August 2008

NMFS-SWR-HCD

Dry Creek Subwatershed

Area	Hydrologic Units	Calwater Subbasins ---	(Planning Watersheds)
139,425 Acres	18010110	1114240101	Ingram Creek (4719 Acres)
56,423 Hectares	4th Field **HUC**	1114240102	Soda Creek (6223 Acres)
218 Square Miles		1114240103	Elkhorn Creek (7975 Acres)
	1114	1114240201	McChristian Creek (4278 Acres)
Location	4th Field **Calwater**	1114240202	Lower Dry Creek (9346 Acres)
Sonoma County		1114240203	Cherry Creek (10382 Acres)
Mendocino County		1114240204	Galloway Creek (10230 Acres)
		1114240301	Dutcher Creek (5963 Acres)
		1114240302	Lower Lake Sonoma Creek (5833 Acres)
		1114240303	Grape Creek (9864 Acres)
		1114240304	Lower Dry Creek(11185 Acres)
		1114240305	Smith Creek (8060 Acres)
		1114240401	Strawberry Creek (8321 Acres)
		1114240402	Warm Springs Creek (7802 Acres)
		1114240501	Pechaco Creek (6801 Acres)
		1114240502	Redwood Log Creek (7671 Acres)
		1114240601	Wallace Creek (3340 Acres)
		1114240602	Felta Creek (3989 Acres)
		1114240603	Palmer Creek 7443 Acres)

Species Potential	Miles of Streams with Species Present
Central California Coast **Steelhead**	Steelhead
Interior San Francisco Bay Diversity Stratum	66
- Independent Population	NOAA Fisheries, Critical Habitat Redesignation, 2005
California Coastal **Chinook**	Chinook
Central Coastal Diversity Stratum	14
- Independent Population	NOAA Fisheries, Critical Habitat Redesignation, 2005
Central California Coast **Coho**	Coho
Coastal Gualala Diversity Stratum	23
- Independent Population	CDFG, Coho Distribution, May 2007

Critical Habitat

Central California Coast Steelhead	66 Miles
California Coastal Chinook	14 Miles
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[A]	Miles
Naturally Occurring Waterways	
Intermittent Stream	424
Perennial Stream	114
Canal / Ditch	0
Connector	1
Artificial Path	24

[A]USGS National Hydrography Dataset, High Resolution, 2004. 1:24,000

Number of Dams[C]
21
1 - Impassable
4 - Partial / Temporal Barriers
16 - Unknow Barrier Status

[C]Passage Assessment Database,
Pacific States Marine Fisheries Commission, 2005

USGS Gaging Stations[B]
11464050 - Dry Creek Tributary near Hopland
11464400 - Dry Creek near Yorkville
11464500 - Dry Creek near Clovedale
11464860 - Warm Springs Creek near Asti
11464900 - Lake Sonoma near Geyserville
11465000 - Dry Creek below Warm Springs Dam near Geyserville
11465050 - Dutcher Creek near Asti
11465150 - Pena Creek near Geyserville
11465200 - Dry Creek near Geyserville
11465350 - Dry Creek mouth near Healdsburg

Number of Barriers[C]
246
21 Dams
71 Road Crossings (13 Impassable)
146 Water Rights Diversions

[C]Passage Assessment Database,
Pacific States Marine Fisheries Commission, 2006

EPA Total Maximum Daily Load Classification (**TMDL**)[I]

Low Priority - Mercury (Lake Sonoma). Temperature Medium Priority - Sediment/Siltation

Sources: Resource Extraction, Nonpoint Source (Lake Sonoma). Agriculture, Ag Run-off, Silviculture, Logging Road Construction/Maintenance, Construction/Land Development, Highway/Road/Bridge Construction, Disturbed Sites, Hydromodification, Channelization, Dam Construction, Upstream Impoundment, Flow Regulation/Modification, Habitat Modification, Removal of Riparian Vegetation, Streambank Modification/ Destabilization, Drainage/Filling of Wetlands, Channel Erosion, Erosion/Silitation, Nonpoint Source

[I]State Water Resources Control Board, 2003

Average Annual Precipitation[E]	Average Annual Precipitation Range[E]
48.6"	35" - 65"

[E]California Mean Annual Precipitation Zones, 1900-1960, CA Department of Forestry, 1990

Roads[A]	Miles
Roads in Watershed	
Primary Road / Highway	11
Local, neighborhood, and rural road, city street, unseparated	315
Vehicular trail, 4WD	34
Driveway or service road or ramp	65
Total Miles	

Road Density	
Miles of Roads per SqMi of Watershed	1.9
Miles of Roads per SqMi of 100m Riparian Buffer*	2.0

*Buffer is 100 meters on either side of the stream centerline
[A]U.S. Census Bureau - Tiger 2000, 2002. 1:24,000

Slope[D]	Acres	Percent of watershed
Lands of 0-2 percent slope		
Lands of 2-4 percent slope		
Lands of 4-10 percent slope		
Lands of 10-15 percent slope		
Lands of 15-30 percent slope		
Lands of 30-60 percent slope		
Lands of 60-100 percent slope		
Lands of 100-117 percent slope		

Elevation Range

[D]Slope derived from USGS 10 meter Digital Elevation Models (DEM's)

Vegetation[G]	Acres	Percent of watershed
Agriculture	11,048	8%
Barren	227	0%
Annual grassland	28,407	20%
Conifer Forest		
Douglas Fir	12,219	9%
Montane Hardwood Conifer	1,465	1%
Redwood	5,271	4%
Hardwood Forest		
Montane Hardwood	67,418	48%
Montane Riparian	69	0%
Hardwood Woodland		
Blue Oak Foothill Pine	262	0%
Blue Oak Woodland	148	0%
Coastal Oak Woodland	72	0%
Valley Foothill Riparian	32	0%
Valley Oak Woodland	22	0%
Shrub	7,524	5%
Urban	2,288	2%
Water	3,029	2%
Wetland	5	0%

[G]Multi-source Land Cover Data (2002 v2), CA Department of Forestry, 2002. 100 meter Grid

Land Ownership[H]	Acres	Percent of watershed
Private	123,706	89%
Federal (ACOE)	15,719	11%

[H]Management Landscape, CA Department of Forestry, 2002

Population[I]	Housing[I]	
Total Population within the watershed -- 281,688 People	Total Housing Units within the watershed -- 107,111 Houses	
	Housing Density	
	0 to Less than 1 Housing Unit / 160 Acres	11%
	1 Unit / 160 Acres to 1 Unit / 20 Acres	34%
	1 Unit / 20 Acres to 1 Unit / 5 Acres	25%
	1 Unit / 5 Acres to 2 Units / Acre	20%
	2 Units / Acres to Greater than or Equal to 5 Units / Acre	10%

[I]Census 2000 Block Data (Migrated), CA Department of Forestry, 2003

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Mark West Creek Subwatershed

Area	Hydrologic Units	Calwater Subbasins ---	(Planning Watersheds)
162,437 Acres	18010110	1114110102	Mirabel Park (1162 Acres)
65736 Hectares	4th Field **HUC**	1114210001	Blucher Creek (15455 Acres)
254 Square Miles		1114210002	Laguna de Santa Rosa (31964 Acres)
	1114	1114210003	Crane Creek (9180 Acres)
Location	4th Field **Calwater**	1114220101	Rincon Creek (6660 Acres)
Sonoma County		1114220102	Pine Creek Res (4491 Acres)
		1114220103	Monroe (11051 Acres)
		1114220104	Santa Rosa Creek (9019 Acres)
		1114220201	Santa Rosa Creek Res (6375 Acres)
		1114220202	Upper Matanzas Creek (3839 Acres)
		1114220203	SF Matanzas Creek (8038 Acres)
		1114230101	Humbug Creek (5407 Acres)
		1114230102	Porter Creek (6224 Acres)
		1114230103	Mark West Springs (6645 Acres)
		1114230104	Van Buren Creek (7928 Acres)
		1114230201	Pool Creek (22058 Acres)
		1114230202	Upper Windsor Creek (6942 Acres)

Species Potential	Miles of Streams with Species Present
Central California Coast **Steelhead**	Steelhead
Interior San Francisco Bay Diversity Stratum	104
- Independent Population	NOAA Fisheries, Critical Habitat Redesignation, 2005
California Coastal **Chinook**	Chinook
Central Coastal Diversity Stratum	17
- Independent Population	NOAA Fisheries, Critical Habitat Redesignation, 2005
Central California Coast **Coho**	Coho
Coastal Gualala Diversity Stratum	24
- Independent Population	CDFG, Coho Distribution, May 2007

Critical Habitat

Central California Coast Steelhead	44 Miles
California Coastal Chinook	3 Miles
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[A]	Miles	Number of **Dams**[C]
Naturally Occurring Waterways		31
Intermittent Stream	289	2 - Impassable
Perennial Stream	88	3 - Not a Barrier
Canal / Ditch	20	2 - Partial / Temporal Barriers
Connector	2	24 - Unknow Barrier Status
Artificial Path	41	

[C]Passage Assessment Database, Pacific States Marine Fisheries Commission, 2005

[A]USGS National Hydrography Dataset, High Resolution, 2004. 1:24,000

USGS **Gaging Stations**[B]	Number of **Barriers**[C]
11465450 - Mark West Creek at Mark	355
11465500 - Mark West Creek near Winds	31 Dams
11465700 - Colgan Creek near Sebastopol	146 Road Crossings (6 Impassable)
11465750 - Laguna de Santa Rosa near Sebastopol	173 Water Rights Diversions
11465800 - Santa Rosa Creek near Santa Rosa	
11465850 - Spring Lake at Santa Rosa	
11466200 - Santa Rosa Creek at Santa Rosa	
11466320 - Santa Rosa Creek at Willowside Rd near Santa Rosa	[C]Passage Assessment Database,
11466500 - Laguna de Santa Rosa	Pacific States Marine Fisheries Commission, 2006
11466800 - Mark West Creek near Mirabel	

EPA Total Maximum Daily Load Classification (**TMDL**)[I]

Low Priority - Temperature, Dissolved Oxygen, Nitrogen, Phosphorus Medium Priority - Sediment/Siltation

Sources: Agriculture, Irrigated Crop Production, Nonirrigated Crop Production, Specialty Crop Production, Range Grazing-Riparian and/or Upland Pasture Grazing, Intensive Animal Feeding Operations, Agriculture-storm runoff, Agriculture-grazing, Silviculture, Harvesting/Restoration/Residue Management, Construction/Land Development, Highway/Road/Bridge Consturction, Land Development, Disturbed Sites, Dairies, Other Urban Runoff, Surface Runoff, Removal of Riparian Vegetation, Streambank Modification/Destabilization, Drainage/Filling of Wetlands, Channel Erosion, Erosion/Siltation, Hydromodification, Upstream Impoundment, Flow regulation/Modification, Habitat Modification, Nonpoint Source, Internal Nutrient Cycling, Erosion from Derelict Land

Approriated Waterways[J]

Mark West Creek is Fully Appropriated 5/1 - 10/31 from where it corsses Highway 101

Laguna de Santa Rosa is Fully Appropriated 6/1 - 10/31 from Laguna de Santa Rosa and North of Molina (Occidental)

Santa Rosa Creek is Fully Appropriated 6/1 - 10/31 from T7N, r8W, S18 upstream

[J]California State Water Resources Control Board, 1998.

Average Annual **Precipitation**[E]	Average Annual **Precipitation Range**[E]
36.1"	27.5" - 65"

[E]California Mean Annual Precipitation Zones, 1900-1960, CA Department of Forestry, 1990

Roads[A]	Miles
Roads in Watershed	
Primary Road / Highway	20
Secondary and connecting road, state highways	25
Local, neighborhood, and rural road, city street, unseparated	1,336
Vehicular trail, 4WD	0
Driveway or service road or ramp	22
Total Miles	

Road Density	
Miles of Roads per SqMi of Watershed	5.5
Miles of Roads per SqMi of 100m Riparian Buffer*	5.2

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

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

Slope[D]	Acres	Percent of watershed
Lands of 0-2 percent slope		
Lands of 2-4 percent slope		
Lands of 4-10 percent slope		
Lands of 10-15 percent slope		
Lands of 15-30 percent slope		
Lands of 30-60 percent slope		
Lands of 60-100 percent slope		
Lands of 100-117 percent slope		

Elevation Range

[D]Slope derived from USGS 10 meter Digital Elevation Models (DEM's)

Vegetation[G]	Acres	Percent of watershed
Agriculture	36,500	22%
Barren	319	0%
Annual grassland	30,513	18%
Conifer Forest		
Closed-Cone Pine-Cypress	138	0%
Douglas Fir	5,337	3%
Montane Hardwood Conifer	168	0%
Redwood	801	0%
Hardwood Forest		
Montane Hardwood	36,631	22%
Montane Riparian	633	0%
Hardwood Woodland		
Coastal Oak Woodland	222	0%
Eucalyptus	324	0%
Valley Foothill Riparian	390	0%
Valley Oak Woodland	15	0%
Shrub	4,969	3%
Urban	44,279	27%
Water	726	0%
Wetland	598	0%

[G]Multi-source Land Cover Data (2002 v2), CA Department of Forestry, 2002. 100 meter Grid

Land Ownership[H]	Acres	Percent of watershed
Private	157,346	97%
Local (City / County Park)	452	0%
State	124	0%
State (Fish & Game)	576	0%
State (Parks & Recreation)	3,397	2%
State (Univ. of CA)	211	0%
Federal (BLM)	331	0%

