

DRAFT FOR EXTERNAL SCIENTIFIC PEER REVIEW

Amendment to the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California—Mercury TMDL and Implementation Program for Reservoirs

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MERCURY RESERVOIR PROVISIONS

I. Effective Date and Applicability

- A. The effective date of the MERCURY RESERVOIR PROVISIONS¹ is [] (Effective Date).
- B. The MERCURY RESERVOIR PROVISIONS establish a program of implementation to achieve the mercury water quality objectives² for the COMM, RARE and/or WILD beneficial uses at RESERVOIRS. The MERCURY RESERVOIR PROVISIONS apply to mercury discharges to RESERVOIRS and tributaries to RESERVOIRS but do not apply to RESERVOIRS for which mercury total maximum daily loads (TMDLs) are established, except for the mercury TMDLs established for El Dorado Park Lakes, Puddingstone Reservoir, and Lake Sherwood by the Los Angeles Area Lakes TMDL for nitrogen, phosphorus, mercury, trash, organochlorine pesticides, and PCBs³.

II. Beneficial Uses

- A. COMM and WILD beneficial uses are designated for the reservoirs identified in Table 1 (see the demarcation in Table 1, last column).

III. Implementation Program for Non-Impaired Reservoirs or Non-Assessed Reservoirs

A. Discharges from Dredge and Fill Activities

1. Applicability. Chapter III applies to discharges of dredge and fill materials regulated under Clean Water Act section 401 water quality certifications, waste discharge requirements, or waivers of waste discharge requirements and apply to a discharger whose activity meets all of the following criteria (hereafter, "Applicable Activity"):
(1) the activity is located at or downstream of a MINE SITE and upstream of or in a NON-IMPAIRED RESERVOIR or NON-ASSESSED RESERVOIR; and (2) the activity moves or removes (i.e., dredges, excavates, uses, or disposes) soil or sediments (collectively referred to as "sediments.")

The WATER BOARD shall include in the certification or order issued to the discharger, the requirements contained in Chapter III, at a minimum. The WATER BOARD may require additional reporting to document actions taken to MINIMIZE the discharge of mercury into surface waters. The certification or order must specify that the requirements specified in Chapter III must be completed prior to the commencement of the Applicable Activity, except as otherwise provided herein.

As described below, the discharger shall characterize whether sediments at a project site are MERCURY-CONTAMINATED and then manage such sediments if required.

Any requirement in Chapter III for a discharger to submit a plan or report to the WATER BOARD shall be submitted to, and approved by, the WATER BOARD's executive officer or executive director.

¹ Terms that are defined in Appendix A (Glossary of Terms) are denoted by the "all cap" font.

² The water quality objectives implemented by the MERCURY RESERVOIR PROVISIONS are being developed by a parallel but separate State Water Board project. The water quality objectives being developed are in Appendix B. It is anticipated that the State Water Board will adopt the water quality objectives in May 2017.

³ Los Angeles Area Lakes Nitrogen, Phosphorus, Mercury, Trash, Organochlorine Pesticides and PCBs TMDLs, established by U.S. Environmental Protection Agency, is available at: <http://epa.gov/region9/water/tmdl/final.html>

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2. Sediment Characterization Plan for Dredging, Use, or Disposal. Prior to dredging, use, or disposal activities described below (at Chapters III.A. 3 through III.A.5), the discharger shall submit a sediment characterization plan to the WATER BOARD that shall propose sampling locations and depths, sample collection methods, analytical methods, and field procedures that would be used to assess the mercury concentrations in the sediments subject to the proposed dredging, use, or disposal.

Upon approval by the WATER BOARD, the discharger shall implement the approved sediment characterization plan and evaluate the sampling results and determine and report to the WATER BOARD whether the sediments from the site are MERCURY-CONTAMINATED.

3. Dredging. The following requirements apply to a discharger proposing to dredge MERCURY-CONTAMINATED sediments.
 - a. Site Characterization Plan: Submit a site characterization plan to the WATER BOARD. The site characterization plan shall propose locations and methods to measure the total mercury concentrations in sediments (soil fines consisting of grain size less than 63 microns) at the surface and at the proposed dredge depth to determine if the sediments exposed at the lowermost dredge depth have a median total mercury concentration greater than the mercury concentration in surface sediments before dredging. After obtaining WATER BOARD approval of a site characterization plan, the discharger shall implement actions described in the plan and submit the results of the plan to the WATER BOARD.
 - b. Dredging Work Plan: Submit a dredging work plan to the WATER BOARD that describes appropriate management practices that will be taken to MINIMIZE releases of sediments into surface water, and, for projects in a creek channel or a flood plain, to maintain channel stability and to MINIMIZE erosion both during and after the activity. If the discharger determines that the mercury concentrations in lowermost proposed dredge depth are greater than the mercury concentration in surface sediments before dredging (see Chapter III.A.3.a), then the dredging work plan shall describe how the discharger plans to either: (1) excavate to deeper depths until the mercury concentrations are equal to or less than the pre-dredge surface concentrations; (2) over-excavate and backfill with sediment that has mercury concentrations that are equal to or less than the pre-dredge surface concentrations; or (3) demonstrate that higher mercury concentrations in the sediments exposed at the lowermost depth will be present for less than one year.

After completion of the dredging, the discharger shall submit a report to the WATER BOARD documenting compliance with the approved dredging work plan.
 - c. Maintenance and Monitoring Plan: Submit a maintenance and monitoring plan to the WATER BOARD that describes the actions the discharger will take to ensure that the mercury and erosion control measures remain effective from the commencement of an Applicable Activity through no less than two years after the activity is completed.
 - d. Annual Reports: After completion of the Applicable Activity, submit annual reports to the WATER BOARD for two years documenting compliance with the approved maintenance and monitoring plan.

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4. Use. Any discharger that uses MERCURY-CONTAMINATED sediments shall submit a construction and maintenance plan to the WATER BOARD for approval that ensures MERCURY-CONTAMINATED sediments shall not be used in construction, including road and watercourse crossing construction, reconstruction, or maintenance, unless the sediments are adequately protected from erosion into surface waters. The construction and maintenance plan shall include proposed best management practices to MINIMIZE discharges of MERCURY-CONTAMINATED sediments.
5. Disposal. Any discharger that disposes of MERCURY-CONTAMINATED sediments shall submit a disposal and monitoring plan to the WATER BOARD unless the disposal is at a permitted municipal or hazardous waste landfill. The disposal and monitoring plan for onsite and offsite disposal areas shall describe how the areas will be designed, managed, and maintained to prevent erosion and transport of mercury into surface waters, and describe the monitoring activities which will ensure that the management and maintenance activities to prevent erosion will remain effective after disposal activities are completed.

IV. Implementation Program for Impaired Reservoirs

The implementation program for IMPAIRED RESERVOIRS includes a total maximum daily load that establishes the allowable mercury or methylmercury loads to IMPAIRED RESERVOIRS and actions to implement the total maximum daily load. The implementation program is intended to reduce loads of methylmercury and total mercury to achieve the mercury water quality objectives established to protect humans and/or wildlife that consume fish.

A. Applicability

Chapter IV applies to all mercury and methylmercury discharges to IMPAIRED RESERVOIRS listed in Tables 3A, 3B, and 3C, except during PHASE 1, the requirements contained in Chapter IV.F (applicable to owners and operators of IMPAIRED RESERVOIRS) do not apply to the reservoirs identified in Table 3C, which are reservoirs used primarily for hydroelectric purposes subject to a license issued by the Federal Energy Regulatory Commission (FERC) pursuant to the Federal Power Act (16 U.S.C. § 791a et. seq.).

Chapter IV shall be implemented through water quality certifications issued pursuant to Clean Water Act section 401, national pollutant discharge elimination system (NPDES) permits issued pursuant to CWA section 402, waste discharge requirements (WDR), waivers of WDRs, and cleanup and abatement orders, prescribed pursuant to Water Code sections 13263, 13269, or 13304, respectively, or other orders.

B. Time Schedule and Phase 1 and Phase 2

The implementation activities required in Chapter IV shall occur on or after the Effective Date of the MERCURY RESERVOIR PROVISIONS, as provided, and may be subject to a two-phased approach, depending on the type of discharger. PHASE 1 commences at the Effective Date of the MERCURY RESERVOIR PROVISIONS and ends 10 years thereafter. PHASE 2 will commence after the State Water Board completes its program review of PHASE 1 activities (discussed in Chapter VI).

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With respect to dischargers subject to the requirements of Chapters III (dredge and fill activities), IV.D (mine sites), IV.E (dredge and fill activities), IV.F (non-federally owned reservoirs listed on Table 3A and federally owned reservoirs listed on Table 3B), and IV.G (Municipal and Industrial Dischargers), and IV. H (Storm Water Dischargers) all implementation activities shall occur on or after the Effective Date of the MERCURY RESERVOIR PROVISIONS.

As discussed in Chapter VI, after the completion of PHASE 1, the State Water Board will commence a program review of the in-reservoir pilot test activities implemented in PHASE 1 to determine which reservoir management practices should be implemented at the IMPAIRED RESERVOIRS during PHASE 2, including which would apply to FERC licensed reservoirs. PHASE 2 will commence after the State Water Board completes its program review.

C. Total Maximum Daily Load

The following total maximum daily load (TMDL) is established for IMPAIRED RESERVOIRS.

1. TMDL Targets. The TMDL targets for the IMPAIRED RESERVOIRS are the mercury water quality objectives and are as follows:
 - a. Sport Fish Target. The sport fish target to achieve the Sport Fish Water Quality Objective is: The average methylmercury concentrations shall not exceed 0.2 mg/kg fish tissue within a calendar year. The target must be applied to TROPIC LEVEL 3 or TROPIC LEVEL 4 fish, whichever is the highest existing trophic level in the reservoir. The target applies to the WET WEIGHT concentration in skinless fillet. TROPIC LEVEL 3 fish are between 150 to 500 millimeters (mm) in total length and TROPIC LEVEL 4 fish are between 200 to 500 mm in total length,⁴ or as additionally limited in size in accordance with the “legal size” set for recreational fishing established by title 14, California Code of Regulations, sections 1 through 53.03.
 - b. Prey Fish Target. The prey fish target to achieve the Prey Fish Water Quality Objective is: The average methylmercury concentrations shall not exceed 0.05 mg/kg fish tissue from February 1 through July 31, unless site-specific information indicates another appropriate breeding period. The target applies to the WET WEIGHT concentration in whole fish between 50 to 150 mm in total length.
 - c. California Least Tern Target. The California least tern target to achieve the Prey Fish Water Quality Objective for California Least Tern is: The average methylmercury concentrations shall not exceed 0.03 mg/kg fish tissue from April 1 through August 31. The target applies to the WET WEIGHT concentration in whole fish less than 50 mm total length.
2. Total Maximum Daily Load. Table 4 contains the TMDL allocations for IMPAIRED RESERVOIRS. The total maximum daily load is the combination of the waste load allocations and load allocations for mercury sources and a load allocation for in-reservoir methylmercury production.
3. Load Allocations and Waste Load Allocations. Final mercury waste load allocations for point sources and load allocations for nonpoint sources are listed in Tables 4 through 7.

⁴ Except for white sturgeon (legal size > 500 mm) and chinook salmon (legal size >500 mm).

