Joint Interim Task Force On Landslides and Public Safety

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Report to the 70th Legislative Assembly

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Glossary

Landslides *are any detached masses of soil, rock and/or debris of sufficient size to cause damage and which move down a slope or a stream channel.*

Rapidly moving landslides usually range in velocity from ten and thirty-five miles per hour and are difficult or impossible for people to outrun or escape.

Debris flows normally occur when a landslide moves down slope as a semi-fluid mass scouring or partially scouring soils from the slope along its path, and are typically rapidly moving and also tend to increase in volume as they scour out the channel.

Debris torrents are debris flows that have entered channels and usually contain much large woody debris, and move very rapidly.

A ***debris avalanche*** is an alternative term, restricted to landslides, for a debris flow or debris torrent. Debris avalanches usually occur on slopes and outside of a channel.

Slump/earthflows are relatively intact landslides, generally made up mostly of soils, which move downslope at slow to moderate velocities (a person can normally walk away from these landslides).

Stream channels are locations formed by running water, and have a defined bed and banks.

High risk sites (*OAR 629-600-100(28))* are specific locations determined by the State Forester within high risk areas. A high risk site may include but is not limited to: slopes greater than 65 percent; steep headwalls; highly dissected land formations; areas exhibiting frequent high intensity rainfall periods; faulting; slumps; slides; or debris avalanches.

Headwalls are steep, concave or subtle bowl shaped features common to steep landscapes where there is insufficient running water to create a stream channel. Headwalls mark the source area of debris flows.

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Executive Summary

The Joint Interim Task Force on Landslides and Public Safety was established by Senate Bill (SB) 1211 (1997). SB 1211 charges the task force with "developing a comprehensive, practicable, and equitable solution to the problem or risks associated with landslides, to replace sections one through six" of the Act. This is to be done through a "problem assessment and risk analysis" process.

- Section 2 of the Act amends ORS 527.610 to 527.770 (Oregon Forest Practices Act). It gives the State Forester the authority to prohibit timber harvest or road construction in areas where human life could be at risk from landslides or debris torrents by denying the approval required for forest harvest operations.
- Section 4 of the Act amends ORS 810 (Road Authorities (ODOT)). It gives road authorities the ability to close all roads under the jurisdiction of the road authority, during extreme storm events, where the road(s) are located in areas subject to landslides or debris torrents that pose a risk to human life.
- Section 6 of the Act amends ORS 455. Section 6 provides that state agencies develop and make available general hazard information for construction on sites that could be affected by landslides or debris torrents in any area that is located outside of an urban growth boundary. It also directs local building officials to make this information available to landowners when the landowner applies for a development permit for any area located outside of an urban growth boundary.
- This Act is repealed on January 1, 2000.

The results of task force work are to be presented, as official recommended legislation, to the regular session of the Seventieth Legislative Assembly.

In order to accomplish its charge, the task force identified six objectives:

- Determine the scope of the problem (Scope described as narrative beginning on Page 8);
- Examine land use conflicts (See Legislative Concept (LC) 1451 and Task Force Recommendations; Page 26 & 29);
- Consider financial impacts to landowners;
- Examine liability issues (See Page 23 and Appendix III);
- Establish a clear statement of public policy on who bears (or shares) responsibility (for prevention and risk communication) (See LC 1450, 1451, and 1452);
- Determine legislative actions (The Task Force determined that three LC's and one recommendation were appropriate. See Legislative Concepts on Page 24 and Rule Making Recommendations on Page 29).

The task force took four field trips, for the purpose of viewing the affects of landslides and listening to local testimony:

- Roseburg/Douglas County (2)
- Portland Metro Area
- Tillamook/Wilson River Highway

These field trips are described as case studies under the "Scope of Landslide-Public Safety Problem" portion of this report (Page 8).

Invited and public testimony was heard from thirty-seven organizations/private citizens. Fifty-three written publications, papers and/or statements were submitted (See Appendix II).

Losses: Five people died (in Douglas County) from landslides during 1996. Three others were injured during these same slides. The loss of life prompted Oregon's Legislature and therefore this task force to examine current statutes, administrative rules, and government practices in an effort to mitigate circumstances under which these deaths and injuries occurred.

Resolution:

Oregon's landslide-public safety inquiry focused on four broad questions:

- Hazard Identification: How do we currently identify landslide hazards how can these efforts be improved?
- Public Education: How do we currently educate the public regarding landslide hazards and how can we better "get the word out?"
- Hazard Mitigation: What do we currently do to mitigate the landslide hazard and what can we do better to further mitigation efforts?
- Land Use Conflicts: Is it appropriate to refine Statewide Land Use Goals, the Forest Practices Act, and/or other relevant statutes to address landslide hazards? Does this unduly impinge on local land use ordinances?

Results:

The Task Force identified five areas requiring statutory amendment:

1. Amend Oregon's Forest Practices Act (ORS 527.610 – 527.992) to give the State Forester the ability to protect public safety.
2. Amend Oregon's Beach Law (ORS 390) and Oregon's Removal-Fill Law (ORS 196) to consolidate overlapping authorities.
3. Consider Oregon's Zoning Laws (ORS 215.130), to limit restoration or replacement of structures that have been adversely affected by natural hazards, in known hazardous areas.
4. Require geotechnical peer review of proposed building site grading plans when appropriate [for newly created plans].
5. Amend ORS 105.465 (Real Estate Disclosure Law) requiring disclosure of known natural hazards affecting a property.

These five areas resulted in three Legislative Concepts (LC 1450, LC 1451, and LC 1452).

The task force also developed one recommendation. This recommendation addresses LCDC and Land Use Planning Goal 7 (Areas Subject to Natural Hazards and Disasters)[1]: The Task Force recommends that LCDC continue their land use planning rule and revision process for Goal 7 and related natural hazard issues. In carrying out these processes, LCDC should:

1. Adopt rules requiring local governments to amend their comprehensive plans and land use regulations to address landslide hazards;
2. Utilize the information and conclusions contained in this report in completing the review of Statewide Planning Goal 7 (Areas Subject to Natural Hazards and Disasters) and in adopting any amendments to Goal 7 and/or administrative rules to implement the goal.

Funding: State agencies identified a need for $1,602,646 associated with LC's and recommendations contained in this report. Details of these needs are contained in the "Funding Requirements/Agency Resources" section of this report (Page 26).

[1] See Page 29 for full recommendation.

Work Plan Objectives

- Organize.
- Determine scope of the problem.
- Establish clear statements of public policy, including liability issues.
- Examine land use conflicts.
- Determine legislative action.
- Consider financial impacts (of legislative action).

Table 3 (Organization)

Organization of Task Force and Schedule
Senator Bob Kintigh and Senator Veral Tarno appointed to the task force by Senate President Adams; Representative Jim Welsh and Representative Cynthia Wooten appointed to the task force by Speaker of the House Lundquist; Five members appointed by the Governor, following requirements stipulated in SB 1211.
December 10, 1997: Hector MacPherson moves to nominate Ms. Gail Achterman (attorney with Stoel Rives, LLP) as Chair of the Joint Interim Task Force on Landslides and Public Safety. In a roll call vote, all members present vote aye (9-0). Hearing no objection, motion is carried.
Representative Welsh moves to nominate Senator Bob Kintigh as Vice-Chair. Hearing no objection, the motion is carried.

Table 4 (Work Plan Time-Line):

Time-Line	
December 10, 1997 (Roseburg)	Organizational meeting. Task force determines that meetings are to be held on the first Monday of every month.
February 2, 1998 (Salem)	Technical overview and comparative law review.
March 2, 1998 (Portland)	Urban landslides tour and state agency presentations.
April 13, 1998 (Tillamook)	Coastal landslides tour, state agency presentations, and public testimony.
May 4, 1998 (Roseburg)	Forested areas landslides tour, presentations, and public testimony.
June 8, 1998 (Salem)	Invited testimony and task force work session.
July 6, 1998 (Salem)	Invited testimony, task force work session, begin evaluation process.
August 3, 1998 (Salem)	Evaluation process.
September 8, 1998 (Salem)	Discuss legislation for pre-session filing.
October 5, 1998 (Salem)	Review and finalize legislation for pre-session filing (final task force meeting).
November 2, 1998	File task force approved legislation for the 1999 Session.

Scope of Landslide-Public Safety Problem

In studying the scope of the landslides-public safety question, the task force addressed several issues including land use planning, forest practices, non-forest area landslides, insurance, and liability. Each of these issues are presented in subsections below:

Oregon's geographic diversity results in many areas of the state being subject to land movement. Land movement (slides) can be gradual, such as movements associated with erosion, or they can be rapid, such as debris flows experienced during or subsequent to extreme storm events.

Generally, slow moving slides are not an imminent threat to human life. Debris flows (also called mudslides, mudflows, lahars, or debris torrents) move rapidly, often strike without warning, and can destroy property and take lives. The latter flows generally occur during periods of intense rainfall or rapid snowmelt and usually start on steep hillsides as shallow landslides that liquefy and accelerate to speeds that are typically about 10 mph, but can exceed 35 mph.

The consistency of debris flows range from watery mud to thick, rocky mud that can carry large items such as boulders, trees, and cars. Debris flows originating from many different sources can combine in channels where their destructive power may be greatly increased. When the flows reach canyon mouths or flat ground, the debris may spread over a broad area, sometimes accumulating in thick deposits that can wreak havoc in developed areas. In areas burned by forest and brush fires, a lower threshold of precipitation may initiate debris flows[2].

The task force investigated landslide sites in urban and rural areas of Western Oregon, including landslide sites in the Umpqua Basin, the West Hills of Portland, coastal erosion in Tillamook County, and at The Capes near Oceanside. Testimony was received from subject-matter experts including state agencies, university professors, professional loggers, and homeowner's associations. Testimony was also received from general interests and concerned private citizens regarding landslides and their affects on public safety.

The task force determined, based on-site visits and testimony, that landslides within the state occur on a regular basis, due to Oregon's climate and geology: They are a natural geologic hazard occurring throughout areas evidencing specific hazard criteria. These criteria include several factors including, but not limited to, slope steepness, water (soil saturation level), slope alterations (development), geology and geomorphology, triggering events, and vegetative cover. The task force also determined that Oregon's landslide-public safety problem encompasses a great deal more than forest practices. The problem is urban, suburban, and rural. It affects potentially all lands within Oregon and all Oregonians.

[2] USGS Fact Sheet 176-97

Senate Bill (SB) 1211 (1997), and therefore the Joint Interim Task Force on Landslides and Public Safety, is a product of legislation introduced following catastrophic, fast moving landslides experienced during 1996. Three significant storm events occurred in 1996, each causing widespread damage in Western Oregon. These storms occurred on February 5-9, November 18-19, and in late December. They produced record rainfall totals, which triggered debris flows in forested and non-forested, urban, and rural lands. Each of these events also resulted in a "Major Presidential Disaster Declaration."[3]

The November storm event was the most costly in terms of lives lost. The 8.05 inches of rain[4] in the Rock Creek area of Douglas County and 9.84 inches of rain at Highway 38 (MP 13) that fell during the forty-eight hours of November 18 & 19, 1996 resulted in five deaths.[5]

Other debris torrents in Western Oregon during 1996 storm events also caused widespread damage to the natural resource and public infrastructure of the state. For the calendar year 1996, according to the Oregon Department of Transportation, approximately $150 million was spent for landslide related road repair and, according to the state's Office of Emergency Management, the three storm events resulted in $18,653,783 in "Infrastructure Assistance," impacting 32 of Oregon's 36 counties.

Subsequent to these storm events, and attributable at least in part to "El [6] land subsidence (erosion or slow moving land movement) during the past three years has also occurred in several areas along the Oregon Coast. Specifically, changes in ocean current, temperature, and tides have led to retreat of existing soil stratas, and therefore have placed homes and communities along portions of the coast[7] in danger.

Statewide Land Use Planning Goals:

Since 1973, Oregon has maintained a strong statewide program for land use planning. The foundation of that program is a set of nineteen statewide planning goals. The goals express the state's policies on land use and on related topics, such as development, housing, natural resources, and citizen involvement.

Oregon's statewide land use planning goals are implemented through local comprehensive planning. State law requires each city and county to have a comprehensive plan and the zoning and land-division ordinances needed to put the plan into effect. These local comprehensive plans must be consistent with statewide planning goals. The state's Department of Land Conservation and Development (DLCD) review plans for such consistency. When the Land Conservation and Development Commission

[3] See ORS 401.
[4] See Report on Rock Creek and Highway 38 (MP 13) Debris Flows, Storm Event of November 1996, Squier Associates, April 8, 1998.
[5] Four people perished in the Rock Creek debris torrent event and one person perished in the Highway 38 debris torrent event. Measurements of Highway 38 site taken from the Elkton 3 SW Climate Station.
[6] Deputy State Geologist (DOGAMI): On site briefing at The Capes development, near Oceanside.
[7] Re: The Capes Development, which has seen its resident dune creep approximately 400'.

officially approves a local government's plan, the plan is said to be "acknowledged". It then becomes the controlling document for land use in the area covered by the plan.

