

Proposed Amendment to the Water Quality Control Plan – Los Angeles Region to Incorporate a Policy for Developing Water Effect Ratios for Metals in the Inland Surface Waters of Los Angeles and Ventura Counties

PROPOSED CHANGES TO BASIN PLAN -1

The following language will be modified in Chapter 3, Water Quality Objectives of the Basin Plan, under the section "Priority Pollutants," which was added as an amendment through Resolution No. 2006-0022:

Implementation Provisions:

The water quality criteria for metals contained in the CTR are expressed as a function of a water-effect ratio (WER).¹ In the CTR, the US EPA has provided for the adjustment of these water quality criteria through the application by States of the WER procedure. The WER has a default value of 1.0 unless a site-specific WER is approved by the Regional Board. To use a WER other than the default of 1.0, a study must be conducted, establishing the ratio that represents the difference between toxicity in laboratory test water and toxicity in a specific water body based on ambient conditions. The study must be consistent with US EPA procedures on deriving WERs. Any studies conducted after the adoption of the Regional Board's Policy for Developing Water Effect Ratios for Metals in the Inland Surface Waters of Los Angeles and Ventura Counties, as provided in Chapter 5, must be consistent with this policy.²

Notwithstanding the provisions below, regulatory actions to achieve applicable criteria, as modified by site-specific WERs, must ensure that downstream standards will also be achieved. (i) the most sensitive beneficial uses are protected, (ii) downstream standards, including sediment quality objectives, and TMDL waste load allocations to achieve standards will be attained, (iii) the anti-backsliding provisions of the federal Clean Water Act are met, and (iv) there is no lowering of water quality unless the required antidegradation review has been conducted and it has been demonstrated that any change will be consistent with the maximum benefit to the people of the State, and will not unreasonably affect present and anticipated beneficial use of such water.

Additional receiving water monitoring shall be required of dischargers subject to site-specific WER(s) to evaluate whether criteria, as modified by the WER(s), are as protective of beneficial uses as the CTR criteria are intended to be, and whether downstream standards are being attained. If additional monitoring indicates a change in the chemical characteristics of the water body or toxicity, the Regional Board may reconsider the site-specific WER(s).

¹ There are two exceptions where the criteria are not a function of a WER. The freshwater criteria for selenium are not a function of a WER. The freshwater and saltwater criteria for mercury are not a function of a WER.

² The Regional Board's *Policy for Developing Water Effect Ratios for Metals in the Inland Surface Waters of Los Angeles and Ventura Counties* was adopted on August 8, 2008.

PROPOSED CHANGES TO BASIN PLAN -2

The following policy language will be added, in its entirety, to Chapter 5 "Plans and Policies", after "State Board Policies" and before "Regional Board Resolutions":

Policy for Developing Water-Effect Ratios for Metals

The purpose of this WER policy is to ensure (i) region-wide consistency in WER development, (ii) technical soundness, (iii) adequate protection of aquatic life, including downstream beneficial uses, and (iv) clarity for stakeholders interested in the development of WERs. The WER policy clarifies and expands on the minimum requirements provided by US EPA guidance and addresses conditions specific to the Los Angeles Region.

Implementation Provisions

The California Toxics Rule (CTR), located at 40 CFR 131.38, contains federally promulgated water quality criteria applicable to California waters for 126 priority pollutants for the protection of aquatic life and human health. The water quality criteria for metals contained in the CTR are expressed as a function of a water-effect ratio (WER)³. In the CTR, the US EPA has provided for the adjustment of these water quality criteria through the application of the WER procedure by States, if desired. The WER has a default value of 1.0 unless a site-specific WER is approved. To use a WER other than the default of 1.0, a study must be conducted, establishing the ratio that represents the difference between toxicity in laboratory test water and toxicity in a specific water body based on ambient conditions. The adoption of a site-specific WER will result in the same level of aquatic life protection as intended by the CTR. The development of a site-specific WER must be consistent with this policy, which is based on US EPA procedures on deriving WERs, and the site-specific WER must be adopted by the Regional Board. WERs adopted by the Regional Board shall be re-evaluated every five years. If the Executive Officer determines upon review of monitoring reports submitted under section d(4) below that a WER is no longer appropriate, the project proponent(s) shall conduct the necessary studies to verify or revise the WER within one year. The Regional Board shall consider modifying the WER based on results of the study.

