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4 **Kitsap County Code Title 19**

5 **Critical Areas Ordinance**

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8 Underline / Strike-out Version

9 **19.400 Geologically Hazardous Areas**

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**Chapter 19.400**

**GEOLOGICALLY HAZARDOUS AREAS**

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**19.400.405 Purpose and applicability.**

A. This chapter regulates uses and activities in those areas susceptible to erosion, sliding, earthquake, or other geologic events. Some geological hazards can be reduced or mitigated by engineering, design, or modified construction or mining practices so that risks to public health and safety are minimized.

The intent of this section is to:

1. Provide standards to protect human life and property from potential risks;
2. Regulate uses of land in order to avoid damage to structures and property being developed and damage to neighboring land and structures;
3. Control erosion, siltation, and water quality to protect anadromous and resident fish and shellfish.
4. Provide controls to minimize erosion caused by human activity; and
5. Use innovative site planning by placing geologically hazardous areas and buffers in open space and transferring development density to suitable areas on the site.

B. This chapter applies to development activities, actions requiring project permits, and clearing, except those identified as exempt in 19.100.125 and except those activities related to soils testing or topographic surveying of slopes for purposes of scientific investigation, site feasibility analysis, and data acquisition for geotechnical report preparation, provided it can be accomplished without road construction.

**19.400.410 General requirements.**

A. Any development activity or action requiring a project permit or any clearing within an erosion or landslide area shall:

1. Comply with the requirements in an approved geotechnical report when one is required, including application of the largest buffer and/or building setback;

1            2. Utilize best management practices (BMPs) and all known and available technology appropriate  
2            for compliance with this chapter and typical of industry standards;

3            3. Prevent collection, concentration or discharge of stormwater or groundwater within an erosion  
4            or landslide hazard area and be in compliance with Title 12 of this code (Stormwater  
5            Management);

6            4. Minimize impervious surfaces and retain vegetation to minimize risk of erosion or landslide  
7            hazards;

8            ~~5. Minimize vegetation removal.~~

9            B. Any development activity or action requiring a project permit or any clearing within an erosion or  
10           landslide area shall not:

- 11           1. result in increased risk of property damage, death or injury;
- 12           2. cause or increase erosion or landslide hazard risk;
- 13           3. increase surface water discharge, sedimentation, slope instability, erosion or landslide potential to  
14           adjacent downstream and down-drift properties beyond pre-development conditions;
- 15           4. adversely impact wetlands, fish and wildlife habitat conservation areas or their buffers; or
- 16           5. be identified as a critical facility necessary to protect public health, safety and welfare. This  
17           includes, but is not limited to, schools, hospitals, police stations, fire departments and other  
18           emergency response facilities, nursing homes, and hazardous material storage or production.  
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21           C. Field marking requirements. The proposed clearing for the project and all critical area buffers shall be  
22           marked in the field for inspection and approval by the department prior to beginning work. Field marking  
23           requirements for construction of a single-family dwelling will be determined on a case-by-case basis by  
24           the department. The field marking of all buffers shall remain in place until construction is completed, and  
25           final approval is granted by the department. Permanent marking may be required as determined  
26           necessary to protect critical areas or its buffer.

27           D. Clearing, grading and vegetation removal.

28           1. Minor pruning of vegetation for view enhancement may be allowed through consultation with  
29           the department. The thinning of limbs on individual trees is preferred to topping of trees for view  
30           corridors. Total buffer thinning shall not exceed twenty-five percent and no more than thirty  
31           percent of the live tree crowns shall be removed.

32           2. Vegetation shall not be removed from a landslide hazard area, except for hazardous trees  
33           based on review by a qualified arborist or as otherwise provided for in a vegetation management  
34           and restoration plan.

35           3. Seasonal restrictions. Clearing and grading shall be limited to the period between May 1 and  
36           October 1, unless the applicant provides an erosion and sedimentation control plan prepared by a

1 professional engineer licensed in the state of Washington that specifically and realistically  
2 identifies methods of erosion control for wet weather conditions.

3 4. Only the clearing necessary to install temporary erosion control measures will be allowed prior  
4 to clearing for roads and utilities construction.

5 5. The faces of cut and fill slopes shall be protected to prevent erosion as required by the  
6 engineered erosion and sedimentation control plan.

7 6. Clearing for roads and utilities shall be the minimum necessary and shall remain within marked  
8 construction limits.

9 7. Clearing for overhead power lines shall be the minimum necessary for construction and will  
10 provide the required minimum clearances for the serving utility corridor.

11 E. Existing logging roads. Where existing logging roads occur in geologically hazardous areas, a  
12 geological assessment may be required prior to use as a temporary haul road or permanent access road  
13 under a conversion or COHP forest practices application.