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- a. Table 4 contains the waste load allocations assigned generally to discharges from NPDES-permitted facilities, as described in Chapter IV.G. Table 5 contains the waste load allocations assigned to individual NPDES-permitted facilities that discharge wastewater directly to and upstream of IMPAIRED RESERVOIRS. Figure 1 contains the method to determine specific waste load allocations for individual facilities not listed in Table 5 if such facilities discharge either directly to an IMPAIRED RESERVOIR or any tributary thereto. As set forth in Chapter IV.G., the waste load allocations shall be implemented as effluent limitations in individual NPDES permits.
- b. Table 4 (item nos. 1 through 5) contains the load allocations assigned generally to nonpoint source discharges from MINE SITES (not covered by Chapter IV.C.4.a), mining waste, runoff from non-urbanized areas, atmospheric deposition, and in-RESERVOIR methylmercury production. As identified in Table 4, allocations for discharges from atmospheric deposition include runoff from urbanized areas not regulated by NPDES permits. As set forth in Chapter IV.D and IV.H, all load allocations shall be implemented as best management practices or, as set forth in Chapter IV.F, reservoir management actions and not implemented as site-specific cleanup standards.
- c. NPDES-permitted facilities located upstream of an IMPAIRED RESERVOIR with design discharge flows equal to or less than 0.2 million gallons per day (mgd) are negligible sources of mercury and are not assigned a waste load allocation (see Table 4). Table 6 identifies individual and general NPDES permits that are negligible sources and not assigned waste load allocation. No new water quality-based mercury effluent limitation or management practice is required for each facility identified on Table 6.
- d. Load allocations for storm water and other runoff from urbanized areas regulated by NPDES permits are included within the load allocation for atmospheric deposition (see Table 4). Table 7 identifies individual and general NPDES permits for storm water and other runoff from urbanized areas to any tributary of an IMPAIRED RESERVOIR. No new water quality-based mercury effluent limitation or management practice is required for each permittee identified on Table 7.

D. Discharges from Mine Sites

The following requirements apply to private landowners, mine operators, and federal, state, and local agencies that have a MINE SITE located on property owned or managed by the respective private landowner, mine operator or agency, and where such MINE SITE discharges mercury directly to or upstream of an IMPAIRED RESERVOIR.

To inform and compel cleanup of MINE SITES, the WATER BOARD will issue orders pursuant to Water Code sections 13267 (13267 investigation order), 13263 (waste discharge requirements), and 13304 (cleanup order), or an NPDES permit pursuant to 33 U.S.C. section 1342.

The MERCURY RESERVOIR PROVISIONS provide a tiered approach for cleanup actions associated with MINE SITES. Table 8 identifies characteristics and other criteria for the WATER BOARDS to use to determine whether a MINE SITE is “Tier 1,” “Tier 2,” or “Tier 3,” which are terms designated in accordance with the prioritization for cleanup.

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PHASE 1 only applies to highest priority MINE SITES, referred to as Tier 1 MINE SITES. During PHASE 1, dischargers of mercury from Tier 1 MINE SITES will be required to cleanup mercury discharges from those MINE SITES. In PHASE 1 the WATER BOARDS will identify, prioritize, and initiate, where possible, the cleanup of such Tier 1 MINE SITES located on private land, and each local, state, and federal agency shall identify, prioritize, and initiate cleanup of such Tier 1 MINE SITES located on land it owns or manages.

The identification, cleanup, and control of lower priority (e.g., Tier 2 and Tier 3) MINE SITES or MINING WASTE DOWNSTREAM OF MINE SITES will not be required until PHASE 2. The State Water Board will determine the time schedule to identify, cleanup, and report on Tier 2 and Tier 3 MINE SITES and MINING WASTE DOWNSTREAM OF MINE SITES on private and public lands as part of the State Water Board's Program Review of the MERCURY RESERVOIR PROVISIONS (see Chapter VI).

1. For purposes of Chapter IV.D, plans and reports applicable to Tier 1 MINE SITES must contain the following elements.
 - a. MINE SITE Prioritization Plan. A MINE SITE Prioritization Plan shall describe the following: (1) method(s) used to identify and locate MINE SITES and locate mining wastes associated with each of those MINE SITES; (2) a sampling strategy to assess the degree and extent of mercury contamination at the MINE SITES; (3) a detailed narrative explaining planned methods to interpret results from the sampling strategy; (4) method(s) to assess actual or potential discharges of mercury from mining to surface waters including but not limited to erosion; and a (5) plan to prioritize MINE SITES.
 - b. MINE SITE Prioritization Report. A MINE SITE Prioritization Report shall include the following: (1) identification and location of MINE SITES and location of mining wastes associated with these MINE SITES; (2) findings of amount and concentration of mercury present at each MINE SITE; (3) assessment of actual or potential discharges of mercury from mining to surface waters; (4) other findings to prioritizing MINE SITES, if relevant; and (5) prioritization of MINE SITES.
 - c. MINE SITE Cleanup Plan. A MINE SITE Cleanup Plan shall describe measures to control mercury discharges and a time schedule to control the discharges. The MINE SITE Cleanup Plan shall contain the following at a minimum: (a) proposed designs and specifications to control discharges of mercury from the MINE SITE to surface waters; (b) a schedule for completion of the MINE SITE cleanup; and (c) description of the plans and specifications of the post-construction long-term, operations, maintenance, and monitoring necessary to ensure continued effectiveness of the control measures.

Insofar as the cleanup plan includes erosion and sediment control measures, such measures shall be designed to MINIMIZE or prevent the discharge of mercury from mining in storm water discharges and authorized non-storm water discharges through the use of controls, structures, and management practices that achieve best conventional pollutant control technology for erosion and sediment control. If applicable, the plans shall also describe control measures (i.e., best management practices) to MINIMIZE or prevent the discharge of mercury not attached to sediment.

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- d. MINE SITE Cleanup Report. A MINE SITE Cleanup Report shall describe the following at a minimum: (a) actions taken to control discharges of mercury from mining to surface waters; (b) the revisions, if any, to the design and specifications for the mercury cleanup control measures; and (c) the revisions, if any, to the post-construction, long-term, operations, maintenance, and monitoring plan(s) necessary to ensure continued effectiveness of the mercury cleanup control measures.
2. Actions for federal, state, or local agencies that own or manage mine sites.
 - a. 13267 Investigation Order. The WATER BOARD will issue an order to federal, state, and local agencies to require the submittal of a MINE SITE Prioritization Plan and MINE SITE Prioritization Report for the MINE SITE(s) located on land owned or managed by the state or local agency and a time schedule for the submission of the plan and report. The order will provide that the federal, state, or local agency may coordinate the development of the MINE SITE Prioritization Plan and the MINE SITE Prioritization Report through the California Abandoned Mine Lands Agency Group. The WATER BOARD may seek a management agency agreement with a federal agency in lieu of issuing an order to meet these requirements.
 - b. Cleanup and Abatement Order. Subsequent to the federal, state, or local agency's submission of the MINE SITE Prioritization Report to the WATER BOARD, the WATER BOARD will issue a cleanup and abatement order to the agency that will include a time schedule for the submission of a MINE SITE Cleanup Plan and a MINE SITE Cleanup Report. The WATER BOARD may seek a management agency agreement with a federal agency in lieu of issuing an order to meet these requirements.
 3. Actions for WATER BOARDS and Landowners Pertaining to privately owned or operated MINE SITES.
 - a. For Tier 1 MINE SITES located on privately owned lands, the WATER BOARD for the region in which the site is located will develop a MINE SITE Prioritization Plan and a MINE SITE Prioritization Report, as described in IV.D.1.a and IV.D.1.b.
 - b. The WATER BOARD will issue an order to the landowner or operator of an identified Tier 1 MINE SITE to require the private landowner to clean up the MINE SITE. The order shall include a schedule for submission of a MINE SITE Cleanup Plan and a MINE SITE Cleanup Report, as described in IV.D.1.c and IV.D.1.d.

E. Discharges from Dredge and Fill Activities

Chapter IV.E applies to discharges related to dredge and fill activities regulated through Clean Water Act section 401 water quality certifications, waste discharge requirements, or waivers of waste discharge requirements and apply to a discharger whose activity meets all of the following criteria (hereafter, "Applicable Activity"): (1) the activity is located at or downstream of a MINE SITE and upstream of or in a IMPAIRED RESERVOIR; and, (2) the activity moves or removes (i.e., dredges, uses, or disposes) mining waste, soil, or sediments (collectively referred to as "sediments."). The discharger of such activities shall comply with Chapter III.

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F. Reservoir Owners and Operators

Chapter IV.F applies to each owner and operator of IMPAIRED RESERVOIRS listed in Tables 3A and 3B upon the Effective Date of the MERCURY RESERVOIR PROVISIONS, except for FERC licensed reservoirs (see Table 3C).

Any requirement in Chapter IV.F for a reservoir owner or operator to submit a plan or report to the WATER BOARD shall be submitted to, and approved by, the WATER BOARD's executive officer or executive director, as applicable.

If the owner and/or operator of an IMPAIRED RESERVOIR has initiated or completed all or portions of the requirements in this Chapter prior to the Effective Date of the MERCURY RESERVOIR PROVISIONS, then that reservoir owner and/or operator has satisfied those pertinent requirements and will not be required to repeat those requirements during PHASE 1. However, such credited effort shall only apply to the individual owner or operator that completed the work and may not be shared or assigned to another owner or operator to satisfy a coordinated approach under this Chapter.

1. The following plans and reports are required by Chapter IV.F.2 through IV.F.4.

a. Pilot Test Work Plan. The pilot test work plan shall include the following elements.

i. An evaluation of, at a minimum, each of the management practices listed below. Such evaluation shall describe whether each management practice could be implemented at the applicable reservoir to achieve the mercury water quality objectives. The evaluation may include a combination of the management practices listed below.

To evaluate the feasibility of implementing one of the following fisheries management practices (Chapter IV.F.1.a.i.e through IV.F.1.a.1.g), if the reservoir owner and operator is not the sole party responsible for fish management in the reservoir, then each owner and operator shall notify and request approval from the entity or entities that either directly stock and/or are responsible for stocking or otherwise responsible for fisheries management in the reservoir.

- a. Oxidant addition to reservoir bottom waters (near the sediment-water interface) to reduce anoxia or adjust redox potential when reservoirs are stratified to suppress methylation of mercury. Evaluate various oxidants (e.g., dissolved oxygen, ozone, others) for (a) efficacy for methylmercury reduction, (b) multiple benefits (e.g., drinking water quality, algal controls), and (c) avoidance of adverse consequences (e.g., application only when a reservoir is stratified and not discharging bottom waters from the dam, with monitoring to ensure that added oxidant does not increase nutrient levels in the reservoir or downstream);
- b. In-reservoir sediment removal or encapsulation to address inorganic mercury hotspots such as submerged or near-shore mine sites and mining waste;
- c. Other management practices to reduce methylation, including enhancing demethylation;

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- d. Nutrient management such as minimal additions of nitrogen or phosphorus (including from natural sources such as restoring historical salmon runs) to slightly increase chlorophyll-a concentrations in oligotrophic reservoirs;
 - e. Intensive fishing to increase the growth rate of remaining fish;
 - f. New or changes to fish stocking practices to increase the abundance of fish with lower methylmercury levels, such as (a) stock low-methylmercury prey fish for reservoir predator fish to consume, (b) stock more or different sport fish species, such as lower trophic level sport fish, and/or (c) stock large, old predator fish from hatcheries that supply low methylmercury fish; and
 - g. Assess potential changes to fish assemblages that would result in top predator fish with lower methylmercury levels.
- ii. The selection of one or more management practice(s) to be pilot tested.
 - iii. A description of the activities, expected types of data, and data analysis methods that will be used to evaluate the efficacy of the pilot tested management practice(s). Such activities should include: design and permitting; baseline monitoring; equipment installation; pilot test procedures; equipment operations and maintenance; and monitoring effectiveness in reducing in-reservoir methylation and fish methylmercury levels.
 - iv. Time schedules for the following, at a minimum: (a) projected start date for the pilot test, (b) projected completion date of pilot test; and (c) reporting dates in accordance with Chapter IV.F.4.
- b. Pilot Test Progress Report. Pilot test progress reports shall describe the progress made to date on the pilot tested management practice(s), any preliminary findings or results, and any recommendations to revise pilot test work plans.
 - c. Pilot Test Final Report. Pilot test final reports shall describe results of the pilot test(s) and recommendations for feasible long-term reservoir and fisheries management practices to achieve the mercury water quality objectives in each IMPAIRED RESERVOIR.
 - d. Long-term Reservoir Management Strategy Report. The long-term reservoir management strategy report shall identify feasible actions and a time schedule that will be taken to achieve the mercury water quality objectives in each IMPAIRED RESERVOIR. The management strategy shall include an assessment schedule that includes periodic monitoring to ensure the management strategy is effective at maintaining the mercury water quality objectives.
2. Individual or Coordinated Plans and Reports.

