

## Watershed Characterization

July 2008



NMFS-SWR-HCD

### Gazos Creek Watershed

Area	Hydrologic Units	Calwater Subbasins ---	(Planning Watersheds)
7,468 Acres	18060001	3304200004	Gazos Creek (7468 Acres)
3022 Hectares	4th Field HUC		
12 Square Miles	3304		
Location	4th Field Calwater		
San Mateo County			
Santa Cruz County			

Species Potential	Miles of Streams with Species Present
Central California Coast <b>Steelhead</b> Santa Cruz Mountains Diversity Stratum - Dependent Population	<u>Steelhead</u> 10 NOAA Fisheries, Critical Habitat Redesignation, 2005
Central California Coast <b>Coho</b> Santa Cruz Mountains Diversity Stratum - Dependent Population	<u>Coho</u> 5 CDFG, Coho Distribution, May 2007

Critical Habitat	
Central California Coast Steelhead	10 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)

Miles of Waterway <sup>A</sup>	Miles	Number of Dams <sup>C</sup>
Naturally Occurring Waterways		2
Intermittent Stream	11	1 - Impassable
Perennial Stream	15	1 - Unknown status

<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>
	15
	2 Dams
	4 Road Crossings (1 Impassable)
	8 Natural Barriers (Chutes, Falls, Log Jams, etc. (5 Impassable))

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

Average Annual Precipitation <sup>E</sup>	Average Annual Precipitation Range <sup>E</sup>
33.2"	22.5 - 45"

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

Roads <sup>A</sup>	Miles
Roads in Watershed	
Secondary and connecting road, state highways	1
Local, neighborhood, and rural road, city street, unseparated	28
Vehicular trail, 4WD	0
Total Miles	29

Road Density	
Miles of Roads per SqMi of Watershed	2.5
Miles of Roads per SqMi of 100m Riparian Buffer*	3.2

\*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>Slope<sup>D</sup></b>	Acres	Percent of watershed
Lands of 0-2 percent slope	38	1%
Lands of 2-4 percent slope	43	1%
Lands of 4-10 percent slope	330	4%
Lands of 10-15 percent slope	398	5%
Lands of 15-30 percent slope	1,827	24%
Lands of 30-60 percent slope	3,524	47%
Lands of 60-100 percent slope	1,253	17%
Lands of 100-117 percent slope	46	1%
<b>Elevation Range</b>	3 - 2333 ft.	1 - 711 m

<sup>D</sup>Slope derived from USGS 10 meter Digital Elevation Models (DEM's)

<b>Vegetation<sup>G</sup></b>	Acres	Percent of watershed
Agriculture	10	0%
Annual grassland	126	2%
Conifer Forest		
Douglas Fir	472	6%
Redwood	4,888	65%
Unknown Conifer	156	2%
Shrub	1,801	24%
Urban	27	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
All watershed ranked 5		

<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** ]

Area Under a <b>Timber Harvest Plan<sup>A</sup></b> past 10 years	Acres	Percent of watershed	Area Under a <b>Timber Harvest Plan<sup>A</sup></b> past 13 years (1994-2006)	Acres	Percent of watershed
330	4%		831	11%	

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

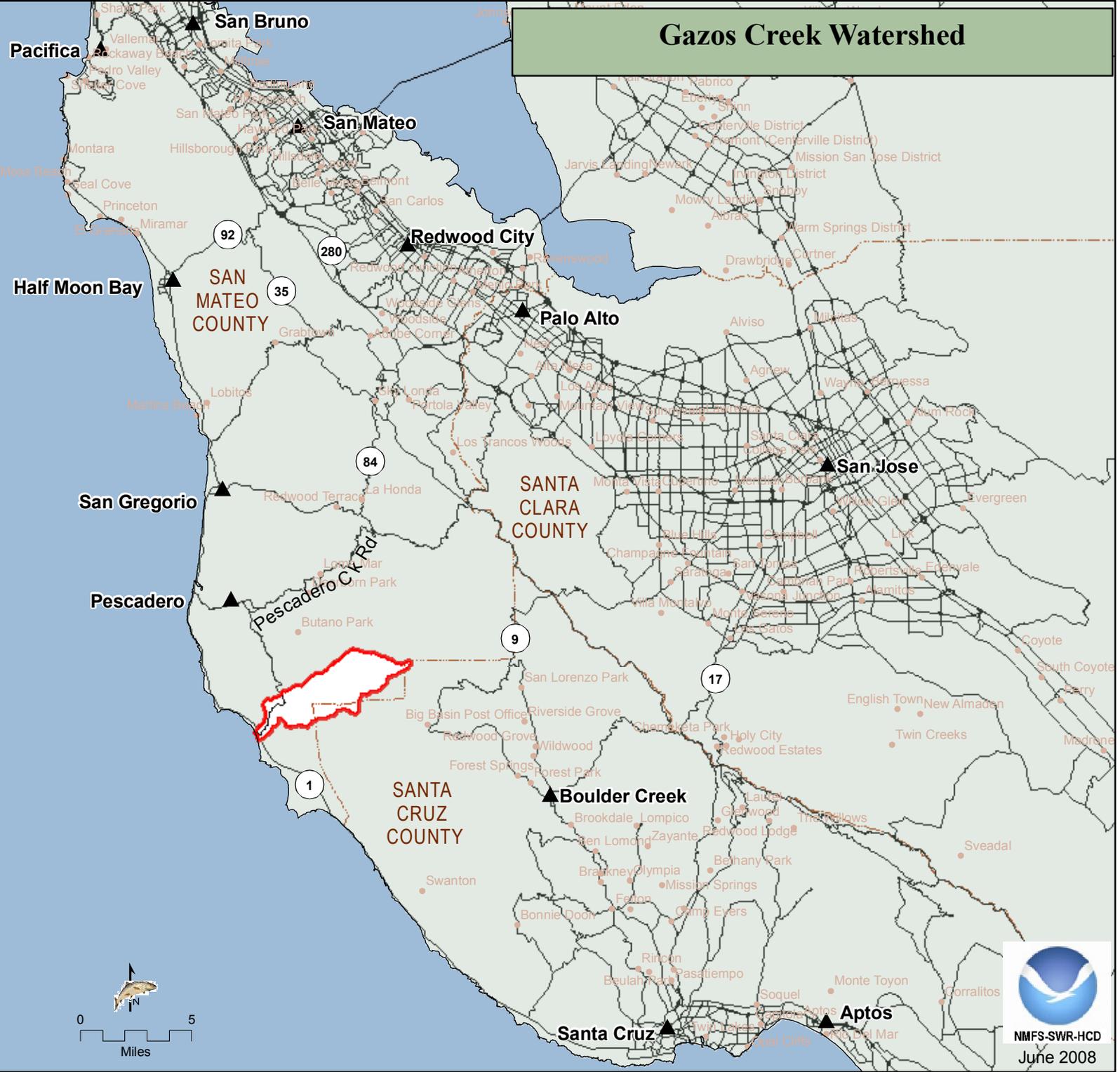
<b>Land Ownership<sup>H</sup></b>	Acres	Percent of watershed
Private	5,910	79%
State (Parks & Recreation)	1,549	21%
State (Other)	7	0%

<sup>H</sup>Management Landscape, CA Department of Forestry, 2002

<b>Population<sup>I</sup></b>	<b>Housing<sup>I</sup></b>
Total Population within the watershed -- 24 People	Total Housing Units within the watershed -- 9 Houses
	Housing Density
	0 to Less than 1 Housing Unit / 160 Acres (91%)
	1 Unit / 160 Acres to 1 Unit / 20 Acres (9%)
	1 Unit / 20 Acres to 1 Unit / 5 Acres
	1 Unit / 5 Acres to 2 Units / Acre
	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







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## Gazos Creek Watershed CalWater Planning Watersheds

