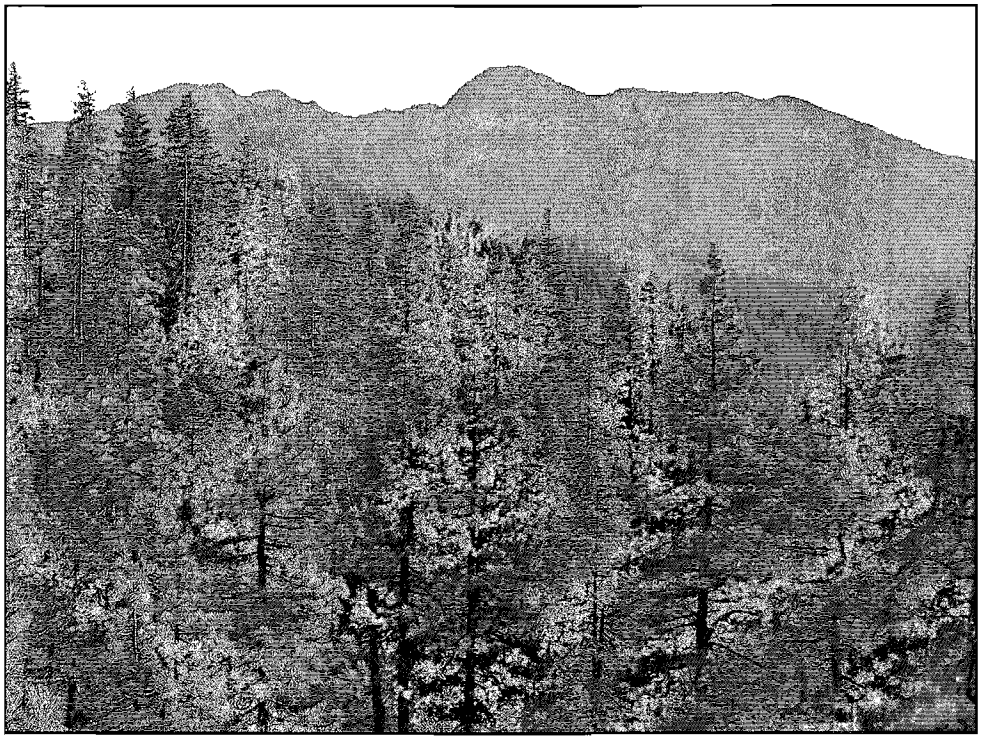
ATTACHMENT #3

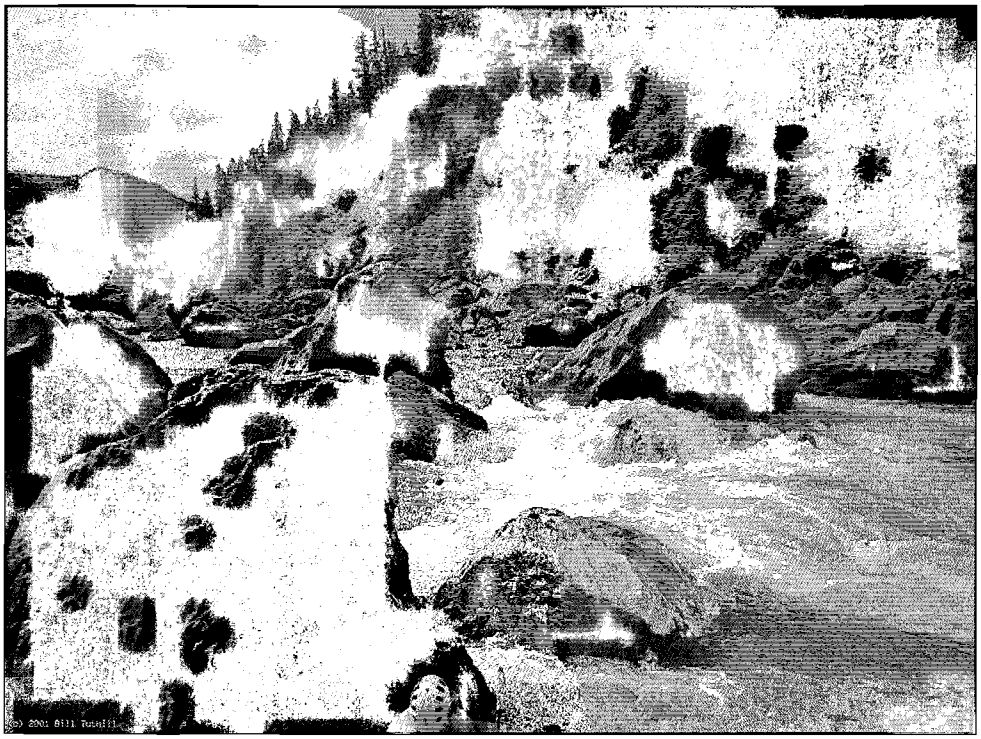
Watershed Restoration in the Trinity River Basin

Forest Service land encompasses about 80% of the surface area in the Trinity Basin. What occurs – or doesn't happen – on Forest Service land matters greatly to the welfare of the Trinity River Basin fishery. Watershed Restoration work has been occurring on USFS Trinity basin land for the past 20 years.

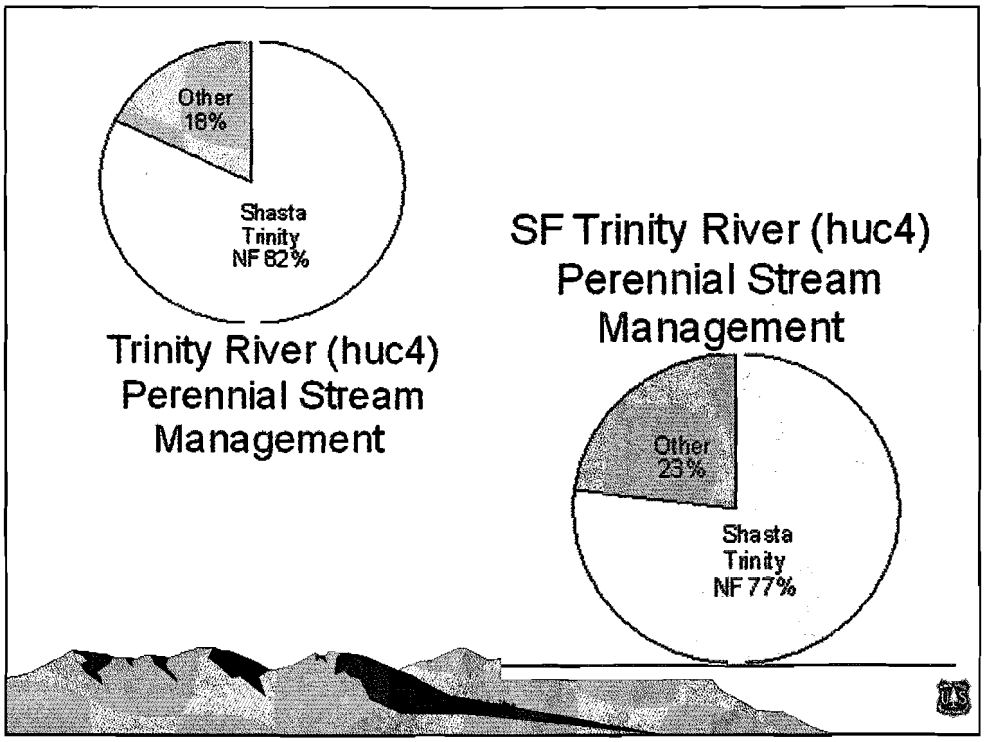


Welcome to the South Fork Trinity, looking toward Black Rock and North Yolla Bolla Mts. The South Fork is presumably the largest undammed free flowing river course remaining in the state of California - approaching 1000 square miles in size.

Smokey Creek Chinquapin Roadless Area, South Fork. The focus of the talk will be the South Fork where the lion's share of watershed restoration has taken place this past decade. This is in part an outcome of the South Fork CRMP group that met earnestly for a decade or more; plus, the existence of a South Fork Trinity funding Action Item from the original Restoration Program that helped inspire numerous tributary watershed erosion inventories in the 1990's. Many of these have served as the basis for the restoration efforts still ongoing.

