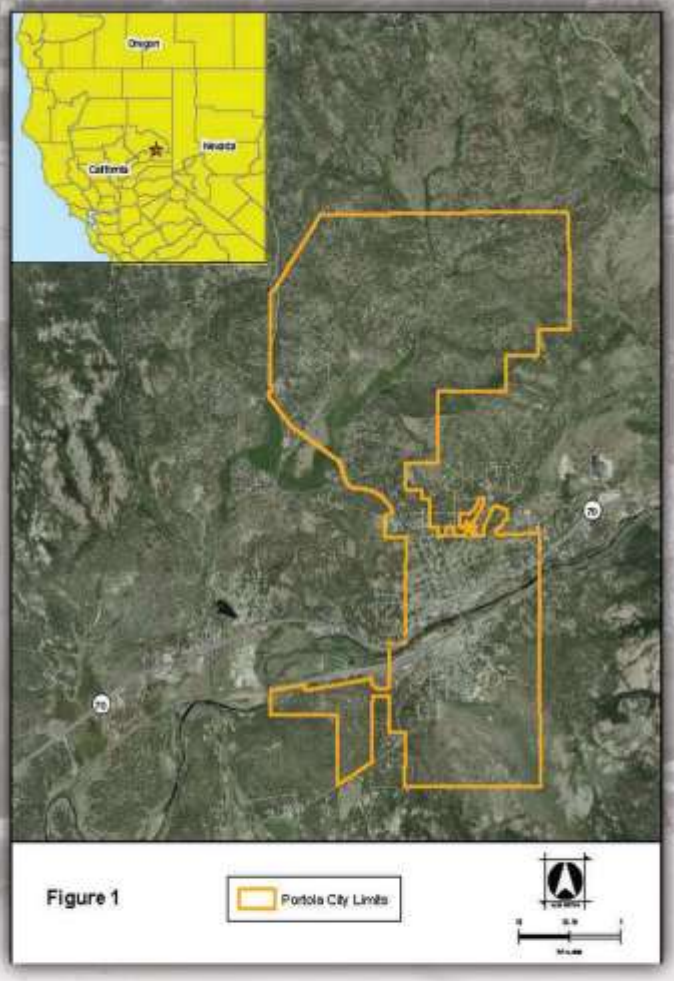
City of Portola

2019 Local Hazard Mitigation Plan Update

June 2019



Manhard CONSULTING

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

City of Portola
Local Hazard Mitigation Plan Update

June 2019

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2019 City of Portola Local Hazard Mitigation Plan Update

What's New?

> 44 CFR Section 201.6(d)(3): a local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within 5 years in order to continue to be eligible for mitigation project grant funding.

The 2013 City of Portola Local Hazard Mitigation Plan contained a detailed description of the planning process, a risk assessment of identified hazards for the City of Portola Planning Area, and an overall mitigation strategy for reducing the risk and vulnerability from these hazards.

Since approval of the 2013 LHMP by FEMA, much progress has been made by the City of Portola implementing mitigation strategies. As part of this 2019 LHMP Update, a thorough review and update of the 2013 plan was conducted to ensure that this update reflects current community conditions and priorities in order to realign the overall mitigation strategy for the next five-year planning period. This Update includes the following information:

- **What's New?** This is an overview of the approach to updating the plan and identifies new information included in this plan update to reflect current community conditions. This includes a summary of hazard and risk assessment as it relates Portola as well as information on current and future development trends affecting the community.
- **Summary of Significant Changes to Current Conditions and Hazard Mitigation Program Priorities:** This provides a summary of significant changes in current conditions and any resulting modifications to the community's mitigation program priorities.
- **2013 Mitigation Strategy Status and Successes:** This section provides a description of the status of mitigation actions from the 2013 plan and also indicates whether a project is no longer relevant or is recommended for inclusion in the updated 2019 mitigation strategy.
- **Climate Change Vulnerability Assessment:** The state has taken action to prepare for the unavoidable impacts of climate change. Among the initiatives being implemented in is Senate Bill (SB) 379, which requires cities and counties to address applicable climate adaptation and resiliency strategies. Accordingly, the vulnerability assessment for climate change within Portola will discuss the risks that climate change poses, as well as the impacts to existing vulnerabilities.

Please note that a copy of the adoption Resolution, hazard mitigation implementation worksheets, and full-page figures are included in the Appendices.

WHAT'S NEW IN THE 2019 LHMP UPDATE

This LHMP Update involved a comprehensive review and update of each section of the 2013 LHMP and includes an assessment of the mitigation strategies outlined in the initial plan. The information and data still valid from the 2013 plan was carried forward as applicable into this LHMP Update.

To update the LHMP, the hazards were reviewed to:

- Consider changes in vulnerability due to action implementation;
- Document areas where mitigation actions were either successful not effective;
- Document any new hazards that may arise or were previously overlooked;
- Incorporate new data or studies on hazards and risks;
- Incorporate new capabilities or changes in capabilities;
- Incorporate new action recommendations or changes in action prioritization.

These requirements and others as detailed throughout this plan were addressed during this update process.

The following issues were reviewed by the City of Portola as part of its comprehensive review and update:

- Reviewed each hazard for updated data and changes in land use
- **Climate Change:** Climate Change has been addressed as a stand-alone hazard through a Climate Change Vulnerability Assessment to assist the City in considering climate change issues when identifying future mitigation actions.
- As required by current FEMA planning guidance, an analysis of the City's ongoing and continued compliance with the National Flood Insurance Program (NFIP).
- Summary of Significant Changes to Current Conditions, Vulnerability, and Hazard Mitigation Priorities

SIGNIFICANT ACCOMPLISHMENTS

The City of Portola has implemented many of the "Hazard Mitigation Implementation Strategies" established in the 2013 LHMP. The following significant accomplishments have been achieved since the LHMP was adopted:

- Adopted Community Wildfire Protection Plan
- Established and Maintained Firewise Community Status
- Significant effort toward brush removal- Riverwalk Park, Joy Way Park
- Significant effort towards tree thinning- Willow Springs Property, Golden Springs, Portola 192, approval from Woodbridge owners to clear property.
- Established a Weed Abatement Program
- Established a Code Enforcement Program
- Updated the Safety Element of the General Plan
- Eastern Plumas Rural Fire Protection District has participated in an annual open house to support educational efforts

SUMMARY OF HAZARDS

This section provides a summary by hazard of significant changes in current conditions, vulnerability, and any resulting modifications to the community's mitigation program priorities since the 2013 LHMP.

Table 1: Review of LHMP Hazards

2013 LHMP Hazards (Hazard Level)	Changes in Conditions	Change in Vulnerability *(Decrease, No Change, Increase)*
Dam Failure (Unlikely)	The Grizzly Valley Dam continues to be evaluated and sufficiently maintained by the California Department of Water Resources' Division of Safety of Dams, so potential hazards associated with a dam break or break would be considered unlikely for naturally occurring events. The DWR condition assessment rating is "Satisfactory". Climate change is not expected to impact dam failure conditions.	No change
Earthquake (Very likely)	The primary concerns are strong ground motion and strong ground motion combined with a potential for liquefaction and lateral spreading adjacent to the Middle Fork of the Feather River channel, which could specifically impact older structures. The Gulling Street Bridge (1954) should still be assumed to present a meaningful risk during a significant seismic event unless and until liquefiable, lateral spreading and liquefaction has been evaluated and the threat dismissed. Disruption to underground utilities may occur due to seismic activity, primarily because the City's system is old. Climate change is not anticipated to impact earthquake conditions.	No change
Extreme Heat (Unlikely)	Portola's mountainous environment with a nearby river, ensure that Extreme Heat as defined by FEMA is a low probability. Climate change may impact temperature but is not likely to change the hazard severity level.	No change
Flood (Likely to Very Likely)	The physical setting of Portola remains the same- straddling the Middle Fork of the Feather River and being confined in a river canyon, which puts the City at significant risk for flood damage, especially in low-lying areas along the river. The City continues to participate in the National Flood Insurance Program. Climate change may increase the likelihood and alter the pattern of flooding. It is not likely to change the hazard severity level.	No change

2013 LHMP Hazards (Hazard Level)	Changes in Conditions	Change in Vulnerability *(Decrease, No Change, Increase)*
Severe Weather (Varies; low impact)	Thunderstorms with hail will continue to occur in the Portola area (predominantly in the spring and summer months), the intensity and magnitude will infrequently approach or exceed the severe thunderstorm/high wind designation threshold. Lightning strikes present a relatively high incidence of occurrence and significant risk factor for the potential to ignite a wildfire (impacts reviewed in Wildfire section). Climate change may impact the frequency of storm events and alter precipitation patterns. It is not likely to change the hazard severity level.	No change
Wildfire (Very Likely)	The worst-case scenario wildland fire in the WUI would be wind-driven crown fire late in the fire season when fuel moisture is at its lowest. These conditions in combination with hot and dry weather, steep slopes, or high winds can create a situation in which the worst-case fire severity scenario can occur. There is significant risk to the City, especially for development near the perimeter. Climate change impact may increase the likelihood and severity of wildfires. It is not likely to change the hazard severity level.	No change
Winter Storm and Extreme Cold (Very Likely)	Because of Portola's location and elevation, winter storms, wintertime freezing temperatures, and windows of extreme cold are to be anticipated. Heat, power, and communications can be knocked out by winter events and access will be impeded. However, there is generally ample time for preparation for impacts. Climate change may impact temperature but is not likely to change the hazard severity level.	No change
Other	The following hazards were reviewed but were not considered to be a hazard and were not profiled in the 2013 LHMP: • Avalanche • Coastal Erosion • Coastal Storm • Drought • Expansive Soils • Hurricane • Land Subsidence • Landslide • Tsunami • Volcano	No change

2013 LHMP MITIGATION IMPLEMENTATION STATUS

The City of Portola has been very successful in implementing actions identified in the 2013 LHMP Mitigation Strategy, thus, working diligently towards meeting their 2013 goals of:

1. Increase public awareness of potential natural hazards and self-reliant mitigation measures.
2. Reduce risk of loss of life/injuries due to natural hazards.
3. Reduce risk of loss to property, both public and private
4. Maintain and increase funding for natural disaster preparedness, planning, and response.

Where possible, the City of Portola used existing activities, plans, and programs to implement the 2013 mitigation strategy. Examples include implementation of wildfire mitigation actions through Plumas County Fire Safe Council and the City's Community Wildfire Protection Plan (CWPPs), implementation of flood mitigation actions, and implementation of City projects.

The 2013 LHMP contained +/-119 separate mitigation actions. As detailed below, certain actions have been completed, some are ongoing, some have not been started, and some were determined not to be viable projects due to a variety of reasons, including funding availability, resulting in a lack of priority.

Table 2 provides a status summary of the mitigation action projects from the 2013 LHMP. Following the mitigation action is a description of the progress and status of each project.

Table 2: 2013 Mitigation Implementation Status

STRATEGY • **Implementation Ideas & Action Items** ***Progress***	Complete	Ongoing	Not Started	Include in Update?
Educate the public about potential hazards and high hazard areas within the community in the event of a natural disaster. *Response: The City has an Emergency Evacuation Plan, and is currently working to update it through community meetings*		X		
• Update City website to contain information on natural hazards facing the City (link to websites Cal OES, FEMA, ready.gov). *Response: The City will be working to add links to the above agencies on their website*			X	
• Set up a text and email notification system that residents can sign up for on the website. *Response: The City has a link to Code Red, a County wide Emergency Evacuation system for cell phones*		X		
• Target specific residents in high potential hazard areas with education and community workshops. *Response: This should be incorporated as the Emergency Evacuation Plan is updated.*			X	

STRATEGY • **Implementation Ideas & Action Items** ***Progress***	Complete	Ongoing	Not Started	Include in Update?
• Provide fliers and handouts to local school, churches, and other civic organizations about hazards facing the City. *Response: This should be part of the process for updating the EOP*			X	
• Promote education and upcoming meetings with City road banners. *Response: this would need to be an approved budgeted item for the City of Portola.*			X	
Encourage property owners to actively participate in education programs, access resources, and develop personal mitigation measures as they relate to natural hazards specific to the community and personal property. *Response: The City has recently become a FireWise Community and the FireWise Committee holds public meetings.*		X		
• Provide booths at local events with information regarding natural hazards and ways the residents can participate in mitigation. *Response: This would need to be reviewed by the City Council and made to be a priority for staff or volunteers.*			X	
• Provide incentives at local meetings to encourage residents to attend (raffle-dinner or other prizes). *Response: this would need to be reviewed by Council for provision of this type by City government.*			X	
• Target specific residents in high potential hazard areas with education and community workshops. *Response: The City Council will begin holding public workshops as part of the Emergency Operations Plan update*		X		
• Provide flyers and handouts to local schools, churches and other civic organizations about hazards facing the City and workshops. *Response: Needs Council direction*			X	
• Keep the City Website current with upcoming meetings and highlight ways the residence can get involved. *Response: The City strives to update its website with new information and meetings*		X		
• In lieu of relying only on mailings and flyers, phone invitations will be presented to service groups and the Chamber of Commerce. *Response: This would need Council direction as a staff priority.*			X	
• Encourage homeowners to have a 72 hour emergency preparedness kits. *Response: This would be a great public outreach program for the City Code Compliance Officer.*			X	
Provide online access to awareness/protection materials relevant to City of Portola residents. *Response: As the City gets online resources it will continue to post them.*		X		

STRATEGY • Implementation Ideas & Action Items *Progress*	Complete	Ongoing	Not Started	Include in Update?
• Update City website with upcoming meetings, highlight ways the residents can get involved, links to information on local Hazards. *Response: The City posts these items on their website.*		X		
• Provide link on City of Portola web page when LHMP is approved. *Response: this document will be posted to the website.*		X		
Educate the public on the Citywide Emergency Evacuation Plan and Emergency Action Plan. *Response: This document will be posted and made accessible to the public.*			X	
• Review current evacuation plan; revise or update as needed. Provide easy links in City Website to evacuation plan. *Response: This document will be posted and made accessible to the public.*			X	
• Identify City emergency evacuation sites with signs. *Response: This would need Council direction as a staff priority and to be budgeted.*			X	
• Consider mailing final document to civic groups, church groups, & businesses for public postings. *Response: The Council should decide the level of outreach.*			X	
• Consider incorporating age appropriate lessons to school curriculum. *Response: This would need to be made a staff priority by the Council and coordinated with the local school district.*			X	
• Offer to make presentations to civic groups and churches on the emergency evacuation plan and to garner support. *Response: This would need to be made a staff priority by the Council or coordinated through volunteer efforts by the Council.*			X	
Educate the public about living with fire and fire safe requirements in the General Plan Safety Element. *Response: The City will coordinate efforts through public meetings.*		X		
• Focus efforts on residents near forested areas or in identified high fire hazard areas. *Response: The City should coordinate efforts with all residents as the majority of the City area is forested.*			X	
• Educate homeowners on current city, state codes and regulations relating to fire protection and local burn ordinances. *Response: This can be coordinated with local meetings and outreach.*			X	
• Add open space and defensible space requirements to Safety Plan & web page. *Response: This will occur as the City defines these requirements.*			X	
• Consider incorporating age appropriate lessons to school curriculum. *Response: DELETE THIS WAS MENTIONED EARLIER*				No

STRATEGY • **Implementation Ideas & Action Items** ***Progress***	Complete	Ongoing	Not Started	Include in Update?
Create a public notification plan to provide a means to educate, inform, and alert the community regarding changes in hazard identification, occurrence, and mitigation processes and options. *Response: This should remain part of the County wide code red notification system. The City should coordinate with the Plumas County.*	X	X		
• Establish a list of contacts for Schools, Churches, Community Organization, and other civic groups. *Response: This would need to be accomplished to implement other action items*			X	
• Add a notification link to Safety Plan web page for automatic emails when updates occur. *Response: The City does not currently have a program to do this, this would need to be budgeted for*			X	
• Consider sending update notices to civic groups, church groups, & businesses when updates for major milestones are completed. *Response: This would need to be made a staff priority by the Council*			X	
Provide hazard warning and forecasting information to City residents & establish a rapid communication system for the community. *Response: The City does not currently have a program to do this, this would need to be budgeted for.*				No
• Reverse 911 through Plumas County. *Response: This is done through the Plumas County Sheriff Department*	X			
• Low Watt Transmitters, for emergency broadcast. *Response: This would need to be made a budget priority by the Council*			X	
• Educate public on location/website to go to get information when the city siren sounds. *Response: This could be coordinated with KJRX from Susanville*			X	
• Educate public on state wide emergency alert system. *Response: This could be coordinated through outreach and the City website*			X	
• Reverse 911 through Plumas County. *Response: DELETE*				No
• Low Watt Transmitters, for emergency broadcast. *Response: DELETE*				No
• Educate public on location/website to go to get information when the city siren sounds. *Response: DELETE*				No
• Educate public on state wide emergency alert system. *Response: DELETE*				No

STRATEGY • Implementation Ideas & Action Items *Progress*	Complete	Ongoing	Not Started	Include in Update?
Actively participate in the development of Plumas County's Safety Element to ascertain Portola's concerns are addressed. *Response: The City should assign a staff member to participate with the County*			X	
• Assign appropriate staff to attend meetings and review documents. *Response: City management should consider this action item*		X		
• Seek citizen involvement to supplement & support from either the County or from the City of Portola. *Response: Councilmembers can solicit volunteers*		X		
Coordinate with the California Department of Water Resources (Dam Safety Division) for mitigation measures within the community as a result of a dam failure inundation. *Response: Review DWR information*		X		
• Contact DWR and establish a contact and begin information sharing and communication regarding the dam. *Response: Not complete*		X	X	
• Establish a method to implement mitigation measures. Work with DWR to coordinate and fund mitigation strategies. *Response: The City currently works with DWR*		X		
• Review current mitigation strategies, modify to include dam failure safety. *Response: None addressed at DWR; nothing to include.*	X			No
All Development within floodway shall meet FEMA Standards. *Response: This is currently required.*		X		
• Establish a monitoring protocol to identify construction or non-permitted activity in floodway. *Response: This could be a staff coordinated priority between the building department and the City Code Compliance Officer.*			X	
• Train/update staff on current Flood Plain Management Ordinance Codes and requirements. *Response: This currently happens.*		X		
• Review Current FEMA Floodway Standards and Update Flood Plain Management Ordinance as needed. *Response: This will occur as necessary.*		X		
Mitigate the potential impacts to new structures by mandating compliance with California Building Code (CBC). *Response: This currently happens.*		X		
Prioritize and evaluate essential facilities for seismic conditions and potential retrofit. *Response: This would need to be made project priority by the City Council.*			X	
• Prioritize City essential facilities. *Response: They are prioritized.*		X		

STRATEGY • Implementation Ideas & Action Items *Progress*	Complete	Ongoing	Not Started	Include in Update?
• Perform seismic review of essential facilities and identify potential retrofit needs. *Response: This would need to be made a project priority by the City Council.*			X	
• Secure funding to support staff in development of grant requests for analysis & prioritization study. *Response: This would need to be made a project priority by the City Council.*			X	
• Perform Benefit: Cost analyses as part of the prioritization and selection protocol. *Response: This would need to be made project priority by the City Council.*			X	
Monitor and continue to regulate grading and slope development standards to reduce potential landslide and slope movement impacts. *Response: This currently occurs for new construction*		X		
• Establish review protocols for new development to ensure slope development standards are met. *Response: The building department can review if this is a goal.*			X	
• Train/update staff on current slope development standards. *Response: Building department staff should be trained*		X		
Enforce compliance with open space and fuel break requirements set forth in the City of Portola General Plan Safety Element Wildland Fire section. *Response: This could be a program implemented by the Code Compliance Officer.*			X	
• Review existing ordinances. Train/educate staff on current code and enforcement measures. *Response: Necessary staff are educated.*		X		
• Draft and adopt more stringent policies, including fee or assessment for properties that do not comply. *Response: This would need to be made a policy/ priority by the City Council.*			X	
• Search for funding for property owners that do not have the means to keep in compliance with ordinance. *Response: This would need to be made a policy/ priority by the City Council.*			X	
• Encourage property owners to seek funding for Fuel Break/Fire Safety improvements. *Response: This would need to be made a policy/ priority by the City Council and could be coordinated with the FireWise Council.*			X	
Review and update mutual aid agreements with Forest Service, CAL Fire, and other surrounding fire departments and volunteer agencies. *Response: This is done as needed by staff.*		X		
• Review possibilities for multi-jurisdictional grants and funding. *Response: This would need to be made a policy/ priority by the City Council and could be coordinated with the FireWise Council.*			X	

STRATEGY • **Implementation Ideas & Action Items** ***Progress***	Complete	Ongoing	Not Started	Include in Update?
Adopt California PRC 4290 and PRC 4291 code *Response: This has not yet been completed*			X	
• Review Title 14 and the defensible space requirements set forth in PRC 4290 and 4291. *Response: This was completed with the update of the Safety Element in 2019 and will be an ongoing review.*	X	X		
• Hold public meetings regarding the fire codes in PRC 4290 and 4291 and highlight the effects, positive and negative to the City. *Response: This would need to be made a policy/ priority by the City Council and could be coordinated with the FireWise Council.*			X	
• Vacant Lot Standards for the city should reviewed. *Response: This would need to be made a policy/ priority by the City Council and could be coordinated with the FireWise Council. The City does have an Ordinance in place for weed abatement.*		X	X	
Adopt and complete steps to become a NFPA Fire-Adapted Community or a 'Fire Wise Community.' *Response: The City is currently a FireWise community.*	X			
• Review the National Fire Protection Agencies policies in becoming a Fire wise, Fire Adapted Community. *Response: Done*	X			
• Participate and adopt Portola Community Wildfire Protection Plan. *Response: Done*	X			
• Seek education opportunities as outlined in Goal 1, increasing public awareness of potential hazards *Response: This is being coordinated through the FireWise Council.*		X		
• Look into opportunities for forest management assistance. *Response: This would need to be made a policy/ priority by the City Council and could be coordinated with the FireWise Council.*			X	
• Encourage and facilitate property owners to share equipment necessary to protect/improve property. *Response: This would need to be made a policy/ priority by the City Council and could be coordinated with the FireWise Council.*			X	
• Create a neighborhood level fuel reduction plan. Identify tactical areas & areas of vulnerability. *Response: This would need to be made a policy/ priority by the City Council and could be coordinated with the FireWise Council.*			X	
Seek opportunities to reduce high fuel hazards and create fuel breaks. *Response: This would need to be made a policy/ priority by the City Council and could be coordinated with the FireWise Council.*			X	

STRATEGY • Implementation Ideas & Action Items *Progress*	Complete	Ongoing	Not Started	Include in Update?
• Seek funding for fuel reduction projects. *Response: This would need to be made a policy/ priority by the City Council and could be coordinated with the FireWise Council.*			X	
Evaluate potential impacts of identified hazards on existing utilities and facilities (water, sewer, power, public transportation routes & structures). Prioritize those utilities for mitigation based on risk level and criticality to community and/or criticality to emergency evacuation routes. *Response: This would need to be made a policy/ priority by the City Council and could be coordinated with the FireWise Council.*			X	
• Evaluate need for Gulling Street Bridge (Scour Protection) *Response: This is monitored by the City Engineer*		X		
• City lift station is within Floodplain, review potential impacts to water system in the event of a flood. *Response: This is monitored by the City Engineer.*		X		
• Waste Water Treatment Plant near or within the floodplain. Identify flood impact to treatment and discharge. *Response: This is monitored by the City Engineer*		X		
• Identify water and sewer lines which could be impacted by an earthquake. *Response: This is monitored by the City Engineer.*		X		
• Adopt utility mitigation protocol to replace old lines and services. *Response: This would need to be made a policy/ priority by the City Council*			X	
• Seek environmental funding/support for sanitary sewer line replacement if required. *Response: The City is currently working CAL State representatives on a Technical Assistance grant to seek funding.*		X		
Continue to combine water quality, open space, and recreation projects within flood measures where feasible. *Response: The City has identified projects at City Park and West End Park that combine water quality, open space, and recreation projects.*	X	X		
Maintain natural stream courses and adjacent habitat, where feasible during flood control improvements. *Response: This would be done during flood control improvements.*		X		
Establish zoning and land use ordinances that limit development in flood prone areas. *Response: Complete*	X			
• Review Ordinances currently in place and evaluate future development standards near or within flood prone areas. *Response: Complete and ongoing*	X	X		

