

Oregon City Planning Commission
Meeting of April 9th, 2018

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Testimony for April 9th meeting from: Christine Kosinski, Unincorporated Clackamas County

RE: AN 17-0004 Annexation of 92 acres and ZC 17-0005 Zone Change

There is much for the City to consider before contemplating approval of this annexation and zone change. I, for one, do not approve for many reasons, however the one huge issue that the City will not be able to fix is the fact that if development is undertaken in the Park Place Concept Plan boundaries, new homeowners will not be told they are moving into a landslide area, and furthermore, they will find it impossible to obtain Landslide Insurance for any and all losses due to landslides.

The City should understand that if annexation and zone change of these 92 acres is approved, then the City may become liable if landslides occur here. And why do I say this? It is because the City has the DOGAMI Landslide and Susceptibility Maps, you can see what lies beneath this land, where prospective new homeowners do not have the maps, they do not know what lies beneath their property along with the risk that may come from living in a landslide zone. Further, I say this because in many other States, such as, Wyoming, Utah, Colorado, Washington and in Oregon (Corvallis, Portland, Burlingame, Lake Oswego, just to mention a few) the homeowners struck with landslides have brought their governments to task, stating "Why did you approve development knowing this is a landslide area, why didn't you warn us and why didn't you tell us our insurance would pay nothing for losses due to landslides." Some took legal actions and then the Federal Government and FEMA became involved to help these victims of landslides who suffered large financial losses.

For these reasons, I am asking the City, Not to Approve this annexation and zone change, the City would be extremely foolish to consider any approval of this large annexation until full Geological testing is done for all land within the boundaries of the Park Place Concept Plan. The type of, and the immense testing that should be required is found in the following report.

Exhibit #1 (Pg. 93) Engineering Geology and Relative Stability of the Southern Half of Newell Creek Canyon, Oregon City, OR – by William J. Burns, DOGAMI.

Here, Professor Burns gives the Suggested Engineering Geologic and Geotechnical Investigations that should be undertaken, and I again would state strongly, that this should be done prior to any considerations for annexation and zone change in this hazardous landslide area. Additional important information the City should study from this Engineering and Geology report is as follows below.

Pgs 54, 60, 61 – The Highway 213-Morton Road Landslide. Speaks to the reactivation of the landslide. You may ask, why is this important? It is important because in the Park Place Plan, the City proposes the **SWAN RD EXTENSION (to Morton Road)** as a parallel road to Holly Lane to take some of the heavy traffic. I believe, however, once you read this report you will find that building the Swan Road Extension will be out of question due to the Morton Road Landslide as well as the large amount of wetlands that must be crossed when building a road.

Pgs 61-62 – If the Highway 213/Morton Road area experiences a major earthquake (magnitude 6.5) this could cause a decrease in the factor of safety to below one, indicating reactivation of this landslides as well as others in the same area. Pgs. 61-62 continue on to speak to the Highway 213, Mile post 2.1 Deep Seated Landslides where the scarp and toe parallel Highway 213, **Holly Lane** and Newell Creek.

Pg 62 speaks to these Deep-Seated landslides, and highlights the extreme caution that should be exercised before any construction takes place on any of the slides. Here it is suggested that a complete surface/subsurface investigation and a slope stability analysis including earthquake loads be performed by an engineering geologist and a geotechnical engineer.

Pgs 81-82 – Potentials for earthquake induced movement in deep-seated slides greatly increases and has become reality in areas such as the Aldercrest Landslide in Kelso, WA as well as several landslides within kilometers of Newell Creek Canyon, such as the Holly Lane Landslide and the Mathew Court Landslide. All of these active, deep-seated landslides are located in the Upper Troutdale Formation which is also discussed in the third paragraph of Pg 79.

Pg 92 – This investigation of the relative stability of the Southern half of Newell Creek Canyon mapped **79 landslides** in the Southern half of Newell Creek Canyon.

Pg. 94 – Professor Burns states why Suggested Further Studies are given for Newell Creek Canyon.

