TOWN OF WOODWAY

ORDINANCE 2022-638

AN ORDINANCE OF THE TOWN OF WOODWAY AMENDING WOODWAY MUNICIPAL CODE SECTIONS 16.10.600-650 RELATING TO THE GEOLOGICAL HAZARD SECTION OF THE TOWN'S CRITICAL AREA REGULATIONS; PROVIDING FOR SEVERABILITY; ESTABLISHING AN EFFECTIVE DATE; AND AUTHORIZING SUMMARY PUBLICATION BY ORDINANCE TITLE ONLY.

WHEREAS, the Washington State Growth Management Act provides for the update, review, and revision of Comprehensive plans and development regulations to comply with the requirements of the Growth Management Act, legislative changes, and best available science information; and

WHEREAS, the Town of Woodway updated its comprehensive plan consistent with the most recent periodic review set forth in RCW 36.70A.130; and

WHEREAS, Woodway's development regulation to implement the comprehensive plan has been updated for wetlands but has not been updated for geological hazard areas; and

WHEREAS, on March 22, 2014, a major catastrophic landslide occurred at Oso, in Snohomish County claiming the lives of 43 people and burying over 40 structures; and

WHEREAS, the United States Geological Service (USGS), Washington Department of Natural Resources (DNR) and other public agencies and independent geologist have studied the cause and effect of the landslide and published their findings in scientific journals and documents; and

WHEREAS, Snohomish County and other local jurisdictions have updated their geological hazard area code based in part on the findings of USGS and DNR related to the Oso landslide; and

WHEREAS, the Town has commissioned Associated Earth Sciences Inc. (AESI), a professional geotechnical engineering firm, to work with the Planning Commission to review the Town's current code and the documented findings of USGS and DNR and other jurisdiction's code amendments related to landslide hazard areas; and

WHEREAS, the Planning Commission conducted two work sessions on December 1, 2021 and February 2, 2022 to understand the characteristics of landslide hazards, review existing code, and propose amendments to WMC 16.10.600-650 to protect the life and property of Town residents; and

WHEREAS, the proposed amendments were forwarded to the Washington State Department of Commerce pursuant to RCW 36.70.A on February 17, 2022; and

WHEREAS, the Town's SEPA Official issued a Declaration of Non-Significance on February 16, 2022 and forwarded the declaration to the Department of Ecology and agencies with jurisdiction on February 17, 2022; and

WHEREAS, a notice of public hearing was published in the Everett Herald on February 18, 2022 and posted in public places in the Town on February; and

WHEREAS, the Planning Commission conducted a public hearing on March 9, 2022 to receive public testimony and passed Resolution PC-2022-006 recommending approval of proposed code amendments to WMC 16.10.600-650 to the Town Council; and

WHEREAS, the proposed amendments to the geological hazard section of the Town's critical area regulations are consistent with the applicable provisions of the Washington State Growth Management Act, the Snohomish Countywide Planning Policies and the Woodway Comprehensive Plan.

NOW, THEREFORE, the Town Council of the Town of Woodway does hereby ordain as follows:

Section 1. The Woodway Town Council adopts amendments to the geological hazard areas section of the Town's critical area regulations WMC 16.10.600-650 as set forth in the attached Planning Commission Resolution PC-2022-006, Exhibit A, Attachment 1.

Section 2. If any part or portion of this Ordinance is declared invalid for any such reason, such declaration of invalidity shall not affect any remaining portion.

Section 3. This Ordinance shall take effect 5 days after date of publication by ordinance title only.

PASSED this 21st day of March 2022 by the Town Council of the Town of Woodway.

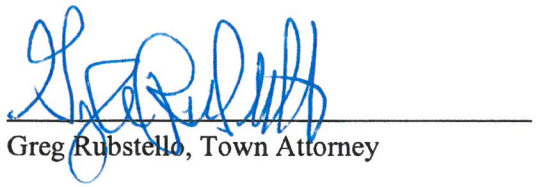
TOWN OF WOODWAY

Michael S. Quinn, Mayor

ATTEST:

Heidi K. S. Napolitino, Clerk-Treasurer

APPROVED AS TO FORM:



Greg Rubstello, Town Attorney

Date Passed by the Town Council: 21 March 2022

Date Published: 24 March 2022

Effective Date: 29 March 2022

TOWN OF WOODWAY
PLANNING COMMISSION

RESOLUTION PC-2022-006

A RESOLUTION OF THE WOODWAY PLANNING COMMISSION RECOMMENDING TO THE TOWN COUNCIL APPROVAL OF AMENDMENTS TO THE GEOLOGICAL HAZARD AREAS SECTION OF THE CRITICAL AREA REGULATIONS (WMC 16.10.600-650)

WHEREAS, the Washington State Growth Management Act provides for the update, review, and revision of Comprehensive plans and development regulations to comply with the requirements of the Growth Management Act, legislative changes and best available science information; and

WHEREAS, the Town of Woodway updated its comprehensive plan consistent with the most recent periodic review set forth in RCW 36.70A.130; and

WHEREAS, Woodway's development regulation to implement the comprehensive plan has been updated for wetlands but has not been updated for geological hazard areas; and

WHEREAS, on March 22, 2014 a major catastrophic landslide occurred at Oso, in Snohomish County claiming the lives of 43 people and burying over 40 structures; and

WHEREAS, the United States Geological Service (USGS), Washington Department of Natural Resources (DNR) and other public agencies and independent geologist have studied the cause and effect of the landslide and published their findings in scientific journals and documents; and

WHEREAS, Snohomish County and other local jurisdictions have updated their geological hazard area code based in part on the findings of USGS and DNR; and

WHEREAS, the Town has commissioned Associated Earth Sciences Inc. (AESI), a professional geotechnical engineering firm to review the Town's current code and the documented findings of USGS and DNR and other jurisdiction's code amendments related to landslide hazard areas; and

WHEREAS, the Planning Commission conducted two work sessions with AESI and staff on January 2nd and February 1st, 2022 to understand the characteristics of landslide hazards, review existing code and discuss potential amendments to the Town's code to protect the life and property of Town residents; and

WHEREAS, the proposed amendments to the Geological Hazard Areas are consistent with the goals and policies of the Conservation Element of the Town's Comprehensive Plan; and

WHEREAS, a Notice of Adoption of proposed amendments was sent to the Department of Commerce on February 17, 2022; and

WHEREAS, a SEPA Declaration of Non-Significance was issued on February 16, 2022; and

WHEREAS, a notice of public hearing was advertised in the Everett Herald newspaper, posted on Town bulletin boards, and posted on the Town's website on February 23, 2022; and

WHEREAS, the Planning Commission conducted a public hearing on March 9, 2022; and

WHEREAS, the staff report attached hereto as Exhibit A includes findings and conclusions and a recommendation of the proposed amendments to the Town Council.

NOW, THEREFORE, the Planning Commission of the Town of Woodway does hereby resolve as follows:

Section 1. The Planning Commission adopts the staff report attached hereto as Exhibit A, including the attachment containing Geological Hazard Areas amendments (WMC 16.10.600-650) as amended by the Planning Commission, and recommends to the Woodway Town Council that the proposed Geological Hazard Areas section of the Critical Area Regulation text amendments be adopted.

PASSED this 9th day of March 2022 by the Planning Commission of the Town of Woodway.

TOWN OF WOODWAY

Per Odegaard, Chair

ATTEST:

Kim Sullivan, Planning Commission Secretary

Attachment: Exhibit A: Staff Report to the Planning Commission Regarding Proposed Amendments to the Geological Hazard Area section of the Town's Critical Area Regulations WMC 16.10.600-650.

Planning Commission Resolution PC-2022-006
Exhibit A

Staff Report to the Town of Woodway Planning Commission Regarding Proposed Amendments to the Geological Hazard Area Section of the Critical Area Regulations (WMC 16.10.600-650)

Part 1: Introduction

Applicant: Town of Woodway
23920 113th Place W.
Woodway, WA 98020

Public Hearing Date: March 9, 2022

Public Hearing Purpose: For the Planning Commission to receive public comments regarding proposed amendments to the Geological Hazard Area section of the Town's Critical Area Regulations (WMC 16.10.600-650) and to forward a recommendation to the Town Council for consideration.

Location of Proposal: The proposed amendments are applicable to the geographic area contained in the Woodway corporate limits and the *Woodway Municipal Urban Growth Area Subarea Plan 2015.* The area includes the entire Town corporate limits and approximately 61 acres of the waterfront area referred to as "Point Wells". The proposed amendments affecting the Point Wells area will only apply upon annexation to the Town.

SEPA Compliance: Pursuant to WMC 16.04. A determination of non-significance was issued on February 15, 2022, forwarded to the Town's SEPA distribution list and noticed in the Everett Herald.

Public Notification: A public notice for the public hearing was advertised in the Everett Herald, posted in several public places within the Town of Woodway on February 25, 2022. A "notice of intent to adopt amendment" (60-day notice) was sent to the Washington State Department of Commerce on February 16, 2022.

Part II: Background Information

The Washington State Growth Management Act (GMA) requires jurisdictions planning under the Act to prepare critical area regulations to conserve and protect the natural environment, wildlife habitats and safe drinking water. The Act defines five types of critical areas including wetlands, aquifer recharge areas including streams, fish and habitat conservation areas, frequently flooded areas and geological hazard areas. The Town's Critical Area Regulations were updated in 2020 to address

new information available from the state related to wetlands and but have not been updated for geologic hazard areas.

On March 22, 2014 a major landslide occurred at Oso in Snohomish County causing the loss of life and property where over 40 homes were buried and 43 people tragically lost their lives. The United States Geological Service (USGS), Washington State Department of Natural Resources (DNR) and numerous other agencies and independent scientist have studied the landslide to address the cause and effect and published their findings in various publications and journals. Among their most important findings was the relationship between hydrology, soil composition and saturation levels, slope angle and geologic characteristics.

Given the presence of the Woodway Bluff, residential properties situated atop the bluff and potential development at Point Wells beneath the bluff, staff is of the opinion that it is prudent to update the Town's critical area regulations with the most up to date geotechnical information available.

To begin the process of reviewing salient information that will inform new code provisions, the Town engaged Associated Earth Science Incorporated (AESI) who are professional licensed geological engineers that have extensive experience in providing geotechnical services to both the public and private sector as well as experience updating local geological hazard areas codes.

Among the jurisdictions that have updated their critical area regulations based in part on the scientific findings of the Oso slide is Snohomish County. Tim Peter, Senior Engineering Geologist with AESI, reviewed relevant background information and the provisions of the Town's current code and the Snohomish County code. Staff then prepared a comparative matrix and discussed the differences between the two codes with the Planning Commission.

The Commission provided staff with their perspective of which code provisions would be in the best long-term interests of Woodway. Staff has used the Commission's preferences to prepare the draft code amendments that are highlighted in the following section. The specific code, in both a redlined version showing deletions and additions and a clean version without deleted text, is attached to the staff report.

