



draft Tentative Order Ventura County Municipal Separate Storm Sewer System Permit

ATTACHMENT A
Watershed Management Areas

Watershed Management Area	Hydrologic Units(s)	Major Surface Water Bodies	303(d) Pollutant(s) of Concern	Permittees
Ventura River	402.10 402.20 402.31 402.32	Ventura River Ventura River Estuary Canada Larga Matilija Creek Matilija Creek Reservoir San Antonio Creek	Algae Coliform (fecal, total) Eutrophic Low DO Nitrogen Trash	City of Ojai City of San Buenaventura Ventura County Watershed Protection District
Santa Clara River	403.11 403.21 403.22 403.31 403.32 403.41 403.42 403.43 403.44 403.51 403.52 403.53 403.54 403.55	Santa Clara River Santa Clara River Estuary Brown Barranca/Long Canyon Elizabeth Lake Hopper Creek Lake Hughes Mint Canyon Creek Munz Lake Piru Creek Pole Creek Sespe Creek Torrey Canyon Creek Wheeler Canyon/Todd Barranca	Algae Ammonia ChemA* (tissue) Chloride Coliform Enrichment Eutrophic Fish kills Low DO/Organic Enrichment Nitrate + Nitrite Odors pH Sulfate Trash Total Dissolved Solids Toxaphene	City of Fillmore City of Oxnard City of San Buenaventura City of Santa Paula Ventura County Watershed Protection District

ATTACHMENT A
Watershed Management Areas

Watershed Management Area	Hydrologic Units(s)	Major Surface Water Bodies	303(d) Pollutant(s) of Concern	Permittees
Calleguas Creek	403.11	Calleguas Creek	Algae	City of Camarillo City of Moorpark City of Simi Valley City of Thousand Oaks Ventura County Watershed Protection District
	403.12	Calleguas Creek Estuary	Ammonia	
	403.61	Arroyo Conejo	Boron	
	403.62	Arroyo Las Posas	ChemA* (tissue)	
	403.63	Arroyo Simi	Chlordane (tissue, sediment)	
	403.64	Beardsley Channel	Chloride	
	403.67	Conejo Creek	Chlorpyrifos (tissue)	
	403.66	Fox Barranca	Coliform, fecal	
	403.68	Mugu Lagoon	Copper (total, dissolved)	
		Mugu Drain/Oxnard Drain	Dacthal (sediment)	
		Rio de Santa Clara/Oxnard Drain	DDT (tissue, sediment)	
		Revolon Slough	Dieldrin (tissue)	
		Tapo Canyon	Endosulfan (tissue, sediment)	
			Hexachlorocyclohexane (tissue)	
		Mercury		
		Nickel		
		Nitrate + Nitrite		
		Nitrate as Nitrogen (NO3)		
		Nitrogen		
		Organophosphorus Pesticides		
		PCBs (tissue)		
		Sediment Toxicity		
		Sedimentation/Siltation		
		Selenium		
		Sulfate		
		Total Dissolved Solids		
		Toxaphene (tissue, sediment)		
		Toxicity		
		Trash		
		Zinc		

ATTACHMENT A
 Watershed Management Areas

Watershed Management Area	Hydrologic Units(s)	Major Surface Water Bodies	303(d) Pollutant(s) of Concern	Permittees
Malibu Creek	401.00 403.11 404.21 404.22 404.23 404.24 404.25 404.26 404.47 404.45	Malibu Creek Malibu Creek Lagoon Lake Lindero Lake Sherwood Las Virgenes Creek Linero Creek Malibou Lake Medea Creek Palo Comado Santa Monica Bay Westlake Lake Triunfo Creek	Algae Ammonia Coliform DDT (tissue, sediment) Enteric viruses Eutrophic Lead Low DO/Organic Enrichment Nutrients (algae) PAHs (sediment) PCBs (tissue, sediment) PH Mercury Scum/foam Sedimentation/Siltation Sediment Toxicity Selenium Specific Conductance Trash	City of Simi Valley City of Thousand Oaks Ventura County Watershed Protection District