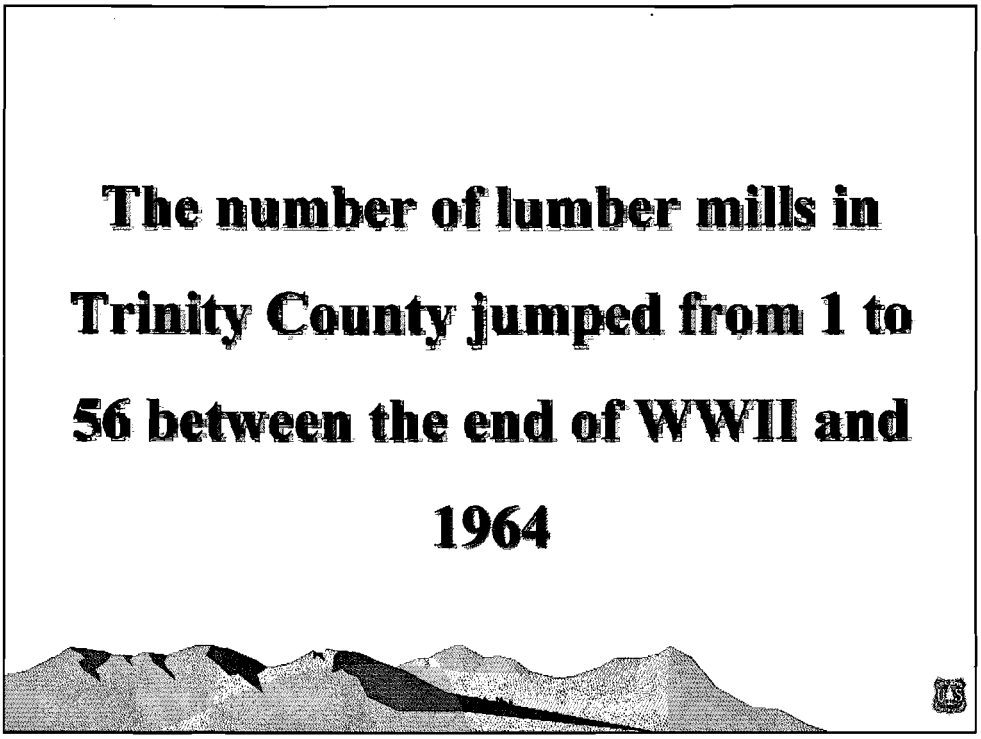


South Fork Trinity

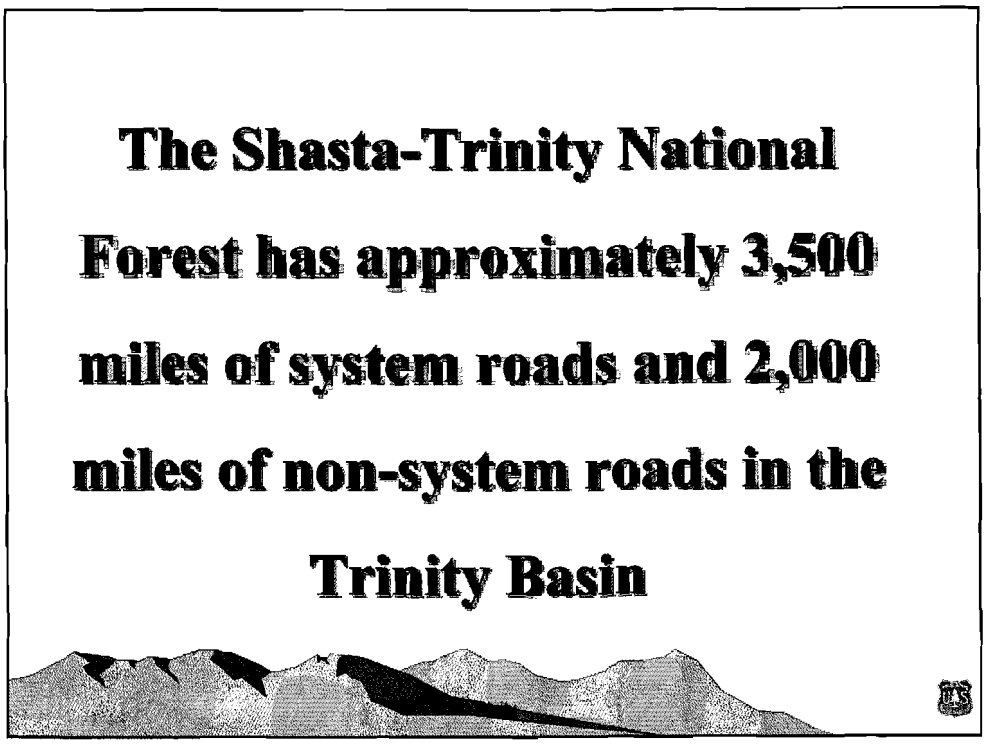


'HUC' stands for 'hydrologic unit code'. Obviously, all of the anadromous fish habitat managed by the Forest Service is included within the perennial total.

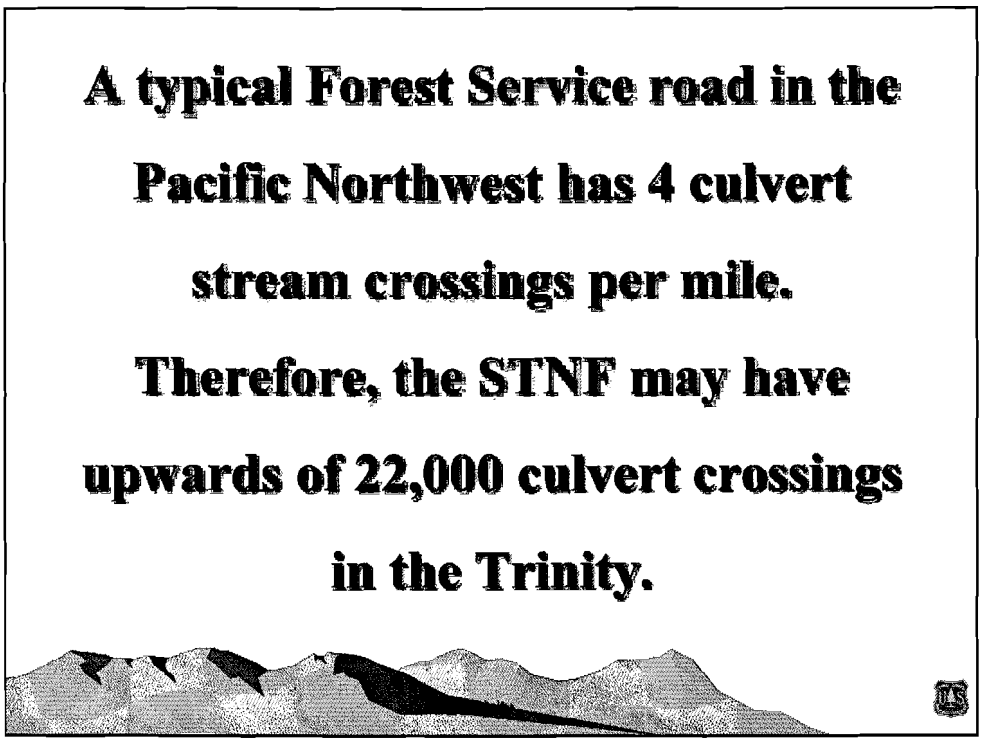
There are 671 miles of fish-bearing perennial streams occurring below Lewiston Dam; 554 miles within the greater Forest boundary; about 480 miles lie directly adjacent to Shasta-Trinity managed lands.



It wasn't until the 1970's, generally, that aquatic resources were first described and protected by laws governing timber harvest and road construction. In many watersheds of Northern California, the 1955 flood event produced as much rain as the 1964 event, both of which included 'rain-on-snow' issues. But the 1964 event caused significantly more resource damage, conclusively because of the watershed development that occurred between the two storms. The existing road network on Forest Service land was largely constructed during this two decade period to accommodate the timber demand by all of these mills.



Road mileage figures originate from the STNF Land Management Plan, LMP EIS or recent Travel Mgt. Plan documents. Six Rivers NF has 550 miles of roads in the Trinity Basin as well. Trinity County may not have a stop light yet, but you could drive nearly the equivalent to Maine and back and still not leave the county just on USFS roads. In California, it is estimated that recreational USFS road use has increased by 35-fold since the roads were built.



