

DOGAMI Fact Sheet: New FEMA Flood Maps for Coos County, Oregon

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Moving flood zone boundaries to where they should be by using new topographic data gives everyone—communities, government agencies, and homeowners—the ability to plan and to protect property from flood damage. This fact sheet explains how DOGAMI improved flood mapping for Coos County.



Redelineating the FEMA 100-year flood zone

- **Removed from 100-year flood zone** on the basis of highly accurate lidar-based mapping by DOGAMI
- **Added to 100-year flood zone** on the basis of highly accurate lidar-based mapping by DOGAMI
- **No change** from previous FEMA flood zone map

Flood zones for Millington, Coos County, Oregon ► have changed dramatically on the basis of new mapping. DOGAMI has remapped flood zones for all of Coos County.



FEMA

What is the project? The Federal Emergency Management Agency (FEMA) contracted with the Oregon Department of Geology and Mineral Industries (DOGAMI) under FEMA's Map Modernization Program to make new, highly accurate elevation maps using lidar (light detection and ranging), flood insurance rate map (FIRM) redelineation, storm wave flood mapping, and integration of multiple natural hazard data layers for Coos County. New, highly accurate digital flood insurance rate maps (DFIRMs) are one result.

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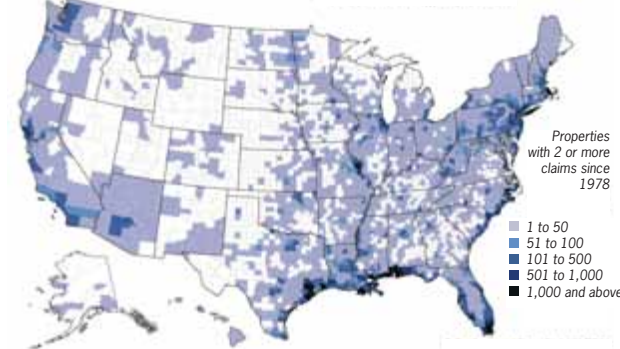
FEMA and the National Flood Insurance Program (NFIP)

FEMA is responsible for coordinating the Federal response to floods, earthquakes, hurricanes, and other natural or man-made disasters and providing disaster assistance to States, communities, and individuals. The Federal Insurance and Mitigation Administration within FEMA is responsible for administering the National Flood Insurance Program (NFIP) and administering programs that provide assistance for mitigating future damages from natural hazards.

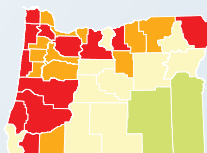
The primary purposes of NFIP are to:

- Better indemnify individuals for flood losses through insurance;
- Reduce future flood damages through State and community floodplain management regulations; and
- Reduce Federal expenditures for disaster assistance and flood control.

Flooded properties have cost the taxpayer-supported insurance fund \$11 billion in claims since 1978. *Source: Paul Overberg and Thomas Frank, USA TODAY*



The National Flood Insurance Program (NFIP) is managed by the Federal Emergency Management Agency (FEMA), a component of the U.S. Department of Homeland Security (DHS).



Number of flood disaster declarations in Oregon 1965-2003

Source: FEMA Region X

What is lidar?

Light detection and ranging (lidar) technology is revolutionizing the way we see the earth. The lidar data used to create the new FEMA flood maps by DOGAMI 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 the maps.



Bandon
Public
Library



Full-feature lidar surface includes everything the laser pulses hit.



Bare-earth lidar surface has trees, buildings, etc. removed.

How are lidar-based flood insurance rate maps (FIRMs) better?

Most current FEMA FIRM flood zones are based on topographic data from the U.S. Geological Survey National Elevation Dataset. These topographic maps were constructed from 1950s-1960s era aerial photography. Cartographers could not see through trees, especially in forested drainages, to draw precise contours; contour intervals were set at 40 feet. Lidar-based elevations, however, are *accurate to within a few inches*. The more accurate the map elevations, the more accurate flood zone modeling can be. Comparisons of older FEMA FIRM zones and new DOGAMI lidar-derived maps commonly show significant misalignment of flood zones to actual topography. With the new elevation data, flood zones can be located much more accurately.

Examples showing problems with older flood maps and DOGAMI's solutions

1



◀ **OLD** Flood Insurance Rate Maps (FIRMs) based on aerial photography lead to inaccurate elevations. These older-style maps can also be hard to read.



▶ **NEW** DOGAMI maps are digitally produced and use far more accurate lidar imagery as a base. The map data can be accessed online as well as on paper.

