A Map Based Approach to Watershed Assessment

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Key Concepts

- Watershed analysis methods characterize current and historic conditions within a drainage basin to better understand the impacts of land management on natural resources.

- GIS provides a consistent framework to evaluate watershed condition and to assess potential risks to ecological processes.

- For watershed analysis GIS can be used to explore the potential effects of current and future land management plans.

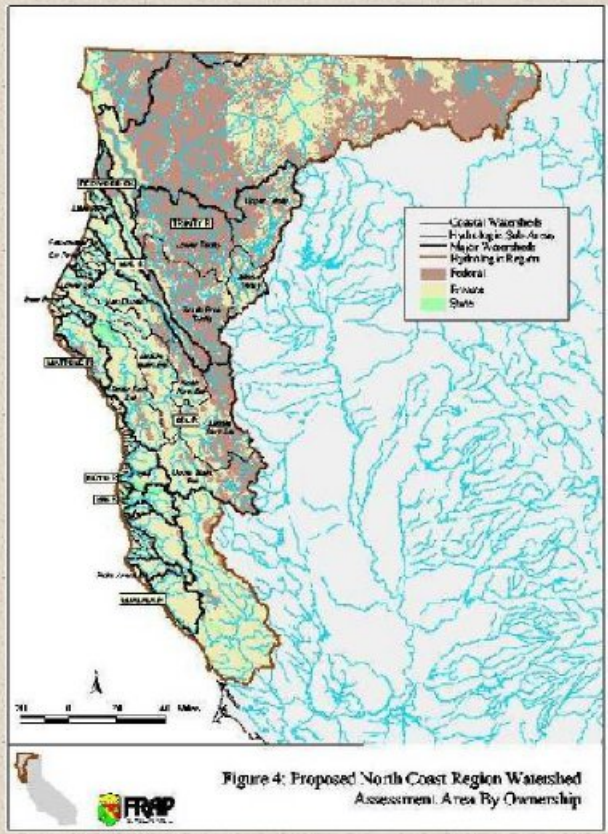