ATTACHMENT A
Watershed Management Areas

Watershed Management Area	Hydrologic Units(s)	Major Surface Water Bodies	303(d) Pollutant(s) of Concern	Permittees
Miscellaneous Ventura Coastal	401.00 403.11	Channel Islands Harbor Channel Islands Beach Hobie Beach Mandalay Beach McGrath Lake McGrath Beach Ormond Beach Port Hueneme Harbor Promenade Park Beach Rincon Beach San Buenaventura Beach Santa Clara River Estuary Beach/Surfers Knoll Ventura Harbor: Ventura Keys	Beach closures Coliform (fecal) Chlordane (sediment) DDT (tissue, sediment) Dieldrin (sediment) PCBs (tissue, sediment) Lead (sediment) Sediment Toxicity Zinc (sediment)	City of Oxnard City of Port Hueneme City of San Buenaventura Ventura County Watershed Protection District

ATTACHMENT BCalleguas Creek Watershed Pollutants of Concern (2003 through 2007)¹

Mass Emission (ME-CC), Receiving Water (W-3 & W-4), and Land Use (A-1) Sites

Wet Weather	
Bacteriological	
E. Coli	
Fecal Coliform	
Conventional	
Residual Chlorine	
TDS	
Metal	
Aluminum - Total	Chromium - Total
Barium - Total	Cooper - Dissolved
Beryllium - Total	Mercury - Total
Cadmium - Total	Nickel - Total
Nutrient	
Nitrate as Nitrogen	
Organic	
Benzo(a)anthracene	
Benzo(a)pyrene	
Benzo(b)fluoranthene	
Benzo(k)fluoranthene	
Bis(2-ethylhexyl)phthalate	
Chrysene	
Dibenz(a,h)anthracene	
Hexachlorobenzene	
Indeno(1,2,3-cd)pyrene	
Pentachlorophenol	
Pesticide	
4,4'-DDD	
4,4'-DDE	

¹ Mass Emission, Receiving Water, and Land Use wet weather monitoring data was compared to Basin Plan Objectives and CTR-Acute Objectives, to obtain exceedences (Pollutants of Concern). Monitoring data is from the Ventura Countywide NPDES Stormwater Monitoring Program Water Quality Monitoring Reports (2003/04 through 2006/07), data for 2000/01 through 2002/03 was either presented with exceedences not analyzed or by percent exceedence, so data could not be compared to 2003/04 through 2006/07 exceedence data. See definitions for Pollutants of Concern

ATTACHMENT BSanta Clara River Watershed Pollutants of Concern (2003 through 2007)¹

Mass Emission (ME-SCR) and Land Use (I-2 & R-1) Sites

Wet Weather
Anion
Chloride
Bacteriological
E. Coli
Fecal Coliform
Conventional
Ph
TDS
Metal
Aluminum - Total Cooper - Dissolved
Arsenic - Total Mercury - Total
Barium - Total Nickel - Total
Cadmium - Total Selenium - Total
Chromium - Total Zinc - Dissolved
Organic
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Bis(2-ethylhexyl)phthalate
Chrysene
Dibenz(a,h)anthracene
Indeno(1,2,3-cd)pyrene
Pesticide
4,4'-DDE

¹ Mass Emission, and Land Use wet weather monitoring data was compared to Basin Plan Objectives and CTR-Acute Objectives, to obtain exceedences (Pollutants of Concern). Monitoring data is from the Ventura Countywide NPDES Stormwater Monitoring Program Water Quality Monitoring Reports (2003/04 through 2006/07), data for 2000/01 through 2002/03 was either presented with exceedences not analyzed or by percent exceedence, so data could not be compared to 2003/04 through 2006/07 exceedence data. See definitions for Pollutants of Concern.

