



*Austin Creek Subwatershed*

Area	Hydrologic Units	Calwater Subbasins ---	(Planning Watersheds)
44820 Acres	18010110	1114110402	Freezeout Creek (4985 Acres)
18,138 Hectares	4th Field HUC	1114120001	Lower East Gray Creek (8016 Acres)
70 Square Miles		1114120002	Bearpen Creek (9328 Acres)
	1114	1114120003	East Austin Creek (8985 Acres)
<b>Location</b>	4th Field Calwater	1114120004	Ward Creek (9990 Acres)
Sonoma County		1114120005	Upper East Gray Creek (3516 Acres)

Species Potential	Miles of Streams with Species Present
Central California Coast <b>Steelhead</b> Interior San Francisco Bay Diversity Stratum - Independent Population	<u>Steelhead</u> 71 NOAA Fisheries, Critical Habitat Redesignation, 2005
Central California Coast <b>Coho</b> Coastal Gualala Diversity Stratum - Independent Population	<u>Coho</u> 14 CDFG, Coho Distribution, May 2007
California Coastal <b>Chinook</b> Central Coastal Diversity Stratum - Independent Population	<u>Chinook</u> 7 NOAA Fisheries, Critical Habitat Redesignation, 2005

Critical Habitat	
Central California Coast Steelhead	71 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	7 Miles of Stream

Miles of Waterway <sup>A</sup>	Miles	Number of Dams <sup>C</sup>
Naturally Occurring Waterways		2
Intermittent Stream	74	2 - Unknow Barrier Status
Perennial Stream	97	
Canal / Ditch	0	<sup>C</sup> Passage Assessment Database,
Connector	0	Pacific States Marine Fisheries Commission, 2005
Artificial Path	4	

<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>
11467040 - Ward Creek Tributary	42
11467200 - Austin Creek near Cazadero	2 Dams 27 Water Rights Diversions
	<sup>C</sup> Passage Assessment Database, Pacific States Marine Fisheries Commission, 2006

EPA Total Maximum Daily Load Classification (TMDL)<sup>I</sup>  
 Water Temperature, Sediment/Siltation  
 Sources: Construction/Land Development; Dam Construction; Disturbed Sites; Erosion/Siltation; Flow Regulation/Modification;  
 Silviculture; Habitat Modification; Hydromodification; Nonpoint Source; Removal of Riparian Vegetation

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



<b>Average Annual Precipitation<sup>E</sup></b>	<b>Average Annual Precipitation Range<sup>E</sup></b>
64.6"	45" - 75"

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

<b>Roads<sup>A</sup></b>	<b>Miles</b>
Roads in Watershed	
Secondary and connecting road, state highways	0
Local, neighborhood, and rural road, city street, unseparated	139
Vehicular Trail or 4WD	17
Driveway or service road or ramp	7
Total Miles	

<b>Road Density</b>	
Miles of Roads per SqMi of Watershed	2.3
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>	<b>Acres</b>	<b>Percent of watershed</b>
Lands of 0-2 percent slope	130	0%
Lands of 2-4 percent slope	259	1%
Lands of 4-10 percent slope	938	2%
Lands of 10-15 percent slope	1,226	3%
Lands of 15-30 percent slope	7,757	17%
Lands of 30-60 percent slope	24,456	55%
Lands of 60-100 percent slope	9,674	22%
Lands of 100-117 percent slope	379	1%

<b>Elevation Range</b>	<b>0 - 2418 ft.</b>	<b>0 - 737 m</b>
------------------------	---------------------	------------------

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

<b>Vegetation<sup>G</sup></b>	<b>Acres</b>	<b>Percent of watershed</b>
Agriculture	7	0%
Annual grassland	4,737	11%
Barren	15	0%
Conifer Forest		
Closed-Cone Pine-Cypress	4,618	10%
Douglas Fir	11,703	26%
Montane Hardwood Conifer	1,581	4%
Redwood	3,479	8%
Hardwood Forest		
Montane Hardwood	16,472	37%
Hardwood Woodland		
Coastal Oak Woodland	35	0%
Shrub	1,572	4%
Urban	534	1%
Water	109	0%

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



<b>Land Ownership<sup>H</sup></b>	<b>Acres</b>	<b>Percent of watershed</b>
Private	39,688	89%
State (Parks & Recreation)	3,287	7%
Federal (BLM)	1,844	4%

<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 -- 1,019 People	Total Housing Units within the watershed -- 781 Houses
	Housing Density
	0 to Less than 1 Housing Unit / 160 Acres 61%
	1 Unit / 160 Acres to 1 Unit / 20 Acres 34%
	1 Unit / 20 Acres to 1 Unit / 5 Acres 4%
	1 Unit / 5 Acres to 2 Units / Acre 1%
	2 Units / Acres to Greater than or Equal to 5 Units / Acre 0%

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





*Green Valley Creek Subwatershed*

Area	Hydrologic Units	Calwater Subbasins ---	(Planning Watersheds)
24,435 Acres	18010110	1114110103	Green Valley Creek (4940 Acres)
9,889 Hectares	4th Field HUC	1114110201	Atascadero Creek (8551 Acres)
38 Square Miles		1114110202	Purrington Creek (10944 Acres)
	1114		
<b>Location</b>	4th Field Calwater		
Sonoma County			

Species Potential	Miles of Streams with Species Present
Central California Coast <b>Steelhead</b> Interior San Francisco Bay Diversity Stratum - Independent Population	<u>Steelhead</u> 25 NOAA Fisheries, Critical Habitat Redesignation, 2005
Central California Coast <b>Coho</b> Coastal Gualala Diversity Stratum - Independent Population	<u>Coho</u> 10 CDFG, Coho Distribution, May 2007

Critical Habitat	
Central California Coast Steelhead	25 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		6
Intermittent Stream	27	3 - Unknow Barrier Status
Perennial Stream	22	2 - Partial Barriers
Canal / Ditch	0	
Connector	0	
Artificial Path	1	<sup>C</sup> Passage Assessment Database, Pacific States Marine Fisheries Commission, 2005

<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>
	79
	6 Dams
	44 Water Rights Diversions
	28 Road Crossings ( 2 Complete Barriers, 8 Partial barriers)
	<sup>C</sup> Passage Assessment Database, Pacific States Marine Fisheries Commission, 2006

EPA Total Maximum Daily Load Classification (TMDL)<sup>1</sup>  
 Water Temperature Sediment/Siltation Pathogens pH  
 Sources: Nonpoint/Point Sources; Source Unknown; Agriculture; Agriculture-grazing; Agriculture-storm runoff; Channel Erosion; Channelization;  
 Construction/Land Development; Dam Construction; Drainage/Filling of Wetlands; Erosion/Siltation; Flow Regulation/Modification;  
 Habitat Modification; Highway/Bridge/Road construction; Hydromodification; Irrigated Crop Production; Land Development;  
 Removal of Riparian Vegetation; Silviculture; Specialty Crop Production; Streambank Modification/Destabilization; Upstream Impoundment;

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



**Appropriated Waterways<sup>J</sup>**

Green Valley Creek is a Fully Appropriated Stream (6/15 - 10/31)

<sup>C</sup>California State Water Resources Control Board, 1998.**Average Annual Precipitation<sup>E</sup>**

38.7"

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

35" - 55"

<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

8

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

169

Driveway or service road or ramp

3

Total Miles

**Road Density**

Miles of Roads per SqMi of Watershed

4.8

Miles of Roads per SqMi of 100m Riparian Buffer\*

4.6

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

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

Acres

Percent of watershed

Lands of 0-2 percent slope

1,821

8%

Lands of 2-4 percent slope

2,516

10%

Lands of 4-10 percent slope

6,822

28%

Lands of 10-15 percent slope

3,829

16%

Lands of 15-30 percent slope

5,543

23%

Lands of 30-60 percent slope

3,349

14%

Lands of 60-100 percent slope

547

2%

Lands of 100-150 percent slope

9

0%

**Elevation Range**

23 - 922 ft.

