Draft Biological Integrity Assessment Implementation Plan

Stakeholder Advisory Group Meeting

July 1, 2014

Overview

* Current Status
* Implementation Plan Outline
* Schedule

Current Status

* Developing implementation plan, not objectives (option 3)
* Revised policy goals
* Developed outline for the plan
* Relying on subcommittee of the stakeholder group and Regulatory Advisory Group for advice on details

Plan Outline

* Preamble
* Purpose and Scope
* Definitions
* Applicability
* Biological Assessment Methods and Data Interpretation
* Uses of Biological Assessments in Water Quality Control Programs
* Roles of the State Water Board, Regional Water Boards, and California Department of Fish and Wildlife

Preamble

* Why is this plan necessary?
  * Healthy streams are essential for the State's vitality.
  * Bioassessments provide a direct measure of aquatic community health.
  * Streams are degraded.
  * As development spreads due to population rise, we need to protect healthy streams from degradation.

Purpose and Scope

* Policy goals
* Degree of discretion afforded the Regional Boards in implementing the plan

Policy Goals

* Establish consistent, statewide methods for conducting biological assessments and interpreting biological data as indicators of biological integrity in California's surface waters.
* Identify streams or stream reaches in which biological condition is similar to that in appropriate reference sites and prevent degradation inasmuch as it is within the State's authority to do so.
* Identify streams or stream reaches in which biological condition is significantly different from appropriate reference condition and use this information to determine whether additional information is needed and to prioritize actions necessary to improve biological condition as appropriate.

Definitions

* **"Index Period"** is used to standardize sampling during the most stable flow periods of the year to minimize variation in the biological communities being sampled. Index periods are based on Omernik Level III Ecoregions developed by US EPA.
* **"Sample-able Stream"** is one that has surface water flow present during the appropriate index period and can be crossed safely by wading in order to be sampled for benthic invertebrates.
* **"Reference Site"** is one determined to be minimally disturbed by anthropogenic stresses.
* **"Reference Condition"** represents the expected stream condition for sites with similar natural characteristics (i.e., elevation, geology, precipitation, temperature, gradient, etc.). Data from reference sites are used to characterize the range of biological conditions expected to occur.
* **"Biological Condition"** is defined by the score derived from a data interpretation model that meets the specifications in the Data Interpretation section below.
* **"Minimally Disturbed"** is defined as a site that has stressor variables that do not exceed the criteria in Table 1.

Table 1. Stressor Criteria for Selecting Reference Sites

Stressor Variable	Scale*	Criteria
% Agriculture	1k, 5k, Watershed	3%
% Urban	Watershed	3%
% Agriculture + % Urban	1k, 5k	5%
% Developed Open Space	1k, 5k	7%
	Watershed	10%
Road Density	Watershed	2 km/km^2
Road Crossings	1k	5 crossings
	5k	10 crossings
	Watershed	50 crossings
Dam Distance	Watershed	10 km
% Canals and Pipelines	Watershed	10%
Instream Gravel Mines	5k	0.1 mines/km
Producer Mines	5k	0 mines
W_HALL (when available)	Site	1.5

Applicability

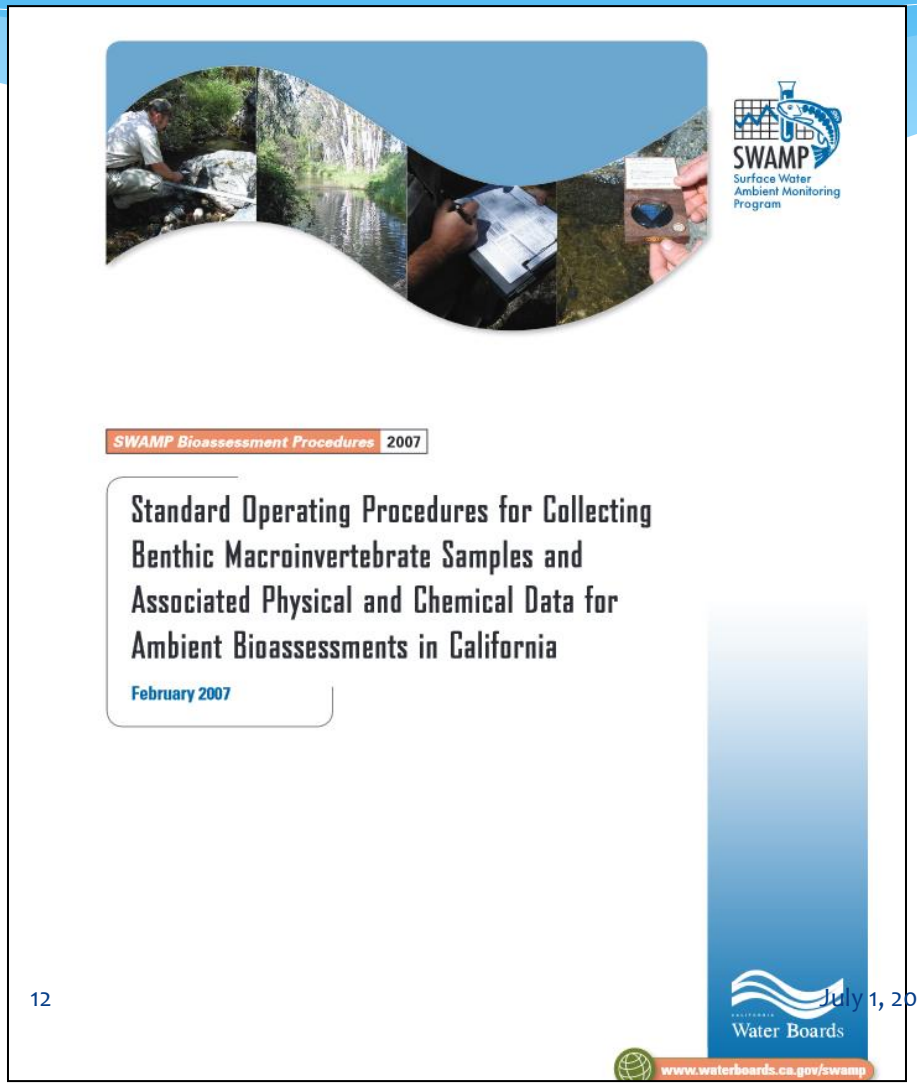
* Streams that flow during the index period
* Streams that flow due to wastewater or urban runoff discharges
* Does not include ephemeral streams

