



*Noyo River Watershed*

Area	Hydrologic Units	Calwater Subbasins ---	(Planning Watersheds)
72,271 Acres	18010108	1113200101	Redwood Creek (3361 Acres)
29,247 Hectares	4th Field <b>HUC</b>	1113200102	Olds Creek (6964 Acres)
113 Square Miles		1113200103	Hayworth Creek (7106 Acres)
	1113	1113200104	Middle Fork N. Fork Noyo River (4566 Acres)
<b>Location</b>	4th Field <b>Calwater</b>	1113200105	North Fork Noyo River (6516 Acres)
Mendocino County		1113200106	McMullen Creek (7065 Acres)
		1113200201	Little N. Fork (8431 Acres)
		1113200202	Duffy Gulch (5733 Acres)
		1113200301	Brandon Gulch (6445 Acres)
		1113200302	Parlin Creek (7572 Acres)
		1113200303	Kass Creek (3530 Acres)
		1113200403	Mouth of Noyo River (4982 Acres)

Species Potential	Miles of Streams with Species Present
Northern California <b>Steelhead</b> North-Central Coastal Diversity Stratum - Independent Population	<u>Steelhead</u> 91 NOAA Fisheries, Critical Habitat Redesignation, 2005
Central California Coast <b>Coho</b> Lost Coast-Navarro Point Diversity Stratum - Independent Population	<u>Coho</u> 79 CDFG, Coho Distribution, May 2007
California Coastal <b>Chinook</b> North-Central Coastal Diversity Stratum - Independent Population	<u>Chinook</u> 41 NOAA Fisheries, Critical Habitat Redesignation, 2005

Critical Habitat	Miles of Stream
Northern California Steelhead	91 Miles of Stream
Central California Coast Coho	All accessible river reaches between Punta Gorda & San Lorenzo River including 2 San Francisco Bay streams: Arroyo Corte Madera del Presidio and Corte Madera Creek (64 FR 24049)
California Coastal Chinook	41 Miles of Stream

Miles of Waterway <sup>A</sup>	Miles	Number of Dams <sup>C</sup>
Naturally Occurring Waterways		2
Intermittent Stream	244	1 - Impassable
Perennial Stream	96	1 - Temporal Barrier
Artificial Path	4	

<sup>C</sup>Passage Assessment Database,  
Pacific States Marine Fisheries Commission, 2008

<sup>A</sup>USGS National Hydrography Dataset, High Resolution, 2004. 1:24,000

USGS Gaging Stations <sup>B</sup>	Number of Barriers <sup>C</sup>
11468500 Noyo River near Fort Bragg	36
	2 Dams
	11 Road Crossings (1 Partial, 10 Unknown passage status)
	8 Natural Barriers (Chutes, Falls, Log Jams, etc. (4 Impassable))
	12 Diversions

<sup>C</sup>Passage Assessment Database,  
Pacific States Marine Fisheries Commission, 2008

EPA Total Maximum Daily Load Classification (**TMDL**)<sup>1</sup>  
High Priority - Sediment / Siltation

Sources: Silviculture, Nonpoint Source

<sup>1</sup>State Water Resources Control Board, 2003



**Average Annual Precipitation<sup>E</sup>**

57.4"

**Average Annual Precipitation Range<sup>E</sup>**

40 - 75"

<sup>E</sup>California Mean Annual Precipitation Zones, 1900-1960, CA Department of Forestry, 1990

<b>Roads<sup>A</sup></b>	<b>(US Census Bureau (TIGER))</b>	Miles
Roads in Watershed		
Primary Road / Highway		0
Secondary and connecting road, state highways		4
Local, neighborhood, and rural road, city street, unseparated		237
Vehicular trail, 4WD		5
Driveway or service road		3
Total Miles		

<b>Road Density</b>	<b>(US Census Bureau (TIGER))</b>	
Miles of Roads per SqMi of Watershed		2.2
Miles of Roads per SqMi of 100m Riparian Buffer*		2.3

\*Buffer is 100 meters on either side of the stream centerline

<sup>A</sup>U.S. Census Bureau - Tiger 2000, 2002. 1:24,000

<b>Roads<sup>A1</sup></b>	<b>(Timber Harvest Plans)</b>	Miles
Roads in Watershed		
Abandoned Seasonal		2
Bridge		0
Existing Permanent (rocked)		109
Existing Seasonal		632
Existing Temporary & 4WD		16
Proposed Permanent (rocked)		0
Proposed Seasonal		47
Proposed Temporary & 4WD		5
Reconstructed Seasonal		1
Secondary Road (2-3 lanes)		22

<b>Road Density</b>	<b>(Timber Harvest Plans)</b>	
Miles of Roads per SqMi of Watershed		7.2
Miles of Roads per SqMi of 100m Riparian Buffer*		6.5

\*Buffer is 100 meters on either side of the stream centerline

<sup>A1</sup>California Department of Forestry, Timber Harvest Plans for Noyo Watershed, 2006

<b>Slope<sup>D</sup></b>	Acres	Percent of watershed
Lands of 0-2 percent slope	925	1%
Lands of 2-4 percent slope	1,336	2%
Lands of 4-10 percent slope	2,840	4%
Lands of 10-15 percent slope	2,692	4%
Lands of 15-30 percent slope	15,241	21%
Lands of 30-60 percent slope	40,267	56%
Lands of 60-100 percent slope	8,787	12%
Lands of > 100 percent slope	192	0%

<b>Elevation Range</b>	6 - 3212 ft.	1.8 - 979 m
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<sup>D</sup>Slope derived from USGS 10 meter Digital Elevation Models (DEM's)

<b>Vegetation<sup>G</sup></b>	Acres	Percent of watershed
Annual grassland	2728	4%
Barren	27	0%
Conifer Forest		
Closed-Cone-Pine-Cypress	890	1%
Douglas Fir	3,598	5%
Montane Hardwood-Conifer	796	1%
Redwood	51,447	71%
Hardwood Forest		
Montane Hardwood	9,131	13%
Montane Riparian	37	0%
Shrub	3,200	4%
Urban	405	1%
Water	54	0%

<sup>G</sup>Multi-source Land Cover Data (2002 v2), CA Department of Forestry, 2002. 100 meter Grid

<b>Erodability of Watershed<sup>F</sup></b>	Acres	Percent of watershed
Not Ranked	28,317	39%
3	4,982	7%
5	275	0%
6	3,119	4%
8	35,576	49%

<sup>F</sup>Department of Conservation, Division of Mines and Geology; minimum mapping unit: approx. 8000 acres  
Watersheds were rated based on slope, precipitation, and lithologic susceptibility to failure. Total erosion potential is based on a combination of the landslide potential, debris slide potential, and the surface erosion potential. Rating 0-10 [0 = Low slide potential, 10 = High slide potential]

<b>Land Ownership<sup>H</sup></b>	Acres	Percent of watershed
Private	58,449	81%
Barnum Timber	1,800	2%
Georgia Pacific	18,070	25%
Mendocino Redwoods	19,652	27%
Others	5,802	8%
State (Forestry)	14,060	19%

<sup>H</sup>Management Landscape, CA Department of Forestry, 2002 and US FWS (data supplied by major landowners who were undergoing an HCP), 2000

Area Under a <b>Timber Harvest Plan<sup>A</sup></b> past 10 years	Area Under a <b>Timber Harvest Plan<sup>A</sup></b> past 20 years
14,929 21% of watershed	43,362 60% of watershed

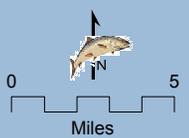
<sup>A</sup>California Department of Forestry, Timber Harvest Plans for Noyo Watershed, 2006

<b>Population<sup>I</sup></b>	<b>Housing<sup>I</sup></b>
Total Population within the watershed -- 2,340 People	Total Housing Units within the watershed -- 1,143 Houses
	Housing Density
	0 to Less than 1 Housing Unit / 160 Acres 92%
	1 Unit / 160 Acres to 1 Unit / 20 Acres 6%
	1 Unit / 20 Acres to 1 Unit / 5 Acres 1%
	1 Unit / 5 Acres to 2 Units / Acre 1%
	2 Units / Acres to Greater than or Equal to 5 Units / Acre