Oregon's land use planning program is therefore a partnership between state and local governments: Local governments do the planning and administer land use/zoning regulations. The state develops and adopts administrative rules, requires cities and counties to plan, sets the standards for local land use plans, and approves those plans. The resulting mosaic of state-approved local comprehensive plans makes land-use planning implementation universal throughout Oregon.

Because Oregon's Statewide Land Use Planning Goals address development in hazardous areas, land use planning was a key issue before the Task Force. Consistent with its mission, the committee reviewed Oregon's statewide planning goals and determined that five of the nineteen goals relate to its workplan. The goals and their purposes are:

Goal 4: To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest uses that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, fish, and wildlife resources and to provide for recreational opportunities and agriculture.

Goal 5: To protect natural resources and conserve scenic and historic areas and open spaces.

Goal 7: To protect life and property from natural disasters and hazards.

Goal 17: To conserve, protect, where appropriate, develop and where appropriate restore the resources and benefits of all coastal shorelands, recognizing their value for protection and maintenance of water quality, fish and wild-life habitat, water-dependent uses, economic resources and recreation and aesthetics. The management of these shoreland areas shall be compatible with the characteristics of the adjacent coastal waters; and

To reduce the hazard to human life and property, and the adverse affects upon water quality and fish and wildlife habitat, resulting from the use and enjoyment of Oregon's coastal shorelands.

Goal 18: To conserve, protect, where appropriate develop, and where appropriate restore the resources and benefits of coastal beach and dune area; and

To reduce the hazard to human life and property from natural or man-induced actions associated with these areas.

Planning Goal Relationships

Statewide Planning Goal 4 relates specifically to Oregon's forest practices. It is also associated with Goals 5 and 7 in that Oregon's forests contain natural resources, scenic

and historic areas and are subject to natural disasters and hazards, of which landslides are one of them. Goal four therefore compliments Goal Seven.

Statewide Planning Goal 5 speaks to protection and conservation of natural resources, scenic and historic areas, and open spaces. It relates to Goals 4, 7, 17, and 18 in that it encompasses all natural, scenic, and historic areas throughout the state, forested and non-forested, and their preservation.

Goal 7 addresses protection of life and property within Oregon that is subject to natural disasters/hazards. It encompasses forested and non-forested, urban and non-urban, as well as coastal lands. All lands within the state are subject to natural disasters and hazards. Landslides are a natural hazard. Therefore Goal 7 is a focal point of this task force.

Goal 17 addresses conservation, protection and development of coastal shorelands, and, as with forested and non-forested lands, is subject to natural hazards such as landslides, resulting from a myriad of causes. It is therefore related to Goals 5, 7, and 18. As we have experienced during the past year and as is evident through geologic investigation, coastal shorelands are subject to landslides which may be slow moving (creep) or which are subject to catastrophic failure or debris torrent.

Goal 18 directly addresses coastal beach and dune areas, and the reduction of hazards associated with these areas. It's purpose parallels Goal 7 and is directly related to Goal 17 **is** beach and there are many areas of the coast which are dunes. Both are subject to landslide action.

Evaluation of Statewide Planning Goal 7:

The Land Conservation and Development Commission (LCDC) is currently evaluating Statewide Planning Goal 7 (Areas Subject to Natural Hazards and Disasters). As part of the state's response to the flood disasters of 1996 and 1997, the Governor issued an Executive Order directing LCDC to conduct an evaluation of Goal 7. This Goal 7 evaluation is being supported by a grant from the Federal Emergency Management Agency (FEMA) and is designed to:

- Examine the hazard planning process in Oregon;
- Assess how effectively Goal 7 is being carried out at the local government level;
- Make recommendations on how Goal 7 can be better implemented throughout the state.

The first step of the Goal 7 evaluation has been finished. This phase involved a consultant study based on interviews with hazard specialists and a statewide survey of city and county planning officials. The Goal 7 report was presented to LCDC at its September 1998 meeting. A major question for LCDC will be whether a Goal 7 administrative rule should be enacted to further guide local government compliance with this goal (Also, refer to "Rule Making Recommendations", page 29 of this report).

DLCD's evaluation of Goal 7 found that the process of keeping natural hazard inventories, plan policies, and land use regulations up-to-date is a major task for many local jurisdictions and may require state agency assistance. Similar information was presented to the Task Force.

A number of recommendations contained in DLCD's consultant report support testimony received by the Task Force and discussions among Task Force members. These include:

- Provisions for technical information and assistance to local government should be improved;
- State agencies should work to strengthen their communications with local governments regarding hazard planning;
- State agencies involved in data collection and hazard planning should do more to coordinate the development and dissemination of information for inventory data;
- More should be done to clarify roles and responsibilities among federal, state, and local agencies in dealing with natural hazards.

Forest Practices and Landslides

Many natural landslides are likely to occur within any decade in the mountainous terrain of Oregon. The majority of landslides occur in direct response to large regional storms, but the stage for a landslide is set naturally by geologic processes of weathering and accumulation of geologic debris. Forest-management-caused landslides occur when the stage for landsliding in response to a large regional storm is further influenced by some management action. Road building and timber harvesting both may set the stage for landslides.[8] The question therefore is: What is the cause and effect relationship between landslides and forest practices?

Landslides that evolve into debris torrents have a source area (where the slide originates), a transport zone (the path of the flow), and a deposition zone (the area where the slide or torrent terminates).

Sources of slides commonly have steep or concave slopes, a relatively large up-slope drainage area, and a thin soil profile. Transport zones occur directly down-slope of the source area and are often high-gradient, first order stream channels. The transport zone is where debris flows "bulk up" and get significantly larger, due to channel and bank scouring. Where debris flows do not have enough energy to transport themselves past a flow resistance area[9], the transport zone is extensively disturbed, but not scoured to bedrock.

[8] Forest Practices and Landslides, A report prepared for Governor John A. Kitzhaber, by the Forest Engineering Department, Oregon State University

[9] An area where the flow does not have enough energy to reach a terminus point and therefore does not fully scour a channel, but deposits debris in its wake.

The deposition zone of a debris flow is its terminus. It is where the mass comes to rest. Depending on the magnitude of the debris flow, the deposition zone may contain large trees and boulders, or small gravel and vegetation.

Landslide inventory results have shown that at any given time, or for any given storm, the amount of forest land area involved in landslide scars and torrent tracks is commonly less than one percent of the total forested land area.[10]

The immediate effect of debris flows on streams has long been considered to be catastrophic. Although the short-term effects of landslides upon channels and riparian vegetation are often regarded as negative, the occurrence of landslides in forested terrain plays an important role in the long-term dynamics of stream channels and the long-term presence of high quality fisheries habitat.[11]

Potential debris slide initiation sites, moderate risk sites that can fail, and high risk sites are generally identifiable. Site factors that suggest slide potential include geology, landform, slope steepness, and vegetation. Landslides in the mountains of Oregon are triggered primarily by large, high-intensity storms during the late fall and winter. However, large storms produce more landslides in some regions than in others, and landslides at some sites and not others. Specific sites and areas that have a high probability of experiencing a landslide are termed *High Risk* within the terminology of Oregon's forest practices rules. Delineation of High Risk Areas are generally site specific, involving an area as small as a fraction of an acre to an area as large as a thousand acres. On the most unstable ground, two or more high risk sites can be nearly contiguous.

A detailed landslide inventory from the highly dissected mountainous terrain of the Oregon Coast Range showed that one third to one half of all landslides in this area originated from *headwalls*.[12] Another study showed that about one quarter of landslides that reached stream channels during the February 1996 flood originated from headwall areas in the Cascade study area near Vida, Oregon.[13]

Site specific characteristics that indicate a greater probability of slope failure include steep slopes, the presence and size of hollows or depressions that produce groundwater convergence, a thin soil profile, and certain soil and bedrock types and conditions. High drainage density which is related to climate, precipitation, bedrock geology, and geologic history is often found in areas with the highest probability of slope failure within a region. Locally, there may be other factors including vegetation types that correlate with slope failure potential.

The landslide inventory range of literature reports that forest roads can increase the occurrence of landslides. This increase is large enough that considering either erosion

[10] Ketcheson & Froelich, 1978
[11] Reeves, et. al. 1995; Bison et. al. 1997
[12] See Glossary.
[13] ODF, 1997.

rates or landslide density numbers will lead to this same conclusion. Research results indicate that forest roads could increase the density of landslides within the road right of way by several orders of magnitude compared with similar areas of forested terrain. Because of this knowledge, Oregon forest practices rules have changed management of roads. After the 1996 storms, it was determined that, based upon on-site inspection, these newer management practices significantly reduced slope failure associated with forest roads.

A second conclusion that can be drawn from literature reviews concerns the effect of clearcut silviculture on erosion from in-unit debris slides[14]. Sidle, et. al. (1985) conclude that clearcut silviculture on steep terrain "…increases soil mass movement rates by 2 to 40 times…" relative to mass movement rates on similar forested terrain. Swanson, et. al. clearcutting and broadcast burning increase soil movement by debris slides by two to four times the rate in forested areas for the ten to thirty year periods of the inventories." The Ice catalog (Ice, 1985) includes studies that used a wide array of protocols and that report smaller and larger ratios of clearcut land erosion rate to forested land erosion rate than are included in the Swanson et. al. statement.

From the perspective of policy on public safety, the Forest Practices and Landslides Report suggests that statements presented in the above referenced studies and "those which present simple, broad, general interpretations about landslide density" do not reflect the complexity of the landslide issue. This could result in unintended results if it is used to guide public policy.

The range in the effect of timber harvesting on landslide erosion expressed by Sidle, Swanson, etc. indicates a rather complex relationship, a range in accuracy of landslide inventory sampling methods, or combinations of the two. "Thus, there is a need to carefully evaluate existing databases to determine the degree to which variability in the effect of timber harvesting on landslides is an indication of a truly complex relationship or varying accuracy from inventories."

Even so, according to the OSU Forest Engineering Department's review (Pyle to Ward letter, July 1998) of literature, studies, and landslide inventories, it appears as though clearcutting may contribute to an increased short-term occurrence of landslides relative to similar forested areas. This increased landslide density occurs on the most landslide-prone terrain and the increase is manifested primarily during large, landslide producing storms during the first decade after harvesting.

A set of Best Management Practices (BMPs) has evolved over time in an attempt to minimize the occurrence of management related debris slides. BMPs include consideration of alternative silviculture prescriptions and appropriate yarding systems as well as the concept of root reinforcement.

As stated in ORS 527.630 (Forest Practices Act) "forests make vital contribution to Oregon by providing jobs, products, tax base and other social and economic benefits, by

[14] Landslides in harvest units that are not associated with roads.

helping to maintain forest tree species, soil, air, and water resources, and by providing a habitat for wildlife and aquatic life. Therefore, it is declared the policy of the State of Oregon to encourage economically efficient forest practices that assure the continuous growing and harvesting of forest tree species and the maintenance of forest land for such purposes as the leading use on privately owned land, consistent with sound management of soil, water, fish, and wildlife resources and scenic resources within visually sensitive corridors…" There are no provisions within the FPA (with the exception of a temporary provision of SB 1211) which speak to or grant authority for public safety related to forest practices[15].

Since the adoption of forest practice rules, the Board of Forestry has regulated forest practices to reduce the risk of road and/or harvest related landslides. In the early 1980s, the Board reviewed existing forest practice rules and processes, substantially modifying them to mitigate landslide potential by requiring written plans for road construction and harvest practices on a site-specific basis. In 1984, geotechnical specialists were hired by ODF to assist with the design of practices and approval of written plans. In 1988, monitoring was first conducted to assess the circumstances under which landslides occur.

Case Studies

Rock Creek (Stump Acres) Debris Flows – Storm Event of 1996:

High up in the Rock Creek watershed near Roseburg, a small slide that transformed into a debris flow occurred in a steep slope headwall. The flow, confined mostly in the channel of Rock Creek, flowed rapidly downslope in an easterly direction, increasing in volume as it scoured, plucked, and incorporated soil, rocks, and woody debris in its path. The debris flow rapidly followed the channel through private and BLM timberlands, entering a parcel of land called Stump Acres, which contained private residences.

One residence, the Moon residence, was located in the Rock Creek Canyon. Being directly in the path of the debris flow, the residence was demolished and the occupants were killed.[16] Continuing downslope, the debris torrent covered Hubbard Creek Road with soil, rocks, and woody debris, and entered Hubbard Creek. From its initiation site to its terminus, the debris flow traveled approximately 5,500 feet.

Highway 38 (MP 13) Debris Flow

This debris flow originated in a slide on private land, at or close to its boundary with Elliot State Forest on the south. It occurred in a subtle hollow on a northwest facing steep hillside slope, near the head of a tributary to an unnamed creek channel, which flowed northerly toward Highway 38 at MP 13. Entering from the tributary to the main drainage

[15] Oregon Department of Forestry Issue Paper, dated April 10, 1998, submitted as testimony to the Joint Interim Task Force on Landslides and Public Safety.

