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## BOARD OF SUPERVISORS' MEETING
## January 20, 2026

Consider adoption of the updated multi-jurisdiction (Lassen County, City of Susanville, and Susanville Indian Rancheria) Multi-Hazard Mitigation Plan to provide guidance for implementing hazard mitigation action items on a priority basis considering hazard level, probability of occurrence, and cost. Said plan is required to maintain eligibility for certain Federal Emergency Management Agency pre and post disaster mitigation funds.

County of Lassen
Department of Planning and Building Services
• Planning • Building • Environmental Health • Code Enforcement • Surveyor • Surface Mining

**Gaylon F. Norwood,** *Director*
707 Nevada Street, Suite 5
Susanville, CA 96130-3912
**Main Phone: 530 251-8269**
Fax: 530 251-8373
email: landuse@co.lassen.ca.us
website: www.co.lassen.ca.us

Zoning and Building
Inspection Requests
Phone: 530 257-5263

January 14, 2026

TO: Board of Supervisors
Agenda Date: January 20, 2025

FROM: Gaylon F. Norwood, Director GFN

SUBJECT: Consider adoption of the updated multi-jurisdiction (Lassen County, City of Susanville, and Susanville Indian Rancheria) Multi-Hazard Mitigation Plan to provide guidance for implementing hazard mitigation action items on a priority basis considering hazard level, probability of occurrence, and cost. Said plan is required to maintain eligibility for certain Federal Emergency Management Agency pre and post disaster mitigation funds.

ACTION REQUESTED:

1. Receive report; and
2. Adopt a resolution.

***Summary:***
The purpose of this meeting is to allow the Board of Supervisors to consider adoption of the updated multi-jurisdictional (Lassen County, City of Susanville, and Susanville Indian Rancheria) Multi-Hazard Mitigation Plan (HMP). A Local Hazard Mitigation Plan is a strategic framework developed by a city, county, or special district to identify natural and human-caused disaster risks and create long-term strategies to protect lives and property. These plans serve as a community's roadmap for breaking the cycle of disaster damage and repeated reconstruction.

On December 23, 2025, the Federal Emergency Management Agency approved the draft pending adoption by the participating jurisdictions (see attached letter from FEMA). The review tool completed by FEMA is also attached.

A proposed resolution of the Board of Supervisors, adopting the updated HMP, is attached.

Enclosures: Approving resolution
FEMA letter approved pending adoption, December 23, 2025
Local Mitigation Plan Review Tool
Multi-jurisdiction, Multi-Hazard Mitigation Plan

:gfn

x/pla/admin/files/465.02.04

RESOLUTION NO. _____

RESOLUTION OF THE LASSEN COUNTY BOARD OF SUPERVISORS ADOPTING AN UPDATED MULTI-JURISDICTIONAL MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Board of Supervisors of the County of Lassen recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Multi-Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple Federal Emergency Management Agency (FEMA) pre and post-disaster mitigation grant programs; and

WHEREAS, The Emergency Management and Assistance regulations (44 CFR Part 201) stipulate that the responsible local agencies must review and consider updates to the approved Multi-Hazard Mitigation Plan every five years in order to retain eligibility for pre and post-disaster funding through FEMA; and

WHEREAS, the County of Lassen participated in the FEMA prescribed mitigation planning process to prepare this updated Multi-Jurisdictional Multi-Hazard Mitigation Plan, including, but not limited to, all requirements of the Disaster Mitigation Act of 2000 (P.L. 106-390); and

WHEREAS, FEMA, Region IX officials have, contingent upon approval by Lassen County, City of Susanville, and the Susanville Indian Rancheria, approved the updated Hazard Mitigation Plan; and

WHEREAS, adoption of this Hazard Mitigation Plan is exempt from the California Environmental Quality Act (CEQA) pursuant to sections 15262 and 15061(b)(3), of the CEQA Guidelines. Section 15262 exempts Feasibility and Planning Studies and section 15061(b)(3) is the General Rule exemption.

NOW, THEREFORE, BE IT RESOLVED THAT the County of Lassen adopts the updated “Multi-Jurisdictional Hazard Mitigation Plan” as an official plan.

BE IT FURTHER RESOLVED, that the County of Lassen, through the Planning and Building Services Department, will submit this Resolution to the Governor’s Office of Emergency Services and the Federal Emergency Management Agency, Region IX officials to enable the updated Plan’s final approval.

BE IT FURTHER RESOLVED, that the Lassen County Planning and Building Services Department is directed to file a Notice of Exemption with the Lassen County Clerk.

The foregoing resolution was adopted at a special meeting of the Board of Supervisors of the County of Lassen, State of California, held on the 20th day of January, 2026 by the following vote:

AYES: _____

NOES: _____

ABSTAIN: _____

ABSENT: _____

_____
Chairman of the Board of Supervisors
County of Lassen, State of California

ATTEST:
JULIE BUSTAMANTE
Clerk of the Board
BY_____
MICHELE YDERRAGA, Deputy Clerk of the Board

I, MICHELE YDERRAGA, Deputy Clerk of the Board of Supervisors, County of Lassen, do hereby certify that the foregoing resolution was adopted by the said Board of Supervisors at a special meeting thereof held on the 20th day of January 2026.

_____
Deputy Clerk of the County of Lassen Board of Supervisors

U.S. Department of Homeland Security
FEMA Region 9
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

FEMA

December 23, 2025



Gaylon Norwood
Director of Planning and Building Services
Lassen County
707 Nevada Street, Suite 5
Susanville, CA 96130

Reference: Hazard Mitigation Plan Approvable Pending Adoption
Lassen County, CA

Dear Gaylon Norwood:

The Federal Emergency Management Agency (FEMA) has completed its review of the 2025 Lassen Count Hazard Mitigation Plan and has determined that the plan is eligible for final approval, pending its formal adoption by Lassen County and all participating jurisdictions. Please refer to the enclosed list of jurisdictions currently considered Approvable Pending Adoption (APA).

Formal adoption documentation must be submitted to FEMA Region 9 by at least one participating jurisdiction within one calendar year from the date of this letter. If no adoption is received within that timeframe, the plan must be updated and resubmitted for review.

FEMA will issue formal approval of the plan upon receipt of the adoption documentation. Once approved, all other participating jurisdictions must adopt the plan within five calendar years of the approval date. Adoption of the plan is required to maintain eligibility for funding under FEMA's Hazard Mitigation Assistance (HMA) programs. All funding requests will be evaluated individually based on the specific eligibility criteria and requirements of the applicable HMA program.

Please note that while local hazard mitigation plans may include additional content to meet Element H: Additional State Requirements or other local objectives, FEMA's APA status does not constitute review or approval of any content exceeding FEMA's standard mitigation planning requirements.

If you have any questions regarding the planning or review processes, please contact the FEMA Region 9 Hazard Mitigation Planning Team at fema-r9-mitigation-planning@fema.dhs.gov.

Sincerely,

ZACHARY M MALCARNE

Digitally signed by ZACHARY M MALCARNE
Date: 2025.12.23 08:38:40 -08'00'

For Alison Kearns
Planning and Implementation Branch Chief
Mitigation Division
FEMA Region 9

Enclosures (2)
Lassen County Plan Review Tool, dated December 23, 2025
Status of Participating Jurisdictions, dated December 23, 2025

cc: Robyn Fennig, State Hazard Mitigation Officer, California Governor's Office of Emergency Services
Victoria LaMar-Haas, Hazard Mitigation Planning Chief, California Governor's Office of Emergency Services

Status of Participating Jurisdictions as of December 23, 2025

Jurisdictions Adopted and Approved

| # | Jurisdiction | Adoption Receipt Date |
|---|---|---|
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Jurisdictions Approvable Pending Adoption

| # | Jurisdiction |
|---|---|
| 1 | Lassen County |
| 2 | City of Susanville |
| 3 | Susanville Indian Rancheria |
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# Local Mitigation Plan Review Tool

## Cover Page

The Local Mitigation Plan Review Tool (PRT) 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 local governments, including special districts.

1. The Multi-Jurisdictional Summary Sheet is a worksheet that is used to document how each jurisdiction met the requirements of the plan elements (Planning Process; Risk Assessment; Mitigation Strategy; Plan Maintenance; Plan Update; and Plan Adoption).
2. The Plan Review Checklist summarizes FEMA's evaluation of whether the plan has addressed all requirements.

*For greater clarification of the elements in the Plan Review Checklist, please see Section 4 of this guide. Definitions of the terms and phrases used in the PRT can be found in Appendix E of this guide.*

| Plan Information | |
|---|---|
| **Jurisdiction(s)** | Lassen County, City of Susanville and Susanville Rancheria |
| **Title of Plan** | Lassen County Operational Area LHMP |
| **New Plan or Update** | Update |
| **Single- or Multi-Jurisdiction** | Multi-jurisdiction |
| **Date of Plan** | 11/30/2024 |
| **Local Point of Contact** | |
| **Title** | Gaylon Norwood, Director of Planning and Building Services |
| **Agency** | Lassen County |
| **Address** | 707 Nevada Street, Suite 5 Susanville, CA 96130 |
| **Phone Number** | (530) 251-2654 |
| **Email** | gnorwood@co.lassen.ca.us |

| Additional Point of Contact | |
|---|---|
| **Title** | Click or tap here to enter text. |
| **Agency** | Click or tap here to enter text. |
| **Address** | Click or tap here to enter text. |
| **Phone Number** | Click or tap here to enter text. |
| **Email** | Click or tap here to enter text. |

| Review Information | |
|---|---|
| **State Review** | |
| **State Reviewer(s) and Title** | Iván Cintrón Guzmán |
| **State Review Date** | 3/24/2025 |
| **FEMA Review** | |
| **FEMA Reviewer(s) and Title** | Kiana Wong, Community Planner |
| **Date Received in FEMA Region** | 10/9/2025<br>12/3/2025 |
| **Plan Not Approved** | 11/21/2025 |
| **Plan Approvable Pending Adoption** | 12/23/2025 |
| **Plan Approved** | Click or tap to enter a date. |

# Multi-Jurisdictional Summary Sheet

In the boxes for each element, mark if the element is met (Y) or not met (N).

| # | Jurisdiction Name | A. Planning Process | B. Risk Assessment | C. Mitigation Strategy | D. Plan Maintenance | E. Plan Update | F. Plan Adoption | G. HHPD Requirements | H. State Requirements |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Lassen County | Y | Y | Y | Y | Y | N | | |
| 2 | City of Susanville | Y | Y | Y | Y | Y | N | | |
| 3 | Susanville Indian Rancheria | See Tribal Plan Review Tool | | | | | | | |
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# Plan Review Checklist

The Plan Review Checklist is completed by FEMA. States and local governments are encouraged, but not required, to use the PRT as a checklist to ensure all requirements have been met prior to submitting the plan for review and approval. 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." FEMA completes the "required revisions" summary at the bottom of each element to clearly explain the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is "not met." Sub-elements in each summary should be referenced using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each element and sub-element are described in detail in Section 4: Local Plan Requirements of this guide.

Plan updates must include information from the current planning process.

If some elements of the plan do not require an update, due to minimal or no changes between updates, the plan must document the reasons for that.

Multi-jurisdictional elements must cover information unique to all participating jurisdictions.

## Element A: Planning Process

| Element A Requirements | Location in Plan (section and/or page number) | Met / Not Met |
|---|---|---|
| **A1. Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement 44 CFR § 201.6(c)(1))** | | |
| A1-a. Does the plan document how the plan was prepared, including the schedule or time frame and activities that made up the plan's development, as well as who was involved? | • Planning Process (pdf pg 12-19) | Met |
| A1-b. Does the plan list the jurisdiction(s) participating in the plan that seek approval, and describe how they participated in the planning process? | • Members (pdf pg 15-16)<br>• Appendix B (pdf pg 196) | Met |

| Element A Requirements | Location in Plan (section and/or page number) | Met / Not Met |
|---|---|---|
| **A2. Does the plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development as well as businesses, academia, and other private and non-profit interests to be involved in the planning process? (Requirement 44 CFR § 201.6(b)(2))** | | |
| A2-a. Does the plan identify all stakeholders involved or given an opportunity to be involved in the planning process, and how each stakeholder was presented with this opportunity? | • Planning Process (pdf pg 12-22) | Met |
| **A3. Does the plan document how the public was involved in the planning process during the drafting stage and prior to plan approval? (Requirement 44 CFR § 201.6(b)(1))** | | |
| A3-a. Does the plan document how the public was given the opportunity to be involved in the planning process and how their feedback was included in the plan? | • Public Outreach (pdf pg 19-22)<br>• Appendix C (pdf pg 197-200)<br>• Appendix D (pdf pg 201-217) | Met |
| **A4. Does the plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement 44 CFR § 201.6(b)(3))** | | |
| A4-a. Does the plan document what existing plans, studies, reports and technical information were reviewed for the development of the plan, as well as how they were incorporated into the document? | • Mitigation Related Planning Resources (pdf pg 19)<br>• Mitigation Governance (pdf pg 46-48)<br>• Location and Extent (pdf pg 101-103) | Met |

| **ELEMENT A REQUIRED REVISIONS** |
|---|
| Required Revision:<br>Click or tap here to enter text. |

## Element B: Risk Assessment

| Element B Requirements | Location in Plan (section and/or page number) | Met / Not Met |
|---|---|---|
| **B1. Does the plan include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction? Does the plan also include information on previous occurrences of hazard events and on the probability of future hazard events? (Requirement 44 CFR § 201.6(c)(2)(i))** | | |
| B1-a. Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area? | • Hazard/Threat Assessment (pdf pg 61-64)<br>• Avalanche (pdf pg 68)<br>• Dam/Reservoir Failure (pdf pg 71)<br>• Drought and Water Shortage (pdf pg 75)<br>• Earthquake (pdf pg 80-82)<br>• Extreme Temperature (pdf pg 91-92)<br>• Flood and Levee Failure (pdf pg 99-101)<br>• Landslide/Other Earth Movement (pdf pg 116-118)<br>• Severe Weather and Storms (pdf pg 123-125)<br>• Volcano (pdf pg 129-130)<br>• Wildfire (pdf pg 134-135) | Met |
| B1-b. Does the plan include information on the location of each identified hazard? | • Avalanche (pdf pg 68-70) | Met |

| Element B Requirements | Location in Plan (section and/or page number) | Met / Not Met |
|---|---|---|
| | • Dam/Reservoir Failure (pdf pg 72-74)<br>• Drought and Water Shortage (pdf pg 75-76)<br>• Earthquake (pdf pg 82-85)<br>• Extreme Temperature (pdf pg 92-94)<br>• Flood and Levee Failure (pdf pg 101-105)<br>• Landslide/Other Earth Movement (pdf pg 118)<br>• Severe Weather and Storms (pdf pg 125)<br>• Volcano (pdf pg 130-133)<br>• Wildfire (pdf pg 135-140) | |
| B1-c. Does the plan describe the extent for each identified hazard? | • Avalanche (pdf pg 68-70)<br>• Dam/Reservoir Failure (pdf pg 72-74)<br>• Drought and Water Shortage (pdf pg 75-76)<br>• Earthquake (pdf pg 82-85)<br>• Extreme Temperature (pdf pg 92-94)<br>• Flood and Levee Failure (pdf pg 101-105) | Met |

| Element B Requirements | Location in Plan (section and/or page number) | Met / Not Met |
|---|---|---|
| | • Landslide/Other Earth Movement (pdf pg 118)<br>• Severe Weather and Storms (pdf pg 125)<br>• Volcano (pdf pg 130-133)<br>• Wildfire (pdf pg 135-140) | |
| B1-d. Does the plan include the history of previous hazard events for each identified hazard? | • Avalanche (pdf pg 70)<br>• Dam/Reservoir Failure (pdf pg 72)<br>• Drought and Water Shortage (pdf pg 76-78)<br>• Earthquake (pdf pg 86-88)<br>• Extreme Temperature (pdf pg 94-95)<br>• Flood and Levee Failure (pdf pg 105-106)<br>• Landslide/Other Earth Movement (pdf pg 118)<br>• Severe Weather and Storms (pdf pg 125-126)<br>• Volcano (pdf pg 133-134)<br>• Wildfire (pdf pg 140-142) | Met |
| B1-e. Does the plan include the probability of future events for each identified hazard, including the type, location and range of anticipated intensities? | • Probability (pdf pg 62)<br>• Avalanche (pdf pg 70) | Met |

| Element B Requirements | Location in Plan (section and/or page number) | Met / Not Met |
|---|---|---|
| | • Dam/Reservoir Failure (pdf pg 74)<br>• Drought and Water Shortage (pdf pg 78-79)<br>• Earthquake (pdf pg 88-89)<br>• Extreme Temperature (pdf pg 95-98)<br>• Flood and Levee Failure (pdf pg 106-108)<br>• Landslide/Other Earth Movement (pdf pg 118)<br>• Severe Weather and Storms (pdf pg 126-127)<br>• Volcano (pdf pg 134)<br>• Wildfire (pdf pg 142-143) | |
| B1-f. For participating jurisdictions in a multi-jurisdictional plan, does the plan describe any hazards that are unique to and/or vary from those affecting the overall planning area? | • Avalanche (pdf pg 69)<br>• Dam/Reservoir Failure (pdf pg 72)<br>• Flood and Levee Failure (pdf pg 154, 160)<br>• Landslide/Other Earth Movement (pdf pg 169) | Met |
| **B2. Does the plan include a summary of the jurisdiction's vulnerability and the impacts on the community from the identified hazards? Does this summary also address NFIP-insured structures that have been repetitively damaged by floods? (Requirement 44 CFR § 201.6(c)(2)(ii))** | | |

| Element B Requirements | Location in Plan (section and/or page number) | Met / Not Met |
|---|---|---|
| B2-a. Does the plan provide an overall summary of each jurisdiction's vulnerability to the identified hazards? | • Avalanche (pdf pg 166)<br>• Dam/Reservoir Failure (pdf pg 167-168)<br>• Drought and Water Shortage (pdf pg 168-170)<br>• Earthquake (pdf pg 151-155)<br>• Extreme Temperature (pdf pg 171-173)<br>• Flood and Levee Failure (pdf pg 155-162)<br>• Landslide/Other Earth Movement (pdf pg 174)<br>• Severe Weather and Storms (pdf pg 175-176)<br>• Volcano (pdf pg 177-179)<br>• Wildfire (pdf pg 162-165) | Met |
| B2-b. For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? | • Avalanche (pdf pg 166)<br>• Dam/Reservoir Failure (pdf pg 167-168)<br>• Drought and Water Shortage (pdf pg 168-170)<br>• Earthquake (pdf pg 151-155)<br>• Extreme Temperature (pdf pg 171-173) | Met |

| Element B Requirements | Location in Plan (section and/or page number) | Met / Not Met |
|---|---|---|
| | • Flood and Levee Failure (pdf pg 155-162)<br>• Landslide/Other Earth Movement (pdf pg 174)<br>• Severe Weather and Storms (pdf pg 175-176)<br>• Volcano (pdf pg 177-179)<br>• Wildfire (pdf pg 162-165) | |
| B2-c. Does the plan address NFIP-insured structures within each jurisdiction that have been repetitively damaged by floods? | • Repetitive Loss Properties (pdf pg 160) | Met |
| **ELEMENT B REQUIRED REVISIONS** | | |
| Required Revision**:** | | |

## Element C: Mitigation Strategy

| Element C Requirements | Location in Plan (section and/or page number) | Met / Not Met |
|---|---|---|
| **C1. Does the plan document each participant's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement 44 CFR § 201.6(c)(3))** | | |
| C1-a. Does the plan describe how the existing capabilities of each participant are available to support the mitigation strategy? Does this include a discussion of the existing building codes and land use and development ordinances or regulations? | • Capability Assessment (pdf pg 42-60) | Met |

| Element C Requirements | Location in Plan (section and/or page number) | Met / Not Met |
|---|---|---|
| C1-b. Does the plan describe each participant's ability to expand and improve the identified capabilities to achieve mitigation? | • Ability to Expand and Improve on Capabilities and Resources (pdf pg 57-60. | Met |
| **C2. Does the plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement 44 CFR § 201.6(c)(3)(ii))** | | |
| C2-a. Does the plan contain a narrative description or a table/list of their participation activities? | • National Flood Insurance Program (pdf pg 48-49) | Met |
| **C3. Does the plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement 44 CFR § 201.6(c)(3)(i))** | | |
| C3-a. Does the plan include goals to reduce the risk from the hazards identified in the plan? | • Mitigation Goals and Objectives (pdf pg 173-175) | Met |
| **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 44 CFR § 201.6(c)(3)(ii))** | | |
| C4-a. Does the plan include an analysis of a comprehensive range of actions/projects that each jurisdiction considered to reduce the impacts of hazards identified in the risk assessment? | • Mitigation Actions (pdf pg 188-191) | Met |
| C4-b. Does the plan include one or more action(s) per jurisdiction for each of the hazards as identified within the plan's risk assessment? | • Mitigation Actions (pdf pg 188-191) | Met |
| **C5. Does the plan contain an action plan that describes how the actions identified will be prioritized (including a cost-benefit review), implemented, and administered by each jurisdiction? (Requirement 44 CFR § 201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))** | | |
| C5-a. Does the plan describe the criteria used for prioritizing actions? | • Mitigation Prioritization (pdf pg 176-178) | Met |

| Element C Requirements | Location in Plan (section and/or page number) | Met / Not Met |
|---|---|---|
| C5-b. Does the plan provide the position, office, department or agency responsible for implementing/administrating the identified mitigation actions, as well as potential funding sources and expected time frame? | • Implementation Plan (pdf pg 181-190) | Met |

| ELEMENT C REQUIRED REVISIONS |
|---|
| Required Revision:<br>Click or tap here to enter text. |

## Element D: Plan Maintenance

| Element D Requirements | Location in Plan (section and/or page number) | Met / Not Met |
|---|---|---|
| **D1. Is there discussion of how each community will continue public participation in the plan maintenance process? (Requirement 44 CFR § 201.6(c)(4)(iii))** | | |
| D1-a. Does the plan describe how communities will continue to seek future public participation after the plan has been approved? | • Continued Stakeholder and Public Involvement (pdf pg 192-193) | Met |
| **D2. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a five-year cycle)? (Requirement 44 CFR § 201.6(c)(4)(i))** | | |
| D2-a. Does the plan describe the process that will be followed to track the progress/status of the mitigation actions identified within the Mitigation Strategy, along with when this process will occur and who will be responsible for the process? | • Plan Maintenance (pdf pg 191-192) | Met |
| D2-b. Does the plan describe the process that will be followed to evaluate the plan for effectiveness? This process must identify the criteria that will be used to evaluate the information in the plan, along with when this process will occur and who will be responsible. | • Plan Maintenance (pdf pg 191-192) | Met |
| D2-c. Does the plan describe the process that will be followed to update the plan, along with when this process will occur and who will be responsible for the process? | • Plan Maintenance (pdf pg 191-192) | Met |

| Element D Requirements | Location in Plan (section and/or page number) | Met / Not Met |
|---|---|---|
| **D3. Does the plan describe a process by which each community will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement 44 CFR § 201.6(c)(4)(ii))** | | |
| D3-a. Does the plan describe the process the community will follow to integrate the ideas, information and strategy of the mitigation plan into other planning mechanisms? | • Integration with Other Planning Efforts (pdf pg 192) | Met |
| D3-b. Does the plan identify the planning mechanisms for each plan participant into which the ideas, information and strategy from the mitigation plan may be integrated? | • Integration with Other Planning Efforts (pdf pg 192) | Met |
| D3-c. For multi-jurisdictional plans, does the plan describe each participant's individual process for integrating information from the mitigation strategy into their identified planning mechanisms? | • Integration with Other Planning Efforts (pdf pg 192) | Met |

| ELEMENT D REQUIRED REVISIONS |
|---|
| Required Revision:<br>Click or tap here to enter text. |

## Element E: Plan Update

| Element E Requirements | Location in Plan (section and/or page number) | Met / Not Met |
|---|---|---|
| **E1. Was the plan revised to reflect changes in development? (Requirement 44 CFR § 201.6(d)(3))** | | |
| E1-a. Does the plan describe the changes in development that have occurred in hazard-prone areas that have increased or decreased each community's vulnerability since the previous plan was approved? | • Future Development (pdf pg 38-41) | Met |

| Element E Requirements | Location in Plan (section and/or page number) | Met / Not Met |
|---|---|---|
| **E2. Was the plan revised to reflect changes in priorities and progress in local mitigation efforts? (Requirement 44 CFR § 201.6(d)(3))** | | |
| E2-a. Does the plan describe how it was revised due to changes in community priorities? | • Mitigation Goals and Objectives (pdf pg 180) | Met |
| E2-b. Does the plan include a status update for all mitigation actions identified in the previous mitigation plan? | • Mitigation Progress (pdf pg 183-186) | Met |
| E2-c. Does the plan describe how jurisdictions integrated the mitigation plan, when appropriate, into other planning mechanisms? | • Integration with Other Planning Efforts (pdf pg 192) | Met |
| **ELEMENT E REQUIRED REVISIONS** | | |
| Required Revision:<br>Click or tap here to enter text. | | |

## Element F: Plan Adoption

| Element F Requirements | Location in Plan (section and/or page number) | Met / Not Met |
|---|---|---|
| **F1. For single-jurisdictional plans, has the governing body of the jurisdiction formally adopted the plan to be eligible for certain FEMA assistance? (Requirement 44 CFR § 201.6(c)(5))** | | |
| F1-a. Does the participant include documentation of adoption? | N/A | Choose an item. |
| **F2. For multi-jurisdictional plans, has the governing body of each jurisdiction officially adopted the plan to be eligible for certain FEMA assistance? (Requirement 44 CFR § 201.6(c)(5))** | | |
| F2-a. Did each participant adopt the plan and provide documentation of that adoption? | • Appendix A | Not Met |

| ELEMENT F REQUIRED REVISIONS | | |
|---|---|---|
| Required Revision:<br>F2-a: All participating jurisdictions must formally adopt the plan and send adoption resolutions to fema-r9-mitigation-planning@fema.dhs.gov | | |

## Element G: High Hazard Potential Dams (Optional)

| HHPD Requirements | Location in Plan (section and/or page number) | Met / Not Met |
|---|---|---|
| **HHPD1. Did the plan describe the incorporation of existing plans, studies, reports and technical information for HHPDs?** | | |
| HHPD1-a. Does the plan describe how the local government worked with local dam owners and/or the state dam safety agency? | Click or tap here to enter text. | Choose an item. |
| HHPD1-b. Does the plan incorporate information shared by the state and/or local dam owners? | Click or tap here to enter text. | Choose an item. |
| **HHPD2. Did the plan address HHPDs in the risk assessment?** | | |
| HHPD2-a. Does the plan describe the risks and vulnerabilities to and from HHPDs? | Click or tap here to enter text. | Choose an item. |
| HHPD2-b. Does the plan document the limitations and describe how to address deficiencies? | Click or tap here to enter text. | Choose an item. |
| **HHPD3. Did the plan include mitigation goals to reduce long-term vulnerabilities from HHPDs?** | | |
| HHPD3-a. Does the plan address how to reduce vulnerabilities to and from HHPDs as part of its own goals or with other long-term strategies? | Click or tap here to enter text. | Choose an item. |
| HHPD3-b. Does the plan link proposed actions to reducing long-term vulnerabilities that are consistent with its goals? | Click or tap here to enter text. | Choose an item. |
| **HHPD4-a. Did the plan include actions that address HHPDs and prioritize mitigation actions to reduce vulnerabilities from HHPDs?** | | |
| HHPD4-a. Does the plan describe specific actions to address HHPDs? | Click or tap here to enter text. | Choose an item. |
| HHPD4-b. Does the plan describe the criteria used to prioritize actions related to HHPDs? | Click or tap here to enter text. | Choose an item. |

| HHPD Requirements | Location in Plan (section and/or page number) | Met / Not Met |
|---|---|---|
| HHPD4-c. Does the plan identify the position, office, department or agency responsible for implementing and administering the action to mitigate hazards to or from HHPDs? | Click or tap here to enter text. | Choose an item. |
| **HHPD Required Revisions** | | |
| Required Revision:<br>Click or tap here to enter text. | | |

## Element H: Additional State Requirements (Optional)

| Element H Requirements | Location in Plan (section and/or page number) | Met / Not Met |
|---|---|---|
| **This space is for the State to include additional requirements.** | | |
| Click or tap here to enter text. | Click or tap here to enter text. | Choose an item. |

# Plan Assessment

These comments can be used to help guide your annual/regularly scheduled updates and the next plan update.

## Element A. Planning Process

**Strengths**

- Appendix B is good for showing who from the planning team attended each meeting. Thorough documentation of the planning process provides clarity for the reader and can help future plan update writers.

**Opportunities for Improvement**

- In future plan updates, it would be beneficial to differentiate between the planning team and stakeholders more. The planning team should be the people writing the plan, while stakeholders provide information based on their expertise or organization they represent.

## Element B. Risk Assessment

**Strengths**

- The jurisdictional vulnerability and impact differences for earthquake, landslide, severe weather and storms are very detailed and it is easy to understand how each hazard will affect the County, City and Rancheria.

**Opportunities for Improvement**

- It would benefit the plan to have a summary of which hazards affect the County, City and Rancheria. This will add to the plan's readability and clarity.
- Consider strengthening the next update by being more specific when it comes to the vulnerability and impacts of dam failure, extreme temperature and volcano. The plan currently lists generic assets that could be affected, this can be tied back to the planning area by noting how many of these assets of concern are in the County, City and Rancheria.

## Element C. Mitigation Strategy

**Strengths**

- [insert comments]

**Opportunities for Improvement**

- [insert comments]

## Element D. Plan Maintenance

**Strengths**

- [insert comments]

**Opportunities for Improvement**

- [insert comments]

## Element E. Plan Update

**Strengths**

- [insert comments]

**Opportunities for Improvement**

- The plan currently describes a public review process of the mitigation goals and objectives to ensure the plan aligns with priorities, concerns and challenges. In future plan updates, it would be beneficial to describe how priorities in the community have changed. This gives better insight to how the planning team adapted the plan to those changes. If there have been no changes since the last update, this should be stated explicitly in the plan.

## Element G. HHPD Requirements (Optional)

**Strengths**

- [insert comments]

**Opportunities for Improvement**

- In future plan updates, it's recommended that Lassen County consider addressing the High Hazard Potential Dam (HHPD) planning elements (HHPD1 – HHPD4) given that dam risk was included in the Risk Assessment. By addressing HHPD planning requirements the city would be eligible to apply for future HHPD grant programs that fund opportunities to mitigate dam risk.

## Element H. Additional State Requirements (Optional)

**Strengths**

- [insert comments]

**Opportunities for Improvement**

- [insert comments]

# *LASSEN COUNTY OPERATIONAL AREA*
# LOCAL HAZARD MITIGTION PLAN

## LASSEN COUNTY, CITY OF SUSANVILLE, AND THE SUSANVILLE INDIAN RANCHERIA

December 2025

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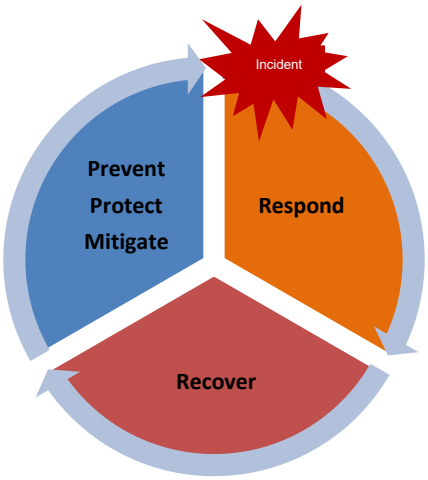
# Preface

Impacts from disasters (threats and hazards) can be a challenge for a jurisdiction's residents/visitors, its budget, its elected officials, and its staff. In addition to significant property damage, injuries, and fatalities, it can experience disruptions to the community and the economy (i.e., power outages, loss of telecommunications and water service, limited access to fuel, loss of revenue, and road closures). Depending on the magnitude, response and recovery from these disaster events can take weeks, months, and in some instances, years. The goal of many communities is to mitigate the potential impacts from disasters thus shortening the response and recovery time.

Mitigation is one of the Mission Areas identified under the Federal government's National Preparedness System. Under the National Preparedness System, each Mission Area is supported by a "*framework*" document that identifies essential functions and core capabilities. The National Preparedness System Mission Areas are:

- **Prevention-** to avoid, prevent, or stop an act of terrorism
- **Protection-** to safeguard against acts of terrorism and other hazards and threats
- **Mitigation-** to reduce the loss of life and property from hazards and threats
- **Response-** to stabilize a situation after hazards and threats
- **Recovery-** to restore, strengthen and revitalize after hazards and threats

Mitigation is seen as the primary Mission Area dedicated to breaking the disaster cycle, as its goal is to build resiliency within the community, enabling a more efficient and effective response to and recovery from threats and hazards.




The Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA) defines mitigation as "*any action taken to reduce and/or eliminate the long-term risk to human life and property from natural hazards and threats*." Mitigation is considered local, with the primary responsibility for development and implementation of mitigation strategies lying with local jurisdictions (cities, counties, tribes, and special districts). Local jurisdictions, however, are not alone. Partners and resources exist within and surrounding jurisdictions, in addition to support from other levels of government (i.e., county, region, state, and federal). To assist jurisdictions

implement mitigation and become more resilient to threats and hazards, FEMA developed a program and guidance around the creation of Local Hazard Mitigation Plans (LHMPs). LHMPs promote a comprehensive planning process, requiring an assessment of local capabilities against impacts from threats and hazards to identify potential mitigation strategies (actions/projects) that will reduce and/or eliminate impacts.

The main goal of the LHMP is to establish a list of actions/projects derived from a comprehensive understanding of the community, existing capabilities, and prevailing threats and hazards. While many of these actions/projects are centered around reducing and/or eliminating the impact, some are focused on increasing current capabilities, fostering the development of partnerships, and providing public education outreach programs.

With an approved and adopted LHMP, local jurisdictions are eligible for federal Hazard Mitigation Assistance (HMA) Grants offered through FEMA: *Hazard Mitigation Grant Program-HMGP, Building Resilient Infrastructure and Communities- BRIC (formerly Pre-Disaster Mitigation-PDM),* and *Flood Management Assistance-FMA*. The HMA Grants are a great source of funding to help implement actions/projects identified in the LHMPs.

The residents of Lassen County Operational Area have dealt with a variety of threats and hazards affecting the area. Photos, journal entries, and newspaper articles dating well back in to the 1800's show that the residents of the area have experienced earthquakes, flooding, wildfire, severe weather, and windstorms. Historically, these threats and hazards adversely affected the lives and the economy of the area. When factoring in new development and growth (population, the built environment), exposure to these threats and hazards creates an even greater risk than previously experienced. In addition to personal property losses, it is equally important to recognize the increased cost and timeframe for government to recover from these threats and hazards.

While it is not always possible to predict exactly when these threats and hazards will occur or the exact extent to which they will impact the area, with careful planning and collaboration among public agencies, private sector organizations, and citizens within the community, it is possible to minimize the expected losses (injuries, fatalities, economic) that can result from these threats and hazards. Because of this, Lassen County, the City of Susanville, and the Susanville Indian Rancheria realize the importance of identifying effective ways to mitigate (reduce and/or eliminate) the impacts from threats and hazards.

The update to the Lassen County Operational Area LHMP builds upon previous mitigation efforts done by the County, the City, and the Rancheria and incorporates new, relevant information and priorities into the plan. This includes reassessing and reevaluating: the community demographics, mitigation capabilities (resources); community threats and hazards (identification, prioritization, and risk); and mitigation goals, objectives, and strategies (actions/projects). Significant consideration was given to new challenges and issues facing the County, the City, and the Rancheria (i.e., pandemic, energy disruption, wind-driven wildfire events). This plus factoring in best practices, led to a reorganization of the LHMP and in some instances adding, renaming, and expanding threats and hazards and consolidating or renaming mitigation strategies (actions/projects).

Because the LHMP must include information to meet federal requirements and guidance it can include information not traditionally found in other planning documents. This can lead to a large, cumbersome document, making it difficult to easily access specific information. In an effort to ensure the plan contains all required information and is user-friendly; the LHMP has been organized in following sections:

1: **Introduction**- provides information on the purpose of the plan, outlines the scope of the work, and presents the adoption process and authority.

2: **Planning Process**- provides information on the methodology used to prepare the LHMP, including a list of the Planning Team members, overview of stakeholder coordination, and the public outreach efforts.

3: **Community Profile**- provides background information on the County, City, and Rancheria, ensuring all Planning Team members have a common understanding of the dynamics within the community.

4: **Capability Assessment**- provides information on current resources available to the County, City, and Rancheria to support mitigation efforts, including department roles and responsibilities, and existing mitigation plans/programs/codes.

5: **Hazard/Threat Assessment**- provides information on and prioritizes threats and hazards within the County, City, and Rancheria.

6: **Risk Assessment**- provides information on the potential impacts, through exposure and loss (damage) estimates for threats and hazards within the County, City, and Rancheria.

7: **Mitigation Strategy**- provides information on the actions/projects the County, City, and Rancheria are proposing to address the risk from threats and hazards.

8: **Plan Maintenance**- provides information on how the County, City, and Rancheria intend to keep the LHMP current, incorporate it into other efforts, and share it with the public.

# 1. Introduction

This section presents general information about mitigation and the Local Hazard Mitigation Plan (LHMP). Hazard mitigation is defined as any action taken to reduce and/or eliminate long term risk to human life and property. Mitigation can reduce the enormous cost of disasters to residents, businesses, and government. In addition, it can protect critical community facilities, reduce exposure to liability, and minimize community disruption.

The LHMP is a "*living document*" that should be reviewed, monitored, maintained, and revised to reflect changing conditions, shifting priorities, and new information. As required, an approved and adopted LHMP must be in place to receive federal Hazard Mitigation Assistance (HMA) Grants offered through the Federal Emergency Management Agency (FEMA).

Lassen County, the City of Susanville, and the Susanville Indian Rancheria (County, City, Rancheria) collaborated to prepare the update of the LHMP which was previously adopted in 2018 and approved by FEMA in 2019. The updated LHMP represents the current understanding of the community, potential impacts from natural, manmade, and technological hazards and threats, captures current mitigation capabilities, validates mitigation goals and objectives, and presents mitigation actions/projects that may be taken to reduce risk of impacts (fatalities, injuries, property damage, community disruption, and economic consequences) from hazard/threats within Lassen County. Updating of this LHMP demonstrates the community's commitment to mitigation, fulfills regulatory requirements as established by FEMA, establishes eligibility for seeking HMA Grants, and serves as a guide to local decisions makers to implement mitigation programs.

## 1.1. Purpose of the Plan

While the plan may have many purposes (i.e., collaboration, coordination, relationship building), the ultimate purpose of the LHMP is to identify mitigation strategies (i.e., policies, measures, projects, actions, and tools) that will result in the reduction and/or the elimination of risk of impacts from future disaster (hazard/threat) events within County, City, and Rancheria.

## 1.2. Scope of the Plan

The scope of the LHMP is to 1) assess relevant existing conditions and capabilities; 2) identify potential threats and hazards and their impacts; and 3) propose mitigation strategies to address the impacts to the threats and hazards within the County, City, and Rancheria.

This is accomplished by using a systematic process of validating existing capabilities, learning about the hazards/threats that can affect each of the participating jurisdictions, establishing (validating) clear goals and objectives, identifying and implementing appropriate mitigation strategies, and keeping the plan current.

The LHMP is an integral part of a multi-pronged approach to minimizing personal injury and property damage from natural, manmade, and technological hazards/threats, and it complements other planning documents and regulatory authorities governing pre-disaster land use planning and post-disaster response and recovery. It is intended to set the tone for the implementation of mitigation practices that will build a disaster resistant and sustainable community.

## 1.3. Hazard Mitigation Planning Directive

The impetus and authority to create LHMPs is derived from the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-288), as amended by the Disaster Mitigation Act of 2000 (DMA 2000). In response to escalating disaster costs, the federal government adopted DMA 2000 which places emphasis on hazard mitigation planning. Under DMA 2000, local governments are required to have a FEMA-approved and locally adopted LHMP to be eligible for HMA Grants (Hazard Mitigation Grant Program- *HMGP*, Building Resilient Infrastructure and Communities *BRIC*, and Flood Mitigation Assistance- *FMA*). LHMPs must be consistent with the State HMP and must demonstrate that proposed mitigation strategies are based on a sound planning process that accounts for the risk to and the capabilities of the individual communities. The requirements and procedures for LHMPs are found in the Code of Federal Regulations (CFR) at Title 44, Chapter 1, Part 201 and in supporting FEMA Mitigation Guidance and Handbooks.

## 1.4. Promulgation Authority

The promulgation authority is vested in the members of the Lassen County Board of Supervisors, the City of Susanville City Council, and the Susanville Indian Rancheria Tribal Business Council. These Councils and Boards are the legislative body of the jurisdiction and decide policy, enact laws, and administer all activities. A list of the members of the Councils/Boards is in **Table 1.1**.

***Table 1-1. County, City, and Rancheria Promulgation Authorities***

| Position | Elected Official |
|---|---|
| **County** | |
| County Supervisor | Mike Scanlan |
| County Supervisor | Gary Bridges |
| County Supervisor | Tom Neely |
| County Supervisor | Aaron Albaugh |
| County Supervisor | Jason Ingram |
| **City** | |
| Mayor | Mendy Schuster |
| Mayor Pro Tem | Russ Brown |
| Council Member | Curtis Bortle |
| Council Member | Patrick Parrish |
| Council Member | Dawn Miller |
| **Rancheria** | |
| Chairman | Arian Hart |
| Vice-chairman | Robert Joseph |
| Councilman | Aaron Brazzanovich Jr |
| Councilman | Alton Brazzanovich |
| Member-at-Large | Kurt Merino |
| Member-at-Large | Mary Joseph |
| Secretary/Treasurer | Christie Choo |

## 1.5. Local Hazard Mitigation Plan Adoption

Following a review by the California Governor's Office of Emergency Services (Cal OES) and formal approval by FEMA, the updated LHMP was adopted by the governing body of each participating jurisdiction (Lassen County, the City of Susanville, and the Susanville Indian Rancheria) through a signed resolution. The Adoption Resolution by the participating jurisdictions are located in **Appendix A**.

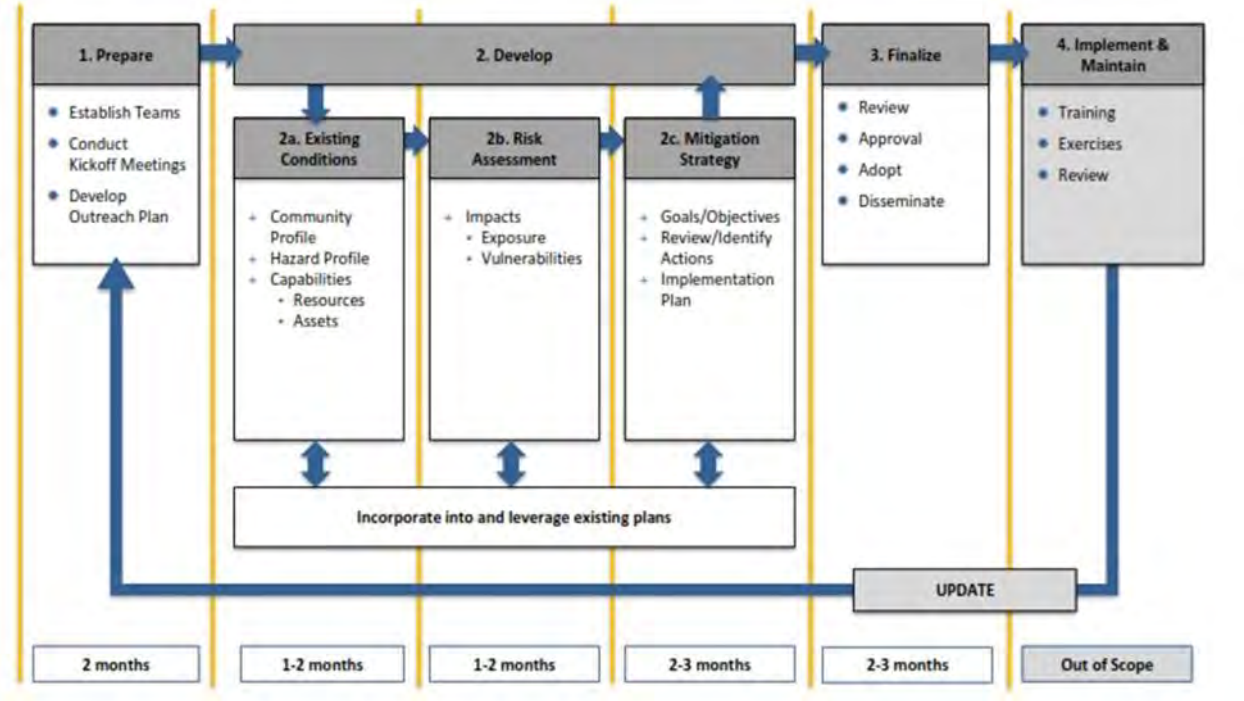
# 2. Planning Process

This section demonstrates the methodology (planning process) used by the County, City, and Rancheria to update the LHMP. FEMA's Local Mitigation Planning Handbook (2023) and FEMA's Local Mitigation Planning Policy Guide (2023) outlines guidance and offers examples to help local jurisdictions meet CFR44 requirements when developing and/or updating LHMPs. A significant part of the guidance emphasizes the involvement of the "*whole community*" in the planning process. The whole community concept promotes the inclusion of not only emergency managers but other department representatives (e.g., community development, public works, finance, administration), as well as, outside stakeholders and partners (e.g., surrounding counties/cities, special districts, lifelines companies, businesses leaders) to participate in the LHMP effort. The whole community concept also includes outreach to the general public to bring awareness to the LHMP planning effort and content (community threats/hazards, mitigation strategies). As part of this effort, the County, City, and Rancheria also ensured representation and/or the needs of the underserved, socially vulnerable populations were included in the planning process. Soliciting and considering input from these diverse interests is essential to building a comprehensive plan and gaining community-wide support for the LHMP. Throughout this process, opportunities for public involvement were offered and comments were encouraged. More details about public engagement are provided under the *Public Outreach* section.

## 2.1. Methodology and Timeline

To update the LHMP, the County, City and Rancheria implemented a three (3) phase planning approach: 1) Prepare; 2) Develop; and, 3) Finalize (**Figure 2.1**), with the *Develop* phase being broken down into three (3) sub-phases. It is worth noting that while the figure includes a 4$^{th}$ phase (Implement & Maintain), it is not part of the LHMP update process. This phase is part of the overall planning approach followed by the County, City, and Rancheria to apply mitigation strategies (implement) and keep the plan current (maintain). In addition to the phases, Figure 2.1 also depicts the estimated timeline to complete each phase.

*Figure 2-1. Hazard Mitigation Plan Update Planning Process*




While this methodology is in alignment with FEMA guidance, sequence and naming of phases were adjusted to better suit the County, City and Rancheria needs. Additional information about each phase is present below.

Under the *Prepare* phase general project tasks were completed. This included conducting an Administrative Kickoff meeting with the consultant, validation of the Planning Team, an identification of the Public Outreach effort, and a Kickoff meeting with the Planning Team. This phase also included the initial identification and collection of both internal and external documents and materials that may be beneficial to the LHMP update process.

Led by the consultant, the Planning Team worked through the *Develop* sub-phases. During the *Existing Conditions* sub-phase (2a), relevant characteristics and demographics (Community Profile), current mitigation abilities (Capabilities Assessment), and existing community threats and hazards (Hazard Assessment) within the County, City, and Rancheria were reviewed and discussed. The Capabilities Assessment included the identification of departments supporting mitigation, current governance guiding mitigation efforts, identification of financial resource availability to possibly support mitigation, and discussion of assets; while the Hazard Assessment included the identification, description, and prioritization of local threats and hazards within the County, City, and Rancheria. Under the *Risk Assessment* sub-phase (2b), the Planning Team reviewed potential impacts (exposure and vulnerabilities) of threats and hazards within the County, City, and Rancheria and validated the prioritization of the threats and hazards. The final sub-phase, Mitigation Strategies (2c), had the Planning Team discuss previous mitigation actions/projects, assess current capabilities, identify and prioritize new mitigation actions/projects, and develop an implementation plan for each mitigation action/project.

Throughout the *Develop* Phase, plans and other documents, both internal and external, were analyzed and leveraged by the Planning Team to ensure decisions were based on the best available information and that proposed mitigation actions were compatible with other efforts. And conversely, efforts were made to encourage results from the LHMP planning process to be considered and incorporated into other planning efforts. Additionally, during this phase outreach was done with the public to solicit input.

The last phase of the planning process methodology was *Finalize*. During this phase, the Planning Team reviewed and provided comments on the administrative draft of the LHMP. The administrative draft of the LHMP was then presented to the public for review and comment. After Planning Team and Public review, the draft LHMP was forwarded to the Cal OES and FEMA. This phase also included addressing both Cal OES and FEMA comments and working with the County Board, City Council, and the Tribal Business Council to adopt the LHMP.

During the planning process, draft LHMP sections were disseminated for review and comment as the Planning Team moved through each phase and sub-phase. This helped the Planning Team focus their review on the subject matter at hand and enforced the relationship between the phases. At the end of the planning process, another review cycle was provided, this time with all draft sections under one cover.

## 2.2. Planning Team

Building on the whole community concept, a Planning Team was established to assist with the updating of the LHMP. The primary goal of the Planning Team is to help define and identify mitigation strategies. Other roles for the Planning Team include:

- Validate the planning approach
- Provide information and material
- Update and review information and material
- Collaborate with other Planning Team members
- Be the primary liaison with the community and stakeholders
- Promote public participation
- Address FEMA and the Cal OES comments

The Planning Team was led by the Lassen County Planning and Building Services Department. The Lassen County Department representative took on the responsibilities of Project Manager; and coordinated Planning Team activates. Additionally, the County, City, and Rancheria hired a consultant (*APetrow Consulting*) to provide technical support through the planning process and preparation of the LHMP. The consultant was responsible for facilitating Planning Team meetings and updating the LHMP.

### 2.2.1. Members

To ensure this update to the LHMP was comprehensive, special considerations were given to the selection of Planning Team members. The intent was to identify members who could represent key segments of the community. The Planning Team was comprised of subject matter experts from a range of areas covered in the LHMP who could provide great benefit/insight to the team, as well as other community stakeholders and partners (i.e., surrounding jurisdictions, special

districts, chamber of commerce, lifeline companies, higher education institutions, special interest groups, private organizations). Keeping the Planning Team to a manageable number of members while ensuring that all perspectives are captured and/or included in the process is always challenging. To balance this, the Planning Team members were urged to act as liaisons to other community groups with whom they regularly interact with to exchange thoughts on the LHMP. Planning Team members were encouraged to communicate the direction and status of the planning effort to outside members and in return they were expected to bring that outside perspective back to the Planning Team. This was especially true for underserved and socially vulnerable populations and businesses. The Planning Team had representatives from County, City, and Rancheria departments (i.e., Housing, Community Development) that worked with and understood the challenges, needs, and special interests of the underserved and socially vulnerable populations. Similar to how the Chamber of Commerce was able to provide great insight into many small business issues and concerns.

The Lassen County Planning and Building Services Department made great efforts to engage/include as many Planning Team members as possible. A phased approach was used to contact potential Planning Team members. This included conducting initial one-on-one phone calls to introduce the project and confirm the best point person (representative) for their organization. Next email invites were sent out to the representatives to become part of the Planning Team. This was then followed up with invites to attend each of the Planning Team meetings. The County also reached back out to any Planning Team member who failed to respond and/or failed to attend Planning Team meetings. It is worth noting that while the County made extra efforts, because of varying reasons, some invited Planning Team members did not attend some meetings. Below is a list of the Planning Team members (**Table 2-1)**.

***Table 2-1. Members of the Mitigation Steering Committee***

| Names | Organization | Department | Title |
|---|---|---|---|
| Bob Godman | City of Susanville | Public Works | Director |
| Dan Newton | City of Susanville | City Manager's Office | City Manager |
| Dow Davis | City of Susanville | | Building Official |
| Erik Edholm | City of Susanville | Public Works | Asst. Director |
| Jolene Arredondo | City of Susanville | City Manager's Office | Assistant to the City Manager |
| Kelly Mumper | City of Susanville | | City Planner/Code Enforcement Supervisor |
| Marcie Rojas | City of Susanville | Public Works | Program Coordinator |
| Mike Bollinger | City of Susanville | | Director of Public Safety |
| Nick Dacosta | City of Susanville | Public Works | Assistant Director |
| Tamra Spade | City of Susanville | Economic Development | Director |
| Tom Hernandez | City of Susanville | Fire | Assistant Chief |
| Cynthia Raschein | Lassen County | Public Works | Assistant Director |
| Elizabeth Krier | Lassen County | Public Health | Emergency Services Coordinator |
| Gaylon Norwood | Lassen County | Planning and Building Services | Deputy Director |
| Grace Poor | Lassen County | Health and Social Services | Housing Program Manager |

| | | | |
|---|---|---|---|
| Jason Housel | Lassen County | Information Services | Information Services Supervisor |
| Jayson Vial | Lassen County | Community and Social Services | Director |
| Jim Uruburu | Lassen County | Public Health | Emergency Preparedness Coordinator |
| John McGarva | Lassen County | Sheriff's Department | Sheriff |
| Matt Oden | Lassen County | Planning and Building Services | Assoc. Planner |
| Maurice Anderson | Lassen County | Planning and Building Services | Director |
| Michael Hoenig | Lassen County | Planning and Building Services | Environmental Health Specialist |
| Mike Johnson | Lassen County | Planning and Building Services | Building Official |
| Mike Prettyman | Lassen County | Planning and Building Services | Code Enforcement Officer |
| Mindie Hilton | Lassen County | Planning and Building Services | Assoc. Planner |
| Robert Steen | Lassen County | Planning and Building Services | Senior Building Inspector |
| Roberto Maravilla-Plancarte | Lassen County | Planning and Building Services | Environmental Health Specialist |
| Sara Chandler | Lassen County | Planning and Building Services | Manager, Environmental Health |
| Silas Rojas | Lassen County | OES | OES Chief |
| Audie Noneo | Susanville Indian Rancheria | | Emergency Management Officer |
| Brandie Cooper | Susanville Indian Rancheria | | Natural Resources Director |
| Maureen Curley | Susanville Indian Rancheria | | Tribal Administrator |
| Scott Dixon | Susanville Indian Rancheria | | Emergency Management Coordinator |
| Kory Bowser | Bureau of Land Management | Fire Management | Officer Division Chief |
| Casey Urrutia | California Department of Forestry and Fire Protection (CAL FIRE) | | Chief |
| Cade Mohlr | Fire Safe Council | | Registered Professional Forrester |
| Jamie Huber | Janesville School District | | Janesville School Superintendent/Principal |
| Tom Browning | Lassen Community College | | Program Director |
| Cort Cortez | Lassen Municipal Utility District (LMUD) | | Electric Operations Manager |
| Casey Williams | Susanville Sanitary District | | District Operations Superintendent |
| Steve Stump | Susanville Sanitary District | | General Manager |
| Michael Gibbons | Mintier Harnish | | City of Susanville Consultant |
| Brian Greer | Dynamic Planning and Science | | City of Susanville Consultant - General Plan update |
| Ethan Mobley | Dynamic Planning and Science | | City of Susanville Consultant - General Plan update |

### 2.2.2. Meetings

There were a series of meetings held with the Planning Team. Each meeting had a primary focus and provided an opportunity to discuss/review information and exchange ideas. The Planning Team meetings were arranged and scheduled to follow the planning process phases outlined in the *Methodology and Timeline* section; with each meeting designed to walk members through sections of the LHMP. Discussions and agreements from the meetings were captured and made available for the Planning Team to review. This allowed the Planning Team to review and comment while the information was still fresh in their minds.

In addition to reviewing and validating material, the intent was to also educate members on the planning process and purpose of each section. By taking this step, it helped ensure that each member would bring knowledge back to their organizations and other stakeholders. **Table 2-2** provides a list and the main purpose of each of the meetings. Planning Team member attendance for each Planning Team meeting can be found in **Appendix B**.

***Table 2-2. Planning Team Meetings Summary***

| Date | Purpose |
|---|---|
| 06/29/2023 | An initial Planning Team meeting, led by the Lassen County staff, was held to review the 2019 LHMP, discuss needed actions, and start to revise the LHMP. During the meeting a date was also scheduled for an initial Public Outreach meeting to orient the public about the LHMP. |
| 04/01/2024 | *Prepare* and *Existing Conditions Community Profile)*- Project kickoff with Planning Team. Discussed: Definition of mitigation, purpose of the LHMP, and the proposed project to update the LHMP. Focus was on the role of and who should be on the team, the type of Information needed, the proposed planning process and timeline, public outreach effort needs. Discussion also included benefits and challenges of the current LHMP (size, information, format), how the LHMP will be used in the future, the FEMA Review Tool, and what changes the community has seen over the past 5 years. Team was prepared for next meeting. |
| 04/15/2024 | *Existing Conditions (Community Profile, Capabilities Assessment, and Hazard Assessment)*- Recapped last meeting and laid out new discussion items. Since there were some new members, discussed definition of mitigation, purpose of the LHMP, the proposed project to update the LHMP, the role of and who should be on the team, the type of information needed, the proposed planning process and timeline, public outreach effort needs discussed relationship between other plans, changes in the community (Community Profile), changes to staff and resources (Capabilities Assessment), project website, and conducted an exercise to identify and prioritize hazards and threats (Hazard Assessment). The Team was prepped for next meeting. |
| 04/29/2024 | *Existing Conditions (Community Profile, Capabilities Assessment, and Hazard Assessment)*- Recapped last meeting and laid out new discussion items. Discussed Community Profile (any changes over the past 5 years), Capabilities Assessment (staffing and governance), threats and hazards (identification and priority), and community assets. Team was prepared for next meeting. |
| 05/13/2024 | *Existing Conditions (Community Profile, Capabilities Assessment, and Hazard Assessment)*- Recapped last meeting and laid out new discussion items. Focused on changes to staffing, governance, and fiscal resources (Capabilities Assessment), highlighted the need to reach "underserved |

| Date | Purpose |
|---|---|
| | and socially vulnerable populations, scheduled and planned a public outreach event. Team was prepared for next meeting. |
| 06/10/2024 | *Existing Conditions (Community Profile, Capabilities Assessment, and Hazard Assessment)*- Recapped status of project and reviewed the draft LHMP (chapters 1-5) of the updated LHMP. Team was prepared for next meeting. |
| 06/24/2024 | *Risk Assessment*- Recapped last meeting and laid out new discussion items. Focused on changes to LHMP organization and format changes. This included separating some sections and creating new sections. Discussions also included initial discussions of risk, focusing on Hazus model results for earthquake and flood. |
| 07/08/2024 | Risk Assessment- Recapped last meeting and laid out new discussion items. Recap included summary of the scientific loss estimation risk assessment model. New topics included discussions of quantitative and qualitative risk assessment exposure. |
| 7/22/2024 | Mitigation Strategies- Recapped last meeting and laid out new discussion items. Recap included summary risk assessment. New topics included discussions of mitigation strategy, summarizing the approach used to review and identify mitigation actions, measures, and/or projects. Focus of discussion included goals and objectives, status of previous mitigation actions, measures, and/or projects, and a method to prioritize previous mitigation actions, measures, and/or projects. |
| 8/5/2024 | Mitigation Strategies and Plan Maintenance- Recapped last meeting and laid out new discussion items. Recap included summary of the discussion of the initial steps of the development of the mitigation strategy (goals and objectives, status of previous mitigation actions, and the method to prioritize mitigation actions). New topics included the identification of new mitigation actions, the mitigation action implementation plan, and the plan to maintain the LHMP over the next 5 years. |
| 8/19/2024 | Administrative Draft LHMP Review- Recapped last meeting and laid out new discussion items. Recap included further discussion of the overall Mitigation Strategy process with focus on mitigation actions. The Planning Team walked through each hazard/threat to validate the problem statement and discuss possible actions to reduce and/or eliminate impacts. New topics included the LHMP Plan Maintenance requirements and proposed actions. |
| 9/16/2024 | Administrative Draft LHMP Review- Recapped last meeting and laid out new discussion items. Recapped the entire Planning Process to ensure the Planning Team understood the purpose of each step. New topics included the review of areas needing Planning Team attention and reevaluation of proposed mitigation actions. |
| 9/17/2024 – Present | Various ad-hoc meetings with Planning Team members to discuss and address comments and concerns |

## 2.3. Stakeholder Coordination

The County, City, and Rancheria coordinate with Emergency Management stakeholders on a regular basis. While some coordination is planned (or scheduled), some is ad hoc. The purpose of these stakeholder meetings is to provide a platform for greater coordination and communication. It also provided an opportunity to discuss proposed and current actions, ensuring actions are understood, compatible, and synchronized. Below is an overview of some of the

Emergency Management stakeholder meetings and stakeholder resources materials leveraged for this effort:

### 2.3.1. Recurring Meetings

- *Mutual Aid Regional Advisory Committee* (MARAC)- Lassen County attends the Cal OES run MARAC meetings. The MARACs were established to provide a broad base for local government participation in the California Standardize Emergency Management System (SEMS) Maintenance System and are a principal source of input and information into the system. The MARAC meetings are also used to inform and encourage regional coordination among local jurisdictions and key stakeholders.
- *Local Emergency Planning Committee* (LEPC)- Lassen County attends the LEPC meetings. The quarterly meetings are used to discuss hazardous material related topics.
- *Lassen County Disaster Council*- The Lassen County runs and attends the Disaster Council meeting annually.
- *Shasta-Cascade Hazardous Materials Response Team* (SCHMRT)- Administration group that meets quarterly or on an as-needed basis. The Operations group meets monthly for a 6-hour drill. They typically welcome invitations to conduct their drills in member jurisdictions

### 2.3.2. Mitigation Related Planning Resources

Because the County, City, and Rancheria wanted a comprehensive LHMP, it emphasized the review, consideration, and incorporation of information from other plans; not only plans within its jurisdiction. These stakeholder plans contained an array of information on various topics that helped augment information within and provided additional insight into all sections within the LHMP (i.e., Community Profile, Hazard Profile, Capabilities Assessment, Risk Assessment, Mitigation Strategy, and Plan Maintenance). These plans include:

- State Hazardous Materials Incident Contingency Plan (HMICP)- describes the State's hazardous material emergency response organization; the roles and responsibilities of state agencies; the relationship of the State with the local, federal, volunteer, and private organizations and is a useful reference document
- Shasta County LHMP
- Plumas County LHMP
- Modoc County LHMP
- Airport Land Use Plan- The primary goal of airport land use planning is to protect the public and the people who live near the airport. This is done by examining land uses within specific airport safety zones.
    - Herlong, Spaulding, Bieber, and Ravendale Airports
    - Susanville Municipal Airport
    - Amedee Army Airfield

## 2.4. Public Outreach

For the purposes of the LHMP, the County, City, and Rancheria define the public as any person within the County or adjacent areas, not part of the Planning Team, not acting in an official capacity of a recognized form or level of government. There were two (2) different Public Outreach

campaigns used during the LHMP update process: the first informing the community of LHMP Update and the second educating the community of hazards. Community education of hazards is an ongoing campaign conducted by the County, City, and Rancheria that was leveraged during the LHMP update process. Below is a summary of the campaigns:

### 2.4.1. LHMP Awareness Campaign

This campaign is focused on engaging with the public during the LHMP update process. A significant piece of the FEMA's LHMP guidance is to ensure the "*whole community*" is involved, and a key element of the whole community concept is engaging with the general public. In support of this a series of public meetings, events, and dissemination of information were used to engage the public.

The public outreach strategy under this campaign worked in conjunction with LHMP planning process and timeline. As the Planning Team completed critical milestones, meetings and key information were disseminated to the public for feedback and comments. This outreach strategy shared information about the project kickoff, potential impacts of the threats and hazards within the community, current mitigation capabilities, and proposed mitigation actions.

There were public meetings held at the very start of the project (06/29/2023); a meeting was held after the Hazard Assessment was completed (06/06/2024), and a meeting was held at the end of the project after the Mitigation Strategies and draft LHMP was completed (10/7/2024). Announcements for the public meetings can be found in **Appendix C**. The meetings were advertised through the Planning Team members official social media platforms (Facebook, X-*formerly Twitter*, Instagram, Nextdoor), through official websites, media outlets (Modoc Record, Susanvillestuff.com, Lassen County Times, Sierra Daily News/JDX/KSUE) and posted at several locations (Lassen County Administrative Office, Lassen County Planning and Building Services Office, Veterans' Memorial Hall). The meeting announcements were also shared with the Susanville Blue Star Moms group.

On June 29, 2023, an initial public outreach meeting was held. The meeting was led by Lassen County staff. A presentation was developed to introduce the community to mitigation and summarize the information in the LHMP. A flyer was prepared and distributed throughout the county and postings were made on the County website of the meeting time and date. While the meeting was well publicized, no one from the public attended.

On June 6, 2024, a second meeting (virtual) was held to inform the public of the contents and the process to update LHMP. The Planning Team believed a virtual meeting may be better attended because of the size of the County, family logistical issues, and other competing family issues. Planning Team members felt that families could find the time to log into a virtual call as opposed to having to make arrangements and travel to a meeting. Because of the lack of attendance during the initial public meeting, the Planning Team took additional steps to ensure the announcement of the meeting was widely disseminated. Information regarding the second Public meeting was disseminated within the community via the County and partner websites and multiple Planning Team member's social media platforms, as well as individual Planning Team member outreach efforts. A presentation was prepared with information about the LHMP (i.e., purpose, scope, update process) in addition to the type of hazards and threats identified by the Planning Team.

While better publicized, no one from the public attended the second Public meeting. To counter this, the presentation was made available on the County and partner websites.

On October 7, 2024, a final public meeting was held to present the findings of the Planning Team's efforts to update the LHMP. As with the past meetings, this public meeting was held virtually to encourage more participation. Announcements for public meetings were disseminated within the community via the County and partner websites and multiple Planning Team member's social media platforms, as well as individual Planning Team member outreach efforts. A presentation was prepared with information about the purpose of mitigation and LHMPs, an introduction of the Lassen County Operational Area LHMP (i.e., purpose, scope, update process), what hazards and threats were included in the LHMP, what mitigation projects/actions were identified by the Planning Team, and how the public could review and comment on the LHMP. While well publicized, public attendance was limited. Comments from the public were geared more on clarification and were addressed in the meeting. As with the past meetings, the presentation was posted on the County website under the Hazard Mitigation page. In conjunction with the final public outreach efforts, as updates were provided to the Councils/Boards, the public was made aware of the public comment period and how they could access the final draft LHMP. After the public review period was closed (3 weeks), a meeting was held with the Planning Team to provide an update of the public comment period.

In support of the Public Outreach efforts, the County created a Local Hazard Mitigation Plan page on its website and provided a link to Planning Team members to share or connect to their organization's website (Susanville Indian Rancheria, City of Susanville, City of Susanville Fire Department). The Local Hazard Mitigation Plan page provided basic information and encouraged the public to sign up to receive information on the LHMP update process, as well as, to sign up for local alerts, warnings, and notifications. In between the meetings, there was a series of status updates provided through the website.

A flyer (handout) about Mitigation/LHMP and a public survey were also developed to help disseminate and collect information to inform the Planning Team's decisions. The handout provided some basic information about mitigation and the LHMP. It also included a link (Quick Response-*QR* code) to the survey. The handout was made available to all Planning Team members. The public survey was housed on the Lassen County LHMP webpage but was advertised through team members that linked their websites to the County website. The Planning Team reviewed and incorporated the results from the survey as they went through the planning process. Survey results can be found in **Appendix D**.

The County, City, and Rancheria also leveraged existing public outreach efforts to engage the public. Planning Team members handed out flyers at the Children's Fair- 05/04/2024, and *Veteran Stand Down*- 05/18/2024. The Planning Team determined that these events were a good opportunity to reach the general public. The Children's Fair was a public event that provided residents with informational resources about general public health issues and challenges. The events were all publicized via the local jurisdiction's websites and official social media platforms. Mitigation information was also disseminated with utility bills and other regular mailer circulars.

Other than the survey results, limited public input was received through the public meetings/events, website, or social media platforms. Results from the survey were shared with

the Planning Team and incorporated/considered where appropriate. In all, the public comments confirmed the Planning Team decisions and supported the proposed mitigation strategies. As such, all public comments were incorporated into the LHMP where appropriate.

### 2.4.2. Mitigation Awareness Campaign

The County, City, and Rancheria utilize several platforms to educate the public about hazards in the community, relevant programs to safeguard and protect the community during/from the effects of the hazards, and actions they can take to prepare themselves for events on a regular basis. Below is a list of the different platforms used:

- County, City and Rancheria Emergency Preparedness Websites
- Social Media (Facebook, Twitter)
- Meetings/Workshops
- Public Service Announcements- radio and television
- Community Emergency Response Team Training (CERT)
- FireSafe Councils
- Evacuation training for Schools and Communities
- Weed Abatement campaigns
- Flood emergency awareness campaigns

Additional information about the County, City, and Rancheria programs can be found in the Capability Assessment (Section 4) of the LHMP.

# 3. Community Profile

The purpose of this section is to present an overview of the County, City, and Rancheria, providing the Planning Team with a common understanding of the existing conditions and perspective on aspects within the community. Gaining a common understanding of these existing conditions provides the basis on which the Planning Team can assess the impacts of threats and hazards, as well as identify needed mitigation strategies. Because Lassen County is more rural than most, and that there is significant coordination between the County, City, and Rancheria, the Planning Team felt that presenting some of the Community Profile information at the County-level was more appropriate and beneficial to the LHMP planning efforts.

## 3.1. Location and History

Lassen County is located in northeastern California. It is bordered on the north by Modoc County, on the south by Plumas and Sierra Counties, on the west by Shasta County, and on the east by Washoe County in the State of Nevada (**Figure 3-1**) named after Peter Lassen and Lassen Peak, the County was formed in 1864.

*Figure 3-1. Map of Lassen County*

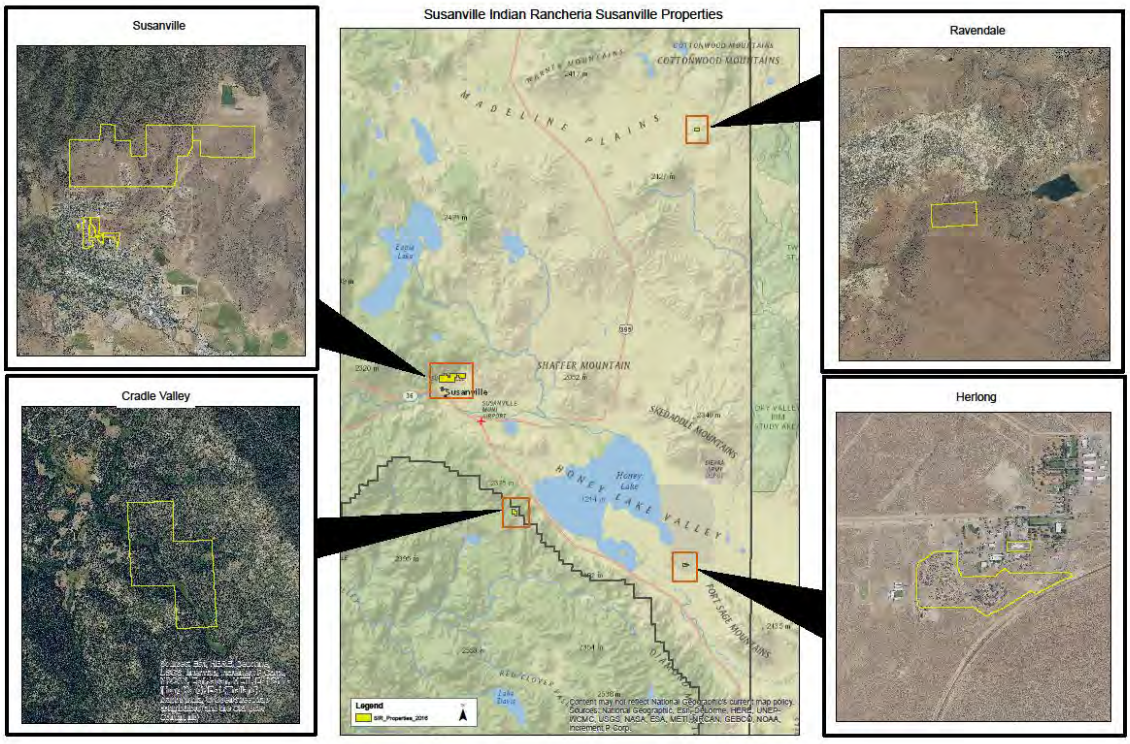

Lassen County has a total area of 3,001,780 acres (4,690.3 square miles). Over 63 percent of the land area in Lassen County is administered by Federal, state or local agencies. Portions of

the Lassen National Forest, Lassen Volcanic National Park, Modoc National Forest, Plumas National Forest and Toiyabe National Forest are located in Lassen County. The region of present-day Lassen Conty is located within the original lands of several indigenous societies: Washoe, Northern Paiute, Mountain Maidu, Achomawi, Atsugewi, and Pit River people.

The City of Susanville is the only incorporated city in the county and serves as the County seat. Incorporated in 1900 as a General Law city, Susanville is about 85 miles north-northwest of Reno, Nevada, on the eastern slopes of where the Sierra Nevada and the Cascade mountain ranges meet. Unincorporated communities include Bieber, Clear Creek, Doyle, Herlong, Janesville, Johnstonville, Litchfield, Madeline, Milford, Nubieber, Patton Village, Ravendale, Spalding, Standish, Termo, Wendel and Westwood. State Highway 36 leads west from Susanville to the Central Valley and the city of Red Bluff. State Highway 36 also leads eastward to Highway 395, then south to Reno, about a 1½ hour drive.

The Susanville Indian Rancheria is a federally recognized Indian Tribe in Northeastern California with aboriginal ties to the Mountain Maidu, Northern Paiute, Hammawi and Atsugewi Bands of the Pit River, and the Washoe Tribe. The Susanville Indian Rancheria currently consists of five (5) non-contiguous land bases (Lower Rancheria, Upper Rancheria, Herlong parcel, Ravendale parcel, and Cradle Valley parcel (Lassen/Plumas County); and totals 1,340 acres (1,100 trust; 240 fee) in Lassen County (**Figure 3-2**).

***Figure 3-2. Map of Susanville Indian Rancheria***



## 3.2. Physical Features

Lassen County is characterized by forest-covered mountains and plateaus roughly covering the western one-third of the County and sagebrush and juniper rangeland with a number of interspersed valleys covering the eastern two-thirds. Part of the Warner Range extends into northeastern Lassen County. Most of the large valleys are comprised of the remnants of ancient lake beds. The largest valley is the Honey Lake Valley in the south-central part of the County, which extends into Nevada and joins Long Valley to the southeast. The Honey Lake Valley is generally considered to be part of the Great Basin. Another large valley consists of the Madeline Plains, which includes Grasshopper Valley. Big Valley is located in the northwestern part of the County. A portion of Fall River Valley extends into the northwestern part of the County from the west. Elevations range from 3,300 feet in the Fall River Valley to about 8,700 feet at Hat Mountain in the northeast comer of the County. Eagle Lake, located 16 miles north of Susanville, is the second largest natural lake located wholly within California. At an elevation of 5,100 feet, the lake covers 42 square miles and offers a variety of recreational resources and attractions.

