

**State of California
California Regional Water Quality Control Board, Los Angeles Region**

**RESOLUTION NO. R10-008
September 2, 2010**

**Amendment to the *Water Quality Control Plan for the Los Angeles Region*
to Incorporate a Total Maximum Daily Load for Pesticides and PCBs for
Machado Lake**

WHEREAS, the California Regional Water Quality Control Board, Los Angeles Region, finds that:

1. The Federal Clean Water Act (CWA) requires the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) to establish water quality standards for each waterbody within its region. Water quality standards include beneficial uses, water quality objectives that are established at levels sufficient to protect those beneficial uses, and an antidegradation policy to prevent degrading waters. Waterbodies that do not meet water quality standards are considered impaired.
2. CWA section 303(d)(1) requires each state to identify the waters within its boundaries that do not meet water quality standards. Those waters are placed on the state's "303(d) List" or "Impaired Waters List". For each listed water, the state is required to establish the Total Maximum Daily Load (TMDL) of each pollutant impairing the water quality standards in that waterbody. Both the identification of impaired waters and TMDLs established for those waters must be submitted to the United States Environmental Protection Agency (U.S. EPA) for approval pursuant to CWA section 303(d)(2). For all waters that are not identified as impaired, the states are nevertheless required to create TMDLs pursuant to CWA section 303(d)(3).
3. A consent decree between U.S. EPA, Heal the Bay, Inc. and Santa Monica BayKeeper, Inc. was approved on March 22, 1999, which resolved litigation between those parties relating to the pace of TMDL development in the Los Angeles Region. The court order directs the U.S. EPA to ensure that TMDLs for all 1998-listed impaired waters in the Los Angeles Region be established within 13 years of the consent decree. The consent decree combined waterbody pollutant combinations in the Los Angeles Region into 92 TMDL analytical units. In accordance with the consent decree, the Machado Lake Pesticides and PCBs TMDL addresses the listings for chlordane, dieldrin, Chem A, DDT and PCBs in tissue for analytical unit 73. Based on the consent decree schedule, TMDLs must be approved or established by U.S. EPA by March 2012.
4. The elements of a TMDL are described in 40 CFR 130.2 and 130.7 and section 303(d)(1)(C) and (D) of the CWA, as well as in U.S. EPA guidance documents (Report No. EPA/440/4-91/001). A TMDL is defined as the sum of the individual waste load allocations for point sources, load allocations for non-point sources and natural background (40 CFR 130.2). TMDLs must be set at levels necessary to attain and maintain the applicable narrative and numeric water quality

standards with seasonal variations and a margin of safety that takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality (40 CFR 130.7(c)(1)). 40 CFR 130.7 also dictates that TMDLs shall take into account critical conditions for stream flow, loading and water quality parameters. TMDLs typically include one or more numeric "targets", i.e., numerical translations of the existing water quality standards, which represent attainment of those standards, contemplating the TMDL elements described above. Since a TMDL must represent the "total" load, TMDLs must account for all sources of the relevant pollutants, irrespective of whether the pollutant is discharged to impaired or unimpaired upstream reaches.

5. Neither TMDLs nor their targets or other components are water quality objectives, and thus their establishment does not implicate California Water Code section 13241. Rather, under California Law, TMDLs are programs to implement existing standards (including objectives), and are thus established pursuant to Cal. Water Code section 13242. Moreover, they do not create new bases for direct enforcement against dischargers apart from the existing water quality standards they translate. Like most other parts of the Water Quality Control Plan for the Los Angeles Region (Basin Plan), TMDLs are not generally self-implementing. The targets merely establish the bases through which load allocations (LAs) and waste load allocations (WLAs) are calculated. The LAs and WLAs may be implemented in any manner consistent with the Water Quality Control Policy for Addressing Impaired Waters: Regulatory Structure and Options, adopted by the State Water Resources Control Board (State Board) on June 16, 2005 (Resolution 2005-0050). Federal regulations also require that National Pollutant Discharge Elimination System (NPDES) permits be consistent with the assumptions and requirements of available WLAs (40 C.F.R. 122.44(d)(vii)(B)).
6. As envisioned by Cal. Water Code section 13242, the TMDL contains a "description of surveillance to be undertaken to determine compliance with objectives." The Compliance Monitoring element of the TMDL recognizes that monitoring will be necessary to assess the progress of pollutant load reductions and improvements in water quality in Machado Lake. The TMDL establishes the types of information that will be necessary to secure. The Regional Board's Executive Officer will ensure that appropriate entities develop and submit monitoring programs and technical reports necessary to achieve the purposes of the TMDL. The Executive Officer will determine the scope of these programs and reports, taking into account any legal requirements, including this TMDL, and if necessary issue appropriate orders to appropriate entities.
7. Upon establishment of TMDLs by the State or U.S. EPA, the State is required to incorporate, or reference, TMDLs in the State Water Quality Management Plan (40 CFR 130.6(c)(1), 130.7). The Basin Plan and applicable statewide plans serve as the State Water Quality Management Plans governing the watersheds under the jurisdiction of the Los Angeles Regional Board. Attachment A to this resolution contains the language to be incorporated into the Basin Plan for this TMDL.
8. Machado Lake is located in the Ken Malloy Harbor Regional Park (KMHRP), which is a 231-acre Los Angeles City Park serving the Wilmington and Harbor

City areas. The Park is located west of the Harbor Freeway (110) and east of Vermont Street between the Conoco Phillips Refinery on the south and the Pacific Coast Highway on the north. The Machado Lake area is approximately 103.5 acres in total size. The upper portion, which includes the open water area, is approximately 40 acres and the lower wetland portion is about 63.5 acres. This TMDL will address the 40-acre open water lake. Machado Lake is located within the Machado Lake subwatershed, which is approximately 20 square miles and positioned within the larger 110-square mile Dominguez Channel Watershed. The dominant land use in the Machado Lake Watershed is high-density single-family residential, accounting for approximately 45 % of the land use. Industrial, vacant, retail/commercial, multi-family residential, transportation, and educational institutions each account for 5-7 % of the land use, while "all other" accounts for the remaining 23 %. Machado Lake receives urban and stormwater runoff from a network of storm drains throughout the watershed.

