The 2007 Storm Event Update from Forest and Debris Recovery Team

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Presentation for Committee for Family Forestlands
Salem OR. January 30, 2008

Presentation Outline

- 2007 Storm Event
- Wind Damaged Trees
  - Assessment and implications
- Woodson debris flow
  - Assessment, response, and implications
- Questions

2007 Storm Event

Forest and Debris Recovery Final Report

Winter Storm - December 2007

Prepared by the

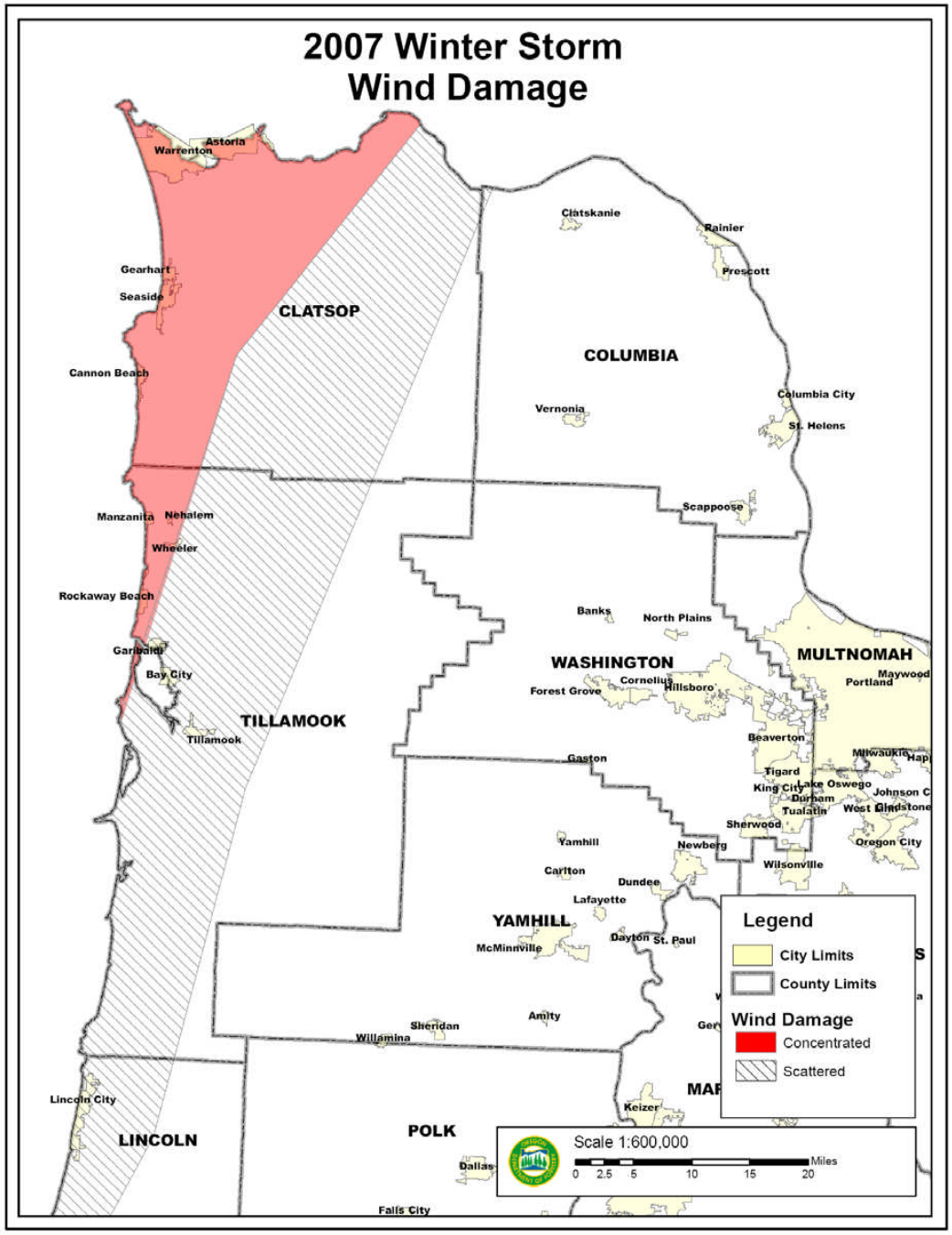
Forest and Debris Recovery Team

Overview

- **Peak Gusts:**
  - **129 mph at Bay City**
  - **96 mph at Astoria**
  - **125 mph at Lincoln City**
- **Maximum Precipitation:**
  - **14.5 in at Lee's Camp**
- **Coastal River Flooding:**
  - **At or above 25 year stage**

