- Cal/EPA
- The Resources Agency
- About the California Water Quality Monitoring Council
- State & Regional Water Boards
- Web Portal Partners
- Monitoring Programs, Data Sources & Reports
- Water Quality Standards, Plans and Policies
- Regulatory Activities
- Enforcement Actions
- Research

- About SWAMP
- SWAMP Tools

SWAMP
Surface Water Ambient Monitoring

Welcome to My Water Quality

This web portal, supported by a wide variety of public and private oraganizations, presents California water quality monitoring data and assessment information from a variety of perspectives that may be viewed across space and time.

IS OUR WATER SAFE TO DRINK?

Safe drinking water depends on a variety of chemical and biological factors regulated by a number of local, state, and federal agencies. More >>

IS IT SAFE TO SWIM IN OUR WATERS?

Swimming safety of our waters is linked to the levels of pathogens that have the potential to cause disease. More >>

IS IT SAFE TO EAT FISH AND SHELLFISH FROM OUR WATERS?

Aquatic organisms are able to accumulate certain pollutants from the water in which they live, sometimes reaching levels that could harm consumers. More>>

ARE OUR AQUATIC ECOSYSTEMS HEALTHY? (links to page 2)

The health of fish and other aquatic organisms and communities depends on the chemical, physical, and biological quality of the waters in which they live. More>> (links to page 2)

WHAT STRESSORS AND PROCESSES AFFECT OUR WATER QUALITY?

Benefical uses of our waters are affected by emerging contaminants, invasive species, trash, global warming, acidification, pollutant loads, and flow. More>>

→ State & Regional Water Boards

AQUATIC HEALTH LINKS
→ Stressors
→ Laws, Regulations, Standards & Guidelines
→ Regulatory Activities
→ Enforcement Actions
→ Research
→ Monitoring Programs, Data Sources & Reports

Are Our Aquatic Ecosystems Healthy?

California has many types of aquatic habitats. Follow the links below to learn more…

WETLANDS

Wetlands form along the shallow margins of deepwater ecosystems such as lakes, estuaries, and rivers. They also form in upland settings where groundwater or runoff makes the ground too wet for upland vegetation. More >>

ESTUARIES

Estuaries are unique habitats found where rivers and the ocean mix. They feature a diverse array of plants and animals adapted to life along this mixing zone. More >>

STREAMS, RIVERS & LAKES (links to page 3)

California's streams and rivers flow through diverse habitats, from mountain canyons, valleys, deserts, estuaries and urban areas. Riparian woodlands develop along stream banks and floodplains, linking forest, chaparral, scrubland, grassland, and wetlands. California lakes, supporting deep water, wetlands, riparian woodlands, offer a quiet refuge for plants, animals and humans alike. More >> (links to page 3)

OCEAN

California has 1,100 miles of shoreline and 220,000 square miles of state and federal oceanic habitat, featuring one of the world's most diverse marine ecosystems. More >>

→ State & Regional Water Boards

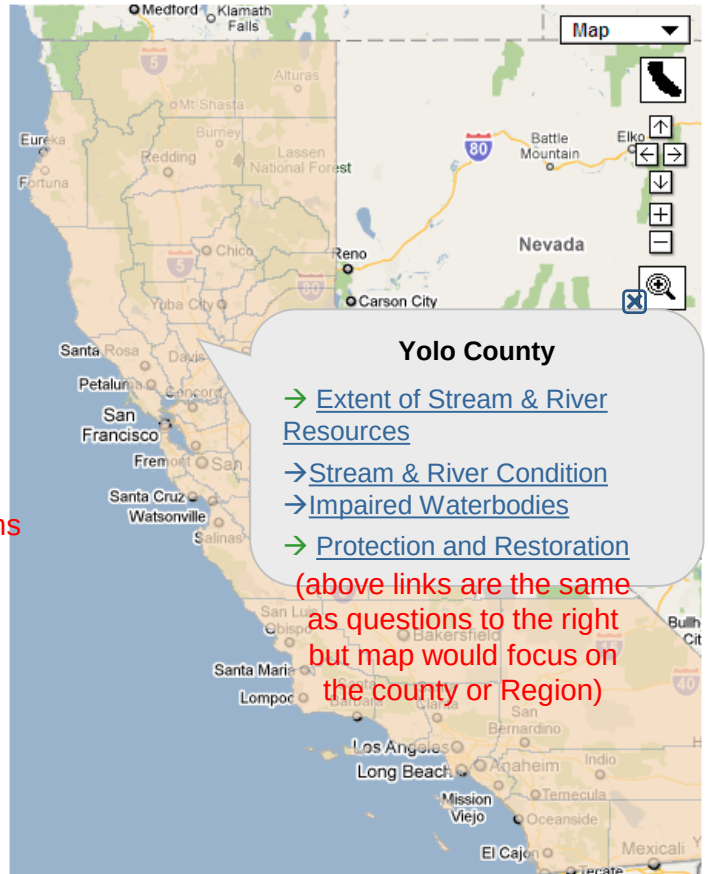
STREAM & RIVER LINKS

→ Stream and River Types (links to page 7)
→ Tools to Assess Biological and Physical Condition (links to page 17)
→ Laws, Regulations, Standards & Guidelines (links to page 18)
→ Regulatory Activities
→ Enforcement Actions
→ Research (links to Healthy Streams Partnership page)
→ Monitoring Programs, Data Sources & Reports

Are Our Stream & River Ecosystems Healthy?