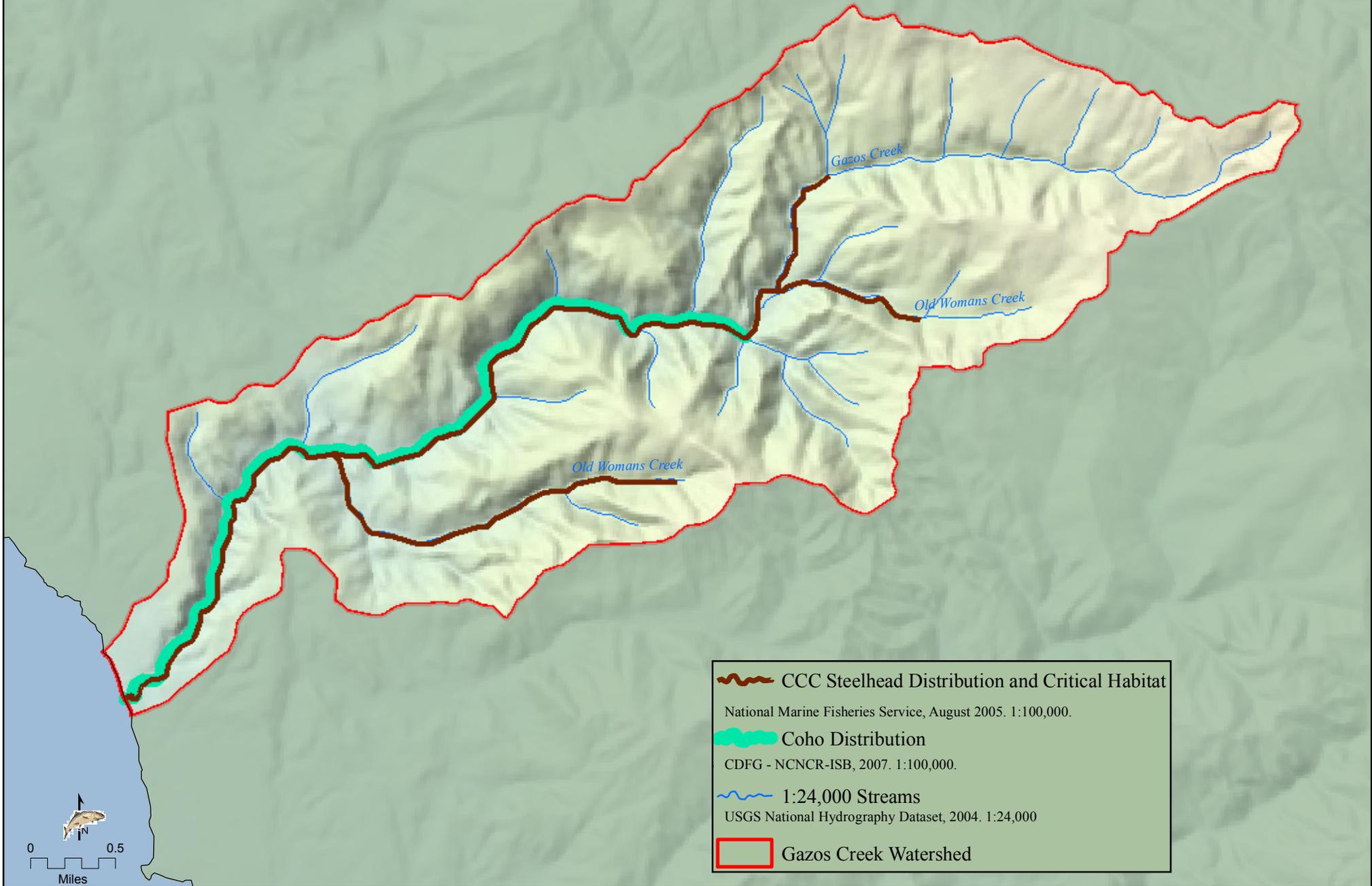




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# Gazos Creek Watershed Fish Distribution and Critical Habitat

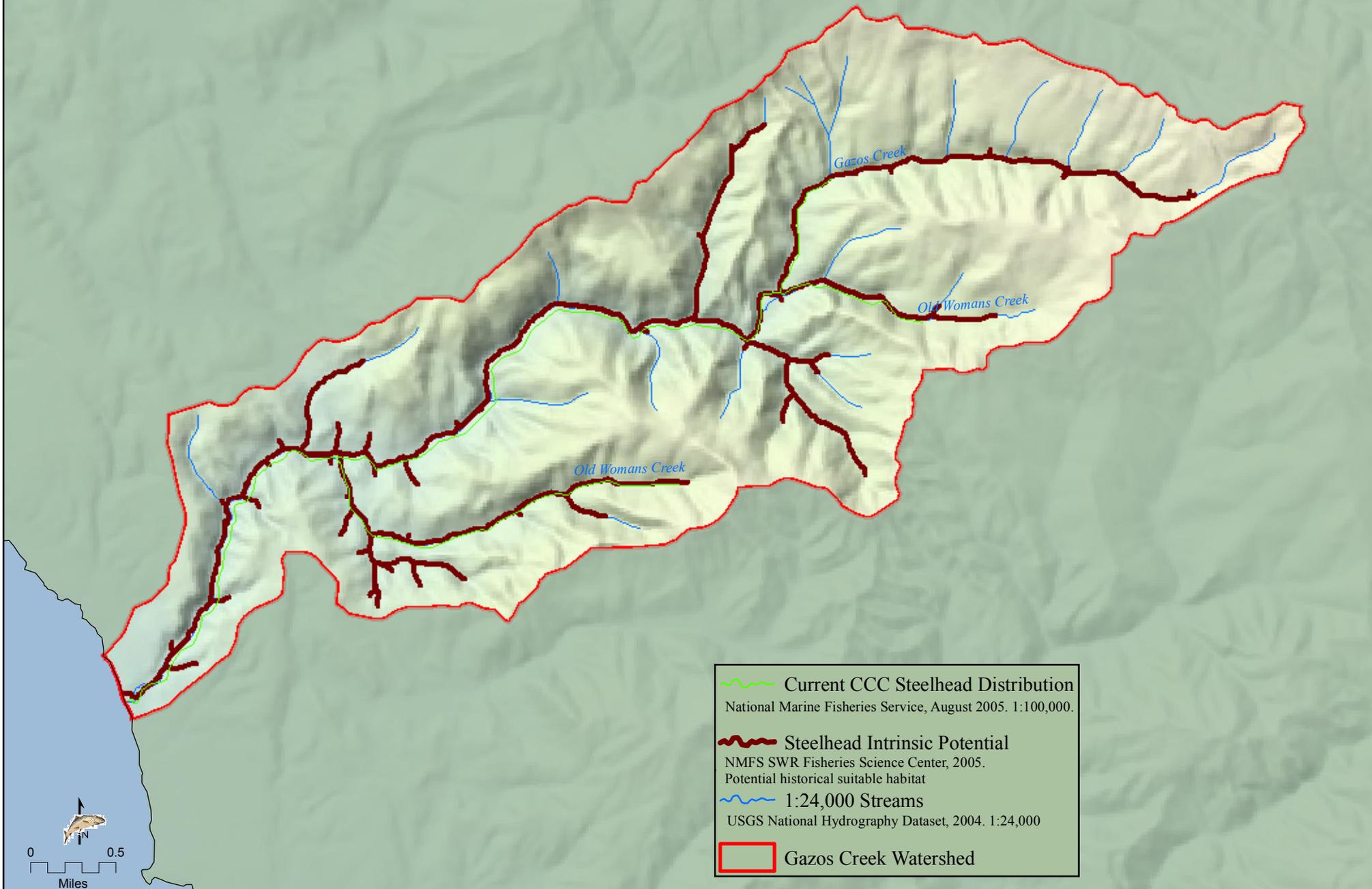




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# Gazos Creek Watershed Steelhead Current vs. Historical