[H]Management Landscape, CA Department of Forestry, 2002

Population[I]	Housing[I]	
Total Population within the watershed -- 747 People	Total Housing Units within the watershed -- 373 Houses	
	Housing Density	
	0 to Less than 1 Housing Unit / 160 Acres	66%
	1 Unit / 160 Acres to 1 Unit / 20 Acres	33%
	1 Unit / 20 Acres to 1 Unit / 5 Acres	2%
	1 Unit / 5 Acres to 2 Units / Acre	0%
	2 Units / Acres to Greater than or Equal to 5 Units / Acre	0%

[I]Census 2000 Block Data (Migrated), CA Department of Forestry, 2003

August 2008

NMFS-SWR-HCD

Maacam Creek Subwatershed

Area	Hydrologic Units	Calwater Subbasins ---	(Planning Watersheds)
44,613 Acres	18010110	1114250401	McDonnell Creek (6094 Acres)
18,054 Hectares	4th Field **HUC**	1114250402	Kellogg Creek (8789 Acres)
70 Square Miles		1114250403	Maacama Creek (6743 Acres)
	1114	1114250404	Briggs Creek (7915 Acres)
Location	4th Field **Calwater**	1114250501	Upper Franz Creek (6108 Acres)
Sonoma County		1114250502	Lower Franz Creek (5033 Acres)
		1114250503	Bidwell Creek (3932 Acres)

Species Potential	Miles of Streams with Species Present
Central California Coast **Steelhead**	Steelhead
Interior San Francisco Bay Diversity Stratum	61
- Independent Population	NOAA Fisheries, Critical Habitat Redesignation, 2005
Central California Coast **Coho**	Coho
Coastal Gualala Diversity Stratum	9
- Independent Population	CDFG, Coho Distribution, May 2007

Critical Habitat

Central California Coast Steelhead	61 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[A]	Miles	Number of **Dams**[C]
Naturally Occurring Waterways		9
Intermittent Stream	289	9 - Unknow Barrier Status
Perennial Stream	88	
Canal / Ditch	20	[C]Passage Assessment Database,
Connector	2	Pacific States Marine Fisheries Commission, 2005
Artificial Path	41	

[A]USGS National Hydrography Dataset, High Resolution, 2004. 1:24,000

USGS **Gaging Stations**[B]	Number of **Barriers**[C]
11463900 - Maacama Creek near Kellog	127
11463940 - Franz Creek near Kellog	9 Dams
	109 Water Rights Diversions

[C]Passage Assessment Database,
Pacific States Marine Fisheries Commission, 2006

EPA Total Maximum Daily Load Classification (**TMDL**)[I]

Low Priority - Temperature Medium Priority - Sediment/Siltation

Sources: Agriculture, Nonirrigated Crop Productin, Irrigated Crop Production, Specialty Crop Production, Range Grazing-Riparian, Range-grazing Upland, Agriculture-storm runoff, Agriculture-grazing, Silviculture, Construction/Land Development, Geothermal Development, Consturction/Land Development, Disturbed Sites, Surface Runoff, Removal of Riparian Vegetation, Resource Extraction, Channelization, Bridge Construction, Streambank Modification/Destabilization, Drainage/Filling of Wetlands, Channel Erosion, Erosion/Siltation, Natural Sources, Flow Regulation/Modification, Habitat Modification, Nonpoint Source

[I]State Water Resources Control Board, 2003

Average Annual **Precipitation**[E]	Average Annual **Precipitation Range**[E]
50"	35" - 85"

[E]California Mean Annual Precipitation Zones, 1900-1960, CA Department of Forestry, 1990

Roads[A]	Miles
Roads in Watershed	
Secondary and connecting road, state highways	9
Local, neighborhood, and rural road, city street, unseparated	71
Driveway or service road or ramp	23
Total Miles	

Road Density	
Miles of Roads per SqMi of Watershed	1.5
Miles of Roads per SqMi of 100m Riparian Buffer*	1.8

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

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

Slope[D]	Acres	Percent of watershed
Lands of 0-2 percent slope		
Lands of 2-4 percent slope		
Lands of 4-10 percent slope		
Lands of 10-15 percent slope		
Lands of 15-30 percent slope		
Lands of 30-60 percent slope		
Lands of 60-100 percent slope		
Lands of 100-117 percent slope		

Elevation Range	ft.	m

[D]Slope derived from USGS 10 meter Digital Elevation Models (DEM's)

Vegetation[G]	Acres	Percent of watershed
Agriculture	3,894	9%
Annual grassland	11,194	25%
Conifer Forest		
Closed-Cone Pine-Cypress	835	2%
Douglas Fir	4,655	10%
Klamath Mixed Conifer	5	0%
Montane Hardwood Conifer	764	2%
Redwood	119	0%
Unknown Conifer	2	0%
Hardwood Forest		
Montane Hardwood	16,618	37%
Montane Riparian	7	0%
Hardwood Woodland		
Blue Oak Foothill Pine	605	1%
Blue Oak Woodland	2	0%
Coastal Oak Woodland	47	0%
Valley Foothill Riparian	54	0%
Shrub	5,659	13%
Urban	30	0%
Water	171	0%
Wetland	2	0%

[G]Multi-source Land Cover Data (2002 v2), CA Department of Forestry, 2002. 100 meter Grid

Land Ownership[H]	Acres	Percent of watershed
Private	41,303	93%
State	16	0%
State (Parks & Recreation)	1,674	4%
Federal (BLM)	1,620	4%

[H]Management Landscape, CA Department of Forestry, 2002

Population[I]	Housing[I]	
Total Population within the watershed -- 12,244 People	Total Housing Units within the watershed -- 4,642 Houses	
	Housing Density	
	0 to Less than 1 Housing Unit / 160 Acres	68%
	1 Unit / 160 Acres to 1 Unit / 20 Acres	27%
	1 Unit / 20 Acres to 1 Unit / 5 Acres	3%
	1 Unit / 5 Acres to 2 Units / Acre	1%
	2 Units / Acres to Greater than or Equal to 5 Units / Acre	0%

[I]Census 2000 Block Data (Migrated), CA Department of Forestry, 2003

NMFS-SWR-HCD

Upper Russian River Subwatershed

Area	Hydrologic Units	Calwater Subbasins ---	(Planning Watersheds)
323,593 Acres	18010110	1114250101	Ash Creek (9924 Acres)
130,953 Hectares	4th Field **HUC**	1114250104	Edwards Creek (7053 Acres)
506 Square Miles		1114260101	Middle Big Sulphur Creek (5806 Acres)
	1114	1114260102	Squaw Creek (9103 Acres)
Location	4th Field **Calwater**	1114260103	Fraiser Creek (4947 Acres)
Sonoma County		1114260104	Upper Big Sulphur Creek (7468 Acres)
Mendocino County		1114260201	Lower Little Sulphur Creek (5889 Acres)
		1114260202	NB Little Sulphur creek (4882 Acres)
		1114260203	Lower Big Sulphur Creek (7490 Acres)
		1114260204	Upper Little Sulphur Creek (7028 Acres)
		1114310101	York Creek (7444 Acres)
		1114310102	Calpella (2341 Acres)
		1114310200	Hensley Creek (4157 Acres)
		1114310301	Upper Ackerman Creek (8696 Acres)
		1114310302	Lower Ackerman Creek (3224 Acres)
		1114310400	Orrs Creek (5518 Acres)
		1114310501	SB Robinson Creek (4279 Acres)
		1114310502	Lower Robinson Creek (5866 Acres)
		1114310503	Upper Robinson Creek (5941 Acres)
		1114310601	MF Feliz Creek (4841 Acres)
		1114310602	Johnson Creek (6617 Acres)
		1114310603	Mainstem Feliz Creek (15182 Acres)
		1114310701	Duncan Springs (11252 Acres)
		1114310702	McDowell Creek (10015 Acres)
		1114310801	Salt Spring Creek (5602 Acres)
		1114310802	Colman Creek (9500 Acres)
		1114310803	Tyler Creek (9213 Acres)
		1114310900	Cummiskey Creek (9981 Acres)
		1114311001	Talmage (13445 Acres)
		1114311002	Sulfer Creek (7958 Acres)
		1114311003	McClur Creek (4141 Acres)
		1114311004	Gibson Creek (4238 Acres)
		1114311005	Willow Creek (5493 Acres)
		1114311006	Howell Creek (4704 Acres)
		1114311007	Romer (1542 Acres)
		1114311008	Morrison Creek (6027 Acres)
		1114311101	Jandrew Gorge (2197 Acres)
		1114311102	Parsons Creek (5451 Acres)
		1114311103	Crawford Creek (7403 Acres)
		1114311104	McNab Creek (7809 Acres)
		1114330101	Mill Creek (7117 Acres)
		1114330102	Walker Creek (11701 Acres)
		1114330200	Jack Smith Creek (7037 Acres)
		1114330301	Corral Creek (6620 Acres)
		1114330302	Mariposa Creek (6211 Acres)
		1114330303	Seward Creek (2167 Acres)
		1114330304	Rewood Valley (7522 Acres)
		1114330305	Salt Hollow Creek (5550 Acres)

Species Potential	Miles of Streams with Species Present
Central California Coast **Steelhead**	Steelhead
Interior San Francisco Bay Diversity Stratum	245
- Independent Population	NOAA Fisheries, Critical Habitat Redesignation, 2005
California Coastal **Chinook**	Chinook
Central Coastal Diversity Stratum	58
- Independent Population	NOAA Fisheries, Critical Habitat Redesignation, 2005

Critical Habitat

Central California Coast Steelhead	143 Miles
California Coastal Chinook	57 Miles

Miles of Waterway[A]	Miles	Number of Dams[C]
Naturally Occurring Waterways		34
Intermittent Stream	903	7 - Impassable
Perennial Stream	301	1 - Not a Barrier
Canal / Ditch	0	4 - Partial / Temporal Barriers
Connector	2	22 - Unknow Barrier Status
Pipeline	0	
Artificial Path	51	[C]Passage Assessment Database, Pacific States Marine Fisheries Commission, 2005

[A]USGS National Hydrography Dataset, High Resolution, 2004. 1:24,000

USGS Gaging Stations[B]	Number of Barriers[C]
11460940 - Russian River near Redwood Valley	839
11461000 - Russian River near Ukiah	34 Dams
11461001 - Russian River / East Fork Russian near Ukiah	173 Road Crossings (24 Impassable)
11462000 - East Fork Russian near Ukiah	604 Water Rights Diversions
11462500 - Russian River near Hopland	
11462668 - Unnamed Trib to McDowell Ck at Hwy 175 near Hopland	[C]Passage Assessment Database,
11462700 - Feliz Creek near Hopland	Pacific States Marine Fisheries Commission, 2006
11463000 - Russian River near Cloverdale	
11463160 - Big Sulphur Creek near Middletown	
11463170 - Big Sulphur Creek at G Resort near Cloverdale	
11463200 - Big Sulphur Creek near Cloverdale	
11463210 - Big Sulphur Creek at Mo	

EPA Total Maximum Daily Load Classification (**TMDL**)[I]

Low Priority - Mercury (Lake Mendocino). Temperature, Medium Priority - Sediment/Siltation

Sources: Agriculture, Irrigated Crop Production, Nonirrigated Crop Production, Specialty Crop Production, Range Grazing-Riparian and/or Upland Pasture Grazing, Intensive Animal Feeding Operations, Agriculture-storm runoff, Agriculture-grazing, Silviculture, Harvesting/Restoration/Residue Management, Construction/Land Development, Highway/Road/Bridge Consturction, Land Development, Disturbed Sites, Dairies, Other Urban Runoff, Surface Runoff, Removal of Riparian Vegetation, Streambank Modification/Destabilization, Drainage/Filling of Wetlands, Channel Erosion, Erosion/Siltation, Hydromodification, Upstream Impoundment, Flow regulation/Modification, Habitat Modification, Nonpoint Source, Internal Nutrient Cycling, Erosion from Derelict Land. Resource Extraction (Lake Mendocino) Geothermal Development, Channelization, Dam Construction, Upstream Impoundment, Natural Sources, Highway Maintenance and Runoff

[I]State Water Resources Control Board, 2003

Approriated Waterways[J]	
Russian River mainstem and the West and East Forks are Fully Appropriated	7/1 - 10/31
Robinson Creek is Fully Appropriated	7/1 - 10/31
Feliz Creek is Fully Appropriated	8/1 - 10/31

[J]California State Water Resources Control Board, 1998.

