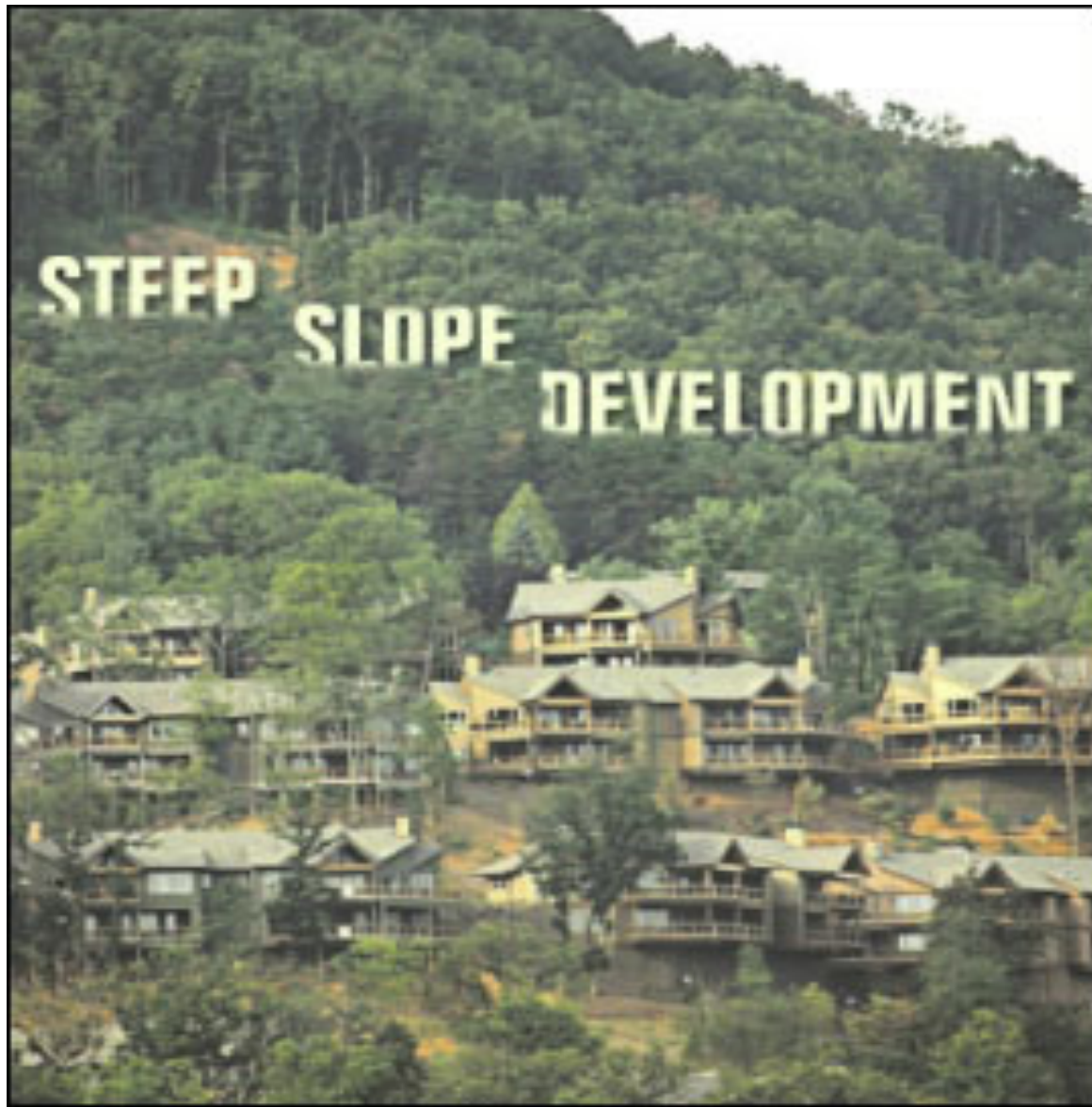




# Shoreline and Coastal Planners Group Steep Slopes Presentation

Brad Murphy, Senior Planner Thurston County Resource Stewardship



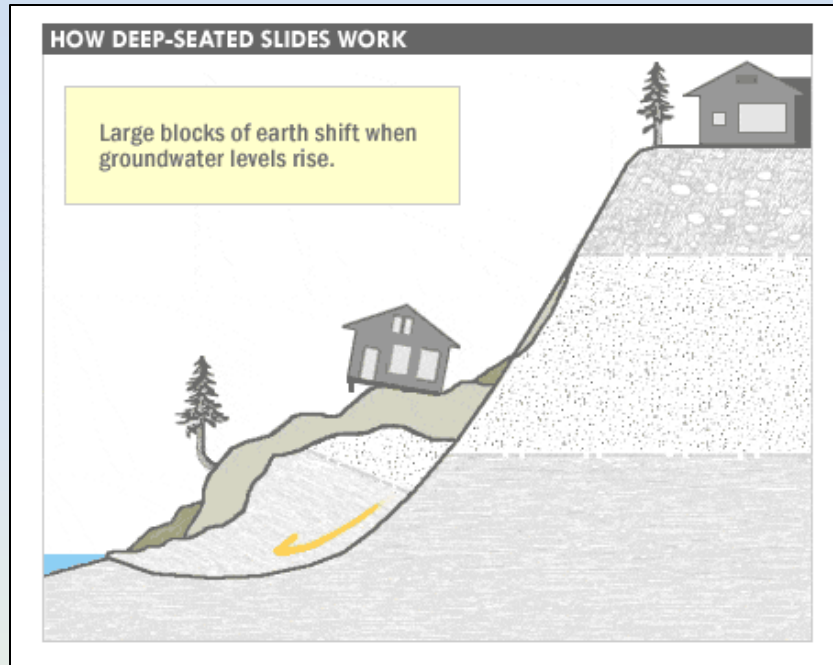
■ *Is Asheville growing up too fast? Economic studies show that many kinds of growth cost more than the benefits they bring. Water, sewage treatment, road maintenance, police and fire protection, garbage pickup — a host of public services. Taxes seldom cover the new costs. The bottom line on urban growth is that it rarely pays its own way. So the more we grow, the poorer we'll get. Will this kind of growth benefit us?*