Wind Damaged Timber

- Clatsop and Tillamook Counties both sustained considerable wind damage with Clatsop County by far bearing the brunt of the wind.
- Gross volume of wind damage over 360 million board feet across all ownerships


2007 Winter Storm
Wind Damage
Astoria
Warrenton
Gearhart
Seaside
CLATSOP
Cannon Beach
Manzanita
Nehalem
Wheeler
Rockaway Beach
Garibaldi
Bay City
TILLAMOOK
Tillamook
Clatskanie
Rainier
Prescott
COLUMBIA
Vernonia
Columbia City
St. Helens
Scappoose
Banks
North Plains
WASHINGTON
Cornelius
Hillsboro
Forest Grove
MULTNOMAH
Maywood
Portland
Beaverton
Gaston
Tigard
King City
Lake Oswego
Durham
Tualatin
West Linn
Sherwood
Oregon City
Yamhill
Newberg
Wilsonville
Carlton
Dundee
Lafayette
YAMHILL
McMinnville
Dayton
St. Paul
Amity
Sheridan
Willamina
Keizer
Lincoln City
LINCOLN
POLK
Dallas
Falls City
Legend
City Limits
County Limits
Wind Damage
Concentrated
Scattered
Scale 1:600,000
0 2.5 5 10 15 20
Miles

Clatsop County

- An estimated 14,500 acres of timber was heavily damaged by wind, about 3 percent of Clatsop County's total land base
- merchantable volume is estimated at 240 million board feet, approximately 73 percent of annual harvest
- 100 million board feet of non-sawlog material

Wind Damaged Timber

State & Private Industrial Ownership:

Ownership	Clatsop	Columbia	Tillamook	Total
Federal	1,150 / 20	0 / 0	20 / 1	1,170 / 21
State[1]	3,000 / 25	0 / 0	500 / 15	3,500 / 40
Private Industrial	10,350 / 297	0 / 0	300 / 5	10,650 / 302
Non-industrial[2]	2,000/28	0 / 0	NA	2,000/28
Total	16,500 / 370	0 / 0	820 / 20	17,320 / 390

Coarse Estimate of Acres/Gross Volume (million board feet) of Significant Wind Damaged Timber by County and Ownership

Wind Damaged Timber

- Family Forest & Other Small Non-Industrial Ownership:
  - Approx. 45,000 acres effected - 20 + MMBF
- Urban Forest Resources:
  - 19 Cities Surveyed-100+ trees each
  - Hardest Hit: Astoria, Wheeler & Klootchy Creek Park
  - 8+MMBF

Challenges

- Small-scale and high-numbers of Family Forestlands make it difficult to quantify damage to those forests and salvage logs

- Landowners may need additional assistance in selecting qualified and reputable forestry and tree care service providers.

Challenges

- Small quantities of logs owned by individual landowners and cities are difficult to remove and market
  - Promote cooperatives and the use of sorting yards.
  - Use multiple landowner notifications
  - Develop alternate procedure to facilitate the cleanup and salvaging of individual damaged trees or hazard.

