



CITY OF FERNDALE

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Planning Process

The City of Ferndale process of reviewing, updating, and adopting the 2021 update of the Whatcom County Natural Hazard Mitigation Plan (NHMP or Plan) included review by the Public Information Officer, the Ferndale Police Department, and the City Administrator, in addition to consultation with other relevant City personnel. The City Administrator audited Ferndale’s existing emergency planning material relating to Natural Hazard Mitigation and sought feedback from other City resources prior to adoption.

Ferndale always seeks to use the best possible information when planning for capital facilities, growth management and emergency planning. The material provided in the NHMP can be used as part of the decision-making process to ensure that our public facilities, city residents and private businesses are as safe as possible, and the public is aware of potential impacts of natural hazards.

Key Contributor List

- Jori Burnett, City Administrator
- Tim Orsino, Public Works and Community Development Department Clerk



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 the City of Ferndale will be used as a tool when the City updates other plans and programs, such as the following:

- Comprehensive Plan;
- Critical areas ordinance;
- Comprehensive Stormwater Plan;
- Comprehensive Emergency Management Plant (CEMP)
- Geographic Information Systems (GIS) mapping
- City Facility Planning

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

Plan Maintenance for City of Ferndale

The City of Ferndale will continue to engage with the public to update and improve their Natural Hazard Mitigation Plan. The City has organized a volunteer citizen group, the Ferndale Emergency Response Network (FERN) that meets on a regular basis to receive training and provide feedback on our emergency hazard response.

The City also engages with the public through social media network where one in every four Ferndale residents is following the City's updates. The City regularly distributes emergency preparedness information through these channels and have been recognized by neighboring jurisdictions as a model for the distribution of electronic information in real time.

The feedback the City receives through its volunteer groups and engagement on social media will be used to update and maintain the Natural Hazard Mitigation Plan.



Public Outreach and Education

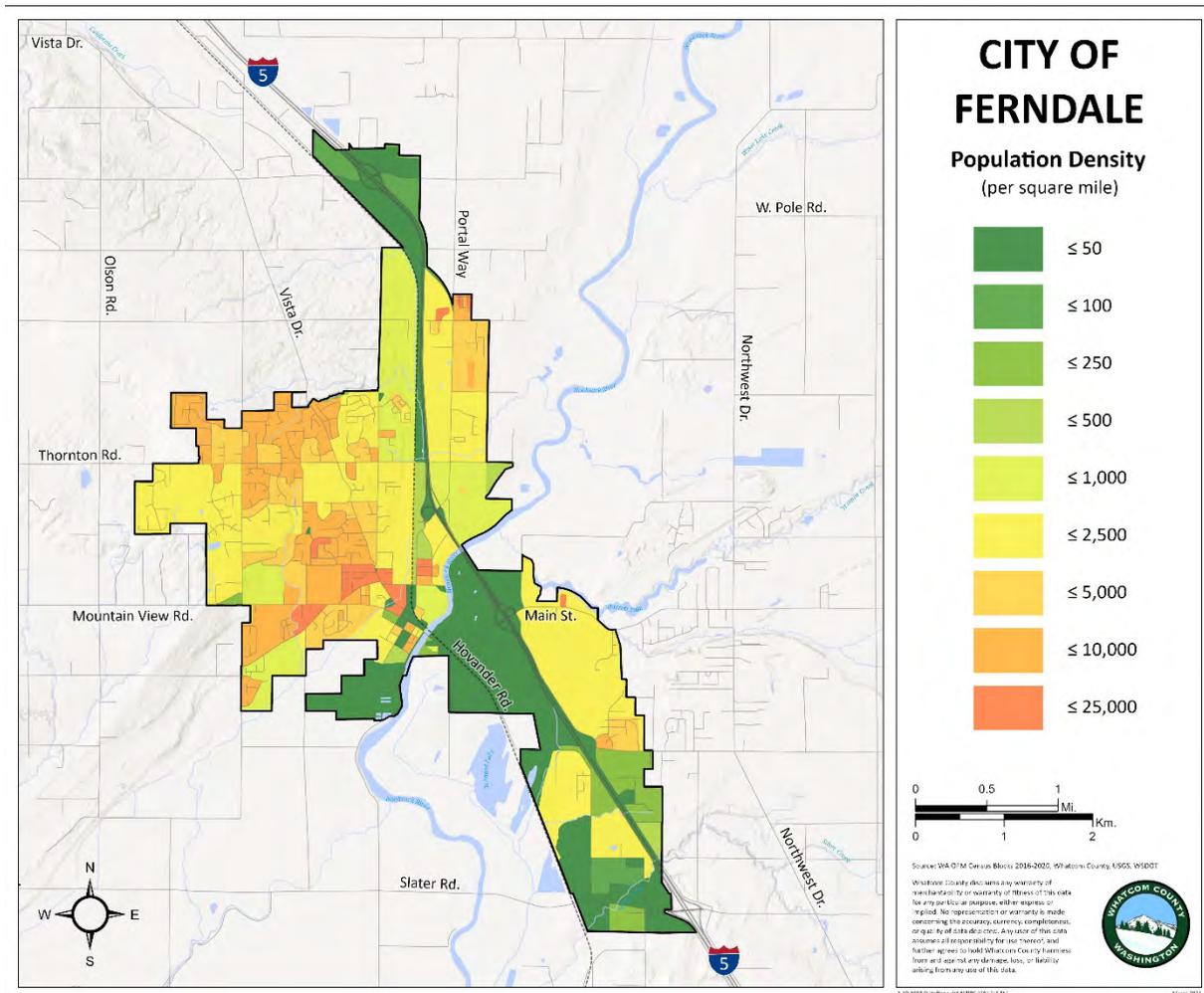
Program	Yes/No, Year Adopted	Description
Nonprofit organizations or local residents groups focused on hazard mitigation, emergency preparedness, vulnerable populations, etc.	Yes	FERN (Ferndale Emergency Response Network) is a group of community members focused on community emergency response and training.
Ongoing public education or information programs	Yes	Educate property owners about flood mitigation techniques. The City produces educational videos on a regular basis and distributes them online via social media and the City’s website.
School-related programs for natural hazard safety		
Public education or information program	Yes	The City provides seasonal videos, utility bill inserts, and social media campaigns associated with natural hazards such as flood, snow, etc.
StormReady certification	No	
Firewise Community certification	No	
Public-Private Partnership initiatives addressing disaster-related issues	No	
Other		



Overview of Ferndale, Hazards, and Assets

Geography of the City of Ferndale

Ferndale Population	14,600 (2020 estimate)
Total area	7.1 sq. mi. (within city limits)

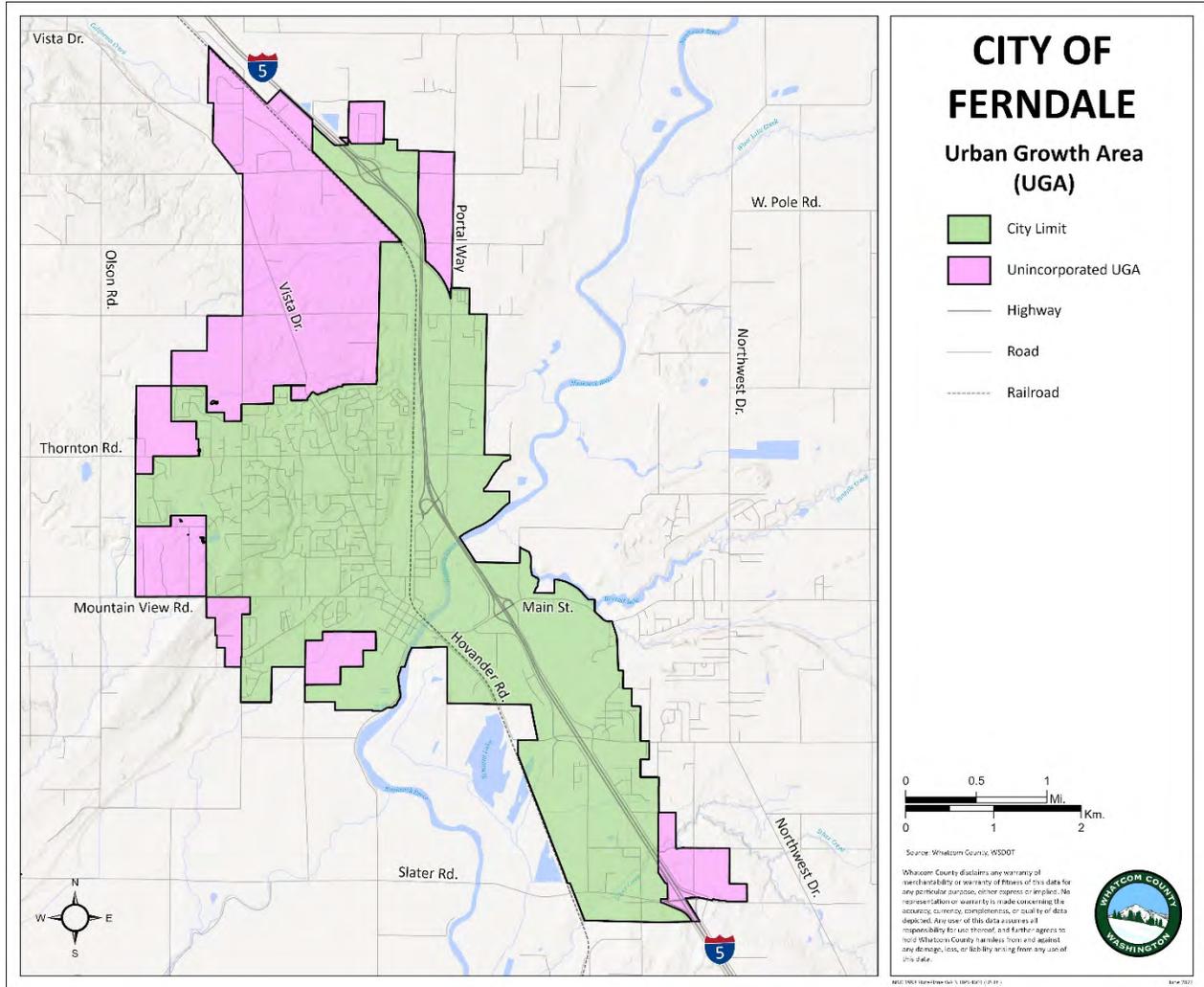


Washington State Office of Financial Management (OFM) 2020 population and housing estimates for 2010-2020 census block data. This map uses the 2016-2020 average population to show population density per square mile.



Growth Trends

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





Presence of Hazards and their Impacts in the City of Ferndale

The City of Ferndale continues to grow at a rapid rate, gaining nearly 2,000 residents in the last five years. While much of this growth continues to follow historic trends of single-family residential development in the northwestern portion of the City, significant increases in both single family and multifamily construction along Portal Way, LaBounty Drive, and surrounding the Downtown core have also contributed to this growth.

From a hazards planning perspective, this increased density makes some hazard mitigation easier, as emergency services have easier access to larger populations, and multifamily development near the city core means that City services are accessible by foot or mass transit in the event of a large-scale weather event.

As the community moves forward, the Hazard Mitigation plan will be considered in land use decisions to better-ensure that the City's population is adequately protected from, and has the means to escape, natural hazards.

In the table below is a list of the major hazards that affect Whatcom County. The second column provides the percentage of Ferndale'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.

