

Attachment 2 Draft Volume Depletion Approach Study

Description of Scientific Conclusions to be addressed by Peer Reviewers

The statutory mandate for external scientific peer review (Health and Safety Code Section 57004) states that the reviewer's responsibility is to determine whether the scientific portion of the proposed rule is based upon sound scientific knowledge, methods, and practices.

We request that you make this determination for each of the following conclusions that constitute the scientific basis of the volume depletion approach study. An explanatory statement is provided for each issue to focus the review.

The State Water Board Division of Water Rights requests that reviewers be identified and assigned to provide an external peer review of a single report (the volume depletion approach study). While the study is not required to be peer reviewed per the requirements of Health and Safety Code section 57004, we feel that this study falls within the peer review category, per the Interagency Agreement between Cal/EPA and the University of California, of "scientific products that support regulations, standards, or rules e.g., Critical technical guidance documents for the regulated community".

The purpose of the volume depletion approach study is to provide scientific evaluation of the protectiveness of alternate criteria to the State Water Board [Policy for Maintaining Instream Flows in Northern California Coastal Streams](#) regional criteria for season of diversion, minimum bypass flow and maximum cumulative diversion. The draft Policy was peer reviewed in February 2008, and included the regional criteria. Approximately one month prior to State Water Board adoption of the Policy, a group of joint stakeholders proposed alternate regional criteria for onstream reservoirs in non-fish bearing streams. The State Water Board included this alternate regional criteria in the Policy as section A.1.8.3, but use of the criteria was generally restricted until: "The State Water Board has completed a study consistent with the language in section 10.4.1 to determine whether or not additional conditions are necessary to protect fisheries resources from the effects of diversion and the applicant agrees to those conditions." Thus, peer review of the volume depletion approach study is warranted, as the conclusions of the study allow use of an alternate regional criteria that was not previously peer reviewed, yet part of the adopted Policy.

1. Allowing no restrictions on season of diversion

Freshwater life stages for anadromous fish consist of upstream migration, spawning, incubation, emigration, and rearing. These life stages occur at various times of the year, and are specific to the type of fish. Stream flows needed for adequate life stage development can be different for each life stage, and minimum stream flows needs for one life stage might not be adequate for another. Stream flows naturally vary over the course of the year. In order to maintain instream flows that are protective of anadromous fish life stage development, the regional criteria of the Policy contains seasonal limits on diversion that were derived to be protective throughout the policy area.

Policy section A.1.8.3. allows an onstream project to operate on a Class II or III stream without a limitation on season of diversion, where the project, when considered with other diversions, has a limited impact on downstream streamflow. Use of the criteria is limited to where the

cumulative depletion of the project when considered with other senior projects in the watershed is not more than 10% of the seasonal (November 1 to March 31) volume measured in the downstream fish bearing stream(s). The volume depletion approach study evaluates the protectiveness of this Policy section in regards to season of diversion, and may recommend further conditions, including those on season of diversion, for use in the alternate criteria. This conclusion will be revised prior to peer review to include the conclusion of the study regarding season of diversion: that is, either supporting the requirements of Policy Section A.1.8.3 as provided; or proposing modifications to the alternative criteria in Policy Section A.1.8.3; or documenting that section A.1.8.3 is not protective of fisheries in regards to season of diversion. Reviewer should determine if these conclusions are based on sound scientific principles.

2. Allowing limited or no restrictions on minimum bypass flow requirements

Adequate sustained stream flows are needed to protect anadromous fish passage and spawning. The regional criteria in the Policy contains minimum bypass flow criteria, which is the minimum instantaneous flow rate of water at any location in a stream that is adequate for fish spawning and passage. The minimum bypass flow is the minimum instantaneous flow rate of water that must be moving past the point of diversion before water may be diverted under a permit. The Policy's minimum bypass flow criteria were derived to be protective of anadromous fish passage and spawning within Policy area.