Figure 4: Proposed North Coast Region Watershed Assessment Area By Ownership

Historic Land Use

Humboldt Bay

Landsat MSS imagery: 4,2,1 spectral bands

Date: August 8, 1973

FRAP

1 0 1 2 Miles

Current Land Use

Humboldt Bay

Landsat TM imagery: 4, 3, 2 spectral bands

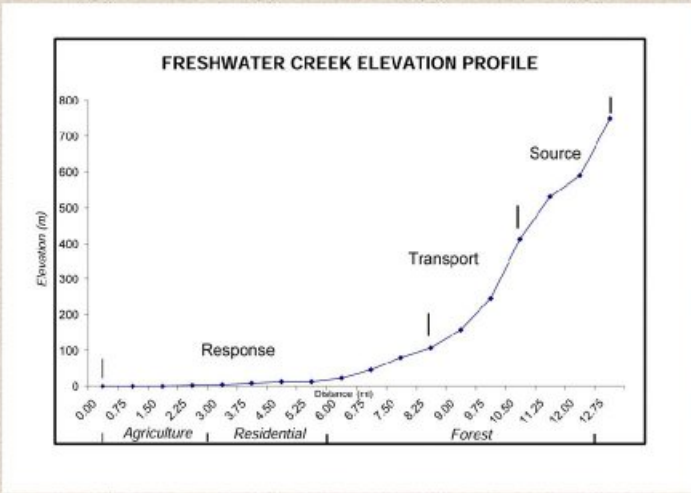
Date: July 26, 1998

FRAP

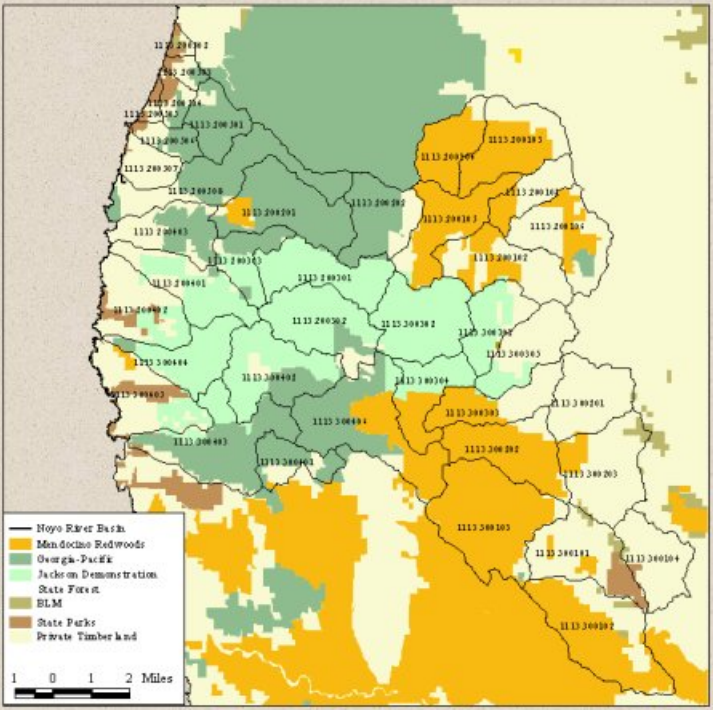
N

1 0 1 2 Miles

Relationship between land use and stream gradient

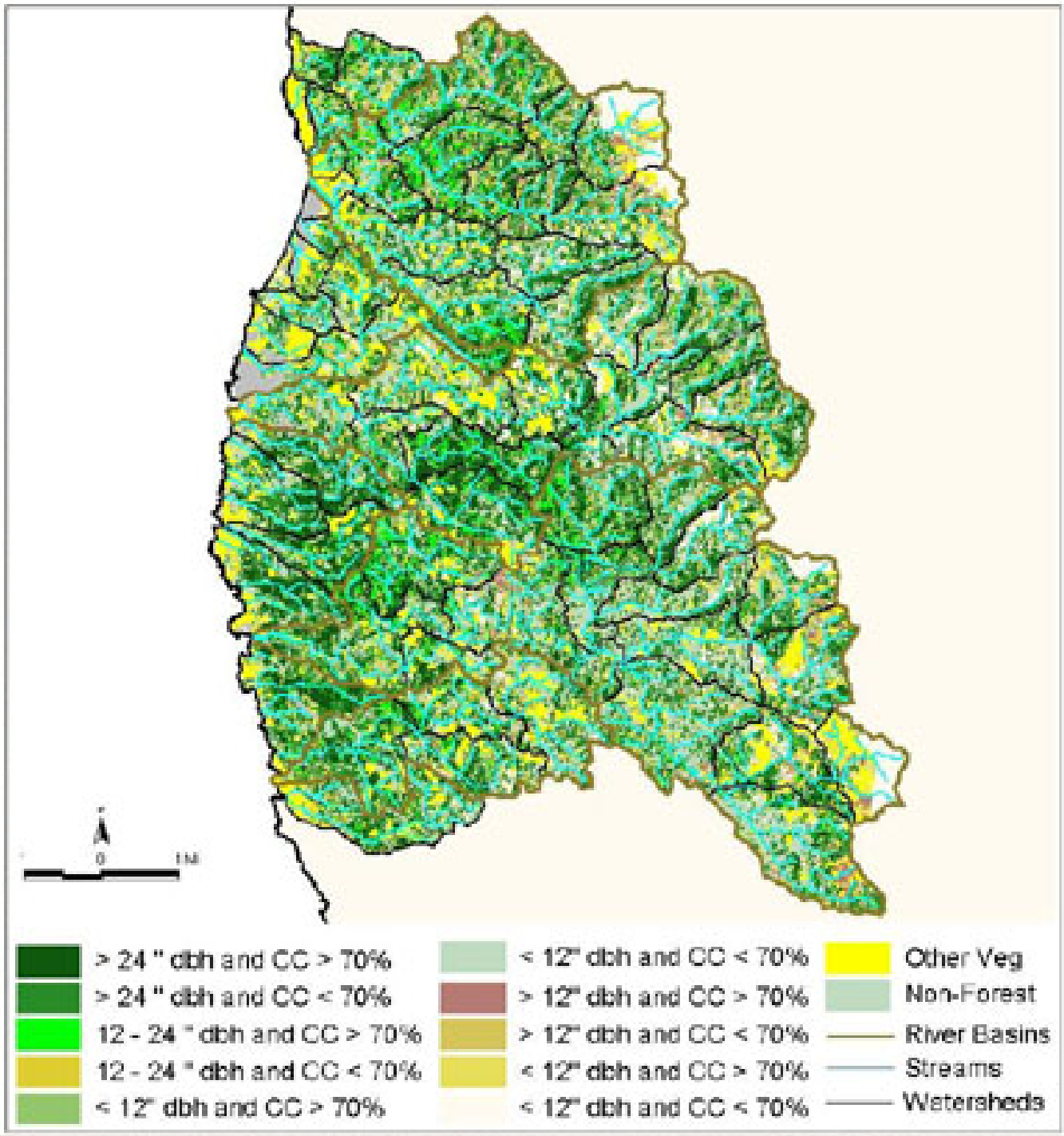


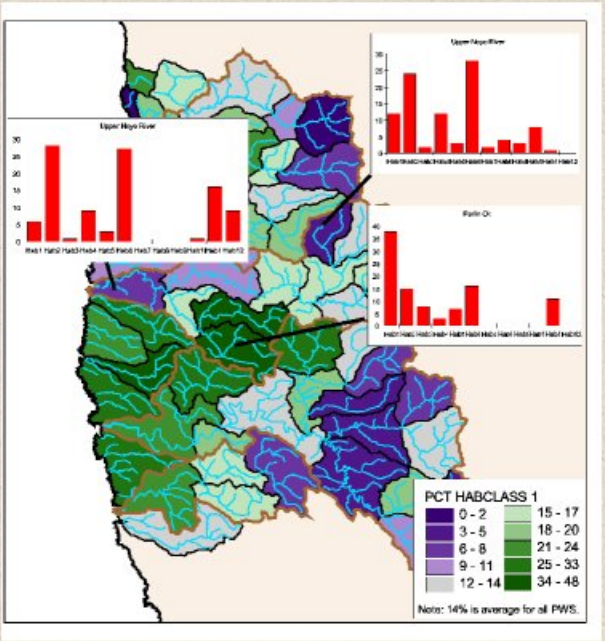