Exhibit A



	Hazard	% area Exposed	Severity of Anticipated Impacts	Hazard Descriptions
Geological	Earthquake	100%	Moderate	The majority of the City of Ferndale is expected to experience strong shaking intensity during an earthquake. Properties within the historic stream channel of the Nooksack River may experience additional damage due to the nature of soils in the area (see liquefaction, below), and there is the potential that hillside properties may experience localized landslides due to topography and high clay content in soils. However, the relatively low profile of existing buildings in these areas, combined with higher earthquake protection standards for new, taller buildings, is expected to limit overall damage as compared to high density areas with a significant stock of tall, older (brick and masonry) structures.
	Liquefaction	99.3%	Moderate	The Nooksack River valley (the historic stream channel of the Nooksack River) includes deposits of soils that are considered seismically sensitive and are conducive to liquefaction in a significant seismic event. While liquefaction may be mitigated through various design approaches, the brick and masonry construction of the City’s downtown makes these structures more-susceptible to liquefaction, as compared to wood-frame construction or deep-foundation/pier foundation construction, which provides additional flexibility during a seismic event, and/or is anchored to deeper, stable soils and rock. The low-profile construction of the City’s downtown significantly (but does not totally) mitigates the overall risk of liquefaction, though individual structures may be highly susceptible.
	Landslide	0.08%	Low	Localized landslides are possible during significant rain events and seismic activity, but will generally be limited to portions of individual properties adjacent to steep slopes.



	Volcano	27.5%	High	Low-lying areas adjacent to the Nooksack River are at risk from a Mount Baker lahar. While such an event is expected to be exceedingly rare, it also has the potential to be extraordinarily impactful on a regional level. Direct impacts to the City of Ferndale will likely occur at or around the Nooksack River as a result of a lahar. However, additional impacts to transportation networks, emergency services, weather, climate, and tourism may all have an impact on Ferndale and surrounding areas.
	Tsunami	13.6%	Low	The southern portion of Ferndale, outside the city limits, is subject to tsunami risk. Tsunamis in this region are exceedingly rare but could be extraordinarily damaging. A major tsunami may impact low-lying areas to the south and west of Ferndale and may disrupt transportation networks. Further, the City may be asked to provide temporary shelter for displaced persons from affected areas.
	Mine Hazards	0%	None	There are no historic mine locations within the City limits.
Hydro-logical	Flooding	19.9%	High	Portions of the City are subject to Nooksack River floods, causing temporary and limited disruptions on an annual or near-annual basis. Moderate flood events causing limited but not necessarily repetitive private property damage have occurred approximately four times from 1990-2021, and have the potential to occur multiple times in one flood season. More-significant (modeled 50-year or higher) flood events will cause major transportation disruptions and moderate damage to private property. 100-year or higher flood events have the potential to cause major transportation disruptions and potential damage to

Exhibit A



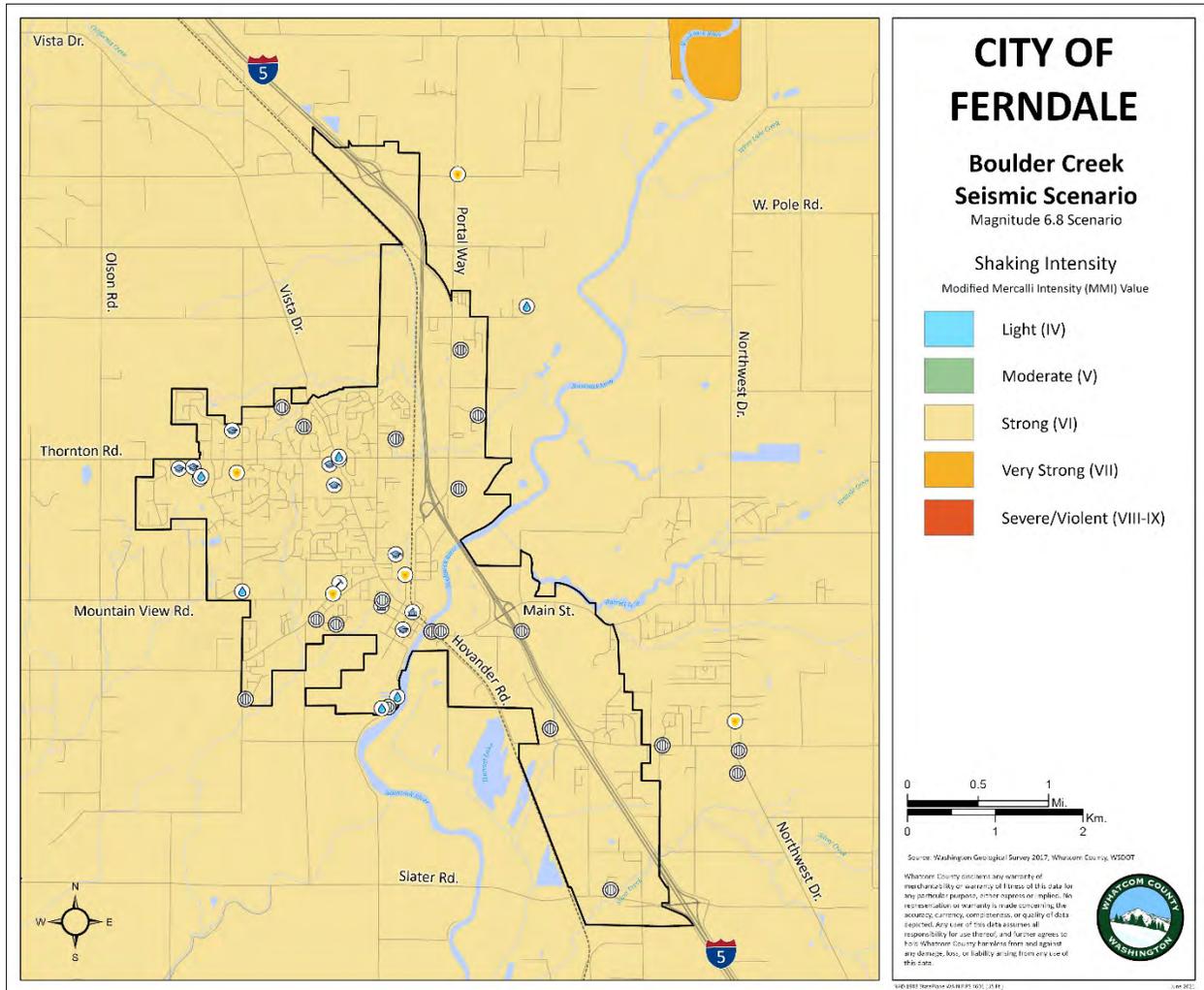
				<p>transportation corridors, as well as widespread damage within the modeled floodplain, generally impacting the Main Street corridor, Downtown Ferndale, the southern portion of the Griffintown Neighborhood, Smith Road, and other localized areas. The near-annual closer of Slater Road for flood-related reasons has a significant impact on Ferndale traffic as well as the mainline of Interstate Five, though these detours are usually temporary in nature.</p> <p>Coastal flooding or storm surges will not impact the City of Ferndale, although displaced persons from these events may choose to shelter in Ferndale.</p>
Meteoro logical	Wildfire	63.1%	Low	<p>Residential homes are at moderate risk of wildfires.</p>

