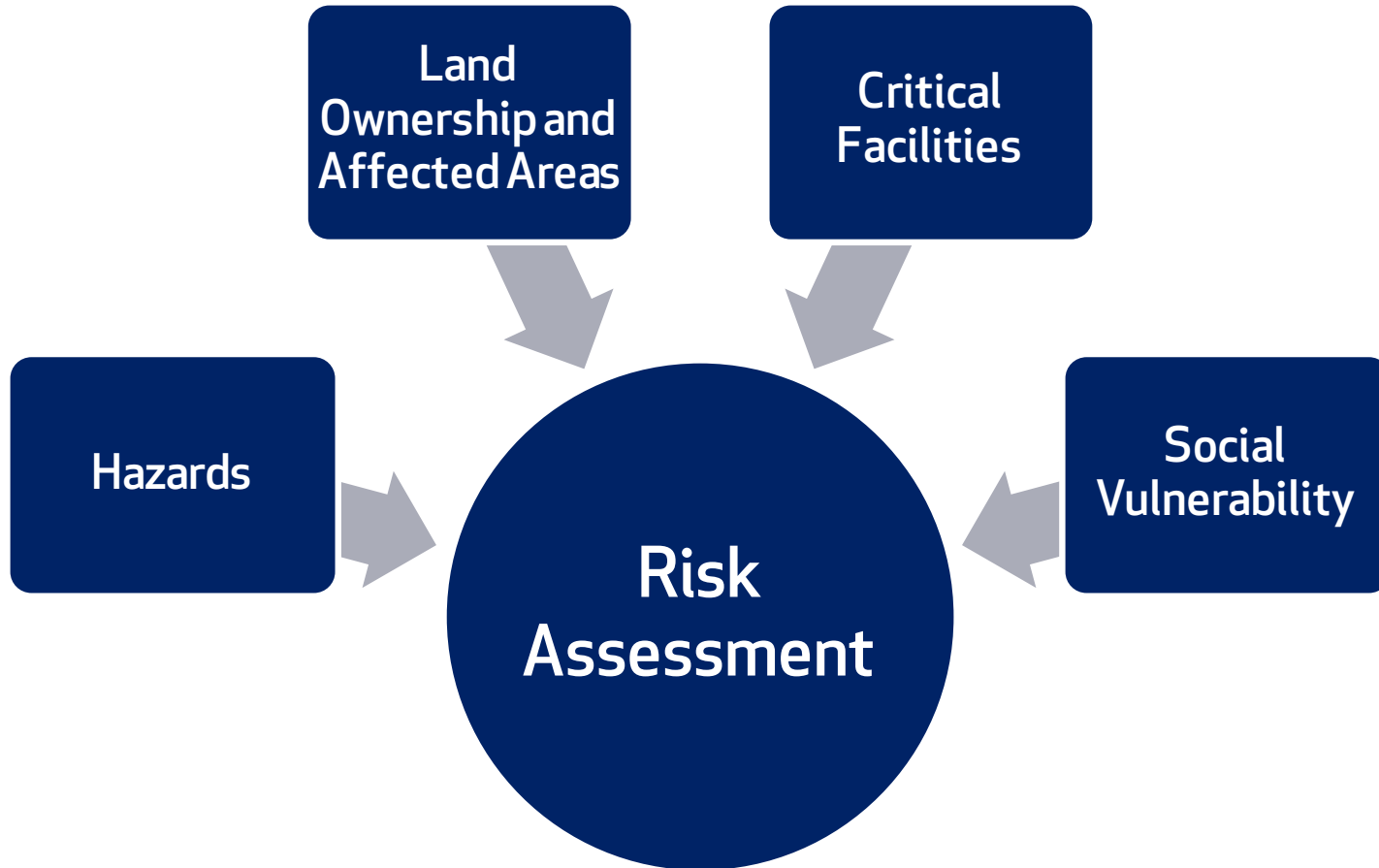
Plan Development Process





Risk Assessment

Risk Assessment



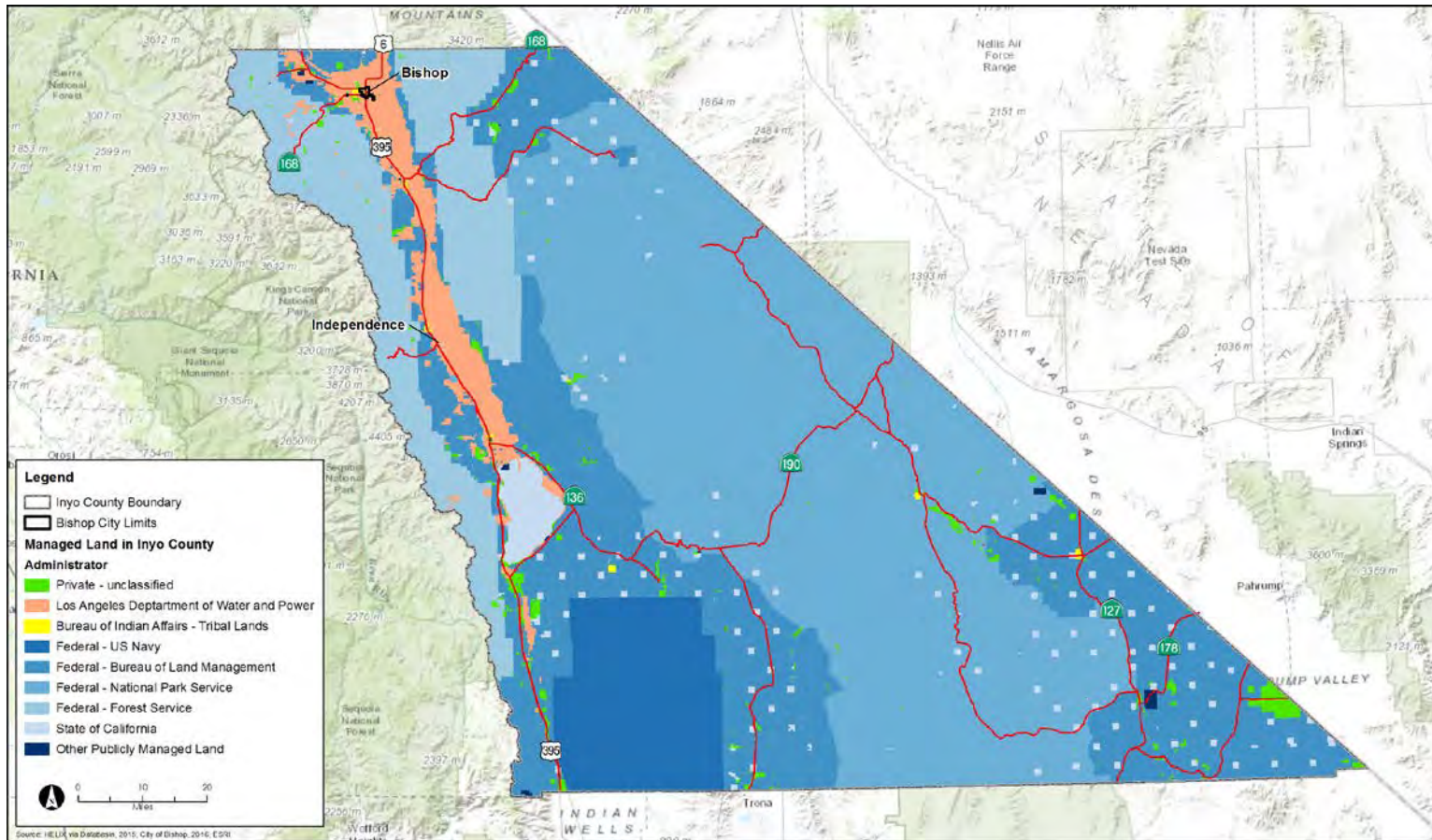
MJHMP Hazards

- **Avalanche**
- **Dam failure**
- **Disease/pest management**
- **Drought**
- **Flood**
- **Geologic hazards**
- **Hazardous materials**
- **Seismic hazards**
- **Severe weather**
- **Wildfire**

Land Ownership

Land Ownership	Acres	
	Unincorporated County	Bishop
Bureau of Indian Affairs	3,843	—
Bureau of Land Management	1,758,394	—
Department of the Navy	459,504	—
National Park Service	3,024,953	—
US Forest Service	794,292	4
State of California	151,993	—
LA Dept. of Water and Power	249,601	572
Other public land	7,090	167
Private land	81,505	325
Total	6,531,175	1,068

Land Ownership



Critical Facilities

Facility Type	Number of Facilities	
	Unincorporated County	Bishop
Administration	6	1
Communication	4	—
Housing	3	—
Public safety	14	4
Recreation	37	—
Social services	25	—
Transportation	32	—
Utilities	12	7
Total	133	12

Social Vulnerability

- Disadvantaged people may be at greater risk
- Factors considered
 - Median household income
 - Poverty
 - Age
 - Education
 - English competency
 - Disabilities
- Comparison between affected areas and entire community
- Overall risk not reduced by lack of difference between hazard zone and entire community

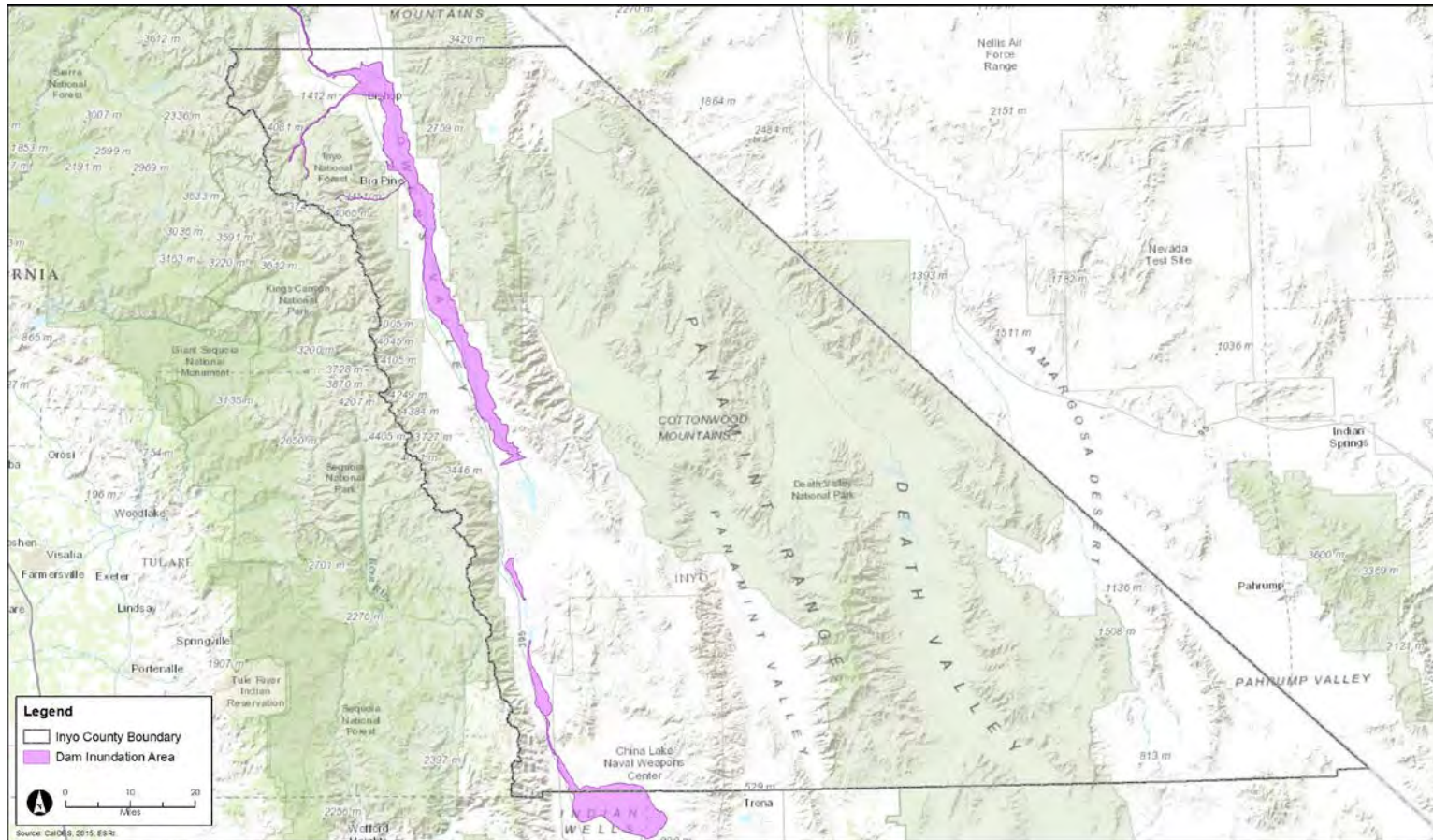
Avalanche

- Risk highest in Sierra Nevada
 - National forests
 - Mountain communities (Seven Pines, Aspendell)
 - Access roads
- No delineated risk area
- No critical facility or social vulnerability analysis
- No specific threat to Bishop

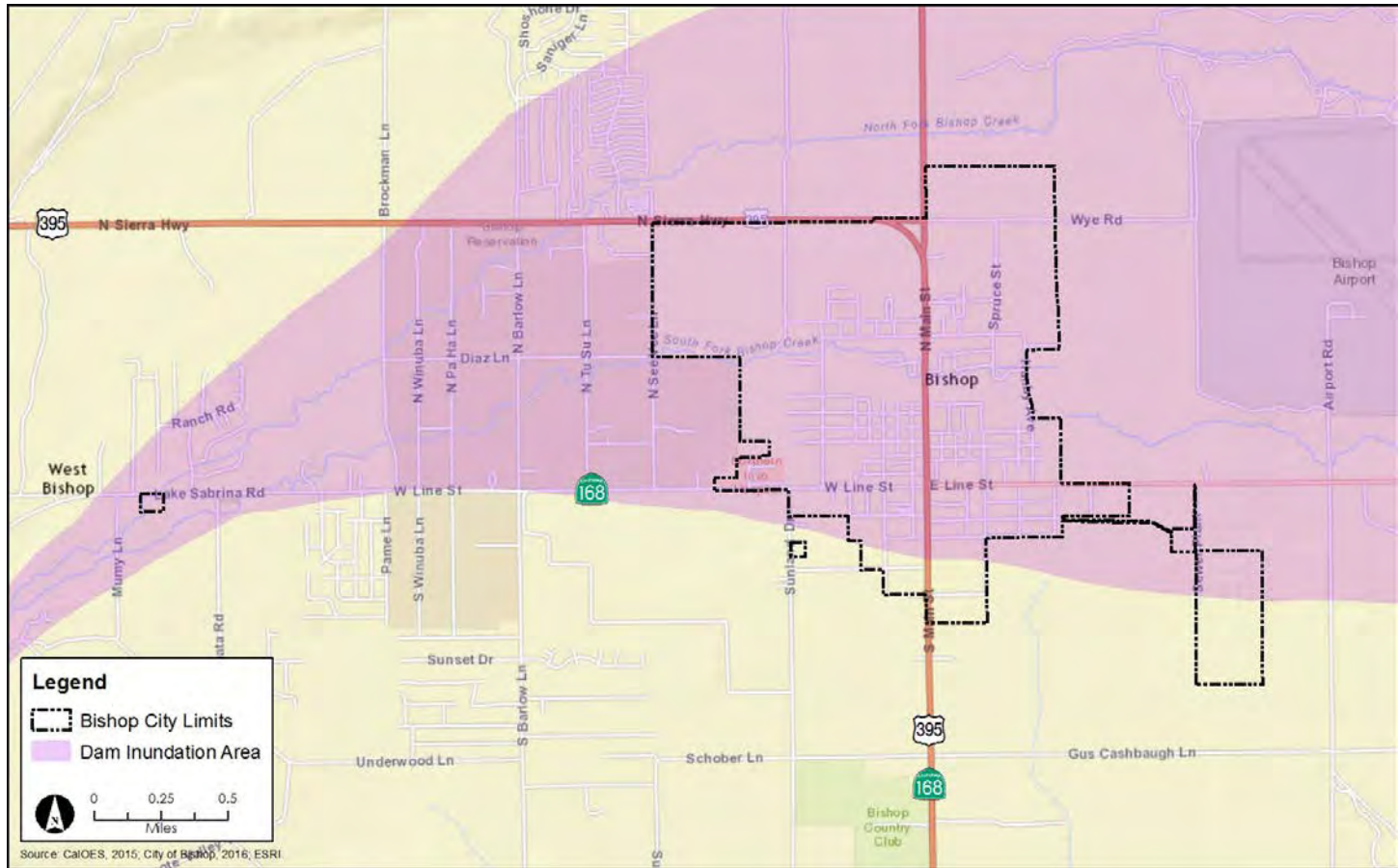
Dam Failure: Overview

- Eight dams in Inyo County
 - 4 LADWP dams
 - 4 SCE dams
- Additional inundation risk from Crowley Lake (Mono County)
- Inundation risk along beds of creeks and Owens River
- Most of Bishop in inundation hazard area

Dam Failure: Hazard Zones (County)



Dam Failure: Hazard Zones (Bishop)



Dam Failure: Affected Areas

- 133,679 acres in unincorporated county and 966 acres in city at risk
- Biggest threat to LADWP land (108,674 acres)
 - 73% of LADWP land
- 42% of Bureau of Indian Affairs land (695 acres) at risk
- 99% of private land in Bishop in risk zone

Dam Failure: Critical Facilities

- 40 County facilities at risk
- Total value of at-risk facilities: \$41.9 million
- Threat greatest to social services and transportation-related facilities
 - Library and County vehicles
- 12 City facilities at risk
- Total value of at-risk facilities: \$14.1 million
- Threat greatest to utility facilities
 - Sewage plant and water wells

Dam Failure: Social Vulnerability

- 30.7% of county population in hazard zone
- 96.4% of city population in hazard zone
- Challenges: large number of affected people, mobility concerns, sufficient shelter space

Disease/Pest Management

- Risk consistent throughout county
- Mosquitos are widespread
 - Acute problem in Owens Valley
- Invasive beetles and other problems in forest areas
- Elderly and immunocompromised persons at greater risk from diseases

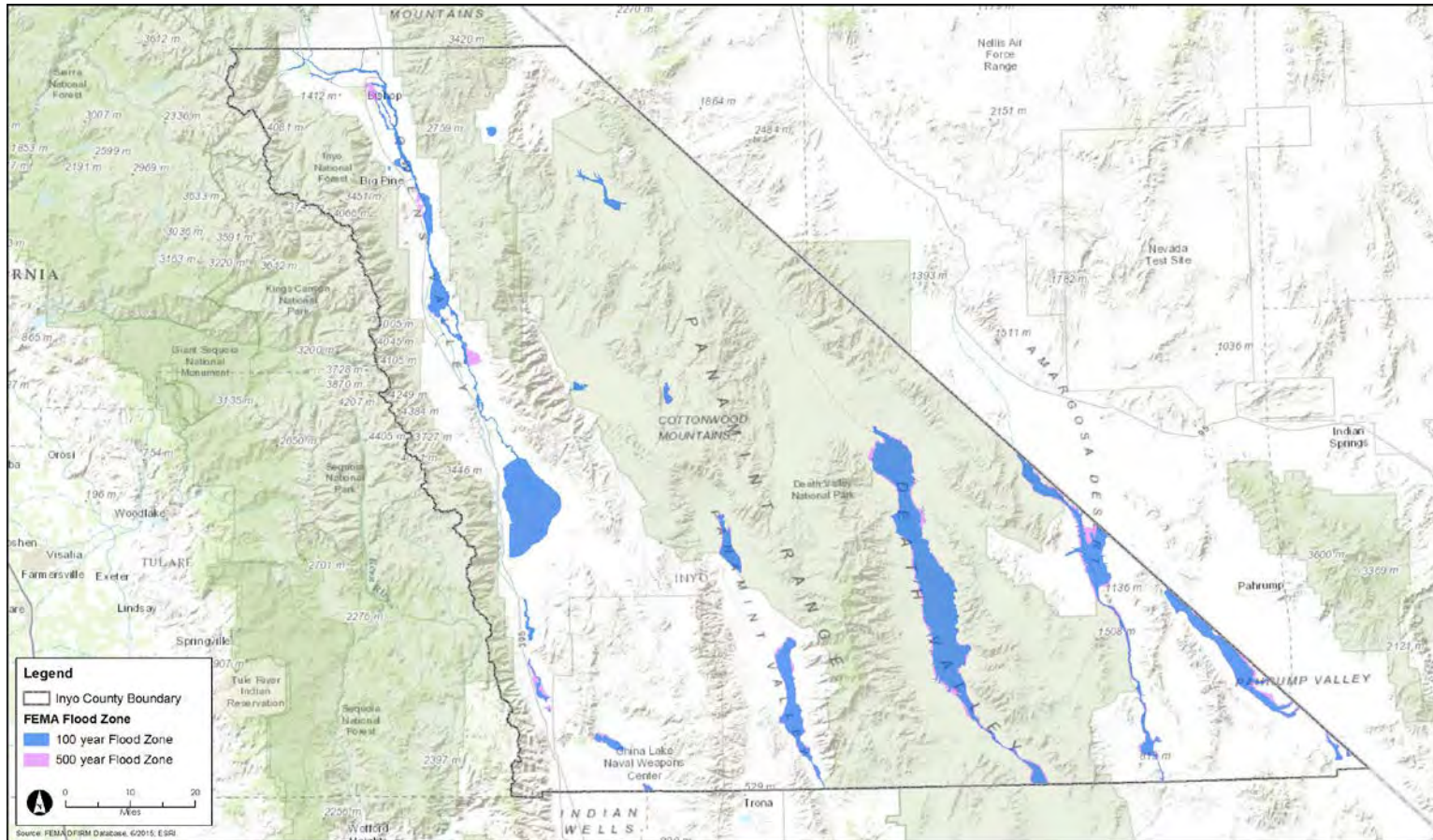
Drought

- Drought severity can vary widely across county
- No particular areas at greater or lesser risk
- Both urbanized and rural areas can be affected
- Lower-income populations may lose water supplies in extreme cases

