

SECTION 5.0200 HILLSIDE AND GEOLOGIC RISK OVERLAY (HGRO)

Contents

Contents..... 1

5.0201 Purpose 2

5.0202 Coordination with Other Regulations 2

5.0203 Applicability 3

5.0204 Prohibitions 3

5.0205 Exempt Uses and Activities 4

5.0206 Permit Required..... 5

5.0207 Application Requirements..... 5

5.0208 Tree and Vegetation Standards within the Hillside and Geologic Risk Overlay (HGRO)..... 9

5.0209 General Standards for Development within the Hillside and Geologic Risk Overlay (HGRO)..... 13

5.0210 Standards for Specific Development Types within the Hillside and Geologic Risk Overlay (HGRO) 14

5.0211 Additional Development Standards for Highly Sloped Subareas (HSS) 16

5.0212 Alternative Review..... 17

5.0213 Modification of HGRO Standards..... 20

5.0214 Mapping Protocols..... 20

5.0215 Map Administration and Correction 21

5.0216 Violations..... 23

5.0201 Purpose

The purpose of the Hillside and Geologic Risk Overlay (HGRO) is to ensure that development in or adjacent to hillside areas occurs in such a manner as to:

- A. Minimize the potential for earth movement and resultant hazards to life and property.
- B. Minimize soil erosion and siltation.
- C. Protect water quality.
- D. Minimize vegetation removal in sloped areas.
- E. Protect the aesthetic and scenic qualities of hillside areas.
- F. Assure the compatibility of new development with surrounding areas.
- G. Encourage site and building design which is consistent with the natural topography.
- H. Minimize the cost of public infrastructure provision.
- I. Provide for adequate access for emergency services.

5.0202 Coordination with Other Regulations

- A. **Allowed Uses.** Uses permitted in the Hillside and Geologic Risk Overlay shall be those listed as permitted in the underlying district designated for the site unless conflicting standards apply.
- B. **Conflicting standards.** The requirements of this Hillside and Geologic Risk Overlay (HGRO) apply in addition to other applicable local, state, regional, and federal development requirements. Conflicts between standards for allowed and conflicting uses shall be resolved as follows:
 - 1. Where there is a conflict between the standards of the underlying district or the Planned Development standards and the standards of this HGRO, the standards of the HGRO shall apply.
 - 2. Where there is a conflict between the standards of the HGRO and other overlay districts the most restrictive will apply.
 - 3. Street Trees, Parking Lot Trees, Buffer Trees and all trees within approved Permanent Disturbance Areas are subject to the tree removal and mitigation requirements of **Section 9.1000**. All other trees within the HGRO are subject to the tree removal, protection, and mitigation requirements of the HGRO.
 - 4. In all other situations, the most stringent of the conflicting standards apply.
- C. **Gresham Environmental Technical Guidance Manual.** Clarifications, commentary and examples are given in the Gresham Environmental Technical Guidance Manual. Content of the Guidance

Manual is to be used in tandem with development code and does not substitute for, amend, or supersede development code.

5.0203 Applicability

- A. Unless exempt pursuant to **Section 5.0205**, the regulations of this chapter apply when the following regulated activities are proposed within the boundaries of the Hillside and Geologic Risk Overlay (HGRO) on the City's Community Development Plan Map:
1. Development or redevelopment.
 2. All land divisions or property line adjustments.
 3. Removing, cutting, mowing, clearing, burning, or application of herbicides to vegetation.
 4. Changing topography, grading, excavating, or filling.
 5. Resource Enhancement.
 6. Construction or expansions of right-of-way improvements.
 7. Placement or stockpiling of woody debris.
- B. Development within an HGRO in accordance with the provisions of this Overlay shall not result in a change of the HGRO status of such developed areas on a property. In the case of a later development request seeking to develop within previously undisturbed HGRO on a property where a prior development request was subject to the provisions of this Overlay, the calculation of the maximum disturbance area allowed on the property shall be based on the location of the HGRO (or predecessor) at the time the previous development was approved.

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5.0204 Prohibitions

The following prohibitions apply within the HGRO. These prohibitions do not apply to the continuation, in the same manner, of activities which were lawfully begun before the effective date of this ordinance, activities approved pursuant to the provisions of this Overlay under **Section 5.0207**, or activities which are exempt in accordance with **Section 5.0205**. An activity continuing in the same manner means that there is no expansion in the scope of that activity within the HGRO.

- A. Stockpiling of woody debris is prohibited as follows:
1. On or within 30 feet of a mapped landslide deposit or associated head and flank scarps (per current Department of Geology and Mineral Industries' SLIDO database);
 2. Within 30 feet of a stream, as measured in horizontal feet from stream centerline; or
 3. Within the Highly Sloped Subarea (HSS).
- B. Any new gardens, lawns, structures, or development other than those allowed outright (exempted) or that is part of a regulated use that is approved by an HGRO permit.

- C. The dumping of materials of any kind.
- D. Grading, placement of fill, or the removal of native vegetation other than those allowed outright (exempted) or that is part of a regulated use that is approved by an HGRO permit.

5.0205 Exempt Uses and Activities

An exemption from obtaining a permit under this section does not exempt development from obtaining permits required by other sections of the code.

- A. **Exemptions for HGRO Areas including HSS.** Uses and activities meeting one or more of the following descriptions are exempt from the permit requirements of the HGRO standards.
 1. A building permit for a phased development project for which the Applicant has previously met the application requirements, as long as the area of new construction was identified on the original permit and no new portion of the HGRO will be disturbed.
 2. Operation, maintenance or repair of existing improvements.
 3. Alteration or replacement of existing structures that do not alter building footprint.
 4. The trenchless subsurface installation of utilities (e.g., via boring, jacking, or microtunneling), provided there is no vegetation removal beyond the limits of this section, no earth movement, and no impacts to trees (e.g., damage to the root zone).
 5. The planting of trees as designated and identified on the Gresham Native Plant List.
 6. The planting, removal, or maintenance of Street, Parking Lot, or Buffer Trees as defined in **Section 9.1012**.
 7. The planting and maintenance of landscaped areas within an approved permanent disturbance area, including tree removal.
 8. Pruning and maintenance of trees which adheres to ANSI pruning standards.
 9. Restoration work including stand management-related removal of no more than 3 trees when conducted as part of an annual restoration plan approved by the City.
 10. Fencing, excluding construction of walls.

