

ATTACHMENT B

Table 8.1 Status Monitoring Elements

Status Monitoring Parameter	Sampling and/or Analytical Method ¹	Minimum Sampling Occurrence ²	Duration of Sampling	Minimum # Sample Sites to Monitor/ Yr ³	Result(s) that Trigger a Monitoring Project in Provision C.8.d.i.
Biological Assessment ⁴ (Includes Physical Habitat Assessment and General Water Quality Parameters ⁵) Nutrients (total phosphorus, dissolved orthophosphate, (continued) total nitrogen, nitrate, ammonia, silica, chloride, dissolved organic carbon, suspended sediment concentration)	SWAMP Std Operating Procedure ^{6,7,8} for Biological Assessments & PHab; SWAMP comparable methods for Nutrients	1/yr Once (Spring Sampling)	Grab sample	Spring 20/10/4 Spring 5	BMI metrics that indicate substantially degraded community as per Attachment C, Table C-1 For Nutrients: 20% of results in one waterbody exceed one

¹ Refers to field protocol, instrumentation and/or laboratory protocol.

² Refers to the number of sampling events at a specific site in a given year during the permit term.

³ ~~The number of sampling sites shown is based on the relative population in each Regional Stormwater Countywide Program and is listed in this order: Santa Clara & Alameda Countywide / Contra Costa & San Mateo Countywide / Vallejo & Fairfield Suisun Programs.~~

⁴ The same general location must be used to collect benthic community, sediment chemistry, and sediment toxicity samples. General Water Quality Parameters need not be collected twice, where it is collected by a multi-parameter probe at a subset of these sample sites (see next row of Table 8.1).

⁵ Includes dissolved oxygen, temperature, conductivity, and pH.

⁶ Ode, P.R. 2007. Standard Operating Procedures for Collecting Benthic Macroinvertebrate Samples and Associated Physical and Chemical Data for Ambient Bioassessments in California, California State Water Resources Control Board Surface Water Ambient Monitoring Program (SWAMP), as subsequently revised (http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/phab_sopr6.pdf). Permittees may coordinate with Water Board staff to modify their sampling procedures if these referenced procedures change during the Permit term.

⁷ Biological assessments shall include benthic macroinvertebrates and algae. Bioassessment sampling method shall be multihabitat reach-wide. Macroinvertebrates shall be identified according to the Standard Taxonomic Effort Level I of the Southwestern Association of Freshwater Invertebrate Taxonomists, using the most current SWAMP approved method. Current methods are documented in (1) SWAMP Standard Operating Procedure (SOP) and Interim Guidance on Quality Assurance for SWAMP Bioassessments, Memorandum to SWAMP Roundtable from Beverly H. van Buuren and Peter R. Ode, 5-21-07, and (2) Amendment to SWAMP Interim Guidance on Quality Assurance for SWAMP Bioassessments, Memorandum to SWAMP Roundtable from Beverly H. van Buuren and Peter R. Ode, 9-17-08. For algae, include mass (ash-free dry weight), chlorophyll a, diatom and soft algae taxonomy, and reachwide algal percent cover. Physical Habitat (PHab) Assessment shall include the SWAMP basic method plus 1) depth and pebble count + CPOM, 2) cobble embeddedness, 3) discharge measurements, and 4) in-stream habitat. Permittees may coordinate with Water Board staff to modify these sampling procedures if SWAMP procedures change during the Permit term.

⁸ Algae shall be collected in a consistent timeframe as Regional SWAMP. For guidance on algae sampling and evaluation: Fetscher, A. and K. McLaughlin, May 16, 2008. Incorporating Bioassessment Using Freshwater Algae into California's Surface Water Ambient Monitoring Program (SWAMP). Technical Report 563 and current SWAMP-approved updates to Standard Operating Procedures therein. Available at http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/reports/563_periphyton_bioassessment.pdf.

