

# **Conservation Priorities for Freshwater Ecosystems:**

## **The Roads Imperative**

**Mary Scurlock  
Pacific Rivers Council**

**November 2, 2011  
Restore Mt. Hood Coalition Summit**

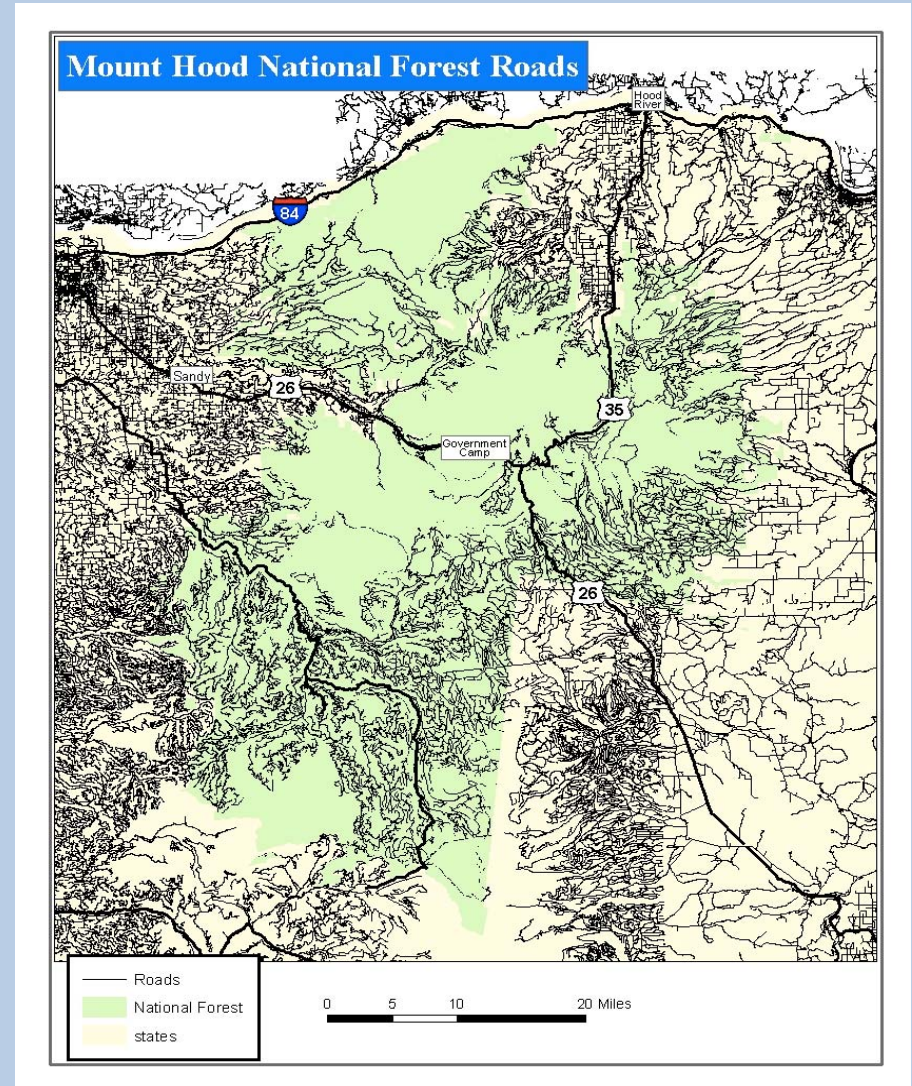


# Key Points

1. Existing roads on the forest landscape cause significant ecological impacts, including those on the Mt. Hood National Forest, a major source of drinking water and key salmon habitat.
2. It is possible to drastically reduce road impacts through road remediation and removal treatments.
3. Current policy direction and legal mandates to protect water and aquatic species place an affirmative burden on the Forest Service to reduce the standing road system and to minimize impacts from remaining roads.
4. Reducing sediment yield from roads will require a significantly greater public investment than is currently being made.
5. New forest plan direction addressing roads will keep the Mt. Hood a watershed restoration leader.

