

## **Workshop Agenda**

### **Technical Assessment and Process for 303(d) Water Temperature Listing and Delisting Requirements in the North Coastal Landscape**

**8:00-9:00 am Registration**

**9:00-9:20 am Opening Remarks**

**9:20-10:30 am Listing/Delisting Process**

State Water Board, Regional Board and US EPA staff will present the process to comply with the listing requirements including data gathering, public participation and data quality assessment process.

**10:30-10:45 am Break**

**10:45 am - 12:15 pm Applying the Listing/Delisting Process on the North Coast**

Regional Water Board staff will discuss data collection considerations and analytical approaches used to evaluate stream temperature data and other information in the context of the Basin Plan's water quality objective for temperature. Biological temperature thresholds and their application to water quality standards will also be discussed.

**12:15-1:15 pm Lunch**

**1:15-2:15 pm Application of the Thermal Potential Approach**

The concept of thermal potential will be presented in its application to the narrative temperature objective with an example of model development for the South Fork Ten Mile River.

**2:15-2:30 pm Break**

**2:30-3:50 pm Question and Answer Session with a Panel**

This is an opportunity for interactive discussions on the analytical tools, data collection, temporal and spatial considerations, and the current listing/delisting process.

**3:50-4:00 pm Wrap Up and Public Comments**

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## Selected Definitions on Water Temperature

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303(d) List	A list of waterbodies that do not meet water quality standards and are not supporting beneficial uses. The list is compiled every two years per Section 303(d) of the Clean Water Act and 40 CFR §130.7. The list identifies the pollutant or stressor causing impairment and placement on the list triggers development of a total maximum daily load (TMDL).
303(d) List Policy	The Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List was adopted in September 2004 and describes the process by which the State Water Board and Regional Water Boards will comply with the listing requirements of Section 303(d) of the Clean Water Act. The Policy can be found at: <a href="http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/ffed_303d_listingpolicy093004.pdf">http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/ffed_303d_listingpolicy093004.pdf</a>
305(b) Report	A surface water quality assessment report that is performed every two years according to Section 305(b) of the Clean Water Act.
Adjusted Potential Effective Shade	The percentage of direct beam solar radiation attenuated and scattered before reaching the stream surface by the potential vegetation conditions, reduced by 10% to account for natural disturbances such as fire, windthrow, disease, and earth movements that reduce the actual riparian vegetation below the site potential.
Anadromous	Refers to aquatic species that migrate up rivers from the sea to breed in fresh water, undergoing a physiological change to allow them to adjust from freshwater to saltwater and back to freshwater conditions.
Basin Plan	Formally known as the Water Quality Control Plan, the Basin Plan contains the list of beneficial uses by waterbody, water quality objectives to protect those uses and prevent nuisance, and programs of implementation.
Beneficial Use	Use of waters of the state designated in the Basin Plan as being beneficial. Beneficial uses that must be protected against quality degradation include, but are not limited to: domestic, municipal, agricultural, and industrial water supply; power generation; recreation; aesthetic enjoyment; navigation; and the preservation and enhancement of fish, wildlife and other aquatic resources or preserves.
Biological Temperature Threshold	A temperature, or range of temperatures, at which a change in physiological response occurs.
Canopy	The more or less continuous cover of branches and foliage formed collectively by the crowns of adjacent trees and other woody species.
Compliance and Trend Monitoring	Monitoring intended to determine, on a watershed scale, if water quality standards are being met, and to track progress towards meeting water quality standards.
Effective Shade	The percentage of direct beam solar radiation attenuated and scattered from topographic and vegetation conditions before reaching the ground or stream surface.
Groundwater Accretion	The gradual increase in surface flow in a stream resulting from the influx of groundwater.
Integrated Report	A combined 303(d) List and 305(b) Report starting this listing cycle with the 2008 Integrated Water Quality Report.
MWAT	The maximum value of the 7-day running average of daily averages in a season.
MWMT	The maximum value of the 7-day running average of daily maximums in a season.

