

1. CLARK COUNTY

1.1 NATURAL HAZARD MITIGATION PLAN POINT OF CONTACT

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1.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- Date of Incorporation—1849
- Current Population—451,820 (County), 214,585 (unincorporated Clark County) as of April 2015 (2015 Office of Finance estimates).
- Population Growth—Based on data tracked by the Office of Finance, Clark County has experienced an increasing rate of growth over the past 5 years. The overall population has increased 5.86 percent since 2010. Significantly, Clark County experienced a 10 percent rate of growth in the last year, ranking it third in rate of growth among counties in Washington State.
- Location and Description—Clark County is located in the southern part of Washington State. Clark County is the state's seventh smallest county, encompassing an area of 656 square miles. The county is bordered by the Columbia River and State of Oregon to the south and west, the Lewis River drainage system, including Lake Merwin and Yale Lake as well as Cowlitz County to the north and Skamania County to the east. Clark County is the home of Washington State University's Vancouver campus. The Port of Vancouver, a deep draft port is located in the southwestern corner of the county. Interstates 5 and 205 and State Route 14 are the major highways within the county.
- Brief History—Clark County began as the Vancouver District in 1844. In 1845 the name was changed to Vancouver County. On September 3, 1849 the Oregon Territorial Legislation changed the name to Clark County in honor of explorer William Clark. Originally covering the area north of the Columbia River, east to the Rockies and south of Alaska, the County was divided and subdivided until reaching its present size in 1880. Clark County has a long and storied cultural, economic, industrial, and military history. From Fort Vancouver and Vancouver Barracks to WWI and WWII, the county has a rich history in many areas such as logging, lumber mills, railroad, aviation, and shipbuilding. In 1989, Washington State University Vancouver was established, conducting virtual classrooms until 1996 when the campus located in the Salmon Creek area opened. The County has a mix of rural and urban areas and has become a regional hub for transportation and commerce.

- **Climate**—Clark County’s weather is typical of the central valley in the Pacific Northwest, with the strong influences of the Pacific Ocean and Cascade Mountain Range producing mild summers and cool wet winters. The average annual rainfall is 42 inches, but varies quite a bit, ranging from 38 inches on the west side to 80 inches in Yacolt. Mountainous areas in northeastern Clark County can receive over 120 inches of annual rainfall. Seventy percent of the county’s rainfall occurs between November and March. The average annual snowfall ranges from 7 inches on the western side to several feet in the mountains, although snow does not occur every year. The average year-round temperature is 50°F. The average high in July is 80°F and average low in January is 34°F. Prevailing winds over most of the county are from the northwest in the summer and southeast in the winter.
- **Governing Body Format**—Clark County is governed under the Home Rule Charter, which took effect in January 2015. It includes a five-member council, one of which is the elected chair, and a county manager. Other elected officials include the Assessor, Auditor, Clerk, District Court, Prosecuting Attorney, Sheriff, Superior Court and Treasurer. Under the direction of the County Manager are eight external departments: Board of Equalization, Community Planning, Community Development, Community Services, Public Health, Public Works, Public Information and Outreach, Environmental Services, and six internal departments: General Services, Human Resources, Budget, Information Technology, GIS and Medical Examiner. The County has over 35 boards, commissions, committees and advisory groups, which report to the Council. The Board of County Councilors assumes responsibility for the adoption of this plan; the County Manager will oversee its implementation.
- **Development Trends**—Anticipated development levels for Clark County are moderate to high, consisting of residential and commercial development. The majority of recent development has included development of areas within the existing urban growth boundaries as urban infrastructure capacity is extended and increased to support development activity. Residential development has consisted primarily of single family homes and some multi-family developments. Clark County is currently in cycle to update its growth management plan effective June 30, 2016. The prior plan update was in 2007. Plan policies for the 2016 update continue to be developed, and some fluctuations are expected as the county charter form of government passed by voters in 2014 comes into full effect in January 2016.

1.3 CAPABILITY ASSESSMENT

An assessment of legal and regulatory capabilities is presented in Table 1-1. An assessment of fiscal capabilities is presented in Table 1-2. An assessment of administrative and technical capabilities is presented in Table 1-3. Information on National Flood Insurance Program (NFIP) compliance is presented in Table 1-4. Classifications under various community mitigation programs are presented in Table 1-5. An assessment of education and outreach capabilities is presented in Table 1-6.

In addition to the capabilities listed below, it should be noted that Clark County is a member of the Discovery Clean Water Alliance, which was legally formed on January 4, 2013 under the Joint Municipal Utility Services Act (RCW 39.106). The Alliance serves four Member agencies – the City of Battle Ground, Clark County, Clark Regional Wastewater District and the City of Ridgefield. The Alliance Members jointly own and jointly manage regional wastewater assets under Alliance ownership. The Alliance seeks to optimize the long-term framework for delivery of regional wastewater transmission and treatment services to the urban growth areas in the central portion of Clark County, Washington.

Table 1-1. Legal and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated
Building Code <i>Comment: Clark County Code Title 14- Buildings and Structures & Title 15- Fire Prevention- adopted July 2013</i>	Yes	No	Yes
Zoning Code <i>Comment: Clark County Code Title 40- Clark County, Washington Unified Development Code Consolidates all development related codes into one document</i>	Yes	No	Yes
Subdivisions <i>Comment: Clark County Code Chapter 40.540 – Boundary Line Adjustments and Land Divisions Section 40.540.040 - Subdivisions</i>	Yes	No	Yes
Stormwater Management <i>Comment: Clark County Code Chapter 40.386 – Stormwater and Erosion Control Clark County Stormwater Management Plan (4 March 2015)</i>	Yes	No	Yes
Post-Disaster Recovery <i>Comment: N/A</i>	No	No	No
Real Estate Disclosure <i>Comment: N/A</i>	No	No	No
Growth Management <i>Comment: Clark County Comprehensive Plan –Adopted September 2007(latest amendment December 2012) Update due June 30, 2016</i>	Yes	No	Yes
Site Plan Review <i>Comment: Clark County Code Chapter 40.520 – Permits and Reviews Section 40.520.040 – Site Plan Review All new commercial and residential projects require Building and Fire review of the site plan for County requirements.</i>	Yes	No	Yes
Environmental Protection <i>Comment: Critical Areas Ordinances (CAO)—Clark County Code Subtitle 40.4- Critical Areas and Shorelines</i>	Yes	No	Yes
Flood Damage Prevention <i>Comment: Critical Areas Ordinances (CAO)—Clark County Code Chapter 40.420 – Flood Hazard Areas- Adopted July 2012</i>	Yes	No	Yes
Emergency Management <i>Comment: Clark County Code Chapter 2.48A – Emergency Management *Clark Regional Emergency Services Agency Interlocal Cooperation Agreement *Washington State Emergency Management Division</i>	Yes	Yes	Yes
Climate Change <i>Comment: N/A</i>	No	No	No
Other <i>Comment: N/A</i>	No	No	No
General or Comprehensive Plan <i>Is the plan equipped to provide linkage to this mitigation plan? Yes, direct linkage to the Natural Hazard Mitigation Plan has been included in the current update to the Clark County Comprehensive Plan, Environmental Chapter, Other Hazard Mitigation Programs Section. Comment: Clark County Comprehensive Plan –Adopted September 2007 (latest amendment December 2012); Update due June 30, 2016</i>	Yes	No	Yes
Capital Improvement Plan <i>Comment: Clark County Comprehensive Plan –Appendix E- Capital Facilities Plan What types of capital facilities does the plan address? Water, sewer, stormwater, schools, parks and recreation facilities, law enforcement and fire protection. How often is the plan updated? As needed every 8-10 years - part of the Comp Plan cycle</i>	Yes	No	Yes

