


APPENDICES:

Appendix A: Hazard Maps

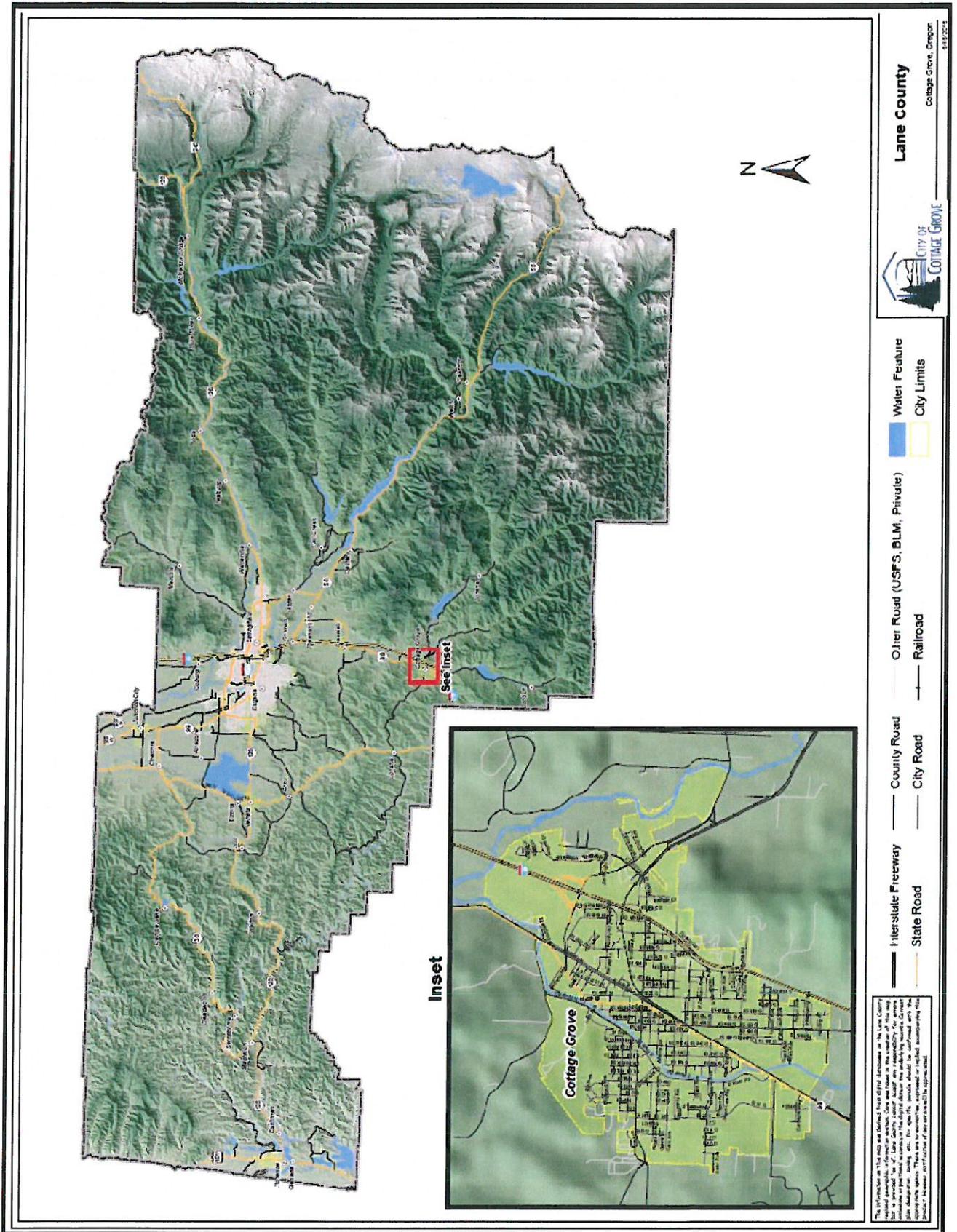
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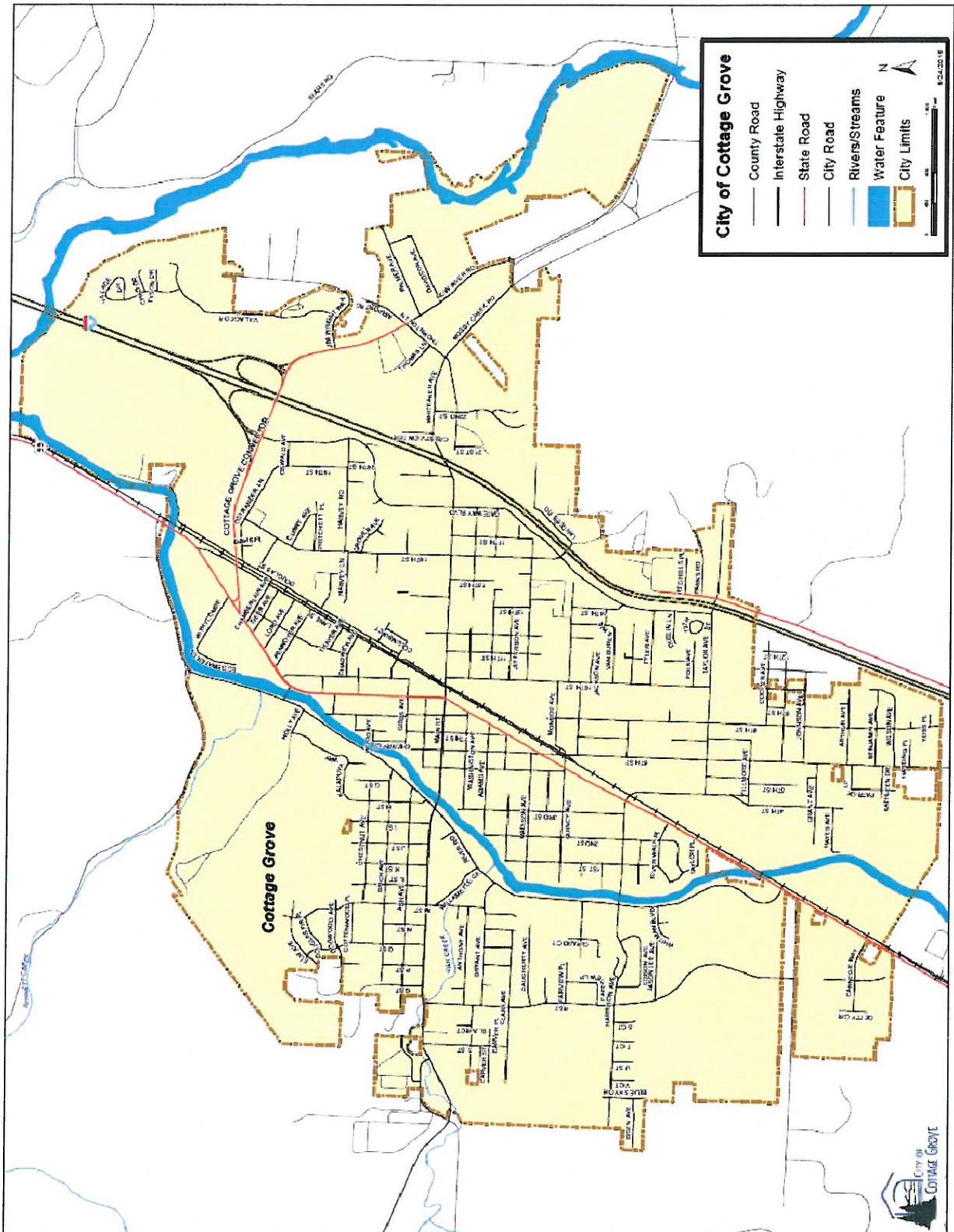
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Figure 11: Lane County and Cottage Grove



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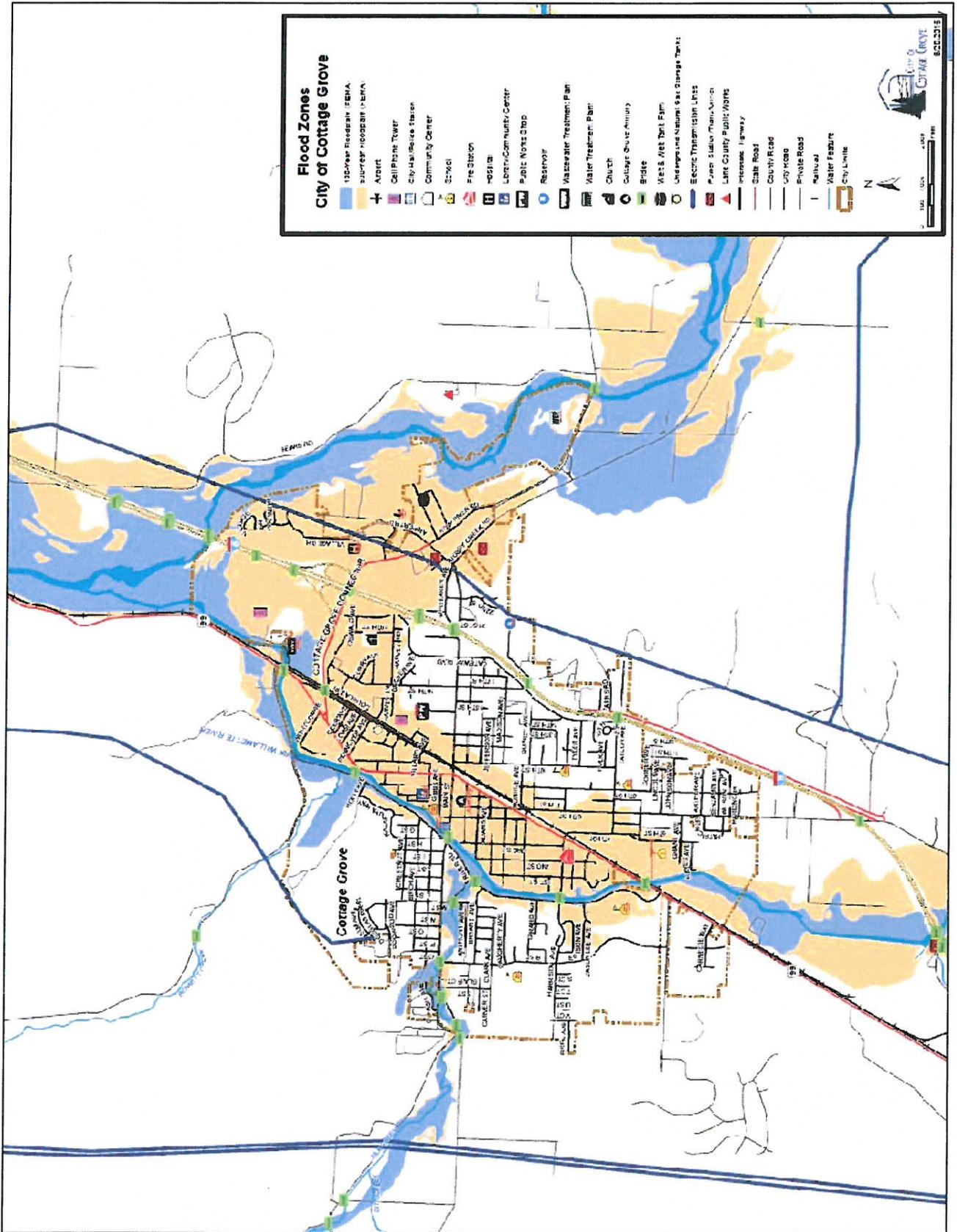
Figure 12: City of Cottage Grove