# The Ecological Imperatives

- Physical Impacts
- Biological Impacts



(Map by Oregon Wild)

# Hydrologic mechanisms of road impact

(Wemple et al. 1996; Foreman & Alexander 1998; Trombulak & Frissel 2000; Jones et al 2000; Gucinski et al. 2001)

- ✓ **Interception** of subsurface flows and faster routing of surface flows to streams = **increased peak flow** (also likely reduced low flow).
- ✓ Increase generation and delivery of **sediment**
- ✓ Generation and accelerated delivery of **chemicals** to streams (P, N, organic C, herbicides, hydrocarbons, salts)
- ✓ **Diversion and ponding** of flow paths in lowlands, riparian areas and floodplains



# Physical Impacts of Roads





# Physical Impacts of Roads



# Biological mechanisms of road impact

(Trombulak and Frissell 2000)

- ✓ Alteration and fragmentation of floodplains, wetlands, and stream and river channels
- ✓ Hydrologic alteration of stream, sediment, nutrient, and contaminant runoff, as well as alteration of thermal regimes.
- ✓ Vegetation and stream canopy reduction
- ✓ Elevated nutrients to surface waters
- ✓ Exposure of biota to novel toxins, e.g. hydrocarbons, roadside herbicides
- ✓ Increased access of humans for harvest, poaching and harassment, beaver trapping, off-road vehicle use, etc.



# Biological Impacts of Roads



*Salmon & trout, including this juvenile coho, need cold, clear water. More sediment from roads creates serious problems, such as clogged gills, and making it harder to find food. Road sediment is harmful even in naturally turbid streams, increased sediment can be very harmful. (Photo S. Trask, 2007)*