Challenges

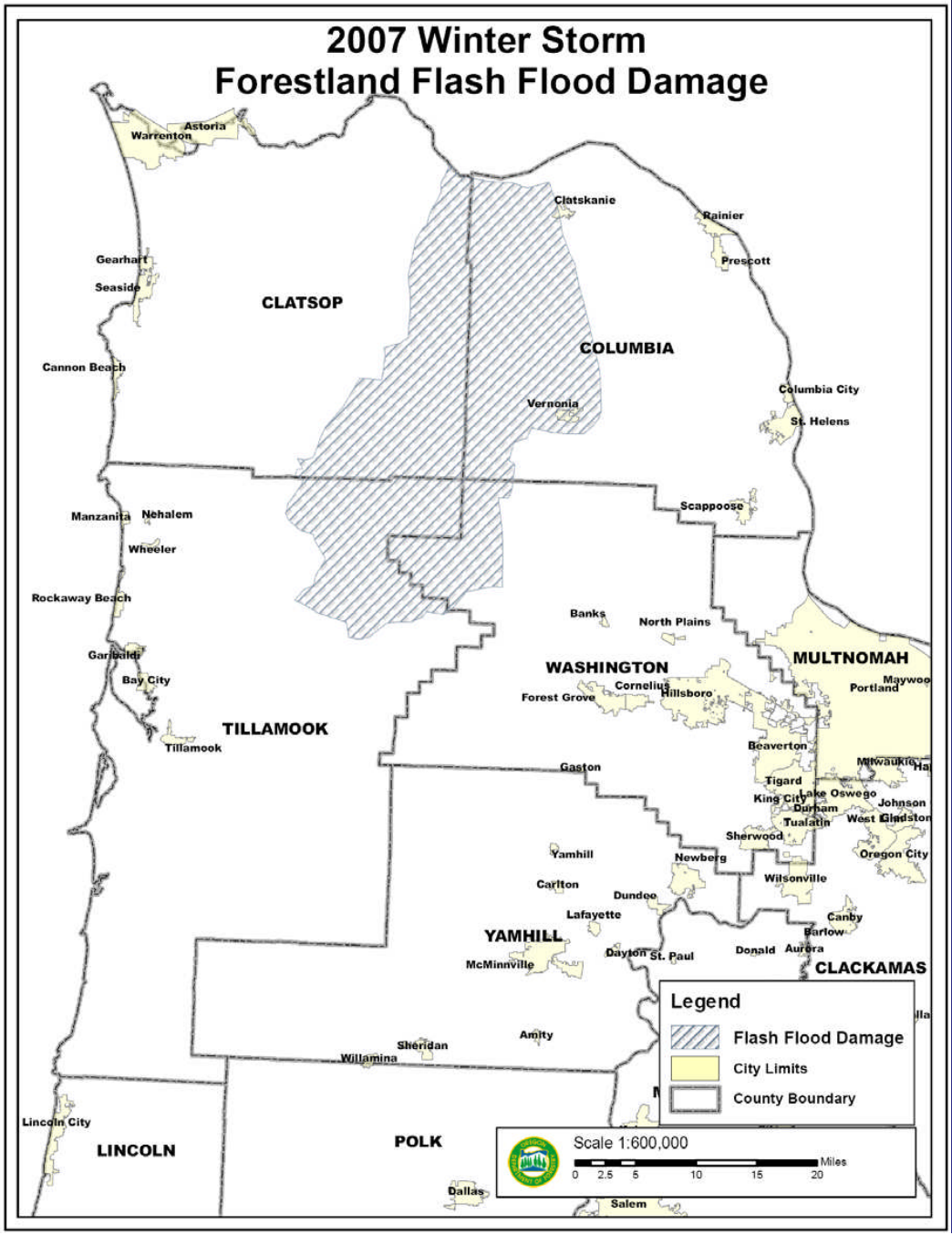
- Salvage reforestation requirements may be difficult to meet due to seedling availability and economics
  - Cost Share available for reforestation (50% Reforestation Tax Credit, Forest Resource Trust).
  - Relaxing reforestation timelines through alternate plans if seedling shortage exists.
  - Coordination with Nursery Industry.

Challenges

- Harvest levels may remain consistent, but higher logging costs associated with salvage and lower value material
- Quantity of non-sawlog material may exceed current capacity and markets
  - Take advantage of existing tax credits for biomass utilization.
  - Create markets and/or subsidize.