Pgs 93-95 – Professor Burns details the type of Engineering Geologic and Geotechnical Investigations that should be undertaken as an essential first step in evaluating the landslide hazards here and that the investigations should be completed prior to decision making and development. On **Pg 95**, last paragraph, Professor Burns suggests that before an area is urbanized, a study similar to this one should be performed on this zone (Park Place Plan), and that included with this study should be an evaluation for reactivation of earthquake induced landslides. The City should understand that a large earthquake fault line exists here. **End of report.**

I strongly urge the City to conduct in depth studies in the Park Place Concept Plan boundaries, as suggested by Professor William Burns, again, this should be done prior to any decision making by the City. There are 34 Landslides in the Concept Plan boundaries, with many of them having slopes of only 5-18% and where the **Holly Lane Landslides occurred on only 11% slopes.** The current Landslide Regulations of Oregon City only regulates slopes of 25% or more, and the City fails to address the real landslide problems that exist in slopes of much lesser degree than 25%. This could be a fatal decision on the part of the City to grossly underestimate the power of these landslides occurring on less than 25% slopes, such as the large landslides on Frank Rd and Oak Tree Terrace which are 10% slopes and yet have already inflicted high damages from landslides.

Oregon City Comprehensive Plan

Unstable Soils – The type of soils within the Park Place Concept Plan boundaries cannot be fully understood unless the studies, as suggested by Professor Burns, on Pages 93-94 & 95 are undertaken. He does mention the Troutdale soils and those of the Upper Troutdale formation, but only a very in depth study would result in the City having a strong understanding of the type of soils that exist in the Park Place area.

In February of 2007, it was felt that the City's current landslide regulations needed to be strengthened due to the serious slope issues within the Plan, therefore instead of the City authorizing an in depth Geological study to be performed within the boundaries of the plan, the City decided only to order a Preliminary geological study. This was an extremely preliminary study for which the City paid GRI Geological Consultants only \$19,000 dollars. This was only enough to allow the consultants to study old logs and not much more than that.

The City has been derelict in ordering a full in depth study of the Park Place Plan, where landslides pose a much more serious threat to the homeowners than what the City realizes. It seems to me that the City is going on a wing and a prayer when it comes to the Park Place Plan. Instead of just a preliminary study, they should be ordering in depth soil and landslide studies, but to date, the City has not wanted to pay for the studies that it really needs in order to make good decisions on whether they can safely undertake development here. At this time, the City is unable to meet the Unstable Soils requirements in their own Comprehensive Plan.

Comprehensive Plan - Landslides – The City cannot meet the requirements as set out in their Comprehensive Plan. The Comp Plan states landslides can be exacerbated by removing vegetation, altering drainage and runoff patterns. All of these will occur if annexation, leading to development, is undertaken. Once the natural vegetation and trees are removed from this hillside – lookout! This is the only thing holding this hill from failing. Development from thousands of homes above off Holcomb Road will drain their waters down into this hillside. New homes will further drain water, and yes drainage patterns will change. Detention Ponds do not help. Even though they are metered, they eventually allow the waters to drain right back into the landslides. Landslides can be triggered by heavy rains (which caused the 96-97 slides on Holly Ln). Heavy traffic, as proposed by the City, will pose serious threats to the people of Holly Ln where the homeowners are unable to obtain insurance that will cover losses due to landslides, as well, it is rare to find Earthquake coverage. These homeowners are unable to protect themselves and this should be in the Comprehensive Plan.

Exhibit #2 - Goal 7 - Areas Subject to Natural Hazards

The City is unable to meet the Goal 7 requirements for both Holly Lane and the land within the boundaries of the Park Place Concept Plan.