9. Numeric targets for the TMDL are based on narrative and numeric water quality objectives (WQOs) provided in the Basin Plan and 40 CFR 131.38 (California Toxics Rule or CTR).
10. The Regional Board's goal in establishing the TMDL for Pesticides and PCBs in Machado Lake is to protect the recreation (REC 1 and REC 2) and aquatic life (WARM, WILD, RARE, WET) beneficial uses of Machado Lake by achieving the numeric and narrative water quality objectives set to protect those uses.
11. Regional Board Staff have prepared a detailed technical document that analyzes and describes the specific necessity and rationale for the development of this TMDL. The technical document entitled "Machado Lake Pesticides and PCBs TMDL" is an integral part of this Regional Board action and was reviewed, considered, and accepted by the Regional Board before acting. Further, the technical document provides the detailed factual basis and analysis supporting the problem statement, numeric targets (interpretation of the narrative and numeric water quality objectives, used to calculate the waste load and load allocations), source analysis, linkage analysis, waste load allocations (for point sources), load allocations (for non-point sources), margin of safety, and seasonal variations and critical conditions of this TMDL.
12. On September 2, 2010, prior to the Board's action on this resolution, a public hearing was conducted on the Machado Lake Pesticides and PCBs TMDL. Notice of the hearing was published in accordance with the requirements of Cal. Water Code Section 13244. This notice was published in the Los Angeles Times on April 15, 2010.
13. The public has had a reasonable opportunity to participate in the review of the amendment to the Basin Plan. A public stakeholder meeting was held on March 18, 2010; a draft of the TMDL was released for public comment on April 14, 2010; a Notice of Hearing and Notice of Filing were published and circulated 45 days preceding Board action; Regional Board staff responded to oral and written comments received from the public; and the Regional Board held a public hearing on September 2, 2010 to consider adoption of the TMDL.

14. In amending the Basin Plan to establish this TMDL, the Regional Board considered the requirements set forth in Sections 13240 and 13242 of the California Water Code.
15. Because the TMDL implements existing narrative and numeric water quality objectives (i.e., water quality objectives in the Basin Plan), the Regional Board (along with the State Board) has determined that adopting a TMDL does not require the Regional Board to consider the factors of Cal. Water Code section 13241. The consideration of the Water Code section 13241 factors, by section 13241's express terms, only applies "in establishing water quality objectives." Here the Regional Board is not establishing water quality objectives, but as required by section 303(d)(1)(C) of the Clean Water Act is adopting a TMDL that will implement the previously established objectives that have not been achieved. In making this determination, the Regional Board has considered and relied upon a legal memorandum from the Office of Chief Counsel to the State Board's basin planning staff detailing why TMDLs cannot be considered water quality objectives. (See Memorandum from Staff Counsel Michael J. Levy, Office of Chief Counsel, to Ken Harris and Paul Lillebo, Division of Water Quality: *The Distinction Between a TMDL's Numeric Targets and Water Quality Standards*, dated June 12, 2002.)
16. While the Regional Board is not required to consider the factors of Cal. Water Code section 13241, it nonetheless has developed and received significant information pertaining to the Cal. Water Code section 13241 factors and has considered that information in developing and adopting this TMDL. Section 13241 at a minimum requires that water quality objectives ensure reasonable protection of beneficial uses. The designated beneficial uses for Machado Lake include aquatic life habitat uses, water contact recreation, and non-water contact recreation. The past, present and probable future beneficial uses of water have been considered in that Machado Lake is designated for a number of beneficial uses in the Basin Plan. The environmental characteristics of Machado Lake are spelled out at length in the Basin Plan and in the technical documents supporting this Basin Plan amendment, and have been considered in developing this TMDL. Water quality conditions that reasonably could be achieved through the coordinated control of all factors which affect water quality in the area have been considered. This TMDL provides several compliance options, including lake management strategies/lake treatment options that could be implemented directly in the lake and watershed strategies for urban and stormwater runoff throughout the watershed to treat and reduce PCBs and pesticide loading to the lake. These options provide flexibility for responsible parties to reduce external loading and remediate contaminated sediments in Machado Lake. The implementation of the in-lake and watershed compliance options should ensure that Machado Lake attains and continues to maintain water quality standards. Attainment of the water quality standards through the in-lake and watershed compliance options is a reasonably achievable water quality condition for Machado Lake. However, to the extent that there would be any conflict between the consideration of the factor in Water Code section 13241, subdivision (c), if the consideration were required, and the Clean Water Act, the Clean Water Act would prevail. Economic considerations were considered throughout the development of the TMDL. Some of these economic considerations arise in the context of Public Resources Code section 21159 and are equally applicable

here. The implementation program for this TMDL recognizes the economic limitations on achieving immediate compliance and allows a flexible implementation schedule of 7 years. The need for housing within the region has been considered, but this TMDL is unlikely to affect housing needs. Whatever housing impacts could materialize are ameliorated by the flexible nature of this TMDL and the 7-year implementation schedule.

17. The amendment is consistent with the State Antidegradation Policy (State Board Resolution No. 68-16), and the federal Antidegradation Policy (40 CFR 131.12), in that it does not allow degradation of water quality, but requires restoration of water quality and attainment of water quality standards.
18. Pursuant to Public Resources Code section 21080.5, the Resources Agency has approved the Regional Boards' basin planning process as a "certified regulatory program" that adequately satisfies the California Environmental Quality Act (CEQA) (Public Resources Code, § 21000 et seq.) requirements for preparing environmental documents (14 Cal. Code Regs. § 15251(g); 23 Cal. Code Regs. § 3782). The Regional Board staff has prepared "substitute environmental documents" for this project that contain the required environmental documentation under the State Board's CEQA regulations. (23 Cal. Code Regs. § 3777.) The substitute environmental documents include the TMDL staff report entitled "Machado Lake Pesticides and PCBs TMDL", the environmental checklist, the comments and responses to comments, the basin plan amendment language, and this resolution. The project itself is the establishment of a TMDL for pesticides and PCBs in fish tissue and sediment of Machado Lake. While the Regional Board has no discretion to not establish a TMDL (the TMDL is required by federal law), the Board does exercise discretion in assigning waste load allocations and load allocations, determining the program of implementation, and setting various milestones in achieving the water quality standards. The CEQA checklist and other portions of the substitute environmental documents contain significant analysis and numerous findings related to impacts and mitigation measures.
19. A CEQA Scoping meeting was conducted on March 18, 2010 at the Los Angeles Regional Water Quality Control Board Office, 320 West 4th Street, Los Angeles, California 90013. A notice of the CEQA Scoping meeting was sent to interested parties within the subwatershed.
20. In preparing the substitute environmental documents, the Regional Board has considered the requirements of Public Resources Code section 21159 and California Code of Regulations, title 14, section 15187, and intends those documents to serve as a tier 1 environmental review. This analysis is not intended to be an exhaustive analysis of every conceivable impact, but an analysis of the reasonably foreseeable consequences of the adoption of this regulation, from a programmatic perspective. The "Lead" agencies for tier 2 projects will assure compliance with project-level CEQA analysis of this programmatic project. Project level impacts will need to be considered in any subsequent environmental analysis performed by other public agencies, pursuant to Public Resources Code section 21159.2.