Average Annual **Precipitation**[E]	Average Annual **Precipitation Range**[E]
44.6"	35" - 85"

[E]California Mean Annual Precipitation Zones, 1900-1960, CA Department of Forestry, 1990

Roads[A]	Miles
Roads in Watershed	
Primary Road / Highway	47
Secondary and connecting road, state highways	31
Local, neighborhood, and rural road, city street, unseparated	1,105
Vehicular trail, 4WD	49
Driveway or service road or ramp	46
Total Miles	

Road Density	
Miles of Roads per SqMi of Watershed	2.5
Miles of Roads per SqMi of 100m Riparian Buffer*	0.3

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

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

Slope[D]	Acres	Percent of watershed
Lands of 0-2 percent slope		
Lands of 2-4 percent slope		
Lands of 4-10 percent slope		
Lands of 10-15 percent slope		
Lands of 15-30 percent slope		
Lands of 30-60 percent slope		
Lands of 60-100 percent slope		
Lands of 100-117 percent slope		

Elevation Range

[D]Slope derived from USGS 10 meter Digital Elevation Models (DEM's)

Vegetation[G]	Acres	Percent of watershed
Agriculture	25,155	8%
Barren	1,300	0%
Annual grassland	56,372	17%
Conifer Forest		
Closed-Cone Pine-Cypress	2,634	1%
Douglas Fir	21,187	7%
Klamath Mixed Conifer	67	0%
Montane Hardwood Conifer	3,741	1%
Ponderosa Pine	106	0%
Redwood	1,065	0%
Unknown Conifer	2	0%
Hardwood Forest		
Montane Hardwood	142,439	44%
Montane Riparian	665	0%
Hardwood Woodland		
Blue Oak Foothill Pine	3,022	1%
Blue Oak Woodland	5,224	2%
Coastal Oak Woodland	1,374	0%
Valley Oak Woodland	17	0%
Shrub	50,392	16%
Urban	8,256	3%
Water	778	0%

[G]Multi-source Land Cover Data (2002 v2), CA Department of Forestry, 2002. 100 meter Grid

Land Ownership[H]	Acres	Percent of watershed
Private	290,671	90%
State	141	0%
State (Fish & Game)	50	0%
State (Parks & Recreation)	5	0%
State (University)	4,990	2%
Federal (ACOE)	238	0%
Federal (BIA)	1,872	1%
Federal (BLM)	25,626	8%

[H]Management Landscape, CA Department of Forestry, 2002

Population[I]

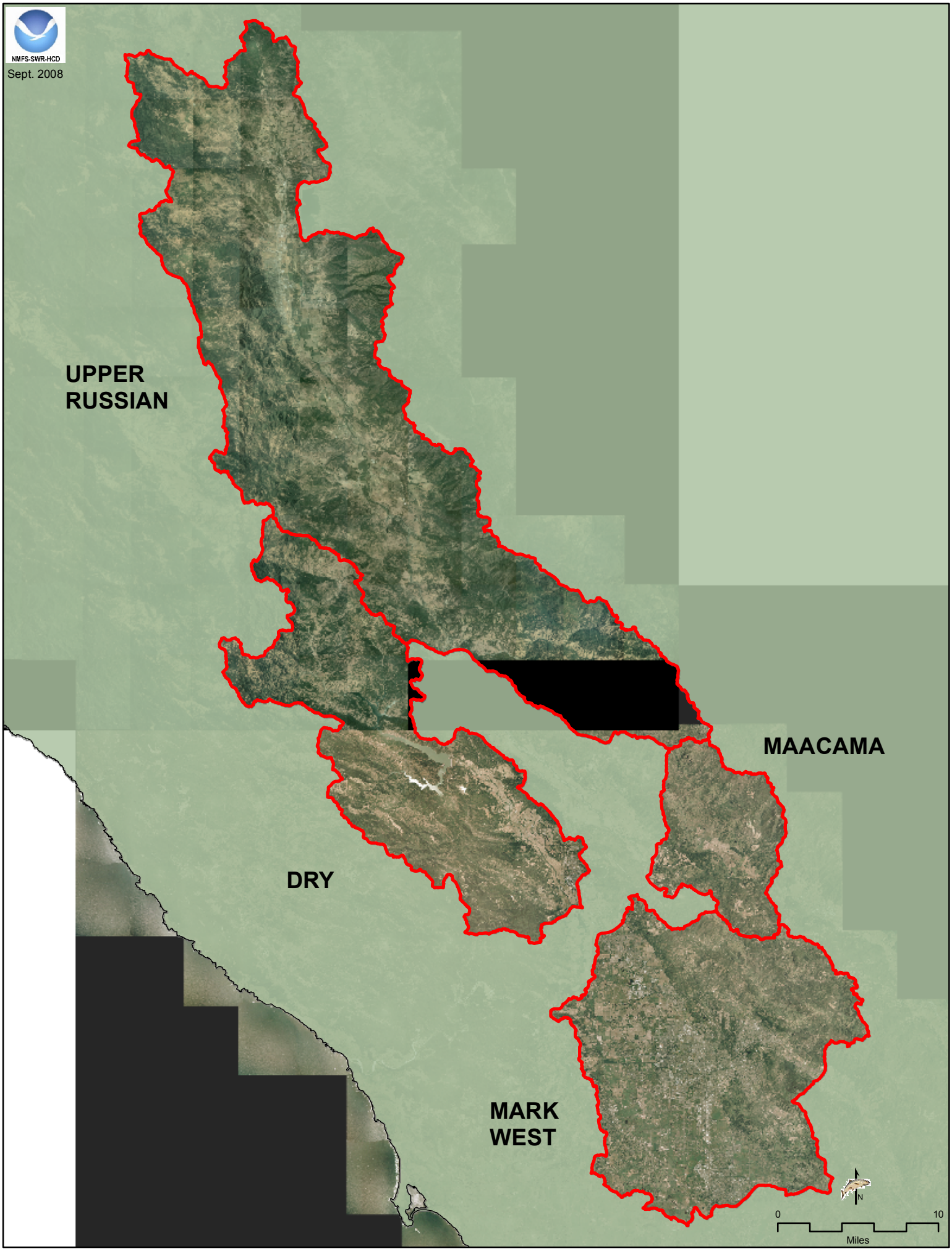
Total Population within the watershed -- 39,096 People

Housing[I]

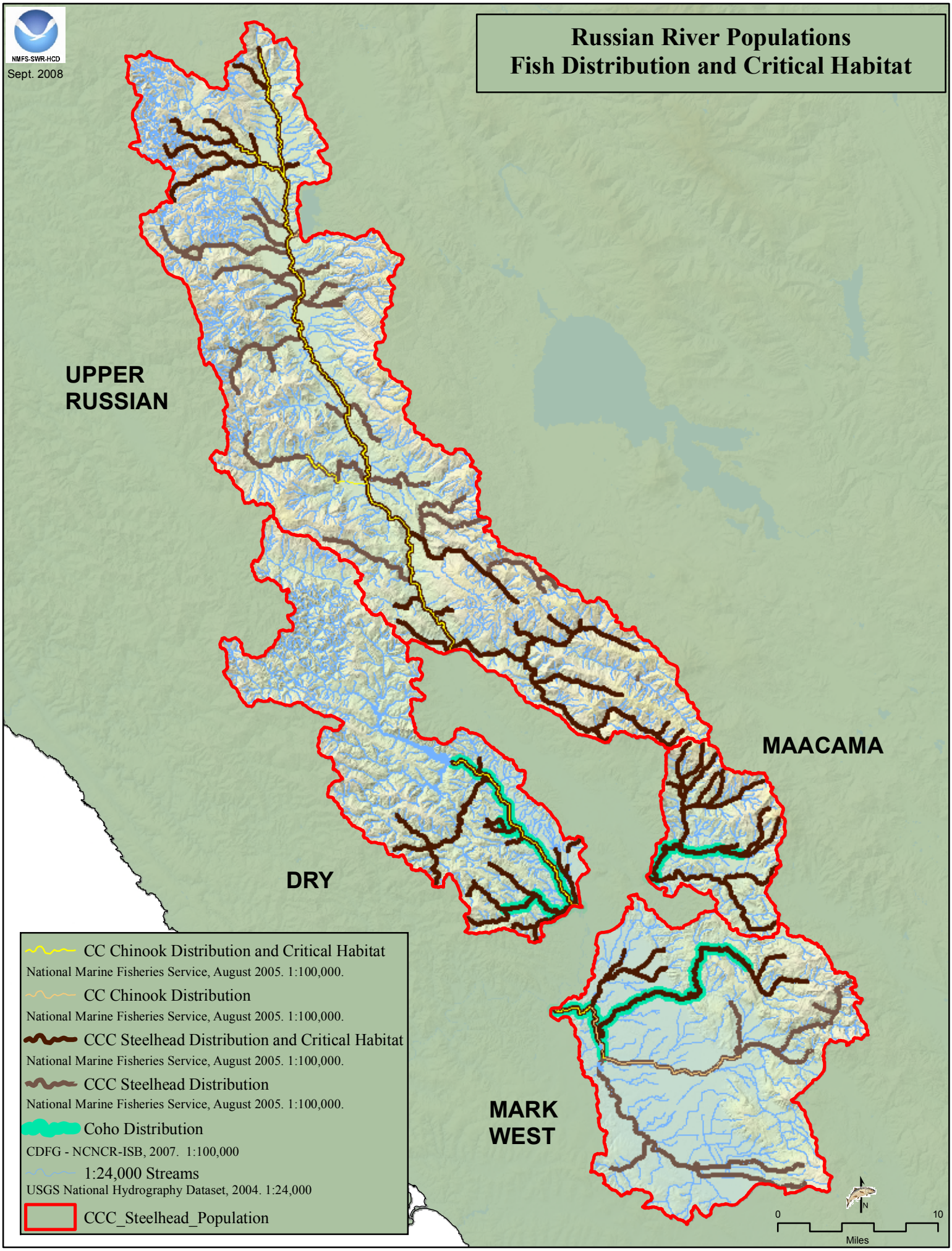
Total Housing Units within the watershed -- 14,782 Houses

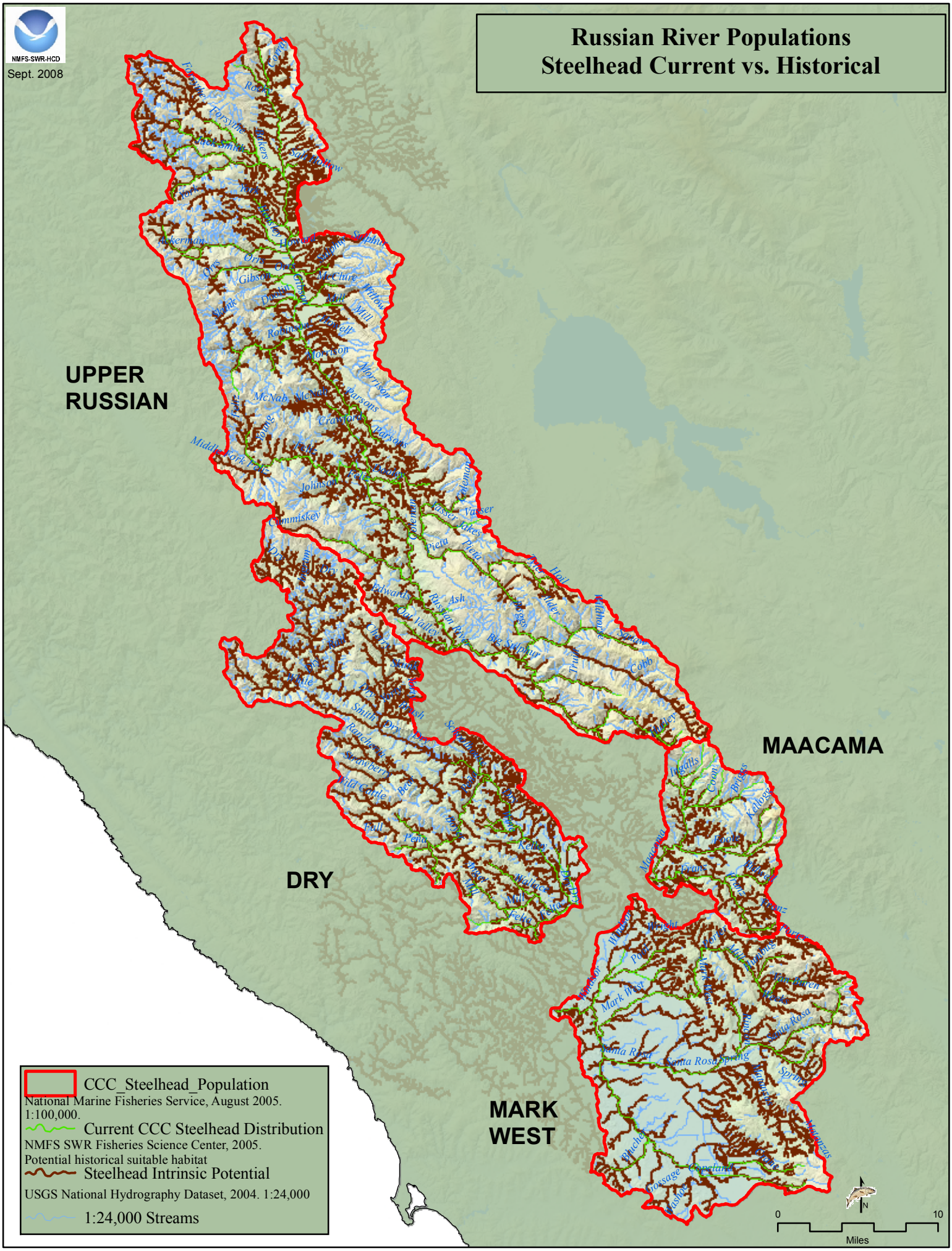
Housing Density	
0 to Less than 1 Housing Unit / 160 Acres	72%
1 Unit / 160 Acres to 1 Unit / 20 Acres	21%
1 Unit / 20 Acres to 1 Unit / 5 Acres	6%
1 Unit / 5 Acres to 2 Units / Acre	2%
2 Units / Acres to Greater than or Equal to 5 Units / Acre	0%