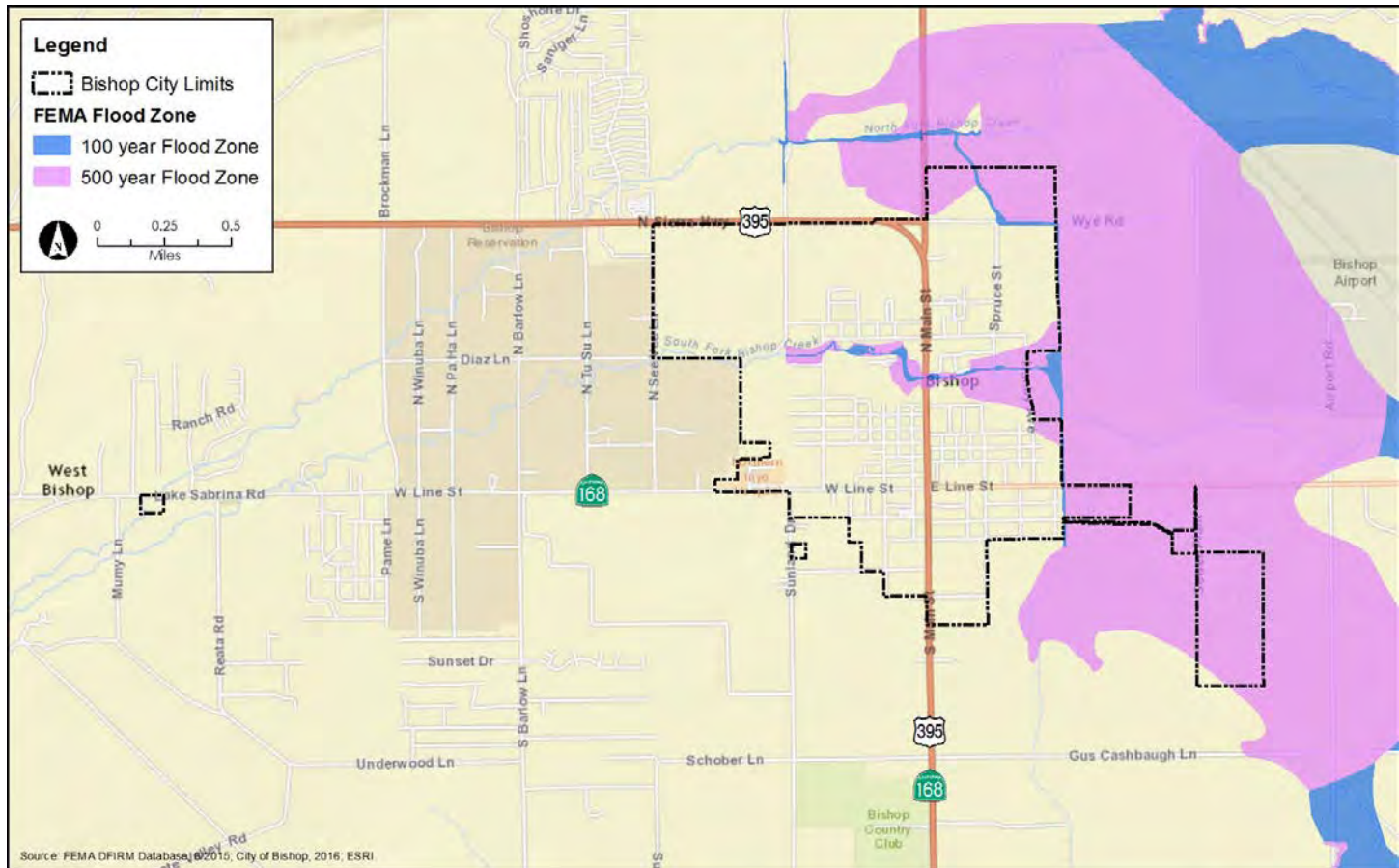
Flood: Overview

- Hazard exposure highest in low-lying areas of county
 - Owens River and Owens Lake beds
 - Panamint Valley
 - Death Valley
- Total area covers 5.6% of county
- Highest in Bishop near Bishop Creek

Flood: Hazard Zones (County)



Flood: Hazard Zones (Bishop)



Flood: Affected Areas

- Close to 368,000 acres affected
- County's biggest land owners (NPS, BLM, State, and LADWP) face greatest risk
- 41% of state land and 18% of LADWP land in county risk area
- In Bishop, 17% of LADWP land in flood hazard zone
- Limited impacts to private land in city

Flood: Critical Facilities

- 4 County facilities in 100-year zone and 14 in 500-year zone
- Value of affected facilities: \$4.8 million
- Largest threat to transportation facilities
 - Airport
- 2 City facilities in 500-year flood zone
- Value of affected facilities: \$6.7 million
- Threat to sewage treatment plant and lift station

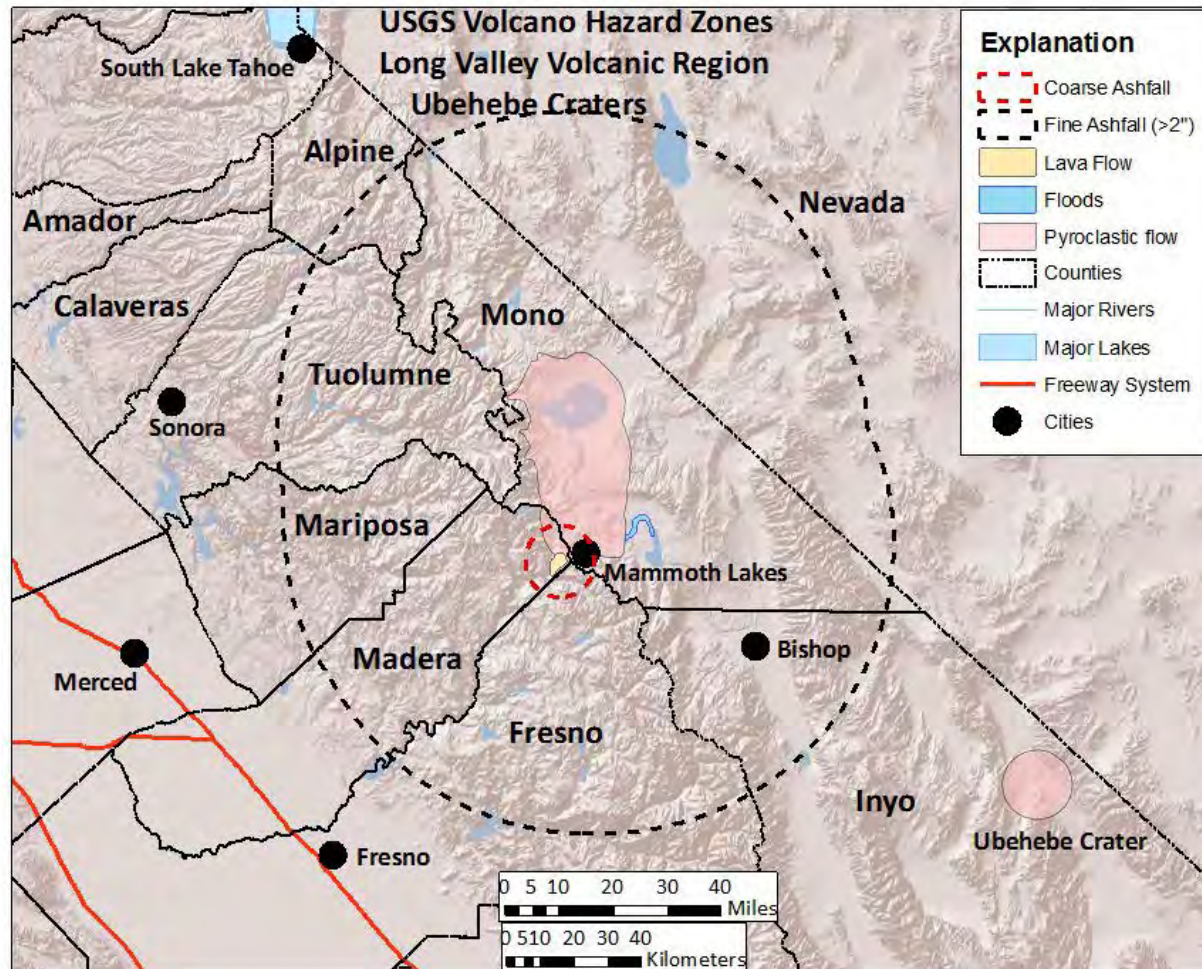
Flood: Social Vulnerability

- Social vulnerability not identified in flood hazard zone for Bishop
 - Very few residents in hazard zone
- 0.5% of county residents in 100-year floodplain
- Social vulnerability difficult to measure
 - Small sample size
 - Slightly lower median income in hazard zone

Geologic Hazards (Landslide/Volcanoes)

- Landslide hazards present on and near slopes throughout county
- Alluvial fan hazards near bottom of canyons
- Volcanic hazards near Ubehebe Craters and northern Inyo County
- Primary threat from ashfall
- Bishop doesn't face elevated risk of landslide hazards
- In hazard exposure area for Mono County volcanic features (ashfall)

Geologic Hazards: Hazard Zone (Volcanoes)



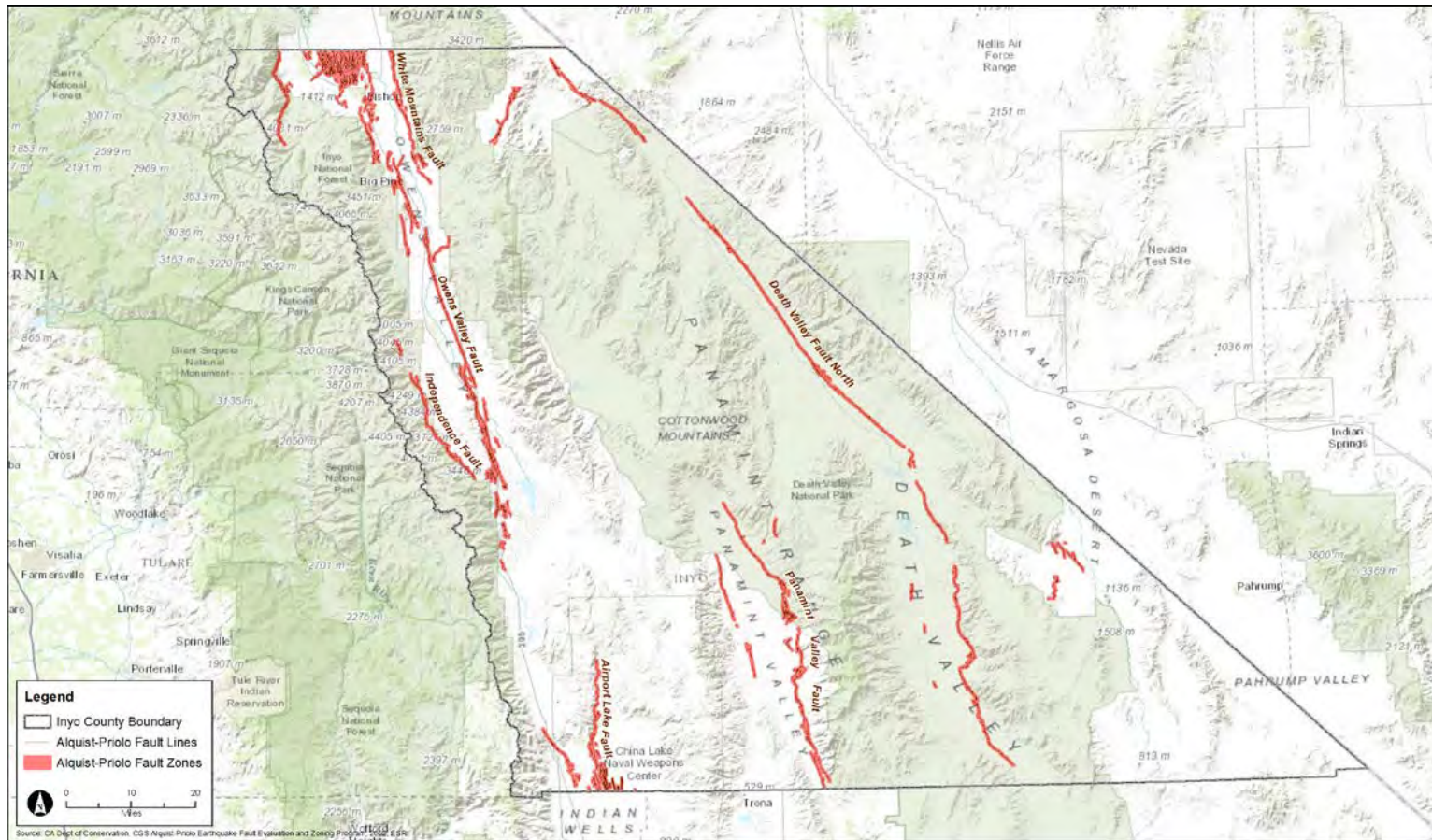
Hazardous Materials

- Saline Valley Air-to-Air Gunnery Range is main hazardous materials site
 - Part of Death Valley National Park
- Scattered, small-scale sites throughout county and Bishop
- Natural asbestos deposits
 - Mostly in or near Death Valley National Park
- Dust from Owens Lake bed
- Hazardous materials transported along State Route 127

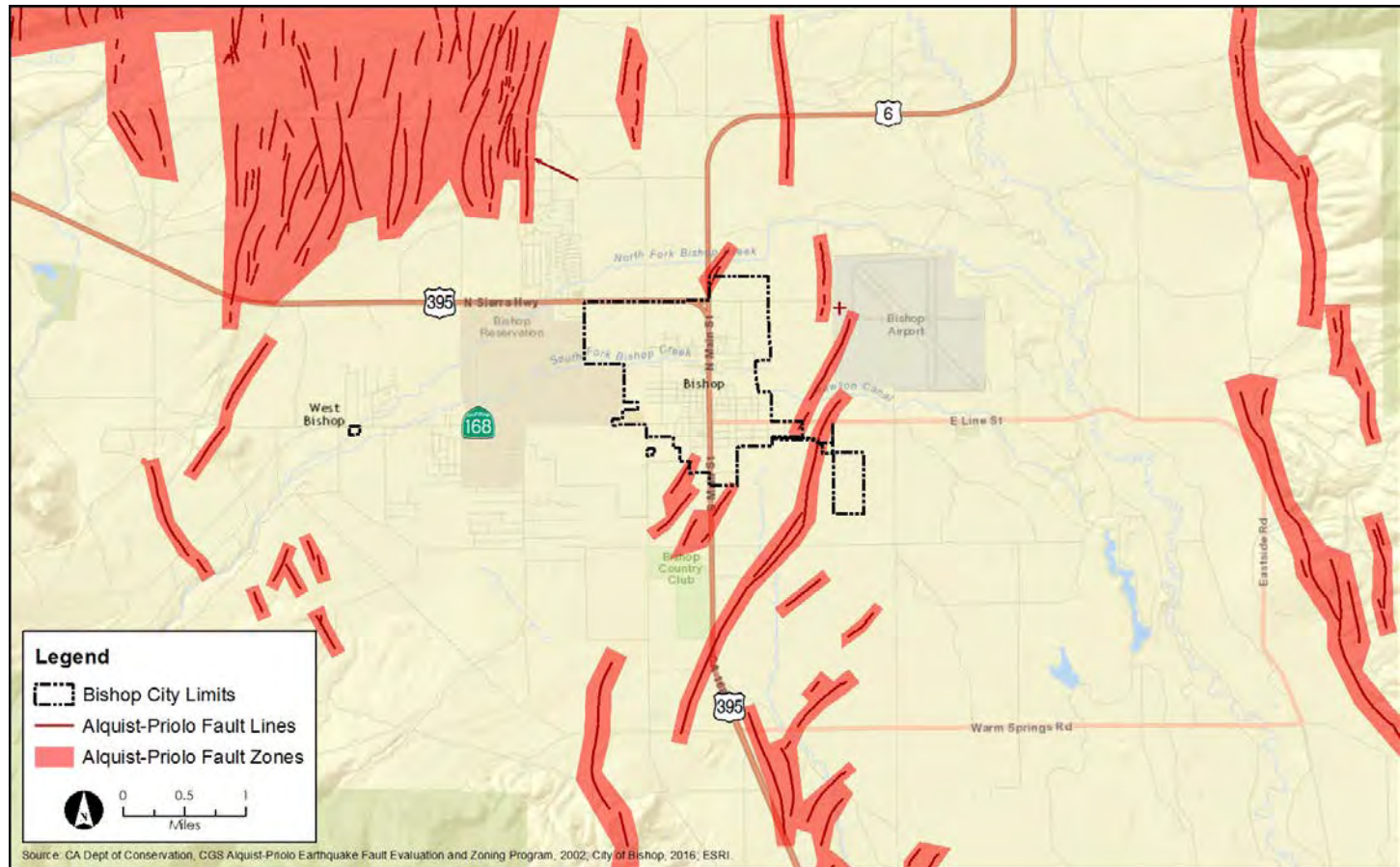
Seismic Hazards: Overview

- Risk of earthquakes present throughout county
 - All of city and county at risk of ground shaking
- Fault rupture risk highest in Owens, Panamint, and Death Valleys
- Multiple faults in and around Bishop
 - Fault rupture risk
 - High vulnerability to some earthquake scenarios

Seismic Hazards: Hazard Zone (County)



Seismic Hazards: Hazard Zone (Bishop)



Seismic Hazards: Affected Area

- 99,000 acres in fault rupture hazard zone
- Greatest risk from fault rupture to BLM, NPS, and LADWP land
- In Bishop, fault rupture hazard zone is small (20 acres)
 - Primarily threatens LADWP land

Seismic Hazards: Critical Facilities

- 20 County facilities at risk of fault rupture
- Value of at-risk facilities: \$7.1 million
- Greatest threat to recreation facilities
 - Laws Railroad Museum
- No City critical facilities in fault rupture hazard zone

Seismic Hazards: Social Vulnerability

- 8.5% of county residents in fault rupture hazard zone
 - Fault rupture not a known risk to city residents
- Consider age and seismic vulnerability of buildings
- Social vulnerability in fault rupture hazard zone similar to entire county

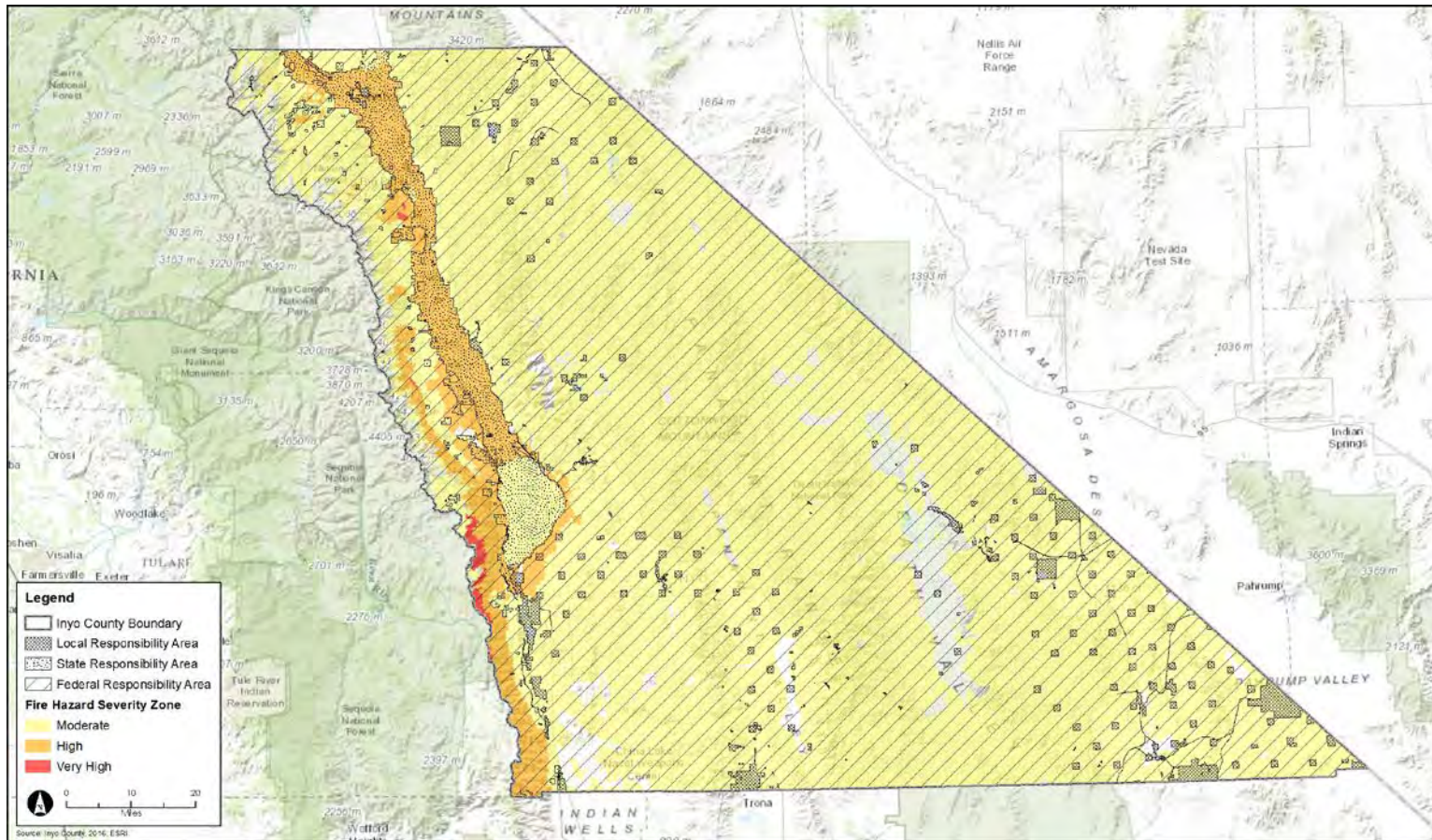
Severe Weather

- Tornadoes, hail, and thunderstorms may occur anywhere
- Severe winds may happen anywhere
 - Health impacts near Owens Lake due to lake dust transport during events
- Extreme heat can happen anywhere
 - Most severe in valley areas
- Extreme cold most likely to happen in northern Inyo County
 - Includes Bishop

Wildfires: Overview

- Threat of hazard highest along the eastern slopes of the Sierra Nevada (very high fire hazard severity zone)
- High threat in Owens Valley, including Bishop, Independence, and Olancho
- Moderate threat elsewhere

Wildfires: Hazard Zone (County)



Wildfires: Affected Area

- Over 506,000 acres in high or very high risk areas
- Biggest risks to LADWP, US Forest Service, and BLM land
 - 90% of LADWP land (over 224,000 acres) in fire risk area
- Large amounts of Bureau of Indian Affairs, private, and Forest Service land at risk
- In Bishop, 650 acres in high risk zone (60.8%)
- 69% of LADWP land in wildfire risk zone
- 75% of other public land and 39% of private land in risk zone

Wildfires: Critical Facilities

- 97 County facilities in high risk zone
 - 12 in moderate risk zone
- Facilities in high risk zone valued at \$82.8 million
- Most recreation, transportation, and utility sites at risk
- 7 City facilities in high risk zone
 - 1 in moderate risk zone
- Facilities in high risk zone valued at \$10.3 million
- Biggest impacts on utility sites
 - Water pumping, treatment, and storage

Wildfires: Social Vulnerability

- Over 79% of county residents and 37% of city residents live in high wildfire risk zones
- Vulnerability highest in urban fringe of Owens Valley and rural areas
- Scale of evacuations may be challenging
- Social vulnerability in wildfire hazard zones similar to all of the county and city

Affected Areas: Summary

Natural Hazard	Unincorporated County		Bishop	
	Affected Acres	Percentage Affected	Total Acres	Percentage Affected
Dam failure	113,679	1.7%	966	90.4%
Flood (100-year)	318,541	4.9%	14	1.3%
Flood (500-year)	49,057	0.8%	199	18.6%
Fault rupture	98,919	1.5%	20	1.9%
Wildfire (very high risk)	17,122	0.3%	0	—
Wildfire (high risk)	490,493	7.5%	650	60.9%
Wildfire (moderate risk)	5,585,103	85.5%	162	15.2%

Affected Areas: Local Control

Natural Hazard	Unincorporated County		Bishop	
	Affected Acres	Percentage Affected	Total Acres	Percentage Affected
Dam failure	4,879	5.9%	417	80.8%
Flood (100-year)	7,528	9.1%	14	2.7%
Flood (500-year)	3,854	4.6%	110	21.3%
Fault rupture	2,926	3.5%	5	1.0%
Wildfire (very high risk)	0	—	0	—
Wildfire (high risk)	15,493	18.7%	240	46.5%
Wildfire (moderate risk)	61,108	73.7%	191	37.0%

Timeline/Next Steps

- Finalize data collection (particularly critical facilities) [NOW]
- Outreach/engagement (online survey) [NOW]
- Prepare draft mitigation actions for review [NOW]
- Conduct LHMP team meeting #4 to review draft mitigation actions [May 19, 2016]
- Conduct LHMP team meeting #5 to review admin draft LHMP [June 23, 2016]

Questions/Comments?