<sup>I</sup>Census 2000 Block Data (Migrated), CA Department of Forestry, 2003



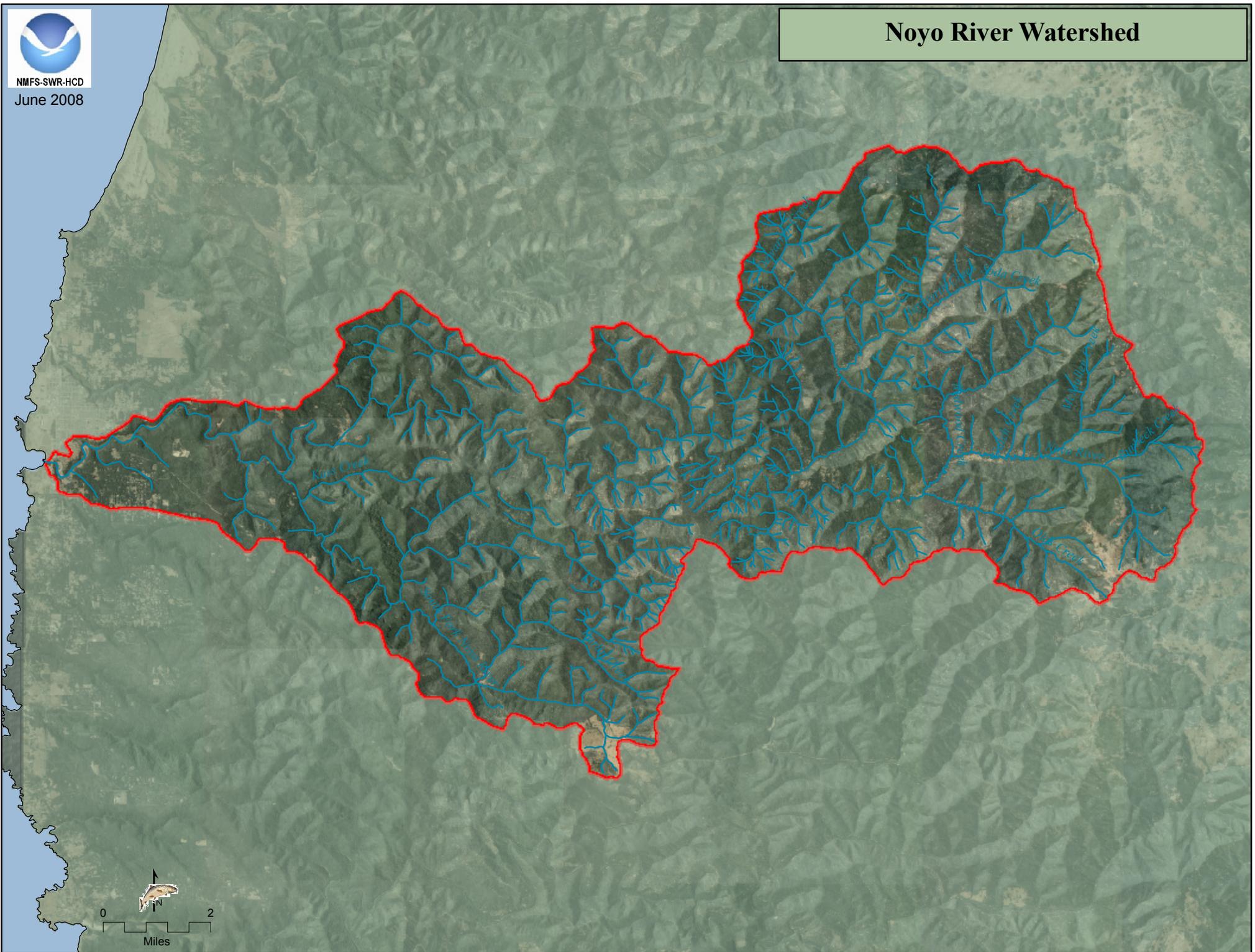
# Noyo River Watershed





NMFS-SWR-HCD  
June 2008

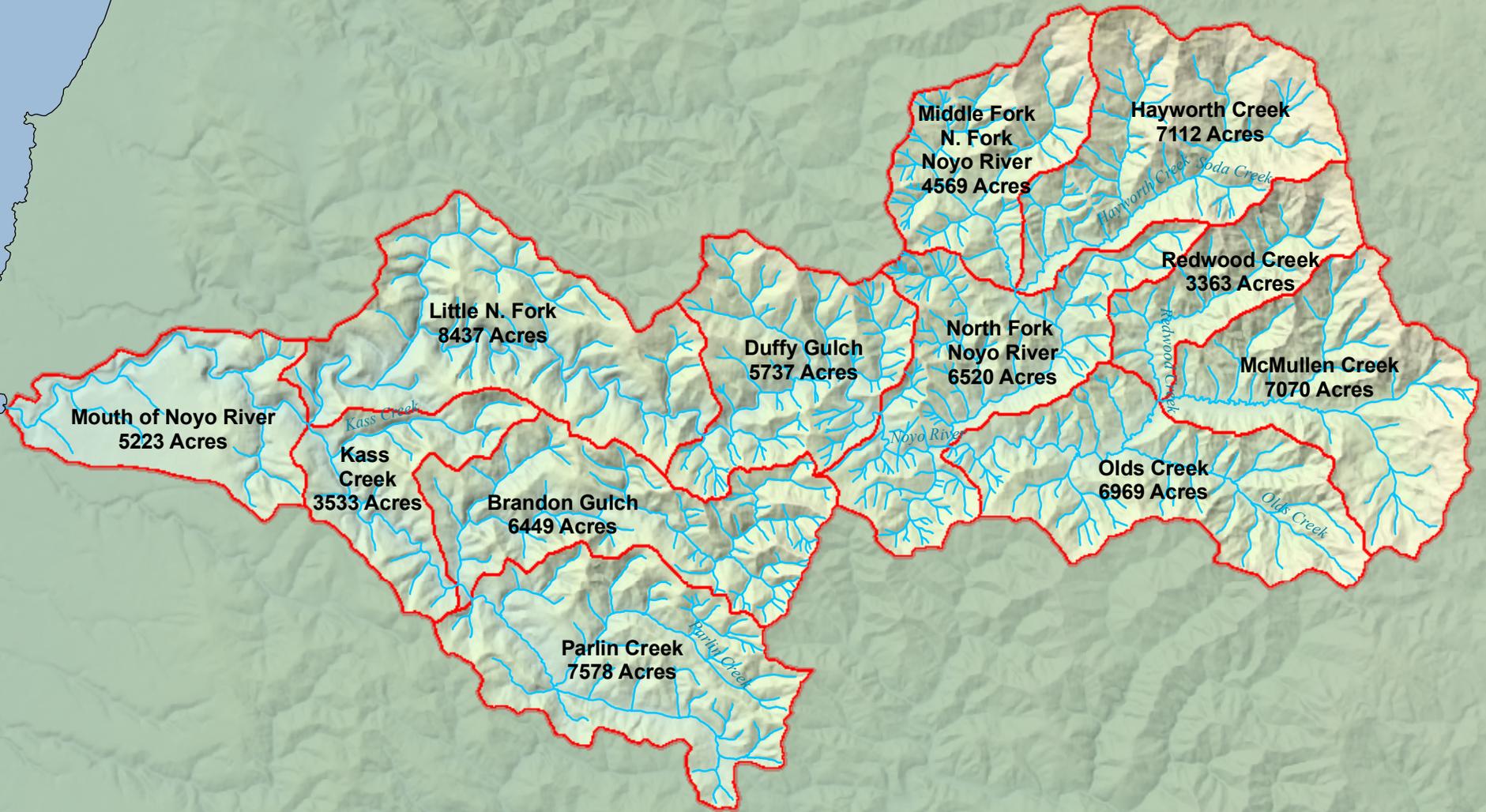
# Noyo River Watershed





NMFS-SWR-HCD  
June 2008

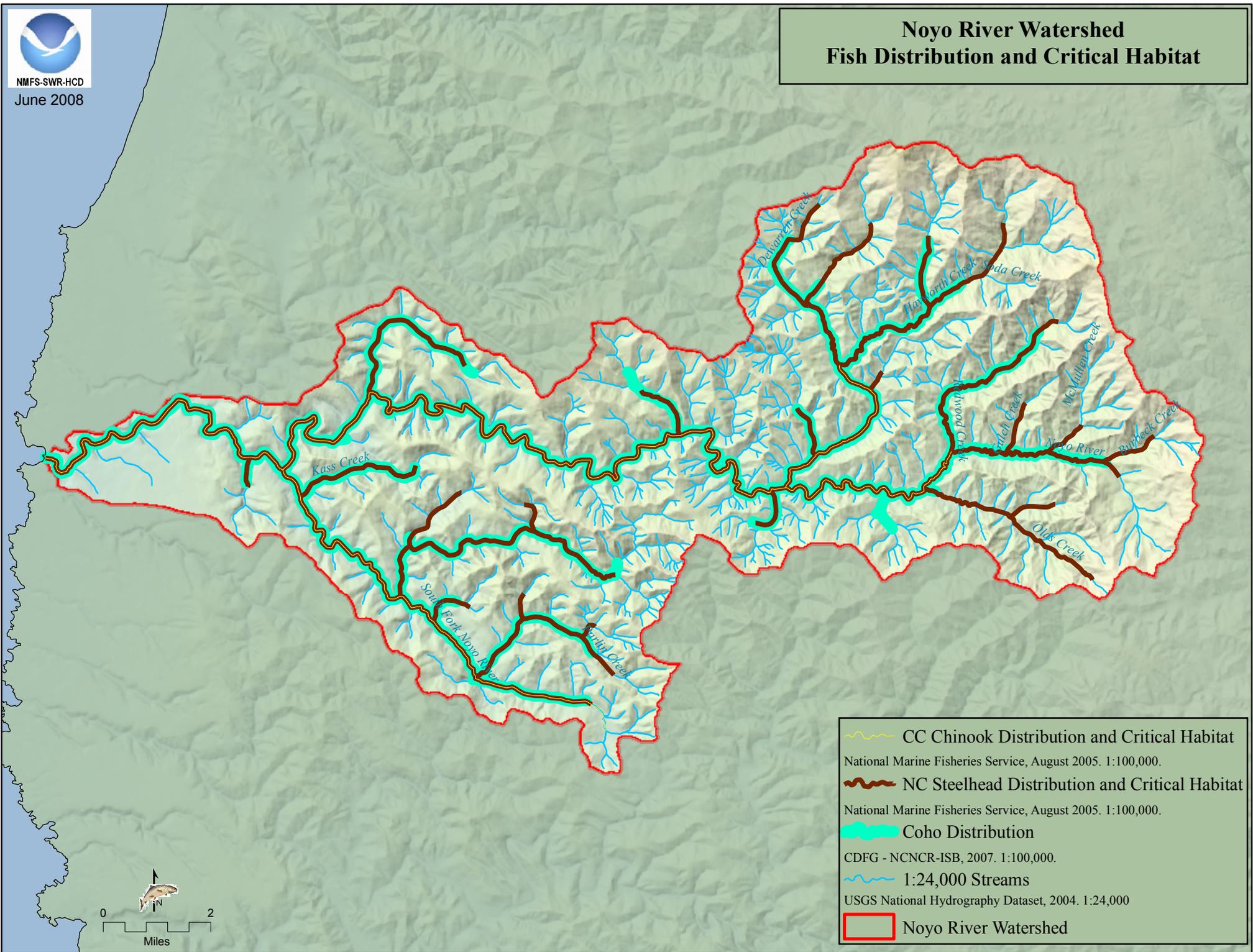
# Noyo River Watershed CalWater Planning Watersheds





NMFS-SWR-HCD  
June 2008

## Noyo River Watershed Fish Distribution and Critical Habitat





NMFS-SWR-HCD  
June 2008

## Noyo River Watershed Steelhead Current vs. Historical



-  Current NC Steelhead Distribution  
National Marine Fisheries Service,  
August 2005. 1:100,000.
-  Steelhead Intrinsic Potential  
NMFS SWR Fisheries Science Center, 2005.  
Potential historical suitable habitat
-  1:24,000 Streams  
USGS National Hydrography Dataset, 2004. 1:24,000
-  Noyo River Watershed





NMFS-SWR-HCD  
June 2008

## Noyo River Watershed Coho Current vs. Historical



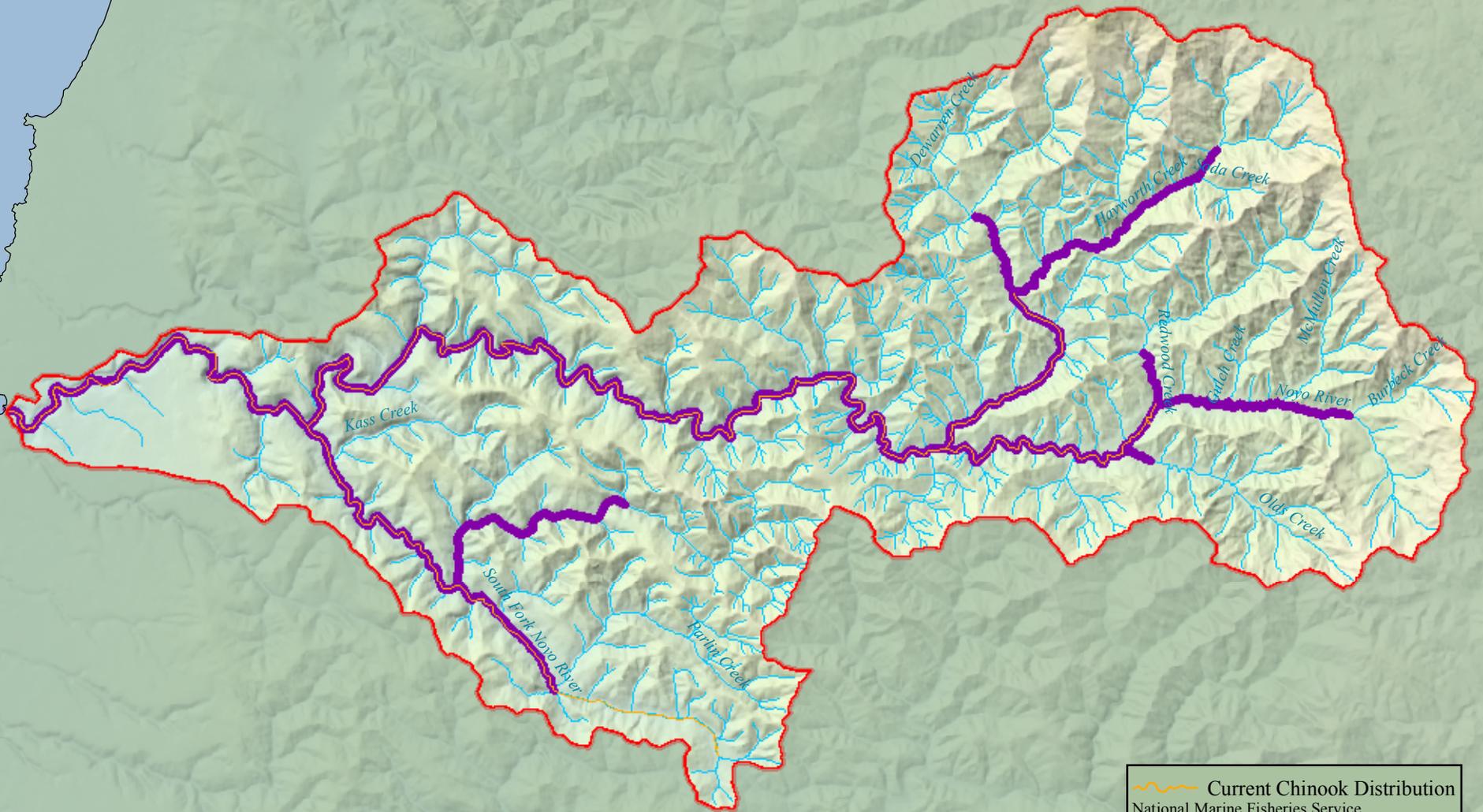
-  Current Coho Distribution  
CDFG - NCNCR-ISB, 2007. 1:100,000.
-  Coho Intrinsic Potential  
NMFS SWR Fisheries Science Center, 2005.  
Potential historical suitable habitat
-  1:24,000 Streams  
USGS National Hydrography Dataset,  
2004. 1:24,000
-  Noyo River Watershed





