ATTACHMENT N – TMDLS IN THE CALLEGUAS CREEK WATERSHED MANAGEMENT AREA

I. ORGANOCHLORINE (OC) PESTICIDES, POLYCHLORINATED BIPHENYLS (PCBS) AND SILTATION IN CALLEGUAS CREEK, ITS TRIBUTARIES, AND MUGU LAGOON TMDL

A. Permittees subject to the provisions below are identified in Attachment J, Table J-5.

B. Compliance with the following sediment-based receiving water limitations shall be measured as an in-stream annual average at the base of each subwatershed[1] within the Calleguas Creek Watershed.

1. Permittees shall comply with the following interim sediment-based receiving water limitations for pollutant concentrations in suspended sediment and bed sediment for the following subwatersheds as of the effective date of the Order:

Interim Receiving Water Limitations by Subwatershed (ng/g sediment)						
Constituent	**Mugu Lagoon[2]**	**Calleguas Creek**	**Revolon Slough**	**Arroyo Las Posas**	**Arroyo Simi**	**Conejo Creek**
Total Chlordane	25	17	48	3.3	3.3	3.4
4,4-DDD	69	66	400	290	14	5.3
4,4-DDE	300	470	1,600	950	170	20
4,4-DDT	39	110	690	670	25	2
Dieldrin	19	3	5.7	1.1	1.1	3
Total PCBs	180	3,800	7,600	25,700	25,700	3,800
Toxaphene	22,900	260	790	230	230	260

2. Permittees shall comply with the following final sediment-based receiving water limitations for pollutant concentrations in suspended sediment and bed sediment for the following subwatersheds no later than March 24, 2026:

Final Receiving Water Limitations by Subwatershed (ng/g sediment)						
Constituent	**Mugu Lagoon[3]**	**Calleguas Creek**	**Revolon Slough**	**Arroyo Las Posas**	**Arroyo Simi**	**Conejo Creek**
Total Chlordane	3.3	3.3	0.9	3.3	3.3	3.3
4,4-DDD	2.0	2.0	2.0	2.0	2.0	2.0
4,4-DDE	2.2	1.4	1.4	1.4	1.4	1.4
4,4-DDT	0.3	0.3	0.3	0.3	0.3	0.3
Dieldrin	4.3	0.2	0.1	0.2	0.2	0.2
Total PCBs	180	120	130	120	120	120
Toxaphene	360	0.6	1.0	0.6	0.6	0.6

II. TOXICITY, CHLORPYRIFOS, AND DIAZINON IN THE CALLEGUAS CREEK, ITS TRIBUTARIES AND MUGU LAGOON TMDL

A. Permittees subject to the provisions below are identified in Attachment J, Table J-5.

[1] All references to subwatersheds for this TMDL are defined per drainage areas in Figure 1 of the Calleguas Creek Watershed OC Pesticides and PCBs TMDL Technical Report, April 25, 2005.
[2] The Mugu Lagoon subwatershed includes Duck Pond/Agricultural Drain/Mugu/Oxnard Drain #2.
[3] Ibid.

B. Permittees shall comply with the following receiving water limitations for Calleguas Creek and its tributaries measured in-stream at the base of each subwatershed[4] as of the effective date of the Order:

Receiving Water Limitations Daily Maximum (µg/L)		
Constituent	**Wet Weather**	**Dry weather**
Chlorpyrifos	0.025	0.014
Diazinon	0.10	0.10

C. Permittees shall comply with the receiving water limitation of 1 TUc measured in-stream at the base of each subwatershed as of the effective date of the Order. The receiving water limitation shall be implemented as a trigger for initiation of the TRE/TIE process as outlined in U.S. EPA's "*Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System Program*" (2000).