Located in the south- central part of the county at an elevation of 4,240 feet above sea level, the City of Susanville straddles the Susan River which flows out of the mountains and drains southeastward into the Honey Lake Valley. West of Susanville, on both sides of the southeast-draining Susan River, foothills rise nearly 1,000 feet above the river valley to elevations of 5,000 to 5,200 feet. Susanville Peak, 3½ miles due north of the city, is 6,576 feet high; Diamond Mountain, 8 miles south of Susanville, is 7,738 feet above sea level; and, Thompson Peak, 13 miles southeast of Susanville and 3 miles southwest of Janesville, reaches elevations of 7,795 feet. Both Diamond Mountain and Thompson Peak straddle the Lassen County-Plumas County boundary. Mt. Lassen, a 10,437-foot volcano that last erupted in 1914 is located in Shasta County, 6 miles from the Lassen County line and approximately 50 air-miles from Susanville.

Amongst Susanville Indian Rancheria's expanse, precious surface water resources include 1 perennial stream (Clarks Creek), 2 intermittent streams (East and West Berry Creek), 5 documented springs, 1 wetland, 2 wet meadows, and several ephemeral drainages. These water resources are important not only economically and ecologically, but also culturally for SIR. The West Barry Creek (Berry Creek) is an ephemeral stream drainage that runs approximately north to south through the Upper and Lower Rancheria properties. It is the western most of two main drainages originating in the Upper SIR property, transecting through the residential areas and entering the Lower SIR property at the Diamond Mountain Casino/Mini-Mart (Casino). The Upper Rancheria topography contributes to runoff, erosion, and transport debris into Barry Creek during flood events that have the potential to block established storm drainages and cause overflowing water and damage to the surrounding infrastructure and established roads. The most recent flooding of Barry Creek occurred in 2019 that contributed to erosion of stream banks and minor habitat deterioration. No landslides have been recorded to have occurred on tribal lands.

## 3.3. Historic/Cultural Resources

Because of the proximity of the Susan River, Honey Lake, and various other creeks, as well as the flat land near these water sources, the Susanville area is considered extremely sensitive for both historic and pre-historic resources.

The City of Susanville General Plan Land Use Element indicates there are 7 archaeological sites within the city limits and another 10 within one mile of the city limits, as recorded by the California Archaeological Inventory (CAI). There are also historical and culturally sensitive sites located within the Susanville Indian Rancheria. The Susanville Indian Rancheria is dedicated to the preservation of these sites and as a policy does not disclose information regarding the location of specific sites or general areas where they are present.

## 3.4. Climate

The climate of Lassen County is variable, but in general it is characterized by warm dry summers and cold moist winters. Most of the precipitation falls between October and May. The average annual rainfall ranges from 4 inches along the Nevada border in the eastern Honey Lake Valley and increases going west to 48 inches near Juniper Lake in Lassen Volcanic National Park. Average daily temperatures range from 69.6 degrees Fahrenheit in July (although it is not uncommon to reach temperatures exceeding 90 degrees) to 20.4 Fahrenheit in January. The frost-free growing season ranges from 142 days at Susanville to 65 days in the Madeline Plains.

## 3.5. Population

According to the Lassen County Housing Element Technical Background Report, the County has experienced fluctuating population growth over the past five (5) decades (**Table 3-1**). Between 1970 and 1980, Lassen County experienced a population increase of approximately 29% (16,796 to 21,661). However, between 1980 and 2000, the population has declined to 16,393. Conversely, there was a significant population increase in the following decade (35,081 in 2010), more than doubling the population in 2000. Currently, Lassen County has been experiencing a slight population decline.

*Table 3-1. Lassen County Population, 1970-2021 (U.S. Census Bureau)*

| Year | 1970 | 1980 | 1990 | 2000 | 2010 | 2021 |
|---|---|---|---|---|---|---|
| Population | 16,796 | 21,661 | 20,319 | 16,363 | 35,081 | 32,949 |

The current estimated population breakdowns for the County, City, and Rancheria are as follows:

- Unincorporated 32,730 (US Census Bureau)
- City of Susanville 16,728 (US Census Bureau)
- Susanville Indian Rancheria 570 (US Census Bureau)

**Table 3-2** represents the projected population projections for Lassen County. It should be noted that the total population figures given include an incarcerated population in the two (2) state prisons and the one (1) federal prison located within the county. A more accurate view of the population that could potentially be affected by hazards is indicated by the household population.

*Table 3-2. Projected Growth for Lassen County (U.S. Census Bureau)*

| | 2030 | 2040 | 2050 |
|---|---|---|---|
| Total Population | 37,490 | 39,073 | 39,891 |
| Household Population | 27,994 | — | — |

## 3.6. Demographics

According to the Lassen County Housing Element Technical Background Report, approximately 42.5% of the population falls within the 20-44 age range, 24.5% falls within the 45-64 age range, 14.8% falls within the 65 and above age range, and 18.1% falls within the 0-19 age range. Additionally, approximately 65% of the population is male and 35% female. The following table (**Table 3-3**) provides a further breakdown of the age range of the population, and the male/female population.

*Table 3-3. Population by Age and Gender in Lassen County (U.S. Census Bureau)*


**Table 3-4** depicts the racial or ethnic group breakdown within the County between 2010 to 2021. Approximately 64% of the population in Lassen County identifies as White (non-Hispanic). The second largest ethnic group is Hispanic or Latino accounting for approximately 20% of the population. Between 2010 and 2021, the White (non-Hispanic) population decreased by 10.5%. Within that same timeframe, the Hispanic or Latino, Native Hawaiian or Other Pacific Islander, and Two or More Races populations slightly increased. This trend is consistent with the statewide trend in California.

*Table 3-4. Population by Race/Ethnicity (U.S. Census Bureau)*

| Racial/Ethnic Group | 2010 | 2021 |
|---|---|---|
| *Hispanic or Latino* | 5,974 | 6,494 |
| *White (non-Hispanic)* | 23,606 | 21,139 |
| *Black or African American* | 2,849 | 2,748 |
| *Native American* | 1,129 | 750 |
| *Asian* | 642 | 513 |
| *Native Hawaiian* | 201 | 250 |
| *Other* | 171 | 137 |
| *Two or More Races* | 509 | 918 |

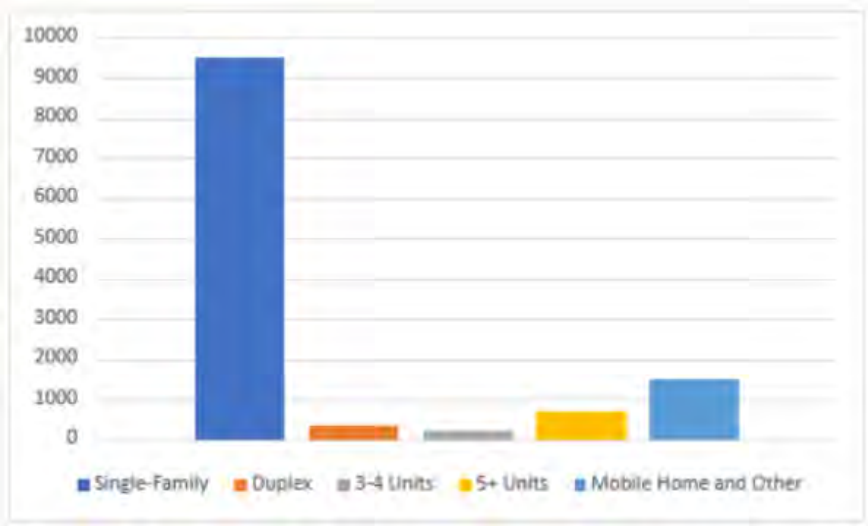
As required by FEMA, the LHMP should identify and emphasis "*Underserved and Socially Vulnerable Populations"*. While there are no specific classifications, the understood intent is to identify populations in the community who may have unique challenges and/or needs with regards to response and recovery from threats and hazards. Below is an overview of the "*Underserved and Socially Vulnerable Populations"* in Lassen County. This list and the corresponding data were taken from the revised draft of the Lassen County General Plan Housing Element.

- ***Extremely Low-income Households****- (1,055 households in Co- 11.5%)*
- ***Seniors****- (7.3% of the population is 65 or older)*
- ***Persons with Disabilities****- (16.9% have disabilities. 59.6% are 75 years or older)*
- ***Large Households****- (5 or more persons; may be multi-generational.8.4% in Co)*
- ***Farmworker Households****- (77 farms, 152 farmworkers, 97 seasonal in Co)*
- ***Female-headed Households****- (1,097 families in Co)*
- ***Individuals Experiencing Homelessness****- (102 in Co, 31 unsheltered.)*

## 3.7. Housing

According to the Lassen County Housing Element Technical Background Report, approximately 76.4% of the housing stock in Lassen County is single-family homes (**Table 3-5**). Of the remaining 23.6% of the housing stock, 12.3% are mobile homes, boats, recreational vehicles, and vans. Duplexes, triplexes, fourplexes, and housing developments with five or more units make up the remaining housing stock.

*Table 3-5. Housing Units by Type (U.S. Census Bureau)*




There are 8,910 households in Lassen County (**Table 3-6**). Of that, approximately 70% of the households are owner-occupied, 30% are renter occupied. As depicted in the table, there has been some fluctuation between owner-occupied and renter-occupied in County over the last 21 years.

*Table 3-6. Household by Tenure (U.S. Census Bureau)*

| | 2000 | | 2010 | | 2021 | |
|---|---|---|---|---|---|---|
| **Tenure** | **Number** | **Percent** | **Number** | **Percent** | **Number** | **Percent** |
| Owner | 6,552 | 68% | 6,545 | 64% | 6,236 | 70% |
| Renter | 3,073 | 32% | 3,731 | 36% | 2,674 | 30% |
| **TOTAL** | **9,625** | | **10,276** | | **8,910** | |

Over 56.9% of the housing units in Lassen County are "*occupied*" and 10.7% are for seasonal, recreational, or occasional use (**Table 3-7**). An estimated 29% of the housing units in Lassen County are "*vacant*" or "*other vacant*". Other vacant is a category that includes units that are vacant due to foreclosure, personal/family reasons, legal proceedings, repairs/renovation, abandonment, preparation for being rented or sold, or vacant for an extended absence for reason such as work assignment, military duty, or incarceration.

*Table 3-7. Vacancy by Type (U.S. Census Bureau)*

| Type | Number | Percent |
|---|---|---|
| *Occupied* | 8,910 | 56.9% |
| *Vacant* | 3,363 | 21.5% |
| *For Rent* | 143 | 0.9% |
| *Rented, not occupied* | 18 | 0.11% |
| *For sale only* | 222 | 1.4% |
| *Sold, not occupied* | 114 | 0.7% |
| *For seasonal, recreational, or occasional use* | 1,681 | 10.7% |
| *For migrant workers* | 0 | 0% |
| *Other vacant* | 1,185 | 7.5% |

## 3.8. Economy

According to the California Department of Transportation (Caltrans) Economic Forecast for Lassen County (2021-2026), total employment in Lassen County will decline throughout most of the forecast period. Some of the forecast summary includes:

- The California Correction Center, a prison in Susanville, will be deactivated during 2021 and 2022.
- Because the California Correction Center accounts for more than 10 percent (10%) of all jobs in Lassen County, closing it will have a major impact on the economy and job market.
- Total employment across Lassen County will decline by 2.1 percent (2.1%) in 2021 and 6.7 percent (6.7%) in 2022.
- The job market will not recover before the end of the forecast period and may never completely recover.
- The unemployment rate is expected to decline to 5.5 percent (5.5%) in 2021 as people drop out of the labor force but increase to 6.2 percent (6.2%) in 2022 as local residents lose their jobs.
- Lassen County population is expected to shrink during the forecast period and could continue to decline over the long term (through at least 2030).

## 3.9. Employment

According to the Lassen County Housing Element Technical Background Report, there are 8,639 jobs in Lassen County (**Table 3-8**); and approximately 3,851 individuals who reside in Lassen County are employed in the area. Employment trends indicate that the top industry type Lassen County residents work in is public administration (31.1%). Public Administration is defined as managing, supervising, and working through a partnering with organizations that regulate and control public policy in all levels of government (local, regional, state, federal), as well as nonprofit organizations. Secondly, top industry types include education, health, and social services (20.7%), followed by retail trade (9.8%).

*Table 3-8. Employment by Industry (U.S. Census Bureau)*

| Industry Type | Number | Percent |
|---|---|---|
| Agriculture, forestry, fishing and hunting, and mining | 464 | 5.37 % |
| Education, health, and social services | 1,796 | 20.79% |
| Retail trade | 848 | 9.82 % |
| Manufacturing | 179 | 2.07 % |
| Arts, entertainment, recreation, and services | 592 | 6.85 % |
| Construction | 637 | 7.37 % |
| Public administration | 2,689 | 31.13 % |
| Finance, insurance, real estate, rental and leasing | 163 | 1.89 % |
| Professional, scientific, management, administration | 388 | 4.49 % |
| Wholesale trade | 131 | 1.52 % |
| Other services | 279 | 3.23 % |
| Transportation, warehousing, and utilities | 342 | 3.96 % |
| Total | 8,639 | 100 % |

## 3.10. Lifeline Infrastructure

### 3.10.1. Energy

Four (4) utilities provide electrical service in Lassen County: Lassen Municipal Utility District (LMUD), Plumas-Sierra Rural Electric Cooperative (PSREC), Surprise Valley Electrification Cooperative (SVEC), and Pacific Gas & Electric (PG&E).

LMUD, a publicly owned utility created by voters in 1986, provides service to the most customers in the County. LMUD has nine (9) substations, and its service territory is over 1,933 areas, mostly in the central portion of the County. LMUD is connected to the California's electrical grid in Westwood, CA (Lassen County). LMUD is supplied its electrical power from Pacific Gas & Electric Company (PG&E). PG&E is connected to LMUD with two (2) PG&E owned transmission lines: 1) the Caribou line and the 2) Hat Creek line. The Hat Creek line is only used as a back-up line and does not have the capacity to support all of LMUD's customers.

PSREC, based in Portola provides service to the southeast portion of the County. SVEC, based in Modoc provides service to the northeast portion of the County, and PG&E provides service along the western boundary of the County.

### 3.10.2. Natural Gas

TC Energy (formerly TransCanada Energy) owns and operates 85.1 miles of 20-inch mainline, including one compressor station and one each pig launcher and receiver in Lassen County called the Tuscarora line. Typical mainline operating pressures are between 800 PSI and the maximum allowable operating pressure of 1,000 PSI. Flow is from north to south. The system also includes 11.0 miles of 6-inch Susanville lateral, and 5.3 miles of 4-inch Herlong lateral for distribution by local systems. The City of Susanville operates 10 miles of high-pressure steel gas main pipeline operating at 400 PSI and 60 miles of low pressure polyethene gas mains operating at 40 PSI.

### 3.10.3. Water

The City of Susanville is the water provider to the residents within the City of Susanville and to some areas of the Susanville Indian Rancheria (lower Rancheria on Joaquin Street and upper Rancheria north of Spring Ridge Road). The City of Susanville is a retail water supplier and does not provide water to other supply agencies. Customer's water needs are met utilizing water from Bagwell Springs, Cady Springs, and four (4) wells located southeast in the City. Water from the wells is primarily utilized during hot summer months to supplement increased demands. The City wells draw water from the Honey Lake Valley Groundwater Basin, which is part of the North Lahontan Hydrologic Region.

The City of Susanville maintains approximately 60 miles of water lines that service six (6) different pressure zones, five (5) water storage tanks (3.88 MMG) located throughout the City, a 29-acre freshwater reservoir (Berry Reservoir) that holds up to 36.8 million gallons.

The majority of the unincorporated County is served by individual wells. The Big Valley Groundwater Basin (BVGB) spans across 144 square miles, 72% of which is located in Lassen County. BVGB's sixteen (16) wells are part of the California Statewide Groundwater Elevation Monitoring Program. According to the 2021 Big Valley Groundwater Sustainability Plan, the historic water budget analysis for the basin is about 39,300 acre-feet per year (AFY) and a rough estimate of average annual overdraft of 5,000 (AFY) The Big Valley Groundwater Sustainability Plan established a path to sustainability by 2042.

### 3.10.4. Liquid Waste (Sewer)

The Susanville Sanitary District, formed in 1948, is an independent special district. Its service boundaries encompass about 6.2 square miles. According to the District's website, with a few exceptions, the District boundaries are contiguous to the City of Susanville City limits. The District has approximately 3,595 connections (3,199 residential connections, 387 commercial connections, and 9 industrial connections). The District provides wastewater collection and tertiary wastewater treatment. The District recently went to UV disinfection in lieu of chemical treatment in order to better serve the community and protect the environment. The District owns and maintains 61 miles of collection pipelines, a wastewater treatment plant, 2 polishing ponds, and a wetland.

Wastewater is collected through 60 miles of gravity-fed pipelines and one mile of pressure sewer mains. The Wastewater Treatment Plant (WWTP) treats approximately 1.0 million gallons of wastewater per day during dry weather and approximately 1.2 million gallons per day (mgd) in

wet weather. The WWTP has the capacity to treat and discharge 2.0 mgd average monthly flow and 3.1 mgd peak wet weather flow, with a maximum hydraulic capacity of 4.0 mgd. For planning purposes, the District estimates that each residence uses approximately 250 gallons per day.

The majority of the unincorporated County is not served by a community septic system. Therefore, housing is dependent on individual septic systems. The Lassen County Liquid Waste Program is responsible for protecting public health and the environment from the potential adverse health and environmental impacts associated with new and repair on-site individual sewage disposal systems. They investigate complaints, review test data, design proposals and inspect the construction and installation of all septic systems to ensure conformance with applicable codes and ordinances.

### 3.10.5. Solid Waste (Trash) and Recycling

The Lassen Regional Solid Waste Management Authority (LRSWMA) is a joint powers agency (JPA) formed in 1998 by and between the City of Susanville and the County of Lassen. The Authority is responsible for all aspects of municipal solid waste management, including recycling, within Lassen County and is empowered to grant a franchise for municipal solid waste and recycling collection services. LRSWMA operates two (2) municipal solid waste landfills and nine (9) transfer stations within Lassen County. Private contractors, such as C&S Waste Solutions of Lassen County, perform waste collection services within some areas of Lassen County. C&S Waste Solutions of Lassen County currently holds the franchise agreement and operates exclusively in the franchised area which includes the areas of Susanville, Doyle, Herlong, Janesville, Milford, Wendel and Westwood.

### 3.10.6. Telecommunications

Historically, telecommunications consisted of land lines, cellular service, and broadband (internet) service. However, with recent innovations and advancements in telecommunications, many of the traditional land line services have been transitioning to voice over internet protocol (VoIP) services. VoIP is a technology that allows people to make phone calls using a broadband internet connection instead of a traditional phone line. VoIP can be cheaper than traditional phone networks, especially for long distance calls, but it can also be subject to bandwidth limitations.

A Broadband Planning and Feasibility Study for Lassen County has just been completed (2023). According to the study, the purpose was to research the telecommunications industry landscape in Lassen County. This included identifying the location of fiber optics assets, the service areas and service offering of retail Internet Service Providers (ISP), the location of premises lacking access to adequate broadband, and available funding for broadband infrastructure.

The study determined that there are only two (2) wireline ISPs providing services to significant portions of Lassen County. Zito Media's cable services are essentially the only form of high-speed cable available in the County, reaching more than half of households. Frontier's DSL systems cover more rural areas, but often do not offer speeds of 25/3 Mbps, suggesting that they are using legacy telephone wiring that has not been upgraded in many areas. Fixed wireless services are more readily available across the County, often the only form of internet service available beyond the service footprints of each of these two main ISPs. In some areas, the fixed wireless option can offer better performance than the DSL option.

Plumas-Sierra Telecommunications (PST) provides broadband services to Lassen, Plumas, Sierra and Nevada counties in California, and Washoe County, Nevada. PST is a wholly owned subsidiary of Plumas-Sierra Rural Electric Cooperative, which is member-owned and provides electric and internet services north of Truckee.

## 3.11. Transportation

### 3.11.1. Highway/Road Systems

The public road system within Lassen County consists of:

- 303 miles of state highway
- 881 miles of county road
- 50 miles within the City of Susanville, and
- 536 miles controlled by federal agencies

Truck traffic on the state highway system has reached 24%. For trucks travelling between Reno and the Interstate 5 corridor, Routes 395 and 44 are the shortest travel routes.

### 3.11.2. Railroad

Two (2) Class 1 freight railroads operate in the county:

- **Burlington Northern Santa Fe (BNSF)-** BNSF operates 83 track miles in Lassen County, including 36 at-grade crossings, and 1 each under- and above-grade crossing. At-grade crossings are at greatest risk of conflicts with road traffic. BNSF operates a maintenance facility in Westwood, a railyard at Bieber, and freight stations at Westwood, Lodgepole, Willow Springs, Little Valley, and Bieber.
- **Union Pacific (UP)-** UP operates 131 track miles with 36 at-grade, and 2 each under- and above-grade crossings. UP operates freight stations at Wendel, Susanville, CalNeva, and Herlong.

### 3.11.3. Aviation

Aviation serves are provided by a variety of public and private organizations.

- **Susanville Municipal Airport (SVE)-** SVE serves general aviation and emergency services use, with an asphalt runway of 2,180 feet and two helipads
- **Southard Field (Bieber)-** with a runway of 2,980 feet
- **Herlong Airport-** with a runway of 3,269 feet
- **Ravendale Airport-** with a runway of 2,920 feet
- **Spaulding Airport-** with a runway of 4,600 feet
- **Amedee Airport-** Amedee Airport is near Herlong and has a 10,000-foot runway operated by the U.S. Army and requires prior permission before use
- **Banner Lassen Medical Center-** Banner Lassen Medical Center operates a private 86 by 50-foot concrete helipad in Susanville

### 3.11.4. Public Transportation

Lassen Rural Bus, the primary public transportation provided in Lassen County, offers a range of services. These services include Commuter Route, Fixed Route, Deviated Fixed Route, Demand Response Route, and Dial-a-Ride services. Additional Lassen Rural Bus offers services to select regional locations and/or services to connect to other regional transportation services (Reno Bus Service, Plumas County Transit Connection, Lassen Senior Services, Big Valley 50 Plus, and Eagle Lake Demand Response Route).

## 3.12. Land Use and Development

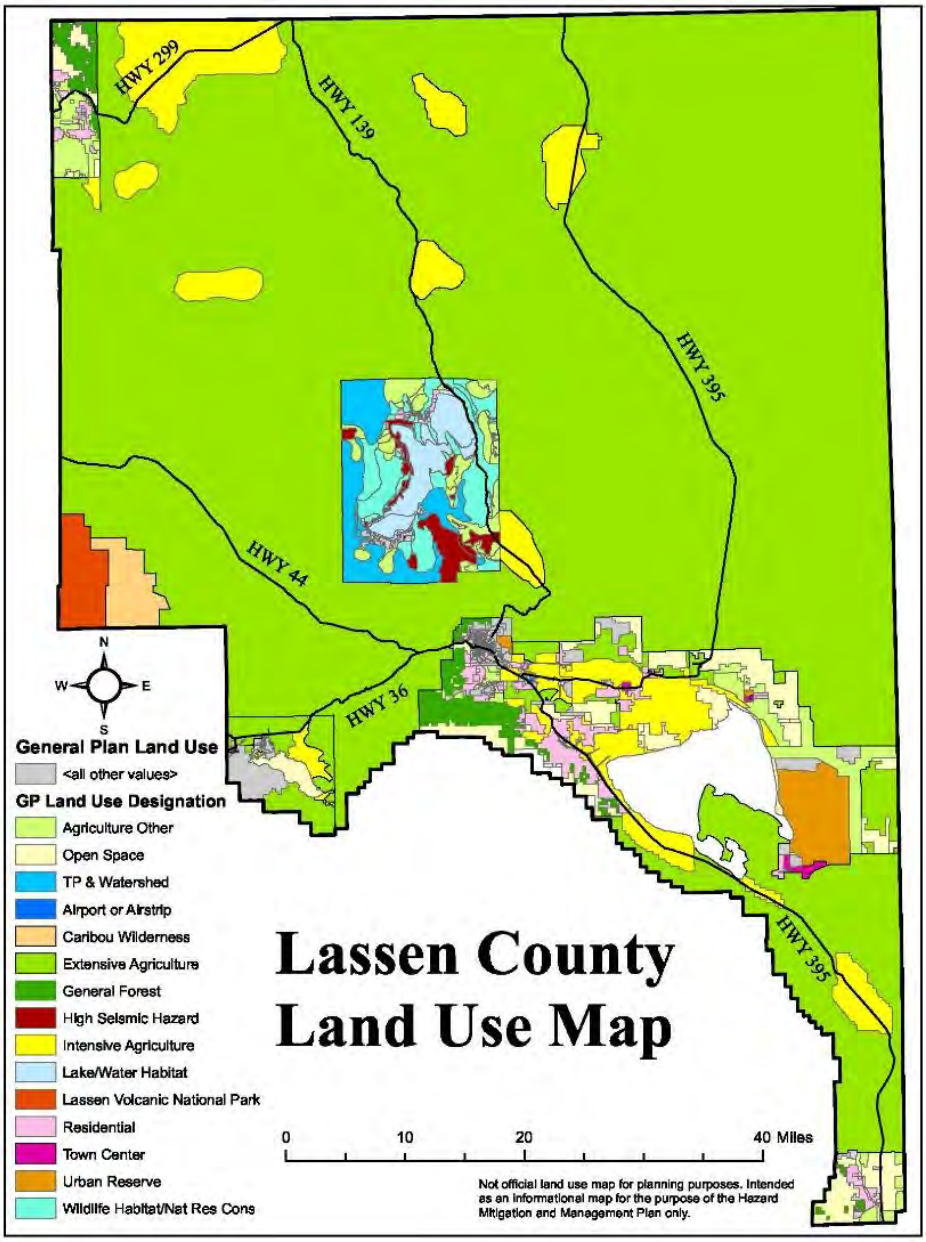
### 3.12.1. Lassen County

**Table 3-9** provides a list of the Land Use designations for Lassen County as defined in the Lassen County General Plan. These designations are derived in an attempt to designate the proposed general distribution and intensity of uses within the county. **Figure 3-3** presents the Land Use Map for Lassen County. Greater detailed information can be found in the Lassen County General Plan.

*Table 3-9. Lassen County Land Use Designations and Building Density*

| Land Use Designation | Description | Building Density |
|---|---|---|
| **Residential** | Residential Centers | 1 - 7.25 |
| | Urban Residential | Low 1 - 7.25; High +8 |
| | Estate Residential | .2 - 1 |
| | Planned Development Residential | Average: 4 |
| | Planned Development Option | Average: 4 |
| | Rural Residential | .05 – .33 |
| | Agricultural Residential | .025 – .05 |
| **Commercial** | Commercial | 1 - 7.25 |
| | Business Park | 1 - 7.25 |
| | Neighborhood Commercial | 1 - 7.25 |
| | Highway Commercial | 1 - 7.25 |
| | Industrial (General) | 1 - 7.25 |
| | Industrial Park | 1 - 7.25 |
| **Natural Resource** | Intensive Agriculture | Not to Exceed: 0.025 |
| | Extensive Agriculture | Not to Exceed: 0.025 |
| | Open Space | N/A |
| | Scenic Corridor | N/A |
| | Conservation/Conservation Corridor | N/A |
| | Trail Corridor | N/A |
| **Institutional** | Governmental & non-governmental | Wide Range |

*Figure 3-3. General Plan Land Use- Lassen County*



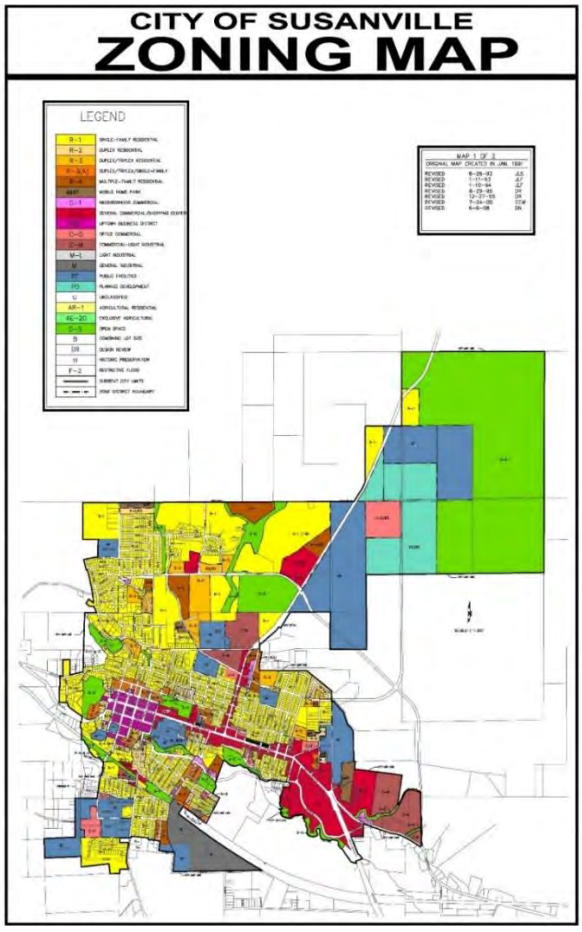

### 3.12.2. City of Susanville

All land within the Susanville planning area is grouped into categories (designations). Error! Reference source not found.**10** presents the Land Use designation and Error! Reference source not found.**4** presents the distribution of Land Use designations within the city limits (Source: City of Susanville General Plan, Land Use Element). Both ensure a proper planning mechanism is in use for considerations of future planning and development, which allow for determining adjacent developments and acceptability of zone districts.

*Table 3-10. City of Susanville Land Use Designations and Building Density*

| Land Use Designations | Description | Building Density |
|---|---|---|
| **Residential** | Single Family | 0 - 7 |
| | Duplex and Triplex | 0 - 15 |
| | Multiple Family | 5 - 20 |
| | Mobile Home Park | 0 - 14 |
| **Commercial** | Local/Neighborhood | 5 - 20 |
| | Commercial Office | 5 - 20 |
| | General Commercial/Shopping Center | 5 - 20 |
| | Mixed Use | 5 - 20 |
| | Commercial/Light Industrial | N/A |
| **Industrial** | Light Industry/Business Park | N/A |
| | Heavy/General | N/A |
| **Agricultural** | Agricultural Residential | 0 - 2 |
| **Open Space** | Resource Conservation | N/A |
| | Parks and Recreation | N/A |
| **Public & Governmental** | Critical Facilities | N/A |

*Figure 3-4. General Plan Land Use- City of Susanville*




Because of regular flooding along the river, Susanville's earliest residential area was built on the high ground now known as Uptown. Originally, the center of the town was at Main and Lassen,

but the development trend has been such that the commercial area has now extended eastward along Main Street about 2 miles. All new development, as well as redevelopment, or substantial improvement projects located in mapped flood zones are subject to the City of Susanville Floodplain Ordinance.

### 3.12.3. Susanville Indian Rancheria

The Susanville Indian Rancheria has a total acre is 1880.54. 1397.53 acres in trust land and 483.01 in fee acres that are either developed or partially developed. The land is held in seven different parcels as follows:

- **Lower Rancheria**: The Lower Rancheria is the original 30-acre land base purchased in 1923 with funds from a congressional appropriation for the procurement of land for landless and homeless California Indians and today is utilized for housing, a health care facility, education facilities, gymnasium, administrative offices, a gaming facility, and a mini-mart. In 2001 the Susanville Indian Rancheria purchased 3.21 acres adjacent to the Lower Rancheria that was put into trust in 2003 and has since been developed for 12 additional tribal housing units. SIR also purchased land off of Paul Bunyon and Chestnut with 38.01 acres. Brings a total of acres to 71.31 acres.
- **Upper Rancheria**: The Upper Rancheria is a 120-acre parcel which was appropriated to the tribe by an act of congress in 1978 with help from Congressman Bizz Johnson and is located just north of Susanville city limits. The land is used for tribal housing, a public water system, and open space. SIR also purchased 875 acres in March 2002 and acquired an additional 300 acres from BLM in 2016 to the Upper Rancheria for a total of 1295 acres to the Upper Rancheria.
- **Ravendale**: 80 acres was given to the Susanville Rancheria in 1994 through a donation. The property is located near Buckhorn Reservoir and is undeveloped with Limited access.
- **Eagle Lake Biological Field Station:** 102.35 acres located on the southern shores of Eagle Lake. Chico State transferred the property to be maintained by the SIR. We would like to revitalize the property for the community to use.
- **Termo:** 20.1 acres were donated to SIR, and the deed is anticipated in 2025.
- **Cradle Valley:** SIR purchased the property in September 2003. 160 acres near Antelope Lake. Plans to create an outdoor culture recreation area for Native groups on the property. This property was in the footprint of the Dixie Fire in 2022.
- **Herlong Parcel**: The Susanville Indian Rancheria acquired 72 acres from the Sierra Army Depot (SIAD) through the Base Realignment and Closure Act (BRAC) which was put into trust in 2000. The property consists of 120 housing units, many of which were in disrepair when acquired; a commercial building; and open space adjacent to a railroad track. The Susanville Indian Rancheria currently operates a housing rental program and is investigating other economic development opportunities for the property.

## 3.13. Future Development

Lassen County has experienced reduced population growth over the past 5 years, and it is anticipated this trend may continue over the next 5 years. All development occurring since the adopted 2019 LHMP was constructed in accordance with all local, state and federal land use,

building codes, zoning, and environmental requirements. Because of no growth and rigorous project review, there have been no changes to the community's vulnerability over the last 5 years.

All future development proposed for the County, City, and the Rancheria will continue to be reviewed to ensure compliance with all relevant land use, zoning, building codes and environmental standards. Additionally, prior to incorporation of information from the updated LHMP into the relevant General Plans, each jurisdiction will leverage the LHMP during the review of future proposed development projects. In doing so, new projects, whether on vacant land or infill projects will limit and/or reduce expose of structures or population to potential hazards. Development on Susanville Indian Rancheria parcels which are in trust, is governed by federal statute. Parcels which are located within Lassen County or City of Susanville jurisdictional boundaries are governed by the jurisdiction in which they are located.

### 3.13.1. Lassen County

The Lassen County population in the unincorporated area has declined; however, based on recent population trends the population is expected to remain steady or slightly decline in the next 5-year time frame. Error! Reference source not found.**11** provides an overview of the available parcels within Lassen County.

*Table 3-11. Available Parcels in Lassen County*

| Zoning | Vacant Acreage with Infrastructure |
|---|---|
| R-1 (Single Family Residential) | 912.19 |
| R-2 (Duplex Residential) | 0.58 |
| R-3 (Duplex/Triplex Residential) | 17.83 |
| PUD (Planned Unit Development) | 382.43 |
| C-T (Town Center) | 126.73 |
| MU (Mixed Use) | 87.26 |
| **Total** | **1,527.02** |

*Source: 2014–2019 Lassen County Housing Element*

### 3.13.2. City of Susanville

The City of Susanville population has increased at approximately 1-percent (1%) annually since 1990. This includes irregular growth patterns attributed to the construction of state prison facilities but does not include inmate population. Much of the City's growth has been associated with an increased employment base in government, education, and health care. While many parcels within the city could hold additional residential capacity, there is a limited supply of residential property that is ready for construction. Growth has been limited in recent years and has decreased some over the past 5 years despite improvements in the state and national economies. Error! Reference source not found.**12** provides an overview of the vacant acreage within the City and the associated planning zones. In addition to the land listed in the table there are 136 vacant infill parcels which can be developed with one dwelling per parcel.

*Table 3-12. Available Parcels in City of Susanville*

| Zone District | Vacant Acreage without Environmental/ Infrastructure Constraints |
|---|---|
| R-1 (Single Family Residential) | 98.00 |
| R-1 B-1 (Single Family Residential) | 1.80 |
| R-2 (Duplex Residential) | 7.08 |
| R-3 (Duplex/Triplex Residential) | 48.40 |
| R-3A (Duplex/Triplex Residential) | 3.58 |
| R-4 (Multifamily Residential) | 45.91 |
| MHP (Mobile Home Park) | 32.77 |
| PD (Planned Development) | 172.20 |
| **Total** | **407.94** |

### 3.13.3. Susanville Indian Rancheria

As previously mentioned, limited growth has occurred within the Susanville Indian Rancheria over the past 5 years, and it is anticipated this trend will continue over the next 5 years. All development occurring since the adopted 2018/2019 LHMP was constructed in accordance with all relevant tribal land use, building codes, zoning, and environmental requirements. Because of the limited growth and rigorous project review over the past 5 years, there have been no changes to the community's vulnerability.

Below are the development projects in discussion at the Susanville Indian Rancheria. As included in the project description, these project parcels may or may not be developed. If they are developed, the Susanville Indian Rancheria will review the proposed developed to ensure that any new development does not occur in hazard area and will not increase vulnerability.

- **Upper Rancheria**: In 2001, the Susanville Indian Rancheria purchased an additional 875 acres adjacent to the Upper Rancheria. The tribe plans to utilize the property for additional housing, economic development, renewable energy, and protection of cultural sites on the property. A Class-III Archaeological survey performed in conjunction with an Environmental Assessment required to put the land into trust (completed in 2004), revealed 72 sites potentially eligible for the National Register of Historic Places, many of which were petroglyph panels. Currently, there are plans to construct a new health clinic off of Spring Ridge Road.
- **Ravendale Parcel**: Susanville Indian Rancheria was donated 80 acres east of Ravendale, CA (T35N, R16E, S1/2 of the SE1/4 of Sec. 36) in 1994. Buckhorn creek bisects the NW corner of the property which has steep slopes, sagebrush and western juniper habitats, and no road access. The Susanville Indian Rancheria has been discussing a possible land transfer to the Bureau of Land Management (BLM), which manages land adjacent to the property, in exchange for BLM managed lands adjacent to the Upper Rancheria and Highway 139.
- **Cradle Valley Parcel**: Susanville Indian Rancheria acquired 160 acres of forested property in Plumas County, completely surrounded by the Plumas National Forest, in 2003. The Susanville Indian Rancheria is currently developing a proposal to put this land into trust. The long-term goal for this property, executed through the Cradle Valley Indigenous Landscape Enhancement Project (CVILEP), is to return the property to pre-settlement conditions and develop a Cultural Retreat.

# 4. Capability Assessment

The purpose of this section is to capture the resources (or capabilities) available to the County, City, and Rancheria in support of mitigation. To demonstrate these resources, this section has been organized by: Personnel Resource; Mitigation Governance Resources; Technical Resources, and Financial Resources.

## 4.1. Personnel Resources

The following is an overview of the Personnel Resources (administrative capacities) for the County, City, and Rancheria which support emergency management, and can assist with the implementation of current and future mitigation strategies. The focus is on the County, City, and Rancheria capabilities. However, due to the extensive amount of public lands located in Lassen County, a number of federal and state agencies are included as potential planning partners in hazard mitigation activities. The following subsection includes a listing of local departments, agencies, and special districts that may have a role in developing and/or implementing mitigation strategies, programs, and/or projects.

### 4.1.1. Lassen County

- **Administration Department:** The Administration Department is responsible for compilation, preparation, recommendation and presentation to the Board of Supervisors of the County Preliminary and Final Budgets on a yearly basis. In addition, the Department oversees the County's Information Services Department.
- **Agricultural Commission:** The Agricultural Commission promotes Lassen County agricultural production by protecting it from injurious pests and diseases, to ensure the safety and wholesomeness of food and other products for the consumer, and to build consumer and business confidence in the marketplace through the maintenance of equity.
- **Airports:** The Airports Department is responsible for the administration, operation and maintenance of Lassen County's four airports located throughout the County.
- **Buildings and Grounds:** The Roads Department provides funding for the maintenance of County road and bridge systems to safeguard the traveling public and preserves the County's capital investment in the system.
- **HMA Grants and Loans:** The HMA Grants and Loans Division is committed to community reinvestment through the use of Community Development Block Grant (CDBG) and HOME Investment Partnership Program (HOME) funds. The funds assist in improving the quality of life for all residents and business owners in Lassen County by providing businesses with technical assistance, homeowners the financing to complete the necessary repairs to bring a housing unit in compliance with all pertinent codes, affordable housing options, and to upgrade the infrastructure of disadvantaged rural communities.
- **Public Health:** The Public Health Emergency Preparedness Program plans response efforts to large-scale public health incidents. These emergencies could include a pandemic, anthrax attack, smallpox outbreak, earthquake, severe winter storm, and more.
- **Office of Emergency Services:** Provides for services in any extraordinary emergency situation associated with natural disasters, technological (man-made) emergencies, and war emergency operations in the Lassen Operational Area. Responsible for the policies, responsibilities and procedures required to protect the health and safety of the populace,

public and private property and the environment from the effects of natural and human caused technological emergencies and disasters. Responsible for field response, Emergency Operations Center activities, and the recovery process.

- **Planning and Building Services:** Responsible for developing the County General Plan, including the Safety Element. Develops Area Plans and Zoning Maps. Provides planning and technical assistance to residents to ensure development projects are consistent with all applicable building codes and standards. The County Building Official serves as the County Floodplain Manager.
    - **Planning Division-** Responsible for land use planning and policy, zoning, setback requirements, and design reviews. This division presents applications to multiple bodies including the Planning Commission, Board of Supervisors, Architectural Review Committee, and others.
    - **Building Division-** Responsible for enforcing building codes and design criteria within Lassen County, issuing related permits, identifying snow load roof requirements, and performing inspections.
    - **Surveyor Division-** Provides services to the public and to other governmental agencies as requested. The Surveyor's Office ensures that the review of Final Maps, Parcel Maps, Records of Survey, Lot Line Adjustments, Mergers, Certificates of Compliance, Notices of Violation, Corner Records and legal descriptions are in conformance with State and Local Ordinances and that the information provided on these documents is technically correct. The Surveyor's Office is also responsible for maintaining Lassen County's six digit addressing system.
    - **Code Enforcement Division-** The primary function of the Division is to receive and respond to citizen complaints and referrals from other agencies and/or departments regarding alleged violations of applicable ordinances, codes, and regulations relating to fire, life, health, safety, blight, building, electrical, mechanical, plumbing, public nuisance, welfare, zoning, land use, and other matters of public concern. The County Code Enforcement program is complaint driven. This means that, typically, the Department does not initiate code enforcement cases. However, cases are potentially opened (without a complaint) when a "dangerous" violation is identified necessitating action without a complaint.
    - **Environmental Health Division-** The mission of Environmental Health is to protect and promote public health and environmental quality through the application of scientific principles, education and the enforcement of applicable laws and regulations. Environmental Health carries out necessary programs designed to control or prevent disease, improve the overall environment, and enhance the general welfare and health of the community.
    - **Surface Mining and Reclamation, Williamson Act (Land Conservation Act)-** Responsible for managing mining projects, including the mining reclamation process which restores the land to a stable and safe environment. Additionally, The Williamson Act provides property tax relief to private landowners of open-space or farmland in exchange for a ten-year agreement with local governments. During this ten-year period, specific parcels of land would be restricted to open space or agricultural uses.

  - **Natural Resources-** Responsible for Lassen County's resource management and conservation policies. This includes resource management agencies, geologic and soil resources, water resources, vegetation, forest resources, rangeland, mineral resources, energy resources, recreation resources, air quality, and scenic resources
- **Public Works/Roads:** The Roads Department provides funding for the maintenance of County road and bridge systems to safeguard the traveling public and preserves the County's capital investment in the system.
- **Sheriff:** The Sheriff is responsible for a wide range of public safety services including managing a 911 dispatch center for both the city and county, providing search and rescue services, providing boating safety services on navigable waters, and responding to and managing emergencies within the County. The sheriff is also responsible for the County Jail.

### 4.1.2. City of Susanville

- **Administration:** All public buildings, parks and all other public property, including the Susanville Municipal Airport and its operation, under the jurisdiction of the City Council are under the general supervision of the City Administrator. This department also oversees the finance division.
- **Code Enforcement:** The city has established and hired staff to conduct local code enforcing of municipal and other codes.
- **Economic Development Department:** The City, in partnership with the Rancheria, has established and hired staff to for an Economic Development Department. The department will guide the City's Economic Development strategies and programs working closely with all City staff, local governments, and community stakeholders.
- **Fire:** Provides fire, rescue and emergency services to the Susanville community on a day to basis. Conducts emergency response activities in advance of hazard events to minimize life loss and property damage. Also provides fire prevention public education information, including vegetation management. Enforces fire safety codes and regulations.
- **Police:** Provides law enforcement services for the City of Susanville. Responds to emergencies caused by natural and manmade events.
- **Public Works:** Maintains and improves the condition of the City street and alley system, keeps drainage ways open and free of debris, maintains and operates all City controlled traffic signs, and pavement markings in a safe and effective manner, provides a safe and reliable public water and natural gas system, provides a local municipal airport and implements capital improvement projects. The Public Works Department also serves as the air pollution control district.
  - **Planning and Building:** Planning administers the General Plan, including Safety Element Updates. Reviews development plans within the City of Susanville. Develops and enforces zoning regulations and ensures all projects meet applicable public safety codes and standards. Building reviews all local construction projects to ensure they are consistent with all applicable building codes and standards. The Building Official serves as the City's Floodplain Manager. Parks & facilities operates, maintains and improves City owned parks and recreation facilities.

### 4.1.3. Susanville Indian Rancheria

- **Tribal Business Council:** The governing body of the Tribe, the Tribal Business Council, is made up of elected officials. It sets tribal policy, including land use and development strategies for all tribal lands, and approves all plans, including emergency procedures, evacuation, and hazard mitigation plans.
- **Tribal Administrator:** Responsible for implementing Council policies and programs on a day-to-day basis.
- **Housing Authority:** Develops and administers housing programs to benefit the members of the Susanville Indian Rancheria.
- **Indian Health Care Center:** Provides public health services and health care to the Susanville Indian Rancheria.
- **Natural Resources:** To assess, protect, and enhance the Tribal and environmental resources (culture, language, land, air, water) on the ancestral homelands of the tribes and bands of SIR in order maintain a healthy community and to manage for multiple land uses.
- **Public Works:** Develops, implements, and maintains infrastructure and facilities located within the Rancheria lands. The Emergency Services Specialist (ESS) resides within the Public Works Department. The ESS develops emergency plans and procedures, participates in operational area and multi-jurisdictional hazard mitigation planning efforts.
- **Emergency Services Specialist:** Provides perspective on hazards and vulnerabilities facing the Susanville Indian Rancheria. Helps identify and develop projects that will eliminate and/or reduce the risk of hazards. Ensures plans incorporate/consider hazard-related information, and reviews projects to increase awareness of risk to hazards.

### 4.1.4. Other Area Organizations

- **Local/Regional**
  - Fire Protection Districts (i.e., Janesville Fire, Susan River, others)
  - Firenet Lassen Joint Powers Authority
  - Big Valley Pest Abatement District
  - Community Service Districts
  - County Service Area #1
  - Herlong Public Utility District
  - Lassen Municipal Utility District
  - School Districts (i.e., Susanville, Lassen High, others)
  - Resource Conservation Districts
- **State**
  - Department of Forestry and Fire Protection (CAL FIRE)
  - Department of Transportation (Caltrans)
  - Division of Safety of Dams
  - Department of Corrections and Rehabilitation
  - California Environmental Protection Agency
  - Department of Fish & Wildlife
  - Office of Emergency Services
  - Highway Patrol

- **Federal**
  - Bureau of Indian Affairs
  - Environmental Protection Agency
  - Bureau of Land Management
  - Correctional Institution, Herlong
  - USDOT-FRA-Office of Railroad Safety
  - Federal Emergency Management Agency (FEMA)
  - US Forest Service
  - Sierra Army Depot Fire and Emergency Services
  - Sierra Army Depot Police Department

## 4.2. Mitigation Governance

The County, City, and Rancheria have many plans, programs, and regulations/codes/ordinances that address disaster management in their respective jurisdictions. Some of them (or elements of them) directly relate to mitigation, such as the Lassen County Safety Element of the General Plan, while others focus on different aspects of disaster management such as emergency response. Still others do not focus directly on disaster issues but have implications that are relevant to mitigation, such as plans related to spending on public facilities. As part of the LHMP planning process, each of these plans, programs, and regulations were reviewed to identify relevant information to be incorporated into the LHMP update, and to identify deficiencies which would impact proposed mitigation actions or lead to the development of new mitigation actions. The jurisdictions have the ability to expand and improve their plans, programs, and regulations but may have little control over other's plans, programs, and regulations (i.e., NFIP). Whether they have the ability or not to expand and improve, relevant plan, program, or regulation, each was assessed for deficiencies. Recommended changes, if any, are reflected in the mitigation actions section (Section 7).

### 4.2.1. Plans

- **General Plan**: California State law requires local governments to prepare a Comprehensive General Plan to address community policies, objectives, and mitigation actions that will guide the growth and physical development of the jurisdiction and the distribution of future land uses, both public and private. The policies of the General Plan are intended to underline most land use decisions, zoning and specific Plans, subdivisions, and capital improvements. General Plans are made up of a series of mandatory elements (Land Use, Circulation, Housing, Conservation, Open Space, Noise, Safety, Environmental Justice, and OpenSpace) and optional elements (i.e., Health, Equity, Community Development, Water, Climate Change, and Resiliency). According to California General Plan guidelines, the goal of the Safety Element of General Plans is to reduce the potential short and long-term risk of death, injuries, property damage, and economic and social dislocation resulting from fires, floods, droughts, earthquakes, landslides, climate change, and other hazards. Other locally relevant safety issues, such as airport land use, emergency response, hazardous materials spills, and crime reduction, may also be included. Some local jurisdictions have chosen to incorporate their hazardous waste management plans into their safety elements. California law requires each county and city in the state to develop and adopt a general plan. By law, the legislative body of the county or city can amend any part of the general plan only four (4) times a year. The

Susanville Indian Rancheria prepares a Master Land Use Plan to guide development within the Rancheria.

- **City of Susanville Community Fire Safe Plan 2006**: The City of Susanville Community Fire Safe Plan was utilized as the basis for the wildfire risk and vulnerability assessment. No changes have been made to this document since the adoption of the 2018/2019 Hazard Mitigation Plan, however, the City has adopted the Very High Fire Hazard Severity Zone delineated within the city local response area by Division of Forestry/CAL FIRE.
- **Lassen County Community Wildfire Protection Plan 2017 Work Plan:** This plan was developed by the Lassen County Community Wildfire Protection Plan (CWPP) Working Group to identify priority private, private-public and public agency fire mitigation projects within Lassen County. Three of the priority projects identified in the plan (Diamond Mountain, Little Valley, and Day Lassen Bench) have been funded through efforts by the Lassen County Firesafe Council and are currently in progress.
- **CAL FIRE Lassen Modoc Unit Fire Plan**: The Lassen Modoc Plumas Unit includes Lassen, Modoc and Plumas Counties and portions of Shasta and Siskiyou Counties. The Unit's Fire Management Plan is intended to provide information to CAL FIRE personnel, various County Boards of Supervisors, Firesafe Councils and other stakeholders focused on identifying specific problem areas and solving the mutually agreed upon fire issues.
- **Emergency Operations Plans**: Lassen County, the City of Susanville, and the Susanville Indian Rancheria maintain Emergency Operations Plans which include specific response procedures for earthquake, flooding, reservoir failure, fire, and other hazards. These plans are periodically updated to be consistent with all state requirements. The County Office of Emergency Services is currently leading the update of the Lassen Operational Area Emergency Operations Plan.
- **Evacuation Plan**: Lassen County is currently developing an Evacuation Plan to systematically evacuate citizens from hazard areas.
- **Urban Water Management Plan 2017**: The City of Susanville Urban Water Management Plan is updated every five years to monitor water supply issues and mitigate drought situations.
- **Groundwater Sustainability Plan**: Lassen County serves as the Groundwater Sustainability Agency (GSA) for Big Valley which has been designated as a medium priority groundwater basin under the Groundwater Sustainability Act. Under the Act, local GSA's have to prepare a Groundwater Sustainability Plan for the basin.
- **Storm Water Resource Plan**: As a result of the regional flooding which occurred in January and February 2017, the Honey Lake Valley Resource Conservation District obtained funding from the State Water Board to develop the region's first Storm Water Resource Plan.
- **Floodplain Management Plan**: Lassen County and the City of Susanville have adopted a floodplain management plan in accordance with the National Flood Insurance Program (NFIP) guidance. Recommendations and policies within the plan have been adopted as part of the local building codes.
- **Capital Improvements Plan**: Lassen County, the City of Susanville, and the Susanville Indian Rancheria each maintain a Capital Improvements Plans (CIP) with projects that are budgeted for at least a five-year period. Engineering mitigation projects are included within the Capital Improvements Plan. Additionally, the projects already included within the

Capital Improvements Plan are reviewed for mitigation improvements (e.g., areas prone to flooding are configured with mitigation elements, new reservoirs are reviewed to ensure they are configured with seismic flexible joints, current seismic design criteria is applied to pipeline construction, facility locations are reviewed for special hazards, etc.).

- **Lassen County Drought Plan**: The County and local stakeholders are in the process of creating and adopting a local Drought Plan for the County of Lassen in compliance with Senate Bill 552.
- **Lassen County Hazardous Materials Area Plan (HMAP)**- describes the County's pre-incident planning and preparedness for hazardous materials releases. It describes the roles and responsibilities of federal, state, local, and nongovernmental agencies during a hazardous materials incident. It also describes the County's hazardous materials incident response program, training, communications and post-incident recovery procedures.
- **State Hazardous Materials Incident Contingency Plan (HMICP)-** describes the State's hazardous material emergency response organization; the roles and responsibilities of state agencies; the relationship of the State with the local, federal, volunteer, and private organizations and is a useful reference document
- **Hazardous Materials Response Plan**- address mutual aid, hazardous materials transportation issues, hazard analysis and coordination of incidents that cross-jurisdictional boundaries within Region III. The thirteen-county Region III LEPC includes Butte, Colusa, Glen, Lassen, Modoc, Plumas, Lassen, Sierra, Siskiyou, Sutter, Tehama, Trinity and Yuba counties.
- **Airport Compatibility Plans**- The primary goal of airport land use planning is to protect the public and the people who live near the airport. This is done by examining land uses within specific airport safety zones. There are plans for all public airports in Lassen and surrounding counties.

### 4.2.2. Programs

- **Lassen County Firesafe Council**: The Lassen County Fire Safe Council was formed in 2001 as a 501(c)(3) corporation. Its purpose is to make communities, neighborhoods and homes within Lassen County safe from wildfires. The Council works closely with public agencies, private landowners and the communities within Lassen County to identify, review, prioritize and implement fire mitigation projects. There are currently seven communities that have been organized and recognized by the Firewise Communities USA program.
- **Vegetation Management**: Lassen County, the City of Susanville, and the Susanville Indian Rancheria conduct vegetation management (e.g., vegetation removal, burning) to mitigate potential wildfire hazards. Also, CAL FIRE Lassen Modoc Unit is conducting or assisting in multiple vegetation management treatments.
- **Weed Abatement**: In order to minimize the potential for wildfires, Lassen County, the City of Susanville and the Susanville Indian Rancheria implement weed abatement programs.
- **National Flood Insurance Program (NFIP)**:
  *Lassen County*- Lassen County participates in the National Flood Insurance Program (NFIP). Lassen County has adopted floodplain management requirements and county staff will continue to enforce the requirements in the foreseeable future. The Building Official is the designated floodplain manager for Lassen County. Section 12.26 of the

Lassen County Code provides details on the actions the County takes for flood prevention. Section 12.26.040 references the adoption of the NFIP minimum flood plain management criteria and the adoption of the latest Flood Insurance Map. Section 12.26.054(2)A/B provides a description of the implementation of Substantial Improvement and Substantial Damage provision. The section covers many details from general provisions to duties and responsibilities of flood plain administration that the County takes to keep in compliance. Lassen County Planning and Building Department currently tracks all new permitting in the county to ascertain if an applicant is in a flood zone, this enables them to properly apply the Substantial Damage and Substantial Improvement regulations set forth by the NFIP. Lassen County also prohibits building in Flood Ways, highly limits building in the Flood Fringe and requires Elevation Certificates showing compliance with NFIP regulations in all SFHA's (Special Flood Hazard Areas).

*City of Susanville*- The City of Susanville participates in the National Flood Insurance Program (NFIP) and has adopted the NFIP minimum floodplain management criteria through Susanville Municipal Code (SMC) Chapter 15.40 – Floodplain Management Regulations, most recently updated and adopted by Ordinance No. 13-988 to maintain compliance with FEMA requirements. These regulations implement 44 CFR § 60.3 and establish the City's standards for floodplain development, permitting, construction, elevation, floodway restrictions, subdivision requirements, and enforcement within Special Flood Hazard Areas (SFHAs).

The City has adopted the governing Flood Insurance Study (FIS) and Flood Insurance Rate Maps (FIRMs) through SMC § 15.40.070, which incorporate by reference the Flood Insurance Study dated June 6, 1985 and the associated FIRM and Flood Boundary and Floodway Maps with an effective date of September 3, 2010, as adopted by Ordinance No. 13-988.

Administration and enforcement of these regulations is assigned to the City Building Official, designated as the Floodplain Administrator under SMC § 15.40.140, who is responsible for reviewing floodplain development applications, issuing or denying permits, conducting field inspections, and ensuring compliance with NFIP requirements. Following a flood or damaging event, the Floodplain Administrator conducts onsite assessments to determine whether structures within the SFHA have incurred Substantial Damage, applying FEMA's definition of damage equal to or exceeding 50 percent of the structure's pre-damage market value. When a structure meets the definition of Substantial Damage—or when proposed work qualifies as Substantial Improvement—the City requires the structure to be elevated, repaired, or reconstructed to meet all applicable provisions of SMC Chapter 15.40 and NFIP standards prior to issuance of a permit, ensuring continued community compliance with NFIP floodplain management regulations.

*Susanville Indian Rancheria***-** Susanville Indian Rancheria is not in an NFIP designated floodplain and therefore does not participate in the NFIP or have a designated floodplain manager.

- **Certified Unified Program Agency (CUPA) Regulatory Program**. A State law that requires locals to develop and maintain an Area Plan which describes the agency's plan for preparing for and responding to a hazardous materials emergency.
- **Public Information and Outreach Program**: Lassen County, the City of Susanville and the Susanville Indian Rancheria maintain Public Outreach through various platforms (i.e., social media) and activities to continue to improve and enhance the program. Additionally, while used for more focused, major type of events, the jurisdictions can also access the Caltrans message boards.
- **Neighborhood Watch**: Lassen County, the City of Susanville, and the Susanville Indian Rancheria are implementing "Neighborhood Watch" programs for residents. Neighborhood Watch is set up for the safety of the residents. The Neighborhood Watch Program is a group of people living in the same area, who want to make the neighborhood safer by working together and in conjunction with the local law enforcement to reduce crime and improve their quality of life.
- **Dangerous Building Program/Ordinance** Codified and adopted in 2017. The program is broken down into two Chapters within Title 15. Chapter 15.09 (Neglected Vacant Buildings) and Chapter 15.10 (Abatement of Dangerous Buildings and Structures) which references the California Building Code and 1997 Uniform Code for the Abatement of Dangerous Buildings, or within the definition of "substandard building" under the provisions of the California Building Code. The purpose of this program is to require that vacant dwellings and buildings within the incorporated limits of the city of Susanville are maintained to certain minimum standards and suitable for use or habitation while allowing them to be properly secured and boarded up for a limited period time, and that dwellings and buildings which remain vacant and unoccupied for appreciable periods of time do not become public nuisances. The program (or ordinance) addresses vacant buildings and vacant boarded-up buildings that are considered to be a major cause and source of blight and safety concerns in both residential and nonresidential neighborhoods, especially when the owner of the building fails to actively maintain and manage the building to ensure that it does not become a liability to the neighborhood.

### 4.2.3. Regulations, Codes, Laws, Policies, & Ordinances

- **Lassen County**
  - Lassen County Code, Title 7: Health and Sanitation, Chapter 7.04 – Contagious Diseases
  - Lassen County Code, Title 9: Public Peace, Safety, and Morals, Chapter 9.16 – Fire Hazards
  - Lassen County Code, Title 12: Buildings and Construction, Article I – Building Code, Chapter 12.19 – Snow Load Design Standards
  - Lassen County Code, Title 12: Buildings and Construction, Article I – Building Code, Chapter 12.26 – Flood Damage Prevention
  - Lassen County Code, Title 12: Buildings and Construction, Article III – Storage of Hazardous Materials
- **City of Susanville**
  - Susanville Municipal Code, Title 8: Health and Safety, Chapter 8.12 – Open Burning

- Susanville Municipal Code, Title 8: Health and Safety, Chapter 8.20 – Standards for Fire Protection Facilities And Water Flow
- Susanville Municipal Code, Title 8: Health and Safety, Chapter 8.50 – Very High Fire Hazard Severity Zone
- Susanville Municipal Code, Title 8: Health and Safety, Chapter 8.28 – Weed and Rubbish Abatement
- Susanville Municipal Code, Title 15: Buildings and Construction, Chapter 15.24 – International Fire Code Adopted
- Susanville Municipal Code, Title 15: Buildings and Construction, Chapter 15.40 – Floodplain Management

- **Susanville Indian Rancheria**

  - Tribal Environmental Policy Ordinance No. 2000-003
  - Housing Ordinance No. 2000-002
  - Discharge of Pollutants into the Waters of the Susanville Indian Rancheria Ordinance No. 2003 – 001

- **Other**

  - *Code of Federal Regulations (CFR)*- The Code of Federal Regulations (CFR) is the codification of the general and permanent regulations published in the Federal Register by the executive departments and agencies of the federal government of the United States. CFR provides the rules and regulations for the Stafford Act which includes the FEMA Response, Recovery, and Mitigation programs.
  - *California Emergency Services Act*- The California Emergency Services Act is the guiding policy document of the State of California to ensure the state is prepared to deal with threats and hazards. The document establishes authorities and presents the organizational structure (and system) to ensure the state is coordinated between its political subdivisions (Standardized Emergency Management System- *SEMS*). This act also establishes the California Disaster Assistance Act- *CDAA*.
  - *California Building Standards Code*- California Building Standards Code 2022 Edition, California Residential Code 2022 Edition, Energy Code- California Energy Code 2022 Edition and California Green Building Standards Code 2022 Edition, California Historical Building Code 2022 Edition, California existing Building Code 2022 Edition, adopted and amended by on November 5, 2022
  - *California Plumbing Code*- CPC 2022 Edition, adopted and amended by Ordinance No. 19-007 on November 5, 2022
  - *California Mechanical Code*- California Mechanical Code 2022 Edition, adopted and amended by Ordinance No. 19-008 on November 5, 2022
  - *California Electrical Code*- California Electrical Code 2022 Edition, adopted and amended by Ordinance No. 19-009 on November 5, 2022
  - *California Fire Code*- California Fire Code 2022 Edition, adopted and amended by Ordinance No. 19-010 on November 5, 2022
  - *Senate Bill (SB) 379*- In 2017, the California State Senate approved Senate Bill (SB) 379 which requires the General Plan's Safety Element to address climate adaptation and resilience strategies. This must be done after the next revision to the Local

Hazard Mitigation Plan (LHMP) or by January 2022 in the city/county does not have a LHMP. If the jurisdiction has an approved and adopted LHMP it shall be summarized and incorporated by reference into the Safety Element.

- *Assembly Bill (AB) 477*- In 2019, the California State Assembly approved Assembly Bill (AB) 477. AB 477 requires local jurisdictions (cities/counties) to include representatives from the access and functional needs population in the next update of the Emergency Plan. The primary focus areas include, but are not limited to, emergency communications, emergency evacuations, and emergency sheltering.
- *Assembly Bill (AB) 2140*- In 2006, the California State Assembly approved Assembly Bill (AB) 2140. AB 2140 enables the state of California to provide greater than 75% of the eligible state share if a local jurisdiction (city/county) has an approved and adopted LHMP as part of the General Plan's Safety Element.
- *Senate Bill (SB) 552*- Passed and signed in September 2021, State and local governments will share the responsibility in preparing and acting in the case of a water shortage event (Drought Planning). The new requirements are expected to improve California's ability to manage future droughts and help prevent catastrophic impacts on drinking water for communities vulnerable to impacts of climate change. The bill outlines the new requirements for small water suppliers, county governments, DWR, and the State Water Board to implement more proactive drought planning and be better prepared for future water shortage events or dry years.
- *California Health and Safety Code (H&SC), Article 1*- allows peace officers to enforce local health officer orders to prevent the spread of contagious diseases within their jurisdiction. This section does not limit the authority of peace officers or public officers to enforce these orders.
- *California Code of Regulations (CCR), Title 19, Division 2, Chapter 4, Article 3*- regulations relating to fire and life safety involving the various occupancy classifications under the authority of the California State Fire Marshal.

## 4.3. Technical Resources

The County, City, and Rancheria have a variety of technical resources that can be used to assist with emergency management, including resources to help implement and maintain mitigation strategies. Some Technical Resources are connected to and/or can be expanded by the County's, City's, and Rancheria's ability to augment personnel and fiscal resources. This allows the County, City, and Rancheria to expand existing services and/or bring in needed proficiencies/expertise or technology/equipment to assist with mitigation efforts. Below is an outline of the Technical Resources.

### 4.3.1. Proficiencies and Expertise

- **Hazardous Materials Response Team-** The County is a participating member of the Region III Hazardous Material Response Team (HMRT) which operates a Type II hazmat response team. This HMTRT is a multi-jurisdictional team that serves Lassen, Modoc, Lassen, Siskiyou, Tehama, and Trinity Counties. The City Susanville Fire Department also operates a Type II hazmat response team. Due to concerns created by the transport of hazardous materials through Lassen County, the California Office of Emergency Services

has provided a Hazardous Materials Response Vehicle, and a 17-member response team designed to respond to events occurring in Lassen, Plumas, and Modoc counties. Lassen County also maintains membership with the Shasta Cascade Hazardous Materials Response Team (SCHMRT); and the Sierra Army Depot maintains an agreement with City of Susanville for Hazmat response.

- **Back-up Power Generation**: Lassen County, the City of Susanville and the Susanville Indian Rancheria maintain appropriate back-up power generation at many, but not all critical facilities. Emergency power is available at the County and City Emergency Operations Centers and the Susanville Indian Rancheria Casino.
- **Emergency Preparedness Training**: Lassen County, the City of Susanville and the Susanville Indian Rancheria routinely conduct HazMat, NIMS, and SEMS training for employees, in addition to conducting exercises to simulate the response to a hazard event.
- **Emergency Equipment Inventory**: Lassen County, the City of Susanville and the Susanville Indian Rancheria maintain emergency equipment and resources to enable a timely response and repair of assets to mitigate the overall impact of hazards on operations.

### 4.3.2. Communications

Several alert-warning systems are available in Lassen County. To activate one or more of these systems, LCSO's Public Safety Dispatch Center or SIFC can be contacted to activate and support these alert systems:

- **Genasys (zonehaven)-** mass notification system is a reverse call emergency notification system utilized to inform residents and business owners of local emergencies. Notifications can be made to both landlines and wireless services.
- **Emergency Alert System (EAS)** is used when a life-threatening hazard requires immediate protective action, with participating broadcast stations and cable operators transmitting the emergency alert over their networks. EAS messages may not exceed two minutes and are designed to provide a brief, initial warning to be followed by more detailed information.
- **National Warning System** is a government-to-government warning system that connects the National Warning Center at Colorado Springs to each state and, in turn, to the designated warning points in each county.
- **Integrated Public Alert Warning System (IPAWS)** can also be sent through the Community Notification System. IPWAS works off cell towers. If the circumstances of the emergency meet criteria, an alert can be sent out for a specific area with a duration of time so if anyone drives in the specified area of the incident they will get the alert.
- **California Health Alert Network (CAHAN)** is a web-based system that can distribute public health emergency information via cell phone, email or landline. Lassen County HSSA Public Health is the designated Lassen County CAHAN Administrator.
- **AT&T Language Line** is available as a mobile application to assist the Incident Commander in communicating with affected individuals in their native language should there be no other emergency responder on-scene who can do so in person.
- **Amateur Radio Emergency Service (ARES)** operators who can provide backup two-way voice and data communications on independent systems. They may be used to

communicate between facilities and locations when conventional communications systems are inoperable or overwhelmed. Local operators are equipped to communicate on UHF (60 CM), VHF high (2 meter), and HF bands. A unique capability of HF is long distance communications without intervening repeaters or other technologies. The auxiliary communications system is activated through SIFC.

In addition to the specialty platforms, the County, City, and Rancheria also have access to social media, print media, and broadcast media (radio).

### 4.3.3. Technology

- **Geographic Information Systems (GIS)-** the County, City, and the Rancheria are in the process of developing GIS databases to map and evaluate natural hazards (e.g., earthquake, flooding, etc.).

## 4.4. Fiscal Resources

This sub section demonstrates the County's, City's, and Rancheria's fiscal resources that may be leveraged to support mitigation efforts. As with most jurisdictions, County, City, and Rancheria generate annual operating budgets. The operating budgets incorporate all revenue streams and planned expenditures, providing insight into how the jurisdiction's financial resources will be used and/or reallocated.

### 4.4.1. Lassen County

The County of Lassen operating budget is prepared by the Administration Department and approved by the County Board of Supervisors annually. The County of Lassen annual operating budget consists of Governmental Funds and Other Funds. The Governmental Funds include General, Special Revenue, Capital Projects, Debt Service, while the Other Funds include Enterprise, Internal Service, and Special Districts and Other Agencies. **Figure 4-1** presents a summary of all funds for Fiscal Year 2023-24.

*Figure 4-1. Lassen County Budget- 2023-24*

State Controller Schedules — COUNTY OF LASSEN — Schedule 1

County Budget Act
January 2010 Edition, Revision #1

All Funds Summary
Fiscal Year 2023-24

| Fund Name | Total Financing Sources | | | | Total Financing Uses | | |
|---|---|---|---|---|---|---|---|
| | Fund Balance Available June 30, 2023 | Decreases to Obligated Fund Balances | Additional Financing Sources | Total Financing Sources | Financing Uses | Increases to Obligated Fund Balances | Total Financing Uses |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Governmental Funds | | | | | | | |
| GENERAL | $18,100,863 | $0 | $25,024,001 | $43,124,864 | $26,604,797 | $10,299,983 | $36,904,780 |
| SPECIAL REVENUE | $60,141,386 | $0 | $96,846,443 | $156,987,829 | $106,529,037 | $50,529,909 | $157,058,946 |
| CAPITAL PROJECTS | $6,297,415 | $0 | $11,259,034 | $17,556,449 | $15,794,606 | $1,761,843 | $17,556,449 |
| DEBT SERVICE | $8,758 | $0 | $302,000 | $310,758 | $302,155 | $8,603 | $310,758 |
| Total Governmental Funds | $84,548,422 | $0 | $133,431,478 | $217,979,900 | $149,230,595 | $62,600,338 | $211,830,933 |
| Other Funds | | | | | | | |
| ENTERPRISE | $89,131 | $0 | $114,000 | $203,131 | $145,641 | $37,631 | $183,272 |
| INTERNAL SERVICE | $2,146,430 | $0 | $1,817,750 | $3,964,180 | $3,015,692 | $948,488 | $3,964,180 |
| SPECIAL DISTRICTS AND OTHER AGENCIES | $32,966 | $0 | $3,582 | $36,548 | $4,075 | $0 | $4,075 |
| Total Other Funds | $2,268,527 | $0 | $1,935,332 | $4,203,859 | $3,165,408 | $986,119 | $4,151,527 |
| Total All Funds | $86,816,949 | $0 | $135,366,810 | $222,183,759 | $152,396,003 | $63,586,457 | $215,982,460 |
| Arithmetic Results | | | | Col 2 + 3 + 4 | | | Col 6 + 7 |
| Governmental Fund Totals Transferred From | Schedule 2, Column 2 | Schedule 2, Column 3 | Schedule 2, Column 4 | Schedule 2, Column 5 Col 5 = Col 8 | Schedule 2, Column 6 | Schedule 2, Column 7 | Schedule 2, Column 8 Col 5 = Col 8 |
| Internal Service Fund From | | Sched 10, Col 5 If Net Assets <Decrease> | Schedule 10, Column 5 | | Schedule 10, Column 5 | Sched 10, Col 5 If Net Assets <Increase> | |
| Enterprise Fund From | | Sched 11, Col 5 If Net Assets <Decrease> | Schedule 11, Column 5 | | Schedule 11, Column 5 | Sched 11, Col 5 If Net Assets <Increase> | |
| Special Districts From Arithmetic Results | Schedule 12, Column 2 | Schedule 12, Column 3 | Schedule 12, Column 4 | Schedule 12, Column 5 Col 5 = Col 8 | Schedule 12, Column 6 | Schedule 12, Column 7 | Schedule 12, Column 8 Col 5 = Col 8 |

Over the last five (5) years the County has not received Hazard Mitigation Assistance (HMA) or any other funds to implement projects from the LHMP; it has used general funds to implement needed projects within the jurisdiction. The administration of the implemented projects (project management, project closeout, audits) was carried out in accordance with Lassen County policies and requirements, as well as any special fund requirements, A list of the completed projects is included in Section 7 of the LHMP.

### 4.4.2. City of Susanville

The City of Susanville operating budget is prepared by the Finance Department and approved by the City Council annually. The City of Susanville annual operating budget consists of a variety of funds. **Figure 4-2** presents a draft summary of all funds for Fiscal Year 2024-25.