STRATEGY • **Implementation Ideas & Action Items** ***Progress***	Complete	Ongoing	Not Started	Include in Update?
• Review current allocations/approvals for development that impact flood prone areas. *Response: N/A*				No
Ensure the impacts of flooding are adequately analyzed when considering areas for future urban development or significant improvements to existing facilities or structures. *Response: This would need to be made a policy/ priority by the City Council. Building and planning staff does an initial assessment when reviewing applications for new development.*		X		
• Train/update staff on City development standards and requirements for improvements or new development in floodplains. *Response: This would need to be made a policy/ priority by the City Council.*			X	
• Keep current on FEMA Mapping requirements *Response: This would need to be made a policy/ priority by the City Council.*			X	
Ensure that flood mitigation measures are incorporated into repairs, new development, major alterations, and new redevelopment applications. *Response: This would need to be made a policy/ priority by the City Council*		X		
Enforce compliance with the City of Portola Master Drainage Plan and Floodplain Management Ordinance. *Response: This would need to be made a policy/ priority by the City Council.*		X		
• Train City staff who deal with permitting. *Response: This is currently done*		X		
Pursue a regional approach to flood issues. *Response: This would need to be made a policy/ priority by the City Council.*			X	
Educate and encourage homeowners residents to adopt seismic safety protocols as their time and resources allow. *Response: This would need to be made a policy/ priority by the City Council.*			X	
• Educate residents about the benefit of securing hot water heaters and other items in the event of an earthquake. *Response: This would need to be made a policy/ priority by the City Council.*			X	
• Establish a strap water heater program. *Response: This would need to be made a policy/ priority by the City Council.*			X	
• Inform public about Disaster Assistance.gov a Federal disaster assistance program offering loans and additional support. *Response: This would need to be made a policy/ priority by the City Council.*			X	
• Educate/inform about preventive strategies and link the public to www.ready.gov/earthquakes for proactive strategies. *Response: This would need to be made a policy/ priority by the City Council.*			X	

STRATEGY • **Implementation Ideas & Action Items** ***Progress***	Complete	Ongoing	Not Started	Include in Update?
Secure a grant that would provide support staff to aid in the implementation and execution of the LHMP. *Response: This would need to be made a policy/ priority by the City Council.*			X	
Apply for grants specific to identified action items, including scientific studies and evaluation of existing improvements. *Response: This would need to be made a policy/ priority by the City Council.*		X		
Cross train staff with Plumas County personnel and adopt uniform protocols where applicable. *Response: This would need to be made a policy/ priority by the City Council. However, the City strives for consistency with Plumas County.*		X		
Work toward securing multi-jurisdiction grants and funding for disaster planning and response. *Response: This would need to be made a policy/ priority by the City Council*			X	
• See appendix of LHMP for grant opportunities. *Response: Complete and reviewed as appropriate.*		X		
Create a community network for emergency response alternatives including churches, and civic meeting halls. *Response: This would need to be made a policy/ priority by the City Council.*			X	
Apply for grants that may help fund improvements beyond the City limits; e.g. fire safety and wildfire hazard mitigation, channel and water quality improvements to the Middle Fork of the Feather River, etc. *Response: This would need to be made a policy/ priority by the City Council.*			X	
Review existing hazard response training protocol and update/upgrade as necessary. *Response: This would need to be made a policy/ priority by the City Council*			X	
Begin to search for grant/funding opportunities for upgrade of fire equipment & training opportunities. *Response: This would need to be made a policy/ priority by the City Council.*		X		
Utilize County, State, and other regulatory agency opportunities for cross and specialty training modules. *Response: This would need to be made a policy/ priority by the City Council.*			X	

DOCUMENT PREPARATION AND PUBLIC REVIEW

> 44 CFR Sections 201.6(b) and 201.6(c)(1): An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:
>
> 1. An opportunity for the public to comment on the plan during the drafting stage and prior to the plan approval;
> 2. An opportunity for neighboring communities, local and regional agencies involved int eh hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and nonprofit interests to be involved in the planning process; and
> 3. Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.
>
> [The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

The City conducted a public workshop in February 2019 regarding a variety of community hazards and to review the document. Planning staff met, provided information on the LHMP Update process, and answered any questions. There were no substantive comments received during public comment to be included in the LHMP. The workshop was advertised in the *Portola Reporter*, on the City's Facebook page, and information was made available on the City's website. In addition to the workshop, information the LHMP Update was presented at the May 22 and June 12 City Council meetings. No substantive public comments were received to be included in the LHMP.

Following the public workshop, the City began to review information for the 2019 LHMP Update and re-established the Hazard Mitigation Team. The Hazard Mitigation Team was re-established to provide a review body for this Update. The HMP met to review the LHMP Hazards and to review and summaries the Mitigation Implementation Status.

A completed copy of the 2019 LHMP Update will be kept at the City of Portola and will be available for public review and comment.

The City reviewed certain plans and programs to include in this update for planning consistency among documents. Relevant information from reviewed plans, studies, reports, and technical information incorporated into the LHMP Update includes:

- **State Hazard Mitigation Plan-** The State Hazard Mitigation Plan was reviewed for recent updates on Statewide hazard events and hazard information for consistency.
- **City of Portola 2013 LHMP-** Reviewed so the Plan could be updated
- **General Plan Safety Element** (including incorporated documents)- Information from the recently-updated document was cross-referenced for inclusion as part of the overall profile. Additionally, any vulnerabilities identified were included as part of the vulnerability and risk assessment for wildfire, landslide, and flood.
- **Portola General Plan-** reviewed and included as part of the vulnerability assessment.

- **Plumas County Emergency Operations Plan-** The EOP was reviewed to gather hazard information as it related to the assessed natural hazards.

After receiving comments and direction from the City Council, the Hazard Mitigation Team met to discuss policies to include in the Update. Then, staff completed the draft LHMP update. The draft update was submitted for City Council review and then submitted to Cal OES and FEMA for review. Staff incorporated comments into the final LHMP Update for City Council consideration. The LHMP Update was approved by the Portola City Council on XX, Resolution No. XX and was sent to FEMA for approval.

February 22, 2019 ..... Public Workshop
May 6 – June 7, 2019 ..... Draft LHMP Update
May 22, 2019 ..... City Council meeting to review the draft LHMP Update policies/ "What's New"
May 29, 2019 ..... Hazard Mitigation Team meeting
June 1-7, 2019 ..... Environmental review, contact other agencies as appropriate
June 12, 2019 ..... City Council meeting to approve the draft LHMP and direct staff to submit it to Cal OES
XX ..... Receive comments back from Cal OES and FEMA
XX ..... Revise draft per comments
XX ..... City Council to consider adoption of LHMP Update
XX ..... Receive FEMA approval letter

INTRODUCTION

The Disaster Mitigation Act of 2000 (DMA2K) was established to emphasize the need for long-term mitigation planning to help reduce public and personal exposure from natural and human-caused hazards. Through implementation of DMA2K, Federal Emergency Management Agency (FEMA) established the requirement for local governments and other jurisdictions to develop Local Hazard Mitigation Plans (LHMP) to identify new and highlight known natural hazards. The LHMP also helps the City of Portola (City) remain eligible for certain types of state and federal grants. Once hazards have been identified, mitigation strategies can be formulated for those hazards that could present an adverse impact to the City.

Hazard mitigation consists of deliberate action(s) initiated to reduce or eliminate long-term risk or exposure to property and life from identified hazards. Mitigation strategies may occur prior to, during, or after an event. However, the most effective mitigation strategies occur before a disaster strikes. The goals associated with the development of a local mitigation plan include:

- Helping jurisdictions conduct comprehensive reviews of their existing mitigation plans and update as necessary to meet the requirements of 44 Code of Federal Regulations (CFR) Part 201.
- Helping jurisdictions develop and adopt new mitigation strategies or revise existing plans as necessary to meet the requirements of 44 CFR Part 201.

The most successful mitigation plans develop comprehensive risk and capability assessments that facilitate the City's evaluation processes and in the development of hazard mitigation strategies. These successful mitigation plans also embrace a wide range of stakeholders who help identify and initiate those mitigation strategies that can be most effective and beneficial to the community. Once mitigation strategies have been identified, benefit cost analyses (BCA) can be performed to identify and prioritize those strategies that present the greatest benefit.

The City's LHMP identifies potential hazards and assesses resources to assist the City staff and officials, residents, and others interested in participating in the planning process, to meet the demands triggered by natural disasters and other events. The LHMP also provides a list of action items that serves to direct the City toward reducing risk and preventing loss. Strategies and action items address activities specific to hazards facing the City, specifically flooding, wildfire, and earthquake.

Cities cannot be protected against every possible hazard; however, many potential events and outcomes can be anticipated and reasonably predicted so the City can take the steps necessary to reduce the detrimental effects those hazards can pose. Re-evaluating and updating the LHMP perpetuates the process of examining and evaluating the risks various hazards pose to the City. This process also engages the City and the citizenry in the necessary dialogue to identify which risks present the greatest concerns and which avenues of mitigation are most important and effective to those citizens.

THE CITY

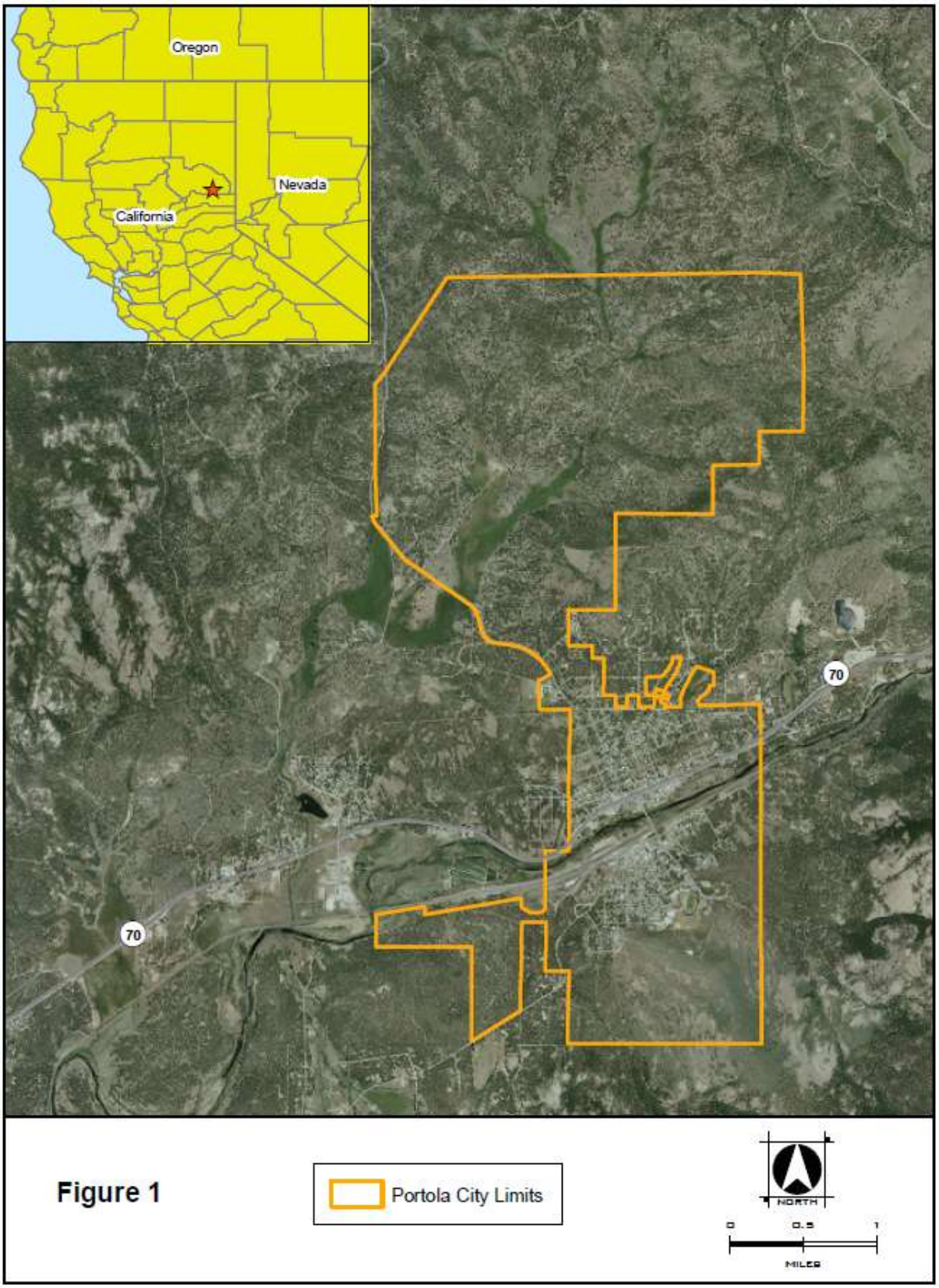
City Overview

The City of Portola is located along the Middle Fork of the Feather River in the southeast portion of Plumas County, California. Nearby towns include Beckwourth to the east and Graeagle to the west. Reno, Nevada is approximately 50 miles to the southeast and Sacramento, California is approximately 150 miles to the southwest. The City of Portola is the only incorporated city in Plumas County. The City limits are depicted in Figure 1.

The 2010 census recorded 2,104 residents, representing 887 occupied households within the City. A total of 1,134 total housing units were reported by the Census, indicating a vacancy rate approaching 20 percent. At the time of the 2010 census, the population density was 389 people per square mile for the 5.4 square mile city limits; this population density is significantly higher than the 8 people per square mile for the entirety of Plumas County.

Image 1-City of Portola Downtown

Figure 1 – City of Portola City Limits (See Appendix 4)



Infrastructure

The City of Portola straddles State Highway 70, which connects to US 395 on the east and State Highway 89 on the west. There are no other major roads entering or leaving Portola. The Gulling Street Bridge crosses the Feather River and the Western Pacific Railroad corridor and serves as the main connection route between north and south Portola. The Portola middle and high schools and the community hospital are located in the southern portion of Portola. Most residential and local streets which serve the community and are maintained by the City.

The Union Pacific Railroad (UPRR) corridor follows the course of the Feather River through the City. UPRR currently provides transport services for the automotive, chemical, industrial, energy, and agricultural businesses.

The Nervino Airport is the nearest airport and is located approximately 5 ½ miles west of Portola. This airport services mainly single engine airplanes and in 2010 averaged 33 aircraft operations per day.

The City`s domestic water supply is provided through the City's Lake Davis Water Treatment Plant. Back-up service is supplied by Willow Creek Springs, owned and operated by the City. Two wells, located at the City's public works yard and at the corner of Gulling and Commercial Streets, provide the City's water source. The City's water system serves approximately 1,200 customers within the City and adjacent county, conveying approximately 12 million gallons of water per month. The water system infrastructure includes 24.53 miles of pipeline, two ground water wells, and four springs.

The City provides sewer collection and treatment just west of the City and south of the Feather River. The sewer system serves approximately 1,200 customers within in the City and adjacent County and treats 0.35 million gallons of wastewater on an average day. The sewer infrastructure consists of 15.8 miles of sewer pipeline and a wastewater collection and treatment facility.

Critical Facilities, Infrastructure, and Community Interests

A critical facility is defined as a facility in either the public or private sector that provides essential products and services to the general public, such as preserving the quality of life in the City and fulfilling important public safety, emergency response, and disaster recovery functions. Similar to critical facilities, critical infrastructure includes infrastructure that is essential to preserving the quality of life and safety in the City. Critical facilities and infrastructure identified and considered within the City are shown in Table 1. Critical facilities identified in this section may also be discussed with Infrastructure, Healthcare, Housing, and Schools and Education.

Table 1 – Critical Facilities, Support Facilities and Essential Infrastructure City Owned Facilities and Community		
Critical Facilities		
Eastern Plumas District Hospital[2]	Fire Station (South side Feather River)	**Plumas County Sheriff's Office (Portola)**
	Fire Station (North side Feather River)	
Support Facilities & Essential Infrastructure		
State Highway 70	Lake Davis Water Treatment Facility	Gulling Street Bridge
WPRR Corridor	Waste Water Treatment Facility	**Schools (Portola Junior/Senior High School[3], Carmichael Elementary School[4])**
City Owned Facilities & Community Interests		
Portola Veteran's Memorial Hall[5]	Western Pacific Railroad Museum	William's House
City Hall[1]	Portola Branch Library	**Grizzly Ranch Conference Center[6]**
Note: Locations in Bold and Reference Number indicate City Office of Emergency Services' (OES) approved evacuation centers.		

Healthcare

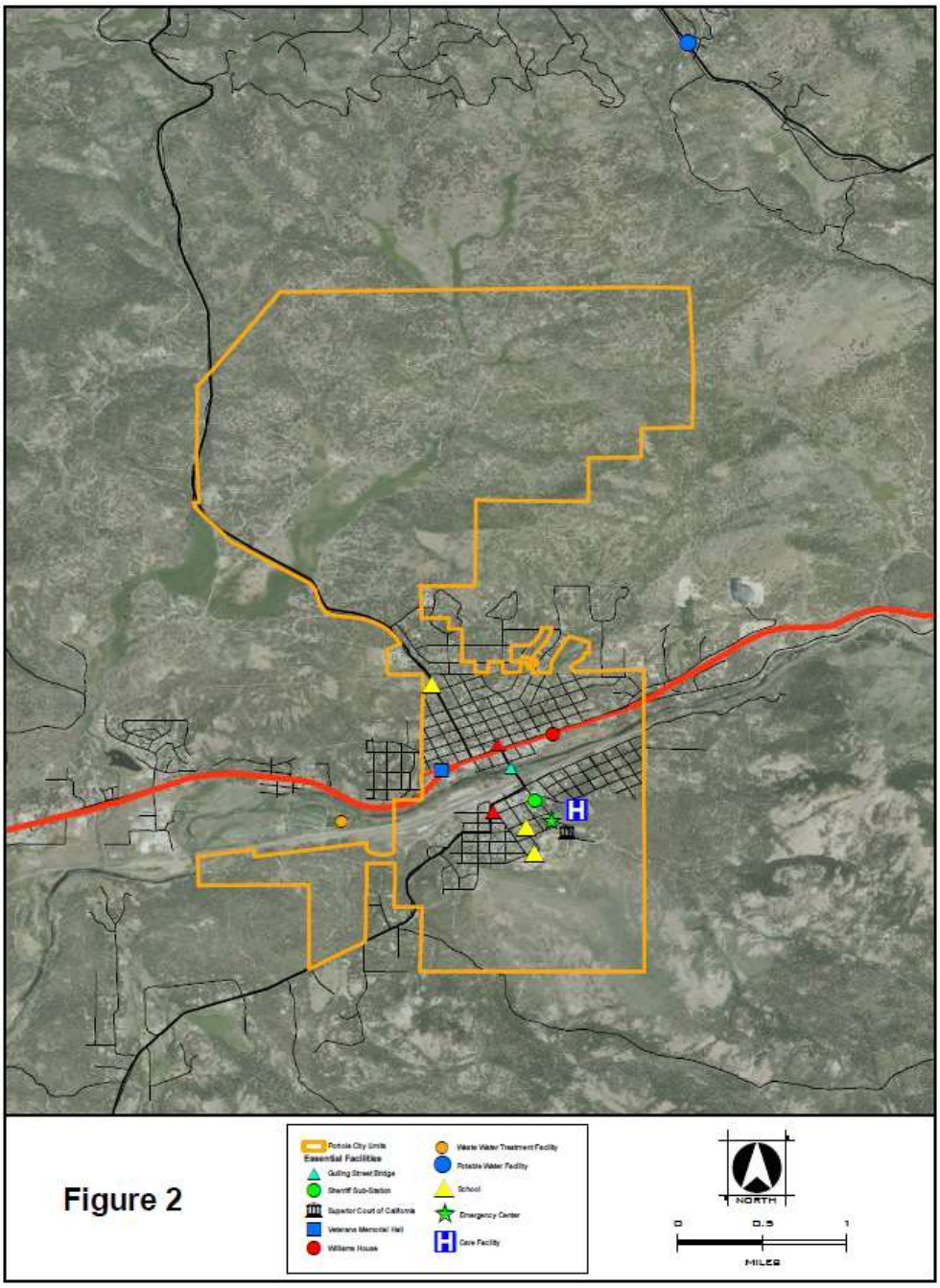
The City of Portola has one local hospital, Eastern Plumas Health Care. Nearby hospitals include the Loyalton Medical Clinic, part of Eastern Plumas Health Care (approximately 25 miles), the Plumas District Hospital in Quincy (approximately 30 miles), Renown Regional Medical Center and St. Mary's Regional Medical Center in Reno (Approximately 50 miles). According to the City's Community Evacuation Route Map, hospital access for the northern portion of Portola would be limited to helicopter (from the north Sports Field Complex to the Portola High School Football Field) should the Gulling Street Bridge become compromised. To travel along the evacuation route along Highway 70 to the west, to the intersection with Highway 89, and back along A15 to Portola would encompass approximately 26 miles. This encompasses approximately the same distance as travelling to hospitals located in Quincy and Loyalton.

Housing

The City has many old neighborhoods which pre-date the common use of automobiles and which over time have developed a distinctive character. One goal of the General Plan is to enhance the existing

neighborhoods and restore or replace the existing housing stock" (City of Portola Community Design Element, Neighborhood Conservation and Development section).

Figure 2 – City of Portola – Essential Facilities Map (See Appendix 4)



Schools and Education

The City of Portola supports 3 schools; an elementary school, junior/senior high school, and the Portola Opportunity School which is a public school serving grades 3-7. The elementary and junior/senior high schools have a combined enrollment of approximately 625 students.

Land Use

The City's Land Use Plan within the City's General Plan guides the development, maintenance, and improvement of land and properties. It allows the City to preserve those qualities that define the City, while developing new paths toward a sustainable future.

Portola actively works towards creating a community that has a balance of opportunities and events, while fostering economic, environmental, and social sustainability. The goals established by the City of Portola Land Use Plan are designed to continue and improve the City's role as the commercial and service center for eastern Plumas County. Table 2 illustrates the distribution of land uses throughout the City of Portola. The City Land Use map is presented below.