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Figure 13: 100 and 500 Year Flood Zones



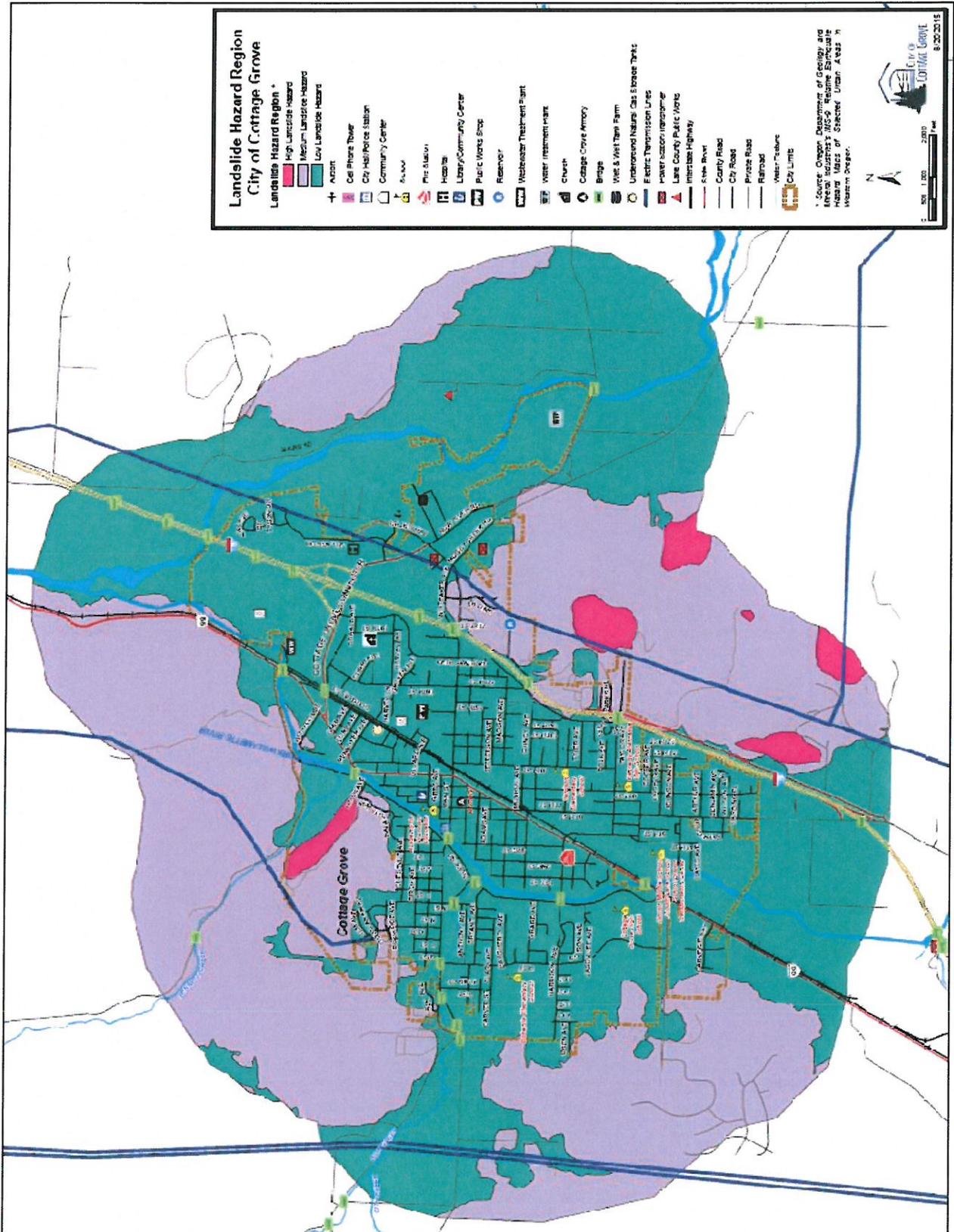
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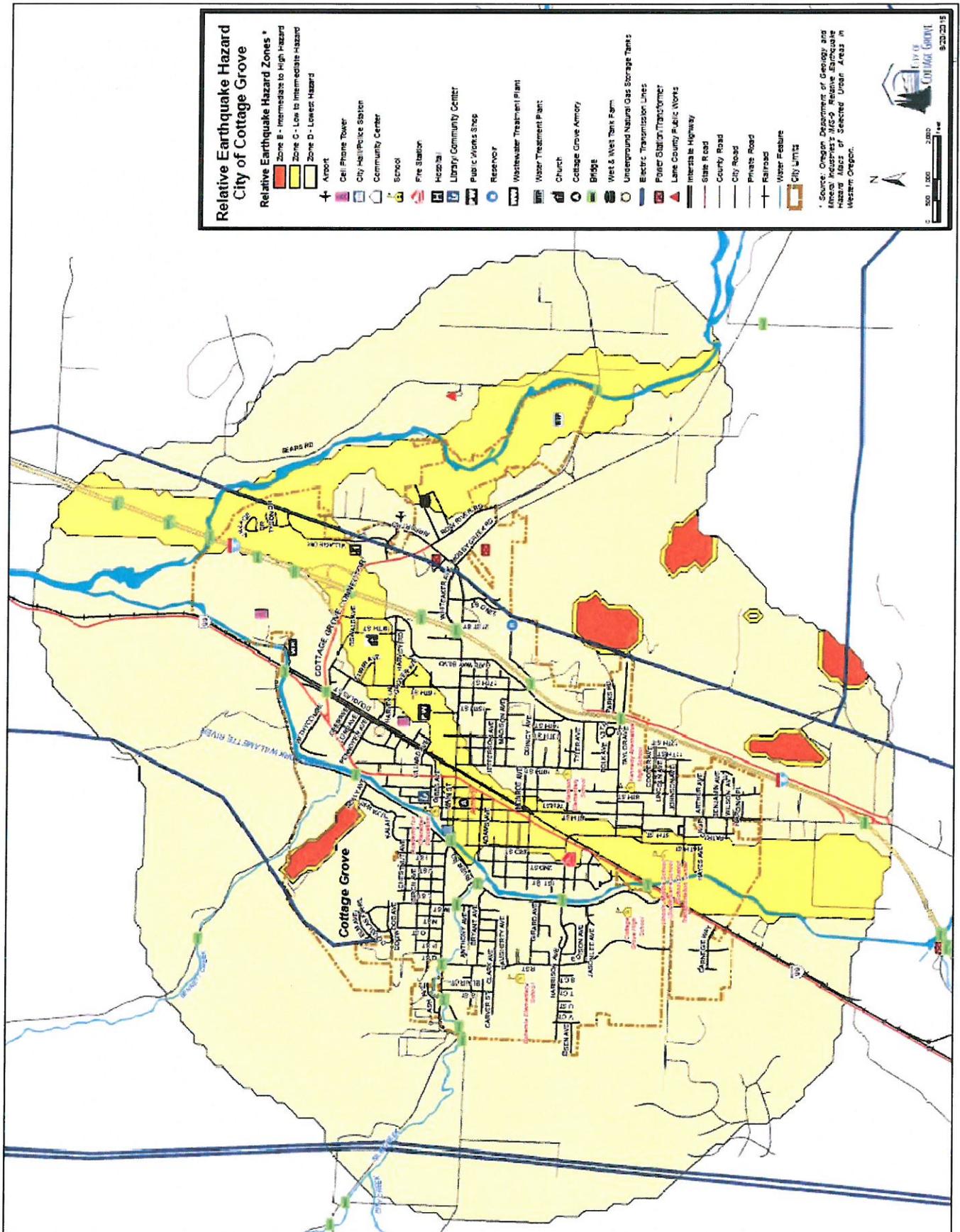
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Figure 15: Landslide Hazard Regions



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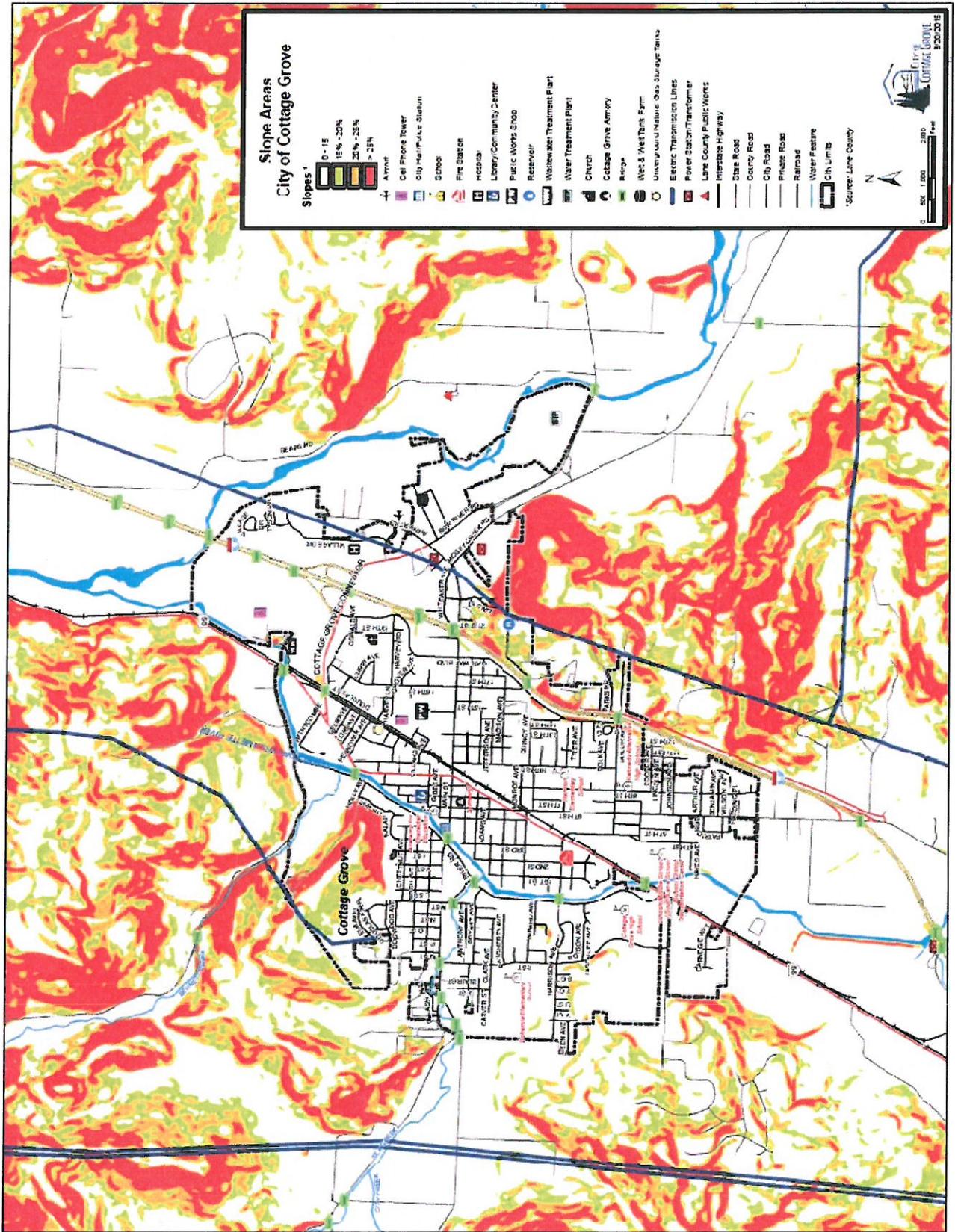
Figure 16: Relative Earthquake Hazard