- B. **Additional Exemptions for HGRO Areas other than Highly Sloped Subarea (HSS).** Except within the HSS, the following uses and activities are exempt from the permit requirements of the HGRO standards provided that in no case shall the activity result in the removal of any non-required trees over 6 inches DBH (see definition of "Required Tree" in Section 3.0103) outside of a permanent disturbance area or leave more than 500 square feet of ground exposed (devoid of stabilizing vegetation) between October 1 and May 1.

- 1. One time excavation or filling of land (including temporary stockpiles) not exceeding 10 cubic yards per lot.

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2. one time installation of impervious surface not exceeding 1,000 square feet per site.
3. Construction of retaining walls not exceeding 4 feet in height.
4. Construction of ponds and in-ground swimming pools not exceeding 1.5 cubic yards.
5. Any development that does not require a building permit except for development activities which exceed one or more of the thresholds in 1 through 4, above.
6. Outdoor bike and pedestrian recreation facilities for public use, limited to accessways, trails, picnic areas, or interpretive and educational displays and overlooks that include benches and outdoor furniture.

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5.0206 Permit Required

Unless exempt pursuant to **Section 5.0205**, a Hillside and Geologic Risk Overlay (HGRO) permit is required for all regulated activities within the HGRO as specified in **Table 5.0206-1**.

Table 5.0206-1 Permit Procedure and Applicable Standards for Development within an HGRO

Proposed Activity or Request	Permit Procedure	Applicable Standards
Hillside and Geologic Risk Overlay permits review concurrent with land use application except as specified below	Same as concurrent land use application	varies
Programmatic Permit	Type II	Section 5.0209(D)
Alternate Review	Type II	Section 5.0212
Modification of HGRO Standards	Type II/III	Section 5.0213
Verification of a Disturbance Area boundary on a developed lot with no concurrent land use application	Type I	Section 5.0207(E)
All other Hillside and Geologic Risk Overlay permits with no concurrent land use application	Type I	varies

5.0207 HGRO Application Requirements

Applications must include the items required for the applicable procedure type in accordance with **Article 11**, other applicable sections of the code, Gresham Environmental Technical Guidance Manual, and the HGRO application submittal requirements as specified in **Table 5.0207-1**. Applications for Alternative Review must also include the submittal requirements specified in **Section 5.0212**.

Table 5.0207-1 HGRO Submittal Requirements

Proposed Development Activity	Submittal Requirements in 5.0207
Tree removal (non-exempt) (other than tree removal pursuant to a programmatic permit submitted in accordance with Section 5.0209(D))	<ul style="list-style-type: none"> • Tree Removal / Protection / Revegetation Plan and Documentation (Subsection (A))

Proposed Development Activity	Submittal Requirements in 5.0207
Tree removal pursuant to a programmatic permit in accordance with Section 5.0209(D)	<ul style="list-style-type: none"> • Tree Removal / Protection / Revegetation Plan and Documentation (Subsection (A)) • Certification and Documentation (Subsection (C)) if storage of woody debris exceeds dimensions • Additional Plans and Narrative Subsection (D)
All other non-exempt development activities (e.g., design review, special use review, building permits, land divisions, etc.)	<ul style="list-style-type: none"> • Tree Removal / Protection / Revegetation Plan and Documentation (Subsection (A)) • Construction Management and Preliminary Grading Plan (Subsection (B)) • Certification and Documentation (Subsection (C)) • Additional Plans and Narrative (Subsection (D))
Verification or establishment of a disturbance area boundary on a developed lot with no concurrent land use application	<ul style="list-style-type: none"> • Disturbance Area Boundary Verification (Subsection (E))

A. Tree Removal, Protection, and Revegetation Plan. A Tree Removal, Protection, and Revegetation Plan that includes, at a minimum, the following:

1. Evidence regarding the credentials of the qualified professional (e.g. certified arborist, geotechnical professional, or landscape architect) who made assessments or prepared the plan.
2. If Applicant is requesting tree removal on the basis that the tree(s) is on the City of Gresham Invasive Plant List, the identity of the species including in-focus, high resolution photographs supporting identification of species such as habitat, trunk, crown, flowers, fruits, branches, twigs, and leaves.
3. If Applicant is requesting tree removal on the basis that the tree(s) meets the definition of dangerous tree, an International Society of Arboriculture (ISA) basic tree risk assessment prepared by a qualified arborist is required.
4. If tree replacement is required, but cannot be achieved onsite (per **Section 5.0208(C)(6)**), a statement that the Applicant proposes to make a payment of a cash-in-lieu and documentation supporting this request.
5. A tree removal / revegetation map identifying the following:
 - a. The boundary of the entire project site and the boundary of the HGRO (and HSS, if applicable) on the site;
 - b. The location on the site where tree removal is proposed;

- c. The species, size, and location of individual trees over 6 inches DBH that are proposed for removal;
- d. All trees 6 inches DBH or greater (numbered) within 50 feet of trees to be removed;
- e. The methods used to protect all other trees over 6 inches DBH on the site; and
- f. The species, size and location of mitigation trees (if proposed).