7 - 281 m

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

Acres

Percent of watershed

Agriculture

12,051

49%

Annual grassland

1,888

8%

Barren

62

0%

Conifer Forest

Closed-Cone Pine-Cypress

171

1%

Douglas Fir

1,396

6%

Montane Hardwood Conifer

294

1%

Redwood

3,324

14%

Hardwood Forest

Montane Hardwood

2,548

10%

Montane Riparian

126

1%

Hardwood Woodland

Coastal Oak Woodland

0

0%

Eucalyptus

86

0%

Valley Foothill Riparian

462

2%

Shrub

72

0%

Urban

1,764

7%

Water

106

0%

Wetland

109

0%

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

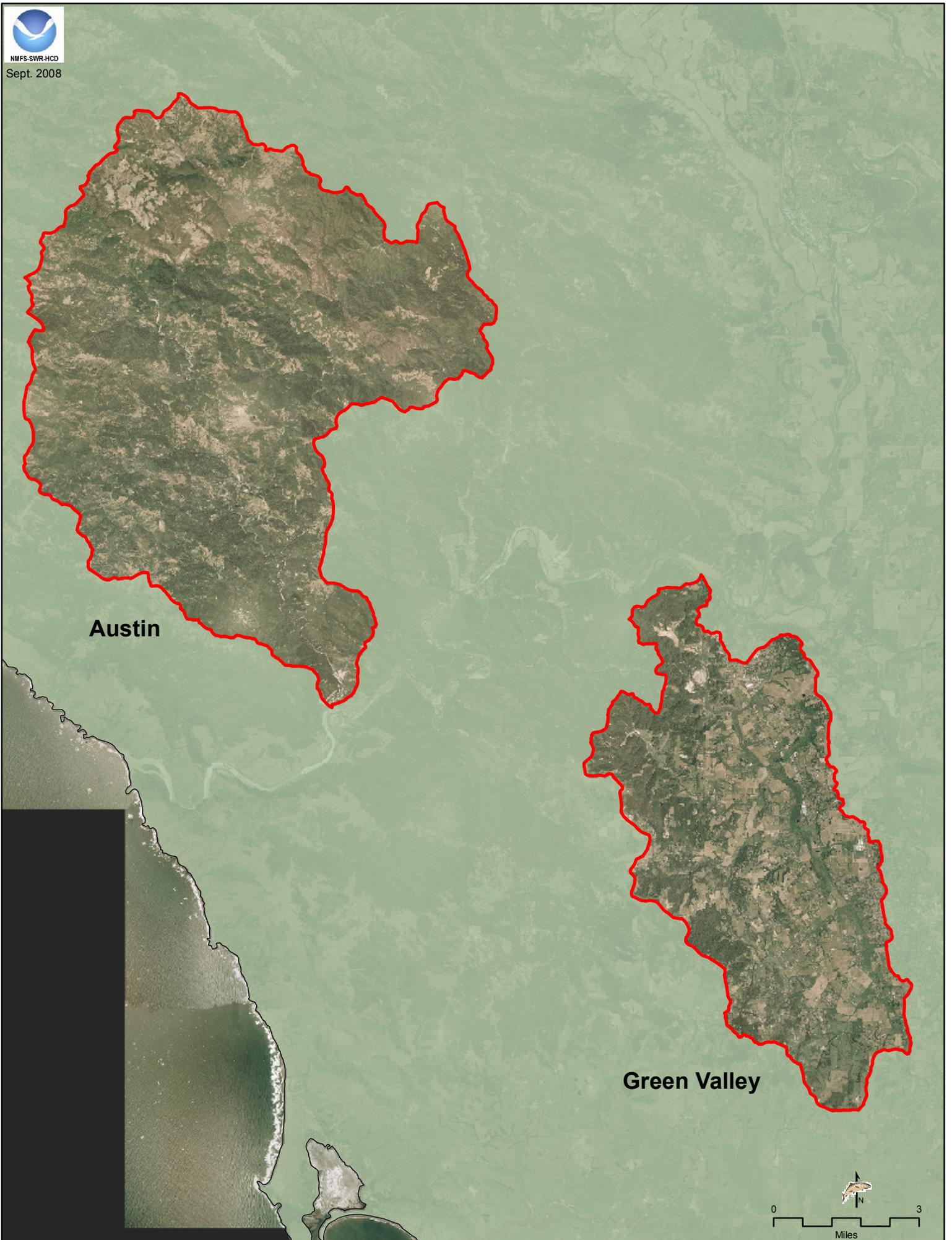
<b>Land Ownership<sup>H</sup></b>	<b>Acres</b>	<b>Percent of watershed</b>
Private	24,199	99%
Local, City/County Park	155	1%
State (Fish & Game)	81	0%

<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 -- 15,023 People	Total Housing Units within the watershed -- 6,086 Houses
	Housing Density
	0 to Less than 1 Housing Unit / 160 Acres 2%
	1 Unit / 160 Acres to 1 Unit / 20 Acres 5%
	1 Unit / 20 Acres to 1 Unit / 5 Acres 44%
	1 Unit / 5 Acres to 2 Units / Acre 48%
	2 Units / Acres to Greater than or Equal to 5 Units / Acre 1%