Show County Info: Yolo County ☑ Show counties

Show Region Info: -- Select Region -- ☐ Show Regions



Yolo County

→ Extent of Stream & River Resources
→ Stream & River Condition
→ Impaired Waterbodies
→ Protection and Restoration

(above links are the same as questions to the right but map would focus on the county or Region)

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To view stream and river information:

→ Click on a county or
→ Select a County or Region from a pop-up menu above the map

QUESTIONS ANSWERED

→ What is the extent of stream and river resources? (links to page 4)
→ What is the condition of our streams and rivers? (link to page 8)
→ Which streams or rivers are listed by the State as impaired? (links to page 13)
→ What is being done to protect and restore our streams and rivers? (links to page 14)
→ What are the trends in the condition of our streams and rivers? (links to page 15)
→ What are the stressors affecting the condition of our streams and rivers? (links to page 16)

→ State & Regional Water Boards

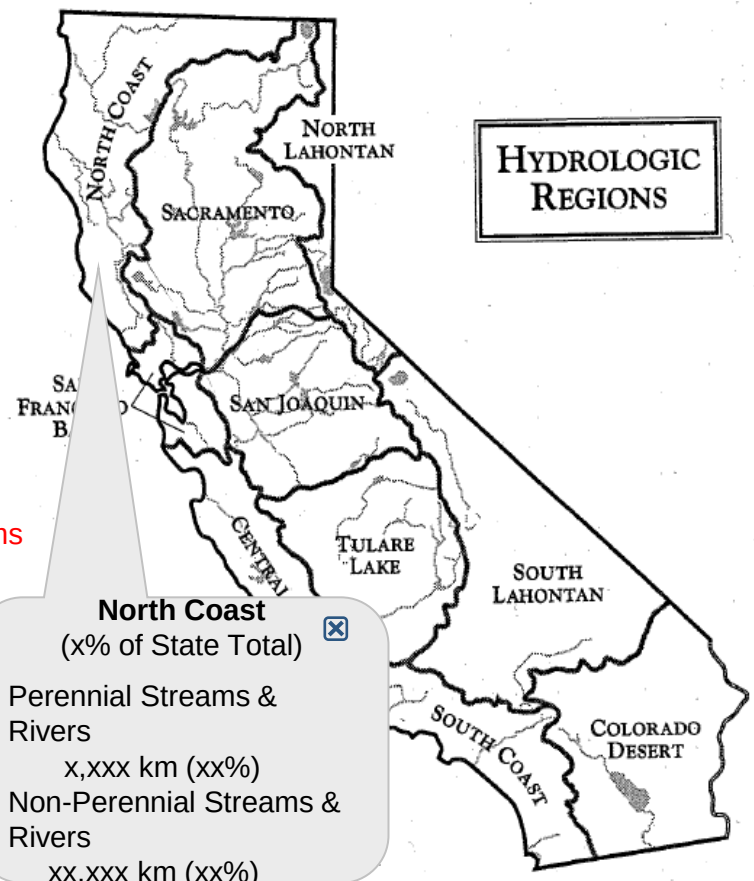
STREAM & RIVER LINKS

→ Stream and River Types (links to page 7)
→ Tools to Assess Biological and Physical Condition (links to page 17)
→ Laws, Regulations, Standards & Guidelines (links to page 18)
→ Regulatory Activities
→ Enforcement Actions
→ Research (links to Healthy Streams Partnership page)
→ Monitoring Programs, Data Sources & Reports

Healthy Streams PARTNERSHIP

What is the Extent of Our Stream & River Resources?

Select Region: North coast



North Coast
(x% of State Total)

Perennial Streams & Rivers
x,xxx km (xx%)
Non-Perennial Streams & Rivers
xx,xxx km (xx%)

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The hydrologic regions of California are based on divisions established by the California Department of Water Resources. Each region exhibits similar precipitation, runoff, geologic, and tectonic conditions.

Statewide Figures

→ Perennial Streams and Rivers
  → xx,xxx km (x,xxx miles)
  → xx% of the total
→ Non-Perennial Streams and Rivers
  → xxx,xxx km (x,xxx miles)
  → xx% of the total
→ Stream and River Types (links to page 7)

To view stream and river info by hydrologic region:

→ Click on a hydrologic region or
→ Select from the pop-up menu above the map

→ State & Regional Water Boards

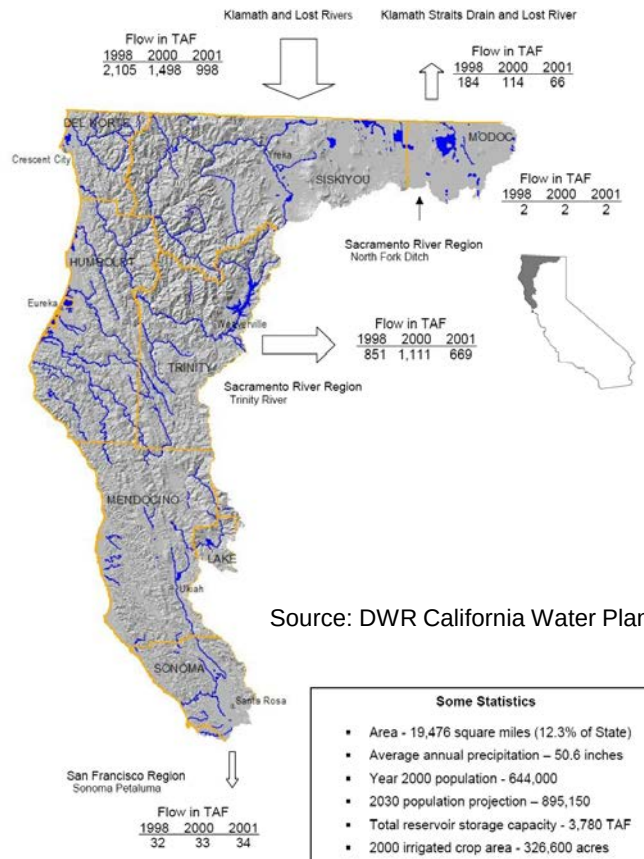
STREAM & RIVER LINKS

→ Stream and River Types (links to page 7)
→ Tools to Assess Biological and Physical Condition (links to page 17)
→ Laws, Regulations, Standards & Guidelines (links to page 18)
→ Regulatory Activities
→ Enforcement Actions
→ Research (links to Healthy Strea Partnership page)
→ Monitoring Programs, Data Sources & Reports

Healthy Streams PARTNERSHIP

What is the Extent of Our Stream & River Resources?