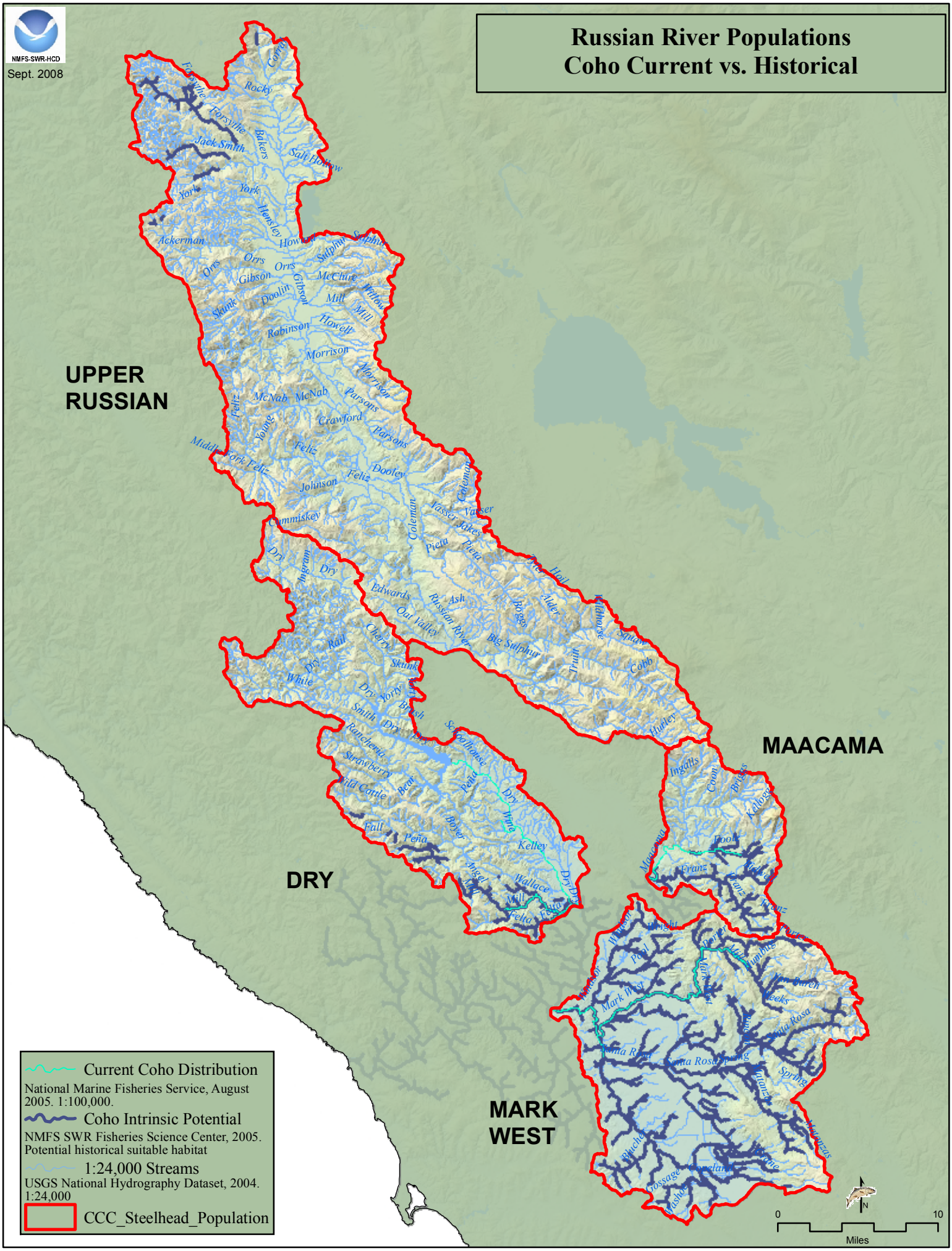
[I]Census 2000 Block Data (Migrated), CA Department of Forestry, 2003

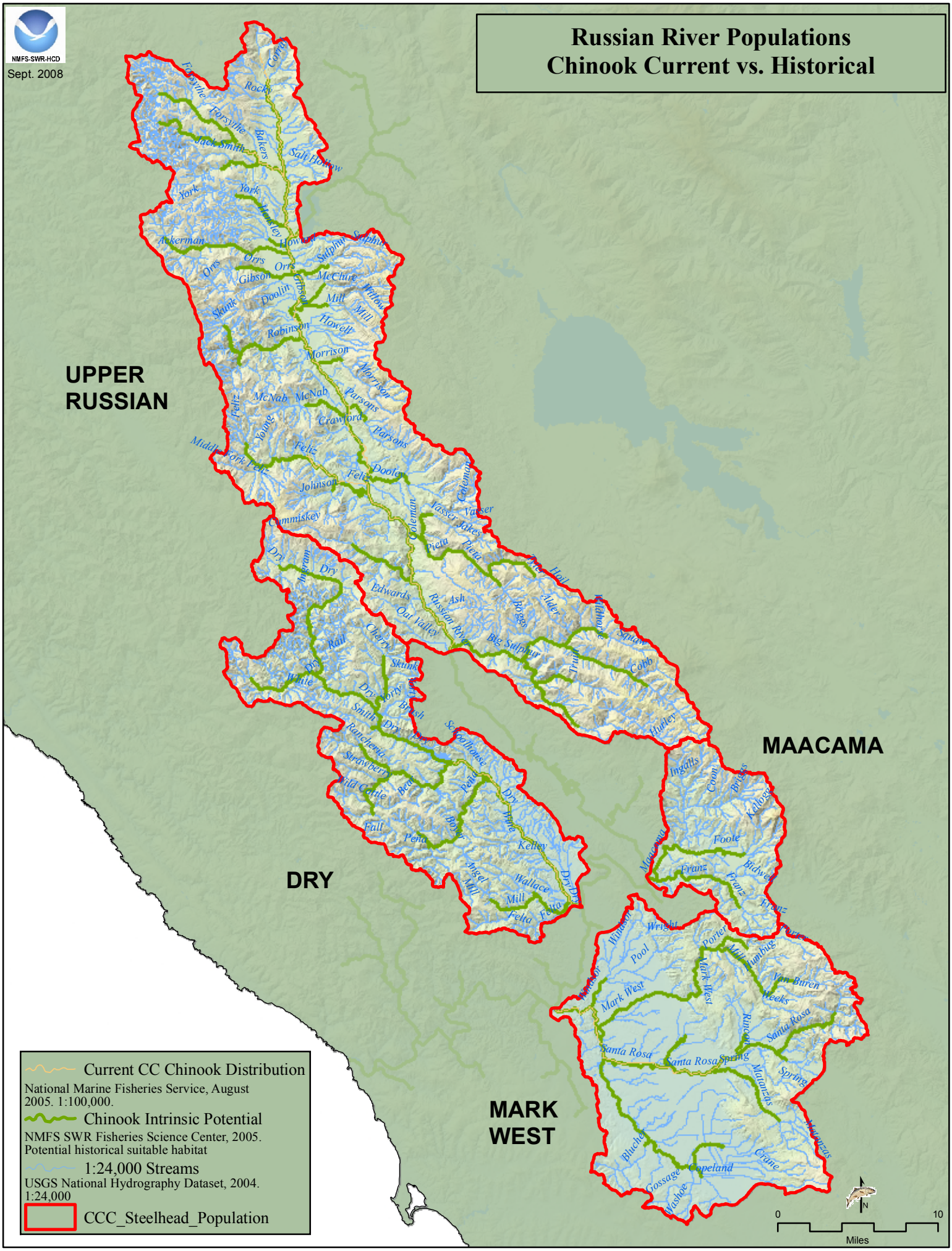

NMFS-SWR-HCD
Sept. 2008
UPPER
RUSSIAN
MAACAMA
DRY
MARK
WEST
N
0
10
Miles

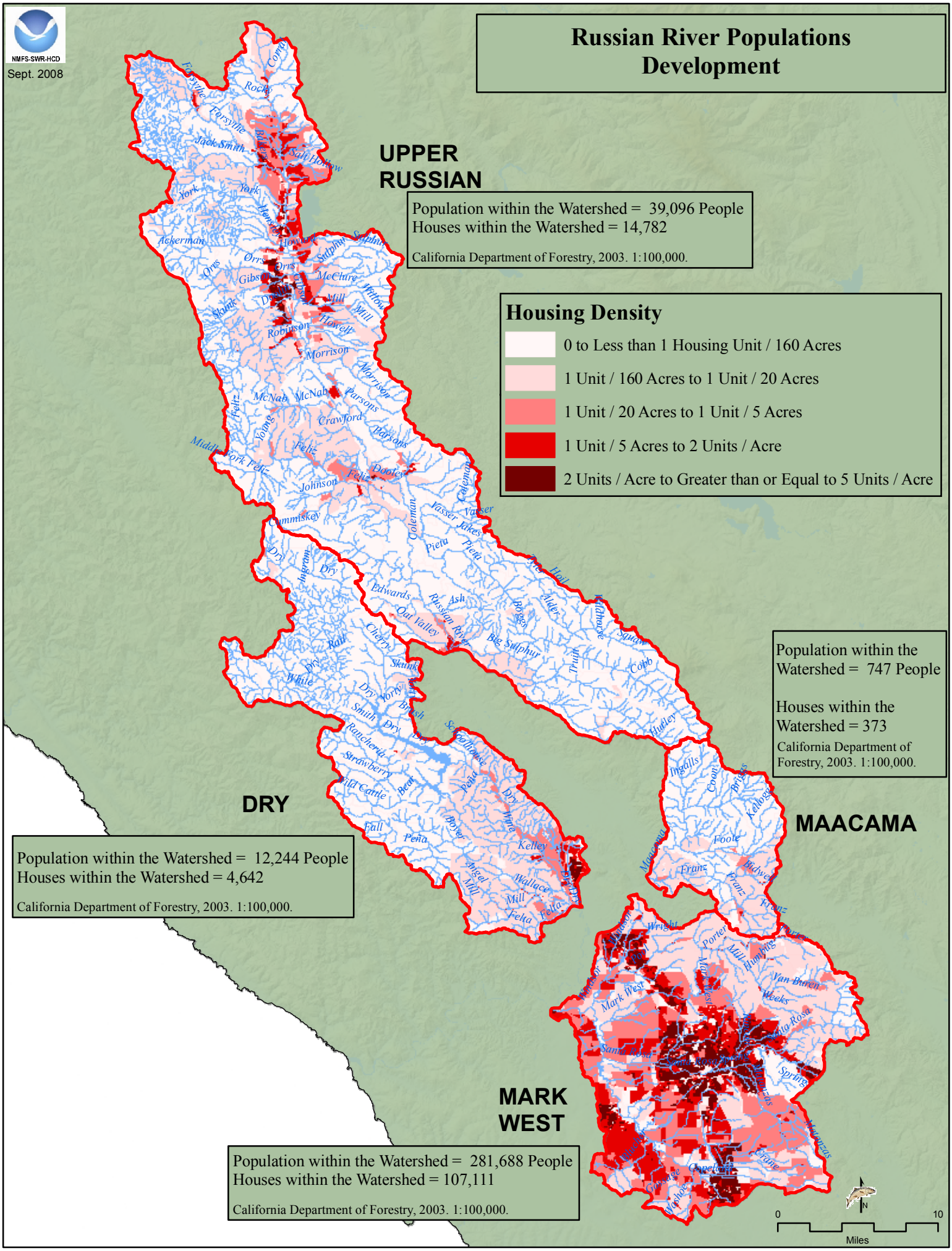
Russian River Populations
CalWater Planning Watersheds
NMFS-SWR-HCD
Sept. 2008
Corral 6620 Ac
Walker 11701 Ac
Mariposa 6211 Ac
Mill Creek 7117 Acres
Redwood Valley 7522 Ac
Salt Hollow 5550 Ac
Jack Smith 7036 Ac
York 7444 Ac
Calpella 2341 Ac
Upper Ackerman 8696 Ac
Sulfer 7958 Ac
McClure 4141 Ac
Orrs 5518 Ac
Gibson 4238 Ac
Talmage 13445 Ac
Willow 5493 Ac
Upper Robinson 5941 Ac
Lower Robinson 5866 Ac
Howell 4704 Ac
Romer 1542 Ac
Morrison 6027 Ac
SB Robinson 4279 Ac
UPPER RUSSIAN
McNab 7809 Ac
Parsons 5451 Ac
Mainstem Feliz 15182 Ac
Crawford 7403 Ac
McDowell 10015 Ac
MF Feliz 4841 Ac
Johnson 6617 Ac
Duncan Springs 11252 Ac
Coleman 9500 Ac
Elkhorn 7975 Ac
Commiskey 9981 Ac
Salt Spring 5602 Ac
Tyler 9213 Ac
Ingram 4719 Ac
Edwards 7053 Ac
Soda 6223 Ac
Ash 9924 Ac
Squaw 9103 Ac
Frasier 4947 Ac
McChristian 4278 Ac
Cherry 10382 Ac
NB Little Sulfur 4882 Ac
Middle Big Sulphur 5806 Ac
Galloway 10230 Ac
Lower Dry 9346 Ac
Lower Big Sulphur 7490 Ac
Upper Big Sulphur 7468 Ac
Lower Little Sulfur 5889 Ac
Upper Little Sulfur 7028 Ac
MAACAMA
Smith 8060 Ac
Strawberry 8321 Ac
Dutcher 5963 Ac
McDonnell 6094 Ac
Lower Lake Sonoma 5833 Ac
Briggs 7915 Ac
Warm Springs 7802 Ac
Grape 9864 Ac
Maacama 6743 Ac
Pechaco 6801 Ac
Kellogg 8789 Ac
Redwood Log 7671 Ac
Lower Dry 11185 Ac
Wallace 3340 Ac
Lower Franz 5033 Ac
Bidwell 3932 Ac
DRY
Palmer 7443 Ac
Upper Franz 6108 Ac
Felta 3989 Ac
Upper Windsor 6942 Ac
Porter 6224 Ac
Mark West Springs 6645 Ac
Humbug 5407 Ac
Van Buren 7928 Ac
Mirabel Park 1162 Ac
Pool 22058 Ac
Rincon 6660 Ac
Santa Rosa 9019 Ac
Pine Res 4491 Ac
Monroe 11051 Ac
Santa Rosa Res 6375 Ac
Upper Matanzas 3839 Ac
MARK WEST
Laguna de Santa Rosa 31964 Ac
SF Matanzas 8038 Ac
Crane 9180 Ac
Blucher 15455 Ac
N
0
10
Miles

