

ATTACHMENT E

California Regional Water Quality Control Board San Francisco Bay Region

General Waste Discharge Requirements Order No. R2-2017-0033

MONITORING AND REPORTING REQUIREMENTS

This Monitoring and Reporting Program (MRP) is issued pursuant to Order No. R2-2017-0 (Order) and California Water Code (CWC) section 13267. The Discharger shall not implement any changes to this MRP unless, and until, a revised MRP is approved by the Executive Officer. To allow the Water Board to evaluate compliance with the terms and conditions of the Order, this MRP requires that monitoring, sampling, and record-keeping be conducted by Vineyard Property owners and operators (hereinafter, Dischargers). The Executive Officer may modify Attachment E, as necessary or appropriate. Public Notice of the modification of Attachment E would be provided, and revised requirements would be posted on the Water Board website.

This MRP requires that Tier 2 and Tier 3 Dischargers prepare an Annual Report of compliance (Table E-1), to be submitted to the Water Board by December 15 of each year. The Annual Report shall document: a) status of the Farm Plan (e.g., as applicable, completed, “verified”); b) property inspections; and c) progress toward attainment of applicable performance standards for discharge (e.g., miles of unpaved roads and percent length hydrologically connected). Per the time schedule and specifications, defined as follows herein, Tier 2 and Tier 3 Dischargers also are required to submit a Monitoring Plan and a Monitoring Results Report to evaluate Streambed Conditions and BMP effectiveness.

SUMMARY OF MONITORING AND REPORTING REQUIREMENTS:

Tier 1:

Verification Letter
BMP Implementation Monitoring

Tiers 2 and Tier 3*:

BMP Implementation Monitoring
Stream Monitoring
BMP Effectiveness Monitoring
Annual Compliance Report
Monitoring Plan (per BMP Effectiveness and Streambed Monitoring)
Monitoring Results Report (per BMP Effectiveness and Streambed Monitoring)

*Tier 3 Dischargers must submit their Farm Plan to the Water Board for review/approval.

MONITORING AND REPORTING BASED ON TIERS

Three tiers for enrollment are defined under this Order and the MRP that are related to the relative level of threat to water quality presented by pollutant discharges at an individual Vineyard Property. Tier 1 sites are expected to present the lowest level of threat, Tier 2 an intermediate level, and Tier 3 the highest potential threat. Required monitoring and reporting, as related to enrollment tier, is as presented below.

A. Tier 1 (Stewardship Tier): Water Quality Monitoring and Reporting Requirements

Tier 1 Dischargers are required to submit a Verification Letter and to conduct BMP Implementation Monitoring, as specified immediately below. Attachment A specifies requirements for enrollment in Tier 1 (Stewardship Tier). In summary, these include having fully implemented a “verified” Farm Plan to meet all applicable performance standards (which are as specified in Attachment A).

1. Verification Letter (Confirming Attainment of Performance Standards)

At the time of enrollment in Tier 1, the permittee shall submit a letter signed by a representative of an approved Third-Party Program confirming that: a) the Farm Plan has been “verified” and has been fully implemented; and b) as applicable, that the performance standard for Stream and Riparian Habitats has been attained (as defined in Attachment A). Once every five years thereafter, a verification letter must be submitted to the Water Board verifying that the farm plan remains fully implemented in order for the permittee to retain their Tier 1 status.

2. BMP Implementation Monitoring

Photo-points provide a qualitative indication of BMP performance and habitat and water quality conditions in receiving waters. Photo-points shall be established and monitored each year to document winter readiness, demonstrate annual maintenance practices and BMP implementation, and to document habitat and water quality conditions in receiving waters at and/or near points of discharge. Photo-points shall be numbered and depicted on maps contained in the Farm Plan (requirements and specifications for the Farm Plan are included in Attachment A). Photo-point records and field notes shall be appended to the Farm Plan. Guidance regarding establishment and protocols for photo-point monitoring are provided in OWEB (2007) and NRCS (2009).