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Figure 17: Slope Areas



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Appendix B: Critical Facilities

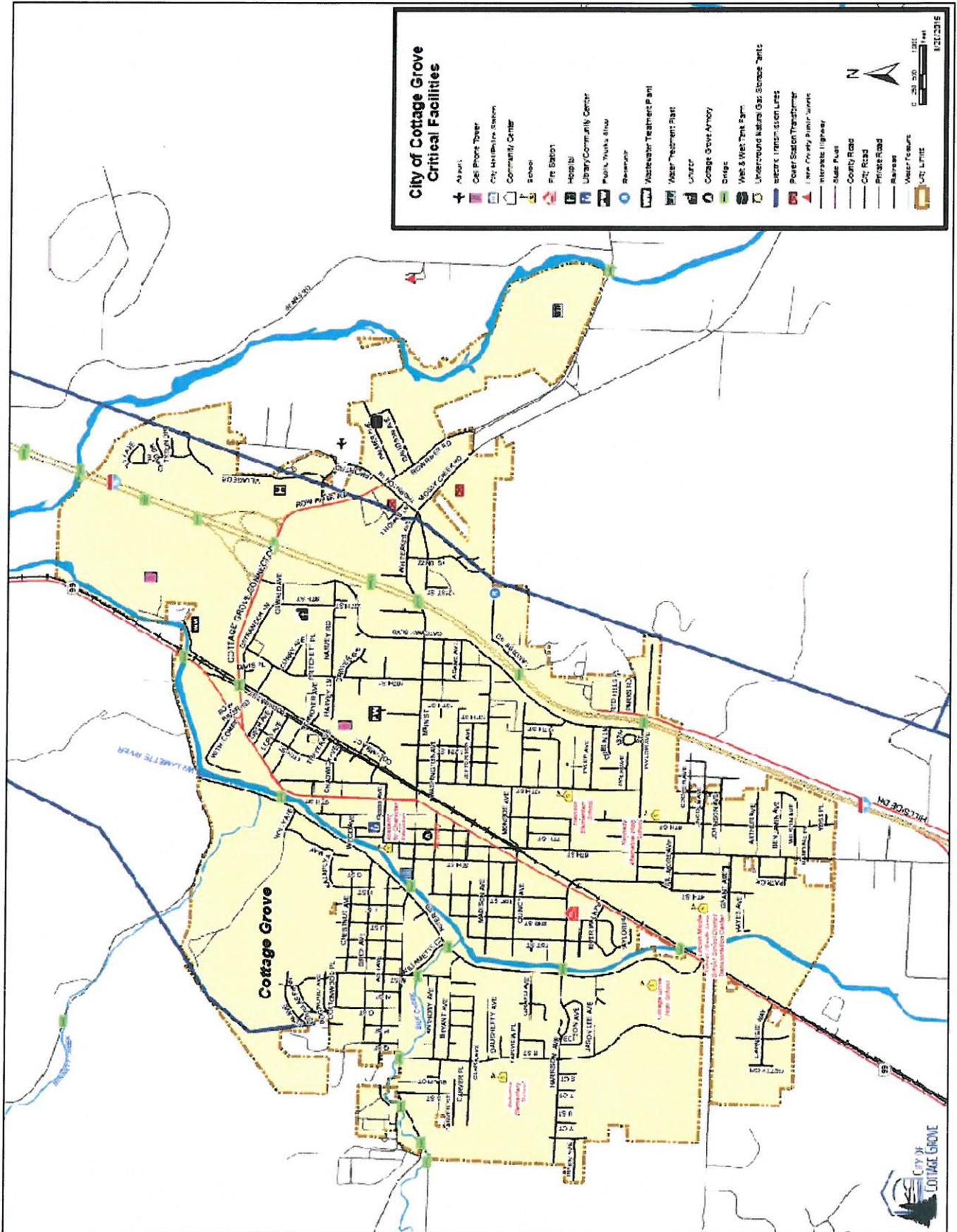
NHMP Critical Infrastructure and Key Facilities (% Land Area Impacted)	Flood (5%)	Landslide (<1%)	Earthquake (100%)	Winter Storm (100%)	Wildfire (20%)	Volcano (<1%)	Drought (100%)
Critical Facilities							
Cottage Grove City Hall	X		X	X			
Cottage Grove Police Department (911 Call Center and Dispatch), City Jail	X		X	X			
Cottage Grove Community Hospital	X		X	X			
City of Cottage Grove Public Works Shops (EOC #2)	X		X	X			
Water Treatment Facility (Row River)	X		X	X			X
Waste Water Treatment Plant	X		X	X	X		
South Lane County Fire and Rescue Fire Station #1	X		X	X			
Cottage Grove Schools	X		X	X			
Cottage Grove High School			X	X			
Our Lady of Perpetual Help Catholic Church (Red Cross Shelter)	X		X	X			
Knox Butte Reservoir		X	X	X	X		
Downtown Historical District			X				
Cottage Grove Lake Dam	X	X	X		X		X
Dorena Reservoir Dam	X	X	X		X		X

(Table continued on page 116)

Table 5: City of Cottage Grove Infrastructure & Facility Hazard Vulnerability (cont.)

NHMP Critical Infrastructure and Key Facilities (% Land Area Impacted)	Flood (5%)	Landslide (<1%)	Earthquake (100%)	Winter Storm (100%)	Wildfire (20%)	Volcano (<1%)	Drought (100%)
Key Infrastructure							
Telephone Lines	X	X	X	X	X		
Wastewater Collection System	X		X	X			
Stormwater Collection System	X		X	X			
Cell Phone Towers	X		X	X			
Roads	X	X	X	X			
Cottage Grove State Airport	X		X	X	X		
NW Natural Gas Lines	X		X				
Overhead Power Lines	X	X	X	X	X		
Transportation Networks	X	X	X	X	X		
Bridges	X		X	X	X		
Central Oregon & Pacific Railroad Lines	X		X	X	X		
Water Treatment, Storage, and Distribution Lines	X		X	X			

Figure 18: Cottage Grove Critical Facilities



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Appendix C: Action Item Table

NHMP Critical Facilities Land Area Impacted	Flood (5%)	Landslide (<1%)	Earthquake (100%)	Winter Storm (100%)	Wildfire (20%)	Volcano (<1%)	Drought (100%)
Critical Facilities							
Cottage Grove City Hall	X		X	X			
Cottage Grove Police Department (911 Call Center and Dispatch), City Jail	X		X	X			
Water Treatment Facility (Row River)	X		X	X			X
Waste Water Treatment Plant	X		X	X	X		
South Lane County Fire and Rescue Fire Station #1	X		X	X			
City of Cottage Grove Public Works Shops (EOC #2)	X		X	X			
Cottage Grove City Hall	X		X	X			
Cottage Grove Police Department (911 Call Center and Dispatch), City Jail	X		X	X			
Water Treatment Facility (Row River)	X		X	X			X
Waste Water Treatment Plant	X		X	X	X		

NHMP Critical Facilities Land Area Impacted	Flood (5%)	Landslide (<1%)	Earthquake (100%)	Winter Storm (100%)	Wildfire (20%)	Volcano (<1%)	Drought (100%)
South Lane County Fire and Rescue Fire Station #1	X		X	X			
City of Cottage Grove Public Works Shops (EOC #2)	X		X	X			
Cottage Grove Community Medical Center (Hosp.)	X		X	X			
Cottage Grove Schools	X		X	X			
Cottage Grove High School			X	X			
Downtown Historical District			X				
Cottage Grove Lake Dam	X	X	X		X		X
Dorena Reservoir Dam	X	X	X		X		X

Appendix D: Hazard Action Item Tables

Hazard	Action Name	Mitigation Action	Estimated Cost	Timeline	Responsible Agency/Department	Priority
Flood	Agency Coordination	1 Seek training and exercise opportunities with other agencies and jurisdictions.	Low	Ongoing	Community Development Dept. (CGDD); ODOT; NW Natural Gas; Pacific Power; EUD	High
		2 Work with USACE and FEMA on Upper Willamette Valley Flood Insurance Map Update project.	None / Staff Time	Ongoing	CGDD; USACE; FEMA	Low
		3 Coordinate with Coast Fork Watershed Council, USACE, and Oregon Department of Fish and Wildlife on Row River Nature Park flood storage improvements.	High	3-5 Years	CGDD; USACE; ODFW; Coast Fork Watershed Council	Medium / High
		4 Participate in state-wide water management group led by USACE for flood controlled streams fish conference call held on a weekly, bi-weekly, or as needed basis). Participate in Northwest Regional Floodplain Management Association (NORFMA) and Association of State Floodplain Managers (ASFM).	Low / Staff Time	Ongoing	Public Works; CGDD; NORFMA; ASFM	High
	Critical Facilities Protection	1 Evaluate and flood-proof dry-owned Critical Facilities within the 500 year floodplain.	To be determined	Ongoing	CGDD	Low
		1 Increase awareness of localized flood risk and safety. Use outreach programs to advise home and property owners of risks to life, property, health, and safety. Increase outreach to residential and commercial residents of the city on additional measures property owners can take to reduce their risk to flooding, and facilitate funding for mitigation measures.	Low	Ongoing	CGDD; Public Works	High
	Flood Loss Mitigation	2 Extend the freeboard requirement.	Low	In Process	CGDD	High
		3 Mitigate flooding by limiting or restricting how development occurs in flood prone areas through actions such as: Prohibit or limit floodway development through regulatory and/or incentive-based measures. Limit the density of developments in the floodplain. Require that floodways be kept as open space. Manage and enforce a riparian buffer ordinance to protect water resources and limit flood impacts. Limit fill in floodplain areas.	Low	In Process	CGDD	High
		4 Develop a long term plan for Open Space land acquisitions (purchases by the City) for floodway protection (in 4 specific lots within the Floodplain).	High	Future	CGDD	Low
		1 Designate a local floodplain manager and/or CRS coordinator who achieves Certified Floodplain Manager (CFM) certification.	Low	Completed / Ongoing	CGDD	Medium
Floodplain Management	2 Conduct NIPF community workshops to provide information and incentives for property owners to acquire flood insurance.	Low	3-5 Years	CGDD	Low	
	3 Require and maintain FEMA elevation certificates for all new and improved buildings located in floodplains. (Records are maintained in the Cottage Grove Community Development Office.)	Low	Ongoing	CGDD	High	
	4 Include requirements in the local floodplain ordinance for homeowners to sign non-conversion agreements for areas below BFE.	None / Staff Time	3-5 Years	CGDD	High	
	5 Maintain and provide access to Flood Insurance Rate Maps.	None / Staff Time	Ongoing	CGDD	High	
	6 Implement damage reduction measures for existing, public ally owned, buildings such as acquisition, relocation, retrofitting, and maintenance of drainage ways and retention basins.	High	3-5 Years	CGDD	Low	
	7 Improve flood warning, emergency response, and evacuation planning. (Alert Sense)	Medium	Ongoing	CGDD	High	
	1 Integrate Natural Hazard Mitigation plan goals and policies with Total Maximum Daily Loads (TMDL) plan goals and policies.	Low	Ongoing	Public Works; CGDD	Medium	
2 Rehabilitate and manage riparian areas under city ownership to improve function, utilize stream restoration to ensure adequate drainage and diversion of storm water, and protect and enhance landforms that serve as natural mitigation features (i.e., riverbanks, wetlands, buffers etc.)	High TBD	Ongoing -> 3-5 Years	Public Works; CGDD	Low		
3 Obtain and install a River Flow Gauge at the mouth of Mosby Creek at confluence of Row River.	Medium	3-5 Years	Public Works; CGDD	Low		
4 Pursue funding for culvert rearing.	High	2-5 Years	Public Works; CGDD	Medium		
Stormwater Management and Improvement	5 Develop storm water management standards in Development Code.	Medium	3-5 Years	Public Works; CGDD	High	
	6 Enforce Riparian Development standards.	Low	Ongoing	Public Works; CGDD; Coast Fork Willamette Watershed Council	Medium	
	7 Coordinate with Coast Fork Watershed Council on riparian area restoration and education programs.	Low	Ongoing	Public Works; CGDD; Coast Fork Willamette Watershed Council	Low	
	8 Join or schedule yearly (or biannual) river/stream cleanup projects with the public at-large, and facilitate debris removal activities with Coast Fork Watershed Council and United States Forest Service (USFS) to use debris removed from the Coast Fork and Row Rivers for wildlife habitat in the Row River Nature Park.	Low	Annual / Biannual Basis	Public Works; CGDD; Coast Fork Willamette Watershed Council	Medium	
	9 Develop an open space acquisition, reuse, and preservation plan targeting hazard areas.	Low / Staff Time	3-5 Years	Public Works; CGDD; Coast Fork Willamette Watershed Council	Medium	
	10 Compensate an owner for partial rights, such as easement or development rights, to prevent a property from being developed.	High	Long Term	Public Works; CGDD; Coast Fork Willamette Watershed Council	Low	