Part III: Proposed Amendments

16.10.600. Landslide Hazard Areas: The most significant revision to the code is in the definition of Landslide Hazard Areas. The current code divides landslide hazard areas into three separate categories: very high,

high and moderate with various regulatory provisions associated with each category. In staff's opinion, all landslide areas are hazardous to both property and human life and should be regulated accordingly based on a combination of hydrologic, topographic and geologic factors. The code amendments include six specific factors that define landslide hazard areas and three illustrated figures that display the topographic, hydrologic and geologic conditions.

The revised definition consists of a single landslide hazard category instead of the three in the existing code. The revised definition is based on a combination of slope height, inclination, subsurface conditions and previous slide history. In all cases, the landslide hazard area includes both the slope plus an area that extends from the top of the slope a horizontal distance of 50' or the height of the slope, whichever is greater and extends from the toe of the slope a horizontal distance of 50' or two times the height of the slope, whichever is greater. The provision for the top of the slope is consistent with the Town's current code for the landslide hazard areas buffer but the provision for the toe of the slope reflects the County's code and the USGS and DNR findings that a landslide runout area can be more extensive based on the geologic, topographic and hydrologic conditions than previously anticipated. For steep slopes adjacent to marine bluffs, the landslide hazard area is proposed to extend to the Puget Sound shoreline.

16.10.610 Geologic Hazard Area Buffers: This section has been deleted in its entirety. Similar to the County's code, there is no need for a prescriptive buffer if the definition of Landslide Hazard Areas is extensive and performance standards are included related to development within and adjacent to landslide hazard areas. The proposed regulations for development within landslide hazard areas (i.e., alteration of geologic hazard areas) and performance standards are presented in the next two sections.

16.10.620 Alteration of Geologic Hazard Areas: Two revisions are proposed to this section including critical erosion areas and landslide hazard areas. For development in critical erosion areas, the code requires a geotechnical report, adherence to best management practices, erosion control and avoidance of impacting other critical areas such as wetlands, streams and their buffers.

For landslide hazard areas, the code provides that development is allowed in designated areas with the requirement of an approved geotechnical report that states that:

a. the risk associated with development will be mitigated,
b. there is no increased discharge of stormwater to the slope,

c. various factors of safety will be met, and
d. a peer review of the geotechnical report will be conducted by the Town and funded by the applicant.

Exceptions to the requirements are allowed for certain slope stabilization projects and modification of the various requirements where a compelling reason exist. For seismic hazard areas the code provides that development is allowed subject to the approval of geotechnical report. For tsunami hazard areas the code requires identification, disclosure and recording requirements located elsewhere in the code and encourages applicants in tsunami areas to follow recommendations in a DNR publication related to designing buildings within tsunami hazard areas.

Section 16.10.620 (F), (G) and (H) of the code is unchanged from the current code and provides for assurances where development is proposed in geologic hazard areas. The assurances include recorded letters, statements, covenants and other information by a professional geologist or geological engineer that if the engineer's or engineering geologist's recommendations are followed, any recommended structure will be as safe on the site containing the critical geologic hazard as it would be on a site not containing such hazard and further, that the use of the site according to the engineer's or engineering geologist's recommendations will not increase the likelihood of damage to neighboring properties.

16.10.630 Geological Hazard Area Performance Standards: This section of the current code has been modified to reflect important actions required by the applicant and reviewed by the Town for land development proposals within landslide hazard areas. The performance standards are criteria that must be adhered to in preparing and implementing plans for land development. The performance standards include requirements for preparation of geotechnical reports, site clearing and treatment, hydrology management, minimum factors of safety, geotechnical plan review and geotechnical monitoring.

16.10.640 Geotechnical Report- Required Information: The current code requires the preparation of a geotechnical report to assess the existing conditions and geotechnical hazards and to mitigate on and off-site impacts. The information required for the geotechnical report has been expanded in the proposed code to better address the geologic characteristics of sites, geotechnical plan review and construction monitoring and includes the prohibitions of certain activities that may result in a decrease in slope stability and/or negative impacts to surrounding properties

16.10.650 Geologic Hazard Area Mitigation, Monitoring and Maintenance This section is unchanged and authorizes the Town to

require the monitoring, maintenance and mitigation projects within landslide hazard areas. The Town has the discretion to require the term of the monitoring period.

Part IV Findings and Conclusions

1. The Washington State Growth Management Act requires development regulations to be periodically updated to reflect changes in legislation and/or conditions affecting local governments.
2. The cause and effect of the March 22, 2014, devasting landslide at Oso has been extensively studied by United States Geological Service, the State Department of Natural Resources, public agencies and independent geological engineers. Findings by various agencies has determined that a combination of geologic, topographic and hydrologic conditions together with documented previous landslide activities are relevant factors that should be considered when regulating future land uses in landslide hazard areas.
3. It is prudent to update the state required critical area regulations that address geologic hazard areas to reflect the best available science and the findings of professional geological engineers related to recent landslide events.
4. The Town commissioned Associated Earth Sciences Inc. (AESI) to assist the Town in updating the geologic hazard area section of the Town's critical area regulations in December 2021.
5. The Town staff and AESI has reviewed the Snohomish County code that has been updated to reflect the recent landslide hazard area findings from USGS and DNR and other relevant geotechnical information and prepared a matrix displaying the various sections of the County code with the Town's code.
6. The Woodway Planning Commission reviewed and discussed the various code provisions at two workshops conducted on December 1, 2021 and February 2, 2022, suggested revisions to the code and set March 9, 2022, for a public hearing to receive public testimony.
7. A SEPA Determination of Non-Significance was issued on February 15, 2022, and no appeals have been received.
8. Staff has prepared a notice of application that was posted and advertised in the Everett Herald on February 22, 2022, sent a 60 day Notice of Code Amendments to the Department of Commerce on February 17, 2022 and advertised in the Everett Herald for the public hearing on February 23, 2022.
9. The proposed revisions to WMC 16.10.600-650 are consistent with the Growth Management Act and in the best interest of the health, safety and general welfare of the Town's residents and properties.

Part V Recommendation Based on the above findings and conclusions, staff recommends to the Planning Commission the adoption of revisions to the geologic hazard area section of the Town's critical area regulations as set forth in Resolution #PC-2022-006 and attachments thereto.

Attachments:

Attachment 1: WMC 16.10.600-650 Proposed Code Amendments Redline Version with additions and deletions

Attachment 2: WMC 16.10.600-650 Proposed Code Amendments Clean Version

TOWN OF WOODWAY

PLANNING COMMISSION RESOLUTION PC-2022-006
EXHIBIT A | ATTACHMENT 1

GEOLOGIC HAZARD AREA 16.10.600-650 | PROPOSED AMENDMENTS

16.10.600 CLASSIFICATION AND RATING OF GEOLOGIC HAZARD AREAS.

Geologic hazard areas shall be classified according to the criteria in this section.

A. Critical Erosion Hazard Areas. Critical erosion hazard areas are lands or areas underlain by soils identified by the U.S. Department of Agriculture Soil Conservation Service (SCS) as having severe or very severe erosion hazards.

B. Landslide Hazard Areas. Areas of upland and submerged land potentially subject to mass earth movement based on a combination of geologic, topographic, and hydrologic factors. Includes:

1. Areas potentially unstable because of rapid stream incision, stream bank erosion, or undercutting by wave action.
2. Areas located in a canyon or on an active alluvial fan, susceptible to inundation by debris flows or catastrophic flooding.
3. Areas of historic landslides as evidenced by landslide deposits, geomorphic site features, or other indications (Figure 1).
4. Areas with both of the following characteristics
   a. Slopes steeper than 15 percent that are ≥10 feet high that intersect geologic contacts with a relatively permeable sediment overlying a relatively impermeable sediment; and,
   b. Springs (Figure 2).
5. All slopes ≥33 percent with a vertical height of 10 feet or more (Figure 3).
6. For Items 3 through 5 above, the Landslide Hazard Area includes the following:
   a. The area within a horizontal distance of the top of the slope equal to 50 feet or the slope height (H), whichever is greater.
   b. The area within a horizontal distance from the toe of the slope equal to 50 feet or 2H, whichever is greater. For the steep slope (marine bluff) above the Puget Sound shoreline, the Landslide Hazard Area shall extend beyond the toe of the bluff to Puget Sound.

~~B. Landslide hazard areas are classified as moderate, high, and very high. High and very high are considered critical landslide hazard areas and require a buffer in accordance with Section 16.10.140. Definitions of classifications are as follows:~~

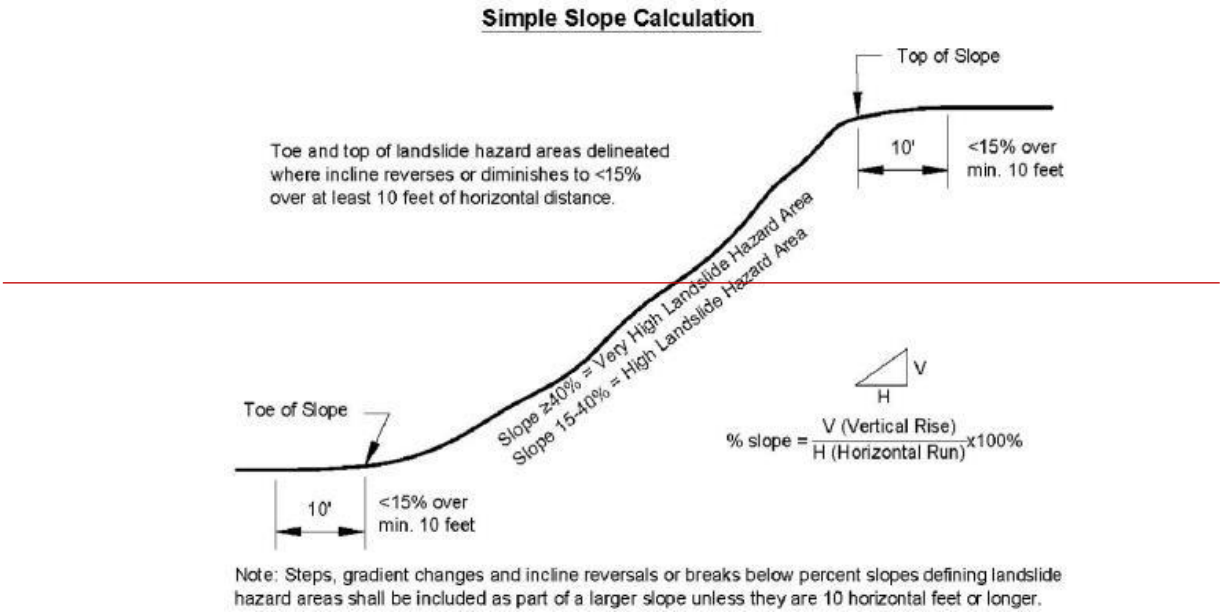
~~1. Moderate Hazard. Areas with slopes between fifteen percent and forty percent and that are underlain by soils that consist largely of sand, gravel, or glacial till;~~
~~2. High Hazard. Areas with slopes between fifteen percent and forty percent that are underlain by soils consisting largely of silt and clay or by soils that have sand over clay;~~
~~3. Very High Hazard. Areas with slopes steeper than fifteen percent with zones of emergent water (e.g., springs or groundwater seepage), areas of landslide deposits regardless of slope, and all areas sloping forty percent or steeper.~~

~~4. A slope is delineated by establishing its toe and top (as defined in Figure 1 of this section) and is measured by averaging the inclination over at least ten feet of vertical relief or twenty-five feet of horizontal distance. Benches, steps, and variations in gradient shall be incorporated into a larger slope if they do not meet criteria defining toe and/or top depicted in Figure 1 of this section (see also Figure 2 at the end of this section). If the toe or top of a slope is located off of a subject property, then the location of the toe or top shall be delineated two hundred horizontal feet from the property boundary or at its natural location, whichever is closer to the subject parcel (see Figure 2 at the end of this section).~~

C. Seismic Hazard Areas. Seismic hazard areas are lands that, due to a combination of soil and groundwater conditions, are subject to severe risk of ground shaking, subsidence, lateral spreading, or liquefaction of soils during earthquakes. These areas are typically underlain by soft or loose saturated soils (such as alluvium) or have a shallow groundwater table.