I'm not sure how much rigorous scientific sampling has been done to arrive at this oft-repeated claim. Informal sampling on USFS roads in the Trinity Basin arrives at this approximate ratio. Considering the previous slide, it can be concluded that most of the CMP culverts, installed during the period up to about 1964, have exceeded their lifespan of durability. Culvert stream crossings comprise but a single component of the various forms of watershed restoration but is a critical part today since so many culverts were installed during that 2 decade period that is approaching 40+ years ago. Culverts were designed to have a 40 year lifespan. Therefore, the majority of the 22,000 culvert stream crossings can be considered loaded guns ready to blow.

Shasta-Trinity National Forest

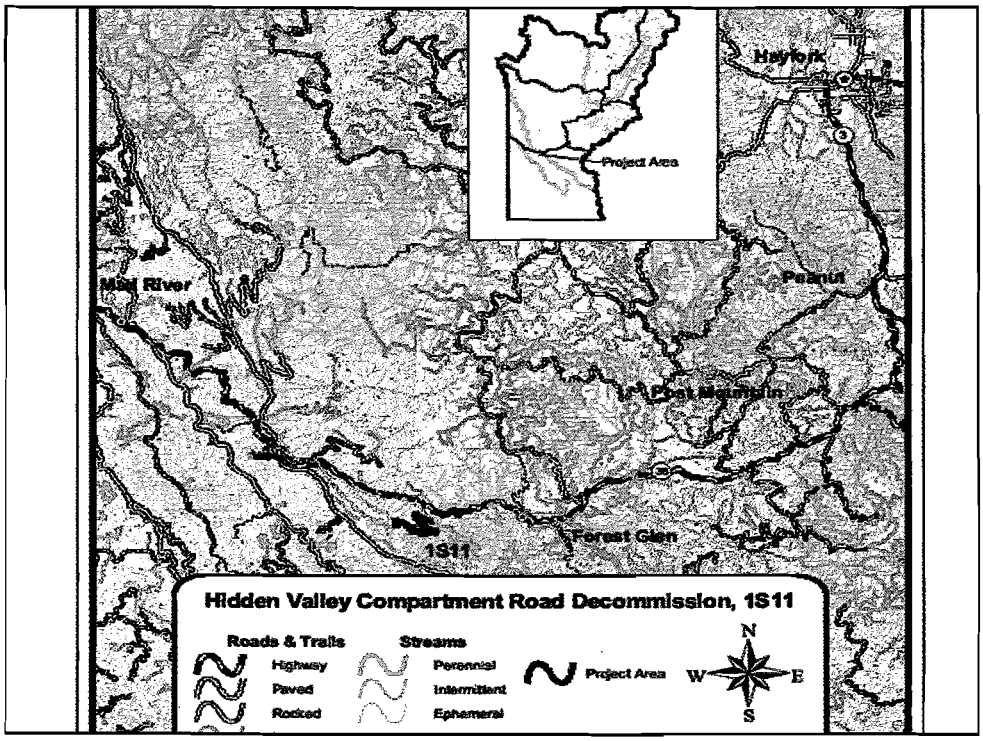
- **Nearly 1,300 miles of roads on the Shasta-Trinity National Forest have been inventoried for erosion control and rehabilitation needs since 1996 in the Trinity Basin.**

Most of the surveys have been done by the Trinity County RCD.

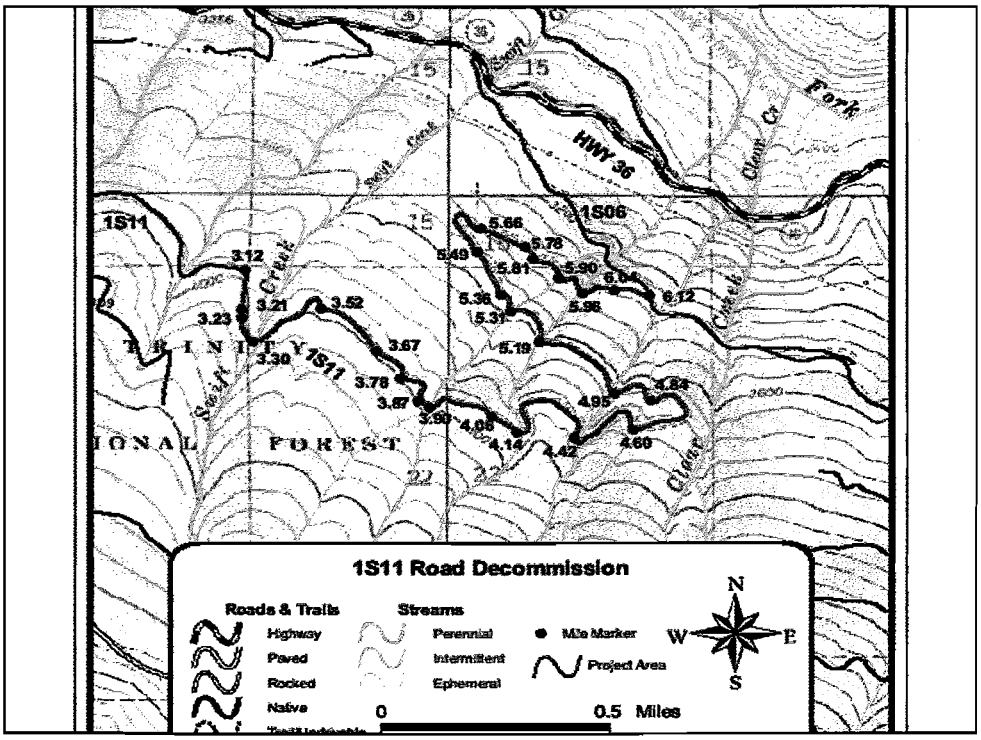
This is what the Forest has been doing lately to address this problem

Special kudos go to Pat Frost, Noreen Doyas & Cynthia Tarwater of the Trinity County RCD. The RCD has provided most of the project implementation oversight during the past decade on the Shasta-Trinity National Forest.

The need to get this outside help is partly due to the significant decrease in the number of employees on this Forest over the past 20 years.



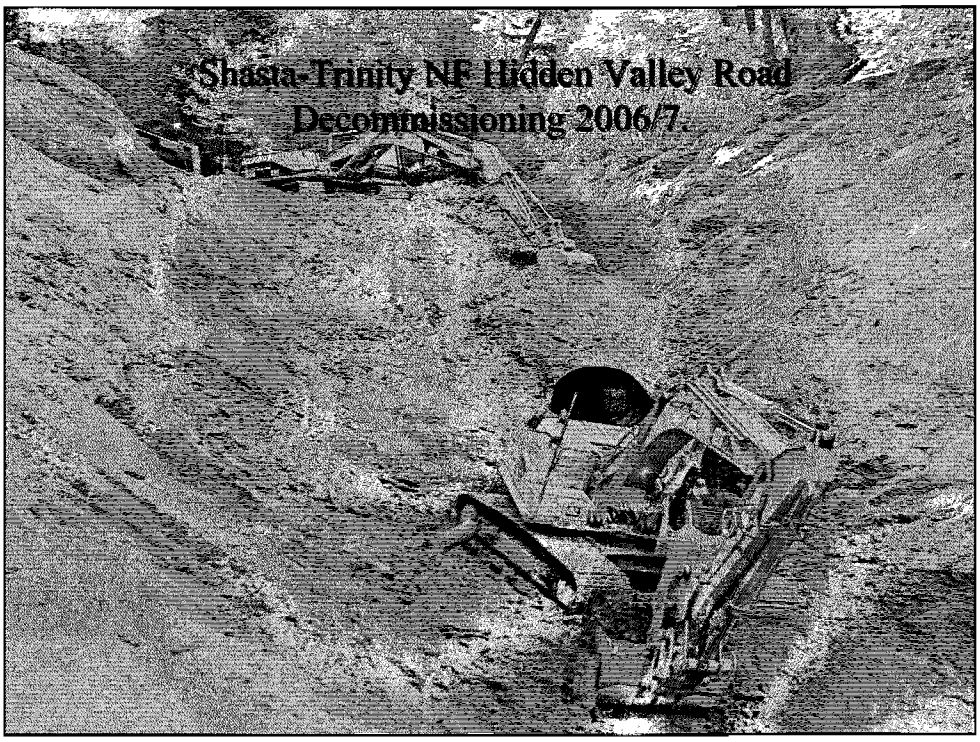
Note Hwy 36 and Forest Glen on the map; the area is southwest of there.