ATTACHMENT BVentura River Watershed Pollutants of Concern (2003 through 2007)¹

Mass Emission (ME- VR & ME- VR2) Sites

Wet Weather
Anion
Chloride
Bacteriological
E. Coli
Fecal Coliform
Conventional
TDS
Metal
Aluminum -Total
Cadmium - Total
Chromium - Total
Mercury - Total
Nickel - Total
Zinc - Dissolved
Organic
Benzo(a)pyrene
Benzo(b)fluoranthene
Bis(2-ethylhexyl)phthalate
Chrysene
Hexachlorobenzene
Pesticide
4,4'-DDD
4,4'-DDE

¹ Mass Emission wet weather monitoring data was compared to Basin Plan Objectives and CTR-Acute Objectives, to obtain exceedences (Pollutants of Concern). Monitoring data is from the Ventura Countywide NPDES Stormwater Monitoring Program Water Quality Monitoring Reports (2003/04 through 2006/07). Monitoring data for 2000/01 through 2002/03 was either presented with exceedences not analyzed or by percent exceedence, so data could not be compared to 2003/04 through 2006/07 exceedence data. See definitions for Pollutants of Concern.

ATTACHMENT C
Municipal Action Levels

Table 1 - Conventional Pollutants

Pollutants	pH	TSS mg/L	COD mg/L	Kjedahl Nitrogen (TKN) mg/L	Nitrate & Nitrite-total mg/L	P- total mg/L
Municipal Action Level	6.0-9.0	211	120	3.50	1.16	0.82

Table 2 – Metals

Pollutants	Cd- total µg/L	Cr-total µg/L	Cu- total µg/L	Pb- total µg/L	Ni- total µg/L	Zn- total µg/L	Hg- total µg/L
Municipal Action Level	7.34	20.4	70.7	62.2	19.2	756	1.01

ATTACHMENT C
Treatment BMP Performance Standards

Table 3 - Conventional Pollutants

Pollutant	Suspended Solids mg/L	Total P mg/L	Total N mg/L	Total Nitrate-Nitrogen mg/L	TKN mg/L	COD mg/L
Concentration Effluent	10.85-25.81	0.11-0.21	0.74-1.62	0.20-1.26	1.05-1.55	35.01

Table 4 - Metals

Pollutant	Total Cd µg/L	Total Cu µg/L	Total Cr µg/L	Total Pb µg/L	Total Zn µg/L
Concentration Effluent	0.24-0.61	3.35-7.49	1.48-4.84	2.62-6.28	21.58-37.76

The treatment control BMP performance standards were developed from the median effluent water quality values of the 3 highest performing BMPs, per pollutant, in the storm water BMP database (<http://www.bmpdatabase.org/>, last visited August 15, 2007.)

See subpart 4.A.3 (Storm Water Quality Management Program Implementation- General Requirements).

ATTACHMENT D
Critical Sources Categories¹

Municipal Landfills (SIC 4953)

Hazardous Waste Treatment, Disposal and Recovery Facilities¹

Facilities Subject to SARA Title III (also known as EPCRA)²

Restaurants³

Wholesale trade (scrap, auto dismantling) (SIC 50)

Automotive service facilities²

Fabricated metal products (SIC 34)

Motor freight (SIC 42)

Chemical/allied products (SIC 28)

Automotive Dealers/Gas Stations (SIC 55)

Primary Metals Products (SIC 33)

Nursery³ (NAICS 424930 and 444220)

Electric/Gas/Sanitary (SIC 49)

Air Transportation (SIC 45)

Water Transportation (SIC 44)

Rubbers/Miscellaneous Plastics (SIC 30)

Local/Suburban Transit (SIC 41)

Railroad Transportation (SIC 40)

Oil & Gas Extraction (SIC 13)

Lumber/Wood Products (SIC 24)

Machinery Manufacturing (SIC 35)

Transportation Equipment (SIC 37)

¹ Non-underlined categories belong to Industrial Facilities.

² Various categories subject to these requirements.

³ See Definition in Part 7. of the Order.

ATTACHMENT D
Critical Sources Categories¹

Stone, Clay, Glass, Concrete (SIC 32)

Leather/Leather Products (SIC 31)

Miscellaneous Manufacturing (SIC 39)

Food and kindred Products (SIC 20)

Mining of Nonmetallic Minerals (SIC 14)

Printing and Publishing (SIC 27)

Electric/Electronic (SIC 36)

Paper and Allied Products (SIC 26)

Furniture and Fixtures (SIC 25)

Laundries (SIC 72)

Instruments (SIC 38)

Textile Mills Products (SIC 22)

Apparel (SIC 23)

¹ Non-underlined categories belong to Industrial Facilities.