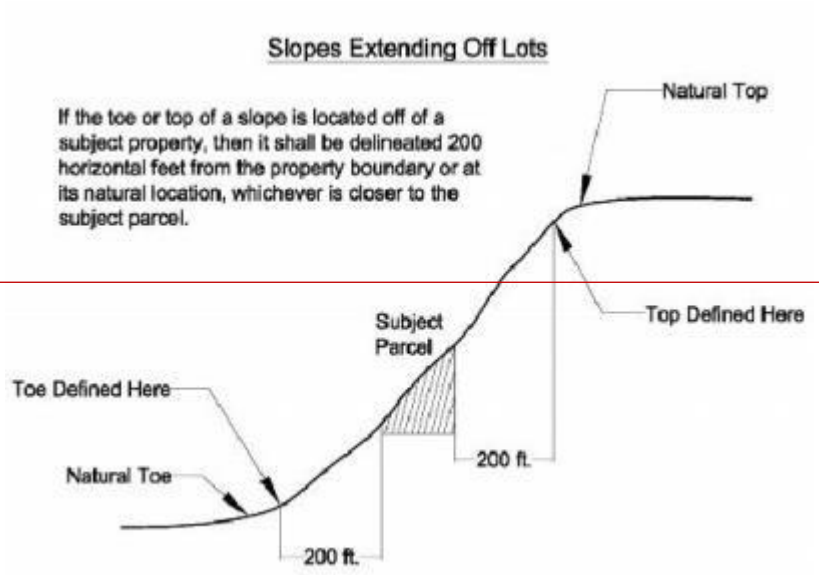
~~C.~~D. Tsunami Hazard Areas. Areas identified by the Washington Department of Natural Resources (DNR) as potentially subject to tsunami inundation. Tsunami inundation mapping is available through the Washington DNR Geologic Information Portal (https://geologyportal.dnr.wa.gov/).

~~Figure 1~~



Note: Steps, gradient changes and incline reversals or breaks below percent slopes defining landslide hazard areas shall be included as part of a larger slope unless they are 10 horizontal feet or longer.

~~Figure 2~~


Slopes Extending Off Lots
If the toe or top of a slope is located off of a subject property, then it shall be delineated 200 horizontal feet from the property boundary or at its natural location, whichever is closer to the subject parcel.
Natural Top
Top Defined Here
Subject Parcel
Toe Defined Here
Natural Toe
200 ft.
200 ft.

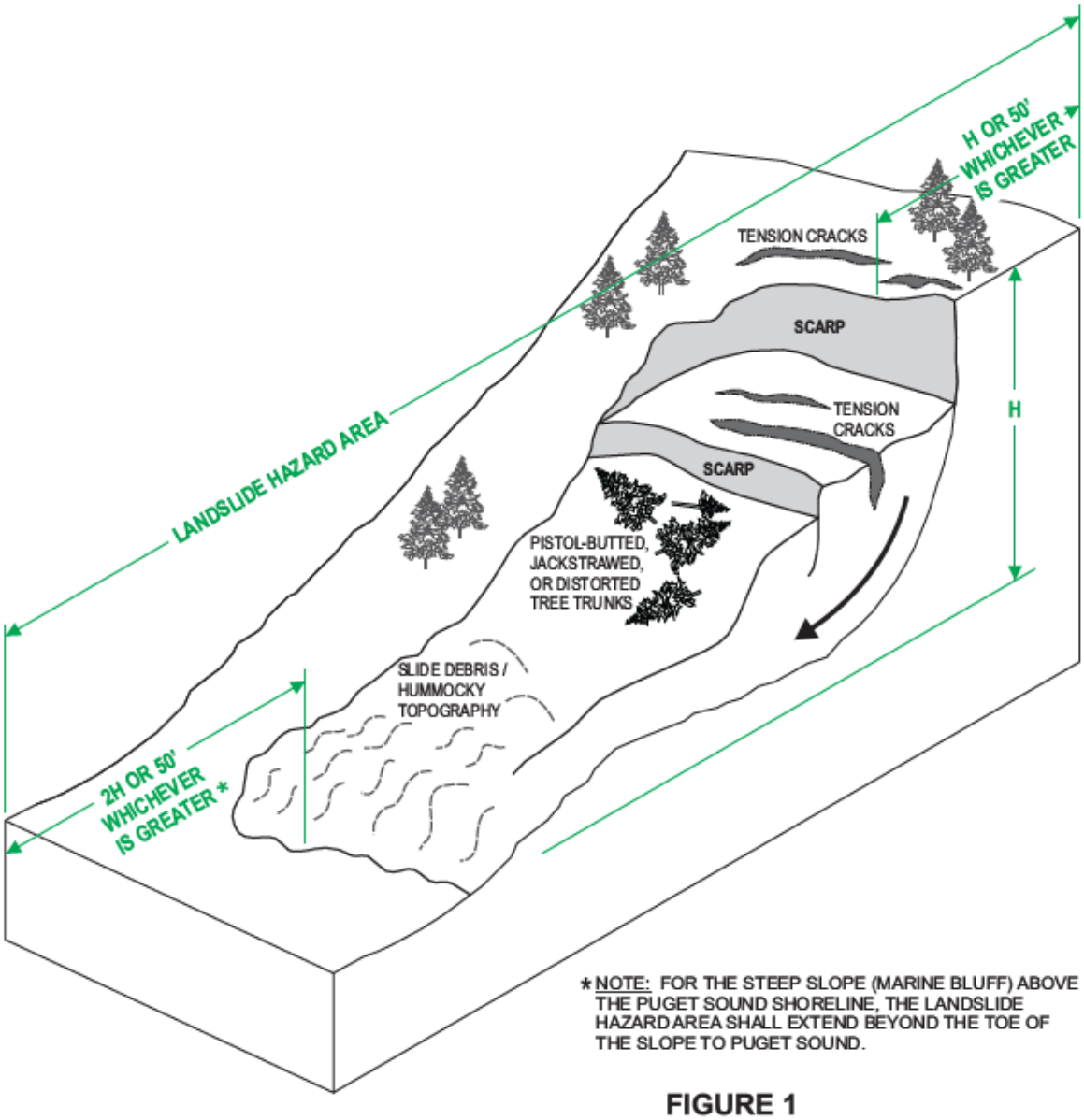
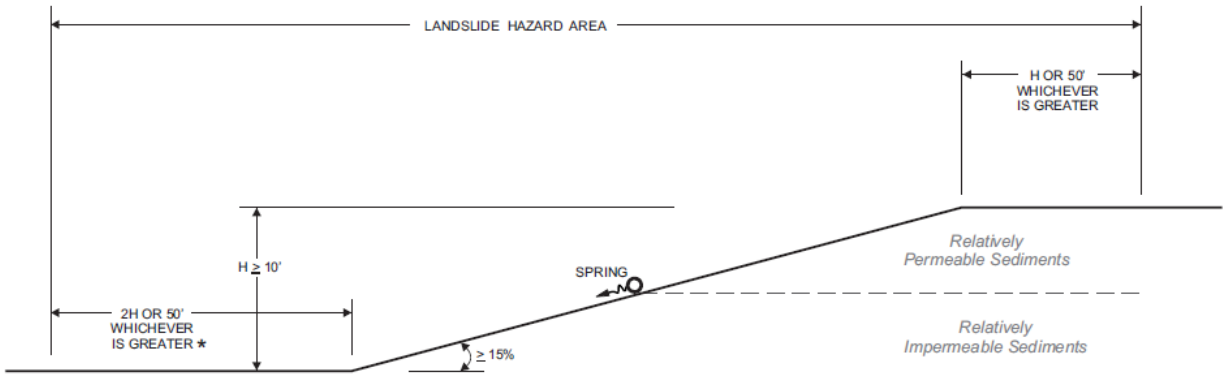
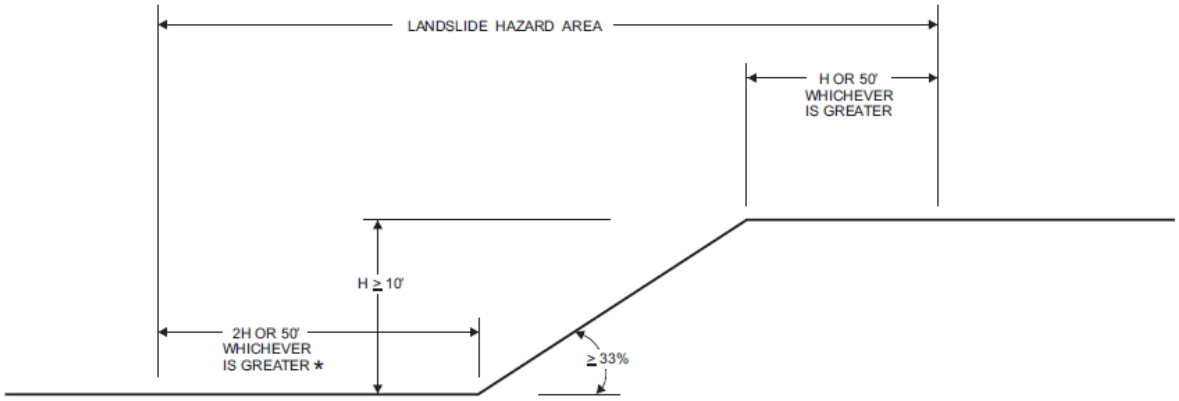

H OR 50' WHICHEVER * IS GREATER
TENSION CRACKS
SCARP
TENSION CRACKS
SCARP
H
LANDSLIDE HAZARD AREA
PISTOL-BUTTED, JACKSTRAWED, OR DISTORTED TREE TRUNKS
SLIDE DEBRIS / HUMMOCKY TOPOGRAPHY
2H OR 50' WHICHEVER IS GREATER *
* NOTE: FOR THE STEEP SLOPE (MARINE BLUFF) ABOVE THE PUGET SOUND SHORELINE, THE LANDSLIDE HAZARD AREA SHALL EXTEND BEYOND THE TOE OF THE SLOPE TO PUGET SOUND.