Figure 3 – Land Use Map (See Appendix 4)

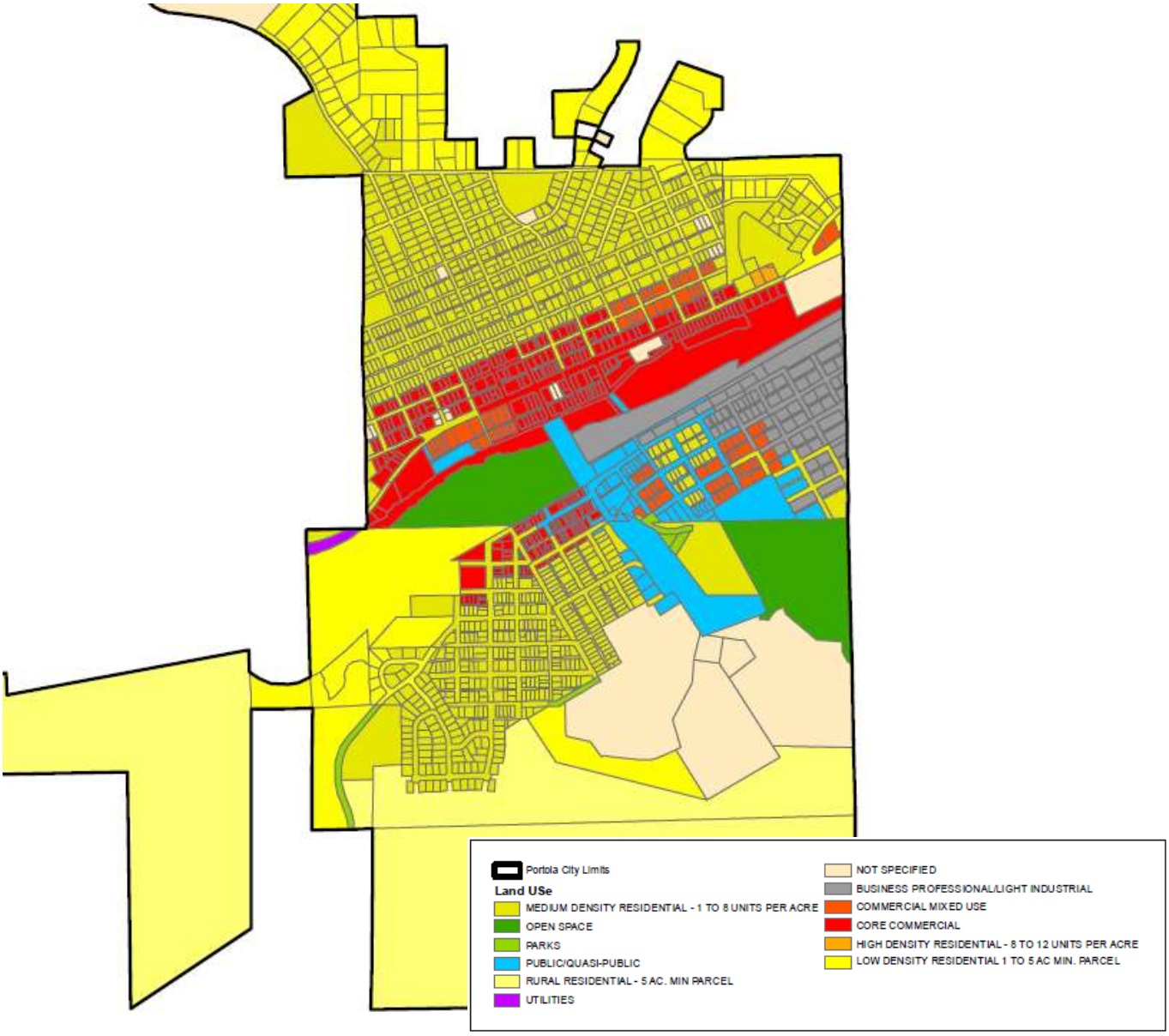
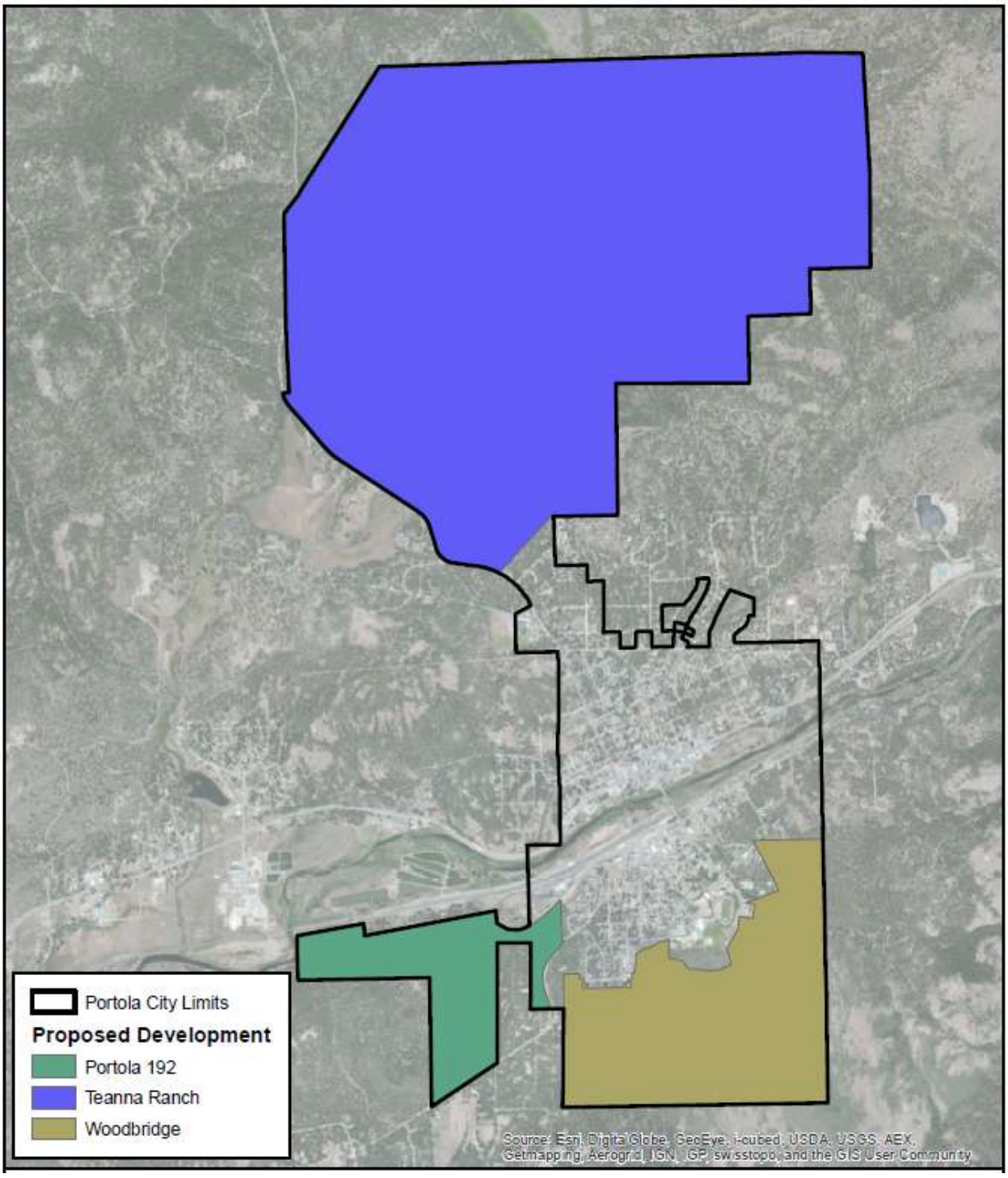


Table 2 – City of Portola Land Use Profile		
Land Use	**Total Area (ac)**	% of Total Area
Business Professional/Light Industrial	5	**1.55%**
Commercial Mixed Use	2	**0.67%**
Core Commercial	1	**3.01%**
High Density Residential – 8 to 15 Units per Acre	1	**0.03%**
Low Density Residential – 1 to 5 Acre Minimum Parcel	2	**6.40%**
Medium Density Residential – 1 to 8 Units per Acre	3	**9.77%**
Not Specified	21	**60.87%**
Open Space	5	**1.66%**
Parks	5	**0.16%**
Public/Quasi-Public	5	**1.68%**
Rural Residential – 5 Acre Min. Parcel	4	**14.14%**
Utilities	1	**0.05%**
Total Area (ac)	**34**	**100%**

Three locations within the City limits have been identified for future development, Woodbridge Development, Portola 192, and Teanna Ranch. Woodbridge Development and Portola 192 both have City approved Tentative Subdivision Maps. These two developments would provide an additional 1200 residential dwelling units, commercial, retail, and industrial space. Although approved, no progress has been made toward Final Map Approval in the last 5 to 10 years. Teanna Ranch has no formal proposal to develop the property at this time; however, the purpose of the annexation and reorganization of this property was to provide for the future growth of the City. All approved maps are reviewed by the City on an annual basis, but with the current vacancy rate and declining population the city does not anticipate these developments to move forward until economic and/or current housing needs within the City changes. These developments relative to the City limits can be seen in Figure 4.

Figure 4 – Future Development (See Appendix 4)



Economy

The economy of the City of Portola is historically based on logging; both as a logging camp and mill site. As the logging industry grew, railroads sprang up to help more efficiently transport the lumber in and out of the area. When the Western Pacific Railway through the Feather River Canyon was

completed in 1910, the City of Portola provided the ideal location for a depot which has sustained the City to present day. Currently the City of Portola remains a railroad hub which helps support year round outdoor recreation, tourism, and a Railroad museum.

As the service center for eastern Plumas County, future economic development depends on maintaining and expanding that role. Historically, the economy was based on natural resource extraction, but availability, environmental pressures, commodity value, and export difficulties have made these historic industries less viable. Current economic development has increased as workers seeking an active outdoor lifestyle relocate and are able to use technology to operate successful businesses free of traditional commuting and manufacturing restrictions. Additional resources are facilitating expanding tourism and visitor opportunities to help further develop this sector of the economy.

Government

In California, there are two kinds of cities: charter cities and general law cities. The City of Portola is a general law city which means that the legal authority for the City's Acts and Ordinances originates with the laws of the State of California. The City of Portola is located in the 1st Senate District, and in the 3rd Assembly District. Federally, Portola is located in California's 4th congressional district.

The City of Portola operates under the council-manager form of government, meaning that the Council selects a Mayor from among its members to serve a one year term. The City Council is composed of five Council Members elected to staggered four year terms.

Environment

Disaster resistance should further environmental sustainability and reduce pollution in the City of Portola. Central among environmental concerns is the impact of human actions and choices on the atmosphere and climate. The air quality in Portola is considered good. An air quality monitoring station is operated in the City of Portola by the North Sierra AQMD, located at 161 Nevada Street. This station monitors for PM2.5 (fine particles and airborne particulates), temperature, wind direction, and wind speed. In 2010 the number of days with PM2.5 concentrations greater than the National 24-hour Standard was 9.2, which is slightly less than the State Annual Average of 9.6 (http://www.arb.ca.gov/adam/select8/sc8display.php). Most days of poor air quality are due to atmospheric inversions, which are common in high Sierra valleys, especially in winter. These inversions trap air pollution and smoke from wood stoves to near ground level. Measurements at the City of Portola's testing station from the years 2000 to 2010 showed no noticeable time trend of increasing or decreasing PM2.5 levels.

Transportation sources account for the highest percentage of greenhouse gas emissions in most urban areas. Although the City has no ability to specifically address vehicle emission directly, the General Plan Update sets forth focused strategies to increase bicycle, pedestrian, and transit use. In addition to reducing greenhouse gas emissions, the General Plan also establishes goals for energy conservation through energy efficient construction standards and alternative energy sources.

ELEMENT A – THE PLANNING PROCESS

Overview

The City's Planning Department initiated the LHMP process with the selection and contracting of consultant support in late December 2011; the LHMP update started in February 2019. Early in the process, a Hazard Mitigation Team (HMT) was created to identify the stakeholders and interested parties to provide input and guidance into the City of Portola's LHMP. The stakeholders and interested parties were invited to participate via telephone and email. Although adjacent jurisdictions, the County, and other local entities were involved in this process, this LHMP is specific to the City of Portola. Each team member was asked to review the documents regarding overall plan formatting and global understanding and to respond specifically as the plan relates to their area of purview. For instance, the review by the health and safety advisor would be more attentive to emergency response and evacuation. The members of the Hazard Mitigation Team are as follows:

2019 Update Team

Manhard Consulting, Karen Downs
LHMP Development Coordinator and Task Manager
Manhard Consulting
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Reno, NV 89501

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Building and Public Works
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530-832-6801
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m.klundby@ci.portola.ca.us

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Bob Frank, Elaine Frank
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141 Delleker Dr
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2013 LHMP Team

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jsimpson@woodrodgers.com
msmith@woodrodgers.com

Sheila Anderson
Assistant Project Development (Fire)
Resource Concepts, Inc.
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Carson City, NV 89703
775-883-1600
sheila@rcinv.com

City of Portola
Evacuation Plans, Risk Assessment of
Public Utilities & Potential Mitigation Response
Public Works Department
(Streets & Roads, Solid Waste, Sewer)
Todd Roberts 530-832-6809
t.roberts@ci.portola.ca.us

US Forest Service
Joint Fire Hazard Assessment &
Short/Long-Term Mitigation Approach
Jerry Sipe, Don Fregulia
ADFMO Fuels
(530) 836-7176
dfregulia@fs.fed.us

City of Portola
Emergency Medical & Hazard Response
Community Service Officer
(Fire/Hospital/EPHC EMT1)
Leah Turner
530-832-6833

Plumas County Fire Safe Council
Joint Fire Hazard Assessment &
Emergency Resource Response
Jerry Hurley
PC FSC Coordinator
530-283-0829
jerry.hurley@sbcglobal.net

Union Pacific Railroad
UPRR Corridor Risk Assessment
Carl Anderson
916-789-5134

Additional agencies, jurisdictions, and districts invited to participate in the review process by telephone include:

Eastern Plumas Health Care
Designated BOD Member
500 1st Avenue
Portola, CA 96122
530-832-6500

Eastern Plumas Chamber of Commerce
California 89
Blairsden, CA 96103
530-836-6811

Plumas Unified School District Office of the Superintendent 50 Church Street
Quincy, CA 95971
530-283-6500

Once the HMT was in place, a schedule was developed to allow for Cal OES and FEMA approval in accordance with terms of the Disaster Recovery Initiative (DRI) funding grant. In order to complete the LHMP planning process, the HMT identified needs, reviewed the following specific target areas, and developed protocols for meeting the intent of these specific target areas based on the guidance presented in FEMA's Local Mitigation Plan Review Guide, October 1, 2011. It should be noted that although the Guide is dated 2011, it was not publicly available through the FEMA web page until October 1, 2012.

1. Garner public input. Develop a Public Participation Plan (PPP). Specifics to this process and findings are presented in the Public Involvement subsection of Element A.
2. Review and incorporate as appropriate existing studies, reports, and technical information. These documents will include, but not be limited to: the City's General Plan including the Land Use Element (GPLUE) and Safety Element (GPSE), the City's Emergency Evacuation Plan (EEP). Additional documents reviewed are discussed in the *Existing Plans, Studies, Reports and Technical Information* subsection to Element A, entitled *The Planning Process*.
3. Evaluation of the community's resources and available response mechanisms will need to rely on continued public participation. The *Plan Maintenance Process* subsection of Element A describes the current vision of the HMT for developing and fostering public participation. It is envisioned this component of the LHMP will be the most dynamic as the HMT and the community work iteratively to refine the stated goals and available means to meet those goals.
4. Once the LHMP has been adopted, the HMT must continue to move forward in the implementation and maintenance of mitigation strategies. In addition, it is critical that these policies be modified as certain items become addressed and as the community realizes that some items may need additional refinement before the ultimate goal can be obtained. *Monitoring, Evaluating and Updating the Mitigation Plan*, the final subsection to Element A, addresses these very methodologies and schedules.

Once the planning process had been framed, the Team moved forward with formulating the remaining required LHMP elements: Hazard Identification and Risk Assessment, Mitigation Strategies, and Plan Adoption.

Public Involvement

Consultant efforts and feedback from the HMT at the March 2012 HMT meeting resulted in the formulation of a Public Participation Plan which guided subsequent public interaction protocols. The PPP is provided in detail in Appendix 6; key aspects the PPP presents are:

- Goals of broad and timely public involvement to allow for the development of public awareness of the LHMP process and receipt of meaningful feedback;
- Objectives of the PPP include the development of and providing for:
    - Database of contacts, presented in Appendix 6, subsection 2,
    - Email distribution of notices,
    - Meetings in an open public forum,
    - Distribution of information facilitated by establishment of project web site and distribution through existing City hard copy postings and distributions and media contacts, www.portolasafetyplan.com
    - HMT availability for public questions and feedback via meetings, email, and phone calls; and
- Evaluation of the public involvement process.

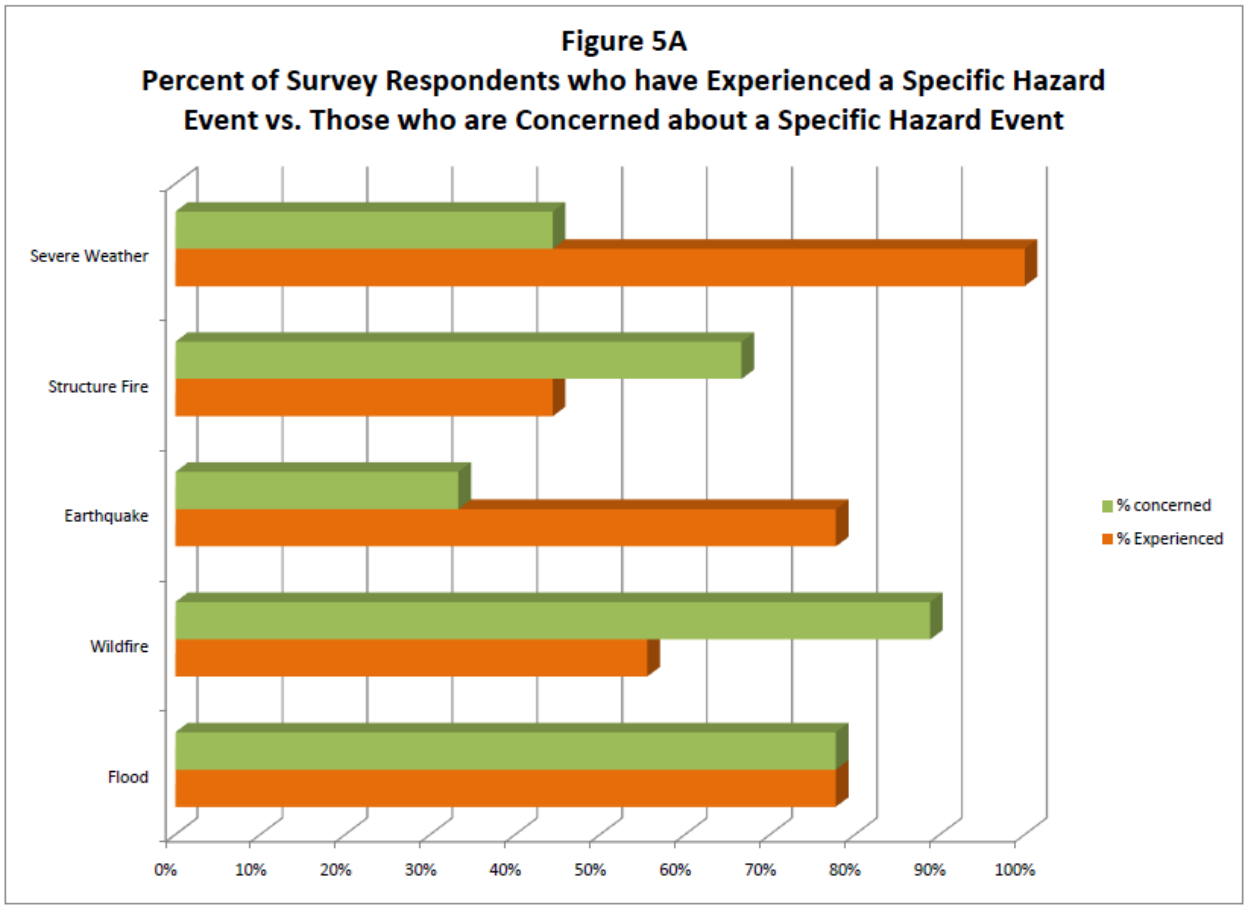
A copy of the Public Participation Plan is presented in Appendix 6, subsection 1. Public meetings were scheduled to allow for direct public contact and interaction. Meeting summaries are presented in Appendix 6, subsection 3, 4, and 6.

As an initial step in the development of the LHMP, a survey was presented to the community to attempt to gauge their levels of concern with hazard mitigation and to attempt to garner anecdotal evidence of prior hazards and how they may or may not have affected the community. A copy of the questionnaire and graphic presentations of some of the data are presented in Appendix 6, subsection 8.

One of the questions that helped guide the formulation of mitigation strategies asked the respondents to characterize their level of concern for various hazards based on hazards they had experienced vs. hazards they had not (Figure 4). Although the survey response cannot be considered a statistical sampling, it is interesting to note that when it comes to Severe Weather, Earthquake, and Flood, experience seems to temper the amount of concern felt by the residents. Whereas Wildfire and/or structure fire present a greater concern once the hazard has been experienced. This data provided unique insight to the planning process as we begin to formulate the Plan and how to work with the City to mitigate those hazards identified.

As development of the LHMP progressed, public involvement outside the HMT was very limited. The PPP was therefore subsequently modified to include providing specific invitations to meetings and to present specific requests for review to community and civic groups, including: Chamber of Commerce, Rotary Club, and interested church groups. Because churches typically have access to large structures capable of housing many people and an existing communication network through phone trees and church bulletins, incorporating interested church groups as a secondary tier to public notification protocols might present a productive endeavor. This might also lead to greater involvement and public input.

Figure 5 – Hazard Concerns (See Appendix 4)



Existing Plans, Studies, Reports and Technical Information

City Planning Documents

The HMT reviewed and incorporated information from the following City Planning documents:

- City of Portola General Plan, Land Use Element (GPLUE)

  The General Plan, Land Use Element provides information on existing land use, including characterization of development type and intensity based on location.

- City of Portola General Plan, Safety Element (GPSE)

  The Safety Element provides a framework for presenting hazard mitigation identification, and mitigation goals and strategies. The GPSE is currently being updated in tandem and in conjunction with the development of this LHMP.

- City of Portola, Citywide Emergency Evacuation Plan (CEEP)

  The Citywide Emergency Evacuation Plan attempts to affect the emergency evacuation of residents, businesses, and visitors during natural disaster events and other emergency situations.

Documents for Neighboring Jurisdictions and State Regulation Authorities

Other documents relied upon to garner information to incorporate into the LHMP are:

- Plumas County General Plan
- The Plumas County General Plan presents information on hazard areas immediately adjacent to the city limits and on City ingress and egress options.
- State of California Multi-Hazard Mitigation Plan
- This plan, prepared by Cal OES, was used for internal quality assurance and evaluation purposes to ensure that the City's LHMP was consistent with the State's Plan.
- Past disaster declarations provided a record of historical occurrences and a basis to formulate risk assessments and sense of frequency associated with hazard events.

Technical Information

Analysis of hazard areas, particularly as it relates to flooding and seismic risk was developed through the use of Hazards – United States (Hazus). Hazus is a nationally applicable standardized methodology that has developed models for estimating potential losses from earthquakes and floods. Data compiled through Geographic Information Systems (GIS) is used to estimate physical, economic, and social impact of these disasters.

Documents reviewed for technical analysis and information regarding the identification and characterization of specific hazards are summarized in the *Reference* section of this Plan.

Federal Guidelines

The following FEMA guides were consulted for general information and guidance on the LHMP processes and formulation of this Plan:

- Local Mitigation Plan Review Guide, October 1, 2011,
- Local Multi-Hazard Mitigation Planning Guidance, July 1, 2008,
- How-To Guide #1: Getting Started: Building Support For Mitigation Planning,
- How-To Guide #2: Understanding Your Risks – Identifying Hazards and Estimating Loss Potential,
- How-To Guide #3: Developing the Mitigation Plan: Identifying Mitigation Actions and Implementing Strategies, and
- How-To Guide #4: Bringing the Plan to Life: Implementing the Hazard Mitigation Plan.

Plan Maintenance & Public Involvement

The City is committed to garnering public involvement in the perpetual reshaping and modifying of the LHMP. However, strategies to encourage public participation cannot be formulated without examining the community for which the LHMP is intended to serve. Small town apathy is a common phenomenon; which seems counter intuitive given the affection many in the community have for their home town. It is difficult to rally support behind mitigation projects for risks that may or may not

manifest, especially when immediate financial needs and obligations are going unfulfilled. To their credit, many officials serve as volunteers in performing community functions. Additional tasks such as garnering public support, while implementing and managing an LHMP, can leave community leaders taxed, overburdened, and overwhelmed. Therefore, finding grant funding to help provide the support level necessary to perpetuate hazard mitigation activities and maintenance of the LHMP is a high priority for the City. Grant funding will allow the City to alleviate and distribute some of the LHMP administrative burdens by providing for the means to support the needed mitigation efforts while at the same time utilizing community resources.

Upon approval of the LHMP, the City's web page will be formatted to allow for:

- The plan, and any proposed changes will be posted on the City's Web site for public review and comment.
- The web site will present contact information for interested citizens to direct their comments and specific concerns.
- The web page will be modified to allow for individual citizens and groups interested in receiving updates to sign up so automatic notices can be sent via email as public meetings are held and changes to the LHMP are considered and adopted.
- Comments received regarding the LHMP will be collected by City personnel, included in the annual report to the City Council, and considered during future LHMP updates.
- The requesting of a physical copy of the LHMP.

The proposed mitigation goals and objectives also present several specific approaches to encouraging public involvement.

Updating the Plan

Monitoring, Evaluating, and Updating the Mitigation Plan

Emergency Management and Assistance regulation 44 CFR Part 201 states that the agency responsible for the LHMP is required to, "at a minimum, review and, if necessary, update the local mitigation plan every five years from date of plan approval to continue program eligibility". The office of the City Planner is responsible for the annual review of the LHMP. This annual review is to be completed by February 28 of the year following the year under consideration and will provide the basis for consideration of any changes to the LHMP's adopted Goals, Objectives, and Strategies.

Items to be specifically considered and documented in the annual review are to include:

- Grants applied for and/or funding received for administrative support for the implementation and execution of the LHMP.
- Summary of community comment and summary of actions taken.
- Summary of items reviewed and current status including a discussion of ongoing action items.

- Changes in identified hazards.
- Changes in hazard vulnerability.
- Changes in hazard type or rating.
- Changes in potential impact to critical facilities.
- Changes in available resources.
- Difficulties or concerns observed with plan implementation.
- Status of ongoing and/or completed mitigation items.
- Status of multi-jurisdiction LHMP's with whom the City shares an interest.
- Funding received for implementation of action items.
- Submit annual review to City Council for review and approval.