Select Region: North Coast



Source: DWR California Water Plan

Some Statistics

- Area - 19,476 square miles (12.3% of State)
- Average annual precipitation – 50.6 inches
- Year 2000 population - 644,000
- 2030 population projection – 895,150
- Total reservoir storage capacity - 3,780 TAF
- 2000 irrigated crop area - 326,600 acres

Major Rivers

River	Length (mi.)	Watershed Area (sq. mi.)	Peak Discharge (cfs)	Date
Eel	200	3,120	752,000	Dec. 23, 1964
Gualala	35	290	55,000	Dec. 22, 1955
Klamath	210	12,100	557,000	Dec. 23, 1964
Mad	90	490	81,000	Dec. 22, 1964
Mattole	56	340	90,400	Dec. 22, 1955
Navarro	19	300	64,500	Dec. 22, 1955
Noyo	35	130	26,600	Mar. 29, 1974
Russian	105	1,480	102,000	Feb. 18, 1986
Salmon	46	750	100,000	Dec. 23, 1964
Scott	68	650	54,600	Dec. 22, 1964
Shasta	52	790	21,500	Dec. 22, 1964
Smith	50	630	228,000	Dec. 22, 1964
Trinity	170	2,860	231,000	Dec. 22, 1964
Van Duzen	63	275	48,700	Dec. 22, 1964

SOURCES: U.S. Geological Survey Water Data Reports and California State Lands Commission.

Source: J. Mount. 1995. California Rivers and Streams: The Conflict Between Fluvial Process and Land Use

→ State & Regional Water Boards

STREAM & RIVER LINKS

→ Stream and River Types (links to page 7)
→ Tools to Assess Biological and Physical Condition (links to page 17)
→ Laws, Regulations, Standards & Guidelines (links to page 18)
→ Regulatory Activities
→ Enforcement Actions
→ Research (links to Healthy Stream Partnership page)
→ Monitoring Programs, Data Sources & Reports

What is the Extent of Our Stream & River Resources?

Select Region: North Coast

Source: J. Mount. 1995. California Rivers and Streams: The Conflict Between Fluvial Process and Land Use

TABLE 9.1 North Coast Hydrologic Region

Climate	Highest yearly rainfall totals in California, with areas near the Oregon border receiving nearly 200 inches. High-intensity, long-duration rainfall events common. Precipitation dominated by rainfall with heavy snowfall limited to Klamath Mountains and Trinity Alps. Intense orographic effects in mountain ranges near coast.
Tectonic Setting	Area located north of Mendocino Triple Junction dominated by subduction zone tectonics with high rates of uplift in Coast Ranges close to subduction zone and active volcanoes in nearby Cascade Range. Area south of Mendocino Triple Junction dominated by mountain building along compressional sections of San Andreas Transform.
Geology	Geologic units record past and present subduction zone tectonic activity. Near-modern and ancient subduction zone rocks dominated by mixtures of volcanic and sedimentary units with isolated serpentinite units. In area to east, older rocks composed of granitic and metamorphic rocks with younger rocks dominated by volcanics. Subduction zone rocks highly unstable and prone to landslides and erosion.
Sediment Supply	State's highest total sediment yields. Caused by combination of unstable rock types/soils, high rates of uplift, high total rainfall, and land use practices that promote erosion, such as logging and grazing.
Runoff Characteristics	Rivers have highest peak discharges recorded in state. Smaller, coastal watersheds like Navarro, Mad, Smith, and Eel exhibit rapid hydrograph response with limited base flow and snowmelt. Eastern, larger rivers like Klamath and Trinity have more subdued hydrograph response and high overall base flow and snowmelt runoff.

Continuation from prior slide, content from slides 5 and 6 would be on the same page

→ State & Regional Water Boards

STREAM & RIVER LINKS

→ Stream and River Types
→ Tools to Assess Biological and Physical Condition (links to page 7)
→ Laws, Regulations, Standards & Guidelines (links to page 17)
→ Regulatory Activities (links to page 18)
→ Enforcement Actions
→ Research
→ Monitoring Programs, Data Sources & Reports (links to Healthy Streams Partnership page)

CALIFORNIA Healthy Streams PARTNERSHIP

Home → Aquatic Ecosystem Health → Streams & Rivers

Types of Streams & Rivers

[Add photos]

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→ Large Rivers
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→ Streams
Landscape features with defined beds and banks that have been formed by water and which under typical circumstances are maintained by the flow of water.

→ Perennial Streams
A stream with the year-round presence of flowing surface water during a typical water year.

→ Non-Perennial Streams
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- Intermittent Streams
  Streams containing flowing water for only a portion of the year. When not flowing, water may remain in sections (e.g., isolated pools) fed by springs or ground water with dry stretches occurring in the intervening areas.
- Ephemeral Streams
  Streams that contain running water only seasonally and not necessarily every year.