Pursuant to the time schedule set forth in Chapter IV.F.4, each owner and operator shall develop and submit the plans and reports described in Chapter IV.F.1 for each IMPAIRED RESERVOIR it owns or operates, or the owner or operator may elect to coordinate with other owner(s) or operator(s) of other IMPAIRED RESERVOIR(S) to develop and implement coordinated plans and reports.

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An owner or operator that elects to develop and implement coordinated plans and reports described in Chapter IV.F.1 shall additionally comply with the following requirements:

- a. A coordinated approach may only encompass “representative reservoirs.” “Representative reservoirs” means that each reservoir proposed to be coordinated must be sufficiently similar to other reservoirs such that the management practices pilot tested at a specific reservoir or reservoirs are expected to be effective to achieve or aid in achieving the mercury water quality objectives in each similar reservoir included in the coordinated approach, and for which the management practices pilot tested could be implemented in PHASE 2 in each similar reservoir.
 - b. The coordinated pilot test work plan may include multiple pilot tests for one or more representative reservoirs.
 - c. The coordinated pilot test work plan shall describe the criteria utilized to determine that each “representative reservoir” is sufficiently similar to other reservoirs, and list the similar reservoirs associated with each “representative reservoir”.
 - d. Owners and operators that elect to coordinate pilot tests shall formalize that commitment in a binding agreement. The agreement must contain the following provisions:
 - i. The name of each owner, operator, and IMPAIRED RESERVOIR subject to the coordinated approach.
 - ii. The specific actions each owner and operator agrees to undertake with respect to developing and implementing the pilot tests.
 - iii. An outline of the selection criteria for representative reservoirs in which pilot tests will be implemented and how the pilot tests will be designed to be representative of the similar IMPAIRED RESERVOIRS involved. Coordinated pilot tests may be implemented in representative NON-ASSESSED RESERVOIRS and associated studies may be conducted in representative reservoirs that are NON-IMPAIRED.
 - iv. A description of the financial and other resource commitments from each owner and operator.
 - v. A statement signed by an authorized representative of owner(s) and operator(s) committing to develop and implement the pilot test(s).
3. Technical Review Committee

IMPAIRED RESERVOIR owners and operators shall convene and fund a technical review committee to advise the WATER BOARD and the owners and operators on the applicability and technical feasibility of implementing the reservoir management and fisheries management practices identified in Chapter IV.F.1.a or other management practices that may reduce levels or bioaccumulation of methylmercury in all or some reservoirs, including representative reservoirs proposed in any coordinated pilot test work plan. Owners and operators shall submit all draft pilot test work plans, final reports, and long-term management strategy reports to the technical review committee and WATER BOARD for review. Owners and operators shall revise the plans and reports to account for the technical review committee’s

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conclusions and recommendations and the WATER BOARD's review prior to submitting final plans and reports to the WATER BOARD for approval.

- a. Each member of the technical review committee must have technical expertise relevant to the pilot tests and be independent of the owners and operators convening the committee. Independent means having no financial interest with the owners and operators of IMPAIRED RESERVOIRS or in any reservoir owned by the owners and operators, or authority over the reservoir operations.
 - b. The membership of the technical review committee is subject to review and approval of the WATER BOARD.
 - c. The owners and operators may elect to involve a third party to coordinate, convene, and manage the technical review committee.
 - d. The technical review committee shall meet approximately 60 days prior to submittal to the WATER BOARD of the pilot test work plans, final reports, and the long-term management strategies. The meetings shall include a review and public discussion of the technical review committee members' advice to the owners and operators and to the WATER BOARD on the adequacy and scientific merit of the submittals and advice on implementation of the pilot test work plans. The technical review committee shall provide reports to the WATER BOARD of their review, conclusions, and recommendations.
4. Time Schedule Requirements for Reservoir Owners and Operators:

Within six months of the Effective Date of the MERCURY RESERVOIR PROVISIONS, the WATER BOARD will issue a 13267 investigation order (or other appropriate order, which could include waste discharge requirements, waivers of waste discharge requirements, or cleanup and abatement orders, pursuant to Water Code sections 13263, 13269, or 13304, respectively) to each owner and operator identified on Tables 3A and 3B. The order will include the following requirements.

- a. Notify if individual or coordinated. Within three months of issuance of the order, each owner and operator shall notify the WATER BOARD of its election to conduct individual pilot tests or coordinated pilot tests (see Chapter IV.F.2).
- b. Signed agreement. Within nine months of issuance of the order, the owners and operators that elect to develop and implement coordinated pilot test work plans and reports shall submit their signed agreement to the WATER BOARD pursuant to Chapter IV.F.2.d.
- c. Technical Review Committee. Within 12 months of issuance of the order, the owners and operators shall convene and fund a technical review committee (see Chapter IV.F.3). "Convene" means execute an agreement to fund a facilitator and honoraria for the committee members, determine selection criteria of the committee members, nominate, and select the committee members. Within 15 months of issuance of the order, the owners and operators shall submit draft pilot test work plan(s) to the technical review committee and WATER BOARD.

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- d. Pilot Test Work Plan. Within two years of issuance of the order, the owners and operator shall submit an individual or coordinated pilot test final work plan(s) to the WATER BOARD for review and approval.
 - e. Implement Pilot Tests. Beginning not later than six months after WATER BOARDS approval of each pilot test work plan, the owner and operator shall implement the approved individual or coordinated pilot test work plan.
 - f. Pilot Test Progress Report. Every year after the pilot test work plan is approved, the owner and operator shall submit to the WATER BOARD individual or coordinated, as applicable, pilot test progress reports.
 - g. Pilot Test Final Report. By nine years after the Effective Date, the owners and operators shall submit to the WATER BOARD for review and approval the individual or coordinated, as applicable, pilot test final reports.
 - h. Long-term Reservoir Management Strategy Report. By ten years after the Effective Date, the owners and operators shall submit to the WATER BOARD a final long-term management strategy report for each IMPAIRED RESERVOIR.
5. PHASE 2: Implementation of Long-Term Reservoir Management Strategy

During the State Water Board's review of the MERCURY RESERVOIR PROVISIONS (see Chapter VI), the State Water Board will review each long-term reservoir management strategy submitted to determine which, if any, strategies should be implemented during PHASE 2 at each IMPAIRED RESERVOIR. In PHASE 2, the State Water Board will require each owner and operator of an IMPAIRED RESERVOIR to implement the long-term management strategy selected by the State Water Board to achieve mercury water quality objectives.

- a. Any order issued to a reservoir owner and operator will describe the long-term management strategy to be implemented and the time requirements for such implementation.
 - b. Commencing at the effective date of PHASE 2, every five years, each reservoir owner and operator shall submit a progress report to the State Water Board describing (a) progress to date in implementing the long-term reservoir management strategy in each reservoir, (b) results of implementation in reducing fish methylmercury levels, and (c) any recommendations to revise the long-term reservoir management strategy.
6. Reservoirs Constructed After the Effective Date of the MERCURY RESERVOIR PROVISIONS.

Regarding a RESERVOIR constructed after the Effective Date of the MERCURY RESERVOIR PROVISIONS, and prior to the construction of the impoundment structure, the WATER BOARD may consider requiring the following actions as requirements or conditions in a water right order, water quality certification issued pursuant to Clean Water Act section 401, or other appropriate order issued to each RESERVOIR owner and operator.

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- a. Prior to constructing the impoundment structure for the RESERVOIR, determine if the RESERVOIR is to be sited in a watershed with historical MINE SITES, and if it is, then do the following:
 - i. Remediate actively eroding MINE SITES and associated MINING WASTE DOWNSTREAM OF MINE SITES that discharge mercury upstream of the RESERVOIR; and
 - ii. Conduct comprehensive soil mercury monitoring of area to be inundated and cap or remove MERCURY-CONTAMINATED soils before flooding;
- b. Prior to filling the RESERVOIR for the first time, remove vegetation, if feasible, in a manner that would minimize methylmercury production in the reservoir; and
- c. Upon the first filling of the RESERVOIR, implement feasible water chemistry and fisheries management practices to achieve mercury water quality objectives. The selection of water chemistry and fisheries management practices will be informed by the results of the successful pilot tests completed in PHASE 1 by the owners and operators of IMPAIRED RESERVOIRS and other relevant information. Additionally, the State Water Board may recommend against stocking high trophic level fish species such as brown trout and bass.

G. Municipal and Industrial Wastewater Non-Stormwater NPDES Dischargers

1. The WATER BOARDS will implement the applicable waste load allocations as effluent limitations in individual NPDES permits.
2. The WATER BOARD will include the requirements in this section (Chapter IV.G) in individual NPDES permits issued, reissued, or reopened after the Effective Date of the MERCURY RESERVOIR PROVISIONS, for municipal and industrial wastewater treatment facility NON-STORMWATER NPDES DISCHARGERS (including those identified in Table 5), involving a facility's direct discharge of mercury to an IMPAIRED RESERVOIR or a surface water that is tributary to an IMPAIRED RESERVOIR, except those with a design flow equal to or less than 0.2 mgd and NPDES permits issued to the facilities identified in Table 6.
 - a. Table 5 identifies specific permits and the corresponding water quality based effluent limitation (for total mercury concentration for a calendar year average) that shall be included in the permit, unless performing the REASONABLE POTENTIAL analysis set forth in Chapter III.A.2 of the *Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California—Mercury Water Quality Objectives and Program of Implementation*, requires a more stringent lower effluent limitation.

For permittees not identified on Table 5 that discharge to a tributary of an IMPAIRED RESERVOIR, the effluent limitation shall be the more stringent numeric value that results from applying the method described in Figure 1, or the REASONABLE POTENTIAL analysis set forth in Chapter III.A.2 of the *Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California—Mercury Water Quality Objectives and Program of Implementation*.
 - b. For permittees that directly discharge to an IMPAIRED RESERVOIR not listed in Table 5, the effluent limitation shall be determined by using the method described in Figure 1.

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3. Within one year of the Effective Date of the MERCURY RESERVOIR PROVISIONS, for any permittee with a direct discharge of mercury to an IMPAIRED RESERVOIR or a surface water that is tributary to an IMPAIRED RESERVOIR (including those identified in Table 5) that uses one or more treatment pond systems (e.g., oxidation, facilitative, settling, or stabilization ponds), the WATER BOARD will either issue an order pursuant to Water Code sections 13267 or 13383, or modify, re-issue, or adopt the applicable NPDES permit to require effluent methylmercury monitoring. The effluent methylmercury monitoring shall occur at a minimum on a quarterly basis for two calendar years and the monitoring results may be submitted in an annual report. If all methylmercury sample results in the first calendar year are below the detection limit of 0.02 ng/L, then the permittee may discontinue the monitoring.

