SECTION 3. JURISDICTION PROFILES AND MITIGATION ACTION PLANS

The following section chapters provide profiles and future mitigation actions for the participating jurisdictions in this Plan. Each chapter is organized into the following sections:

1. **Contact Information** – the person involved with providing information for the Plan from the jurisdiction.
2. **Approving Authority** – the person or persons who will approve the final version of the Plan.
3. **Planning Process** – describes how the jurisdiction updated the Plan.
4. **Key Contributor List –** lists both the individuals who contributed to the Plan update and lists other documents that are, or will be, informed by the updated Plan.
5. **Plan Maintenance –** explains how the Plan will be maintained and how its contents will be communicated to the public.
6. **Geography** – provides Census Bureau population information and area, as well as a jurisdiction map.
7. **Growth Trends** – areas designated as an Urban Growth Area (UGA), under Washington State's Growth Management Act (GMA).
8. **Presence of Hazards and their Impacts** – provides a table of major hazards, the area exposed to the hazards, a qualitative assessment of the severity of impacts anticipated, and a brief description of each hazard and its potential impacts.
9. **Natural Hazard Maps** – provides seismic, wildland-urban interface, liquefaction, flood, landslide, volcano, and tsunami hazard maps for the jurisdiction. Please note the hazard maps may display only those facilities within municipality limits, so facilities outside these limits may not be displayed. Refer to the map in the Whatcom County section for facilities located outside of a jurisdiction's city limits. Most recent natural hazard datasets available were used for the maps. Data used includes: Federal Emergency Management Agency (FEMA) 2019 flood risk, Washington Department of Natural Resources (WA DNR) 2010 liquefaction susceptibility, WA DNR 2017 Boulder Creek Fault Zone seismic, WA DNR 2019 wildland-urban interface, Washington Geological Survey (WGS) 2020 landslide inventory data, United States Geological Survey Mount Baker Future Activity (1995), and Whatcom County 2020 tsunami inundation data. All

data projected to NAD 1983 StatePlane Washington North FIPS 4601 (US Feet) coordinate system. No data used was changed, only symbology was edited.

10. **Critical Facilities List** – list of critical facilities for each jurisdiction's area. These facilities were provided by each jurisdiction and include the facility name, type of facility, location information, and qualitative assessment of the significance of each facility. The section also includes a critical facilities map.

11. **Areas and Assets Exposed, Per Hazard –** geospatial analysis was performed to calculate the percent of area, population, parcels, and critical facilities exposed to different levels of seismic, liquefaction, landslide, volcano, tsunami, flood, and wildfire risk. Areas and assets exposed to hazards were calculated using Whatcom County parcel data, jurisdiction boundaries and critical facilities, natural hazard data, and Washington State Office of Financial Management (OFM) 2020 population and housing estimates for census blocks. The percent of area and parcels were calculated in ArcGIS Pro using the tabulate intersect tool, which calculates the intersection of two feature classes. For the parcel geospatial analysis, only parcels 45% or greater in a hazard were considered for the asset table. The percent of critical facilities in each hazard was found using the overlay layers tool. This tool takes multiple layers and outputs one single layer, keeping each layers' attributes. Percent of population was calculated only using 2020 population data. Since the population data is in census blocks, in order to calculate percent of population, population was allocated. This assumes population is evenly distributed among the census block, although this is generally not the case, the assumption is made to calculate the estimates. The census block population data was intersected with each natural hazard data layer to join only census blocks that overlapped with a hazard. The area of the new census block (that overlaps with the hazard) were calculated. The area of the new census block was then divided by the original census block, multiplied by the original census block's 2020 population to estimate how many people were in a hazard zone.

12. **Public Outreach and Education –** each jurisdiction identified the programs engaged public outreach and education, including those programs administered by non-profit organizations, through the local government, through schools, or public-private partnerships. StormReady and Firewise certification was also assessed.

13. **Status of 2015—2020 and Ongoing Hazard Mitigation Actions** – each jurisdiction reviewed and provided an update to actions proposed in the 2016 Plan, such as indicating whether the action was completed, deferred, or ongoing. Those that had not

been started or completed were considered for 2021-2025.

14. **Proposed Hazard Mitigation Strategy for 2021-2025** – lists jurisdiction-specific actions put together by each jurisdiction. This information is a detailed jurisdiction-specific extension of each hazard summary and assessment of past proposed actions. A review was conducted internally by each jurisdiction to determine priority for the mitigation actions and maximize anticipated benefits.
15. **Hazard Specific Action Items 2021-2025 Annual Review and Progress Reporting** – provides a framework for tracking 2021-2025 mitigation actions and annual progress reporting.

Overall Exposure of Whatcom County Assets

Below is the overall assessment of how much exposure the county has to key natural hazards. It analyzes exposure by area, population, parcels and critical facilities and includes both unincorporated and incorporated sections of the county. The results show that the entire county is exposed to earthquake hazard and about two thirds of the county is exposed to some flood risk, although only about 4% is in the designated 100-year and 500-year flood plain; due to good natural hazards planning, only 8% of the population levels in these flood risk areas. A third of the county area is exposed to liquefaction risk, though a majority of residents live in this area. About a third of the county is exposed to volcanic hazard, with only a very small portion of the population in these areas. About 15% of the county is in the WUI, exposed to wildfire, but over half of the population lives is in these areas.

Whatcom County Exposure to Natural Hazards						
	Hazard Susceptibility	**Asset County (% of Total)**				**Critical Facilities Appraised Value (Million)**
		Area (sq.mi.)	**Population**	**Parcels**	**Critical Facilities**	
Geological	**Earthquake**, Shaking Intensity					
	MMI IV	8.9%	-	0.03%	-	-
	MMI V	36.7%	10.7%	15.7%	17.5%	$722 [1]
	MMI VI	34.3%	77.4%	66.8%	62.3%	$2235 [1]
	MMI VII	13.5%	8.1%	8.4%	14.6%	$97 [1]
	MMI VIII - IX	6.6%	3.7%	7.4%	5.4%	$76
	TOTAL	100%	99.9%	98.3%	99.8%	$3130
	Liquefaction					
	Very Low to Low	16.9%	41.2%	41.8%	39.2%	$942 [1]
	Low to Moderate	7.5%	29.8%	27.5%	20.3%	$1506 [1]

	Moderate	-	-	-	-	-
	Moderate to High	4.9%	5.8%	8.5%	16.3%	$140 [1]
	High	0.02%	0.04%	0.04%	2%	$249 [1]
	TOTAL	29.32%	76.84%	77.84%	77.8%	$2837
	Landslide					
	Landslide Low	0.8%	0.1%	0.25	-	-
	Landslide Moderate	1.2%	0.09%	0.1%	-	-
	Landslide High	3.2%	0.5%	1.9%	0.6%	-
	Fan Low	0.1%	0.04%	0.06%	-	$0.3
	Fan Moderate	0.4%	0.1%	0.2%	-	-
	Fan High	0.9%	1%	1.9%	1.4%	$3 [1]
	Mine Hazard	0.1%	2.6%	2.1%	0.8%	$19 [1]
	TOTAL	6.7%	4.43%	6.51%	2.8%	$22.3
	Volcanic Eruption					
	Case 1 Debris Flows	1.8%	1.9%	2.1%	6.2% [3]	$74 [1/3]
	Case 2 Debris Flows	1.1%	0%	-	-	-
	Case M Flows	3.3%	4.3%	6.3%	11% [3]	$111 [1/3]
	Pyroclastic Flows, Lava Flows, and Ballistic Debris	6.8 %	0.1%	0.6%	0.8% [3]	$0.3 [3]

	Lateral Blast Hazard Zone	26.2%	0.1%	5.5%	3.1% [3]	$21 [1/3]
	TOTAL	39.2%	6.4%	14.5%	21.1%	$206.3
	Tsunami, Inundation Zone					
	Low to Moderate Inundation Potential	0.3%	1.4%	1.1%	3.7%	$24[1]
	Moderate to High Inundation Potential	0.3%	2.4%	0.5%	5.4%	-
	High Inundation Potential	0.7%	0.5%	4.9%	6.2%	$335 [1]
	TOTAL	1.3%	4.4%	6.5%	15.3%	$359
Hydrological	**Flooding**					
	100-year Flood	3.9%	4.9%	8%	31.8%	$119 [1]
	500-year Flood	0.5%	1.6%	3.4%	16.9%	$164 [1]
	Floodway	0.9%	1%	-	0.8%	$34 [2]
	Undetermined (Zone D)	60.4%	0.04%	0.05%	0.6%	$9
	TOTAL	65.7%	7.54%	11.45%	50.1%	$326
Meteorological	**Wildfire Zones**					
	Interface Very Low-Low Structure Density	1%	1.03%	7.7%	2%	$27
	Interface Medium-High Structure Density	1.6%	31.2%	26.9%	27.9%	$1851 [1]
	Intermix Very Low-Low Structure Density	6.9%	8.4%	1.6%	12.1%	$118 [1]

	Intermix Medium-High Structure Density	4.7%	18.4%	30.4%	22.8%	$86 [1]
	TOTAL	14.2%	59.03%	66.6%	64.8%	$2082

[1]This value shows the total of 2020 Whatcom County parcel data appraised total value and community's critical facility assessed dollar value (found in the community's critical facilities list). The critical facility's assessed dollar value was used instead of the appraised total value when available.

[2]Shows the assessed dollar value when provided by the community in their critical facilities list. Does not include the appraised total value.

[3]Some critical facilities located in multiple hazard zones.

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CITY OF BELLINGHAM

Contact Information

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Approving Authority

Mayor Seth Fleetwood and City Council Members

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Bellingham, WA 98225

360 778 8000

Planning Process

The City of Bellingham's process for the 2021 update of the Whatcom County Hazard Mitigation Plan began in January of 2021 when the City's Emergency Manager attended a "Kickoff" meeting hosted by the Whatcom County Sheriff's Division of Emergency Management. This was the first of five planning meetings hosted by DEM staff. During the next several months the City's Emergency Manager and the Environmental Policy Manager met with staff from multiple City departments including Planning, Public Works, Parks, Police and Fire to solicit input on sections of the 2016 NHMP that needed updates and new goals and actions for the 2021 revision. The City's Planning Senior GIS Analyst also reviewed the plan and provided key updates to the Critical Facilities list and the plan maps. In addition to the planning meetings and outreach to City staff, a news release describing the planning process and soliciting public input was issued on March 2, 2021. The news release also included social media posts on the City's

and Fire Department's Facebook pages. The Emergency Manager also created a webpage for the plan update that directed the public to the County's website to review and comment on the plan in the public comment portal that DEM created. The City Council was provided an update on the process on March 22 which was followed by a public meeting hosted by DEM on March 23. In preparation for the public meeting the Emergency Manager also created a meeting announcement that was sent out to the City's list serve and it was posted on the Fire Department's Facebook page. Subsequent public meetings were advertised in a similar fashion.

The 2021 update of the NHMP received substantial assistance from Dr. Paci-Green, Director of the Resilience Institute, and two masters level students at Western Washington University as they revised the format of the Countywide NHMP, developed content, and provided consultation to City of Bellingham staff working on the update.

Key Contributor List

- Liz Coogan, Emergency Manager, City of Bellingham
- Clare Fogelsong, Environmental Resource Manager, City of Bellingham
- Chris Behee, Planning Senior GIS Analyst, City of Bellingham

The information contained in the Natural Hazards Mitigation Plan update regarding hazards, risks, vulnerability and potential mitigation is based on the best available science and technology currently available. This information and related data on natural hazards potentially impacting City of Bellingham will be used as a tool when the City updates other plans and programs, such as the following:

- Comprehensive Plan required by the Growth Management Act (GMA)
- Development regulations required by the GMA
- Critical Areas Ordinance
- Capital Improvement Program
- Capital facilities planning
- Water Resource Inventory Area planning
- Shoreline Master Program
- Climate Adaptation Plan

- Habitat Restoration Plans
- Wildfire Risk Reduction Programs
- Neighborhood plans

As additional information becomes available from other planning sources that can enhance this Plan, that information will be incorporated through the periodic update process.

- Coastal Storm Modeling Systems, CoSMoS, will provide additional information on Sea Level Rise/Storm Surge impacts on the waterfront lands of Bellingham Bay. Expected to be available by June of 2021.
- Sea Level Rise Vulnerability Assessment and Risk Analysis for Bellingham Bay. Expected to be completed in June of 2022.

Plan Maintenance for the City of Bellingham

The City of Bellingham Office of Emergency Management cultivates awareness of local hazards, disaster preparedness, and resiliency in the community through a variety of education and outreach activities.

Presentations on hazard awareness and preparedness are delivered to the public in person and via videoconferencing. Information about local hazards and emergency preparedness guides are made available to the public in print and electronic forms. Outreach efforts are amplified by regular contact with twenty-five neighborhood associations which maintain close ties with households in their respective areas. Public engagement and input are encouraged through the neighborhood associations and in all interactions with this office.

The Office of Emergency Management coordinates grassroots disaster planning and resiliency at the neighborhood level by providing support and coordination for an ongoing Map Your Neighborhood program that is conducted by and for neighborhood households. The Office of Emergency Management coordinates and participates in local safety fairs and other relevant community connection programs when available.

A volunteer Auxiliary Communications Service (ACS) unit is also supported and coordinated as an opportunity for higher levels of public involvement and a resource for the Fire Department. This office also maintains open channels for ad hoc questions and comments from the public, including social media accounts, email, telephone, and text, with a representative assigned to interface with the public.