Diane Fortney
dfortney@inyocounty.us
760-878-0263

Project Meeting 4: May 19, 2016

Included Materials:

Sign-in sheet

Mitigation Actions Table

MJHMP Meeting #4 Attendee Sign-In Sheet (May 19, 2016)

Name	Department/Company	Telephone	Email
Ray Seesive	City of Bishop Fire	[REDACTED]	rasesive@cityofbishop.com
Rick Naples	Inyo National Forest	[REDACTED]	rnapoles@fs.fed.us
KARLA BENEDECARD	CAL OES	[REDACTED]	karla.benedicard@caloes.ca.gov
Stuart Wilkinsen	USGS	[REDACTED]	swilk@usgs.gov
CAL Fire Independence	CAL Fire	[REDACTED]	
John Dukes	KESD/KVBC	[REDACTED]	BJZ@WEBSITE.COM KVBC@WEBSITE.COM
Nick Vaughn	Inyo Co Sheriff	[REDACTED]	Nvaughn@inyocounty.us
Jill Barchelder	ESTA	[REDACTED]	jbarchelder@estransit.com

MJHMP Meeting #4 Attendee Sign-In Sheet (May 19, 2016)


Name	Department/Company	Telephone	Email
FF, FC E 3565	Cal Fire BDU	[REDACTED]	bdv.IndependenceStn@fire.ca.gov
Stuart Wilkinson	USGS	[REDACTED]	swilke@usgs.gov
[Signature]	Inyo-CAO	[REDACTED]	kwilliams@inyocounty.us
TIM NOYES	CHP	[REDACTED]	TNOYES@CHP.CA.GOV
Jill Batchelder	ESTRA	[REDACTED]	jbatchelder@estransit.com

Mitigation Measure		Applicability	Priority
Multiple Hazards			
1.1	Distribute information about reducing the impacts of potential hazards through mailings, printed notices, television, digital devices and social media, and in-person meetings and events. Ensure all information is widely distributed and made available in all commonly spoken languages.	Inyo County City of Bishop	●
1.2	Explore the feasibility of establishing a communication system for community members and government officials that can supplement or replace conventional telecommunication networks if standard infrastructure is damaged or destroyed.	Inyo County City of Bishop	●●●● ●●●●
1.3	Coordinate with federal and state agencies and LADWP to support a unified hazard mitigation strategy throughout Inyo County.	Inyo County City of Bishop	
1.4	Support efforts by SCE and LADWP to identify vulnerabilities in the local power grid, and coordinate on efforts to make the power grid more resilient to hazard events. Evaluate the feasibility of distributed electricity generation and backup storage at critical facilities, and install generation and storage systems as feasible. Promote increased energy independence for residents and businesses, and revise zoning codes and permitting processes to remove barriers to these systems as appropriate. Emphasize the use of renewable energy technologies.	Inyo County City of Bishop	
1.5	Work with local community organizations to identify populations who face increased vulnerabilities, and develop actions to reduce risks to these populations. Provide information to tribal governments on vulnerable individuals, and work with tribal governments as requested to reduce risks to vulnerable individuals on tribal land.	Inyo County City of Bishop	
1.6	Evaluate existing critical facilities for specific vulnerabilities to hazard situations, and conduct retrofits to reduce vulnerabilities. Share information about any known specific vulnerabilities of existing key facilities with other agencies and service providers, and encourage them to relocate or retrofit vulnerable existing facilities as feasible.	Inyo County City of Bishop	●●●● ●●●●
1.7	To the extent possible, avoid locating critical County and City facilities in known areas of increased hazard potential. If no reasonable alternative is available, ensure new facilities contain comprehensive features to mitigate risk. Conduct hazard vulnerability studies when constructing new facilities, and build facilities to be more resilient to any identified hazards. Share information about vulnerable areas with other agencies and service providers. Support any efforts by these organizations to locate new key facilities outside of known hazard areas or to integrate resilient features into facility design.	Inyo County City of Bishop	●
1.8	In coordination with other landowners, protect existing natural habitats and restore degraded ones to help ensure the continued hazard mitigation benefits of the environment.	Inyo County City of Bishop	
1.9	Require applicants for major development projects to conduct hazard assessment studies and to design new or significantly retrofitted structures to be resilient to any identified hazards.	Inyo County City of Bishop	
1.10	Incorporate applicable hazards and risk information from the MJHMP into other local emergency planning and public safety efforts.	Inyo County City of Bishop	●
1.11	Monitor potential changes to the location, severity, and frequency of hazard events as a result of climate change or other factors, in coordination with state and regional agencies.	Inyo County City of Bishop	
1.12	In coordination with other agencies and experts, improve estimates of injury, death, property damage, health impacts, service disruptions, and other consequences of hazard events.	Inyo County City of Bishop	●●
1.13	Pursue funding for implementation of hazard mitigation measures.	Inyo County City of Bishop	●
1.14	Continue to use emergency alert systems to notify community members of an imminent hazard event or a need to evacuate, in coordination with notification systems used by state and federal agencies.	Inyo County City of Bishop	●●●




Avalanche

2.1	In coordination with the US Forest Service, monitor the probability of avalanches on slopes with accumulated snow, and restrict access to specific areas deemed unsafe due to avalanche risk.	Inyo County	
2.2	Post information about avalanche risks and current conditions at trailheads throughout avalanche-prone areas, in visitor centers, and online.	Inyo County	
2.3	Support efforts by the US Forest Service to set off controlled avalanches on unstable slopes as necessary.	Inyo County	

Dam Failure

3.1	Encourage and support efforts by SCE and LADWP to assess the current safety of dams in Inyo County and the Long Valley Dam.	Inyo County City of Bishop	
3.2	Establish and maintain an effective public alert system for areas in a dam inundation zone.	Inyo County City of Bishop	
3.3	Share information about dam inundation risks with tribal governments, and provide support as needed to assist with any tribal efforts to locate new development outside of dam inundation zones.	Inyo County City of Bishop	
3.4	Evaluate the vulnerability of water and wastewater infrastructure to dam inundation in greater detail, and carry out actions to improve resiliency as feasible.	City of Bishop	

Disease and Pest Management

4.1	When installing new or renovated public landscapes, plant vegetation that is resistant to diseases or pest infestation. Encourage private property owners to use resistant plants in landscaping projects.	Inyo County City of Bishop	
4.2	Practice Integrated Pest Management (IPM) strategies on public landscapes, emphasizing a preventive approach and minimizing the use of chemicals.	Inyo County City of Bishop	
4.3	Through the Owens Valley Mosquito Abatement Program, continue to monitor the status of mosquitos in the Owens Valley and take appropriate action to protect public health.	Inyo County City of Bishop	
4.4	Conduct periodic educational campaigns through in-person events and various types of media to encourage community members to remove standing water and practice other mosquito prevention strategies.	Inyo County City of Bishop	
4.5	Continue to monitor the status of vector-borne diseases in Inyo County, and issue public health alerts for diseases that are new to the area or are becoming more widespread.	Inyo County City of Bishop	
4.6	Through the Inyo and Mono Counties Agricultural Commissioner's Office, continue to monitor for agricultural diseases and pests, and take appropriate steps to contain or eradicate these diseases and pests.	Inyo County	
4.7	Continue activities to prevent the spread of noxious weeds through the Eastern Sierra Weed Management Area program.	Inyo County	
4.8	Encourage farmers to plant disease-resistant crop varieties and to minimize use of pesticides in favor of effective biological or physical pest controls, to the extent possible.	Inyo County	
4.9	Support efforts by the US Forest Service, the Bureau of Land Management, and other landowners to control or eradicate invasive and/or abnormally active forest pests.	Inyo County	

Drought			
5.1	Integrate changes in precipitation and snowpack levels as a result of climate change into long-term water availability forecasts.	Inyo County City of Bishop	
5.2	Explore opportunities to diversify water sources for community water systems.	Inyo County City of Bishop	●
5.3	Encourage retrofits of private homes and businesses for increased water conservation. Explore financing mechanisms such as Property Assessed Clean Energy (PACE) programs to support water conservation retrofits.	Inyo County City of Bishop	●●●●
5.4	Encourage private landowners to use plants that require no irrigation in new or retrofitted landscapes.	Inyo County City of Bishop	
5.5	Provide resources to local farmers about crop varieties that require little or no irrigation.	Inyo County	
5.6	Provide farmers with low-cost or free water audits to identify opportunities to improve water conservation in irrigation systems, and support financing mechanisms to make water-efficient irrigation systems more affordable.	Inyo County	
Flood			
6.1	Identify areas in larger communities where ponding frequently occurs during heavy rainfall, and install LID features or other measures to reduce ponding.	Inyo County City of Bishop	
6.2	Maintain an adequate supply of sandbags in advance of potential flood events.	Inyo County City of Bishop	
6.3	Encourage farmers to use grading systems and vegetation to minimize topsoil loss during heavy rains.	Inyo County	
6.4	Harden sewage treatment plant and lift station infrastructure against flood events.	City of Bishop	
6.5	As a pilot project, install acoustic flow monitors along portions of the Amargosa River to establish an early warning system for flash floods that have affected County facilities and communities in this area.	Inyo County	
Geologic Hazards			
7.1	In coordination with other landowners, support efforts to plant and maintain native vegetation on exposed slopes and recently burned areas to control erosion and landslides.	Inyo County City of Bishop	●
7.2	During an ongoing volcanic eruption or threat of eruption, widely distribute information about removing and disposing of ash from private property.	Inyo County City of Bishop	
7.3	Support efforts to improve volcanic forecasting strategies.	Inyo County City of Bishop	●
7.4	Encourage property owners to avoid construction activities at canyon mouths or on existing alluvial fans.	Inyo County	
Hazardous Materials			
8.1	In coordination with appropriate state and federal agencies, establish a system to distribute information about hazardous material releases quickly and accurately to community members.	Inyo County City of Bishop	●●
8.2	Support ongoing mitigation and testing activities at sites known or suspected to contain hazardous materials.	Inyo County City of Bishop	●
8.3	Establish multiple sites for free or low-cost disposal of hazardous household wastes, including electronic wastes.	Inyo County City of Bishop	●●
8.4	In coordination with Caltrans, the CHP, and members of the public, develop an emergency response plan for hazardous material releases occurring along State Route 127.	Inyo County	●●

Seismic Hazards

9.1	Identify and maintain records of seismically vulnerable structures, and encourage owners of these structures to complete seismic retrofits.	Inyo County City of Bishop	
9.2	Continue to require new and retrofitted structures to meet minimum state seismic safety standards, and encourage property owners to exceed these standards.	Inyo County City of Bishop	
9.3	Assess liquefaction potential of soils, particularly near permanent and dry water bodies, and integrate the results into future hazard planning efforts.	Inyo County City of Bishop	●
9.4	Require property owners to locate new developments outside of known fault rupture hazard zones.	Inyo County City of Bishop	
9.5	Design City- and County-owned infrastructure in fault rupture zones to resist damage from fault rupture, and encourage LADWP and other agencies to use similar strategies. Use similar strategies outside of fault rupture zones to the extent feasible.	Inyo County City of Bishop	

Severe Weather

10.1	Designate at least one cooling/heating center in all larger communities to the extent that facilities are available, and establish a temperature at which cooling/heating centers will open. Ensure that community members are notified through multiple means when cooling/heating centers are operational.	Inyo County City of Bishop	●●●
10.2	Work with tribal governments and community organizations to provide check-ins to vulnerable persons, including elderly residents, socially isolated persons, and immunocompromised individuals, during extreme temperature events.	Inyo County City of Bishop	●
10.3	Identify ways to provide free or low-cost weatherization and energy-efficient heating and cooling appliances to lower-income residents without access to these devices.	Inyo County City of Bishop	
10.4	Ensure that County and City employees receive training on reducing risks from extreme temperatures and providing emergency first aid for temperature-related illnesses. Encourage federal and state agencies, LADWP, and private businesses to provide similar training to their employees.	Inyo County City of Bishop	
10.5	Post signs with information about extreme temperatures and current conditions at trailheads and other outdoor recreation facilities.	Inyo County City of Bishop	
10.6	Work with landowners and utility companies to monitor tree health near developed areas or key infrastructure (e.g., roads or power lines). Promptly remove weakened branches and trees. When planting new trees in these areas, use species that can resist high winds and other severe weather, and encourage other landowners to do the same.	Inyo County City of Bishop	
10.7	As part of the countywide emergency notification system, ensure residents are informed when severe winds are imminent around Owens Lake, and provide information about reducing exposure to toxic dust.	Inyo County City of Bishop	●●
10.8	Encourage project applicants to incorporate wind-resistant design features into new or significantly renovated buildings.	Inyo County City of Bishop	
10.9	Expand weather prediction and monitoring capabilities in the county through increased coordination with the National Weather Service and other state and federal agencies responsible for weather-related services.	Inyo County City of Bishop	●●

Mitigation Measure		Applicability	Priority
Wildfire			
11.1	Work with property owners to ensure a buffer of defensible space around all buildings and key structures.	Inyo County City of Bishop	
11.2	Require new and significantly renovated buildings in very high and high fire hazard zones to contain wildfire-resistant building, landscaping, and site design features, and encourage the use of similar features in moderate fire hazard zones.	Inyo County City of Bishop	
11.3	Identify areas near residences or key facilities with potential access difficulties for fire equipment, and work with landowners to reduce or remove access barriers.	Inyo County City of Bishop	
11.4	Support efforts to reduce the risk of wildfire through preventive measures on federal, state, and LADWP land, with an emphasis on the Inyo National Forest and surrounding land.	Inyo County City of Bishop	
11.5	In coordination with the Great Basin Unified Air Pollution Control District, provide air quality alerts and information about reducing exposure to smoke and fire-related particulates during regional wildfire events.	Inyo County City of Bishop	
11.6	Share information about fire risks to electricity and water infrastructure with LADWP. Encourage and support any efforts to harden existing vulnerable backup infrastructure or to establish backup electricity and water infrastructure outside of high fire hazard zones.	Inyo County City of Bishop	

11.7 Promote the establishment of fire safe councils w/in Inyo County Communities.



Preparation Measure		Applicability	Priority
P.1	Distribute a checklist of recommended supplies for emergency kits to all community residents and businesses through mailers, television, radio, digital and online media, and other communication systems, as appropriate.	Inyo County City of Bishop	
P.2	Encourage local businesses to establish disaster preparation and communication plans.	Inyo County City of Bishop	
P.3	Establish and maintain a Community Emergency Response Team (CERT) program in major communities.	Inyo County City of Bishop	
P.4	Coordinate with the Eastern Sierra Transit Authority (ESTA) and private transportation companies to ensure there is a reasonable supply of vehicles to provide evacuation services as needed to community members without private vehicles and that these vehicles can be made available in the event of an emergency.	Inyo County City of Bishop	
P.5	Participate in disaster preparedness exercises and training events, in coordination with local landowner agencies and community members.	Inyo County City of Bishop	
P.6	Designate appropriate facilities as evacuation centers and stock them with emergency supplies. Facilities should be of sufficient size and hold enough supplies to meet community needs and should be accessible to all residents throughout Bishop and Inyo County. Coordinate with local tribes to recommend that similar evacuation centers be set up on tribal land.	Inyo County City of Bishop	

Project Meeting 5: June 23, 2016

Included Materials:

Sign In Sheet

Meeting Presentation

Meeting Workbook

MJHMP Meeting #5 Attendee Sign-In Sheet (June 23, 2016)

Name	Department/Company	Telephone	Email
Paul Wheeler	CERRO COSO COMMUNITY COLLEGE	[REDACTED]	paul.wheeler@cerrocoso.edu
DAVID GRANT	PUBLIC WORKS / CITY OF BISHOP	[REDACTED]	DGRANT@CITYOFBISHOP.COM
Steven Butler	AUSP	[REDACTED]	Steven.butler@ladayp.com
Melissa Best-Baker	HHS	[REDACTED]	mbestbaker@inyocounty.us
Stuart Wilkinsa	USGS	[REDACTED]	swilk@usgs.gov
Nick Vaughan	Inyo Co. Sheriff	[REDACTED]	Nvaughan@inyocounty.us
Christ Quinter	Inyo Co. Fire	[REDACTED]	cquinter@inyocounty.us

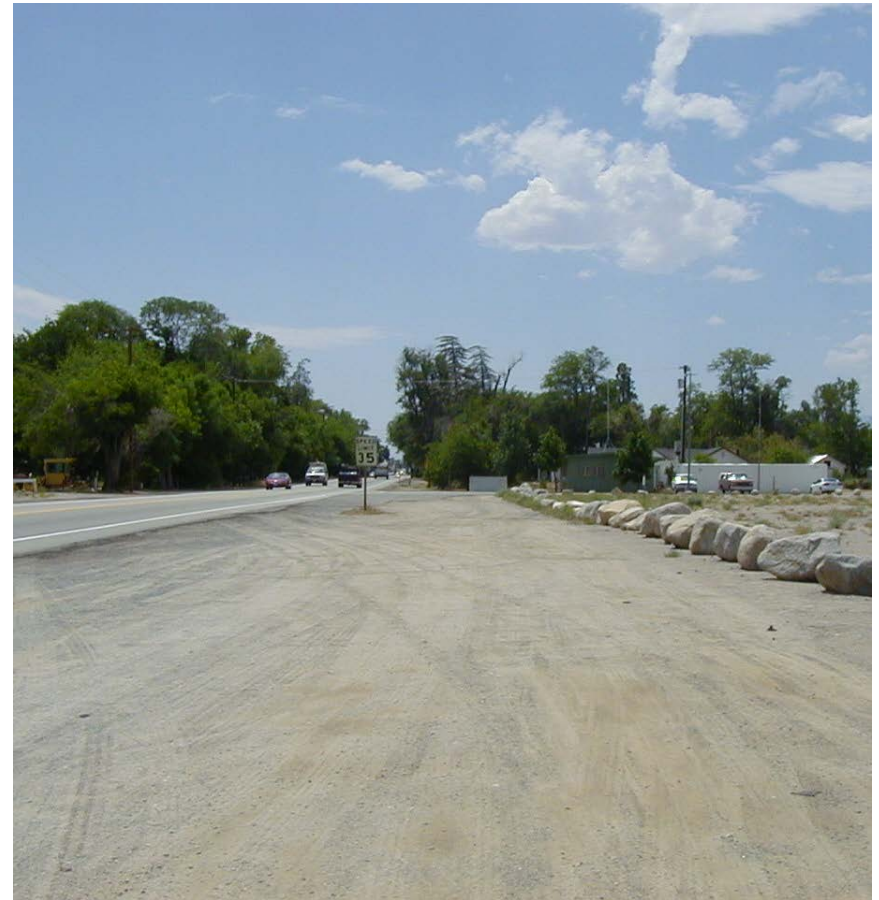


Inyo County Hazard Mitigation Plan Meeting # 5

June 23, 2016

Meeting Objectives

- Review administrative draft plan.
- Review next steps:
 - Plan adoption
 - Plan implementation and plan maintenance



Plan Development Process





Plan Review

Review Objective

- **Group discussion about:**
 - **Factually incorrect information**
 - **Missing information**
 - **Possible changes or improvements**



General Comments

Is anything factually incorrect?	Is anything missing?	Is there anything you would change?

Chapter 1 – Introduction

Is anything factually incorrect?	Is anything missing?	Is there anything you would change?

Chapter 2 – Community Profile

Is anything factually incorrect?	Is anything missing?	Is there anything you would change?

Chapter 3 – Hazards Assessment

Is anything factually incorrect?	Is anything missing?	Is there anything you would change?

Chapter 4 – Risk Assessment

Is anything factually incorrect?	Is anything missing?	Is there anything you would change?

Chapter 5 – Mitigation Actions

Is anything factually incorrect?	Is anything missing?	Is there anything you would change?

Chapter 6 – Plan Maintenance and Capabilities

Is anything factually incorrect?	Is anything missing?	Is there anything you would change?

Appendices

Is anything factually incorrect?	Is anything missing?	Is there anything you would change?



Next Steps

Next Steps

- Easy part: Incorporate comments in draft plan, circulate for public review, adopt the plan, and circulate for FEMA review and certification.
- Hard part: Implement plan and monitor the plan!



Plan Implementation and Monitoring

- Created mitigation workbook to assist staff.
- Includes guidance on:
 - Identifying and applying for grants
 - Integrating with local planning frameworks
 - Maintaining data to easily update HMP in 2021
 - Continuing coordination and momentum

Using the Plan to Apply for Grants

- FEMA grants
- State grants
- Miscellaneous grants



HMP and Planning Framework Integration

- General Plan updates:
 - Safety Element
 - Housing Element
 - Land Use Element
- Zoning Code updates
- Budgeting process



Maintaining Plan Data

- Area to keep track of data as disasters occur and to monitor and maintain critical facility information.
- Area to track mitigation action implementation.
- Area to track demographic and development changes.



Continuing Momentum and Communication

- Guidance for additional Hazard Mitigation Team meetings.
- Protocol for sharing GIS data and other research with tribes and special districts.



Schedule

- Incorporate comments in draft plan [immediately]
- Circulate for public review [July]
- Adopt plan [August - TBD]
 - Inyo County Board of Supervisors
 - City of Bishop City Council
- FEMA review and certification [TBD]
- Implement plan [2016-2021]
- Monitor plan [2016-2021]

Questions/Comments?

Diane Fortney
dfortney@inyocounty.us
760-878-0263

Administrative Draft Plan Review Tool

Please use the tool below to provide comments on the Multi-Jurisdictional Hazard Mitigation Plan (MJHMP, or Plan). Organizing the input in this way will allow for constructive discussion at the June 23 Hazard Mitigation Team meeting. Specific text edits are also welcome and can be submitted in person via hard copy markups, or via email. For each comment, please include page number for easy reference.

	Is anything factually incorrect?	Is anything missing?	Is there anything you would change?
General Comments			
Chapter 1 – Introduction			

	Is anything factually incorrect?	Is anything missing?	Is there anything you would change?
Chapter 2 – Community Profile			
Chapter 3 – Hazards Assessment			

	Is anything factually incorrect?	Is anything missing?	Is there anything you would change?
Chapter 4 – Risk Assessment			
Chapter 5 – Mitigation Actions			

	Is anything factually incorrect?	Is anything missing?	Is there anything you would change?
Chapter 6 – Plan Maintenance and Capabilities			
Appendices			

Inyo County | City of Bishop
Multi-Jurisdictional Hazard Mitigation Plan
Technical Appendices

APPENDIX B: PUBLIC OUTREACH MATERIALS

Website

Included Materials:

Inyo County Webpage



Welcome to Inyo County Multi-Jurisdictional Hazard Mitigation Plan Project:

Please review and provide public comment on the Draft Public Inyo County Multi-Jurisdiction Hazard Mitigation Plan by August 12, 2016.

Draft plan available in hard copy at local Inyo County Libraries, City of Bishop Public Works, and by download from the below link:

[Draft Public Inyo County Multi-Jurisdictional Hazard Mitigation Plan](#)

Introduction:

A Federal Emergency Management Agency (FEMA) approved Inyo County Multi-Jurisdictional Hazard Mitigation Plan (ICMJHMP) forms the foundation for a community's long-term strategy to reduce disaster losses and break the cycle of repeated disaster damage and subsequent reconstruction. The planning process necessary to develop the ICMJHMP is an important component to create a framework for risk-based decision making and thereby reducing damage to property and the economy from future disasters. The Disaster Mitigation Act of 2000 requires local governments to develop and submit mitigation plans for FEMA approval, as a condition of receiving Hazard Mitigation Grant Program project grants or Pre-Disaster Mitigation project grants.

Inyo County has been awarded California Governor's Office of Emergency Services (Cal OES) Grant Number 2014-0005 to prepare a ICMJHMP, The plan needs to assess the risk from all hazards, natural and manmade, within the County and neighboring Counties, evaluate the vulnerability of structures and infrastructures to these hazards, and assist participating jurisdictions to identify and plan mitigation initiatives to address the vulnerabilities. The plan will provide a set of action items that, when implemented, can help reduce the risk from natural hazards.

The projected planning area generally corresponds to the boundaries of Inyo County. Anticipated stakeholders (multiple jurisdictions) may include, but are not limited to: the City of Bishop, Unincorporated Communities, Special Districts, School Districts, Local Tribes, Local Hospitals, State and Federal agencies.