21. The foreseeable methods of compliance for this TMDL entail construction and operation of stormwater management practices such as filter systems and grass swales. Foreseeable methods of compliance also include lake management practices, such as hydraulic dredging, in-situ capping, and monitored natural attenuation.
22. Consistent with the Regional Board's substantive obligations under CEQA, the substitute environmental documents do not engage in speculation or conjecture, and only consider the reasonably foreseeable environmental impacts, including those relating to the methods of compliance, reasonably foreseeable feasible mitigation measures to reduce those impacts, and the reasonably foreseeable alternative means of compliance, which would avoid or reduce the identified impacts.
23. The proposed amendment could have a potentially significant adverse effect on the environment. However, there are feasible alternatives, feasible mitigation measures, or both, that if employed, would substantially lessen the potentially significant adverse impacts identified in the substitute environmental documents; however such alternatives or mitigation measures are within the responsibility and jurisdiction of other public agencies, and not the Regional Board. Cal. Water Code section 13360 precludes the Regional Board from dictating the manner in which responsible parties comply with any of the Regional Board's regulations or orders. When the parties responsible for implementing this TMDL determine how they will proceed, the parties responsible for those parts of the project can and should incorporate such alternatives and mitigation into any subsequent projects or project approvals. These feasible alternatives and mitigation measures are described in more detail elsewhere in the substitute environmental documents. (14 Cal. Code Regs. § 15091(a)(2).)
24. The substitute documents for this TMDL, and in particular the Environmental Checklist and staff's responses to comments, identify broad mitigation approaches that should be considered at the project level.
25. To the extent significant adverse environmental effects could occur, the Regional Board has balanced the economic, legal, social, technological, and other benefits of the TMDL against the unavoidable environmental risks and finds that specific economic, legal, social, technological, and other benefits of the TMDL outweigh the unavoidable adverse environmental effects, such that those effects are considered acceptable. The basis for this finding is set forth in the substitute environmental documents. (14 Cal. Code Regs. § 15093.)
26. The regulatory action meets the "Necessity" standard of the Administrative Procedures Act, Government Code, section 11353, subdivision (b). As specified above, federal law and regulations require that TMDLs be incorporated into the state's water quality management plan. The Regional Board's Basin Plan is the Regional Board's component of the water quality management plan, and the Basin Plan is how the Regional Board takes quasi-legislative, planning actions. Moreover, the TMDL is a program of implementation for existing water quality objectives, and is, therefore, appropriately a component of the Basin Plan under Water Code section 13242. The necessity of developing a TMDL is established in the TMDL staff report, the section 303(d) list, and the data contained in the

administrative record documenting the sediment and fish tissue impairments of Machado Lake.

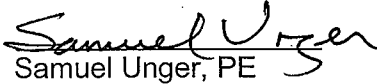
27. The Basin Plan amendment incorporating a TMDL for Pesticides and PCBs in Machado Lake must be submitted for review and approval by the State Board, the State Office of Administrative Law (OAL), and the U.S. EPA. The Basin Plan amendment will become effective upon approval by OAL and U.S. EPA. A Notice of Decision will be filed with the Resources Agency.
28. If during the State Board's approval process Regional Board staff, the State Board or State Board staff, or OAL determine that minor, non-substantive modifications to the language of the amendment are needed for clarity or consistency, the Executive Officer should make such changes consistent with the Regional Board's intent in adopting this TMDL, and should inform the Board of any such changes.
29. Considering the record as a whole, this Basin Plan amendment is expected to result in an effect, either individually or cumulatively, on wildlife resources.

THEREFORE, be it resolved that pursuant to sections 13240 and 13242 of the Cal. Water Code, the Regional Board hereby amends the Basin Plan as follows:

1. The Regional Board hereby approves and adopts the CEQA substitute environmental documentation, which was prepared in accordance with Public Resources Code section 21159 and California Code of Regulations, title 14, section 15187, and directs the Executive Officer to sign the environmental checklist.
2. Pursuant to Sections 13240 and 13242 of the California Water Code, the Regional Board, after considering the entire record, including oral testimony at the hearing, hereby adopts the amendments to Chapter 7 of the Water Quality Control Plan for the Los Angeles Region, as set forth in Attachment A hereto, to incorporate the elements and implementation schedule of the Machado Lake Pesticides and PCBs TMDL.
3. The Executive Officer is directed to forward copies of the Basin Plan amendment to the State Board in accordance with the requirements of section 13245 of the California Water Code.
4. The Regional Board requests that the State Board approve the Basin Plan amendment in accordance with the requirements of sections 13245 and 13246 of the California Water Code and forward it to OAL and the U.S. EPA.
5. If during the State Board's approval process, Regional Board staff, the State Board or State Board staff, or OAL determine that minor, non-substantive modifications to the language of the amendment are needed for clarity or consistency, the Executive Officer may make such changes, and shall inform the Board of any such changes.

6. The Executive Officer is authorized to request a "No Effect Determination" from the Department of Fish and Game, or transmit payment of the applicable fee as may be required to the Department of Fish and Game.

I, Samuel Unger, 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, Los Angeles Region, on September 2, 2010.


