

Watershed Characterization

San Gregorio Creek Watershed

Area	Hydrologic Units	Calwater Subbasins ---	(Planning Watersheds)
33,301 Acres	18050006	2202300001	La Honda Creek (7327 Acres)
13,476 Hectares	4th Field HUC	2202300002	Harrington Creek (8274 Acres)
52 Square Miles		2202300003	El Corte de Madera Creek (6333 Acres)
	2203	2202300004	Clear Creek (5390 Acres)
Location	4th Field Calwater	2202300005	Mindego Creek (5977 Acres)
San Mateo County			

Species Potential	Miles of Streams with Species Present
Central California Coast Steelhead Santa Cruz Mountains Diversity Stratum - Independent Population	<u>Steelhead</u> 40 NOAA Fisheries, Critical Habitat Redesignation, 2005
Central California Coast Coho Santa Cruz Mountains Diversity Stratum - Dependent Population	<u>Coho</u> 2 CDFG, Coho Distribution, May 2007

Critical Habitat	
Central California Coast Steelhead	40 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)

Coho Intrinsic Potential	
Km of Historical Coho IP (21.5 C mask)	40
% of IP (21.5 C Mask) with Current Coho Distribution	39%
<small>Spence, B. C., et al., 2008. A framework for assessing the viability of threatened and endangered salmon and steelhead in the North-Central California Coast Recovery Domain. NOAA Tech Memo NMFS-SWFSC-423.</small>	

Miles of Waterway ^A	Miles	Number of Dams ^C
Naturally Occurring Waterways		11
Intermittent Stream	70	4 - Impassable
Perennial Stream	46	1 - Not a Barrier
Artificial Path	1	3 - Temporal Barriers
		3 - Unknow Barrier Status
<small>^CPassage Assessment Database, Pacific States Marine Fisheries Commission, 2005</small>		

^AUSGS National Hydrography Dataset, High Resolution, 2004. 1:24,000

USGS Gaging Stations ^B	Number of Barriers ^C
11162570	47
San Gregorio Creek at San Gregorio	11 Dams
	11 Road Crossings (2 Impassable, 7 Temp. &/or Partially Impassable)
	21 Natural Barriers (Chutes, Falls, Log Jams, etc. (11 Impassable))
<small>^CPassage Assessment Database, Pacific States Marine Fisheries Commission, 2006</small>	

EPA Total Maximum Daily Load Classification (TMDL)^I
 Low Priority - High Coliform Count Medium Priority - Sediment/Siltation
 Sources: Nonpoint Sources
^IState Water Resources Control Board, 2003



Appropriated Waterways^J

San Gregorio Creek is Fully appropriated (6/1 to 10/31)

^JCalifornia State Water Resources Control Board, 1998.**Average Annual Precipitation^E**

31.1"

Average Annual Precipitation Range^E

18 - 45"

^ECalifornia Mean Annual Precipitation Zones, 1900-1960, CA Department of Forestry, 1990**Roads^A**

Miles

Roads in Watershed

Secondary and connecting road, state highways

22

Local, neighborhood, and rural road, city street, unseparated

99

Vehicular trail, 4WD

12

Driveway or service road

23

Total Miles

Road Density

Miles of Roads per SqMi of Watershed

3.0

Miles of Roads per SqMi of 100m Riparian Buffer*

3.2

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

^AU.S. Census Bureau - Tiger 2000, 2002. 1:24,000**Slope^D**

Acres

Percent of watershed

Lands of 0-2 percent slope

294

1%

Lands of 2-4 percent slope

401

1%

Lands of 4-10 percent slope

1,962

6%

Lands of 10-15 percent slope

2,629

8%

Lands of 15-30 percent slope

10,994

33%

Lands of 30-60 percent slope

14,910

45%

Lands of 60-100 percent slope

2,103

6%

Lands of 100-117 percent slope

9

0%

Elevation Range

0 - 2569 ft.

0 - 783 m

^DSlope derived from USGS 10 meter Digital Elevation Models (DEM's)**Vegetation^G**

Acres

Percent of watershed

Agriculture

247

1%

Annual grassland

7,665

23%

Conifer Forest

Douglas Fir

462

1%

Montane Hardwood-Conifer

106

0%

Redwood

8,090

24%

Unknown Conifer

2,192

7%

Hardwood Forest

Montane Hardwood

2

0%

Hardwood Woodland

Coastal Oak Woodland

210

1%

Shrub

12,980

39%

Urban

1,366

4%

Water

10

0%

^GMulti-source Land Cover Data (2002 v2), CA Department of Forestry, 2002. 100 meter Grid**Erodability of Watershed^F**

Acres

Percent of watershed

All of watershed is ranked as 5

33,301

100%

^FDepartment 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]



Land Ownership^H	Acres	Percent of watershed
Private	32,526	98%
Local (City / County Park)	672	2%
State (Parks & Recreation)	103	0%

^HManagement Landscape, CA Department of Forestry, 2002

Population^I	Housing^I
Total Population within the watershed -- 2,458 People	Total Housing Units within the watershed -- 1,007 Houses
	Housing Density
	0 to Less than 1 Housing Unit / 160 Acres 40%
	1 Unit / 160 Acres to 1 Unit / 20 Acres 54%
	1 Unit / 20 Acres to 1 Unit / 5 Acres 4%
	1 Unit / 5 Acres to 2 Units / Acre 2%
	2 Units / Acres to Greater than or Equal to 5 Units / Acre

^ICensus 2000 Block Data (Migrated), CA Department of Forestry, 2003



San Gregorio Creek

Vegetation density and age class in the entire watershed

California Department of Forestry and Fire Protection; fveg02_2. Vector digital dataset. 100m Grid, 2002.

Acres

Size	Density	Agriculture	Barren	Conifer Forest	Conifer Woodland	Hardwood Forest	Hardwood Woodland	Herbaceous	Shrub	Urban	Water	Wetland	Grand Total by Size class	
Not Determined	Not Determined	247						7658	6356	1366	10		25118	
	S													
	P				838									
	M				153									
	D				8491									
	Total	247		9481				7658	6356	1366	10			
Seedling	S												0	
	P													
	M													
	D													
	Total													
Sapling	S												0	
	P													
	M													
	D													
	Total													
Pole	S												0	
	P													
	M													
	D													
	Total													
Small Tree	S												8189	
	P													
	M				353		200							
	D				1025	2	17		6590					
	Total			1379		2	217		6590					
Medium/Large Tree	S												0	
	P													
	M													
	D													
	Total													
Multi Layered	D												0	
	Total													
Grand Total by Species Type		247	0	10860	0	2	217	7658	12946	1366	10	0	33307	

Percent

Size	Density	Agriculture	Barren	Conifer Forest	Conifer Woodland	Hardwood Forest	Hardwood Woodland	Herbaceous	Shrub	Urban	Water	Wetland	Grand Total by Size class	
Not Determined	Not Determined	1%						23%	19%	4%	0%		75%	
	S													
	P				3%									
	M				0%									
	D				25%									
	Total	1%		28%				23%	19%	4%	0%			
Seedling	S												0%	
	P													
	M													
	D													
	Total													
Sapling	S												0%	
	P													
	M													
	D													
	Total													
Pole	S												0%	
	P													
	M													
	D													
	Total													
Small Tree	S												25%	
	P													
	M				1%		1%							
	D				3%	0%	0%		20%					
	Total			4%	0%	1%		20%						
Medium/Large Tree	S												0%	
	P													
	M													
	D													
	Total													
Multi Layered	D												0%	
	Total													
Grand Total by Species Type		1%		33%	0%	1%	23%	39%	4%	0%			100%	

SIZE	Description	Diameter at Breast Height (DBH)
Not Determined		N/A
Seedling		Less Than 1 inch
Sapling		1 to 6 inches
Pole		6 to 11 inches
Small Tree		11 to 24 inches
Medium/Large Tree		Greater Than 24 inches
Multi Layered		Size 5 Over Size 4 Or 3; Total Tree Crown Closure Greater Than 60%

SIZE (SHRUB)	Desc.	Crown Decadence	DENSITY	Description
Not Determined		N/A		None
Seedling Shrub		Seedlings or sprouts < 3 years	S	10 to 24%
Young Shrub		None	P	25 to 39%
Mature Shrub		1 - 25%	M	40 to 59%
Decadent Shrub		> 25%	D	60 to 100%

San Gregorio Creek

Vegetation within Riparian Buffer (100 meter on either side of stream)

California Department of Forestry and Fire Protection; fveg02_2. Vector digital dataset. 100m Grid, 2002.