Goal 7 requires Natural Hazard Planning, where local governments shall adopt Comprehensive Plans to reduce risk to people and property from natural hazards. Oregon City has done nothing to reduce the risk on Holly Lane, in fact it's just the opposite, Oregon City has done everything to grossly raise the risk on Holly Lane to it's people and property owners. The City has proposed plans to bring in heavy traffic from the North and South, to extend Holly Lane beyond it's current 1 ¼ miles to more than four times the current size. The City has failed to consider heavy traffic, development, earthquakes and damages from landslides, to the people of Holly Lane. The City has failed to comply with sections of Goal 7, ie, **Implementation, Coordination, Planning**. The City cannot comply with, **C (c)** The potential for development in the hazard area to increase the frequency and severity of the hazard.

C (d) The types and intensities of land uses to be allowed in the hazard are of Holly Lane.

C (2) Allow an opportunity for citizen review and comment on the new inventory information and the results of the evaluation and incorporate such information into the comprehensive plan, as necessary.

C (3) Adopt or amend, as necessary, based on the evaluation of risk, plan policies and implementing measures consistent with the following principles.

C (3a) Avoiding development in hazard areas where the risk to people and property cannot be mitigated. **The City cannot comply with Goal 7.**

Annexation Factors: 14.04.060

Adequacy of access to the site – Poor access to the site because contractor, city, all construction crews can only access through small residential streets where children play and families live. Appears only one way in and out and unsafe to current residents. **City does not comply**

Conformity of the proposal with the city's comprehensive plan –**City does not comply**
Unstable soils, steep slopes, landslides, absence of City Regulations to regulate slopes of less than 25%. Many landslides here have occurred on only 10% slopes and even lesser. Absence of in depth geological studies and soil studies as well.

Adequacy and availability of public facilities and services to service potential development
City does not comply. No roads. The City has not proven that the Holly Ln Extension can even be built. No soil, steep slope, no landslide, no geological studies have been done. The Swan Road Extension has not been studied, it has not been evaluated for the landslide danger nor for the ability to even extend this road over Redland Road. Read above what I have submitted about Morton Road, Highway 213 landslides. The Swan Rd Extension was planned to come up to Morton Road, however one large home and smaller home were destroyed by liquidfaction here in the 1996 floods. How can you possibly put people into such danger? Geological studies must be done prior to any approval of annexation, zone change or possible development, as none of the homeowners on Holly Lane are able to obtain landslide insurance to cover losses from landslides. Landslide Insurance pretty much does not exist, therefore any new homeowners moving into the boundaries of the Park Place Plan will (1) **not be told they are moving into a landslide area, and (2) that it would be close to impossible for them to find landslide insurance to cover any losses from landslides.** It has yet to be determined if fire equipment will have an access to property. There are NO roads here, many roads currently close to failing. Alternative Mobility Targets will be useless, they will not work. Putting an extra right turn lane from Beaver Creek Road to Highway 213 will only further the already over capacity issues because vehicles will find it S-L-O-W.....to merge from Beaver Creek Rd into Hwy 213. Additionally, Oregon City is a Regional Hub, therefore traffic coming through the City will only intensify as development continues to outpace the few roads we have.

Natural Hazards identified by the city, such as wetlands, floodplains and steep slopes -
Again, the **City does not comply** and the City is not prepared to develop in areas where so many landslides exist and their landslide codes are poor, regulating slopes of 25% or more is inadequate when most landslides occur on slopes much less than 25%. Regulations must be brought current after a full in depth geological study of this area is completed. Holly Lane should be taken out of the TSP since the homeowners here cannot protect themselves. They are unable to obtain landslide insurance, heavy traffic, a plethora of landslides, along with a very narrow street where homes sit only about 20-30 feet off the road does not make this a street that should be used heavily by the City. The City should have sought alternatives years ago when these conditions were brought to their attention. Does not conform.

Any significant adverse effects on specially designated open space, scenic, historic or natural resource areas by urbanization of the subject property at time of annexation - Everything I have listed as above applies here as well. This is not an area to develop. **City does not comply**

Lack of any significant adverse effects on the economic, social and physical environment of the community by the overall impact of the annexation. - City does not comply. Adverse effects on all issues listed, economic, social, physical environment will be devastating to an area where lack of roads, heavy traffic already exists, heavy with landslides and steep slopes and poor regulations to deal with the repercussions of, No landslide insurance exists to cover homeowners for losses due to landslides. New homeowners will not be told they are moving into a landslide area.