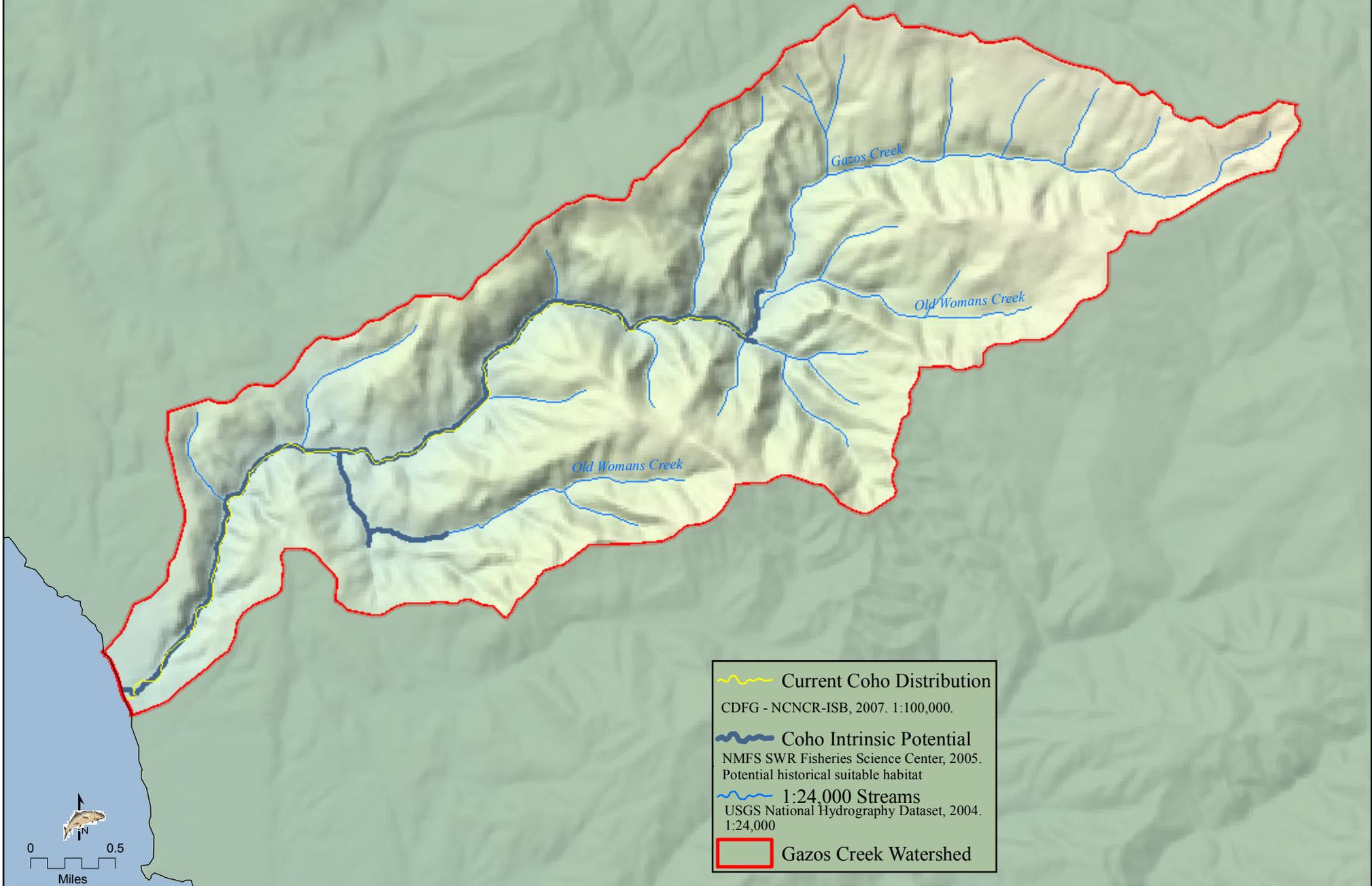




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# Gazos Creek Watershed Coho Current vs. Historical

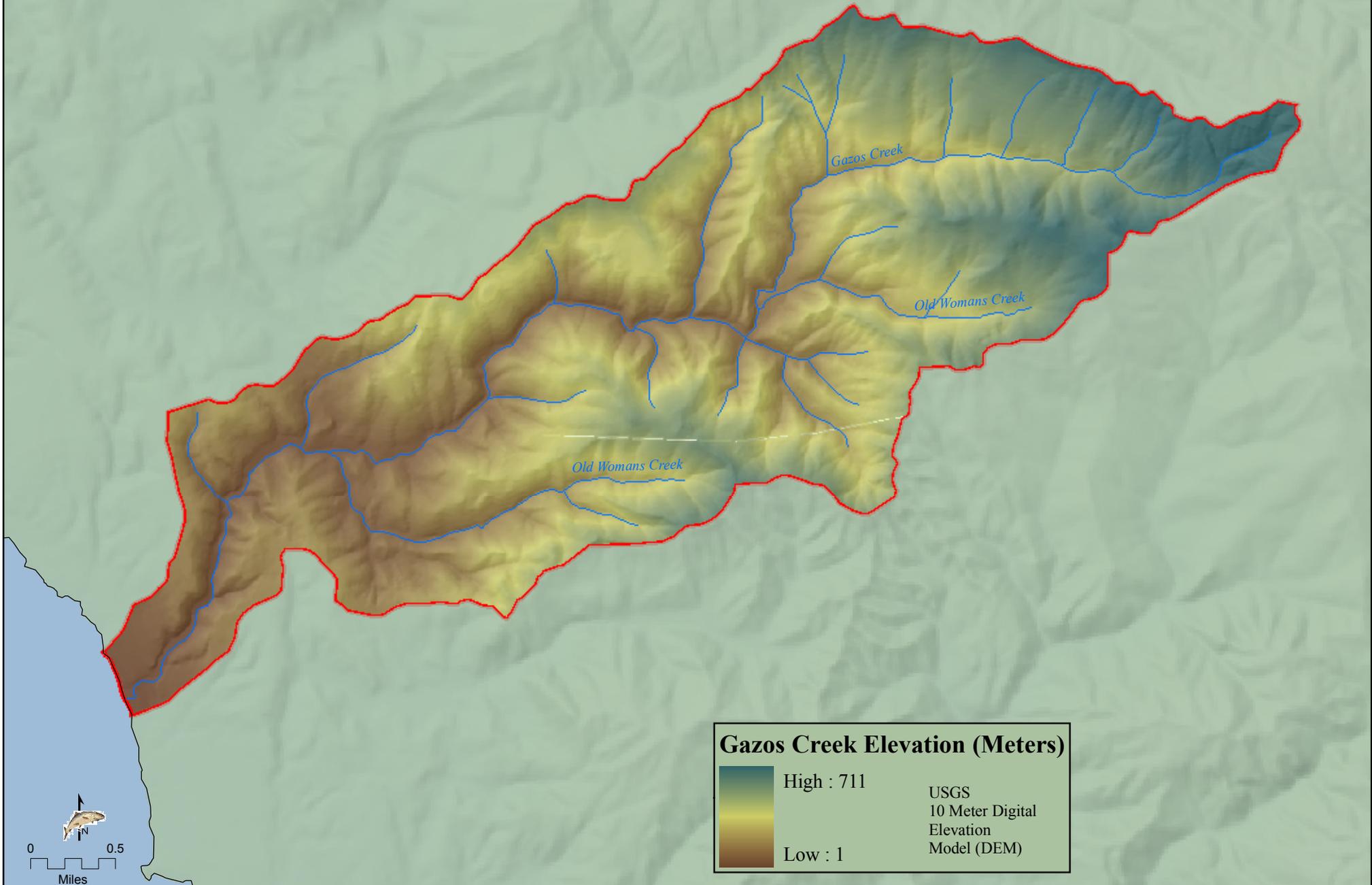




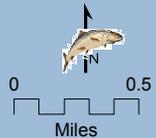
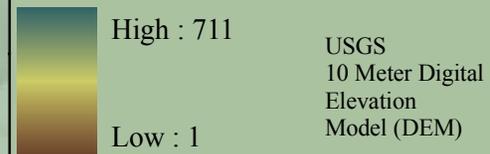
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## Gazos Creek Watershed Elevation