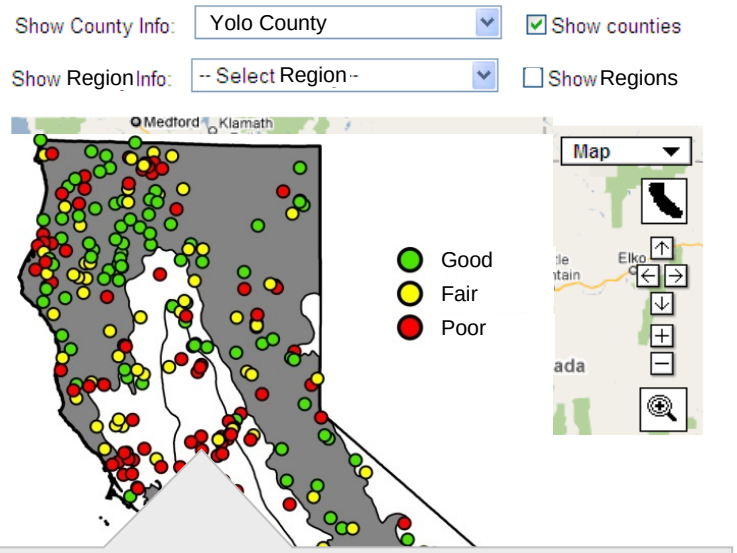
→ State & Regional Water Boards

STREAM & RIVER LINKS

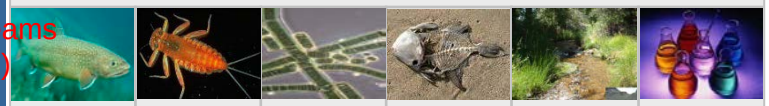
→ Stream and River Types (links to page 7)
→ Tools to Assess Biological and Physical Condition (links to page 17)
→ Laws, Regulations, Standards & Guidelines (links to page 18)
→ Regulatory Activities
→ Enforcement Actions
→ Research (links to Healthy Streams Partnership page)
→ Monitoring Programs, Data Sources & Reports

Healthy Streams PARTNERSHIP

What is the Condition of Our Streams & Rivers?



Sacramento River at I-Street Bridge



Fish	Benthic Macro-Inverte-brates	Algae	Toxicity	Physical Habitat	Chem-istry
No Assess-ment	A	D	B	C	F

(links to related information on page 15)

Condition Measured Using Biological and Physical Indicators

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→ Tools to Assess Biological and Physical Condition (links to page 17)

→ Statewide Condition Assessment - Toxicity
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut quis ante arcu, non rutrum dolor. Morbi nec malesuada urna. Cras a metus elit. (links to page 9)

→ Stream and River Water Quality Assessment and Impairments Pursuant to the Clean Water Act
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(links to page 13)

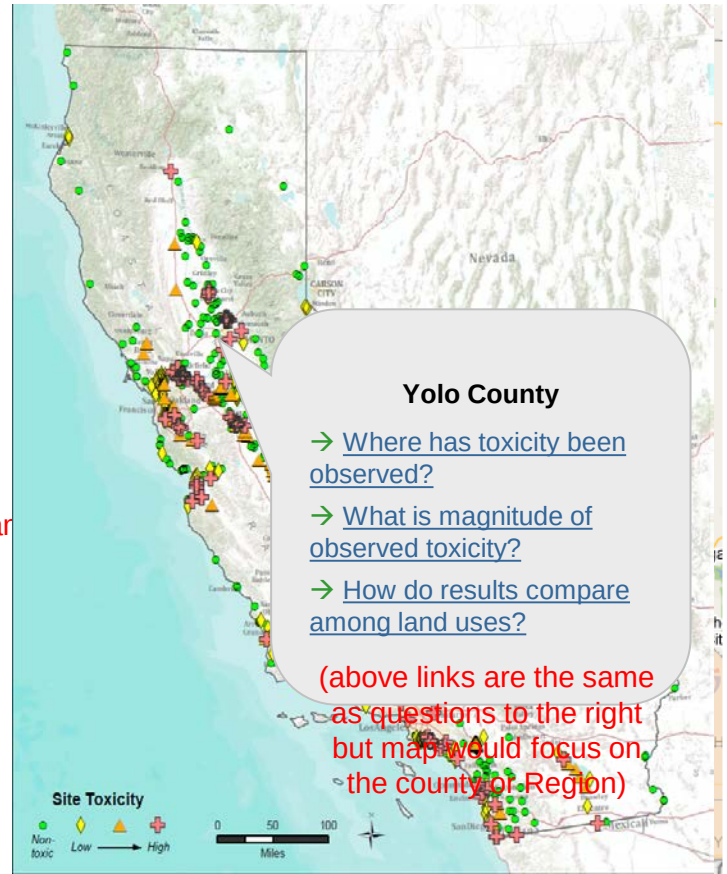
→ State & Regional Water Boards

STREAM & RIVER LINKS

→ Stream and River Types (links to page 7)
→ Tools to Assess Biological and Physical Condition (links to page 17)
→ Laws, Regulations, Standards & Guidelines (links to page 18)
→ Regulatory Activities
→ Enforcement Actions
→ Research (links to Healthy Strean Partnership page)
→ Monitoring Programs, Data Sources & Reports

What is the Condition of Our Streams & Rivers?

Show County Info: Yolo County ☑ Show counties
Show Region Info: -- Select Region -- ☐ Show Regions



Yolo County

→ Where has toxicity been observed?
→ What is magnitude of observed toxicity?
→ How do results compare among land uses?

(above links are the same as questions to the right but map would focus on the county or Region)

Condition assessed using toxicity testing as an indicator.