Goal 5 – The City does not comply with Goal 5

Our forest canopy will be cut down and that will destroy the environment of this entire area as natural vegetation and trees will be taken down. What happened to the Upland Game Corridor that Commissioner Doug Neely asked for and that was in the plan? It not longer exists unless the new homeowners want to pay annually to keep it open and that won't happen. Why aren't we protecting the small animals and fish? We only seem to do everything to kill them off. Lead fumes and chemicals from more and more cars, the vegetation removal will warm the creeks and streams too much. Chemicals and poisons from new homes will further poison the creeks and streams so that the small animals will have no good water to drink. Yes, we are killing our environment. The City and it's developer seem only interested in building more and more homes. Certainly, preserving this beautiful canyon, the fish, streams, creeks, the small animals and upland game should be a huge priority with the City, however Goal 5 requirements are constantly dismissed by the City where they seem to only build for density, leaving no quality of life for the people. Abernethy and Newell Creeks are two of the most important creeks for Salmon and other types of fish. I'm sure the water they will be drinking after the huge development here, will be awful, it will make the fish sick and diseased. Water quality here will be below failing. What are we doing to this beautiful canyon, to it's forest and animal life. We certainly seem to be doing everything we can to destroy it.

In 1999, Metro stated for budget reasons they dropped their landslide program. They would rely on local governments to write their own landslide regulations, however, many of them were not prepared for development in hazardous areas. Since this time, Metro has continued to spin out more lands into the UGB and many of them are in hazardous areas, at times placing people and their property in jeopardy. In 2006, I took Carlotta Collette, Metro District 2 Representative, on a two hour tour of the boundaries of the Park Place Concept Plan, and as well to the Newell Creek Apartments, to Thayer Road, to Holly Lane and others where she was able to personally see the many areas of this part of Clackamas County that are treacherous, dangerous and are capable of taking people's lives and property in these hazardous areas of landslides and steep slopes. Therefore, Metro has been aware of the dangers of landslides, but has not taken an active role in living out the requirements of Goal 7 and labeling certain lands as unbuildable due to severe hazards. This has placed many people in harm's way who do not understand they may be living in a landslide area and they certainly do not know their insurance coverage will pay nothing for losses due to landslides. When the City and a developer met with Metro in the early 2000's and asked for the Park Place area to be brought into the UGB for development, this should never have been allowed in such a dangerous place. Oregon City knows the dangers here and they seem willing to allow their developer to build homes and then withhold landslide and landslide insurance information from new buyers. This is simply unconscionable to me. I thought I lived in America!

Lastly, I want to include information for you regarding a Landslide Bill that was introduced in March of 2017 by Representative Del Bene of the State of Washington, by Suzanne Bonamici, Mr. Cartwright, Ms. Lee, Ms. Norton, Mr. Smith of Washington, Mr. Kilmer, Mr. Heck and Mr. Grijalva. The Bill has passed through the Natural Resources Committee and the Committee on Science, Space and Technology. The Bill is also Co-Sponsored by Senator Ron Wyden.

Exhibit #3 Bill H.R. 1675 and can be found on the internet. The Bill is to establish a national program to identify and reduce losses from landslide hazards, to establish a national 3D Elevation Program, and for other purposes. This act may be cited as the “National Landslide Preparedness Act” and will cover many issues such as identifying and understanding landslide hazards and risks, to reduce losses from landslides, to develop and implement landslide hazard guidelines for land use and other decision-makers. The USGS will coordinate the program throughout the U.S.