Samuel Unger, PE
Executive Officer

Nov. 22, 2016
Date

Proposed Amendment to the Water Quality Control Plan – Los Angeles Region
to Incorporate the
Total Maximum Daily Load for Pesticides and PCBs in Machado Lake

Proposed for adoption by the California Regional Water Quality Control Board, Los Angeles Region on September 2, 2010

Amendments

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Add:

Chapter 7. Total Maximum Daily Loads (TMDLs)

7-38 Machado Lake Pesticides and PCBs TMDL

List of Figures, Tables, and Inserts

Add:

Chapter 7. Total Maximum Daily Loads (TMDLs)

Tables

7-38 Machado Lake Pesticides and PCBs TMDL

7-38.1 Machado Lake Pesticides and PCBs TMDL - Elements

7-38.2 Machado Lake Pesticides and PCBs TMDL - Implementation Schedule

Chapter 7. Total Maximum Daily Loads (TMDLs)
Machado Lake Pesticides and PCBs TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on September 2, 2010.

This TMDL was approved by:

The State Water Resources Control Board on **[insert date]**.

The Office of Administrative Law on **[insert date]**.

The U.S. Environmental Protection Agency on **[insert date]**.

This TMDL is effective on **[insert date]**.

The elements of the TMDL are presented in Table 7-38.1 and the Implementation Plan in Table 7-38.2.

Table 7-38.1. Machado Lake Pesticides and PCBs TMDL: Elements

TMDL Element	Regulatory Provisions
Problem Statement	<p>Machado Lake is identified on the 1998, 2002, 2006, and 2008 Federal Clean Water Act Section 303(d) lists of impaired waterbodies due to chlordane, DDT, dieldrin, Chem A, and PCBs in fish tissue.</p> <p>Chem A (the abbreviation for 'chemical group A') is a suite of bio-accumulative pesticides that includes chlordane and dieldrin. The 1998 303(d) listing (and subsequent listings) for Chem A was predominately based on fish tissue concentrations of chlordane and dieldrin; there was only minimal detection of other Chem A pollutants in 1983 and 1984. Chlordane and dieldrin have been recently detected in fish tissue, while other Chem A pollutants have not been detected in 25 years. Therefore, this TMDL only addresses the Chem A pollutants (chlordane and dieldrin) that are causing impairment.</p> <p>Because of potential harm to human health and the environment, the use of these pollutants has been banned for many years; however, the physio-chemical properties of the pollutants cause them to persist in the environment. These pollutants, bound to soil particles, are easily transported with surface runoff to waterbodies. Contaminated sediments accumulate in the receiving waterbodies and aquatic organisms are exposed to the toxic pollutants. Sediment toxicity has been documented at Machado Lake, and it is likely that pesticides and PCBs contribute to the toxic condition of the sediments. Moreover, all of these pollutants biomagnify as they move up the food chain, thereby increasing concentrations in higher trophic-level aquatic organisms and wildlife.</p> <p>The exposure of the Machado Lake ecosystem to chlordane, DDT, dieldrin, and PCBs has impaired the aquatic life (WARM, WILD, RARE, WET) and recreation (REC-1, REC-2), including fishing, designated beneficial uses of the lake. This TMDL addresses these impairments.</p> <p>Applicable water quality objectives for this TMDL are narrative objectives for Chemical Constituents, Bioaccumulation, Pesticides, and Toxicity in the Basin Plan and the numeric water quality criteria promulgated in 40 CFR section 131.38 (the California Toxics Rule (CTR)).</p>
Numeric Targets	<p>Numeric targets are for pesticides and PCBs in water, sediment, and fish tissue to protect aquatic life, fishing, and other recreational uses in the lake. The CTR criteria for human health (including protection for consumption of organisms) are the numeric targets for the water column. These targets will protect both aquatic life and human health because the CTR human health criteria are more stringent than the aquatic life criteria.</p>

Attachment A to Resolution No. R10-008

TMDL Element	Regulatory Provisions																																						
	<table><tr><th>Pollutant</th><th>Water Column Target (µg/L)</th></tr><tr><td>Total PCBs</td><td>0.00017</td></tr><tr><td>4,4' DDT</td><td>0.00059</td></tr><tr><td>4,4' DDE</td><td>0.00059</td></tr><tr><td>4,4' DDD</td><td>0.00084</td></tr><tr><td>Chlordane</td><td>0.00059</td></tr><tr><td>Dieldrin</td><td>0.00014</td></tr></table> <p>The sediment numeric targets are based on the freshwater Threshold Effect Concentration (TEC) guidelines compiled by the National Oceanic and Atmospheric Administration (NOAA). The fish tissue numeric targets are based on the Office of Environmental Health Hazard Assessment (OEHHA) Fish Contaminant Goals (FCGs).</p> <table><tr><th>Pollutant</th><th>Sediment Target (µg/kg dry weight)</th><th>Fish Tissue Target (ng/g wet weight)</th></tr><tr><td>Total PCBs</td><td>59.8</td><td>3.6</td></tr><tr><td>DDT (all congeners)</td><td>4.16</td><td>No target</td></tr><tr><td>DDE (all congeners)</td><td>3.16</td><td>No target</td></tr><tr><td>DDD (all congeners)</td><td>4.88</td><td>No target</td></tr><tr><td>Total DDT</td><td>5.28</td><td>21.0</td></tr><tr><td>Chlordane</td><td>3.24</td><td>5.6</td></tr><tr><td>Dieldrin</td><td>1.9</td><td>0.46</td></tr></table>	Pollutant	Water Column Target (µg/L)	Total PCBs	0.00017	4,4' DDT	0.00059	4,4' DDE	0.00059	4,4' DDD	0.00084	Chlordane	0.00059	Dieldrin	0.00014	Pollutant	Sediment Target (µg/kg dry weight)	Fish Tissue Target (ng/g wet weight)	Total PCBs	59.8	3.6	DDT (all congeners)	4.16	No target	DDE (all congeners)	3.16	No target	DDD (all congeners)	4.88	No target	Total DDT	5.28	21.0	Chlordane	3.24	5.6	Dieldrin	1.9	0.46
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Source Analysis	<p>The point sources of pesticides and PCBs into Machado Lake are stormwater and urban runoff discharges from the municipal separate storm sewer system (MS4), California Department of Transportation (Caltrans), and general construction and industrial dischargers. Stormwater and urban runoff discharges to Machado Lake occur through the following subdrainage systems: Wilmington Drain, Project 77 and Project 510.</p> <p>PCBs, DDT, dieldrin, and chlordane are no longer legally sold or used, yet, they remain ubiquitous in the environment, bound to fine-grained particles. When these particles become waterborne, the chemicals are ferried to new locations. The more recent small discharges of pesticides and PCBs to Machado Lake most likely come from the erosion of pollutant-laden sediment further up in the watershed. Urban runoff and rainfall higher in the watershed mobilize the particles, which are then washed into storm drains and channels that discharge to the lake.</p>																																						