[16] Four people died in this debris torrent: Sharon and Rick Moon (husband and wife), Sharon Marvin (who was visiting the Moons), and Ms. Ann Maxwell, who was walking up the driveway to the Moon residence at the time of the slide. Three others, including two children, were injured.

channel, it gained size and speed as it flowed, scouring and carrying soil, rock, and debris in its path. Reaching Highway 38, it crossed the road, covering it with saturated soil and rock, approximately four feet thick. Continuing across the highway it deposited more soil and rock on private property, damaging in the process a residence and adjoining structures, situated on the Umpqua River bank. The flow terminated in the river. This debris torrent caused one death when a motorist was pushed into the Umpqua River, which parallels Highway 38 at this location.

Conditions Common to Both Sites:

- Both initiation sites of these debris flows occurred on clearcut or harvested land;
- Both sites were designated by the Forest Practices Forester as "High Risk[17]" sites;
- Both initiation sites were logged within nine years of the initiating event[18];
- Logging roads at each site were avoided by using full-suspension, one end suspension, and helicopter logging techniques;
- Both debris torrent events initiated in the Southern Oregon Coast Range geologic unit known as Tyee Sandstone;
- Both debris torrent events occurred during the November 1996 storm event.

Non-Forested Area Slides

The geology of land formations subject to urban/suburban/coastal landslide is similar to landslide prone geology in forested land, but not the same. That is, slopes subject to slide potential meet similar criteria: Slopes are generally steep, even though landslide slopes on non-forested lands are less steep; soil formation is weak or can be weakened (as in saturated loess); a channel for slope movement is available; and there is no control of water or drainage (ground or stream). Some important differences include:

- Landslides on non-forested lands tend to be slower moving than forested landslides, but because of development, can do extensive economic damage to public infrastructures and private holdings;
- They are exacerbated by development and lack of proper subdivision/site drainage plans;
- They are often related to more drastic drainage and slope alterations than associated with landslides in forested lands.

Case Studies

Portland Metropolitan Area – Storm Event of February 1996

[17] The High Risk classification is defined within Forest Practice Rule definitions: Steep slope, recent and old slide areas present, steep headwalls, etc.

[18] According to Squier Associates, "the "window" of lowered stability is commonly believed to be up to 12 years. Both debris slide-debris flow events in our (Squier Associates) investigation occurred within this "probable window" of lowered stability."

Associated with the flooding of the storm of February 5-9, 1996[19], was abundant landslide activity that crippled the region. In the Portland Metropolitan Region alone, approximately 40% of the $10 million in damage resulted from landslides[20]. The majority of failures were earth flows and slump earth flows in loess deposits of the West Hills of Portland. Debris flows were also abundant in the steep-drainage bedrock streams along the Columbia River.

Over 800 landslides occurred within the Portland Metropolitan Area. In the city of Portland, 17 homes were completely destroyed (red tagged) and 64 were partially condemned (yellow tagged). Dr. Scott Burns of Portland State University estimates that "up to 60% of the damage could have been prevented or at least reduced if humans had been better prepared." Also, according to Dr. Burns, many sites in the Portland area "have two strikes against them already (geology that is susceptible to landslides and steep slopes), and that third strike comes when abundant water is not controlled on site."

The greatest concentration of landslides in Portland was in the West Hills in the wind-blown loess of the Portland Hills Silt Formation. Over 250 slides were mapped in this province. The loess varies in thickness from one foot to over 100 feet at the crest of the Tualatin Mountains. When loess is dry (as in August), it is very strong, but when it is wet – especially saturated – it loses most of its strength, and slopes fail. Most of the failures occurred on steep slopes in the loess.

During this same storm event, the most dangerous and devastating slides were debris flows that developed in bedrock streams along the Columbia River. These debris flows followed the same paradigm as those occurring in forested areas: They started on shallow soiled, steep slopes, scoured as they moved through channels, and had a terminus at a resistance area.

***NOTE**: The Dodson slide, the largest debris flow observed in the 1996 storms, originated in naturally forested slopes in the Columbia River Gorge.*

The Capes –

The Capes development, located near Oceanside, is an excellent example of an erosion-induced landslide, sited on an ancient landslide site (previously undetected).

Tillamook County first approved the development in 1982 on approximately 90 acres previously zoned as urban density with urban services. This approval remained in place until the county approved a re-configured 200-unit development proposal in 1991, which permitted locating structures up to 10 feet from the edge of a 165 foot bluff that slopes at an average of approximately 33 degrees to the beach.

[19] Landslide and flooding in February 1996, in Portland, is an example of a "rain on snow" event.
[20] Environmental, Groundwater, and Engineering Geology: Applications from Oregon, Scott Burns, Portland State University

Erosion and slide problems on the bluff fronting The Capes became apparent in December of 1997[21] with the advent of El Nino ocean currents and storms from the south. As of August 1, 1998 no homes had been lost, but four were in imminent danger and several others are considered vulnerable over time.

The developers of The Capes hired well known and respected experts who provided detailed assurances that the proposed development was on safe ground, and that all applicable hazard requirements had been met. These experts included a geotechnical engineer and the engineering geologist who "literally wrote the book on Northern Oregon Coast geology." In addition, the foremost expert on Oregon coastal dune stabilization assured Tillamook County planners, in a written report, that the site was not a landslide feature, and that the bluff could further be stabilized by vegetative plantings.

El Nino currents and storms from the south produced an unanticipated change in the structure of top-soils (sands and silts) where development was sited. A new water channel was eroded downward from Sand Lake at the base of the bluff.

Additionally, wave erosion of the bluff (dune) was intensified by extreme changes in wave action. The result of these two influences was exposure of an ancient landslide site and marsh/tree stands carbon-dated to be approximately 30,000 years old at the base of the dune deposits. Underlying clays, silts, and sediments provided a slick soil bed over which a large mass of overlying dune sand slid. As the slide progressed, the steep headwall surrounding the slide mass, located immediately seaward of part of the first row of houses grew larger and threatened the stability of the homes.

Insurance

Applicability/Availability in Oregon

All standard insurance homeowners' policies cover the structure and contents of a home. Landslide insurance associated with some types of natural hazards is readily available (e.g. landslides caused by flood, earthquake, volcano eruption, etc.), as an endorsement[22] to a standard homeowners' policy. Also, there is one company, Trinity Universal of Dallas, Texas that does offer low-cost landslide insurance in Oregon, but this company is reconsidering the offering[23].

Definition

An insurance policy owner would be concerned about coverage for a landslide that causes damage to land and structure. Otherwise, there would be no need for insurance.

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[21] Summary of The Capes erosion slide taken from written testimony submitted by Vic Affolter, Tillamook County Development Director and an on-site verbal briefing by Dr. John Beaulieu, Deputy State Geologist.

[22] Insurance endorsements are options to general insurance packages that can be purchased at an increased premium cost for specific perils, including a limited number of natural disaster perils.

[23] Letter dated May 13, 1998 from Trinity Universal to Oregon's Insurance Division (Dick McGavock, Senior Policy Advisor)

According to the National Association of Independent Insurers[24], "if a home slides down a hill due to erosion of the land it sat on, an insurer cannot rebuild the home without rebuilding the land to place it on. Alternatively, sometimes an insured's home is not damaged by a slide but the only way to prevent it from being damaged is to repair the land…" Therefore, when a landslide policy is written, it must specify what it does and what it does not cover, in terms of replacement values. This is consistent with how the term "landslide" is defined in the policy[25].

In addition to defining 'landslide' for the purpose of insurance coverage, the insurance industry must determine whether or not the peril is a fortuitous event (accidentally caused). Landslides are not fortuitous events. They definitively occur in known risk areas. Since landslides are non-fortuitous events, insurance for them is either covered by other natural disaster perils or is offered as an endorsement to a standard policy, at an increased premium rate (See Footnote #22).

Equitable Availability-Adverse Selection

Homes and land in areas known to be at risk are relatively few, as compared to the general real estate market place. Therefore, insurance coverage for this peril cannot be applied equitably to all policy holders.

Calculations of insurance pool premiums are based upon the likelihood of a loss occurring (risk) where it is anticipated that only a percentage of policy holders will suffer a loss. In order to keep prices affordable for all Oregonians, landowners (i.e. all policy holders) would have to pay the cost of restoring the land and homes of only a few (those at risk). Insurers would therefore be unable to spread the risk among those who will and will not incur losses. "Adverse selection" would be the result; policyholders that choose not to live in a landslide prone area would be subsidizing those that do.

Landslide insurance was introduced by Trinity Universal during the company's initial expansion into Oregon in 1993. Oregon's Insurance Division found this coverage to be "designed to fit over" Trinity's standard product offering. The company did not intend to target landslide coverage in Oregon, but were using a product it made available nationally as a "little or no premium" endorsement.

From 1996 to the present, Trinity Universal has paid claims under its landslide coverage in Oregon and Idaho. This, coupled with Trinity's "adverse selection" experience in Oregon has caused concern within the company, which, in turn, has caused the company to re-evaluate, "during their next rate review in Oregon, and in all other states," the viability of offering landslide coverage in this manner. The company "will likely

[24] Letter dated July 2, 1998 from Trisha M. Connors, Counsel, National Association of Independent Insurers to Raymond Kelly, Committee Administrator and Richard McGavock, Oregon Insurance Division. This organization represents 560 property and casualty insurers in Oregon.

[25] According to Legislative Counsel, there is no 'legal' definition of landslide in Oregon (personal telephone call on July 10, 1998: staff and L.C. w/ follow-up memorandum)

discontinue offering the coverage as a "give-away", but may continue to offer it as a

Mandated Coverage

According to Oregon's Insurance Division, the Insurance Division Director cannot mandate landslide insurance or coverage by the insurance industry; The authority to mandate such coverage would need to be legislated. According to John R. Munro of the Independent Insurance Agents of Oregon, insurance can be written for any risk[26], including landslides, under a "Surplus Lines" type of insurance (Surplus Lines are "Lloyds of London" types of policies).The question becomes one of cost as compared to coverage. In other words, the purchaser of risk based insurance must weigh the cost of coverage against the potential return of the coverage, and make a decision as to whether to purchase the insurance.

California Example

Mandated Pool insurance (also known as "Assigned Risk Pool"), is another option to mandate landslide coverage in Oregon. Such a pool was required for earthquakes, by the California Earthquake Authority. With Assigned Risk Pool policies in force, $12.5 billion in losses were experienced by the insurance industry due to the Northridge Earthquake and insurance rating agencies demanded that insurers reduce their exposure to catastrophic losses. The result was that 95% of voluntary homeowner's insurance companies stopped selling new policies in the state and approximately one million policyholders were threatened with non-renewal of existing policies.

The solution to this problem was to redefine coverage in order to focus post earthquake recovery on structure and bare necessities, by creation of a tax efficient risk pool to ensure access to earthquake insurance by consumers, and to cap maximum liability of the insurance industry. This type of "mini-policy" covers 100% of the value of the structure; contents coverage is limited to $5,000; living expenses limited to $1,500; and a 15% deductible. This solution was supported by the insurance industry and consumer groups in California under the following conditions:

- Mandates for carriers and consumers must be voluntary;
- The program must exist in a tax free environment;
- Incentives must attract new capital;
- The Risk Pool must be funded adequately to survive in most cases;
- It must be actuarially sound;
- Program reserves must have the capacity of paying $10.5 billion in claims, pro-rated for participation;
- Coverage must be capable of covering two Northridge magnitude events, back-to-back.

[26] Telephone conversation on July 7, 1998…Unusual perils or risks are usually 'written' under *Surplus Lines*, in the 'non-admitted market'.

In order to achieve a program that met the above conditions, the California Earthquake Authority secured a diversified funding pool which included the sale of risk bonds, a second reinsurance layer, debt financing, and a line of credit (a consortium of banks led by Chase).

With this Assigned Risk pool in place, 35% of California homeowners purchased coverage (85,000 CEA policies). The California initiative described above brought State Farm, Farmers, and Allstate Insurance back into California's homeowners insurance market.

Summary of Insurance Issues

- Landslide insurance coverage is available in Oregon, but only if it is associated with events that initiate land movement or as an endorsement to standard homeowners policies, usually under "Surplus Lines". Only one company offers landslide coverage under a general homeowners policy.
- Landowners in need of landslide insurance live in identifiable landslide prone areas. The number of landowners in these hazardous areas are small as compared to the general real estate marketplace. "Adverse selection" by the consumer is the result.
- Premiums cannot be applied equitably to all policy holders (see "adverse selection"). Landowners in the hazardous area pays a high premium or the premium cost is borne by those who have no need for this type of insurance.
- There is currently no authority for the State's Insurance Division Director to mandate landslide insurance coverage in Oregon. This authority would need to be legislated.
- California has established an "Assigned Risk Pool", which is voluntary, is funded through various mechanisms, and is administered by the California Earthquake Authority. Similar coverage would need to be legislated in Oregon.
- The insurance industry in Oregon is reluctant to participate in a mandated program. Negotiations with industry representatives would need to occur in order to ensure success of such a proposal.[27]

No action by the Task Force was taken regarding insurance.

Liability

No Oregon statute imposes liability on landowners for damage caused by landslides originating on their land that does not result from the landowner's activity ("Act of

[27] Staff conversations (in person and telephonic) with industry/association representatives and letters received by staff from these same representatives.

