

# Yellowdog Creek, Idaho

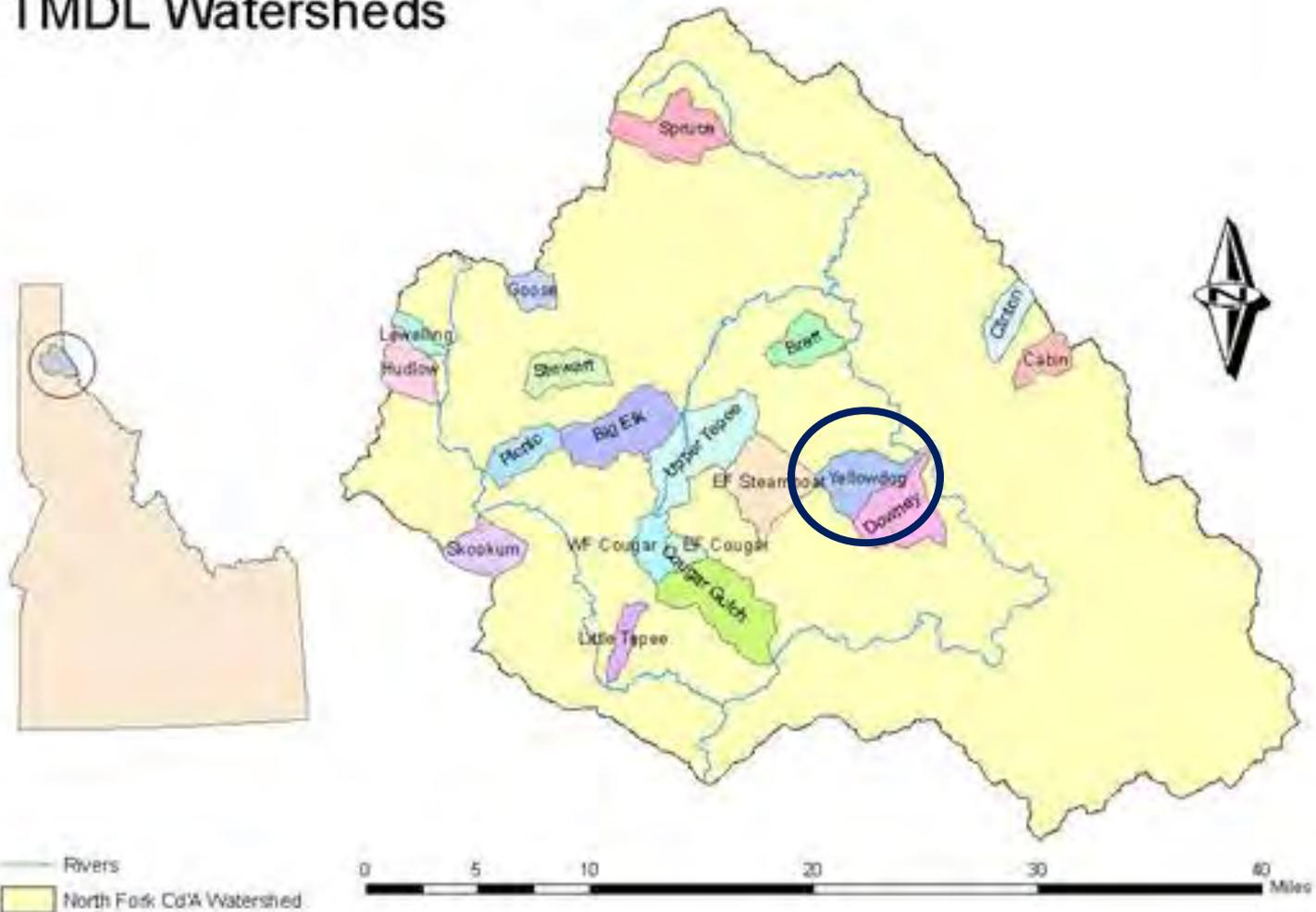
## Water Quality Success Story

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North Fork Coeur d'Alene River Subbasin  
Watershed Advisory Group (WAG)