Acres

Size	Density	Agriculture	Barren	Conifer Forest	Conifer Woodland	Hardwood Forest	Hardwood Woodland	Herbaceous	Shrub	Urban	Water	Wetland	Grand Total by Size class
Not Determined	Not Determined	111.2						1025.5	1603.7	373.1	7.4		
	S												
	P				368.2								
	M				96.4								
	D				3284.0								
	Total	111.2			3748.6			1025.5	1603.7	373.1	7.4		6869
Seedling	S												
	P												
	M												
	D												
	Total												0
Sapling	S												
	P												
	M												
	D												
	Total												0
Pole	S												
	P												
	M												
	D												
	Total												0
Small Tree	S												
	P												
	M				64.2		7.4						
	D				160.6				1964.5				
	Total				224.9		7.4		1964.5				2197
Medium/Large Tree	S												
	P												
	M												
	D												
	Total												0
Multi Layered	D												
	Total												0
Grand Total by Species Type		111	0	3973	0	0	7	1025	3568	373	7	0	9066

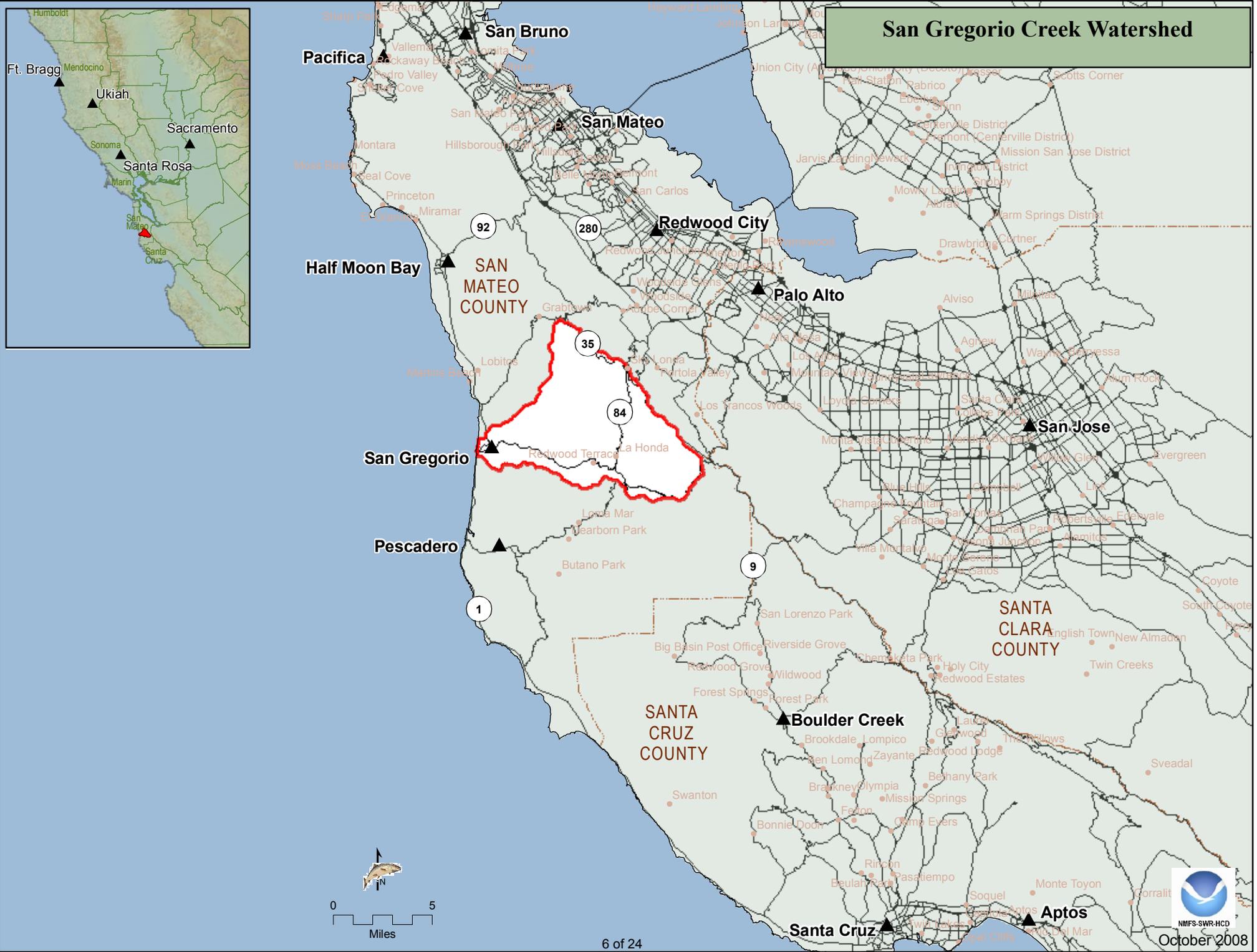
SIZE	Description	Diameter at Breast Height (DBH)
Not Determined		N/A
Seedling		Less Than 1 inch
Sapling		1 to 6 inches
Pole		6 to 11 inches
Small Tree		11 to 24 inches
Medium/Large Tree		Greater Than 24 inches
Multi Layered		Size 5 Over Size 4 Or 3; Total Tree Crown Closure Greater Than 60%

Percent

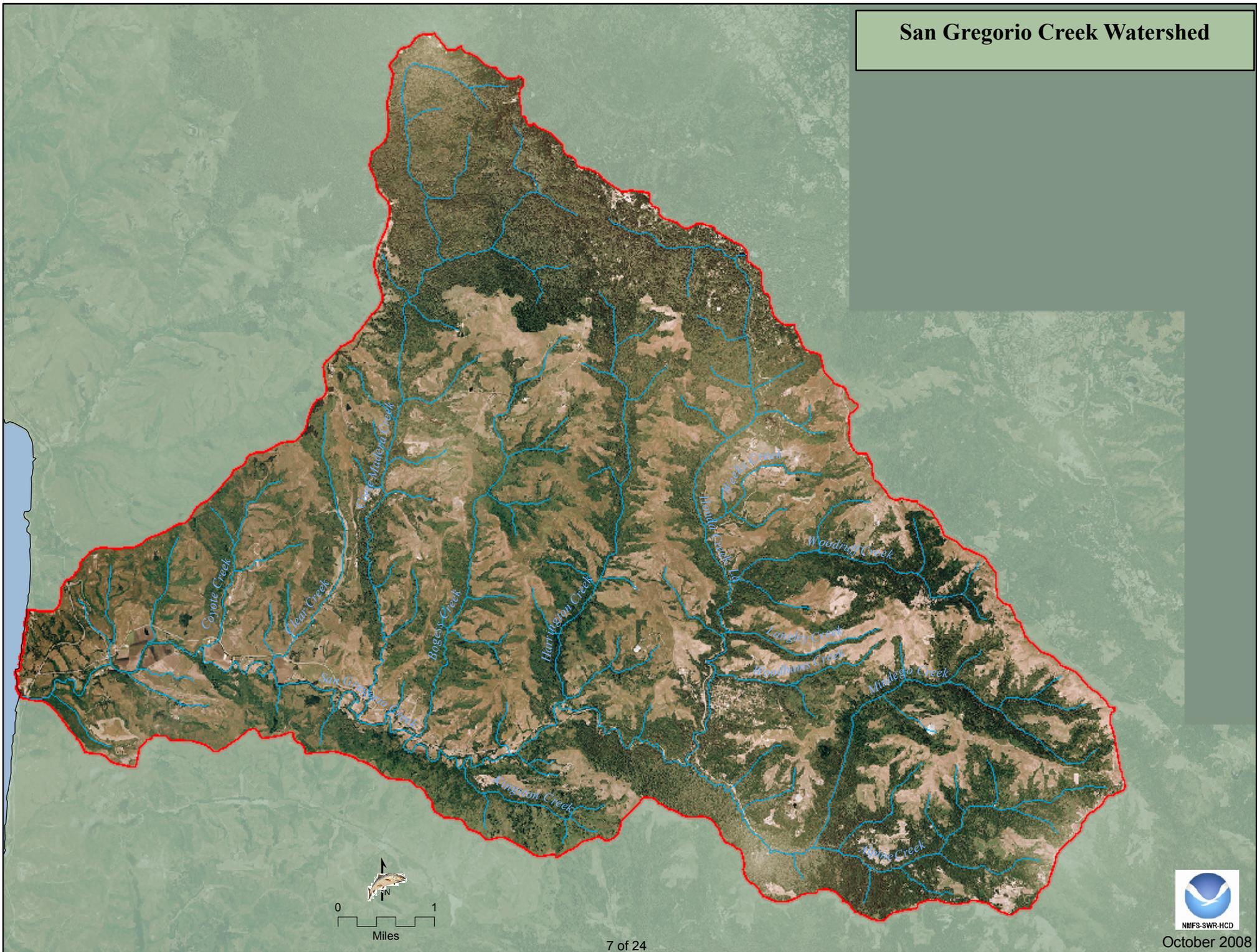
Size	Density	Agriculture	Barren	Conifer Forest	Conifer Woodland	Hardwood Forest	Hardwood Woodland	Herbaceous	Shrub	Urban	Water	Wetland	Grand Total by Size class
Not Determined	Not Determined	1%						11%	18%	4%	0%		
	S												
	P				4%								
	M				1%								
	D				36%								
	Total	1%		41%				11%	18%	4%	0%		76%
Seedling	S												
	P												
	M												
	D												
	Total												0%
Sapling	S												
	P												
	M												
	D												
	Total												0%
Pole	S												
	P												
	M												
	D												
	Total												0%
Small Tree	S												
	P												
	M				1%		0%						
	D				2%				22%				
	Total				2%		0%		22%				24%
Medium/Large Tree	S												
	P												
	M												
	D												
	Total												0%
Multi Layered	D												
	Total												0%
Grand Total by Species Type		1%		44%			0%	11%	39%	4%	0%		100%