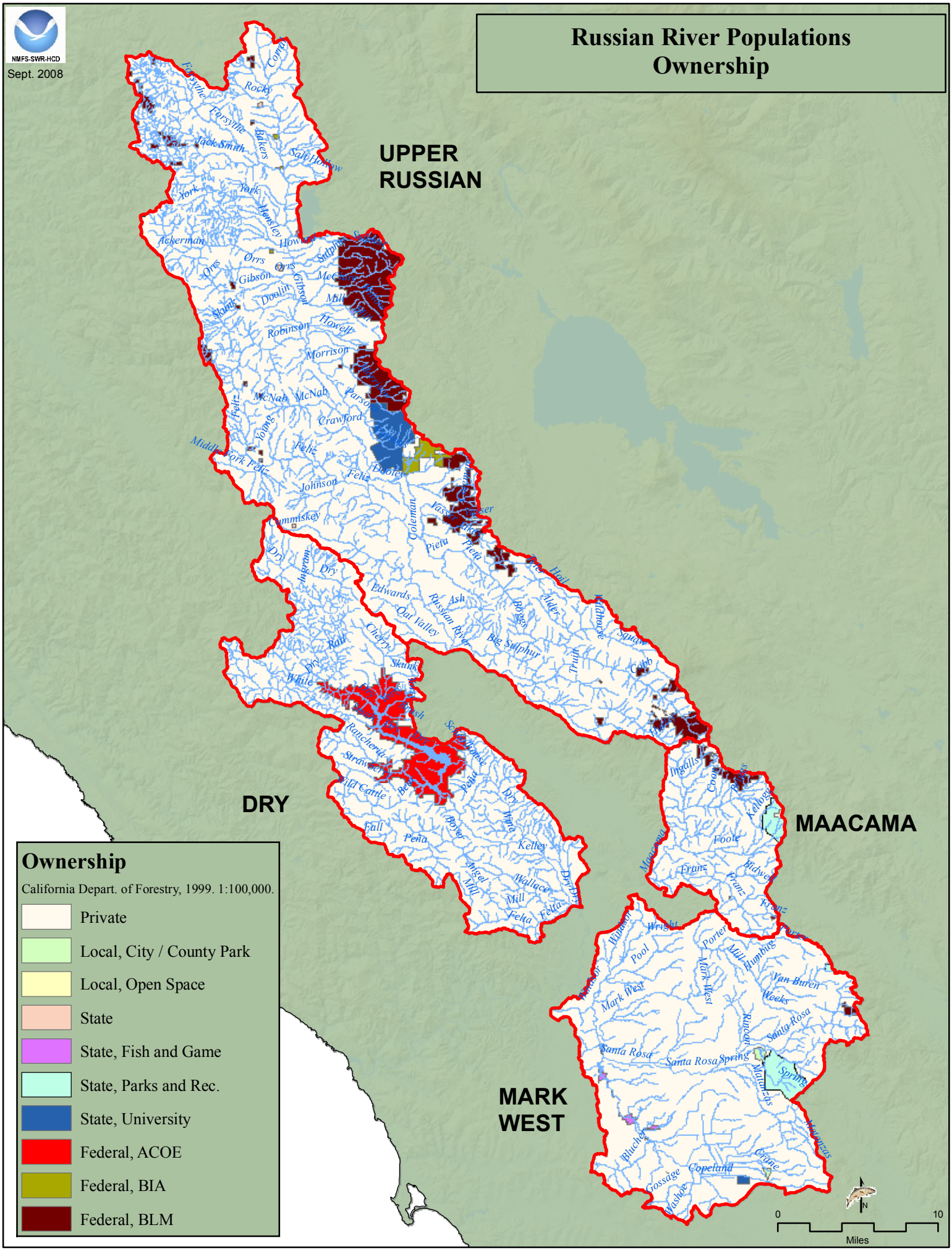

NMFS-SWR-HCD
Sept. 2008
Russian River Populations
Fish Distribution and Critical Habitat
UPPER RUSSIAN
MAACAMA
DRY
MARK WEST
CC Chinook Distribution and Critical Habitat
National Marine Fisheries Service, August 2005. 1:100,000.
CC Chinook Distribution
National Marine Fisheries Service, August 2005. 1:100,000.
CCC Steelhead Distribution and Critical Habitat
National Marine Fisheries Service, August 2005. 1:100,000.
CCC Steelhead Distribution
National Marine Fisheries Service, August 2005. 1:100,000.
Coho Distribution
CDFG - NCNCR-ISB, 2007. 1:100,000
1:24,000 Streams
USGS National Hydrography Dataset, 2004. 1:24,000
CCC_Steelhead_Population
N
0
10
Miles

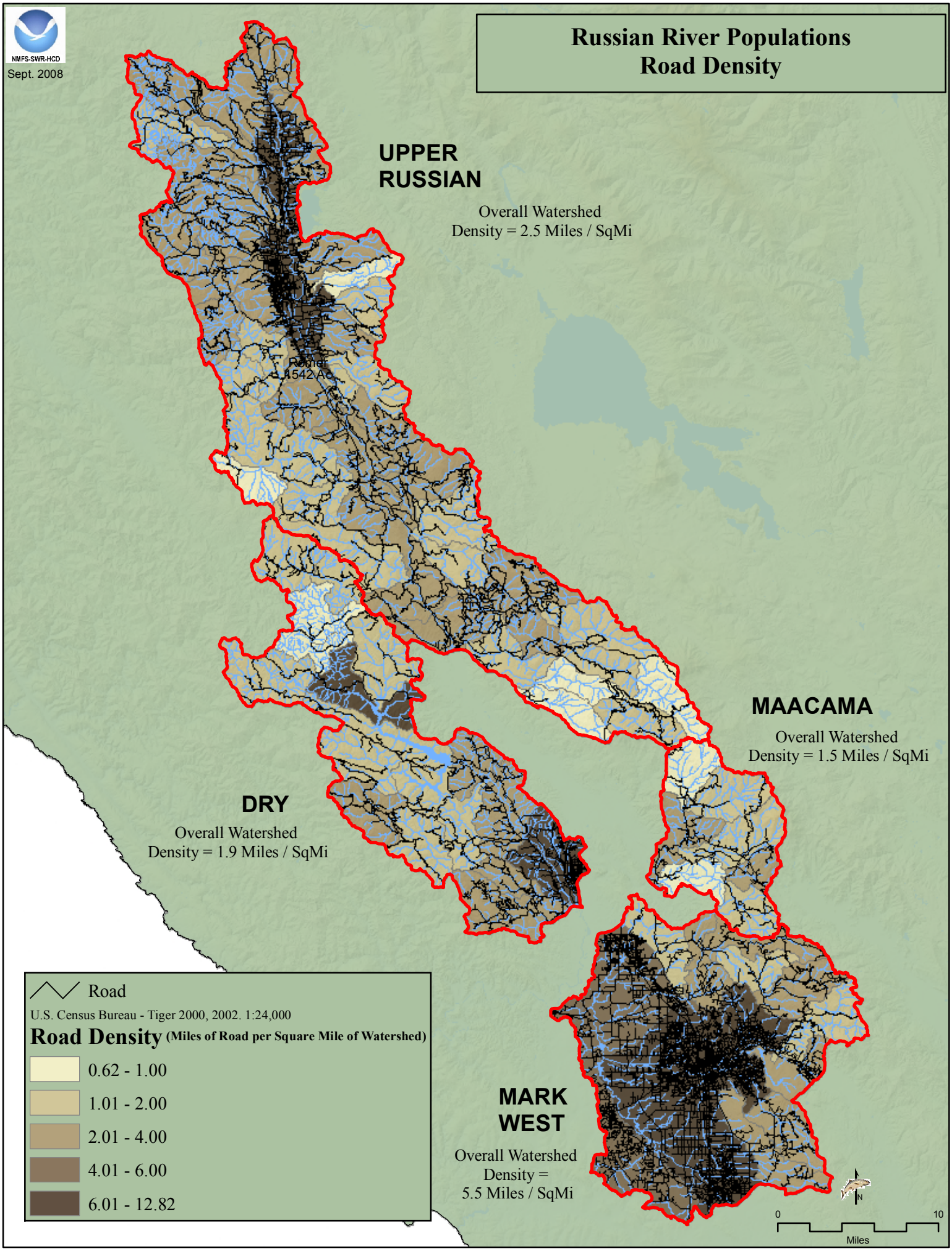

NMFS-SWR-HCD
Sept. 2008
Russian River Populations
Steelhead Current vs. Historical
UPPER RUSSIAN
MAACAMA
DRY
MARK WEST
CCC_Steelhead_Population
National Marine Fisheries Service, August 2005.
1:100,000.
Current CCC Steelhead Distribution
NMFS SWR Fisheries Science Center, 2005.
Potential historical suitable habitat
Steelhead Intrinsic Potential
USGS National Hydrography Dataset, 2004. 1:24,000
1:24,000 Streams
0
10
Miles
N

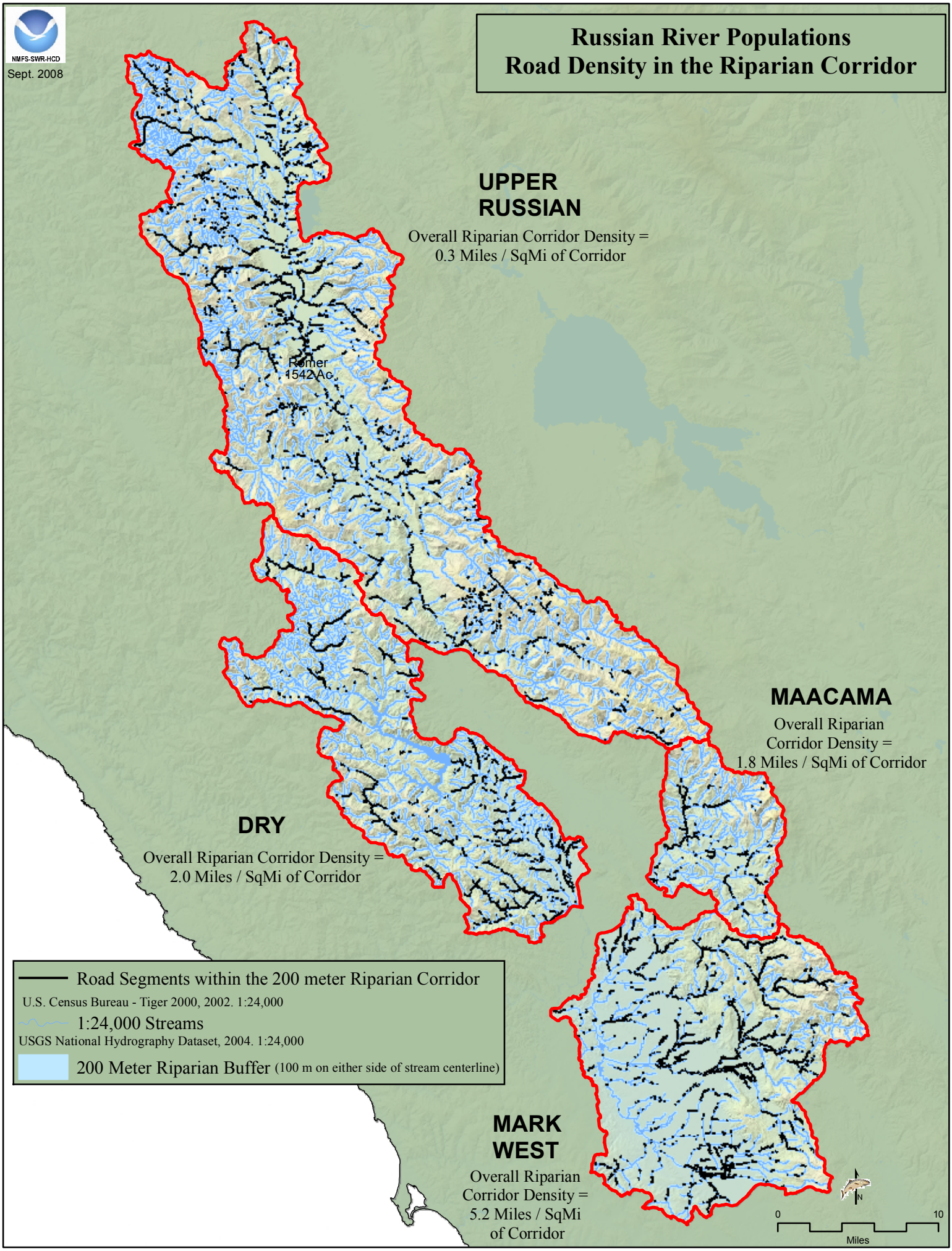

NMFS-SWR-HCD
Sept. 2008
Russian River Populations
Coho Current vs. Historical
UPPER RUSSIAN
MAACAMA
DRY
MARK WEST
Current Coho Distribution
National Marine Fisheries Service, August 2005. 1:100,000.
Coho Intrinsic Potential
NMFS SWR Fisheries Science Center, 2005. Potential historical suitable habitat
1:24,000 Streams
USGS National Hydrography Dataset, 2004. 1:24,000
CCC_Steelhead_Population
0
10
Miles
N