H. Storm Water NPDES Dischargers

1. Municipal Separate Storm Sewer Systems
 - a. Chapter IV.H.1 applies to an individual municipal separate storm sewer system (MS4) regulated by NPDES permits issued pursuant to Clean Water Act section 402, subsection (p), that discharges to an IMPAIRED RESERVOIR or a tributary of an IMPAIRED RESERVOIR if it meets the following conditions:
 - i. The MS4 serves a population of 100,000 or more; and
 - ii. The individual MS4 drainage infrastructure area in the watershed, combined with the drainage infrastructure area of all other MS4s in the watershed, is greater than 20 percent of the watershed area upstream of the IMPAIRED RESERVOIR. For purposes of this determination, the watershed area does not extend upstream of any dam on a tributary to an IMPAIRED RESERVOIR.
 - b. The WATER BOARD will either issue an order pursuant to Water Code sections 13267 or 13383, or modify, re-issue, or adopt the applicable NPDES permit to require methylmercury monitoring in representative urban runoff discharges to the reservoir or its tributaries at least twice during each of one dry season and one wet season and to submit the monitoring results to the WATER BOARD within eight years of the Effective Date of the MERCURY RESERVOIR PROVISIONS.
2. Storm Water Dischargers in Historical Mining Areas
 - a. Chapter IV.H.2 applies to a municipal or industrial storm water discharger regulated by an NPDES permit listed in Table 7 which has a discharge or proposed discharge that includes or has the potential to include mercury from mercury, silver, or gold mining operations to surface waters and the permittee's drainage infrastructure area encompasses one or more historical MINE SITE(s).
 - b. The WATER BOARD will include a requirement in the NPDES permits issued, reissued, or reopened after the Effective Date of the MERCURY RESERVOIR PROVISIONS for a permittee to implement or require implementation of erosion and sediment control practices to MINIMIZE discharges of mercury from any project that involves new road construction or road maintenance activities or land development activities that disturb soil in areas potentially affected by mercury from historical MINE SITES.

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V. Recommendations

To protect human health and reduce levels of methylmercury in reservoir fish, the State Water Board provides the following recommendations to the agencies and entities identified in this section (Chapter V). The State Water Board will request:

A. Outreach Activities Regarding Fish Consumption Advisories

1. The California Department of Public Health continue to take action to inform the public about fish consumption advisories and fish consumption recommendations to protect human health, particularly with respect to people and communities that are known to consume fish at higher rates (i.e., subsistence fishers) and most likely to be affected by methylmercury in fish.
2. The Office of Environmental Health Hazard Assessment (OEHHA) continue to provide timely advisories, advisory updates, and associated health information for the public regarding contaminants in fish caught in California water bodies.
3. The California Department of Public Health and OEHHA coordinate with owners and operators of RESERVOIRS and other interested persons or entities to engage in public outreach and education activities regarding fish consumption advisories.
4. Reservoir owners and operators of IMPAIRED RESERVOIRS post signs, at entrances to reservoirs, containing either the OEHHA Statewide Advisory for Eating Fish from California's Lakes and Reservoirs without Site-specific Advice or a reservoir-specific advisory if available.
5. For reservoirs that have fish 'do not eat' consumption advisories, reservoir owners and operators engage in additional public outreach and educational activities to discourage people from consuming those fish.

B. Fisheries Management

1. During PHASE 1, California Department of Fish and Wildlife (CDFW) coordinate with interested reservoir owners and operators listed in Tables 3A and 3B to conduct reservoir pilot tests for fisheries management activities described in Chapter IV.F.1.
2. CDFW implement fisheries management actions described in Chapters IV.F.1.a.i.d through IV.F.1.a.i.g in all RESERVOIRS to reduce methylmercury levels in fish to the extent those fisheries management actions do not conflict with programs Fish and Wildlife is authorized to implement.
3. CDFW change recreational catch limits to reduce human consumption of larger, older fish with high methylmercury levels (e.g., implement "slot limits" that specify a safer size range of fish that can be harvested for consumption).
4. CDFW change to fishing regulations contained in title 14 of the California Code of Regulations (Division One) to limit the harvesting of fish species and sizes known to have elevated levels of methylmercury, and implement and enforce these fish harvesting limits at RESERVOIRS where data are available that show fish methylmercury levels are greater than the OEHHA 'do not eat' consumption advisories.
5. CDFW provide fish consumption recommendations and advisories to fishing licensees and the public to protect public health.

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C. Reductions in Atmospheric Mercury

1. The California Air Resources Board (CARB) and U.S. Environmental Protection Agency (USEPA) continue to promote and enhance programs that reduce mercury emissions, evaluate their effectiveness, and modify the programs as necessary to make progress towards reducing atmospheric mercury deposition.
2. CARB and USEPA develop a plan describing which agency will evaluate changes in deposition patterns in California associated with local and global anthropogenic emissions. The plan should include the following elements:
 - a. Which agencies will track progress towards achieving the goals for atmospheric deposition; and
 - b. The potential steps to identify and implement additional mercury controls for California emissions and/or additional national and international actions if monitoring and modelling indicates the deposition load allocations likely will not be achieved, or additional deposition hotspots are observed in California.

VI. Program Review: State Water Board Reconsideration of Mercury Reservoir Provisions

- A. At the conclusion of PHASE 1, but no later than 12 years after the Effective Date of the MERCURY RESERVOIR PROVISIONS, the State Water Board will evaluate and review the MERCURY RESERVOIR PROVISIONS (“Program Review”). The Program Review will include the following:
 1. Evaluate the results of each of the pilot tests submitted in PHASE 1 in accordance with Chapters IV.F.1, 4, and 5.
 2. Consider the statewide technical review committee’s advice and report (see Chapter IV.F.3.d), if available.
 3. Review each long-term reservoir management strategy submitted in accordance with Chapters IV.F.1.d, IV.F.4.h, and IV.F.5, and, if approved by the State Water Board, direct each owner and operator on whose behalf the long-term reservoir management strategies were submitted to implement actions informed by the pilot tests during PHASE 2.
 4. Consider whether any RESERVOIR determined to be impaired by mercury after the Effective Date of the MERCURY RESERVOIR PROVISIONS should be subject to the requirements set forth in Chapter IV.F.
 5. Consider whether any additional or new information bears on the efficacy of the MERCURY RESERVOIR PROVISIONS, and if so, consider amendments thereto.
 6. Consider whether to exercise reservations of authority included in each Clean Water Act section 401 water quality certification issued to owners or operators of reservoirs subject to a license issued by FERC pursuant to the Federal Power Act. In particular, the review shall consider if the reservoir exceeds or threatens to exceed water quality standards for mercury at the reservoir and include the actions and time schedules consistent with the requirements contained in Chapter IV.F.
- B. The State Water Board will hold a public hearing pertaining to the issues it will consider during its Program Review of the MERCURY RESERVOIR PROVISIONS after

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providing the public with notice and a comment period in accordance with applicable law.

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Appendix A: Glossary of Terms

COMM: A general reference to the Commercial and Sport Fishing (COMM) beneficial use, which pertains to uses of water that support commercial or recreational collection of fish, shellfish, or other organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes. Each of the regional water quality control plans contains a specific definition for this beneficial use applicable within the specific region.

IMPAIRED RESERVOIR: A RESERVOIR identified on Table 1 that has been determined by the WATER BOARDS to be too degraded to meet water quality standards for the pollutant mercury for COMM, WILD, and/or RARE. The RESERVOIR need not be listed as impaired on the Clean Water Action section 303(d) list of impaired waters.

MERCURY-CONTAMINATED: Mining waste, soil, or sediments with median mercury concentration (dry weight, in grains smaller than 63 microns) greater than the following mercury concentration limits for the applicable site geology:

- i. 0.2 milligrams per kilogram (mg/kg) for sites located in geology that has trace levels of mercury;
- ii. 0.6 mg/kg for sites located in geology that is naturally enriched in mercury; or
- iii. 400 mg/kg for sites located within the mercury mineralized zone at mercury MINE SITES.

MERCURY RESERVOIR PROVISIONS: A general reference to the provisions contained in the Amendment to the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California— Mercury TMDL and Implementation Program for Reservoirs.

MINE SITES: Historical abandoned mines, facilities, or areas, or both, where mercury was mined or used for the processing of gold or silver. MINE SITES include associated mining waste near the mine site, and roads or property near MINE SITES that contain mining waste.

MINIMIZE: For purposes of Chapters III.A, IV.D, IV.E, and IV.H of the MERCURY RESERVOIR PROVISIONS, MINIMIZE means the use of controls, structures, and management practices that achieve best conventional pollutant control technology for erosion and sediment control.

MINING WASTE DOWNSTREAM OF MINE SITES: Mining waste that contains mercury that is located in upland areas and in floodplains, creeks, and/or rivers downstream of the MINE SITES but upstream of the RESERVOIRS.

NON-ASSESSED RESERVOIR: A RESERVOIR for which the WATER BOARDS have not determined whether COMM, WILD, and/or RARE is supported for the pollutant mercury (i.e., a NON-ASSESSED RESERVOIR is neither an IMPAIRED RESERVOIR nor a NON-IMPAIRED RESERVOIR).

NON-IMPAIRED RESERVOIR: A RESERVOIR for which the WATER BOARDS have determined that all applicable beneficial uses of COMM, WILD, and RARE are supported for the pollutant mercury (see Table 2).

NON-STORMWATER NPDES DISCHARGERS: Dischargers that are regulated pursuant to one or more NPDES permits(s), but excluding any discharges subject to Clean Water Act section 402(p).

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PHASE 1: PHASE 1 generally refers to the first of two phases of the program of implementation and commences at the Effective Date of the MERCURY RESERVOIR PROVISIONS and ends 10 years thereafter.

PHASE 2: PHASE 2 generally refers to the second of two phases of the program of implementation for IMPAIRED RESERVOIRS and will not begin until the effective date of the State Water Board's amendment to the MERCURY RESERVOIR PROVISIONS, which will occur in accordance with Chapter VI.

RARE: A general reference to the Rare, Threatened, or Endangered Species (RARE) beneficial use, which pertains to uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under State or federal law as being rare, threatened, or endangered. Each of the regional water quality control plans contains a specific definition for this beneficial use applicable within the specific region.

REASONABLE POTENTIAL: A designation used for a waste discharge that is projected or calculated to cause or contribute to an excursion above a water quality standard.

RESERVOIR: A natural or artificial water impoundment that: 1) has constructed structures such as dams, levees, or berms to contain or otherwise manage water, and/or was excavated; and 2) provides year round habitat for fish other than those specifically introduced for vector control purposes.

However, the term RESERVOIR does not include the following types of impoundments, unless the impoundment is expressly identified as a reservoir in a water quality control plan and/or provides year round habitat for fish other than those specifically introduced for vector control purposes:

1. Potable water treatment and storage facilities;
2. Industrial (including mining) supply water treatment facilities including water storage facilities that are part of the industrial process;
3. Ponds or facilities designed and operated to collect or treat municipal, industrial, process or mining wastewaters;
4. Storm water runoff and flood control basins containing water ephemerally or intermittently, including constructed storm water detention ponds and storm water best management practice impoundments; and
5. Ponds primarily created for purposes of agricultural and ranching operations, irrigation, storage for beneficial reuse of wastewater, or percolation to groundwater; and
6. Ponds created to impound saline waters, e.g., salt evaporation ponds.

TROPHIC LEVEL 3: Fish that consume mainly zooplankton, benthic invertebrates, and small, phytoplankton-dependent fish. Species include rainbow and brook trout, blue gill, sunfishes, suckers, and bullhead. Additional examples are provided in Appendix B, Table C-1.

TROPHIC LEVEL 4: Fish that consume TROPHIC LEVEL 3 fish and aquatic organisms. Species include largemouth, smallmouth, spotted, and striped bass; brown and lake trout; white and channel catfish, and Sacramento pikeminnow. Additional examples are provided in Appendix B, Table C-1.

WATER BOARD or WATER BOARDS: Water board or water boards means the State Water Resources Control Board (State Water Board) or Regional Water Quality Control Board (Regional Water Board) that issues a National Pollutant Discharge Elimination System (NPDES)

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permit, Waste Discharge Requirements (WDR), or conditional waivers of WDRs to a qualifying discharger.

WET WEIGHT: Wet weight is part of the format for expressing the concentration of methylmercury in fish tissue. The mercury water quality objectives and TMDL targets are expressed as a mass of methylmercury per mass of fresh or “wet” fish tissue. Concentrations expressed as methylmercury in dry weight of fish are not equivalent and must be converted to concentration on a wet weight basis if being compared with the objectives and targets.

WILD: A general reference to the Wildlife Habitat (WILD) beneficial use, which pertains to uses of water that support estuarine ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources. Each of the regional water quality control plans contains a specific definition for this beneficial use applicable within the specific region.