SIZE (SHRUB)	Desc.	Crown Decadence	DENSITY	Description
Not Determined		N/A		None
Seedling Shrub		Seedlings or sprouts < 3 years	S	10 to 24%
Young Shrub		None	P	25 to 39%
Mature Shrub		1 - 25%	M	40 to 59%
Decadent Shrub		> 25%	D	60 to 100%

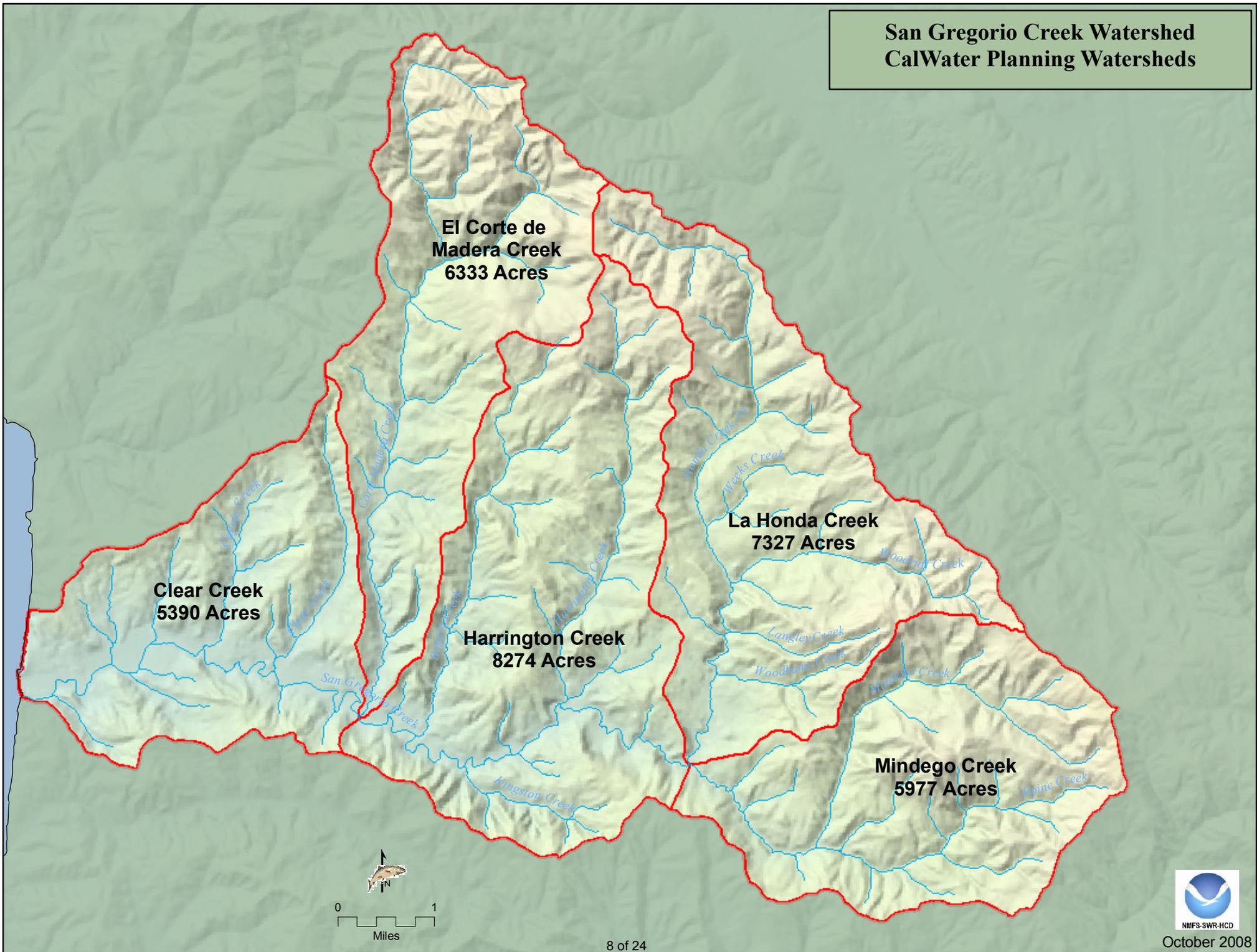
San Gregorio Creek Watershed



San Gregorio Creek Watershed

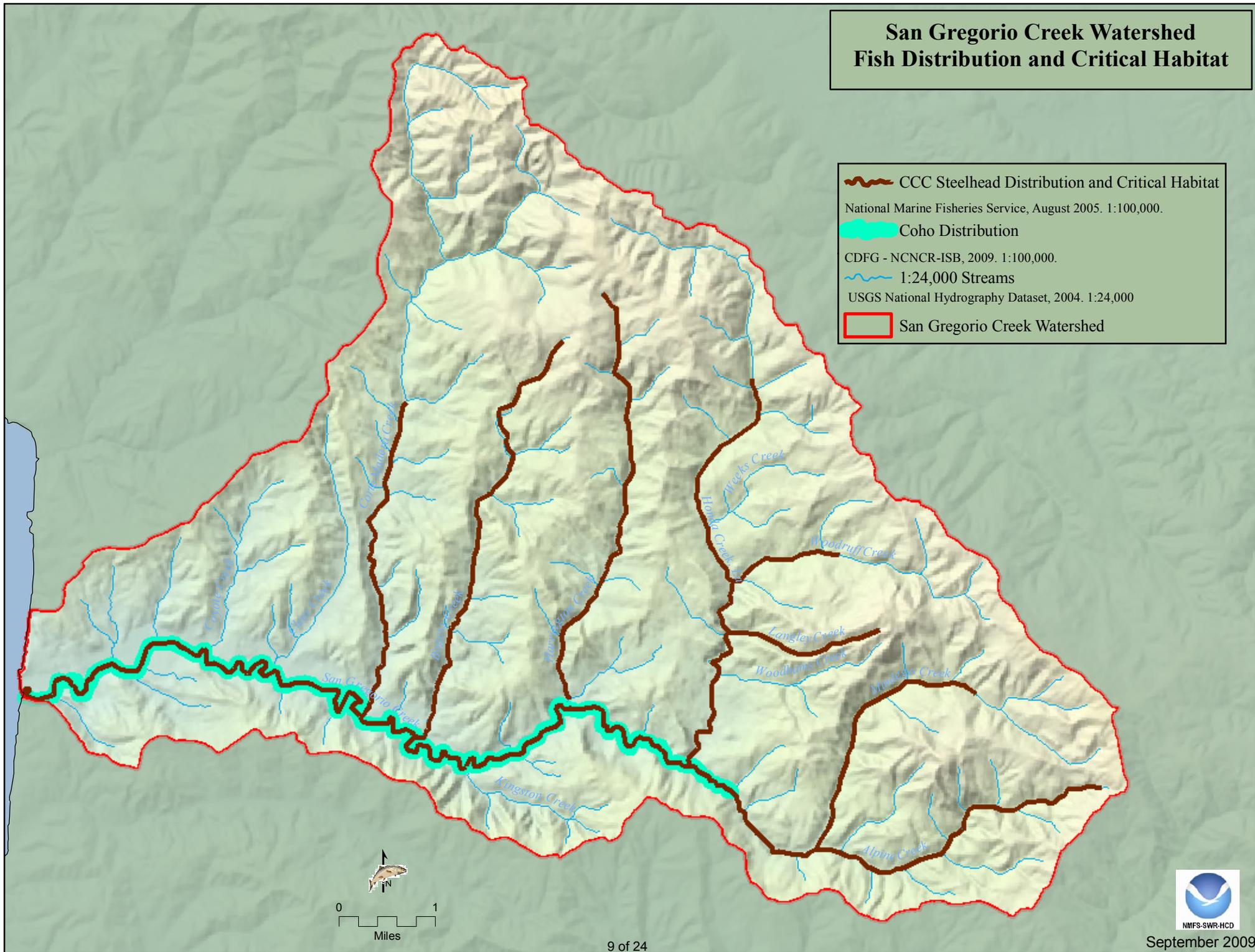


**San Gregorio Creek Watershed
CalWater Planning Watersheds**



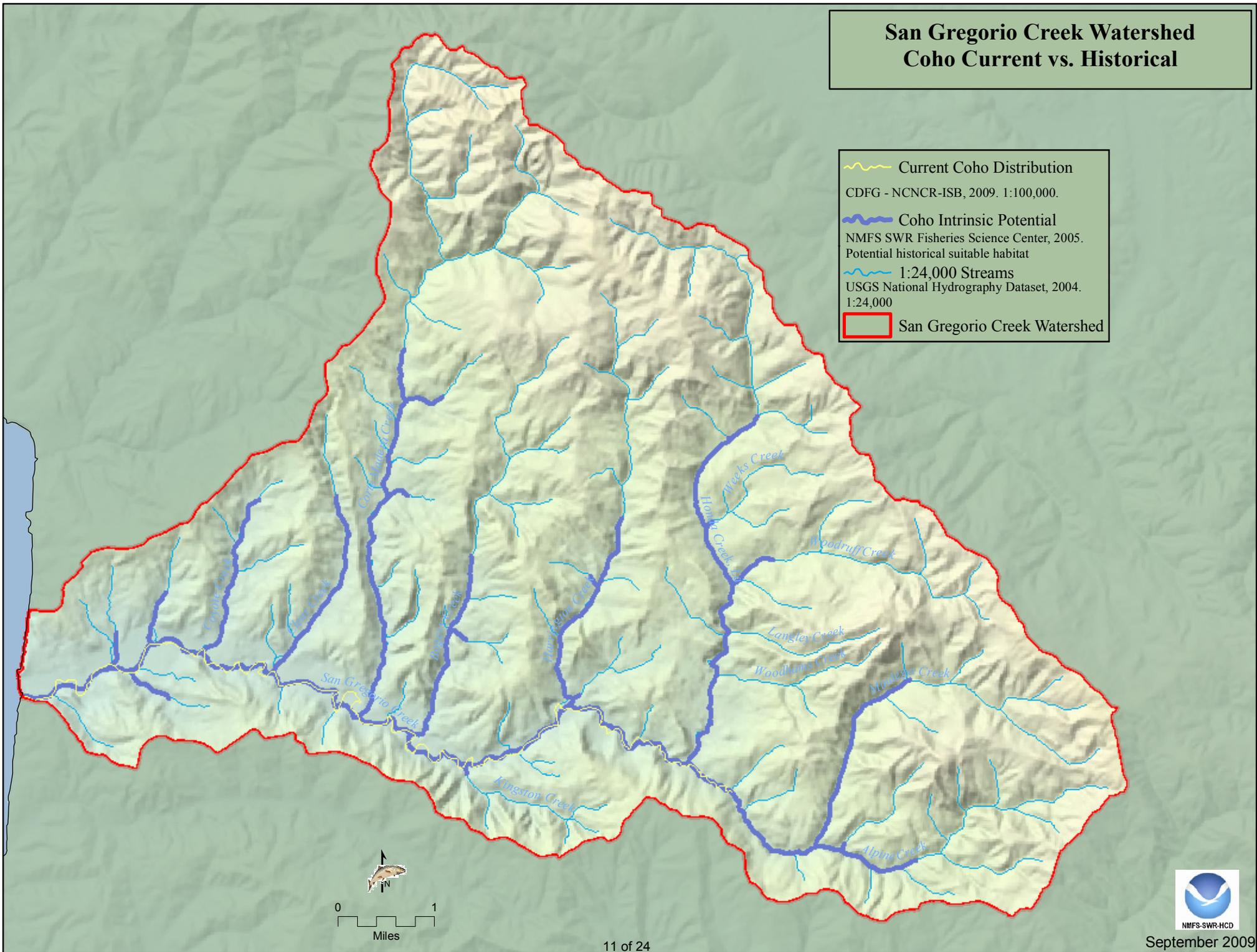