*Figure 4-2. City of Susanville Draft Budget- 2024-25*

| | | Revenue | Expense | Transfer In | Transfer Out |
|---|---|---|---|---|---|
| 1000 | GENERAL FUND | $ 8,441,561 | $ 2,507,914 | $ (1,719,814) | $ 8,027,021 |
| 1002 | GF-ECONOMIC DEVELOPMENT | $ 110 | | | |
| 1004 | GF-PANCERA | $ 110 | | | |
| 1005 | GF-RESERVE ACCOUNT | $ 2,510 | | | |
| 1006 | POLICE FACILITIES & EQUIP FUND | $ 60 | | | |
| 1007 | FIRE FACILITIES & EQUIP FUND | $ 510 | $ - | | |
| 1008 | ADMIN SVCS FACILITIES & EQUIP | $ 510 | | | |
| 1009 | PUBLIC SAFETY POLICE | $ 392,107 | $ 4,703,356 | $ (4,567,192) | $ 269,882 |
| 1010 | PUBLIC SAFETY FIRE | $ 616,800 | $ 2,563,285 | $ (2,077,435) | $ 130,950 |
| 1011 | COMMUNITY SERVICES GF | $ 471,932 | $ 1,676,490 | $ (1,396,041) | $ 191,482 |
| 2002 | STATE COPS | $ 152,822 | $ 130,479 | | |
| 2004 | AMERICAN RESCUE PLAN ACT | | $ 1,013,999 | | $ 200,000 |
| 2005 | ROAD MAINT AND REHAB SB-1 | $ 422,293 | $ 370,666 | | |
| 2006 | SNOW REMOVAL | $ 32,000 | $ 66,127 | | |
| 2007 | STREETS & HIGHWAYS | $ 4,286,099 | $ 4,249,089 | $ (60,000) | $ 386,642 |
| 2010 | STREET MITIGATION | $ 1,110 | | | |
| 2011 | POLICE MITIGATION | $ 3,510 | | | $ - |
| 2012 | FIRE MITIGATION | $ 3,510 | | | $ - |
| 2013 | PARK DEDICATION FUND | $ 520 | | | $ 59,800 |
| 2016 | CDBG REVOLVING LOAN FUND | $ 3,510 | | | $ - |
| 2018 | HOME REVOLVING FUND | $ 3,500 | $ 10 | | |
| 2030 | TRAFFIC SAFETY | $ 3,015 | $ - | | |
| 2035 | TRAFFIC SIGNALS FUND | $ 410 | | | |
| 2037 | SKYLINE BICYCLE LANE | $ 220 | | | |
| 2043 | HCD LEAP GRANT | $ 65,000 | $ 1,947 | | |
| 2045 | STATE OF CA 2021 OTS STEP GRANT | $ 38,000 | $ 38,000 | | |
| 2046 | 2022 CDBG CV2/3 | | $ - | | |
| 2047 | HCD SB2 GRANT | $ - | $ - | | |
| 2048 | PER CAPITA PARKS GRANT | $ 177,952 | $ - | | |
| 2049 | LATA GRANT | $ 500,000 | $ 500,000 | | |
| 3010 | SIERRA ROAD DOG PARK | | $ - | | |
| 3015 | CITY HALL PARKING LOT PROJECT | | | | |
| 4003 | CITY HALL | | $ 135,406 | $ (135,406) | |
| 4005 | COMMUNITY POOL DEBT SERVICE | | $ 100,608 | $ (100,608) | |
| 7110 | WATER SYSTEM | $ 2,118,000 | $ 2,337,471 | | $ 905,997 |
| 7112 | JOHNSTONVILLE WATER SYSTEM | $ 17,747 | $ 9,050 | | |
| 7114 | WATER CAPITAL IMPROVEMENTS | $ 664,000 | $ - | | |
| 7201 | AIRPORT | $ 94,200 | $ 307,157 | | $ 59,921 |
| 7202 | AIRPORT CIP FUND | | $ - | | |
| 7301 | GEOTHERMAL UTILITY | $ 91,000 | $ 72,574 | | $ 63,669 |
| 7401 | NATURAL GAS | $ 5,016,530 | $ 4,060,863 | | $ 927,842 |
| 7530 | GOLF COURSE | $ 453,200 | $ 400,545 | | $ 51,862 |
| 7620 | PW ADMIN & ENGINEERING FUND | $ 10,700 | $ 1,545,251 | $ (1,531,288) | |
| 7630 | RISK MANAGEMENT FUND | $ 641,688 | $ 647,048 | | |
| 8402 | LAFCO | $ 69,594 | $ 79,631 | | |
| 8404 | AIR POLLUTION | $ 542,127 | $ 917,689 | | $ 312,716 |
| 8405 | AIR POLLUTION-CARL MOYER | $ 350,000 | $ 547,277 | | |
| 8406 | REGIONAL WATER MANAGEMENT GROUP | $ 1,100,000 | $ 1,100,000 | | |
| 8407 | AIR POLLUTION- CCI REDUCTION | | $ 290,750 | | |
| | Grand Total | 26,788,467 | 30,372,683 | (11,587,784) | 11,587,784 |

Over the last five (5) years the City has not received Hazard Mitigation Assistance (HMA) or any other funds to implement projects from the LHMP; it has used general funds to implement needed projects within the jurisdiction. The administration of the implemented projects (project management, project closeout, audits) was carried out in accordance with the City of Susanville policies and requirements, as well as any special fund requirements, A list of the completed projects is included in Section 7 of the LHMP.

### 4.4.3. Susanville Indian Rancheria

The Susanville Indian Rancheria operating budget is prepared by the Fiscal Department, in close coordination with all Susanville Indian Rancheria Departments; and is approved by the Tribal

Business Council annually. While operating budget records are maintained, they were not available for incorporation in the LHMP update.

With regards to Hazard Mitigation efforts, the Susanville Indian Rancheria has not received funding through FEMA's Hazard Mitigation Assistance (HMA) program. However, hazard mitigation type of work has been funded through other agencies such as the United States (US) Environmental Protection Agency (EPA). The EPA funds the Natural Resources Department through its Performance Partnership Grant (PPG) General Assistance Program (GAP). In this grant, programs such as the annual Spring drive are funded to collect, dispose or recycle hazardous household waste to prevent it from entering the ground, streams and wetlands where it can pose a risk to the health and safety of living organisms and the abandoned vehicle program to collect and dispose of abandoned vehicles which eventually break down into some harmful chemicals and can leach fluids into the ground (see SIR's Abandoned Vehicle Ordinance. Additionally, other grants in the PPG combined award are the CWA 106 and 319 and these grants pay for programs to protect waterways and wetlands from contaminants as well as build infrastructure to reduce runoff from parking lot at the Casino to keep it out of Barry Creek.

Non-federal funding was also received from the Tribal Nations Grant Fund (TNGF) – funds projects to Tribal Governments to mitigate the hazard of power outages to the community. Through several Equal Distribution Grants funded by the California Gaming Commission's Tribal Nations Grant Fund, the Susanville Indian Rancheria has: installed a generator at the tribal building; purchased remote CRDs to utilize in various locations on tribal lands and remote places to have back up power and wireless cell phone service during emergency events where power and cell phone service is disrupted so that they can take care of themselves, families and nearby neighbors.

Through the I.H.S. Small Ambulatory Program (SAP) grant, the SIR is moving forward in the process of constructing a new clinic to serve Native and non-natives in the region whose health has been affected by hazardous environmental conditions. In the absence of other grants, the SIR has funded emergency management supplies and equipment.

Within the last decade, the Susanville Indian Rancheria has received several CalOES Emergency HSGP grants. They have been utilized for backup power purposes, to hire an Emergency Coordinator, to develop response plans, and offer CERT training. With access to these funds, the Susanville Indian Rancheria plans to grow the SIR's Emergency Management program to be able to explore some of these other programs.

Future potential sources of funding are aligned with the Natural Resources Department's three (3) plans all addressing climate change: Climate Change Vulnerability and Assessment Plan, Climate Change Adaption Plan, Climate Change Implementation Plan and Forest Woodland Management Plan. Many opportunities exist within EPA, FEMA, USDA. DOE, BIA, BLM, and CalFIRE. the Susanville Indian Rancheria is currently investigating grants within these agencies to address the top priority threat of wildfires through fuel reduction activities that prevent the fires we have experienced recently.

The Susanville Indian Rancheria Continuity of Operations Plan (COOP) has policies and procedures in support of closing out all grants. Also, the Susanville Indian Rancheria financial

policies and procedures have all of the necessary internal controls in place with fiscal policy in compliance with all applicable Federal statutes and regulations and will amend its plan whenever necessary to reflect changes in Tribal or Federal laws and statutes.

The closeout procedures required by Uniform Guidance, 2 C.F.R. § 200 are followed with the completion of projects funded with federal, state, local and tribal grants. Under this closeout requirement for 2 C.F.R. § 200. 344, recipients must submit no later than 120 calendar days after the end of the period of performance, all financial, performance and other reports as required by the terms and conditions of the award. This ensures that grant expenditures are in sync with the stated deliverables for the granting agency to determine that the project was completed as stated.

Below is a list of the current federal, tribal, and private funding to implement mitigation activities:

- BIA Wildland Urban Interface (WUI) grants ( 2024) for the Upper Rancheria area. The first round of WUI work has been completed for fuel reduction, fire breaks that would impact the cultural areas, homes and future development areas on 995 acres of Tribal trust property where pile burning, thinning, mowing and hand piling was used to mitigate risks posed by fires and drought. A new grant proposal is pending to complete work in 2025
- EPA CWA 106- (annual grant as part of the EPA Performance Partnership Project). This grant award includes improvements and follow-up on the bioretention structure that keeps pollution from runoff at casino parking lot and prevents them from entering Barry Creek and mitigates the risk of Barry Creek flooding on Paul Bunyan Road and at the Chesnut St. intersection
- EPA CWA 312- (2023/2024) as part of the EPA Performance Partnership Project) This grant award included post-Dixie fire mitigation as well as non-source pollution nutrient overload in Clark Creek from soil erosion.
- Gaming Commission's Tribal Nations Grant Fund (TNGF) awarded in 2024 to mitigate outages caused by fire and climate events such as a generator for the Tribal offices so that critical command and control can continue during Wildfires that have caused power outages and Compactible Rapid Deployment Units for backup power and Internet for crews working in remote field locations in critical fuel reduction work.

## 4.5. Ability to Expand On and Improve Capabilities and Resources

### 4.5.1. Personnel Resources

There are four (4) primary ways the County, City, and Rancheria can expand and/or improve personnel resources: deployment or reassignment of the County, City, and Rancheria workforce, through Contractor Employees, through Volunteer Workers; Mutual Aid Support; and Partnerships. Depending on the needs of the project and/or action, the County, City, and Rancheria can bring in additional staff to support mitigation efforts. This could include bringing in a project manager or support staff to implement a project or program or to help with public outreach. The County, City, and Rancheria could also establish MOUs for mutual aid and/or partnership to provide a unique service or support staff. The County, City, and Rancheria also has very active volunteer groups that can be utilized for selected roles and responsibilities.

### 4.5.2. Mitigation Governance

While the County, City, and Rancheria do have some influence with other Mitigation Governance Resources (i.e., federal, state, adjacent counties), it only has the ability to create, revise, and remove governance under its authority. Departments within the County, City, and Rancheria

regularly review governance and make recommendations for any necessary changes (i.e., expansion, revision, creation, elimination) based on needs or lessons learned after disasters in its or surrounding/similar communities. Additionally, during the development of new mitigation actions, each mitigation governance was reviewed and evaluated. Any recommended (or needed) changes, including the creation of and/or the removal of mitigation governance was captured under section 7.

### 4.5.3. Technical Resources

The County, City, and Rancheria have the ability (and regularly assesses) its Technical Resources to identify needs, determine necessary resources, and recommend necessary actions in support of efforts. The Technical Resources are usually connected to the County, City, and Rancheria ability to augment or resign personnel outlined under Section 4.1 or to allocate or raise funding outlined under Section 4.4 but can also include the expanding and/or revising the use of proficiencies/expertise, technology, and communication technologies Section 4.3; including outreach programs and social media platforms to assist with mitigation efforts. Actions could include increasing educational programs to bring hazard awareness to students and vulnerable populations, developing and offering traveling hazard awareness campaigns at street fairs and farmers markets, or utilizing its social media platforms to disseminate or expand on the amount of hazard and mitigation information shared with the public.

### 4.5.4. Fiscal Resources

The County, City, and Rancheria have several options they can explore if they decide not to utilize funds used as part of their operating budget to implement additional emergency management efforts and/or mitigation strategies. The options to augment operating budget funds include Grants, Bonds, Loans, Fees, and Assessments. The method most likely utilized will be applying for Grants. Because the County, City, and Rancheria are committed to mitigation, they intend to seek grant funding opportunities to assist with implementation of mitigation efforts. The County, City, and Rancheria will use their standard procedures for applying for HMA Grants, which includes seeking Board/ Council approval. The HMA Grants could be used for the implementation of projects and/or to pay staff to assist with the mitigation effort. The other funding options, while available, will only be used after careful consideration and deliberation. In some instances, this may also include seeking public approval. The County, City, and Rancheria are considering the following funding sources to help implement mitigation projects.

#### 4.5.4.1 Federal Funding Sources

- **Building Resilient Infrastructure and Communities (BRIC) Grant Program**: Building Resilient Infrastructure and Communities (BRIC) is a FEMA program administered by Cal OES and was created when the Disaster Mitigation Act of 2000 amended the Stafford Act to provide a funding mechanism that is not dependent on a presidential disaster declaration.
- **Hazard Mitigation Grant Program (HMGP)**: Hazard Mitigation Grant Program (HMGP) is authorized under Section 404 of the Stafford Act. The program provides HMA Grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. These funds are only available in states following a presidential disaster declaration. Eligible applicants include state and local governments, Native

American tribes or other tribal organizations, and certain private non-profit organizations. Eligible projects must be proven to be cost-effective through a benefit /cost analysis.

- **Fire Protection & Safety (FP&S) Grant Program**: The Fire Protection & Safety (FP&S) Grant Program is administered by FEMA and supports projects that enhance the safety of the public and firefighters from fire and related hazards. The primary goal is to target high-risk populations, firefighter safety and mitigate high incidences of death and injury. Examples of the types of projects supported by FP&S include fire prevention and public safety education campaigns, juvenile fire setter interventions, media campaigns, and arson prevention and awareness programs.
- **Flood Mitigation Assistance (FMA) Grant Program:** FEMA provides funding to assist States and communities implement measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program (NFIP).
- **Post-Fire Hazard Mitigation Grant**: Under the Fire Mitigation Assistance Grant (FMAG) program, FEMA offers mitigation grants to help reduce and/or eliminate potential impacts after a fire. These funds are generally used to address secondary hazards that leave areas prone to floods, erosion, and mudflows.
- **Urban Area Security Initiative (UASI) Grant Program**: The Urban Area Security Initiative (UASI) Grant Program is designed to set a strategic direction for the enhancement of regional response capability and capacity. Through Federal grant funding, UASI is tasked to reduce area vulnerability by strengthening the cycle of response and by ensuring that potential targets are identified, assessed and protected.
- **Hazardous Materials Emergency Planning (HMEP) Grant Program**: The Hazardous Materials Emergency Planning (HMEP) Grant Program is administered by the US Department of Transportation Pipeline and Hazardous Materials Safety Administration and provides financial and technical assistance as well as national direction and guidance to enhance State, Territorial, Tribal, and local hazardous materials emergency planning and training.
- **Emergency Operations Center (EOC) Grant Program**: Administered by FEMA and is intended to improve emergency management and preparedness capabilities by supporting flexible, sustainable, secure, and interoperable Emergency Operations Center (EOC) with a focus on addressing identified deficiencies and needs.
- **Emergency Management Performance Grant (EMPG) Program**: States have the opportunity to use Emergency Management Performance Grant (EMPG) funds to further strengthen their ability to support emergency management mission areas while simultaneously addressing issues of national concern as identified in the National Priorities of the National Preparedness Guidelines.
- **Bureau of Indian Affairs (BIA)**: Programs administered through the Bureau of Indian Affairs (BIA) include social services, natural resources management on trust lands, economic development programs, housing improvements, fire management, trail maintenance, disaster relief, replacement and repair of schools, repair and maintenance of roads and bridges, and the repair of structural deficiencies on high hazard dams.
- **Environmental Protection Agency (EPA)**: Environmental Protection Agency (EPA) can assist Tribal Agencies with environmental concerns, environmental review of proposed actions, and Clean Water Act HMA Grants.

- **United States Forest Service (USFS)**: United States Forest Service (USFS) by the Lassen County Resource Advisory Committee (RAC). Projects recommended by the RAC typically include trails reconstruction and maintenance, fish passage and waterway restoration, community wildfire fuels reduction efforts, conservation education programs, and noxious weed reduction efforts. Though projects may occur on both National Forest System and private lands in Lassen County, All RAC projects must show a clear benefit to the public lands.

#### 4.5.4.2 State Funding Sources

- **Fire Safe California Grants Clearinghouse**: Various grant opportunities lay within this grant program to improve California's community wildfire preparedness. The California Fire Safe Council (FSC) in cooperation with its fellow member of the California Fire Alliance accomplishes its mission, to preserve and enhance California's manmade and natural resources, through public education programs and by funding community fire safety projects.
- **Infrastructure State Revolving Fund**: Provides low-cost financing for some infrastructure projects.
- **Proposition 50 Funds**: A variety of water projects can be financed through this program which is administered by the Water Resources Control Board.
- **Clean Water State Revolving Fund**: Provides low-interest loans related to water treatment projects.

#### 4.5.4.3 Local Funding Sources

- **Capital Improvement Funds**: These funds may be used to support hazard mitigation projects and are provided through the annual budgeting process to support projects included in the community's 5-Year Capital Improvement Plan.
- **Special Assessments**: Local governments can also raise funds for mitigation projects through special assessments which can be adopted through the local voting process.
- **Community Development Block Grants**: These funds may be used for mitigation projects related to housing, economic development, public works, community facilities and public service activities serving lower income residents. Although the funds are administered by the Department of Housing and Urban Development, they are considered local funds once they are received and thereby are eligible to provide the 25 percent local match required for the receipt of federal grant programs.

# 5. Hazard/Threat Assessment

## 5.1. Overview

The purpose of this section is to review, validate, and/or update the identified and profiled hazards and threats in the current LHMP. The intent is to confirm and update the list and determine if the information is current and accurate. The importance of this is to ensure that all hazards and threats are being considered and decisions are based on the most up-to-date information. Another purpose of this section is to screen the hazards and threats. The screening of the hazards/threats (ranking and prioritizing) will provide the jurisdictions with a better understanding of the significance of each hazard/threat within its community. During the review and update, the Planning Team addressed and discussed the following questions:

- Is this hazard/threat still present and significant within the jurisdiction?
- Has the potential for the hazard/threat changed including the severity and/or frequency?

As part of process, the Planning Team leveraged other planning efforts and documents, including the State of California Multi-Hazard Mitigation Plan, the Lassen County General Plan, the City of Susanville General Plan, and other documents containing updated information and best practices for hazards (i.e. FEMA, USGS, NOAA, USC). Additionally, as previously mentioned, because Lassen County is more rural than most and there is significant coordination between the County, City, and Rancheria, it was determined to be beneficial to discuss the Hazards and Threats County-wide.

## 5.2. Hazard/Threat Identification

Based on the review of the current LHMP, incorporating information from other documents (i.e., the California State Multi-Hazard Mitigation Plan, local General Plans), and utilizing local experience and knowledge, the Planning Team identified the following hazards and threats as being relevant to the County, City, and Rancheria (**Table 5-1**). Over the past 5 years, the County, City, and Rancheria has determined that because of the dynamics (challenges and opportunities) and exceptional cooperation within the county that it is best to assess and address all hazards and threats at a county-level; not by individual jurisdiction.

No new hazards or threats were identified and/or removed from the previous LHMP. However, a few of the hazards and threats were renamed to better reflect the hazards and/or threat in the County, City and Rancheria.

***Table 5-1. Relevant Hazards and Threats***

| | |
|---|---|
| ▪ Agricultural Pests/Disease | ▪ Hazardous Materials Release |
| ▪ Aircraft Accident | ▪ Infectious Disease |
| ▪ Avalanche | ▪ Landslide/Other Earth Movement |
| ▪ Civil Disturbance | ▪ Natural Gas Pipeline/Storage Accident |
| ▪ Dam/Reservoir Failure | ▪ Other Lifeline Infrastructure Accident |
| ▪ Drought and Water Shortage | ▪ Severe Weather and Storms |
| ▪ Earthquake | ▪ Technology Disruption |
| ▪ Energy Disruption | ▪ Terrorism |
| ▪ Extreme Temperature | ▪ Volcano |
| ▪ Flooding and Levee Failure | ▪ Wildfire |

## 5.3. Hazard/Threat Screening and Prioritization

The intent of screening hazards/threats is to help prioritize which hazards/threats create the greatest concern in the community. The County, City, and Rancheria applied the same approach used in the 2019 LHMP to update the LHMP. A summary of the process and the results of the hazard/threat ranking are below:

### 5.3.1. Ranking Tool Design

The ranking tool prioritizes hazards/threats based on two (2) separate factors:

- **Probability** of the hazard affecting the community
- **Impacts** of the hazard on the community

The Planning Team utilized a non-numerical ranking system that was implemented within other LHMPs. This process consists of generating a qualitative ranking, **High**, **Medium**, or **Low** rating for: 1) *Probability*; and, 2) *Impact* from each hazard/threat. As part of this process, the following criteria (definitions) were applied:

- **Probability**

  *High:* (Highly Likely/Likely) An event will most likely happen within five (5) years (greater than 75% chance). There may or may not have been historic occurrences of the hazard in the community or region, but experts feel that it is likely that the hazard will occur in the community. Citizens feel that there is a likelihood of an occurrence.

  *Medium:* (Possible) An event may happen within five (5) years (between 30% and 75% chance). There may or may not have been a historic occurrence of the hazard in the community or region, but experts feel that it is possible that the hazard could occur in the community. Citizens may feel that there is a likelihood of an occurrence.

  *Low:* (Unlikely) An event will most likely not happen within five (5) years (less than 30% chance). There have been no historical occurrences of the hazard in the community or region and both experts and citizens agree that it is highly unlikely that the hazard will occur in the community.

- **Impact**

  *High:* (Catastrophic/Critical) Both experts and citizens feel that the consequences will be significant in terms of building damage, loss of life, and disruption to the economy; widespread geographic extent and/or higher than average magnitude.

  *Medium:* (Limited, but not insignificant) Consequences are thought to be considerable in terms of building damage, loss of life, and disruption to the economy; extended geographic extent and/or average magnitude.

  *Low:* (Negligible) Consequences are thought to be minimal in terms of building damage, loss of life, and disruption to the economy; may be limited in geographic extent and/or lower than average magnitude.

For consistency, the County, City, and Rancheria agreed to the following prioritization scheme for hazards/threats (**Table 5-2**). The shading of the matrix boxes indicates the priority level: Red = Tier 1; Yellow = Tier 2; and Green = Tier 3.

*Table 5-2. Hazard Prioritization Template*

| | **High** *Impact* | **Medium** *Impact* | **Low** *Impact* |
|---|---|---|---|
| **High** *Probability* | | | |
| **Medium** *Probability* | | | |
| **Low** *Probability* | | | |

### 5.3.2. Hazard/Threat Prioritization

Based on the revised list of hazards and threats utilizing the ranking approach indicated above, the County, City, and Rancheria screened the relevant hazards/threats. The following table (**Table 5-3**) presents the results of the screening and ranking of each relevant hazard/threat.

*Table 5-3. Hazard/Threat Prioritization Results*

| | |
|---|---|
| Agricultural Pests/Disease | |
| Aircraft Accident | |
| Avalanche | |
| Civil Disturbance | |
| Dam/Reservoir Failure | |
| Drought and Water Shortage | |
| Earthquake | |
| Energy Disruption | |
| Extreme Temperature | |
| Flooding and Levee Failure | |
| Hazardous Materials Release | |
| Infectious Disease | |
| Landslide/Other Earth Movement | |
| Natural Gas Pipeline/Storage Accident | |
| Other Lifeline Infrastructure Accident | |
| Severe Weather and Storms | |
| Technology Disruption | |
| Terrorism | |
| Volcano | |
| Wildfire | |

Based on this approach, there are eight (8) priority hazards/threats- hazards categorized as “Tier 1” or Red. The eight (8) priority hazards/threats include: Cybersecurity Threat, Drought and Water Shortage, Extreme Temperature, Flood and Levee Failure, Hazardous Materials Release, Other Pipeline/Storage Accident, Severe Weather and Storms, and Wildfire.

## 5.4. Hazard/Threat Profiles

The information provided is intended to be an overview of each of the relevant hazards/threats, which includes a summary of the prioritization, brief description of the hazard/threat, the location and extent of potential risk, previous occurrences (history), the probability of future events, and climate considerations. More detailed information may be found in the State of California Multi-Hazard Mitigation Plan, the Lassen County General Plan, the City of Susanville General Plan, and other documents (i.e., local, state, federal and academic publications discussing specific hazards).

### *5.4.1.* Agricultural Pests/Disease

#### 5.4.1.1 Prioritization

- *Probability*- MEDIUM
- *Impact*- MEDIUM

#### *5.4.1.2* Description

Agricultural pests and disease occur when an undesirable organism inhabits an area in a manner that causes serious harm to agriculture crops, livestock or poultry, and wild land vegetation or animals. Countless insects and diseases live on, in, and around plants and animals in all environments. Most are harmless, while some can cause significant damage and loss. Under some conditions, insects and diseases that have been relatively harmless can become hazardous. For example, severe drought conditions can weaken trees and make them more susceptible to destruction from insect attacks than they would be under normal conditions.

#### *5.4.1.3* History

Agricultural pests in Lassen County include both insect pests and noxious weeds. Given the arid environment of the agricultural lands in Lassen County, the predominant commodity is field crops which include hay, wheat, straw, and pasture land, and account for over half the agriculture production value in the county. Scotch thistle, yellow starthistle and puncturevine are the most common noxious weeds that can impact these crops. Insect pests which are known to prey on field crops include the mormon cricket and locusts.

The Mormon cricket is a short-winged katydid which is closely related to grasshoppers. The name originated in 1848 when crickets invaded crops of Mormon settlers in the Salt Lake area. Mormon crickets can create havoc and cause economic losses, as well as creating a greater amount of destruction when accompanied by a drought. Unfortunately, there are no known predators that feed specifically on Mormon crickets.

Seed, fruit, vegetable and nursery crops account for approximately fifteen percent (15%) of the county's agricultural production value. They may be susceptible to mediterranean fruit fly, oriental fruit fly, gypsy moth, glassy-winged sharpshooter, asian citrus psyllid, and light-brown apple moth. According to the most recent map published by the United States Department of Agriculture in 2011, the Africanized honey bee had not spread into California counties farther north than the central valley.

To date, there have been no known state or federal declarations for this type of event in the County.

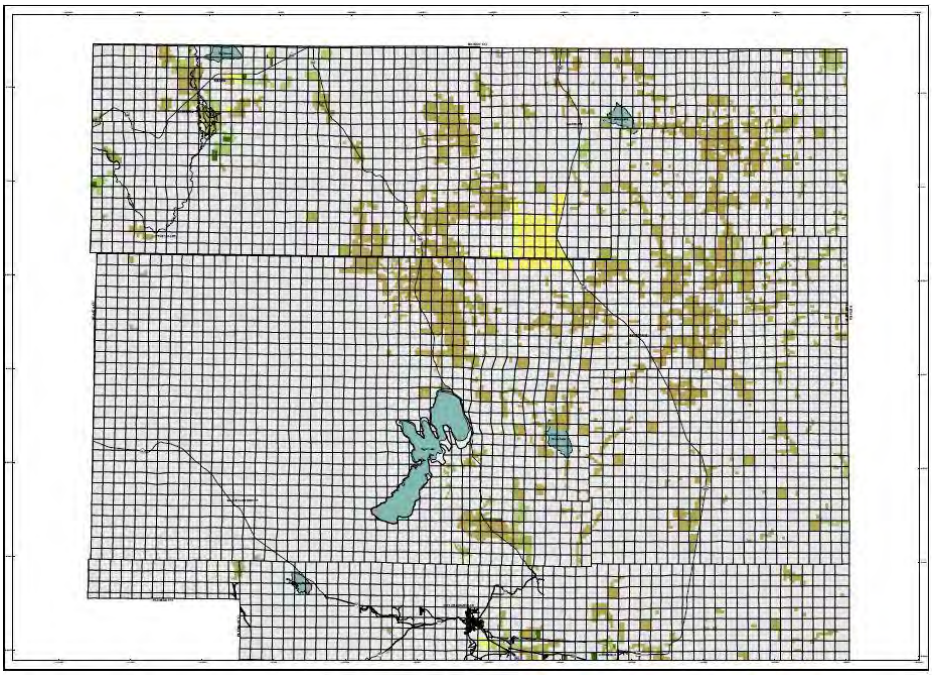
#### *5.4.1.4* Location and Extent

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, landowners receive property tax assessments which are much lower than normal because they are based upon farming and open space uses as opposed to full market value.

State funding was provided in 1971 by the Open Space Subvention Act, which created a formula for allocating annual payments to local governments based on acreage enrolled in the Williamson Act Program. Subvention payments were made through FY 2009 but have been suspended in more recent years due to revenue shortfalls.

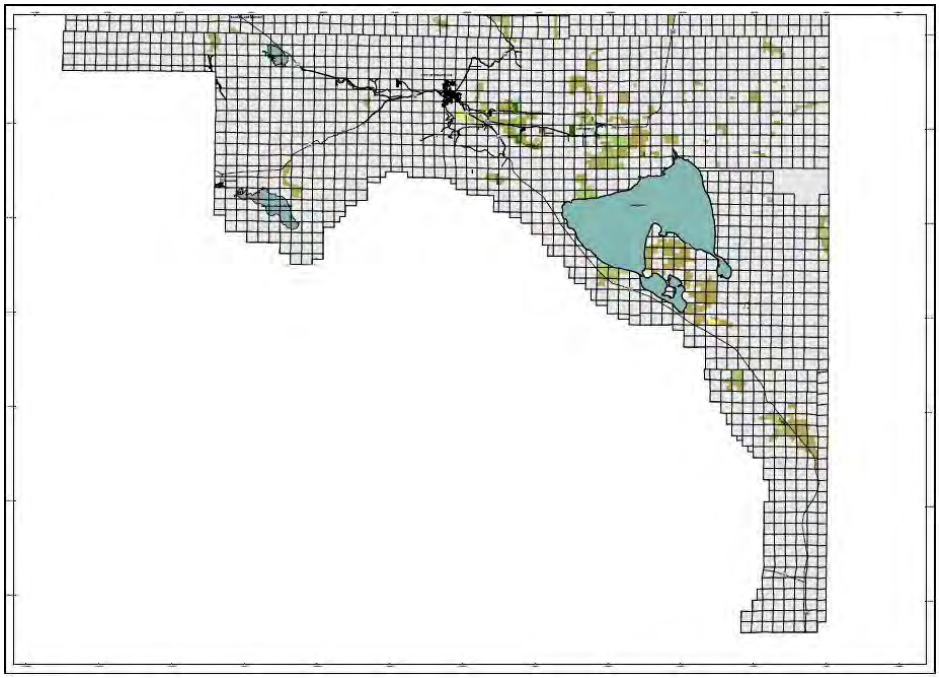
Error! Reference source not found. and **Figure 5-2** shows land that, under the Williamson Act, has been zoned as agricultural, open space, or recreational in Lassen County. These lands are susceptible to agricultural pests and diseases.

*Figure 5-1. Land Conservation Act Maps- Lassen County, north segment*



*Source: California Department of Conservation*

*Figure 5-2. Land Conservation Act Maps- Lassen County, south segment*



*Source: California Department of Conservation*

#### *5.4.1.5* Probability of Occurrence

Due to its interaction with the global economy, its mild Mediterranean climate, and its diversified agricultural and native landscape, Lassen County currently experiences and will continue to

experience periodic losses due to agricultural pests and diseases. According to the Planning Team's assessment of this hazard/threat, there is a Medium probability of occurrence; see subsection 1 under this hazard/event (Prioritization). A Medium hazard/threat event was determined to equate to between 30% and 75% chance of occurring within five (5) years.

#### *5.4.1.6* Climate Consideration

California farmers contend with a wide range of crop-damaging pests and pathogens. Continued climate change is likely to alter the abundance and types of many pests, lengthen pests' breeding season, and increase pathogen growth rates. For example, the pink bollworm, a common pest of cotton crops, is currently a problem only in southern desert valleys because it cannot survive winter frosts elsewhere in the state. However, if winter temperatures rise 3 to 4.5°F, the pink bollworm's range would likely expand northward, which could lead to substantial economic and ecological consequences for the state.

Temperature is not the only climatic influence on pests. For example, some insects are unable to cope in extreme drought, while others cannot survive in extremely wet conditions. Furthermore, while warming speeds up the lifecycles of many insects, suggesting that pest problems could increase, some insects may grow more slowly as elevated carbon dioxide levels decrease the protein content of the leaves on which they feed (California Climate Change Center 2006).

### 5.4.2. Aircraft Accident

#### 5.4.2.1 Prioritization

- *Probability*- LOW
- *Impact*- HIGH

#### 5.4.2.2 Description

The industry standard for defining Aircraft Accidents include both accidents that occur "*in-flight*" and those that occur "*on ground*"; and definitions delineate those that cause death and injuries and those that cause substantial damage to the aircraft. For this LHMP, the Planning Team is defining Aircraft Accident as an occurrence associated with in- flight accidents only.

#### 5.4.2.3 Location and Extent

As described under Section 3- Transportation, the County has seven (7) aviation facilities:

- **Susanville Municipal Airport (SVE)-** SVE serves general aviation and emergency services use, with an asphalt runway of 2,180 feet and two helipads
- **Southard Field (Bieber)-** with a runway of 2,980 feet
- **Herlong Airport-** with a runway of 3,269 feet
- **Ravendale Airport-** with a runway of 2,920 feet
- **Spaulding Airport-** with a runway of 4,600 feet
- **Amedee Airport-** Amedee Airport is near Herlong and has a 10,000-foot runway operated by the U.S. Army and requires prior permission before use**.**
- **Banner Lassen Medical Center-** Banner Lassen Medical Center operates a private 86 by 50-foot concrete helipad in Susanville.

#### 5.4.2.4 History

There is not an extensive history of aircraft accidents in Lassen County, but they have occurred. The most recent incident occurred in August of 2020, when a small private aircraft (Piper PA-14 Family Cruiser) crashed shortly after taking off from the Susanville Municipal Airport (SVE) at about 1:40 pm. Both passengers aboard the aircraft were fatally injured. To date, there have been no known state or federal declarations for this type of event in the County.

#### 5.4.2.5 Probability of Occurrence

The probability of an aircraft incident occurring in the County exists due to several airports in the County and aircraft flight patterns over the County. While many airports have Airport Environs Land Use Compatibility Plans, these plans usually only identify safety zones that require land use restrictions to minimize potential impacts. While these efforts can assist in reducing impacts on the ground, they usually do not address impacts associated with aircraft flying overhead under normal flight conditions. The risk to the County associated with these types of incidents is similar to other parts of rural California. According to the Planning Team's assessment of this hazard/threat, there is a Low probability of occurrence; see subsection 1 under this hazard/event (Prioritization). A Low hazard/threat event was determined to equate to (less than 30% chance of occurring within five (5) years.

#### 5.4.2.6 Climate Consideration

While there are many devices that monitor and/or track weather conditions, it is expected that changing conditions are going to impact air travel. From the simplest of impacts from temperatures altering takeoffs and landing, to increase in rains and winds altering flight patterns, change in our environment could increase the likelihood of an aircraft incident.

### *5.4.3.* Avalanche

#### 5.4.3.1 Prioritization

- *Probability*- LOW
- *Impact*- Medium

#### *5.4.3.2* Description

An avalanche is a rapid flow of snow down a slope, from either natural triggers or human activity. Typically occurring in mountainous terrain, an avalanche can mix air and water with the descending snow. Powerful avalanches have the capability to entrain ice, rocks, trees, and other material on the slope; however, avalanches are always initiated in snow and are primarily composed of flowing snow. In mountainous terrain avalanches are among the most serious objective hazards to life and property, with their destructive capability resulting from their potential to carry an enormous mass of snow rapidly over large distances.

#### *5.4.3.3* Location and Extent

Avalanches are classified by their morphological characteristics and are rated by either their destructive potential (force), or the mass (size) of the downward flowing snow. Some of the morphological characteristics used to classify avalanches include the type of snow involved, the nature of the failure, the sliding surface, the propagation mechanism of the failure, the trigger of

the avalanche, and the slope angle, direction, and elevation. Avalanche size, mass, and destructive potential are rated according to the following table (**Table 5-4**):

*Table 5-4. Avalanche Classification System*

| Size Relative to Path | | Destructive Force | |
|---|---|---|---|
| R1 | Very Small | D1 | Sluff or snow that slides less than 50m (150') of slope distance |
| R2 | Small | D2 | Small, relative to path |
| R3 | Medium | D3 | Medium, relative to path |
| R4 | Large | D4 | Large, relative to path |
| R5 | Maximum | D5 | Major or maximum, relative to path |

*Source: University Corporation for Atmospheric Research*

To help reduce the probability of avalanches, an Avalanche Warning System has been developed. The purpose of the warning system is to both educate the public of the potential risk but to also ensure the public is taking appropriate actions to reduce the chance of triggering an avalanche and that they are prepared in the event of an occurrence (**Table 5-5**).

*Table 5-5. Avalanche Danger Warning System*

| Probability and Trigger | Degree and Distribution of Danger | Recommended Action in Back Country |
|---|---|---|
| **Low** | Natural avalanches very unlikely. Human triggered avalanches unlikely. Generally stable snow. Isolated areas of instability | Travel is generally safe. Normal caution advised |
| **Moderate** | Natural avalanches unlikely. Human triggered avalanches possible. Unstable slabs possible on steep terrain | Use caution in steeper terrain |
| **Considerable** | Natural avalanches possible. Human triggered avalanches probable. Unstable slabs probable on steep terrain | Be increasingly cautious in steeper terrain |
| **High** | Natural and human triggered avalanches likely. Unstable slabs likely on a variety of aspects and slope angles | Travel in avalanche terrain is not recommended. Safest travel on windward ridges of lower angle slopes without steeper terrain above |
| **Extreme** | Widespread natural or human triggered avalanches certain. Extremely unstable slabs certain on most aspects and slope angles. Large destructive avalanches possible | Travel in avalanche terrain should be avoided and travel confined to low angle terrain well away from avalanche path run-outs |

*Source: Lassen County*

The City of Susanville and the Susanville Indian Rancheria are located in relatively flat areas within Lassen County and are therefore not at risk for avalanche hazards; however, other areas within Lassen County that are in mountainous terrain with snow pack are susceptible to periodic avalanches. This includes the higher elevations of the western mountainous regions of the County including the Diamond Mountains and areas within Lassen National Park. These areas are

generally owned by State or Federal agencies and are remote with no development and access typically limited to dirt roads. Private lands under County jurisdiction are very sparsely developed if developed at all.

#### *5.4.3.4* History

Documented past occurrences of avalanches as they relate to impacts on the County, City, and the Rancheria are not available. To date, there have been no known state or federal declarations for this type of event in the County.

#### *5.4.3.5* Probability of Occurrence

While no specific property damage or loss of life have been recorded within the County, the potential exists that an avalanche will impact the County in the higher elevations of the western mountainous regions of the County including the Diamond Mountains and areas within Lassen National Park. Because avalanches are caused by natural and human triggers, there is always a probability of occurrence if the snow pack is at significant levels. However, because of modern technology and advanced communication systems, the Planning Team's assessment of this hazard/threat there a low probability (less than 30%) of experiencing an event with loss of life over the next five (5) years.

#### *5.4.3.6* Climate Consideration

Avalanches are caused by an external stress on the snow pack; they are not random or spontaneous events. Natural triggers of avalanches include additional precipitation, radiative and convective heating, rock fall, ice fall, and other sudden impacts; however, even a snow pack held at a constant temperature, pressure, and humidity will evolve over time and develop stresses, often from the downslope creep of the snow pack. These are all factors that may be impacted by climate change. The effect could include more frequent and larger events.

### 5.4.4. Civil Disturbance

#### 5.4.4.1 Prioritization

- *Probability*- LOW
- *Impact*- LOW

#### 5.4.4.2 Description

Civil Disturbance is a term generally used to describe disorderly conduct or a breakdown of orderly society by a group of people. Civil Disturbance can range from a protest against major socio-political problems to riots.

#### 5.4.4.3 Location and Extent

Civil Disturbance can occur in any part of the County. However, it is generally located within larger, more concentrated, commercial areas. Civil Disturbance events can occur any time of the year and can last a few hours or in some cases a few days/weeks.

Some Civil Disturbance events can occur without warning, while other times there is limited advance warning. There is no universal or common scale to measure levels of Civil Disturbance. Most Civil Disturbance is generally defined by types of disturbance.

#### 5.4.4.4 History

No significant historical or known state or federal declarations for this type of event in the County. have been reported to date.

#### 5.4.4.5 Probability of Occurrence

There are no studies that predict the probability of civil disturbance occurrences. However, based on its rural environments, the Planning Team's assessment of this hazard/threat determined there is a low probability (less than 30%) chance of experiencing an event over the next five (5) years.

#### 5.4.4.6 Climate Consideration

While there is no direct linkage between climate change and civil disturbances, there could be indirect linkages. As climate change impacts are either felt or perceived to be felt it could ignite passions within people to demonstrate against possible causes or enablers.

### *5.4.5.* Dam/Reservoir Failure

#### 5.4.5.1 Prioritization

- *Probability*- MEDIUM
- *Impact*- MEDIUM

#### *5.4.5.2* Description

Because of California's seasonal and climatic conditions, water storage is critical. Dams and reservoirs help store water necessary for agriculture, hydroelectric power, recreational activities, environmental protection, and a stable drinking water supply. They are also critical tools in flood and debris control. Based on the function, dams can be classified as: storage dams, diversion dams, detention dams, debris dams, or coffer dams. In addition to these functional classifications there are several types of dam constructions:

- *Gravity Dams*—concrete, rubber masonry
- *Embankment Dams*—earth or rock
- *Arch/Multiple Arch Dams*—concrete
- *Buttress Dams*—concrete, timber, steel

Along with their many benefits, dams and reservoirs present formidable consequences if not properly designed, built, and maintained. Failures to dams and reservoir are generally due to old age, poor design/construction, lack of maintenance, structural damage, improper siting, landslides flowing into a reservoir, or terrorist actions. Structural damage is often a result of a flood, erosion, or earthquake. A catastrophic dam/reservoir failure could inundate the area downstream. The degree of flood impact is dependent upon topography, vegetation, duration and intensity of rainfall with consequent storm water runoff. The force of the water is large enough to carry boulders, trees, automobiles, and even houses along a destructive path downstream. Another factor in dam/reservoir failures is heavy or increased precipitation, especially in very short

periods of time. This increase in rainfall can crest dams, weaken structures, and erode supports. The potential for casualties, environmental damage, and economic loss is great. Damage to electric generating facilities and transmission lines could impact life support systems in communities outside the immediate hazard area.

#### *5.4.5.3* History

Lassen County has numerous reservoirs and dams; however, historically there have only been minor impacts associated with washout or overflow impacting Lassen County and City of Susanville. Furthermore, the Susanville Indian Rancheria is geographically located such that impacts from reservoirs or dams are not expected to affect the region. The State of California and the federal government have a rigorous Dam Safety Program. This is a proactive program that ensures proper planning in the event of failure but also sets standards for dam design and maintenance. Because of this, many potential issues have been addressed and/or resolved. To date, there have been no known state or federal declarations for this type of event in the County.

#### *5.4.5.4* Location and Extent

There are forty-five (45) dams in Lassen County, with a total storage capacity of 162,000-acre feet (**Table 5-6**). Only four (4) of these dams have a storage capacity of 10,000-acre feet or greater. These dams range in purpose from water storage to flood control. Most dams in this sparsely populated county are removed from the population clusters of the county. Many of the dams are privately owned and support agriculture and ranching activities. The State of California has created Dam Inundation Zone maps for some dams within the state. The maps depict areas that would be inundated should a dam fail catastrophically. Dam Inundation Zone maps have been prepared for seven (7) dams in or adjacent to the county (**Figure 5-3**). These included Rains Creek (high), Sworinger (high), Collet Addition (significant), Coyote Flat (significant), Red Rock #1 (high), Caribou Lake (significant), and Indian Ole (high). Other dams of concern which have not been mapped include Hog Flat, and McCoy Flat.

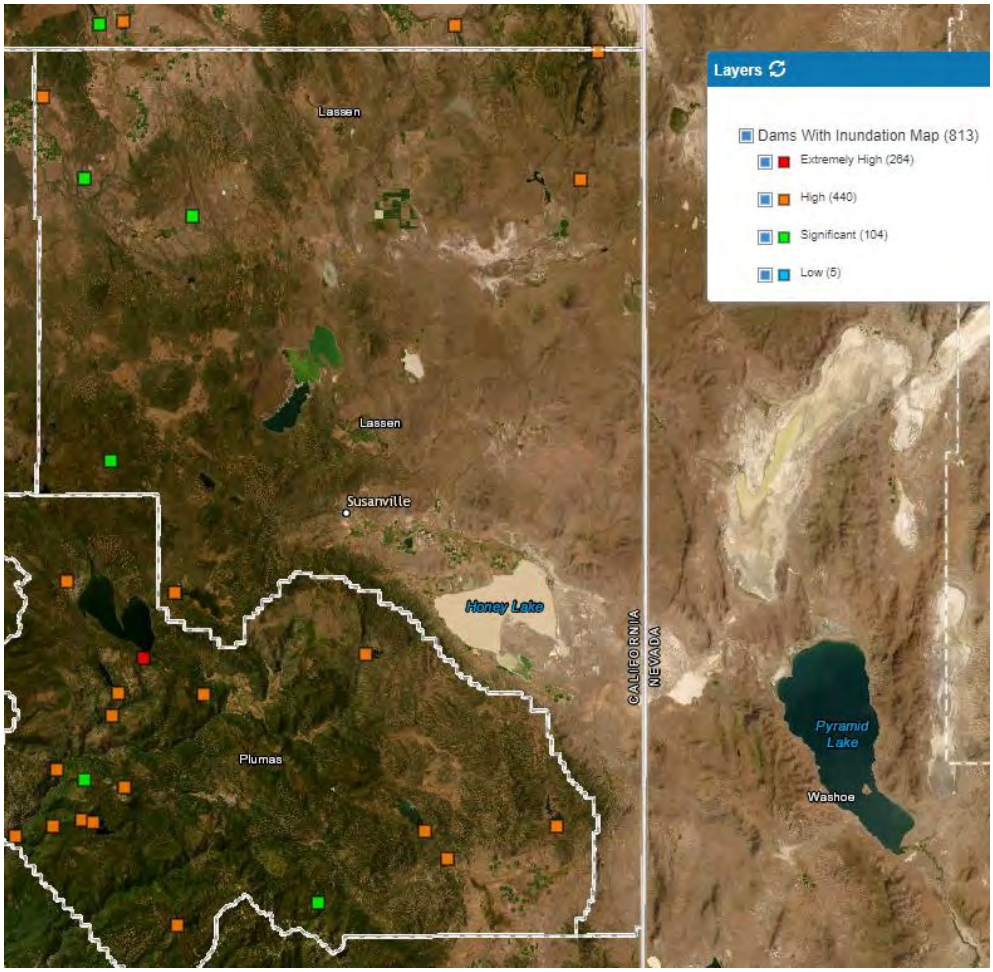
*Table 5-6. Dams and Reservoirs in Lassen County*

| | Name | Date | Type | Capacity (acre ft.) |
|---|---|---|---|---|
| 1 | Albaugh No 1 | 1953 | Earth | 335 |
| 2 | Albaugh No 2 | 1966 | Earth | 270 |
| 3 | Antelope | 1918 | Earth | 1,500 |
| 4 | Beaver Creek | 1978 | Earth | 214 |
| 5 | Branham Flat | 1880 | Earth | 1,200 |
| 6 | Buckhorn | 1904 | Earth | 2,000 |
| 7 | California Corrections Center | 1980 | Earth | 280 |
| 8 | California Corrections Center II | 1995 | Earth | 368 |
| 9 | Caribou Lake | 1928 | Earth | 460 |
| 10 | Chace Valley | 1955 | Earth | 92 |
| 11 | Collett Addition | 1991 | Earth and Rock | 7,800 |
| 12 | Collett Afterbay | 1991 | Earth | 300 |
| 13 | Coon Camp | 1900 | Earth | 548 |
| 14 | Coyote Flat | 1928 | Earth | 5,250 |
| 15 | Cramer Wood Ranch | 1910 | Earth | 3,000 |
| 16 | Elkins And Lane | 1953 | Earth | 412 |
| 17 | Emerson | | Earth | 418 |

| | Name | Date | Type | Capacity (acre ft.) |
|---|---|---|---|---|
| 18 | Fredonia | 1914 | Earth | 300 |
| 19 | Gerig | 1939 | Flashboard and Buttress | 110 |
| 20 | Heath Reservoir | 1965 | Earth | 6,850 |
| 21 | Hog Flat | 1891 | Earth | 8,000 |
| 22 | Holbrook | 1952 | Earth | 719 |
| 23 | Horse Lake | 1912 | Earth | 75 |
| 24 | Indian Ole | 1924 | Flashboard and Buttress | 24,800 |
| 25 | Iverson | 1968 | Earth | 1,800 |
| 26 | Leavitt, Lake | 1891 | Earth | 7,482 |
| 27 | Leonard No 2 | 1968 | Earth | 187 |
| 28 | Madeline | 1900 | Earth | 400 |
| 29 | Mardis | 1941 | Earth | 11 |
| 30 | Mccoy Flat | 1891 | Earth | 17,290 |
| 31 | Mendiboure | 1949 | Earth | 1,130 |
| 32 | Myers | 1957 | Earth | 279 |
| 33 | Nine Springs | 1954 | Earth | 125 |
| 34 | Peconom | 1920 | Earth | 173 |
| 35 | Petes Valley | 1954 | Earth | 240 |
| 36 | Rains Creek | 1960 | Earth | 126 |
| 37 | Red Rock No 1 | 1893 | Earth | 10,000 |
| 38 | Round Valley | 1892 | Earth and Rock | 5,500 |
| 39 | Shugru | | Earth | 195 |
| 40 | Silva Flat | 1926 | Earth | 3,900 |
| 41 | Smoke Creek | 1949 | Earth | 960 |
| 42 | Spaulding | 1954 | Earth | 147 |
| 43 | Spooner | 1906 | Earth | 3,123 |
| 44 | Sworinger | 1961 | Earth | 4,050 |
| 45 | Tule Lake | 1904 | Earth | 39,500 |

*Source: California Department of Water Resources*

*Figure 5-3. Dams within Lassen County with Inundation Maps*




*Source: California Division of Dam Safety (2024)*

### *5.4.5.5* Probability

Dam failure events are infrequent and usually coincide with the events that cause them, such as earthquakes, landslides, excessive rainfall and snowmelt. These impacts can also be exacerbated by aging or poor maintenance of the structures. There is a "residual risk" associated with dams; residual risk is the risk that remains after safeguards have been implemented. For dams, the residual risk is associated with events beyond those that the facility was designed to withstand. According to the Planning Team's assessment of this hazard/event, there is a Medium probability of occurrence; see subsection 1 under this hazard/threat (Prioritization). A Medium hazard/threat event was determined to equate to between 30% and 75% chance of occurring within five (5) years.

### *5.4.5.6* Climate Consideration

Increased rainfall from changing climate conditions could present a risk to dams and reservoirs in Lassen County if volume of runoff is greater than the dam's capacity. This could cause the County to release stored water into the downstream water courses in order to ensure the integrity of the dam.

## *5.4.6.* Drought and Water Shortage

### 5.4.6.1 Prioritization

- *Probability*- HIGH
- *Impact*- HIGH

### *5.4.6.2* Description

Drought can best be thought of as a condition of water shortage for a particular user in a particular location. Drought is a gradual phenomenon and generally is not signified by one or two dry years. There are many considerations that are factored into the determining the drought status; these include consideration of status on the Palmer Drought Severity Index, CPC Soil Moisture Model, USGS Weekly Streamflow, Standardized Precipitation Index, and Objective Drought Indicator Blends.

California's extensive system of water supply infrastructure (reservoirs, groundwater basins, and interregional conveyance facilities) generally mitigates the effects of short-term dry periods for most water users. However, drought conditions are present when a region receives below-average precipitation, resulting in prolonged shortages in its water supply, whether its water supply is provided by atmospheric, surface, or ground water means.

Drought is not a purely physical phenomenon, but rather an interplay between natural water availability and human demands for water supply. The precise definition of drought is made complex owing to political considerations, but there are generally four (4) types of conditions that are referred to as drought:

- *Meteorological drought* is brought about when there is a prolonged period with less than average precipitation.
- *Agricultural drought* is brought about when there is insufficient moisture for average crop or range production. This condition can arise, even in times of average precipitation, owing to soil conditions or agricultural techniques.
- *Hydrologic drought* is brought about when the water reserves available in sources such as aquifers, lakes, and reservoirs fall below the statistical average. This condition can arise, even in times of average (or above average) precipitation, when increased usage of water diminishes the reserves.
- *Socioeconomic drought* associates the supply and demand of water services with elements of meteorological, hydrologic, and agricultural drought. Socioeconomic drought occurs when the demand for water exceeds the supply as a result of weather-related supply shortfall.

### *5.4.6.3* Location and Extent

The entire County is subject to drought and/or water storage conditions. There are many considerations that are factored into the determining the drought status; these include consideration of status on the Palmer Drought Severity Index, CPC Soil Moisture Model, USGS Weekly Streamflow, Standardized Precipitation Index, and Objective Drought Indicator Blends. The U.S. Drought Monitor, established in 1999, is a weekly map of drought conditions produced jointly by the National Oceanic and Atmospheric Administration, the U.S. Department of

Agriculture, and the National Drought Mitigation Center at the University of Nebraska-Lincoln. The map is based on measurements of climatic, hydrologic and soil conditions as well as reported impacts and observations from more than 350 contributors around the country. Droughts are generally categorized into five (5) categories:

- D1- Abnormally Dry
- D2- Moderate Drought
- D3- Severe Drought
- D4- Extreme Drought
- D5- Exceptional Drought

Drought events can happen any time of the year and can last for months or in worst case scenarios, even years or may be declared after as few as 15 days. Drought events usually have advance notices as it is generally a worsening of condition over time.

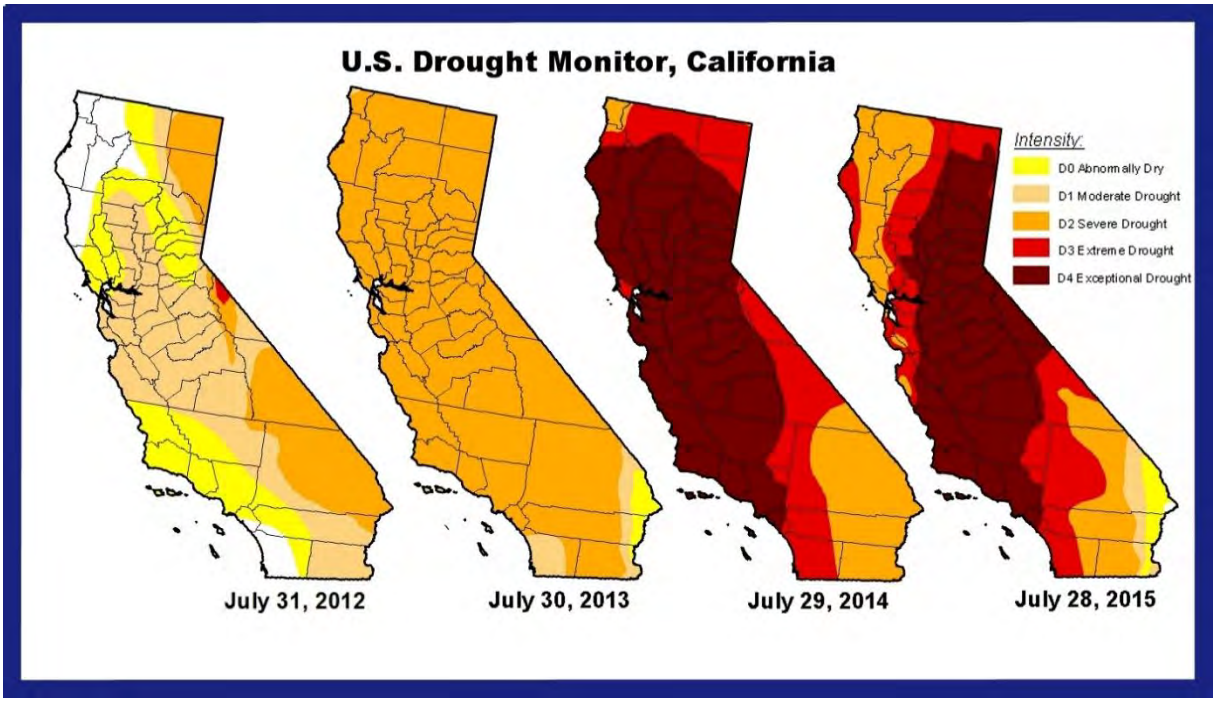
Around the Susanville Indian Rancheria, the West Barry Creek has suffered altercation to its original stream course from historic land use as a ranch, impoundment and springhead excavation, and more recently by the construction of Paul Bunyan Road through the drainage. This later road construction event effectively de-watered the natural stream channel, interrupted the hydrologic function of several ephemeral/seasonal wet lands and associated native plant communities, impacted absorption of precipitation into the natural lithographic structure of the drainage, with the resultant drying of seeps and shallow springs due to the loss of surface area of absorbing soils exposure and disruption of the water table strata in the drainage bottom, and is exacerbated during drought events.

The SIR Lower and Upper Rancheria, and SIR Herlong are located in the Honey Lake Valley Groundwater Basin. Groundwater recharge in Honey Lake Valley occurs through direct precipitation, infiltration through basalts north of the valley which percolates laterally to beneath the valley floor (DWR 1963), and absorption from flows in stream courses. Groundwater in the northwest portion of the valley also is affected by drought periods, showing changes in spring groundwater levels of 20 feet over the period from 1987 to 1991 as compared to preceding and subsequent years. Hydrographs in the area near Herlong do not appear to be affected by drought periods but instead show a continued decline in groundwater levels of 20 feet during the period from 1984 through 2005.

#### *5.4.6.4* History

Lassen County and the Susanville Indian Rancheria along with all of California has been experiencing a severe-to-very severe multi-year drought which began in 2012 and continued into 2024 even with a normal rainfall season (**Figure 5-4**). California's Governor declared a drought state of emergency in January 2014 and directed state agencies to take all necessary actions to respond to drought conditions.

*Figure 5-4. US Drought Monitor, California*




*Source: US Drought Monitor*

In April of 2015 the Governor announced the first-ever 25 percent statewide mandatory water reductions and a series of actions to help save water, increase enforcement to prevent wasteful water use, streamline the state's drought response and invest in new technologies that will make California more drought resilient. As secondary effect from the drought has been an unprecedented die-off of trees and a state of emergency was issued to enable federal action to mobilize resources for the safe removal of dead and dying trees which represent a significant increased wildland fire hazard. To date, guided by the California Water Action Plan, the state has committed hundreds of millions of dollars – including Water Bond funds - to emergency drought relief, disaster assistance, water conservation and infrastructure projects across the state. Efforts are also underway to establish a framework for sustainable, local groundwater management for the first time in California's history based on legislation passed in 2014. The 2017 water year brought record rainfall to California and an unprecedented snowpack to the Sierra Nevada Mountains, The drought was declared officially over for most of the state by the Governor on April 7, 2017. However, five counties in the Central Valley remain under a state drought declaration.

The majority of Lassen County is included in the North Lahontan Hydrologic Region. Hydrologic regions are defined as "*major drainage basins*" by the California Water Plan. This means that much of the County's surface water, including the Susan River, drains to the series of alkaline lakes, such as Honey Lake, which make up the region, and do not feed to the ocean. This fact creates different conditions in Lassen County than other parts of the state as its water sources are more localized and independent from regional water systems.

Historically, water levels in Honey Lake were the indicator of dry or drought years in Lassen County. Honey Lake went dry in 1859, 1865, 1887, and 1889. Following a wet cycle, the Lake

once again went dry in 1919 and remained dry until 1938. Other periods of extended drought occurred in California in 1975-77, 1987-1992, 2000-2004, 2007-2009, and 2012-2016.

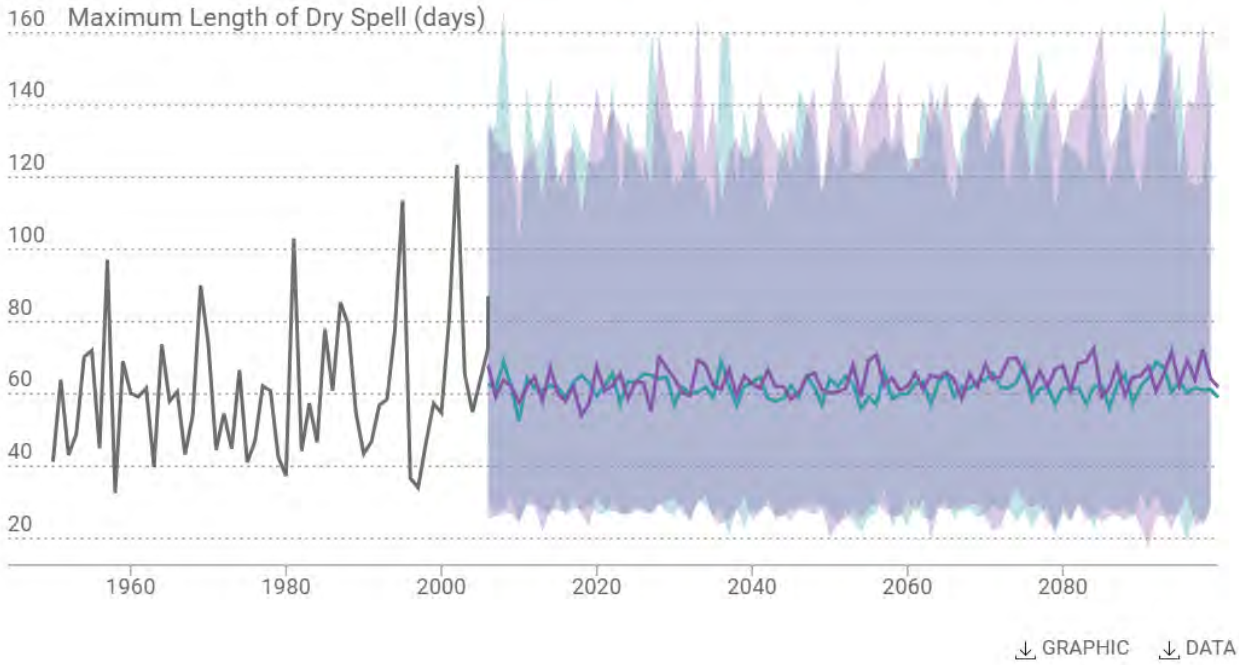
To date, there have been no known state or federal declarations for this type of event in the County.

#### *5.4.6.5* Probability of Occurrence

In any given year, California and Lassen County can be subject to drought and/or water shortage conditions. This is especially true since much of the water supply is provided by outside resources, resources that are shared with others. It is also important to note that droughts do not happen overnight, they are a slow buildup of conditions. On average, seventy-five percent (75%) of the state's annual precipitation occurs in the "wet season"- *November through March*. December, January, and February generally see the most precipitation but there have been many early and late season storms that bring in a substantial amount of precipitation. One of the best ways to predict drought conditions is to study the status of the El Niño Southern Oscillation (ENSO) patterns. In California. ENSO is a periodic shifting of ocean atmosphere conditions in the tropical Pacific that ranges from El Niño (warm phase) to neutral to La Niña (cold phase). La Niña conditions tend to favor a drier outlook for Southern California; while the El Niño conditions favor stronger, and wetter storms.

The State of California has also developed tools under the Cal-Adapt project. The Cal-Adapt project provides the public, researchers, government agencies and industry stakeholders with essential data & tools for climate adaptation planning, building resiliency, and fostering community engagement. The following figure (**Figure 5-5**) was generated by Cal-Adapt work for Lassen County.

*Figure 5-5. Maximum Length of Dry Spells (Days)*




**Observed (1961-1990)** 30yr Average: 59 days

| | Change from baseline ⓘ | 30yr Average | 30yr Range |
|---|---|---|---|
| **Baseline (1961-1990)** | | | |
| MODELED HISTORICAL | - | 57 days | 47 - 69 days |
| **Mid-Century (2035-2064)** | | | |
| MEDIUM EMISSIONS (RCP 4.5) | +4 days | 61 days | 43 - 81 days |
| HIGH EMISSIONS (RCP 8.5) | +6 days | 63 days | 46 - 79 days |
| **End-Century (2070-2099)** | | | |
| MEDIUM EMISSIONS (RCP 4.5) | +5 days | 62 days | 44 - 85 days |
| HIGH EMISSIONS (RCP 8.5) | +9 days | 66 days | 38 - 93 days |

According to the Planning Team's assessment of this hazard/event, there is a High probability of occurrence; see subsection 1 under this hazard/threat (Prioritization). A High hazard/threat event was determined to equate to greater than 75% chance of occurring within five (5) years.

#### *5.4.6.6* Climate Consideration

Climate change has the potential to make drought events more common in the West, including California. Extreme heat creates conditions more conducive for evaporation of moisture from the ground, thereby increasing the possibility of drought. A warming planet could lead to earlier

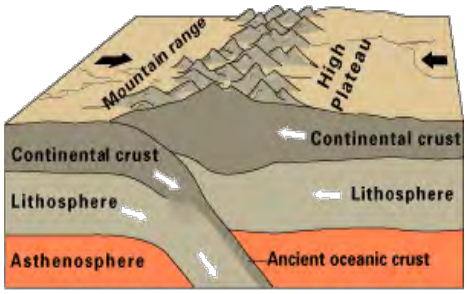
melting of winter snow packs, leaving lower stream flows and drier conditions in the late spring and summer. Snow packs are important in terms of providing water storage and ensuring adequate supply in the summer, when water is most needed. Changing precipitation distribution and intensity has the potential to cause more of the precipitation to run-off rather than be stored. The result of these processes is an increased potential for more frequent and more severe periods of drought.

### 5.4.7. Earthquake

#### 5.4.7.1 Prioritization

- *Probability*- LOW
- *Impact*- HIGH

#### 5.4.7.2 Description

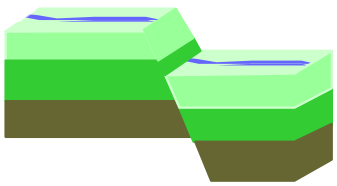


Continental-continental convergence

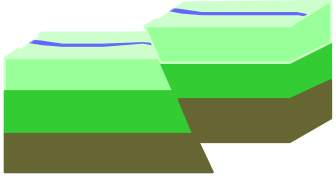
An earthquake is caused by a release of strain within or along the edge of the Earth's tectonic plates, producing surface fault rupture, ground motion, and secondary hazards such as ground failure. For millions of years, the forces of plate tectonics have shaped the Earth as the huge plates that form the Earth's surface move slowly over, under, and past each other. Sometimes the movement is gradual. At other times, the plates are locked together, unable to release the accumulating energy. When the accumulated energy grows strong enough, the plates break free causing the ground to shake. Most earthquakes occur at the boundaries where the plates meet; however, some earthquakes occur in the middle of plates. The severity of the shaking increases with the amount of energy released, decreases with distance from the causative fault or epicenter, and is amplified by soft soils. After just a few seconds, earthquakes can cause massive damage and extensive casualties.

A fault is a fracture between blocks of the earth's crust where one side moves relative to the other along a parallel plane to the fracture. There are three (3) different types of earthquake faults: 1) Normal, 2) Thrust, and 3) Strike-slip. Normal and Thrust faults are examples of dip-slip faults. Dip-slip faults are slanted fractures where the blocks mostly shift vertically. If the earth above an inclined fault moves down, the fault is called a normal fault, but when the rock above the fault moves up, the fault is called a reverse (or thrust) fault. Thrust faults have a reverse fault with a dip of 45° or less.

*Normal Fault*



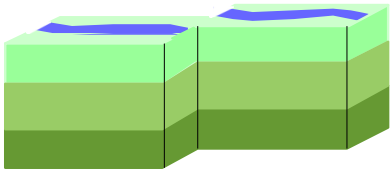
*Thrust Fault*



Strike-slip faults are vertical or almost vertical rifts where the earth's plates move mostly horizontally. From the observer's perspective, if the opposite block looking across the fault moves

to the right, the slip style is called a right lateral fault; if the block moves left, the shift is called a left lateral fault.

*Strike-slip Fault*



Ground shaking and ground deformation are the specific hazards associated with earthquakes. The severity of these hazards depends on several factors, including soil and slope conditions, proximity to the fault, magnitude, and the type of earthquake. Below is an overview of the hazards associated with earthquakes:

*Ground Shaking* - Ground shaking is the motion felt on the earth's surface caused by seismic waves generated by the earthquake. It is the primary cause of earthquake damage. The strength of ground shaking depends on the magnitude of the earthquake, the type of fault, distance from the epicenter (where the earthquake originates), and local soil conditions. Soils and soft sedimentary rocks near the earth's surface can amplify earthquake ground shaking. Amplification increases the magnitude of the seismic waves generated by the earthquake. The amount of amplification is influenced by the thickness of geologic materials and their physical properties. Buildings and structures built on soft and unconsolidated soils can face greater risk. Amplification can also occur in areas with deep sediment filled basins and on ridge tops. Peak Ground Acceleration (PGA) is a measure of the strength of ground shaking across the impacted area. Larger PGAs result in greater damage to structures. PGA is often used to depict the risk of damage from future earthquakes by showing earthquake ground motions that have a specified probability (10%, 5% or 2%) of being exceeded in 50 years return period. These values are often used for reference in construction design, and in assessing relative hazards when making economic and safety decisions.

*Ground Deformation* - consists of three (3) main classifications or types: 1) surface fault rupture, 2) landslides, and 3) liquefaction.

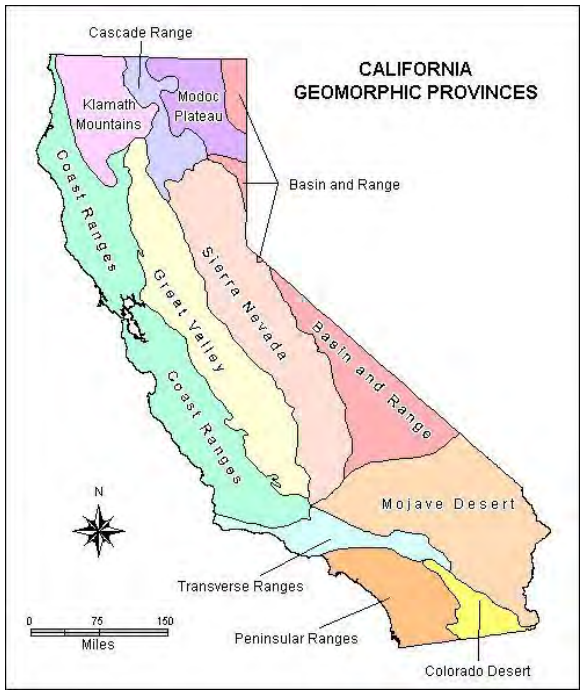
*Surface Fault Rupture* - As previously mentioned, the sudden sliding of part of the earth's crust releases the vast store of elastic energy in the rocks as an earthquake. The resulting fracture is known as a fault, while the sliding movement of earth on either side of a fault is called fault rupture. Fault rupture generally begins below the ground surface at the earthquake hypocenter, typically between three and ten miles below the ground surface in California. If an earthquake is large enough, the fault rupture will reach the ground surface (referred to as "surface fault rupture"), wreaking havoc on structures built across its path. Structures built across a fault are at risk of significant damage from surface fault rupture. Recent large earthquakes in Turkey and Taiwan have shown that few structures built across the surface traces of rupturing faults can withstand the displacements that may occur during a large earthquake.

*Landslides* - Earthquake-induced landslides are secondary earthquake hazards that occur from ground shaking. They can destroy the roads, buildings, utilities, and other critical facilities necessary to respond and recover from an earthquake.

Many communities in Southern California have a high likelihood of encountering such risks, especially in areas with steep slopes. (*NOTE: while mentioned here, landslides are addressed separately in a later section*)

*Liquefaction* - Liquefaction is the phenomenon that occurs when ground shaking causes loose, saturated, sandy soils to lose strength and act like viscous fluid. Liquefaction results in two types of ground failure: lateral spread and loss of bearing strength. Lateral spreads develop on gentle slopes and entail the sidelong movement of large masses of soil as an underlying layer liquefies. Loss of bearing strength occurs when the soil supporting structures liquefy, causing the structures to settle, resulting in damage and, in some cases, collapse.

### *5.4.7.3* Location and Extent

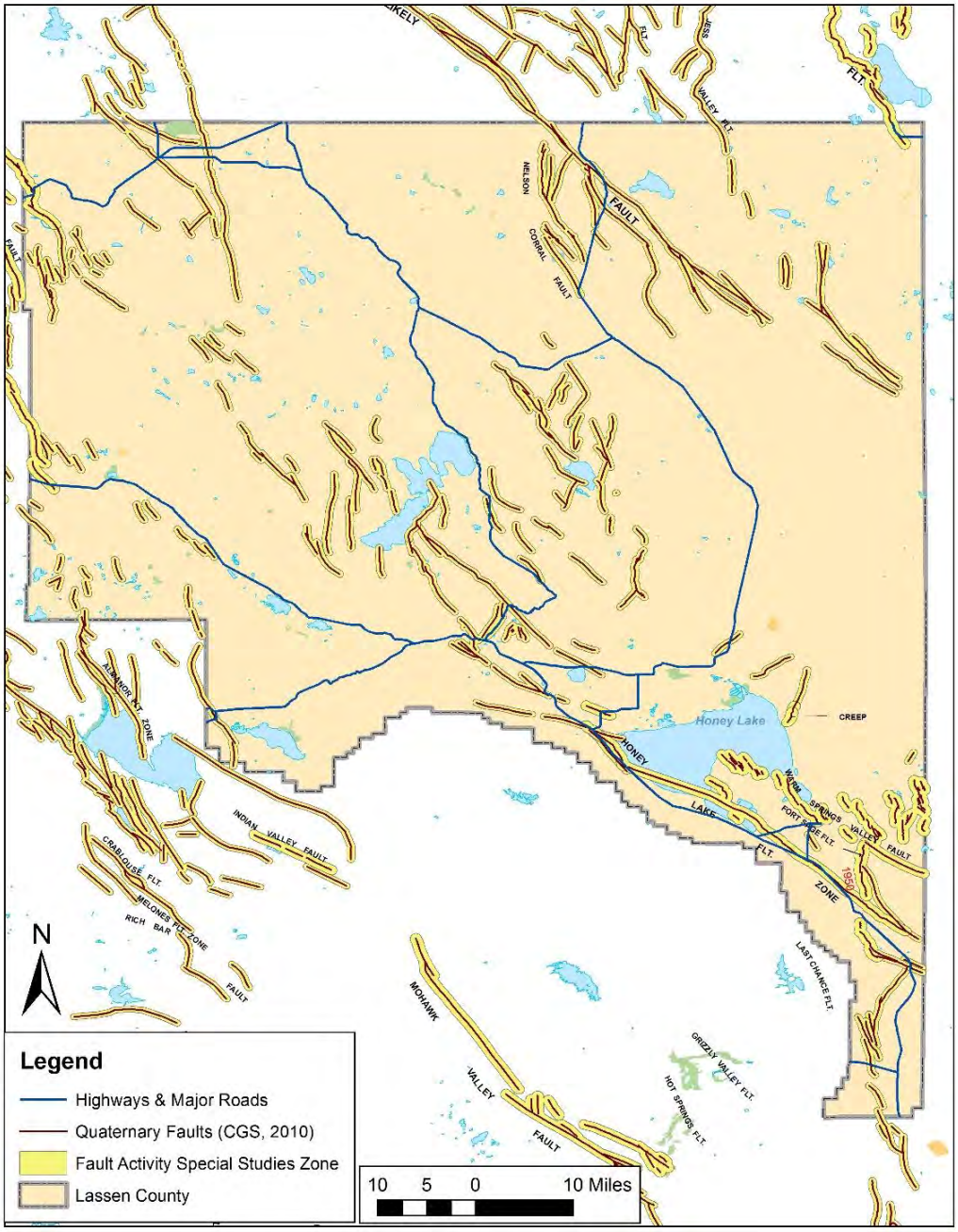



As noted by the California Geological Survey, California is divided into eleven (11) geomorphic provinces. California's geomorphic provinces are naturally defined geologic regions that display a distinct landscape or landform. Each region displays unique, defining features based on geology, faults, topographic relief and climate. These geomorphic provinces are remarkably diverse. They provide spectacular vistas and unique opportunities to learn about the earth's geologic processes and history. These geomorphic provinces each have the potential to create significant earthquakes and associated hazards. Lassen County is located in a relatively high seismic activity zone in the Modoc Plateau geologic province, between the Cascade Range and Basin and Range geologic provinces. The Modoc Plateau area lies in the northeast corner of California as well as parts of Oregon and Nevada. Nearly 1,000,000 acres of the Modoc National Forest are on the plateau between the Medicine Lake Highlands in the west and the Warner Mountains in the east. Its landform is volcanic table land ranging from 4,000 to 6,000 feet above sea level, cut by many north–south faults. "Occasioned lakes, marshes, and sluggishly flowing streams meander across the plateau. It is a thick accumulation of lava flows and tuff beds, along with many small volcanic cones. It has cinder cones, juniper flats, pine forests, and seasonal lakes. The plateau is thought to have been formed approximately 25 million years ago as a southern extension of the Columbia Plateau flood basalts.

