

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

RESOLUTION R2-2008-0012

Amending the Water Quality Control Plan for the San Francisco Bay Region to Establish a Total Maximum Daily Load and Implementation Plan for PCBs in the San Francisco Bay

WHEREAS, the California Regional Water Quality Control Board, San Francisco Bay Region (Water Board), finds that:


1. The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) is the Water Board's master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives. The Basin Plan was duly adopted by the Water Board and approved by the State Water Resources Control Board (State Water Board), Office of Administrative Law (OAL) and the United States Environmental Protection Agency (U.S. EPA), where required.
2. The Basin Plan may be amended in accordance with California Water Code § 13240, et seq.
3. The San Francisco Bay has been identified under federal Clean Water Act §303(d) as an impaired waterbody due to polychlorinated biphenyls (PCBs).
4. Under Clean Water Act § 303(d), the Water Board is required and authorized to establish the total maximum daily load (TMDL) for those pollutants identified as causing impairment of waters on the § 303(d) list. Additionally, the Water Board is authorized to develop a implementation program for achieving water quality standards, such as the narrative water quality objective.
5. On May 18, 2000, the U.S. EPA promulgated the California Toxics Rule (CTR) prescribing numeric water quality criteria for priority toxic pollutants, including PCBs, that apply to the San Francisco Bay.
6. A Basin Plan Amendment has been prepared in accordance with California Water Code § 13240 that will establish the TMDL and Implementation Plan to reduce PCBs-related risks to humans, aquatic life and wildlife and restore and protect water quality beneficial uses.
7. The Basin Plan Amendment, including specifications on its physical placement in the Basin Plan, is set forth in Exhibit A hereto.
8. The scientific basis for the regulatory elements of the proposed Basin Plan Amendment was subjected to an independent, external peer review by Professors Kevin J. Farley and Dr. David O. Carpenter, M.D, pursuant to the requirements of Health and Safety Code section 57004.

9. On June 22 and December 3, 2007, the Water Board publicly noticed the proposed Basin Plan Amendment and distributed the proposed Basin Plan Amendment, a draft Staff Report, and Environmental Checklist in accordance with applicable state and federal environmental regulations (CWC § 13244, title 23, California Code of Regulations, § 3775 et seq., and 40 CFR Part 25).
10. On September 12, 2007, the Water Board held a public hearing to consider the Basin Plan Amendment, after a 60-day public comment period.
12. On February 13, 2008, the Water Board held a second public hearing to consider the Basin Plan Amendment, after a second 45-day public comment period on the changes made on December 3, 2007, to the Basin Plan Amendment and supporting Staff Report, including response to public comments on the Amendment.
13. The process of basin planning has been certified by the Secretary for Resources as exempt from the requirement of the California Environmental Quality Act (Public Resources Code Section 21000 et seq.) to prepare an Environmental Impact Report or Negative Declaration.
14. The Basin Plan Amendment package includes a Staff Report, an Environmental Checklist, an assessment of the potential environmental impacts of the Basin Plan Amendment, and a discussion of alternatives. The Basin Plan Amendment, Environmental Checklist, Staff Report, and supporting documentation serve as a substitute environmental document under the Water Board's certified regulatory program.
15. The Water Board has duly considered the Environmental Checklist, Staff Report and supporting documentation with respect to environmental impacts and finds that the proposed Basin Plan Amendment will not have a significant impact on the environment. The Water Board further finds, based on consideration of the record as a whole, that there is no potential for adverse effect, either individually or cumulatively, on wildlife as a result of the proposed Basin Plan Amendment.
16. The Water Board has also considered the environmental analysis in the Staff Report and the Environmental Checklist of the reasonably foreseeable methods of the compliance with the Basin Plan Amendment, including economics.
17. The Water Board has carefully considered all comments and testimony received, including responses thereto, on the Basin Plan Amendment, as well as all of the evidence in the administrative record.
18. The Basin Plan Amendment must be submitted for review and approval by the State Water Board, the OAL, and U.S. EPA. Once approved by the State Water Board, the amendment is submitted to OAL and U.S. EPA. The Basin Plan Amendment will become effective upon approval by OAL and U.S. EPA.

