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## State Water Resources Control Board

# Statewide Mercury Policy and Mercury Control Program for Reservoirs

## Summary for CEQA Scoping Meetings March 2012

*Mercury is negatively impacting the waters of the state. More than 180 water bodies in California are designated as impaired by mercury by the U.S. Environmental Protection Agency. Many fish in these waters have mercury concentrations that pose a risk for humans or wildlife that eat the fish. The number of mercury-impaired waters is expected to increase substantially when additional, recently collected monitoring data are evaluated.*

The State Water Resources Control Board and Regional Water Quality Control Boards (“Water Boards”) are in the early stages of developing a Statewide Mercury Policy (Policy) to control mercury in California’s waters. The Policy would define an overall structure for adopting water quality objectives; general implementation requirements; and control plans for mercury impaired water bodies.

The first phases of program development will include:

- Development of water quality standards to protect people and wildlife that eat fish. These could include water quality objectives expressed as concentrations of mercury in the water column or in the tissues of fish; beneficial use designations; and antidegradation provisions
- Establishment of a control program designed to attain the new water quality objectives in our state’s mercury-impaired reservoirs. An associated implementation plan will likely include:
  - Control actions for a variety of point and nonpoint sources, such as runoff from mine sites, atmospheric deposition, and discharges from wastewater treatment plants and urban stormwater
  - Changes in approaches to reservoir management that will modify water chemistry to reduce creation of the most biologically available form of mercury
  - Changes in fisheries management practices to limit populations of the types of stocked fish that often have high levels of mercury in their tissues

Future phases may include development of control plans specific to other mercury-impaired water bodies such as creeks, rivers, bays, and estuaries.

**Please visit**  
[http://www.waterboards.ca.gov/water\\_issues/programs/mercury/](http://www.waterboards.ca.gov/water_issues/programs/mercury/) for information about this project and the extent of the mercury problem in California.

This document has been prepared for public workshops and “scoping meetings” as required by the California Environmental Quality Act (CEQA; California Public Resources Code section 21000 et seq.) and the Water Boards’ regulations for compliance with CEQA (California Code of Regulations, Title 23, Division 3, Chapter 27). The purpose of the document – and the scoping meetings – is to provide stakeholders and members of the public with a basic understanding of the project and the types of actions that may be required for compliance, so that interested parties and concerned California residents may provide comments and suggestions to the Water Boards early in the project development process. We welcome comments about potential harmful impacts of the project on the environment, and mitigation measures that will lessen those impacts. *This document is not intended to present an exhaustive analysis of mercury sources, or a detailed explanation of potential mercury control options.* Later in the process, full documentation will be made available for formal public comment.

A public scoping meeting has already taken place to discuss the development of mercury fish tissue objectives. Therefore, the remainder of this document and the public scoping meetings anticipated in early 2012 will focus on the development of a Policy structure and reservoir control program.

## CEQA Scoping

The scoping process is designed to enlist the public in the Water Boards’ effort to identify:

- Concerns of government agencies and other stakeholders
- A reasonable range of project alternatives and actions, including different regulatory vehicles the Water Boards may use to control mercury in our state’s waters; and preferred options
- Reasonably foreseeable methods of compliance with a new Policy or other regulatory program
- Potential significant harmful impacts to the environment -- including cumulative impacts if any -- related to potential implementation actions
- Potential mitigation measures to reduce potential impacts to a less than significant level

CEQA defines “environment” broadly. Comments are welcome in the following topic areas:

- Aesthetics
- Agriculture and forest resources
- Air quality
- Biological resources
- Cultural resources
- Geology and soils
- Greenhouse gas emissions
- Hazards and hazardous materials
- Hydrology and water quality
- Land use and planning
- Mineral resources
- Noise
- Population and housing
- Public services
- Recreation
- Transportation and traffic
- Utility and service delivery systems

## Need for a new Mercury Policy, and a mercury control program for reservoirs in California

Harmful levels of mercury in fish are a statewide (indeed nationwide) problem. Reservoirs containing potentially harmful amounts of mercury are found throughout California. The Colorado River, Santa Ana, and San Diego regions have the fewest reservoirs impaired by mercury; while the Central Valley Region has over 100. A map and complete list of impaired reservoirs is posted on the State Water Board's Mercury Program web page, at [http://www.waterboards.ca.gov/water\\_issues/programs/mercury/reservoirs/](http://www.waterboards.ca.gov/water_issues/programs/mercury/reservoirs/).