In California, the 1972 Alquist-Priolo Earthquake Fault Zoning Act prohibits the siting of most structures for human occupancy across traces of active faults that constitute a potential hazard to structures from surface faulting. **Figure 5-6** depicts the quaternary faults in Lassen County. Quaternary Faults are less than 1.8 million years old and are classified as "*potentially active*." A fault is considered "*active*" if displacement has occurred in the past 11,000 years; "*historic*" displacement is seismic activity which occurred within the past 200 years. Pre-quaternary faults

are more than 1.8 million years old and are generally classified as "*inactive*" unless a detailed study concludes there is potential for activity.

***Figure 5-6. Quaternary Earthquake Faults in Lassen County***

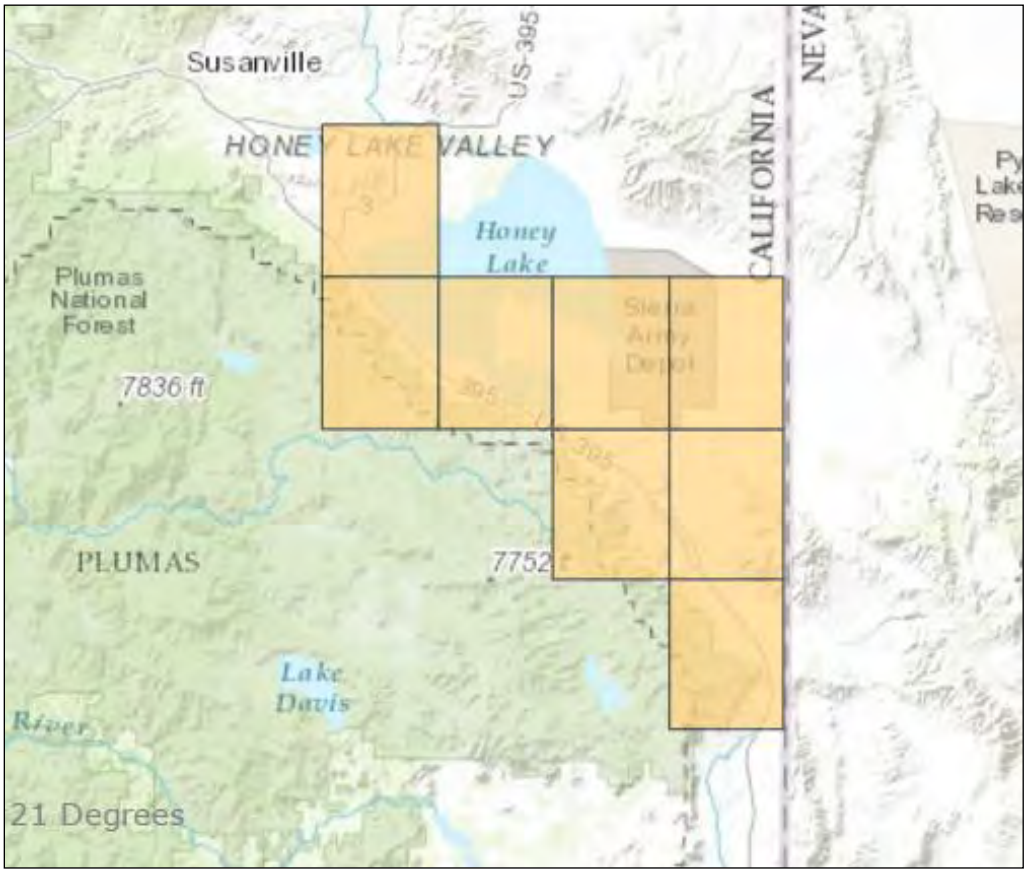



*Source: California Geological Survey, Fault Activity Map of California*

The City of Susanville and the Susanville Indian Rancheria are located within the Honey Lake Fault Zone. As mapped by the California Geological Survey, there are eight (8) quadrangle maps delineating Alquist-Priolo Earthquake Fault Zones in the Susanville area, as shown in the figure below (Error! Reference source not found.**7)**. From top to bottom, left to right, these quadrangle maps are Standish, Stony Ridge, Milford, Herlong, Calneva Lake, McKesick Peak, Doyle and

Constantia. Properties in the earthquake fault zones are required to have a geological evaluation prior to construction to avoid mapped fault traces of active faults. After earthquakes, some regions may be prone to fault ruptures, liquefaction, and landslides.

*Figure 5-7. Quadrangle Maps Containing Earthquake Fault Zones in the Susanville Area*




Earthquakes can occur any time of the year and their duration is usually measured in minutes. While there are some advanced warning with earthquake associated aftershocks (or foreshocks), the majority of earthquakes occur without warning. The effect of an earthquake on various locations throughout the felt area is often measured in terms of shaking intensity. The intensity scale consists of a series of certain key responses such as people awakening, movement of furniture, damage to chimneys, and total destruction of property. The intensity scale currently used in the United States is the Modified Mercalli Intensity (MMI) Scale (**Table 5-7**). It was developed in 1931 by the American seismologists Harry Wood and Frank Neumann. This scale is composed of increasing levels of intensity, designated by Roman numerals that range from imperceptible shaking (MMI I) to catastrophic destruction (MMI X). It does not have a mathematical basis; instead, it is an empirical scale based on observed effects.

*Table 5-7. Modified Mercalli Intensity (MMI) Scale*

| Intensity | Shaking | Description |
|---|---|---|
| I | Not Felt | Not felt except by a very few under especially favorable conditions. |
| II | Weak | Felt only by a few persons at rest, especially on upper floors of buildings. |
| III | Weak | Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. |
| IV | Light | Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing cars rocked noticeably. |
| V | Moderate | Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop. |
| VI | Strong | Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight. |
| VII | Very Strong | Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken. |
| VIII | Severe | Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. |
| IX | Violent | Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations. |
| X | Extreme | Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent. |

In addition, most people are familiar with the Richter scale, a method of rating earthquakes based on the amplitude of seismic waves at their source, an indirect measure of energy released (**Table 5-8**). The Richter scale is logarithmic; each one-point increase corresponds to a 10-fold increase in the amplitude of the seismic waves and a 32-fold increase in the amount of energy released. For example, an earthquake registering magnitude 7.0 on the Richter scale releases over 1,000 times more energy than an earthquake registering magnitude 5.0. It should be noted that while an earthquake may have many intensity values across the impacted area, there is just one Richter magnitude associated with each event.

*Table 5-8. Earthquake Effects Associated with various Richter Magnitudes*

| Magnitude | Earthquake Effects |
|---|---|
| 0-1.9 | *Micro*- Not felt by people |
| 2.0-2.9 | *Minor*- Felt by few people |
| 3.0-3.9 | *Minor*- Felt by some people, inside objects can be seen shaking |
| 4.0-4.9 | *Light*- Felt by most people, inside objects shake and fall |
| 5.0-5.9 | *Moderate*- Felt by everyone, damage and possible collapse of unreinforced buildings |
| 6.0-6.9 | *Strong*- Felt by everyone, widespread shaking/damage, some buildings collapse |
| 7.0-7.9 | *Major*- Felt by everyone, widespread shaking/damage, many buildings collapse |
| 8.0 or greater | *Great*- Felt by everyone, widespread shaking/damage, most buildings collapse |

#### 5.4.7.4 History

Historical records provide some limited information on earthquakes that impacted Lassen County prior to the widespread development of regional seismic networks. Five events are included in the USGS' "Seismicity of the United States, 1568-1989 (Revised)" (1993), as given in Error! Reference source not found.**9.**

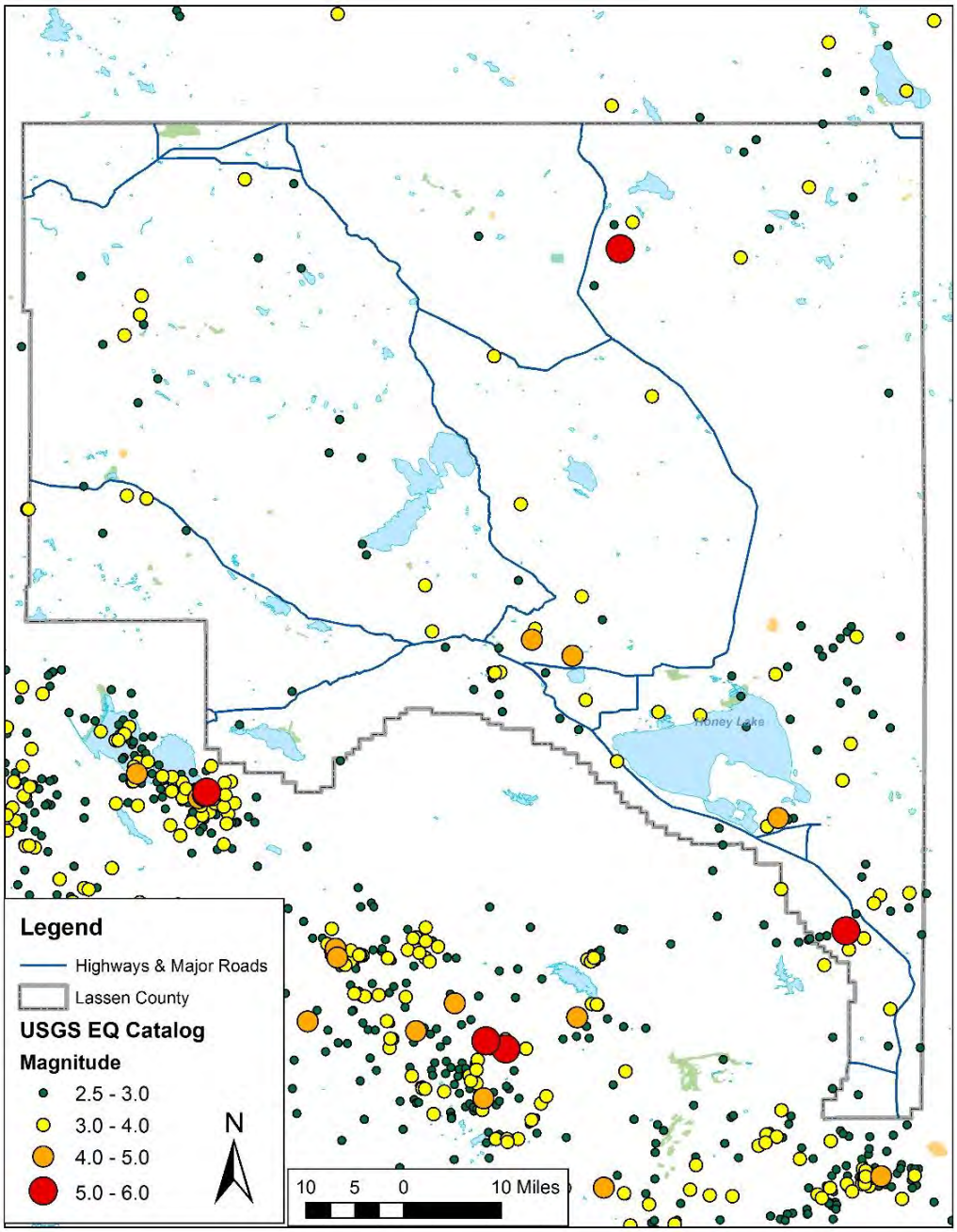
*Table 5-9. Historic Earthquakes in the Vicinity of Lassen County*

| Magnitude | Date(s) | Location/Description |
|---|---|---|
| 5.8 (est.) | 1885-Jan 31 | **Near Susanville.** Chimneys were damaged in the Honey Lake Valley towns of Buntingville and Susanville. Shocks were most severe near Janesville. Felt north to Alturas (Modoc County), south to Sacramento, and at a few towns in Nevada. More than 100 aftershocks were felt in the area to Feb. 8, 1885. |
| 6.0 (est.) | 1889-June 20 | **North of Susanville.** The earthquake was most severe in the Susanville-Willow Creek area, where chimneys were thrown down, and the water in Eagle Lake was muddied. As many as 75 aftershocks occurred, 28 of which were felt within 2 hours of the main event. Felt north to Alturas (Modoc County), south to Sacramento, and east to Virginia City, Nev. |
| N/A | 1908-Jan 27 | **Honey Lake region.** Chimneys were toppled at Amedee and Milford in the Honey Lake region. Aftershocks were reported. |
| 5.6 | 1950-Dec 14 | **Near Herlong.** This main shock of a series caused considerable structural damage at Herlong. Many structures sustained cracks from about 0.3 to 0.6 cm in width to as much as 24 m in length. Many chimneys were broken, trusses and roof rafters were split, and several buildings were displaced on their foundations. Damage to water mains, steam pipes, and sewers also was reported. Felt from Alturas (Modoc County) south to Sacramento and east to Lovelock, Nev. Several foreshocks and aftershocks were felt in the area. |
| 5.3 | 1979-Feb 22 | **Honey Lake Valley.** This earthquake interrupted telephone service in the epicentral area but caused only minor property damage. Drywall was cracked at Doyle, near the Nevada border, and desks were displaced. The earthquake was felt over a large area of northeast California and western Nevada. It was preceded by a small foreshock and was followed by aftershocks through Feb. 23. |

*Source: USGS, 1993*

Error! Reference source not found.**8** depicts the USGS earthquake catalog of earthquakes occurring in the vicinity of Lassen County since 1973. The USGS earthquake catalog for the region includes more than 1,000 earthquakes within 50 miles of Lassen County, including five (5) events of Magnitude 5.0 or above, listed in **Table 5-10**, two (2) of which had its epicenter within Lassen County.

*Figure 5-8. Recorded Earthquakes in the Vicinity of Lassen County*




*Source: USGS*

*Table 5-10. Recent Earthquakes of M5+ in the Vicinity of Lassen County Since 1973*

| Magnitude | Date | Location/Description (when available) |
|---|---|---|
| 5.7 | 2013-May 24 | Plumas County/10 km WNW of Greenville CA (Canyon Dam earthquake) |
| 5.3 | 1979-Feb 22 | Lassen County/(see **Error! Reference source not found.** for description) |
| 5.2 | 2001-Aug 10 | Adjacent to Lassen County |
| 5.1 | 2008-Apr 26 | Adjacent to Lassen County/1 km NW of Mogul, NV |
| 5.0 | 1976-Nov 27 | Lassen County |

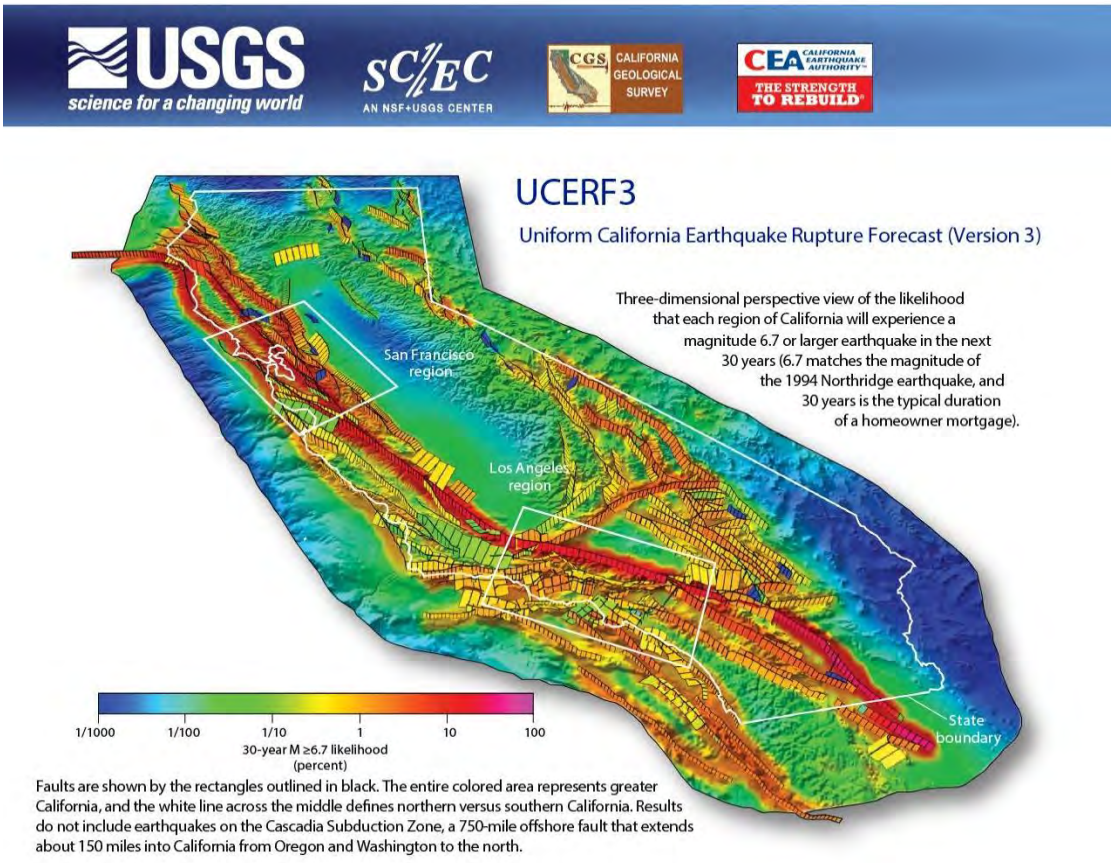
*Source: USGS, 2015*

To date, there have been no known state or federal declarations for this type of event in the County.

### *5.4.7.5* Probability of Occurrence

The United States Geological Survey (USGS) and their partners, as part of the latest Uniform California Earthquake Rupture Forecast Version 3 (UCERF3; 2015), have estimated the chances of having large earthquakes throughout California over the next 30 years (**Figure 5-9**).

*Figure 5-9. Rates for Earthquake of Magnitude 6.7 or Larger in the Next 30 years*




*Source: USGS, 2015*

Statewide, the rate of earthquakes around Magnitude 6.7 (the size of the 1994 Northridge earthquake) has been estimated to be one per 6.3 years (more than 99% likelihood in the next 30

years); in northern California, the rate is one per 12 years (95% likelihood in the next 30 years). Northern California's rates are given in **Table 5-11**.

*Table 5-11. Northern California Region Earthquake Likelihoods*

| Magnitude (greater than or equal to) | Average Repeat Time (years) | 30-year likelihood of one or more events |
|---|---|---|
| 5 | 0.24 | 100% |
| 6 | 2.4 | 100% |
| 6.7 | 12 | 95% |
| 7 | 25 | 76% |
| 7.5 | 92 | 28% |
| 8 | 645 | 5% |

*Source: UCERF3, 2015*

According to the Planning Team's assessment of this hazard/event, there is a Low probability of occurrence; see subsection 1 under this hazard/threat (Prioritization). A Low hazard/threat event was determined to equate to (less than 30% chance of occurring within five (5) years.

#### *5.4.7.6* Climate Considerations

To date, no credible evidence has been provided that links climate to earthquakes; however, climate impacts are a significant consideration in the response and recovery efforts. Effects from climate change could create cascading complications and impacts. For example, if a significant earthquake causing damage to infrastructure such as water supply lines and storage tanks occurred during extensive drought conditions, efforts to fight post-earthquake fires or urban interface fires could be compromised. Conversely, if the earthquake were to occur during extended heightened rainfall or snowfall, landslides could occur hindering access and prolong the need for long-term sheltering of persons displaced from their housing. Damage to the power supply could be exacerbated by an increasing number of severe winter storms.

### *5.4.8.* Energy Disruption

#### 5.4.8.1 Prioritization

- *Probability*- MEDIUM
- *Impact*- MEDIUM

#### *5.4.8.2* Description

Energy Disruption is considered a form of lifeline system failure. For the purposes of this LHMP, energy disruption includes energy shortage/power outage and energy shortage/power outage is confined to rolling blackouts or brownouts and Public Safety Power Shutdown (PSPS) events. A brownout is a partial, temporary reduction in total system capacity, while a blackout is a complete interruption in power. A brownout is caused by high electricity demand that is near or above a utility's production capacity. When this occurs, the utility may reduce the flow of electricity to certain areas to prevent a blackout. A blackout is a large-scale service interruption that can happen as a result of severe weather or equipment failure at power plants.

PSPS events are initiated by power utility companies and are implemented in response to severe weather events. The purpose is to mitigate the increased fire risk during "red flag" weather

conditions. Red flag weather conditions include high winds, low humidity, and high temperatures. By shutting off power, the utility companies are ensuring that electrical equipment, which can arc and spark, during severe events, will not exacerbate or start a fire.

Energy Disruptions can also be the consequence of another hazard, or can be a primary hazard, absent of an outside trigger. Energy outages may also be due to natural hazards such as wildfires, earthquakes, floods, severe winter weather, high winds, and landslides. These outages can last anywhere from a few minutes to, in rare instances, a week or more. Energy Disruptions could impact one, or a combination of other systems (i.e., potable water system, power system, natural gas system, wastewater system, communication system, or transportation system).

#### *5.4.8.3* Location and Extent

Energy Disruption events can occur throughout the County, they can occur anytime of the year, and generally last for a few hours or in some cases a few days. Depending on the cause of energy disruption there may or may not be advanced warning (i.e., PSPS). There is no universal or common scale to measure levels of Energy Disruption. Most Energy Disruptions are generally defined by the type (cause) of disruption and duration.

#### *5.4.8.4* History

The 2000-2001 California electricity crises brought to light many critical issues surrounding the state's power generation and distribution system, including its dependency on out-of-state resources. Although California has implemented effective energy conservation programs, the state continues to experience both population growth and weather cycles that contribute to a heavy demand for power. The 2000 and 2001 blackouts occurred due to losses in transmission or generation and/or extremely severe temperatures that lead to heavy electric power consumption. Additionally, the July 2006 heat wave brought about rolling blackouts which indicates the demand for power during extreme heat events will exceed availability and appropriate planning for alternate power sources is extremely important to protect the community.

The Caribou line is the main transmission supply line. The Caribou line traverses rugged country throughout the Feather River Canyon and is susceptible to damage. Winter storms with high winds, ice storms, rain induced slides, drought kill trees, along with possibility of forest fires can all play a part in damage to the Caribou line and power failures are an annual occurrence. The Caribou line has averaged over three outages per year over the last five years. The outage duration varies depending upon the event but can last from hours to several weeks. As mentioned above, the Hat Creek line is a back-up line and cannot meet the capacity to support all of LMUD's customers.

For certain events, LMUD has the ability to obtain power from the Honey Lake Power (HLP) biomass generation plant in a power outage emergency. During the August 2012, "Chips Fire", LMUD) received power from HLP for 24 consecutive days due to damage sustained to the Caribou line. However, during the January 2017 storm related Caribou line outage, the Honey Lake Power (HLP) plant was closed down for maintenance which led to an area wide 30-hour power outage for LMUD's customers.

To date, there have been no known state or federal declarations for this type of event in the County.

#### *5.4.8.5* Probability of Occurrence

There are no studies that predict the probability of Energy Disruption occurrences. However, the California Independent System Operator (Cal ISO) does monitor energy supply and demand and provides some near-time predictions when there may be energy shortages and recommend "Flex Alerts" orders. Similarly, PSPS events are implemented and managed by private utility companies. While historically, they have not consistently provided advanced notice of when and where the power would be shut off, or when the power will be restored, there are noticeable improvements to notifications over recent events. According to the Planning Team's assessment of this hazard/event, there is a Medium probability of occurrence; see subsection 1 under this hazard/threat (Prioritization). A Medium hazard/threat event was determined to equate to between 30% and 75% chance of occurring within five (5) years.

#### *5.4.8.6* Climate Consideration

With increased changes in climate, the demands on energy will shift too. This shift in demand could have significant impacts on energy supply and equipment. Additionally, climate could have a direct impact on the energy system and equipment. Heavier than normal rain or snowfall could cause flooding and damage infrastructure, as could extreme winds.

### *5.4.9.* Extreme Temperature

#### 5.4.9.1 Prioritization

- *Probability*- HIGH
- *Impact*- MEDIUM

#### *5.4.9.2* Description

For the purposes of the LHMP, Extreme Temperature includes both 1) extreme heat and 2) extreme cold weather conditions.

**Extreme Heat** conditions, according to the U.S. Environmental Protection Agency (EPA) and Centers for Disease Control and Prevention (CDC), are defined as weather that is much hotter and more humid than average for a particular time and place. The Cal-Adapt website defines Extreme Heat as any day in the 7-month period between April through October where the high temperature exceeds the 98th historical percentile of the maximum daily temperature. Similarly, a heat wave is defined as five (5) days of temperatures which exceed the extreme threshold. The baseline used is calculated from data for the years 1961 through 1990. Extreme Heat is a function of heat and relative humidity. As relative humidity increases, the air seems warmer than it actually is because the body is less able to cool itself via evaporation of perspiration. As the Heat Index rises, so do health risks such as heat exhaustion, sunstroke, and heatstroke. Some Heat Index Program Alert procedures are implemented when the high temperature is expected to exceed 105° to 110° (depending on local climate) for at least two consecutive days.

Extreme heat kills hundreds of Americans every year and causes many to become seriously ill. Extreme heat can result in significant economic impacts, affect agriculture and livestock,

and may cause damage to homes and businesses. Measures to prevent illness are generally common sense, including staying cool indoors, keeping hydrated, limiting physical activity, and monitoring those at highest risk. Prolonged high temperatures can pose a risk to vulnerable populations, particularly if combined with power outages. Measures to prevent illness are generally common sense, including staying cool indoors, keeping hydrated, limiting physical activity, and monitoring those at highest risk.

There are also other characteristics of extreme heat which do not factor in humidity. This includes when there is a series of days at high temperatures and when temperatures do not cool down/off at night. In both of these instances there could be risks to humans and equipment.

**Extreme Cold** conditions are noted when there are sustained temperatures below freezing (32F). The NOAA provides three different categories of actions for freeze events: advisory, watch, and warning.

- *Frost Advisory* is issued when the minimum temperature is forecast to be 33 to 36 degrees on clear and calm nights during the growing season.
- *Freeze Watch* is issued when there is a potential for significant, widespread freezing temperatures within the next 24-36 hours.
- *Freeze Warning* is issued when significant, widespread freezing temperatures are expected.

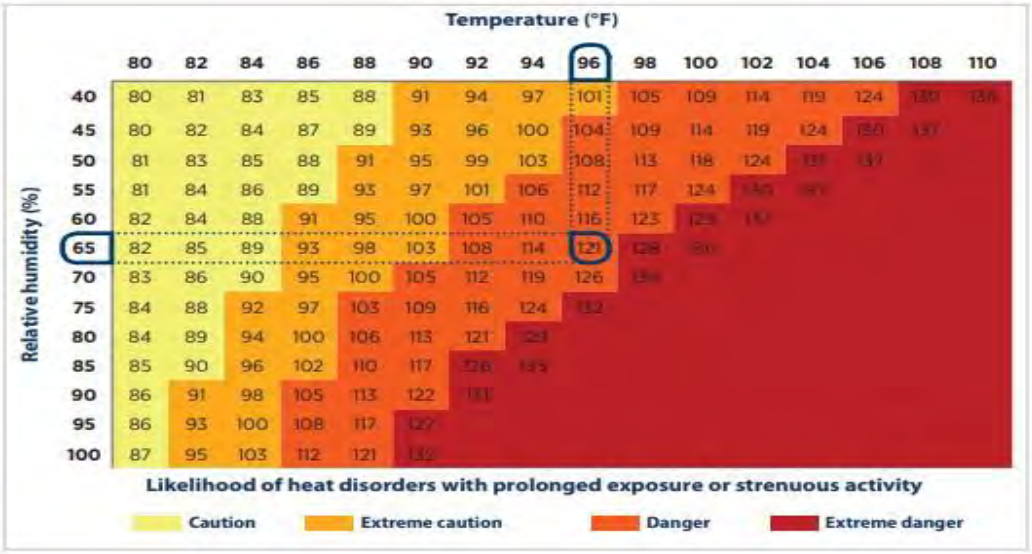
When combined with extreme cold temperatures, winds can compound the events creating a phenomenon known as “wind chill” factor. Wind Chill is the term used to describe the rate of heat loss on the human body resulting from the combined effect of low temperature and wind. As winds increase, heat is carried away from the body at a faster rate, driving down both the skin temperature and eventually the internal body temperature. Animals are also affected by wind chill; however, cars, plants, and other objects are not.

#### 5.4.9.3 Location and Extent

Because of modern weather technologies, Extreme Temperature events usually have advance notice. An Extreme Temperature event can occur throughout the entire County and events can last a few days and, in some instances, they can last for a few weeks. Typically, extreme heat events happen in the summer months while extreme cold events happen in the winter months.

The heat index is a measure of how hot it feels when relative humidity is factored in with the actual air temperature (**Figure 5.10**). Relative humidity is the percentage of moisture in the air compared with the maximum amount of moisture the air can hold. Humidity is an important factor in how hot it feels because when humidity is high, water does not evaporate as easily, so it is harder for your body to cool off by sweating.

*Figure 5-10. NOAA's National Weather Service Heat Index*




As the Heat Index rises, so do health risks. Specifically:

- When the Heat Index is 90°F, heat exhaustion is possible with prolonged exposure and/or physical activity.
- When it is 90° to 105°F, heat exhaustion is probable with the possibility of sunstroke or heat cramps with prolonged exposure and/or physical activity.
- When it is 105° to 129°F, sunstroke, heat cramps or heat exhaustion is likely, and heatstroke is possible with prolonged exposure and/or physical activity.
- When it is 130°F and higher, heatstroke and sunstroke is extremely likely with continued exposure. Physical activity and prolonged exposure to the heat increase the risks.

Heat Syncope refers to sudden loss of consciousness and is typically associated with people exercising who are not acclimated to warm temperatures When conditions exist, the National Weather Services (NWS) issues the following excessive heat products:

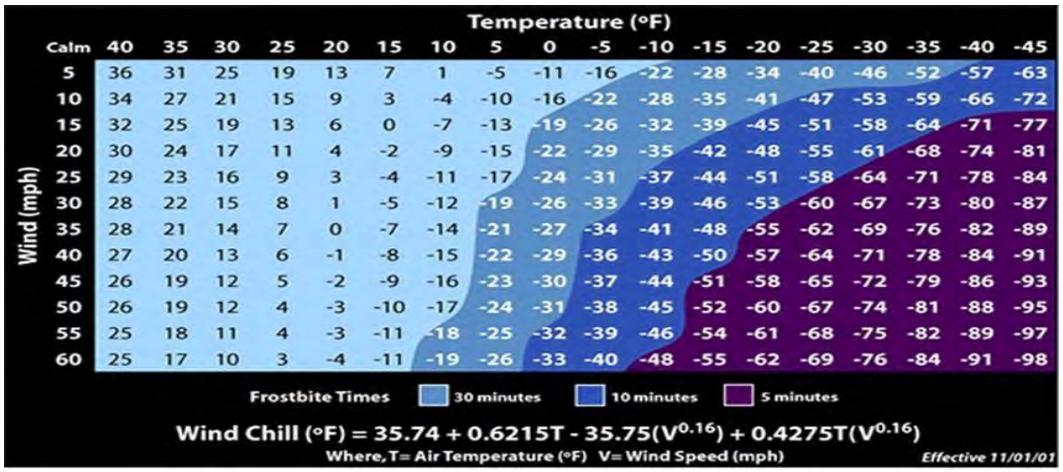
- *Heat Advisory* is a period when excessive heat is expected. The combination of hot temperatures and high humidity will create a situation in which heat related illnesses are possible.
- *Excessive Heat Watch* is a prolonged period of dangerous excessive heat within about 48 hours.
- *Excessive Heat Warning* is a prolonged period of dangerous excessive heat within about 24 hours.

In addition to affecting people, severe heat places significant stress on plants and animals. The effects of severe heat on agricultural products may include reduced yields and even loss of crops. In events with long durations, especially when temperatures do not cool down in the evenings, it will tax and stress equipment both from the utility, as well as, personal equipment (i.e., air conditions). The loss of equipment could create large scale issues and increase the reliance on government support.

Prolonged freezing temperatures can pose a risk to vulnerable populations, particularly if combined with power outages. Exposure to cold can cause significant health problems, such as frostbite or hypothermia and become life threatening. When combined with precipitation, ice can form on roadways, trees, and power lines creating secondary hazard conditions. Extreme cold can also result in significant damage to homes and businesses (e.g., from burst pipes). Agriculture and livestock are subject to damage and life loss and may cause economic impacts as well.

**Figure 5.11** shows the NWS Wind Chill Chart that uses science and other information to provide an accurate, understandable, and useful formula for calculating the dangers from winter winds and freezing temperatures.

*Figure 5-11. Wind Chill Chart*




When conditions exist, NOAA provides three (3) different categories of actions for freeze events: advisory, watch, and warning.

- *Frost Advisory* is issued when the minimum temperature is forecast to be 33 to 36 degrees on clear and calm nights during the growing season.
- *Freeze Watch* is issued when there is a potential for significant, widespread freezing temperatures within the next 24–36 hours.
- *Freeze Warning* is issued when significant, widespread freezing temperatures are expected.

#### *5.4.9.4* History

Lassen County has experienced several extreme heat events in the past; however, they are not well documented. The temperature baseline varies throughout Lassen County with it ranging from 84 degrees, in the higher elevation area of western Lassen County near Juniper Lake, to 96 degrees in the Honey Lake area. In the Susanville, Janesville, Standish, and Leavitt Lake area where the majority of the County's population lives the extreme heat threshold is 94-95 degrees. The County, City, and the Rancheria have, in the baseline period, reached the extreme heat threshold an average of 4 days a year and have historically averaged a heat wave once every 6 years for the 1961 to 1990 time period. However, there have generally been no adverse or limited human impact from these routine heat waves. There have been no activations of cooling centers in response to heat waves experienced in the Lassen County, the City of Susanville, or the Susanville Indian Rancheria.

Temperatures below freezing have been recorded in Lassen County every month of the year. The lowest recorded temperature on record is -23F, which occurred on February 1, 1956. Temperatures falling below 0F generally occur no more than a few days a year on average, though most of the County experiences single digit low temperatures each year. To date Lassen County has been declared under a state or federal freeze declaration only once.

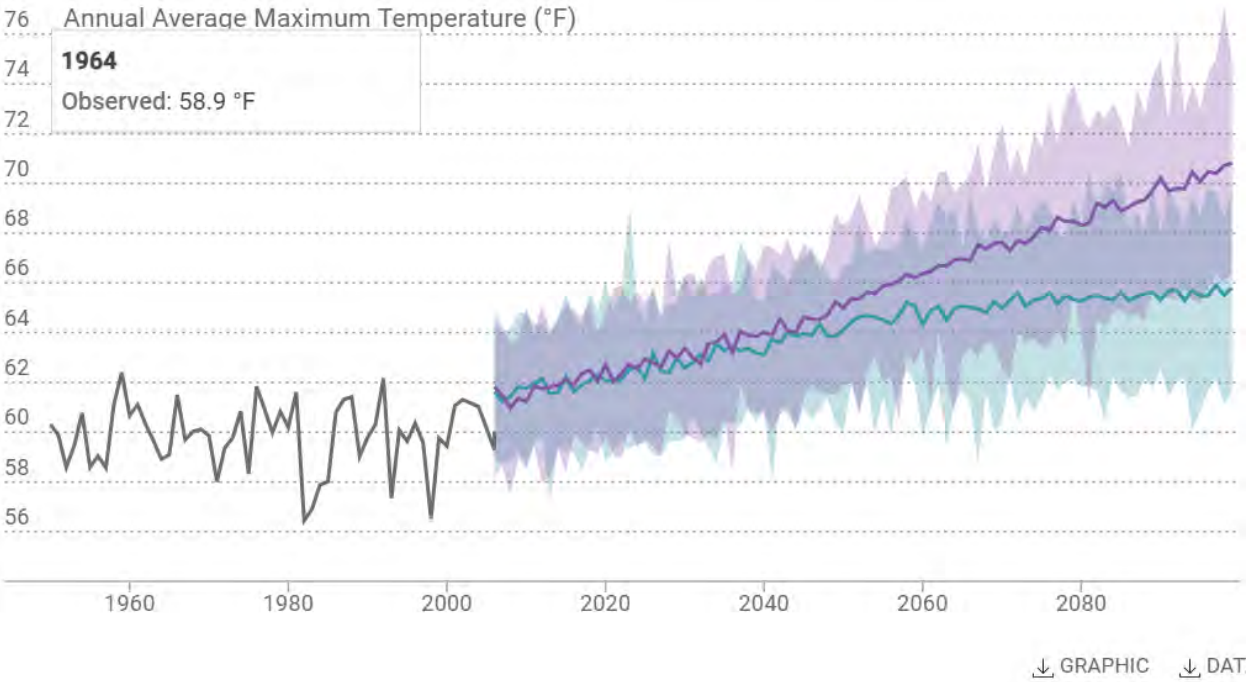
To date, there have been no known state or federal declarations for this type of event in the County.

#### *5.4.9.5* Probability of Occurrence

While the County is not subjected to high humidity, other conditions of extreme heat (series of days and no cooling off during the evenings) can occur. Because of this, the entire county could be subject to extreme heat conditions, particularly in the lower elevation valley areas. Additionally, the entire County is subject to freeze conditions. The variations in elevation within the county, ranging from around 3,300 feet in the valleys to over 8,000 at some mountain peaks, give an indication of the general areas subjected to extended freezing conditions. The higher elevations will experience greater levels of freezing for longer periods of time. For example, the frost-free growing season in Lassen County ranges from 142 days at Susanville to only 65 days in the Madeline Plains.

The State of California has also developed tools under the Cal-Adapt project which provide the public, researchers, government agencies and industry stakeholders with essential data & tools for climate adaptation planning, building resiliency, and fostering community engagement. Some areas that Cal-Adapt looked at which are useful for Extreme Temperature events include Annual Average Maximum Temperature, Annual Average Minimum Temperature, and Extreme Heat Days. The following figures (**Figure 5-12**, **Figure 5-13**, and **Figure 5-14**) were generated by Cal-Adapt work for Lassen County.

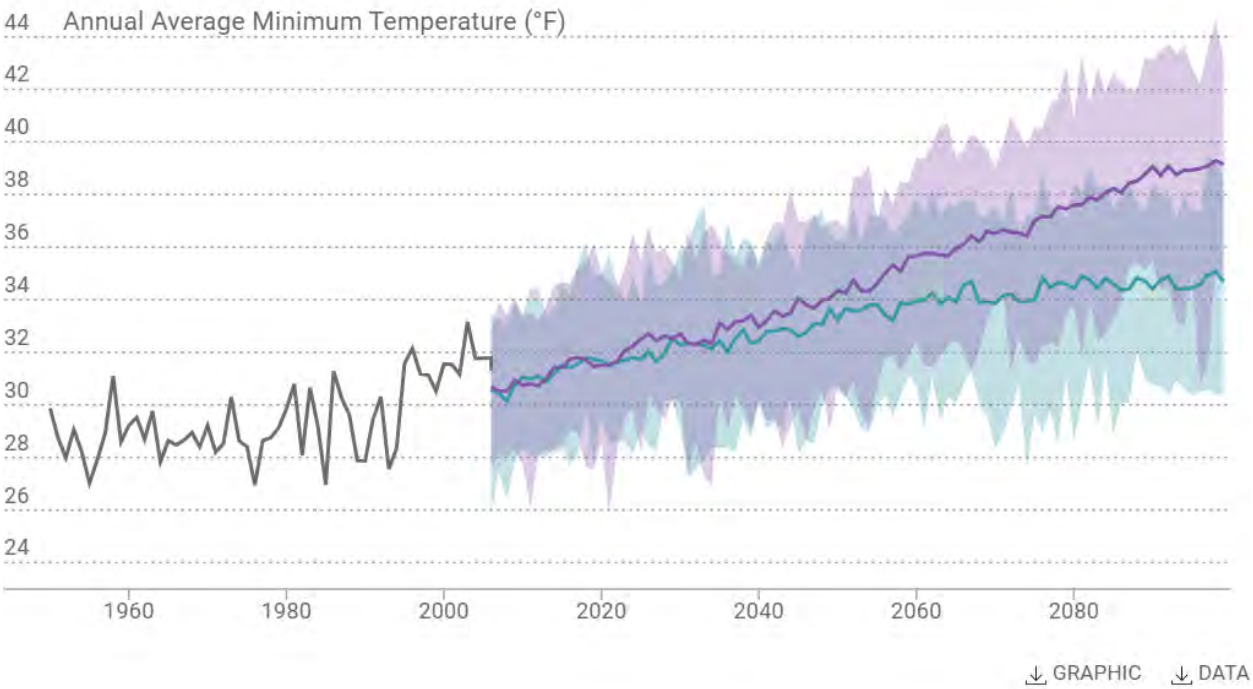
*Figure 5-12. Annual Average Maximum Temperature*




**Observed (1961-1990)** 30yr Average: 59.8 °F

| | Change from baseline ⓘ | 30yr Average | 30yr Range |
|---|---|---|---|
| **Baseline (1961-1990)** | | | |
| MODELED HISTORICAL | - | 59.6 °F | 59.3 - 59.9 °F |
| **Mid-Century (2035-2064)** | | | |
| MEDIUM EMISSIONS (RCP 4.5) | +4.6 °F | 64.2 °F | 62.0 - 66.0 °F |
| HIGH EMISSIONS (RCP 8.5) | +5.5 °F | 65.1 °F | 62.5 - 66.8 °F |
| **End-Century (2070-2099)** | | | |
| MEDIUM EMISSIONS (RCP 4.5) | +5.9 °F | 65.5 °F | 62.7 - 67.6 °F |
| HIGH EMISSIONS (RCP 8.5) | +9.5 °F | 69.1 °F | 65.6 - 71.6 °F |

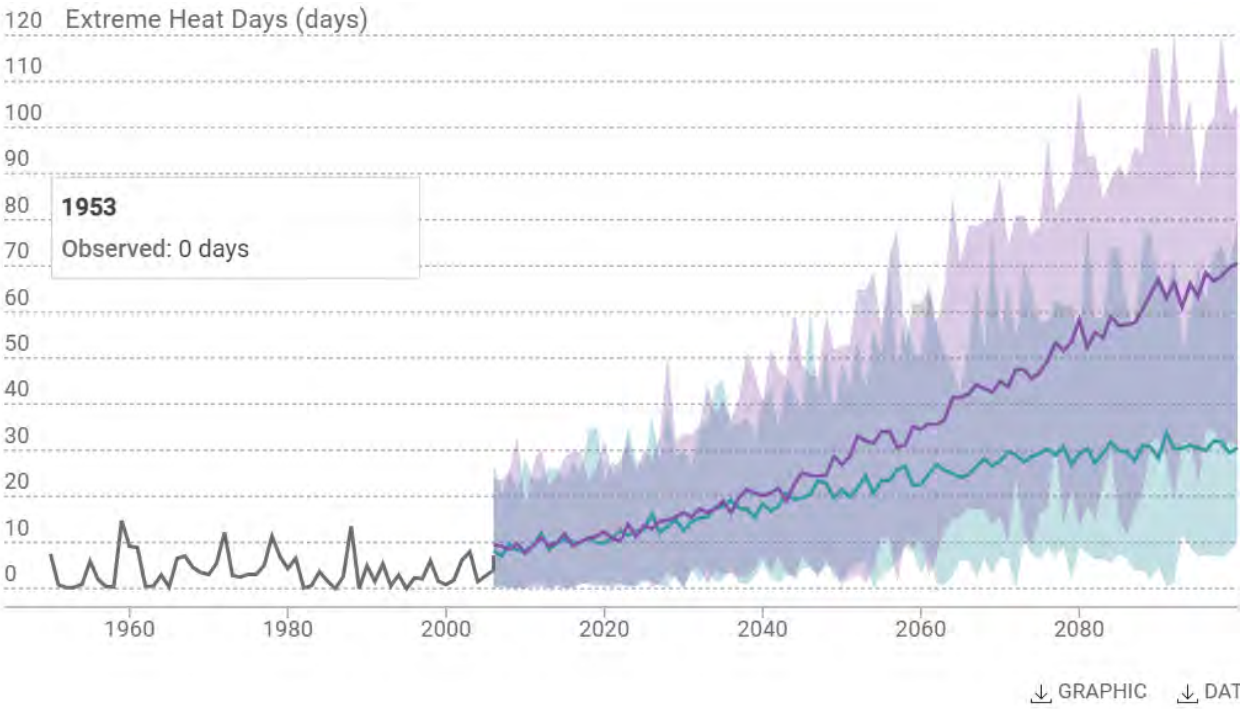
*Figure 5-13. Annual Average Minimum Temperature*




**Observed (1961-1990)** 30yr Average: 28.9 °F

| | Change from baseline ⓘ | 30yr Average | 30yr Range |
|---|---|---|---|
| **Baseline (1961-1990)** | | | |
| MODELED HISTORICAL | - | 29.3 °F | 28.8 - 29.7 °F |
| **Mid-Century (2035-2064)** | | | |
| MEDIUM EMISSIONS (RCP 4.5) | +3.9 °F | 33.2 °F | 31.0 - 34.5 °F |
| HIGH EMISSIONS (RCP 8.5) | +5.0 °F | 34.3 °F | 31.3 - 35.8 °F |
| **End-Century (2070-2099)** | | | |
| MEDIUM EMISSIONS (RCP 4.5) | +5.2 °F | 34.5 °F | 32.0 - 36.6 °F |
| HIGH EMISSIONS (RCP 8.5) | +8.7 °F | 38.0 °F | 34.5 - 40.4 °F |

*Figure 5-14. Extreme Heat Days*




**Observed (1961-1990)** 30yr Average: 4 days

| | Change from baseline ⓘ | 30yr Average | 30yr Range |
|---|---|---|---|
| **Baseline (1961-1990)** | | | |
| MODELED HISTORICAL | - | 3 days | 2 - 4 days |
| **Mid-Century (2035-2064)** | | | |
| MEDIUM EMISSIONS (RCP 4.5) | +18 days | 21 days | 11 - 41 days |
| HIGH EMISSIONS (RCP 8.5) | +25 days | 28 days | 12 - 50 days |
| **End-Century (2070-2099)** | | | |
| MEDIUM EMISSIONS (RCP 4.5) | +27 days | 30 days | 15 - 62 days |
| HIGH EMISSIONS (RCP 8.5) | +54 days | 57 days | 34 - 87 days |

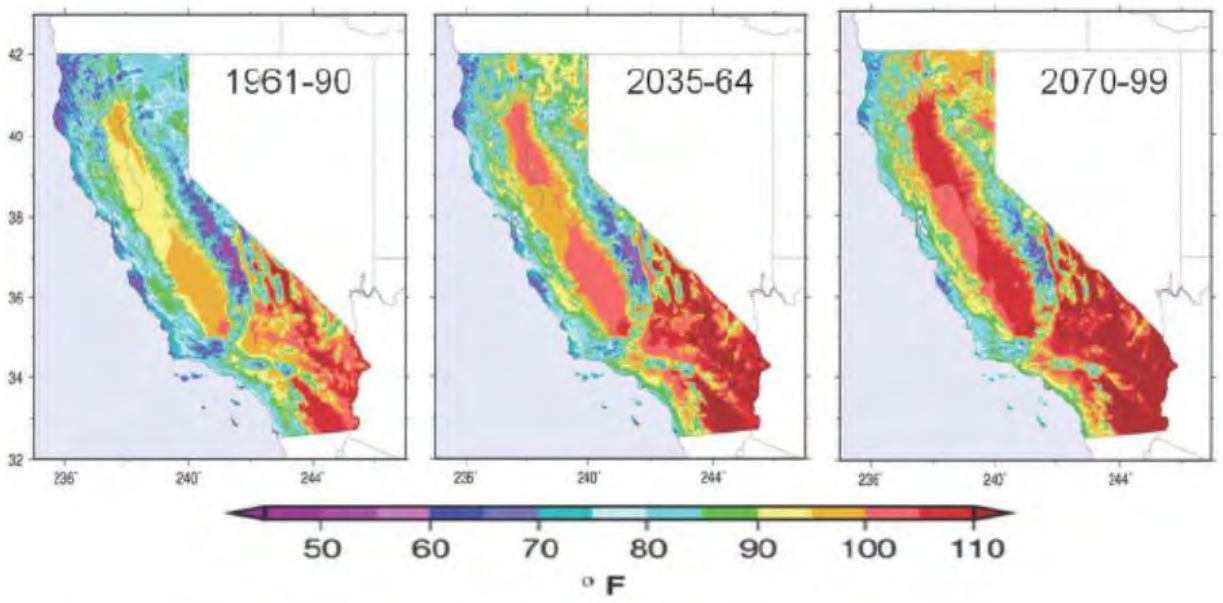
According to the Planning Team's assessment of this hazard/event, there is a High probability of occurrence; see subsection 1 under this hazard/threat (Prioritization). A High hazard/threat event was determined to equate to greater than 75% chance of occurring within five (5) years.

#### *5.4.9.6* Climate Consideration

As temperatures rise due to climate change, Californians will face greater risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat. By mid-century, extreme heat events in urban centers could cause two to three

times more heat-related deaths than occur today. By 2100, hotter temperatures are expected throughout the state, with an increase of 3 to 5.5°F under the lower emissions scenario and 8 to 10.5°F under the higher emissions scenario (**Figure 5-15**).

*Figure 5-15. Comparison between Historic and Projected Temperature*




*Source: California Energy Commission*

Depending on the model and the study referenced, freezing spells are likely to increase and/or decrease in frequency as climate conditions change. However, if emissions follow higher projections, freezing events could occur only once per decade in a sizable portion of the state by the second half of the 21st century.

### *5.4.10.* Flood and Levee Failure

#### 5.4.10.1 Prioritization

- *Probability*- HIGH
- *Impact*- MEDIUM

#### *5.4.10.2* Description

A flood is a temporary condition (short-duration or long-duration) of partial or complete inundation on land that is normally dry. Although temporary, floods can take several hours to days to develop. This condition is generally caused by precipitation (i.e., rainfall). Several factors determine the severity of floods, including rainfall intensity and duration, antecedent moisture conditions, surface permeability, and geographic characteristics of the watershed such as shape and slope. Other causes of flooding can include a ruptured dam or levee, rapid ice or snow melting in the mountains, under-engineered infrastructure, or even a poorly placed beaver dam can overwhelm a river or channel and send water spreading over adjacent land or floodplains. According to FEMA, there are several different types of floods and under some there are subtypes. The flooding types and subtypes include:

- *Riverine Flooding*- river/stream overbank flooding, flash floods, dam and levee failure, alluvia fans, ice jam flooding, moveable bed streams)
- *Urban Drainage*- flooding caused by older, undersized, or ill placed infrastructure.
- *Ground Failures*- mud flood and mud flows, subsidence, liquefaction *(NOTE: while mentioned here, mud flows are discussed under landslide hazards and Subsidence and Liquefaction hazards are discussed under earthquake hazards).*
- *Fluctuating Lake Levels*- water level in lakes fluctuates with changes in moisture balance (precipitation minus evaporation) within the lake basin.
- Coastal Flooding and Erosion- flooding that occurs when storms produce large ocean waves that sweep across coastlines making landfall (storm surge).

In California, the more common types of flooding are Riverine Flooding (including flash flooding), Urban Flooding, and Coastal Flooding (i.e., storm surge).

A flash flood is a flood occurring in a watershed where the time of travel of the peak of flow from one end of the watershed to the other is less than six hours. A flash flood is a rapid flooding of low-lying areas, rivers and streams that is caused by the intense rainfall associated with a thunderstorm, or multiple thunderstorms. Flash floods also occur when a man-made structure, such as a dam, collapses. Flash flooding occurs when the ground under a storm becomes saturated with water so quickly that it cannot be absorbed. The runoff collects in low-lying areas and flows rapidly downhill. As a result, anything in its path is suddenly in rising water. A typical flash flood begins with a slow-moving thunderstorm. This usually takes longer to move out of the affected areas and causes the area to endure a greater amount of rainfall for a longer period of time. In addition, a thunderstorm may pass over an affected area repeatedly, dumping even more rainfall. A large amount of rainfall in a short time can result in flash flood conditions, as can a dam failure or other sudden spill. The National Weather Service's definition of a flash flood is a flood occurring in a watershed where the time of travel of the peak of flow from one end of the watershed to the other is less than six hours.

The heavy rainfall associated with these storm systems contributes to urban flooding in a number of ways. Primarily, heavy rainfall will often overwhelm the capacity of the conventional drainage system made up of storm drains, catch basins, sewers, and additional natural mechanisms for storm-water management. These systems typically cannot handle more than one or two inches of rainfall per hour before they begin to back up and overflow. This amount is further diminished if the storm drains, and other components of the storm-water management system, have not been adequately maintained, are clogged with debris such as trash or natural waste, or are old and in a state of disrepair. Heavy rainfall, combined with storm-water runoff, can cause local waterways to rise and overflow their banks.

Another flood condition is alluvial fan flooding which occurs in the steep arid or semiarid mountains found throughout California. Alluvial fans are fan-shaped deposits of eroded rock and soil carried out of mountains and into valley floors by landslides, mudslides, mudflows, and surface runoff. At the beginning of the valley, alluvial fans are steep and narrow with boulders and other coarse material. The deposited material becomes increasingly fine as the gradient decreases and the material, mainly gravels, sand and mud, spreads. When rain falls, runoff from the canyon walls flows as a high-velocity sheet that channels into rivulets, and then to natural drainage courses. The rapidly moving water often carries large boulders and other material from the watershed

depositing them into runoff channels, blocking the flow of water. Floodwater then spills out onto the fan, with each event finding a new channel that soon fills up with deposits and overflows. Flooding in alluvial fans often can cause greater damage than clear-water flooding.

The following flood characterization designates the amount of time for response:

- *Flood Watch*—a flood is possible in the area. Advanced warning.
- *Flood Warning*—flooding is already occurring or will occur soon in the area. Advanced warning.
- *Flash Flood Watch*—a flash flood is possible in the area. Little-to-no advanced warning.
- *Flash Flood Warning*—flooding is already occurring or will occur soon in the area. Little-to-no advanced warning.

#### *5.4.10.3* Location and Extent

The geographical location, climate, and topography of Lassen County makes some portions of the county more prone to flooding. Floods in Lassen County are classified into three (3) types. The first consists of those that occur during late fall and winter, primarily as a result of prolonged rainstorms. The second type occurs during spring and early summer, mainly as a result of snowmelt from the Sierra Nevada Mountains. The third type occurs during summer as a result of intense convective rainstorms. The most significant flood-producing rainstorms are those that occur during fall and winter.

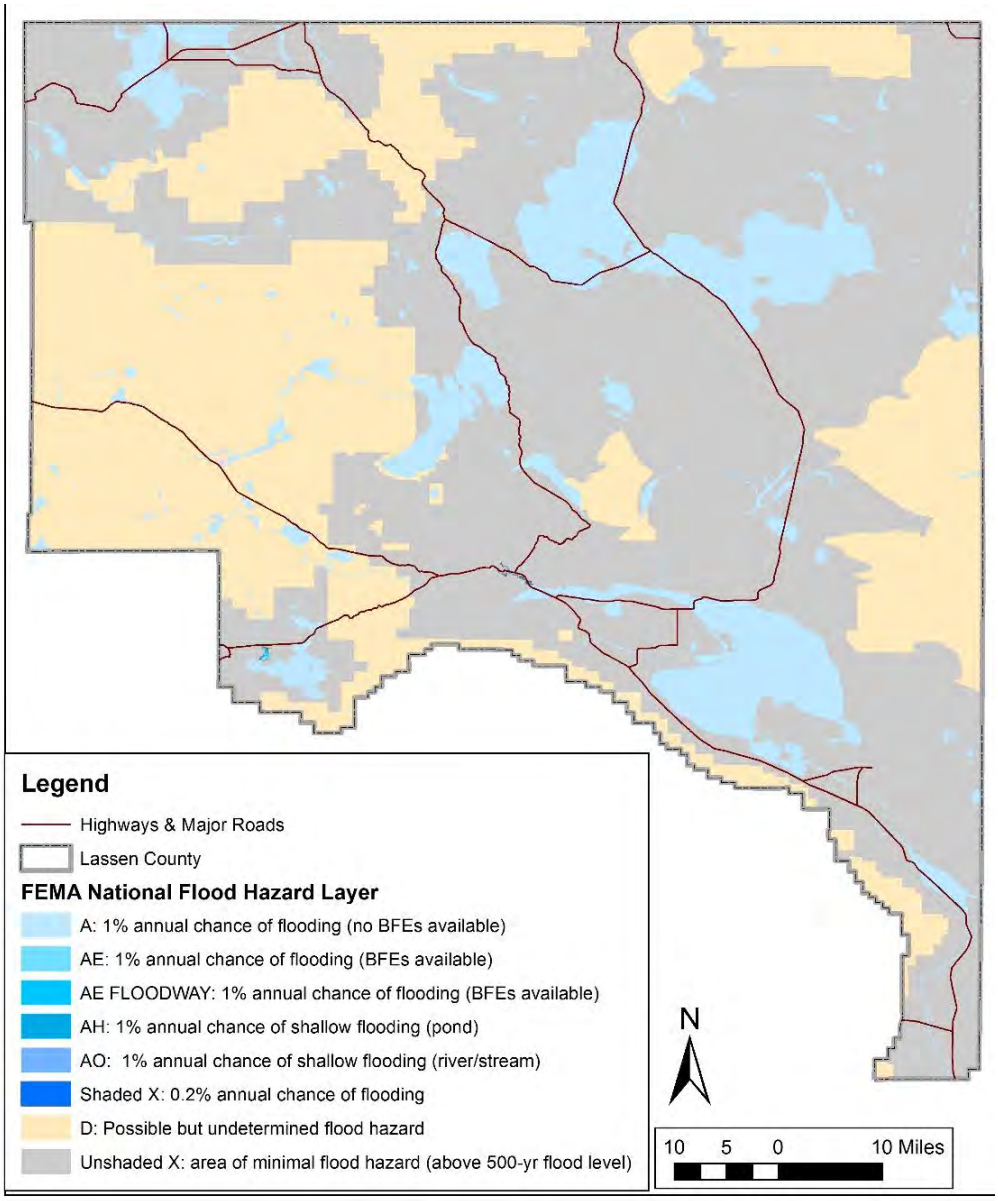
The standard measure for flooding is the "*100-year flood*", a benchmark used by the Federal Emergency Management Agency (FEMA) to establish a standard of flood control in communities throughout the country. The 100-year flood is also referred to as the "regulatory" or "base" flood. The term 100-year flood is often incorrectly used and can be misleading. The correct designation is "*the 1% annual chance flood*", meaning that the 100-year flood has a one percent chance of being equaled or exceeded during any given year, not that the flood will occur once every hundred years.

The County and City are participating members of the NIFP and they utilize FEMA National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM). The FIRM maps identify potential flood risk in geographic areas. The FIRMs are the official map of a community on which FEMA has delineated both the special flood hazard areas and the risk premium zones applicable to the community. Historically, FIRMs were produced on paper; however, over recent years FEMA has begun the process of creating digital versions - *DFIRM*. Because of the volume of area, not all FIRMs have been digitized. Due to the limited detail and large scale of the base maps used for most FIRMs, much interpolation between contour lines is done in mapping the floodplain boundaries. This is why you may find discrepancies when actual ground elevations are surveyed: the maps are just the best available graphic representations of the Base Flood Elevations (BFEs).

The flood hazard areas identified on the FIRMs (i.e., the Special Flood Hazard Areas or SFHAs) for the County are depicted in **Figure 5.16**. The flood hazard zones depicted on the map are derived from FEMA's DFIRM and indicate the probability of flooding happening over a given period of time. As defined by FEMA, Zone A, AE, AE Floodway, AH, and AO (lighter shades of blue) indicate a 1% annual chance of flooding; while Zone Shaded X (dark blue) indicates a 0.2%

annual chance of flooding (500-year flooding). Complete definitions of flood zone designations are provided in **Table 5.12**.

*Figure 5-16. Special Flood Hazard Areas*




*Source: FEMA*

*Table 5-12. FEMA Flood Zone Designations*

| Risk Level | Flood Zone | Description |
|---|---|---|
| **High** | A | Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones. |
| | AE | The floodplain where base flood elevations are provided. |
| | AH | Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones. |
| | AO | River or stream flood hazard areas, and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones. |
| **Moderate to Low** | X (Shaded) | Area of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods. |
| | X (Unshaded) | Area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood. |
| **Undetermined** | D | Areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of the flood risk. |

The County does not have a well-developed flood protection system. As a result, flooding often occurs along many streams, damaging agricultural and urban properties and causing channel and bank erosion. Although many valleys and rivers in the County could be subject to flooding, flooding and erosion are particularly serious along the Susan River. This is supported by the fact that historical records indicate that the Susan River is the primary source of flooding within the County. The Susan River (approximately 40 miles long) crosses the southern portion of the County and drains into Honey Lake. Because of the Susanville River flood risk, steps have been taken to develop categories of flooding (Error! Reference source not found.**13**) and estimate expected damage for selected flood levels on the Susan River (Error! Reference source not found.**14**).

*Table 5-13. Susan River Flood Categories*

| Stage | Flood Level (feet) |
|---|---|
| Major Flood | 14 |
| Moderate Flood | 13 |
| Flood | 12 |
| Action | 10.5 |

*Source: Lassen County*

*Table 5-14. Susan River Flood Levels*

| River Level (feet) | Description |
|---|---|
| 10.5 | Those along rivers should begin careful monitoring of river and keep informed of forecast updates. Localized minor lowland flooding below Susanville in Johnstonville, Leavitt Lake, Standish, and Litchfield rural areas. |
| 11.0 | Local minor lowland flooding below Susanville in Johnstonville, Leavitt Lake, Standish, and Litchfield rural areas. |
| 11.5 | Localized minor to moderate lowland flooding below Susanville in the Johnstonville, Leavitt Lake, Standish, and Litchfield rural areas. |
| 12.0 | Flood Stage. Several homes on Carroll Street in Susanville begin to flood. Local flooding in Susanville from Lassen Street downstream along Riverside Drive, especially below Piute Creek which enters river near Alexander Drive. Moderate lowland flooding below Susanville in Johnstonville, Leavitt Lake, Standish, and Litchfield areas. Some rural roads affected by flooding. |
| 12.5 | Minor to moderate flooding in Susanville from Lassen Street downstream along Riverside Drive. Several homes along the river were affected, especially on Carroll Street. Moderate lowland flooding below Susanville in Johnstonville, Leavitt Lake, Standish, and Litchfield areas. Rural roads and bridges begin to flood in these areas. |
| 13.0 | Moderate flooding in Susanville from Lassen Street downstream along Riverside Drive. Some homes along the river have moderate flood effects, especially on Carroll Street. Significant lowland flooding below Susanville in Johnstonville, Leavitt Lake, Standish, and Litchfield areas. Rural roads and bridges in these areas flood. Similar to flood of 3/13/1983. |
| 13.5 | Moderate to major flooding in Susanville, Johnstonville, Leavitt Lake, Standish, and Litchfield. Susanville flooded from Lassen Street downstream along Riverside Drive and from Cornell/River Street on north to Hood Street/Sunkist Drive on south. River up to bottom of Lassen Street bridge. Many homes along river have minor to moderate flooding. Many roads and bridges in the Honey Lake Valley area flood, with moderate transportation impacts. Similar to 3/30/1974 and 1/21/1969 floods. |
| 14.0 | Major flooding in Susanville, Johnstonville, Leavitt Lake, Standish, and Litchfield. Susanville flooded from Lassen Street downstream along Riverside Drive and from Main St (Highway 36) on north to railroad tracks on south. Many homes, businesses, schools, roads, and bridges in the Honey Lake Valley area flooded. Serious transportation impacts. Impacts to power, phone, and rural water systems begin. Similar to 2/24/1958 flood. |
| 14.5 | Major flooding in Susanville, Johnstonville, Leavitt Lake, Standish, and Litchfield areas in Honey Lake Valley. Susanville flooded from Lassen Street downstream along Riverside Drive and from Main Street (Highway 36) north to railroad tracks on south. Serious flood impacts homes, businesses, schools, roads, and bridges throughout Honey Lake Valley. US Highway 395 flooded. Serious transportation impacts, moderate impacts to power, phone, and rural water systems. Similar to 12/23/1955 flood. |
| 15.0 | Major flooding in Susanville, Johnstonville, Leavitt Lake, Standish, and Litchfield areas. Major flooding in Susanville from Lassen Street downstream along Riverside Drive, and from Main Street (Highway 36) on north to railroad tracks on south. Serious flood impacts homes, businesses, schools, roads, and bridges throughout Honey Lake Valley. US Highway 395 flooded. Serious transportation, power, phone, and rural water system impacts. Similar to 1/31/1963 and 1/13/1980 floods. |

| River Level (feet) | Description |
|---|---|
| 16.0 | Extensive flood damage from Susanville to Honey Lake. Serious flood impacts homes, businesses, schools, roadways, and bridges in flood plain throughout Honey Lake Valley. Transportation impacts may be serious as US Highway 395 and Highway 36 are flooded. Extensive power, phone, and rural water system impacts. Similar to 11/23/1981 flood. |
| 16.5 | Extensive flood damage from Susanville to Honey Lake with flooding of homes, businesses, schools, roadways, bridges, and water systems in flood plain throughout Honey Lake Valley. Extensive transportation, power, phone, and rural water system impacts. US Highway 395 and Highway 36 flooded. Similar to 11/23/1981 flood. |
| 17.0 | Flood disaster from Susanville to Honey Lake. Extensive flooding of homes, businesses, schools, roadways, bridges, and water systems in flood plain throughout Honey Lake Valley. Transportation very difficult as US Highway 395 and Highway 36 flooded or washed out. Extensive power, phone, and rural water system impacts. Slightly less severe than floods of 12/22/1964, 2/17/1986, and 1/02/1997. |
| 17.5 | Near record flooding from Susanville to Honey Lake. Extensive damage to homes, businesses, schools, roadways, bridges, and water systems in flood plain throughout Honey Lake Valley. Transportation in the valley is very difficult as US Highway 395 and Highway 36 flooded or washed out. Extensive power, phone, and rural water system impacts. Similar to floods of 12/22/1964, 2/17/1986, and 1/02/1997. |
| 18.0 | Near record flooding from Susanville to Honey Lake. Extensive damage to homes, businesses, schools, roads, bridges, and water systems in flood plain throughout Honey Lake Valley, including Susanville area. Transportation in and out of Honey Lake Valley was cut off as US Highway 395 and Highway 36 flooded or washed out. Extensive power, phone, and rural water system impacts. Only exceeded by flood of 1/24/1970. |
| 18.5 | Record flooding from Susanville to Honey Lake. Extensive damage to homes, businesses, schools, roads, bridges, and water systems in flood plain throughout Honey Lake Valley, including Susanville area. Transportation in and out of Honey Lake Valley was cut off as US Highway 395 and Highway 36 flooded or washed out. Extensive power, phone, and rural water system impacts. Only exceeded by flood of 1/24/1970. |

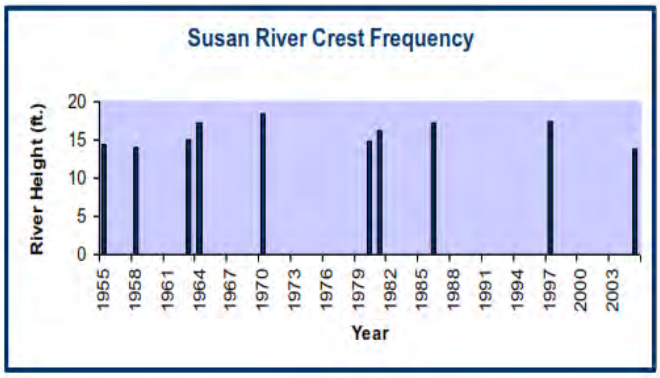
*Source: Lassen County*

#### *5.4.10.4* History

The City of Susanville's location on a bench above the Susan River and Piute Creek generally protected it from flooding during the early years of its development. However, there were recorded floods during years of heavy rain, including the winters of 1907, 1938, and 1955. According to the National Oceanic and Atmospheric Administration (NOAA) National Weather Service Advanced Hydrologic Prediction Service for the Susan River, the following are the most significant flooding events and the associated flood levels (Error! Reference source not found.**15**).

*Table 5-15. Significant Flooding Events and Associated Flood Levels- Susan River*

| Date | Feet |
|---|---|
| 12/23/1955 | 14.40 |
| 02/24/1958 | 13.93 |
| 01/31/1963 | 15.10 |
| 12/22/1964 | 17.23 |
| 01/24/1970 | 18.47 |
| 01/13/1980 | 14.85 |
| 11/23/1981 | 16.30 |
| 02/17/1986 | 17.26 |
| 01/02/1997 | 17.31 |
| 12/31/2005 | 13.89 |
| 02/09/2017 | 15.19 |




*Source: NOAA*

Additionally, to indicate the potential for a flooding event, the table below (Error! Reference source not found.**16**) lists an excerpt of large-scale flooding events and associated damage in Lassen County that have resulted in a presidential emergency declaration.

*Table 5-16. Historical Records of Large Floods in Lassen County*

| Date | Injuries | Fatalities | Property Damage | Crop Damage |
|---|---|---|---|---|
| 12/18/1964 | 1.96 | 0.64 | $1,785,714 | $178.57 |
| 01/08/1973 | 0 | 0 | 0 | $35,714 |
| 01/16/1973 | 0 | 0 | $86,206 | 0 |
| 02/18/1986 | 0 | 0 | $500,000 | 0 |
| 02/14/1992 | 0 | 0 | $9,090 | 0 |
| 12/10/1992 | 0 | 0 | $1,315.79 | 0 |
| 03/01/1995 | 0 | 0 | 0 | $11,241,379 |
| 01/01/1997 | 0.22 | 0 | $36,670,000 | 0 |
| 12/31/2005 | 0 | 0 | $500,000 | 0 |
| 02/09/2017 | 0 | 0 | $800,000* | 0 |

**Estimated damage for City of Susanville as of 5/1/17*

Although there has been localized flooding, there have been no state proclamations for flooding within the last planning cycle for Lassen County.

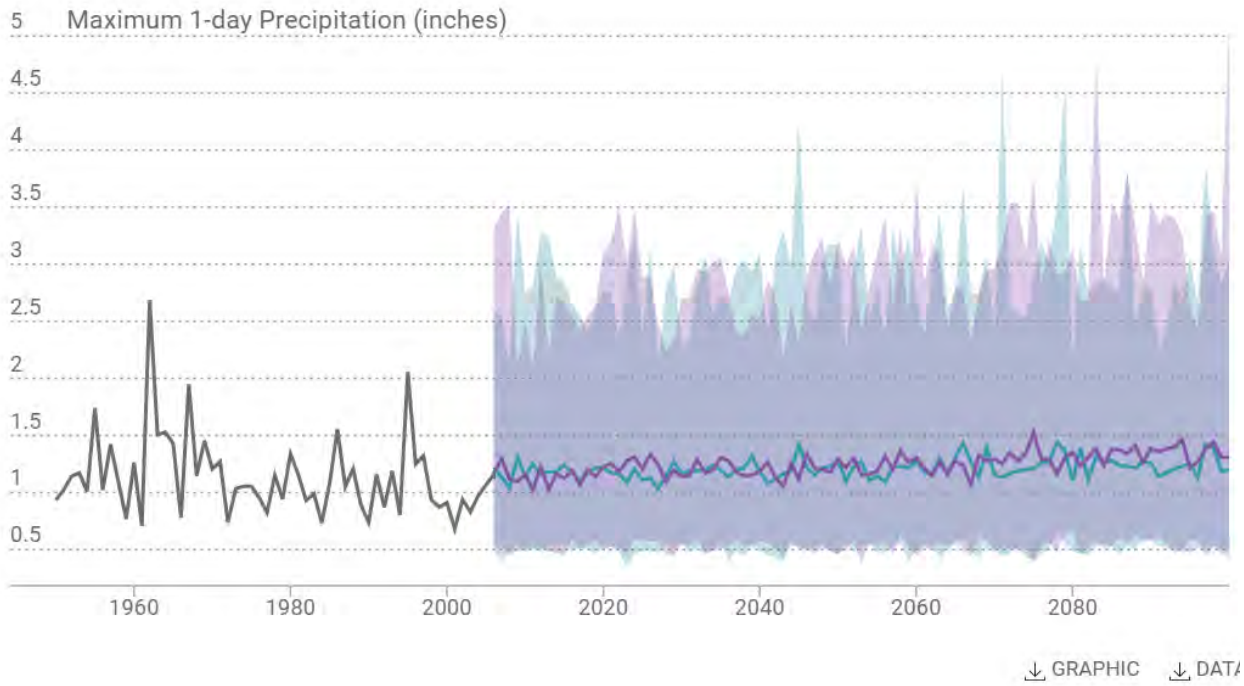
### *5.4.10.5* Probability of Occurrence

While the methodology to estimate riverine flood frequency and probability is firmly established by FEMA, these methods do not apply to non-riverine (local) flooding related to poor site drainage. As defined by FEMA, Zone A, AE, AE Floodway, AH, and AO (lighter shades of blue) indicate a 1% annual chance of flooding; while Zone Shaded X (dark blue) indicates a 0.2% annual chance of flooding (500-year flooding).

The State of California has also developed tools under the Cal-Adapt project. The Cal-Adapt project provides the public, researchers, government agencies and industry stakeholders with essential data & tools for climate adaptation planning, building resiliency, and fostering community

engagement. The following figures (**Figure 5-17** and **Figure 5-18**) were generated by Cal-Adapt work for the County.