### Gazos Creek Elevation (Meters)

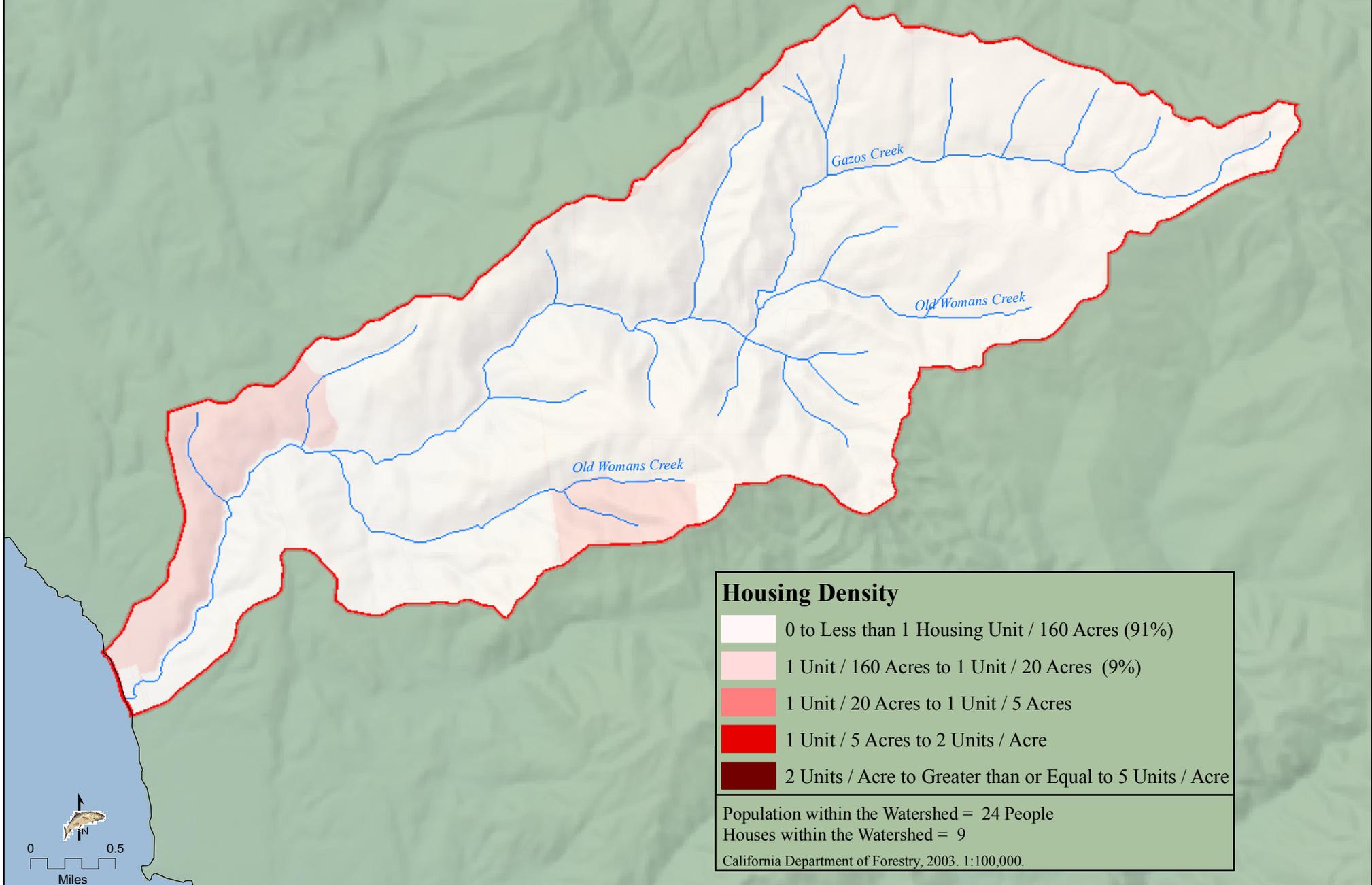




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## Gazos Creek Watershed Development

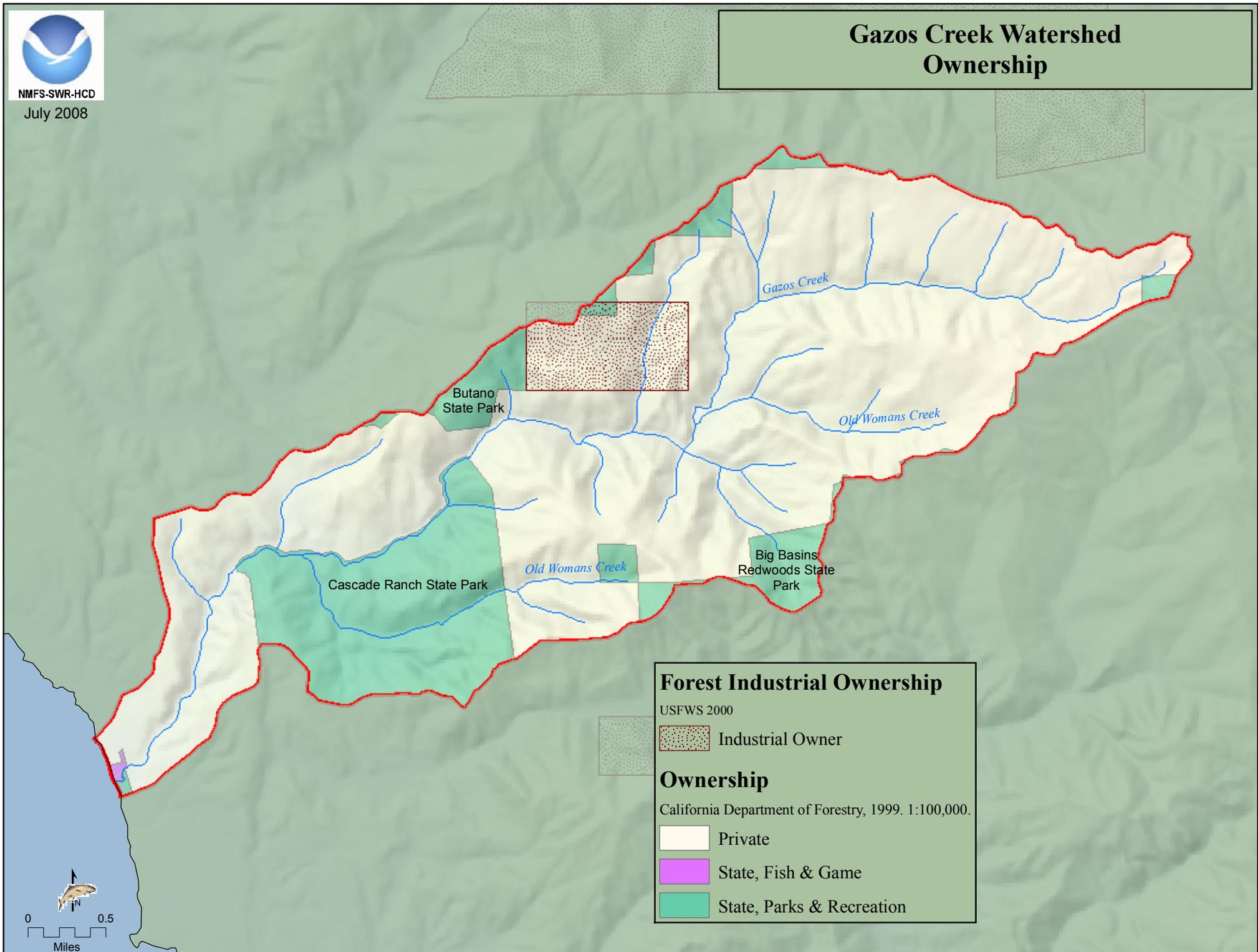




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# Gazos Creek Watershed Ownership