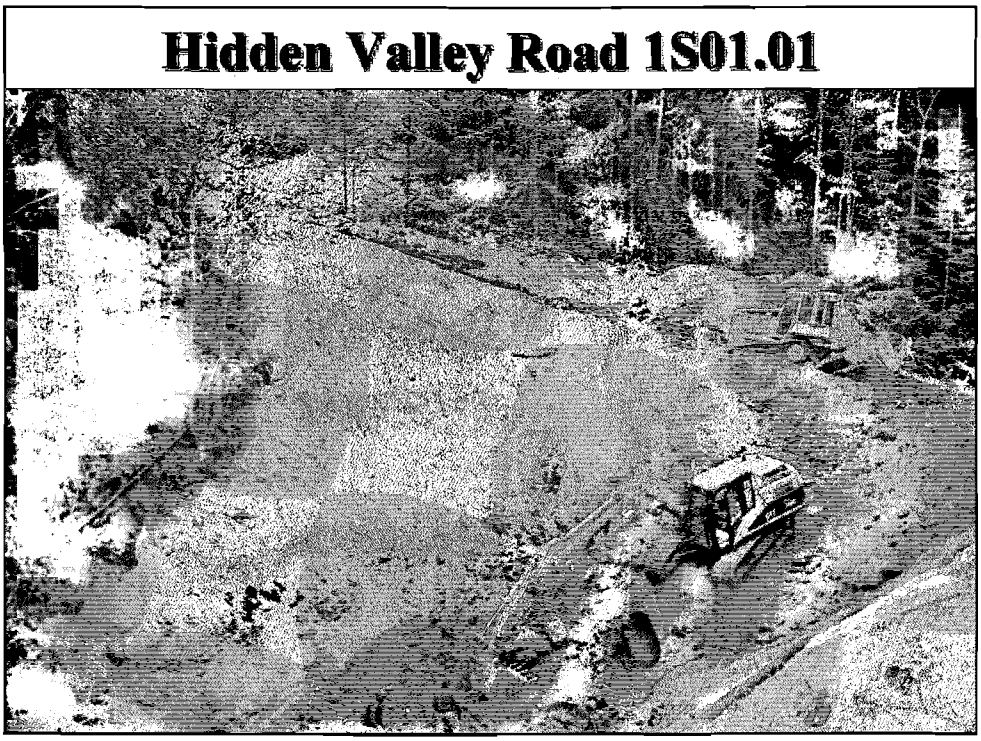
Road 1S11. Note that there are 21 culvert sites on this map, covering precisely three miles. In this case, there's nearly 9 culverts per mile of road!! Also note the gradient stacking of many of the crossing sites within the same tributaries. The uppermost road crossings in general within tributaries often blow out first because the terrain is usually steepest near headwaters areas and subject to sliding and slumps that can block the smaller culverts.

Restorationists can refer to culvert stream crossings as effectively being 'dams with holes in them'. The steeper the terrain, the more this is true.....

Rd 1S11 offers several examples of the adage.....



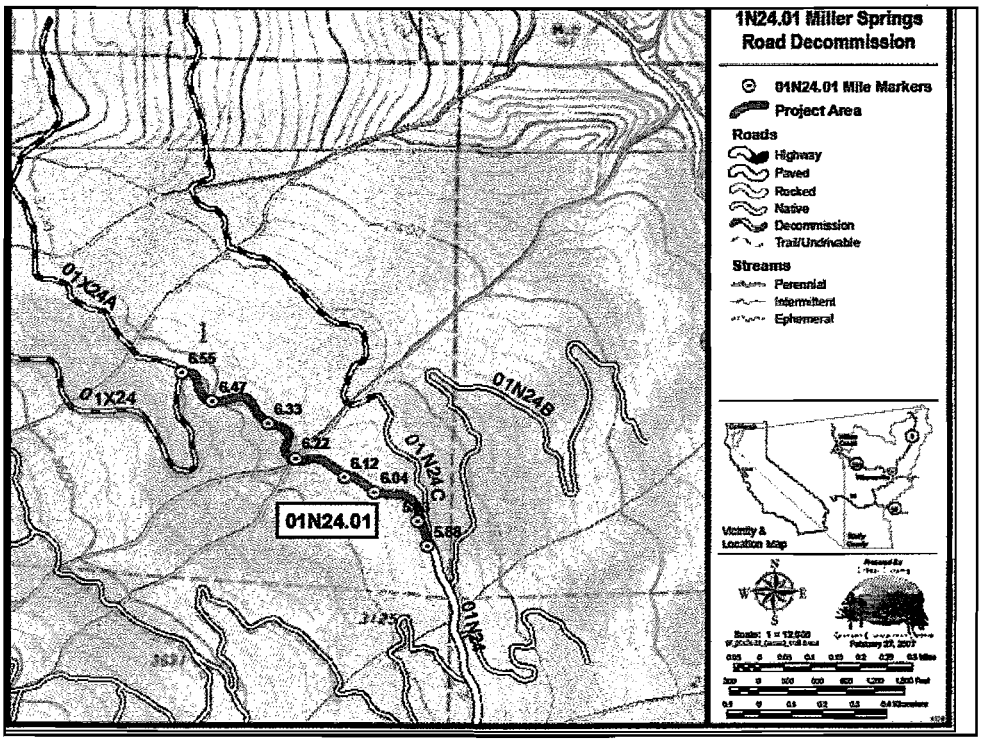
MP 3.30. An example of one of our stream crossings (hmm... looks like a dam with a hole in it!). Hidden Valley compartment roads treated were 1S11, 1S16 and 1N24B. Five miles of road decommissioned, 21 stream crossings excavated and defused, 35,000 cubic yards of soil (potential sediment) excavated and benignly distributed.



This is the same site of the previous slide of a 'dam with a hole in it'.

Removing the 'hole' (culvert) is an important part of the restoration design

Occasionally 'extreme' measures are taken to minimize erosion from a freshly restored site depending on the proximity of critical aquatic resources just downstream.

