

Investigations of January 2009 Landslides in Whatcom County

In early January 2009, rain and melting snow from a strong Pacific storm triggered hundreds of landslides in western Washington. A significant number of the landslides occurred in Whatcom County, several dozen of which began on State Trust Lands managed by DNR. Some of these landslides affected private properties at the base of steep slopes on Sumas Mountain, Slide Mountain, and Van Zandt Dike. The impacts ranged from minor mud and debris deposition on lawns or pastures to significant structural damage to homes and outbuildings.

Soon after the storm, two Earth Sciences Program staff began investigating 25 of the landslides. The primary objective of the investigations was to determine if, and to what extent, past management activities on State Trust Lands contributed to landslide initiation.

Of the 25 landslides investigated, 20 began in unmanaged areas while the remaining 5 originated in managed areas. Unmanaged areas include fully intact mature forest and buffers or “leave areas” of mature forest within or along the margins of previously harvested areas. Managed areas include sites where roads or recent timber harvesting are immediately adjacent to the landslide initiation point, or were in close proximity. Of the 20 landslides that began in unmanaged areas, 15 occurred at sites where there was no contribution or influence from forest management activities on State Trust Lands. These landslides initiated in fully intact mature forest stands, some of which were between 100- and 200-years of age. The five remaining ‘unmanaged area’ landslides originated within leave areas of mature forest within or along the margins of two recently harvested DNR timber sales.



Of the five ‘managed area’ landslides, four began at sites that were harvested in the late 1980s or early 1990s. At the time of harvesting, Washington’s Forest Practices Rules did not include specific protections for potentially unstable slopes as they do now. In addition, the parcels were in private ownership when they were harvested and DNR acquired the properties after the logging was completed. The one remaining landslide in a ‘managed area’ began when an orphaned road grade collapsed and triggered a dam-break flood.

A home in Whatcom County impacted by a landslide during the January 2009

Under the State Forest Practices Rules, roads are considered 'orphaned' when they haven't been used for forestry activities since 1974.

The 25 landslides investigated affected 42 separate private properties and impacted 23 homes. Of the 23 homes impacted, all are located in areas where landslides have historically deposited. Eighteen (18) of the homes are located on alluvial fans while another is located on a toeslope. The four remaining homes, while affected by the landslides, were not on alluvial fans or toeslopes. According to Whatcom County's Geologically Hazardous Areas mapping, six of the homes are within 'alluvial fan hazard areas' while another is immediately below a 'landslide hazard area.'

For more information, contact John Coyle at john.coyle@dnr.wa.gov or 360-854-2873