B. Construction Management and Preliminary Grading Plan. In addition to any other plan required by **Section 9.0500**, the application shall include a construction management and preliminary grading plan that includes, at a minimum, the following:

1. Location of site access and egress that construction equipment will use.
2. Equipment and material staging and stockpile areas.
3. Erosion and sediment control measures in accordance with the City of Gresham "Erosion Prevention and Sediment Control Manual" appendix of the Gresham Stormwater Management Manual.
4. Critical Root Zone of all trees to be preserved within the Disturbance Area and within 50 feet of the Disturbance Area (measured in horizontal distance from the edge of Disturbance Area) and location and type of tree protection (per Gresham Environmental Technical Guidance Manual).
5. Location and square footage of all disturbance areas to be cut, filled or cleared, including but not limited to roads, sidewalks, utilities, yards and landscaping, building envelopes or pads (buildable areas), driveways, and other accessways. The total square footage shall also be summed and expressed as a percentage of the total area of the parcel. Grading area limitations are described in **Sections 5.0209, 5.0210 and 5.0211.**

C. Certification. A certification form (provided by the City) must be prepared, or reviewed and stamped by a Certified Engineering Geologist or Geotechnical Engineer and submitted along with any documentation and plans relied on in issuing the certification. The purpose of the Certification is to ensure that development in or adjacent to hillside areas is evaluated by a Certified Engineering Geologist or Geotechnical Engineer to ensure it is designed in a manner that provides for public health, safety, and welfare.

1. Where certification is required for a permit, a permit shall *only* be issued if a Certified Engineering Geologist or Geotechnical Engineer affirms and certifies the following based on their professional opinion. A permit shall not be granted if a Certified Engineering Geologist or Geotechnical Engineer does not affirm and certify the following based on their professional opinion. :

- a. Potential landslide hazards identified for this site and nearby and the DOGAMI Interpretive Map Series 57 (IMS-57) Landslide hazard and risk study of central and western Multnomah County, Oregon, by William J. Burns, Nancy C. Calhoun,

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Jon J. Franczyk, Kassandra O. Lindsey, and Lina Ma, 2018 (Report and Data) have been reviewed;

- b. The proposed development activity was reviewed according to industry standards for geologic engineering in Oregon;
- c. Either:
 - i. That the proposed development activity will not be negatively impacted by, or cause negative impacts to onsite and offsite engineering geological conditions, processes, and hazards, including but not limited to, existing or post development soil stability or any of the following site features: springs or seeps, depth of soil to bedrock, variations in soil types, or a combination of these conditions; or
 - ii. If proposed development activity will be negatively impacted by, or cause negative impacts to onsite and offsite engineering geological conditions, processes, and hazards, including but not limited to, any of the features listed in **Subsection (C)(1)(c)(i)** above, the plans incorporate the methods for safely mitigating the impact(s).
- d. Where applicable, attest to the following certification requirements stated in **Subsections 5.0208(D), 5.0209(A), 5.0209(D)(2), 5.0211(B)(2), 5.0211(C)(2), 5.0212(B)(2), or 5.0212(C)(2).**

2. Certification that is submitted pursuant to **Subsection (1)** shall include the Applicant’s statement that they will develop the site in accordance with the Certified Engineering Geologist’s or Geotechnical Engineer’s certification and that they will schedule and perform the recommended geotechnical engineer or certified engineering geologist site inspections.

3. In determining if the Certification satisfies the permit requirements, the City shall review the Certification only to determine whether a Certified Engineering Geologist or Geotechnical Engineer has affirmed and certified that the proposal meets the above listed requirements. The City shall not substitute its judgement or discretion for the professional judgement of the Certified Engineering Geologist or Geotechnical Engineer.

D. Additional Plans and Narrative. Additional plans and narrative necessary as determined by the City to demonstrate compliance with the applicable standards of the HGRO.

E. Disturbance Area Boundary Verification. Owners of individual legal lots created and developed with a single family dwelling or duplex prior to January 15, 2021, who wish to establish or verify an approved permanent disturbance area boundary on that lot may submit a Disturbance Area Boundary Verification request form (provided by the City). The form shall be accompanied by aerial photography or other evidence that predates January 15, 2021, which identifies the location of all areas meeting the definition of permanent disturbance area. The date of the evidence must be verifiable by the City.

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5.0208 Tree and Vegetation Standards within the Hillside and Geologic Risk Overlay (HGRO)

Trees and vegetation provide protection against soil erosion and earth movement as well as enhance the aesthetic value of those hillside areas that may be highly visible to the surrounding community.

A. Trees and Vegetation Protection. Except as provided in **Subsections (1)** through **(4)** below, land within the HGRO that is outside of an approved permanent disturbance area shall be retained in a natural state. Lands to be retained in a natural state shall be protected from damage during construction. Protection methods shall be in accordance with the Gresham Environmental Technical Guidance Manual. All trees within approved Permanent Disturbance Areas are subject to the tree removal and mitigation requirements of **Section 9.1000**. The following standards apply outside of an approved Permanent Disturbance Area:

1. A tree over 6 inches DBH can be removed in the following circumstances if mitigation is provided in accordance with **Subsection (B)**:
 - a. The tree is identified as a species on Gresham Invasive Plant List by an arborist, professional wetland scientist, or landscape architect. Applications must include in-focus, high resolution photographs supporting identification to species such as habitat, trunk, crown, flowers, fruits, branches, twigs, and leaves;
 - b. The tree is found to meet the definition of dangerous tree by a qualified arborist who has completed a basic tree risk assessment. The risk assessment shall be included with application. Conversion of a dangerous tree to a snag which involves the removal of part of the tree and retention as a habitat tree may be allowed with the dangerous tree permit; or
 - c. The tree is within an approved temporary disturbance area and is less than 24 inches DBH.
2. Trees 6 inches DBH or less and other vegetation may be removed provided that the area is stabilized with vegetation as follows:
 - a. No more than 500 square feet of ground shall be left exposed between October 1 and May 1 each year, and
 - b. Disturbed soils shall be stabilized with new native vegetative cover prior to October 1 in any given year.
3. Trees shall not be removed before public facility construction plans are approved, building permits are issued, or relevant development permits are issued. When removing a tree, other trees on the site shall be protected from damage during construction, and any disturbed soils shall be stabilized with new vegetative cover by seeding. Protection methods shall be in accordance with the Gresham Environmental Technical Guidance Manual.
4. All required revegetation shall be installed per **Section 5.0209(C)**.

B. Tree Replacement Quantity. The number of replacement trees required for tree removal shall be as specified below. Replacement trees shall be planted in accordance with **Subsection (C)**.

- a. Dangerous Tree Removal, including conversion to Habitat Tree (snag). For each dangerous tree removed one replacement tree shall be planted.
- b. Other tree replacement. Each tree removed for reasons other than dangerous tree replacement is subject to the replacement rates in **Table 5.0209-1**.