Public Outreach and Education

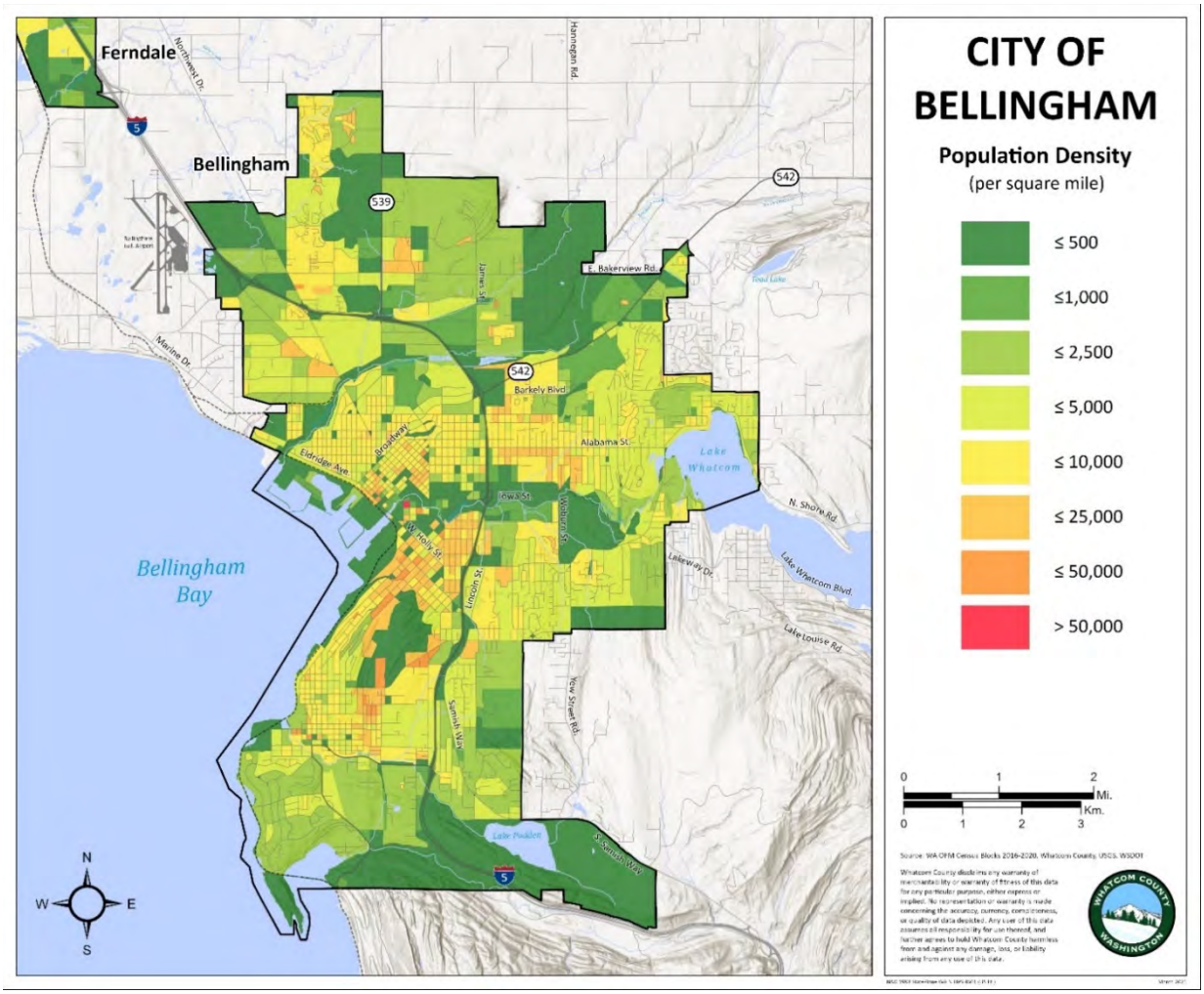
Program	Yes/No, Year Adopted	Description
Nonprofit organizations or local resident groups focused on hazard mitigation, emergency preparedness, vulnerable populations, etc.	Yes, 1999	Map Your Neighborhood has been in use by Bellingham since 1999. This network allows for residents to prepare to help their neighbors before help can arrive following a disaster, which will save lives.
	Yes, 1999	**CERT:** Community Emergency Response Training prepares residents to safely and efficiently assist others in their neighborhood or workplace following an event when professional responders are not immediately available to help.
	Yes, 2019	Bellingham Auxiliary Communication Service was initiated in 2019 to provide amateur radio communication support for City public service agencies and authorized volunteer emergency response units.
Ongoing public education or information programs	Yes, 2019	Public outreach events were delivered on tsunami

		awareness in 2019 and will resume post-COVID
School-related programs for natural hazard safety	Yes	Partnering with Red Cross for disaster awareness education in classrooms. Bellingham School District participates in the state-wide Great ShakeOut drill each October.
StormReady certification	Yes, 2003	Whatcom County is one of 14 counties in Washington State to be certified StormReady. StormReady uses a grassroots approach to help communities develop plans to handle all types of extreme weather.
Firewise Community certification	Yes, 2019	Clark's Point is a Firewise site as of November 1st, 2019.

Overview of Bellingham, Hazards, and Assets

Geography of the City of Bellingham

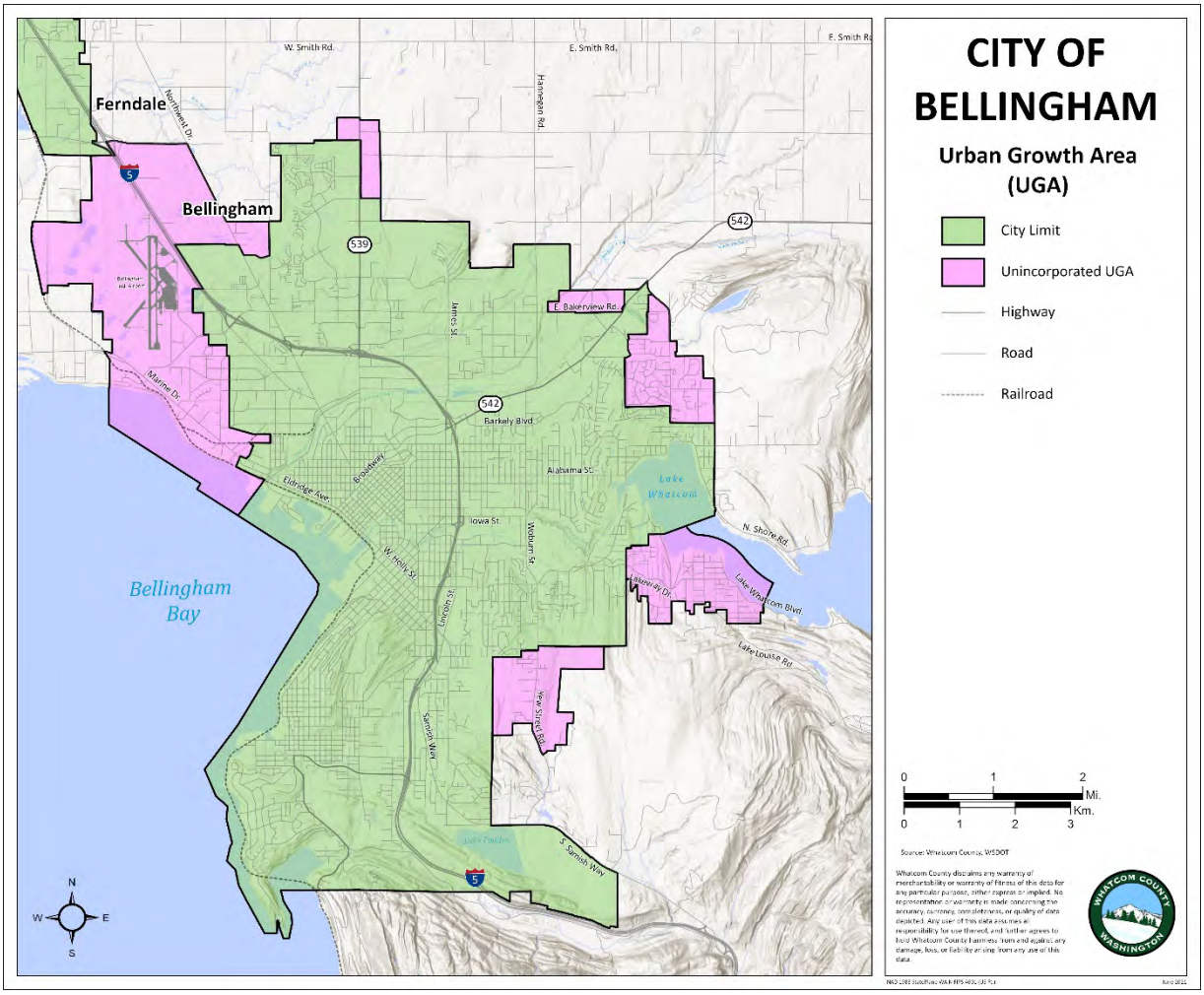
Bellingham Population	91,610 (2020 estimate)
Total area	28 sq. mi. (within city limits)



Washington State Office of Financial Management (OFM) 2020 population and housing estimates for 2010-2020 census block data. This map uses the 2016-2020 average population to show population density per square mile.

Growth Trends

This map displays the UGA for the City of Bellingham, as designated by the Whatcom County Comprehensive Plan.



Presence of Hazards and their Impacts in the City of Bellingham

Natural hazards that could occur in the City of Bellingham would be related to flood events, landslides, wildfires, and earthquakes/tsunamis, as well as the effects of sea level rise and storm surge on additional flood events and marine bluff destabilization.

Since the adoption of the 2016 NHMP, Bellingham has grown by roughly 6000 people. Most City growth has occurred outside flood and landslide areas, in accordance with the City's Critical Areas Ordinance, which regulates development in these areas. In partnership with the Port of Bellingham, the City has begun development on the Waterfront Subarea, portions of which would be at risk of tsunami inundation. This risk is being mitigated by the installation of tsunami sirens, the development of a countywide tsunami action plan, the creation of tsunami evacuation route maps, and building design and construction that accounts for tsunami forces. More information on where development in Bellingham is allowed can be seen in Bellingham Municipal Code below.

The Bellingham Municipal Code (BMC) has regulations related to flooding, landslides and sea level rise.

BMC 16.55.390, .400. Addresses development in frequently flooded areas. Generally, these rules prohibit development in the FEMA floodway and severely limit development in the FEMA Floodplain (limited infrastructure). The City has also mapped frequently flooded areas NOT recognized by FEMA that could - if allowed to develop - experience impacts and damage to property as well as present a risk to life safety and welfare - not to mention additional impacts to floodplain function. The floodplain rules are more effective at determining WHERE development occurs.

BMC 16.55.450 and .460. Development in geologically hazardous areas (landslide and seismic) requires additional geo-technical analysis by a qualified professional to certify that if a landslide or earthquake occurred structures would not be compromised, inhabitants would remain safe and abutting property owners would not incur damage from failed structures. These rules don't necessarily limit WHERE development can occur but rather, the FORM that it takes in order to be safe.

BMC 16.30 EXHIBIT A – Section B 1-7. Development in areas expected to be impacted by Sea Level Rise. As part of construction of on-site infrastructure, site grades shall be raised to accommodate potential long-term sea level rise and tsunami conditions, appropriate to the design lifetime of the project, as determined using the higher end of the range predicted using best available science. The range of Sea Level Rise encoded in Bellingham regulations is found in the Waterfront District sub-area plan: "Sea Level Rise. The Waterfront District infrastructure

and development will be constructed to accommodate potential long**[1]**term sea level rise and tsunami conditions. Development in the Waterfront District shall be constructed in accordance with the best available sea level rise science at the time the development occurs. Recent climate change studies have projected sea level to rise 15" to **50**" over the next 100 years.

In the table below is a list of the major hazards that effect Whatcom County. The second column provides the percentage of Bellingham's total area that is exposed to each hazard. The third column indicates the severity of anticipated impacts to community function, considering the credible worst-case hazard scenario. Severity of anticipated impacts considers effects on basic community function such as shelter, transportation, utilities, commerce, industry, agriculture, education, health, recreation, and cultural identity. Severity ranges from none to extreme, as shown in the key below the table. Finally, the last column of the table describes where the hazard impacts the community and which services the hazard would most significantly impact.

