STATE OF OREGON
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Surface Hydrography Map of the Bull Run Watershed

2015

EXPLANATION

The Bull Run Watershed is a surface water collection system, so hydrography is very important. The main river, the Bull Run River, outlets into the Sandy River, which flows into the Columbia River and then out to the Pacific Ocean. Inside the watershed is a network of streams, rivers, natural lakes, and man-made reservoirs.

To improve the surface hydrography datasets for the Bull Run Watershed with the goal of submitting the data to the National Hydrography Dataset (NHD; U.S. Geological Survey, 2012a) and Watershed Boundary Dataset (WBD; U.S. Geological Survey, 2012b), we performed several tasks. We have summarized the tasks in the accompanying report text; details are included in Appendix D of that report. Briefly, we began with a lakes polygon and modeled streamline datasets provided by the PWB. We performed some simple edits to each dataset, mostly to fix errors created by the hydromodels. Next we digitized almost 90 lakes and other waterbodies and added them to the dataset. Finally, we modeled and edited new boundaries for HUC10 and HUC12 (hydrologic unit code) watershed and subwatersheds.

The new surface hydrography dataset consists of three primary file types: streamlines (flowlines), waterbody polygons, and watershed polygons (HU: hydrologic units). The final dataset has 3,432 streamline segments; 67 percent of these have NHD reach codes. The rest are new streamlines not in the existing NHD and require new codes established during the NHD update process.Thirty-seven percent of the streams are classified as intermittent, 51 percent as perennial, and 11 pecent as artificial paths. The artificial paths are not shown on this map.

The final waterbody dataset has 92 waterbodies that cover 1.9 percent of the watershed. Seventy-seven percent of these have NHD reach codes; the rest are new waterbodies not in the existing NHD and require new codes established during the NHD update process. Twenty-seven waterbodies are classified as swamp/marsh areas that cover 0.3 percent of the watershed; 65 waterbodies are classified as lakes or ponds that cover 1.6 percent of the watershed.

The final watershed boundary or hydrologic unit code (HUC) dataset has one HUC10 boundary, which bounds the entire Bull Run River watershed. The lower limits of this boundary are at the confluence of the Bull Run River and the Sandy River. This watershed boundary, delineated using a new 3-ft^2 lidar-derived bare-earth DEM, is 3,901,012,315 ft^2 (362,416,227m^2) [140 mi^2 (362 km^2)]. Six HUC12 boundaries subdivide the HUC 10 boundary (see small map below).

LIMITATIONS

We developed the hydrography network from computer-based hydrologic modeling and heads-up digitizing in GIS. Modeling and digitization were based on lidar topographic data collected on November 6-7, 2007. Given these approaches, there are inherent limitations as discussed below. These limitations underscore that this map is designed for regional applications and should not be used as an alternative to site-specific studies in critical areas.

1. Every effort has been made to ensure the accuracy of the GIS and tabular database as a representation of ground conditions captured by lidar on November 6-7, 2007. In some cases, due to unclear circumstances, best judgment was used when defining hydrographic features. No field checks were performed to verify results of computer-based hydrologic modeling and heads-up digitizing.

2. Hydrologic processes are dynamic, and features captured here may have changed in location or condition since November 6-7, 2007. Human activity may also have resulted in changes.

3. No attempt was made represent reservoir features at low capacity or full capacity; instead, features shown as they existed on November 6-7, 2007.

4. In some cases, hydrographic flowlines represent subsurface conduits or artificial paths through waterbodies. These locations are assumed.

5. Primary transmission conduits to the City of Portland water supply are not shown at the request of the Portland Water Bureau.

Please contact DOGAMI if errors and/or omissions are found so that they can be corrected in future versions of this map.

REFERENCES

U.S. Geological Survey, 2012a, National Hydrography Dataset (NHD), U.S. Geological Survey National Geospatial Program, Hydrography, version 2.1, high-resolution. [http://nhd.usgs.gov/]

U.S. Geological Survey, 2012b, Watershed Boundary Dataset (WBD), U.S. Geological Survey National Geospatial Program, Hydrography, version 2.1, high-resolution. [http://nhd.usgs.gov/wbd.html]

Waterbodies

- ● Lake / Pond
- ▨ Swamp / Marsh

Streams

- Intermittent
- Perennial

DOGAMI SPECIAL PAPER 46

Surficial and Bedrock Engineering Geology, Landslide Inventory and Susceptibility, and Surface Hydrography of the Bull Run Watershed, Clackamas and Multnomah Counties, Oregon

by William J. Burns, Katherine A. Mickelson, Cullen B. Jones,
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PLATE 5

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 ascertain the usability of the information. This publication cannot substitute for site-specific investigations by qualified practitioners. Site-specific data may give results that differ from the results shown in the publication. See the accompanying text report for more details on the limitations of the methods and data used to prepare this publication.

ABOUT THIS PUBLICATION

The Bull Run Watershed (BRW) is the primary drinking water supply for the City of Portland and several suburbs and is cooperatively managed by the Portland Water Bureau and the U.S. Forest Service. The watershed is located 25 miles (40 km) east of downtown Portland on the western slopes of the Cascade Range. The BRW is a surface water collection system, so the risk of landslide impact directly to the water and the infrastructure is relatively high. Because landslides are one of the most widespread and damaging natural hazards in Oregon, it is important to map and assess the risk in the BRW. The purpose of this study is to assist the Portland Water Bureau in understanding the landslide hazard better and thus increase their ability to reduce future risk. The study publication consists of a text report, five map plates, and three geodatabases.

Additional Map Symbols

- × Summit
- Primary Paved Road
- Primary Gravel Road
- Secondary Road or Non-Bull Run Road
- Stream
- ● Lake / Reservoir

SCALE 1:24,000

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Source Data:
Lidar data from DOGAMI Lidar Data Quadrangles LDQ-2010-45121-D7-Bull Run Lake, LDQ-2010-45121-D8-Hickman Butte, LDQ-2010-45121-E7-Wahtum Lake, LDQ-2010-45121-E8-Tanner Butte, LDQ-2010-45122-D1-Brightwood, LDQ-2010-45122-D2-Bull Run, LDQ-2009-45122-D3-Sandy, LDQ-2010-45122-E1-Multnomah Falls, and LDQ-2010-45122-E3-Washougal.

Roads, streams, and waterbodies from the City of Portland and the Oregon Department of Geology and Mineral Industries (2013). Additional physical and cultural locations from the Geographic Names Information System, U.S. Geological Survey (2013).

Projection:
North American Datum 1983, HARN Oregon Statewide Lambert International Feet

Cartography:
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