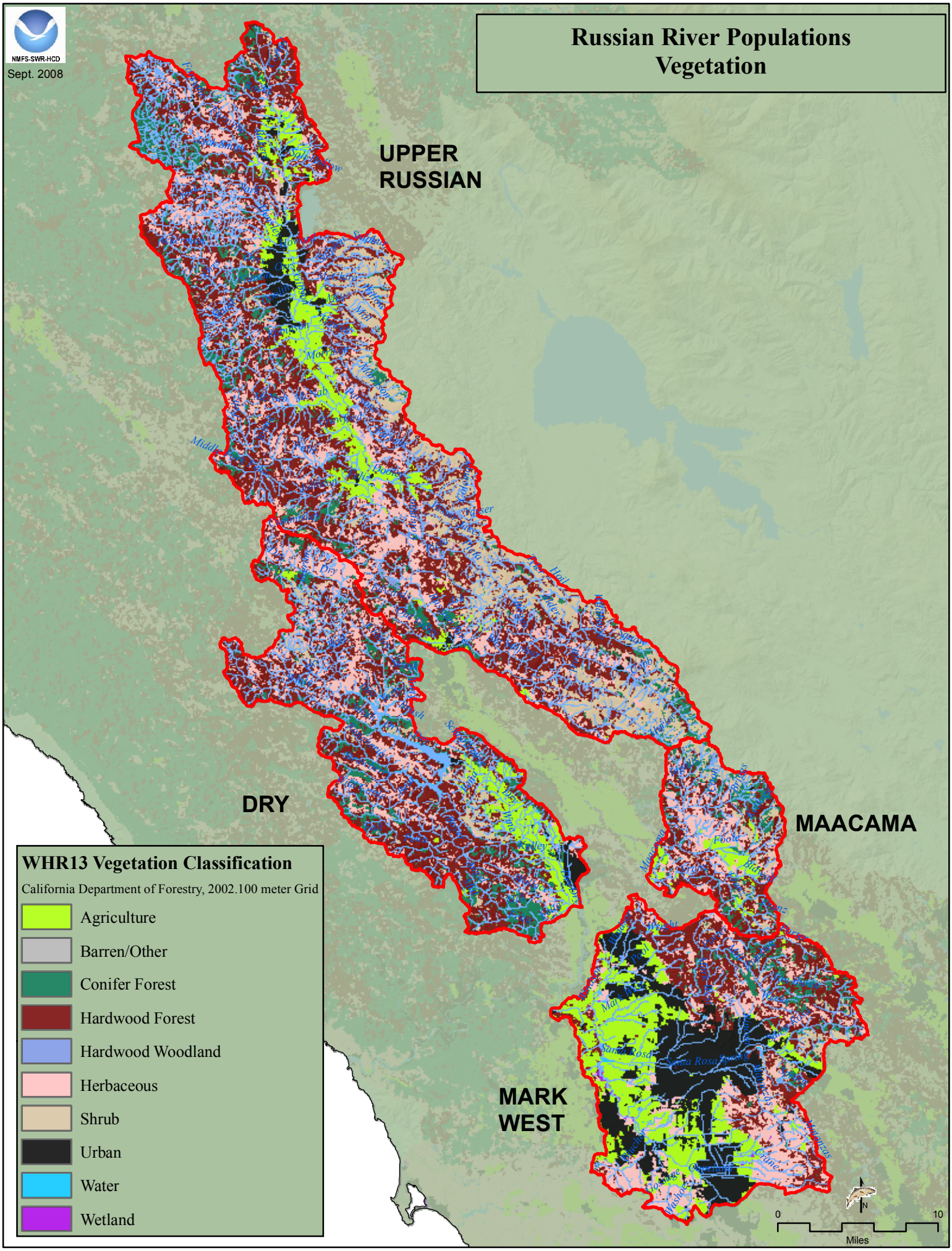

NMFS-SWR-HCD
Sept. 2008
Russian River Populations
Chinook Current vs. Historical
UPPER RUSSIAN
DRY
MAACAMA
MARK WEST
Current CC Chinook Distribution
National Marine Fisheries Service, August 2005. 1:100,000.
Chinook Intrinsic Potential
NMFS SWR Fisheries Science Center, 2005. Potential historical suitable habitat
1:24,000 Streams
USGS National Hydrography Dataset, 2004. 1:24,000
CCC_Steelhead_Population
0
10
Miles
N

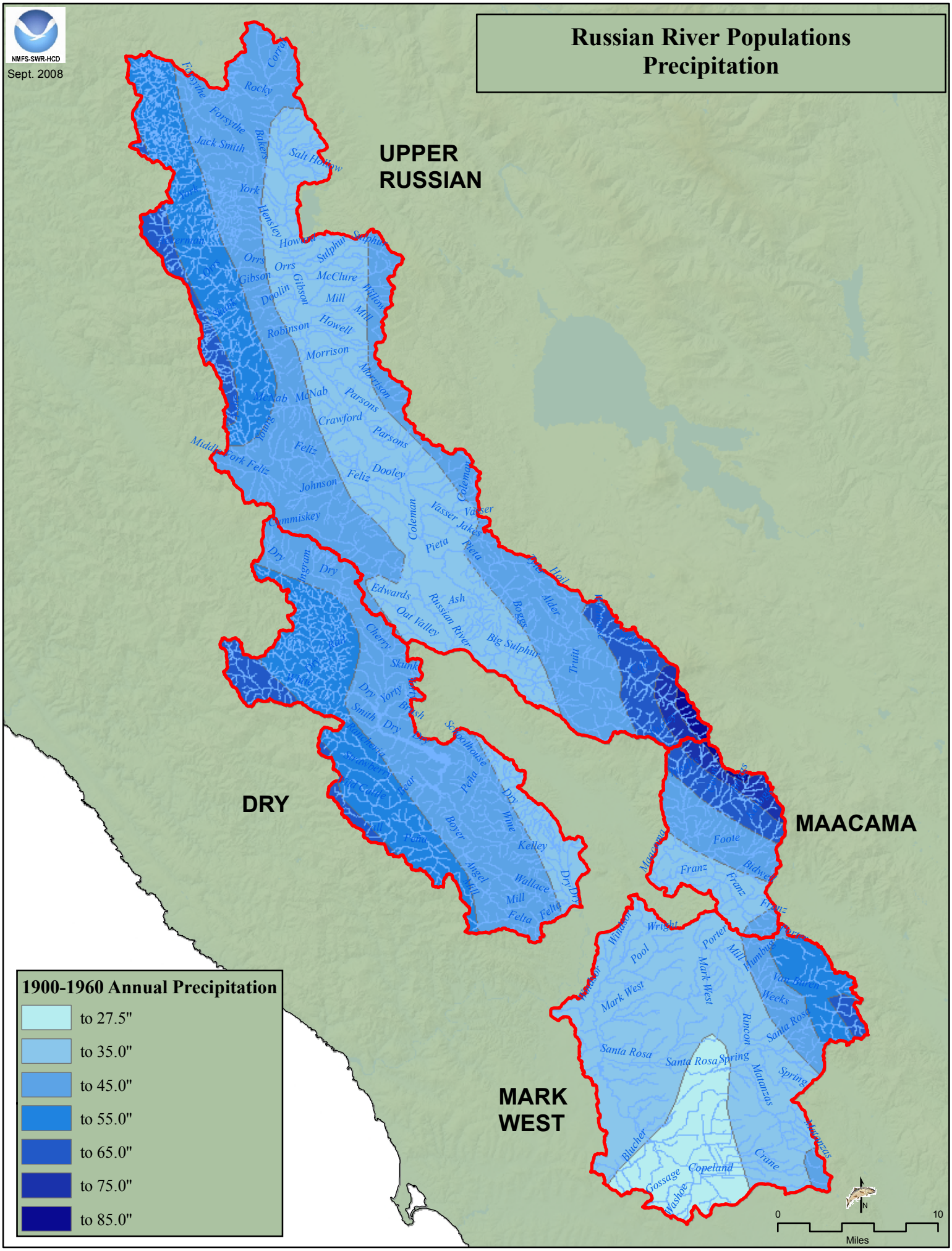

NMFS-SWR-HCD
Sept. 2008
Russian River Populations Development
UPPER RUSSIAN
Population within the Watershed = 39,096 People
Houses within the Watershed = 14,782
California Department of Forestry, 2003. 1:100,000.
Housing Density
0 to Less than 1 Housing Unit / 160 Acres
1 Unit / 160 Acres to 1 Unit / 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
Population within the Watershed = 747 People
Houses within the Watershed = 373
California Department of Forestry, 2003. 1:100,000.
DRY
Population within the Watershed = 12,244 People
Houses within the Watershed = 4,642
California Department of Forestry, 2003. 1:100,000.
MAACAMA
MARK WEST
Population within the Watershed = 281,688 People
Houses within the Watershed = 107,111
California Department of Forestry, 2003. 1:100,000.
0
10
Miles

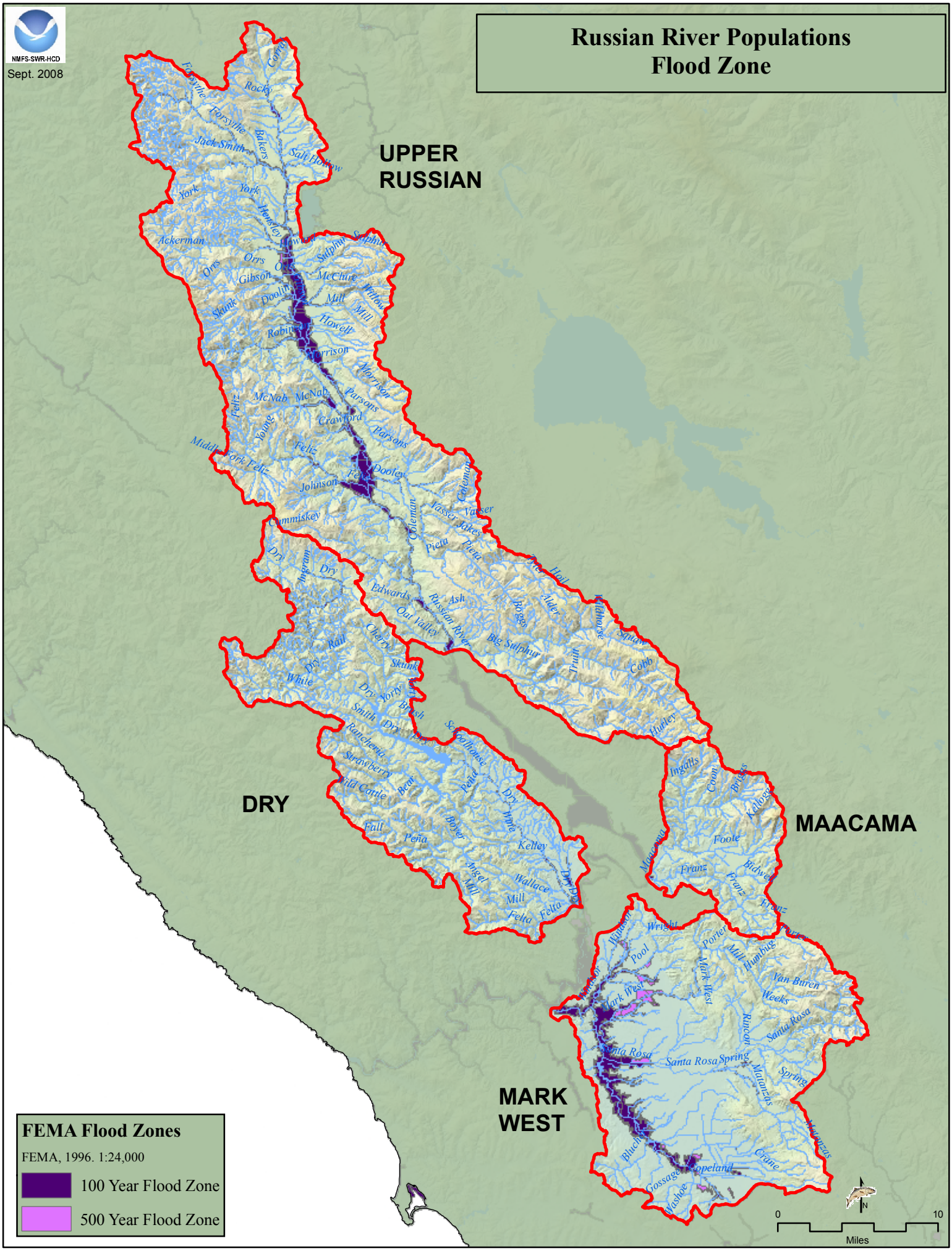

Russian River Populations
Ownership
NMFS-SWR-HCD
Sept. 2008
UPPER
RUSSIAN
DRY
MAACAMA
MARK
WEST
Ownership
California Depart. of Forestry, 1999. 1:100,000.
Private
Local, City / County Park
Local, Open Space
State
State, Fish and Game
State, Parks and Rec.
State, University
Federal, ACOE
Federal, BIA
Federal, BLM
0
10
Miles
N

