

Chollas Creek Metals Total Maximum Daily Load (TMDL)

Resolution:	R9-2007-0043
Effective Date:	October 22, 2008
Impaired Water Body:	Chollas Creek
Pollutants:	Dissolved Copper, Lead, and Zinc (Metals)
Responsible Dischargers:	Dischargers within the Chollas Creek watershed. ¹ The Chollas Creek Metals TMDL watershed boundaries are defined by those lands in the Chollas HSA (908.22) that drain to the lower 3.5 miles of Chollas Creek and all upstream tributaries to this section. ²
Required Actions:	Dischargers meet the requirements of the Chollas Creek Metals TMDL provided discharges from their facilities are in compliance with the numeric water quality based effluent limitations (WQBELs) in accordance with Table 3 of this fact sheet; and analyze storm water samples for hardness in order to calculate WQBELs determined by the equations in Table 1 and Table 2 of this fact sheet. The Regional Water Board may require dischargers to implement additional actions to reduce metal discharges based on a site-specific analysis.
TMDL documents are available at: http://www.waterboards.ca.gov/sandiego/water_issues/programs/tmdls/chollascreekmetals.shtml	

Fact Sheet for Chollas Creek Metals TMDL

Background

The Chollas Creek Metals TMDL addresses the Clean Water Act section 303(d) impairment for acute and chronic toxicity impacts related to Metals in Chollas Creek. A source analysis for Metals indicates that major contributors of Metals in urban runoff to Chollas Creek include freeways, commercial and industrial land uses.³ The Metals TMDL technical report specifically identifies industries with practices that may expose metals to stormwater as a “significant source”.⁴ Elevated levels of Metals may cause

¹ Resolution No. R9-2007-0043, Attachment A, Table 4
² Resolution No. R9-2007-0043, Technical Report, p. 19
³ Resolution No. R9-2007-0043, Attachment A, p. 3
⁴ Resolution No. R9-2007-0043, Technical Report, p. 33

adverse effects in all biological species. Dissolved forms of Metals can potentially accumulate in lower organisms.⁵

The Chollas Creek Metals TMDL identifies the following responsible parties: Municipal Separate Storm Sewer System (MS4s), Caltrans, U.S. Navy, school districts, industrial, construction, utility vault, groundwater extraction, and hydrostatic test water permit dischargers (Responsible Parties).⁶

TMDL Waste Load Allocation

The Metals TMDL requires dischargers to improve water quality conditions in the Chollas Creek watershed through waste load reductions of metals in their discharges. The Metals TMDL assigns a Waste Load Allocation (WLA) to all Responsible Parties, including industrial dischargers. The WLA is set at concentrations equal to 90 percent of the receiving water's loading capacities for Metals. Because the toxicity of Metals varies with the hardness levels in receiving waters,⁷ the allowable WLA concentrations are expressed as hardness based equations equal to the California Toxic Rule Criteria.⁸ Because industrial discharges occur as a discrete point source that have the potential to occur at any time during both dry and wet weather, compliance with the acute WLA, as described below, is considered compliance the Metals TMDL.

TMDL Requirements

The Metals TMDL technical report states that the General Permit should include the following requirements (1) a WQBEL consistent with the WLAs, (2) an iterative BMP approach to attain the WLA in accordance with a compliance schedule, and (3) annual reports describing the discharger's progress in meeting the WLA.⁹ Requirements (2) and (3) are met because the General Permit requires Dischargers with coverage under the prior industrial general permit to submit a SWPPP (Section II.B.4.f), implement Best Management Practices (BMPs) to reduce metals loadings (Section X.H), conduct visual observations of BMPs and potential nonauthorized sources of stormwater (Section XI), and submit reports within data and information on BMP effectiveness (Section J). Requirement (1) is not met because the General Permit includes numeric action levels (NALs) rather than numeric effluent limitations. The San Diego Water Board has determined that enforceable numeric WQBELs are necessary to meet Requirement (1) of the Metals TMDL because WLAs must be met at all point source discharge locations in order to achieve water quality standards in Chollas Creek, and compliance with WQBELs are designed to achieve the WLA. NALs are not enforceable. The applicable WQBELs depend on whether the Discharger is considered new or existing as described in the Compliance Schedule section of this Fact Sheet.