# Biological Impacts of Roads

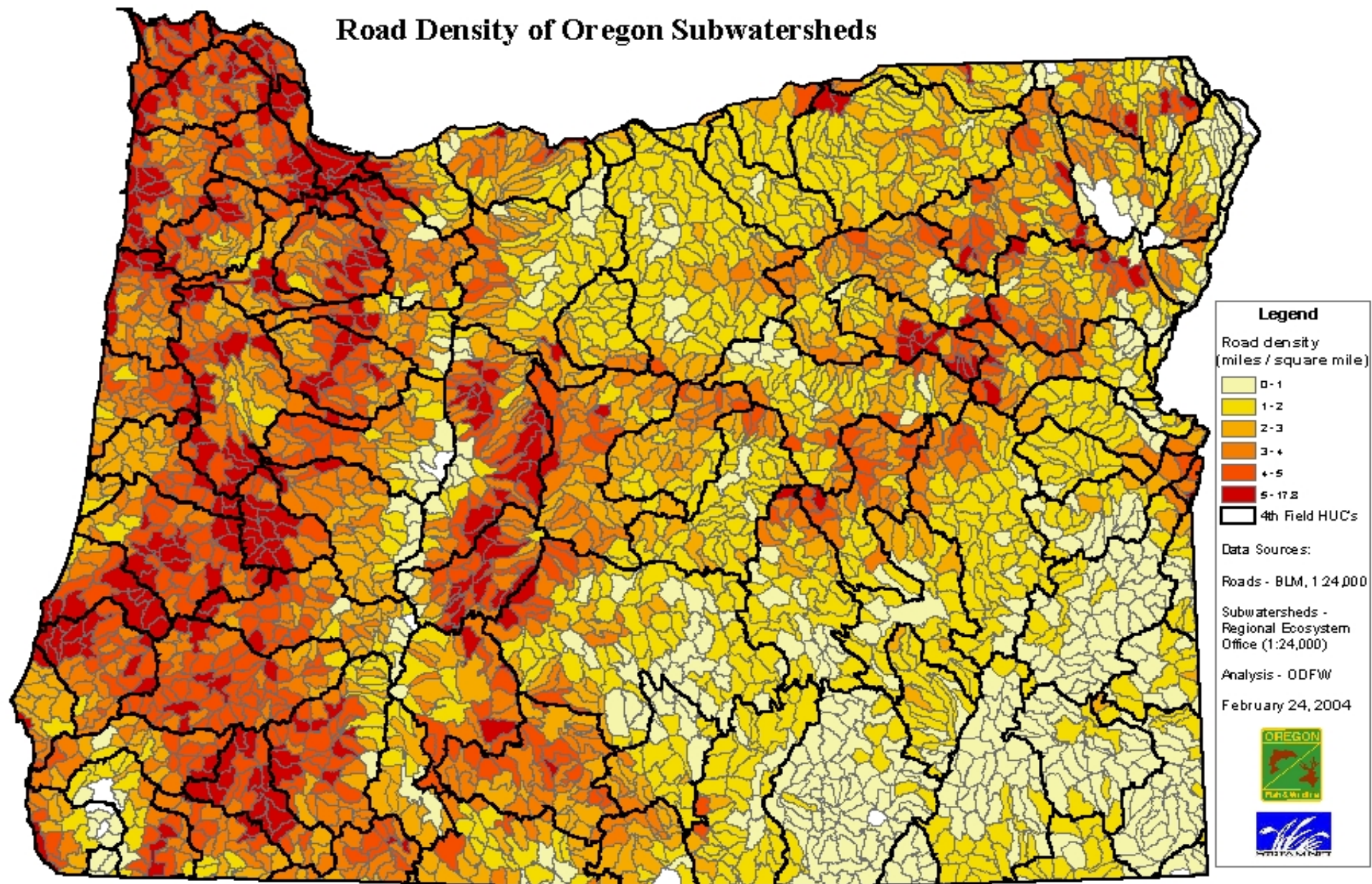


Salmon carcasses in Grayback Creek, Rogue River Siskiyou National Forest  
After a road-triggered landslide, Sucker Creek Aquatic Restoration Plan, 2007.



# Forest Road Density is too high

Road Density of Oregon Subwatersheds



# Roads on the Mt. Hood

- Roads a source of increased chronic sediment to streams and slope instability/mass wasting
- 4000 miles down to 3400 open miles
- 746 now planned for long term closures
- Road density in parts of the Mt. Hood = 4.7 mi/mi<sup>2</sup>

(Sources: Fish Creek, Eagle Creek & Collawash Watershed Analyses)