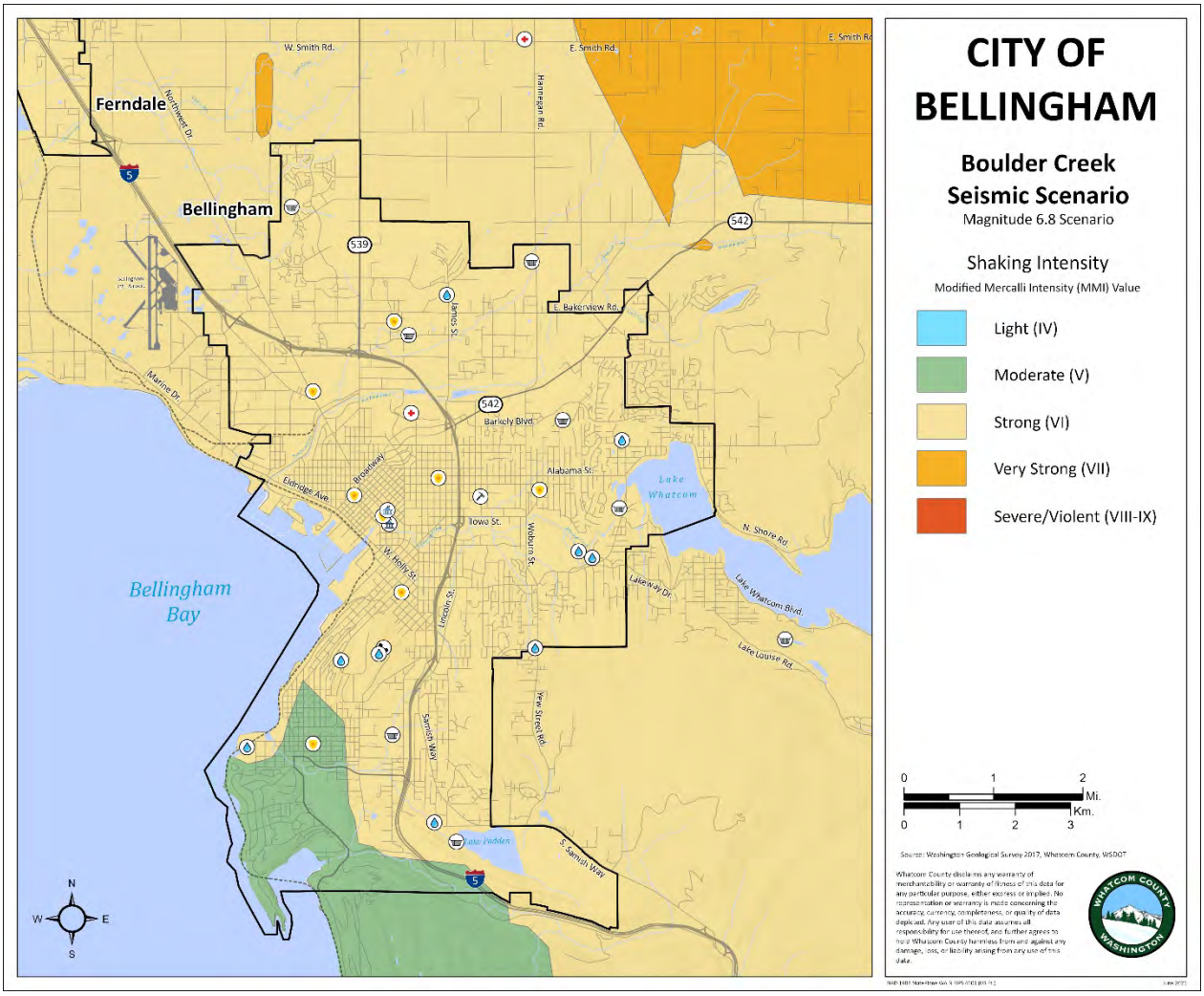
	Hazard	% area Exposed	Severity of Anticipated Impacts	Hazard Descriptions
Geological	**Earthquake**	95.2%	High	An earthquake of a magnitude predicted in the Cascadia Rising exercise would have citywide impacts as well as regional impacts of multi month duration. There is the potential for damage to roads, utilities, water supply infrastructure, communication, buildings of all types and the marine waterfront. Disruption of food and fuel delivery as well as interjurisdictional aid is also likely. Damage to the Lake Whatcom control dam would be an added flooding hazard.
	Liquefaction	64.4%	Mod	Destabilization of soils in waterfront areas built on fill would damage buildings, utilities, roads, and parks in those areas.
	Landslide	0.13%	Low	Landslides due to soil destabilization from precipitation saturation could be limited to geologically vulnerable areas identified by the Critical Area Ordinance development process. Landslides from bluff erosion due to sea level rise would be limited to marine bluffs i.e. Edgemore, Eldridge, Marine Drive. Landslides that result from earthquakes could be more widespread, impacts would be to residences, some commercial buildings, and utilities.
	Volcano	0%	Low	In addition to the potential ashfall within the City, the Middle Fork Diversion Facility would be impacted by lahar flows in the river.
	Tsunami	3.1%	Mod	A severe tsunami resulting from a large earthquake would significantly impact the shoreline of Bellingham Bay. Roads,

				buildings, marinas, parks, fish and wildlife habitat, and utilities could be damaged.
	Mine Hazards	4.5%	Mod	Limited to two areas of the city, Birchwood neighborhood and the downtown business district, that include critical infrastructure, residences, and commercial buildings.
Hydro-logical	**Flooding**	9.67%	Low	Multiple creeks systems (Chuckanut, Padden, Silver/Bear, Squalicum, and Whatcom that pass through the city are subject to flooding. In heavy rains these creeks can exceed their banks. Near term impact of flooding due to storm surge disrupts passability of Roeder Avenue. Long term impacts of sea level rise may be severe unless anticipated and mitigated.
Meteorological	**Wildfire**	57.7%	Mod	Mostly limited to the urban/rural edge and damage to residences, parks and some commercial buildings. Wildland-urban interface areas adjacent to large parks and natural areas will increase risk in a warming climate. Regional fires degrade air quality.

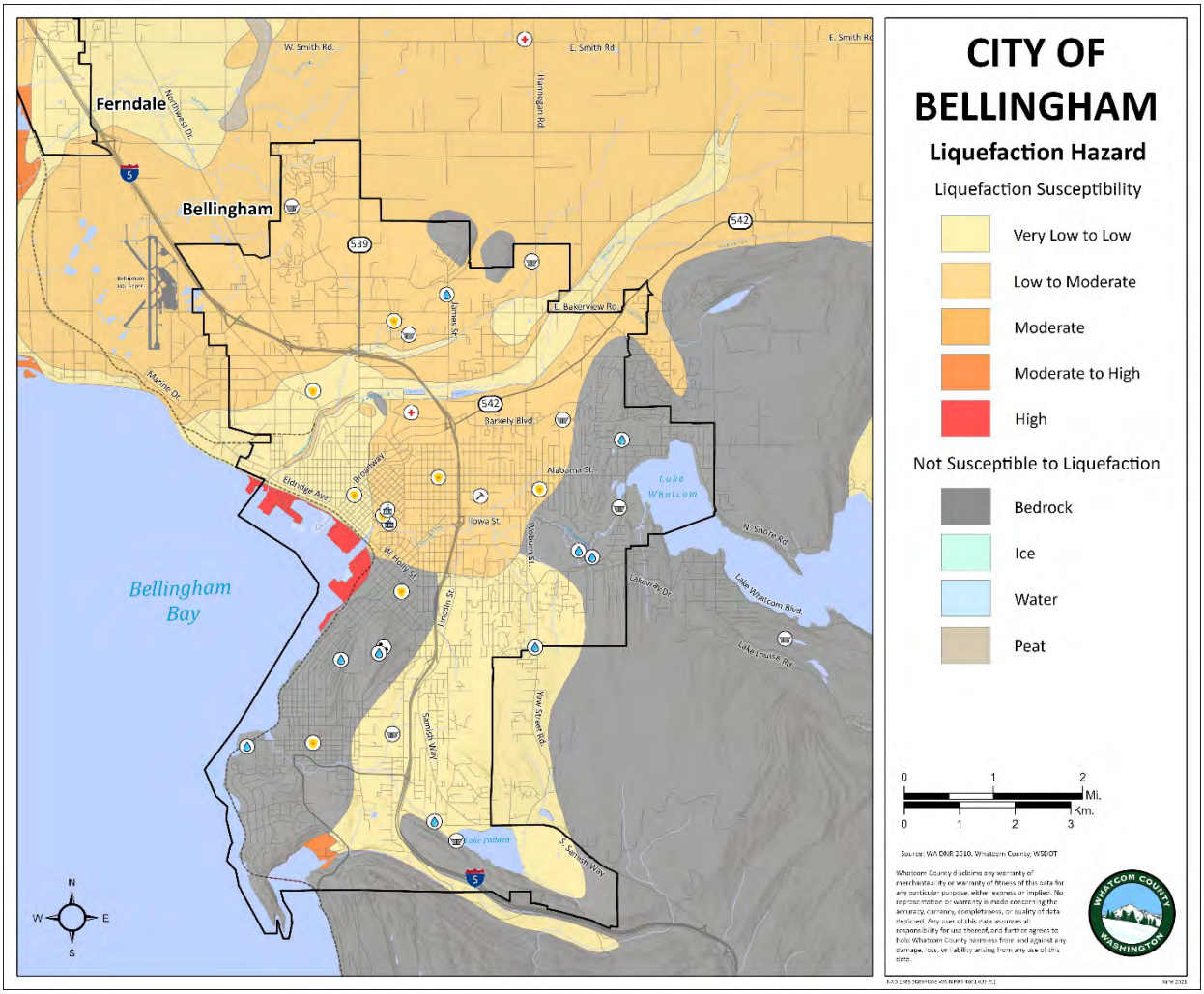
Severity Scale: **None** = no impact to community function
Low = minor degradation of community functions, not widespread
Moderate = moderate degradation over multiple weeks or widespread
High =degradation or loss over many weeks, widespread

Natural Hazard Maps

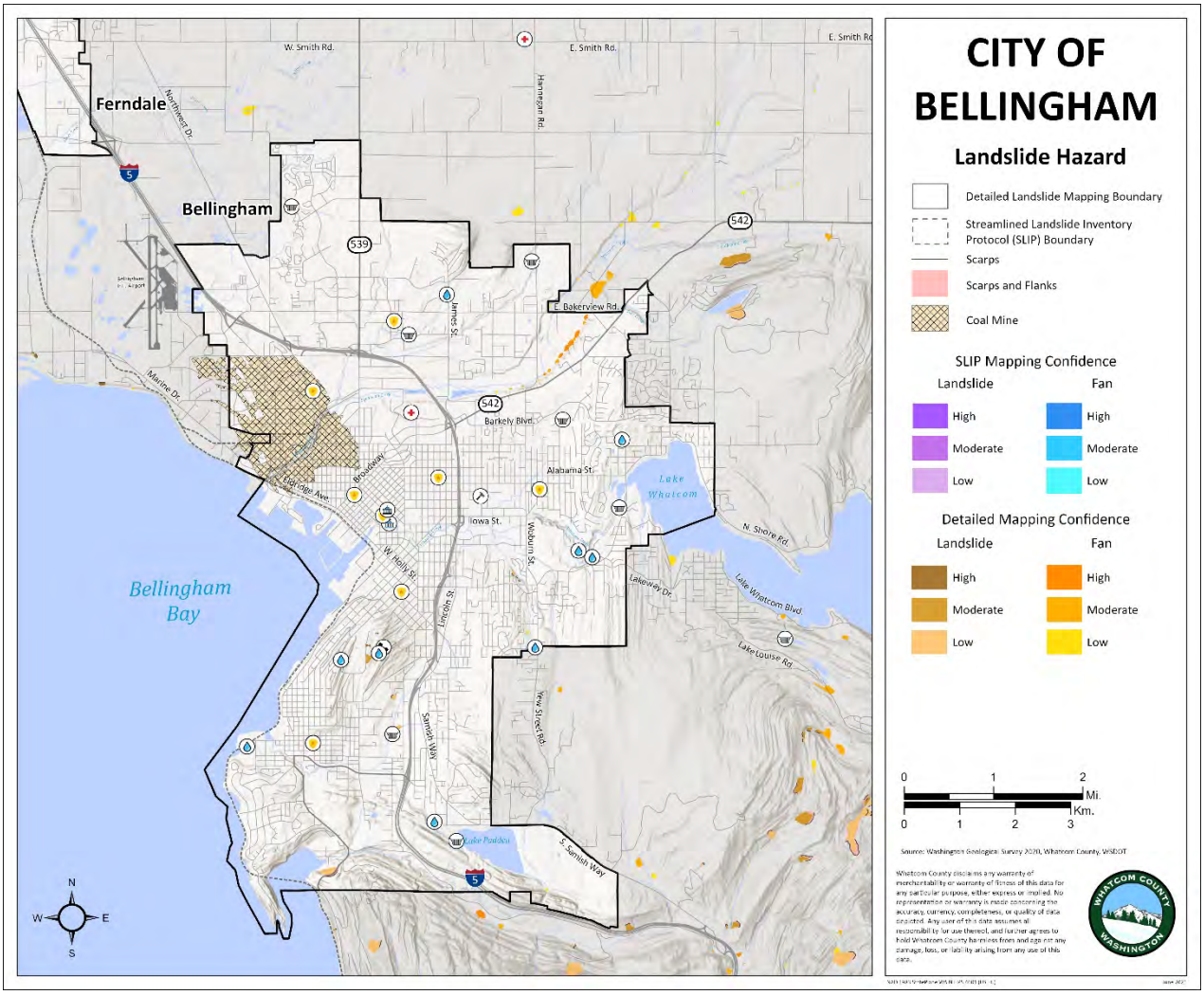
The following figures depict the natural hazards present within the jurisdiction.