NOW, THEREFORE BE IT RESOLVED THAT:

1. The Water Board adopts the Basin Plan Amendment as set forth in Exhibit A hereto.
2. The Executive Officer is directed to forward copies of the Basin Plan Amendment to the State Water Board in accordance with the requirement of CWC Section 13245.
3. The Water Board requests that the State Water Board approve the Basin Plan Amendment in accordance with the requirements of CWC Sections 13245 and 13246 and forward it to the OAL and U.S.EPA for approval.
4. If, during the approval process, Water Board staff, the State Water Board or OAL determines that minor, non-substantive corrections to the language of the Amendment are needed for clarity or consistency, the Executive Officer may make such changes, and shall inform the Water Board of any such changes.
5. Since the Basin Plan Amendment will involve no potential for adverse effect, either individually or cumulatively, on wildlife, the Executive Officer is directed to sign a CEQA Filing Fee No Effect Determination Form.

I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on February 13, 2008.



BRUCE H. WOLFE
Executive Officer

Attachment

Exhibit A – Basin Plan Amendment to Amend the Water Quality Control Plan for the San Francisco Bay Region to Establish a Total Maximum Daily Load and Implementation Plan for PCBs in the San Francisco Bay.

Exhibit A

Proposed Basin Plan Amendment

Add the following language to Chapter 7, Water Quality Attainment Strategies including Total Maximum Daily Loads, of the Basin Plan:

San Francisco Bay Polychlorinated Biphenyls TMDL

The following sections establish the TMDL for total polychlorinated biphenyls including dioxin-like PCBs congeners (hereinafter referred to as PCBs) for the San Francisco Bay. The associated numeric target, allocations, and implementation plan are designed to ensure attainment of beneficial uses and water quality objectives for the San Francisco Bay.

Problem Statement

All segments of the San Francisco Bay have been identified as impaired due to elevated levels of PCBs in sport fish. Neither the narrative water quality objective, which states that controllable water quality factors shall not cause a detrimental increase in toxic substances found in bottom sediments or aquatic life, nor the numeric water quality objective of 0.00017 µg/L total PCBs in water is attained in the San Francisco Bay. The existing beneficial uses for commercial and sport fishing is not fully supported.

This TMDL addresses impairment of San Francisco Bay segments by PCBs. In the context of this TMDL, “San Francisco Bay” refers to all of the following water bodies:

- Sacramento/San Joaquin Delta (within Region 2)
- Suisun Bay
- Carquinez Strait
- San Pablo Bay
- Richardson Bay
- San Francisco Bay, Central
- San Francisco Bay, Lower (including)
 - Central Basin, San Francisco
 - Mission Creek
 - Oakland Inner Harbor (Fruitvale site)
 - Oakland Inner Harbor (Pacific Dry-Dock Yard 1 site) San Francisco Bay, South

This TMDL is intended to achieve protection of the commercial and sport fishing beneficial use and to the extent that other beneficial uses are affected by PCBs, the TMDL will also ensure protection of other beneficial uses, specifically, preservation of rare and endangered species, estuarine habitat and wildlife habitat.

Numeric Target

The numeric target (also referred to as the TMDL target) to protect both human health and wildlife is an average fish tissue concentration of 10 micrograms total PCBs per kilogram of typically consumed fish, on a wet weight basis (10 µg/kg wet weight). Attainment of the total PCBs fish tissue numeric target will also protect human health and wildlife for dioxin-like PCBs.

Attainment of the fish tissue target for PCBs in San Francisco Bay will be initially evaluated by comparing the average total PCBs concentrations in the edible portion of two fish species,

white croaker (size class, 20 to 30 centimeters in length) and shiner surfperch (size class, 10 to 15 centimeters in length) to the target. Comparison of the fish target against these two species of fish is considered to be protective and provides a margin of safety for the TMDL, because PCBs concentrations in these species are the highest of the fish species measured and sport recreational fishers likely consume a variety of fish species, including those species with lower PCBs concentrations. As part of the adaptive implementation of this TMDL, the Water Board will require the collection of additional information regarding recreational and subsistence fishers' patterns of consumption and evaluate if fish species other than white croaker and shiner surfperch should be considered to evaluate attainment of the target.

The number of fish samples collected to determine compliance with the target will be based on guidance described in USEPA's Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories (EPA 823-B-00-007) and on the statistical power needed to demonstrate trends in total PCBs concentration over time.

