

Summary of Metrics Being Evaluated.

<i>Metric</i>	<i>Source</i>	<i>Data Type</i>	<i>Metric Unit</i>	<i>Scale of Analysis</i>							
				<i>WS</i>	<i>5k</i>	<i>1k</i>	<i>rWS</i>	<i>r5k</i>	<i>r1k</i>	<i>Point</i>	
Gradient											
Climate											
30-y (1971-2000) average annual precipitation	PRISM	Other	100ths of mm	N	N	N	N	N	N	N	Y
30-y (1971-2000) average max temperature	PRISM	Other	100ths degrees C	N	N	N	N	N	N	N	Y
Geology											
Calcite mineral content	USGS	Areal density	%	Y	Y	Y	N	N	N	N	N
Magnesium oxide mineral content	USGS	Areal density	%	Y	Y	Y	N	N	N	N	N
Nitrogenous mineral content	USGS	Areal density	%	Y	Y	N	N	N	N	N	N
Percent cenozoic sediments	USGS	Areal density	%	Y	Y	Y	N	N	N	N	N
Percent non-sedimentary or volcanic geology (gneiss, granitic, mafic, ultramafic). = "Other" geology	USGS	Areal density	%	Y	Y	Y	N	N	N	N	N
Percent quarternary geology	USGS	Areal density	%	Y	Y	Y	N	N	N	N	N
Percent sedimentary geology	USGS	Areal density	%	Y	Y	Y	N	N	N	N	N
Percent volcanic geology	USGS	Areal density	%	Y	Y	Y	N	N	N	N	N
Phosphorus mineral content	USGS	Areal density	%	Y	Y	Y	N	N	N	N	N
Sulphur mineral content	USGS	Areal density	%	Y	Y	Y	N	N	N	N	N
Hydrology											
Length of all stream lines, except pipes. 100k.	NHD+	Length	km	Y	Y	Y	N	N	N	N	N
Length of all stream lines, except pipes. 24K	NHD	Length	km	Y	Y	Y	N	N	N	N	N
Percent lakes, from NHD Plus waterbodies	NHD+	Areal density	%	Y	N	N	N	N	N	N	N
Total stream length, from NHD Plus (1:100k). Includes all flowlines	NHD+	Length	km	Y	Y	Y	N	N	N	N	N
Total strem length, from NHD (1:24k). Includes all flowlines	NHD	Length	km	Y	Y	Y	N	N	N	N	N
NHD+ segment mean annual flow (Unit area method)	NHD+										
NHD+ segment mean annual flow (Vogel method)	NHD+										
NHD+ segment slope	NHD+										
NHD+ segment stream order	NHD+										
NHD+ segment FTYPE	NHD+										
Location											

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Latitude	GIS	Other	Degrees	N	N	N	N	N	N	Y
Longitude	GIS	Other	Degrees	N	N	N	N	N	N	Y
Elevation	NED	Other	m	N	N	N	N	N	N	Y
Area of the unit of analysis	GIS	Area	m2	Y	Y	Y	Y	Y	Y	N
Perimeter of the unit of analysis	GIS	Length	m	Y	Y	Y	Y	Y	Y	N
Omernik Ecoregion Lvl 3 (2010 draft revision in CA)	EPA	Other	Categorical	N	N	N	N	N	N	Y
Omernik Ecoregion Lvl 4 (draft in CA)	EPA	Other	Categorical	N	N	N	N	N	N	Y
Physical habitat										
Average reach slope (measured)	Measured	Percent	%	N	N	N	N	N	N	Y
Canopy cover at the midpoint of the stream	Measured	Percent	%	N	N	N	N	N	N	Y
Natural fish cover	Measured	Other	None	N	N	N	N	N	N	Y
Water chemistry										
Alkalinity	Measured	Concentration	mg/L	N	N	N	N	N	N	Y
pH	Measured	Concentration	None	N	N	N	N	N	N	Y
Stressor										
Biological										
Distance from the nearest Corbicula record	Various	Length	km	N	N	N	N	N	N	Y