Protecting Ambient Water Quality

Protection of Most Sensitive Beneficial Use: Under no circumstance shall the Regional Board consider the development of a WER in a water body where there is a more sensitive beneficial use requiring a more stringent objective for the pollutant in question.

Downstream Protection: Notwithstanding the provisions of this policy, regulatory actions to achieve applicable objectives, as modified by site-specific WERs, must ensure that downstream standards, including sediment quality objectives, and TMDL waste load allocations to achieve standards will also be attained.

³ There are two exceptions where the objectives are not a function of a WER. The freshwater objectives for selenium are not a function of a WER. The freshwater and saltwater objectives for mercury are not a function of a WER.

Anti-backsliding: The relaxation of water quality objectives where the WER is determined to be greater than 1.0, as permitted by the WER policy, does not exempt a discharger from the anti-backsliding provisions of the federal Clean Water Act [section 402(o)] and separately in 40 CFR § 122.44(l). Effluent limits for existing dischargers⁴ shall be based upon these provisions, along with other considerations.

Anti-degradation Considerations: The WER study shall include the requisite anti-degradation review upon determination that any proposed WER will be greater than 1.0. This requirement shall be completed prior to the Regional Board's consideration of the adoption of any proposed WER.

Sediment Impairment: No WER shall be approved for a pollutant in a waterbody segment that is upstream of reaches with sediment impairment resulting from the pollutant in question.

Fish Tissue Impairment: The Regional Board shall determine the appropriateness of allowing a WER in a waterbody segment that is upstream of reaches with fish tissue impairment resulting from the pollutant in question. Such determination shall be based upon fish tissue data and an evaluation of other factors, including life history, habitat, and geographical range, to establish the linkage between the fish tissue impairment and the waterbody proposed for WER development.

(a) Initiation

As stipulated in the CTR and Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP), the Los Angeles Regional Water Quality Control Board (Regional Board) may develop WERs for metals whenever it determines, in the exercise of its professional judgment, that it is appropriate to do so. The Regional Board may choose to develop a WER on its own, or stakeholders may initiate WER development.

Consistent with the provisions of the SIP, the Regional Board shall consider initiating or approving the development of a WER under the following conditions:

- (1) A demonstration that the existing CTR criteria do not provide sufficient protection against aquatic toxicity is submitted in writing to the Regional Board, or
- (2) A written request for the development of a WER, accompanied by a commitment to fund the study, subject to development of a work plan, is filed with the Regional Board; and either:
 - (a) a priority pollutant criterion or objective is not achieved in the receiving water; or
 - (b) a holder of an NPDES permit demonstrates that they do not, or may not in the future, meet an existing or potential effluent limitation based on the priority pollutant criterion or objective; and a demonstration that the discharger cannot be assured of achieving the criterion or objective and/or effluent limitation through reasonable treatment, source control, and pollution prevention measures. This demonstration may include, but is not limited to, as determined by the Regional Board:
 - (i) an analysis of compliance and consistency with all relevant federal and State plans, policies, laws, and regulations;

⁴ "Existing discharger" means any discharger that is not a new discharger. An existing discharger includes an increasing discharger (i.e., an existing facility with treatment systems in place for its current discharge that is or will be expanding, upgrading, or modifying its existing permitted discharge after the site-specific WER becomes applicable.)

- (ii) a thorough review of historical limits and compliance with those limits;
- (iii) a thorough review of current technology and technology-based limits; and
- (iv) an economic analysis of compliance with the priority pollutant criterion or objective of concern.⁵

The Executive Officer of the Regional Board shall make a determination as to whether a WER is necessary upon review of all the information listed above.

(b) Public Participation

WER development shall be an open process, conducted by project proponents, federal and state agency representatives, technical advisors and stakeholders. Public participation in the development of WERs will have two components: (i) technical oversight and review by a technical advisory committee, and (ii) stakeholder input solicited through workshops and existing public review processes. These public participation requirements are consistent with the US EPA "Interim Guidance on the Determination and Use of Water-Effect Ratios for Metals" (1994 Interim Guidance), which states that the determination of a WER should be a cooperative effort.