	Local Authority	Other Jurisdiction Authority	State Mandated
Floodplain or Watershed Plan <i>Comment: Clark County Code Chapter 40.420 – Flood Hazard Areas Clark County Code Chapter 40.410- Critical Aquifer Recharge Areas * Lower Columbia Fish Recovery Board & Washington State Department of Ecology</i>	Yes	Yes*	No
Stormwater Plan <i>Comment: Clark County Code Chapter 40.386- Stormwater and Erosion Control Clark County Stormwater Management Plan (4 March 2015)</i>	Yes	No	Yes
Habitat Conservation Plan <i>Comment: Clark County Code Chapter 40.440- Habitat Conservation Clark County Code Chapter 40.450- Wetland Protection</i>	Yes	No	No
Economic Development Plan <i>Comment: Clark County Code Chapter 40.230- Commercial, Business, Mixed Use and Industrial Districts Clark County Economic Development Plan – September 2011 (update due 2016) Clark County Comprehensive Plan – Chapter 9 -Adopted September 2007(latest amendment December 2012) Update due June 30, 2016 * Columbia River Economic Development Council</i>	Yes	Yes*	Yes (dependent on funding)
Shoreline Management Plan <i>Comment: Clark County Code Chapter 40.460 – Shoreline Master Program – last update 2012 Clark County Comprehensive Plan- Chapter 13</i>	Yes	No	Yes
Community Wildfire Protection Plan <i>Comment: Clark County Code Chapter 15.13- Wildland Urban Interface/Intermix Ordinance Clark County Forest Stewardship Plan – Camp Bonneville – November 2011- Appendix E- Wildfire Suppression Plan</i>	Yes	No	No
Forest Management Plan <i>Comment: Clark County Forest Stewardship Plan – Camp Bonneville – November 2011</i>	Yes	No	No
Climate Action Plan <i>Comment: N/A</i>	No	No	No
Other <i>Comment: Regional Disaster Debris Management Plan (DRAFT) March 31, 2011 *Note- a working group involving Clark County and other Municipal Partners is currently meeting monthly to work on an update to this plan based on recommendations during a contractor review in 2014 through the Regional Disaster Preparedness Organization.</i>	Yes	Yes	No
Comprehensive Emergency Management Plan <i>Comment: Clark Regional Comprehensive Emergency Management Plan – December 2013</i>	Yes	No	Yes
Threat & Hazard Identification & Risk Assessment <i>Comment: Clark County Hazards Identification Vulnerability Analysis- 2011 *Clark Regional Emergency Services Agency *Regional Disaster Preparedness Organization and Portland Urban Area Security Initiative (UASI)</i>	Yes	Yes*	No
Post-Disaster Recovery Plan <i>Comment: N/A</i>	No	No	No
Continuity of Operations Plan <i>Comment: Clark County Code Section 2.48A.050- Continuity of Government *COOP efforts underway in Treasurers Office, Public Health, Public Works and Elections</i>	Yes*	No	No
Public Health Plan <i>Comment: Clark County Code Title 24- Public Health Clark County Public Health Strategic Plan 2015-2016 Region IV Public Health Emergency Response Plan – December 2013</i>	Yes	No	No

Table 1-2. Fiscal Capability

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other Legacy Lands Program	Yes

Table 1-3. Administrative and Technical Capability

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Clark County Dept. of Community Development – Land Use Clark County Dept. of Public Works / Clark County Public Health Dept.
Engineers or professionals trained in building or infrastructure construction practices	Yes	Clark County Dept. of Community Development- Building Safety: Inspectors Plans Examiners Administrative Staff Clark County Dept. of Community Development- Fire Marshal's Office: Deputy Fire Marshal's Administrative Staff Clark County Public Works Dept. Project Managers Construction Engineering
Planners or engineers with an understanding of natural hazards	Yes	Clark County Public Works Dept.
Staff with training in benefit/cost analysis	Yes	Clark County Budget Office Clark County Auditor's Office Clark County risk Management
Surveyors	Yes	Clark County Public Works Dept.
Staff capable of making substantial damage estimates	Yes	Buildings – Clark County Dept. of Community Development Bridges/Infrastructure/Soils – Clark County Public Works Dept. – Also has GEO-Tech Contractors on immediate contract
Personnel skilled or trained in GIS applications	Yes	Clark County GIS Department Includes: GIS Manager – 1 GIS Coordinator/Project Mgr. – 3 GIS Coordinator/ GIS DBA – 1 GIS Analysts – 6 (1) Hazus/EOC trained GIS Technicians – 5 Land Records Technicians - 4

Staff/Personnel Resources	Available?	Department/Agency/Position
Scientist familiar with natural hazards in local area	Yes	Clark County Public Works Dept. : Cleanwater Access to CVO, NWS and other organizations
Emergency manager	Yes	Clark Regional Emergency Services Agency (CRESA) – Emergency Management Division Manager
Grant writers	Yes	Multiple depending on subject