14 F. The department may also require:

15 1. clustering to increase protection to geologically hazardous areas; or

16 2. enhancement of buffer vegetation to increase protection to geologically hazardous areas.

17 **19.400.415 Designation of geologically hazardous areas.**

18 The county has designated geologically hazardous areas pursuant to RCW 36.70A.170 by defining them  
19 and providing criteria for their identification. Project proponents are responsible for determining whether a  
20 geologically hazardous area exists and is regulated pursuant to this chapter. The department will verify on  
21 a case-by-case basis the presence of geologically hazardous areas identified by project proponents.  
22 Specific criteria for the designation of geologically hazardous areas are contained in this chapter. While  
23 the county maintain some maps of potentially geologically hazardous areas, they are for informational  
24 purposes only and may not accurately represent all such areas.

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26 **19.400.420 Erosion hazard areas.**

27 A. General. Erosion hazard areas include areas likely to become unstable, such as bluffs, steep slopes,  
28 and areas with unconsolidated soils. These include coastal erosion-prone areas and channel migration  
29 zones, and may be inclusive of landslide areas.

30 B. Potential erosion hazard areas. Potential erosion hazard areas are depicted on the Kitsap County  
31 Erosion Hazards map. These potential erosion hazard areas are identified using the following criteria:

32 1. Areas of high erosion hazard

33 a. Channel Migration Zones, as mapped by the Washington Department of Ecology;

34 b. Coastal erosion with a sediment source rating value of 0.6 to 1.0, per the Prioritization  
35 Analysis of Sediment Sources in Kitsap County;

36 2. Areas of moderate erosion hazard

37 a. Areas identified as geologically hazardous for soil erosion (soil type and slope grade)  
38 by NRCS Kitsap County Soil Survey;

1 b. Slopes 15 percent or greater, not classified as I, U, UOS, or URS with soils classified  
2 by the U.S. Department of Agriculture NRCS as “highly erodible” or “potentially highly  
3 erodible”;

4 c. Coastal erosion with a sediment source rating value of 0.3 to 0.6 per the Prioritization  
5 Analysis of Sediment Sources in Kitsap County.

6 C. Erosion Hazard Indicators. The project proponents are responsible for determining actual presence  
7 and location of an erosion hazard area. These areas may be indicated by, but not limited to, the following:

8 1. Any of the above criteria currently identified in subsection (B) or amended hereafter.

9 2. Coastal Erosion Hazards.

10 a. Areas with active bluff retreat that exhibit continuing sloughing or calving of bluff  
11 sediments, resulting in a vertical or steep bluff face with little or no vegetation;

12 b. Lands located directly adjacent to freshwater or marine waters that are identified as  
13 regressing, retreating, or potentially unstable as a result of undercutting by wave action or  
14 bluff erosion. The limits of the active shoreline erosion hazard area shall extend landward  
15 to include that land area that is calculated, based on the rate of regression, to be subject  
16 to erosion processes within the next ten year time period.

17 3. Channel Migration Zones. The lateral extent that a river or stream is expected to migrate over  
18 time due hydrologically and geomorphologically related processes, as indicated by historic  
19 record, geologic character, and evidence of past migration over the past one hundred years.

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21 **19.400.425 Landslide hazard areas.**

22 A. General. Landslide hazard areas include those areas at risk of mass movement due to a combination  
23 of geologic, topographic, and hydrologic factors, such as bedrock, soil, slope (gradient), slope aspect,  
24 structure, hydrology, and other factors. Landslide hazards are further classified as either shallow or deep-  
25 seated.

26 B. Potential Landslide Hazard Areas. Potential landslide hazard areas are depicted on the Kitsap County  
27 Landslide Hazards map. These potential landslide hazard areas are identified using the following criteria:

28 1. Areas of high landslide hazard.

29 a. Shallow landslide areas with Factor of Safety (FS) of 0.5 to 1.5. FS is a method (Harp,  
30 2006) for slope stability based on the angle of the slope from LiDAR elevation data and  
31 strength parameters.

32 b. Areas with slopes greater to or equal to 30 percent in grade and deemed by a qualified  
33 geologist or geotechnical engineer to meet the criteria of U, UOS, or URS.

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35 c. All deep-seated landslides areas.

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37 2. Areas of moderate landslide hazard.