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

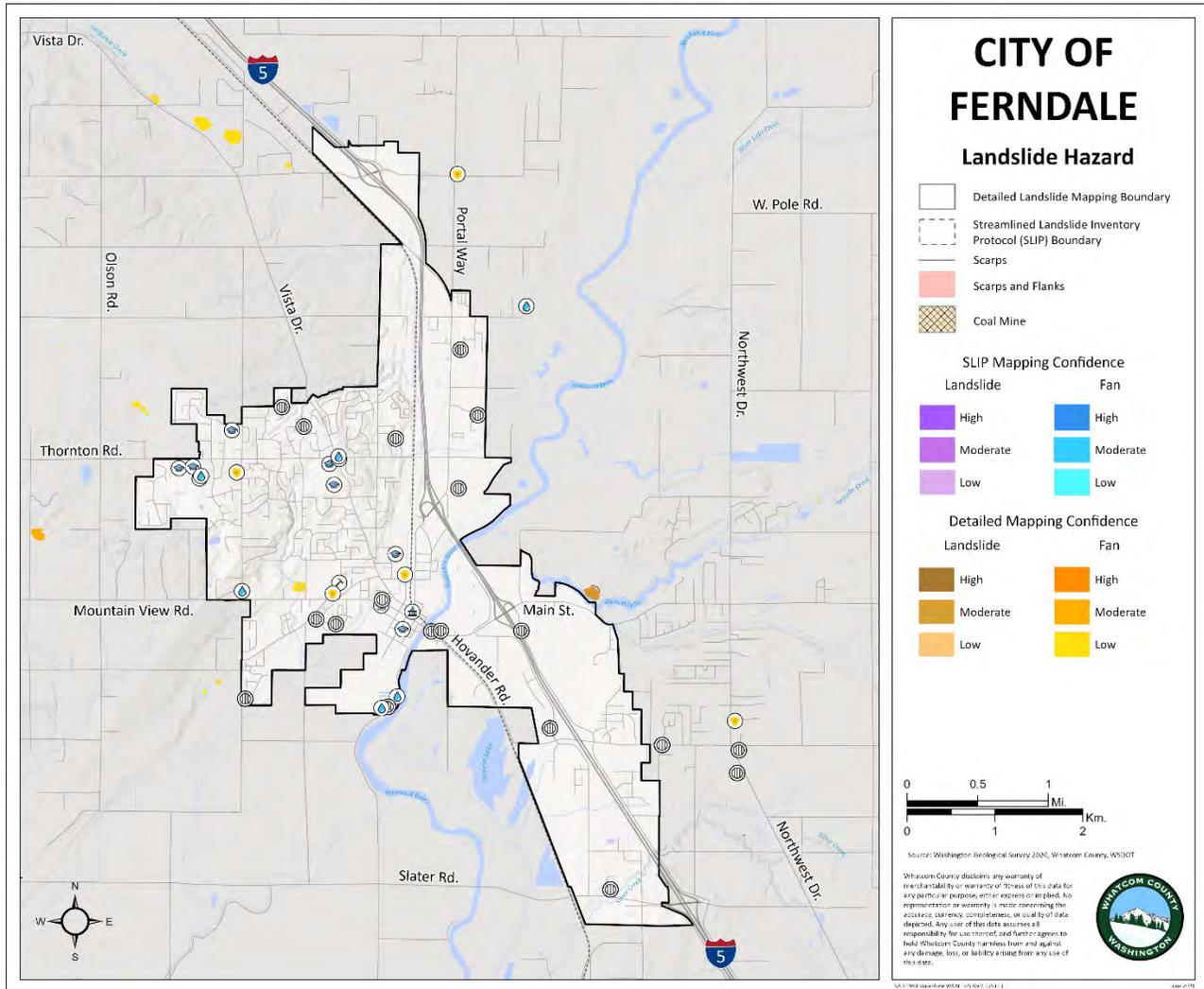


Natural Hazard Maps

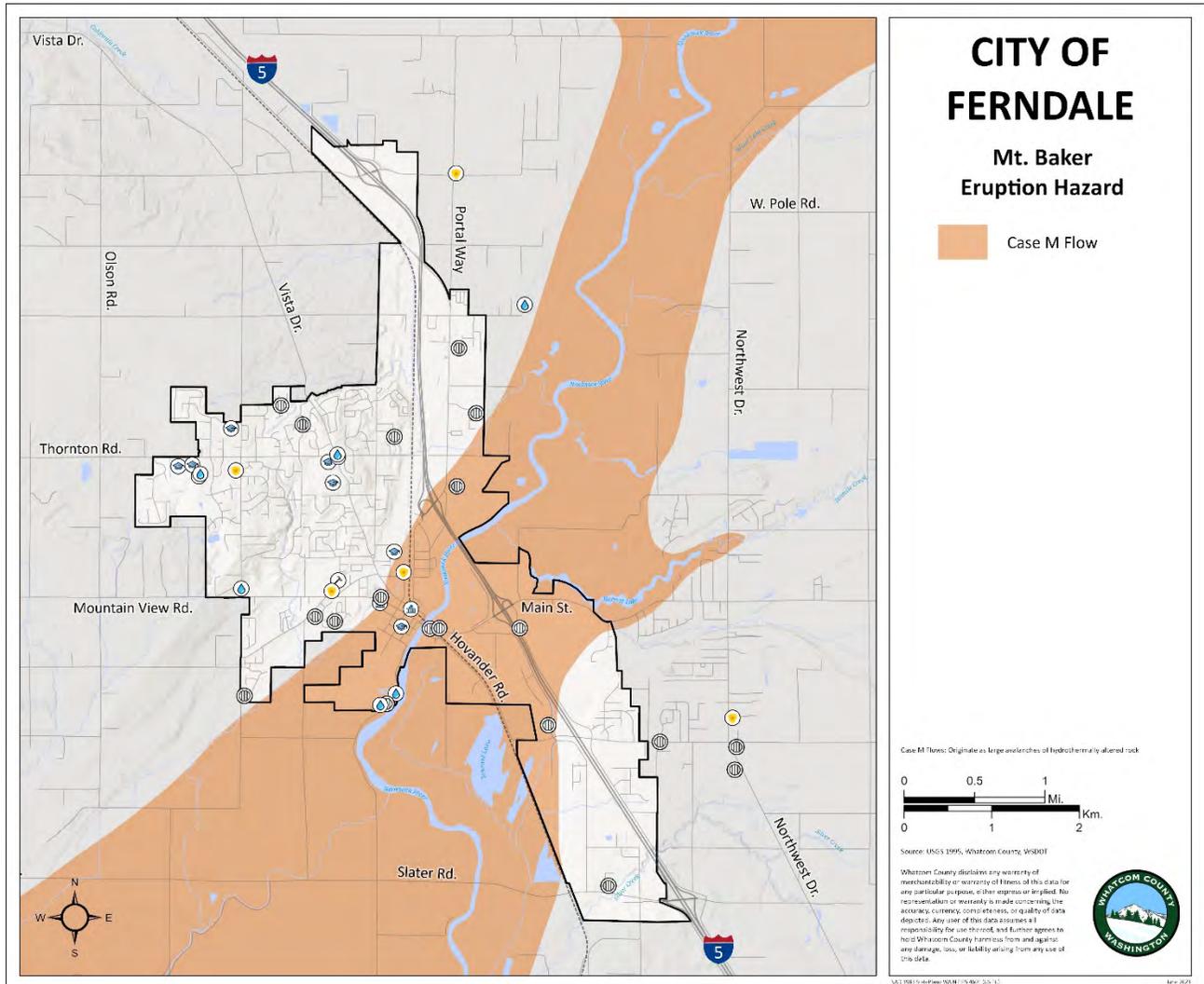
The following figures depict the natural hazards present within the jurisdiction.



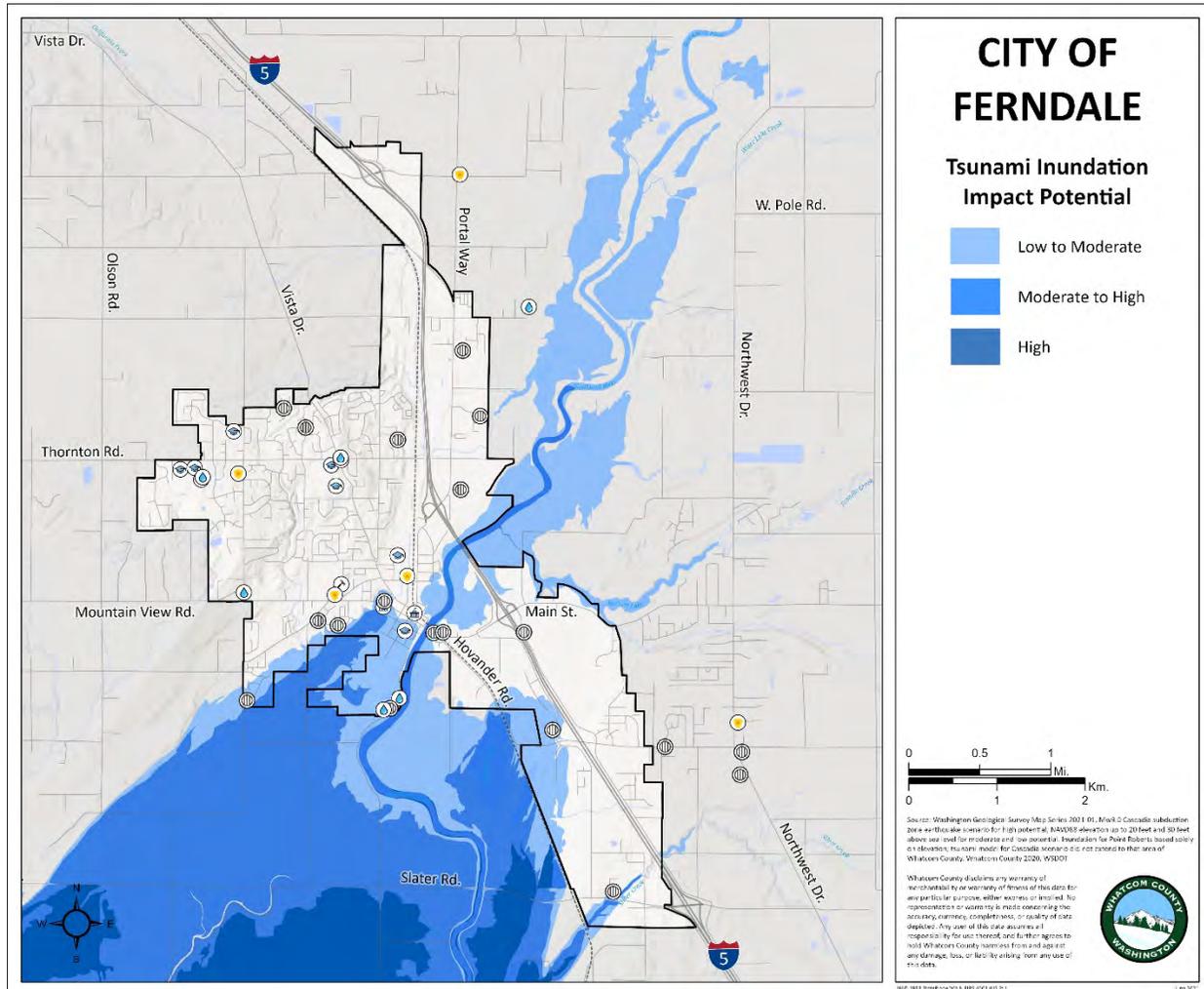
Washington Department of Natural Resources (WA DNR) 2017 Boulder Creek Fault Zone seismic scenario of magnitude 6.8 data. Displays extent and severity of the modeled earthquake in the Modified Mercalli Intensity (MMI) scale.



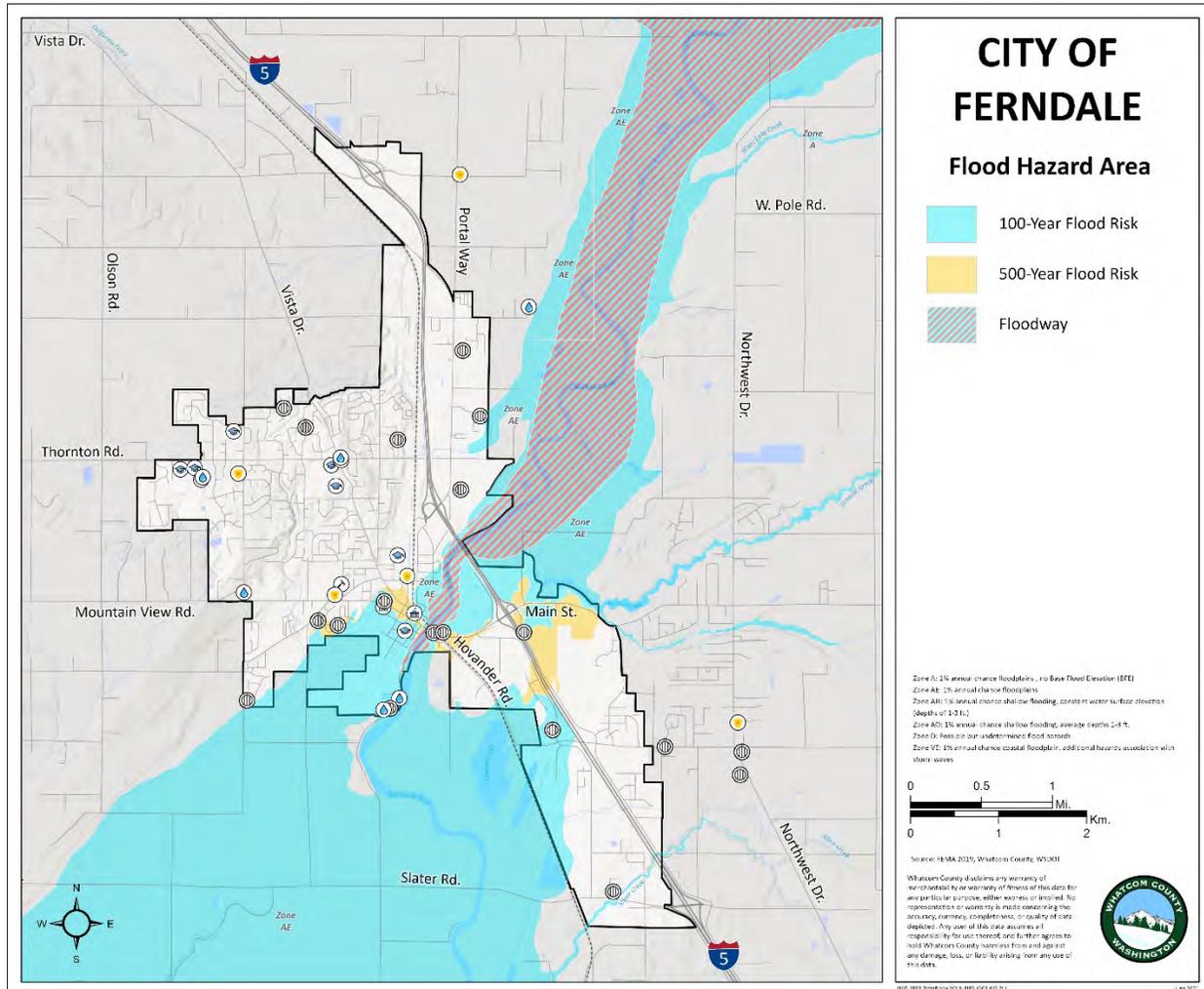
Washington Geological Survey (WGS) 2020 Washington landslide inventory data compiled following streamline landslide mapping protocol (SLIP). SLIP was developed by the WGS's Landslide Hazards Program to help geologists rapidly map landslide landforms from lidar. This data shows both detailed mapping and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