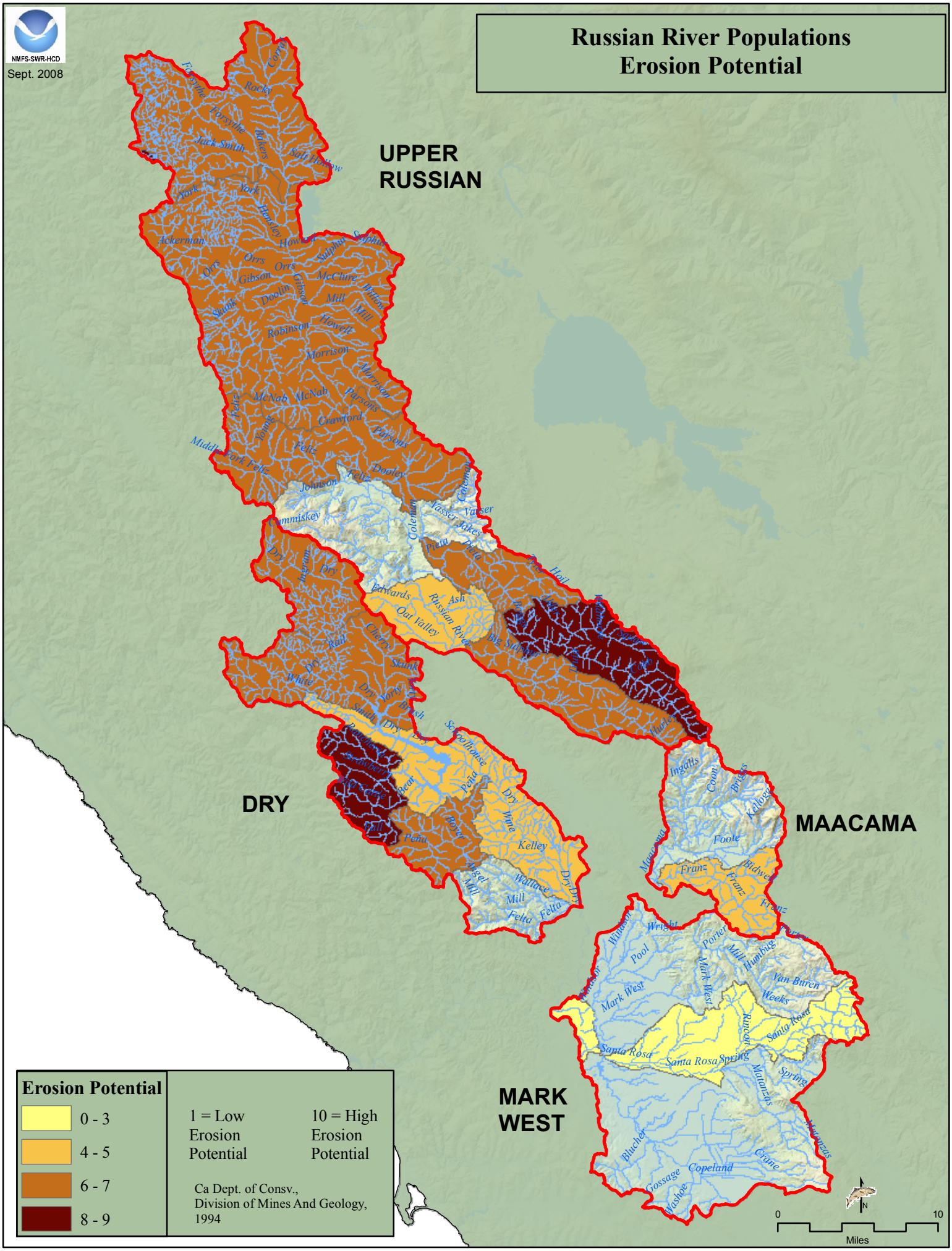

NMFS-SWR-HCD
Sept. 2008
Russian River Populations
Road Density
UPPER RUSSIAN
Overall Watershed
Density = 2.5 Miles / SqMi
Rodgers
1542 Ac
MAACAMA
Overall Watershed
Density = 1.5 Miles / SqMi
DRY
Overall Watershed
Density = 1.9 Miles / SqMi
MARK WEST
Overall Watershed
Density =
5.5 Miles / SqMi
Road
U.S. Census Bureau - Tiger 2000, 2002. 1:24,000
Road Density (Miles of Road per Square Mile of Watershed)
0.62 - 1.00
1.01 - 2.00
2.01 - 4.00
4.01 - 6.00
6.01 - 12.82
N
0
10
Miles

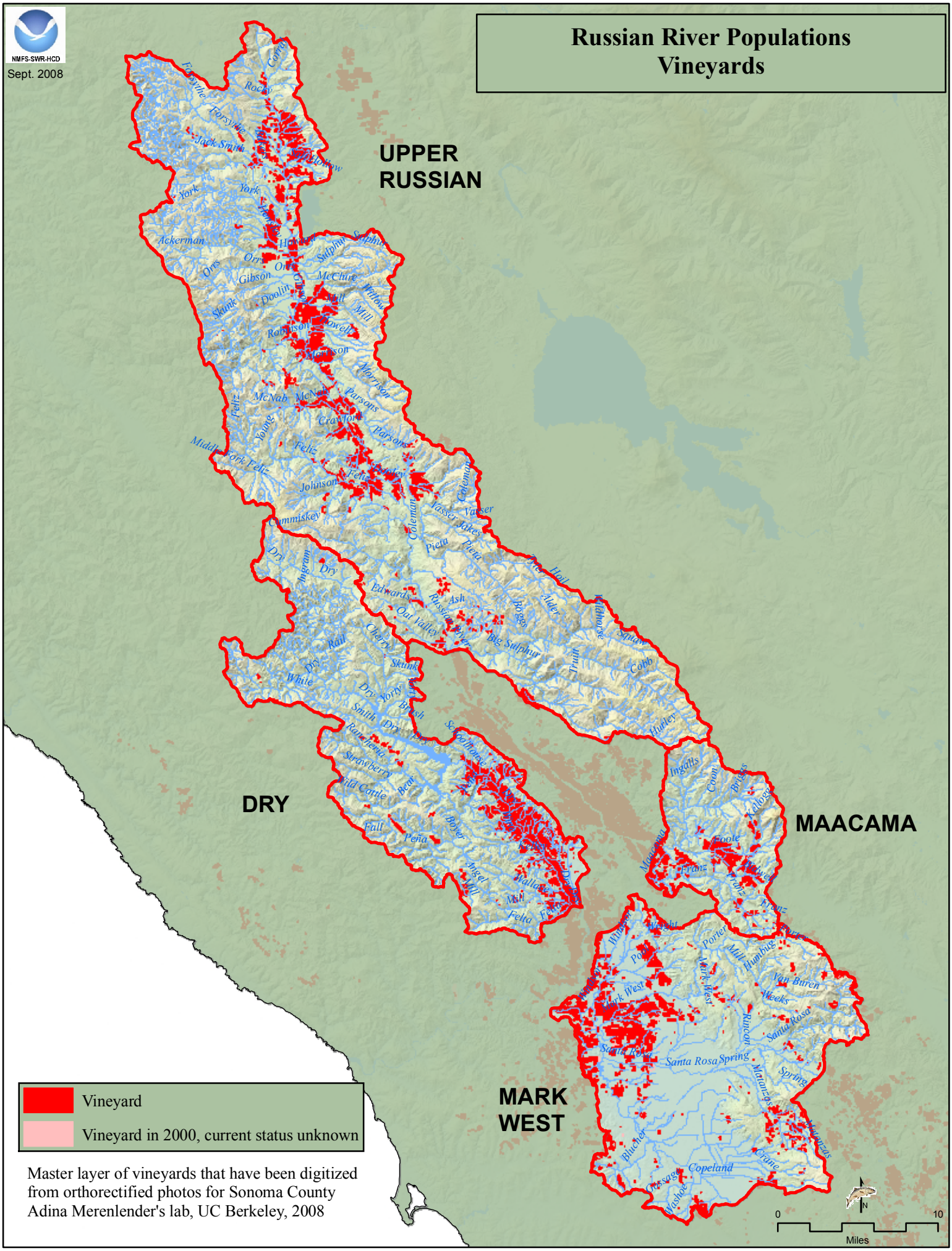

NMFS-SWR-HCD
Sept. 2008
Russian River Populations
Road Density in the Riparian Corridor
UPPER RUSSIAN
Overall Riparian Corridor Density = 0.3 Miles / SqMi of Corridor
Romer
1542 Ac.
MAACAMA
Overall Riparian Corridor Density = 1.8 Miles / SqMi of Corridor
DRY
Overall Riparian Corridor Density = 2.0 Miles / SqMi of Corridor
MARK WEST
Overall Riparian Corridor Density = 5.2 Miles / SqMi of 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)
N
0
10
Miles

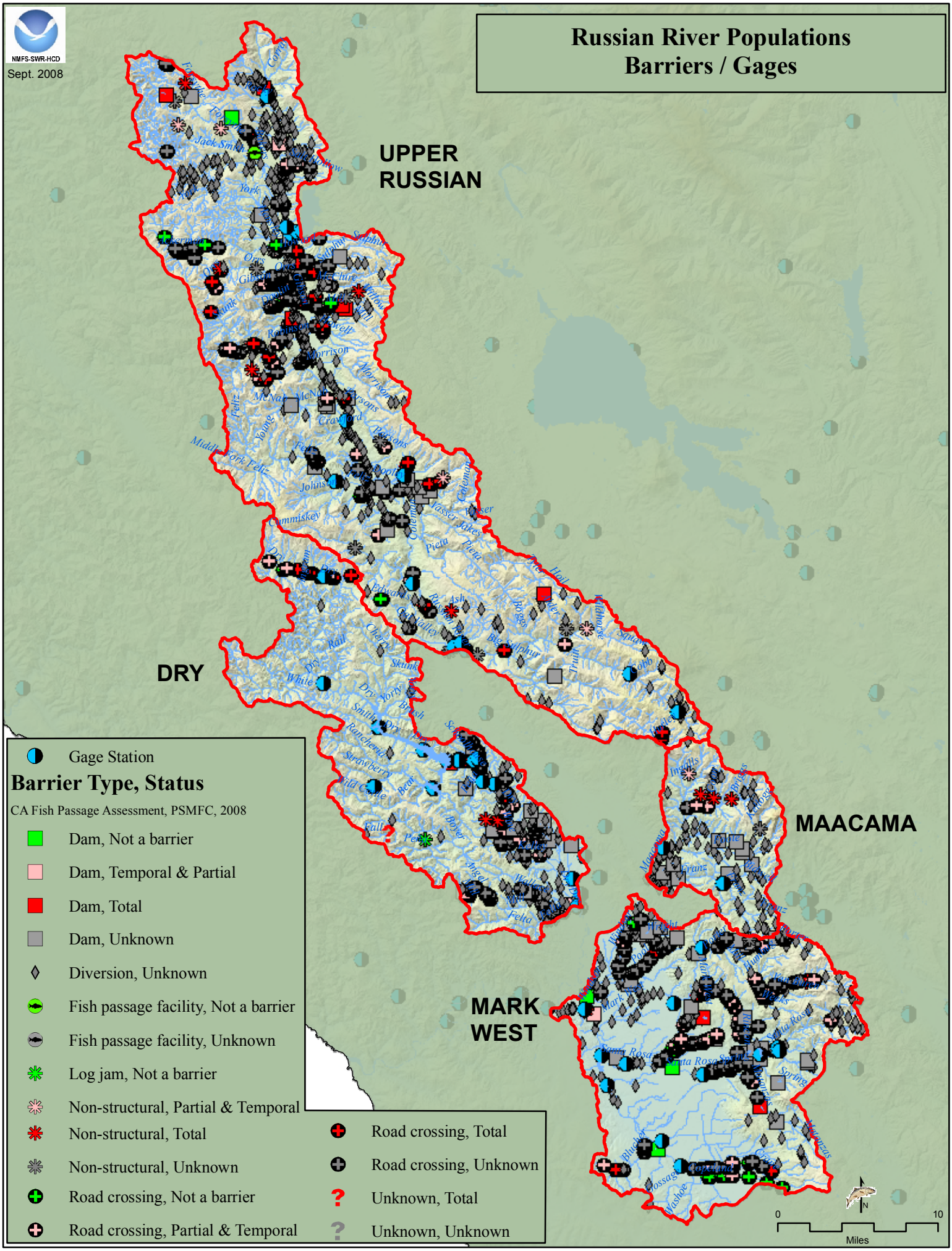

NMFS-SWR-HCD
Sept. 2008
Russian River Populations
Vegetation
UPPER
RUSSIAN
DRY
MAACAMA
MARK
WEST
WHR13 Vegetation Classification
California Department of Forestry, 2002.100 meter Grid
Agriculture
Barren/Other
Conifer Forest
Hardwood Forest
Hardwood Woodland
Herbaceous
Shrub
Urban
Water
Wetland
0
10
Miles
N