Table 5.0209-1 Tree Replacement

Diameter of Removed Tree (measured 4.5 feet above ground)	Number of replacement trees required
6" up to 24" DBH	2 trees
Above 24" up to 36" DBH	3 trees
Above 36" DBH	6 trees

C. Replacement Trees and Vegetation.

- 1. Location. Replacement trees shall be located as follows:
 - a. Replacement of trees removed from the Highly Sloped Subarea (HSS) shall be located within the HSS.
 - b. Replacement of trees removed from the HGRO outside the HSS shall be located within the HGRO outside of the Permanent Disturbance Area.
- 2. Species. Replacement trees and vegetation shall be as specified in the Gresham Environmental Technical Guidance Manual.
- 3. Size. Replacement Trees shall be one gallon, bareroot, plugs, or stakes as specified in the Gresham Environmental Technical Guidance Manual or at the discretion of the Applicant, as specified by an arborist.
- 4. Timing. Vegetation and trees required by **Subsections (A)** and **(B)** shall be installed prior to acceptance of public facilities in the case of land division or approval of a final building inspection. Within the temporary disturbance area ground cover shall be planted before the next wet-weather period and trees shall be planted before the end of next wet-weather period (as defined in the Public Works Standards) or as otherwise specified in the permit. In the case of dangerous tree removal replacement trees shall be planted during the wet weather season following the removal.
- 5. Maintenance and monitoring. With the exception of dangerous tree replacement and development per **Section 5.0211(A)**, to ensure replacement trees are maintained in a healthy condition for a period of five years after planting, the Applicant shall record a document identifying the person or entity responsible for maintenance of the trees during a five year monitoring period. The document shall outline the obligation of the

person or entity to provide yearly reports regarding condition of the trees and replant any replacement tree that dies, becomes diseased, or is removed during this five-year time period. Trees planted to meet mitigation requirements section shall not be removed unless such trees are dangerous.

6. Cash-in-lieu. The cost of cash-in-lieu of on-site tree replacement shall be determined by the City Council based upon the expected tree replacement cost including labor, materials, and maintenance for each replacement tree, according to the costs reflected in the Gresham Environmental Technical Guidance Manual. Payment of a cash-in-lieu of replanting is only allowed if the City determines:
 - a. There is insufficient area on the lot to meet the standard tree replacement standards in **Section 5.0209(B)**; or
 - b. Tree replacement or management provided within public open space, public right-of-way or a nearby Resource Area will be of greater benefit to area slope stability.

D. Programmatic Permit. Programmatic Permits may only be obtained by Public Agencies and Utilities with a Gresham franchise license to allow for routine public facility or utility operation, repair and replacement, and/or on-going maintenance or enhancement programs. The purpose of a Programmatic Permit is to eliminate the need for individual tree removal permits for ongoing activities within the HGRO. Programmatic permits do not cover tree protection, removal, planting, or mitigation associated with a development permit.

1. Time Limits. The Manager may approve a Programmatic Permit for a period of up to 2 years. An annual report from the Applicant on activity conducted under the permit is required to be submitted to the Manager by June 30 each year. Failure to submit the annual report will result in cancellation/suspension of the Programmatic Permit.
2. Work Standards. All work conducted under a programmatic permit must be conducted in accordance with proper arboricultural practices as detailed in the most recent version of ANSI A300 standards.
3. Review Factors. The Manager may approve a Programmatic Permit for work in the HGRO and HSS upon finding that the following review factors are met or will be met with conditions, according to the Gresham Environmental Technical Guidance Manual:
 - a. Biodiversity: The activities will result in the same or better species diversity within each project area treated under the programmatic permit.
 - b. Erosion Control: Activities will be planned to prevent exposed soil areas of greater than 500 square feet during the wet weather window of October 1 to May 1.
 - c. Mitigation of Impacts: The activities will protect or improve project area conditions as they relate to water quality, critical habitat protection, and forest health.

- d. Risk reduction:
 - i. Ignition fuel reduction at the private-public property interface shall occur before any additional coarse woody debris (CWD) is placed as part of stand management activities.
 - ii. CWD shall be placed in a manner not likely to increase wildfire, slope movement, or public safety risks.
 - iii. Deciduous vegetation will be preferred for retention in defined firebreak areas.
 - iv. Coniferous vegetation will not be planted in defined firebreak areas.
 - v. Suspended branch material is addressed as part of site activities.
 - vi. Allowance for amount and location limitations for cut or chipped CWD are observed.
 - vii. Snags or habitat tree retention is incorporated into project areas where retention of such features poses no risk to structures or active use areas.
 - viii. Within areas mapped as past landslides according to DOGAMI IMS-57, or mapped as HSS, a Certified Engineering Geologist or Geotechnical Engineer must certify according to 5.0207(C) that vegetation removal, with the exception of dangerous tree removal, or deposition of CWD will not increase geologic risk or otherwise cause negative impacts to onsite and offsite geologic conditions or processes.
4. Application Requirements. The application requirements in **Section 5.0208** do not apply. In addition to the requirements for a Type II application, an application for a programmatic permit shall include:
 - a. A narrative description of proposed activities and locations.
 - b. A map of the areas in which work will occur, including generalized locations of each type of work.
 - c. Sufficient documentation to describe compliance with approval factors above.
5. Permit Specifications. Approved permits issued by the City shall include the following specifications. The Manager may modify these specifications during the permit period in order to respond to public safety concerns, changes in regulations, or previously unforeseen issues, provided the Applicant is notified in writing and provided an opportunity to appeal the change:
 - a. Duration of permit.
 - b. Geographic area covered by the permit.
 - c. Permitted activities and any restrictions on the method, number, type, location or timing of activities.
 - d. Procedures and thresholds for informing neighboring residents, businesses and the City of upcoming permitted activities.