ATTACHMENT E

Determination of Erosion Potential

E_p is determined as follows- The *total effective work* done on the channel boundary is derived and used as a metric to predict the likelihood of channel adjustment given watershed and stream hydrologic and geomorphic variables. The index under urbanized conditions is compared to the index under pre-urban conditions expressed as a ratio (E_p). The effective work index (W) is computed as the excess shear stress that exceeds a critical value for streambed mobility or bank material erosion integrated over time and represents the total work done on the channel boundary:

$$W = \sum_{i=1}^n (\tau_i - \tau_c)^{1.5} \cdot V \cdot \Delta t_i \quad (1)$$

Where τ_c = critical shear stress that initiates bed mobility or erodes the weakest bank layer, τ_i = applied hydraulic shear stress, Δt = duration of flows (in hours), and n = length of flow record. The effective work index for presumed stable stream channels under pre-urban conditions is compared to stable and unstable channels under current urbanized conditions. The comparison, expressed as a ratio, is defined as the Erosion Potential (E_p)¹ (McRae (1992, 1996)).

$$E_p = \frac{W_{post}}{W_{pre}} \quad (2)$$

where:

W_{post} = work index estimated for the post-urban condition

W_{pre} = work index estimated for the pre-urban condition

¹ MacRae, C.R. 1992. The Role of Moderate Flow Events and Bank Structure in the Determination of Channel Response to Urbanization. Resolving conflicts and uncertainty in water management: Proceedings of the 45th Annual Conference of the Canadian Water Resources Association. Shrubsole, D, ed. 1992, pg. 12.1-12.21; MacRae, C.R. 1996. Experience from Morphological Research on Canadian Streams: Is Control of the Two-Year Frequency Runoff Event the Best Basis for Stream Channel Protection. Effects of Watershed Development and Management on Aquatic Ecosystems, ASCE Engineering Foundation Conference, Snowbird, Utah, pg. 144-162

ATTACHMENT GStorm Water Monitoring Program's Constituents with Associated Minimum Levels (MLs)¹

CONSTITUENTS	MLs
CONVENTIONAL POLLUTANTS	mg/L
Oil and Grease	5
Total Phenols	0.1
Cyanide	0.005
pH	0 - 14
Temperature	N/A
Dissolved Oxygen	Sensitivity to 5 mg/L
BACTERIA (single sample limits)	MPN/100ml
Total coliform (marine waters)	10,000
Enterococcus (marine waters)	104
Fecal coliform (marine & fresh waters)	400
E. coli (fresh waters)	235
GENERAL	mg/L
Dissolved Phosphorus	0.05
Total Phosphorus	0.05
Turbidity	0.1 NTU
Total Suspended Solids	2
Total Dissolved Solids	2
Volatile Suspended Solids	2
Total Organic Carbon	1
Total Petroleum Hydrocarbon	5
Biochemical Oxygen Demand	2
Chemical Oxygen Demand	20-900
Total Ammonia-Nitrogen	0.1
Total Kjeldahl Nitrogen	0.1
Nitrate-Nitrite	0.1
Alkalinity	2
Specific Conductance	1umho/cm
Total Hardness	2
MBAS	0.5
Chloride	2
Fluoride	0.1
Methyl tertiary butyl ether (MTBE)	1
Perchlorate	4 µg/L

¹ For priority pollutants, MLs published in Appendix 4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California (SIP) shall be used for all analyses, unless otherwise specified. Method Detection Levels (MDLs) must be lower than or equal to the ML value, unless otherwise approved by the Regional Board.