38 a. Shallow landslide areas with FS of 1.5 to 2.5

39 b. Slopes of 15 percent or greater and not classified as I, U, UOS, or URS, with soils  
40 classified by the U.S. Department of Agriculture NRCS as “highly erodible” or

1 “potentially highly erodible”; or slopes of 15 percent or greater with springs or  
2 groundwater seepage

3 c. Slopes in all areas equal to or greater than 40 percent.  
4

5 C. Landslide Hazard Indicators. Project proponents are responsible for determining the actual presence  
6 and location of a seismic hazard area. These areas may be indicated by, but not limited to the  
7 following:

- 8 1. Any of the above criteria currently identified in subsection (B) or amended hereafter;
- 9 2. Areas of historic failures, including areas of unstable, old and recent landslides or landslide  
10 debris within a head scarp;
- 11 3. Areas within active bluff retreat that exhibit continuing sloughing or calving of bluff  
12 sediments, resulting in a vertical or steep bluff face with little or no vegetation;
- 13 4. Hillsides that intersect geologic contacts with a relatively permeable sediment overlying a  
14 relatively impermeable sediment or bedrock;
- 15 5. Slopes that are parallel or sub-parallel to planes of weakness, such as bedding planes, joint  
16 systems, and fault planes in subsurface materials;
- 17 6. Areas exhibiting geomorphological features indicative of past slope failure, such as  
18 hummocky ground, back-rotated benches on slopes, etc.;
- 19 7. Areas with tension cracks or ground fractures along and/or near the edge of the top of a  
20 bluff or ravine;
- 21 8. Areas with structures that exhibit structural damage such as settling and cracking of  
22 building foundations or separation of steps or porch from a main structure that is located  
23 near the edge of a bluff or ravine;
- 24 9. The occurrence of toppling, leaning, bowed, or jackstrawed trees that are caused by  
25 disruptions of ground surface by active movement;
- 26 10. Areas with slopes containing soft or liquefiable soils;
- 27 11. Areas where gullyng and surface erosion have caused dissection of the bluff edge or slope  
28 face as a result of drainage or discharge from pipes, culverts, ditches, and natural drainage  
29 courses;
- 30 12. Areas where seeps ,springs or vegetative indicators of a shallow groundwater table are  
31 observed on or adjacent to the face of the slope;
- 32 13. Areas that include alluvial or colluvial fans located at the base of steep slopes and  
33 drainages.
- 34 14. Areas within 300 feet of areas classified as U, UOS, I, URS.  
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36 **19.400.430 Seismic hazard areas.**

37 A. General. Seismic hazard areas are areas subject to severe risk of damage as a result of earthquake-  
38 induced landsliding, seismic ground shaking, dynamic settlement, fault rupture, soil liquefaction, or  
39 flooding caused by tsunamis and seiches.

40 B. Potential Seismic hazard areas. Potential seismic hazard areas are depicted on the Kitsap County  
41 Seismic Hazards map. These potential seismic hazard areas are identified using the following criteria:

42 1. Areas of high seismic hazard are those areas with faults that have evidence of rupture at the  
43 ground surface.

44 2. Areas of moderate seismic hazard

1 a. Areas susceptible to seismically induced soil liquefaction, such as hydric soils as  
2 identified by the NRCS, and areas that have been filled to make a site more suitable for  
3 development. This may include former wetlands that have been covered with fill.

4 b. Areas identified as Seismic Site Class D, E, and F.

5 c. Faults without recognized evidence of rupture at the ground surface.

6 C. Seismic Hazard Indicators. Project proponents are responsible for determining actual presence and  
7 location of a seismic hazard area. These areas may be indicated by, but not limited to, the following:

- 8 1. Any of the above criteria currently identified in subsection (B) or amended hereafter;  
9 2. Areas identified as potential landslide areas. Includes slopes that can become unstable as a  
10 result of strong ground shaking, even though these areas may be stable under non-seismic  
11 conditions;  
12 3. Areas identified as high and moderate liquefaction and dynamic settlement hazard areas by the  
13 Washington Department of Natural Resources, including areas underlain by unconsolidated  
14 sandy or silt soils and a shallow groundwater table (static groundwater depth <30 feet) capable of  
15 liquefying in response to earthquake shaking. Dynamic settlement hazard areas are those  
16 underlain by more than 10 feet of loose or soft soil not susceptible to liquefaction, but that could  
17 result in vertical settlement of the ground surface in response to earthquake shaking.  
18 4. Tsunami and Seiche hazard areas. Generally, these are areas that are adjacent to Puget Sound  
19 marine waters and lakes that are designated as "A" or "V" zones as identified by FEMA and  
20 depicted on the FEMA maps or other maps adopted by Kitsap County.  
21 5. Fault rupture hazard areas, including areas where displacement (movement up, down, or  
22 laterally) of the ground surface has occurred during past earthquake(s) in the Holocene Epoch,  
23 and areas adjacent that may be potentially subject to ground surface displacement in a future  
24 earthquake.  
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26 **19.400.435 Development standards.**