Noyo and Big River Watershed Assessment

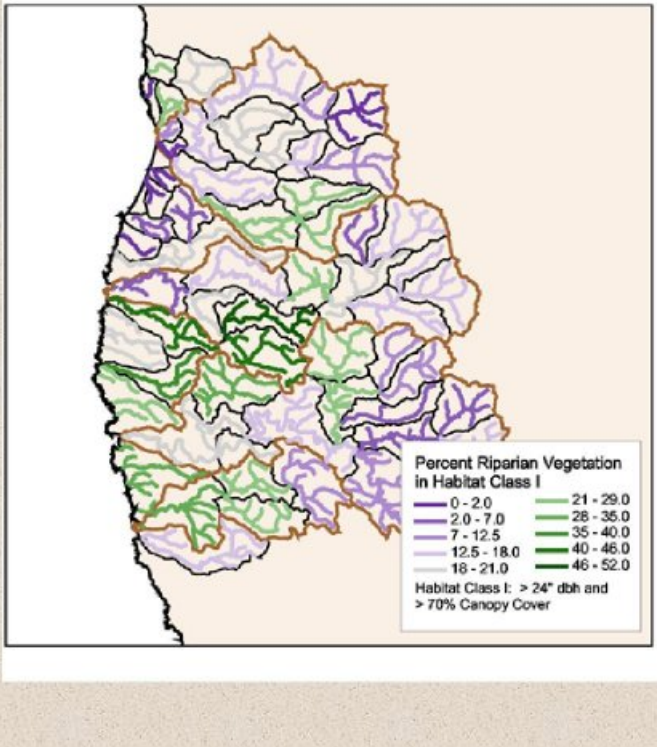


Goals and Objectives

- Conduct a coarse level assessment of hillslope and stream conditions.
- Assess potential large woody debris recruitment from streamside vegetation.
- Assess potential sediment delivery from timber harvesting, roads and mass wasting.
- Develop a method for evaluating impacts of land use practices that allows for comparison among sub-basins.


N
0
1 M
> 24 " dbh and CC > 70%
> 24 " dbh and CC < 70%
12 - 24 " dbh and CC > 70%
12 - 24 " dbh and CC < 70%
< 12" dbh and CC > 70%
< 12" dbh and CC < 70%
> 12" dbh and CC > 70%
> 12" dbh and CC < 70%
< 12" dbh and CC > 70%
< 12" dbh and CC < 70%
Other Veg
Non-Forest
River Basins
Streams
Watersheds


Upper Hoyo River
Upper Hoyo River
Parin Ck
PCT HABCLASS 1
0 - 2
3 - 5
6 - 8
9 - 11
12 - 14
15 - 17
18 - 20
21 - 24
25 - 33
34 - 48
Note: 14% is average for all PWS.


Percent Riparian Vegetation
in Habitat Class I
0 - 2.0
2.0 - 7.0
7 - 12.5
12.5 - 18.0
18 - 21.0
21 - 29.0
29 - 35.0
35 - 40.0
40 - 46.0
46 - 52.0
Habitat Class I: > 24" dbh and
> 70% Canopy Cover

