

# REFERENCES

- Booth, D.B., R.A. Haugerud and K.G. Troost. 2003. Geology, Watersheds and Puget Lowland Rivers. Chapter in D. Montgomery, S. Bolton and D.B. Booth, eds., Restoration of Puget Sound Rivers. University of Washington Press.
- Bourgeois, Joanne and Johnson, Samuel Y. 2001. Geologic Evidence of Earthquakes at the Snohomish Delta, Washington, in the Past 1200 years. Geological Society of America, 2001, GSA Bulletin Vol. 113, p. 482-494.
- California Department of Water Resources. 2008. Managing for an Uncertain Future, Climate Change Adaptation Strategies.
- Caltech, 2003. System Gets the Jump on Quakes. Caltech 336 Vol. 3, No. 10. May 15, 2003.
- Cameron, David. 2004. A Brief History of Snohomish County. Accessed in 2010 from Snohomish County website: [co.snohomish.wa.us/documents/county\\_information/SnoCoHistory.pdf](http://co.snohomish.wa.us/documents/county_information/SnoCoHistory.pdf)
- Cascades Volcano Observatory website. 2010. Accessed in 2010 from the USGS Cascades Volcano Observatory website at: <http://vulcan.wr.usgs.gov/>
- Economic Development Council of Snohomish County 2010. Accessed in 2010 from Economic Development Council of Snohomish County website: [snoedc.org/](http://snoedc.org/)
- FEMA Website. 2010. Accessed in 2010 from the Federal Emergency Management Agency website at: <http://www.fema.gov/>
- FEMA (386-1). Getting Started; Building support for Mitigation Planning; September 2002
- FEMA (386-2). Understanding Your Risks; Identifying Hazards and Determining your Risks. (August 2001)
- FEMA (386-3). Developing the Mitigation Plan; Identifying Mitigation Actions and Implementing Strategies. (April 2003)
- FEMA (433), Using HAZUS-MH for Risk Assessment, How to Guide, August 2004
- FEMA, National Flood Insurance Program, Community Rating System; CRS Coordinator's Manual FIA-15/2006 OMB No. 1660-0022
- International Strategy for Disaster Reduction. 11/11/2008. "Disaster Risk Reduction Strategies and Risk Management Practices: Critical Elements for Adaptation to Climate Change"
- NASA, 2004. NASA Earth Observatory News Web Site News Item, dated August 2, 2004. <http://earthobservatory.nasa.gov/Newsroom/view.php?id=25145>
- National Atlas Website. 2010. Accessed in 2010 from the National Atlas website at: <http://www.nationalatlas.gov/>

NOAA Technical Memorandum OAR PMEL-124. NOAA TIME Seattle Tsunami Mapping Project: Procedures, Data Sources, and Products. September 2003

Snohomish County Growth Management Advisory Council. “Snohomish County Tomorrow-2007 Buildable Lands report for Snohomish County, 10/31/2007

Snohomish County Hazard Identification and vulnerability Analysis, August 2004

The Snohomish County Natural Hazards Mitigation Plan, April 2005

Spatial Hazard Events and Losses Database for the United States maintained by the University of South Carolina’s (USC ) Hazard Research Lab

U.S. Army Corps of Engineers. 1995. Earthquake Design and Evaluation for Civil Works Projects. U.S. Army Corp of Engineers Publication EM 1110-2-1806. July 31, 1995. Accessed on line at: [usace.army.mil/publications/eng-regs/er1110-2-1806/a-b.pdf](http://usace.army.mil/publications/eng-regs/er1110-2-1806/a-b.pdf).

U.S. Army Corps of Engineers. 1997. Engineering and Design - Hydrologic Engineering Requirements for Reservoirs. U.S. Army Corp of Engineers Publication EM 1110-2-1420. October 31, 1997. Accessed on line at: [usace.army.mil/publications/eng-manuals/em1110-2-1420/c-16.pdf](http://usace.army.mil/publications/eng-manuals/em1110-2-1420/c-16.pdf).

U.S. Census. 2000. Data from 2000 U.S. Census. U.S. Census Bureau.

USGS Website. 2010. Accessed in 2010 from U.S. Geological Survey website: <http://wrgis.wr.usgs.gov/docs/wgmt/pacnw/lifeline/eqhazards.html>

UW Website. 2010. Accessed in 2010 from University of Washington website: <http://depts.washington.edu/presence/records/makenice.cgi?ID=121>

WA. Department of Ecology, 2010, “Inventory of Dams in the State of Washington”, November 2009, Publication # 94-16.

WAEMD. 2008. Washington State Enhanced Hazard Mitigation Plan. January 2008. Accessed in 2010 from WAEMD website: [emd.wa.gov/plans/washington\\_state\\_hazard\\_mitigation\\_plan.shtml](http://emd.wa.gov/plans/washington_state_hazard_mitigation_plan.shtml)

## **Web Site Resources**

- Snohomish County
  - [http://www.snohomish.org/index.php?page\\_id=394](http://www.snohomish.org/index.php?page_id=394)
- Tulalip Tribes
  - <http://www.tulaliptribes-nsn.gov/>
- South Snohomish Chamber of Commerce
  - <http://www.sscchamber.org/doclib/Employment%20Information.pdf>
- Climate data:
  - <http://www.worldclimate.com/>
- Soil Survey of Snohomish County Area. U.S. Soil Conservation Service. July 1983.
  - <http://soildatamart.nrcs.usda.gov/>

- Washington Office of Financial Management
  - <http://www.ofm.wa.gov/>
- US Census data-poverty incomes
  - [http://www.census.gov/Press-Release/www/releases/archives/income\\_wealth/014227.html](http://www.census.gov/Press-Release/www/releases/archives/income_wealth/014227.html)
- National Climatic Data Center.
  - <http://www.ncdc.noaa.gov/oa/ncdc.html>



Snohomish County  
**Natural Hazard Mitigation Plan Update**

---

**APPENDIX A.**  
**ACRONYMS AND DEFINITIONS**

---

September 2010



# APPENDIX A. ACRONYMS AND DEFINITIONS

## ACRONYMS

Acronym Definition		Acronym Definition	
BFE	Base Flood Elevation	MCE	Maximum Creditable Earthquake
CEMP	Comprehensive Emergency Management plan	MM	Modified Mercalli Scale
CIP	Capital Improvements Plan	NEHRP	National Earthquake Hazards Reduction Program
CFR	Code of Federal Regulations	NFIP	National Flood Insurance Program
CRS	Community Rating System	NCDC	National Climatic Data Center
DEM	Department of Emergency Management	NGVD	National Geodetic Vertical Datum
DHS	Department of Homeland Security	NOAA	National Oceanic and Atmospheric Administration
DMA	Disaster Mitigation Act	NWS	National Weather Service
DNR	Department of Natural Resources	OFM	Office of Financial Management
DSO	Dam Safety Office	PDM	Pre-Disaster Mitigation Grant Program
EPA	U.S. Environmental Protection Agency	PGA	Peak Ground Acceleration
ESCA	Emergency services Coordinating Agency	PUD	Planned Unit Developments
ESA	Endangered Species Act	RCW	Revised Code of Washington
FCAAP	Flood Control Account Assistance Program	SCNHMP	Snohomish County Natural Hazard Mitigation Plan
FCD	Flood Control District	SFHA	Special Flood Hazard Area
FEMA	Federal Emergency Management Agency	SHELDUS	Special Hazard Events and Losses Database for the US
FERC	Federal Energy Regulatory Commission	SMA	Shoreline Management Act
FIRM	Flood Insurance Rate Map	UBC	Uniform Building Code
GIS	Geographic Information System	UDC	Unified Development Code
GMA	Growth Management Act	UGA	Urban Growth Area
HAZUS-MH	Hazards, United States-Multi Hazard	USGS	United States Geological Survey
HIVA	Hazard Inventory and Vulnerability Analysis	WAC	Washington Administrative Code
HMGP	Hazard Mitigation Grant Program	WAEMD	Washington Emergency Management Division
IBC	International Building Code	WRIA	Water Resource Inventory Area
IRC	International Residential Code	WSDOT	Washington State Department of Transportation

## DEFINITIONS

**100-Year Flood:** The term “100-year flood” can be misleading. The 100-year flood does not necessarily occur once every 100 years. Rather, it is the flood that has a 1 percent chance of being equaled or exceeded in any given year. Thus, the 100-year flood could occur more than once in a relatively short period of time. The Federal Emergency Management Agency (FEMA) defines it as the 1 percent annual chance flood, which is now the standard definition used by most federal and state agencies and by the National Flood Insurance Program (NFIP).

**Ash fall:** Volcanoes tend to erupt lavas so thick and charged with gases that they explode into ash rather than flow.

**Asset:** An asset is any man-made or natural feature that has value, including, but not limited to, people; buildings; infrastructure, such as bridges, roads, sewers, and water systems; lifelines, such as electricity and communication resources; and environmental, cultural, or recreational features such as parks, wetlands, and landmarks.

**Avalanche track:** This may be channeled meaning that it is restricted by the topographic contours of the slope or it may be unconfined which involves a broad area without regard to surface contours. The snow’s movement may be described as airborne, usually when dry, powdery snow is involved, or flowing along the ground surface, or mixed if both types are present.

**Base Flood:** The flood having a 1% chance of being equaled or exceeded in any given year, also known as the “100-year” or “1% chance” flood. The base flood is a statistical concept used to ensure that all properties subject to the National Flood Insurance Program (NFIP) are protected to the same degree against flooding.

**Benefit:** A benefit is a net project outcome and is usually defined in monetary terms. Benefits may include direct and indirect effects. For the purposes of benefit-cost analysis of proposed mitigation measures, benefits are limited to specific, measurable, risk reduction factors, including reduction in expected property losses (buildings, contents, and functions) and protection of human life.

**Benefit/Cost Analysis:** A benefit/cost analysis is a systematic, quantitative method of comparing projected benefits to projected costs of a project or policy. It is used as a measure of cost effectiveness.

**Benioff Earthquake:** Sometimes called “deep quakes,” these occur in the Pacific Northwest when the Juan de Fuca plate breaks up underneath the continental plate, approximately 30 miles beneath the earth’s surface.

**Building:** A building is defined as a structure that is walled and roofed, principally aboveground, and permanently fixed to a site. The term includes manufactured homes on permanent foundations on which the wheels and axles carry no weight.

**Capability Assessment:** A capability assessment provides a description and analysis of a community’s current capacity to address threats associated with hazards. The assessment includes two components: an inventory of an agency’s mission, programs, and policies, and an analysis of its capacity to carry them out. A capability assessment is an integral part of the planning process in which a community’s actions to reduce losses are identified, reviewed, and analyzed, and the framework for implementation is identified. The following capabilities were reviewed under this assessment:

- Legal and regulatory capability

- Administrative and technical capability
- Fiscal capability

**Community Rating System (CRS):** The CRS is a voluntary program under the NFIP that rewards participating communities (provides incentives) for exceeding the minimum requirements of the NFIP and completing activities that reduce flood hazard risk by providing flood insurance premium discounts.

**Critical Area:** An area defined by state or local regulations as deserving special protection because of unique natural features or its value as habitat for a wide range of species of flora and fauna. A sensitive/critical area is usually subject to more restrictive development regulations.

**Critical Facility: Critical Facility:** those facilities and infrastructure that is critical to the health and welfare of the population. These become especially important after any hazard event occurs. For the purposes of this plan update, critical facilities include:

- Structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic and/or water reactive materials;
- Hospitals, nursing homes, and housing likely to contain occupants who may not be sufficiently mobile to avoid death or injury during a hazard event.
- Police stations, fire stations, vehicle and equipment storage facilities, and emergency operations centers that are needed for disaster response before, during, and after hazard events, and
- Public and private utilities, facilities and infrastructure that are vital to maintaining or restoring normal services to areas damaged by hazard events.
- Government facilities– City Hall, Judicial, Emergency Management

**Crustal Earthquake:** Crustal quakes occur at a depth of 5 to 10 miles beneath the earth's surface and are associated with fault movement within a surface plate.

**Cubic Feet per Second (cfs):** Discharge or river flow is commonly measured in cfs. One cubic foot is about 7.5 gallons of liquid.

**Dam:** Any artificial barrier or controlling mechanism that can or does impound 10 acre-feet or more of water.

**Debris Avalanche:** Volcanoes are prone to debris and mountain rock avalanches that can approach speeds of 100 mph.

**Debris Flow:** Dense mixtures of water-saturated debris that move down-valley; looking and behaving much like flowing concrete. They form when loose masses of unconsolidated material are saturated, become unstable, and move down slope. The source of water varies but includes rainfall, melting snow or ice, and glacial outburst floods.

**Debris Slide:** Debris slides consist of unconsolidated rock or soil that has moved rapidly down slope. They occur on slopes greater than 65 percent.

**Disaster Mitigation Act of 2000 (DMA);** The DMA is Public Law 106-390 and is the latest federal legislation enacted to encourage and promote proactive, pre-disaster planning as a condition of receiving financial assistance under the Robert T. Stafford Act. The DMA emphasizes planning for disasters before

they occur. Under the DMA, a pre-disaster hazard mitigation program and new requirements for the national post-disaster hazard mitigation grant program (HMGP) were established.

**Drainage Basin:** A basin is the area within which all surface water- whether from rainfall, snowmelt, springs or other sources- flows to a single water body or watercourse. The boundary of a river basin is defined by natural topography, such as hills, mountains and ridges. Drainage basins are also referred to as **watersheds** or **basins**.

**Flood Insurance Rate Map (FIRM):** FIRMs are the official maps on which the Federal Emergency Management Agency (FEMA) has delineated the Special Flood Hazard Area (SFHA).

**Flood Insurance Study:** A report published by the Federal Insurance and Mitigation Administration for a community in conjunction with the community's Flood Insurance rate Map. The study contains such background data as the base flood discharges and water surface elevations that were used to prepare the FIRM. In most cases, a community FIRM with detailed mapping will have a corresponding flood insurance study.

**Floodplain:** Any land area susceptible to being inundated by flood waters from any source. A flood insurance rate map identifies most, but not necessarily all, of a community's floodplain as the Special Flood Hazard Area (SFHA).

**Floodway:** Floodways are areas within a floodplain that are reserved for the purpose of conveying flood discharge without increasing the base flood elevation more than 1 foot. Generally speaking, no development is allowed in floodways, as any structures located there would block the flow of floodwaters.