⁵ Resolution No. R9-2007-0043, Technical Report, pp 24 – 26

⁶ Resolution No. R9-2007-0043, Technical Report, pp 67-71

⁷ Hardness is defined as the calcium and magnesium ion content in the water. Hardness is usually reported as parts per million (ppm) of calcium carbonate CaCO₃

⁸ Resolution No. R9-2007-0043, Technical Report, p.73

⁹ Resolution No. R9-2007-0043, Technical Report, p. 79

Interim and Final WQBELs

The Metals TMDL's requires the WLA to be implemented through WQBELs. The TMDL requires Dischargers to improve water quality conditions in Chollas Creek by achieving the WQBEL at their discharge point(s) in a phased manner during the anticipated twenty year TMDL implementation period.

The Metals TMDL states that concentrations of metals are allowed to exceed the WLAs as follows: dissolved metals concentrations are allowed to exceed the WLAs by twenty percent (20%) at the end of the tenth year (on or before October 22, 2018), and by zero percent (0%) after the final compliance date (October 22, 2028). For example, if based on the measured hardness, the resultant calculated WLA for copper is 10 ug/l, at the end of the tenth year, discharges can include dissolved copper less than or equal to 12 ug/l (i.e. a 20% exceedance of the WLA).¹⁰ By the final compliance date, assuming the same measured hardness, Dischargers would have to meet the WLA of 10 ug/l (i.e. a 0% exceedance of the WLA).

The Interim WQBELs in Table 1 translate the allowable 20% exceedances of the WLA into numeric water quality standards. The final WQBELs in Table 2 translate the 0% allowable exceedance of the WLA into numeric water quality standards. Because the toxicity of Metals varies with the amount of hardness in the water sample,¹¹ interim and final WQBELs are measured at the appropriate time of compliance.¹² This means once a water sample is collected from each discharge point and the hardness of the sample is known, Dischargers compare the concentration of dissolved metals in their discharge to the calculated WQBELs to determine the compliance with either interim or final WQBELs.

Table 1: Interim WQBELs Expressed as Dissolved Metals Concentrations in Discharges to Chollas Creek

Metal	Exposure Duration	Dissolved Metal Concentration (µg/l)
Dissolved Copper	Acute	$1.2 \times (0.90) \times (0.96) \times e^{[0.9422 \times \ln(\text{hardness}) - 1.700]} \times \text{WER}$
Dissolved Lead	Acute	$1.2 \times (0.90) \times [1.46203 - 0.145712 \times \ln(\text{hardness})] \times e^{[1.273 \times \ln(\text{hardness}) - 1.460]} \times \text{WER}$
Dissolved Zinc	Acute	$1.2 \times (0.90) \times (0.978) \times e^{[0.8473 \times \ln(\text{hardness}) + 0.884]} \times \text{WER}$

Note: Water Effects Ratio (WER) is a mathematical means to account for a difference between the toxicity of the metal in laboratory dilution water and its toxicity in the water at the site.¹³ The WER is assumed to be 1.0 unless there is a site-specific and chemical-specific WER provided in the San Diego Region Basin Plan.

¹⁰ Resolution No. R9-2007-0043, Technical Report, p. 75

¹¹ Hardness is defined as the calcium and magnesium ion content in the water. Hardness is usually reported as parts per million (ppm) of calcium carbonate CaCO₃

¹² Resolution No. R9-2007-0043, Technical Report, p. 6

¹³ US EPA February 22, 1994, Memorandum, Use of Water Effect Ratios in Water Quality Standards, EPA 823-B-94-001

Table 2: Final WQBELs Expressed as Dissolved Metal Concentrations in Discharges to Chollas Creek

Metal	Exposure Duration	Dissolved Metal Concentration (µg/l)
Dissolved Copper	Acute	$(0.90) \times (0.96) \times e^{[0.9422 \times \ln(\text{hardness}) - 1.700]} \times \text{WER}$
Dissolved Lead	Acute	$(0.90) \times [1.46203 - 0.145712 \times \ln(\text{hardness})] \times e^{[1.273 \times \ln(\text{hardness}) - 1.460]} \times \text{WER}$
Dissolved Zinc	Acute	$(0.90) \times (0.978) \times e^{[0.8473 \times \ln(\text{hardness}) + 0.884]} \times \text{WER}$

Note: Water Effects Ratio (WER) is a mathematical means to account for a difference between the toxicity of the metal in laboratory dilution water and its toxicity in the water at the site.¹⁴ The WER is assumed to be 1.0 unless there is a site-specific and chemical-specific WER provided in the San Diego Region Basin Plan.

