



Geologically Hazardous Areas

Critical Areas Ordinance

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What is the purpose of reviewing Geologically Hazardous Areas?

The purpose of this review is to minimize hazards to the public and to reduce the risk of property damage from development activities on or adjacent to geologically hazardous areas. In addition, this review is intended regulate land use to protect existing and new development while avoiding the need for construction of flood control devices and maintaining natural geologic and hydrologic processes.

What are Geologically Hazardous Areas?

Landslide Hazard Areas

Landslide hazards are areas throughout the county where there is potential for slope failure due to any combination of geologic, topographic, and hydrologic features. These areas include, but are not limited to:

- Areas with all three of the following characteristics:
 1. slopes between 15% and 35%; and
 2. a relatively permeable sediment overlying a relatively impermeable sediment or bedrock; and
 3. springs or ground water seepage.
- Slopes greater than 35%.
- Potentially unstable slopes resulting from rapid river or stream incision, river or stream bank erosion, or undercutting wave action.

- Areas showing evidence of active or past/historic failure or instability.
- Areas parallel or subparallel to planes of weakness in subsurface geologic materials.
- Slopes steeper than 80% that are subject to rock fall during seismic shaking.
- Areas at risk of mass wasting due to seismic forces.

Seismic Hazard Areas

Seismic hazard areas are subject to a severe risk of earthquake damage as a result of:

- Seismically induced ground shaking
- Differential settlement, or soil liquefaction, such as:
 - areas of man-made fill
 - partially decomposed organic materials at least 5-feet thick
 - filled wetlands
 - alluvial deposits subject to liquefaction
- Slope failure or mass wasting
- Lateral spreading
- Surface faulting

Alluvial Fan Hazard Areas

Alluvial fan hazard areas are those areas on alluvial fans that have the potential to damage or harm the community health or welfare. They include the area that generally corresponds to the path of potential stream flooding, channel changes, sediment and debris deposition, or debris flow paths as determined by topography, hydrology, geology, potential for channel changes, and depositional history.

Volcanic Hazard Areas

Volcanic hazard areas are areas that are subject to lava flows, pyroclastic flows, pyroclastic surges, mud flows, lahars, debris flows, debris avalanche, ash clouds or ash fall, lateral blast, ballistic debris, or flooding resulting from volcanic activity.

Erosion Hazard Areas

Erosion hazard areas include *surface erosion areas*, which include slopes greater than 15% with “severe” or “very severe” rill and inter-rill erosion hazard, and *coastal and riverine erosion areas*, which include areas subject to impacts from lateral erosion due to moving water such as river channel migration and shoreline retreat.

Tsunami and Seiche Hazard Areas

Tsunami and seiche hazard areas include coastal areas and lake shoreline areas that are susceptible to flooding, inundation, debris impact, and/or mass wasting resulting from coastal or inland wave action generated by seismic events.

Mine Hazard Areas

Mine hazard areas are lands in proximity to abandoned coal mines and associated underground mine workings such as adits (mine entrances), tunnels, rooms and chutes, pillars, and air shafts. Potential mine hazards include:

- Subsidence of the ground surface.
- Ground and surface water contamination from tailings and underground workings.
- Concentrations of lethal or noxious gases.
- Underground mine fires.

Regulatory requirements

The following requirements apply to all development activities within geologically hazardous areas:

1. Projects are to be directed toward areas of parcels or parcels under contiguous ownership that are not subject to, or at risk from, geologic hazards and/or are outside associated buffers.
2. Division of land may not create buildable parcels that are entirely within a hazard area. Land may be divided if each resulting lot has sufficient buildable area outside of the hazard area.
3. Projects shall be engineered and/or constructed to minimize risk to health and safety, protect buildings and occupants from the hazard, and to avoid or compensate for impacts to other critical areas.
4. A qualified professional, licensed in the State of Washington, shall review projects in accordance with the critical areas assessment report process (WCC 16.16.255).
5. All reasonable measures must be taken to minimize risks and other adverse effects associated with geologically hazardous areas, and the amount and degree of alteration shall be limited to the minimum necessary.
6. Structures in seismic hazard areas shall conform to the applicable provisions of the International Building Code (IBC).

Geologic Assessment Report

When County critical area maps or other sources of credible information indicate that a

site proposed for development or alteration is, or may be, located within an active or potential geologically hazardous area, the Technical Administrator may require a geologic assessment report.

In addition to general critical areas assessment report requirements, a geologic assessment report must include the following site-specific and proposal-related information unless the Technical Administrator determines that any of these requirements is unnecessary due the scope and/or scale of the proposal:

- A scaled site plan showing:
 - type and extent of geologic hazard areas, other critical areas, and buffers on or adjacent to the site
 - location of existing and proposed structures, fill, access roads, materials storage, and drainage facilities showing distance to floodplain (as applicable)
 - existing site topography
 - clearing limits
- Descriptions of:
 - areas on the site, surrounding areas that influence or could be influenced by the site, or areas within 300 feet that meet the criteria for geologic hazard areas
 - site features including geology, past or potential channel migration, hydrology, soils and vegetation
 - processes affecting the property or affected by development of the property
 - vulnerability of the site to seismic and other geologic processes
 - potential hazards that could be created or exacerbated by development
- Description and analysis of risk associated with:

- the proposed development and development alternatives
- proposed mitigation measures
- Landslide hazard areas:
 - assessment of slope stability for existing and developed conditions
 - analysis of slope recession rate
 - description of landslide debris run-out hazard to proposed development, down-slope and up-slope properties, and critical areas
- Seismic hazard areas: a detailed engineering evaluation of expected ground displacement, liquefaction, and/or other dynamic settlement effects, and proposed mitigation measures
- Mine hazard areas: description of historical data and remnant mine conditions (dates of operation, years of abandonment, strength of overlying rock, etc.)

Fees

Please refer to the current Whatcom County Unified Fee Schedule.

Information

Due to the administrative complexity of these regulations, it is usually best to contact the County Geologist to answer any additional questions.

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