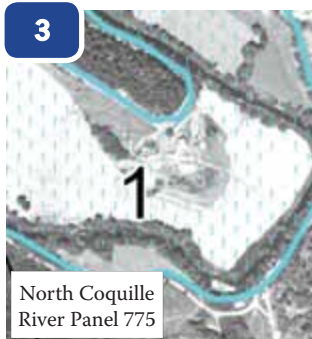
2



▲ **OLD** Less accurate base map topography leads to inaccurate locations for flood elevations (blue line). Poor base map resolution means locations of structures are uncertain.

▲▲ **NEW** High-resolution lidar elevation data provide accurate locations for modeled flood area (blue area in left image) as well as for structures. The areas no longer in the predicted flood area are shown in green (right image). The revised flood data on the new maps can be accessed in the traditional FIRM format or online.

3

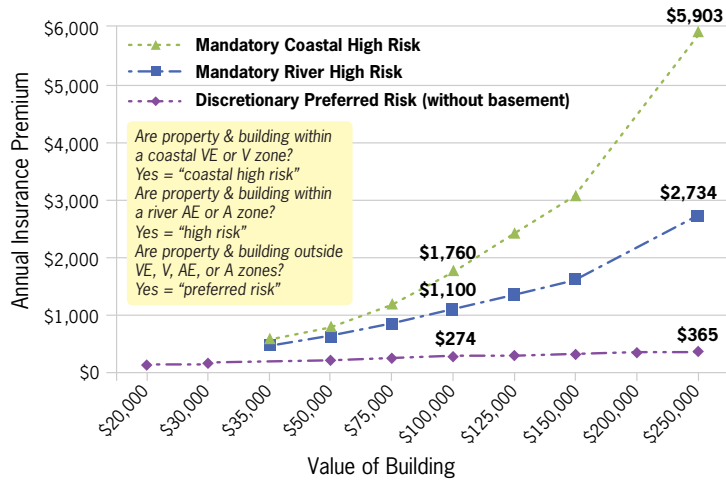


▲ **OLD** Less accurate base map topography causes flooded area (blue outline) to "run over hills"; here, the flood area includes the hilly area in the middle of the image.

▲▲ **NEW** Lidar-based elevation data and new A zone models provide accurate locations for flood elevations. Blue area (left image) is in the revised flood area. Green area (right image) is no longer in the flood area. Buildings are precisely located.

What determines flood insurance rates?

National Average NFIP Premiums for Residential Buildings and Contents



Rates effective January 1, 2011

Source: http://www.floodsmart.gov/floodsmart/pages/residential_coverage/policy_rates.jsp

To help establish flood insurance rates and applicability, FEMA defines several different flood hazard areas. Flood hazard areas identified on FEMA Flood Insurance Rate Maps (FIRMs) are identified as Special Flood Hazard Areas (SFHA). A SFHA is defined as the area that will be inundated by a flood event having a 1% chance of being equaled or exceeded in any given year. The 1% annual chance flood is also referred to as the base flood or 100-year flood.

High-risk flood zone designations:

A zone: Areas in the 100-year floodplain, but where a detailed flood study has not been prepared.

AE zone: Areas in the 100-year flood plain where a detailed flood study has been performed.

V zone: Coastal areas subject to a 100-year flood, with additional hazard from storm waves. These areas are determined by approximate analysis, not by detailed calculations.

VE zone: Coastal areas subject to a 100-year flood, where a detailed study was performed to determine base flood elevation.

When is Flood Insurance Required? — see page 4.

Summary of Changes to Flood Zones by Acreage in Coos County

Calculated jurisdiction acreage includes the City Limit and Urban Growth Boundary (UGB)

Within city urban growth boundaries (UGBs), new maps by DOGAMI reduced the area in Special Flood Hazard Zones by 7.1%.

Within city UGBs, new maps by DOGAMI reduced the number of buildings in Special Flood Hazard Zones by 19.7%.