ATTACHMENT GStorm Water Monitoring Program's Constituents with Associated Minimum Levels (MLs)¹

METALS (Dissolved & Total)	µg/L
Aluminum	100
Antimony	0.5
Arsenic	1
Beryllium	0.5
Cadmium	0.25
Chromium (total)	0.5
Copper	0.5
Hex. Chromium	5
Iron	100
Lead	0.5
Mercury	0.5
Nickel	1
Selenium	1
Silver	0.25
Thallium	1
Zinc	1
SEMIVOLATILE ORGANIC COMPOUNDS	µg/L
ACIDS	µg/L
2-Chlorophenol	2
4-Chloro-3-methylphenol	1
2,4-Dichlorophenol	1
2,4-Dimethylphenol	2
2,4-Dinitrophenol	5
2-Nitrophenol	10
4-Nitrophenol	5
Pentachlorophenol	2
Phenol	1
2,4,6-Trichlorophenol	10
BASE/NEUTRAL	µg/L
Acenaphthene	1
Acenaphthylene	2
Anthracene	2
Benzidine	5
1,2 Benzantracene	5
Benzo(a)pyrene	2
Benzo(g,h,i)perylene	5
3,4 Benzoflouranthene	10

ATTACHMENT GStorm Water Monitoring Program's Constituents with Associated Minimum Levels (MLs)¹

BASE/NEUTRAL	µg/L
Benzo(k)fluoranthene	2
Bis(2-Chloroethoxy) methane	5
Bis(2-Chloroisopropyl) ether	2
Bis(2-Chloroethyl) ether	1
Bis(2-Ethylhexyl) phthalate	5
4-Bromophenyl phenyl ether	5
Butyl benzyl phthalate	10
2-Chloroethyl vinyl ether	1
2-Chloronaphthalene	10
4-Chlorophenyl phenyl ether	5
Chrysene	5
Dibenzo(a,h)anthracene	0.1
1,3-Dichlorobenzene	1
1,4-Dichlorobenzene	1
1,2-Dichlorobenzene	1
3,3-Dichlorobenzidine	5
Diethyl phthalate	2
Dimethyl phthalate	2
di-n-Butyl phthalate	10
2,4-Dinitrotoluene	5
2,6-Dinitrotoluene	5
4,6 Dinitro-2-methylphenol	5
1,2-Diphenylhydrazine	1
di-n-Octyl phthalate	10
Fluoranthene	0.05
Fluorene	0.1
Hexachlorobenzene	1
Hexachlorobutadiene	1
Hexachloro-cyclopentadiene	5
Hexachloroethane	1
Indeno(1,2,3-cd)pyrene	0.05
Isophorone	1
Naphthalene	0.2
Nitrobenzene	1
N-Nitroso-dimethyl amine	5
N-Nitroso-diphenyl amine	1
N-Nitroso-di-n-propyl amine	5
Phenanthrene	0.05
Pyrene	0.05
1,2,4-Trichlorobenzene	1

ATTACHMENT GStorm Water Monitoring Program's Constituents with Associated Minimum Levels (MLs)¹

CHLORINATED PESTICIDES	µg/L
Aldrin	0.005
alpha-BHC	0.01
beta-BHC	0.005
delta-BHC	0.005
gamma-BHC (lindane)	0.02
alpha-chlordane	0.1
gamma-chlordane	0.1
4,4'-DDD	0.05
4,4'-DDE	0.05
4,4'-DDT	0.01
Dieldrin	0.01
alpha-Endosulfan	0.02
beta-Endosulfan	0.01
Endosulfan sulfate	0.05
Endrin	0.01
Endrin aldehyde	0.01
Heptachlor	0.01
Heptachlor Epoxide	0.01
Toxaphene	0.5
POLYCHLORINATED BIPHENYLS	µg/L
Aroclor-1016	0.5
Aroclor-1221	0.5
Aroclor-1232	0.5
Aroclor-1242	0.5
Aroclor-1248	0.5
Aroclor-1254	0.5
Aroclor-1260	0.5
ORGANOPHOSPHATE PESTICIDES	µg/L
Atrazine	2
Chlorpyrifos	0.05
Cyanazine	2
Diazinon	0.01
Malathion	1
Prometryn	2
Simazine	2
HERBICIDES	µg/L
2,4-D	0.02
Glyphosate	5
2,4,5-TP-SILVEX	0.2