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Appendix B: Water Quality Objectives

Amendment to the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California—Tribal and Subsistence Fishing Beneficial Uses, Mercury Water Quality Objectives, and Program of Implementation

Available at http://www.waterboards.ca.gov/water_issues/programs/mercury/

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Table 1

IMPAIRED RESERVOIRS and Beneficial Uses Associated with COMM, WILD, or RARE

IMPAIRED RESERVOIR	Region	COMM, WILD, and RARE beneficial uses of IMPAIRED RESERVOIRS designated in Basin Plans by a WATER BOARD prior to the Effective Date of the MERCURY RESERVOIR PROVISIONS ^(a)			Document Underlying Impairment Finding ^(d)	COMM and WILD beneficial uses of IMPAIRED RESERVOIRS designated by the MERCURY RESERVOIR PROVISIONS	
		COMM	RARE	WILD		2010 303(d) List or Staff Report	COMM
Almanor, Lake	5			E	2010 303(d) List	X	
Anderson Reservoir	2	E		E	2010 303(d) List		
Beach Lake (Black Crown Lake) ^(e)	5			E	2010 303(d) List		
Berryessa, Lake	5			E	2010 303(d) List	X	
Big Bear Lake	8		X	X	2010 303(d) List	X	
Black Butte Reservoir	5			E	2010 303(d) List	X	
Bon Tempe Reservoir	2			E	2010 303(d) List	E	
Britton Lake	5			E	2010 303(d) List	X	
Calaveras Reservoir ^(e)	2		E	E	2010 303(d) List		
Camanche Reservoir	5			E	2010 303(d) List	X	
Camp Far West Reservoir	5			E	2010 303(d) List	X	
Casitas, Lake	4		E	E	2010 303(d) List	E	
Castaic Lake	4		E	E	2010 303(d) List	E	
Chabot, Lake (Alameda Co)	2	E		E	2010 303(d) List		

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Table 1 (Continued)

IMPAIRED RESERVOIRS and Beneficial Uses Associated with COMM, WILD, or RARE

IMPAIRED RESERVOIR	Region	COMM, WILD, and RARE beneficial uses of IMPAIRED RESERVOIRS designated in Basin Plans by a WATER BOARD prior to the Effective Date of the MERCURY RESERVOIR PROVISIONS ^(a)			Document Underlying Impairment Finding ^(d)	COMM and WILD beneficial uses of IMPAIRED RESERVOIRS designated by the MERCURY RESERVOIR PROVISIONS	
		COMM	RARE	WILD		2010 303(d) List or Staff Report	COMM
Chesbro Reservoir	3	X	X	X	2010 303(d) List		
Combie, Lake	5			E	2010 303(d) List	X	
Davis Creek Reservoir ^(e)	5			E	2010 303(d) List		
Del Valle Reservoir	2	E		E	2010 303(d) List		
Don Pedro Lake	5			E	2010 303(d) List	X	
East Park Reservoir	5			E	2010 303(d) List	X	
El Dorado Park Lakes	4			E	2010 303(d) List	E	
Englebright Lake	5			E	2010 303(d) List	X	
Folsom Lake	5			E	2010 303(d) List	X	
Hell Hole Reservoir	5			E	2010 303(d) List	X	
Hensley Lake	5			E	2010 303(d) List	X	
Herman, Lake	2			E	2010 303(d) List	E	
Hetch Hetchy Reservoir	5			E	2010 303(d) List	X	
Hodges, Lake	9		●	●	2010 303(d) List	● ¹	
Indian Valley Reservoir	5			E	2010 303(d) List	X	

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Table 1 (Continued)

IMPAIRED RESERVOIRS and Beneficial Uses Associated with COMM, WILD, or RARE

IMPAIRED RESERVOIR	Region	COMM, WILD, and RARE beneficial uses of IMPAIRED RESERVOIRS designated in Basin Plans by a WATER BOARD prior to the Effective Date of the MERCURY RESERVOIR PROVISIONS ^(a)			Document Underlying Impairment Finding ^(d)	COMM and WILD beneficial uses of IMPAIRED RESERVOIRS designated by the MERCURY RESERVOIR PROVISIONS	
		COMM	RARE	WILD		COMM	WILD
Kaweah Lake	5			●	2010 303(d) List	●	
Lafayette Reservoir	2	E		E	2010 303(d) List		
Marsh Creek Reservoir ^{(b), (e)}	5		E	E	2010 303(d) List		
McClure Reservoir	5			E	2010 303(d) List	X	
Mendocino, Lake	1	E	E	E	2010 303(d) List		
Mile Long Pond	5			E	2010 303(d) List	X	
Millerton Lake	5			E	2010 303(d) List	X	
Modesto Reservoir	5			E	2010 303(d) List	X	
Nacimiento Reservoir	3	X	X	X	2010 303(d) List		
Natoma, Lake	5			E	2010 303(d) List	X	
New Bullards Bar Reservoir	5			E	2010 303(d) List	X	
New Hogan Lake	5			E	2010 303(d) List	X	
New Melones Reservoir	5			E	2010 303(d) List	X	
Nicasio Reservoir	2	E		E	2010 303(d) List		

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Table 1 (Continued)

IMPAIRED RESERVOIRS and Beneficial Uses Associated with COMM, WILD, or RARE

IMPAIRED RESERVOIR	Region	COMM, WILD, and RARE beneficial uses of IMPAIRED RESERVOIRS designated in Basin Plans by a WATER BOARD prior to the Effective Date of the MERCURY RESERVOIR PROVISIONS ^(a)			Document Underlying Impairment Finding ^(d)	COMM and WILD beneficial uses of IMPAIRED RESERVOIRS designated by the MERCURY RESERVOIR PROVISIONS	
		COMM	RARE	WILD		COMM	WILD
O'Neill Forebay	5				2010 303(d) List	X	X
Oroville, Lake	5			E	2010 303(d) List	X	
Oxbow Reservoir	5			E	2010 303(d) List	X	
Pardee Reservoir ^(c)	5			E	2010 303(d) List	X	
Pillsbury, Lake	1	E	E	E	2010 303(d) List		
Pine Flat Reservoir	5			●	2010 303(d) List	●	
Puddingstone Reservoir	4		E	E	2010 303(d) List	E	
Pyramid Lake	4		E	E	2010 303(d) List	E	
Robinsons Pond (Butte County)	5			E	2010 303(d) List	X	
Rollins Reservoir	5			E	2010 303(d) List	X	
San Antonio Reservoir	3	X	X	X	2010 303(d) List		
San Luis Reservoir	5			E	2010 303(d) List	X	
San Pablo Reservoir	2	E		E	2010 303(d) List		
Scotts Flat Reservoir	5			E	2010 303(d) List	X	

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Table 1 (Continued)

IMPAIRED RESERVOIRS and Beneficial Uses Associated with COMM, WILD, or RARE

IMPAIRED RESERVOIR	Region	COMM, WILD, and RARE beneficial uses of IMPAIRED RESERVOIRS designated in Basin Plans by a WATER BOARD prior to the Effective Date of the MERCURY RESERVOIR PROVISIONS ^(a)			Document Underlying Impairment Finding ^(d)	COMM and WILD beneficial uses of IMPAIRED RESERVOIRS designated by the MERCURY RESERVOIR PROVISIONS	
		COMM	RARE	WILD		2010 303(d) List or Staff Report	COMM
Shadow Cliffs Reservoir	2	E		E	2010 303(d) List		
Shasta Lake	5			E	2010 303(d) List	X	
Shastina, Lake	1			E	2010 303(d) List	E	
Sherwood, Lake	4			E	2010 303(d) List	E	
Slab Creek Reservoir	5			E	2010 303(d) List	X	
Solano, Lake	5			E	2010 303(d) List	X	
Sonoma, Lake	1	E	E	E	2010 303(d) List		
Stevens Creek Reservoir	2	E		E	2010 303(d) List		
Stony Gorge Reservoir	5			E	2010 303(d) List	X	
Thermalito Afterbay	5			E	2010 303(d) List	X	
Trinity Lake	1	E	E	E	2010 303(d) List		
Tulloch Reservoir	5			E	2010 303(d) List	X	
Turlock Lake	5			E	2010 303(d) List	X	
Uvas Reservoir	3	X	X	X	2010 303(d) List		
Whiskeytown Lake	5			E	2010 303(d) List	X	
Wildwood, Lake	5			E	2010 303(d) List	X	

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Table 1 (Continued)

IMPAIRED RESERVOIRS and Beneficial Uses Associated with COMM, WILD, or RARE

IMPAIRED RESERVOIR	Region	COMM, WILD, and RARE beneficial uses of IMPAIRED RESERVOIRS designated in Basin Plans by a WATER BOARD prior to the Effective Date of the MERCURY RESERVOIR PROVISIONS ^(a)			Document Underlying Impairment Finding ^(d)	COMM and WILD beneficial uses of IMPAIRED RESERVOIRS designated by the MERCURY RESERVOIR PROVISIONS	
		COMM	RARE	WILD	2010 303(d) List or Staff Report	COMM	WILD
Woodward Reservoir	5			E	2010 303(d) List	X	
<i>Additional reservoirs will be added after peer review</i>					<i>Staff Report</i>		

Table 1 Footnotes:

(a) Table 1 contains the unique beneficial use designation codes utilized by each WATER BOARD:

<u>Region</u>	<u>Code</u>	<u>Designation</u>
1	E	Existing
2	E	Beneficial use exists in the water body
	E*	Public access to the water body is limited or prohibited for purposes of protecting drinking water quality and public health
3	X	Existing beneficial use
4	E	Existing beneficial use
5	E	Existing beneficial use (Sacramento and San Joaquin River Basins)
	P	Potential beneficial use (Sacramento and San Joaquin River Basins)
	●	Existing and probable future beneficial uses (Tulare Lake Basin)
	X	Designated beneficial use. To be added as a footnote to the Sacramento and San Joaquin River Basins Plan Table II-1.
8	X	Existing or potential beneficial use
9	●	Existing beneficial use
	● ¹	Existing beneficial use. Fishing from shore or boat permitted, but other water contact recreational (REC-1) uses are prohibited.

(b) Marsh Creek Reservoir, Basin Plan Table II-1, page II-6.00 (Per State Water Board Resolution No. 90-28, Marsh Creek and Marsh Creek Reservoir in Contra Costa County are assigned the following beneficial uses: REC-1 and REC-2 (potential uses), WARM, WILD and RARE. COMM is a

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Table 1 Footnotes (continued):

designated beneficial use for Marsh Creek and its tributaries listed in Appendix 43 within the legal Delta boundary.)

- (c) Pardee Reservoir, Basin Plan Table II-1, page II-7.00 (Sport fishing is the only recreation activity permitted.)
- (d) Document Underlying the Impairment Finding – This column describes the documentation that contains the Water Board's finding that the reservoirs are impaired prior to the Effective Date of the MERCURY RESERVOIR PROVISIONS. The beneficial use evaluated for the impairment finding is human consumption of fish.
- (e) COMM is not applicable to this reservoir.

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Table 2
NON-IMPAIRED RESERVOIRS
as of the Effective Date of the MERCURY RESERVOIR PROVISIONS

Note: Analysis of NON-IMPAIRED RESERVOIRS will be conducted after scientific peer review.