God")[28], nor has there been a case decided in Oregon involving landslides directly caused by logging[29].

However, there have been extensive case proceedings deciding issues of liability, torts, and takings as they relate to landslides in Oregon. These case proceedings are summarized in Appendix III.

The Task Force discussed the issue of liability, as it related to their charge and determined that the courts were best equipped to deal with this issue. The Task Force therefore determined that legislative action or recommendation should not be taken relative to statutory assignment of liability.

Summary of Landslide-Public Safety Study

As evidenced in written and verbal testimony, as well as a myriad of geologic literature, land movement is a naturally occurring phenomena that affects all regions of the earth. It begins with the theories of plate tectonics[30] and ground faults, advancing to soil movements or disturbances associated with geologic structures.

Oregon's geology, like other diverse geologic regions, is subject to land movement in many forms. Earthquakes along tectonic and ground faults uplift, subside, or shift the ground laterally. Volcanoes erupt and shift matter by spewing materials and causing lava/mudflows. Extreme storms or the combination of storms and snow-melt cause landslides which can turn into debris torrents. The natural processes of erosion can strip top-soils, exposing underlying bedrock or ancient land-forms.

Landslides are a sub-set of earth movement upon geologic structures; they occur naturally, usually under a given set of criteria. The charge of this task force was to identify a way or ways to protect the public from these naturally occurring events. In order to accomplish this task, the task force endeavored to understand the causes landslides and debris torrents, as well as look for ways to mitigate the effects of these events.

Testimony has shown us that human intervention can exacerbate the occurrence and affects of landslides, even though there are differences of opinion within the scientific community as to how much and at what point intervention affects natural processes. Even so, each occurrence of a landslide has the potential of causing loss: loss of natural resources, loss of wildlife habitat, destruction of migratory fish streams, loss of local, regional, and state economic bases, and loss of human life.

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[28] April 1, 1998 Memorandum from Mark N. Salvo, Brent R. Edwards, Ralph O. Bloemers (Willamette University Law Students) to the 69th Legislative Assembly Joint Interim Task Force on Landslides & Public Safety. Reference: Landowner liability, State Liability, Taking Implications.

[29] See Memorandum referenced in Footnote #28 for full explanation/analysis of landowner liability, state liability, and takings issues as they relate to task force proceedings. The recent case of Marvin v. Champion International et. al. was settled out of court on October 6, 1998.

[30] Theory that the earth's crust is divided into plates that continuously shift, bringing continents closer together or moving them further apart.

In researching Oregon's response to the landslide issue, the Task Force asked for recommendations from nine state agencies. Each of these agencies produced landslide issue papers and recommendations, which were submitted to the task force as written testimony. These issue papers spell out what role the specific agency plays in the landslide-public safety arena, what the agency is currently doing within this arena, and what recommendations the agency has regarding enhancement or modification of current efforts and existing statutes regarding landslides and public safety. A summary of these issue papers is found in Appendix IV.

SB 1211 (1997) passed as a result of devastating landslides during November of 1996, when five Oregonians perished as a result of landslides in Douglas County.[31] During this same year, the State spent millions of dollars on infrastructure repair as a result of landslides precipitated by heavy rains and floods. In fact, Oregonians were provided with $217,031,349 in Federal government assistance during 1996/97[32]. The Task Force therefore has determined that the issue of landslides and public safety is important and should be addressed through land-use planning efforts and legislative initiatives.

[31] Four people (Ann Maxwell, Sharon Marvin, Sue Moon, and Rick Moon) perished during the Rock Creek-Stump Acres slide. Another slide, at Hwy 39, MP 13 killed one woman and injured two others during the same time frame.

[32] According to Oregon Office of Emergency Management data, three "Presidential Disaster Declarations" were declared in Oregon between February 1996 and January 1997. Federal Emergency Management Agency (FEMA) program dollars to Oregonians include Mission Assignments (initial disaster response), Public Infrastructure Assistance, Human Services/Individual Assistance, Hazard Mitigation Grants, National Flood Insurance Claims, and Small Business Administration Loans.

Legislative Concepts

Five areas of interest resulted from task force deliberations:

1. ***Amend Oregon's Forest Practices Act***: The Oregon Forest Practices Act (ORS 527.610 to ORS 527.992, amended by Section 1, Chapter 530, Oregon Laws 1997 and Sections 2, 7, and 8, Chapter 565 Oregon Laws 1997) does not set out a definitive policy regarding forest practices and landslides, shared responsibilities for mitigating landslide affects, or responsibility for public safety as it relates to mass movement of land within Oregon's forested areas.

   The task force proposes to create a policy statement on landslides that sets out the state's policy, including identification of shared responsibility concepts. It also proposes establishing authority for the Board of Forestry to be able to consider and react to public safety, and write rules and regulations to carry out these new responsibilities.

2. ***Consolidate authority under ORS 390 and ORS 196***: Current regulatory authority for Oregon's Beach Law (ORS 390.605-390.770) and Removal-Fill Law (ORS 196.800-196.990) rest with two state agencies: The Division of State Lands and the Oregon Parks & Recreation Division. The task force proposes regulatory processes and authorities be consolidated, while maintaining a requirement for review and advisory technical expertise by an appropriate agency.

3. ***Amend Oregon's Zoning Laws***: ORS 215.130(5)(6), states that a county shall not place conditions upon the continuation or alteration of a use (a structure), except as provided for under ORS 215.215 (non-farm use within an exclusive farm use zone). Restoration or replacement (of a structure) may be permitted when the "restoration is made necessary by fire, other casualty, or natural disaster". The task force proposes placing limits on the restoration or replacement of structures which were in harm's way and would remain at risk if restored or reconstructed in the same location.

4. ***Geotechnical Peer Review***: In order to ensure professional agreement on geotechnical report methodology within the scientific community, peer review of reports and plans is necessary. The task force proposes to make geotechnical report peer review, for newly created plans, for selected structures, a requirement.

5. ***Real Estate Disclosure***: Current real estate disclosure laws do not mandate property owner/purchaser notification of natural hazards or prior known hazardous phenomena affecting a parcel. The task force proposes to amend ORS 105.465, revising the current disclosure law, making it known whether or not the seller has any knowledge of any prior natural hazards affecting the property in question.

The above resulted in three draft Legislative Concepts (LC):

LC 1450: Transfers administration of fill and removal permits for portions of ocean shore from Division of State Lands to State parks and Recreation Department. Establishes procedures, including process for appeal of order on permit. Establishes application fee to pay for administrative costs of issuing improvement permits. Allows injunction and civil or criminal penalty for violation of improvement permit requirements.

LC 1451: Establishes policy for protection of public from landslide hazards. Directs agencies to implement specific responsibilities related to protecting public from landslides. Appropriates monies to state agencies to implement responsibilities related to landslides.

LC 1452: Requires seller to disclose information on geotechnical hazards that affect property at the time of sale or transfer.

Funding Requirements/Agency Resources

The Task Force recommends that the Legislative Assembly provide resources to enable state agencies to carry out proposed statutory requirements and recommendations contained in this report. Following is a break-down, by Legislative Concept, of funding requirements identified by affected agencies. These requirements include budget packages submitted to the Governor for approval:

LC 1450:

- Decrease the Division of State Lands' (DSL) budget consistent with consolidation. Transfer funds previously available to DSL under this program to the Oregon Parks and Recreation Department and consider providing funds to DOGAMI in support of technical assistance efforts.

LC 1451:

- Department of Forestry (ODF): Public safety considerations are not currently funded under the ODF budget. Charlie Stone, Assistant State Forester, has identified 2 new positions to provide forest practices advice to local government and to review forestry plans (1 position for Northwest Oregon and 1 position for Southwest Oregon) and 1.5 geotechnical positions (3.5 half FTE total) in support of this LC. First biennium fiscal estimated impact is $480,000. Approximately $70,000 less will be needed for following biennia.

- Department of Land Conservation and Development (DLCD): This draft legislation requires LCDC to develop and implement landslide rules consistent with Goal 7, to improve the adequacy of site-specific geotechnical reports, and to review evaluations regarding geologic hazards. The agency estimates a fiscal impact of $161,813 for the 1999-2001 biennium. This reflects the cost of an FTE to provide technical assistance to local government on natural hazards, including landslide, to coordinate hazard planning issues between state agencies and local governments and to guide the Goal 7 rulemaking process. The Department is also seeking $200,000 to help local governments address new rule requirements for landslide hazards.

- Department of Geology and Mineral Industries (DOGAMI): This LC stipulates that DOGAMI provide technical assistance to local governments and map landslide hazard areas. DOGAMI has submitted two decision packages to the Governor, for inclusion in the Governor's budget. One package requests $247,746 for the agency to address and work on geology and education related to landslides and forestlands. The other package is a $513,087 request for the agency to work on coastal protection. Each decision package also contains criteria for mapping of geology, integrating hazard maps with geographic information systems (GIS) for use in identifying and mitigating hazards.

- The Department of Transportation (ODOT) is required to warn motorists of landslide hazards under this draft legislation. Through testimony, the agency identified a need to fund signage in support of this requirement. The Department could not estimate a fiscal impact.

- The Building Codes Division (BCD) is required to write rules establishing site-grading practices under this LC. The agency will need funds to support the rule making process.

LC 1452: No funding required.

Draft Legislation

Published under separate cover as Legislative Concepts (LC)1450, 1451, and 1452.

Rule Making Recommendations

Direction to LCDC for Goal 7 Rule Making and Agency Resources

LCDC Goal 7 Rulemaking:

The Task Force recommends that the LCDC begin rulemaking during the 1999-2001 biennium to protect people and development from landslide hazards. Based on the outcome of its evaluation of Goal 7, LCDC should consider integrating its landslide rules into a broader effort to enact amendments to Goal 7 and/or adopt a Goal 7 administrative rule.

The Task Force further recommends that, as a part of this process of adopting and implementing LCDC's landslide rules, DLCD and other affected agencies should:

1. Prepare information and examples of model landslide mitigation policies, land use regulations, and other tools for local governments to use in addressing landslide hazards.
2. Assist local governments, particularly those communities with limited planning resources, in utilizing updated landslide inventory information and incorporating this material into comprehensive plans and land use regulations to provide for the characterization of the landslide hazard and reasonably provide for the reduction of landslide risk within proposed development areas.
3. Provide landslide information to local jurisdictions for use in updating local land use plans and in making land use decisions. To the extent possible, such information from state agencies shall be provided in a timely, coordinated manner, at a scale usable by local planning officials.
4. Consider public reporting and peer review of geotechnical reports required by local landslide development regulations.
5. Help local jurisdictions avoid potential taking claims arising from the enactment and implementation of local landslide regulations by emphasizing public safety and employing alternative ways of mitigating the effects of such hazards.
6. Consider severe hazard areas where development prohibition should be considered and addressed in rules.

Appendix I

Task Force Meeting Summaries

December 10, 1997 Organizational Meeting: The task force met for the first time in Roseburg for organizational purposes and to review background materials on debris flows. SB 1211 (1997) created the task force and charged the group with utilizing a problem assessment and risk analysis process to develop possible solutions to the problems associated with landslides. The legislation also requires the task force to recommend policy changes regarding the authority of the State Forester to prohibit timber harvests or road building that may pose a landslide risk to public safety, and the authority of the road authority to close roads during extreme storm events. The task force will also need to propose measures for educating the public on the risks and hazards associated with landslides.

As required by the legislation, the task force elected a tenth member from the public who shall serve as a chairperson of the task force. The task force unanimously selected Gail Achterman, who is an attorney with Stoel Rives, LLP. Ms. Achterman was formerly the natural resources advisor to former Governor Neil Goldschmidt.

Charlie Stone, Forest Practices Director, Oregon Department of Forestry (ODF) presented the task force with background on SB 1211. In addition, Mr. Stone offered general information regarding landslides. Mr. Stone discussed the November 1996 storm event that resulted in the loss of human life, in large part, due to landslides. Mr. Stone discussed the ODF voluntary deferment program and the mandatory deferment that is authorized by SB 1211. Most landowners are in compliance with forest practices that attempt to minimize landslides, but several policy questions will need to be addressed by the task force including the following: the appropriate level of state response for landslide mitigation on forest and non-forest lands, establishing responsibility for preventing harm from landslides, direct actions to carry out responsibilities, examining land use conflicts related to resource use and residential use, considering the financial impact on landowners, and establishing liability for damages from landslides.

The task force toured several landslide sites in near the Roseburg area. The task force plans to meet February 2, March 2, and April 6, 1998. The location of the meetings has yet to be determined.

February 2, 1998: The task force met in Salem to listen to technical presentations on landslides from the Department of Forestry (ODF) and the Department of Geology and Mineral Industries (DOGAMI). The technical presentations focused on the historical background of landslides in Oregon, the major factors affecting the occurrence of landslides, geology most susceptible to landslide occurrence, risks to public safety, and risk management.

Chris Crean, Legislative Counsel, discussed landslide laws in other states. Oregon appears to be out in front of legislation focusing on landslides. The State of Washington is the only other state with any type of significant landslide laws. Washington requires landslide hazard mapping and allows the public to comment on the proposed maps. Liability from landslides is absolved from the state under Washington law. Owners in Washington can undertake landslide mitigation measures, allowing the state to certify mitigation. With state certification, a Washington can be absolved from liability.