NMFS-SWR-HCD  
June 2008

## Noyo River Watershed Chinook Current vs. Historical



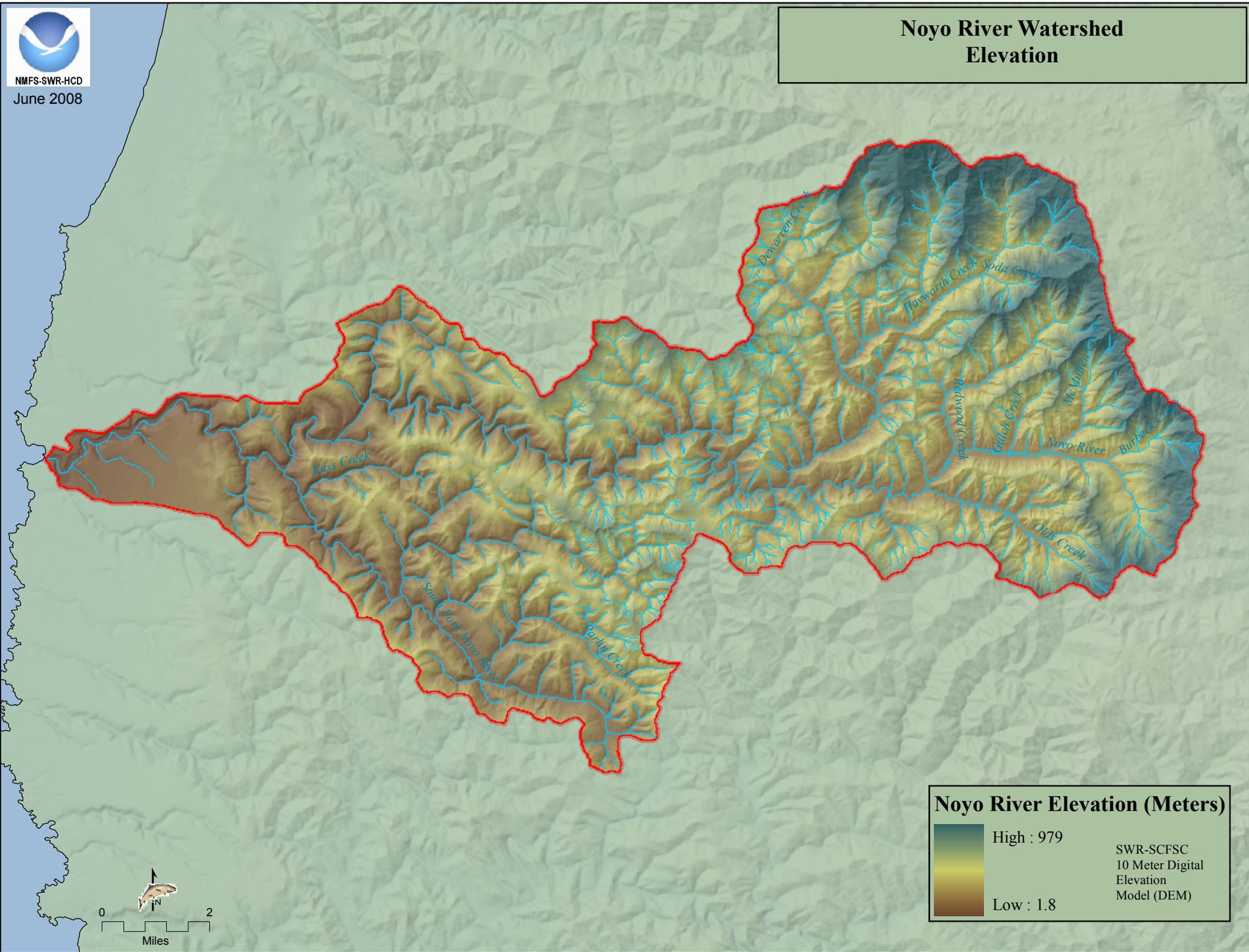
-  Current Chinook Distribution  
National Marine Fisheries Service,  
August 2005. 1:100,000.
-  Chinook Intrinsic Potential  
NMFS SWR Fisheries Science Center, 2005.  
Potential historical suitable habitat
-  1:24,000 Streams  
USGS National Hydrography Dataset,  
2004. 1:24,000
-  Noyo River Watershed



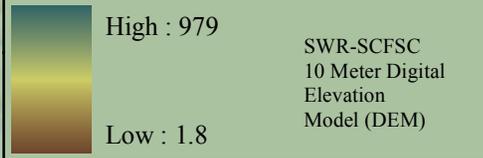


NMFS-SWR-HCD  
June 2008

# Noyo River Watershed Elevation



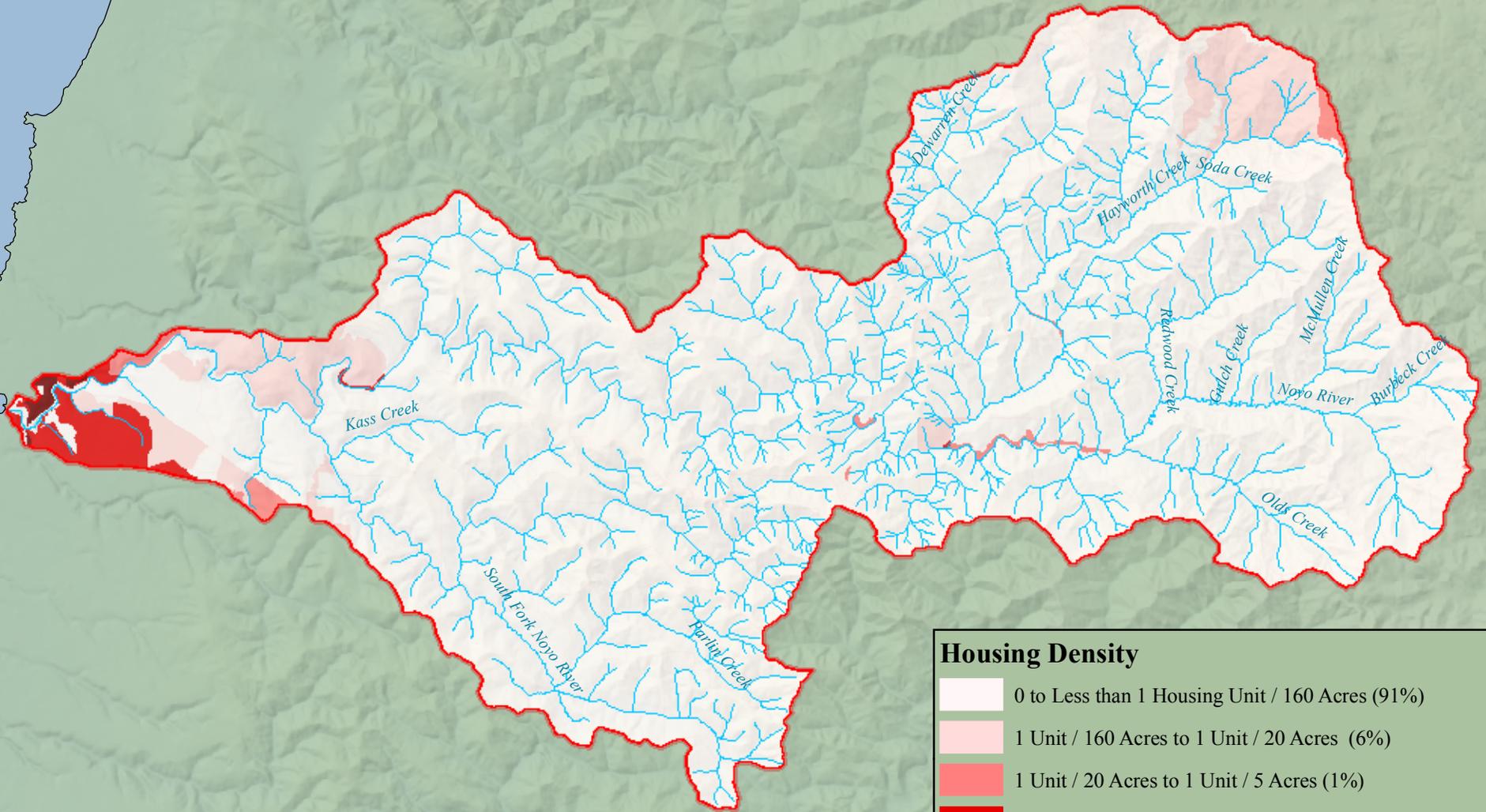
## Noyo River Elevation (Meters)





NMFS-SWR-HCD  
June 2008

## Noyo River Watershed Development



### Housing Density

	0 to Less than 1 Housing Unit / 160 Acres (91%)
	1 Unit / 160 Acres to 1 Unit / 20 Acres (6%)
	1 Unit / 20 Acres to 1 Unit / 5 Acres (1%)
	1 Unit / 5 Acres to 2 Units / Acre (1%)
	2 Units / Acre to Greater than or Equal to 5 Units / Acre

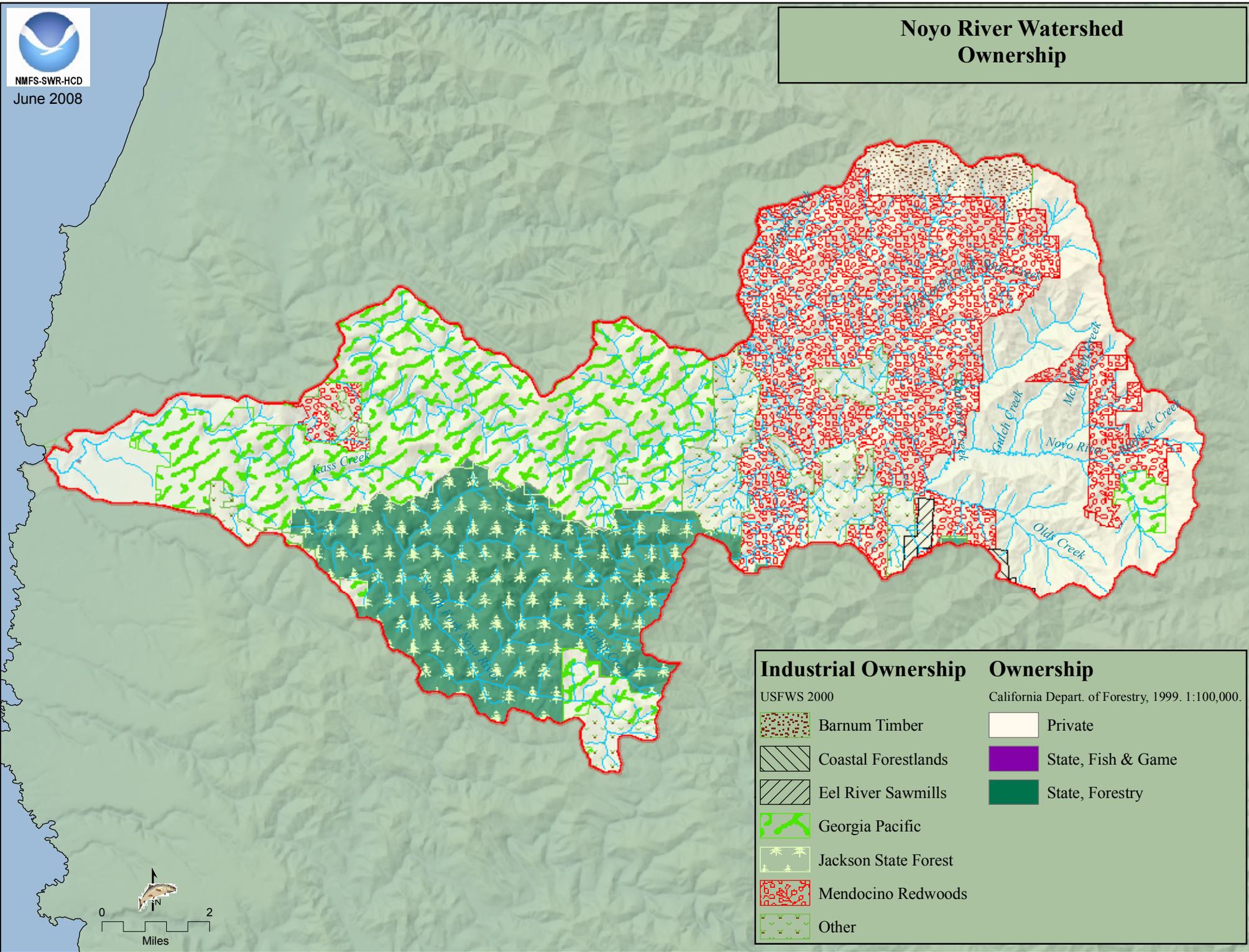
Population within the Watershed = 2,340 People  
Houses within the Watershed = 1,143  
California Department of Forestry, 2003. 1:100,000.