San Gregorio Creek Watershed Fish Distribution and Critical Habitat

-  CCC Steelhead Distribution and Critical Habitat
National Marine Fisheries Service, August 2005. 1:100,000.
-  Coho Distribution
CDFG - NCNCR-ISB, 2009. 1:100,000.
-  1:24,000 Streams
USGS National Hydrography Dataset, 2004. 1:24,000
-  San Gregorio Creek Watershed



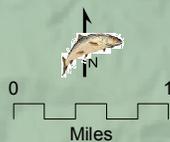
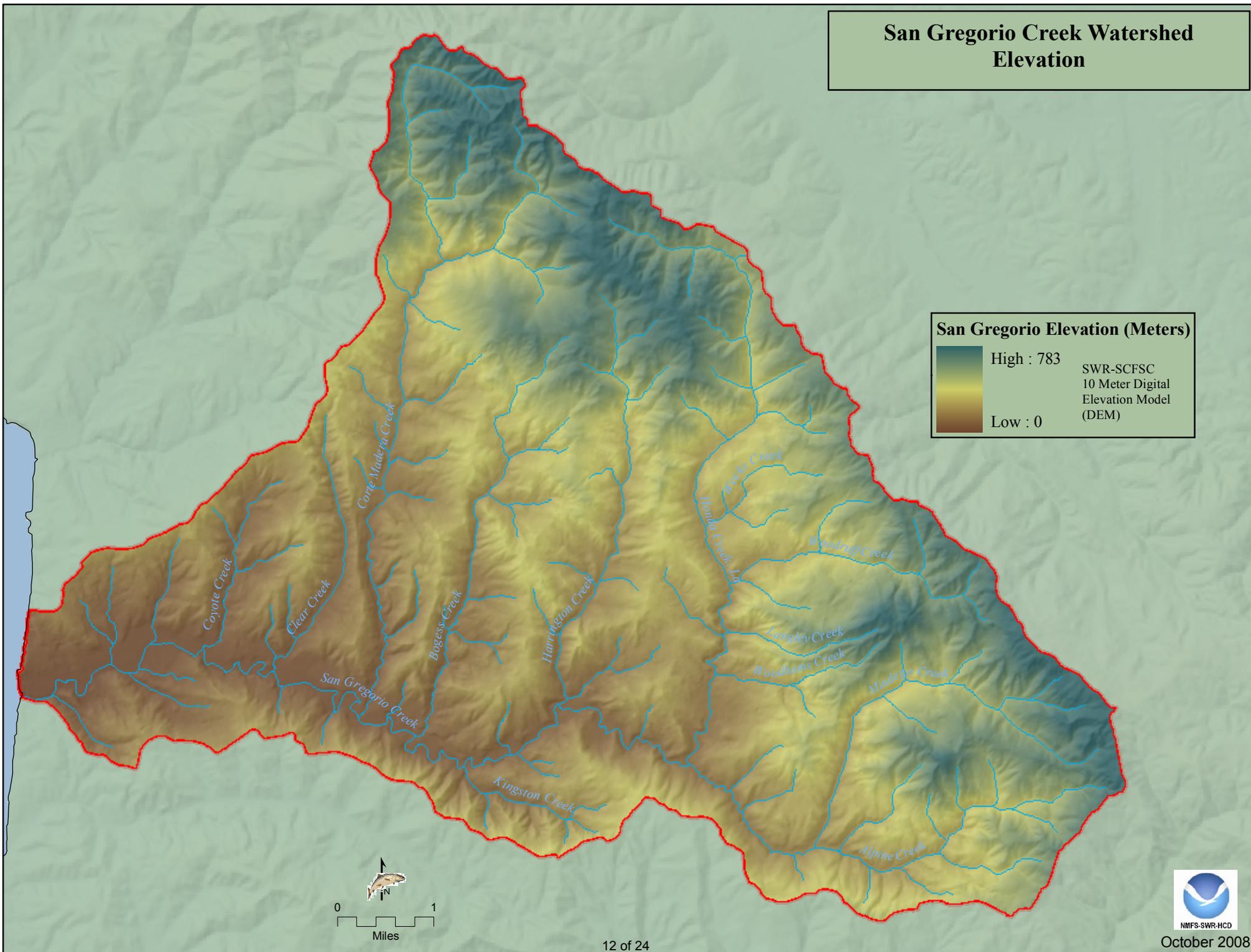
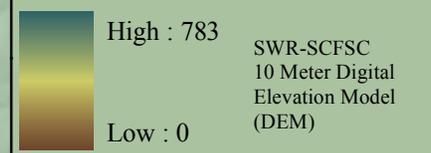
San Gregorio Creek Watershed Coho Current vs. Historical