- e. Monitoring, performance tracking and reporting requirements. The Manager may prescribe rules or procedures that specify the manner in which such tracking and reporting occur.
6. Revocation. The Manager may revoke a Programmatic Permit upon finding the Applicant is not adhering to the limitations imposed or is acting beyond the activities permitted by the Programmatic Permit. Noncompliance with the Programmatic Permit may also be cause for any other enforcement action as stated in **Section 5.0216**.

5.0209 General Standards for Development within the Hillside and Geologic Risk Overlay (HGRO)

In addition to other applicable standards in the code, the standards in this section apply to all regulated development within the HGRO. Development within the HGRO is also subject to the applicable standards for specific development types in **Section 5.0211**. In addition, development within the HSS is subject to the standards in **Section 5.0212**.

- A. Grading, Retaining Wall Design, Footings, Foundations, Changes to Site Drainage, Ponds, Pools, and Erosion Control Plans.** All grading, retaining wall design, footings, foundations, changes to site drainage, ponds, pools, and erosion control plans for development within the HGRO shall be shown on site plan(s) and be designed by a licensed design professional and must be certified per **5.0207(C)** to be in accordance with the recommendations and guidelines provided by a Certified Engineering Geologist or Geotechnical Engineer.
- B. Clearing, Cuts, Grading, or Fills.** Only land within an approved disturbance area shall be graded, cleared or otherwise disturbed. All cuts, grading, or fills shall conform to the International Building Code and be consistent with the provisions of this ordinance. Erosion control measures shall conform to the City of Gresham Erosion Prevention and Sediment Control (EPSC) requirements as included in the City of Gresham's Stormwater Management Manual. Perimeter protection and protection of bare soils are required for ground disturbance exceeding 500 square feet.
- C. Trees and Vegetation.** Tree and vegetation removal shall comply with the standards in **Section 5.0209**.
- D. Surface and Groundwater Drainage.** All facilities for the collection of stormwater runoff for any development in the HGRO shall be required to be constructed on the site and in accordance with **Section 9.0500** and the following requirements:
 1. Stormwater systems which infiltrate shall not be utilized within the HGRO except as provided in **Subsection 2**, below.
 2. A Type II Alternate Review may be approved pursuant to **Section 5.0213** if a Certified Engineering Geologist or Geotechnical Engineer certifies that geologic conditions, processes, and hazards onsite and offsite will not be negatively impacted by the proposed infiltration of stormwater on the site per **Section 5.0207(C)**.

5.0210 Standards for Specific Development Types within the Hillside and Geologic Risk Overlay (HGRO)

In addition to the general development standards in **Section 5.0210**, the standards in this section are applicable to specified types of development.

- A. Single-family detached dwellings and duplexes.** The following standards apply to proposed single-family detached dwellings and duplexes and to additions or alterations of existing single-family dwellings and duplexes and related accessory structures on existing legal lots created prior to *[insert effective date of ordinance]* unless otherwise exempt under **Section 5.0205**.

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The disturbance area allowed within the HGRO shall meet the following standards:

1. The maximum disturbance area allowed on a lot is determined by subtracting all portions of the lot outside the HGRO from 6,000 square feet. If there is 6,000 square feet of contiguous land with a minimum depth and width of at least 40 feet outside of the HGRO, all permanent and temporary disturbance must occur outside the HGRO. If there is not a contiguous area of 6,000 square feet with a depth and width of at least 40 feet outside the HGRO, encroachment into HGRO shall be limited to the amount of area needed to make up for the deficit.
2. The disturbance area must be entirely outside the HSS except as provided in **Section 5.0212**.
3. Of the 6,000 square feet maximum disturbance area, no more than 4,000 square feet shall be permanent disturbance area.
4. Trees may be removed within the permanent disturbance area. Only trees less than 24-inch DBH may be removed in the temporary disturbance area. Replacement shall be in accordance with **Section 5.0209**.
5. Temporary disturbance areas shall be restored to predevelopment grade.
6. On lots where existing developed areas meeting the definition of permanent disturbance area exceed the standards of this subsection, such areas can be maintained or modified, but may not be expanded.

- B. Land Divisions and Lot Line Adjustments.** The following standards apply to all land divisions (including Planned Developments) and Lot Line Adjustments.

1. No density credit is permitted for portions of the site that are within the HGRO, except through a Planned Development, as provided by **Section 6.0300**.
2. On each proposed developable lot, Applicants shall identify a contiguous permanent disturbance area of at least 2,000 square feet with a minimum depth and width of at least 40 feet. Larger permanent and temporary disturbance areas may be shown on a lot, but all disturbance areas shall be included in the calculation of maximum disturbance area in **Subsection 3**.

3. No more than 55% of the total HGRO area on the site shall be included within a disturbance area (temporary and permanent). The disturbance area identified on each proposed developable lot shall be included in the calculation of maximum disturbance area for the land division or Planned Development. In order to meet this requirement, Applicants are encouraged to employ innovative site design techniques such as:
 - Limiting grading on building lots only to that area needed for driveways, walkways, building pads, and necessary retaining walls;
 - Limiting the total area of the site dedicated to roadways and paths while maintaining adequate connectivity and providing for adequate emergency access consistent with the roadway standards;
 - Locating roads and paths on less steeply sloped areas to minimize the width of graded areas needed for roads;
 - Designing and locating structures so that they fit into the contour of the hillside rather than altering the hillside to fit the structure;
 - Using retaining structures as an alternative to banks of cuts and fills;
 - Building designs, which require less grading, such as split-level and stair-stepping foundations and the use of piers;
 - Placing structures as close as possible to the street so as to minimize driveway construction in the sloped areas; and
 - Focusing development on areas outside the HGRO.
4. All disturbance areas must be entirely outside the Highly Sloped Subarea (HSS) except as provided in **Section 5.0212**.
5. Areas outside the permanent disturbance area shall be placed in an easement (public or private) or tract. If preservation is proposed to be private, it can be either by tract or as a part of an individual lot (with an easement). Public preservation shall be by tract only. Easement types shall be natural resource, open space, or public access easements, in accordance with **Section 9.0300** provided that the easement ensures that the land within the easement shall be left undisturbed and protected from construction and post-development impacts. Acceptance of proposed dedication of open space shall be at the City's discretion

C. Multi-Family, Commercial, Industrial and Institutional Development. The following standards apply to all Multi-Family, Commercial, Industrial, and Institutional development.