# Climate Change Forecast for the Pacific Northwest



- Increasing incidence of high-intensity storms and floods



- Increased flux from cool to warm with frequent winter thaw

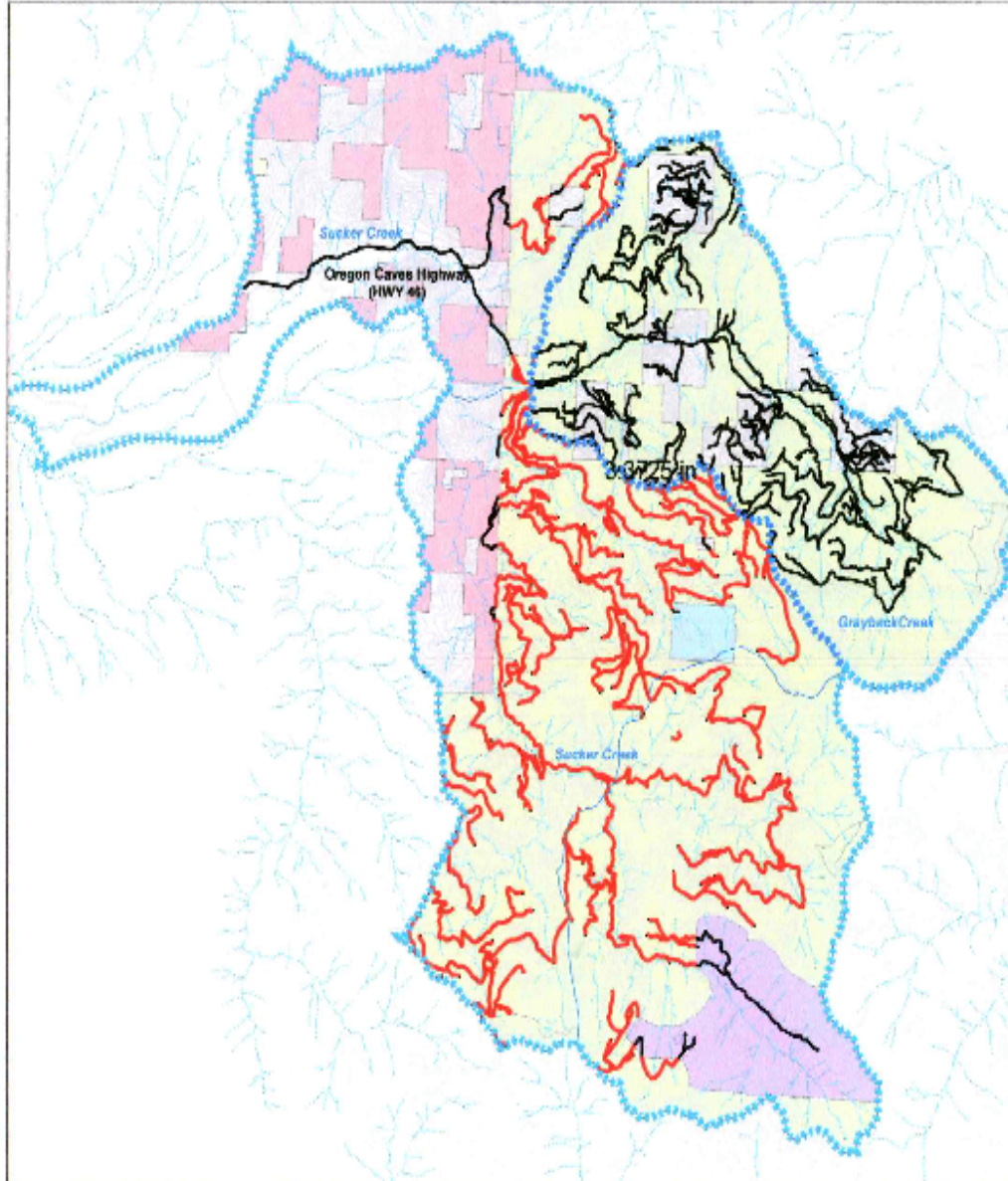
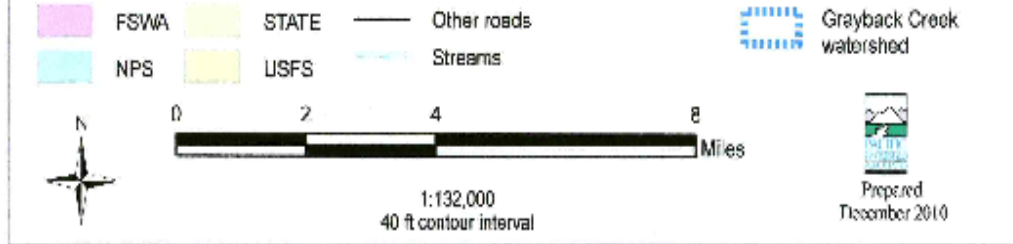


- Drought and moisture flux leading to increased wildfire incidence and severity

# The Case for “Stormproofing”



Extreme gully erosion caused by a stream diversion of Windy Creek onto the road system during storms of January 1997. (Because Sucker Creek soils are decomposed granitics, these roads are especially susceptible to gully erosion where drainage features are not adequate). (Photos by Barbara Ullian).