Attachment A to Resolution No. R10-008

TMDL Element	Regulatory Provisions										
	<p>The major nonpoint source of pesticides and PCBs to Machado Lake is the internal lake sediments. The contaminated lake sediments are a reservoir of historically deposited pollutants. The resuspension of these sediments contributes to the fish tissue impairment in the lake. Additionally, the feeding behaviors of fish expose them to contaminated sediments. Therefore, a load allocation is assigned to the existing reservoir of contaminated sediment.</p> <p>The estimated contribution of pesticides and PCBs from point sources is much smaller than the estimated contribution from internal lake sediments. However, a waste load allocation is assigned to ongoing point source discharges to the lake.</p>										
Linkage Analysis	<p>A conceptual model links the source loading information to the numeric targets.</p> <p>The chemical properties of pesticides and PCBs result in strong binding to particulate matter; therefore, most of the incoming contaminants from the watershed are bound to suspended sediment particles. When the contaminated suspended sediment settles to the lake bottom, pesticides and PCBs accumulate in the lake sediments. These pollutants are available to migrate to the water column and ultimately to the food web. Through bioturbation and feeding processes the contaminants may be taken up by benthic organisms. Once the sediment-bound PCBs and pesticides contaminate benthic organisms, the contaminants may move out of the lake sediments through each trophic level. Thus, the contaminated lake sediments are an important source. It is expected that if sediments within the lake and those loaded to the lake meet sediment numeric targets, then the fish tissue targets will be met as well. The monitoring program will consist of water, sediment, and fish tissue monitoring to assess this assumption.</p>										
Loading Capacity	<p>The loading capacity is calculated as the volume of the active layer of sediment in the lake multiplied by the sediment numeric target.</p> <p>Pollutant Loading Capacity = Volume Active Sediment x Target Concentration</p> <p>However, in the case that the existing load is less than the loading capacity (dieldrin and PCBs); the loading capacity is set at the existing load. The existing load is calculated as the volume of the active layer of sediment in the lake multiplied by the observed pollutant concentration.</p> <p>Existing Pollutant Load = Volume Active Sediment x Pollutant Concentration. The loading capacity for each pollutant is presented as follows.</p> <table data-bbox="721 1629 1151 1850"> <tr> <th>Pollutant</th><th>Loading Capacity (g)</th></tr> <tr> <td>Chlordane</td><td>1,275</td></tr> <tr> <td>Total DDT</td><td>2,078</td></tr> <tr> <td>Dieldrin</td><td>519</td></tr> <tr> <td>PCBs</td><td>14,049</td></tr> </table>	Pollutant	Loading Capacity (g)	Chlordane	1,275	Total DDT	2,078	Dieldrin	519	PCBs	14,049
Pollutant	Loading Capacity (g)										
Chlordane	1,275										
Total DDT	2,078										
Dieldrin	519										
PCBs	14,049										

Attachment A to Resolution No. R10-008

TMDL Element	Regulatory Provisions																					
Waste Load Allocations	<p>Waste load allocations (WLAs) for contaminants associated with suspended sediment are assigned to stormwater dischargers (MS4, Caltrans, general construction and general industrial dischargers) in both wet and dry weather.</p> <table><tr><th>Responsible Party</th><th>Pollutant</th><th>WLA for Suspended Sediment-Associated Contaminants¹ (µg/kg dry weight)</th></tr><tr><td rowspan="7">MS4 Permittees¹, Caltrans, General Construction and Industrial Stormwater Permittees, Other Non-stormwater NPDES Permittees</td><td>Total PCBs</td><td>59.8</td></tr><tr><td>DDT (all congeners)</td><td>4.16</td></tr><tr><td>DDE (all congeners)</td><td>3.16</td></tr><tr><td>DDD (all congeners)</td><td>4.88</td></tr><tr><td>Total DDT</td><td>5.28</td></tr><tr><td>Chlordane</td><td>3.24</td></tr><tr><td>Dieldrin</td><td>1.9</td></tr><tr><td colspan="3">¹ WLAs are applied with a 3-year averaging period.</td></tr></table>	Responsible Party	Pollutant	WLA for Suspended Sediment-Associated Contaminants ¹ (µg/kg dry weight)	MS4 Permittees ¹ , Caltrans, General Construction and Industrial Stormwater Permittees, Other Non-stormwater NPDES Permittees	Total PCBs	59.8	DDT (all congeners)	4.16	DDE (all congeners)	3.16	DDD (all congeners)	4.88	Total DDT	5.28	Chlordane	3.24	Dieldrin	1.9	¹ WLAs are applied with a 3-year averaging period.		
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	Dieldrin	1.9																				
¹ WLAs are applied with a 3-year averaging period.																						
Load Allocations	<p>Load allocations (LAs) addressing nonpoint sources of pesticides and PCBs are assigned to the existing lake sediments. The LAs are set to attain the lake loading capacity, including a 10% margin of safety.</p> <table><tr><th>Responsible Party</th><th>Pollutant</th><th>LA (grams)</th></tr><tr><td rowspan="4">City of Los Angeles, Department of Recreation and Parks</td><td>Chlordane</td><td>1,147</td></tr><tr><td>Total DDT</td><td>1,870</td></tr><tr><td>Dieldrin</td><td>467</td></tr><tr><td>PCBs</td><td>12,644</td></tr></table>	Responsible Party	Pollutant	LA (grams)	City of Los Angeles, Department of Recreation and Parks	Chlordane	1,147	Total DDT	1,870	Dieldrin	467	PCBs	12,644									
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¹ Municipal Separate Storm Sewer System (MS4) Permittees include: Los Angeles County, Los Angeles County Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance.

