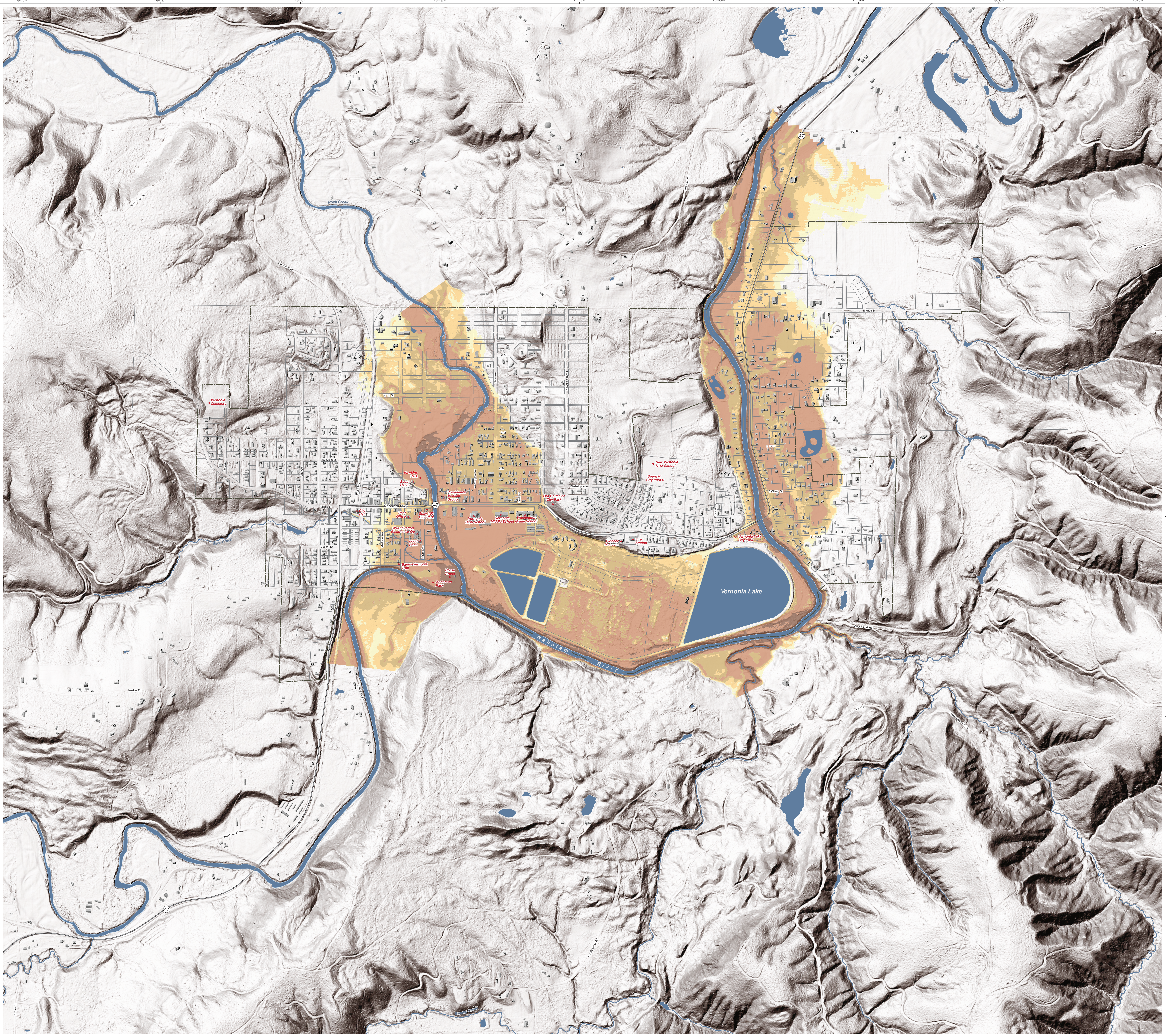


STATE OF OREGON  
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES  
www.OregonGeology.org  
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Lidar-Based Suggested Minimum Building Elevation  
City of Vernonia, Columbia County, Oregon  
2013

OPEN-FILE REPORT O-13-03  
Lidar-Based Maps for the City of Vernonia, Columbia County, Oregon,  
Pursuant to Oregon Executive Order No. 1047

PLATE 5



**INTRODUCTION**  
Much of the public infrastructure and property in the city of Vernonia, Oregon, was damaged by a long duration winter storm in December 2007. A series of three storms arrived over three consecutive days, producing extreme winds and heavy rain that resulted in widespread record flooding throughout the region. As directed by the State of Oregon Executive Order No. 1047, "Rebuilding Vernonia's Schools and the Surrounding Community in the Wake of December 2007 Storms," the Oregon Department of Geology and Mineral Industries (DOGAMI) created a set of lidar-based maps to aid in assessing the vulnerability of critical and essential facilities to flood and landslide hazards. Landslide inventory maps for the city of Vernonia were also created in conjunction with this map series. See DOGAMI publications DM-51 and DM-52 for more information.