A statewide Mercury Policy will provide the framework for implementing a consistent approach to controlling mercury in California's inland waters. A statewide mercury control program for reservoirs is needed because the Water Boards must address impairments in an efficient and timely manner.

The project under consideration at the public scoping meetings is development and adoption by the State Water Resources Control Board of 1) a statewide Mercury Policy that will provide the framework for control programs for mercury in California's inland waters, and 2) a control program for mercury-impaired reservoirs. The reservoir control program should be based on the efficient use of the Water Board's existing regulatory authority. The final structure of the control program could include a total maximum daily load (TMDL) for mercury in reservoirs along with an implementation plan to achieve the TMDL; or an implementation plan that does not rely on a TMDL. Whatever the vehicle, the mercury control program will need to be developed to ensure achievement of the objectives established for methylmercury in the tissues of fish, in accordance with the Porter-Cologne Water Quality Control Act of 1972 (CA Water Code, Division 7, section 13242).

## CEQA Scoping: Project elements under consideration

The Water Boards are considering alternatives to adoption of a Mercury Policy, and to key elements of a reservoir control program. In addition, CEQA requires that we identify both harmful impacts that may result from implementation, and actions or strategies that can be included in the program which will mitigate or reduce potential impacts. When considering alternatives, the Water Board must consider and analyze a "no action" alternative.

We invite the public to comment on these alternatives and to suggest additional options.

Elements 1 and 2, and the potential implementation actions described later in this document, will be discussed at the public scoping meetings.

### *Element 1: Adoption of a statewide Mercury Policy*

#### **Alternative 1: No action**

No action to develop a Statewide Mercury Policy to reduce mercury in California's waters would leave policies and practices as they currently exist.

Mercury-impaired water bodies would continue to be addressed by each Regional Water Board on an individual basis through the ongoing development of statewide fish tissue mercury objectives, site specific mercury water quality objectives, the TMDL process, site cleanup orders, waste discharge requirements, conditional waivers of waste discharge requirements, and NPDES permits – without an over-arching statewide structure.

## **Alternative 2: Establish a statewide Mercury Policy to control mercury in California's waters**

A new statewide Policy would incorporate statewide water quality objectives for mercury, which are currently under development. A Policy would present a coordinated and tiered approach to developing control plans for mercury-impaired water bodies in a timely and effective manner. Such control plans could eventually include specific requirements for point and nonpoint sources that discharge to all water bodies in the state.

As has been previously mentioned, establishment of fish tissue objectives for mercury and a statewide reservoir mercury control program are expected to be the first completed elements of the broader Policy. The reservoir control program could incorporate requirements for parties responsible for point and nonpoint sources of inorganic mercury and methylmercury in reservoirs, as well as parties responsible for land and water management activities that affect methylmercury production and loss processes, mercury transport, and bioaccumulation.

Future elements of a Policy could include control programs for the following waters and mercury sources, among others:

- Other California reservoirs identified in the future as containing fish with unsafe levels of mercury in their tissues
- Rivers, creeks, streams, enclosed bays, and coastal bays, estuaries, and lagoons impaired by mercury
- Point sources including NPDES-permitted wastewater and stormwater sources
- Nonpoint sources including timber harvest activities, mining, and agriculture including irrigation and grazing

### ***Element 2: A statewide control program for mercury in reservoirs***

#### **Alternative 1: No action**

No action to develop a control program for mercury in reservoirs would leave policies and practices as they now exist, with no statewide program of actions to achieve either the new statewide fish tissue objectives for methylmercury that are currently under development, or the existing narrative bioaccumulation objectives. As required by the federal Clean Water Act, the Regional Water Boards would need to address California's 74 reservoirs listed by the United States Environmental Protection Agency on the 2010 Clean Water Act section 303(d) list of impaired waters as impaired by mercury, and other reservoirs designated as impaired by mercury in the future, on an individual basis – for example through the total maximum daily load (TMDL) process for individual water bodies. Future TMDLs would be implemented through individual site cleanup orders, waste discharge requirements, waiver

programs for waste discharge requirements, NPDES permits, and other enforcement actions as appropriate. Future 303(d) listings for mercury would also be required to be addressed by future TMDLs.