Meeting Dates	Agenda/Presentations	Additional Materials	Attendees
July 11, 2016	City of Bishop	Presentation	Public Meeting
July 12, 2016	BOS ARE	Presentation	Public Meeting

Questions/Comments:

Please contact the Diane Fortney, Inyo County Planning Department at inyoplanning@inyocounty.us or by phone at (760) 878-0263

[Comment Form
Notification of Upcoming Public Meetings
or To Provide Comments](#)

Public Notices:
[BOS Agenda Request Form, July 12, 2016](#)

Press Releases:
[Public Plan Review Period Open, July 13, 2016](#)
[Survey Available, March 26, 2016](#)

Online Survey

Included Materials:

Press Release for Survey Release

Survey Results Summary



DEPARTMENT OF PUBLIC WORKS

P.O. DRAWER Q
INDEPENDENCE, CA 93526
PHONE: (760) 878-0201
FAX: (760) 878-2001

COUNTY
OF
INYO

Clint Quilter, Director

For Immediate Release
March 26, 2016

Press Release

County of Inyo Local Hazard Mitigation Plan (ICMJHMP) Needs Community Input

In January 2016, the County of Inyo kicked off the development of a Multi-Jurisdictional Hazard Mitigation Plan (ICMJHMP). This document is intended to provide a better understanding of the natural hazards affecting the county, and assist in planning for future mitigation actions. Upon completion, the County will seek Federal Emergency Management Agency (FEMA) approval of the ICMJHMP to maximize eligibility for future grant funding for hazard mitigation.

Plan preparation is occurring throughout 2016. To guide plan development, the County is conducting public outreach, which includes an online survey. To take the survey, via the internet please type the following link into your browser:

English Survey Link: <https://www.surveymonkey.com/r/38QKHJW>

Spanish Survey Link: <https://es.surveymonkey.com/r/3KFPV52>

Surveys can also be completed in hard copy at all local libraries, Inyo County - Planning Department and City of Bishop - Public Works. Opportunities for involvement and project updates will be available on the County's website at www.inyoplanning.org. Final action on the project will occur with Board of Supervisor's adoption of the plan at the end of 2016.

For questions or comments, please contact Diane Fortney, the County's Project Coordinator via:

County of Inyo
Planning/Public Works Department
P.O. Box L
Independence, CA. 93526
Phone: (760) 878-0263
Email: dfortney@inyocounty.us

Inyo County and the City of Bishop prepared an online survey for members of the public to assist with development of the MJHMP. The survey gauges respondents' awareness and past experiences with hazard events, preparedness for future hazards, and views on effective hazard mitigation strategies. The survey received approximately 130 responses, although not all respondents answered each question. This appendix presents the survey questions and the results of the public outreach survey.

A-B.1. Awareness of Potential Hazards

The survey asked respondents about which hazards are present in the community and what hazards respondents are most concerned about. Earthquakes and severe weather were the hazards of greatest concern to respondents, substantially more than all potential hazard situations. Large numbers of respondents were also concerned about flooding, severe winter weather, wildfire, geologic hazards, and dam failure. Approximately 30 percent of survey respondents also identified a local hazard situation that they wanted to bring to the attention of the Planning Team, primarily issues of ponding and local flooding

What are the three hazards of most concern to your neighborhood or home?

Response	Number of Responses	Percentage of Respondents
Earthquake	100	82.64%
Severe weather	91	75.21%
Flooding	53	43.80%
Severe winter weather	38	31.40%
Fire	26	21.88%
Geologic threats	24	19.83%
Dam failure	19	15.70%
Other hazards	12	9.92%
Total	121	
Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.		

Are there small-scale local issues that you would like the Planning Team to consider?

Response	Number of Responses	Percentage of Respondents
No	82	70.09%
Yes	35	29.91%
Total	117	

Response	Number of Responses	Percentage of Respondents
Issues of concern among respondents who provided additional feedback		
Local ponding and temporary flooding	18	58.06%
Falling trees or branches	7	22.58%
Fires	2	6.45%
Other hazards	4	12.90%
Total	31	
Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.		

A-B.2. Past Hazard Experiences

Approximately two-thirds of survey respondents mentioned that they had not been impacted by a disaster in their current residence. Among the one-third of respondents who had, there was no single type of disaster that had affected a majority of people. A plurality of respondents had been affected by severe weather, and large numbers of respondents had also been affected by fires, droughts, and flood events.

Have you been impacted by a disaster in your current residence?

Response	Number of Responses	Percentage of Respondents
No	82	66.13%
Yes	42	33.87%
Total	124	
Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.		

If you have been impacted by a disaster in your current residence, what type or types of disaster were you impacted by?

Response	Number of Responses	Percentage of Respondents
Severe weather	21	46.67%
Fire	18	40.00%
Drought	16	35.56%
Flooding	15	33.33%
Earthquake	11	24.44%
Extreme heat	11	24.44%
Severe winter weather	6	13.33%
Exposure to hazardous materials	4	8.89%
Landslide	3	6.67%
Others	2	4.44%
Total	45	

Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.

A-B.3. Preparedness

Insurance

Survey respondents were asked about their existing insurance coverage. The majority of owners stated that they had adequate insurance, although a large minority felt that their insurance would be inadequate, were unaware of whether their coverage were adequate, or had no insurance at all. A small number of renters lacked renters insurance of any kind. Approximately 30 percent of survey respondents had flood insurance, and a number of respondents commented that they also had earthquake insurance or were looking to obtain it.

If you are a homeowner, do you have adequate homeowners insurance to cover the hazards that could impact your home?

Response	Number of Responses	Percentage of Respondents
Yes, my insurance should be adequate	56	47.06%
No, I do not believe my insurance would be adequate	19	15.97%

Response	Number of Responses	Percentage of Respondents
Unsure	11	9.24%
I do not have an insurance policy	5	4.20%
Not applicable, I rent my residence	28	23.53%
Total	119	
Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.		

If you rent your residence, do you have renters insurance?

Response	Number of Responses	Percentage of Respondents
No	21	20.19%
Yes	18	17.31%
Not applicable, I own my residence	65	62.50%
Total	104	
Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.		

Do you have flood insurance for your home?

Response	Number of Responses	Percentage of Respondents
Yes, I own my home and have flood insurance	25	24.04%
Yes, I rent my home and have flood insurance	6	5.77%
No, but I am interested in reviewing flood service options	73	70.19%
Total	104	
Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.		

Personal Resiliency

A majority of survey respondents have already taken action to make their homes less vulnerable to hazards, and among those that have not yet done so, approximately two-thirds plan to. Many respondents had a 72-hour supply of basic necessities in their homes, including cooking and eating utensils, canned or nonperishable food, first aid kits, blankets and sleeping bags, heat, and extra clothing. However, a substantial number of respondents did not have potable water, communication equipment, or important documents, among other key items. Many respondents also have access to water purification equipment and firearms.

Survey respondents felt that effective emergency communication is the most important thing that Inyo County and the City of Bishop can do to help community members prepare for a hazard event, although increased outreach, better education, and creating awareness of special needs or vulnerable persons were also popular choices. Many survey respondents had a number of specific ideas, including dedicated emergency preparation classes, a “what to do” plan for community members in the event of an emergency, and comprehensive information about hazards in specific locations.

Have you done anything to your home to make it less vulnerable to hazards?

Response	Number of Responses	Percentage of Respondents
Yes	65	53.72%
No, but I plan to	37	30.58%
No, and I do not plan to	19	15.70%
Total	121	
Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.		

If a severe hazard event occurred today, all services were cut off, and you could not leave your home or access a store for 72 hours, which of these items do you have readily available?

Response	Number of Responses	Percentage of Respondents
Can opener	110	97.35%
Cooking and eating utensils	109	96.46%
Canned/nonperishable goods	105	92.92%
First aid supplies	103	91.15%
Flashlight with batteries	100	88.50%
Blankets and sleeping bags	99	87.61%
Extra clothes and shoes	95	84.07%
Gas grill or camping stove	93	82.30%
Extra medication	75	66.37%
Potable water	70	61.95%
Pet supplies	69	61.09%
Telephone with batteries	61	53.98%
Portable AM/FM radio (battery, solar, or hand-crank)	60	53.10%
Cash	52	46.02%

Response	Number of Responses	Percentage of Respondents
Secondary sources of heat	51	45.13%
Gasoline	45	39.82%
Important photos and documents in a safe container	40	35.40%
Handheld “walkie-talkie” radios with batteries	38	33.63%
Other	24	21.24%
Total	113	
Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.		

How can Inyo County and the City of Bishop help you become more prepared for a disaster?

Response	Number of Responses	Percentage of Respondents
Provide effective emergency notifications and communication	83	81.37%
Provide community outreach on emergency preparedness	66	64.71%
Provide training and education on how to reduce future damage	62	60.78%
Create awareness of special needs and vulnerable populations	57	55.88%
Other	11	10.78%
Total	102	
Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.		

Neighborhood and Community Preparedness

More than two-thirds of survey respondents were unfamiliar with the special needs of their neighbors in an emergency situation, although a sizeable number of respondents were. Close to 40 percent of respondents were either trained CERT members or expressed an interest in the program. Many survey respondents stated that they were either unaware what the CERT program is or did not know that Inyo County or the City of Bishop had such a program.

Are you familiar with the special needs of your neighbors in the event of a disaster situation?

Response	Number of Responses	Percentage of Respondents
No	77	68.14%
Yes	36	31.86%
Total	113	

Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.

Are you a trained member of your Community Emergency Response Team (CERT)?

Response	Number of Responses	Percentage of Respondents
Yes	12	11.01%
No, but I would like to learn more about CERT	30	27.52%
No, and I am not interested in learning more about CERT	67	61.47%
Total	109	

Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.

Workplace Preparedness

Most respondents stated that their employers had a disaster recovery plan in place, while an even larger number of employers had a workplace communications plan. However, there remained a sizeable number of survey respondents whose employers did not have these plans or who were unaware whether their employers had these plans.

Does your employer have a plan in place for disaster recovery?

Response	Number of Responses	Percentage of Respondents
Yes	61	58.10%
No	11	10.48%
I don't know	33	31.43%
Total	105	

Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.

Does your employer have a workplace communications plan to implement following a disaster?

Response	Number of Responses	Percentage of Respondents
Yes	78	72.82%
No	28	27.18%
Total	106	

Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.

A-B.4. Demographics

What is your place of residence?

Response	Number of Responses	Percentage of Respondents
Unincorporated areas of Inyo County	73	57.94%
Bishop	34	26.98%
Outside of Inyo County	12	9.52%
Tribal lands in Inyo County	7	5.56%
Total	126	

Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.

What is your place of employment?

Response	Number of Responses	Percentage of Respondents
Unincorporated areas of Inyo County	56	44.80%
Bishop	54	43.20%
Tribal lands in Inyo County	11	8.80%
Outside of Inyo County	4	3.20%
Total	125	

Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.

Public Review Process Release

Included Materials:

Press Release

Inyo County Board of Supervisors Presentation

City of Bishop



DEPARTMENT OF PUBLIC WORKS

P.O. DRAWER Q
INDEPENDENCE, CA 93526
PHONE: (760) 878-0201
FAX: (760) 878-2001

COUNTY
OF
INYO

Clint Quilter, Director

For Immediate Release
July 13, 2016

Press Release

County of Inyo Needs Community Input on Local Hazard Mitigation Plan

The County of Inyo is asking for public input on the draft version of a plan developed to address local hazard mitigation.

County staff kicked off development of a Multi-Jurisdictional Hazard Mitigation Plan (ICMJHMP) in January 2016 and the draft document was released for public review on Monday, July 11. Comments will be accepted until Friday, August 12, 2016.

This document is intended to provide a better understanding of the natural hazards affecting the county, such as wildfire and floods, and assist in planning for future mitigation actions. Upon completion, the County will seek Federal Emergency Management Agency (FEMA) approval of the Draft Plan to maximize eligibility for future grant funding for hazard mitigation.

Risk assessment and plan preparation has occurred over the last six months. To guide plan development, the County has conducted public outreach, which included an online survey. The survey period is now closed and the information collected was used to help create the Draft Plan. The Draft Public Multi-Jurisdictional Hazard Mitigation Plan is now available for download and comment from both the City of Bishop and County of Inyo Websites at:

www.cityofbishop.com

www.inyocounty.us

www.inyoplanning.org

The Draft Public Multi-Jurisdictional Hazard Mitigation Plan can also be reviewed in hard copy at all local libraries, the Inyo County Planning Department and City of Bishop Public Works Department. This is an opportunity for the public to review the Draft Plan and provide comment. The public comment period ends August 12, 2016. Final action on the project will occur when the Inyo County Board of Supervisors and Bishop City Council adopt the plan at the end of 2016.

To make comments or for more information, please contact Diane Fortney, the County's Project Coordinator, via:

County of Inyo
Planning/Public Works Department
P.O. Box L
Independence, CA. 93526
Phone: (760) 878-0263
Email: dfortney@inyocounty.us



Inyo County Hazard Mitigation Plan

Inyo County Board of Supervisors | July 12

What is hazard mitigation?

- Hazard mitigation: *Sustained actions taken to reduce or eliminate long-term risk to life and property from hazards.*
- Actions that make the community less vulnerable to natural hazards before disasters strikes.
- Communities reduce their vulnerability through a Hazard Mitigation Plan (HMP)

What does an HMP do?

- **1:** Discuss the natural hazards that affect the community
- **2:** Analyzes how severe the impacts of hazards could be



What does an HMP do?

- **3:** Provides policies and projects to reduce risk from natural hazards
- **4:** Gives direction to implement the policies and monitor how effective they are

Who is preparing the HMP?

- Joint effort between Inyo County and the City of Bishop
- Supported by the Hazard Mitigation Planning Team
 - Five meetings to provide information and vet draft work products
 - Comprised of representatives from Inyo County, the City of Bishop, state agencies, and interested community partners.
- Data is available for sharing with Tribes and Other Special Districts

Why prepare an HMP?

- Reduces injury, loss of life, property damage, and loss of services from natural disasters.
- Makes the City and the County eligible for state and federal funding programs.



Why prepare a HMP?

- Coordinates hazard planning between Inyo County, the City of Bishop, and other agencies/ entities.
- Consolidates multiple hazard planning efforts into a single document.



What hazards are in the HMP?



Dam failure



Diseases
and pests



Drought



Flooding



Geologic
hazards



Hazardous
materials



Severe
weather



Seismic
hazards



Wildfires

How was the draft HMP prepared?

- The plan was led by the Hazard Mitigation Planning Team (City/County Staff).
- Consultants assisted with the technical work.
- Plan follows state and federal rules and guidelines.



Image: FEMA (Christopher Madorf)

What is the timeline for the HMP?

Develop plan

- January to June

Public review

- July 11 to August 12

Submit plan to FEMA

- September to December

Adopt and implement plan

- Upon FEMA approval

Public Participation

- 128 residents took the hazard mitigation online survey
 - 34 from City of Bishop
 - 94 from Inyo County
- Sign up for email updates on the plan process
- Review the draft plan
 - Public review July 11–August 12



Public Review Draft

- Available for download at: www.inyocounty.us
- Provide comments by August 12 via email to Diane Fortney at dfortney@inyocounty.us

Questions/Comments?

Diane Fortney
dfortney@inyocounty.us
760-878-0263



City of Bishop Hazard Mitigation Plan

City of Bishop City Council | July 11

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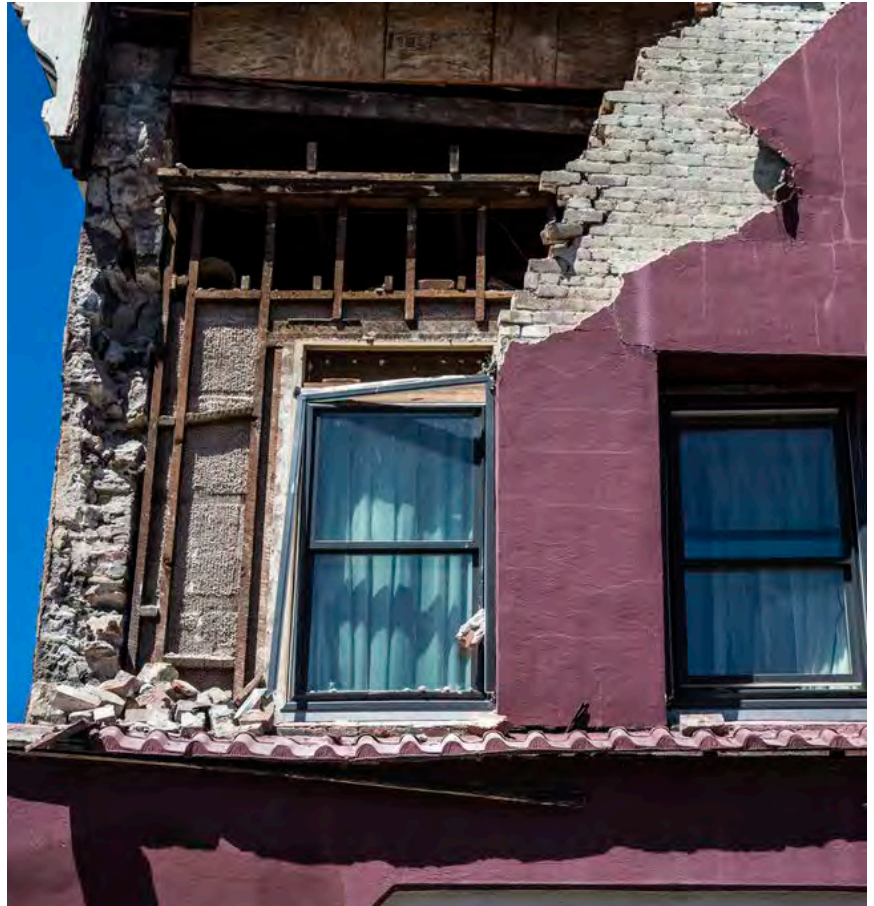


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Image: FEMA (Hands Pennink)

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- Provide comments by August 12 to David Grah via e-mail at publicworks@cityofbishop.com

Questions/Comments?

David Grah
publicworks@cityofbishop.com

Tribal Meetings

Included Materials:

Big Pine Paiute Tribe Comment Letter

Sign In Sheets from Tribal Meetings



BIG PINE PAIUTE TRIBE OF THE OWENS VALLEY

Big Pine Paiute Indian Reservation

P.O. Box 700 · 825 South Main Street · Big Pine, CA 93513

(760) 938-2003 · fax (760) 938-2942

www.bigpinepaiute.org

August 9, 2016

Inyo County Board of Supervisors
P. O. Drawer N
224 N. Edwards Street
Independence, CA 93526

County of Inyo
Planning/Public Works Department
P.O. Box L
Independence, CA. 93526

Dear Inyo County Board of Supervisors and Planning/Public Works Department:

Subject: Comments on Inyo County Multi-Jurisdictional Hazard Mitigation Plan

The Big Pine Paiute Tribe of the Owens Valley (Tribe) thanks you for allowing this opportunity to comment on the Inyo County (and City of Bishop) Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). The July 2016 draft report contains useful information, and it is evident the county and participants on the planning team seriously considered and assessed potential natural hazards, then developed approaches to address them. The Tribe is pleased to see the county's intention to build upon this work and provide for the safety of all county residents in the future.

The Tribe regrets being unable to attend the first MJHMP planning team meeting held January 28, 2016. On January 26, 2016, the Tribal office received a letter addressed to the Tribal Chairwoman, but the short notice, when key staff were on other assignments, precluded Tribal participation. It is regrettable that Tribal staff was not informed about the three subsequent meetings. In fact, Tribal members and Tribal staff participated in the online survey (as a result of seeing an ad in the Inyo Register) and requested to be notified regarding meetings, but notifications were not received. It seems Tribal staff was not communicating with the appropriate county staff, and as a result, Tribal staff was unaware of the extent of work being done by the planning team, or of meeting times and places. Section 6 of the MJHMP suggests there will be future meetings, so the Tribe respectfully requests being notified. Please send notifications to Tribal Environmental Director Sally Manning (s.manning@bigpinepaiute.org). The Tribe feels that Inyo County should view all such planning efforts as an opportunity for government to government consultation. The Tribe recognizes that the county and Tribe are making an effort to establish a relationship such that the Tribe is informed in a timely manner of important county undertakings, including those not requiring tribal consultation by law.

As a result of the above, Native American Indian Tribes in Inyo County are poorly represented in the MJHMP, and this fact should be made clear when a final MJHMP is submitted to the Federal Emergency Management Agency (FEMA). Language in the MJHMP can be misleading in this regard, because the MJHMP quotes the Disaster Management Act of 2000 and other FEMA requirements, and the language refers to involving local tribes. Also, the MJHMP lists mitigations such as outreach to tribes, and some

tribal members or tribal staff participated in the online survey. However, no tribal entities in Inyo County appear to have played a significant role in this MJHMP, and as a result future support for tribes would not automatically be forthcoming. The Tribe understands it may develop its own Tribal Hazard Mitigation Plan; perhaps language should be included in the MJHMP to point out this potential need.

The Tribe would like to acquire the shapefiles used to present the information in the MJHMP as well as other data and information. The MJHMP presents or refers to a large amount of data, but not all of it is readily accessible to the reader. For example, it is difficult to see details of the Big Pine area in some of the small-sized maps which are presented in the report at low resolution. Having the data would allow the Tribe and others the ability to analyze the mapped boundaries of particular hazards. Other information, such as which dams would affect Big Pine if they failed, probably exists in the actual data, but was not presented at this level of detail in the report. Also, quite a bit of demographic data are presented, and even though references are given, it is not easy to independently locate the information. Inyo County staff reviewers of this report should assist the consultants in presenting the data. For example, it is hard to believe that, as stated on page 12, "the largest employer in Inyo County is the CG Roxane Water Company." The website providing this information may not categorize jobs and employers the way people in the county do. Also, in Table 7 the reader learns that 15.6% of the land in the City of Bishop is "owned" by "unknown public agencies." Someone needs to figure out who they are.

The Tribe notes that Appendices D and E, which are governing board resolutions and the plan's implementation handbook, are not yet available, but these would provide information helpful to understanding how this MJHMP will be used.

Table 16: on page 36 indicates 695 acres of "BIA-owned land" could be inundated due to dam failure, but it is difficult to tell from the way the information is presented which areas are at risk. Bishop Paiute Reservation is about 875 acres, and the Big Pine Paiute Reservation is about 279 acres. Figure 6 shows the extent of potential inundation for the Bishop Reservation due to dam failure, but Figure 5, showing a dam inundation zone for all of Inyo County is hard to read. The extent of inundation due to dam failure for the Big Pine area is not clear in the information presented.

Although the MJHMP analyzes the risk of dam failure, it does not address failure of the Los Angeles Aqueduct. If it failed (and it has), surging water could affect communities like Lone Pine, Cartago, Olancho, and Little Lake.

The threat of drought in Owens Valley is real, but not exactly for the reasons presented in the MJHMP. Drought is a chronic problem in Owens Valley due to surface water diversions and groundwater pumping which have been designed by Los Angeles Department of Water and Power (LADWP) to export the valley's water to the City of Los Angeles. Water that naturally belongs in Owens Valley and Owens Lake has been taken from the region. Our area has been unnaturally drained for over a century, resulting in loss of springs, wetlands, riparian and lacustrine habitats, vegetation, animal forage, economic opportunities, and our own residents' ability to easily access groundwater. In Owens Valley, "drought" is the artificially-imposed baseline condition. Therefore, when the region is subjected to an unusually low amount of precipitation (a climatic drought), the valley lacks resiliency (sufficient groundwater or water stored in lakes or reservoirs) and people are placed at risk of running out of water. There are also places where LADWP's lack of maintenance of water-carrying infrastructure (pipes, ditches, etc.) results in low to no flows, and people, plants, animals, and habitat are deprived of water.