Table 1-4. National Flood Insurance Program Compliance

Criteria	Response
When did the community enter the NFIP?	08/02/82
When did the Flood Insurance Rate maps become effective?	09/5/2012
What local department is responsible for floodplain management?	Clark County Public Works Dept.
Who is your floodplain administrator? (department/position)	Clark County Public Works – Engineering Division Manager
• Is this a primary or auxiliary role?	Auxiliary
Are any certified floodplain managers on staff in your jurisdiction?	No
What is the date of adoption of your flood damage prevention ordinance?	July 15, 2012
• Does your floodplain management program meet or exceed minimum requirements?	Exceed
• If so, in what ways?	Exceeds due to higher regulatory standards and participation in the Community Rating System. The County has adopted higher regulatory standards than the NFIP requirements. These include <ul style="list-style-type: none"> • New residential, commercial and industrial construction, as well as substantial improvements shall have the lowest floor (including basement) elevated at least one foot above based flood elevation. • No net loss of conveyance or storage capacity for all channels during 100-year flood event. • Adoption of both the IRC and IBC. • All manufactured homes to be placed or substantially improved within a special flood hazard area shall be elevated on a permanent foundation such that the lowest floor of the manufactured home is at least one (1) foot above the base elevation.
When was the most recent Community Assistance Visit or Community Assistance Contact?	September 24, 2008
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed?	No
• If so, please state what they are.	
Do your flood hazard maps adequately address the flood risk within your jurisdiction?	Yes
• If no, please state why.	

Criteria	Response
Does your floodplain management staff need any assistance or training to support its floodplain management program? • If so, what type of assistance/training is needed?	Yes E072 – Hazus – MH for Flood E0194- Advanced Floodplain Management Concepts E0272- Managing the Floodplain Post-Disaster E0273- Managing Floodplain through NFIP E0278- NFIP / Community Rating System E0282- Advanced Floodplain Concepts II CFM Certification training program if available.
Does your jurisdiction participate in the Community Rating System (CRS)? • If so, is your jurisdiction seeking to improve its CRS Classification? • If not, is your jurisdiction interested in joining the CRS program?	Yes Yes the County would like to improve its CRS rating to 4 Already participate in CRS
How many Flood Insurance policies are in force in your jurisdiction? ^a	647
• What is the insurance in force? ^a	\$185,016,900
• What is the premium in force? ^a	\$422,554
How many total loss claims have been filed in your jurisdiction? ^a	103
• How many claims were closed without payment/are still open? ^a	2
• What were the total payments for losses? ^a	\$1,666,659.68

a. According to FEMA records as of 11/30/15.

Table 1-5. Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	Yes	5	October 2015
Building Code Effectiveness Grading Schedule	Yes	3	November 2015
Public Protection	Yes	Varies by Fire District	Varies – Information available at each Fire District
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A

Table 1-6. Education and Outreach

Criteria	Response
Do you have a Public Information Officer or Communications Office?	Yes – The Director of the Public Information & Outreach Department (PIO).
Do you have personnel skilled or trained in website development?	Yes – PIO has a Graphic Designer Information Technology Dept. – Web design team
Do you have hazard mitigation information available on your website? • If yes, please briefly describe.	No- not at this time, will have at least a link to information in the future when this project is complete N/A
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe.	Yes- Just started with this project Currently- Facebook, Twitter Future- Possibly YouTube
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly specify.	Yes <u>Development & Engineering Advisory Board</u> —Works with Public Works and community development to review policy and code changes <u>Planning Commission</u> —Advises the Board of County Councilors on matters related to physical development in unincorporated areas. <u>Stakeholder Advisory Committee</u> —High level guidance for update of codes and design governing stormwater management. <u>Technical Committee</u> —Advise on technical aspect of stormwater design and codes. <u>Board of Health</u> —Exercises final authority over all matters pertaining to preservation of life and health of the people of Clark County
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe.	Yes Internal—Employee FYI weekly newsletter, monthly safety committee meetings External- News releases, Clark-Vancouver Television (CVTV), Clark County Neighborhood Associations, various County mailings (i.e. The Public Works annual newsletter to the special flood hazard area. Clark County Fire Marshal Spring Wildfire Campaign
Do you have any established warning systems for hazard events? • If yes, please briefly describe.	Yes <u>Internal</u> to County Government: Emergency Notification System (ENS) – desktop application. <u>External</u> : Clark Regional Emergency Services Agency (CRESA) – Public Alerts system (wireless, VOIP, emails)

1.4 INTEGRATION WITH OTHER PLANNING INITIATIVES

The following describe the jurisdiction’s process for integrating the natural hazard mitigation plan into local planning mechanisms.

1.4.1 Existing Integration

The following plans and programs currently integrate the goals, risk assessment and/or recommendations of the hazard mitigation plan:

- Currently – No plans or programs have been DIRECTLY integrated with the 2004 Hazard Mitigation Plan.
- A direct linkage enabling future integration, was inserted into the DRAFT update to the County Comprehensive Plan and is pending approval with the other updates to the plan, June 30, 2016.
- Title 40- Clark County Washington, Unified Development Code addresses many aspects of integration in its various sections, including Shoreline Master Program, Land Use, Development, Permitting and specific Hazard Areas. However, Title 40 needs a thorough review specifically looking at integration with this plan. That action is captured in 1.4.2

1.4.2 Opportunities for Future Integration

The following plans and programs do not currently integrate the goals, risk assessment and/or recommendations of the natural hazard mitigation plan, but provide an opportunity for future integration:

- **County Department Engagement**—Engage all County Departments and make them aware of the contents of the Natural Hazard Mitigation Plan and the associated risk assessment. Upon plan approval, the point of contact for the plan will meet with the directors of each county department and seek their support in using the risk assessment and identifying opportunities for integration in plans, projects and programs for which they are responsible.
- **Clark County Comprehensive Plan**—Look for opportunities to integrate goals and use the risk assessment info to in multiple chapters of the Comp Plan including the Land use, Environmental, Parks, Recreation and Open Space. Consider developing a new Mitigation Chapter in the Comp Plan. As integration opportunities are identified they will be accomplished during the Comp Plan annual update process.
- **Public Works Emergency Response Plans/SOP/Ops Manual**—Integrate goals where applicable and use the risk assessment information to inform the planning efforts in Public Works. These plans are due for revision so integration timing is good. Seek opportunities to implement mitigation actions in Public Works projects as feasible.
- **Regional Disaster Debris Management Plan**—Integrate goals where applicable. Use the risk assessment information and debris estimates from the Mitigation Plan in the planning process.
- **Clark County Stormwater Management Plan**—Integrate goals where applicable. Use the risk assessment information to inform planning processes. Engage with Stormwater staff and look for opportunities to include mitigation considerations and action during Stormwater construction projects.
- **Applicable sections of Clark County Code. Some examples are Titles 12, 13, 14, 15 and 40**—Work with responsible department directors and managers to integrate the goals from the Mitigation Plan into applicable sections of the Clark County Code. Assist them in working with leadership to gain approval and updates to the code. Use the risk assessment information to inform the planning and updates. Title 12 – Streets and Roads, Title 13- Public Works, Title 14- Buildings and Structures, Title 15- Fire Prevention, Title 40 Clark County Unified Development Code.
- **Clark Regional Comprehensive Emergency Management Plan and annexes (CEMP)**—As one of the planning partners, support the integration of goals into the planning updates to the CEMP and its annexes. Where possible support mitigation actions that relate to this plan including those of other partners. Use the risk assessment information to inform planning, exercises and plan updates.