**Hazard Mitigation Grant Program (HMGP):** Authorized under Section 202 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, the HMGP is administered by FEMA and provides grants to states, tribes, and local governments to implement hazard mitigation actions after a major disaster declaration. The purpose of the program is to reduce the loss of life and property due to disasters and to enable mitigation activities to be implemented as a community recovers from a disaster

**Hazards U.S. Multi-Hazard (HAZUS-MH) Loss Estimation Program:** HAZUS-MH is a GIS-based program used to support the development of risk assessments as required under the DMA. The HAZUS-MH software program assesses risk in a quantitative manner to estimate damages and losses associated with natural hazards. HAZUS-MH is FEMA's nationally applicable, standardized methodology and software program and contains modules for estimating potential losses from earthquakes, floods, and wind hazards. HAZUS-MH has also been used to assess vulnerability (exposure) for other hazards.

**Lahar:** A debris flow composed of a significant component of volcanic material.

**Landslide:** Landslides can be described as the sliding movement of masses of loosened rock and soil down a hillside or slope. Fundamentally, slope failures occur when the strength of the soils forming the slope exceeds the pressure, such as weight or saturation, acting upon them.

**Liquefaction:** Liquefaction is the complete failure of soils, occurring when soils lose shear strength and flow horizontally. It is most likely to occur in fine grain sands and silts, which behave like viscous fluids when liquefaction occurs. This situation is extremely hazardous to development on the soils that liquefy, and generally results in extreme property damage and threats to life and safety.

**Local Government:** Any county, municipality, city, town, township, public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government; any Indian tribe or authorized tribal organization, or Alaska Native village or organization; and any rural community, unincorporated town or village, or other public entity.

**Magnitude:** Magnitude is the measure of the strength of an earthquake, and is typically measured by the Richter scale. As an estimate of energy, each whole number step in the magnitude scale corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number value.

**Mass movement:** A collective term for landslides, mudflows, debris flows, sinkholes and lahars.

**Mitigation:** A preventive action that can be taken in advance of an event that will reduce or eliminate the risk to life or property.

**Mitigation Actions:** Mitigation actions are specific actions to achieve goals and objectives that minimize the effects from a disaster and reduce the loss of life and property.

**Objective:** For the purposes of this plan, an objective is defined as a short-term aim that, when combined with other objectives, forms a strategy or course of action to meet a goal. Unlike goals, objectives are specific and measurable.

**Peak Ground Acceleration:** Peak Ground Acceleration (PGA) is a measure of the highest amplitude of ground shaking that accompanies an earthquake, based on a percentage of the force of gravity.

**Preparedness:** Preparedness refers to actions that strengthen the capability of government, citizens, and communities to respond to disasters.

**Presidential Disaster Declaration:** These declarations are typically made for events that cause more damage than state and local governments and resources can handle without federal government assistance. Generally, no specific dollar loss threshold has been established for such declarations. A Presidential Disaster Declaration puts into motion long-term federal recovery programs, some of which are matched by state programs, designed to help disaster victims, businesses, and public entities.

**Probability of Occurrence:** The probability of occurrence is a statistical measure or estimate of the likelihood that a hazard will occur. This probability is generally based on past hazard events in the area and a forecast of events that could occur in the future. A probability factor based on yearly values of occurrence is used to estimate probability of occurrence.

**Pyroclastic Flow:** Pyroclastic flows are avalanches of hot (570-1470° F) ash, rock fragments and gas that move at high speeds down the sides of a volcano during explosive eruptions or when the edge of a thick, viscous, lava flow or dome breaks apart or collapses. Speeds range from 20 to more than 200 miles per hour.

**Repetitive Loss Property:** Any NFIP-insured property that, since 1978 and regardless of any changes of ownership during that period, has experienced:

- Four or more paid flood losses in excess of \$1000.00; or
- Two paid flood losses in excess of \$1000.00 within any 10-year period since 1978 or

- Three or more paid losses that equal or exceed the current value of the insured property.

**Return Period (or Mean Return Period):** This term refers to the average period of time in years between occurrences of a particular hazard (equal to the inverse of the annual frequency of occurrence).

**Riverine:** Of or produced by a river. Riverine floodplains have readily identifiable channels. Floodway maps can only be prepared for riverine floodplains.

**Risk:** Risk is the estimated impact that a hazard would have on people, services, facilities, and structures in a community. Risk measures the likelihood of a hazard occurring and resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate, or low likelihood of sustaining damage above a particular threshold due to occurrence of a specific type of hazard. Risk also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.

**Sinkhole:** A collapse depression in the ground with no visible outlet. Its drainage is subterranean. It is commonly vertical-sided or funnel-shaped.

**Slab:** This refers to one or more layers of snow in which the grains are bonded together. A slab initially fails over a large area instead of at a single point.

**Special Flood Hazard Area:** The base floodplain delineated on a Flood Insurance Rate Map. The SFHA is mapped as a Zone A in riverine situations and zone V in coastal situations. The SFHA may or may not encompass all of a community's flood problems

**Stafford Act:** The Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 100-107, was signed into law on November 23, 1988. This law amended the Disaster Relief Act of 1974, Public Law 93-288. The Stafford Act is the statutory authority for most federal disaster response activities, especially as they pertain to FEMA and its programs.

**Stakeholder:** Business leaders, civic groups, academia, non-profit organizations, major employers, managers of critical facilities, farmers, developers, special purpose districts, and others whose actions could impact hazard mitigation.

**Steering Committee:** The steering committee is the group that oversaw all phases of the hazard mitigation plan's development. The members of this committee included key city personnel, citizens, and other stakeholders from within the planning area.

**Stream Bank Erosion:** Stream bank erosion is common along rivers, streams and drains where banks have been eroded, sloughed or undercut. However, it is important to remember that a stream is a dynamic and constantly changing system. It is natural for a stream to want to meander, so not all eroding banks are "bad" and in need of repair. Generally, stream bank erosion becomes a problem where development has limited the meandering nature of streams, where streams have been channelized, or where stream bank structures (like bridges, culverts, etc.) are located in places where they can actually cause damage to downstream areas. Stabilizing these areas can help protect watercourses from continued sedimentation, damage to adjacent land uses, control unwanted meander, and improvement of habitat for fish and wildlife.

**Steep Slope:** Different communities and agencies define it differently, depending on what it is being applied to, but generally a steep slope is a slope in which the percent slope equals or exceeds 25%. For this study, steep slope is defined as slopes greater than 33%.

**Subduction Zone Earthquake:** This type of quake occurs along two converging plates, attached to one another along their interface. When the interface between these two plates slips, a sudden, dramatic release of energy results, propagated along the entire fault line.

**Sustainable Hazard Mitigation:** This concept includes the sound management of natural resources, local economic and social resiliency, and the recognition that hazards and mitigation must be understood in the largest possible social and economic context.

**Tephra:** The ash and the large volcanic projectiles that erupt from a volcano into the atmosphere are called tephra. The largest fragments (2½ inches) fall back to the ground fairly near the vents, as close as a few feet and as far as 6 mi. The smallest rock fragments (ash) are composed of rock, minerals, and glass that are less than 1/8 inch in diameter. Tephra plume characteristics are affected by wind speed, particle size, and precipitation.

**Thunderstorm:** A thunderstorm is a storm with lightning and thunder produced by cumulonimbus clouds. Thunderstorms usually produce gusty winds, heavy rains, and sometimes hail. Thunderstorms are usually short in duration (seldom more than 2 hours). Heavy rains associated with thunderstorms can lead to flash flooding during the wet or dry seasons.

**Vulnerability:** Vulnerability describes how exposed or susceptible an asset is to damage. Vulnerability depends on an asset's construction, contents, and the economic value of its functions. Like indirect damages, the vulnerability of one element of the community is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power. Flooding of an electric substation would affect not only the substation itself but businesses as well. Often, indirect effects can be much more widespread and damaging than direct effects.

**Water Resource Inventory Area (WRIA):** WRIs were formalized under WAC 173-500-040 and authorized under the Water Resources Act of 1971, RCW 90.54. Ecology was given the responsibility for the development and management of these administrative and planning boundaries. These boundaries represent the administrative underpinning of this agency's business activities. The original WRIA boundary agreements and judgments were reached jointly by Washington's natural resource agencies (Ecology, Natural Resources, Fish and Wildlife) in 1970.

**Watershed:** A watershed is an area that drains downgradient from areas of higher land to areas of lower land to the lowest point, a common drainage basin.

**Wildfire or Wildland Fire:** These terms refer to any uncontrolled fire occurring on undeveloped land that requires fire suppression. The potential for wildland fire is influenced by three factors: the presence of fuel, topography, and air mass. Fuel can include living and dead vegetation on the ground, along the surface as brush and small trees, and in the air such as tree canopies. Topography includes both slope and elevation. Air mass includes temperature, relative humidity, wind speed and direction, cloud cover, precipitation amount, duration, and the stability of the atmosphere at the time of the fire. Wildland fires can be ignited by lightning and, most frequently, by human activity including smoking, campfires, equipment use, and arson.

**Wild and Scenic River:** A federal designation that is intended to protect the natural character of rivers and their habitat without adversely affecting surrounding property.

**Windstorm:** Windstorms are generally short-duration events involving straight-line winds or gusts exceeding 50 mph. These gusts can produce winds of sufficient strength to cause property damage. Windstorms are especially dangerous in areas with significant tree stands, exposed property, poorly

constructed buildings, mobile homes (manufactured housing units), major infrastructure, and aboveground utility lines. A windstorm can topple trees and power lines; cause damage to residential, commercial, critical facilities; and leave tons of debris in its wake.

**Zero-Rise Floodway:** A ‘zero-rise’ floodway is an area reserved to carry the discharge of a flood without raising the base flood elevation. Some communities have chosen to implement zero-rise floodways because they provide greater flood protection than the floodway described above, which allows a one foot rise in the base flood elevation.

**Zoning Ordinance:** The zoning ordinance designates allowable land use and intensities for a local jurisdiction. Zoning ordinances consist of two components: a zoning text and a zoning map.

Snohomish County  
**Natural Hazard Mitigation Plan Update**

---

















**APPENDIX B.**  
**HAZARD MITIGATION QUESTIONNAIRE AND RESULTS**





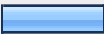

---


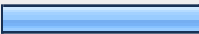
September 2010



# Copy of Snohomish County Survey: Natural Hazards & Mitigation Planning

1. Where in Snohomish County do you live?			Response Percent	Response Count
Arlington			10.8%	53
Bothell			2.2%	11
Brier			0.2%	1
Darrington			5.7%	28
Edmonds			1.6%	8
Everett			6.9%	34
Gold Bar			2.6%	13
Granite Falls			3.9%	19
Index			0.8%	4
Lake Stevens			6.9%	34
Lynnwood			1.8%	9
<b>Marysville</b>			<b>11.2%</b>	<b>55</b>
Mill Creek			1.4%	7
Monroe			3.9%	19
Mountlake Terrace			0.6%	3
Mukilteo			3.5%	17
Sauk-Suiattle Tribal Lands			0.0%	0

Snohomish		8.1%	40
Stanwood		5.1%	25
Stillaguamish Tribal Lands		0.0%	0
Sultan		8.1%	40
Tulalip Tribal Lands		0.8%	4
Woodway		0.0%	0
Unincorporated County		8.7%	43
Other (please specify)		5.1%	25
<b>answered question</b>			<b>492</b>
<b>skipped question</b>			<b>0</b>

2. Do you work in Snohomish County?		Response Percent	Response Count
Yes		82.9%	392
No		17.1%	81
<b>answered question</b>			<b>473</b>
<b>skipped question</b>			<b>19</b>

**3. Which of the following natural hazard events have you or has anyone in your household experienced in the past 20 years within Snohomish County?  
(Check all that apply)**

	Response Percent	Response Count
Avalanche	1.4%	7
Dam/Levee Failure	3.7%	18
Drought	4.7%	23
Earthquake	56.0%	272
Flood	43.6%	212
Hazardous Materials	4.9%	24
Household Fire	5.8%	28
Landslide	7.0%	34
<b>Severe Weather (wind, lightning, winter storm, etc.)</b>	<b>64.6%</b>	<b>314</b>
Tsunami	0.6%	3
Wildland Fire	5.8%	28
None	15.0%	73
Other (please specify)	2.9%	14
<b>answered question</b>		<b>486</b>
<b>skipped question</b>		<b>6</b>








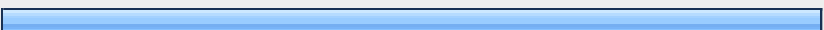


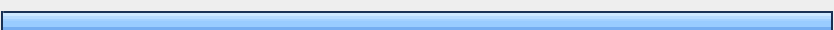
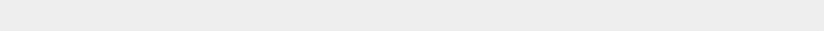
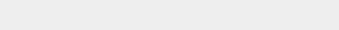

4. How prepared is your household is to deal with a natural hazard event?

	Not at all prepared	Somewhat prepared	Adequately prepared	Well prepared	Very well prepared	Rating Average	Response Count
Check one:	4.1% (19)	<b>42.4% (194)</b>	33.0% (151)	14.2% (65)	6.3% (29)	2.76	458
<i>answered question</i>							<b>458</b>
<i>skipped question</i>							<b>34</b>

5. Which of the following have provided you with useful information to help you be prepared? (Check all that apply)

	Response Percent	Response Count
Emergency preparedness information from a government source (e.g., federal, state, or local emergency management)	72.4%	325
Have experienced one or more natural hazards or disasters	43.2%	194
Locally provided news or other media information	46.3%	208
Schools and other academic institutions	16.5%	74
Attended meetings that have dealt with disaster preparedness	40.8%	183
Community Emergency Response Training (CERT)	26.3%	118
Other (please specify)	12.7%	57
	<b>answered question</b>	<b>449</b>
	<b>skipped question</b>	<b>43</b>





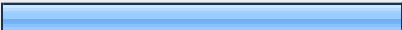

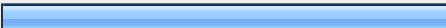
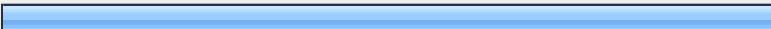
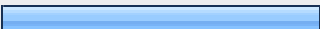
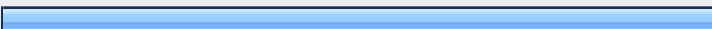
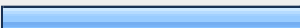