Policy section A.1.8.3. allows an onstream project to operate on a Class III stream without a minimum bypass flow, where the cumulative depletion of the project when considered with other senior projects in the watershed is less than 5% of the seasonal (November 1 to March 31) volume measured in the downstream fish bearing stream(s). Section A.1.8.3 also allows projects on Class II streams with depletions below 10% and projects on Class III streams with depletions from 5-10% to operate with the February median flow. Calculation of February median flow is less complicated and generally results in a less restrictive value than use of the minimum bypass flow generated by the Policy's regional criteria per Policy section 2.2.1.2. The volume depletion approach study evaluates the protectiveness of this Policy section in regards to minimum bypass flow, and may recommend further conditions, including those on bypass, for use in the alternate criteria. This conclusion will be revised prior to peer review to include the conclusion of the study regarding minimum bypass flow: that is, either supporting the requirements of Policy section A.1.8.3 as provided; or proposing modifications to the alternative criteria in Policy section A.1.8.3; or documenting that section A.1.8.3 is not protective of fisheries in regards to minimum bypass flow. Reviewer should determine if these conclusions are based on sound scientific principles.

3. Allowing no restrictions on maximum cumulative diversion

Adequate magnitude and variability in peak stream flows are needed to meet the habitat needs of anadromous salmonids, including maintaining stream channel geometry, vegetative structure and variability, gravel and wood movement, and other channel features. Channel maintenance is a long-term process in which the basic habitat structure of a stream is formed and maintained by multiple, variable high flow events recurring on a periodic basis.

The Policy established a maximum cumulative diversion regional criterion that was derived to be protective of channel maintenance flows throughout the policy area. The maximum cumulative diversion is the largest value that the sum of the rates of diversion of all diversions upstream of a specific location in the watershed can be so that channel maintenance flows are protected. The maximum cumulative diversion criterion limits cumulative diversion to 5 percent of 1.5-year recurrence flow. Absent site-specific study, the Policy requires that this criterion be met at the proposed point of diversion and certain downstream locations where fish are present. Proposed

points of diversion may be located on a range of stream types, including small headwater drainages.

Policy section A.1.8.3. allows an onstream project to operate on a Class II or III stream without a limitation on maximum cumulative diversion, where the project, when considered with other diversions, has a limited impact on downstream streamflow. Use of the criteria is limited to where the cumulative depletion of the project when considered with other senior projects in the watershed is not more than 10% of the seasonal (November 1 to March 31) volume measured in the downstream fish bearing stream(s). The volume depletion approach study evaluates the protectiveness of this Policy section in regards to maximum cumulative diversion, and may recommend further conditions, including those on maximum cumulative diversion, for use in the alternate criteria. This conclusion will be revised prior to peer review to include the conclusion of the study regarding maximum cumulative diversion: that is, either supporting the requirements of Policy section A.1.8.3 as provided; or proposing modifications to the alternative criteria in Policy section A.1.8.3; or documenting that section A.1.8.3 is not protective of fisheries in regards to maximum cumulative diversion. Reviewer should determine if these conclusions are based on sound scientific principles.

The Big Picture

Reviewers are not limited to addressing only the specific conclusions presented above, and are asked to contemplate the following questions.

- (a) In reading the staff technical reports and proposed implementation language, are there any additional scientific conclusions that are part of the scientific basis of the proposed rule not described above? If so, please comment with respect to the statute language given above.
- (b) Taken as a whole, is the scientific portion of the proposed rule based upon sound scientific knowledge, methods, and practices?

Reviewers should also note that some proposed actions may rely significantly on professional judgment where available scientific data are not as extensive as desired to support the statute requirement for absolute scientific rigor. In these situations, the proposed course of action is favored over no action.

The preceding guidance will ensure that reviewers have an opportunity to comment on all aspects of the scientific basis of the proposed Board action. At the same time, reviewers also should recognize that the Board has a legal obligation to consider and respond to all feedback on the scientific portions of the proposed rule. Because of this obligation, reviewers are encouraged to focus feedback on the scientific conclusions that are relevant to the central regulatory elements being proposed.