1.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 1-7 lists notable past occurrences of natural hazards within the jurisdiction.

Table 1-7. Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment ^a
Severe storm, flooding, tornado	4253	12/1/2015	\$712,833
Severe storm, tornado	N/A	3/21/2013	\$10,162
Severe storm, high wind	N/A	12/16/2012	\$103,110
Flood	N/A	6/1/2011	\$1,262,934
Flood	N/A	5/26/2011	\$315,733
Severe winter storm-Snow	1825	12/12/2008	\$611,898
Tornado	N/A	1/10/2008	\$577,262
Severe winter storm, landslides, mudslides	1682	12/14/2006	N/A
Severe storms, flooding, landslides and mudslides	1671	11/02/2006	N/A
Severe storm, high wind	N/A	2/10/2006	\$234,857
Earthquake	1361	2/28/2001	N/A
Tornado	N/A	5/11/2000	\$13,747
Severe winter storm – ice storm	N/A	1/14/1998	\$181,546
Tornado	N/A	5/31/1997	\$14,749
Severe winter storms, land & mudslides, flooding	1159	12/26/1996	\$377,208
Severe storm- high wind & flooding	1100	1/26/1996	N/A
Severe storms- high wind & flooding	1079	11/29/1995	\$862,992
Flood	N/A	11/23/1990	\$7,875,187
Tornado	N/A	6/29/1989	\$954
Severe winter storm- high wind & snow	N/A	2/1/1989	\$244,764
Flood	N/A	11/23/1986	\$900,000
Tornado	N/A	10/13/1984	\$11,392
Severe storm – high wind	N/A	12/24/1983	\$2,971,084
Severe storm- high wind	N/A	11/24/1983	\$108,039
Severe storm- high wind	N/A	11/14/1981	\$333,891
Volcanic eruption- Mt St Helens	623	5/21/1980	N/A
Severe winter storm- snow	N/A	1/8/1980	\$359,126
Severe storm- high wind	N/A	2/12/1979	\$9,590,677
Severe storms- flood & mudslides	545	12/10/1977	N/A
Flood	N/A	12/2/1975	\$169,242,207
Severe storm- high wind	N/A	1/8/1973	\$666,486
Tornado	N/A	4/5/1972	\$28,317,703
Severe storm- flooding & landslides	N/A	2/27/1972	\$235,981
Flood	N/A	1/20/1972	\$353,971
Severe storm- heavy rain & snow- flooding	185	12/29/1964	\$979,057
Flood	146	3/2/1963	N/A
Severe storm- wind & rain	137	10/20/1962	\$103,143
Flood	70	3/6/1957	N/A
Flood	50	2/25/1956	N/A

a. Note the Preliminary Damage Estimates are from SHEL DUS and may not be exact/accurate. N/A indicates-unknown.

1.6 JURISDICTION-SPECIFIC VULNERABILITIES

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 5
- Number of FEMA-identified Severe-Repetitive-Loss Properties: Unknown
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: 0

Other noted vulnerabilities include:

- No standardized method or system for capturing and retaining perishable data during and after significant events.
- Public Works has knowledge of common localized urban shallow flooding areas and landslides areas throughout the County which affect transportation routes and may help identify areas of isolation. The information needs to be collected, reviewed, verified and mapped in GIS, then shared with our partners.
- Detailed seismic and other natural disaster assessments were not completed on County facilities.
- County Essential Functions have not been identified and prioritized.
- No back-up power is currently available at the vast majority of County Government facilities. At the few that have back-up power the capacity is inadequate and only powers life safety systems like emergency lighting and fire suppression systems.
- Lack of alternate and back-up communications at County Facilities.
- Lack of integration of disaster, response and recovery planning efforts, internally and externally. No common references and resources used in plan development. General lack of awareness of other planning efforts.
- Many critical county and non-county facilities are located in liquefaction areas. Information available on our liquefaction areas is limited, more detailed study is needed.
- Lack of access to Dam Failure mapping information makes it extremely hard to identify areas for public information and outreach.
- The cascading effects from a very strong earthquake on Cascadia or Portland Hills are not well known.
- The Regional Debris Management Plan was never finalized and lacks important information such as pre-identified debris collection sites.

1.7 HAZARD RISK RANKING

Table 1-8 presents the ranking of the hazards of concern.

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Severe Weather	48	High
2	Earthquake	32	High
3	Flood	21	High
4	Landslide	18	Medium
5	Wildfire	12	Medium
6	Dam Failure	6	Low
7	Volcano	4	Low
8	Drought	3	Low

1.8 STATUS OF PREVIOUS PLAN INITIATIVES

Table 1-9 summarizes the initiatives that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared. It should be noted, that the actions identified in the following table were developed in 2004. Due to the significant amount of time and staff turnover that has occurred since their identification, the status of some actions may be unknown. Additionally, many of the action items identified were to be led by CRESA or other non-City agencies. For ease of annual progress reporting, these actions have generally been removed from the City’s action plan or rephrased to be within the capabilities of the City. This will allow for a fresh start consistent with the comprehensive update to the natural hazard mitigation plan conducted during the 2016 planning process.