-  Current Coho Distribution
CDFG - NCNCR-ISB, 2009. 1:100,000.
-  Coho Intrinsic Potential
Potential historical suitable habitat
NMFS SWR Fisheries Science Center, 2005.
-  1:24,000 Streams
USGS National Hydrography Dataset, 2004.
1:24,000
-  San Gregorio Creek Watershed



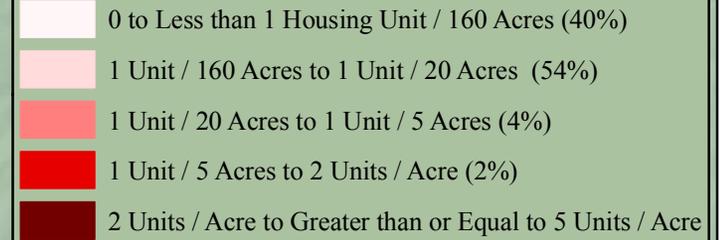
San Gregorio Creek Watershed Elevation

San Gregorio Elevation (Meters)

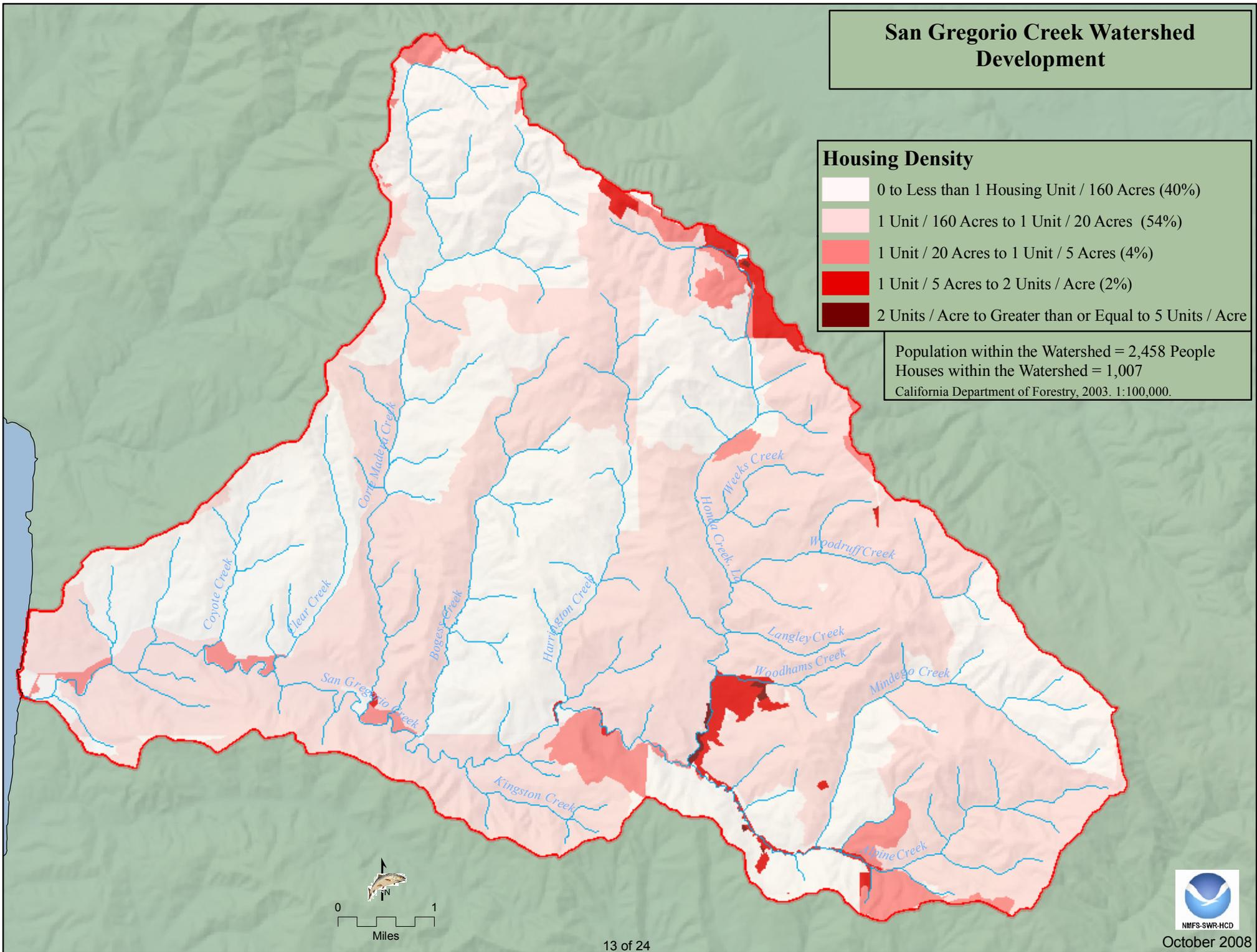


San Gregorio Creek Watershed Development

Housing Density



Population within the Watershed = 2,458 People
Houses within the Watershed = 1,007
California Department of Forestry, 2003. 1:100,000.