Section 4.2 of the MJHMP, under Hazard Risk Assessments, pages 84-85, says,

“The regional nature of drought hazards means that all of Inyo County and Bishop face an equal risk of drought, although the characteristics of a drought can vary widely across the region. While droughts typically do not pose a health or safety impact, in extreme cases normal water supplies may dry up and individuals may have to procure water from other sources, which may be difficult for lower-income residents. Critical facilities are not physically affected by drought conditions, although droughts may have impacts for facility operations, such as water recreation facilities.”

In the Tribe’s view, for Owens Valley, the above are not fair statements. The Big Pine Paiute Reservation is experiencing an imposed drought this summer due to LADWP’s failure to maintain the irrigation trunkline supplying the Reservation. Roots have penetrated the approximately 70-year-old concrete pipeline. The roots impede flow, and water now gushes from cracks in the pipe, leaking onto LADWP land without reaching the Reservation. For decades, this water has been used for gardens and domestic animals, as well as landscaping, but in the summer of 2016 it is not available to the Tribe. LADWP imposed a similar “drought” in the Bishop area in 2013-14 when it failed to route water through the ditch system of the Bishop Creek Water Association. Impacts of LADWP’s management actions have been significant in terms of damage to fish and wildlife, landscaping, property values, and increased risk of fire. The action had the not-too-unpredictable consequence of localized flooding once the flows were resumed in Bishop’s ditches. As this MJHMP mentions, on page 39, drought can cause soils to dry and harden, such that once water is again available, the soils are less able to absorb water and flooding occurs. These are just a couple of examples of chronic drought imposed on Owens Valley.

The MJHMP must address the LADWP situation consistent with reality and not pretend like LADWP’s possession of Owens Valley as a water resource colony is part of the natural setting. For the Owens Valley communities to survive future climatic drought, the valley must take more control of the water and ensure that water remains in the valley where it belongs. In contrast to the quote from pages 84-85, our high elevation Eastern Sierra region cannot realistically acquire water from any other sources, so it is imperative to protect the region’s natural resources.

LADWP’s control of the region’s water resources directly affects other hazards covered in the MJHMP. If steps were taken to curtail the water export and heal the region, then in addition to alleviating the threat of water shortages, the region also would be less vulnerable to dust storms, wildfires, certain pests, and some seismic activity, to name a few. In the discussion of blowing dust from Owens Lake on page 69, the Tribe sees an opportunity in the report to point out that the drying of the lake is human-caused, and the obvious remedy is to restore water to the lake. The language from page 69 says,

“Severe wind events may also occur virtually anywhere in Inyo County, but they can be of particular concern in the Owens Valley near the (mostly) dry bed of Owens Lake. While wind speeds are not necessarily more intense in this area and high winds do not necessarily occur with greater frequency, the winds stir up dust from the lakebed, creating large dust storms throughout the area. The dust can cause or exacerbate respiratory illnesses and may damage electronic or mechanical devices. The dust can also carry elevated levels of hazardous elements, including arsenic, chromium, copper, molybdenum, nickel, lead, antimony, thorium, and uranium. These materials may pose both acute and chronic health conditions when inhaled and may also cause environmental problems (USGS 2014d, 2015b).”

Keeping water in the valley would address the chronic, human-imposed drought, and it also would allow the region to use its water to grow food for its people and use water in other ways that would benefit

the local economy. These activities themselves might help mitigate future hazards, or they might provide dollars for mitigation projects.

The MJHMP touches on the fact that a number of wildfires have been caused in our region due to power lines. Birds, winds, lightning, the old age of infrastructure, and sometimes human activities have also been implicated in serious fires started by power lines. The MJHMP notes that, even with all the power lines, we are vulnerable to power outages, and SCE and DWP are not well interconnected. As a hazard mitigation measure as well as a networking efficiency measure, the Tribe would support efforts to look at the existing network of power lines in the valley and make the system more efficient, less of an eyesore, and in the long run safer.

The countywide flood map presented in the MJHMP is difficult to read, like the dam failure map. With regard to flooding, page 54 of report says, "Certain roads in Inyo County are frequently affected by flood events and often suffer damage when a flood occurs. These include the roads around Rawson Creek in Wilkerson, some roads near Big Pine Creek in Big Pine, Sunland Lane and Gerkin Road between Bishop and Wilkerson, roads along Big Pine Creek and Little Pine Creek west of Big Pine, roads near Tinemaha Creek, and parts of Death Valley Road and Eureka Valley Road (Anderson 2016). Bishop City staff also note that Highways 190, 127, and 168 (east of Big Pine) are commonly subject to flood damage" [underlining added]. The Tribe would like clarification regarding the underlined parts in the above statement: Which roads in the Big Pine area?

Pages 62-66 list and discuss sites or areas that contain, store, and potentially release hazardous materials, including 26 sites in the county with underground storage tanks; however, these are not mapped. Tables 28 and 29 are not particularly useful without additional information on the location and size of each problem listed. The Tribe shares the concerns about transport of materials on roads, especially through populated areas including the Reservation, and the Tribe would like to participate in discussions of methods to reduce the likelihood and extent of damage from spills.

Table 34 shows acreages in federal, state, and local wildfire hazard zones. According to the table, 3,697.03 acres of BIA lands are in the Federal (high or moderate) wildfire hazard zones. What does this mean to tribes as far as areas on the ground?

Part 1 of Table 49 in Section 5 of the MJHMP lists Hazard Mitigation Actions for Multiple Hazards, and the Tribe agrees some are worthwhile strategies. The MJHMP is not clear regarding who will carry out these commitments. For reasons stated in comments in this letter, the Tribe is not in agreement with proposed mitigation actions for drought, presented in part 5 of Table 49.

Thank you for considering the Tribe's comments and please consider the Tribe's request to be notified of future meetings where the MJHMP will be discussed.

Sincerely,



Shannon Romero
Tribal Chairwoman

9/1/10

Big Pine Tribal - LTMP Meeting 10:00 AM

Jill Paydon, Tribal Administrator
j.paydon@bigpinepaiute.org

ALAN BACOCK, WATER PROGRAM COORDINATOR
A.BACOCK@BIGPINEPAIUTE.ORG

Deborah, Project Coordinator

Aaron Fannenstiel, Michael Baker Intl.
a.fannenstiel@mbakerintl.com

Sally Manning, Environmental Director
s.manning@bigpinepaiute.org

Mark Tillemans - Inyo Co. 4th D Supervisor

Kelley Williams - Inyo Co.



Jill L. Paydon

Tribal Administrator

Big Pine Paiute Tribe of the Owens Valley

P.O. Box 700 • 825 South Main Street

Big Pine, CA 93513

Phone No. 760-938-2003 ext. 223

Fax No. 760-938-2942

Email: J.Paydon@BigPinePaiute.org

Sally Manning Alan Bacock

9/1/16 Bishop Paiute Tribal - LHMV Meeting 1:30pm

Diane Fortney - Inyo Co.
Abon Fannenschiel - Baker
Kelley Williams - Inyo Co.
Rick Pucci - Inyo Co. 3rd D Supervisor



**BISHOP
PAIUTE
TRIBE**

**PUBLIC WORKS
DEPARTMENT**

Peter A. Bernasconi, PE

Public Works Director

Brian Atkins

630 Brockman Lane

Bishop, CA 93514

Email: peter.bernasconi@bishoppaiute.org

Cell: (760) 920-7109

Phone: (760) 873-6638 ext 9002

Fax: (760) 873-0018

Lone Pine
Paute Shoshone
Reservation

9/1/16 Lone Pine Tribal - LHMP Meeting

12:30 pm

Mary Wuester - 876-1034
chair@LPPSR.org

Janice Aten janice.aten@yahoo.com

Mel Joseph mel.joseph@LPPSR.org

760-876-4690

Diane Fortney - Inyo Co.

Aaron Pfannenstiel - Baker

Kelley Williams - Inyo Co.

Matt Kingsley - Inyo Co 5th J Supervisor

9/1/14 Timbisha Tribal - LAMP Meeting 2:30pm

Spike Jackson environmental @ timbisha.com
Env. Director

Diane Fortney - Inyo Co
Aaron Fannestiel - Baker
Kelley Williams - Inyo Co.
Matt Kingsley - Inyo Co. 5th D Supervisor

Inyo County | City of Bishop
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APPENDIX C: MASTER FACILITIES LIST

Facility Name	Responsible Agency *	Location	Total Value	Facility Type
Administration	Inyo County	Bishop	\$239,513	Administration
Administrative Center Building	Inyo County	Independence	\$936,467	Administration
Agricultural Commissioner Shop	Inyo County	Bishop	\$573,194	Administration
Airport Hangar	Inyo County	Independence	\$124,078	Transportation
Airport Hangar	Inyo County	Bishop	\$24,717	Transportation
Airport Hangar 1	Inyo County	Bishop	\$371,576	Transportation
Airport Hangar 1	Inyo County	Lone Pine	\$89,911	Transportation
Airport Hangar 10	Inyo County	Lone Pine	\$247,540	Transportation
Airport Hangar 2	Inyo County	Bishop	\$110,318	Transportation
Airport Hangar 2	Inyo County	Lone Pine	\$95,307	Transportation
Airport Hangar 3	Inyo County	Bishop	\$101,786	Transportation
Airport Hangar 4	Inyo County	Bishop	\$255,279	Transportation
Airport Hangar 4	Inyo County	Lone Pine	\$79,568	Transportation
Airport Hangar 5	Inyo County	Bishop	\$161,552	Transportation
Airport Hangar 6	Inyo County	Bishop	\$239,807	Transportation
Airport Hangar 7	Inyo County	Bishop	\$260,653	Transportation
Airport Hangar 8	Inyo County	Bishop	\$268,712	Transportation
Airport Hangar 8	Inyo County	Lone Pine	\$146,570	Transportation
Airport Hangar 9	Inyo County	Lone Pine	\$155,116	Transportation
Airport Office	Inyo County	Lone Pine	\$177,898	Transportation
Airport Residence	Inyo County	Independence	\$78,982	Transportation
Airport Terminal	Inyo County	Bishop	\$827,567	Transportation
Animal Control Shelter and Office	Inyo County	Big Pine	\$724,907	Public Safety
Bath House, Men	Inyo County	Tecopa	\$68,077	Recreation
Bath House, Women	Inyo County	Tecopa	\$51,699	Recreation
Behavioral Wellness Center	Inyo County	Bishop	\$280,000	Social Services
Big Pine Fire Protection	Inyo County	Big Pine	\$1,800,000	Public Safety

Facility Name	Responsible Agency*	Location	Total Value	Facility Type
Big Pine Fire Protection	Inyo County	Big Pine	\$1,200,000	Public Safety
Big Pine Library Collection	Inyo County	Big Pine	\$748,000	Social Services
Big Pine Park	Inyo County	Big Pine	\$244,148	Recreation
Big Pine Transfer Station Gatehouse (Office)	Inyo County	Big Pine	\$5,739	Utilities
Bishop Airport	Inyo County	Bishop	\$348,673	Transportation
Bishop/Sunland Landfill Gatehouse and Shop	Inyo County	Bishop	\$37,051	Utilities
Butler Building	Inyo County	Bishop	\$35,108	Transportation
Butler Building	Inyo County	Bishop	\$104,718	Transportation
Butler Building (Equipment Storage)	Inyo County	Big Pine	\$72,021	Recreation
Cerro Coso Community College	Inyo County	Bishop	\$21,640,000	Social Services
Child Support/Dist. Attorney	Inyo County	Bishop	\$67,099	Social Services
City Hall	City of Bishop	Bishop	\$300,000	Administration
Commanders House Museum	Inyo County	Independence	\$399,987	Recreation
Community Building	Inyo County	Tecopa	\$217,338	Social Services
Contractors Equipment	Inyo County	Inyo County	\$12,136,000	Transportation
County Service Office Building	Inyo County	Independence	\$5,012,946	Administration
County Services Building	Inyo County	Bishop	\$867,586	Administration
Court Building, Clark Wing	Inyo County	Bishop	\$142,327	Public Safety
Courthouse/Historical Building	Inyo County	Independence	\$7,300,432	Public Safety
Dehy Park	Inyo County	Independence	\$218,364	Recreation
Diaz Lake Boat Ramp	Inyo County	Lone Pine	\$155,185	Recreation
Diaz Lake Park Shop	Inyo County	Lone Pine	\$109,909	Recreation
Diaz Lake Restroom	Inyo County	Lone Pine	\$103,455	Recreation
DWP Electrical Substation	City of Bishop	Bishop	\$0	Utilities
Eastern California Museum	Inyo County	Independence	\$3,393,336	Recreation
Edwards House	Inyo County	Independence	\$150,837	Housing
ESAAA Senior Center	Inyo County	Bishop	\$709,491	Social Services

Facility Name	Responsible Agency*	Location	Total Value	Facility Type
Firehouse	Inyo County	Bishop	\$12,237	Public Safety
Furnace Creek Library	Inyo County	Death Valley	\$168,000	Social Services
Hay Barn	Inyo County	Big Pine	\$99,813	Recreation
Health & Human Services (Mental Health)	Inyo County	Bishop	\$58,860	Social Services
Health & Human Services (Office Building)	Inyo County	Bishop	\$90,748	Social Services
Health & Human Services (Offices/Substance Abuse)	Inyo County	Bishop	\$47,149	Social Services
Health & Human Services (Probation/Social Services Office Use)	Inyo County	Bishop	\$249,768	Social Services
Health & Human Services (Social Services)	Inyo County	Bishop	\$92,678	Social Services
Health & Human Services, WIC Program Offices	Inyo County	Bishop	\$52,577	Social Services
Health Building	Inyo County	Independence	\$702,755	Social Services
Independence Landfill Gatehouse (Office)	Inyo County	Independence	\$10,206	Utilities
Independence Library and Law Library	Inyo County	Independence	\$2,334,937	Social Services
INET Office	Inyo County	Bishop	\$37,671	Public Safety
Inyo County Jail	Inyo County	Independence	\$11,993,694	Public Safety
Juvenile Detention Facility	Inyo County	Independence	\$3,755,272	Public Safety
Laundry and Pumphouse	Inyo County	Big Pine	\$129,656	Utilities
Laws Railroad Museum	Inyo County	Bishop	\$3,339,105	Recreation
Lease Equipment (Copiers)	Inyo County	Bishop	\$133,944	Administration
Legion and VFW Hall	Inyo County	Lone Pine	\$318,575	Social Services
Legion Hall (Community Hall and Kitchen)	Inyo County	Big Pine	\$485,438	Social Services
Legion Hall/Community Hall	Inyo County	Independence	\$485,281	Social Services
Library & Office	Inyo County	Bishop	\$2,532,038	Social Services
Lift Station	City of Bishop	Bishop	\$250,000	Utilities

Facility Name	Responsible Agency *	Location	Total Value	Facility Type
Lone Pine Landfill Gatehouse (Office)	Inyo County	Lone Pine	\$10,206	Utilities
Lone Pine Library	Inyo County	Lone Pine	\$981,019	Social Services
Lone Pine Park (Restroom & Playground Equipment)	Inyo County	Lone Pine	\$182,130	Recreation
Maintenance. Bldg.	Inyo County	Lone Pine	\$75,143	Recreation
Mazourka Peak Radio Building	Inyo County	Independence	\$113,752	Communication
Millpond Rec. Area (Concession Stand)	Inyo County	Bishop	\$121,585	Recreation
Millpond Rec. Area (Restroom building)	Inyo County	Bishop	\$20,324	Recreation
Millpond Rec. Area (Restroom, Shower, & Laundry)	Inyo County	Bishop	\$226,671	Recreation
Mobile Equipment (Playground Equipment)	Inyo County	Bishop	\$65,862	Recreation
Mobile Homes	Inyo County	Shoshone	\$231,388	Housing
Park Entrance Station	Inyo County	Lone Pine	\$44,931	Recreation
Park Office	Inyo County	Lone Pine	\$19,159	Recreation
Parks and Recreation (Motor Pool Facility - Office Trailer)	Inyo County	Independence	\$323,532	Transportation
Parks and Recreation, Office and Tool Storage and Playground	Inyo County	Tecopa	\$205,866	Recreation
Pasco Building	Inyo County	Bishop	\$133,860	Recreation
Playground Equipment	Inyo County	Lone Pine	\$39,095	Recreation
Police Station	City of Bishop	Bishop	\$500,000	Public Safety
Progress House/Halfway House	Inyo County	Bishop	\$329,937	Housing
Public Works (Shop Building #1)	Inyo County	Independence	\$53,176	Transportation
Public Works (Shop Building #2)	Inyo County	Independence	\$64,772	Transportation
Radio Building	Inyo County	Bishop	\$10,608	Communication
Radio Building	Inyo County	Bishop	\$10,608	Communication

Facility Name	Responsible Agency*	Location	Total Value	Facility Type
Reservoir	Inyo County	Lone Pine	\$1,275,416	Utilities
Restroom	Inyo County	Independence	\$47,978	Recreation
Restroom	Inyo County	Bishop	\$297,269	Recreation
Restroom (2)	Inyo County	Big Pine	\$100,924	Recreation
Restroom and Playground Equipment	Inyo County	Bishop	\$74,957	Recreation
Restroom Buildings	Inyo County	Big Pine	\$59,453	Recreation
Restroom Buildings	Inyo County	Lone Pine	\$0	Recreation
Restroom Buildings	Inyo County	Independence	\$15,245	Recreation
Restroom Buildings	Inyo County	Independence	\$59,453	Recreation
Restroom Buildings	Inyo County	Big Pine	\$15,245	Recreation
Restrooms (2)	Inyo County	Big Pine	\$112,398	Recreation
Restrooms (3)	Inyo County	Big Pine	\$178,362	Recreation
Restrooms Bldg. 1	Inyo County	Lone Pine	\$42,884	Recreation
Restrooms Bldg. 2	Inyo County	Lone Pine	\$118,906	Recreation
Road Department	Inyo County	Shoshone	\$82,081	Transportation
Road Department	Inyo County	Big Pine	\$79,263	Transportation
Road Department (Modular Office)	Inyo County	Lone Pine	\$49,325	Transportation
Road Maintenance	Inyo County	Lone Pine	\$208,724	Transportation
Road Shop	Inyo County	Independence	\$2,430,996	Transportation
Search and Rescue	Inyo County	Bishop	\$418,514	Public Safety
Sewage Plant	City of Bishop	Bishop	\$6,400,000	Utilities
Sewer Lagoon/Tecopa	Inyo County	Tecopa	\$1,200,000	Utilities
Sheriffs Department (Communication Equipment)	Inyo County	Bishop	\$837,062	Public Safety
Sherriff Substation Lone Pine	Inyo County	Lone Pine	\$419,495	Public Safety
Starlite Park Playground Equipment	Inyo County	Bishop	\$28,263	Recreation
Statham Hall/Community Hall	Inyo County	Lone Pine	\$885,232	Social Services
Station 1	City of Bishop	Bishop	\$1,000,000	Public Safety

Facility Name	Responsible Agency *	Location	Total Value	Facility Type
Station 2	City of Bishop	Bishop	\$500,000	Public Safety
Station 3	City of Bishop	Bishop	\$600,000	Public Safety
Superior Court	Inyo County	Independence	\$37,134	Public Safety
Tecopa Library/Social Services	Inyo County	Tecopa	\$264,171	Social Services
Telephone Systems	Inyo County	Bishop	\$62,044	Communication
Vehicles	Inyo County	Inyo County	\$17,405,000	Transportation
Water Department Office Building	Inyo County	Independence	\$1,193,561	Utilities
Water Reservoir Chlorination Building	Inyo County	Independence	\$376,647	Utilities
Water Reservoir Chlorination Building	Inyo County	Bishop	\$236,248	Utilities
Water Storage Tank	City of Bishop	Bishop	\$1,500,000	Utilities
Water Storage Tanks and Main Line/Independence	Inyo County	Independence	\$1,300,000	Utilities
Water Storage Tanks and Main Line/Lone Pine	Inyo County	Lone Pine	\$1,000,000	Utilities
Well 1	City of Bishop	Bishop	\$1,000,000	Utilities
Well 2	City of Bishop	Bishop	\$1,000,000	Utilities
Well 4	City of Bishop	Bishop	\$1,000,000	Utilities
Wellness Center	Inyo County	Bishop	\$16,584	Social Services
Wellness Center	Inyo County	Lone Pine	\$53,784	Social Services
WIC & First Five Office	Inyo County	Bishop	\$58,211	Social Services
<p>Note: Due to rounding, the totals presented in this table may not equal the sum of all rows.</p> <p>* Responsible Agency identification is based on the location of the facility, regardless of ownership of the facility.</p>				

Inyo County | City of Bishop
Multi-Jurisdictional Hazard Mitigation Plan
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APPENDIX D: ADOPTION RESOLUTIONS

RESOLUTION NO. 2017-58

A RESOLUTION OF THE BOARD OF SUPERVISORS OF THE COUNTY OF INYO, STATE OF CALIFORNIA, ADOPTING THE INYO COUNTY/CITY OF BISHOP MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS, Inyo County has prepared a Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) in compliance with the Disaster Mitigation Act of 2000; and

WHEREAS, this MJHMP has been prepared in compliance with California Government Code Sections 8685.9 and 65302.6, which integrates this plan with the Inyo County General Plan Safety Element; and

WHEREAS, the County has received a letter from FEMA identifying the MJHMP as eligible for approval pending final adoption; and

WHEREAS, Board of Supervisors adoption of a current MJHMP will make the County eligible to pursue and receive earmarked mitigation grant funding, as well as eligible to apply for additional federal mitigation grants; and

WHEREAS, County staff has collaborated with numerous partner representatives and hazard experts to develop the MJHMP; and

WHEREAS, on July 11, 2016, the general public, surrounding communities and, County staff and elected/appointed officials were invited to provide feedback on the Public Review Draft Plan; and

WHEREAS, on August 12, 2016, the public review period was completed and comments received were reviewed and incorporated into the MJHMP; and

WHEREAS, on September 1, 2016, meetings between Inyo County staff and elected representatives met with local tribal government staff and tribal members to discuss the MJHMP; and

WHEREAS, on June 28, 2017, the County transmitted the MJHMP document to the California Office of Emergency Services, initiating the formal review process; and

WHEREAS, on November 15, 2017, the MJHMP was submitted to the Federal Emergency Management Agency (FEMA) for review; and

WHEREAS, on November 28, 2017 FEMA determined the plan to be eligible for final approval pending its adoption by the Inyo County Board of Supervisors.

NOW THEREFORE, BE IT RESOLVED by the Board of Supervisors of the County of Inyo that the Multi- Jurisdictional Hazard Mitigation Plan is hereby adopted.

PASSED AND ADOPTED this 12th day of December, 2017 by the following vote of the Inyo County Board of Supervisors:

AYES: -5- Supervisors Griffiths, Kingsley, Pucci, Tillemans, Totheroh

NOES: -0-

ABSENT: -0-

ABSTAIN: -0-



Chairperson, Inyo County Board of Supervisors

Attest: Kevin D. Carunchio
Clerk of the Board

By: 

Darcy Ellis, Assistant

RESOLUTION NO. 2017-12

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BISHOP, STATE OF CALIFORNIA, ADOPTING THE INYO COUNTY/CITY OF BISHOP MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS, Inyo County and the City of Bishop have prepared a Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) in compliance with the Disaster Mitigation Act of 2000; and

WHEREAS, this MJHMP has been prepared in compliance with California Government Code Sections 8685.9 and 65302.6, which integrates this plan with the City of Bishop General Plan Safety Element; and

WHEREAS, the County has received a letter from FEMA identifying the MJHMP as eligible for approval pending final adoption; and

WHEREAS, the City of Bishop adoption of a current MJHMP will make the City eligible to pursue and receive earmarked mitigation grant funding, as well as eligible to apply for additional federal mitigation grants; and

WHEREAS, the City of Bishop staff have collaborated with numerous partner representatives and hazard experts to develop the MJHMP; and

WHEREAS, beginning on July 11, 2016, the general public, surrounding communities and, County/City staff and elected/appointed officials were invited to provide feedback on the Public Review Draft Plan; and

WHEREAS, on August 12, 2016, the public review period was completed and comments received were reviewed and incorporated into the MJHMP; and

WHEREAS, on September 1, 2016, meetings between Inyo County staff and elected representatives met with local tribal government staff and tribal members to discuss the MJHMP; and


WHEREAS, on June 28, 2017, the County transmitted the MJHMP document to the California Office of Emergency Services, initiating the formal review process; and

WHEREAS, on November 15, 2017, the MJHMP was submitted to the Federal Emergency Management Agency (FEMA) for review; and

WHEREAS, on November 28, 2017 FEMA determined the plan to be eligible for final approval pending its adoption by the Inyo County Board of Supervisors and the City Council of the City of Bishop.