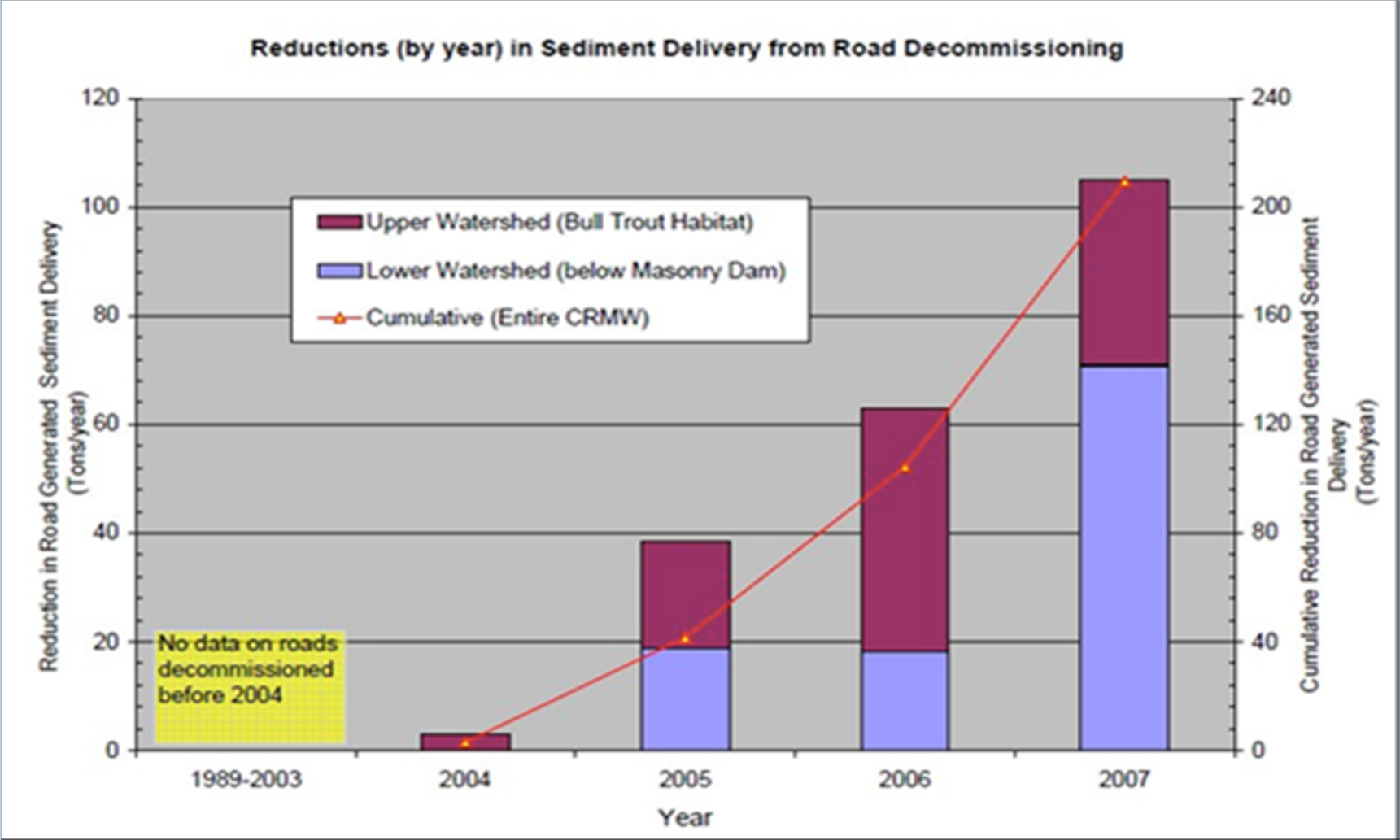
## SAMPLE ASSESSMENT: RRSNF Grayback Creek:

1. 45% roads have potential to deliver; treatment could reduce to less than 10%;
2. Sediment sources and risks at 234 sites including some non-system (“ghost”) roads;
3. Treatment at 201 sites would prevent 70,000 yds<sup>3</sup> sediment to streams
4. 67% of recommended treatments are at stream crossings.

(B. Weaver & E. Weppner, Pacific Watershed Associates, 2010)



# Decommissioning reduces sedimentation



# Treatment on Retained Roads Reduces Sedimentation



Figure 1. Location of monitored sites, FY2008, FY2009, and FY2010, PNW Region.

Early results of the Forest Service monitoring of storm damage risk reduction treatments under the Legacy Roads program show treatments are effective to:

> reduce road-to-stream hydrologic connectivity

> reduce delivery of fine sediment to streams

> reduce the risk of gully initiation

# The Legal Imperative

## National Forest Management Act

- Water and watershed protection
- NWFP Aquatic Conservation Strategy, based on Forest Ecosystem Management Assessment Team findings about importance of road-impacts reduction continues to be validated; national direction now goes further to reduce road impacts
- 2000 roadless/roads rule – roads analysis, MRSD
- 2010 FS WO Direction



# The Legal Imperative

## The Clean Water Act

- Forest streams impaired for road-related parameters, sediment & temperature
- DEQ permits likely to be required for point sources from active timber haul roads

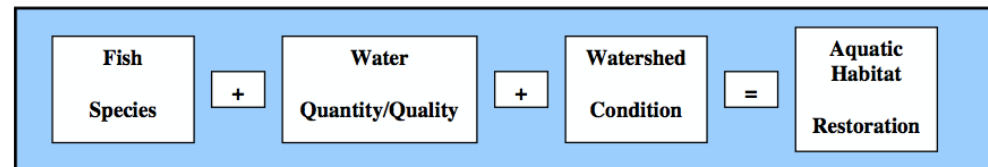
Willamette Basin TMDL: Clackamas Subbasin

September 2006

Map 6.2 303(d) listed reaches in the Clackamas Subbasin.