1. No more than 55% of the total HGRO area on the site shall be included within a disturbance area (temporary and permanent). In order to meet this requirement, Applicants are encouraged to employ innovative site design techniques such as:
 - Limiting grading to that area needed for driveways, walkways, building pads, minimum parking, solid waste collection facilities and necessary retaining walls.

- Limiting the total area of the site dedicated to roadways, paths, and internal driveways while maintaining adequate connectivity and providing for adequate emergency access consistent with the roadway and parking lot standards.
 - Locating roads, paths, parking lots, and internal driveways on less steeply sloped areas to minimize the width of graded areas needed for roads.
 - Designing and locating structures so that they fit into the contour of the hillside rather than altering the hillside to fit the structure.
 - Using retaining structures as an alternative to banks of cuts and fills.
 - Placing structures as close as possible to the street so as to minimize driveway construction in the sloped areas.
 - Focusing development on areas outside the HGRO.
2. All disturbance areas must be entirely outside the Highly Sloped Subarea (HSS) except as provided in **Section 5.0212**.

5.0211 Additional Development Standards for Highly Sloped Subareas (HSS)

The HSS is a subarea of the HGRO. In addition to the general development standards in **Section 5.0210** and the applicable development standards in **Section 5.0211**, the standards of this section apply to regulated development within HSS.

- A. Single-family detached and duplexes.** The following standards apply to proposed single-family detached dwellings, duplexes, and additions or alterations of existing single-family dwellings, duplexes, and related accessory structures located in the HSS either on existing legal lots that were created prior to January 15, 2021 or which were created through a PD in accordance with **Section (B)**. The disturbance area allowed within the HSS shall meet the following standards.
1. The maximum disturbance area (permanent and temporary) allowed within the HSS is determined by subtracting all portions of the lot outside the HSS from 2,000 square feet. If there is an area of 2,000 contiguous square feet at least 40 feet in width and depth outside of the HSS, all permanent and temporary disturbance must occur outside the HSS. If there is not 2,000 square feet of land outside the HSS, encroachment into HSS shall be limited to the amount of area needed to make up for the deficit.
 2. On lots where existing developed areas meeting the definition of permanent disturbance area exceed the standards of this subsection, such areas can be maintained and modified, but may not be expanded.
- B. Land Divisions and Lot Line Adjustments.** The following standards apply to all land divisions (including Planned Developments) and Lot Line Adjustments.
1. No new lots which include HSS shall be created except through a Planned Development (PD).
 2. The following standards apply to all Planned Developments that include HSS.

- a. Permanent disturbance areas may include HSS only when the PD is 10 acres or more in size;
 - b. No more than 30 percent of the total HSS on the site may be included within permanent disturbance; and
 - c. A Certified Engineering Geologist or Geotechnical Engineer must certify (per **Subsection 5.0207(C)**) that disturbance area within the HSS are not susceptible to earth movement nor landslide hazard; and the proposed construction and design techniques will minimize cuts, fills, and potential adverse impacts to existing vegetation and have no adverse impacts to existing drainage ways, water quality, and slope stability.
- C. Open Space Improvements.** Open spaces may be improved with private walking/hiking trails, or with public trails or paths. Public trails or paths shall be limited to public open spaces, and private trails or paths shall be limited to private open spaces and conservation easements.
- D. Public Facilities and Utilities.** Public facilities (including streets) and utilities are not allowed within the Highly Sloped Subarea (HSS) except through the HGRO Alternative Review process as provided in **Section 5.0213**.
- E. Technical Review.** When a Geotechnical Report or Impact Evaluation and Alternatives Analysis is submitted it shall be reviewed by a third-party reviewer. The Manager shall select and consult with a Geotechnical Engineer and/or Certified Engineering Geologist to evaluate the methodology, conclusions, and recommendations of the Applicant's submittals regarding site conditions and potential geologic hazards. The consultant for the City may conduct a site visit prior to submitting an evaluation to the City. The written evaluation and recommendation from the City's consultant shall include an evaluation regarding the following:
- the acceptability of the observations, procedure, data, reports, methods, and assumptions relied upon; and
 - the support of the conclusions and recommendations by evidence provided.

If required, the written evaluation and recommendation from the City's Consultant shall be received prior to a recommendation for a Type III process, or before a decision for a Type II process. Costs for such consultation shall be paid by the Applicant, in accordance with the City of Gresham's Development Fee Resolution.

5.0212 Alternative Review

Applicants who cannot or choose not to comply with the standards of **Section 5.0209, 5.0210, or 5.0211**, may apply for Alternative Review in accordance with this Section.

- A Application Requirements.** In addition to the items described in Section 5.0208 (further clarified in the Gresham Environmental Technical Guidance Manual), the Applicant shall also provide information described in Subsections (1) through (3) and any additional information needed to demonstrate compliance with the approval criteria in Subsection B. For utility projects undertaken by public utilities across property that is not owned by the utility, the utility is not

required to map or provide any information about the property except for the area within 100 feet of the location of the proposed disturbance area of the utility's project.

1. **Impact Evaluation and Alternatives Analysis.** An impact evaluation and alternatives analysis is required to determine compliance with the approval criteria and to evaluate development alternatives for a particular property. At a minimum, the analysis should evaluate three alternatives: 1) no project, 2) the applicant's preferred alternative, and 3) a second practicable alternative that proposes less development within HGRO and HSS. The impact evaluation shall include all the following items:
 - a. Identification of on-and off-site engineering geological conditions, processes, and hazards
 - b. An explanation of proposed unavoidable impacts to on and offsite engineering geological conditions, processes, and hazards.
 - c. Evaluation of alternative locations, design modifications, or alternative methods of development to determine which option best reduces the impacts on the HGRO provided on the property.
3. The Impact Evaluation and Alternatives Analysis shall be prepared and signed by a Geotechnical Engineer and/or Certified Engineering Geologist and shall meet the current standard of practice.