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





**Austin**

**Green Valley**



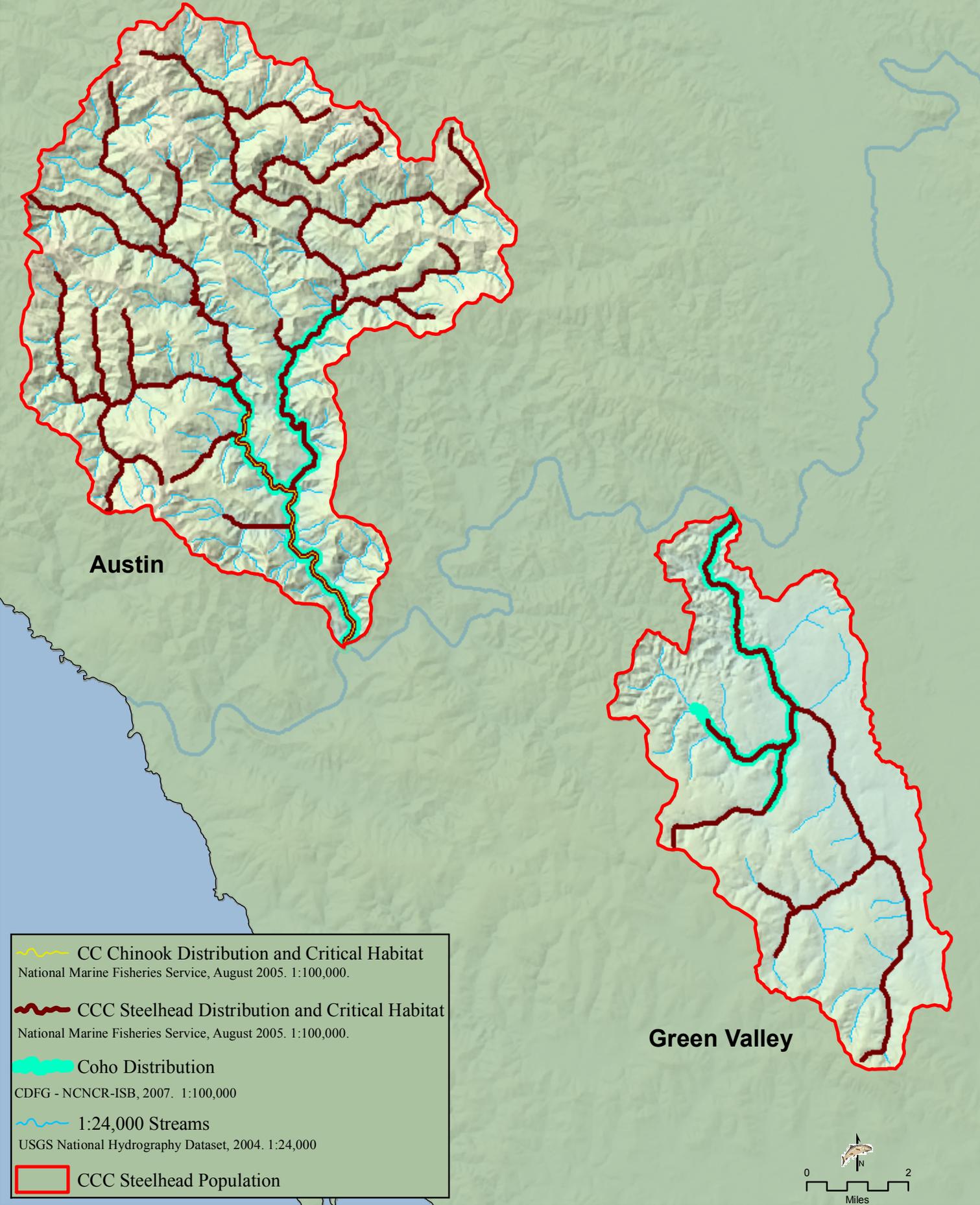


NMFS-SWR-HCD  
Sept. 2008

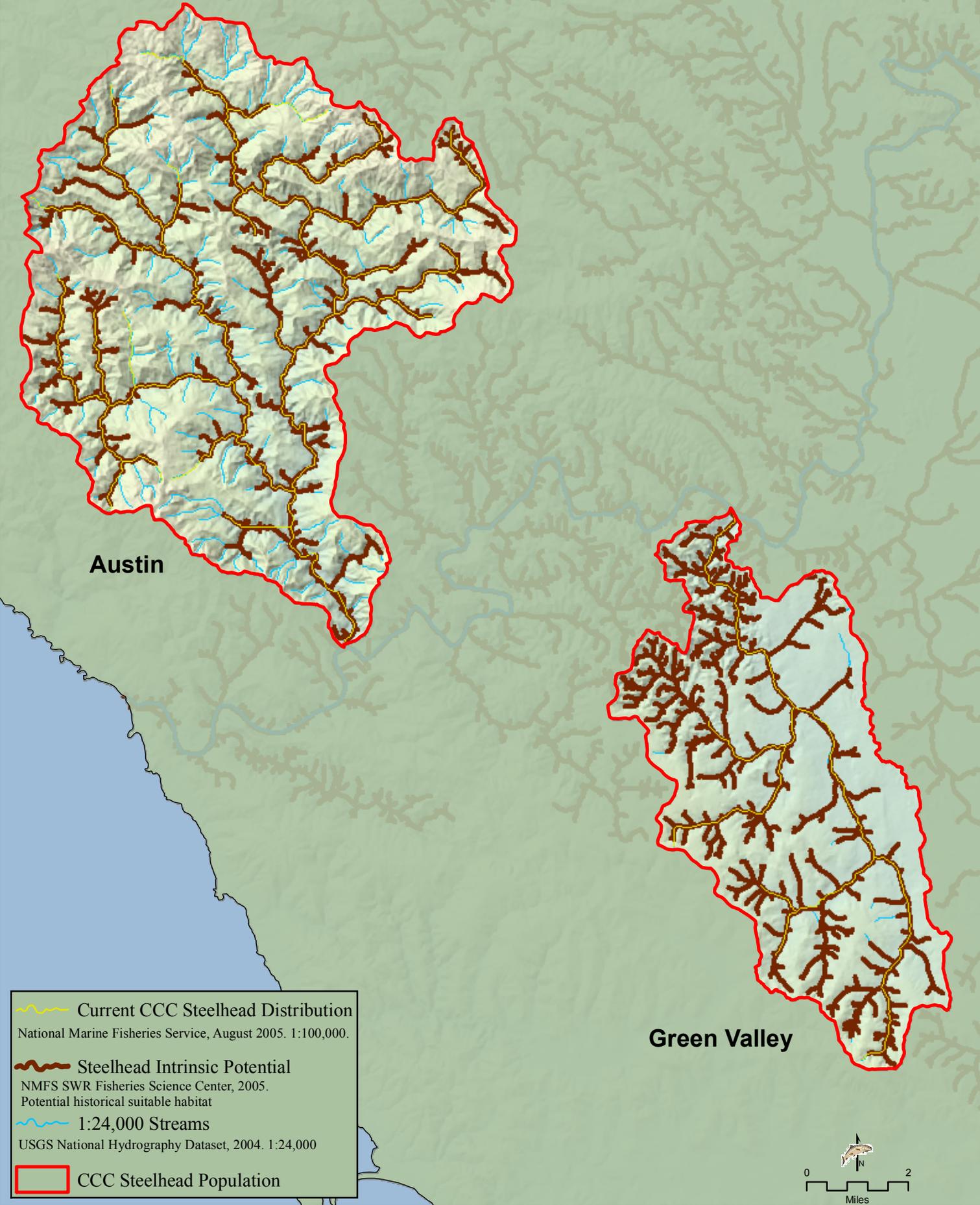
# Green Valley and Austin Creeks CalWater Planning Watersheds



# Green Valley and Austin Creeks Fish Distribution and Critical Habitat



# Green Valley and Austin Creeks Steelhead Current vs. Historical



**Austin**

**Green Valley**

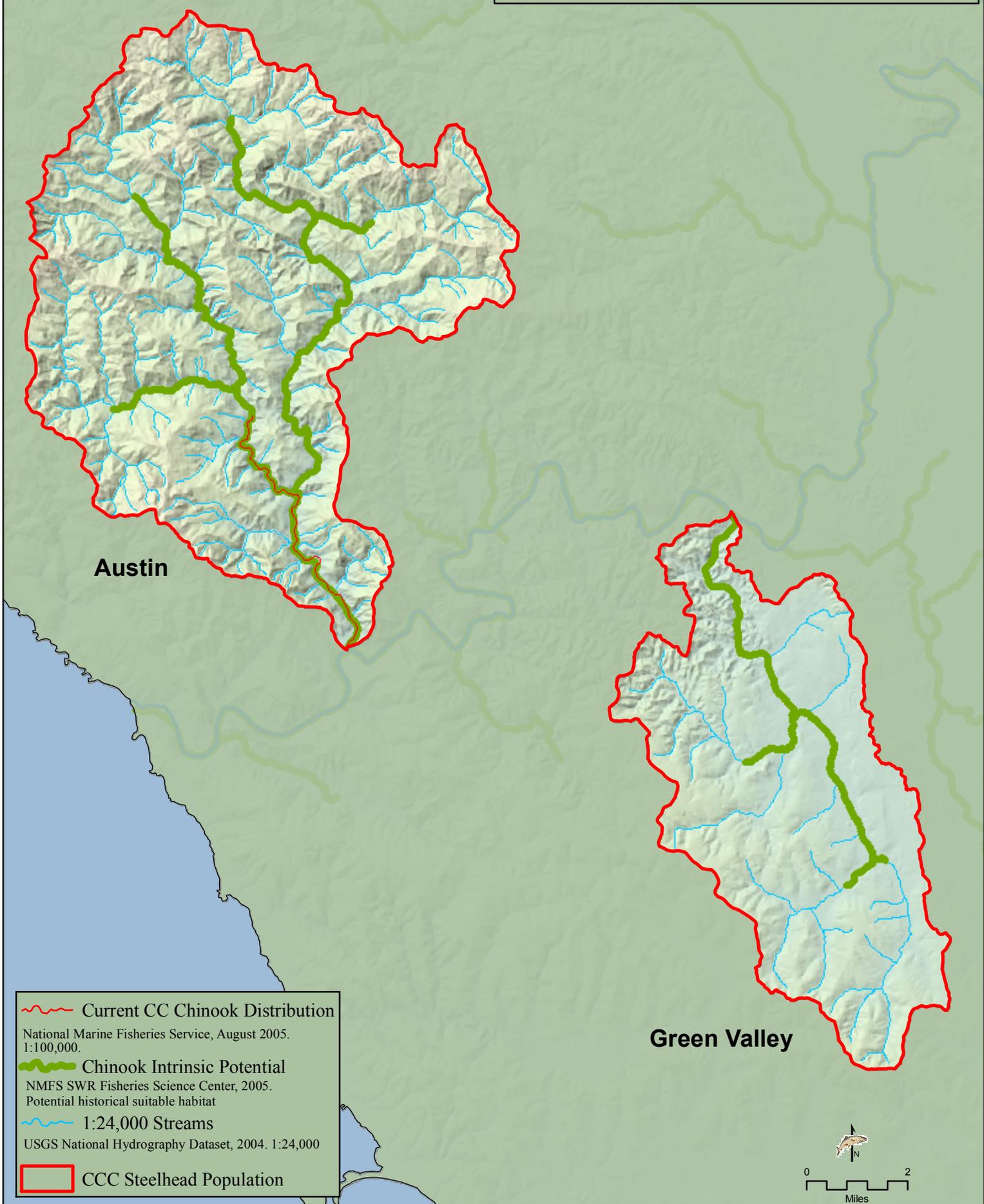
-  Current CCC Steelhead Distribution  
National Marine Fisheries Service, August 2005. 1:100,000.
-  Steelhead Intrinsic Potential  
NMFS SWR Fisheries Science Center, 2005.  
Potential historical suitable habitat
-  1:24,000 Streams  
USGS National Hydrography Dataset, 2004. 1:24,000
-  CCC Steelhead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



# Green Valley and Austin Creeks Coho Current vs. Historical



# Green Valley and Austin Creeks Chinook Current vs. Historical



 Current CC Chinook Distribution  
National Marine Fisheries Service, August 2005.  
1:100,000.