(1) Technical Advisory Committee

Consistent with US EPA guidance, any proposed WER study must be overseen by a technical advisory committee. The technical advisory committee (TAC) shall be comprised of Regional Board staff, US EPA Region 9 staff, and independent technical experts in the fields of aquatic toxicology and statistics. Membership of the TAC shall be subject to the approval of the Regional Board Executive Officer. The roles and responsibilities of the TAC shall be to:

- Make certain determinations, including but not limited to: which WER procedure to apply, number and location of sites, number and frequency of sampling events, selection of secondary species, and appropriate margin of safety for the final WER
- Develop the work plan for the project
- Review data and results as they become available
- Recommend modifications to work plan, based on data review (including special studies and additional data analysis, as necessary)
- Review draft and final project documents
- Develop a monitoring plan to be implemented in all affected water bodies after adoption of a WER.

(2) Stakeholder Participation

Regional Board staff will provide opportunities for stakeholder participation in accordance with CEQA, Title 23 of the California Code of Regulations, Title 40 of the Code of Federal Regulations, and Section 13244 of the California Water Code, as appropriate.

⁵ Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California. State Board Resolution No. 2005-0019. State Water Resources Control Board. California Environmental Protection Agency. 2005.

(c) Technical Requirements

Project proponents are required to follow the most appropriate US EPA-approved methods for determining WERs in conjunction with additional requirements set forth below.

(1) Preliminary Analysis

Evaluation of Ambient Water Body Conditions:

Prior to the onset of sampling, a minimum of three years of data/information shall be evaluated for each water body segment to which the WER will apply, including wet and dry weather data as well as all available data for downstream reaches that could potentially be impacted the WER.

Specifically, information assessed should include the biological, chemical and hydrological conditions that are expected to produce the lowest WER.

- Biological complexity should include species composition, species distribution and periods of sensitive life stages.
- Chemical complexity should include measurements of hardness, pH, dissolved organic carbon and total suspended solids. If available, measurements of alkalinity, total organic carbon, total dissolved solids, ammonia, chloride, calcium, magnesium, sodium, potassium, and sulfate should also be included.
- Hydrologic variation should include measurements of rainfall, velocity and flow (including peak stream flow frequency). Inter- and intra-storm variability should also be examined.
- Sediment quality assessment should include data/information on sediment chemistry and toxicity, as well as benthic community composition.

Reaches downstream of the water body segment for which a WER is to be developed must be included in the study if water quality standards for the metal of interest are not being attained downstream. Sampling design shall be based on the results of this analysis.

Work Plan Development:

A work plan, defining the extent of the project (site definition), selecting the WER method to be applied, and presenting the sampling design and laboratory procedures and other relevant details, shall be prepared with the oversight of the TAC.

The work plan shall include:

- (i) a definition of the boundaries (upstream and downstream) of the water body segment for which a WER is to be developed
- (ii) a determination of downstream reaches to be included in the WER study
- (iii) a determination of which EPA-approved WER method will be used
- (iv) proposed sampling locations
- (v) proposed temporal sampling protocols
- (vi) proposed composition of site water (simulated versus ambient)
- (vii) description of testing protocols
- (viii) description of proposed chemical testing
- (ix) calculation methods for EC50 values and sample and final WERs
- (x) other details of study including flow measurement, QA/QC, number of sampling periods proposed, application of results, schedule, etc.

The work plan shall be released for public comment and modified as necessary prior to submittal for approval by the Regional Board Executive Officer.

(2) Sampling Requirements

Sampling should be conducted in a manner that reflects the variability of hydrologic, biological, ecological and water quality conditions in each water body over time to ensure the most critical conditions are identified and evaluated. All sample collection and handling for WER development shall be conducted using the most appropriate US EPA-approved WER guidelines and toxicity testing methods.

Initial sampling shall be conducted during the following periods to determine the critical condition:⁶

Summer dry-weather

Winter dry-weather

Winter wet-weather

At a minimum, initial sampling shall include two events for each period - at each site for which a WER is being developed.