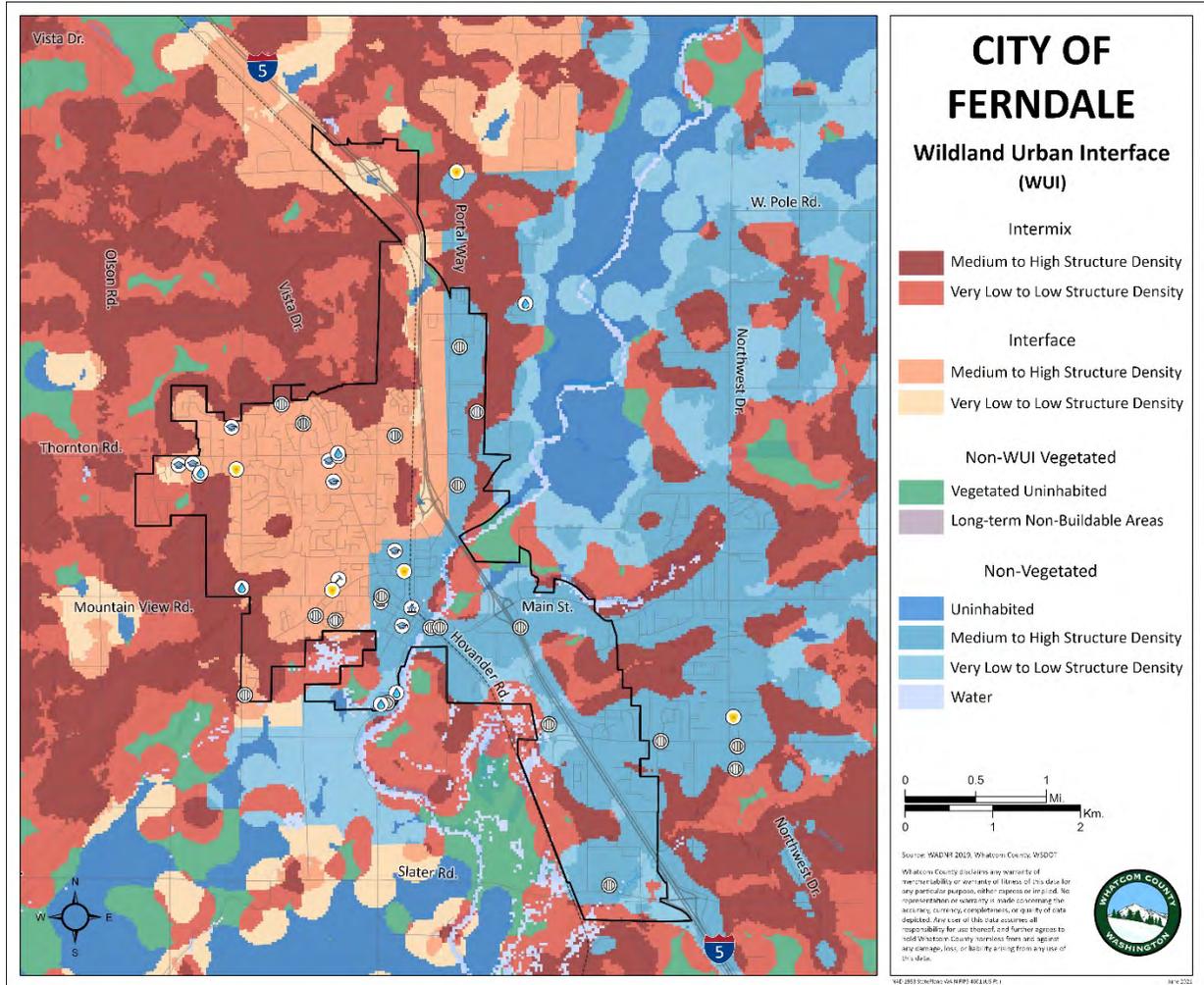
USGS Hazards from Future Activity of Mount Baker, WA (1995) data shows different volcanic flows. Case M flows originate as large avalanches of hydrothermally altered rock. Case 1 debris flows are non-cohesive flows related to melting of snow and ice, with a recurrence of 500 years. Case 2 debris flows are cohesive flows from small debris avalanches, with a recurrence of 100 years.



Map of Ferndale 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.



The City of Ferndale’s Critical Facility List

Facility Name	Facility Type	Significance	Location	Assessed Dollar Value	Notes
Phillips 66 Refinery	HPL	3	3901 Unick Road		The Phillips 66 Refinery is located to the west of the City of Ferndale and is one of the major west coast refineries, producing gasoline and diesel fuels for distribution across the Pacific Northwest and beyond. The facility is also one of the major sources of employment in Northwest Washington. Damage or destruction of the facility has the potential for impacts to the environment, the local economy, and the regional economy, should the production of fuel be interrupted or significantly reduced for an extended period of time. The machinery and equipment is considered of very high dollar value.
Ferndale City Hall	EF	2	2095 Main Street		With the exception of police and Municipal Court services, City Hall is the location for the operational control of all other City functions for the City of Ferndale, including undigitized current records storage. With sufficient advance notice, all or most City Hall functions may be performed remotely for an extended period of time.
Ferndale City Shop	LUS	3	5735 Legoe Avenue		Acts as the location for City maintenance crews, maintenance fleet, and maintenance supplies. The maintenance fleet and equipment itself are considered high value. Damage or destruction of the

Exhibit A



					facility and the fleet would significantly limit the City’s ability to respond to infrastructure maintenance, including repairs caused by natural disasters.
City Hall Annex	EF	2	5694 Second Avenue		The City Hall Annex/ Ferndale Municipal Court/ City Council Chambers serves as the location for a variety of City and community functions. The space acts as the location for the Ferndale Municipal Court and jury trials, is utilized by the City Council and other boards and commissions for meetings and hearings, and provides space for the Community Service Cooperative. The Annex is also used for long-term storage of City records.
Ferndale Police Station	EF	3	2220 Main Street		The Ferndale Police Station is the location for the City’s law enforcement services, including police vehicles, records storage, municipal court offices and storage, and the City’s Emergency Operations Center. The police department fleet is considered to be of high value. Damage or destruction to the facility, particularly the EOC, would limit the City’s ability to operate an EOC.
PUD #1 Water Plant #2	LUS	3	1705 Trigg Road		Between its two water plants, the Public Utilities District provides industrial grade (non-potable) water to the Cherry Point Industrial Area as well as irrigation water to approximately 50 customers. The PUD also provides potable water and fire protection to large light-industrial users at

Exhibit A



					<p>Grandview Road and Interstate Five. In total the PUD treats and delivers approximately 5.4 billion gallons of water per year. Disruption to the PUD’s treatment facilities as the result of a natural disaster would have a direct and immediate impact on its customers, with the most significant impact occurring at Cherry Point. Additionally, disruption to the PUD’s conveyance system as a result of a major disaster could have a similar impact.</p>
PUD #2 Water Plant #1	LUS	3	5431 Ferndale Road		<p>Between its two water plants, the Public Utilities District provides industrial grade (non-potable) water to the Cherry Point Industrial Area as well as irrigation water to approximately 50 customers. The PUD also provides potable water and fire protection to large light-industrial users at Grandview Road and Interstate Five. In total the PUD treats and delivers approximately 5.4 billion gallons of water per year. Disruption to the PUD’s treatment facilities as the result of a natural disaster would have a direct and immediate impact on its customers, with the most significant impact occurring at Cherry Point. Additionally, disruption to the PUD’s conveyance system as a result of a major disaster could have a similar impact.</p>
Ferndale High School	EF	2	5830 Golden Eagle Drive		<p>Largest school in Whatcom County</p>



			PO Box 428 Ferndale WA 98248		Grades 9-12
Horizon Middle School	EF	2	2671 Thornton Road PO Box 1769 Ferndale WA 98248		Grades 6-8
Vista Middle School	EF	2	6051 Vista Drive PO Box 1328 Ferndale WA 98248		Grades 6-8
Beach Elementary School	EF	2	3786 Centerview Road, Lummi Island, WA 98262		Outside of Ferndale’s city limits.
Cascadia Elementary School	EF	2	6175 Church Road PO Box 2009 Ferndale WA 98248		
Central Elementary School	EF	2	5610 Second Avenue PO Box 187 Ferndale WA 98248		Within the 100-year floodplain.
Custer Elementary School	EF	2	7660 Custer School Road Custer WA 98240		Outside of Ferndale’s city limits.
North Bellingham Elementary	EF	2	5275 Northwest Dr, Bellingham, WA 98226		Outside of Ferndale’s city limits.
Eagleridge Elementary School	EF	2	2651 Thornton Road PO Box 1127 Ferndale WA 98248		
Skyline Elementary School	EF	2	2225 Thornton Road PO Box 905 Ferndale WA 98248		
Sewer Pump Station #21	LUS	2	(Ariel Court)		The pump station facilitates the conveyance of wastewater (sewer) from low lying areas in the southwestern portion of the City to the City’s wastewater treatment plant



					on Ferndale Road.
Sewer Pump Station #10	LUS	2	NW Corner of Aquarius & Apollo Drive		The pump station facilitates the conveyance of wastewater (sewer) from residential neighborhoods west of the hillside summit in north-central Ferndale to the City's wastewater treatment plant on Ferndale Road.
Sewer Pump Station #11	LUS	2	6156 Unrein Drive		The pump station facilitates the conveyance of wastewater (sewer) from low lying residential and commercial/industrial areas north of Thornton Street to the City's wastewater treatment plant on Ferndale Road.
Sewer Pump Station #12	LUS	2	5217 Northwest Drive		The pump station facilitates the conveyance of wastewater (sewer) from unincorporated areas east of the City limits to the City's wastewater treatment plant on Ferndale Road. The City's extension of utilities to this area serves public (Whatcom County) uses and is not intended for the use of additional private customers, consistent with the Growth Management Act (GMA).
Sewer Pump Station #15	LUS	2	Smith Road & Bellaire		The pump station facilitates the conveyance of wastewater (sewer) from unincorporated areas east of the City limits to the City's wastewater treatment plant on Ferndale Road. The City's extension of utilities to this area serves public (Whatcom County) uses and is not intended for the use of additional private customers, consistent with the Growth Management Act (GMA).



Sewer Pump Station #16	LUS	2	6006 Portal Way	The pump station facilitates the conveyance of wastewater (sewer) from areas east of Portal Way that are below the elevation of the sewer mainline within Portal Way.
Sewer Pump Station #17	LUS	2	1350 Slater Road	The pump station facilitates the conveyance of wastewater (sewer) from commercial and industrial properties on Slater Road.
Sewer Pump Station #18	LUS	2	Nicholas Drive	The pump station facilitates the conveyance of wastewater (sewer) from residential properties in low-lying areas north of Thornton Street.
Sewer Pump Station #2	LUS	3	N. of 1951 Main Street & Nooksack River	The pump station facilitates the conveyance of wastewater (sewer) from Main Street properties east of the Nooksack River. In a flood event, Pump Station #2 also serves to pump water from the immediate vicinity for the purpose of preserving Main Street as a navigable roadway during a flood event.
Sewer Pump Station #3	LUS	2	N. of 5610 Barrett Road	The pump station facilitates the conveyance of wastewater (sewer) from commercial and industrial properties along Barrett Road.
Sewer Pump Station #4	LUS	2	5345 LaBounty Drive	The pump station facilitates the conveyance of wastewater (sewer) from commercial and industrial properties on LaBounty Drive.
Sewer Pump Station #5	LUS	2	5280 Northwest Road	The pump station facilitates the conveyance of wastewater (sewer) from unincorporated areas east of the City limits to the City's wastewater treatment plant on Ferndale Road. The City's extension of utilities to this area serves public (Whatcom County) uses

Exhibit A



					and is not intended for the use of additional private customers, consistent with the Growth Management Act (GMA).
Sewer Pump Station #6	LUS	2	5336 Poplar Drive		The pump station facilitates the conveyance of wastewater (sewer) from low-lying residential properties in a residential neighborhood.
Sewer Pump Station #7	LUS	2	2090 Main Street		The pump station facilitates the conveyance of wastewater (sewer) from low-lying commercial properties on Main Street.
Storm Sewer Pump Station #8	LUS	2	1920 Main Street		The pump station facilitates the conveyance of wastewater (sewer) from commercial and industrial properties on LaBounty Drive.
Sewer Pump Station #20	LUS	2	1820-1821 McKinley Court		The pump station facilitates the conveyance of wastewater (sewer) from residential properties east of Portal Way
Sewer Pump Station # 9	LUS	2	6400 Portal Way		The pump station facilitates the conveyance of wastewater (sewer) from residential and commercial properties east of Portal Way
Tenaska Cogeneration Plant	LUS	2	5105 Lake Terrell Road		The facility, located adjacent to the Phillips 66 Refinery, utilizes natural gas-power turbines as well as a steam-driven turbine generating power from the steam exhaust resulting from the gas-powered turbines. The resulting power is then distributed through Puget Sound Energy’s distribution system.
Petro Gas	LUS	2	4100 Unick Road		The Ferndale Terminal including a deep water dock serves as a storage and distribution facility for bulk shipments of LPG by railcar,