III. METALS AND SELENIUM IN THE CALLEGUAS CREEK, ITS TRIBUTARIES AND MUGU LAGOON TMDL

A. Permittees subject to the provisions below are identified in Attachment J, Table J-5.

B. Permittees shall comply with the following interim receiving water limitations[5] measured in-stream at the base of the following subwatersheds[6] as of the effective date of the Order, expressed as total recoverable metals:

Interim Receiving Water Limitations in Water Column (µg/L of total recoverable metals)						
Constituents	**Conejo Creek and Arroyo Simi / Las Posas**			**Revolon Slough**		
	Dry Weather Daily Maximum	**Dry Weather Monthly Average**	**Wet Weather Daily Maximum**	**Dry Weather Daily Maximum**	**Dry Weather Monthly Average**	**Wet Weather Daily Maximum**
Copper	23	19	204	23	19	204
Nickel	15	13	---	15	13	---
Selenium	---	---	---	14[7]	13[8]	---

C. Permittees shall comply with the following dry weather grouped[9] mass-based final receiving water limitations measured in-stream at the base of the following subwatersheds[10] no later than March 27, 2022, expressed as total recoverable metals:

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[4] All references to subwatersheds in this TMDL include Mugu Lagoon, Revolon Slough, Calleguas, Conejo, Las Posas, and Arroyo Simi per drainage areas in Figure 1 of the Calleguas Creek Watershed Toxicity, Chlorpyrifos, and Diazinon TMDL Technical Report, April 25, 2005.

[5] The dry weather limitations apply to days when flows in the stream are less than the 86th percentile flow rate for each reach. The wet weather limitations apply to days when flows in the stream exceed the 86th percentile flow rate for each reach.

[6] All references to subwatersheds for this TMDL are defined per drainage areas in Figure 1 of the Calleguas Creek Watershed Metals and Selenium TMDL Technical Report, March 29, 2006.

[7] Attainment of interim limits will be evaluated in consideration of background loading data, if available consistent with EPA's Recommended Aquatic Life Ambient Water Quality Criterion for Selenium in Freshwater.

[8] Ibid.

[9] Includes MS4 Permittees, Caltrans, general industrial and construction storm water permit dischargers, and Naval Air Weapons Station Point Mugu.

[10] All references to subwatersheds for this TMDL are defined per drainage areas in Figure 1 of the Calleguas Creek Watershed OC Metals and Selenium TMDL Technical Report, March 29, 2006.

Final Receiving Water Limitations in Water Column (lbs/day of total recoverable metals)						
Constituent	Calleguas and Conejo Creek			Revolon Slough		
	Low Flow (0-5 cfs)	Average Flow (6-21 cfs)	Elevated Flow (22-30 cfs)	Low Flow (0-10 cfs)	Average Flow (11-17 cfs)	Elevated Flow (18-22 cfs)
Copper[11]	$0.04 \times WER - 0.02$	$0.12 \times WER - 0.02$	$0.18 \times WER - 0.03$	0.02	0.03	0.11
Nickel	0.10	0.12	0.44	0.05	0.069	0.116
Selenium	---	---	---	0.004	0.003	0.004

D. Permittees shall comply with the following wet weather grouped[12] mass-based final receiving water limitations measured in-stream at the base of the following subwatersheds no later than March 27, 2022, expressed as total recoverable metals:

Final Receiving Water Limitations in Water Column (lbs/day of total recoverable metals)[13]		
Constituent	Calleguas Creek	Revolon Slough
Copper[14]	$(0.00054 \times Q^2 \times 0.032 \times Q - 0.17) \times WER - 0.06$	$0.0002 \times Q^2 + 0.0005 \times Q$
Nickel[15]	$0.014 \times Q^2 + 0.82 \times Q$	$0.027 \times Q^2 + 0.47 \times Q$
Selenium[16]	---	$0.027 \times Q^2 + 0.47 \times Q$

E. Permittees shall comply with the following grouped[17] mass-based interim receiving water limitations for Calleguas Creek and its tributaries measured in-stream at the base of each subwatershed as of the effective date of the Order. Permittees shall comply with the following grouped mass-based final receiving water limitations for Calleguas Creek and its tributaries measured in-stream at the base of each subwatershed no later than March 27, 2022:

[11] For copper, the approved site-specific WER of 1.51 for Mugu Lagoon shall be used to calculate the assigned receiving water limitations for Calleguas and Conejo Creek to ensure the downstream standard is achieved. Permittees may apply a WER of up to 3.69 for upstream reaches, except for Reaches 4 and 5, to calculate the assigned receiving water limitations. To apply a WER of greater than 1.51, Permittees shall provide a detailed quantitative analysis to the Los Angeles Water Board Executive Officer for approval to demonstrate that the receiving water limitations as modified by the WER are protective of downstream reaches. No site specific WER for Revolon Slough subwatershed was approved so the default WER value of 1 was applied. Regardless of the final WERs, total copper loading shall not exceed current loading.