The task force then worked on finalizing the work plan. The task force focused on the following objectives and project phases:

Objectives:

1. Determine the scope of the problem based on an assessment of the hazard and risks of exposure to personal injury or death as a result of landslides, both rural and urban.
2. Establish clear statements of public policy on who bears (or shares) the responsibility for preventing harm from landslides, and communicate to the public risks associated with landslides.
3. Examine land use conflicts related to landslides, resource production, and other uses.
4. Determine legislative actions, if appropriate, to prevent harm from landslides.
5. Consider financial impacts to landowners affected by changes in public policy and prescribe appropriate remedies.
6. Establish clear statements of public policy of who bears (or shares) liability, if any, for damages from landslides and/or actions affecting landslide occurrence.

Project Phases:

1. Organization of task force.
2. Education of task force, including public testimony and review of white papers from agencies on their landslide related roles and responsibilities.
3. Develop and evaluate options.
4. Prepare and propose legislation.

The task force then opened up the meeting to public comment.

March 2, 1998*:* The task force met in Portland to discuss and view urban landslides and to listen to various agency briefs on landslides.

Dr. Scott Burns, Portland State University (PSU), presented findings on an urban landslide study conducted by PSU and funded by METRO. Burns discussed his Landslide Hazards in Oregon reports, which outlines geological conditions and landslide occurrences throughout the different geographical regions of Oregon. Burns explained

that the METRO study was mapping landslide occurrences in the Portland metropolitan area.

The task force toured a selection of Portland landslide sites. Stops included a large earthflow at Cornell and Thompson Streets; an earthflow repair by gabion wall on Skyline Drive; the Pittock Mansion earthflow on Monta Vista Street; Portland's Rose Garden; the Portland Zoo; a Canyon Road earthflow repaired with rock buttress and rock fill; and an unrepaired earthflow on Sylvan Street.

The afternoon was dedicated to a series of reports by state agencies on their roles in landslides and public safety, including suggestions for improvements.

Tom Lulay and Charlie Sciscione from the Oregon Department of Transportation (ODOT), discussed the agency's responsibility to reopen highways closed by landslides or floods. ODOT spent over $50 million to reopen highways after the 1996 floods. The task force voiced concerns regarding ODOT's use of variable message signs and temporary disposal sites during storm events.

Jim Knight from the Department of Land Conservation and Development (DLCD) described the agency's authority and obligations under ORS Chapter 197 and statewide Land Use Planning Goals 7,17, and 18. DLCD requires local governments to address geologically unstable areas as part of their land use planning responsibilities, and has no authority to apply goals directly.

Dennis Sigrist from the Office of Emergency Management (OEM) described its public education materials, debris flow mapping, debris flow warning system efforts, and their relationship with the Federal Emergency Management Agency (FEMA). FEMA's emphasis is turning to mitigation and prevention instead of structural controls, pointing out real estate disclosure laws in other states.

Steve Purchase from the Division of State Lands (DSL) described agency responsibilities and authority under Oregon's Removal-Fill Law, which requires permits for most waterway alterations, including dredging, protecting or repairing stream banks, and filling wetlands. DSL is also represented on the Interagency Hazard Mitigation team.

Peggy Collins from the Building Codes Division described agency responsibility for adopting and administering state building codes that apply to both state and local jurisdictions. With regard to landslides, drainage problems are of particular concern.

April 13, 1998: The task force met in Tillamook to view landslide sites at The Capes development and along the Wilson River, as well as to listen to various briefs in response to four questions asked of state agencies during the March task force meeting in Portland.

After calling the meeting to order and introducing Ray Kelly, the Task Force's new Committee Administrator, Ms. Gail Achterman, Chair, called on Mr. Vic Affolter, Tillamook County Planning Director and Mr. Mark Labhart, Tillamook District Forester,

Oregon Department of Forestry (ODF) to brief task force members on the day's tour events.

Tour of The Capes development
The task force received an on-site explanation of the current geologic phenomena affecting The Capes from Dr. John Beaulieu, Deputy State Geologist, Department of Geology and Mineral Industries (DOGAMI). The task force then proceeded to beach-level to view the slide site from the ground, again receiving an explanation of present geology, relating the beachfront erosion to the slide.

Tour of Landslide Sites along the Wilson River
The task force drove up Oregon Highway 6 along the Wilson River to view various landslide sites. Stops included the Mills Bridge landslide which was attributable to numerous violations of the Forest Practices Act; the Trailer House slide of 1996 resulting from a thirteen year old timber stand earth flow; the Wilson River slide, approximately seven miles east of Tillamook, which was a result of the 1964 flood (material deposited forty feet high on Highway 6); and an old growth landslide which occurred during the 1996 flood. The task force received technical explanations of slide causes from Mr. Mark Labhart and Mr. Keith Mills, also of ODF, at each slide site.

The afternoon was dedicated to a series of presentations from state agencies, resulting in a series of recommendations for the task force/legislative consideration.

Mr. Mills presented a short explanation and update of the Governor's Interagency Debris Flow Team efforts, centering on state agency activities to coordinate actions within the group. Mr. Mills also reviewed the group's "Recommendations to Address Dangerous Debris Avalanches," dated March 4, 1997.

Dr. Beaulieu explained the role of DOGAMI as it relates to landslide and debris flow issues. Dr. Beaulieu presented five recommendations for task force/legislative consideration.

Mr. Charlie Stone (ODF) and Mr. Mills presented a Department of Forestry issue paper, dated April 10, 1998, regarding their agency's role relative to landslides and public safety. Eight recommendations resulted from this issue paper.

Ms. Emily Toby, representing the Oregon Sea Grant, presented that group's publication titled "Improving Natural hazards Management on the Oregon Coast: Recommendations of the Coastal Natural Hazards Policy Working Group," dated 1994, and asked that these recommendations be considered for legislation.

The task force will summarize and evaluate all recommended requests for legislative consideration.

Mr. James Bela, founder of Oregon Earthquake Awareness, demonstrated how he believes earthquakes will precipitate landslides on the Oregon Coast.

May 4, 1998: The Task Force met in Roseburg to visit a landslide site at Rock Creek/Hubbard Creek (four people lost their lives and one person was injured at this site as a result of a debris torrent (landslide) in November 1996), to receive a report on liability as it relates to landslides (prepared at the request of the task force), to hear public testimony, and to finalize the task force work plan.

Upon arrival at the tour/debris torrent site, task force members received a general briefing and informational material from Gordon Marvin (Hubbard Creek resident) and his attorney, Art Johnson. Keith Mills of the Department of Forestry provided information regarding specifics of the clearcut area above Hubbard Creek. John Beaulieu, Oregon Deputy State Geologist, explained general geologic nuances of the debris torrent area.

The task force walked to the site of Rick and Sue Moon's house, which had been obliterated by the November 18, 1996 landslide. Debris torrent information provided earlier was explained from this point of reference.

Brent Edwards and Ralph Bloemers presented a paper they and fellow Willamette University law student Mark Salvo wrote, titled Landowner Liability, State Liability, and Taking Implications. The paper was written at the request of the task force Chair, Gail Achterman.

Public testimony followed. Approximately seventeen members of the public provided testimony regarding landslides and forest practices.

Prior to adjoining, the task force completed its work plan.

June 9, 1998: Dick McGavock, Senior Policy Advisor for the state's Insurance Division, responded to a task force request as to availability of landslide insurance for Oregonians, whether the state's Insurance Division is authorized to mandate coverage, and if a state managed insurance pool could be a viable option for Oregonians.

Mr. McGavock advised the task force that, according to the Western Insurance Information Service and the Surplus Lines Association of Oregon, landslide insurance is available in Oregon, with exceptions (as noted in written testimony). Mr. McGavock advised the task force that neither general powers under ORS 731.236 nor additional powers provided by the Insurance Code or by other law authorize the division to mandate the offering of landslide insurance in Oregon. Mr. McGavock also advised the task force that there are basically two landslide insurance options: a risk pool or mandated coverage. Each option would require a change in current statutory language.

Matt Brunengo, Washington Department of Forestry Geologist, responded to a task force invitation to explain Washington's perspective(s) on forest practices and slope stability, related takings issues, and the Washington Department of Natural Resources forest harvest application processing steps. Mr. Brunengo explained that a key difference between Oregon and Washington is that Washington has a State Environmental Policy

Act (SEPA 1971), modeled after the National Environmental Policy Act (NEPA). Oregon has no equivalent legislation. Mr. Brunengo presented the development chronology of Washington's Forest Practices Act, as it emerged from their SEPA. He further explained the SEPA and its decision/appeal process.

Ms. Gail Achterman, Chair, reviewed two working papers (drafted by staff) with task force members. Based on the review and member consensus, staff was directed to begin formulation of a final report containing pros and cons of potential task force actions. The draft will be available for review at the next task force meeting. The next meeting is scheduled for July 6, 1998, 8:30 am, in Hearing Room A.

July 6, 1998: Meeting cancelled at the request of membership.

August 3, 1998: Dallas Hemphill and Ron Stuntzner of Logging Engineering International proposed the following forest practices rule for committee consideration: "Any road constructed on a high risk site shall be built according to a design prepared by or under the supervision of a registered professional engineer. Any logging within a high risk site shall be conducted according to a plan prepared by or under the supervision of a registered professional engineer." Witnesses claim advantages of the proposed rule are: 1) Greater confidence that risks have been eliminated; 2) Reduced need for state oversight; 3) Reduction of liability on the part of the timber owner, through having performed due diligence; 4) Reduced pressure to withdraw land from timber production. The presentation was followed by extensive questions from task force members.

Michael Long of the Oregon Board of Geologists (OBG) discussed roles and responsibilities of the OBG, standards and practices of OBG members, OBG examination procedures, and guidelines for preparing geologic reports in Oregon.

Mic Alexander of the Oregon Trial Lawyers Association (OTLA) testified regarding immunizing liability, "abnormally dangerous" activities, absence of negligence, and discretionary immunity for landslide hazards. The OTLA does not support immunizing liability because of potential litigation.

Ted Lorensen, Forest Practices Policy Unit Manager, Oregon Department of Forestry (ODF) and Keith Mills, ODF Geotechnical Engineer provided an update on ODF Memorandum of Agreement (MOA) Committee issues/work. Six working principles and eight action items are being addressed by the MOA Committee. Contact Ted Larson of ODF for a detailed list of these items.

Statements of Note/Discussion related to forest practices: 1) A statutory definition of "shallow rapid landslides" needs to be developed; the first point of business is to create definitions to develop policy around. 2) ODF feel that the decision to extend authority ODF now has to cut logging off entirely in some very high risk sites is a decision appropriate for the Board of Forestry to make, given that the Forest Practices Act is amended to give the Board public safety authority. 3) Forty-three forestry operations

have been denied as of June of this year. It is speculated (by ODF) that possibly three times as many have been discouraged by the structure of the current regulation.

Myra Lee, Director, Oregon Office of Emergency Management (OEM), provided testimony on OEM's public education efforts. OEM has helped establish an Emergency Management Associates Degree program at Clackamas Community College. The agency distributes public education materials before a disaster occurs. They are also active in FEMA's Project Impact initiative. According to OEM, the "missing pieces" in preparing for disasters at the state level include a better education process (regarding emergency management) for legislators and an understanding of hazards and processes involved.

Brian Boe and Jim Markee, representing the National Association of Independent Insurers (NAII), testified on the proposal to require mandated insurance coverage. Issues discussed include: Public policy implications of mandating landslide insurance; the Northridge, California earthquake insurance experience; and what other states have done in this area. No other states have mandated landslide insurance. Consistent with previous testimony heard by the task force, Mr. Boe stated that a surplus lines carrier (Lloyds of London, etc.) can write landslide insurance for Oregonians.

Jerry Schmidt and Andrea Bushnell of the Oregon Association of Realtors (OAR) discussed current real estate disclosure requirements under ORS 105.465: 1) Disclosure is only required if there is a structure on the property; 2) Seller's disclosure and disclaimer of property are included in current paperwork, at the end of the transaction process, but realtor disclosure is not; 3) Common law duty: If an owner is aware the property has a history of landslide, that history must be disclosed; 4) The property owner has primary duty to disclose. However, if the realtor knew or should have known of the defect, that fact may raised; OAR does not support changing the existing real estate disclosure law.

Legislative Concepts Resulting from Task Force Discussion Current regulatory authority for Oregon's Beach Law (ORS 390.605-390.770) and Removal-Fill Law (ORS 196.800-196.990) rest with two state agencies: The Division of State Lands and the Oregon Parks & Recreation Division. Vice-Chair Kintigh asked that legislation consolidating regulatory authority be drafted (for task force review) to give sole authority to the Oregon Parks and Recreation Division and that this draft legislation require technical expertise (review and advisory) by the appropriate state agency, conditional to permit approval.