CC: Senator Ron Wyden
Tom Hughes – Metro

**ENGINEERING GEOLOGY AND RELATIVE STABILITY OF THE
SOUTHERN HALF OF NEWELL CREEK CANYON, OREGON CITY,
OREGON**

by

WILLIAM J. BURNS

A thesis submitted in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

in

GEOLOGY

Portland State University

1999

EXB #1

exposed scarps occurring at an average of 12 meters (± 6.6 meters) (Figure 16). The area of these deep-seated slide complexes is generally much larger than that of the shallow-seated slides and range from 1,622 m² to 256,436 m² or 0.05% to 7.41% of the study area. Almost all of these deep-seated landslides have smaller, inactive-young and active, shallow-seated slides within their boundaries. Out of the two active deep-seated landslides in the study area, one of these landslides had a complete evacuation of material, while the other landslide seemed to have relatively smaller horizontal and vertical movements, probably constrained by the depth to the failure plane. These relatively smaller horizontal and vertical movements are most likely indicating drained conditions.

Out of the 14 deep seated landslides, the Highway 213-Morton Road landslide and the Highway 213-Mile Post 2.1 landslide were examined in detail. Both of these landslides seemed to be representative of most of the deep-seated slides in the study area based on size and morphology.

The Highway 213-Morton Road Landslide

The Highway 213-Morton Road deep-seated landslide was mapped by Schlicker and Finlayson in 1979 as a “large area of bedrock (Troutdale Formation) failure characterized by irregular topography, disrupted stratigraphy, overall anomalous moderate to shallow slope, and disrupted drainage pattern” (Figure 17 and Figure 18). This large inactive-mature slide has an estimated area of 208,925 m² and contains

subsurface soil properties from bore holes TB-104 and TB-108 and phreatic water surfaces found in well log 29 and bore hole TB-104 (appendix 2, Figure 18). This analysis consisted of three trials, starting with estimated material properties (cohesion and angle of internal friction) from the subsurface data, then lowering the values until a reasonable factor of safety was found (

Table 4, appendix 2). The material properties displayed in Figure 18 are most likely very close to the residual strength. The most critical failure plane ($F_s=1.2$) occurs at a maximum depth of 25 meters, approximately twice the exposed scarp (12 meters), and is depicted on the cross-section (Figure 18). To confirm this approximate depth to the failure plane, the critical thickness was calculated, resulting with a thickness of 21.5 meters, a value slightly less than that calculated by XSTABL, but within a close range of approximation considering the lack of subsurface information (appendix 2). Further stability analysis of this landslide included the addition of a horizontal earthquake load through a coefficient (k). Recommended values from the California Department of Conservation (1997) included $k=0.10$ for a 6.5 magnitude earthquake (major) and $k=0.15$ for a 8.25 magnitude earthquake (great). This analysis resulted in a factor of safety ranging from 1.5 to 0.6 for a major earthquake and 1.3 to 0.5 for a great earthquake (appendix 2).

Although major development, including cut slopes and fills, occurred during the building of Highway 213, which passes across the toe of this landslide, this slide does not appear to have any deep-seated movements since this construction. But, examination

of the toe and the scarp indicate active and inactive-young slides have been modifying this deep-seated landslide continuously. The stability analysis confirms the current conditions of this deep-seated movement with a factor of safety of 1.2 for the current conditions. It was also discovered that a even major earthquake (magnitude=6.5) could cause a decrease in the factor of safety below one, indicating reactivation of this landslide (California Department of Conservation, 1997). These predicted factors of safety show that there is a chance of reactivation for this inactive-mature, deep-seated landslide and others like it.

The Highway 213, Mile Post 2.1 Deep-Seated Landslide

In 1979 the Oregon Department of Transportation began investigation for the construction of Highway 213. Included in this investigation was a series of bore holes. Some of these bore holes were very helpful in more accurately assessing the depth to the failure plane of some of the deep-seated landslides. The Highway 213, mile post 2.1 landslide (Plate 1), located crossing Highway 213 in the central portion of the study area is a deep-seated, inactive-mature landslide very similar to the Highway 213-Morton Road landslide described in the last section. This slide has a double bowl shape in plan view and is approximately 300 meters wide and 300 meters long with an exposed maximum scarp of approximately nine meters. The scarp and toe parallel Highway 213, Holly Lane and Newell Creek. Within this landslide's boundaries are two smaller, shallow-seated, active slides, both of which appear to have their scarps in the road prism

of Highway 213. During the building of Highway 213, the Oregon Department of Transportation recognized this deep-seated slide through surficial mapping and subsurface exploration and mitigated it with a rock buttress located upslope from the highway (ODOT, 1998).