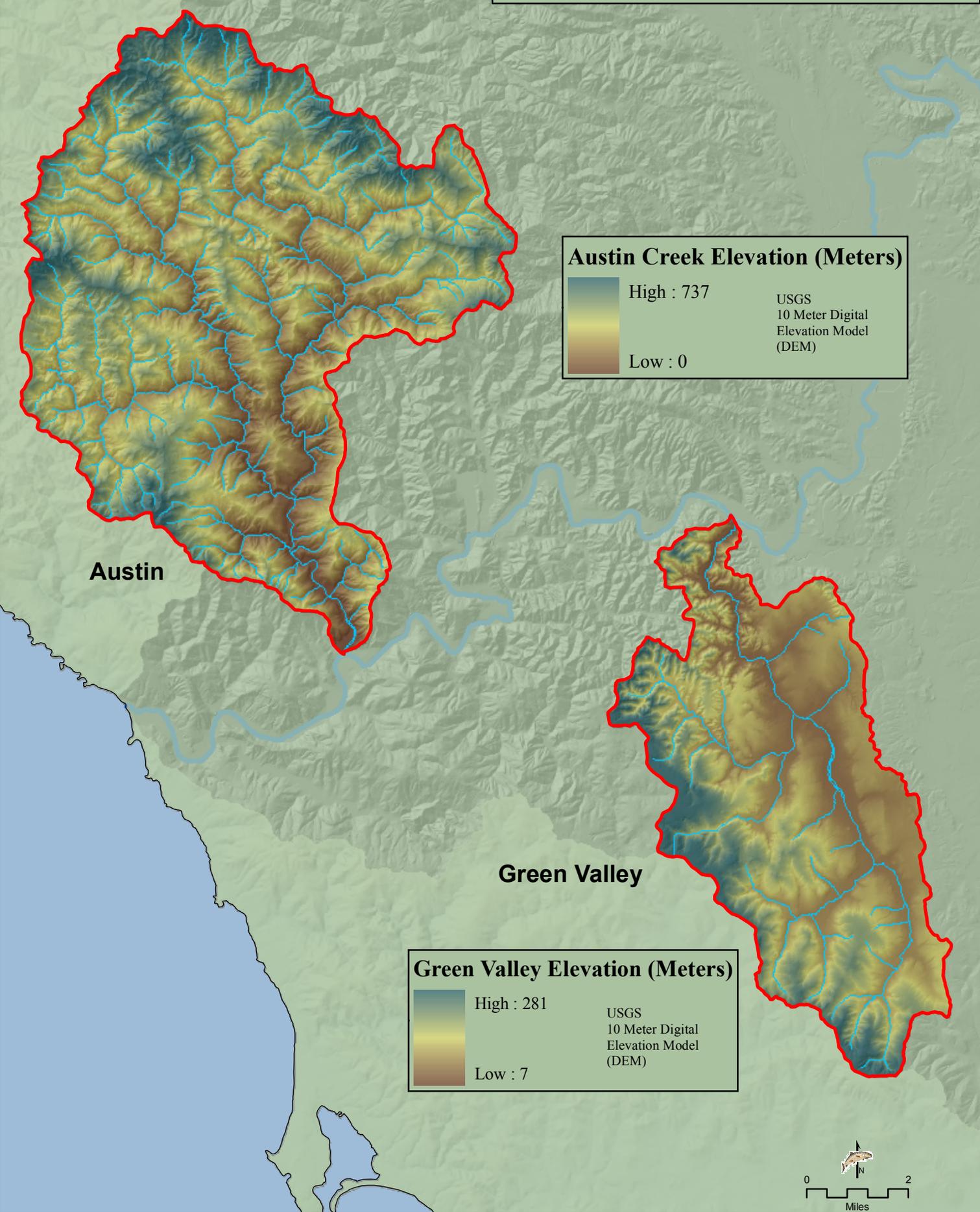
 Chinook Intrinsic Potential  
NMFS SWR Fisheries Science Center, 2005.  
Potential historical suitable habitat

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

 CCC Steelhead Population



# Green Valley and Austin Creeks Elevation



### Austin Creek Elevation (Meters)

High : 737  
Low : 0

USGS  
10 Meter Digital  
Elevation Model  
(DEM)

### Green Valley Elevation (Meters)

High : 281  
Low : 7

USGS  
10 Meter Digital  
Elevation Model  
(DEM)





# Green Valley and Austin Creeks Development

Population within the Watershed = 1,019 People  
Houses within the Watershed = 781  
California Department of Forestry, 2003. 1:100,000.

**Austin**

Population within the Watershed = 15,023 People  
Houses within the Watershed = 6,086  
California Department of Forestry, 2003. 1:100,000.

**Green Valley**

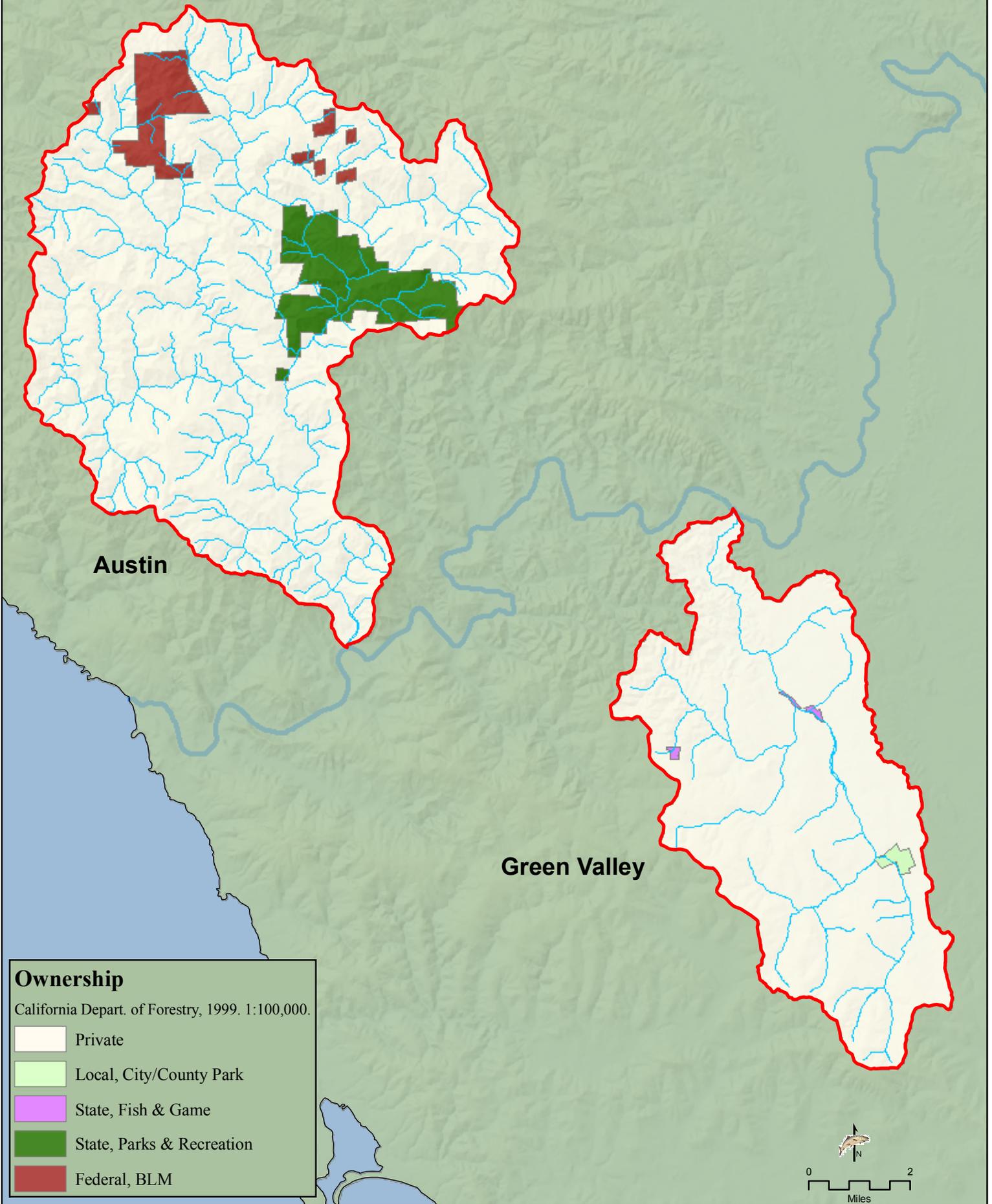
## Development

	0 to Less than 1 Housing Unit / 160 Acres
	1 Unit / 160 Acres to 1 Unit / 20 Acres
	1 Unit / 20 Acres to 1 Unit / 5 Acres
	1 Unit / 5 Acres to 2 Units / Acre
	2 Units / Acre to Greater than or Equal to 5 Units / Acre