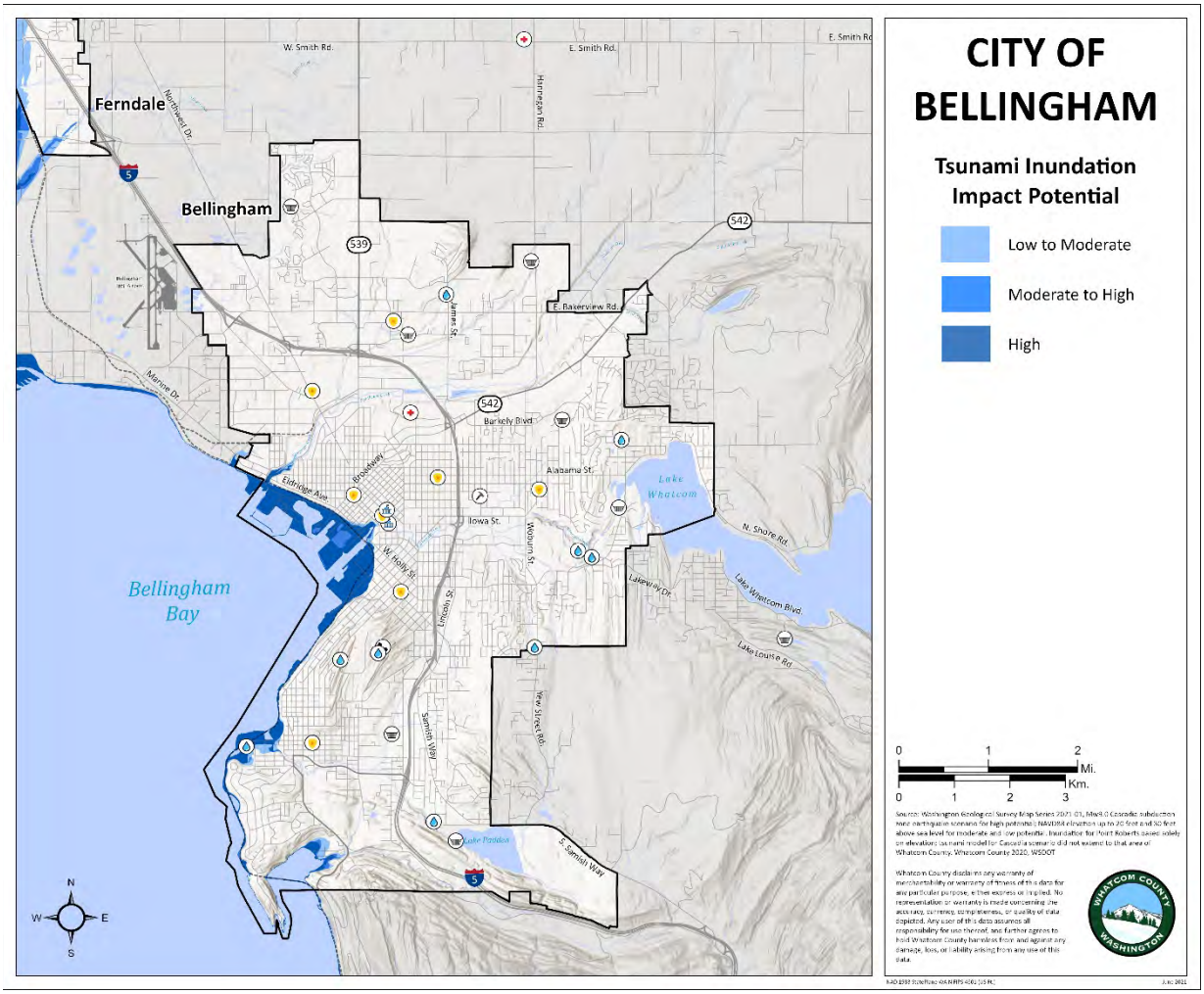
Washington Department of Natural Resources (WA DNR) 2017 Boulder Creek Fault Zone seismic scenario of magnitude 6.8 data. Displays extent and severity of the modeled earthquake in the Modified Mercalli Intensity (MMI) scale.



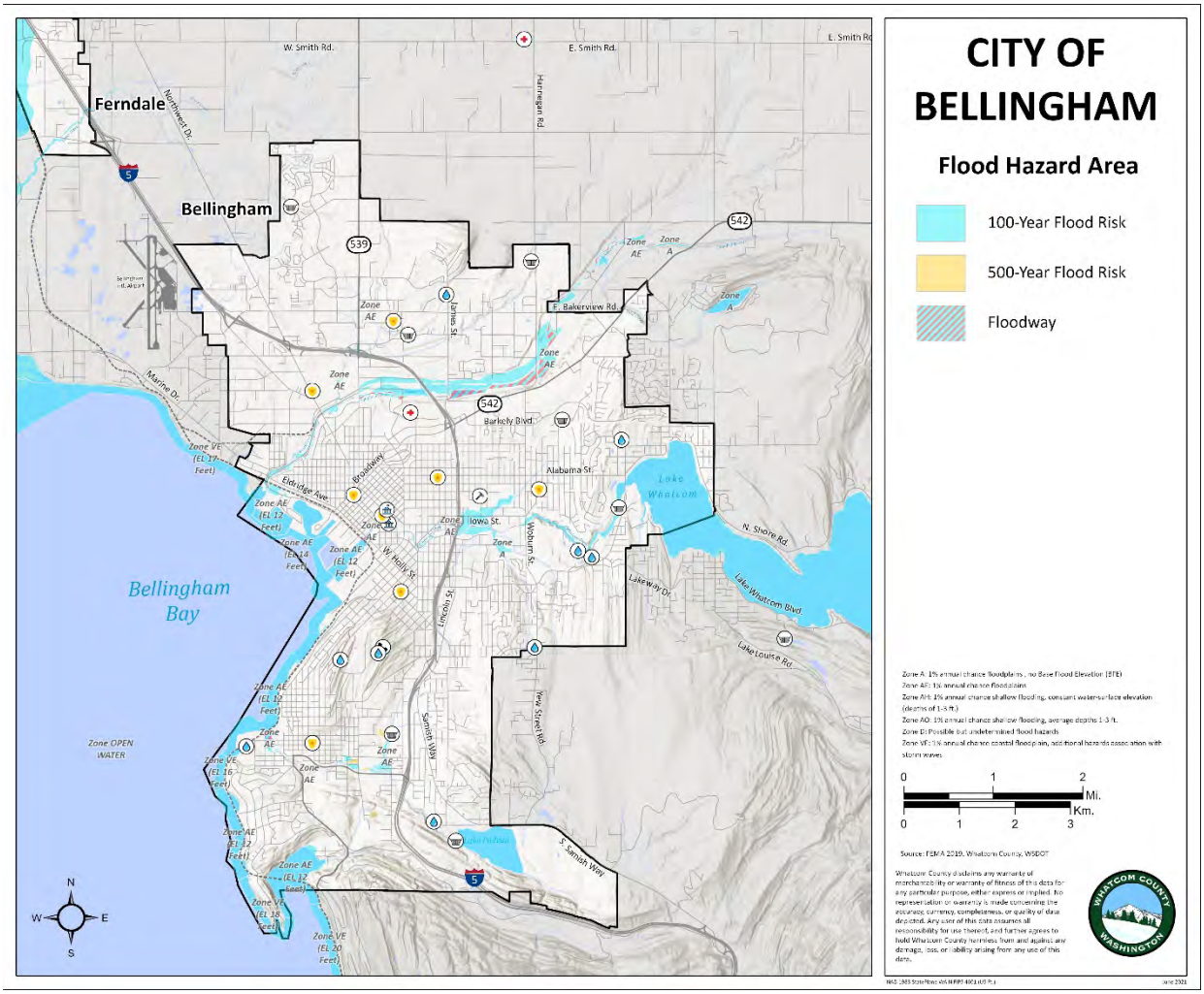
Washington Department of Natural Resources (WA DNR) 2010 liquefaction susceptibility data. This feature class is part of a geodatabase that contains statewide ground response data for Washington State.



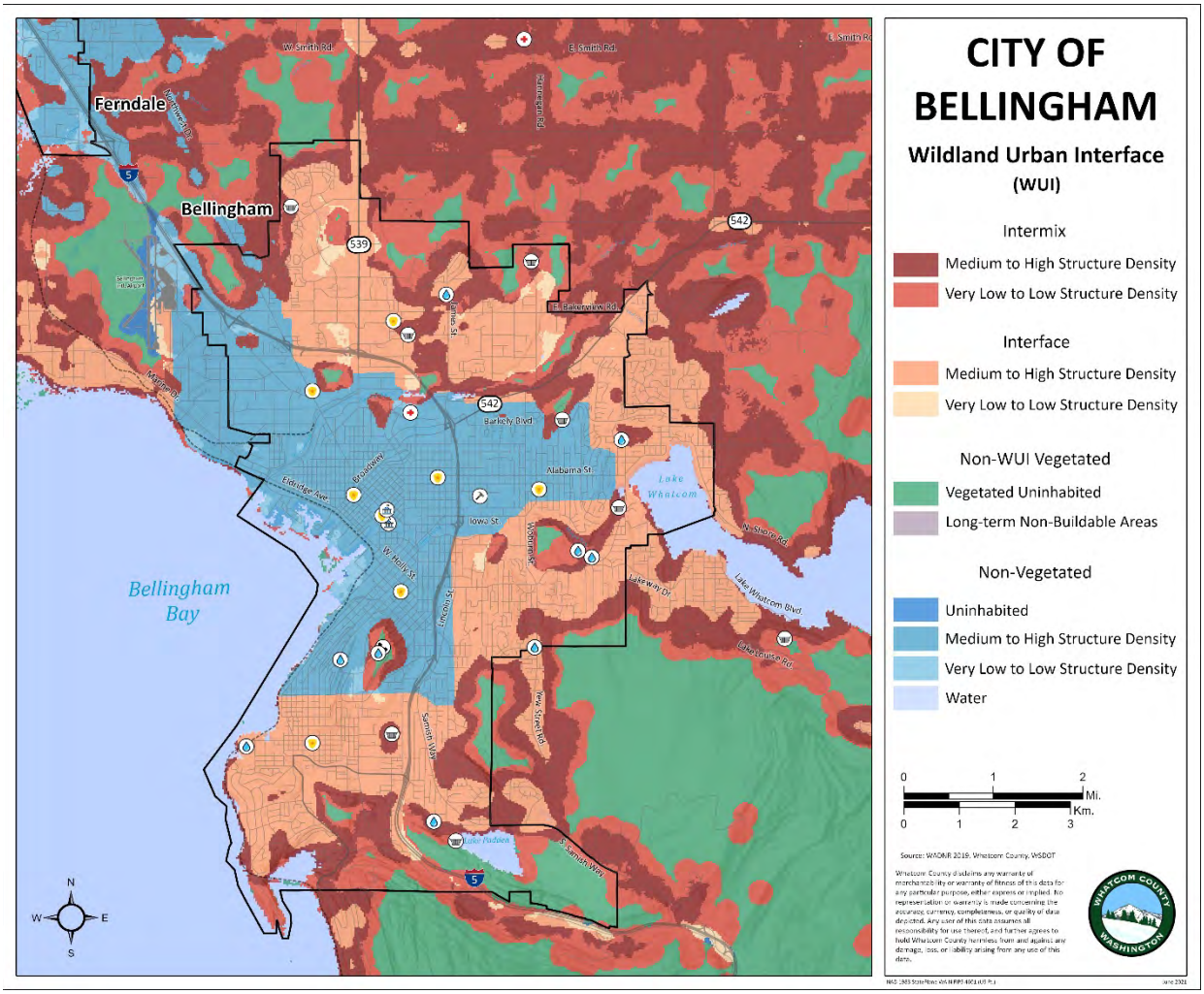
Washington Geological Survey (WGS) 2020 Washington landslide inventory data compiled following streamline landslide mapping protocol (SLIP). SLIP was developed by the WGS's Landslide Hazards Program to help geologists rapidly map landslide landforms from lidar. This data shows both detailed mapping and SLIP landslide data.



Map of Bellingham tsunami inundation impact potential. The high impact potential zone is based upon Washington Geological Survey Map Series 2021-01, Mw9.0 Cascadia subduction zone earthquake scenario occurring at mean high tide. The moderate to high and the low to moderate impact potential areas are based upon elevation of up to 20 feet and 30 feet, respectively, above mean sea level (NAVD88). Inundation for Point Roberts is based solely on elevation; tsunami model for the Cascadia subduction zone scenario did not extend to Point Roberts.



FEMA 2019 flood hazard data showing 100-year flooding, 500-year flooding, floodways, and flood zones. FEMA flood data includes both riverine and coastal flooding.



Washington Department of Natural Resources (WA DNR) 2019 mapped data of Washington's Wildland Urban Interface (WUI). The WUI displays areas of WA where structures and wildland overlap with specific structure densities.