NMFS-SWR-HCD  
June 2008

# Noyo River Watershed Ownership

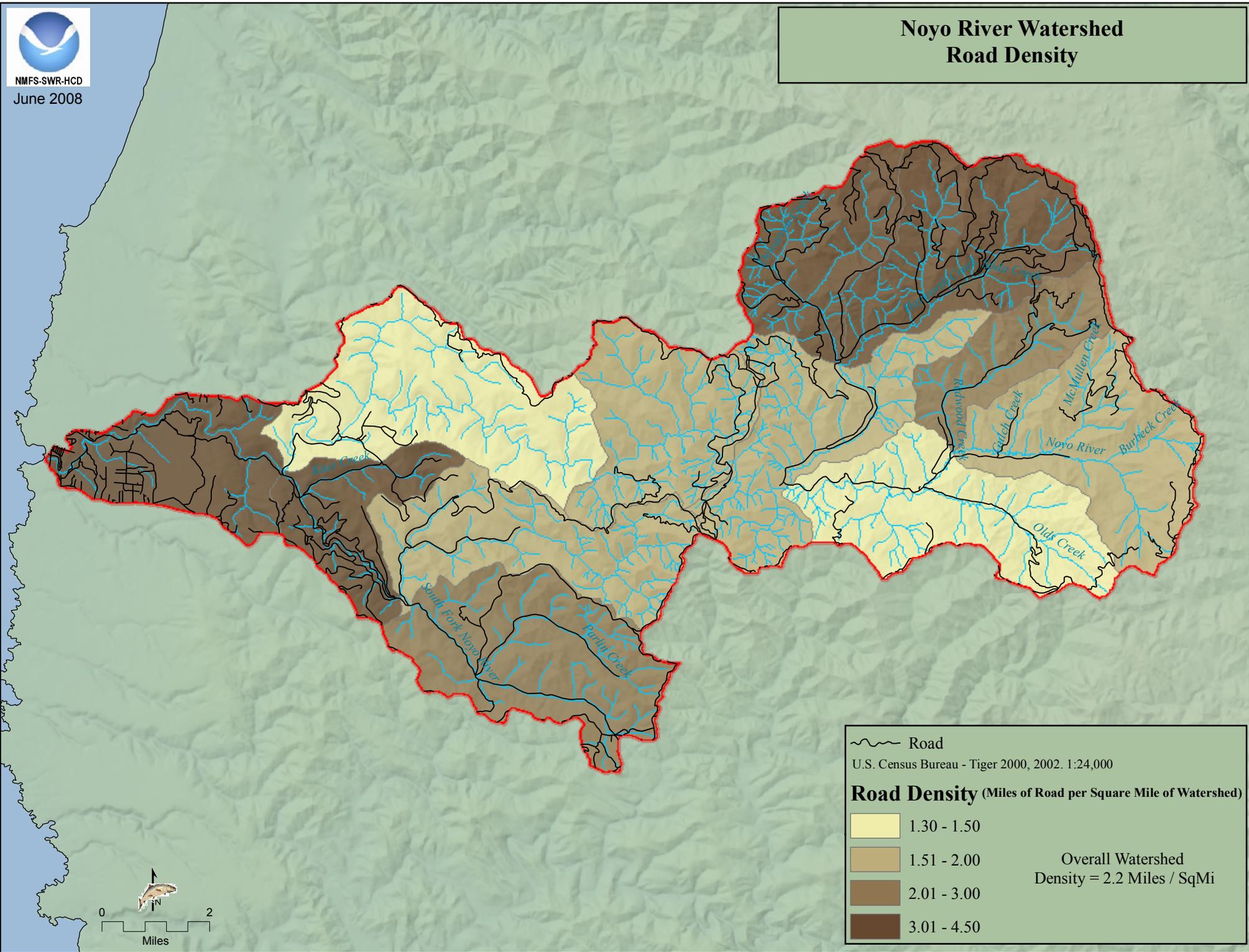


Industrial Ownership		Ownership	
USFWS 2000		California Dept. of Forestry, 1999. 1:100,000.	
	Barnum Timber		Private
	Coastal Forestlands		State, Fish & Game
	Eel River Sawmills		State, Forestry
	Georgia Pacific		
	Jackson State Forest		
	Mendocino Redwoods		
	Other		



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June 2008

# Noyo River Watershed Road Density



— Road

U.S. Census Bureau - Tiger 2000, 2002. 1:24,000

**Road Density** (Miles of Road per Square Mile of Watershed)

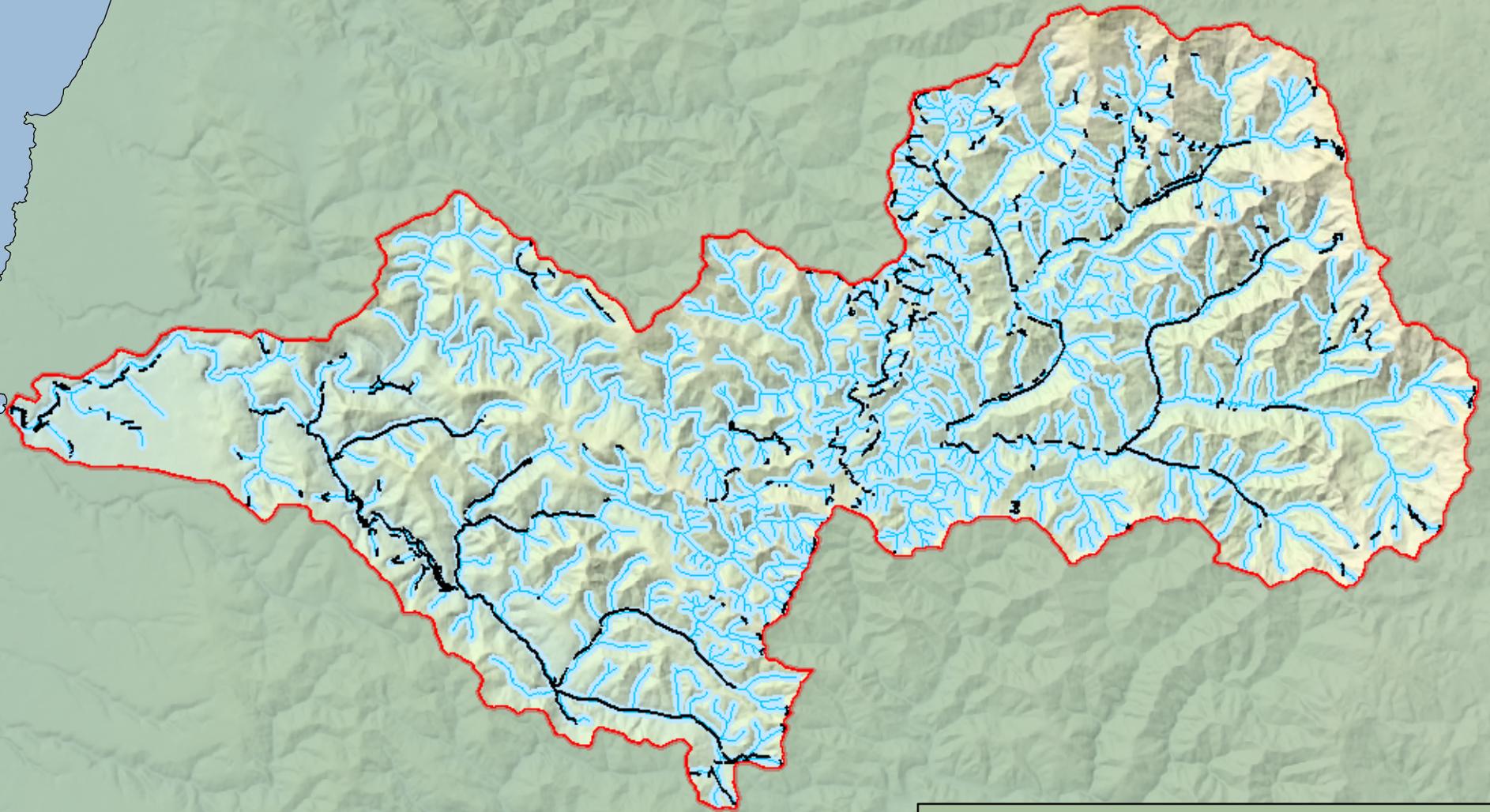
Light Yellow	1.30 - 1.50
Light Brown	1.51 - 2.00
Dark Brown	2.01 - 3.00
Very Dark Brown	3.01 - 4.50

Overall Watershed  
Density = 2.2 Miles / SqMi

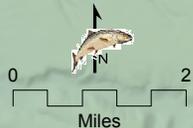


NMFS-SWR-HCD  
June 2008

## Noyo River Watershed Road Density in the Riparian Corridor



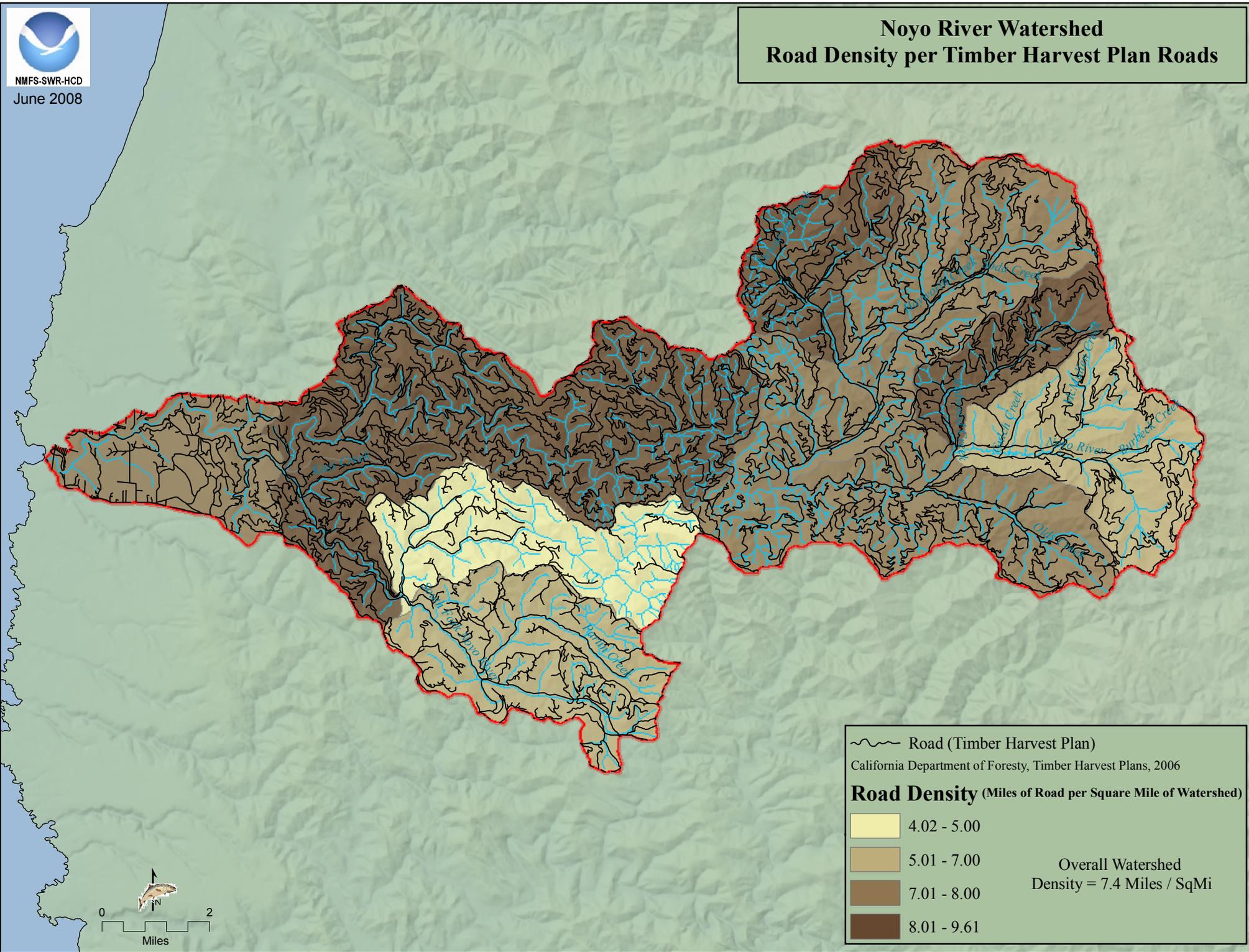
-  Road Segments within the 200 meter Riparian Corridor  
U.S. Census Bureau - Tiger 2000, 2002. 1:24,000
  -  1:24,000 Streams  
USGS National Hydrography Dataset, 2004. 1:24,000
  -  200 Meter Riparian Buffer (100 m on either side of stream centerline)
- Overall Riparian Corridor Density = 2.3 Miles / SqMi of Corridor





