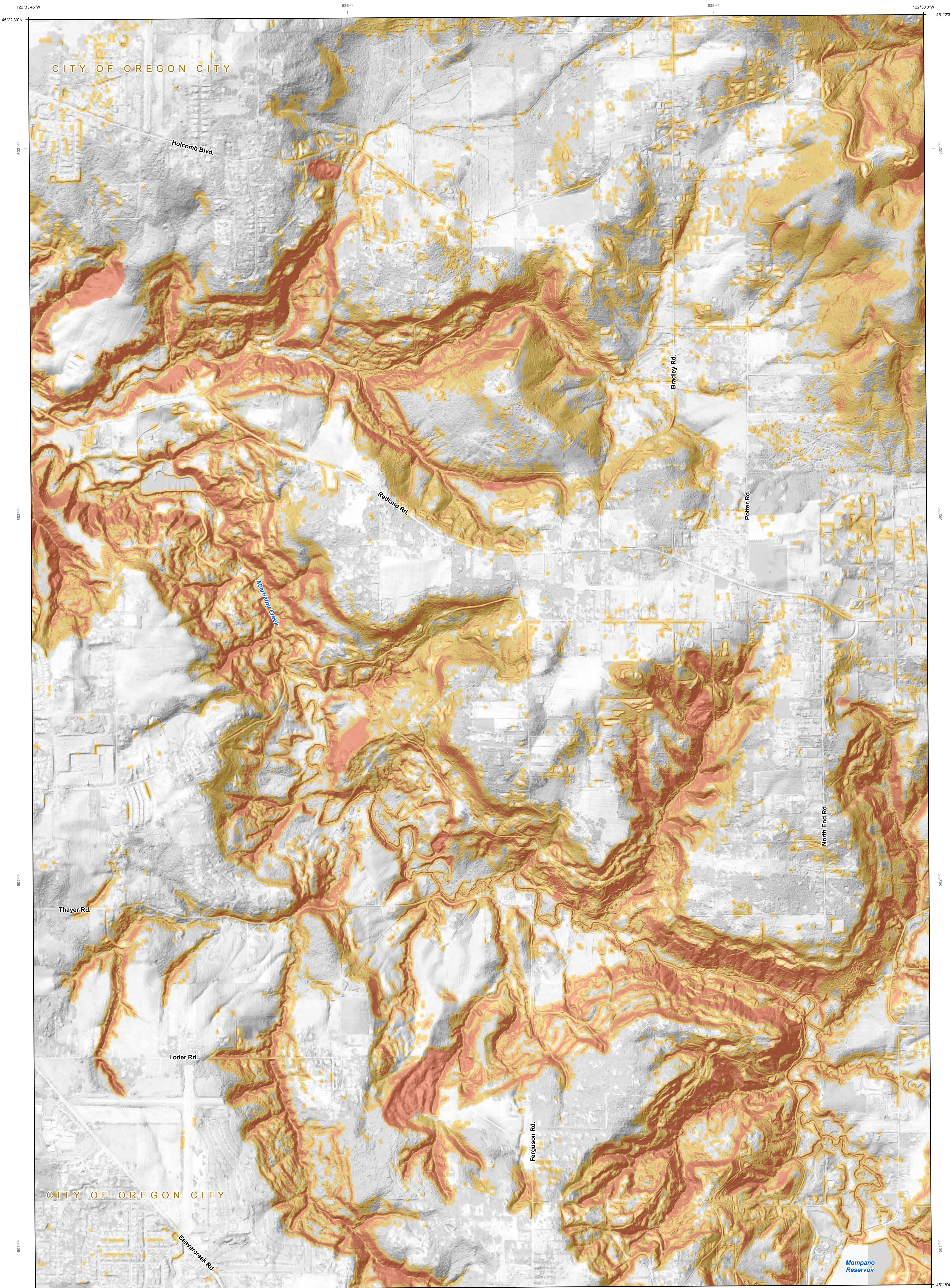


Shallow-Landslide Susceptibility Map of the Northeast Quarter of the Oregon City Quadrangle, Clackamas County, Oregon

2013



Base map for plates in this publication:

Lidar data from DOGAMI Lidar Data Quadrangle LDQ-2009-45122C3-Etacada, LDQ-2009-45122C4-Redland, LDQ-2009-45122C5-Oregon City, LDQ-2009-45122C6-Curbly, LDQ-2009-45122D1-Lake Oswego, LDQ-2009-45122D2-Lake Oswego, and LDQ-2009-45122D3-Gladstone. LDQ-2009-45122D4-Lake Oswego. This data was converted to Digital Elevation Model (DEM) consists of a 4-foot-square elevation grid that was converted to a 10-meter resolution grid. The DEM was multiplied by 5 (vertical exaggeration) to enhance slope areas. The DEM was multiplied by 5 (vertical exaggeration) to enhance slope areas.