Once the critical condition is determined, future sampling shall be conducted during this condition. The number of additional sample events needed shall be determined by the statistician on the TAC, based on a statistical analysis to ensure adequate representation of the critical conditions. At a minimum, two additional sample events shall be conducted at each location, under the determined critical condition. Secondary WERs (i.e. confirmatory WERs using a second test specie) shall be determined for samples collected during the critical condition.

Sample locations shall be recommended by the TAC (or proponents with oversight by the TAC) and shall reflect the spatial variability of the water body for which a WER is being developed. The timing of the sampling events shall be determined by the TAC based on US EPA guidelines.

(3) Toxicity Tests

All US EPA guidance pertaining to selection of primary and secondary tests and species selection shall be strictly adhered to. However, where feasible and appropriate, the TAC shall consider the use of resident species as the secondary test organism.

To address and minimize test method variability, all test acceptability criteria must be met, including the lower and upper bounds of the Percent Minimum Significant Difference (PMSD) and Control CV (10th and 90th percentiles as published by US EPA⁷), where appropriate.

(4) Laboratory Procedures

All laboratory procedures shall be conducted as detailed in the most appropriate US EPA guidance on developing WERs and conducting toxicity tests; with the following additions/modifications⁸:

The TAC shall consider, and incorporate as necessary, the following recommendations:

⁶ Here "critical condition" describes the weather condition and season that produces the lowest WER, e.g. wet or dry, summer or winter.

⁷ US EPA. 2000. "Understanding and Accounting for Method Variability in WET Applications Under the NPDES Program." EPA 833-R-00-003. Office of Wastewater Management.

⁸ These recommendations are presented in the publication titled "Evaluation of Water-Effect Ratio Methodology for Establishing Site-Specific Water Quality Criteria" by Welsh, P. G., Lipton, J., Chapman, G. A. (2000) *Environmental Toxicology and Chemistry*. Vol.19, No. 6. pp. 1616-1623.

- Laboratory waters should be blended to match the Ca:Mg ratios of laboratory waters used to derive the national criteria. If the variability of the data used to develop the national criteria precludes this, the laboratory waters should be adjusted to match the Ca:Mg of the site water.
- WER testing should be performed to address spatial and temporal variability in water quality parameters (pH, alkalinity, dissolved organic carbon) as well as differences in inter-species metal sensitivity over the range of these parameters.
- WER testing should include evaluation of any site specie of special concern, including fish and vertebrates over a reasonable range of water quality conditions, and final WERs should be calculated to be protective across this range of conditions.
- When multiple metals are present, WER tests should also be conducted with the full suite of metals found at the site at concentrations that specifically address covariance in metal fluctuations.
- All fish should be acclimated similarly and imbalances in acclimation Ca (caused by varying Ca:Mg ratios) should be minimized.

(5) Calculation of Endpoints and Final WERs (fWERs)

Estimation of endpoints (EC50, LC50, etc.) must be performed as specified in the most relevant EPA guidance.

The TAC shall select the most appropriate calculation approach for determining final WERs only per methods provided in the most relevant US EPA WER guidance.

To protect downstream water quality where it has been determined that a WER shall be developed for downstream reaches of a water body, the final WER shall be the downstream final WER if it is the lower final WER, except in the instance where it can be demonstrated that sufficient attenuation of metal concentrations occurs to comply with the downstream WER-adjusted objectives.

A WER of 5 or greater shall not be approved unless an additional year of confirmatory sampling is conducted under the critical condition. This confirmatory sampling must include the same number of samples used to characterize the critical condition in the first instance. Additional monitoring will also be required for WERs of 5 or greater after adoption by the Regional Board, as described in section IV(d) under Monitoring Requirements.

Once the final WER has been determined, a 10% margin of safety shall be applied to obtain the WER to be used to modify the CTR criteria. Any margin of safety of greater than 10% shall be based upon an evaluation of the degree of environmental and effluent variability under the critical condition.