December 15, 2011

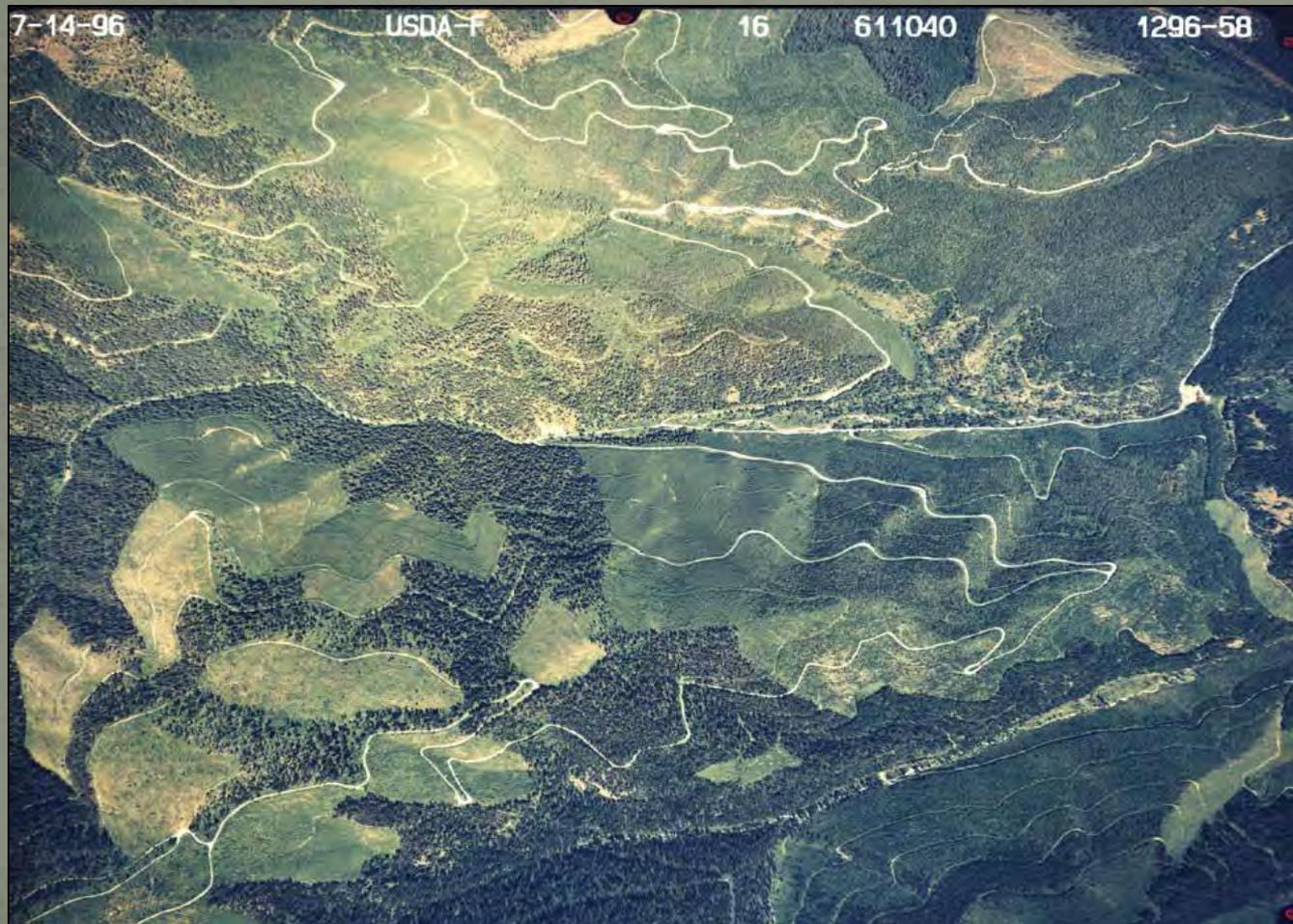
# North Fork Coeur d'Alene River TMDL Watersheds