[12] Includes MS4 Permittees, Caltrans, general industrial and construction storm water permit dischargers, and Naval Air Weapons Station Point Mugu.

[13] Q = Daily storm volume (cfs). If volume used is cfd, the result should be divided by 86,400 to get cfs.

[14] The approved site-specific WER of 1.51 for Mugu Lagoon shall be used to calculate the assigned receiving water limitations for Calleguas and Conejo Creek to ensure the downstream standard is achieved. Permittees may apply a WER of up to 3.69 for upstream reaches, except for Reaches 4 and 5, to calculate the assigned receiving water limitations. To apply a WER of greater than 1.51, Permittees shall provide a detailed quantitative analysis to the Los Angeles Water Board Executive Officer for approval to demonstrate that the receiving water limitations as modified by the WER are protective of downstream reaches. No site specific WER for Revolon Slough was approved so the default WER value of 1 was applied. Regardless of the final WERs, total copper loading shall not exceed current loading.

[15] Current loads do not exceed loading capacity during wet weather. Sum of all loads cannot exceed loads presented in the table.

[16] Ibid.

[17] Includes MS4 Permittees, Caltrans, general industrial and construction storm water permit dischargers, and Naval Air Weapons Station Point Mugu.

Interim and Final Receiving Water Limitations for Mercury in Suspended Sediment (lbs/yr)				
Flow Range (MGY)	**Calleguas Creek**		**Revolon Slough**	
	Interim	**Final**	**Interim**	**Final**
0 – 14,999	3.3	0.4	1.7	0.1
15,000 – 25,000	10.5	1.6	4	0.7
Above 25,000	64.6	9.3	10.2	1.8

F. Compliance with subparts C, D, and E shall be determined based on the percentage of the watershed and land uses within the Permittee's jurisdiction. Permittees shall report this with their submittal of monitoring data.

IV. BORON, CHLORIDE, SULFATE AND TDS (SALTS) IN THE CALLEGUAS CREEK, ITS TRIBUTARIES AND MUGU LAGOON TMDL

A. Permittees subject to the provisions below are identified in Attachment J, Table J-5.

B. Permittees shall comply with the following interim dry weather[18] receiving water limitations for Calleguas Creek and its tributaries[19] measured in-stream at the base of each subwatershed[20] as of the effective date of the Order:

Interim Dry-Weather Receiving Water Limitations (mg/L)	
Constituent	**Monthly Average**
Boron	1.3
Chloride	230
Sulfate	1289
Total Dissolved Solids (TDS)	1720

C. Permittees shall comply with the following final dry weather receiving water limitations measured in-stream at the base of subwatersheds listed below no later than December 2, 2023:

Final Dry-Weather Receiving Water Limitations				
Subwatershed	**Chloride (lbs/day)**	**TDS (lbs/day)**	**Sulfate (lbs/day)**	**Boron (lbs/day)**
Simi	1,738	9,849	2,897	12
Las Posas	157	887	261	---
Conejo	1,576	8,931	2,627	---
Camarillo	72	406	119	---
Pleasant Valley (Calleguas Creek)[21]	150	850	250	---
Pleasant Valley (Revolon)[22]	314	1,778	523	2

[18] Dry weather limitations apply when instream flow rates are below the 86th percentile flow and there has been no measurable precipitation in the previous 24 hours.

[19] The segment of Calleguas Creek Reach 4 below Laguna Road is tidally influenced and therefore not impaired for chloride, boron, sulfate, and TDS. Therefore, limitations for discharges to Reach 4 do not apply below Laguna Road.