B. Public Facilities and Utilities.

1. When the applicant demonstrates through the alternatives analysis that either (a) and/or (b) below will reduce the amount of HGRO which will be disturbed. The City may approve an alternate that:
 - a. Adjusts the "minimum block spacing and maximum block perimeter standards for local queuing and transitional street types in **Section A5.501** by up to 50 percent.
 - b. Adjust the standard street cross section within the HSS to omit the median, parking lane, and landscape strip, or combination thereof.
2. The City may approve public facilities not meeting the standards of **Section 5.0211(D)**, if it determines that the street location is necessary to provide street connectivity or for emergency vehicle access. Public facilities (including streets) and utilities may be constructed if the following is certified per **Section 5.0207(C)** by a Certified Engineering Geologist or Geotechnical Engineer:
 - a. That these facilities can be constructed given the geologic and topographic conditions of the area of development; and
 - b. That these facilities can be constructed in a manner that does not increase the risk of earth movement or erosion.

C. All other development. The City may approve an application which does not comply with the

clear and objective standards of this code if the applicant shows through the Impact Evaluation and Alternatives Analysis that the following conditions are met:

1. The applicant shows that the development has less detrimental impact to the slope than development meeting the standards would. If there is HSS on a property then the Applicant shall first avoid the intrusion of development into the HSS, to the extent practicable.
2. A Certified Engineering Geologist or Geotechnical Engineer certifies in Section 5.0207(C) that the proposed alternative (including consideration of any proposed mitigation) will not increase the risk of earth movement or landslide hazard; and the proposed construction and design techniques will minimize cuts, fills and potential adverse impacts to existing vegetation and have no adverse impacts to existing drainage ways, water quality and slope stability.

D. Additional disturbance on flat land. When a land division is proposed which includes a contiguous area of HGRO at least an acre in size located on a DOGAMI mapped landslide deposit and which is comprised of slope less than 15%, such area can be exempted from of 5.0210(B)(3). Such and application is not required to submit the Impact Evaluation and Alternatives Analysis of **Section 5.0212(A)** however, it shall be accompanied by:

1. A slope analysis showing the area with slopes of less than 15%. Areas shall be identified using raster analysis of a LiDAR-derived Bare-Earth DEM created as part of the Oregon LiDAR Consortium Metro 2014 Project. The DEM is processed to reflect into percent slope rise and then slope is averaged for each cell across a 45-foot radius circle. Cells with an average surrounding slope of 15% or less are included. Concentrations are identified using raster analysis of a LiDAR-derived Bare-Earth DEM created as part of the Oregon LiDAR Consortium Metro 2014 Project. The DEM is processed to reflect percent slope and then to select slope data where at least 1/3 of surrounding cells within a 45-foot radius circle were also designated as less than 15% in slope percent.
2. A soils and geology report of sufficient detail to describe the geologic conditions of the parcel and immediate vicinity and evaluate the potential geologic hazards associated with the site and prepared by Geotechnical Engineer and/or Certified Engineering Geologist. The report must meet current standard of practice and contain:
 - A review of the geologic history and history of prior excavation and fills
 - Field reconnaissance of the site and its vicinity
 - Scope of work done, investigative methods, sampling methods, logs of borings or test pits, elevations of borings or test pits for reference of materials and samples to finished grade or footing elevations, and the identification of the elevations
 - Location of all samples taken, surface and subsurface
 - Groundwater conditions and potential future natural and artificial seepage effects
 - (USCM) Unified Soil Classifications of Materials

- Material competency and strength of the existing soils
- Pertinent engineering geologic attributes (clayey, weak, loose, alignments, fissility, planar boundaries, pervious or water-bearing parts, susceptibility to mass wasting, erosion, piping or compressibility)
- Bearing capacity and/or shear strength of sample areas
- Consolidation or settlement potential
- Expansion potential

5.0213 Modification of HGRO Standards

Where the compliance with the HGRO would cause unreasonable hardship, applicants may seek a Type II Minor Variance or a Type III Major Variance pursuant to **Section 10.1500**.

5.0214 HGRO Mapping Protocols

The boundaries of the Hillside and Geologic Risk Overlay (HGRO) and Highly Sloped Subarea (HSS) are based on a GIS-supported application of the following mapping protocols. All buffer measurements are based on horizontal distance rather than a slope distance.

A. The HGRO includes all lands with the following attributes:

1. Mapped Landslide Deposits – All mapped landslide deposits in the Statewide Landslide Information Database for Oregon (SLIDO) maintained by the Oregon Department of Geology and Mineral Industries (DOGAMI) and included in DOGAMI Interpretive Map Series 57 (IMS-57).
2. Deep Landslide Hazards – All lands identified in IMS-57 as having high or moderate susceptibility to deep landslide hazards.
3. Shallow Landslide Hazards – Prioritized concentrations of lands identified in IMS-57 as having high susceptibility to shallow landslide hazards. Prioritized concentrations were determined using further mapping protocols as follows:
 - a. Edit the hazard raster to remove the following lands:
 - i. Lands with prioritized hazard areas that represent temporary slope features that are no longer present, such as stockpiles that have been removed.
 - ii. Areas of hazard inaccurately identified due to underlying LiDAR-derived Bare-Earth Digital Elevation Model (DEM) (created as part of the 2014 Oregon LiDAR Consortium Metro 2014 Project) data quality issues, such as uncommonly low spots or “pits” caused by atmospheric interference. Acceptable quality levels are established by the 2014 Oregon LiDAR Consortium Metro 2014 Project.
 - iii. Existing stormwater ponds unless in, or within 100 feet of, HSS.
 - iv. Concentrations of hazards on lands with an average slope less than 15%, except within 200 feet of a mapped stream. Average slope is calculated

across a 120-foot radius circle for each slope raster cell (using Focal Statistics).