Exhibit A



					tank truck, pipeline, and ship.
Waste Water Treatment Plant	LUS	3	5389 Ferndale Road		The City’s wastewater (sewer) treatment plant is located west of the Nooksack River and was significantly expanded 2020-2022. The treatment plant serves all City utility customers and has the capacity to serve planned growth within the twenty-year period. The plant is located adjacent to the Nooksack River, and treated wastewater is discharged to the river. The plant is within the 100-year floodplain of the Nooksack River and is susceptible to flood events. The redesign and expansion of the plant has raised the interior of structures above the Base Flood Elevation, but settling ponds and other equipment remain below the Base Flood Elevation. This means that the plant is susceptible to flood damage and that there is the potential for impacts to the environment as a result of flooding, and an interruption of service. For these reasons, the City’s wastewater and water treatment plants are considered the highest priority for City facilities, especially in response to hazards originating from the Nooksack River.
City’s Water Treatment Plant	LUS	3	5389 Ferndale Road		The City’s Water Treatment Plant is located adjacent/on the same property as the aforementioned Waste Water Treatment Plant.
Water Pump Station #1	LUS	2	2195 Thornton Street		The pump station facilitates the conveyance of wastewater (sewer) from residential and

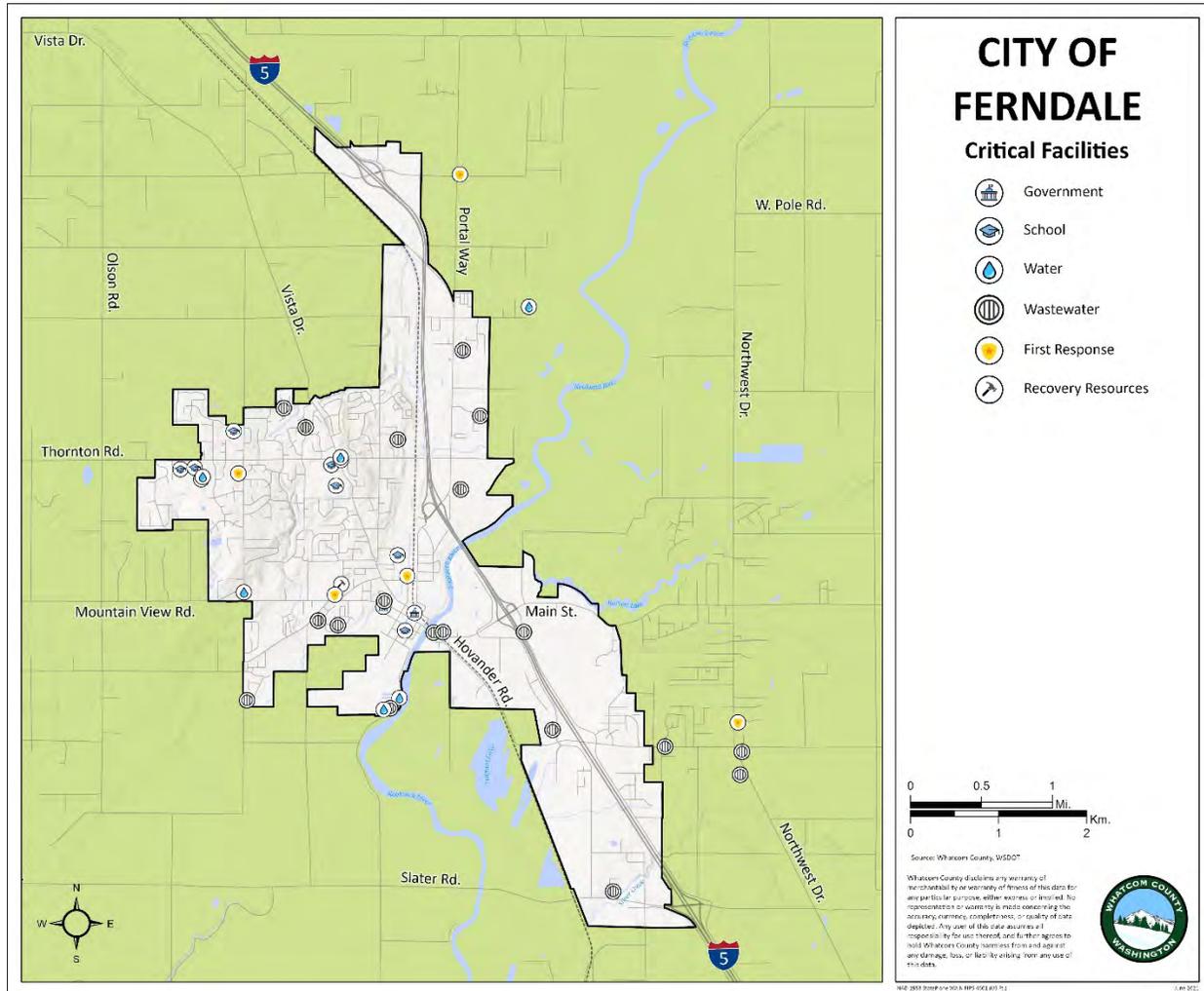
Exhibit A



					school district properties in the vicinity of Thornton Street and Vista Drive
Water Pump Station #2	LUS	2	2601 Thornton Street		The pump station facilitates the conveyance of wastewater (sewer) from residential properties in the vicinity of Church Street and Thornton Street
Water Pump Station #3	LUS	2	5727 Church Street		The pump station facilitates the conveyance of wastewater (sewer) from residential and school district properties in the vicinity of Church Street
Water Tank #1	LUS	2	Vista Drive & Thornton Street		Water Tank 1 provides potable water to the surrounding community at a strategic location owned by the City, utilizing gravity to feed nearby water consumers.
Water Tank #2	LUS	2	2601 Thornton Street		Water Tank 2 provides potable water to the surrounding community at a strategic location owned by the City, utilizing gravity to feed nearby water consumers.
WCFD 7 St. 1 Ferndale	EF	3	2020 Washington Street		
WCFD7 St. 2 Whitehorn	EF	3	4047 Brown Road		
WCFD7 St. 3 N. Bellingham	EF	3	5368 Northwest Road		
WCFD7 St. 4 Kohen Road	EF	3	5491 Grandview Road		
WCFD7 St. 5 Enterprise	EF	3	1886 Grandview Road		
WCFD7 St. 6 Church Road	EF	3	6081 Church Road		

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 Ferndale. 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 jurisdictions identified or included critical facilities in each category.



Critical Facility Rankings for the City of Ferndale

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.

$$\text{Rank} = \text{Significance} * \left[\frac{\text{EQ_Zone}}{\text{EQ_Freq}} + \frac{\text{LQ_Zone}}{\text{LQ_Freq}} + \frac{\text{LS_Zone}}{\text{LS_Freq}} + \dots + \frac{\text{WF_Zone}}{\text{WF_Freq}} \right]$$

Ranking value will be from 0.0 to 1.0, scaled to the highest ranking in jurisdiction.

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	Significance	EQ	LQ	LS	TSU	VOL	FL	COA	WF	Rank Assessment
Phillips 66 Refinery	HPL	3	1	1	0	0	0	0	0	1	0.39
Ferndale City Hall	EF	2	1	1	0	1	0	1	0	0	0.41
Ferndale City Shop	LUS	3	1	1	0	0	0	0	0	1	0.39
City Hall Annex	EF	2	1	1	0	0	0	0	0	0	0.17
Ferndale Police Station	EF	3	1	1	0	0	0	0	0	1	0.39
PUD #1 Water Plant #2	LUS	3	1	1	0	0	0	0	0	0	0.26
PUD #2 Water Plant #1	LUS	3	1	1	0	1	1	1	0	0	0.86
Ferndale High School	EF	2	1	1	0	0	0	0	0	0	0.17
Horizon Middle School	EF	2	1	1	0	0	0	0	0	1	0.26
Vista Middle School	EF	2	1	1	0	0	0	0	0	1	0.26
Beach Elementary School	EF	2	1	1	0	0	0	0	0	1	0.26
Cascadia Elementary School	EF	2	1	1	0	0	0	0	0	1	0.26
Central Elementary School	EF	2	1	1	0	1	1	1	0	0	0.58
Custer Elementary School	EF	2	1	1	0	0	0	0	0	1	0.26
North Bellingham Elementary	EF	2	1	1	0	0	0	0	0	0	0.17
Eagleridge Elementary School	EF	2	1	1	0	0	0	0	0	1	0.26
Skyline Elementary School	EF	2	1	1	0	0	0	0	0	1	0.26
Sewer Pump Station #21	LUS	2	1	1	0	0	0	0	0	1	0.26



Sewer Pump Station #10	LUS	2	1	1	0	0	0	0	0	1	0.26
Sewer Pump Station #11	LUS	2	1	1	0	0	0	0	0	1	0.26
Sewer Pump Station #12	LUS	2	1	1	0	0	0	0	0	0	0.17
Sewer Pump Station #15	LUS	2	1	1	0	0	0	0	0	0	0.17
Sewer Pump Station #16	LUS	2	1	1	0	0	1	0	0	0	0.35
Sewer Pump Station #17	LUS	2	1	1	0	1	0	0	0	0	0.35
Sewer Pump Station #18	LUS	2	1	1	0	0	0	0	0	1	0.26
Sewer Pump Station #2	LUS	3	1	1	0	1	1	1	0	1	1
Sewer Pump Station #3	LUS	2	1	1	0	1	1	1	0	1	0.66
Sewer Pump Station #4	LUS	2	1	1	0	1	1	1	0	0	0.58
Sewer Pump Station #5	LUS	2	1	1	0	0	0	0	0	0	0.17
Sewer Pump Station #6	LUS	2	1	1	0	1	0	1	0	1	0.49
Sewer Pump Station #7	LUS	2	1	1	0	1	0	1	0	0	0.41
Storm Sewer Pump Station #8	LUS	2	1	1	0	1	1	1	0	0	0.58
Sewer Pump Station #20	LUS	2	1	1	0	1	0	0	0	1	0.43
Sewer Pump Station #9	LUS	2	1	1	0	0	0	0	0	0	0.17
Tenaska Cogeneration Plant	LUS	2	1	1	0	0	0	0	0	1	0.26
Petro Gas	LUS	2	1	1	0	0	0	0	0	1	0.26
Waste Water Treatment Plant	LUS	3	1	1	0	1	1	1	0	0	0.87
Water Pump Station #1	LUS	2	1	1	0	0	0	0	0	1	0.26
Water Pump Station #2	LUS	2	1	1	0	0	0	0	0	0	0.17



Water Pump Station #3	LUS	2	1	1	0	0	0	0	0	0	0.17
Water Tank #1	LUS	2	1	1	0	0	0	0	0	1	0.26
Water Tank #2	LUS	2	1	1	0	0	0	0	0	0	0.17
WCFD7 St. 1 Ferndale	EF	3	1	1	0	0	1	0	0	0	0.52
WCFD7 St. 2 Whitehorn	EF	3	1	1	0	0	0	0	0	1	0.39
WCFD7 St. 3 N. Bellingham	EF	3	1	1	0	0	0	0	0	0	0.26
WCFD7 St. 4 Kohen Road	EF	3	1	1	0	0	0	0	0	1	0.39
WCFD7 St. 5 Enterprise	EF	3	1	1	0	0	0	0	0	1	0.39
WCFD7 St. 6 Church Road	EF	3	1	1	0	0	0	0	0	1	0.39

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 Ferndale Exposure to Natural Hazards					
Hazard Susceptibility	Asset County (% of Total)				Critical Facilities Appraised Value (Million)
	Area (sq.mi.)	Population	Parcels	Critical Facilities	
Geological Hazards					
<i>MMI V</i>	-	-	-	12.2%	\$455
<i>MMI VI</i>	100%	100%	100%	87.8%	\$131
<i>MMI VII</i>	-	-	-	-	-
<i>MMI VIII - IX</i>	-	-	-	-	-
TOTAL	100%	100%	100%	100%	\$586
Very Low to Low					
<i>Very Low to Low</i>	46.4%	40.3%	38.5%	46.9%	\$478
Low to Moderate					
<i>Low to Moderate</i>	35.8%	53.5%	54.1%	34.7%	\$73
Moderate					
<i>Moderate</i>	-	-	-	-	-
Moderate to High					
<i>Moderate to High</i>	17.1%	6.2%	7.4%	18.4%	\$35
High					
<i>High</i>	-	-	-	-	-
TOTAL	99.3%	100%	100%	100%	\$586
Landslide Low					
<i>Landslide Low</i>	-	-	-	-	-
Landslide Moderate					
<i>Landslide Moderate</i>	-	-	-	-	-
Landslide High					
<i>Landslide High</i>	-	-	-	-	-