B. Tier 2 and 3 Dischargers: Water Quality Monitoring and Reporting Requirements

Introduction

Tier 2 and Tier 3 Dischargers are required to conduct BMP Implementation Monitoring, Streambed Monitoring (as applicable), and BMP Effectiveness Monitoring, and also to submit an annual compliance report (Table E-1). The required Streambed and BMP effectiveness monitoring may be satisfied either through participation in a watershed-based group effort, or through individual property-specific monitoring. Following permit adoption, in State fiscal year 2017-18, Water Board staff intends to work with Third-Party Programs, and/or establish a technical advisory committee, to provide additional guidance with regard to BMP effectiveness monitoring, and streambed monitoring and reporting.

BMP Implementation Monitoring

Photo-points provide a qualitative indication of BMP performance and habitat and water quality conditions in receiving waters. Photo-points shall be established and monitored each year to document winter readiness, demonstrate annual maintenance practices and BMP implementation, and to document habitat and water quality conditions in receiving waters at and/or near points of discharge. Photo-points shall be numbered and depicted on maps contained in the Farm Plan (requirements and specifications for the Farm Plan are included in Attachment A). Photo-point records and field notes shall be appended to the Farm Plan. Guidance regarding establishment and protocols for photo-point monitoring are provided in OWEB (2007) and NRCS (2009).

Specification of Streambed and BMP Effectiveness Monitoring Option

This MRP allows Tier 2 and 3 Dischargers to conduct stream monitoring and BMP effectiveness monitoring either through individual or watershed-based group monitoring. We strongly encourage Dischargers to participate in a watershed-based group monitoring program. Dischargers who do not elect to participate in a group monitoring program must submit their individual monitoring plans to the Executive Officer for review and approval and conduct individual, property-specific surface water quality monitoring that achieves the same purpose as the group program. At the time of enrollment, Tier 2 and Tier 3 Dischargers must elect a surface water quality monitoring option, either:

- a) **Napa River and/or Sonoma Creek Watershed-Based Group Monitoring;** or
- b) **Individual Property-Specific Monitoring,**

in order to comply with the monitoring requirements specified in this Order.

For all existing vineyard properties, regardless of the monitoring option Tier 2 and 3 Dischargers elect, **by July 15, 2020**, a surface water quality monitoring plan (monitoring plan) shall be submitted to the Executive Officer for review and approval. **By ~~July 15, 2023~~ January 15, 2024**, a report that presents and analyzes monitoring results (monitoring report) shall be submitted for review and approval by the Executive Officer. The scope of the monitoring plan and monitoring report shall include BMP effectiveness and streambed monitoring as described below. As indicated earlier, the Executive Officer may modify Attachment E, as necessary or appropriate at a future date.

For new vineyard properties, those that are developed subsequent to adoption of this Order, that elect the Group Monitoring option, the monitoring plan and report requirements are satisfied subject to meeting the terms of enrollment in the group (i.e., if the new Vineyard Property enrolls in a Group, that has previously submitted a monitoring plan and report that were approved by the Executive Officer, these reporting requirements are satisfied). For new vineyard properties that elect the Individual Property-Specific monitoring option, the requirements are the same, however, the deadline for the monitoring plan submittal is by two-years following vineyard development, and for the monitoring report by five-years following vineyard development.

Streambed Monitoring

Streambed substrate conditions shall be monitored in channel reaches that provide existing and/or potential spawning habitat for steelhead and/or salmon to evaluate attainment of TMDL numeric targets for sedimentation in the Napa River and Sonoma Creek watersheds (Water Board 2008b, Table 1; Water Board 2009b, Table 1). The requirement to monitor streambed substrate conditions may be satisfied through participation in watershed-based group monitoring program, or by individual property-specific monitoring, which is applicable, if a Vineyard Property includes channel reaches that provide existing and/or potential spawning habitat for steelhead or salmon. Potential spawning sites are as defined in Water Board, 2009b, Table 1, which is included immediately below. A watershed-based group monitoring program for streambed monitoring, already has been developed for the Napa River watershed, that could be implemented to satisfy this requirement as defined in Stillwater Sciences (2013), and/or with refinements. Field sampling protocols for: a) spawning gravel permeability are defined in Barnard and McBain (1994) and/or in Stillwater Sciences (2013); b) streambed scour as defined in Nawa and Frissell (1993), Schuett-Hames et al. (1999), and/or in Stillwater Sciences (2013); c) substrate composition percent fines, are defined in Valentine (1995); and d) v-star are defined in Hilton and Lisle (1993).