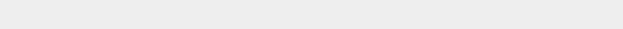
6. Which of the following steps has your household taken to prepare for a natural hazard event? (Check all that apply)

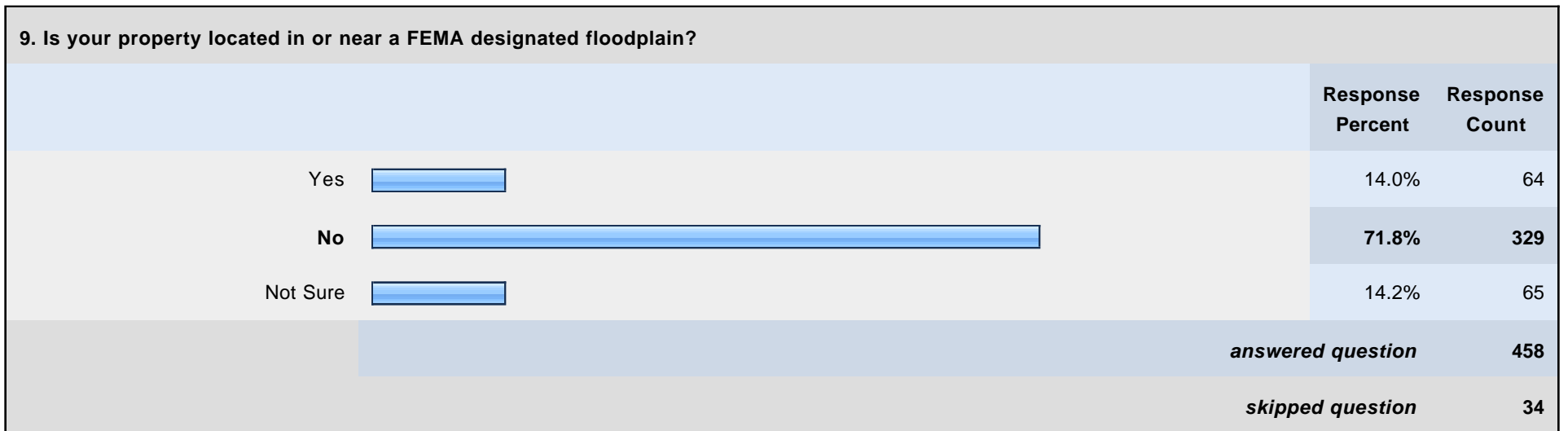
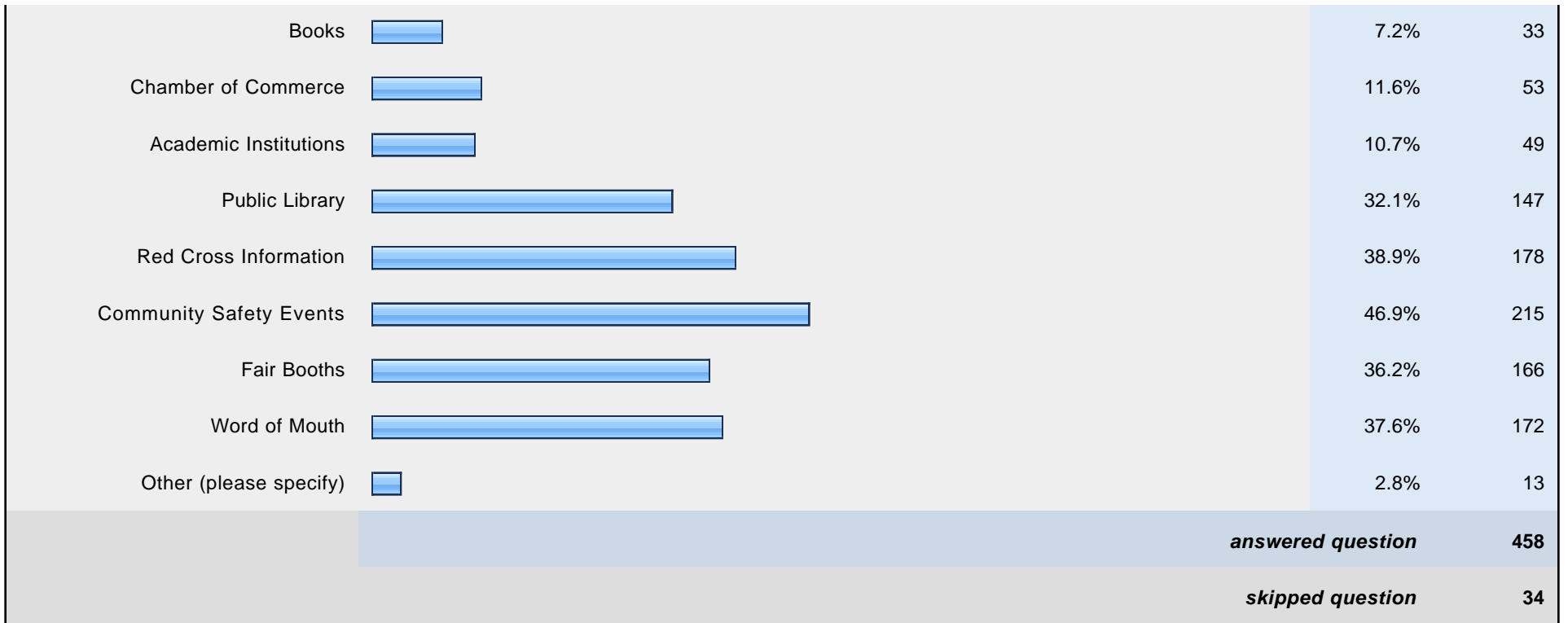
		Response Percent	Response Count
Received first aid/CPR training		78.8%	356
Made a fire escape plan		48.9%	221
Designated a meeting place		44.9%	203
Identified utility shutoffs		63.5%	287
Sand bags		4.0%	18
Prepared a disaster supply kit		51.8%	234
<b>Installed smoke detectors on each level of the house</b>		<b>88.7%</b>	<b>401</b>
Stored food and water		71.9%	325
Stored flashlights and batteries		83.2%	376
Stored a battery-powered radio		57.1%	258
Stored a fire extinguisher		72.8%	329
Stored medical supplies (first aid kit, medications)		71.7%	324
Natural hazard insurance-(Flood, Earthquake, Wildfire)		28.8%	130
Other (please specify)		4.9%	22
<b>answered question</b>			<b>452</b>
<b>skipped question</b>			<b>40</b>

7. How concerned are you about the following natural hazards in Snohomish County? (Check one response for each hazard)

	Not Concerned	Somewhat Concerned	Concerned	Very Concerned	Extremely Concerned	Rating Average	Response Count
Avalanche	<b>85.3% (367)</b>	10.9% (47)	2.8% (12)	0.7% (3)	0.2% (1)	1.20	430
Climate Change	<b>46.6% (206)</b>	28.5% (126)	14.9% (66)	7.2% (32)	2.7% (12)	1.91	442
Dam/Levee Failure	<b>53.5% (230)</b>	20.5% (88)	11.9% (51)	10.0% (43)	4.2% (18)	1.91	430
Drought	<b>53.7% (231)</b>	29.8% (128)	11.9% (51)	4.0% (17)	0.7% (3)	1.68	430
Earthquake	4.6% (21)	20.3% (92)	<b>35.3% (160)</b>	27.2% (123)	12.6% (57)	3.23	453
Flood	18.8% (83)	<b>28.3% (125)</b>	24.9% (110)	19.7% (87)	8.2% (36)	2.70	441
Hazardous Materials	28.7% (125)	<b>35.2% (153)</b>	22.5% (98)	8.0% (35)	5.5% (24)	2.26	435
Household Fire	13.2% (59)	<b>34.8% (155)</b>	34.1% (152)	12.3% (55)	5.6% (25)	2.62	446
Landslide	<b>50.5% (217)</b>	26.7% (115)	16.5% (71)	4.4% (19)	1.9% (8)	1.80	430
Severe Weather	12.5% (56)	29.9% (134)	<b>32.8% (147)</b>	18.8% (84)	6.0% (27)	2.76	448
Tsunami	<b>68.9% (294)</b>	20.6% (88)	6.3% (27)	3.5% (15)	0.7% (3)	1.47	427
Volcanic Eruption	<b>40.0% (174)</b>	33.3% (145)	17.5% (76)	6.2% (27)	3.0% (13)	1.99	435
Wildland Fire	<b>44.8% (191)</b>	27.7% (118)	17.4% (74)	6.6% (28)	3.5% (15)	1.96	426
Other	<b>79.1% (53)</b>	4.5% (3)	4.5% (3)	7.5% (5)	4.5% (3)	1.54	67
							(Please specify other natural hazard)
							17
						<b>answered question</b>	<b>458</b>
						<b>skipped question</b>	<b>34</b>

8. Which of the following methods do you think are most effective for providing hazard and disaster information? (Check all that apply)

		Response Percent	Response Count
Newspaper		50.0%	229
Telephone Book		8.1%	37
Informational Brochures		43.0%	197
City Newsletters		33.4%	153
Public Meetings		34.9%	160
Workshops		28.8%	132
Schools		39.1%	179
<b>TV News</b>		<b>67.7%</b>	<b>310</b>
TV Ads		27.7%	127
Radio News		62.4%	286
Radio Ads		26.0%	119
Internet		64.6%	296
Outdoor Advertisements		13.8%	63
Fire Department/Rescue		46.7%	214
Church (faith-based institutions)		19.4%	89
CERT Classes		40.4%	185
Public Awareness Campaign (e.g., Flood Awareness Week, Winter Storm Preparedness Month)		54.6%	250



10. Do you have flood insurance?

Yes



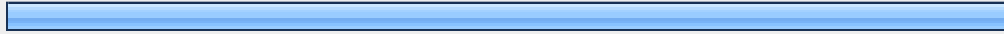
Response  
Percent

Response  
Count

11.6%

53

No



88.4%

405

*answered question*

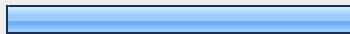
458

*skipped question*

34

11. Is your property located near an earthquake fault?

Yes



Response  
Percent

Response  
Count

30.3%

139

No



21.4%

98

Not Sure



48.3%

221



*answered question*

458



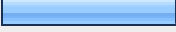
*skipped question*

34

12. Do you have earthquake insurance?

	Response Percent	Response Count
Yes 	28.2%	129
<b>No</b> 	<b>71.8%</b>	<b>329</b>
<i>answered question</i>		<b>458</b>
<i>skipped question</i>		<b>34</b>

13. Is your property located in an area at risk for wild fires?

	Response Percent	Response Count
Yes 	17.5%	80
<b>No</b> 	<b>67.5%</b>	<b>309</b>
Not Sure 	15.1%	69
<i>answered question</i>		<b>458</b>
<i>skipped question</i>		<b>34</b>

14. Have you ever had problems getting homeowners or renters insurance due to risks from natural hazards?

Yes

No

Response  
Percent    Response  
Count

2.4%    11

97.6%    443

If "yes," what natural hazard was the cause of the problem?    12

*answered question*    454

*skipped question*    38

15. When you moved into your home, did you consider the impact a natural disaster could have on your home?

Yes

No

Response  
Percent    Response  
Count



54.1%    243

45.9%    206



*answered question*    449

*skipped question*    43





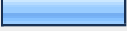
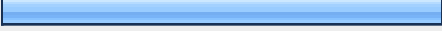
16. Was the presence of a natural hazard risk zone (e.g., dam failure zone, flood zone, landslide hazard area, high fire risk area) disclosed to you by a real estate agent, seller, or landlord before you purchased or moved into your home?

	Response Percent	Response Count
Yes 	14.3%	64
No 	85.7%	385
<i>answered question</i>		449
<i>skipped question</i>		43

17. Would the disclosure of this type of natural hazard risk information influence your decision to buy or rent a home?

	Response Percent	Response Count
Yes 	80.4%	361
No 	19.6%	88
<i>answered question</i>		449
<i>skipped question</i>		43



**18. How much money would you be willing to spend to retrofit your home to reduce risks associated with natural disasters? (for example, by elevating a home above the flood level, performing seismic upgrades, or replacing a combustible roof with non-combustible roofing)**

		Response Percent	Response Count
\$10,000 or above		10.7%	48
\$5,000 to \$9,999		10.9%	49
\$1,000 to \$4,999		21.6%	97
Less than \$1,000		7.8%	35
Nothing		10.5%	47
<b>Don't Know</b>		<b>38.5%</b>	<b>173</b>
<i>answered question</i>			<b>449</b>
<i>skipped question</i>			<b>43</b>

19. Which of the following incentives would encourage you to spend money to retrofit your home to protect against natural disasters? (Check all that apply)

	Response Percent	Response Count
Building permit fee waiver	51.4%	231
Insurance premium discount	71.7%	322
Mortgage discount	44.5%	200
<b>Property tax break or incentive</b>	<b>77.7%</b>	<b>349</b>
Low interest rate loan	44.3%	199
Grant funding	66.6%	299
None	6.2%	28
Other (please specify)	3.6%	16
<b>answered question</b>		<b>449</b>
<b>skipped question</b>		<b>43</b>


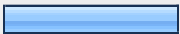
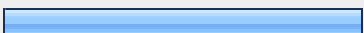

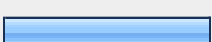
20. If your property were located in a designated “high hazard” area or had received repetitive damages from a natural hazard event, would you consider a “buyout” offered by a public agency?

		Response Percent	Response Count
Yes		85.1%	371
No		14.9%	65
<i>answered question</i>			<b>436</b>
<i>skipped question</i>			<b>56</b>

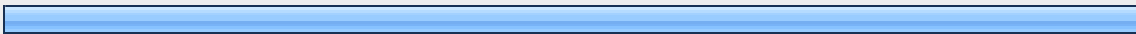

21. Please indicate how you feel about the following statement: It is the responsibility of government (local, state and federal) to provide education and programs that promote citizen actions that will reduce exposure to the risks associated with natural hazards.