# Yellowdog and Downey Creeks, 1935

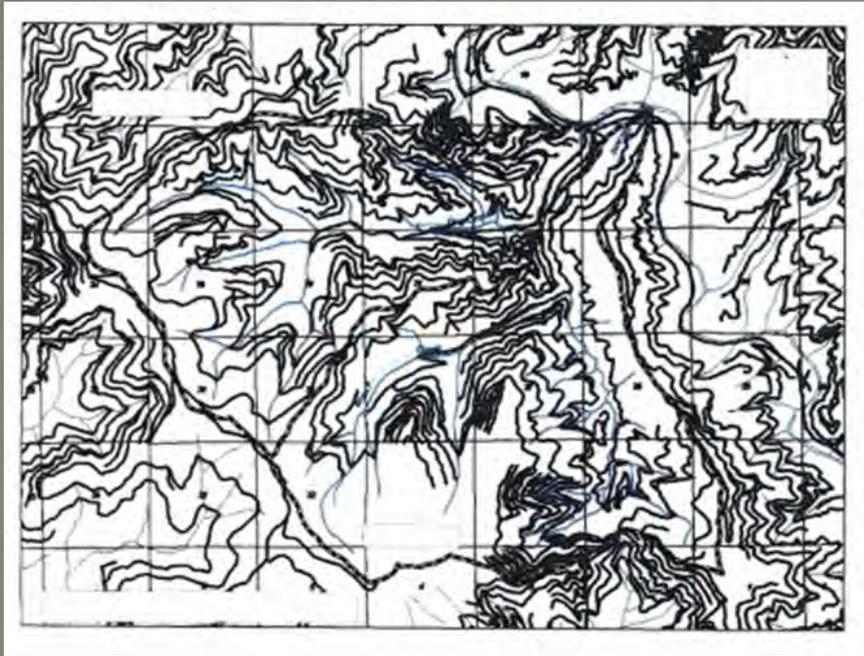


# Yellowdog and Downey Creeks, 1996



# Development and Roads

1950 – 1995



*Road density in Yellowdog and Downey Creek watersheds, before.*

- More than 60% of Yellowdog and Downey Creek watersheds harvested at least once
- > 170 miles of road
- > 120 stream crossings
- Rain-on-snow events common
- Major floods in 1964, 1974, 1981, and 1996

# Impacts of Development and Roads

- Failed headwater stream channel crossings
- Washed out riparian roads
- Reduced access to floodplain
- Tons of sediment delivered to stream (fine and coarse sediment, bedload)
- Degraded habitat
- In late 1980s and early 1990s, data already showed water quality issues