**September 2007**

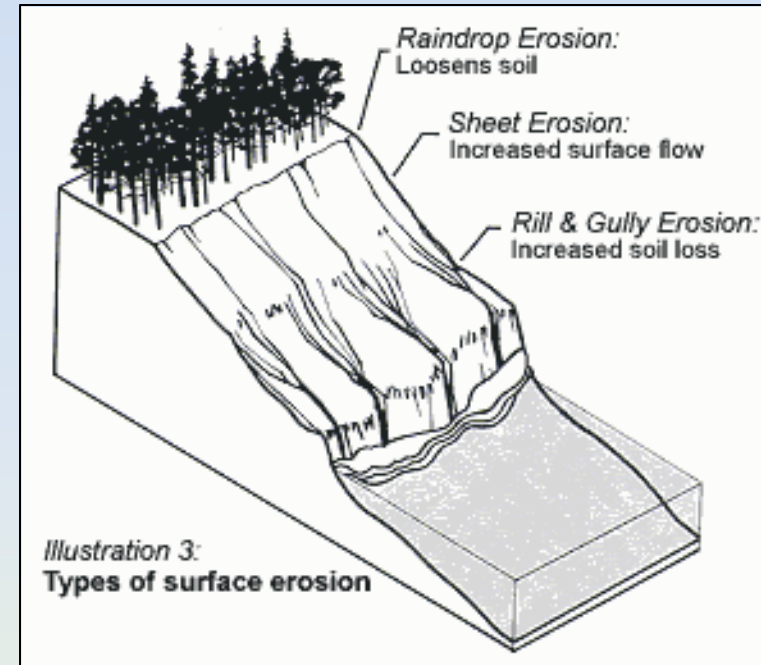
The Urban News, Asheville NC

# Geologically Hazardous Areas: Two Main Relevant Types

## Landslide hazard areas



## Erosion hazard areas



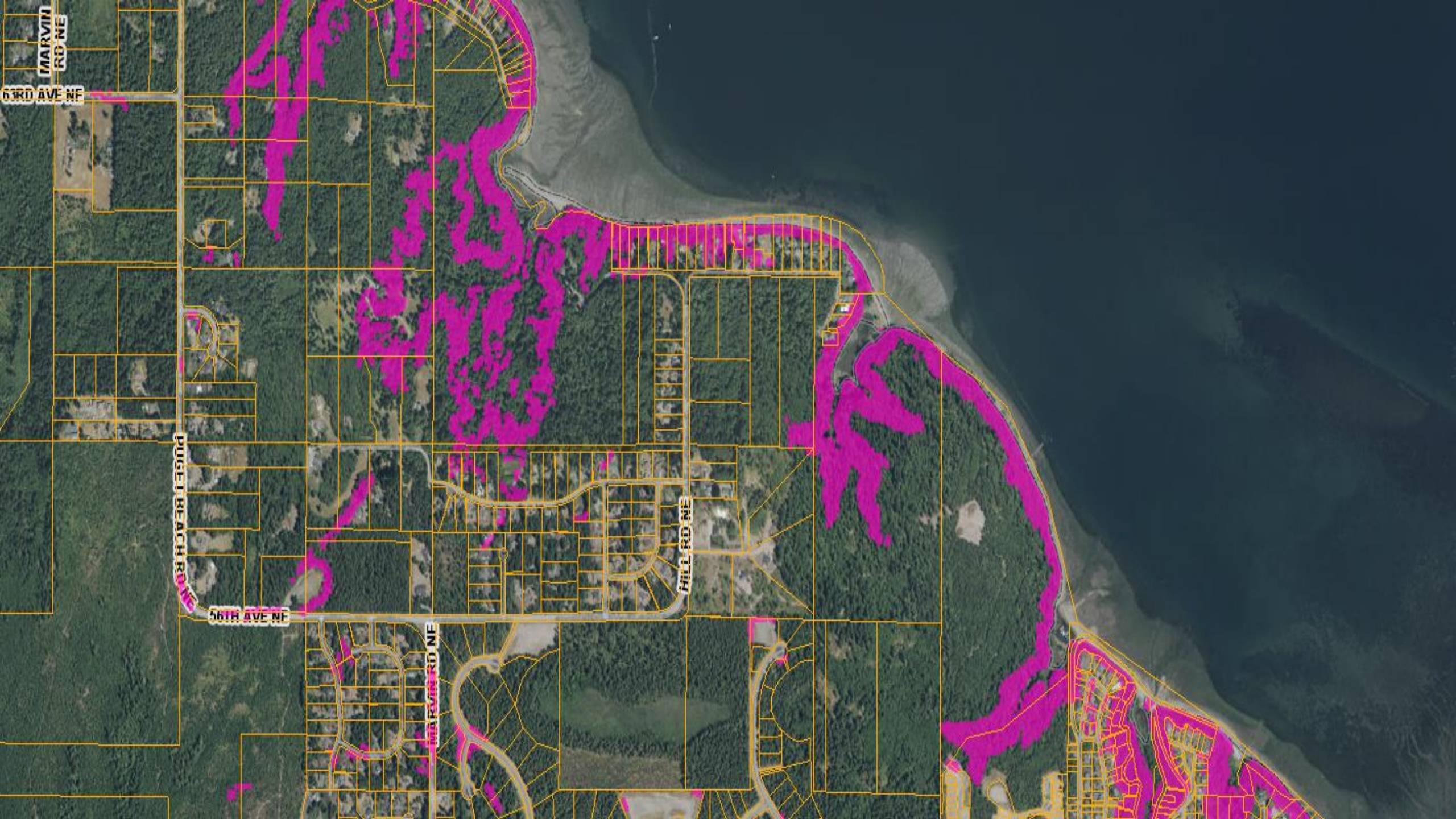
Ecology guidelines are not specific to other geological hazards addressed under GMA (*seismic, mine and volcanic hazards*)