	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Rating Average	Response Count
Choose one:	8.5% (38)	14.3% (64)	15.9% (71)	<b>36.5% (163)</b>	24.8% (111)	3.55	447
<i>answered question</i>							<b>447</b>
<i>skipped question</i>							<b>45</b>


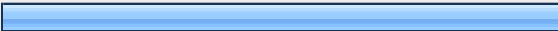
**22. Please indicate your age range:**

	Response Percent	Response Count
18 to 30 	4.5%	20
31 to 40 	15.0%	67
<b>41 to 50</b> 	<b>31.3%</b>	<b>140</b>
<b>51 to 60</b> 	<b>31.3%</b>	<b>140</b>
61 or older 	17.9%	80
<b>answered question</b>		<b>447</b>
<b>skipped question</b>		<b>45</b>





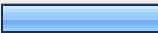

**23. Please indicate the primary language spoken in your household.**

	Response Percent	Response Count
<b>English</b> 	<b>99.6%</b>	<b>444</b>
Spanish	0.0%	0
Other Indo-European Language	0.0%	0
Asian and Pacific Island Languages	0.0%	0
Other (please specify) 	0.4%	2
<b>answered question</b>		<b>446</b>
<b>skipped question</b>		<b>46</b>


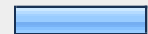
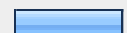

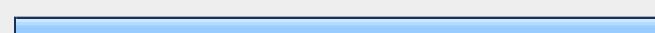
24. Please indicate your gender:

	Response Percent	Response Count
Male 	51.1%	228
Female 	48.9%	218
<b>answered question</b>		<b>446</b>
<b>skipped question</b>		<b>46</b>

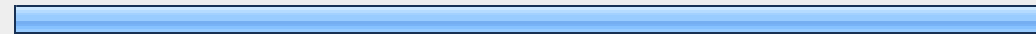
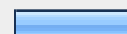
25. Please indicate your highest level of education.

	Response Percent	Response Count
Grade school/No schooling	0.0%	0
Some high school 	0.4%	2
High school graduate/GED 	10.1%	45
Some college/Trade school 	35.6%	159
<b>College degree</b> 	<b>39.4%</b>	<b>176</b>
Post-graduate degree 	13.6%	61
Other (please specify) 	0.9%	4
<b>answered question</b>		<b>447</b>
<b>skipped question</b>		<b>45</b>





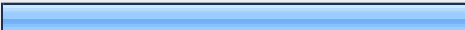
**26. How long have you lived in Snohomish County?**

	Response Percent	Response Count
Less than 1 year 	1.4%	6
1 to 5 years 	11.4%	50
6 to 10 years 	9.1%	40
11 to 20 years 	21.9%	96
<b>More than 20 years</b> 	<b>56.3%</b>	<b>247</b>
<i>answered question</i>		<b>439</b>
<i>skipped question</i>		<b>53</b>



**27. Do you own or rent your place of residence?**

	Response Percent	Response Count
Own 	90.0%	398
Rent 	10.0%	44
<i>answered question</i>		<b>442</b>
<i>skipped question</i>		<b>50</b>

**28. How much is your gross household income?**

	Response Percent	Response Count
\$20,000 or less 	2.4%	10
\$20,001 to \$49,999 	14.2%	60
\$50,000 to \$74,999 	24.6%	104
\$75,000 to \$99,999 	18.2%	77
<b>\$100,000 or More</b> 	<b>40.5%</b>	<b>171</b>
<b>answered question</b>		<b>422</b>
<b>skipped question</b>		<b>70</b>

**29. Do you have regular access to the Internet?**

	Response Percent	Response Count
Yes 	97.3%	434
No 	2.7%	12
<b>answered question</b>		<b>446</b>
<b>skipped question</b>		<b>46</b>

**30. Comments**

	<b>Response Count</b>
	78
<i>answered question</i>	<b>78</b>
<i>skipped question</i>	<b>414</b>



Snohomish County  
**Natural Hazard Mitigation Plan Update**

---

**APPENDIX C.**  
**PROGRESS REPORT FOR INITIAL HAZARD MITIGATION PLAN**

---

September 2010



# Snohomish County Natural Hazards Mitigation Plan Progress Report

## Reporting Period:

July 2007 to August 2008

## Summary Overview of the plan's progress

The performance period for the SCNHMP became effective on April 27, 2005, with the final approval of the plan by FEMA region X. The initial performance period for this plan is 5 years, with the anticipated update to the plan to occur before April 27th, 2010. As of this reporting period, the performance period for this plan is considered to be 60% complete. The SCNHMP has identified 216 hazard mitigation initiatives to be implemented by 40 planning partners to mitigate the potential impacts of nine natural hazards. As of the reporting period the following overall progress can be reported:

**116 out of 216 initiatives (54%) reported on-going action towards completion.**

**33 out of 216 initiatives (16%) were reported as being complete as of this reporting period.**

**67 out of 216 initiatives (31%) reported no action taken as of this reporting period**

**Background:** The Snohomish County Natural Hazards Mitigation Plan (SCNHMP) was prepared by a coalition partnership of local government planning partners within Snohomish County pursuant to the Disaster Mitigation Act of 2000. This act required state and local governments to develop hazard mitigation plans as a condition for federal grant assistance. Over a 17 month period from September of 2003 to February of 2005, this partnership organized resources, assessed the risks to natural hazards within the planning area, developed planning goals and objectives, reviewed mitigation alternatives, and developed an action plan to address the probable impacts from natural hazards within Snohomish County. By completing this process, all participating planning partners achieved compliance with the parameters of the Disaster Mitigation Act, and thus leveraged hazard mitigation grant funding opportunities afforded under the Robert T. Stafford Act. Copies of the plan are available to the public throughout the Snohomish County Library system and it can be viewed on-line at:

[http://www1.co.snohomish.wa.us/Departments/Public\\_Works/Divisions/SWM/Work\\_Areas/River Flooding/Planning/Countywide](http://www1.co.snohomish.wa.us/Departments/Public_Works/Divisions/SWM/Work_Areas/River_Flooding/Planning/Countywide)

**Purpose:** The purpose of this report is to provide all governing bodies within the Snohomish County partnership, and the citizens of Snohomish County an annual update on the implementation of the action plan(s) identified in the Snohomish County Natural Hazard Mitigation Plan. This report has been prepared by the Snohomish County planning team and was reviewed and confirmed by the SCNHMP Steering Committee in accordance Chapter 7.2, Part 2 of Volume I, adopted by all Coalition partners during May of 2005. The Steering Committee reviewed and approved this progress report at their annual meeting held August 21, 2008. The objective of this annual evaluation is to ensure that there is a continuing and responsive planning process that will keep the SCNHMP dynamic and responsive to the needs and capabilities of the coalition partnership. This report will discuss the following:

- I.) **Natural Hazard Events that have occurred within the last year**
- II.) **Changes in risk exposure within the planning area**
- III.) **Review of the action plan(s)**
- IV.) **Changes in capability within the planning Area that could impact plan implementation**
- V.) **Recommendations for changes/enhancement**

**The SCHNMP Steering Committee:** The development of the SCNHMP was overseen by a steering committee that was made up of planning partners and stakeholders within the planning area. This oversight committee operated under a set of ground rules that they helped to establish and that were supported by the Coalition Partnership. It was determined through the SCNHMP development process that a Steering committee will remain as a viable body to oversee the maintenance aspects of the SCNHMP as established in Chapter 7.2, Part 2 of Volume I. This body will remain as organized in the established ground rules, but will be dynamic in its membership. It is anticipated that there will be turn-over in this membership annually that will be monitored via the progress reporting mechanism. It is also anticipated the Steering Committees role in overall plan implementation will be dynamic, based on the needs of the partnership. At a minimum, the Steering Committee will provide technical review and oversight on the development of the annual progress report. For this reporting period, the Steering Committee Membership is as indicated in table PR-1.

TABLE PR-1.  
STEERING COMMITTEE MEMBERS

Name	Title	Jurisdiction/Agency	Representing
Mike Ganz, Chair	Fire Chief	Camano Island/Stanwood Fire	Coalition Partner
Steve Thomsen, Vice-Chair	Director Dept. of Public Works	Snohomish County	Coalition Partner
Robin Gordon	Emergency Program Manager	Snohomish County, Department of emergency Management	Stakeholder
Diane Boyd		County Resident	Citizen
Dennis Fenstermaker	Fire Chief	Darrington Fire District #24, City of Darrington	Coalition Partner
Chuck Steele	Floodplain Management Specialist	Washington Dept. Of Ecology	Agency/Stakeholder
Richard Gilmore		Silver Lake Water and Sewer District	Coalition Partner
Paul Reasoner		Marshland Flood Control District	Coalition Partner
Tamara Doherty	Deputy Director	Snohomish County Dept. of Emergency Management	Coalition Partner

## **I.) Natural Hazard Events within the Planning Area**

During the reporting period, there was one Presidential declared event that impacted the planning area. DR-1734 was for the flood events and severe winter storms that occurred during December 2007. The following is a brief discussion of how these events impacted the planning area:

**DR-1734**-On December 1, 2007, a rather cold air mass was in place over Washington State that was being maintained by a northerly jet stream plunging southward from Alaska and Canada. The series of storms was a result of a gradual transition from the influence of the northerly jet to a westerly jet, which was originating in the subtropics north of Hawaii. Thus, the first system that moved on shore on Saturday was rather cool and resulted in lowland snow. The second system, which was somewhat warmer and wetter, moved onshore late Saturday and early Sunday generating significant mountain snow and increasing lowland rain. The last of the three systems, which struck the Washington coast early Monday, was also the most powerful. It brought tremendous ocean waves and fierce winds to the coast, and torrential rain to both the lowlands and mountain areas on the Olympic Peninsula and in the Cascade Mountains. According to river flood gage data from the National Weather Service, floods of record occurred on the Chehalis River at Centralia, Grand Mound, and Porter.

Snohomish County experienced mostly urban flooding during this event and was deemed eligible for both Public Assistance and Individual Assistance by WAEMD.

## **II.) Changes in Risk exposure within the Planning Area**

The SCNHMP addressed the probable impact for the following natural hazard events within Snohomish County:

- Avalanche
- Dam Failure
- Earthquake
- Flood
- Landslides and other Mass Movements
- Severe Weather
- Tsunami/Seich
- Volcano
- Wildland Fire

During the reporting period, there was no occurrence of any natural hazard event within the planning area that would alter or change the probability of occurrence, or ranking of risk for the natural hazards addressed by the SCNHMP. It should be noted that the occurrence of the flood/landslide events within the reporting period is consistent with the probability of occurrence assigned to these events in the development in the initial plan.

## **III.) Review of the Action Plan**

This section will review the action plan of each planning partner and determine the status of each initiative. The following action plan matrix will provide the following information:

- Brief summary of the initiative
- Time Line
- Priority
- Status

Reviewers of this report should refer to Volume II of the SCNHMP for more detailed descriptions of each initiative and the prioritization process. Under the “status” section of the following section, each planning partner will provide the following comments with regards to each initiative:

- Was any element of the initiative carried out during the reporting period?
- If no action was completed, why?
- Is the timeline for implementation for the initiative still appropriate?
- If the initiative was completed, does it need to be changed or removed from the action plan?

The following matrix will illustrate the time line and priority that was assigned to each initiative by each Coalition Partner during the plan development process. The definitions for the timeline and priorities are as follows:

***Time Line***

- “***Short term***” = Project can be implemented in 1 to 5 years
- “***Long Term***” = Project implementation will take 5 years or greater to complete

***Priority***

- ***High Priority***—A project that meets multiple objectives (i.e., multiple hazards), benefits exceeds cost, has funding secured or is eligible for grants from the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation Grant Program (PDM), and can be completed in 1 to 5 years (i.e., short term project) once project is funded.
- ***Medium Priority***—A project that meets goals and objectives, benefits exceeds costs, funding has not been secured and HMGP or PDM grant funding is questionable, and can be completed in 1 to 5 years once project is funded.
- ***Low Priority***—Any project that will mitigate the risk of a hazard, benefits exceed costs, funding has not been secured and project is not eligible for HMGP or PDM grant funding, and time line for completion is considered long term (1 to 10 years).

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
<b>Countywide Initiatives</b>					
CW-1	Provide coordination and technical assistance in the application for grant funding that includes assistance in cost vs. benefit analysis for grant eligible projects	Short Term	High	Snohomish County provided technical and grant application assistance to Index, Fire District 5, and the City of Stanwood and the City of Arlington.	O
CW-2	Provide countywide updates to the HIVA that utilizes best available science and technology as new hazard specific data becomes available (i.e.: Avalanche, Tsunami, Landslide)	Short Term	Medium	No actions were implemented under this task during the reporting period. The Science and technology in this field has not advanced to the point to where the current HIVA would be considered obsolete. Elements of this task are more likely to occur at the plan update phase, or as funding opportunities develop. Time line and priority remain as assigned.	X
CW-3	County to assume lead role in the update/re-study of floodplains as a <i>Cooperating Technical Partner (CTP)</i> with FEMA for all Coalition Partners.	Short Term	High	County completed data collection and modeling of update of Skykomish River floodplain as a CTP; presently under FEMA review. County review of DFIRM's process remains underway.	O
CW-4	Provide basin specific floodplain information in the form of an informational brochure to all Coalition Partners annually for dissemination to county floodplain residents and identified repetitive loss areas. This outreach project will be designed according to the CRS criteria for outreach projects.	Short Term	High	Produced and distributed Snohomish County Flood Safety Bulletin brochure in October 2007 to Coalition Partners and to County floodplain residents. Preparing to update this informational brochure for distribution to all Coalition Partners and homeowners in SFHA's in 2008. Time line and priority remain as assigned.	O
CW-5	Sponsor and maintain a natural hazards informational website.	Short term	High	Snohomish County Natural Hazards Mitigation Plan and Annual Progress Reports are provided to the public via Snohomish County website: <a href="http://www.snoco.org/Departments/Public_Works/Division_s/SWM/Work_Areas/River_Flooding/Planning/Count">www.snoco.org/Departments/Public_Works/Division_s/SWM/Work_Areas/River_Flooding/Planning/Count</a>	O