NOW THEREFORE, BE IT RESOLVED by the City Council of the City of Bishop that the Multi- Jurisdictional Hazard Mitigation Plan is hereby adopted.

PASSED, APPROVED AND ADOPTED this 11th day of December 2017.



Joe Pecki, Mayor

ATTEST: Jim Tatum, City Clerk

By: 

Robin Picken, Assistant City Clerk



STATE OF CALIFORNIA }
COUNTY OF INYO }
CITY OF BISHOP }

I, Robin Picken, Assistant City Clerk for the City of Bishop, do hereby certify that the whole number of members of the City Council of said City of Bishop is five (5); that the foregoing Resolution No. 2017-12 was duly passed and adopted by said City Council; approved and signed by the Mayor of said City; and attested by the City Clerk of said City, all at a regular meeting of said City Council, held on December 11, 2017, and that the same was so passed and adopted by the following roll call vote.

AYES: Smith, Ellis, Gardner, Schwartz, Pecsí

ABSENT: None

NOES: None

DISQUALIFIED: None

WITNESS, my hand and the seal of the City of Bishop this 12th day of December 2017.



Robin Picken, Assistant City Clerk
CITY OF BISHOP





FEMA

December 18, 2017

Kelley Williams
Assistant to the County Administrator
County of Inyo
224 N. Edwards Street
P.O. Drawer N
Independence, CA 93526

Dear Ms. Williams:

We have completed our final review of the *Inyo County Multi-Jurisdictional Hazard Mitigation Plan*, officially adopted by Inyo County on December 12, 2017 and the City of Bishop on December 11, 2017, and found the plan to be in conformance with Title 44 Code of Federal Regulations (CFR) Part 201.6 *Local Mitigation Plans*. A list of the status of participating jurisdictions is enclosed with this letter.

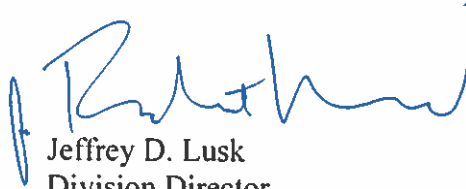
The approval of this plan ensures Inyo County's and the City of Bishop's continued eligibility for project grants under FEMA's Hazard Mitigation Assistance programs, including the Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, and Flood Mitigation Assistance Program. All requests for funding, however, will be evaluated individually according to the specific eligibility, and other requirements of the particular program under which applications are submitted.

Also, approved hazard mitigation plans are eligible for points under the National Flood Insurance Program's Community Rating System (CRS). Additional information regarding the CRS can be found at <https://www.fema.gov/national-flood-insurance-program-community-rating-system> or through your local floodplain manager.

FEMA's approval of the *Inyo County Multi-Jurisdictional Hazard Mitigation Plan* is for a period of five years, effective starting the date of this letter. Prior to December 18, 2022, Inyo County and the City of Bishop are required to review and revise the plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval in order to continue to be eligible for mitigation project grant funding. The enclosed plan review tool provides additional recommendations to incorporate into the plan during the plan maintenance process.

If you have any questions regarding the planning or review processes, please contact Alison Kearns, Lead Community Planner, at (510) 627-7125 or by email at alison.kearns@fema.dhs.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jeffrey D. Lusk".

Jeffrey D. Lusk
Division Director
Mitigation Division
FEMA Region IX

Enclosure

cc: Julie Norris, Mitigation and Dam Safety Branch Chief, California Governor's Office of
Emergency Services
Jennifer Hogan, State Hazard Mitigation Officer, California Governor's Office of Emergency
Services

Status of Participating Jurisdictions as of December 18, 2017

Jurisdictions – Adopted and Approved

#	Jurisdiction	Date of Adoption
1	Inyo County	12/12/2017
2	City of Bishop	12/11/2017

Jurisdictions – Approvable Pending Adoption

#	Jurisdiction

REGION IX LOCAL MITIGATION PLAN REVIEW TOOL

The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers states and FEMA mitigation planners an opportunity to provide feedback to the community.

- The **Regulation Checklist** provides a summary of FEMA’s evaluation of whether the plan has addressed all requirements.
- The **Plan Assessment** identifies the plan’s strengths as well as documents areas for future improvement. This section also includes a list of resources for implementation of the plan.
- The **Multi-Jurisdiction Summary Sheet** is a **mandatory** worksheet that is used to document which jurisdictions have participated in the planning process and are eligible to adopt the plan.
- The **Hazard Identification and Risk Assessment Matrix** is a tool for plan reviewers to identify if all components of Element B are met.

Jurisdiction: County of Inyo, CA City of Bishop, CA	Title of Plan: Multi-Jurisdictional Hazard Mitigation Plan	Date of Plan: June 2017
Local Point of Contact: Kelley Williams	Address: 224 N. Edwards Street P.O. Drawer N Independence, CA 93526	E-Mail: kwilliams@inyocounty.us
Title: Assistant to the County Administrator		
Agency: County of Inyo		
Phone Number: 760-878-0292 (Inyo County office) 760-873-5577 (Bishop office)		

State Reviewer: Karen McCready-Hoover (916) 845-8177 Karen.McCready- Hoover@caloes.ca.gov	Title: Emergency Services Coordinator	Date: November 8, 2017
Date Received at State Agency		
Plan Not Approved		
Plan Approved/Sent to FEMA		

FEMA Reviewer: Emma Reed JoAnn Scordino	Title: Hazard Mitigation Community Planner Hazard Mitigation Community Planner	Date: November 20, 2017 November 28, 2017
Date Received in FEMA Region IX	November 15, 2017	
Plan Not Approved		
Plan Approvable Pending Adoption	November 28, 2017	
Plan Approved	December 18, 2017	

**SECTION 1:
REGULATION CHECKLIST**

INSTRUCTIONS: The Regulation Checklist must be completed by FEMA. The purpose of the Checklist is to identify the location of relevant or applicable content in the plan by element/sub-element and to determine if each requirement has been ‘Met’ or ‘Not Met.’ The ‘Required Revisions’ summary at the bottom of each element must be completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is ‘Not Met.’ Sub-elements should be referenced in each summary by using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each Element and sub-element are described in detail in the *Local Plan Review Guide* in Section 4, Regulation Checklist.

1. REGULATION CHECKLIST		Location in Plan (section and/or page number)	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans)				
ELEMENT A. PLANNING PROCESS				
A1. Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	a. Does the plan provide documentation of how the plan was prepared? This documentation must include the schedule or timeframe and activities that made up the plan’s development as well as who was involved.	Section 1.6, pp. 4-7; Appendices A & B	X	
	b. Does the plan list the jurisdiction(s) participating in the plan that are seeking approval?	Section 1.0, p. 1; Section 1.3, p. 3	X	
	c. Does the plan identify who represented each jurisdiction? (At a minimum, it must identify the jurisdiction represented and the person’s position or title and agency within the jurisdiction.)	Section 1.6, pp. 4-7; Appendix A	X	
A2. Does the plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	a. Does the plan document an opportunity for neighboring communities, local, and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development, as well as other interested parties to be involved in the planning process?	Section 1.6, pp. 4-7; Section 1.7, pp. 7-8; Appendices A & B	X	

1. REGULATION CHECKLIST		Location in Plan (section and/or page number)	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans)				
	b. Does the plan identify how the stakeholders were invited to participate in the process?	Section 1.6, pp. 4-7 Section 1.7, pp. 7-8; Appendices A & B	X	
A3. Does the plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))		Section 1.6, pp. 6-7; Section 1.7, pp. 7-8; Appendices A & B	X	
A4. Does the plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))		Section 1.8, pp. 9-10; Sources, pp. 133-138	X	
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))		Section 6.4, p. 131	X	
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))	a. Does the plan identify how, when, and by whom the plan will be monitored (how will implementation be tracked) over time?	Section 6.0, pp. 127-130; Appendix E	X	
	b. Does the plan identify how, when, and by whom the plan will be evaluated (assessing the effectiveness of the plan at achieving stated purpose and goals) over time?	Section 6.0, pp. 127-130; Appendix E	X	
	c. Does the plan identify how, when, and by whom the plan will be updated during the 5-year cycle?	Section 6.0, pp. 127-130; Appendix E	X	
<u>ELEMENT A: REQUIRED REVISIONS</u>				
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT (Reviewer: See Section 4 for assistance with Element B)				

1. REGULATION CHECKLIST		Location in Plan	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans)		(section and/or page number)		
B1. Does the plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))	a. Does the plan include a general description of all natural hazards that can affect each jurisdiction?	Avalanche: p. 32 Dam/Aqueduct: p. 34 Disease/Pest: p. 40 Drought: p. 42 Flood: pp. 54-55 Geologic: pp. 60-61 HazMat: p. 69 Seismic: pp. 46-48 Weather: pp. 73-75 Wildfire: p. 79	X	
	b. Does the plan provide rationale for the omission of any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area?	Section 3.1, pp. 27-31	X	
	c. Does the plan include a description of the location for all natural hazards that can affect each jurisdiction?	Avalanche: p. 32 Dam/Aqueduct: pp. 34-37 Disease/Pest: p. 41 Drought: p. 43 Flood: pp. 55-58 Geologic: pp. 62-63 HazMat: pp. 70-72 Seismic: pp. 48-50 Weather: pp. 76-77 Wildfire: p. 80	X	

1. REGULATION CHECKLIST		Location in Plan	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans)		(section and/or page number)		
	d. Does the plan include a description of the extent for all natural hazards that can affect each jurisdiction?	Avalanche: pp. 32-33 Dam/Aqueduct: pp. 34-35 Disease/Pest: p. 41 Drought: p. 43 Flood: pp. 55-58 Geologic: pp. 62-63 HazMat: pp. 70-72 Seismic: pp. 48-50 Weather: pp. 76-77 Wildfire: p. 80	X	
B2. Does the plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))	a. Does the plan include information on previous occurrences of hazard events for each jurisdiction?	Avalanche: pp. 32-33 Dam/Aqueduct: pp. 37-38 Disease/Pest: pp. 41-42 Drought: p. 44 Flood: pp. 58-59 Geologic: pp. 63-65 HazMat: p. 72 Seismic: p. 50 Weather: p. 77 Wildfire: pp. 80-81	X	

1. REGULATION CHECKLIST		Location in Plan	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans)		(section and/or page number)		
	b. Does the plan include information on the probability of future hazard events for each jurisdiction?	Avalanche: p. 33 Dam/Aqueduct: pp. 38-39 Disease/Pest: p. 42 Drought: pp. 44-45 Flood: p. 59 Geologic: pp. 65-68 HazMat: pp. 72-73 Seismic: pp. 50-54 Weather: p. 78 Wildfire: pp. 81-82	X	
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))	a. Is there a description of each hazard's impacts on each jurisdiction (what happens to structures, infrastructure, people, environment, etc.)?	Avalanche: p. 32 Dam/Aqueduct: p. 34 Disease/Pest: p. 41 Drought: p. 43 Flood: p. 55 Geologic: pp. 61-62 HazMat: p. 69 Seismic: p. 48 Weather: pp. 75-76 Wildfire: pp. 79-80	X	
	b. Is there a description of each identified hazard's overall vulnerability (structures, systems, populations, or other community assets defined by the community that are identified as being susceptible to damage and loss from hazard events) for each jurisdiction?	Avalanche: p. 88 Dam/Aqueduct: pp. 88-90 Disease/Pest: p. 90 Drought: p. 90 Flood: pp. 92-94 Geologic: p. 94 HazMat: p. 95 Seismic: pp. 90-91 Weather: p. 95 Wildfire: pp. 95-98	X	

1. REGULATION CHECKLIST		Location in Plan (section and/or page number)	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans)				
B4. Does the plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))		Section , pp. 93-94	X	
<u>ELEMENT B: REQUIRED REVISIONS</u>				
ELEMENT C. MITIGATION STRATEGY				
C1. Does the plan document each jurisdiction’s existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))	a. Does the plan document each jurisdiction’s existing authorities, policies, programs and resources?	Section 5.3, pp.121-125	X	
	b. Does the plan document each jurisdiction’s ability to expand on and improve these existing policies and programs?	Section 5.3, pp.121-125	X	
C2. Does the plan address each jurisdiction’s participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))		Section 4.2, pp. 93-94	X	
C3. Does the plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))		Section 1.5, p. 4; Section 5.1, p. 99	X	
C4. Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))	a. Does the plan identify and analyze a comprehensive range (different alternatives) of specific mitigation actions and projects to reduce the impacts from hazards?	Section 5.2, pp. 100-120	X	
	b. Does the plan identify mitigation actions for every hazard posing a threat to each participating jurisdiction?	Section 5.2, pp. 100-120	X	
	c. Do the identified mitigation actions and projects have an emphasis on new and existing buildings and infrastructure?	Section 5.2, pp. 100-120	X	
C5. Does the plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))	a. Does the plan explain how the mitigation actions and projects will be prioritized (including cost benefit review)?	Section 5.1, p. 100; Section 5.2, pp. 100-120	X	
	b. Does the plan identify the position, office, department, or agency responsible for implementing and administering the action/project, potential funding sources and expected timeframes for completion?	Section 5.2, pp. 100-120	X	

1. REGULATION CHECKLIST		Location in Plan	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans)		(section and/or page number)		
C6. Does the plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))	a. Does the plan identify the local planning mechanisms where hazard mitigation information and/or actions may be incorporated?	Section 5.3, pp. 121-125; Section 6.3, p. 131; Appendix E, pp. 7-10	X	
	b. Does the plan describe each community's process to integrate the data, information, and hazard mitigation goals and actions into other planning mechanisms?	Section 5.3, pp. 121-125; Section 6.3, p. 131; Appendix E, pp. 7-10	X	
	c. The updated plan must explain how the jurisdiction(s) incorporated the mitigation plan, when appropriate, into other planning mechanisms as a demonstration of progress in local hazard mitigation efforts.	N/A – new plan	N/A	
<u>ELEMENT C: REQUIRED REVISIONS</u>				
ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (Applicable to plan updates only)				
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))		N/A		
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))		N/A		
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))		N/A		
<u>ELEMENT D: REQUIRED REVISIONS</u>				
ELEMENT E. PLAN ADOPTION				
E1. Does the plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))			X	
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))			X	

1. REGULATION CHECKLIST

Regulation (44 CFR 201.6 Local Mitigation Plans)

Location in Plan
(section and/or
page number)

Met

Not
Met**ELEMENT E: REQUIRED REVISIONS****ELEMENT F. ADDITIONAL STATE REQUIREMENTS**

(Optional for State Reviewers only; not to be completed by FEMA)

F1.			
F2.			

ELEMENT F: REQUIRED REVISIONS

SECTION 2: PLAN ASSESSMENT

A. Plan Strengths and Opportunities for Improvement

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

Element A: Planning Process

Strengths:

- 1) The plan includes a good amount of supporting documentation of the planning process as well as public and stakeholder outreach activities.
- 2) The plan incorporates effective templates and schedules for future plan updates and maintenance activities.
- 3) The Planning Team includes a variety of stakeholders from a number of local government departments and agencies involved with mitigation actions.
- 4) The document includes a helpful discussion of how the Planning Team used and incorporated existing plans, reports, technical studies, etc. into the plan.

Opportunities for Improvement:

- 1) For the next plan update, consider obtaining increased participation from the local media to help increase public awareness and participation in the planning process.

Element B: Hazard Identification and Risk Assessment

Strengths:

- 1) The document presents the hazard profiles in a very succinct and thoughtful manner, presenting only information relevant to the hazard analysis.
- 2) The plan provides comprehensive explanation of how the hazards were identified and screened for incorporation within the plan.
- 3) The plan incorporated many comprehensive maps and figures to enhance the hazard profiles in order to enable readers to better understand the hazards and impacts.
- 4) Each of the hazards profiles is further expanded upon to explain how this particular hazard is affected (increased strength, likelihood, etc.) by climate change.

Opportunities for Improvement:

- 1) The Drought hazard profile could be improved by providing more information about the potential impacts and vulnerabilities of this hazard on the region.

2) The methodology on how loss estimates are projected could be expanded to give the reader a more informed perspective on how potential losses were determined.

Element C: Mitigation Strategy

Strengths:

- 1) The capabilities assessment is comprehensive and presented in a succinct and easy-to-read and understand table.
- 2) The priority status and responsible department for accomplishing each mitigation action is clearly indicated throughout the mitigation actions table.
- 2) Some of the mitigation actions can be integrated with existing local authorities, policies, programs, plans, and resources, potentially making them easier to implement.
- 3) The mitigation strategy addresses all hazards profiled and provides a good template for future Inyo County/City of Bishop hazard mitigation efforts to expand upon.

Opportunities for Improvement:

- 1) Future iterations of the hazard mitigation plan for these jurisdictions should include additional potential implementation steps for prioritized mitigation actions.

Element D: Plan Update, Evaluation, and Implementation (*Plan Updates Only*)

Strengths:

N/A

Opportunities for Improvement:

N/A

B. Resources for Implementing and Updating Your Approved Plan

This resource section is organized into three categories:

- 1) Guidance and Resources
- 2) Training Topics and Courses
- 3) Funding Sources

Guidance and Resources

Local Mitigation Planning Handbook

<https://www.fema.gov/media-library/assets/documents/31598>

Beyond the Basics

<http://mitigationguide.org/>

Mitigation Ideas

<https://www.fema.gov/media-library/assets/documents/30627>

Plan Integration: Linking Local Planning Efforts

<https://www.fema.gov/media-library/assets/documents/108893>

Integrating Disaster Data into Hazard Mitigation Planning

<https://www.fema.gov/media-library/assets/documents/103486>

Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning

<https://www.fema.gov/ar/media-library/assets/documents/4317>

Community Rating System User Manual

<https://www.fema.gov/media-library/assets/documents/8768>

U.S. Climate Resilient Toolkit

<https://toolkit.climate.gov/>

2014 National Climate Assessment

<http://nca2014.globalchange.gov/>

Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation

http://ipcc-wg2.gov/SREX/images/uploads/SREX-All_FINAL.pdf

FY15 Hazard Mitigation Assistance Unified Guidance

<https://www.fema.gov/media-library/assets/documents/103279>

Climate Resilient Mitigation Activities for Hazard Mitigation Assistance

<https://www.fema.gov/media-library/assets/documents/110202>

Training

More information at <https://training.fema.gov/emi.aspx> or through your State Training Officer

Mitigation Planning

IS-318 Mitigation Planning for Local and Tribal Communities

<https://training.fema.gov/is/courseoverview.aspx?code=is-318>

IS-393 Introduction to Hazard Mitigation

<https://training.fema.gov/is/courseoverview.aspx?code=is-393.a>

G-318 Preparing and Reviewing Local Plans

G-393 Mitigation for Emergency Managers

Hazard Mitigation Assistance (HMA) Grant Programs

IS-212.b Introduction to Unified HMA

<http://www.training.fema.gov/is/courseoverview.aspx?code=IS-212.b>

IS-277 Benefit Cost Analysis Entry Level

<http://www.training.fema.gov/is/courseoverview.aspx?code=IS-277>

E-212 HMA: Developing Quality Application Elements

E-213 HMA: Application Review and Evaluation

E-214 HMA: Project Implementation and Programmatic Closeout

E-276 Benefit-Cost Analysis Entry Level

GIS and Hazus-MH

IS-922 Application of GIS for Emergency Management

<http://www.training.fema.gov/is/courseoverview.aspx?code=IS-922>

E-190 ArcGIS for Emergency Managers

E-296 Application of Hazus-MH for Risk Assessment

E-313 Basic Hazus-MH

Floodplain Management

E-273 Managing Floodplain Development through the NFIP

E-278 National Flood Insurance Program/ Community Rating System

Potential Funding Sources

Hazard Mitigation Grant Program

POC: FEMA Region IX and State Hazard Mitigation Officer

Website: <https://www.fema.gov/hazard-mitigation-grant-program>

Pre-Disaster Mitigation Grant Program

POC: FEMA Region IX and State Hazard Mitigation Officer

Website: <https://www.fema.gov/pre-disaster-mitigation-grant-program>

Flood Mitigation Assistance Grant Program

POC: FEMA Region IX and State Hazard Mitigation Officer

Website: <https://www.fema.gov/flood-mitigation-assistance-grant-program>

Emergency Management Performance Grant Program

POC: FEMA Region IX

Website: <https://www.fema.gov/emergency-management-performance-grant-program>

**SECTION 3:
MULTI-JURISDICTIONAL SUMMARY SHEET**

INSTRUCTIONS: For multi-jurisdictional plans, this summary sheet must be completed by listing each participating jurisdiction that is eligible to adopt the plan.

MULTI-JURISDICTION SUMMARY SHEET					
#	Jurisdiction Name	Jurisdiction Type	Eligible to Adopt the Plan?	Plan POC	Email
1	Inyo County	County		Kelley Williams	kwilliams@inyocounty.us
2	City of Bishop	City		David Grah	publicworks@cityofbishop.com
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

Inyo County | City of Bishop
Multi-Jurisdictional Hazard Mitigation Plan
Technical Appendices

APPENDIX E:
IMPLEMENTATION
HANDBOOK



Inyo County | City of Bishop



Multi-Jurisdictional Hazard Mitigation Plan
IMPLEMENTATION HANDBOOK

Final Draft (FEMA Approved) | December 2017

What is this handbook?

The Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) for Inyo County and City of Bishop provides a list of prioritized mitigation strategies organized by jurisdiction and hazard type. This hazard mitigation handbook (handbook) provides a distilled version of the plan with clear direction for how the plan can be used by jurisdiction staff and elected and appointed officials. The handbook has the following objectives:

- Provide clear direction for what to do after adoption of the mitigation plan
- Streamline the next update process (to be completed in 2022)
- Assist with identifying and applying for grant resources
- Help jurisdictions periodically revisit and review plan

Who is responsible for maintaining this handbook?

Kelley Williams, Assistant to the County Administrator, Inyo County, County of Inyo Administrative Office

When do I need to use this handbook?

A disaster has been declared	2
<i>By the Inyo County Board of Supervisors or City of Bishop City Council</i>	2
<i>By the State of California</i>	2
<i>By the Federal Government</i>	2
I want to apply for mitigation grant funding	3
My jurisdiction is in the budgeting process	4
My jurisdiction is conducting its annual Hazard Mitigation Team meeting	5
My jurisdiction is updating policy and regulatory documents	7
<i>My jurisdiction is updating this hazard mitigation plan</i>	7
<i>My jurisdiction is updating the Safety Element of the General Plan</i>	8
<i>My jurisdiction is updating the Housing Element of the General Plan</i>	9
<i>My jurisdiction is updating its zoning code</i>	10

A disaster has been declared

By the Inyo County Board of Supervisors or City of Bishop City Council

In the event of a local disaster declaration, the MJHMP can be implemented through the following steps:

1. Update **Attachment 2** with relevant disaster information.
2. Discuss local assistance opportunities with Cal OES representative.
3. If damage occurs to local infrastructure, repair or rebuild the infrastructure to be more resilient as laid out in the hazard mitigation actions. Locally vetted mitigation actions are located in **Attachments 1a/1b** and are organized by hazard.