Insert Toxicity Summary

See Notes also need careful consideration of appropriate caveats

To view stream and river information:

→ Click on a county or
→ Select a County or Region from a pop-up menu above the map

QUESTIONS ANSWERED

→ Where has toxicity been observed in California waters? (link to slide 10)
→ What is the magnitude of observed toxicity? (link to slide 10)
→ How do the results of toxicity measurements compare among different land cover types? (link to slide 11)

→ State & Regional Water Boards

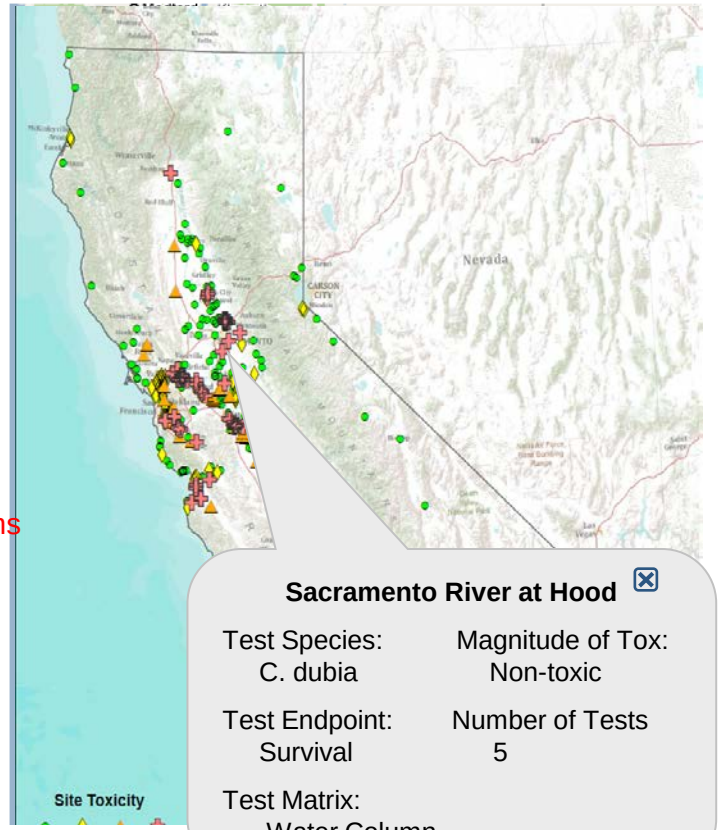
STREAM & RIVER LINKS

→ Stream and River Types
→ Tools to Assess Biological and Physical Condition (links to page 7)
→ Laws, Regulations, Standards & Guidelines (links to page 17)
→ Regulatory Activities (links to page 18)
→ Enforcement Actions
→ Research (links to Healthy Streams Partnership page)
→ Monitoring Programs, Data Sources & Reports

Where has Toxicity Been Observed in California Waters and What is the Magnitude of Observed Toxicity?

Show County Info: Sac County ☑ Show counties

Select Species: -- Select Test Species ☐ ShowRegions



Sacramento River at Hood

Test Species: C. dubia
Magnitude of Tox: Non-toxic
Test Endpoint: Survival
Number of Tests: 5
Test Matrix: Water Column

This interactive map shows locations of sites sampled by the SWAMP and partner programs. All sites are color coded using the categorization process described here, which considers the available toxicity test endpoints in both water and sediment…

Here links to slide 9

Develop associated page that provides means of viewing the raw data (CCAMP layout one example) Raw data show summarized value (% survival), as opposed to replicate data

[Note: Add disclaimer language]

Add drop-down menus that allow you to filter data according to:

→ matrix
→ magnitude of toxicity

Include drop down menu similar to safe to eat portal

Drop-down menu on raw data page
→Test species
→Toxicity observed (Y/N)
→Matrix
→Date – start and end

→ State & Regional Water Boards

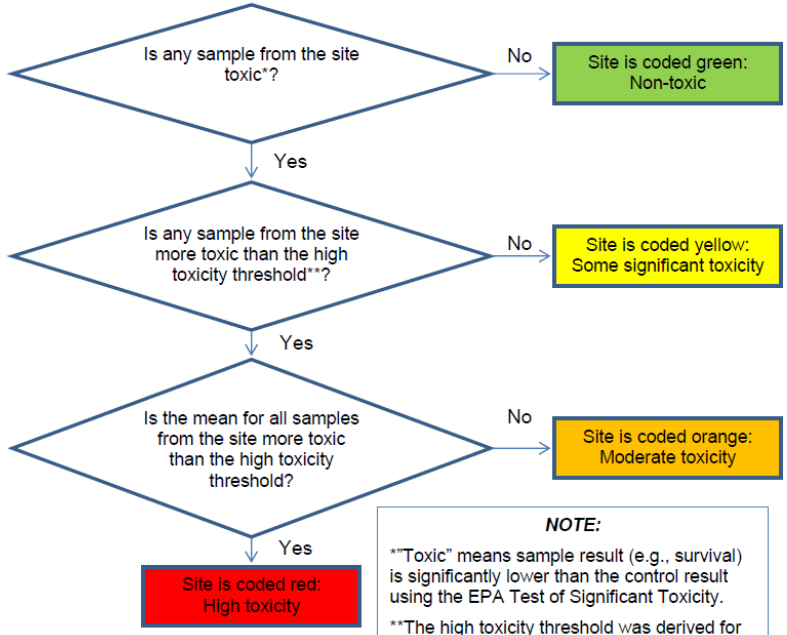
STREAM & RIVER LINKS

→ Stream and River Types (links to page 7)
→ Tools to Assess Biological and Physical Condition (links to page 15)
→ Laws, Regulations, Standards & Guidelines (links to page 16)
→ Regulatory Activities
→ Enforcement Actions
→ Research (links to Healthy Streams Partnership page)
→ Monitoring Programs, Data Sources & Reports

Where has Toxicity Been Observed in California Waters and What is the Magnitude of Observed Toxicity?