Sources

Sources of PCBs to fish and the water column of San Francisco Bay fall into two categories: (1) external sources including atmospheric deposition, Central Valley inflow, municipal and industrial wastewater discharges, and urban and non-urban stormwater runoff; and (2) internal sources, including movement or release of PCBs already in San Francisco Bay sediments, specifically, dredging and in-Bay disposal of dredged sediment, erosion of bay bottom sediment containing PCBs (bed erosion), and in-Bay contaminated sediment sites. These sources and estimates of associated loads are shown in Table A-1. Decreases of PCBs in San Francisco Bay occur via out-of-Bay dredge material disposal, natural attenuation, and outflow through the Golden Gate.

Table A- 1 PCBs Sources and Current Loads to San Francisco Bay

Source Category	PCBs Loads
Kilograms per year	
External	
Direct Atmospheric Deposition	Net Loss
Central Valley Watershed	11
Municipal Wastewater Dischargers	2.3
Industrial Wastewater Dischargers	0.035
Urban and Non Urban-Stormwater Runoff	20
Total	33^a
Internal	
Sediment Dredging and Disposal	Net Loss
Bed Erosion	Not Quantified
In-Bay Contaminated Sediment	Not Quantified

a) Total differs from column sum due to rounding

Total Maximum Daily Load

The TMDL for PCBs in San Francisco Bay is 10 kg/year. Calculation of the TMDL is based on two models: a food-web PCBs bioaccumulation model and a long-term fate mass balance model. The model results predict that attainment of the numeric target will occur when the total PCBs concentration in surface sediments in the Bay declines to one µg/kg, which will be achieved when loads from external sources are reduced to 10 kg/year.

Load and Wasteload Allocations

Load allocations are presented in Table A-2 for source categories.

Individual wasteload allocations for municipal wastewater dischargers and industrial wastewater dischargers are presented in Table A-3 and Table A-4. Individual wasteload allocations for stormwater runoff to county-based watersheds are presented in Table A-5.

Table A- 2 Load and Wasteload Allocations

Source Category	Allocations
	Kilograms per year
External	
Direct Atmospheric Deposition	0 ^a
Central Valley Watershed	5
Municipal Wastewater Dischargers	2
Industrial Wastewater Dischargers	0.035
Stormwater Runoff	2
Stormwater Runoff Treatment by Municipal Wastewater Dischargers	1
Total	10^b

a) Zero allocation reflects overall net loss to the atmosphere

b) Total differs from column sum due to rounding

Table A - 3 Individual Wasteload Allocations For Municipal Wastewater Dischargers

Permitted Entity	NPDES Permit	Allocations kilograms per year
American Canyon, City of	CA0038768	0.002
Benicia, City of	CA0038091	0.009
Burlingame, City of	CA0037788	0.01
Calistoga, City of	CA0037966	0.002
Central Contra Costa Sanitary District	CA0037648	0.1
Central Marin Sanitation Agency	CA0038628	0.04
Delta Diablo Sanitation District	CA0038547	0.04
East Bay Dischargers Authority	CA0037869	0.3
Dublin-San Ramon Services District (CA0037613)		
Hayward Shoreline Marsh (CA0037702)		
Livermore, City of (CA0038008)		
Union Sanitary District, Wet Weather (CA0038733)		
East Bay Municipal Utilities District	CA0037702	0.3
East Brother Light Station	CA0038806	0.00030
Fairfield-Suisun Sewer District	CA0038024	0.05
Las Gallinas Valley Sanitary District	CA0037851	0.01
Marin County Sanitary District, Paradise Cove	CA0037427	0.00003
Marin County Sanitary District, Tiburon	CA0037753	0.002
Millbrae, City of	CA0037532	0.007
Mt. View Sanitary District	CA0037770	0.007
Napa Sanitation District	CA0037575	0.04
Novato Sanitary District	CA0037958	0.02
Palo Alto, City of	CA0037834	0.09
Petaluma, City of	CA0037810	0.02
Pinole, City of	CA0037796	0.009
Contra Costa County, Port Costa Wastewater Treatment Plant	CA0037885	0.0001
Rodeo Sanitary District	CA0037826	0.002
Saint Helena, City of	CA0038016	0.001
San Francisco, City and County of, San Francisco International Airport WQCP	CA0038318	0.002
San Francisco, City and County of, Southeast Plant	CA0037664	0.3
San Jose/Santa Clara WPCP	CA0037842	0.4
San Mateo, City of	CA0037541	0.04
Sausalito-Marín City Sanitary District	CA0038067	0.005
Seafirth Estates	CA0038893	0.00001
Sewerage Agency of Southern Marin	CA0037711	0.01
Sonoma Valley County Sanitary District	CA0037800	0.01
South Bayside System Authority	CA0038369	0.06
South San Francisco/San Bruno WQCP	CA0038130	0.03
Sunnyvale, City of	CA0037621	0.05
US Naval Support Activity, Treasure Island WWTP	CA0110116	0.002
Vallejo Sanitation & Flood Control District	CA0037699	0.05
West County Agency, Combined Outfall	CA0038539	0.05
Yountville, Town of	CA0038121	0.001
Total		2^a