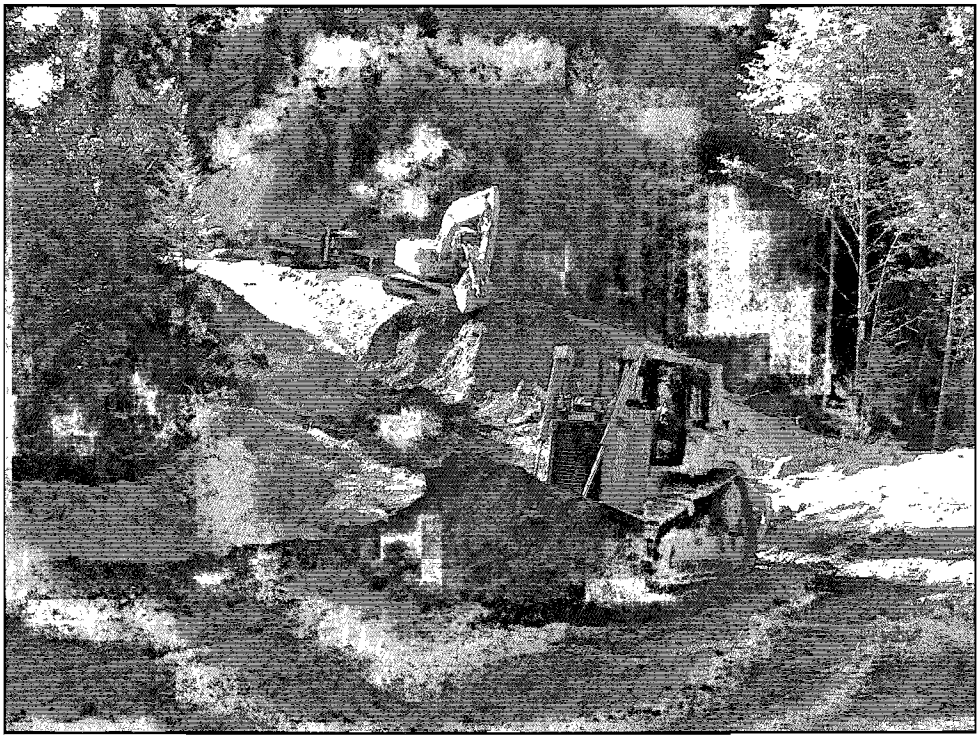


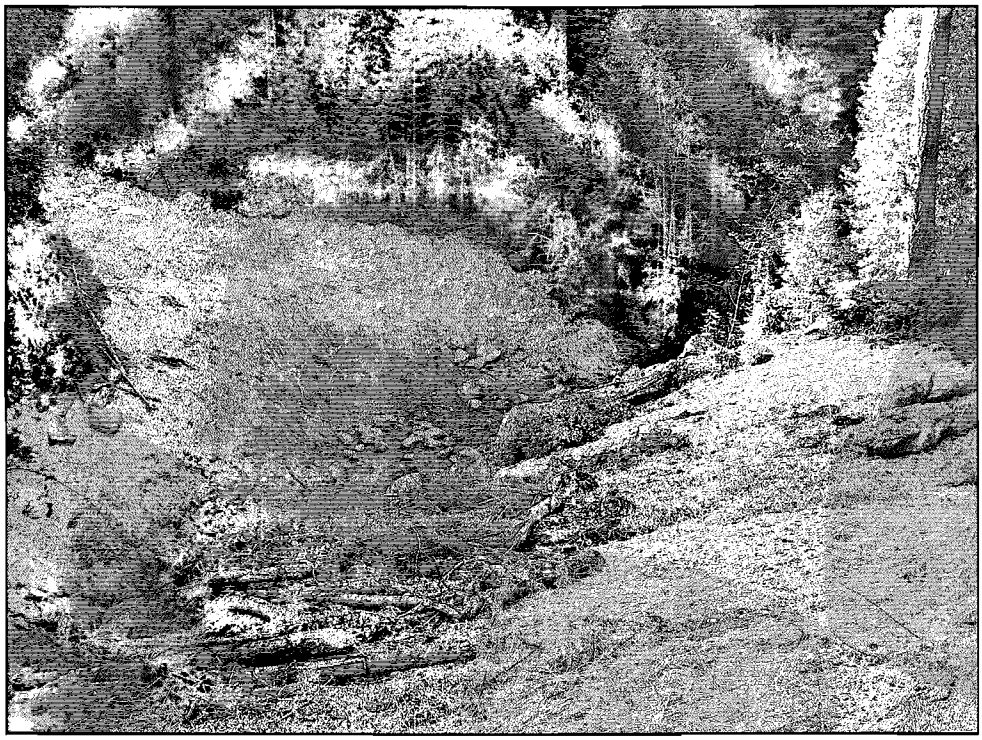
This road segment is situated on South Fk Mountain facing and downstream from Plummer Creek, also downstream from McClellan and Miller Place. Xing 6.22 is over an unnamed trib.

This is the inlet to crossing MP 6.22 on Rd 1N24.

Milepost 6.22 crossing, Rd 1N24, outlet

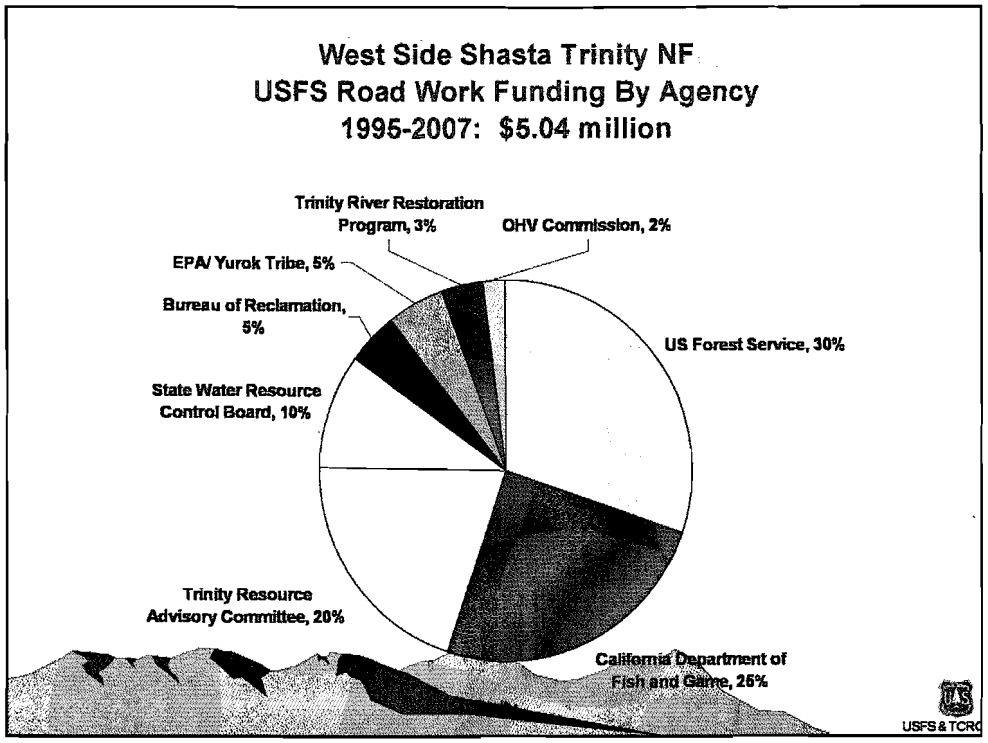
Milepost 6.22 crossing



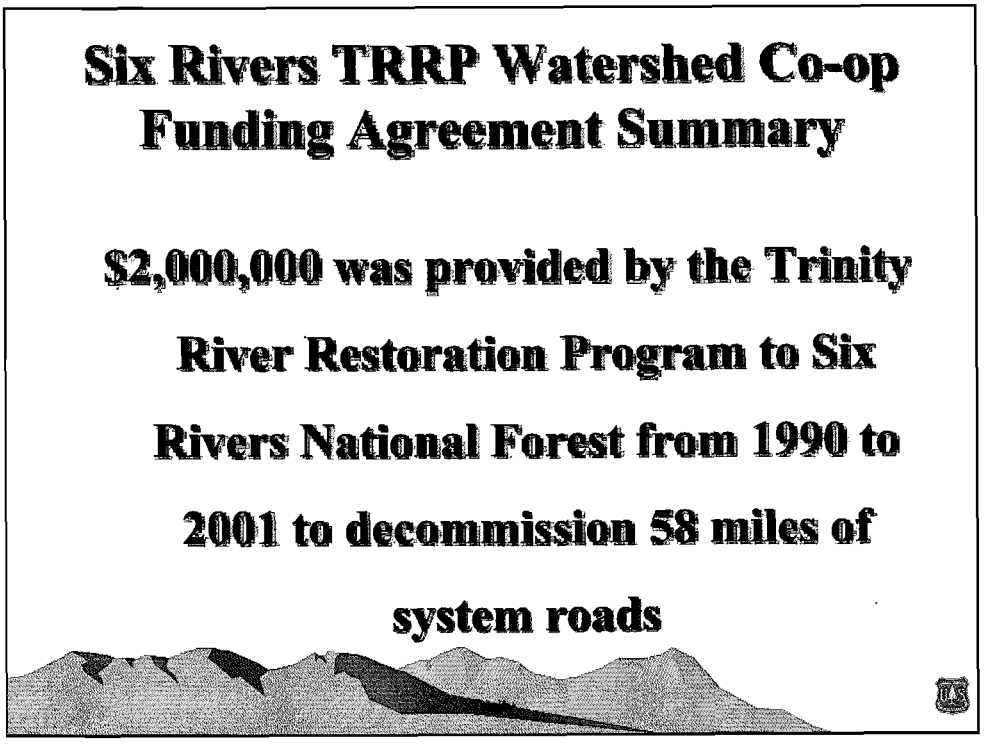


Just over 200 miles of roads on the STNF have had stream crossings upgraded, closed & hydrologically defused or the roads decommissioned since 1997 in the Trinity Basin at a cost of $6,040,000. Approximately 203,000 cubic yards of fine sediment have been excavated and therefore prevented from entering adjacent stream courses.