Acres and FEMA Special Flood Hazard Areas (SFHA) by Jurisdiction

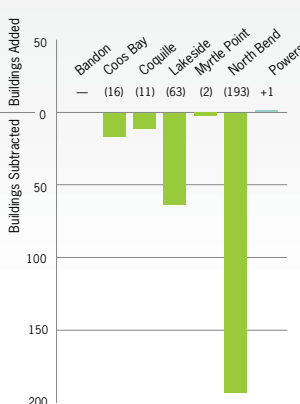
Jurisdiction	Total Number of Acres	Pre-DOGAMI Total Acres inside SFHA	DOGAMI Modifications			Post-DOGAMI Total Acres inside SFHA	Post-DOGAMI Total Acres outside SFHA
			Acres removed from SFHA	Acres added to SFHA	Acres remaining in SFHA		
Bandon	1,872	1,175	49	50	1,127	1,177	695
Coos Bay	10,189	4,534	296	75	4,238	4,313	5,876
Coquille	1,738	355	43	16	311	327	1,411
Lakeside	1,337	486	46	40	441	481	855
Myrtle Point	1,021	240	13	25	226	252	770
North Bend	3,514	1,676	328	2	1,348	1,350	2,164
Powers	419	81	46	8	34	42	376
All Cities	20,089	8,547	822	217	7,725	7,942	12,147
Coos County Unincorp.	1,137,401	65,410	7,618	8,069	57,792	65,861	1,071,540
ALL COOS COUNTY	1,157,490	73,956	8,439	8,286	65,517	73,803	1,083,687

Percentages by Jurisdiction

Jurisdiction	Total Number of Acres	Pre-DOGAMI Total Acres inside SFHA	Acres removed from SFHA	Acres added to SFHA	Acres remaining in SFHA	Post-DOGAMI Total Acres inside SFHA	Post-DOGAMI Total Acres outside SFHA
Bandon	100.00%	62.8%	2.6%	2.7%	60.2%	62.9%	37.1%
Coos Bay	100.00%	44.5%	2.9%	0.7%	41.6%	42.3%	57.7%
Coquille	100.00%	20.4%	2.5%	0.9%	17.9%	18.8%	81.2%
Lakeside	100.00%	36.4%	3.4%	3.0%	33.0%	36.0%	64.0%
Myrtle Point	100.00%	23.5%	1.3%	2.5%	22.2%	24.6%	75.4%
North Bend	100.00%	47.7%	9.3%	0.1%	38.4%	38.4%	61.6%
Powers	100.00%	19.2%	11.1%	2.0%	8.1%	10.1%	89.9%
All Cities	100.00%	42.5%	4.1%	1.1%	38.5%	39.5%	60.5%
Coos County Unincorp.	100.00%	5.8%	0.7%	0.7%	5.1%	5.8%	94.2%
ALL COOS COUNTY	100.00%	6.4%	0.7%	0.7%	5.7%	6.4%	93.6%

Summary of Changes to Structures within Flood Zones by Jurisdiction

Net Change to Number of Structures In or Out of FEMA Flood Zone



Structures and SFHA by Jurisdiction

Jurisdiction	Total Number of Structures	Pre-DOGAMI Total Structures inside SFHA	Structures removed from SFHA	Structures added to SFHA	Structures remaining in SFHA	Post-DOGAMI Total Structures inside SFHA	Post-DOGAMI Total Structures outside SFHA
Bandon	2,119	151	30	30	121	151	1,968
Coos Bay	6,933	603	146	130	457	587	6,346
Coquille	1,848	37	15	4	22	26	1,822
Lakeside	1,146	283	87	24	196	220	926
Myrtle Point	1,246	103	14	12	89	101	1,145
North Bend	4,129	267	197	4	70	74	4,055
Powers	508	1	1	2	-	2	506
All Cities	17,929	1,445	490	206	955	1,161	16,768
Coos County Unincorp.	NA	NA	NA	NA	NA	NA	NA
ALL COOS COUNTY	NA	NA	NA	NA	NA	NA	NA

Percentages by Jurisdiction

Jurisdiction	Total Number of Structures	Pre-DOGAMI Total Structures inside SFHA	Structures removed from SFHA	Structures added to SFHA	Structures remaining in SFHA	Post-DOGAMI Total Structures inside SFHA	Post-DOGAMI Total Structures outside SFHA
Bandon	100%	7.1%	1.4%	1.4%	5.7%	7.1%	92.9%
Coos Bay	100%	8.7%	2.1%	1.9%	6.6%	8.5%	91.5%
Coquille	100%	2.0%	0.8%	0.2%	1.2%	1.4%	98.6%
Lakeside	100%	24.7%	7.6%	2.1%	17.1%	19.2%	80.8%
Myrtle Point	100%	8.3%	1.1%	1.0%	7.1%	8.1%	91.9%
North Bend	100%	6.5%	4.8%	0.1%	1.7%	1.8%	98.2%
Powers	100%	0.2%	0.2%	0.4%	0.0%	0.4%	99.6%
All Cities	100%	8.1%	2.7%	1.1%	5.3%	6.5%	93.5%
Coos County Unincorp.	NA	NA	NA	NA	NA	NA	NA
ALL COOS COUNTY	NA	NA	NA	NA	NA	NA	NA

Frequently Asked Questions

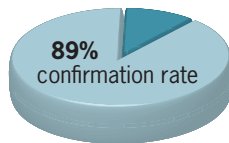
Who needs FEMA flood maps (FIRMs)?