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June 2008

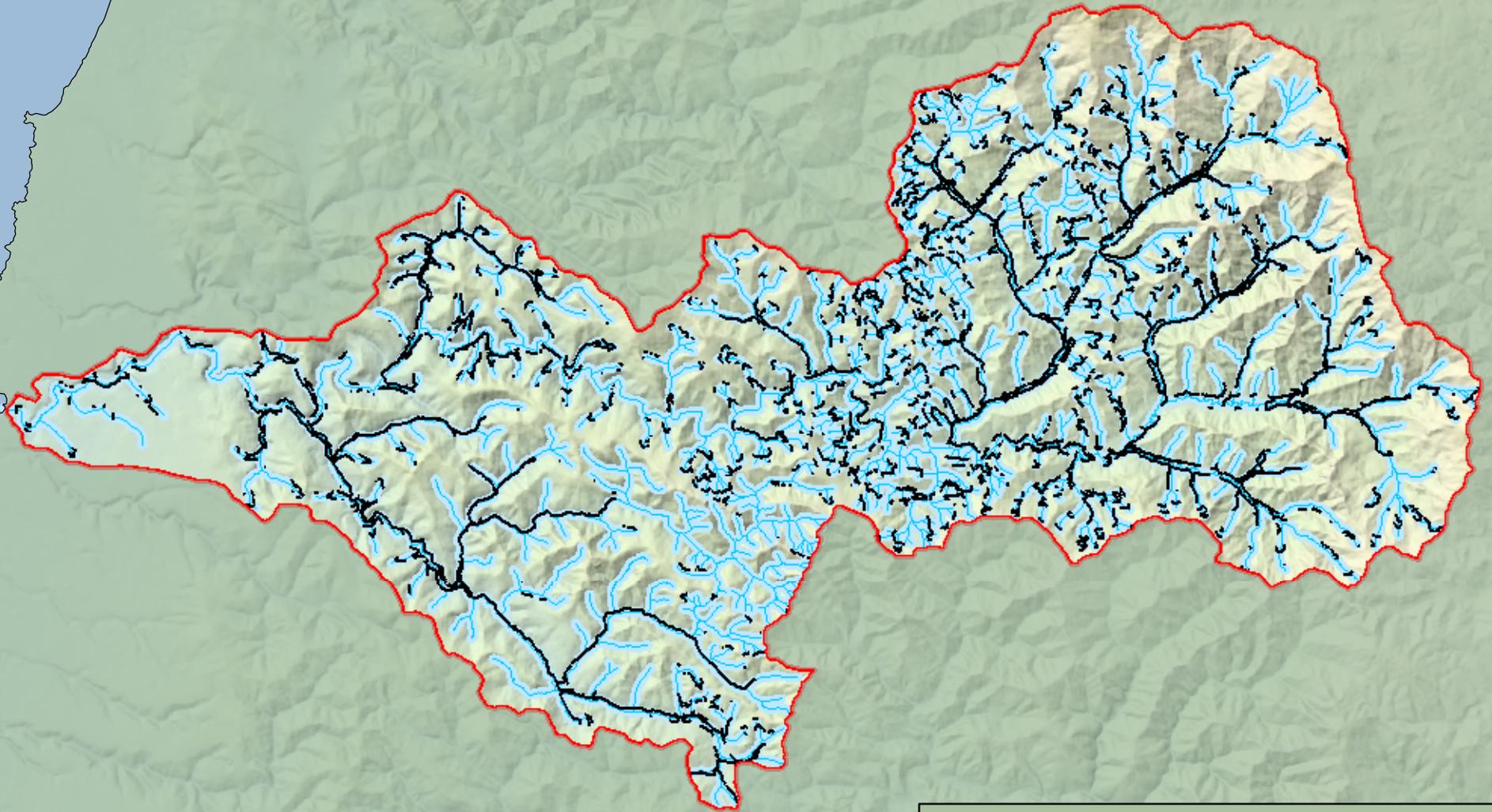
# Noyo River Watershed Road Density per Timber Harvest Plan Roads





NMFS-SWR-HCD  
June 2008

## Noyo River Watershed Road Density in the Riparian Corridor per Timber Harvest Plan Roads



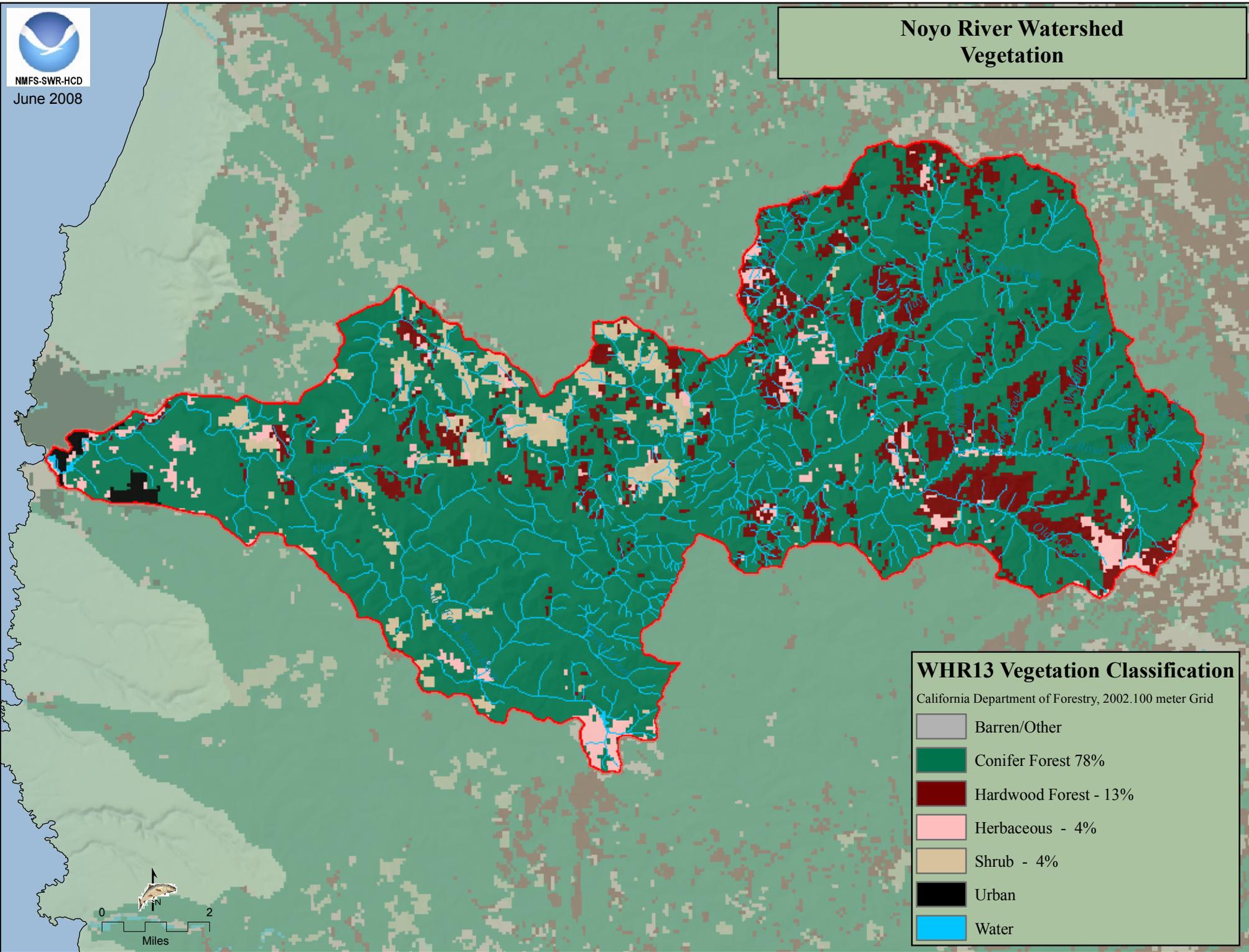
-  Road Segments within the 200 meter Riparian Corridor  
California Department of Forestry, Timber Harvest Plans, 2006
  -  1:24,000 Streams  
USGS National Hydrography Dataset, 2004. 1:24,000
  -  200 Meter Riparian Buffer (100 m on either side of stream centerline)
- Overall Riparian Corridor Density = 6.5 Miles / SqMi of Corridor





NMFS-SWR-HCD  
June 2008

# Noyo River Watershed Vegetation



## WHR13 Vegetation Classification

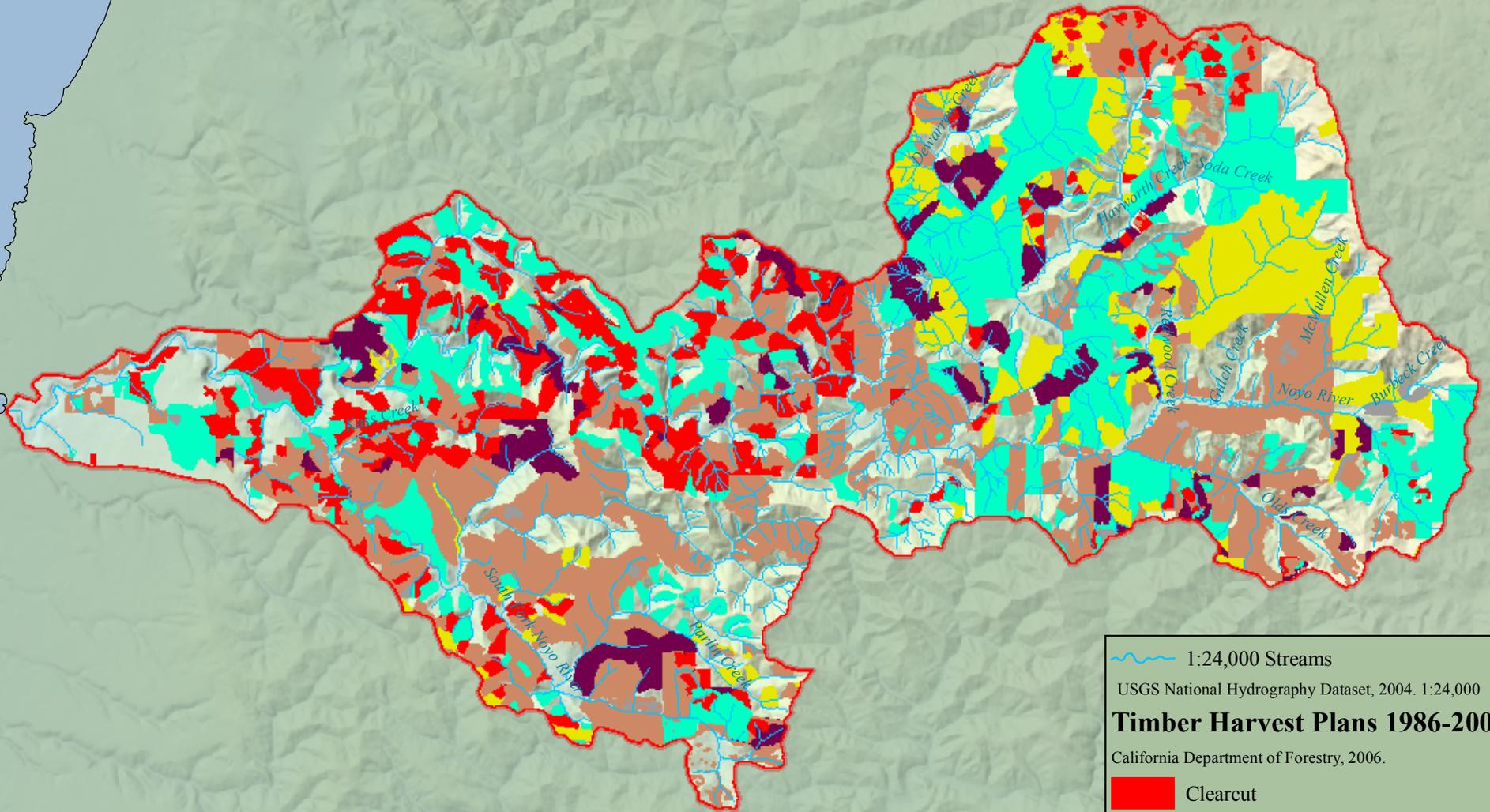
California Department of Forestry, 2002.100 meter Grid