A GAP analysis is a means to evaluate and determine steps to be taken to move away from a current protocol to a desired protocol or level of activity. Performing GAP analyses should be conducted as necessary in the early implementation of the Plan and comprehensively with every Plan update. Specific to this Plan, the Public Participation Plan should be analyzed to attempt to more actively engage the public. Public participation during the initial development of the Plan was not consistent with the goals envisioned by the HMT and leaders of the community. The approaches incorporated during the development of the Plan were passive and relied on mailings, flyers, and newspaper notices. Adopting a more active approach, where members of the HMT engage the public through meetings for civic groups, community dinners, and churches may spark interests where less active approaches go unnoticed. As the Plan is implemented, look for opportunities to actively seek support for specific tasks. For instance, a civic group might not respond to a global request to become involved in the LHMP process. However, when approached to purchase a public notification banner, support may be more forthcoming. Another area where further analysis will be required is staffing. As Plan activities become more complex and pressing, current staff will not have the time or resources to meet the demands of their existing work load while facilitating and coordinating mitigation activates. As mitigation actions become more costly, the process by which to secure those improvements become more complex and the evaluation of current status and future direction becomes more critical.

To ensure that the 5-year update occurs, in the fourth year (2017) following the City's adoption of the LHMP, the City Planner's office will initiate the following activities at least 6 months prior to the end of the 5 year cycle for the LHMP review.

- Compile items of interest identified and presented in each of the previous annual reports for the period under review;
- Review and update to the LHMP for any new identified hazards change in risks. For instance, completion or progress for any mitigation strategies would bear discussion.
- Review, revising, and formulate additions and changes to the mitigation strategy;

- Prepare a new action plan with prioritized strategies, identified responsible parties, and available resources;
- Prepare an amended LHMP to be submitted to the City Council for review; and,
- Submit the amended LHMP to Cal OES for approval.
- Submit the amended LHMP to City Council for adoption.

ELEMENT B–HAZARD IDENTIFICATION & RISK ASSESSMENT

Overview

No one source identifies or characterizes all potential hazards that may affect or impact a jurisdiction. In addition, each hazard will affect each jurisdiction in unique ways; a wildfire may be devastating or of limited consequence depending on the area surrounding the community, the community's ability to respond, and the level of commitment the public has displayed to help protect themselves. Tasks associated with performing the hazard identification and risk assessments included the following:

1. Present a description of the type, location and extent of all natural hazards that can affect the City of Portola.
2. Summarize previous occurrences and present information on the probability of future hazard events.
3. Provide a description of each hazards potential impact on the community.
4. Address National Flood Insurance Program (NFIP) structures that have been repeatedly damaged by floods.

Natural Hazards

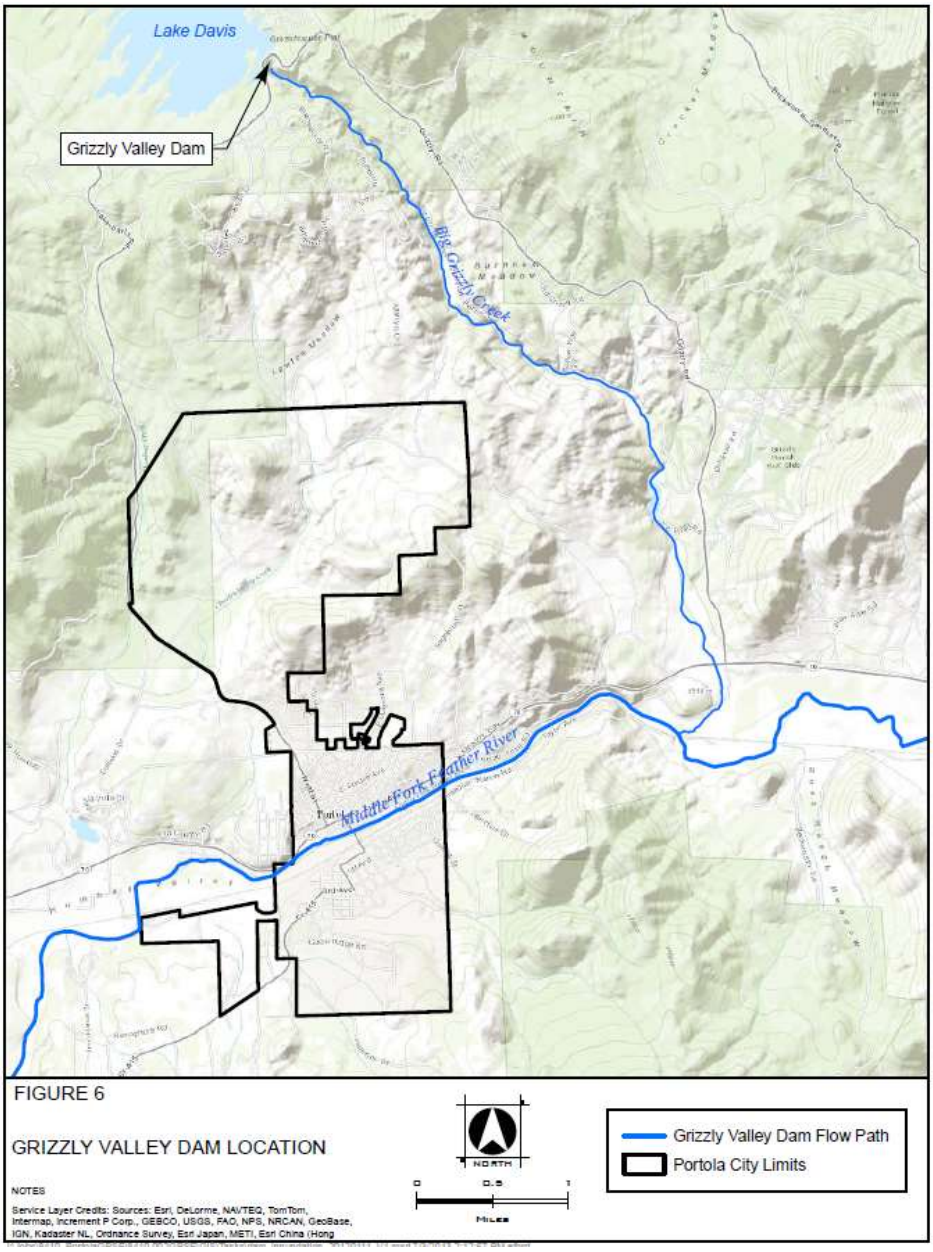
Hazards presented by FEMA for consideration in the formulation of an LHMP are listed alphabetically below. No additional hazards specific to the community were identified during public input or during our research efforts to document historical events. Utilizing historical data from the National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center (NCDC), Cal OES, and FEMA Region IX, and the United States Geological Survey (USGS) the overall list was pared to reflect only those natural hazards of significance within and immediately adjacent to the limits of the City of Portola. The US Forest Service and members of the Plumas County Fire Safety Council were consulted for information regarding wildfire. 'Significance' was considered in generic terms, focusing on key criteria that essentially relates to frequency and/or intensity. Potential hazards considered for Portola have been summarized in Table 3. Threshold or screening conditions are indicated; reference links are supplied in a supplement to Table 3 located in Appendix 7 of this plan. Additional screening criteria, that may be integral to characterization of certain hazards, were not examined further once the hazard had been removed from consideration by a limiting condition.

Table 3 – Hazard Consideration Selection Matrix			
Hazard	**Threshold Value or Condition**	**Considered a Hazard**	**Hazard Profiled**
Avalanche	Slope >30^{o}	N	N
Coastal Erosion	On Coast	N	N
Coastal Storm	On Coast	N	N
Dam Failure	Refer to California Division of Water Resources	Y	Y
Debris Flow (Post Fire)	Independent Study Required	Y	Y
Drought	Agricultural Dependency & D4	N	N
Earthquake	PGA > 0.02g	Y	Y
Expansive Soils	a.) >30% Clay b.) Plasticity Index >15	N	N
Extreme Heat	Heat Index >105^{o}F predicted for more than 2 days.	Y	Y
Flood	FEMA 100 Year Flood Zone	Y	Y
Hurricane	Within Tropical Cyclone Formation Region	N	N
Land Subsidence	a.) Aquifer Compaction Area b.) Evaporate or Carbonate Rock	N	N
Landslide	Slope (^{o}) > 0.19(Relief, m) - 0.16	N	N
Severe Weather Hail Lightning Microbursts Thunderstorms Tornadoes Windstorms	 > ¾" Diameter No Threshold Established Straight line wind speed >85 mph Severe, wind>58 mph & hail>¾" Wind speed > 85 mph Wind > 58 mph (50 knots)	Y	Y
Tsunami	Within 1000' of Water Body	N	N
Volcano	Within Mt. Lassen Influence Zone	N	N
Winter Storms & Extreme Cold	Definition for Cold Air Outbreak	Y	Y

Dam Failure

The City of Portola lies approximately 8 miles downstream of Lake Davis, which is the reservoir created by the Grizzly Valley Dam. Lake Davis was built to provide recreation, create a water supply to the City of Portola, and to improve fish habitat. The Grizzly Valley Dam was completed in 1915 and the maximum surface elevation is 5,744 ft with a maximum storage volume of 195,000 acre-feet. If the dam were to fail catastrophically the flood surge would travel south down the Grizzly Valley Creek channel and reach the Middle Fork of the Feather River approximately 2.25 miles east of Portola. Because the Feather River flows to the west, structures along the Feather River at the eastern boundary of the City of Portola would be the first structures to be affected by the flood surge. Figure 6 shows the proximity of the Grizzly Valley Dam to the City of Portola.

Figure 6 – Grizzly Valley Dam Location (See Appendix 4)



History

There have been no dam inundation events impacting the City of Portola.

Location, Extent & Probability of Future Events

Dam Inundation areas, as mapped by Cal OES, show the potential flood extent, given a complete and sudden dam failure at full capacity. Given its physical setting and proximity to the Grizzly Valley Dam, the City of Portola could be affected both by the immediate impacts of a flood wave, and long-term impacts if roads, buildings and bridges are destroyed. The flood wave has the potential to impact the South Gulling Street Bridge, which is the only connection between the south and north sides of the City. If the bridge were adversely impacted, those people on the south side of the Middle Fork of the Feather River would be required to travel over 25 miles to return to the north side of Portola; those on the north side would not be able to reach the hospital in the event of a medical emergency. Based on records presented by the National Bridge Inventory, the bridge is considered scour critical.

The main channel of the Middle Fork of the Feather River runs fairly central to the flood plain. The relatively broad flood plain will help mitigate potential damage and limit destruction as it allows for some spreading of the flood wave, while continuing to help channelize the flow. Depending on flood levels, the railroad, a City well, and the sewage treatment plant could all be impacted by the event. Because of confidentiality concerns on behalf of the Division of Safety of Dams, specific concerns will have to be reviewed by the City and cannot be represented herein.

As long as the dam continues to be evaluated and sufficiently maintained by the California Department of Water Resources' Division of Safety of Dams, the potential hazard associated with a dam break or breach would be considered unlikely for naturally occurring events. Manmade hazards may elevate the level of risk, but given the size of the dam, remote location, and lack of high value impact the potential for a successful targeted attack would also be considered unlikely. The probability regarding the likelihood of a dam break or breach would be addressed more specifically and comprehensively in the Division of Safety of Dams' assessment.

Earthquake

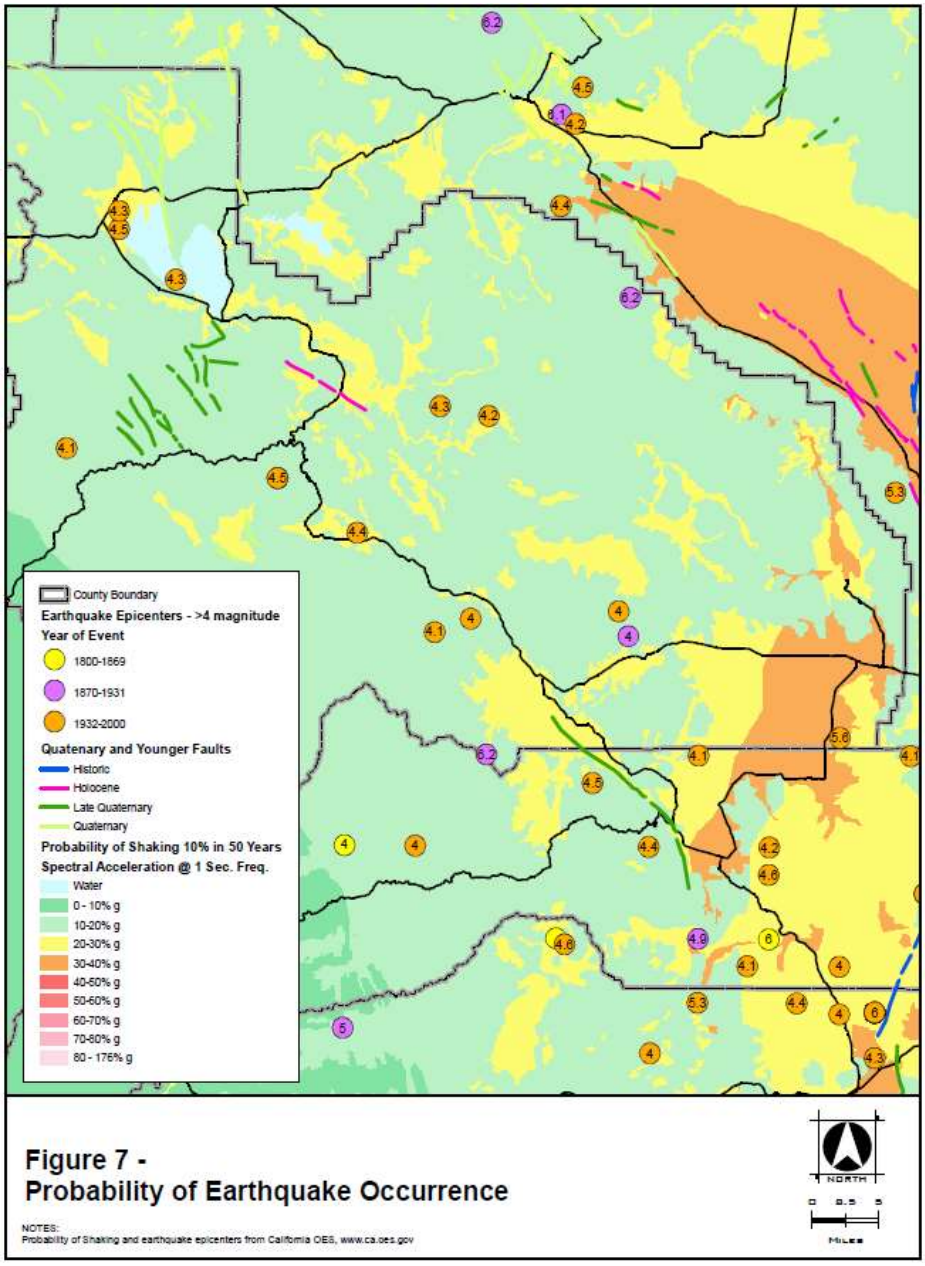
An earthquake is a sudden motion or trembling caused by a release of stress accumulated within or along the edge of the earth's tectonic plates. Earthquakes usually occur without warning and, after just a few seconds, can cause massive damage and extensive casualties. The effects of an earthquake can be felt far beyond the site of its origin. The most common effect of earthquakes is ground motion or the vibration or shaking of the ground during an earthquake. The severity of ground motion generally increases with the amount of energy released and decreases with distance from the fault or hypocenter of the earthquake.

In addition to ground motion, several secondary hazards can occur from earthquakes: surface faulting/rupture, liquefaction, and lateral spreading. The Seismic Hazards Mapping Act (SHMA) of 1997 established zones of required site-specific geotechnical investigations to identify seismic hazards

and formulate mitigation measures prior to permitting developments designed for human occupancy. Portola is not within, nor is it in, an area slated for the development of a Seismic Hazard Zone Map.

The City of Portola is located in an area of potentially moderate seismic activity. The nearest active faults are the Mohawk Valley fault, located about 8.5 miles to the west, and the Honey Lake fault, located 21 miles to the east. The Mohawk Valley fault (MCE 7.0) is characterized as being less than 130,000 years old and the Honey Lake Fault (MCE 7.8) is less than 15,000 years old. Figure 5 on the following page presents a summary of epicenters and associated magnitudes for earthquakes in the area surrounding Portola. The bulk of the events present a magnitude on the order of 4, with a couple event reaching as high as 6.2.

Figure 7 – Probability of Earthquake Occurrence (See Appendix 4)



Surface Rupture

Surface rupture occurs when the ground surface 'breaks' due to fault movement during an earthquake. Not all earthquakes result in surface rupture; however, the location of surface rupture generally can be assumed to be along an active major fault trace. The Alquist-Priolo Earthquake Fault Zoning Act (APEFZA) was passed in 1972 to attempt to mitigate the hazard of surface rupture to structures for human occupancy. The State has not designated any special study zones for Portola or the immediate surrounding areas indicating the potential for surface rupture would be considered low. Image 3 shows how a surface rupture can manifest.

Image 3 – Surface Rupture through field in El Centro, California (NOAA>NESDIS>NGDC>MGGD>Natural Hazards>Image Database)

Ground Shaking

Seismic waves radiating away from the hypocenter, like ripples in a pond, and travelling rapidly through the earth's crust produce shaking as these waves reach the ground surface. Strength and duration of shaking is a function of the size (magnitude) and location of the earthquake and on the characteristics of the site such as proximity to bedrock and stiffness and thickness of overlying alluvium. Soil deposits filter seismic waves by attenuating the motion at some frequencies while amplifying motion at others. This 'filtering' is what causes the dramatic variations in the levels of ground shaking observed within relatively small areas. Ground shaking is a general term that refers to all aspects of motion of the earth's surface resulting from an earthquake and is usually considered the most important of all seismic hazards because all the other hazards are triggered by ground shaking.

Ground shaking is what typically triggers the structural responses that make the headlines. Of course, the amount of damage that ensues is a function of the design of the structure and materials from which it is built. Typically structures with larger open areas, such as schools, can experience the most significant damage. Unreinforced masonry structures are also at significant risk.

Liquefaction and Lateral Spreading

Some of the most infamous events associated with earthquake damage deal with liquefaction, the point during a seismic event when soils lose their strength and begin to act as fluids, and lateral spreading. Liquefaction can cause severe damage to structures, bridges, roadways, and buried utilities. Image 4 helps highlight that when liquefaction occurs its effects can be very isolated.

Image 4 – Seismic Waves Propagating thru Different Soils
(http://www.webpages.uidaho.edu/~simkat/course_materials/geol344/ground_shake.jpg)

The Cal OES MyHazards Awareness website (http://myhazards.caloes.ca.gov/Default.aspx) indicates that Portola is not in a liquefaction prone area. However, for areas of limited subsurface data, it has also been recommended that the California Geological Society generate liquefaction zone maps which would require investigation if the area contains late Holocene age deposits along current river channels and within their historical floodplains, where the M7.5 weighted peak acceleration is greater than 0.1g, and the anticipated depth to saturated soil is less than 40 feet. Wood Rodgers has determined that Portola presents all three of the required conditions particularly within the floodplain deposits of the Middle Fork of the Feather River. In addition, the California Division of Mines and Geology has concluded that the Pleistocene Lake Mohawk sediments that underlie much of the Portola area and along the Middle Fork of the Feather River may be susceptible to seismically induced liquefaction. Therefore, for the purposes of the City of Portola LHMP Wood Rodgers has listed liquefaction as a natural hazard risk in the City. Image 5 indicates how variable the results of liquefaction can be.

Lateral spreading develops on gentles slopes and adjacent to rivers and channels as the saturated stream sediments liquefy during a seismic event and can no longer support the adjacent slopes.

Image 5 – Results of Liquefaction in 1906 (http://geomaps.wr.usgs.gov/sfgeo/liquefaction/image_pages/tilted_victorian.html

the City of Portola LHMP Wood Rodgers has listed liquefaction as a natural hazard risk in the City. Image 5 indicates how variable the results of liquefaction can be.

Lateral spreading develops on gentles slopes and adjacent to rivers and channels as the saturated stream sediments liquefy during a seismic event and can no longer support the adjacent slopes.

History

The most recent notable earthquake near the City of Portola occurred prior to 1931 and was estimated as a magnitude 4 earthquake. The nearest earthquake above magnitude 6.0 also occurred prior to 1931 and was centered about 15 miles southeast of the City. There are no records of significant earthquakes (M $\geq$ 6.5, caused loss of life, or caused more than $200,000) within close proximity to the City of Portola.

Earthquakes occur frequently and depending on type of event, proximity, and characteristics of both the structure and the soils/bedrock supporting the structure, its effects may or may not be felt. Figure 5 presents a summary of historic earthquake events close enough to the City to be noticed by most of its residents. The earthquake profile for an event having a 7% Probability of Exceedance within 75 years, i.e. the current design level earthquake, would be a Magnitude 7.2 event occurring within 30 miles of the City.

Location, Extent, and Probability of Future Events

For the City of Portola, the primary concerns are strong ground motion and strong ground motion combined with a potential for liquefaction and lateral spreading adjacent to the Middle Fork of the Feather River channel. Contemporary structural design protocols consider the impact of strong ground motions and require new construction to meet the performance rigors demanded by the seismic environment. However, due to the age of many of Portola's structures, an increased potential for damage exists when compared to that of new construction. Figure 8 presents the likelihood of future events based on magnitude, proximity to the City, and within the next 75 years.

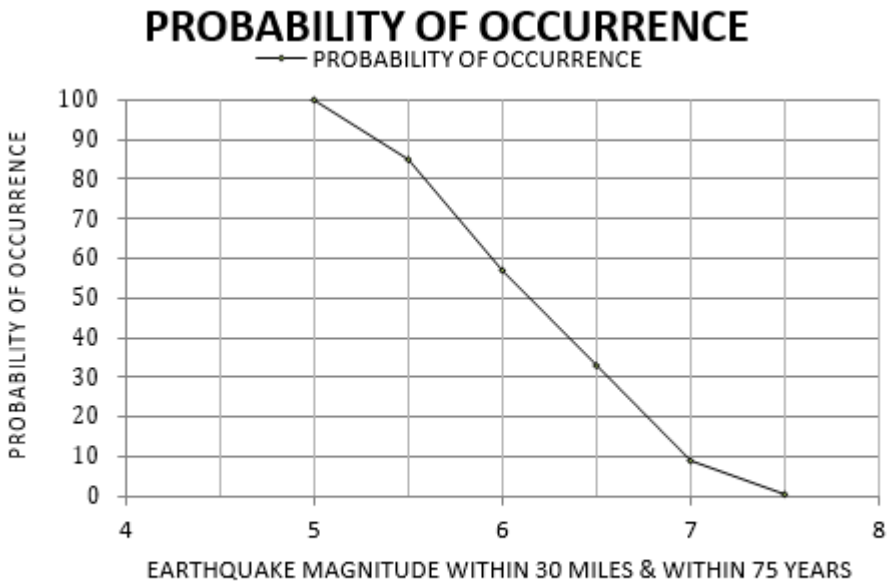


Figure 8 – Probability of Occurrence for Various Magnitude Events

The Gulling Street Bridge crosses the Middle Fork of the Feather River, the UPRR corridor, and provides ready access between north and south Portola. The Gulling Street Bridge was constructed in 1954 and consists of 3 spans, constructed of steel with a cast-in-place concrete deck. 1954 was well before the ability to evaluate liquefaction and lateral spreading had been developed. Recent evaluations of the structure (2010, National Bridge Inventory, NBI Structure Number 09C0130) indicates that the structure is: *equal to present minimum criteria* but scour critical. It should be noted; *the evaluation protocol has not been refined to include evaluating bridge criticality as related to liquefaction and/or lateral spreading*. Because the structure spans the Feather River, and the soils have been superficially assessed as potentially liquefiable, lateral spreading and liquefaction should be assumed to present a meaningful risk during a significant seismic event until that hazard is specifically evaluated and the threat dismissed.

Fault traces and active fault zones have not been identified within Portola proper, and disruption to underground utilities and services is not anticipated to be a significant hazard due to extension across a fault zone. However, the City's system is old and may just break due to seismic activity. Disruption in overhead power lines may occur depending on the strength of the event and proximity to groundwater and/or crossings associated with the Middle Fork of the Feather River.

Based on Portola's seismic history, proximity to surrounding fault zones, and age of structures and improvements, the risk probability for the community to be at seismic risk would be considered moderate. The greatest potential for damage is considered to be from ground shaking. When considering potential risk severity associated with utilities and transportation the Portola area would be considered low to moderate. However, the City and County have a history of sewer and water line breaks being triggered by a seismic event. When considering the potential severity for liquefaction and lateral spreading, the hazard would be considered moderate. Hazard impact must also consider type and age of construction of the structures. Given the age of many of the structures in the community, the severity becomes more moderate to potentially high. Typically, brick and unreinforced masonry structures present the greatest risk. Heavy masonry structures with large spans present a more moderate risk. Small

Image 6 – School Damage from May 1983 Coalinga Earthquake
(http://www.smate.wwu.edu/teched/geology/eq-CA-central.html)

wood framed structures typically present the lowest risk level for damage when considering seismic response.