Reservoir	WATER BOARD Region

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Table 3A

Non-FERC Licensed IMPAIRED RESERVOIRS (non-federally owned)

Reservoir	Reservoir Owner	Reservoir Operator (if Different from Owner)
Anderson Lake	Santa Clara Valley Water District	
Beach Lake	Sacramento Regional County Sanitation District	
Big Bear Lake	Big Bear Municipal Water District	
Bon Tempe Lake	Marin Municipal Water District	
Calaveras Reservoir	City & County of San Francisco	
Castaic Lake	CA Department of Water Resources	
Chabot, Lake (Alameda Co.)	East Bay Municipal Utility District	
Chesbro Reservoir	Santa Clara Valley Water District	
Davis Creek Reservoir	Homestake Mining Co.	
Del Valle Reservoir	CA Department of Water Resources	
El Dorado Park Lakes	City of Long Beach	
Herman, Lake	City of Benicia	
Hetch Hetchy Reservoir	City & County of San Francisco	San Francisco Public Utilities Commission
Hodges, Lake	City of San Diego	
Indian Valley Reservoir	Yolo County Flood Control & Water Conservation District	

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Table 3A (Continued)

Non-FERC Licensed IMPAIRED RESERVOIRS (non-federally owned)

Reservoir	Reservoir Owner	Reservoir Operator (if Different from Owner)
Lafayette Reservoir	East Bay Municipal Utility District	
Marsh Creek Reservoir	Contra Costa County Flood Control & Water Conservation District	
Mile Long Pond	CA Department of Water Resources	
Modesto Reservoir	Modesto Irrigation District	
Nicasio Reservoir	Marin Municipal Water District	
Puddingstone Reservoir	Los Angeles County Department of Public Works	
Robinson's Pond	CA Department of Fish and Wildlife	
San Antonio Reservoir	Monterey County Water Resources Agency	
San Pablo Reservoir	East Bay Municipal Utility District	
Scotts Flat Reservoir	Nevada Irrigation District	
Shadow Cliffs Reservoir	East Bay Regional Park District	
Shastina, Lake	Montague Water Conservation District	
Sherwood, Lake	Westlake Lake Management Association	
Stevens Creek Reservoir	Santa Clara Valley Water District	
Turlock Lake	Turlock Irrigation District	

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Table 3A (Continued)

Non-FERC Licensed IMPAIRED RESERVOIRS (non-federally owned)

Reservoir	Reservoir Owner	Reservoir Operator (if Different from Owner)
Uvas Reservoir	Santa Clara Valley Water District	
Wildwood, Lake	Lake Wildwood Association	
Woodward Reservoir	South San Joaquin Irrigation District	

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Table 3B

Non-FERC Licensed IMPAIRED RESERVOIRS (federally owned)

Reservoir	Reservoir Owner	Reservoir Operator (if Different from Owner)
Casitas, Lake	U.S. Bureau of Reclamation	Casitas Municipal Water District
East Park Reservoir	U.S. Bureau of Reclamation	Orland Unit Water Users' Association
Folsom Lake	U.S. Bureau of Reclamation	
Hensley Lake	U.S. Army Corps of Engineers	
Natoma, Lake	U.S. Bureau of Reclamation	
New Melones Lake	U.S. Bureau of Reclamation	
O'Neill Forebay	U.S. Bureau of Reclamation	CA Department of Water Resources
San Luis Reservoir	U.S. Bureau of Reclamation	CA Department of Water Resources
Shasta Lake	U.S. Bureau of Reclamation	
Trinity Lake	U.S. Bureau of Reclamation	
Whiskeytown Lake	U.S. Bureau of Reclamation	

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**Table 3C
FERC-Licensed IMPAIRED RESERVOIRS**

Reservoir	Reservoir Owner	Reservoir Operator (if Different from Owner)
Almanor, Lake	Pacific Gas and Electric Co.	
Berryessa, Lake	U.S. Bureau of Reclamation	Solano County Water Agency
Black Butte Lake	U.S. Army Corps of Engineers	
Britton, Lake	Pacific Gas and Electric Co.	
Camanche Reservoir	East Bay Municipal Utility District	
Camp Far West Reservoir	South Sutter Water District	
Combie, Lake	Nevada Irrigation District	
Don Pedro Lake	Turlock & Modesto Irrigation District	
Englebright Lake	U.S. Army Corps of Engineers	Yuba County Water Agency/Pacific Gas and Electric Company
Hell Hole Reservoir	Placer County Water Agency	
Kaweah, Lake	U.S. Army Corps of Engineers	Kaweah River and Power Authority
McClure, Lake	Merced Irrigation District	
Mendocino, Lake	U.S. Army Corps of Engineers	Sonoma County Water Agency
Millerton Lake	U.S. Bureau of Reclamation	Friant Power Authority
Nacimiento, Lake	Monterey County Water Resources Agency	
New Bullards Bar Reservoir	Yuba County Water Agency	

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**Table 3C (Continued)
FERC-Licensed IMPAIRED RESERVOIRS**

Reservoir	Reservoir Owner	Reservoir Operator (if Different from Owner)
New Hogan Lake	U.S. Army Corps of Engineers	Modesto Irrigation District
Oroville, Lake	CA Department of Water Resources	
Oxbow Reservoir (Ralston Afterbay)	Placer County Water Agency	
Pardee Reservoir	East Bay Municipal Utility District	
Pillsbury, Lake	Pacific Gas and Electric Co.	
Pine Flat Lake	U.S. Army Corps of Engineers	Pacific Gas and Electric Company and Kings River Conservation District
Pyramid Lake	CA Department of Water Resources	
Rollins Reservoir	Nevada Irrigation District	
Slab Creek Reservoir	Sacramento Municipal Utility District	
Solano, Lake	U.S. Bureau of Reclamation	Solano County Water Agency
Sonoma, Lake	U.S. Army Corps of Engineers	
Stony Gorge Reservoir	U.S. Bureau of Reclamation	Orland Unit Water Users' Association
Thermalito Afterbay	CA Department of Water Resources	
Tulloch Reservoir	South San Joaquin and Oakdale Irrigation Districts	

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Table 4

TMDL Load and Waste Load Allocations for Mercury Sources Directly to or Upstream of IMPAIRED RESERVOIRS

Source	Geologic Region	Allocation Type⁽¹⁾ (Load or Waste Load)	Parameter & Matrix*	Allocation
1. Mine Sites				
(a) Runoff from mercury mine sites	Hg mineralized zone	Load	Hg conc. in suspended sediment in water	400 mg/kg [dry wt., median]
(b) Runoff from non-mercury mine sites (e.g., gold and silver mine sites where mercury was used)	Naturally enriched in Hg	Load	Hg conc. in suspended sediment in water	0.3 mg/kg [dry wt., median]
	Trace Hg			0.1 mg/kg [dry wt., median]
2. Mining Waste Downstream of Mine Sites				
Erodible mining waste in floodplain areas and stream channels and activities that disturb mercury-contaminated sediment, located downstream of mine sites	Hg mineralized zone	Load	Hg conc. in suspended sediment in water	400 mg/kg [dry wt., median]
	Naturally enriched in Hg			0.3 mg/kg [dry wt., median]
	Trace Hg			0.1 mg/kg [dry wt., median]
3. Atmospheric Deposition⁽²⁾				
(a) Deposition attributed to California anthropogenic emissions	Statewide	Load	Hg load in atmospheric deposition	230 kg/year
(b) Deposition attributed to non-California anthropogenic emissions				1,600 kg/year

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Table 4 (Continued)

TMDL Load and Waste Load Allocations for Mercury Sources Directly to or Upstream of IMPAIRED RESERVOIRS

Source	Geologic Region	Allocation Type⁽¹⁾ (Load or Waste Load)	Parameter & Matrix*	Allocation*
(c) Deposition attributed to emissions from natural sources				1,400 kg/year
4. Runoff from Urbanized Upland Areas⁽²⁾				
(a) Mercury in runoff from direct discharges from local urban sources within and outside of municipal separate storm sewer system (MS4) service areas	All regions	<i>Atmospheric deposition source of mercury to urban runoff is accounted for in the load allocations for atmospheric deposition⁽²⁾</i>		
(b) Mercury in runoff from atmospheric deposition	All regions	<i>Atmospheric deposition source of mercury to urban runoff is accounted for in the load allocations for atmospheric deposition⁽²⁾</i>		
5. Runoff from Non-Urbanized Upland Areas				
Runoff from non-mine areas (e.g., runoff from managed timber lands; grazing and other agricultural areas; unmanaged forests and other undeveloped areas; road construction and maintenance; and other construction activities).	Hg mineralized zone	Load	Hg conc. in suspended sediment in water	400 mg/kg [dry wt., median]
	Naturally Enriched in Hg			0.3 mg/kg [dry wt., median]
	Trace Hg			0.1 mg/kg [dry wt., median]

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Table 4 (Continued)

TMDL Load and Waste Load Allocations for Mercury Sources Directly to or Upstream of IMPAIRED RESERVOIRS

Source	Geologic Region	Allocation Type ⁽¹⁾ (Load or Waste Load)	Parameter & Matrix*	Allocation*
6. Municipal and Industrial Wastewater NON-STORMWATER NPDES Dischargers⁽³⁾				
(a) Facilities with either (i) design discharge flows greater than 1 million gallons per day (>1 mgd) in IMPAIRED RESERVOIR watersheds where the sum of the NPDES-permitted facility discharges to or upstream of the reservoir exceeds 1% of the reservoir inflow, or (ii) if no discharge flow data are available	All regions	Waste Load	Hg conc. in water	Municipal WWTPs: 10 ng/L [calendar year average] All other facilities: 30 ng/L [calendar year average]
(b) Facilities with either (i) design discharge flows greater than 0.2 mgd but equal to or less than 1 mgd, or (ii) design flows >1 mgd but the sum of the NPDES-permitted facility discharges to or upstream of a reservoir does not exceed 1% of the reservoir inflow	All regions	Waste Load	Hg conc. in water	Municipal WWTPs: 20 ng/L [calendar year average] All other facilities: 60 ng/L [calendar year average]
(c) Facilities with design discharge flows equal to or less than 0.2 mgd and facilities enrolled in general permits listed in Table 6	All regions	<i>No waste load allocation because these are negligible dischargers</i>		

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Table 4 (Continued)

TMDL Load and Waste Load Allocations for Mercury Sources Directly to or Upstream of IMPAIRED RESERVOIRS

Source	Geologic Region	Allocation Type ⁽¹⁾ (Load or Waste Load)	Parameter & Matrix*	Allocation*
7. Reservoirs with Fish with Methylmercury Concentrations that Exceed the Mercury Water Quality Objectives				
IMPAIRED RESERVOIRS	All regions	Load	MeHg conc. in water	Non-detect with MDL ≤0.009 ng/L MeHg [unfiltered, calendar year median, entire water column ⁽⁴⁾]

Table 4 Footnotes:

1. The load allocations identified in Table 4 shall be implemented as management practices and are not remediation standards; mercury concentration or other remediation standards shall be established as necessary and appropriate, typically on a site-specific basis.
2. Atmospheric deposition is the primary source of mercury to urban runoff in reservoir watersheds and is accounted for by the load allocations for atmospheric deposition. Direct mercury discharges from local urban sources are expected to decrease to negligible amounts by the implementation of recent statewide mercury reduction rules and institutional controls and best management practices required by storm water discharge permits and other regulatory mechanisms. These negligible discharges are not assigned load allocations. No new water quality based mercury effluent limitations are required for runoff from urbanized areas encompassed by NPDES permits and other urbanized areas upstream of reservoirs to implement mercury water quality objectives. Table 7 identifies individual and statewide NPDES permits for storm water and other urban runoff in reservoir watersheds addressed by the atmospheric deposition load allocations in Table 4.
3. See Table 5 for facility-specific waste load allocations.
4. Entire water column indicates that samples must be collected from both shallow and deep depths (i.e., epilimnion and hypolimnion) and may include additional samples from intermediate depths.