FIGURE 1



* NOTE: FOR THE STEEP SLOPE (MARINE BLUFF) ABOVE THE PUGET SOUND SHORELINE, THE LANDSLIDE HAZARD AREA SHALL EXTEND BEYOND THE TOE OF THE SLOPE TO PUGET SOUND.

FIGURE 2



* NOTE: FOR THE STEEP SLOPE (MARINE BLUFF) ABOVE THE PUGET SOUND SHORELINE, THE LANDSLIDE HAZARD AREA SHALL EXTEND BEYOND THE TOE OF THE SLOPE TO PUGET SOUND.

FIGURE 3

~~**16.10.610 GEOLOGIC HAZARD AREA BUFFERS.**~~

~~A. Required buffer widths for geologic hazard areas shall reflect the sensitivity of the hazard area and the risks associated with development and, in those circumstances permitted by these regulations, the type and intensity of human activity and site design proposed to be conducted on or near the area. In determining the appropriate buffer width, the Town shall consider the recommendations contained in a geotechnical report required by these regulations and prepared by a licensed geotechnical engineer or engineering geologist retained by the applicant. As identified in Figure 3 at the end of this chapter, the Town has created a map of steep slopes within the Town and their associated prescriptive buffers for high hazard and very high hazard landslide areas. Based on the location of the proposed development, the Director may require a topographic survey to determine the location of the geologic hazard area and its associated buffer.~~

~~B. For high hazard and very high hazard landslide areas, the standard buffer shall be fifty feet from all edges of the landslide hazard area or the horizontal distance equal to the height of the landslide hazard area, whichever is greater. Larger buffers may be required as needed to eliminate or minimize the risk to people and property based on a geotechnical report prepared by a qualified professional.~~

~~C. Landslide hazard area buffers may be reduced to a minimum of fifteen feet when technical studies by a licensed geotechnical engineer or engineering geologist demonstrate that the reduction will not increase the risk of the hazard to people or property on or off site.~~

~~D. Alterations, other than tree removal, within geologic hazard area buffers for the purposes of stabilization are permitted, when such hazard area poses a risk to private property or existing development, as confirmed by the Town's qualified professional geotechnical engineer or engineering geologist.~~

~~E. Installation of temporary or permanent dewatering wells is permitted in geologic hazard area buffers to reduce groundwater seepage in geologic hazard areas and their associated buffers.~~

~~F. Tree removal and topping within geologic hazard area buffers shall comply with Chapter 16.12 of this code.~~

~~G. When a development permit is required, and the Town finds permanent preservation necessary to achieve the objectives of this chapter, the Town may require landslide hazard areas and their associated buffers to be placed either in a separate tract on which development is prohibited, protected by execution of an easement, dedicated to a conservation organization or land trust, or similarly preserved through a permanent protective mechanism acceptable to the Town. The location and limitations associated with the critical landslide hazard and its buffer shall be shown on the face of the deed or plat applicable to the property and shall be recorded with Snohomish County.~~

~~H. For proposed subdivision plats, the total area contained within the designated hazard area and buffer shall not be included in calculating the lot yield of the subject parcel; provided, that the created buildable lots meet the minimum lot area requirements of the applicable zoning district and Title 13 of this code, Subdivisions.~~

16.10.620 ALTERATION OF GEOLOGIC HAZARD AREAS.

A. The Town shall approve, condition, or deny development, land disturbing, or land altering proposals in a geologic hazard area as appropriate based upon the effective mitigation of

risks posed to property, health, and safety. The objective of mitigation measures shall be to render a site containing a critical geologic hazard as safe as one not containing such hazard. Conditions may include limitations of proposed uses, modification of density, alteration of site layout and other appropriate changes to the proposal. Where potential impacts cannot be effectively mitigated, or where the risk to public health, safety and welfare, public or private property, or important natural resources is significant notwithstanding mitigation, the proposal shall be denied unless it is subject to reasonable use as provided in Section 16.10.070.

B. Critical Erosion Hazard Areas. Development is allowed in Critical Erosion Hazard Areas subject to the following requirements:

1. The development is designed to comply with the recommendations of an approved geotechnical report.
2. The development utilizes Best Management Practices (BMPs) and complies with other stormwater management requirements pursuant to Chapter 11.02.
3. The development does not adversely impact wetlands, streams, fish and wildlife habitat areas or their buffers.
4. The development complies with an approved Temporary Erosion and Sedimentation Control (TESC) Plan.

C. ~~Very High~~ Landslide Hazard Areas.

1. Development in Landslide Hazard Areas. Development in Landslide Hazard Areas is allowed subject to the following requirements:
   a. The development is designed to comply with the recommendations of an approved geotechnical report.
   b. The geotechnical report demonstrates that landslide risks associated with the development will be mitigated sufficient to render a site containing a critical geologic hazard as safe as one not containing such hazard.~~.~~
   c. The project will not result in increased discharge of stormwater to the Landslide Hazard Area.
   d. The factor of safety of landslide occurrences shall not be decreased below the limits of 1.5 for static conditions or 1.1 for dynamic conditions. Analysis of dynamic conditions shall be based on a horizontal ground acceleration equal to one-half of the peak horizontal ground acceleration with a two (2) percent in 50 year probability of exceedance as established by the current version of the International Building Code.
   e. Development in landslide hazard areas ~~with slope inclinations of 33 percent or greater as defined in Section 16.10.600B(5) shall not result in increased landslide risk and~~ shall provide protection commensurate to being located outside of the Landslide Hazard Area.
   f. For projects in Landslide Hazard Areas the Town shall require applicant funding of a qualified licensed geotechnical professional, selected and retained by the Town to review the applicant's geotechnical report and recommendations.
2. Exceptions. Alterations in Landslide Hazard Areas for the purpose of slope stabilization shall be allowed to address ~~existing conditions~~slope instability that ~~which~~ poses a significant risk to private party and/or ~~existing development~~public improvements. Although the requirements of 16.10.620~~B~~C(1) shall generally apply to slope stabilization projects, the Town recognizes that these requirements may not be practical or feasible in

all cases. For this reason, the Town reserves the right to ~~relax~~ modify these requirements when it is demonstrated by a qualified licensed geotechnical professional that there is a compelling ~~reason~~ reason and/or public benefit to do so. The burden shall be on the applicant to demonstrate a compelling reason and/or public benefit to allow the modification to the standard code requirements and consideration of the request for modification will be subject to ~~as determined through~~ independent third-party geotechnical review in accordance with 16.10.620C~~B~~(1)(f). In this case, the proposed slope stabilization work shall not result in increased risk to either the subject site or other properties. Existing conditions that pose significant risk may include, but are not necessarily limited to, active landslides that result in loss of ground, endangerment of existing structures or utilities, or significant erosion that poses an immediate threat to structures/utilities. Slope stabilization may not be used as a means of reducing setbacks or other recommended mitigation for new development as otherwise required by this chapter. For those projects where an exception to the standard code requirements is granted, the provisions of Section~~s~~ 16.10.620~~C~~F and 16.10.620E will still apply.

~~2. Development shall be prohibited in very high landslide hazard areas except for the installation and construction of:~~

~~a. Public and private drainage conveyance facilities;~~

~~b. Public streets;~~

~~c. Utilities, excluding natural gas, petroleum, and other potentially hazardous utilities;~~

~~d. Alterations within a very high landslide hazard area for the purposes of stabilization, when such hazard area poses risk to private property or existing development, as confirmed by the Town's qualified professional geotechnical engineer or engineering geologist.~~

~~3. Proposals allowed by the above exceptions shall be reviewed based upon the nature of the proposal per the procedures and criteria in this chapter and the applicable sections of this code, i.e., clearing and grading (stormwater) projects shall be reviewed under the procedures of the stormwater and/or clearing and grading chapters, structures shall be reviewed under the procedures of the building/zoning chapters, etc. All proposals for development or alterations within very high landslide hazard areas shall be subject to the criteria below:~~

~~a. Stormwater conveyance pipes shall be permitted in geologic hazard areas only when the applicant demonstrates that no other practical alternative is available. The pipe shall be located above ground and properly anchored and/or designed so that it will continue to function in the event of an underlying slide. Stormwater conveyance shall be allowed only through a high-density polyethylene pipe with fuse-welded joints, or similar product that is technically equal or superior.~~

~~b. The proposed street and/or utility is identified in a plan adopted by the Town Council, such as the comprehensive plan, capital facility plan, transportation improvement plan or other utility facility plan. As new or amended plans are prepared and adopted, streets and utilities shall be located to avoid impact to very high landslide hazard areas. Where no reasonable alternative to locating in very high landslide hazard areas exists, review and approval of the plan shall include a discussion of alternatives and rationale for planning streets and utilities in very high landslide hazard areas.~~

c. Alternative locations which avoid impact to very high landslide hazard areas are evaluated and are determined to be functionally infeasible.

d. There is a geotechnical evaluation to identify the risks of damage from the proposal, both on site and off site, to ascertain that the proposal will not increase the risk of occurrence of the potential geologic hazard; and to identify measures to eliminate or reduce risks, both on site and off site, which should be implemented as conditions of approval.

e. Alterations within very high landslide hazard areas for purposes of slope stabilization shall be allowed to address existing conditions that pose risk to private property or existing development. Existing conditions that pose risk may include active or potential landslides that result in loss of ground, endangerment of existing structures or utilities, or significant erosion. Slope stabilization within very high landslide hazard areas may not be used as a means of reducing landslide hazard buffers for new development as otherwise required by this chapter.

f. When no alternative exists, the impact shall be minimized by limiting the magnitude of the proposed construction to the extent possible. Any impacts shall be rectified by repairing, rehabilitating, restoring, replacing, or providing substitute resources consistent with the mitigation and performance standards contained in Sections 16.10.190 and 16.10.200.

I. Moderate and High Landslide Hazards. Alterations proposed to moderate and high landslide hazards or their buffers shall be evaluated by a qualified professional through the preparation of the geotechnical report. However, for proposals that include no development, construction, or impervious surfaces, the Town, in its sole discretion, may waive the requirement for a geotechnical report. The recommendations contained within the geotechnical report shall be incorporated into the alteration of the landslide hazard area or their buffers.