- Barren/Other
- Conifer Forest 78%
- Hardwood Forest - 13%
- Herbaceous - 4%
- Shrub - 4%
- Urban
- Water



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June 2008

# Noyo River Watershed Timber Harvesting 1986-2006



 1:24,000 Streams  
USGS National Hydrography Dataset, 2004. 1:24,000

**Timber Harvest Plans 1986-2006**  
California Department of Forestry, 2006.

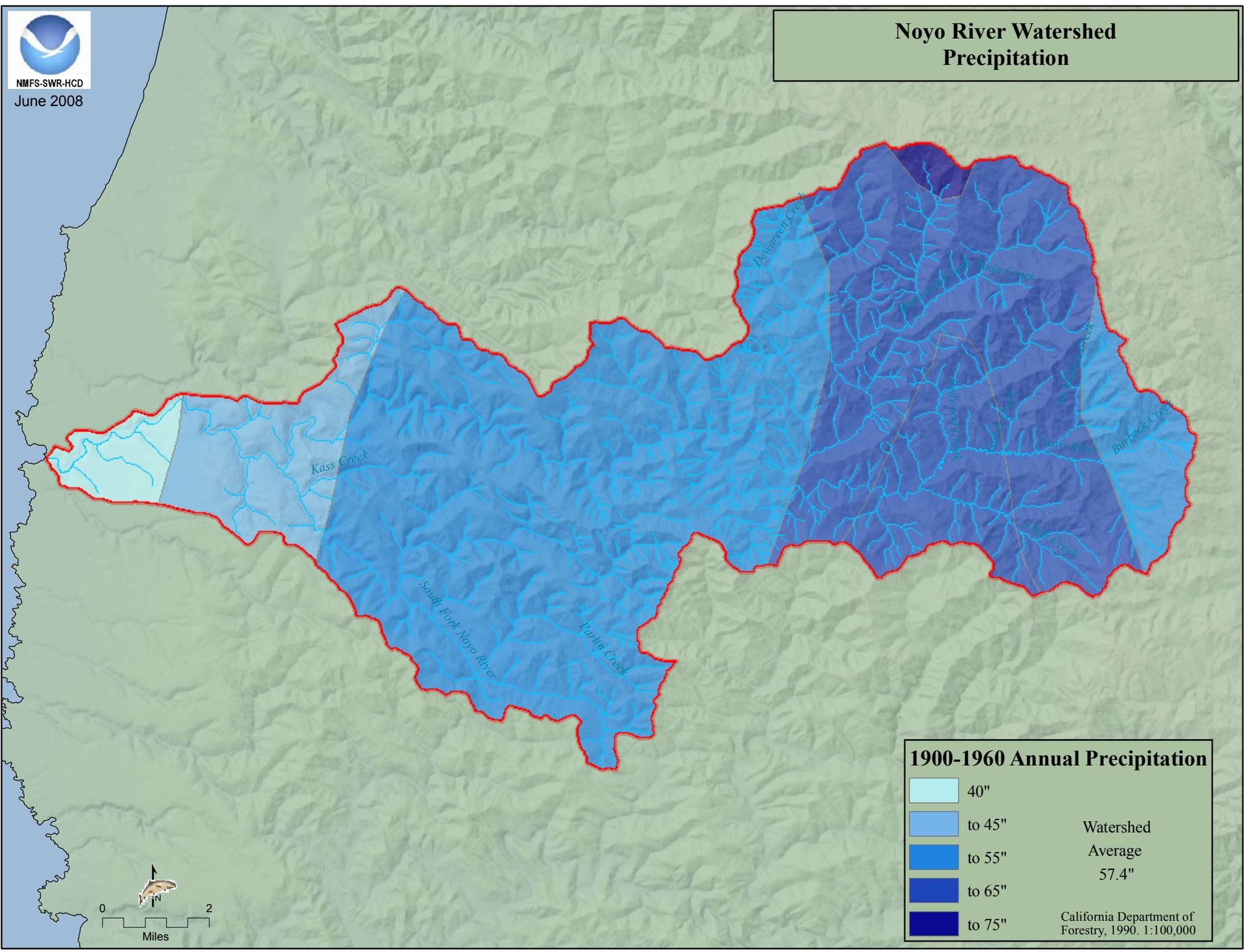
-  Clearcut
-  Uneven Age Removal
-  Even age Removal
-  Alternative Prescription
-  Transition
-  Out





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# Noyo River Watershed Precipitation



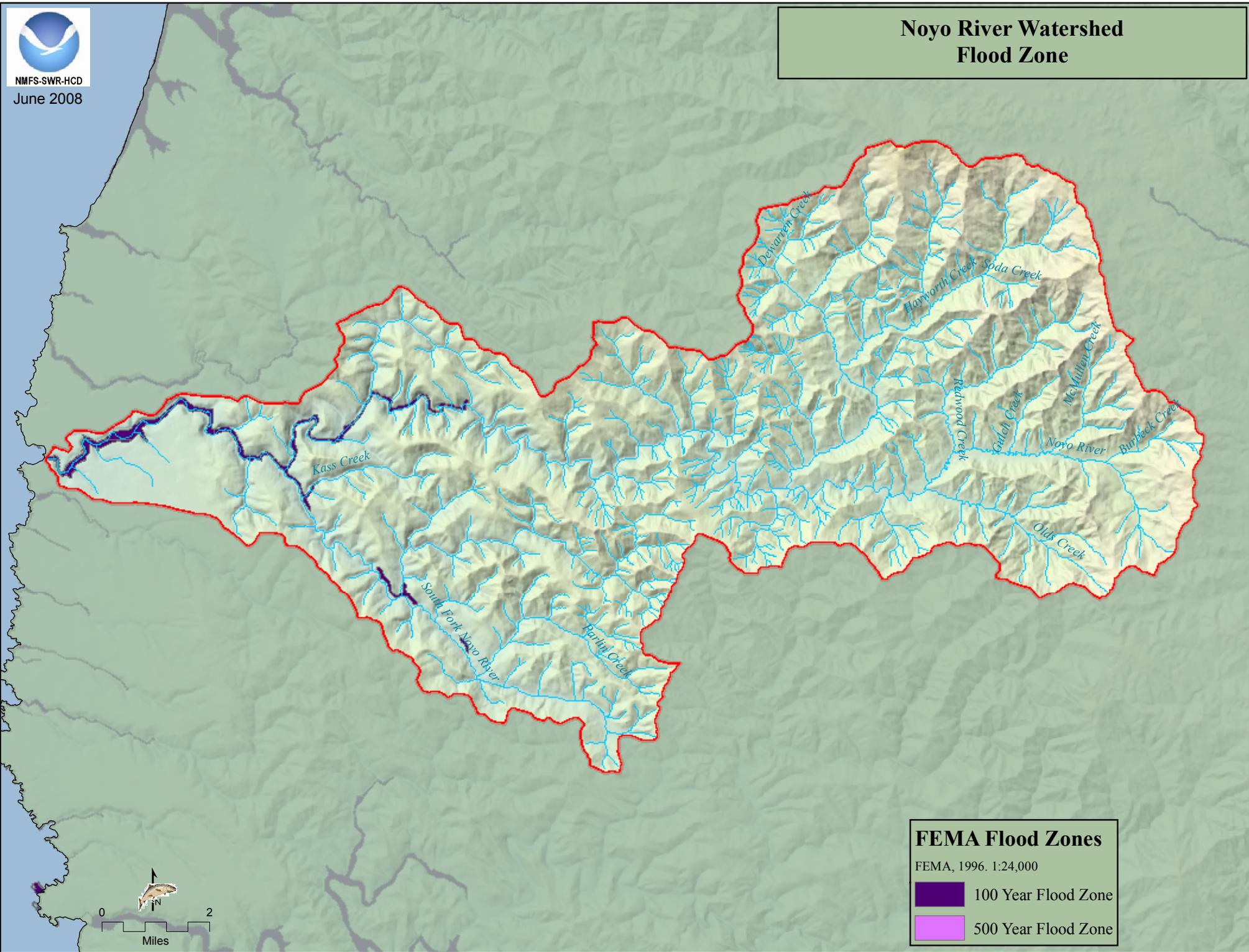
## 1900-1960 Annual Precipitation

Light Cyan	40"	
Light Blue	to 45"	Watershed
Medium Blue	to 55"	Average
Dark Blue	to 65"	57.4"
Very Dark Blue	to 75"	California Department of Forestry, 1990. 1:100,000