One of the bore holes, TB-109, drilled during construction of the highway, notes the presence of slickensides at a depth of approximately 13.5 meters (ODOT, 1998) (appendix 1). The depth of the slickensides in this bore hole (TB-109), located in the middle the Highway 213, mile post 2.1 deep seated landslide, is interpreted to display the approximate depth to the failure plane. Although this interpreted depth to failure plane (13.5 meters) does not match the estimated depth from the exposed scarp (nine meters), their comparison confirms that this slide is deep-seated.

Deep-Seated Landslide Conclusions

Since most of these deep-seated slides are prehistoric, human caused induction can be ruled out. The most probable initiating causes of these slides are a wetter prehistoric climate, inundation and quick lake level drop following the 40+ Missoula Floods (12,700 to 15,300 years B.P.), and earthquake shaking (CDC, 1997; Waitt, 1985).

Although most of these slides are considered inactive-mature (dormant), **extreme caution should be exercised before any construction takes place on or near one of these deep-seated slides, including a complete surface/subsurface investigation and a slope stability analysis including earthquake loads by an engineering geologist and a geotechnical** ENGINEER

the observations and mapping of the growth of this landslide tend to confirm that the head scarp (right-bowl) and upper right flank are the areas most susceptible to further growth.

Conclusions for Deep and Shallow-Seated Landslides

The main hazards associated with deep and shallow-seated landslides in the study area are very different. The shallow-seated slides generally fail very rapidly, sometimes spawning a potentially life-threatening debris flow in the valley below. Although these shallow-seated landslides are dangerous and can cause considerable damage when they occur, it is relatively easy and economically feasible to mitigate these landslides.

Another hazard associated with the shallow-seated slides is the potential for growth if mitigation is not implemented immediately, as shown with the Spady Landslide.

The deep-seated slides in the study area are generally not as dangerous (life-threatening), because their movements, at one time, are generally less and much slower than shallow-seated slides. But these landslides can be extremely costly to mitigate if movement does occur, as shown with the Dewey-Warren Street landslide. Another concern is the potential for earthquake induced movement, as studied with the Highway 213-Morton Road landslide. If a major or great earthquake did occur, the potential for movement of these deep-seated slides greatly increases.

This concern of reactivation of deep-seated landslides is (1998) becoming a reality in some other areas, such as the Aldercrest Landslide in Kelso, Washington, and several



landslides within kilometers of Newell Creek Canyon, such as the Holly Lane Landslide and the Mathew Court Landslide. All of these active, deep-seated landslides are located in the Upper Troutdale Formation.

CHAPTER 8: CONCLUSIONS

This engineering geologic investigation and interpretation of the relative stability of the southern half of Newell Creek Canyon covered an area roughly 3.1 km². The results of this study are a set of detailed maps displaying areas of active and formerly active landslides, geologic bedrock and soil distribution, and a set of recommendations concerning future development and the possible stability conditions that may be encountered.

The mapping of morphological landslide features and associated features resulted in the identification of 79 landslides in the southern half of Newell Creek Canyon (Plate 1). These landslides were divided into two classes related to the depth to the failure plane resulting with 65 shallow-seated and 14 deep-seated landslides. All of these landslides were also classified geomorphologically, totaling 65 earthflows, 3 earthflow/debrisflows, 9 slumps, and 2 slump/earthflows (Easterbrook, 1993). From the Engineering Geology Map combined with a stability analysis, the Relative Stability Map was created resulting in three zones of relative stability with the following percents of the study area: moving ground (5%), potentially unstable ground (56%), stable ground (38%).