TMDL Compliance

Dischargers in the Chollas Creek watershed are in compliance with the Metals TMDL and their contribution to the total WLA if all of the following are completed:

1. Enrollment in this General Permit; and
2. Inclusion of BMPs in the Discharger' SWPPP; and
3. Compliance with this General Permit; and
4. There are no exceedances of the interim or final WQBELs within a reporting year at the point(s) of discharge from the Discharger's industrial facility.

TMDL Compliance Schedule

The implementation actions applicable to industrial dischargers and the relevant compliance deadlines are set forth in Table 3. The Metals TMDL assumes existing Responsible Parties will need to implement an iterative approach of new or expanded BMPs to meet the WQBELs. As such, the TMDL establishes a compliance schedule with interim milestones for industrial dischargers previously enrolled under Order No. 97-03-DWQ.¹⁵ New industrial dischargers are not given a compliance schedule under the Metals TMDL. Therefore, new Dischargers must comply with Final WQBELs upon enrollment in the General Permit.¹⁶

Table 3: Compliance Dates

Implementation Actions	Industrial Dischargers	Date
Meet Interim WQBELs in Table 1	Existing Dischargers	October 22, 2018
Meet Final WQBELs in Table 2	Existing Dischargers	October 22, 2028
Meet Final WQBELs in Table 2	New Dischargers	Upon enrollment

¹⁴ US EPA February 22, 1994, Memorandum, Use of Water Effect Ratios in Water Quality Standards, EPA 823-B-94-001

¹⁵ Resolution No. R9-2007-0043, Technical Report, pp. 74, 79

¹⁶ Resolution No. R9-2007-0043, Technical Report, pp. 82-83

Monitoring and Reporting

To be in compliance with the Metals TMDL, Dischargers must monitor their discharges for hardness in order to be able to calculate the interim and final WQBELs using the formulas in Table 1 and Table 2, respectively. The General Permit does not currently require Dischargers to monitor their discharges for hardness. Table 4 summarizes the monitoring requirements specific for hardness and dissolved metals.

Table 4: Monitoring Requirements for TMDL Parameters

Parameter	Unit	Sample Type	Minimum Frequency	Required Test Method
Hardness	mg/l as CaCO ₃	Grab	2 QSE between July 1 and December 31	As specified in 40 CFR part 136
Dissolved Copper, Lead, Zinc	µg/l	Grab	2 QSEs between January 1 and June 30	As specified in 40 CFR part 136

Dischargers shall report results of all required monitoring annually as part of their Annual Report. Pursuant to section XVI of this General Permit, Annual Reports are due on or before July 15.

The Regional Water Boards retain the authority to require Dischargers to revise their SWPPPs, ERA Reports, or monitoring programs as well as to direct a Discharger to obtain an individual NPDES permit if additional Metals controls are necessary.

Watershed Coordination

Phase I MS4s in the Chollas Creek Metals TMDL are implementing an adaptive management approach to improve water quality in the Pueblo San Diego, Sweetwater, and Otay Watershed Management Areas in the San Diego Bay Water Quality Improvement Plan. Coordinated efforts by Responsible Parties accelerate waste load reductions required in the Chollas Creek Metals TMDL and achieve the ultimate goal of improving water quality as soon as possible. Industrial dischargers are encouraged to coordinate with Phase I MS4s and other Responsible Parties to meet the Chollas Creek Metals WLA requirements using an adaptive management approach. Dischargers located within County of San Diego, City of San Diego, City of Del Mar, and the City of Poway, are encouraged to contact that jurisdictions Storm Water Program Manager to collaborate. Dischargers located within County of San Diego, City of San Diego, City of La Mesa, and the City of Lemon Grove, and the San Diego Unified Port District are encouraged to contact that jurisdiction’s Storm Water Program Manager to collaborate.