D. Seismic Hazard Areas. Development activities or actions within a Seismic Hazard Area may be allowed with an approved geotechnical report that confirms the site is suitable for the proposed development subject to the provisions of Sections 16.10.630 and 16.10.640.

E. Tsunami Hazard Areas. Development activities or actions requiring a project permit within 200 feet of a Tsunami Hazard Area shall comply with the identification, disclosure, and recording requirements of Section 16.10.620D. In Tsunami Hazard Areas, applicants are encouraged to follow the recommendations from "Designing for Tsunamis: Seven Principals for Planning and Designing for Tsunami Hazards", by the National Tsunami Hazard Mitigation Program.

J. The geotechnical engineer and/or geologist preparing the report shall provide assurances that the risk of damage from the proposal, both on site and off site, is minimal subject to the conditions set forth in the report, that the proposal will not increase the risk of occurrence of the potential landslide hazard, and that measures to eliminate or reduce risks have been incorporated into the report's recommendations.

K. Seismic Hazard Areas. The applicant shall conduct an evaluation of seismic site response and liquefaction potential, including sufficient subsurface exploration to provide a site coefficient (S) for use in the static lateral force procedure described in the International Building Code or International Residential Code.

~~L.~~F. When development is permitted in geologic hazard areas by these regulations, the Town shall ~~may~~ require an applicant and/or its licensed geotechnical engineer or engineering geologist to provide assurances that may include the following:

1. A letter under seal from a licensed geotechnical engineer or engineering geologist shall be recorded with Snohomish County that states that, in the engineer's or engineering geologist's professional opinion, all needed surface and subsurface soil explorations have been completed, a thorough review has been made of public records, and all needed analysis has been completed such that if the engineer's or engineering geologist's recommendations are followed any recommended structure will be as safe on the site containing the critical geologic hazard as it would be on a site not containing such hazard and that the use of the site according to the engineer's or engineering geologist's recommendations will not increase the likelihood of damage to neighboring properties;
2. A legal statement shall be recorded and noted on the face of the deed and on any new plat, executed in a form satisfactory to the Town, which characterizes the site as being located in a geologic hazard area, and which states there may ~~or may not~~ be risks associated with development of such site, and which references the engineer's or engineering geologist's recorded letter required by subsection (F)(1) of this section;
3. A covenant between the owner(s) of the property and the Town prior to issuance of any permit or approval. The covenant shall not be required where the permit or approval is for work done by the Town. The covenant shall be tailored to the specific types of risks presented, shall be signed by the owner(s) of the property, shall be notarized, shall run with the land, shall be recorded with the Snohomish County Recorder's Office at the expense of the owner, and shall include, but need not be limited to, the following:
    a. A legal description of the property;
    b. A description of the geologic hazard area;
    c. As relevant to the property condition, commitment by the owner to maintain features of the site in such condition and such manner as will prevent harm to the public, to residents of the property, to nearby property, to streets, alleys and drainage facilities, from the activities to be done pursuant to the permit and from the related changes to the site, and to indemnify the Town and its officers, employees, contractors and agents from any claims arising from the failure of the owner to comply with the commitment;
    d. A statement that the owner(s) of the property understands and accepts the responsibility for the risks associated with development on the property given the described condition, and agrees, through recording of the covenant with the Snohomish County Auditor's Office, to inform future purchasers and other successors and assignees of the risks;
    e. The application date, type, and number of the permit or approval for which the covenant is required; and
    f. A waiver and release of any right of the owner(s), the owner's heirs, successors and assigns to assert any claim against the Town and its officers, employees, contractors, and agents by reason of or arising out of issuance of the permit or approval by the Town for the development on the property, or arising out of any inspection, statement, assurance, delay, act or omission by or on behalf of the Town related to the permit or approval or the work done thereunder, and agreeing to defend and indemnify the Town and its officers, employees, contractors and agents for any

liability, claim or demand arising out of any of the foregoing or out of work done or omitted by or for the owner, except in each case only for such losses, claims or demands that directly result from the sole negligence of the Town; and

4. A bond, guarantee, or other assurance device reviewed and approved by the Town to cover the cost of monitoring, maintenance, and any necessary corrective actions.

~~M.~~G. Stormwater conveyance and groundwater collection and conveyance facilities may be allowed to encroach into geological hazard areas on a case-by-case basis and upon geotechnical evidence that there are no other practical locations for these facilities and that the installation of such facilities will not detrimentally affect adjacent properties or ecosystems.

~~N.~~H. Tree removal and topping within geologic hazard areas shall comply with Chapter 16.12 of this code.

16.10.630 GEOLOGIC HAZARD AREA PERFORMANCE STANDARDS.

A. Relevant performance standards from Sections 16.10.330, 16.10.430 and 16.10.530, as determined by the Town, shall be incorporated into mitigation plans.

B. The following additional performance standards shall apply to ~~be reflected in~~ proposals within geologic hazard areas:

1. Geotechnical reports ~~studies~~ shall be prepared by a qualified ~~professional. An environmentally critical areas report for a geologically hazardous area shall be prepared by an~~ geotechnical engineer or engineering geologist licensed in the state of Washington, with experience analyzing geologic, hydrologic, and groundwater flow systems, and who has experience preparing reports for the relevant type of hazard. ~~Critical areas studies and~~Geotechnical reports ~~o~~for projects in geologically hazardous areas shall be subject to independent review;

~~2. Construction methods shall reduce or not adversely affect geologic hazards;~~

~~3.~~2. Site planning should minimize disruption of existing topography and natural vegetation;

~~4.~~3. Impervious surface coverage should be minimized;

~~5.~~4. Disturbed areas should be replanted as soon as feasible pursuant to an approved landscape plan;

~~6.~~5. Clearing and grading regulations as set forth by the Town shall be followed;

6. ~~Use of retaining walls that allow maintenance of existing natural slope areas is preferred over graded slopes~~Grading is generally discouraged in Landslide Hazard Areas. Any grading proposed in a Landslide Hazard Area must be reviewed by the geotechnical engineer or engineering geologist in accordance with 16.10.630B18;

7. For Landslide Hazard Areas, the factor of safety of landslide occurrences shall not be decreased below the limits of 1.5 for static conditions or 1.1 for dynamic conditions. Analysis of dynamic conditions shall be based on a horizontal ground acceleration equal to one-half of the peak horizontal ground acceleration with a two (2) percent in 50 year probability of exceedance as established by the current version of the International Building Code;

8. Temporary erosion and sedimentation controls, pursuant to an approved plan, shall be implemented during construction;

~~9. Undevelopable geologic hazard areas larger than one-half acre shall be placed in a separate tract; provided, that this requirement does not make the lot nonconforming;~~

~~10.~~9. ~~A~~ Where required in accordance with Section 16.10.650, a monitoring program, reviewed and approved by the Town, shall be prepared for construction activities permitted in geologic hazard areas;

~~11.~~10. Development shall not ~~increase instability or~~ create a hazard to the site or adjacent properties, or result in ~~a~~ significant ~~increase in~~ sedimentation or erosion that adversely impacts surface water or other sensitive receptors, or poses a threat to structures/utilities;

~~12.~~11. The development will not increase or concentrate surface water discharge or sedimentation to adjacent sites beyond predevelopment conditions;

~~13.~~12. The development will not decrease slope stability ~~on the development site or~~ on adjacent sites;

~~14.~~13. Structures and improvements shall be located, and clustered if appropriate, to preserve the most critical portion of the site and its natural landforms and vegetation;

~~15. All subdivision activity proposed in landslide and critical erosion hazard areas and associated buffers is subject to the following:~~

~~a. Land that is located wholly within an erosion or landslide hazard area may not be subdivided. Land located partially within an erosion or landslide hazard area or its buffer may be divided; provided, that each resulting lot has sufficient buildable area outside of, and will not affect, the erosion or landslide hazard and its buffer;~~

~~b. Access roads and utilities may be permitted within the erosion or landslide hazard area and associated buffers if the Director determines based on an approved critical area report and mitigation plan that the road will not increase the risk to adjacent sites and that no other feasible alternative exists;~~

~~16.~~14. Construction of trails shall meet the following criteria:

a. Constructed of permeable or semi-permeable materials;
b. Designed to minimize impact on the environmentally critical area;
c. Have a maximum trail surface width of five feet;
d. Meet all applicable requirements in Chapter 16.08 of this code;

15. Prohibited Development. On-site sewage disposal systems, including drain fields, shall be prohibited within landslide and erosion hazard areas ~~and related buffers~~;

16. Geotechnical Plan Review. Written acknowledgement from the licensed geotechnical engineer or engineering geologist who prepared the geotechnical report that they have reviewed the project plans and that they conform to their recommendations.

17. Geotechnical Construction Monitoring. A qualified geotechnical professional, working under the supervision of a licensed geotechnical engineer or engineering geologist must provide on-site monitoring of key earthwork activities including, but not limited to temporary and permanent erosion control, structural fill placement and compaction, excavation of temporary cut slopes, pile and shoring installation, verification of foundation subgrade preparation, and subsurface drainage installation. Observations must be documented in daily written field reports. Upon completion of the work, the licensed geotechnical engineer or engineering geologist must provide a final letter verifying that the work was completed in accordance with the recommendations of the geotechnical professional's reports and recommendations, and geotechnical-related permit requirements.

~~18. Public roads, bridges, utilities, and trails shall be allowed.~~

16.10.640 ~~GEOLOGIC HAZARD AREA~~ GEOTECHNICAL REPORT--REQUIRED INFORMATION.

A geologic hazard area report shall include, at a minimum, the following information:

A. Aerial extent of the proposed project or activity, including all lands within two hundred feet of such proposed project or activity.

B. Geologic Hazards Assessment. An environmentally critical areas report for a geologically hazardous area shall contain an assessment of geologic hazards including the following site- and proposal-related information at a minimum:

1. Site and Construction Plans. The report shall include a copy of the site plans for the proposal showing:
   a. The type and extent of geologic hazard areas, any other critical areas, and buffers on, adjacent to, within two hundred feet of, or that are likely to impact the proposal;
   b. Proposed development, including the location of existing and proposed structures, fill, storage of materials, and drainage facilities~~, with dimensions indicating distances to the floodplain, if available~~;
   c. The topography, in minimum five-foot contours, as determined by the Director, of the project area and all hazard areas addressed in the report; and
   d. Clearing limits.