	<i>Fan Low</i>	0.08%	0.3%	0.02%	-	-	
	<i>Fan Moderate</i>		-	-	-	-	
	<i>Fan High</i>	-	-	-	-	-	
	<i>Mine Hazard</i>	-	-	-	-	-	
	TOTAL	0.08%	0.3%	0.02%	-	-	
	<i>Case 1 Debris Flows</i>	-	-	-	-	-	
	<i>Case 2 Debris Flows</i>	-	-	-	-	-	
	<i>Case M Flows</i>	27.5%	11.6%	11.4%	22.4%	\$35	
	<i>Pyroclastic Flows, Lava Flows, and Ballistic Debris</i>	-	-	-	-	-	
TOTAL	27.5%	11.6%	11.4%	22.4%	\$35		
	<i>Low to Moderate Inundation Potential</i>	11.6%	5.9%	5.6%	14.3%	\$22	
	<i>Moderate to High Inundation Potential</i>	2.1%	4.5%	0.3%	-	-	
	<i>High Inundation Potential</i>	-	-	-	-	-	
	TOTAL	13.7%	10.4%	5.9%	14.3%	\$22	
Hydrological Hazards							
	<i>100-year Flood</i>	13.6%	5.1%	6.3%	16.4%	\$35	
	<i>500-year Flood</i>	4%	3.4%	3.7%	8.2%	\$0.4	
	<i>Floodway</i>	2.3%	0.6%	0.2%	-	-	
	<i>Undetermined (Zone D)</i>	-	-	-	-	-	



	TOTAL	19.9%	9.1%	10.2%	24.5%	\$35.4
Meteoro-logical	Wildfire Zones					
	<i>Interface Very Low-Low Structure Density</i>	2.9%	0.6%	0.8%	4.1%	\$2
	<i>Interface Medium-High Structure Density</i>	32.1%	59.6%	54.1%	46.9%	\$530
	<i>Intermix Very Low-Low Structure Density</i>	11.5%	0.4%	3.3%	-	-
	<i>Intermix Medium-High Structure Density</i>	16.6%	1.8%	16.2%	6.1%	\$0.6
	TOTAL	63.1%	62.4%	74.4%	57.1%	\$532.6



Status of Ferndale’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

Education and Outreach

EO-a. The City strives to continuously improve the safety of its citizens and level of protection for public infrastructure. The City has committed to expand and maintain its first responder capabilities and has sought to upgrade equipment and infrastructure necessary to respond to emergency events. The City has also sought to make use of all available forms of communication in order to distribute information quickly and accurately.

Lead Agency	Ferndale City Council
Funding Source	Local sources, and state and federal grants
Current Status	Ongoing

EO-b. Continue to identify ways the city can improve the protection of public infrastructure. The City has updated and will continue to update its long-range infrastructure plans and considers natural and human-caused impacts to this infrastructure. The City also seeks to identify modifications or improvements to infrastructure that will avoid or mitigate impacts from natural hazards.

Lead Agency	Ferndale City Council
Funding Source	Local sources, and state and federal grants
Current Status	Ongoing

EO-c. Telephone based early warning system. A computerized early warning system that automatically dials each landline telephone number within a specified area, and plays a recorded message when the phone is answered is currently provided to the City by the



Whatcom County Sheriff’s Office, Division of Emergency Management. A larger capacity system that can also contact cell phones through the use of a federally licensed COG would help address a variety of natural and manmade problems.

Lead Agency	City of Ferndale/ Whatcom County Sheriff’s Office Division of Emergency Management
Funding Source	Local sources, and state and federal grants
Current Status	Complete

EO-d. Utility bill inserts. The City routinely includes information in bi-monthly utility bill inserts related to natural hazards and potential avoidance/mitigation measures. The City has also established a quarterly newsletter (established 2020) that is delivered to all utility customers. This newsletter typically includes at least one natural/environmental topic. The City will be transitioning to online utility bill payment 6/1/2021 and expects to be able to utilize this platform for additional communication efforts.

Lead Agency	City of Ferndale Communications Officer
Funding Source	Local
Current Status	Ongoing

EO-e. Adopt and enforce building codes. The City is required to, and does, adopt and enforce the International Building Codes. The City has committed to continue to fully staff these functions.

Lead Agency	Ferndale Community Development and Planning Department
Funding Source	Local
Current Status	Ongoing

Drought/heat wave

D-a. Water Conservation Schedules. During the summer months, the City has a permanent mandatory water conservation schedule. Information relating to water conservation is distributed as part of a coordinated campaign in late spring/early summer each year.

Lead Agency	Ferndale Communications
Funding Source	Local
Current Status	Ongoing

Earthquake

EQ-a. Conduct inspections of building safety.



Lead Agency	Ferndale Community Development and Planning Department
Funding Source	Local
Current Status	Ongoing

Volcano

Vol-a. Lahar warning through IPAWS alerting.

Lead Agency	WCDEM
Funding Source	FEMA
Current Status	Completed

Extreme Temp

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

Flooding

F-a. Extension of Riverside Dike Reinforcement. The City, working with Whatcom County River and Flood, anticipate that a project to modify the existing levee system north of the treatment plant may provide some flooding benefits. This project would not extend as far as what is described here, but would potentially be close.

Lead Agency	Public Works
Funding Source	Local sources, and state and federal grants
Current Status	Ongoing

F-b. Preparedness handbooks, brochures. Distribution of severe weather guides, homeowner’s retrofit guide, etc. The City maintains an inventory of FEMA handbook, brochures, flood-related weather guides, and homeowner’s retrofit guides that are available to the public at no cost. The City also provides links to equivalent materials online. The Ferndale Public Library also maintains a collection of these documents that are available to the public.

Lead Agency	WCDEM
Funding Source	Local sources
Current Status	Ongoing

F-c. Incorporate flood mitigation in local planning. Per City Code (FMC 15.24), any development activity within the 100-year floodplain must seek to mitigate flood impacts.

Lead Agency	Ferndale Community Development, Planning Department, and Public Works
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Funding Source	Local sources
Current Status	Ongoing

F-d. Form partnerships to support floodplain management. The City, working with the Whatcom County Department of River and Flood and other regional partners frequently participates in planning efforts to address potential flood impacts, floodplain modeling, and more. In 2020 the City worked with River and Flood to produce a video documenting flood characteristics in Ferndale.

Lead Agency	Ferndale Community Development, Planning Department, WCDEM, and Public Works
Funding Source	Local sources
Current Status	Ongoing

F-e. Limit or restrict development in floodway areas. Per the City’s Municipal Code a Floodway Zone has been established consistent with FEMA-designated floodways, prohibiting or restricting development within these areas.

Lead Agency	Ferndale Community Development and Planning Department
Funding Source	Local sources
Current Status	Ongoing

F-f. Improve stormwater management planning. The City is required to maintain compliance with stormwater manuals established by the Washington State Department of Ecology. In 2021 the City initiated major updates to its Stormwater Comprehensive Plan. The City has augmented the staffing associated with stormwater and has expanded stormwater education throughout Public Works and Community Development Department staff.

Lead Agency	Ferndale Public Works
Funding Source	Local sources
Current Status	Ongoing

F-g. Adopt policies to reduce stormwater runoff. The City is required to comply with the most recent edition of the Western Washington Stormwater Manual issued by the Washington State Department of Ecology, which seeks to reduce stormwater runoff.

Lead Agency	Ferndale Public Works
Funding Source	Local sources
Current Status	Ongoing



F-h. Improve flood risk assessment. City staff undertake annual floodplain training. In the future the City anticipates enrolling at least one staff member in a comprehensive flood risk assessment course.

Lead Agency	Ferndale Community Development and Planning Department
Funding Source	Local sources
Current Status	Ongoing

F-i. Join or improve compliance with NFIP. Ferndale is compliant with NFIP.

Lead Agency	Ferndale Community Development and Planning Department
Funding Source	Local sources
Current Status	Complete

F-j. Participate in the CRS. The City has maintained participation in CRS since 2016; the City anticipates maintaining this affiliation and to expand its compliance over time.

Lead Agency	Ferndale Community Development and Planning Department
Funding Source	Local sources
Current Status	Ongoing

F-k. Improve stormwater drainage system capacity. Through its update to the Stormwater Comprehensive Plan (initiated 2021), the City anticipates the completion of an analysis of overall stormwater drainage system capacity and projects necessary to achieve this goal. The plan is expected to be completed at the end of 2022.

Lead Agency	Ferndale Public Works
Funding Source	Local sources
Current Status	Ongoing

F-l. Conduct Regular Maintenance for Drainage Systems and Flood Control Structures. The City is obligated to periodically inspect and maintain its various drainage systems and flood control structures, including stormwater and storm drains associated with the City’s transportation network. In addition, the City seeks to ensure that private properties and homeowner’s associations meet their responsibilities for inspection and maintenance of private structures. The City is fully staffed to accomplish these goals.



Lead Agency	Ferndale Public Works
Funding Source	Local sources
Current Status	Ongoing

F-m. Protect infrastructure. The City is obligated to protect and maintain its infrastructure. In addition to these standard responsibilities, the City in 2021 initiated an Asset Management program to better track infrastructure maintenance, including recurring maintenance obligations that could be indicative of broader challenges. This will enable the City to proactively identify additional steps or projects necessary to maintain the system.

Lead Agency	Ferndale Public Works
Funding Source	Local sources
Current Status	Ongoing

F-n. Protect critical facilities. The City continues to evaluate the condition of all of its critical facilities and anticipates constructing new City Hall/ Municipal Court facilities by the end of the decade that will represent an improvement and be better-protected than the current facilities.

Lead Agency	Ferndale Public Works
Funding Source	Local sources
Current Status	Ongoing

F-o. Preserve pre-designated undeveloped floodways as open space.

Lead Agency	Ferndale Community Development and Planning
Funding Source	Local sources
Current Status	Complete

F-p. Increase awareness of flood risk and safety. On at least an annual basis the City distributes information to the community and businesses concerning flood impacts, risks, and mitigation measures.

Lead Agency	Ferndale Community Development, Planning Department, City of Ferndale Communications Officer, and WCDEM
Funding Source	Local sources
Current Status	Ongoing

F-q. Educate property owners about flood mitigation techniques. On at least an annual basis



the City distributes information to the community and businesses concerning flood impacts, risks, and mitigation measures.

Lead Agency	Ferndale Community Development, Ferndale Public Works, City of Ferndale Communications Officer, and WCDEM
Funding Source	Local sources
Current Status	Ongoing

Landslide/erosion

ER-a. Map and assess vulnerability to erosion. The City maintains steep slope and erosion maps on its GIS database, which is available to the public.

Lead Agency	Ferndale Community Development and Planning Department
Funding Source	Local sources
Current Status	Ongoing

ER-b. Manage development in erosion hazard areas. There are no areas of substantial erosion risk in the City that would prevent development from occurring on the property; should there be an erosion hazard risk on the property, the City’s codes require that the applicant seek to avoid the area or to mitigate impacts accordingly.

Lead Agency	Ferndale Community Development and Planning Department
Funding Source	Local sources
Current Status	Ongoing

ER-c. Promote or require site and building design standards to minimize erosion risk. The Ferndale Critical Areas Ordinance includes erosion risks as geologic hazards, which must be avoided. If avoidance is not possible, the code identifies several steps to minimize and mitigate potential impacts.

Lead Agency	Ferndale Community Development and Planning Department
Funding Source	Local sources
Current Status	Ongoing

LS-a. Map and assess vulnerability to landslides. The City of Ferndale’s GIS maps depict steep slopes and areas of landslide risk.