Figure 11. Site categorization process

The process used to characterize the magnitude of toxicity at each site was designed to take into consideration the widely varying number of samples and test endpoints (such as fish or crustacean survival) among sites. If any toxic samples were measured for a site, the site was categorized based on the most sensitive endpoint. This process considers both individual sample results and the mean results for sites with multiple samples. Relative to the impaired waterbody listing process, a site coded "green" would not be listed for toxicity. Sites coded "yellow" to "red" would be listed if the number of toxic samples met the criteria outlined in the State Water Board's Listing and De-listing Policy.



NOTE:

*"Toxic" means sample result (e.g., survival) is significantly lower than the control result using the EPA Test of Significant Toxicity.

**The high toxicity threshold was derived for each endpoint as the mean between the most toxic 25th percentile of all toxic samples and the point of 99% confidence that the samples was toxic.

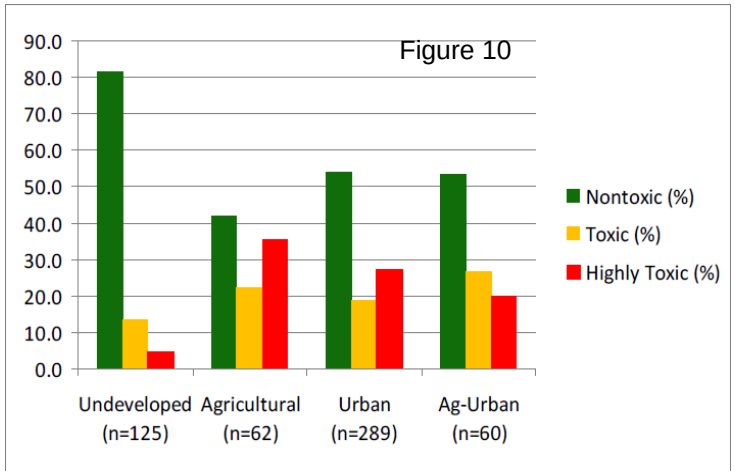
The word "here" in text on slide 10 links to a separate page with this figure

→ State & Regional Water Boards

STREAM & RIVER LINKS

→ Stream and River Types
→ Tools to Assess Biological and Physical Condition (links to page 7)
→ Laws, Regulations, Standards & Guidelines (links to page 17)
→ Regulatory Activities (links to page 18)
→ Enforcement Actions
→ Research
→ Monitoring Programs, Data Sources & Reports (links to Healthy Stream Partnership page)

How do the Results of Toxicity Measurements Compare Among Different Land Cover Types?



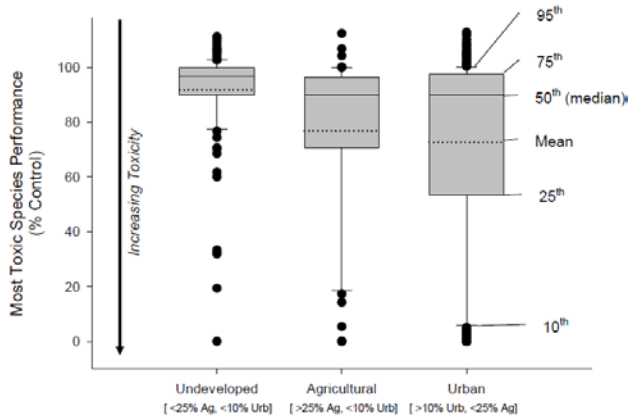


Figure 9

Samples from sites in agricultural and urban areas had significantly higher toxicity than sites in less developed areas (Figure 9), and had a greater magnitude of toxicity (Figure 10). The differences in toxicity between undeveloped and urban areas was highly statistically significant ($p < 0.0005$); and the same is true for the difference between undeveloped and agricultural areas.

A subset of the sites assessed (536 out of 992) were mapped and categorized for land cover using geographic information system (GIS) analysis. For each site, an area 1 km upstream (including tributaries) and 500 m on either side of the stream was mapped. If land cover within those areas was greater than 10% "developed" (National Land Cover Dataset classification), they were designated as urban. This is based on the widely supported impervious surface area model that shows decreased ecological condition in streams draining lands with greater than 10% impervious surface area. Sites with greater than 25% agricultural land cover were classified as agricultural sites. Sites were classified as "undeveloped" if they had both less than 10% urban and less than 25% agricultural land cover. Sites were classified as "ag-urban" if they had both greater than 10% urban and 25% agricultural land cover.

Use fusion charts for these figures. These will be static figures that are updated occasionally. Possibly use series of tabs for figures or other means so only one figure shows at any given time.