a) Total differs from column sum due to rounding

Table A - 4 Individual Wasteload Allocations for Industrial Wastewater Dischargers

Permitted Entity	NPDES Permit	Allocations ^a kilograms per year
C&H Sugar and Crockett Community Services District.	CA0005240	0.00006
Chevron Products Company	CA0005134	0.003
ConocoPhillips	CA0005053	0.0006
Crockett Cogeneration LP, and Pacific Crockett Energy, Inc.	CA0029904	0.0006
General Chemical	CA0004979	0.0009
GWF Power Systems, Site I	CA0029106	0.0001
GWF Power Systems, Site V	CA0029122	0.0001
Hanson Aggregates, Amador Street	CA0030139	0.00003
Hanson Aggregates, Olin Jones Dredge Spoils Disposal	CA0028321	0.00003
Hanson Aggregates, Tidewater Ave., Oakland	CA0030147	0.00003
Morton Salt	CA0005185	0.00008
Pacific Gas and Electric, East Shell Pond	CA0030082	0.00003
Rhodia, Inc.	CA0006165	0.0003
San Francisco, City and Co., SF International Airport Industrial WTP	CA0028070	0.002
Shell Oil Products US and Equilon Enterprises LLC	CA0005789	0.002
Mirant Delta LLC, Pittsburg Power Plant	CA0004880	0.0008
Mirant Potrero LLC, Potrero Power Plant	CA0005657	0.0003
Tesoro Refining and Marketing Company	CA0004961	0.002
The Dow Chemical Company	CA0004910	0.0006
USS-Posco	CA0005002	0.02
Valero Refining Company	CA0005550	0.0007
<i>Total</i>		<i>0.035^b</i>

- a) Wasteload allocations for industrial wastewater dischargers do not include mass from once-through cooling water. The Water Board will apply intake credits to once-through cooling water as allowed by law.
- b) Total differs from column sum due to rounding

Table A- 5 County-Based Watershed Wasteload Allocations for Stormwater Runoff

County^b	Allocations^a
	kilograms per year
Alameda	0.5
Contra Costa	0.3
Marin	0.1
Napa	0.05
San Francisco ^c	0.2
San Mateo	0.2
Santa Clara	0.5
Solano	0.1
Sonoma	0.05
<i>Total</i>	2

^a Allocations implicitly include all current and future permitted discharges within the geographic boundaries of municipalities and unincorporated areas within the County. Examples of discharges include but are not limited to California Department of Transportation (Caltrans) roadways and non-roadway facilities and rights-of-way, atmospheric deposition, public facilities, properties proximate to stream banks, industrial facilities, and construction sites.

^b Includes unincorporated areas and all municipalities in the county that drain to the Bay and are part of the San Francisco Bay Region.

^c Does not account for treatment provided by San Francisco’s combined sewer system. The treatment provided by the City and County of San Francisco’s Southeast Plant and Northpoint Wet Weather Facility (NPDES permit CA0037664) will be credited toward meeting the allocation and load reduction.

Implementation Plan

The implementation plan includes three general implementation categories: control of external loadings of PCBs to the Bay, control of internal sources of PCBs within the Bay, and actions to manage risks to Bay fish consumers. In addition, the plan includes monitoring to measure attainment of the numeric target and load allocations, and measuring implementation progress. The plan will be implemented in phases via an adaptive implementation strategy founded on requiring actions in each category based on the current state of knowledge of PCBs sources and control measures, while also conducting studies to improve our understanding of PCBs sources, control options, and fate in the environment.