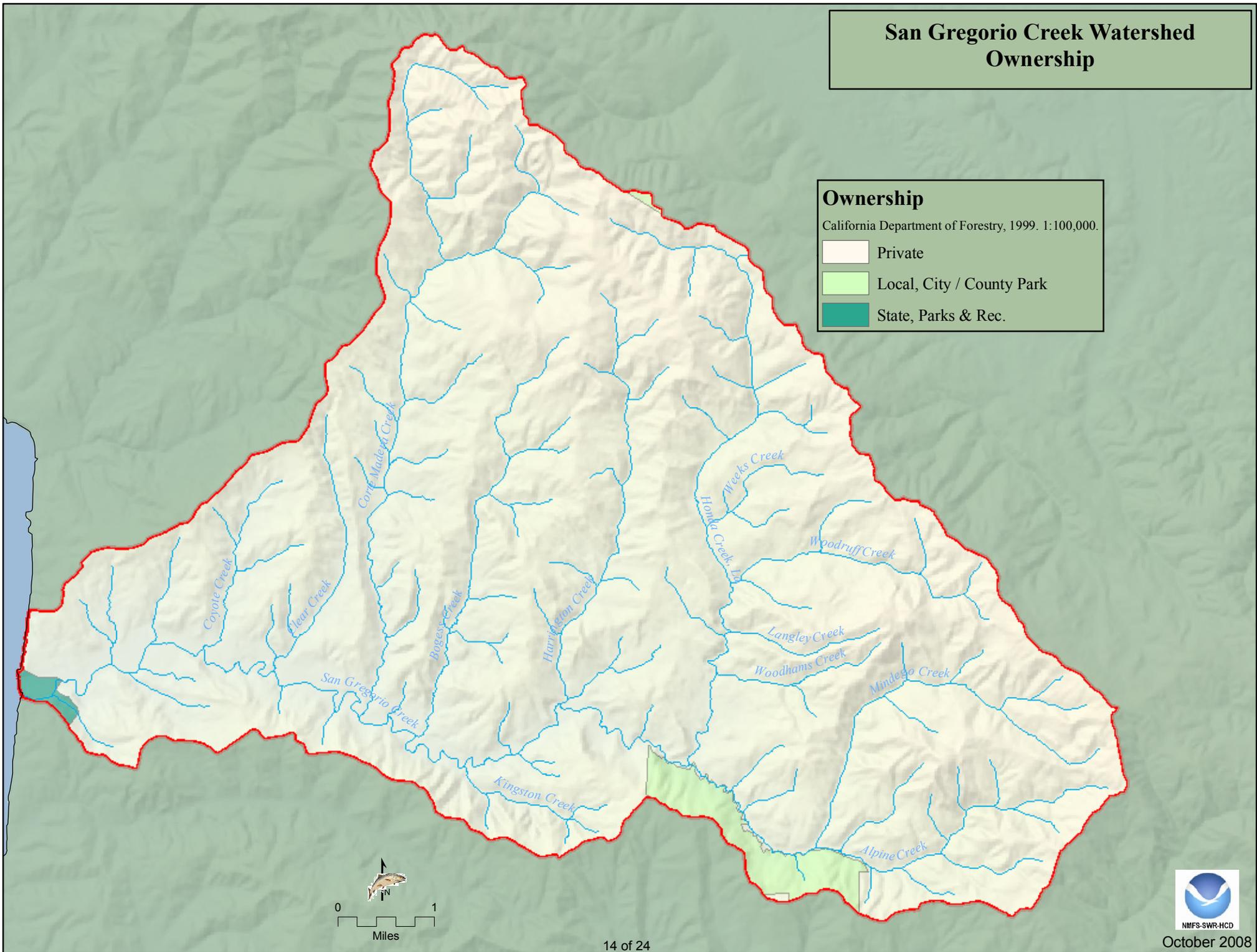


San Gregorio Creek Watershed Ownership

Ownership

California Department of Forestry, 1999. 1:100,000.

- Private
- Local, City / County Park
- State, Parks & Rec.



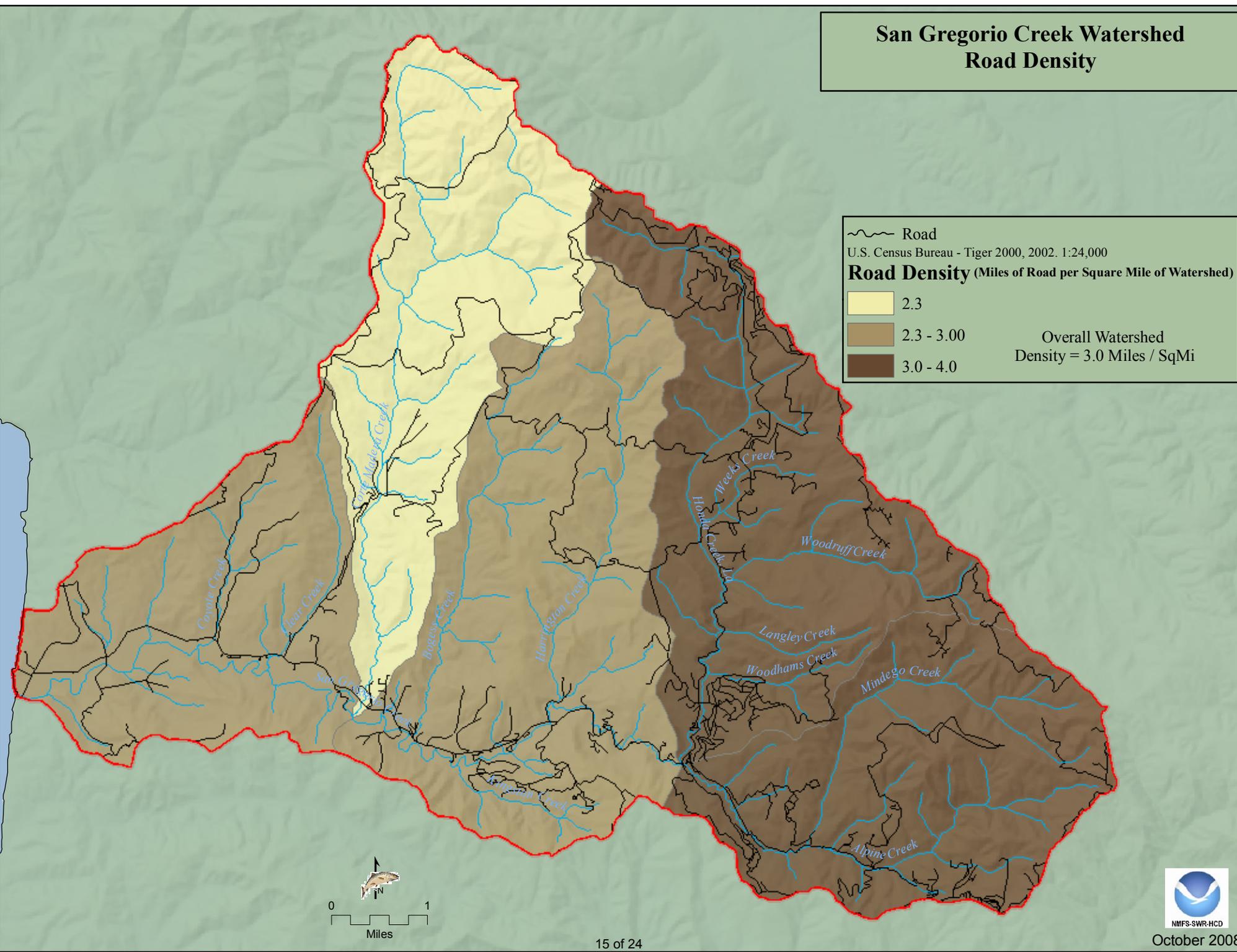
San Gregorio Creek Watershed Road Density