2. Assessment of Geological Characteristics. The report shall include an assessment of the geologic characteristics of the soils, sediments, and/or rocks of the project area and potentially affected adjacent properties, and a review of the site history regarding landslides, erosion, and prior grading. Soils analysis shall be accomplished in accordance with accepted classification systems in use in the region. The assessment shall include, but not be limited to:
   a. A description of the surface and subsurface geology, hydrology, soils, and vegetation found in the project area and in all hazard areas addressed in the report;
   b. A detailed overview of the field investigations, published data, and references; data and conclusions from past assessments of the site; and site-specific measurements, tests, investigations, or studies that support the identification of geologically hazardous areas;
   c. Subsurface exploration logs with soil descriptions in accordance with the Unified Soil Classification System. The logs shall identify the geologic units present (e.g. fill, landslide deposits, Vashon lodgement till, Vashon advance outwash, etc.). The subsurface explorations completed for the study must provide sufficient subsurface characterization to assess the geologic hazards of concern;
   d. Identification of existing fill areas;
   e. The locations of seeps, springs, or other surface expressions of groundwater;
   f. The depth to groundwater and estimates of potential seasonal fluctuations, if applicable to the project;
   g. For projects in Landslide Hazard Areas, a discussion of the presence or absence of site features potentially indicative of historic landslide activity or increased risk of future landslide activity. Such features include, but are not limited to, tree trunk deformation, landslide scarps, springs, tension cracks, reversed slope benches, hummocky topography, vegetation patterns, and area stormwater management practices;

h. For projects in Landslide Hazard Areas, a current LIDAR-based shaded relief map of the project area and a discussion regarding the presence or absence of geomorphic features indicative of historic landsliding;

i. An assessment of the risk of erosion hazards; and,

j. A description of the vulnerability of the site to seismic and other geologic events.

~~b. and~~

~~c. A description of the vulnerability of the site to seismic and other geologic events.~~

3. Analysis of Proposal. The report shall contain a hazards analysis including a detailed description of the project, its relationship to the geologic hazard(s), and its potential impact upon the hazard area, the subject property, and affected adjacent properties. Where appropriate, the report shall also include the following information:

a. For projects in Landslide Hazard Areas, the geotechnical report shall include the results of a quantitative slope stability analysis. The assessment of slope stability under dynamic conditions shall be based on a horizontal ground acceleration with a two (2) percent in 50-year probability of exceedance as defined in the current version of the International Building Code. The report shall also include an assessment of the present stability of the subject property, the stability of the property during construction, and the stability of the subject property after all development activities are completed. The assessment should include a discussion of the potential risks to other potentially impacted properties;

b. For projects in Seismic Hazard Areas, the geotechnical report shall include an assessment of seismic hazards applicable to the project, such as liquefaction and/or lateral spreading. In areas subject to liquefaction, an estimate of the magnitude of seismically induced settlement that could occur during a seismic event. Estimation of the magnitude of seismically induced settlement shall be based on a peak horizontal ground acceleration based on a seismic event with a two (2) percent in 50-year probability of exceedance as defined in the current version of the International Building Code;~~. The report should include The analysis should also include an assessment of lateral spreading where~~

c. For projects in Critical Erosion Hazard Areas, the geotechnical report shall include a discussion of the sensitivity of the site to erosion hazards and provide recommendations to mitigate the hazards present;

d. For projects in or within 200 feet of a Tsunami Hazard Area, the geotechnical report shall disclose the presence of the Tsunami Hazard Area and comply with the requirements of Section 16.10.620E.

4. ~~Minimum Buffer and Building Setback. The report shall make a recommendation for the minimum no-disturbance buffer and minimum building setback from any geologic hazard based~~Geologic Hazard Mitigation. The report shall include recommendations to mitigate geologic hazards of concern based upon the geotechnical analysis.

5. Seismic Design Criteria. The report shall include the seismic site class for structural design when applicable to the project.

~~3.~~6. Geotechnical Design Recommendations. The report shall include geotechnical design recommendations applicable to the project. Such recommendations may include, but may not be limited to, types of suitable foundations, allowable footing or pile capacities, minimum footing depths, floor slab support recommendations, retaining wall design criteria, grading recommendations, and drainage recommendations.

C. Incorporation of Previous Study. Where a valid environmentally critical areas report has been prepared within the last five years for a specific site, and where the proposed land use activity and surrounding site conditions are unchanged, said report may be incorporated into the required environmentally critical areas report. The applicant shall submit a hazards assessment detailing any changed environmental conditions associated with the site or updated code requirements.

D. Mitigation of Long-Term Impacts. When hazard mitigation is required, the mitigation plan shall specifically address how the activity maintains or reduces the preexisting level of risk to the site and adjacent properties on a long-term basis (equal to or exceeding the projected lifespan of the activity or occupation). Proposed mitigation techniques shall be considered to provide long-term hazard reduction only if they do not require regular maintenance or other actions to maintain their function. Mitigation may also be required to avoid any increase in risk above the preexisting conditions following abandonment of the activity. (Ord. 20-611 § 3 (Exh. C (part)), 2020)

16.10.650 GEOLOGIC HAZARD AREA MITIGATION MONITORING AND MAINTENANCE.

The Town shall have authority to require annual monitoring of mitigation activities and submittal of annual monitoring reports in accordance with Sections 16.10.230, 16.10.340, 16.10.540 and this section to ensure and document that the goals and objectives of the mitigation are met. The frequency and duration of the monitoring shall be based on the specific needs of the project as determined by the Town.

TOWN OF WOODWAY

PLANNING COMMISSION RESOLUTION PC-2022-006
EXHIBIT A | ATTACHMENT 2

GEOLOGIC HAZARD AREA 16.10.600-650 | PROPOSED AMENDMENTS

16.10.600 CLASSIFICATION AND RATING OF GEOLOGIC HAZARD AREAS.

Geologic hazard areas shall be classified according to the criteria in this section.

A. Critical Erosion Hazard Areas. Critical erosion hazard areas are lands or areas underlain by soils identified by the U.S. Department of Agriculture Soil Conservation Service (SCS) as having severe or very severe erosion hazards.

B. Landslide Hazard Areas. Areas of upland and submerged land potentially subject to mass earth movement based on a combination of geologic, topographic, and hydrologic factors. Includes:

1. Areas potentially unstable because of rapid stream incision, stream bank erosion, or undercutting by wave action.
2. Areas located in a canyon or on an active alluvial fan, susceptible to inundation by debris flows or catastrophic flooding.
3. Areas of historic landslides as evidenced by landslide deposits, geomorphic site features, or other indications (Figure 1).
4. Areas with both of the following characteristics
    a. Slopes steeper than 15 percent that are ≥10 feet high that intersect geologic contacts with a relatively permeable sediment overlying a relatively impermeable sediment; and,
    b. Springs (Figure 2).
5. All slopes ≥33 percent with a vertical height of 10 feet or more (Figure 3).
6. For Items 3 through 5 above, the Landslide Hazard Area includes the following:
    a. The area within a horizontal distance of the top of the slope equal to 50 feet or the slope height (H), whichever is greater.
    b. The area within a horizontal distance from the toe of the slope equal to 50 feet or 2H, whichever is greater. For the steep slope (marine bluff) above the Puget Sound shoreline, the Landslide Hazard Area shall extend beyond the toe of the bluff to Puget Sound.

C. Seismic Hazard Areas. Seismic hazard areas are lands that, due to a combination of soil and groundwater conditions, are subject to severe risk of ground shaking, subsidence, lateral spreading, or liquefaction of soils during earthquakes. These areas are typically underlain by soft or loose saturated soils (such as alluvium) or have a shallow groundwater table.

D. Tsunami Hazard Areas. Areas identified by the Washington Department of Natural Resources (DNR) as potentially subject to tsunami inundation. Tsunami inundation mapping is available through the Washington DNR Geologic Information Portal (https://geologyportal.dnr.wa.gov/).