Lead Agency	Ferndale Community Development and Planning Department
Funding Source	Local sources
Current Status	Ongoing

LS-b. Manage development in landslide hazard areas. The Ferndale Critical Areas Ordinance includes landslide risks as geologic hazards, which must be avoided. If avoidance is not possible, the code identifies several steps to minimize and mitigate potential impacts.

Lead Agency	Ferndale Community Development and Planning Department
Funding Source	Local sources
Current Status	Ongoing

LS-c. Prevent impacts to roadways. The City’s development standards, combined with its land use regulations, Critical Areas Ordinance, and Public Works Maintenance division are designed to work collaboratively to prevent impacts to roadways. When necessary the Ferndale Police Department may provide additional traffic control and assistance during emergency events.

Lead Agency	Ferndale Public Works
Funding Source	Local sources
Current Status	Ongoing

Lightning

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

Severe Storm

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

Severe Wind

SW-a. Promote or require site and building design standards to minimize wind damage. The City of Ferndale is required to verify that structures built in the City of Ferndale are designed to meet wind load standards. The City also utilizes Code Enforcement personnel to identify potential risks resulting from wind damage, and to pursue enforcement in order to remove the potential impact.



Lead Agency	Ferndale Community Development and Planning Department
Funding Source	Local sources
Current Status	Ongoing

SW-b. Increase severe wind risk awareness. The City utilizes its public information channels to promote wind awareness prior to anticipated wind event.

Lead Agency	City of Ferndale Communications Officer and WCDEM
Funding Source	Local sources
Current Status	Ongoing

Tornadoes

No actions ongoing, discontinued, or completed for this hazard

Wildfire

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

Winter storms/Freezes

WW-a. Protect buildings and infrastructure. The City designs and operates its facilities and infrastructure to meet the demands of all seasons and weather conditions. The City seeks to ensure adequate funding for normal maintenance, repairs, and system replacement.

Lead Agency	Ferndale Public Works
Funding Source	Local sources
Current Status	Ongoing

WW-b. Reduce impacts to roadways. The City has developed snow plow routes, advance warning of inclement winter weather, and more. As a result, City of Ferndale roadways are widely recognized as the most-navigable roadways in Whatcom County during winter weather events.

Lead Agency	Ferndale Public Works
Funding Source	Local sources
Current Status	Ongoing

WW-c. Conduct winter weather risk awareness activities. Annually, and immediately prior to



forecast winter weather events, the City distributes information concerning priority snow plow routes, shelter opportunities for the homeless and near homeless, appropriate steps to prevent burst pipes, and more.

Lead Agency	City of Ferndale Communications Officer and WCDEM
Funding Source	Local sources
Current Status	Ongoing

Multiple Hazards

MU-a. Assess community risk. The City continually reviews regulations, practices, procedures, and City facilities to determine whether existing conditions are adequate to meet the demands of future growth, change, and hazard impacts. The City has sought to practice rolling code and development changes in order to constantly refresh City expectations and policies. The City is also working with regional partners to augment climate change resiliency planning.

Lead Agency	Ferndale Community Development and Planning Department
Funding Source	Local sources
Current Status	Ongoing

MU-b. Map community risk. The City maintains a comprehensive GIS mapping system available to the general public. Included in this system are additional data layers (maps) depicting community risk.

Lead Agency	Ferndale Community Development and Planning Department
Funding Source	Local sources
Current Status	Ongoing

MU-c. Prevent development in hazard areas. The City’s various policies (Critical Areas Ordinance, Zoning, Shoreline Master Program, Floodplain Management, Development Standards, etc.) are designed to provide a higher-level of scrutiny when development is proposed in or near hazard areas; development is generally prohibited in high hazard areas.

Lead Agency	Ferndale Community Development and Planning Department
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Funding Source	Local sources
Current Status	Ongoing

MU-d. Adopt development regulations in hazard areas.

Lead Agency	Ferndale Community Development and Planning Department
Funding Source	Local sources
Current Status	Ongoing

MU-e. Integrate mitigation into local planning.

Lead Agency	Ferndale Community Development and Planning Department
Funding Source	Local sources
Current Status	Ongoing

MU-f. Protect structures.

Lead Agency	Ferndale Public Works
Funding Source	Local sources
Current Status	Ongoing

MU-g. Protect infrastructure and critical facilities.

Lead Agency	Ferndale Public Works
Funding Source	Local sources
Current Status	Ongoing

MU-h. Increase hazard education and risk awareness.

Lead Agency	City of Ferndale Communications Officer and WCDEM
Funding Source	Local sources
Current Status	Ongoing

MU-i. Improve household disaster preparedness.

Lead Agency	City of Ferndale Communications Officer and WCDEM
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Funding Source	Local sources
Current Status	Ongoing



Ferndale 2021-2025 Hazard Mitigation Strategy

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 Ferndale-Specific Hazard Mitigation Goals

Ferndale does not add any community specific goals to the county goals.

Mitigation Action Options

Appendix E of the Whatcom County Natural Hazard Mitigation Plan provides a list of mitigation options. Ferndale considered mitigation options related to earthquakes, volcanoes, flooding, landslides/erosion, land subsidence, tsunamis, and winter storms, especially those related to earthquake and 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 Ferndale. Some options have already been implemented or are ongoing in Ferndale, 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 Ferndale 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.



Ferndale 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)
5	Funding Source:	Local; State; FEMA; Private; Other
6	Estimated Cost:	Actual; Estimated



Ferndale’s Identified Mitigation Actions 2021-2025

City of Ferndale 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						
Education and Outreach Education and Awareness Actions	These are actions that inform and educate citizens, elected officials, and property owners about hazards and ways to mitigate them.						
	<i>EO-a Ongoing -- The City strives to continuously improve the safety of its citizens and level of protection for public infrastructure</i>	1	Ferndale City Council	M	O	Local/State/Federal	Staff
	<i>EO-b Ongoing -- Continue to identify ways the city can improve the protection of public infrastructure</i>	1	Ferndale City Council	M	O	Local/State/Federal	Staff
	<i>EO-d Ongoing – Utility Bill Inserts</i>	2	City of Ferndale Communications Officer	M	O	Local	Staff
	<i>EO-e Ongoing -- Adopt and enforce building codes</i>	1	Ferndale Community Development and Planning Department	M	O	Local	Staff
	EO-1 Hazard “Safety Fairs”	2	WCDEM	M	L	Local	
	EO-2 Hazard Awareness Weeks	2	WCDEM	M	L	Local	

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



City of Ferndale 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						
	EO-3 Emergency preparedness education programs for schools.	2,1	Ferndale School District	M	S	Local	
	EO-4. Drills, exercises in homes, workplaces, classrooms, etc.	2,1	Ferndale Police Department and WCDEM	M	S	Local	
Hazard Specific (Reference: Whatcom County Mitigation Ideas)	Actions communities should consider to identify and evaluate a range of potential mitigation actions for reducing risk to natural hazards and disasters.						
Dam/Levee Failures (See: Flooding)	The City of Ferndale has no planned actions for this hazard that is not already in progress or completed						
Droughts/Heat Waves	<i>D-a Ongoing -- Water Conservation Schedules</i>	1, 3	Ferndale Communications	M	O	Local	Staff
Earthquakes	<i>EQ-a Ongoing -- Conduct inspections of building safety</i>	1, 5	Ferndale Community Development and Planning Department	M	O	Local	Staff

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



City of Ferndale 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						
	EQ-1 Construct a new city hall facility to meet requirements to survive a 6.0M_w or greater earthquake event.	1,2	Ferndale Planning Department	H	L	Local sources, and state and federal grants	\$12-15 million
	EQ-2 Earthquake Early Warning System	1,2	Ferndale Police Department/Whatcom Fire District 7	M	L	Local sources, and state and federal grants	\$500,000
Extreme Temperatures	The City of Ferndale has no planned actions for this hazard that is not already in progress or completed						
Flooding	<i>F-a Ongoing -- Extension of Riverside Dike Reinforcement</i>	1	Public Works	M	O	Local, State, and Federal	Staff
	<i>F-b Ongoing -- Preparedness handbooks, brochures</i>	2	WCDEM	M	O	Local	Staff

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



City of Ferndale 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						
	<i>F-c Ongoing -- Incorporate flood mitigation in local planning</i>	1	Ferndale Community Development, Planning Department, and Public Works	M	O	Local	Staff
	<i>F-d Ongoing -- Form partnerships to support floodplain management</i>	1, 5	Ferndale Community Development, Planning Department, WCDEM, and Public Works	M	O	Local	Staff
	<i>F-e Ongoing -- Limit or restrict development in floodway areas</i>	1, 3	Ferndale Community Development and Planning Department	M	O	Local	Staff
	<i>F-f Ongoing -- Improve stormwater management planning</i>	1, 3	Ferndale Public Works	M	O	Local	Staff
	<i>F-g Ongoing -- Adopt policies to reduce stormwater runoff</i>	1, 3	Ferndale Public Works	M	O	Local	Staff

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



City of Ferndale 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						
	<i>F-h Ongoing -- Improve flood risk assessment</i>	1	Ferndale Community Development and Planning Department	M	O	Local	Staff
	<i>F-j Ongoing -- Participate in the CRS</i>	1	Ferndale Community Development and Planning Department	M	O	Local	Staff
	<i>F-k Ongoing -- Improve stormwater drainage system capacity</i>	1	Ferndale Public Works	M	O	Local	Staff
	<i>F-l Ongoing -- Conduct Regular Maintenance for Drainage Systems and Flood Control Structures</i>	1	Ferndale Public Works	M	O	Local	Staff
	<i>F-m Ongoing -- Protect infrastructure</i>	1	Ferndale Public Works	M	O	Local	Staff
	<i>F-n Ongoing -- Protect critical facilities</i>	1	Ferndale Public Works	M	O	Local	Staff
	<i>F-p Ongoing -- Increase awareness of flood risk and safety</i>	2	Ferndale Community	M	O	Local	Staff

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



City of Ferndale 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						
			Development, Planning Department, City of Ferndale Communications Officer, and WCDEM				
	<i>F-q Ongoing -- Educate property owners about flood mitigation techniques</i>	2	Ferndale Community Development, Ferndale Public Works, City of Ferndale Communications Officer, and WCDEM	M	O	Local	Staff
	FL-1 Purchase Repetitive Loss Properties in the Floodplain		Ferndale Planning Department	M	L	Local sources, and state and federal grants	

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



City of Ferndale 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						
Landslide/ Erosion/ Land Subsidence	<i>ER-a Ongoing -- Map and assess vulnerability to erosion</i>	1	Ferndale Community Development and Planning Department	M	O	Local	Staff
	<i>ER-b Ongoing -- Manage development in erosion hazard areas</i>	1	Ferndale Community Development and Planning Department	M	O	Local	Staff
	<i>ER-c Ongoing -- Promote or require site and building design standards to minimize erosion risk</i>	1	Ferndale Community Development and Planning Department	M	O	Local	Staff
	<i>LS-a Ongoing -- Map and assess vulnerability to landslides</i>	1	Ferndale Community Development and Planning Department	M	O	Local	Staff

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



City of Ferndale 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						
	<i>LS-b Ongoing -- Manage development in landslide hazard areas</i>	1	Ferndale Community Development and Planning Department	M	O	Local	Staff
	<i>LS-c Ongoing -- Prevent impacts to roadways</i>	1	Ferndale Public Works	M	O	Local	Staff
	LS-1 Survey for potential alluvial fan hazards	1,2	Ferndale Planning Department	M	L	Local sources, and state and federal grants	
Lightning	The City of Ferndale has no planned actions for this hazard that is not already in progress or completed						
Severe Storms	The City of Ferndale has no planned actions for this hazard that is not already in progress or completed						
	<i>SW-a Ongoing -- Promote or require site</i>	1	Ferndale	M	O	Local	Staff