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
				<a href="#">ywide/natural_hazards_plan.htm</a> . DEM is working to create a mitigation specific website as well.	
CW-6	Coordinating with all Coalition Partners, WRIA's and other Stakeholders within the County, seek the acquisition of high risk parcels that could provide significant open space benefits such as the attenuation of the impacts of natural hazards and beneficial environmental functions such as enhancement of habitat for threatened or endangered species.	Long term	Medium	Snohomish County acquired and continues to acquire property at high risk for flooding along the Skykomish River in the Skyview Tracts subdivision near Sultan. These acquired parcels will be maintained as open space that will provide attenuation of flooding impacts and will provide beneficial environmental functions for endangered Chinook Salmon and Steelhead along the Skykomish River. The County and all planning partners continue to target properties for key acquisitions in the future. Time line and priority remain as assigned.	O
CW-7	The SCNHMP Steering Committee.	Short Term	High	The Steering Committee did remain as a viable body and was primarily responsible for the development, overview and approval of this report. It is anticipated that this body's role will be enhanced over the next reporting period to provide technical oversight and coordination of grant applications within the planning area in addition to overseeing the development of the NHMP Update. Time line and priority remain as assigned.	O
<b>City of Arlington</b>		Point of Contact		Mr. Bill Blake Email: <a href="mailto:bblake@ci.arlington.wa.us">bblake@ci.arlington.wa.us</a>	
A-1	Conduct a seismic study of the City of Arlington fire stations and retrofit or relocate facilities if necessary	Short term	High	The study is complete. Station 48 is going to begin construction soon with an estimated completion date of Fall 2009. Station 46 will be upgraded as well by Fall of 2009.	O
A-2	Adopt and continue to implement the Utility	Short Term	High	Sewer and Water plans operational, stormwater plan	O

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
	Comprehensive Plan			still in development. Time line and priority remain as assigned.	
A-3	Increase the capacity of culverts at Jensen Business Park and create wetlands.	Short Term	High	Wetland was created to reduce flooding risk; culverts will still need to be replaced. Looking for funding source to replace the culverts. Time line and priority remain as assigned.	O
A-4	Enhance and update Snohomish County Hazard Inventory and Vulnerability Analysis (HIVA) as it pertains to Arlington.	Short Term	Medium	Will work with Sno. Co. DEM, Surface Water and ACE to gather information in regards to changes in the River system as well as other hazards and insert them into the Co. HIVA during the next scheduled update. Time line and priority remain as assigned.	O
A-5	Ensure redundancy in communication and data for all critical facilities by upgrading generators	Short Term	Medium	Station 47 received a permanent generator via an AFG grant. Applied for generator for Station 46 via AFG grant 07. Have a portable generator to run the phone system at the PW facility if needed or it can be taken where the need is the greatest (fueling stations etc.). Police and Council Chambers have a generator that can run up to 5 days to maintain Continuity of Government. Time line and priority remain as assigned.	✓
A-6	Seismic retrofit older homes in the Arlington Old Town Area.	Long Term	Medium	This is a private landowner issue, but City building department will encourage retrofit if a hazardous situation is recognized	O
A-7	Work to enhance and maintain the Johnson Levy.	Short term	Medium	Corps of Engineers has visited site and verbally approved repair action, awaiting a Hazard Mitigation grant opportunity to complete the work. Time line and priority remain as assigned.	O
A-8	Join Community Rating System	Long Term	Low	We will contact FEMA to set up a time for a CRS interview/meeting. We will then work to address any deficiencies necessary to get the City within the	O

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
				parameters needed to be able to join the CRS. Time line and priority remain as assigned.	
<b>Town of Darrington</b>		Point of Contact		Mr. Dennis Fenstermaker, Fire Chief 360-436-1338Email: <a href="mailto:dfenstermaker.firedist24@hotmail.com">dfenstermaker.firedist24@hotmail.com</a>	
D-1	Construct 2nd water storage facility to increase fire flow capabilities and storage capacity.	Short Term	High	Construction of 2 <sup>nd</sup> water storage facility is complete.	✓
D-2	Ensure that water system is available and critical facilities are by obtaining generators.	Short Term	High	Generator purchased and waiting for funding to intall.	O
D-3	Create evacuation routes for the community in the event of a volcano.	Short Term	High	Routes identified. Requested and waiting to receive evacuation route signage from the County. Timeline and priority remain as assigned.	O
D-4	Enhance and improve Zoning and Development Standards to include regulations that will mitigate or reduce exposure/vulnerability to natural hazards	Short Term	High	See D-7. Shoreline plan meets major needs of the Town of Darrington. Timeline and priority remain as assigned.	O
D-5	Create a partnership with fire district, school district and the sheriff's department to develop an emergency plan of action	Short Term	High	Partnership meets every month. Timeline and priority remain as assigned.	O
D-6	Create or enhance public information programs that will promote preparedness and mitigation of risk from Natural hazards.	Short Term	Medium	Conducts a CERT class for the community each year. Timeline and priority remain as assigned.	O
D-7	Create and maintain the Shoreline Management Plan	Short Term	Medium	Plan complete, submitted to Dept. of Ecology for final approval. Timeline and priority remain as assigned.	O
D-8	Join Community Rating System	Long Term	Medium	No action reported on this initiative during this reporting period. The initiative is still considered to be long term, with medium priority.	X

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
<b>City of Goldbar</b>		Point of Contact	Mr. John Light, Director of Public Works 360-793-1101 Email: <a href="mailto:j.light.goldbar@verizon.net">j.light.goldbar@verizon.net</a>		
GB-1	Feasibility Study on what to do about Gold Bar Dike	Short Term	Low	The dike has been reinforced in danger area.	✓
GB-2	Set up Surface Water Utility for Drainage	Short Term	High	Planning commission is working on rate study. Timeline and priority remain as assigned.	O
GB-3	Develop and implement a public information/education strategy on preparedness and mitigation of natural hazards	Short Term	High	Council member Woods is working on preparedness. Timeline and priority remain as assigned.	O
GB-4	Replace wood stove water reservoir #3 with new reservoir built to seismic code.	Short Term	High	We have CDBG grant for \$250,000. Working to obtain USDA grant for around \$1,400,000 for project. Timeline and priority remain as assigned.	O
GB-5	Seismic retrofit of vulnerable water transmission mains.	Long Term	Medium	Plan to be included in water comprehensive plan update. Timeline and priority remain as assigned. The transmission mains can now be isolated at the May Creek Bridge located on 1 <sup>st</sup> Ave.	O
GB-6	Adopt the Snohomish County Skykomish River Comprehensive Floodplain Management Plan	Short Term	High	No progress to report on this initiative at this time. Time line and priority remain the same.	X
GB-7	Join Community Rating System (CRS)	Long Term	Medium	No progress to report on this initiative at this time. Time line and priority remain the same.	X
GB-8	"GIS" capability at the City of Gold Bar Level	Long Term	Low	In the process of upgrading the city computer system. This will be added in the near future.	O
<b>City of Granite Falls</b>		Point of Contact	Mr. Lyle Romack, Mayor or Lotta Hines 360-691-6441; FAX 360-691-6441 Email: <a href="mailto:lyleromack@cityofgranitefalls.com">lyleromack@cityofgranitefalls.com</a> or <a href="mailto:lottahines@cityofgranitefalls.com">lottahines@cityofgranitefalls.com</a>		

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
GF-1	Determine structural vulnerability of older structures on NEHRP D and E soils and seismic retrofit.	Long Term	High	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
GF-2	Replace or retrofit vulnerable critical utility infrastructure	Long Term	High	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
GF-3	Educate the public on vegetation management practices to reduce risk to homes.	Short Term	Medium	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
GF-4	Maintain and clear storm drains and culverts	Short Term	Medium	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
GF-5	Promote open space uses in identified high hazard areas by use of setbacks, greenways and environmentally sensitive areas.	Short Term	Medium	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
GF-6	Promote non-structural retrofitting for structures on NEHRP D and E soils	Long Term	Low	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
GF-7	Educate the public on fire prevention and policy by: a) Restricting hazardous activities during high risk times and b) Encouraging residents to store water on-site and clear defensible space along structures c) Manage fuel loads through Controlled burns or harvesting.	Short Term	Low	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
<b>Town of Index</b>		Point of Contact	Ms. Lisa Stowe, Clerk, Treasurer 360-793-2488 Email: <a href="mailto:index@premier1.net">index@premier1.net</a>		
I-1	Acquisition of land and removal of flood-prone structures or elevation of structures	Long Term	High	No land in flood prone areas has come up for acquisition. Riprap has been repaired again; Index has applied for a hazard mitigation grant. Time line and priority remain as assigned.	O

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
I-2	Control land use in flood prone areas by: a) creating zoning setback provisions; b) designating greenways or open spaces to minimize stream bank erosion and; c) providing additional buffering against the effects of overflows.	Long Term	High	Index is currently beginning the update process for the Comprehensive Plan, which will be followed by updating the Critical Areas Ordinance to further protect these areas. Priority and timeline remain as assigned.	O
I-3	Re-vegetate along the riverbanks to reduce erosion, re-direct water flows and strengthen current armoring.	Long Term	High	The Town continues to allow natural vegetation to come back. Pruning, mowing, etc., is limited in these areas. Time line and priority remain as assigned.	O
I-4	Educate the public on fire prevention and policy by: a) Restricting hazardous activities during high risk times and b) Encouraging residents to store water on-site and clear defensible space along structures c) Manage fuel loads through Controlled burns or harvesting.	Short Term	Medium	The Snohomish County Fire Department located in Index handles the fire prevention and education aspects of this for the Town. They also regulate burn bans and permits. The annual Index newsletter that goes out to all residents carries information on water management and fire prevention, and this information is available at the Town Hall. Index has not yet researched managing fuel loads for areas around Town. That will need interagency involvement as the lands that have high fuel loads are owned by the State Parks and the Forest Service. Time line and priority remain as assigned.	O
I-5	Retrofit existing structures on NEHRP D and E soils	Long Term	Medium	No progress at this time. Time line and priority remain as assigned.	X
I-6	Promote non-structural retrofitting for structures on NEHRP D and E soils	Short Term	Medium	No progress at this time. Time line and priority remain as assigned.	X
I-7	Continue participation in and seek class improvement in CRS	Short Term	Low	Index has successfully completed requirements to improve flood insurance ratings, resulting in a change from Class 8 to Class 6 and reduction of insurance premiums for residents. Time line and priority	O

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
				remain as assigned.	
<b>City of Lake Stevens</b>		Point of Contact	Mr. Dave Ostergaard, Public Works Director 425-334-1012 Email: <a href="mailto:dostergaard@ci.lake-stevens.wa.us">dostergaard@ci.lake-stevens.wa.us</a>		
LS-1	Provide back-up power generation for critical infrastructure and facilities.	Long Term	High	Police Department has a small generator for the phone system and computers only.	O
LS-2	Manage city-owned vegetation by trimming trees back from city property near or next to privately owned property.	Short Term	High	Completed with ongoing maintenance being performed.	✓
LS-3	Maintain city drainage facilities by developing a vegetation management program.	Short Term	High	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
LS-4	Develop a Regional Stormwater Plan and construct a regional stormwater detention facility.	Long Term	Medium	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
LS-5	Upgrade stormwater drainage infrastructure in areas of urban flooding.	Long Term	Medium	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
LS-6	Join Community Rating System	Long Term	Low	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
<b>City of Marysville</b>		Point of Contact	Ms. Kari Chennault, Program Engineer Surface Water 360-651-5100 Email: <a href="mailto:kchennault@ci.marysville.wa.us">kchennault@ci.marysville.wa.us</a>		
Ma-1	Construct a Regional Detention Pond.	Short Term	High	Completed construction of first regional pond (October 2004); design and construction of a second regional detention pond occurred during the reporting period. This action is considered complete.	✓

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
Ma-2	Upgrade and expand wastewater treatment plant to current seismic design standards	Short Term	High	This project was completed during first report period.	✓
Ma-3	Construct the North End 240 Zone Reservoir	Short Term	High	Completion of this project occurred during the reporting period.	✓
Ma-4	Create the North Marysville Master Drainage Basin Plan	Short Term	High	This project was completed during first report period.	✓
Ma-5	Enhance and update Snohomish County Hazard Inventory and Vulnerability Analysis (HIVA) as it pertains to Marysville	Short Term	High <i>Medium</i>	No progress to report on this initiative at this time. Time line and priority remain the same.	X
Ma-6	Enhance and improve Development Standards to include regulations that will mitigate or reduce exposure/vulnerability to natural hazards	Short Term	Medium	Updated Critical Area ordinance in May 2005. This initiative is considered to be complete.	✓
Ma-7	Create or enhance public information programs that will promote preparedness and mitigation of risk earthquakes	Short Term	Medium	Progress was made towards creation of this public information during the reporting period. However no implementation of the outreach occurred. Time line and priority remain as assigned.	O
Ma-8	Update Shoreline Management Ordinance	Short Term	Medium	Completion of the update to the shorelines management ordinance occurred during the reporting period. This task is considered to be complete.	✓
Ma-9	Join Community Rating System	Long Term	Low	No progress to report on this initiative at this time. Time line and priority remain the same.	X
<b>City of Monroe</b>		Point of Contact	Mr. Brad Feilberg, City Engineer 360-863-4540 Email: <a href="mailto:bfeilberg@ci.monroe.wa.us">bfeilberg@ci.monroe.wa.us</a>		
Mo-1	Implement policies and recommendations of the Snohomish River Comprehensive Flood Control Management Plan as they pertain to	Short Term	High	All policies and recommendations pertaining to the City of Monroe have been implemented.	✓

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
	the City of Monroe				
Mo-2	Acquire/relocate the Monroe Motel repetitive Loss property	Short Term	High	Property owner not interested in selling.	X
Mo-3	Construct Floodwall around Terrace Street Apartments Building	Short Term	High	No funding available.	X
Mo-4	Enhance and update Snohomish County Hazard Inventory and Vulnerability Analysis (HIVA) as it pertains to Monroe	Short Term	High	Work in progress, expected completion December 2008.	O
Mo-5	Enhance and improve Development Standards to include regulations that will mitigate or reduce exposure/vulnerability to natural hazards	Short Term	Medium	Completed and adopted critical area regulations.	✓
Mo-6	Seismic retrofit of approximately 149,000 LF of vulnerable water mains.	Long Term	Medium	Completed replacement of 2,000 feet of water main. Time line and priority remain as assigned	O
Mo-7	Create or enhance public information programs that will promote preparedness and mitigation of risk from Natural hazards.	Short Term	Medium	Presented preparedness information at two community events. Time line and priority remain as assigned	O
Mo-8	Update Shorelines Master Plan	Short Term	Medium	Completed and adopted 10/23/2007.	✓
<b>City of Snohomish</b>		Point of Contact	Mr. George Perillo, Emergency Management Coordinator Email: <a href="mailto:perillo@ci.snohomish.wa.us">perillo@ci.snohomish.wa.us</a>		
So-1	Determine vulnerable critical city facilities and seismic retrofit these facilities.	Long Term	High	The City is in the progress of determining those facilities in need of seismic retrofit. This is still in the identification and feasibility phase of this initiative. Time line and priority remain as assigned.	O