Table 1-9 Status of Previous Plan Initiatives			
Action Item	Completed	Carry Over to Plan Update	Removed; No Longer Feasible
Support voluntary structural retrofitting of older homes on vulnerable soils. <i>Comment: Carry Over (Modified)—This was a Clark Regional Emergency Services Agency (CRESA) specific action item, however Clark County will carry it over. See Action # CC-10 in updated Action Plan.</i>		X	
Require the retrofitting of older, vulnerable or critical structures located on NEHRP ‘E’ and ‘F’ soils. <i>Comment: Completed- Clark County Community Development Department instituted a trigger for existing structures that anytime improvements or modification greater than 50% of the value of the home are being done, the structure must be brought into compliance with current seismic codes, regardless of NEHRP soil type.</i>	X		
Encourage non-structural retrofitting throughout the County. <i>Comment: Carry Over (Modified)—This was a Clark Regional Emergency Services Agency (CRESA) specific action item, however Clark County will carry it over. See Action # CC-11 in updated Action Plan.</i>		X	
Join the CRS program <i>Comment: Completed / Carry Over (Modified)—Clark County joined the CRS program in October 2004 and was classified in October 2015. See Action # CC-9 in updated Action Plan.</i>	X		
Floodproof Salmon Creek pump station. <i>Comment: Completed – A 100 year flood wall was designed and constructed at the Salmon Creek 36th Ave Pump Station. Project was completed in November 2006.</i>	X		
Encourage elevation of homes in the Trails Mobile Home Park <i>Comment: Removed; no longer feasible- Have not been able to locate the “Trails Mobile Home Park” in Clark County.</i>			X
Support the retrofit of at-risk homes and subdivisions <i>Comment: Completed- Clark County Community Development Department (Fire Marshal) developed a trigger for existing structures that anytime improvements or modification greater than 50% of the value of the home are being done, and the structure is within the Wildland Urban Interface (WUI), the structure must be brought into compliance with current standards and codes. Information and resources provided during Public Outreach events throughout the County.</i>	X		
Retrofit hazardous material containment areas. <i>Comment: Carry Over (Modified)—No Clark County Code was written or approved to enforce this Action Item. See Action # CC-12 in updated Action Plan.</i>		X	
Encourage non-structural retrofitting of hazardous materials containment <i>Comment: Carry Over (Modified) – See Action # CC-13 in updated Action Plan.</i>		X	
Develop a position within Clark County government for a Mitigation Outreach Coordinator <i>Comment: Removed; No longer feasible – There is a Mitigation Coordinator at Clark Regional Emergency Services Agency (CRESA). Clark County will support our partner by providing information and resources as requested.</i>			X

Action Item	Completed	Carry Over to Plan Update	Removed; No Longer Feasible
Develop public information packets ready to deploy following a disaster event <i>Comment: Removed; no longer feasible- This was a Clark Regional Emergency Services Agency (CRESA) specific action item. Clark County will support our partner by providing information and resources as requested.</i>			X
Ensure that residents understand the benefits of defensible space to minimize and reduce the impacts of fires. <i>Comment: Carry Over (Modified) – See Action# CC-14 in updated Action Plan.</i>		X	
Ensure severe weather warning system and public education for tornadoes in place. <i>Comment: Removed; no longer feasible- this was a Clark Regional Emergency Services Agency (CRESA) specific action item. Clark County will support our partner by providing information and resources as requested.</i>			X
Expand the public awareness program about hazard materials <i>Comment: Removed; no longer feasible- this was a Clark Regional Emergency Services Agency (CRESA) and Local Emergency Planning Committee specific action item. CRESA also heads the Committee which has responsibility for this action item. Clark County will support our partner by providing information and resources as requested.</i>			X
Cultivate an awareness program for landslide hazards <i>Comment: Removed; no longer feasible- this was a Clark Regional Emergency Services Agency (CRESA) specific action item. Clark County will support our partner by providing information and resources as requested.</i>			X
Develop an automated method to notify the public of events during a disaster. <i>Comment: Removed; no longer feasible- this was a Clark Regional Emergency Services Agency (CRESA) specific action item. Clark County will support our partner by providing information and resources as requested.</i>			X
Expand weather radio systems to include all of Clark County <i>Comment: Removed; no longer feasible- this was a Clark Regional Emergency Services Agency (CRESA) specific action item. Clark County will support our partner by providing information and resources as requested.</i>			X
Provide fast, accurate spatial incident information for emergency services response. <i>Comment: Removed; no longer feasible- CAMEO and other software are for First Responders. Clark County has no Hazmat First Responders. Clark Regional Emergency Services Agency (CRESA) specific action item...</i>			X
Conduct pre-earthquake assessments for critical and essential facilities and develop a risk-reduction strategy <i>Comment: Carry Over (Modified) – See Actions # CC-22 & CC-23 in updated Action Plan.</i>		X	
Determine critical government functions and establish redundancy for these functions. <i>Comment: Carry Over (Modified) – See Action # CC-21 in updated Action Plan.</i>		X	
Target development and preparedness efforts of Tier II hazardous material facilities <i>Comment: Removed; no longer feasible- Clark County continues to support preparedness efforts and cooperation with Tier II facilities by our involvement on the Local Emergency Planning Commission. However most of the regulatory capability rests with the State, especially concerning existing facilities. Clark County has the ability to be involved in the review process for new facilities and actively participates when the County has an interest.</i>			X
Strengthen the Port of Vancouver bulkhead supporting the chemical storage tank. <i>Comment: Removed; no longer feasible- this is a Port of Vancouver specific action item and falls within City of Vancouver.</i>			X
Take advantage of leases to build resiliency for port businesses <i>Comment: Removed; no longer feasible- this is a Port of Vancouver specific action item and falls within City of Vancouver.</i>			X
Encourage partnerships among agencies to promote uniformity among no-burn policies in forest lands <i>Comment: Complete (Ongoing)—The Clark County Fire Marshall collaborates and partners with Federal, State and Local Fire Agencies throughout the year, to promote uniformity among no-burn policies not just in forest lands, but the entire County, during regularly scheduled meetings and based on circumstances, whenever necessary outside regular meetings.</i>	X		