Parlin Creek
February, 1999

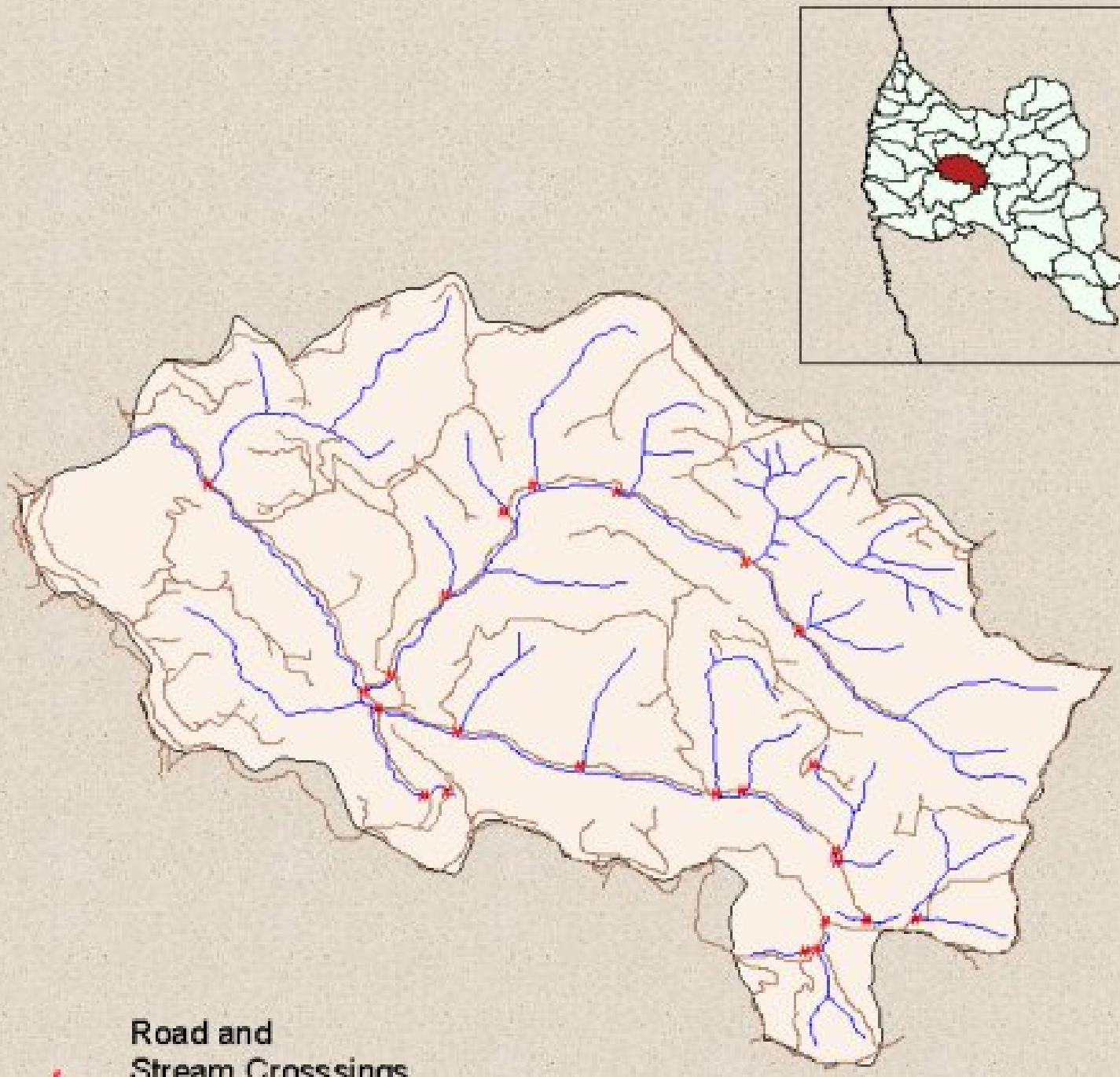
Parlin Creek
June, 1999

Evaluating Potential Sediment Delivery

Factors

- roads - location of roads with a watershed
- timber harvesting - management prescription and terrain position.
- slope stability: existing and potential landslides

