

WHAT GOVERNMENT IS DOING

To address the immediate threat of landslides, WSDOT, BNSF, Sound Transit, local jurisdictions, and other public agencies are working together to prevent landslides.

FOR FURTHER INFORMATION

For residents in the cities of Everett, Mukilteo, and Shoreline, the town of Woodway and Snohomish County with questions on landslides, please contact your local planning department. For other regions, please visit the Department of Ecology website at: www.ecy.wa.gov/programs/sea/landslides/index.html or your local planning department.

CONTACT

City of Mukilteo
425-263-8000
www.ci.mukilteo.wa.us/index.asp

City of Everett
425-257-8731
www.ci.everett.wa.us/default.aspx?ID=52

Snohomish County
425-388-3311
www1.co.snohomish.wa.us/Departments/PDS/default.htm

SPONSORS



WASHINGTON STATE
Governor's Office of
Regulatory Assistance

Do you have drainage or landslide concerns?

Please take our survey:

www.surveymonkey.com/s/MZLJVX3



RESOURCES

Washington State Department of Ecology
Managing Drainage on Coastal Bluffs
www.ecy.wa.gov/programs/sea/pubs/95-107/intro.html

Managing Vegetation on Coastal Slopes
www.ecy.wa.gov/programs/sea/pubs/93-31/chap3.html

Slope Stabilization and Erosion Control
www.ecy.wa.gov/programs/sea/pubs/93-30

Puget Sound Landslides
www.ecy.wa.gov/programs/sea/landslides/index.html

Puget Sound Shorelines
www.ecy.wa.gov/programs/sea/pugetsound/bluffs/slides.html

Plant Selection Guide
www.ecy.wa.gov/programs/sea/pubs/93-30/table3.html

Slope Stability Maps
www.ecy.wa.gov/programs/sea/femaweb/snohomish.htm

Department of Natural Resources
Division of Geology and Earth Resources
www.dnr.wa.gov/ResearchScience/Topics/GeologicHazardsMapping/Pages/landslides.aspx

U.S. Geological Survey
Landslides Hazard Program
landslides.usgs.gov/

Washington Military Department
Emergency Management Division
www.emd.wa.gov

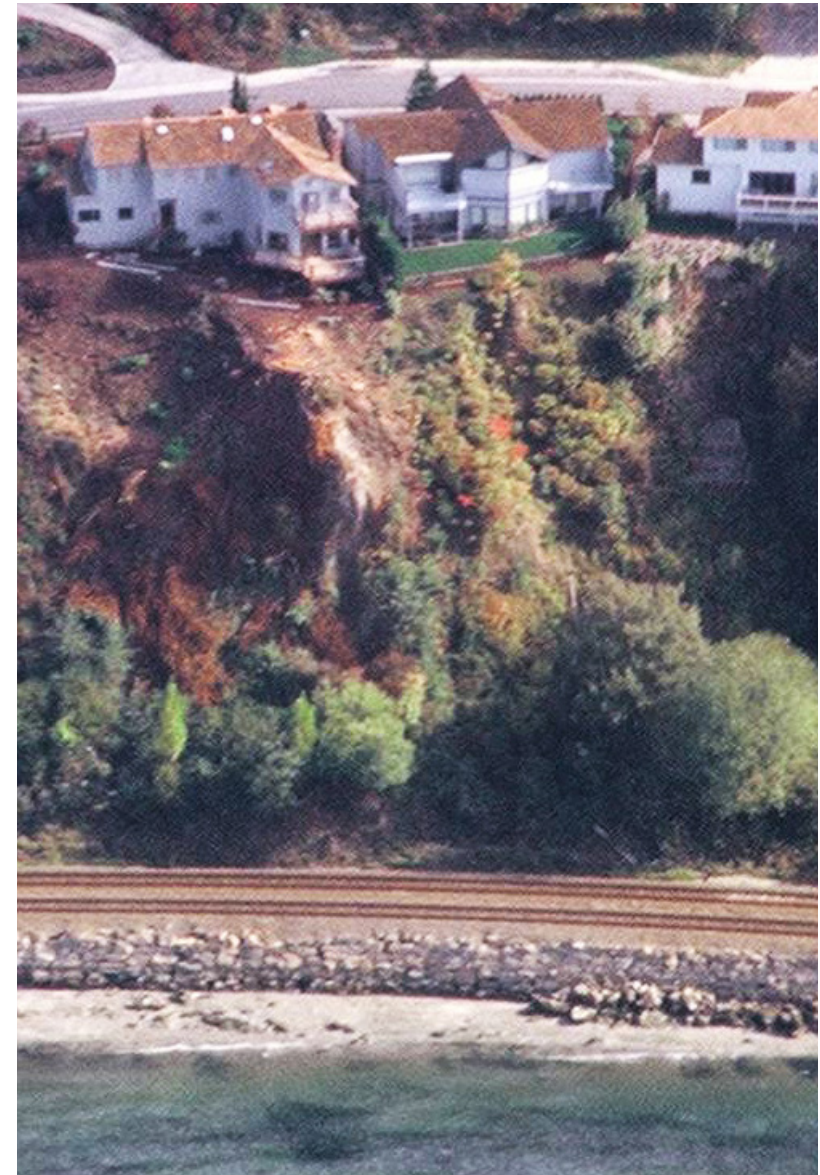
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Washington State
Department of Transportation