Distance from the nearest Corbicula, Dreissena, or Potamopyrgus	Various	Length	km	N	N	N	N	N	N	Y
Distance from the nearest Dreissena record	Various	Length	km	N	N	N	N	N	N	Y
Distance from the nearest Potamopyrgus antipodarum record	Various	Length	km	N	N	N	N	N	N	Y
Distance from nearest Tamarix record	Various	Length	km	N	N	N	N	N	N	Y
Distance from nearest Arundo record	Various	Length	km	N	N	N	N	N	N	Y
Distance from nearest Tamarix or Arundo record	Various	Length	km	N	N	N	N	N	N	Y
Census/population										
Change in housing units between 1990 and 2000	US Census	Count	Housing units	Y	Y	Y	Y	Y	Y	N
Change in housing units density between 1990 and 2000	US Census	Areal density	Housing units/km2	Y	Y	Y	Y	Y	Y	N
Housing units density in 1990	US Census	Areal density	Housing units/km2	Y	Y	Y	Y	Y	Y	N
Housing units density in 2000	US Census	Areal density	Housing units/km2	Y	Y	Y	Y	Y	Y	N
Housing units in 1990	US Census	Count	Housing units	Y	Y	Y	Y	Y	Y	N
Housing units in 2000	US Census	Count	Housing units	Y	Y	Y	Y	Y	Y	N
Population change between 1990 and 2000	US Census	Count	People	Y	Y	Y	Y	Y	Y	N

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Population density change between 1990 and 2000	US Census	Areal density	People/km2	Y	Y	Y	Y	Y	Y	N
Population density in 1990	US Census	Areal density	People/km2	Y	Y	Y	Y	Y	Y	N
Population density in 2000	US Census	Areal density	People/km2	Y	Y	Y	Y	Y	Y	N
Population in 1990	US Census	Count	People	Y	Y	Y	Y	Y	Y	N
Population in 2000	US Census	Count	People	Y	Y	Y	Y	Y	Y	N
Hydrology										
Density of dams, by area	NID	Areal density	count/km2	Y	Y	Y	N	N	N	N
Distance to nearest canal or pipe (100k) in watershed	NHD+	Length	km	N	N	N	N	N	N	Y
Distance to nearest canal or pipe (24k) in watershed	NHD	Length	km	N	N	N	N	N	N	Y
Distance to nearest upstream dam in catchment	NID	Length	km	Y	N	N	N	N	N	N
Number of dams	NID	Count	Number	Y	Y	Y	N	N	N	N
Total length of FTYPE=ArtificialPath in NHD hi res	NHD	Length	km	Y	Y	Y	N	N	N	N
Total length of FTYPE=ArtificialPath in NHD+	NHD+	Length	km	Y	Y	Y	N	N	N	N
Percent of artificial paths (24k), of total stream length	NHD									
Percent of artificial paths (100k), of total stream length	NHD+									
Total length of FTYPE=CanalDitch and Pipeline in NHD hi res	NHD	Length	km	Y	Y	Y	N	N	N	N
Total length of FTYPE=CanalDitch and Pipeline in NHD+	NHD+	Length	km	Y	Y	Y	N	N	N	N
Percent of canals or pipes (24k), of total stream length	NHD									
Percent of canals or pipes (100k), of total stream length	NHD+									
Total length of pipelines	NHD+	Length	km	Y	Y	Y	N	N	N	N
Total length of pipelines	NHD	Length	km	Y	Y	Y	N	N	N	N
Total normal dam storage	NID	Volume	Acre-feet	Y	N	N	N	N	N	N
Land use										
Impervious surfaces from NLCD	NLCD	Areal density	%	Y	Y	Y	Y	Y	Y	N
Percent ag land converted to urban	NLCD	Areal density	%	Y	Y	Y	Y	Y	Y	N