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
So-2	Determine vulnerable sewer and water infrastructure and replace or harden.	Long Term	High	The City is in the progress of determining those facilities in need of retrofit. This is still in the identification and feasibility phase of this initiative. Time line and priority remain as assigned.	O
So-3	Stabilize slope and prevent erosion along waterfront area by creating constructing a trail.	Short Term	High	Completion of this initiative occurred during the reporting period.	✓
So-4	Construct a water line inter-tie in order to create redundant source of water supply.	Long Term	High	South pressure zone completed, north pressure zone to be looked at in 2009.	O
So-5	Institute low impact development techniques in vulnerable areas.	<del>Short Term</del> On-going	Medium	The city continues to consider LID techniques based on feasibility and capability for all new development. The time line for this initiative should be considered "on-going", and the priority remains as assigned.	O
So-6	Construct a pump station to convey combine sewer overflows along the Snohomish River.	Long Term	Medium	In progress; scheduled for 2009 construction.	O
So-7	Create or enhance public information programs that will promote preparedness and mitigation of risk from Natural hazards.	Short Term	Medium	In Progress. Time line and priority remain as assigned.	O
So-8	Promote non-structural retrofitting of private property.	Short Term	Medium	No action on this initiative completed during the reporting period. Time-line and priority remain as assigned.	X
So-9	Develop a map of critical routes through the city.	Long Term	Medium	Done	✓
So-10	Create and maintain a partnership with Washington State Department of Transportation (WSDOT) to ensure Highway 2 and 9 bridges are seismically retrofitted and maintained	Long Term	Medium	None of the bridges belong to the City of Snohomish. WSDOT has been informed of the need for upgrade. Time line and priority remain as assigned.	O

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
So-11	Join the Community Rating System	<del>Short Term</del> Long Term	Low	No action on this initiative completed during the reporting period. Time-line has been changed as indicated.	X
<b>City of Stanwood</b>		Point of Contact	Mr. Mike Ganz, Fire Chief 360-629-3008 Email: <a href="mailto:m ganz@camanofire.com">m ganz@camanofire.com</a>		
St-1	Relocate City Hall/Police Station out of floodplain and seismic risk zones	Short Term	High	Plans are being made to build new City Hall/Police Station in City of Stanwood. While a specific location has not been selected, the city will use both location and architectural design to mitigate the seismic and flood risks. The City EOC is located in seismically sound fire station built in 2003 and is located out of flood plain to maintain continuity of government during disasters. Time line and priority remain as assigned.	O
St-2	Enhance flood threat recognition system on Stillaguamish River to allow for phase warning capability.	Long Term	Medium	The City participates with the county flood warning center – a regional early warning center, and will continue to look for additional warning options along with continued participation in the county program.	O
St-3	Update Emergency Response plan to include “phase” warning protocol	Short Term	Medium	A new Emergency Operations Plan (EOP) for City of Stanwood has been drafted incorporating a phased warning and activation protocol for City EOC. Time line and priority remain as assigned.	O
St-4	Create a Public Information/education strategy on preparedness/mitigation of natural hazards.	Short Term	High	A Public Information Annex to the EOP has been drafted. Map Your Neighborhood and CERT programs, Community Disaster and Pan Flu Task Force have been developed to educate and improve preparedness level of local citizens. Mayor held a Preparedness Public Forum Jan. 07. Time line and priority remain as assigned.	O

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
St-5	Update Emergency Operations Center to increase capability and redundancy.	Short Term	High	The EOC plan and capability expansion efforts are currently in progress. ICS and incident status boards have been purchased. Time line and priority remain as assigned.	O
St-6	Seismic Retrofit of water distribution system	Long Term	Medium	Ongoing water main replacement per Stanwood Water Comprehensive Plan. Annual PVC and concrete asbestos pipe replacements are on-going as funds permit (up to \$100,000 per year projected to last 8-15 years). Time line and priority remain as assigned.	O
St-7	Implement recommendations in the Stillaguamish Comprehensive Flood Hazard Management Plan where appropriate to the City of Stanwood.	Long Term	High	Ongoing work with Snohomish County Surface Water in regards to SCFHMP. Time line and priority remain as assigned.	O
St-8	8. Join the Community Rating System	Long Term	Medium	City is a member of NFIP and will receive a Community Assistance Visit (CAV) in September. Following a CAV the city will complete the CRS checklist with Insurance Services Office assistance and request CRS enrollment.	O
St-9	9. Join the NOAA "Tsunami Ready" program	Long Term	Medium	City is in the process of inventorying existing warning assets and completing hazard specific plans needed to comply with national Weather Service Storm/Tsunami Ready programs. Time line and priority remain as assigned.	O
<b>City of Sultan</b>		Point of Contact	Ms. Deborah Knight, City Administrator 360-793-2231 Email: deborah.knoight@ci.sultan.wa.us		
Su-1	Implement policies and recommendations identified in the City of Sultan	Short Term	High	Aided citizens with ICC claims, two elevated, three others are a work in progress. Time line and priority remain as assigned.	O

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
	Comprehensive Floodplain Management and Repetitive Flood Loss Plans				
Su-2	Acquire, relocate or retrofit identified repetitive flood loss properties	Short Term	High	Bought out and demolished single family resident 101 Main Street. Purchasing SFR at 105 2 <sup>nd</sup> St (2008). Demolition scheduled for 2008. Time line and priority remain as assigned.	O
Su-3	Provide the citizens of Sultan access to “web-based” information on natural hazards.	Short Term	High	Have listed all elevations certificates on interactive FIRM on City web-site. Time line and priority remain as assigned.	O
Su-4	Relocate Police Station out floodplain and Seismic vulnerable soils areas of Town. Possible Joint Facility with Fire Station	Long Term	High	Fire department is moved police has not. The City will continue to pursue a joint facility. Time line and priority remain as assigned.	O
Su-5	Update, enhance and adopt the City’s Emergency response Plan based on the most current information and to include identification of multi-hazard evacuation routes	Short Term	High	Created evacuation route map and included in the City’s emergency Operations Plan as an update. Time line and priority remain as assigned.	O
Su-6	Create an alternate evacuation Route out of Sultan (Clay Hill)	Long Term	Medium	Created evacuation route map and included in the City’s emergency Operations Plan as an update. Time line and priority remain as assigned.	O
Su-7	Promote flood insurance and the accurate rating of flood insurance by providing certified elevation data on all structures in the floodplain	Long Term	Medium	Preparedness flyer created and sent to all floodplain residents. This flyer included information and promotion of Flood Insurance per CRS guidelines.	O
Su-8	Enhance ongoing outreach programs to include information on preparedness for and mitigation of the impacts of all natural hazards that impact the city of Sultan.	Short Term	Medium	Preparedness flyer created and sent to all floodplain residents.	O

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
Su-9	Seismic retrofit of vulnerable water mains within Sultan	Short Term	Medium	No action was taken on this initiative during the reporting period primarily due to the lack of funding. Time line and priority remain as assigned.	X
Su-10	Promote mitigation of private property within Sultan by providing incentive, and seeking alternative ways to fund mitigation efforts within Sultan	Long Term	Medium	Made grant application for buy-out of 105 2nd Street. Providing assistance to private property owners with ICC claims. Time line and priority remain as assigned.	O
Su-11	Continue to participate in the Community Rating System with emphasis on improving classification and premium discount	Long Term	Medium	ISO rating increased to 7 for CRS grade. Made application to ISO for better CRS grade, may get to 6 rating, 20% premium reduction. Time line and priority remain as assigned.	O
<b>Snohomish County</b>		Point of Contact	Ms. Robin Gordon, Emergency Program Manager 425-388-5071 Email: <a href="mailto:robin.gordon@co.snohomish.wa.us">robin.gordon@co.snohomish.wa.us</a>		
SC-1	Implement recommendations identified in the Snohomish, Stillaguamish River and other adopted Comprehensive Flood Hazard Management Plans.	Short Term	High	Continued to implement additional acquisitions at Skyview Tracts along Skykomish River. Maintained CRS classification 5 rating. Received a FEMA PDM grant to elevate 4 Repetitive Loss structures in the French Slough area along the Snohomish River. Time line and priority remain as assigned.	O
SC-2	Seismic Retrofit of Snohomish County Courthouse complex. This includes 4 buildings.	Long Term	Medium	Began discussions with committee regarding retrofit of Carnegie Library Building. Other grant funding was made available through the WA State Historical Society & other grants. No further discussions on other county buildings at this time. Time line and priority remain as assigned.	O
SC-3	Retrofit seismic and flood vulnerable buildings (including grandstands) on the	Long Term	High	Seismic retrofit of rabbit barn and repaired retrofit of grandstands at Evergreen State Fairgrounds (post 2001 earthquake). Reported complete in 2006	✓

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
	Evergreen State Fairgrounds and at McCollum Park.			update.	
SC-4	Retrofit seismically vulnerable buildings, including the YMCA, at the Paine Field Airport	Long Term	High	Implemented seismic upgrade to water tank (standpipe); joint project with Mukilteo Water District completed in 2006. Feasibility study underway for retrofit of gym (YMCA). Time line and priority remain as assigned.	O
SC-5	Seek to include appropriate regulatory standards, through ongoing critical areas ordinance and growth management ordinance updates.	Short Term	High	Adopted Critical Areas Ordinance update to complete Growth Management Ordinance updates. Time line and priority remain as assigned.	O
SC-6	Join the Community Rating System	Short Term	High	Maintained CRS Classification of 5. This action considered to be completed.	✓
SC-7	Join NOAA's "Storm Ready" and "Tsunami Ready" programs	Short Term	High	Maintained National Weather Service "Storm Ready" designation. This action considered to be completed.	✓
SC-8	Inform and educate the public on hazard mitigation and preparedness via a County operated website	Short Term	High	DEM hazard mitigation website design is underway. Maintained River Flood Warning Program via County website ( <a href="http://www.floods.surfacewater.info">www.floods.surfacewater.info</a> ). Time line and priority remain as assigned.	O
SC-9	Acquire, relocate, or retrofit repetitive flood loss properties and those at risk to channel migration	Long Term	High	Received a FEMA PDM grant to elevate 4 Repetitive Loss structures minimum of 1 foot above the BFE. Completing project to elevate 1 Repetitive Loss structure along the Stillaguamish River under an HMGP grant. Time line and priority remain as assigned.	O
SC-10	Develop and disseminate annually a floodplain resident informational brochure.	Short Term	Low	Updated "Snohomish County Flood Safety Bulletin" and distributed to floodplain residents (7400) and SCNHMP Coalition Members in October 2007. Time line and priority remain as assigned.	O

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
SC-11	Integrate goals, objectives and initiatives of the Snohomish County Natural Hazards Mitigation Plan into existing regulations and programs where appropriate.	Short Term	Medium	Snohomish County Comprehensive Plan Update (2005) integrated many of the goals, objectives, and initiatives of the SCNHMP. The Critical Areas Ordinance, adopted in 2007, also incorporated goals, objectives, and initiatives of the SCNHMP. Time line and priority remain as assigned.	O
SC-12	Relocate County owned critical facilities out of identified high hazard risk zones.	Long Term	Medium	Relocated a County owned Public Works field equipment operations and maintenance facility to a more strategic location.	O
SC-13	Enhance the Flood Warning System on major rivers within Snohomish County	Long Term	Low	Received a NOAA grant to enhance the Flood Warning System to upgrade and expand the system. Upgrade and expansion underway. Added a new flood warning gage on the Pilchuck River. Time line and priority remain as assigned.	O
SC-14	Update and enhance Snohomish County Emergency Response plan to include “phase” warning along major rivers.	Long Term	Medium	Update remains underway. Time line and priority remain as assigned.	O
SC-15	Retrofit vulnerable road and bridge facilities, especially those known to access isolated populations.	Long Term	Medium	Three additional bridge replacement projects have been completed, replaced and rebuilt to current seismic and flood standards, in 2008. They are 1.) Swanson Road Bridge #80; 2.) Woods Creek Bridge #445; and 3.) May Creek Bridge in the City of Gold Bar.? We also completed emergency scour repair to Blue Bridge #538. Bridge replacement projects currently in construction include Sauk River Bridge #414 and May Creek Bridge #572. Swamp Creek Bridge #600 is also scheduled to be replaced later on this year. Time line and priority remain as assigned.	O

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
SC-16	Enhance and update HIVA utilizing best available technology to include Tsunami zones and landslide zones.	Long Term	Medium	County climate change study is underway and is intended for inclusion during the update phase. No additional actions were implemented under this task during the reporting period. This task is more likely to occur at the plan update phase, or as funding opportunities develop. Time line and priority remain as assigned	O
SC-17	Develop a Continuity of Operations Plan (COOP)	Short Term	High	Development is underway by Dept. of Emergency Management and all other County Departments at this time. Time line and priority remain as assigned.	O
SC-18	Seek land acquisition opportunities for open space use and preservation in areas of high vulnerability due to multiple risk exposure.	Short Term	High	Implementing land acquisition opportunities for open space use and preservation at Skyview tracts along the Skykomish River. Time line and priority remain as assigned.	O
SC-19	Support programs such as "Tree Watch" that proactively manage problem areas by use of selective removal of hazardous trees, tree replacement, etc	Short Term	Medium	No actions were implemented under this task during the reporting period. Time line and priority remain as assigned.	X
SC-20	Perform feasibility study on incentive options to promote hazard mitigation of private property.	Short Term	Low	No actions were implemented under this task during the reporting period. Time line and priority remain as assigned.	X
SC-21	Promote disclosure of known natural hazards to prospective buyers	Long Term	Medium	No actions were implemented under this task during the reporting period. Time line and priority remain as assigned.	X
SC-22	Implement high priority projects identified in the Drainage Needs Report	Long Term	High	Implemented approximately 43% of projects or a total of 95 projects, identified in the Drainage Needs Report. Time line and priority remain as assigned.	O
<b>Snohomish County Fire District #1</b>		Point of Contact	<b>Mr. Steve Sherman, Deputy Chief of Prevention 425-551-1232</b>		

