

Sacramento River Watershed Portal Design Outline				
Topic	Interests	Sub Headings	Measures to Display	Working Towards Solutions
Topic (with draft questions)	Background information on the topic and why it is important.	Subsections for covering multiple aspects to "The Problem" (Subheadings are listed below)	This section gives a brief description of relevant measurements to display, including thresholds such as concentration limits. This section will also include real-time interactive maps with current conditions.	Discussion and references about what is being done to address the issue--projects, research, monitoring, and reports.
Sub-watershed current conditions dashboard	Aggregate data picture of current conditions (key WQ parameters: DO, Turbidity, Discharge, Temperature, EC) by sub-watershed. Background and metadata for each parameter.	N/A	Provide metadata for each measured parameter; include current monitoring objective and criteria where applicable	Link to any restoration, reports, guidelines, basin plans etc so that user may
Sub-watershed projects and documents	Filter and display all projects, images, documents, and maps by sub-watershed		Display metadata for each mapped asset so users can follow links to more information.	
Datastory example: Battle Creek	Key Issues: Sediment Transport Turbidity Flood Events Salmon and Steelhead Rearing and Spawning Habitat Fire Safe Restoration	General overview of the Shasta area, highlight key issues and management activities	Display key data for this region	Add references to (1) recent, ongoing and planned restoration projects; (2) contact information for local regulators, stakeholder groups and managers
Datastory example: Shasta	Key Issues: Cold Water releases for salmonid species Salmon life stages and water needs Reservoir Water Quality Concerns and monitoring Scheduled Releases Inflow and Outflow Recreational Activities Releases for temperature compliance on the Sacramento River Snowpack (SWE) and snow melt Lake Elevation	General overview of the Battle Creek area, highlight key issues and management activities	Display key data for this region	Add references to (1) recent, ongoing and planned restoration projects; (2) contact information for local regulators, stakeholder groups and managers
Datastory example: Mines	Key Issues: What are the remediation strategies? Possible sources of contaminants Distance to rivers/streams/lakes	General overview of abandoned mine issue and their impacts on water quality	Display key mine data	Add references to (1) recent, ongoing and planned restoration projects; (2) contact information for local regulators, stakeholder groups and managers
Discharge (How, why, and where is discharge/flow managed in the Sacramento River Watershed?)	Many people/animals depend on river flows. Salmonid species need sufficient flows for migrating as adults and juveniles, and for spawning/rearing habitat. Discharges are also important for recreation, flood control, waterfowl habitat, urban potable water use, and agricultural use.	Possible subheader: Discharge at the Headwaters Discharge and Fish Discharge and Dissolved Oxygen Discharge and Recreation Discharge and Diversion	Discharge is monitored and recorded in real-time, or near real-time, at 130 stations in the Sacramento River watershed. Discharge is typically recorded in cfs. Current Conditions	Maintaining specific discharge values are necessary for environmental, recreational and urban/agricultural uses. There are standards set in place, such as; beneficial use, environmental flow requirements, and limits to diversion.
Water Temperature (Does water temperature in the Sacramento River Watershed help support migration of salmonid species?)	Water temperature is a key component of salmon spawning success and juvenile salmon survival. In drought conditions it is important to monitor temperature and schedule reservoir releases to maintain cool temperatures needed for salmon survival.	Salmon Facts: would include some basic salmon facts, and would link to a more detailed salmon information page. Sacramento River Temperature Compliance: monitoring locations, temperature goals, reservoir releases, and BiOps	Water temperature is monitored at 40 stations in the Sacramento River Watershed. There are several Sacramento River Temperature Compliance stations mandated as part of the NMFS Biological Opinion (BiOps). Reservoir releases are carefully planned and timed to conserve cold water resources. Current Conditions	EPA Guidelines for water temperatures needed by salmon, beneficial uses, Sacramento River Temperature Compliance locations (BiOps), Shasta reservoir releases for cold temperatures.