# History of Impairment

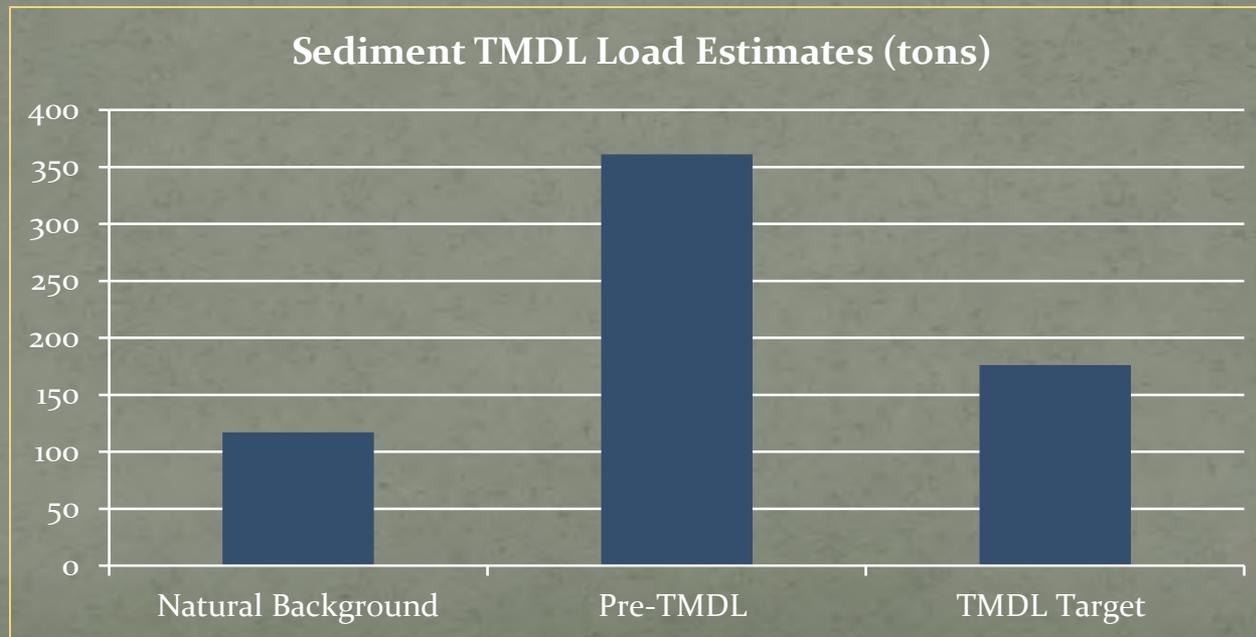
- 1994 EPA added Yellowdog Creek to 303(d) List of Impaired Waterbodies for sediment
- 1996 DEQ bioassessment (BURP)
- Two 1996 BURP sites both indicated impairment of cold water aquatic life.



*Photo from DEQ BURP monitoring in 1996 shows washed out riparian road along Yellowdog Creek.*

# Sediment TMDL, 2001

- Subbasin Assessment and Total Maximum Daily Loads of the North Fork Coeur d'Alene River
- Sediment load allocations for Yellowdog Creek
- Forest roads identified as major source



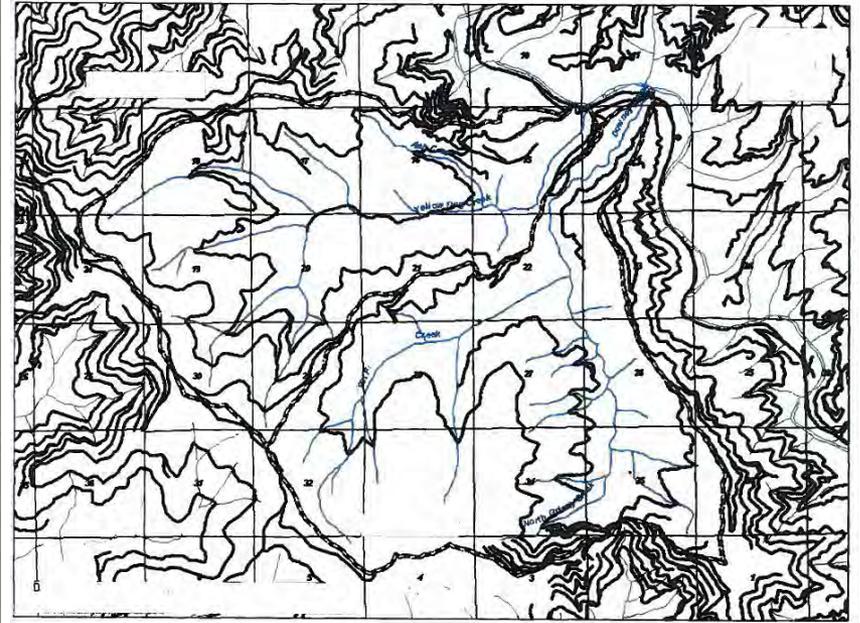
# Restoration, 2000-2006

- US Forest Service led restoration in Yellowdog and Downey Creek watersheds (“Down Doggy” Restoration Project)
- Funded by timber sale receipts
- Numerous partnerships
- Approx. \$1 million
- Decommissioned 46 miles of road
- Removed 111 stream crossings
- Removed lower 2 miles of road adjacent to Yellowdog Creek