- *Private citizens and insurance and brokers*
 - use FIRMs to locate properties and buildings to determine the amount of flood risk and whether flood insurance is required.
- *Community officials*
 - use FIRMs to administer floodplain management regulations and to mitigate flood damage.
- *Lending institutions and federal agencies*
 - use FIRMs to locate properties and buildings in relation to mapped flood hazards, and to determine whether flood insurance is required when making loans or providing grants following a disaster for the purchase or construction of a building.

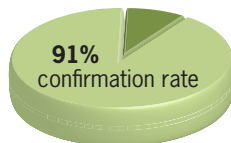
How do I know the new DOGAMI maps and flood zones are accurate?

FEMA has extensively reviewed the process, the modeling, and the final maps. The Oregon Department of Land Conservation and Development (DLCD) is providing guidance through planning and implementation.

In addition, as part of the Flood Insurance Study, DOGAMI reviewed all Letters of Map Changes (LOMC), which are applications made by property owners at their expense to prove to FEMA that their home is not in the Special Flood Hazard Area (SFHA) and therefore is exempt from mandatory flood insurance. Results for all SFHAs showed that of 126 LOMC evaluated, 112 were confirmed by new mapping alone. Results for Approximate A Zones showed that of 64 LOMCs evaluated, 58 were confirmed by new mapping alone.



All Special Flood Hazard Areas



Approximate A Zones

Comparing the surveyed elevation of the structure/property to the modeled flood surface (not previously available for A zones) confirmed two additional LOMC, raising the confirmation percentage to 94%. Therefore, Coos County residents can be confident that the new DFIRM mapping and zone delineation are highly accurate.

Where can I get the new Coos County DFIRM maps?

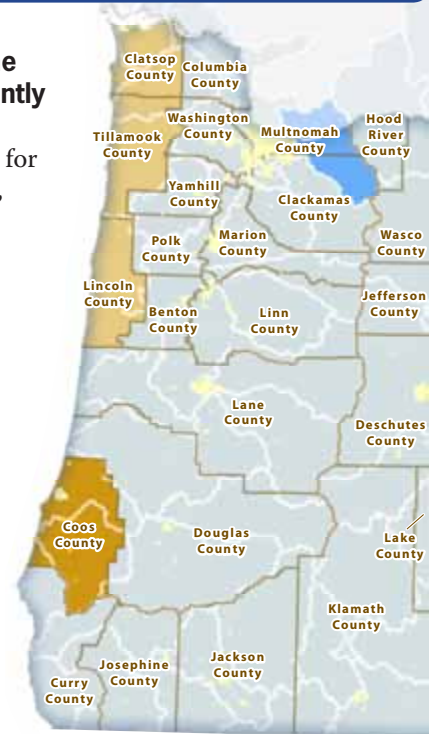
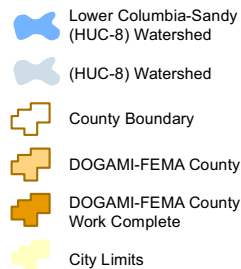
The maps are available for inspection at local municipal and county offices. You can also view an interactive map online at <http://www.oregongeology.org>.

When is flood insurance required?

Homes and buildings in high-risk flood areas with mortgages from federally regulated or insured lenders are required to have flood insurance. These areas have a 1% or greater chance of flooding in any given year, which is equivalent to a 26% chance of flooding during a 30-year mortgage.

What other areas in the state is DOGAMI currently remapping?

DOGAMI is working for FEMA to remap Lincoln, Tillamook, and Clatsop counties and the Lower Columbia–Sandy watershed.



Dan Coe, DOGAMI

Who should I contact if I have questions about the new flood zones?

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Resources

The National Flood Insurance Rate Program (NFIP)

<http://www.fema.gov/business/nfip/>

FEMA Map Service Center

<http://msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView?storeId=10001&catalogId=10001&langId=-1>

Oregon Department of Land Conservation and Development

<http://www.lcd.state.or.us/>

DOGAMI's Coos County Flood and Natural Hazards Web Tool

<http://www.oregongeology.org/sub/fema-cooscountyhazards>