# Specific Critical Areas

Have separate Chapters in Thurston County Code for:

- Geologic Hazard Areas (Chapter 24.15 TCC)
- Seismic Hazard Areas (Chapter 24.16 TCC)
- Volcanic Hazard Areas (Chapter 24.17 TCC)
- Mine Hazard Areas (Chapter 24.18 TCC)





MARVIN  
RD NE

63RD AVE NE

PUGET BEACH RD  
NE

56TH AVE NE

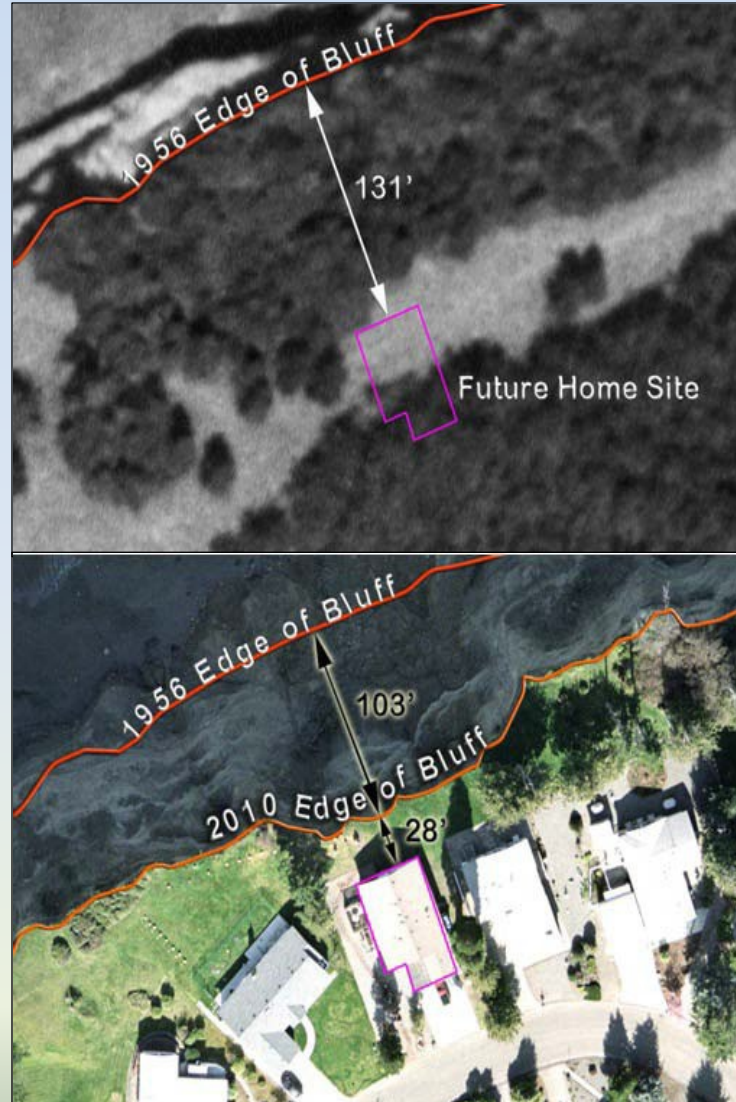
MILL RD NE

51ST AVE NE

# Geologically Hazardous Areas: key principles

“Do not allow **new development or the creation of new lots** that would cause foreseeable risk from geological conditions to people or improvements during the life of the development.”

“Do not allow **new development** that would require structural shoreline stabilization over the life of the development.”