TMDL Element	Regulatory Provisions															
Margin of Safety	<p>The uncertainties associated with this TMDL are due to:</p> <ul style="list-style-type: none">■ Limited data on the amount of pesticides and PCBs residing within the lake sediments■ Limited data on the amount of pesticides and PCBs entering the lake■ Estimated information on the volume of the active layer of sediment in Machado Lake■ Estimated information on the watershed sediment deposition rate■ Constant bulk density, sediment density, and sediment porosity values used to calculate the load associated with deposited sediment <p>To address these uncertainties, an implicit margin of safety is included by employing conservative assumptions in the TMDL analysis. Additionally, an explicit 10 % margin of safety is applied to the loading capacity for this TMDL.</p> <table><tr><th>Pollutant</th><th>Loading Capacity (g)</th><th>Loading Capacity with 10 % Margin of Safety</th></tr><tr><td>Chlordane</td><td>1,275</td><td>1,147</td></tr><tr><td>Total DDT</td><td>2,078</td><td>1,870</td></tr><tr><td>Dieldrin</td><td>519</td><td>467</td></tr><tr><td>PCBs</td><td>14,049</td><td>12,644</td></tr></table>	Pollutant	Loading Capacity (g)	Loading Capacity with 10 % Margin of Safety	Chlordane	1,275	1,147	Total DDT	2,078	1,870	Dieldrin	519	467	PCBs	14,049	12,644
Pollutant	Loading Capacity (g)	Loading Capacity with 10 % Margin of Safety														
Chlordane	1,275	1,147														
Total DDT	2,078	1,870														
Dieldrin	519	467														
PCBs	14,049	12,644														
Seasonal Variations and Critical Conditions	<p>Pesticides and PCBs in fish tissue are a concern in Machado Lake due to long-term loading and bioaccumulation and biomagnification. Wet-weather events may produce extensive sediment redistribution and transport sediments to the lake. This would be considered the critical condition for loading and the CTR-based water column targets are protective of this condition. However, the effects of pesticides and PCBs in sediment and fish tissue are manifested over long time periods. The TMDL is established in a manner that accounts for the longer time periods in which ecological effects may occur.</p>															
Monitoring Plan	<p>Responsible parties assigned both WLAs and LAs may submit one document that addresses the monitoring requirements (as described below) and implementation activities for both WLAs and LAs.</p> <p><u>Waste Load Allocation Compliance Monitoring</u></p> <p>Responsible parties assigned WLAs shall conduct monitoring to determine compliance with the WLAs. Samples will be analyzed for total suspended solids. Sampling shall be designed to collect sufficient volumes of suspended solids to allow for analysis of the following pollutants in the bulk sediment:</p>															

Attachment A to Resolution No. R10-008

TMDL Element	Regulatory Provisions
	<ul style="list-style-type: none"> ■ Total Organic Carbon ■ Total PCBs ■ DDT and Derivatives ■ Dieldrin ■ Total Chlordane <p>In addition to TMDL constituents, general water chemistry (temperature, dissolved oxygen, pH, and electrical conductivity) and a flow measurement will be required at each sampling event. General chemistry measurements may be taken in the laboratory immediately following sample collection, if auto samplers are used for sample collection or if weather conditions are unsuitable for field measurements.</p> <p>The monitoring shall be conducted in two phases at appropriate locations in the subwatershed.</p> <p><u>Phase 1</u></p> <p>Phase 1 monitoring will be conducted for a two-year period. Samples will be collected during three wet weather events each year. The first large storm event of the season shall be included as one of the monitoring events.</p> <p><u>Phase 2</u></p> <p>Phase 2 monitoring will commence once Phase 1 monitoring has been completed. Samples will be collected during one wet weather event every other year.</p> <p>Monitoring shall be conducted under a technically appropriate Monitoring and Reporting Plan (MRP) and Quality Assurance Project Plan (QAPP). The MRP shall include a requirement that the responsible parties report compliance and non-compliance with waste load allocations as part of annual (or biennial during Phase 2 monitoring) reports submitted to the Regional Board. The QAPP shall include protocols for sample collection, standard analytical procedures, and laboratory certification. All samples shall be collected in accordance with SWAMP protocols. Phase 1 sampling shall begin within 60 days of Executive Officer approval of the MRP and QAPP.</p> <p>Stormwater dischargers that fully divert a stormwater discharge to the sanitary sewer may document the diversion as a wet-weather monitoring event and report both the flow and pollutant concentration as zero. Unless all stormwater discharges are fully diverted to the sanitary sewer, at least one wet-weather event must be sampled according to the monitoring requirements above. Stormwater discharges that are not fully diverted are subject to the WLA compliance monitoring described above. The reported pollutant concentration of zero may be combined with other measured sample concentrations (from stormwater discharges that are not fully diverted) when demonstrating compliance with the WLA over the 3-year averaging period.</p>

Attachment A to Resolution No. R10-008

TMDL Element	Regulatory Provisions
	<p>The Regional Board's Executive Officer may reduce, increase, or modify Phase 2 monitoring and reporting requirements, as necessary, based on the results of Phase 1 monitoring. Currently, several of the constituents of concern have numeric targets that are lower than the readily available detection limits. As analytical methods and detection limits continue to improve (i.e., development of lower detection limits) and become more environmentally relevant, responsible parties shall incorporate new method detection limits in the MRP and QAPP.</p> <p>The Regional Board may reconsider the TMDL WLAs based on the results of Phase 1 and 2 monitoring, if necessary.</p> <p><u>Load Allocation Compliance and Numeric Target Assessment Monitoring</u></p> <p>Monitoring to determine compliance with the TMDL load allocations and attainment of numeric targets shall be conducted as part of the Lake Water Quality Management Plan (LWQMP). This monitoring shall commence following the remediation of lake sediments as presented in the LWQMP.</p> <p>Lake sediment samples will be collected from three locations in the lake (northern end, mid point, southern end). Immediately following remediation of lake sediments, samples will be collected at a frequency appropriate to assess post remediation conditions and demonstrate compliance with LAs. Thereafter, samples will be collected every three years to assess attainment of numeric targets. All samples shall be collected in accordance with SWAMP protocols. Sediment samples will be analyzed for:</p> <ul style="list-style-type: none"> ■ Total Organic Carbon ■ Total PCBs ■ DDT and Derivatives ■ Dieldrin ■ Total Chlordane <p>A water sample will be collected every three years from the mid point of the lake. Sample collection shall be associated with wet-weather conditions. Samples will be collected as a depth integrated water column sample and/or a bottom sample (collected near the sediments) as appropriate based on lake depth. All samples shall be collected in accordance with SWAMP protocols. Samples (unfiltered) will be analyzed for:</p> <ul style="list-style-type: none"> ■ Total PCBs ■ DDT and Derivatives ■ Dieldrin ■ Total Chlordane <p>Fish shall be collected for tissue analysis every 3 years. Fish tissue samples will be analyzed for:</p>