External Sources

This section, organized by source categories, specifies actions required to achieve allocations and implement the TMDL.

Central Valley Watershed

Sediments entering the Bay from the Central Valley have lower concentrations of PCBs than in-Bay sediment. Major mass loading events that occur during episodic high flow conditions generally flow directly out of the Bay through the Golden Gate. It is anticipated that the Central Valley allocation will be attained through natural attenuation.

Municipal and Industrial Wastewater Dischargers

Wasteload allocations shall be implemented through NPDES permits that require implementation of best management practices to maintain optimum treatment performance for

solids removal and the identification and management of controllable sources. NPDES permits shall include effluent limits based on current performance and a requirement for quantification of PCBs loads to the Bay in order to determine attainment of the wasteload allocations. Compliance with effluent limits shall be determined using a Title 40, Code of Federal Regulations, Part 136 analytical method. In addition, municipal and industrial wastewater dischargers will be required to support actions to reduce the health risks of people who eat PCBs-contaminated, San Francisco Bay fish and to conduct or cause to be conducted monitoring, and studies to fill critical data needs identified in the adaptive implementation section.

It is the Water Board's intent to implement individual wasteload allocations via numeric water quality-based effluent limitations for PCBs in NPDES permits. These limits shall represent individual dischargers' PCBs loads, consistent with the underlying assumptions and requirements of the wasteload allocations. In the absence of actual discharge performance data sufficient to calculate such limits, the Water Board will apply appropriate uncertainty factors to the individual wasteload allocations.

Dischargers shall also be required to conduct sufficient monitoring of their effluent, which accounts for discharge variability and blended effluent, to enable calculation of current PCBs loading. These requirements will be implemented via NPDES permits or the Water Board's authority under Section 13267 of the California Water Code, such that monitoring begins no later than January 2009 and is completed in a timely manner.

Stormwater Runoff

Stormwater runoff wasteload allocations shall be achieved within 20 years and shall be implemented through the NPDES stormwater permits issued to stormwater runoff management agencies and the California Department of Transportation (Caltrans). The urban stormwater runoff wasteload allocations implicitly include all current and future permitted discharges, not otherwise addressed by another allocation, and unpermitted discharges within the geographic boundaries of stormwater runoff management agencies including, but not limited to, Caltrans roadway and non-roadway facilities and rights-of-way, atmospheric deposition, public facilities, properties proximate to stream banks, industrial facilities, and construction sites.

Requirements in each NPDES permit issued or reissued, shall be based on an updated assessment of best management practices and control measures intended to reduce PCBs in urban stormwater runoff. Control measures implemented by stormwater runoff management agencies and other entities (except construction and industrial sites) shall reduce PCBs in stormwater runoff to the maximum extent practicable. Control measures for construction and industrial sites shall reduce discharges based on best available technology economically achievable. All permits shall remain consistent with Section 4.8 - Stormwater Discharges.

In the first five-year permit term, stormwater permittees will be required to implement control measures on a pilot scale to determine their effectiveness and technical feasibility. In the second permit term, stormwater permittees will be required to implement effective control measures, that will not cause significant adverse environmental impacts, in strategic locations, and to develop a plan to fully implement control measures that will result in attainment of allocations, including an analysis of costs, efficiency of control measures and an identification

of any significant environmental impacts. Subsequent permits will include requirements and a schedule to implement technically feasible, effective and cost efficient control measures to attain allocations. If, as a consequence, allocations cannot be attained, the Water Board will take action to review and revise the allocations and these implementation requirements as part of adaptive implementation.

In addition, stormwater permittees will be required to develop and implement a monitoring system to quantify PCBs urban stormwater runoff loads and the load reductions achieved through treatment, source control and other actions; support actions to reduce the health risks of people who consume PCBs-contaminated San Francisco Bay fish; and conduct or cause to be conducted monitoring, and studies to fill critical data needs identified in the adaptive implementation section.

Stormwater runoff management agencies have a responsibility to oversee various discharges within the agencies' geographic boundaries. However, if it is determined that a source is substantially contributing to PCBs loads to the Bay or is outside the jurisdiction or authority of an agency the Water Board will consider a request from an stormwater runoff management agency which may include an allocation, load reduction, and/or other regulatory requirements for the source in question.