Action Item	Completed	Carry Over to Plan Update	Removed; No Longer Feasible
Develop a contingency/Business resumption organization <i>Comment: Removed; no longer feasible - this was a Clark Regional Services Agency (CRESA) specific action item.</i>			X
Provide opportunities for strategic relations between emergency managers and social service providers. <i>Comment: Removed; no longer feasible- this was a Clark Regional Services Agency (CRESA) specific action item.</i>			X
Support the use of GIS management tools such as spatial decision support systems <i>Comment: Completed (Ongoing)—Clark County GIS management tools are used throughout the County for planning, development, code enforcement, risk identification and much more on a daily basis.</i>	X		
Require the construction of earthquake-resilient structures <i>Comment: Completed - Clark County Code requires new construction to meet the most current standards and seismic codes and is enforced by the Building Officials in the Community Development Department during permitting and plan review.</i>	X		
Develop integrated County stormwater basin-wide plans <i>Comment: Complete (Ongoing)—The Clark County Stormwater Plan was completed in 2009 and is updated annually in the first quarter of the year. Last update was March 2016. Plan includes maintenance, repair, etc.</i>	X		
Map shallow flooding areas <i>Comment: Carry Over (Modified) –LIDAR mapping completed in 2002 was input into GIS. Shallow flood areas still need to be mapped. See Action # CC-16 in updated Action Plan.</i>		X	
Promote development off of the floodplain <i>Comment: Completed - Clark County promotes development off the floodplain through required reviews (Clark County Code) conducted by the Departments of Community Development (Land Use), Public Works (Floodplain) and Environmental Services (Shoreline & Wetland) for proposed developments.</i>	X		
Consider adoption of a zero-rise floodway <i>Comment: Removed; no longer feasible – Action considered no longer feasible at this time due to lack of political support. Clark County Code currently enforces a 1 foot rise floodway.</i>			X
Expand the County Clean Water Program <i>Comment: Completed Clark County Environmental Services expanded the program to include an integrated Stormwater Basin plan and retrofitting and property purchase through the Legacy Lands Program.</i>	X		
Develop a method of assessing and documenting landslide hazard areas. <i>Comment: Completed- Clark County code defines landslide hazard areas and requirements for development including a geologic hazard area study by a State of Washington registered geotechnical engineer using the "best available engineering and geologic practice." The geotechnical information and plan requirements are defined in Clark County Code and triggers for review by multiple departments are in place.</i>	X		
Support the use of LIDAR mapping technology to refine landslide hazard maps <i>Comment: Completed- The latest LIDAR information is currently used in the Slope Layer and Developers Package of Clark County GIS, and is linked to code requirement in Clark County Unified Development Code.</i>	X		
Ensure state certification of licensing for professionals performing geotechnical evaluations <i>Comment: Completed- Clark County Code 40.430 Geologic Hazard Areas, requires that persons performing geotechnical evaluations be certified and licensed in Washington State.</i>	X		
Institute Low Impact Development Practices <i>Comment: Completed- A Low Impact Development section was included in the Stormwater Manual which was adopted in 2015. As part of our NPDES permit, the State Department. of Ecology mandates we use LID where applicable. The LID section in the Stormwater manual guides the Counties compliance with the NPDES and the use of LID.</i>	X		

Action Item	Completed	Carry Over to Plan Update	Removed; No Longer Feasible
<p>Initiate a vegetation management program</p> <p><i>Comment: Removed; no longer feasible- Clark County Development Code has a vegetation management component with requirements in the Geologic Hazard Areas Section (40.430). Education and outreach is mostly to developers or those doing improvements. Efforts to develop a formal education program with WSU Vancouver and Special Districts have not gained traction and are no longer feasible at this time. NOTE—Clark County Vegetation Management section under the Environmental Services Departments sole focus is on the control of noxious weeds within the County.</i></p>			X
<p>Ensure emergency vehicle access to all residents to allow effective response and recovery from disaster events.</p> <p><i>Comment: Removed; no longer feasible- Clark County Code requires this for new construction only and there is not the political support to increase it to older construction. Clark County Public Works identified bridges insufficient to carry emergency vehicle and improvements were done. Homeowners in effected areas have been notified by the County.</i></p>			X
<p>Develop priority routes throughout the county and improve these routes to a higher standard.</p> <p><i>Comment: Removed; no longer feasible- Some priority routes have been identified, such as snow routes, however not enough specific information on the effects of various hazards, such as flood areas, liquefaction areas, etc. has been used to make identification of primary routes outside the major roadways. This action item is replaced in the new plan. See Action# CC-19 in updated Action Plan.</i></p>			X
<p>Ensure that electricity is available to populations requiring priority for electricity.</p> <p><i>Comment: Removed; no longer feasible- this was a Clark Public Utilities specific action item.</i></p>			X
<p>Ensure appropriate equipment is available during events.</p> <p><i>Comment: Completed- Clark County Public Works operates numerous equipment shed throughout the County and has the ability to surge more equipment to any shed if needed. Other staging areas would be identified on an as needed basis per the Incident Command System and cooperation with our local and regional partners.</i></p>	X		
<p>Condition development in isolated interface zones on adequate fire suppression capability and redundant access.</p> <p><i>Comment: Removed; no longer feasible- Clark County requires new developments in the Wildland Urban Interface to meet current Fire Code. Clark County Government has no fire first responders and no ability to compel the Fire Districts to increase capabilities allowing more development. Lack of political support to complete.</i></p>			X

1.9 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 1-10 lists the actions that make up the Clark County hazard mitigation action plan. Table 1-11 identifies the priority for each action. Table 1-12 summarizes the mitigation actions by hazard of concern and the six mitigation types.

1.10 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

The following information was identified as having the potential to increase the understanding of risk and vulnerability in Clark County:

- Detailed study of the cascading effects resulting from a large or very large earthquake on the Cascadia or Portland Hills fault.
- Detailed information on building stock construction types in the planning area.
- As science improves, better understanding and future mapping of landslide runout areas/zones.