Secondary hazards, such as fire, can also present a significant risk to the community. Old heating systems, broken gas lines, old wooden structures can all become both a risk and a hazard if fire is triggered during a seismic event. Image 6 also shows what kind of damage is typical to large open bays.

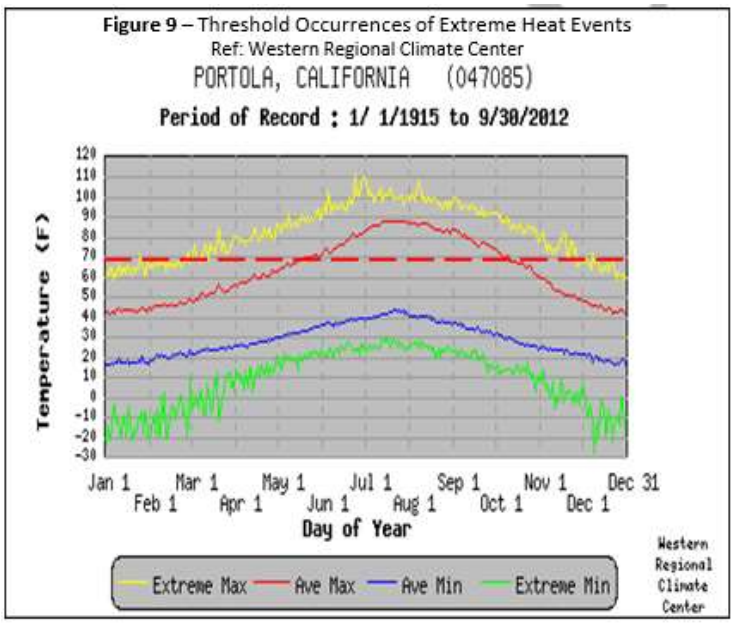
Extreme Heat

As defined by FEMA, extreme heat occurs when temperatures of 100^{O} F or more above average high temperatures for the area are exceeded for extended periods. The National Weather Service and Cal OES consider criteria which includes a combination of factors in defining hazardous heat conditions: daytime high temperatures, humidity, nighttime low temperatures, and the specific climate region. High humidity and poor air quality can exacerbate the effects of heat.

Heat can incapacitate or kill. Based on information provided by Cal OES, approximately 20 Californians per year die due to the effects of extreme heat. However, during extreme heat emergencies the impacts can be much greater. For example, 946 were killed in California as a result of a 1955 heat wave lasting 8 days. Extreme heat has killed more Californians than all other declared disasters combined in the past 17 years. Extreme heat is a unique hazard in that it can result in a large number of casualties but very little damage to infrastructure.

History

Figure 9 presents records of maximum temperatures within the Plumas County areas. Evidence or records of deaths or injuries due to extreme heat have not been presented for the City of Portola as documented in SHELDUS™. SHELDUS™ is a data set for 18 different natural hazard events such as thunderstorms, hurricanes, floods, etc., represented at the



LEGEND

Extreme Max. - Maximum of all daily maximum temperatures recorded for the day of the year.

Ave. Max. - Average of all daily maximum temperatures recorded for the day of the year.

Ave. Min. - Average of all daily minimum temperatures recorded for the day of the year.

Extreme Min. - Minimum of all daily minimum temperatures recorded for the day of the year.

---- Threshold Events

county level. As indicated in the following graphic, isolated and limited periods of extreme heat have occurred in the past. The average annual maximum temperature for Portola is approximately 90 ^{o}F. All-time peak temperatures have been reported near 110 ^{o}F and periods of temperatures in excess of 100 ^{o}F have occurred. Figure 9 also provides an indication as to the frequency of extreme heat events since 1915.

Location, Extent & Probability of Future Events

Periods of elevated summertime high temperatures are certain to occur in the City of Portola. However, as a mountainous environment with a nearby river, the City of Portola is not generally subject to extreme heat as defined by FEMA. The high elevation (4,850 ft) in combination with typically dry conditions during hot periods results in substantial cooling during evenings and nighttime. Average high and low temperatures during the summer months typically swing as much as 45^{o}F; providing significant relief and for cooling of the outdoor and indoor environments. Fortunately, even when daytime temperatures reach elevated levels it is typically only for a few hours. Therefore, the probability of an extreme heat event is considered low, with a resulting low severity. Structures and critical facilities would not be typically be directly impacted. However, any fire caused incidents could impact any structure.

Flood

Floods are the most prevalent hazard in the United States and are considered the natural events when people and property can be most adversely affected. Due to their frequency and proximity to occupied structures and residences, floods present the highest distress rate of any natural hazard. Flooding of the Middle Fork of the Feather River typically occurs as excess water from rainfall and snowmelt runoff into streams and tributaries to the river, collect, and cause the rivers' water to overflow the riverbanks and flow onto the adjacent floodplain. Rainfall intensity, snow pack, topography and ground cover all impact the extent and magnitude of flooding observed.

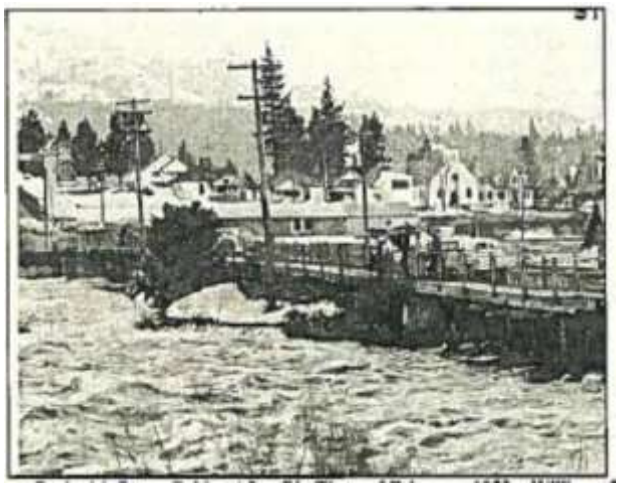


Image 7 – Historic Flooding of the Feather River (City source)

Due to its physical setting straddling the Middle Fork of the Feather River, and being confined in a river canyon, the City of Portola is at significant risk for flood damage, especially in low lying areas along the river. Historically floods have been a result of either "cloudburst storms" or general rainstorms. Cloudburst storms are unpredictable, high intensity storms of relatively short duration (<6 hours) which produce short duration peak flows and relatively small runoff volumes. General rainstorms are longer duration storms which produce large runoff volumes. The impacts of these storms can be exacerbated when the rainfall occurs over frozen ground or existing snowpack (Plumas County, California Flood Insurance Study). Burn areas can also exacerbate flooding conditions due to increased runoff and debris-laden flows.

Recent evaluations of the Gulling Street Bridge (2010, National Bridge Inventory, NBI Structure Number 09C0130) indicates that the bridge is scour critical. A specific study would be required to identify the risk and present specific recommendations for mitigation. In addition to the Gulling Street Bridge being located in the flood plain, a municipal water well and some of Portola's housing are also located in the flood plain. (Figure 11)

In the Sierra Nevada Mountains, and City of Portola, inclement weather, including general rainstorms, are primarily expected from November through March when approximately 75% of the annual precipitation falls. The month with the highest average precipitation is January, with 3.67 inches of precipitation, and an average snowfall of 16.0 inches.

FEMA flood insurance rate maps (2005) show the areas of the City that are subject to 100-year and 500-year floods. Figure 8 shows flood hazard areas in relationship to land use, to indicate types of parcels affected by the 100-year flood event. Flooding potential exists along both sides of the middle Fork of the Feather River. Two unnamed, minor tributaries which pass through Portola from the south also contribute to potential flood risk. The "Portola Tributary" (name assigned by FEMA, it is nameless on the USGS Quadrangle) to the north. The areas along the Middle Fork of the Feather River and the Portola Tributary are designated as FEMA flood Zone AE (areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods with Base Flood Elevations shown).

Image 8 - Downstream View from Gage Location (Flood Stage 9')
Ref: National Weather Service Photo

The unnamed tributaries which originate south of Portola are designated Zone A (areas subject to inundation by the 1-percent-annual-chance flood event determined using approximate methodologies). There are minor

areas of designated 0.2 percent annual chance flood hazard (500 year flood hazard) along the Portola Tributary. The Grizzly Valley Dam also ultimately discharges to the Middle Fork of the Feather River.

History

Records from NOAA's nearest gauging station on the Middle Fork of the Feather River indicate that the "action stage" of 7 feet has been exceeded regularly. Records also indicate that the "flood stage" of 8.5 feet was most recently reached on 3/17/2011 with a flood stage of 9.03 feet. Figure 8 also indicates FEMA Flood Zones within and immediately around the City limits. Table 4 presents those historic flood events which have exceeded the "action stage" within the period of record. Inserted with these historical events are characterizations of what those flood levels mean to the community.

Figure 10 – FEMA Flood Zone Map (See Appendix 4)

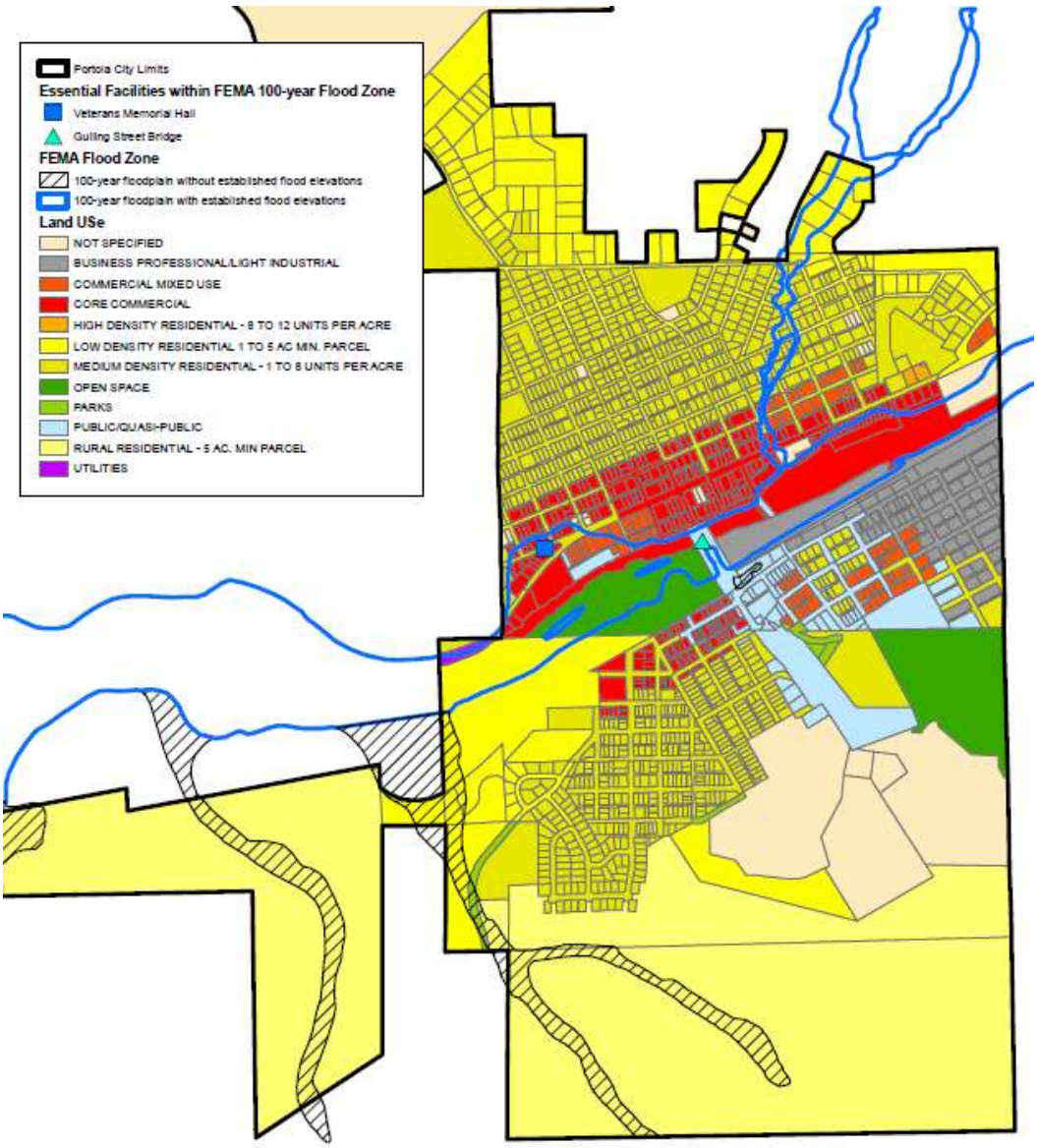


Table 4 – Measured Flood Levels & Dates (Sorted by Height above Action Stage)		
Event	Height Above Action Stage	Date
11’ (8,400 cfs) Major Event - Record flooding of homes, businesses, structures, roads, railroads, and bridges from Beckwourth to Sloat California, including Portola. Before the gage record, this level was exceeded during the flood events of 2/21/1927, 3/26/1928, 4/6/1952, 12/23/1955, 2/1/1963, and 12/24/1964.		
1	10.62 ft	01/21/1969
10.5’ (7,640 cfs) Major Event - Near record flooding with significant damage to roads, railroads, homes, businesses and structures along river with significant damage.		
2	10.07 ft	03/27/1971
10’ (6,450 cfs) Moderate Event - Flooding of lowlands, structures, and roads from Beckwourth to Sloat, including Portola. Sleepy Pines Motel and other low structures along river in Portola flood. Evacuation of homes on south end of West Street likely to begin. Sewage ponds in Portola may exceed capacity and may need to release to river. River near foundation of Veterans Hall in Portola.		
3	9.56 ft	01/14/1980
9.5’ (5,600 cfs) Moderate Event - Flooding of lowlands, roads, and low-lying structures in reach from Beckwourth to Sloat California, including Portola. In Portola, Sleepy Pines Motel on CA Hwy 70 begins to experience some minor flooding. Water near bottom of large propane tanks along Hwy 70. South end of West Street floods. River encroaches within about a foot of the Veterans’ Hall foundation and some low homes along river.		
4	9.11 ft	01/25/1980
5	9.03 ft	3/17/2011
9’ (4,800 cfs) Minor Event - Flooding of lowlands, rural roads, agricultural areas, and some low structures between Beckwourth and Sloat California, including Portola. In Portola water encroaches within CA Hwy 70 road surface. Water level is nearing the Sleepy Pines Motel and is just below the propane tanks on Hwy 70. The south end of West Street floods.		
8.5’ (4,100 cfs) Flood Stage - Some minor lowland flooding in reach between Beckwourth and Sloat California, including Portola.		
6	8.17 ft	03/31/1974
8’ (3,440 cfs) – Minor Event - Some areas of minor out of bank flow in reach between Beckwourth and Sloat California, including Portola.		
7	7.74 ft	03/27/1975
8	7.73 ft	01/17/1978
7.5’ (2,850 cfs) Action Stage Event - Some areas of very minor out of bank flow in reach between Beckwourth and Sloat, California. No incidents reported for Portola.		
9	7.32 ft	01/18/1973
http://water.weather.gov/ahps2/hydrograph.php?wfo=rev&gage=mftc1		

Location, Extent & Probability of Future Events

Areas within the 100-year flood zone are considered high flood hazard areas as previously indicated in Figure 10. The City of Portola participates in the National Flood Insurance Program

(NFIP). As a result, all new development within the floodplain requires certification that the proposed development within floodplain will be raised above the 100-year water surface and the unnamed tributaries which originate south of Portola are designated Zone A (areas subject to inundation by the 1-percent-annual-chance flood event determined using approximate methodologies) and that any proposed structures will not increase flood depths or velocities on adjacent properties. There are minor areas of designated 0.2 percent annual chance flood hazard (500-year flood hazard) along the Portola Tributary. The Grizzly Valley Dam also ultimately discharges to the Middle Fork of the Feather River. In addition, the NFIP requires that owners of property within the designated flood zones to purchase flood insurance. No NFIP structures have been reported as experiencing repetitive claims from flooding. The sewage treatment plant is mapped within the 100-year flood plain, as is a pump house for a City well.

Severe Weather

Severe weather encompasses several phenomena that can alternately govern and be the most critical of a weather event or not even be present: thunderstorms, lightning, hail, microbursts (wet and dry), tornadoes, and windstorms. Each of these phenomena can present special considerations that may or may not alone present a hazard. However, when considered in tandem they present the increased likelihood of a damaging event.

Severe weather is most commonly associated with the term thunderstorm. Thunderstorms develop when warm, moist, air rises and condenses as it cools at the higher altitudes. As the moisture condenses it causes the surrounding air to continue to warm, intensifying the instability in the air mass. Thunderstorms present a potential for both direct and indirect hazardous impacts and manifest several different weather phenomena during their occurrence. Direct impacts and various specific phenomena include: hail, lightning, microbursts (wet and dry), and windstorms (including tornadoes). Unfortunately, indirect impacts can present more significant threats and include: flash flooding and wildfires.

- Lightning develops as liquid and ice particles collide and discharge electrons, causing the buildup large electrical fields. Once those fields become large enough, the field 'sparks' creating a lightning strike. The insulation properties of air allow the fields to become exceptionally large before discharge. Dry lightning can also occur, increasing the potential for wildfire.
- Windstorms form from both thunderstorms and occur near a storm/low pressure edge. Strong winds form in advance of low-pressure systems, or as severe pressure gradients develop as high mountain air cools in close proximity to warmer valley air such as occurs with the Washoe Zephyrs along the eastern flank of the Sierra Nevada Mountains. FEMA considers wind speeds severe when velocities exceed 58 miles per hour.
- Tornadoes are high energy, rotating, columns of air which typically occur at the trailing edge of a very strong thunderstorm. The most violent tornadoes can produce wind speeds exceeding 250 miles per hour. Tornadoes can occur in any state, but because they are spawned by a cold air mass overriding a layer of warm air, they occur more frequently east of the Rocky Mountains.
- Hail is formed due to cyclical freezing and partial thawing as particles alternately fall and get carried back up in strong updrafts in an unstable air mass. FEMA considers a thunderstorm severe when hail exceeds ¾ inch.

- Microbursts can produce wind damage (dry or wet) and localized flooding (wet) as intense rainfall concentrates in available channels such as streets, streams, and rivers.
- Monsoonal flows usually begin to develop off the coast of Baja and come up the desert across the Sierra Nevada from the east. The moist air flowing into New Mexico and Arizona hits the mountains and begins to rise, expanding and cooling. The air temperature decreases, releasing rain. Monsoonal flows can trigger large amounts of rain leasing to an increase potential for isolated flooding. Figure 9 presents Tornadoes in and around the Portola area.

Figure 11 – History of Tornadoes in the Portola Vicinity (See Appendix 4)

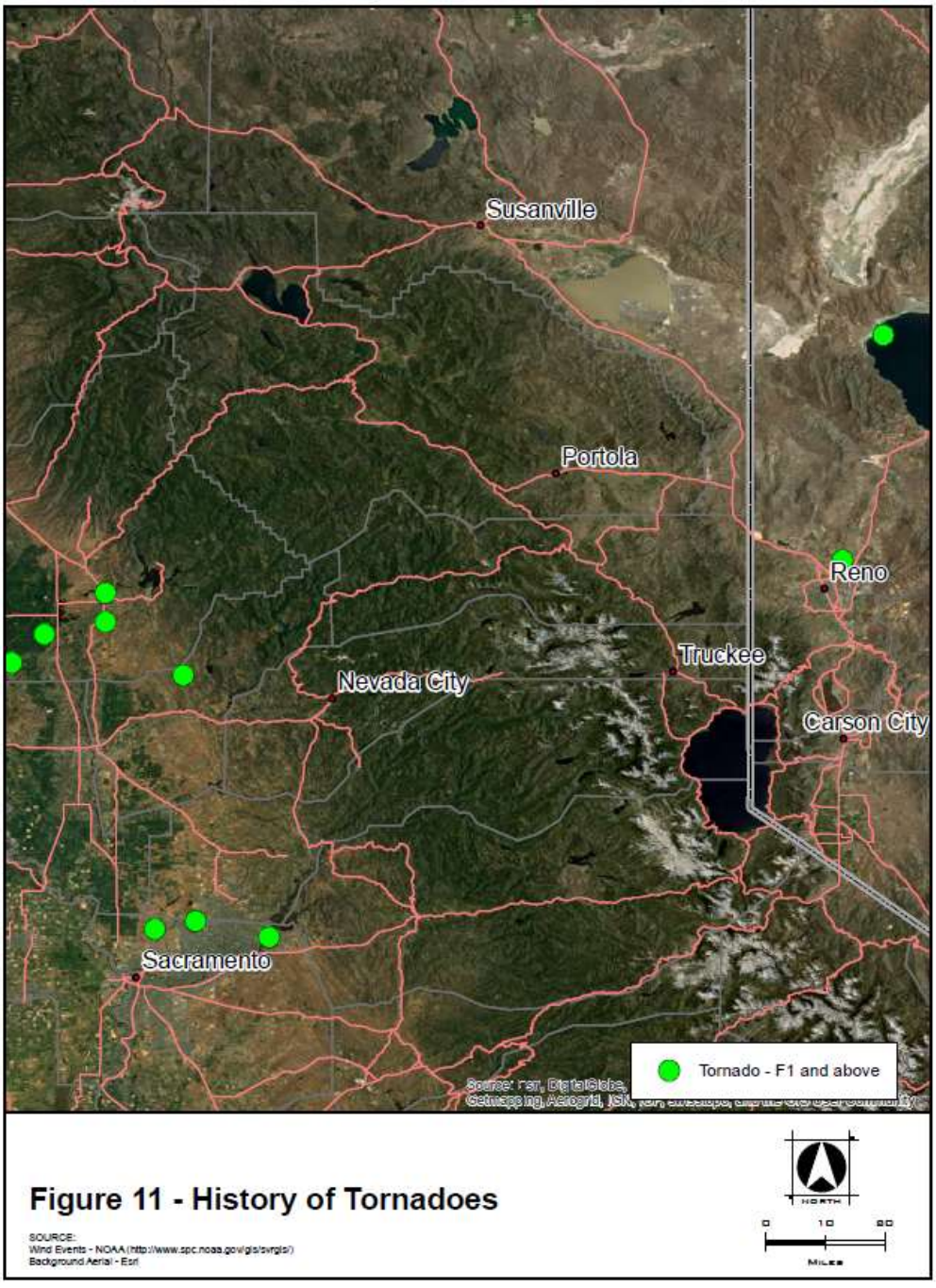


Table 5 on the following page summarizes the Beaufort Wind Scale which provides an indication to wind strength and level established for risk consideration.

Table 5 – Beaufort Wind Scale (Developed in 1805 by Sir Francis Beaufort of England)			
Force	**Wind (mph)**	**WMO Classification**	**Appearance of Wind Effects on Land**
0	Less than 1	Calm	Calm, smoke rises vertical
1	1 – 3½	Light Air	Smoke drift indicates wind direction, still wind vanes
2	4½ – 7	Light Breeze	Wind felt on face, leaves rustle, vanes begin to move
3	8 – 11½	Gentle Breeze	Leaves and small twigs constantly moving, light flags extended
4	12½ – 18	Moderate Breeze	Dust, leaves, and loose paper lifted, small tree branches move
5	20 – 24	Fresh Breeze	Small trees in leaf begin to sway
6	25 – 31	Strong Breeze	Larger tree branches moving, whistling in wires
7	32 – 38	Near Gale	Whole trees moving, resistance felt walking against wind
8	39 – 46	Gale	Twigs breaking off trees, generally impedes progress
Hazard Threshold @ 50 mph			
9	**47 – 54**	**Strong Gale**	**Slight structural damage occurs, slate blows off roofs**
10	**55 – 63**	**Storm**	**Seldom experienced on land, trees broken or uprooted, "considerable structural damage"**
11	**64 – 72**	**Violent Storm**	**Not Characterized**
12	**74+**	**Hurricane**	**Not Characterized**
http://www.spc.noaa.gov/faq/tornado/beaufort.html			

History

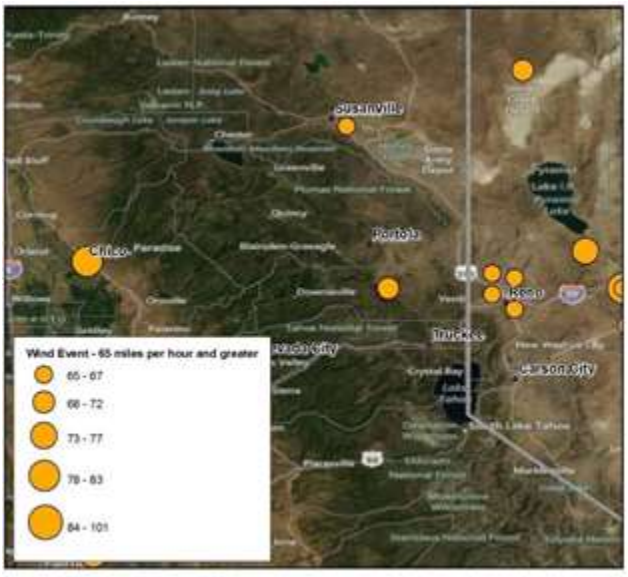
Table 6 presents historical data regarding injuries, fatalities, and property and crop damage for reported severe weather events within the County.