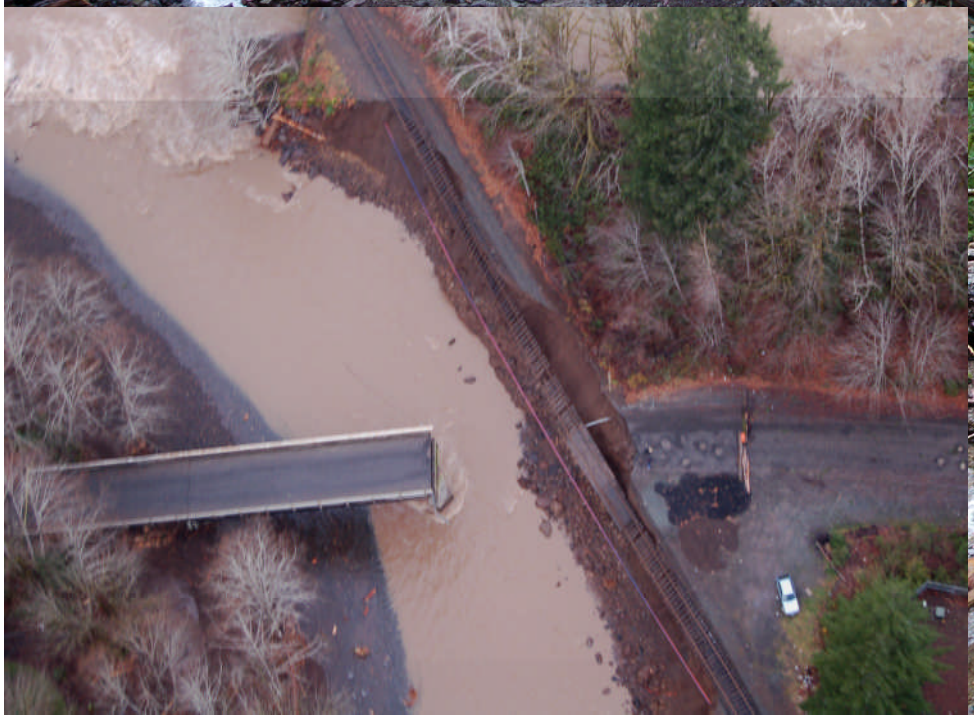
Flash Flood Damage on Forest Lands

- Forest Roads
- Debris Flows


2007 Winter Storm
Forestland Flash Flood Damage
Astoria
Warrenton
Clatskanie
Rainier
Prescott
Gearhart
Seaside
CLATSOP
COLUMBIA
Cannon Beach
Columbia City
Vernonia
St. Helens
Scappoose
Manzanita
Nehalem
Wheeler
Rockaway Beach
Banks
North Plains
Garibaldi
Bay City
WASHINGTON
MULTNOMAH
Cornelius
Hillsboro
Forest Grove
Portland
TILLAMOOK
Tillamook
Beaverton
Gaston
Tigard
King City
Lake Oswego
Durham
Johnson
Tualatin
West Linn
Sherwood
Yamhill
Newberg
Oregon City
Carlton
Wilsonville
Dundee
Lafayette
Canby
YAMHILL
Barlow
Dayton
St. Paul
Donald
Aurora
McMinnville
CLACKAMAS
Legend
Flash Flood Damage
City Limits
County Boundary
Amity
Sheridan
Willamina
Lincoln City
LINCOLN
POLK
Scale 1:600,000
Miles
0 2.5 5 10 15 20
Dallas
Salem

Forest Roads

- The majority of the detailed forest road reconnaissance occurred on State Forest lands.
- Private forest land road conditions were not sampled or reported with the same level of intensity.



Initial Cost Estimate of Road Damage Repair on State Forest Land

County	Repair Estimate
Columbia	$50,000
Tillamook	$850,000
Tillamook	$1,300,000
Clatsop	$200,000
Total	**$2,400,000**

Challenges

- Stream crossing structure repair may delay access to active and planned logging units because of in-stream work periods
  - Pre-plan and coordinate efforts to effectively use narrow in-stream time periods
- Some road damage will require road closure and alternative access, sometimes across other ownerships
  - Will require coordination of multi-ownership road systems and access