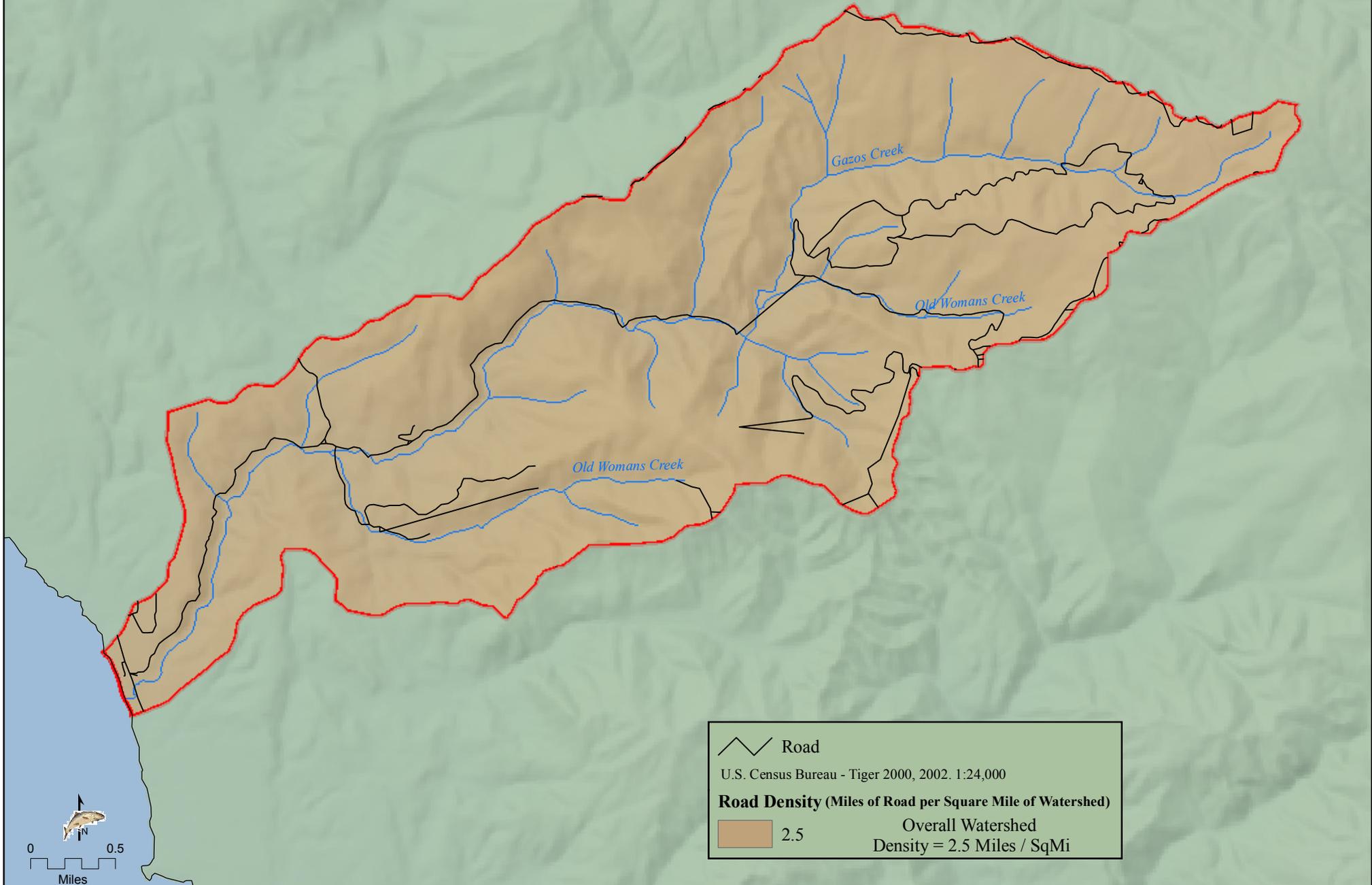




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# Gazos Creek Watershed Road Density

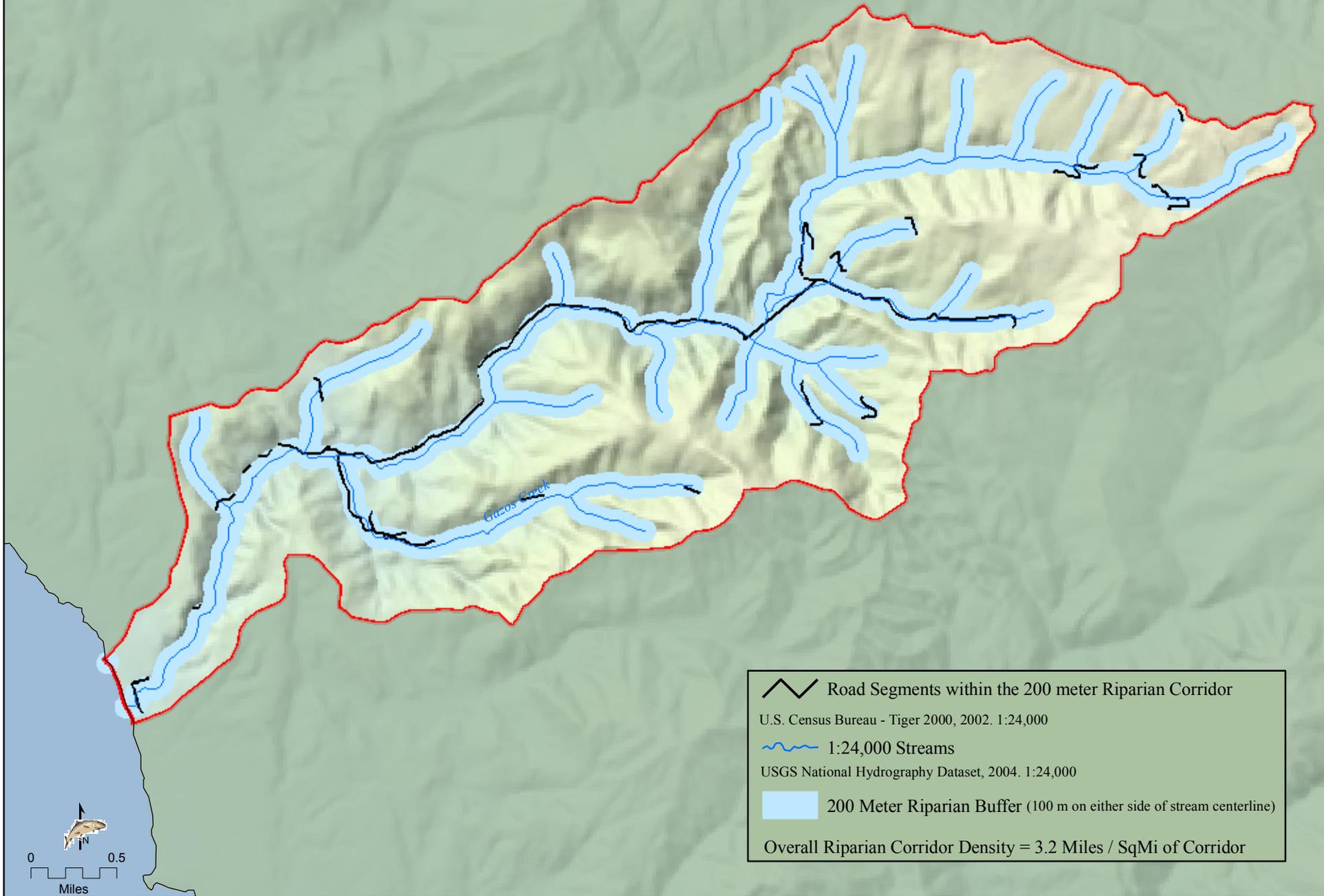




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## Gazos Creek Watershed Road Density in the Riparian Corridor