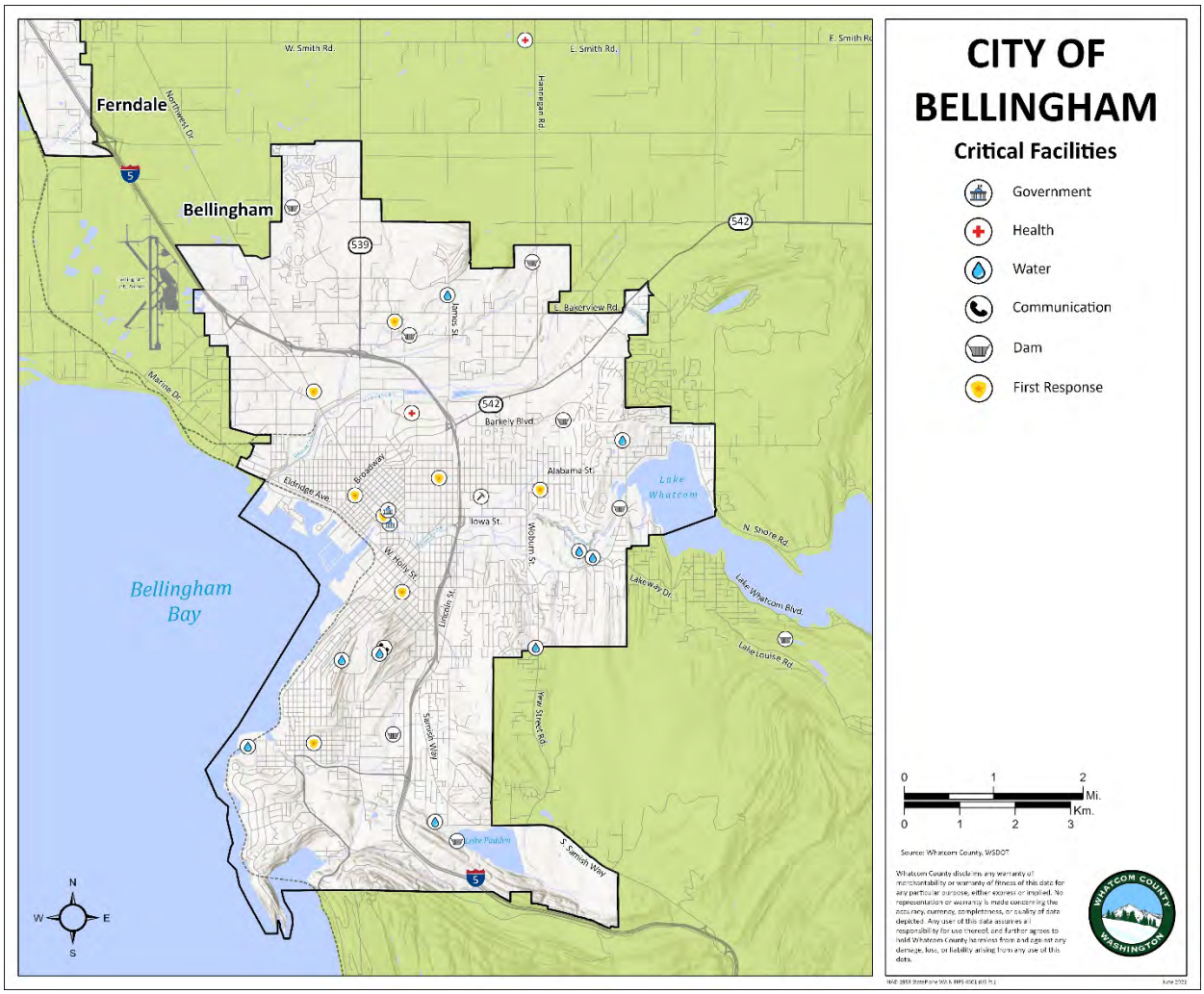
City of Bellingham's Critical Facility List

Facility Name	Facility Type	Signi-ficance	Location	Assessed Dollar Value	Notes
Bellingham City Hall	EF	2	210 Lottie Street	$33,962,612	Government offices
Police Headquarters	EF	3	505 Grand Avenue	$13,251,745	
What-Comm dispatch	EF	3	620 Alabama Street	$6,717,415	911 dispatch
Fire Station 1	EF	3	1800 Broadway	$7,286,642	
Fire Station 2	EF	3	1590 Harris Avenue	$2,396,622	
Fire Station 3	EF	3	1111 Billie Frank Junior Street	$2,516,048	
Fire Station 4	EF	3	2306 Yew Street	$1,993,010	
Fire Station 5	EF	3	3314 Northwest Avenue	$2,101,186	
Fire Station 6	EF	3	4060 Deemer Road	$2,396,622	
Smith Rd Medic Sta.	EF	3	858 East Smith Road	$ 384,208	
WUECC	EF	3	3888 Sound Way		Shared City/County/ Port facility
Municipal Court Bldg	EF	2	2014 C Street	$10,492,727	
Sehome Communications Tower	LUS	3	Sehome Hill	$1,742,009	
Post Point Plant	LUS/HMF	3	200 McKenzie Avenue	$4,622,186	

Public Works Central Operations Campus	EF	3	2221 Pacific Street	$13,820,928	
Middle Fork NR Diversion Facility	HPL	1	Lat N48 46 15.7 Long W122 04 21.4	$10,000,000	
Lake Whatcom Control Dam	HPL	3	Electric Avenue between 2107 and 2109	$3,000,000	
Lake Padden Control Dam	EF	1	West Lake Padden outlet to Padden Creek	$500,000	
Geneva Dam	EF	1	2647 Strawberry Shore Dr	$500,000	
Hannegan Road Detention Dam	EF	1	Section SE1/4 08 Township 38N Range 03E	$500,000	
Happy Valley Detention Dam	EF	1	Section 06 Township 3 7 Range 03	$500,000	
Telegraph Detention Dam	EF	1	Section 18 Township 38N Range 03E	$500,000	
St Clair Detention Dam	EF	1	Section 29W Township 38N Range 03E	$500,000	
Horton Road Detention Dam	EF	1	Section 01 Township 38N Range 02E	$500,000	
Water Treatment Plant	HMF	3	3201 Arbor Court	$20,000,000	
Water Supply Storage Reservoirs	LUS	3	2500 Yew Street Road 231 Highland Drive Balsam Lane, near Big	$2,000,000 $2,000,000 $2,000,000	

			Rock Garden 4185 James Street 3820 Broad Street 3201 Arbor Way Sehome Hill Arboretum, E Ivy Street	$2,000,000 $2,000,000 $2,000,000 $2,000,000	
PeaceHealth St Joseph Medical Center	EF/HPL	3	2901 Squalicum Way		Essential facilities not owned or maintained by the City
Bellingham School District	HPL	2	14 Elementary 4 Middle Schools 4 High schools		Essential facilities not owned or maintained by the City

Facility Type: **EF** = Essential Facility; **HMF** = Hazardous Materials Facility; **HPL** = High Potential Loss; **LUS** = Lifeline Utility System
Significance to community function: **1**=Moderate; **2**= High; **3** =Very High



Map of critical facilities identified by the City of Bellingham. Across Whatcom County, critical facilities fell into 15 categories. Unique categories developed for this plan update include mass shelter, assisted living, and recovery resources. Mass shelter includes facilities such as fairgrounds and community centers. Recovery resources are facilities that are required post-hazard event, for example public works and private construction companies. Not all judications identified or included critical facilities in each category.

Critical Facility Rankings for the City of Bellingham

The table below indicates whether each critical facility falls within known hazard zones for earthquake, liquefaction, landslide, tsunami, volcano, riverine flooding, coastal flooding and wildfire zones. A rank assessment in the last column indicates how the relative risk of community impact. This ranking considers the significance of the facility to the community and the number of hazard zones the facility is within. The frequency of each hazard is also considered, such that being in a low frequency hazard zone would receive a lower ranking than that same facility being in a high frequency hazard zone. Ranking is on a scale of 1 to 10, with 1 being the facility with the highest-ranking score, and 10 being a facility with the lowest ranking score in the jurisdiction.

$$\text{Rank} = \text{Significance} * \left[\frac{\text{EQ\_Zone}}{\text{EQ\_Freq}} + \frac{\text{LQ\_Zone}}{\text{LQ\_Freq}} + \frac{\text{LS\_Zone}}{\text{LS\_Freq}} + \ldots \frac{\text{WF\_Zone}}{\text{WF\_Freq}} \right]$$

Significance: 1=moderate; 2=high; 3=very high, as assessed in the critical facilities list in the previous section

Zone: 0=facility not in hazard zone; 1 = facility in the hazard zone

Frequency (e.g. EQ_Freq, LQ_Freq) is the most difficult variable to which to assign a value. Frequency varies based upon the magnitude of a hazard event and varies from one place to another. It was not possible within the time constraints to assess frequency of hazard at each critical facility location. Instead, a qualitative assessment of the hazard frequency across the entire county was made, as shown in the chart below.

Description	Freq Value used in formula	Hazards
Frequent, occurring on the order of decades	3	Riverine flooding (FL); Coastal flooding (COA)
Rare, occurring on the order of centuries	2	Earthquake (EQ); Liquefaction (LQ); Landslide (LS); Wildfire (WF)
Very rare, occurring on the order of millennia	1	Tsunami (TSU); Volcano (VOL)

Note: Severe storm, a very frequent hazard, was omitted because it is ubiquitous and because no hazard map of storm severity was available.

Critical Facilities Ranking Table

Facility Name	Facility Type	Signi-ficance	EQ	LQ	LS	TSU	VOL	FL	COA	WF	Rank Assessment
Bellingham City Hall	EF	2	1	1	0	0	0	0	0	0	0.33
Police Headquarters	EF	3	1	1	0	0	0	0	0	0	0.5
What-Comm dispatch	EF	3	1	1	0	0	0	0	0	0	0.5
Fire Station 1	EF	3	1	1	0	0	0	0	0	0	0.5
Fire Station 2	EF	3	1	0	0	0	0	0	0	1	0.5
Fire Station 3	EF	3	1	0	0	0	0	0	0	0	0.25
Fire Station 4	EF	3	1	1	0	0	0	0	0	0	0.5
Fire Station 5	EF	3	1	1	1	0	0	0	0	0	0.75
Fire Station 6	EF	3	1	1	0	0	0	0	0	1	0.75
Smith Rd Medic Sta.	EF	2	1	1	0	0	0	0	0	1	0.5
WUECC	EF	3	1	1	0	0	0	0	0	0	0.5
Municipal Court Bldg	EF	2	1	1	0	0	0	0	0	0	0.33
Sehome Communications Tower	LUS	3	1	0	0	0	0	0	0	0	0.25
Post Point Plant	HMF	3	1	0	0	1	0	0	0	1	1
Public Works Central Operations Campus	EF	3	1	1	0	0	0	0	0	0	0.5
Middle Fork NR Diversion Facility	HPL	1	1	0	0	0	0	0	0	0	0.08
Lake Whatcom Control Dam	HPL	3	1	0	0	0	0	1	0	1	0.66
Lake Padden Control Dam	EF	1	1	1	0	0	0	0	0	1	0.25
Geneva Dam	EF	1	1	0	0	0	0	0	0	0	0.08
Hannegan Road Detention Dam	EF	1	1	1	0	0	0	0	0	1	0.25
Happy Valley Detention Dam	EF	1	1	1	0	0	0	1	0	1	0.31

Telegraph Detention Dam	EF	1	1	1	0	0	0	0	0	1	0.25
St Clair Detention Dam	EF	1	1	1	0	0	0	0	0	1	0.25
Horton Road Detention Dam	EF	1	1	1	0	0	0	0	0	1	0.25
Water Treatment Plant	HMF	3	1	0	0	0	0	0	0	1	0.5
Water Supply Storage Reservoirs	LUS	3	1	1	0	0	0	0	0	1	0.75
PeaceHealth St Joseph Medical Center	EF/LUS/ HPL	3	1	1	0	0	0	0	0	0	0.5
Bellingham School District schools (22)	HPL	2	1	1	0	0	0	0	0	0	0.33

Notes: **EQ** = Earthquake; **LQ** =Liquefaction; **LS** = Landslide; **TSUN** = Tsunami; **VOL** = Volcano; **FL** = Riverine Flooding; **COA** = Coastal Flooding; **WF** = Wildland Fire

Areas and Assets Exposed, Per Hazard

	City of Bellingham Exposure to Natural Hazards					
	Hazard Susceptibility	Asset County (% of Total)				Critical Facilities Appraised Value (Million)
		Area (sq.mi.)	Population	Parcels	Critical Facilities	
Geological Hazards	**Earthquake**, Shaking Intensity					
	MMI V	9.1%	6.8%	8.4%	3.1%	$2 [2]
	MMI VI	86.1%	93.2%	91.4%	93.8%	$249 [1]
	MMI VII	-	-	-	3.1%	$10
	MMI VIII - IX	-	-	-	-	-
	TOTAL	95.2%	100%	99.8%	100%	$261
	Liquefaction					
	Very Low to Low	26.3%	26.7%	27.8%	18.8%	$5 [2]
	Low to Moderate	36.5%	39.4%	39.3%	43.8%	$183 [1]
	Moderate	-	-	-	-	-
	Moderate to High	0.3%	0.1%	0.2%	-	-
	High	1.3%	0.1%	0.1%	-	-
	TOTAL	64.4%	66.3%	67.4%	62.6%	$188
	Landslide					
	Landslide Low	0.04%	.04%	0.02%	-	-
	Landslide Moderate	0.02%	-	-	-	-

	Landslide High	-	-	-	-	-
	Fan Low	-	-	-	-	-
	Fan Moderate	0.02%	0.01%	-	-	-
	Fan High	0.05%	0.01%	-	-	-
	Mine Hazard	4.4%	6.2%	7.06%	3.1%	$0.2 [2]
	TOTAL	4.53%	6.26%	7.08%	3.1%	$0.2
	Volcanic Eruption					
	Case 1 Debris Flows	-	-	-	3.1% [3]	$10 [2/3]
	Case 2 Debris Flows	-	-	-	-	-
	Case M Flows	-	-	-	3.1% [3]	$10 [2/3]
	Pyroclastic Flows, Lava Flows, and Ballistic Debris	-	-	-	3.1% [3]	$10 [2/3]
	TOTAL				9.3%	$30
	Tsunami, Inundation Zone					
	Low to Moderate Inundation Potential	0.4%	0.3%	0.2%	-	-
	Moderate to High Inundation Potential	0.3%	2.7%	0.03%	-	-
	High Inundation Potential	2.5%	-	0.7%	3.1%	$5 [2]
	TOTAL	3.2%	3%	0.93%	3.1%	$5

Hydrological Hazards	**Flooding**					
	100-year Flood	8.9%	1.4%	1%	9.4%	$4 [2]
	500-year Flood	0.07%	0.1%	0.1%	-	-
	Floodway	0.7%	0.3%	0.1%	-	-
	Undetermined (Zone D)	-	-	-	-	-
	TOTAL	9.67%	1.8%	1.2%	9.4%	$4
Meteorological Hazards	**Wildfire Zones**					
	Interface Very Low-Low Structure Density	1.2%	0.4%	0.2%	-	-
	Interface Medium-High Structure Density	33.2%	39%	44.7%	18.8%	$15 [2]
	Intermix Very Low-Low Structure Density	8.9%	1.9%	1%	3.1%	$2 [2]
	Intermix Medium-High Structure Density	14.3%	8.5%	7.7%	28.1%	$28 [2]
	TOTAL	57.6%	49.8%	53.6%	50%	$45

[1]This value shows the total of 2020 Whatcom County parcel data appraised total value and community's critical facility assessed dollar value (found in the community's critical facilities list). The critical facility's assessed dollar value was used instead of the appraised total value when available.