Hazard	Action Name	Mitigation Action	Estimated Cost	Timeline	Responsible Agency/Department	Priority
Wildfire	Encourage fire-safe construction practices for existing and new construction in high-risk areas.	1. Utilize Geospatial Information Systems (GIS) to map, identify, and study landslide hazard areas; develop and maintain a database to track community vulnerability to landslides.	Low	Ongoing / 1-3 Years	CGCDD	Low
		2. Develop and maintain a database to track community vulnerability to landslides.	Low / Staff Time	1-3 Years	CGCDD	Medium
		3. Locate utilities outside of landslide areas to decrease the risk of service disruption.	TBD - Project Specific	Ongoing	CGCDD; Public Works; ENUD; Pacific Power, NW Natural gas	High
		1. Begin the mitigation process on north slope of Mt. David through use of Geological Assessment in compliance with Cottage Grove City Development Code 3.7.100 Hillside Development.	Medium	1-3 Years	CGCDD	Medium
		2. Engage in long term program to purchase land at high risk of landslide (i.e., Mt. David)	High	3-5 Years	CGCDD	Low
		3. Create or increase setback limits on parcels near high-risk areas.	Medium	3-5 Years	CGCDD	Low
		1. Create and adopt regulations regarding erosion control.	Low / Staff Time	3 Years	CGCDD	Medium
		2. Provide education to city staff on erosion control.	Low / Staff Time	Ongoing	Public Works; CGCDD	High
		1. Include considerations of wildfire hazards in land use, public safety, and other elements of the comprehensive plan.	Low / Staff Time	Comp. Plan Update Item	CGCDD	High
		2. Recognize the existence of wildfire hazards and identify areas of risk based on a wildfire vulnerability assessment.	Low / Staff Time	1-3 Years	South Lane County Fire and Rescue District, CGCDD	Medium
		3. Describe policies and recommendations for addressing wildfire risk and discouraging expansion in the wildland-urban interface.	Low / Staff Time	Ongoing	CGCDD	Low
		1. Use GIS mapping of wildfire hazard areas to facilitate analysis and planning decisions through comparison with zoning, development, infrastructure, etc.	Low	Lane County GIS LIAR Mapping	South Lane County Fire and Rescue District, CGCDD	Medium
		2. Promote conservation of open space or wildland-urban boundary zones to separate developed areas from high-hazard areas.	Low / Staff Time	Ongoing	CGCDD	Low
		1. Join the "FireWise Communities/USA" recognition program sponsored by the National Wildlife Coordinating Group (firewise.org).	Low / Staff Time	Ongoing	CGCDD	High
		2. Sponsor FireWise workshops for local officials, developers, civic groups, and neighborhood/homeowners' associations.	Low	Ongoing	CGCDD	Low
1. Offer GIS hazard mapping online (i.e., DOGAMI HAZVU) for residents, developers, and design professionals.	Low	Paused for LIDAR Map Data	CGCDD	Low		
2. Organize a local fire department tour to show local elected officials and planners the most vulnerable areas of the city's wildland-urban interface and increase their understanding of risks.	Low	Ongoing	CGCDD	Low		
3. Utilize local fire departments to conduct education programs in schools.	Low / Staff Time	Ongoing	CGCDD	Low		
4. Inform the public about proper evacuation procedures.	Low / Staff Time	Ongoing	CGCDD	Medium		
5. Empower and educate property owners about wildfire mitigation techniques which reduce the risk to property and life.	Low	Ongoing	CGCDD	Low		
1. Provide developers, homeowners, and businesses with fire-safe construction practices, and other mitigation options to reduce fire risk.	Low	Ongoing	South Lane County Fire and Rescue District, CGCDD	Low		
2. Explore FireWise construction and development practices for new development.	Low	Ongoing	CGCDD	Low		
3. Explore mitigation funding for existing houses on perimeter of city at risk to wildfire.	Low	Ongoing	CGCDD	Low		
Landslide	Evaluate landslide hazard on Mt. David	1. Begin the mitigation process on north slope of Mt. David through use of Geological Assessment in compliance with Cottage Grove City Development Code 3.7.100 Hillside Development.	Medium	1-3 Years	CGCDD	Medium
		2. Engage in long term program to purchase land at high risk of landslide (i.e., Mt. David)	High	3-5 Years	CGCDD	Low
		3. Create or increase setback limits on parcels near high-risk areas.	Medium	3-5 Years	CGCDD	Low
Regulatory tools and enforcement		1. Create and adopt regulations regarding erosion control.	Low / Staff Time	3 Years	CGCDD	Medium
		2. Provide education to city staff on erosion control.	Low / Staff Time	Ongoing	Public Works; CGCDD	High
		1. Include considerations of wildfire hazards in land use, public safety, and other elements of the comprehensive plan.	Low / Staff Time	Comp. Plan Update Item	CGCDD	High
Incorporate wildfire mitigation in the comprehensive plan.		2. Recognize the existence of wildfire hazards and identify areas of risk based on a wildfire vulnerability assessment.	Low / Staff Time	1-3 Years	South Lane County Fire and Rescue District, CGCDD	Medium
		3. Describe policies and recommendations for addressing wildfire risk and discouraging expansion in the wildland-urban interface.	Low / Staff Time	Ongoing	CGCDD	Low
		1. Use GIS mapping of wildfire hazard areas to facilitate analysis and planning decisions through comparison with zoning, development, infrastructure, etc.	Low	Lane County GIS LIAR Mapping	South Lane County Fire and Rescue District, CGCDD	Medium
Reduce risk to wildfire through land use planning		2. Promote conservation of open space or wildland-urban boundary zones to separate developed areas from high-hazard areas.	Low / Staff Time	Ongoing	CGCDD	Low
		1. Join the "FireWise Communities/USA" recognition program sponsored by the National Wildlife Coordinating Group (firewise.org).	Low / Staff Time	Ongoing	CGCDD	High
		2. Sponsor FireWise workshops for local officials, developers, civic groups, and neighborhood/homeowners' associations.	Low	Ongoing	CGCDD	Low
Participate in FireWise system		1. Offer GIS hazard mapping online (i.e., DOGAMI HAZVU) for residents, developers, and design professionals.	Low	Paused for LIDAR Map Data	CGCDD	Low
		2. Organize a local fire department tour to show local elected officials and planners the most vulnerable areas of the city's wildland-urban interface and increase their understanding of risks.	Low	Ongoing	CGCDD	Low
		3. Utilize local fire departments to conduct education programs in schools.	Low / Staff Time	Ongoing	CGCDD	Low
Decrease vulnerability and risk from wildfire to new and existing construction, and increase public awareness to wildfire risks and mitigations.		4. Inform the public about proper evacuation procedures.	Low / Staff Time	Ongoing	CGCDD	Medium
		5. Empower and educate property owners about wildfire mitigation techniques which reduce the risk to property and life.	Low	Ongoing	CGCDD	Low
		1. Provide developers, homeowners, and businesses with fire-safe construction practices, and other mitigation options to reduce fire risk.	Low	Ongoing	South Lane County Fire and Rescue District, CGCDD	Low
Encourage fire-safe construction practices for existing and new construction in high-risk areas.		2. Explore FireWise construction and development practices for new development.	Low	Ongoing	CGCDD	Low
		3. Explore mitigation funding for existing houses on perimeter of city at risk to wildfire.	Low	Ongoing	CGCDD	Low