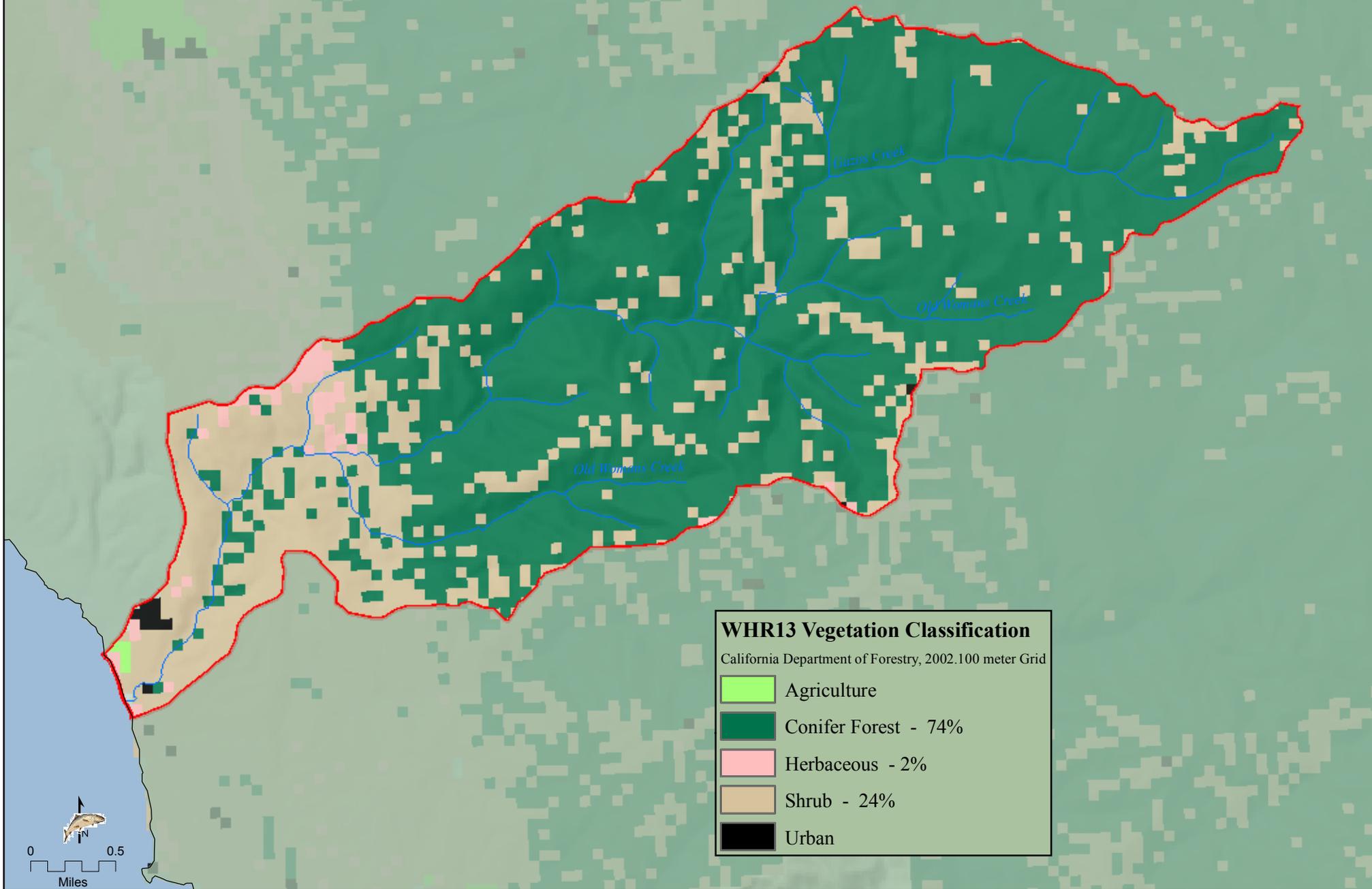




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# Gazos Creek Watershed Vegetation

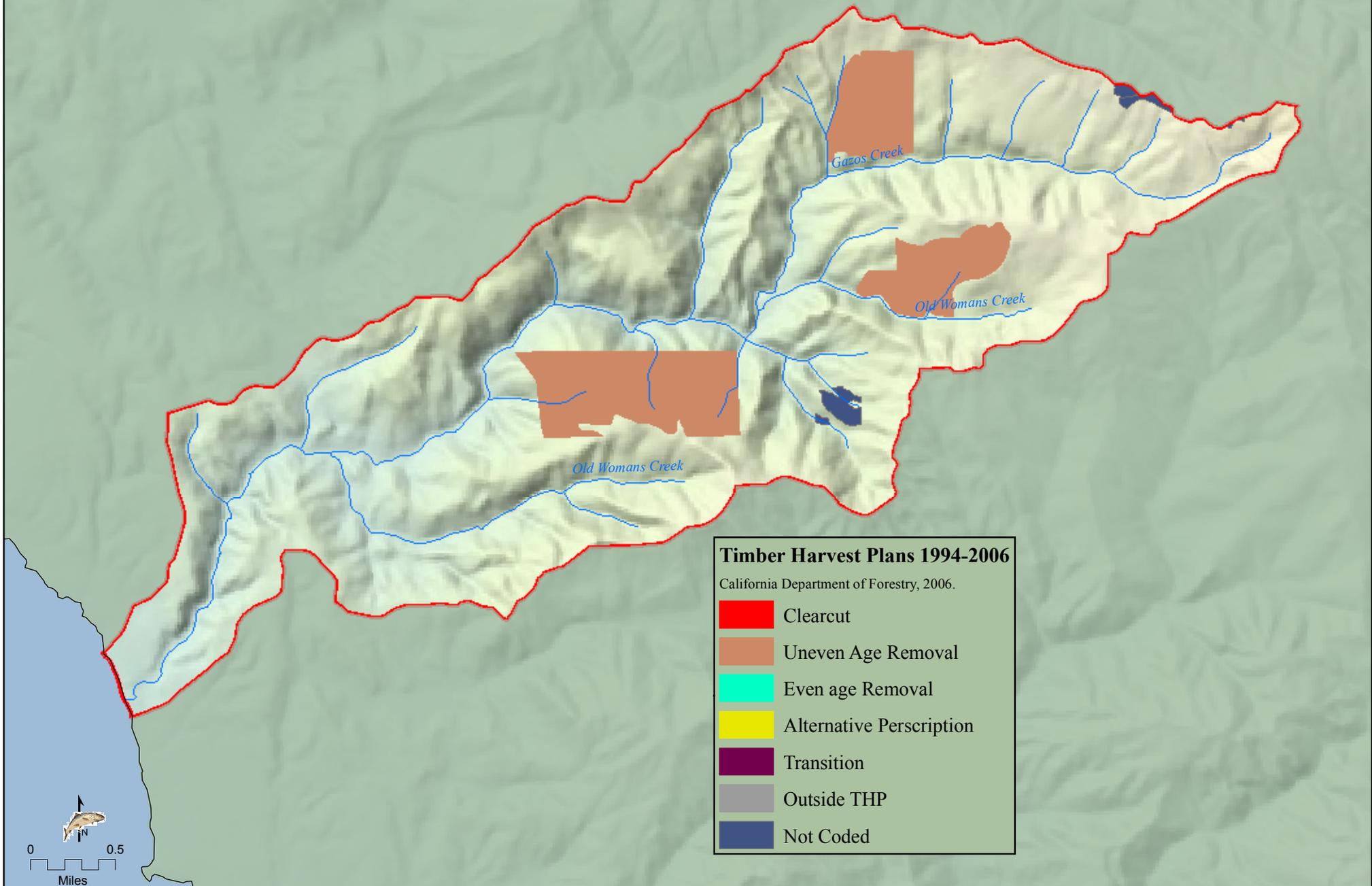




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## Gazos Creek Watershed Timber Harvesting 1994-2006