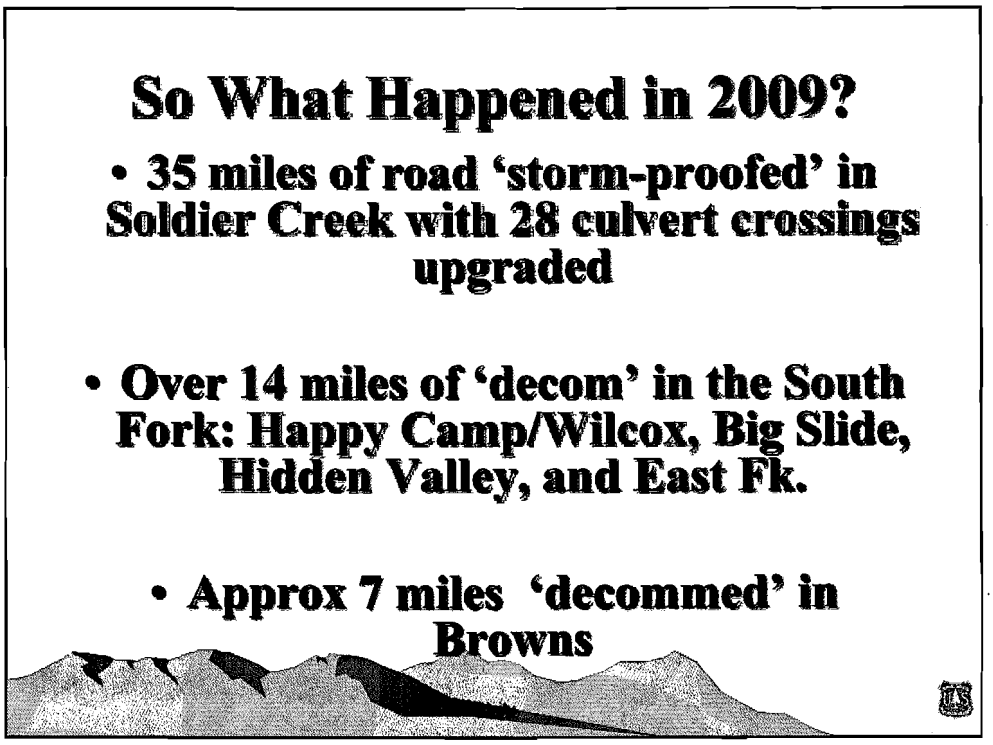
See hard-copy documentation and meeting handouts. Approximately 50 miles of the total were decommissioned. The estimate of 200+ thousand cubic yards of sediment is in reality a gross underestimate based on the example that follows, despite being carefully measured or estimated. The funds climb to near $6MM after adding projects for this summer.



Note that the USFS has been able to provide only about one-third of the total funding



The Shasta-Trinity also received over $2,000,000 during the same timeframe. But a significant percentage of STNF funds went toward conducting watershed erosion inventories on numerous tributaries. The results later became valuable information for the Forest's first watershed analyses done shortly thereafter.



1.2 miles of decomm in Hidden Vly, Rd 1S16; 1.5 miles of decomm in Smoky, Rd. 28N12; 3.4 miles of decomm on Sims Big Slide Rd., Rds 4N15 and 3N63. Happy Camp Wilcox Rd: 2.85 miles hydro-close; Happy Camp Wilcox Ridge: about one mile. FYI: 83 miles of system roads were storm-proofed in the Beegum watershed, USFS tributary to Cottonwood Creek. TRRP contributed $150K to the efforts in Soldier Creek.

What Will/May Happen in 2010?

- Possible start to multi-year decommissioning of about 40 miles of road in Canyon & Hayfork Creeks, & South Fork Trinity
- South Fork Mountain and Rattlesnake Creek area roads storm proofing
- **Continuation of fish passage improvement program**
- **Total above could easily top $2 million**

NEPA not yet completed for first item; if noticed, then 72 stream crossings addressed. Funding not yet secured for the second and third items, but outlook good

USFS Restoration Needs – Next 20 Years

Six Rivers NF

South Fork and Lower Mainstem Trinity – $18.1 MM

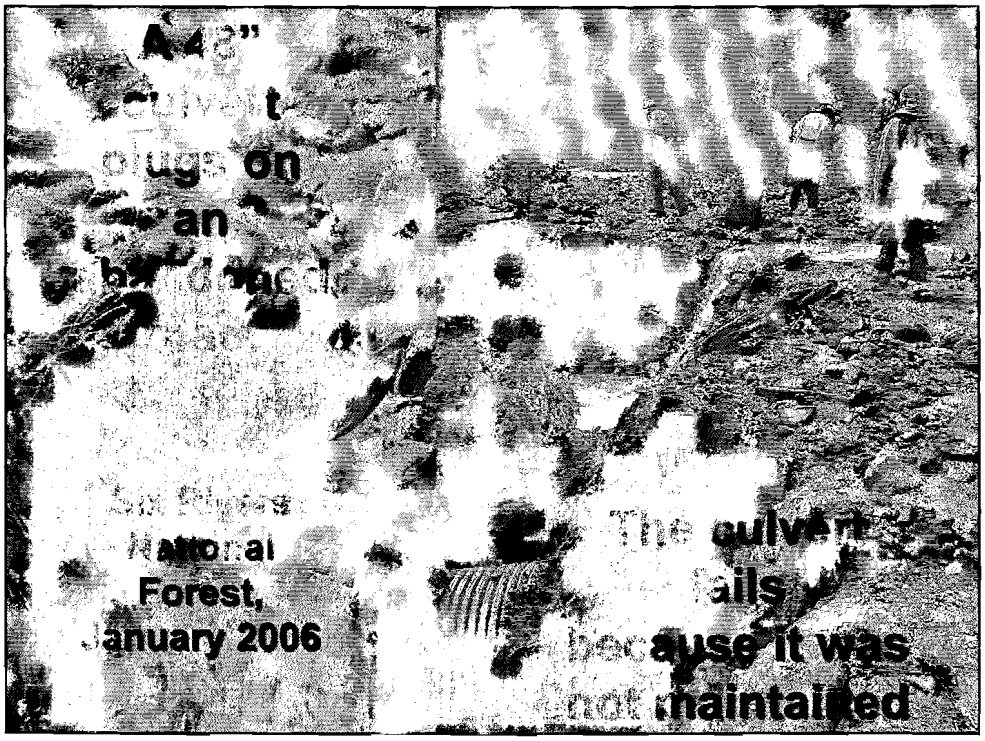
Shasta-Trinity NF

- **Trinity River Mainstem- $20.1 MM**
- **South Fork Trinity - $72.9 MM**

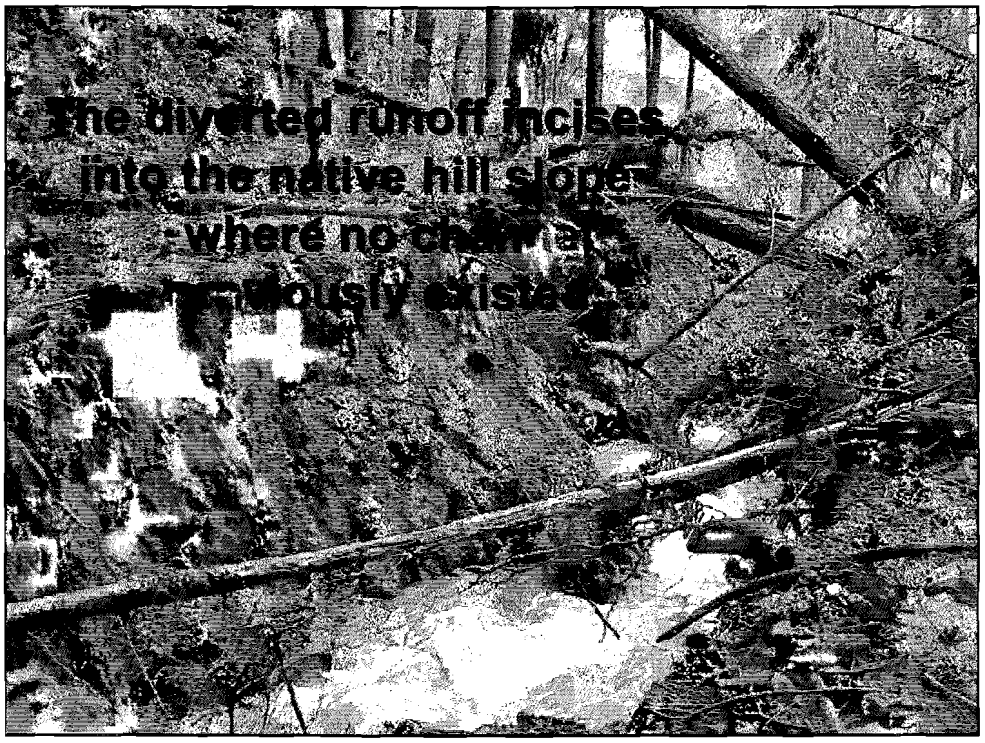
Work Composed of Road Obliteration, Stabilization, 'Storm-proofing', Fish Passage, Spawning/Rearing Habitat Enhancement, Hazardous Fuels Reduction

450,000 miles of USFS roads in the nation with $10 Billion backlog in maintenance.