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
			Email: <a href="mailto:ssherman@firedistrict1.org">ssherman@firedistrict1.org</a>		
FD1-1	Purchase emergency generators for all fire stations to assure no interruption in service post hazard incident	Short Term	Medium	All fire stations now have emergency generators. This initiative is now considered complete.	✓
FD1-2	Structural Seismic retrofit of Fire stations #21, #22 and #23.	Short Term	Medium	Station 21 is under construction. Stations #22 and #23 scheduled for replacement. Time line and priority remain as assigned.	O
FD1-3	Enhance existing public education program to include preparedness for and the mitigation of the impacts of natural hazards.	Short Term	High	CERT program is active. Two classes per year with up to 20 students per class. Improve County wide partnerships with DEM, Everett, and ESCA. Time line and priority remain as assigned.	O
<b>Monroe Fire District #3</b>		Point of Contact	Mr. Michael Hill, Captain 360-794-7666 e-mail: <a href="mailto:mhill@monroefire.org">mhill@monroefire.org</a>		
FD3-1	Non Structural seismic retrofit of Fire Stations	Short Term	Medium	Assessment made of offices and storage areas. No actions taken to retrofit at this time.	O
FD3-2	Support County wide initiatives of the SCNHMP	Long Term	High	District continues to support the SCNHMP and it's planning process by participating in the planning process. The time line and priority remain as assigned.	O
FD3-3	Study to determine seismic stability of training tower	Short Term	Medium	Repairs made to exterior of tower. Still need to look at stability of structure. Timeline and priority remain as assigned.	O
FD3-4	Enhance existing Public education program to address preparedness for and the mitigation of the impacts from natural hazards	Short Term	High	Participate actively with City of Monroe in CERT training for community. Timeline and priority remain as assigned.	O
<b>Snohomish County Fire District #4</b>		Point of Contact	Mr. Mark Collins 360-568-2141		

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
Email: <a href="mailto:mcollins@snohomishfire.org">mcollins@snohomishfire.org</a>					
FD4-1	Install and update earthquake bracing and sheer walls in all stations.	Short Term	Medium	No action was taken on this initiative during the reporting period due to the lack of funding. The District is seeking funding for this initiative via alternative means. The time line and priority remain as assigned.	X
FD4-2	Support the County-wide Mitigation strategies of the SCNHMP.	Short Term	High	District continues to support the SCNHMP and its planning process by participating in the planning process. The time line and priority remain as assigned.	O
FD4-3	Enhance existing public education program to include preparedness for and the mitigation of the impacts of natural hazards.	Short Term	High	<b>Completed</b> – SCFD4 will continue to provide ongoing CERT and other hazard mitigation training programs to the citizens and Snohomish School District 201 students and staff.	✓
<b>Snohomish County Fire District #5</b>		Point of Contact	Mr. Ron Bertholf or Mr. Merlin Halverson, Fire Chief 360-793-1179 Email: <a href="mailto:r.bertholf@snofire5.org">r.bertholf@snofire5.org</a> or <a href="mailto:m.halverson@snofire5.org">m.halverson@snofire5.org</a>		
FD5-1	Replace/relocate Headquarters Fire Station out of flood/earthquake susceptible risk zones.	Short Term	High	Property has been purchased. Meets all flood and seismic requirements. Time line and priority remain as assigned.	O
FD5-2	Build a VHF regional emergency radio system	Short Term	Medium	VHF frequency licensed through FCC. Time line and priority remain as assigned.	O
FD5-3	Replace and expand the dam collapse warning system.	Long Term	Medium	Continuing negotiations with the PUD for replacement of the existing system. Time line and priority remain as assigned.	O
FD5-4	Create Dam Failure Emergency Action Plan.	Short Term	High	School evacuation routes and plans complete. Annual drills ongoing. Evacuation routes and signage for general population in process. Time line and priority remain as assigned.	O

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
FD5-5	Purchase equipment specifically suited to flood/earthquake rescue and Wildland interface firefighting such as: portable water storage for hauled water operations, portable pumps and generators.	Short Term	Medium	New Tender purchased adding 1000 gallons of additional capacity and improved reliability and safety. Time line and priority remain as assigned.	O
<b>Snohomish County Fire District #7</b>		Point of Contact	Ms. Janet Jaeger 360-668-5357 Email: <a href="mailto:jjaeger@firedistrict7.com">jjaeger@firedistrict7.com</a>		
FD7-1	Create an education program for the people, focusing on risk education for hazards and public assistance programs.	Short Term	High	Action on this initiative was completed during the reporting period by holding CERT classes and the Fire District has hired a public safety educator. <a href="#">Waiting for a rehire; CERT program is continuing.</a> The time line and priority remain as assigned.	O
FD7-2	Work with the water districts to develop an updated hydrant system, focusing on areas lacking in hydrants, such as: Sunset Rd., Strumme Rd. to 161st, Elliott Rd, High Bridge Rd., and the Crystal Lake community.	Long Term	Medium	This project <a href="#">progressed</a> due to the growth and construction in the area. Hydrants and water mains have been installed in the new housing developments. <a href="#">Hydrant and water mains are mandatory by code for new developments. Water District has no plans to extend water mains and hydrants into existing developments at this time.</a> The time line and priority remain as assigned.	O
<b>Snohomish County Fire District # 14 (Merged with Fire District # 18 into North County Regional Fire Authority)</b>		Point of Contact	Chief Dale Fulfs 360-652-1246 Email: <a href="mailto:dfulfs@northcountyfireems.com">dfulfs@northcountyfireems.com</a>		
FD14-1	Seismic Retrofit Station 96	Short Term	Medium	<a href="#">No progresses at this time due to lack of funding. The priority on this initiative has been changed to medium until such a time a funding source can be identified</a>	X

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
FD14-2	Support County-wide initiatives of SCNHMP	Short Term	High	District continues to support SCNHMP and its planning process by participating in the planning process. The time line and priority for this initiative remain as assigned.	O
<b>Snohomish County Fire District #17</b>		Point of Contact	Mr. Rick Hjelle 360-691-5553 Email: <a href="mailto:scfpd17@aol.com">scfpd17@aol.com</a>		
FD17-1	Replace 100 year old, un-reinforced masonry section of Headquarters fire station.	Long Term	Medium	No progress to report on this initiative at this time due to lack of funding. Time line and priority remain the same.	X
FD17-2	Purchase emergency generator for headquarters fire station/Community EOC.	Short Term	High	No progress to report on this initiative at this time due to lack of funding. Time line and priority remain the same.	X
FD17-3	Create a Public education program focusing on risk and preparedness education for natural hazards and public assistance programs.	Short Term	High	No progress to report on this initiative at this time due to lack of funding. Time line and priority remain the same.	X
<b>Snohomish County Fire District # 18 (Merged with Fire District # 18 into North County Regional Fire Authority)</b>		Point of Contact	Chief Dale Fulfs 360-652-1246 Email: <a href="mailto:dfulfs@northcountyfireems.com">dfulfs@northcountyfireems.com</a>		
FD18-1	Construct water tower in extreme urban wild land interface area of District.	Short Term	Medium	No progresses at this time due to lack of funding. The priority on this initiative has been changed to medium until such a time a funding source can be identified	X
FD18-2	Promote and support the “Fire Wise” program within district and seek District Certification	Long Term	Medium	Fire District 18 continues to promote the “Fire-Wise” program within the district. Firewise certification has not yet been obtained due to limited resources. The District will continue to pursue certification in the near future. The priority and time-line for this	O

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
				initiative remain as assigned.	
<b>Snohomish county Fire District #19</b>		Point of Contact	Mr. Keith Strotz 360-652-8277 Email: <a href="mailto:kstrotz@firedistrict.com">kstrotz@firedistrict.com</a>		
FD19-1	Retrofit District Facilities for earthquake.	Short Term	High	On going, no advancement to date. The time line and priority remain the same.	O
FD19-2	Flood proof station #95	Short Term	High	On going, no advancement to date. The time line and priority remain the same.	O
FD19-3	Support the County-Wide mitigation Initiatives of the SCNHMP	Short Term	High	The district continues to support SCNHMP and its planning process. The time line and priority remain the same.	O
<b>Snohomish County Fire District #21</b>		Point of Contact	Mr. Scott Hillis 360-435-3311 Email: <a href="mailto:shillis@ci.arlington.wa.us">shillis@ci.arlington.wa.us</a>		
FD21-1	Water source containment (Water Tanks) in identified vulnerable portions of the District (urban-wild land interface areas).	Short Term	High	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
FD21-2	Public education on fire prevention, and creation of defensible spaces in interface areas.	Short Term	High	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
<b>Snohomish County Fire District #24</b>		Point of Contact	Dennis Fenstermaker 360-436-1338 Email: <a href="mailto:dfenstermaker.firedist24@hotmail.com">dfenstermaker.firedist24@hotmail.com</a>		
FD24-1	Retrofit fire station from severe weather storms.	Short Term	High	General maintenance is conducted; however no action on the retrofit occurred during the reporting period. Time line and priority remain as assigned.	X
FD24-2	Retrofit fire station from forest fires.	Long Term	Medium	General maintenance is conducted; however no action on the retrofit occurred during the reporting period. Time line and priority remain as assigned.	X

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
<b>Snohomish County Fire District #25</b>		Point of Contact	Chief Baker 360-435-9513 Email: <a href="mailto:osofire@glacierview.net">osofire@glacierview.net</a> Mail: 21824 State Route 530 NE, Arlington, WA 98223		
FD25-1	Fire hall seismic retrofit	Long Term	Medium	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
<b>Snohomish County Fire District #26</b>		Point of Contact	Mr. Eric Andrews (or Ms. Wendy Enyart) 360-793-1335 (or 425-327-1705) Email: <a href="mailto:andrews@snofire26.org">andrews@snofire26.org</a> (or <a href="mailto:wenvart@snofire26.org">wenvart@snofire26.org</a> )		
FD26-1	Seismic Retrofit of Station 53	Short Term	Medium	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
FD26-2	Emergency generator for Station 53	Short Term	Medium	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
FD26-3	Food/Lodging up to 200 people	Short Term	Medium	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
<b>Snohomish County Fire District #27</b>		Point of Contact	Mr. Mike Worthy 425-743-1877 Email: <a href="mailto:scfpd27@hatisland.com">scfpd27@hatisland.com</a>		
FD27-1	Seismic retrofit of Station	Short Term	High	No action was taken on this initiative during the reporting period primarily due to the lack of funding. Time line and priority remain as assigned.	X
FD27-2	Replace existing “patchwork” water lines in District covered area to 6”	Long term	High	Limited work has been conducted on the water system. Time line and priority remain as assigned.	O
<b>Snohomish County Fire District 28</b>		Point of Contact	Mr. Ernie Walters 360-793-0866 Email: <a href="mailto:fire28@premier1.net">fire28@premier1.net</a>		
FD28-1	Place above-ground Utilities Underground	Long Term	Medium	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
FD28-2	Flood-Proof Generator Room	Short Term	High	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
FD28-3	Purchase additional satellite phones	Short Term	High	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
FD28-4	Support County-wide initiatives of the SCNHMP	Short Term	High	District continues to support the SCNHMP and its planning process by participating in the planning process. The time line and priority remain as assigned.	O
<b>Alderwood Water/Wastewater District</b>		Point of Contact	Mr. Arden Blackledge 425-743-4605 Email: <a href="mailto:ablackledge@alderwoodwater.com">ablackledge@alderwoodwater.com</a>		
AW-1	Sewer Structure Seismic Reinforcement	Short Term	High	No progress was made during the past reporting period; however the project is in planning. Time line and priority remain as assigned.	O
AW-2	Sewer Lift Station Seismic Retrofit	Short Term	High	Requires a complete replacement, which design should be complete by end of the year. Time line and priority remain as assigned.	O
<b>Cross Valley Water District</b>		Point of Contact	Mr. Gary Hajek 360-668-6766 Email: <a href="mailto:gary@crossvalleywater.net">gary@crossvalleywater.net</a>		
CV-1	Relocation of water mains out of floodway and erosion prone areas	Short Term	High	Work has begun on Phase I of this relocation project. Bids to be opened August 29, 2008. This remains a high priority, short term project.	O
CV-2	Seismic upgrades/retrofits to vulnerable District facilities	Long Term	High	Planning in progress	O
CV-3	Purchase Emergency Generators	Short Term	Medium	No progress was made during the past reporting period.	X

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
CV-4	Purchase 800 MHz Radios	Short Term	Medium	No progress was made during the past reporting period.	X
<b>Highland Water District</b>		Point of Contact	Mr. Bob Shonka 360-794-6900 Email: <a href="mailto:bobshonka@seanet.com">bobshonka@seanet.com</a>		
HWD-1	Reservoir #2 seismic retrofit	<del>Short Term</del> Long-Term	High Medium	Not Completed. Priority and time-line have been changes as indicated.	X
HWD-2	Booster Station #2 seismic retrofit	Long Term	High Medium	Not Completed. Priority has been changed as indicated.	X
HWD-3	Seismic retrofit of 20,000 lineal feet of AC Water mains	Long Term	Medium	Not Completed. Priority and time-line remain as assigned.	X
HWD-4	Install district telemetry system.	Long Term	Medium	Not Completed. Priority and time-line remain as assigned.	X
<b>Mukilteo Water District and Wastewater District (Formerly Mukilteo Water District)</b>		Point of Contact	Mr. Rick Matthews 425-355-3355 Email: <a href="mailto:rickm@mukilteowater.org">rickm@mukilteowater.org</a>		
MWWD-1	Merge Mukilteo Water District with Olympus Terrace Sewer District	Short Term	High	Merge complete. New District name is now Mukilteo Water and Wastewater District	✓
MWWD-2	Repair/replacement of trunk sewer line, rehabilitation of creek bed & slopes, & development of high flow storm water bypass line within Big Gulch in order to protect sewer trunk line and treatment plant infrastructure.	Short Term	High	Project divided into 4 segments. Segment #1 nearing completion, #2 was re-damaged in December 2007 event, #2 and #3 December Storm Damage Repair contract awarded August 2008, #4 in re-design. Main sewer line, redundant sewer, and hi-flow storm water bypass being installed. Time line and priority remain as assigned.	O
MWWD-3	Research/Repair/Re-locate existing Sanitary	Short Term	High	Reliable access to existing L.S. lost during December	O