Charlie Stone, Assistant State Forester, stated that ODF would like to add 2 new positions to provide forest practices advice to local governments and to review forestry plans (1 position for Northwestern Oregon and 1 for Southwestern Oregon) and 1.5 geotechnical assistant positions (3.5 FTE). Total first biennium fiscal request would be approximately $480,000; approximately $70,000 less for following biennia. ODF is preparing proposals for these new positions.

ODF believes that the task force should create a policy statement on landslides that sets out the state's policy, including identification of shared responsibilities concepts. ODF

also believes, if the task force finds it appropriate, the Forest Practices Act should be amended to establish authority for the Board of Forestry to be able to consider and react to public safety as it relates to the mass movement of land. This amendment should enable the Board to write rules and regulations to carry out the state's "official position".

The Committee Administrator will work with Legislative Counsel, as directed by the task force Vice-Chair, to draft legislation (for task force review) amending ORS 215.130 (5) and/or (6), which deals with restoration or replacement of structures destroyed by "fire, other casualty or natural disaster", in order to place limits on replacing non-conforming uses in hazardous areas.

At the direction of the task force Vice-Chair, the task force requested development of draft legislation requiring geotechnical report peer review, for newly created forestry plans.

The Vice-Chair asked that a recommendation be made, by the task force, for DLCD to continue their land use planning rule and revision process.

The task force Vice-Chair directed that legislation be drafted (for task force review) which adds a line to the current disclosure law (ORS 105.465), making it known whether or not the seller has any knowledge of any prior natural hazards affecting the property in question.

The task force indicated that it does not support addressing the insurance issue further.

Next meeting scheduled for Tuesday, September 8, at 9:00 AM in Hearing Room A.

September 8, 1998: The purpose of this meeting was to review the Task Force draft final report and three Legislative Concepts (LC), incorporating changes as recommended by task force members.

Staff was directed to add two new sections to the final report: A section on funding requirements/agency resources and a section on rule making recommendations. Staff was also directed to add language that definitively addresses Land Use Planning Goal 7.

The task force reviewed the three draft LCs. Following are summaries, comments/changes, organized by LC:

LC 1450: Summary - Transfers administration of fill and removal permits for portions of ocean shore property from the Division of State Lands to the State Parks and Recreation Division. This is a redraft of HB 2141 ('97), affecting Section 404 of the Water Pollution Control Act.

Comments/Changes: None.

LC 1451: Summary – Establishes policy for protection of the public from landslide hazards. Directs agencies to implement specific responsibilities related to protecting the public from landslides. Amends Forest Practices Act to allow the State Forester to consider public safety as is relates to Forest Practices.

Comments/Changes:

1. Add a section addressing the transition and linkage from SB 1211 to this LC. Something that says the deferral under SB1211 remains in affect and continues until the Board of Forestry adopts rules under this Act.
2. Section 4(1)(a), lines 17 – 19: Change to read "…adopt rules requiring identification of areas vulnerable to landslides."
3. Section 4(1)(b), line 21: Insert the word "state" between the words "hazard" and "highway"; Change to read "when the Department is notified of…"
4. Section 4(1)(d): Rewrite to fit with current building codes (I'll work with Building Codes Division and the task force local government rep. on the new language).
5. Section 4(1)(e), line 2: Delete "the risk of" and replace with "public safety risks

6. Section 4(1)(e), line 3: Add, after "forestlands": "in areas of known high landslide

7. Delete last sentence of Section 5, subparagraph 6 (page 4, lines 21 through 23).
8. Restore language of lines 6 & 7 on page 6 (reference your editorial comment).
9. Section 8: Expand funding provisions for all state agencies that would require funds and are named in this bill. List includes Department of Land Conservation and Development, Department of Transportation, Department of Geology and Mineral Industries, Building Codes Division, and Department of Forestry.

LC 1452: Summary: Requires seller to disclose information on geotechnical hazards that affect property at the time of sale or transfer.

Comments/Changes: Section 8A of the Seller's Disclosure Statement (page 11): Delete first draft Section "A", making the first draft Section "B" a new Section "A". List hazards identified in the first draft Section "A" in the new Section "A".

Staff directed to make the draft report and draft Legislative Concepts available for public review, with the public review period ending September 25, 1998.

Next meeting scheduled for Monday October 5, 1998 in Hearing Room A.

October 5, 1998: The purpose of this meeting was to take final action on the Task Force draft final report and three proposed Legislative Concepts (LC). Following are results of this action:

LC 1450: Transfers administration of fill and removal permits for portions of ocean shore from Division of State Lands to State Parks and Recreation Division. **ACTION**: Refer to the Seventieth Legislative Assembly for consideration.

LC 1451: Establishes policy for protection of public from landslide hazards. Directs state agencies to implement specific responsibilities related to protecting the public from landslides. Appropriates funds to state agencies, to implement responsibilities related to landslides. **ACTION**: Refer to the Seventieth Legislative Assembly for consideration, with the following changes:

- Section 4(1)(a) - Replace existing language with: 4(1)(a): "The Land Conservation and Development Commission shall adopt rules requiring local governments to amend their comprehensive plans and land use regulations to:
  (A) Identify areas subject to landslide hazards; and
  (B) Regulate the approval and siting of dwellings and other development in or subject to identified landslide hazard areas."

- Section 4(2) – Delete "…and when making decisions that affect land use planning

LC 1452: Requires seller to disclose information on geotechnical hazards that affect property at the time of sale or transfer. **ACTION**: Refer to the Seventieth Legislative Assembly for consideration.

Final Report:

1. Review entire document to ensure spelling, grammar, page references, etc. are correct.
2. Make corrections as identified by Task Force members.

The Chair adjourned the Task Force with no further meetings scheduled.

Appendix II

Testimony

(Oral Testimony):

Government Testimony	**Professional/Non-Profit Org. Testimony**	**Private Citizen Testimony**
Oregon Dept. of Forestry	Dr. Scott Burns (Department of Geology, Portland State University)	Bill Arsenault (Elkton Resident)
Legislative Counsel	Coastal Management Policy Working Group (DLCD)	Dan Newton (Roseburg Resident-Small Woodland Owner)
Department of Geology & Mineral Industries	Mark Edwards/Ralph Bloemers (Willamette Law School)	Gary Springer (Corvallis Resident-Small Woodland Owner)
Oregon Department of Transportation	Rick Sohn (Roseburg area Soil Scientist)	Lew Howe (Roseburg Resident)
Department of Land Conservation and Development	James Bela (Oregon Earthquake Awareness)	Bob Hoene (Dillard Resident)
Oregon State Police Office of Emergency Mgmt.	Rick Barnes (Umpqua Chapter, Society of American Foresters)	Bob Heilman (Myrtle Creek Resident)
Department of State Lands Building Codes Division	Rick Sohn (Roseburg Resident-Soil Scientist)	Francis Eatherington (Roseburg Resident)
Tillamook County	Rex Storm (Associated Oregon Loggers)	Kip Morgan (Myrtle Creek Resident)
Oregon Insurance Division	Cary Jones (Douglas Timber Operations	Alixe Dancer (Roseburg Resident)
Washington Dept. of Natural Resources	Aaron Rappaport (Sierra Club)	Patricia Gilbert (Roseburg Resident
Oregon Board of Geologists	Dallas Hemphill (Logging Engineering Int'l.)	Carl Groda (Roseburg Resident)
Washington Dept. of Natural Resources	Ron Stuntzner (Logging Engineering Int'l.)	
	Mic Alexander (Oregon Trial Lawyers' Assoc.)	
	Brian Boe (National Association of Independent Insurers)	
	Jim Markee (National Association of Independent Insurers)	

	Jerry Schmidt (Oregon Association of Realtors	
	Andrea Bushnell (Chief Counsel, Oregon Assoc. of Realtors	

(Written/Submitted Publications, Papers, and Written Testimony/Exhibits):

Title	Organization	Date of Publication
The News Note (Forest Practices Program News Note)	Oregon Dept. of Forestry	July 21, 1997
Landslides in Oregon (public education brochure)	Governor's Interagency Hazard Mitigation Team	undated
General Landslide Information – Douglas County	Oregon Dept. of Forestry	undated
A Method for Predicting Slope Instability For Earthquake Hazard Maps (Preliminary Report)	David K. Keefer, USGS, and Yumei Wang, Oregon DOGAMI	undated
Oregon Geology, Volume 45, Number 9	DOGAMI	September 1985
Early Account of Landslide, Coos County	Oregon Dept. of Forestry	undated
Reducing Risk From Geologic Hazards	DOGAMI	undated
1996 Storm Impacts Monitoring Project (Preliminary Report)	Oregon Department of Forestry	January 29, 1997
"Foresters Take Position on Landslides"	Oregon Society of American Foresters	Undated (position adopted 12/19/97 w/92% membership approval)
Environmental, Groundwater and Engineering Geology: Applications from Oregon	Dr. Scott Burns, Department of Geology, Portland State University	Copyright 1998
Homeowners Landslide Guide	Oregon State Police Office of Emergency Management/FEMA Region 10	undated
Transportation Issues	Oregon Department of Transportation	March 2, 1998
Slide Response	Oregon Department of Transportation	undated
Landslide Mitigation Options, Hood River Hwy.	Oregon Department of Transportation	February 25, 1998
Written Testimony	Dept. of Land Conservation & Development	March 2, 1998
Written Testimony	Oregon State Police Office of Emergency Management	March 2, 1998
Written Testimony	Or. Division of State Lands	February 27, 1998

Title	Organization	Date of Publication
Written Testimony	Building Codes Division	March 2, 1998
Written Testimony	Oregon Department of Transportation	March 31, 1998
Lessons from The Capes	Tillamook County Community Development	March 31, 1998
Governor's Recommendations to Address Dangerous Debris Avalanches	Governor's Interagency Debris Flow Team	March 4, 1997
Written Testimony	Oregon DOGAMI	April 13, 1998
The Takings Issue and the Regulation of Hazardous Areas (Natural Hazards Research Working paper #95)	University of Massachusetts	June 1997
Written Testimony	Oregon Department of Forestry	April 10, 1998
Report on Rock Creek and Highway 38 (MP 13) Debris Flows: Storm Event of November 1996	Squier Associated (For Dept. of Forestry)	April 8, 1998
Forest Practices and Landslides (A report prepared for Governor John A. Kitzhaber)	Forest Engineering Department, Oregon State University	January 1998
Improving Natural Hazards Management on the Oregon Coast: Recommendations of the Coastal Natural Hazards Policy Working Group	Oregon Sea Grant (ORESU-T-94-002)	1994
Improving Natural Hazards Management on the Oregon Coast: A Progress Report	Oregon State University (James W. Good) & Oregon Coastal Management Program (Emily Toby-DLCD)	April 1998
Coastal Protection, Remediation, and Disaster Prevention in the Post-Industrial Society	Geologic Society of America (1994 Annual Meeting Abstracts)	October 24-17, 1994
Landowner Liability, State Liability, Tasking Implications	Salvo, Edwards, Bloemers, Willamette Law Students	April 1, 1998
Landslide Talking Points	Written Testimony supplemental to Oral, by Dan Newton (Roseburg)	undated

Title	Organization	Date of Publication
Testimony	Gary Springer, Springer Tree Farm	May 4, 1998
Testimony	Lone Rock Timber Company (Rick Sohn, Ph.D.)	May 7, 1998
Testimony	Robert Leo Heilman (Myrtle Creek, Or.)	May 8, 1998; supplemental letter: May 13, 1998
Citizen Letter	Steven A. Taylor	May 1, 1998
Broad Scale Climatic Influence on Rainfall Thresholds for Debris Flows…	Geologic Society of America	1997
Excerpts of a Disaster – The Rock/Hubbard Logging Debris Torrent, November 18, 1996	Gordon Marvin (Rock Creek Resident)	Undated, submitted May 4, 1998
Memorandum/Stump Acres	Douglas County Planning Dept.	March 5, 1997
Testimony	Oregon Insurance Division	June 8, 1998
Chronology: Forest Practices and Slope Instability in Washington	Washington Dept. of Natural Resources	June 7, 1998
SEPA Process (Washington)	Washington Dept. of Natural Resources	August 23, 1993
Landslides! Information on Dwellings Damaged by Landslides during the Winter of 1996/1997	Douglas County Planning Department	June 1998
Sierra Club Testimony	Sierra Club, Oregon Chapter (Aaron Rappaport)	May 5, 1998
Sierra Club Position Paper	Sierra Club, Oregon Chapter (Aaron Rappaport	June 8, 1998
Written Testimony	Betty R. Howe (Myrtle Creek, Or.)	May 26, 1998
Written Testimony	Daniel Newton (Roseburg, Or.)	May 26, 1998
Written Testimony	Logging Engineering Int'l. (Dallas Hemphill and Ron Stuntzner)	August 1998
Written Testimony	Oregon Board of Geologists (Michael Long)	August 1998
Written Testimony (MOA Update)	Oregon Department of Forestry (Ted Larson)	August 1998

Title	Organization	Date of Publication
Project Impact	Oregon Office of Emergency Management (Myra Lee)	August 1998
Draft Final Report	Committee Staff	September 1998
Draft Legislative Concepts	Committee Staff	September 1998
1994 Uniform Building Codes, excerpts from Ch. 18, Foundations and Retaining Walls	Building Codes Division (Peggy Collins)	

