

State Water Resources Control Board
Monitoring and Reporting Program No. [REDACTED]
For
Waiver of Waste Discharge Requirements for
Nonpoint Source Discharges Related to
Certain Activities on National Forest System Lands in California

This Monitoring and Reporting Program (MRP) is issued pursuant to California Water Code section 13267(b) and is associated with Order [REDACTED], the Waiver of Waste Discharge Requirements for Nonpoint Source Discharges Related to Certain Activities on National Forest System Lands in California (hereinafter referred to as “the Order”). The reasons for requiring the U.S. Department of Agriculture, Forest Service (USFS) to provide this information, and the evidence supporting this need, can be found in the Order.

Under the authority of the California Water Code section 13267(b), the USFS above is required to comply with the following:

Monitoring and Reporting Requirements

The USFS Best Management Practices Evaluation Program (BMPEP) has satisfied some waiver monitoring elements. The updated USFS Water Quality Management Plan (WQMP), which has been formalized as Forest Service Handbook [REDACTED] directs USFS to conducting additional monitoring, including:

- focused administrative effectiveness monitoring for moderate risk activities, Category B (see section 1.A.1., below);
- road patrols after major storms (1.A.2b., below), and
- in-channel long-term monitoring (1.C., below).

For watersheds in which the in-channel long-term monitoring is not conducted, Category B projects will trigger:

- in-channel monitoring at the lowest end of the watershed (2.A. , below);
- non-random BMP effectiveness monitoring for the project (2.B. , below); and
- retrospective monitoring of a subsample of BMPs five years post-implementation (2.C. , below).

The WQMP monitoring program relies on existing well-documented monitoring methods. The following are the default methods:

- Monitoring for management activities will use BMPEP protocols (USFS 2001¹).
- In-channel monitoring will follow Stream Condition Inventory (SCI) protocols (USFS 2002²).

¹ USDA Forest Service, 2001. Investigating Water Quality in the Pacific Southwest Region, Best Management Practices Evaluation Program: A User’s Guide. USDA Forest Service, Pacific Southwest Region, Vallejo, CA.

² USDA Forest Service, 2002. Stream Condition Inventory Protocol. USDA Forest Service, Pacific Southwest Region, Vallejo, CA.

However, equivalent methods that are standardized and address the water temperature and sediment and channel form needs will be considered by staff of the State Water Resources Control Board (State Water Board) and Regional Water Quality Control Boards (Regional Water Boards; together Water Boards), and may be used upon concurrence by the Executive Director.

Certain details regarding criteria and methods for decisions about sample site location, numbers of sites, and sample pool selection for retrospective monitoring will be developed, in collaboration with Water Board staff, prior to initiation of the monitoring program. The USFS shall develop those details with Water Board staff collaboration prior to initiating monitoring, or by August, 2012 at the latest.

1. USFS-Wide Monitoring

This is the default monitoring, with sample site selection and monitoring for all USFS ownership in the State.

A. Monitoring of current management activities and corrective actions

1. Administrative Implementation Monitoring

All projects in Waiver Category B will have administrative implementation monitoring using a "checklist" approach. All on-the-ground prescriptions for the project will be included in the checklist so that the monitoring constitutes 100% implementation monitoring. This monitoring will be conducted by USFS project staff (timber, range, recreation, etc.) and will be coordinated and reviewed by the Forest Hydrologists. Administrative implementation monitoring will be the primary systematic means for early detection of potential water-quality problems, and will be completed early enough to allow corrective actions to be taken, if needed, prior to the onset of the first winter after project implementation.

2. Best Management Practice Evaluation Program (BMPEP) Monitoring

- a. The BMPEP, with random site selection, will continue to be the primary means of assessing the effectiveness of water-quality protection for current projects on USFS lands at the programmatic scale. Corrective actions will be taken in response to recommendations made the previous year to address water-quality protection, and these actions will be documented in annual BMPEP reports. Follow-up monitoring for sites that were not rated as fully implemented or effective the previous year will be conducted, and results will be presented in annual BMPEP reports.
- b. Retrospective hillslope monitoring of past management activities will be included in the BMPEP. Forests will develop sample pools for timber, engineering, and grazing projects completed in the past 5 years in the project watershed (6th field scale) that were rated as effective as part of

the random BMPEP monitoring. Projects will be selected randomly for retrospective BMPEP effectiveness evaluations. Retrospective monitoring results will be compared to original BMPEP effectiveness scores to determine if BMPs remained effective over a period of years.

- c. Each national forest will conduct road patrols to the extent allowed by weather, safety, and road conditions during and after major storms to detect and correct road drainage problems that could affect water quality.