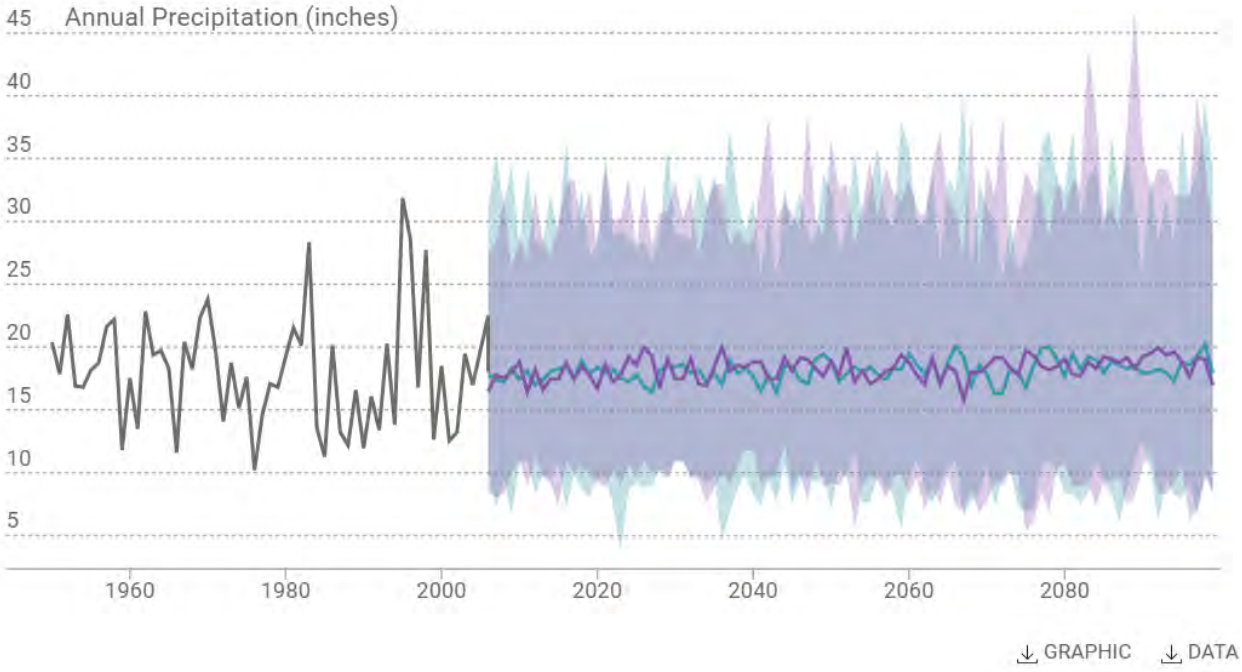
*Table 5-17. Maximum 1-day Precipitation*




**Observed (1961-1990)** 30yr Average: 1.170 inches

| | Change from baseline ⓘ | 30yr Average | 30yr Range |
|---|---|---|---|
| **Baseline (1961-1990)** | | | |
| MODELED HISTORICAL | - | 1.123 inches | 0.980 - 1.321 inches |
| **Mid-Century (2035-2064)** | | | |
| MEDIUM EMISSIONS (RCP 4.5) | +0.078 inches | 1.201 inches | 0.929 - 1.484 inches |
| HIGH EMISSIONS (RCP 8.5) | +0.096 inches | 1.219 inches | 0.980 - 1.523 inches |
| **End-Century (2070-2099)** | | | |
| MEDIUM EMISSIONS (RCP 4.5) | +0.117 inches | 1.240 inches | 0.978 - 1.536 inches |
| HIGH EMISSIONS (RCP 8.5) | +0.210 inches | 1.333 inches | 1.007 - 1.741 inches |

*Table 5-18. Annual Precipitation*




Observed (1961-1990) 30yr Average: 17.4 inches

| | Change from baseline ⓘ | 30yr Average | 30yr Range |
|---|---|---|---|
| **Baseline (1961-1990)** | | | |
| MODELED HISTORICAL | - | 18.0 inches | 16.6 - 19.5 inches |
| **Mid-Century (2035-2064)** | | | |
| MEDIUM EMISSIONS (RCP 4.5) | +0.0 inches | 18.0 inches | 15.2 - 22.2 inches |
| HIGH EMISSIONS (RCP 8.5) | +0.3 inches | 18.3 inches | 15.3 - 22.8 inches |
| **End-Century (2070-2099)** | | | |
| MEDIUM EMISSIONS (RCP 4.5) | +0.4 inches | 18.4 inches | 15.0 - 22.7 inches |
| HIGH EMISSIONS (RCP 8.5) | +0.7 inches | 18.7 inches | 14.5 - 26.2 inches |

According to the Planning Team's assessment of this hazard/event, there is a High probability of occurrence; see subsection 1 under this hazard/threat (Prioritization). A High hazard/threat event was determined to equate to greater than 75% chance of occurring within five (5) years.

### *5.4.10.6* Climate Consideration

Climate change is both a present and future threat. Extreme weather events have become more frequent over the past 40 to 50 years and this trend is projected to continue. Rising temperatures and changing rainfall (distribution and intensity) are expected to cause a significant amplification

to many existing hazards and conditions. Because of this, climate change might impact the frequency, intensity and distribution of flood hazards.

### *5.4.11.* Hazardous Materials Release

#### 5.4.11.1 Prioritization

- *Probability*- HIGH
- *Impact*- MEDIUM

#### *5.4.11.2* Description

For the purposes of the LHMP, Hazardous Material Release only includes accidental release of materials, not release caused by criminal acts. Hazardous Material Release caused by criminal acts are covered under the Terrorism Hazard/Threat. Hazardous Waste/Materials are widely used or created at facilities such as hospitals, wastewater treatments plants, universities and industrial/manufacturing warehouses. Several household products such as cleaning supplies and paint are also considered hazardous materials. Hazardous materials include:

- Explosives
- Flammable, non-flammable, and poisonous gases
- Flammable liquids
- Flammable, spontaneously combustible, and dangerous when wet solids
- Oxidizers and organic peroxides
- Poisons and infectious substances
- Radioactive materials
- Oil
- Corrosive materials.

Both mobile (i.e., trucks, rail) and external hazardous materials releases can spread and affect a wide area, through the release of plumes of chemical, biological, or radiological elements or leaks or spills. Conversely, internal releases are more likely to be confined to the structure the material is stored in.

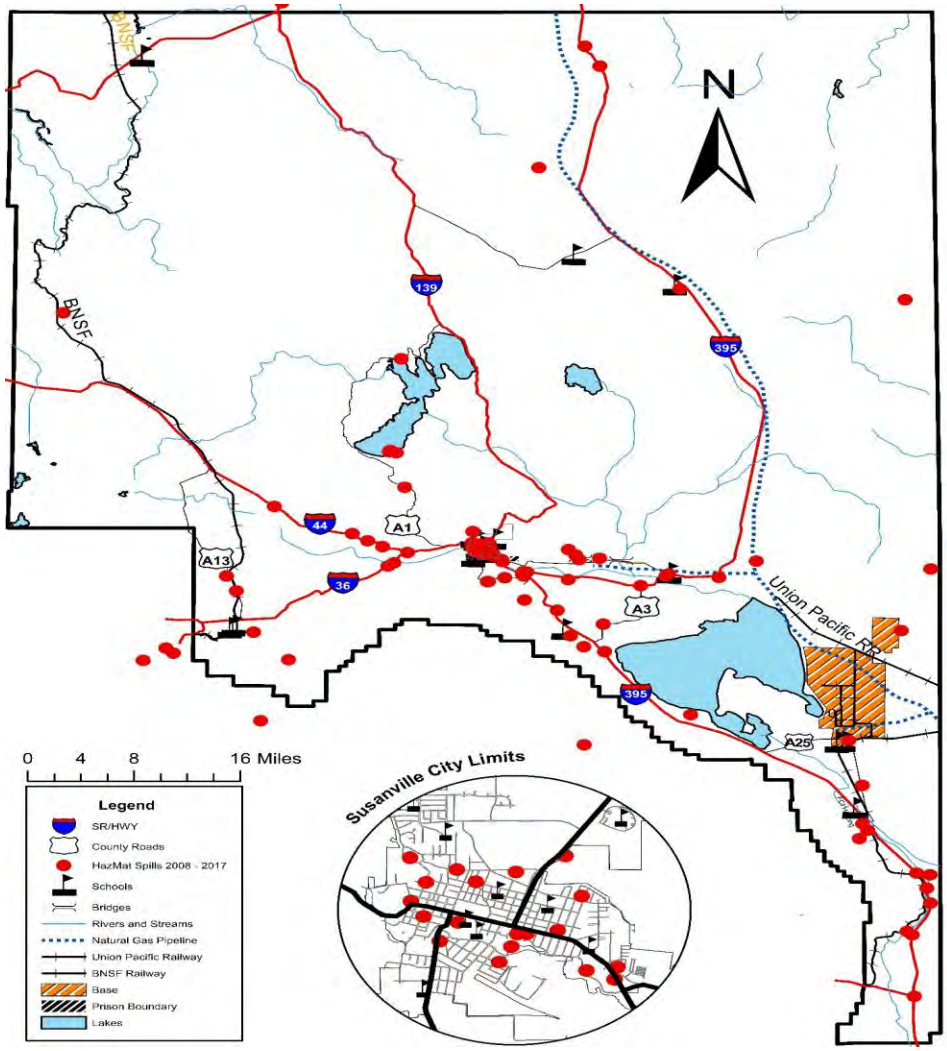
Chemicals may be corrosive or otherwise damaging over time. A hazardous materials release could also result in fire or explosion. Contamination may be carried out of the immediate area of the incident by people, vehicles, wind, and water. Weather conditions can increase the size and intensity of the Hazardous Materials Release. Topography, such as hills and canyons, can increase the size of the release or make it more difficult to contain.

#### *5.4.11.3* Location and Extent

According to the 2024 Hazardous Materials Area Plan (HMAP), Lassen County is home to 220 business and government facilities that manufacture, store, sell, use, or dispose of hazardous materials. Additionally, large volumes of hazardous materials are transported through the County on various transportation corridors such as rail, highways and pipeline systems. The locations and identity of facilities that store hazardous materials are reported to local and federal governments. Many facilities have their own hazardous materials guides and response plans, including transportation companies who transport hazardous materials.

The release of hazardous materials into the environment can cause a multitude of problems. Although these incidents can happen almost anywhere, certain areas of the County are at higher risk, such as near rail lines and roadways that are frequently used to transport hazardous materials and locations with industrial facilities that use, store, and/or dispose of such materials (**Figure 5-19**). The presence of several small airfields and one military airfield within the county boundary also provides the opportunity for fuel or chemical spills resulting from airplane accidents.

*Figure 5-17. Hazardous Materials Features- Lassen County*




*Source- Lassen County HMAP (2024)*

Hazardous materials incidents are categorized as Level 1, 2, or 3, based on the severity of the incident. The criteria used to determine the level of an incident include:

- Characteristics of the hazardous material
- Nature of its release
- Area affected by the hazardous materials incident (e.g., sensitive ecosystems, populations, waterways, transportation routes, etc.)

- Extent of multi-agency and multi-jurisdictional involvement
- Evacuations, injuries, or fatalities
- Technical expertise and equipment needed to safely mitigate the incident

**Level 1 Incident**
A minor situation within the capabilities of first responders trained at the "operational" level. A Level 1 incident involves a release, or possible release, of a small amount of liquid or solid of a known (identified) hazardous material. The agencies on-scene must have the expertise and proper equipment to safely mitigate the incident.

a) Basic hazard and risk assessment are performed for Level 1 releases and fire crews respond as appropriate.
b) An incident should be immediately upgraded to Level 2 for a release or potential release of an unknown hazardous material or suspected hazardous material.
c) Typical Level 1 incidents include:
    - Minor leaks or spills from a 55-gallon drum.
    - Minor leaks or spills which can be handled with absorbent.
    - Minor leaks or spills within the capability of a driver or operator to correct and mitigate.
    - Leaking valves on upright cargo tanks that do not require the product to be immediately off-loaded.
    - Release of chemicals which do not produce an environment which is immediately dangerous to life and health (IDLH) or above 10% of the Lower Explosion Limit (LEL) of a product, other than possibly inside the transport vehicle.
    - Leaks or spills of paint or batteries.
    - Overturned, empty cargo tanks which the IC determines to present no other hazards.
    - Evacuations limited to a single intersection or building.
    - Minor injuries to a small number of people and no fatalities.
    - Pesticide drift incidents involving one or several people.

**Level 2 Incident**
Any incident beyond the capabilities of an agency with jurisdictional responsibility for the incident requires a response by a HazMat Team or other hazardous materials resources as appropriate. This can range from a small incident involving any amount of an unknown substance to a large incident involving multiple agencies and jurisdictions. As a minimum, a Command Post and exclusion zone should be established for a Level 2 incident, and movement of personnel into the Hot Zone should be limited to personnel entering for a specific reason wearing the proper level of protective equipment.

a) A Level 2 incident will be declared by the IC if the incident involves a sufficient quantity of liquid or solid of a known hazardous substance or any quantity of an unknown material that has been released or offers the potential for release.
b) A Level 2 incident will be declared for the release of any quantity of a known solid or liquid toxic material in a critical public area or for the release or potential release of any quantity of an unknown solid, liquid, or gaseous toxic material or suspected toxic material.
c) In a Level 2 incident, a formal and properly identified Command Post with a removed staging area, an Incident Safety Officer and a Hazardous Materials Group must be established. Control Zones must be established and maintained as early as possible,

evaluated and monitored throughout the incident. Localized evacuation may need to be implemented, and outside agencies should be notified.

d) Typical Level 2 incidents include:
   - One or more 55-gallon drums leaking large quantities of a known substance
   - A major liquefied petroleum gas leak due to puncture, crack, or crease of a large tank where ignition sources are a real threat
   - Overturned cargo tanks with a hazardous material on board
   - Train derailment not involving railroad tank cars filled with hazardous materials
   - A vehicle or train fire involving hazardous materials or wastes
   - Leaking cargo tank with hazardous materials on board whose structural integrity is in question
   - Incident involving a fatality or serious injury attributed to the hazardous substance
   - Evacuation consisting of an apartment complex, city block, or large facility with many employees
   - A large spill of flammable liquids where ignition sources pose a serious threat
   - A fire that poses a serious threat of a boiling liquid expanding vapor explosion (BLEVE)
   - A pesticide drift incident in which multiple victims are exposed

**Level 3 Incident**

Any incident beyond the capabilities of the HazMat Team and local resources. The incident may be quite lengthy in duration and may necessitate large-scale evacuations.

a) Level 3 incidents will involve multiple agencies and jurisdictions, as well as resources from the private sector (including chemical manufacturers) and volunteer organizations.

b) Examples of Level 3 incidents include:
   - Incidents involving large-scale evacuations that may extend beyond jurisdictional boundaries
   - Any, leak, or fire involving hazardous materials that has gone to greater alarms
   - Any incident beyond local capabilities and resources (including the HazMat Team) to safely identify, contain, and mitigate
   - Train derailments involving railroad tank cars containing hazardous materials
   - Flammable liquid or gas cargo tank or railroad tank cars involved in or threatened by fire
   - Major leaks of compressed or liquefied gas cargo tanks or railroad tank cars caused by puncture of major structural damage
   - A major pesticide drift incident affecting a large geographical area involving large-scale exposures and evacuations

All significant releases or threatened releases of a hazardous material, including oil and radioactive materials require *immediate* verbal notification. Notification must be made to the Cal OES State Warning Center for the following:

- Discharges or threatened discharges of oil in marine waters
- Any spill or other release of one barrel (42 gallons) or more of petroleum products at a tank facility
- Discharges of any hazardous substances or sewage, into or on any waters of the state
- Discharges that may threaten or impact water quality
- Any found or lost radioactive materials
- Discharges of oil or petroleum products, into or on any waters of the state

- Hazardous Liquid Pipeline releases and every rupture, explosion or fire involving a pipeline
- Any spill deemed to be significant by regulation

#### *5.4.11.4* History

Comprehensive Environmental Response, Compensation, and Liablitiy Act (CERCLA) and California law require responsible parties to report hazardous material releases if certain criteria are met. In the state of California, the Governor's Office of Emergency Services (Cal OES) maintains a hazardous materials spill database. For the time period from January 2020 (after adoption of the LHMP) through February 2024 (latest available from Cal OES), forty-one (41) suspected hazmat spills within Lassen County were reported, twelve (12) of which were within the City of Susanville limits. Most of the spills were petroleum products as a result of accidents. Other incidents included a few damaged propane tanks related to railroads, and several sewage spills. It should be noted that not all incidents for which a spill report was filed resulted in damage or injury from the spill. In short, there are no significant historical events to report to date. Additional information on historical hazardous material releases can be found in the Lassen County HMRT Plan.

To date, there have been no known state or federal declarations for this type of event in the County.

#### *5.4.11.5* Probability of Occurrence

The release of hazardous materials can occur throughout the entire county. Incidences can occur during production, storage, transportation, use or disposal of hazardous materials. Communities can be at risk if a chemical is used unsafely or released in harmful amounts into the environment. Hazardous materials can cause death, serious injury, long lasting health effects, and damage to buildings, the environment, homes, and other property. According to the Planning Team's assessment of this hazard/event, there is a High probability of occurrence; see subsection 1 under this hazard/threat (Prioritization). A High hazard/threat event was determined to equate to greater than 75% chance of occurring within five (5) years.

#### *5.4.11.6* Climate Consideration

As mentioned above, weather can play a significant factor in hazardous material releases. While there is little evidence to link climate change to increased occurrences of hazardous material releases, it could impact the response and recovery efforts.

### *5.4.12.* Infectious Disease

#### 5.4.12.1 Prioritization

- *Probability*- MEDIUM
- *Impact*- MEDIUM

#### *5.4.12.2* Description

Infectious Disease is a broad term used to describe illness caused by a specific type of bacterium, parasite, virus, or fungus organisms. Below is a brief overview of the main infectious disease types:

- *Bacterial Infections*- Responsible for a variety of diseases from strep throat to meningitis and tuberculosis.
- *Fungal Infections*- There are roughly 300 types of fungi known to cause infectious disease. Common types include ringworm, blastomycosis, histoplasmosis, and pneumocystis pneumonia.
- *Parasitic Infections*- Responsible for a variety of diseases including malaria, Chagas disease, and toxocariasis.
- *Viral Infections*- Responsible for a variety of diseases including the common cold, influenza, mononucleosis, smallpox, and HIV/AIDS.

These organisms can be transmitted:

- Person-to-person (e.g., measles, mumps, meningococcal disease, tuberculosis)
- By consuming contaminated food or water, also known as foodborne (e.g.: salmonella, E.coli, botulinum toxin)
- Through animal bites (i.e., mosquito, ticks, fleas) also known as vector-borne (e.g.: West Nile virus, dengue, Zika, malaria).

Newly emerging infectious diseases include Ebola, Zika, Severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), avian influenza. The current pandemic (COVID-19) is linked to the SARS virus. The SARS coronavirus (SARS-CoV) is a virus identified in 2003. SARS-CoV is thought to be an animal virus from an as-yet-uncertain animal reservoir, perhaps bats, which spread to other animals (civet cats) and first infected humans in the Guangdong province of southern China in 2002. In 2019, in Wuhan China a new coronavirus was discovered. The coronavirus is closely related to the SARS coronavirus. The new virus goes by both COVID-19, standing for coronavirus disease 2019, and SARS CoV-2. Additional details about the impacts of COVID 19 can be found in the History section.

The Vector Borne Disease Section of the California Department of Public Health identifies the following types of diseases and infestations:

- Africanized Honeybees
- Bed Bugs
- Body Lice
- Cat Scratch Disease
- Conenose Bugs
- Zika Virus
- Head lice
- Lyme Disease
- Mosquitoes
- Murine Typhus
- Plague
- Ticks
- West Nile Virus
- Tularemia
- Scabies
- Swimmer's Itch
- Red Imported Fire Ants
- Hantavirus Cardiopulmonary Syndrome

Also, of concern are the threats of potential biological terrorism (bioterrorism), the intentional release or spread of disease (or toxins). Bioterrorism, also known as biological warfare, is not new and has been used for centuries. As early as 600 BC, military leaders implemented practices to poison water supplies and infect citizens/soldiers to gain strategic advantages in their efforts to conquer territories. This threat continues today at both the large scale (by military) and small scale (by terrorist organizations or individuals). No matter the purpose, the release of organisms could have devastating effects on an international, national, state, or local level if it is a highly infectious disease.

#### *5.4.12.3* Location and Extent

An infectious disease incident can occur throughout the entire County any time during the year and can last a few weeks or in some cases years. While the initial occurrence of an Infectious Disease event can occur without warning, there are instances where the spread of the Infectious Disease can provide some warning or indication (i.e., Covid 19). Depending on the category of the Infectious Disease (see below), the duration can last a few days, all the way up to years.

Infectious disease emergencies are incidents caused by organisms, with the potential for significant illness or death in the population. The impact of infectious disease emergencies can also affect the local economy through loss of production and costs of treating or preventing spread of the disease. The ability to recover from an infectious disease emergency will depend on:

- The type of biological agent (organism)
- The availability of prophylaxis (i.e., vaccine) for responders and the public
- The scale of the current and ongoing exposure
- The mode of transmission and whether transmission can be interrupted
- Whether the event is affecting critical infrastructure such as transportation, law enforcement, health care, and the medical and food supply chains.

There are three (3) common levels (or categories) of infectious disease emergencies: Outbreaks, Epidemics, and Pandemics.

- *Outbreak*- when there are more cases than would be normally expected, often suddenly, of an infectious disease in a community or facility.
- *Epidemic*- when there are more cases than would be normally expected of an infectious disease, often suddenly, in a population of a large geographic area.
- *Pandemic*- refers to an epidemic that has spread over several countries or continents, usually affecting a large number of people.

Outbreaks, epidemics, or pandemics can occur when a new virus emerges to which the population has little immunity. Public Health measures are used to control outbreaks, epidemics, or pandemics of infectious diseases, and are especially important for diseases with high morbidity or mortality and limited medical prophylaxis and/or rapid treatment. Public Health measures to control disease include:

- Isolation and quarantine of persons or products, and legal closure of food establishments
- Control of contaminated food through recall of product
- Control of contaminated water through “Do Not Use”, “Do Not Drink” or “Boil Water” orders
- Vector control spraying to target animals, bugs, and/or inspects

#### *5.4.12.4* History

Similar to the what has been happening throughout the world, country, and in the State, Lassen County has been and continues to battle with COVID (DR-4482). While conditions, number of cases, and recommendations have changed, COVID cases still exist within the County. Lassen County has also experienced small outbreaks of some infectious disease cases (foodborne, norovirus, H1N1). There have been no recent significant events.

#### *5.4.12.5* Probability of Occurrence

There is an annual risk of experiencing an infectious disease outbreak in the County. While there is a continued threat from a novel influenza virus the potential threat of outbreaks and epidemics have been increased due to expanding global trade and accessible national and international travel. Infectious disease outbreaks and epidemics occur on an ongoing basis.

Aside from the County still dealing with the effects from COVID-19, annual outbreaks of the seasonal flu usually occur during the late fall through early spring. Most people have natural immunity, and a seasonal flu vaccine is generally available. According to the CDC, in a typical year, approximately 5 to 20 percent of the population gets the seasonal flu and flu-related deaths range from 3,300 to 48,600 (average 23,600).

Bird flu (H5N1) is an influenza A virus subtype that is highly contagious among birds; although rare, some human infections with the Bird flu virus have occurred. Most confirmed cases have occurred in Asia, Africa, the Pacific, Europe and the Near East. According to the CDC, there are currently no confirmed human cases of Bird Flu infections, but it remains a serious concern with the potential to cause a deadly pandemic.

Swine flu (H1N1) was first detected in the United States in April 2009. This virus was a unique combination of influenza virus genes never previously identified in either animals or people. The Swine flu virus caused more illness in young people and pregnant women than is usual for prior flu seasons and was declared a Worldwide Pandemic by the World Health Organization.

According to the Planning Team's assessment of this hazard/event, there is a Medium probability of occurrence; see subsection 1 under this hazard/threat (Prioritization). A Medium hazard/threat event was determined to equate to between 30% and 75% chance of occurring within five (5) years.

#### *5.4.12.6* Climate Consideration

While many vector-borne diseases, such as malaria, yellow fever, dengue, and murine typhus, are rarely seen in the United States, the United States are susceptible to these vector-borne diseases. Many vector-borne diseases are climate sensitive and ecological shifts associated with climate change are expected to impact the distribution and incidences of these diseases. Changes in temperature and precipitation directly affect vector born disease transmission through pathogen-host interaction, and indirectly through ecosystem changes and species composition. As temperatures increase vectors can spread into new areas that were previously too cold. For example, two (2) mosquito vectors that carry malaria are now found at the U.S.-Mexico border.

### *5.4.13.* Landslide/Other Earth Movement

#### 5.4.13.1 Prioritization

- *Probability*- LOW
- *Impact*- LOW

### *5.4.13.2* Description

Landslides can be defined as the movement of a mass of rock, debris, or earth down an incline. According to the USGS, the term "*landslide*" encompasses five (5) modes of slope movement: falls, topples, slides, spreads, and flows.

- *Falls* are masses of soil or rock that dislodge from steep slopes and free-fall, bounce, or roll downslope.
- *Topples* move by the forward pivoting of a mass around an axis below the displaced mass.
- *Spreads* (lateral) commonly induced by liquefaction of material in an earthquake, move by horizontal extension and shear or tensile fractures.
- *Slides* displace masses of material along one or more discrete planes.
    - In "rotational" sliding, the slide plane is curved, and the mass rotates backwards around an axis parallel to the slope.
    - In "translational" sliding, the failure surface is more or less planar, and the mass moves parallel to the ground surface.
- *Flows* mobilize as a deforming, viscous mass without a discrete failure plane.

Landslides can be caused by natural processes or by man-made activities. Landslides occur when down-slope forces (gravity) exceed the resistance (strength) of the earth's materials. Landslides can be initiated by rainfall, snowmelt, changes in water level, stream erosion, changes in ground water, earthquakes, volcanic activity, disturbance by human activities, or any combination of these factors. Two (2) of the more common types of landslides include:

- *Mudflows*- defined as flows or rivers of liquid mud down a hillside on the surface of normally dry land. They occur when water saturates the ground, usually following long and heavy rainfalls, or rapid snow melt. Mud forms and flows down slope if there is no ground cover such as brush or trees to hold the soil in place.
- *Debris Flow*- defined when water begins to wash material from a slope or when water sheets off of a newly burned stretch of land. Chaparral land is especially susceptible to debris flows after a fire. The flow will pick up speed and debris as it descends the slope. As the system gradually picks up speed it takes on the characteristics of a basic river system, carrying everything in its path along with it.

Fast-moving (or rapidly moving) landslides present the greatest risk to human life, and people living in or traveling through areas prone to rapidly moving landslides are at increased risk of serious injury. Debris- flows can travel down a hillside with speeds up to 200 miles per hour (though more commonly, 30-50 miles per hour), depending on the slope angle and type of earth and debris in the flow.

Slow-moving landslides can occur on relatively gentle slopes and can cause significant property damage but are less likely to result in serious human injuries. Slow-moving slides include rotational slides, where sliding material moves along a curved surface, and translational slides, where movement occurs along a flat surface. These slides are generally slow-moving and can be deep. Slumps are small rotational slides that are generally shallow.

The size of a landslide usually depends on the geology and the initial cause of the landslide. Landslides vary greatly in their volume of rock and soil; the length, width, and depth of the area affected; frequency of occurrence; and speed of movement. Some characteristics that determine

the type of landslide are slope of the hillside, moisture content, and the nature of the underlying materials. Landslides are given different names, depending on the type of failure and their composition and characteristics.

Many landslides are difficult to mitigate, particularly in areas of large historic movement with weak underlying geologic materials. As communities continue to modify the terrain and influence natural processes, it is important to be aware of the physical properties of the underlying soils as they, along with climate, create landslide hazards. Proper planning cannot completely eliminate the threat of landslides to the safety of people, property, and infrastructure; however, without proper planning, landslide hazards will be even more common and more destructive.

#### *5.4.13.3* Location and Extent

The California Geological Survey is leading the effort and is in the process of recording and mapping landslides in the state. These include inventory of historical landslides, landslide hazard maps (susceptibility and potential), landslide risk maps (landslide potential with expected loss of life and property), and landslide-zone maps (areas with higher probability). The location and extent of landslides are extremely difficult to predict and are usually based on historical events and/or soil type and topography. Currently, the California Geological Survey has NOT prepared any landslide maps in Lassen County. However, landslides have the potential to occur in areas with steep slopes and weak soils. This is particularly true in and around the Sierra Nevada and Cascade mountain ranges. While the County does contain areas with some of these characteristics, it does not experience the frequency and magnitude of landslides that occur in other regions of the State.

#### *5.4.13.4* History

Historically, the majority of landslides in the County have been a secondary hazard to other hazards (i.e., earthquakes, volcanos); there have been no known documented landslides consistent with the above description. To date, there have been no known federal declarations for this type of event in the County. To date, there have been no known state or federal declarations for this type of event in the County.

#### *5.4.13.5* Probability of Occurrence

Landslide events can occur any time of the year. Because of modern weather technologies some landslide events can have advanced notices or some indication of the possibility of landslides in the area. However, there are landslide events which provide limited to no warning. A landslide event can last a few hours, and, in some instances, they can last for years in some capacity. As previously stated, it is difficult to estimate the probability of occurrence for landslides. As such, there is no current probability of occurrence information for Lassen County. However, according to the Planning Team's assessment of this hazard/event, there is a Low probability of occurrence; see subsection 1 under this hazard/threat (Prioritization). A Low hazard/threat event was determined to equate to (less than 30% chance of occurring within five (5) years.

#### *5.4.13.6* Climate Consideration

Climate change can increase the probability, frequency, and/or intensity of landslides. Changes in precipitation, specifically the increased frequency of intense precipitation, can result in significant water run-off, which may cause landslides. These landslides may happen more frequently due to the increased number of expected heavy rainfall events due to climate change. Additionally, an increase in wildfire hazards will result in loss of hillside vegetation. The loss of hillside vegetation will increase the likelihood of debris and mudflows. This could result in landslides occurring in areas not previously identified.

### *5.4.14.* Natural Gas Pipeline/Storage Accident

#### 5.4.14.1 Prioritization

- *Probability*- MEDIUM
- *Impact*- MEDIUM

#### *5.4.14.2* Description

The United States is heavily dependent on transmission pipelines to distribute energy and fuel sources. Virtually all natural gas, which accounts for about 28 percent (28%) of energy consumed annually, is transported by transmission pipelines. Energy demand in the United States continues to increase. Although California is a leader in exploring and implementing alternative energy sources such as wind and solar, the expansion of traditional energy sources, such as natural gas, continues.

Most of the natural gas used in California comes from out-of-state natural gas basins. It is delivered to California via the interstate natural gas pipeline system. natural gas, is delivered into the Pacific Gas and Electric Company (PG&E) and Southern California Gas (SoCal Gas) intrastate natural gas transmission pipeline systems (commonly referred to as California's "backbone" natural gas pipeline system). Natural gas on the utilities' backbone pipeline systems is then delivered into the local transmission and distribution pipeline systems, or to natural gas storage fields. PG&E and SoCal Gas own and operate several natural gas storage fields that are located in Northern and Southern California. Generally speaking, natural gas transmission lines are large-diameter steel pipes carrying natural gas at high pressure and compressed to provide higher carrying capacity. Transmission lines are both interstate and intrastate, with the latter connecting to smaller distribution lines delivering gas directly to homes and businesses. Compounding the potential risk is the age and gradual deterioration of the gas transmission system due to natural causes. Significant failure, including pipe breaks and explosions, can result in loss of life, injury, property damage, and environmental impacts.

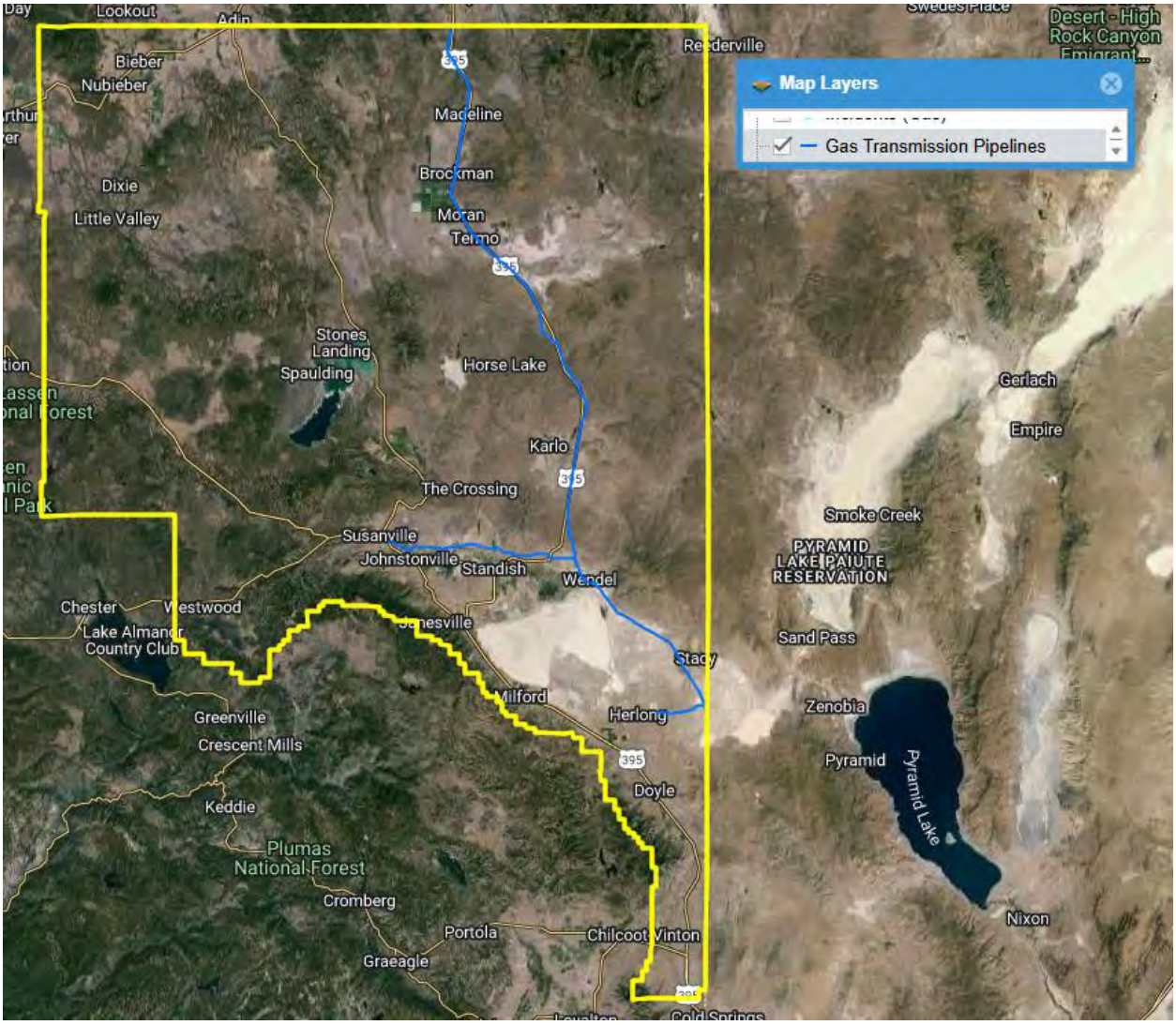
In 2012, California customers received 42 percent of their natural gas supply from basins in the Southwest, 22 percent from Canada, 23 percent from the Rocky Mountains, and 12 percent from California.

#### *5.4.14.3* Location and Extent

The natural gas supply is provided through a major transmission line that runs in the eastern portion of Lassen County (**Figure 5-20**). Within the county, there are several lines (spurs) off of the single transmission line that supplies the City of Susanville and select facilities. The natural

gas distribution lines are all located within the City of Susanville. Additionally, the Lower Rancheria has a gas pipeline. Currently, there is no storage of natural gas. Areas not covered by the natural gas distribution lines utilize propane. There are no large propane storage facilities, but some facilities and properties do have individual storage tanks. Herlong has two (2) 500-gallon propane storage tanks and the Upper Rancheria has a 220-gallon propane tank at each house and/or rental property.

*Figure 5-18. High Pressure Natural Gas Transmission Pipelines- Lassen County*




*Source: Pipeline and Hazardous Material Safety Administration*

### *5.4.14.4* History

No significant state or federal declared events to report to date.

### *5.4.14.5* Probability of Occurrence

The potential risk of occurrence of this hazard is related to the age and gradual deterioration of the gas transmission/distribution system due to natural causes. Causes of and contributors to pipeline failures include construction errors, material defects, internal and external corrosion, operational errors, control system malfunctions, outside force damage, subsidence, and seismicity. Significant failure, including pipe breaks and explosions, can result in loss of life, injury, property damage, wildfires, and environmental impacts. According to the Planning Team's assessment of this hazard/event, there is a Medium probability of occurrence; see subsection 1 under this hazard/threat (Prioritization). A Medium hazard/threat event was determined to equate to between 30% and 75% chance of occurring within five (5) years.

#### *5.4.14.6* Climate Consideration

Climate change could have a direct effect on natural gas pipelines as flooding, erosion, and run-off could cause damage to the pipeline. Additionally, climate change could increase the demand for natural gas. This increase in demand may require the development of new pipelines, which could increase potential complications.

### 5.4.15. Other Lifeline Infrastructure Accident

#### 5.4.15.1 Prioritization

- *Probability*- MEDIUM
- *Impact*- HIGH

#### 5.4.15.2 Description

Lifeline Infrastructure is considered any system, facility, and/or equipment needed for continuous operation of critical government and business functions and is essential to human health and safety or economic security. For the purposes of the LHMP, Natural Gas and Information Technology are not part of this hazard/threat profiles as they are covered under separate hazard/threat profiles. Examples of this include telecommunications, water/wastewater, petroleum and propane pipelines/storage, sewer, and solid waste.

#### 5.4.15.3 Location and Extent

Other Lifelines Infrastructure systems, facilities, and/or equipment are located throughout the county. While the majority of the infrastructure is located in more urbanized areas, there are miles of pipes/lines, facilities, and equipment in, around, and cutting through rural areas of the county.

#### 5.4.15.4 History

While there have been several temporary, localized Lifeline Infrastructure outages, there have not been any significant historical accidents or state or federal declarations to report to date.

#### 5.4.15.5 Probability of Occurrence

The potential risk of an accident is related to the age and gradual deterioration of the infrastructure (i.e., pipeline/storage, equipment, facilities). Additional causes of and contributors to accidents include construction errors, material defects, internal and external corrosion, operational errors, control system malfunctions, outside force damage, subsidence, and seismicity. According to the Planning Team's assessment of this hazard/event, there is a Medium probability of occurrence; see subsection 1 under this hazard/threat (Prioritization). A Medium hazard/threat event was determined to equate to between 30% and 75% chance of occurring within five (5) years.

#### 5.4.15.6 Climate Considerations

Climate change could have a direct effect on other Lifeline Infrastructure accidents such as flooding, erosion, and run-off could cause damage to the systems, equipment, and/or facilities. Additionally, climate change could increase the demand for services (heating and cooling) which may decrease the life expectancy of systems, equipment, and facilities and require the expansion of systems, equipment, and facilities to meet the demand. Thus, introducing more break points.

## *5.4.16.* Severe Weather and Storms

### 5.4.16.1 Prioritization

- *Probability*- MEDIUM
- *Impact*- HIGH

### *5.4.16.2* Description

For the purposes of the LHMP, severe weather and storms are defined as storms containing one or more of the following characteristics: 1) Lightning/Thunder, 2) Hail, 3) High wind, 4) Snow, and 5) Fog. Other severe weather characteristics, such as drought, flooding, extreme heat, and freeze are covered under separate sections. Below is a brief description of the characteristics of severe storms:

Lightning/Thunder

Lightning is a powerful natural electrostatic discharge produced during some storms. This abrupt electric discharge is accompanied by the emission of visible light. The electric current passing through the discharge channels rapidly heats and expands the air, producing acoustic shock waves (thunder) in the atmosphere.

All lightning originates around 15,000 to 25,000 feet above sea level when raindrops are carried upward until some drops convert to ice. A cloud-to-ground (CG) lightning flash moves downward in 50-yard sections called step ladders. Eventually, the charge encounters something on the ground that conducts electricity. At this point the circuit is complete, and the charge is lowered from the cloud to the ground. The return stroke is a flow of charge, which produces visible light.

Lightning causes thunder. The bright light of the lightning flash caused by the return stroke represents a great deal of energy. This energy heats the air in the channel to above 50,000 degrees Fahrenheit in only a few millionths of a second. The air that is now heated to such a high temperature has no time to expand, resulting in very high pressure. The high-pressure air then expands outward into the surrounding air, compressing it and causing a disturbance that propagates in all directions away from the stroke. The disturbance is a shock wave for the first 10 yards, after which it becomes an ordinary sound wave, or thunder.

Nearly 2,000 people per year in the world are injured by lightning strikes, and between 25% to 33% of those struck die. Lightning injuries result from three (3) factors: 1) electrical damage; 2) intense heat; and, 3) the mechanical energy which these generate. The following list provides the lightning hazards to the general population:

- Direct strike.
- “Splash” from nearby objects struck.
- Ground strike near victim causing a difference of potential in the ground itself, amounting to several thousand volts-per-foot, depending upon the composition of the earth that makes up the ground at that location.
- Electromagnetic pulse from close strikes - especially during positive lightning discharges

Hail

Hail forms in strong thunderstorm clouds, particularly those with intense updrafts, high liquid water content, great vertical extent, large water droplets, and where a good portion of the cloud layer is below freezing (< 32 °Fahrenheit, 0 Celsius). The growth rate is maximized at about -13 Celsius, and becomes vanishingly small much below -30 Celsius as super-cooled water droplets become rare. For this reason, hail is most common in mid-latitudes during early summer where surface temperatures are warm enough to promote the instability associated with strong thunderstorms, but the upper atmosphere is still cool enough to support ice. Accordingly, hail is actually less common in the tropics despite a much higher frequency of thunderstorms than in the mid-latitudes because the atmosphere over the tropics tends to be warmer over a much greater depth. Also, entrainment of dry air into strong thunderstorms can increase the frequency of hail by promoting evaporational cooling which lowers the freezing level of thunderstorm clouds giving hail a larger volume to grow in.

Hail is both destructive to vegetation and manmade structures. Hail is classified as severe by the National Weather Service if it is equal to or greater than 3/4" in diameter. Strong winds make these darting spheres of ice even more damaging. It is difficult to pin point where exactly a large hail shaft will strike just as it is difficult to predict where tornadoes will exactly occur. However, the general region where hail can be expected is very predictable. Hail occurs in association with thunderstorms, particularly supercell thunderstorms.

High Wind

Events with damaging winds are often called “straight-line” winds to differentiate the damage they cause from swirling wind (i.e. tornado) damage. Strong winds can come from a number of different processes. Most winds that cause damage at the ground are a result of outflow generated by a thunderstorm downdraft. Damaging winds are classified as those exceeding 50-60 mph. The types of damaging winds include:

- Straight-line
- Downdraft
- Downburst
- Microburst
- Gust Front
- Derecho
- Haboob

Damage from winds accounts for half of all severe reports in the lower 48 states and is more common than damage from tornadoes. Wind speeds can reach up to 100 mph and can produce a damage path extending for hundreds of miles.

Snow

Snow events generate a large amount of snowfall over a short or long period of time. Additionally, many snow events are accompanied by strong winds which can create blizzard-like conditions. While some communities are equipped for regular snow events, a large amount of snowfall can create direct and indirect impacts to a community. These events can

create significant health issues, as well as create issues with transportation, lifelines, communications, and the built environment (i.e., homes and commercial buildings).

Fog

Fog occurs when moisture from the surface evaporates; and as this evaporated moisture moves upward, it cools and condenses into fog. All types of fog form when the relative humidity reaches 100% and the air temperature drops below the dew point, pushing it lower by forcing the water vapor to condense. Fog can form suddenly, and can dissipate just as rapidly, depending on what side of the dewpoint the temperature is on. Fog produces significantly reduced visibility which increases driving hazard and can result in multi-vehicle accidents when drivers do not adjust their driving speed for the conditions. Multi-vehicle accidents can close major roadways for hours and pull emergency services away from other areas of the county.

#### *5.4.16.3* Location and Extent

Severe storms can occur throughout the entire County. High wind can occur throughout the county; however, they are most common and dangerous along the Highway 395 corridor which heads south from Susanville to Reno, Nevada. Severe wind along this corridor can cause the highway to be closed to trucking and result in power outages. Fog occurs predominantly in the mountain valley areas and can produce ice fog during sub-freezing temperatures in winter months. Fog patterns shift rapidly as wind and temperatures vary. Predicting exact locations and density of fog is not feasible. Snow can fall anywhere in the county with snow levels increasing as the elevation rises, leading to occasional closures of the mountain passes to the west of Susanville on Highway 36 and Highway 44, and the seasonal closure of paved and unpaved county-maintained roads. Lassen County receives, on average, about 33 inches of snow per year. The national average is around 26 inches. According to the Severe Weather Data Inventory, a joint project between US Department of Commerce's National Environmental Modeling and Analysis Center, National Oceanic and Atmospheric Agency (NOAA) National Climatic Data Center, and the Renaissance Computing Institute, the Lassen County has had over 170 lightning strikes from 2013-2017, with 76 recorded in a single day event in July 2015. The recorded data indicates: 31 strikes in 2017; 11 in 2016; 98 in 2015; 17 in 2014; and 16 in 2013. Because of its climate, hail can occur in any part of the County (county-wide), prominently occurring in the winter months. Additionally, hail events are usually tied (or associated) with other server weather events. Areas more prone to hail in the County include in and around the Sierra Nevada and Cascade mountain ranges.

#### *5.4.16.4* History

The following table (Error! Reference source not found.**19**) depicts the history of severe storm events in the county.

*Table 5-19. Historic Severe Storms in Lassen County*

| Date | Injuries | Fatalities | Property Damage | Crop Damage | Severe Storm Type |
|---|---|---|---|---|---|
| 02/07/1962 | 0.26 | 0.35 | $86,206 | 0 | Lightning/Thunder-Wind |
| 10/10/1962 | 1.79 | 0.36 | $35,714 | $35,714 | Lightning/Thunder-Wind |
| 01/30/1963 | 0.57 | 0.14 | $35,714 | 0 | Lightning/Thunder-Wind |
| 12/24/1964 | | | | | DR-183; Heavy Rains and Flooding |
| 01/18/1969 | 0.17 | 0.78 | $862,068 | $8,620 | Lightning/Thunder |
| 02/16/1970 | | | | | DR- Severe Storm, Flooding |
| 01/16/1973 | 0 | 0 | $86,206 | 0 | Lightning/Thunder |
| 12/23/1979 | 0 | 0 | $14,285 | 0 | Lightning/Thunder-Wind |
| 12/22/1982 | 0.21 | 0.06 | $1,041,666 | $104 | Wind |
| 02/21/1986 | | | | | DR-758; California Severe Storms, Flooding |
| 09/01/1987 | 7.29 | 0.57 | $3,571,428 | 0 | Lightning |
| 12/20/1990 | 0 | 0.05 | $86,206 | $8,620,689 | Winter Weather (snow, wind) |
| 01/13/1993 | 0.29 | 0 | $357,142 | 0 | Winter Weather (snow, wind) |
| 01/19/1993 | 0.31 | 0.00 | $31,250 | $31,250 | Wind |
| 02/03/1993 | | | | | DR-979; Severe Storm, Winter Storm |
| 01/10/1995 | | | | | DR-1044; Severe Winter Storms |
| 03/12/1995 | | | | | DR-1046; Severe Winter Storms |
| 01/22/1997 | 0 | 0 | $66,666 | 0 | DR-1155- Winter Weather (snow, wind) |
| 01/21/2002 | 0 | 0 | $50,000 | 0 | Wind |
| 11/07/2002 | 0 | 0 | $50,000 | 0 | Wind |
| 12/14/2002 | 0 | 0 | $50,000 | 0 | Wind |
| 02/23/2006 | | | | | DR-1628; Severe Winter Storms and Flooding |
| 12/26/2006 | 0 | 0 | $16,250 | 0 | Wind |
| 02/06/2015 | 0 | 0 | $100,000 | 0 | Wind |
| 02/14/2017 | | | | | DR- 4301; Severe Winter Storms |
| 05/18/2017 | | | | | DR-4308; Severe Winter Storms |
| Aug-Sep 2022 | | | | | Fires & Extreme Weather Conditions Disaster Code 115 |
| 12/27/2022 | | | | | Severe Winter Storms, Disaster Code140 |

It should be noted that Hail and Fog are very frequent in the county, but they are usually in conjunction with severe weather events (i.e., thunderstorms, snow storms). On the occasions when Hail and Fog are not associated with severe weather events, they seldom raise to the level of local, state, or federal emergency declarations. As such, the history of such events is not tracked. To date, there have been no known state or federal declarations for this type of event in the County.

#### *5.4.16.5* Probability of Occurrence

In any given year, Lassen County can be subject to severe storms. While generally they occur during the winter months; lightning and thunder also can occur during the spring and summer

months. According to the Planning Team's assessment of this hazard/event, there is a Medium probability of occurrence; see subsection 1 under this hazard/threat (Prioritization). A Medium hazard/threat event was determined to equate to between 30% and 75% chance of occurring within five (5) years.

#### *5.4.16.6* Climate Considerations

Climate change will play a significant role with severe storm events. The changing conditions are expected to cause a significant amplification to many existing hazards and conditions. Because of this, climate change might impact the frequency and intensity of severe storms.

### *5.4.17.* Technology Disruption

#### 5.4.17.1 Prioritization

- *Probability*- MEDIUM
- *Impact*- HIGH

#### *5.4.17.2* Description

For the purposes of the LHMP, a Technology Disruption hazard/threat includes both deliberate (i.e., cyber-attacks) or accidental (i.e., equipment failure or human error) actions that can cause the loss of use of technology and/or data. A cyber-attack is a circumstance or event that has or indicates the potential to exploit technology vulnerabilities and to adversely impact organizational operations, organizational assets (including information and information systems), individuals, other organizations, or society. Critical infrastructure, such as utilities and telecommunications, are also potential targets. Cyber-attacks are most easily described as either external threats (where attacks originate outside of established networks) or internal/insider threats (where attacks originate from users who have existing access to an internal network). Examples of cyber-attacks include malware and hacking, phishing, denial of service attacks, ransomware, and state-sponsored hacking. Any one of these threats, if initiated, and successful, can produce a cyber-attack that has major implications throughout the organization. Recent report produced by Verizon (2020) analyzes 32,002 security incidents and 3,950 confirmed breaches from 81 global contributors from 81 countries and indicate the following trends:

- 86% of data breaches are for financial gain - up from 71% in 2019
- Cloud-based data under attack – web application attacks double to 43%
- 67% of breaches caused by credential theft, errors and social attacks
- Clearly identified cyber-breach pathways enable a "Defender Advantage" in the fight against cyber-crime
- On-going patching successful - fewer than 1 in 20 breaches exploit vulnerabilities
- 37% of credential theft breaches used stolen or weak credentials
- 25% involved phishing
- Human error accounted for 22%

#### 5.4.17.3 Location and Extent

A Technology Disruption can happen anywhere within the County. but are generally targeted at administrative platforms (i.e., website, operating systems, personnel/sensitive data records), facilities (i.e., utilities, hospitals, healthcare), and communications systems. Most Technology

Disruption events are defined by types (cause) of disruption and duration. Technology Disruptions events can last a few hours, days, and in some instances a few weeks/months and depending on the cause of the distribution, there may or may not be advanced warning and. There is no universal or common scale to measure levels of Technology Disruption.

#### *5.4.17.4* History

While there have been several smaller Technology Disruption events, none have reached a level of significance. To date, there have also been no known state or federal declarations for this type of event in the County.

#### *5.4.17.5* Probability of Occurrence

The probability of Technology Disruption is on the rise globally, nationally, and locally. With the increased reliance on the internet and cloud-based computing, there are more opportunities for cyber-attacks and/or the loss of connectivity. However, cyber-attacks generally target larger corporations or state/national governments. Several local government agencies are increasingly being targeted by cyber criminals on the basis that they have fewer resources to defend themselves. Businesses with personal or sensitive data are also being targeted (i.e., hospitals, healthcare providers, utilities/lifelines) where they can gain access and exploit opportunities. Unlike natural hazards, where there is historical data, and some predictive modeling, cyber-attacks are more challenging to anticipate. According to the Planning Team's assessment of this hazard/event, there is a Medium probability of occurrence; see subsection 1 under this hazard/threat (Prioritization). A Medium hazard/threat event was determined to equate to between 30% and 75% chance of occurring within five (5) years.

#### *5.4.17.6* Climate Consideration

While there is little evidence to link climate change to increase in occurrences of Technology Disruptions, the target could be related to persons/groups with issues with individuals or companies they perceive to have effect on the climate (i.e., greenhouse gas producers) within the community.

### *5.4.18.* Terrorism

#### 5.4.18.1 Prioritization

- *Probability*- LOW
- *Impact*- MEDIUM

#### *5.4.18.2* Description

The term terrorism refers to intentional, criminal malicious acts. There is no single, universally accepted definition of terrorism, and it can be interpreted in many ways. Terrorism is defined in the Code of Federal Regulations as "...*the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives.*" (28 CFR, Section 0.85). For the purposes of this plan, terrorism refers to the use of weapons of mass destruction, including biological, chemical, nuclear, and radiological weapons; arson, incendiary, explosive, and armed attacks; industrial sabotage and intentional hazardous materials releases; and cyber terrorism. Conventional Attacks/Active

Shooter incidents are initiated by humans. They can be a well-planned coordinated attack with multiple suspects, or the result of a lone individual on a rampage.

#### *5.4.18.3* Location and Extent

Terrorism can occur throughout the entire County but due to terrorisms' intended purpose- *to cause the greatest amount of destruction* - it would most likely happen in more populous areas (high value, visually recognized targets) where more devastation, fear, and chaos will ensue. Except in rare cases, Terrorism events have no advanced warning and can last hours, days, weeks, months, and in some worst cases, years. There is no universal or common scale to measure levels of Terrorism. Most Terrorism events are generally defined by types of events or the intended target.

#### *5.4.18.4* History

There have been no significant terrorism events or known state or federal declarations for this type of event in the County.

#### *5.4.18.5* Probability of Occurrence

Because of the intended purpose of terrorism - *to create devastation (and fear)* - terrorist incidents would most likely happen in more populous urban areas, rather than within Lassen Couty. However, all government and local business facilities can be perceived as soft targets. According to the Planning Team's assessment of this hazard/event, there is a Low probability of occurrence; see subsection 1 under this hazard/threat (Prioritization). A Low hazard/threat event was determined to equate to (less than 30% chance of occurring within five (5) years.

#### *5.4.18.6* Climate Consideration

While there is little evidence to link climate change increasing occurrences of terrorism, the motivation behind the incident may be targeting individuals and/or organizations they perceive to have effect on the climate (i.e., greenhouse gas producers) within the community. Climate conditions could also intensify the incident (i.e., Improvised Explosive Device- *IED* during high wind event) and/or hinder the response and recovery efforts (i.e., evacuation during flooding).

## *5.4.19.* Volcano

### 5.4.19.1 Prioritization

- *Probability*- LOW
- *Impact*- HIGH

### *5.4.19.2* Description

A volcano is a rupture in the crust of a planetary-mass object, such as Earth, which allows hot lava, volcanic ash, and gases to escape from a magma chamber below the surface. Volcanoes occur because the earth's crust is broken into seventeen (17) major, rigid tectonic plates that float on a hotter, softer layer in its mantle. Volcanoes can also form where there is stretching and thinning of the crust's interior plates. Therefore, volcanoes are generally found where tectonic plates are diverging or converging. There are several hazards associated with volcanic activity and they include: eruption columns and clouds, volcanic gases, lava flows and domes, pyroclastic flows, volcano landslides, and mudflows.

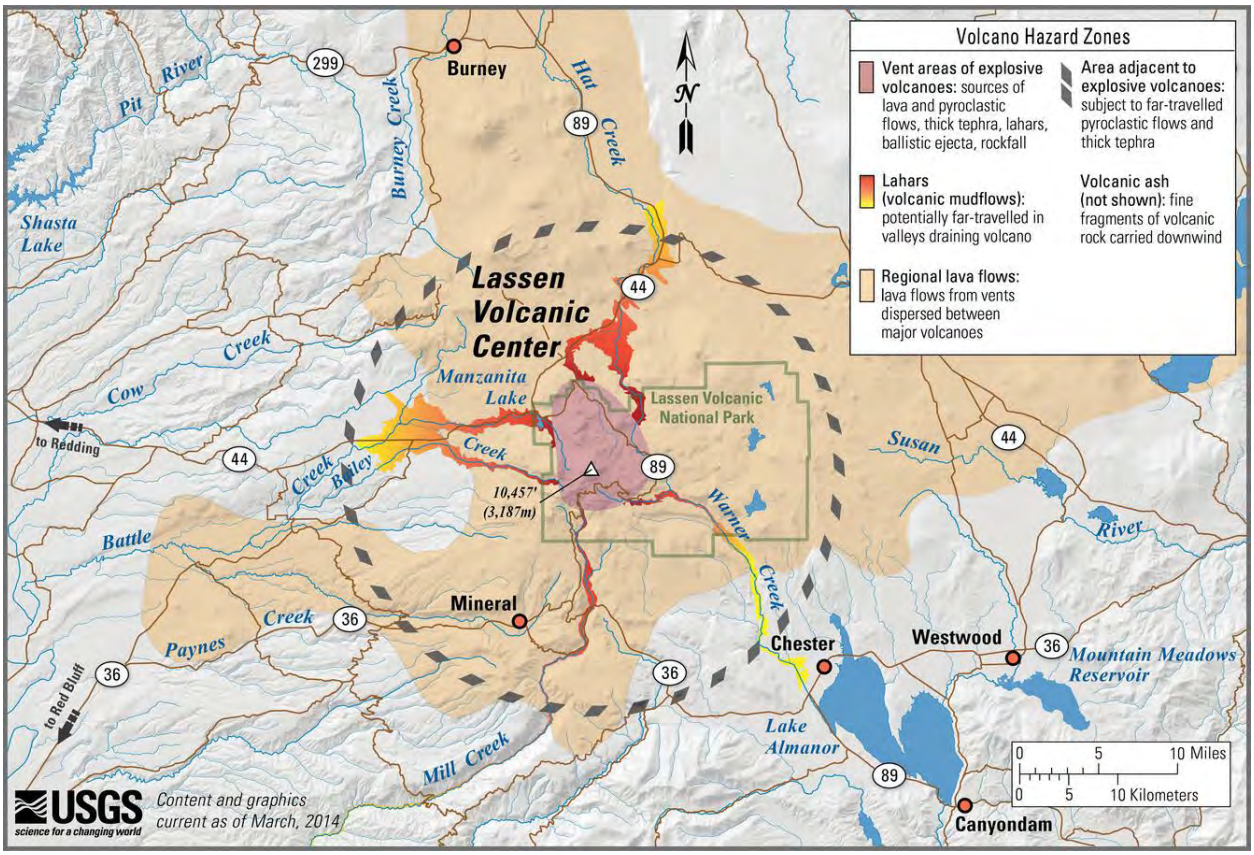
### *5.4.19.3* Location and Extent

A national report on volcanic threat published by the USGS in 2005 lists eight (8) young and potentially hazardous volcanic areas in California (**Figure 5-21**).

*Figure 5-19. Potentially Hazardous Volcanoes of California*

The Lassen region of the southernmost Cascade Range is an active volcanic area. Mount (Mt.) Lassen itself is located six (6) miles west of the Lassen County line, and approximately 50 air miles from Susanville. Error! Reference source not found.**22** illustrates the USGS modeled volcanic impacts within the Lassen County area. Although there is little chance that lava flows (solid blue and red lines on the figure) would impact the county, there is a likelihood that ash fallout (dotted blue and red lines on the figure) could have public health impacts, and effect agricultural activities and air traffic. Airborne ash from future events could last for days to weeks following an eruption. Compared to those of a typical Cascade volcano, eruptive vents at Mount (Mt.) Lassen and the surrounding area are widely dispersed, extending in a zone about 50 km wide from the southern boundary of Lassen Volcanic National Park north to the Pitt River.

*Figure 5-20. Volcano Hazard Assessment- Lassen Region (USGS)*




Volcanic threat rankings for U.S. volcanoes are derived from a combination of factors including age of the volcano, potential hazards (the destructive natural phenomena produced by a volcano), exposure (people and property at risk from the hazards), and current level of monitoring (real-time sensors in place to detect volcanic unrest).

Establishment of robust volcano monitoring networks and effective warning schemes are essential mitigation measures. The USGS monitors hazardous volcanoes and responds to volcanic crises under Congressional mandate (Public Law 93-288), which requires the USGS to issue "timely warnings" of potential volcanic hazards to responsible emergency management authorities and to the populace affected.

The USGS California Volcano Observatory, or CalVO, headquartered in Menlo Park, California obtains and interprets data from real-time monitoring sensors (seismometers, continuously recording GPS receivers, tiltmeters, and/or strain meters) installed on California's high-to-moderate threat volcanoes, although network coverage is minimal at some locations (See monitoring capabilities and data at http://volcanoes.usgs.gov/observatories/calvo/). The sensor networks automatically and continually relay data to CalVO for scientific interpretation. Information is communicated to emergency response agencies and the public using alert level schemes for ground-based and airborne hazards (Error! Reference source not found.**20** and Error! Reference source not found.**21**).

*Table 5-20. Ground-Based Volcanic Hazard Alert Levels (USGS)*

**Volcano Alert Levels Used by USGS Volcano Observatories**

Alert Levels are intended to inform people on the ground about a volcano's status and are issued in conjunction with the Aviation Color Code. Notifications are issued for both increasing and decreasing volcanic activity and are accompanied by text with details (as known) about the nature of the unrest or eruption and about potential or current hazards and likely outcomes.

| Term | Description |
|---|---|
| NORMAL | Volcano is in typical background, noneruptive state<br>or, *after a change from a higher level,*<br>volcanic activity has ceased and volcano has returned to noneruptive background state. |
| ADVISORY | Volcano is exhibiting signs of elevated unrest above known background level<br>or, *after a change from a higher level,*<br>volcanic activity has decreased significantly but continues to be closely monitored for possible renewed increase. |
| WATCH | Volcano is exhibiting heightened or escalating unrest with increased potential of eruption, timeframe uncertain,<br>**OR**<br>eruption is underway but poses limited hazards. |
| WARNING | Hazardous eruption is imminent, underway, or suspected. |

*Table 5-21. Airborne Volcanic Hazards Alert Levels (USGS)*

**Aviation Color Code Used by USGS Volcano Observatories**

Color codes, which are in accordance with recommended International Civil Aviation Organization (ICAO) procedures, are intended to inform the aviation sector about a volcano's status and are issued in conjunction with an Alert Level. Notifications are issued for both increasing and decreasing volcanic activity and are accompanied by text with details (as known) about the nature of the unrest or eruption, especially in regard to ash-plume information and likely outcomes.

| Color | Description |
|---|---|
| GREEN | Volcano is in typical background, noneruptive state<br>or, *after a change from a higher level,*<br>volcanic activity has ceased and volcano has returned to noneruptive background state. |
| YELLOW | Volcano is exhibiting signs of elevated unrest above known background level<br>or, *after a change from a higher level,*<br>volcanic activity has decreased significantly but continues to be closely monitored for possible renewed increase. |
| ORANGE | Volcano is exhibiting heightened or escalating unrest with increased potential of eruption, timeframe uncertain,<br>**OR**<br>eruption is underway with no or minor volcanic-ash emissions [ash-plume height specified, if possible]. |
| RED | Eruption is imminent with significant emission of volcanic ash into the atmosphere likely<br>**OR**<br>eruption is underway or suspected with significant emission of volcanic ash into the atmosphere [ash-plume height specified, if possible]. |

A no-cost, email-based Volcano Notification Service (VNS) is available to agencies, businesses, and the public by registering online at http://volcanoes.usgs.gov/vns/help.php. VNS sends monthly volcano status updates to subscribers and other posts as warranted, including notification of alert level changes, details of volcanic unrest, and eruption information.

#### *5.4.19.4* History

Volcanic eruptions occur in the State infrequently. At least ten eruptions have occurred in California in the last 1,000 years. There have been at least fifty-eight (58) eruptions of small volcanoes in the Mt. Lassen region in the past 100,000 years, including two (2) in the past 15,000 years. At the Lassen Volcanic Center, approximately 70 eruptions have occurred in the past 100,000 years, including three (3) in the past 1,100 years: the Chaos Crags eruption 1,100 years ago; the Cinder Cone 345 years ago, and the Lassen Peak eruption which lasted from 1914 to 1917. The most notable event in the Lassen Peak eruption, occurring on May 22, 1915, devastated nearby areas and rained volcanic ash as far away as 200 miles to the east. To date, there have been no known state or federal declarations for this type of event in the County.

#### *5.4.19.5* Probability of Occurrence

The USGS has designated the Lassen Volcanic Area as a very high threat volcano. According to a report published by the USGS in 2012, the record of past eruptions and the present state of the underlying magmatic and hydrothermal systems make it clear that future eruptions within the Lassen Volcanic Area are very likely. Volcanic activity over the past 100,000 years suggests that within any given year there exists about a 1 in 1,000 chance of an eruption occurring at the Lassen Volcanic Center. Although the annual probability of an eruption is small in any given year, the potential consequences of future eruptions could be regionally significant.

Unlike most other natural disasters, volcanic eruptions are usually preceded by weeks to months of precursory unrest which manifests as ground deformation, earthquake swarms, and gas emissions. By monitoring these indicators, scientists can make accurate eruption forecasts. According to the Planning Team's assessment of this hazard/event, there is a Low probability of occurrence; see subsection 1 under this hazard/threat (Prioritization). A Low hazard/threat event was determined to equate to (less than 30% chance of occurring within five (5) years.

#### 5.4.19.6 Climate Considerations

To date, no credible evidence has been provided that links climate to volcanic events; however, climate impacts are a significant consideration in the response and recovery efforts. Effects from climate change could create cascading complications and impacts. For example, if the volcanic eruption results coincide with a period of higher-than-normal rainfall, ash flows could liquefy into mud flows which would potentially impact water quality, vegetation, wildlife, and recreational activities in the surrounding areas.

### *5.4.20.* Wildfire

#### 5.4.20.1 Prioritization

- *Probability*- HIGH
- *Impact*- HIGH

#### 5.4.20.2 Description

There are three (3) different classes of wildfires: 1) surface; 2) ground; and, 3) crown. A "Surface fire" is the most common type and burns along the floor of a forest, moving slowly and killing or damaging trees. A "Ground fire"; usually started by lightning, are fed by subterranean roots, and

smolders on or below the forest floor. A "Crown fire" spreads rapidly by wind and moves quickly by jumping along the tops of trees. Wildfires can also be classified as either a wildland fire or a wildland-urban interface (WUI) fire. Wildland fires involve situations where a fire occurs in an area that is relatively undeveloped except for the possible existence of basic infrastructure such as roads and power lines. A WUI fire includes situations in which a wildland fire enters an area that is developed with structures and other human developments. In WUI fires, the fire is fueled by both naturally occurring vegetation and the urban structural elements themselves. According to the National Fire Plan issued by the U.S. Departments of Agriculture and Interior, the wildland-urban interface is defined as "*…the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.*"

The WUI can be subdivided into three (3) categories (NWUIFPP, 1998): 1) classic wildland-urban interface; 2) the mixed wildland-urban interface; and, 3) the occluded wildland-urban interface. The *classic wildland-urban interface* exists where well-defined urban and suburban development presses up against open expanses of wildland areas. The *mixed wildland-urban interface* is characterized by isolated homes, subdivisions, and small communities situated predominantly in wildland settings. The *occluded wildland- urban interface* exists where islands of wildland vegetation occur inside a largely urbanized area.

Certain conditions must be present for a wildfire hazard to occur; a large source of fuel must be present, the weather must be conducive (generally hot, dry, and windy), and fire suppression sources must not be able to easily suppress and control the fire. The cause of a majority of wildfires is human-induced or lightning; however, once burning, wildfire behavior is based on three (3) primary factors: 1) fuel, 2) topography, and 3) weather. Fuel will affect the potential size and behavior of a wildfire depending on the amount present, its burning qualities (e.g., level of moisture), and its horizontal and vertical continuity. Topography affects the movement of air, and thus the fire, over the ground surface. The terrain can also change the speed at which the fire travels, and the ability of firefighters to reach and extinguish the fire. Weather as manifested in temperature, humidity and wind (both short and long term) affect the probability, severity, and duration of wildfires. Other factors that create concern are drought conditions and development (the built environment). Drought conditions bring on contributing concerns in that it can lead to relatively drier conditions and leave reservoirs and water tables lower, thus, creating hotter fires and less water to fight the fires. The expansion of the built environment into previously unoccupied areas introduces more people to the hazard and in some cases makes response actions more challenging.

Another contributing factor is fire suppression sources not being able to easily suppress and control the fire. The cause of a majority of wildfires is human-induced or lightning; however, earthquakes or floods have the potential to rupture buried gas lines, and high winds or accidents could cause overhead electric lines to break, creating ignition sources for wildfires.

The aftermath of a wildfire can be just as disastrous as the wildfires themselves. A particularly destructive fire burns away plants and trees that prevent erosion. If heavy rains occur after such a fire, landslides, ash flows, and flash floods can occur. This can result in property damage outside the immediate fire area, and can affect the water quality of streams, rivers and lakes. Additionally,

heat and heavy smoke from wildfires can create public health issues and impact certain operations (i.e., aviation).

#### *5.4.20.3* Location and Extent

The climate, topography, and vegetation in Lassen County is conducive to wildfires. Limited rainfall, low humidity, and seasonal high temperatures continue to contribute to the desiccation of the vegetation, providing prime fuel for intense burns. Although some areas are shielded from the direct impact of the powerful, dry winds, their occurrence generally aggravates the fire hazard. In addition, the presence of human activities in or near a wildland area dramatically increases the risk of a major fire due to careless smokers, illegal campfires, and other related risks.

California Department of Forestry and Fire Protection, Fire Resource Assessment Program (CDF-FRAP) was mandated to map areas of significant fire hazards based on fuels (vegetation), terrain, weather, and other relevant factors. These zones, referred to as Fire Hazard Severity Zones, define the application of various mitigation strategies to reduce risk associated with wildland fires. CDF-FRAP developed data that displays the relative risk to areas of significant population density from wildfire. This data is created by intersecting residential housing unit density with proximate fire threat, to give a relative measure of potential loss of structures and threats to public safety from wildfire. The CAL FIRE has assessed both State Responsibility Areas (SRA) and Local Responsibility Areas (LRA). For the SRA CAL FIRE uses three (3) different zones to classify fire hazard severity in the State of California, while for the LRA, CAL FIRE uses eight (8) different zones to classify the fire severity zones. The CDF-FRAP Fire Hazard Severity Zones consist of:

- SRA- Moderate (Yellow):
- SRA- High- (Orange):
- SRA- Very High (Red)-:
- LRA- Very High (Red):
- LRA- High (Orange):
- LRA- Moderate (Yellow):
- LRA- Unzoned (Grey):
- LRA- Other Very High (Light Red):
- LRA- Other High (Light Orange):
- LRA- Other Moderate (Light Yellow):
- LRA- Other Unzoned (Light Grey):

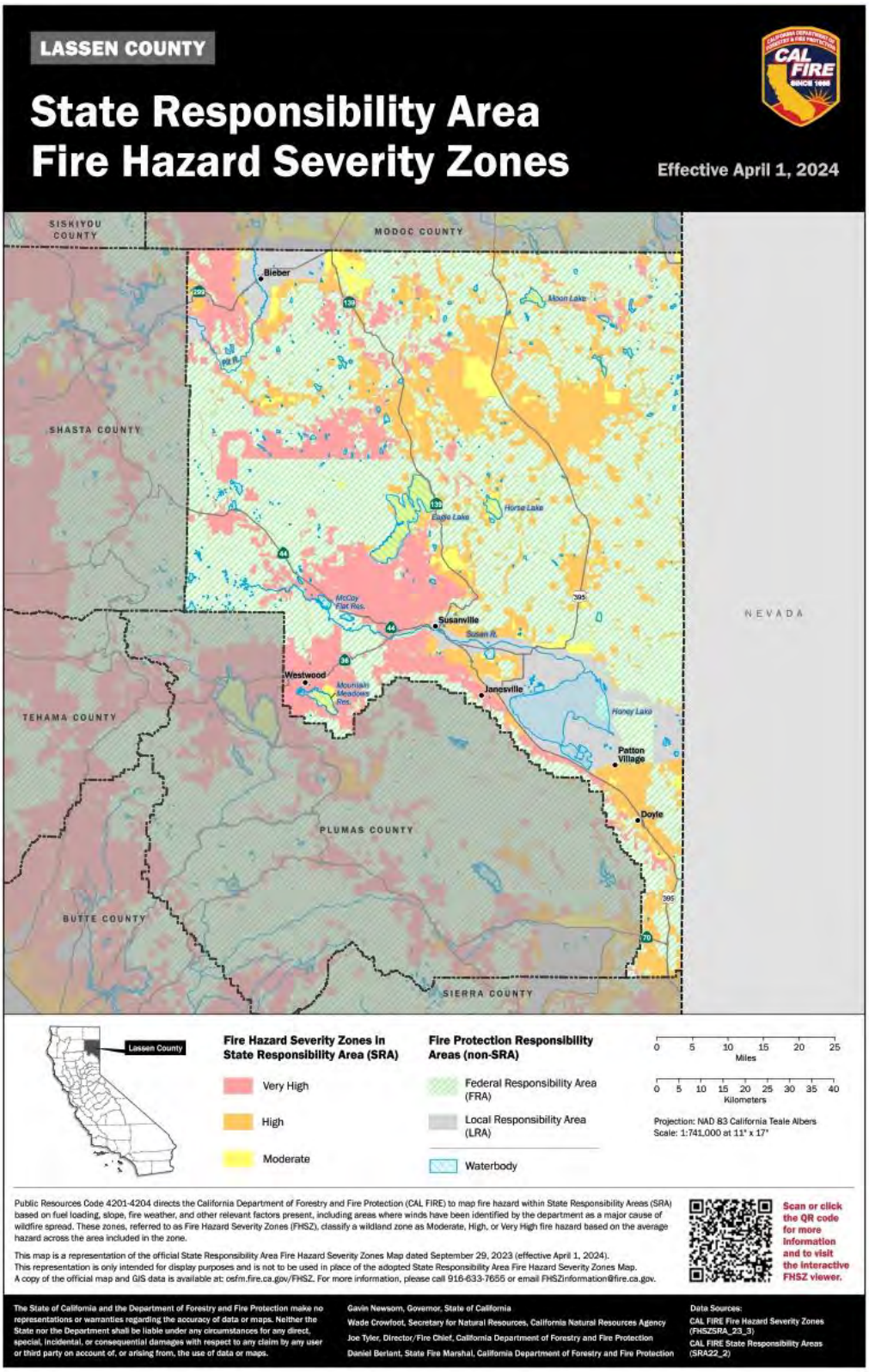
CAL FIRE was contacted to obtain some clarification on the above categories, but CAL FIRE indicated that the categories are based on many factors (i.e., terrain, fuel, weather) and are adjusted regularly based on new information (i.e., probability of an area burning, fire behavior). Because of the dynamic factors, CAL FIRE does not publish definitive definitions of the categories for public dissemination. However, the CAL FIRE website does provide this explanation: “Classification of a wildland zone as Moderate, High or Very High fire hazard is based on the average hazard across the area included in the zone, which have a minimum size of 200 acres. In wildlands, hazard is a function of modeled flame length under the worst conditions and annual burn probability. Both these factors generally increase with increasing hazard level, but there may be instances where one value is Very High and the other is low, pushing the overall hazard into a more intermediate ranking. On average, both modeled flame length and burn probability

*increase by roughly 40-60% between hazard classes. Classification outside of wildland areas is based on the fire hazard of the adjacent wildland and the probability of flames and embers threatening buildings."*

While Wildfire events can occur without warning, there are instances where the spread of the Wildfire can provide or some weather indicator (i.e., Red Flag Warning) can provide some warning. Wildfires events can occur any time of the year but are typically worse during hotter dryer months. Durations of wildfires can last a few hours, up to a few weeks.