[2]Shows the total assessed dollar value provided by the community in their critical facilities list. Does not include the appraised total values.

[3]Some critical facilities located in multiple hazard zones.

Status of Bellingham's 2016-2020 and Ongoing Hazard Mitigation Actions

This section describes the status of mitigation actions that were proposed in the 2016 Mitigation Plan and are now 1) currently being implemented and are ongoing, 2) are now completed, or 3) are now discontinued because they are no longer needed. The actions are organized by hazard and indicate the lead agency, funding source, and status.

1	Lead Agency	May be more than one lead agency indicating shared responsibility and coordination
5	Funding Source:	Local; State; FEMA; Private; Other
6	Current Status	Action Discontinued / Action Completed / Action ongoing and expected completion date

General: All Hazards

G-a. Emergency preparedness education programs for schools

Bellingham Fire Department (BFD) conducted October fire and earthquake safety presentations in public and private school 2nd grade classrooms 2016-2019 (partnered with American Red Cross 2016-2018 on this program until they were no longer able to provide staffing). 2nd grade presentations were suspended in 2020 due to COVID-19 pandemic.

Lead Agency	School Districts/Office of Emergency Management (OEM)/Western Washington University (WWU)/Police/Fire
Funding Source	Local/Grants
Current Status	Ongoing

G-b. Drills, exercises in homes, workplaces, classrooms

Reassigned to Bellingham Fire Department Office of Emergency Management (OEM) promotes participation in the annual international ShakeOut drill to practice taking proper actions to save lives and reduce the risk of injury during an earthquake.

Lead Agency	OEM
Funding Source	Local
Current Status	Ongoing

G-c. Public service announcements

Lead Agency	OEM /Police/Fire
Funding Source	Local
Current Status	Ongoing

G-d. Hazard "safety fairs"

OEM sponsored “GearUp!” an emergency preparedness fair in 2017 that offered community members the opportunity to learn about steps they can take to prepare for a future disaster by utilizing resources already at their disposal.

Lead Agency	OEM
Funding Source	Local
Current Status	Ongoing

G-e. Hazard conferences, seminars

OEM staff attend and host conferences and seminars as time and resources allow to learn and share lessons to enhance community preparedness.

Lead Agency	OEM
Funding Source	Local/State/Private/Other
Current Status	Ongoing

G-f. Hazard awareness weeks

Lead Agency	OEM
Funding Source	Local
Current Status	Ongoing

G-g. Preparedness handbooks, brochures. Distribution of severe weather guides, homeowner’s retrofit guide, etc.

In cooperation with Whatcom County, OEM makes available to the public throughout the year an all-hazards emergency preparedness guide, a variety of age-appropriate preparedness and awareness publications (activity books, comic books), and a graphic “two weeks ready” guide. Most recently, OEM developed and delivered tsunami awareness guides that feature evacuation routes and related details for shoreline inundation zones.

Lead Agency	OEM
Funding Source	Local/State/FEMA/Private

Current Status	Ongoing

G-i. Annual correspondence with residents reminding them of the need to be hazard prepared.

The Public Works Department offers education programs to inform city workers to prepare 72-hour emergency prep kits. OEM issues annual reminders about fireworks safety and regulations in the City of Bellingham and contributes reminders to staff and community newsletters as resources allow.

Lead Agency	OEM /Public Works
Funding Source	Local
Current Status	Ongoing

Drought/heat wave

D-a. Assess Vulnerability to Drought Risk

The City's Water Shortage Contingency Plan includes recognition of drought risk as established by an assessment of regional climate conditions. The WSCP defines the levels of response to a range of drought conditions.

Lead Agency	Public Works
Funding Source	Local
Current Status	Ongoing

D-b. Monitor Water Supply

The City maintains a water supply model of the City's water supply source, the Lake Whatcom Reservoir. Model data parameters include lake levels, annual precipitation, estimated evapotranspiration, water use trends.

Lead Agency	Public Works
Funding Source	Local
Current Status	Ongoing

D-c. Plan for Drought

The City's Water Shortage Contingency Plan describes actions to be taken by the public in response to defined thresholds of reservoir capacity coupled with weather forecasts. The actions range from low water level alerts to a series of curtailment measures.

Lead Agency	Public Works
Funding Source	Local
Current Status	Ongoing

D-d. Require Water Conservation During Drought Conditions

The Water Shortage Contingency Plan requires different levels of water use restrictions in response to various reservoir levels, precipitation and weather forecasts.

Lead Agency	Public Works
Funding Source	Local
Current Status	Ongoing

D-e. Retrofit Water Supply Systems

Since 2016 the water meter program has successfully completed retrofit metering of 22,743 residential customers. Now all buildings within the City of Bellingham and most customers outside of the City are metered.

Lead Agency	Public Works
Funding Source	Local/Grants
Current Status	Completed

D-f. Enhance Landscaping and Design Measures to include drought tolerant native plants

Environmental restoration and park restoration projects include a mix of native plants some of which are drought tolerant. These programs are ongoing with multiple projects each year. Recent completion of The Native Plant Material Selection Guidelines includes a thorough discussion of plant stress due to climate change and options for maintaining resilient local plant communities in the face of climate challenges. Options include different approaches to assisted migration.

Lead Agency	Public Works
Funding Source	Local/Grants
Current Status	Ongoing

D-g. Educate Residents on Water Saving Techniques

The City of Bellingham's Water Use Efficiency program provides education about water saving techniques to youth, households and businesses through a variety of programs and offerings, including property assessments, in-school education and community education campaigns.

Focus is placed on both indoor and outdoor water conservation techniques.

- Provides youth education through our 5th grade Water School program.
- Contracts education to K-12 in a partnership with ReSources, a local non-profit.
- Contracts with Community Energy Challenge to provide water assessments at homes, multifamily and commercial properties and to provide rebates for a fixture retrofit program.
- Provide outdoor summer watering education through advertising campaigns and an online pledge that provides customers with free tools to help with outdoor water conservation, such as hose-timers, efficient spray nozzles and moisture meters.
- Participate in the county-wide Whatcom Water Alliance which has a goal to coordinate water conservation practices and outreach throughout the county.
- Education materials accompany City sponsored events such as annual planning and participation in World Water Week events.

Lead Agency	Public Works
Funding Source	Local/Grants
Current Status	Ongoing

Earthquake

EQ-a Adopt and Enforce Building Codes that increase earthquake resilience

The City has adopted the 2018 International Building Code with State and Local amendments. Each code cycle strengthens earthquake resilience as new studies, new technology, and new construction methods are devised. Fire enforces these codes through the new construction permitting process (average of 1,250 construction inspections per year) and performing approximately 500 inspections per year on existing buildings throughout the City. Planning and Community Development Services provides structural inspections for code compliance.

Lead Agency	Planning, Fire
Funding Source	Local
Current Status	Ongoing

EQ-c. Map and Assess Community Vulnerability to Seismic Hazards

A map of seismic vulnerable areas has been completed, is included in this report and is

available to the public.

Lead Agency	OEM /Public Works
Funding Source	Local
Current Status	Ongoing

EQ-d Conduct Inspections of Building Safety

Fire conducts an average of 1,250 new construction inspections per year and performing approximately 500 inspections per year on existing buildings (code enforcement inspections) throughout the City. Community Development Services conducts inspections of building structural compliance with earthquake codes.

Lead Agency	Planning, Fire
Funding Source	Local
Current Status	Ongoing

EQ-e. Protect Critical Facilities and Infrastructure

The City conducts routine assessment and maintenance of critical facilities and infrastructure to ensure they remain in good repair. The Sehome Hill Communications Tower, a critical facility was replaced in 2020.

Lead Agency	Public Works
Funding Source	Local
Current Status	Ongoing

EQ-f. Implement Structural Mitigation Techniques

City buildings are earthquake retrofitted as funding allows.

Lead Agency	Planning/Public Works
Funding Source	Local
Current Status	Ongoing

EQ-g. Increase Earthquake Risk Awareness

Multiple City departments participate in state and local exercises, including Cascadia Rising exercise planning and execution of the exercise. Increased earthquake awareness and public participation has been facilitated by the CERT program.

Lead Agency	OEM
Funding Source	Local
Current Status	Ongoing

EQ-h. Conduct Outreach to Builders, Architects, Engineers, and Inspectors

Outreach to the development community is conducted through Pre-Application Conferences (average 100 conferences per year) and one-on-one meetings, emails, and telephone calls. Technical Advisory Bulletins with code updates are sent to builders and other members of the development community several times a year.

Lead Agency	Planning
Funding Source	Local
Current Status	Ongoing

Extreme Temperature

ET-a. Reduce Urban Heat Island Effect – Increase tree canopy in neighborhoods

Development and Critical Areas regulations require certain tree retention, and replacement during design and construction.

Lead Agency	Planning/Public Works
Funding Source	Local
Current Status	Ongoing

ET-b. Increase Awareness of Extreme Temperature Risk and Safety

Shelters for vulnerable populations have increased community awareness of extreme temperature risk and safety.

Lead Agency	OEM
Funding Source	Local
Current Status	Ongoing

ET-c. Assist Vulnerable Populations.

The City partners with and/or provides funding to several organizations that provide emergency overnight shelter, day center accommodations and safe camping for vulnerable populations.

The Bellingham Fire Department (BFD) responds to all types of medical emergency calls (fires, medical, public service, etc.) per year within the City limits. The City's Planning Department and BFD's Life Safety Division are involved in the review, approval, and inspection of homeless shelters, emergency shelters, and encampments.

Lead Agency	OEM /Planning/Police/Fire/Private
Funding Source	Local
Current Status	Ongoing

ET-d. Educate Property Owners About Freezing Pipes

Lead Agency	OEM /Fire/PW
Funding Source	Local
Current Status	Ongoing

Hail

HA-a. Increase Hail Risk Awareness

Lead Agency	OEM
Funding Source	Local
Current Status	Ongoing

Flooding

F-a. Incorporate Flood Mitigation in Local Planning

The Bellingham Municipal Code and the Surface and Stormwater Comprehensive Plan address flood hazards, development standards and mitigation strategies.

Lead Agency	OEM /Public Works
Funding Source	Local/State/FEMA
Current Status	Ongoing

F-b. Form Partnerships to Support Floodplain Management

Bellingham Municipal Code for floodplain management is included in sections administered by both the Public Works Department and the Planning and Community Development Department. Interjurisdiction floodplain management is coordinated between the City of Bellingham, Whatcom County and the Washington State Department of Ecology.

Lead Agency	OEM /Public Works
Funding Source	Local
Current Status	Ongoing

F-c. Adopt and Enforce Building Codes and Development Standards

The Bellingham Municipal Code and the Surface and Stormwater Comprehensive Plan address flood hazards, development standards and mitigation strategies. Building codes and development standards meet FEMA standards. Planning and Community Development Department administers the Critical Areas Ordinance that includes frequently flooded areas which are areas that have an increased risk of flooding and that are an expansion of FEMA designated flood areas.

Lead Agency	Planning/Police/Fire
Funding Source	Local
Current Status	Ongoing

F-d. Improve Stormwater Management Planning

The Surface and Stormwater Comprehensive Plan was updated in 2020. Improvements to mapping and facility maintenance are part of the plan. Near-term sea-level rise impact analysis, funding obligations and needs, prioritization, conveyance capacity analysis, and a capital improvement plan are also included.

Lead Agency	Public Works
Funding Source	Local/Grants
Current Status	Ongoing

F-e. Adopt Polices to Reduce Stormwater Runoff

The Surface and Stormwater Comprehensive Plan conditions all new buildings to minimize or be stormwater runoff neutral. A residence focused program in the Lake Whatcom watershed incentivizes actions that reduce stormwater runoff from individual parcels. Bellingham

Municipal Code includes sections on stormwater management. The 2017 Municipal Code update made Low Impact Development techniques required if feasible on a site.

Lead Agency	Public Works
Funding Source	Local
Current Status	Ongoing

F-f. Improve Flood Risk Assessment

Hydrology model data are used to assess the impacts of new development, re-development and stream restoration projects on flood control and carrying capacity. Bellingham is a National Flood Insurance Program participating community. The Operations and Maintenance Plans and Emergency Action Plans for seven flood control dams are updated every 5-years. Ecology Dam Safety office performs inspections and receives records from the City every 5-years.