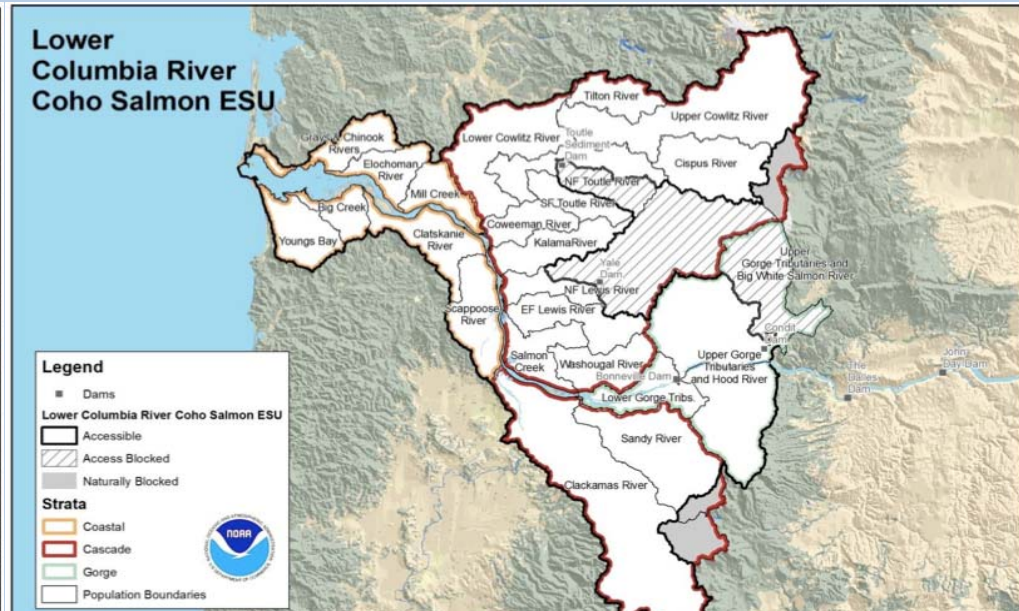
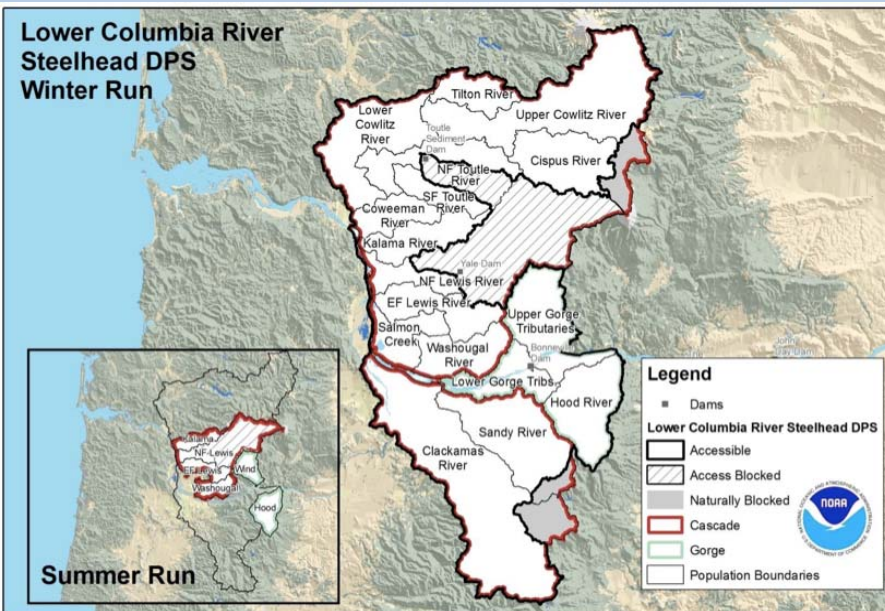
Conceptual Model Used to Establish Aquatic Habitat Restoration Priorities at the 6<sup>th</sup> Field Watershed Scale, Hood River Basin.