Map of road and stream crossings



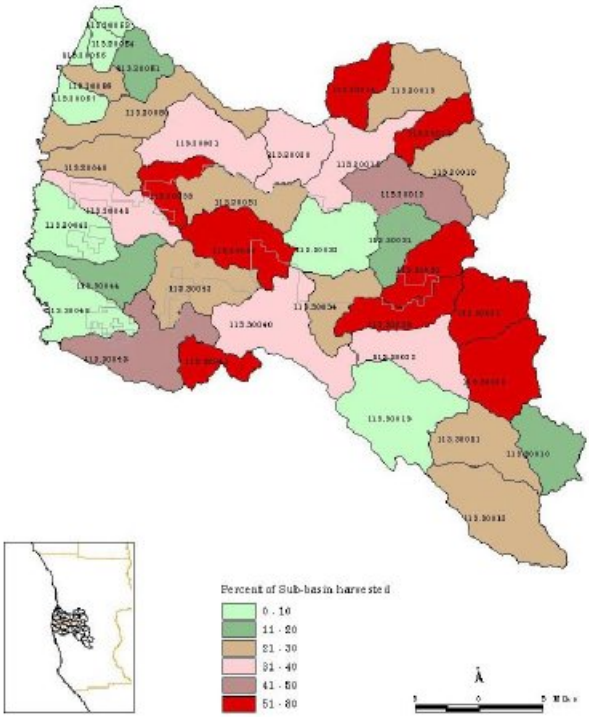
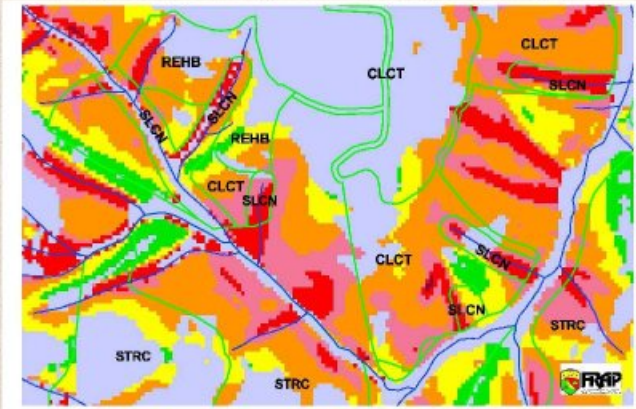
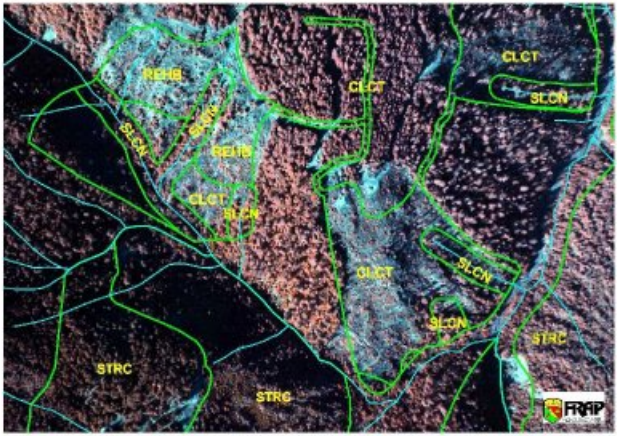


Figure 5:
Noyo and Big River Timber Harvesting: 1989 - 1988

Pacific
Ocean
Fort Bragg
Willits



Bear Creek
SHALSTAB Predicted Slope Instability



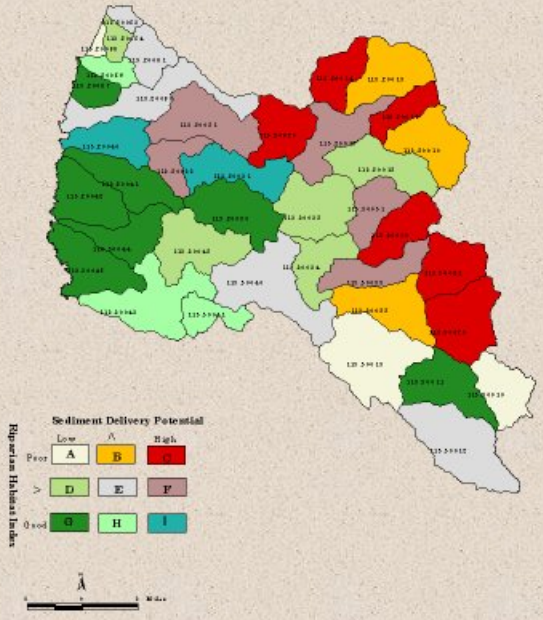
Bear Creek Digital Air Photo
October, 1999.

Evaluating Restoration Potential

Sediment Delivery Potential

Riparian Habitat Indicators

	Low	Medium	High
Poor	**A** Limited restoration potential. Requires long term restoration of riparian habitat	**B** Limited restoration potential. Requires long term restoration of riparian habitat and sediment reduction.	**C** Limited restoration potential. Requires long term restoration efforts for both sediment reduction and riparian habitat
Adequate	**D** Near term restoration possible with improved riparian habitat	**E** Near term restoration possible with reductions in sediment and improved riparian habitat	**F** Requires long term sediment reduction and riparian habitat improvements
Good	**G** Good Conservation Potential	**H** Short term restoration possible with sediment reduction	**I** Requires long term sediment reduction



Noyo and Big River Watersheds: Restoration Potential

The End