Table 1-10. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency ^a	Estimated Cost	Sources of Funding	Timeline
CC-1—Where appropriate, support retro-fitting, relocation or acquisition from willing property owners of structures located in hazard prone areas to protect structures from future damage, with repetitive and severe repetitive loss as a priority. Seek opportunities to leverage partnerships within the planning area in these pursuits.						
Existing	All Hazards	4, 5, 7, 9, 10	Public Works- Construction & Design* / Community Development- Building Safety	High	HMGP, PDM, FMA, CDBG-DR	Short-term
CC-2—Integrate the natural hazard mitigation plan into other plans, programs, ordinances, codes and databases that dictate land use decisions, unified development, comprehensive planning, critical areas ordinances, stormwater etc. within the community. Ensure managers and planners within responsible departments are aware of the natural hazard mitigation plan, the information contained within it, and its potential for integration. Do so through direct engagement, training and education.						
New and Existing	All Hazards	2, 4	Community Planning*/ Community Development/ Public Works/ Public Health / Risk Management- Emergency Response Coordinator>(*engagem ent & education)	Low	Staff Time, General Funds	On-going
CC-3—Develop and implement a program to capture perishable data during and after significant events (e.g. high water marks, preliminary damage estimates, damage photos) to support our partners and future mitigation efforts including the update, implementation and maintenance of the natural hazard mitigation plan. Support the establishment of a county-wide repository for capturing this information.						
Existing	All Hazards	1, 2, 4, 12	Risk Management- Emergency Response Coordinator* / Public Works- OPS	Low	Staff Time, General Funds	Short-term
CC-4—Support the County-wide initiatives identified in Volume I of the natural hazard mitigation plan.						
New and Existing	All Hazards	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	Risk Management- Emergency Response Coordinator* / All County Departments (as needed)	Low	Staff Time, General Funds	Short-term
CC-5—Actively participate in the plan maintenance protocols outlined in Volume I of the natural hazard mitigation plan. Share lessons learned and mitigation success stories and actively participate in progress reporting.						
New and Existing	All Hazards	1, 4	Risk Management- Emergency Response Coordinator	Low	Staff Time, General Funds	Short-term
CC-6—Continue to maintain good standing and compliance under the National Flood Insurance Program (NFIP). This will be accomplished through the implementation of floodplain management programs that will, at a minimum, meet the requirements of the NFIP:						
<ul style="list-style-type: none"> • Enforcement of the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts. 						
New and Existing	Flood	1, 4, 5, 9	Public Works- Construction & Design	Low	Staff Time, General Funds	On-going

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency ^a	Estimated Cost	Sources of Funding	Timeline
CC-7— Work with building officials to identify ways to improve our jurisdiction’s BCEGS classification.						
New	Earthquake, Flood, Landslide, Severe Weather, Volcano, Wildfire	5, 6, 7, 10, 12	Community Development- Building Safety	Low	Staff Time, General Funds	Short-term
CC-8—In cooperation with our participating jurisdictional partners, finalize the Regional Disaster Debris Management Plan by incorporating changes that were recommended during the 2014 review of the draft plan. Identify, assess and document debris collection sites. Ensure the plan meets at least the minimum requirements for future review and approval.						
Existing	All Hazards	1, 2, 4, 6	Public Works- Emergency Management* / Public Health - Solid Waste / Risk Management- Emergency Response Coordinator	Medium	Staff Time, General Funds, Interns, EMPG	Short-term
CC-9— Maintain the County CRS classification and where appropriate take steps to improve our CRS classification.						
New and Existing	Flood, Dam Failure	1, 6, 7, 9, 10, 11, 12	Public Works- Construction & Design	Low	Staff Time, General Funds	Short-term
CC-10—Establish a program to encourage voluntary structural retro-fitting of older homes on vulnerable soils by providing information and resources during scheduled public outreach events and when requested.						
Existing	Earthquake	1, 2, 8, 9	Community Development- Building Safety	Low	Staff Time, General Funds	Short-term
CC-11—Establish a program to encourage voluntary non-structural and structural retro-fitting throughout the County by providing information and resources during scheduled public outreach events and when requested.						
Existing	Earthquake	1, 2, 5, 9, 10,	Community Development- Building Safety	Low	Staff Time, General Funds	Short-term
CC-12—Establish a program to encourage structural retro-fitting of hazardous materials containment during Clark County Fire Marshal operational permit inspections.						
Existing	Earthquake, Flood, Severe Weather, Dam Failure	1, 4, 6, 8, 9, 10, 11	Community Development- Fire Marshal*	Low	Staff Time, General Funds	Short-term
CC-13— Establish a program to encourage non-structural retro-fitting of hazardous materials containment during Clark County Fire Marshal annual facilities visits.						
Existing	Earthquake	1, 4, 6, 8, 9, 10	Community Development- Fire Marshal*	Low	Staff Time, General Funds	Short-term
CC-14—Establish a program to encourage and assist residents in understanding the benefits of defensible space to minimize and reduce the impacts of fires during public outreach opportunities and the Spring Wildfire Campaign.						
New and Existing	Wildfire	1, 2, 4, 6, 10	Community Development- Fire Marshal*	Low	Staff Time, General Funds	Short-term

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency ^a	Estimated Cost	Sources of Funding	Timeline
CC-15— Develop a program within the Community Development Department (Building Safety) to review the unincorporated area critical facilities list from the natural hazard mitigation plan, prioritize the list, and conduct outreach and education to owners concerning pre-disaster assessments.						
Existing	Severe Weather, Earthquake, Flood, Landslide, Wildfire, Wildfire	1, 2, 8, 9, 10	Community Development- Building Safety*/ Fire Marshal	Medium	Staff Time, General Funds	Short-term
CC-16—Develop a standard hazards planning map in GIS using the best available information. Include layers for each of the hazards identified in the natural hazard mitigation plan. In addition, create a map layer of the known shallow flood areas based on information from Public Works, and other layers including liquefaction and critical facilities and transportation infrastructure. Once complete, integrate this mapping into planning. New layers should be added as a need is identified. Share within the County Government and with our planning partners.						
New and Existing	All Hazards	4, 6, 12	Clark County GIS Department* / Risk Management- Emergency Response Coordinator / Public Works/ Community Development / Public Health / CRESA	Low	Staff Time, General Funds	Short-term
CC-17—Establish a hazard mitigation webpage on the Clark County internet website with links to pertinent hazard mitigation topics and information from County Departments (I.E. retro-fit information, defensible space, etc.) to support public outreach and education as well as other action items. Include a link to the natural hazard mitigation plan and information on CRESA's website.						
New and Existing	All Hazards	1, 4, 6	Public Information & Outreach* / Risk- Emergency Response Coordinator / Community Planning / Community Development / Public Works / Public Health	Low	Staff Time, General Funds	Short-term
CC-18—Expand our participation in the Great Washington SHAKEOUT drill throughout the County Government. Exercise the ENS system during the drill. Conduct de-briefings and collect lessons learned and improve our procedures to enhance earthquake preparedness and employee safety. Encourage the public to participate as well, using social media, website, and other public outreach methods.						
Existing	Earthquake	1, 3, 10	Risk Management- Emergency Response Coordinator */ All Departments	Low	Staff Time, General Funds	On-going
CC-19—Add a hazard mitigation information section to the annual newsletter mailing to the special flood hazard area. Include hazard information and resources as part of our public outreach.						
New and Existing	Flood, Severe Weather	1, 6	Public Works- PIO* / Risk Management- Emergency Response Coordinator	Low	Staff Time, General Funds	Short-term
CC-20— Where feasible, continue to encourage and support efforts to re-open/improve access roads into the County forest for fire suppression and fuel breaks.						
New and Existing	Wildfire	4, 10, 11	Public Works - Forestry	High	PDM	Short-term