Appendix III

Case Law

Applicable Legal Proceedings Regarding Liability/Torts/Takings in Oregon

Case Cite	***Action***
Hubbard v. Olsen-Roe Transfer Co., 224 P.636, 110 Or. 618 (1924)	"Act of God" excuses failure to perform a duty but does not exclude circumstances produced by human agency.
Nettleton v. James, 319 P.2d 879, 212 Or. 375 (1958)	When a landslide occurs on a landowner's property and that landowner did nothing to contribute to the landslide, the damage caused is considered an "unavoidable accident" because it occurred without the negligence of the landowner.
Marvin v. Champion Int'l. Corp., No. 97CV0318CC (Or. Cir. Ct. January 24, 1997)	Argues strict liability; negligence in clear-cutting a dangerous slope.
Fazzolari v. Portland School District, 734 P.2d 1326, 1336, 303 Or.1.17 (1987)	In order to bring a negligence claim in Oregon, the plaintiff must show that the defendant's conduct unreasonably created a foreseeable risk (foreseeability) and that this foreseeable risk caused an injury to the plaintiff (causation).
Slogowski v. Lyness, 927 P.2d 587, 589, 324 Or. 436, 441 (1996)	Foreseeability in Oregon requires (1) that defendant's conduct caused a foreseeable risk of harm, (2) that the risk is to an interest of kind that the law prohibits against negligent invasion, (3) that the defendant's conduct was unreasonable in light of the risk.
Schweiger v. Solbeck, 191 Or. 454, 572 P.2d 200 (1951)	Defendant was held liable for damage to property caused by a debris slide originating from the defendant's logging operation (permitting slash and other logging debris to collect in a steep ravine above the plaintiff's property).
Union Pacific Railroad Co. v. Vale, Oregon Irrigation District, 253 F. Supp. 251 (D. Or. 1966)	Under Oregon law, the defendant was liable for damage to the plaintiff's railroad tracks caused by a landslide created by seepage from the defendant's irrigation canal.
Hamilton v. State and City of Astoria, 42	Neither the State not city was negligent

Or. App. 821, 601 P.2d 822 (1979)	under res ipsa loquitur for property damage caused by a landslide triggered by flooding from a manhole because neither entity had exclusive control over the city storm drain.

Case Cite	***Action***
McLane v. Northwest Natural Gas Co., 255 Or. 324, 328, 467 P.2d 635, 637 (1970)	Strict liability attaches if an activity is abnormally dangerous and carries an inherent risk of injury to others. An activity is abnormally dangerous if it is "extraordinary, exceptional, or unusual. considering the locality in which it is carried on; when there is a risk of grave harm from such abnormality; and when the risk cannot be eliminated by the exercise of reasonable care.
Nicolai v. Day, Restatement of Torts, ¶ 520	The Court (Oregon) adopted elements contained in the Restatement as necessary to establish strict liability.
Burkett v. Freedom Arms, 704 P.2d 118, 119, 299 Or. 551, 577	Oregon Courts use Restatement elements as guides, not as strict criteria.
Koos v. Ross, 293 Or. 670, 678, 652 P.2d 1255, 160-1261 (1982), citing McLane, 255 Or. At 329, 467 P.2d 638	Whether the danger (presented by an activity) is so great as to give rise to strict liability depends both on the probability and the magnitude of the threatened harm. If the consequences of a mishap are potentially lethal or highly destructive of health and property, a slight likelihood that they will occur suffices, even if the harm in the actual occurrence is less severe.
Union Pacific Railroad Co. v. Vale, Oregon Irrigation District, 253 F. Supp. 258 (D. Or. 1966) Also see: Laurance v. Tucker, 160 Or. 474, 85 P.2d 374 (1939); Boulevard Drainage System v. Gordon, 91 Or. 240, 177 P. 956 (1919); Stephens v. City of Eugene, 90 Or. 167, 175 P. 855 (1918); and Esson v. Wattier, 25 Or. 7, 34 P. 756 (1893)	…any interference with lawful possession of property is an act which will entitle the injured party to complain in tort and that "this is true even though the act may be done accidentally, or in good faith, or under justifiable error." The actor need only set in motion the chain of events that results in tress pass.
Raymond v. Southern Pacific Co., 259 Or. 629, 633, 488 P.2d 460, 462 (1971)	Claims alleging nuisance and seeking to enjoin timber harvesting that may cause landslides presently are not valid in Oregon. Unlike claims in tort or trespass, nuisance law is proactive, allowing a plaintiff to seek an injunction of

	defendant's activities that unreasonably interfere with plaintiff's use and enjoyment of her land. Oregon Court have never recognized such a claim on steep slopes.
Case Cite	***Action***
York v. Stallings, 217 Or. 13, 22, 341 P.2d 529, 534 (1958)	Oregon Supreme Court: …in determining the existence of a nuisance, the nature of the industry involved is considered. "Timber and logging is a primary industry and its operations are not to be enjoined without substantial reasons." (Finding codified in Oregon legislation in 1995).
Hendricks v. State, 678 P.2d 759, 67 Or. App 453 (1984) (parole boards); Penland v. Redwood Sanitary Sewer Service District, 934 P.2d 434 at 440, 146 Or. App. 225 (Pr. Sup. Ct. 1997) (sanitation districts); Brungardt v. Barton, 685 P.2d 1021, 1023, 69 Or. App. 440 (1984)	Oregon Tort Claims Act Legal Challenges - Arguments: When determining whether an action is within the scope of employment, Oregon Courts look at (1) whether the act is the kind the person was employed to do; (2) whether the act occurred within an authorized time and space; (3) whether the act was at least in part to serve the employer. An act by a public body employee is outside the scope of employment if it involves malfeasance, or willful or wanton neglect of duty.
Penland v. Redwood Sanitary Sewer Service District, 146 Or. App. At 234, 934 P.2d at 440; Hendricks v. State 678 P.2d at 760 (1984); Brennen v. City of Eugene, 591 P.2d 719, 285 Or. 401 (1979)	"Routine decisions made by employees in the course of their day-to-day activities, even though the decision involves a choice among two or more courses of action" is not an exercise of immune discretion. Therefore, discretion does not include issuing a license when the issuer need only compare facts.
Neher v Cartier, 879 P.2d 156 at 158, 319 Or. 417 at 422 (1994)	Constitutional grant of immunity held unconstitutional by the Oregon Supreme Court considering that worker's compensation is not a "substantial remedy" in this wrongful death suit. The Court was careful to preserve the legislature's ability to grant immunity to employees, so long as a tort plaintiff still had a substantial remedy.
Nollan v. California Coastal Commission, 483 U.S. 825 (1987)	Takings Issue: All regulation must substantially advance a legitimate state interest. If the legislation does not do so, then a taking occurs and compensation for even temporary takings are required.

Case Cite	***Action***
Loretto v. Teleprompter Manhattan CATV Corp., 458 U.S. 419 (1982) Also see: Queenside Hills Realty Co. v Saxl, 328 U.S. 80, 66 S. Ct. 850 (1946) (fire regulation)	Interference with the owner's right to exclude others from the property by placing a commercial cable box on the owner's apartment building was a taking that required compensation. This does not alter the state's ability to enforce or require compliance with building codes.
Lucas v. South Carolina Coastal Commission, 112 S. Ct. 2886 (1992)	Asks if the proscribed use is a nuisance under state common law. If it is considered a nuisance, then the use was never part of the property owner's right to begin with and therefore no taking occurs regardless of the hardship to the property owner.
Raymond v. Southern Pacific Co., 259 Or. 629, 633 (1971)	A private nuisance is the invasion by a neighbor of an "individual's interest in the use and enjoyment of land."
Stevens v. The City of Cannon Beach, 317 Or. 131 (1993)	Oregon Supreme Court determined that dry sands of Oregon's beaches had always been free to access by the public at large. Therefore restriction on a landowner's ability to build on beach front property was not considered a taking.
Keystone Bituminous Coal Ass'n v. De Benedictis, 480 U.S. 470 (1987)	Takings multifactor balancing test: (1) Economic impact of the regulation on the claimant; (2) interference with the owner's reasonable investment backed expectations; (3) the character of the government action.
Mugler v. Kansas, 123 U.S. 623, 665 (1887)	"…all property in this country is held under the implied obligation that the owner's use of it shall not be injurious to the community."
Dolan v. City of Tigard, 114 S. Ct. 2309 (1994)	Related to city taking, final Supreme Court Opinion (5-4): "Undoubtedly the prevention of flooding along Fanno Creek and the reduction of traffic congestion in the central business district qualify as the type of legitimate public purposes we have upheld…It seems equally obvious that a nexus exists between preventing flooding along Fanno Creek and limiting development within the creek's 100 year

Appendix IV

State Agency Issues/Recommendations

State Agency Answers to Policy Questions (4) asked of them by the Joint Interim Task Force on Landslides and Public Safety

1. Public Safety Role of Agencies in the Landslide and Debris Flow Issue:

A. Department of Land Conservation and Development (DLCD):

1. *Governing Statute(s)*: ORS Title 19, Chapters 195 through 197
2. *Charge*: Under the direction of the Land Conservation and Development Commission, assist in and coordinate development and preparation of model land use regulations to guide state agencies, cities, counties, and special districts in implementing land use goals.
3. *Responsibilities*: Require local governments to address geologically unstable areas as part of their local land use planning responsibilities.

B. Building Codes Division, Department of Consumer & Business Services (BCD)

1. *Governing Statute(s)*: ORS Title 36, Chapter 455
2. *Charge*: Adopt and administer state building codes that apply to local and state jurisdictions.
3. *Responsibilities*: Review existing and proposed codes to ensure they provide safety for Oregonians.

C. Office of Emergency Management, Department of State Police (OEM)

1. *Governing Statute(s)*: ORS Title 32, Chapters 401.015 through 401.990
2. *Charge*: Reduce the vulnerability of the State of Oregon to loss of life, injury to persons or property and human suffering and financial loss resulting from emergencies, and provide for recovery and relief assistance for the victims of such occurrences.
3. *Responsibilities*: Act as the Governor's focal point for coordinating and facilitating the state's emergency services system.

D. Division of State Lands (DSL):

1. *Governing Statute(s)*: ORS Title 19, Chapters 196.795 through 196.905 (Oregon Removal-Fill Law)
2. *Charge*: Pursue methods to streamline the process for administering permits for the removal of material from the bed or banks of any waters within this state or for filling the waters of this state.
3. *Responsibilities*: Regulate removal and filling of waterways within the state.

E. Oregon Department of Forestry (ODF):

1. *Governing Statute(s)*: ORS Title 44, Chapters 526.008 to 526.990; ORS Title 44, Chapters 527.370 to 527.992 (Oregon Forest Practices Act (FPA)).
2. *Charge*: Ensure growing and harvesting of trees and to protect soil, air, water, fish, and wildlife (*The FPA contains no public safety responsibility or authority outside of the limited scope set forth in SB 1211, authorizing the State Forester to prohibit certain operations presenting a threat to the public*).
3. *Responsibilities* (Under the FPA): Study and make recommendations with regard to maintaining balance between protection of resources and giving predictable certainty to landowner costs and forest practices rules on private forest land, consistent with the goals of the FPA.

F. Oregon Department of Geology and Mineral Industries (DOGAMI):

1. *Governing Statute(s)*: ORS Title 43, Chapter 516.030
2. *Charge*: Initiate, carry out, or administer studies and programs, in cooperation with others that will reduce loss of life and property by understanding and mitigating geologic hazards.
3. *Responsibilities*: Conduct or administer statewide hazard assessment, including identification and mapping of geologic hazards, estimating potential consequences and likelihood of occurrence, and monitor/assess potential hazardous geologic activity.

G. Oregon Department of Transportation (ODOT):

1. *Governing Statute(s)*: ORS Title 18, Chapters 184.615 through 184.648
2. *Charge*: Provide a safe, efficient transportation system that enhances Oregon's economic competitiveness and livability.
3. *Responsibilities (as they relate to landslides affecting state roads and highways)*: Re-open highways when they are closed.

2. What specific action(s) has your agency taken to better protect Oregonians from landslides in general and more specifically, debris flow? This may include actions taken in conjunction with local government.

A. DLCD:

1. Adoption of three statewide planning goals: Goal 7 in 1974, Goal 17 in 1976 (amended in 1984), and Goal 18 in 1976 (amended in 1988).
2. Reviewed and evaluated during the acknowledgement review process all local comprehensive plan policies and ordinance provisions designed to protect Oregonians from natural hazards, including landslides.
3. Where adequate information was available, ensure local governments implemented aforementioned goals by identifying slide prone areas in local comprehensive plans and applying zoning regulations.

Although all jurisdictions addressed Goal 7 when the goals were adopted, many have not updated their geologic hazard section since acknowledgement, due to costs and availability of information.

4. LCDC has not adopted rules to implement Goal 7. The Commission regards implementation as a local government responsibility.