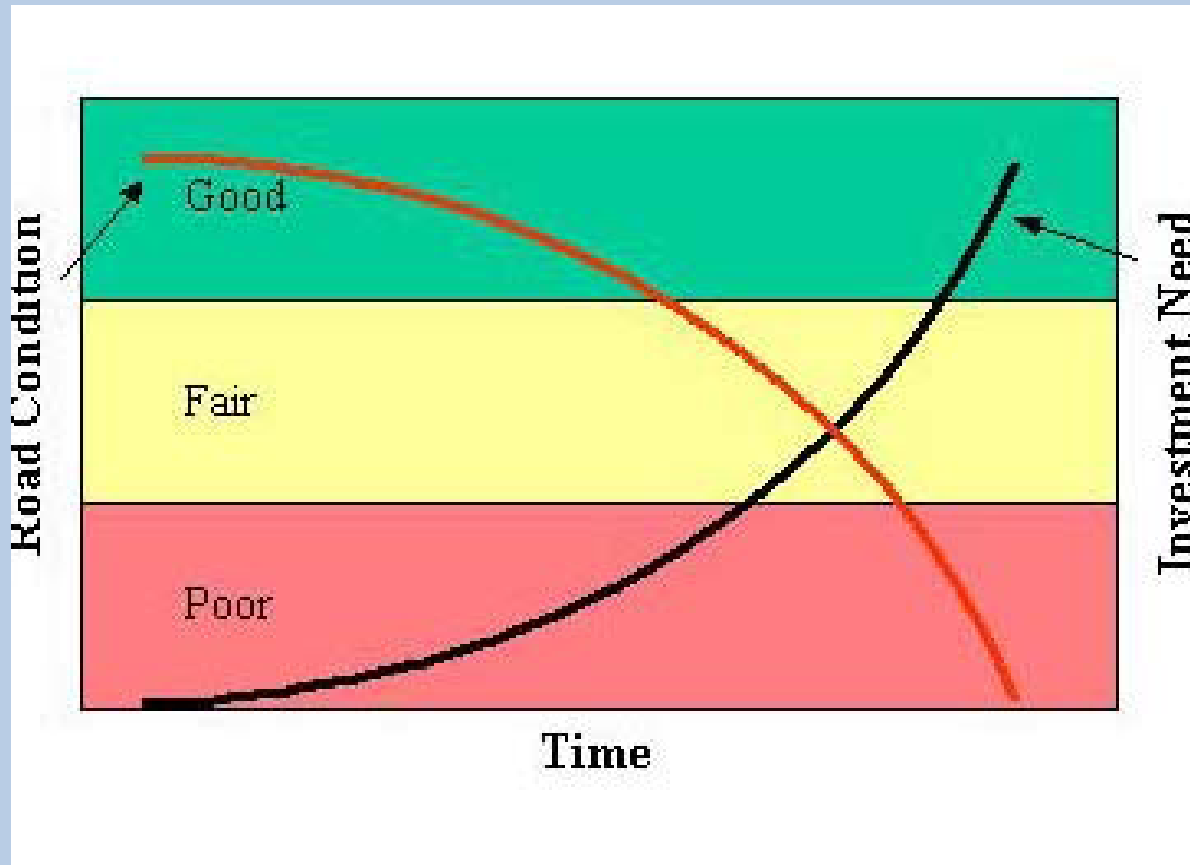
# The Legal Imperative

## Endangered Species Act (NMFS, 2011)

- Lower Columbia Coho
- Lower Columbia & Upper Willamette fall and spring Chinook
- Lower Columbia winter steelhead



# The Economic Imperative



**Fixing and reducing roads saves money in the long run**

Moore, T. 2007. *Rightsizing the Forest Road System: Draft Report*. USDA Forest Service.