(6) Reporting the Results

All reporting requirements provided in US EPA WER guidance, for submission to the appropriate regulatory agency, shall be strictly adhered to. In addition to the WER technical report, project proponents will be required to submit the following documents for consideration:

- (a) an environmental analysis of the impacts of implementing the WER, including potential downstream impacts
- (b) an analysis of the factors set forth in Cal. Water Code section 13241 including:
 - past, present, and probable future beneficial uses of water.
 - environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto.
 - water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area.
 - economic considerations.
 - the need for developing housing within the region.
 - the need to develop and use recycled water.
- (c) an anti-degradation review, in the instances where a WER is greater than 1.

(d) Monitoring Requirements

Monitoring and reporting shall be coordinated with relevant TMDL monitoring plans and NPDES monitoring and reporting programs approved by the Executive Officer or Regional Board, as appropriate.

Monitoring shall conform to the following schedule and requirements:

1. Monitoring of receiving water and effluent chemistry and toxicity shall include a minimum of three sample events per year for three years at each site. Two of the three sample events shall be conducted during the defined critical weather condition, as identified by study results. For water bodies subject to WERs of 5 or greater, the above monitoring requirements must be conducted for a period of five years.
2. Following the first three years of monitoring, if there is no increase in toxicity, monitoring may be reduced to once every three years at each site, as appropriate. The number and type of events during the year shall be as described above.
3. Monitoring of sediment chemistry and toxicity, fish tissue, and benthic community structure shall be conducted once the WER goes into effect to determine a baseline, and annually for three years afterwards to ensure that increasing pollutant loads are not causing or contributing to further degradation. A minimum of three samples will be required for each sampling event. Sediment chemistry shall be compared to available sediment quality guidelines or sediment quality objectives. If there is no indication of degradation after this period, monitoring shall be conducted every three years.
4. Every five years, the project proponent(s) shall provide a written report to Regional Board staff containing monitoring results, analysis of results, and recommendations to maintain or modify the existing WER.
5. After reviewing the written report, the Regional Board Executive Officer shall determine whether the existing WER should be reconsidered by the Regional Board.
6. The project proponent(s) shall ensure that the variables referenced under section (c)(1) "Evaluation of Ambient Water body Conditions" continue to be measured on an

on-going basis after the WER is developed. Regardless of the above monitoring schedule, WERs may be re-evaluated whenever any of these variables change to the extent that the water quality objective, as modified by the WER, would no longer protect beneficial uses.

For existing and new dischargers to water bodies with an approved WER, the Regional Board shall require as appropriate, additional monitoring in subsequent Conditional Waiver and NPDES permitting actions to fulfill these monitoring requirements.

(e) Deriving Effluent Limits for Dischargers

Existing Dischargers: Development of effluent limits for existing discharges must comply with all applicable law and regulations, including federal and state antidegradation policies and antibacksliding requirements (CWA [section 402(o)] and 40 CFR § 122.44(l)), and will consider natural background conditions, current technology, and other relevant factors. Given these considerations, effluent limits for existing discharges may not necessarily be set equivalent to the WER-adjusted criteria.

New Dischargers⁹: WERs are developed under assumptions regarding, and data from, existing discharges and receiving water quality. Permits developed for new discharges must comply with all applicable law and regulations, including federal and state antidegradation policies, and will consider natural background conditions, current technology, and other relevant factors. Given these considerations, effluent limits for new discharges may not necessarily be set per the WER-adjusted criteria.

(f) Adopting Individual WERs

In most cases, a WER must be approved by the Regional Board as an amendment to the Water Quality Control Plan, Los Angeles Region (Basin Plan) to become effective.¹⁰ However, in the limited instances where WERs are adopted as part of a single permitting action, the following limitations on the use of the WER shall apply:

- The WER may not be used to modify the water quality objective(s) applicable to the receiving water,
- The WER may not be used in water quality assessments, including listing decisions pursuant to section 303(d) of the federal Clean Water Act,
- The WER may not be used to establish numeric targets or waste load allocations in TMDLs, and
- The WER must be re-evaluated with each subsequent permit re-issuance.

⁹ A "new discharger" is defined as any building, structure, facility, or installation from which there is or may be a "discharge of pollutants" (as defined in 40 C.F.R. §122.2) to surface waters of the Los Angeles Region, the construction of which commences after the site-specific WER becomes applicable.

¹⁰ This process includes a public comment period, adoption by the Regional Board, and approval by the State Board, Office of Administrative Law.