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



City of Ferndale 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						
Severe Wind	<i>and building design standards to minimize wind damage</i>		Community Development and Planning Department				
	<i>SW-b Ongoing -- Increase severe wind risk awareness</i>	2	City of Ferndale Communications Officer and WCDEM	M	O	Local	Staff
Tornadoes	The City of Ferndale has no planned actions for this hazard that is not already in progress or completed						
Wildfires	The City of Ferndale has no planned actions for this hazard that is not already in progress or completed						
Winter Storms/ Freezes (Severe Winter Weather)	<i>WW-a Ongoing -- Protect buildings and infrastructure</i>	1	Ferndale Public Works	M	O	Local	Staff
	<i>WW-b Ongoing -- Reduce impacts to roadways</i>	1	Ferndale Public Works	M	O	Local	Staff
	<i>WW-c Ongoing -- Conduct winter weather risk awareness activities</i>	1	City of Ferndale Communications Officer and	M	O	Local	Staff

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



City of Ferndale 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						
			WCDEM				
Multiple Hazards	<i>MU-a Ongoing -- Assess community risk</i>	1	Ferndale Community Development and Planning Department	M	O	Local	Staff
	<i>MU-b Ongoing -- Map community risk</i>	1	Ferndale Community Development and Planning Department	M	O	Local	Staff
	<i>MU-c Ongoing -- Prevent development in hazard areas</i>	1	Ferndale Community Development and Planning Department	M	O	Local	Staff
	<i>MU-d Ongoing -- Adopt development regulations in hazard areas</i>	1	Ferndale Community Development and Planning Department	M	O	Local	Staff

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



City of Ferndale 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						
	<i>MU-e Ongoing -- Integrate mitigation into local planning</i>	1	Ferndale Community Development and Planning Department	M	O	Local	Staff
	<i>MU-f Ongoing -- Protect structures</i>	1	Ferndale Public Works	M	O	Local	Staff
	<i>MU-g Ongoing -- Protect infrastructure and critical facilities</i>	1	Ferndale Public Works	M	O	Local	Staff
	<i>MU-h Ongoing -- Increase hazard education and risk awareness</i>	1	City of Ferndale Communications Officer and WCDEM	M	O	Local	Staff
	<i>MU-i Ongoing -- Improve household disaster preparedness</i>	1	City of Ferndale Communications Officer and WCDEM	M	O	Local	Staff
Advanced Mitigation Projects	Natural Hazard Early Warning Systems	1,2,5	Whatcom County, Ferndale Police Department, What-Comm	M	S	Unknown	\$500,000

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



City of Ferndale 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						
(Dream List)	Tone Radio Based Early Warning System Natural Hazard Early Warning Systems	1,2,5	Whatcom County, Ferndale Police Department, What-Comm	M	S	Unknown	\$500,000
	Purchase Repetitive Loss Properties	1,3	City of Ferndale, Whatcom County River and Flood	L	L	FEMA, Local Match	\$1 million
	Schell Marsh Flood Attenuation Project	1,3	City of Ferndale	H	M	State, Federal	\$1 million

Priority: H (High); M (Medium); L (Low)	Timeline: Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years); Ongoing	Funding Source: Local; State; FEMA; Private; Other	Estimated Cost: Actual; Estimated
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Ferndale 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 Ferndale Hazard-Specific Action Items 2021-2025 – Annual Review and Progress						
Action Items	Status (Choose One & Enter Letter):					Notes on yearly progress
	2021	2022	2023	2024	2025	
EDUCATION AND OUTREACH						
EO-a. The City strives to continuously improve the safety of its citizens and level of protection for public infrastructure.	B					Ongoing/Forever Action
EO-b. Continue to identify ways the city can improve the protection of public infrastructure.	B					Ongoing/Forever Action
EO-c. Telephone based early warning system: A computerized early warning system that automatically dials each landline telephone number within a specified area, and plays a recorded message when the phone is answered is currently provided to the City by the Whatcom County Sheriff's Office, Division of Emergency Management. A larger capacity system that can also contact cell phones through the use of a federally licensed COG would help address a variety of natural and manmade problems.	D					
EO-d. Utility bill inserts.	B					Stormwater, Flood (anticipated for 2021)
EO-1. Hazard "Safety Fairs"		B				
EO-2. Hazard Awareness Weeks	B					City anticipates a hazard awareness week to coincide with the adoption of NHMP and CEMP
EO-3. Emergency preparedness education programs for schools.	B					
EO-4. Drills, exercises in homes, workplaces, classrooms, etc.	B					City anticipates 2021 evacuation/emergency response drills in City facilities
<i>Add New Action Items if Applicable</i>						



City of Ferndale Hazard-Specific Action Items 2021-2025 – Annual Review and Progress						
Action Items	Status (Choose One & Enter Letter):					Notes on yearly progress
	2021	2022	2023	2024	2025	
DAM/LEEVE FAILURES						
Add New Action Items if Applicable						
DROUGHTS/HEAT WAVES						
D-a. Water Conservation Schedules	B					City annually distributes information concerning water conservation and steps to mitigate drought impacts
Add New Action Items if Applicable						
EARTHQUAKES						
EQ-a. Conduct inspections of building safety.	C					COVID-19 and higher-than-normal private development activity has reduced the City's ability to conduct safety inspections for existing buildings.
EQ-1. Construct a new city hall facility to meet requirements to survive a 6.0MW or greater earthquake event.	C					Design will not occur prior to 2022 at the earliest.
EQ-2. Earthquake Early Warning System	D					
Add New Action Items if Applicable						
VOLCANO						
VOL-a. Lahar warning through IPAWS alerting.						
Add New Action Items if Applicable						
FLOODING						
FL-a. Extension of Riverside Dike	B					Initial design and alternatives under



City of Ferndale Hazard-Specific Action Items 2021-2025 – Annual Review and Progress						
Action Items	Status (Choose One & Enter Letter):					Notes on yearly progress
	2021	2022	2023	2024	2025	
	A. Completed; B. In Progress (on schedule); C. In Progress (delayed); D. Delayed Until Funding Available; E. Canceled					
<i>Reinforcement: The City, working with Whatcom County River and Flood, anticipate that a project to modify the existing levee system north of the treatment plant may provide some flooding benefits. This project would not extend as far as what is described here, but would potentially be close.</i>						review
<i>FL-b. Preparedness handbooks, brochures. Distribution of severe weather guides, homeowner’s retrofit guide, etc.</i>	B					City maintains an inventory of FEMA flood information available to the public, Ferndale Public Library includes identical data available to the public for reference.
<i>FL-c. Incorporate flood mitigation in local planning.</i>	B					
<i>FL-d. Form partnerships to support floodplain management.</i>	B					
<i>FL-e. Limit or restrict development in floodway areas.</i>	B					
<i>FL-f. Improve stormwater management planning.</i>	B					The City has initiated an update to its Stormwater Comprehensive Plan, to be completed 4Q 2022.
<i>FL-g. Adopt policies to reduce stormwater runoff.</i>	B					The City has adopted such policies consistent with relevant stormwater manuals.
<i>FL-h. Improve flood risk assessment.</i>						
<i>FL-i. Join or improve compliance with NFIP.</i>	A					Ongoing/Forever Action
<i>FL-j. Participate in the CRS, have been participating since 2016.</i>	B					Ongoing/Forever Action
<i>FL-k. Improve stormwater drainage system capacity.</i>	B					Ongoing/Forever Action
<i>FL-l. Conduct Regular Maintenance for</i>	B					Ongoing/Forever Action



City of Ferndale						
Hazard-Specific Action Items 2021-2025 – Annual Review and Progress						
Action Items	Status (Choose One & Enter Letter):					Notes on yearly progress
	2021	2022	2023	2024	2025	
<i>Drainage Systems and Flood Control Structures.</i>						
<i>FL-m. Protect infrastructure.</i>	B					Ongoing/Forever Action
<i>FL-n. Protect critical facilities.</i>	B					Ongoing/Forever Action
<i>FL-o. Preserve pre-designated undeveloped flood plains as open space.</i>	B					Ongoing/Forever Action
<i>FL-p. Increase awareness of flood risk and safety.</i>	B					Ongoing/Forever Action
<i>FL-q. Educate property owners about flood mitigation techniques.</i>	B					Ongoing/Forever Action
FL-1. Purchase Repetitive Loss Properties in the Floodplain	D					
<i>Add New Action Items if Applicable</i>						
LANDSLIDES/EROSION						
<i>ER-a. Map and assess vulnerability to erosion.</i>	A					
<i>ER-b. Manage development in erosion hazard areas.</i>	B					Ongoing/Forever Action
<i>ER-c. Promote or require site and building design standards to minimize erosion risk.</i>	B					Ongoing/Forever Action
<i>ER-d. Increase awareness of erosion hazards.</i>	B					Ongoing/Forever Action
<i>LS-a. Map and assess vulnerability to landslides.</i>	A					
<i>LS-b. Manage development in landslide hazard areas.</i>	B					Ongoing/Forever Action
<i>LS-c. Prevent impacts to roadways.</i>	B					Ongoing/Forever Action
LS-1. Survey for potential alluvial fan	D					



City of Ferndale Hazard-Specific Action Items 2021-2025 – Annual Review and Progress						
Action Items	Status (Choose One & Enter Letter):					Notes on yearly progress
	2021	2022	2023	2024	2025	
hazards						
<i>Add New Action Items if Applicable</i>						
LAND SUBSIDENCE						
<i>SU-a. Educate residents about subsidence.</i>	D					
<i>Add New Action Items if Applicable</i>						
TORNADOES						
<i>Add New Action Items if Applicable</i>						
TSUNAMI						
<i>TSU-a. Map and assess vulnerability to tsunami.</i>	A					
<i>TSU-b. Manage development in tsunami hazard areas.</i>	A					
<i>TSU-c. Increase public awareness of tsunami hazard.</i>	A					
<i>Add New Action Items if Applicable</i>						
WILDFIRES						
<i>Add New Action Items if Applicable</i>						
WINTER STORMS/FREEZES (SEVERE WINTER WEATHER)						
<i>WW-a. Protect buildings and infrastructure.</i>	B					Ongoing/Forever Action
<i>WW-b. Reduce impacts to roadways.</i>	B					Ongoing/Forever Action
<i>WW-c. Conduct winter weather risk awareness activities.</i>	B					Ongoing/Forever Action



City of Ferndale Hazard-Specific Action Items 2021-2025 – Annual Review and Progress						
Action Items	Status (Choose One & Enter Letter):					Notes on yearly progress
	2021	2022	2023	2024	2025	
Add New Action Items if Applicable						
EXTREME TEMPERATURES						
Add New Action Items if Applicable						
LIGHTNING						
Add New Action Items if Applicable						
SEVERE WIND						
<i>SW-a. Promote or require site and building design standards to minimize wind damage.</i>	B					Ongoing/Forever Action
<i>SW-b. Increase severe wind risk awareness.</i>						
Add New Action Items if Applicable						
MULTIPLE HAZARDS						
<i>MU-a. Assess community risk.</i>	B					Ongoing/Forever Action
<i>MU-b. Map community risk.</i>	B					Ongoing/Forever Action
<i>MU-c. Prevent development in hazard areas.</i>	B					Ongoing/Forever Action
<i>MU-d. Adopt development regulations in hazard areas.</i>	A					
<i>MU-e. Integrate mitigation into local planning.</i>	A					
<i>MU-f. Adopt and enforce building codes.</i>	B					Ongoing/Forever Action
<i>MU-g. Protect structures.</i>	B					Ongoing/Forever Action
<i>MU-h. Protect infrastructure and critical facilities.</i>	B					Ongoing/Forever Action
<i>MU-i. Increase hazard education and risk</i>	B					Ongoing/Forever Action



City of Ferndale Hazard-Specific Action Items 2021-2025 – Annual Review and Progress						
Action Items	Status (Choose One & Enter Letter):					Notes on yearly progress
	2021	2022	2023	2024	2025	
<i>awareness.</i>						
<i>MU-j. Improve household disaster preparedness.</i>	D					
<i>Add New Action Items if Applicable</i>						



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