How landslides affect your property



LANDSLIDES COST YOU

- Loss of property value
- Increased insurance costs
- Damage to building structures
- Loss of land
- Clean-up and repair costs
- Liability for damages to others' properties

LANDSLIDE FACTS

- More than 200 landslides have occurred in the last ten years along the Seattle to Everett coastline
- 80 percent of landslides are related to human activities, including poor slope management and drainage problems
- Since 2009, more than 800 trains have been cancelled due to landslides

MANAGING DRAINAGE

- When possible, direct drainage away from the bluff crest
- Talk to your local public works department before planning your water drainage system
- Build drainage systems in compliance with local standards
- Don't direct drain pipes onto steep slopes or the tops of slopes
- Where possible, connect your drainage with down-slope drainage systems
- Seek professional help from geologists, engineers, and state and local agencies for questions and help

LANDSLIDE WARNING SIGNS

Property

- Bare soils, eroding slopes, cracks
- Mid-slope benches (level areas)
- Hummocky (mounding) and uneven ground
- Changes in roads, utilities, and buildings
- Sagging or taut utility lines
- Foundation separating/cracking
- Growing cracks in walls/windows
- Broken or leaking water or sewer lines
- Doors/windows not closing properly
- Significant cracking of concrete slabs and pavement

Vegetation

- Tilted or curved conifer trees
- Split trunks and stretched roots
- Large clusters of similar-aged trees (often alder)

Water

- Small ponds on benches of slopes
- Disrupted natural drainage
- Unusually heavy or muddy seepage
- Unusual increase or decrease in flow from springs

LANDSLIDE DAMAGE



WHAT YOU CAN DO

Regular Maintenance

- Inspect plumbing and drains for leaks
- Don't dump garbage or yard debris on slopes
- Inspect and maintain underground drainage and sprinkler systems

Vegetation

- Consult your local planning department and a licensed geologist before removing vegetation from steep slopes
- Maintain and retain native vegetation and ground cover on slopes (replant if bare)

Drainage

- Don't discharge water over steep slopes
- Don't irrigate or put septic drain fields above slopes
- Don't change natural drainage
- Collect surface water from gutters and driveways and drain away from slopes

Helpful Tips

- Landslides from slopes and bluffs can be started by:
 - Placement of unstable fill
 - Placement of debris, such as yard waste
 - Cutting or grading
 - Cutting into the bottom of the slope
 - Discharging water from broken pipes or storm drains
- Use maximum construction setbacks on steep slopes/bluffs