Natural Receiving Water Temperatures	The water temperatures that result when the environmental factors that influence stream temperature have not been altered by human activities.
Potential Vegetation Conditions	The most advanced seral stage vegetation naturally developed at a site in the absence of human interference. Seral stages are the series of plant communities that develop during ecological succession from bare ground to the climax community (e.g., fully mature, old-growth).
Reach	Limited stretch of a stream considered for a specific purpose. Often delineated by stream gradient, valley form, channel type, or some other physical characteristic.
Refugia	Habitat areas that allow refuge from poor habitat conditions.
Solar Pathfinder	An instrument used to measure the distribution of effective shade at a site throughout the year.
Stream order	The designation (1,2,3, etc.) of the relative position of stream segments in the drainage basin network. For example, a first order stream is the smallest, unbranched, perennial tributary which terminates at the upper point. A second order stream is formed when two first order streams join. A third order stream is designated where two 2 <sup>nd</sup> - order streams join, etc.
Thermal Potential	Thermal Potential: the water temperature regime in a watershed or stream segment in the absence of anthropogenic influence (i.e., the natural range and pattern of water temperatures experienced by a waterbody in an unaltered watershed).
Thermal Refugia	Colder areas within a water body that provide species with cold water refuge from unsuitably warm water.
Total Maximum Daily Load (TMDL)	A pollution control plan required by Section 303(d) of the Clean Water Act designed to restore the health of an impaired waterbody. The TMDL process provides a quantitative assessment of water quality problems, contributing sources of pollution, and the pollutant load reductions or control actions needed to restore and protect the beneficial uses of an individual waterbody impaired from loading of a particular pollutant.
Watercourse	Any well-defined channel having a distinguishable bed and bank and showing evidence of having contained flowing water as indicated by deposit of rock, sand, gravel, or soil.
Waters of the State	All ground and surface waters, including saline waters, within the boundaries of the state.
Watershed	Total land area draining to any point in a watercourse, as measured on a map, aerial photo, or other horizontal plane. Also called a basin, drainage area, or catchment area.
Water Quality Indicator/Target	Factor or condition that determines or expresses the quality of water in terms of the instream or watershed environment. For each pollutant or stressor addressed in a TMDL problem statement, an indicator and target value of that indicator is developed.
Water Quality Objectives	A State Basin Plan term equivalent to the Clean Water Act's water quality criteria. Water quality objectives are limits or levels of water quality constituents or characteristics established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area. Water quality objectives are found in Chapter 3 of the Basin Plan.
Water Quality Standard	A Clean Water Act term which includes the designated beneficial uses of a waterbody, the water quality objectives established to protect the designated uses, and an anti-degradation policy.

Speaker Biographies  
Stream Temperature Workshop  
June 26, 2008

Douglas Allen

Douglas Allen has over 20-years of experience in the earth environmental sciences. He recently earned his doctorate in the Department of Earth and Planetary Science at UC Berkeley. His graduate research focused on developing and applying a process-based, spatially explicit, stream temperature model.

Shakoora Azimi-Gaylon:

Shakoora has worked in water quality throughout her environmental career. She has an MS in Environmental Science and BS in Chemistry. Shakoora has 15 years of experience that includes as a research chemist and environmental scientist. She has experience in developing TMDLs, drinking water and wastewater water quality, quality assurance programs, database management, and environmental sample collection.

Her work experience includes private environmental consulting firms, the Central Valley Regional Water Quality Control Board, and the State Water Board. She is currently the Chief of Water Quality Assessment Unit in the Division of Water Quality of the State Water Board.

Ethan Bell

Ethan Bell is an aquatic ecologist and project manager at Stillwater Sciences. He received his bachelor's degree in biological sciences at the University of California at Santa Barbara, and his master's degree in fisheries at Humboldt State University, where he focused on aquatic ecology. He has worked on a variety of research projects focusing on juvenile salmonids, and their survival and growth in relation to habitat and water quality. His current work includes technical studies for assessing the impacts of hydroelectric dams, alterations to instream flows, water temperature and suspended sediment on native fish in the Pacific Northwest.

## Bruce Orr

Bruce Orr is a senior ecologist and co-founder of Stillwater Sciences. He received his bachelor's degree in biological sciences and environmental studies at the University of California at Santa Barbara and his doctorate at UC Berkeley, where he focused on stream and wetland ecology. He has worked on a wide variety of natural resource assessment and ecosystem management projects in California and the Pacific Northwest, including technical studies for temperature and sediment TMDLs, multispecies habitat conservation plans, forestry sustained yield plans, river corridor restoration plans, and hydroelectric relicensing projects. His current research interests include riparian vegetation dynamics and the effects of flow alterations on aquatic and riparian communities.

## Rebecca Fitzgerald

Rebecca Fitzgerald is an Environmental Scientist with the North Coast Regional Water Quality Control Board in the TMDL Unit, where she works as lead staff for the 2008 303(d) and 305(b) Integrated Report and as SWAMP co-coordinator. She has been with the Water Board for nine years working on basin planning issues, sediment TMDL implementation planning, TMDL development, groundwater cleanup, and other projects. She received her BA in Environmental Studies from Sonoma State University.

## Peter Kozelka

EPA Region 9 TMDL program for past eight years and Coordinator since 2006. Reviews and prepares Section 303(d) list approvals for Region 9 and performed this task for the CA 2006 list. Ph.D in Chemistry, UC-Santa Cruz.

## Bryan McFadin

Bryan McFadin is a Water Resource Control Engineer with the North Coast Regional Water Quality Control Board. Bryan has been developing and implementing temperature and sediment TMDLs on the north coast for the past nine years. Bryan received his BS in environmental resources engineering from Humboldt State University, where he focused on hydrology, groundwater modeling, and watershed processes. Bryan is a licensed civil engineer. Bryan's previous work experience includes modeling salinity distributions in the Sacramento – San Joaquin delta for the Department of Water Resources, and studies of road-stream interactions for the US Forest Service. Bryan is a native of the north coast. Most of his juvenile rearing occurred in the Middle Fork Eel River watershed.