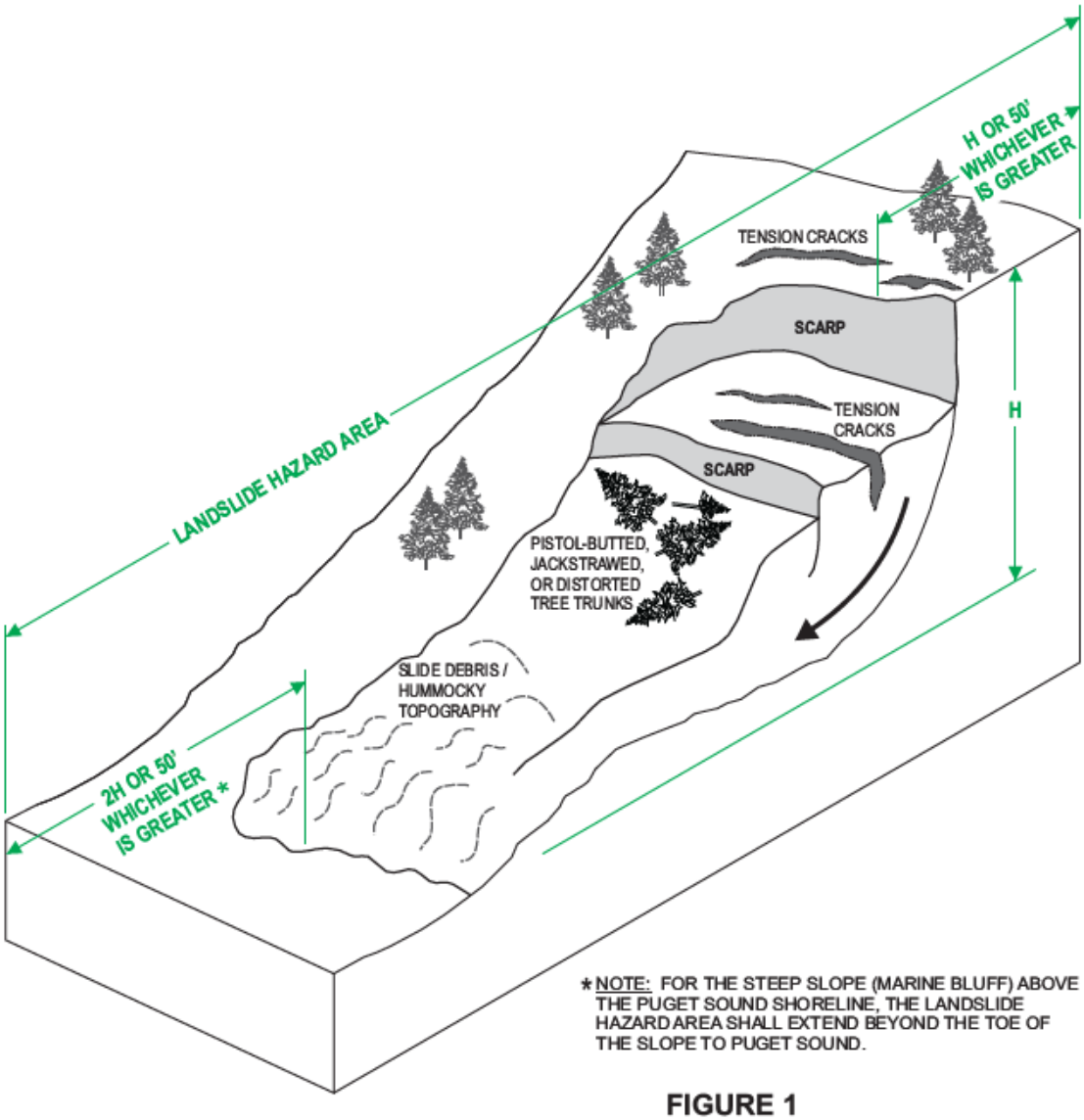
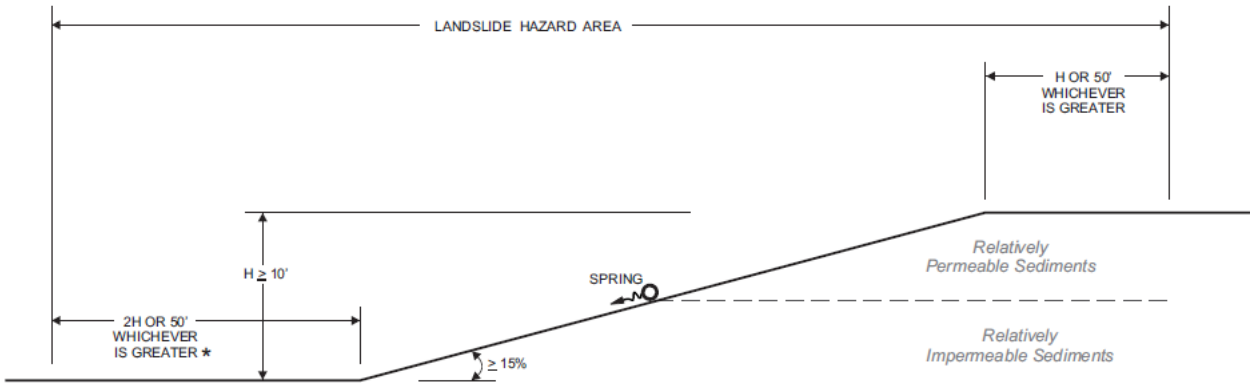
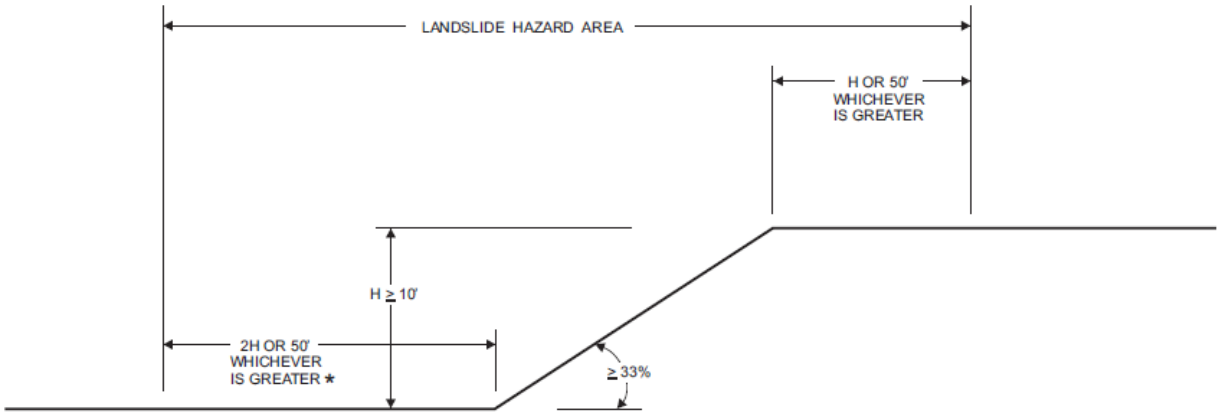

H OR 50' WHICHEVER IS GREATER
TENSION CRACKS
SCARP
TENSION CRACKS
SCARP
H
LANDSLIDE HAZARD AREA
PISTOL-BUTTED, JACKSTRAWED, OR DISTORTED TREE TRUNKS
SLIDE DEBRIS / HUMMOCKY TOPOGRAPHY
2H OR 50' WHICHEVER IS GREATER *
* NOTE: FOR THE STEEP SLOPE (MARINE BLUFF) ABOVE THE PUGET SOUND SHORELINE, THE LANDSLIDE HAZARD AREA SHALL EXTEND BEYOND THE TOE OF THE SLOPE TO PUGET SOUND.

FIGURE 1



* NOTE: FOR THE STEEP SLOPE (MARINE BLUFF) ABOVE THE PUGET SOUND SHORELINE, THE LANDSLIDE HAZARD AREA SHALL EXTEND BEYOND THE TOE OF THE SLOPE TO PUGET SOUND.

FIGURE 2



* NOTE: FOR THE STEEP SLOPE (MARINE BLUFF) ABOVE THE PUGET SOUND SHORELINE, THE LANDSLIDE HAZARD AREA SHALL EXTEND BEYOND THE TOE OF THE SLOPE TO PUGET SOUND.

FIGURE 3

16.10.620 ALTERATION OF GEOLOGIC HAZARD AREAS.

A. The Town shall approve, condition, or deny development, land disturbing, or land altering proposals in a geologic hazard area as appropriate based upon the effective mitigation of risks posed to property, health, and safety. The objective of mitigation measures shall be to render a site containing a critical geologic hazard as safe as one not containing such hazard. Conditions may include limitations of proposed uses, modification of density, alteration of site layout and other appropriate changes to the proposal. Where potential impacts cannot be effectively mitigated, or where the risk to public health, safety and welfare, public or private property, or important natural resources is significant notwithstanding mitigation, the proposal shall be denied unless it is subject to reasonable use as provided in Section 16.10.070.

B. Critical Erosion Hazard Areas. Development is allowed in Critical Erosion Hazard Areas subject to the following requirements:
   1. The development is designed to comply with the recommendations of an approved geotechnical report.
   2. The development utilizes Best Management Practices (BMPs) and complies with other stormwater management requirements pursuant to Chapter 11.02.
   3. The development does not adversely impact wetlands, streams, fish and wildlife habitat areas or their buffers.
   4. The development complies with an approved Temporary Erosion and Sedimentation Control (TESC) Plan.

C. Landslide Hazard Areas.
   1. 1. Development in Landslide Hazard Areas. Development in Landslide Hazard Areas is allowed subject to the following requirements:
      a. The development is designed to comply with the recommendations of an approved geotechnical report.
      b. The geotechnical report demonstrates that landslide risks associated with the development will be mitigated sufficient to render a site containing a critical geologic hazard as safe as one not containing such hazard.
      c. The project will not result in increased discharge of stormwater to the Landslide Hazard Area.
      d. The factor of safety of landslide occurrences shall not be decreased below the limits of 1.5 for static conditions or 1.1 for dynamic conditions. Analysis of dynamic conditions shall be based on a horizontal ground acceleration equal to one-half of the peak horizontal ground acceleration with a two (2) percent in 50 year probability of exceedance as established by the current version of the International Building Code.
      e. Development in landslide hazard areas shall provide protection commensurate to being located outside of the Landslide Hazard Area.
      f. For projects in Landslide Hazard Areas the Town shall require applicant funding of a qualified licensed geotechnical professional, selected and retained by the Town to review the applicant's geotechnical report and recommendations.
   2. Exceptions
      a. Alterations in Landslide Hazard Areas for the purpose of slope stabilization shall be allowed to address slope instability that poses a significant risk to private party and/or public improvements. Although the requirements of 16.10.620C(1) shall generally

apply to slope stabilization projects, the Town recognizes that these requirements may not be practical or feasible in all cases. For this reason, the Town reserves the right to modify these requirements when it is demonstrated by a qualified licensed geotechnical professional that there is a compelling reason and/or public benefit to do so. The burden shall be on the applicant to demonstrate a compelling reason and/or public benefit to allow the modification to the standard code requirements and consideration of the request for modification will be subject to independent third-party geotechnical review in accordance with 16.10.620C(1)(f). In this case, the proposed slope stabilization work shall not result in increased risk to either the subject site or other properties. Existing conditions that pose significant risk may include, but are not necessarily limited to, active landslides that result in loss of ground, endangerment of existing structures or utilities, or significant erosion that poses an immediate threat to structures/utilities. Slope stabilization may not be used as a means of reducing setbacks or other recommended mitigation for new development as otherwise required by this chapter. For those projects where an exception to the standard code requirements is granted, the provisions of Section 16.10.620F and 16.10.620E will still apply.

D. Seismic Hazard Areas. Development activities or actions within a Seismic Hazard Area may be allowed with an approved geotechnical report that confirms the site is suitable for the proposed development subject to the provisions of Sections 16.10.630 and 16.10.640.

E. Tsunami Hazard Areas. Development activities or actions requiring a project permit within 200 feet of a Tsunami Hazard Area shall comply with the identification, disclosure, and recording requirements of Section 16.10.620D. In Tsunami Hazard Areas, applicants are encouraged to follow the recommendations from "Designing for Tsunamis: Seven Principals for Planning and Designing for Tsunami Hazards", by the National Tsunami Hazard Mitigation Program.

F. When development is permitted in geologic hazard areas by these regulations, the Town shall require an applicant and/or its licensed geotechnical engineer or engineering geologist to provide assurances that may include the following:

1. A letter under seal from a licensed geotechnical engineer or engineering geologist shall be recorded with Snohomish County that states that, in the engineer's or engineering geologist's professional opinion, all needed surface and subsurface soil explorations have been completed, a thorough review has been made of public records, and all needed analysis has been completed such that if the engineer's or engineering geologist's recommendations are followed any recommended structure will be as safe on the site containing the critical geologic hazard as it would be on a site not containing such hazard and that the use of the site according to the engineer's or engineering geologist's recommendations will not increase the likelihood of damage to neighboring properties;
2. A legal statement shall be recorded and noted on the face of the deed and on any new plat, executed in a form satisfactory to the Town, which characterizes the site as being located in a geologic hazard area, and which states there may be risks associated with development of such site, and which references the engineer's or engineering geologist's recorded letter required by subsection (F)(1) of this section;
3. A covenant between the owner(s) of the property and the Town prior to issuance of any permit or approval. The covenant shall not be required where the permit or approval is for work done by the Town. The covenant shall be tailored to the specific types of risks

presented, shall be signed by the owner(s) of the property, shall be notarized, shall run with the land, shall be recorded with the Snohomish County Recorder's Office at the expense of the owner, and shall include, but need not be limited to, the following:

a. A legal description of the property;
b. A description of the geologic hazard area;
c. As relevant to the property condition, commitment by the owner to maintain features of the site in such condition and such manner as will prevent harm to the public, to residents of the property, to nearby property, to streets, alleys and drainage facilities, from the activities to be done pursuant to the permit and from the related changes to the site, and to indemnify the Town and its officers, employees, contractors and agents from any claims arising from the failure of the owner to comply with the commitment;
d. A statement that the owner(s) of the property understands and accepts the responsibility for the risks associated with development on the property given the described condition, and agrees, through recording of the covenant with the Snohomish County Auditor's Office, to inform future purchasers and other successors and assignees of the risks;
e. The application date, type, and number of the permit or approval for which the covenant is required; and
f. A waiver and release of any right of the owner(s), the owner's heirs, successors and assigns to assert any claim against the Town and its officers, employees, contractors, and agents by reason of or arising out of issuance of the permit or approval by the Town for the development on the property, or arising out of any inspection, statement, assurance, delay, act or omission by or on behalf of the Town related to the permit or approval or the work done thereunder, and agreeing to defend and indemnify the Town and its officers, employees, contractors and agents for any liability, claim or demand arising out of any of the foregoing or out of work done or omitted by or for the owner, except in each case only for such losses, claims or demands that directly result from the sole negligence of the Town; and

4. A bond, guarantee, or other assurance device reviewed and approved by the Town to cover the cost of monitoring, maintenance, and any necessary corrective actions.