# Restoration, 2000-2006



*Road density in Yellowdog and Downey Creek watersheds, before.*

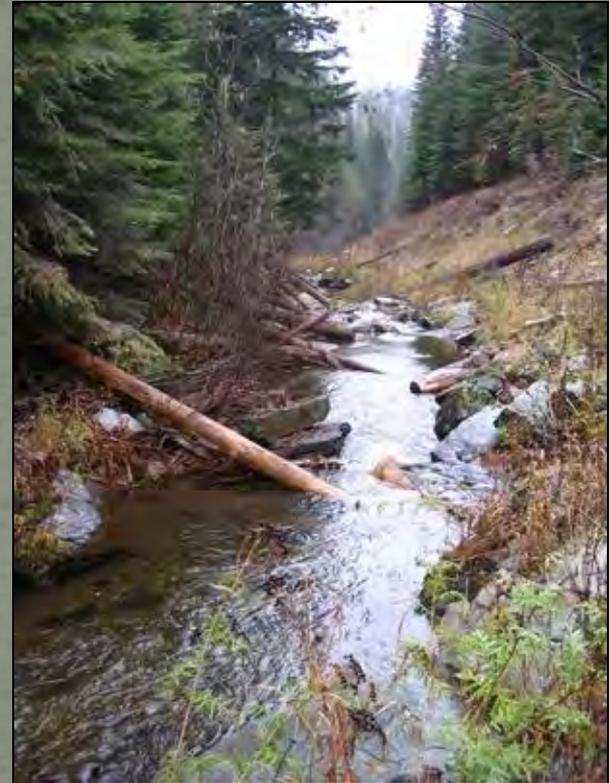


*Road density in Yellowdog and Downey Creek watersheds, after.*

Road density in Yellowdog Creek Watershed reduced from 6.2 miles/sq. mile to 2.6 miles/sq. mile.

# Restoration, 2000-2006

- Instream restoration
- 765 Logs
- More than 100 boulder structures
- Help stabilize the stream channel by providing grade control and dissipating energy.
- Improve aquatic habitat by providing cover, pools and increased complexity.