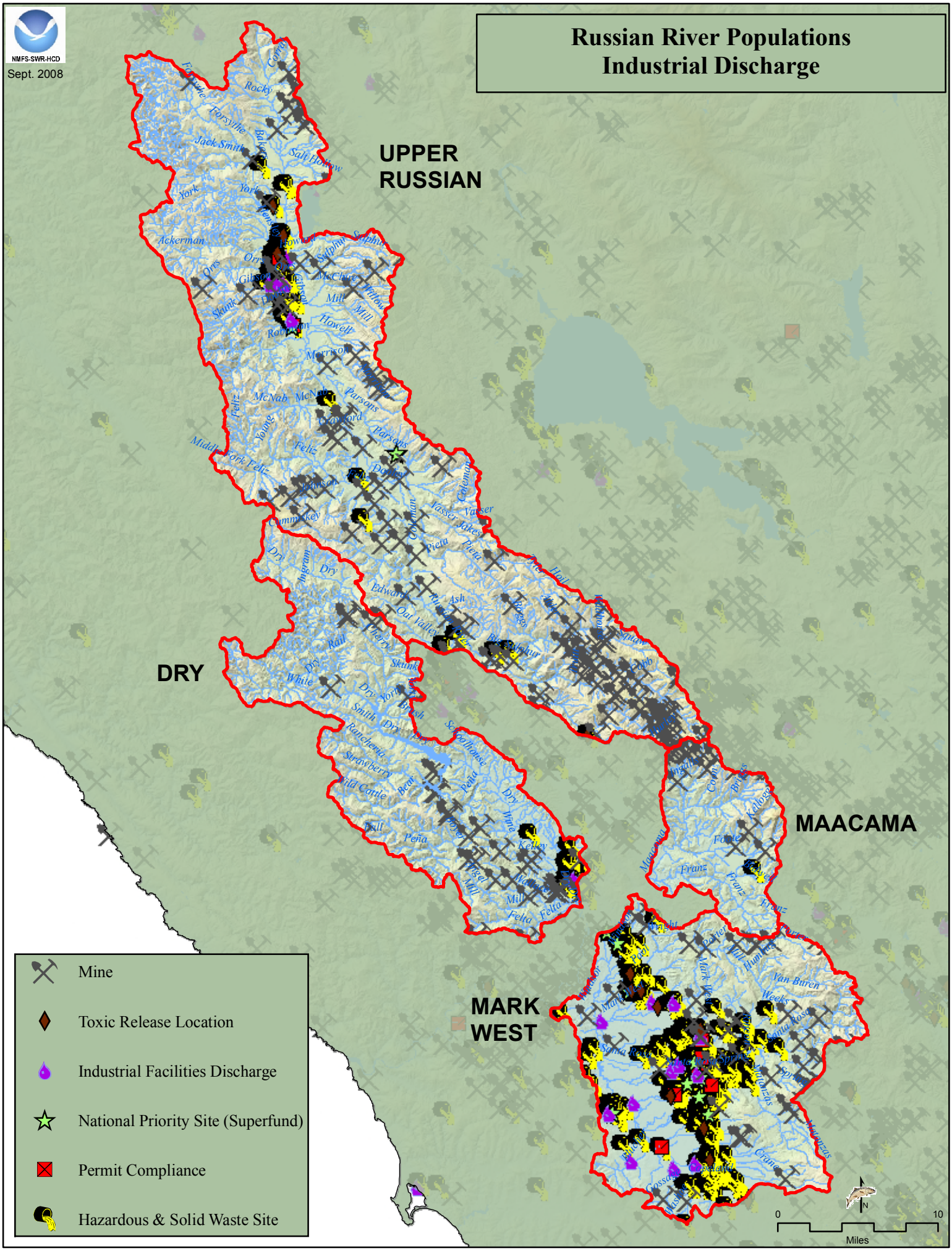

NMFS-SWR-HCD
Sept. 2008
Russian River Populations
Precipitation
UPPER RUSSIAN
DRY
MAACAMA
MARK WEST
1900-1960 Annual Precipitation
to 27.5"
to 35.0"
to 45.0"
to 55.0"
to 65.0"
to 75.0"
to 85.0"
0
10
Miles
N

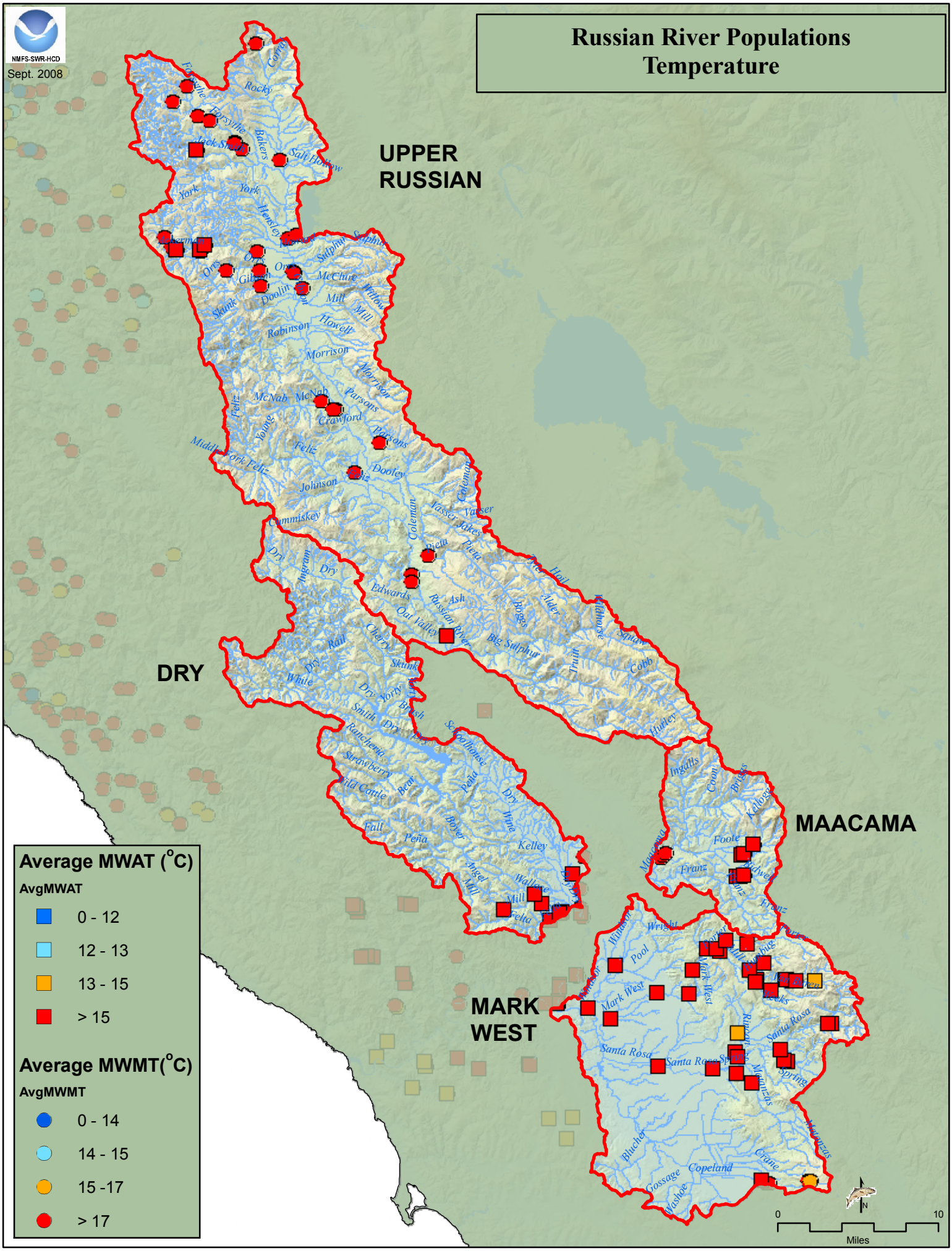

NMFS-SWR-HCD
Sept. 2008
Russian River Populations
Flood Zone
UPPER
RUSSIAN
DRY
MAACAMA
MARK
WEST
FEMA Flood Zones
FEMA, 1996. 1:24,000
100 Year Flood Zone
500 Year Flood Zone
0
10
Miles
N


NMFS-SWR-HCD
Sept. 2008
Russian River Populations
Erosion Potential
UPPER RUSSIAN
DRY
MAACAMA
MARK WEST
Erosion Potential
0 - 3
4 - 5
6 - 7
8 - 9
1 = Low Erosion Potential
10 = High Erosion Potential
Ca Dept. of Consv., Division of Mines And Geology, 1994
0
10
Miles
N


NMFS-SWR-HCD
Sept. 2008
Russian River Populations
Vineyards
UPPER RUSSIAN
DRY
MAACAMA
MARK WEST
Vineyard
Vineyard in 2000, current status unknown
Master layer of vineyards that have been digitized from orthorectified photos for Sonoma County
Adina Merenlender's lab, UC Berkeley, 2008
0
10
Miles
N


NMFS-SWR-HCD
Sept. 2008
Russian River Populations
Barriers / Gages
UPPER RUSSIAN
DRY
MAACAMA
MARK WEST
Gage Station
Barrier Type, Status
CA Fish Passage Assessment, PSMFC, 2008
Dam, Not a barrier
Dam, Temporal & Partial
Dam, Total
Dam, Unknown
Diversion, Unknown
Fish passage facility, Not a barrier
Fish passage facility, Unknown
Log jam, Not a barrier
Non-structural, Partial & Temporal
Non-structural, Total
Non-structural, Unknown
Road crossing, Not a barrier
Road crossing, Partial & Temporal
Road crossing, Total
Road crossing, Unknown
Unknown, Total
Unknown, Unknown
0
10
Miles
N


NMFS-SWR-HCD
Sept. 2008
Russian River Populations
Industrial Discharge
UPPER RUSSIAN
DRY
MAACAMA
MARK WEST
Mine
Toxic Release Location
Industrial Facilities Discharge
National Priority Site (Superfund)
Permit Compliance
Hazardous & Solid Waste Site
0
10
Miles
N


NMFS-SWR-HCD
Sept. 2008
Russian River Populations
Temperature
UPPER
RUSSIAN
DRY
MAACAMA
MARK
WEST
Average MWAT (°C)
AvgMWAT
0 - 12
12 - 13
13 - 15
> 15
Average MWMT(°C)
AvgMWMT
0 - 14
14 - 15
15 -17
> 17
0
10
Miles
N

Russian River Populations
Public Consultation Tracking System
NMFS-SWR-HCD
Sept. 2008
Spaletta Culvert Replacement and Bank Stabiization
31259 Mid-mountain Vineyards
Restoration Plan for Mill Creek, Golden Rule
Solda Vineyard Irrigation Project
Redwood Valley Waterline (Russian River)
Linholme Properties, Ltd.
Mumford Dam Fish Passage and Riparian Restoration Project
Forsythe Creek Bank Protection
Oman bank stabilization
Forsyth Creek - Jack Cox Bank Protection
Corps/SCWA Russian River Section 7
Millview County Water District Petition Change
Orrs Creek Bank Protection
Gibson Creek Bank Stabilization
Talmage Bridge
Doolin Creek bank stabilization
Buddhist Pedestrian Bridges (Russian River)
15721 & 17232 Willow County Water District, Change Petition
Robinson Creek Bridge Replacement
BLM - Chapand Burn
UPPER RUSSIAN
Coyote Valley Dam Preflood Inspection 2002
Feliz Creek Bridge Upgrade and Widening
BLM Land Exchange-Tyler Creek
Shamrock Gravel Mining (Russian River)
DRY
Corps/SCWA Russian River Section 7
Warm Springs Dam Periodic Inspections
Stewart's Point - Skaggs Springs Road, Board Bridge Retrofit
MAACAMA
Maacama Creek Bridge Replacement at H
Redwood Creek Bridge Replace
Chateau Property Bank Stabilization
Bidwell Creek flashboard dam rem
Foss Creek, Sonoma County, Bank Stabilization Project
Westside Road Bridge, Dry Creek
Schwab Dry Creek Bank Erosion Repair
Windsor Creek Flood Control
Windsor northbound Offramp widening
Pruit Creek Road Crossing Removal-RGP1
Pruit Creek Culvert Replacement
HWY 101 HOV - SR to Windsor
MARK WEST
Paulin Creek sewer line replacement
Guerneville Road Bridge over Laguna de Santa Rosa
Seascape Development
Shea Properties storm water outfalls
Sant Rosa Creek Restoration
Piner Creek Bank Stabilization and Culvert Repair
Santa Rosa Memorial Hospital Bank Protection
Prince Memorial Greenway
Bikeway along SR Creek, Pierson Reach
Santa Rosa Creek/101 Bridge widening
Grange Road bridge replacement
101/12 HOV lanes, Willfred Ave. Interchage
Kandy Investmenats sorm water Outfall on LdeSR
Copeland Creek Flood Channel Maintenance Project
Rohnert Park Sewer Trunk Project
University District LLC Outfall on Copeland Creek
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.
0
10
Miles
N

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

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)
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 Protection1990

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

Erodabilty
Highly Erodible Watersheds
vector digital data
Depart. 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
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