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
	Sewer Lift Station #5 and provide permanent access. Existing location/access subject to flooding and landslides.			2007 storm event. District in process of planning and negotiating alternatives and solutions.	
MWWD-4	Repair/Replace terminal 720 LF of 24" diameter existing sewer outfall pipe from WWTP. Project will address earthquake and land mass movement.	Short Term	High	District in process of pre-design and permitting research.	O
MWWD-5	Develop and adopt an Emergency Response Plan to provide emergency access and protect the WWTP from Flooding Events.	Short Term	High	District Staff in process of plan development for submittal in September of 2008	O
MWWD-6	Revise existing standards and specifications to address Natural Hazard Events effects on access and maintenance of District assets/infrastructure.	Short Term	High	Action on-going at this time.	O
MWWD-7	Reservoir No. 4 Seismic and Security Improvements	Short Term	High	Completed	✓
MWWD-8	86th Place Water Main	Short Term	High	Completed	✓
MWWD-9	Reservoir Security and Roof Vent Improvements	Short Term	High	Roof Vents Completed. Security On-Going. Time line and priority remain as assigned.	O
MWWD-10	Reservoir Seismic Improvements	Long Term	High	Completed	✓
MWWD-11	Master Meter Check Valve	Short Term	High	Completed	✓
MWWD-12	New Smoke/Fire Detectors	Short Term	High	Action On-Going. Time line and priority remain as assigned.	O

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
MWWD-13	Fixture Restraint of Electrical/SCADA Equipment.	Short Term	Medium	Action On-Going. Time line and priority remain as assigned.	O
<b>Silver Lake Water District</b>		Point of Contact	Mr. Richard Gilmore 425-337-3647 Email: <a href="mailto:rkgilmore@slwsd.com">rkgilmore@slwsd.com</a>		
SL-1	IT Redundancy—To be incorporated in our proposed new office facilities scheduled for September 2005	Short Term	High	Completed.	✓
SL-2	Isolation Valves in Earthquake Sensitive Areas—Locations to be determined as other District projects in the vicinity allow the efficient and effective installation of valves to improve District redundancy of service options and reduce vulnerability by decreasing the size of isolation zones.	Short Term	High	On-going, some 12-inch line isolation valves added in this past year. The District will continue to consider this goal and install valves where appropriate with new construction opportunities. Time line and priority remain as assigned.	O
SL-3	Trailer Mounted Emergency High Head Sewage Pump—This facility would serve as a redundant component to our system emergency operation mode for generator operational mode and allow bypass from gravity facilities around main failures due to landslides or other natural hazard events.	Short Term	High	District is incorporating this equipment in our next 5-year CIP. Not yet purchased. The pump trailer unit is currently planned for purchase within one year. Time line and priority remain as assigned.	O
SL-4	Seismic Valve Operators—These facilities would adapt existing valves at our reservoir sites to close on earthquake events containing water reserves until distribution damage can be evaluated.	Short Term	Medium	New reservoir now on line included this equipment, two remaining reservoirs to be upgraded at future undetermined date. Time line and priority remain as assigned.	O

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
<b>Darrington School District</b>		Point of Contact	Larry Johnson 360-436-1323 (ext 182) Email: <a href="mailto:Johnsonl@dsd.k12.wa.us">Johnsonl@dsd.k12.wa.us</a>		
DSD-1	Replace existing LAN frame stand with platform that will give seismic protection to existing equipment.	Short Term	High	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
DSD-2	Install computer monitor lasso straps to keep monitors from falling in seismic event to protect both equipment and students.	Short Term	High	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
DSD-3	Purchase and install generator to sub panel so when there is a loss of power we can use phones, email, to communicate. This will also allow us to keep students warm and feed when there is an extended state waiting for guardians.	Short Term	High	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
DSD-4	To replace hard sewer pipe with flex pipe to three portables to prevent breakage in the event of an earthquake	Long Term	Medium	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
<b>Monroe School District #103</b>		Point of Contact	Mr. Ralph Yingling 360-804-2679. Email: <a href="mailto:yinglingr@monroe.wednet.edu">yinglingr@monroe.wednet.edu</a>		
MSD-1	Lightning protection	Short Term	High Medium	No progress on this initiative during the reporting period.	X
MSD-2	Freeze proof cooling towers & fire systems	Short Term	High	Glycol has been added to cooling towers.	✓
MSD-3	Seismic retrofits at older facilities including: computer racks, hardware, and equipment; gas valves and fire suppression systems; remove brick chimney systems (2).	Short Term	High Medium	No progress on this initiative during the reporting.	X

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
MSD-4	Wildfire buffer zones around select sites	Short Term	High Medium	No progress on this initiative during the reporting period.	X
MSD-5	Purchase property and relocate bus garage and fleet	Long Term	Low	No progress on this initiative during the reporting period due to lack of funding. Time	X
MSD-6	Replace 1916 Administration Building in lieu of seismic upgrade	Long Term	Low	No progress on this initiative during the reporting period due to lack of funding. Time	X
<b>Northshore Parks &amp; Recreation Service Area</b>		Point of Contact	Cheri Rondeau Administrative Assistant NORTHSHORE SENIOR CENTER 10201 East Riverside Drive Bothell, WA 98011-3708 425-487-2441 <a href="mailto:cherir@seniorservices.org">cherir@seniorservices.org</a>		
NS-1	Prepare and implement a public information strategy focusing on preparedness and response to impacts of natural hazards. Media to be considered are printed media and internet.	Short Term	High	We have offered Emergency Preparedness classes which are listed in our quarterly newsletter mailed to over 5,000 members and community contacts and is also available on-line at our web site. We have recently begun sending a monthly e-Newsletter which could provide pertinent preparedness tips from time to time.	O
NS-2	Prepare an emergency response plan to address impacts from natural hazards.	Short Term	High	We are listed as a warm shelter with the American Red Cross. We have had discussions with the City of Bothell regarding emergency preparedness; however, a response plan is still an on-going project.	O
<b>Sultan School District #311</b>		Point of Contact	Ms. Marianne Naslund 360-793-9822 Email: <a href="mailto:mnaslund@sultan.k12.wa.us">mnaslund@sultan.k12.wa.us</a>		
SSD-1	Update existing audible early warning device	Short Term	High	No action on this initiative during the reporting	X

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
	with remote voice override capability. To be utilized for early warning for all hazards, most notably flooding and dam failure.			period. Time line and priority remain as assigned.	
SSD-2	Non-structural seismic retrofit of school buildings.	Short Term	High	No action on this initiative during the reporting period. Time line and priority remain as assigned.	X
<b>Olympus Terrace Sewer District (Merged with Mukilteo Water District and is changed to Mukilteo Water and Wastewater District)</b>		Point of Contact	Mr. Greg Bradley 425-353-6637 Email: <a href="mailto:gbradley@olympusterrace.com">gbradley@olympusterrace.com</a>		
OT-1	Repair/replacement of trunk sewer line, rehabilitation of creek bed & slopes, & development of high flow storm water by-pass line within Big Gulch in order to protect sewer trunk line and treatment plant infrastructure.	Short Term	High	See Mukilteo Water and Wastewater District MWWD # 2.	O
OT-2	Critical facilities evaluation. Prioritization of hazard mitigation opportunities to protect critical District infrastructure (less Big Gulch, treatment plant, sewer trunk line within Gulch. Cost of study is estimated at approximately \$125,000.	Short Term		Postponed pending merge with Mukilteo Water District. See Mukilteo Water and Wastewater District.	O
<b>Snohomish County Dike District #2</b>		Point of Contact	Ms. Ruth Brandal 425-334-7403 Email: <a href="mailto:Bisondalen@yahoo.com">Bisondalen@yahoo.com</a>		
DD2-1	Re-sloping Dikes	Short Term	High	South end of district has construction of overtopping section underway. Contractors to begin re-sloping work at north end by late summer 07. Time line and priority remain as assigned.	O

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
DD2-2	Sunnyside Pump Station	<del>Short Term</del> Long-term	High Low	Pump station has been abandoned as not fiscally feasible. The time line should be changed to long – term, and priority to low pending identification of feasible alternative.	X
DD2-3	Explore feasibility of restructuring District into flood control District or Dike and Drainage	Short Term	High	No progress on this initiative completed during the reporting period. Time line and priority remain as assigned.	X
DD2-4	Build 3 access roads to Dike	Short Term	High	All 3 roads are under construction summer 07. Time line and priority remain as assigned.	✓
<b>Marshland Flood Control District</b>		Point of Contact	Mr. Paul Reasoner 360-568-6044; FAX 360-568-3785 Email: None Address: P.O. Box 85, Snohomish, WA 98291-0085		
MFCD-1	Structural retrofit of pump plant and dam	Long Term	High	No progress on this initiative completed during the reporting period. Time line and priority remain as assigned.	X
<b>Stillaguamish Flood Control District</b>		Point of Contact	Mr. Chuck Hazelton 360-652-9233 Email: <a href="mailto:chaz@snohomish.net">chaz@snohomish.net</a>		
SFCD-1	Construct a flood control spillway on existing levee system	Long Term	Medium	Completed construction of flood control spillway on existing levee system.	✓
<b>French Slough Flood Control District</b>		Point of Contact	Mr. Neil Wheeler 360-568-5383 Email: <a href="mailto:neilwheeler@comcast.net">neilwheeler@comcast.net</a>		
FS-1	Repair and maintain existing dikes	Short Term	Medium	FSFC obtained permits to repair damages to dikes from the November 2006 flood event.	O
FS-2	Seismic retrofit study of pump plant	Long Term	Low	Implementation of this initiative has been canceled after review of District priorities.	X
FS-3	Acquisition within Pilchuck Trailer Park	Long Term	Low	Implementation of this initiative has been delayed due to lack of landowner interest. Time-line and	X

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

TABLE PR-2.  
ACTION PLAN MATRIX

Action Identifier	Initiative Description	Time Line	Priority	Status	Completion Status (X,O,✓)
				priority remain as assigned.	
FS-4	Pursue settlement of dike easement issues with landowners	Short Term	Medium	Ongoing with residents along the Pilchuck Trailer Park.	O
<b>Snohomish County Health District</b>		Point of Contact	Mr. Donald Peterson 425-339-8696 Email: <a href="mailto:don.peterson@shd.snohomish.wa.gov">don.peterson@shd.snohomish.wa.gov</a>		
SHD-1	Structural Seismic Retrofit of owned Health District facilities	Long Term	Medium	Not started – pending funding. The time line and priority remain as assigned.	O
SHD-2	Non-Structural Seismic retrofit of District facilities	Short Term	High	This action was completed.	✓

Completion status legend:

✓ = Project Completed

O = Action on-going towards completion

X = No progress at this time

#### **IV.) Changes within the Planning area that may impact implementation of the plan**

During the reporting period, there were no significant changes within the planning area that would have a profound impact on the implementation of the plan. All technical, regulatory and financial capabilities identified by the Coalition Partnership during the plan's development remain consistently in place throughout the planning area.

As mentioned in the progress report for the last reporting period, oversight of the SCNHMP implementation continues to transition over to Snohomish County Department of Emergency Management (DEM). This effort will include monitoring the plan's progress, coordination within the partnership on hazard mitigation activities and all phases of emergency management. DEM will continue to be supported by the Surface Water Management Division of the Department of Public Works and other county agencies as deemed appropriate. The DEM designated SPOC is:

**Ms. Robin Gordon**

Emergency Program Manager  
Snohomish County Dept. of Emergency Management  
3509 109th St. SW  
Everett, WA 98204  
425-388-5071 Cell: 425-508-7685  
Fax: 425-423-9152  
[robin.gordon@co.snohomish.wa.us](mailto:robin.gordon@co.snohomish.wa.us)

#### **V.) Recommendations for Changes or Enhancements**

Based on the review of this report by the SCNHMP Steering Committee, the following recommendations will be noted for future updates or revisions to the plan.

Consider expanding the planning partnership to include Island County.

Include in the plan a funding matrix that illustrates the various mitigation grant programs (FEMA and non-FEMA) and the types of projects they will fund.

Enhance the one-on-one technical assistance to all planning partners through DEM mitigation programs.

Need to clearly identify benefits of being a planning partner and convey these benefits to all partners as the partnership prepares to update the SCNHMP.

Need to enhance the definition of planning partner "participation" to clearly identify the duties and responsibilities of each planning partner through the plan update process as well as progress reporting process.

Enhance the mitigation catalog such that it illustrates example projects that are applicable to the various planning partner types in the partnership. For example, what are examples of good, cost effective projects for Fire Districts, Water Districts, School Districts, etc.

***Public review notice:*** *The contents of this report are considered to be public knowledge and have been prepared for total public disclosure. Copies of the report have been provided to: The governing bodies of all planning partners, the local media outlets, and posted on the Snohomish County website. Any questions or comments regarding the contents of this report should be directed to:*

Ms. Robin Gordon  
Emergency Program Manager  
Snohomish County Dept. of Emergency  
Management  
3509 109th St. SW  
Everett, WA 98204  
425-388-5071 Cell: 425-508-7685  
Fax: 425-423-9152  
[robin\\_gordon@co.snohomish.wa.us](mailto:robin_gordon@co.snohomish.wa.us)

Ms. Karen Wood-McGuinness, CFM  
Snohomish County Public Works  
Surface Water Management  
3000 Rockefeller Ave., MS 607  
Everett, WA 98201-4046  
425-388-6401 FAX 425-388-6455  
[k.woodmcguinness@co.snohomish.wa.us](mailto:k.woodmcguinness@co.snohomish.wa.us)



Snohomish County  
**Natural Hazard Mitigation Plan Update**

---

**APPENDIX D.**  
**PLAN ADOPTION RESOLUTIONS FROM PLANNING PARTNERS**

---

September 2010



**APPENDIX D.  
PLAN ADOPTION RESOLUTIONS FROM PLANNING  
PARTNERS**

***To Be Provided With Final Release***