Percent agricultural lands (row crop, pasture)	NLCD	Areal density	%	Y	Y	Y	Y	Y	Y	N

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Percent deforested	NLCD	Areal density	%	Y	Y	Y	Y	Y	Y	N
Percent developed land (urban, row crop, pasture, Code21)	NLCD	Areal density	%	Y	Y	Y	Y	Y	Y	N
Percent natural land cover (forest, grassland, barren, wetlands, shrub)	NLCD	Areal density	%	Y	Y	Y	Y	Y	Y	N
Percent new ag (class 36, 46, or 56)	NLCD	Areal density	%	Y	Y	Y	Y	Y	Y	N
Percent new urban (class 32, 42, 52, or 62)	NLCD	Areal density	%	Y	Y	Y	Y	Y	Y	N
Percent of area allotted to grazing on USFS and BLM lands in CA.	NLCD	Areal density	%	Y	Y	N	N	N	N	N
Percent of natural land with forests	NLCD	Areal density	%	Y	Y	Y	Y	Y	Y	N
Percent of natural land with shrub or forest	NLCD	Areal density	%	Y	Y	Y	Y	Y	Y	N
Percentage of polygon designated as natural barren (31)	NLCD	Areal density	%	Y	Y	Y	Y	Y	Y	N
Percentage of polygon designated as natural grassland (71)	NLCD	Areal density	%	Y	Y	Y	Y	Y	Y	N
Percentage of polygon designated as pasture (81)	NLCD	Areal density	%	Y	Y	Y	Y	Y	Y	N
Percentage of polygon designated as row crops (82)	NLCD	Areal density	%	Y	Y	Y	Y	Y	Y	N
Percentage of polygon designated as shrublands (52)	NLCD	Areal density	%	Y	Y	Y	Y	Y	Y	N
Percentage of polygon designated as urban (22, 23, 24)	NLCD	Areal density	%	Y	Y	Y	Y	Y	Y	N
Percentage of polygon designated as Urban/Recreational Grass (21)	NLCD	Areal density	%	Y	Y	Y	Y	Y	Y	N
Percentage of polygon designated as wetlands (90, 95)	NLCD	Areal density	%	Y	Y	Y	Y	Y	Y	N
Percentage of polygons designated as forest (codes 41, 42, 43)	NLCD	Areal density	%	Y	Y	Y	Y	Y	Y	N
Mining										
Count of gravel mines	MRDS	Count	Number	Y	Y	Y	Y	Y	Y	N
Count of mines	MRDS	Count	Number	Y	Y	Y	Y	Y	Y	N
Density of gravel mines	MRDS	Areal density	Number/km2	Y	Y	Y	Y	Y	Y	N
Density of mines	MRDS	Areal density	Number/km2	Y	Y	Y	Y	Y	Y	N
Transportation										

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Density of paved road crossings (class 1, 2, no pipelines)	Mosaic roads layer	Linear density	Crossings/stream-km	N	N	N	Y	Y	Y	N
Density of railroad crossings (no pipelines)	FRA	Linear density	Crossings/stream-km	N	N	N	Y	Y	Y	N
Density of road (class 1-3) and rail crossings (no pipelines)	Mosaic roads layer	Linear density	Crossings/stream-km	N	N	N	Y	Y	Y	N
Density of road crossings (class1-3, no pipelines)	Mosaic roads layer	Linear density	Crossings/stream-km	N	N	N	Y	Y	Y	N
Density of unpaved road crossings (class 3, no pipelines)	Mosaic roads layer	Linear density	Crossings/stream-km	N	N	N	Y	Y	Y	N
Desnity of rail + paved and unpaved roads	Mosaic roads layer	Areal density	m/m2	Y	Y	Y	Y	Y	Y	N
Length of rail + paved and unpaved roads	Mosaic roads layer	Length	m	Y	Y	Y	Y	Y	Y	N
