

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

TMDL Element	Regulatory Provisions
<p>Problem Statement</p>	<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>
<p>Numeric Targets</p>	<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>

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<p>Source Analysis</p>	<p data-bbox="386 1356 1425 1556">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 data-bbox="386 1591 1425 1860">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>																																						

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	<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>										
<p>Linkage Analysis</p>	<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>										
<p>Loading Capacity</p>	<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 align="center">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 align="center">Existing Pollutant Load = Volume Active Sediment x Pollutant Concentration.</p> <p>The loading capacity for each pollutant is presented as follows.</p> <table border="1" data-bbox="690 1654 1117 1879"> <thead> <tr> <th>Pollutant</th> <th>Loading Capacity (g)</th> </tr> </thead> <tbody> <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> </tbody> </table>	Pollutant	Loading Capacity (g)	Chlordane	1,275	Total DDT	2,078	Dieldrin	519	PCBs	14,049
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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 border="1" data-bbox="500 436 1325 976"> <thead> <tr> <th data-bbox="500 436 792 590">Responsible Party</th> <th data-bbox="792 436 1036 590">Pollutant</th> <th data-bbox="1036 436 1325 590">WLA for Suspended Sediment-Associated Contaminants¹ (µg/kg dry weight)</th> </tr> </thead> <tbody> <tr> <td data-bbox="500 590 792 642">MS4 Permittees¹,</td> <td data-bbox="792 590 1036 642">Total PCBs</td> <td data-bbox="1036 590 1325 642">59.8</td> </tr> <tr> <td data-bbox="500 642 792 684">Caltrans, General</td> <td data-bbox="792 642 1036 684">DDT (all congeners)</td> <td data-bbox="1036 642 1325 684">4.16</td> </tr> <tr> <td data-bbox="500 684 792 726">Construction and</td> <td data-bbox="792 684 1036 726">DDE (all congeners)</td> <td data-bbox="1036 684 1325 726">3.16</td> </tr> <tr> <td data-bbox="500 726 792 768">Industrial Stormwater</td> <td data-bbox="792 726 1036 768">DDD (all congeners)</td> <td data-bbox="1036 726 1325 768">4.88</td> </tr> <tr> <td data-bbox="500 768 792 810">Permittees, Other</td> <td data-bbox="792 768 1036 810">Total DDT</td> <td data-bbox="1036 768 1325 810">5.28</td> </tr> <tr> <td data-bbox="500 810 792 863">Non-stormwater</td> <td data-bbox="792 810 1036 863">Chlordane</td> <td data-bbox="1036 810 1325 863">3.24</td> </tr> <tr> <td data-bbox="500 863 792 915">NPDES Permittees</td> <td data-bbox="792 863 1036 915">Dieldrin</td> <td data-bbox="1036 863 1325 915">1.9</td> </tr> </tbody> </table> <p data-bbox="500 926 1325 976">¹ WLAs are applied with a 3-year averaging period.</p>	Responsible Party	Pollutant	WLA for Suspended Sediment-Associated Contaminants ¹ (µg/kg dry weight)	MS4 Permittees ¹ ,	Total PCBs	59.8	Caltrans, General	DDT (all congeners)	4.16	Construction and	DDE (all congeners)	3.16	Industrial Stormwater	DDD (all congeners)	4.88	Permittees, Other	Total DDT	5.28	Non-stormwater	Chlordane	3.24	NPDES Permittees	Dieldrin	1.9
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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 border="1" data-bbox="492 1276 1320 1535"> <thead> <tr> <th data-bbox="492 1276 792 1346">Responsible Party</th> <th data-bbox="792 1276 1027 1346">Pollutant</th> <th data-bbox="1027 1276 1320 1346">LA (grams)</th> </tr> </thead> <tbody> <tr> <td data-bbox="492 1346 792 1535" rowspan="4">City of Los Angeles, Department of Recreation and Parks</td> <td data-bbox="792 1346 1027 1388">Chlordane</td> <td data-bbox="1027 1346 1320 1388">1,147</td> </tr> <tr> <td data-bbox="792 1388 1027 1430">Total DDT</td> <td data-bbox="1027 1388 1320 1430">1,870</td> </tr> <tr> <td data-bbox="792 1430 1027 1472">Dieldrin</td> <td data-bbox="1027 1430 1320 1472">467</td> </tr> <tr> <td data-bbox="792 1472 1027 1535">PCBs</td> <td data-bbox="1027 1472 1320 1535">12,644</td> </tr> </tbody> </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.

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<p>Margin of Safety</p>	<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 border="1" data-bbox="602 884 1235 1140"> <thead> <tr> <th>Pollutant</th> <th>Loading Capacity (g)</th> <th>Loading Capacity with 10% Margin of Safety</th> </tr> </thead> <tbody> <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> </tbody> </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
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<p>Seasonal Variations and Critical Conditions</p>	<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>															
<p>Monitoring Plan</p>	<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>															

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	<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>

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	<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>

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	<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>

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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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	<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>

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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>

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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 Plan

³ Monitoring Reporting Program

⁴ Quality Assurance Project Plan

⁵ 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
<p>⁶The 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.</p>			