Attachment A to Resolution No. R10-008

TMDL Element	Regulatory Provisions
	<ul style="list-style-type: none"> ■ Total PCBs ■ DDT and Derivatives ■ Total Chlordane ■ Dieldrin <p>The fish collection and analysis shall be conducted in accordance with the U.S. EPA <i>Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories: Volume 1 Fish Sampling and Analysis</i> (EPA 823-B-00-0007) or updates.</p> <p>In addition to TMDL constituents, general water chemistry (temperature, dissolved oxygen, pH, and electrical conductivity) will be required at each sampling event. The Executive Officer may require additional monitoring depending on which implementation alternatives are pursued by the responsible parties.</p> <p>Currently, several of the constituents of concern have numeric targets that are lower than the readily available detection limits. As analytical methods and detection limits continue to improve (i.e., development of lower detection limits) and become more environmentally relevant, responsible parties shall incorporate new method detection limits in the MRP and QAPP.</p> <p><u>Wilmington Drain Monitoring</u></p> <p>The Los Angeles County Flood Control District shall monitor Wilmington Drain to demonstrate that Wilmington Drain is not re-contaminating Machado Lake. Monitoring shall include bed sediment sampling and visual inspection of channel maintenance and operation of best management practices (BMPs). Monitoring shall be required by Regional Board order or a conditional Water Quality Certification under section 401 of the Clean Water Act. This monitoring shall be initiated at the same time as all other required WLA monitoring.</p>

Attachment A to Resolution No. R10-008

TMDL Element	Regulatory Provisions
Implementation Plan	<p>Compliance with the TMDL is based on the assigned WLAs and LAs. Compliance with this TMDL will require the implementation of NPDES permit limitations for urban runoff and stormwater discharges and cleanup of contaminated lake sediments. Table 7-38.2 contains a schedule for responsible parties to implement BMPs and a LWQMP to comply with the TMDL.</p> <p>I. Implementation of WLAs</p> <p>The TMDL WLAs shall be incorporated into the MS4, Caltrans, and general construction and industrial stormwater NPDES permits and any other non-stormwater NPDES permits.</p> <p>Permitted stormwater dischargers can implement a variety of implementation strategies to meet the required WLAs, such as non-structural and structural BMPs, and/or diversion and treatment to reduce sediment transport from the watershed to the lake.</p> <p>II. Implementation of LAs</p> <p>Load allocations shall be implemented through the following:</p> <ul style="list-style-type: none"> (1) Memorandum of Agreement (MOA), or (2) Cleanup and Abatement Order or Other Regulatory Order. <p>The responsible parties for the load allocations shall be allowed one year from the effective date of this TMDL to enter into a Memorandum of Agreement (MOA) with the Regional Board, detailing the voluntary efforts that will be undertaken to attain the load allocations. The MOA shall include development of a LWQMP. The MOA shall comply with the Water Quality Control Policy for Addressing Impaired Waters: Regulatory Structure and Options ("Policy"), including part II, section 2.c.ii. and related provisions, and shall be consistent with the requirements of this TMDL. If the MOA is timely adopted, and so long as it is implemented, the program described in the MOA shall be deemed "certified", pursuant to the Policy, subject to the conditions of section 2.e. of the Policy. The MOA must be approved by the Executive Officer, and may be amended with Executive Officer approval, as necessary. If an MOA is not established with responsible parties within one year or if responsible parties do not comply with the terms of the MOA, a cleanup and abatement order pursuant to California Water Code section 13304 or another appropriate regulatory order shall be issued to implement the load allocations.</p> <p>Furthermore, the implementation of the MOA must result in attainment of the TMDL load allocations. If the MOA and LWQMP are not implemented or otherwise do not result in attainment of load allocations, the certification shall be revoked, the MOA rescinded, and the load allocations shall be implemented through a cleanup and abatement order or other order as described above. Implementation of the MOA shall be reviewed annually by the Executive Officer</p>

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TMDL Element	Regulatory Provisions
	<p>as part of the MRP annual reports.</p> <p>Responsible parties entering into an MOA with the Regional Board shall submit and implement a LWQMP. The LWQMP must be approved by the Executive Officer and may be amended by Executive Officer approval, as necessary. The LWQMP shall include an MRP to address appropriate monitoring and a clear timeline for the implementation of measures that will achieve the lake sediment LAs. The LWQMP shall include annual reporting requirements. In addition to the LWQMP and MRP, a QAPP shall also be submitted to the Regional Board for approval by the Executive Officer to ensure data quality.</p> <p>One and one half years from the effective date of the TMDL, the responsible parties entering into the MOA shall submit a letter of intent, LWQMP, MRP, and QAPP for approval by the Executive Officer in order to be in compliance with the MOA adopted as part of this TMDL. If there is already an MOA, LWQMP, MRP, and QAPP in place to implement the Machado Lake Nutrient TMDL, these documents may be amended to implement and attain the load allocations of this TMDL.</p> <p>The Executive Officer may require a revised assessment under the MOA and LWQMP:</p> <ul style="list-style-type: none"> (a) To prevent pesticides and PCBs from accumulating or recycling in the lake in deleterious amounts that impair water quality and/or adversely affect beneficial uses; (b) To reflect the results of special studies. <p>Cleanup and Abatement Order or Other Regulatory Order:</p> <p>Alternatively, responsible parties may propose or the Regional Board may impose an alternative program that would be implemented through a cleanup and abatement order, or any other appropriate order or orders, provided the program is consistent with the allocations and schedule described in Table 7-38.2.</p> <p>III. Compliance with Allocations and Attainment of Numeric Targets</p> <p>TMDL effectiveness will be determined through water, sediment, and fish tissue monitoring and comparison with the TMDL waste load and load allocations and numeric targets. The compliance point for the stormwater WLA is at the storm drain outfall of the permittee's drainage area. Alternatively, if stormwater dischargers select a coordinated compliance option, the compliance point for the stormwater WLA may be at storm drain outfalls which suitably represent the combined discharge of cooperating parties discharging to Machado Lake. Depending on potential BMPs implemented, alternative stormwater compliance points may be proposed by responsible parties subject to approval by the Regional Board Executive Officer. The compliance point for responsible parties receiving a load allocation is in Machado Lake.</p>