Number of paved road crossings (class 1, 2, no pipelines)	Mosaic roads layer	Count	Crossings	N	N	N	Y	Y	Y	N
Number of railroad crossings (no pipelines)	Mosaic roads layer	Count	Crossings	N	N	N	Y	Y	Y	N
Number of road (class 1-3) and rail crossings (no pipelines)	Mosaic roads layer	Count	Crossings	N	N	N	Y	Y	Y	N
Number of road crossings (class 1-3, no pipelines)	Mosaic roads layer	Count	Crossings	N	N	N	Y	Y	Y	N
Number of unpaved road crossings (class 3, no pipelines)	Mosaic roads layer	Count	Crossings	N	N	N	Y	Y	Y	N
Total density of all roads (classes 1-4)	Mosaic roads layer	Areal density	m/m2	Y	Y	Y	Y	Y	Y	N
Total density of fire roads and trails (class 4)	Mosaic roads layer	Areal density	m/m2	Y	Y	Y	Y	Y	Y	N
Total density of footpaths (class 5) NOT HIKING TRAILS	Mosaic roads layer	Areal density	m/m2	Y	Y	Y	Y	Y	Y	N
Total density of paved and unpaved roads (classes 1, 2, and 3)	Mosaic roads layer	Areal density	m/m2	Y	Y	Y	Y	Y	Y	N
Total density of paved roads (class 1 and 2)	Mosaic roads layer	Areal density	m/m2	Y	Y	Y	Y	Y	Y	N
Total density of railroads	FRA	Areal density	m/m2	Y	Y	Y	Y	Y	Y	N
Total density of unpaved and fire roads (class 3 and 4)	Mosaic roads layer	Areal density	m/m2	Y	Y	Y	Y	Y	Y	N
Total density of unpaved roads (class 3)	Mosaic roads layer	Areal density	m/m2	Y	Y	Y	Y	Y	Y	N
Total length of all roads (classes 1-4)	Mosaic roads layer	Length	m	Y	Y	Y	Y	Y	Y	N
Total length of fire roads and trails (class 4)	Mosaic roads layer	Length	m	Y	Y	Y	Y	Y	Y	N
Total length of footpaths (class 5) NOT HIKING TRAILS	Mosaic roads layer	Length	m	Y	Y	Y	Y	Y	Y	N
Total length of paved and unpaved roads (classes 1, 2, and 3)	Mosaic roads layer	Length	m	Y	Y	Y	Y	Y	Y	N

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Total length of paved roads (class 1 and 2)	Mosaic roads layer	Length	m	Y	Y	Y	Y	Y	Y	N
Total length of railroads	FRA	Length	m	Y	Y	Y	Y	Y	Y	N
Total length of unpaved and fire roads (class 3 and 4)	Mosaic roads layer	Length	m	Y	Y	Y	Y	Y	Y	N
Total length of unpaved roads (class 3)	Mosaic roads layer	Length	m	Y	Y	Y	Y	Y	Y	N
Wildfire										
Number of burns between 1986 and 1990	CalFIRE	Count	Count	N	N	Y	N	N	N	N
Number of burns between 1987 and 1991	CalFIRE	Count	Count	N	N	Y	N	N	N	N
Number of burns between 1988 and 1992	CalFIRE	Count	Count	N	N	Y	N	N	N	N
Number of burns between 1989 and 1993	CalFIRE	Count	Count	N	N	Y	N	N	N	N
Number of burns between 1990 and 1994	CalFIRE	Count	Count	N	N	Y	N	N	N	N
Number of burns between 1991 and 1995	CalFIRE	Count	Count	N	N	Y	N	N	N	N
Number of burns between 1992 and 1996	CalFIRE	Count	Count	N	N	Y	N	N	N	N
Number of burns between 1993 and 1997	CalFIRE	Count	Count	N	N	Y	N	N	N	N
Number of burns between 1994 and 1998	CalFIRE	Count	Count	N	N	Y	N	N	N	N
Number of burns between 1995 and 1999	CalFIRE	Count	Count	N	N	Y	N	N	N	N