Hazard	Action Name	Mitigation Action	Estimated Cost	Timeline	Responsible Agency/Department	Priority	
Winter-Severe Storm	Protect powerlines from winter and severe storms effects.	1	Continue to require all new construction including remodels, to include underground power lines.	Low	Ongoing	CGDD	High
		2	Determine major stakeholders, and begin planning process for a Debris Management Plan.	Low / Staff Time	3-5 Years	CGDD; Public Works	Low
	Create A Debris Management Plan.	1	Create a formal Memorandum of Understanding (MOU) with property owners for temporary storage of storm debris.	Low / Staff Time	3-5 Years	CGDD; Public Works	Low
		2	Survey City owned trees on a seasonal (spring and fall) basis.	Low / Staff Time	Ongoing	Public Works	Medium
	Reduce hazards associated with un-trimmed trees on city property.	1	Trim trees identified as being in need, and schedule removal of diseased or dead trees.	Low / Staff Time	Ongoing	Public Works	Medium
		2	Maintain backup power availability at Critical Facilities including the City EOC, backup EOC.	Low	Ongoing	Public Works	Low
	Ensure that critical facilities have backup power and emergency operations plans to deal with power outages.	1	1. Develop an inventory of public and commercial and historically significant buildings that may be particularly vulnerable to earthquake damage.	Low / Staff Time	Ongoing	CGDD	High
		2	2. Inventory of buildings within Downtown Historic District vulnerable to earthquake damage, and investigate potential funding sources for building retrofits.	Low / Staff Time	Ongoing	CGDD	High
		3	3. Develop mitigation strategies for seismic retrofitting of critical dry structures and conduct seismic retrofitting for critical public facilities and historic structures within the Downtown Historic District most at risk to earthquakes.	Medium	1-5 Years / Ongoing	CGDD	High
		4	4. Create an earthquake scenario to estimate potential loss of life and injuries, the types of potential damage, and existing vulnerabilities within a community to develop earthquake mitigation priorities.	Staff Time	1-3 Years	CGDD	High
5		5. Establish a school survey procedure and guidance document to inventory structural and non-structural hazards in and around school buildings.	Staff Time	1-3 Years	CGDD South Lane County School District	High	
6		6. Assist with and/or develop program to fund seismic retrofit designs for historic buildings and encourage seismic retrofits as part of any alterations or remodels.	Staff Time	1-3 Years	CGDD	High	
Earthquake	Address Community vulnerability to seismic threats.	1	Identify and harden critical lifeline systems (i.e., critical public services such as utilities and roads) to meet "seismic design guidelines and Standards for Lifelines" or equivalent standards such as American Lifelines Alliance (ALA) guidance.	High	Ongoing	City Engineer; CGDD	Medium
		2	Evaluate bridges for resilience to earthquake, and establish priority listing for post event evaluation and repair.	Staff Time	Ongoing	City Engineer; Public Works; CGDD	High
		3	Develop a process by which critical public buildings are prioritized for retrofitting based upon their role in recovery after an earthquake.	Low / Staff Time	1-3 Years	City Engineer; Public Works; CGDD	Medium
		1	Gather and analyze water and climate data to gain a better understanding of local climate and drought history.	Low	Ongoing	CGDD; Public Works	Low
		2	Identify factors that affect the severity of a drought.	Low	Ongoing	CGDD	Low
		3	Identify available water sources.	Low	Very long term	CGDD	Low
Drought	Monitor drought conditions.	1	Identify local drought indicators, such as precipitation, temperature, surface water levels, soil moisture, etc.	Low	Ongoing	CGDD; Public Works	Low
		2	Establish a regular schedule to monitor and record conditions on at least a monthly basis when drought conditions exist.	Low	Ongoing	CGDD; Public Works	Low
		1	Regularly check for leaks to minimize water supply losses.	Low	Ongoing	Public Works	Medium
Drought	Monitor water supply	2	Improve water supply monitoring through the installation of a USGS Monitoring system on Mosby Creek	Moderate	Future Project; grant funding.	Public Works	High
		3	Develop a long range water conservation plan	Low		CGDD; Public Works	Medium
		1	Work with insurance companies, utility providers, and others to include wildfire safety information in materials provided to area residents.	Low	Long Term	CGDD	Low
All Hazards	Develop Community Involvement	2	Develop partnerships with neighborhood groups, homeowners' associations, and others to conduct outreach activities. (E.g., Community Emergency Response Teams, Map My Neighborhood etc.)	Low	Long Term	CGDD	Medium
		3	Create a severe weather scenario to estimate potential damage and existing vulnerabilities within community to develop severe wind/weather mitigation priorities.	Low	1-2 Years	CGDD	Low
		4	Develop tabletop or other exercises for the purposes of training city employees on how to respond to an emergency.	Medium/Staff Time	1-2 Years	CGDD	High
		5	Develop exercises or events to strengthen community resilience through public participation and educational events	Low	1 Year	CGDD	High

Appendix E: Evaluation of Mitigation Strategies

Economic Analysis of Natural Hazard Mitigation Projects

This appendix was developed by the University of Oregon's Oregon Natural Hazards Workgroup and it outlines three approaches for conducting economic analysis of natural hazard mitigation projects. It describes the importance of implementing mitigation activities, different approaches to economic analysis of mitigation strategies, and methods to calculate costs and benefits associated with mitigation strategies. Information in this section is derived in part from: The Interagency Hazards Mitigation Team, *State Hazard Mitigation Plan*, (Oregon State Police – Office of Emergency Management, 2000), and Federal Emergency Management Agency Publication 331, *Report on Costs and Benefits of Natural Hazard Mitigation*. This section is not intended to provide a comprehensive description of benefit/cost analysis, nor is it intended to provide the details of economic analysis methods that can be used to evaluate local projects. It is intended to (1) raise benefit/cost analysis as an important issue, and (2) provide some background on how economic analysis can be used to evaluate mitigation projects.

Why Evaluate Mitigation Strategies?

Mitigation activities reduce the cost of disasters by minimizing property damage, injuries, and the potential for loss of life, and by reducing emergency response costs, which would otherwise be incurred. Evaluating possible natural hazard mitigation activities provides decision-makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects.

Evaluating mitigation projects is a complex and difficult undertaking, which is influenced by many variables. First, natural disasters affect all segments of the communities they strike, including individuals, businesses, and public services such as fire, police, utilities, and schools. Second, while some of the direct and indirect costs of disaster damages are measurable, some of the costs are non-financial and difficult to quantify in dollars. Third, many of the impacts of such events produce "ripple-effects" throughout the community, greatly increasing the disaster's social and economic consequences.

While not easily accomplished, there is value, from a public policy perspective, in assessing the positive and negative impacts from mitigation activities, and obtaining an instructive benefit/cost comparison. Otherwise, the decision to pursue or not pursue various mitigation options would not be based on an objective understanding of the net benefit or loss associated with these actions.

What are Some Economic Analysis Approaches for Evaluating Mitigation Strategies?

The approaches used to identify the costs and benefits associated with natural hazard mitigation strategies, measures, or projects fall into three general categories: benefit/cost analysis, cost-effectiveness analysis and the STAPLE/E approach. The distinction between the methods is outlined below:

Benefit/cost Analysis

Benefit/cost analysis is a key mechanism used by the state Office of Emergency Management (OEM), the Federal Emergency Management Agency, and other state and federal agencies in evaluating hazard mitigation projects, and is required by the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288, as amended.

Benefit/cost analysis is used in natural hazards mitigation to show if the benefits to life and property protected through mitigation efforts exceed the cost of the mitigation activity. Conducting benefit/cost analysis for a mitigation activity can assist communities in determining whether a project is worth undertaking now, in order to avoid disaster-related damages later. Benefit/cost analysis is based on calculating the frequency and severity of a hazard, avoided future damages, and risk. In benefit/cost analysis, all costs and benefits are evaluated in terms of dollars, and a net benefit/cost ratio is computed to determine whether a project should be implemented. A project worth pursuing will have a benefit/cost ratio greater than 1 (i.e., the net benefits will exceed net costs).

Cost-Effectiveness Analysis

Cost-effectiveness analysis evaluates how best to spend a given amount of money to achieve a specific goal. This type of analysis, however, does not necessarily measure costs and benefits in terms of dollars. Determining the economic feasibility of mitigating natural hazards can also be organized according to the perspective of those with an economic interest in the outcome. Hence, economic analysis approaches are covered for both public and private sectors as follows.

Investing in public sector mitigation activities

Evaluating mitigation strategies in the public sector is complicated because it involves estimating all of the economic benefits and costs regardless of who realizes them, and potentially to a large number of people and economic entities. Some benefits cannot be evaluated monetarily, but still affect the public in profound ways. Economists have developed methods to evaluate the economic feasibility of public decisions which involve a diverse set of beneficiaries and non-market benefits.

Investing in private sector mitigation activities

Private sector mitigation projects may occur on the basis of one of two approaches: it may be mandated by a regulation or standard, or it may be economically justified on its own merits. A building or landowner, whether a private entity or a public

agency, required to conform to a mandated standard may consider the following options:

- Request cost sharing from public agencies;
- Dispose of the building or land either by sale or demolition;
- Change the designated use of the building or land and change the hazard mitigation compliance requirement; or
- Evaluate the most feasible alternatives and initiate the most cost effective hazard mitigation alternative.

The sale of a building or land triggers another set of concerns. For example, real estate disclosure laws can be developed which require sellers of real property to disclose known defects and deficiencies in the property, including earthquake weaknesses and hazards to prospective purchasers. Correcting deficiencies can be expensive and time consuming, but their existence can prevent the sale of the building. Conditions of a sale regarding the deficiencies and the price of the building can be negotiated between a buyer and seller.

STAPLE/E Approach

Conducting detailed benefit/cost or cost-effectiveness analysis for every possible mitigation activity could be very time consuming and may not be practical. There are some alternate approaches for conducting a quick evaluation of the proposed mitigation activities which could be used to identify those mitigation activities that merit more detailed assessment. One of these methods is the STAPLE/E Approach.

Using STAPLE/E criteria, mitigation activities can be evaluated quickly by steering committees in a systematic fashion. This criteria requires the committee to assess the mitigation activities based on the Social, Technical, Administrative, Political, Legal, Economic, and Environmental (STAPLE/E) constraints and opportunities of implementing the particular mitigation item in your community. The second chapter in FEMA's April How-To Guide "Developing the Mitigation Plan – Identifying Mitigation Actions and Implementation Strategies" as well as the "State of Oregon's Local Natural Hazard Mitigation Plan: An Evaluation Process" outline some specific considerations in analyzing each aspect. The following are suggestions for how to examine each aspect of the STAPLE/E Approach from the "State of Oregon's Local Natural Hazard Mitigation Plan: An Evaluation Process".

Social: Community development staff, local non-profit organizations, or a local planning board can help answer these questions:

- Is the proposed action socially acceptable to the community?
- Are there equity issues involved that would mean that one segment of the community is treated unfairly?
- Will the action cause social disruption?

Technical: The city or county public works staff, and building department staff can help answer these questions.

- Will the proposed action work?
- Will it create more problems than it solves?
- Does it solve a problem or only a symptom?
- Is it the most useful action in light of other community goals?

Administrative: Elected officials or the city or county administrator, can help answer these questions.

- Can the community implement the action?
- Is there someone to coordinate and lead the effort?
- Is there sufficient funding, staff, and technical support available?
- Are there ongoing administrative requirements that need to be met?

Political: Consult the mayor, city council or county planning commission, city or county administrator, and local planning commissions to help answer these questions.

- Is the action politically acceptable?
- Is there public support both to implement and to maintain the project?

Legal: Include legal counsel, land use planners, risk managers, and city council or county planning commission members, among others, in this discussion.

- Is the community authorized to implement the proposed action? Is there a clear legal basis or precedent for this activity?
- Are there legal side effects? Could the activity be construed as a taking?
- Is the proposed action allowed by the comprehensive plan, or must the comprehensive plan be amended to allow the proposed action?
- Will the community be liable for action or lack of action?
- Will the activity be challenged?

Economic: Community economic development staff, civil engineers, building department staff, and the assessor's office can help answer these questions.

- What are the costs and benefits of this action?
- Do the benefits exceed the costs?
- Are initial, maintenance, and administrative costs taken into account?
- Has funding been secured for the proposed action? If not, what are the potential funding sources (public, non-profit, and private)?
- How will this action affect the fiscal capability of the community?
- What burden will this action place on the tax base or local economy?
- What are the budget and revenue effects of this activity?
- Does the action contribute to other community goals, such as capital improvements or economic development?
- What benefits will the action provide? (This can include dollar amount of damages prevented, number of homes protected, credit under the CRS, potential for funding under the HMGP or the FMA program, etc.)