NMFS-SWR-HCD  
June 2008

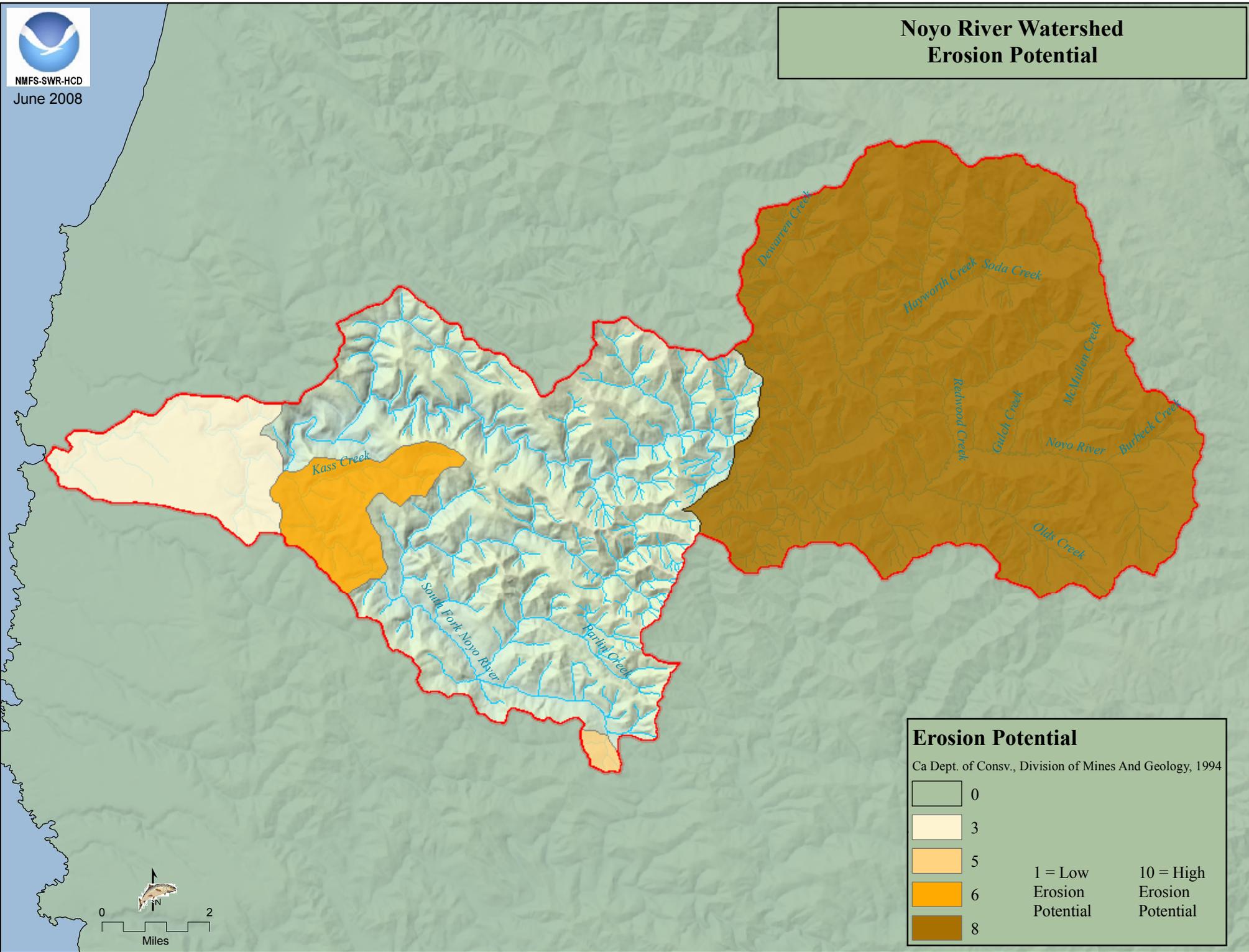
# Noyo River Watershed Flood Zone





NMFS-SWR-HCD  
June 2008

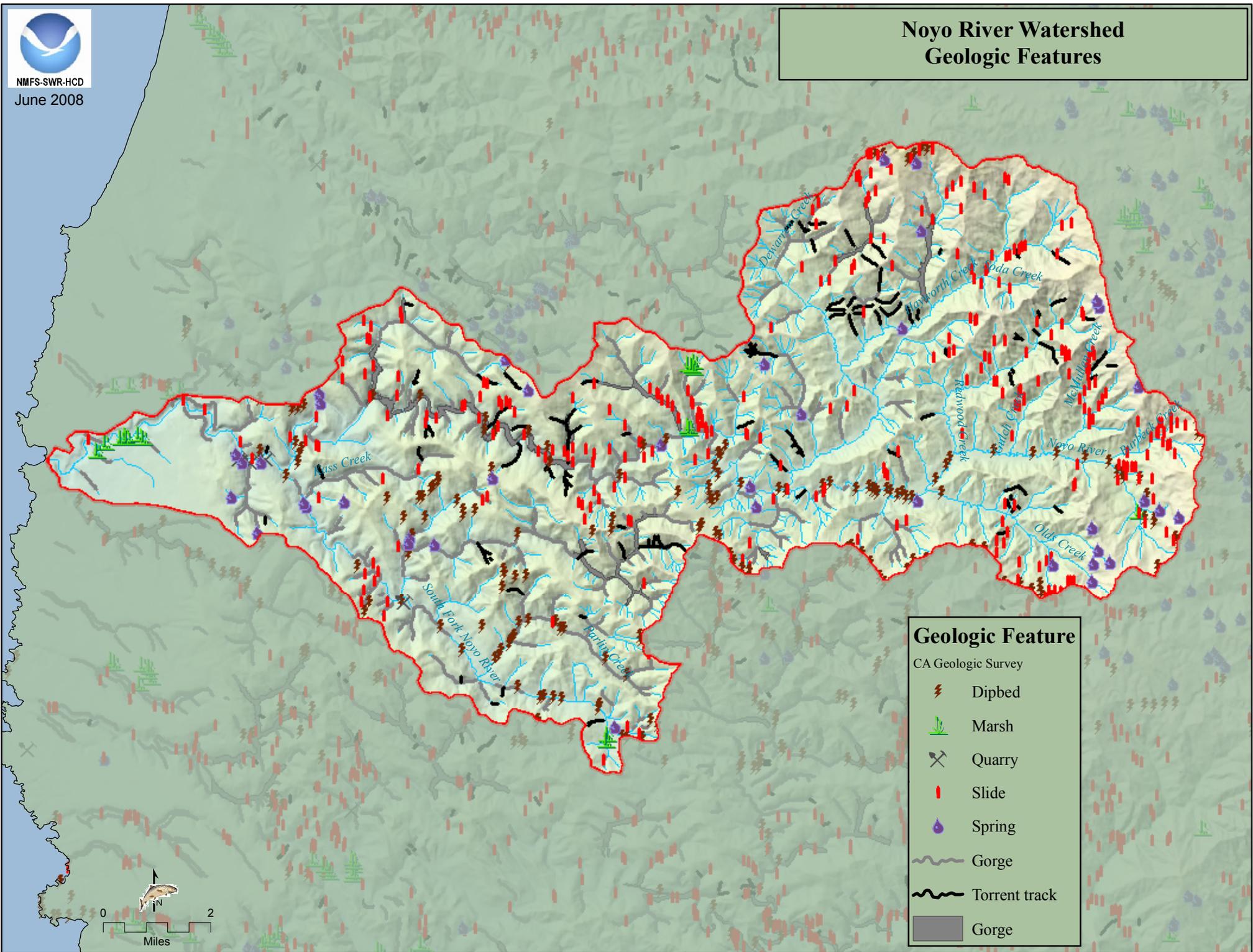
# Noyo River Watershed Erosion Potential





NMFS-SWR-HCD  
June 2008

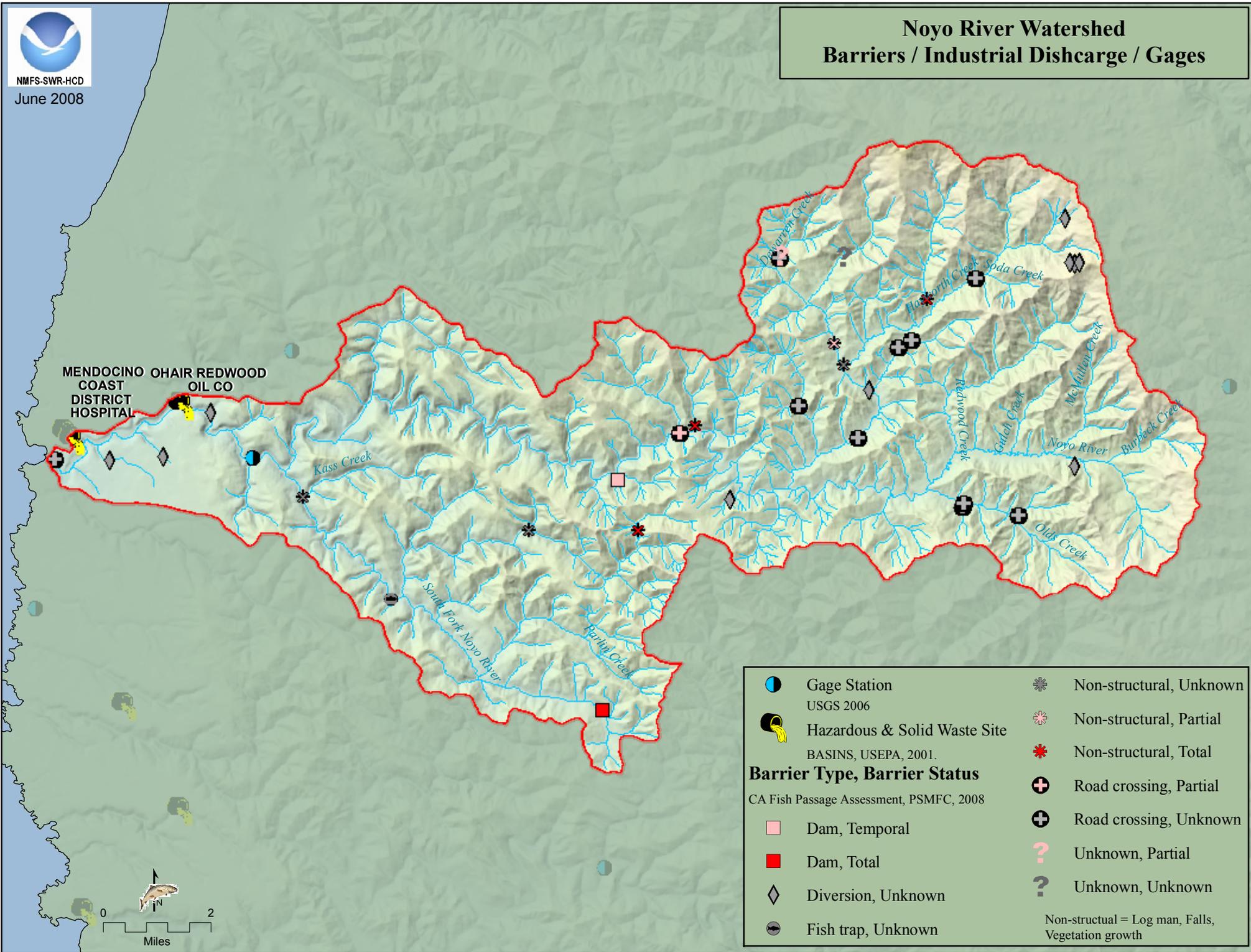
# Noyo River Watershed Geologic Features





NMFS-SWR-HCD  
June 2008

# Noyo River Watershed Barriers / Industrial Discharge / Gages



	Gage Station USGS 2006		Non-structural, Unknown
	Hazardous & Solid Waste Site BASINS, USEPA, 2001.		Non-structural, Partial
<b>Barrier Type, Barrier Status</b> CA Fish Passage Assessment, PSMFC, 2008			Non-structural, Total
	Dam, Temporal		Road crossing, Partial
	Dam, Total		Road crossing, Unknown
	Diversion, Unknown		Unknown, Partial
	Fish trap, Unknown		Unknown, Unknown

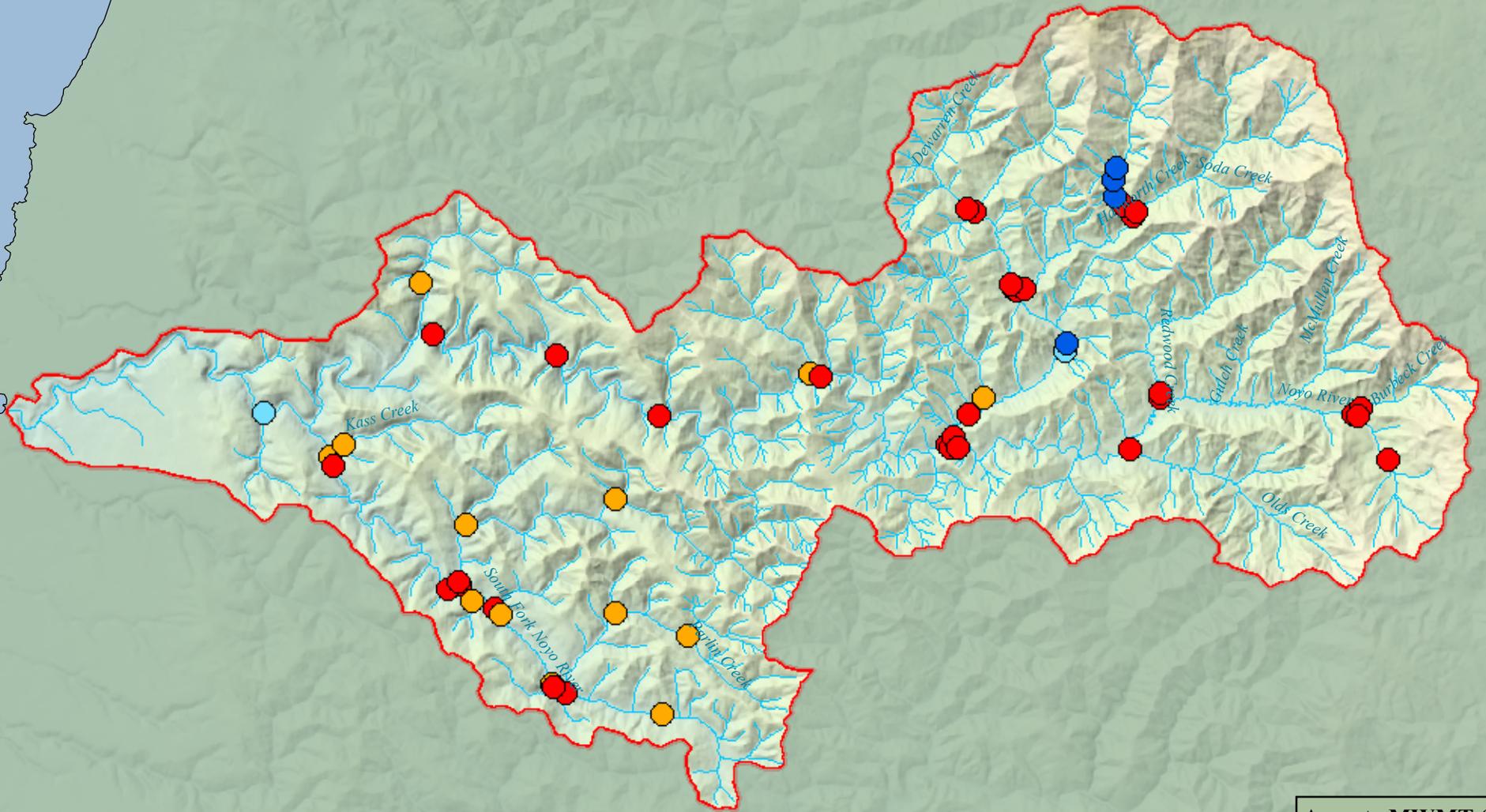
Non-structural = Log man, Falls, Vegetation growth