Biological Assessment Methods and Data Interpretation

* Biological Assessment Methods
* Data Interpretation
* Establishing Biological Condition (spatial & temporal)
* Causal Assessment

Biological Assessment Methods

* SOP for Collecting BMI Samples and Physical Habitat Measures
* SOP for Lab Processing and Identification of BMIs
* Taxonomic Conventions for Identifying BMI (SAFIT Level 1)



Data Interpretation/Model Specifications

* The model is consistently applicable to sample-able streams statewide.
* The model is based on a set of at least 450 reference sites that meet the definition of minimally disturbed and represent the range of natural characteristics of streams in California. Reference sites must meet at least the criteria for defining a site as minimally disturbed shown in Table 1.
* The model calculates a score from raw taxa count data using an index based on the taxa expected to be present at the site. The taxa expected to be present at a site is based on a comparison to reference sites that are most environmentally similar to the site in terms of elevation, precipitation, temperature, geology, and watershed area, at a minimum.
* The model's measures of accuracy, bias, precision, and representativeness are documented.
* The model is published in a scientifically peer reviewed journal.

Biological Community Condition Spatial Extent

* A biological condition score at a site represents biological community condition of the stream segment between tributary inputs or significant changes in land use or hydrology, flow diversions, and stressor inputs.
* At a minimum the biological condition score represents biological condition in the sampled reach of no less than 150 meters.

Establishing Current Biological Condition

* The average biological condition score of a minimum of 3 samples shall be calculated to determine current biological condition.
* Samples may be collected within one year's index period or over multiple years.
* Table 2 indicates the number of samples needed to determine whether a change in biological condition scores has changed.

Table 2. Number of Samples Needed to Detect Change in Score

Change in Biological Condition Score	Samples Needed to Detect Change
0.1	16
0.15	8
0.2	5
0.25	4

Causal Assessment

* Refer to causal assessment case studies and guidance document.
* Identify criteria for prioritizing where further investigation or causal assessments are needed.
  * Potential for restoration
  * Adequate data on biological community condition
  * Adequate comparator sites
  * Adequate data on potential stressors

Use of Biological Assessments in Water Quality Control Programs

* Assess current biological community condition.
* Assess trends in biological community condition.
* Measure the effectiveness of management plan implementation
* Evaluate whether additional investigation is necessary to determine the cause of a change in biological community condition or a low biological condition score relative to other similar sites.
* Evaluate whether additional management actions are needed to improve biological community condition.
* In streams where biological community condition is statistically similar to reference condition, Regional Boards may require biological assessment as a screening tool in lieu of other monitoring requirements.
* Prioritize drainage and sub-drainage areas that need management actions.

Roles of the Water Boards and Other Agencies

* The State Water Board establishes policy for water quality control, consisting of principles and guidelines for long-range water resource planning.
* The Regional Water Boards are required to formulate and adopt water quality control plans for surface and groundwater within their regions. Such plans shall conform to policies adopted by the State Water Board. The Regional Water Boards protect water resources with the issuance of permits that implement CDFW recommendations, this Policy, and applicable law.
* CDFW is charged with the maintenance of sufficient populations of all species of aquatic organisms to insure their continued existence (Fish and Game Code Section 1700). CDFW, as with all State departments, in carrying out activities which affect water quality, are required to comply with water quality control policies adopted by the State Water Board, unless otherwise directed by statute. (Wat. Code § 13146).

Schedule

* See Word document.