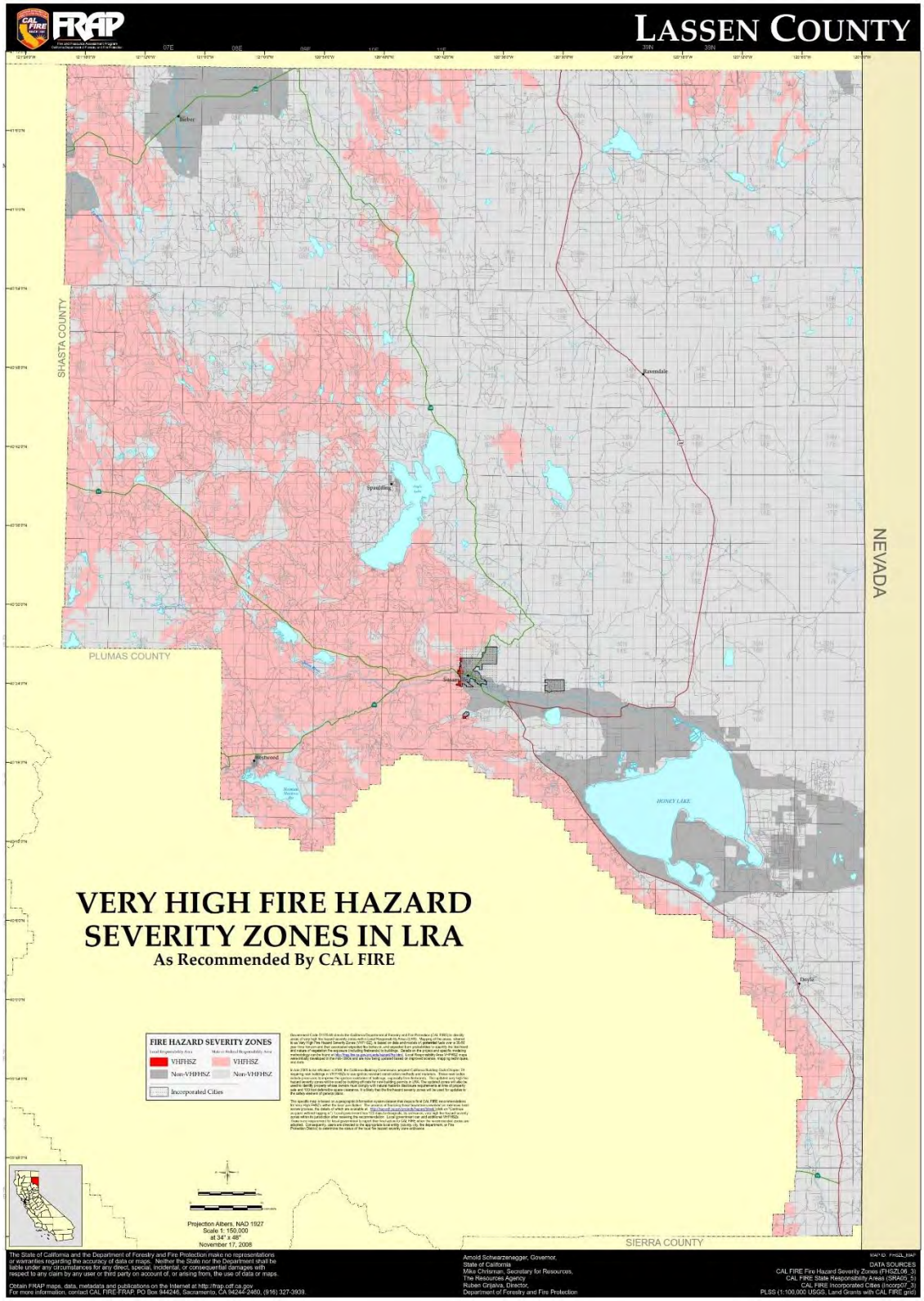
The most current mapping efforts by CDF-FRAP were conducted in 2024. Error! Reference source not found.**23** shows the Fire Hazard Severity Zones under State and Federal responsibilities in Lassen County and Error! Reference source not found.**24** shows the Fire Hazard Severity Zones under local responsibilities in Lassen County.

*Figure 5-21. Fire Hazard Severity Zones- State Responsibility Areas*




*Source: California Department of Forestry and Fire Protection*

*Figure 5-22. Fire Hazard Severity Zones- Local Responsibility Areas*




*Source: California Department of Forestry and Fire Protection*

Additionally, the Upper Rancheria is considered to be in the Wildland Urban Interface (WUI) zone due to the vegetation surrounding the structures

#### *5.4.20.4* History

Lassen County is subject to periodic wildland fires. Error! Reference source not found.**22** depicts the major wildfire history in Lassen County; while Error! Reference source not found.**25** depicts the location of the recent wildfire perimeters for the major wildfires listed in **Error! Reference source not found.**22. Showing recent wildfire perimeters provides important information as they show areas that might not be as high of a risk in the near future since vegetation (fuel) may be reduced due to the recent wildfire. It should be noted that the Rush wildfire is the largest wildfire by acreage in the state of California.

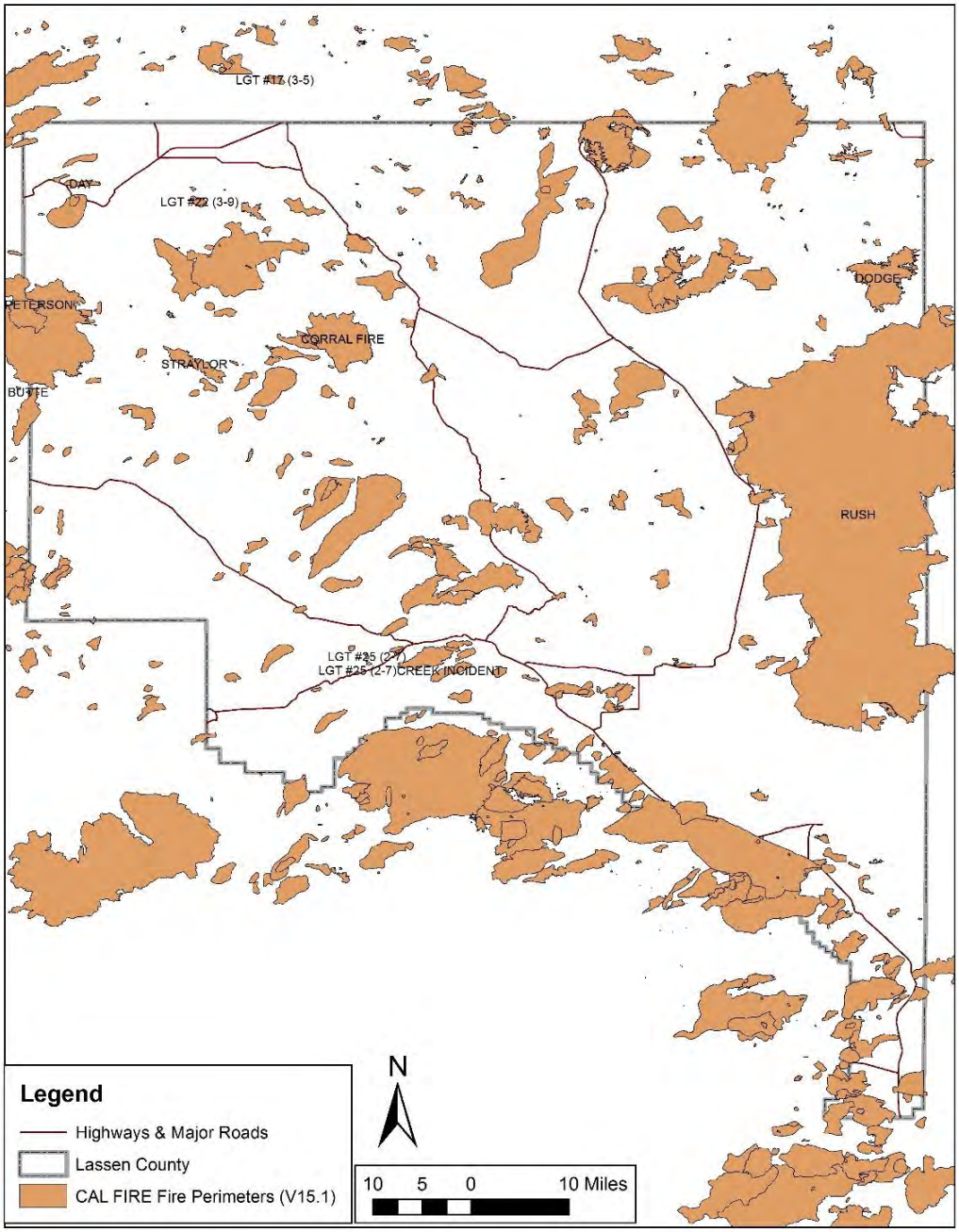
*Table 5-22. Major Wildfires in Lassen County*

| Fire Name | Date | Approximate Damage |
|---|---|---|
| **Straylor Fire** | Jul 22–30, 2004 | Took place in the CDF Lassen-Modoc Unit, burning 3,422 acres. |
| **Lassen/Modoc Lightning Fires** | Jun 25, 2006 | Burned approximately 3,500 acres. |
| **Creek Fire** | Jul 18–23, 2006 | The Creek Fire took place in the CDF Lassen-Modoc Unit, burning 1,611 acres. |
| **Popcorn Fire** | Jun 24, 2008 | The Popcorn Fire joined with the Peterson Fire to become the Peterson Complex and burned 3,100 acres near Little Valley in the Lassen National Forest in Shasta County and Lassen County. |
| **Corral Fire** | Jun 23, 2008 | Burned 12,434 acres in the Upper Gooch Valley in Lassen County. |
| **Dodge Complex Fire** | Aug 1, 2009 | Burned 1,600 acres, 10 miles southeast of Madeline in Lassen County. |
| **Hat Creek Complex** | Aug 1, 2009 | Burned 11,269 acres throughout multiple locations in the Lassen and Shasta Counties. The Hat Creek Complex consists of several fires. The three major fires are Sugarloaf, Brown and Butte. |
| **Day Fire** | Aug 27, 2009 | Burned 853 acres near Day Road/Hwy 299E in Lassen County. |
| **Rush Fire** | Aug 12, 2012 | 315,577 acres, (271,911 acres in CA) 15 miles southeast of Ravendale |
| **Dodge Fire** | Aug 3, 2015 | Burned 10,570 acres 17 miles northeast of Ravendale |
| **Willard Fire** | Sep 11,2016 | Burned 2,575 acres in the Susan River Canyon 6 miles west of Susanville |
| **Extreme Wind and Fire weather Conditions** | Oct 2019 | Disaster Code 114 |
| **Beckworth Complex** | Jun 1, 2024 | Plumas National Forest, 105,003 acres |
| **Dixie Fly & Tamarack Fires** | Summer 2021 | Additionally, LMUD received power from HLP for 66 days due to the fire damage sustained to the Caribou Line. Disaster Code 120 |
| **Laura II Fire** | Oct 16, 2020 | Bureau of Land Management, 2,729 acres |
| **Sheep Fire** | Jul 16, 2020 | Plumas National Forest, 29,541 acres |
| **Hog Fire** | Jun 17, 2020 | CAL FIRE Lassen Modoc Unit, 9,566 acres |

| | | |
|---|---|---|
| **Gold Fire** | Jun 19, 2020 | CAL FIRE Lassen Modoc Unit, 22,652 acres |
| **California Wildfires** | Nov 12, 2020 | DR- 4558- |
| **California Wildfires** | Sep 24, 2021 | D-4610- |
| **Lava & Beckworth Complex Fires** | Jun-Jul 2021 | Disaster Code 119 |

*Source: California Department of Forestry and Fire Protection*

***Figure 5-23. Lassen County Recent Major Wildfire Perimeters***




*Source: California Department of Forestry and Fire Protection*

In recent years, higher prevalence and intensity of drought has led to loss in forest vegetation and habitat as well as an increased occurrence of drought tolerant invasive species and insect blight/diseases, drier summers conducive to longer fire seasons where fires have an increased frequency, extent, and magnitude. In 2021, the SIR Cradle Valley property burned in the Dixie Fire in 2021 with the majority of the property burned at moderate and high severity. Sixty-four (64) acres sustained stand-replacing fire and requiring reforestation. There was a cabin and remnants of two older structures near the cabin site that burned down during the fire. The Upper Rancheria also is comprised of forest land and has a high risk of wildfire damage. Fuel break lines are currently maintained on the Upper Rancheria through BIA funding to mitigate this direct threat.

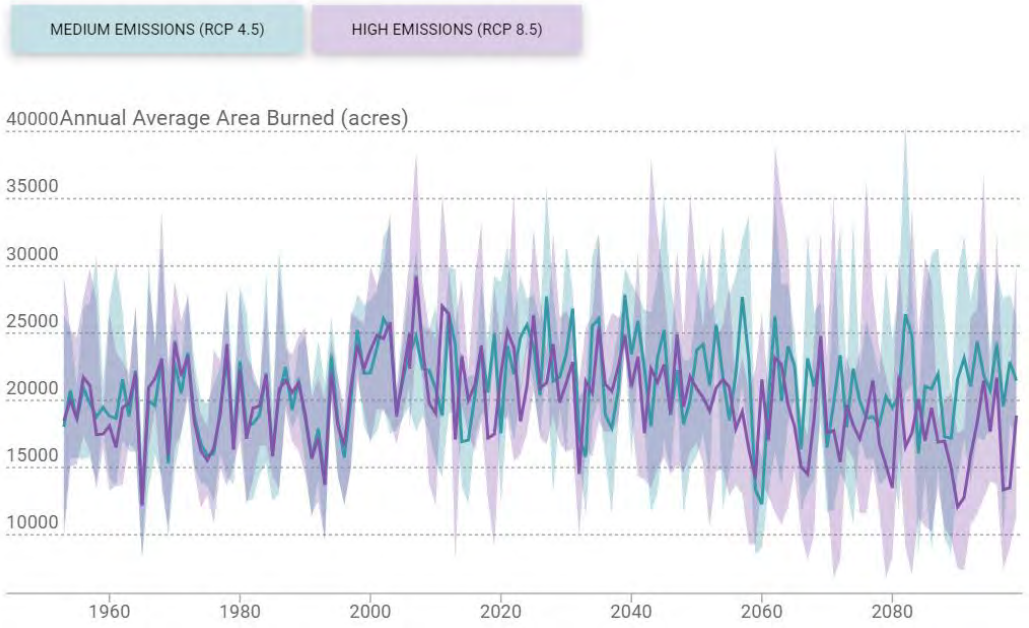
#### *5.4.20.5* Probability of Occurrence

The majority of work done to estimate the probability of wildfire occurrence has been focused on identifying the potential areas where wildfire could occur. According to the CAL FIRE, the FRAP Fire Hazard Severity Zone maps are based on data and models of potential fuels over a 30- to 50-year time horizon and their associated expected fire behavior and expected burn probabilities to quantify the likelihood and nature of vegetation for exposure to buildings. This indicates a very high likelihood of wildfire occurrence in the area.

As previously mentioned, vegetation, weather, and topography are the significant elements in identifying areas of potential threat of wildfire occurrences. The north part of the County is marked by mountains, foothills, and canyons that are covered in susceptible vegetation. A large amount of the native vegetation in the area is commonly called chaparral; chaparral is a dense and scrubby bush that has evolved to persist in a fire-prone habitat. Chaparral plants will eventually age and die; however, they will not be replaced by new growth until a fire rejuvenates the area. Chamise, manzanita and ceanothus are all examples of chaparral which are quite common in the area. The region's climate, with its warm and dry summers, contributes to low relative humidity and low fuel moisture. When combined with high fuel loading, the potential for a catastrophic wildfire event is significant. Three (3) weather conditions that may cause the ignition of and/or impact the behavior of wildfires are as follows: 1) thunder and lightning storms; 2) high wind events; and, 3) hot, dry (low humidity) periods.

The State of California has also developed tools under the Cal-Adapt project. The Cal-Adapt project provides the public, researchers, government agencies and industry stakeholders with essential data & tools for climate adaptation planning, building resiliency, and fostering community engagement. The following figure (**Figure 5-26**) was generated by Cal-Adapt work for Lassen County.

*Figure 5-24. Annual Average Area Burned*




According to the Planning Team's assessment of this hazard/event, there is a High probability of occurrence; see subsection 1 under this hazard/threat (Prioritization). A High hazard/threat event was determined to equate to greater than 75% chance of occurring within five (5) years.

#### *5.4.20.6* Climate Consideration

Climate change plays a significant role in wildfire hazards. The changing conditions from wet to dry can create more fuel; the increased possibility of high winds increase risk and present a challenge, and drought conditions could hinder the ability to contain fires. According to the modeling for wildfire potential available on the Cal-Adapt website, on average, more acreage will be affected by wildfire in the coming decades, particularly beyond 2050, when most of the County can expect up to 20% more land to be burned by wildfire on an average annual basis. Large wildfires also have several indirect effects beyond those of a smaller, local fire. These may include air quality and health issues, road closures, business closures, and other forms of losses. Furthermore, large wildfires increase the threat of other disasters such as landslides and flooding.

# 6. Risk Assessment

## 6.1. Overview

The purpose of this section is to estimate the risk (potential impacts to vulnerable assets) of the hazards and threats within the county. To accomplish this, three (3) different approaches were used: 1) application of scientific loss estimation models; 2) quantitative exposure analysis of hazards/threats; and 3) qualitative exposure analysis of hazards/threats. It is important to note that the first two approaches can only be applied if a hazard/threat has an exposure area (footprint). For those hazards/threats where an exposure layer does not exist or where the hazard/threat exposure area is the entire planning area (i.e., Lassen County), a brief summary of the potential vulnerability is presented.

### 6.1.1. Vulnerable Assets

For the purposes of the LHMP, Vulnerable Assets were broken down into two (2) categories: General Assets and Key Assets.

General Assets consist of general population, general building stock, the economy, the environment, and lifelines. Below is an overview of some of the vulnerabilities of General Assets:

- Population- This includes the general population with special emphasis on underserved and socially vulnerable populations as outlined in Section 3.5. Consideration was given to injuries, fatalities, and any additional support that may be needed.
- Buildings- This includes the general building stock in the Operational Area: residential, commercial, and industrial sites. Consideration was given to loss of functionality, injuries, fatalities, and disruption to the community.
- Economy- This includes the loss of general revenue generating streams of income for residents, businesses, and government. Consideration was given to family's ability to meet response and recovery needs, business and government to meet operating budgets.
- Environment- This includes consideration of public open space, culturally sensitive areas, and protected lands. Consideration was given to loss of quality of life, loss of historical/scientific significance, and possible impacts on health and safety.
- Lifelines- This includes utilities such as water, power, telecommunications, sewer, natural gas, other fuels (propane, gasoline, oil), transportation (land, air), and trash removal. Consideration was given to loss of quality of life, loss of functionality, and possible impacts on health and safety.

Key Assets consist of those assets in the Operational Area or used by the Operational Area during response and/or recovery efforts. As each Key Asset is unique, vulnerability was assessed for both a loss of functionality and damage. Additional information about Key Assets is found under Section 6.1.3 and Appendix E.

### 6.1.2. Scientific Loss Estimation Models

The approach used to complete this effort involves the utilization of the FEMA Hazus model. Hazus is a nationally applicable standardized methodology that estimates potential losses from

earthquakes, hurricane winds and floods. Hazus uses state-of-the-art Geographic Information Systems (GIS) software to map and present data results of damage and economic loss estimates for buildings and infrastructure from earthquake, hurricane winds and flood hazard. It also allows users to estimate the impacts of the hazards on populations. Estimating losses is essential to decision-making at all levels of government, providing a basis for developing mitigation plans and policies, emergency preparedness, and response and recovery planning.

Hazus' standard configuration allows for "out-of-the-box" regional or community-wide loss assessment using default ("Level 1") population and building inventory databases, aggregated to the census tract level for earthquakes or census block level for flood and hurricane. Additionally, there is a default essential facilities and lifeline systems database; however, the data sets are incomplete and usually need augmentation.

Because there were no significant changes to the data over the past 5 years, the County, City, and Rancheria decided not to rerun Hazus. Additionally, the County, City, and Rancheria did not incorporate inflation but recognized that the Hazus numbers would be higher in today's dollars. Various inflation factors that needed to be considered and the challenges incorporating those factors were discussed. It was agreed that the previous Hazus model run was sufficient for current planning efforts but that for the next LHMP update, the County, City, and Rancheria should rerun the Hazus model. As explained, when the Hazus default data is updated, it incorporates inflation estimated numbers. A summary of Hazus default building inventory data used for Lassen County is provided below. **Table 6-1** presents Hazus default building inventory data by general occupancy and **Table 6-2** presents Hazus default building inventory data by general building type.

*Table 6-1. Hazus Default Building Inventory Data- General Occupancy*

| General Occupancy | Building Replacement Value ($1,000) | Building Replacement Value ($1,000) | Contents Replacement Value ($1,000) | Building Square Footage (1,000 Sq. Ft.) | Building Count |
|---|---|---|---|---|---|
| **Residential** | $2,445,605 | $2,445,605 | $1,223,378 | 19,135 | 11,752 |
| **Commercial** | $387,734 | $387,734 | $467,219 | 1,953 | 445 |
| **Industrial** | $30,673 | $30,673 | $37,983 | 244 | 110 |
| **Other** | $143,293 | $143,293 | $148,174 | 856 | 174 |
| **TOTAL** | **$3,007,305** | **$3,007,305** | **$1,876,754** | **22,188** | **12,481** |

*Table 6-2. Hazus Default Building Inventory Data- General Building Type*

| General Building Type | Building Replacement Value ($1,000) | Building Replacement Value (%) | Estimated Building Count | Building Count (%) |
|---|---|---|---|---|
| **Concrete** | $189,981 | 6.3% | 152 | 1% |
| **Manufactured Housing** | $114,559 | 3.8% | 2,228 | 18% |
| **Precast Concrete** | $67,395 | 2.2% | 123 | 1% |
| **Reinforced Masonry** | $223,634 | 7.4% | 269 | 2% |
| **Steel** | $148,321 | 4.9% | 160 | 1% |
| **Unreinforced Masonry** | $27,232 | 0.9% | 36 | 0% |
| **Wood Frame (Other)** | $107,002 | 3.6% | 127 | 1% |
| **Wood Frame (Single-family)** | $2,129,182 | 70.8% | 9,386 | 75% |
| **TOTAL** | **$3,007,305** | | **12,481** | |

The distribution of buildings across the various construction classes given in Table 6-2 is estimated using Hazus default relationships (e.g., x% of offices may be built of concrete frame, y% of offices may be built of reinforced masonry, etc.). The actual distribution of buildings across these construction types may be different.

The Hazus essential facilities default data was also used for the analysis; however, the data sets were augmented to account for a significant number of missing facilities located within Lassen County. Below is a summary of the essential facilities data used:

- **Fire Stations-** the Hazus default database contained 11 facilities; database was augmented to include 25 facilities.
- **Law Enforcement Facilities-** the Hazus default database contained 3 police station facilities; database was augmented to include 11 facilities (5 stations, 5 jail/prison facilities, and the Superior Court building).
- **Medical Care Facilities-** the Hazus default database contained 1 hospital; database was augmented to include 8 facilities (incorporated information on community clinics, skilled nursing facilities and home health agencies as licensed by the California Office of Statewide Health Planning and Development- OSHPD).
- **Public Schools-** the Hazus default database included 38; database was not augmented.

**Table 6-3** provides a summary of the construction type and design level assumed for the essential facilities considered in the Hazus risk assessment. A more accurate risk assessment could be conducted if additional facility information was collected, such as structural system, number of stories, year of construction/seismic code used for design, building square footage, building replacement value, and content replacement value. It should be noted that the Hazus default database represents each school campus with a single building record of an assumed construction type. In reality, most public schools are multi-building campuses, built over a period of years (i.e., buildings may be designed to different seismic codes). To improve the risk assessment for public schools, information on each individual building would need to be collected.

*Table 6-3. Essential Facilities Data for Lassen County Included in the Hazus Risk Assessment*

| Essential Facility Type | Essential Facility Sub-Type | Assumed Structural Class and Seismic Design Level | Number of Facilities |
|---|---|---|---|
| **Fire Stations** | Station | W2 (Wood Frame > 5,000 SF), Moderate Code Design Level | **25** |
| **Law Enforcement Facilities** | Police/Sheriff Station | W2 (Wood Frame > 5,000 SF), Moderate Code Design Level | 5 |
| | Jail/Prison | Reinforced Masonry, High Code Design Level | 5 |
| | Courthouse | Reinforced Masonry, High Code Design Level | 1 |
| | | *Sub-total* | **11** |
| **Medical Care Facilities** | Hospital | W2 (Wood Frame >5,000 SF), High Superior Design Level | 1 |
| | Community Clinic | W1 (Wood Frame ≤ 5,000 SF), Moderate Code Design Level | 5 |
| | Skilled Nursing Facility | W1 (Wood Frame ≤ 5,000 SF), Moderate Code Design Level | 1 |
| | Home Health Agency | W1 (Wood Frame ≤ 5,000 SF), Moderate Code Design Level | 1 |
| | | *Sub-total* | **8** |
| **Public Schools** | Schools | W1 (Wood Frame ≤ 5,000Sq.Ft.), High Code Design Level | **38** |

The lifeline inventory within HAZUS is divided between transportation and utility lifeline systems. There are seven (7) transportation systems in Hazus that include 1) highways, 2) railways, 3) light rail, 4) buses, 5) ports, 6) ferries and 7) airports, and 8) utility systems. Utility systems include 1) potable water, 2) wastewater, 3) natural gas, 4) crude & refined oil, 5) electric power, and 6) communications. The current Hazus lifeline inventory default data are provided in **Table 6-4** and **Table 6-5**. Light Rail, Port and Ferry facilities have been omitted from Table 6-4 as there are no such facilities in the County. It should be noted that most utility data have been removed from the public domain for security reasons; accordingly, default utility data available in Hazus may not be fully representative of the actual exposure.

*Table 6-4. Hazus Lifeline Inventory Default Data - Transportation System*

| System | Component | # Locations/ # Segments | Replacement value (millions of dollars) |
|---|---|---|---|
| **Highway** | Bridges | 98 | **54.7** |
| | Segments | 45 | **2,004.2** |
| | Tunnels | 0 | **0** |
| | **Sub-total** | **143** | **2,058.9** |
| **Railway** | Bridges | 1 | **0.04** |
| | Facilities | 0 | **0** |
| | Segments | 157 | **315.2** |
| | Tunnels | 0 | **0** |
| | **Sub-total** | **158** | **315.24** |
| **Bus** | Facilities | 1 | **1.3** |
| | **Sub-total** | **1** | **1.3** |
| **Airport** | Facilities | 3 | **32.0** |
| | Runways | 4 | **151.90** |
| | **Sub-total** | **7** | **183.90** |
| | | **TOTAL** | **2,559.34** |

*Table 6-5. Hazus Lifeline Inventory Default Data- Utility System*

| System | Component | #Locations/ Segments | Replacement value (millions of dollars) |
|---|---|---|---|
| **Potable Water** | Distribution Lines | N/A | **28.9** |
| | Facilities | 0 | **0** |
| | Pipelines | 0 | **0** |
| | **Sub-total** | **0** | **28.9** |
| **Waste Water** | Distribution Lines | N/A | **17.30** |
| | Facilities | 1 | **78.60** |
| | Pipelines | 0 | **0** |
| | **Sub-total** | **1** | **95.90** |
| **Natural Gas** | Distribution Lines | N/A | **11.5** |
| | Facilities | 0 | **0** |
| | Pipelines | 0 | **0** |
| | **Sub-total** | **0** | **11.5** |
| **Oil Systems** | Facilities | 0 | **0** |
| | Pipelines | 0 | **0** |
| | **Sub-total** | **0** | **0** |
| **Electrical Power** | Facilities | 2 | **259.6** |
| | **Sub-total** | **2** | **259.6** |
| **Communication** | Facilities | 3 | **0.40** |
| | **Sub-total** | **3** | **0.40** |
| | | **TOTAL** | **396.3** |

### *6.1.3.* Quantitative Exposure Analysis

The approach used to complete this effort involves using GIS software to geolocate assets which fall within the hazard exposure area (footprint). The results summarize the total number of

exposed critical assets and the estimated cost of building replacement and content. Because of the size of the county and the disbursement of the assets, maps were not generated for this analysis. **Table 6-6** provides a list of the categories of assets identified by the County, City, and Rancheria. This list represents both government owned and/or operated and privately owned and operated assets. While similar, this list is different than the Hazus list which was developed to estimate damage (loss) from hazards/threats. Information for government owned or operated facilities (building replacement cost and building content costs) were reviewed and updated as needed; where available the same information was reviewed and updated for the privately owned or operated facilities. A complete list of the assets can be found in **Appendix E**.

*Table 6-6. Critical Assets within Lassen County*

| Category of Facility | Total Structures | Total Real Property | Total Personal Property |
|---|---|---|---|
| **Airport** | 7 | $ 6,000,000 | NA |
| **Commercial** | 2 | $ 10,780,000 | $ 10,780,000 |
| **Communications** | 2 | $ 7,000,000 | NA |
| **Fire** | 7 | $ 6,331,800 | $ 7,387,100 |
| **Law** | 8 | $ 16,936,012 | $ 18,807,387 |
| **Medical** | 4 | $ 5,782,499 | $ 8,673,735 |
| **Other** | 2 | $ 270,660 | $ 270,660 |
| **Public Buildings** | 15 | $ 20,453,545 | $ 15,803,545 |
| **Roads/Bridges** | 53 | $ 67,750,000 | NA |
| **Schools** | 20 | $ 58,782,137 | $ 70,250,037 |
| **Water Facilities** | 27 | $ 11,825,000 | NA |
| **Total** | **143** | **$ 211,911,653** | **$ 131,972,464** |

The owners of the critical assets are as follows:

- City of Susanville 27
- Federal Government 3
- Lassen County 76
- Private 20
- Susanville Indian Rancheria 10
- State Government 7

### *6.1.4.* Qualitative Exposure Analysis

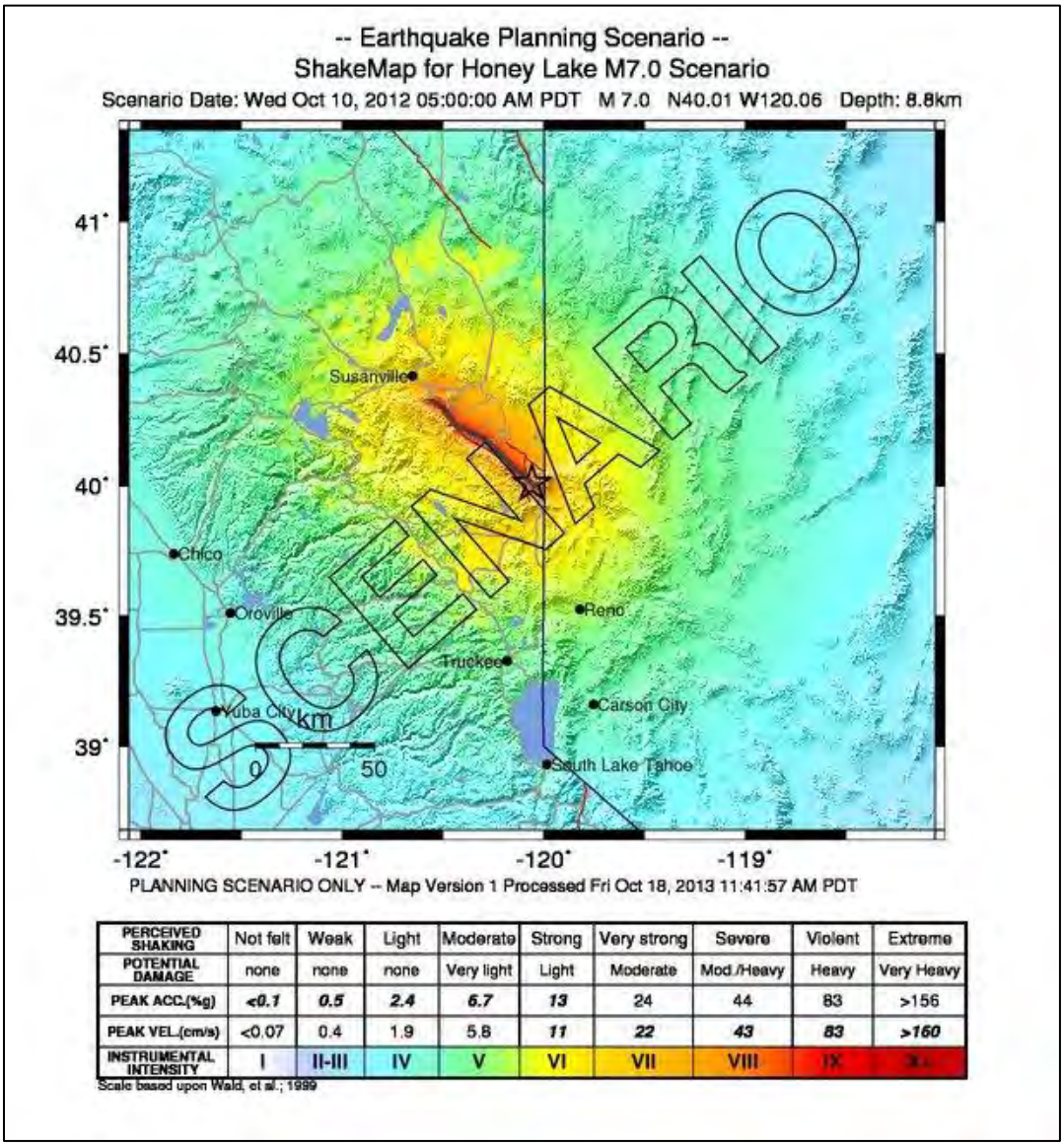
The approach used to complete this effort involves utilizing readily available data (i.e., historical events), After Action Reports, census data, and local expertise to estimate potential vulnerability and impacts. This approach will assess vulnerabilities and impacts in the following areas: Population, Buildings, Economy, Environment, and Lifelines. As to not duplicate information, the Planning Team considered the historical damages to hazard/threats presented in Section 5.0 but did not include the information here.

## 6.2. Scientific Loss Estimation Analysis Results

### 6.2.1. Earthquake

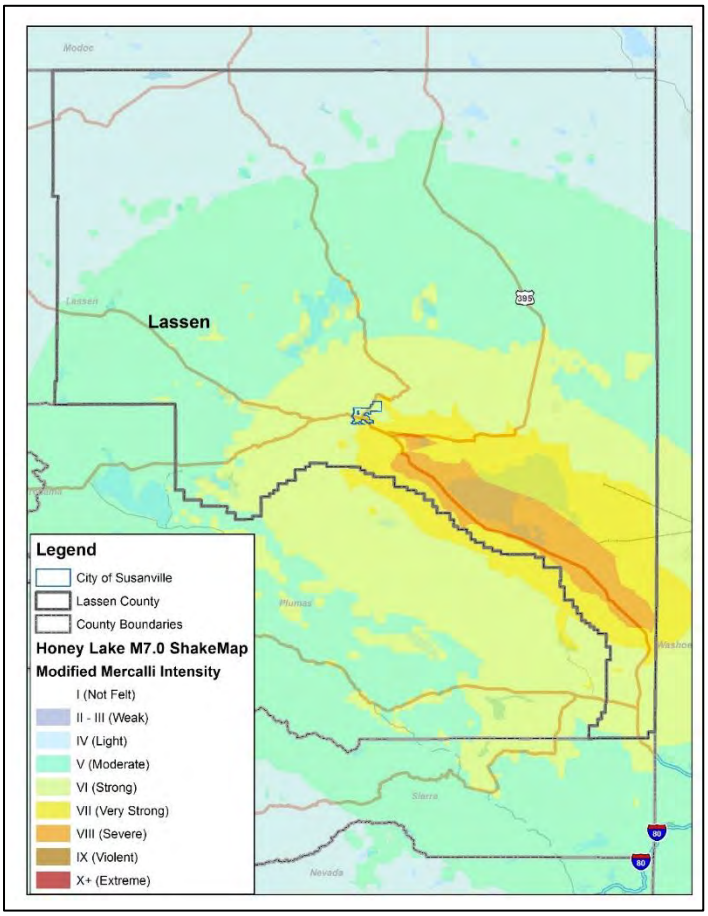
One (1) earthquake scenario developed by the United States Geological Survey (USGS) was selected to assess potential impacts from a significant earthquake in the county (**Figure 6-1**). A county-level map of ground shaking for the same scenario is shown in **Figure 6-2**.

*Figure 6-1. M7.0 Earthquake on the Honey Lake Fault*




*Source: USGS ShakeMap*

*Figure 6-2. M7.0 Earthquake on the Honey Lake Fault: Ground Motions for Lassen County*




*Source: USGS ShakeMap*

Hazus was used to conduct county-wide earthquake risk assessment. An overview of the county-wide results for the earthquake scenario is provided in **Table 6-7**. **Table 6-8** provides a breakdown of estimated building damage (building count by Hazus damage state) by general building type, allowing for an understanding of the distribution of predicted damage in the modeled scenarios. (Note: totals by building type in Table 6-8 may not match those in Table 6-2 due to rounding within Hazus). Functionality of essential facilities in the scenario earthquake is summarized in **Table 6-9**.

*Table 6-7. Estimated Impacts- M7.0 Honey Lake Earthquake Scenario*

| | | |
|---|---|---|
| **Direct Economic Losses for Buildings ($1,000)** | | |
| **Capital Stock Losses** | Cost of Structural Damage | 14,101 |
| | Cost of Non-Structural Damage | 64,103 |
| | Cost of Contents Damage | 24,229 |
| | Inventory Loss | 248 |
| **Income Losses** | Relocation Loss | 8,757 |
| | Capital-Related Loss | 2,240 |
| | Rental Income Loss | 3,059 |
| | Wage Losses | 3,470 |
| | **Total Direct Economic Loss** | **120,207** |
| **Casualties** | | |
| **Day Casualties** | Casualties – 2 pm | |
| | Level 1 - minor injuries, basic first aid | 25 |
| | Level 2 - hospital treat & release | 5 |
| | Level 3 - injuries requiring hospitalization | 1 |
| | Level 4 - fatalities | 1 |
| | **Total Casualties** | **32** |
| **Night Casualties** | Casualties – 2 am | |
| | Level 1 - minor injuries, basic first aid | 27 |
| | Level 2 - hospital treat & release | 4 |
| | Level 3 - injuries requiring hospitalization | 0 |
| | Level 4 - fatalities | 0 |
| | **Total Casualties** | **31** |
| **Shelter** | | |
| **Shelter** | Displaced Households | 34 |
| | People Requiring Short-term Shelter | 24 |
| | | |
| **Debris** | Brick, Wood & Other (Light) Debris | 11.6 |
| | Concrete & Steel (Heavy) Debris | 12.4 |
| | **Total Debris** | **24.0** |

*Source: Hazus*

*Table 6-8. Estimated Building Damage- M7.0 Honey Lake Earthquake Scenario*

| General Building Type | Damage State | | | | | Total |
|---|---|---|---|---|---|---|
| | None | Slight | Moderate | Extensive | Complete | |
| Concrete | 96 | 28 | 20 | 6 | 1 | **151** |
| Manufactured Housing | 866 | 451 | 578 | 282 | 52 | **2,229** |
| Precast Concrete | 75 | 21 | 20 | 7 | 1 | **124** |
| Reinforced Masonry | 196 | 34 | 30 | 9 | 1 | **270** |
| Steel | 99 | 27 | 25 | 7 | 1 | **159** |
| Unreinforced Masonry | 21 | 8 | 5 | 2 | 1 | **37** |
| Wood Frame (other) | 86 | 28 | 12 | 1 | | **127** |
| Wood Frame (single family) | 6,954 | 1,872 | 521 | 31 | 9 | **9,387** |
| Total | **8,393** | **2,469** | **1,211** | **345** | **66** | **12,484** |

*Source: Hazus*

*Table 6-9. Predicted Essential Facility Functionality- M7.0 Honey Lake Earthquake Scenario*

| Essential Facility Type | Functionality Level | Number of Facilities |
|---|---|---|
| **Fire Stations** | Functionality < 50 % on Day 1 | 4 |
| | Functionality 50 - 75% on Day 1 | 7 |
| | Functionality >75% Day 1 | 14 |
| **Law Enforcement Facilities** | Functionality < 50 % on Day 1 | 0 |
| | Functionality 50 - 75% on Day 1 | 9 |
| | Functionality >75% Day 1 | 2 |
| **Medical Care Facilities** | Functionality < 50 % on Day 1 | 0 |
| | Functionality 50 - 75% on Day 1 | 5 |
| | Functionality >75% Day 1 | 3 |
| **Public Schools** | Functionality < 50 % on Day 1 | 2 |
| | Functionality 50 - 75% on Day 1 | 23 |
| | Functionality >75% Day 1 | 13 |

*Source: Hazus*

*City of Susanville*- Within the city we could expect disruption/damage to several key assets, including older residential and commercial buildings in the downtown and surrounding neighborhoods that may not be built to current seismic standards. Critical facilities such as the hospital, schools, fire and police stations, and other essential public services could be impaired, limiting emergency response capabilities. Transportation routes, including city streets and bridges are at risk of damage that could disrupt access within and outside of the community. Utilities and infrastructure, including water and sewer lines, treatment facilities, water tanks and pumps, power distribution systems, and communication networks, could also sustain damage resulting in service interruptions. Local businesses may be affected by structural damage or prolonged utility outages, leading to disruptions in commerce and the availability of goods and services.

*County of Lassen*- An earthquake could significantly affect key infrastructure critical to public safety and daily life. Transportation routes such as Highways 36, 44, 139, and 395, along with county roads and bridges, may be damaged or blocked, limiting access for emergency responders and isolating rural communities. Utility systems, including power distribution, water supply, wastewater facilities, and natural gas lines, are vulnerable to disruption, potentially leaving residents without essential services. Communication systems such as radio towers, fiber lines, and cellular networks could also be impacted, reducing the county's ability to coordinate response

and recovery. Public facilities, including Lassen County's hospitals, schools, and government buildings, may sustain structural damage, limiting their ability to serve the community during and after the disaster. Damage to homes, businesses, and agricultural operations could displace residents, disrupt livelihoods, and place additional strain on emergency shelters and support services.

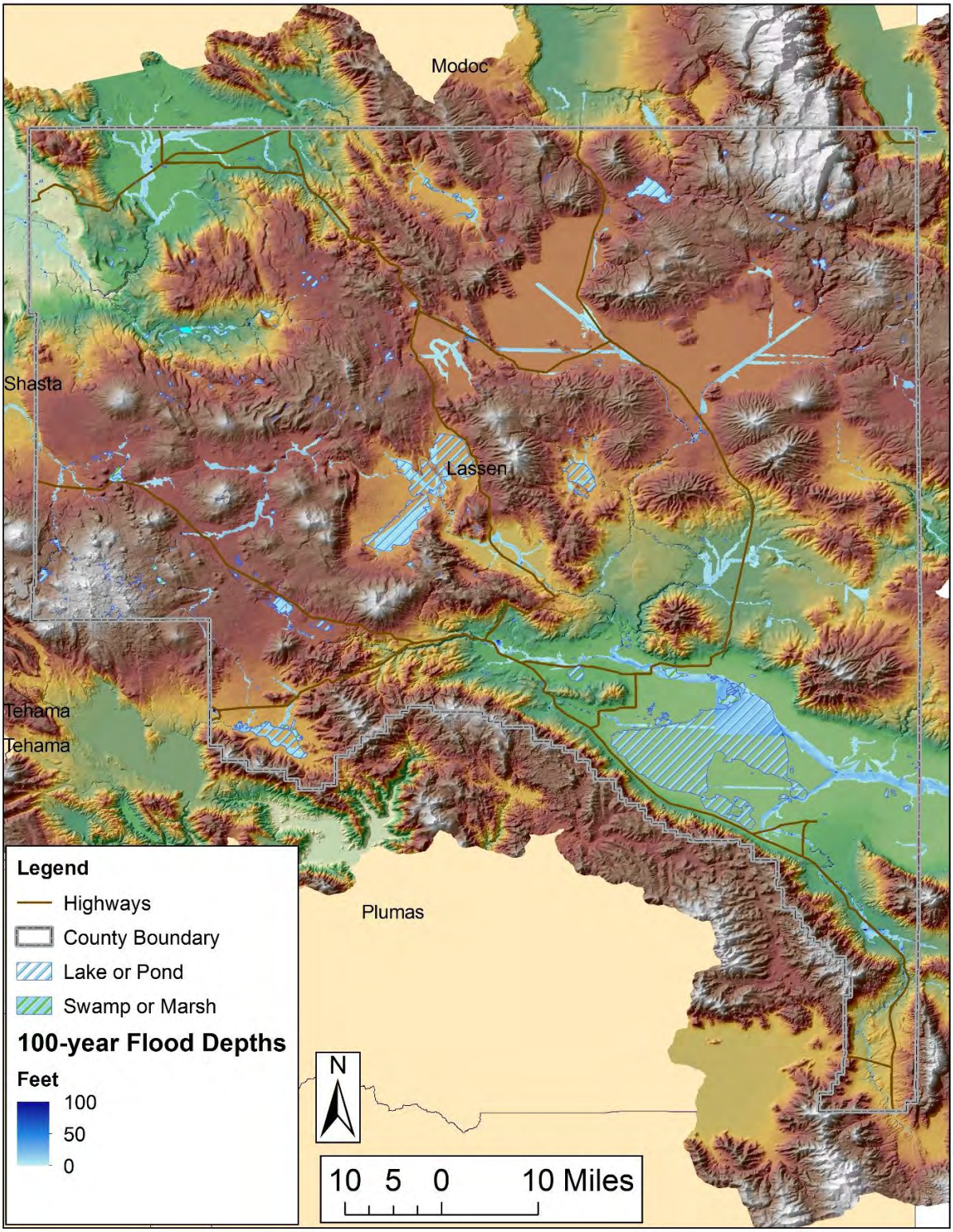
*Susanville Indian Rancheria*- An earthquake will cause effects to structural damage to all the buildings and infrastructure to (2) 100,000-gallon water tanks that supply water to 67 homes. It will disrupt approximately 7000 feet of water lines, including the main supply line and pumping station. For our road system it could buckle the roads, and this will delay delivery of supplies to us, or for us to ship any supplies out. Our Gym will be used as a Red Cross shelter.

### 6.2.2. Flood and Levee Failure

Hazus was used to develop a flood depth grid for the one percent (1%) annual chance (i.e., 100-year) flood, using Hazus built-in, basic (i.e., Level 1) flood depth estimation methodology. The Hazus flood hazard assessment methodology uses available information and local river and floodplain characteristics, such as frequency, discharge and ground elevation to estimate flood elevation, and ultimately flood depth. Digital elevation model (DEM) data with 30-meter resolution, available from the USGS' National Elevation Dataset (see: http://nationalmap.gov/elevation.html) has been utilized in the current assessment.

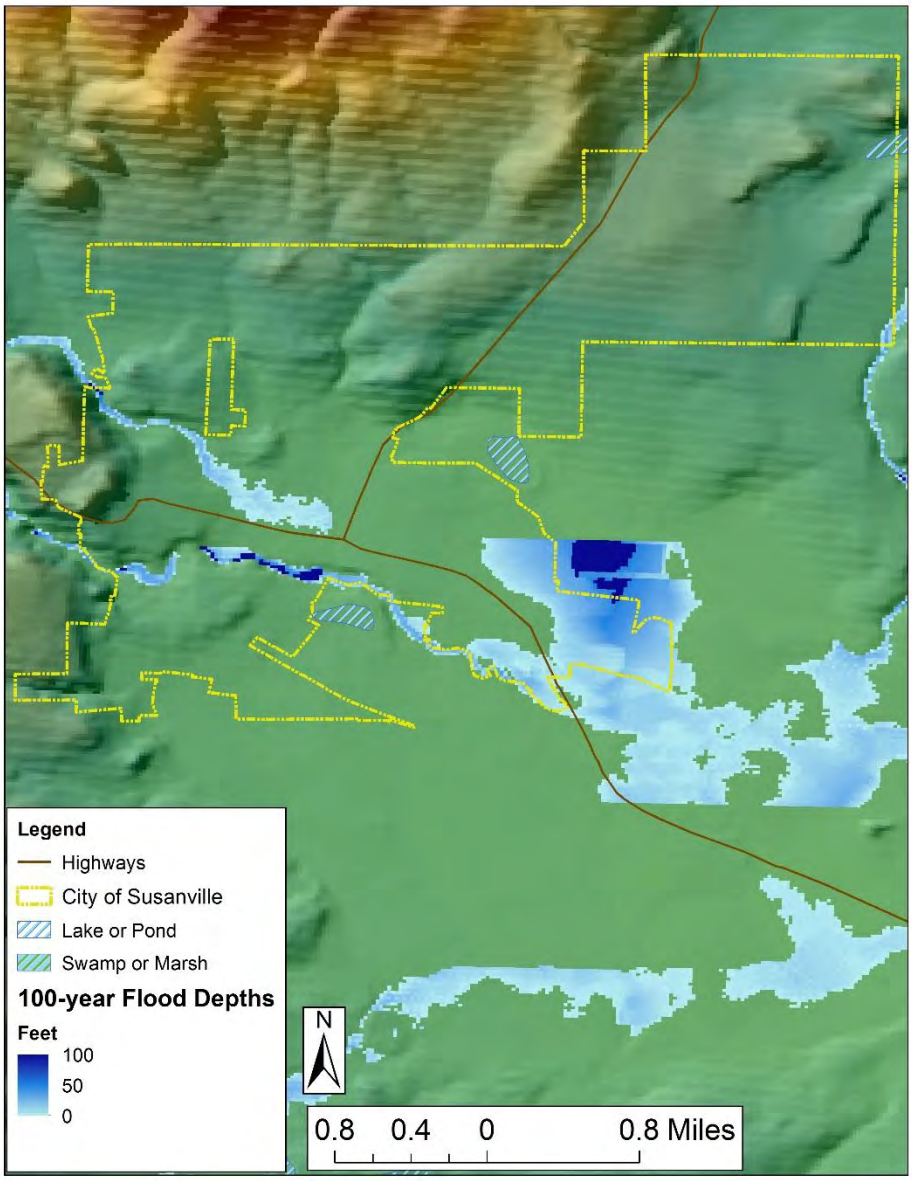
It should be noted that the flood depth grid generated by Hazus is not equivalent to regulatory floodplain data contained in FEMA's Digital Flood Insurance Rate Maps (DFIRMs), which are the result of extensive, detailed engineering study. The Hazus-generated flood depth grid is a hypothetical representation of a potential flooding scenario, intended for non-regulatory uses. Further, it should also be noted that the DEM data used in the default analysis do not reflect the presence of channels and levees. A more detailed assessment would utilize higher resolution DEM data, such as LIDAR-based DEM data, and/or would require GIS-based revisions to the DEM to better reflect local flood control structures. Given that the Hazus Level 1 approach does not consider the presence of levees, Hazus loss and damage estimates produced for areas with levees should be considered "worst-case" flood losses, reflecting potential flood damage that could occur in the event that the levees fail. Hazus-estimated flood depths across Lassen County are provided in Error! Reference source not found.**3,** while Error! Reference source not found.**4** and Error! Reference source not found.**5** show flood depths in the vicinity of Susanville and the Susanville Indian Rancheria, respectively. While the Susanville Indian Rancheria (as mapped by FEMA) is not impacted by the estimated 100-year flooding, the City of Susanville may be impacted by flooding on both the Susan River and Piute Creek.

*Figure 6-3. Flood Depths 1% Annual Chance (100-year) Flood- Lassen County*



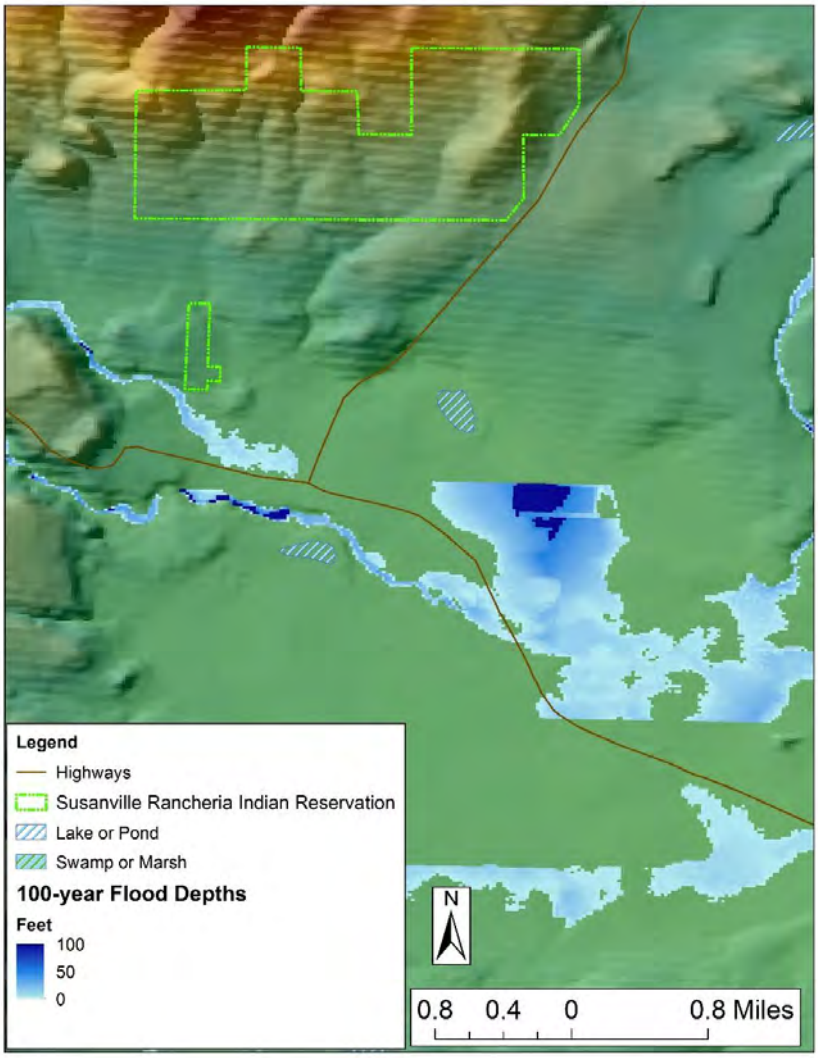

*Source: Hazus*

*Figure 6-4. Flood Depths 1% Annual Chance (100-year) Flood- City of Susanville*




*Source: Hazus*

*Figure 6-5. Flood Depths 1% Annual Chance (100-year) Flood- Susanville Indian Rancheria*




*Source: Hazus*

An overview of the county-wide Hazus results for the 100-year flood scenario is provided in **Table 6-10**. Error! Reference source not found.**11** provides a breakdown of estimated building damage (building count by percent damage range) by general occupancy, for those occupancies with exposure in the flooded census blocks. Several occupancies (e.g., industrial, agriculture, multi-family residential) had no exposure in the flooded blocks and have been omitted from the table. As shown, most of the flood-damaged buildings are single family homes.

Functionality of essential facilities in the flood scenario is summarized in **Table 6-12** for Lassen County. As shown in the table, no fire stations, law enforcement facilities or schools were located within the areas predicted to be flooded in the Hazus 100-year flood assessment. Further, just two medical care facilities were located within flooded areas, and just one is anticipated to suffer any flood damage.

*Table 6-10. Impacts for 1% Annual Chance (100-Year) Flood Scenario*

| | | |
|---|---|---|
| **Direct Economic Losses for Buildings ($1,000)** | | |
| **Capital Stock Losses** | Total Building Damage | 16,125 |
| | Cost of Contents Damage | 16,868 |
| | Inventory Loss | 304 |
| **Income Losses** | Relocation Loss | 34 |
| | Capital-Related Loss | 37 |
| | Rental Income Loss | 9 |
| | Wage Losses | 273 |
| | **Total Direct Economic Loss** | **33,650** |
| **Shelter** | | |
| **Shelter** | Displaced Households | 475 |
| | Number of People Requiring Short-term Shelter | 770 |
| **Debris (tons)** | | |
| **Debris** | Finishes | 1,161 |
| | Structures | 302 |
| | Foundations | 507 |
| | **Total Debris** | **1,970** |

*Source: Hazus*

*Table 6-11. Estimated Building Damage for 1% Annual Chance (100-year) Flood Scenario*

| Occupancy | Damage State | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | None | 1–10% | 11–20% | 21–30% | 31–40% | 41–50% | Substantial | |
| Single Family Homes | 92 | 61 | 49 | 9 | 8 | 2 | 3 | **224** |
| Manufactured Homes | 16 | 2 | 2 | 2 | 0 | 1 | 9 | **32** |
| Commercial | 2 | 0 | 0 | 0 | 0 | 0 | 0 | **2** |
| **Total** | **110** | **63** | **51** | **11** | **8** | **3** | **12** | **258** |

*Source: Hazus*

*Table 6-12. Predicted Essential Facility Functionality for 1% Annual Chance (100-year) Flood Scenario*

| Essential Facility Type | Hazard Impact/Functionality | Number of Facilities |
|---|---|---|
| **Fire Stations** | # facilities located within flooded areas | 0 |
| | # facilities with Moderate or Greater Damage | 0 |
| | # facilities expected to be non-functional on Day 1 | 0 |
| **Law Enforcement Facilities** | # facilities located within flooded areas | 0 |
| | # facilities with Moderate or Greater Damage | 0 |
| | # facilities expected to be non-functional on Day 1 | 0 |
| **Medical Care Facilities** | # facilities located within flooded areas | 2 |
| | # facilities with Moderate or Greater Damage | 0 |
| | # facilities expected to be non-functional on Day 1 | 1 |
| **Public Schools** | # facilities located within flooded areas | 0 |
| | # facilities with Moderate or Greater Damage | 0 |
| | # facilities expected to be non-functional on Day 1 | 0 |

*Source: Hazus*

*City of Susanville*- Flooding represents a well-documented and recurring hazard for the City of Susanville, particularly along the Susan River corridor. Historic flood events in 1964, 1986, 1997, and 2017 resulted in inundation of residential areas, mobile home parks, and roadways, with evacuations occurring along Carroll Street, Riverside Drive, and areas near the River Roost Mobile Home Park. These events caused damage to homes, disrupted transportation, and required emergency response operations. Within city limits, localized flooding also occurs in low-lying neighborhoods and areas served by older storm drainage infrastructure that lacks capacity for current storm intensities. Floodwaters threaten roadways, storm drains, water lines, and sewer systems, and can impair access to critical facilities and disrupt utility operations. While Susanville does not rely on a formal levee system, informal embankments and channel modifications along the Susan River may pose additional risk if overtopped or eroded.

Overall, Susanville's flood vulnerability is characterized by recurrent riverine flooding, exposure of developed areas along the Susan River, aging drainage infrastructure, and the risk of simultaneous impacts to housing, transportation, and utility systems that could significantly disrupt community function and complicate recovery.

*County of Lassen*- Flooding is one of the most frequent and damaging natural hazards affecting Lassen County. Flood events can result from heavy rainfall, rapid snowmelt, localized thunderstorms, or the failure of flood control infrastructure such as levees or drainage systems. Although much of Lassen County is rural, several communities, transportation corridors, and agricultural areas are located in or near flood-prone zones. The county's rivers, creeks, and seasonal drainages can rise rapidly during major storm events, leading to flash flooding, riverine flooding, and localized inundation. Levee failure, though less common, poses a significant risk where flood control structures protect low-lying lands, communities, or agricultural properties.

The potential impacts of flooding and levee failure are extensive. Floodwaters can cause injury or loss of life, particularly when high flows occur suddenly or at night. Fast-moving water can trap residents, damage vehicles, and cut off evacuation routes, complicating emergency response and

rescue operations. In rural areas, isolation of homes and communities may occur when roads and bridges are overtopped or washed out. Prolonged flooding can also lead to health hazards from contaminated water supplies, mold growth, and vector-borne diseases.

Damage to infrastructure and property can be severe. Flooding can destroy homes, businesses, and public buildings, while also damaging critical facilities such as water treatment plants, wastewater systems, power substations, and communication networks. Transportation infrastructure, including major highways, county roads, and bridges, may suffer erosion, washouts, or structural failure. The agricultural sector faces particular vulnerability, as floodwaters can inundate cropland, drown livestock, deposit sediment and debris, and degrade soil fertility. Such impacts can result in long-term economic losses and reduced productivity.

Environmental effects of flooding and levee failure include erosion of streambanks, loss of riparian habitat, and degradation of water quality. Floodwaters often carry sediment, nutrients, and pollutants into rivers, lakes, and wetlands, which can disrupt aquatic ecosystems and wildlife. In cases of levee failure, the sudden release of water can cause rapid habitat alteration and long-term landscape changes.

The social and economic impacts of major flood events can be profound. Displaced residents may face housing shortages and emotional stress, while businesses experience interruptions or closures. Recovery costs can place heavy financial burdens on local governments and property owners.

*Susanville Indian Rancheria*- The Susanville Indian Rancheria has no property with residential areas to deal with floods, levee failure, or landslides.

#### 6.2.2.1 Repetitive Loss (RL) Properties

As previously mentioned in Section 4 (Capability Assessment), the County and the City participate in the National Flood Insurance Program (NFIP). However, although the County and City have gone through several flood events in which properties have experienced repetitive loss, there are no properties that fall under the NFIP definition of Repetitive Loss Properties. Repetitive loss properties are defined as property that is insured under the NFIP that has filed two or more claims in excess of $1,000 each within any consecutive 10-year period since 1978. As such, there are no repetitive loss properties within the County or City.

## 6.3. Quantitative Exposure Analysis Results

### 6.3.1. Wildfire

**Error! Reference source not found.13** represents the number of assets exposed to California Department of Forestry and Fire Protection, Fire Resource Assessment Program (CDF-FRAP) Fire Hazard Severity Zones and the corresponding asset replacement and content cost. It is important to note that while CAL FIRE does categorize areas as "*moderate*", "*high*" and "*very high*", there is no standard description; they are based on a weighted scoring system of several factors.

*Table 6-13. Critical Asset Wildfire Exposure- Lassen County*

| | Moderate | | High | | Very High | | TOTAL | |
|---|---|---|---|---|---|---|---|---|
| | # | Exposure $ | # | Exposure $ | # | Exposure $ | # | Exposure $ |
| **City of Susanville** | 0 | $0 | 0 | $0 | 8 | $34,771,020 | **8** | **$34,771,020** |
| **Federal Government** | 0 | $0 | 0 | $0 | 0 | $0 | **0** | **$0** |
| **Lassen County** | 11 | $12,363,080 | 2 | $6,320,100 | 9 | $16,867,730 | **22** | **$35,550,910** |
| **Private** | 3 | $0 | 2 | $0 | 2 | $0 | **7** | **$0** |
| **Susanville Indian Rancheria** | 3 | $1,019,587 | 0 | $0 | 0 | $0 | **3** | **$1,019,587** |
| **State Government** | 0 | $0 | 1 | $2,551,875 | 2 | $4,221,200 | **3** | **$6,773,075** |
| **TOTAL** | **17** | **$13,382,667** | **5** | **$8,871,975** | **21** | **$55,859,950** | **43** | **$78,114,592** |

Because of the size of the county and the lack of concentration of assets in any single location, it was determined best to provide a list of the exposed assets by owner:

| Lassen County Asset Name | Zone |
|---|---|
| CR322 and Long Creek Bridge | Moderate |
| CR322 Long Valley Creek Bridge | Moderate |
| Long Valley Charter School | Moderate |
| A26 and Long Valley Creek Bridge | Moderate |
| Hwy. 36 and | Moderate |
| Schaffer Elementary School | Moderate |
| Barry Reservoir | Moderate |
| Belfast Rd. and Willow Creek bridge | Moderate |
| Hwy. 139 bridge | Moderate |
| Ravendale Airport | Moderate |
| Susanville Road bridge | Moderate |
| Janesville Elementary School | High |
| Stone Bengard Community Services | High |
| Clear Creek Bridge/Culvert | Very High |
| Westwood Airport | Very High |
| Susan Hills Water Tank | Very High |
| Hwy. 36 and Susan River Devil's coral bridge | Very High |
| Lassen County Public Works | Very High |
| Lassen County Administration Complex | Very High |
| Harris Drive Water Tank | Very High |
| Lake Forest Water Tank | Very High |
| Bagwell Springs Water Tank | Very High |

| City of Susanville Asset Name | Zone |
|---|---|
| South St Water Tank | Very High |
| Diamond View Elementary School | Very High |
| Susanville Public Works Building | Very High |
| S. Lassen St. and Susan River Bridge | Very High |
| Lassen Municipal Utilities District | Very High |
| Susanville Sanitation District | Very High |
| Susanville City Hall | Very High |
| Meadow View School | Very High |

| Private Asset Name | Zone |
|---|---|
| Branham Flat Dam | Moderate |
| Antelope Dam/Ducasse Reservoir | Moderate |
| Sworinger Reservoir | Moderate |
| Emerson Lake Dam | High |
| Collett Addition | High |
| Indian Ole Dam | Very High |
| Round Valley Reservoir | Very High |

| Susanville Indian Rancheria Asset Name | Zone |
|---|---|
| Susanville Rancheria Community (admin) Building | Moderate |
| Church | Moderate |
| Susanville Rancheria Water Tank | Moderate |

| State Government Asset Name | Zone |
|---|---|
| California Highway Patrol Station | High |
| CAL FIRE Susanville | Very High |
| CAL FIRE 5th & Cedar | Very High |

*City of Susanville*- Within the city we could expect disruption/damage to several key assets, including residential neighborhoods located near wildland-urban interface areas are at highest risk, with potential for structure loss and property damage. Critical facilities such as schools, the hospital, fire and police stations, and other public buildings may be threatened or require evacuation, impairing emergency response and public safety services. Transportation routes, including highways and local roads, could be closed due to fire activity or smoke, limiting access and evacuation capability. Utilities and infrastructure, including power lines, water supply systems, and communication networks, may be disrupted or damaged, resulting in extended outages. Local businesses and commerce could also be significantly affected by fire damage, smoke impacts, and reduced community access, leading to economic disruption and loss of essential services.

*County of Lassen*- Wildfire poses one of the most severe natural hazards to Lassen County, threatening its communities, infrastructure, and natural resources. The county's dry summer

climate, abundant vegetation, and steep, rugged terrain create conditions where fires can spread quickly and unpredictably, endangering lives and placing immense strain on firefighting resources. Major utility corridors operated by Lassen Municipal Utility District (LMUD) and Plumas-Sierra Rural Electric Cooperative (PSREC), along with critical communication towers and fiber-optic routes, are at risk of damage or failure, which can cut off electricity and communications across wide areas. Transportation networks such as Highways 36, 44, 139, and 395, along with rural county roads, are vulnerable to closures from advancing flames, making evacuations difficult and delaying emergency response. Public facilities, including Banner Lassen Medical Center in Susanville, local schools, and county government buildings, could sustain damage or face operational disruptions during wildfire events. Residential neighborhoods, commercial districts, ranching operations, and timber resources are all highly susceptible to loss, further straining the local economy. Lassen County's forests, watersheds, and recreation areas, including portions of Lassen Volcanic National Park and Lassen National Forest, are also at significant risk, with damage that could take decades to recover. In addition, smoke and poor air quality from large wildfires threaten public health, particularly for children, older adults, and individuals with respiratory conditions.

*Susanville Indian Rancheria*- Within the rancheria we could expect disruption/damage to several key assets, including Threat to the homes and infrastructure to the homes. Disruption of power, loss of power would mean the loss of capabilities for our pump station to pump water to the storage tanks. Smoke impacts breathing on the young and elderly. Transportation for special needs members who need to evacuate the area. Evacuation routes may be cut off due to fire and smoke. If our Admin building caught fire, it would disrupt service to our tribal membership, and local community.

## 6.4. Qualitative Exposure Analysis Results

According to FEMA's National Risk Index, Lassen County has a Relatively Low risk. Of the eighteen (18) hazards included in Risk Index, FEMA has indicated that thirteen (13) are in the County. The Risk Index is derived by multiplying the Expected Annual Loss estimate with Social Vulnerability, then dividing it by Community Resilience. A summary of the FEMA National Risk Index information is presented in **Appendix F**. This information was used to supplement and/or augment the information prepared by the Planning Team. Below is the Planning Team's perceived vulnerability and potential impacts from each hazard/threat in the Lassen County.

### 6.4.1. Agriculture Pests/Disease

Impacts from Agriculture Pest/Disease events could have the following qualitative impact:

- *Population*- fatal and non-fatal injuries; restricted access/use, limited displaced households
- *Buildings*- limited structural and non-structural damage, loss of building functionality, repurposing
- *Economy*- loss of revenue/property, cost of response/care/clean up, increased operating costs

- *Environment*- loss of vegetation/wildlife, contamination
- *Lifelines*- none

### 6.4.2. Aircraft Accident

Impacts from Aircraft Accidents are difficult to determine because there are many variables to consider (i.e., location of accident, type of accident, weather conditions, time of day). Impacts from Aircraft Accident events could have the following qualitative impact:

- *Population*- fatal and non-fatal injuries; restricted access/use, limited displaced households
- *Buildings*- limited structural and non-structural damage, loss of building content (equipment) and functionality, repurposing
- *Economy*- loss of revenue/property, cost of response/care/clean up, increased operating costs
- *Environment*- loss of vegetation/wildlife, ground displacement, contamination
- *Lifelines*- damage to facilities/infrastructure/systems, loss of equipment

### 6.4.3. Avalanche

Impacts from Avalanche events could have the following qualitative impact:

- *Population*- fatal and non-fatal injuries; restricted access/use, limited displaced households
- *Buildings*- limited structural and non-structural damage, loss of building content (equipment) and functionality, repurposing
- *Economy*- loss of revenue/property, cost of response/care/clean up, increased operating costs
- *Environment*- loss of vegetation/wildlife, ground displacement, contamination
- *Lifelines*- damage to facilities/infrastructure/systems, loss of equipment

### 6.4.4. Civil Disturbance

California has frequent sites of demonstrations due to its high profile and presence of significant government functions and buildings. It is conceivable that a demonstration (or movement) depending on the cause and effect, could turn to violence and spread into neighboring communities. Civil disturbance can vary in size and length of time, however, within the County, it is expected to be smaller and of limited time. Impacts from Civil Disturbance events could have the following qualitative impact:

- *Population*- fatal and non-fatal injuries; restricted access/use, limited displaced households
- *Buildings*- structural and non-structural damage, loss of building content (equipment) and functionality, repurposing
- *Economy*- loss of revenue/property, cost of response/care/clean up, increased operating costs

- *Environment*- loss of vegetation, contamination
- *Lifelines*- damage to facilities/infrastructure/systems, loss of equipment

### 6.4.5. Dam/Reservoir Failure

Impacts from Dam/Reservoir Failure events could have the following quantitative impact:

- *Population*- fatal and non-fatal injuries; restricted access/use, considerable potential for displaced households
- *Buildings*- structural and non-structural damage, loss of building content (equipment) and functionality, repurposing
- *Economy*- loss of revenue/property, cost of response/care/clean up, increased operating costs
- *Environment*- loss of vegetation/wildlife, ground displacement, contamination
- *Lifelines*- damage to facilities/infrastructure/systems, loss of equipment

*City of Susanville*- Within the City of Susanville, the primary dam and reservoir-related risk is associated with failure of municipal water storage infrastructure and localized impoundments rather than large regional dams. The City operates multiple water storage tanks ranging from approximately 500,000 to 1 million gallons that maintain system pressure and fire flow across various pressure zones. Structural failure of one or more tanks caused by seismic activity, slope instability, structural deterioration, or operational failure could result in sudden localized flooding, property damage, and extended disruption of water service to residential neighborhoods, businesses, and critical facilities. While the Barry Reservoir is not currently utilized for municipal water supply or storage, a failure or uncontrolled release could still exacerbate downstream flooding along the Susan River and adjacent drainages, increasing damage potential to roadways, riverfront properties, and low-lying areas within the city.

Overall, Susanville's vulnerability to dam and reservoir-related hazards is driven by its reliance on hillside water storage tanks and gravity-fed transmission infrastructure, limited redundancy in certain pressure zones, and the potential for localized but high-consequence service interruptions that could severely impact fire protection, public health, and emergency response capabilities during concurrent disaster events.

*County of Lassen*- Lassen County relies on several dams and reservoirs that provide essential resources for water supply, agricultural irrigation, recreation, and hydropower generation. While these facilities offer significant benefits, they also present potential hazards in the event of a structural failure, breach, or uncontrolled release of water. A dam or reservoir failure could result from seismic activity, extreme precipitation, structural deterioration, operational error, or wildfire-related damage to infrastructure and surrounding terrain.

A failure event could have devastating impacts on human health and safety, particularly for residents living downstream of major dams and reservoirs. Rapid-onset flooding could cause loss of life and injuries, as well as hinder evacuation and emergency response efforts. In addition to

immediate threats, residents could face secondary hazards such as hypothermia, drowning, and exposure to contaminated water sources.

Infrastructure and property damage from a dam failure would likely be extensive. Floodwaters could destroy homes, businesses, roads, bridges, and utility systems, causing long-term disruptions to power, water, and communication services. Public infrastructure such as water treatment plants and transportation corridors could become inoperable, further complicating recovery efforts. The agricultural sector, a vital component of Lassen County's economy, could experience severe losses due to the flooding of croplands, destruction of irrigation systems, and sediment deposition that renders farmland unusable.

Economically, the impacts would extend far beyond immediate physical damage. The loss of agricultural productivity and local business interruption would have ripple effects throughout the region, while recovery and reconstruction costs would place significant financial strain on county and state resources. Environmental consequences would also be profound. The sudden release of water could cause severe erosion, destroy wildlife habitats, and introduce sediment, fuel, fertilizers, and other pollutants into local waterways. These effects could permanently alter aquatic ecosystems and degrade water quality for both human and ecological use.

From a social perspective, a dam or reservoir failure could lead to widespread displacement, emotional distress, and long-term community disruption. Residents who lose homes or livelihoods may require extended sheltering, financial assistance, and mental health support.

*Susanville Indian Rancheria*- None

### *6.4.6.* Drought and Water Shortage

Drought and water shortage can happen countywide. Past experience with droughts tells us that impacts are felt first by those most dependent on or affected by annual rainfall – fire departments, ranchers engaged in dryland grazing, rural residents relying on wells in low-yield rock formations, or other small water systems lacking a reliable water source. The effects of the drought are most visible in the County when looking at the current capacity of Honey Lake, as the majority of the region's watershed flows into Honey Lake.

Drought can have secondary impacts too. For example, drought is a major determinant of wildfire hazard, in that it creates greater propensity for fire starts and larger, more prolonged conflagrations fueled by excessively dry vegetation, along with reduced water supply for firefighting purposes. Impacts from Drought and Water Shortage events could have the following qualitative impact:

- *Population*- fatal and non-fatal injuries; restricted access/use, no displaced households
- *Buildings*- non-structural damage, loss of building functionality, repurposing
- *Economy*- increased operating costs, agriculture industry can experience hardship to farmers, farm workers, packers, and shippers of agricultural products as lack of water and subsequent feed available to grazing livestock, potentially leading to risk of livestock death, can cause significant increases in food prices due to shortages

- *Environment*- loss of vegetation/wildlife, contamination
- *Lifelines*- Potential loss of utilities from impacts to outside system failures (secondary impacts). On the Susanville Indian Rancheria, water shortage to the upper Rancheria if we had power outages or equipment failure. The main supply line has a pumping station midway from the city water supply to our storage tanks on the upper Rancheria. This could affect 67 homes.