* Hg = Inorganic mercury, MeHg = Methylmercury, MDL = Method detection limit, conc. = concentration, mg/kg = milligrams per kilogram, ng/L = nanograms per liter, dry wt. = dry weight

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Table 5

**Waste Load Allocations and Effluent Limitations for NPDES-Permitted Facilities
Upstream of IMPAIRED RESERVOIRS**

Region	NPDES No.	Permittee [Facility]	Facility Design Flow > 1 mgd	Watershed Sum of Facility Design Flows > 1% of Reservoir Inflows	Allocation and Effluent Limitation (effluent total mercury concentration, calendar year average)
2	CA0038342	East Bay Municipal Utility District [Orinda Water Treatment Plant]			30 ng/L
2	CA0038857	San Francisco Public Utilities Commission [SFPUC Drinking Water Transmission System]			30 ng/L
4	CA0055824	Los Angeles, City of [Castaic Power Plant, discharges to Castaic Reservoir]	X		60 ng/L
4	CA0055824	Los Angeles, City of [Castaic Power Plant, discharges to Pyramid Reservoir]	X		60 ng/L
4	CA0059188	California Department of Water Resources [William E. Warner Power Plant]	X		60 ng/L
5	CA0003981	Sierra Pacific Industries [Burney Division]			60 ng/L
5	CA0004391	Collins Pine Company [Chester Sawmill]			60 ng/L
5	CA0077747	Chester Public Utilities District [Chester WWTP] ¹			20 ng/L

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Table 5 (Continued)

Waste Load Allocations and Effluent Limitations for NPDES-Permitted Facilities Upstream of IMPAIRED RESERVOIRS

Region	NPDES No.	Permittee [Facility]	Facility Design Flow > 1 mgd	Watershed Sum of Facility Design Flows > 1% of Reservoir Inflows	Allocation and Effluent Limitation (effluent total mercury concentration, calendar year average)
5	CA0077844	Portola, City of [Portola WWTP] ¹			20 ng/L
5	CA0078051	City of Mt. Shasta [Mt. Shasta WWTP] ¹			20 ng/L
5	CA0078441	City of Dunsmuir [Dunsmuir WWTP]			20 ng/L
5	CA0078921	City of Alturas [Alturas Municipal WWTP] ¹			20 ng/L
5	CA0078956	City of Placerville [Hangtown Creek WWTP]	X		20 ng/L
5	CA0078981	Quincy Community Services District [Quincy WWTP] ¹	X		20 ng/L
5	CA0079464	San Andreas Sanitary District [San Andreas WWTP] ¹			20 ng/L
5	CA0079529	City of Colfax [Colfax WWTP] ¹			20 ng/L
5	CA0079898	City of Grass Valley [Grass Valley WWTP]	X		20 ng/L
5	CA0079901	City of Nevada City [Nevada City WWTP]			20 ng/L

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Table 5 (Continued)

Waste Load Allocations and Effluent Limitations for NPDES-Permitted Facilities Upstream of IMPAIRED RESERVOIRS

Region	NPDES No.	Permittee [Facility]	Facility Design Flow > 1 mgd	Watershed Sum of Facility Design Flows > 1% of Reservoir Inflows	Allocation and Effluent Limitation (effluent total mercury concentration, calendar year average)
5	CA0080357	Sierra Pacific Industries [Quincy Division]			60 ng/L
5	CA0081337	Southern California Edison Company [Balsam Meadows Hydroelectric Project Eastwood Powerhouse Facility]	X		60 ng/L
5	CA0081612	Nevada County Sanitation District No. 1 [Lake of the Pines WWTP]			20 ng/L
5	CA0081621	Donner Summit Public Utilities District [Donner Summit PUD WWTP]			20 ng/L
5	CA0081759	USDI NPS Yosemite National Park [El Portal WWTP]			20 ng/L
5	CA0081809	Original Sixteen to One Mine, Inc. [Sixteen to One Mine]			60 ng/L
5	CA0082058	Dicalite Minerals Corporation [Diatomaceous Earth Mine]			60 ng/L
5	CA0082490	Burney Forest Products [Burney Forest Power]			60 ng/L

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Table 5 (Continued)

Waste Load Allocations and Effluent Limitations for NPDES-Permitted Facilities Upstream of IMPAIRED RESERVOIRS

Region	NPDES No.	Permittee [Facility]	Facility Design Flow > 1 mgd	Watershed Sum of Facility Design Flows > 1% of Reservoir Inflows	Allocation and Effluent Limitation (effluent total mercury concentration, calendar year average)
5	CA0082546	California Dept. of Corrections [Sierra Conservation Center Water Treatment Plant]			60 ng/L
5	CA0083861	Aerojet-General Corporation [Interim Groundwater Extraction & Treatment Systems, discharges in the Beach Lake watershed]	X	X	30 ng/L
5	CA0083861	Aerojet-General Corporation [Interim Groundwater Extraction & Treatment Systems, discharges in the Lake Natoma watershed]	X		60 ng/L
5	CA0083992	U.S. Department of the Air Force [Aircraft Control & Aircraft Control and Warning Site Groundwater Treatment System]		X	60 ng/L
5	CA0084212	Lyondell Environmental Custodial Trust [Bully Hill & Rising Star Mines]			60 ng/L
5	CA0084387	Lazarus Mining & U.S. Forest Service, Tahoe National Forest [Klondike, Dutch & Telegraph Mines]			60 ng/L

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Table 5 (Continued)

Waste Load Allocations and Effluent Limitations for NPDES-Permitted Facilities Upstream of IMPAIRED RESERVOIRS

Region	NPDES No.	Permittee [Facility]	Facility Design Flow > 1 mgd	Watershed Sum of Facility Design Flows > 1% of Reservoir Inflows	Allocation and Effluent Limitation (effluent total mercury concentration, calendar year average)
5	CA0084891	Boeing Company [Boeing Interim Groundwater Extraction and Treatment Systems]	X	X	30 ng/L
5	CA0085146	Bear Valley Water District [Bear Valley WWTP] ¹			20 ng/L
5	CA0085171	California Department of Parks and Recreation [Empire Mine]	X		60 ng/L
5	CA0085201	Angels, City of [City of Angels WWTP]			20 ng/L
5	CA0085219	AmeriPride Services, Inc. [Operable Unit 3]		X	60 ng/L
5	CA0085278	Calaveras County Water District and Cain-Papais Trust [Forest Meadows WWTP]			20 ng/L
5	CA0085294	Shasta Gold Corporation, French Gulch (Nevada) Mining Corporation and USDI Bureau of Land Management [Washington Mine]			60 ng/L

¹ Effluent methylmercury monitoring required per Chapter IV.G.

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Table 6

Individual and General NPDES Permits for Wastewater Discharges Considered to be Negligible and Therefore are Not Assigned a Mercury Waste Load Allocation or Effluent Limitation

Region	NPDES No.	Discharge Type
1	CA0024902	Low Threat Discharges to Surface Waters in the North Coast Region
	CAG911001	Discharges of Highly Treated Groundwater to Surface Waters Following Extraction and Treatment of Groundwater Polluted with Petroleum Hydrocarbons and Volatile Organic Compounds
	CAG011001	Concentrated Animal Feeding Operations within the North Coast Region
2	CAG982001	Discharges of Process Wastewaters from Aggregate Mining, Sand Washing, and Sand Offloading Facilities to Surface Waters
	CAG382001	Discharges from Surface Water Treatment Facilities for Potable Supply
	CAG912003	Discharge or Reuse of Extracted and Treated Groundwater resulting from the Cleanup of Groundwater Polluted by Volatile Organic Compounds (VOC)
	CAG912002	Discharge or Reuse of Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted by Volatile Organic Compounds (VOC), Fuel Leaks and Other Related Wastes (VOC and Fuel General Permit)
	CAG032012	Discharges from Dry Dock Operations
	CAG912004	Discharge or Reuse of Extracted Brackish Groundwater and Reverse Osmosis Concentrate Resulting from Treatment of Groundwater by Reverse Osmosis and Discharge or Reuse of Extracted and Treated Groundwater Resulting from Structural Dewatering
3	CAG993003	Discharges From Aquaculture Facilities and Aquariums
	CAG993002	Discharges of Highly Treated Groundwater to Surface Waters
	CAG993001	Discharges With Low Threat to Water Quality
4	CAG994005	Discharges of Groundwater from Potable Water Supply Wells to Surface Waters
	CAG994003	Discharges of Nonprocess Waste Water to Surface Waters
	CAG674001	Discharges of Low Threat Hydrostatic Test Water to Surface Waters
	CAG834001	Treated Groundwater and Other Wastewaters from Investigation and/or Cleanup of Petroleum Fuel-Contaminated Sites to Surface Waters

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TABLE 6 (Continued)

Individual and General NPDES Permits for Wastewater Discharges Considered to be Negligible and Therefore are Not Assigned a Mercury Waste Load Allocation or Effluent Limitation

Region	NPDES No.	Discharge Type
4	CAG914001	Discharges of Treated Groundwater from Investigation and/or Cleanup of Volatile Organic Compound Contaminated-Sites to Surface Waters
	CAG994004	Discharges of Groundwater from Construction Dewatering to Surface Waters
5	CAG015001	Existing Milk Cow Dairy Concentrated Animal Feeding Operations Within The Central Valley Region
	CAG135001	Cold Water Concentrated Aquatic Animal Production Facility Discharges to Surface Waters
	CAG995002	Limited Threat Discharges of Treated/Untreated Groundwater from Cleanup Sites, Wastewater from Superchlorination Projects, and Other Limited Threat Wastewaters to Surface Waters
	CAG995001	Dewatering and Other Low Threat Discharges to Surface Waters
	CAG915001	Discharge to Surface Waters of Groundwater from Cleanup of Petroleum Fuel Pollution
	CA0004009	Discharges from the Picayune Rancheria of the Chukchansi Indian Community Chukchansi Gold Resort and Casino WWTP
	CA0079545	Discharges from the Southern California Edison Company Big Creek Powerhouse No. 1 Domestic WWTP
	CA0081744	Discharges from the Grizzly Lake Community Services District Delleker WWTP
	CA0081795	Discharges from the U.S. Department of the Interior National Park Service Yosemite National Park Wawona WWTP
	CA0081876	Discharges from the Mining Remedial Recovery Company, Inc. Mammoth, Sutro, Keystone, Stowell Balaklala, Shasta King, and Early Bird Mines
	CA0082406	Discharges from the Modoc Joint Unified School District Modoc High School Geothermal Project
CA0083241	Discharges from the Nevada County Sanitation District No. 1 Cascade Shores WWTP	
CA0084905	Discharges from the U.S. Department of the Interior Bureau of Reclamation Sliger Mine	
5	CA0085162	Discharges from the Grizzly Ranch Community Services District Grizzly Ranch

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TABLE 6 (Continued)

Individual and General NPDES Permits for Wastewater Discharges Considered to be Negligible and Therefore are Not Assigned a Mercury Waste Load Allocation or Effluent Limitation

Region	NPDES No.	Discharge Type
		WWTP
	CA0085286	Discharges from the Soper Company Spanish Mine
6	CAG996001	Limited Threat Discharges to Surface Waters
	CAG916001	Surface Water Disposal of Treated Ground Water
	CAG616003	Discharges of Storm Water Runoff Associated with Marina Operations and Maintenance Dredging in the Lake Tahoe Basin Hydrologic Unit - El Dorado and Placer Counties
7	CAG017001	Concentrated Animal Feeding Operations within the Colorado River Basin Region
	CAG997001	Low Threat Discharges to Surface Waters within the Colorado River Basin Region
	CAG917001	Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted by Volatile Organic Constituents into Surface Water
8	CAG918002	Discharges to Surface Waters of Groundwater Resulting from Groundwater Dewatering Operations and/or Groundwater Cleanup Activities at Sites within the San Diego Creek/Newport Bay Watershed Polluted by Petroleum Hydrocarbons, Solvents, Metals and/or Salts
	CAG648001	Discharges to Surface Waters of Process Wastewater Associated with Certain Wellhead Treatment Systems
	CAG998001	Discharges to Surface Waters that Pose an Insignificant (De Minimus) Threat to Water Quality
	CAG918001	General Groundwater Cleanup Permit for Discharges to Surface Waters of Extracted and Treated Groundwater Resulting From the Cleanup of Groundwater Polluted by Petroleum Hydrocarbons, Solvents, Metals and/or Salts
	CAG018001	Concentrated Animal Feeding Operations (Dairies and Related Facilities) within the Santa Ana Region

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TABLE 6 (Continued)

Individual and General NPDES Permits for Wastewater Discharges Considered to be Negligible and Therefore are Not Assigned a Mercury Waste Load Allocation or Effluent Limitation