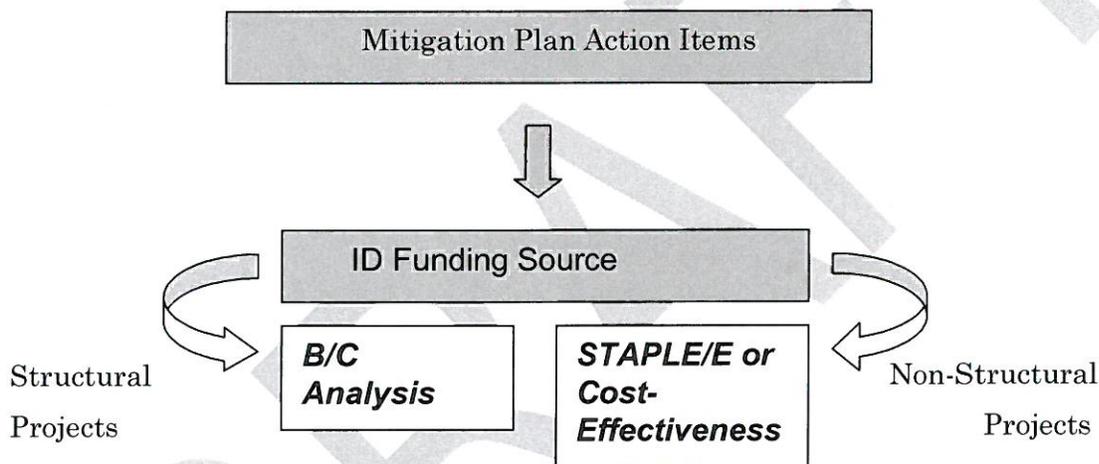
Environmental: Watershed councils, environmental groups, land use planners and natural resource managers can help answer these questions.

- How will the action impact the environment?
- Will the action need environmental regulatory approvals?
- Will it meet local and state regulatory requirements?
- Are endangered or threatened species likely to be affected?

The STAPLE/E approach is helpful for doing a quick analysis of mitigation projects. Most projects that seek federal funding and others often require more detailed Benefit/Cost Analyses.

When to use the Various Approaches

It is important to realize that various funding sources require different types of economic analyses. The following figure is to serve as a guideline for when to use the various approaches.



Implementing the Approaches

Benefit/cost analysis, cost-effectiveness analysis, and the STAPLE/E are important tools in evaluating whether or not to implement a mitigation activity. A framework for evaluating mitigation activities is outlined below. This framework should be used in further analyzing the feasibility of prioritized mitigation activities.

1. Identify the Activities

Activities for reducing risk from natural hazards can include structural projects to enhance disaster resistance, education and outreach, and acquisition or demolition of exposed properties, among others. Different mitigation project can assist in minimizing risk to natural hazards, but do so at varying economic costs.

2. Calculate the Costs and Benefits

Choosing economic criteria is essential to systematically calculating costs and benefits of mitigation projects and selecting the most appropriate activities. Potential economic criteria to evaluate alternatives include:

Determine the project cost. This may include initial project development costs, and repair and operating costs of maintaining projects over time.

Estimate the benefits. Projecting the benefits, or cash flow resulting from a project can be difficult. Expected future returns from the mitigation effort depend on the correct specification of the risk and the effectiveness of the project, which may not be well known. Expected future costs depend on the physical durability and potential economic obsolescence of the investment. This is difficult to project. These considerations will also provide guidance in selecting an appropriate salvage value. Future tax structures and rates must be projected. Financing alternatives must be researched, and they may include retained earnings, bond and stock issues, and commercial loans.

Consider costs and benefits to society and the environment. These are not easily measured, but can be assessed through a variety of economic tools including existence value or contingent value theories. These theories provide quantitative data on the value people attribute to physical or social environments. Even without hard data, however, impacts of structural projects to the physical environment or to society should be considered when implementing mitigation projects.

Determine the correct discount rate. Determination of the discount rate can just be the risk-free cost of capital, but it may include the decision maker's time preference and also a risk premium. Including inflation should also be considered.

3. Analyze and Rank the Activities

Once costs and benefits have been quantified, economic analysis tools can rank the possible mitigation activities. Two methods for determining the best activities given varying costs and benefits include net present value and internal rate of return.

- ***Net present value.*** Net present value is the value of the expected future returns of an investment minus the value of expected future cost expressed in today's dollars. If the net present value is greater than the project costs, the project may be determined feasible for implementation. Selecting the discount rate, and identifying the present and future costs and benefits of the project calculates the net present value of projects.
- ***Internal Rate of Return.*** Using the *internal rate of return* method to evaluate mitigation projects provides the interest rate equivalent to the dollar returns expected from the project. Once the rate has been calculated, it can be compared to rates earned by investing in alternative projects. Projects may be feasible to implement when the internal rate of return is greater than the total costs of the project. Once the mitigation projects are ranked on the basis of economic criteria, decision-makers can consider other factors, such as risk, project effectiveness, and economic, environmental, and social returns in choosing the appropriate project for implementation.

Economic Returns of Natural Hazard Mitigation

The estimation of economic returns, which accrue to building or landowner as a result of natural hazard mitigation, is difficult. Owners evaluating the economic feasibility of mitigation should consider reductions in physical damages and financial losses. A partial list follows:

- Building damages avoided
- Content damages avoided
- Inventory damages avoided
- Rental income losses avoided
- Relocation and disruption expenses avoided
- Proprietor's income losses avoided

These parameters can be estimated using observed prices, costs, and engineering data. The difficult part is to correctly determine the effectiveness of the hazard mitigation project and the resulting reduction in damages and losses. Equally as difficult is assessing the probability that an event will occur. The damages and losses should only include those that will be borne by the owner. The salvage value of the investment can be important in determining economic feasibility. Salvage value becomes more important as the time horizon of the owner declines. This is important because most businesses depreciate assets over a period of time.

Additional Costs from Natural Hazards

Property owners should also assess changes in a broader set of factors that can change as a result of a large natural disaster. These are usually termed "indirect" effects, but they can have a very direct effect on the economic value of the owner's building or land. They can be positive or negative, and include changes in the following:

- Commodity and resource prices
- Availability of resource supplies
- Commodity and resource demand changes
- Building and land values
- Capital availability and interest rates
- Availability of labor
- Economic structure
- Infrastructure
- Regional exports and imports
- Local, state, and national regulations and policies
- Insurance availability and rates

Changes in the resources and industries listed above are more difficult to estimate and require models that are structured to estimate total economic impacts. Total economic impacts are the sum of direct and indirect economic impacts. Total economic impact models are usually not combined with economic feasibility models. Many models exist to estimate total economic impacts of changes in an economy. Decision makers should understand the total economic impacts of natural disasters

in order to calculate the benefits of a mitigation activity. This suggests that understanding the local economy is an important first step in being able to understand the potential impacts of a disaster, and the benefits of mitigation activities.

Additional Considerations

Conducting an economic analysis for potential mitigation activities can assist decision-makers in choosing the most appropriate strategy for their community to reduce risk and prevent loss from natural hazards. Economic analysis can also save time and resources from being spent on inappropriate or unfeasible projects. Several resources and models are listed on the following page that can assist in conducting an economic analysis for natural hazard mitigation activities.

Benefit/cost analysis is complicated, and the numbers may divert attention from other important issues. It is important to consider the qualitative factors of a project associated with mitigation that cannot be evaluated economically. There are alternative approaches to implementing mitigation projects. Many communities are looking towards developing multi-objective projects. With this in mind, opportunity rises to develop strategies that integrate natural hazard mitigation with projects related to watersheds, environmental planning, community economic development, and small business development, among others. Incorporating natural hazard mitigation with other community projects can increase the viability of project implementation.

Resources

CUREe Kajima Project, *Methodologies For Evaluating The Socio-Economic Consequences Of Large Earthquakes*, Task 7.2 Economic Impact Analysis, Prepared by University of California, Berkeley Team, Robert A. Olson, VSP Associates, Team Leader; John M. Eiding, G&E Engineering Systems; Kenneth A. Goettel, Goettel and Associates Inc.; and Gerald L. Horner, Hazard Mitigation Economics Inc., 1997.

Federal Emergency Management Agency, *Benefit/Cost Analysis of Hazard Mitigation Projects*, Riverine Flood, Version 1.05, Hazard Mitigation Economics Inc., 1996.

Federal Emergency Management Agency *Report on Costs and Benefits of Natural Hazard Mitigation*. Publication 331, 1996.

Goettel & Horner Inc., *Earthquake Risk Analysis Volume III: The Economic Feasibility of Seismic Rehabilitation of Buildings in The City of Portland*, Submitted to the Bureau of Buildings, City of Portland, August 30, 1995.

Goettel & Horner Inc., *Benefit/Cost Analysis of Hazard Mitigation Projects Volume V, Earthquakes*, Prepared for FEMA's Hazard Mitigation Branch, October 25, 1995.

Horner, Gerald, *Benefit/Cost Methodologies for Use in Evaluating the Cost Effectiveness of Proposed Hazard Mitigation Measures*, Robert Olson Associates, Prepared for Oregon State Police, Office of Emergency Management, July 1999.

Interagency Hazards Mitigation Team, *State Hazard Mitigation Plan*, (Oregon State Police – Office of Emergency Management, 2000).

Risk Management Solutions, Inc., *Development of a Standardized Earthquake Loss Estimation Methodology*, National Institute of Building Sciences, Volume I and II, 1994.

VSP Associates, Inc., *A Benefit/Cost Model for the Seismic Rehabilitation of Buildings*, Volumes 1 & 2, Federal Emergency Management Agency, FEMA Publication Numbers 227 and 228, 1991.

VSP Associates, Inc., *Benefit/Cost Analysis of Hazard Mitigation Projects: Section 404 Hazard Mitigation Program and Section 406 Public Assistance Program, Volume 3: Seismic Hazard Mitigation Projects*, 1993.

VSP Associates, Inc., *Seismic Rehabilitation of Federal Buildings: A Benefit/Cost Model*, Volume 1, Federal Emergency Management Agency, FEMA Publication Number 255, 1994.



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Appendix F: Plan Development Timeline

2005

General: The City of Cottage Grove developed the 2005 Hazards Mitigation Plan as an addendum to the Lane County All-Hazard Mitigation Plan in an effort to take a more regional approach to planning for natural hazard scenarios. The Natural Hazards Mitigation Plan Team was formed in February of 2003, and served to provide guidance and direction in the Natural Hazards Mitigation Plan by the City Council in 2005.

Activities: Community Development Department engaged in several community-wide planning activities that implemented elements of the 2005 Natural Hazards Mitigation Plan, including a 2050 Visioning project, Total Maximum Daily Load (TMDL) Implementation Planning process and plan adoption, extended work with the Coast Fork Watershed Council on floodplain and riparian protections, work with the 2006-2007 Development Code Advisory Committee on the adoption of new sensitive lands standards in 2008, and ongoing work with the Lane County Countywide Preparedness Group.

The original Natural Hazards Mitigation Plan Advisory Committee was used as an Advisory Committee for the TMDL Implementation Plan; information from this ongoing planning process was used to inform changes made in the Update done in 2010.