Suggested Engineering Geologic and Geotechnical Investigation

Engineering geologic investigations and interpretation of the relative slope stability serve as an essential first step in the evaluation of landslide hazards for regional and community land-use planning, decision making, and development. After this decision making has taken place, an experienced engineering geologist should complete a similar site-specific investigation including an engineering geologic map, relative stability map, and a report of observations and suggestions concerning development. This investigation should, in turn, be followed by a geotechnical study including a subsurface investigation such as drilling or trenching with insitu testing and sampling, testing of soil and bedrock samples, and stability computations.

The annual estimated \$4 million cost of landslide damage in Oregon reveals the severity of the problem. In 1997, along with one of my professors, Scott Burns, and two other graduate students completed a landslide inventory of the entire Portland Metropolitan Region (Burns et al., 1998). This study focused only on landslides occurring in the past two years (1996-1997), yet 705 landslides were mapped, and a total of over \$40 million for mitigation was estimated! However, I suggest that this study on Newell Creek Canyon and studies similar to it, followed by the recommended site-specific studies can reduce these costs immensely.

Suggested Land Use Planning

The purpose of the engineering geologic investigation is not to prevent development, but to promote educated decision making and wise development. Any area can be developed if the potential for instability is determined and the cost of stabilization and development meets the developer's budget. Yet, some of these areas may be worth more to the community, socially and economically, if other land uses are implemented, such as parks.

Suggested Further Study

As Portland continues to expand its suburbs due to continued population increases and as there is continued pressure to develop in geologically hazardous terrain, the need for the development of relative stability maps for educated decision making is increased. In a recent study by Burns et al. (1998), five zones of high risk for landsliding were delineated for the Portland Metropolitan Region. One of these zones is the fine grained facies of The Troutdale Formation, which covers hundreds of square kilometers in the southeast section of Portland. Newell Creek Canyon is located within this zone and most of the rest of this zone contains slides similar in type and density to these in Newell Creek Canyon.

Another concern within the Portland Metropolitan Region is the potential for earthquake induced and reactivation of currently identified landslides. Portland is in seismic risk zone 3, meaning the area can experience earthquakes of magnitudes up to

VIII (Schlicker and Finlayson, 1979). The effects of an earthquake can be added to the simplified factor of safety equation through a second pseudostatic driving force component or earthquake thrust (Abel, 1997).



I suggest that before the area zoned as a high potential for landslides in the 1998 study by Burns, et al. becomes urbanized, a study similar to this one should be performed on this zone. Included with this study should be the evaluation for reactivation of earthquake induced landslides.

Oregon's Statewide Planning Goals and Guidelines

GOAL 7: AREAS SUBJECT TO NATURAL HAZARDS

To protect people and property from natural hazards.

A. NATURAL HAZARD PLANNING

1. Local governments shall adopt comprehensive plans (inventories, policies and implementing measures) to reduce risk to people and property from natural hazards.

2. Natural hazards for purposes of this goal are: floods (coastal and riverine), landslides,¹ earthquakes and related hazards, tsunamis, coastal erosion, and wildfires. Local governments may identify and plan for other natural hazards.

B. RESPONSE TO NEW HAZARD INFORMATION

1. New hazard inventory information provided by federal and state agencies shall be reviewed by the Department in consultation with affected state and local government representatives.

2. After such consultation, the Department shall notify local governments if the new hazard information requires a local response.

3. Local governments shall respond to new inventory information on natural hazards within 36 months after being notified by the Department of Land Conservation and Development, unless extended by the Department.

C. IMPLEMENTATION

Upon receiving notice from the Department, a local government shall:

1. Evaluate the risk to people and

property based on the new inventory information and an assessment of:

- a. the frequency, severity and location of the hazard;
- b. the effects of the hazard on existing and future development;
- c. the potential for development in the hazard area to increase the frequency and severity of the hazard; and
- d. the types and intensities of land uses to be allowed in the hazard area.

2. Allow an opportunity for citizen review and comment on the new inventory information and the results of the evaluation and incorporate such information into the comprehensive plan, as necessary.