# Green Valley and Austin Creeks Ownership



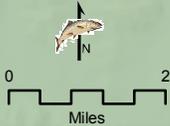
**Austin**

**Green Valley**

## Ownership

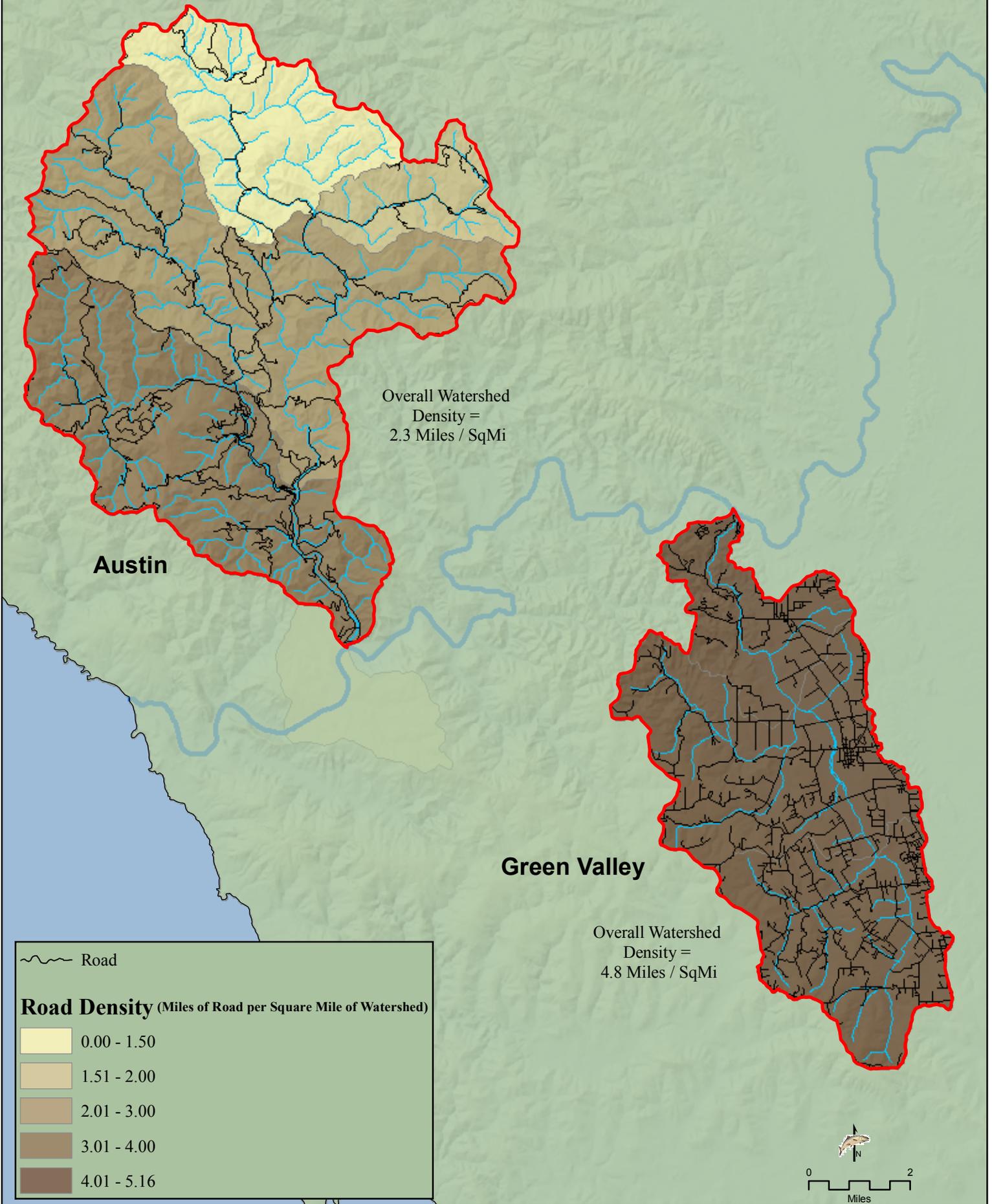
California Depart. of Forestry, 1999. 1:100,000.

- Private
- Local, City/County Park
- State, Fish & Game
- State, Parks & Recreation
- Federal, BLM





# Green Valley and Austin Creeks Road Density





# Green Valley and Austin Creeks Road Density



Overall Riparian  
Corridor Density =  
3.2 Miles / SqMi

**Austin**

**Green Valley**

Overall Riparian  
Corridor Density =  
4.6 Miles / SqMi

 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)