By the State of California

In the event of a disaster declaration by the state of California for a disaster that occurs wholly or partially in Inyo County or the City of Bishop, the MJHMP can be implemented through the following steps:

1. Update **Attachment 2** with relevant disaster information.
 - a. Be sure to gather in particular cumulative damages of the disaster, even if the damages occur partially outside of the county.
 - b. Work with the California Office of Emergency Services (Cal OES) to assess disaster damages and coordinate with the Federal Emergency Management Agency (FEMA) where federal designations are a possibility.
2. Discuss local assistance opportunities with Cal OES representative.
3. If damage occurs to local infrastructure, repair or rebuild the infrastructure to be more resilient as laid out in the hazard mitigation actions. Locally vetted mitigation actions are located in **Attachments 1a/1b** and are organized by hazard.

By the Federal Government

A disaster declaration by the federal government enables multiple sources of funding for disaster recovery and response, as well as mitigation projects. If the federal declaration identified the City of Bishop or Inyo County by name as eligible for funding sources, the MJHMP can be implemented through the following steps:

1. Identify if the jurisdiction is named in the declaration as eligible for public assistance funds, which provide reimbursement for recovery and response activities.
 - a. Follow requirements identified in that declaration to receive public assistance funds. Although FEMA and Cal OES typically release information directly to jurisdictions named in declarations, additional information can be obtained here: <https://www.fema.gov/disasters>.
2. Identify if the jurisdiction is named in the declaration as eligible for the Hazard Mitigation Grant Program (HMGP), which funds hazard mitigation projects.
 - a. Follow requirements identified in that declaration to apply for HMGP funding.
 - b. The HMGP may only allow for certain types of projects. Review the list of actions and projects in **Attachments 1a/1b** to identify which projects will be submitted in the grant application.

I want to apply for mitigation grant funding

In addition to the sources mentioned in the previous section, adoption of the MJHMP makes your jurisdiction eligible for several types of grant funding sources. The two most consistent sources are Pre-Disaster Mitigation (PDM) funding and Flood Mitigation Assistance (FMA) funding.

Pre-Disaster Mitigation

The PDM grant program awards project and planning grants on a nationally competitive basis. Projects are only eligible if they appear in a jurisdiction's hazard mitigation plan (see **Attachments 1a/1b** for projects included in your jurisdiction's mitigation plan). Applications must be processed through the state. The general application process is below; for more information, see <https://www.fema.gov/pre-disaster-mitigation-grant-program>.

1. Review notice of funding opportunity announcements on the Cal OES website: <http://www.caloes.ca.gov/cal-oes-divisions/hazard-mitigation/pre-disaster-flood-mitigation>.
2. Identify desired project or projects in **Attachments 1a/1b** that meet current funding cycle requirements.
3. Coordinate with Cal OES representative to compile and submit grant application.

Flood Mitigation Assistance

The FMA grant program funds projects that reduce or eliminate long-term risk of flood damage to structures insured under the National Flood Insurance Program (NFIP). Similar to PDM, FMA grant applications must be submitted to FEMA by a state, US territory, or federally recognized tribe. Generally, local communities sponsor applications on behalf of property owners and then submit the applications to their state. The general application process is below; for more information, see <https://www.fema.gov/flood-mitigation-assistance-grant-program>.

1. Review notice of funding opportunity announcements on the Cal OES website: <http://www.caloes.ca.gov/cal-oes-divisions/hazard-mitigation/pre-disaster-flood-mitigation>.
2. Identify desired project or projects in **Attachments 1a/1b** that meet current funding cycle requirements.
3. Coordinate with Cal OES representative to compile and submit grant application.

My jurisdiction is in the budgeting process

The budgeting process is an ideal place to integrate the fiscally related concepts of hazard mitigation into a jurisdiction's work plan. Consider integrating hazard mitigation into your budget through the following means:

1. Incorporate mitigation into the Capital Improvements Program (CIP).
 - a. Review the mitigation actions in **Attachments 1a/1b** to identify projects that could be included in the CIP or projects that share objectives with those identified in the CIP. Additionally, review the hazard profiles in the MJHMP to ensure that environmental constraints are being considered in the selection and prioritization of capital improvements.
2. Identify opportunities to implement stand-alone adaptation actions.
 - a. Review the high priority actions in **Attachments 1a/1b** to identify projects or actions that could be included in the budget as stand-alone line items.
3. Set aside staff time.
 - a. PDM and FMA grant opportunities (see: I want to apply for mitigation grant funding, above) are annual opportunities to obtain funds and reduce local hazard impacts. Grant applications can be time-intensive processes for staff. The budgeting process often allows departments to set priorities and earmark staff time for certain objectives.
 - b. The Hazard Mitigation Planning Team should meet annually. Consider setting aside staff time to plan and attend these meetings.

My jurisdiction is conducting its annual Hazard Mitigation Team meeting

One benefit of the MJHMP process is that it brings all the different hazard-related stakeholders in the county to the table to discuss local risk and ways to reduce risk. An annual meeting of the Hazard Mitigation Planning Team (Planning Team) allows for check-ins on progress and creates a time to strategically plan for the following year. We recommend meetings be held in March to identify outcomes ahead of the following fiscal year budgeting process. At its annual meeting, the Planning Team should review the implementation status of individual MJHMP mitigation measures, including measures that have been completed, are in progress, and have not yet begun. **Chapter 6** of the MJHMP contains more details about the responsibilities of the Planning Team at its annual meeting.

Attachment 4 includes a sample Planning Team meeting agenda; we recommend at a minimum the following stakeholders be invited to participate:

Organization	Current Participant	Current Participant Contact (phone/email)
California Department of Forestry and Fire Protection	Jeremy Mitchell	(760) 408-7772 jeremy.mitchell@fire.ca.gov
California Department of Transportation	Greg Miller	(760) 937-0783 greg_miller@dot.ca.gov
California Highway Patrol	Tim Noyes	(760) 872-5960 tnoyes@chp.ca.gov
California Office of Emergency Services	Karla Benedicto John Hudson	(719) 889-9718 karla.benedicto@caloes.ca.gov (619) 250-9063 john.hudson@caloes.ca.gov
City of Bishop Fire Department	Ray Seguine	(760) 873-5185 rseguine@cityofbishop.com
Eastern Sierra Transit Authority	Jill Batchelder	(760) 872-1901 jbatchelder@estransit.com
Inyo County Administrative Services	Rick Benson	(760) 873-7191 rbenson@inyocounty.us
Inyo County Administrator's Office	Kelley Williams Kevin Carunchio	(760) 878-0292 kwilliams@inyocounty.us (760) 878-0292 kcarunchio@inyocounty.us
Inyo County Assessor	Dave Stottlemyre	(760) 878-0302 dstottlemyre@inyocounty.us
Inyo County Environmental Health		(760) 878-0261
Inyo County Health and Human Services	Melissa Best-Baker	(760) 878-0232 mbestbaker@inyocounty.us
Inyo County Public Works	Clint Quilter	(760) 878-0201 cquilter@inyocounty.us

Organization	Current Participant	Current Participant Contact (phone/email)
Inyo County Sheriff	Bill Lutze Nick Vaughn	(760) 920-0320 blutze@inyocounty.us (760) 878-0383 nvaughn@inyocounty.us
Inyo National Forest	Rich Napoles	(760) 937-9113 rnapoles@fs.fed.us
Inyo/Mono Agricultural Commissioner	David Miller	(760) 258-7518 dmiller@inyocounty.us
Los Angeles Department of Water and Power	Steven Butler	(760) 920-2692 steven.butler@ladwp.com
Northern Inyo Hospital	Scott Hooker Andrew Stevens	(760) 873-5811 scott.hooker@nih.org (760) 873-2620 andrew.stevens@nih.org
National Park Service	Peter Treuherz	(760) 786-3219 peter_treuherz@nps.gov
Sierra Highlands Community Service District	John Beischel	(760) 873-5367 mr05rubi@gmail.com
SuddenLink	Jason Janney	(760) 784-1585 jason.janney@suddenlink.com
UC Cooperative Extension	Dustin Blakey	(760) 873-7854 dwblakey@ucanr.edu
United States Forest Service	Levi Ray	(760) 937-1535 pray@fs.fed.us
United States Geological Survey	Stuart Wilkinson	(760) 914-0246 swilk@usgs.gov

Ahead of the team meeting, we recommend you use **Attachment 3** to identify changes in the community or recent disasters that could make the MJHMP out of date. This is also a good time to make sure the previous year's disaster information has been properly recorded (**Attachment 2**) and that successes, such as hazard mitigation actions that have been implemented, are discussed (**Attachments 1a/1b**)

My jurisdiction is updating policy and regulatory documents

My jurisdiction is updating this hazard mitigation plan

Hazard mitigation plans should be updated at least every five years. This helps keep the plan up-to-date and consistent with the most recent science, regulations, and best practices. Keeping the plan current also ensures that Inyo County and the City of Bishop will remain eligible for hazard mitigation grant funding and an increased amount of post-disaster recovery funds.

The update process for the MJHMP should begin no later than one year before the plan expires (four years after adoption). The plan update may occur sooner if there is a federal disaster declaration affecting Inyo County and/or the City of Bishop, or if a hazard event causes loss of life in Inyo County and/or the City of Bishop. **Chapter 6** of the MJHMP contains more detail about updating the MJHMP, and **Chapter 1** outlines the process used to prepare the plan.

1. Assemble the Planning Team.
 - a. At the annual meeting at least one year before the MJHMP expires, convene a meeting of the Planning Team. In addition to regular members, invite representatives from any other applicable agencies or organizations. Review the current implementation status of the MJHMP and identify any shortcomings or opportunities for improvement in the current plan. Determine if there is a need for a technical consultant, and begin the selection process if necessary.
 - b. Devise and implement a public outreach strategy. This strategy may include in-person meetings and workshops, surveys, information booths, and other techniques.
2. Update the hazard profiles and risk assessment.
 - a. With assistance from a technical consultant if needed, review and update the hazard profiles and risk assessment to reflect the most recent conditions in Inyo County and the City of Bishop. Consider new development, demographic changes, any recent hazard events, and climate change.
 - b. Evaluate the status of all critical facilities and update the critical facilities list as needed. Determine if the vulnerability of any critical facilities has changed.
3. Update the mitigation measures.
 - a. Update existing mitigation measures to reflect any actions that are in progress. Remove measures that have been completed, or determine ways to expand on them. If possible, revise measures that have been abandoned so as to make them more feasible.
 - b. Based on the hazard profiles and risk assessment, identify ways to improve resiliency not addressed by the current mitigation measures. Develop new measures to address these gaps.
 - c. Ensure that feedback from public outreach is reflected in the new and updated mitigation measures.
4. Review and adopt the updated plan.
 - a. Review and revise the completed plan internally among Planning Team members.
 - b. Distribute the plan to appropriate external agencies for comment and make revisions as needed.
 - c. Distribute the plan to members of the public, and make revisions as appropriate to reflect public comment.
 - d. Submit the plan to Cal OES and FEMA for approval and revise as needed.
 - e. Submit the plan to the Inyo County Board of Supervisors and Bishop City Council for adoption.

My jurisdiction is updating the Safety Element of the General Plan

The Safety Element is a required component of any jurisdiction's General Plan. It can be updated individually or as part of a comprehensive General Plan update. There is no specific requirement for how often a Safety Element should be updated, but it should be frequent enough for the element to remain current and applicable to the community. The state of California adopted specific language to assist communities in understanding these requirements.

California Government Code (CGC) Sections 8685.9 and 65302.6 allow local communities to incorporate their hazard mitigation plans into their Safety Elements. This makes the community eligible for a greater share of post-disaster relief funding from the state if a hazard situation occurs. In order to be incorporated into the Safety Element, the hazard mitigation plan must contain specific components as specified in these sections of the CGC.

1. Incorporate new requirements into the Safety Element, and ensure the MJHMP is consistent.
 - a. CGC Section 65302.6 requires that Safety Elements address a number of hazard types and include specific pieces of information. The MJHMP should be fully consistent with the Safety Element, and either document should be updated as needed to ensure that both reflect the most recent information.
 - b. Make certain that any hazard profiles or risk assessments in the Safety Element do not contradict the MJHMP. The policies in the Safety Element should support the MJHMP and provide a planning framework for specific hazard mitigation measures.

My jurisdiction is updating the Housing Element of the General Plan

1. The Housing Element is a required section of every jurisdiction's General Plan, and must be updated regularly to remain current. While the Housing Element does not necessarily contain hazard-related information, updates to the Housing Element do trigger reviews and potential revisions to the Safety Element, which the MJHMP can support. Use the MJHMP to support updates to the Safety Element that are mandated by updates to the Housing Element.
 - a. CGC Section 65302(g) lists a number of requirements for the Safety Element of the General Plan. These requirements are triggered by updates to the Housing Element that occur after a specific year. For example, Section 65302(g)(3) requires that, when a jurisdiction's Housing Element is updated after January 1, 2014, the Safety Element be updated at the same time to include specific information on wildfires. While there are no applicable requirements to the MJHMP itself, much of the information required in the Safety Element as triggered by Housing Element updates may be included in the MJHMP.
 - b. Under CGC Section 65302.6, a jurisdiction may incorporate its hazard mitigation plan as part of its Safety Element as long as the hazard mitigation plan meets specific requirements. Therefore, by ensuring that the MJHMP contains the information needed under the specific standards of Section 65302(g), your jurisdiction can effectively meet these requirements without needing to update the Safety Element document itself.

My jurisdiction is updating its municipal or zoning code

Within each's jurisdiction's municipal code is a set of standards and requirements that address flooding, building construction, wildfire urban interface conditions, and a variety of other hazards. While all communities in California are required to adopt the minimum state Building Standards Code (BSC), jurisdictions have the option to establish additional building standards that exceed the state code in order to achieve any specific community goals or reflect local values. All communities also have a zoning code, implementing the land use and development standards contained in the General Plan. While neither the building code nor the zoning code are required to contain hazard-related requirements, both codes can be an effective tool for implementing hazard mitigation measures for land use and development in the community.

1. Include hazard-related building standards in the building code.
 - a. The building code applies to new and significantly retrofitted buildings, and so can be a very effective tool in making new and retrofitted construction more resilient to hazard events. When making updates to the building code or the entire municipal code, consider standards that exceed the minimum state BSC that can implement the hazard mitigation measures in the MJHMP. This can include requirements for how buildings are designed and constructed, siting standards, and landscaping requirements, among other options.
2. Include hazard-based overlay zones in the zoning code.
 - a. Zoning codes can designate overlay zones, set areas that can span different types of land use but where an additional set of standards apply. Overlay zones can be used for a number of different reasons, including to require stricter development standards in areas that face an elevated risk of specific hazards such as wildfire, flooding, and fault rupture. When updating the zoning code, work to include any hazard-related zoning codes identified in the MJHMP. Consider if any new hazard-related overlay zones are appropriate, and if the boundaries and standards of any existing hazard-related overlay zones should be changed.

Attachment 1a. Adopted Mitigation Actions – Inyo County

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
Multiple Hazards						
1.1	Explore the feasibility of establishing a communication system for community members and government officials that can supplement or replace conventional telecommunication networks if standard infrastructure is damaged or destroyed.	Information Services/ Sheriff's Office	High	\$\$	1, 2, 3, 4	2021
1.2	Evaluate existing critical facilities for specific vulnerabilities to hazard situations, and conduct retrofits to reduce vulnerabilities. Share information about any known specific vulnerabilities of existing key facilities with other agencies and service providers, and encourage them to relocate or retrofit vulnerable existing facilities as feasible.	Public Works	High	\$\$\$	1, 2, 3, 4, 5	2020
1.3	Continue to use emergency alert systems to notify community members of an imminent hazard event or a need to evacuate, in coordination with notification systems used by state and federal agencies.	Sheriff's Office	High	\$	2	Ongoing
1.4	Distribute information about reducing the impacts of potential hazards through mailings, printed notices, television, digital devices and social media, and in-person meetings and events. Ensure all information is widely distributed and made available in all commonly spoken languages.	Public Works/ Sheriff's Office	Medium	\$	1, 2, 4	Ongoing
1.5	To the extent possible, avoid locating critical county and city facilities in known areas of increased hazard potential. If no reasonable alternative is available, ensure new facilities contain comprehensive features to mitigate risk. Conduct hazard vulnerability studies when constructing new facilities, and build facilities to be more resilient to any identified hazards. Share information about vulnerable areas with other agencies and service providers. Support any efforts by these organizations to locate new key facilities outside of known hazard areas or to integrate resilient features into facility design.	Planning/ Public Works	Medium	\$	1, 2, 3, 4	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
1.6	Incorporate applicable hazards and risk information from the MJHMP into other local emergency planning and public safety efforts.	Planning/ Public Works	Medium	\$	1, 2	Ongoing
1.7	In coordination with other agencies and experts, improve estimates of injury, death, property damage, health impacts, service disruptions, and other consequences of hazard events.	Public Works/ Emergency Services/ Sheriff's Office	Medium	\$\$	1, 4	Ongoing
1.8	Pursue funding for implementation of hazard mitigation measures.	Public Works/ Planning	Medium	\$	1, 3, 4	Ongoing
1.9	Coordinate with federal and state agencies and LADWP to support a unified hazard mitigation strategy throughout Inyo County.	Public Works/ Planning	Low	\$	1, 2, 4	Ongoing
1.10	Support efforts by SCE and LADWP to identify vulnerabilities in the local power grid, and coordinate on efforts to make the power grid more resilient to hazard events. Evaluate the feasibility of distributed electricity generation and backup storage at critical facilities, and install generation and storage systems as feasible. Promote increased energy independence for residents and businesses, and revise zoning codes and permitting processes to remove barriers to these systems as appropriate. Emphasize the use of renewable energy technologies.	Public Works	Low	\$\$	1, 4, 5	Ongoing
1.11	Work with local community organizations to identify populations who face increased vulnerabilities, and develop actions to reduce risks to these populations. Provide information to tribal governments on vulnerable individuals, and work with tribal governments as requested to reduce risks to vulnerable individuals on tribal land.	Health and Human Services/ Public Health	Low	\$	1, 2, 4	Ongoing
1.12	In coordination with other landowners, protect existing natural habitats and restore degraded ones to help ensure the continued hazard mitigation benefits of the environment.	Public Works	Low	\$	1, 4, 5, 6	Ongoing
1.13	Require applicants for major development projects to conduct hazard assessment studies and to design new or significantly retrofitted structures to be resilient to any identified hazards.	Public Works	Low	\$	6	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
1.14	Monitor potential changes to the location, severity, and frequency of hazard events as a result of climate change or other factors, in coordination with state and regional agencies and continue to identify improved risk analysis opportunities.	Public Works	Low	\$	1, 6	Ongoing
Avalanche						
2.1	In coordination with the US Forest Service, monitor the probability of avalanches on slopes with accumulated snow, and restrict access to specific areas deemed unsafe due to avalanche risk.	Public Works/Sheriff's Office	Low	\$	1, 4, 6	Ongoing
2.2	Post information about avalanche risks and current conditions at trailheads throughout avalanche-prone areas, in visitor centers, and online.	Public Works/Sheriff's Office	Low	\$	1, 2, 6	Ongoing
2.3	Support efforts by the US Forest Service and CalTrans to set off controlled avalanches on unstable slopes as necessary.	Public Works/Sheriff's Office	Low	\$	4	Ongoing
Dam and Aqueduct Failure						
3.1	Encourage and support efforts by SCE and LADWP to assess the current safety of dams and the LA Aqueduct in Inyo County and the Long Valley Dam.	Public Works	High	\$	1, 4, 6	2020
3.2	Establish and maintain an effective public alert system for areas in a dam and aqueduct inundation zones.	Sheriff's Office	Low	\$\$	1, 2, 4, 6	2022
3.3	Share information about dam and aqueduct inundation risks with Tribal governments, and provide support as needed to assist with any Tribal efforts to locate new development outside of dam and aqueduct inundation zones. Use existing studies and new quantitative analysis to highlight best practices and regional risks.	Public Works	Low	\$	1, 2, 4	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
3.4	Evaluate the vulnerability of water and wastewater infrastructure to dam and aqueduct inundation in greater detail, and carry out actions to improve resiliency as feasible. Identify opportunities to improve analysis of risk from dam or aqueduct failure, especially in regard to flood routing and related water infrastructure.	Public Works	Low	\$\$\$	1, 2, 4, 6	2022
Disease/Pest Management						
4.1	Through the Owens Valley Mosquito Abatement Program, continue to monitor the status of mosquitos in the Owens Valley and take appropriate action to protect public health.	Owens Valley Mosquito Abatement Program (OVMAP)	Medium	\$	1, 2, 4, 5	Ongoing
4.2	Continue to monitor the status of vector-borne diseases in Inyo County, and issue public health alerts for diseases that are new to the area or are becoming more widespread.	OVMAP/ Health and Human Services/ Public Health	Medium	\$	1, 2, 4, 5	Ongoing
4.3	Encourage farmers to plant disease-resistant crop varieties and to minimize use of pesticides in favor of effective biological or physical pest controls, to the extent possible.	Agricultural Commissioner	Medium	\$	1, 4, 5, 6	Ongoing
4.4	When installing new or renovated public landscapes, plant vegetation that is resistant to diseases or pest infestation. Encourage private property owners to use resistant plants in landscaping projects.	Agricultural Commissioner	Low	\$\$	1, 2, 4, 5, 6	Ongoing
4.5	Practice Integrated Pest Management (IPM) strategies on public landscapes, emphasizing a preventive approach and minimizing the use of chemicals.	Agricultural Commissioner	Low	\$	1, 4, 6	Ongoing
4.6	Conduct periodic educational campaigns through in-person events and various types of media to encourage community members to remove standing water and practice other mosquito prevention strategies.	OVMAP	Low	\$	1, 2, 4, 5	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
4.7	Through the Inyo and Mono Counties Agricultural Commissioner's Office, continue to monitor for agricultural diseases and pests, and take appropriate steps to contain or eradicate these diseases and pests.	Agricultural Commissioner	Low	\$	1, 2, 4, 5	Ongoing
4.8	Continue activities to prevent the spread of noxious weeds through the Eastern Sierra Weed Management Area program.	Agricultural Commissioner	Low	\$\$	1, 4, 5, 6	Ongoing
4.9	Support efforts by the US Forest Service, the Bureau of Land Management, and other landowners to control or eradicate invasive and/or abnormally active forest pests.	Agricultural Commissioner	Low	\$	1, 4	Ongoing
Drought						
5.1	Encourage retrofits of private homes and businesses for increased water conservation. Explore financing mechanisms such as Property Assessed Clean Energy (PACE) programs to support water conservation retrofits.	Public Works	High	\$\$	1, 2, 4, 6	Ongoing
5.2	Explore opportunities to diversify water sources for community water systems.	Public Works	Medium	\$\$	1, 2, 3, 4, 5, 6	2022
5.3	Integrate changes in precipitation and snowpack levels as a result of climate change into long-term water availability forecasts.	Water Department	Low	\$\$	1, 2	Ongoing
5.4	Encourage private landowners to use plants that require no irrigation in new or retrofitted landscapes.	Agricultural Commissioner	Low	\$	1, 4, 6	2020
5.5	Provide resources to local farmers about crop varieties that require little or no irrigation.	Agricultural Commissioner	Low	\$	1, 2, 4, 6	2020
5.6	Provide farmers with low-cost or free water audits to identify opportunities to improve water conservation in irrigation systems, and support financing mechanisms to make water-efficient irrigation systems more affordable.	Agricultural Commissioner /Public Works	Low	\$\$	1, 2, 4, 6	2021