G. Stormwater conveyance and groundwater collection and conveyance facilities may be allowed to encroach into geological hazard areas on a case-by-case basis and upon geotechnical evidence that there are no other practical locations for these facilities and that the installation of such facilities will not detrimentally affect adjacent properties or ecosystems.
H. Tree removal and topping within geologic hazard areas shall comply with Chapter 16.12 of this code.

16.10.630 GEOLOGIC HAZARD AREA PERFORMANCE STANDARDS.

A. Relevant performance standards from Sections 16.10.330, 16.10.430 and 16.10.530, as determined by the Town, shall be incorporated into mitigation plans.
B. The following additional performance standards shall apply to proposals within geologic hazard areas:

1. Geotechnical reports shall be prepared by a qualified geotechnical engineer or engineering geologist licensed in the state of Washington, with experience analyzing geologic, hydrologic, and groundwater flow systems, and who has experience preparing reports for the relevant type of hazard. Geotechnical reports for projects in geologically hazardous areas shall be subject to independent review;
2. Site planning should minimize disruption of existing topography and natural vegetation;
3. Impervious surface coverage should be minimized;
4. Disturbed areas should be replanted as soon as feasible pursuant to an approved landscape plan;
5. Clearing and grading regulations as set forth by the Town shall be followed;
6. Grading is generally discouraged in Landslide Hazard Areas. Any grading proposed in a Landslide Hazard Area must be reviewed by the geotechnical engineer or engineering geologist in accordance with 16.10.630B18;
7. For Landslide Hazard Areas, the factor of safety of landslide occurrences shall not be decreased below the limits of 1.5 for static conditions or 1.1 for dynamic conditions. Analysis of dynamic conditions shall be based on a horizontal ground acceleration equal to one-half of the peak horizontal ground acceleration with a two (2) percent in 50 year probability of exceedance as established by the current version of the International Building Code;
8. Temporary erosion and sedimentation controls, pursuant to an approved plan, shall be implemented during construction;
9. Where required in accordance with Section 16.10.650, a monitoring program, reviewed and approved by the Town, shall be prepared for construction activities permitted in geologic hazard areas;
10. Development shall not create a hazard to the site or adjacent properties, or result in significant sedimentation or erosion that adversely impacts surface water or other sensitive receptors, or poses a threat to structures/utilities;
11. The development will not increase or concentrate surface water discharge or sedimentation to adjacent sites beyond predevelopment conditions;
12. The development will not decrease slope stability on adjacent sites;
13. Structures and improvements shall be located, and clustered if appropriate, to preserve the most critical portion of the site and its natural landforms and vegetation;
14. Construction of trails shall meet the following criteria:
    a. Constructed of permeable or semi-permeable materials;
    b. Designed to minimize impact on the environmentally critical area;
    c. Have a maximum trail surface width of five feet;
    d. Meet all applicable requirements in Chapter 16.08 of this code;
15. Prohibited Development. On-site sewage disposal systems, including drain fields, shall be prohibited within landslide and erosion hazard areas;
16. Geotechnical Plan Review. Written acknowledgement from the licensed geotechnical engineer or engineering geologist who prepared the geotechnical report that they have reviewed the project plans and that they conform to their recommendations.
17. Geotechnical Construction Monitoring. A qualified geotechnical professional, working under the supervision of a licensed geotechnical engineer or engineering geologist must provide on-site monitoring of key earthwork activities including, but not limited to temporary and permanent erosion control, structural fill placement and compaction,

excavation of temporary cut slopes, pile and shoring installation, verification of foundation subgrade preparation, and subsurface drainage installation. Observations must be documented in daily written field reports. Upon completion of the work, the licensed geotechnical engineer or engineering geologist must provide a final letter verifying that the work was completed in accordance with the recommendations of the geotechnical professional's reports and recommendations, and geotechnical-related permit requirements.

16.10.640 GEOTECHNICAL REPORT--REQUIRED INFORMATION.

A geologic hazard area report shall include, at a minimum, the following information:

A. Aerial extent of the proposed project or activity, including all lands within two hundred feet of such proposed project or activity.

B. Geologic Hazards Assessment. An environmentally critical areas report for a geologically hazardous area shall contain an assessment of geologic hazards including the following site- and proposal-related information at a minimum:

1. Site and Construction Plans. The report shall include a copy of the site plans for the proposal showing:
    a. The type and extent of geologic hazard areas, any other critical areas, and buffers on, adjacent to, within two hundred feet of, or that are likely to impact the proposal;
    b. Proposed development, including the location of existing and proposed structures, fill, storage of materials, and drainage facilities;
    c. The topography, in minimum five-foot contours, as determined by the Director, of the project area and all hazard areas addressed in the report; and
    d. Clearing limits.

2. Assessment of Geological Characteristics. The report shall include an assessment of the geologic characteristics of the soils, sediments, and/or rocks of the project area and potentially affected adjacent properties, and a review of the site history regarding landslides, erosion, and prior grading. Soils analysis shall be accomplished in accordance with accepted classification systems in use in the region. The assessment shall include, but not be limited to:
    a. A description of the surface and subsurface geology, hydrology, soils, and vegetation found in the project area and in all hazard areas addressed in the report;
    b. A detailed overview of the field investigations, published data, and references; data and conclusions from past assessments of the site; and site-specific measurements, tests, investigations, or studies that support the identification of geologically hazardous areas;
    c. Subsurface exploration logs with soil descriptions in accordance with the Unified Soil Classification System. The logs shall identify the geologic units present (e.g., fill, landslide deposits, Vashon lodgement till, Vashon advance outwash, etc.). The subsurface explorations completed for the study must provide sufficient subsurface characterization to assess the geologic hazards of concern;
    d. Identification of existing fill areas;
    e. The locations of seeps, springs, or other surface expressions of groundwater;
    f. The depth to groundwater and estimates of potential seasonal fluctuations, if applicable to the project;

g. For projects in Landslide Hazard Areas, a discussion of the presence or absence of site features potentially indicative of historic landslide activity or increased risk of future landslide activity. Such features include, but are not limited to, tree trunk deformation, landslide scarps, springs, tension cracks, reversed slope benches, hummocky topography, vegetation patterns, and area stormwater management practices;
h. For projects in Landslide Hazard Areas, a current LIDAR-based shaded relief map of the project area and a discussion regarding the presence or absence of geomorphic features indicative of historic landsliding;
i. An assessment of the risk of erosion hazards; and,
j. A description of the vulnerability of the site to seismic and other geologic events.

3. Analysis of Proposal. The report shall contain a hazards analysis including a detailed description of the project, its relationship to the geologic hazard(s), and its potential impact upon the hazard area, the subject property, and affected adjacent properties. Where appropriate, the report shall also include the following information:
   a. For projects in Landslide Hazard Areas, the geotechnical report shall include the results of a quantitative slope stability analysis. The assessment of slope stability under dynamic conditions shall be based on a horizontal ground acceleration with a two (2) percent in 50-year probability of exceedance as defined in the current version of the International Building Code. The report shall also include an assessment of the present stability of the subject property, the stability of the property during construction, and the stability of the subject property after all development activities are completed. The assessment should include a discussion of the potential risks to other potentially impacted properties;
   b. For projects in Seismic Hazard Areas, the geotechnical report shall include an assessment of seismic hazards applicable to the project, such as liquefaction and/or lateral spreading. In areas subject to liquefaction, an estimate of the magnitude of seismically induced settlement that could occur during a seismic event. Estimation of the magnitude of seismically induced settlement shall be based on a peak horizontal ground acceleration based on a seismic event with a two (2) percent in 50-year probability of exceedance as defined in the current version of the International Building Code;
   c. For projects in Critical Erosion Hazard Areas, the geotechnical report shall include a discussion of the sensitivity of the site to erosion hazards and provide recommendations to mitigate the hazards present;
   d. For projects in or within 200 feet of a Tsunami Hazard Area, the geotechnical report shall disclose the presence of the Tsunami Hazard Area and comply with the requirements of Section 16.10.620E.
4. Geologic Hazard Mitigation. The report shall include recommendations to mitigate geologic hazards of concern based upon the geotechnical analysis.
5. Seismic Design Criteria. The report shall include the seismic site class for structural design when applicable to the project.
6. Geotechnical Design Recommendations. The report shall include geotechnical design recommendations applicable to the project. Such recommendations may include, but may not be limited to, types of suitable foundations, allowable footing or pile capacities,

minimum footing depths, floor slab support recommendations, retaining wall design criteria, grading recommendations, and drainage recommendations.

C. Incorporation of Previous Study. Where a valid environmentally critical areas report has been prepared within the last five years for a specific site, and where the proposed land use activity and surrounding site conditions are unchanged, said report may be incorporated into the required environmentally critical areas report. The applicant shall submit a hazards assessment detailing any changed environmental conditions associated with the site or updated code requirements.

D. Mitigation of Long-Term Impacts. When hazard mitigation is required, the mitigation plan shall specifically address how the activity maintains or reduces the preexisting level of risk to the site and adjacent properties on a long-term basis (equal to or exceeding the projected lifespan of the activity or occupation). Proposed mitigation techniques shall be considered to provide long-term hazard reduction only if they do not require regular maintenance or other actions to maintain their function. Mitigation may also be required to avoid any increase in risk above the preexisting conditions following abandonment of the activity. (Ord. 20-611 § 3 (Exh. C (part)), 2020)

16.10.650 GEOLOGIC HAZARD AREA MITIGATION MONITORING AND MAINTENANCE.

The Town shall have authority to require annual monitoring of mitigation activities and submittal of annual monitoring reports in accordance with Sections 16.10.230, 16.10.340, 16.10.540 and this section to ensure and document that the goals and objectives of the mitigation are met. The frequency and duration of the monitoring shall be based on the specific needs of the project as determined by the Town.