*City of Susanville*- The City of Susanville relies primarily on groundwater wells and the Cady Springs and Bagwell Springs system to meet municipal demand. Although the City has historically maintained adequate supply and has not experienced a complete system failure, recent statewide droughts have required the City to implement conservation measures, including Stage 1 and Stage 2 watering restrictions during previous drought periods. Prolonged drought conditions can reduce groundwater recharge and spring flow, placing increased operational strain on the system and requiring more intensive pumping, maintenance, and energy use. Reduced availability of water also diminishes the City's ability to maintain adequate fire flow, particularly in elevated zones and areas near the wildland-urban interface. Drought stress further affects public landscaping, urban tree canopy, and park areas such as Memorial Park and Fruit Growers Park, reducing vegetation health and increasing heat exposure.

In summary, Susanville's drought vulnerability lies in its dependence on limited supply sources, increasing regulatory pressure to conserve water, indirect wildfire risk amplification, and the potential for reduced fire suppression capacity and economic disruption during prolonged dry periods.

*County of Lassen*- Lassen County's economy, environment, and quality of life are closely tied to the availability of water for agriculture, domestic use, industry, recreation, and ecosystem health. Periodic droughts are a natural part of the region's climate cycle, but the increasing frequency and duration of dry periods, combined with higher temperatures and reduced snowpack, have intensified water shortages in recent years. Prolonged drought conditions can place significant stress on surface water and groundwater supplies, affecting residents, businesses, and natural resources throughout the county.

Drought impacts can be widespread and multifaceted. Reduced precipitation and streamflow diminish reservoir levels and groundwater recharge, threatening both municipal and rural water supplies. Domestic wells may go dry or require deepening, particularly in outlying rural areas dependent on private groundwater sources. Limited water availability can also strain public water systems, leading to conservation mandates, reduced water quality, and potential service interruptions.

Agriculture, a cornerstone of Lassen County's economy, is especially vulnerable to drought conditions. Reduced irrigation water availability can result in crop losses, fallowed fields, and declining livestock production. These losses have cascading economic effects, reducing farm income, employment opportunities, and the stability of local food supply chains. Secondary industries—such as food processing, transportation, and retail—can also experience downturns due to decreased agricultural output.

Environmental consequences of drought are equally severe. Prolonged dry conditions can degrade aquatic and terrestrial habitats, reduce streamflow critical for fish and wildlife, and increase the risk of wildfires across forested and grassland areas. Lower water levels may also concentrate pollutants, leading to poor water quality and impacts on sensitive ecosystems. The loss of vegetation and soil moisture contributes to erosion and the long-term decline of watershed health.

Social and community impacts of drought and water shortage include increased costs for water supply and food, mental and financial stress for agricultural families, and the potential displacement of residents in areas where wells fail or economic activity declines. Recreational and tourism-based activities may also suffer from reduced lake levels, dry conditions, and degraded natural scenery.

*Susanville Indian Rancheria*- None

### *6.4.7.* Energy Disruption

Energy disruptions can be the consequence of another hazard, or can be the primary hazard, absent of an outside trigger. There are two (2) components to consider: 1) increased demand within the County; and, 2) increased demand elsewhere. Because Lassen County relies on power supplied by PG&E, increases in other parts of their territory could curtail the energy available to LMUD. This vulnerability is compounded by the reality that our communities have become more reliant on power for gadgets and appliances to perform basic daily activities. The loss of power will not only be an inconvenience but could become a life-threatening experience. Many citizens rely on power to operate medical machinery to survive (i.e., oxygen tanks, dialysis machines).

While Lassen County has not experienced a population growth, changes to daily life styles and weather have contributed to a heavy demand for power over recent years. In the event of a significant energy shortage, it will have a significant impact on the population, built environment, lifeline infrastructure, and the economy.

Impacts from Energy Disruption events could have the following qualitative impact:

- *Population*- fatal and non-fatal injuries; restricted access/use, limited displaced households
- *Buildings*- limited structural and non-structural damage, loss of building content (equipment) and functionality, repurposing
- *Economy*- loss of revenue/property, cost of response/care/clean up, increased operating costs
- *Environment*- none expected
- *Lifelines*- damage to facilities/infrastructure/systems, loss of equipment

### 6.4.8. Extreme Temperature

Impacts from Extreme Temperature events could have the following qualitative impact:

- *Population*- Exposure to extreme temperature can result in illness (heat stroke or heat exhaustion, frost bite, hyperthermia) or death for those at greatest risk, including infants and children up to four years of age; people who overexert during work or exercise; people 65 years of age or older; people who are ill or on certain medications; and, people who are overweight.
- *Built Environment*- Extreme temperature conditions can cause equipment to become overburdened and possibly fail. Depending on the type of equipment impacted, it could overheat structures, create electrical overloads, and warp (or melt) pieces.
- *Lifeline Infrastructure*- Both systems and equipment can become over worked and overwhelmed. This can lead to temporary shutdowns or system failures. Additionally, lifeline interdependencies need to be considered (i.e., water systems needing electricity to move water).
- *Economy*- If lifeline systems shutdown and/or fail, there are rippling effects on the economy as there is an inability to provided services and/or move merchandise. Additionally, extreme temperature events may require implementation of mitigation actions (shelters, heating/cooling centers) that impact operating budgets.
- *Environment*- During extreme temperature events, there could be noticeable depletion of water supplies and dehydration/freeze of vegetation/landscape. This could cause reduction and/or loss of flora and fauna and altering of landscape.

*City of Susanville*- The City of Susanville experiences pronounced seasonal temperature extremes, with prolonged freezing conditions in winter and increasingly frequent heat waves during summer. Extreme cold events can cause frozen and ruptured water service laterals, reduced system pressure, and increased maintenance demands on the City's distribution system. Winter storms and sustained freezing temperatures also accelerate pavement deterioration through freeze-thaw cycles, increase traffic hazards, and strain Public Works resources for snow removal and road treatment. Conversely, extreme heat events raise electricity demand for cooling, increasing the likelihood of localized power outages that may disrupt residential comfort, cooling centers, traffic control systems, and critical city operations. Vulnerable populations, including elderly residents, unsheltered individuals, and those in older housing without air conditioning, face heightened health risks from heat-related illnesses and dehydration.

From a vulnerability perspective, Susanville is particularly susceptible to compounding impacts when extreme heat coincides with drought and wildfire smoke, degrading air quality and straining medical and emergency services. Infrastructure aging, limited cooling shelter capacity, and increased pavement and utility degradation contribute to long-term resilience challenges under increasingly volatile temperature patterns.

*County of Lassen*- Lassen County experiences a wide range of temperatures throughout the year, from severe winter cold to extreme summer heat. While seasonal temperature variations are typical for the region, extreme temperature events—both heat waves and cold snaps—are becoming more frequent and intense. These events pose significant risks to public health, infrastructure, agriculture, and the natural environment. Prolonged exposure to extreme temperatures can strain energy and water systems, increase wildfire risk, and threaten the health and safety of vulnerable populations.

Extreme heat events can lead to serious health impacts such as heat exhaustion, heatstroke, and dehydration, particularly among elderly residents, young children, outdoor workers, and individuals without access to air conditioning. Higher temperatures also exacerbate air quality issues by increasing ground-level ozone formation and particulate matter from wildfire smoke. Prolonged heat can stress electrical grids due to higher energy demand for cooling, potentially leading to power outages that compound health risks. Drought conditions often accompany extreme heat, further straining water resources and increasing the potential for wildfire ignition and spread.

Extreme cold temperatures, particularly during winter storms, can also have severe consequences. Exposure to freezing temperatures can cause hypothermia, frostbite, and other cold-related illnesses. Infrastructure systems, including water lines and transportation networks, are vulnerable to freezing and damage during extended cold periods. Power outages caused by ice accumulation or heavy snow can isolate rural communities and disrupt essential services. Residents relying on wood heat or portable generators may face increased fire hazards and carbon monoxide exposure.

The agricultural sector is highly sensitive to both temperature extremes. Intense heat can reduce crop yields, damage forage and rangeland, and threaten livestock health. Conversely, unseasonal frosts or extended freezes can destroy crops, delay planting, and damage orchards or vineyards. These agricultural impacts contribute to broader economic losses that ripple through Lassen County's rural economy and associated industries.

Extreme temperature events also affect the natural environment and local ecosystems. Prolonged heat and drought can stress vegetation, reduce streamflows, and impact fish and wildlife populations. Cold events may damage sensitive habitats or disrupt migration and breeding patterns. The combination of temperature extremes and other climate-related hazards contributes to long-term changes in ecosystem stability and resilience.

*Susanville Indian Rancheria*- SIR will activate a cooling center on the Rancheria for cooling and hydrate with our COOP plans. This will be activated when temperatures are above 100 degrees, for tribal members and family. The primary location will be Resource center, and secondary location will be Diamond Mountain Casino. Both facilities will be available during cold weather and power outages also.

### *6.4.9.* Hazardous Materials Release

Hazardous material release incidents can occur during production, storage, transportation, use or disposal of hazardous materials. Communities can be at risk if a chemical is used unsafely or released in harmful amounts into the environment. Hazardous materials can cause death, serious injury, long lasting health effects, and damage to buildings, the environment, homes, and other property.

Although these incidents can happen almost anywhere, certain areas of the County are at higher risk, such as near roadways that are frequently used to transport hazardous materials and locations with industrial facilities that use, store, and/or dispose of such materials. Transportation routes that are crossed by railways, waterways, airways, and pipelines also have increased

potential for mishaps. The existence of a major rail line that transports oil through the county is of particular concern. A train accident resulting in a major oil spill has the potential to cause fire ignitions as well as public health and environmental consequences. Climate usually does not play a direct role in increased events but can be a factor in the cause (i.e., slippery roads due to heavy snow).

Impacts from Hazardous Materials Release events could have the following qualitative impact:

- *Population*- fatal and non-fatal injuries; restricted access/use, displaced households
- *Buildings*- structural and non-structural damage, loss of building content (equipment) and functionality, repurposing
- *Economy*- loss of revenue/property, cost of response/care/clean up, increased operating costs
- *Environment*- loss of vegetation/wildlife, contamination
- *Lifelines*- damage to facilities/infrastructure/systems, loss of equipment

### 6.4.10. Infectious Disease

The County, as well as the state, country, and the world, are vulnerable to infectious disease caused by either newly emerging or existing diseases spread person to person, through a vector, or through food. A significant infectious disease outbreak, epidemic, and/or pandemic could impact a large portion of the population, create challenges on the built environment, overburden essential public services, and affect the economy. Depending on the type of Infectious Disease event, impacts to buildings may include increased use of equipment (i.e., HVAC, water) and adaptive reuse of space for response and/or recovery from the event. Additionally, it could also include deferred maintenance to equipment if employees and vendors are unavailable. Limited staffing could also impact associated business and the economy within the County. All of this could lead to loss of jobs as well. Actions to address the Infectious Disease could create higher demands on lifeline systems and cause damage from over/under use or curtailment of services. Impacts from Infectious Disease events could have the following qualitative impact:

- *Population*- fatal and non-fatal injuries; restricted access/use
- *Buildings*- possible loss of use due to deferred maintenance, repurposing
- *Economy*- loss of revenue/property, cost of response/care/clean up, increased operating costs
- *Environment*- possible loss of vegetation/wildlife, contamination
- *Lifelines*- damage to facilities/infrastructure/systems, loss of equipment

### 6.4.11. Landslide/Other Earth Movements

Impacts from Landslide/Other Earth Movements events could have the following qualitative impact:

- *Population*- non-fatal injuries; restricted access/use, limited displaced households

- *Buildings*- limited structural and non-structural damage, loss of building content (equipment) and functionality
- *Economy*- loss of revenue/property, cost of response/care/clean up, increased operating costs
- *Environment*- loss of vegetation, ground displacement
- *Lifelines*- damage to facilities/infrastructure/systems, loss of equipment

*City of Susanville*- Within the city we could expect disruption/damage to several key assets, including areas of steep slopes and unstable soils pose risks to residential neighborhoods and transportation routes, where slope movement could block or damage city streets and limit access for residents and emergency services. A particular concern is the Cady Springs gravity-fed water distribution system, which is susceptible to landslide activity that could damage supply lines and disrupt the delivery of potable water. In addition, the city's water storage tanks located near sloped areas may be affected, creating potential service interruptions and public health risks. Other utilities, such as power and communication lines, may also be damaged by slope failures. Local businesses and public facilities could experience service disruptions if landslides impair infrastructure, transportation, or utility systems.

*County of Lassen*- Landslides present a serious hazard to Lassen County due to the region's mountainous terrain, variable soils, and seasonal weather patterns. Heavy rainfall, rapid snowmelt, or seismic activity can trigger slope failures, threatening roads, highways, and rural communities located near steep hillsides. Transportation corridors such as Highways 36, 44, 139, and 395, along with local county roads, are particularly vulnerable, where blockages can isolate residents and delay emergency response. Landslides may also damage utility infrastructure, including water lines, power distribution systems, and communication networks, leading to service interruptions. In addition, homes, businesses, and agricultural lands situated in slide-prone areas can suffer property loss or long-term soil instability.

*Susanville Indian Rancheria*- SIR does not have property with residential areas with floods, levee failures or landslides that will impact the Susanville Indian Rancheria.

### 6.4.12. Natural Gas Pipeline/Storage Accident

Impacts from Natural Gas Pipeline/Storage Accident events could have the following qualitative impact:

- *Population*- fatal and non-fatal injuries; restricted access/use, displaced households
- *Building*- structural and non-structural damage, loss of building content (equipment) and functionality
- *Economy*- loss of revenue/property, cost of response/care/clean up, increased operating costs
- *Environment*- loss of vegetation/wildlife, contamination
- *Lifelines*- damage to facilities/infrastructure/systems, loss of equipment

### 6.4.13. Other Lifeline Infrastructure Accident

Impacts from Other Lifeline Infrastructure Accidents events could have the following qualitative impact:

- *Population*- fatal and non-fatal injuries; restricted access/use, displaced households
- *Building*- structural and non-structural damage, loss of building content (equipment) and functionality
- *Economy*- loss of revenue/property, cost of response/care/clean up, increased operating costs
- *Environment*- loss of vegetation/wildlife, contamination
- *Lifelines*- damage to facilities/infrastructure/systems, loss of equipment

### *6.4.14.* Severe Weather and Storms

While most of these hazards are short-duration storms some of these severe storms have the capability of being of long duration. These longer duration storms could have just as much impact as shorter, more powerful events. Prolonged periods of high snow fall could create issues as it could be difficult to move around the area and/or could cave in roofs from snow weight. The prolonged snow and high winds could also create issues with powerlines, combining the hazard of severe storms with power outages. As can be expected, these events will only become more frequent and severe when factoring in climate change considerations. This could include both the increase of frequency as well as the increase in intensity. A case could also be made that the increase of one (1) of these events could trigger the increase of another. Impacts from Severe Weather and Storms events could have the following qualitative impact:

- *Population*- fatal and non-fatal injuries; restricted access/use, limited displaced households (snow loads)
- *Buildings*- structural and non-structural damage (i.e., snow loads, other), loss of building content and functionality
- *Economy*- loss of revenue/property, cost of response/care/clean up, increased operating costs
- *Environment*- loss of vegetation/wildlife, ground displacement, contamination
- *Lifelines*- damage to local or regional facilities/equipment/systems

*City of Susanville*- Within the city we could expect disruption/damage to several key assets, including critical facilities such as the hospital, schools, and emergency services buildings may be impacted by roof damage, utility outages, or access issues during storm events. Transportation networks, including highways, bridges, and local roads, are vulnerable to flooding, snow accumulation, and debris, which may disrupt travel and hinder emergency response. Utilities and infrastructure, including water and sewer systems, storm drainage, power lines, and communication networks, are at risk of outages or damage, potentially causing extended service interruptions. Local businesses may face economic losses from property damage, power outages,

or reduced access due to road closures. Severe weather can also strain city resources as crews work to clear snow and maintain essential services.

*County of Lassen*- Severe weather storms, including heavy rain, high winds, snow, and ice, pose significant risks to Lassen County's residents and infrastructure. Prolonged storms can damage power lines, communication systems, and transportation networks, leading to widespread outages and hazardous travel conditions. Heavy snow and ice can close highways such as 36, 44, 139, and 395, isolating rural communities and delaying emergency response. Flooding from intense rain or rapid snowmelt may overwhelm drainage systems, damage roads, and threaten homes and businesses located in low-lying areas. Strong winds can topple trees, damage structures, and spark secondary hazards such as wildfires from downed power lines. Severe weather also places stress on public facilities, emergency shelters, and healthcare systems as residents seek assistance during extended outages or unsafe conditions.

*Susanville Indian Rancheria*- Within the rancheria we could expect disruption/damage to several key assets. Thunderstorms are frequent in our area during the summer months. Lightning could cause damage to our buildings and knock out power. It can cause wildland fires in our area. During the winter we could get a large amount of snow for a long period of time. This can create problems on the roadways for our membership, and the maintenance department will operate the plows around the clock. And shovel our facilities walkways to provide safety for our customers. Winter of 1993, we had a winter storm that produced 5-8 feet of snow. The snow was wet and heavy, if we didn't address the issue to get crews to shovel off rooftops and around fire hydrants. This could cause the roofs to collapse and possibility cause fires to the structures and displace tribal members.

### 6.4.15. Technology Disruption

The County, as well as others in the State, Nation, and the world, are vulnerable to Technology Disruptions. As with our society, the County is becoming heavily reliant upon technology to perform daily work routines. Whether loss of communication with each other or loss of access to data and materials, this disruption can seriously impact and/or alter the way business is conducted. Impacts from Technology Disruptions could have the following qualitative impact:

- *Population*- fatal and non-fatal injuries; restricted access/use, limited displaced households
- *Buildings*- non-structural damage, loss of building content (equipment) and functionality
- *Economy*- loss of revenue, cost of response/care/clean up, increased operating costs
- *Environment*- contamination
- *Lifelines*- damage to facilities/infrastructure/systems, loss of equipment

### 6.4.16. Terrorism

The County, as well as others in the State and Nation, are vulnerable to Terrorism. However, terrorist groups are more prone to target larger, more populous, nationally recognized places since the goal in most cases is to create the greatest amount of destruction while striking fear and create chaos to largest number of people. In the unlikelihood of a significant terrorism event, there

could be considerable impact within the County. Impacts from Terrorism events could have the following qualitative impact:

- *Population*- fatal and non-fatal injuries; restricted access/use, limited displaced households
- *Buildings*- structural and non-structural damage, loss of building content (equipment) and functionality, repurposing
- *Economy*- loss of revenue/property, cost of response/care/clean up, increased operating costs
- *Environment*- loss of vegetation/wildlife, ground displacement, contamination
- *Lifelines*- damage to facilities/infrastructure/systems, loss of equipment

### 6.4.17. Volcano

Impacts from Volcano events could have the following quantitative impact:

- *Population*- fatal and non-fatal injuries; restricted access/use, limited displaced households. Populations would also be impacted by the air quality which could effect breathing.
- *Buildings*- structural and non-structural damage, loss of building content (equipment) and functionality, repurposing
- *Economy*- loss of revenue/property, cost of response/care/clean up, increased operating costs
- *Environment*- loss of vegetation/wildlife, ground displacement, contamination. Impact to the air quality.
- *Lifelines*- damage to facilities/infrastructure/systems, loss of equipment

*City of Susanville*- Although the City of Susanville is located northeast of the Lassen Volcanic Center, it remains vulnerable to secondary impacts from volcanic activity, particularly airborne ashfall. Historical eruptions at Lassen Peak have demonstrated that ash can travel long distances depending on prevailing winds, and future eruptions could result in ash deposition across the Susanville Basin. Even light ash accumulation can reduce visibility on State Route 36, Highway 139, and local roads, contaminate water system components, damage HVAC systems and mechanical equipment, and degrade air quality. Ash intrusion could affect municipal facilities, public buildings, the wastewater treatment plant, and power substations, leading to operational disruptions and costly cleanup efforts. Residents, especially those with respiratory conditions, would be vulnerable to health impacts, and local commerce could experience interruptions due to road closures and reduced activity.

Susanville's vulnerability to volcanic hazards is primarily tied to its exposure to ashfall-related disruptions, limited local experience with volcanic response, potential contamination of critical infrastructure systems, and the cumulative burden of cleanup, health impacts, and temporary economic decline during a regional volcanic event.

*County of Lassen*- Lassen County lies within a geologically active region of northeastern California that includes several volcanic features, most notably within the Lassen Volcanic National Park area and the southern Cascade Range. While large-scale volcanic eruptions are infrequent, the county remains vulnerable to a range of volcanic hazards due to its proximity to Lassen Peak, Cinder Cone, and other volcanic centers. Potential volcanic activity could include eruptions, ashfall, lava flows, pyroclastic flows, landslides, and secondary hazards such as flooding or debris flows from melted snow and ice. Even distant eruptions can have far-reaching effects across the region through airborne ash and disruptions to transportation and utilities.

The primary hazard from a volcanic event in Lassen County would likely be ashfall. Volcanic ash can travel great distances, depending on wind conditions, and may impact communities far from the eruption site. Accumulated ash can reduce air quality, impair visibility, contaminate water supplies, and cause respiratory problems in people and animals. It can also damage vehicles, buildings, electrical systems, and mechanical equipment. Heavy ash accumulation on roofs can cause structural collapse, while fine ash can infiltrate ventilation systems, electronics, and machinery, leading to widespread maintenance and repair needs.

More localized impacts could result from lava flows, pyroclastic flows, and lahars (volcanic mudflows). While these phenomena are typically confined to areas near the eruption source, they can devastate everything in their paths—destroying vegetation, infrastructure, and wildlife habitat. Rapid snowmelt or the release of crater lakes during an eruption could cause flash flooding or debris flows that threaten downstream communities, roadways, and waterways.

The economic consequences of a volcanic event could be considerable. Transportation disruptions caused by road closures or reduced visibility can hinder emergency response, tourism, and local commerce. Agriculture may be severely affected by ash contamination of crops, soil, and grazing lands. Public utilities—especially power and water systems—could experience outages or equipment damage, leading to extended service interruptions. The cleanup of ash deposits can be costly and time-consuming, straining local resources and budgets.

Environmental impacts of volcanic activity include destruction of vegetation, alteration of drainage patterns, and degradation of air and water quality. However, over time, volcanic soils can enhance fertility, contributing to long-term ecosystem recovery. Short-term impacts, though, can be severe, particularly for wildlife and aquatic habitats exposed to sedimentation and contamination.

The social impacts of a volcanic event may include temporary or long-term displacement of residents, health problems related to ash exposure, and psychological stress caused by property loss or evacuation. Public safety could also be compromised by limited warning time or reduced access to affected areas due to ash-covered roads or damaged infrastructure.

*Susanville Indian Rancheria*- after ash fall out, it will create health impacts to the communities. The Elderly and children, along with people who have Chronic Obstructive Pulmonary Disease

(COPD), who may be dependent on oxygen will have a hard time breathing, our drinking water could be affected with the fall out of ash. This will limit any type of care for patients who may need immediate care outside of the areas to be transported to a medical facility.

# 7. Mitigation Strategy

## 7.1. Overview

The purpose of this section is to present the proposed mitigation measures the County, City, and the Rancheria have identified to help reduce and/or eliminate vulnerabilities and impacts from threats and hazards within the county. Because it was determined to address the hazards and threats at a countywide level, the same approach was used for identifying mitigation projects/actions. The mitigation strategy is derived from the in-depth review of the existing community (Section 3.0), hazard and threats and their vulnerabilities/impacts (Sections 5.0 and 6.0), and capabilities (Section 4.0) outlined in this plan, combined with a vision for creating a disaster resistant and sustainable community for the future. This vision is based on informed assumptions, recognizes both mitigation challenges and opportunities, and is demonstrated by the goals and objectives outlined below. The current mitigation actions were built upon the previous mitigation actions adopted in the 2019 LHMP. The Planning Team reassesses previously proposed measures to determine if they are still valid and needed moving forward. Each Mitigation Strategy was prioritized, and an implementation plan was prepared for each mitigation action.

## 7.2. Mitigation Goals and Objectives

To better assist with the identification of mitigation actions, mitigation goals and objectives were developed. Well defined mitigation goals and objectives help better outline needs and focus efforts. The 2019 LHMP goals and objectives were used by the Planning Team as a starting point, and were reviewed, updated, and augmented as needed based on current hazard/threat profiles and knowledge of existing vulnerabilities/impacts and capabilities. Additionally, goals and objectives within existing General Plans, Emergency Operations Plans (EOP), and other relevant plans were carefully considered. While the LHMPs, General Plans, and EOPs serve different purposes, there is overlap between the plans. Ensuring that the mitigation goal and objectives are compatible with the General Plans and EOPs will help ensure all of the plans are working together. The proposed Planning Team Goals and Objectives were also reviewed and validated by the general public, ensuring their priorities, concerns, and challenges were incorporated. The goals and objectives are outlined below:

- **GOAL 1: Minimize life loss and injuries**

Objective 1.1 Improve understanding of the locations, potential impacts, and linkages between hazards/threats, vulnerability, and actions needed to protect life safety and health.

Objective 1.2 Provide updated information about hazards, vulnerabilities, and mitigation processes to all levels of governmental jurisdictions, the private sector, and the public.

Objective 1.3 Strive to implement applicable federal/state regulations and local ordinances designed to protect life safety.

Objective 1.4 Identify and modify high risk structures to meet life safety standards.

Objective 1.5 Incorporate mitigation actions into repairs, major alterations, new development, and redevelopment projects in areas subject to substantial life safety risks.

Objective 1.6 Improve emergency response communications and public warning systems.

Objective 1.7 Develop policies and procedures to better serve disadvantaged and vulnerable populations.

- **GOAL 2: Minimize damage to structures, property, infrastructure, and essential services**

Objective 2.1 Encourage new development to occur in locations that avoid or minimize exposure to hazards/threats.

Objective 2.2 Encourage property protection measures for all communities and structures located in hazard/threat areas.

Objective 2.3 Develop and adopt enhanced land use, design, and construction policies designed to reduce property loss due to flood, fire, earthquake, and other identified hazards/threats.

Objective 2.4 Encourage mitigation programs by non-governmental and private sector organizations that own or operate key community facilities.

Objective 2.5 Protect vital records to minimize post-disaster disruption and facilitate short-term and long-term recovery.

Objective 2.6 Protect critical infrastructure from fire, flood, earthquake and other identified hazards.

Objective 2.7 Minimize economic loss and disruption to agriculture (crops/animals/timber) and recreation resources from natural and manmade hazards.

Objective 2.8 Coordinate, develop and maintain a digital inventory of areas and critical assets exposed to identified hazards.

- **GOAL 3: Protect the environment**

Objective 3.1 Implement mitigation and watershed protection strategies that reduce loss of wildlife, habitat, and water.

Objective 3.2 Protect cultural, historic and environmental resources from natural and manmade hazards.

- **GOAL 4: Promote integration, coordination and public outreach efforts across governmental agencies, the private sector and the general public**

Objective 4.1 Promote public understanding of the risks associated with hazards/threats, individual preparedness activities, and the benefits of mitigation.

Objective 4.2 Continually build operational coordination between mitigation and disaster response and recovery programs within the public and private sectors.

Objective 4.3 Establish and maintain partnerships between all levels of local government, the private sector, the business community, community groups, and institutions of higher learning that improve and implement methods to protect life and property.

- **GOAL 5: Improve Emergency /Management Capability**

Objective 5.1 Continue to coordinate jurisdictional responsibilities to various hazards/threats through County and Community Disaster/Emergency Response Plans and Exercises.

Objective 5.2 Identify the need for, and acquire, any special emergency services and equipment to enhance response capabilities for specific hazards.

Objective 5.3 Review and improve, if necessary, emergency traffic and evacuation routes; communicate such routes to the public and communities.

Objective 5.4 Develop and maintain emergency management plans (Response, Recovery, Protection, Prevention, Mitigation).

Objective 5.5 Establish and maintain emergency management systems and facilities.

Objective 5.6 Develop and maintain Memorandums of Understanding/Mutual Aid Agreements and partnerships (public-private).

Objective 5.7 Develop, maintain, and share essential data (demographics, threats, hazards, buildings and other infrastructure, resources, personnel).

Objective 5.8 Develop, maintain, and implement emergency management training and exercise curriculum.

- **GOAL 6: Ensure Continuity of Government and Operations**

Objective 6.1 Develop, maintain, and exercise Business Continuity Plans, ensuring compatibility with emergency management plans.

Objective 6.2 Ensure reliability for vital communications.

Objective 6.3 Protect vital records.

Objective 6.4 Protect essential Information Technology equipment and systems.

Objective 6.5 Promote resiliency of essential functions to minimize economic loss/disruption.

Objective 6.6 Maintain list of Key Assets and ensure their functionality after hazard events.

Objective 6.7 Maintain a list of essential personnel and vendors with contact information.

Objective 6.8 Identify and acquire any necessary equipment to maintain functionality.

## 7.3. Mitigation Progress

As part of the LHMP update process, the Planning Team reviewed each mitigation action included in the previous LHMP (**Table 7-1**). Five (5) status categories were considered to describe the status of the mitigation action: 1) completed, 2) in progress, 3) ongoing, 4) has not started, and 5) no longer needed. During the review and subsequent follow-ups meetings and calls, it was determined that all of the "ongoing" mitigation actions would be removed and captured under the Capabilities Assessment (Section 4.0) where appropriate. Additionally, the County, City, and Rancheria also completed a variety of actions (work) in support of mitigation. However, some of the work was not captured in the previous LHMP.

*Table 7-1. Status of Previous Mitigation Actions*

| Mitigation Action | Status |
|---|---|
| 1. Continue the fuels/vegetation management programs to reduce the wildfire hazard throughout County. | Ongoing |
| 2. Continue to enforce the weed abatement requirements to mitigate the risk of wildfires in the County. | Ongoing |
| 3. Identify areas vulnerable to wildfire due to inadequate water supply for firefighting and implement improvements (e.g., expansion of water supply, storage hydrants, etc.). | Not Started |
| 4. Install necessary infrastructure for fire protection in Johnstonville, as identified in the Lassen County Feasibility Study. | No Longer Needed |
| 5. Implement the Cady Springs Booster Station and Main line protection project, as identified in the City of Susanville Feasibility Study. | Complete |
| 6. Reduce residential property densities in Very High Fire Hazard zones within the City of Susanville by changing multi-family zoning to single family zoning. | Complete |
| 7. Implement the spring rehabilitation program via the installation of spring boxes to protect the spring water from contamination (from surface runoff or contact with human and animals) and to provide a point of collection and a place for sedimentation. | Ongoing |
| 8. Assess, retrofit, and maintain adequate level of emergency inventory materials (food, blankets, etc.) at schools in the City of Susanville (i.e., Lassen High School, Diamond View, Meadowview, and McKinley) and throughout the county to accommodate emergency shelter. | Complete |
| 9. Assess, retrofit, and maintain adequate level of emergency inventory materials (food, blankets, etc.) at other facilities throughout the county (i.e., Veterans Memorial Building) to accommodate emergency shelter. | Complete |
| 10. Identify and designate Domestic Animal evacuation centers. Where possible link to emergency shelters as not to separate owners from their pets. | Complete |
| 11. Assess, retrofit, and possibly purchase necessary equipment at essential buildings (i.e., EOC's, Emergency Services Buildings, Shelters, Water Facilities, etc.).to ensure a continual power supply during events that can potentially disrupt energy. | Ongoing |

| Mitigation Action | Status |
|---|---|
| 12. To improve the consistency of emergency communications and facilitate timely response, implement Firenet/Lawnet Lassen Emergency communication equipment upgrades (backup power, additional repeaters, radios, etc.). | Ongoing |
| 13. Assess and possibly purchase material and/or equipment (i.e., snowplows/blowers and Snow CATs) to mitigate the hazards associated with severe and snow storms. | Ongoing |
| 14. To facilitate storage for emergency response equipment and resource materials (e.g., salt, sand, heavy equipment) construct or purchase dry storage facilities in strategic locations within the county. | Not started |
| 15. To mitigate the impacts of severe storms and subsequent flooding, implement levee upgrades for waterways throughout the County, including Irrigation Canals. | Not Started |
| 16. To reduce the potential for flooding, develop a levee integrity program that includes assessment, inspection, and maintenance. | Not Started |
| 17. To mitigate flood losses, develop and implement a plan to address Carol Street repetitive flooding. | Complete |
| 18. Develop a standardized operational area evacuation plan to streamline emergency response efforts. | Complete |
| 19. Conduct EOC mock exercises and incident management position training to prepare for emergency response. | Ongoing |
| 20. Implement structural upgrades (e.g., installation of propane props, water supply, etc.) at the City of Susanville Fire Training Center to ensure continuous accessibility and functionality of the center. The center is primary building used for emergency response training, including wildfire and rescue operations. | Ongoing |
| 21. Evaluate flooding areas and implement drainage improvements to reduce the potential for commercial and residential flooding. | Not Started |
| 22. Assess and develop additional potable water supplies in communities that currently do not have adequate water supply and storage. | Not Started |
| 23. Train and conduct mock exercises with first responders in hazardous materials (HazMat) response field operations and decontamination. | Ongoing |
| 24. Develop a commodity flow study to determine flow of hazardous materials through the county. | Complete |
| 25. Assess and implement seismic flexible piping joints at above ground storage reservoirs, as appropriate. Also, incorporate changes into building codes to ensure new reservoirs are designed with seismic flexible piping joints. | Complete |
| 26. Inventory and evaluate all major pipelines in the county (water, sewer, gas) for seismic event reliability; include materials of constructing and the age of the pipeline. | Not Started |
| 27. Provide training on the Pandemic Response Plan to prepare for pandemic events. | Ongoing |
| 28. Purchase pandemic equipment and supplies to prepare for pandemic events. | Ongoing |
| 29. Conduct terrorism training and awareness courses to prepare for terrorism events. | Ongoing |

| Mitigation Action | Status |
|---|---|
| 30. Update the Lassen County, City of Susanville, and Susanville Indian Rancheria websites to include natural hazard preparedness information and the final Hazard Mitigation Plan for public education. | Complete |
| 31. During the Lassen County and Susanville General Plan Update, and the Susanville Indian Rancheria Master Plan Update, review and incorporate the LHMP findings to prevent building in identified hazard areas. | Complete |
| 32. Harden spring locations for security. | Complete |
| 33. Explore options for increasing energy assurance throughout the county. | Complete |
| 34. Remap 100 year flood map to reflect Piute Creek Mitigation Project. | Complete |
| 35. Develop, adopt, and implement a dangerous building ordinance. | Complete |
| 36. Develop public education campaigns for the LHMP identified high priority hazards. | Complete |
| 37. Implement Diamond Mountain Watershed and Forest Restoration Project. | Complete |
| 38. Implement Hazardous Fuel Reduction Program (Day Road, Little Valley). | Complete |
| 39. Prepare a Storm Water Resource Plan. | Not Started |
| 40. Develop and implement projects to help protect, restore, enhance and benefit National Forest System lands in Lassen County (including fire prevention, pest management, watershed restoration, forest health). | Not Started |
| 41. Determine feasibility and implementation plan for interconnection to the Nevada Energy line. | Ongoing |
| 42. Participate in the HERO Property Assessed Clean Energy Program to support homeowner energy and water efficiency improvements. | Complete |
| 43. Develop a Groundwater Sustainability Plan(s) | Complete |
| 44. Assess and where necessary retrofit/harden facilities essential to response and recovery operations within the county. | Ongoing |
| 45. Enhance, support, and expand current Geographic Information Systems (GIS) efforts within the county; including the development and maintenance of key data sets (i.e., critical assets, backup generators, evacuation routes) | Complete |
| 46. Assess, identify, and possibly retrofit/harden a building and/or office space to serve as the joint back up EOC | Complete |
| 47. Assess and implement recommended actions to ensure historical, cultural, and other significant (i.e., high occupancy) facilities/locations are safe from and will be preserved after major events | Ongoing |

A signification action that was in the previous LHMP that was completed was related to incorporating the LHMP information into the General and Master Plan updates. The County and City have leveraged the LHMP information into the revised General Plan Housing and Safety Elements (Action Item #31 in the previous LHMP). Others actions competed included the hardening spring locations (Action Item #32 in the previous LHMP), exploring options for increasing energy efficiency (Action Item #33 in the previous LHMP), remap the 100-year flood zone (Action Item #34 in the previous LHMP), adoption of a dangerous building ordinance (Action

Item #35 in the previous LHMP), establish a platform via the County, City, and Rancheria website to disseminate mitigation-related information and material (Action Item #30 in previous LHMP), and the development of a groundwater sustainability plan (Action Item #10 in the previous LHMP). It is worth noting that the groundwater sustainability plan is complete but waiting approval. In addition to implementing previous mitigation actions, several vital special and capital improvement projects were implemented by each of the participating jurisdictions that supported and/or augmented emergency management efforts.

For SIR, Action Items #1 and #2 are ongoing. Continue the Fuels/vegetation management will be placed in Action Item #37. Action Item #7 is ongoing, pending grant funding. Action Items #18, #19, and #46 have been put into our Continuity Of Operation Plan (COOP) and is ongoing and can be closed in the LHMP. Action Item #23 is ongoing and will be added to Action Item #27. Action Item #25 is complete with water tanks. Action Item #27 continue to train on pandemic response plan is ongoing. Will be on going and added to new Action Item #29. Action Item #28, continues to train on pandemic response plan, is ongoing. Wil be added to Action Item #30. Action item #29 conduct terrorism training is ongoing and will be added to Action Item #33. Action Item #30 is complete Action Item #31, master plan is ongoing, will be completed in 2025. Action Item #36 continues education campaigns for LHMP to members. This is completed. Action Item #44 continue to evaluate facilities to retrofit/harden. On going and will be added to Action Item #13. Action Item #45, working on support and expanding current GIS. This has been completed. Action Item #47, recommend action to ensure historical, culture sites will be preserved, ongoing. To be added to Action Item #14.

Additionally, it was decided to remove action #6- Reduce residential property densities in Very High Fire Hazard zones. The City determined that this action was addressed through other existing processes. The County has also determined it best to remove Action Items #4, #8, # 14, #18, and #20. All other existing mitigation actions from the previous LHMP were moved forwarded and included in this revised LHMP.

## 7.4. Mitigation Prioritization

The Planning Team used the STAPLEE Criteria to evaluate the feasibility of each of the mitigation action being considered for inclusion in the LHMP update. A feasibility assessment helps understand possible challenges that could hinder the ability to implement a mitigation action. STAPLEE is an acronym with each letter representing an area that should be assessed for the project (Social, Technical, Administrative, Political, Legal, Economic, and Environmental). While there is a series of questions that can be asked under each area, the list below presents the general concept behind each area and some sample questions:

- **Social-** Do you have community support to implement the project?
    - Is the proposed action socially acceptable to the community?
    - Are there equity issues involved that would mean that one segment of the community is treated unfairly?
    - Will the action cause social disruption?

- **Technical**- Does the technology exist to implement the project?
  - Will the proposed action work?
  - Will it create more problems than it solves?
  - Does it solve a problem or only a symptom?
  - Is it the most useful action in light of other community goals?
- **Administrative**- Do you have the organization/staff to implement and sustain the project?
  - Can the community implement the action?
  - Is there someone to coordinate and lead the effort?
  - Is there sufficient funding, staff, and technical support available?
  - Are there ongoing administrative requirements that need to be met?
- **Political**- Do you have the political support to implement the project?
  - Is the action politically acceptable?
  - Is there public support both to implement and to maintain the project?
- **Legal**- Do you have appropriate legal authority to implement the project?
  - Is the community authorized to implement the proposed action? Is there a clear legal basis or precedent for this activity?
  - Are there legal side effects? Could the activity be construed as a taking?
  - Is the proposed action allowed by the general plan, or must the general plan be amended to allow the proposed action?
  - Will the community be liable for action or lack of action?
  - Will the activity be challenged?
- **Economic**- Do you have the funds to implement and is it cost-effective?
  - What are the costs and benefits of this action?
  - Do the benefits exceed the costs?
  - Are initial, maintenance, and administrative costs taken into account?
  - Has funding been secured for the proposed action? If not, what are the potential sources (public, non-profit, and private)?
  - How will this action affect the fiscal capability of the community?
  - What burden will this action place on the tax base or local economy?
  - What are the budget and revenue effects of this activity?
  - Does the action contribute to other community goals, such as capital improvements or economic development?
  - What benefits will the action provide?
- **Environmental**- What kind of impact will the project have on the environment?
  - How will the action affect the environment?
  - Will the action need environmental regulatory approvals?
  - Will it meet local and state regulatory requirements?
  - Are endangered or threatened species likely to be affected?

This evaluation is intended to assist the participating jurisdictions to focus their efforts on those projects with the greatest potential for implementation, including benefit-to-cost considerations. Each proposed mitigation action was assigned a number for each STAPLEE criteria based on a scale of 1–5 where 5 is favorable/beneficial or NO major issues/opposition; 3 is middle of the

road, and 1 is unfavorable/not beneficial or major issues/opposition. There was also the ability to weigh some criteria considered more important than others in determining the final prioritization of individual mitigation actions. For example, the urgency of implementing a mitigation action to address a high priority hazard/threat, or the current availability of funding to initiate a mitigation action affected the final priority assigned to each mitigation action. The scores assigned to each STAPLEE criteria were then totaled for each mitigation action.

## 7.5. Mitigation Actions

As mentioned, the proposed mitigation actions were identified from a review of the list of mitigation actions in 2019 LHMP and consideration of the work done during the LHMP update process (Community Profile- Section 3.0, Capability Assessment- Section 4.0, Hazard/Threat Assessment- Section 5.0, and Risk Assessment- Section 6.0). The mitigation measures focused on actions the County, City, and the Rancheria can take to reduce the vulnerabilities/impacts and/or increase its capabilities.

The focus of the mitigation actions was on the "high" priority (Tier I) hazards/threats; however, mitigation actions were considered for all hazards/threats. As mentioned, part of this work included an assessment of current capabilities. As such, all plans, programs, regulations, codes, laws, policies, ordinances were evaluated to determine if they are effective at addressing the risk or whether it needed to be expanded and/or improved. If adjustments of the capability were needed, they were included as a mitigation action. However, the County, City, and the Rancheria recognize the importance to support, expand, and implement these capabilities as evident by the mitigation goals and objectives. It is worth noting that consideration was also given to overlooked (needed) capabilities (plans, policies, and programs). Needed capabilities, if any, are included in the mitigation action list.

Given the limited potential for new development discussed in Section 4, the majority of structural and non-structural mitigation actions focus on existing structures. Any new development or redevelopment that occurs within the County, City, and the Rancheria will be subject to current codes and standards, including relevant hazard ordinances, design requirements, and environmental review.

The table below (Error! Reference source not found.**2**) represents the proposed mitigation actions as identified by the Planning Team. As mentioned earlier, the focus of the mitigation actions is primarily on the "high" priority hazards (Earthquake, Flood, Wildfire, Drought, Energy Shortage, Severe Weather, and Hazardous Material Spills); however, some mitigation actions do address other hazards.

*Table 7-2. Proposed Mitigation Actions*

| Action # | Mitigation Action | Hazard or Threat | Goal Addressed |
|---|---|---|---|
| 1 | Implement the Cady Springs Booster Station and Main line protection project, as identified in the City of Susanville Feasibility Study. | Multi-hazard | 1, 2, 3 |

| Action # | Mitigation Action | Hazard or Threat | Goal Addressed |
|---|---|---|---|
| 2 | Assess, inventory, and maintain adequate level of emergency materials (food, blankets, etc.) at facilities throughout the county to accommodate emergency shelter. This would include needs to address avalanche, dam/reservoir failure, landslide/other earth movement, and volcanoes. | Multi-hazard | 1, 4, 5 |
| 3 | Identify and designate Domestic Animal evacuation centers. Where possible link to emergency shelters as not to separate owners from their pets. | Multi-hazard | 1, 4, 5 |
| 4 | Assess, inventory, and purchase necessary equipment at essential buildings (i.e., EOC's, Emergency Services Buildings, Shelters, Water Facilities, etc.).to ensure a continual power supply during events that can potentially disrupt energy. This would include needs to address avalanche, dam/reservoir failure, landslide/other earth movement, and volcanoes. | Multi-hazard | 1, 4, 5, 6 |
| 5 | Improve the consistency of emergency communications and facilitate timely response, implement Firenet/Lawnet Lassen Emergency communication equipment upgrades (backup power, additional repeaters, radios, etc.). This would include needs to address avalanche, dam/reservoir failure, landslide/other earth movement, and volcanoes. | Multi-hazard | 1, 2, 3, 4, 5 |
| 6 | Assess, inventory, and maintain adequate level of storage for emergency response equipment and resource materials (e.g., salt, sand, heavy equipment). Possibly retrofit, construct, or purchase dry storage facilities in strategic locations within the county. This would include needs to address avalanche, dam/reservoir failure, landslide/other earth movement, and volcanoes. | Multi-hazard | 1, 2, 3, 5 |
| 7 | Develop a standardized operational area evacuation plan to streamline emergency response efforts. This would include needs to address avalanche, dam/reservoir failure, landslide/other earth movement, and volcanoes. | Multi-hazard | 1, 2, 3, 4, 5 |
| 8 | Conduct EOC mock exercises and incident management position training to prepare for emergency response. This would include needs to address avalanche, dam/reservoir failure, landslide/other earth movement, and volcanoes. | Multi-hazard | 1, 2, 3, 5, 6 |
| 9 | Implement structural upgrades (e.g., installation of propane props, water supply, etc.) at the City of Susanville Fire Training Center to ensure continuous accessibility and functionality of the center. The center is primary building used for emergency response training, including wildfire and rescue operations. | Multi-hazard | 1, 2, 3, 5 |
| 10 | Develop public education campaigns for the LHMP identified high priority hazards. This would include needs to address avalanche, dam/reservoir failure, landslide/other earth movement, and volcanoes. | Multi-hazard | 1, 2, 3, 4, 5 |
| 11 | Identify/inventory, assess, and where necessary retrofit/harden facilities essential to response and recovery operations within the county. This would include needs to address avalanche, dam/reservoir failure, landslide/other earth movement, and volcanoes. | Multi-hazard | 1, 2, 3, 5, 6 |

| Action # | Mitigation Action | Hazard or Threat | Goal Addressed |
|---|---|---|---|
| 12 | Enhance, support, and expand current Geographic Information Systems (GIS) efforts within the county, including the development and maintenance of key data sets (i.e., critical assets, backup generators, evacuation routes). This would include needs to address avalanche, dam/reservoir failure, landslide/other earth movement, and volcanoes. | Multi-hazard | 1, 2, 3, 4, 5, 6 |
| 13 | Assess, identify, and possibly retrofit/harden a building and/or office space to serve as the joint back up EOC. This would include needs to address avalanche, dam/reservoir failure, landslide/other earth movement, and volcanoes. | Multi-hazard | 1, 2, 3, 5, 6 |
| 14 | Assess and implement recommended actions to ensure historical, cultural, and other significant (i.e., high occupancy) facilities/locations are safe from and will be preserved after major events. | Multi-hazard | 1, 2, 3, 4, 6 |
| 15 | Implement the spring rehabilitation program via the installation of spring boxes to protect the spring water from contamination (from surface runoff or contact with human and animals) and to provide a point of collection and a place for sedimentation. | Drought | 1, 2, 3 |
| 16 | Assess and develop additional potable water supplies in communities that currently do not have adequate water supply and storage. | Drought | 1, 3, 4, 5 |
| 17 | Harden spring locations for security. | Drought | 1, 2, 3, 5, 6 |
| 18 | Prepare a Storm Water Resource Plan. | Drought | 1, 3, 4, 5 |
| 19 | Assess and implement seismic flexible piping joints at above ground storage reservoirs, as appropriate. Also, incorporate changes into building codes to ensure new reservoirs are designed with seismic flexible piping joints. | Earthquake | 1, 2, 5 |
| 20 | Inventory and evaluate all major pipelines in the county (water, sewer, gas) for seismic event reliability; include materials of constructing and the age of the pipeline. | Earthquake | 1, 2, 3, 5, 6 |
| 21 | Explore options and implement recommendations for increasing energy assurance throughout the county. | Energy Disruption | 1, 2, 3, 4, 5, 6 |
| 22 | Determine feasibility and implementation plan for interconnection to the Nevada Energy line. | Energy Disruption | 1, 2, 3, 4, 5, 6 |
| 23 | Participate in the HERO Property Assessed Clean Energy Program to support homeowner energy and water efficiency improvements. | Energy Disruption | 1, 2, 3, 4, 5, 6 |
| 24 | Develop a levee integrity program that includes assessment, inspection, and maintenance. | Flood | 1, 2, 3, 4 |
| 25 | Develop and implement a plan to address Carol Street repetitive flooding. | Flood | 1, 2, 3 |
| 26 | Evaluate flooding areas and implement drainage improvements to reduce the potential for commercial and residential flooding. | Flood | 1, 2, 3, 4 |
| 27 | Train and conduct mock exercises with first responders in hazardous materials (HazMat) response field operations and decontamination. | Hazardous Materials | 1, 2, 3, 5, 6 |
| 28 | Develop a commodity flow study to determine flow of hazardous materials through the county. | Hazardous Materials | 1, 2, 3, 4, 5 |
| 29 | Provide training on the Pandemic Response Plan to prepare for pandemic events. | Infectious Disease | 1, 2, 3, 5, 6 |

| Action # | Mitigation Action | Hazard or Threat | Goal Addressed |
|---|---|---|---|
| 30 | Purchase pandemic equipment and supplies to prepare for pandemic events. | Infectious Disease | 1, 4, 5 |
| 31 | Assess and possibly purchase material and/or equipment (i.e., snowplows/blowers and Snow CATs) to mitigate the hazards associated with severe and snow storms. | Severe Storms | 1, 2, 5 |
| 32 | Implement levee upgrades for waterways throughout the County, including Irrigation Canals. | Severe Storms | 1, 2, 3 |
| 33 | Conduct terrorism training and awareness courses to prepare for terrorism events. | Terrorism | 1, 2, 3, 5, 6 |
| 34 | Identify areas vulnerable to wildfire due to inadequate water supply for firefighting and implement improvements (e.g., expansion of water supply, storage hydrants, etc.). | Wildfire | 1, 2, 3 |
| 35 | Install necessary infrastructure for fire protection in Johnstonville, as identified in the Lassen County Feasibility Study. | Wildfire | 1, 2, 3, 5 |
| 36 | Implement Diamond Mountain Watershed and Forest Restoration Project. | Wildfire | 1, 2, 3, 4 |
| 37 | Implement Hazardous Fuel Reduction Program (Day Road, Little Valley). | Wildfire | 1, 2, 3, 4, 5 |
| 38 | Develop and implement projects to help protect, restore, enhance and benefit National Forest System lands in Lassen County (including fire prevention, pest management, watershed restoration, forest health). | Wildfire | 1, 2, 3, 4, 6 |
| 39 | Develop a program and/or policy that outlines the required *Emergency Management* plans, *Business Continuity* plans, and *Local* plans, defining the purpose, roles and responsibilities, and relationship between the plans. Encourage the development, implementation, testing, and maintenance of these plans to ensure compatibility, consistency, and efficiency. This would include needs to address avalanche, dam/reservoir failure, landslide/other earth movement, and volcanoes. | Multi-hazard | 1, 2, 3, 5, 6 |
| 40 | Establish Mobile Disaster Response Units equipped with supplies, equipment, and personnel to quickly deploy to affected areas and provide emergency assistance, medical care, and support services during disasters. This would include needs to address avalanche, dam/reservoir failure, landslide/other earth movement, and volcanoes. | Multi-hazard | 1, 2, 3, 5, 6 |

## 7.6. Implementation Plan

The following table (**Table 7-3**) reflects the implementation plan and the STAPLEE scoring for each mitigation action. The table is sorted by the STAPLEE scoring to help better understand the priority mitigation actions. The implementation plan identifies the lead department responsible for the action, the estimated cost, potential funding source to support the action, and the proposed timeframe for completion. Because there are some unknowns, the Planning Team developed ranges for both the project costs and project timeframes. The range for project cost includes <$100,000, $100,000-$500,000, $500,001-$1,000,000, and >$1,000,000. The range for project timeframe includes <1 year, 1-3 years, 3-5 years, and >5 years. Additionally, while some funding sources are listed, the County, City, and the Rancheria intend to actively search for other possible

funding sources to help implement mitigation actions. It is also worth noting that the Planning Team has listed Hazard Mitigation Assistance (HMA) Grants under several of the mitigation actions. The Planning Team recognizes that HMA Grants include the Hazard Mitigation Grant Program (HMGP), Building Resilient Infrastructure and Communities (BRIC), and Flood Mitigation Assistance (FMA) funding. It was deemed better by the Planning Team to list it collectively, instead of only selecting 1 or 2 of the grant programs so as to not limit consideration under the other grant programs.

*Table 7-3. Proposed Mitigation Actions Implementation Plan*

| Action # | Mitigation Action | Leads | Cost | Funding Source | Timeframe | STAPLEE score |
|---|---|---|---|---|---|---|
| 1 | Implement the Cady Springs Booster Station and Main line protection project, as identified in the City of Susanville Feasibility Study. | • Susanville Public Works | >$1,000,000 | • Prop. 84 funds | 1-3 years | 27 |
| 2 | Assess, inventory, and maintain adequate level of emergency materials (food, blankets, etc.) at facilities throughout the county to accommodate emergency shelter. | • County Public Works<br>• County Health & Social Services<br>• Susanville School District<br>• Lassen High School District<br>• County Health & Social Services | $100,000-$500,000 | • HMA Grants | 1 year | 24 |
| 3 | Identify and designate Domestic Animal evacuation centers. Where possible link to emergency shelters as not to separate owners from their pets. | • County Ag Commissioner<br>• County Emergency Services | $100,000-$500,000 | • Annual Budget | 1-3 years | 25 |

| Action # | Mitigation Action | Leads | Cost | Funding Source | Timeframe | STAPLEE score |
|---|---|---|---|---|---|---|
| 4 | Assess, inventory, and purchase necessary equipment at essential buildings (i.e., EOC's, Emergency Services Buildings, Shelters, Water Facilities, etc.).to ensure a continual power supply during events that can potentially disrupt energy. | • County Emergency Services<br>• County Public Works<br>• Susanville Public Works<br>• County Health & Social Services | >$1,000,000 | • Annual Budget<br>• HMA Grants | >5 years | 28 |
| 5 | Improve the consistency of emergency communications and facilitate timely response, implement Firenet/Lawnet Lassen Emergency communication equipment upgrades (backup power, additional repeaters, radios, etc.). | • County Emergency Services<br>• County Sheriff<br>• Firenet Lassen<br>• County Health & Social Services | $500,001-$1,000,000 | • HMA Grants<br>• JPA Fees | 1-3 years | 25 |
| 6 | Assess, inventory, and maintain adequate level of storage for emergency response equipment and resource materials (e.g., salt, sand, heavy equipment). Possibly retrofit, construct, or purchase dry storage facilities in strategic locations within the county. | • County Public Works<br>• Susanville Public Works<br>• SIR Public Works | $500,001-$1,00,000 | • Annual Budget<br>• HMA Grants | 1-3 years | 24 |

| Action # | Mitigation Action | Leads | Cost | Funding Source | Timeframe | STAPLEE score |
|---|---|---|---|---|---|---|
| 7 | Develop a standardized operational area evacuation plan to streamline emergency response efforts. | • County Sheriff<br>• Susanville Police Department<br>• Highway Patrol<br>• Sierra Depot Police<br>• County Emergency Services<br>• County Health & Social Services<br>• SIR Emergency Services | $100,000-$500,000 | • Annual Budget<br>• HMA Grants | 1-3 years | 28 |
| 8 | Conduct EOC mock exercises and incident management position training to prepare for emergency response. | • County Emergency Services<br>• Susanville Fire Department<br>• Rancheria Emergency Services | $100,000-$500,000 | • Annual Budget<br>• HMA Grants | <1 year | 27 |
| 9 | Implement structural upgrades (e.g., installation of propane props, water supply, etc.) at the City of Susanville Fire Training Center to ensure continuous accessibility and functionality of the center. The center is primary building used for emergency response training, including wildfire and rescue operations. | • City Fire Department<br>• Lassen County Fire Officers Association | $500,001-$1,000,000 | • HMA Grants | 1-3 years | 26 |
| 10 | Develop public education campaigns for the LHMP identified high priority hazards. | • County Emergency Services<br>• Susanville Fire Department<br>• Rancheria Emergency Services<br>• Administrative Departments | $100,000-$500,000 | • Annual Budget<br>• HMA Grants | 1-3 years | 28 |

| Action # | Mitigation Action | Leads | Cost | Funding Source | Timeframe | STAPLEE score |
|---|---|---|---|---|---|---|
| 11 | Identify/inventory, assess, and where necessary retrofit/harden facilities essential to response and recovery operations within the county. | • County Public Works<br>• Susanville Public Works | >$1,000,000 | • HMA Grants | >5 years | 22 |
| 12 | Enhance, support, and expand current Geographic Information Systems (GIS) efforts within the county, including the development and maintenance of key data sets (i.e., critical assets, backup generators, evacuation routes) | • County Planning and Building<br>• Susanville Planning | $100,000-$500,000 | • HMA Grants | 1-3 years | 28 |
| 13 | Assess, identify, and possibly retrofit/harden a building and/or office space to serve as the joint back up EOC | • County Office of Emergency Services<br>• SIR Emergency Services | $500,001-$1,00,000 | • HMA Grants | 1-3 years | 25 |
| 14 | Assess and implement recommended actions to ensure historical, cultural, and other significant (i.e., high occupancy) facilities/locations are safe from and will be preserved after major events | • County Public Works<br>• Susanville Public Works<br>• SIR Public Works | >$1,000,000 | • HMA Grants | >5 years | 22 |

| Action # | Mitigation Action | Leads | Cost | Funding Source | Timeframe | STAPLEE score |
|---|---|---|---|---|---|---|
| 15 | Implement the spring rehabilitation program via the installation of spring boxes to protect the spring water from contamination (from surface runoff or contact with human and animals) and to provide a point of collection and a place for sedimentation. | • Susanville Public Works<br>• Rancheria Natural Resources Department | >$1,000,000 | • HMA Grants<br>• BIA<br>• EPA | 1-3 years | 31 |
| 16 | Assess and develop additional potable water supplies in communities that currently do not have adequate water supply and storage. | • County Planning & Building<br>• City Public Works | $100,000-$500,000 | • HMA Grants | 1-3 years | 25 |
| 17 | Harden spring locations for security. | • Susanville Public Works | >$1,000,000 | • HMA Grants<br>• Capital Improvement Funds | 1-3 years | 27 |
| 18 | Prepare a Storm Water Resource Plan. | • Honey Lake Resource Conservation District | $100,000-$500,000 | • HMA Grants | 1-3 years | 28 |
| 19 | Assess and implement seismic flexible piping joints at above ground storage reservoirs, as appropriate. Also, incorporate changes into building codes to ensure new reservoirs are designed with seismic flexible piping joints. | • City Public Works<br>• Rancheria Public Works | >$1,000,000 | • HMA Grants | 1-3 years | 28 |

| Action # | Mitigation Action | Leads | Cost | Funding Source | Timeframe | STAPLEE score |
|---|---|---|---|---|---|---|
| 20 | Inventory and evaluate all major pipelines in the county (water, sewer, gas) for seismic event reliability; include materials of constructing and the age of the pipeline. | • County Public Works<br>• Susanville Public Works<br>• Susanville Sanitary District | $100,000-$500,000 | • HMA Grants<br>• Capital Improvement Funds | 1-3 years | 23 |
| 21 | Explore options and implement recommendations for increasing energy assurance throughout the county. | • County & City Administration<br>• Lassen Municipal Utility District<br>• Rural Electric<br>• Surprise Valley Electric<br>• Pacific Gas & Electric | >$1,000,000 | • HMA Grants | 1-3 years | 28 |
| 22 | Determine feasibility and implementation plan for interconnection to the Nevada Energy line. | • Lassen Municipal Utility District | $100,000-$500,000 | • HMA Grants | 1-3 years | 26 |
| 23 | Participate in the HERO Property Assessed Clean Energy Program to support homeowner energy and water efficiency improvements. | • City of Susanville<br>• Renovate America<br>• Private Homeowners | $100,000-$500,000 | • HERO PACE | 1-3 years | 28 |
| 24 | Develop a levee integrity program that includes assessment, inspection, and maintenance. | • County Public Works<br>• Susanville Public Works | $100,000-$500,000 | • HMA Grants | 1-3 years | 20 |
| 25 | Develop and implement a plan to address Carol Street repetitive flooding. | • Susanville Public Works<br>• Fish & Wildlife | >$1,000,000 | • HMA Grants | 1-3 years | 23 |

| Action # | Mitigation Action | Leads | Cost | Funding Source | Timeframe | STAPLEE score |
|---|---|---|---|---|---|---|
| 26 | Evaluate flooding areas and implement drainage improvements to reduce the potential for commercial and residential flooding. | • County Public Works<br>• City Public Works<br>• SIR Public Works | $100,000-$500,000 | • Annual Budget<br>• Capital Improvement Funds<br>• HMA Grants | 1-3 years | 23 |
| 27 | Train and conduct mock exercises with first responders in hazardous materials (HazMat) response field operations and decontamination. | • Lassen County Fire Officers Association<br>• County Emergency Services<br>• Rancheria Emergency Services<br>• County Ag Commissioner | $100,000-$500,000 | • Annual Budget<br>• HMA Grants | 1-3 years | 30 |
| 28 | Develop a commodity flow study to determine flow of hazardous materials through the county. | • County Emergency Services<br>• Susanville Fire Department<br>• County Environmental Health | $100,000-$500,000 | • HMA Grants | 1-3 years | 27 |
| 29 | Provide training on the Pandemic Response Plan to prepare for pandemic events. | • County Public Health<br>• Rancheria Health Clinic | $100,000-$500,000 | • Annual Budget<br>• HMA Grants | 1 year | 25 |
| 30 | Purchase pandemic equipment and supplies to prepare for pandemic events. | • County Public Health<br>• Rancheria Health Clinic | $500,001-$1,000,000 | • Annual Budget<br>• HMA Grants | 1 year | 22 |
| 31 | Assess and possibly purchase material and/or equipment (i.e., snowplows/blowers and Snow CATs) to mitigate the hazards associated with severe and snow storms. | • County Public Works<br>• Susanville Public Works<br>• SIR Public Works | >$1,000,000 | • Annual Budge<br>• HMA Grants | 1-3 years | 23 |

| Action # | Mitigation Action | Leads | Cost | Funding Source | Timeframe | STAPLEE score |
|---|---|---|---|---|---|---|
| 32 | Implement levee upgrades for waterways throughout the County, including Irrigation Canals. | • County Public Works<br>• Susanville Public Works<br>• Fish & Wildlife<br>• Resource Conservation Districts | >$1,000,000 | • HMA Grants | 1-3 years | 23 |
| 33 | Conduct terrorism training and awareness courses to prepare for terrorism events. | • County Emergency Services<br>• County Sheriff<br>• Susanville Fire Department<br>• Susanville Police Department<br>• Rancheria Emergency Services<br>• California Highway Patrol | $100,000-$500,000 | • Annual Budget<br>• HMA Grants | 1 year | 25 |
| 34 | Identify areas vulnerable to wildfire due to inadequate water supply for firefighting and implement improvements (e.g., expansion of water supply, storage hydrants, etc.). | • Community Service Districts (Leavitt Lake, Westwood, Adin, Clear Creek)<br>• Herlong Public Utility District<br>• County Service Area #1<br>• CAL FIRE | $100,000-$500,000 | • Annual Budget<br>• Capital Improvement Funds<br>• HMA Grants | 1-3 years | 26 |
| 35 | Install necessary infrastructure for fire protection in Johnstonville, as identified in the Lassen County Feasibility Study. | • Susanville Fire Department<br>• Susan River Fire Protection District<br>• Susanville Public Works | >$1,000,000 | • Annual Budget<br>• See Feasibility Study | >5 years | 26 |
| 36 | Implement Diamond Mountain Watershed and Forest Restoration Project. | • Lassen County Fire Safe Council<br>• CAL FIRE<br>• BLM<br>• Lassen & Plumas National Forests<br>• Honey Lake Valley RCD<br>• Susan River FPD<br>• Private Landowners | >$1,000,000 | • HMA Grants | >5 years | 29 |

| Action # | Mitigation Action | Leads | Cost | Funding Source | Timeframe | STAPLEE score |
|---|---|---|---|---|---|---|
| 37 | Implement Hazardous Fuel Reduction Program (Day Road, Little Valley). | • Lassen County Fire Safe Council<br>• CAL FIRE<br>• Pacific Gas & Electric<br>• Rancheria | <$100,000 | • HMA Grants<br>• USDA<br>• BIA | <1 year | 29 |
| 38 | Develop and implement projects to help protect, restore, enhance and benefit National Forest System lands in Lassen County (including fire prevention, pest management, watershed restoration, forest health). | • Lassen County Resource Advisory Committee<br>• U.S. Forest Service | $100,000-$500,000 | • HMA Grants | >5 years | 29 |
| 39 | Develop a program and/or policy that outlines the required *Emergency Management* plans, *Business Continuity* plans, and *Local* plans, defining the purpose, roles and responsibilities, and relationship between the plans. Encourage the development, implementation, testing, and maintenance of these plans to ensure compatibility, consistency, and efficiency. | • County Planning and Building<br>• Susanville Planning | $500,001-$1,000,000 | • Annual Budget<br>• HMA Grants | 1-3 years | 28 |

| Action # | Mitigation Action | Leads | Cost | Funding Source | Timeframe | STAPLEE score |
|---|---|---|---|---|---|---|
| 40 | Establish Mobile Disaster Response Units equipped with supplies, equipment, and personnel to quickly deploy to affected areas and provide emergency assistance, medical care, and support services during disasters | • Public Safety | $500,001-$1,000,000 | • Annual Budget<br>• Grants | 1-3 years | 26 |

# 8. Plan Maintenance

The purpose of this section is to present the actions the County, City, and the Rancheria will take to ensure the LHMP remains current and up to date over the next five (5) years. In addition to ensuring the LHMP remains current, this section presents the efforts the County, City, and the Rancheria will take to educate and bring awareness about hazards/threats, efforts to address the hazards/threats, and potential actions that can be taken within the community to stakeholders and the general public. This section also presents the County, City, and the Rancheria's intention to encourage the incorporation LHMP information into other planning efforts. The County, City, and the Rancheria believe the effectiveness of the LHMP depends on the implementation of proposed mitigation actions and the integration of information into other existing plans, policies, and programs.

## 8.1. Monitoring, Evaluating and Updating the Plan

The County Planning and Building Services will work with the Planning Team to monitor, evaluate, review, and update information in the LHMP, and although significant efforts were taken to include all relevant stakeholders and partners during the update process, additional efforts will be made to expand the Planning Team to include other community stakeholders and partners that may not have participated. The County Planning and Building Services will facilitate an annual meeting with the Planning Team to review all of the information in the LHMP, with a heavy emphasis on the proposed mitigation actions. The intent, benefit, and status update of mitigation action will be discussed, including the validation of the implementation plan. The intent is to have the review coincide with the development of the County, City, and the Rancheria's annual budget, increasing the chances of inclusion of mitigation actions in the Capital Improvement Program. While there is not a confirmed meeting schedule, the County Planning and Building Services will ensure that the first annual meeting will occur within one (1) year from the date of FEMA approval.

In addition to the annual Planning Team meeting, the County Planning and Building Services will facilitate ad hoc meetings to review the LHMP after an emergency declaration/proclamation (Federal, State, Regional, County, Rancheria, and/or City), after an event that required activation of an Emergency Operations Center (EOC) within the Operational Area, during an update of the General Plan/Master Plan or Emergency Plans, or if a disaster event occurs in a community sharing similar characteristics. Some of the discussion will focus around validating the Goals and Objectives, reviewing the Hazard/Threat Profiles, calibrating the potential vulnerabilities and impacts (risk), and assessing the benefits of the proposed projects/actions.

The County Planning and Building Services will also encourage the integration of mitigation topics into other County, City, Rancheria, and stakeholder/partner planning meetings. The County will urge that mitigation is an agenda item and/or incorporated into the discussion during those meetings whenever appropriate.

The County Planning and Building Services will also lead the next effort to update the LHMP. The County Planning and Building Services will ensure all information obtained from these meetings will be captured and made available for the next LHMP update. Understanding the need not to have the LHMP expire, the County will begin the process of updating the LHMP two (2) years prior to the plan expiration date. If the County, City, and the Rancheria decided to seek a Hazard

Mitigation Assistance (HMA) grant and/or the assistance of a consultant to support the LHMP update effort, the County will incorporate appropriate time to account for those needs. The County, City and Rancheria anticipate utilizing the same planning process used for this update process during the next update of the LHMP.

## 8.2. Integration with Other Planning Efforts

Integration of the LHMP with other programs, processes, and planning efforts is essential to the success of building a disaster resilient community. Ensuring all plans and programs are consistent and working together towards common goals is vital part of this effort. The Lassen County Operational Area supports an all-hazard approach, encourages information sharing between jurisdictions, organizations, and departments, and urges the incorporation of information into other planning efforts. In the past, integration of the LHMP has not been without its challenges. Along with ever evolving, competing priorities, there have been challenges of personnel changes and highly competitive allocation of funding.

As other plans are developed, the LHMP information will be leveraged and incorporated when other plans could benefit from a better understanding of hazards/threats and the potential mitigation actions that can be taken. The County has already incorporated the previous LHMP by reference and will continue to assess and incorporate changes where necessary. After adoption and approval of this LHMP, the City and the Rancheria will work to incorporate and/or update the information in the General Plan and Master Plan. Additionally, the County, City, and Rancheria will work to incorporate the LHMP into the Emergency Operations Plans (EOP) where appropriate.

While the LHMP was not integrated into many other plans and planning efforts, some *formal* actions were accomplished. The information in the LHMP is leveraged in the creation of the annual Capital Improvement Program Project list. Issues identified through the LHMP process augmented the work done annually to assess projects, capabilities, and needs. The LHMP also assists with discovery and mitigation actions in EIR processes.

The County, City, and Rancheria intend to implement a similar planning process like the one used to complete this LHMP update. The process encourages establishing an all-inclusive team and the consideration of a multitude of plans and documents, supporting an information driven planning/decision process. Additionally, many of the plans prepared by the County, City, and Rancheria require public review and, in some instances, environmental compliance (i.e., NEPA, CEQA). This will also help to ensure that information and findings from the LHMP be considered and incorporated where applicable. Another element to help ensure incorporation is that the very team members working on the LHMP are the ones working on other plans. This deliberate action under the LHMP was to not only ensure the LHMP incorporated information from their efforts but was to also ensure LHMP information would be brought back to their planning efforts.

## 8.3. Continued Stakeholder and Public Involvement

A critical part of maintaining the LHMP is ongoing stakeholder and public review and participation. The County, City, and the Rancheria are committed to the direct involvement of stakeholders and the public, offering them a platform to provide feedback and comments on the LHMP on a continued basis. As mentioned, during the update of the LHMP, the County, City, and the

Rancheria made an effort to be all inclusive in the planning process. At the beginning of the process, extra effort was conducted to reach out to non-governmental organizations and private organizations, some of whom are advocates for underserved and socially vulnerable populations. The County, City, and the Rancheria are dedicated to continuing to engage with these communities and bringing greater awareness of these community needs.

The County, City, and the Rancheria are also looking for better opportunities to engage directly with the communities (i.e., workshops, meetings) to both educate each other and exchange ideas. The mitigation survey will remain on the County website for the foreseeable future as to allow for additional participants to provide input and feedback. The County, City, and the Rancheria are hoping that this continued (and improved) outreach will lend itself to better participation in the next update of the LHMP. This may include more targeted messaging and contact with underserved and socially vulnerable populations (i.e., the elderly, non-English speaking, homeless, transportation disadvantaged, and the Disabled, Access, and Functional Needs- *DAFN*). As an ongoing effort, stakeholders and the public will continue to be apprised of mitigation actions through the County's website, County, City, and the Rancheria social media platforms, and through the local media. The County, City, and the Rancheria will leverage the communication capabilities presented in section 4.3.2 and followed during the LHMP public involvement processes described under Section 2 of this Plan.

## 8.4. Point of Contact

While the LHMP is viewed as an Operational Area document, requiring participation from several County, City, and the Rancheria departments, it is important to identify a single person responsible for the administration of the plan. As mentioned, the County will act as the lead, facilitating and encouraging participation from all Planning Team members to monitor, evaluate, review, and update information in the LHMP. Without this collective input and participation, the County recognizes the potential shortfall of the LHMP. Below is the contact information for the County Coordinator:

Silas Rojas- Lassen County Emergency Services Chief
697-345 Highway 36, Susanville CA 96130
(530) 257/ 8504 / Lassen.oes@fire.ca.gov

# APPENDIX A- Adoption Resolutions

# APPENDIX B- Planning Team Member Attendance Matrix

| Name | 6/29/2023 | 4/1/2024 | 4/15/2024 | 4/29/2024 | 5/13/2024 | 6/10/2024 | 6/24/2024 | 7/8/2024 | 7/22/2024 | 8/5/2024 | 8/19/2024 | 9/16/2024 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maurice Anderson | | X | X | | X | X | | | X | X | X | X |
| Gaylon Norwood | X | X | X | X | X | X | X | X | X | X | X | X |
| Mike Johnson | | | | X | | | | | | | | |
| Matt Oden | | | X | X | X | X | X | X | X | X | X | X |
| Mindie Hilton | | | X | X | X | X | X | X | X | X | X | X |
| Grace Poor | | | X | | X | | X | | | X | | X |
| John McGarva | X | X | | | | | X | | | | | |
| Jim Uruburu | | | X | X | X | | X | X | X | | | X |
| Sara Chandler | | | X | X | X | | | | | | X | |
| Michael Hoenig | | | | | X | | X | | | | | |
| Cynthia Raschein | | X | X | X | X | X | X | | X | X | | X |
| Mike Bollinger | | | X | | | | X | X | X | X | X | X |
| Kelly Mumper | X | X | X | X | X | X | X | X | X | X | X | X |
| Tom Hernandez | | | X | | X | | X | X | X | X | X | X |
| Marcie Rojas | | | X | | X | X | X | | X | X | | X |
| Nick Dacosta | | | X | | X | X | X | X | X | X | X | |
| Dan Newton | | | X | X | | | | | | | | |
| Bob Godman | | | | X | X | X | X | X | X | X | X | X |
| Erik Edholm | | | X | | | X | X | | X | X | X | |
| Dow Davis | | | X | | | | | | | | | |
| Tamra Spade | | | | | X | X | X | | X | X | X | X |
| Silas Rojas | X | X | X | | X | X | | X | | | | X |
| Brandie Cooper | | | X | X | X | | | | | | | |
| Maureen Curley | | | | X | X | X | X | X | | X | | X |
| Audie Noneo | | | | | X | | | | | | | |
| Andrew Petrow | | X | X | X | X | X | X | X | X | X | X | X |
| Michael Gibbons | | | | | | | | | | | | |
| Cort Cortez | | | | X | X | X | X | X | X | | | X |
| Cortney Flather | X | | | | | | | | | | | |
| Ethan Mobley | | | X | | X | | | | | | | |
| Brian Greer | | | X | | | | | | | | | |
| Mike Prettyman | | | | | | | | | | | | |
| Robert Steen | | | | | | | | | | | | |
| Cade Mohlr | | | | X | X | | | | | | | |
| Jamie Huber | | | | X | X | X | | X | | | | |
| Casey Urrutia | | | | X | X | | | X | | | | |
| Scot Dixon | | | | X | | | | | | | X | |
| Jayson Vial | | | | X | X | | | | | | | |
| Jolene Arredondo | | | | X | | | | | | | | |
| Steve Stump | | | | | | | | | | | | |
| Casey Williams | | | | | | | | | | | | |
| Jason Housal | | | | | | X | | | X | | X | |
| Kory Bowser | | | | | | | | | | | | |
| Elizabeth Krier | | | | | | X | | X | X | | | X |
| Caleb Schortz | | | | | | | | | X | | X | |
| Jasleen Mutti | | | | | | | | X | | X | | X |
| Tom Downing | | | | | | | | | | X | X | |

# APPENDIX C- Public Outreach Meeting Announcements

# PUBLIC MEETING

## LOCAL HAZARD MITIGATION PLAN UPDATE

## THURSDAY, JUNE 29, 2023 at 2:00 P.M.

**Jensen Hall, 195 Russell Ave. Susanville, CA**

**Join via Microsoft Teams: https://msteams.link/Z2UY**

**Meeting ID: 216 765 741 478 Passcode: P5hhJG**

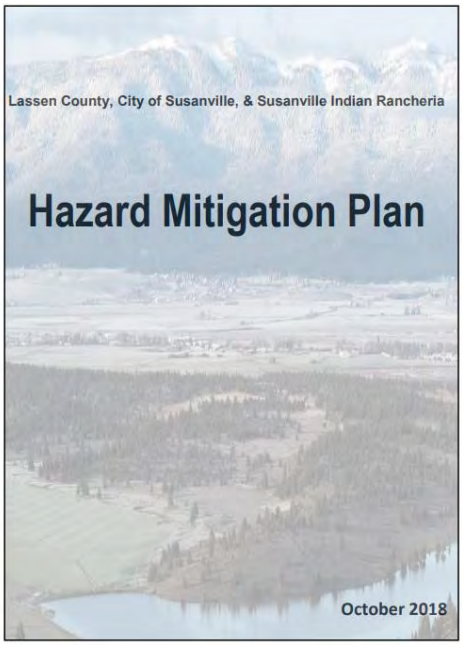
**At the Thursday, June 29, 2023 meeting, we will be discussing which hazards are of the most concern throughout the county.**

### What is a Local Hazard Mitigation Plan (LHMP)?

The purpose of a LHMP is for local governments to identify the natural hazards that impact them, to identify actions and activities to reduce any losses from those hazards, and to establish a coordinated process to implement the plan, taking advantage of a wide range of resources. A LHMP enables the County and the City to leverage Federal funding sources to prevent damages from natural hazards such as wildfires, power outages, and floods.