B. Representative in-channel beneficial use monitoring

The purpose of in-channel monitoring of beneficial uses is to determine whether BMPs collectively are effective in protecting water quality at the watershed scale. Effectiveness will be assessed by monitoring trends in channel characteristics that affect beneficial uses and by comparing channel characteristics of streams downstream of intensively managed areas with those in pristine watersheds (the paired watershed approach).

Because USFS resources are limited, this type of monitoring will be restricted to a relatively small number of watersheds and sites. Therefore, monitoring sites will need to be carefully selected to represent large landscapes within the national forest system. Detecting downstream channel changes related to upstream activities is problematic (MacDonald and Coe 2006³), so monitoring sites will be located on smaller headwaters stream watersheds. Paired monitoring sites (intensively managed and pristine) will be selected to have similar valley segment and stream reach characteristics (Bisson et al 2006⁴).

1. Fixed long-term locations for SCI surveys will be selected by the USFS Forest Hydrologists and Regional Office in cooperation with staff of affected Regional Water Boards to represent areas of similar landform, geology, climate, and vegetation.
2. SCI sites will be:
 - a. Selected to minimize variability in channel type; and
 - b. Stratified based on watershed condition class (I, II, III), with approximately one-third of the selected watersheds in each condition class.
3. SCI surveys will be made near the mouth of each selected headwater stream watershed at least once every 5 years and as soon as possible following major (RI>10 year) floods. Roughly 20% of the watersheds will be surveyed each year, on average.
4. If SCI results indicate adverse impacts to channels from management activities in watersheds in condition class II or III, restoration plans will be developed and implemented. Adverse impacts will be inferred by comparison with SCI results for watersheds in condition class I.

³ MacDonald, L.H., and Coe, D., 2006. Influence of headwater streams on downstream reaches in forested areas. USDA, Forest Science, 53(2): 148-168.

⁴ Bisson, P.A., Buffington, J.M., and Montgomery, D.R., 2006. Valley segments, stream reaches, and channel units: Chapter 2, in Methods in Stream Ecology, Elsevier Publishing: 23-49.

5. Non-random “nested” BMPEP evaluations for all current management activities will be conducted within the selected watersheds. Implementation and effectiveness results will be compared to SCI results.
6. SCI water-temperature monitoring will be conducted in watersheds that are 303(d) listed for water temperature for at least one full snow-free season. In addition, effective shade will be monitored using Solar Pathfinders.
7. Sites will be removed from or added to the sample pool as needed by agreement with the USFS Regional Office, each national forest, and staff of the affected Regional Board.

2. Project-triggered Monitoring

For projects in watersheds at the 6th field scale (as defined in NRCS 2007⁵) that lack the In-channel Beneficial Use Monitoring (Item 1.B., above), the following monitoring will apply:

A. In-channel Beneficial Use Monitoring

In watersheds at or above Thresholds of Concern for cumulative watershed effects (as determined pursuant to R-5 FSH 2509.22, Soil and Water Conservation Handbook Amendment No. 1, 1988), conduct this monitoring per Item 2, above, at a sampling site selected at or near the lowest end of the project watershed (6th field scale). Another watershed scale may be proposed as appropriate and must be jointly agreed upon by the USFS and the Executive Officer of the affected Regional Water Board.

B. Non-random BMP Effectiveness Monitoring

Conduct BMP effectiveness monitoring of all BMPs associated with roads, stream crossings, grazing, and activities in riparian reserves in the project area per the Best Management Practice Evaluation Program (USFS 2001) protocols.

3. Rangeland Monitoring

The current rangeland monitoring objectives were developed for the pilot project on the Stanislaus National Forest during summer and fall 2010. As the project progresses, long-term objectives will be developed based upon information gathered during the pilot project and from stakeholder input.

A. Initial Fecal Indicator Bacteria (FIB) Source Search Monitoring Program

Allotments will be selected to be representative of other allotments and grazing management in USFS Region 5 and to identify patterns and sources of FIB across the watersheds draining these allotments throughout the mid to late summer recreation and grazing season. Within each allotment, sample sites will be selected to isolate potential sources using an “above and below” monitoring strategy. Potential sources of fecal contamination within each watershed are

⁵ Natural Resource Conservation Service, 2007. Watersheds, Hydrologic Units, Hydrologic Unit Codes, Watershed Approach, and Rapid Watershed Assessments. June 2007: 2pp.
http://www.nrcs.usda.gov/programs/rwa/Watershed_HU_HUC_WatershedApproach_defined_6-18-07.pdf

identified (e.g., key livestock grazing areas, campgrounds and in-stream bathing/swimming pools. This will provide information about FIB levels above and below key grazing/livestock concentration areas, above and below human sources such as campgrounds, and at recreational sites frequented by forest users. A minimum of two sample events will occur, with a goal of three events. All sites are sampled on the same day.