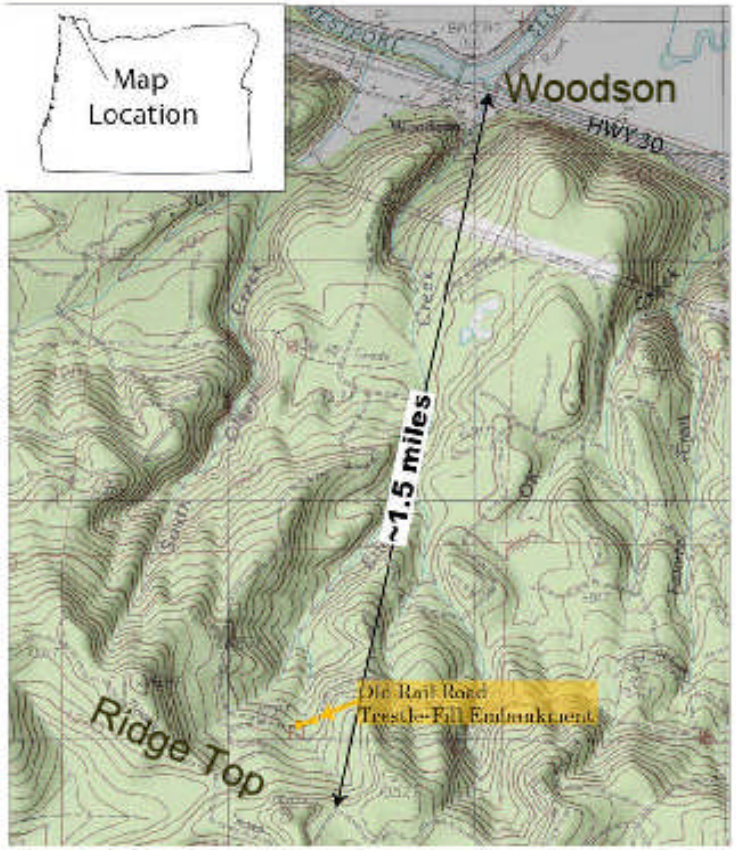
Debris Flows

Woodson Debris Flow December 2007

Bill Burns
Oregon Department of Geology and Mineral Industries

Photo: KGW website, 2007

Where Did It Happen ?



USGS Topographic Quadrangle

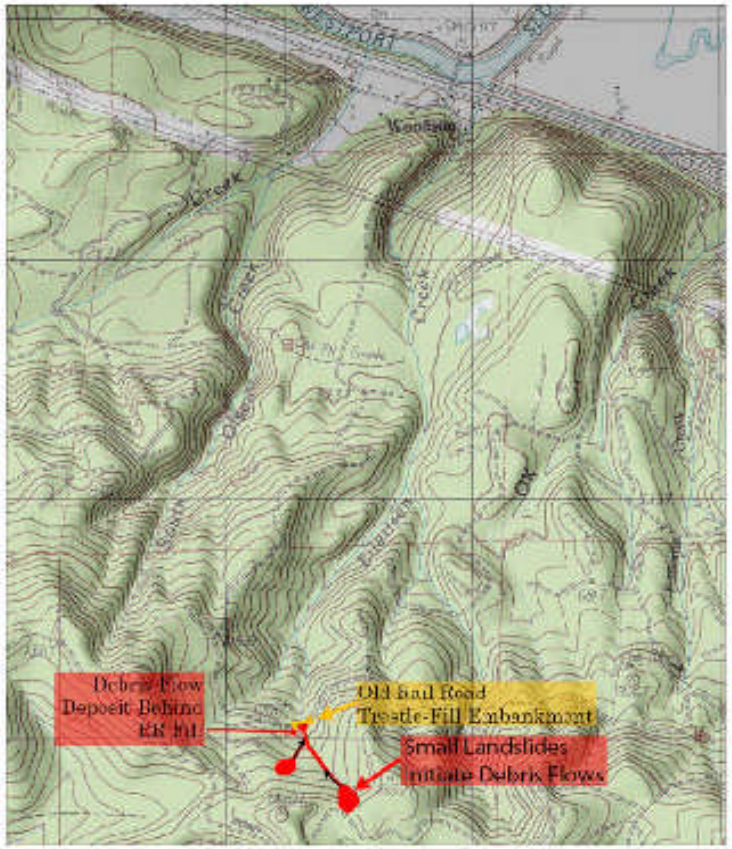
2005 Air Photo

Pre-Event maps from Woodson/Highway 30 up to the ridge top (roughly 1.5 miles)

