Fact Sheet: San Francisco Bay PCB TMDL

Waterbody/ Watershed	The 1998 listing applies to the following Bay segments: Sacramento and San Joaquin Delta (within the San Francisco Bay Regional Board jurisdiction), Suisun Bay, Carquinez Strait, San Pablo Bay, Richardson Bay, Central Bay, Lower Bay and South Bay. The 303(d) list was revised in 2002 to include specific locations in the Lower Bay segment. This TMDL applies to all Bay segments. Total # of TMDLs: 1
Date TMDL Approved	March 29, 2010; Lead agency: California Environmental Protection Agency
Basis for 303(d) Listing	Interim health advisory for fish consumption
Water Quality Standards Target & TMDL Target	CA has two applicable numeric water quality standards: • saltwater criterion continuous concentration of 30 nanograms per liter (ng/L) for the protection of aquatic life and its uses from chronic toxicity, and • the human health criterion of 170 picograms per liter (pg/L) for the protection from consumption of aquatic organisms. These criteria apply to total PCBs. TMDL proposes a fish tissue numeric target of 10 ng/g. The fish tissue numeric target provides for the attainment of the desired conditions that support the beneficial uses currently impaired.
Existing Source Loadings	Several sites (e.g.,Cerrito Creek) were identified under the Bay Protection and Toxic Clean-up Program (BPTCP). Also, Hunters Point Shipyard and Seaplane Lagoon at the Alameda Naval Air Station are Superfund sites regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). External sources cited in the TMDL include: ▪ direct atmospheric deposition, ▪ Central Valley watershed (Sacramento and San Joaquin Rivers), ▪ municipal and industrial wastewater discharges, and ▪ runoff and local tributaries The two major sources of PCBs mass to the Bay come from the Delta and urban stormwater runoff. Sediments from the Central Valley watershed carry a large mass of PCBs but are lower in concentrations than in-Bay sediments, potentially helping to reduce the current impact of PCBs on the Bay by burying more contaminated sediments.

Method for Characterizing Existing Loadings	The TMDL assesses current PCB mass in the water column and sediments, as well as the loads from direct atmospheric deposition, Central Valley watershed inputs, municipal and industrial wastewater, and urban stormwater runoff to the Bay. It presents current understanding of in-Bay PCB-contaminated sites, but cannot estimate their role as sources to the water column and biota.
Method for Determining Allowable Load (Loading Capacity)	The mass budget model and food web model represent the linkage between load reductions and attainment of the fish tissue numeric target, as well as between the cause of impairment and the sources of PCBs: • Food web bioaccumulation model -- Starting with the numeric fish tissue target of 10 ng/g, the model yields a corresponding concentration of 1 µg/kg PCBs in sediment. Model results validate the sediment PCBs concentration goal as protective of wildlife in San Francisco Bay. • Mass budget model -- Treats the Bay as a single box with two environmental reservoirs: water and sediment; highlights the importance of reducing current external loads of PCBs to the Bay.
Reductions Needed to Reach Target	This TMDL necessitates achieving a load reduction of 24 kg/yr to reduce total PCBs in the Bay active layer to 160 kg in about 30 years.
Allocations	The TMDL is expressed as an average annual rather than as a daily load because: • mass budget model depicts the long term (decadal) fate of PCBs; the loadings data are not refined enough to provide discrete daily loads; • future data collection to verify attainment of the TMDL will also be collected on an annual timeframe, due to the large cost associated with these types of data. Therefore a TMDL is needed based on annual loads for comparison purposes; and • the natural variability in quantifying PCBs loads is much greater than the expected rate of load reductions. Long-term averaging of the loads is necessary to dampen out the variability in the data. Point sources: There are 39 individual municipal wastewater waste load allocations (WLAs), ranging from 0.00001 kg/yr to 0.4 kg/yr and 21 individual industrial WLAs, ranging from 0.00003 kg/yr to 0.02 kg/yr. Nonpoint source: The TMDL proposes using 5 kg/yr as the load allocation to sediment in the Central Valley watershed.

Margin of Safety	The TMDL uses an implicit margin of safety and a conservative approach to derive the fish tissue numeric target. We used a high-end value, the 95th percentile consumption rate, rather than the average consumption rate allowed by USEPA.
Reasonable Assurance	Adaptive implementation for mass reductions of PCBs loads from the following external sources and internal sources is summarized briefly as follows: • Direct atmospheric deposition -- relies on net removal from system • Central Valley watershed – focuses on natural attenuation • Municipal and industrial wastewater dischargers -- NPDES permits will require implementation of best management practices (BMPs) • Stormwater runoff – NPDES permits will be issued to urban runoff management agencies • Urban stormwater runoff treatment by municipal wastewater dischargers -- includes investigating the feasibility and PCB-removal efficiency of intercepting and routing and treating urban stormwater runoff via wastewater treatment systems, and implementing this • control measure where feasible • In-Bay PCB contaminated sites -- will not result in new requirements for selecting site clean-up levels and remedial options • Navigational dredging -- removes sediment from navigation channels and disposes of this sediment at different permitted sites
Implementa-tion	This implementation plan includes three general implementation categories: 1) control of external loadings of PCBs to the Bay, 2) control of internal sources of PCBs within the Bay, and 3) actions to manage risks to Bay fish consumers. An adaptive implementation section describes the method and schedule for evaluating and adapting the TMDL and implementation plan as needed to assure water quality standards are attained based on new information, studies to fill information gaps, and tracking and evaluation of actions.

Monitoring	The Water Board will call on dischargers to support the Regional Monitoring Plan (RMP) to monitor PCBs in fish (as specified in the numeric target), in sediments and water, at a spatial scale and frequency to track trends in the decline of PCBs and to demonstrate attainment of the numeric fish tissue target and sediment concentration goal. Monitoring of load allocations to demonstrate progress towards attainment shall be conducted by municipal and industrial wastewater dischargers and by urban runoff stormwater agencies; per the RMP, regular monitoring of PCBs loads from the Central Valley and some limited monitoring of PCBs loads from local tributaries also takes place.
Source: *Total Maximum Daily Load for PCBs in San Francisco Bay Final Staff Report for Proposed Basin Plan Amendment*, February 13, 2008, available at http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/sfbaypcbs/Staff_Report.pdf.	

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