### How can you help?

Public input is an essential part of the plan update. As part of the planning process, Lassen County and the City of Susanville are seeking feedback from residents and businesses from across the county to incorporate into the plan.




**What are the natural hazards you feel pose the greatest risk to your community?**

If you would like more information please contact us at the numbers listed below or email Cortney Flather, Natural Resources Coordinator, at cflather@co.lassen.ca.us.

Lassen County – (530) 251-8269
City of Susanville – (530) 252-5100

# PUBLIC MEETING ANNOUCEMENT

## LOCAL HAZARD MITIGATION PLAN *UPDATE*

## THURSDAY, JUNE 6, 2024 at 7:00 P.M.

**Join via Zoom**

**https://www.zoomgov.com/j/1619965063?pwd=YUs2RG5MWklOUEdybjNLbFA2L2hldz09**

**Meeting ID: 161 996 5063 Passcode: 418082**

### Purpose of the Meeting:

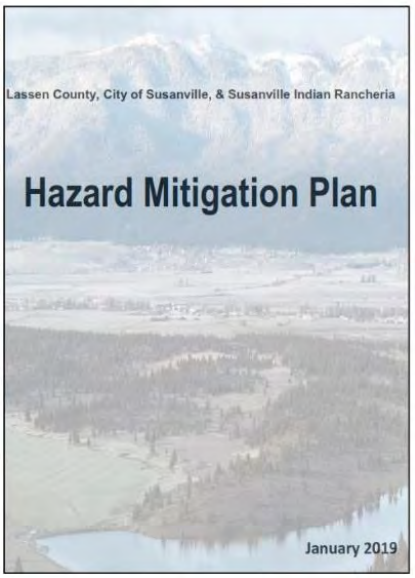
Lassen County, the City of Susanville, and the Susanville Indian Rancheria are working cooperatively to update the Lassen County Operational Area Local Hazard Mitigation Plan (LHMP). As part of the process, input is essential to ensure the public's perspectives (i.e., concerns, challenges, expectations) are considered and incorporated into the LHMP.

### What is Hazard Mitigation:

Any long-term action taken to reduce and/or eliminate impacts from Hazards and Threats. Mitigation can reduce the enormous cost and lengthy duration of disaster response and recovery by protecting citizens, critical facilities/infrastructure, and local businesses.

### What is a Local Hazard Mitigation Plan?

The purpose of a LHMP is for local governments to identify actions (or *strategies*) it can take to reduce and/or eliminate risk from identified Hazards and Threats. This is accomplished by facilitating a team through a comprehensive planning process to learn about the Hazards and Threats, understanding the current local capabilities, and then identify appropriate actions to reduce and/or eliminate risk.




### Hazard Mitigation Plan Update:

The Federal Emergency Management Agency (FEMA) requires that LHMPs be updated every five (5) years to receive Hazard Mitigation Assistance grants. The current Lassen County Operational Area LHMP (here) expired January 2024. The intent is to have a FEMA-approved and locally adopted LHMP by the end of 2024.

### Contact Information

Questions may be addressed to Lassen County Deputy Director of the Planning and Building Services Department Gaylon Norwood: (530) 251-8269 or landuse@co.lassen.ca.us.

# PUBLIC MEETING ANNOUNCEMENT

## LOCAL HAZARD MITIGATION PLAN *UPDATE*

## MONDAY, October 7, 2024 at 6:00 P.M.

**Join via Zoom**

**https://www.zoomgov.com/j/1614660757?pwd=bjbGbLnzqOjrMYmZgwUb7NPwT4kKEu.1**

**Meeting ID: 161 466 0757 Passcode: 237893**

### Purpose of the Meeting:

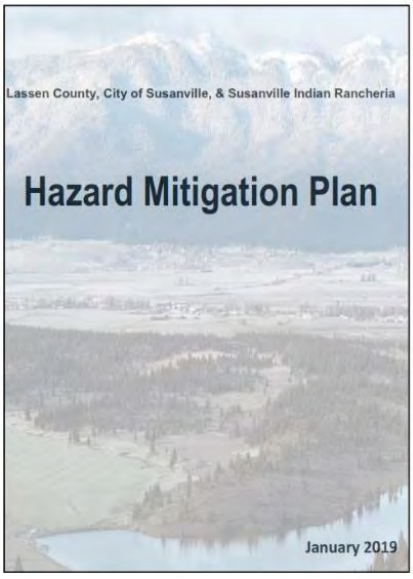
Lassen County, the City of Susanville, and the Susanville Indian Rancheria are working cooperatively to update the Lassen County Operational Area Local Hazard Mitigation Plan (LHMP). As part of the process, input is essential to ensure the public's perspectives (i.e., concerns, challenges, expectations) are considered and incorporated into the LHMP.

### What is Hazard Mitigation:

Any long-term action taken to reduce and/or eliminate impacts from Hazards and Threats. Mitigation can reduce the enormous cost and lengthy duration of disaster response and recovery by protecting citizens, critical facilities/infrastructure, and local businesses.

### What is a Local Hazard Mitigation Plan?

The purpose of a LHMP is for local governments to identify actions (or *strategies*) it can take to reduce and/or eliminate risk from identified Hazards and Threats. This is accomplished by facilitating a team through a comprehensive planning process to learn about the Hazards and Threats, understanding the current local capabilities, and then identify appropriate actions to reduce and/or eliminate risk.




### Hazard Mitigation Plan Update:

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### Contact Information

Questions may be addressed to Lassen County Deputy Director of the Planning and Building Services Department Gaylon Norwood: (530) 251-8269 or landuse@co.lassen.ca.us.

**Scan the QR Code to go to Lassen County Planning and Building Services website for more information and a link to the above meeting.**

# APPENDIX D- Survey Results

10 responses

# Local Hazard Mitigation Plan (LHMP) Survey

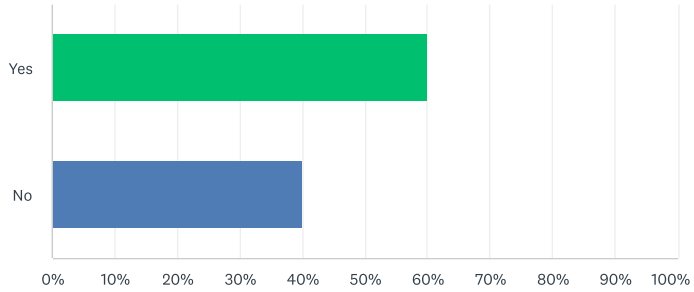
QUESTION SUMMARIES | DATA TRENDS | INDIVIDUAL RESPONSES

All Pages

**Q1**

## Have you heard of the term MITIGATION (action taken to reduce and/or eliminate loss of life and property from hazards)?

Answered: 10 Skipped: 0

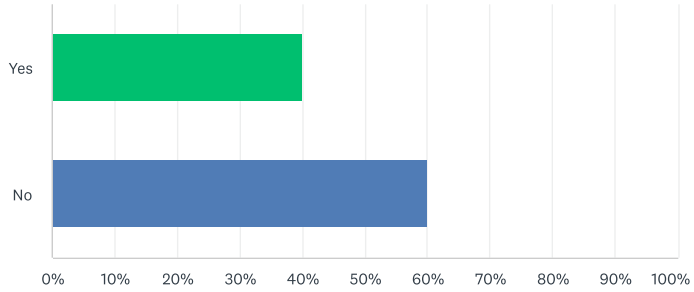



| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Yes | 60.00% | 6 |
| No | 40.00% | 4 |
| TOTAL | | 10 |

**Q2**

## Are you aware the State, the County, the City, and Rancheria have a Hazard Mitigation Plan?

Answered: 10 Skipped: 0




| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Yes | 40.00% | 4 |

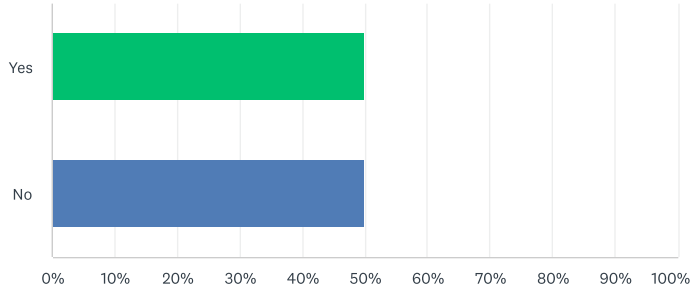
Share Link COPY

10 responses

Q3

## Are you aware of the hazards facing the County, the City, and Rancheria?

Answered: 10 Skipped: 0

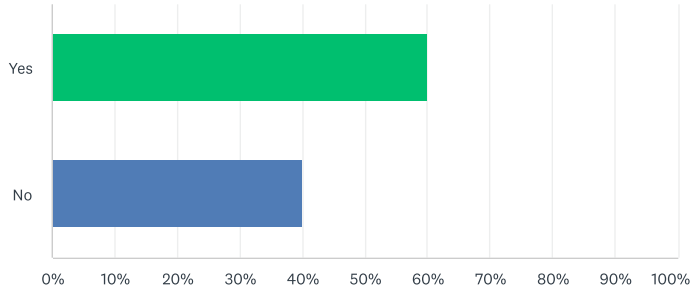



| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Yes | 50.00% | 5 |
| No | 50.00% | 5 |
| TOTAL | | 10 |

Q4

## Have you lived through or experienced a hazard?

Answered: 10 Skipped: 0



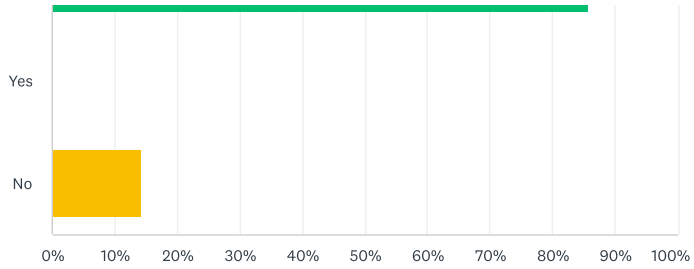

| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Yes | 60.00% | 6 |
| No | 40.00% | 4 |
| TOTAL | | 10 |

Q5

## Were you as prepared as you thought you would be?

Answered: 7 Skipped: 3

Share Link COPY 10 responses




| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Sort of | 85.71% | 6 |
| Yes | 0.00% | 0 |
| No | 14.29% | 1 |
| **TOTAL** | | **7** |

**Q6**

## Did you learn any valuable lessons?

Answered: 5 Skipped: 5

That lassen county services are only for the residents that are loce to susanville all others are ignored and unaware of any plans or programs implemented my lassen county. Rural areas being un aware because of no information received

9/12/2024 04:49 PM

Not yet.

9/4/2024 10:24 AM

Regroup important paperwork.. Deed .. Will.. Advance Directive.. and such in a single easy grab and carry location

6/14/2024 11:50 PM

Planning for possible hazards is important.

6/14/2024 11:17 PM

**Q7**

## What is your biggest fear with hazards?

Answered: 7 Skipped: 3

Being ignored by lassen county in the event of a physical hazard and lack of services which would be inevitable because of lack of knowledge in rural area of the county

9/12/2024 04:49 PM

Share Link COPY

10 responses

9/4/2024 10:24 AM

That the correct resources will be available.

6/16/2024 06:25 PM

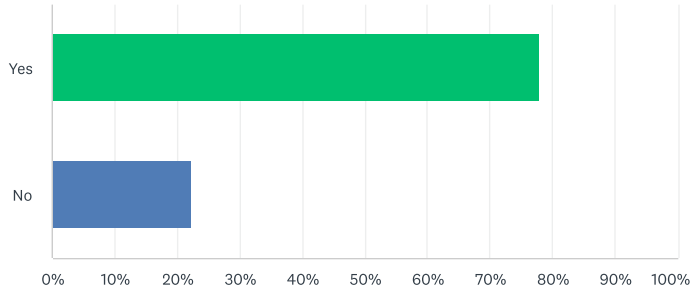
?? Do not have any specific fears short of "when" it happens because it will. Just be prepared

6/14/2024 11:50 PM

**Q8**

## Are you interested in learning more about hazards and what the County, the City, and Rancheria is doing about them?

Answered: 9 Skipped: 1

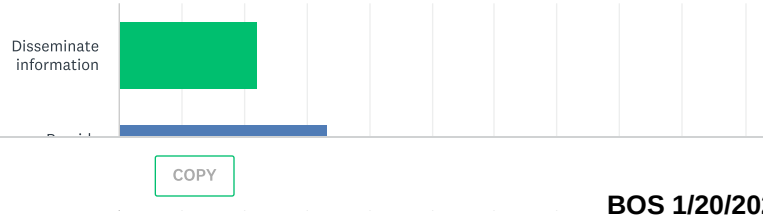



| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Yes | 77.78% | 7 |
| No | 22.22% | 2 |
| TOTAL | | 9 |

**Q9**

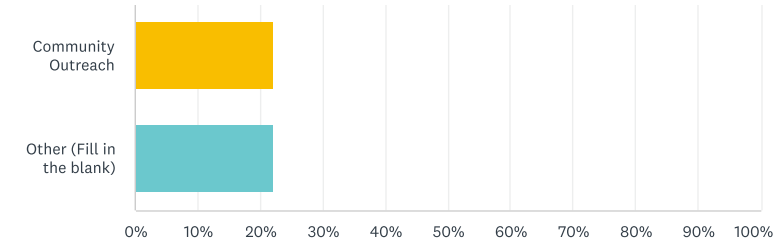
## What are the most important things the County, the City, and Rancheria can do to help communities prepare for hazards?

Answered: 9 Skipped: 1




Share Link COPY

10 responses

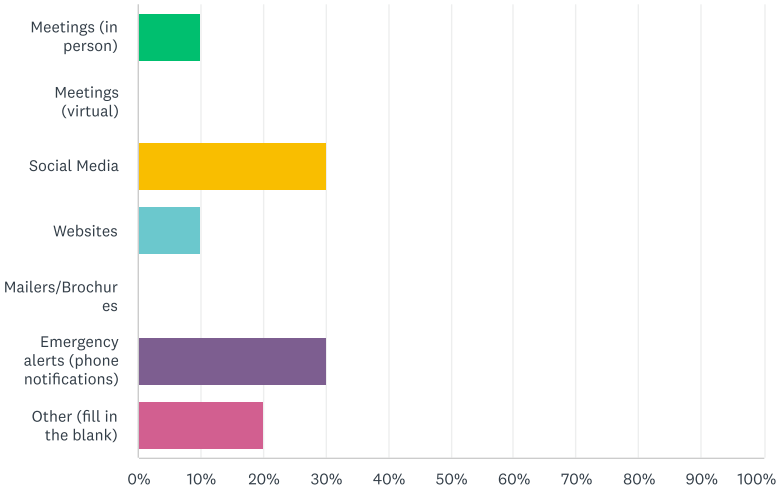



| ANSWER CHOICES | | RESPONSES | |
|---|---|---|---|
| Disseminate information | | 22.22% | 2 |
| Provide training/education | | 33.33% | 3 |
| Community Outreach | | 22.22% | 2 |
| Other (Fill in the blank) | Responses | 22.22% | 2 |
| TOTAL | | | 9 |

Q10

## What is the best way to provide hazard information to you and your family?

Answered: 10 Skipped: 0




| ANSWER CHOICES | | RESPONSES | |
|---|---|---|---|
| Meetings (in person) | | 10.00% | 1 |
| Meetings (virtual) | | 0.00% | 0 |
| Social Media | | 30.00% | 3 |
| Websites | | 10.00% | 1 |
| Mailers/Brochures | | 0.00% | 0 |
| Emergency alerts (phone notifications) | | 30.00% | 3 |
| Other (fill in the blank) | Responses | 20.00% | 2 |
| TOTAL | | | 10 |

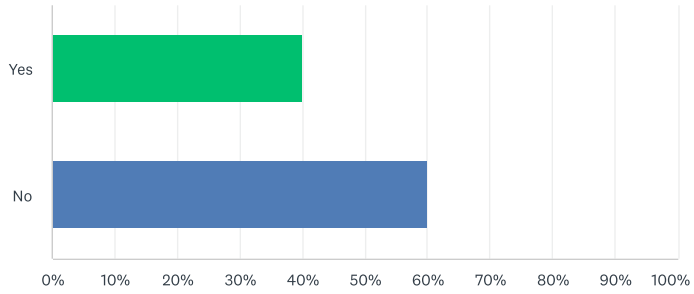
Q11

Share Link COPY

10 responses

discussed?

Answered: 10 Skipped: 0

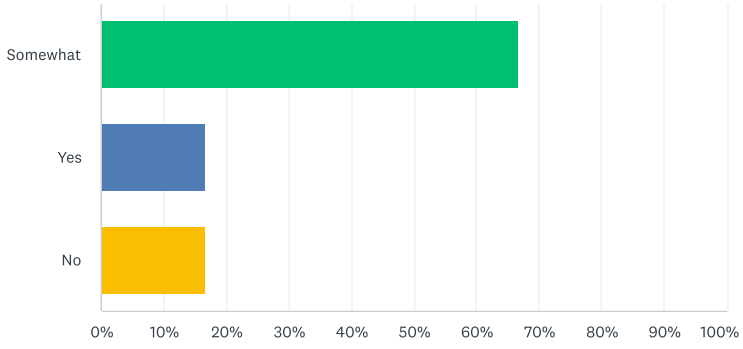



| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Yes | 40.00% | 4 |
| No | 60.00% | 6 |
| TOTAL | | 10 |

Q12

## If so, were the meetings useful and informative?

Answered: 6 Skipped: 4




| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Somewhat | 66.67% | 4 |
| Yes | 16.67% | 1 |
| No | 16.67% | 1 |
| TOTAL | | 6 |

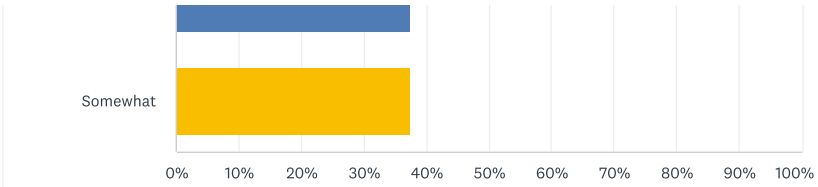
Q13

## Earthquakes

Answered: 8 Skipped: 2


Share Link COPY

10 responses

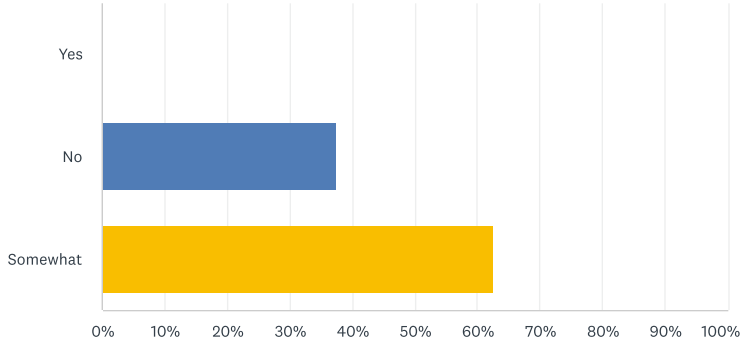



| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Yes | 25.00% | 2 |
| No | 37.50% | 3 |
| Somewhat | 37.50% | 3 |
| **TOTAL** | | **8** |

**Q14**

## Floods

Answered: 8 Skipped: 2

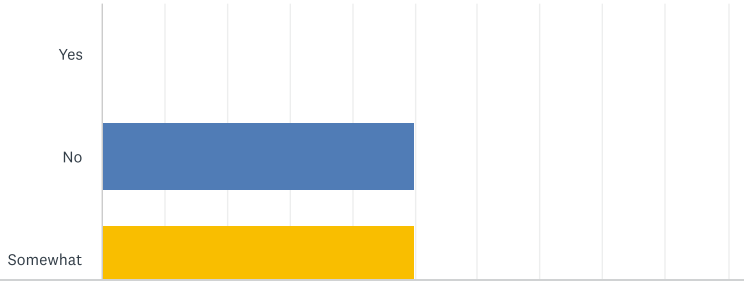



| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Yes | 0.00% | 0 |
| No | 37.50% | 3 |
| Somewhat | 62.50% | 5 |
| **TOTAL** | | **8** |

**Q15**

## Wildfires

Answered: 8 Skipped: 2




Share Link COPY

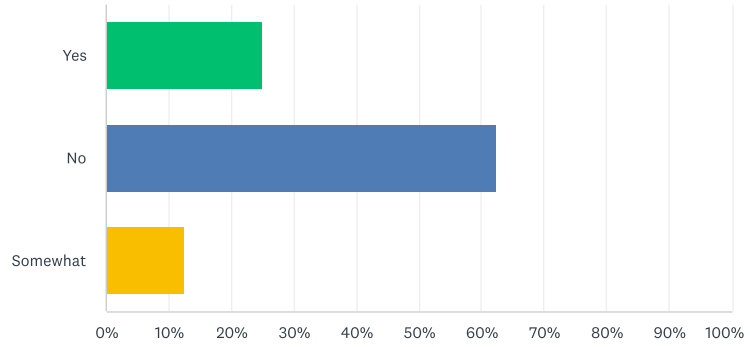
10 responses

| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Yes | 0.00% | 0 |
| No | 50.00% | 4 |
| Somewhat | 50.00% | 4 |
| **TOTAL** | | **8** |

**Q16**

## Windstorms

Answered: 8 Skipped: 2

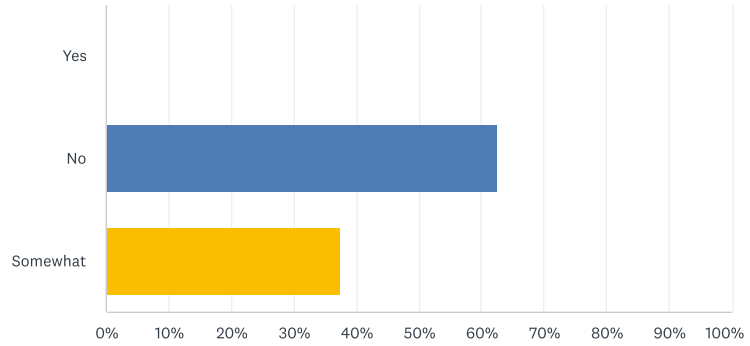



| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Yes | 25.00% | 2 |
| No | 62.50% | 5 |
| Somewhat | 12.50% | 1 |
| **TOTAL** | | **8** |

**Q17**

## Energy Disruption

Answered: 8 Skipped: 2




| ANSWER CHOICES | RESPONSES |
|---|---|

Share Link COPY

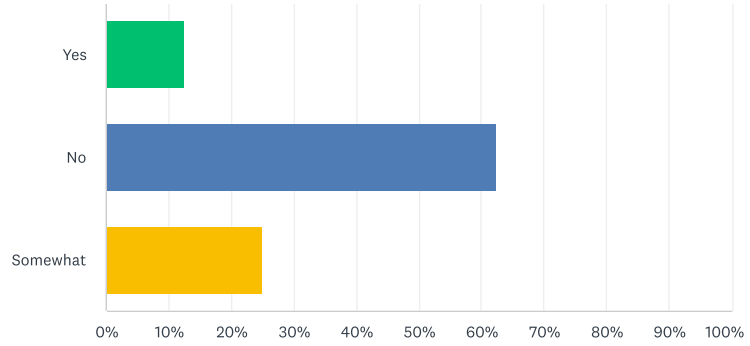
10 responses

| | | |
|---|---|---|
| Somewhat | 37.50% | 3 |
| **TOTAL** | | **8** |

**Q18**

## Infections Disease (Pandemic)

Answered: 8 Skipped: 2

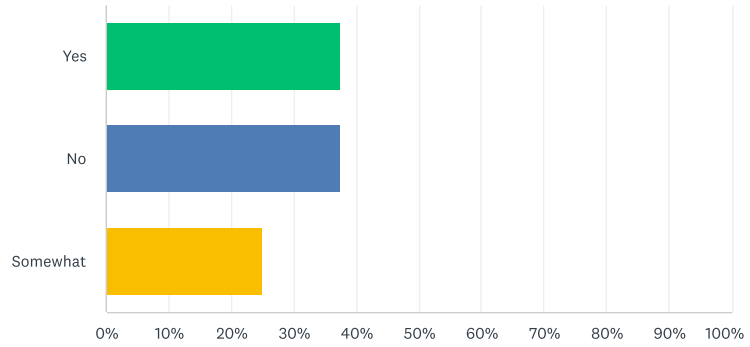



| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Yes | 12.50% | 1 |
| No | 62.50% | 5 |
| Somewhat | 25.00% | 2 |
| **TOTAL** | | **8** |

**Q19**

## Earthquakes

Answered: 8 Skipped: 2



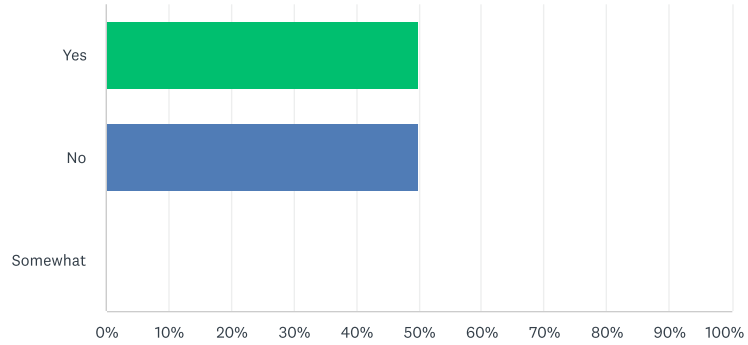

| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Yes | 37.50% | 3 |
| No | 37.50% | 3 |
| Somewhat | 25.00% | 2 |
| **TOTAL** | | **8** |

Share Link COPY

10 responses

## Floods

Answered: 8 Skipped: 2

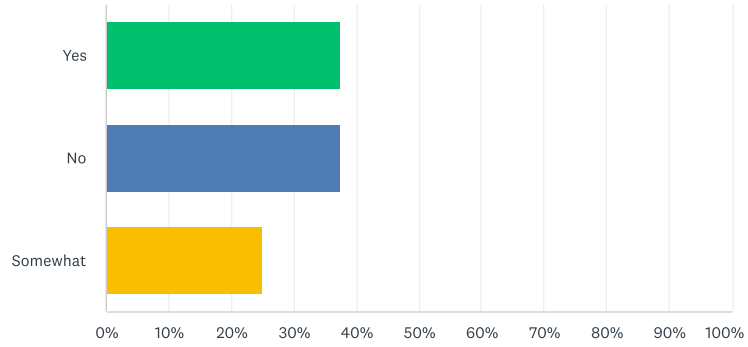



| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Yes | 50.00% | 4 |
| No | 50.00% | 4 |
| Somewhat | 0.00% | 0 |
| TOTAL | | 8 |

Q21

## Wildfires

Answered: 8 Skipped: 2

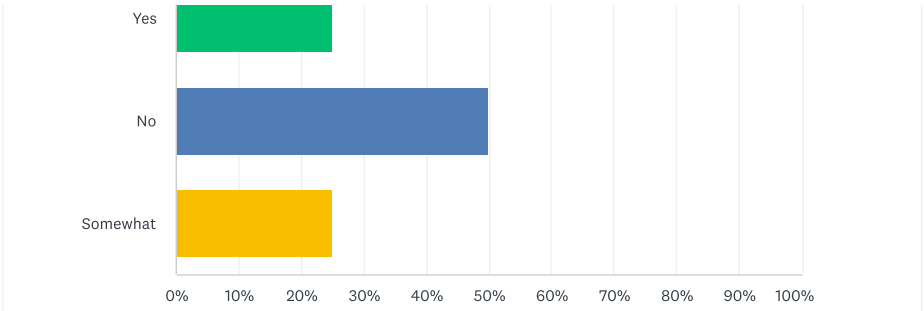



| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Yes | 37.50% | 3 |
| No | 37.50% | 3 |
| Somewhat | 25.00% | 2 |
| TOTAL | | 8 |

Q22

## Windstorms

Answered: 8 Skipped: 2

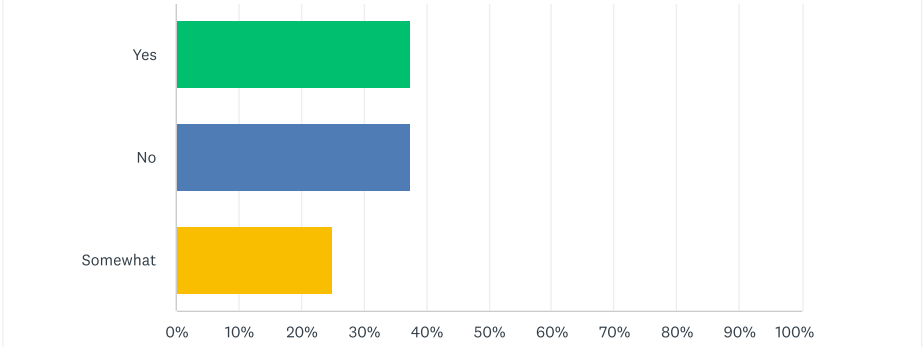



| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Yes | 25.00% | 2 |
| No | 50.00% | 4 |
| Somewhat | 25.00% | 2 |
| **TOTAL** | | **8** |

**Q23**

## Energy Disruption

Answered: 8 Skipped: 2

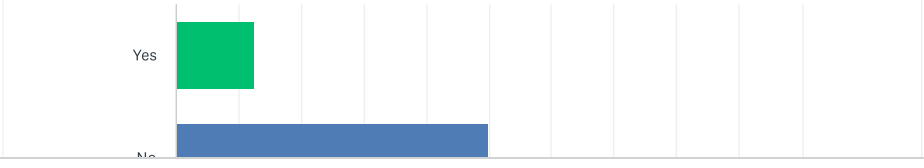



| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Yes | 37.50% | 3 |
| No | 37.50% | 3 |
| Somewhat | 25.00% | 2 |
| **TOTAL** | | **8** |

**Q24**

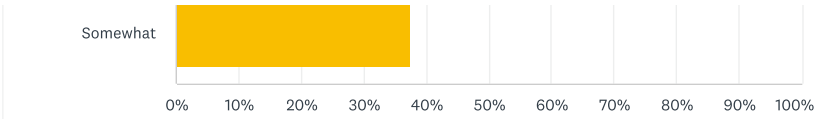
## Infectious Disease (Pandemic)

Answered: 8 Skipped: 2




Share Link COPY

10 responses

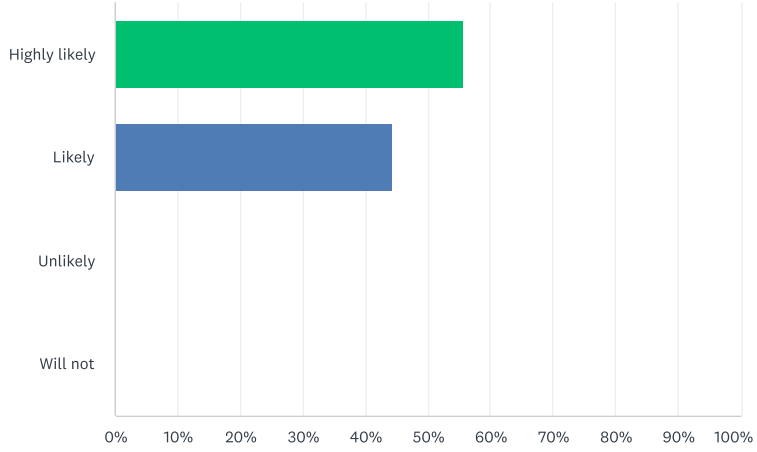



| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Yes | 12.50% | 1 |
| No | 50.00% | 4 |
| Somewhat | 37.50% | 3 |
| **TOTAL** | | **8** |

**Q25**

## How likely are you to take actions to protect yourself against hazards if the County, the City, and Rancheria provide recommendations?

Answered: 9 Skipped: 1




| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Highly likely | 55.56% | 5 |
| Likely | 44.44% | 4 |
| Unlikely | 0.00% | 0 |
| Will not | 0.00% | 0 |
| **TOTAL** | | **9** |

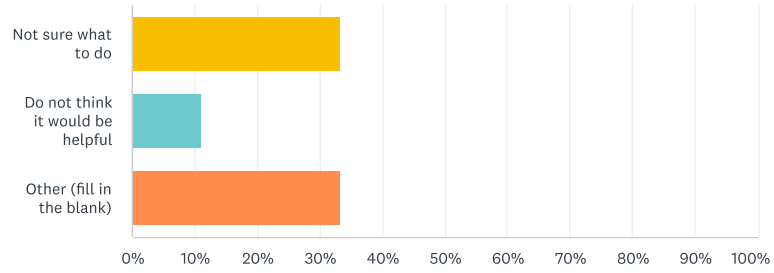
**Q26**

## Is there anything prohibiting you from taking action? (Pick all that apply)

Answered: 9 Skipped: 1


Share Link COPY

10 responses




| ANSWER CHOICES | | RESPONSES | |
|---|---|---|---|
| Time | | 44.44% | 4 |
| Cost | | 44.44% | 4 |
| Not sure what to do | | 33.33% | 3 |
| Do not think it would be helpful | | 11.11% | 1 |
| Other (fill in the blank) | Responses | 33.33% | 3 |

**Total Respondents: 9**

**Q27**

## Would you like to stay informed about the updates, changes and meetings about Hazard Mitigation Plan aside from checking the Lassen County LHMP Update website page? If yes, please provide your email address.

Answered: 3 Skipped: 7

ultraspeedie@yahoo.com

9/12/2024 04:51 PM

Jonathanschmelzer95@gmail.com

9/4/2024 10:26 AM

ejacobs1955@gmail.com

6/16/2024 06:37 PM

# APPENDIX E- List of Assets

| Type | Owner 2 | Name 2- Correct | Structure Value | Contents Value |
|---|---|---|---|---|
| Airport | City | Susanville Municipal Airport | $ 2,000,000 | |
| Government- Fire | City | Susanville Fire Department | $ 949,770 | $ 1,424,655 |
| Government- Law | City | Susanville Police Department | $ 1,633,200 | $ 2,449,800 |
| Public Buildings | City | Lassen Municipal Utilities District | $ 677,250 | $ 677,250 |
| Public Buildings | City | Susanville City Hall | $ 541,800 | $ 541,800 |
| Public Buildings | City | Susanville Community Center | $ 180,600 | $ 180,600 |
| Public Buildings | City | Susanville District Library | $ 1,143,340 | $ 1,143,340 |
| Public Buildings | City | Susanville Public Works Building | $ 541,800 | $ 541,800 |
| Public Buildings | City | Susanville Sanitation District | $ 451,500 | $ 451,500 |
| Roads/Bridges | City | Akexander Ave. and Susan River Bridge | $ 1,000,000 | |
| Roads/Bridges | City | Foss St. bridge | $ 150,000 | |
| Roads/Bridges | City | Hwy 36 and Susan River Bridge | $ 100,000 | |
| Roads/Bridges | City | N. Weatherlow and Paiute Creek bridge | $ 200,000 | |
| Roads/Bridges | City | North St. and Paiute Creek bridge | $ 200,000 | |
| Roads/Bridges | City | Richmond Road and Susan River Bridge | $ 1,000,000 | |
| Roads/Bridges | City | Riverside Drive and Susan River Bridge | $ 600,000 | |
| Roads/Bridges | City | S. Lassen St. and Susan River Bridge | $ 6,000,000 | |
| School | City | Credence High School | $ 649,600 | $ 649,600 |
| School | City | Diamond View Elementary School | $ 7,037,160 | $ 7,037,160 |
| School | City | Lassen Community College | $ 22,936,000 | $ 34,404,000 |
| School | City | Lassen High School | $ 9,280,000 | $ 9,280,000 |
| School | City | McKinley Elementary School | $ 5,593,640 | $ 5,593,640 |
| School | City | Meadow View School | $ 4,511,000 | $ 4,511,000 |
| Water Facilities | City | Well One- Grove St Well | $ 400,000 | |
| Water Facilities | City | Well Four- Orlo St. Well | $ 400,000 | |
| Water Facilities | City | Well Three- Johnstonville Road | | |
| Water Facilities | City | Well Five- Highway 139, north of Sleep Hollow | | |
| Water Facilities | City | Water Tank- South St | $ 1,250,000 | |
| Water Facilities | City | | | |
| Water Facilities | City | | | |
| Water Facilities | City | | | |
| Water Facilities | City | Water Tank- Spring Ridge | $ 1,250,000 | |
| Government- Fire | Federal Government | US Forestry Fire Dispatch | $ 1,055,300 | $ 1,582,950 |
| Government- Law | Federal Government | Herlong Correctional Facility | | |
| Medical | Federal Government | Northeastern Health Center | | |
| Airport | Lassen County | Ravendale Airport | $ 2,000,000 | |

| Type | Owner 2 | Name 2- Correct | Structure Value | Contents Value |
|---|---|---|---|---|
| Airport | Lassen County | Bieber Airport | $ 2,000,000 | |
| Airport | Lassen County | Herlong Airport | | |
| Airport | Lassen County | Spalding Airport | | |
| Government- Fire | Lassen County | Lake Forest Fire Department | $ 105,530 | $ 158,295 |
| Government- Law | Lassen County | Lassen County Jail | $ 7,242,970 | $ 7,242,970 |
| Government- Law | Lassen County | Lassen County Sheriff/Coroner's Office | $ 1,088,800 | $ 1,633,200 |
| Government- Law | Lassen County | Lassen County Superior Court | $ 5,950,292 | $ 5,950,292 |
| Public Buildings | Lassen County | Lassen County Administration Complex | $ 1,354,500 | $ 1,354,500 |
| Public Buildings | Lassen County | Lassen County Fairgrounds | $ 2,709,000 | $ 2,709,000 |
| Public Buildings | Lassen County | Lassen County Public Works | $ 2,216,865 | $ 2,216,865 |
| Public Buildings | Lassen County | Spaulding Community Services District | $ 2,709,000 | $ 2,709,000 |
| Public Buildings | Lassen County | Stone Bengard Community Services | $ 2,709,000 | $ 2,709,000 |
| Public Buildings | Lassen County | Westwood Community Service District | $ 1,150,000 | |
| Roads/Bridges | Lassen County | A25 and Long Valley Creek Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | A26 and Long Valley Creek Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | A27 Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Alexander Rd. and ? Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Alexander Rd. and ? Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Alexander Rd. and ? Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Alexander Rd. and Dill Slough Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Belfast Rd. and Willow Creek bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Bieber bridge Hwy 299 | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Center Rd. Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Center Road and Willow Creek Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Chappius Lane and Susan River Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Clear Creek Bridge/Culvert | $ 1,300,000 | |
| Roads/Bridges | Lassen County | CR322 and Long Creek Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | CR322 Long Valley Creek Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Cut-Off Road Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Galeppi Rd and Hartson Slough Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Hemphill Rd. and ? Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Hemphill Rd. and ? Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Hemphill Rd. and ? Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Hwy 299 and railroad bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Hwy 395 and Willow Creek Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Hwy. 139 bridge | $ 1,300,000 | |

| Type | Owner 2 | Name 2- Correct | Structure Value | Contents Value |
|---|---|---|---|---|
| Roads/Bridges | Lassen County | Hwy. 36 and | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Hwy. 36 and Susan River Devil's coral bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Hwy. 395 bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Johnstonville Bridge A27 | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Karlo Rd Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Lambert Lane and Dill Slough Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Lambert Lane and Hartson Slough Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Leavitt Lane and ? Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Leavitt Lane and Susan Suver Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Mapes Lane and Whitehead Slough Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Mapes Rd and Hartson Slough Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Mapes Rd. and ? Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Mapes Rd. and ? Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Mapes Rd. and ? Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Mapes Road and ? Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Mapes Road and ? Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Mapes Road and ? Bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Pine Creek bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Richmond Rd CR 205 Lassen Creek | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Richmond Rd. CS 205 and Gold Run Creek | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Susanville Road bridge | $ 1,300,000 | |
| Roads/Bridges | Lassen County | Travis Lane Bridge | $ 1,300,000 | |
| School | Lassen County | Big Valley Elementary School | $ 180,440 | $ 180,440 |
| School | Lassen County | Big Valley High School | $ 928,000 | $ 928,000 |
| School | Lassen County | Fort Sage Middle School | $ 451,100 | $ 451,100 |
| School | Lassen County | Herlong High School | $ 928,000 | $ 928,000 |
| School | Lassen County | Janesville Elementary School | $ 451,100 | $ 451,000 |
| School | Lassen County | Johnstonville Elementary School | $ 1,082,640 | $ 1,082,640 |
| School | Lassen County | Juniper Ridge Elementary School | $ 451,100 | $ 451,100 |
| School | Lassen County | Juvenile Detention Facility | $ 225,550 | $ 225,550 |
| School | Lassen County | Long Valley Charter School | $ 180,440 | $ 180,440 |
| School | Lassen County | Richmond Elementary School | $ 902,200 | $ 902,200 |
| School | Lassen County | Schaffer Elementary School | $ 451,100 | $ 451,100 |
| School | Lassen County | Westwood High School and Fletcher Walker Elementary | $ 928,000 | $ 928,000 |
| Water Facilities | Lassen County | Bagwell Springs Water Tank | $ 1,250,000 | |
| Water Facilities | Lassen County | Barry Reservoir | | |

| Type | Owner 2 | Name 2- Correct | Structure Value | Contents Value |
|---|---|---|---|---|
| Water Facilities | Lassen County | Cady Springs Water Tank | $ 2,000,000 | |
| Water Facilities | Lassen County | Harris Drive Water Tank | $ 1,250,000 | |
| Water Facilities | Lassen County | Johnstonville Water Tank | $ 750,000 | |
| Water Facilities | Lassen County | Lake Forest Water Tank | $ 1,500,000 | |
| Water Facilities | Lassen County | Susan Hills Water Tank | $ 1,125,000 | |
| Airport | Private | Banner Lassen Medical Center Airport | | |
| Airport | Private | Amedee Airfield | | |
| Communication | Private | Frontier Communications | $ 5,000,000 | |
| Communication | Private | Sierra Radio Network | $ 2,000,000 | |
| Medical | Private | Banner Lassen Medical Center | $ 3,540,300 | $ 5,310,450 |
| Medical | Private | Lassen Surgery Center | $ 944,080 | $ 1,416,120 |
| Public Buildings | Private | Lassen Historical Museum | $ 135,450 | $ 135,450 |
| School | Private | Cornerstone Christian School | $ 451,100 | $ 451,100 |
| Water Facilities | Private | Antelope Dam/Ducasse Reservoir | | |
| Water Facilities | Private | Branham Flat Dam | | |
| Water Facilities | Private | Buckhorn Reservoir | | |
| Water Facilities | Private | Collett Addition | | |
| Water Facilities | Private | Dodge Reservoir/Red Rock 1 Dam | | |
| Water Facilities | Private | Emerson Lake Dam | | |
| Water Facilities | Private | Heath Reservoir | | |
| Water Facilities | Private | Hog Flat Dam | | |
| Water Facilities | Private | Indian Ole Dam | | |
| Water Facilities | Private | Iverson Dam | | |
| Water Facilities | Private | McCoy Flat Dam | | |
| Water Facilities | Private | Mendiboure Reservoir | | |
| Water Facilities | Private | Round Valley Reservoir | | |
| Water Facilities | Private | Sworinger Reservoir | | |
| Commercial | Rancheria | Diamond Mountain Hotel and Casino | $ 9,030,000 | $ 9,030,000 |
| Commercial | Rancheria | Gas Station | $ 1,750,000 | $ 1,750,000 |
| Medical | Rancheria | Susanville Rancheria Medical Clinic | $ 1,298,119 | $ 1,947,165 |
| Other | Rancheria | Child Care Facility | $ 135,330 | $ 135,330 |
| Other | Rancheria | Church | $ 135,330 | $ 135,330 |
| Public Buildings | Rancheria | Susanville Rancheria Community (administrative) Building | $ 433,440 | $ 433,440 |
| Public Buildings | Rancheria | Susanville Rancheria Public Works | $ 3,500,000 | |
| School | Rancheria | Susanville Rancheria Gymnasium | $ 1,163,967 | $ 1,163,967 |
| Water Facilities | Rancheria | Booster Station | $ 500,000 | |

| Type | Owner 2 | Name 2- Correct | Structure Value | Contents Value |
|---|---|---|---|---|
| Water Facilities | Rancheria | Susanville Rancheria Water Tank | $ 150,000 | |
| Government- Fire | State Government | Cal Fire Station | $ 1,055,300 | $ 1,055,300 |
| Government- Fire | State Government | Cal Fire Station | $ 1,055,300 | $ 1,055,300 |
| Government- Fire | State Government | Cal Fire Station | $ 1,055,300 | $ 1,055,300 |
| Government- Fire | State Government | Cal Fire Station | $ 1,055,300 | $ 1,055,300 |
| Government- Law | State Government | California Correctional Center | | |
| Government- Law | State Government | California Highway Patrol Station | $ 1,020,750 | $ 1,531,125 |
| Government- Law | State Government | High Desert Correctional Facility | | |

# APPENDIX F- FEMA National Risk Index-Lassen County

# National Risk Index

July 26, 2024

# Lassen County, California

## Summary

Risk Index is **Relatively Low** — Score **75.3**


Expected Annual Loss is **Relatively Low** — Score **74.8**


Social Vulnerability is **Relatively High** — Score **63.5**

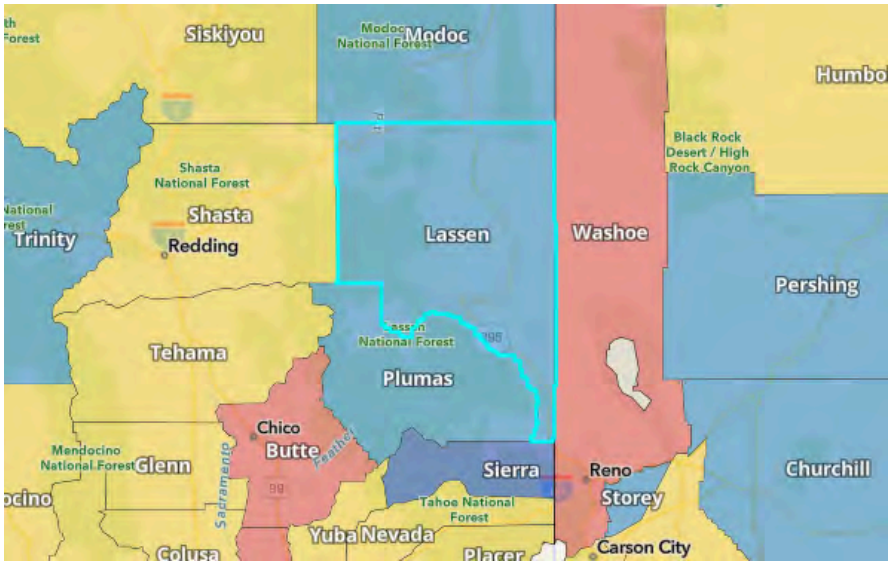

Community Resilience is **Relatively Moderate** — Score **53.1**


**While reviewing this report, keep in mind that low risk is driven by lower loss due to natural hazards, lower social vulnerability, and higher community resilience.**

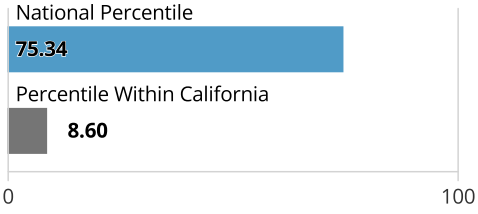
For more information about the National Risk Index, its data, and how to interpret the information it provides, please review the **About the National Risk Index** and **How to Take Action** sections at the end of this report. Or, visit the National Risk Index website at hazards.fema.gov/nri/learn-more to access supporting documentation and links.

## Risk Index

The Risk Index rating is **Relatively Low** for **Lassen County, CA** when compared to the rest of the U.S.




Score **75.34**




**75%** of U.S. counties have a lower Risk Index

**9%** of counties in California have a lower Risk Index

Risk Index Legend

Very High | Relatively High | Relatively Moderate | Relatively Low | Very Low

No Rating | Not Applicable | Insufficient Data

## Hazard Type Risk Index

Hazard type Risk Index scores are calculated using data for only a single hazard type, and reflect a community's Expected Annual Loss value, community risk factors, and the adjustment factor used to calculate the risk value.

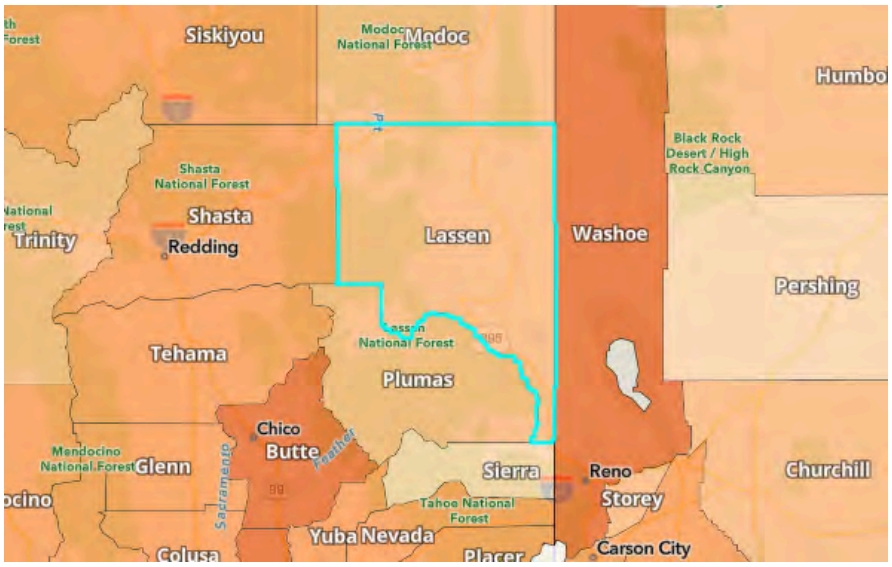
| Hazard Type | Risk Index Rating | Risk Index Score | National Percentile |
|---|---|---|---|
| **Avalanche** | Not Applicable | -- | |
| **Coastal Flooding** | Not Applicable | -- | |
| **Cold Wave** | Very Low | 27.5 | 0 100 |
| **Drought** | Relatively Moderate | 97.8 | 0 100 |
| **Earthquake** | Relatively Low | 92.5 | 0 100 |
| **Hail** | Very Low | 1.8 | 0 100 |
| **Heat Wave** | Very Low | 25.5 | 0 100 |
| **Hurricane** | Not Applicable | -- | |
| **Ice Storm** | Not Applicable | -- | |
| **Landslide** | Relatively Low | 69.6 | 0 100 |
| **Lightning** | Very Low | 27.4 | 0 100 |
| **Riverine Flooding** | Relatively Moderate | 81 | 0 100 |
| **Strong Wind** | Very Low | 2.9 | 0 100 |
| **Tornado** | Very Low | 3 | 0 100 |
| **Tsunami** | Not Applicable | -- | |
| **Volcanic Activity** | Relatively Low | 60.7 | 0 100 |
| **Wildfire** | Relatively Moderate | 96.3 | 0 100 |
| **Winter Weather** | Relatively Low | 35.1 | 0 100 |

# Risk Factor Breakdown

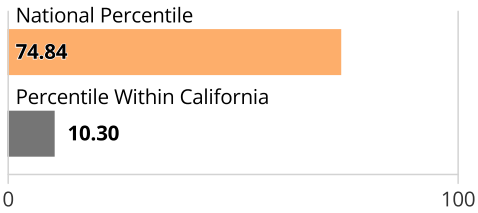
| Hazard Type | EAL Value | Social Vulnerability | Community Resilience | CRF | Risk Value | Risk Index Score |
|---|---|---|---|---|---|---|
| **Wildfire** | $5,296,691 | Relatively High | Relatively Moderate | 1.14 | $5,886,477 | 96.3 |
| **Earthquake** | $4,191,169 | Relatively High | Relatively Moderate | 1.14 | $5,162,978 | 92.5 |
| **Drought** | $2,332,145 | Relatively High | Relatively Moderate | 1.14 | $2,418,033 | 97.8 |
| **Riverine Flooding** | $1,727,424 | Relatively High | Relatively Moderate | 1.14 | $1,989,262 | 81 |
| **Volcanic Activity** | $192,884 | Relatively High | Relatively Moderate | 1.14 | $221,510 | 60.7 |
| **Lightning** | $44,846 | Relatively High | Relatively Moderate | 1.14 | $52,072 | 27.4 |
| **Landslide** | $28,460 | Relatively High | Relatively Moderate | 1.14 | $33,438 | 69.6 |
| **Winter Weather** | $28,150 | Relatively High | Relatively Moderate | 1.14 | $32,553 | 35.1 |
| **Heat Wave** | $11,110 | Relatively High | Relatively Moderate | 1.14 | $12,560 | 25.5 |
| **Strong Wind** | $6,439 | Relatively High | Relatively Moderate | 1.14 | $7,691 | 2.9 |
| **Tornado** | $5,633 | Relatively High | Relatively Moderate | 1.14 | $6,939 | 3 |
| **Hail** | $705 | Relatively High | Relatively Moderate | 1.14 | $811 | 1.8 |
| **Cold Wave** | $0 | Relatively High | Relatively Moderate | 1.14 | $0 | 27.5 |
| **Avalanche** | -- | Relatively High | Relatively Moderate | 1.14 | -- | -- |
| **Coastal Flooding** | -- | Relatively High | Relatively Moderate | 1.14 | -- | -- |
| **Hurricane** | -- | Relatively High | Relatively Moderate | 1.14 | -- | -- |
| **Ice Storm** | -- | Relatively High | Relatively Moderate | 1.14 | -- | -- |
| **Tsunami** | -- | Relatively High | Relatively Moderate | 1.14 | -- | -- |

# Expected Annual Loss

In **Lassen County, CA**, expected loss each year due to natural hazards is **Relatively Low** when compared to the rest of the U.S.




| Score | 74.84 |
|---|---|




**75%** of U.S. counties have a lower Expected Annual Loss

**10%** of counties in California have a lower Expected Annual Loss

Expected Annual Loss Legend

Very High | Relatively High | Relatively Moderate | Relatively Low | Very Low

No Expected Annual Losses | Not Applicable | Insufficient Data

| | |
|---|---|
| **Composite Expected Annual Loss** | **$13,865,656.21** |
| **Composite Expected Annual Loss Rate National Percentile** | **87.2** |

| | | | |
|---|---|---|---|
| Building EAL | **$10,541,726.80** | Population EAL | **0.08** fatalities |
| Building EAL Rate | **$1 per $573.17 of building value** | Population EAL Rate | **1 per 396.26K people** |
| Agriculture EAL | **$2,367,186.37** | Population Equivalence EAL | **$956,743.03** |
| Agriculture EAL Rate | **$1 per $22.27 of agriculture value** | | |

# Expected Annual Loss for Hazard Types

Expected Annual Loss scores for hazard types are calculated using data for only a single hazard type, and reflect a community's relative expected annual loss for only that hazard type.

**13 of 18** hazard types contribute to the expected annual loss for **Lassen County, CA**.

| Hazard Type | Expected Annual Loss Rating | EAL Value | Score |
|---|---|---|---|
| **Wildfire** | Relatively Moderate | $5,296,691 | 96.3 |
| **Earthquake** | Relatively Moderate | $4,191,169 | 91.2 |

| Hazard Type | Expected Annual Loss Rating | EAL Value | Score |
|---|---|---|---|
| **Drought** | Relatively Moderate | $2,332,145 | 98.1 |
| **Riverine Flooding** | Relatively Moderate | $1,727,424 | 80.9 |
| **Volcanic Activity** | Relatively Low | $192,884 | 69.8 |
| **Lightning** | Relatively Low | $44,846 | 28.3 |
| **Landslide** | Relatively Low | $28,460 | 73.0 |
| **Winter Weather** | Relatively Low | $28,150 | 38.2 |
| **Heat Wave** | Relatively Low | $11,110 | 27.4 |
| **Strong Wind** | Very Low | $6,440 | 5.3 |
| **Tornado** | Very Low | $5,633 | 3.3 |
| **Hail** | Very Low | $705 | 3.7 |
| **Cold Wave** | Very Low | $0 | 29.5 |
| Avalanche | Not Applicable | -- | -- |
| Coastal Flooding | Not Applicable | -- | -- |
| Hurricane | Not Applicable | -- | -- |
| Ice Storm | Not Applicable | -- | -- |
| Tsunami | Not Applicable | -- | -- |

## Expected Annual Loss Values

| Hazard Type | Total | Building Value | Population Equivalence | Population | Agriculture Value |
|---|---|---|---|---|---|
| Avalanche | -- | -- | -- | -- | -- |
| Coastal Flooding | -- | -- | -- | -- | -- |
| **Cold Wave** | $0 | $0 | $0 | 0.00 | $0 |
| **Drought** | $2,332,145 | n/a | n/a | n/a | $2,332,145 |
| **Earthquake** | $4,191,169 | $3,430,210 | $760,959 | 0.07 | n/a |
| **Hail** | $705 | $53 | $569 | 0.00 | $83 |
| **Heat Wave** | $11,110 | $7 | $9,114 | 0.00 | $1,989 |
| Hurricane | -- | -- | -- | -- | -- |
| Ice Storm | -- | -- | -- | -- | -- |
| **Landslide** | $28,460 | $6,030 | $22,431 | 0.00 | n/a |
| **Lightning** | $44,846 | $425 | $44,421 | 0.00 | n/a |
| **Riverine Flooding** | $1,727,424 | $1,694,263 | $2,836 | 0.00 | $30,325 |

| Hazard Type | Total | Building Value | Population Equivalence | Population | Agriculture Value |
|---|---|---|---|---|---|
| **Strong Wind** | $6,439 | $4,894 | $1,400 | 0.00 | $146 |
| **Tornado** | $5,633 | $4,923 | $686 | 0.00 | $24 |
| **Tsunami** | -- | -- | -- | -- | -- |
| **Volcanic Activity** | $192,884 | $170,921 | $21,963 | 0.00 | n/a |
| **Wildfire** | $5,296,691 | $5,229,357 | $64,860 | 0.01 | $2,474 |
| **Winter Weather** | $28,150 | $644 | $27,506 | 0.00 | $0 |

## Exposure Values

| Hazard Type | Total | Building Value | Population Equivalence | Population | Agriculture Value |
|---|---|---|---|---|---|
| **Avalanche** | -- | -- | -- | -- | -- |
| **Coastal Flooding** | -- | -- | -- | -- | -- |
| **Cold Wave** | $37,521,379 | $3,288,730 | $34,231,155 | 2.95 | $1,494 |
| **Drought** | $20,891,220 | n/a | n/a | n/a | $20,891,220 |
| **Earthquake** | $385,710,161,000 | $6,042,161,000 | $379,668,000,000 | 32,730.00 | n/a |
| **Hail** | $385,217,762,632 | $6,042,244,980 | $379,122,800,000 | 32,683.00 | $52,717,652 |
| **Heat Wave** | $385,217,762,632 | $6,042,244,980 | $379,122,800,000 | 32,683.00 | $52,717,652 |
| **Hurricane** | -- | -- | -- | -- | -- |
| **Ice Storm** | -- | -- | -- | -- | -- |
| **Landslide** | $77,786,762,671 | $1,338,005,892 | $76,448,756,778 | 6,590.41 | n/a |
| **Lightning** | $385,165,044,980 | $6,042,244,980 | $379,122,800,000 | 32,683.00 | n/a |
| **Riverine Flooding** | $15,231,127,685 | $358,213,830 | $14,848,430,841 | 1,280.04 | $24,483,014 |
| **Strong Wind** | $385,217,762,632 | $6,042,244,980 | $379,122,800,000 | 32,683.00 | $52,717,652 |
| **Tornado** | $385,217,762,632 | $6,042,244,980 | $379,122,800,000 | 32,683.00 | $52,717,652 |
| **Tsunami** | -- | -- | -- | -- | -- |
| **Volcanic Activity** | $345,533,056,733 | $5,411,806,263 | $340,121,250,470 | 29,320.80 | n/a |
| **Wildfire** | $104,038,194,054 | $1,840,092,124 | $102,180,157,175 | 8,808.63 | $17,944,754 |
| **Winter Weather** | $385,217,762,632 | $6,042,244,980 | $379,122,800,000 | 32,683.00 | $52,717,652 |

## Annualized Frequency Values

| Hazard Type | Annualized Frequency | Events on Record | Period of Record |
|---|---|---|---|
| **Avalanche** | -- | -- | -- |

| Hazard Type | Annualized Frequency | Events on Record | Period of Record |
|---|---|---|---|
| Coastal Flooding | -- | -- | -- |
| **Cold Wave** | 0 events per year | 0 | 2005-2021 (16 years) |
| **Drought** | 72.7 events per year | 1,701 | 2000-2021 (22 years) |
| **Earthquake** | 0.459% chance per year | n/a | 2021 dataset |
| **Hail** | 0.1 events per year | 3 | 1986-2021 (34 years) |
| **Heat Wave** | 0.5 events per year | 8 | 2005-2021 (16 years) |
| Hurricane | -- | -- | -- |
| Ice Storm | -- | -- | -- |
| **Landslide** | 0 events per year | 1 | 2010-2021 (12 years) |
| **Lightning** | 4 events per year | 89 | 1991-2012 (22 years) |
| **Riverine Flooding** | 0.3 events per year | 7 | 1996-2019 (24 years) |
| **Strong Wind** | 0.1 events per year | 2 | 1986-2021 (34 years) |
| **Tornado** | 0.1 events per year | 3 | 1950-2021 (72 years) |
| Tsunami | -- | -- | -- |
| **Volcanic Activity** | 0 events per year | 2 | 9310BC-2022 (11331 years) |
| **Wildfire** | 1.20% chance per year | n/a | 2021 dataset |
| **Winter Weather** | 10.7 events per year | 173 | 2005-2021 (16 years) |

## Historic Loss Ratios

| Hazard Type | Overall Rating |
|---|---|
| Avalanche | -- |
| Coastal Flooding | -- |
| **Cold Wave** | Relatively Moderate |
| **Drought** | Relatively Moderate |
| **Earthquake** | Relatively High |
| **Hail** | Very Low |
| **Heat Wave** | Very Low |
| Hurricane | -- |
| Ice Storm | -- |
| **Landslide** | Very Low |
| **Lightning** | Relatively High |

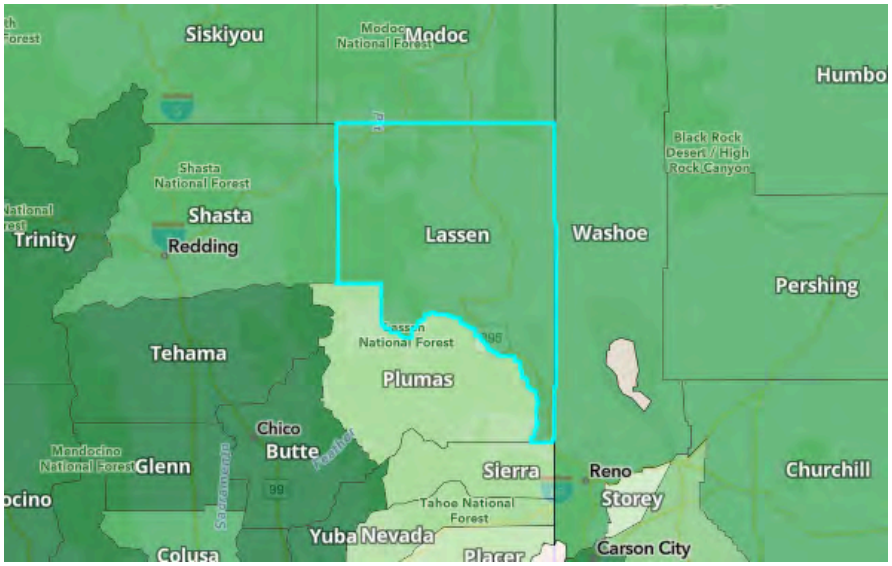
| Hazard Type | Overall Rating |
|---|---|
| **Riverine Flooding** | Relatively Moderate |
| **Strong Wind** | Relatively Low |
| **Tornado** | Very Low |
| **Tsunami** | -- |
| **Volcanic Activity** | Relatively Low |
| **Wildfire** | Very Low |
| **Winter Weather** | Very Low |

## Expected Annual Loss Rate

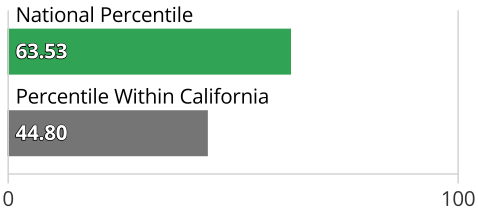
| Hazard Type | Building EAL Rate (per building value) | Population EAL Rate (per population) | Agriculture EAL Rate (per agriculture value) |
|---|---|---|---|
| **Avalanche** | -- | -- | -- |
| **Coastal Flooding** | -- | -- | -- |
| **Cold Wave** | $1 per $303.93T | 1 per 35.82T | $1 per $56.83B |
| **Drought** | -- | -- | $1 per $22.60 |
| **Earthquake** | $1 per $1.76K | 1 per 498.22K | -- |
| **Hail** | $1 per $113.81M | 1 per 666.37M | $1 per $632.58K |
| **Heat Wave** | $1 per $922.84M | 1 per 41.60M | $1 per $26.50K |
| **Hurricane** | -- | -- | -- |
| **Ice Storm** | -- | -- | -- |
| **Landslide** | $1 per $1.00M | 1 per 16.90M | -- |
| **Lightning** | $1 per $14.22M | 1 per 8.53M | -- |
| **Riverine Flooding** | $1 per $3.57K | 1 per 133.70M | $1 per $1.74K |
| **Strong Wind** | $1 per $1.23M | 1 per 270.87M | $1 per $360.45K |
| **Tornado** | $1 per $1.23M | 1 per 552.80M | $1 per $2.21M |
| **Tsunami** | -- | -- | -- |
| **Volcanic Activity** | $1 per $35.35K | 1 per 17.26M | -- |
| **Wildfire** | $1 per $1.16K | 1 per 5.85M | $1 per $21.31K |
| **Winter Weather** | $1 per $9.38M | 1 per 13.78M | $1 per $39.32B |

# Social Vulnerability

Social groups in **Lassen County, CA** have a **Relatively High** susceptibility to the adverse impacts of natural hazards when compared to the rest of the U.S.




| Score | 63.53 |
|---|---|




**64%** of U.S. counties have a lower Social Vulnerability

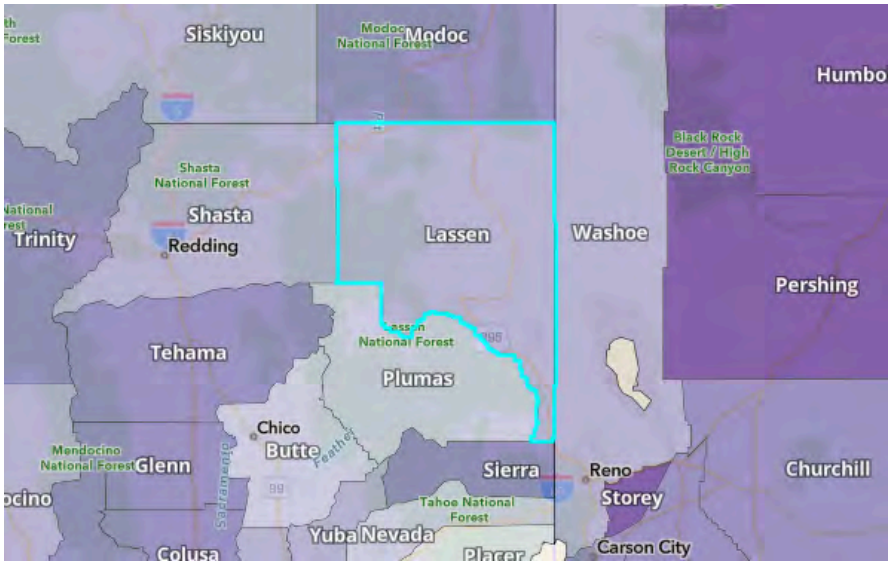
**45%** of counties in California have a lower Social Vulnerability

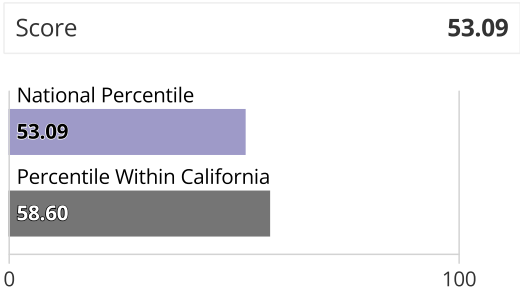
Social Vulnerability Legend

Very High | Relatively High | Relatively Moderate | Relatively Low | Very Low | Data Unavailable

# Community Resilience

Communities in **Lassen County, CA** have a **Relatively Moderate** ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions when compared to the rest of the U.S.




**47%** of U.S. counties have a higher Community Resilience

**41%** of counties in California have a higher Community Resilience

Community Resilience Legend

Very High | Relatively High | Relatively Moderate | Relatively Low | Very Low | Data Unavailable

## About the National Risk Index

The National Risk Index is a dataset and online tool to help illustrate the United States communities most at risk for 18 natural hazards: Avalanche, Coastal Flooding, Cold Wave, Drought, Earthquake, Hail, Heat Wave, Hurricane, Ice Storm, Landslide, Lightning, Riverine Flooding, Strong Wind, Tornado, Tsunami, Volcanic Activity, Wildfire, and Winter Weather.

The National Risk Index leverages available source data for Expected Annual Loss due to these 18 hazard types, Social Vulnerability, and Community Resilience to develop a baseline relative risk measurement for each United States county and Census tract. These measurements are calculated using average past conditions, but they cannot be used to predict future outcomes for a community. The National Risk Index is intended to fill gaps in available data and analyses to better inform federal, state, local, tribal, and territorial decision makers as they develop risk reduction strategies.

Explore the National Risk Index Map at **hazards.fema.gov/nri/map**.

Visit the National Risk Index website at **hazards.fema.gov/nri/learn-more** to access supporting documentation and links.

## Calculating the Risk Index

Risk Index scores are calculated using an equation that combines scores for Expected Annual Loss due to natural hazards, Social Vulnerability and Community Resilience:

Risk Index = Expected Annual Loss × Social Vulnerability ÷ Community Resilience

Risk Index scores are presented as a composite score for all 18 hazard types, as well as individual scores for each hazard type.

For more information, visit **hazards.fema.gov/nri/determining-risk**.

## Calculating Expected Annual Loss

Expected Annual Loss scores are calculated using an equation that combines values for exposure, annualized frequency, and historic loss ratios for 18 hazard types:

Expected Annual Loss = Exposure × Annualized Frequency × Historic Loss Ratio

Expected Annual Loss scores are presented as a composite score for all 18 hazard types, as well as individual scores for each hazard type.

For more information, visit **hazards.fema.gov/nri/expected-annual-loss**.

## Calculating Social Vulnerability

Social Vulnerability is measured using the Social Vulnerability Index (SVI) published by the Centers for Disease Control and Prevention (CDC).

For more information, visit **hazards.fema.gov/nri/social-vulnerability**.

## Calculating Community Resilience

Community Resilience is measured at the County level using the Baseline Resilience Indicators for Communities (HVRI BRIC) published by the University of South Carolina's Hazards and Vulnerability Research Institute (HVRI).

For more information, visit **hazards.fema.gov/nri/community-resilience**.

## How to Take Action

There are many ways to reduce natural hazard risk through mitigation. Communities with high National Risk Index scores can take action to reduce risk by decreasing Expected Annual Loss due to natural hazards, decreasing Social Vulnerability, and increasing Community Resilience.

For information about how to take action and reduce your risk, visit **hazards.fema.gov/nri/take-action**.

## Disclaimer

The National Risk Index (the Risk Index or the Index) and its associated data are meant for planning purposes only. This tool was created for broad nationwide comparisons and is not a substitute for localized risk assessment analysis. Nationwide datasets used as inputs for the National Risk Index are, in many cases, not as accurate as available local data. Users with access to local data for each National Risk Index risk factor should consider substituting

the Risk Index data with local data to recalculate a more accurate risk index. If you decide to download the National Risk Index data and substitute it with local data, you assume responsibility for the accuracy of the data and any resulting data index. Please visit the **Contact Us** page if you would like to discuss this process further.

The methodology used by the National Risk Index has been reviewed by subject matter experts in the fields of natural hazard risk research, risk analysis, mitigation planning, and emergency management. The processing methods used to create the National Risk Index have produced results similar to those from other natural hazard risk analyses conducted on a smaller scale. The breadth and combination of geographic information systems (GIS) and data processing techniques leveraged by the National Risk Index enable it to incorporate multiple hazard types and risk factors, manage its nationwide scope, and capture what might have been missed using other methods.

The National Risk Index does not consider the intricate economic and physical interdependencies that exist across geographic regions. Keep in mind that hazard impacts in surrounding counties or Census tracts can cause indirect losses in your community regardless of your community's risk profile.

Nationwide data available for some risk factors are rudimentary at this time. The National Risk Index will be continuously updated as new data become available and improved methodologies are identified.

The National Risk Index Contact Us page is available at **hazards.fema.gov/nri/contact-us**.