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

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

Light Yellow	2.3
Medium Brown	2.3 - 3.00
Dark Brown	3.0 - 4.0

Overall Watershed
Density = 3.0 Miles / SqMi

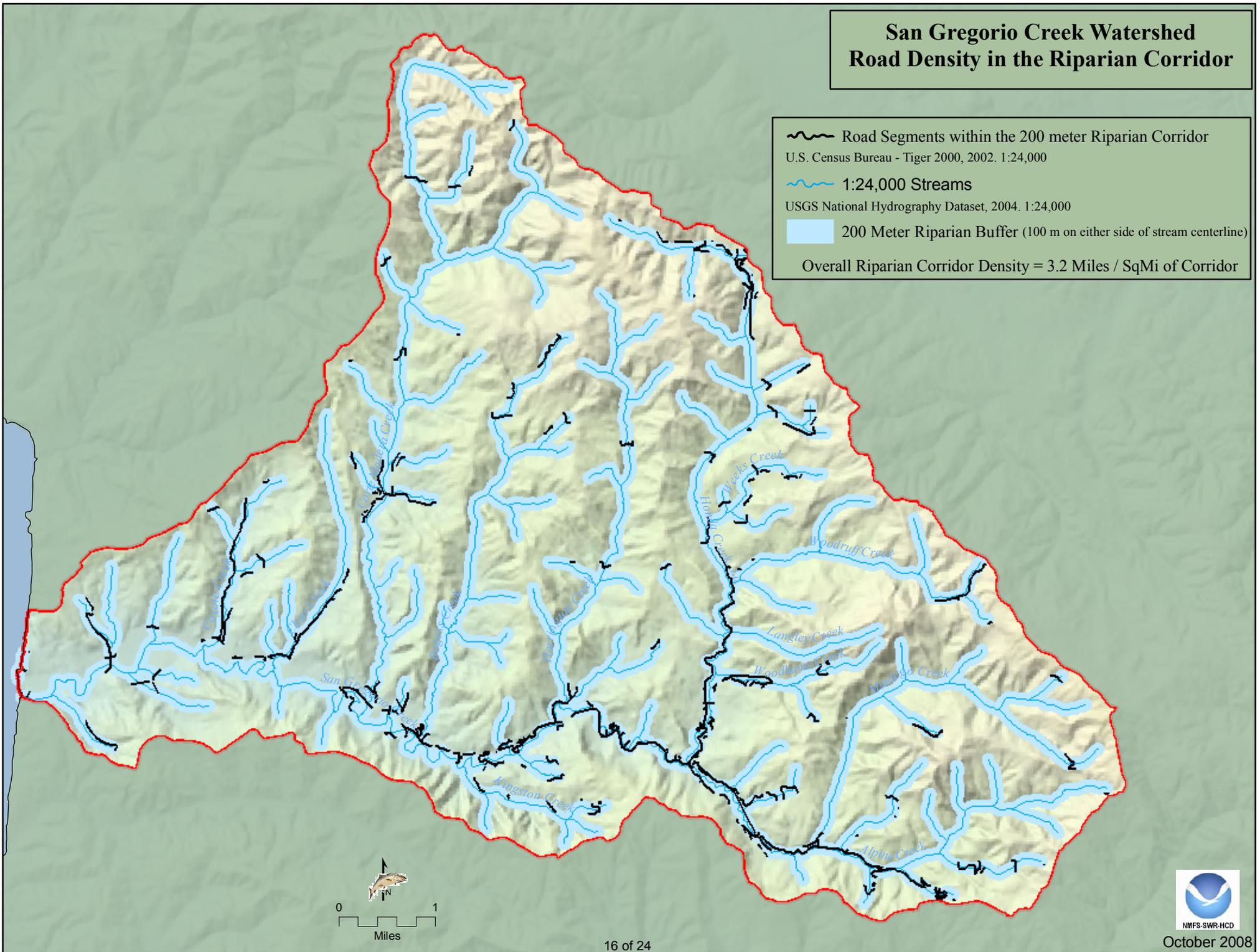


NMFS-SWR-HCD

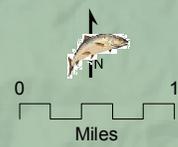
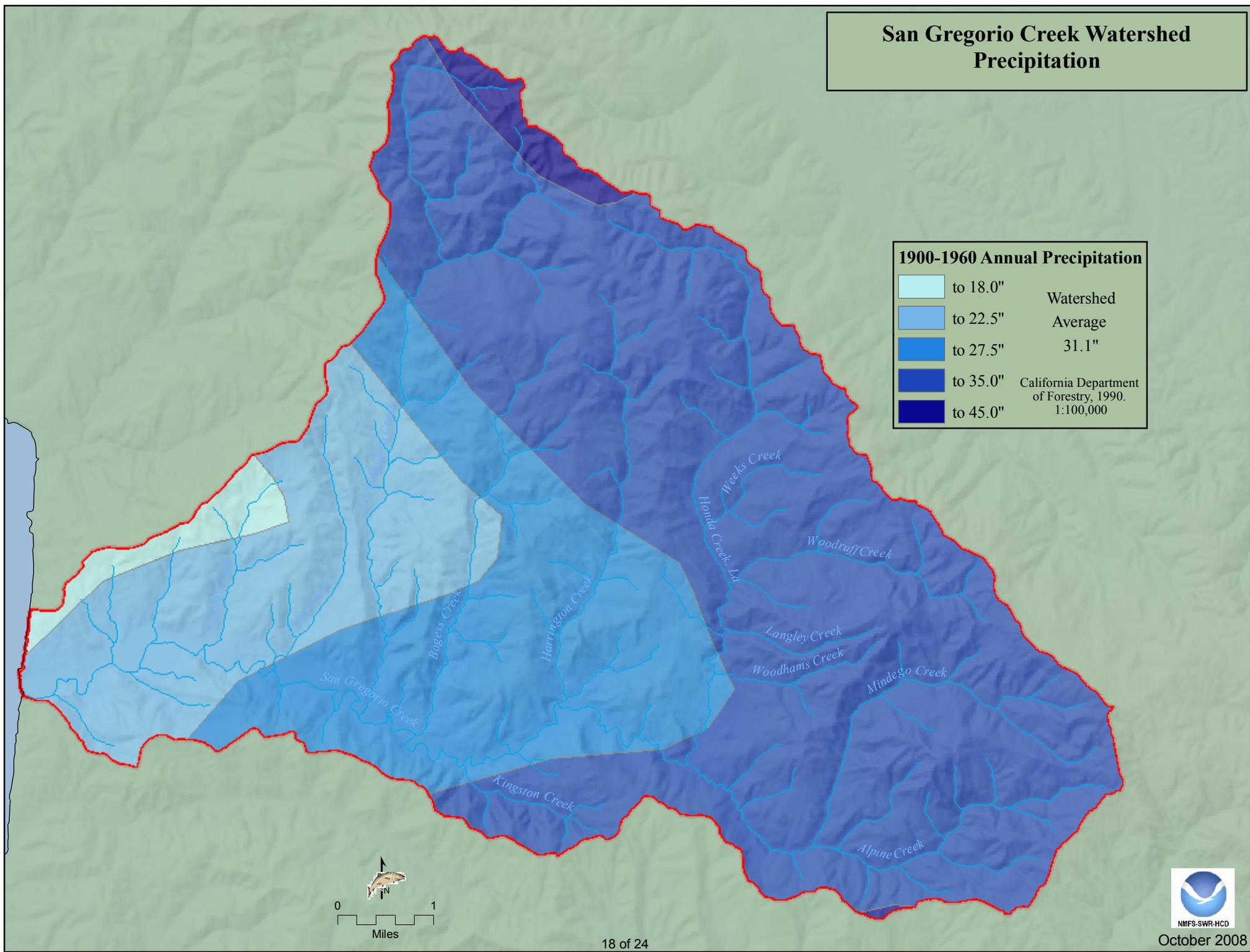
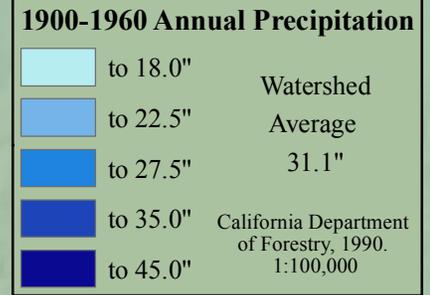
October 2008

San Gregorio Creek 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 = 3.2 Miles / SqMi of Corridor



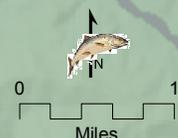
San Gregorio Creek Watershed Precipitation