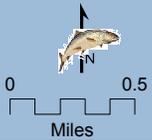
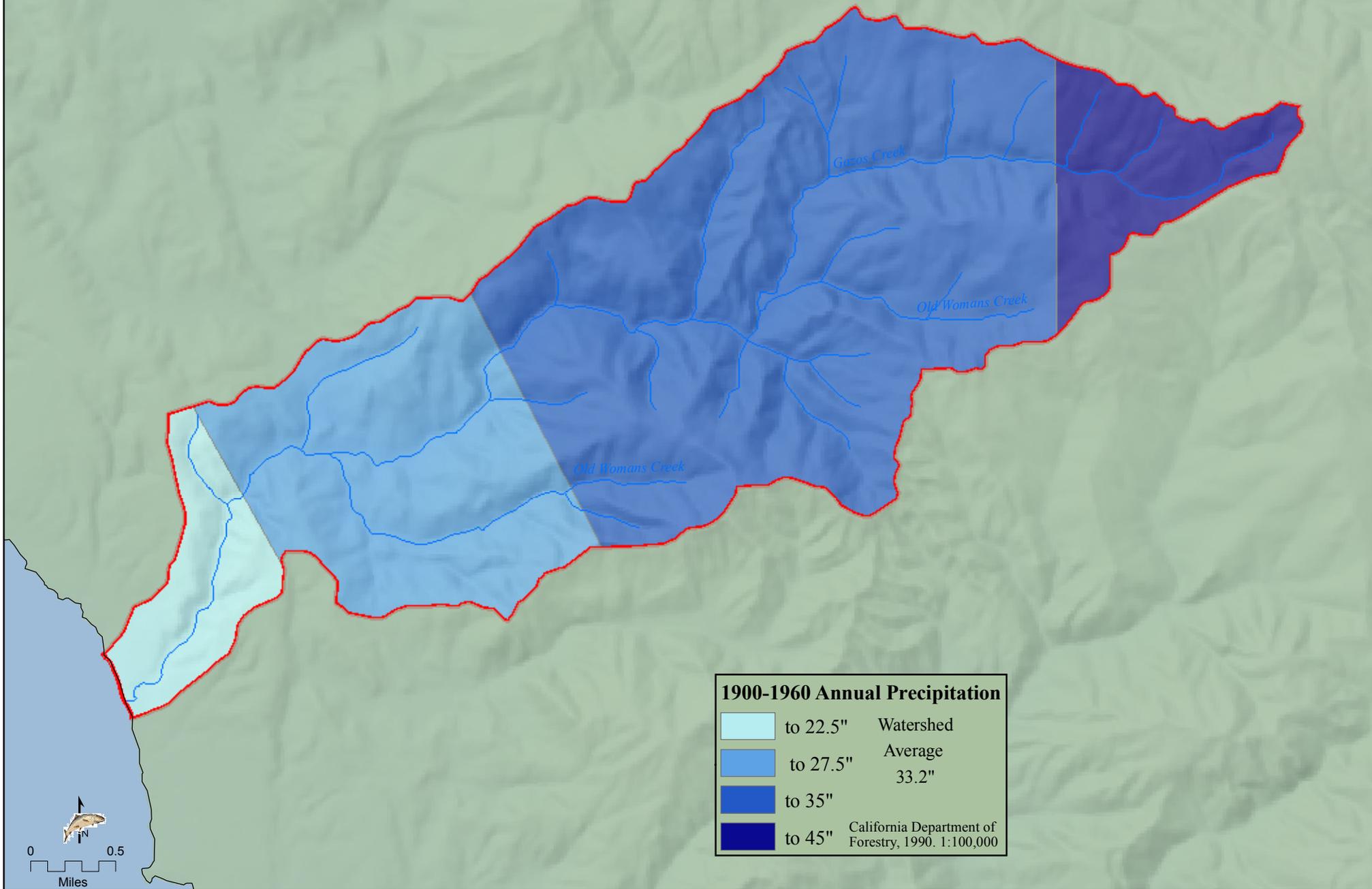




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# Gazos Creek Watershed Precipitation

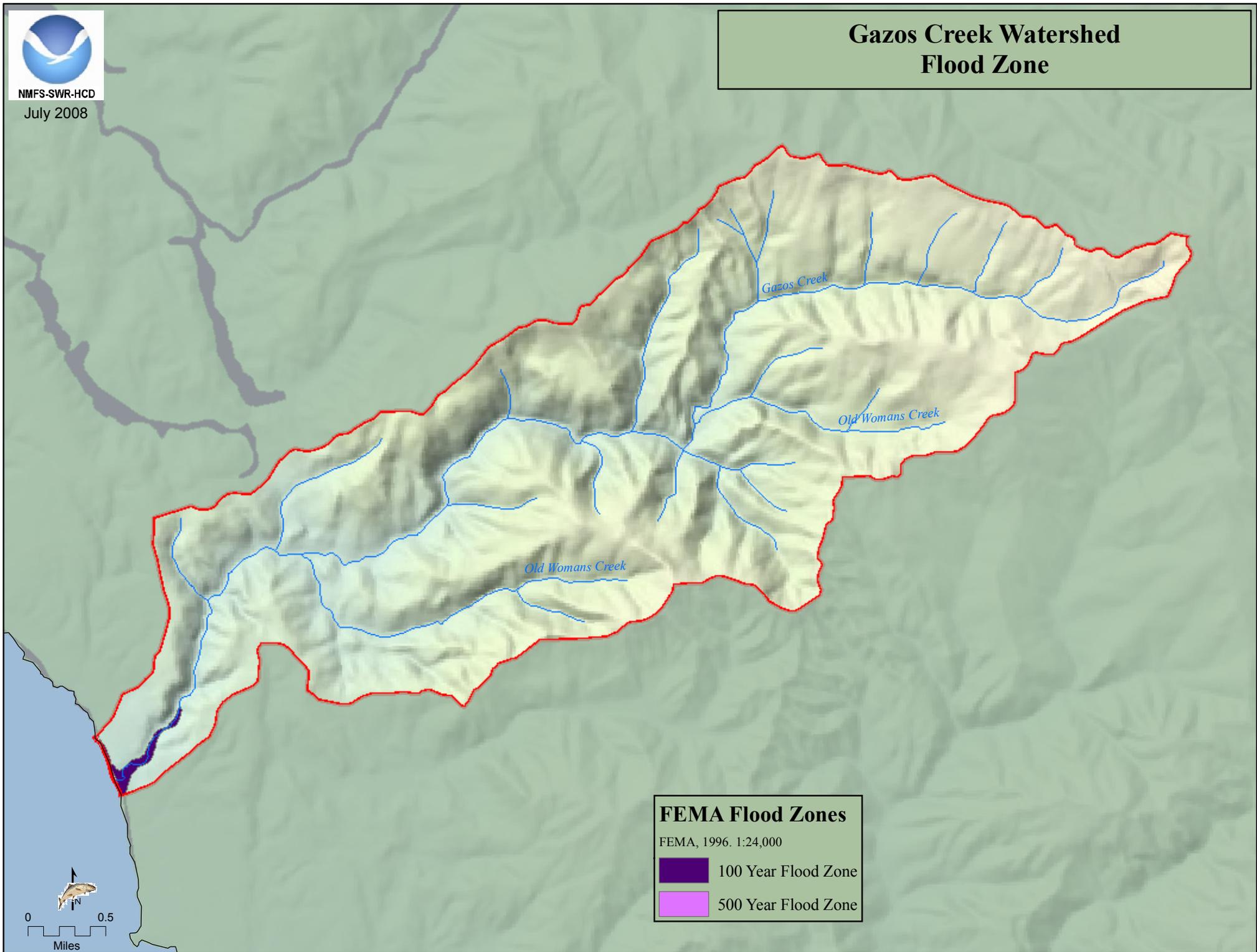




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# Gazos Creek Watershed Flood Zone