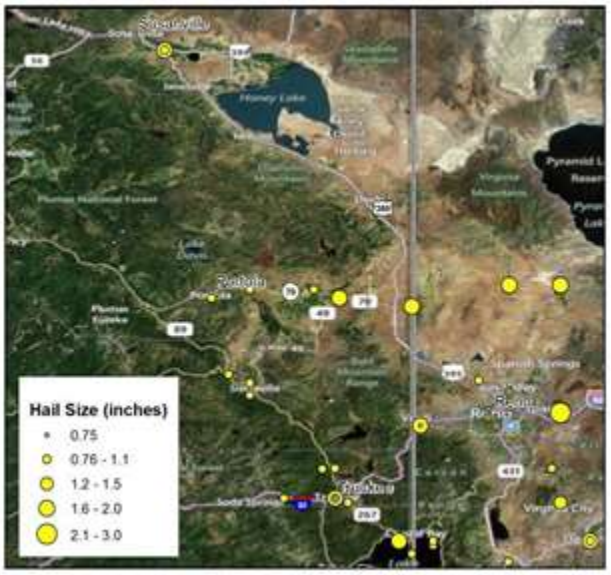
Table 6 – History of Reported Severe Weather Events						
Date	**Hazard**	**Injuries**	**Fatalities**	****Property Damage**	****Crop Damage**	**Remarks**
6/26/2000	Severe Weather	0	0	131.65	0	Hail
3/2/1962	Winter Storm	0.02	0.03	640.42	0	Hail
7/22/2003	Severe Weather	0	0	0	6,190.48	Wind, glaze, & hail
* Injuries and Fatalities reported as incidents. ** Property Damage in dollars, corrected to 2011 values.						

Moderate thunderstorms are a regular occurrence in the Plumas County region and have resulted in both injuries and deaths as reported by SHELDUS. Figures 12 & 13 present specific incidents of large hail and high winds as reported by NOAA. However, because the incidents occurred separately, the frequency of events indicated in the graphics would not be equal to the frequency of severe storm events.

Figures 12 & 13 – Occurrence of High Wind and Large Hail Events around Portola (See Appendix 4)

Ref: http://www.spc.noaa.gov/gis/svrgis/





A dry microburst occurred in the town of Quincy (approximately 26 miles northwest of Portola) on 7/11/2002. While not classified as a tornado, winds associated with the event were estimated to be at least 80 miles per hour. The microburst knocked down trees, destroyed power and phone poles, and damaged homes in a swath over two miles long. 55 homes were impacted; 17 homes were destroyed, 12 presented major damage, and 26 experienced minor damage. Portola's proximity to the Sierra ridge increases the potential occurrence of monsoonal flows as the high moist from Baja gets cooled and redirected back to the south. Monsoonal flows would more likely present a secondary hazard such as localized flooding.

Location, Extent & Probability of Future Events

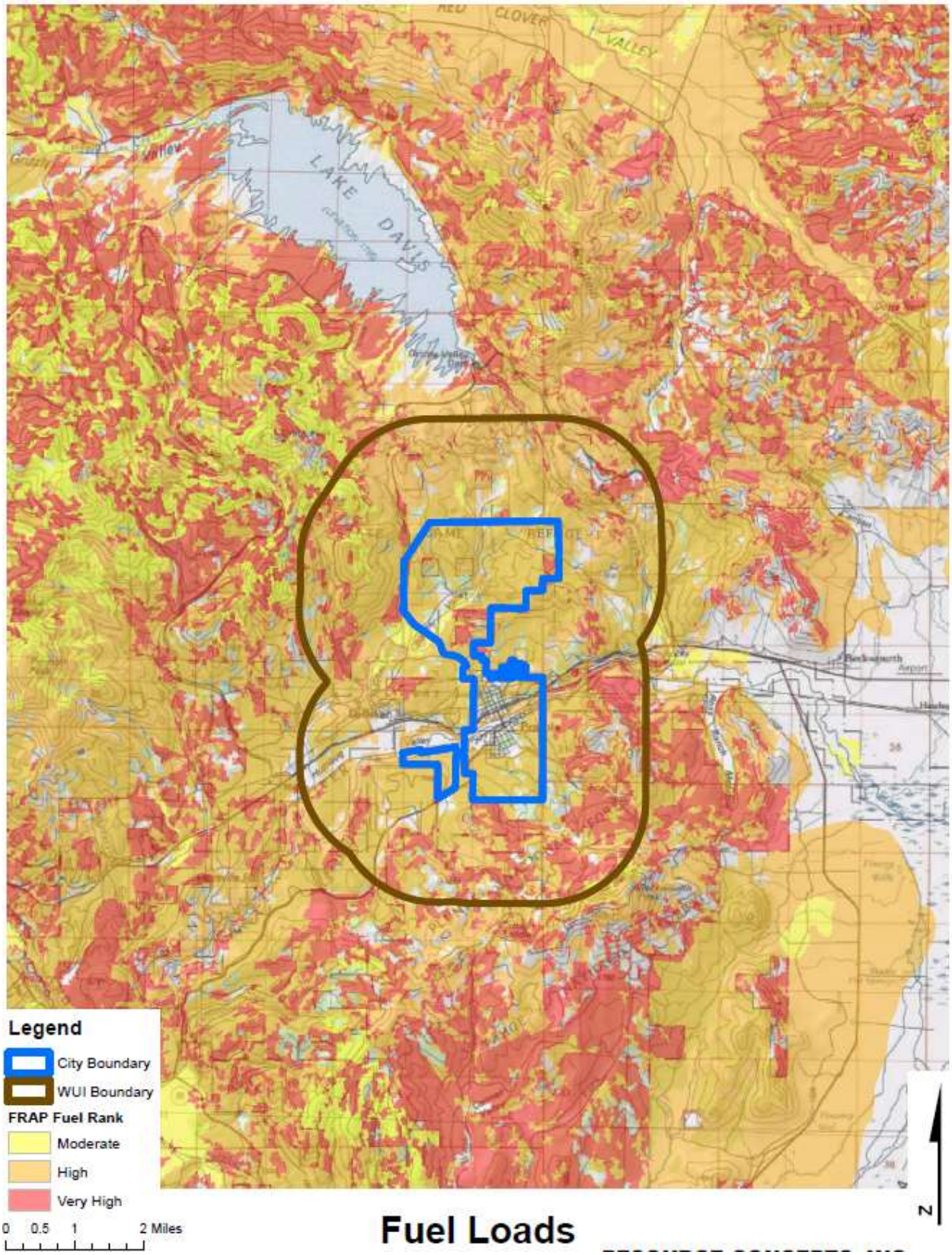
The most damaging thunderstorms in the United States typically occur in the South and Midwest where thunderstorms frequently generate tornadoes and extremely large hail. While thunderstorms, with hail, will continue to occur in the Portola area (predominantly in the spring and summer months), their intensity and magnitude infrequently approach or exceed the severe thunderstorm/high wind designation threshold. Therefore, the probability for the City of Portola to experience large hail and/or high winds (including windstorms and microbursts) would be considered low, however the potential severity would be considered moderate given the event that occurred in Quincy.

Lightning strikes present a relatively high incidence of occurrence; and a significant risk factor when considering the potential to ignite a wildfire (refer to the section on Wildfires for further discussion). Flash flooding, fueled by wet microbursts and downpours, although localized can cause extensive damage. However, the potential for an occurrence which would result in a significantly adverse impact to the overall community is low and flash floods are not considered to present a specifically identifiable risk that can be reasonably mitigated.

Wildfire

Wildfire is an uncontrolled fire that spreads through forests, and across mountains and deserts. Unfortunately, land use, weather patterns, and climate change have altered natural fire regimes. In addition, historical practices of fire suppression are now viewed to have resulted in creating forests with large fuel loads that are primed to burn. Figure 14 indicates the City of Portola is surrounded by woodlands with moderate to very high fuel loads. Vegetation type, fuel moisture values, and fuel density around a community affect the potential fire behavior. Areas with dense, continuous, vegetative fuels carry a higher hazard rating than communities situated in areas of irrigated, sparse, or non-continuous fuels. Several consecutive years of above normal precipitation can result in excessive growth and ground litter which offsets the benefits of increased precipitation by providing an additional fuel source.

Figure 14 – Fuel Loads (See Appendix 4)



In addition to local weather conditions, topographic features also influence fire behavior. Fire usually burns upslope with greater speed and with longer flame lengths than on flat areas. Fire also burns downslope, but usually burns downhill at a slower rate and with shorter flame lengths, making steeper slopes more critical. West and south facing aspects are subject to more intense solar exposure, which preheats vegetation and lowers the moisture content of fuels. Canyons, ravines, and saddles are topographical features that are prone to higher wind speeds than adjacent areas. Fires pushed by winds grow at an accelerated rate compared to fires burning in non-windy conditions. Homes built mid-slope, at the crest of slopes, or in saddles are most at risk due to wind-prone topography in the event of a wildfire.

Post fire debris flows present a unique hazard in that the conditions that are necessary for the hazard to develop have not yet impacted the community or its immediate vicinity. Once wildfires burn and scar the topography flash floods and debris flows become critical. Deforestation and destabilization of the forest floor allows even small amounts of precipitation to lead to flash floods and debris flows. Runoff becomes heavily laden with sediment and rock and flows with increased velocities and can lead to the destruction of culverts, bridges, structures, and roadways. Mud and debris flows undermine culverts and drainage facilities, cover roadways, reroute water ways, choke channels with sediments and debris, threaten municipal surface water sources.

Portola has an active history of fire ignitions within the Wildland-Urban Interface (WUI), a five-mile buffer around the City. In 1988 a lightning caused fire burned 783 acres directly south of the high school, well within the City limits. In 2008 the "Cold" fire burned approximately ten square miles about fifteen miles to the west of Portola. Figure 13 presents a graphic of fire history and ignition points for areas in and around the City of Portola.

Ignition risks fall into two general categories, lightning and human caused. Human caused ignitions that have occurred within the WUI come from a variety of sources: equipment uses, debris burning, playing with fire, arson, and campfires. As can be seen in Figure 15, next to lightning strikes, campfires and playing with fire present the greatest occurrences of ignition. Historical burn areas (red crosshatch) are also indicated in Figure 15.

Location, Extent & Probability of Future Events

The worst-case scenario wildland fire in the Portola WUI would be wind driven crown fire late in the fire season when fuel moisture is at its lowest. These conditions in combination with hot and dry weather, steep slopes, or high winds can create a situation in which the worst-case fire severity scenario can occur. The ignition source could be either a lightning strike or structure fire. Given the frequency of lightning strikes, number of human driven ignitions, and frequency of historical events, the probability of future events should be considered high.

Depending on how closely the wildfire approaches Portola, the City could have much at risk. The high school and hospital are both near the perimeter of the town and therefore somewhat more exposed. Current proposed future development for the City is also located on the outside edge of the

City, adjacent to woodland urban interfaces, increasing the fire risk. Incidental drainages and stream locations become more critical with post fire debris flows as they can serve as a main channel or conduit to funnel mud and debris to areas typically outside the stream's immediate influence area.

Winter Storm & Extreme Cold

Winter storms are relatively common in the Sierra Nevada Mountains and in the Portola area. Snow accumulations of 20 to 30 inches per event can occur. The maximum daily snowfall recorded since 1/1/1915 resulted in an accumulation of approximately 40 inches (Portola Western Regional Climate Center). Image 9 shows the effect of a notable winter event, as residents had to get out their shovels to remove snow from the rooftops.

Image 9 – Snow Removal from Rooftops on Gulling Street

Severe winter storms are classified as a blizzard if wind speeds exceed 38 mph and temperatures drop to less than 21°F. While extreme cold in the Sierras is not common, atmospheric conditions can occur which push temperatures below 0°F. Cold air outbreaks, extreme cold, have been characterized as two or more days more in which the daily mean temperature is more than 2 standard deviations below daily mean temperature for December, January, and February. Based on a crude examination of Figure 15, this would indicate two consecutive days with temperatures below 5 to 10°F. The WRCC data shows extreme low temperatures reaching -30°F, but the lowest average low is about 10°F. Winter storms and extreme cold can knock out power, immobilize travel and hamper service crews and repair vehicles, isolate residents in remote areas, and impede access to critical facilities and goods and services. Older structures, not consistent with current code requirements, can become distressed due to large snow loads.

History

Evidence or records of deaths or injuries due to winter storms or extreme cold have not been presented for the City of Portola as documented in SHELDUS. However, as indicated in Figure 15, isolated and relatively limited periods of extreme cold have occurred in the past. The average winter minimum temperature for Portola is typically between 10 and 20^{o}F. All-time record low temperatures have been reported near -30^{o}F and periods of extended temperatures below 30^{o}F have occurred. Figure 7 provides an indication as to the frequency of extreme cold events since 1915.

Location, Extent & Probability of Future Events

Because of Portola's location and elevation (4850± feet), winter storms, wintertime freezing temperatures, and windows of extreme cold are to be anticipated. Portola's limited size and

geographic setting will serve to make the impact on the community relatively uniform, although effects should be anticipated to worsen with elevation.

Heat, power, and communications can be knocked out by winter events and extreme cold. Alternate emergency energy sources, such as generators and kerosene heaters, can present a secondary hazard to the citizenry as both generate carbon monoxide. Alternative energy sources in combination with enclosed air spaces present a risk that can be more critical than cold or extreme weather. The surrounding mountains and passes will impede community access during moderate to extreme events. Extent and severity of winter storms is generally predicted several days prior to the first snowflakes falling, so ample time is available for preparation of public snow removal equipment and "stocking up" on necessities for residents.

2019 City of Portola Local Hazard Mitigation Plan Update

Climate Change Vulnerability Assessment

As California confronts mounting climate change impacts, local governments are now required, in accordance with SB 379, to include a climate change vulnerability assessment, measures to address vulnerabilities and comprehensive hazard mitigation and emergency response strategies.

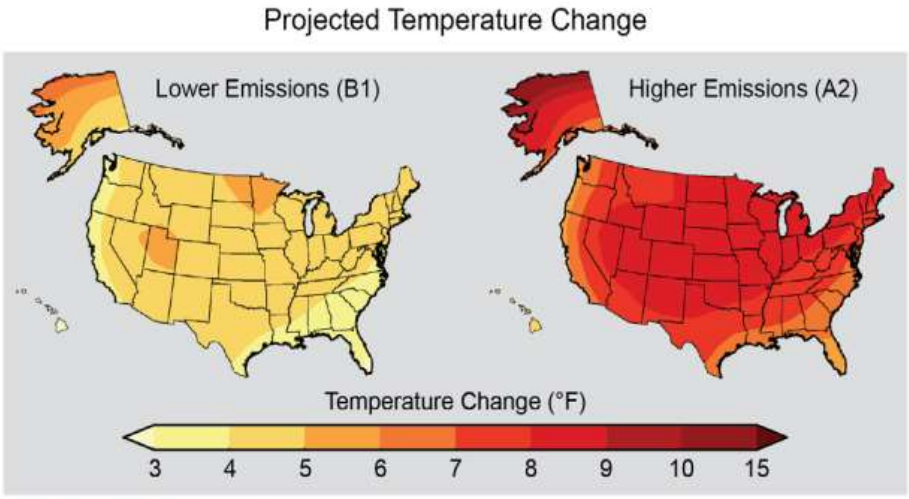
An increasingly important factor affecting disaster management functions is climate change. Climate change reflects new uncertainties and factors shaping and conditions hazard mitigation planning. The burning of fossil fuels (coal, oil, and natural gas) at escalating quantities has released vast amounts of carbon dioxide and other greenhouse gases responsible for trapping heat in the atmosphere, increasing the average temperature of the Earth. Secondary impacts include changes in precipitation patterns, the global water cycle, melting glaciers and ice caps, and rising sea levels. According to the Intergovernmental Panel on Climate Change (IPCC), climate change will "increase the likelihood of severe, pervasive and irreversible impacts for people and ecosystems" if unchecked.

California is leading the efforts in the United States in introducing legislation and providing tools and incentives to local governments to help reduce greenhouse gases emissions. The state is also taking action to prepare for the impacts of climate change, including the increased likelihood of flooding and wildfires, which are high vulnerability risks for the City of Portola.

Among the initiatives being implemented in California is Senate Bill (SB) 379 (Jackson). This bill requires cities and counties to address climate adaptation and resiliency strategies applicable to the city or county. Local officials are given an option to enact the requirements of this bill, within the update of their Local Hazard Mitigation Plans on, or after January 1, 2017. Accordingly, the following vulnerability assessment for climate change within the City of Portola will discuss the risks climate change poses, as well as the impacts to existing vulnerabilities.

According to the California Natural Resource Agency (CNRA), climate change has already had an effect on California. It is projected that the effects will continue and will be seen through changes that include increased temperatures, sea level rise, a reduced winter snowpack, altered precipitation patterns, and more frequent storm events. Considering mitigation actions to help reduce the impacts from climate change will be noted in the mitigation actions section of this plan and will consider secondary consequences of climate change including the impacts on human health and safety, economic continuity, ecosystem integrity and provision of basic services.

Figure 1 (CCVA): Projected Temperature Change- Lower and Higher Emissions Scenario



Source: National Climate Assessment

The CNRA's 2014 Climate Adaptation Strategy (CAS) delineated how climate change may impact and exacerbate natural hazards in the future, including wildfires and flooding:

- Droughts are likely to become more frequent and persistent in the 21st century.
- Intense rainfall events, periodically ones with larger than historical runoff, will continue to affect California with more frequent and/or more extensive flooding.
- Storms and snowmelt may coincide and produce higher winter runoff from the landward side, while accelerating sea-level rise will produce higher storm surges during coastal storms. Together, these changes may increase the probability of floods and levee and dam failures, along with creating issues related to salt water intrusion.
- Warmer weather, reduced snowpack, and earlier snowmelt can be expected to increase wildfire through fuel hazards and ignition risks. These changes can also increase plant moisture stress and insect populations, both of which affect forest health and reduce forest resilience to wildfires. An increase in wildfire intensity and extent will increase public safety risks, property damage, fire suppression and emergency response costs to government, watershed and water quality impacts, vegetation conversions and habitat fragmentation.

Figure 2 (CCVA): Summary of Cal-Adapt Climate Projects for the North Sierra Regions

EFFECT	RANGES
Temperature Change, 1990-2100	January increase in average temperatures: 2.5°F - 4°F by 2050 and 6°F - 7°F by 2100. The largest changes are observed in the southern part of the region. July increase in average temperatures: 4°F - 5°F by 2050 and 10°F by the end of the century, with the greatest changes in the northern part of the region. (Modeled average temperatures; high emissions scenario.)

EFFECT	RANGES
Precipitation	Precipitation decline is projected throughout the region. The amount of decrease varies from 3" to 5" by 2050 and 6" to more than 10" by 2100, with the larger rainfall reductions projected for the southern portions of the region. (CSM3 climate model; high carbon emissions scenario.)
Heat Wave	Heat waves are defined as five consecutive dates over 83°F to 97°F depending on location. By 2050, the number of heatwaves per year is expected to increase by two. A dramatic increase in annual heat waves is expected by 2100, with to 10 more per year.
Snowpack	Snowpack levels are projected to decline dramatically in many portions of the region. In southern portions of the region, a decline of nearly 15" in snowpack levels- a more than 60% drop- is projected by 2090. (CCSM3 climate model; high carbon emissions scenario.)
Wildfire Risk	Wildfire risk is projected to increase in a range of 1.1 to 10.5 times throughout the region, with the highest risks expected in the northern and southern parts of the region. (GFDL climate model; high carbon emissions scenario.)

Public Interest Energy Research, 2011. Cal-Adapt (retrieved from http://cal-adapt.org)

VULNERABILITY ASSESSMENT

The California Adaptation Planning Guide (APG) provides further input on adaptation considerations for the North Sierra Region. The North Sierra is a mountainous region that is very sparsely settled with a few cities scattered along primary transport routes. The vast majority of the regional resident reside outside of Plumas County; +/- 20,000 of the region's +/- 808,000 population live in Plumas County, with +/- 2,104 residents living in the City of Portola.

Climate change impacts that should be evaluated by communities located in the North Sierra region include the following:

- Increased temperature
- Decreased precipitation
- Reduced snowpack
- Reduced tourism
- Ecosystem change
- Sensitive species stress
- Increased wildfire

The North Sierra is rich in natural resources. It is the source for the majority of the water used by the State and home to a varied landscape supporting rich biodiversity.

In the past, this region relied on industries such as mining, timber production, and agriculture. Population growth in recent decades has shifted the region's economy to be driven by the provision of services, tourism, and second home development (Sierra Business Council, 2007). Today, the region's

economy is primarily tourism-based. Climate change has the potential to disrupt many features that characterize the region, including ecosystem health, snowpack, and the tourist economy.