B. BCD:

1. BCD currently has representatives serving on the Department of Forestry's Debris Avalanche Task Group and the Governor's Interagency Hazard Mitigation Team. BCD participated in FEMA's studies of landslides and stream erosion, and in preparation of the "I*nteragency Hazard Mitigation Team Reports, FEMA DR-1009, 1149, and 1160-OR*" after the 1996-97 storms.
2. Participated in publishing and distributing to local building departments the "Landslides in Oregon" brochure.
3. Adopted statewide standards for residential and commercial properties addressing excavation and grading of construction sites in the immediate area of any new construction. This code change created standards for building excavation slopes, cut and fill on construction sites, building setbacks from changes in ground elevation, and soil condition evaluation for other than one and two family dwellings.

C. OEM:

1. Convenes and holds regular meeting of the Governor's Interagency Hazard Mitigation Team; provides funding to support debris flow mapping, distributes the landslide public information brochure; and includes county emergency management support to the Governor's Debris Avalanche Action Plan through annual work plans under the State and Local Assistance Program.

2. Administers the Federally funded (with a 25% non-federal funding match) Hazard Mitigation Grant Program by selecting and prioritizing key statewide mitigation projects.

D. DSL:

1. Issues emergency authorizations and coordinate with natural resource agencies to allow emergency repairs, address public concerns, or prevent irreparable damage to property.
2. Requires removal/fill permits. Entered into a Memorandum of Understanding (June 1994) which delegated authority to the Oregon Parks and recreation Department (OPRD) to process beach front and ocean shore removal-fill application west of the beach zone line.

E. ODF:

1. Prohibit timber harvest and road construction operations where landslides or debris torrents pose a significant threat to human lives at precariously sited homes or on roads (*exceptions to this prohibition are considered on a individual basis*).
2. Requires written plans for all other road construction or harvesting operations containing high risk sites and where public safety is not at significant risk.
3. Provide guidance to responsible parties for administration of SB1211 deferral.
4. Completed a "*Storm Impacts Monitoring Project Preliminary Report*" in conjunction with scientists from Oregon State University.
5. Contracted with the geotechnical consulting firm of *Squier Associates* to complete a Report on Rock Creek and Highway 38 (MP 13) Debris Flows resulting from storms events of November 1996 and conducted a Department investigation of these two sites to determine forest practice compliance.
6. Coordinates implementation of the Governor's Debris Avalanche Action Plan.
7. Conducts routine review of operations in high risk sites.

8. Initiates debris flow mapping projects west of the crest of the Cascade Mountains.
9. Implemented a debris flow warning system. Issues warning(s) when rain gauges have recorded either critical threshold or after debris flow movement has initiated.

F. DOGAMI:

1. Produced first regional characterization of geologic hazards in the world for regional planning purposes (Tualatin Valley Study, dated 1967).
2. Assisted national effort to produce a guidebook for use by local governments in dealing with landslides (FEMA 192, dated 1985).
3. Working with FEMA and the National Academy of Sciences, developed a methodology for dealing with coastal erosion rate characterization (1995) as part of broader efforts to deal with the Jones-Upton Amendment to the National Flood Insurance Act.
4. Continue to seek federal funding for landslide efforts in Oregon.
5. Participated in 1996 state emergency response to the 1996 floods and landslides and acted to terminate road construction until locations of threat to road crews were properly evaluated by qualified technical persons.
6. Prepared and published general landslide maps for most of Western Oregon. Maps are not adequate to meet current needs.
7. Conducted periodic review of comprehensive plans and determined that the plans do not have adequate landslide information for risk reduction purposes.
8. Evaluated reports for dams, power plants, and corrections facilities for adequacy of geologic hazards including landslides.
9. Includes community preparedness it DOGAMI performance measure process.
10. Included development of landslide information in the DOGAMI 6 year strategic plan.
11. Currently preparing earthquake ground response information for thirty rural Western Oregon Communities.

G. ODOT:

1. Refined and expanded the ODOT Emergency Operations Plan, describing what ODOT will do during emergencies and how they will provide assistance to local government during emergencies.
2. Worked with local government and others to develop alternate routing plans for major transportation corridors.

3. Working with Coos County and OEM on Pilot Project called Rapid Operational Coordination Teams, which defines ODOT support to local government(s) prior to Governor declared emergencies.
4. Participates in the Governors Interagency Hazard Mitigation Team and provide financial support toward development of debris flow hazard maps.
5. Co-located ODOT's dispatch centers with the Oregon State Police dispatch centers (generally).
6. Operates variable message signs on I-5 and I-84.

3. Do you have any specific recommendations for task force consideration? These may include legislative changes, policy alternatives, or specific actions (projects).

A. DLCD:

1. Agency believes its role should be to follow the work of the Task Force on Landslides & Public Safety and integrate task force efforts with an agency re-evaluation of Goal 7, and assist, as appropriate, in developing solutions.
2. Set of comprehensive recommendations not offered, however, the department has been involved in similar efforts involving coastal hazards.
3. The rule making process could be used as an efficient means for addressing land use concerns.

B. BCD:

1. Better identify potential landslide areas within and exterior to urban growth boundaries.
2. Re-assess adequacy of statewide planning goals to determine if they require municipalities to address slide areas in their local land use planning regulations and mapping.
3. Re-assess land use planning requirements to prevent development in identified slide areas.
4. Re-assess current building codes to determine if they address existing hazards and prevent the creation of new hazards during development.
5. Develop a model standard, available to municipalities, for the design and construction of subdivisions and streets.

C. OEM:

1. Legislate permanency of the Governor's Interagency Hazard Mitigation Team (GIHMT) in order to ensure continuation of

federal funds for hazard mitigation requirements and coordination of Goal 7 objectives.

2. Require the GIHMT to review and approve the State Hazard Mitigation Plan.
3. Provide funds to continue mitigation planning workshops, to be held at and for the benefit of local planners.
4. Require peer review of geotechnical engineering documentation for new development in known or potential landslide areas.
5. Require on-site inspections to ensure mitigation activities identified in the site investigation reports are properly implemented.
6. Establish real estate disclosure laws for hazard conditions.
7. Improve and adopt local landslide development ordinances.
8. Allow for 'development rights swapping' from hazardous to non-hazardous areas.
9. Make sure the public understands that landslide damage is not covered by standard homeowner's insurance.

D. DSL:

1. Formally amend the Beach law and Removal-Fill Law to consolidate regulatory authority for beachfront and ocean shore alterations in the Oregon Parks and Recreation Division, consistent with bills introduced during the 1995 and 1997 legislatures (SB 234 in 1995 and HB 2141 in 1997).
2. Require local government public review of the decision-making process relative to statewide land use goal compliance and ensure that this process is subject to DLCD Commission review.

E. ODF:

1. Identify precarious locations including debris flow prone areas and debris flow impact sites.
2. Educate people living in precarious areas.
3. Issue warnings prior to extreme storms including forecast precipitation events and extreme rainfall (debris flow hazard) warnings.
4. Acquire sound geoscience evaluation prior to new construction in debris flow prone areas.
5. Facilitate or mandate the acquisition/condemnation of dwellings/properties in extremely hazardous locations, especially after structures have been destroyed by debris flows.[33]
6. Regulate land use practices to minimize periods with reduced vegetative cover, eliminate steepening or other significant physical

[33] **ODF now believes that State acquisition of either landslide prone homes or forest lands is <u>not</u> appropriate**.

disturbance of the ground surface, prevent routing of drainage water to high risk sites, and prevent accumulation of logging slash in debris flow prone channels.

7. Warn road users of debris flow hazard locations, especially during extreme storm events.
8. Improve coordinate of emergency response in flow hazard areas.

F. DOGAMI:

1. Appropriate discreet General Funds to support the department's work on landslide and related efforts.
2. Support decision packages in the DOGAMI 1999-2001 budget aimed specifically at reducing landslide losses through proactive community based public service actions aimed at landslides.
3. Legislate statutes and fee structures to assure that coastal shore protection permit decisions by State Parks or the Division of State Lands are supported by proper technical input from DOGAMI.
4. Consider legislation to require peer review for geotechnical reports for subdivisions or other selected types of construction.
5. Consider legislation to require geotechnical reports for selected critical and essential facilities involving significant public investment.

G. ODOT:

1. Plan for water/rainfall run-off.
2. Coordinate facility plans between adjoining jurisdictions to evaluate cumulative impacts of increased run-off.
3. Construct a new state emergency management center, with state of the art computer and communications system, for the centralized coordination of emergency response.

3. What laws, incentives, or other restrictions exist in view of your expertise, that could provide additional insight into the task force's objective?

A. DLCD:

1. Statewide Planning Goals 7, 17, and 18 are tools available and relevant for use in protecting Oregonians against landslides and debris torrents.
2. The Coastal Natural Hazards Policy Working Group's Improving Natural hazards Management on the Oregon Coast: Recommendations of the Coastal Natural Hazards Policy Working Group, dated 1994, provides detailed recommendations that could be adapted to remedies.

3. Oregon Revised Statutes (ORS) Chapter 215 governs many activities in forest and farm lands.
4. Oregon Administrative Rules (OAR) 660, Division 6 and Division 33 provides rules for uses allowed and sited in forest lands.
5. National Flood Insurance Program provides limited protection to those buying insurance to protect against "mudflows".
6. Colorado model geologic hazard area control regulations could be adapted for use in Oregon.

B. BCD:

"None of which we are aware."

C. OEM:

None submitted. This agency's answer to the Task Force question #4 answers question #3 and has therefore been moved to that category.

D. DSL: None submitted.

E. ODF:

Oregon's programs provide a similar or better level of landslide protection to that provided in other states, with the following exceptions:

a. Utah, Washington, Colorado, and Idaho have places where roads are blocked during high snow avalanche hazard.
b. Colorado has used a system where the State Geologic Survey provides technical review of building plans in certain areas.
c. Washington's Forest Practices Act includes public infrastructure in its list of protected resources in addition to protection of natural resources.
d. California requires certification of geotechnical engineers.

F. DOGAMI:

1. The information gap in the public sector for landslide relative to public need is growing. As the information gap continues to grow, a second pattern of increased litigation also continues to grow.
2. As the discussion shifts to litigation, the public loses sight of the fact that as cases are settled eventually, the prime realty of damage have occurred, is not addressed effectively.
3. Off-site factors increasingly are playing into landslide losses, because such factors commonly are beyond the scope of site specific reports.

4. There is legal motion toward holding realtors accountable for landslide losses in California.
5. In California, information based strategies for landslide reduction have cut losses by over 90%. An initiative of information-based proactive landslide risk reduction is needed to achieve these kinds of reductions in Oregon.
6. Communities may not need more rules; they may just need help in understanding the hazards and the manners in which they might be identified.

G. ODOT: None submitted.

Appendix V

Bibliography

Broad-Scale Climatic Influences on Rainfall Thresholds for Debris Flows: Adapting Thresholds for Northern California to Southern California , Raymond C. Wilson, GSA Reviews in Engineering Geology, Vol. XI, 1997, 10. 10 pp., May 4, 1998, Exhibit I.

Environmental, Groundwater and Engineering Geology: Applications from Oregon , Scott Burns, 34 pp., March 2, 1998.

Forest Practices and Landslides – A report prepared for Governor John A. Kitzhaber , Marvin R. Pyles, Paul W. Adams, Robert L. Beschta, and Arne E. Skaugset, 49 pp., April 13, 1998, Exhibit H.

Homeowner's Landslide Guide , Oregon Emergency Management, 6 pp., March 2, 1998, Exhibit B.

Improving Natural Hazards Management on the Oregon Coast: Recommendations on the Coastal Natural Hazards Policy Working Group 1994 , April 13, 1998, Exhibit I.

Improving Natural Hazards Management on the Oregon Coast: A Progress Report, April 1998 , James W. Good and Emily S. Toby, 11 pp., April 13, 1998, Exhibit I.

Landslides! Information on Dwellings Damaged by Landslides during the Winter of 1996/1997 , Douglas County Planning Department, 28 pp., June 8, 1998, Exhibit E.

A Method for Predicting Slope Instability for Earthquake Hazard Maps. Preliminary Report , David K. Keefer and Yumei Wang, February 2, 1998, Exhibit B.

The News Note, July 21, 1997, Oregon Department of Forestry – Forest Practices, 2 pp., December 10, 1997, Exhibit A.

Oregon Department of Forestry, 1996 Storm Impacts Monitoring Project Preliminary Report , Liz Dent, George Robison, Keith Mills, Arne Skaugset, and Jim Paul, 53 pp., February 2, 1998, Exhibit F.

Oregon Geology, Vol. 47 Number 9, September 1985, February 2, 1997, Exhibit C.

Project Impact – Building a Disaster Resistant Community , Federal Emergency Management Agency, 54 pp., August 3, 1998, Exhibit G.

Protect Yourself and Your Property – Landslides in Oregon , December 10, 1997, Exhibit A.

Report on Rock Creek and Highway 38 (MP 13) Debris Flows – Storm Even of November 1996 , Squier Associates, 86 pp., April 13, 1998, Exhibit G.

The Taking Issue and the Regulation of Hazardous Areas, Rutherford H. Platt and Alexandra D. Dawson, 17 pp., April 13, 1998, Exhibit E.