*Yellowdog Creek, 2008.*

# Restoration, 2000-2006



*Yellowdog Creek, 1996*



*Yellowdog Creek, 2005*

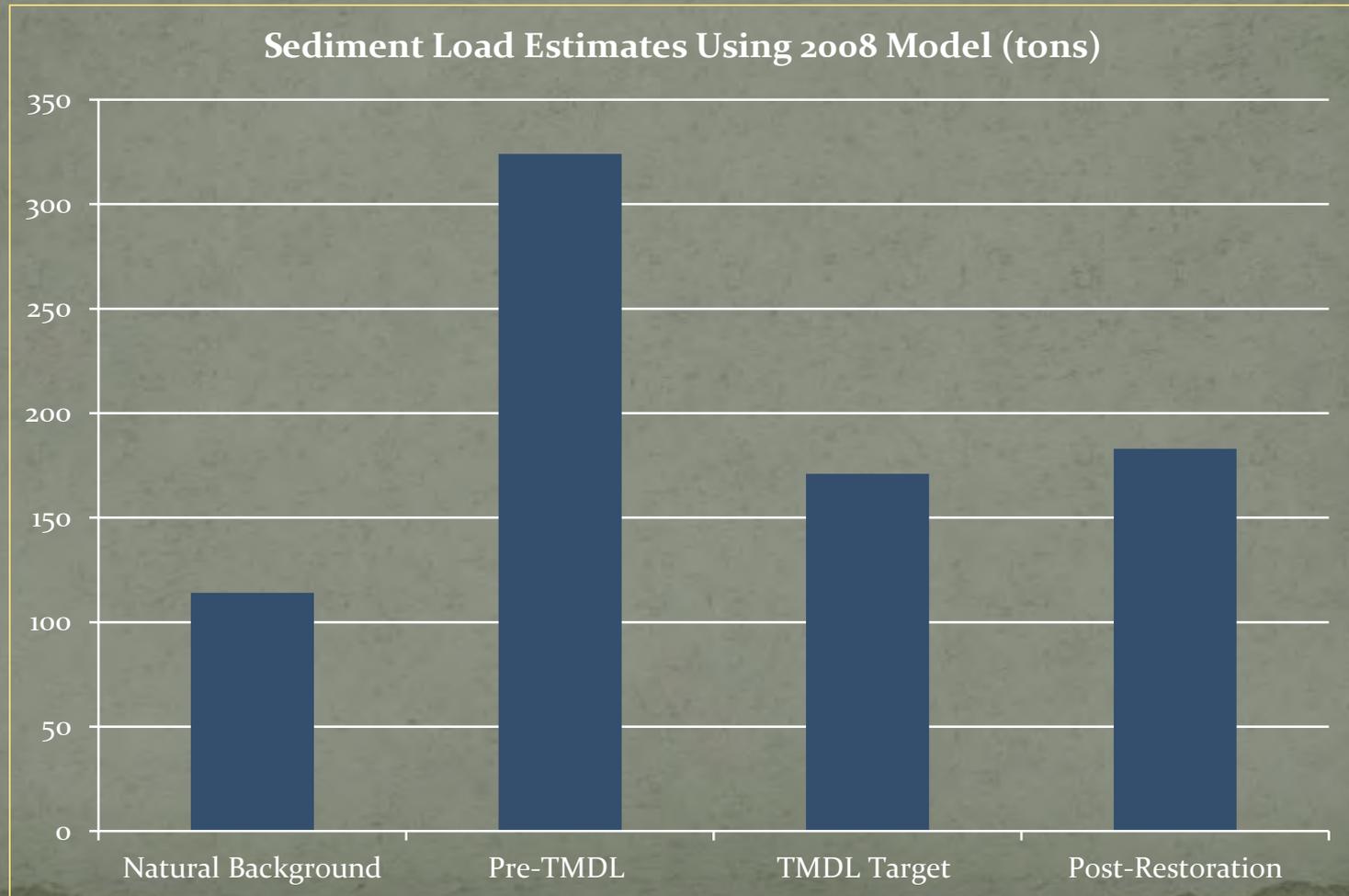
# Restoration, 2000-2006



*Constructed log jam and boulder pool-forming structure in Yellowdog Creek, 2009.*

# Effectiveness Review

- Modeling based on sediment TMDL model and GIS



# Field Monitoring

- Field monitoring with DEQ BURP protocols and USFS PIBO Effectiveness Monitoring protocols.
- Yellowdog Creek one of 8 study streams.

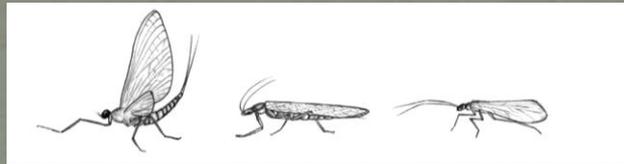


*DEQ-USFS interagency crew, 2009.*

- Interagency BURP crew
- Rapid bioassessment:
  - Fish
  - Macroinvertebrates (Bugs)
  - Physical Habitat

# Monitoring Results - BURP

- Stream Habitat Index – Good
- Stream Macroinvertebrates Index – Excellent
- Stream Fisheries Index – Good



*Macroinvertebrates associated with good water quality.*

- Altogether, index scores indicate good water quality as compared to reference conditions.
- Suggests full support for cold water aquatic life.
- No evidence of sediment impairment.

# Monitoring Results - PIBO

- Stream habitat index score – Good, only low metric was bank angle
- Macroinvertebrates – Good, Observed  $\approx$  Expected from reference conditions (1.05)



*Yellowdog Creek overview, 2009.*

# Monitoring Results – BMPs

- Visited road decommissioning sites and culvert removal sites to evaluate stability, cover and sediment delivery.
- Most sites well covered, stable and not contributing problematic amounts of sediment to streams.