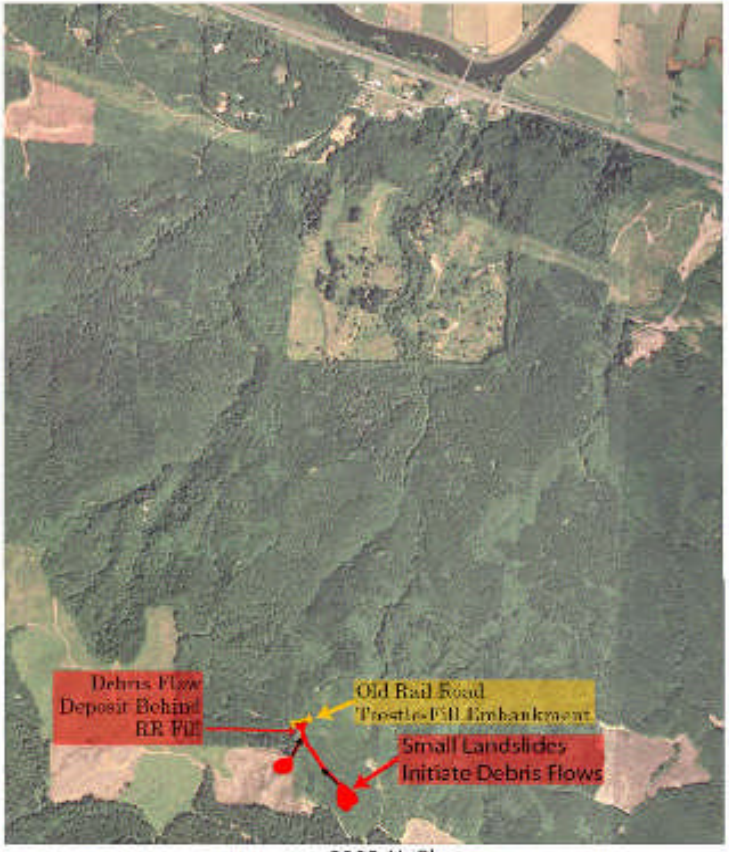
Maps created with assistance from Jason Hinkle, 2007