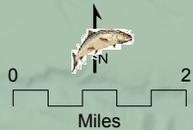
NMFS-SWR-HCD  
June 2008

## Noyo River Watershed In-stream Temperature



### Average MWMT (°C)

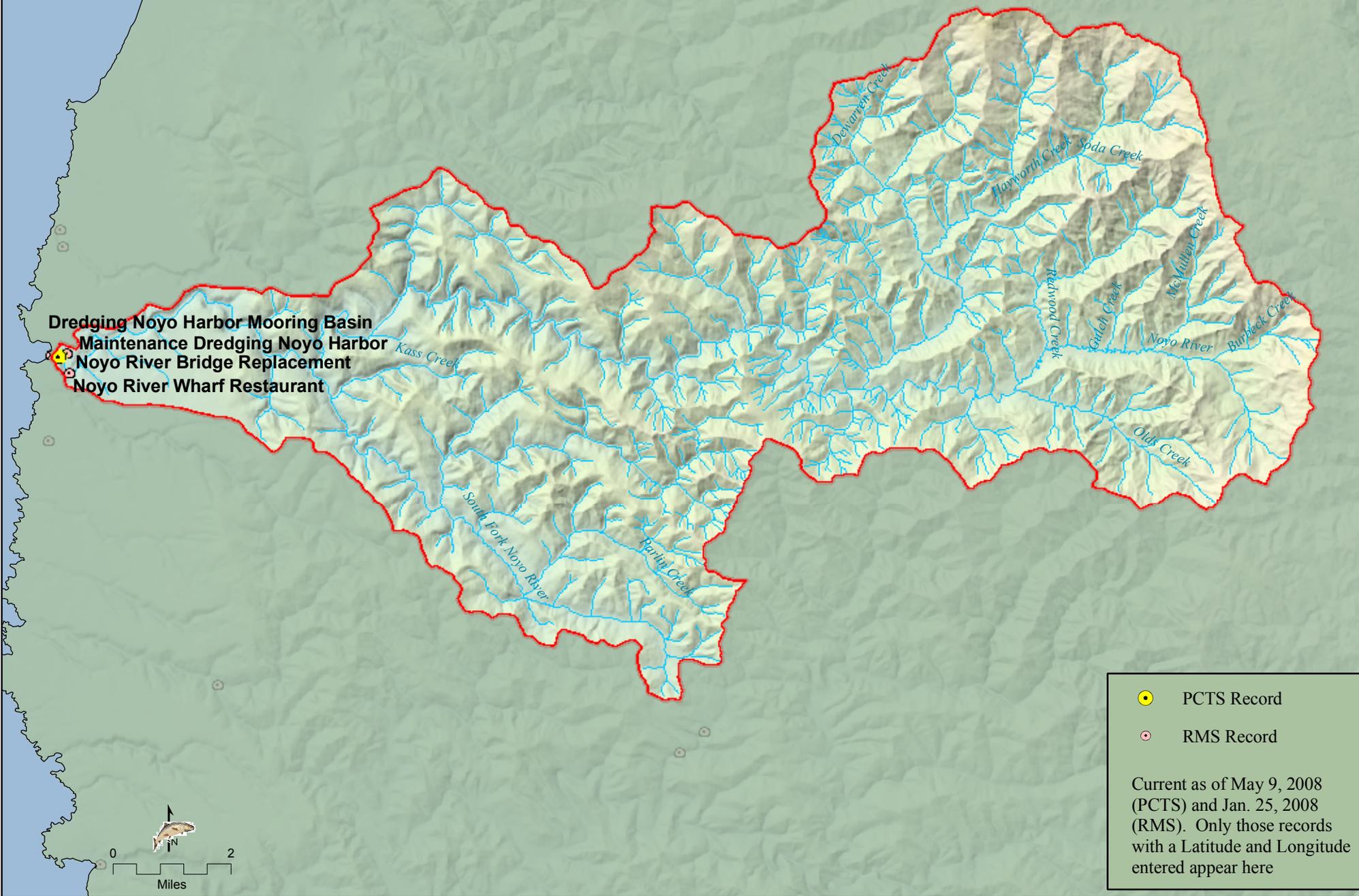
- 0 - 14
- 14 - 15
- 15 - 17
- 17 - 28





NMFS-SWR-HCD  
June 2008

# Noyo River Watershed Public Consultation Tracking System



- PCTS Record
- RMS Record

Current as of May 9, 2008 (PCTS) and Jan. 25, 2008 (RMS). Only those records with a Latitude and Longitude entered appear here



## References

### **Watersheds**

calwater\_ver2\_2  
vector digital data  
California Watersheds (CALWATER 2.2)  
California Department of Forestry and Fire  
Protection  
1:24,000  
1999  
<http://www.ca.nrcs.usda.gov/features/calwater/>

### **Distribution**

Coho\_Distribution  
vector digital data  
Eric Haney - CDFG - NCNCR-ISB  
1:100,000  
2006  
Draft  
<http://www.calfish.org/>  
  
NC\_Steelhead\_Distribution\_06\_2005  
vector digital data  
National Marine Fisheries Service (NOAA  
Fisheries)  
1:100,000  
August 2005  
<http://swr.nmfs.noaa.gov/salmon/layers/finalgis.htm>

CC\_Chinook\_Distribution\_06\_2005  
vector digital data  
National Marine Fisheries Service (NOAA  
Fisheries)  
1:100,000  
August 2005  
<http://swr.nmfs.noaa.gov/salmon/layers/finalgis.htm>

### **Critical Habitat**

CC\_Chinook\_ch\_06\_2005  
vector digital data  
National Marine Fisheries Service (NOAA  
Fisheries)  
1:100,000  
August 2005  
<http://swr.nmfs.noaa.gov/salmon/layers/finalgis.htm>

NC\_Steelhead\_ch\_06\_2005  
vector digital data  
National Marine Fisheries Service (NOAA  
Fisheries)  
1:100,000

August 2005  
<http://swr.nmfs.noaa.gov/salmon/layers/finalgis.htm>

### **Hydrology**

1801 NHD Flowline  
vector digital data  
National Hydrography Dataset High Resolution  
United States Geological Survey  
1:24,000  
2004

### **Dams**

Dams\_2005  
vector digital data  
Goslin, M.,  
Santa Cruz Fishery Science Center  
National Marine Fisheries Service  
2005  
<http://swfsc.noaa.gov/>

### **Barriers and Diversions**

pad\_september2008  
vector digital data  
California Fish Passage Assessment Database  
Pacific States Marine Fisheries Commission  
September 2006  
<http://www.calfish.org/>

### **Gaging Stations**

USGS Streamgages  
vector digital data  
U.S. Geological Survey  
Reston, Va  
2006  
[http://water.usgs.gov/GIS/dsdl/USGS\\_Streamgages-NHD\\_Locations\\_Shape.zip](http://water.usgs.gov/GIS/dsdl/USGS_Streamgages-NHD_Locations_Shape.zip)

### **Total Maximum Daily Load (TMDL)**

R1\_rivers\_2002 303d  
vector digital data  
State Water Resources Control Board (SWRCB)  
California Environmental Protection Agency  
2002

### **Precipitation**

California Mean Annual Precipitation Zones, 1900-1960

Vector digital data

California Department of Forestry and Fire Protection 1990

1:100,000

<http://frap.cdf.ca.gov/data/frapgisdata/select.asp>

### **Roads**

roads

vector digital data

Timber Harvest Plans

California Department of Forestry and Fire Protection

1:24,000

2006

TGRR00

vector digital data

Roads

United States Census Bureau

1:100000

2000

<http://www.census.gov/geo/www/tiger/>

### **Elevation**

Dem\_1\_utm\_f

Dem\_2\_utm\_f

10 Meter Digital Elevation Model (DEM)

NOAA Fisheries, Santa Cruz Laboratory

2003

### **Vegetation**

fveg02\_2

raster digital data

Multi-source Land Cover Data

California Department of Forestry and Fire Protection

100 meter Grid

2002

<http://frap.cdf.ca.gov/data/frapgisdata/select.asp>

### **Erodability**

Highly Erodible Watersheds

vector digital data

Department of Conservation, Division of Mines and Geology

Minimum Mapping Unit: Approximately 8000

Acres (20,000 Hectares)

1994

<http://gis.ca.gov/catalog/BrowseRecord.epl?id=380>

### **Land Ownership**

GOVTOWNA

vector digital data

California Department of Forestry Forest and Rangeland Resources Assessment Program

Bureau of Land Management Surface Management

1:100,000

September 1999

<http://old.casil.ucdavis.edu/casil/gis.ca.gov/teale/govtowna/>

### **Timber Harvesting**

thp\_(year)

Annual Timber Harvest Plans

vector digital data

California Department of Forestry and Fire Protection

Santa Rosa, CA

1983-2001

### **Developed Area and Population**

Census 2000 Block Data (Migrated)

vector digital data

California and the Department of Forestry and Fire Protection, FRAP

2003

1:100,000

<http://frap.cdf.ca.gov/data/frapgisdata/select.asp>

### **Imagery**

naip\_1-1\_2n\_s\_ca045\_2004\_1 (Mendocino)

remote-sensing image

raster digital data

National Agriculture Imagery Program (NAIP)

USDA-FSA Aerial Photography Field Office

Salt Lake City, Utah

2004

<http://datagateway.nrcs.usda.gov/GatewayHome.html>

### **Historic Suitable Habitat (Coho, Chinook, Steelhead)**

Intrinsic Potential Model

vector digital data

NOAA Fisheries

Santa Cruz Laboratory, Santa Cruz, CA

2005

<http://swfsc.noaa.gov/>

### **Forest Industrial Ownership**

nwca\_own

vector digital data

United States Fish and Wildlife Service

Arcata, CA

2000

### **Toxins**

Hazardous\_&\_solid\_waste\_sites

Better Assessment Science Integrating point and

Nonpoint Sources (BASINS)

vector digital data

United States Environmental Protection Agency

2001

<http://www.epa.gov/waterscience/basins/>

### **Temperature**

MWMT\_20080117\_selected\_watersheds

Vector digital data

Sonoma Ecology Center

2008

### **Geologic Features**

Geopoint

vector digital data

Department of Conservation, Division of Mines and

Geology

Minimum Mapping Unit: Approximately 8000

Acres (20,000 Hectares)

1994

Gorge

vector digital data

Department of Conservation, Division of Mines and

Geology

Minimum Mapping Unit: Approximately 8000

Acres (20,000 Hectares)

1994

### **Records Management System (RMS)**

### **Public Consultation Tracking System (PCTS)**

National Marine Fisheries Service

Oracle Databases

2008