Table 9: 2005 NHMP Action Items

Flood #1: Investigate FEMA's Community Rating System requirements to potentially lower flood insurance rates.
Flood #2: Improve upon localized flood hazard knowledge.
Flood #3: Inventory structures and infrastructure in the FEMA mapped floodway and explore mitigation options.
Flood #4: Address concerns associated with development in areas with high water tables.
Flood #5: Increase channel maintenance and debris removal from rivers and streams.
Flood #6: Update Storm Drainage Master Plan, determine and implement appropriate mitigation measures.
Flood #7: Improve public notification system in case of a dam break.
Landslide #1: Evaluate risk level for buildings identified in the landslide hazard area.
Landslide #2: Limit future development in high landslide potential areas.
Landslide #3: Adopt erosion control regulations for all development, especially in high

landslide hazard areas.
Wildland Fire #1: Encourage fire-safe construction practices for existing and new construction in high-risk areas.
Winter Storm #1: Decrease risk of power and utility outages by moving lines underground.
Winter Storm #2: Periodically survey trees on city property and trim as necessary.
Winter Storm #3: Ensure that critical facilities have backup power and emergency operations plans to deal with power outages.
Earthquake #1: Complete inventory of residential, commercial, and public buildings in Cottage Grove that may be particularly vulnerable to earthquake damage, including (but not limited to) unreinforced masonry buildings and wood frame buildings with cripple wall foundations and with sill plates not bolted to the foundation.
Earthquake #2: Complete seismic vulnerability assessments and develop mitigation strategies of seismic retrofit of critical public buildings identified as being particularly vulnerable.
Earthquake #3: Study and make necessary improvements to the water transmission line from Layng Creek.
Multi-Hazard #1: Complete inventories of buildings and infrastructure at risk from each hazard and prioritize mitigation projects to reduce the level of risk.
Multi-Hazard #2: Identify and pursue funding opportunities to develop and implement specific mitigation projects in Cottage Grove.
Multi-Hazard #3: Strengthen emergency preparedness and response capabilities.
Multi-Hazard #4: Integrate the information, objectives, mitigation strategies and action items into existing regulatory documents and programs.
Multi-Hazard #5: Update the Comprehensive Plan to meet State Land Use Planning Goal 7.
Multi-Hazard #6: Enhance awareness of natural hazards.
Multi-Hazard #7: Increase the medical resources capable of handling large-scale medical needs.
Multi-Hazard #8: Ensure that there are adequate shelter facilities in hazard-free zones to serve Cottage Grove residents.

2010

General: The 2005 Plan was due for an update by April 2010. In December 2009, a steering committee was formed to update the 2005 Plan.

This committee reviewed and updated the mission, goals and objectives of the 2005 Plan. They also reviewed and updated the plan's risk assessment, the mitigation actions, and the plan implementation and maintenance process. The planning process was designed to: (1) result in an updated plan that is Disaster Mitigation Act 2000 compliant; (2) coordinate with the State's plan and Lane County's plan; (3)

build a network of local organizations that can play an active role in plan implementation; and (4) reflect any changes or new information that occurred since the plan's initial adoption in 2005.

This planning process was influenced by the work done by the Oregon Partnership for Disaster Resilience on the 2009 Eugene/Springfield Multi-Jurisdictional Natural Hazards Mitigation Plan, funded through a FEMA awarded Pre-Disaster Mitigation grant.

Table 10: 2010 NHMP Action Items

<u>Flood Hazard 1</u> : Improve upon localized flood hazard knowledge.
<u>Flood Hazard 2</u> : Inventory structures and infrastructure in the FEMA mapped floodway and explore mitigation options.
<u>Flood Hazard 3</u> : Coordinate with other local, state and federal agencies on flood plain improvements
<u>Flood Hazard 4</u> : Increase channel maintenance and debris removal from rivers and streams.
<u>Flood Hazard 5</u> : Adopt Storm Drainage Master Plan, and determine and implement appropriate mitigation measures.
<u>Flood Hazard 6</u> : Improve public notification system in case of a dam break.
<u>Flood Hazard 7</u> : Improve Riparian area health.
<u>Landslide Hazard 1</u> : Evaluate risk level for buildings identified in the Landslide hazard area.
<u>Landslide Hazard 2</u> : Limit future development in high landslide potential areas.
<u>Landslide Hazard 3</u> : Adopt erosion control regulations for all development, especially in high landslide hazard areas.
<u>Landslide Hazard 4</u> : Evaluate landslide hazard risk for Knox Hill Reservoir and mitigate as necessary.
<u>Landslide Hazard 5</u> : Improve knowledge of landslide hazard through better mapping.
<u>Wildfire 1</u> : Encourage fire-safe construction practices for existing and new construction in high-risk areas.
<u>Winterstorm 1</u> : Decrease risk of power and utility outages by moving lines underground.
<u>Winterstorm 2</u> : Periodically survey trees on city property and trim as necessary.
<u>Winterstorm 3</u> : Ensure that critical facilities have backup power and emergency operations plans to deal with power outages.
<u>Winterstorm 4</u> : Develop plans for snow emergency and roof clearance.
<u>Earthquake 1</u> : Complete and maintain inventory of critical infrastructure in Cottage Grove that may be particularly vulnerable to earthquake damage, including (but not limited to) unreinforced masonry buildings and infrastructure.

<u>Earthquake 2:</u> Complete seismic vulnerability assessments and develop mitigation strategies of seismic retrofit of critical public buildings and facilities identified as being particularly vulnerable.
<u>Earthquake 3:</u> Complete and maintain inventory of commercial and multi-family residential buildings in Cottage Grove that may be particularly vulnerable to earthquake damage, including (but not limited to) unreinforced masonry buildings and wood frame buildings with cripple wall foundations and with sill plates not bolted to the foundation.
<u>Earthquake 4:</u> Complete necessary improvements to the Row River Water Treatment Plant.
<u>Earthquake 5:</u> Participate in ODOT Bridge review program.
<u>Multi Hazard 1:</u> Complete inventory of buildings and infrastructure at risk from each hazard and prioritize mitigation projects to reduce the level of risk.
<u>Multi Hazard 2:</u> Identify and pursue funding opportunities to develop and implement specific mitigation projects in Cottage Grove.
<u>Multi Hazard 3:</u> Strengthen emergency preparedness and response capabilities.
<u>Multi Hazard 4:</u> Integrate the information. Objectives, mitigation strategies and action items into existing regulatory documents and programs.
<u>Multi Hazard 5:</u> Update the Comprehensive Plan and Development Code to meet State Land Use Planning Goal 7.
<u>Multi Hazard 6:</u> Enhance awareness of natural hazards.
<u>Multi Hazard 7:</u> Increase the medical resources capable of handling large-scale medical needs.
<u>Multi Hazard 8:</u> Ensure that there are adequate shelter facilities in hazard-free zones to serve Cottage Grove residents.

Activities:

Steering Committee Meeting (February, 2010)

The committee met to review and update as necessary plan goals and objectives; (2) develop a stakeholder list and approve a public involvement plan; and (3) develop a project timeline.

Steering Committee Meeting (March, 2010)

The committee met again in early March to (1) review and update the city’s hazard profile and vulnerability estimates; (2) review and make recommendations on mitigation strategies; and (3) discuss stakeholder survey content.

Agendas from those meeting were included as part of the City’s Appendix to the Lane County Natural Hazards Mitigation Plan Update. Once defined, the public involvement schedule and project goals were uploaded

to the City's website and a notice of the upcoming planning process was sent to all City water service customers.

Stakeholder Identification

As part of the public involvement plan, the Steering Committee identified a group of stakeholders that may be impacted by or have some control over the impacts of natural hazards in Cottage Grove. Representatives from the following organizations were contacted via mail and email to inform them on the ongoing project and request comment on revised mitigation strategies:

- The Building Department
- Cottage Grove Historical Society
- Cottage Grove Area Chamber of Commerce
- Coast Fork Willamette Watershed Council
- City of Cottage Grove Public Works, Engineering
- City of Cottage Grove, Maintenance
- City of Cottage Grove, Sewer & Water
- South Lane County Fire and Rescue District
- Lane County Transportation Planning
- Oregon Department of Forestry
- U.S. Forest Service
- Department of State Lands
- Lane County Waste Management
- Lane County Land Management
- ODOT Region 5
- Pacific Power & Light
- NW Natural
- Emerald People's Utility District
- Peace Health
- South Lane School District
- Cottage Grove Economic & Business Improvement District
- Visioning Committee
- U.S. Army Corps of Engineers
- Department of Land Conservation & Development

Public Open House & Steering Committee meeting (June 2010)

The Steering Committee met to review final draft mitigation strategies as prepared by Community Development Department staff at a meeting in June at City Hall in an Open House format. The drafts were made available on-line for public comment two weeks before the open house.

All stakeholders had received email and written invitations to attend the Open House. Additionally, all water-bill customers within Cottage Grove received a public notice of the meeting. The public open house was also published in the Sentinel and advertised on-line and at various public locations throughout Cottage Grove. Comments taken at the meeting were incorporated into the final draft of the document. (See Appendix for copies of public notice, meeting materials and meeting attendance.)

Final Draft

Staff created a draft 2011 Natural Hazards Mitigation Plan Update integrating comments received during the open house. This draft was sent to the State Hazard Mitigation Office and to FEMA Region 5 for review and comment to verify that the City was on the right track. Comments were incorporated into the draft prior to release to the public.

State Hazard Mitigation Officer Review (November 2011)

The final approved draft of the 2011 Update was sent to the State Hazard Mitigation Officer and to FEMA for review. Upon receipt of approval pending adoption, City staff began the process for local adoption.

Final adoption (April 2012)

The Cottage Grove City Council is responsible for adopting the City of Cottage Grove Natural Hazards Mitigation Plan as well as the Lane County All-Hazard Mitigation Plan as an addendum to the Cottage Grove Plan.

The City Council adopted the final draft of the document through Resolution No. 1802 on April 23, 2012.

2016 Update

In June of 2015, the decision was made to update the City's current NHMP as Lane County was also in the process of updating its NHMP in order to incorporate changes made in state level planning guidelines. The Cottage Grove NHMP Update is being undertaken early in the 5 year planning cycle in order to make it adaptable to new FEMA mitigation planning standards released in 2013, and in coordination with efforts undertaken by Lane County Emergency Management.

The process began with a review of the current plan as it was adopted in April of 2012. The changes to the 2016 plan update include a significant change in the format of the document, and a very thorough review of existing Mitigation Actions. Mitigation Actions are now listed in a concise table format, and separate tables outlining Critical Infrastructure and Key Resources (CIKR), and the Natural Hazards to which they are vulnerable. Below is the timeline of development:

2015-16 NHMP Update Timeline

October	<ul style="list-style-type: none"> • Form Advisory Committee • Invitees: <ul style="list-style-type: none"> ○ South Lane County Fire and Rescue – Justin Baird ○ Cottage Grove Police Department – Dan White ○ Planning Commission – Alan Widener ○ City Council - Garland Burbank ○ Community Development Department - Howard Schesser ○ City Planner - Amanda Ferguson ○ Public Works – Jan Wellman ○ Water Treatment – Jan Wellman ○ Finance Department – Bert Olson • Contact Stakeholders with Initial Information
December	<ul style="list-style-type: none"> • Advisory Committee: • Review Proposed Mitigation Actions
March 2016	<ul style="list-style-type: none"> • Public Forum on survey results, proposed mitigation measures
April	<ul style="list-style-type: none"> • Advisory Committee: Review Second Draft Plan • Public Meeting on Draft Plan
May	<ul style="list-style-type: none"> • Final Draft of plan to stakeholders (written notice, plan on-line) • Advisory Committee: final Draft Review • Planning Commission – Draft Review • Revise as necessary based on comments
June	<ul style="list-style-type: none"> • Final Draft of Plan to City Council



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Appendix G: Public Meeting Documentation

44 CFR Requirement 201.6(b)

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: (2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process. (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

Outlined below are the highlights of Cottage Grove Natural Hazards Mitigation Plan Advisory Committee meetings and general mitigation activities undertaken during this planning cycle. These activities demonstrate the committed and diverse involvement of community members, local government, regional agencies, the public, and various stakeholders.