# The Economic Imperative

Investments in watershed protection and restoration result in significant savings to utilities in water treatment and filtration costs; for every \$1 invested in forest and watershed protection, utilities save an average of \$7.50 to \$200 in treatment and filtration costs.

(Ernst, 2004; Reid, 2001; Reid 1997).

# Decommissioning & storm-proofing of logging roads protects watersheds and creates jobs



Road Decommissioning in Bull Run, 2009 (Photo by C. Frissell)

AMERICAN RIVERS

AMERICAN WHITEWATER

AUDUBON SOCIETY OF PORTLAND

ASSOCIATION OF NORTHWEST STEELHEADERS

BARK

CASCADIA WILDLANDS

CENTER FOR BIOLOGICAL DIVERSITY

COAST RANGE ASSOCIATION

GIFFORD PINCHOT TASK FORCE

HELLE CANYON PRESERVATION COUNCIL

KLAMATH SISKIYOU WILDLANDS CENTER

NORTHWEST ENVIRONMENTAL ADVOCATES

NORTHWEST ENVIRONMENTAL DEFENSE CENTER

NORTHWEST SPORTFISHING INDUSTRY ASSOCIATION

OREGON COUNCIL TROUT UNLIMITED

OREGON WILD

PACIFIC COAST FEDERATION OF FISHERMEN'S ASSOCIATIONS

PACIFIC RIVERS COUNCIL

SISKIYOU PROJECT

THE FRESHWATER TRUST

TROUT UNLIMITED

WASHINGTON WATERSHED RESTORATION INITIATIVE

WILDLANDS CPR

WILD SALMON CENTER

*By Facsimile and U.S. Mail*  
March 16, 2011

Senator Ron Wyden  
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Washington D.C. 20510-3703  
Fax 202-228-2717

Senator Jeff Merkley  
107 Russell SOB  
Washington, D.C. 20510  
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Representative Earl Blumenauer  
1502 Longworth HOB  
Washington D.C. 20515  
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Representative Peter DeFazio  
2135 Rayburn HOB  
Washington D.C. 20515-3704  
Fax 202-225-0032

**Re: Oregonians urge you to request \$90 million in FY 2012 for the Forest Service Legacy Roads and Trails Remediation Program**

Dear Honorable Members of the Oregon Congressional Delegation:

The undersigned 24 conservation, recreation and fishing groups have come together to request your full and active support for adequate appropriations in Fiscal Year 2012 for the Forest Service Legacy Roads and Trails Remediation Initiative (Legacy Roads and Trails). We urge you to support funding Legacy Roads and Trails at \$90 million nationwide. This investment would translate into approximately \$12.3 million for projects and planning in Oregon with substantial job creation in rural communities.

Legacy Roads and Trails was created in 2008 to protect and restore clean drinking water, aquatic habitat access and habitat for sensitive, threatened and endangered wild salmon, trout, amphibians and other native aquatic species. The funds were specially designated in bill and report language to implement critical drainage improvements on needed forest roads and to remove unneeded roads for the benefit of water resources. In its first three years, this program brought \$23.8 million to Oregon national forests struggling to properly manage over 69,000 road miles.

We are asking you to help maintain 2010 funding levels in 2012 and beyond. This substantial public investment continues to be well justified: it is fiscally prudent, job creating, safeguards fish and wildlife, and enjoys broad public support.

***Water Quality Benefits: Road treatment and removal reduces the leading threat to rivers, lakes and streams on forestlands nationwide.***

Unbelievably, Washington and Oregon's National Forests (comprising Region 6 of the agency)

Representative Kurt Schrader  
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Fax 202-225-5699

Representative Greg Walden  
2182 Rayburn HOB  
Washington D.C. 20515  
Fax 202-225-5774

Representative David Wu  
2338 Rayburn HOB  
Washington D.C. 20515  
Fax 202-225-9497

## Bipartisan support for federal appropriations to FS Legacy Roads and Trails



Rep. Norm Dicks,  
D-WA, LRTI Lead  
Champion

Senator  
Ron Wyden  
D-OR  
LRTI Leader



Rep. Peter  
Defazio, D-OR,  
Strong Supporter



Sen. Jeff Merkley  
D-OR  
LRTI Strong Supporter