27 **A. Erosion and Landslide Hazard Development Standards.**

- 28 1. Development activities or actions requiring project permits or clearing shall not be allowed in  
29 landslide hazard areas unless the applicant demonstrates:  
30 a. There is no alternate location for the structure on the subject property; and  
31 b. a geotechnical report demonstrates that building within a landslide hazard area will  
32 provide protection commensurate to being located outside the landslide hazard area and  
33 meets the requirements of this section. This may include proposed mitigation measures.  
34  
35 2. Top of slope building setback. All development activities or actions that require project  
36 permits or clearing in erosion and landslide hazard areas shall provide native vegetation from  
37 the toe of the slope to twenty-five feet beyond the top of slope, with an additional minimum  
38 fifteen-foot building and impervious surface setback, unless otherwise allowed through a  
39 geologic assessment. The minimum building and setback shall be increased from the top of  
40 the slope as follows:  
41 a. For high landslide hazard areas, the setback shall be equal to the height of the slope  
42 (1:1 horizontal to vertical) plus the greater of one-third of the vertical slope height or  
43 twenty-five feet.  
44 b. For moderate landslide hazard areas, the setback shall be forty feet from the top of  
45 slope.

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3. Toe of slope building setback. A geotechnical report may be required based on slope height and stability indicators. Where slope hazard indicators are not identified, the requirements of Title 14.04 of this code, the Kitsap County Building and Fire Code will apply.

4. The department may require a larger native vegetation ~~buffer~~-width than the standard buffer distance as determined above, if any of the following are identified through the geological assessment process:

- a. The adjacent land is susceptible to severe erosion and erosion control measures will not effectively prevent adverse impacts; or
- b. The area has a severe risk of slope failure or downslope stormwater drainage impacts.

5. The minimum native vegetation ~~buffer~~ width and/or building setback requirement may be decreased if a geotechnical report demonstrates that a lesser distance, through design and engineering solutions, will adequately protect both the proposed development and the erosion ~~and/or~~ landslide hazard area. The department may decrease the setback when such a setback would result in a greater than 1:1 slope setback.

B. Seismic Hazard Development Standards.

1. Development activities or actions requiring a project permit occurring within 200 feet of a seismic hazard area may be allowed with an approved geotechnical report that confirms the site is suitable for the proposed development and addresses any fill or grading that has occurred on the subject parcel.

2. Development activities or actions requiring a project permit within in a seismic hazard area shall be in accordance with Chapter 14.04 of this code, the Kitsap County Building and Fire Code.

**19.400.440 Review Procedures.**

A. Map review. The Kitsap County Geologically Hazardous Areas Maps (Erosion, Landslide, and Seismic) provide an indication of where potential geologically hazardous areas are located within the County. The department will complete a review of the map to determine if the proposed activity is located within a hazard area.

B. A geological assessment shall be required when the proposed activity is located within a potential hazard area.

C. A geotechnical professional shall complete a field investigation and geological assessment to determine whether or not the site for the proposed activity is located within 200 feet of the geologic hazard. (Special Reports 19.700).

D. The geological assessment shall be submitted in the most applicable form as follows:

1. A geological letter. When the geologist or geotechnical professional finds that no hazard area exists within 200 feet of the site, a stamped letter may be submitted demonstrating those findings;

2. A geological report. When the geologist finds that a geologically hazardous area exists within 200 feet of the site, but will not impact the site or need engineering design recommendations;

1           3. A geotechnical report. When the geotechnical engineer finds that a geologically hazardous  
2           area exists within 200 feet of the site, and will require engineering design recommendations or  
3           other mitigation measures necessary in order to construct or develop within the geologically  
4           hazardous area.

5 E. The department shall review the geological assessment and either:

6           1. Accept the geological assessment and approve the application; or

7           2. Reject the geological assessment and require revisions or additional information.

8

9 **19.400.445 Independent consultant review.**

10 If the department lacks the necessary expertise, the department may require an independent consultant  
11 review of the application by a qualified professional to assess compliance with this chapter. If  
12 independent consultant review is required, the applicant shall make a deposit with the department to  
13 cover the cost of the review. Unexpended funds will be returned to the applicant following final decision  
14 on the application.

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16 **19.400.450 Recording and disclosure.**

17 In addition to the required Critical Area Notice to Title for development activities within a critical area, the  
18 following shall be signed, notarized, recorded with the County Auditor prior to permit issuance for  
19 development in a geologically hazardous area requiring a geotechnical report:

- 20           A. An abstract and description of the specific types of risks identified in the geotechnical report;  
21           B. A statement that the owner(s) of the property understands and accepts the responsibility for the  
22           risks associated with developments on the property given the described condition, and agrees to  
23           inform future purchasers and other successors and assignees of the risks; and  
24           C. A statement that the owner(s) of the property acknowledge(s) that this chapter does not create  
25           liability on the part of Kitsap County, any officer or employee thereof for any damages that result  
26           from reliance on this chapter or any administrative decision lawfully made thereunder.

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