→ State & Regional Water Boards

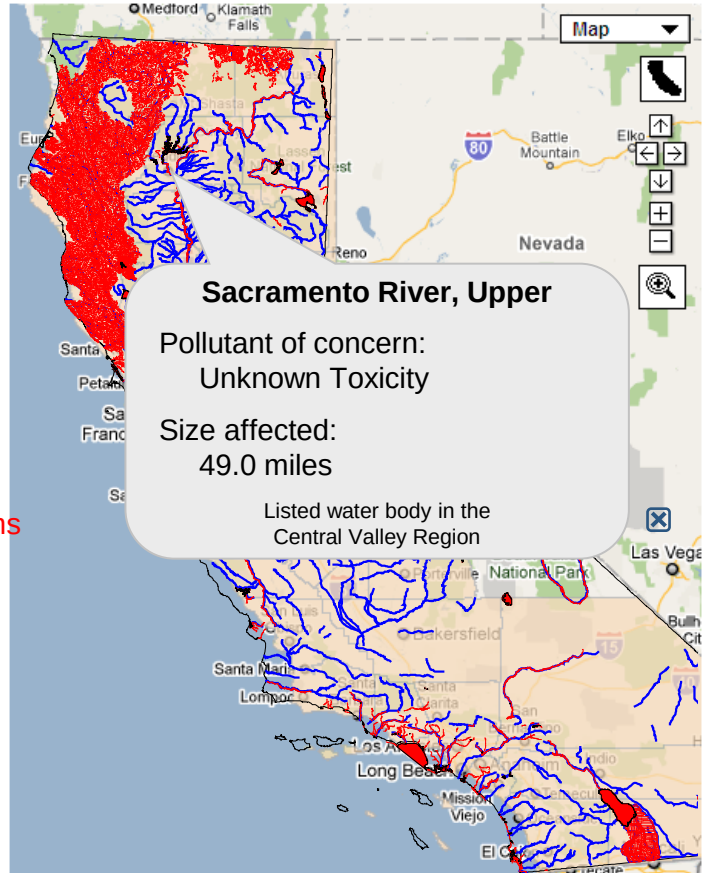
STREAM & RIVER LINKS

→ Stream and River Types
→ Tools to Assess Biological and Physical Condition (links to page 7)
→ Laws, Regulations, Standards & Guidelines (links to page 17)
→ Regulatory Activities (links to page 18)
→ Enforcement Actions
→ Research
→ Monitoring Programs, Data Sources & Reports (links to Healthy Streams Partnership page)

Which Streams or Rivers are Listed by the State as Impaired?

Show County Info: Yolo County ☑ Show counties

Select Pollutant: -- Select Pollutant Category ☐ ShowRegions



This interactive map shows which of California's waters are listed as impaired for aquatic life uses (i.e., may not protect aquatic life) and which pollutants are involved. Also shown are condition assessments pursuant to Section 305(b) of the Clean Water Act. **[Note: Add disclaimer language - Hunt]**

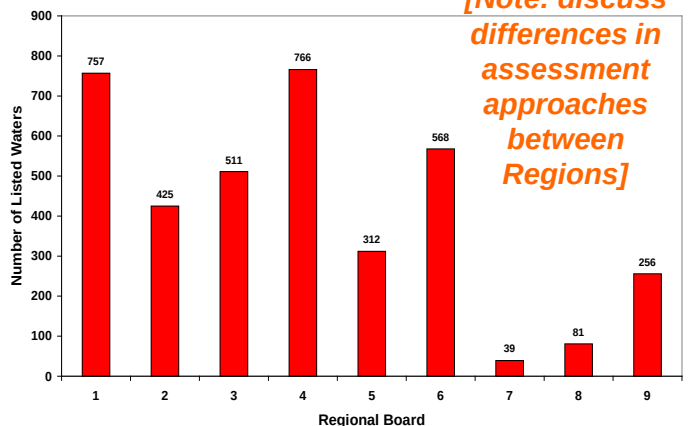
View 2010 303(d) Listing and current TMDL Information: See safe to eat page for TMDL text

→ Click on a county or
→ Select County from the pop-up menu above map
→ Select Pollutant Category from the pop-up menu
→ Use magnifier tool to zoom into an area of interest

Listed Waters by Water Quality Control Region

This chart shows …

[Note: discuss differences in assessment approaches between Regions]



→ State & Regional Water Boards

STREAM & RIVER LINKS

→ Stream and River Types (links to page 7)
→ Tools to Assess Biological and Physical Condition (links to page 17)
→ Laws, Regulations, Standards & Guidelines (links to page 18)
→ Regulatory Activities
→ Enforcement Actions
→ Research (links to Healthy Streams Partnership page)
→ Monitoring Programs, Data Sources & Reports

CALIFORNIA Healthy Streams PARTNERSHIP

What is Being Done to Protect and Restore Our Streams and Rivers?

A number of programs address existing water quality problems that affect stream health.

Total Maximum Daily Loads (TMDLs) Link back to 303(d) page/map

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Clean Water Grant Projects *[Show on map?]*

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NPS – Watersheds of Focus

ILRP

Stormwater

Flow Studies (DFG and SWRCB)

Critical Habitat Designations – (include link to map of designated critical habitat for salmonids)