Urban Stormwater Runoff Treatment by Municipal Wastewater Dischargers

Routing of urban stormwater runoff through municipal wastewater treatment facilities may be an efficient means of reducing PCBs, and other particle-associated contaminant loads to the Bay. This load allocation shall be implemented through a permit. Within five years of adoption of this TMDL, the Water Board will consider issuance of a permit under which municipal wastewater dischargers can apply for a portion of this reserved allocation.

Internal Sources

In-Bay PCB-Contaminated Sites

A number of former industrial and military sites adjacent to PCBs-enriched sediment are found throughout the Bay. This TMDL does not require any specific party to implement new actions for in-Bay PCB-contaminated sites. However, cleanup of these sites is a Water Board priority and many cleanups are underway. The Water Board will maintain an inventory of contaminated sites and continue to set priorities for investigating and remediating the sites. The existing list of in-Bay PCB-contaminated sites referred to in this TMDL is based on data collected under the Bay Protection Toxic Cleanup Program, which identified sites with total PCBs in sediment that exceed 180 µg/kg. This TMDL does not set a cleanup level for total PCBs in sediment. The fish tissue target of 10 µg/kg and the sediment goal of one ug/kg are not cleanup standards, nor should they be considered appropriate, or relevant, and applicable requirements (ARARs) or a "to-be-considered" ARAR under the National Contingency Plan, 40 CFR Part 300 et. Seq. or the 1986 Superfund Amendments and Reauthorization Act. An analysis of the feasibility, technical practicability, and potential environmental impacts of individual clean-up actions is currently required prior to conducting cleanup of contaminated in-Bay sediment overseen by the Water Board and the Department of Toxic Substances Control and will continue to be required, notwithstanding this TMDL. The Water Board has

the authority to approve, disapprove or condition these projects to minimize adverse environmental impacts while achieving the goals of environmental cleanup.

The Water Board will coordinate cleanup actions with the U.S. EPA and the Department of Toxic Substances Control, and advise them that the fish tissue target and sediment goal do not constitute cleanup standards for ARARs. The Water Board will issue cleanup orders as necessary. The Water Board will require responsible parties for each specific Bay margin contaminated site to:

1. Estimate the pre-cleanup and post-cleanup vertical and lateral extent of PCBs in Bay sediments;
2. Estimate the pre-cleanup and post-cleanup mass of PCBs in Bay sediments;
3. Quantify rate(s) of sediment accretion, erosion or natural attenuation;
4. Implement on-land source control measures, if necessary, to ensure that on-land sources of PCBs do not further contaminate in-Bay sediments;
5. Evaluate post-cleanup, the residual risks to humans and wildlife;
6. Support actions to reduce the health risks of people who consume PCBs-contaminated San Francisco Bay fish;
7. Conduct or cause to be conducted studies to fill critical data needs identified in the Adaptive Implementation section.

These requirements shall be incorporated into relevant site investigation plans within five years of the effective date of this TMDL, and the actions shall be fully implemented within ten years of the effective date of this TMDL or as agreed to in the individual site investigation plan.

Navigational Dredging

The PCBs concentration in dredged material disposed of in the Bay shall not exceed the 99th percentile PCBs concentration of the previous 10 years of Bay sediment samples collected through the RMP (excluding stations outside the Bay like the Sacramento River, San Joaquin River, Guadalupe River and Standish Dam stations). Prior to disposal, the material shall be sampled and analyzed according to the procedures outlined in the 2001 U.S. Army Corps of Engineers document "Guidelines for Implementing the Inland Testing Manual in the San Francisco Bay Region." All in-Bay disposal of dredged material shall comply with Section 4.20, entitled Dredging and Disposal of Dredged Sediment, including the Long Term Management Strategy. Additionally, dredged material dischargers will be required to conduct or cause to be conducted studies to fill critical data needs identified in the Adaptive Implementation section.