Number of burns between 1996 and 2000	CalFIRE	Count	Count	N	N	Y	N	N	N	N
Number of burns between 1997 and 2001	CalFIRE	Count	Count	N	N	Y	N	N	N	N
Number of burns between 1998 and 2002	CalFIRE	Count	Count	N	N	Y	N	N	N	N
Number of burns between 1999 and 2003	CalFIRE	Count	Count	N	N	Y	N	N	N	N
Number of burns between 2000 and 2004	CalFIRE	Count	Count	N	N	Y	N	N	N	N
Number of burns between 2001 and 2005	CalFIRE	Count	Count	N	N	Y	N	N	N	N
Number of burns between 2002 and 2006	CalFIRE	Count	Count	N	N	Y	N	N	N	N
Number of burns between 2003 and 2007	CalFIRE	Count	Count	N	N	Y	N	N	N	N
Number of burns between 2004 and 2008	CalFIRE	Count	Count	N	N	Y	N	N	N	N
Number of burns between 2005 and 2009	CalFIRE	Count	Count	N	N	Y	N	N	N	N
Percent burned in 1990	CalFIRE	Areal density	%	Y	Y	Y	N	Y	Y	N
Percent burned in 1991	CalFIRE	Areal density	%	Y	Y	Y	N	Y	Y	N
Percent burned in 1992	CalFIRE	Areal density	%	Y	Y	Y	N	Y	Y	N
Percent burned in 1993	CalFIRE	Areal density	%	Y	Y	Y	N	Y	Y	N
Percent burned in 1994	CalFIRE	Areal density	%	Y	Y	Y	N	Y	Y	N
Percent burned in 1995	CalFIRE	Areal density	%	Y	Y	Y	N	Y	Y	N
Percent burned in 1996	CalFIRE	Areal density	%	Y	Y	Y	N	Y	Y	N
Percent burned in 1997	CalFIRE	Areal density	%	Y	Y	Y	N	Y	Y	N
Percent burned in 1998	CalFIRE	Areal density	%	Y	Y	Y	N	Y	Y	N
Percent burned in 1999	CalFIRE	Areal density	%	Y	Y	Y	N	Y	Y	N

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Percent burned in 2000	CalFIRE	Areal density	%	Y	Y	Y	N	Y	Y	N
Percent burned in 2001	CalFIRE	Areal density	%	Y	Y	Y	N	Y	Y	N
Percent burned in 2002	CalFIRE	Areal density	%	Y	Y	Y	N	Y	Y	N
Percent burned in 2003	CalFIRE	Areal density	%	Y	Y	Y	N	Y	Y	N
Percent burned in 2004	CalFIRE	Areal density	%	Y	Y	Y	N	Y	Y	N
Percent burned in 2005	CalFIRE	Areal density	%	Y	Y	Y	N	Y	Y	N
Percent burned in 2006	CalFIRE	Areal density	%	Y	Y	Y	N	Y	Y	N
Percent burned in 2007	CalFIRE	Areal density	%	Y	Y	Y	N	Y	Y	N
Percent burned in 2008	CalFIRE	Areal density	%	Y	Y	Y	N	Y	Y	N
Percent burned in 2009	CalFIRE	Areal density	%	Y	Y	Y	N	Y	Y	N
Regulatory status										
Site is on a 303d listed segment	CWIQS									
Density of discharges (CWIQS)	CWIQS									
PHAB										
Average percent embeddedness	Measured	Percent	%	N	N	N	N	N	N	Y
Log relative bed stability	Measured	Other	None	N	N	N	N	N	N	Y
Percent sands and fines	Measured	Percent	%	N	N	N	N	N	N	Y
Weighted human influence	Measured	Other	None	N	N	N	N	N	N	Y
Water chemistry										
Ammonium	Measured	Concentration	mg/L	N	N	N	N	N	N	Y
Chloride microequivalents	Measured	Concentration	uEq	N	N	N	N	N	N	Y
Specific conductivity	Measured	Concentration	uS/cm	N	N	N	N	N	N	Y
Total Nitrogen	Measured	Concentration	ug/L	N	N	N	N	N	N	Y
Total Phosphorous	Measured	Concentration	ug/L	N	N	N	N	N	N	Y
Total suspended solids	Measured	Concentration	mg/L	N	N	N	N	N	N	Y
Turbidity	Measured	Concentration	NTU	N	N	N	N	N	N	Y