[20] All references to subwatersheds for this TMDL are defined per drainage areas in Figure 10 of the Calleguas Creek Watershed Boron, Chloride, TDS, and Sulfate TMDL Public Review Technical Report, April 2007.

[21] The receiving water limitations apply upstream of Potrero Road. Downstream of Potrero Road, the creek is tidally influenced and the salt receiving water limitations do not apply.

[22] For Calleguas Creek Reach 4 which is in the Pleasant Valley (Revolon) subwatershed, the receiving water limitations apply upstream of Laguna Road. Downstream of Laguna Road, the creek is tidally influenced and the salt receiving water limitations do not apply.

V. REVOLON SLOUGH AND BEARDSLEY WASH TRASH TMDL

A. Permittees subject to the provisions below are identified in Attachment J, Table J-5.

B. Permittees shall comply with water quality-based effluent limitations for trash per the provisions in Part IV.B.3 of the Order.

C. Permittees shall comply with the water quality-based effluent limitation of zero trash discharged from priority land use areas, as defined in Attachment A of the Order, to Revolon Slough and Beardsley Wash as of the effective date of the Order and every water year thereafter.

VI. PESTICIDES, PCBS, AND SEDIMENT TOXICITY IN OXNARD DRAIN 3[23] TMDL (U.S. EPA ESTABLISHED)

A. Permittees subject to the provisions below are identified in Attachment J, Table J-5.

B. Permittees shall comply with the following receiving water limitations and water quality-based effluent limitations per the provisions in Part IV.B.2.c of the Order (U.S. EPA Established TMDLs).

C. Permittees shall comply with the following receiving water limitations for water and sediment in Oxnard Drain 3 and water quality-based effluent limitations for discharges to Oxnard Drain 3 subwatershed:

Receiving Water and Effluent Limitations Daily Maximum for Water and Sediment[24]			
Constituent	**Water (µg/L)**	**Sediment[25] (µg/dry kg)**	**Alternate Sediment[26] (µg/dry kg)**
Bifenthrin	0.0006	---	---
Total Chlordane	0.00059	0.5	3.3
Chlorpyrifos	0.0056	---	---
4,4'-DDT	0.00059	1.0	0.3
4,4'-DDE	0.00059	2.2	2.2
4,4'-DDD	0.00084	2.0	2.0
Dieldrin	0.00014	0.02	4.3
Total PCBs	0.00017	22.7	180
Sediment toxicity[27]	---	No significant chronic sediment toxicity	---
Toxaphene	0.0002	0.1	360

[23] Oxnard Drain 3 has also been called Rio de Santa Clara, Arnold Road Drain, or L Street Drain; it is occasionally confused with Oxnard Drain 1.

[24] Sediment concentrations associated with suspended sediment and Oxnard Drain 3 bed sediment.

[25] Sediment limitations apply if there are fish tissue targets or sediment toxicity exceedances. Fish tissue targets are defined per subpart D below.

[26] The alternate sediment limitations apply when the fish tissue targets and the sediment toxicity limitations are achieved in Oxnard Drain 3. Otherwise, the sediment limitations apply.

[27] Sediment is toxic if a sediment sample is significantly more toxic than the laboratory control, where the following two criteria are met: (1) a separate-variance t-test determines that there is a significant difference ($p<0.05$) in mean toxicity test organism response (e.g., percent survival, percent normal development) between the sediment sample and the laboratory control, and (2) the mean organism response in that toxicity test is lower than a certain percentage of the control value, as determined by the 90th percentile Minimum Significant Difference (MSD). Exceedance of the toxicity target will be a trigger mechanism for initiation of the TRE/TIE process as described in U.S. EPA's Region 8, 9, and 10 Toxicity Training Tool (2010) at the base of each subwatershed.

D. The following fish tissue targets for Oxnard Drain 3 shall be met using a composite sample of skin-off fillets from at least five common carp each measuring at least 350 mm in length:

Constituent	Fish Tissue Target (µg/wet kg)
Total Chlordane	8.3
Chlorpyrifos	1200
4,4'-DDT	32
4,4'-DDE	32
4,4'-DDD	45
Dieldrin	0.65
Total PCBs	5.3
Toxaphene	9.8