Burns, December 2007

December 2nd or 3rd Map



USGS Topographic Quadrangle

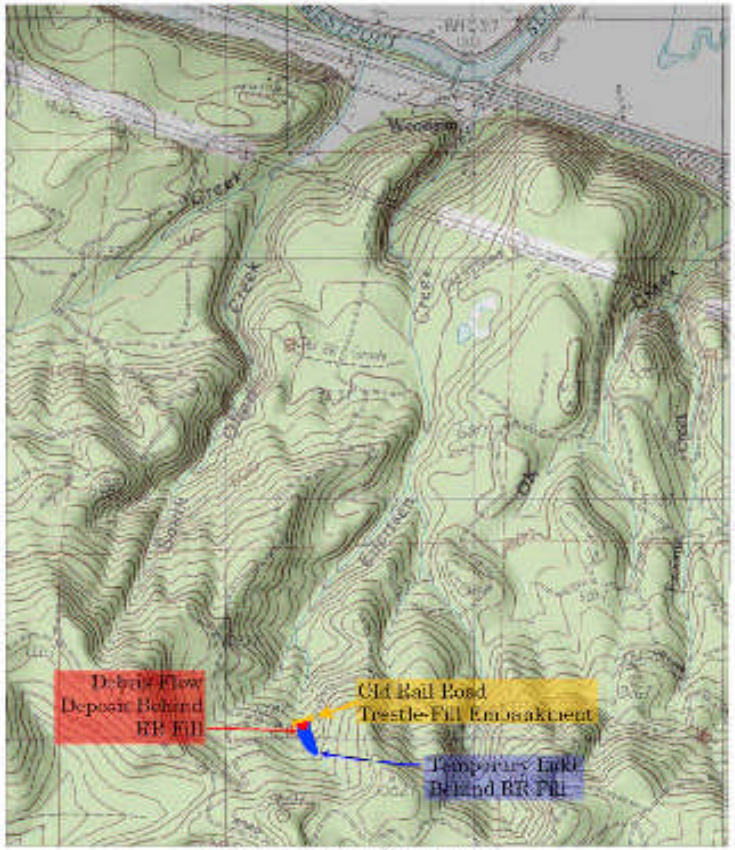


2005 Air Photo

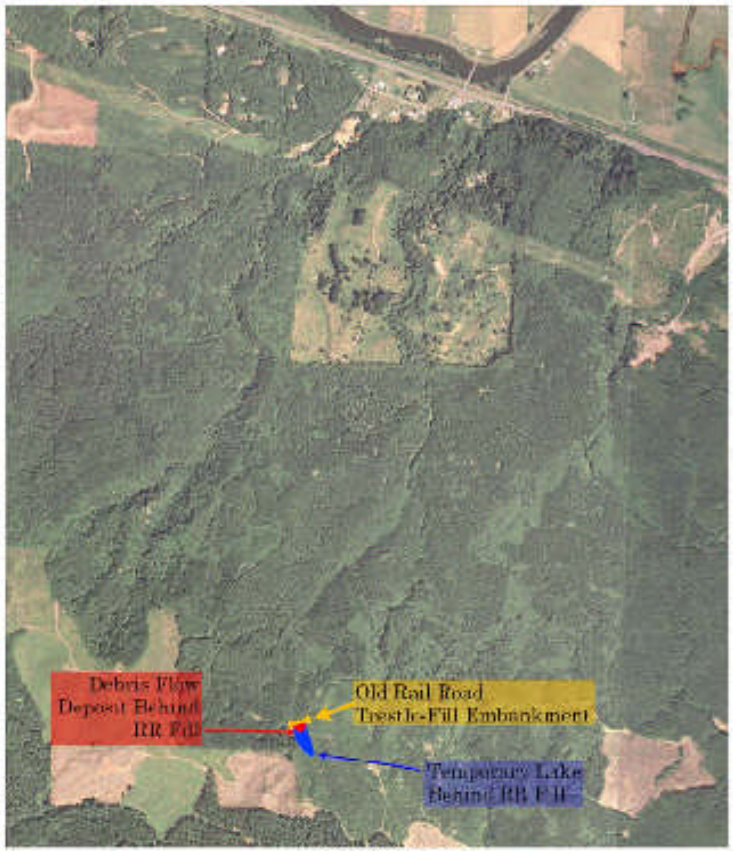
It is likely that one or more small landslides triggered a debris flow that traveled ~1 mile to the old RR trestle-fill embankment and blocked the drainage.

Maps created with assistance from Jason Hinkle, 2007

December 4th through 11th Map



USGS Topographic Quadrangle



2005 Air Photo

With the drainage under the old RR trestle-fill embankment blocked, a temporary lake formed behind the embankment December 4-11.

Maps created with assistance from Jason Hinkle, 2007

Burns, December 2007

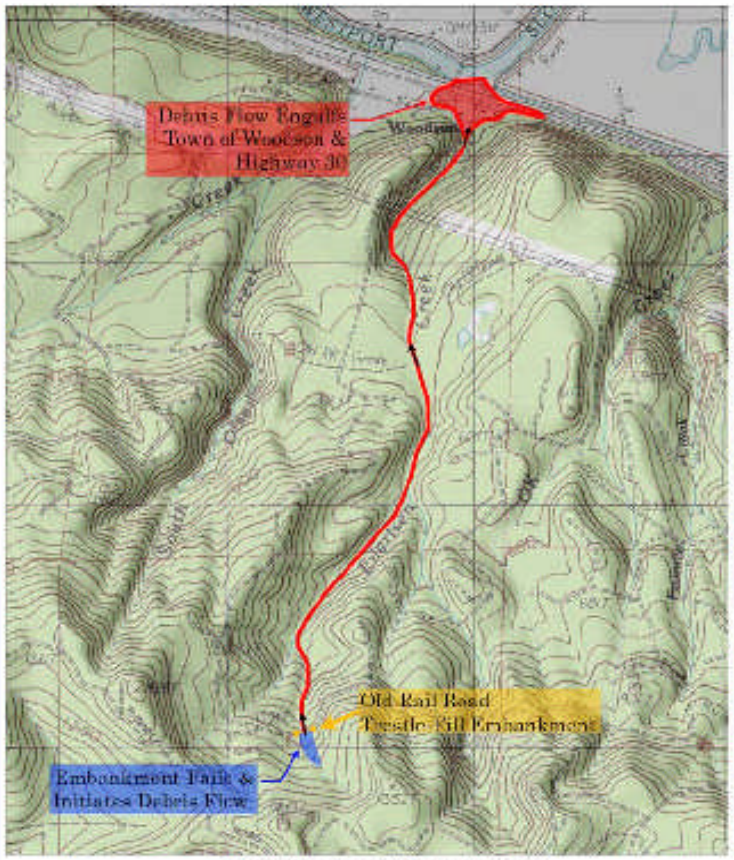
December 4th through 11th Details

- After the drainage under the old RR trestle-fill embankment was blocked, a temporary lake roughly 30-40 feet deep and 200 feet long formed behind the embankment.
- The land owner noticed this lake and called the Oregon Department of Forestry (ODF).
- After study of the old RR trestle-fill embankment and lake, ODF notified the residents in Woodson and the Oregon Department of Transportation that a debris flow was eminent.
- The residents in Woodson were evacuated and Highway 30 closed during the morning of December 11th.