Meeting Date:

Location:

Meeting Agenda/Outline:

Agencies Represented:

Minutes/Notes:

AGENDA

Natural Hazards Mitigation Update Advisory Committee Meeting

December 18, 2015

11:00 AM

Sinclair Room, City Hall

Cottage Grove, Oregon. 97424

1. Review of previous plan – Why we are updating early
2. Review New Action Items
3. Update on Project timeline / Public Involvement Plan
4. Schedule future meeting

AGENDA

Natural Hazards Mitigation Update

Advisory Committee Meeting

Insert Date Here

Insert Time here

Sinclair Room

1. Review of last meeting: First Draft Review
2. Review Action Items:
 - a. Earthquake
 - b. Wildfire
 - c. Winter Storms
 - d. Flood Hazards
 - e. Landslide Hazards
3. Update on Project timeline / Public Involvement Plan
4. Schedule future meeting

TIMELINE 2010:

- February
- Form Advisory Committee
 - Goals and Objectives
 - Identify Stakeholders
- March
- Contact Stakeholders with Initial Information
 - Website Page Developed
 - Advisory Committee: Identify Proposed Mitigation Measures
 - Develop Stakeholder Survey
- April
- Stakeholder Survey on Mitigation Measures
- May
- Public Forum on survey results, proposed mitigation measures
 - Advisory Committee: Review survey results and finalize mitigation measures
- June
- Develop draft plan
- July
- Advisory Committee: Review first Draft Plan
 - Public Meeting on Draft Plan
- August
- Final Draft of plan to stakeholders (written notice, plan on-line)
 - Advisory Committee: final Draft Review
 - Revise as necessary based on comments
- September
- Final Draft of plan to OEM
 - Final Draft of Plan to City Council

Community Involvement in Plan Update

February 2010-Fall 2010

1. Establish Advisory Committee (February 2010)

- Emergency Management
- Public Works
- Community Development (planning department)
- Community Services
- Finance
- Coast Fork Willamette Watershed Council
- Planning Commission

2. Identify Stakeholders (February/March 2010)

- City representatives
 - 2030 Vision group
 - City Council
 - Building Official
 - Cottage Grove Public Works, Engineering
 - Cottage Grove Maintenance
- representatives of regional, state, and federal agencies
 - South Lane Fire & Rescue
 - US Forest Service
 - Department of State Lands
 - ODOT Region 5
 - Oregon Emergency Management
 - Oregon Department of Fish & Wildlife
 - US Army Corps of Engineers
 - Lane County Transportation Planning
 - Lane County Waste Management
 - Lane County Land Management
- Utilities
 - PP&L
 - EPUD
 - NW Natural
- Critical Facilities
 - Peace Health
 - Assisted Living facilities
 - Lane Community College
 - South Lane School District
- property owners, homeowners, renters

- Friends of Mt. David
- EBID & Chamber of Commerce
- Service clubs (Rotary, Lions, Kiwanis, etc.)
- land developers, real estate agents, lenders (Realty Board, Homebuilders Association)
- neighboring jurisdictions (Lane County, Creswell, E/S, LCOG)

3. Contact Stakeholders:

- 1) at beginning of process (February/March 2010)
- 3) with survey on mitigation strategies (March/April 2010)
- 2) with draft plan (August 2010)

4. Identify outreach & education activities

1. Stakeholder contact (February/March 2010):

-- initial mailing with timeline for project, goals and objectives, contact information

2. Website update (Ongoing)

-- include timeline for project, updated goals, draft plan, contact information, survey link

3. Stakeholder survey (March/April 2010):

Monkey survey for stakeholders (including public link on website, and email to identified stakeholders) on proposed mitigation strategies

Survey report on line & incorporated in findings of draft plan

4. Public Open House (May 2010)

-- when draft mitigation strategies prepared, prior to final draft

5. Public meeting (July 2010)

-- review of final draft

6. Final Draft review & comment (August 2010)

-- notice to stakeholders of final draft completion

-- final draft available on line for comment

5. Adoption

- 1) Public Hearing at City Council (September 2010)

DATE: May 24, 2010
TO: Potential Stakeholders
FROM: City of Cottage Grove
Natural Hazard Mitigation Advisory Committee
RE: **Cottage Grove Natural Hazard Mitigation Plan Update**

Dear Potential Stakeholder:

The City of Cottage Grove has initiated a planning process to update our 2016 Natural Hazard Mitigation Plan. We would like to invite you to participate in the 5-year update of this important planning document.

We have formed an Advisory Committee to work with staff to update the plan. To date, the Advisory Committee, which is comprised of representatives from the Planning Commission, City Council, implicated city departments, and the Coast Fork Watershed Council, have met twice, to review the plan's goals and mission, develop a project timeline, and recommend amendments to existing mitigation priorities. I have attached the 2010 Natural Hazard Mitigation Plan's Mission & Goals for your review.

We will hold an **OPEN HOUSE** on June 16th, at City Hall, from 5:30-6:30pm to present revised/updated Mitigation Strategies. Proposed mitigation strategies will be available on-line at www.cottagegrove.org for your review by June 5. Please feel free to send any comments or questions regarding these strategies to planner@cottagegrove.org.

Our next step will to develop a draft mitigation plan, which will be taken to public comment during the Summer of 2010.

When the draft plan is available in August, we would like to send your agency a copy for review and comment. If you are not interested in receiving a draft of the plan, please let me know at the email above or by phone at (541) 942-3340.

We welcome your participation in the planning process. Thank you in advance for your time.

Sincerely,

Amanda Ferguson
City Planner
planner@cottagegrove.org



NATURAL HAZARD MITIGATION PLAN UPDATE 2010

The City of Cottage Grove is working on updating our 2005 Natural Hazards Mitigation Plan. Staff is working with an Advisory Committee to update our plan to reflect current federal, state and local regulations and needs. We hope to have a final draft ready for adoption by September, 2010. We welcome your participation and feedback in the planning process!

What are the Natural Hazard Mitigation Plan's Mission and Goals?

Plan Mission

The mission of the City of Cottage Grove Natural Hazards Mitigation Plan is to promote sound public policy designed to protect citizens, critical facilities, infrastructure, and property from natural hazards. This can be achieved by increasing public awareness, documenting resources for risk reduction and loss-prevention, and identifying activities to guide the City towards a safer, more sustainable community.

Plan Goals

The plan goals provide guidance in developing specific action items from the general mission statement. The goals describe the overall direction the City of Cottage Grove desires to work towards in mitigating the effects of natural hazards.

Protect Life and Property

- Implement activities that assist in protecting life and property from losses due to natural hazards.

- Reduce losses and repetitive damage from chronic hazard events.
- Improve hazard assessment information to make recommendations for discouraging new development in areas vulnerable to natural hazards.
- Encourage preventative measures in existing vulnerable areas.
- Recovery from disaster

Public Awareness

- Develop and implement educational outreach programs to increase public awareness of the hazards associated with natural disasters.
- Provide information on tools, partnerships, and funding resources to assist in implementing hazard mitigation actions.

Emergency Services

- Establish policy to ensure mitigation for critical facilities, services, and infrastructure.
- Coordinate and integrate natural hazard mitigation activities with emergency operations plans and procedures.

Partnerships and Implementation

- Strengthen communication and coordinate participation among and within public agencies, citizens, non-profit organizations, businesses, and industry.
- Encourage leadership within the public and private sectors to prioritize and implement local, county, and regional hazard mitigation activities.

State/National Guidelines

- Meet the Federal Emergency Management Associations (FEMA) mitigation planning requirements so Cottage Grove remains eligible for pre- and post-disaster mitigation funding from FEMA.
- Continue to comply with National Flood Insurance Program requirements.
- Meet Oregon Emergency Management's mitigation planning evaluation criteria.
- Meet Oregon's Goal 7 natural hazard planning guidelines.

Advisory Committee Makeup:

- Howard Schesser, Emergency Program Director
- Jan Wellman, Public Works Director
- Bert McClintock, Finance Director
- Amanda Ferguson, City Planner
- Pam Reber, Coast Fork Watershed

- Lindsey Haskell, Cottage Grove Planning Commission

Upcoming Events:

Open House to present Mitigation Strategies – _____ (Insert Date Here)

Draft Available for Comment to Public -- _____

Final Draft to Stakeholders -- _____

FOR MORE INFORMATION, CONTACT:

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planner@cottagegrove.org
www.cottagegrove.org**

RESOLUTION NO. 1802

A RESOLUTION ADOPTING
THE COTTAGE GROVE NATURAL HAZARDS MITIGATION PLAN

WHEREAS, a Natural Hazards Mitigation Plan has been prepared by the City in compliance with the criteria outlined in 44 CFR Part 201; and,

WHEREAS, the Natural Hazards Mitigation Plan includes resources and information to assist the city government, residents, public and private sector organizations, and others interested in participating in planning for natural hazards; and

WHEREAS, the Natural Hazards Mitigation Plan provides a list of activities that may assist the City of Cottage Grove in reducing risk and preventing loss from future hazard; and,

WHEREAS, the Natural Hazards Mitigation Plan is a collaborative effort between the City of Cottage Grove and local stakeholders. The Natural Hazards Mitigation Plan Team was formed in February 2003 and assisted in the preparation of this; and

WHEREAS, the plan was reviewed at a public meeting, and a public hearing before the Planning Commission; and

WHEREAS, City Council of Cottage Grove approved the Natural Hazards Mitigation Plan in 2005 by adopting Resolution No. 1586 on December 19, 2005 following approval by the Federal Emergency Management Agency (FEMA) on November 25, 2005; and

WHEREAS, the 2005 Natural Hazards Mitigation Plan had a requirement to be reviewed every five years; and

WHEREAS, a planning process was established that included the formation of a Natural Hazards Mitigation Plan Update Steering Committee, Work Sessions, Stakeholder Notification, Public Open House, Public Posting on City Website, and submissions to the State Hazard Mitigation Officer and FEMA Region X Risk Analysis Branch, Mitigation Division; and

WHEREAS, with approval of this plan by the City and FEMA the City will maintain eligibility for the Pre-Disaster Mitigation Grant Program, the Hazard Mitigation Grant Program, and the Flood Mitigation Assistance Program; and

WHEREAS, the Natural Hazards Mitigation Plan has been reviewed by the Oregon State Office of Emergency Management and Region X of FEMA; and

Resolution 1802, 2011 Natural Hazards Mitigation Plan

WHEREAS, Region X of FEMA approved the Natural Hazards Mitigation Plan on March 30, 2012 subject to the adoption of the plan by the City Council of the City of Cottage Grove; and

NOW, THEREFORE, BE IT RESOLVED that the *2011 Natural Hazard Mitigation Plan*, set forth in Exhibit "A" is hereby adopted.

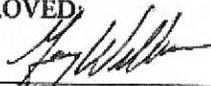
This resolution will take effect immediately.

PASSED BY THE COMMON COUNCIL AND APPROVED BY THE MAYOR THIS 23rd DAY OF April, 2012.

ATTEST:


Richard Meyers, City Manager
Date: April 23, 2012

APPROVED:


Gary Williams, Mayor
Date: April 23, 2012

Resolution 1802, 2011 Natural Hazards Mitigation Plan