The specific regional impacts outlined in the APG include the following:

Ecosystems and Biodiversity

One of the biggest threats to the ecosystems of the North Sierra is development pressure, second home development, and agriculture (including timber). While these pressures are not caused by climate change, they interact with the changes in climate to further stress ecosystems and endemic species. Climate change can cause habitats to shift, creating conditions inhospitable to these species (CDFG, 2007). As a result, plant and animal species tend to migrate either up in elevation or farther north. Development can limit opportunities for migration and also introduce non-native species, which can further damage habitat. Timber practices have also had ecosystem consequences that are exacerbated by climate change. The timber industry has resulted in forests with trees of similar age, lacking snags and underbrush. These management practices reduce the diversity of the habitat. In addition, logging road construction and fire suppression has also altered these habitats (CDFG, 2007). The most altered habitat in the Sierra is aquatic and riparian systems. The causes of this change include development and water diversion (CDFG, 2007). Changes in hydrologic flow regime and increased temperature will further stress these systems, which are home to many special-status species. *** Limited impact/severity to Portola; hazard not reviewed.*

Reduced Snowpack and Flooding

The North Sierra snowpack serves as a reservoir for the rest of the state. The climate-related decrease in snowpack therefore will have dramatic consequences on the lowland area that depends on this water. In addition, the snowpack decrease may cause the North Sierra region to experience detrimental impacts from flooding, landslide, and loss of economic base (e.g., skiing). These flood events are likely to put additional pressure on water infrastructure and increase the chance of flooding along waterways. Flooding and damage to infrastructure can put large populations at risk (CDPH, 2008). The populations at risk include the elderly and children, who are isolated or dependent on others for evacuation. Populations that lack the resources or knowledge to prepare or respond to disaster due to language barriers or economic status, including having access to transportation, which would allow them to escape, at least temporarily, flooding also may be at risk (English et al., 2007). *** Flooding has been addressed as a high severity hazard in Portola and is reviewed in the LHMP with mitigation measures.*

Wildfire

Climate change is projected to result in large increases in wildfire frequency and size which will further compound the wildfire problem. In addition, potential impacts following fires, such as heavy rains causing landslide and erosion in post-burn areas can have significant consequences on waterways and entire watersheds. Despite the fact that the ecosystems in the North Sierra have evolved with recurring fire, there is a long history of fire suppression in the North Sierra region. Recently, fire has been recognized as a critical part of ecosystem function (CDFG, 2007). The challenge is twofold: (1) a century of built-up fuel due to suppression cannot be remedied quickly, and (2) the number of structures that have been built throughout the region make it difficult to let fires burn. *** Wildfire has been addressed as a high severity hazard in Portola and is reviewed in the LHMP with mitigation measures.*

Public Health, Socioeconomic, and Equity Impact

Increased temperatures throughout the North Sierra can cause vulnerable populations to be at greater risk to these issues. In addition to the elderly population found in this region, people who work and play outdoors are also vulnerable. *** Limited impact/severity to Portola; hazard not reviewed.*

Future Development

The North Sierra region could see population fluctuations as a result of climate impacts relative to those experienced in other regions, and these fluctuations are expected to impact demand for housing and other development state and nationwide. For example, sea level rise may disrupt economic activity and housing in coastal communities, resulting in migration to inland areas. Other interior western states may experience an exodus of population due to challenges in adapting to heat even more extreme than that which is projected to occur here. While there are currently no formal studies of specific migration patterns expected to impact the City of Portola, climate-induced migration was recognized within the UNFCCC Conference of Parties Paris Agreement of 2015 and is expected to be the focus of future studies. *** Limited impact/severity to Portola; hazard not reviewed.*

Impact on Development

Research has shown the possibility for the increased demand for smaller homes that require fewer resources, use less energy, are easier to maintain and can be more readily adapted or moved in response to changing conditions related to climate change. Compact, mixed-use and infill developments that can help residents avoid long commutes and vulnerabilities associated with the transportation system will likely continue to grow in popularity. The value of open space and pressure to preserve it will likely increase, due in part to its restorative, recreational, environmental and habitat benefits but also for its ability to sequester carbon, help mitigate the accumulation of greenhouse gas in the atmosphere and slow down the global warming trend. Higher flood risks, especially if coupled with increased federal flood insurance rates, may decrease market demand for housing and other types of development in floodplains, while increased risk of wildfires may do the same for new developments in the urban-wildland interface. Flood risks may also inspire new development and building codes that elevate structures while maintaining streetscapes and neighborhood characteristics. *** Any impact from development is reviewed within each hazard.*

Stress on water resources

While the APG states that water is an issue in every region, it is particularly significant to the North Sierra. Drought, related to reduced precipitation, increased evaporation, and increased water loss from plants, is an important issue in many U.S. regions, especially in the West. Floods, water quality problems, and impacts on aquatic ecosystems and species are likely to be amplified by climate change. The ability to secure and provide water for new development requires on-going monitoring. It is recommended that the ability to provide a reliable water supply from the appropriate water purveyor, continue to be in the conditions for project approval, and such assurances shall be verified and in place prior to issuing building permits. Protecting and enhancing water supply: California's Sustainable Groundwater Management Act (SGMA) will contribute to addressing groundwater and aquifer recharge needs. Good groundwater management will provide a buffer against drought and climate change and contribute to reliable water supplies regardless of weather patterns. California depends on groundwater for a major portion of its annual water supply, and sustainable groundwater management is essential to a reliable and resilient water system. Protection of critical recharge areas should be addressed across the County in the respective Groundwater Management Plans. Further, these plans should include provisions that guide development or curtail development in areas that would harm or compromise recharge areas. *** Limited impact/severity to Portola; hazard not reviewed.*

Protecting and enhancing water supply

California's Sustainable Groundwater Management Act (SGMA) will contribute to addressing groundwater and aquifer recharge needs. Good groundwater management will provide a buffer against drought and climate change and contribute to reliable water supplies regardless of weather patterns. California depends on groundwater for a major portion of its annual water supply, and sustainable groundwater management is essential to a reliable and resilient water system. Protection of critical recharge areas should be addressed across the County in the respective Groundwater Management Plans. Further, these plans should include provisions that guide development or curtail development in areas that would harm or compromise recharge areas. *** Limited impact/severity to Portola; hazard not reviewed.*

Effects on transportation

The transportation network is vital to the North Sierra and the region's economy, safety, and quality of life. While it is widely recognized that emissions from transportation have impacts on climate change, climate will also likely have significant impacts on transportation infrastructure and operations. Examples of specific types of impacts include softening of asphalt roads and warping of railroad rails; damage to roads; flooding of roadways, rail routes, and airports from extreme events; and interruptions to flight plans due to severe weather. Climate change impacts considered in the plan include: extreme temperatures; increased precipitation, runoff and flooding; increased wildfires; and landslides. Although landslides are not a direct result of climate change, these events are expected to increase in frequency due to increased rainfall, runoff, and wildfire. These events have the potential to cause injuries or fatalities, environmental damage, property damage, infrastructure damage, and interruption of operations. During flood events, trails serve as secondary transportation facilities when roadways are blocked or otherwise impassible. Including dual or multi-purpose facilities and amenities as part of all new development provides not just desirable community amenities but critical infrastructure for climate resiliency. *** Limited impact/severity to Portola; hazard not reviewed.*

Effect on Land Uses and Planning

Development could be impacted by climate change, shifting demographics and market conditions. Demand may increase for smaller dwellings that are less resource intensive, more energy efficient, easier to maintain and can be more readily adapted or even moved in response to changing conditions. Compact, mixed-use and infill developments that can help residents avoid long commutes and vulnerabilities associated with the transportation system will likely continue to grow in popularity. The value of open space, urban greening, green infrastructure, tree canopy expansion and pressure to preserve it will likely increase, due in part to its restorative, recreational, environmental, and habitat, and physical and mental health benefits but also for its ability to sequester carbon and cool the surrounding environment. *** Limited impact/severity to Portola; hazard not reviewed.*

Effect on Utilities

Utility efforts to deal with the impacts from climate change range from emergency and risk management protocols, to new standards for infrastructure design and new resource management techniques. California is already experiencing impacts from climate change such as an increased number of wildfires, sea level rise and severe drought. Utilities are just beginning to build additional resilience and redundancy into their infrastructure investments from a climate adaptation perspective but have been doing so from an overall safety and reliability perspective for decades. Significant efforts are also being made in those areas that overlap with climate change mitigation such as diversification of resources, specifically the addition of more renewables to the portfolio mix, as well as implementation

of demand response efforts to curb peak demand. Efforts are also under way to upgrade the distribution grid infrastructure, which should add significant resilience to the grid as well. Next, a guidance document may expand upon the vulnerability assessments phase and includes plans for resilience solutions including cost/benefit analysis methodologies. The outcomes of this work will help to inform next steps on how infrastructure, the grid and other related operations will be modified to address climate change. New development will have to adapt and incorporate these new approaches as they evolve. Existing and new development will be affected from impacts that includes not only diminished capacity from all of the utility assets from generation to transmission and distribution, but also the cost consequences resulting from prevention, replacement, outage, and energy loss. These have the potential for greatly impacting not just residential development but commercial and industrial and all utility users. *** Limited impact/severity to Portola; hazard not reviewed.*

Past Occurrences

Disaster Declaration History: Climate change has never been directly linked to any declared disasters.

Likelihood of Future Occurrence

Likely – Climate change is virtually certain to continue without immediate and effective action. According to NASA, 2016 was on track to be the hottest year on record, and 15 of the 17 hottest years have occurred since 2000. Without action to reduce greenhouse gas emissions, the Intergovernmental Panel on Climate Change (IPCC) concludes in its Fifth Assessment Synthesis Report (2014) that average global temperatures are likely to exceed 1.5 C by the end of the 21st century, with consequences for people, assets, economies and ecosystems, including risks from heat stress, storms and extreme precipitation, inland and coastal flooding, landslides, air pollution, drought, water scarcity, sea level rise and storm surges.

RESILIENCY AND ADAPTATION STRATEGIES

Strategy	Description
1 Open Burning Ban	Reduced risk of escaped burns. Less GHG released to the air eliminating the burning of natural vegetation. Implemented by the end of 2019.
2 Wood Stove Changeout Program	Reduced GHG emissions released to the air due to more efficient burning in wood stoves. Less wood cut, less wood burned. Total of 600+ stoves. Additionally, fire risk is reduced by replacing degraded chimney pipe with code compliant pipe.
3 Reduce the risk of utility infrastructure starting wildfires in response to extreme weather	The City will support Liberty Utility in its efforts to reduce the risk of utility infrastructure starting wildfires. Liberty Utilities Emergency Management Plan is being rewritten to include de-energization events (shutting off power to the power lines in the affected area). De-energization can be a time-consuming process. De-energization events require specific emergency planning in order to minimize their impact on the community, and will be included in Portola's Emergency Plan.

Strategy	Description
4 Incorporate climate change adaptation into relevant local and regional plans and projects.	This is a long term goal that will help ensure that climate change adaption will become a standard consideration in local planning decisions. This long-term goal seeks to have consideration of projected climate impacts and potential consequence included in all relevant local policy. This can be achieved by bringing all other local plans into agreement with this Climate Change Vulnerability Assessment.
5 Establish a climate change adaptation public outreach and education program.	Long-term implementation of climate change adaptation requires community support. This support is only possible if the potential consequences of climate change are understood. A public outreach and community education program will seek to raise public awareness of the potential threats of climate change and the community benefits of acting. Emphasis will be placed on the tangible outcomes projected for a community, such as public safety (flooding and wildfire).
6 Build collaborative relationships between regional entities and neighboring communities to promote complementary adaptation strategy development and regional approaches.	Many climate change impacts have spatial extents that go beyond political boundaries are likely best addressed in collaboration with neighboring jurisdictions to ensure not only that the impacts are addressed efficiently, but also that actions taken in each community are complementary. Collaborative relationships will be facilitated between the City of Portola and Plumas County, the Plumas County Transportation Commission, and Northern Sierra Air Quality Management District.
7 Refine emergency preparedness and response to address health impacts.	The City will work to incorporate climate change risks into existing emergency preparedness plans and design and to augment preparedness measures for events likely to increase with climate change (e.g., heat waves, wildfires, floods). The city can ensure completeness and availability of identified emergency supplies and resources, including but not limited to items such as water main repair parts, generators, pumps, sandbags, road clearing, medical supplies and services, and communication facilities. The effort will include identifying and cataloging the current supply and procuring additional items and services to ensure preparedness in the event of a climate-related emergency.
8 Implement National Flood Insurance Program (NFIP) activities to minimize and avoid development in flood hazard areas.	The City uses Federal Insurance Rate Map (FIRM) data for the 100-year floodplain (area with 1 percent annual flood recurrence risk) as a source for determining general plan policies and zoning patterns and participates in the Community Rating Service system, which reduces rates for flood insurance purchasers.
9 Restore existing flood control and riparian corridors.	The City will continue to evaluate flooding potential, monitor and improve natural conditions to improve flood flow, reduce erosion, improve habitat, and protect adjacent neighborhoods. There is an additional benefit of expanding active recreation areas.

Strategy	Description
10 Implement general plan safety elements through zoning and subdivisions practices that restrict development in floodplains and landslide hazard areas.	This strategy includes a combination of a variety of commonly used zoning and subdivision practices, including: (1) restricting allowable residential densities in hazardous areas, reducing the potential number of structures at risk; (2) clustering development or setting it back from flood hazard areas to reduce exposure; (3) transferring allowable density from hazardous sites to safer areas; (4) adopting slope-density formulas limiting the number of dwellings on hillsides subject to slippage or subsidence; (5) modifying proposed parcel boundaries and street locations to avoid hazardous areas; and (6) requiring multiple ingress and egress points for emergency access and evacuation.
11 Develop, adopt, and implement integrated plans for mitigating wildfire impacts in wildland-urban interface (WUI) areas.	The City of Portola continues to ensure that the Local Hazard Mitigation Plan, Community Wildfire Protection Plan, and General Plan Safety Element and associated documents continue to be implemented and integrated. Such plans provide a policy and programmatic foundation for hazard mitigation actions, such as adjusting construction, land use, and fuel management practices to reduce fire spread in existing and new development in WUI areas.
12 Manage fuel load through thinning and brush removal.	Past fire suppression practices have resulted in increased fuel load. Thinning and brush removal are approaches to reducing this load and associated fire risk. Thinning can vary in scale and intensity; the City's thinning activities have included mechanical thinning, hand thinning, and brush removal. The City has collaborated with the Fire Wise Council, CAL FIRE, and other local entities to identify high fire risk and high value areas.

Hazard Profile Summary

Based on the hazards as profiled, Table 7 presents our anticipated extent, impact, and probability of occurrence for those hazards. It should be noted that the stated probability is a qualitative assessment roughly characterized as:

- Unlikely – Not likely to occur within the next 50 years when considering standard recurrence intervals for the stated hazard or based on historical frequency.
- Likely – Likely to occur within the next 50 years when considering standard recurrence intervals for the stated hazard or based historical frequency.
- Very Likely – Likely to occur within the next 10 years when considering standard recurrence intervals for the stated hazard or based on historical frequency.

Table 7 – Identified Hazard Summary

Hazard	Extent	Impacts	Probability
Dam Failure	California DWR – Dept. of Safety of Dams	Community Wide Contact CaDWR	Unlikely Contact CaDWR
Debris Flow (Post Fire)	Independent Study Required after Wildfire Event	---	---
Earthquake Surface Rupture Strong Ground Motion Liquefaction Lateral Spreading	PGA > 0.02g	Community Wide None Community Wide Floodplain + Floodplain Margins	Very Likely Unlikely Very Likely Likely Likely
Extreme Heat	Heat Index >105°F predicted for more than 2 days.	Medium	Unlikely
Flood	FEMA 100 Year Flood Zone	Medium	Likely to Very Likely
Severe Weather Hail Lightning Microbursts Thunderstorms Tornadoes Windstorms Monsoonal Flow	 > ¾" Diameter No Threshold Established Straight line wind speed >85 mph Severe, wind>58 mph & hail>¾" Wind speed > 85 mph Wind > 58 mph (50 knots) Extensive Rain	 Community Wide Community Wide Community Wide Community Wide Community Wide Community Wide Community Wide	 Likely Very Likely Unlikely Very Likely Unlikely Very Likely Likely
Wildfire	Moderate	Community Wide	Very Likely
Winter Storms & Extreme Cold	Definition for Cold Air Outbreak	Community Wide	Very Likely

Vulnerability

In summary, the following hazards have been characterized for the community: earthquake, extreme heat, flood, severe weather, wildfire, and winter storms and extreme cold. Hazus (Hazards United States) was used in formulation of our vulnerability analyses. Hazus is a nationally accepted standardized computer method that models potential loss from earthquakes, floods, and hurricanes. Hazus graphically shows the limits of high risk locations which allows communities to visualize and understand spatial relationships between their citizens, physical community assets, and hazard impact; it essentially highlights and helps prioritize areas of concern.

For the purposes of this LHMP, we selected Hazus to evaluate earthquake hazards on a Census Tract basis. The City of Portola is in Tract 060630003000, which is significantly larger than the City limits; however, because development outside the City limits proper is fairly limited, financial risk should not be significantly skewed. The total number and value of structures exposed were taken directly from the 2010 census data (County Assessors' records do not contain data regarding structure count or value.).

The following matrix (Table 8) presents those hazards and identifies structures, improvements, and community features which may be adversely impacted by those hazards. For many of the hazards listed in Table 8, it is impossible to determine the specific impacts to the listed vulnerable elements. For example, impacts of debris flow, earthquake, severe weather and winter storm cannot be predicted with the accuracy necessary to determine the specific features that are most likely to be impacted. However, for hazards with defined boundaries, potential impacts to distinct features, like critical facilities, can be predicted. For flood inundation, FEMA provides a boundary for the 100-year flood, and it is a simple matter of intersecting the critical facilities with the 100-year flood zone. According to this analysis, the Veterans Memorial Hall and the Waste Water Treatment Facility have the potential to be impacted by flood. A similar analysis was completed for wildfire impacts using the CalFire high/very high fire hazard classes, and the following essential facilities are within that zone: Portola Hospital, Portola City Hall, Gulling Street Bridge, Portola Water Treatment Center, Portola High School, Portola Elementary School, Superior Court of California, Veterans Memorial Hall, Waste Water Treatment Facility and Williams House. Wildfire has the potential to cause the greatest impact to both "economic elements" and "historic, cultural and natural resource areas" because the City of Portola depends largely on "historic, cultural and natural resource areas" for economic sustainability. These elements include the rural mountain atmosphere (fresh air, big trees, hiking trails and wildlife), Lake Davis for outdoor recreation, and other historic monuments scattered within the City of Portola, all of which would be severely impacted by a major wildfire.

Table 8 – Vulnerability Matrix & Structure Impact BS – Building Stock, CF – Critical Facility, TS – Transportation System, LUS – Lifeline Utility Systems, EE – Economic Elements. HCNRA – Historic, Cultural, and Natural Resource Areas	
Hazard & Vulnerability Methodology	**Vulnerability Inventory**
Dam Failure	BS, TS (Gulling Bridge), LUS, HCNRA
Earthquake (Hazus)	**BS, CF, TS (Gulling Bridge), LUS, HCNRA**
Extreme Heat	LUS
Flood (Hazus, 100 Year)	**BS, CF, TS (Gulling Bridge, Railroad), LUS, HCNRA**
Severe Weather	BS, CF, TS, LUS, HCNRA
Wildfire (Threat Area, CalFire)	**BS, CF, TS, LUS, EE, HCNRA**
Winter Storms & Extreme Cold	CF, TS, LUS

Estimated numbers of residential and nonresidential buildings and replacement values for those structures, as shown in Table 9, were obtained from the U.S. Census, the City, and Hazus- MH by census block. A total of 1,134 residential and mixed use buildings were considered in this analysis, including single-family dwellings, mobile homes, multifamily dwellings, temporary lodgings, institutional dormitory facilities, and nursing homes. A total of 87 nonresidential buildings were also analyzed, including industrial, retail trade, wholesale trade, personal and repair services, professional and technical services, banks, medical offices, religious centers, entertainment and recreational facilities and theaters. Specific electronic data, available for inclusion into the Hazus model, is very limited and therefore a Level 1 analysis was performed using the data included with the Hazus software package. Should more detailed analyses be desired, building configuration, building value, and elevation data will be required.

Table 9 – Population & Structure Distribution and Values				
Population (2010 Census)	**Residential / Mixed Use Buildings**		**Nonresidential Buildings**	
	Total Buildings	**Value (millions)**	**Total Buildings**	**Value (millions)**
2,104	1,134	48,355	87	28,375

When considering earthquake damage, impacted buildings were assumed to have sustained moderate, extensive or complete damage based on the following rubric and the knowledge that

the bulk of the structures within the City were not designed, built, or retrofitted to meet current building codes:

- Brick structures, mostly residential with some commercial – complete damage
- Masonry building and older concrete structures with large spans and open bays - extensive damage
- Wood framed structures, mostly residential with some commercial – moderate damage

When considering liquefaction and lateral spreading, the number of potential structures that could be impacted has been reduced to 10% of the predicted due to variability in how the hazards are manifested within the delineated zones.

Table 10 presents a summary of impacted structures, residential and non-residential, as it relates to prospective hazards in their specific hazard zones. Table 10 also indicates the methodology employed for the assessment of the specific threat. For estimating losses from a wildfire, areas of high hazard areas for wildfire were developed using GIS mapping, field visits and onsite communication with firefighting personnel. The high hazard areas were overlaid on the City parcel map and those parcels which fall within the high hazard area were analyzed for loss.

Table 10 – Impacted Structure Count vs. Hazard

Hazard	Methodology	Residential	Non-Residential
Earthquake	Hazus	85**	10**
Flood	Hazus – 100-year	60***	22***
Fire*	Threat area	1369	129

*Values for fire hazard are based on CalFire Hazard Zones and methodologies described herein.

**High hazard areas for liquefaction are based on potentially liquefiable zones as established and characterized by the California Division of Mines and Geology.

***Hazus considers all structures within the Census block for flooding in lieu of actual structure impacted.

As previously discussed, analysis and risk assessment associated with failure of the Grizzly Valley Dam must be obtained via the California Department of Water Resources, Department of Safety of Dams. The potential for post fire debris flows must be assessed after the occurrence of the event.

The remaining identified hazards, Extreme Heat, Severe Weather, and Winter Storms & Extreme Cold, present risks that are typically greater to human life and comfort than to structures. Fortunately, these hazards are somewhat foreseeable and can allow for the community to respond to and plan for their potential impact. Severe weather, such as microbursts, can adversely impact structures but the extent is typically isolated and so random it renders further planning or establishing a specific course of action moot.

Residential properties make up the bulk of the exposed personal property value within the City. Community property such as roads, bridges, schools and hospitals also present a significant asset

value. Table 11 below presents the estimated value of development in hazard areas when considering earthquake, flood, and fire. The disproportionate level of risk as related to various hazards is also highlighted by Table 11.

Table 11 - Estimated Value of Development in High Hazard Areas by Building Type

	All Event Max	Earthquake**	100-year flood	Fire*
Total Value	170,384 (1453)	170,269 (1453)	31,490 (79)	183,600 (1369)
Residential	124,700	124,585	21,290	137,551
Commercial	32,485	32,485	6,853	20,561
Industrial/Other	13,199	13,199	3,347	25,488

*Values for fire hazard are based on CalFire Hazard Zones

**High hazard areas for liquefaction are based on potentially liquefiable zones as established and characterized by the California Division of Mines and Geology. When considering liquefaction, reduce number of units to 10% of count provided.

***Numbers in ( ) indicate total number of structures in hazard zone.

****Value in millions

The vulnerability estimates provided herein use currently available data and methodologies. Methodologies employed result in and assume an approximation of risk. Uncertainties are inherent due to incomplete scientific knowledge regarding the identified hazards and their potential effects on structures and improvements. These uncertainties are compounded due to the simplifications necessary to develop community wide analyses.

Note that analyses address only buildings and physical improvements and assigns qualitative assessments. Loss of life projections have not been considered or projected in formulation of this Plan.

NFIP Repetitive Damage to Structures

Within the City of Portola there are 7 properties in the NFIP, which enforces approximately $1.5 million in coverage. To date, there have been 3 paid losses totaling approximately $38,000. Repetitive loss properties have two or more losses of at least $1,000 each. There are currently no repetitive loss structures. Given the magnitude of the payment spread over the number of houses, it is unlikely all 3 received improvements that would completely mitigate the potential for future flooding. There are no severe repetitive loss properties in the community (FEMA, https://isource.fema.gov/cis/insurance).

ELEMENT C - MITIGATION STRATEGY

Mitigation strategy development establishes how to reduce or eliminate the loss of life or property damage as a result of naturally occurring hazard. Armed with the knowledge and understanding of the hazards, potential risks, and identified vulnerabilities, the City of Portola can examine various methods to avoid, minimize, or safely deal with the impacts of these hazards. The Mitigation Process considers the risks identified in this plan and moves toward implementing strategies and developing action plans that will reduce or hopefully eliminate the community's exposure to specific hazards.

The Mitigation process is categorized into the following four basic components:

- Assess community resources, i.e. community assets and abilities available to facilitate this Plan;
- Identify goals and objectives, i.e. provide vision and direction on where community wants to be;
- Develop mitigation strategies that move the City toward the established goals;
- Prioritize key ideas and begin to implement the crucial strategies through various action items;

Community Resource Assessment

The Resource Assessment is broken down into the following distinct components:

1. Review of legal and regulatory capabilities, including ordinances, codes, and plans needed to address hazard mitigation activities.
2. Description of the administrative and technical capabilities available to the agency.
3. An analysis of the City's fiscal capability and financial resources to implement proposed mitigation strategies.
4. Review of the physical assets available to the community in the event of an emergency.

Legal and Regulatory Resources

The City's applicable Municipal Code, Housing Element, and other regulatory development guidelines provide specific support to hazard mitigation activities within the communities. This includes the General Plan with its Land Use, Development Guidelines, Floodplain management ordinances, and the Safety Element, which provide additional authority for the City of Portola to regulate and support many mitigation strategies.

Administrative and Technical Resources

The City has a small but experienced and competent administrative and technical staff in place to help facilitate the mitigation strategies identified for the community; however, the City's staff is very small with few full time and limited part time City staff employees. This requires the City worker to prioritize various tasks and focus on the most pressing items and needs for the City. Due to the

limited time and resources available to the staff it will be necessary to provide additional support to effectively implement the full extent of the mitigation plan and to reach the goals the City has outlined to accomplish.

Financial Resources

Funding is a vital aspect in order to achieve the goals and objectives of the Mitigation Strategy. The following funding sources could be utilized in assisting the City to with various mitigation measures:

- Federal and State Entitlements
- Federal and State Grants,
- City's General Fund
- Sales and Property Taxes
- Infrastructure User Fees
- Impact Fees
- New Development Impact Fees
- Private Sector Grants and Funding to provide matching funds to Government grants.

The City has many of the necessary budgetary tools and practices in place to facilitate handling appropriate funds, however, funding sources are very limited. A summary of potential grant sources is presented in Appendix 5. We also anticipate administrative grants will be necessary to provide the community the support necessary to implement, maintain, and develop this LHMP. Concrete mitigation strategies will likely require support in the form of grants and/or matching funds. The community finance and administrative structure will be strained under the demands of implementing and monitoring many of the hazard mitigation items identified in this plan. However, the City is ready to step forward and provide what services it can as well as develop innovative ways to cost-effectively provide education and ancillary support activities.

Physical Resources

State Highway 70 will provide ready ingress and egress to the community. Fire is the only identified hazard that can present a direct identified risk to this highway. When not considering fire, it is anticipated that even with a significant event of any of the other remaining hazards, the majority of local roads can remain open to provide access. Heavy equipment belonging to the Public Works Department can be used to clear roads and properties as necessary.

In addition, two fire houses, and a volunteer force provide the City with fire prevention and suppression services. The City of Portola has a mutual aid agreement in place with the US Forest Service and other fire districts in eastern Plumas County.

Portions of the City's water supply could become compromised during a flood or seismic event. Water demand during a wildfire could also compromise the system. However, because the system relies on three separate water sources (two wells, and the Lake Davis Water Treatment Facility), the potential for a complete service failure of the system is significantly reduced.