Samples will be processed for fecal coliform, indicator E. coli, nitrogen (total, nitrate, ammonium), and phosphorus (total and soluble reactive phosphorus) via standard methods (<http://www.standardmethods.org/>), and following CA Surface Water Ambient Monitoring Program quality assurance project plan (QAPP) protocols from SWRCB approved QAPPs (SWRCB Agreements 04-121-555-0; 04-122-555-0; 04-122-555-0). Samples are held on ice upon collection and transported to the UC Davis Rangeland Watershed Laboratory for analysis. FIB is determined as quickly as possible following collection with a goal of hold time no longer than 8 hours (6 hours to lab, 2 hours in lab until processed). Nutrient analysis is conducted within 30 days, with samples remaining frozen until they are processed. At the time of sample collection, instantaneous stream discharge is measured, and water temperature is determined at every sample location.

B. Link Source Search Monitoring to Current Range Management and Planning

In all key grazing areas sampled in the FIB source search monitoring, indicators of annual livestock utilization (for example, herbage utilization, fecal loading rates) will be monitored and overall long-term ecological conditions and trends at key grazing areas throughout these watersheds will be evaluated, especially in meadows near streams, stream crossings, and livestock drinking points. Specific annual use metrics include: utilization of herbaceous biomass, residual herbaceous vegetation stubble height, stream bank disturbance, and incidence of browse on woody riparian plant species. Standard methods described in Technical Reference 1734-3 will be used to measure annual use metrics. In addition, livestock fecal loading rates will be determined in these grazing areas following Tate and others (2003).

These data will be used in interpreting FIB results above and below a key area and between key areas. Key grazing areas currently enrolled in the long-term meadow condition and trend monitoring effort will be selected as sample sites when possible, to allow comparison of meadow and riparian condition and trend data to FIB results.

C. Conduct Outreach with Local And Regional Stakeholders

This will be done to deliver the best available science on microbial water-quality risks and management options, to provide stakeholders formal and informal opportunities to engage in this project, and to report the specific findings under A and B above. Formal outreach activities, such as workshops and field days, will be conducted, as well as informal frequent communication with interested stakeholders. A workshop will be scheduled annually to report the results of data collection. In addition, USFS will present the participants with the latest scientific and management information about managing livestock to minimize risks of

microbial pollution on rangeland streams. As the project progresses, information and results will be posted at the California Rangeland Watershed Laboratory website, <http://rangelandwatersheds.ucdavis.edu>.

4. Reporting

Each national forest shall prepare an annual report summarizing and discussing the monitoring results of 1.A.1, 1.A.2.a., 1.B., and 2.A.-C., above. These reports shall be submitted to each affected Regional Water Board by March 15 each year following the monitoring. Regional Water Board staff will review the reports and provide comments to each originating forest, to the USFS Regional Hydrologist, and the Executive Director. The comments will be discussed with each forest, and any agreed to changes incorporated into the next year's monitoring.

5. Quality Assurance and Quality Control Project Plan (QAPP)

- a. Within one year or before any monitoring component is initiated, whichever comes first, the USFS shall develop a comprehensive QAPP for the monitoring and reporting activities to be implemented. The QAPP shall address all aspects of the monitoring program and shall contain, at a minimum, but not be limited to the following:
 - Standard procedures for the establishment of repeatable sampling locations;
 - Standard operating procedures for each field method and piece of equipment used;
 - Standard operating procedures for each laboratory method and piece of equipment used;
 - Standard reporting procedures;
 - Measures for quality assurance associated with monitoring and reporting procedures;
 - Measures for quality control associated with monitoring and reporting procedures;
 - A training program for personnel conducting monitoring activities; and,
 - Measures for adapting the QAPP, when necessary. The USFS may propose to use an existing QAPP for these measurements as long as it addresses the above list of elements.
- b. Following implementation of the approved QAPP, the USFS may propose changes to the procedures and control measures specified in the QAPP as necessary, and submit the changes to the Executive Director for approval. Following approval of changes to the QAPP, the USFS shall document such changes and implement the new procedures and control measures immediately.

6. Request for Extensions

Requests for extensions to required time lines specified within the above monitoring section shall be submitted, in writing, at least 10 working days prior to the due date. Requests for extension must provide a reason or reasons for the request. For those deadlines approved or accepted by a Regional Water Board Executive Officer, approval of any request for extension of a deadline is subject to the approval of the

Regional Water Board's Executive Officer. For those deadlines approved or accepted by a the Executive Director, approval of any request for extension of a deadline is subject to approval of the Executive Director. If written approval is not received, it should not be assumed that the due dates are extended indefinitely or have been approved. USFS shall be accountable for all due dates set out in this Plan in the absence of written approval from the appropriate Executive Officer and/or the Executive Director.

Ordered by: _____
Tom Howard
Executive Director
[REDACTED], 2011

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