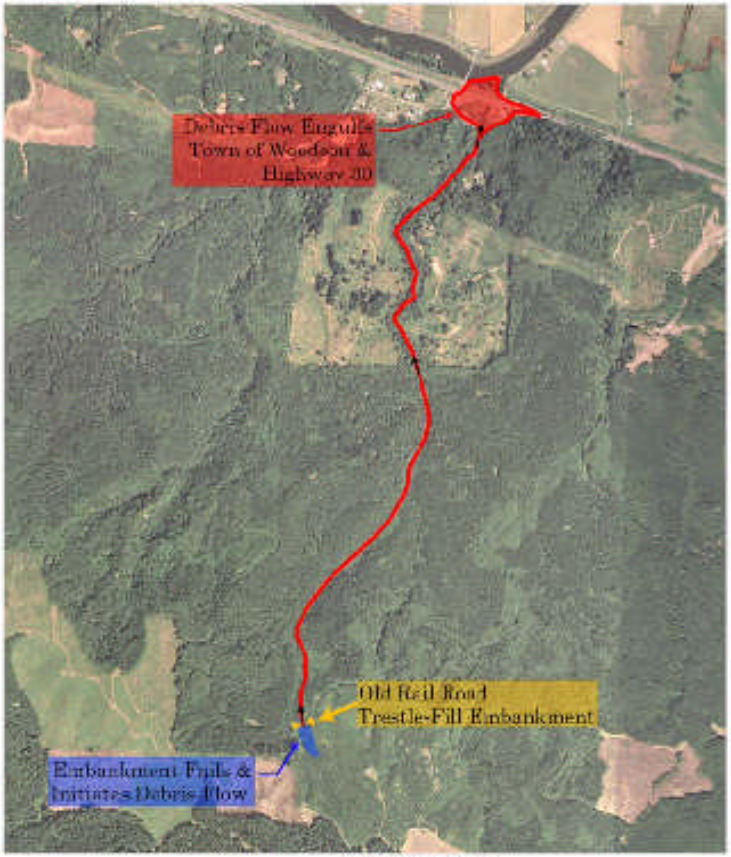
Portion of Old RR trestle

Photo by: Bill Burns, 2007

December 11th Map



USGS Topographic Quadrangle



2005 Air Photo

The temporary lake was too deep for the old RR trestle-fill embankment to hold, and the embankment failed catastrophically, initiating a debris flow that engulfed the town of Woodson and Highway 30.

Maps created with assistance from Jason Hinkle, 2007

Burns, December 2007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Seoul Food
KOREAN & AMERICAN CUISINE

Response

- ODF will conduct review of debris flow event
  - Geotechnical assessment
  - Evaluate Forest Practice Act (FPA) administration
  - Evaluate Forest Practice Act (FPA) compliance
  - Develop lessons learned

Geotechnical assessment

- One from the geotechnical expertise from ODF and one from a consulting engineering geologist
  - The path and delivery areas of railroad fill failure and subsequent dam-burst flood.
  - The landslide run-out paths and delivery areas for the two known landslides
- Identify the causal factors for each of these events

FPA Administration and Compliance

- An evaluation relative to FPA and landowner responsibilities including:
  - Road maintenance on the railroad fill
  - Road maintenance on the lands above the railroad fill
  - The landslide and public safety rules for harvests in the Eilertsen Creek drainage.
  - Other FPA issues deem pertinent.

Challenges

- High fills mostly due to legacy RR grades may not be safe from dam-break floods
  - Increased guidance and training to address more effectively
  - Explore cost-share funding options for maintenance and repairs
  - Notice of unsatisfactory condition where appropriate

Challenges

- Some road drainage systems are not adequate to pass large woody debris at stream crossings
  - Identify those structures most prone to passage problems and prioritize those for cleaning immediately following storm events
  - Further development of technical solutions, testing, and implementation

Implications

- Re-evaluation of sufficiency of landslide safety rules
  - Increased public concern about landslides
  - Questions regarding the effectiveness of current Forest Practices Rules in the wake of this significant storm event

?Questions?