One of many on the South Fork. This sequence illustrates the importance that culverts can play in forested watersheds



Bluff Creek drainage, Klamath River. Note the portion of the stream course working it's way down the road in the background.

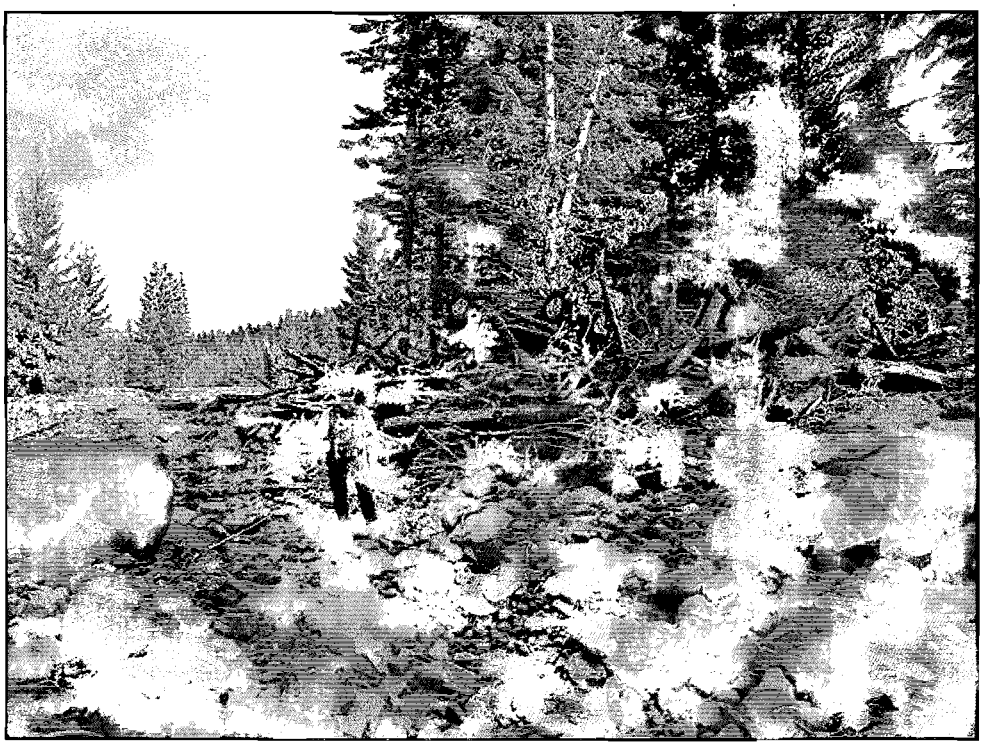


When coming upon this scene on foot for the first time, it's always frightening to notice a large opening or clearing just below and slightly beyond your view....

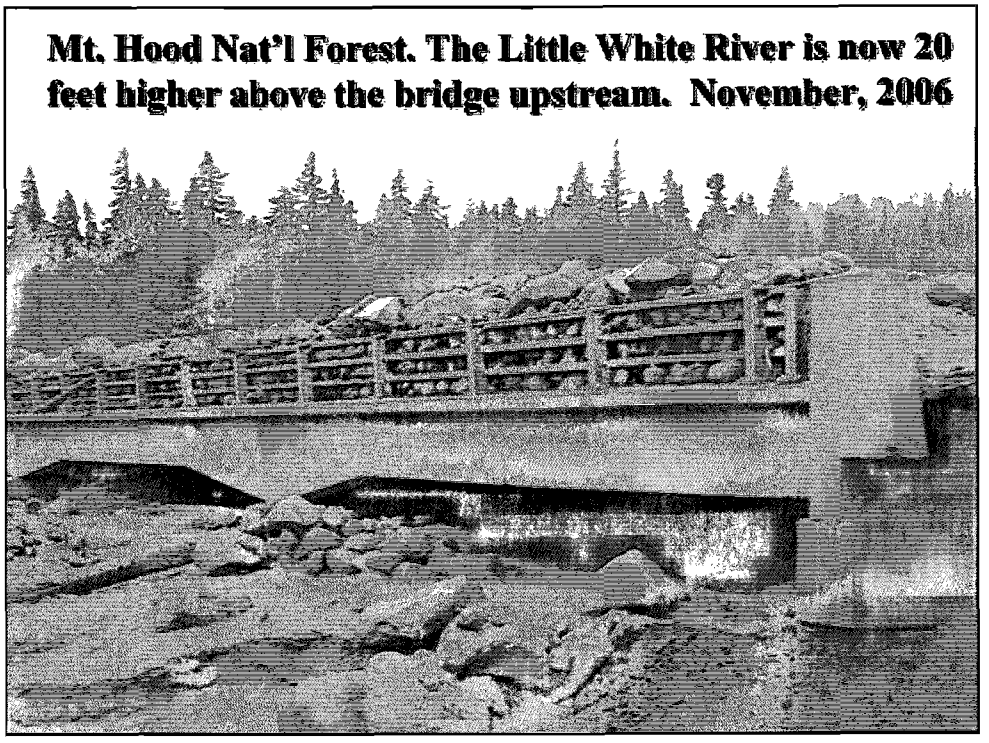
Especially when that opening or clearing is a new rotational slump, slide, or debris flow caused by the diverted, 'pirated' water that was captured by the road surface.

Debris Torrent, Mt. Hood Nat'l Forest, November 2006. Major depositional area upstream of a USFS road. Standing trees had limbs stripped off up to 50 feet above the ground!

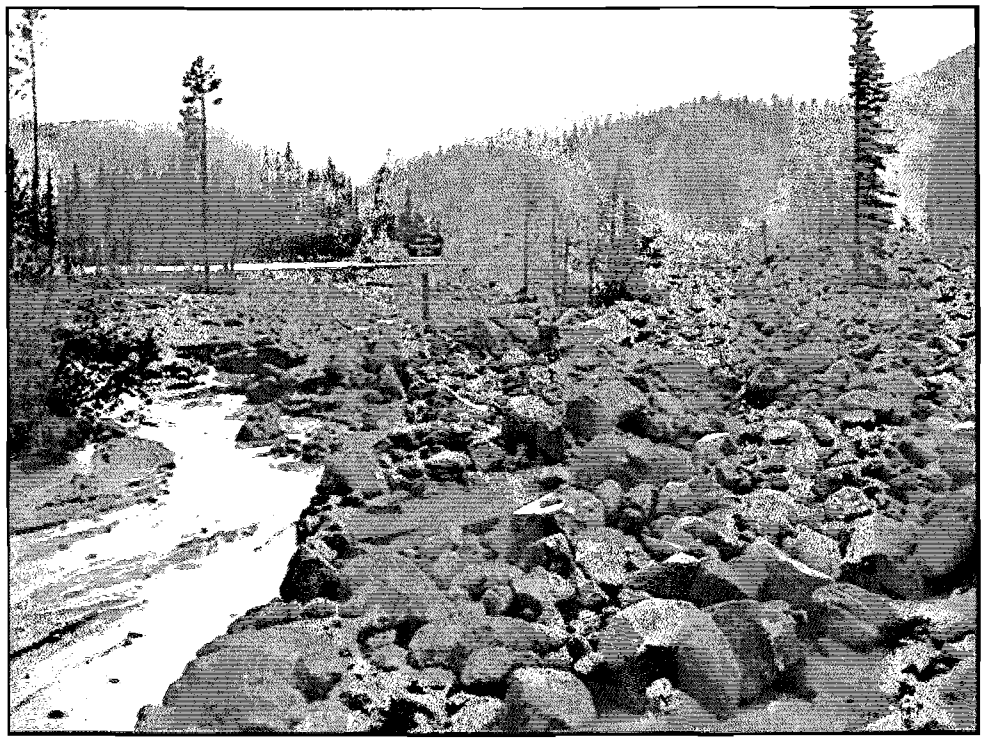
Eliot Branch from USFS Road 2840. This final sequence demonstrates fresh evidence of what can occur in Pacific Northwest mountainous watersheds when heavy rains fall on, in our case, managed watersheds with only 10% or so of road maintenance funding needs provided year in and year out. Darcy Morgan, Fish Biologist, Hood River Ranger District