TMDL Element	Regulatory Provisions
	<p>Stormwater dischargers may coordinate compliance with the TMDL. Compliance with the TMDL may be based on a coordinated MRP and implementation plan. Dischargers interested in coordinated compliance shall submit a coordinated MRP and implementation plan that identifies stormwater BMPs and monitoring to be implemented by the responsible parties.</p> <p>After lake remediation activities, to address existing sediment contamination, are complete and LAs are attained, if Machado Lake is recontaminated as a result of continued polluted discharge from the surrounding watershed, the WLA compliance monitoring data will be used, along with other available information, to assess the relative contribution of watershed dischargers and determine their responsibility for secondary lake remediation activities. If a significant amount of contaminated sediment is transported to Machado Lake from the surrounding watershed after lake remediation activities are completed, but before monitoring is conducted to confirm attainment of LAs, Regional Board staff shall consider all information related to watershed discharges and lake conditions when assessing responsibility for secondary lake remediation activities.</p> <p>IV. Application of Allocations to Responsible Parties</p> <p>Responsible parties to attain WLAs for this TMDL include but are not limited to:</p> <ul style="list-style-type: none"> • Caltrans • General Stormwater Permit Enrollees • MS4 Permittees including: <ul style="list-style-type: none"> ➢ Los Angeles County ➢ Los Angeles County Flood Control District ➢ City of Carson ➢ City of Lomita ➢ City of Los Angeles ➢ City of Palos Verdes Estates ➢ City of Rancho Palos Verdes ➢ City of Redondo Beach ➢ City of Rolling Hills ➢ City of Rolling Hills Estates ➢ City of Torrance • Other Non-stormwater Permittees <p>The City of Los Angeles is the responsible jurisdiction to implement the assigned Load Allocations for this TMDL.</p>

Table 7-38.2. Machado Lake Pesticides and PCBs TMDL: Implementation Schedule

Task Number	Task	Responsible Party	Deadline
Load Allocation Requirements			
1	Enter into a Memorandum of Agreement (MOA) with the Regional Board to implement the load allocations. If there is already an MOA in place to implement the Machado Lake Nutrient TMDL, the current MOA may be amended to address the requirements of this TMDL.	City of Los Angeles, Department of Recreation and Parks	1 year from effective date of TMDL
2	Begin development of a Cleanup and Abatement Order or other regulatory order to implement the load allocations if an MOA is not established with responsible parties.	Regional Board	1 year from effective date of TMDL
3	Issue a Cleanup and Abatement Order or other regulatory order if an MOA is not established with responsible parties. The Cleanup and Abatement Order or other regulatory order shall reflect the TMDL Implementation Schedule.	Regional Board	1.5 years from effective date of TMDL
4	Submit a LWQMP ² , MRP ³ Plan, and QAPP ⁴ for approval by the Executive Officer to comply with the MOA. If there is already a LWQMP, MRP Plan, and QAPP in place to implement the Machado Lake Nutrient TMDL, these documents may be amended to address the requirements of this TMDL.	City of Los Angeles, Department of Recreation and Parks	1.5 years from the effective date of the TMDL
5	Begin implementation of the LWQMP.	City of Los Angeles, Department of Recreation and Parks	60 days from date of LWQMP approval
6	Achieve LAs for Pesticides and PCBs and assess attainment of numeric targets.	City of Los Angeles, Department of Recreation and Parks	September 30, 2019
Waste Load Allocation Requirements			
7	Submit a MRP and QAPP for Executive Officer approval ⁶ .	Caltrans, MS4 Permittees ⁵ , General Construction and	6 months from effective date of TMDL or

² Lake Water Quality Management Plan³ Monitoring Reporting Program⁴ Quality Assurance Project Plan⁵ Municipal Separate Storm Sewer System (MS4) Permittees include: Los Angeles County, Los Angeles County Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance.

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Task Number	Task	Responsible Party	Deadline
		Industrial Stormwater Permittees	September 11, 2011 whichever date is later
8	Begin monitoring as outlined in the approved MRP and QAPP.	Caltrans, MS4 Permittees, General Construction and Industrial Stormwater Permittees	60 days from date of approval
9	Conduct Phase 1 Monitoring	Caltrans, MS4 Permittees, General Construction and Industrial Stormwater Permittees	2 year monitoring period
10	Based on the results of Phase 1 Monitoring, submit an implementation plan to attain WLAs or document that WLAs are attained.	Caltrans, MS4 Permittees, General Construction and Industrial Stormwater Permittees	6 months from completion of Phase 1 Monitoring (Submit Draft Plan) 1 year from completion of Phase 1 Monitoring (Submit Final Plan)
11	Begin implementation actions to attain WLAs, as necessary.	Caltrans, MS4 Permittees, General Construction and Industrial Stormwater Permittees	60 days from date of plan approval
12	Achieve WLAs for Pesticides and PCBs	Caltrans, MS4 Permittees, General Construction and Industrial Stormwater Permittees	September 30, 2019
⁶ The deadline for Responsible Parties assigned both WLAs and LAs to submit one document to address both WLA and LA monitoring requirements and implementation activities shall be 1.5 years from the effective date.			