Region	NPDES No.	Discharge Type
9	CAG919001	Discharges from Temporary Groundwater Extraction and Similar Waste Discharges to San Diego Bay, Tributaries Thereto under Tidal Influence, and Storm Drains or Other Conveyance Systems Tributary Thereto
	CAG919002	Discharges from Groundwater Extraction Waste to Surface Waters within the San Diego Region Except for San Diego Bay
	CAG679001	Discharges of Hydrostatic Test Water and Potable Water to Surface Waters and Storm Drains or Other Conveyance Systems Within the San Diego Region
	CAG999002	Residual Firework Pollutant Waste Discharges to Waters of the United States, San Diego Region
	CAG999003	Discharge of Lanthanum-Modified Clay to Surface Waters of the United States in the San Diego Region
	CAG719001	Discharges from Boatyards and Boat Maintenance and Repair Facilities Adjacent to Surface Waters within the San Diego Region
State Board	CAG990005	Discharge of Aquatic Pesticides for Aquatic Weed Control
	CAG990002	Discharges from Utility Vaults and Underground Structures to Surface Waters
	CAG990004	Biological and Residual Pesticide Discharges to Waters of the United States from Vector Control Applications
	CAG990006	Residual Pesticide Discharges to Waters of the United States from Aquatic Animal Invasive Species Control Applications
	CAG990007	Biological and Residual Pesticide Discharges to Waters of The United States from Spray Applications

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Table 7

**Individual and Statewide NPDES Permits for Storm Water
and Other Urban Runoff in Reservoir Watersheds Addressed
By the Load Allocations for Atmospheric Deposition**

Region	NPDES Permit No.	Discharge Description
2	CAS612008	Municipal separate storm sewer system (MS4) discharges within the San Francisco Bay Region
4	CAS004001	MS4 discharges within the coastal watersheds of Los Angeles County, except those discharges originating from the City of Long Beach MS4
4	CAS004002	MS4 discharges within the Ventura County Watershed Protection District, County of Ventura, and the incorporated Cities therein
5	CAS082597	MS4 discharges within the Cities of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, and Sacramento, and County of Sacramento
5	CAS0085324	National Pollutant Discharge Elimination System Permit and Waste Discharge Requirements General Permit for Discharges from Municipal Separate Storm Sewer Systems
8	CAS618036	MS4 discharges the San Bernardino County Flood Control District, the County of San Bernardino, and the incorporated cities of San Bernardino County within the Santa Ana Region
9	CAS0108758	Discharges of urban runoff from the MS4s draining the watersheds of the County of San Diego, the incorporated cities of San Diego County, the San Diego Unified Port District, and the San Diego County Regional Airport Authority
State Board	CAS000001	Statewide discharges of storm water associated with industrial activities excluding construction activities
	CAS000002	Statewide storm water discharges associated with construction and land disturbance activities
	CAS000003	Statewide storm water and permitted non-storm water discharges from the State of California Department of Transportation's properties, facilities, and discharges associated with operation and maintenance of the State highway system
	CAS000004	Statewide storm water discharges from small MS4s

Table 8
Mine Tiers

Tier	Mining waste mercury concentration	Erosion potential	Other criteria
1	<p>a) Average mercury concentration in discharge of mining wastes is equal to or greater than 3 mg/kg from mercury MINE SITES or 1 mg/kg from non-mercury MINE SITES; or</p> <p>b) Elemental mercury is present and being discharged or is likely to discharge.</p>	<p>Significant active erosion from mass wasting processes, such as landslides, slumps, and large gullies.</p>	<p>a) Elevated sediment total mercury concentrations in IMPAIRED RESERVOIRS, where elevated means average mercury concentration equal to or greater than 0.6 mg/kg or 0.2 mg/kg in RESERVOIRS located in geologic regions that are naturally enriched in mercury or have trace levels of mercury, respectively (i.e., more than twice the load allocation for the applicable RESERVOIR geologic region, see Table 4);</p> <p>b) All actively eroding (either significant active erosion from mass wasting processes; or less significant active erosion from small gullies, rills, and accompanying loss of vegetation) MINE SITES in the IMPAIRED RESERVOIR watershed are localized to a relatively small area of the watershed (i.e., mine sites cover no more than 10% of the reservoir watershed area); and</p> <p>c) All actively eroding MINE SITES in the IMPAIRED RESERVOIR watershed are located adjacent to or very close to the reservoir (either direct discharge to the reservoir or discharge to tributary streams less than about 10 km upstream of the reservoir, measured from reservoir high water level); or</p> <p>d) Other site-specific factors, approved by a WATER BOARD's executive officer, relevant to initiating cleanup and abatement orders within PHASE 1.</p>

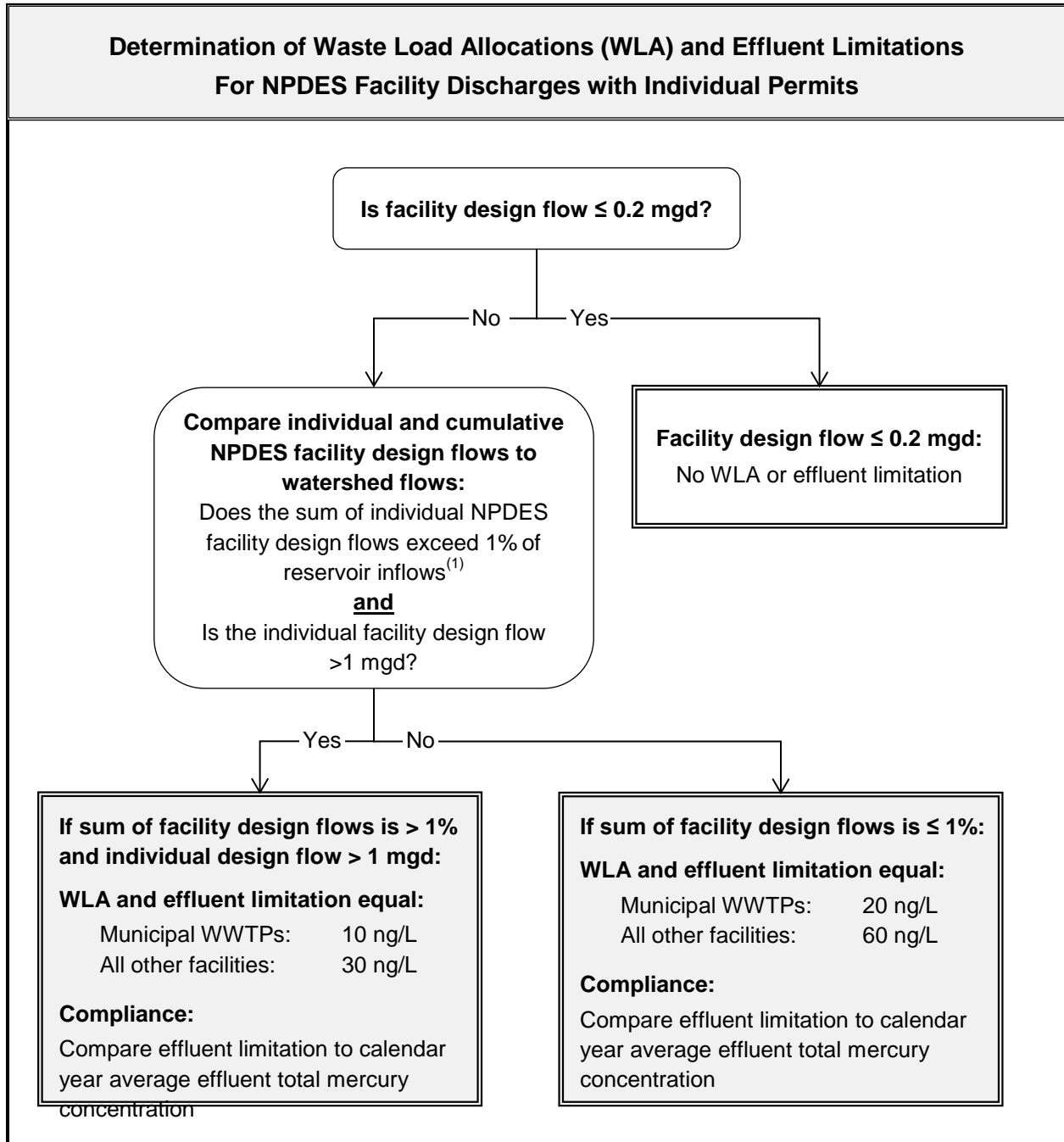
Table 8 (Continued)

Mine Tiers

Tier	Mining waste mercury concentration	Erosion potential	a) Other criteria
2	Average mercury concentration in discharge of mining wastes is equal to or greater than 0.6 mg/kg from mercury MINE SITES or 0.2 mg/kg from non-mercury MINE SITES.	a) Significant active erosion from mass wasting processes, such as landslides, slumps, and large gullies; or b) Less significant active erosion from small gullies, rills, and accompanying loss of vegetation.	b) Elevated sediment total mercury concentrations in IMPAIRED RESERVOIRS, where elevated means average mercury concentration equal to or greater than 0.6 mg/kg or 0.2 mg/kg in RESERVOIRS located in geologic regions that are naturally enriched in mercury or have trace levels of mercury, respectively.
3	Either no discharge of MERCURY-CONTAMINATED mining waste anticipated to surface waters during large storm events; or the concentration of inorganic mercury in suspended sediment discharged from MINE SITES is less than 0.6 mg/kg from mercury mines or 0.2 mg/kg from other mines.	Not applicable.	Not applicable.

Figure 1

Flow Chart for Determining Waste Load Allocations and Effluent Limitations for Facilities with Individual NPDES Permits Upstream of IMPAIRED RESERVOIRS



(Notes for Figure 1 are on next page)

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Figure 1 Notes:

1. The answer to the question, “Does the sum of individual NPDES facility design flows exceed 1% of reservoir inflows?” is yes if either the sum of annual design flows for NPDES-permitted facility discharges exceeds 1% of annual reservoir inflows, or the sum of dry weather design flows for NPDES-permitted facility discharges exceeds 1% of dry weather reservoir inflows.

Calculation methods:

Annual design flow for each facility is calculated by multiplying the facility daily design flow by 365, or by the potential maximum allowable number of days of discharge each year for facilities that do not discharge year round.

Annual reservoir inflow for each reservoir is calculated by first summing the total inflow volume during each year of the entire period of gage record, and then dividing that sum by the number of years of the gage record.

Dry weather design flow for each facility is calculated by multiplying the facility design flow by 61 (the number of days in October and November) or by the potential maximum allowable number of days of discharge during October and November for facilities that do not discharge year round.

Dry weather reservoir inflow for each reservoir is calculated by first summing the total inflow volume during October and November of each year of the entire period of gage record, and then dividing that sum by the number of years of the gage record.

2. If gaged inflow data are not available for a reservoir, gaged outflow data may be used instead. If no gaged reservoir inflow or outflow data are available, watershed precipitation runoff estimates may be used. Watershed precipitation runoff estimates should be based on at least five years of precipitation data.
3. For facilities such as hydro-power plants and fish hatcheries that make use of surface water intakes from the same water bodies as their discharge receiving waters, the annual and dry weather design flow calculations, waste load allocations, and effluent limitations apply to the discharges from internal waste streams, not to once-through cooling water discharges or other discharges of ambient surface water. The WATER BOARDS will apply intake credits to once-through cooling water and other discharges as allowed by law.
4. If a facility has more than one outfall to a given reservoir’s watershed, the waste load allocation and effluent limitation are determined by the sum of all its outfall flows in that reservoir watershed. The waste load allocation and effluent limitation apply to all of the facility’s outfalls in that watershed.
5. If future expansions or other new discharges from facilities with individual NPDES permits cause the watershed sum of annual or dry weather design flows to exceed 1% of reservoir inflows, then all the facilities in that reservoir watershed that discharge greater than one mgd shall be re-evaluated per the methodology described in Figure 1.