*Stream crossing treatment with culvert removal in Yellowdog Creek, 2009.*

# Conclusions

- Watershed restoration by USFS has reduced sediment loads substantially by treating forest roads and improving stream habitat.
- Stream habitat and the cold water aquatic life community is no longer impaired by sediment.



*Yellowdog Creek, 2011.*

# Conclusions

- Propose delisting Yellowdog Creek for sediment in 2012
- EPA published “Success Story” about Yellowdog Creek online
- Interagency cooperation for monitoring and assessment efficient and effective



**Section 319  
NONPOINT SOURCE PROGRAM SUCCESS STORY**

*Idaho*

## Removing Forest Roads and Restoring Streams Reduces Sediment in Yellowdog Creek

**Waterbody Improved** Eroding forest roads had contributed excessive sediment to northern Idaho's Yellowdog Creek. As a result, the Yellowdog Creek assessment unit, encompassing 12.2 stream miles, was added to the state's 1994 Clean Water Act (CWA) section 303(d) list for sediment impairment. Beginning in 2000, the U.S. Forest Service (USFS) removed or repaired failing roads, restored riparian areas and implemented in-stream habitat improvement projects. Sediment loads in Yellowdog Creek have declined, and monitoring results show that sediment no longer impairs cold-water aquatic life such as the native westslope cutthroat trout. Therefore, the Idaho Department of Environmental Quality (DEQ) will propose removing the Yellowdog Creek assessment unit from the state's list of impaired waters in 2012 for sediment.

### Problem

The 7.8-square-mile Yellowdog Creek watershed is in the North Fork Coeur d'Alene River Subbasin, which drains the west flank of Idaho's Bitterroot Mountain Range in the northern Rocky Mountains (Figure 1). Idaho Panhandle National Forests manages the entire Yellowdog Creek watershed.

Intensive timber harvest and road building occurred through much of the North Fork Coeur d'Alene River Subbasin from 1890 until the early 2000s. A dense network of roads was constructed, including some roads that were spaced 300 feet apart across hillsides to accommodate "jammer logging," a system in which logs are pulled with cables from the cutting area to a collection point. Access roads were often built directly adjacent to streams. Historically, sediment inputs from forest roads were excessive. Even after active logging ceased, runoff and floodwaters continued to erode and wash out roads, particularly those near or adjacent to streams.

Water quality investigations in the early 1990s suggested that sediment inputs were impairing cold-water aquatic life in Yellowdog Creek. As a result, the Yellowdog Creek assessment unit (12.2 stream miles) was added to the 1994 CWA section 303(d) list for sediment. To confirm sediment impairment, in 1996 DEQ completed a Beneficial Use Reconnaissance Program (BURP) wadeable streams rapid bioassessment on two Yellowdog Creek sites, which yielded low scores for both the stream habitat index (SHI) and stream macroinvertebrate index (SMI). Because fish were not sampled, the stream fish index (SFI) could not be calculated. The middle site had an SHI score of 1 and an SMI score of 0, for an average score of 0.5; the lower site had an SHI score of 2 and an SMI score of 1, for an average score of 1.5. Index scores at both sites failed to meet the minimum average score of 2.0 that would have indicated full support of cold-water aquatic life according to DEQ's *Water Body Assessment Guidance*. When DEQ completed a total maximum daily load (TMDL) for the North Fork Coeur d'Alene Subbasin in 2001, the TMDL study identified erosion from road encroachment as the subbasin's largest sediment source.



**Figure 1.** The Yellowdog Creek watershed is in the North Fork Coeur d'Alene River Subbasin in northern Idaho. USFS, as part of its extensive restoration efforts, removed a 2-mile-long road from the riparian area, added large woody debris and restored riparian and in-stream habitat.

Yellowdog Creek “Success Story” online, 2011.