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
Seismic hazards						
6.1	Assess liquefaction potential of soils, particularly near permanent and dry water bodies, and integrate the results into future hazard planning efforts.	Public Works	Medium	\$\$	1, 4	2021
6.2	Identify and maintain records of seismically vulnerable structures, and encourage owners of these structures to complete seismic retrofits.	Public Works	Low	\$\$	1, 2, 4, 6	2023
6.3	Continue to require new and retrofitted structures to meet minimum state seismic safety standards, and encourage property owners to exceed these standards.	Public Works	Low	\$	1, 2, 4, 6	Ongoing
6.4	Require property owners to locate new developments outside of known fault rupture hazard zones.	Planning	Low	\$	1, 2, 4, 6	Ongoing
6.5	Design County-owned infrastructure in fault rupture zones to resist damage from fault rupture, and encourage LADWP and other agencies to use similar strategies. Use similar strategies outside of fault rupture zones to the extent feasible.	Public Works	Low	\$\$	1, 2, 3, 4, 5, 6	Ongoing
Severe Weather						
7.1	Designate at least one cooling/heating center in all larger communities to the extent that facilities are available, and establish a temperature at which cooling/heating centers will open. Ensure that community members are notified through multiple means when cooling/heating centers are operational.	Health and Human Services/ Emergency Services/ Sheriff's Office	High	\$\$	1, 2, 4	Ongoing
7.2	Work with tribal governments and community organizations to provide check-ins to vulnerable persons, including elderly residents, socially isolated persons, and immunocompromised individuals, during extreme temperature events.	Health and Human Services/ Sheriff's Office	Medium	\$	1, 2, 4	Ongoing
7.3	As part of the countywide emergency notification system, ensure residents are informed when severe winds are imminent around Owens Lake, and provide information about reducing exposure to toxic dust.	Health and Human Services/ Public Health/ Sheriff's Office	Medium	\$	1, 2	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
7.4	Expand weather prediction and monitoring capabilities in the county through increased coordination with the National Weather Service and other state and federal agencies responsible for weather-related services.	Sheriff's Office	Medium	\$\$\$	1, 2, 4	2021
7.5	Identify ways to provide free or low-cost weatherization and energy-efficient heating and cooling appliances to lower-income residents without access to these devices.	Public Works/ Health and Human Services	Low	\$\$	1, 2, 4, 6	2023
7.6	Ensure that County employees receive training on reducing risks from extreme temperatures and providing emergency first aid for temperature-related illnesses. Encourage federal and state agencies, LADWP, and private businesses to provide similar training to their employees.	Risk/ Emergency Services	Low	\$	1, 4	Ongoing
7.7	Post signs with information about extreme temperatures and current conditions at trailheads and other outdoor recreation facilities.	Public Works	Low	\$\$	1, 4	2022
7.8	Work with landowners and utility companies to monitor tree health near developed areas or key infrastructure (e.g., roads or power lines). Promptly remove weakened branches and trees. When planting new trees in these areas, use species that can resist high winds and other severe weather, and encourage other landowners to do the same.	Public Works/ Agricultural Commissioner	Low	\$	1, 4, 6	Ongoing
7.9	Encourage project applicants to incorporate wind-resistant design features into new or significantly renovated buildings.	Public Works	Low	\$	1, 2, 4, 6	Ongoing
Flood						
8.1	Identify areas in larger communities where ponding frequently occurs during heavy rainfall, and install LID features or other measures to reduce ponding.	Public Works	Low	\$	1, 4, 6	2021
8.2	Maintain an adequate supply of sandbags in advance of potential flood events.	Emergency Services/ Sheriff's Office/ Public Works	Low	\$\$	1, 2	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
8.3	Encourage farmers to use grading systems and vegetation to minimize topsoil loss during heavy rains.	Agricultural Commissioner/ Public Works	Low	\$	1, 2, 4, 6	Ongoing
8.4	As a pilot project, install acoustic flow monitors along portions of the Amargosa River to establish an early warning system for flash floods that have affected County facilities and communities in this area.	Public Works	Low	\$\$	1, 4, 6	2021
8.5	Identify opportunities to improve analysis of risk from flood, especially in regard to flood routing.	Public Works	Low	\$	1, 4	Ongoing
Geologic Hazards						
9.1	In coordination with other landowners, support efforts to plant and maintain native vegetation on exposed slopes and recently burned areas to control erosion and landslides.	Public Works	Medium	\$	1, 4, 6	Ongoing
9.2	Support efforts to improve volcanic forecasting strategies.	Public Works	Medium	\$	1, 4, 6	Ongoing
9.3	During an ongoing volcanic eruption or threat of eruption, widely distribute information about removing and disposing of ash from private property.	Public Works/ Integrated Waste/ Environmental Health	Low	\$	1, 4	Ongoing
9.4	Encourage property owners to avoid construction activities at canyon mouths or on existing alluvial fans.	Planning/ Public Works	Low	\$	1, 2	Ongoing
Hazardous Materials						
10.1	In coordination with appropriate state and federal agencies, establish a system to distribute information about hazardous material releases quickly and accurately to community members.	Environmental Health/ Sheriff's Office	Medium	\$\$	1, 2, 4, 6	Ongoing
10.2	Support ongoing mitigation and testing activities at sites known or suspected to contain hazardous materials.	Environmental Health	Medium	\$	1, 4, 6	Ongoing
10.3	Establish multiple sites for free or low-cost disposal of hazardous household wastes, including electronic wastes.	Environmental Health/ Integrated Waste	Medium	\$\$	1, 2, 4, 5	2022

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
10.4	In coordination with Caltrans, the CHP, and members of the public, develop an emergency response plan for hazardous material releases occurring along State Route 127.	Environmental Health/ Sheriff's Office	Medium	\$\$	1, 2, 4, 6	2023
Wildfire						
11.1	Work with property owners to ensure a buffer of defensible space around all buildings and key structures.	Public Works/ Sheriff's Office/ Local Fire Departments	High	\$	1, 4, 5, 6	Ongoing
11.2	Promote the establishment of fire safe councils within Inyo County communities.	Public Works/ Sheriff's Office/ Local Fire Departments	High	\$	1, 4, 5, 6	Ongoing
11.3	Support efforts to reduce the risk of wildfire through preventive measures on federal, state, and LADWP land, with an emphasis on the Inyo National Forest and surrounding land.	Public Works/ Local Fire Departments	High	\$	1, 4, 6	Ongoing
11.4	Identify areas near residences or key facilities with potential access difficulties for fire equipment, and work with landowners to reduce or remove access barriers.	Public Works/ Sheriff's Office/ Local Fire Departments	Medium	\$	1, 4, 6	Ongoing
11.5	Require new and significantly renovated buildings in very high and high fire hazard zones to contain wildfire-resistant building, landscaping, and site design features, and encourage the use of similar features in moderate fire hazard zones.	Public Works	Low	\$	1, 2, 4, 6	Ongoing
11.6	In coordination with the Great Basin Unified Air Pollution Control District, provide air quality alerts and information about reducing exposure to smoke and fire-related particulates during regional wildfire events.	Environmental Health/ Health and Human Services/ Public Health/ Sheriff's Office	Low	\$	1, 4, 6	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
11.7	Share information about fire risks to electricity and water infrastructure with LADWP. Encourage and support any efforts to harden existing vulnerable backup infrastructure or to establish backup electricity and water infrastructure outside of high fire hazard zones.	Public Works	Low	\$	1, 4, 6	Ongoing
Relative Cost Categories: Low (\$) – Costs below \$100,000 Medium (\$\$) – Costs between \$100,001 and \$300,000 High (\$\$\$) – Costs above \$300,001		Potential Funding Sources: 1: Grant Funding 2: County funding sources (eligible categorical monies, general fund, or combination thereof) 3: Financing (e.g. COPs, bonds, and loans). Requires voter approval 4: State/federal appropriations 5: Assessment districts. Requires voter approval 6: Private/other public sector/NGO funding				

Attachment 1b. Adopted Mitigation Actions – City of Bishop

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
Multiple Hazards						
1.1	Explore the feasibility of establishing a communication system for community members and government officials that can supplement or replace conventional telecommunication networks if standard infrastructure is damaged or destroyed.	Administration/ Police Department	High	\$\$	1, 2, 3, 4	2021
1.2	Evaluate existing critical facilities for specific vulnerabilities to hazard situations, and conduct retrofits to reduce vulnerabilities. Share information about any known specific vulnerabilities of existing key facilities with other agencies and service providers, and encourage them to relocate or retrofit vulnerable existing facilities as feasible.	Public Works	High	\$\$\$	1, 2, 3, 4, 5	2020
1.3	Continue to use emergency alert systems to notify community members of an imminent hazard event or a need to evacuate, in coordination with notification systems used by state and federal agencies.	Police Department	High	\$	2	Ongoing
1.4	Distribute information about reducing the impacts of potential hazards through mailings, printed notices, television, digital devices and social media, and in-person meetings and events. Ensure all information is widely distributed and made available in all commonly spoken languages.	Public Works/ Police Department	Medium	\$	1, 2, 4	Ongoing
1.5	To the extent possible, avoid locating critical county and city facilities in known areas of increased hazard potential. If no reasonable alternative is available, ensure new facilities contain comprehensive features to mitigate risk. Conduct hazard vulnerability studies when constructing new facilities, and build facilities to be more resilient to any identified hazards. Share information about vulnerable areas with other agencies and service providers. Support any efforts by these organizations to locate new key facilities outside of known hazard areas or to integrate resilient features into facility design.	Planning/ Public Works	Medium	\$	1, 2, 3, 4	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
1.6	Incorporate applicable hazards and risk information from the MJHMP into other local emergency planning and public safety efforts.	Planning/ Public Works	Medium	\$	1, 2	Ongoing
1.7	In coordination with other agencies and experts, improve estimates of injury, death, property damage, health impacts, service disruptions, and other consequences of hazard events.	Police Department/ Public Works	Medium	\$\$	1, 4	Ongoing
1.8	Pursue funding for implementation of hazard mitigation measures.	Public Works/ Planning	Medium	\$	1, 3, 4	Ongoing
1.9	Coordinate with federal and state agencies and LADWP to support a unified hazard mitigation strategy throughout Inyo County.	Public Works/ Planning	Low	\$	1, 2, 4	Ongoing
1.10	Support efforts by SCE and LADWP to identify vulnerabilities in the local power grid, and coordinate on efforts to make the power grid more resilient to hazard events. Evaluate the feasibility of distributed electricity generation and backup storage at critical facilities, and install generation and storage systems as feasible. Promote increased energy independence for residents and businesses, and revise zoning codes and permitting processes to remove barriers to these systems as appropriate. Emphasize the use of renewable energy technologies.	Public Works	Low	\$\$	1, 4, 5	Ongoing
1.11	Work with local community organizations to identify populations who face increased vulnerabilities, and develop actions to reduce risks to these populations. Provide information to tribal governments on vulnerable individuals, and work with tribal governments as requested to reduce risks to vulnerable individuals on tribal land.	Community Services	Low	\$	1, 2, 4	Ongoing
1.12	In coordination with other landowners, protect existing natural habitats and restore degraded ones to help ensure the continued hazard mitigation benefits of the environment.	Public Works	Low	\$	1, 4, 5, 6	Ongoing
1.13	Require applicants for major development projects to conduct hazard assessment studies and to design new or significantly retrofitted structures to be resilient to any identified hazards.	Public Works	Low	\$	6	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
1.14	Monitor potential changes to the location, severity, and frequency of hazard events as a result of climate change or other factors, in coordination with state and regional agencies and continue to identify improved risk analysis opportunities.	Public Works	Low	\$	1, 6	Ongoing
Dam and Aqueduct Failure						
2.1	Encourage and support efforts by SCE and LADWP to assess the current safety of dams along Bishop Creek in Inyo County and the Long Valley Dam.	Public Works	High	\$	1, 4, 6	2020
2.2	Establish and maintain an effective public alert system for areas in a dam and aqueduct inundation zones.	Police Department	Low	\$\$	1, 2, 4, 6	2022
2.3	Evaluate the vulnerability of water and wastewater infrastructure to dam and aqueduct inundation in greater detail, and carry out actions to improve resiliency as feasible. Identify opportunities to improve analysis of risk from dam or aqueduct failure, especially in regard to flood routing and related water infrastructure.	Public Works	Low	\$\$\$	1, 2, 4, 6	2022
Disease/Pest Management						
3.1	Through the Owens Valley Mosquito Abatement Program, continue to monitor the status of mosquitos in the Owens Valley and take appropriate action to protect public health.	Owens Valley Mosquito Abatement Program (OVMAP)	Medium	\$	1, 2, 4, 5	Ongoing
3.2	Continue to monitor the status of vector-borne diseases in Inyo County, and issue public health alerts for diseases that are new to the area or are becoming more widespread.	OVMAP/Community Services	Medium	\$	1, 2, 4, 5	Ongoing
3.4	When installing new or renovated public landscapes, plant vegetation that is resistant to diseases or pest infestation. Encourage private property owners to use resistant plants in landscaping projects.	Public Works	Low	\$\$	1, 2, 4, 5, 6	Ongoing
3.5	Practice Integrated Pest Management (IPM) strategies on public landscapes, emphasizing a preventive approach and minimizing the use of chemicals.	Public Works	Low	\$	1, 4, 6	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
3.6	Conduct periodic educational campaigns through in-person events and various types of media to encourage community members to remove standing water and practice other mosquito prevention strategies.	OVMAP	Low	\$	1, 2, 4, 5	Ongoing
Drought						
4.1	Encourage retrofits of private homes and businesses for increased water conservation. Explore financing mechanisms such as Property Assessed Clean Energy (PACE) programs to support water conservation retrofits.	Public Works	High	\$\$	1, 2, 4, 6	Ongoing
4.2	Explore opportunities to diversify water sources for community water systems.	Public Works	Medium	\$\$	1, 2, 3, 4, 5, 6	2022
4.3	Integrate changes in precipitation and snowpack levels as a result of climate change into long-term water availability forecasts.	Public Works	Low	\$\$	1, 2	Ongoing
4.4	Encourage private landowners to use plants that require no irrigation in new or retrofitted landscapes.	Planning	Low	\$	1, 4, 6	2020
Seismic hazards						
5.1	Identify and maintain records of seismically vulnerable structures, and encourage owners of these structures to complete seismic retrofits.	Public Works	Low	\$\$	1, 2, 4, 6	2023
5.2	Continue to require new and retrofitted structures to meet minimum state seismic safety standards, and encourage property owners to exceed these standards.	Public Works	Low	\$	1, 2, 4, 6	Ongoing
5.3	Require property owners to locate new developments outside of known fault rupture hazard zones.	Planning	Low	\$	1, 2, 4, 6	Ongoing
5.4	Design City-owned infrastructure in fault rupture zones to resist damage from fault rupture, and encourage LADWP and other agencies to use similar strategies. Use similar strategies outside of fault rupture zones to the extent feasible.	Public Works	Low	\$\$	1, 2, 3, 4, 5, 6	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
Severe Weather						
6.1	Designate at least one cooling/heating center in all larger communities to the extent that facilities are available, and establish a temperature at which cooling/heating centers will open. Ensure that community members are notified through multiple means when cooling/heating centers are operational.	Community Services/ Police Department	High	\$\$	1, 2, 4	Ongoing
6.2	Work with tribal governments and community organizations to provide check-ins to vulnerable persons, including elderly residents, socially isolated persons, and immunocompromised individuals, during extreme temperature events.	Community Services/ Police Department	Medium	\$	1, 2, 4	Ongoing
6.3	As part of the countywide emergency notification system, ensure residents are informed when severe winds are imminent around Owens Lake, and provide information about reducing exposure to toxic dust.	Community Services/ Police Department	Medium	\$	1, 2	Ongoing
6.4	Expand weather prediction and monitoring capabilities in the county through increased coordination with the National Weather Service and other state and federal agencies responsible for weather-related services.	Police Department	Medium	\$\$\$	1, 2, 4	2021
6.5	Identify ways to provide free or low-cost weatherization and energy-efficient heating and cooling appliances to lower-income residents without access to these devices.	Community Services/ Public Works	Low	\$\$	1, 2, 4, 6	2023
6.6	Ensure that City employees receive training on reducing risks from extreme temperatures and providing emergency first aid for temperature-related illnesses. Encourage federal and state agencies, LADWP, and private businesses to provide similar training to their employees.	Administration	Low	\$	1, 4	Ongoing
6.7	Work with landowners and utility companies to monitor tree health near developed areas or key infrastructure (e.g., roads or power lines). Promptly remove weakened branches and trees. When planting new trees in these areas, use species that can resist high winds and other severe weather, and encourage other landowners to do the same.	Public Works	Low	\$	1, 4, 6	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
6.8	Encourage project applicants to incorporate wind-resistant design features into new or significantly renovated buildings.	Public Works	Low	\$	1, 2, 4, 6	Ongoing
Flood						
7.1	Identify areas in larger communities where ponding frequently occurs during heavy rainfall, and install LID features or other measures to reduce ponding.	Public Works	Low	\$	1, 4, 6	2021
7.2	Work with the County to maintain an adequate supply of sandbags in advance of potential flood events.	Public Works	Low	\$\$	1, 2	Ongoing
7.3	Harden sewage treatment plant and lift station infrastructure against flood events.	Public Works	Low	\$\$\$	1, 2, 3, 4, 5, 6	2023
7.4	Identify opportunities to improve analysis of risk from flood, especially in regard to flood routing.	Public Works	Low	\$	1, 4	Ongoing
Geologic Hazards						
8.1	In coordination with other landowners within landslide prone areas, support efforts to plant and maintain native vegetation on exposed slopes and recently burned areas to control erosion and landslides.	Public Works	Medium	\$	1, 4, 6	Ongoing
8.2	Support efforts to improve volcanic forecasting strategies.	Public Works	Medium	\$	1, 4, 6	Ongoing
8.3	During an ongoing volcanic eruption or threat of eruption, widely distribute information about removing and disposing of ash from private property.	Police Department/ Public Works	Low	\$	1, 4	Ongoing
Hazardous Materials						
9.1	In coordination with appropriate state and federal agencies, establish a system to distribute information about hazardous material releases quickly and accurately to community members.	Police Department	Medium	\$\$	1, 2, 4, 6	Ongoing
9.2	Support ongoing mitigation and testing activities at sites known or suspected to contain hazardous materials.	Police Department	Medium	\$	1, 4, 6	Ongoing

		Responsible Department	Priority	Relative Cost	Potential Funding	Timing
9.3	Establish multiple sites for free or low-cost disposal of hazardous household wastes, including electronic wastes.	Police Department	Medium	\$\$	1, 2, 4, 5	2022
Wildfire						
10.1	Work with property owners to ensure a buffer of defensible space around all buildings and key structures.	Fire Department	High	\$	1, 4, 5, 6	Ongoing
10.2	Support efforts to reduce the risk of wildfire through preventive measures on federal, state, and LADWP land, with an emphasis on the Inyo National Forest and surrounding land.	Fire Department	High	\$	1, 4, 6	Ongoing
10.3	Identify areas near residences or key facilities with potential access difficulties for fire equipment, and work with landowners to reduce or remove access barriers.	Fire Department	Medium	\$	1, 4, 6	Ongoing
10.4	Require new and significantly renovated buildings in very high and high fire hazard zones to contain wildfire-resistant building, landscaping, and site design features, and encourage the use of similar features in moderate fire hazard zones.	Fire Department/ Planning	Low	\$	1, 2, 4, 6	Ongoing
10.5	In coordination with the Great Basin Unified Air Pollution Control District, provide air quality alerts and information about reducing exposure to smoke and fire-related particulates during regional wildfire events.	Police Department/ Fire Department	Low	\$	1, 4, 6	Ongoing
10.6	Share information about fire risks to electricity and water infrastructure with LADWP. Encourage and support any efforts to harden existing vulnerable backup infrastructure or to establish backup electricity and water infrastructure outside of high fire hazard zones.	Public Works	Low	\$	1, 4, 6	Ongoing
Relative Cost Categories:		Potential Funding Sources:				
Low (\$) – Costs below \$100,000		1: Grant Funding				
Medium (\$\$) – Costs between \$100,001 and \$300,000		2: City funding sources (eligible categorical monies, general fund, or combination thereof)				
High (\$\$\$) – Costs above \$300,001		3: Financing (e.g. COPs, bonds, and loans). Requires voter approval				
		4: State/federal appropriations				
		5: Assessment districts. Requires voter approval				
		6: Private/other public sector/NGO funding				

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Attachment 2. Disaster Information Table

Date	Location (describe the extent to which the disaster impact occurred; include which jurisdictions were impacted)	Declaration Details (identify if a disaster was declared; if so, include local, state, or federal declaration information)	Damages (include information property damage, including \$ loss estimate, as well as injuries and deaths)

Attachment 3. Plan Maintenance Table

	Is anything factually incorrect?	Is anything missing?	Is there anything you would change?
General Comments			
Chapter 1 – Introduction			
Chapter 2 – Community Profile			

	Is anything factually incorrect?	Is anything missing?	Is there anything you would change?
Chapter 3 – Hazards Assessment			
Chapter 4 – Risk Assessment			

	Is anything factually incorrect?	Is anything missing?	Is there anything you would change?
Chapter 5 – Mitigation Actions			
Chapter 6 – Plan Maintenance and Capabilities			

	Is anything factually incorrect?	Is anything missing?	Is there anything you would change?
Appendices			

Attachment 4 Sample Hazard Mitigation Planning Team Agenda and Sign-In Sheet

Item 1: Recent Hazard Events

- What hazard events have occurred this past year? Include events that caused loss of life, substantial injuries, significant property damage, or widespread disruption or other substantial community impacts.
- What are the basic facts of any hazard events? Include affected area, any measurements of severity, any injuries or deaths, damages, and other relevant summary information.

Item 2: Mitigation Measure Activities

- What mitigation measures have been completed? Are these measures working as expected, or should they be revised? Are any resources needed to ensure continuing implementation?
- What mitigation measures have started implementation since the last Planning Team meeting? Is implementation proceeding as expected, or are there barriers or delays?
- What mitigation measures are scheduled to begin implementation in the next year? Are there specific resources needed to ensure effective implementation? Can the Planning Team secure these resources?

Item 3: Information Sharing

- Share information from local special districts, including any district-specific hazard situations, mitigation actions, or other relevant information.
- Share information from tribal governments. Discuss any specific hazard situations in tribal areas, social vulnerability analyses, mitigation actions, or other relevant information.
- Share information from federal, state, and regional agencies with a presence in Inyo County and the City of Bishop. Include discussions of any ongoing hazard mitigation actions being carried out by these agencies, updated hazard information, or other relevant data.

Item 4: Budgetary Planning

- What are the financial needs to initiate new hazard mitigation measures and continue implementation of existing ones? Is there sufficient funding for all measures? If not, which measures should be prioritized?
- Are there other hazard-related efforts that should be budgeted for? Is there sufficient funding for these efforts?

Item 5: Strategic Planning

- If it has been four years since the adoption of the MJHMP, lay out a timeline for MJHMP update activities, including additional meetings of the Planning Team. Identify if a technical consultant is needed, and begin the contracting process if necessary.
- Discuss which grants are available for hazard mitigation activities. Decide which activities are best positioned to secure grant funding, and how organizations represented in the Planning Team should coordinate to maximize the chances of receiving grant funding.
- Discuss upcoming updates to plans (e.g., General Plan elements or zoning codes). Determine ways that Planning Team members can share information or otherwise be involved.
- Identify upcoming capital projects. Discuss ways that organizations represented in the Planning Team can coordinate efforts to take advantage of economies of scale or to ensure the project is implemented consistently across jurisdictional boundaries.
- Discuss any other opportunities for Planning Team members and the organizations they represent to coordinate efforts over the next year.

Items 6: New Business

- Discuss any other items related to the Planning Team's mission.