3. Adopt or amend, as necessary, based on the evaluation of risk, plan policies and implementing measures consistent with the following principles:

a. avoiding development in hazard areas where the risk to people and property cannot be mitigated; and

b. prohibiting the siting of essential facilities, major structures, hazardous facilities and special occupancy structures, as defined in the state building code (ORS 455.447(1) (a)(b)(c) and (e)), in identified hazard areas, where the risk to public safety cannot be mitigated, unless an essential facility is needed within a hazard area in order to provide essential emergency response services in a timely manner.²

4. Local governments will be deemed to comply with Goal 7 for coastal and riverine flood hazards by adopting and

¹ For "rapidly moving landslides," the requirements of ORS 195.250-195.275 (1999 edition) apply.

² For purposes of constructing essential facilities, and special occupancy structures in tsunami inundation zones, the requirements of the state building code - ORS 455.446 and 455.447 (1999 edition) and OAR chapter 632, division 5 apply.

EXB # 2

implementing local floodplain regulations that meet the minimum National Flood Insurance Program (NFIP) requirements.

D. COORDINATION

1. In accordance with ORS 197.180 and Goal 2, state agencies shall coordinate their natural hazard plans and programs with local governments and provide local governments with hazard inventory information and technical assistance including development of model ordinances and risk evaluation methodologies.

2. Local governments and state agencies shall follow such procedures, standards and definitions as may be contained in statewide planning goals and commission rules in developing programs to achieve this goal.

GUIDELINES

A. PLANNING

1. In adopting plan policies and implementing measures to protect people and property from natural hazards, local governments should consider:

- a. the benefits of maintaining natural hazard areas as open space, recreation and other low density uses;
- b. the beneficial effects that natural hazards can have on natural resources and the environment; and
- c. the effects of development and mitigation measures in identified hazard areas on the management of natural resources.

2. Local governments should coordinate their land use plans and decisions with emergency preparedness, response, recovery and mitigation programs.

B. IMPLEMENTATION

1. Local governments should give special attention to emergency access when considering development in identified hazard areas.

2. Local governments should consider programs to manage stormwater runoff as a means to help address flood and landslide hazards.

3. Local governments should consider nonregulatory approaches to help implement this goal, including but not limited to:

- a. providing financial incentives and disincentives;
- b. providing public information and education materials;
- c. establishing or making use of existing programs to retrofit, relocate, or acquire existing dwellings and structures at risk from natural disasters.

4. When reviewing development requests in high hazard areas, local governments should require site-specific reports, appropriate for the level and type of hazard (e.g., hydrologic reports, geotechnical reports or other scientific or engineering reports) prepared by a licensed professional. Such reports should evaluate the risk to the site as well as the risk the proposed development may pose to other properties.

5. Local governments should consider measures that exceed the National Flood Insurance Program (NFIP) such as:
- a. limiting placement of fill in floodplains;
 - b. prohibiting the storage of hazardous materials in floodplains or providing for safe storage of such materials; and
 - c. elevating structures to a level higher than that required by the NFIP and the state building code.

Flood insurance policy holders may be eligible for reduced insurance rates through the NFIP's Community Rating System Program when local governments adopt these and other flood protection measures.

115TH CONGRESS
1ST SESSION

H. R. 1675

To establish a national program to identify and reduce losses from landslide hazards, to establish a national 3D Elevation Program, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

MARCH 22, 2017

Ms. DELBENE (for herself, Ms. BONAMICI, Mr. CARTWRIGHT, Ms. LEE, Ms. NORTON, Mr. SMITH of Washington, Mr. KILMER, Mr. HECK, and Mr. GRIJALVA) introduced the following bill; which was referred to the Committee on Natural Resources, and in addition to the Committee on Science, Space, and Technology, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

A BILL

To establish a national program to identify and reduce losses from landslide hazards, to establish a national 3D Elevation Program, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “National Landslide
5 Preparedness Act”.

6 **SEC. 2. DEFINITIONS.**

7 In this Act:

EXB #3