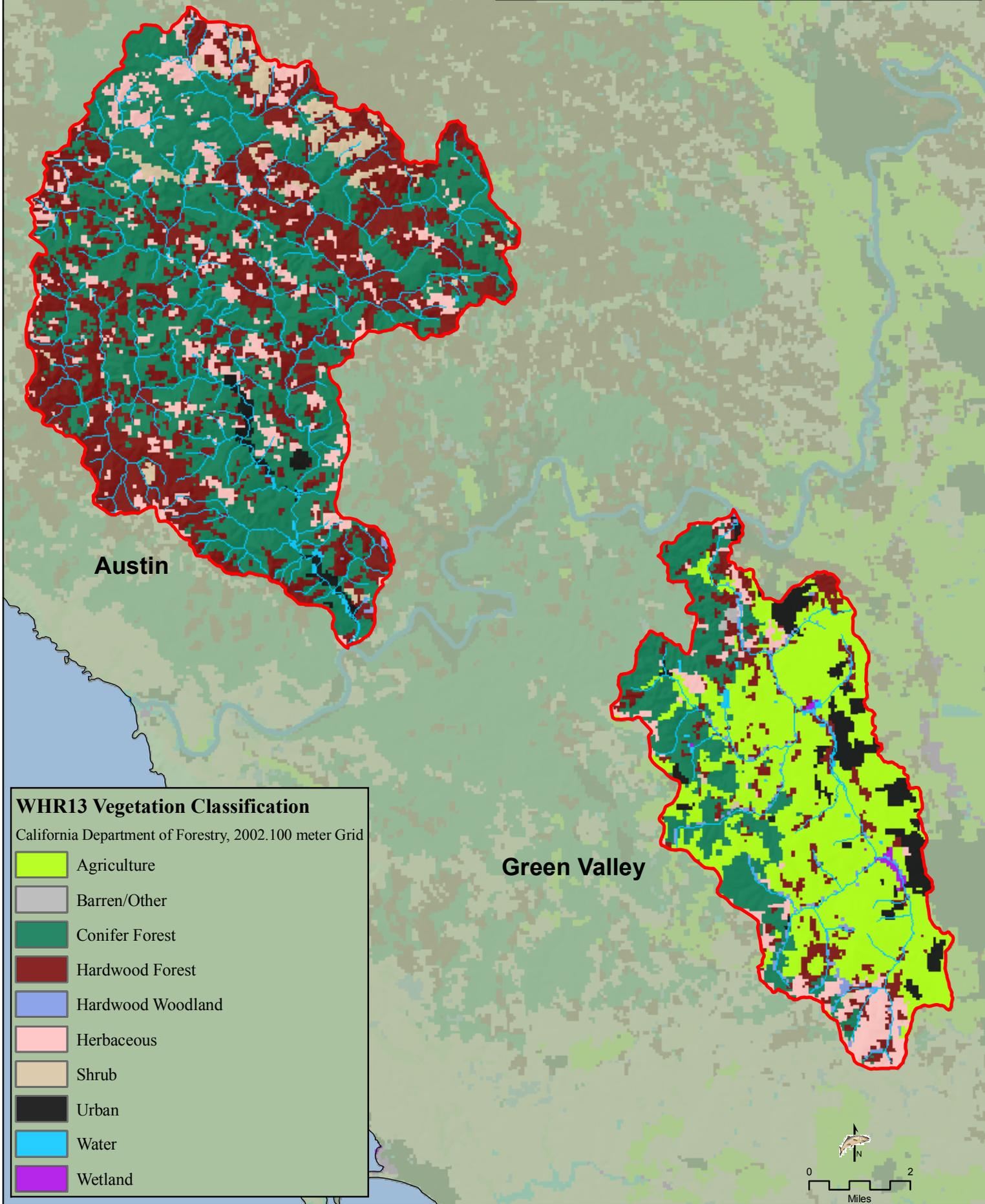




NMFS-SWR-HCD

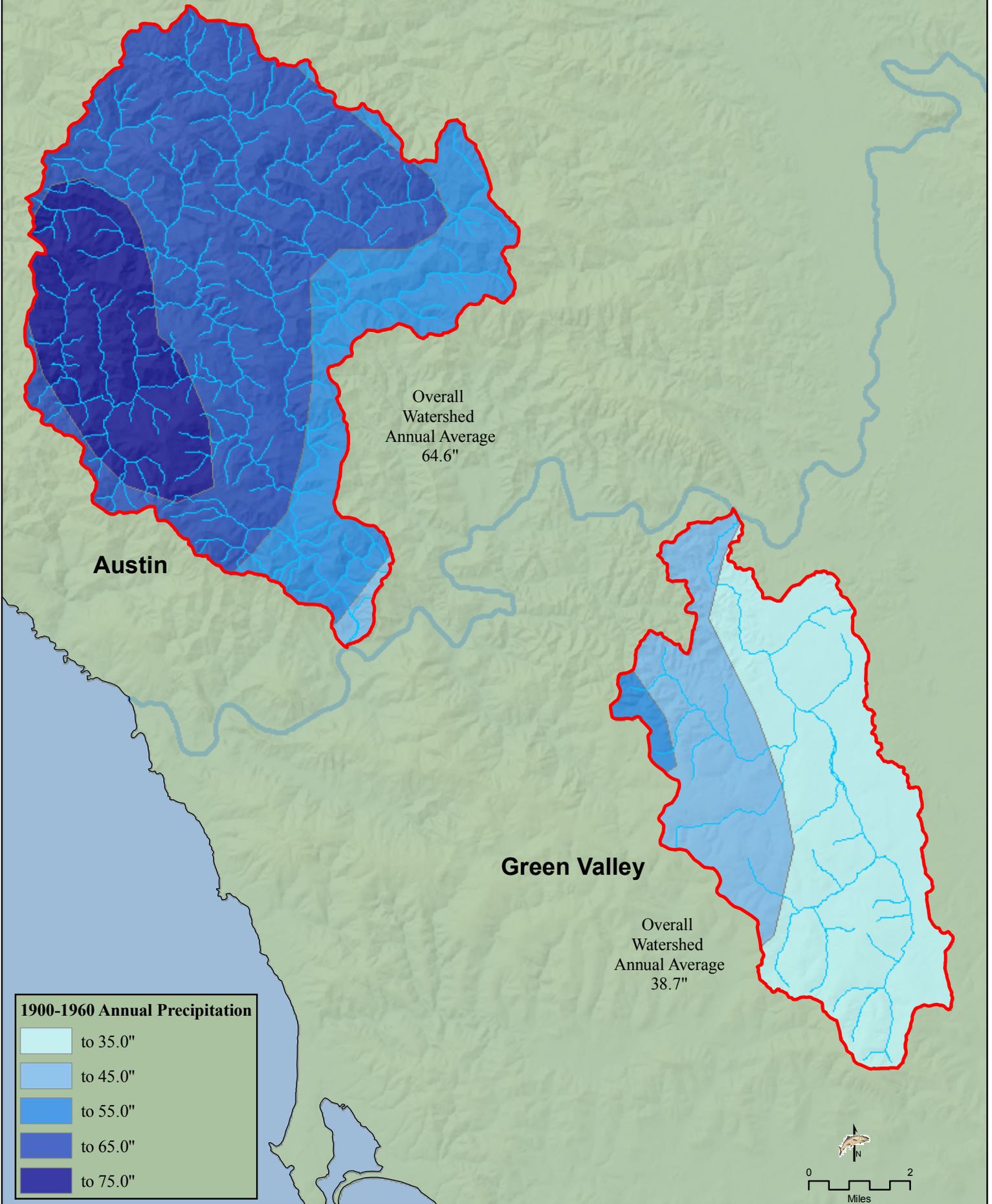
Sept. 2008

# Green Valley and Austin Creeks Vegetation





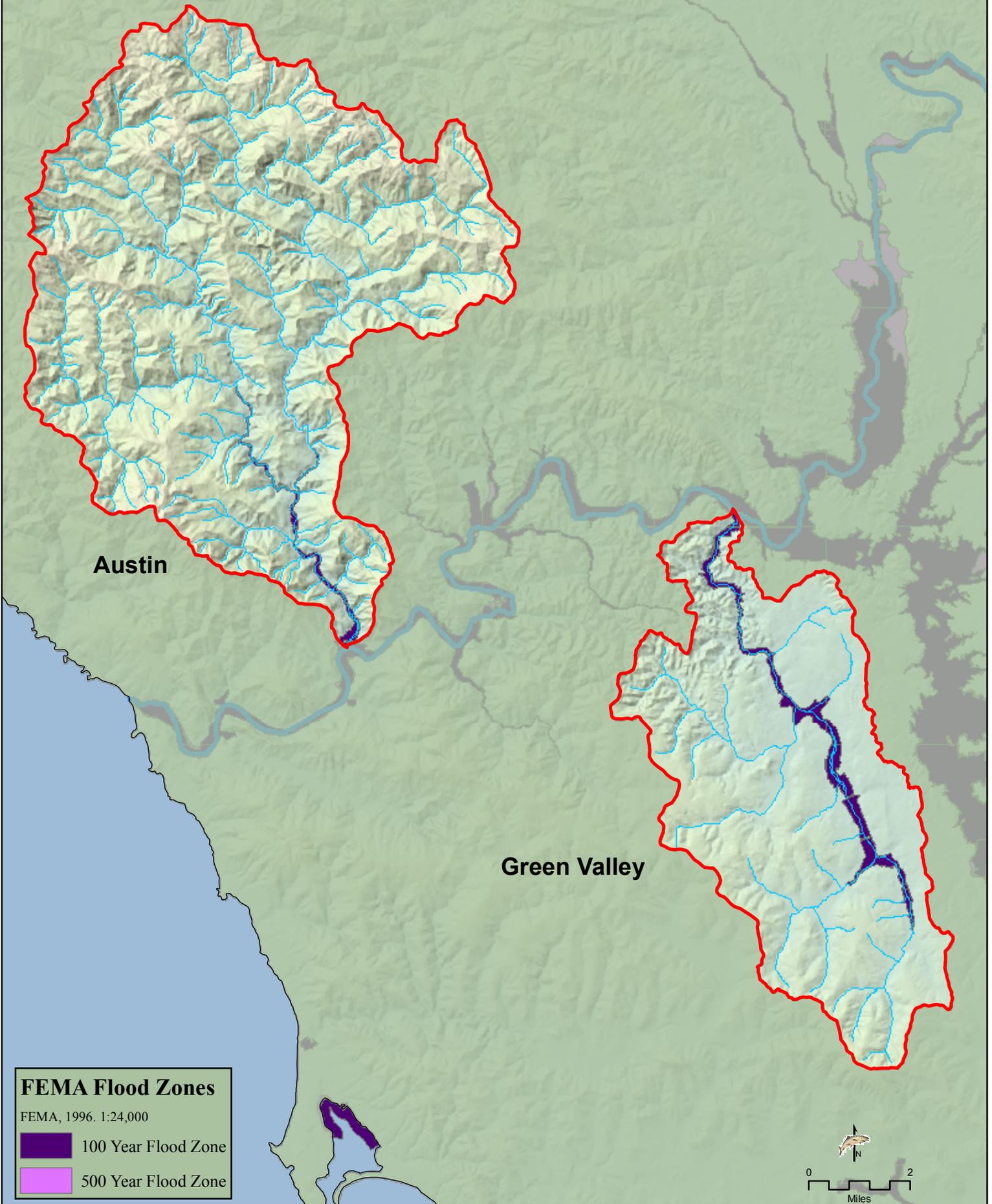
# Green Valley and Austin Creeks Precipitation





NMFS-SWR-HCD  
Sept. 2008

# Green Valley and Austin Creeks Flood Zone



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

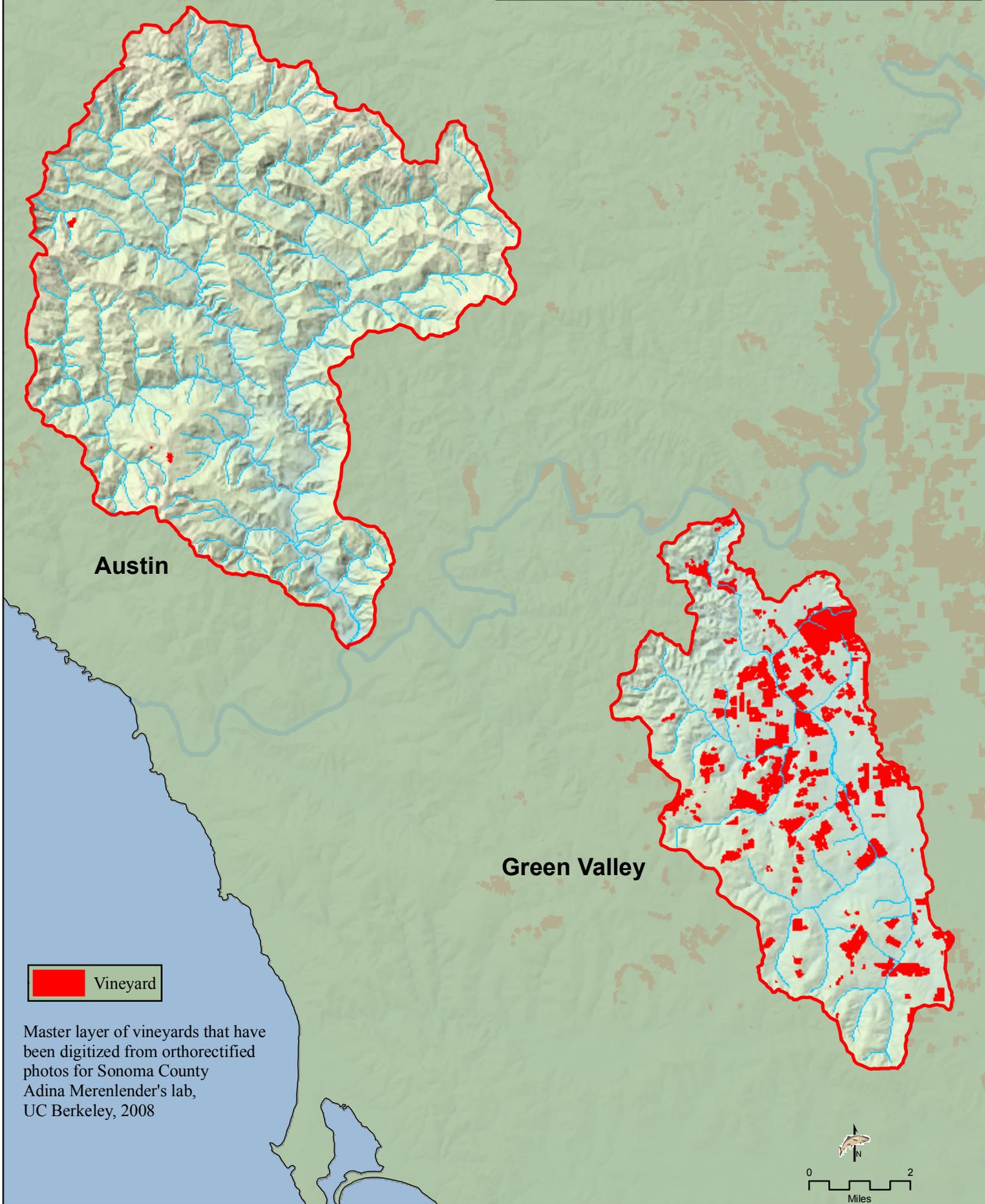
-  100 Year Flood Zone
-  500 Year Flood Zone