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					or more water quality standard or established threshold
General Water Quality ⁹	Multi-Parameter Probe	Twice 2/yr (Concurrent with bioassessment & during the Aug. - Sept. timeframe)	15-minute intervals for 1-2 weeks	3/2/1	20% of results in one waterbody exceed one or more water quality standard or established threshold
Chlorine (Free and Total)	USEPA Std. Method 4500 Cl F ¹⁰	Twice 2/yr (Spring & Dry Seasons)	Grab sample	Spring 20/10/25 Dry 3/2/1	After immediate resampling, concentrations remain > 0.08 mg/L
Temperature	Digital Temperature Logger	60-minute intervals <u>Once</u>	60-minute intervals April through Sept.	8/4/1	20% of results in one waterbody exceed applicable temperature threshold ¹¹
Toxicity – Water Column ¹²	Applicable SWAMP Comparable Method	2/yr (1/Dry)	Grab or composite	3/2/1	If toxicity results < 50% of control results, repeat

⁹ Includes dissolved oxygen, temperature, conductivity, pH.

¹⁰ The method of analysis shall achieve a method detection limit at least as low as that achieved by the Amperometric Titration Method (4500-Cl from *Standard Methods for Examination of Water and Wastewater*, Edition 20).

¹¹ If temperatures exceed applicable threshold (e.g., Maximum Weekly Average Temperature, Sullivan K., Martin, D.J., Cardwell, R.D., Toll, J.E., Duke, S. 2000. *An Analysis of the Effects of Temperature on Salmonids of the Pacific Northwest with Implications for Selecting Temperature Criteria, Sustainable Ecosystem Institute*) or spike with no obvious natural explanation observed.

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		Season & 1 Storm Event)	sample		sample. If 2nd sample yields < 50% of control results, proceed to C.8.d.i.
Toxicity– Bedded Sediment, Fine-grained ¹³	Applicable SWAMP Comparable Method	1/yr Once	Grab sample	3/2/12 At fine-grained depositional area at bottom of watershed	See Attachment C, Table C-1
Pollutants – Bedded Sediment, ¹⁴ fine-grained	Applicable SWAMP Comparable Method inc. grain size	1/yr Once	Grab sample	3/2/12 At fine-grained depositional area at bottom of watershed	See Attachment C, Table C-1
Pathogen Indicators ¹⁵	U.S. EPA protocol ¹⁶	1/yr Once (During	Grab sample Fol	5/5/* *Fairfield	Exceedance of USEPA criteria

¹² US EPA three species toxicity tests: *Selenastrum* growth and *Ceriodaphnia* and *Pimephales* with lethal and sublethal endpoints. Also *Hyaella azteca* with lethal endpoint.

¹³ Bedded sediments should be fine-grain from depositional areas. Grain size and TOC must be reported. Coordinate with TMDL Provision requirements as applicable.

¹⁴ Bedded sediments should be fine-grain from depositional areas. Grain size and TOC must be reported. Analytes shall include all of those reported in MacDonald et al. 2000 (including copper, nickel, mercury, PCBs, DDT, chlordane, dieldrin) as well as pyrethroids (see Table 8.4 for list of pyrethroids). Coordinate with TMDL Provision requirements as applicable. MacDonald, D.D., G.G. Ingersoll, and T.A. Berger. 2000. Development and Evaluation of Consensus-based Sediment Quality Guidelines for Freshwater Ecosystems. *Archives of Environ. Contamination and Toxicology* 39(1):20–31.

¹⁵ Includes fecal coliform and *E. Coli*.

¹⁶ Rather than collecting samples over five separate days, Permittees may use Example #2, pg. 54, of USEPA’s *Implementation Guidance for Ambient Water Quality Criteria for Bacteria*, March 2004 Final.

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		Summer)	low U.S. EPA protocol	Suisun & Vallejo Permittees: 3 sites twice in permit term ₂	
Stream Survey (stream walk & mapping) ¹⁷	USA ¹⁸ or equivalent	+ waterbody/y once every five years Once	N/A	39/6/3 stream miles/year	N/A

¹⁷ The Stream Surveys need not be repeated on a watershed if a Stream Survey was completed on that waterbody within the previous five years. The number of stream miles to be surveyed in any given year may be less than that shown in Table 8-1 in order to avoid repeating surveys at areas surveyed during the previous five years.

¹⁸ Center for Watershed Protection, Manual 10: *Unified Stream Assessment: A User's Manual*, February 2005.