Risk Management

Load reductions and attainment of the numeric target to support fishing in the Bay as a beneficial use will take time to achieve. However, there are actions that should be undertaken prior to achievement of the numeric fish tissue target to help manage the risk to consumers of PCBs-contaminated fish. The Water Board will work with the California Office of Environmental Health Hazard Assessment, the California Department of Toxic Substances

Control, the California Department of Public Health, dischargers, and interested parties to pursue risk management strategies. The risk management activities will include the following:

- Investigating and implementing actions to address the public health impacts of PCBs in San Francisco Bay/Delta fish, including activities that reduce the actual and potential exposure of, and mitigate health impacts to, people and communities most likely to be consuming PCB-contaminated fish from San Francisco Bay, such as recreational and subsistence fishers and their families;
- Providing multilingual fish-consumption advice to the public to help reduce PCBs exposure through community outreach, broadcast and print media, and signs posted at popular fishing locations;
- Regularly informing the public about monitoring data and findings regarding hazards of eating PCB-contaminated fish; and
- Conducting special studies needed to support health risk assessment and risk communication, including the collection of additional information regarding recreational and subsistence fishers' patterns of consumption.

Critical Data Needs

Additional data and other information will be needed to assess both the progress toward attainment of the fish tissue target and to evaluate the need for modifications to the implementation plan, TMDL, and/or allocations. Dischargers will be required to conduct or cause to be conducted the following studies to fill critical data needs.

- PCBs mass budget modeling and food web model improvements – Model refinements to improve our ability to predict recovery rates of the Bay from impairment by PCBs, to help strategically focus implementation actions on those actions with the most potential for success, and to help better our understanding of the role in-Bay PCBs-contaminated sites play in the Bay's recovery.
- Rate of natural attenuation of PCBs in the Bay environments –A better understanding of local rates of natural attenuation in order to predict with more certainty the recovery time of the Bay.

Monitoring

Monitoring to demonstrate progress toward attainment of the TMDL target shall be conducted by maintaining discharger-funded RMP monitoring of PCBs in San Francisco Bay fish, sediments, and water at a spatial scale and frequency to track trends in the decline of PCBs in the Bay. Monitoring of load allocations to demonstrate progress towards attainment shall be conducted by municipal and industrial wastewater dischargers and stormwater permittees as discussed in external sources above.

Continued regular monitoring of PCB loads from the Central Valley and other tributaries to the Bay shall be conducted by maintaining discharger-funded RMP monitoring in order to provide information on the long term decline of PCBs to the Bay and to confirm the assumption that Central Valley loads are being reduced due to natural attenuation. Monitoring of loads allocated to other sources will be considered as part of the RMP special studies.

Adaptive Implementation

Adaptive implementation entails taking actions commensurate with the existing, available information, reviewing new information as it becomes available, and modifying actions as necessary based on the new information. Taking action allows progress to occur while more and better information is collected and the effectiveness of current actions is evaluated. Accordingly, this TMDL will be implemented in phases starting with actions described in each source category, risk management, monitoring, and critical data needs section above with subsequent modifications and phases based on improved knowledge of PCBs sources, control measures, and fate in the environment,

The Water Board will adapt the TMDL and implementation plan to incorporate new and relevant scientific information such that effective and efficient measures can be taken to achieve the allocations and numeric fish tissue target. The Water Board staff will present an annual progress report to the Water Board on implementation of the TMDL that includes evaluation of new and relevant information that becomes available through implementation actions, monitoring, special studies, and the scientific literature. Within ten years of the effective date of the TMDL, Water Board will consider a Basin Plan amendment that will reflect and incorporate the data and information that is generated in the intervening years. The Water Board will consider amending the PCBs TMDL and implementation plan as necessary to ensure attainment of water quality standards in a timely manner while considering the financial and environmental consequences of new control measures.

In particular, achievement of the allocations for stormwater runoff, which is projected to take 20 years, will be challenging. Consequently, the Water Board will consider modifying the schedule for achievement of the load allocations for stormwater runoff provided that dischargers have complied with all applicable permit requirements and accomplished all of the following:

- A diligent effort has been made to quantify PCBs loads and the sources of PCBs in the discharge;
- Documentation has been prepared that demonstrates that all technically and economically feasible and cost-effective control measures recognized by the Water Board have been fully implemented, and evaluates and quantifies the PCBs load reduction of such measures;
- A demonstration has been made that achievement of the allocation will require more than the remaining 10 years originally envisioned; and
- A plan has been prepared that includes a schedule for evaluating the effectiveness and feasibility of additional control measures and implementing additional controls as appropriate.