Lead Agency	Public Works/OEM
Funding Source	Local/Grants
Current Status	Ongoing

F-g. Improve Stormwater Drainage System Capacity

The Comprehensive Surface and Stormwater Plan includes analysis of stormwater infrastructure needs and projects. Projects are selected by committee based on needs analysis that considers risks, areas of growth, age of infrastructure, road projects, opportunities and other issues identified by stormwater staff.

Lead Agency	Public Works
Funding Source	Local/Grants
Current Status	Ongoing

F-h. Conduct Regular Maintenance for Drainage Systems and Flood Control Structures

The City's stormwater conveyance system is regularly maintained to clear debris and replace failing infrastructure to ensure it is fully functional. Stormwater crews perform routine maintenance and repair activities on all City owned drainage structures and conveyance pipes. Work crews video-inspect 267 total miles of mains, 15,066 drainage structures, and clean structures as required. The City meets or exceeds the requirements in our Western Washington Phase II Municipal Stormwater Permit. Additional inspections and maintenance is

also conducted on all flow control and bioretention facilities which includes nearly 150 rain gardens, 190 ponds and bioswales, and 5 regional detention facilities. City staff also assist in performing private facility inspections.

Lead Agency	Public Works
Funding Source	Local
Current Status	Ongoing

F-i. Elevate or Retrofit Structures and Utilities

Utility facilities are sited with consideration of potential flooding impacts. Recent development of models that predict potential flooding due to sea level rise are also being used as guidance for utility planning in waterfront areas. Utilities located within either City or Federal designation with a flood potential are retrofitted, designed, and contracted to minimize the possibility of floodwaters from entering the system.

Lead Agency	Public Works
Funding Source	Local/Grants
Current Status	Ongoing

F-j. Protect Infrastructure

Utilities located within either City or Federal designation with a flood potential are retrofitted, designed, and constructed to minimize the possibility of floodwaters from entering the system.

Lead Agency	Public Works
Funding Source	Local/Grants
Current Status	Ongoing

F-k. Protect Critical Facilities

Critical facilities that are located within either City or Federal designation with a flood potential are retrofitted, designed, and constructed to minimize the possibility of floodwaters from entering the facility and damage caused by flooding.

Lead Agency	Planning/PW/Police/Fire
Funding Source	Local/Grants
Current Status	Ongoing

F-l. Construct Flood Control Measures

The City's flood control infrastructure includes 150 rain gardens, 190 ponds and bioswales, and 7 regional detention facilities throughout the city to capture and retain stormwater runoff. The combined stormwater facilities work in concert to lessen the impacts of localized and regional storm events. Flood control berm along the lower portions of Whatcom Creek. All new and redevelopment projects are subject to stormwater flow control requirements.

Lead Agency	Public Works
Funding Source	Local/Grants
Current Status	Ongoing

F-m. Protect and Restore Natural Flood Mitigation Features

Seven stormwater regional detention facilities are built in natural floodways to increase the flood storage capacity of the natural system. These sites are regulated by the Critical Areas Ordinance and are included in wetland and riparian restoration and mitigation plans projects.

Lead Agency	Parks/Public Works/Planning
Funding Source	Local/Grants
Current Status	Ongoing

F-n. Preserve Floodplains as Open Space

Accomplished through the City's Critical Areas Ordinance, Frequently Flooded Areas section.

Lead Agency	Parks/Planning
Funding Source	Local/Grants
Current Status	Ongoing

F-o. Increase Awareness of Flood Risk and Safety

The City is a National Flood Insurance Program participating community.

Lead Agency	OEM/Parks/Public Works
Funding Source	Local
Current Status	Ongoing

F-p. Educate Property Owners about Flood Mitigation Techniques

The City is a National Flood Insurance Program participating community.

Lead Agency	Parks/ Public Works/OEM
Funding Source	Local
Current Status	Ongoing

Landslide/Erosion

ER-a. Map and Assess Vulnerability to Landslides and Erosion

The Critical Areas Ordinance defines and maps landslide hazard areas. No additional action has occurred.

Lead Agency	Planning
Funding Source	Local
Current Status	Ongoing

ER-b. Manage Development in Landslide and Erosion Hazard Areas

The Critical Areas Ordinance conditions development in Landslide and Erosion Hazard areas.

Lead Agency	Planning
Funding Source	Local
Current Status	Ongoing

ER-c. Promote or Require Site and Building Design Standards to Minimize Erosion Risk

The Critical Areas Ordinance and Subdivision Ordinance together require site designs to consider building with existing contours and minimizing recontouring. No new action taken.

Lead Agency	Planning
Funding Source	Local
Current Status	Ongoing

ER-d. Stabilize Erosion Hazard Areas

Public Works Natural Resources includes elements to stabilize banks and reduce erosion in all habitat restoration projects. The Parks & Recreation Department also designs park uplands and nearshore areas to withstand sea level rise and floodwaters to protect critical habitat areas that might otherwise be lose or eliminated during a natural disaster. Boulevard Park and Waypoint Park beach enhancement projects were designed for the upper end of predicted sea level rise,

including king tides and storm surges. These projects mitigate flood damage and erosion to uplands by providing natural nearshore environments capable of sustaining large storm events.

Lead Agency	Public Works/Parks
Funding Source	Local/Grants
Current Status	No action taken

ER-e. Increase Awareness of Erosion Hazards

A map of geological hazards is available to the public on the City's website and can be ordered.

Lead Agency	Public Works/OEM
Funding Source	Local
Current Status	Ongoing

Land Subsidence

SU-a. Map and Assess Vulnerability to Subsidence

A map of land areas at risk of subsidence events is a layer in City IQ, the City's publicly accessible property mapping database.

Lead Agency	Public Works
Funding Source	Local/Grants
Current Status	Ongoing

SU-b. Manage Development in High-Risk Areas

City zoning, building regulations, critical areas restrictions and the Comprehensive Plan manage development in all hazard areas.

Lead Agency	Planning
Funding Source	Local
Current Status	Ongoing

SU-c. Consider Subsidence in Building Design

Building codes regulate building foundation in light of the potential for stress from events such as subsidence.

Lead Agency	Planning

Funding Source	Local
Current Status	Ongoing

SU-d. Monitor Subsidence Risk Factors

Changes in land elevations, slumps, street integrity, or other signs of subsidence are reported to City staff.

Lead Agency	Public Works
Funding Source	Local
Current Status	Ongoing

Lightning

L-a. Protect Critical Facilities and Equipment

Critical facilities and equipment receive ongoing maintenance.

Lead Agency	Public Works/Private/Planning
Funding Source	Local
Current Status	Ongoing

Severe Storm

SS-a. Increase Severe Storm Preparedness

The City participates in the annual severe storm preparedness meeting conducted by the Whatcom County Sheriff's Office Division of Emergency Management.

Severe Wind

SW-a. Adopt and Enforce Building Codes

Building codes require wind studies and engineered designs in response to wind analysis for development in designated high wind zones.

Lead Agency	Planning
Funding Source	Local
Current Status	Ongoing

SW-b. Promote or Require Site and Building Design Standards to Minimize Wind Damage

Building codes require site specific analysis of land clearing proposals in high wind designated areas, to determine impacts on trees and structures in the immediate area. Temporary tent permits require prescribed amount of ballasting to prevent blow-over or damage from wind. Fire issues temporary tent permits and performs inspections on roughly 15 temporary tents per year.

Lead Agency	Planning/Fire
Funding Source	Local
Current Status	Ongoing

Tornadoes

No actions ongoing, discontinued, or completed for this hazard.

Tsunami

TSU-a. Map and Assess Vulnerability to Tsunami

The City of Bellingham participates in the Washington State Department of Emergency Management's Inner Coast Tsunami Workgroup that publishes tsunami inundation and current velocity maps that show the expected depth of water and the speed of the currents from an earthquake-generated tsunami, as well as tsunami pedestrian evacuation walk maps.

Lead Agency	OEM
Funding Source	Local/Grants
Current Status	Ongoing

TSU-b. Manage Development in Tsunami Hazard Areas

The City's Shoreline Master Program regulates development in Tsunami Hazard Areas.

Lead Agency	Planning
Funding Source	Local
Current Status	Ongoing

TSU-c. Increase Public Awareness of Tsunami Hazard

The City of Bellingham is a key stakeholder in Whatcom County Sheriff's Office Tsunami Action Plan and will actively prepare for, respond and participate in recovery from any tsunami threat. Public outreach events were delivered on tsunami awareness in 2019 and will resume post-COVID.

Lead Agency	OEM
Funding Source	Local
Current Status	Ongoing

Wildfire

WF-a. Map and Assess Vulnerability to Wildfire

City's Wildland-Urban Interface mapping is being performed in 2nd quarter 2021 by consultant as part of City's Urban Forest Management Plan. State DNR is also in the process of mapping and performing risk assessment in each county.

Lead Agency	Fire
Funding Source	Local
Current Status	Ongoing

WF-b. Create Defensible Space Around Structures and Infrastructure

Awaiting results of Wildland-Urban Interface mapping/risk assessment in order to target highest risk areas of City.

Lead Agency	OEM/Fire
Funding Source	Local
Current Status	Ongoing

WF-c. Participate in Firewise Program

Partnered with Conservation District's Wildfire Risk Reduction Program staff to identify vulnerable areas. Provided education materials to property owners in target area. Clark's Point is a Firewise site as of November 1st, 2019.

Lead Agency	Fire
Funding Source	Local
Current Status	Ongoing

WF-d. Educate Property Owners about Wildfire Mitigation Techniques

Property owner education included in Wildfire Risk Reduction and Firewise programs.

Lead Agency	Fire
Funding Source	Local
Current Status	Ongoing

Winter storms/Freezes

WW-a. Adopt and Enforce Building Codes

International and State Building Codes adopted by the City include snow load calculations and requirements for roofs.

Lead Agency	Planning/Fire
Funding Source	Local
Current Status	Ongoing

WW-b. Protect Buildings and Infrastructure

Public Work Facilities maintains all city government buildings to avoid weather incurred damage. Fire-Operations responds to all types of hazardous conditions and emergencies

Lead Agency	Public Works/Fire
Funding Source	Local
Current Status	Ongoing

WW-c. Reduce Impacts to Roadways

City Public Works applies icing prevention compounds to main city streets ahead of predicted winter snow storms, and freezing rain events.

Lead Agency	Public Works/DOT
Funding Source	Local/Grants
Current Status	Ongoing

WW-d Conduct Winter Weather Risk Awareness Activities

Efforts to provide shelters for vulnerable populations have increased community awareness of winter weather risks.

Lead Agency	OEM
Funding Source	Local/Grants
Current Status	Ongoing

WW-e. Assist Vulnerable Populations

Shelters have been provided for vulnerable populations.

Lead Agency	OEM/Police/Fire/Private
Funding Source	Local/Grants
Current Status	Ongoing

Multiple Hazards

MU-a. Assess Community Risk

City departments continue to reassess the most current information when planning response to hazard risks.

Lead Agency	OEM /Public Works
Funding Source	Local
Current Status	Ongoing

MU-b. Map Community Risk.

The City maintains maps of hazardous areas and conditions that are available to the public on the City website and hardcopy.

Lead Agency	OEM /Public Works
Funding Source	Local
Current Status	Ongoing

MU-c. Update Policies, Codes, Standards, Regulations, and Plans for all hazards included in this plan as needed

Lead Agency	Planning/Fire
Funding Source	Local
Current Status	Ongoing

MU-d. Adopt Development Regulations in Hazard Areas

Development in hazard areas is regulated by the Critical Areas Ordinance.

Lead Agency	Planning
Funding Source	Local
Current Status	Completed

MU-e. Limit Density in Hazard Areas

Comprehensive Plan updates may include evaluation of zoning including hazard conditions analysis for any contemplated zoning changes.

Lead Agency	Planning
Funding Source	Local
Current Status	No action taken

MU-f. Integrate Mitigation into Local Planning

The information and related data contained in the Natural Hazards Mitigation Plan regarding hazards, risks, vulnerability and potential mitigation potentially impacting City of Bellingham will be used as a tool when the City updates other plans and programs.

Lead Agency	OEM
Funding Source	Local
Current Status	Ongoing

MU-g. Strengthen Land Use Regulations

Washington State and Bellingham are national leaders in development and land use regulations.

Lead Agency	Planning/Public Works
Funding Source	Local
Current Status	Ongoing

MU-h. Adopt and Enforce Building Codes

State and City of Bellingham adopted the 2015 body of International Code Council (ICC) codes on July 1, 2016, including local Bellingham Municipal Code (BMC) amendments; then adopted 2018 ICC Codes with implementation date of February 1, 2021 (also with BMC amendments). Each code cycle strengthens resilience as new studies, new technology, and new construction methods are devised. Fire enforces these codes through the new construction permitting process (average of 1,250 construction inspections per year) and performing approximately 500 inspections per year on existing buildings throughout the City.

Lead Agency	Planning/Fire/Police
Funding Source	Local
Current Status	Ongoing

MU-i. Protect Infrastructure and Critical Facilities

Critical infrastructure and facilities are maintained regularly.

Lead Agency	Police/Fire
Funding Source	Local/Grants
Current Status	Ongoing

MU-j. Increase Hazard Education and Risk Awareness

Map Your Neighborhood has been in use by Bellingham since 1999. This network allows for residents to prepare to help their neighbors before help can arrive following a disaster, which will save lives.