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

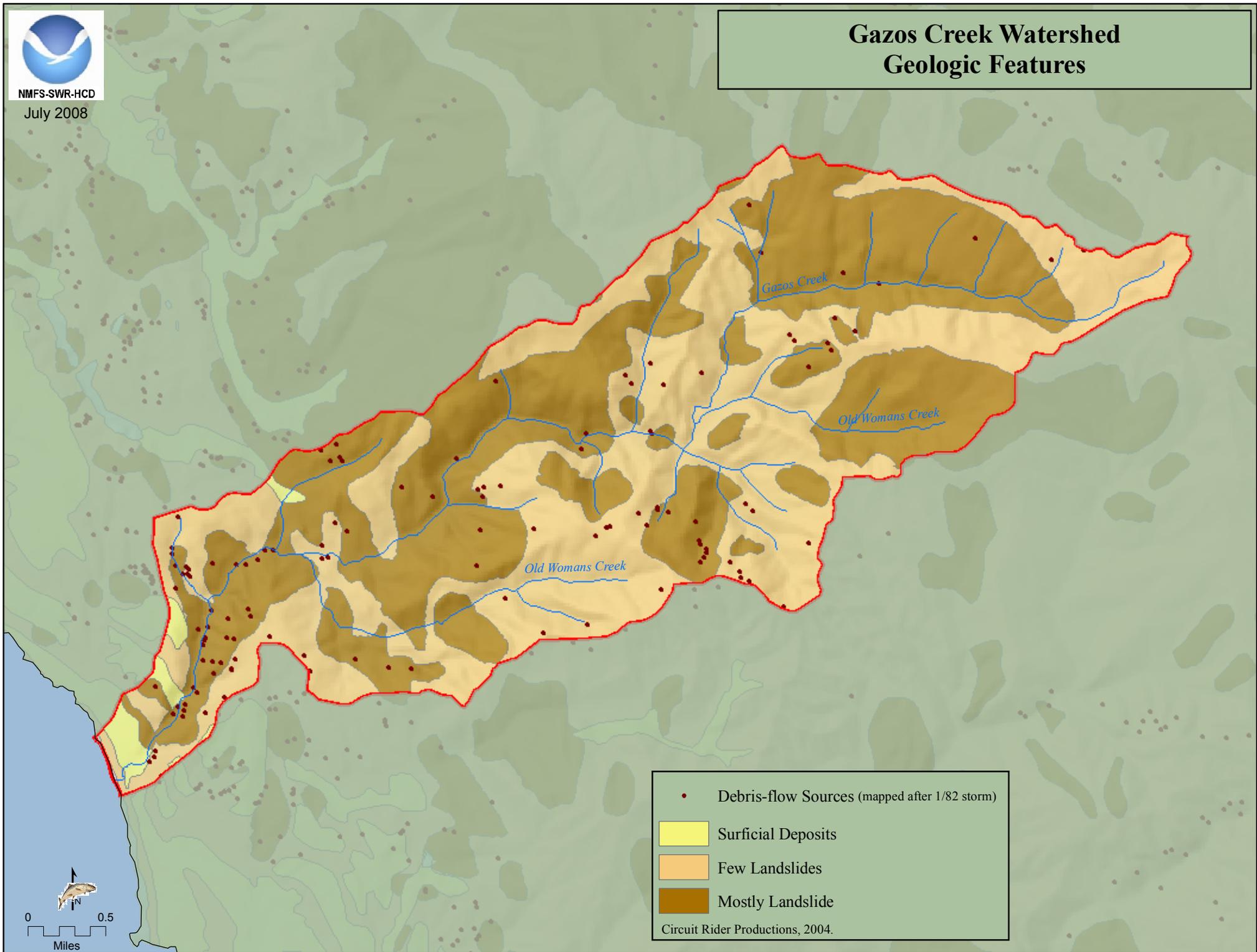
- 100 Year Flood Zone
- 500 Year Flood Zone



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# Gazos Creek Watershed Geologic Features

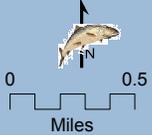
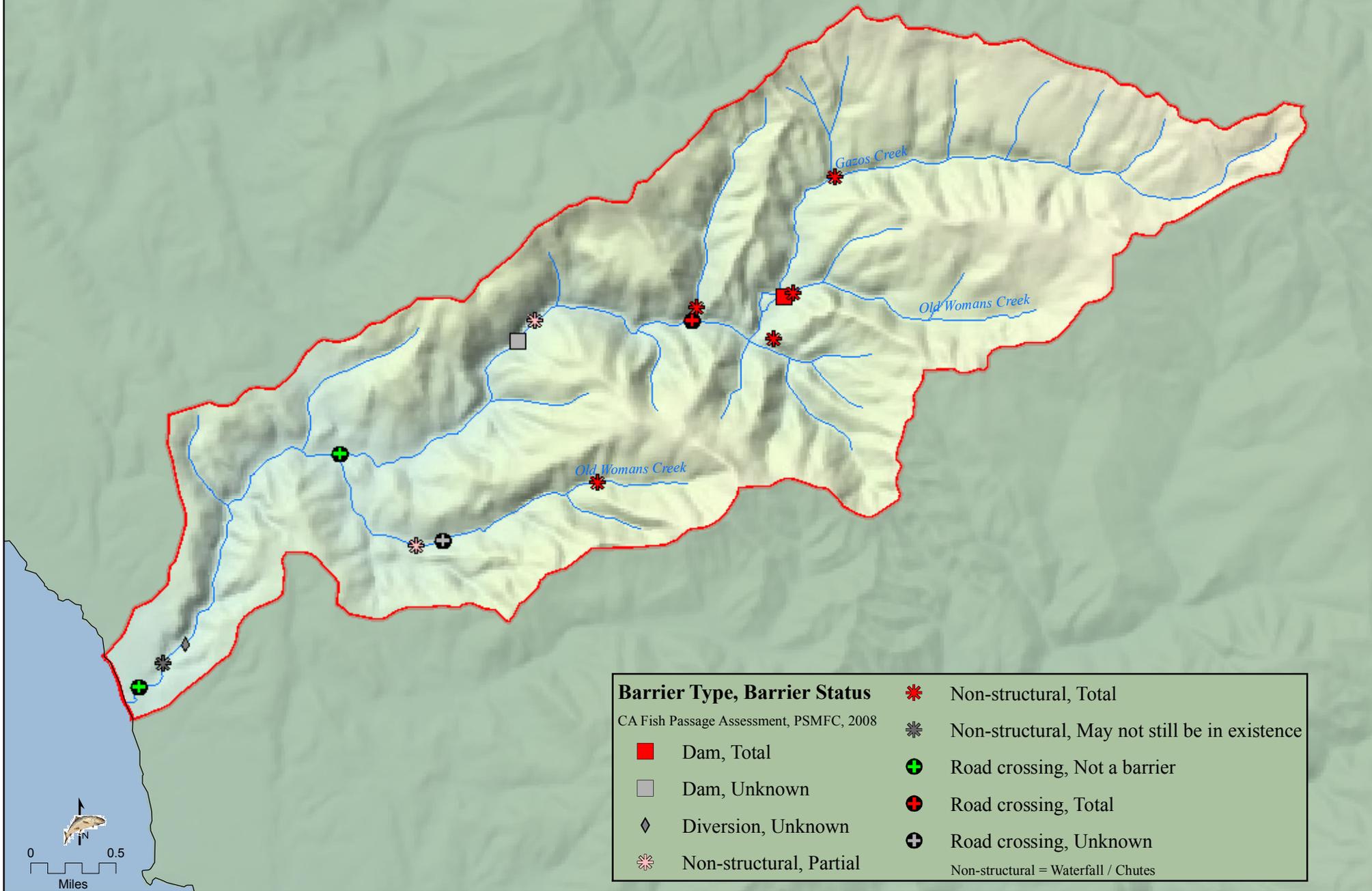




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# Gazos Creek Watershed Barriers



## 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

1806 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/>

### 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

USGS DEM  
10 Meter Digital Elevation Model (DEM)  
Earth Resources and Science (EROS)  
United States Geological Survey  
<http://edc.usgs.gov/products/elevation/dem.html>

### 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\_ca081\_2006\_1 (San Mateo)  
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

### **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