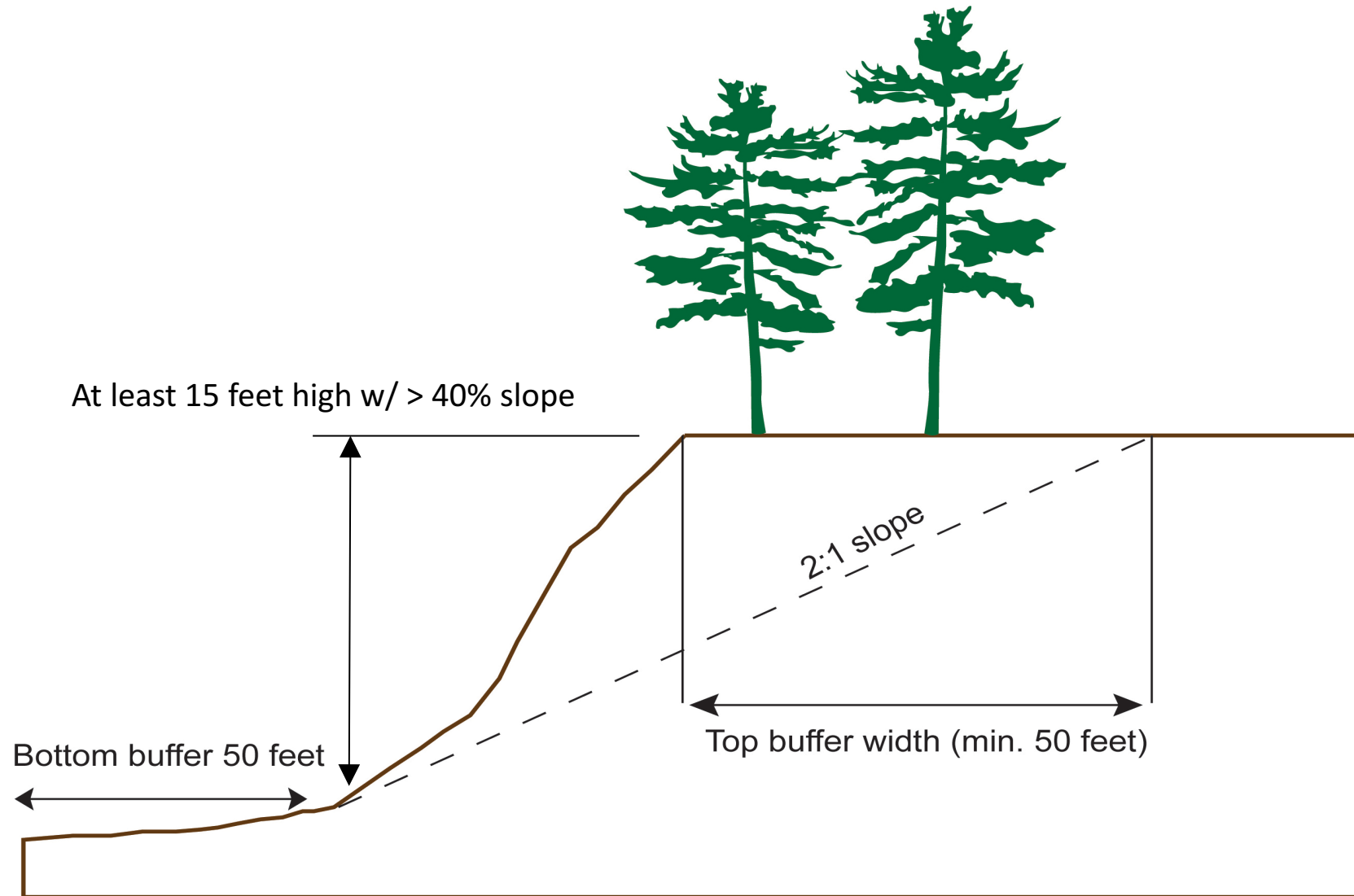
*WAC 173-26-221(2)(c)(ii)(B) and (C)*

# 24.15 Geologic Hazards

Standard setback (landslide and marine bluff hazard) is GREATER of following:

- 50 feet from toe and top of slope, or:
- Distance from toe of slope upward at slope of 2:1 until intersecting with topography of site.
- Minimum distance recommended in geotechnical assessment

# TCC 24.15 Geologic Hazards







## **Deep Seated Landslide Sunset Beach Landslide, Eld Inlet, Olympia, Washington**

Third documented re-activation was in 2007

Three homes severely damaged

Typical geometry with arc-shaped scarps in “Step formation”



**Rock Candy Mountain Slide – Thurston County**

# 2014 Thurston County Water Resources Study Identified:

- +70 Landslides in geomorphic exercise
- Preliminary 'risks'
- 7 Physiographic Areas for Higher Landslide Potential
- Two Lakes with "Seiche" susceptibility (could be more)
- Scoping out latest research on what is known
- Including WA DNR Viewer
- They did not identify an "Oso" Type Slide potential in Thurston County

# Geo-hazards: Typical CAO approaches can be adequate

## Setbacks from edge of hazard areas

Requiring projects within 300' of a hazard to include **geotechnical report**, to demonstrate how hazards are to be avoided

For erosion-prone areas, require **Soil Erosion and Sediment Control Plan**



Photo by Len Palmer

(d) Recommended buffers from the landslide hazard areas shoreline bluffs and the tops of other slopes on the property.  
Located on page(s) 7, Figure 2

(e) Recommended setbacks from the landslide hazard areas shoreline bluffs and the tops of other slopes on the property.  
Located on page(s) 7, Figure 2

(8) Recommendations for the preparation of a detailed clearing and grading plan which specifically identifies vegetation to be removed, a schedule for vegetation removal and replanting, and the method of vegetation removal.  
Located on page(s) 7, 8, 9

(9) Recommendations for the preparation of a detailed temporary erosion control plan which identifies the specific mitigating measures to be implemented during construction to protect the slope from erosion, landslides and harmful construction methods.  
Located on page(s) 7, 8, 9


(10) An analysis of both on-site and off-site impacts of the proposed development.  
Located on page(s) 7, 8

(11) Specifications of final development conditions such as, vegetative management, drainage, erosion control, and buffer widths.  
Located on page(s) 7

(12) Recommendations for the preparation of structural mitigation or details of other proposed mitigation.  
Located on page(s) 8, 9

(13) A site map drawn to scale showing the property boundaries, scale, north arrow, and the location and nature of existing and proposed development on the site.  
Located on Map(s) Fig. 2

I, Erno Rannearum hereby certify under penalty of perjury that I am a civil engineer licensed in the State of Washington with specialized knowledge of geotechnical/geological engineering or a geologist or engineering geologist licensed in the State of Washington with special knowledge of the local conditions. I also certify that the Geotechnical Report, dated 12/23/09, and entitled Geotechnical Report meets all the requirements of the Mason County Resource Ordinance, Landslide Hazard Section, is complete and true, that the assessment demonstrates conclusively that the risks posed by the landslide hazard can be mitigated through the included geotechnical design recommendations, and that all hazards are mitigated in such a manner as to prevent harm to property and public health and safety. (Signature and Stamp)



Common practice: Require Report from licensed civil engineer or engineering geologist.

# Geologically hazardous areas: exceptions allowed when...

“Exceptions may be made for the limited instances where stabilization is necessary **to protect allowed uses where no alternative locations are available** and no net loss of ecological functions will result.”

“Stabilization structures or measures **to protect existing primary residential structures** may be allowed where no alternative exists and if no net loss of ecological functions will result.”

Use of “No Net Loss” = require mitigation for unavoidable impacts...



*WAC 173-26-221(2)(c)(ii)(C) and (D)*