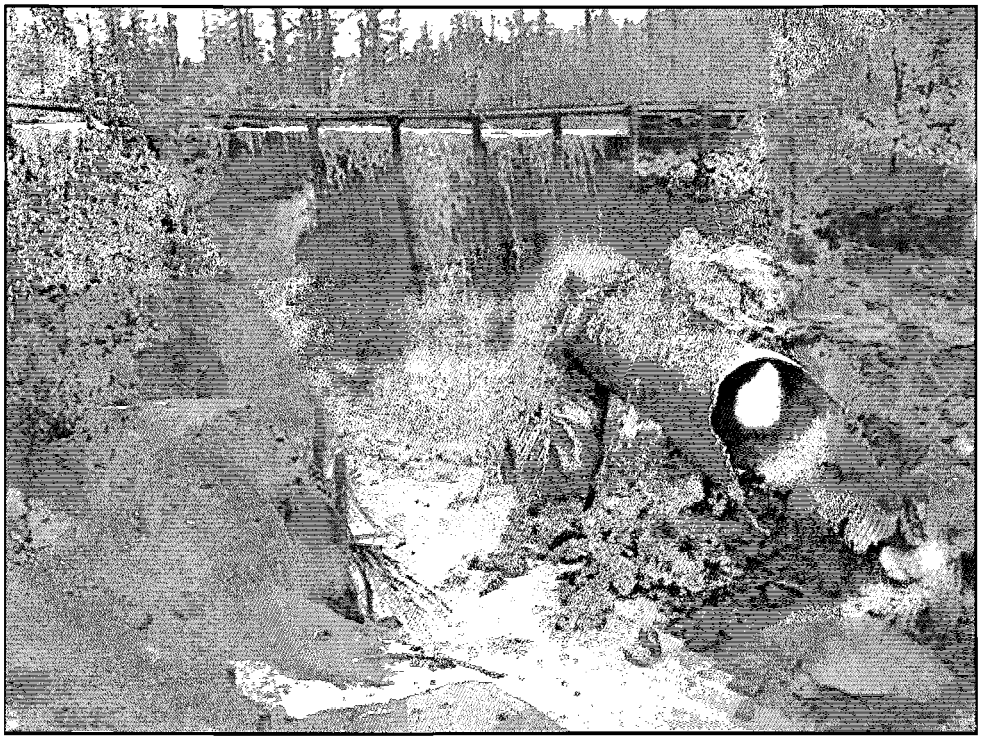
Car downstream of 2840 road (this car belonged to the individual who was parked and sleeping in his car on the access road to the Eliot diversion the night of the event and who was later trapped by the debris torrent and survived.)



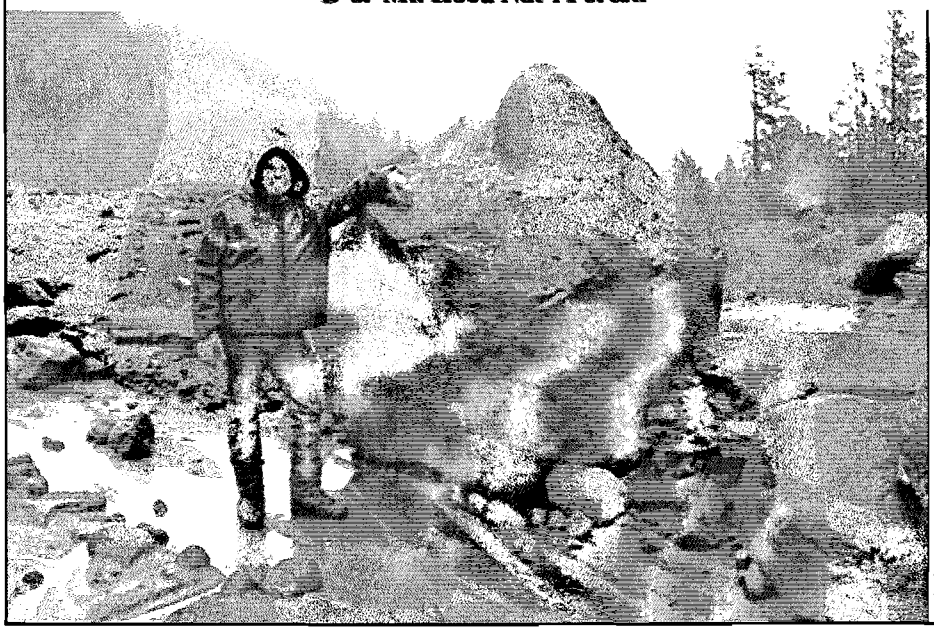
What's really sobering about this final sequence is that these recent downpours and resulting debris torrents occurred with no snow on the ground... just hard rains falling on the ground!



This two-lane Highway originally looked eerily similar to portions of Hwy 299 along the Trinity

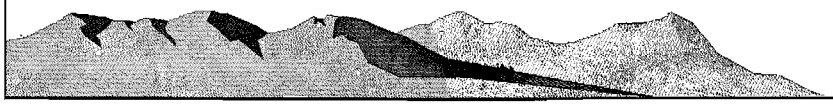


Large boulder left on centerline of Hwy 35. Little White River can move big things when it has the mind. This is 'Gary' about to fire up his D-8. Mt. Hood Nat'l Forest.



This 'huge' material was transported for miles to this point, NOT simply fallen from an adjacent hill slope!

The North Coast Regional Water Quality Control Board issued a Work Plan to Control Excess Sediment in Sediment-Impaired Watersheds, November 2007. The Board ranked 27 sediment-impaired watersheds in order of importance. The mainstem Trinity ranked 5'th, and the South Fork 7'th. Such a designation results from the Trinity not meeting sediment-related water quality objectives nor supporting beneficial uses because of too much human-derived sediment impacting coho and Chinook salmon and steelhead.



The South Fork and mainstem Trinity are included by being on the Clean Water Act Section 303(d) list of impaired water bodies, hence the ranking here.

The Total Maximum Daily Load (TMDL) process leads to a "pollution budget" designed to restore the health of a polluted body of water. The TMDL process provides a quantitative assessment of water quality problems, contributing sources of pollution, and the pollutant load reductions or control actions needed to restore and protect the beneficial uses of an individual waterbody impaired from loading of a particular pollutant. More specifically, a TMDL is defined as the sum of the individual waste load allocations for point sources, load allocations for non-point sources, and natural background such that the capacity of the water body to assimilate pollutant loading (the loading capacity) is not exceeded (40 CFR §130.2). In other words, a TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards which will insure the protection of beneficial uses. The mainstem and South Fork Trinity River both have established TMDLs.

Recent Regional Water Quality Board correspondence has included the following:

California Water Code Section 13304 provides that 'Any person who has discharged or...threatens to cause waste to be discharged into the waters of the state... shall upon order of the regional board... abate the effects of the waste or take other necessary remedial actions...'.

Correspondence written by the Central Valley RWQCB, fall 2007. The letter and quote originated from the simple observation of an undersized culvert that posed a threat to a small tributary.

Water Board staff will start working on Trinity basin tasks in two years (?) based on these high rankings.

Tasks were developed for each basin and also ranked with regard to sediment sources. From the Work Plan: "... Tasks that address roads (which were almost always identified as the largest human-caused sediment source) are high priorities".

Regional Board Task #17 – "Develop and Implement WDR's for the USFS for Non-Timber Harvest Activities".

Contents of the WDR's:

- ❖Inventory existing sediment sites on all USFS roads
- ❖Rank the list
- ❖Describe the repair plans and practices to be employed
- ❖Schedule the repairs
- ❖Develop and describe practices to prevent new sites.
- ❖Monitor success and apply adaptive management.

What's cool right now is an effort by the Northern California Forests to get watershed restoration activities included within the timber harvest Waste Discharge Requirements Waiver that is being renewed today with the North Coast Regional Water Quality Control Board.

That just about does it my friends.