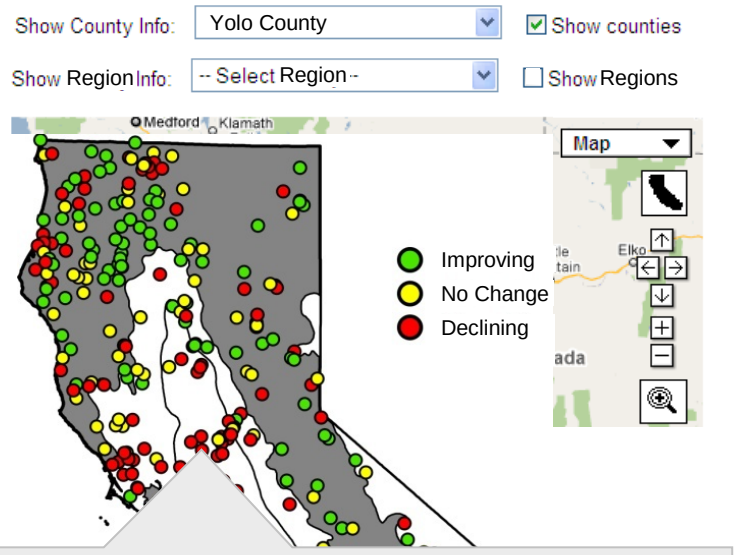
DPR Pyrethroid Re-registration

→ State & Regional Water Boards

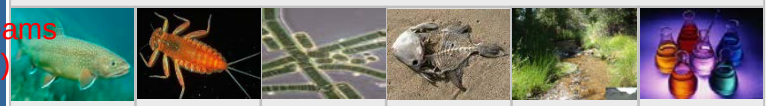
STREAM & RIVER LINKS

→ Stream and River Types (links to page 7)
→ Tools to Assess Biological and Physical Condition (links to page 17)
→ Laws, Regulations, Standards & Guidelines (links to page 18)
→ Regulatory Activities
→ Enforcement Actions
→ Research (links to Healthy Streams Partnership page)
→ Monitoring Programs, Data Sources & Reports

What Are the Trends in Stream & River Condition?



Sacramento River at I-Street Bridge



Fish	Benthic Macro-Inverte-brates	Algae	Toxicity	Physical Habitat	Chem-istry
No Assess-ment	↑	↓	↑	–	↓

(links to related information on page 17)

Much of the water quality information for California streams was gathered in studies designed to identify problem areas and recommend solutions. Assessment of trends over time requires studies specifically designed for that purpose that can be maintained over many funding cycles. The trends information presented here is primarily from one large-scale State/federal program. Other trend monitoring programs have begun recently, but do not yet have a long enough data record to be presented here.

To view stream and river trend information:

→ Click on a county, Region, or monitoring location or
→ Select from the pop-up menu above the map

→ Statewide Trends

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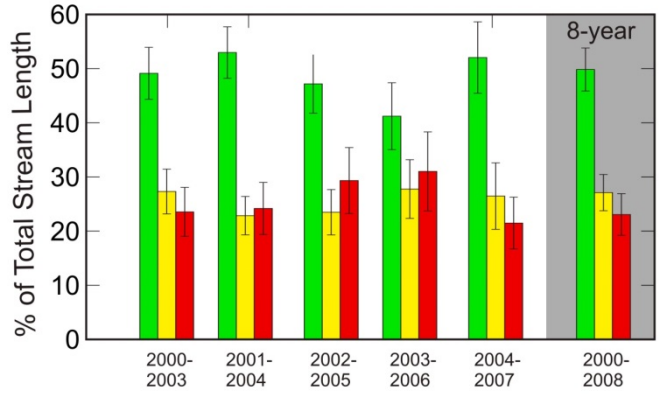

→ State & Regional Water Boards

STREAM & RIVER LINKS

→ Stream and River Types
→ Tools to Assess Biological and Physical Condition (links to page 7)
→ Laws, Regulations, Standards & Guidelines (links to page 17)
→ Regulatory Activities (links to page 18)
→ Enforcement Actions
→ Research
→ Monitoring Programs, Data Sources & Reports (links to Healthy Streams Partnership page)

What are the Stressors Affecting the Condition of our Streams and Rivers?

Show County Info: Yolo County ☑ Show counties

Show Region Info: -- Select Region -- ☐ Show Regions

Need separate map from page 13?

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To view stream and river information:

→ Click on a county or Region or

→ Select from the pop-up menu above the map

Physical Stressors

Text

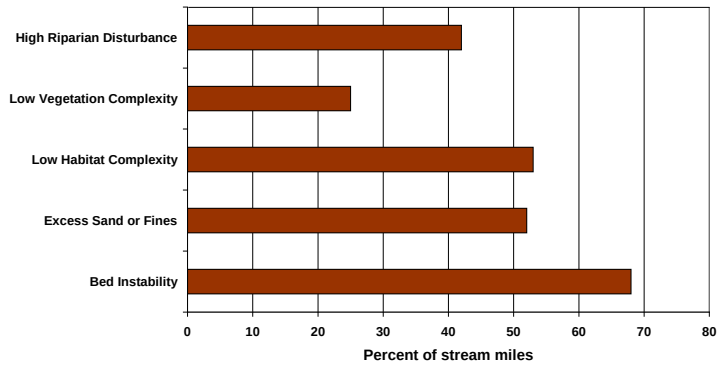
Chemical Stressors

Text

The Extent of Stressor Impact

This chart shows …

[Note: include data from PSA, SPoT SMC, EMAP, CMAP, SG/LA, NPDES, land use, and pesticide use]



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Tools to Assess Biological and Physical Condition

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Toxicity Testing

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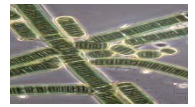
→ Link

Biological Assessment Indicators



→ Benthic Macro-Invertebrates (BMI)
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→ Algae
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→ Fish
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Physical Habitat Assessment

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→ Link

Chemical Assessment

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→ Link

Integrated Assessment Methods

→ California Rapid Assessment Method (CRAM)
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CALIFORNIA Healthy Streams PARTNERSHIP

Laws, Regulations, Standards, and Guidelines to Protect Aquatic Life and Ecosystems

Introductory text

→ Aquatic Life and Ecosystem Protective Standards
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→ Aquatic Life Protection Standards for Streams and Rivers
The Water Quality Control Plans (Basin Plans) of the nine Regional Water Quality Control Boards include standards to protect aquatic life and ecosystems. These standards vary from place to place.

→ Development of Biological Objectives
The State Water Resources Control Board is developing statewide biological objectives to protect aquatic life uses of streams and rivers.

Water Boards

→ Clean Water Act Sections 303(d) and 305(b)
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→ Non-Point Source Policy
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→ Stormwater Program Permits
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→ Numeric Nutrient Endpoints
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