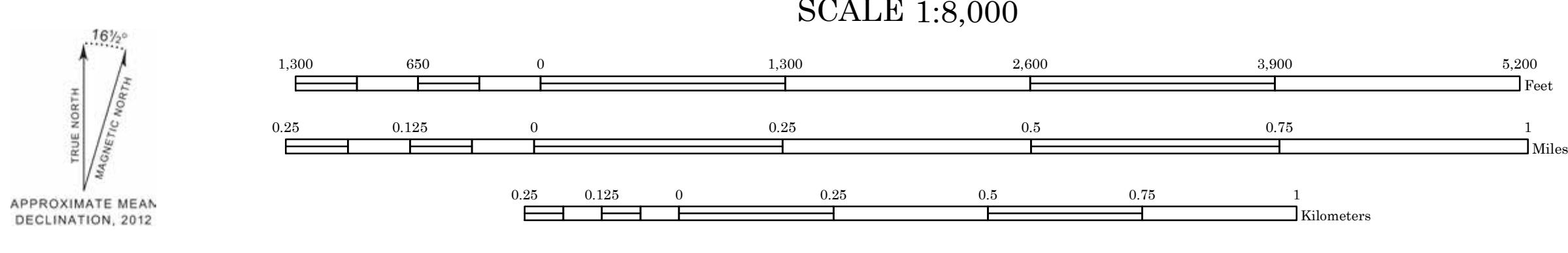
2005 orthophoto imagery is from Oregon Geospatial Enterprise Office and is draped over the hillshade image with transparency.

Projection: North American Datum 1983, UTM zone 10 North.

Software: Esri ArcMap 10, Adobe Illustrator CS2.

Source File: Project.Clackamas.Landslide.ClackamasStudy.mxd

SCALE 1:8,000



Cartography by William J. Burns and Katherine A. Mickelson,
Oregon Department of Geology and Mineral Industries.
This map also benefited from internal review and comments by
Ian Madin, DOGAMI Chief Scientist.

IMPORTANT NOTICE

This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to determine the suitability of the data for their use. This publication cannot substitute for site-specific investigations by qualified professionals. The data and information presented in this publication are not intended to be used for engineering, legal, or surveying purposes. The results shown in the publication are the responsibility of the author. See the accompanying text report for more details on the limitations of the methods and data used to prepare this publication.

OPEN-FILE REPORT O-13-08

Landslide Hazard and Risk Study of
Northwestern Clackamas County, Oregon

by William J. Burns, Katherine A. Mickelson, Cullen B. Jones,
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The project described in this publication was supported in part by
Intergovernmental Agreement IGS 11-21-2011 from Clackamas County, Oregon

PLATE 53

EXPLANATION

This shallow-landslide susceptibility map identifies landslide-prone areas that are defined following the protocol of Burns and others (2012).

On the basis of several factors and past studies (described in detail by Burns and Madin (2009)), a depth of 15 ft (4.5 m) is used to divide shallow from deep landslides. The susceptibility map was prepared by combining three factors: 1) calculated factor of safety (FOS) for head scars and landslides; 2) presence of landslides in the inventory; and 3) presence of shallow landslides in the inventory. The combinations of these factors comprise the relative susceptibility hazard zones: high, moderate, and low as shown by the color scheme on the map. The hazard zones are overlaid on the corresponding inventory map. The landslide inventory data are displayed on a grid base map that consists of an aerial photograph (orthorectified) overlain on the later-derived digital elevation model. For additional detail on how this map was developed see Burns and others (2012).

SHALLOW-LANDSLIDE SUSCEPTIBILITY CLASSIFICATION

Each landslide susceptibility hazard zone shown on this map has been developed according to a number of specific factors. The classification scheme was developed by the Oregon Department of Geology and Mineral Industries (Burns and others, 2012).

The symbols used to display these hazard zones is explained below.

HIGH: High susceptibility to shallow landslides.

MODERATE: Moderate susceptibility to shallow landslides.

LOW: Low susceptibility to shallow landslides.

Shallow-Landslide Susceptibility Hazard Zone Matrix

| Contributing Factors * | Final Hazard Zone | | |
|---|--------------------|---------------------------|------------------|
| | High | Moderate | Low |
| 1 Factor of Safety (FOS) | less than 1.25 | 1.25 - 1.5 | greater than 1.5 |
| 2 Landslide Deposits & Head Scars (Shallow) | Included | — | — |
| 3 Buffers | 2H:IV (head scars) | 2H:IV (FOS less than 1.5) | — |

*See explanation of corresponding contributing factors below.

1 Factor of Safety

Factor of Safety (FOS) Map: The mechanics of landslides can be divided into two force driving forces and resisting forces. These forces are a function of the mass of the slope, the angle of the slope, and the properties of the material in the slope. These two forces oppose each other, and slope stability can be thought of as their ratio.

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