TMDL sediment targets [streambed conditions] for the Napa River and its Tributaries (Table 1, Water Board, 2009b).

Spawning gravel permeability	Median value ≥ 7000 cm/hr ^a
Streambed scour	Mean depth of scour ≤ 15 cm ^b
<p>^a Target applies to all potential spawning sites for steelhead and salmon in the Napa River and its tributaries, excluding those upstream of municipal water supply reservoirs.</p> <p>^b Target applies to the response of the streambed to peak flows less than the bankfull event at all potential spawning sites for salmon in gravel-bedded reaches of: 1) mainstem Napa River; and 2) alluvial reaches of tributaries where streambed slope is between 0.001 and 0.02. Potential spawning sites can be identified based on the following: 1) dominant substrate size in the streambed surface layer is between 8 and 128 mm; 2) minimum surface area of gravel deposit is 0.2 square meters in tributaries and 1.0 square meter in mainstem Napa River; or 3) located within mainstem Napa River at a riffle head, pool tail, and/or pool margin or in tributary reaches where streambed slope < 0.03, or in tributary reaches where streambed slope > 0.03 in pool tails, backwater pools, and/or in gravel deposits associated with flow obstructions (e.g., woody debris, boulders, banks).</p>	

TMDL sediment targets [streambed conditions] for Sonoma Creek and its Tributaries (Table 1, Water Board, 2008b).

Spawning gravel permeability	Median value ≥ 7000 cm/hr ^a
Pool filling	Decreasing trend in the volume of fine sediment deposited in pools
Substrate Composition- Percent Fines	Percent of fine sediment less than 0.85 mm in diameter is less than or equal to 14 percent of the total bulk core sample (<14% fines < 0.85 mm) ^b
	Percent of fine sediment less than 6.40 mm in diameter is less than or equal to 30 percent of the total bulk core sample (<30% fines < 6.40 mm) ^b
<p>^aTarget applies to all potential spawning sites for steelhead and salmon in Sonoma Creek and its tributaries.</p> <p>^bTarget applies to wadeable streams and rivers with gradient less than 3 percent. A wadeable stream is one which an average human can safely cross on foot during the summer, low flow season while wearing chest waders.</p>	

BMP Effectiveness Monitoring

BMP Effectiveness Monitoring shall be conducted to evaluate attainment of the performance standards for sediment discharge and storm runoff, specified by this Order. As described in the introduction to Section B, all aspects of required BMP effectiveness monitoring may be performed as part of a group monitoring plan (where a stratified sample of sites is monitored) or may be performed as part of an individual/property-specific monitoring plan. In summary:

- a) All vineyards must perform a **ground cover survey** to evaluate attainment of the performance standard for soil erosion in the farm area; and
- b) Hillslope Vineyard Properties also must perform **road inventories** to evaluate attainment of the performance standard for sediment delivery from existing unpaved roads, ~~and bed and bank erosion monitoring~~ (cross-sectional profiles), as applicable to evaluate attainment of the performance standard for bed and bank erosion[†].

Ground Cover Survey: Annually during the month of November, percent ground cover shall be estimated based on a weighted average value of samples collected to characterize vineyard rows, inter-rows, and vineyard avenues. Examples of acceptable approaches for ground cover survey and estimation are presented in US Department of Agriculture (1999). Alternative approaches (e.g., normalized difference vegetation index (NDVI)) for estimation of percent ground cover also may be proposed for review and approval of the Executive Officer. In the evaluation of ground cover survey data, submitted as part of the Monitoring Results Report (see above), a

[†]As specified in Attachment A, this performance standard applies only to hillslope vineyards. Where a hillslope vineyard discharges into an unstable area (e.g., an actively eroding gully, landslide, and/or a down-cutting or head-cutting channel), in addition to the required channel reconnaissance and photo points, bed and bank erosion monitoring would include cross-sectional surveys to evaluate effectiveness of additional BMPs implemented to attenuate storm runoff and soil bioengineering practices implemented to control erosion in the unstable area.

weighted average or weighted median value for ground cover (accounting for relative proportions of the farm area in inter-rows, rows, avenues, and for inter-annual variation) could be input into the universal soil loss equation (USLE) or the revised universal soil loss equation (RUSLE) model to evaluate attainment of the performance standard for soil erosion within the Farm Area, which corresponds to the soil loss rate being less than or equal to the tolerable soil loss rate as defined by the USDA Soil Conservation Service (1994). Other analytical approaches to evaluate attainment of the performance standard also may be proposed.