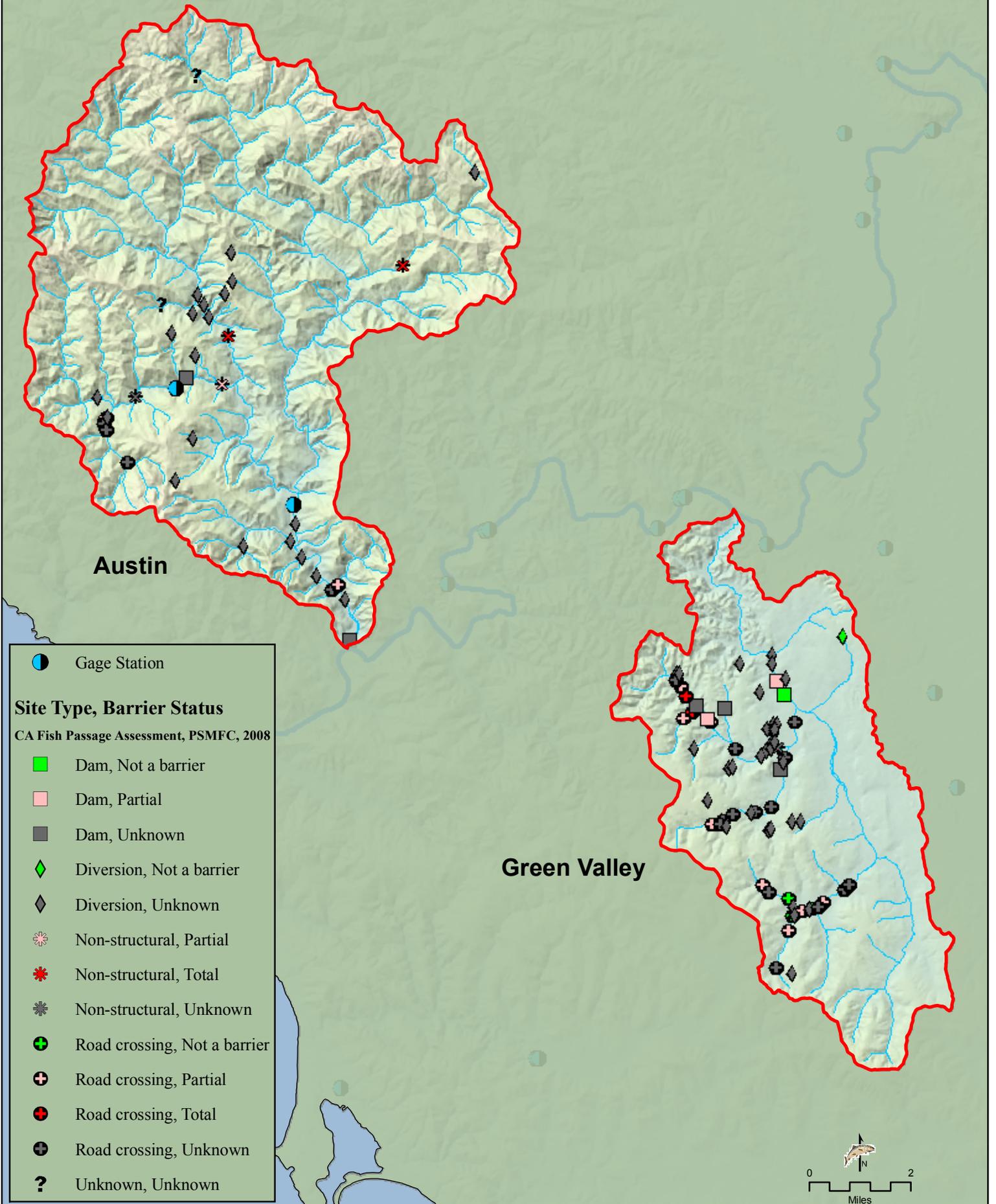
NMFS-SWR-HCD  
Sept. 2008

# Green Valley and Austin Creeks Vineyards





# Green Valley and Austin Creeks Barriers / Gages



**Austin**

**Green Valley**

● Gage Station

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

- Dam, Not a barrier
- Dam, Partial
- Dam, Unknown
- ◆ Diversion, Not a barrier
- ◆ Diversion, Unknown
- ✱ Non-structural, Partial
- ✱ Non-structural, Total
- ✱ Non-structural, Unknown
- ⊕ Road crossing, Not a barrier
- ⊕ Road crossing, Partial
- ⊕ Road crossing, Total
- ⊕ Road crossing, Unknown
- ? Unknown, Unknown