Lead Agency	OEM
Funding Source	Local
Current Status	Ongoing

MU-k. Improve Household Disaster Preparedness

Map Your Neighborhood has been in use by Bellingham since 1999. This network allows for residents to prepare to help their neighbors before help can arrive following a disaster, which will save lives.

Lead Agency	OEM
Funding Source	Local
Current Status	Ongoing

Bellingham Hazard Mitigation Strategy 2021-2025

Whatcom County Hazard Mitigation Goals

Whatcom County has identified five overarching hazard mitigation goals, which represent what a community seeks to achieve through mitigation actions.

Goal 1. Protect Life, Property and Public Welfare

Goal 2. Increase Public Awareness

Goal 3. Preserve and Enhance Natural Systems

Goal 4. Encourage Partnership for Implementation

Goal 5. Ensure Continuity of Emergency Services

These countywide goals help guide any prioritization and implementation of mitigation actions, ensuring that the actions contribute to a community's vision for the future.

City of Bellingham-Specific Hazard Mitigation Goals

Bellingham adds to these county-wide goals, the following community-specific mitigation planning goals:

- **Goal BELL-1.** Reduce the possibility of damages and losses due to coastal flooding caused by Sea Level Rise.
- **Goal BELL-2.** Reduce disproportionate natural hazard impact on vulnerable populations (e.g. elderly, low-income residents, disabled, health-compromised, rural/urban, and similar).
- **Goal BELL-3.** Collaborate with partners to create a countywide public safety radio system available to all public safety agencies for daily operations as well as emergency and disaster response.

Mitigation Action Options

Appendix E of the Whatcom County Natural Hazard Mitigation Plan provides a list of mitigation options. The City of Bellingham considered mitigation options related to earthquakes, tsunamis, and severe storms, especially those related to coastal flooding, because these hazards have the

potential to cause the greatest loss and damage. Not all mitigation options in Appendix E were relevant or a strong priority for Bellingham. Some options have already been implemented or are ongoing in Bellingham, as documented in the section above on the status of 2016-2020 and ongoing hazard mitigation actions.

Mitigation Action Prioritization

The mitigation actions in this section are new actions that the City of Bellingham has prioritized for the 2021-2025 planning period and beyond. Mitigation options were prioritized based upon review of the following two criteria: 1) The action's Overall Feasibility based on engineering, environmental, financial, and political considerations, 2) The Criticality of the action, based upon a consideration of which actions had the greatest potential to protect life, property, and public welfare. Blaine is working in cooperation with the County and other participating communities and special districts to develop a systematic methodology that would use multiple evaluation criteria to determine mitigation action prioritization. This new methodology will be used in future updates of this Plan.

In the following Identified Mitigation Actions 2021-2025 table, each priority action is listed by hazard. Each action is followed by planning goals, lead agency, the priority evaluation, timeline, funding source and estimated cost, where such information is available. This information can be used by local decision makers in pursuing strategies for implementation.

1	Goals	Indicates the hazard mitigation planning goal or goals this action addresses; countywide and/or community-specific
2	Lead Agency	May be more than one lead agency indicating shared responsibility and coordination
3	Priority:	H (High); M (Medium); L (Low)
4	Timeline:	Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years); Ongoing
5	Funding Source:	Local; State; FEMA; Private; Other

Bellingham Identified Mitigation Actions 2021-2025

CITY OF BELLINGHAM IDENTIFIED MITIGATION ACTIONS 2021-2025							
MITIGATION ACTIONS		(1) Goals	(2) Lead Responsibility for Carrying out Measure	(3) Priority	(4) Timeline	(5) Funding Source	(6) Estimated Cost
Hazard	Action Items						
Multiple Hazards	MU-1 Assess Community Risk - For all hazards included in this Plan	G6	OEM	M	O	Local	Staff
	MU-2 Map Community Risk – For all hazards included in this plan	G6	OEM	M	O	Local	Staff
	MU-3 Update Policies, Codes, Standards, Regulations, and Plans for all hazards included in this plan as needed	G1 G5	Planning/Fire	M	O	Local	Staff

	MU-4 Enforce Codes, Standards, or Regulations for all hazards included in this Plan.	G1	Planning/Fire/ Police	M	O	Local	Staff
	MU-5 Protect Infrastructure and Critical Facilities	G1 G5	Fire/Police/PW	H	O	Local	Staff + Capital Project Cost
	MU-6 Update Natural Hazard Early Warning Systems	G1 G2 B1 B2	OEM	M	O	Local	Staff
	MU-7 Create Local Funding Mechanisms for Hazard Mitigation	G1	Administration	L	M	Local	Staff
Education and Outreach all hazards	**EO-1 Support Map Your Neighborhood, Community Emergency Response Training (CERT), and other community preparedness initiatives.**	G1, G2, B2	Various, see notes	L	O	Local	$50,000
	EO-2 Provide emergency preparedness education programs for schools, and community groups.	G2, B2	OEM	L	O	Local	$50,000
	EO-3 Conduct drills, exercises in homes, workplaces, classrooms	G2, B2	OEM	L	O	Local	$50,000

	EO-4 Deliver Public Service Announcements to the community	G2, B2	OEM	L	O	Local	$125,000
	EO-5 Host or attend hazard safety fairs, conferences, seminars.	G2, B2	OEM	L	O	Local	$15,000
	EO-6 Sponsor hazard awareness weeks	G2, B2	OEM	L	O	Local	$15,000
	EO-7 Distribute risk awareness and emergency preparedness handbooks, brochures, severe weather guides, homeowner's retrofit guide, etc.to the community.	G2, B2	OEM	L	O	Local	$50,000
	EO-8 Provide information for regular newspaper articles	G2	OEM	L	O	Local	Staff +$1,000
	EO-9 Provide annual correspondence with residents reminding them of the need to be hazard prepared.	G2, B2	OEM	L	O	Local	$20,000
Dam/Levee Failures	**DL-1 Update early warning notification list as needed.**	G1	Public Works/OEM	M	O	Local	Staff
Drought	**D-1 Monitor Water Supply**	G6	Public Works	M	O	Local	Staff
	D-2 Implement Drought Contingency Plan when needed	G1	Public Works	L	O	Local	Staff

Priority:	Timeline:	Funding Source:	Estimated Cost:
H (High); M (Medium); L (Low)	Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years); Ongoing	Local; State; FEMA; Private; Other	Actual; Estimated

	D-3 Develop/Implement plant resiliency plan	G3	PWNR, Parks	L	O	Local	Staff +$10,000
	D-4 Ongoing -- Educate Residents on Water Saving Techniques	G2	Public Works	L	O	Local	Staff +$10,000
Earthquake	**EQ-1 Provide Information on Structural and Non-Structural Retrofitting**	G1 G2	Planning	L	M	Local	Staff +$10,000
	EQ-2 Implement Structural Mitigation Techniques, building retrofits.	G1 G2	Planning	L	M	Local	Staff +$10,000
Extreme Temperatures	**ET-1 Reduce heat impacts, increase shade**	G1 G4 B2	Plan PW	L	S	Local	$20,000
	ET-2 Assist Vulnerable Populations, provide shelters and access to shade	G2, B2	OEM/Fire/ Police/PW	L	O	Local	$1,000,000
Flooding	**FL-1 Consider policy response to Sea Level Rise**	G1, B1	Planning	L	M	Local	Staff
	FL-2 Implement projects of the Surface and Stormwater Comprehensive Plan	G1 G3	PWNR	M	O	Local Grants	$1,500,000
	FL-3 Maintain Partnerships to Support Floodplain Management	G4	Public Works	L	O	Local	Staff

Landslides/ Erosion	**LE-1 Assess impacts of Sea Level Rise on marine bluff stability**	G1	Planning	L	O	Local	Staff +$12,000
Land Subsidence	**LS-1 Monitor Subsidence Risk Factors**	G1	Public Works	M	O	Local	Staff
Lightning	**L-1 Protect Critical Facilities and Equipment**	G1	Planning	M	O	Local	Staff +Capital Project Cost
Severe Wind	**SW-1 Retrofit Residential Buildings**	G1	BHA	L	M	Local	Staff +Project Cost
	SW-2 Retrofit Public Buildings and Critical Facilities	G1	Public Works	L	M	Local	Staff + Project Cost
Tsunami	**TSU-1 Include Sea Level Rise in Tsunami Risk Assessment**	G2	PWNR	L	S	Local	Staff
	WF-1 Participate in Firewise program	G1 G2 G4	Fire	M	O	Local	$100,000

Wildfires	**WF-2 Create Defensible Space Around Structures and Infrastructure**	G1	Fire	M	S	Local	Staff + Project Cost
Winter Weather	**WW-1 Reduce Impacts to Roadways**	G1, G5	Public Works	L	O	Local	Staff
	WW-2 Assist Vulnerable Populations	B2	Various	M	O	Local	Staff + $1,500,000

Bellingham Annual Review and Progress for Hazard-Specific Mitigation Actions 2021-2025

Progress monitoring means tracking the implementation of the hazard specific mitigation actions over time. Each jurisdiction must identify how, when, and by whom action items will be monitored. The responsible agency assigned to each mitigation action is responsible for tracking and reporting on each of their actions.

Annual review and progress reporting includes the following:

Step One: Identify mitigation actions that your planning team has identified for the annual review. The planning team has the option to address ALL action items, or only those that should be acted on during each review cycle.

Step Two: Use the table below to track annual progress. For each action item selected for annual review insert the appropriate letter that indicates the status of that action item.

Step Three: Complete a progress report form as illustrated in Appendix G for each mitigation action item selected for annual review

Step Four: Submit the completed form(s) to the Whatcom County DEM.

City of Bellingham Hazard-Specific Action Items 2021-2025 – Annual Review and Progress						
Action Items	**Status** *(Choose One & **Enter Letter**):* **A.** Completed; **B.** In Progress (on schedule); **C.** In Progress (delayed); **D.** Delayed Until Funding Available; **E.** Canceled					
	2021	**2022**	**2023**	**2024**	**2025**	**Notes on yearly progress**
MULTIPLE HAZARDS						
MU-1. Assess Community Risk - for all hazards included in this Plan						
MU-2. Map Community Risk – For all hazards included in this plan						
MU-3. Update Policies, Codes, Standards, Regulations, and Plans for all hazards included in this plan as needed						
MU-4. Enforce Codes, Standards, or Regulations for all hazards included in this Plan.						
MU-5 Protect Infrastructure and Critical Facilities						
MU-6 Update Natural Hazard Early Warning Systems						
MU-7 Create Local Funding Mechanisms for Hazard Mitigation						
Add Addition Actions as Needed						
EDUCATION AND OUTREACH ALL HAZARDS						
EO-1 Support Map Your Neighborhood, Community Emergency Response Training (CERT), and other community preparedness initiatives.						

EO-2 Provide Emergency preparedness education programs for schools, and community groups.						
EO-3 Conduct drills, exercises in homes, workplaces, classrooms.						
EO-4 Deliver public service announcements to the community.						
EO-5 Host or attend hazard safety fairs, conferences, seminars.						
EO-6 Sponsor hazard awareness weeks.						
EO-7 Distribute risk awareness and preparedness handbooks, brochures, severe weather guides, homeowner's retrofit guide, etc.to the community.						
EO-8 Provide information for regular newspaper articles						
EO-9 Provide annual correspondence with residents reminding them of the need to be hazard prepared.						
Add Addition Actions as Needed						
DAM/LEVEE FAILURES						
DL-1 Update early warning notification list as needed.						
Add Addition Actions as Needed						
DROUGHTS/HEAT WAVES						
D-1 Monitor Water Supply						
D-2 Implement Drought Contingency Plan when needed						
D-3 Develop/Implement plant resiliency plan						
D-4 Ongoing -- Educate Residents on Water Saving Techniques						

Add Addition Actions as Needed						
EARTHQUAKES						
EQ-1 Provide Information on Structural and Non-Structural Retrofitting						
EQ-2 Implement Structural Mitigation Techniques, building retrofits.						
Add Addition Actions as Needed						
EXTREME TEMPERATURE						
ET-1 Reduce heat impacts, increase shade						
ET-2 Assist Vulnerable Populations, provide shelters and access to shade						
Add Addition Actions as Needed						
FLOODING						
FL-1 Consider policy response to Sea Level Rise						
FL-2 Implement projects of the Surface and Stormwater Comprehensive Plan						
FL-3 Maintain Partnerships to Support Floodplain Management						
Add Addition Actions as Needed						
LANDSLIDES/EROSION						
LE-1 Assess impacts of Sea Level Rise on marine bluff stability						
LAND SUBSIDENCE						
LS-1 Monitor Subsidence Risk Factors						
Add Addition Actions as Needed						

LIGHTNING						
L-1 Protect Critical Facilities and Equipment						
Add Addition Actions as Needed						
SEVERE WIND						
SW-1 Retrofit Residential Buildings						
SW-2 Retrofit Public Buildings and Critical Facilities						
Add Addition Actions as Needed						
TSUNAMI						
TSU-1 Include Sea Level Rise in Tsunami Risk Assessment						
Add Addition Actions as Needed						
WILDFIRES						
WF-1 Participate in Firewise program						
WF-2 Create Defensible Space Around Structures and Infrastructure						
Add Addition Actions as Needed						
WINTER STORMS/FREEZES (SEVERE WINTER WEATHER)						
WW-1 Reduce Impacts to Roadways						
WW-2 Assist Vulnerable Populations						
Add Addition Actions as Needed						

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