## **Alternative 2: Statewide mercury control program for reservoirs**

A statewide control program for mercury in reservoirs would address mercury impairments in the 74 reservoirs on the 2010 303(d) list, and potentially other mercury-impacted reservoirs. Such a program could incorporate requirements for parties responsible for point and nonpoint sources of inorganic mercury and methylmercury, and parties responsible for land and water management activities that affect methylmercury production and loss processes, mercury transport, and bioaccumulation. A reservoir control program could be designed within a TMDL framework, or could rely on other regulatory approaches. Implementation requirements would likely be similar, regardless of the regulatory framework employed.

## **CEQA Scoping: Potential implementation actions under consideration**

A key purpose of CEQA scoping is for the lead agency (in this case, the Water Boards) to receive comments from the public about the range of project actions and alternatives, reasonably foreseeable means of compliance, significant (and any cumulative) impacts of the project to be analyzed, and ways to eliminate or mitigate those impacts.

The table on the following pages provides examples of implementation actions responsible parties might take to comply with a mercury control program for the state's reservoirs. "Responsible parties" include both regulatory agencies and the entities they regulate. This list is a starting point for evaluating potential environmental impacts; it is not intended to restrict the scope of possible actions to be evaluated or implemented. While many of these potential actions are already common practice, implementation of an effective statewide control program may require broader, more comprehensive application of such approaches and technologies.

After receiving comments on possible impacts and mitigation actions, the State Water Board will prepare project documentation including draft staff reports, a CEQA checklist, and a draft water quality control plan or Policy. These documents will be circulated for public comment.

## Potential Implementation Actions

Sources	Potential Responsible Parties	Implementation Actions (examples)
<p>Mine sites where mercury was mined or used, e.g., mercury mines in the Coast Range and gold mines and dredging in the Sierra Nevada and Trinity Mountains:</p> <ul style="list-style-type: none"> <li>• Tailings, over burden, waste rock, and other mercury contaminated wastes at mine sites</li> <li>• Hydraulic mining debris and dredge tailings downstream of gold mine sites</li> </ul>	<p>Private mine site property owners and mine operators</p> <p>Public agencies that own or manage mine sites, such as U.S. Bureau of Land Management</p>	<p>Site cleanup to prevent mercury transport from tailings piles, waste rock, sluices, and other mining features, such as:</p> <ul style="list-style-type: none"> <li>• Erosion control (grading, runoff controls, revegetation)</li> <li>• Excavation of mercury-contaminated wastes and burial onsite or in an engineered landfill; installation of erosion controls in excavated area</li> </ul> <p>Onsite pollution prevention measures, such as:</p> <ul style="list-style-type: none"> <li>• Protection of erosive areas from vehicles, grazing, etc.</li> <li>• Construction of downstream settling basins to collect and sequester contaminated sediment</li> <li>• Restoration of temporary or unmaintained roads and trails to native forest conditions with natural hydrologic function (recontouring, soil restoration, seeding, block vehicle access)</li> <li>• Dust suppression during earth-moving operations</li> </ul>
<p>Water chemistry in reservoirs</p>	<p>Private reservoir owners and operators, such as water suppliers and irrigation companies</p> <p>Public reservoir owners and operators, for example:</p> <ul style="list-style-type: none"> <li>• Federal agencies such as the U.S. Army Corps of Engineers, U.S. Bureau of Reclamation</li> <li>• State agencies, such as the Department of Water Resources</li> <li>• Municipalities and local agencies, such as water suppliers and flood control districts</li> </ul>	<p>Develop and implement reservoir management plans to reduce methylmercury concentrations in reservoir fish</p> <p>Implement and evaluate methods for reducing methylmercury in reservoirs, such as:</p> <ul style="list-style-type: none"> <li>• Water aeration and circulation to increase oxygen</li> <li>• Removal or capping of mercury-contaminated sediment in the reservoir and in upstream tributaries</li> <li>• Monitoring to identify areas within reservoir where mercury accumulates in sediment; develop sediment management plans to reduce releases of mercury during reservoir maintenance</li> <li>• Modification of channel geometry to direct flows away from mercury-contaminated areas</li> <li>• Where possible, modification of water storage and discharge patterns to reduce methylmercury production</li> </ul>