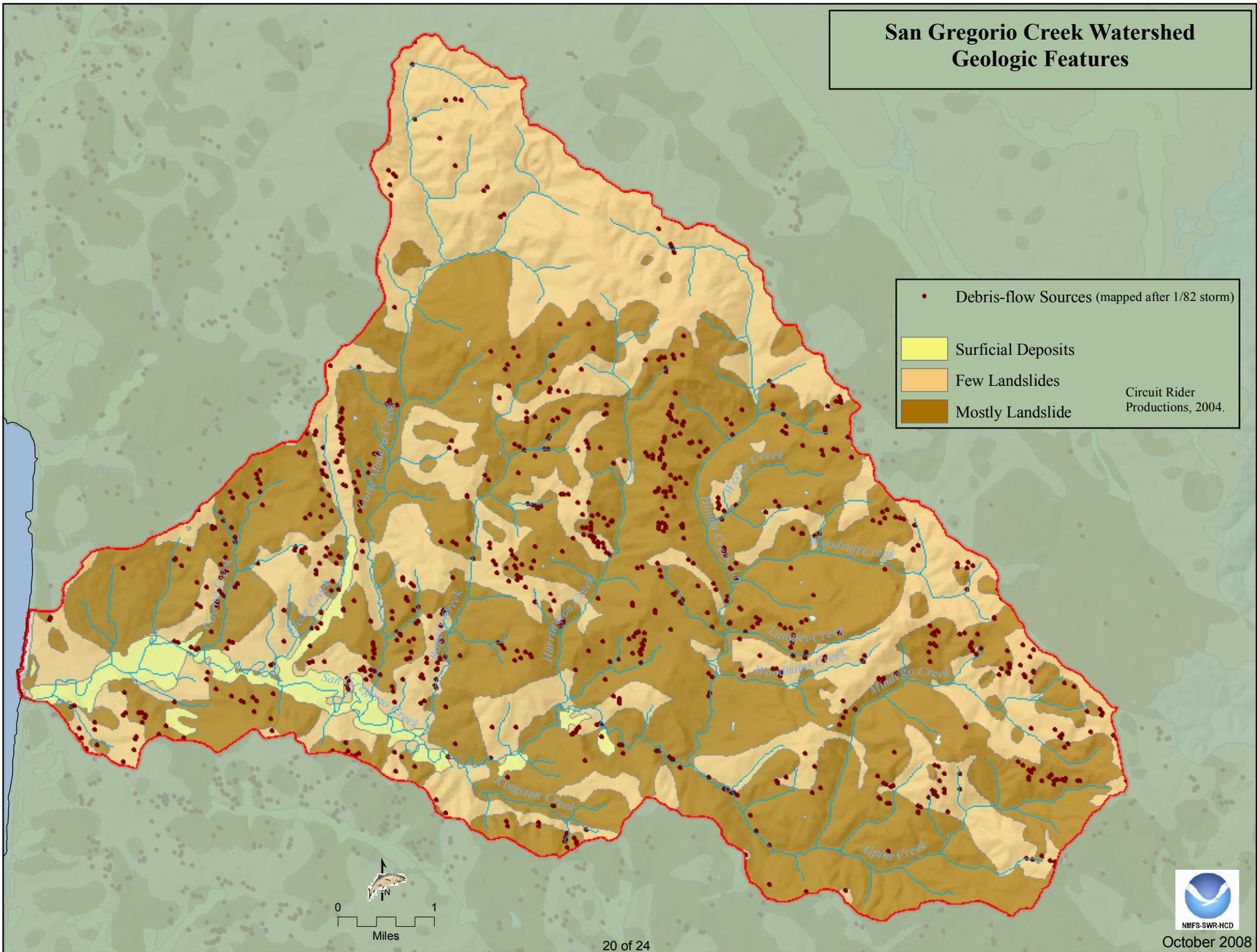
San Gregorio Creek Watershed Flood Zone

FEMA Flood Zones
FEMA, 1996. 1:24,000

- 100 Year Flood Zone
- 500 Year Flood Zone



San Gregorio Creek Watershed Geologic Features



San Gregorio Creek Watershed Barriers / Gages / Industry

 Hazardous & Solid Waste Site

 Gage Station

BASINS, USEPA, 2001

Barrier Type, Barrier Status
CA Fish Passage Assessment, PSMFC, 2008

 Dam, Not a barrier

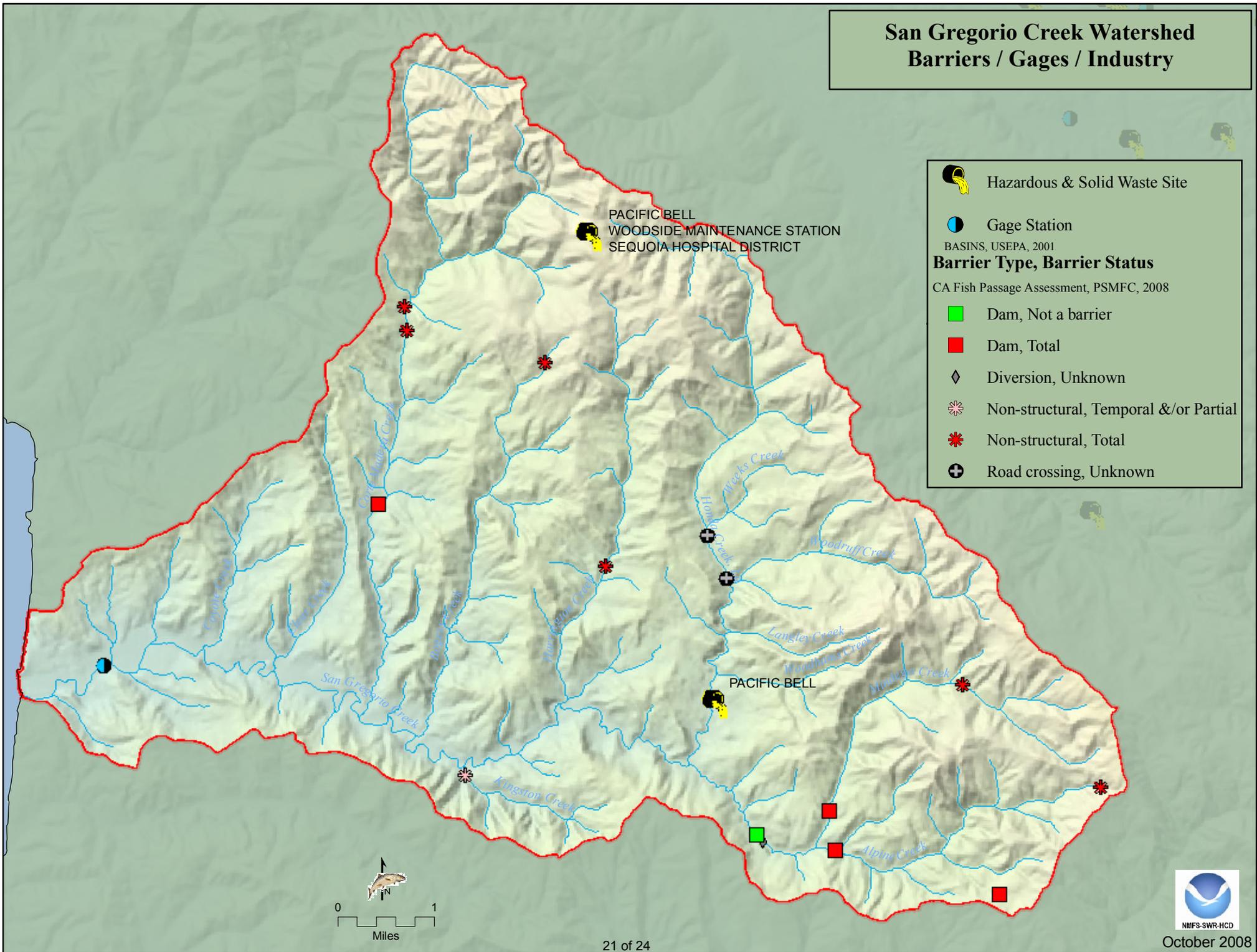
 Dam, Total

 Diversion, Unknown

 Non-structural, Temporal &/or Partial

 Non-structural, Total

 Road crossing, Unknown



San Gregorio Creek Watershed Public Consultation Tracking System

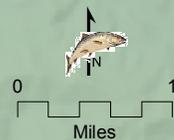
Complaint on Midpeninsula Regional Open Space District lands in El Corte de Madra

- 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

Section 7 consultation on the issuance of section 10(a)1(A) Permit 10017, California Department of Parks and Recreation, Pescadero Marsh Natural Pres

US Route 84 Storm Damage Restoration

PGE's Pilarcitos Creek Bank Stabilization Project



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/>

CCC_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>

Critical Habitat

CCC_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

1805 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

gages
vector digital data
Better Assessment Science Integrating point and
Nonpoint Sources (BASINS)
United States Environmental Protection Agency
2001
<http://www.epa.gov/waterscience/basins/>

Total Maximum Daily Load (TMDL)

R2_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

TGRR00
vector digital data
Roads
United States Census Bureau
1:100000
2000
<http://www.census.gov/geo/www/tiger/>

Elevation

Spln_mos_02
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

Srp_landslide
Landslide Areas
Vector digital data
Circuit Rider Productions, Inc.
2004

Srp_82_debrisfl_Source
Debris Flow Sources
Vector digital data
Circuit Rider Productions, Inc.
2004

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/>

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_ca081_2004_1 (San Mateo)
remote-sensing image
raster digital data

National Agriculture Imagery Program (NAIP)
USDA-FSA Aerial Photography Field Office
Salt Lake City, Utah
2006
<http://datagateway.nrcs.usda.gov/GatewayHome.html>

Historic Suitable Habitat (Coho, Steelhead)

Intrinsic Potential Model
vector digital data
NOAA Fisheries
Santa Cruz Laboratory, Santa Cruz, CA
2005
<http://swfsc.noaa.gov/>

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/>

mines
vector digital data
Better Assessment Science Integrating point and
Nonpoint Sources (BASINS)
United States Environmental Protection Agency
2001
<http://www.epa.gov/waterscience/basins/>

Records Management System (RMS)

Public Consultation Tracking System (PCTS)
National Marine Fisheries Service
Oracle Databases
2008

Fully Appropriated Streams

Declaration of Fully Appropriated Stream Systems
State Water Resources Control Board
State of California
November 19, 1998
<http://www.waterrights.ca.gov/html/faslist.htm>

Flood Zones

FEMA Flood Insurance Maps 1996
Vector digital data
Federal Emergency Management Agency
Q3 Flood Data Program
1996
<http://www.fema.gov/>