**MAP EXPLANATION**  
The City of Vernonia uses Ordinance 851, An Ordinance of the City of Vernonia, Oregon Enacting Flood Damage Prevention Provisions and Repealing Ordinance 445, 725, 722, 712, 651, and 554, to regulate construction, with regard to the flood hazard within the city limits. This ordinance states that new residential construction and substantial improvements shall have the lowest floor, including basements, elevated to a minimum of three feet above the design flood elevation (DFE). The DFE is shown on Plate 3b and is less than one foot above the flood of record. (December 2007, shown on Plate 4). Based on these minimum elevation requirements, this map depicts the suggested minimum building elevation using both the design flood and flood-of-record data. This map is a planning tool only and does not negate the need for a site-specific investigation.

**DATA SOURCES**  
Lidar source: LDQ 2011-45123-02 Vernonia. The lidar was flown in June 2009. Please see the following website for more information:  
<http://www.OregonGeology.org>  
Other data: The Vernonia city limits were provided by the Oregon Department of Transportation (ODOT, 2006). All other vector and raster datasets were created by the Oregon Department of Geology and Mineral Industries (DOGAMI).  
Projections: UTM Zone 18 North, Datum: NAD83, Unit: meter  
Software: Esri ArcGIS version 10.0 and Adobe Illustrator CS5

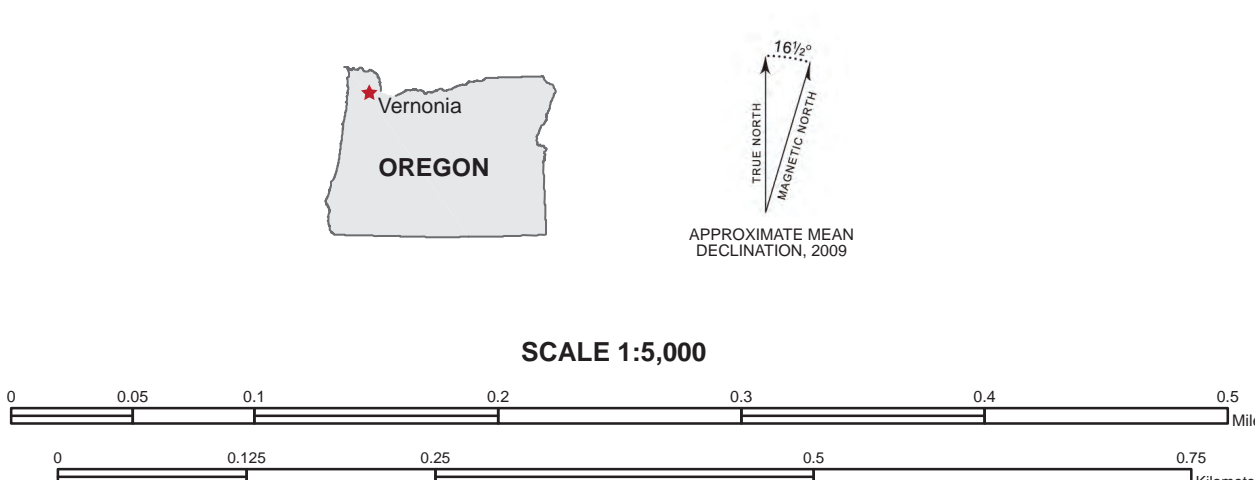
**WHAT IS LIDAR?**  
The lidar data used to create this map were collected from a light aircraft carrying a highly accurate laser scanner. The scanner makes over 100,000 measurements each second to build up a three-dimensional "point cloud" model of the surface of the earth and the vegetation and structures on it. A computer sorts the points, separating those that measure the ground from those that measure other objects such as trees or buildings. Images derived from these sets of points are then merged with other forms of digital data to create this map.  
The Oregon Department of Geology and Mineral Industries (DOGAMI) has been collecting lidar data in Oregon since 2006. The goal is to cover the entire state as funding for data collection becomes available. You can learn more about lidar and view lidar images of other parts of Oregon at [www.OregonGeology.org](http://www.OregonGeology.org).

**MAP SYMBOL EXPLANATION**

- Highway
- City Boundary
- Stream or Creek
- Waterbody
- Building

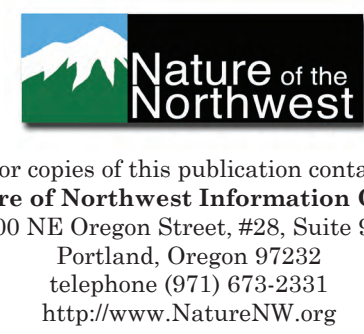
**Suggested Minimum Building Elevation (ft)**

- 0 - 2
- 2 - 4
- 4 - 6
- 6 - 12
- > 12



**MAP PLATE ACKNOWLEDGMENTS**  
Lidar feature extraction: Robert D. Chappell, Kaleena L.B. Hughes, Matthew A. Tilman  
GIS analysis: Kaleena L.B. Hughes  
GIS technical support: John T. English, Joel T. Roberts  
Technical review: Ian P. Madin  
Cartography: Kaleena L.B. Hughes, Tracy J. Pollock  
Map plate review: Rachel L. Smith  
Publication: Deborah A. Schaefer

**NOTICE**  
This map series depicts an inventory of existing features based on the published and unpublished reports and interpretations of topography derived from lidar data. These maps are not intended to provide authoritative locations for any of the features depicted. Although they are derived from highly accurate lidar imagery, they should not be used for engineering or survey purposes.



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