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency ^a	Estimated Cost	Sources of Funding	Timeline
CC-21—Develop a County Continuity Of Operations Plan (COOP). Initial priority is to identify and prioritize County essential functions and critical facilities based on function during an event.						
Existing	All Hazards	2, 3, 4, 10	Risk Management- COOP Coordinator* / County Manager & Directors of all County Departments	Medium	Staff Time, General Funds , EMPG	Short-term
CC-22—Conduct pre-disaster assessments (seismic, flood, severe weather, back-up power, etc.) on County critical facilities based on information determined in Action #CC-21.						
Existing	Severe Weather, Earthquake, Flood, Landslide, Wildfire	2, 3, 4, 8, 10	County Risk Manager* / Risk Management- COOP Coordinator / Community Development- Building Safety / Public Works- Engineering / General Services- Facilities Management	Medium	Staff Time, General Funds	Short-term
CC-23- Based on information from Action #CC-22, identify and prioritize County critical facilities to target for retro-fit and back-up power, or most likely to require an alternate site during a major event or disaster.						
Existing	All Hazards	3, 6, 8, 10	Risk Management- COOP Coordinator*/ General Services- Facilities Management	Low	Staff Time, General Funds	Short-term
CC 24—Based on the information gathered in Actions #CC-22 & CC-23, procure and install alternate/back-up power generators and/or emergency generator quick connect hook-ups in County critical facilities as funding becomes available. Install and maintain surge protection on critical electronic equipment.						
Existing	All Hazards	3, 6, 8, 10	General Services- Facilities Management* / Information Technology / Risk Management- COOP Coordinator /	High	HMGP, PDM	Long-term

a. * denotes lead agency

Table 1-11. Mitigation Strategy Priority Schedule

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/Budgets?	Implementation Priority ^a	Grant Priority ^a
CC-1	5	High	High	Yes	Yes	No	Medium	High
CC-2	2	Medium	Low	Yes	No	Yes	High	Low
CC-3	4	Low	Low	Yes	No	Yes	High	Low
CC-4	12	Low	Low	Yes	No	Yes	High	Low
CC-5	2	Low	Low	Yes	No	Yes	High	Low
CC-6	4	Medium	Low	Yes	No	Yes	High	Low
CC-7	5	Medium	Low	Yes	No	Yes	High	Low
CC-8	4	Medium	Medium	Yes	Yes	No	Medium	High
CC-9	7	Medium	Low	Yes	No	Yes	High	Low
CC-10	4	Medium	Low	Yes	No	Yes	High	Low
CC-11	5	Medium	Low	Yes	No	Yes	High	Low
CC-12	7	Medium	Low	Yes	No	Yes	High	Low
CC-13	6	Medium	Low	Yes	No	Yes	High	Low
CC-14	5	Medium	Low	Yes	No	Yes	High	Low
CC-15	5	Medium	Medium	Yes	No	No	Medium	Low
CC-16	3	Low	Low	Yes	No	Yes	High	Low
CC-17	3	Low	Low	Yes	No	Yes	High	Low
CC-18	3	Medium	Low	Yes	No	Yes	High	Low
CC-19	2	Low	Low	Yes	No	Yes	High	Low
CC-20	3	High	High	Yes	Yes	No	Medium	High
CC-21	4	Medium	Medium	Yes	Yes	No	Medium	High
CC-22	5	Medium	Medium	Yes	No	No	Medium	Low
CC-23	4	Low	Low	Yes	No	Yes	High	Low
CC-24	4	Medium	High	No	Yes	No	Low	Medium

a. See the introduction to this volume for explanation of priorities.

Table 1-12. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Dam Failure	CC-2, CC-3, CC-4, CC-5, CC-6, CC-8, CC-9, CC-16	CC-1, CC-6, CC-9, CC-12	CC-4, CC-6, CC-9, CC-12, CC-16, CC-17	CC-9	CC-8, CC-9, CC-16, CC-21, CC-23, CC-24	CC-9, CC-12
Drought	CC-2, CC-3, CC-4, CC-5	CC-1	CC-4, CC-17		CC-21, CC-24	
Earthquake	CC-2, CC-3, CC-4, CC-5, CC-7, CC-8, CC-18	CC-1, CC-7, CC-10, CC-11, CC-12, CC-13	CC-4, CC-10, CC-11, CC-12, CC-13, CC-15, CC-16, CC-17, CC-18, CC-22, CC-23		CC-8, CC-15, CC-16, CC-18, CC-21, CC-22, CC-23, CC-24	CC-12
Flood	CC-2, CC-3, CC-4, CC-5, CC-6, CC-7, CC-8, CC-9, CC-16	CC-1, CC-6, CC-7, CC-9, CC-12	CC-4, CC-6, CC-9, CC-12, CC-15, CC-16, CC-17, CC-19, CC-22, CC-23	CC-9	CC-8, CC-15, CC-16, CC-21, CC-22, CC-23, CC-24	CC-9, CC-12
Landslide	CC-2, CC-3, CC-4, CC-5, CC-7, CC-8, CC-16	CC-1, CC-7	CC-4, CC-15, CC-16, CC-17, CC-22, CC-23		CC-8, CC-15, CC-16, CC-21, CC-22, CC-23, CC-24	
Severe Weather	CC-2, CC-3, CC-4, CC-5, CC-7, CC-8	CC-1, CC-7, CC-12	CC-4, CC-12, CC-15, CC-16, CC-17, CC-19, CC-22, CC-23		CC-8, CC-15, CC-16, CC-21, CC-22, CC-23, CC-24	CC-12
Volcano	CC-2, CC-3, CC-4, CC-5, CC-7, CC-8	CC-1, CC-7	CC-4, CC-16, CC-17		CC-8, CC-21, CC-24	
Wildfire	CC-2, CC-3, CC-4, CC-5, CC-7, CC-14, CC-20	CC-1, CC-7	CC-4, CC-14, CC-15, CC-16, CC-17, CC-22, CC-23	CC-20	CC-8, CC-15, CC-16, CC-21, CC-22, CC-23, CC-24	

a. See the introduction to this volume for explanation of mitigation types.