- b. Perform raster analysis to prioritize resultant hazard data where at least 1/3 of surrounding cells within a 45-foot radius circle were also designated as high risk.
 - c. Remove lands with prioritized hazard areas less than 6,000 square feet in area when located more than 200 feet away from a mapped stream.
 - d. Buffer resultant prioritized concentrations by 30 feet.
4. Butte tops – All lands 700 feet above sea level or higher.
 5. Gaps – Resultant gaps of less than 55,000 square feet after combining the above lands.
 6. Excluded areas – The following lands were excluded:
 - a. Lands regulated by DOGAMI for surface mining.
 - b. Lands north of Glisan Street.
- B. Highly Sloped Subarea (HSS)** includes all lands within the Hillside and Geologic Risk Overlay with the following attributes:
1. Lands with concentrations of slopes of 35% or greater. Concentrations are identified using raster analysis of a LiDAR-derived Bare-Earth DEM created as part of the Oregon LiDAR Consortium Metro 2014 Project. The DEM is processed into percent slope rise and then slope is averaged for each cell across the surrounding cells within a 45-foot radius circle. Cells with an average surrounding slope of 35% or greater are included. Prior to analysis, the DEM is edited to remove the following lands:
 - a. Lands that represent temporary slope features that are no longer present.
 - b. Areas with underlying DEM data quality issues.
 2. Lands within 5 feet of areas identified in accordance with **Subsection (1)**.

5.0215 HGRO Map Administration and Correction

- A. Map Administration.** The City shall incorporate all map updates associated with development permit applications and corrections to the location of the HSS and HGRO as necessary. This shall be processed under a Type I procedure and is not considered a comprehensive plan map amendment.
- B. Map Corrections.** All Applicants who believe that the HGRO and/or HSS was mapped based upon incorrect data may file a verification request consistent with this Subsection, and as described in the Gresham Environmental Technical Guidance Manual. Verification requests will be processed under the Type I development permit procedure.
1. HGRO Boundary. Applicants may request a site-specific correction of the HGRO boundary and the City shall incorporate such corrections to the HGRO using the

protocols in **5.0214** with modifications to the input data allowed under the following scenarios:

- a. DEM Data Issues: Data issues with the Oregon LiDAR Consortium Metro 2014 Project Bare-Earth DEM used in the creation of DOGAMI IMS-57 Shallow Landslide Susceptibility Hazard raster may be addressed where provided for here. Such issues must be delineated to within 3 feet of the data issue(s) and submitted as an ESRI Shapefile (polygon) accompanied by two maps and a narrative. The narrative must describe the data errors in detail and methods for mapping them. The two maps must delineate the data issues at a scale of no less than 1 inch to 100 feet. One map must show the data issue(s), current HGRO boundary, and the raw Oregon LiDAR Consortium Metro 2014 Project Bare-Earth DEM with a color gradient based on Min/Max Elevation. A second map must show data issue(s), current HGRO boundary, and the DOGAMI IMS-57 Shallow Landslide Susceptibility High hazard data. The following DEM Data Issues may be addressed:
 - i. Temporary Slope Features. Lands with prioritized hazard areas that represent temporary slope features that are no longer present, such as stockpiles that have been removed, may be extracted from the Shallow Landslide Hazard dataset.
 - ii. DEM Data Quality Issues: Areas of hazard inaccurately identified due to underlying LiDAR-derived Bare-Earth Digital Elevation Model (DEM) data quality issues related to structures may be extracted from the Shallow Landslide Hazard Dataset. Acceptable data quality issues are those defined in the "Oregon LiDAR Consortium Metro 2014 Lidar Project Quality Control Report – November 30, 2016" and which are related to structures. The data issue narrative must identify the specific data quality issue(s) for each polygon submitted.
 - b. Mapped Stream Changes: Mapped stream changes incorporated through **Section 5.0714(C)** (NRO Map Corrections).
2. HSS Boundary. Applicants may request a site-specific correction of the HSS boundary by providing on-site slope survey data, new HSS boundary, and an HSS analysis map prepared in accordance with the following:
 - a. On-site survey data: A survey shall be submitted of the natural/existing topography for the site of the proposed area of correction and a 50-foot buffer around it, stamped by a registered Civil Engineer or licensed Land Surveyor. If access in the 50-foot buffer cannot be acquired, data from the Oregon LiDAR Consortium Metro 2014 Project Bare-Earth DEM may be substituted. Survey data must be provided as bare-earth DEM raster as well as a percent slope raster calculated using the bare-earth DEM. Survey data must meet or exceed standards set in "Oregon LiDAR Consortium Metro 2014 Lidar Project Quality Control Report – November 30, 2016" including an absolute vertical error of less than 0.20 meters.

- b. New HSS boundary data: The new slope raster must be processed according to the mapping protocol in **Section 5.0214(B)** and provided as a raster dataset.
- c. HSS analysis map: A map shall be provided having a scale of not less than 1 inch to 100 feet and a contour interval of not more than 10 feet with two-foot intermediates. The map shall also indicate the datum, source, and scale of topographic data used in the slope analysis and shall attest to the fact that the slope analysis has been accurately calculated. The map shall clearly delineate/identify the slopes of 35% or greater and new HSS boundary. The map shall be prepared using CAD-based, GIS-based, or other type of software specifically designed for such purpose.
- d. Raster data requirements: Raster datasets must be provided as outlined in the Gresham Environmental Technical Guidance Manual.

5.0216 Violations

- A. Actions that violate the HGRO regulations are subject to the abatement and penalty provisions of **Section 2.0008** of the Gresham Community Development Code. The following activities shall be considered immediate hazards:
 1. Unpermitted work in the HSS;
 2. Dumping;
 3. Depositing any material on public property;
 4. Bare earth over 500 square feet during the wet weather period of October 1 to May 1;
and
 5. Other situations as determined by the Manager.
- B. Unpermitted alterations will not be deemed valid buildable/developable area.
- C. For correcting violations regarding unauthorized activity, the responsible party must submit and ensure implementation of a remediation plan that meets all applicable standards of the HGRO. The plan must be developed by an Oregon licensed Certified Engineering Geologist or Geotechnical Engineer.
- D. For correcting violations regarding unauthorized activity, the responsible party shall submit an application that meets all applicable standards of the HGRO including appropriate mitigation if applicable.
- E. The plan must be developed by an Oregon licensed Certified Engineering Geologist or Geotechnical Engineer.