Road Inventory: At hillslope vineyard properties, an inventory of unpaved roads shall be conducted after each winter and no later than May 15, to qualitatively evaluate road sediment discharge potential and BMP effectiveness. Sources of erosion and evidence of sediment transport to stream channels shall be documented on a road inventory form. An example of an acceptable approach to road inventory is provided by the California Department of Forestry and Fire Protection (2014). Other approaches also may be proposed for review and approval of the Executive Officer.

~~**Bed and Bank Erosion** (cross section profiles): This monitoring is applicable only at hillslope vineyard properties. As specified in Attachment A (to evaluate attainment of the performance standard for bed and bank erosion), a field survey must be performed (as specified in Attachment A) to evaluate attainment of the performance standard. Based on conditions documented in the required field survey², where a hillslope vineyard discharges into an unstable area (e.g. an actively eroding gully, a landslide, and/or a head cutting and/or down cutting channel), additional BMPs must be implemented (as feasible) to attenuate storm runoff and to control erosion in the unstable area. The required cross section and photo point monitoring (where a hillslope vineyard discharges into an unstable area) is to evaluate erosional volume and response to BMP implementation and other factors, and shall be presented and evaluated in the Monitoring Results Report (see above). Other approaches to monitoring may be proposed in the required Monitoring Plan.~~

Annual Compliance Report

Following permit adoption, each year by December 15, all Tier 2 and Tier 3 Dischargers must submit an annual report that documents progress toward completion of the Farm Plan and progress toward attainment of the performance standards for discharge. The Annual Reporting Form and Schedule for Compliance are included as Table E-1 to this attachment.

Farm Plan Submittal

Tier 3 Dischargers also must submit a completed Farm Plan (as specified in Attachment A) to the Water Board for review and approval in conformance with the schedule for compliance specified in Attachment A. Upon approval, such a Farm Plan is defined as Verified, and the Vineyard Property would qualify for enrollment in Tier 2 or Tier 1, as applicable.

² At a minimum, the field survey shall be conducted prior to submittal of the monitoring report, and at least once every five years thereafter, and/or following the occurrence of a 5-year or greater recurrence interval peak discharge, that is $\geq 10,000$ cfs at the US Geological Survey Napa River near St. Helena gauge.

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Napa River and Sonoma Creek Watersheds WDR for Vineyard Properties

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TABLE E-1 (CONTINUED): ANNUAL COMPLIANCE REPORTING FORM

If the Vineyard Property includes Hillslope Vineyard Blocks:

Field surveys were conducted to assess compliance with the bed & bank erosion performance standard.

Date(s) of field survey(s): _____

Baseline Conditions as Related to Performance Standards

Farm Area

Acres in the Farm Area: _____

Acres under a County approved ECP: _____

Hillslope Vineyard Runoff (check boxes below as applicable)

The Vineyard Property includes Hillslope Vineyard blocks.

Hillslope Vineyard blocks drain into an unstable area (e.g., landslide, gully, or head-cutting or down-cutting channel).

The Farm Plan includes BMPs to achieve the performance standard for bed and bank erosion.

Unpaved Roads

Miles of unpaved roads: _____

Percent, by length, of unpaved roads that are hydrologically connected: _____

Number of stream crossings along unpaved roads: _____

Of these, number of crossings with diversion potential: _____

Number of stream crossings on unpaved roads that drain forested areas _____

Of these, number of stream crossings with trash racks _____

Farm Plan Submittal (applicable only to Tier 3 dischargers)

Farm Plan completed: Yes, the Farm Plan is attached, or was previously submitted.

No, the Farm Plan has not been completed yet.

Note: Tier 3 discharges must submit the Farm Plan for review and approval. For an existing Vineyard Property, the Farm Plan must be submitted within two years of adoption of this Order. For a Vineyard Property developed subsequent to adoption, the Farm Plan must be submitted at or before the time that vineyard construction is completed.