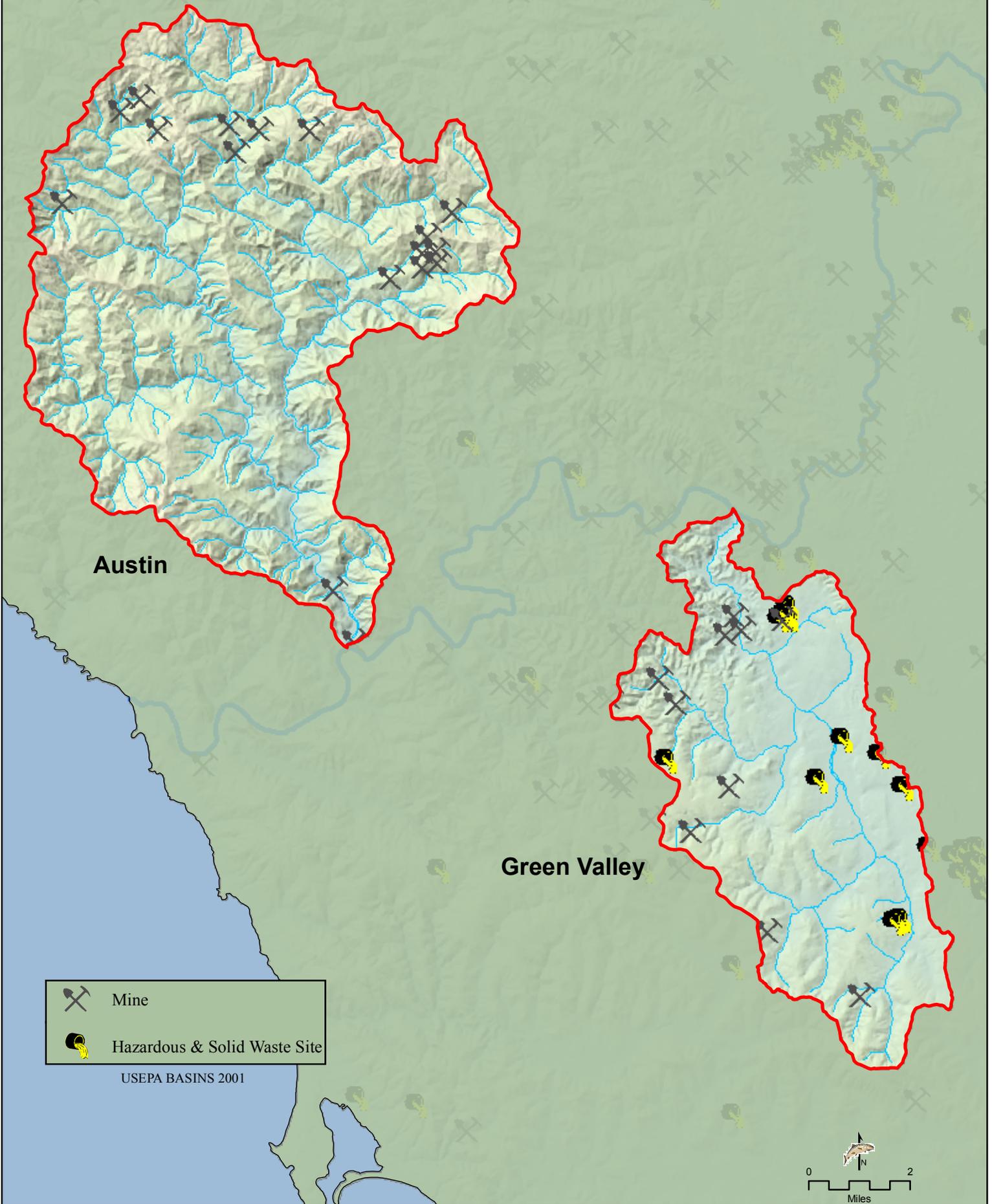




NMFS-SWR-HCD

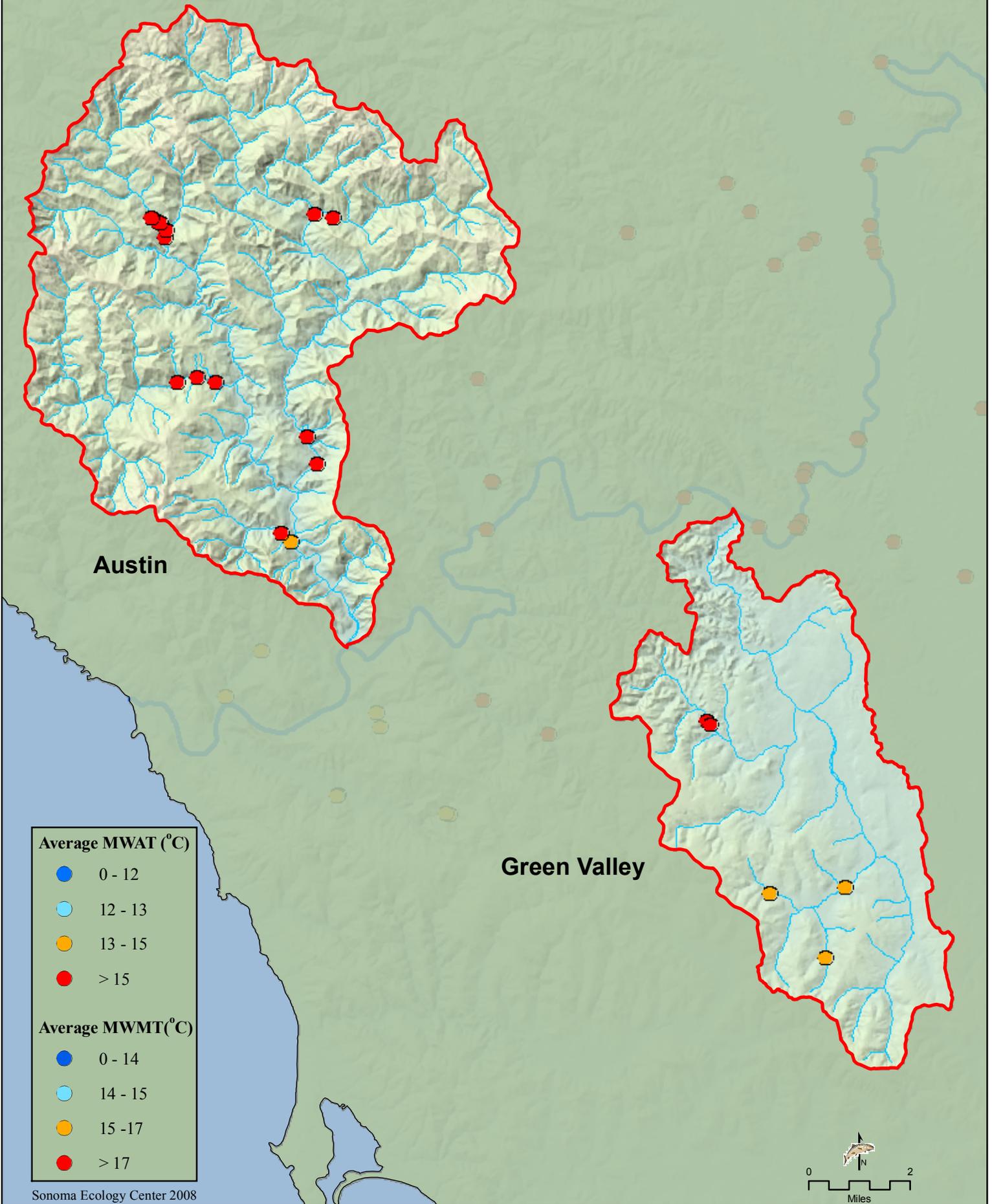
Sept. 2008

# Green Valley and Austin Creeks Industrial Discharge



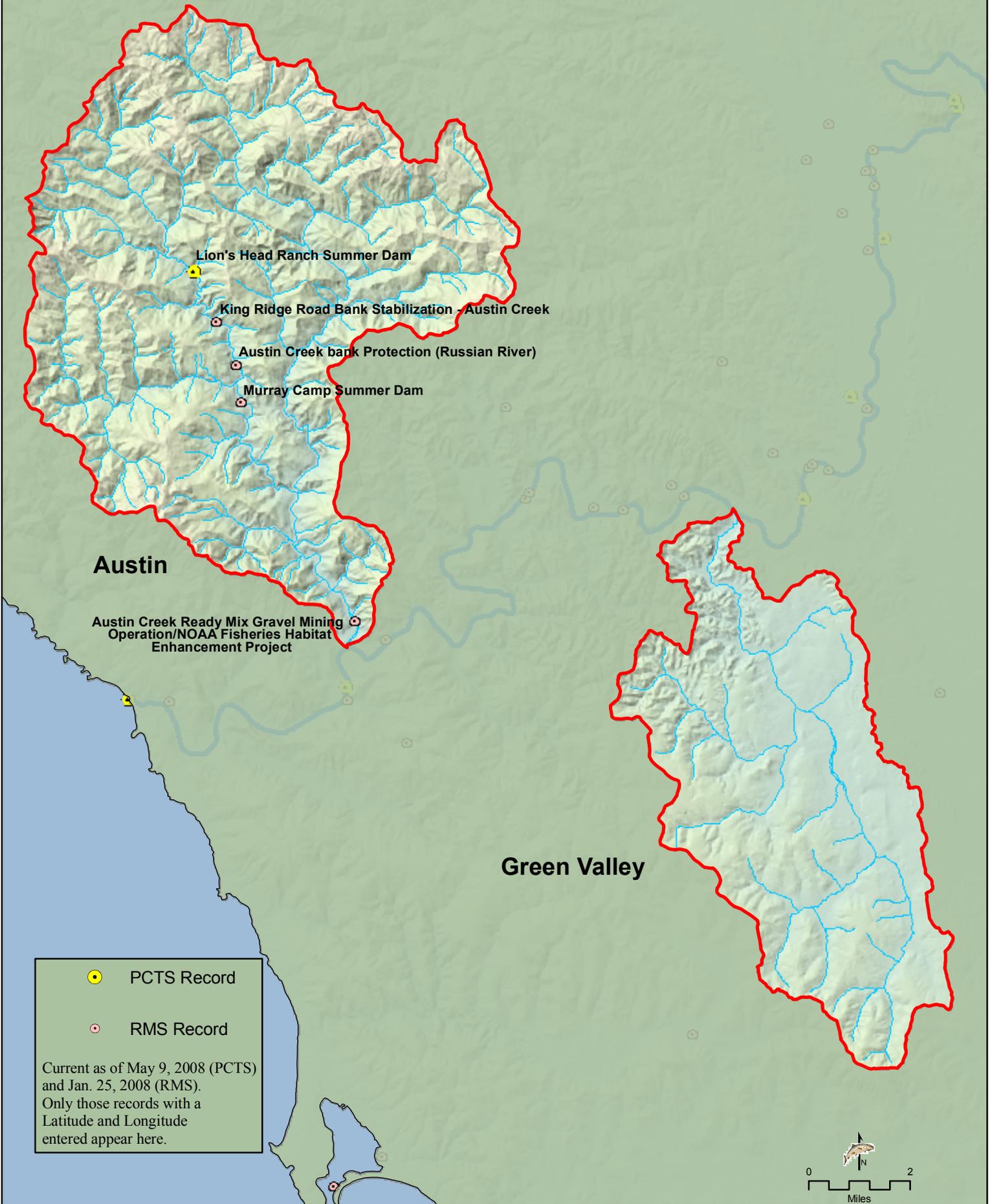


# Green Valley and Austin Creeks Temperature



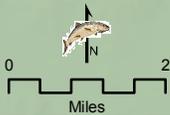


# Green Valley and Austin Creeks Public Consultation Tracking System



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.



## **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>

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>

CCC\_Steelhead\_ch\_06\_2005  
vector digital data  
National Marine Fisheries Service (NOAA  
Fisheries)

## **References**

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\_september2010  
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\_01

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**

Highly Erodible Watersheds

vector digital data

Dept. of Conservation, Division of Mines & 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/>

### **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**

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, Chinook, 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/>

Industrial\_discharge\_sites

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

**Flood Zones**

FEMA Flood Insurance Maps 1996

Vector digital data

Federal Emergency Management Agency

Q3 Flood Data Program

1996

<http://www.fema.gov/>