Sources	Potential Responsible Parties	Implementation Actions (examples)
Fisheries management in reservoirs	Public and private fisheries managers Reservoir owners and operators U.S. Fish and Wildlife Service State agencies such as the Department of Water Resources, Department of Fish and Game	Promote abundance of species and sizes of reservoir fish that accumulate smaller amounts of mercury in their tissues, for example: <ul style="list-style-type: none"> <li>• Encourage native anadromous fisheries such as salmon and steelhead, and landlocked species such as rainbow trout and kokanee salmon, which have lower mercury levels than introduced species</li> <li>• Reduce stocking of introduced species such as bass and brown trout</li> <li>• Promote intensive fishing of species with higher mercury levels, which would enhance the individual fish growth rates of the remaining fish and consequently reduce their methylmercury levels</li> </ul> Manage nutrients/algae to improve production (at the base of the food web) and reduce fish methylmercury concentrations
Upland earthmoving projects that disturb mercury-contaminated soils and In-stream projects (in- or near-channel activities) that disturb sediment or soil downstream of mercury sources	Public agencies, municipalities that regulate grading projects Private landowners Forest owners and managers, timber harvesters Parties seeking Clean Water Act Section 401 certification of dredge-and-fill or construction projects from the Water Board Operators/managers of municipal stormwater pollution prevention programs Habitat restoration and conservation project managers	Minimize erosion of mercury-contaminated soils and sediments, for example: <ul style="list-style-type: none"> <li>• Stabilize and revegetate road shoulders</li> <li>• Preserve existing vegetation, or revegetate</li> <li>• Stabilize stream banks</li> <li>• Encourage/promote landscaping practices that contain erosion</li> <li>• Increase filtration by reducing impervious surface cover</li> <li>• Keep livestock out of mercury-contaminated areas</li> <li>• Install retention basins or other features to reduce erosion</li> <li>• Minimize earth disturbance from logging activities adjacent to mercury or gold mine sites, or mine waste piles</li> </ul> Ensure adequate soil moisture or other dust suppression techniques during earth-moving operations Install and maintain features that direct, contain, or filter mercury from stormwater runoff, such as: <ul style="list-style-type: none"> <li>• Infiltration trenches and prefabricated infiltration systems, silt fences</li> <li>• Slope drains, water velocity dissipators, check dams</li> <li>• Constructed wetlands, detention basins, drainage swales</li> </ul>

Sources	Potential Responsible Parties	Implementation Actions (examples)
Urban stormwater sources upstream of reservoirs (primarily in southern California)	Operators/managers of municipal stormwater pollution prevention programs	<p>Reduce mercury in urban stormwater by employing appropriate actions described previously for “Upland earthmoving and In-stream projects”, and additional actions such as: vacuum street sweeping, stormwater vaults with media filters, and sediment traps</p> <p>Implement mercury-specific pollution prevention measures, for example:</p> <ul style="list-style-type: none"> <li>• Thermometer exchange and fluorescent lamp recycling programs</li> <li>• Education of auto dismantlers on how to remove, store, and dispose of mercury switches</li> <li>• Expand hazardous waste collection programs for mercury-containing products, including thermometers, batteries, fluorescent lamps, switches, and thermostats</li> </ul>
Wastewater treatment plants and other NPDES-permitted dischargers that discharge into or upstream of reservoirs	<p>Municipal owners and operators of wastewater treatment facilities, and other publicly owned treatment works</p> <p>Industrial wastewater dischargers</p>	<p>Develop and implement programs to minimize total mercury in sewage, for example:</p> <ul style="list-style-type: none"> <li>• Implement mercury-specific pollution prevention measures (see examples listed in the “Urban stormwater” section above)</li> <li>• Install amalgam separators at dental offices</li> </ul> <p>Improve wastewater treatment to reduce particle-bound methylmercury and total mercury, and/or promote demethylation of methylmercury, for example:</p> <ul style="list-style-type: none"> <li>• Increase retention in aeration tanks or retention ponds</li> <li>• Filtration</li> <li>• Ultraviolet disinfection</li> <li>• Nitrification/denitrification and other treatments used to reduce ammonia</li> <li>• Increase effluent disposal to land</li> </ul>



<b>Sources</b>	<b>Potential Responsible Parties</b>	<b>Implementation Actions (examples)</b>
Atmospheric deposition from California industrial sources	Regulatory agencies: <ul style="list-style-type: none"> <li>• U.S. EPA</li> <li>• California Air Resources Board</li> <li>• Local air quality management districts</li> </ul> Industrial facilities	Use emissions control technology to reduce emissions of mercury from industry, such as: <ul style="list-style-type: none"> <li>• Cement plants</li> <li>• Geothermal power plants</li> <li>• Petroleum refineries</li> <li>• Waste incinerators</li> </ul> Implement mercury source reduction strategies, where feasible
Atmospheric deposition from global industrial sources	U.S. EPA U.S. Department of State	Negotiate international treaties to reduce global industrial emissions