The sewer treatment facility lies within the flood plain and could become compromised during a 100-year flood event.

Assuming the hospital, fire stations and sheriff station comply with current code and seismic retrofit standards, these critical facilities should be available during and after a hazard event. The EOS approved evacuation centers should be evaluated for potential hazard impact and priority modified as necessary for different events.

Eastern Plumas Health Care Hospital is currently in the process of retrofitting the Boiler Plant Building to be SPC 2 compliant. The project has an anticipated completion date of 12/31/2014. This action is a hazard mitigation measure.

The nearby hospitals in Loyalton and Quincy can help service the community in the event the Eastern Plumas District Hospital becomes compromised or overloaded. Additional planning is needed at the City and county levels to identify and coordinate with ancillary health facilities in the region, including: pharmacies, doctor and dentist offices, business facilities that sell hearing aids and eye glasses, dialysis centers, and urgent care clinics. Currently state law does not require these ancillary facilities to be in structurally sound buildings, or that they have business continuity plans.

While hospitals are licensed by the State, ancillary facilities obtain their building permits and business licenses from local municipalities and counties, ensuring that this effort remains local. Therefore, there is a critical need for coordination of business recovery planning between City government, facility operators, and owners.

Schools are critical to community recovery following an earthquake or other major disaster. While the principal mission of a school, prior to a disaster, is education – the school's mission becomes more complex after a disaster hit. The City and community rely on schools to: shelter those displaced from their homes, to serve as conduits for information and supplies to parents and others in the community, including post- disaster information.

Portola Junior/Senior High School is located south of the Middle Fork of the Feather River and maintains ready access to the Eastern Plumas Health Care Hospital during and after a hazard event. The Carmichael Elementary School however is located north of the river and hospital access would be limited to helicopter in the event the Gulling Street Bridge became compromised. As previously discussed, following the designated evacuation route would result in a travel distance approximately equal to heading to hospitals in Loyalton or Quincy.

NFIP Compliance

The National Flood Insurance Program (NFIP) offers flood insurance to homeowners, renters, and business owners for communities that participate. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding. Due to the flood hazards in and around the City, an emphasis has been placed on continued compliance with the NFIP.

Participating communities must adhere to the following to be part of the NFIP:

- Issue/deny floodplain development and/or building permits based on NFIP or stricter requirements by enforcing the latest NFIP Maps and Data, requiring permits for all development in the Special Flood Hazard Areas, and requiring that all development not increase the flood hazard on other properties.
- Inspect all development to assure compliance with the local ordinance (which must meet or exceed NFIP requirements).
- Maintain all records of floodplain development which requires that all new, substantially improved or substantially damaged buildings be protected from damage by the base flood. This includes reduced exposure to flood damage to all public utilities and facilities such as sewer, water, gas and electrical systems. Sewer systems should minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters and locate onsite waste disposal systems to avoid impairment to them or contamination during flooding.
- Assist residents and businesses obtain information on flood hazards, floodplain map data, flood insurance and proper construction methods.

In addition, the community also agrees to work with FEMA in the following ways:

- Assist the FEMA Administrator to delineate the regulatory floodplain.
- Provide information concerning uses and occupancy of the regulatory floodplain.
- Maintain for public inspection and furnish upon request, for the determination of applicable flood insurance risk premium rates within all areas having special flood hazards, elevation and flood proofing records on new construction.
- Cooperate with agencies and firms which undertake to study, survey, map, and identify flood plain areas and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent aggravation of existing hazards. If riverine watercourses are to be altered, notify adjacent communities and the Sate Coordinating Office prior to any alteration and assure that the flood carrying capacity within the altered or relocated portion of any watercourse is maintained.
- Notify the FEMA administrator whenever the boundaries of the community have been modified by annexation or the community has otherwise assumed or no longer has the authority to adopt and enforce floodplain management regulations for a particular area.

The City's Floodplain Ordinance, Chapter 17.47 of the Portola, California Municipal Code, identifies each of these conditions/requirements and provides a means of enforcement. The City has an appointed Floodplain Administrator, who is ultimately responsible for granting or denying development, managing updates to damaged buildings, inspection, and agency notification.

FEMA Floodplain mapping for the City of Portola was originally done in 1985 and updated in 2005. The city mapping currently has base flood elevations mapped though the City along the Middle Fork Feather River in almost all developed areas. Development along the river has been minimal since 2005, however if new development occurs along the floodplain, updated mapping through map

revisions is required by the developer in order to ensure that the City and the development meets all NFIP standards.

Currently the City does not have an official assistance programs in place to help mitigate those within the floodplain however for those that inquire about assistance, the City will help by provide information on how to better flood protect their property and inform them of other state and federal programs that may be available.

Mitigation Goals and Objectives

Team members reviewed the previous sections of this document, including the hazard profiles and risk assessment results in order to develop the mitigation goals and objectives contained in this section. Mitigation goals are general guidelines that define what a community wants to achieve in terms of hazard and loss prevention. Goal statements are policy-oriented statements representing community-wide visions to be achieved in the long term. Objectives detail how a community's goals will be achieved. The identified goals are generally met by first defining strategies or implementation steps. Then using the Communities assessed hazards, City of Portola General Plan 2020 as a guideline, the Hazard Mitigation Team developed a number of goals with associated objectives to reduce or avoid long-term vulnerabilities to the identified hazards.

Four Goals have been established for the City of Portola.

1. Increase public awareness of potential natural hazards and self-reliant mitigation actions.
2. Reduce risk of loss of life/injuries due to natural hazards
3. Reduce risk of loss to property, both public and private
4. Maintain and increase funding for natural disaster preparedness, planning and response

Once the community and Hazard Mitigation Team developed the goals for the City, objectives were discussed and compiled. Focus was given to items that would provide the best benefit to the City, which still could be accomplished with the assets, financial means and other resources available.

Potential Mitigation Items

Potential mitigation strategies have also been identified by the HMT in order to assist the City in mitigating the impact of the previously identified natural hazards. Mitigation strategies are defined as activities, measures, or projects that help achieve the goals and objectives of a mitigation plan. Mitigation strategies can generally be grouped into six broad categories: prevention, property protection, public education and awareness, natural resource protection, emergency services, and structural projects. Mitigation ideas are specifically presented in the Prioritizing and Implementing Potential Mitigation Strategies and Action Items section of this Plan.

The Hazard Mitigation Team reviewed the City's General Plan Safety Element as a basis for developing potential mitigation strategies. In addition, particular emphasis was placed on actions that reduced the effects of the identified hazards on all existing and future buildings and infrastructure. The hospital is currently undergoing improvements to bring it to required standards.

Studies have been performed on the Gulling Street Bridge and additional work may or may not be required. Steps should be taken to ascertain our schools are also consistent with the requirements of current codes.

Some mitigation strategies have already been implemented and have actively involved the public. The City of Portola has met the certification requirements of the Federal Emergency Management Administration (FEMA), in order to obtain flood insurance for its residents. It should be considered whether it would be beneficial to become Community Rating System (CRS) compliant. CRS is the part of the NFIP program which provides incentives through reduced insurance premiums for communities that take proactive steps to further mitigate potential flood hazards beyond NFIP base requirements. FEMA has approved communities for CRS even with limited properties still within the floodplain (City of Tehama, CA).

Prioritizing and Implementing Potential Mitigation Strategies and Action Items

Proposed mitigation strategies were evaluated using the following questions in order to more accurately assess and identify the mitigation strategies that would allow the City to meet its mitigation goals, that is reducing or eliminating vulnerabilities to the identified hazards.

- Does the strategy mitigate assets identified as vulnerable in the LHMP's Risk Assessment?
- Is the strategy economically feasible (either through a grant or current funding sources)?
- Are proper laws, ordinances, and resolutions in place to implement the strategy?
- Is political and public support enough to implement the strategy and ensure its success?

This process assisted the Hazard Mitigation Team in identifying mitigation strategies to be included in the LHMP action plan. Once identified, the Hazard Mitigation Team prioritized the strategies based on a ranking system of high, medium, and low. The rankings were evaluated based on:

- Available resources (Staff, Financial, and Infrastructure)
- Ease of implementation;
- Multi-objective strategies;
- Time to implement; and
- Benefits vs. Costs – BCA will need to be performed for the more complicated mitigation items. These items will typically require a comprehensive study to evaluate potential mitigation strategies for identified deficiencies. These type items are typically more costly and additional funding will be required. FEMA BCA evaluation tools will be required when submitting for FEMA funded grants. Additionally, the Hazard Mitigation Team identified how the strategy will be implemented and administered, including the responsible departments or, existing and potential funding sources, and time frame.

Listed below are specific hazard mitigation goals and objectives with possible supporting strategies. For each goal, one or more objectives have been identified that provide strategies to attain the goal. Where appropriate, the City has identified a range of specific strategies to achieve the objective and goal.

Goal 1. Increase public awareness of potential natural hazards and self-reliant mitigation actions.

Priority: Medium

Responsible Agency: City of Portola

Supporting Agency: Plumas Unified School District

Hazards are identified in the Hazard Mitigation Implementation Worksheets (Appendix 3)

Objective 1.1 Involve the public in disaster planning and promote individual mitigation and preparedness measures.

Strategy 1.1.1 Educate public about potential hazards and high hazard areas within the community in the event of a natural disaster.

Strategy 1.12 Encourage property owners to actively participate in education programs, access resources, and develop personal mitigation measures as they relate to natural hazards specific to the community and personal property.

Strategy 1.1.3 Provide online access to awareness / protection materials relevant to City of Portola residents.

Strategy 1.1.4 Educate the public on the Citywide Emergency Evacuation Plan and Emergency Action Plan.

Strategy 1.1.5 Educate the public on living with fire and fire safe requirements in the General Plan Safety Element and the Wildfire Protection Plan.

Strategy 1.1.6 Create a public notification plan to provide a means to educate, inform, and alert the community regarding changes in hazard identification, occurrence, and mitigation processes and options.

Strategy 1.1.7 Maintain an outreach protocol with the American Red Cross.

Goal 2. Reduce risk of loss of life/injuries due to natural hazards

Priority: High

Responsible Agency: City of Portola

Supporting Agency: Plumas County Sheriff Department (Portola), City of Portola Fire Volunteer Department, Army Corps of Engineers, California Department of Water Resources Division of Safety of Dams, US Forest Service, Plumas County Fire Departments

Hazards are identified in the Hazard Mitigation Implementation Worksheets (Appendix 3)

Objective 2.1 Establish Public Community Warning system in the event of a natural disaster.

Strategy 2.1.1 Provide hazard warning and forecasting information to City residents.

Strategy 2.1.2 Establish a rapid communication system for the community in the event of a natural disaster (Television, Radio, Emergency alert, & Local Citizen Network with Low Watt Transmitters)

Strategy 2.1.3 Actively participate in the development of Plumas County's Safety Element to ascertain Portola's concerns are addressed.

Objective 2.2 Reduce possibility of injury or loss of life due to flooding

Strategy 2.2.1 Coordinate with the California Department of Water Resources (Dam Safety Division) for mitigation measures within the community as a result of a dam failure inundation.

Strategy 2.2.2 All Development within floodway shall meet FEMA Standards.

Objective 2.3 Minimize Injury or loss of life due to seismic or geologic hazards

Strategy 2.3.1 Mitigate the potential impacts to new structures by mandating compliance with California Building Code (CBC).

Strategy 2.3.2 Prioritize and evaluate essential facilities for seismic evaluation and potential retrofit

Strategy 2.3.3 Monitor and continue to regulate grading and slope development standards to reduce potential landslide and slope movement events.

Objective 2.4 Minimize Injury or loss of life due to wildfire

Strategy 2.4.1 Enforce compliance with open space and fuel break requirements set forth in the City of Portola General Plan Safety Element Wildland Fire section

Strategy 2.4.2 Review and update mutual aid agreements with the forest service, CAL Fire, and other surrounding fire departments and agencies.

Strategy 2.4.3 Adopt California PRC 4290 and PRC 4291 legislation

Strategy 2.4.4 Evaluate and update the existing Citywide Emergency Evacuation Plan to include present roadway and development conditions.

Strategy 2.4.5 Adopt and complete steps to meet FEMA's Fire-Adapted Communities requirements or become a 'Fire Wise Community.'

Strategy 2.4.6 Seek opportunities to reduce high fuel hazards and create fuel breaks.

Goal 3. Reduce risk of loss to property, both public and private

Priority: High

Responsible Agency: City of Portola

Supporting Agency: Plumas County Sheriff Department (Portola), City of Portola Volunteer Fire Department, Army Corps of Engineers, California Department of Water Resources, Division of Safety of Dams, US Forest Service, Plumas County Fire Departments

Hazards are identified in the Hazard Mitigation Implementation Worksheets (Appendix 3)

Objective 3.1 Establish Public Community Warning system in the event of a natural disaster.

Strategy 3.1.1 Provide flood & event warning and forecasting information to City residents.

Strategy 3.1.2 Establish a rapid communication system for the community in the event of a natural disaster (Television, Radio, Emergency alert)

Strategy 3.1.3 Actively participate in the development of Plumas County's Safety Element to ascertain Portola's concerns are addressed.

Objective 3.2 Protect existing public infrastructure

Strategy 3.2.1 Evaluate potential impacts of identified hazards on existing utilities and facilities (water, sewer, power, public transportation routes & structures). Prioritize those utilities for mitigation based on risk level and criticality to community and/or criticality to emergency evacuation routes.

Strategy 3.2.2 Ensure that all essential facilities (hospitals, schools, evacuation centers, and other emergency facilities) are evaluated for specific risks and where risk is identified prioritize for analysis and mitigation.

Objective 3.3 Pursue flood control solutions which minimize environmental impacts

Strategy 3.3.1 Continue to combine water quality, open space, recreation projects within flood measures where feasible.

Strategy 3.3.2 Maintain natural stream courses and adjacent habitat, where feasible during flood control improvements.

Objective 3.4 Regulate Land Use and Development within flood areas

Strategy 3.4.1 Establish zoning and land use ordinances that limit development in flood prone areas

Strategy 3.4.2 Ensure the impacts of flooding are adequately analyzed when considering areas for future urban development or significant improvements to existing facilities or structures.

Strategy 3.4.3 Ensure that flood mitigation measures are incorporated into repairs, new development, major alterations, and new redevelopment applications.

Strategy 3.4.4 Enforce compliance with the City of Portola Master Drainage Plan and Floodplain Management Ordinance.

Strategy 3.4.5 Pursue a regional approach to flood issues

Objective 3.5 Reduce property damage due to seismic and geologic hazards

Strategy 3.5.1 Mitigate the potential impacts to new structures by mandating compliance with California Building Code (CBC).

Strategy 3.5.2 Prioritize and evaluate essential facilities for seismic evaluation and potential retrofit

Strategy 3.5.3 Monitor and continue to regulate grading and slope development standards.

Strategy 3.5.4 Educate and encourage residents to adopt seismic safety protocols as their time and resources allow.

Objective 3.6 Minimize loss of property due to wildfire

Strategy 3.6.1 Enforce compliance with open space and fuel break requirements set forth in the City of Portola General Plan Safety Element Wildland Fire section

Strategy 3.6.2 Review and update mutual aid agreements with Forest Service, CAL Fire, and other surrounding fire departments and agencies.

Strategy 3.6.3 Adopt California 4290 and 4291 legislation.

Strategy 3.6.4 Evaluate and update the existing Citywide Emergency Evacuation Plan to include present roadway and development conditions.

Strategy 3.6.5 Adopt and complete steps to meet FEMA's Fire-Adapted Communities requirements or become a 'Fire Wise Community.'

Goal 4. Maintain and increase funding for natural disaster preparedness, planning and response.

Priority: High
Responsible Agency: City of Portola
Supporting Agency: Cal OES, FEMA, Other Grant Sources, Community Civic Groups and Churches
Hazards are identified in the Hazard Mitigation Implementation Worksheets (Appendix 3)

Objective 4.1 Cooperate with other local agencies, jurisdictions or non-profit organizations involved in disaster planning or response so that efforts to secure funding are coordinated and will work toward maximum benefits.

Strategy 4.1.1 Secure a grant that would provide support staff to aid in the implementation and execution of the LHMP.

Strategy 4.1.2 Apply for grants specific to identified action items, including scientific studies and evaluation of existing improvements.

Strategy 4.1.3 Cross train staff with Plumas County personnel and adopt uniform protocols where applicable.

Strategy 4.1.4 Work toward securing multi-jurisdiction grants and funding for disaster planning and response.

Strategy 4.1.5 Create a community network for emergency response alternatives including churches, and civic meeting halls.

Objective 4.2 Support efforts put forth by other agencies where funding for mitigation efforts presents the potential to benefit the City.

Strategy 4.2.1 Continue involvement in the update to the Plumas County LHMP;

Strategy 4.2.2 Apply for grants that may help fund improvements beyond the City limits; e.g. fire safety and wildfire hazard mitigation, channel and water quality improvements to the Middle Fork of the Feather River, etc.

Objective 4.3 Evaluate and improve current training for response personnel and equipment. Consider increased training for first responders and updating outdated equipment.

Strategy 4.3.1 Review existing training protocol and update/upgrade as necessary.

Strategy 4.3.2 Begin to search grant/funding opportunities for upgrade of fire equipment & training opportunities.

Strategy 4.3.3 Utilize County, State, and other regulatory agency opportunities for cross and specialty training modules.

Funding Sources

The fiscal capabilities of the City are limited. The City would like mitigation items to be funded through a variety of sources as it would be difficult for the City to financially manage all Goals and Objectives outlined in the plan. When opportunities are available the City will seek federal, state and other grants where ever possible.

City staff and funding will be prioritized by the City Council in accordance with the Planning Commission's recommendation in the City's annual budget. Each mitigation measure would be a line item within a specific department; although the Planning Department is expected to be the impacted department. Staff time is funded annually; it is expected that staff time from the Planning and Building Departments will be spent implementing mitigation measures and assisting the Planning Commission throughout the monitoring and implementing the plan.

Prioritization of Mitigation Strategies

The Mitigation strategies were prioritized based upon, 1) overall life threat, 2) the STAPLEE criteria which factor into account the social, technical, administrative, political, legal, economic and environmental concerns, and 3) a cost-benefit review of prioritized strategies. Key stakeholders utilized these criteria to establish ratings of HIGH, MEDIUM and LOW for each goal and the Implementation Worksheets (See Appendix 3) rate each mitigation strategy. As typical for most cities, Portola's needs will evolve due to economic, cultural, and natural events, the City's priorities will evolve and change also. The Planning Commission will review the plan and implementation progress during a bi-annual review of the LHMP and re-assess the priorities at that time.

Implementation Strategy and Monitoring

Once the LHMP has received formal adoption by the City, the City Planning Commission and any Mayor appointed members will champion the overall plan and review the strategies and short-term goals on a bi- annual basis or as deemed necessary by the Commission. The following strategy will be used to ensure the Plan is fully implemented and remains an active and relevant document, addressing the ever- c h a n g i n g environments and needs for the City:

- Implementation worksheets will be used as a tool to continually target high priority strategies and help the City focus on manageable short-term goals and objectives. See Appendix 3.
- Review previous goals and tasks as outlined in the Plans implementation worksheets as developed in previous Hazard Mitigation meetings. They should highlight success and try to address concerns or difficulties in its implementation.
- Re-evaluate each goal and strategy's priority to better conform to the City's changing needs and abilities to implement the various parts of the Plan.

- Assign new goals and tasks to City staff, community volunteers, or other groups involved in the implementation of the plan.

It is also the City's strategy to integrate these actions into existing planning documents and projects, such as the City General Plan (currently being updated), the development of a Community Wildfire Protection Plan, and the City Capital Improvement Project (CIP). With proper integration, implementing mitigation strategies will result in a cost-benefit that can help to further refine projects and the prioritization of each strategy. This will remain an ongoing effort and ensure this LHMP remains a living document that will be maintained in accordance with the requirement of this LHMP, Cal OES, and FEMA. As more information becomes available the strategies, coordinating agencies, funding, constraints, or even the priority may change however the focus should always be to provide measures that mitigate and reduce natural hazards and their impacts to the City.

ELEMENT D – PLAN ADOPTION

Incorporation into Planning Mechanisms

After the adoption of the LHMP, the City planner or the safety committee will ensure that the LHMP, in particular the mitigation strategies, is incorporated into existing planning mechanisms. This incorporation will be achieved through the following steps:

- Review the General Plan Safety Element and ensure that it is consistent with the risk assessment and action plan in the LHMP, and update, if necessary;
- Work with other area agencies to expand and keep current safety-related information. The City will use sufficiently detailed analysis of hazards, and will update the City ‘s Emergency Operations Plan as new information becomes available; and,
- Keep current and implement its Emergency Operations Plan as required by the California Emergency Services Act.
- After each State and/or Presidential declaration that impacts the City, a review shall be made of the LHMP for updating or reprioritizing the strategies.

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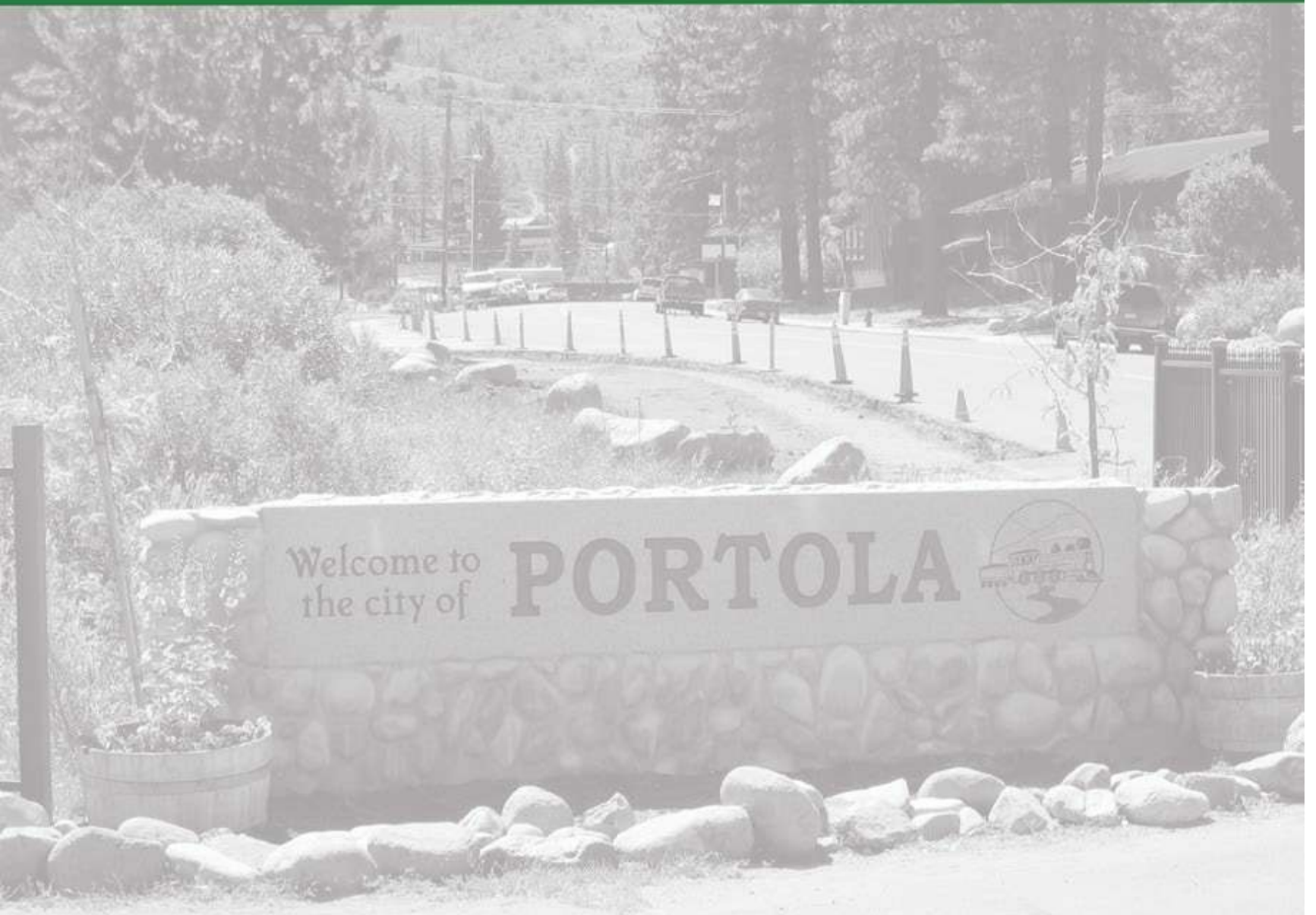

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