Mercury (Why is Mercury a concern in the Sacramento River Watershed?)	Mercury occurs naturally in these river ecosystems; through human activities the amount of mercury in the Sacramento River Watershed has surpasses natural levels. A major source of additional mercury in this system comes from historic mining practices. Mercury is now present in high levels in fish and various Waterbodies throughout the region. High Mercury levels in fish has led to fish consumption warnings throughout the watershed. It important to be aware of mercury in water and fish and to know the sources.	Natural Mercury Levels: Mercury is a naturally occurring metal in the environment. Sources of Mercury, bio magnification of mercury, mine remediation projects.	CEDEN mercury data (discrete data sets), SWIM Mercury data (GIS files),USGS EMMMA(mercury in fish tissue, mercury point source pollution, mercury GIS files)	Delta Tributaries Mercury Council (DTMC), beneficial uses, Statewide Mercury Control Program for Reservoirs (Water Boards), mercury mine and mine tailings remediation, mercury risk to wildlife in California Lakes

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Safe to Swim (Is it Safe to Swim in the Sacramento River Watershed?)	The Sacramento River Watershed attracts many tourists for recreational activities; swimming, watersports, and fishing. It is important to know about any swimming concerns and what water bodies are affected. Exposure to bacteria and pathogens while participating in water related activities can cause illness. There are naturally occurring bacteria in these systems; the concern arises when those levels are heightened and are linked to harmful bacteria such as E.Coli and coliform.	What is E. Coli? What is Coliform? (each sub heading will include basic information about sources, safe levels, and a basic description of the bacteria)	E.Coli and Coliform are measured through discrete water samples. E.Coli and coliform data can be found on CEDEN.	SWAMP, Safe to Swim Portal, Citizen Monitoring Groups
Reservoir Status (What is the Status of Reservoirs in the Sacramento River watershed?)	The Sacramento River Watershed and its headwater have many reservoirs that store water for use during drought and to prevent flooding during large storms. It is important to monitor reservoir inflows and storage levels. Reservoir outflows are strategically managed (timing and amount) to ensure optimal use for agriculture, and the environment.	A small section for each of the major reservoirs in the Watershed: Shasta, Oroville, Folsom, and Keswick. These sections would include photos, location information, and a brief description of the reservoir.	For each reservoir; inflows and outflows (scheduled and current), reservoir % of capacity, reservoir elevation, and current storage. Current Conditions	Shasta Lake temperature monitoring for cold water releases during spawning on the Sacramento River.
Nutrients	Nutrients in rivers serve the same basic function as nutrients in a garden. They are essential for growth. In a garden growth and productivity are considered beneficial, but this is not necessarily so in a river. The additional algae and other plant growth allowed by the nutrients may be beneficial up to a point, but may easily become a nuisance.	Are nutrients a problem in the Sac River Watershed?	Nitrogen can be measured as total nitrogen (TN) or in chemicals such as ammonia, nitrate and nitrite. Total Kjeldahl Nitrogen (TKN) represents the nitrogen fraction of TN bound up in organic form plus ammonia. The remaining inorganic fractions plus ammonia represent the bioavailable forms of nitrogen. U.S. Environmental Protection Agency (USEPA) nutrients criteria include: - Maximum nitrate in drinking water of 10 milligrams per liter as nitrogen (mg/L as N) (USEPA, 2013). - Maximum ammonia concentrations in surface water on the basis of chronic and acute exposure of aquatic organisms to un-ionized ammonia. These criteria vary with pH, temperature and whether sensitive freshwater mussels or early life stages of sensitive fish species are present (www.epa.gov/wqc/aquatic-life-criteria-ammonia).	Review all watershed efforts to control nutrients
Fire	How many fires occur each year in a particular area in an indicator of the state of the landscape regarding health of plant communities. Disease pressure, drought, no-burn management practices and timber harvesting can directly impact the health of the landscape.	What is the target or desired condition?	Use data accessible per sub-region to give an overview of current conditions and priorities	